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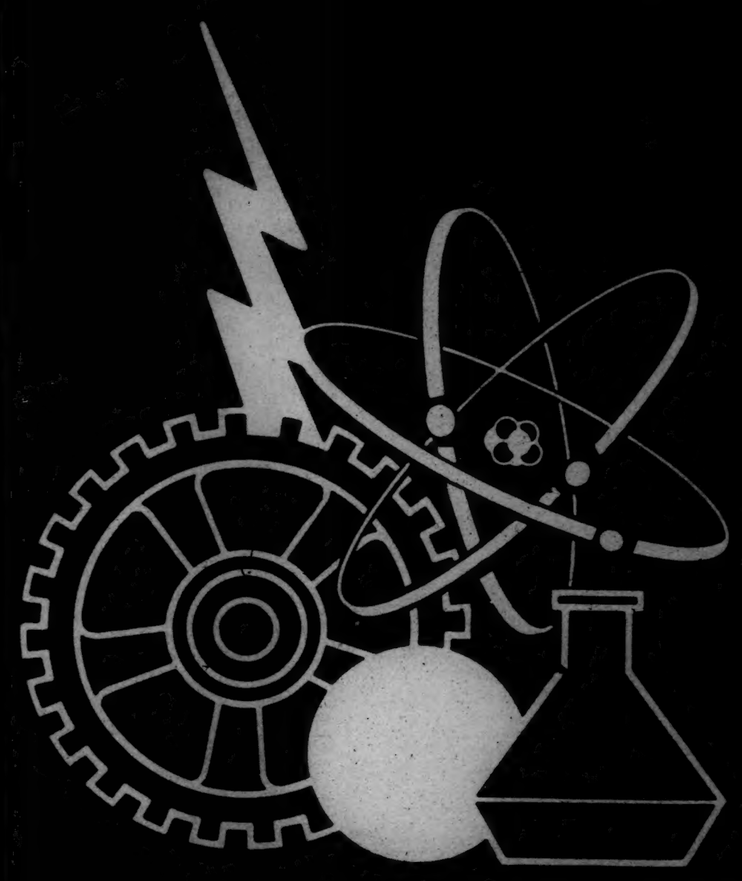
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 6, 1997



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
May 6, 1997 Volume 1198 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 3, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,307,521 through 5,309,569
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 1, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,920,575 through 4,922,549
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 29, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,584,721 through 4,586,195
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$510.00
By other than a small entity	$1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1,025.00
By other than a small entity	$2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1,540.00
By other than a small entity	$3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable	$680.00
(2) unintentional	$1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED February 26, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,645	06/789,790	04/12/88
(4,501,515)	(06/392,234)	(02/26/85)
Re. 33,386	07/084,670	10/16/90
(4,501,965)	(06/458,009)	(02/26/85)
Re. 33,663	07/520,330	08/13/91
(4,807,134)	(07/071,434)	(02/21/89)
4,501,025	06/518,133	02/26/85
4,501,031	06/227,329	02/26/85
4,501,032	06/407,043	02/26/85
4,501,034	06/546,248	02/26/85
4,501,044	06/563,485	02/26/85
4,501,046	06/363,846	02/26/85
4,501,050	06/543,625	02/26/85
4,501,051	06/594,505	02/26/85
4,501,052	06/445,107	02/26/85
4,501,057	06/498,940	02/26/85
4,501,064	06/299,979	02/26/85
4,501,071	06/453,756	02/26/85
4,501,072	06/512,724	02/26/85
4,501,073	06/460,647	02/26/85
4,501,077	06/481,183	02/26/85
4,501,083	06/427,889	02/26/85
4,501,087	06/387,045	02/26/85
4,501,093	06/449,565	02/26/85
4,501,124	06/571,146	02/26/85
4,501,126	06/569,177	02/26/85
4,501,136	06/372,314	02/26/85
4,501,140	06/428,221	02/26/85
4,501,159	06/409,836	02/26/85
4,501,160	06/481,076	02/26/85
4,501,164	06/520,877	02/26/85
4,501,173	06/445,961	02/26/85
4,501,175	06/435,100	02/26/85
4,501,178	06/471,639	02/26/85
4,501,185	06/518,684	02/26/85
4,501,191	06/496,943	02/26/85
4,501,194	06/507,041	02/26/85
4,501,195	06/552,792	02/26/85
4,501,207	06/461,305	02/26/85
4,501,210	06/313,986	02/26/85
4,501,211	06/431,571	02/26/85
4,501,212	06/550,935	02/26/85
4,501,216	06/451,365	02/26/85
4,501,218	06/567,290	02/26/85
4,501,219	06/481,809	02/26/85
4,501,221	06/513,996	02/26/85
4,501,223	06/591,400	02/26/85
4,501,226	06/593,585	02/26/85
4,501,228	06/448,353	02/26/85
4,501,231	06/500,346	02/26/85
4,501,236	06/406,484	02/26/85
4,501,245	06/591,425	02/26/85
4,501,251	06/578,279	02/26/85
4,501,253	06/449,483	02/26/85
4,501,254	06/553,351	02/26/85
4,501,256	06/583,447	02/26/85
4,501,268	06/294,653	02/26/85
4,501,283	06/425,225	02/26/85
4,501,638	06/558,308	02/26/85
4,501,639	06/399,769	02/26/85
4,501,647	06/551,978	02/26/85
4,501,648	06/476,820	02/26/85
4,501,649	06/548,139	02/26/85
4,501,654	06/594,851	02/26/85
4,501,658	06/411,250	02/26/85
4,501,662	06/380,940	02/26/85
4,501,667	06/582,213	02/26/85
4,501,671	06/567,872	02/26/85
4,501,672	06/478,679	02/26/85
4,501,679	06/582,104	02/26/85
4,501,680	06/550,247	02/26/85
4,501,681	06/451,527	02/26/85
4,501,688	06/575,980	02/26/85
4,501,693	06/471,641	02/26/85
4,501,694	06/566,024	02/26/85
4,501,696	06/396,646	02/26/85
4,501,697	06/505,547	02/26/85
4,501,701	06/281,552	02/26/85
4,501,708	06/404,696	02/26/85
4,501,711	06/610,593	02/26/85
4,501,716	06/376,998	02/26/85
4,501,721	06/503,178	02/26/85
4,501,722	06/468,270	02/26/85
4,501,725	06/480,898	02/26/85
4,501,731	06/508,167	02/26/85
4,501,736	06/520,760	02/26/85
4,501,740	06/420,791	02/26/85
4,501,742	06/578,143	02/26/85
4,501,743	06/588,831	02/26/85
4,501,751	06/528,765	02/26/85
4,501,757	06/575,920	02/26/85
4,501,761	06/448,546	02/26/85
4,501,764	06/459,175	02/26/85
4,501,768	06/359,445	02/26/85
4,501,769	06/465,299	02/26/85
4,501,783	06/501,558	02/26/85
4,501,790	06/631,800	02/26/85
4,501,791	06/602,624	02/26/85
4,501,795	06/581,764	02/26/85
4,501,797	06/446,009	02/26/85
4,501,799	06/355,964	02/26/85
4,501,804	06/521,402	02/26/85
4,501,812	06/576,349	02/26/85
4,501,818	06/511,058	02/26/85
4,501,825	06/625,531	02/26/85
4,501,834	06/564,589	02/26/85
4,501,837	06/413,439	02/26/85
4,501,859	06/481,279	02/26/85
4,501,865	06/505,655	02/26/85
4,501,873	06/555,241	02/26/85
4,501,875	06/410,311	02/26/85
4,501,876	06/585,107	02/26/85
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4,501,913	06/547,632	02/26/85
4,501,916	06/338,620	02/26/85
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4,501,924	06/490,818	02/26/85
4,501,931	06/507,497	02/26/85
4,501,932	06/290,731	02/26/85
4,501,940	06/542,818	02/26/85
4,501,944	06/451,781	02/26/85
4,501,945	06/502,336	02/26/85
4,501,949	06/414,263	02/26/85
4,501,952	06/386,017	02/26/85
4,501,953	06/337,830	02/26/85
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4,501,962	06/492,858	02/26/85
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Patent Number	Serial Number	Issue Date
4,501,966	06/243,415	02/26/85
4,501,967	06/442,804	02/26/85
4,501,968	06/471,455	02/26/85
4,501,975	06/349,414	02/26/85
4,501,976	06/415,109	02/26/85
4,501,984	06/561,649	02/26/85
4,501,985	06/605,957	02/26/85
4,501,992	06/410,763	02/26/85
4,501,996	06/601,112	02/26/85
4,501,997	06/457,744	02/26/85
4,502,001	06/515,351	02/26/85
4,502,002	06/413,984	02/26/85
4,502,004	06/430,588	02/26/85
4,502,007	06/462,137	02/26/85
4,502,009	06/340,592	02/26/85
4,502,010	06/443,234	02/26/85
4,502,017	06/452,569	02/26/85
4,502,032	06/580,637	02/26/85
4,502,033	06/395,534	02/26/85
4,502,035	06/512,236	02/26/85
4,502,044	06/379,619	02/26/85
4,502,047	06/322,690	02/26/85
4,502,052	06/460,458	02/26/85
4,502,062	06/417,393	02/26/85
4,502,063	06/481,511	02/26/85
4,502,065	06/465,373	02/26/85
4,502,076	06/365,388	02/26/85
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4,502,086	06/506,577	02/26/85
4,502,087	06/651,656	02/26/85
4,502,089	06/484,893	02/26/85
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4,502,099	06/497,049	02/26/85
4,502,100	06/444,411	02/26/85
4,502,105	06/490,080	02/26/85
4,502,114	06/437,647	02/26/85
4,502,125	06/458,823	02/26/85
4,502,131	06/530,528	02/26/85
4,502,132	06/539,057	02/26/85
4,502,138	06/403,333	02/26/85
4,502,142	06/415,695	02/26/85
4,502,148	06/392,129	02/26/85
4,502,150	06/428,848	02/26/85
4,502,151	06/547,772	02/26/85
4,805,243	07/045,419	02/21/89
4,805,244	07/147,938	02/21/89
4,805,249	07/095,303	02/21/89
4,805,250	07/101,859	02/21/89
4,805,253	07/161,065	02/21/89
4,805,254	07/076,006	02/21/89
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4,805,284	07/188,175	02/21/89
4,805,289	07/206,911	02/21/89
4,805,291	07/070,421	02/21/89
4,805,292	07/140,779	02/21/89
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4,805,300	06/908,329	02/21/89
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4,805,352	07/093,585	02/21/89
4,805,360	06/763,972	02/21/89
4,805,369	06/559,776	02/21/89
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4,805,371	06/858,765	02/21/89
4,805,372	07/175,920	02/21/89
4,805,376	07/104,640	02/21/89
4,805,382	07/106,389	02/21/89
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4,805,386	07/159,303	02/21/89
4,805,399	07/147,072	02/21/89
4,805,400	07/042,994	02/21/89
4,805,402	06/897,728	02/21/89
4,805,403	07/131,975	02/21/89
4,805,406	07/212,006	02/21/89
4,805,410	07/150,435	02/21/89
4,805,412	07/141,691	02/21/89
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5,188,177	07/730,668	02/23/93
5,188,198	07/825,835	02/23/93
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5,189,649	07/876,693	02/23/93
5,189,662	07/470,178	02/23/93
5,189,677	07/808,221	02/23/93
5,189,681	07/781,771	02/23/93
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5,189,705	07/804,469	02/23/93
5,189,711	07/800,472	02/23/93
5,189,713	07/602,276	02/23/93
5,189,715	07/747,214	02/23/93

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4,366,813	06/275,931	06/22/81	01/04/83	02/27/97
4,375,284	06/269,994	06/03/81	03/01/83	02/26/97
4,466,973	06/463,062	02/01/83	08/21/84	02/26/97
4,623,795	06/613,860	05/24/84	11/18/86	02/21/97
4,626,346	06/827,867	02/10/86	12/02/86	02/21/97
4,644,706	06/822,328	01/27/86	02/24/87	02/27/97
4,655,829	06/776,981	09/11/85	04/07/87	02/27/97
4,664,443	06/796,541	11/08/85	05/12/87	02/27/97
4,664,992	06/654,136	09/26/84	05/12/87	02/25/97
4,675,245	06/622,207	06/19/84	06/23/87	02/25/97
4,722,474	06/826,127	02/04/86	02/02/88	02/27/97
4,722,888	06/717,613	03/29/85	02/02/88	02/25/97
4,722,890	06/769,684	08/27/85	02/02/88	02/26/97
4,727,146	06/748,854	06/26/85	02/23/88	02/28/97
4,728,469	06/823,339	01/28/86	03/01/88	02/27/97
4,764,051	07/075,399	07/20/87	08/16/88	02/25/97
4,828,979	06/669,334	11/08/84	05/09/89	02/28/97
4,943,063	07/330,055	03/29/89	07/24/90	02/26/97
4,977,655	07/340,383	04/18/89	12/18/90	02/25/97
4,980,826	06/590,900	03/19/84	12/25/90	02/28/97
4,986,274	07/453,123	12/04/89	01/22/91	02/27/97
4,990,291	07/161,934	02/29/88	02/05/91	02/27/97
5,067,175	07/576,614	08/31/90	11/26/91	02/28/97

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4,764,513	06/907,261	09/15/86	08/16/88	03/11/97
4,769,005	07/083,500	08/06/87	09/06/88	03/13/97
4,810,693	07/049,646	05/11/87	03/07/89	03/07/97
4,983,258	07/251,761	10/03/88	01/08/91	03/10/97
5,084,785	07/522,673	05/11/90	01/28/92	03/11/97
5,108,624	07/491,979	03/12/90	04/28/92	03/13/97
5,115,919	07/739,309	08/01/91	05/26/92	03/07/97
5,168,989	07/688,975	04/22/91	12/08/92	03/11/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,329,732, Re. S.N. 08/792,936, Jan. 24, 1997, Cl. 451/011, WAFER POLISHING METHOD AND APPARATUS, Chris E. Karlsrud, et. al., Owner of Record: *Speedfam Corporation, Des Plaines, Ill.*, Attorney or Agent: Michael K. Kelly, Ex. Gp.: 3203

5,555,052, Re. S.N. 08/799,725, Feb. 12, 1997, Cl. 396/440, LIGHT SHIELDING APPARATUS, Douglas H. Pearson, Owner of Record: *Eastman Kodak, Rochester, N.Y.*, Attorney or Agent: Robert L. Walker, Ex. Gp.: 2101

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,745,564, Reexam. No. 90/004,580, March 14, 1997, Cl. 364/566, IMPACT DETECTION APPARATUS, Bernard R. Tenner, et. al., Owner of Record: *U.S. of America as represented by the Secretary of Agriculture*, Attorney or Agent: Ian C. McLeod, Okemos, Mich., Ex. Gp.: 2414, Requester: Warnes, Norcross & Judd, Grand Rapids, Mich.

4,930,516, Reexam. No. 90/004,585, March 20, 1997, Cl. 128/665, METHOD FOR DETECTING CANCEROUS TISSUE USING VISIBLE NATIVE LUMINESCENCE, Robert R. Alfano, et. al., Owner of Record: *Laser Diagnostic Instruments, Inc., Bridgewater, N.J., location changed to Woodcrest, Cherry Hill, N.J.*, Attorney or Agent: Irving M. Kriegsman, Kriegsman & Kriegsman, Framingham, Mass., Ex. Gp.: 3305, Requester: Owner

4,968,993, Reexam. No. 90/004,583, March 19, 1997, Cl. 347/118, PRINTING PRESS, Larry Wolfberg, et. al., Owner of Record: *Xeikon NV, Mortsel, Belgium*, Attorney or Agent: Banner Birch McKie & Beckett, Washington, D.C., Ex. Gp.: 2108, Requester: James J. Maune, Brumbaugh, Graves Donahue & Raymond, New York, N.Y.

4,983,312, Reexam. No. 90/004,586, March 20, 1997, Cl. 252/067, REFRIGERANTS, Koji Tamura, et. al., Owner of Record: *Daikin Industries Ltd., Osaka, Japan*, Attorney or Agent: Richard Zaitlen, Loeb & Loeb, Los Angeles, Calif., Ex. Gp.: 1105, Requester: Owner

5,305,919, Reexam. No. 90/004,581, March 17, 1997, Cl. 222/079, PINCH TRIGGER HAND PUMP WATER GUN WITH NON-DETACHABLE TANK, Lonnie G. Johnson, et. al., Owner of Record: *Larami Ltd., Mt. Laurel, N.J.*, Attorney or Agent: Panitch Schwarze Jacobs & Nadel, Philadelphia, Pa., Ex. Gp.: 3104, Requester: Alan B. Amron, Rivkin, Radler & Kreimer, Uniondale, N.Y.

5,324,595, Reexam. No. 90/004,584, March 19, 1997, Cl. 428/679, COMPOSITE TUBE, Jonas Rosen, Owner of Record: *Sandvik AB, Sandviken, Sweden*, Attorney or Agent: Ronald L. Grudziecki, Burns Doane Swecker & Mathis, Alexandria, Va., Ex. Gp.: 1316, Requester: Armstrong, Westerman, Hattori, McLeland & Naughton, Washington, D.C.

5,567,460, Reexam. No. 90/004,582, March 17, 1997, Cl. 426/264, METHOD OF PREPARING FULLY COOKED BACON DERIVED FROM PORK BELLIES, Brent J. Afman, Owner of Record: *OSI Industries, Inc., Aurora, Ill.*, Attorney or Agent: Alan L. Barry, Wallenstein & Wagner, Chicago, Ill., Ex. Gp.: 1302, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
January 27, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
109,888	71/090,313	04/25/1916
109,899	71/090,089	04/25/1916
109,927	71/049,670	04/25/1916
109,947	71/091,780	04/25/1916
333,320	71/371,093	03/17/1936
334,044	71/372,723	04/21/1936
334,050	71/371,911	04/21/1936
334,051	71/371,910	04/21/1936
334,054	71/371,849	04/21/1936
334,112	71/372,946	04/21/1936
334,163	71/372,100	04/21/1936
334,190	71/371,467	04/21/1936
334,192	71/372,889	04/21/1936
334,202	71/372,740	04/21/1936
334,203	71/372,739	04/21/1936
334,214	71/370,263	04/21/1936
334,217	71/361,617	04/21/1936
334,234	71/347,212	04/21/1936
334,237	71/352,203	04/21/1936
620,698	71/684,085	02/07/1956
625,644	71/671,856	04/24/1956

Reg. Number	Serial Number	Reg. Date	1,038,077	73/062,385	04/20/1976
			1,038,079	73/062,482	01/20/1976
625,648	71/693,791	04/24/1956	1,038,080	73/062,697	01/27/1976
625,649	71/693,792	04/24/1956	1,038,086	73/048,669	04/20/1976
625,652	71/696,053	04/24/1956	1,038,089	73/063,951	04/20/1976
625,660	71/672,602	04/24/1956	1,038,091	73/031,916	04/20/1976
625,661	71/672,854	04/24/1956	1,038,093	73/038,317	04/20/1976
625,666	71/680,156	04/24/1956	1,038,094	73/038,318	04/20/1976
625,668	71/682,253	04/24/1956	1,038,096	73/045,676	04/20/1976
625,669	71/683,379	04/24/1956	1,038,097	73/049,403	04/20/1976
625,671	71/684,867	04/24/1956	1,038,098	73/059,341	04/20/1976
625,676	71/688,584	04/24/1956	1,038,100	73/062,396	04/20/1976
625,677	71/688,585	04/24/1956	1,038,102	73/020,155	04/20/1976
625,683	71/694,098	04/24/1956	1,038,104	73/026,953	04/20/1976
625,698	71/684,770	04/24/1956	1,038,111	73/064,968	04/20/1976
625,703	71/692,027	04/24/1956	1,038,115	73/055,970	04/20/1976
625,709	71/693,519	04/24/1956	1,038,117	73/002,533	04/20/1976
625,715	71/697,036	04/24/1956	1,038,122	73/040,303	04/20/1976
625,731	71/690,674	04/24/1956	1,038,123	73/043,447	04/20/1976
625,736	71/695,124	04/24/1956	1,038,124	73/044,072	04/20/1976
625,737	71/654,400	04/24/1956	1,038,125	73/016,142	04/20/1976
625,739	71/679,809	04/24/1956	1,038,126	73/017,768	04/20/1976
625,743	71/656,989	04/24/1956	1,038,129	73/035,440	04/20/1976
625,745	71/691,622	04/24/1956	1,038,130	73/016,580	04/20/1976
625,746	71/695,352	04/24/1956	1,038,134	73/029,288	04/20/1976
625,759	71/693,328	04/24/1956	1,038,136	73/032,487	04/20/1976
625,760	71/693,329	04/24/1956	1,038,141	73/056,498	04/20/1976
625,764	71/693,767	04/24/1956	1,038,143	73/060,187	04/20/1976
625,784	71/644,604	04/24/1956	1,038,145	73/062,467	04/20/1976
625,787	71/656,112	04/24/1956	1,038,147	73/063,122	04/20/1976
625,791	71/672,071	04/24/1956	1,038,148	73/065,806	04/20/1976
625,799	71/677,854	04/24/1956	1,038,150	73/043,479	04/20/1976
625,800	71/678,879	04/24/1956	1,038,151	73/053,984	04/20/1976
625,802	71/679,718	04/24/1956	1,038,152	73/054,587	04/20/1976
625,804	71/681,755	04/24/1956	1,038,155	73/057,761	04/20/1976
625,807	71/686,156	04/24/1956	1,038,159	73/025,862	04/20/1976
625,811	71/687,662	04/24/1956	1,038,160	73/038,369	04/20/1976
625,813	71/688,141	04/24/1956	1,038,162	73/045,204	04/20/1976
625,814	71/688,142	04/24/1956	1,038,164	73/053,047	04/20/1976
625,816	71/688,144	04/24/1956	1,038,165	73/056,190	04/20/1976
625,817	71/688,146	04/24/1956	1,038,168	73/060,186	04/20/1976
625,824	71/690,824	04/24/1956	1,038,172	73/026,475	04/20/1976
625,836	71/686,337	04/24/1956	1,038,173	73/034,320	04/20/1976
625,837	71/689,399	04/24/1956	1,038,176	73/038,967	04/20/1976
625,854	71/649,540	04/24/1956	1,038,179	73/047,057	04/20/1976
625,861	71/686,268	04/24/1956	1,038,181	73/050,267	04/20/1976
625,862	71/686,344	04/24/1956	1,038,192	73/044,000	04/20/1976
625,868	71/654,484	04/24/1956	1,038,197	73/054,824	04/20/1976
625,877	71/674,462	04/24/1956	1,038,198	73/055,365	04/20/1976
625,903	71/693,347	04/24/1956	1,038,200	73/015,321	04/20/1976
625,905	71/643,578	04/24/1956	1,038,203	73/048,095	04/20/1976
625,907	71/663,616	04/24/1956	1,038,205	73/015,502	04/20/1976
625,918	71/689,444	04/24/1956	1,038,206	73/045,132	04/20/1976
625,933	71/678,158	04/24/1956	1,038,208	73/048,880	04/20/1976
625,936	71/689,891	04/24/1956	1,038,214	73/050,076	04/20/1976
625,943	71/693,307	04/24/1956	1,038,215	73/050,841	04/20/1976
625,955	71/649,272	04/24/1956	1,038,222	73/048,758	04/20/1976
625,963	71/683,977	04/24/1956	1,038,242	73/059,628	04/20/1976
625,964	71/684,467	04/24/1956	1,038,243	73/059,629	04/20/1976
625,965	71/687,708	04/24/1956	1,038,244	73/024,055	04/20/1976
625,972	71/690,808	04/24/1956	1,038,246	73/031,493	04/20/1976
625,973	71/690,810	04/24/1956	1,038,249	73/050,715	04/20/1976
625,981	71/669,397	04/24/1956	1,038,251	73/054,084	04/20/1976
625,986	71/677,321	04/24/1956	1,038,257	73/064,764	04/20/1976
625,996	71/682,401	04/24/1956	1,038,260	73/043,997	04/20/1976
625,998	71/684,187	04/24/1956	1,038,261	73/046,731	04/20/1976
626,001	71/685,925	04/24/1956	1,038,264	73/048,900	04/20/1976
626,006	71/671,379	04/24/1956	1,038,265	73/052,056	04/20/1976
626,014	71/692,014	04/24/1956	1,038,268	73/058,792	04/20/1976
1,012,666	72/464,512	06/03/1975	1,038,277	73/053,977	04/20/1976
1,017,633	73/011,524	08/05/1975	1,038,278	73/005,923	04/20/1976
1,019,973	73/040,174	09/09/1975	1,038,283	73/048,144	04/20/1976
1,030,653	73/049,538	01/20/1976	1,038,285	73/036,138	04/20/1976
1,031,229	73/038,398	01/27/1976	1,038,287	73/020,609	04/20/1976
1,038,064	73/022,090	04/20/1976	1,038,288	73/026,619	04/20/1976
1,038,068	73/051,483	04/20/1976	1,038,297	73/039,731	04/20/1976
1,038,071	73/052,237	04/20/1976	1,038,298	73/045,180	04/20/1976
1,038,074	73/058,591	04/20/1976	1,038,301	73/050,312	04/20/1976
1,038,076	73/062,212	04/20/1976	1,038,303	73/065,477	04/20/1976

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Reg. Number	Serial Number	Reg. Date
1,038,304	73/065,478	04/20/1976
1,038,313	72/430,504	04/20/1976
1,038,314	72/460,665	04/20/1976
1,038,319	72/437,642	04/20/1976
1,038,320	72/458,966	04/20/1976
1,038,321	72/458,965	04/20/1976
1,038,322	72/341,952	04/20/1976
1,038,323	72/443,179	04/20/1976
1,038,324	72/462,785	04/20/1976
1,038,325	72/447,308	04/20/1976
1,038,330	73/024,442	04/20/1976
1,038,331	73/048,375	04/20/1976
1,038,332	73/045,195	04/20/1976
1,038,333	73/037,910	04/20/1976
1,038,336	73/025,856	04/20/1976

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before June 20, 1997.

Howard, Kyle L., 14514 S. Hills Ct., Centreville, Va., 20120

Lee, Michael S., 4508 Bestor Dr., Rockville, Md. 20853

Schain, Howard E., 2301 S. Jeff. Davis Hwy., #504, Arlington, Va. 22202

Wilkinson, Duncan A. C., 605 Jefferson St., #105, Alexandria, Va. 22314

Wilson, James T., 801 S. 15th St., #301, Arlington, Va. 22202

Yoo, Edward T., 11119-64th Ave., Edmonton, Alb., T6H 1T4, Canada

April 4, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on August 28, 1996, were mailed to 2,764 candidates. There were 970 persons who successfully passed the examination. The following list contains the names of those persons who passed the examination and have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before June 20, 1997.

April 1, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Aagaard, Eric James, 3850 Poppyseed Pl., #I, Calabasas, Calif. 91302

Abelev, Gary, 14 Newbrook Ln., Springfield, N.J. 07081

Abrahamsen, Robert Martin, 24 Wellington St., #3, Boston, Mass. 02118

Adams, Darryl Jedd, 12029 Tulare Dr., Austin, Tex. 78733

Adornato, Rocco Lawrence, 5856 Old Oakridge Rd, #209, Greensboro, N.C. 27410

Agarwal, Atulya Ramesh, 4897 Esquerra Terrace, Fremont, Calif. 94555

Agarwal, Pavan Kumar, 2 Shipwright Ct., Gaithersburg, Md. 20877

Agostinelli, John A., 60 Betwood Ln., Rochester, N.Y. 14612

Aguirre, Renato L., 3205 Los Feliz Blvd., #8-118, Los Angeles, Calif. 90039

Akhtar, Adeel S., 313 Fullerton Ave,, Newport Beach, Calif. 92663

Albrecht, John Weiskopf, 4602 Johnson St N.E., Columbia Hgts., Minn. 55421

Albright, John M., 3833 Peachtree Rd., N.E., #1501, Atlanta, Ga. 30319

Aldag, Andrew J., 3905 Davis Pl., N.W., #202, Washington, D.C. 20007

Alderucci, Dean P., 47 Bell St., Glastonbury, Conn. 06033

Alicea, Hector A., 1562-B Haight St., San Francisco, Calif. 94117

Allan, Albert Peter, 10444 Surey Ct., Charlotte, N.C. 28227-1419

Allegrezza, Anthony E., Jr., 254 Congress St., Milford, Mass. 01757

Alwan, Joy A., 2358 White Birch Ln., Joliet, Ill. 60435

Ames, Wesley B., 7031 Los Vientos Serenos, Escondido, Calif. 92029

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Ansari, Hazim Hamied, 61 Festivo St., Irvine, Calif. 92606

Antoline, Michael L., 2606 Cherry Hills Dr., Champaign, Ill. 61821

Appleby, Robert Alan, 200 East 82nd St., #5G, New York, N.Y. 10028

Ariniello, Pamela Deneke, 19 Governors Ave., Winchester, Mass. 01890

Armaly, Samir Bassem, 2716 Ellsworth, Berkeley, Calif. 94705

Arno, Thomas Robert, 7934 Playmor Terr., San Diego, Calif. 92122

Ashe, Oliver Richard, Jr., 3010 Millstream Court, Herndon, Va. 22071

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Baker, Joseph Raymond, Jr., 3962 Armstrong St., San Diego, Calif. 92111

Baldy, Anderson L., III, 4504 Beach Park Drive, Tampa, Fla. 33609

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Banet, Matthew John, 21 McAlee St., Framingham, Mass. 01702

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Barr, Dale Clifford, 15853 Ninth Ave., S.W, Burien, Wash. 98166

Barrett, Steven D., 51 John St., #404, Brookline, Mass. 02146-3324

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Bartz, Richard John, 5605 Countryside Rd., Edina, Minn. 55436

Basile, Richard Joseph, 157 Rosedale Ave., Hastings on Hudson, N.Y. 10706

Bateman, Linda Ratner, P.O. Box 6446, Breckenridge, Colo. 80424

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Baumann, Timothy R., 4N404 S. Robert Frost Circle, St. Charles, Ill. 60175

Baumeister, Bradley William, 2903 Pine Spring Rd., Falls Church, Va. 22042

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Bays, Gregory C., 3300 N. Lakewood, #2, Chicago, Ill. 60657

Beardell, Louis W., Jr., 1165 Lafayette Rd., Wayne, Pa. 19087

Beberman, Julie A., P.O. Box 698, Christiansted, Vt. 00821-0698

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Becker, Matthew James, 11 Foxcroft Rd., W. Hartford, Conn. 06119

Beers, Everitt George, 8928 Beverlywood St., Los Angeles, Calif. 90034

Belanger, William David, 1935 Anderson Rd., Falls Church, Va. 22043

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Bennett, Jack E., 217 Prospect St., #E3, Honolulu, Hi. 96813

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Biese, Fumiko, 6-9-304 Kozuchi-Cho, Uchide, Ashiya-Shi, Hyogo-Ken, Japan

Bisulca, Anthony Arthur, 500 Harbison Blvd., #1302, Columbia, S.C. 29212

Bitetto, James Joseph, 4 Cromwell Rd., Carle Place, N.Y. 11514

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Blochlinger, Karen Beryl, 2533 32nd Ave. South, Seattle, Wash. 98144

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Bloom, Cynthia Porter, 140 Golden Oak Dr., Portola Valley, Calif. 94028

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Bluni, Scott T., 11900 Crayton Ct., Herndon, Va. 22070

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Bodine, Brian George, 2470 239th Pl., N.E., Redmond, Wash. 98053

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Bonorden, Gay Lynn, 912 Columbia, Houston, Tex. 77008

Books, Mark Erin, 45 Cedar Bluff Dr., #22, Lake St. Louis, Mo. 63367

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Bornstein, Alan A., 16 Beech St., Westwood, N.J. 07675

Bosch, Michele C., 13819 Shavano Ridge, San Antonio, Tex. 78230

Bourg, Nicholas J., 1068 La Plata Dr., Las Cruces, N. Mex. 88005

Bowles, Teresa J., 1605 Azalae Dr., Cedar Park, Tex. 78613

Boyce, Justin Francis, 585 Hacienda Ave., #204, Campbell, Calif. 95008

Braginsky, Philip Y., 67-87 Booth St., #1G, Forest Hills, N.Y. 11375

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Bremer, Dennis Charles, 700 Louwen, St. Louis, Mo. 63124

Bridge, Richard L., 1233 Cedar Creek Rd., Chesterfield, Mo. 63017

Brigden, John Francis, 36 Navy St., #9, Venice, Calif. 90219

Brin, David Scott, 14 Sawmill Brook Rd., West Newbury, Mass. 01985

Brinkman, David H., 8357 Shadowpoint Ct., Cincinnati, Ohio 45242

Brivanlou, Margaret Bolce, 325 E. 84th St., #6D, New York, N.Y. 10028

Brockhaus, Marc Alan, 100 S. Westchester, Norman, Okla. 73069

Bronson, Melanie I., 64527 Limerick Ln., Washington, Mich. 48095

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Brooks, John J., III, 23 Berndt Dr., Attleboro, Mass. 02703

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Brown, Scott Rebert, 4618 Hampton Falls Pl., San Jose, Calif. 95136

Brunoforte, Louis J., 1309 McMullen Booth Rd., Clearwater, Fla. 34619

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Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

A & A Auto Rental, Inc., Batesville, Ariz., Reg. No. 1,642,314, for the mark "A & A AUTO RENTAL", Canc. No. 25,018.

Vertical Apparel, Ltd., New York, N.Y., Reg. No. 1,675,916, for the mark "ADDICTION", Canc. No. 25,315.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Patent Term Extended Under 35 U.S.C. § 156(d)(5)

An order granting a one-year interim extension of the term of the following patent was granted on April 7, 1997.

U.S. Patent No. 4,197,297; Granted June 13, 1989, to Joseph Weinstock; Owner of Record: SmithKline Beecham Corporation; Title: 6-Halo-7,8-Dihidroxy-1-(Hydroxyphenyl)-2,3,4,5-Tetrahydro-1H-3-Benzazepines; Classification: 514/213; Product Trade Name: CORLOPAM®; Active Ingredient: Fenoldopam Mesylate; Original Expiration Date: April 8, 1997; Term Extended: One Year; Extended Expiration Date: April 8, 1998.

Patent Term Extended Under 35 U.S.C. § 156

A certificate extending the term of the following patent was issued on April 4, 1997.

U.S. Patent No. 4,839,342; Granted June 13, 1989, to Renee Kaswan; Owner of Record: University of Georgia Research Foundation, Inc.; Title: Method of Increasing Tear Production by Topical Administration of Cyclosporin; Classification: 514/256; Product Trade Name: OPTIMMUNE®; Original Expiration Date: September 2, 2007; Term Extended: 700 days; Extended Expiration Date: August 2, 2009.

Interim Treatment of Fee Deficiency Submissions under 37 C.F.R. § 1.28(c) in view of *DH Technology*

Two recent district court decisions have considered the practice of submitting a fee deficiency under 37 C.F.R. § 1.28(c) and have reached conflicting conclusions. *See DH Technology v. Synergstex International, Inc.*, 937 F.Supp. 902, 40 USPQ2d 1754 (N.D. Cal. 1996); and *Jewish Hospital of St. Louis v. Idexx Laboratories*, 951 F.Supp 1 (D. Me. 1996).

In *DH Technology*, the District Court for the Northern District of California held that the submission of the balance of the full issue fee under 37 C.F.R. § 1.28(c) must also meet the requirements of 37 C.F.R. § 1.317. 937 F.Supp. at 909, 40 USPQ2d at 1761. *DH Technology* is currently under appeal to the Court of Appeals for the Federal Circuit (Federal Circuit).

Since a decision by the Federal Circuit in *DH Technology* is expected to resolve the conflict concerning 37 C.F.R. § 1.28(c), the PTO is holding the acceptance of all submissions of fee deficiencies under 37 C.F.R. § 1.28(c) in abeyance pending a decision in *DH Technology* by the Federal Circuit.

Inquiries with regard to this notice should be directed to Robert W. Bahr at (703) 305-9285.

April 14, 1997

STEPHEN G. KUNIN
Deputy Assistant Commissioner for
Patent Policy and Projects

Errata

In the notice "Reissue Applications Filed", appearing at 1193 OG 13 (Dec. 3, 1996), Patent Number 5,353,173 should be 5,353,713.

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Certificates of Correction For the Week of May 6, 1997

B1 4,815,562	5,397,569	5,509,154	5,554,624	5,569,152	5,578,642	5,586,963	5,596,587
D. 368,804	5,405,667	5,513,049	5,554,784	5,569,378	5,578,711	5,587,288	5,597,094
D. 377,154	5,412,095	5,513,544	5,555,680	5,569,384	5,578,794	5,587,364	5,597,776
P. 09,009	5,418,469	5,514,301	5,556,386	5,569,501	5,579,078	5,587,485	5,597,849
Re. 35,324	5,422,111	5,515,068	5,556,453	5,569,584	5,579,113	5,587,563	5,598,002
Re. 35,410	5,431,599	5,517,852	5,556,509	5,569,836	5,579,284	5,587,682	5,598,038
Re. 35,441	5,432,782	5,518,494	5,556,610	5,570,166	5,579,405	5,587,798	5,598,050
4,275,157	5,439,704	5,523,794	5,556,961	5,570,306	5,579,761	5,587,811	5,598,393
4,506,877	5,441,776	5,527,469	5,557,003	5,571,108	5,580,042	5,588,124	5,599,649
4,960,720	5,445,823	5,529,664	5,557,316	5,571,209	5,580,473	5,588,221	5,599,887
5,001,119	5,451,216	5,532,143	5,557,432	5,571,749	5,580,488	5,588,397	5,600,005
5,018,052	5,453,312	5,534,117	5,557,570	5,571,917	5,580,489	5,588,504	5,600,343
5,136,524	5,453,612	5,536,302	5,558,970	5,572,268	5,580,642	5,588,556	5,600,494
5,153,521	5,460,780	5,536,597	5,559,581	5,572,274	5,580,843	5,589,031	5,600,614
5,162,813	5,462,879	5,537,554	5,559,748	5,572,558	5,580,963	5,589,055	5,600,699
5,173,888	5,463,370	5,538,024	5,560,226	5,572,891	5,581,333	5,589,116	5,600,769
5,209,916	5,467,152	5,539,285	5,561,466	5,573,233	5,581,464	5,589,250	5,600,829
5,213,045	5,468,307	5,540,085	5,561,486	5,573,601	5,581,768	5,589,336	5,600,893
5,236,265	5,470,991	5,540,737	5,561,502	5,573,632	5,581,782	5,589,382	5,600,978
5,245,440	5,472,424	5,541,551	5,561,816	5,573,904	5,581,926	5,589,489	5,601,151
5,259,039	5,473,493	5,542,712	5,562,094	5,574,089	5,582,052	5,590,255	5,601,461
5,270,166	5,477,351	5,543,080	5,562,217	5,574,138	5,582,168	5,590,942	5,601,651
5,270,469	5,482,931	5,543,266	5,562,844	5,574,414	5,582,642	5,590,960	5,602,071
5,295,001	5,483,693	5,543,535	5,563,347	5,574,487	5,582,876	5,591,079	5,602,810
5,310,719	5,486,041	5,544,178	5,563,695	5,574,850	5,583,498	5,592,435	5,602,953
5,320,583	5,487,884	5,544,450	5,563,851	5,575,508	5,583,562	5,592,647	5,603,331
5,320,700	5,489,597	5,546,539	5,563,902	5,575,710	5,583,962	5,593,072	5,603,364
5,326,271	5,490,528	5,548,399	5,564,224	5,575,849	5,584,937	5,593,707	5,603,491
5,328,676	5,490,893	5,549,670	5,564,942	5,576,067	5,584,994	5,593,756	5,604,281
5,358,234	5,495,458	5,550,005	5,565,001	5,576,200	5,585,104	5,594,058	5,604,319
5,364,352	5,495,850	5,550,423	5,565,740	5,576,288	5,585,198	5,594,210	5,604,764
5,367,115	5,500,879	5,550,442	5,565,884	5,576,442	5,585,507	5,594,648	5,605,697
5,367,465	5,502,380	5,552,231	5,565,999	5,576,637	5,585,821	5,594,692	5,606,103
5,369,647	5,503,111	5,553,023	5,566,290	5,576,909	5,585,848	5,594,797	5,607,363
5,386,407	5,503,436	5,554,233	5,566,926	5,577,200	5,585,866	5,594,955	5,608,045
5,386,438	5,506,333	5,554,412	5,567,751	5,577,655	5,585,945	5,595,026	5,609,426
5,397,568	5,506,916	5,554,467	5,568,716	5,577,941	5,586,199	5,595,248	5,613,332
				5,578,143	5,586,250	5,595,559	
				5,578,298	5,586,461	5,596,053	
				5,578,314	5,586,868	5,596,489	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
March 10-14, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Recommended for Publication
3-12	OPP	88,961	Dayton Hudson Corp. v. Robert W. Mann	2(d)	Opposition Dismissed	No

Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney
"TARGET" [retail department store services (and sponsorship of entertainment services, namely, performance of a musical group)]	"TARGET" (and design) [entertainment services, namely, performance of a musical group]	

(1)EX = EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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PATENT EXAMINING CORPS

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EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/06/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/14/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/27/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/25/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/13/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/07/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	07/18/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/21/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	06/29/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/26/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/02/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/26/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/29/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	[illegible]
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/05/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/09/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/01/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of April 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	01/30/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	11/13/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/04/96	03/17/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/20/96	12/27/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/02/96	12/12/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/16/96	10/28/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	01/13/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/96	01/22/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	02/03/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	02/21/97	—0—
Renewals (All Classes)	02/10/97	—0—
Section 12(c) Publications (All Classes)	12/05/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

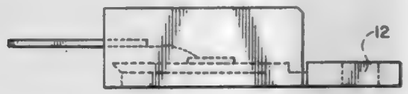
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REEXAMINATIONS

MAY 6, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,712,127 (3181st)
HIGH RELIABILITY METAL AND RESIN CONTAINER FOR A SEMICONDUCTOR DEVICE
Piero Colombo, Monza; Marino Cellai, Bresso, and Carlo Cognetti de Martiis, Milan, all of Italy, assignors to SGS-Thomson Microelectronics, Inc., Carrolton, Tex.
Reexamination Request Nos. 90/003,727, Feb. 16, 1995 and 90/004,067, Dec. 27, 1995.
Reexamination Certificate for Patent 4,712,127, issued Dec. 8, 1987, Ser. No. 556,159, Nov. 29, 1983.
Claims priority, application Italy, Dec. 1, 1982, 24533/82
Int. Cl.[6] H01L *23/12*
U.S. Cl. 257—796



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is cancelled.

Claims **2, 3** and **4** are determined to be patentable as amended.

New claims **5–32** are added and determined to be patentable.

32. A container for a semiconductor device comprising a metal plate and a body of synthetic resin which encapsulates part of said plate so as to keep a surface of said plate exposed, said plate being arranged such that an area of said plate has two opposed side notches and at least one groove connecting said two notches together and said body of synthetic resin projects into said two opposed side notches and said at least one groove without projecting beyond said two opposed side notches, wherein said groove has at least one portion of at least one wall thereof which is undercut.

B1 4,996,770 (3182nd)
METHOD OF ASSEMBLING A CONCRETE FORM BRACE
L. Scott McCracken, Des Moines, Iowa, assignor to Wilian Holding Company, Des Moines, Iowa
Reexamination Request No. 90/003,965, Sep. 22, 1995.
Reexamination Certificate for Patent 4,996,770, issued Mar. 5, 1991, Ser. No. 461,223, Jan. 5, 1990.
Int. Cl.[6] B23P *17/00*
U.S. Cl. 29—897.34

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–7** are cancelled.

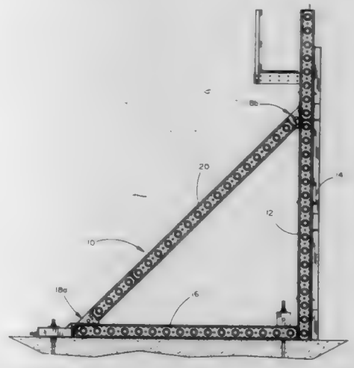
[1. A method for assembling a brace for maintaining an elongated concrete form assembly in a predetermined supported position by a plurality of beam members, each of which is of a generally rectangular shape in transverse cross section having terminal end plates, comprising:

(a) positioning a first upright beam member laterally from one side of the form assembly;

(b) mounting a second beam member on said first beam member at the end portion thereof adjacent the one side of the form assembly;

(c) inclining a third beam member between said first beam member and said second beam member;

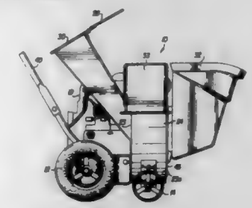
(d) providing a pair of like adaptor units, each of which is of a substantially right isosceles triangular shape in side elevation including a pair of perpendicular side sections and a hypotenuse section;

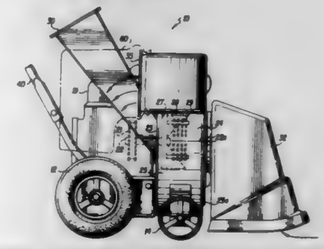


(e) mounting the hypotenuse section of a first of said adaptor units on the first beam member and the hypotenuse section of a second of said adaptor units on the second beam member with a side section thereof parallel to and facing the corresponding side section of the first of said adaptors a distance apart equal to the length of said inclined beam; and

(f) securing the end plates of said inclined beam member to adjacent side section of said adaptor units.**]**

B1 5,340,035 (3183rd)
COMBINATION CHIPPER AND SHREDDER APPARATUS AND LAWN VACUUM MACHINE
Stuart N. Ford, Manakin, Va., assignor to Studley Products Corp., Richmond, Va.
Reexamination Request No. 90/003,922, Aug. 11, 1995.
Reexamination Certificate for Patent 5,340,035, issued Aug. 23, 1994, Ser. No. 856,409, Apr. 13, 1992.
Int. Cl.[6] B02C *13/10*
U.S. Cl. 241—55





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **14** is confirmed.

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Claims **1**, **3**, **4** and **9** are determined to be patentable as amended.

Claims **2**, **5–8** and **10–13**, dependent on an amended claim, are determined to be patentable.

New claims **15** and **16** are added and determined to be patentable.

1. A combination chipper and shredder apparatus and vacuum machine comprising:

a) a housing having a first wall and a second wall defining a chipping and shredding chamber for housing a chipper and shredder assembly, said housing including an inlet port and an outlet port;

b) a drive means coupled to said chipper and shredder assembly by a drive assembly, said drive assembly including a drive shaft[, part of which extends] *defining a first axis longitudinally disposed with respect to said combination chipper and shredder apparatus and vacuum machine, said drive shaft extending* into said chipping and shredding chamber and [is] coupled to said chipper and shredder assembly for driving said chipper and shredder assembly;

c) a chute means having an input end and an output end, said chute means for directing matter introduce into said [chute means via said] input end [thereof,] to said chipping and shredding chamber via said inlet port; and

d) a coupling means for coupling said chute means to said first wall of said housing so that said output end [of said chute means] is in communication with said inlet port [of said housing, said coupling means], *and* for permitting rotational movement [by] *of* said chute means [on said first wall for rotating said chute means about said inlet port from a first position, relative to said housing to a second position relative to said housing] *about a second axis, said second axis being a virtual projection of said drive shaft.*

STATUTORY INVENTION REGISTRATIONS

PUBLISHED MAY 6, 1997

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1644

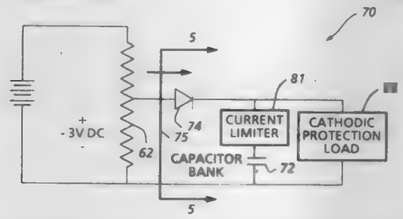
METHOD AND APPARATUS FOR PROVIDING CONTINUOUS CATHODIC PROTECTION BY SOLAR POWER

Wallace W. Muehl, Sr., Panama City Beach, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 210,490, Mar. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 892,860, Jun. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 566,297, Aug. 13, 1990, abandoned. This application Apr. 28, 1995, Ser. No. 430,990

Int. Cl.[6] C23F *13/00*

U.S. Cl. 204—196 **1 Claim**



1. Apparatus for providing continuous cathodic protection for iron bearing structures when installed in an electrolytic media comprising:

a photovoltaic solar panel means located adjacent a first end of the structure and having positive and negative terminals;

means establishing linear electrical continuity between all major successive metal components of the structure to be protected, and terminal means located at the first end of the structure for receiving a conductor line from the photovoltaic solar panel to provide a negative potential adequate to provide cathodic protection;

a plurality of anodes located in predetermined offset spaced relation and generally along side the structure, the anodes being electrically connected to the structure;

a control circuit including an ultracapacitor operating in circuit with a current limiter and at least one blocking diode and electrically connected to the structure, the anodes and the photovoltaic solar panel means to thereby maintain a negative potential in the range of from about −1.050 v to about −1.600 v sufficient to provide cathodic protection to the structure when the photovoltaic solar panel means is not providing current to the structure sufficient to maintain a negative potential adequate to provide cathodic protection.

H1645

UNDERWATER MULTI-MODE NIGHT VISION APPARATUS

Michael L. Lewis, 318 Red Cedar La., Panama City, Fla. 32407

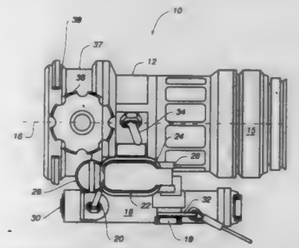
Filed Jan. 3, 1995, Ser. No. 368,836

Int. Cl.[6] H01L *31/00*

U.S. Cl. 250—330 **9 Claims**

6. An underwater infrared night vision apparatus comprising:

a night vision image intensifying device having a detection capability from ambient night light to invisible infrared and having a cylinder-like body having a lens mounting ring affixed to one end of a movable focusing tube encircling one end of said body, the opposite end of said body having an adjustable eyepiece;



a light emitting diode assembly containing a light emitting diode capable of emitting invisible infrared light, a storage type power source, and a circuit containing an ON/OFF switch connecting said diode to said power source, said diode assembly affixed to said image intensifying device, and

a catadioptric lens mounted to said mounting ring of said movable focusing tube.

H1646

SPEECH RECOGNITION ADAPTER FOR TELEPHONE SYSTEM

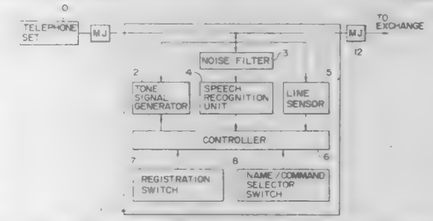
Yasuhiko Kato; Masao Watari, and Miyuki Tanaka, all of Sony Corporation 7-35, Kitashinagawa 6-Chome, Shinagawa-Ku, Tokyo, Japan

Filed May 7, 1993, Ser. No. 59,035

Claims priority, application Japan, May 8, 1992, 4-143429

Int. Cl.[6] H04M *1/26*

U.S. Cl. 379—355 **16 Claims**



1. A speech recognition adapter for use in a telephone system having a telephone set, said speech recognition adapter comprising:

speech recognizing means including a first memory for performing a voice recognition process on a voice sound received from the telephone set, said voice sound including the name of a person to be called, and for storing said voice sound as a voice sound pattern in said first memory;

storage control means including a second memory and a controller for controlling said speech recognizing means to store said voice sound pattern in said first memory in response to receiving repeated utterances of said voice sound only when said voice sound patterns of said repeated utterances of said voice sound agree with each other, said storage control means storing said voice sound in said second memory in association with at least one of a plurality of telephone numbers transmitted from the telephone set and,

means for entering said at least one of a plurality of telephone numbers.

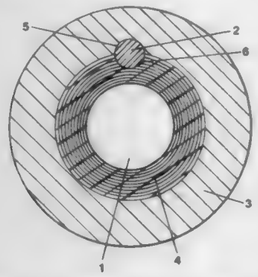
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H1647

CYLINDRICAL KEYED COUPLING FOR COMPOSITE PROPULSION SHAFTING

William M. Appleman, 2596 Bell Creek Dr., Davidsonville, Md. 21035

Filed Sep. 28, 1994, Ser. No. 313,930
Int. Cl.[6] B25G *3/28*
U.S. Cl. 403—355 9 Claims



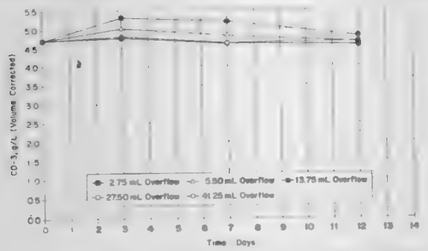
1. A coupling for a torsional drive, the coupling, comprising:
a rotatable hollow shaft made frown a shaft material and having therein an axial bore and further having an outer surface provided with a first keyway, said first keyway comprising a half-round groove;
a rotatable hub made of a hub material and disposed around said shaft and coaxial with said shaft, said hub having an inner surface provided with a second keyway, said second keyway comprising a half-round groove, said first keyway and said second keyway being alignable upon appropriate rotational alignment of said hub and said shaft to form a cylindrical keyway between said hub and said shaft;
a cylindrical key made of a key material and insertable into said cylindrical keyway between said shaft and said hub, to prevent relative rotation therebetween; and
a bore plug made of a plug material and disposed in said axial bore substantially axially aligned with said cylindrical keyway for preventing radial deformation of said shaft by said key.

H1648

METHOD FOR STORING AND REGENERATING PHOTOGRAPHIC PROCESSING SOLUTIONS

Hongzoon Kim, c/o Fuji Hunt Photographic Chemicals, 25 Commerce Dr., Allendale, N.J. 08401

Filed Jun. 7, 1995, Ser. No. 478,016
Int. Cl.[6] G03C *3/00*
U.S. Cl. 430—398 25 Claims



1. A method for storing and reusing processing solutions employed in a photographic processing system comprising:
(a) introducing a replenishing solution into a photographic processing bath:
(b) transferring an overflow processing solution from the photographic processing bath into a storage vessel and contacting the overflow solution with a preservative separately introduced to said vessel in an amount effective to prevent any substantial degradation in activity of said overflow solution during a storage period; and
(c) therefore treating the stored solution to increase the activity thereof and reusing the treated solution at the end of said storage period.

H1649

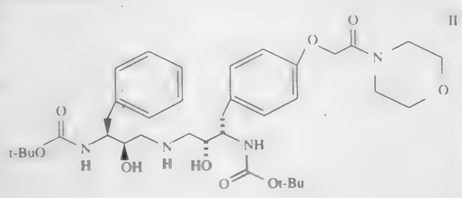
HIV PROTEASE INHIBITOR COMBINATIONS

Joel C. Barrish, 46 Heather Valley Rd., Holland, Pa. 18966; Richard J. Colonno, 5288 Lower Mountain Rd., Buckingham, Pa. 18938, and Pin-Fang M. Lin, 169 Northford Rd., Branford, Conn. 06405

Continuation-in-part of Ser. No. 270,614, Jul. 5, 1994, which is a continuation-in-part of Ser. No. 79,978, Jul. 31, 1987, Pat. No. 4,987,228. This application May 17, 1995, Ser. No. 436,868
Int. Cl.[6] A01N *43/00*; A61K *31/395*
U.S. Cl. 514—210 6 Claims

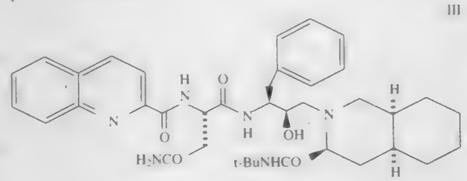
1. A method for the prophylaxis or treatment of a disease caused by the HIV virus in a human patient, which comprises administering to said patient, either sequentially or concurrently, an effective HIV-inhibiting amount of an HIV-1 protease inhibitor compound of the formula

II



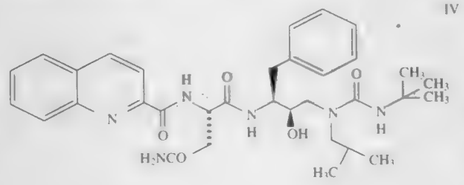
or a pharmaceutically acceptable derivative thereof, and an effective HIV-inhibiting amount of one or more protease inhibitor compounds selected from the group consisting of (a) the compound of the formula

III



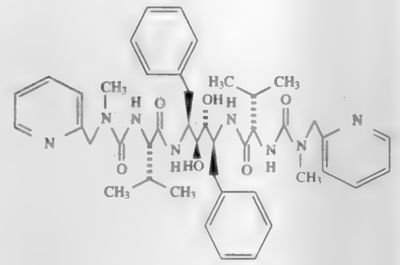
or a pharmaceutically acceptable derivative thereof, (b) the compound of the formula

IV



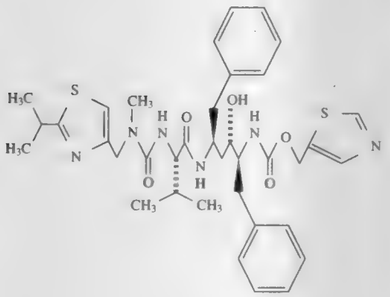
or a pharmaceutically acceptable derivative thereof, (c) the compound of the formula

V



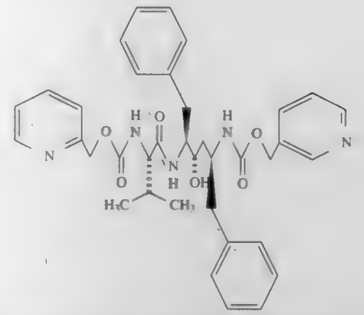
or a pharmaceutically acceptable derivative thereof, (d) the compound of the formula

VI



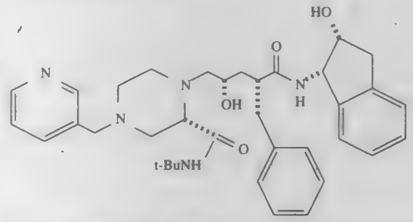
or a pharmaceutically acceptable derivative thereof, (e) the compound of the formula

VII



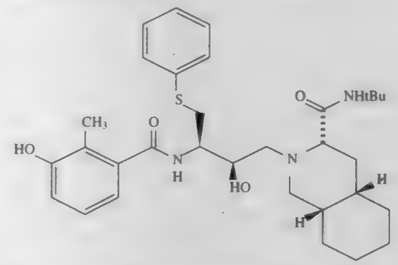
or a pharmaceutically acceptable derivative thereof, and (f) the compound of the formula

VIII



or a pharmaceutically acceptable derivative thereof, and (g) the compound of the formula

IX



or a pharmaceutically acceptable derivative thereof.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,500

DIRECT RADIOLABELING OF ANTIBODIES AND OTHER PROTEINS WITH TECHNETIUM OR RHENIUM

Buck A. Rhodes, Albuquerque, N.M., assignor to Aberlyn Capital Management Limited Partnership, Waltham, Mass.

Original No. 5,102,990, dated Apr. 7, 1992, Ser. No. 565,275, Aug. 8, 1990. Continuation-in-part of Ser. No. 391,474, Aug. 9, 1989, Pat. No. 5,078,985. Application for reissue Feb. 16, 1995, Ser. No. 389,269

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[6] **A61K** *39/395*

U.S. Cl. 424—1.49

64 Claims

50. A method of radiolabeling a whole antibody or F(ab')$_2$ *antibody fragment containing one or more disulfide bonds with a radionuclide to obtain stable labeling, comprising the steps of:*

a) incubating the antibody or fragment with a first Sn (II) agent, the period of incubation being sufficient to reduce a portion of the disulfide bonds and to allow formation of Sn (II)-containing and sulfur-containing complexes, while preventing excessive fragmentation of the antibody or fragment;

b) thereafter complexinh the free Sn agents with a subsequently added polyaminocarboxylic acid complexing agent so as not to further reduce the antibody or fragment, while retaining complexed Sn agents for reducing radionuclide, the radionuclide to be added in a subsequent step; and

c) radiolabeling the antibody or fragment with the Sn (II)-containing and sulfur-containing complexes by adding the radionuclide, whereby the complexed Sn (II) agents reduce the radionuclide and the reduced radionuclide forms radionuclide-containing and sulfur-containing complexes.

Re. 35,501

INFUSION PUMP, TREATMENT FLUID BAG THEREFOR, AND METHOD FOR THE USE THEREOF

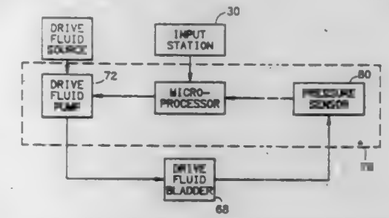
Stephen O. Ross, Vista, and Mark D. McWilliams, San Diego, both of Calif., assignors to Medication Delivery Devices, San Diego, Calif.

Original No. 5,207,645, dated May 4, 1993, Ser. No. 720,658, Jun. 25, 1991. Application for reissue Dec. 19, 1994, Ser. No. 359,281

Int. Cl.[6] **A61M** *31/00*

U.S. Cl. 604—141

12 Claims



9. A portable pump for infusing intravenous treatment fluid to a patient, said infusion pump comprising:

a collapsible treatment fluid bag;

a pressure sensor;

an inflatable bladder juxtaposed with said treatment fluid bag, wherein said bladder is in fluid communication with **[a]** *said* pressure sensor;

means for venting said bladder;

a containment means for impinging said bladder against said treatment fluid bag as said bladder is inflated, said containment means comprising first and second opposing containment members confining said juxtaposed bladder and fluid bag;

an electronic control assembly comprising a drive fluid pump in fluid communication with said bladder for inflating said bladder to collapse said treatment fluid bag and expel treatment fluid therefrom**[;]** , wherein said drive fluid pump is also in **[**fluid**]** *operative* communication with an electronic control circuit, which is, in turn, in **[**fluid**]** *operative* communication with said pressure sensor; and

an outlet tube in fluid communication with said treatment fluid bag and said patient.

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PLANT PATENTS

GRANTED MAY 6, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,881

APPLE TREE 'CO-OP 32'

Jules Janick, West Lafayette; Edwin B. Williams, Lafayette; Jeffrey A. Crosby, Lawrenceburg; Paul C. Pecknold, West Lafayette, all of Ind.; Schuyler S. Korban, Champaign, Ill., and Joseph Goffreda, Kendall Park, N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Dec. 22, 1995, Ser. No. 293,700

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—35.1 **1 Claim**

1. A new and distinct apple tree as shown and described, characterized by resistance to apple scab, fire blight, powdery mildew, and cedar-apple rust, and early season yellow apple about 1.5 weeks after 'Yellow Transparent' and 'Lodi' with very good dessert quality based on flavor and crisp breaking flesh, and excellent storage ability for an early apple.

9,882

PEACH TREE SNOW BRIDE

Chris F. Zaiger, 929 Grimes Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Jan. 16, 1996, Ser. No. 586,003

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—42.1 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth and being a regular and productive bearer of large, white flesh, clingstone fruit with excellent flavor and eating quality; the fruit is further characterized by having firm flesh with good handling and shipping quality, having a high degree of attractive red skin color and in comparison to its white flesh parent Redwing Peach (U.S. Plant Pat. No. #621) the new variety has firmer flesh with greater handling and shipping quality and has a higher degree of attractive red skin color.

9,883

PEACH TREE 'SPRING SNOW'

Chris F. Zaiger, 929 Grimes Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Dec. 6, 1995, Ser. No. 599,465

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—42.1 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous upright growth, and being a productive and regular bearer of large, white flesh, clingstone fruit with very good flavor and eating quality; the fruit is further characterized by having firm flesh with good handling and shipping quality, having a high degree of attractive red skin color and ripening in the early maturity season, approximately one week before the white flesh Peach Sugar May (U.S. Plant Pat. No. 8,034).

9,884

PETUNIA PLANT NAMED 'LIRICASHOWER ROSE'

Masao Bessho; Seiji Nakamura, both of Kakegawa, and Hitoshi Kojima, Kikukawa-machi, all of Japan, assignors to Sakata Seed Corporation, Yokohama, Japan

Filed Jan. 16, 1996, Ser. No. 585,850

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Petunia plant named 'Liricashower Rose', as herein illustrated and described.

9,885

PETUNIA PLANT NAMED 'LIRICASHOWER BLUE'

Masao Bessho; Seiji Nakamura, both of Kakegawa, and Hitoshi Kojima, Kikukawa-machi, all of Japan, assignors to Sakata Seed Corporation, Yokohama, Japan

Filed Jan. 16, 1996, Ser. No. 585,887

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Petunia plant named 'Liricashower Blue', as herein illustrated and described.

9,886

POINSETTIA PLANT NAMED 'WHITE SAILS'

William Leighfield, Brownsville, Canada, assignor to Fernlea Flowers, Ltd., Canada

Filed Sep. 26, 1995, Ser. No. 534,193

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—86.2 **1 Claim**

1. A new and distinct variety of poinsettia plant as herein shown and described, particularly characterized by its brilliant cream colored bracts against a background of dark green foliage, its strong, fixed stems, its long lasting keeping qualities in the home, its excellent resistance to fade, vigorous growth habits and its branch and bract production.

9,887

GERANIUM PLANT NAMED 'GUIRAC'

Bernard Guillou, Saint-Malo, France, assignor to ETS Guillou Freres, Saint-Malo, France

Filed Jan. 26, 1996, Ser. No. 592,238

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Guirac,' as illustrated and described.

9,888

CHAMPION DWARF HYBRID BERMUDAGRASS

Richard M. Brown, Rte. 4, Box 263; Michael A. Brown, 2611 Del Monte, and Scott D. Brown, Rte. 4, Box 230, all of Bay City, Tex. 77414

Filed Oct. 4, 1995, Ser. No. 539,122

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—90 **1 Claim**

1. A new and distinct Bermudagrass plant having 2n=27 chromosomes, substantially as herein shown and described, distinguished by a minimum vertical leaf extension rate in conjunction with rapid, dense lateral stem growth.

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PATENTS

GRANTED May 6, 1997

ERRATA

For CLASS	See PATENT NO.
473–581	5,626,339
283–116	5,626,370
438–004	5,626,715
438–723	5,626,716
442–076	5,626,950
442–262	5,626,951
442–154	5,626,952
442–154	5,626,952
437–192	5,627,102
264–272	5,627,107
228–175	5,627,108
264–001	5,627,116
264–122	5,627,542
264–122	5,627,542
396–025	5,627,615
396–427	5,627,616
396–395	5,627,617
396–379	5,627,618
396–620	5,627,619
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396–373	5,627,621
396–242	5,627,622
396–299	5,627,623
399–046	5,627,628
399–231	5,627,629
399–026	5,627,630
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399–322	5,627,633
399–069	5,627,634
386–111	5,627,654
386–094	5,627,655
386–096	5,627,656
386–070	5,627,657
349–156	5,627,665
349–074	5,627,666
349–124	5,627,667
386–054	5,627,691
395–792	5,627,748
360–077	5,627,946

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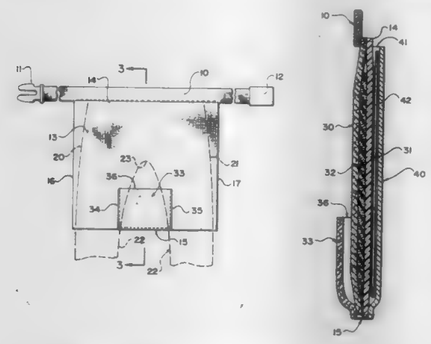
GENERAL AND MECHANICAL

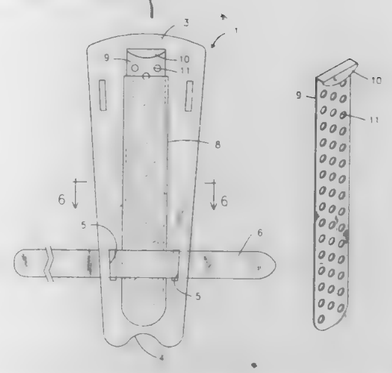
5,625,895

GARMENT FOR PROTECTING THE BUTTOCKS OF A WEARER WHEN SEATED

Lewis V. Sovereign, 293 Ottawa Avenue, Winnipeg, Manitoba, Canada

Continuation of Ser. No. 505,754, Jul. 21, 1995, abandoned.
This application Jan. 24, 1996, Ser. No. 592,853
Int. Cl.[6] A41D *13/00*; A47C *1/00*
U.S. Cl. 2—467 8 Claims





1. A garment comprising a waist band with fastening means for engaging around the waist of a wearer; a flat seat pad having an upper edge attached to the waist band for support thereby, a lower edge substantially parallel to the upper edge and two side edges each extending from the upper edge to the lower edge, the side edges being spaced to define a width of the pad sufficient to engage across the buttocks of a wearer, the lower edge being spaced from the upper edge by a distance sufficient to depend below the crotch of the wearer, the pad having an inner surface for engaging against the buttocks of the wearer and an opposed outer surface; a transparent moisture impermeable cover layer on the outer surface having three sides edges attached to the pad and a fourth upper edge at the waistband which is open to define a first pocket between the pad and the cover layer for receiving a printed sheet and a second pocket on the inner surface having a bottom edge of the second pocket at the lower edge of the pad and a top edge of the second pocket spaced downwardly from the upper edge of the pad by a distance so as to be accessible between the legs of the wearer when the wearer is seated.

5,625,896

LIGHT WEIGHT SHIN PROTECTOR

Joseph P. LaBarbera, 1001 Symphony Isles Blvd., and William C. Relihan, 817 Chipaway Dr., both of Apollo Beach, Fla. 33572

Filed Aug. 1, 1995, Ser. No. 509,784
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—22 1 Claim

1. A shin protector comprising:

a pad having a longitudinal axis and comprising a sheet of impact-absorbing foamed material sandwiched between outer layers of breathable fabric, wherein the thickness of the foamed material layer is about 1/16 to ¼ inches, wherein the total weight of said shin protector is 1–6 ounces, said pad shaped to fit over the skin of a user, and having a pocket extending longitudinally along substantially the longitudinal length;

a guard shaft of stiff material adapted for insertion in said pocket;

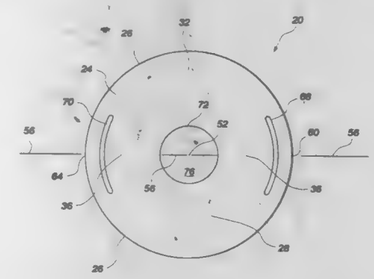
wherein said guard shaft has an upper end and a lower end, and wherein said upper end is curved outward to facilitate gripping by fingertips.

5,625,897

UPPER TORSO GARMENT

Kelly R. Park, 8790 Blue Jay La., Salt Lake City, Utah 84121

Filed Jan. 11, 1996, Ser. No. 583,777
Int. Cl.[6] A41D *3/00*
U.S. Cl. 2—69 28 Claims



1. A garment comprising:

at least one sheet of flexible material having portions thereof to drape over the wearer's shoulders, upper chest and upper back, said at least one sheet having a center, a central hole formed therein and at least one peripheral edge, wherein a straight axis extends from a first portion of the at least one peripheral edge through the center to a second portion of the at least one peripheral edge opposite said first portion;

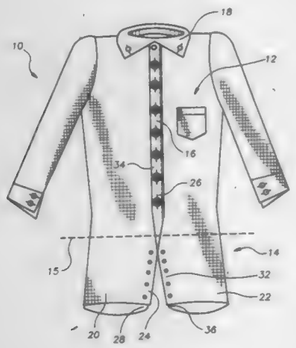
at least one inner edge defining the central hole for insertion of the wearer's head; and,

wherein the sheet resides common to a single plane when disposed in a naturally biased, unfolded position and includes at least two slots formed therein on opposing sides of the central hole such that when the sheet is disposed in the naturally biased, unfolded position said slots face each other in a broadside-facing-broadside noncollinear relationship and such that said axis simultaneously intersects the central hole and the first and second slots while extending in a nonparallel orientation with respect to said slots, said slots being disposed between the at least one inner edge and the first and second portions of the at least one peripheral edge respectively, the sheet, central hole and slots being configured and dimen-

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sioned to enable the wearer's arms to extend through the slots when the wearer's head is inserted through said central hole.

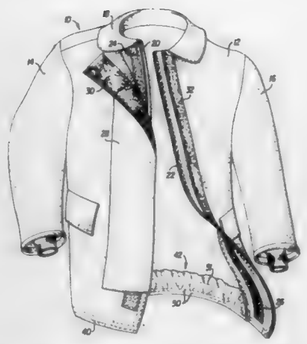
5,625,898
COMBINED INNER AND OUTER GARMENT
Brian J. Telega, 3981 El Camino Rd. S., Las Vegas, Nev. 89103
Filed Nov. 13, 1995, Ser. No. 557,747
Int. Cl.° A41D *1/06*
U.S. Cl. 2—79 1 Claim



1. A combined inner and outer garment comprising:
an outer wear portion constructed from cotton broadcloth having a button down dress collar, a back center line and a button down front including a left button hole edge and a right button edge; and
an inner wear portion integrally formed with said outer wear portion comprising a substantially rectangular right leg section and a substantially rectangular left leg section;
said right leg section having a right front side edge oriented in alignment with said right button edge and a right rear side edge substantially oriented along a line extending from said back center line of said outer wear portion, said left leg section having a left front side edge oriented in alignment with said left button hole edge and a left rear side edge substantially oriented along said same line as said right rear side edge, said right front side edge and said right rear side edge having at least four pairs of interlocking snap fasteners secured thereon in a manner such that said right front side edge and said right rear side edge are securable with said snap fasteners to form a right tubular leg for receiving a right leg of a wearer, said left front side edge and said left rear side edge having at least four pairs of interlocking snap fasteners secured thereon in a manner such that said left front side edge and said left rear side edge are securable with said snap fasteners to form a left tubular leg for receiving a left leg of a wearer.

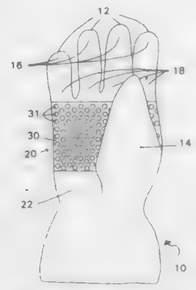
5,625,899
FIREFIGHTERS COAT WITH ENVIRONMENTAL SEAL
Julie A. Snedeker, Northwood, N.H., assignor to Globe Manufacturing Company, Pittsfield, N.H.
Filed Oct. 27, 1995, Ser. No. 549,146
Int. Cl.° A41D *13/00*
U.S. Cl. 2—81 15 Claims

1. A firefighters coat comprising, a flame resistant outer shell including an inner surface and a lower edge portion, and an environmental seal disposed adjacent said inner surface, said seal extending along said lower edge portion and upwardly from said lower edge portion, said seal including an upper elastic part spaced



a substantial distance above said lower edge portion and being adapted to hold said upper part of the seal tight against cooperating firefighter pants.

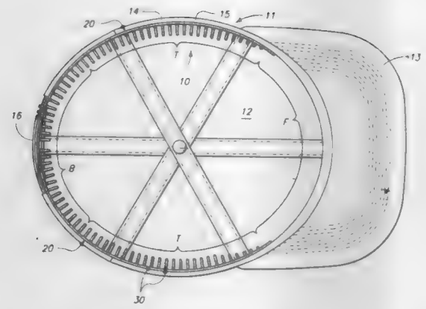
5,625,900
HIGH GRIP GLOVE
Christopher J. Hayes, Rockford, Mich., assignor to Specialty Sports Limited, Rockford, Mich.
Filed Mar. 8, 1995, Ser. No. 400,614
Int. Cl.° A41D *19/00*
U.S. Cl. 2—161.8 7 Claims



1. A glove comprising a soft, tacky elastomeric polymer applied to a synthetic leather layer, which in turn is secured to the palm area of the glove, the elastomeric polymer being disposed on the synthetic leather layer in a continuous, embossed pattern such that there are a plurality of openings through the elastomeric polymer, exposing portions of the synthetic leather layer at the openings.

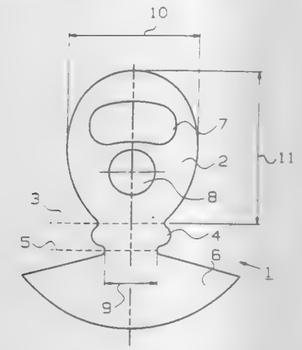
5,625,901
VENTILATING HAT BAND
James W. Healy, 1200 Westwood Dr., #35, Sandpoint, Id. 83864
Filed Oct. 4, 1995, Ser. No. 539,129
Int. Cl.° A42B *1/00*
U.S. Cl. 2—182.2 15 Claims

1. A hat band for attachment to a hat having a hat band area circumscribing a crown, comprising:
an elongated flexible base including an inside and an outside surface;
a plurality of flexible fingers spaced apart and projecting from the inside surface of the elongated flexible base;
securing means for selectively attaching the outside surface of the elongated flexible base to the hat band area of the hat;



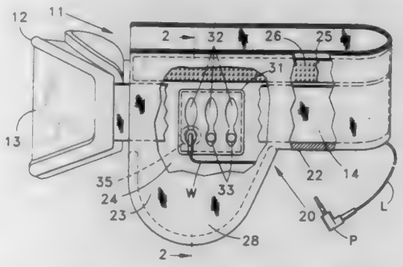
wherein the elongated flexible base includes a forward and a rearward end, with the flexible fingers being spaced apart along the elongated flexible base from adjacent the forward end to the rearward end;
wherein the plurality of flexible fingers include root ends attached to the elongated flexible base and remote ends;
wherein the plurality of flexible fingers include length dimensions between the root ends and the remote ends; and
wherein the length dimensions of the flexible fingers situated adjacent the forward end of the elongated flexible base are shorter than the length dimensions of the flexible fingers situated adjacent the rearward end of the elongated flexible base.

5,625,902
PROTECTIVE HOOD MADE OF AN ELASTIC MATERIAL
Ralf Drews, and Hartmut Kintzel, both of Lübeck, Germany, assignors to Drägerwerk AG, Lübeck, Germany
Filed Oct. 23, 1995, Ser. No. 546,811
Claims priority, application Germany, Dec. 2, 1994, 44 42 926.6; Mar. 18, 1995, 195 09 983.4
Int. Cl.° A62B *7/00;18/04*
U.S. Cl. 2—205 21 Claims



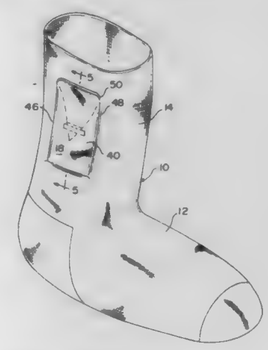
13. A protective hood,comprising:
an elastic,elastomeric, gas-impermeable material defining a one piece protective element formed by dipping an essentially plate-shaped mold in said material, said one piece protective element including a head area and a neck area, said one piece protective element continuing from said neck area into said head area at a top end of the neck area, said material having an elongation at tear greater than or equaling 600% and having a modulus of elasticity 100% within a range of 0.15N/mm^2 to 1.3N/mm^2, said hood being foldable into a flat state, said hood in said flat state having a greatest width of said head area between 250 mm to 340 mm.

5,625,903
HEADBAND WITH ADJUSTABLE SPEAKER SUPPORTING MEANS
Michael A. Schultz, 172 Hemingway Dr., Rochester, N.Y. 14620, and Gavin McAuley, 170 Clovercrest Dr., Rochester, N.Y. 14618
Filed Feb. 26, 1996, Ser. No. 607,218
Int. Cl.° H04R *5/02;* A42C *5/00*
U.S. Cl. 2—209 8 Claims



1. In a headband unit of the type disposed removably to be mounted on a person's head, and having thereon two enlarged fabric pockets disposed to register with and cover the ears of the person wearing the headband unit, and each of which pockets is formed between two layers of fabric, one of which layers is disposed to engage and cover an ear of the person wearing the headband unit, improved means for adjustably mounting audio speakers in said pockets, comprising
a pair of flexible speaker supports each of which is mounted in a different one of said pockets, and each of which supports is secured around its marginal edges to said one layer of fabric of a respective pocket, and
each of said supports having therethrough a plurality of elongate, spaced openings, and each of said openings being shaped to receive and removably to secure on the associated support an audio speaker with the output thereof facing an ear of the person wearing the headband unit.

5,625,904
SOCK WITH POCKET
Kimberly A. Kline, 7423 Courtland Cir., Manassas, Va. 22111
Filed Nov. 2, 1995, Ser. No. 556,851
Int. Cl.° A41B *11/00*
U.S. Cl. 2—239 8 Claims



1. A sock having a pocket comprising:
a sock leg portion having an outer wall and an inner wall:
a panel portion secured to the leg portion;
said panel having an extension portion;

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a-pocket chamber defined by the leg portion and the panel portion;

an opening in the leg portion adjacent to the pocket chamber; and

said extension portion threaded through the opening and extended downwardly adjacent to the inner wall of the leg portion.

5,625,905

URINE DEFLECTOR

Michael C. Woods, 808 Williams St., Copperas Cove, Tex. 76522

Filed Aug. 28, 1995, Ser. No. 519,724

Int. Cl.[6] E03D *9/00*

U.S. Cl. 4—300.3 **1 Claim**



1. A new and improved device for eliminating the splatter of urine on exterior surfaces of a toilet bowl and a hinged section on an attached toilet seat when males urinate from a standing position comprising in combination:

a collar having paired opposed arcuate sections and paired opposed elongated sections that together form a generally oval configuration, said collar having an inner oval periphery and an outer oval periphery terminating at its rear end in a linear periphery;

a flange peripherally disposed from said inner edge of the collar, the flange being in generally frictional communication with an interior edge of the toilet bowl for ease of removal, cleaning, and reinstallation, wherein the flange extends downward around an entire inner circumference of the collar;

a baffle extending upwardly from said linear periphery of the collar such a distance so as to cover the hinged section of the toilet seat and adapted for redirecting urine away from the hinged section of the toilet seat, the baffle being pivotable about said linear periphery so as to assume an standing position when the seat is raised and a folded position when the seat is down;

a lip extending upwardly from the front outer periphery of the collar, the lip extending about a majority of the outer periphery of the collar and terminating at points adjacent the baffle;

the device being fabricated from a flexible elastomeric material.

5,625,906

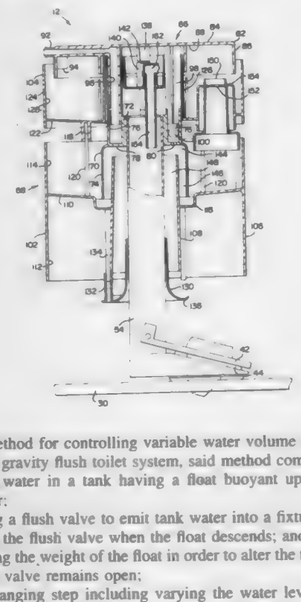
TOILET FLUSH CONTROL ASSEMBLY AND METHODS

Dwight N. Johnson, Carlsbad, Calif., assignor to Hunter Industries Incorporated, San Marcos, Calif.

Continuation of Ser. No. 333,070, Nov. 1, 1994, Pat. No. 5,517,701, which is a continuation of Ser. No. 224,648, Apr. 7, 1994, Pat. No. 5,392,470. This application Jul. 11, 1995, Ser. No. 500,707

Int. Cl.[6] E03D *1/14*

U.S. Cl. 4—325 **6 Claims**



1. A method for controlling variable water volume flush operations in a gravity flush toilet system, said method comprising:

storing water in a tank having a float buoyant upon the tank water;

opening a flush valve to emit tank water into a fixture;

closing the flush valve when the float descends; and

changing the weight of the float in order to alter the time that the flush valve remains open;

said changing step including varying the water level in a bias chamber of the float by siphoning water from the bias chamber through a siphon or selectively disabling the siphon;

said disabling step includes opening and closing an air vent passage communicating with the siphon.

5,625,907

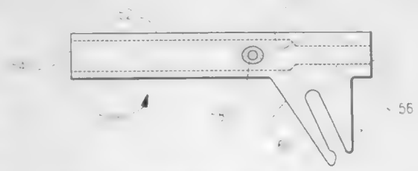
WATER SAVING DEVICE FOR WATER CLOSET

Peter Svoboda, 1980 Prospector Dr., Leadville, Colo. 80461

Filed May 12, 1995, Ser. No. 440,098

Int. Cl.[6] E03D *1/00*

U.S. Cl. 4—353 **2 Claims**



1. A method for reducing the amount of water delivered to a bowl of a water closet having a reservoir tank, the reservoir tank having a plurality of substantially vertical walls and a bottom, the reservoir tank enclosing a valve and an overflow tube, the overflow tube extending in a substantially vertical manner from the bottom of the tank and terminating in an entrance end above the bottom of the tank, the tank further enclosing a fill tube extending from the valve and to the entrance of the overflow tube the bowl being filled by the fill tube in fluid communication with the bowl by means of the overflow tube, the fill tube further including a water flow dividing device having a one piece hollow body adapted for attachment to the fill tube, the hollow body further having a fluid passage therethrough, the fluid passage having an entrance and an exit, the fluid passage further having an entrance end and an exit end, constricting means for reducing the fluid passage, and at least one side aperture, the side aperture being between the entrance end and the constricting means, the flow dividing device further having means for positioning the flow dividing device relative to the overflow tube such that the side aperture is above the bottom and the aperture facing one of the walls of the tank, the method comprising:

attaching the flow dividing device to the fill tube; and

engaging the positioning means with the entrance end of the overflow tube, so that water flowing out of the side aperture is directed to flow against at least one of the walls of the reservoir tank before coming to rest in the reservoir tank and water flowing out of the exit end of the flow dividing device is directed to flow towards the overflow tube.

d) selector switch means having first and second operative conditions for being operably associated with said control means, said selector switch means causing said control means to permit selective operation of said first and second controlling means when said selector switch means is in said first operative condition and to permit operation only of said first controlling means when said selector switch means is in said second operative condition.

5,625,908

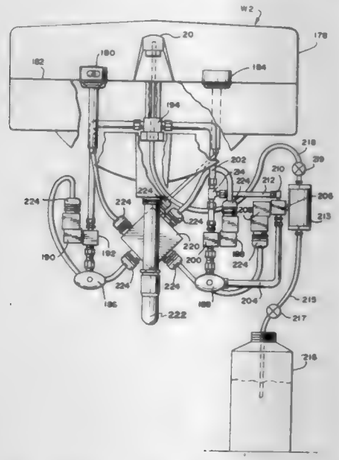
WASH STATION AND METHOD OF OPERATION

Daniel C. Shaw, Geneva, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Continuation of Ser. No. 729,534, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 378,921, Jul. 12, 1989, Pat. No. 5,031,258. This application Aug. 2, 1996, Ser. No. 691,412

Int. Cl.[6] E03C *1/05*; **A47K** *5/12*

U.S. Cl. 4—623 **28 Claims**



1. A control system for a wash station having a sink, a faucet operably associated with the sink, a soap dispenser operably associated with the faucet, a source of water operably associated with the faucet, and a source of soap operably associated with the dispenser, the control system comprising:

a) first means for being interposed between the water source and the faucet for selectively controlling water flow, and second means for being interposed between the soap source and the dispenser for controlling soap flow;

b) infrared sensor means for being operably associated with the sink for detecting the presence of a user;

c) electronic control means for being operably associated with said first and second controlling means and with said sensor means for controlling operation of said first and second controlling means when a user is detected; and

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5,625,909

SANITARY APPLIANCE WITH INDIRECT DISCHARGE

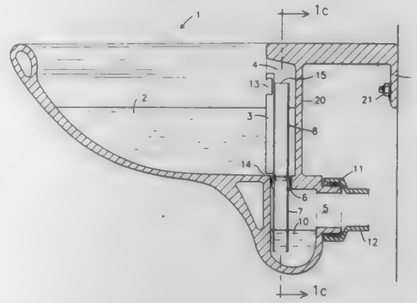
Kurt S. B. Ericson, Prins Boudewihnlaan 48, B-2970 Schilde, Belgium

Continuation of Ser. No. 375,492, Jan. 19, 1995, abandoned. This application Apr. 17, 1996, Ser. No. 634,063

Claims priority, application Belgium, Sep. 2, 1994, 09400148

Int. Cl.[6] E03C *1/24*

U.S. Cl. 4—651 **9 Claims**



1. A sanitary appliance comprising:

a basin for containing a liquid, a first liquid chamber adjoining the basin, a second liquid chamber located below the first liquid chamber and communicating with the first liquid chamber via an opening, the first liquid chamber being separated from the basin by an upright movable wall, the movable wall being attached to an upright liquid discharge pipe,

a bottom portion of the upright liquid discharge pipe being seated in the opening to the second liquid chamber, the seated liquid discharge pipe retaining liquid in the basin and the first liquid chamber, the liquid discharge pipe permitting liquid to drain from the basin and the first liquid chamber to the second liquid chamber when the bottom portion of the liquid discharge pipe is removed from the opening to the second liquid chamber by upward movement of the solid upright movable wall,

an opening below the removable wall permitting the liquid to flow from the basin to the adjoining liquid chamber to permit liquid level equalization between the basin and the adjoining first liquid chamber.

5,625,910

PROTECTIVE SHIELD

Nate Erickson, Lewiston; Alan B. Eke, Blaine, both of Minn.; Joel W. Wolfe, New Richmond, Wis., and Adrian P. Sween, 205 Maryknoll Dr., Stillwater, Minn. 55083, assignors to Adrian P. Sween, Stillwater, Minn.

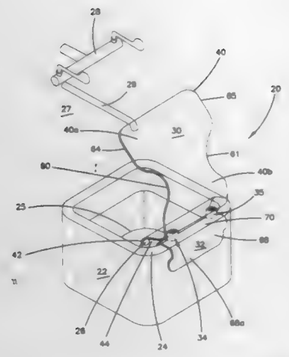
Filed Jun. 2, 1995, Ser. No. 459,363

Int. Cl.[6] E03C *1/181*

U.S. Cl. 4—658 **14 Claims**

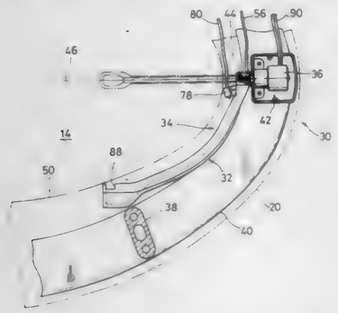
1. An apparatus for placement over a basin to protect an operator from splashing liquid comprising:

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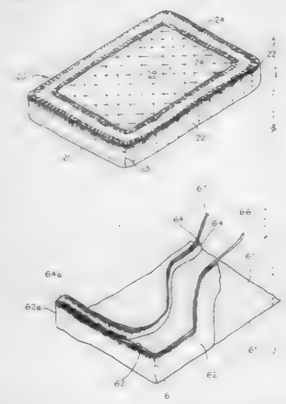
a) a curved shield including a first portion extending outside of the basin and a second portion extending inside the basin, and an intermediate portion being between the first and second portions;
b) means for mounting the apparatus on the basin; and
c) means for attaching the shield to the mounting means, the attaching means connecting to the shield at the intermediate portion, the attaching means providing a biasing force to the shield in a direction away from the basin when a force is applied to the shield toward the basin.

5,625,911
APPARATUS FOR SAMPLING URINE
Chiaki Nakayama; Kuniaki Shinohara; Naoki Sato, and Hiroshi Tsuboi, all of Kita-kyushu, Japan, assignors to Toto Ltd., Fukuoka, Japan
PCT No. PCT/JP95/00259, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/23337, PCT Pub. Date Aug. 31, 1995
PCT Filed Feb. 23, 1995, Ser. No. 537,760
Claims priority, application Japan, Feb. 23, 1994, 6-051289
Int. Cl.[6] E03D *11/00;* **A61B** *5/00*
U.S. Cl. 4—661 **14 Claims**



1. An apparatus for sampling urine excreted by an individual seated on a toilet seat at a toilet equipped with a standard water closet bowl fixture, said apparatus comprising:
an elongated urine sampling trough having an elongated opening;
support means for supporting said sampling trough for swinging movement, about a generally horizontal axis located adjacent the front part of a rim of said bowl fixture and passing through the vertical central plane of said bowl fixture, between an operative position, in which said sampling trough extends in said vertical central plane obliquely between the upper front region and the bottom region of the inner space of the bowl and in which said opening is directed rearwardly and upwardly, and a rest position in which said sampling trough is situated adjacent the rim of said bowl fixture; and,
drive means for swinging said sampling trough about said axis between said operative and rest positions.

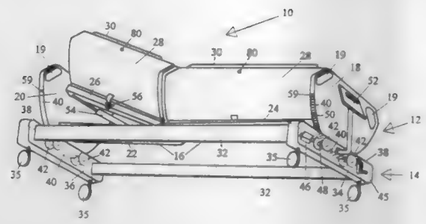
5,625,912
MATTRESS COVERINGS
Ricky A. McCain, and John W. Whitley, both of Monroe, N.C., assignors to Perfect Fit Industries, Inc., Monroe, N.C.
Continuation-in-part of Ser. No. 269,487, Jul. 1, 1994, Pat. No. 5,530,979, which is a continuation-in-part of Ser. No. 45,643, Apr. 9, 1993, Pat. No. 5,325,555. This application Jul. 1, 1996, Ser. No. 673,899
Int. Cl.[6] A47G *9/04;9/02*
U.S. Cl. 5—497 **13 Claims**



1. A matress covering adapted for fitted disposition over the top, sides, ends and corners of mattresses of standard top surface sizes comprising:
an inelastic, genrally rectangular rod portion having outer periphery dimensioned to at least substantially cover the top surface of mattresses of at least one predetermined standard top surface size;
an inelastic side skirt extending transversely from the outer periphery of the generally rectangular top portion around the entire outer periphery of the top portion;
an inelastic panel extending away from a periphery of the side skirt remote from the top portion and entirely around the side skirt periphery;
a first elastic cord;
means for securing the first elastic cord to the inelastic panel at a periphery of the panel remote from the side skirt;
a second elastic cord;
means for securing the second elastic cord with one of the side skirt and the inelastic panel at a location between the outer periphery of the top portion and the periphery of the inelastic panel.

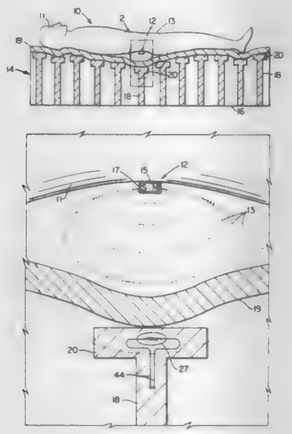
5,625,913
OSCILLATORY BED
William H. Singleton, 4118 Timbervale Dr., Evergreen, Colo. 80439
Continuation-in-part of Ser. No. 195,290, Feb. 14, 1994, Pat. No. 5,502,853. This application Mar. 28, 1996, Ser. No. 623,158
Int. Cl.[6] A47B *7/00*
U.S. Cl. 5—609 **20 Claims**

1. An oscillatory bed with mattress or other pressure reduction surface for receiving a patient's lower body, upper body, and head thereon, the oscillatory bed comprising:



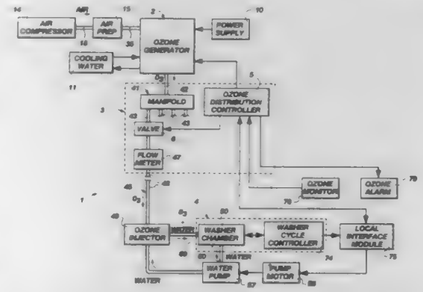
a bed frame assembly having a foot board support member and a head board support member, said support members joined together by a pair of longitudinal parallel support members;
a cradle assembly having an elongated cradle base, one end of said cradle base attached to a semi-circular foot board, another end of said cradle base attached to a semi-circular head board, said semi-circular foot board received into said foot board support member, said semi-circular head board received into said head board support member; and
oscillating means mounted on said bed frame assembly for oscillating said cradle base assembly thereon and about a cradle base axis along the length of the cradle base, said cradle base assembly oscillated independently from said bed frame assembly.

5,625,914
AUTOMATIC MATTRESS SURFACE CONTOUR AND SUPPORT CHANGING APPARATUS WITH WAVE SENSORS
Patrick R. Schwab, 3 Greyswood Ct., Potomac, Md. 20854
Filed Feb. 1, 1996, Ser. No. 595,563
Int. Cl.[6] A47C *27/00;* **A61G** *7/00*
U.S. Cl. 5—690 **15 Claims**



1. An automatic mattress surface contour and support changing apparatus, comprising:
a wave-emitter assembly, worn by a person supported by the mattress surface, which emits waves, and
a wave-responsive mattress/control assembly which responds to said waves from said wave-emitter assembly for adjusting top surface support characteristics of said wave-responsive mattress/control assembly.

5,625,915
LAUNDRY OZONE INJECTION SYSTEM
Michael S. Radler, Norristown, Pa., and Jerry W. Humphreys, Kansas City, Mo., assignors to Cyclo3PSS Textile Systems, Inc., Salt Lake City, Utah
Continuation of Ser. No. 315,682, Sep. 30, 1994, abandoned, which is a continuation of Ser. No. 61,686, May 14, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,132
Int. Cl.[6] D06F *39/08*
U.S. Cl. 8—158 **20 Claims**

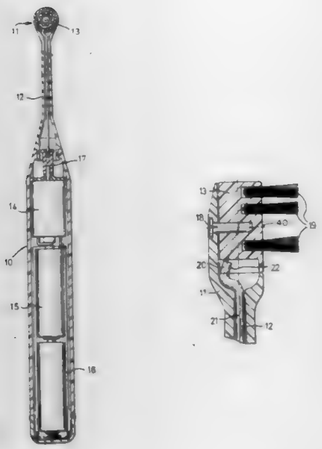


20. A method for delivering ozone to a plurality of washing machines, each washing machine having a washer chamber and a washer cycle controller causing said washing machines to operate through a plurality of washer cycles, said method comprising the steps of:
(a) generating ozone from compressed air;
(b) providing manifold means having a plurality of manifold outlets and receiving said ozone;
(c) fluidically connecting each of said manifold outlets to a respective controllable ozone valve;
(d) fluidically connecting each ozone valve to a respective washing machine;
(e) automatically detecting the current washer cycle of each washing machine;
(f) automatically controlling the ozone valve associated with a respective washing machine to enable the communication of said ozone thereto in response to detecting a selected washer cycle of the associated washing machine;
(g) monitoring the level of ambient ozone in a vicinity of said washing machines; and
(h) ceasing to generate ozone to inhibit the communication of ozone to said washing machines in response to detecting a level of ambient ozone exceeding a selected level.

5,625,916
TOOTHBRUSH
Greg McDougall, 5C, Taichi Court, 132 Austin Road, Tsimshatsui, Kowloon, Hong Kong
Filed May 24, 1995, Ser. No. 449,298
Int. Cl.[6] A61C *17/34;* **A46B** *13/02*
U.S. Cl. 15—28 **4 Claims**

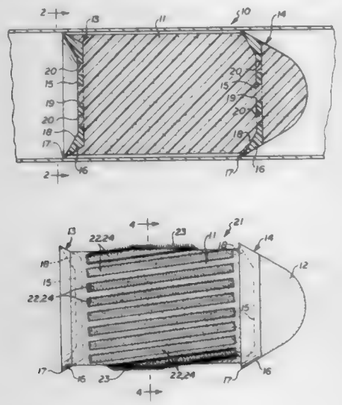
1. An electrically driven toothbrush comprising:
a handle portion at a first end of said toothbrush;
a head section at a second end of said toothbrush;
a rotatable, integrally formed shaft extending from said handle portion to said head section and having a first longitudinal central axis; and
a generally circular, bristle holder pivotally mounted to said head section on a post having a second longitudinal axis and drivingly engaged by a remote-most end of said shaft, said remote-most end of said shaft bent toward an intersection of said first longitudinal central axis and said second longitudinal axis, said bristle holder having a first closed-ended slot extending radially inward from the outer circumference of said holder to less than the distance to the center of said

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holder to receive and retain said remote-most end of said shaft, said bristle holder having a plurality of bristle receiving and retaining holes formed in and distributed around a top surface of said holder, said slot extending inwardly between an adjacent pair of said holes.

5,625,917
FOAM PIPELINE PIG WITH SEAL CUPS
Ronald E. Hawkins, 11907 Doretta, Montgomery, Tex. 77356
Filed Mar. 12, 1996, Ser. No. 614,314
Int. Cl.[6] B08B *9/02*
U.S. Cl. 15—104.061 **11 Claims**



2. A pipeline pig of the type to be propelled through a pipeline by a pressure gradient exerted by a propelling fluid in the pipeline, comprising:

an elongate one piece cylindrical body formed of resilient foamed material having a rear end a nose portion at a front end;

a rear cup of resilient non-foamed material secured to said body rear end having apertures through a central portion and a circumferential rearward facing peripheral lip configured to engage the inner wall of the pipeline; and

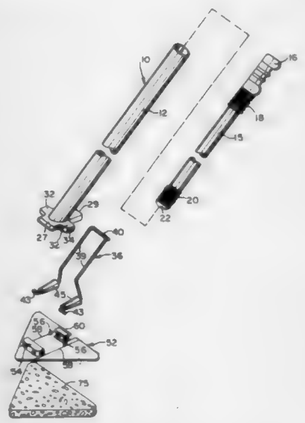
a front cup of resilient non-foamed material secured to said body near said nose portion having apertures extending through a central portion and a circumferential rearward facing peripheral lip configured to engage the inner wall of the pipeline; wherein

the propelling fluid pressure is transmitted to said rear cup lip to engage it in sealing relation on the inner wall of the pipeline and passes through said rear cup apertures and is propagated throughout the foam material of said body to radially expand said body and exert a radial force on said front cup lip to radially expand and firmly engage said front cup lip in sealing relation on the inner wall of the pipeline;

a portion of the propelling fluid pressure propagated throughout the foam material of said body passes to the exterior of said body to exert a propelling force on said front cup lip downstream from said rear cup peripheral lip; and

a portion of the propelling fluid pressure propagated throughout the foam material of said body passes through said front cup apertures and is propagated throughout the foam material of said nose portion to the exterior of said nose portion.

5,625,918
MULTIPLE HEAD WRINGER MOP WITH TELESCOPING HANDLE
Gregory I. Kleson, Haddonfield, and Anthony Lalli, Medford, both of N.J., assignors to New Knight Inc., Paoli, Pa.
Filed Mar. 15, 1996, Ser. No. 616,927
Int. Cl.[6] A47L *13/146*
U.S. Cl. 15—119.2 **17 Claims**



1. A wringer mop, comprising:

an elongated tubular handle internally threaded at one end;

an elongated extension slidably displaceable within the handle, comprising:

a first externally threaded portion adjacent one end of the extension;

a second externally threaded portion at the distal end of the extension, wherein the first and second threaded portions have the same thread diameter and thread pitch as the internal threads of the handle;

a mounting head fixedly connected to an end of the handle;

a wringer rotatably connected to the mounting head comprising:

a wringer bracket; and

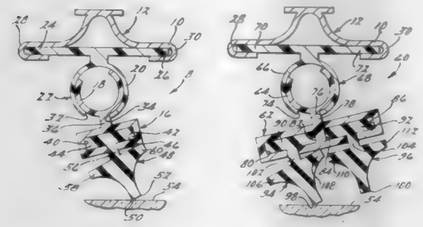
a plurality of rollers rotatably mounted on the wringer bracket; and

a sponge head releasably connectable with the mounting head, comprising:

a resilient sponge plate having a generally planar surface; and

a sponge fixedly attached to the sponge plate.

5,625,919
DUAL ARTICULATED WINDSHIELD WIPER ASSEMBLY
Peter H. Jeffer, 15 Gay St., New York, N.Y. 10014
Filed Aug. 28, 1995, Ser. No. 520,254
Int. Cl.[6] B60S *1/38*
U.S. Cl. 15—250.41 **3 Claims**



1. A dual articulated windshield wiper blade assembly for acceptance in a conventional windshield wiper yoke and claw assembly said blade assembly comprising:

an elongated, relatively high durometer plastic upper spline of generally T-shaped transverse cross section comprising a pair of oppositely directed flanges engageable in conventional claws of said windshield wiper yoke and claw assembly and a downwardly extending step portion intermediate said flanges of a first circular transverse cross section, said stem portion being interrupted to define a channel therein;

an elongated, relatively high durometer plastic lower spline having an upwardly extending stem portion of a second circular transverse cross section complimentary to the stem portion in said upper spline, said upwardly extending stem portion being received in the channel of said downwardly extending stem portion so as to be supported thereby for relative rotation, said lower spline having at least one pair of opposed inwardly directed channels for acceptance of a relatively low durometer wiper blade in close interlocked relation; and

a relatively low durometer wiping blade having a first pair of oppositely directed flanges received in the channels of said lower spline, said blade having a downwardly extending neck extending from said flanges thereof below the channels in said lower spline pivotally supporting a wiping portion, said neck to permit pivoting of said wiping portion relative to said first pair of flanges and said lower spline, said wiping portion defining a second pair of oppositely directed flanges at a lower end of the neck spaced from said lower spline, said second pair of flanges each being engageable with said lower spline to limit rotation of said wiping portion relative thereto, and a wiping edge on said wiping portion engageable with a surface to be wiped upon reciprocation of said wiper blade assembly.

5,625,920
CLEANING TOOL WITH STORABLE BRUSH
Frederick M. Bores, Highlands Ranch; Dan Venard, Littleton, and Michael Guest, Denver, all of Colo., assignors to Windsor Industries, Inc., Englewood, Colo.
Filed Oct. 31, 1995, Ser. No. 550,950
Int. Cl.[6] A47L *9/06*
U.S. Cl. 15—322 **14 Claims**

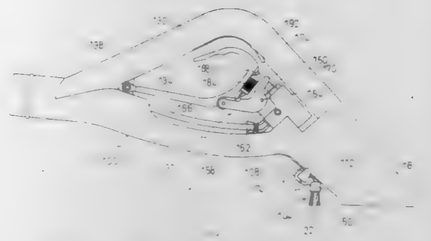
14. A cleaning tool with brush storage, comprising:

a body having a head with at least a first passageway for carrying debris from a surface being cleaned;

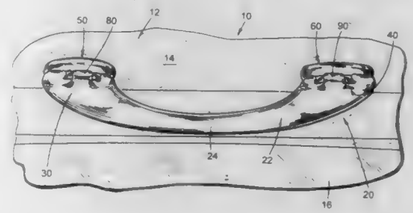
a cleaning brush unit including brush bristles to be held to said body;

means connected to said body for holding said cleaning brush unit; and

a spray control assembly for controlling the delivery of a liquid cleaner spray, said spray control assembly including a locking assembly for disabling and enabling the spraying of the liquid cleaner from said spray control assembly, said locking assembly including a common element moveable in a substantially linear direction including being moveable between first and second positions and in which said common element is in said first position , when spraying of the liquid cleaner is continuously disabled and, after movement of said common element to said second position, the spraying of the liquid cleaner is enabled continuously.



5,625,921
COMBINED ASSIST HANDLE AND HANGER SUPPORT
Nels R. Smith, Holland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Apr. 4, 1996, Ser. No. 628,127
Int. Cl.[6] A47B *95/02*; **E05B** *7/00*
U.S. Cl. 16—112 **16 Claims**



1. A combined assist handle and hanger support for a vehicle comprising:

an elongated, generally C-shaped handle having opposed ends and wherein each end includes a socket facing a first direction toward a vehicle on which said handle is installed;

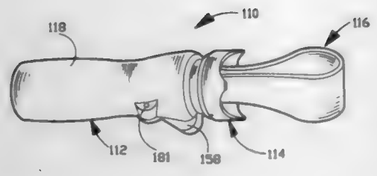
a pair of mounting brackets adapted to be mounted to a vehicle in spaced relationship, each of said brackets cooperating with one of said ends of said handle for pivotally mounting said handle to said spaced brackets; and

wherein each of said ends of said handle integrally including hook-shaped projections extending generally orthogonal to the length of said handle, said projections defining a socket for receiving hangers when said handle is pivoted to a position substantially flush with the vehicle surface to which said brackets are mounted.

5,625,922
ATTACHMENT APPARATUS FOR FORMING A HANDLE
Fred I. Morad, Toluca Lake, Calif., assignor to Worldwide Integrated Resources, Inc., Glendale, Calif.
Filed Apr. 26, 1996, Ser. No. 638,109
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—114 R **20 Claims**

1. An attachment apparatus for attaching to a handle of a broom or the like, the apparatus comprising:

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a. a handle member having a generally cylindrical shaped body, the cylindrical shaped body having a proximal portion with a proximal open end, a distal portion with a distal closed end, a central slot extending from the proximal open end through the distal portion, and a side slot interconnecting the central slot and located on the proximal portion;

b. an intermediate closure member having a wide engagement portion, a short narrow shaft portion, and a central opening extending therethrough, the wide engagement portion having a periphery rim with a multiplicity of spaced apart concave surfaces, the shaft portion being installed at said proximal open end of said handle member and located within said proximal portion;

c. a locking member having a proximal portion with external screw threads and a distal portion forming a loop opening for looping around said broom handle, the proximal portion being inserted through said central opening of said intermediate closure member and said central slot of said handle member such that the proximal portion is located within said central slot of said handle member;

d. a pawl pivotally mounted in said side slot of said handle member and having a tip with inner screw threads;

e. a coil spring being installed in said side slot of said handle member and biasing said tip of said pawl to engage it to said external screw threads on said proximal portion of said locking member;

f. a thin wall disposed between said central slot and said side slot to partially divide them, so that said side slot is partially connected with said central slot;

g. said thin wall having an outward facing recess for adapting to one end of said coil spring;

h. said pawl having an inward facing recess located remote from said tip for adapting the other end of said coil spring; and

i. said handle member rotatable on said locking member such that said inner screw threads on said pawl threadedly engage with said external screw threads on said locking member until a respective two of said multiplicity of concave surfaces on said wide engagement portion of said intermediate closure member abut against said broom handle while said loop opening of said locking member squeezes said broom handle to tighten said attachment apparatus thereon;

j. whereby said pawl biased by said coil spring and its tip is engaged to said proximal portion of said locking member, said handle member is locked on said locking member for preventing said locking member from sliding out from said handle member so that said handle member can be fastened thereto, and said handle member can be further threaded on said locking member to precisely adjust the tightness of said attachment apparatus, and when said pawl is pressed against said coil spring and its tip is disengaged from said proximal portion of said locking member, said handle member is unlocked and can be slid on said locking member for allowing said handle member to be released.

5,625,923

STROLLER LENGTH-ADJUSTABLE HANDLE

Li-chu C. Huang, No. 9, Alley 2, Lane 606, Sec. 2, Po-Ai Rd., Chiayi City, Taiwan

Filed Dec. 28, 1995, Ser. No. 579,883

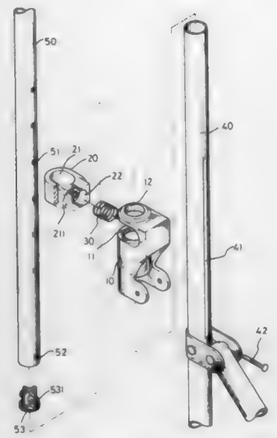
Int. Cl.[6] A47B *95/02*

U.S. Cl. 16—115 **15 Claims**

1. A length-adjustable handle structure for a stroller comprising:

an outer tube;

a stationary block affixed to an upper end of the outer tube;



an inner tube extending through the stationary block and slidably received within the outer tube, the inner tube having a plurality of first holes defined therein along a length thereof;

an engaging block having a boss for extending into one of the plurality of first holes of the inner tube to immobilize the inner tube with respect to the outer tube; and

a spring compressed between the stationary block and the engaging block to releasably urge the engaging block to retain the boss extended into one of the plurality of first holes of the inner tube;

wherein the stationary block has a recess for receiving the engaging block and a passageway in communication with the recess, and the engaging block has a second hole, which is aligned with the passageway when received in the stationary block to allow the inner tube to extend therethrough.

5,625,924

METHOD FOR PRODUCING A CARD SLIVER AND CARDING MACHINE THEREFOR

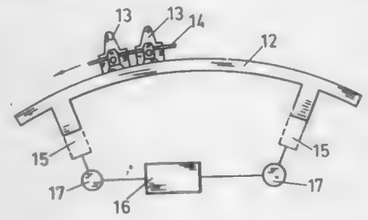
Christian Sauter, Flurlingen, and Jurg Faas, Dinhard, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Jul. 28, 1995, Ser. No. 508,704

Claims priority, application Switzerland, Jul. 29, 1994, 02402/94

Int. Cl.[6] D01G *15/28;7/14*

U.S. Cl. 19—103 **20 Claims**



1. A method for producing a card sliver using a carding machine including working elements wherein the condition of the working elements deteriorates as the machine operating time increases, the method comprising:

periodically resetting the working elements to compensate, at least partially, for the deterioration in the condition of the working elements;

effecting the resetting of the working elements via a controllable actuator system, the resetting initiated by a control; and

providing the control with a control program for initiating the resetting on the basis of a wear characteristic, the wear characteristic depending upon actual machine production.

5,625,925

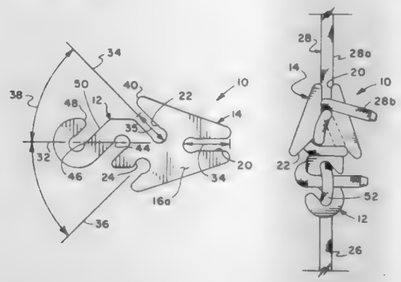
LINE CONNECTING DEVICE

Frank J. Richards, R.R. 290, Gordonville, Tex. 76245

Continuation of Ser. No. 92,715, Jul. 16, 1993, abandoned. This application Jan. 22, 1996, Ser. No. 589,197

Int. Cl.[6] F16G *11/04;11/12*

U.S. Cl. 24—129 B **11 Claims**



1. A line connector, having a central, longitudinal axis, for interconnecting first and second line portions, comprising:

a first connector portion having extension in a first direction along the longitudinal axis and comprising means for receiving the first line portion;

a second connector portion having extension in a second, opposite direction and comprising means for receiving the second line portion, the second connector portion having a first slot opening in the second direction and second and third slots opening in the first direction and diverging outwardly relative to each other, the width of at least the first slot being substantially uniform, the respective lengths of each of the first and second slots being greater than the length of the third slot, the line connector comprising means for connecting the first and second line portions, under tension, in alignment with the line connector longitudinal axis and parallel to the first slot.

5,625,926

EXTENSION FITTING FOR A TENSION BELT

Ridha Berrezouga, Walldorf, Germany, assignor to Ribeco GmbH, Walldorf, Germany

PCT No. PCT/DE94/00275, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO94/20329, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 14, 1994, Ser. No. 338,589

Claims priority, application Germany, Mar. 12, 1993, 9303666 U

Int. Cl.[6] A44B *21/00;* **B60P** *7/00*

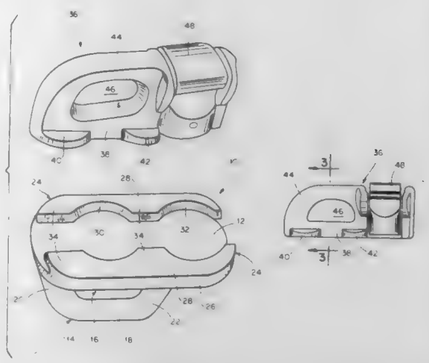
U.S. Cl. 24—265 CD **9 Claims**

1. An extension fitting for an extension clamping belt for use in a clamping belt assembly having a belt anchor with an eyelet for a clamping belt and a foot with at least one anchor mushroom having a laterally-extruding enlarged head, said extension fitting comprising:

a generally elongated plate having a top side, a bottom side, opposite longitudinal ends and opposite lateral ends;

two claws joined to opposite lateral ends of said plate and projected outwardly from one of said sides of said plate, each of said claws having free ends extending toward one another to define a slotted recess therebetween;

an eyelet attached to the other of said sides of said plate for an extension clamping belt, said eyelet being disposed on said other side of said plate such that it will be opposite said eyelet of said belt anchor which said enlarged head of said anchor mushroom is introduced in said slotted recess between said claws joined to said plate.



5,625,927

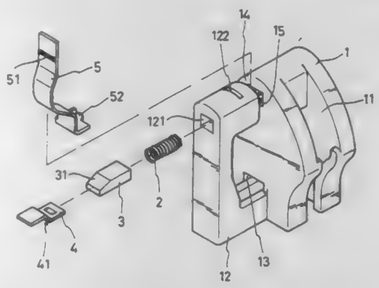
SLIDER OF A ZIPPER

Tino Chu, No. 95, Chien Cheng Street, Chien Cheng, Kaoshiung, Taiwan

Filed Oct. 19, 1995, Ser. No. 545,510

Int. Cl.[6] A44B *19/26;19/30*

U.S. Cl. 24—421 **1 Claim**



1. A slider for installation in a zipper having interlocking tabs and pulled by a puller of the zipper to close/open the interlocking tabs, comprising:

a slider body having a sliding slot for passing the interlocking tabs of the zipper and a top wall, a substantially U-shaped nose raised from said top wall, a pin hole through said top wall in communication with said sliding slot, and a blind hole on said top wall, said nose having one end adjacent to the pin hole in said top wall, an opposite end spaced from said top wall by a gap, a first through hole through said nose in alignment with said gap and said blind hole, and a second through hole intersecting said first through hole;

a spring mounted inside said blind hole;

a movable block inserted into said blind hole and supported on said spring, having a beveled front and disposed in said gap;

a spring locating plate mounted in between said slide body and said nose, having a first end inserted into said second through hole, a transverse slot at said first end, a second end inserted into said pin hole, and a pair of projections at said second end for engagement with the interlocking tabs of the zipper; and

a stop plate mounted inside said first through hole and inserted through the transverse slot of said spring locating plate, having a downwardly backward projecting strip stopped against

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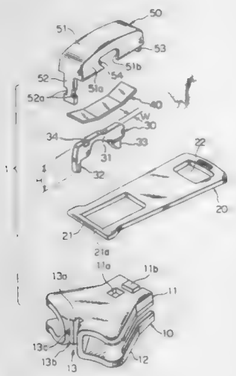
said spring locating plate to limit backward movement of said stop plate relative to said spring locating plate.

5,625,928

AUTOMATIC LOCK SLIDER FOR SLIDE FASTENER

Yasuharu Terada, and Tsunetaka Aoki, both of Toyama, Japan, assignors to YKK Corporation, Tokyo, Japan

Filed Apr. 6, 1995, Ser. No. 418,000
Claims priority, application Japan, May 26, 1994, 6-112414
Int. Cl.[6] A44B *19/30*
U.S. Cl. 24—424 **10 Claims**



1. An automatic lock slider for a slide fastener, comprising:
a slider body composed of upper and lower wings joined together by a connector, said upper wing having an aperture;
a pull tab;
a generally C-shape locking pawl mounted on said slider body astride of a part of said pull tab;
a leaf spring resiliently pressing said pawl against said upper wing; and
a yoke accommodating said pawl and said leaf spring and pivotally supporting said pull tab;
said slider body being formed by pressing in such a manner that said upper wing has a smooth surface with no burrs due to the pressing, said pawl being in the form of a narrow-width rigid strip, said upper wing being smooth and flat from said aperture to a front edge thereof, said pawl having an attachment leg portion and claw portion, said attachment leg portion captured between said yoke and the front edge of said upper wing, said claw portion loosely protruding into said aperture.

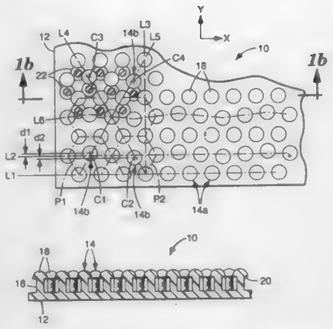
5,625,929

INTERENGAGING FASTENER MEMBER

Jiro Hattori, Atsugi; Shinji Torigoe, Sagamihara; Norihito Shibahara, Hachioji, and Osamu Sawajiri, Sagamihara, all of Japan, assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Aug. 4, 1994, Ser. No. 285,860
Claims priority, application Japan, Aug. 5, 1993, 5-194668
Int. Cl.[6] A44B *18/00*
U.S. Cl. 24—452 **5 Claims**

1. An interengaging fastener member comprising a base and a plurality of headed stems arranged on the base, each of the headed stems including a stem projecting from the base, and a head connected to a distal end of the stem, the arrangement of headed stems comprising:
a first set of headed stems arranged in a predetermined spaced relationship, adjacent headed stems in the first set being separated by a first distance; a plurality of headed stems from the first set defining at least two adjacent polygonal patterns; and
a second set of headed stems not in the first set of headed stems, headed stems in the second set being separated from adjacent headed stems in the first set by a distance not equal to the first distance, at least one of the headed stems in the second set located within each of the polygonal patterns.

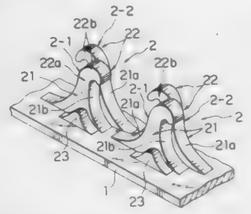


5,625,930

MOLDED SURFACE FASTENER

Toshiaki Takizawa, and Ryuichi Murasaki, both of Toyama-ken, Japan, assignors to YKK Corporation, Tokyo, Japan

Filed Aug. 25, 1995, Ser. No. 519,400
Claims priority, application Japan, Aug. 26, 1994, 6-202260
Int. Cl.[6] A44B *18/00*
U.S. Cl. 24—452 **9 Claims**



1. A molded surface fastener comprising:
(a) a substrate sheet; and
(b) a multiplicity of engaging elements molded in rows on one surface of said substrate sheet,
(c) each of said engaging elements having a pair of stems standing from said one surface of said substrate sheet, molded integrally from said substrate sheet upwardly along at least a portion of a height of said stems, and a pair of hooks extending in opposite directions from distal ends of said stems, said pair of hooks being formed in a pair of parallel planes perpendicular to the general plane of said substrate sheet on opposite sides of the central line of said pair of stems.

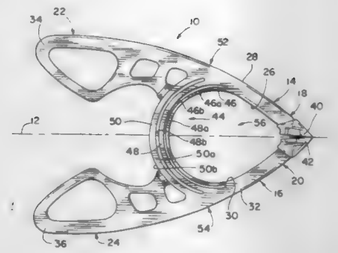
5,625,931

RESILIENT CLAMP

Steven C. Visser, 271 E. Sunset La., West Lafayette, Ind. 47906, and Kyle M. Bennett, 42 Rock Island St., Gouverneur, N.Y. 13642

Filed Aug. 16, 1995, Ser. No. 515,565
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—557 **25 Claims**

1. A resilient clamp, comprising:



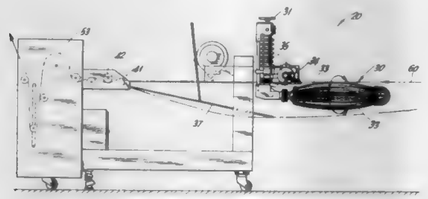
a pair of oppositely facing elongated members, each member having a working end and an opposed force applying end;
a plurality of spaced apart bands resiliently joining the members in a region of the members intermediate the working ends and the force applying ends, wherein the bands are generally arcuately-shaped about a point lying intermediate the working ends and the region, the plurality of spaced apart bands including an outermost band having oppositely facing and spaced apart inner and outer surfaces; and
a pair of braces connected to the members and extending inwardly therefrom by a predetermined distance such that the braces engage the outer surface of the outermost band during convergence of the force applying ends.

5,625,932

APPARATUS FOR OPENING A TUBE OF KNITTED FABRIC

Frank Catallo, 84 Wheatley Rd., Old Westbury, N.Y. 11568

Filed Dec. 6, 1994, Ser. No. 349,800
Int. Cl.[6] D06C *5/00*
U.S. Cl. 26—82 **8 Claims**



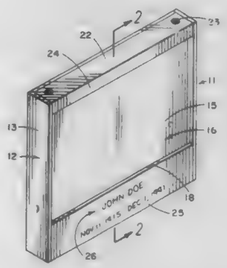
1. An apparatus for opening a tube of knit fabric comprising
a) a slitter means for opening the knit tube;
b) a conveying unit for said apparatus for moving the knit tube along a horizontal axis;
c) a guide means on the fabric;
d) sensing means associated with the slitter means to follow the guide means on the fabric so that the slitter means operates to cut the knit tube of fabric so that same is opened and laid flat;
e) a conveyor device on the apparatus for moving the knit tube of fabric on a horizontal axis;
f) means for opening the knit tube of fabric on said apparatus including an expandable member which operates to open the tubular knit fabric without appreciably tensioning and elongating the tubular knit fabric and prior to slitting same;
g) said expandable member comprising a plurality of supports about an axially disposed member and said sensing means and slitter being part of said expandable member;
h) means for said apparatus including a member for opening the fabric so that it is essentially free of wrinkles; and
i) means for said apparatus including a device for maintaining the opened fabric in a flat state.

5,625,933

STORAGE CONTAINER AND DISPLAY FOR CREMATED REMAINS

Cheryl G. Neuberger, P.O. Box 7064, Vero Beach, Fla. 32961, and Lindsay C. McClenny, 272 Easy St., Ft. Pierce, Fla. 34982

Continuation-in-part of Ser. No. 42,592, Aug. 14, 1995, Pat. No. Des. 374,963. This application Jan. 23, 1996, Ser. No. 590,167
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—1 **14 Claims**



1. A storage container for cremated remains comprising:
a container having a plurality of walls for receiving cremated remains therein through an opening in one side thereof;
a panel insert area formed in said container for bolding a decorative panel therein, said panel insert area having a support flange on at least one side thereof;
a removable decorative panel having a decorative design thereon and having a plurality of edges and being positioned in said panel insert area for displaying said decorative design thereon;
a top removably attached over said container opening, said removably top having fasteners for fastening said top to said container and said removably top having a elongated lip flange formed on one side thereof and extending over one side of said front panel insert and over one edge of said decorative panel in said panel insert area to thereby hold said decorative panel to said container whereby a storage container for human remains can have a predetermined decorative front thereon.

5,625,934

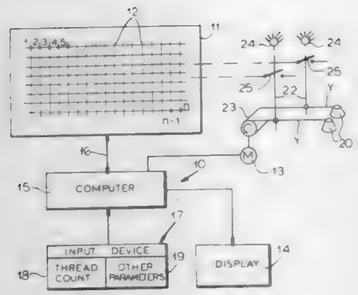
REELING METHOD WITH SCANNING OF MATRIX OF SENSORS

Hubert Kremer, Grefrath, Germany, assignor to Sucker-Muller-Hacoba GmbH & Co., Monchen-Gladbach, Germany

Filed Feb. 22, 1996, Ser. No. 605,390
Claims priority, application Germany, Feb. 23, 1995, 19506205.1
Int. Cl.[6] B65H *63/00;* **D02H** *13/08*
U.S. Cl. 28—187 **11 Claims**

1. A method of operating a reeling machine wherein a multiplicity of yarns are pulled from respective supplies and wound up on a beam, the method comprising the steps of:
providing each yarn with a sensor which produces an electrical sensor output whose state indicates if the respective yarn is broken or not present;
periodically electrically scanning each sensor and reading the state of its output;
automatically stopping the reeling machine when one of the scanned outputs corresponds to a broken or not present condition of the respective yarn; and

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generating a yarn-identifying output indicating exactly which yarn is broken or not present.

5,625,935

METHOD OF MANUFACTURING A MULTILAYER ELECTRONIC COMPONENT

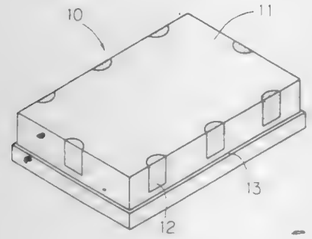
Kenji Kubota; Norio Sakai, and Shoichi Kawabata, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 96,719, Jul. 23, 1993, abandoned. This application Apr. 13, 1994, Ser. No. 227,022

Claims priority, application Japan, Jul. 27, 1992, 4-199795

Int. Cl.° H01R *43/00*

U.S. Cl. 29—25.42 **7 Claims**



1. A method of manufacturing a plurality of multilayer electronic components, comprising the steps of:

preparing a mother laminate, adapted to be cut along prescribed cutting lines for obtaining said plurality of multilayer electronic components;

said mother laminate being formed by the steps of stacking a plurality of mother insulating sheets with internal circuit elements interposed between said mother insulating sheets;

said internal circuit elements providing respective said multilayer electronic components by said internal circuit elements being distributed in respective regions of said mother laminate to be parted by said prescribed cutting lines; and

forming via holes in said mother laminate, and providing said holes with conductive materials electrically connected with said internal circuit elements, in positions in said mother laminate so as to be exposed at cut surfaces to be formed by cutting along said prescribed cutting lines; and

cutting partially but not completely through said mother laminate along said prescribed cutting lines so as to expose said conductive materials at said cut surfaces and thereby form said plurality of multilayer electronic components, which are electrically independent of each other while still being mechanically integrated with each other.

5,625,936

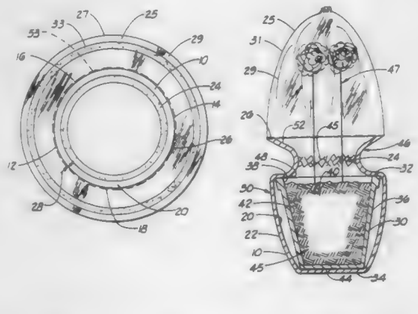
METHOD OF COVERING FOR FLOWER POT AND FLORAL GROUPING

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 37,067, Mar. 25, 1993, Pat. No. 5,542,169, which is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, Ser. No. 1,001, Jan. 6, 1993, Pat. No. 5,307,606, Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, and Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned, said Ser. No. 968,798is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 468,112

Int. Cl.° B21D *35/00*

U.S. Cl. 29—469.5 **14 Claims**



1. A method for providing a decorative covering and a protective covering comprising:

providing a sheet of material having an upper surface, a lower surface and an outer peripheral edge, a sheet extension being connected to the sheet of material and the sheet extension extending a distance outwardly from the sheet of material and the sheet of material having detaching means for detaching the sheet extension from the sheet of material;

providing a flower pot having an upper end, a lower end, an outer peripheral surface and an opening extending through the upper end of the flower pot providing access to a retaining space with the flower pot having an inner peripheral surface encompassing a substantial portion of the retaining space and the flower pot having a bottom formed near the lower end of the flower pot, the flower pot having a floral grouping disposed in the retaining space and extending a distance upwardly beyond the upper end of the flower pot;

forming the sheet of material about the flower pot to a position wherein the sheet of material extends about a substantial portion of the outer peripheral surface of the flower pot to provide the decorative covering and forming the sheet extension about the floral grouping to a position wherein the sheet extension covers a substantial portion of the floral grouping to provide the protective covering; and

placing a bonding means about a portion of the sheet of material extending above the upper end of the flower pot in a position below the detaching means with the bonding means engaging the portion of the sheet of material extending above the flower pot; forming a crimped portion in the portion of the sheet of material having the bonding means disposed thereon with the crimped portion cooperating to hold the sheet of material in the form of the decorative covering extending about the flower pot with the sheet extension extending about the floral grouping.

5,625,937

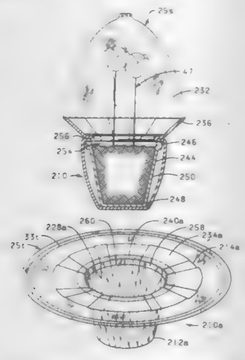
METHOD OF COVERING FOR FLOWER POT AND FLORAL GROUPING

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 37,067, Mar. 25, 1993, Pat. No. 5,542,169, and a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, Ser. No. 1,001, Jan. 6, 1993, Pat. No. 5,307,606, Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, and Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned, said Ser. No. 968,798is a continuation of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 468,502

Int. Cl.° B21D *35/00;* **B65B** *11/00*

U.S. Cl. 29—469.5 **15 Claims**



1. A method for providing a decorative covering and a protective covering comprising:

providing a base having an upper end, a lower end, an outer peripheral surface and a pot opening formed through the upper end of the base providing access to a pot receiving space, the pot receiving space forming an inner peripheral surface in the base, a bonding material being disposed on the base adjacent the upper end of the base, a sheet extension extending a distance outwardly from the upper end of the base;

providing a flower pot having an upper end, a lower end and an outer peripheral surface with a floral grouping being disposed in the flower pot;

disposing the flower pot in the pot receiving space of the base;

forming a crimped portion in the base by crimping together portions of the base adjacent the upper end of the base with the bonding material thereon, the crimped portion cooperating to hold the base on the flower pot for providing the decorative cover; and

forming the sheet extension about the floral grouping to provide the protective covering.

5,625,938

STATOR MANUFACTURING METHOD

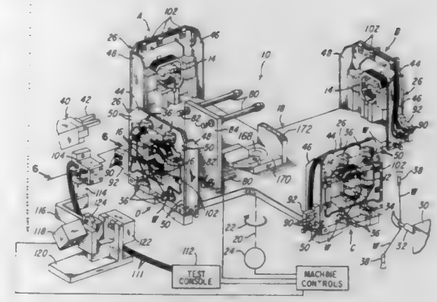
John M. Beakes, Fairborn, and Lawrence E. Newman, Tipp City, both of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Division of Ser. No. 219,847, Mar. 30, 1994, Pat. No. 5,495,659. This application Jun. 7, 1995, Ser. No. 473,084

Int. Cl.° H02K *15/085*

U.S. Cl. 29—596 **4 Claims**

1. A stator manufacturing method comprising the steps of:



supporting a stator core on a support member at a winding station;

winding coils of insulated magnet wire onto said stator core while inserting coil lead wires extending to and from said coils between a fixed jaw and a pivotal jaw of respective temporary wire clamps supported in fixed relation to said support member, said pivotal jaws being spring biased to grip said lead wires;

transferring said support member with said stator supported thereon along with said temporary wire clamps from said winding station into a coil lead terminating station;

attaching said lead wires to stator terminals or terminal supports at said coil lead terminating station; and

pivoting said pivotal clamp jaws away from said fixed clamp jaws by engaging said pivotal clamp jaws by air actuators located adjacent said coil lead terminating station.

5,625,939

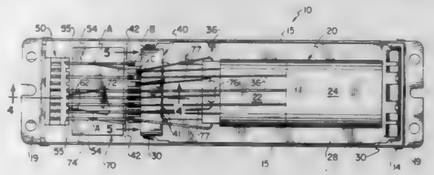
METHOD FOR ASSEMBLING AN INDUCTIVE DEVICE

Steve M. Carey, Brandon; James H. Ball, Magee, both of Mich., and Raymond H. VanWagener, Darien, Conn., assignors to MagneTek, Inc., Los Angeles, Calif.

Division of Ser. No. 226,714, Apr. 12, 1994, Pat. No. 5,510,762. This application Mar. 2, 1995, Ser. No. 397,574

Int. Cl.° H01F *7/06*

U.S. Cl. 29—605 **10 Claims**



1. A method of assembling an inductive device within a housing having walls comprising the steps of

providing in said housing at least one inductive coil having at least two magnet wire ends;

attaching a terminal board having a plurality of spaced lugs to said at least one inductive coil,

engaging each of said magnet wire ends with a corresponding terminal board lug,

providing a connector having a plurality of spaced terminals with connecting wires extending from at least some of said connector terminals toward said terminal board,

engaging one of said connecting wires with one of said terminal board lugs, a said connecting wire extending directly from between its connector terminal and the corresponding terminal board lug,

fixedly electrically connecting each said connecting wire and said magnet wire ends to the corresponding terminal board lugs that they engage, and

mounting said connector in a wall of said housing.

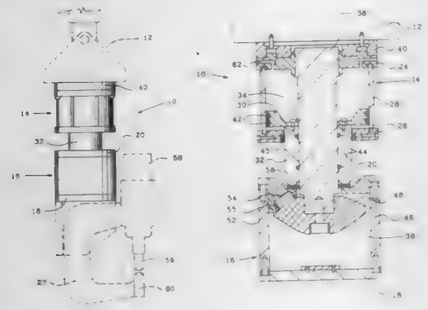
VOL 1198 ISS 1 MY 6 1997 UMI

5,625,940

ROBOT COMPLIANCE DEVICE

Thomas Butt, Breslau, Canada, and Jim Herring, Rochester Hill, Mich., assignors to Budd Canada Inc., Kitchener, Canada

Filed Feb. 28, 1995, Ser. No. 395,809
Int. Cl.[6] B63Q *16/00*
U.S. Cl. 29—709 18 Claims



1. A compliance device for a robot to isolate the robot from reaction loads induced by an operation of a tool used by the robot, and to return the tool to a predetermined home position after a tool operation, comprising:

a tool isolation assembly having a tool attachment end and a position locator end, the position locator end including an aperture;

a position locator means for cooperating with the position locator end to return the tool isolation assembly to the predetermined home position, the position locator means having a first and second ends and a portion intermediate the first and second ends which passes through the aperture, the second end permitting limited movement of the tool attachment end in any direction except past the second end, and the second end having a surface adjacent the aperture which includes position index means for locating the tool isolation assembly in the predetermined home position, the position index means being cooperative with complementary position index means located on an adjacent surface of the locator end of the tool isolation assembly; and

compliance control means for applying mechanical pressure on the locator end of the tool isolation assembly to force the complementary position index means to cooperatively return the tool isolation assembly to the predetermined home position after the tool operation, and for releasing mechanical pressure from the locator end of the tool isolation assembly to disengage the complementary index means and permit limited reaction movement of the tool isolation assembly during tool operations.

5,625,941

APPARATUS FOR CONVEYING AND MOUNTING ELECTRONIC PARTS

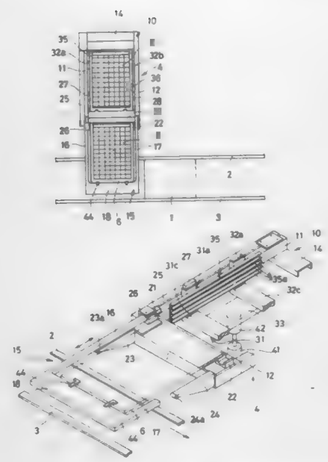
Kazushige Ozawa, Shizuoka, Japan, assignor to Tenryu Technics Co., Ltd., Shizuoka, Japan

Filed May 15, 1995, Ser. No. 441,404
Claims priority, application Japan, May 24, 1994, 6-110056
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—740 4 Claims

1. An apparatus for conveying and mounting electronic parts, wherein the electronic parts are conveyed to a printed board and mounted thereonto, said apparatus comprising:

a conveying means for conveying said printed board;

a pallet support means for slidably supporting opposite side portions of a plurality of pallets, said pallets having a multitude of electronic parts thereon respectively;



a pallet moving member for engaging any one of said pallets and for horizontally reciprocating said engaged pallet between a mounting position above said conveying means and a retracted position retracted from said mounting position; and

a pallet vertically moving means for vertically moving said pallet support means and for positioning any one of said pallets supported by said pallet support means at a position where said any one of pallets is engaged with said pallet moving member;

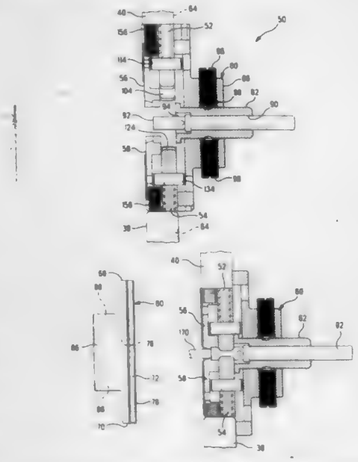
whereby the electronic parts placed on said pallet are delivered to said mounting position by said pallet moving member and mounted onto said printed board.

5,625,942

PRECISION CRIMPING TOOL

Daniel T. Casey, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 9, 1995, Ser. No. 488,922
Int. Cl.[6] H01R *43/042*
U.S. Cl. 29—751 19 Claims



1. A tool for crimping a terminal onto a conductor, said terminal having an axis, comprising:

(a) an actuator mechanism having first and second mutually opposed members, one of which is arranged to move in a first direction toward the other and in a second direction opposite thereto;

(b) a crimper coupled to and carried by said first member and an anvil coupled to and carried by said second member, said crimper and anvil arranged to matingly engage when said first and second members are moved in said first direction thereby crimping said terminal onto said conductor;

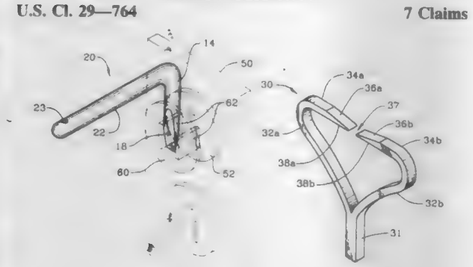
(c) a body movably coupled to both said crimper and said anvil, said body having an opening for receiving said terminal and holding it so that said axis is perpendicular to said first direction during said movement of said first and second members in said first direction, the body being free to move in the first direction and in the second direction so that said terminal is automatically self centered between said crimper and said anvil when engaged thereby.

5,625,943

ELECTRICAL OUTLET COVER REMOVER

Debra Lyonnais, 4900 W. Leitner Dr., Coral Springs, Fla. 33067

Division of Ser. No. 235,374, Apr. 29, 1994, Pat. No. 5,469,614, which is a continuation of Ser. No. 12,069, Aug. 20, 1993.
This application Aug. 30, 1995, Ser. No. 520,947
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—764 7 Claims



1. A tool for removing outlet safety covers from electrical outlets, said tool comprising:

a first substantially L-shaped member having a first tapered free end and a first fixed end;

a central hub having a longitudinal axis; and

a second substantially L-shaped member having a second tapered free end and a second fixed end, said first fixed end and said second fixed end being integrally joined at an end of said central hub such that said first tapered free end and said second tapered free end are in opposition, said first and second tapered free ends having a desired width dimension for enabling said tapered free wedging between a pair of prongs of an outlet safety cover, said first fixed end and said second fixed end defining a central axis, said central axis coinciding with said longitudinal axial of said central hub.

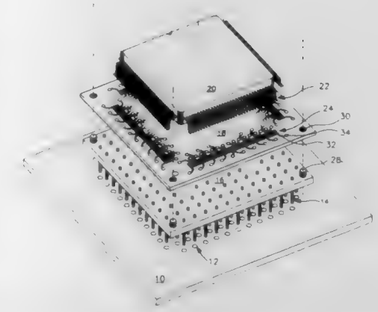
5,625,944

METHODS FOR INTERCONNECTING INTEGRATED CIRCUITS

William E. Werther, Wood Ranch, Calif., assignor to Interconnect Systems, Inc., Simi Valley, Calif.

Division of Ser. No. 998,476, Dec. 30, 1992, Pat. No. 5,479,319. This application Jun. 7, 1995, Ser. No. 480,650
Int. Cl.[6] H01K *3/10*
U.S. Cl. 29—843 18 Claims

1. A method of forming a multi-level electrical assembly for coupling at least one integrated circuit having a plurality of electrically conductive leads to receptacles of at least one attachment area of a circuit board, comprising:



(a) forming at least one interconnect board of an electrically insulating substrate having electrically conductive portions, including electrically conductive pads on a surface of the board, flat electrically conductive contacts on a bottom surface of the interconnect board, and electrically conductive pathways between selected pads and selected contacts;

(b) placing a plurality of electrically conductive pins through an electrically insulating pin carrier comprised of a plastic with thermal expansion characteristics similar to that of the substrate of the interconnect board;

(c) attaching ends of the pins to the contacts on the bottom surface of the interconnect board without causing any portion of the pins to pass through the flat bottom surface of the interconnect board, by using a solder material that has a reflow temperature at least as high as 185° C.; and

(d) soldering an integrated circuit to the electrically conductive pads of the interconnect board at a temperature less than the reflow temperature of the solder material specified in part (c).

5,625,945

METHOD FOR MANUFACTURING A CRANKSHAFT FOR A COMBUSTION ENGINE WITH SEVERAL CYLINDERS

Daniel Paro, Kvevlax, Finland, assignor to Wartsila Diesel International Ltd. OY, Helsinki, Finland

Filed Sep. 29, 1995, Ser. No. 535,984
Claims priority, application Finland, Oct. 6, 1994, 944675
Int. Cl.[6] B21K *1/08*
U.S. Cl. 29—888.08 7 Claims

1. A method for manufacturing a crankshaft for a multicylinder combustion engine, said method comprising:

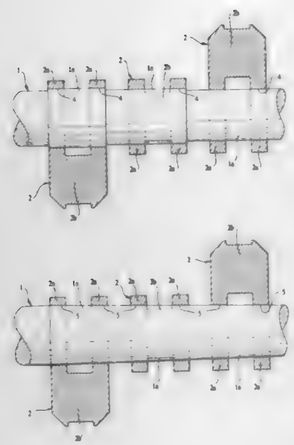
(a) providing a uniform shaft blank having two opposite ends and a central region, the shaft blank being of length corresponding to the entire length of the crankshaft and of diameter that decreases along the blank from the central region of the blank toward each end of the blank,

(b) providing a plurality of crank web units, one for each cylinder of the engine, each crank web unit comprising crank webs that define a passage and are transverse to the passage, and a crank pin connecting the crank webs,

(c) installing a first crank web unit on the shaft blank in the central region thereof, with the shaft blank extending through the passage defined by the crank webs, and fixing the first crank web unit in place on the shaft blank,

(d) installing the other crank web units on the shaft blank, consecutively from the central region of the shaft blank to each end of the shaft blank, with the shaft blank extending through the passage defined by the crank webs of each crank web unit, and fixing the other crank web units in place on the shaft blank, and

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(e) machining away portions of the shaft blank between the crank webs of each crank web unit.

5,625,946

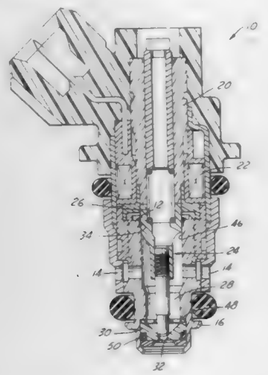
ARMATURE GUIDE FOR AN ELECTROMECHANICAL FUEL INJECTOR AND METHOD OF ASSEMBLY

Raymond Wildeson, Yorktown; L. Blair Weaver; David P. Wieczorek, both of Newport News, and Benjamin F. Brinn, Jr., Williamsburg, all of Va., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed May 19, 1995, Ser. No. 444,497

Int. Cl.[6] F02M *51/06*

U.S. Cl. 29—888.41 **7 Claims**



1. A method for aligning the upper and lower armature guides in an electromechanical fuel injector wherein the armature has a tubular shaped end adjacent the stator means and an elongated valve stem extending from the tubular shaped end, said method comprising the steps of:

forming at least two bores in a valve body member, one bore axially extending the length of the valve body member and having a first diameter, a second bore having a second diameter extending from one end of the valve body to a point intermediate the ends and forming a shoulder at the intersection of the two bores;

inserting a lower armature guide member in said second bore, said lower guide member having an outer diameter smaller than the diameter of said second bore, the lower guide member having an axially concentric diameter forming a sliding fit with the valve stem;

inserting a valve seat member having a valve seat axially concentric with an axially extending through hole, a sealing means and an orifice member against the lower guide member forcing the lower guide member against the shoulder;

positioning an upper armature guide member on the end of the valve body member opposite the lower guide armature member, the upper guide member having an axially concentric diameter forming a sliding fit with the tubular shaped end of the armature;

axially aligning the concentric diameters of the lower and upper guide members with an aligning tool so that the armature reciprocally moves along the axis of the valve body member and the valve stem is centered on the valve seat member and closes the through hole;

securing the valve seat member, lower guide member, orifice member and orifice back up member to the valve body;

securing the upper guide member to the valve body member; and then

removing the aligning tool.

5,625,947

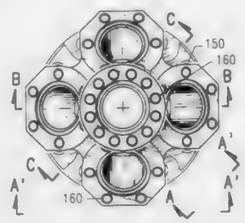
METHOD FOR FORMING A VACUUM PORT MANIFOLD

Charles K. Crawford, Wilton, N.H., assignor to Kimball Physics, Inc., Wilton, N.H.

Filed Mar. 8, 1995, Ser. No. 400,357

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—890.14 **7 Claims**



1. A method for forming a vacuum port manifold comprising a metal body defining a hollow, and having a plurality of spaced ports each having a planar sealing surface communicating with one another via said hollow, which method comprises providing a blank, machining the surface of said blank to form a compound curved surface at least in part, machining said compound curved surface across selected planes to form planar surfaces, boring into said planar surfaces to form said hollow, and machining said planar surfaces to form said planar sealing surfaces.

5,625,948

METHOD FOR PRODUCING A PIPE AND APPARATUS FOR THE SAME

Yoshitaka Kuroda, Anjo; Makoto Ito, Kariya; Nobuyuki Morikawa, Toyoake; Ryoiti Izumi, Okazaki, and Kenji Ogura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 12, 1996, Ser. No. 631,211

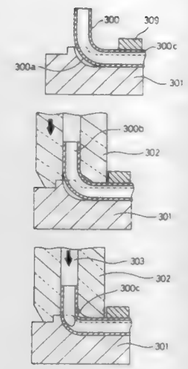
Claims priority, application Japan, Apr. 14, 1995, 7-089277; Sep. 20, 1995, 7-241808; Feb. 20, 1996, 8-032188

Int. Cl.[6] B21D *7/06*

U.S. Cl. 29—890.149 **23 Claims**

1. A method for producing a pipe comprising steps of:

a first process for bending a pipe to a predetermined radius of curvature to form a R elbow portion thereon; and



a second process for bending said R portion with a smaller radius of curvature by pressing a pipe-end portion of said pipe in an axial direction thereof while fixedly holding side walls, which are positioned substantially perpendicularly to a plane in the direction where said pipe is bent, of said pipe to form a small R elbow portion.

5,625,949

METHOD OF SECURING KNOBS ON LEVERS

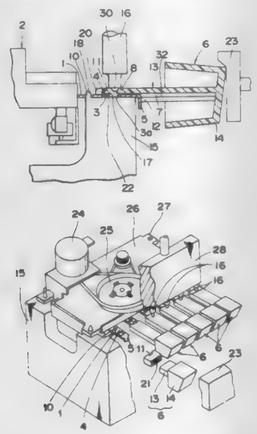
Kiyonori Ishida; Tomotaka Orita, both of Hirakata; Toshiyuki Hanada, Yao; Yasuyuki Sakamoto, Daito; Kazunori Shimoyama, Ikoma; Masanori Mizutani, Hirakata; Fumio Orito, and Shigeru Ogaya, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu; Katani Sangyo Co., Ltd., Ishikawa, and Seidensha Electronics Co., Ltd., Tokyo, all of Japan

Filed Jan. 25, 1995, Ser. No. 378,442

Claims priority, application Japan, Jan. 26, 1994, 6-007051

Int. Cl.[6] B21D *53/38*

U.S. Cl. 29—896.5 **22 Claims**



1. A method of securing an operating button, made of thermoplastic resin, to an operating lever in the form of an elongated metal plate, said operating button including a mounting tongue of a generally tubular configuration having a hollow defined therein, said method comprising the steps of:

forming an anchor perforation and a stopper pawl in said operating lever;

temporarily mounting the operating button on the operating lever with said operating lever slid into the hollow of the mounting tongue until an abutment defined in the mounting tongue and positioned within the hollow is brought into engagement with the stopper pawl;

while the operating button is thus temporarily mounted on the operating lever, placing the operating lever on a support bench with one of opposite surfaces of said operating lever held in contact with the support bench; and

applying a pressure to an area of the mounting tongue which is substantially aligned with the anchor perforation by means of a presser to thereby form an anchor peg protruding into the anchor perforation in the operating lever.

5,625,950

SHAVING APPARATUS

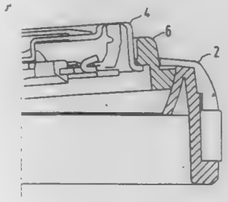
Olivier Sterk; Jan De Boer, and Martinus M. Rijken, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1995, Ser. No. 455,618

Claims priority, application European Pat. Off., Jul. 19, 1994, 94202113

Int. Cl.[6] B26B *19/06;19/14*

U.S. Cl. 30—43.6 **7 Claims**



1. A shaving apparatus having a housing, provided with a holder in which at least one cutting unit is mounted, which cutting unit comprises an external cutting member and an internal cutting member which is rotatably drivable relative to said external cutting member, and provided with a skin supporting rim surrounding the external cutting member, and means for effecting pivotable movement of said skin supporting rim, which external cutting member has at least one hair-entry aperture and is mounted so as to be movable relative to the holder, said internal cutting member being in resilient engagement with the external cutting member, wherein the skin supporting rim is pivotable both relative to its associated external cutting member and relative to the holder.

5,625,951

COMBINATION HAND TOOL FOR CUTTING FLEXIBLE DUCT AND THE LIKE

Michael R. Hamlin, Gig Harbor, Wash., assignor to Flexible Technologies, Inc., Abbeville, S.C.

Filed Dec. 4, 1995, Ser. No. 567,117

Int. Cl.[6] B26B *13/24*

U.S. Cl. 30—146 **19 Claims**

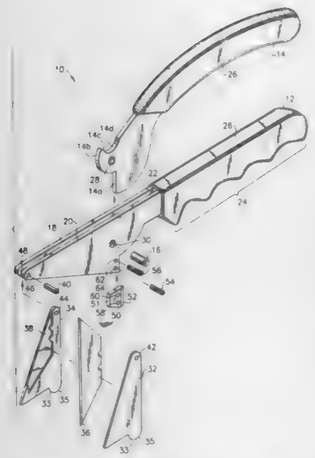
1. A combination hand tool comprising:

(a) first and second pivotably-attached members, each having a grip portion, said grip portions forming a hand grip when said first and second pivotably-attached members are rotated to bring said grip portions into proximity;

(b) blade-holding means pivotably attached to said first member and releasably retained by engagement with said second member, and operative to enable quick replacement of a utility knife blade retained therein; and

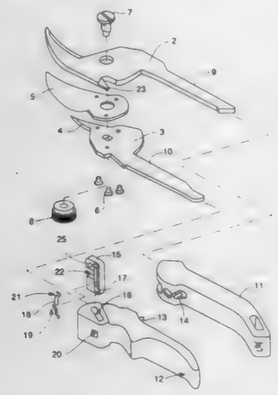
(c) cutting means comprising (i) a cutting tool having a cutting edge removably mounted on said first member and (ii) an

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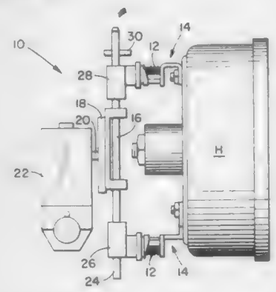
opposed cutting surface on said second member, said cutting edge and said opposed cutting surface being movable toward and away from one another by relative rotation of said first and second members, thereby enabling the user to generate relatively high cutting force.

5,625,952
CUTTING TOOLS
Raymond D. Thomas, 8 Darryl St., Bulleen Victoria 3105, Australia
PCT No. PCT/AU93/00578, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/10829, PCT Pub. Date May 26, 1994
PCT Filed Nov. 9, 1993, Ser. No. 433,450
Claims priority, application Australia, Nov. 9, 1992, PL 5726
Int. Cl.[6] B26B 13/00
U.S. Cl. 30—262 16 Claims



1. A cutting tool having a pair of handles operable to move at least a first cutting blade relative to a second cutting blade or anvil and including a locking mechanism, wherein said locking mechanism includes a locking block transversely located through or on a handle of the first cutting blade, said locking block movable between a locked and an unlocked position in a direction transverse to the plane of rotation of the first cutting blade, said locking block being recessed to receive a shaped spring adapted to restrain the locking block in either the locked or unlocked position, wherein said locking block is movable relative to the spring, said locking block being apertured to permit part of the second cutting blade to pass through said aperture when the locking block is in the unlocked position.

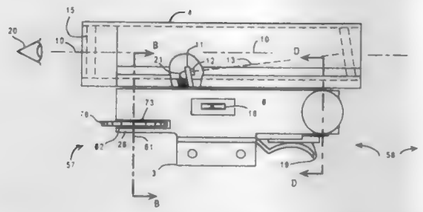
5,625,953
CLAMPING DEVICE FOR VEHICLE WHEEL ALIGNMENT EQUIPMENT
Donald A. Healy, 457 Highway 286 East, and James L. Dale, Jr., 9 Ridgewood, both of Conway, Ark. 72032
Filed Dec. 2, 1994, Ser. No. 348,708
Int. Cl.[6] G01B 5/255;11/275
U.S. Cl. 33—203.18 2 Claims



1. A device for removably attaching an alignment head to a hub of a vehicle having a plurality of bolts, the device comprising: a frame member;
a head carrier member connected to the frame member;
a shaft connected transverse to the head carrier member, the alignment head being mountable on the shaft;
a first bracket connected to the frame member, the first bracket including at least one socket;
a second bracket movably connected to the frame member, the second bracket including at least one socket;
a first bolt engaging member associated with the first bracket, the first bolt engaging member including a clamp, at least one plug connected to the clamp and receivable in a corresponding socket of the first bracket, and a groove formed in the clamp for engaging at least a first bolt of the hub;
a second bolt engaging member associated with the second bracket, the second bolt engaging member including a clamp, at least one plug connected to the clamp and receivable in a corresponding socket of the second bracket, and a groove formed in the clamp for engaging at least a second bolt of the hub;
wherein the first and second bolt engaging members are removably connectable with the first and second brackets and the grooves of the first and second bolt engaging members can be positioned to engage the first and second bolts to secure the frame to the hub.

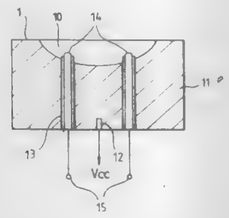
5,625,954
REFLEX LUMINOUS DOT SIGHTING INSTRUMENT WITH ELEVATION AND WINDAGE CONTROLS
Alfred C. DePaoli, 1 Wyman St., Woburn, Mass. 01801
Continuation of Ser. No. 158,522, Nov. 29, 1993, abandoned. This application Sep. 25, 1995, Ser. No. 533,587
Int. Cl.[6] F41G 1/32
U.S. Cl. 33—241 8 Claims

1. A sighting instrument for sighting a rifle on a target, including a sighting tube having a front end and a rear end and defining an optical axis, an aperture at said front end of said tube for admitting light from a target view along said optical axis, whereby said target



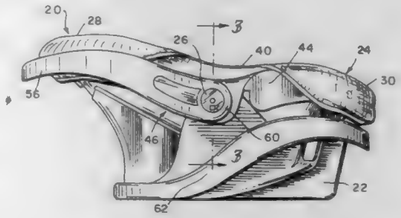
view is visible by looking into said rear end of said tube along said optical axis comprising,
(a) a base attached to said rifle,
(b) elevation and windage adjustment controls on said base that connect to said tube and rotate said tube with respect to said rifle about axes transverse to the rifle, one horizontal at the front of said tube for elevation adjustment and the other vertical at the rear of said tube for windage adjustment,
(c) said elevation adjustment control being at the rear of said tube and said windage adjustment control being at the front of said tube,
(d) said elevation adjustment control includes:
(e) an elevation adjustment control screw and thumb wheel rotatably mounted to said base and
(f) an elevation adjustment control screw follower flexibly connected to said tube and driven by said elevation adjustment control screw,
(g) whereby, rotation of said elevation adjustment control thumb wheel in one direction pushes said rear end of said tube away from said base and rotation of said thumb wheel in the opposite direction pulls said rear end of said tube toward said base and
the motion path of said rear end of said tube when so pushed or pulled is arcuate.

5,625,955
TILT SENSOR
Bin Han, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Ulsan, Rep. of Korea
Filed May 24, 1995, Ser. No. 449,002
Claims priority, application Rep. of Korea, Jun. 17, 1994, 94-13710
Int. Cl.[6] G01C 9/06
U.S. Cl. 33—366 18 Claims



1. A tilt sensor, comprising:
a container of a predetermined dimension;
a conductive liquid provided in said container, said conductive liquid including a nonconductive bubble on the surface thereof;
an electrode mounted on an inner surface of and projecting to an interior of said container for providing an electric potential to said conductive liquid in said container;
a plurality of terminals mounted on the inner surface of said container and having respective exposed portions spaced from said electrode, each of said plurality of terminals whose exposed portion contacts said conductive liquid outputting a current due to the electric potential provided from said electrode to said conductive liquid, thereby outputting a tilt sensing signal; and
an insulating material coating each of said plurality of terminals except the respective exposed portions such that only the exposed portions may contact said conductive liquid.

5,625,956
LEVEL INDICATOR FOR CHILD SEAT
Richard E. Cone, II, Athens, Ohio, and Alvin L. Fowler, Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.
Filed Nov. 4, 1994, Ser. No. 334,721
Int. Cl.[6] G01C 9/00
U.S. Cl. 33—370 41 Claims

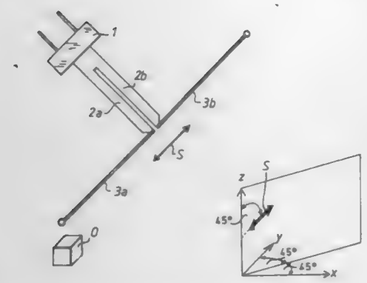


1. A level indicator for a child seat equipped with a rotatable carrying handle, comprising:
a child seat having a pivotal handle rotatably attached thereto,
a housing in said pivotal handle having a wall defining an interior region,
an indicator member having an indicator surface, the indicator member being movably received in the interior region, and
the wall being formed to include a transparent window defined by an edge, the edge being arranged so that the indicator surface is visible through the window when the level indicator is level, the indicator member moving entirely away from the window edge when the level indicator is not level so that the indicator surface is not visible through the window.

5,625,957
COORDINATE MEASURING APPARATUS HAVING A PROBE IN THE FORM OF A SOLID-STATE OSCILLATOR
Karl H. Breyer, Heidenheim; Helmut Heier, and Gerhard Meyer, both of Aalen, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany
PCT No. PCT/EP94/02788, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO93/08093, PCT Pub. Date Mar. 23, 1995
PCT Filed Aug. 23, 1994, Ser. No. 436,387
Claims priority, application Germany, Sep. 13, 1993, 43 31 069.9
Int. Cl.[6] G01B 7/004
U.S. Cl. 33—503 6 Claims

1. A coordinate measuring apparatus defining three measuring directions (x, y, z), the apparatus comprising:
a solid-state oscillator having a direction (S) of vibration;
a thin rod defining a probe element and being mounted on said solid-state oscillator; and,
said solid-state oscillator being mounted relative to said three measuring directions so as to cause said direction (S) of vibration to be at an angle to all three of said measuring

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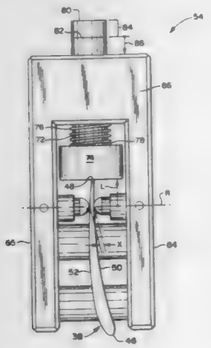
directions, so that said direction (S) of vibration is inclined to all three of said measuring directions.

5,625,958

METHOD AND A GAUGE FOR MEASURING THE SERVICE LIFE REMAINING IN A BLADE

Jonathan M. DeCoursey, East Hampton; Roland E. Morrissette, South Windsor, and Fritz K. Smakula, Lebanon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 6, 1995, Ser. No. 524,192
Int. Cl.[6] G01B *5/00*
U.S. Cl. 33—555 **11 Claims**



1. A method of measuring the service life remaining in a blade of a gas turbine engine, the blade having a root region, an opposed tip, a midspan region disposed therebetween, the midspan region includes a leading edge extending from the root region to the tip, and a trailing edge extending from the root region to the tip and spaced from the leading edge, said method comprising the steps of:

a. locating a line along the blade a predetermined distance from the tip of the blade;

b. locating a point along the line where the point is characterized by the blade having a predetermined thickness;

c. measuring the distance from the point to the trailing edge of the blade; and

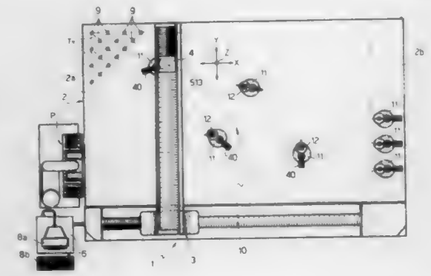
d. comparing the distance obtained in step (c) with a predetermined correlation between a given set of distances and the remaining blade service life, to determine the remaining blade service life.

5,625,959

RECONFIGURABLE SUPPORTING FIXTURE, PARTICULARLY FOR MEASURING MACHINES, AND RELATIVE CONFIGURATION METHOD

Maurizio Ercole, Turin, and Pasqualino Poggi, Moncalieri, both of Italy, assignors to Dea-Brown & Sharpe S.p.A., Turin, Italy

Filed Mar. 20, 1995, Ser. No. 408,142
Claims priority, application Italy, Mar. 22, 1994, TO94A0209
Int. Cl.[6] B23Q *16/00*
U.S. Cl. 33—568 **21 Claims**



1. A reconfigurable fixture for positioning and supporting parts on a machine, comprising:

a) a reference surface;

b) at least one reconfigurable supporting element positionable on said surface comprising

i) a first portion; and

ii) a second portion;

c) reference tool means including a reference tool cooperating with the second portion of the at least one supporting element for defining a three-dimensional position for the second portion with the reference tool and the at least one supporting element in a position of mutual engagement;

d) a moveable unit for moving said reference tool into any one of a plurality positions;

e) clamping means activated with the reference tool and the at least one supporting element in said position of mutual engagement for releasably clamping said first portion to said surface and said second portion to said first portion with the second portion in said three-dimensional position, the clamping means being releasable independent of a position of the reference tool with respect to said at least one supporting element.

5,625,960

UNIT FOR REMOVING RAINWATER FROM UMBRELLAS

Sanai Fujita, 107 Green Park Kotesashi, 12-1, 4-chome, Kotesashi-cho, Tokorozawa-shi, Saitama-ken, Japan

Filed Nov. 21, 1994, Ser. No. 342,703
Claims priority, application Japan, Jun. 21, 1994, 6-160723; Jun. 21, 1994, 6-160725; Jul. 11, 1994, 6-009370 U
Int. Cl.[6] F26B *9/00*
U.S. Cl. 34—80 **18 Claims**

1. A unit, for removing rainwater from umbrellas, comprising:

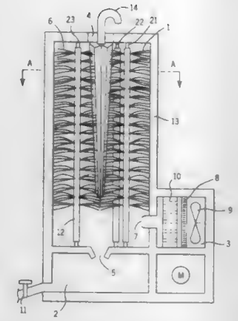
cylindrical umbrella insertion portion into which an Umbrella wet with rainwater is inserted, said umbrella insertion portion having a top, a bottom, and an internal wall;

an umbrella insertion port formed in the top of said umbrella insertion portion;

a first rainwater drain port in the bottom of said umbrella insertion portion;

multiple brushes provided on the internal wall of said umbrella insertion portion;

a rainwater collecting portion in which the rainwater from umbrellas is held and from which the held rainwater is discharged; and



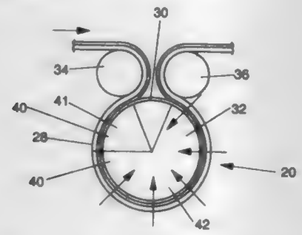
a fan compartment from which warm air is driven into said umbrella insertion portion.

5,625,961

MULTIPLE ZONE LIMITING ORIFICE DRYING OF CELLULOSIC FIBROUS STRUCTURES, APPARATUS THEREFOR, AND CELLULOSIC FIBROUS STRUCTURES PRODUCED THEREBY

Donald E. Ensign, Cincinnati; Michael G. Stelljes, Jr., West Chester, and Paul D. Trokhan, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 486,874, Jun. 7, 1995. This application Jun. 4, 1996, Ser. No. 658,045
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—117 **12 Claims**



1. A limiting orifice though-air-drying papermaking apparatus in combination with an absorbent embryonic web having moisture distributed therein, said apparatus comprising a limiting orifice for airflow through said embryonic web, wherein said apparatus further comprises a plurality of distinct zones, comprising, in order, at least a first zone and a second zone, said distinct zones having mutually different differential pressures relative to the atmospheric pressure, and having means to enable said embryonic web to have a residence time on said first zone of less than about 35 milliseconds.

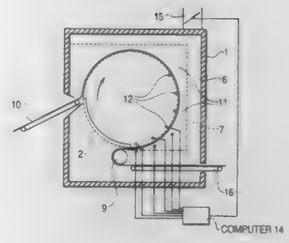
5,625,962

METHOD FOR MEASURING THE MOISTURE CONTENT OF A WEB OF GOODS ON A THROUGH-FLOW DRYER AND DEVICE FOR WORKING THE METHOD

Gerold Fleissner, Zug, Switzerland, assignor to Fleissner GmbH & Co., KG, Egelsbach, Germany

Filed Aug. 31, 1994, Ser. No. 298,282
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—446 **5 Claims**

1. A method for controlling the drying of an endless web of textile or paper material in a continuous through-flow dryer by regulating one or more drying parameters, which comprises passing heated and dried air transversely through the web to dry the web conveyed on a perforated surface, measuring temperature of the heated air, immediately before passing through the web and immediately after passing through the web, at several points over a length of a drying path on the perforated surface, and determining a temperature of the web indirectly and hence actual moisture content in the web at each of said several points by comparing air temperatures on both sides of the web at each of said several points along the drying path, and regulating at least one drying parameter in the dryer on the basis of the moisture content measured in this manner.

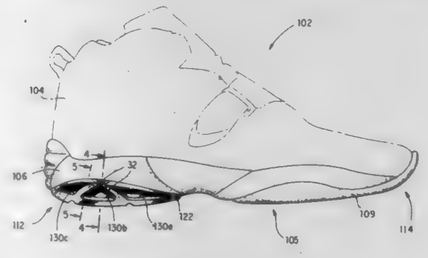


5,625,963

SOLE CONSTRUCTION FOR FOOTWEAR

Todd Miller, West Linn, Oreg.; Craig Feller, Randolph, Mass.; Daniel Wickemeyer; David Potter, both of Venice, Calif.; Erik Purdom, Battle Ground, Wash., and Tuan Le, Portland, Oreg., assignors to American Sporting Goods Corp., Irvine, Calif.

Filed Nov. 1, 1994, Ser. No. 332,041
The portion of the term of this patent subsequent to Jun. 7, 2015, has been disclaimed.
Int. Cl.[6] A43B *13/18;21/26*
U.S. Cl. 36—28 **49 Claims**



47. Footwear comprising:

a sole for being disposed on a wearer, said sole comprising,

a medial side,

a lateral side, and

a lower surface; and

at least one cavity disposed in said sole having first and second ends wherein said first end of said cavity is open on one of said medial and lateral sides and said second end of said cavity is open on said lower surface, the first and second ends of said cavity being in tapered communication with one another and extend transversely across the sole.

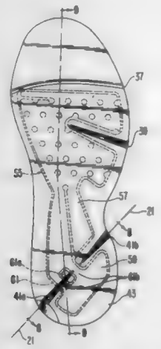
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5,625,964

ATHLETIC SHOE WITH REARFOOT STRIKE ZONE

Robert M. Lyden, Aloha; Gordon A. Valiant, Beaverton; Robert J. Lucas; Michael T. Donaghu, both of Portland, all of Oreg.; David M. Forland, Battle Ground, Wash.; Joel L. Passke; Thomas McGuirk, both of Portland, Oreg., and Lester Q. Lee, Gaston, Oreg., assignors to Nike, Inc., Beaver, Oreg.

Continuation-in-part of Ser. No. 38,950, Mar. 29, 1993, Pat. No. 5,425,184. This application Jun. 7, 1995, Ser. No. 481,697
The portion of the term of this patent subsequent to Mar. 29, 2013, has been disclaimed.
Int. Cl.[6] A43B *13/20*
U.S. Cl. 36—29 21 Claims



1. Athletic footwear comprising an upper and a sole attached to said upper;

said sole including a cushioning portion extending over a heel area of said sole, and a rearfoot strike zone located at a rear lateral corner of said heel area, said rearfoot strike zone being articulated in relation to the remaining heel area along a line of flexion delimiting said rearfoot strike zone;

said cushioning portion comprising differential cushioning means for reducing the compressive stiffness of the rearfoot strike zone relative to at least a medial side portion of the remaining heel area, said differential cushioning means including a first sealed resilient substantially gas-filled bladder chamber extending within said rearfoot strike zone and not inside said medial side portion, and a second resilient substantially gas-filled bladder chamber fluidically isolated from the first chamber and extending along at least a medial side of said remaining heel area and not inside said rearfoot strike zone, the compressive stiffness of said first chamber being decreased relative to said second chamber;

wherein, said line of flexion extends from a first end located along a rear medial side of the sole to a second end located along a lateral side of the sole, said second end being adjacent to or rearward of a nominal location of the junction of the calcaneus and cuboid bones of the foot, and said first end being located such that a line drawn from a nominal location of the weight bearing center of the heel to said first end forms a 10° to 50° angle with respect to a central longitudinal axis of the sole.

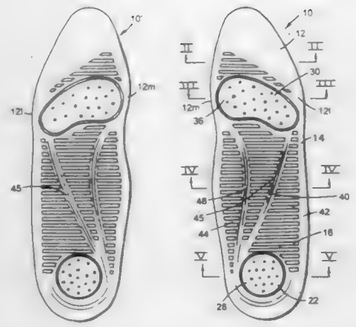
5,625,965

STAND EASY SHOE INSERT

Malcolm G. Blissett, Grand Haven, and Blanca A. Mercado, Grand Rapids, both of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Continuation-in-part of Ser. No. 143,915, Oct. 27, 1993, Pat. No. 5,448,839. This application Jun. 14, 1995, Ser. No. 490,194
Int. Cl.[6] A43B *13/38*; A61F *5/14*
U.S. Cl. 36—43 20 Claims

1. A shoe sole insert for prolonged standing, comprising:



a flexible, elongated shoe sole insert having a heel portion with an upper surface, a midfoot portion with an upper surface, and a forefoot portion with an upper surface;

said insert comprising an underlayer of polymeric foam-type material bonded to an upper layer of cloth, thermoformed into a configuration defined as follows:

said heel portion upper surface being slanted downwardly at a small acute angle from the medial side of said heel portion to the lateral side of said heel portion, and having a central, resilient, compressible, calcaneal pad which is substantially unslanted;

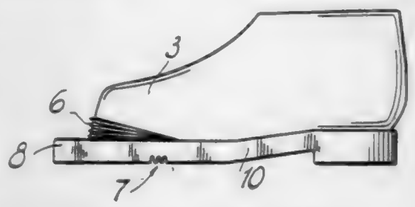
said forefoot portion upper surface being slanted downwardly at a small acute angle from the lateral side of said forefoot portion to the medial side of said forefoot portion to be slanted opposite that of said heel portion upper surface, and having a central, resilient, compressible metatarsal head pad which is substantially unslanted.

5,625,966

HIGHLY FLEXIBLE ITEM OF SPORTS FOOTWEAR

Riccardo Perotto, Volpago del Montello, and Giuliano Zavan, Treviso, both of Italy, assignors to Nordica S.P.A., Trevignano, Italy

Continuation of Ser. No. 341,619, Jan. 23, 1995, abandoned. This application Apr. 10, 1996, Ser. No. 629,908
Claims priority, application Italy, Mar. 18, 1993, MI93A0512
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—117.2 9 Claims



1. A highly flexible item of footwear comprising:

a sole member having a heel portion, a plantar arch portion adjoining said heel portion and a toe portion adjoining said plantar arch portion and connected thereto by a unidirectional articulation extending across an entire width of said sole member enabling displacement of said toe portion of the sole member upwardly out of coplanarity with said plantar arch portion about said unidirectional articulation;

an upper on said sole member having a toe portion with a bottom extending upwardly away from said plantar arch portion and defining an empty wedge-shaped gap with said toe portion of said sole member, said wedge-shaped gap varying in height from a maximum when said toe portion of said sole member is coplanar with said plantar arch portion to a minimum when said toe portion of said sole member is proximal to said bottom of said toe portion of said upper; and

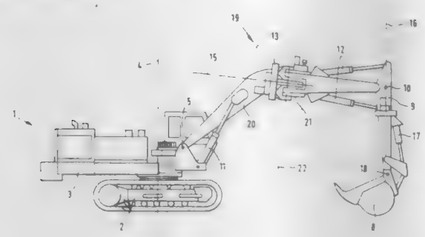
a bellows attached to said toe portions around a periphery of said wedge-shaped gap to seal said wedge-shaped gap from the exterior, said bellows contracting upon displacement of said toe portion of said sole member relative to said toe portion of said upper to vary said height from said maximum to said minimum, said toe portion of said sole member being flat and extending under said bellows beyond said toe portion of said upper and being substantially coplanar with said plantar arch portion upon reaching maximum of height of said wedge-shaped gap.

5,625,967

DEVICE FOR CONTROLLING AT LEAST ONE ATTACHMENT

Jürgen Kulle, Stolberger Atrasse 125, 5500 Nordhausen, Germany

PCT No. PCT/EP91/02136, § 371 Date Jul. 15, 1992, § 102(e) Date Jul. 15, 1992, PCT Pub. No. WO92/08850, PCT Pub. Date May 29, 1992
PCT Filed Nov. 13, 1991, Ser. No. 910,267
Claims priority, application Germany, Nov. 15, 1990, 40 36 466.6
Int. Cl.[6] E02F *3/32*
U.S. Cl. 37—443 50 Claims



1. A device for guiding at least one tool or auxiliary device, comprising a base part; at least one boom articulated with said base part in an articulation and having at least two members connected with one another by a connection and also having an end supporting the tool, the connection of said members with one another and the articulation of said boom with said base part having hinge points formed for swivelling movements in at least one plane, each of said at least two members being subdivided into two elements which are fastened to one another by pivot connections situated between said hinge points so that at least two said pivot connections are provided in the device, said pivot connections being formed so that said elements are swivellable relative to one another over more than 360°, said pivot connections having axes extending in a longitudinal direction of said elements.

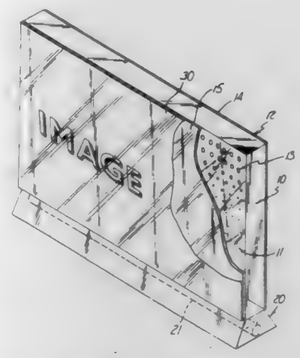
5,625,968

DISPLAY SYSTEM

John Ashall, Runaway Bay, Australia, assignor to Illumination Research Group, Inc., Greensboro, N.C.

Continuation of Ser. No. 30,416, Apr. 29, 1993, Pat. No. 5,390,436. This application Jan. 26, 1995, Ser. No. 378,790
Claims priority, application Australia, Sep. 20, 1990, PK2392
Int. Cl.[6] G09F *13/18*
U.S. Cl. 40—546 2 Claims

1. An edgelit luminaire comprising: a housing having an opening, a display panel having an upper edge and at least one surface carrying a layer having sections of differing transparency forming a graphic symbol, a source of illumination arranged in the housing and located substantially adjacent to the upper edge of said display panel, said display panel attached to the housing such that the panel extends from the opening in the housing and an array of dots on substantially the entire said one surface including said layer of differing transparency, said array of dots having a luminous quality affected by said source of illumination to spread light throughout the entire surface of said display panel thereby greatly enhancing illumination of said graphic symbol.

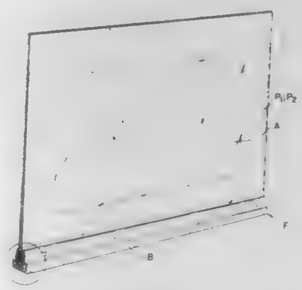


5,625,969

LOW VISIBILITY PLACARD DISPLAY STAND

Michael N. Vogler, 49 Miranda Court, Thornhill, Ontario, Canada

Filed Apr. 15, 1996, Ser. No. 632,078
Int. Cl.[6] G09F *15/00*
U.S. Cl. 40—611 17 Claims



1. A display frame for supporting in a generally vertical position display placards which comprises an elongated substantially rigid base having a bottom wall, opposite side walls upstanding from opposite lateral edges of said bottom wall, said side walls having substantially coterminous upper edges, and an interior partition wall upstanding from the bottom wall generally intermediate the opposite side walls to define with the side walls two upwardly opening channels, said side walls and said partition wall carrying mutually facing cooperating interior guide surfaces sloping from the vertical to impart to said channels an upwardly converging inclination at a significant angle from the vertical, and a cooperating pair of substantially stiffly resilient transparent normally flat plastic sheets which extend upwardly from said base generally perpendicularly to said bottom wall of said base in face-to-face planar contacting relation over a substantial portion of their common area and have their respective lower end margins engaged within the respective channels and maintained by the inclination of said channels in generally outwardly flexed relation out of the plane of said substantial portion of their common area whereby a display placard can be inserted between the upwardly extending portion of said sheets and resiliently gripped thereby.

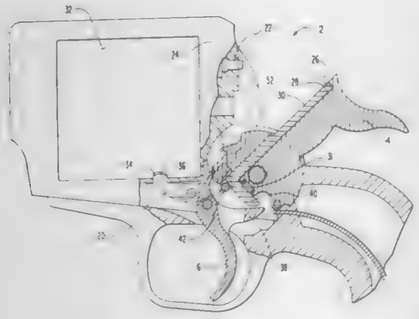
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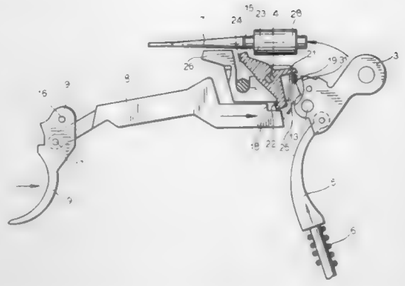
5,625,970

FIREARM SAFETY MECHANISM WITH IMPROVED TRIGGER PULL

Corey N. Pantuso, Freedom, and Donn L. Dunnigan, Thayne, both of Wyo., assignors to Freedom Arms, Inc., Freedom, Wyo.

Division of Ser. No. 496,629, Jun. 29, 1995. This application Oct. 8, 1996, Ser. No. 728,313
Int. Cl.[6] F41A *17/74*
U.S. Cl. 42—66 **1 Claim**





1. A safety mechanism for use with a firearm having a hammer, a cartridge receiving chamber in front of the hammer, a firing pin interposed between a face of the hammer and the cartridge receiving chamber so as to strike and fire a cartridge in the chamber upon actuation by a trigger, the safety mechanism comprising:

a) an elongated recess formed within the face of the hammer;

b) an elongated transfer bar disposed within said recess and slidably movable therein between an extended position and a retracted position, the transfer bar being interposed between the hammer and the firing pin in the extended position, and the transfer bar being juxtaposed to the firing pin in the retracted position thereby exposing a portion of the recess capable of receiving the firing pin therein, thereby preventing contact with the hammer;

c) means independent of the trigger for positioning the transfer bar into the extended position and the retracted position;

d) a trigger cam operated upon by the trigger, the trigger cam being capable of supporting the transfer bar to maintain the transfer bar in the extended position after the trigger has been actuated;

e) a cylinder locking means having a lug which is biased into a notch in the cylinder to prevent rotation of the cylinder within the receiver; and

f) a plunger housed within a recess in the hammer, the plunger capable of pivoting the cylinder locking means out of engagement with the notch in the cylinder to thereby allow rotation of the cylinder, the plunger also being capable of retracting within the recess to pass by the cylinder locking means as the hammer is rotated forward.

5,625,971

HANDGUN

Martin Tuma, Allmendstrasse 31 B, 4503 Solothurn, and Vaclav Brunclik, Lättenstrasse 106, 8142 Uitikon, both of Switzerland, assignors to Martin Tuma, and Vaclav Brunclik

Filed Oct. 31, 1995, Ser. No. 550,684
Int. Cl.[6] F41A *17/24*
U.S. Cl. 42—70.08 **5 Claims**

1. A handgun, having a frame, a firing pin which is moveable between a rest position and a firing position, a barrel mounted upon the frame, a slide for sliding reciprocating movement on the frame, a trigger pivotally mounted upon the frame by a trigger pin, a trigger rod member pivotally connected to the trigger by means of a pin and having a control surface, a spring loaded sear pivotally mounted upon the frame by means of a sear pin, a hammer pivotally mounted to the frame by means of a hammer pin, a hammer rod spring acting onto the hammer, which hammer includes a searing surface and a half-cocked notch, which sear includes a first tang for engaging the searing surface of the hammer and a control projection for engaging the control surface of the trigger rod member, which sear is totatable between a hammer locking position and a hammer release position, and having a pivotable decocking control device supported at the frame by means of a control device shaft member and having a control member adapted to cooperate with the sear and the hammer for a decocking of the gun,

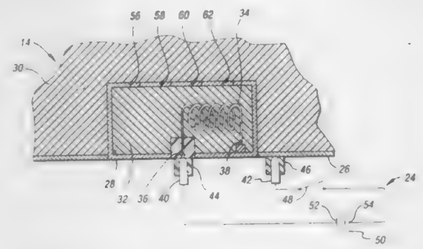
said sear comprising a second tang and said firing pin comprising an abutment surface, which second tang is adapted to be positioned upon a rotational movement of the sear in front of the abutment surface of the firing pin preventing its movement from its rest position into its firing position.

5,625,972

GUN WITH ELECTRICALLY FIRED CARTRIDGE

Albert I. King, 1000 Bretton La., Bloomfield Hills, Mich. 48304-2910, and Mark P. Libich, 8180 N. Canton Center Rd., Canton, Mich. 48187

Filed Aug. 31, 1995, Ser. No. 521,865
Int. Cl.[6] F41A *19/58;* **F42B** *5/08*
U.S. Cl. 42—84 **12 Claims**



1. A gun and cartridge assembly, comprising:

a gun body, including a barrel;

a removable cartridge received within the barrel, the cartridge including a chamber with an explosive and a primer cap with a heat sensitive primer therein ignitable for igniting said explosive, and an electrically resistant fuse wire having first and second ends and contained within the primer cap for igniting the primer, wherein the primer cap is in contact with the explosive and includes apertures formed therethrough to facilitate ignition of the explosive; and

an electric circuit in the gun body for providing electric current to the fuse wire, the circuit comprising:

a switch positionable for opening and closing the circuit, the switch being in electrical communication with one of said first and second ends of the fuse wire;

an electrical power source including first and second terminals, one of said terminals being in electrical communication with the switch; and

a first contact in electrical communication with the other of said terminals and further in electrical communication with the other of said first and second ends of the fuse wire;

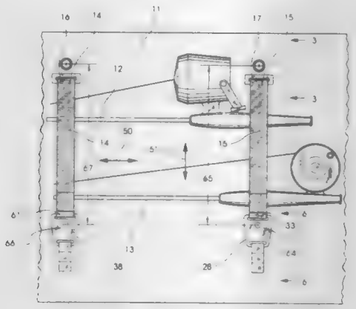
whereby electric power traveling through the fuse wire will ignite the heat sensitive primer when said switch is positioned in one of said opening and closing positions.

5,625,973

FISHING ROD HOLDER

James T. Anthony, Noblesville, Ind., assignor to Indiana Mills and Manufacturing, Inc., Westfield, Ind.

Filed Jun. 5, 1995, Ser. No. 462,950
Int. Cl.[6] A01K *97/10*
U.S. Cl. 43—21.2 **11 Claims**



1. A holder for mounting a fishing rod comprising:

a wall;

a first spool mounted to said wall and having a first web with a first proximal end mounted thereto and a first distal end extendable in a first direction outwardly from said first spool;

first spring means connected to said first spool operable to normally urge said first spool to rotate in one direction locating said first distal end in a retracted position but yieldable to allow said first spool to rotate in an opposite direction when said first distal end is pulled outwardly from said first spool, said first spool free to rotate at all times to move said first web in said one direction and said opposite direction;

a second spool mounted to said wall and having a second web with a second proximal end motored thereto and a second distal end extendable outwardly in a second direction from said second spool;

second spring means connected to said second spool operable to normally urge said second spool to rotate in said one direction locating said second distal end in a retracted position but yieldable to allow second spool to rotate in said opposite direction when said second distal end is pulled outwardly from said second spool, said second spool free to rotate at all times to move said second web in said one direction and said opposite direction;

a first handle mounted to said first distal end;

a second handle mounted to said second distal end;

first interlocking means having a first portion spaced apart a first space from said first spool and located on said wall and further having a second portion located on said first handle being releasably interlockable with said first portion, said first interlocking means being operable to releasably lock said first handle to said wall once said first web is pulled over a fishing rod located in said first space with said first portion locked to said second portion: and,

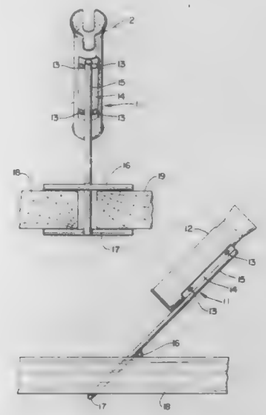
second interlocking means having a third portion spaced apart a second space from said second spool and located on said wall and further having a fourth portion located on said second handle being releasably interlockable with said third portion, said second interlocking means being operable to releasably lock said second handle to said wall once said second web is pulled over said fishing rod located in said second space with said third portion locked to said fourth portion.

5,625,974

PORTABLE, DOCK-MOUNTED FISHING POLE HOLDER

Dominic A. Demaio, 1969 Little Meadow Rd., Guilford, Conn. 06437

Filed Aug. 23, 1995, Ser. No. 518,432
Int. Cl.[6] A01K *97/10*
U.S. Cl. 43—21.2 **11 Claims**



1. A portable fishing pole holder for holding, on a dock comprising planks with spaces therebetween, a fishing pole having a tip end, from which fishing line extends into the water to be fished, and having a handle end, comprising:

a fishing pole holder shell having a distal end into which the handle end of a fishing pole may be inserted for support thereby and a proximal end opposite from said distal end;

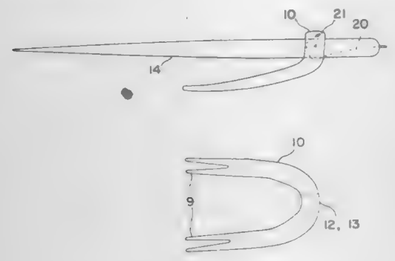
a stem attached to said shell along a length of said stem near a first end of said stem, said stem extending from the proximal end of said shell;

a first cross piece disposed on said stem transversely of said stem near a second end of said stem opposite from said first end, for contacting the bottom of a pair of planks of the dock; and

a second cross piece disposed on said stem substantially transversely of said stem and substantially parallel with said first cross piece and separated therefrom by a distance on the order of between 1¼ and 2½ times the thickness of the planks on a dock with which said holder is to be used, whereby said holder may have its cross pieces aligned with a space between the planks of the dock, be lowered to a point where said first cross piece is below the planks and said second cross piece is above the planks, said holder may then be rotated about a quarter turn to position said cross pieces substantially transversely to the planks and then tilted to place said shell at a fishing angle, supported by said cross pieces engaging the planks.

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5,625,975
FISHING LURE INTERCHANGEABLE FLEXIBLE APPENDAGES
Ivan E. Imes, 10087 Jefferson Hwy. Apt. A, Baton Rouge, La. 70809
Filed Jun. 26, 1995, Ser. No. 494,683
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.09 **5 Claims**



1. A combination which comprises (a) a fishing lure, and (b) an appendage adapted for detachable attachment to said lure, said appendage comprising an elongated body having (i) terminal end portions, (ii) an intermediate zone disposed between said end portions, (iii) walls in said intermediate zone defining a flexibly expandable aperture extending transversely through said body and defining a lure-insertion location therein adapted to engage and clasp the lure when the lure is inserted through said aperture whereby at least the intermediate zone of the appendage is transverse to the lure, and wherein:

(1) said aperture is substantially half-way between the end portions of the body of said appendage;

(2) substantially all of the body of said appendage is composed of flexible material;

(3) said lure is disposed through said aperture and is flexibly engaged and clasped by said walls defining said aperture;

(4) the body of said appendage is configured to include a pair of swept-back lateral extensions disposed respectively between said intermediate zone and the respective end portions of said body;

(5) said end portions have multiple or filamentous ends; and

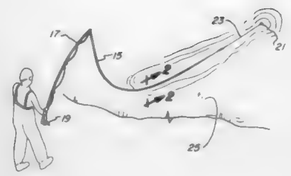
(6) said combination further comprises at least one fishhook embedded in or otherwise attached to said lure with the barb or barbs of the fishhook extending into said appendage.

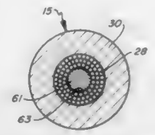
5,625,976
FLY LINES
Robert H. Goodale, Boulder, Colo., assignor to Flow Tek, Inc., Boulder, Colo.
Filed May 31, 1994, Ser. No. 251,244
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—44.98 **17 Claims**

1. A floating fly fishing line comprising:

a core line portion of a first material; and

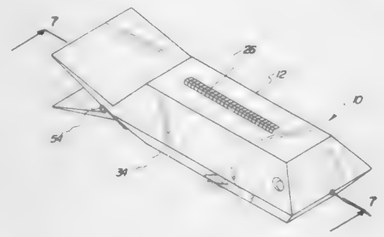
a coating over said core line portion made of a second material different from said first material and including a copolymer of olefin and acrylic material and having a specific gravity of less than 1, said first and second materials having sufficiently similar indices of refraction selected so that the fly fishing line





is substantially transparent absent addition of pigment to said first or second material.

5,625,977
FISHING LURE PROTECTIVE DEVICE
Paul E. Medford, 411 Lakewood, Waxahachie, Tex. 75165
Filed Oct. 4, 1995, Ser. No. 539,081
Int. Cl.[6] A01K *97/06*
U.S. Cl. 43—57.1 **6 Claims**



1. A new and improved fishing lure protective device comprising, in combination:

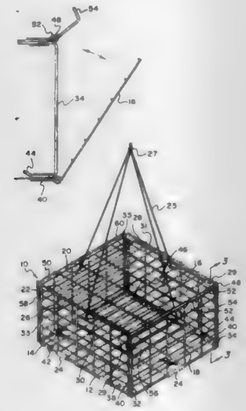
an upper housing portion having a closed upper end and an open lower end, the upper housing portion having a front wall, a rear wall and two side walls, the open lower end having a greater width than the closed upper end, the upper housing portion having apertures formed through the side walls thereof inwardly of the front wall, the apertures resembling eyes of a fish, the closed upper end having an elongated inscription thereon resembling a dorsal fin of a fish, the upper housing portion having a tail portion extending at an angle outwardly from the rear wall thereof, the upper housing portion having an arcuate recess formed in a lower edge of the front wall;

a lower housing portion having an open upper end and a closed lower end, the lower housing portion having a front wall, a rear wall and two side walls, the open upper end having a greater width than the closed lower end, the lower housing portion having fins inscribed on the side walls thereof, the lower housing portion having a tail portion extending at an angle outwardly from the rear wall thereof, the lower housing portion having an arcuate recess formed in an upper edge of the front wall, the lower housing portion and the upper housing portion forming a lure protecting cavity when in a closed, cooperating relationship;

a spring mechanism having an upper arm and a lower arm, the spring mechanism secured to the upper housing portion and the lower housing portion between the tail portions thereto with the upper arm secured to an upper surface of the tail portion of the upper housing portion and the lower arm secured to a lower surface of the tail portion of the lower

housing portion whereby the upper arm and the lower arm biasing the upper housing portion and the lower housing portion together to form the lure protecting cavity.

5,625,978
COLLAPSIBLE CRAB TRAP
Leonard W. Streeper, R.R. #24, Box 69, 2 Clover La., Richland, N.J. 08350, and Theodore Streeper, Jr., Vineland, N.J., assignors to Leonard W. Streeper, Richland, N.J.
Filed Jan. 16, 1996, Ser. No. 586,354
Int. Cl.[6] A01K *69/10*
U.S. Cl. 43—105 **5 Claims**



1. A crab trap movable between an erect condition and a collapsed condition comprising:

a top panel having a pair of opposing side edges and a pair of opposing end edges, each of said side edges being perpendicular to each of said end edges of said upper panel;

a bottom panel having a pair of opposing side edges and a pair of opposing end edges, each of said side edges being perpendicular to each of said end edges of said bottom panel;

a pair of opposing side panels having upper, lower and side edges, each of said lower edges of said side panels being pivotally and hingedly connected to a corresponding one of said side edges of said bottom panel;

a pair of opposing end panels having upper, lower and side edges, each of said lower edges of said end panels being pivotally and hingedly connected to a corresponding one of said end edges of said bottom panel;

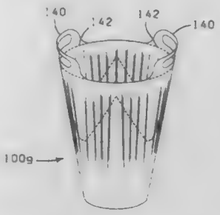
each of said panels being comprised of a mesh material;

said side panels being pivotally movable between a closed position wherein said side panels extend substantially perpendicular to said top and bottom panels and an open position wherein said side panels extend substantially parallel to said top and bottom panels when said crab trap is in said erect condition;

said side and end panels extending substantially parallel to said top and bottom panels when said crab trap is in the collapsed condition, and

pivot means secured to said crab trap, said pivot means being movable between a first position wherein said crab trap can be moved into its collapsed condition and a second position wherein said crab trap is in its erect condition and wherein said top and bottom panels are in a spaced apart relation with respect to each other, said pivot means including a support bail and a U-shaped member, said support bail being pivotally secured to one of said end edges of said top panel, said U-shaped member being secured to one of said side edges of said top panel and having at least one leg extending downwardly therefrom, said support bail including hook means to frictionally engage said leg of said U-shaped member.

5,625,979
SLEEVE HAVING A DETACHABLE PORTION FORMING A SKIRT AND METHODS
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.
Continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, abandoned, and a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482. This application May 3, 1994, Ser. No. 237,078
Int. Cl.[6] A01G *9/02*
U.S. Cl. 47—72 **55 Claims**

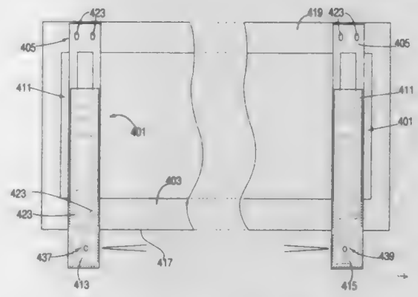


1. A tubular sleeve for covering a pot means having an outer peripheral surface, the tubular sleeve in unitary construction comprising:

a base portion having a lower end, an upper end, an outer peripheral surface, and an area of excess material-comprising preformed creases or folds for allowing extension of a portion of the base portion and having an opening extending from the upper end to the lower end; and

an upper sleeve portion extending from the upper end of the base portion and detachable therefrom, and wherein when the upper portion is detached from the upper end of the base portion, the area of excess material can be expanded to cause portions of the base portion to extend angularly from the base.

5,625,980
GARAGE DOOR OPENER WITH REMOTE SAFETY SENSORS
Oren Teich, South Orange; Vijay Tandon, Clifton; Rudor Teich, South Orange, and Ralph Giffone, Bloomfield, all of N.J., assignors to RMT Associates, South Orange, N.J.
Continuation-in-part of Ser. No. 122,236, Sep. 15, 1993, Pat. No. 5,493,812. This application Jul. 26, 1994, Ser. No. 280,718
Int. Cl.[6] E05F *15/02*
U.S. Cl. 49—26 **20 Claims**



1. An automatic door opening safety system having a door including a leading edge that moves along a path between an open position and a closed position, comprising:

means for controlling movement of said door;

activation means for providing an input to said controlling means to initiate said movement of said door;

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detecting means for detecting whether an obstruction is in the path of said door; and

said detecting means being positioned in front of the leading edge of said door, such that obstructions are detected at a distance in front of the leading edge of said door;

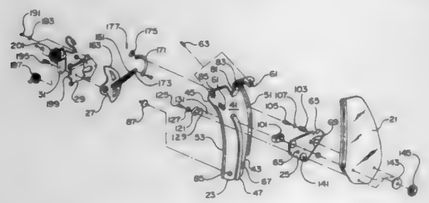
wherein said detecting means includes an infrared transmitter and an infrared receiver arranged to detect said obstruction therebetween; first and second ball jointed attached to first and second mounting plates which secures said infrared transmitter and said infrared receiver respectively to said door.

5,625,981

COMPOSITE WINDOW ASSEMBLY FOR AN AUTOMOTIVE VEHICLE

George W. Klein, Dearborn Heights; Richard P. Hunt, Westland; David P. Piontek, Canton, and Eric Exner, Woodhaven, all of Mich., assignors to ASC Incorporated, Southgate, Mich.

Filed Jun. 7, 1995, Ser. No. 472,752
Int. Cl.[6] E05F *11/52*
U.S. Cl. 49—227 **23 Claims**



1. A window assembly for use in an automotive vehicle comprising:

a window guide plate having a body with a projecting main guide structure, said guide plate body and main guide structure being molded from a polymeric material and permanently secured together whereby a lightweight, composite unit is achieved;

a composite sector gear and arm being integrally molded from a polymeric material, said arm having a base surface with an aperture at an end of said arm, and a set of trusses upstanding from said base surface;

a cover plate being molded from a polymeric material having an extending offset flange, said sector gear being pivotably mounted upon said cover plate;

a clock spring being coupled to a pivot pin upon which said sector gear is mounted, a leg of said clock spring engaging with said flange of said cover plate; and

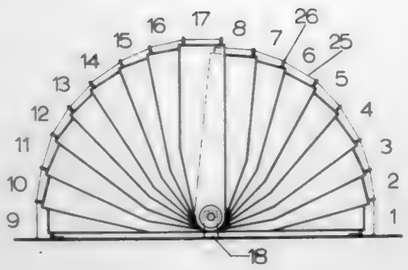
an electric motor having a pinion gear enmeshed with said sector gear, said motor being mounted upon said cover plate, said motor being operable for driving a window between a raised position and a lowered position.

5,625,982

ARTICULATED DOME

Byron N. Foote, 50 Cold Spring Dr., West Warwick, R.I. 02893

Filed Jul. 15, 1994, Ser. No. 278,863
Int. Cl.[6] E04B *1/346*
U.S. Cl. 52—64 **6 Claims**



1. A frameless self-supporting articulated hemispherical dome comprising:

two pivot assemblies which are spaced and rotatably aligned along a common horizontal pivot axis;

two opposing dome halves each comprising a plurality of flat and flexible fins which are sized in progression, bent along a hemispherical arc and rotatably pinned at respective opposing ends to said pivot assemblies, each of said dome halves being movable between an open position wherein said respective fins are stacked in substantially overlying relation on a respective side of said horizontal pivot axis, and a closed position wherein trailing edge portions of each of said fins overlap adjacent portions of adjacent fins to form a continuous dome surface, said opposing dome halves overlapping at a meridian of said dome when said dome halves are in said closed position to form a continuous sealed hemispherical closure; and

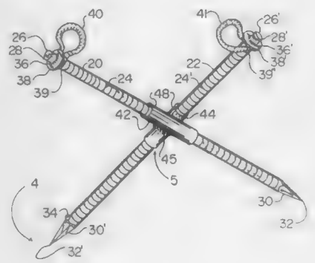
means for maintaining a relative spacing of the trailing edges of said fins when said dome halves are moved from said open position to said closed position.

5,625,983

DISMOUNTABLE ANCHORING DEVICE

Conrad Lachance, 6456, Des Érables, St-Émile, QC, Canada, and Gaston Lachance, 107, Rue Robin, Montmagny, QC, Canada

Filed Aug. 7, 1996, Ser. No. 691,037
Claims priority, application Canada, Aug. 8, 1995, 2155580
Int. Cl.[6] E02D *5/74*; **E04H** *15/62*
U.S. Cl. 52—155 **13 Claims**



1. A dismountable anchoring device comprising:

a first and a second rigid rods, each of said rods comprising a superior end, a middle part and an inferior end, said inferior end intended to be driven into a ground,

a sliding restraining sleeve comprising two first and second tubes placed in the way of a cross, in two superimposed planes, said first tube to receive said first rod and said second tube to receive said second rod, said superior end of each of said rods comprising an eyelet fixed permanently to said superior end, when said inferior ends are in a position of being driven completely into said ground, said inferior ends being fully spread out, thereby said superior ends being in a position next to each other and said eyelets superimposed, said superimposed eyelets providing a common opening for inserting a padlock.

5,625,984

GROUND ANCHOR

James P. Chapman, 16026 Pool Canyon Rd., Austin, Tex. 78734, and Paul N. McKim, 5405 Merrywing Cir., Austin, Tex. 78730

Filed Mar. 7, 1995, Ser. No. 399,765
Int. Cl.[6] E02D *5/80*
U.S. Cl. 52—166 **15 Claims**



1. An anchor for anchoring a structure to the ground, the anchor operable to couple to the structure through a connecting member, the anchor comprising:

an anchor shank having:

a first end and a second end, the first end providing a driving surface for the anchor;

a connection feature positioned proximate the first end, remote from the driving surface and offset from a central axis of the anchor shank, the connection feature for coupling the connecting member to the anchor shank;

a pivot slot positioned proximate the second end and offset from the central axis of the anchor shank in the same direction as the connection feature, such that the pivot slot is substantially in-line with the connection feature; and

an anchor body pivotally connected to the anchor shank at the pivot slot, the anchor body having:

a first end and a second end, the anchor body connected to the pivot slot intermediate the first end and the second end of the anchor body; and

the first end of the anchor body formed with an angled portion that extends away from the central axis of the anchor shank in the same direction as the offset of the connection feature, the angled portion for engaging with the ground when the anchor is set;

the anchor having a pre-set state in which the anchor body is pivoted in the pivot slot to be parallel with the anchor shank with the first end of the anchor body extending towards the first end of the anchor shank and to be substantially in-line with the connection feature and the pivot slot; and

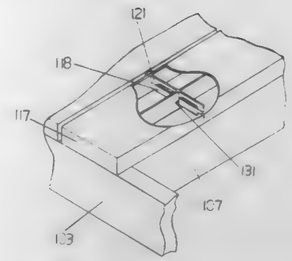
the anchor having a set state in which the anchor body is pivoted in the pivot slot to no longer be parallel with the anchor shank.

5,625,985

DOCK PLANK ASSEMBLY

Richard D. Johnson, 19400 Orwell Ave., Marine-On-St. Croix, Minn. 55047

Continuation-in-part of Ser. No. 5,707, Jan. 19, 1993, Pat. No. 5,412,915. This application May 3, 1995, Ser. No. 434,014
Int. Cl.[6] E01D *19/02*; **E04B** *5/02*
U.S. Cl. 52—177 **11 Claims**



1. A dock plank assembly comprising:

a first elongated polymer plastic plank having a first support end, a second support end, and a top surface for walking on, said first plank having an integral longitudinal web therein for providing rigidity and support to said first plank with said web of said first plank having an opening therein,

a second elongated polymer plastic plank having a first support end, a second support end for supporting said second plank, said second plank having a top surface for walking on, said second plank having integral longitudinal web therein for providing rigidity and support to said second plank with said web of said second plank having an opening therein;

a metal free-span rib, said metal rib spaced from said support ends of said first plank and said second plank with said metal rib extending transversely through said opening in said web of said first plank and said opening in said web of said second plank to provide rigidity and additional individual support for each of said planks and for providing support for said first plank and said second plank as a unit to thereby maintain said first plank and said second plank in surface walking condition with respect to one another;

a first pin secured to said free-span rib for engagement with said first plank; and

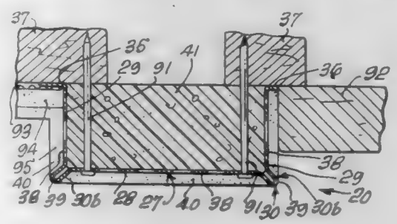
a second pin secured to said free-span rib to said second plank to hold said first plank and said second plank proximate one another.

5,625,986

SKELETAL REINFORCING MANUFACTURE

Mike Mansfield, 8023 Fallbrook, West Hills, Calif. 91304, and Dan Knechtli, 32320 Crown Valley Rd., Acton, Calif. 93510-1927

Filed Sep. 13, 1994, Ser. No. 305,151
Int. Cl.[6] E04F *13/04*
U.S. Cl. 52—255 **24 Claims**



22. A building frame having raised trim, comprising

a building frame having a flat surface;

a pair of lateral flanges that are spaced apart and connected to the flat surface of the building frame;

a pair of juxtaposed side segments that are connected to the respective lateral flanges and extend approximately perpendicularly therefrom to form a pair of non-obtuse exterior angles;

a base segment that is disposed between said side segments, said side and base segments facilitating the adherence of plaster thereto;

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a pair of beads connecting said side segments to opposing ends of said base segment, respectively, so that said base is spaced apart from the frame's flat surface to define a skeletal configuration, said beads determining a depth to which plaster is able to be applied over said side and base segments; and

a plaster finish over the frame's flat surface and the skeletal configuration to provide a finished surface having a raised trim.

5,625,987

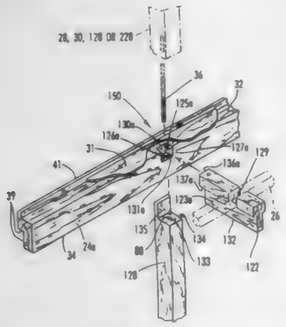
FRAMED STRUCTURE WITH LOAD-BEARING JOINTS

Edward Zamerovsky, 12 Geranium Rd., Levittown, Pa. 19057

Division of Ser. No. 180,480, Jan. 12, 1994, Pat. No. 5,469,678, which is a continuation of Ser. No. 539,124, Jun. 18, 1990, abandoned. This application May 31, 1995, Ser. No. 455,158

Int. Cl.[6] E04F *15/04*

U.S. Cl. 52—263 7 Claims



1. A junction of frame members for supporting a load comprising:

a) a first horizontal member having a lower surface, the first horizontal member having a dado cut in an intermediate section thereof,

b) a second horizontal member having first and second ends and a lower surface, the second horizontal member having a dado cut in its first end, the dado cut in the first end of the second horizontal member being shaped to mate with the dado cut in the intermediate section of the first horizontal member, and

c) a post member, the post member having a generally rectangular cross-section, the post member having an end which is formed with a cut-out which defines a vertical extension and a horizontal seat,

wherein the first and second horizontal members are held in mating relationship such that the dado cut in the intermediate section of the first horizontal member engages the dado cut in the first end of the second horizontal member, and wherein the lower surfaces of the first and second horizontal members both rest upon portions of the horizontal seat.

5,625,988

POST SUPPORT ASSEMBLY HAVING A MOUNTING SOCKET AND A RIGID COLLAR

Andrew Killick, 50 Olympus Way, Lyons ACT 2606, Australia

PCT No. PCT/AU93/00124, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/20312, PCT Pub. Date Oct. 14, 1993

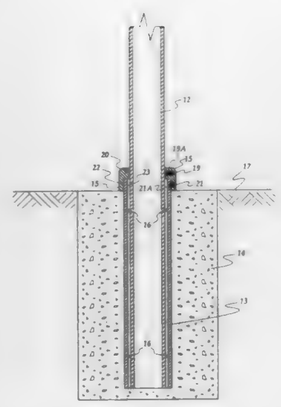
PCT Filed Mar. 24, 1993, Ser. No. 335,754

Claims priority, application Australia, Apr. 1, 1992, PL1707; Dec. 24, 1992, PL6615

Int. Cl.[6] E01F *9/013*; E04H *12/22*

U.S. Cl. 52—298 12 Claims

1. A support assembly for supporting a post in the ground, said support assembly including:



a mounting socket for location in the ground and dimensioned to receive the lower end of a post therein;

a rigid collar assembly in the form of a stepped sleeve having an upper face in use extending radially outwardly from the post and a lower face in use extending radially outwardly of the mounting socket, a socket-engaging reaction face extending upwardly from the lower face and dimensioned to be accommodated in a close tolerance fit by an upper portion of said mounting socket so as to be removably supported thereon and located against lateral movement thereby, and a post-engaging abutment face extending downwardly from the upper face and dimensioned to accommodate a post to be supported by the said support assembly in a close tolerance fit;

the arrangement being such that upon application to a post supported by the support assembly of a substantially transverse load sufficient to bend the post, the rigid collar assembly is not deformed and said close tolerance fits prevent substantial deformation of that portion of the post received within the mounting socket, whereby the post and the collar assembly remain removable from the mounting socket; and

locating means interposable between the inner surface of said mounting socket and the outer surface of said post for locating said post co-axially in said mounting socket.

5,625,989

METHOD AND APPARATUS FOR FORMING OF A POURED CONCRETE WALL

Thomas R. Brubaker, Doylestown, Pa., and Thomas Walton, Howell, Mich., assignors to Huntington Foam Corp., Brockway, Pa.

Filed Jul. 28, 1995, Ser. No. 509,042

Int. Cl.[6] E04C *1/00*

U.S. Cl. 52—309.12 13 Claims

1. A concrete wall forming apparatus defining a mold for forming a wall by receiving poured concrete therein, the apparatus comprising:

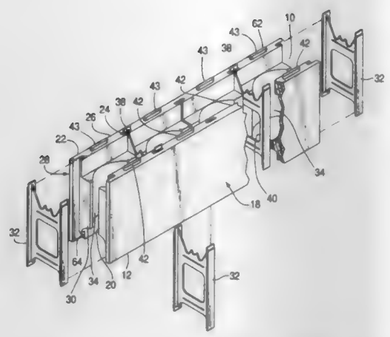
A. a first panel member defining a first slot means extending vertically therethrough, said first slot means including at least one L-shaped first slot, said first panel member including:

(1) a first outer panel side including a first wall surface area extending generally vertically thereon, said first outer panel side including an exterior corner thereon;

(2) a first inner panel side positioned oppositely from said first outer panel side;

B. a second panel member defining a second slot means extending vertically therethrough, said second panel member including:

(1) a second outer panel side including a second wall surface area extending generally vertically thereon and facing oppositely from said first panel member;



(2) a second inner panel side positioned oppositely from said second outer panel side and facing said first inner panel side of said first panel member;

C. a connecting member means detachable securable with respect to said first panel member and said second panel member and extending therebetween to maintain a spatial distance therebetween for defining a molding chamber means therebetween, said connecting member means including at least one connecting member comprising:

(1) a first flange means detachably securably extending within said first slot means of said first panel member, said first flange means including two flange sections thereon oriented perpendicular to one another to facilitate detachable securement of said first flange means within said L-shaped slot;

(2) a second flange means detachably securably extending within said second slot means of said second panel member; and

(3) a spacer mid-section means fixedly secured to said first flange means and said second flange means for maintaining them in spaced relation with respect to one another and for maintaining said first panel member and said second panel means spaced apart from one another to define said molding chamber means between said first inner panel side and said second inner panel side thereof, respectively.

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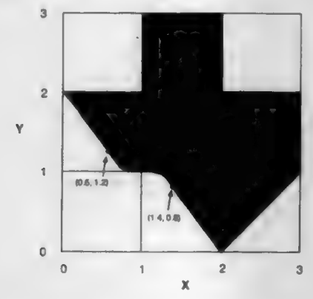
INERLOCKING GROUND COVERING ELEMENT

Darren G. Hazlett, 4902 Dry Oak Trail, Austin, Tex. 74749

Filed Nov. 22, 1995, Ser. No. 590,633

Int. Cl.[6] E04F *13/00*

U.S. Cl. 52—311.2 2 Claims



1. An interlocking ground covering element, substantially larger in horizontal dimensions than it is thick, a plan view of which is based on an abstract shape of a state of Texas, capable of being contained within a three (3) unit by three (3) unit space, with element components formed from individual one (1) by one (1) subunits or partial subunits.

5,625,991

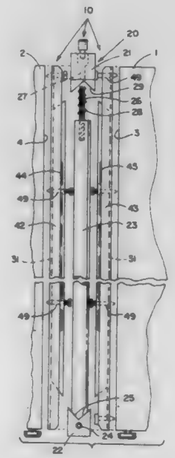
MULTIPLE PANEL ASSEMBLY AND CONNECTOR ASSEMBLY THEREFOR

Peter Sturrus, Grand Haven, Mich., assignor to Shape Corporation, Grand Haven, Mich.

Filed Jun. 7, 1995, Ser. No. 475,074

Int. Cl.[6] E04B *2/00*

U.S. Cl. 52—584.1 11 Claims



1. A panel assembly including a hanger bracket/connector assembly for connecting the opposing edges of first and second panels together and for hanging accessories thereon comprising first and second hanger bracket/connector strips; said first strip for mounting on one of said opposing edges of said first panel and said second strip for mounting on the other edge of said second panel; said first and second strips each being one piece and in cross section taken laterally between the ends thereof including a flat central portion substantially located on a first plane and engaging and attached to the edge of one of said panels, each strip having U-shaped protruding bent portions on each side of said central portion integrally with and extending away from said flat central portion and said plane, said protruding bent portion each including an inner leg extending away from said flat central portion and said first plane, an outer leg spaced from said inner leg and extending toward said plane, said outer leg having longitudinally spaced slots for receiving hooks whereby accessories can be supported on said strip, said inner and outer legs being connected by a web; a reverse bent portion integral with said outer leg and flanges integral with said reverse bent portion, said flanges extending away from said panel on which said strip is attached and located substantially on parallel planes on each side of said outer legs; said strips having upper and lower ends with flat surfaces, said ends extending in a direction longitudinally away from said central portion and located on said first plane; said flanges extending along said flat surfaces and integral therewith; said protruding bent portions forming sockets at their upper and lower ends; upper and lower wedge mating members configured to fit into and mate with said sockets; an elongated tie bar adjustably interconnected between said upper and lower wedging members; and means for drawing at least one of said wedging members toward the other wedging member to force said wedging members into said sockets.

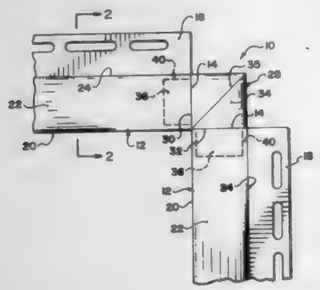
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J-TRIM CORNER PIECE

Howard Strick, 1008 - 401 Athabasca Ave., Fort McMurray, Alberta, Canada, and Robert Bedard, Box 133, Inwood, Manitoba, Canada

Filed Mar. 14, 1995, Ser. No. 404,815
Claims priority, application Canada, Mar. 15, 1994, 2119104
Int. Cl.[6] E06B 9/00
U.S. Cl. 52—656.9 4 Claims



1. A siding trim assembly comprising, in combination,
a pair of siding trim strips with adjacent, non-parallel end faces, each trim strip comprising:
a channel with an open side for extending over an edge of siding being trimmed and including;
a nailing strip; and
a facing flange spaced from the nailing strip and having an inwardly curved lip extending partially over the open side of the channel; and
a corner piece engaged between the two trim strips, said corner piece comprising:
a facing block having:
two adjacent non-parallel side faces engaged face-to-face with the respective end faces of the trim strips, with the facing block extending between the end faces of the respective trim strips: and
two coupling means, each comprising:
a flat panel with an inwardly curved lip forming a J-shaped strip conforming in shape to the inside of the facing flanges,
the coupling means projecting from the respective side faces of the facing block into the respective trim strip channels and into coupling engagement with the insides of the respective facing flanges.

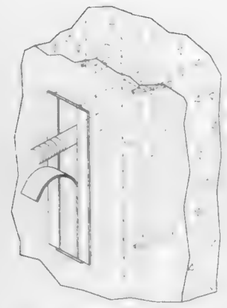
5,625,993

CONCRETE STRUCTURE HAVING LOAD TRANSFERRING INSERT AND METHOD FOR MAKING SAME

David L. Kelly, Sacramento, Calif., assignor to The Burke Group, Sacramento, Calif.

Continuation-in-part of Ser. No. 369,449, Jan. 6, 1995. This application Dec. 14, 1995, Ser. No. 572,633
Int. Cl.[6] E04B 1/38
U.S. Cl. 52—704 43 Claims

1. A concrete structure for supporting an object thereon, said structure having a first surface and comprising;
a support member substantially embedded within said concrete structure, said support member comprising, a longitudinal member generally perpendicular to said first surface and having a first end extending from said first surface, and a load transferring member connected to said longitudinal member, said load transferring member having a load transferring surface oblique to said first surface, and
an insert disposed in said concrete structure and having an opening coplanar with said surface of said structure and the remainder of said insert being embedded within said concrete structure, said insert having an interior volume with first and second contiguous portions, said first portion sized and shaped to accept said load transferring member in a first orientation and said second portion sized and shaped such that said load transferring member does not fit into said second portion when in said first orientation and said longitudinal member does fit within said second portion, said support member being disposed in said insert with said load transferring member in said first portion in said first orientation, whereby said support member can be attached to said object and a load of said object is transferred through said concrete.

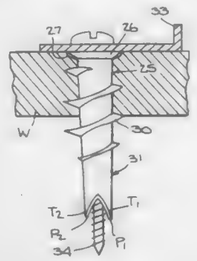


5,625,994

SELF-DRILLING ANCHOR

Louis N. Giannuzzi, 59 Dingletown Rd., Greenwich, Conn. 06830

Division of Ser. No. 75,375, Jun. 4, 1993, Pat. No. 5,482,418, which is a division of Ser. No. 707,661, May 30, 1991, Pat. No. 5,234,299, which is a continuation-in-part of Ser. No. 396,109, Aug. 21, 1989, Pat. No. 5,039,262, which is a continuation-in-part of Ser. No. 215,307, Jul. 5, 1988, Pat. No. 4,892,429, which is a continuation-in-part of Ser. No. 81,016, Aug. 3, 1987, Pat. No. 4,763,456. This application Sep. 5, 1995, Ser. No. 523,467
Int. Cl.[6] F04B 1/38; F16B 25/10
U.S. Cl. 52—705 6 Claims



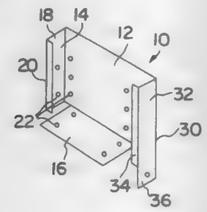
1. A self-drilling anchor installable in a hollow wall by means of a torque producing tool which turns the anchor into the wall in combination with a fastener to hold an object against the wall, said anchor comprising:
A. an externally threaded shank engageable by the tool; and
B. cutting means extending axially from the shank to cut a hole in the wall as the anchor is being turned by the tool, said cutting means including a cutting member to create a hole in the wall having a circular bank, and a guide element in registration with the cutting member adapted to concurrently engage and conform to the bank of the hole as the wall is being cut by the cutting member to ensure the circularity of the bank whereby the shank as the anchor continues to turn enters and taps a matching thread in the circular bank and is thereby securely held in the wall, said shank having a longitudinal bore for receiving and engaging said fastener to hold an object adjacent the wall, said cutting means having a through passage therein communicating with the bore to permit the fastener to advance into and beyond the cutting means.

5,625,995

METHOD AND FLOORING SYSTEM WITH ALIGNING BRACKET FOR MUTUALLY SECURING A HEADER, A JOIST AND A BASE

Byron L. Martin, Columbia, S.C., assignor to Consolidated Systems, Inc., Columbia, S.C.

Filed Jul. 15, 1994, Ser. No. 276,320
Int. Cl.[6] E04B 1/38
U.S. Cl. 52—715 49 Claims



1. A one piece bracket for mutually securing a header, a joist abutting the header and a base with a generally planar upper surface supporting the abutting header and joist and with a side surface facing away from the header, said bracket comprising:
a back plate adapted to overlie the web of the portion of a joist adjacent an abutting header for attachment thereto;
a first side plate having a major portion extending laterally from the header side of the back plate, the major portion of said first side plate being contiguous to said back plate, stiffening said back plate and being adapted to overlie the web of the header adjacent the abutting joist for attachment thereto, so that the header and the abutting joist may be mutually secured;
a second side plate having a major portion extending laterally from the other end of said back plate, the major portion of said second side plate being contiguous to said back plate and stiffening said back plate; and
a base plate extending laterally from the bottom of said back plate for stiffening said back plate, said base plate being adapted to overlie the upper surface of the base for attachment thereto where the base supports the mutually secured header and abutting joist,
wherein said first side plate is L-shaped with a minor terminal portion thereof stiffening the major portion thereof.

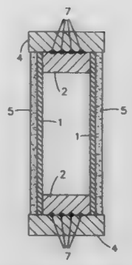
5,625,996

FIRE RESISTANT WOOD BOX BEAM

Friend K. Bechtel, 1523 Borah, Moscow, Id. 83843

Filed Aug. 28, 1995, Ser. No. 519,790
Int. Cl.[6] E04C 3/12; 3/29
U.S. Cl. 52—731.2 10 Claims

1. An elongated fire resistant box beam having an interleaf portion and an exterior portion comprising:
elongated upper and lower flange means each with a longitudinal axis, and a pair of planar panel web means;
the tipper and lower flange means each comprised of a primary and secondary wooden flange member, the secondary flange being wider than the primary flange;



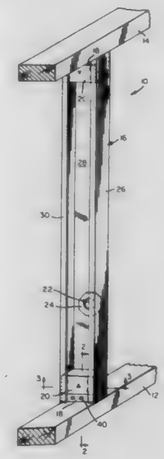
the planar panel web means comprising at least one layer of fire resistant material, one of the web means being rigidly fastened to one edge the primary flange member of each of the upper and lower flange means, the other web means being rigidly fastened to, the opposite edge of the primary flange member of each of the upper and lower flange means, such that the primary flange member is located within the box beam's interior portion, and the secondary flange is located in the box beam's exterior portion, the resulting shape of the box beam being substantially rectangular in cross-section over the length of the box beam.

5,625,997

COMPOSITE BEAM

Robert M. Callahan, 270 White Oak Dr., Blue Ridge, Va. 24064, and Ronald B. Shiflett, Rte. 2, Box 562, Goodview, Va. 24095

Continuation-in-part of Ser. No. 175,605, Dec. 30, 1993, abandoned, and a continuation-in-part of Ser. No. 204,524, Mar. 1, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 415,945
Int. Cl.[6] E04C 3/292
U.S. Cl. 52—737.3 7 Claims



1. A composite beam, comprising:
an elongated shell having a C-shaped cross section, said elongated shell including:
an intermediate wall;
a pair of side walls integral with said intermediate wall and extending at right angles therefrom;
a pair of flanges integral with said pair of side walls and extending at right angles therefrom in a common plane parallel to said intermediate wall; and,

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the respective ends of said intermediate wall, said pair of side walls and said pair of flanges defining a substantially planar abutment surface at each end of said elongated shell;

a pierceable insert contained within each end of said elongated shell; and,

an L-shaped bracket contained within each end of said elongated shell serving as an abutment for one said pierceable insert.

5,625,998

BOX-SHAPED SELF-SUPPORTING BUILDING UNIT AND A METHOD OF CONSTRUCTION THEREOF

Jan Madsen, Odense, Denmark, assignor to S-System Modules Limited, Skanör, Sweden

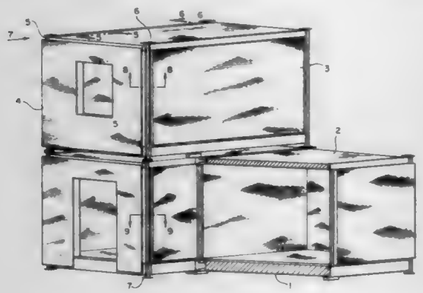
PCT No. PCT/DK94/00031, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO94/16160, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 18, 1994, Ser. No. 491,997

Claims priority, application Denmark, Jan. 18, 1993, 9200156

Int. Cl.[6] E04G *21/14*; **E04B** *1/14*

U.S. Cl. 52—745.03 **9 Claims**



1. A method of construction of a box-shaped, self-supporting building unit a plurality of which may be arranged one of juxtaposed and superposed for the construction of a building, said unit comprising a self-supporting floor element and a self-supporting ceiling element, both having a supporting structure, and two pairs of opposite wall elements as well as in each corner a supporting, vertical column of sectional iron, said vertical columns rigidly connecting the supporting structure of the floor element with the supporting structure of the ceiling element, said method comprising

arranging the floor element on a levelled base, whereafter

shaping and dimensioning the wall elements to bear the ceiling element,

mounting and interconnecting the wall elements plumb on the floor element, subsequently,

arranging and joining the ceiling element superposed on the wall elements, and finally,

mounting and joining the supporting columns to the supporting structure of the floor and ceiling element.

5,625,999

FIBERGLASS SANDWICH PANEL

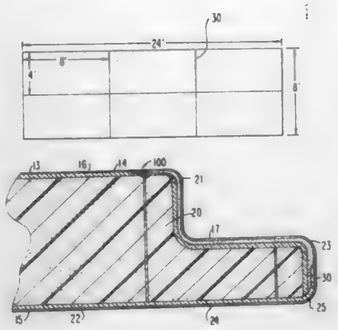
David W. Buzza, Mobile; Frederick W. Schoen, Fairhope, and Harold P. Lovelace, Saraland, all of Ala., assignors to International Paper Company, Purchase, N.Y.

Filed Aug. 23, 1994, Ser. No. 294,523

Int. Cl.[6] E04C *2/36*

U.S. Cl. 52—793.11 **14 Claims**

1. An insulated and corrosion resistant sandwich panel having a length greater than 8 feet and a width greater than 4 feet, which comprises a foam core having a plurality of depthwise fiberglass



ribs extending therethrough, a fiberglass skin fully encapsulating and cured in integral contact with said core, and a gel coating fully encapsulating said skin;

wherein said foam core comprises a plurality of preformed foam blocks each having a length of 8 feet and a width of 4 feet and a resin filling inserted between each of said blocks, said blocks being arranged such that said length of said blocks is oriented with said length of the panel;

wherein the panel has a first surface and a second surface substantially parallel thereto and a peripheral edge having a step therein, said ribs connecting said fiberglass skin on said first surface to said fiberglass skin on said second surface.

5,626,000

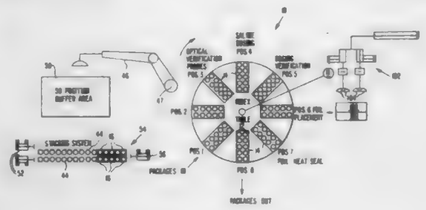
PACKAGING ARRANGEMENT

Russell J. Edwards; Richard W. Abrams, both of Jacksonville; William E. Holley, Ponte Vedra Beach, all of Fla.; Borge P. Gundersen, Tikob, and Thomas C. Ravn, Helsignor, both of Denmark, assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Jun. 10, 1994, Ser. No. 257,787

Int. Cl.[6] B65B *3/04*

U.S. Cl. 53—281 **26 Claims**



1. A packaging arrangement for packaging products, comprising:

a. a movable support base having on its upper surface a plurality of substantially identical support pallets, spaced equally apart along the movable support base, each of which supports and aligns an array of individual package bases;

b. means for sequentially moving the support base through substantially equal incremental movements, with stops between each sequential movement, wherein each support pallet with an array of individual package bases thereon is sequentially stopped at spaced stations in the packaging arrangement;

c. at a first station, a loader unit for loading an array of package bases in the support pallet then at the first station;

d. at a subsequent foil placement station, a placer unit for placing a sheet of laminated covers over the array of package bases;

e. at a subsequent heat sealing station, a heated seal head for heat sealing the laminated covers to the package bases, and

comprising an electrically heated seal head driven by a pneumatic cylinder against the laminated covers on the package bases, which are supported by the pallet and the support base, and wherein an in-line load cell measures the force generated by the pneumatic cylinder, and when a predetermined force is detected by the in-line load cell, a timer is initiated which times a given period of time, after which pressure in the pneumatic cylinder is released, thereby forming a seal between each laminated top cover and package base which is both detachable and consumer friendly; and

f. at a subsequent unloading station, an unloader for unloading the sealed packages from the packaging arrangement for subsequent processing.

5,626,001

SHINGLED MATERIAL ROLL FEED FOR MAIL INSERTION SYSTEM

Eric A. Belec, Southbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed May 8, 1996, Ser. No. 646,894

Int. Cl.[6] B65B *41/00;41/12;61/00*

U.S. Cl. 53—284.3 **6 Claims**



1. An inserting system for inserting documents into an envelope, comprising:

an inserting chassis;

means to convey documents from an upstream location on said chassis to a downstream location on said chassis;

an insertion station for inserting said documents into a waiting envelope;

a feeder located adjacent said inserter chassis for feeding documents to said conveying means, said feeder having a hopper for storing said documents;

a forms unwinder located adjacent said feeder, said unwinder having a pivotable support arm;

a roll of shingled documents mounted on said support arm;

means for unwinding said roll and separating each succeeding document seriatim; and

means for feeding said separated documents into said feeder hopper.

5,626,002

PACKAGING MACHINE HAVING OVERHEAD ASSEMBLY FOR OPENING AND LOWERING CARTON ONTO ARTICLE GROUPS

Colin P. Ford, Woodstock, Ga.; Allen L. Olson, Crosby, Minn., and James W. Emerson, Woodstock, Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Dec. 11, 1995, Ser. No. 570,308

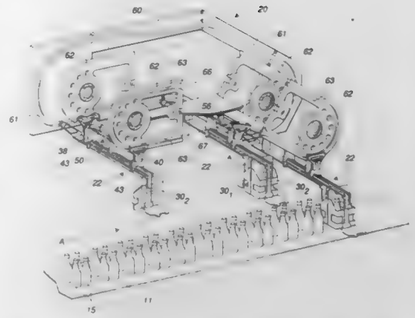
Int. Cl.[6] B65B *21/22;43/26;5/06*

U.S. Cl. 53—398 **36 Claims**

1. An overhead assembly for use in a packaging machine moving an article group in a downstream direction and placing a carton in a predetermined configuration wherein a pair of panels are oriented on either side of a central portion of the carton, said overhead assembly comprising:

a carrier assembly having a pair of opening members;

means for driving said carrier assembly in said downstream direction and for lowering the carrier assembly onto the carton, said opening members engaging the panels of the carton;



means for separating said opening members away from each other to open the carton:

means for lowering the carrier assembly toward said article group and lowering said opening members toward the article group, said lowering means positioning the opening members of the carrier assembly so that the carton is placed onto the article group; and

means for raising the carrier assembly away from the article group after the carton has been placed onto the article group by said lowering means, the opening members disengaging the carton during the raising of said carrier assembly.

5,626,003

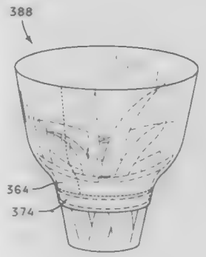
METHOD OF WRAPPING FLOWER POT WITH A SHEET AND SLEEVE

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 237,078, May 3, 1994, which is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, Pat. No. 5,572,851, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482. This application Jun. 5, 1995, Ser. No. 463,116

Int. Cl.[6] A01G *9/02*; **B65B** *25/02;11/58*; **B65D** *85/52*

U.S. Cl. 53—412 **25 Claims**



1. A method of wrapping a potted plant, comprising:

providing a sheet of material having an inner surface, and an outer surface;

disposing a potted plant upon the inner surface of the sheet of material, the potted plant having an outer peripheral surface;

placing the sheet of material about the outer peripheral surface of the potted plant;

providing a tubular sleeve having an upper end, a lower end, an inner peripheral surface, an outer peripheral surface and an interior space defined by the inner peripheral surface;

disposing the wrapped potted plant in the interior space of the tubular sleeve; and

bondingly connecting a portion of the tubular sleeve to the sheet of material wrapped about the potted plant via an adhesive

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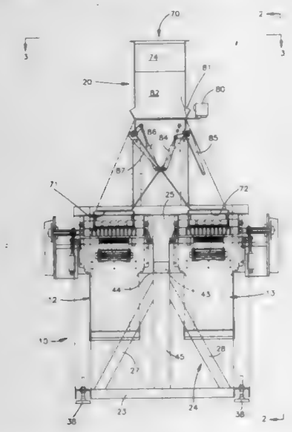
bonding material, the sleeve thereby holding the sheet in a wrapped position about the potted plant.

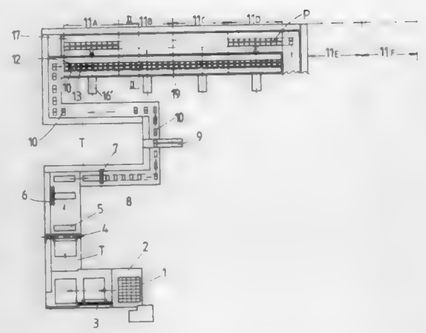
5,626,004

BAGGING MACHINE AND METHOD

Anthony H. Gates, Atwater, and James P. Peppard, Euclid, both of Ohio, assignors to Automated Packaging Systems, Inc., Streetsboro, Ohio

Filed Jan. 17, 1995, Ser. No. 373,107
Int. Cl.[6] B65B *43/36;43/42;61/00*
U.S. Cl. 53—459 **48 Claims**





1. In a bagging machine utilizing chains of interconnected preopened bags, an improved mechanism for positioning bags at a loading station comprising:

a) a feed structure for feeding the chain along a path of travel to position an end one of the bags at the load station;

b) a backing structure positioned adjacent the path of travel and the station; and,

c) a pressurized air supply means connected to the structure and positioned below the path and upstream of the path from the station to direct air between the path and the structure into the station whereby to develop an air film between such end bag being fed to the loading station and the structure as the bag enters the station and while allowing the chain to remain in the path.

5,626,005

APPARATUS FOR PRODUCING PACKS OF NOTES FROM BUNDLES OF NOTES OF VALUE

Hannsgeorg Klingelhoefer, Nuertingen, Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed Nov. 17, 1994, Ser. No. 341,484
Claims priority, application Switzerland, Dec. 3, 1993, 3618/93
Int. Cl.[6] B65B *35/50*
U.S. Cl. 53—540 **10 Claims**

1. An apparatus for producing packs (P) of notes of value, each of said packs (P) comprising a number Z of bundles of notes stacked one onto the other, each of said Z bundles of notes containing a number H of consecutively numbered notes of value, said Z bundles of notes being formed by cutting Z successive stacks of sheets of notes, each of said Z successive stacks containing H successive sheets of notes, each of said H successive sheets of notes containing a number N of individual note prints, said N individual note prints being disposed in rows and columns on each of said H successive sheets, each individual note print placed at a given position in said rows and columns being consecutively numbered within said H successive sheets of notes;

a group of N bundles (**10**) of notes originating from each of said stacks of H successive sheets (**1**) being moved spaced apart one behind the other on a transporting system (T);

said groups of N bundles (**10**) of notes each originating from successive stacks of sheets following one another;

the apparatus having

a distributor (**11**) for the periodic depositing of said N bundles (**10**) of notes of value in N different magazines (**15**), each of said N magazines (**15**) forming one of said packs of notes with said Z bundles (**10**) of notes, each of said pack of notes containing Z×H consecutively numbered notes of value;

and having a removal device (**16**) for displacing the packs (P) out of said magazines (**15**) onto a transporting section (**17**) for further processing;

wherein said distributor (**11**) has a straight conveying section (**12**) adjoining said transporting system (T) and having at least N different bundle positions and a base (**13**) which can be actuated by an automatically controllable actuating mechanism and serves as a rest for said bundles (**10**);

a system of drivers (**14**) installed above said base (**13**) for the advancement of said bundles (**10**);

said N magazines (**15**) being underneath said base (**13**) and aligned with said bundle positions, said magazines (**15**) having the shape of compartments, each with an upper opening;

said transporting section (**17**) running next to said magazines (**15**) and parallel to said conveying section (**12**), said actuating mechanism being set up for opening said base (**13**) to expose said upper opening of said magazines (**15**) when all said N bundle positions are occupied by bundles (**10**), so that said N bundles (**10**) drop into said N magazines (**15**), and for subsequently closing said base (**13**) again before the first bundle of a following group of N bundles arrives;

and wherein said removal device (**16**) is set up for displacing said packs (P) simultaneously out of said N magazines (**15**) onto said transporting section (**17**) once N complete packs (P) with Z bundles (**10**) of notes each have been formed.

5,626,006

DOLLY FOR PORTABLE WEED CUTTERS

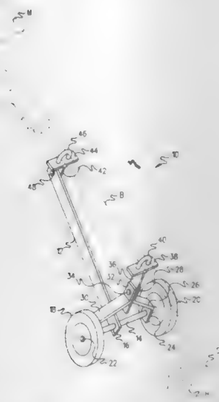
Stanley G. Fricke, Sr., Rte. 4, Box 71, Harrison, Ark. 72601

Filed May 8, 1995, Ser. No. 437,896
Int. Cl.[6] A01D *67/00*
U.S. Cl. 56—12.7 **20 Claims**

16. A dolly for portable weed cutters, comprising:

a frame including an upper frame portion and a lower frame portion;

a lower region of said upper frame portion substantially transversely connected to an axle;



a region of said upper frame clamp member pivotally mounted on an upper portion for engagement with a handle bar portion of a conventional weed cutter, said upper clamp member comprising a U-bolt;

said axle extending between and connecting a pair of wheels, said lower portion of said frame mounted for rotational adjustment about said axle;

said lower frame portion comprising a pair of substantially symmetrical lower frame members, each having a lower end mounted on said axle adjacent a respective one of said wheels; and

a lower clamp member pivotally mounted to upper ends of said lower frame members for engagement with a handle bar portion of a conventional weed cutter, said lower clamp member including a body portion having a plurality of spaced apertures, and further comprising a fastener extending through each of said lower frame members and one of said apertures in said body portion of said lower clamp member for adjustably securing said lower clamp member to said lower frame members, such that said dolly provides the following adjustment modes: (1) the handle bar of the weed cutter may be slid linearly within said upper and lower clamp members, (2) said upper clamp member may be selectively pivotally adjusted about an axis substantially parallel to said axle, (3) said axle rotates relative to said lower frame members, (4) said lower clamp member adjusts linearly in a direction substantially transverse to said axle, and (5) said lower clamp member adjusts pivotally about an axis substantially parallel to said axle.

5,626,007

ROTARY CUTTER WITH REVERSIBLE COUNTERROTATION GEARBOX

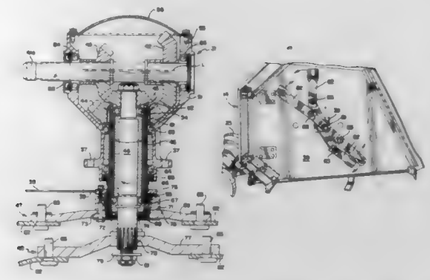
Jackie L. Harrington, Selma, and Fred W. Lurwig, Marion Jct., both of Ala., assignors to Allied Products Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 319,937, Oct. 7, 1994, Pat. No. 5,450,714. This application Sep. 11, 1995, Ser. No. 526,274
Int. Cl.[6] A01D *34/66;34/76*
U.S. Cl. 56—13.5 **25 Claims**

1. A rotary cutter apparatus with dual counterrotating blade assemblies for cutting and shredding vegetation, the rotary cutter apparatus comprising:

a deck assembly associated with at least one ground engagement member and an assembly for transporting the rotary cutter apparatus across a field of vegetation to be cut and shred;

an upper blade assembly rotatably mounted along said deck assembly so as to engage and cut vegetation over which said rotary cutter apparatus moves and which passes generally under said deck assembly;



a lower blade assembly rotatably mounted along said deck assembly so as to engage and cut vegetation over which said rotary cutter apparatus moves and which passes generally under said deck assembly, said lower blade assembly being below said upper blade assembly;

a blade gearbox and drive assembly secured to said deck assembly, said blade gearbox and drive assembly simultaneously driving both said upper blade assembly and said lower blade assembly;

said blade gearbox and drive assembly including a rotatably mounted driven output shaft in driving engagement with said lower blade assembly and a rotatably mounted driven output tube in driving engagement with said upper blade assembly, said output shaft passing through said output tube, and said blade assemblies being driven respectively by said output shaft and output tube in counterrotation with respect to each other;

said blade gearbox and drive assembly include a driven gear for the upper blade assembly and a driven gear for the lower blade assembly;

a multiple gear drive shaft having a first drive gear for engaging and driving said driven gear for the upper blade assembly and a second gear for engaging and driving said driven gear for the lower blade assembly; and

said multiple gear drive shaft also has a first location and a second location therealong, said multiple gear drive shaft having an interchangeability characteristic such that said first location accommodates either said first drive gear or said second drive gear and such that said second location accommodates either said first drive gear or said second drive gear, whichever one is not accommodated by said first location, and said interchangeability characteristic determines the respective directions of counterrotation of said upper and lower blade assemblies.

5,626,008

MULCHER ATTACHMENT FOR LAWN MOWER

Michael T. Puszkar, P.O. Box 75, Frontier, Saskatchewan, Canada

Filed Apr. 18, 1995, Ser. No. 423,832
Int. Cl.[6] A01D *34/72*
U.S. Cl. 56—17.5 **21 Claims**

1. A mulching plate comprising a disk having means at the center thereof for attachment to a rotating drive shaft,

said disk having opposite top and bottom faces and a substantial uninterrupted outer circular periphery,

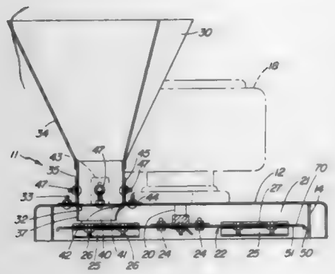
a plurality of circumferentially spaced openings in said disk radially inward of the periphery,

each opening having a blade supporting portion adjacent an edge rearward of said opening in relation to a direction of rotation thereof, and

a plurality of blade members each formed separately of said disk and each being affixed to said disk at said blade supporting portion rearward of one of said openings,

said blade members defining cutting edges in a common plane axially spaced from said top surface of said disk.

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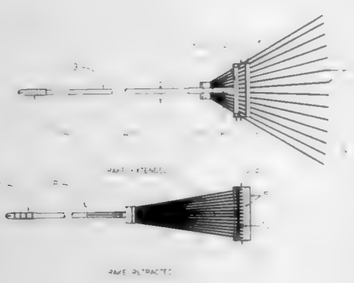
each blade member having an intermediate portion defining a disk engaging portion, a cutting portion extending forwardly of said intermediate portion in relation to said direction of rotation and at an angle relative of said intermediate portion.

5,626,009

A-RAKE-A-HOE

Bob L. Bower, and Betty Carrington, both of 8215 N. Oracle Rd. #199, Tucson, Ariz. 85704

Filed Jan. 23, 1995, Ser. No. 329,947
Int. Cl.° A01D 7/10
U.S. Cl. 56—400.06 1 Claim



1. A combination raking and hoeing apparatus comprising:

a handle having a longitudinal axis having an adjusting means and a tool attached to one end of the handle;

the tool comprising a rake portion having tines and a hoe portion, the rake and hoe portions attached to the handle by a T-shaped head portion;

the T-shaped head portion having a cross portion having a midpoint along its length, and a leg portion having an open end, the cross portion extending substantially perpendicular to the longitudinal axis of the handle and having a plurality of spaced apertures into which individual tines are inserted, the leg portion extending perpendicularly from the midpoint of the cross portion, wherein the handle is inserted into the open end of the leg portion and rigidly attached thereto,

the hoe portion having an elongated blade with ears extending perpendicularly from each end of the blade, each ear having means for attachment to the cross portion of the head,

the adjusting means having a lever for locking and unlocking the position of the head such that the hoe element, attached to the cross portion of the head is slidably adjustable along the length of the tines with the head,

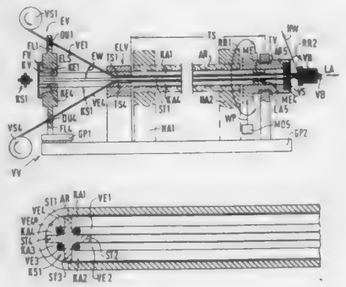
wherein positioning the lever in the locked position prevents the movement of the head and positioning the lever in the unlocked position allows the head, with the hoe portion attached thereto, to move freely along the length of the tines.

5,626,010

METHOD AND APPARATUS FOR STRANDING TOGETHER ELONGATED ELECTRICAL OR OPTICAL CABLE ELEMENTS

Martin Loczenski, Neustadt, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE94/00826, § 371 Date Mar. 31, 1995, § 102(e) Date Mar. 31, 1995, PCT Pub. No. WO95/04361, PCT Pub. Date Feb. 9, 1995
PCT Filed Jul. 18, 1994, Ser. No. 416,680
Claims priority, application Germany, Aug. 2, 1993, 43 25 931.6
Int. Cl.° D01H 13/26;13/30
U.S. Cl. 57—294 30 Claims



1. An apparatus for stranding elongated stranding elements, the apparatus comprising:

a stranding disk;

a rotating accumulator extending along a stranding axis in a longitudinal direction for feeding the stranding elements to the stranding disk; and

chambers disposed in the accumulator, the chambers extending in the longitudinal direction and being outwardly open radially with respect to said stranding axis of the accumulator to accommodate and guide the stranding elements.

5,626,011

METHOD FOR JOINING A THREAD IN A DEVICE FOR MANUFACTURING A TWISTED YARN BY AN INTEGRATED SPINNING AND TWISTING PROCESS AS WELL AS A DEVICE FOR PERFORMING THE METHOD

Ulrich Ballhausen, Krefeld; Guido Spix, Kaarst, and Wilfried Rütten, Wegberg, all of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Germany

Filed Sep. 6, 1995, Ser. No. 524,177
Claims priority, application Germany, Sep. 7, 1994, 44 31 830.8
Int. Cl.° D01H 4/00;1/10
U.S. Cl. 57—409 16 Claims

1. A method for joining a thread in a device for manufacturing a twisted yarn with an integrated spinning and twisting process, said method comprising the steps of:

providing at least one spindle rotor with hollow spindle shaft rotatably supported on a machine frame;

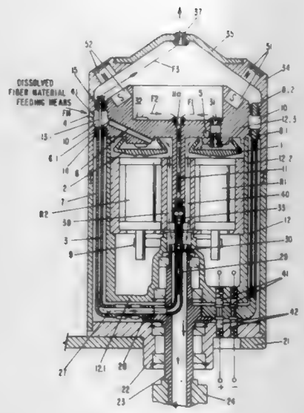
connecting a radially outwardly extending yarn guide channel to the hollow spindle shaft;

supporting at least two spinning devices with upwardly open spinning rotors above the spindle rotor such that the spinning devices are located adjacent to one another and symmetrical to a central axis of the spindle rotor;

positioning a centering point on an extension of the central axis of the spindle rotor above the spindle rotor;

feeding the dissolved fiber material to the spinning devices;

spinning a spun yarn in each one of the spinning devices from dissolved fiber material;



threading for each one of the spinning rotors a joining thread with one end into the hollow spindle axle and with the other end into the spinning rotor;

generating a thread loop of a preset length from each joining thread in an area between the inlet of the hollow spindle axle and the spinning rotor;

guiding each thread loop such that a first thread branch thereof is fed into the spinning rotor for catching a leading end of the spun yarn and simultaneously removing the second thread branch through the hollow spindle axle until the thread loop is resolved and the movement of the first thread branch is reversed and the entire joining thread is removed together with the spun yarn through the hollow spindle axle;

leading the spun yarn of each of the spinning devices upwardly away from the spinning rotors and reversing their direction of movement by 180° for introduction into the hollow spindle axle provided as an upward extension of said hollow spindle shaft;

guiding the spun yarns through the hollow spindle shaft, the yarn guide channel, and the centering point while forming a yarn balloon between said yarn guide channel and said centering point through which the dissolved fiber material is guided; and

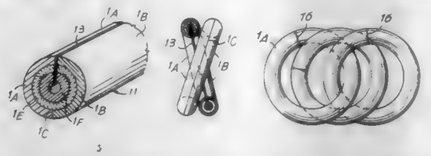
removing the yarn from the centering point.

5,626,012

METHOD OF MAKING A DECORATIVE CHAIN FOR A NECKLACE OR THE LIKE FROM METALS HAVING DIFFERING CHARACTERISTICS AND RESULTING CHAIN

Paolo Fabbro, Cortona, Italy, assignor to UNO A Erre Italia S.p.A, Arezzo, Italy

Filed Apr. 29, 1996, Ser. No. 638,831
Claims priority, application Italy, May 5, 1995, FI95A0096
Int. Cl.° B21L 1/00
U.S. Cl. 59—35.1 8 Claims



1. A method of making a decorative chain, from metals having differing characteristics, which method comprises:

forming a laminated strip (1) with two longitudinal bands (1A; 1B) of two different metals on the same side of said strip and at least one additional thickness (1E and/or 1F) bonded to the metals of said two bands (1A; 1B);

shaping said laminated strip (1) by drawing it into a wire (11) of annular cross-section and having a longitudinal slit (13), said drawing effective to dispose said two longitudinal bands (1A; 1B) of different metals both on the outside of said annular cross-section and with said at least one additional thickness (1E and/or 1F) on the inside of said annular cross-section so that said two bands and said at least one additional thickness are disposed radially with respect to each other in said wire;

winding said wire into a helix, with the slit (13) on the inside of the turns;

cutting the helix longitudinally to form pieces (111) in the form of twisted open rings;

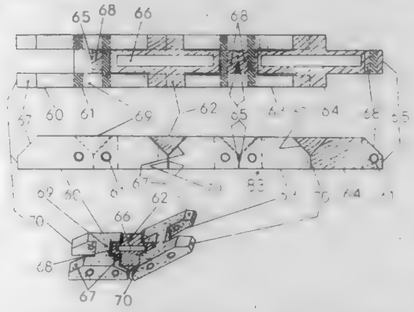
forming said twisted pieces into a chain of soldered and twisted links with the orientation of each of said two bands (1A; 1B) of each link being on the same side of the chain whereby one side of the chain shows the color of one band (1A) and the other side of the chain shows the color of the other band (1B); and shaping the chain.

5,626,013

CIRCLE-CRANE MATERIAL HANDLING SYSTEM

John R. Schneider, 4 Woodside Dr. East, Apalachin, N.Y. 13732

Filed Sep. 26, 1994, Ser. No. 312,524
Int. Cl.° F16G 13/20
U.S. Cl. 59—78 12 Claims



1. A multi-link chain capable of bearing a load, comprising:

a) a plurality of main links, each having a common first predetermined shape each of which main links has a longitudinal plane and comprises at least one surface at each distal end thereof, said surfaces of said main links having stops; and

b) a plurality of pivot links, each have a common second predetermined shape complementary to said first predetermined shape, for connecting each of said main links to form a chain assembly, said pivot links each having a longitudinal plane substantially coincident with the longitudinal plane of said main link and at least one surface at each distal end of said pivot links, said surfaces of the pivot links mating with said stops of said main links, so that said main links and said pivot links are prevented, in one direction, from rotating beyond said longitudinal planes thereof.

5,626,014

CATALYST MONITOR BASED ON A THERMAL POWER MODEL

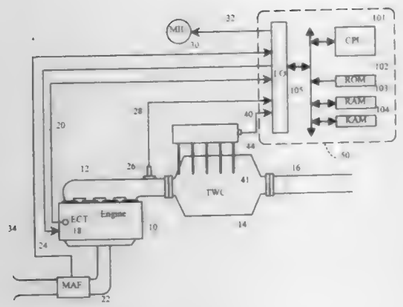
Jeffrey S. Hepburn, Dearborn, and Allen H. Meitzler, Ann Arborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 30, 1995, Ser. No. 497,562
Int. Cl.° F01N 3/20
U.S. Cl. 60—274 10 Claims

1. An on-board monitoring system for a vehicle which includes a catalytic converter to process exhaust gas generated by an internal combustion engine comprising, in combination:

means for initiating a catalytic converter diagnostic test;

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means, responsive to the initiation of said diagnostic test and responsive to a plurality of temperature sensing devices positioned at spaced intervals upon said catalytic converter, for generating a plurality of temperature values, each of said temperature values being indicative of the temperature detected by a corresponding temperature sensing device;

means, responsive to at least one engine operating parameter, for determining if said engine is operating within a predetermined operating range;

means, responsive to said engine operating within said predetermined range, for storing said temperature values for a plurality of time intervals to generate a set of stored temperature values;

means responsive to the expiration of said time intervals for retrieving said set of stored temperature values and for generating a total power value indicative of the thermal-power generated by said catalytic converter during said time intervals;

means for comparing said total power value to a predetermined power value; and

means for providing an indication if the total power value deviates from the predetermined power value by more than a predetermined deviation amount.

5,626,015

DELIVERY CONTROL DEVICE FOR HYDRAULIC PUMPS AND HYDRAULIC SYSTEMS WITH SUCH DEVICES

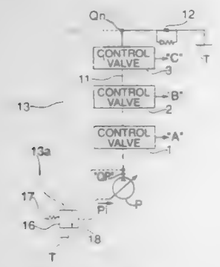
Dae S. Chung, Pusan, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 11, 1995, Ser. No. 500,724

Claims priority, application Rep. of Korea, Sep. 30, 1994, 94-25148

Int. Cl.[6] **F16D** *31/02*

U.S. Cl. 60—450 **3 Claims**



1. A hydraulic system comprising:

a variable displacement hydraulic pump;

at least one actuator operated by pressurized fluid of the pump;

at least one directional control valve arranged between said pump and a return tank and adapted for controlling operation of said actuator;

a bypass line extending from said pump to said return tank such that the bypass line passes the directional control valve, said bypass line being adapted for draining the pressurized fluid of the pump to said return tank when said directional control valve is in the neutral position;

an orifice provided in said bypass line between said control valve and said return tank;

a pilot line branched from said bypass line after passing said control valve, said pilot line being adapted for selectively supplying the swash plate's regulating pilot oil to said pump;

a branch line branched from said pilot line and adapted for draining said swash plate regulating pilot oil of the pilot line to said return tank; and

a relief valve provided in said branch line and selectively opened in response to a preset pressure applied thereto.

5,626,016

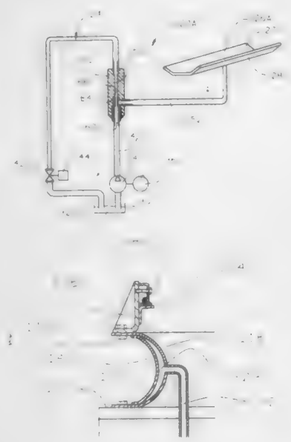
WATER HAMMER DRIVEN VIBRATOR HAVING DEFORMABLE VIBRATING ELEMENTS

Bruno H. Walter, 902 Wentworth Avenue, North Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 936,032, Aug. 25, 1992, Pat. No. 5,459,699. This application Oct. 26, 1994, Ser. No. 329,718

Int. Cl.[6] **F15B** *21/12*

U.S. Cl. 60—532 **8 Claims**



1. A method for shaking a structure relative to a member said method comprising the steps of:

(a) providing a driving system and a deformable hollow element, said driving system comprising:

i) a conduit having an inlet and an outlet;

ii) a source of pressurized fluid having an output pressure, connected to said inlet;

iii) a valve in said conduit;

iv) a valve actuator associated with said valve for repeatedly opening and closing said valve; and

said hollow element comprising a deformable wall enclosing a fluid-filled cavity and first and second mounting points on said deformable wall, wherein a change in a fluid pressure in said fluid-filled cavity, causes said second mounting point to move relative to said first mounting point;

(b) connecting said first mounting point to a structure to be vibrated relative to a member and connecting said second mounting point to said member;

(c) opening said valve and holding said valve open until said fluid flows through said conduit with a velocity sufficient to create a water hammer within said conduit;

(d) suddenly closing said valve to create a water hammer within said conduit, said water hammer comprising a pressure pulse having a pressure significantly greater than said output pressure;

(e) allowing said water hammer pressure pulse to propagate into said cavity in said hollow element to increase said fluid pressure inside said cavity;

(f) allowing said change in said fluid pressure in said cavity to cause said first mounting point to move relative to said second mounting point, thereby moving said structure relative to said member; and

(g) repeating said steps (c), (d), (e) and (f) to cause said structure to shake relative to said member wherein said cavity is connected to said conduit by a branch conduit and said step of allowing said water hammer pressure pulse to propagate into said fluid filled cavity comprises allowing said water hammer pulse to propagate through said branch conduit into said cavity and wherein said step of holding said valve open until said fluid flows through said conduit with a velocity sufficient to create a water hammer within said conduit comprises reducing said fluid pressure in said cavity by allowing said fluid to flow through an aspirator in said conduit, said aspirator connected to said branch conduit.

5,626,017

COMBUSTION CHAMBER FOR GAS TURBINE ENGINE

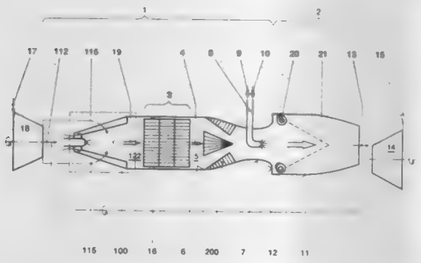
Thomas Sattelmayer, Mandach, Switzerland, assignor to ABB Research Ltd., Zurich, Switzerland

Filed May 25, 1995, Ser. No. 449,752

Claims priority, application Germany, Jul. 25, 1994, 44 26 351.1

Int. Cl.[6] **F02C** *3/14;7/00*

U.S. Cl. 60—723 **15 Claims**



1. A combustion chamber for a gas turbine apparatus, which comprises a wall enclosing a duct having a longitudinal flow direction along a duct axis, the combustion chamber being divided into a:

a first stage having a mixer mounted on a head side for forming a fuel/air mixture, a catalyzer downstream of the mixer for combustion of the fuel/air mixture, a plurality of vortex generators mounted on an interior wall segment downstream of the catalyzer, and a venturi-shaped duct section downstream of the vortex generators and means for injecting at least one of a gaseous and liquid fuel into the venturi-shaped duct section, and

a second stage immediately downstream of the venturi-shaped duct section, the wall being shaped to form an expanding jump in cross section.

5,626,018

GAS TURBINE ENGINE

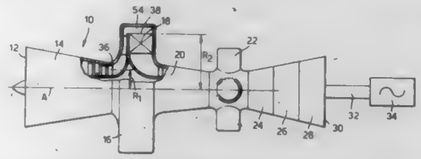
John E. Hatfield, Warwickshire, England, assignor to Rolls-Royce plc, London, England

Filed Jun. 19, 1995, Ser. No. 491,405

Claims priority, application United Kingdom, Jul. 12, 1994, 9414018

Int. Cl.[6] **F02C** *7/00;* **F04D** *29/54*

U.S. Cl. 60—726 **10 Claims**



1. A gas turbine engine including an axial flow compressor and at least one other component downstream of the axial flow compressor, the gas turbine engine having a central axis,

the axial flow compressor having a downstream end at a first radial distance from the central axis of the gas turbine engine,

the at least one other component having an upstream end at a second radial distance from the central axis of the gas turbine engine,

a radial diffuser positioned in flow series between the end of the axial flow compressor and the upstream end of the at least one other component, the radial diffuser being defined between a first radially extending wall and a second radially extending wall, a plurality of angularly spaced diffuser vanes located between the first wall and the second wall, each diffuser vane extending generally radially between its radially inner end and its radially outer end to define a plurality of radially extending diffusing passages each diffuser vane and each diffusing passage having a centerline and with said centerlines all lying in a common plane which extends through said central axis, said at least one component comprising an intercooler, a second compressor and combustion means arranged in flow series and where said second compressor is an axial flow compressor.

5,626,019

GAS TURBINE INTAKE AIR COOLING APPARATUS

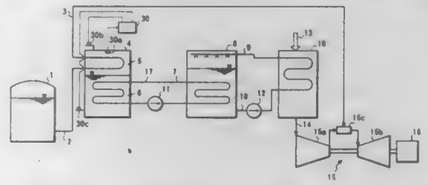
Akihiro Shimizu, Mito; Motoaki Utamura, Hitachi; Shinichi Hoizumi, Hitachi, and Hideaki Komatsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1994, Ser. No. 329,082

Claims priority, application Japan, Oct. 29, 1993, 5-271552

Int. Cl.[6] **F02C** *1/00*

U.S. Cl. 60—728 **15 Claims**



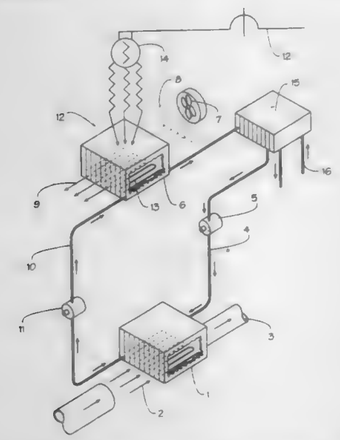
1. Apparatus for cooling intake air to be taken in by a gas turbine using cold energy of a fuel for the gas turbine, comprising:

a heat exchanger for transferring cold energy of the fuel to a heat medium through an intermediate heat medium having a solidifying point lower than the fuel; and

a cooling system, fluidly connected to said heat medium and including an intake air cooler for cooling intake air to be taken into the gas turbine with cold energy of said heat medium.

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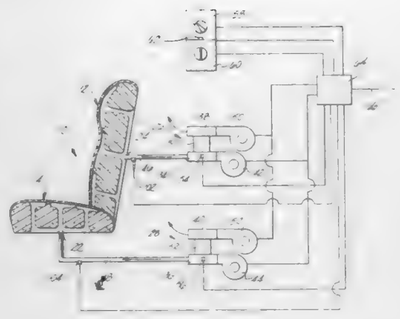
5,626,020
MOLECULAR REFRIGERANTS AND COOLING SYSTEMS
Bruce F. Sangster, 8252 Delfino Cir., Huntington Beach, Calif. 92646-1605, and James D. Bond, 2 Holly, Irvine, Calif. 92715
Filed May 5, 1995, Ser. No. 437,430
Int. Cl.[6] F25B *21/00*
U.S. Cl. 62—3.1 6 Claims



1. A refrigeration system employing a light sensitive heat transfer medium for cooling a space comprising:
a fluid conduit means for conveying said medium between a first area to be cooled by said system and a second area where the captured heat will be exchanged;
means for pumping said medium through said conduit means;
a first heat exchanger means at said first area for absorbing heat from warm air circulating in ducts from said space to be cooled thereby cooling the air;
a second heat exchanger means at said second area for exchanging heat from said medium to the ambient;
means for forcing the cooled air from said first area through said ducts to said space; and
means for transmitting light energy to said medium at said second area;
wherein the medium when exposed to warm air absorbs heat, said medium is then pumped to said second area where the medium is exposed to light energy and releases heat absorbed from said first area to the medium, said heat in said medium is then released to the ambient through the second heat exchanger means at said second area.

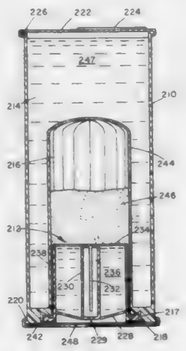
5,626,021
VARIABLE TEMPERATURE SEAT CLIMATE CONTROL SYSTEM
Tissa R. Karunasiri, Van Nuys; David F. Gallup, Pasadena; David R. Noles, Glendale, and Christian T. Gregory, Alhambra, all of Calif., assignors to Amerigon, Inc., Monrovia, Calif.
Continuation-in-part of Ser. No. 156,052, Nov. 22, 1993, Pat. No. 5,524,439. This application Aug. 10, 1994, Ser. No. 288,459
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.5 24 Claims

1. A method for controlling the temperature climate in a variable temperature occupant seat, the method comprising the steps of:
selecting a temperature that effects a cooling mode of operation;
activating a number of thermoelectric modules to temperature condition a heat transfer medium to a desired cooling temperature;



activating at least one transporting means mounted adjacent the thermoelectric modules for passing temperature conditioned heat transfer medium from the modules to a variable temperature seat;
monitoring the temperature of the temperature conditioned heat transfer medium; and
automatically regulating both the amount of power directed to the thermoelectric modules, and an operating speed of the transporting means to achieve the desired cooling temperature.

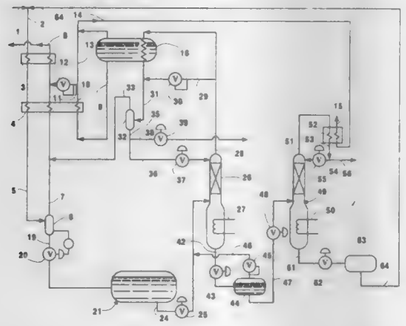
5,626,022
CONTAINER WITH INTEGRAL MODULE FOR HEATING OR COOLING THE CONTENTS
James A. Scudder, San Diego, and James L. Berntsen, Ramona, both of Calif., assignors to Insta-Heat, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 250,537, May 31, 1994, Pat. No. 5,461,867. This application Oct. 30, 1995, Ser. No. 550,457
Int. Cl.[6] F25D *5/00*
U.S. Cl. 62—4 25 Claims



1. A container for selectably changing the temperature of a stored material by mixing two reactants, comprising:
a generally tubular unitarily formed container body having a material cavity for containing said stored material and a reactant cavity for containing a first reactant, said reactant cavity having an opening at a first end of said container;
a cap disposed in said opening at said first end of said container, said cap having a cap body, a flexible member unitarily formed with said cap body, and an elongated member integrally formed with said cap body, said flexible member having an inner surface and an outer surface, at least one point on said inner surface moving in at least a partially axial direction with respect to said container body between a retracted position and an extended position in response to an axial force

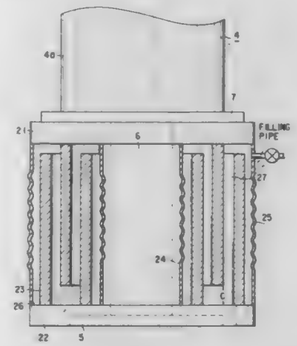
experienced on said outer surface of said flexible member, said elongated member comprising a hollow prong having a longitudinal notch and having a proximal end disposed at said point and a distal end projecting from said point;
a breakable barrier attached to an open end of said cap for retaining a second reactant in said cap, said distal end of said elongated member extending beyond said open end of said cap when said point on said inner surface is in said extended position; and
a removable closure at a second end of said container body for providing access to said stored material in said material cavity.

5,626,023
CRYOGENIC RECTIFICATION SYSTEM FOR FLUORINE COMPOUND RECOVERY USING ADDITIVE LIQUID
Theodore F. Fisher, Amherst, and Yijian Jin, Tonawanda, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Feb. 16, 1995, Ser. No. 389,480
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—625 20 Claims



1. A method for recovering fluorine compounds comprising:
(A) combining a gaseous feed comprising carrier gas, high volatility fluorine compounds and low volatility fluorine compounds with additive liquid to form a mixed stream;
(B) partially condensing the mixed stream to produce vapor comprising carrier gas and additive liquid comprising high volatility and low volatility fluorine compounds;
(C) passing the additive liquid comprising high volatility and low volatility fluorine compounds into a first rectification column as first column feed and separating the first column feed within said first rectification column by cryogenic rectification into top vapor comprising high volatility fluorine compounds and additive liquid comprising low volatility fluorine compounds;
(D) withdrawing top vapor comprising high volatility fluorine compounds from the first rectification column and recovering at least a portion thereof as product fluorine compounds;
(E) passing additive liquid comprising low volatility fluorine compounds into a second rectification column as second column feed and separating the second column feed within said second rectification column by cryogenic rectification into top vapor comprising low volatility fluorine compounds and residual additive liquid; and
(F) withdrawing top vapor comprising low volatility fluorine compounds from the second rectification column and recovering at least a portion thereof as product fluorine compounds.

5,626,024
SELF-CONTAINED COOLING APPARATUS FOR ACHIEVING CRYOGENIC TEMPERATURES
Tomomi Kaneko; Rohana Chandratilleke, and Toru Kuriyama, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 25, 1995, Ser. No. 548,046
Claims priority, application Japan, Oct. 28, 1994, 6-265409
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 17 Claims

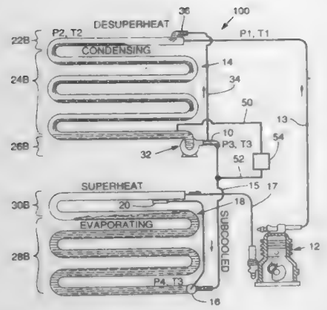


1. A cryogenic cooling apparatus comprising:
a vacuum container for containing an object to be cooled;
at least one refrigerator for cooling the object, said refrigerator including a high-temperature cooling stage and a low-temperature cooling stage arranged at a predetermined distance from each other with a low-temperature cylinder interposed between the high-temperature cooling stage and the low-temperature cooling stage; and
a thermal switch unit comprising,
at least one high-temperature heat transfer member attached to said high-temperature cooling stage of said refrigerator,
at least one low-temperature heat transfer member which is attached to said low-temperature cooling stage of said refrigerator and separated from said at least one high-temperature heat transfer member, and
a sealed container, having no communication with outside said sealed container during an operation of said thermal switch unit and provided between said low-temperature cooling stage and said high-temperature cooling stage, for containing said at least one high-temperature heat transfer member, and a substance, heat conduction between said at least one high-temperature heat transfer member and said at least one low-temperature heat transfer member occurring via said substance when said substance is a gas.

5,626,025
LIQUID PRESSURE AMPLIFICATION WITH BYPASS
Robert E. Hyde, 18448 SE. Pine St., Portland, Oreg. 97233-4859
Continuation-in-part of Ser. No. 207,287, Mar. 7, 1994, Pat. No. 5,386,700, which is a division of Ser. No. 948,300, Sep. 21, 1992, Pat. No. 5,291,744, which is a division of Ser. No. 666,251, Mar. 8, 1991, Pat. No. 5,150,580. This application Mar. 15, 1994, Ser. No. 213,853
Int. Cl.[6] F25B *41/00;5/00*
U.S. Cl. 62—117 19 Claims

11. A method for improving operation of a refrigeration or air-conditioning system which includes a compressor, a condenser, a pump, an expansion valve, and an evaporator connected in series by conduit for circulating refrigerant in a closed loop therethrough, the method comprising:

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transmitting superheated vapor refrigerant from the compressor to an inlet to the condenser at a first temperature and pressure;

condensing the vapor refrigerant to discharge liquid refrigerant at a second temperature and pressure not greater than said first temperature and pressure;

boosting the pressure of the liquid refrigerant discharged from the condenser to a third pressure greater than the second pressure by a substantially constant increment of pressure;

transmitting a first portion of the liquid refrigerant at said third pressure in a forward direction via the expansion valve into the evaporator;

transmitting a second portion of the liquid refrigerant at said third pressure into the condenser inlet so that the first temperature of the superheated vapor refrigerant is reduced toward said second temperature, thereby reducing said first pressure; and

bypassing liquid refrigerant selectively in said forward direction when the third pressure is less than the second pressure.

5,626,026

CONTROL-INFORMATION DETECTING APPARATUS FOR A REFRIGERATION AIR-CONDITIONER USING A NON-AZEOTROPE REFRIGERANT

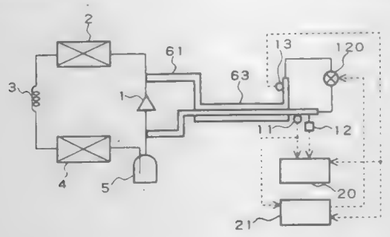
Yoshihiro Sumida; Takashi Okazaki, both of Hyogo; Osamu Morimoto, and Tomohiko Kasai, both of Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 500,551

Claims priority, application Japan, Jul. 21, 1994, 6-169570; Aug. 31, 1994, 6-207457

Int. Cl.[6] F25B *1/00*

U.S. Cl. 62—129 **4 Claims**



1. A control-information detecting apparatus for a refrigeration air-conditioner using a non-azeotrope refrigerant as a refrigerant thereof; the air-conditioner having a refrigerating cycle composed by connecting a compressor, a condenser, a first decompressing device, and an evaporator; the air-conditioner further having a bypass pipe for connecting a high pressure side existing from an exit of said compressor through said first decompressing device to a low pressure side existing from said first decompressing device through an entrance of said compressor with a second decompressing device between them, and a cooling means for cooling the non-azeotrope refrigerant flowing from a high pressure side of said bypass pipe into said second decompressing device; said apparatus comprising:

a first temperature detector for detecting a temperature of the refrigerant on a low pressure side at an exit of said second decompressing device,

a pressure detector for detecting a pressure of the refrigerant on the low pressure side at the exit of the second decompressing device, and

a composition computing unit for computing a composition of the refrigerant circulating through said refrigerating cycle on signals respectively detected by said temperature detector and said pressure detector.

5,626,027

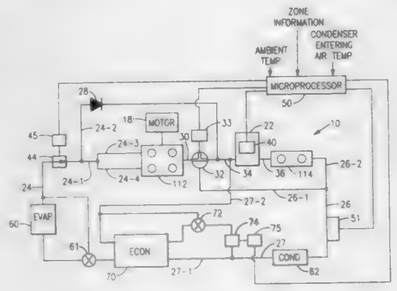
CAPACITY CONTROL FOR MULTI-STAGE COMPRESSORS

Michael J. Dormer, Fabius, and Peter F. Kaido, Verona, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 21, 1994, Ser. No. 360,483

Int. Cl.[6] F25B *7/00*; **G05D** *23/00*

U.S. Cl. 62—175 **4 Claims**



1. In a refrigeration means under microprocessor control for cooling a zone including a closed circuit serially including compressor means, condenser means, economizer means connected to said compressor means, expansion means and evaporator means, a method for operating the refrigeration means during pulldown at high ambient temperature where the compressor means has three banks, a crankcase, a suction inlet connected to the evaporator, means for controlling mass flow to the three banks, and a discharge connected to the condenser comprising the steps of:

supplying gas from the suction inlet to the first and second banks;

supplying gas from the crankcase to a third bank of the three banks;

delivering compressed gas from the third bank to the discharge;

selectively connecting the first and second banks to either the crankcase or the discharge whereby when said first and second banks are connected to the crankcase they act as a first stage and the third bank acts as a second stage and when the first and second banks are connected to discharge they act as a single stage and the third bank acts as a single stage in parallel with the first and second banks;

sensing at least one of ambient and condenser entering air temperature;

sensing zone temperature;

sensing zone set point;

comparing zone temperature and zone set point and if the sensed ambient or condenser entering air temperature is on the order of 100° F., or above, the sensed zone temperature exceeds the zone set point by 5° F., or more, and the first, second and third banks are in single stage operation, performing the serial steps of:

reducing the capacity of said first and second banks to reduce crankcase pressure;

switching over from single stage to two-stage operation;

enabling the economizer whereby capacity is increased and the pulldown is speeded up.

5,626,028

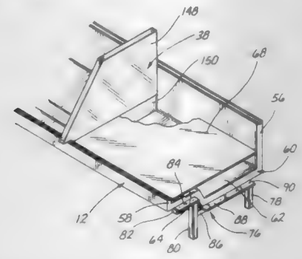
DISPLAY CASE

Kenneth T. Graat, Laguna Niguel, and Randall C. Danta, Tustin, both of Calif., assignors to Architectural Stainless, Inc., Warren, Mich.

Filed Feb. 15, 1994, Ser. No. 196,413

Int. Cl.[6] A47F *3/04*; **E04H** *3/04*; **F25D** *11/00*

U.S. Cl. 62—252 **29 Claims**



1. A modular case for displaying food or the like, comprising:

a bed section having a first length and having first and second ends;

a first zone having a variable second length;

a second zone having a variable third length, said first and second zones being arranged serially along a longitudinal axis of said bed section and being adapted for maintenance at substantially different temperatures relative to one another said different temperatures maintained constant regardless of the actual size of said variable lengths by providing each said zone with independent temperature control; and

a partition located in said case for dividing said first and second zones;

wherein said partition may be positioned at a location along the length of said bed section axially spaced from said first and second ends, and is adapted to be movable when modification of said second or third lengths is desired.

5,626,029

ARRANGEMENT FOR FURNISHING REFRIGERATED OR FROZEN GOODS

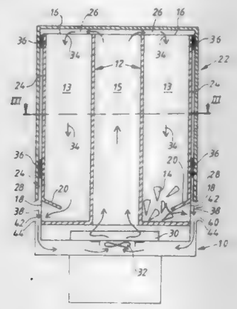
Gunnar Lilja, Arvika, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 6, 1995, Ser. No. 540,124

Claims priority, application Sweden, Dec. 7, 1994, 9404252

Int. Cl.[6] A47F *3/04*; **F25D** *17/04*

U.S. Cl. 62—256 **8 Claims**



1. Arrangement for dispensing refrigerated or frozen goods (**14**) including a magazine (**12**) which is filled with goods from above and, at a bottom, defines an opening (**18**) through which goods are taken out of the magazine, the magazine being surrounded by a casing (**22**) covering a top and sides of the magazine and the goods being refrigerated by air (**34**, **36**) circulated inside the casing, wherein the magazine is constituted by a container (**12**) with at least one compartment (**13**), the opening (**18**) is located at a bottom of the container (**12**) and a portion of the circulating air flows through a gap (**24**) between the container (**12**) and the casing (**22**) and then in an air curtain (**38**) over the opening (**18**).

5,626,030

REFRIGERANT FLOW AMOUNT CONTROL VALVE AND REFRIGERATING APPARATUS THEREWITH

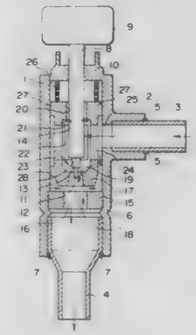
Toshitake Nagai, Gunma-ken, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 22, 1995, Ser. No. 562,046

Claims priority, application Japan, Nov. 24, 1994, 6-290015

Int. Cl.[6] F25B *41/04*

U.S. Cl. 62—324.6 **14 Claims**



1. A refrigerant flow amount control valve having a common refrigerant flow path between an input and an output, said valve being adjustable between a reduced flow condition and an open state, comprising:

adjusting means for adjusting the amount of flow of a refrigerant from the input through said valve in a predetermined reduced range of flow in a single flow path direction thereof; and

a bypass means for causing additional refrigerant to flow from the input through said valve without passing through said adjusting means when said valve is in the open state, and

means for combining the flow of refrigerant through said adjusting means and said bypass into a common refrigerant flow path to the output.

5,626,031

AIR CONDITIONER

Hideaki Motohashi, Shizuoka-ken; Kokichi Furuhama, Tokyo; Megumi Komazaki, and Tetsuo Sano, both of Shizuoka-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 12, 1996, Ser. No. 614,252

Claims priority, application Japan, Mar. 14, 1995, 7-054381

Int. Cl.[6] F25B *39/00*

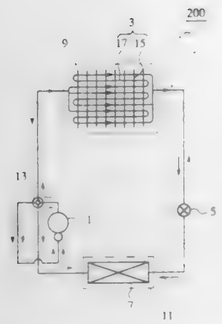
U.S. Cl. 62—502 **14 Claims**

1. An air conditioner comprising:

a compressor for compressing a coolant and for discharging said coolant;

an indoor unit comprising an indoor heat exchanger through which said coolant flows; and

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an outdoor unit comprising an outdoor heat exchanger through which said coolant flows,

wherein a saturation temperature of said coolant at 50° C. is not less than 2500 kPa, and said indoor heat exchanger in said indoor unit satisfies a relationship of Hi×Li/(Di3×Ni2)≧150, where Hi is a cooling operation rated output (kw), Li is a total length (mm) of a heat exchanger tube, Di is the outer diameter (mm) of said heat exchanger tube, and Ni is the number of paths of said heat exchanger tube.

5,626,032

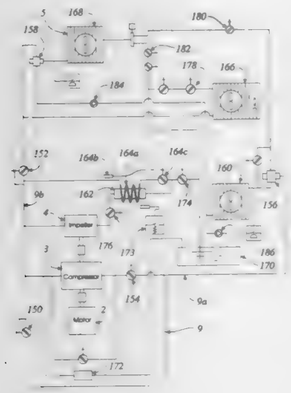
CYCLOTHERMIC CONVERTER VANE PUMP AND IMPELLER SYSTEM

Ian G. Neblett, 125 Terrosa Road, Markham, Ontario, Canada

Filed Jun. 6, 1995, Ser. No. 467,978

Int. Cl.[6] F01C *1/00*; F25B *1/00*

U.S. Cl. 62—513 **16 Claims**



1. A reciprocating vane pump comprising:

a stator

a rotor for riding within said stator;

said rotor comprising a partition having slots and slidable vanes for sliding engagement within those slots;

said stator assembly comprising first and second camming surfaces bracketing said partition;

said slidable vanes disposed intermediate, and for riding engagement of said camming surfaces;

said stator assembly having an inner wall and an outer wall and a gallery intermediate said inner and outer walls;

said camming surfaces each comprising at least an intake sector, a pressurizing sector, and an exhaust sector;

said stator assembly comprising a pressurizing port opening upon said pressurizing sector and communicating with said gallery whereby said pressurizing sector is exposed to pressure prevailing in said gallery.

5,626,033

PROCESS FOR THE RECOVERY OF PERFLUORINATED COMPOUNDS

Satish S. Tamhankar, Scotch Plains; Paul A. Sweeney, Basking Ridge, and Neeraj Saxena, Murray Hill, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Jul. 12, 1996, Ser. No. 678,921

Int. Cl.[6] F25J *3/00*

U.S. Cl. 62—617 **13 Claims**



1. A process for separating components of a feed gas comprised of a first component and a second component, wherein the concentration of said second component in said feed gas varies over time, by a cyclic adsorption process using an adsorbent which more strongly adsorbs said second component than said first component comprising the steps:

(a) passing the feed gas through a chamber containing said adsorbent at a selected pressure and temperature, thereby adsorbing said second component and producing a gas stream depleted in said second component;

(b) desorbing said second component from said adsorbent by reducing the pressure in said chamber or raising the temperature in said chamber or by reducing the pressure and raising the temperature in said chamber, thereby producing a gas stream enriched in said second component; and

(c) modulating the concentration of second component in said feed gas by introducing supplemental second component into said feed gas.

5,626,034

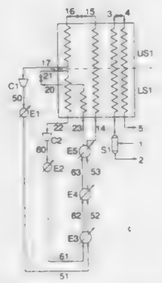
MIXED REFRIGERANTS IN ETHYLENE RECOVERY

David Manley, 11480 Cedar Grove La., and Hazem Haddad, 825 S. Bishop Rd., both of Rolla, Mo. 65401

Filed Nov. 17, 1995, Ser. No. 560,469

Int. Cl.[6] F25J *1/00*

U.S. Cl. 62—623 **12 Claims**



1. A process for ethylene recovery comprising:

(a) a first gas substantially comprising hydrogen, methane and ethylene;

(b) passing the first gas through a high efficiency rectification zone first to a lower section and then to an upper section to recover to a first liquid from the lower section substantially all the ethylene in the first gas;

(c) providing heat interchange between the upper section and a first closed, mixed refrigerant loop; and

(d) providing heat interchange between the lower section and a second closed, mixed refrigerant loop.

5,626,035

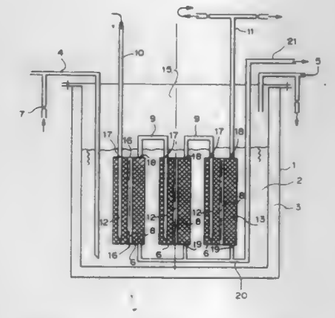
APPARATUS AND METHOD FOR SEPARATION OF HELIUM AND NEON

Felix Pozvonkov, Moscow, Russian Federation, assignor to Russian American Technology Alliance, Norcross, Ga.

Filed Jul. 24, 1995, Ser. No. 506,218

Int. Cl.[6] F25J *5/00*

U.S. Cl. 62—637 **16 Claims**



1. An apparatus for the separation of a mixture of materials which are gaseous at room temperature to produce a purified material, said apparatus comprising:

(a) a hollow, sealed, insulated cryostat;

(b) a plurality of serially connected cartridges which are disposed inside the cryostat;

wherein the cartridges have a hollow interior cavity and include at least first, second and third openings, where the first and second openings are located in a top surface of the cartridge and the third opening is located in a bottom surface of the cartridge;

(c) input means for introducing the mixture into the apparatus, said input means introducing the mixture into the hollow interior cavity of a first cartridge;

(d) collection means for collecting the purified material, wherein the collection means are connected to the third opening means located on the bottom surface of each of the cartridges;

(e) inlet means for introducing a cryogenic coolant into the cryostat container, said inlet means introducing the cryogenic coolant to a space inside the cryostat container which is outside the cartridges;

(f) connection means for transferring the mixture between adjacent cartridges, wherein the connection means is connected to the second opening in the top surface of one cartridge and connected to the first opening of an adjacent cartridge; and where the connection means passes through the first opening into the hollow interior cavity of the adjacent cartridge to introduce the mixture into the hollow cavity of the cartridge;

(g) output means for transferring the gaseous mixture from a final cartridge to the exterior of the cryostat.

5,626,036

PROCESS FOR THE PRODUCTION OF OXYGEN BY CRYOGENIC DISTILLATION

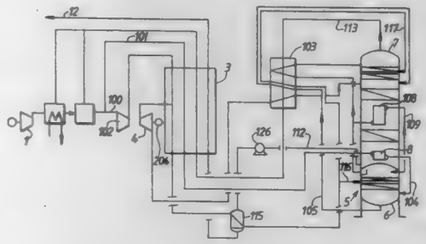
Yves Koeberle, le Perreux sur Marne, France, assignor to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 23, 1995, Ser. No. 408,084

Claims priority, application Erance, Aug. 29, 1994, 94 10364

Int. Cl.[6] F25J *3/00*

U.S. Cl. 62—646 **9 Claims**



1. Process for the production of oxygen by cryogenic distillation of a supply mixture containing oxygen and nitrogen in a double column comprising a medium pressure column and a low pressure column, comprising withdrawing all the oxygen destined to form a gaseous production in liquid phase from the base of the low pressure column, pumping said withdrawn oxygen in liquid phase to a utilization pressure, condensing less than 30% of at least one fraction of the supply mixture in a condenser by vaporization of said liquid oxygen, and sending said partially condensed mixture to the medium pressure column.

5,626,037

KNITTING METHOD

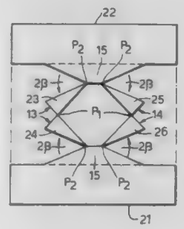
Keith Jeffcoat, Nuneaton, United Kingdom, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1995, Ser. No. 546,261

Claims priority, application United Kingdom, Nov. 10, 1994, 9422674

Int. Cl.[6] D04B *1/22*

U.S. Cl. 66—170 **7 Claims**



1. A knitting pattern for continuously knitting a three-dimensional weft knitted cover having at least one knitted joint formed from two knitted together edges, said knitting pattern having two substantially congruent weft-knittable areas for each respective knitted joint, said congruent areas having at least three sides and being linked at a point P_1 with a pair of first congruent sides of said areas intersecting at said point P_1, said first sides of said congruent areas corresponding with said edges which form the respective knitted joint, with two other congruent sides of each area being straight lines and intersecting at a second point P_2.

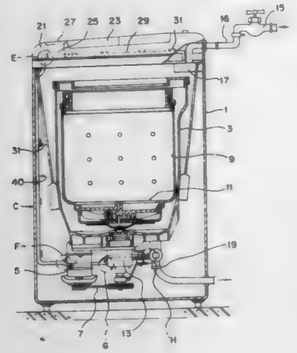
VOL 1198 ISS 1 MY 6 1997 UMI

5,626,038

ELECTRIC WIRE ARRANGEMENT IN A WORKING MACHINE

Young-Hwan Hong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 21, 1995, Ser. No. 426,925
Claims priority, application Rep. of Korea, Apr. 22, 1994, U. M. 94-8636
Int. Cl.° D06F *39/00*
U.S. Cl. 68—3 R 4 Claims



1. A washing machine comprising:
a body;
a washing tub in the body;
a control mechanism mounted on the body;
a drive mechanism for the tub disposed at a lower portion of the body; and
a plurality of single-section coated wires electrically connecting the control mechanism with the drive mechanism, a plurality of the wires arranged together in a first bundle, and remaining ones of the wires arranged together in at least one additional bundle, such that each bundle includes at least two wires, each of the bundles being wrapped by an insulative coating material, each single-section wire carrying a respective pair of male terminals for connection with respective female terminals of the control mechanism and drive mechanism.

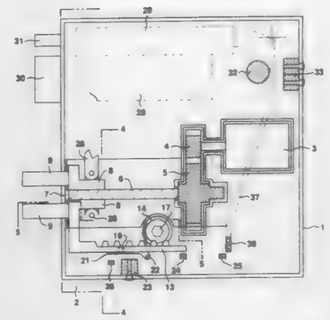
5,626,039

ELECTRONIC SAFETY-LOCK

Antonio Solari, Largo Marconi n. 7, I-16040 Leivi, and Roberto Mottola, Via Privata Argirollo n. 1, I-16043 Chiavari, both of Italy

Filed Apr. 9, 1996, Ser. No. 629,578
Claims priority, application Italy, Apr. 12, 1995, GE95A0036
Int. Cl.° E05B *47/00*
U.S. Cl. 70—279 10 Claims

1. Electronic safety-lock mounted in a box-shaped frame (**1**) secured to a mobile wing (**2**) of a door and provided with one or more lock studs (**9**) entering related borings (**10**) drilled in a lock plate (**11**) fastened onto an edge of a fixed door wing (**12**) or to a contour wall characterized in that it is comprised of:
a motor (**3**) operating on low voltage d.c. and rotating in both directions
a driving gear (**4**) keyed onto a motor shaft
a driven gear (**5**) meshing with the driving gear (**4**) at a speed reduction ratio;
a worm screw (**6**) axially mounted on the driven gear (**5**) and revolving with the latter;
a threaded slider (**8**) keyed onto the worm screw (**6**);
one or more closing studs (**9**) rigidly connected to the slider (**8**) and cooperating with the boring(s) (**10**) in the lock plate (**11**);
a rack (**13**) rigidly connected to the threaded slider (**8**) and provided with a lower lock hole (**19**);



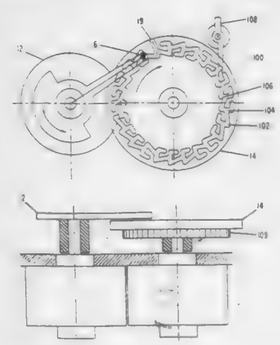
a gear wheel (**14**) meshing with the above mentioned rack (**13**);
a cylinder or sprocket latch (**17**) which can be axially moved inwards against the action of a spring loaded coil, to engage the gear wheel (**14**) with the aid of a key (**15**) fitted into the cylinder from outside, a surface of the cylinder or sprocket latch (**17**) being cone-shaped tapered (**18**) so that this cylinder or sprocket latch can be hand operated in emergency cases;
a knob (**16**) coupled to the gear wheel (**14**) to open the door from inside in case of emergency, after having released the rack (**13**) by means of a pin tooth (**36**) located inside the door;
an L-shaped ratchet (**21**) located below the rack (**13**) and oscillating on a pin (**22**) transverse to the frame, so that a vertical flange of the ratchet (**21**) will touch the cone-shaped portion (**18**) of the cylinder (**17**) for emergency opening;
a blocking pin tooth (**20**) located on an upper face of a horizontal flange of the ratchet (**21**) entering the hole (**19**) in the rack (**13**) to ensure its interlock;
an electromagnet (**23**) activating the ratchet (**21**) to release the rack (**13**), provided with a return spring;
sensors (**24**, **25**, **26**) to detect the release position of the ratchet (**21**) as well as the open and closed positions of the rack (**13**);
a remote control (**34**) with opening push-button (A) and closing push-button (C), controlling an electric operating circuit.

5,626,040

ROTARY PIN-IN-MAZE DISCRIMINATOR

Gilbert L. Benavides, Albuquerque, N.M., assignor to Sandia Corporation, Albuquerque, N.M.

Filed Jul. 20, 1994, Ser. No. 277,100
Int. Cl.° E05B *37/20*
U.S. Cl. 70—290 22 Claims



1. A discriminator apparatus comprising:
a first planar surface capable of rotation;

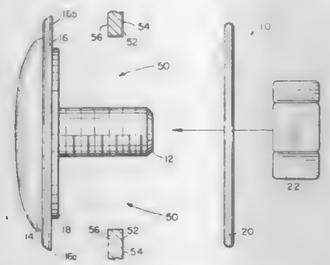
a second planar surface capable of rotation, said first and second surfaces having parallel but separate axes of rotation;
a maze consisting of a plurality of binary decision points, each decision point comprising two advancement choices of constant angular displacement, one of which leads to a dead end in said maze, said maze being placed on said first surface; and
an extended member fixed to and extending perpendicularly from said second surface, said extended member being capable of engaging and passing through said maze.

5,626,041

LOCK CYLINDER REPLACEMENT DEVICE AND METHOD OF REPLACING LOCK CYLINDER WITH LOCK CYLINDER REPLACEMENT DEVICE

James M. Zaccaria, 9 Shoredale Dr., Manhasset, N.Y. 11030

Filed May 17, 1995, Ser. No. 442,659
Int. Cl.° E05B *9/08*
U.S. Cl. 70—370 20 Claims



1. In combination, a door, a lock cylinder hole located in the door and a lock cylinder replacement device for replacing a lock cylinder removed from the lock cylinder hole in the door, the lock cylinder replacement device comprising:
a body portion having a shape corresponding to a shape of the lock cylinder hole;
a head portion connected to the body portion and having a shape to cover the lock cylinder hole, the head portion including a continuous outer surface which lacks an opening formed thereon;
a securing device for securing the lock cylinder replacement device in the lock cylinder hole.

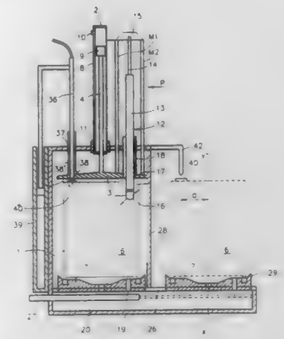
5,626,042

DEVICE FOR THE PREPARATION OF USED METAL BARRELS WITH A VIEW TO FACILITATING HANDLING AND RECYCLING THEREOF

Jean-Claude Vasseur, 42, Avenue de Conflans, 78260 Acheres, France

Filed May 12, 1995, Ser. No. 439,889
Int. Cl.° B21C *43/00*
U.S. Cl. 72—39 11 Claims

1. A device for processing a used barrel with a view to storage and/or recycling thereof, said barrel having a vertical axis of symmetry and comprising an upper side fitted with a filling and/or draining hole having a vertical axis spaced from said axis of symmetry and situated in a standardized position, said device comprising:
a processing enclosure inside which said barrel is processed,
a supporting structure comprising a base bearing a rotary supporting means on which said barrel is disposed, centered and pivoted about said vertical axis of symmetry, and
a purging device comprising a purging rod that is mobile along a vertical axis situated at a same distance from said axis of symmetry as the axis of said hole, in order for said rod to be able to be brought into line with the axis of said hole when said barrel is disposed in said enclosure and centered on said rotary supporting means, by means of a simple rotation of said barrel on said rotary supporting means, and to then be inserted inside the barrel by a downward translational motion along said vertical axis, said rod being connected to a suction means.

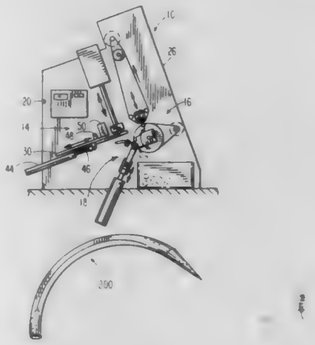


5,626,043

APPARATUS FOR FORMING CURVED RECTANGULAR BODIED NEEDLES

Michael W. Bogart, Milford, and Richard J. Smith, Stamford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 135,602, Oct. 8, 1993, Pat. No. 5,526,666, which is a continuation-in-part of Ser. No. 958,926, Oct. 9, 1992, abandoned. This application Feb. 15, 1996, Ser. No. 602,227
Int. Cl.° B21G *1/00*
U.S. Cl. 72—133 4 Claims



1. A method of forming curved rectangular bodied needles from substantially round-elongated needle blanks comprising the steps of:
a) flat pressing opposite sides of the needle blanks between a pair of flat press dies;
b) drawing the needle blanks from at least one of said flat press dies onto a rotatable mandrel;
c) curving the needle blanks between said rotatable mandrel and a reciprocable belt;
d) rotating the needle blanks about said mandrel and adjacent side press dies and depositing the needle blanks therebetween; and

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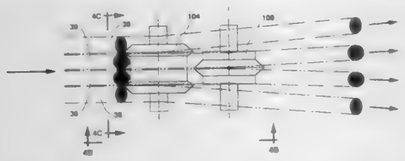
e) side pressing opposite sides of the needle blanks between said side press dies, said side pressing acting on sides of the needle blanks substantially perpendicular to the flat pressed sides.

5,626,044

METHOD OF PRODUCING STEEL BARS FROM BILLETS

Manuel Lara-Castro, Ave. Fuentes del Valle 648 Ote., Col. Fuentes del Valle, San Pedro Garza Garcia, Nuevo León, Mexico

Filed May 19, 1995, Ser. No. 445,431
Int. Cl.° B21B *1/12*
U.S. Cl. 72—203 **2 Claims**



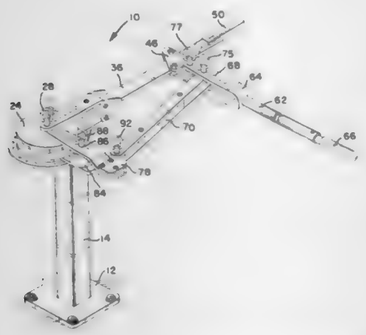
1. A method of rolling a steel billet into uniform steel reinforcing bar product in a continuous hot rolling mill having a plurality of rolling stands, which method comprises forming a multiple element rolled stock composed of at least four individual strand-like side-by-side elements by rolling a billet through a plurality of successive stands, said individual elements of said rolled stock being joined together lengthwise to the next adjacent element(s) by a thin web of steel therebetween, outer elements have a different shape and a larger cross-section as compared to the next respective inner elements in said multiple element stock, splitting said individual elements while at a high temperature to separate horizontally all the strand-like elements in a single pass, and thereafter simultaneously rolling said separate individual elements to a final shape of said product bars, whereby said difference in shape of the inner and outer elements counteracts differences in tension and produces individual reinforcing bars of uniform size and shape.

5,626,045

METAL STOCK BENDER

Marshall R. Bulle, P.O. Box 163, Centennial, Wyo. 82055

Continuation-in-part of Ser. No. 232,389, Apr. 25, 1994, abandoned. This application Jun. 15, 1995, Ser. No. 490,568
Int. Cl.° B21D *7/024*
U.S. Cl. 72—219 **14 Claims**



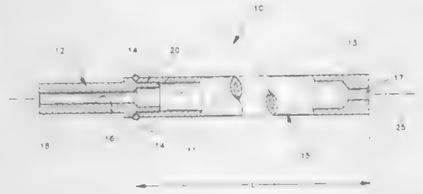
1. Apparatus for manual bending of metal stock comprising:
a) pedestal means for support;
b) forming die means pivotably mounted upon said pedestal means for providing a predetermined metal stock shape;
c) roller die holder means pivotally mounted upon said pedestal means coaxial with said forming die means, said roller die holder means having roller die means pivotally mounted thereupon with the roller die holder being oriented to rotate said roller die means around said forming die means, arranged such that said roller die means will bend any metal stock placed between said roller die means and said forming die means to the shape of said forming die means;
d) compound lever means for rotating said roller die holder means around said forming die means, said compound lever means having a pivot point offset from said forming die means, said compound lever means further having slide bar means for slidably changing the position of the pivot point with respect to said forming die means, said slide bar means having lever operated locking means for securing the pivot point position of the compound lever means.

5,626,046

LIGHTWEIGHT RAM FOR BODYMAKER

Ralph Main, San Pedro, Calif., assignor to Sequa Corporation, Hackensack, N.J.

Continuation-in-part of Ser. No. 212,036, Mar. 10, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,994
The portion of the term of this patent subsequent to Nov. 25, 2011, has been disclaimed.
Int. Cl.° B21C *25/02*
U.S. Cl. 72—273 **22 Claims**



1. A lightweight ram for high speed apparatus that produces relatively elongated can bodies by driving relatively shallow cups through a ring type die means, said ram including:
a nose piece constructed to mount and operatively position a punch on said ram;
a body constructed from a single integral piece having an elongated thin-walled tube section with a front end and tail piece section adapted for connection to a drive means that reciprocates the ram along its longitudinal axis;
said nose piece, said tube section and said tail piece section being in axial alignment, with said tube section interposed between said nose piece and said tail piece section;
a metallurgical bond fixedly securing said nose piece to said tube section at said front end and extending forward thereof.

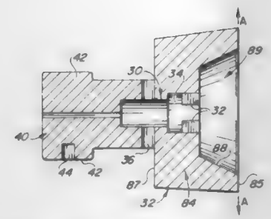
5,626,047

FIXED DUMMY BLOCK ASSEMBLY

Luis B. Bello, 2180 NW. 82nd Ter., Pembroke Pines, Fla. 33024

Filed Nov. 13, 1995, Ser. No. 556,390
Int. Cl.° B21C *25/00*
U.S. Cl. 72—273 **12 Claims**

1. An improved fixed dummy block assembly to be used with a heavy duty metal extrusion assembly including a hydraulic press and a billet container having: (i) a die end over which an extrusion die is positioned and from which a formed part exits, (ii) an interior wall surface to contain a metal billet from which the formed part is extruded, and (iii) an open inlet end opposite the die end; said improved fixed dummy block assembly comprising:



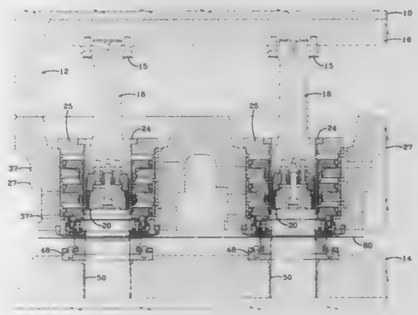
a stem connected with the hydraulic press, said stem being disposed in axial alignment with a central axis of the billet container and being structured to be pushed towards said open inlet end of the billet container.
said stem being generally elongate and including a first end disposed in confronting relation with said open inlet end of the billet container,
an axial socket extending into said stem from said first end thereof and including an outer end at said first end of said stem and an inner end within an interior of said stem.
an exterior dummy block member, said exterior dummy block member including an expansion segment and a connector segment,
said connector segment being structured and disposed to be axially and slidingly inserted into said axial socket of said stem.
said axial socket and said connector segment including lock means structured and disposed to secure said exterior dummy block member in axial alignment at said first end of said stem so as to prevent removal of said connector segment from said axial socket,
said expansion segment of said exterior dummy block member including a front end, a rear end, and a surrounding wall structure defining an open interior area which extends inwardly from said front end, said open interior area including a bell head containment portion and a bell stem containment portion,
a compression bell, said compression bell including a bell head, having a primary face, a rear face, and a surrounding wall structure, and a bell connector stem extending from said rear face of said bell head in a direction opposite said primary face of said bell head,
said compression bell being structured and disposed to be contained within said open interior area of said expansion segment such that said bell stem extends into said bell stem containment portion of said open interior area of said expansion segment and said bell head is retained in said bell head containment portion of said open interior area of said expansion segment,
said compression bell being structured and disposed to protrude from said front end of said expansion segment and to engage said expansion segment such that upon said primary face of said bell head engaging the metal billet within said billet container said compression bell will be pushed into said open interior area of said expansion segment resulting in an outward flexing of said surrounding wall structure of said expansion segment,
said bell stem and said bell stem containment portion including bell locking means structured and disposed to maintain said bell stem securely, yet removably within said bell stem containment portion and thereby maintain said compression bell securely within said open interior area of said expansion segment,
said bell locking means in said bell stem containment portion including at least one entry channel extending axially along an interior of said bell stem containment portion, and at least one lock recess formed in said interior of said bell stem containment portion in adjacent communication with said entry channel,
said bell locking means on said bell stem further including at least one lock segment protruding from a perimeter of said bell stem, said lock segment being structured and disposed to slidingly move through said entry channel of said bell stem containment portion upon insertion of said bell stem of said compression bell into said bell stem containment portion in said expansion segment, and
said lock segment being further structured and disposed to slide from said entry channel in said bell stem containment portion into an engaged position within said lock recess of said bell stem containment portion, upon axial rotation of said compression bell within said expansion segment, so as to prevent removal of said compression bell from said expansion segment unless said compression bell is affirmatively rotated out of said engaged position.

5,626,048

METHOD AND APPARATUS FOR FORMING CUP-SHAPED MEMBERS

James A. McClung, North Canton, Ohio, assignor to Can Industry Products, Inc., Canton, Ohio

Filed Nov. 20, 1995, Ser. No. 560,891
Int. Cl.° B21D *28/20*
U.S. Cl. 72—336 **18 Claims**



1. A method of forming a cup-shaped member from a metal sheet in a single continuous stroke of a double-acting press having inner and outer rams, including the steps of:
(A) feeding the metal sheet between a blank and draw die and an aligned draw horn, pressure-actuated draw pad and cut edge;
(B) advancing the cut edge and draw pad toward the metal sheet and the blank and draw die by movement of the outer ram toward the blank and draw die;
(C) blanking a disk from the metal sheet by advancing the cut edge in a continuous stroke of the outer ram;
(D) clamping a periphery of the disk between the draw pad and the blank and draw die upon advancement of the draw pad by the continuous stroke of the outer ram by applying a pneumatic clamping pressure on said draw pad;
(E) incrementally increasing the pneumatic clamping pressure on the draw pad when clamping the periphery of the disk by sequentially advancing a plurality of vertically stacked pistons into engagement with each other and with the draw pad as the outer ram continues to move toward the lower blank and draw die;
(F) advancing the draw horn towards the disk by movement of the inner ram; and
(G) drawing the cup-shaped member from the disk, by the advancement of the draw horn in a continuous single stroke of the inner ram.

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5,626,049

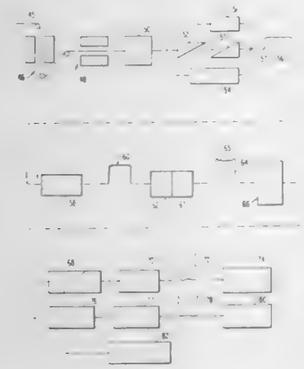
DRAW-PROCESS SYSTEMS FOR FABRICATING ONE-PIECE CAN BODIES

William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.

Division of Ser. No. 866,661, Apr. 8, 1992, Pat. No. 5,409,130, which is a division of Ser. No. 573,548, Aug. 27, 1990, Pat. No. 5,119,657, which is a continuation-in-part of Ser. No. 831,624, Feb. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 712,238, Mar. 1, 1985, abandoned. This application Apr. 14, 1995, Ser. No. 421,777

Int. Cl.[6] B21D *22/00;22/21*

U.S. Cl. 72—347 9 Claims



1. Draw process system for fabricating flat-rolled sheet metal precoated with organic coating and draw lubricant into a one-piece can body, comprising

(A) means providing relatively light-gauge high tensile strength flat-rolled sheet metal can stock, predeterminedly coated on each surface with organic coating and draw lubricant, in the form of cut blanks,

(B) cupping means for drawing such a blank into a cup-shaped work product presenting:

a closed endwall,

a side wall which is symmetrically disposed with relation to a centrally-located axis for the work product,

such side wall defining an open end, spaced along the centrally-located axis of such work product, opposite to such closed endwall, and

flange metal extending peripherally outwardly at such open end so as to be disposed substantially perpendicularly transverse to such axis,

such cupping means for draw forming such cup-shaped work product including:

(i) a draw die defining an interior die cavity which is symmetrical with such centrally-located axis,

(ii) a die cavity entrance surface, which is curvilinear in a plane which includes such axis, selected to be as small as practicable while avoiding cutting of such sheet metal blank,

(iii) a planar clamping surface circumscribing such die cavity entrance surface and disposed to be substantially transversely perpendicular to such central axis,

(iv) a draw punch, for movement into such die cavity, having a curvilinear transition zone surface, between its endwall and side wall, which is as large as possible while avoiding buckling of sheet metal as such sheet metal is drawn into such die cavity, and

(v) clamping means presenting a planar clamping surface, circumscribing such draw punch side wall, for coacting with the planar clamping surface of such cupping die so as to place sheet metal peripherally exterior to such die cavity entrance under tension during work product fabrication so as to prevent any significant increase in sheet metal thickness of such work product side wall which would be detrimental to organic coating adhesion.

5,626,050

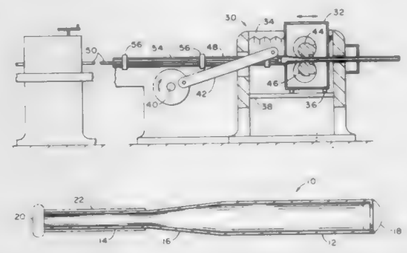
METHOD OF MAKING METAL BALL BATS

Thomas A. Ploughe, Frankfort, and Robert C. Pahl, West Lafayette, both of Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 8, 1994, Ser. No. 351,994

Int. Cl.[6] B21B *17/06*

U.S. Cl. 72—370 11 Claims



1. A method of making stock for fabricating a hollow metal ball bat, said stock having a barrel section, a handle section and a tapered section connecting said barrel section and handle section, said barrel section having a first inner and outer diameter, said handle section having a second outer and inner diameter, said second outer and inner diameters being smaller than said first outer and inner diameters, said tapered section having a variable inner and outer diameter along its length and a substantially uniform wall thickness, the method comprising:

(a) providing a cylindrical tube blank having a generally uniform wall thickness and outer and inner diameters equal to said first outer and inner diameters;

(b) rigidly fixing said first end of said tube into a pusher, said pusher having a cylindrical opening of a diameter slightly larger than said outer diameter of said tube blank;

(c) positioning a mandrel rod inside said tube, said mandrel rod having a leading section, a transition section and a trailing section, said leading section having an outer diameter approximately equal to said second inner diameter of said handle section, said transition section having an outer diameter approximately equal to said variable inner diameter of said tapered section, said trailing section having an outer diameter approximately equal to said second inner diameter of said handle section, said mandrel rod supporting said cylindrical tube blank;

(d) advancing said pusher to a reducing rolling mill; and

(e) feeding said tube blank into said reducing rolling mill and longitudinally reducing the diameter of a portion of said tube to form said handle section and said tapered section and thereby form stock for fabricating a hollow metal ball bat.

5,626,051

PROCESS AND DEVICE FOR FORMING A CORRUGATED METAL SHEET AND CORRUGATED METAL SHEET OBTAINED BY THIS PROCESS

Dominique Sabin, Herbeville, France, assignor to Packinox, Paris, France

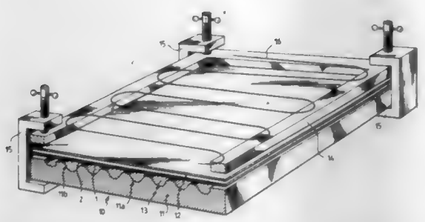
Filed Apr. 24, 1995, Ser. No. 427,308

Claims priority, application France, Apr. 22, 1994, 94 04891

Int. Cl.[6] B21B *9/00;* B21C *37/02;* B21D *26/02;* B21J *5/04*

U.S. Cl. 72—379.6 6 Claims

1. Process for forming a corrugated metal sheet (1) which includes perforations (2) over an entire surface of said metal sheet, said process comprising the steps of:



(a) positioning said metal sheet (1) on a corrugated die (11);

(b) positioning a frame (14) on an upper peripheral edge of said metal sheet (1);

(c) clamping said sheet (1) between said frame (14) and said die (11);

(d) placing an explosive charge (16) with remote-controlled firing on top of an upper face of said metal sheet (1);

(e) creating a vacuum in a space (13) delimited between said metal sheet (1) and said die (11);

(f) sealing said space (13) by blocking off said perforations (2) in said metal sheet (1);

(g) immersing an assembly of said metal sheet, said frame and said die in a firing tank filled with water;

(h) initiating firing of said explosive charge (16) so that an energy release presses said metal sheet (1) against said die (11); and

(i) removing said corrugated metal sheet (1) from said die (11).

5,626,052

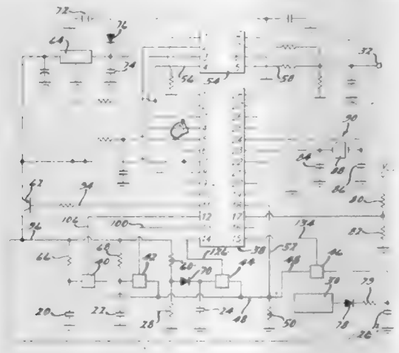
SMART FUEL TANK MODULE

John C. Lawson, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Division of Ser. No. 185,336, Jan. 24, 1994. This application Jun. 6, 1995, Ser. No. 470,687

Int. Cl.[6] G01F *23/26*

U.S. Cl. 73—304 C 6 Claims



1. A method for collecting liquid level data from at least two capacitive sensors and a resistive member located within a storage tank in a vehicle, wherein a first capacitive sensor is disposed so as to be always immersed in a liquid within said storage tank, and a second capacitive sensor is disposed so as to be exposed to a changing liquid level within stud storage tank, comprising the steps of:

(a) charging said first and second capacitive sensors;

(b) discharging said first capacitive sensor through a resistive member and recording the discharge time as a first clock count representing a full-tank liquid level;

(c) discharging said second capacitive sensor through said resistive member and recording the discharge time as a second clock count representing an instant liquid level; and

determining absolute liquid level data representative of the fractional volume of fuel remaining in said tank using said first and second clock counts.

5,626,053

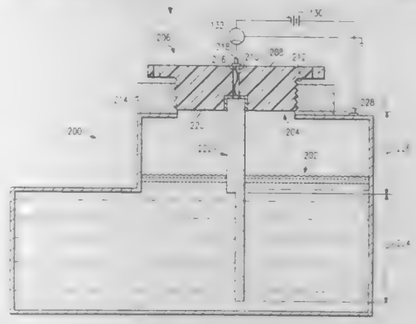
FLOATLESS GAUGE WITH RESISTIVE/CONDUCTIVE POLYMER

Cecil M. Williamson, Carrollton, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.

Division of Ser. No. 509,833, Aug. 1, 1995, which is a division of Ser. No. 158,036, Nov. 24, 1993, Pat. No. 5,501,102. This application May 16, 1996, Ser. No. 648,592

Int. Cl.[6] G01F *23/24;* H01C *7/00;10/06*

U.S. Cl. 73—304 R 16 Claims



5. A tank having a floatless gauge comprising:

(a) a tank made of conductive material for containing a conductive fluid, said tank having a non-uniform horizontal cross sectional area;

(b) a terminal attached to said tank;

(c) a base made of insulating material attached to said tank;

(d) an elongate electrically resistive/conductive polymeric member connected at one end thereof to said base such that it is insulated from said tank and extending into said tank such that it can be contacted by liquid in said tank, said elongate member having a resistance profile corresponding to the variations in horizontal cross sectional area of said tank; and

(e) a second terminal connected to said polymeric member for connection to a voltage indicator.

5,626,054

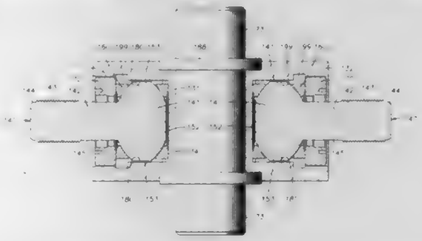
LOAD DECOUPLER

Michael E. Rembert, Cypress, and Robert W. Milner, Katy, both of Tex., assignors to Bettis Corporation, Waller, Tex.

Filed Sep. 11, 1995, Ser. No. 526,683

Int. Cl.[6] F16H *21/22*

U.S. Cl. 74—104 14 Claims

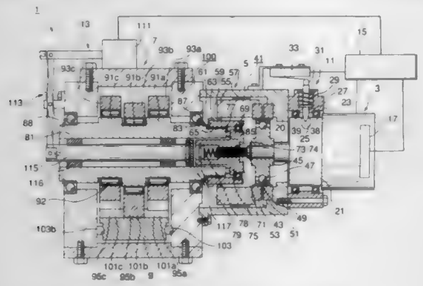


1. A device for dissipating lateral forces generated on converting linear motion to rotary motion, said device comprising:

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a linearly movable first rod member linked at one end thereof to force transmitting means via connector means;
means for restricting relative rotation between said first rod member and said force transmitting means;
rotatable member engaged with said force transmitting means via a pin connection;
said connector means including;
hemispherically surfaced head linked to said first rod, and spherical washer means slidably engaging said head, said head and said washer means carried in a cavity of said force transmitting means, said head comprising oppositely facing curved surfaces and said washer means comprising oppositely facing, concave surfaced washers, each washer having a concave surface for slidably engaging said head;
said rotation restricting means includes stop means provided the wall of said cavity and stop engaging means provided said head; and
said stop engaging means comprises at least one flattened surface intermediate said curved surfaces.

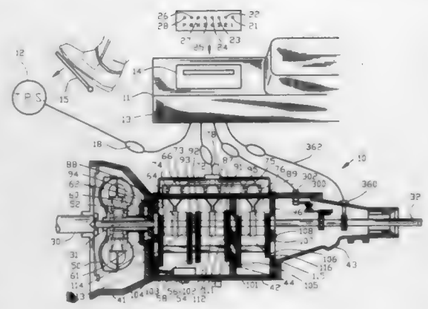
5,626,055
ELECTRICALLY-DRIVEN THRUST GENERATOR
Kiyozumi Fukui, Tokyo, Japan, assignor to Teijin Seiki Co., Ltd., Japan
Filed May 11, 1995, Ser. No. 438,712
Claims priority, application Japan, May 12, 1994, 6-122059
Int. Cl.[6] F16H *29/22*
U.S. Cl. 74—116 **25 Claims**



1. An electrically driven thrust generator comprising:
an electrically driven motor;
a variable reduction ratio speed reducer for reducing rotation of the motor;
a rotary motion to linear motion converting mechanism for converting rotary motion output from the speed reducer to linear motion; and
a thrust rod linearly driven by the rotary motion to linear motion converting mechanism; wherein
the thrust rod is disposed to contact an object to apply thrust to the object; and
said rotary motion to linear motion converting mechanism comprises an oscillating crank plate driven rack mechanism.

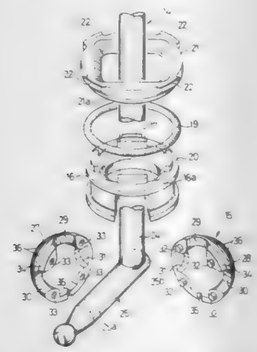
5,626,056
HYDRAULICALLY OPERATED TRASNMISSION FOR LAND VEHICLE
Kevin M. Owens, 115 S. Lois Ave., Tampa, Fla. 33614
Filed Mar. 31, 1995, Ser. No. 414,447
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—333 **8 Claims**

1. An improved automatic transmission for transferring rotational power from a rotary power input of a land vehicle and a rotary power output of a drive wheel of the land vehicle, comprising:



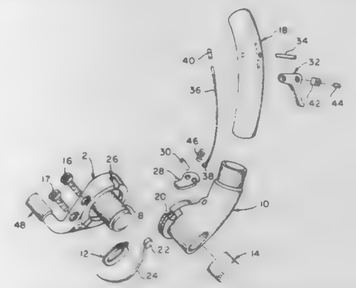
an input shaft connected to the rotary power input for receiving rotary power therefrom;
an output shaft connected to the rotary power output for transferring rotary power thereto;
an input drive gear secured to said input shaft;
first, second and third drive gears rotatably mounted to said output shaft;
a countershaft having a countershaft gear secured thereto for rotational engagement with said input drive gear of said input shaft for transferring rotational power from said input shaft to said countershaft;
first, second and third countershaft gears secured to said countershaft for rotational engagement with said first, second and third drive gears of said output shaft for transferring rotational power from said countershaft to said first, second and third drive gears, respectively;
first, second and third clutches mounted between said output shaft and said first, second and third drive gears for transferring rotational power from a selected one of said first, second and third drive gears to said output shaft upon engagement of a selected one of said first, second and third clutches, respectively;
each of said first, second and third drive gears being connected to a clutch gear respectively disposed within said clutch housing;
each of said first, second and third clutches comprising a clutch housing secured to said output shaft;
each of said clutch housings having a peripheral region having a plurality of keyways;
a plurality of key rings located within each of said clutch housing with each of said plurality of key rings having a key located within said plurality of keyways for preventing rotation of said plurality of key rings relative to said clutch housing;
a plurality of gear rings located within said each of said clutch housing with each of said plurality of gear rings having gear teeth for engaging said clutch gear teeth of said clutch gear for preventing rotation of said plurality of gear tings relative to said drive gears;
said plurality of key rings being interleaved with said plurality of gear rings for enabling said plurality of key rings to rotate relative to said plurality of gear rings;
a clutch piston slidably disposed within each of said clutch housings for preventing rotation of said plurality of key rings relative to said plurality of gear rings upon an introduction of fluid pressure within said clutch housing;
a control for selectively introducing fluid pressure within one of said first, second and third clutches for transferring rotational power from said input shaft to said output shaft in accordance with said selected one of said first, second and third drive gears;
a park assembly comprising a park gear having a plurality of voids secured to said output shaft;
a blocking member pivotably mounted for movement between a non-interrupting position whereat said blocking member is positioned remote from one of said plurality of voids to enable rotation of said output shaft and an interrupting position whereat said blocking member is positioned within one of said plurality of voids to inhibit rotation of said output shaft;
said blocking member being biased into said non-interrupting position;
a stem slidably mounted in a direction parallel to said output shaft;
bar actuator being slidably mounted on said stem with a spring biasing said bar actuator into an extending position;
an electrical actuator connected to said control system for slidably moving said stem in accordance with a signal from said control system;
said control system actuating said electrical actuator to slidably move said stem for enabling said bar actuator to pivot said blocking member into one of said plurality of voids of said park gear for inhibiting rotation of said output shaft;
said bar actuator pivoting said blocking member into engagement with a surface of said park gear upon a misalignment of said blocking member with one of said plurality of voids of said park gear; and
said bar actuator pivoting said blocking member into one of said plurality of voids of said park gear upon a slight rotation of said output shaft due to a slight movement of said vehicle for inhibiting rotation of said output shaft.

5,626,057
CHANGE LEVER SUPPORTING STRUCTURE
Yukio Nishigai; Shigeo Matsumoto, and Takatoshi Harada, all of Shizuoka, Japan, assignors to Kabushiki Kaisha Atsumitec, Shizuoka, Japan
Filed Jun. 1, 1995, Ser. No. 456,377
Claims priority, application Japan, Dec. 28, 1994, 6-328189; Jan. 9, 1995, 7-001369
Int. Cl.[6] F16H *59/04*
U.S. Cl. 74—473 P **6 Claims**



1. A change lever supporting structure, comprising:
a change lever including a main lever having a knob, and a subsidiary lever projected from one side of a lower end portion of said main lever; and
a spherical fulcrum member having a center at an intersection between axes of both said main and subsidiary levers and attached to said change lever; said fulcrum member being supported on a housing of a lever bracket for swinging movement in a select direction and a shift direction of said change lever.
wherein said main and subsidiary levers are intersected integrally coupled so as to form a T-shape, said fulcrum member is formed by coupling a pair of hemispherical bodies, and said hemispherical bodies are formed at their coupled end surfaces with semi-cylindrical supporting recesses extending in three directions so as to be fitted around outer peripheral surfaces of said main and subsidiary levers wherein each of said hemispherical bodies is formed of synthetic resin by molding, and is provided at an outer periphery of an end portion thereof with an annular chamfer formed during molding.

5,626,058
ROTARY ACTUATOR FOR A BICYCLE BRAKE
John W. Karpowich, P.O. Box 66100, Los Angeles, Calif. 90066, and Scott A. Robinson, 3844 Anvil Dr., Colorado Springs, Colo. 80925
Continuation-in-part of Ser. No. 427,264, Apr. 24, 1995, abandoned. This application Oct. 20, 1995, Ser. No. 546,142
Int. Cl.[6] B62L *3/00*
U.S. Cl. 74—489 **13 Claims**

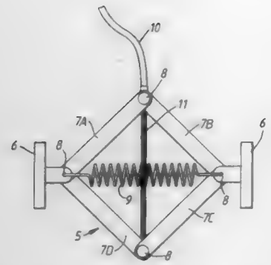


1. Apparatus for displacing a bicycle brake cable to apply and release a bicycle brake, comprising
(a) a housing mounted on a bicycle handlebar, said housing including a spindle;
(b) an actuator mounted on said housing spindle, one end of the brake cable being connected with said actuator, said actuator including a handle which extends generally radially from the bicycle handlebar and having an axis of rotation generally parallel to the bicycle handlebar;
(c) means for connecting said actuator with said spindle; and
(d) means for releasably locking said actuator with respect to said housing, whereby when said actuator is rotated in a first direction with respect to said housing, said actuator pulls the brake cable to apply the bicycle brake, and when said actuator is rotated in a second direction with respect to said housing, said actuator pushes the brake cable to release the bicycle brake and said locking means fixes said actuator in a brake release portion.

5,626,059
CLAMPING MECHANISM FOR AN ADJUSTABLE STEERING COLUMN
John T. Bobbitt, III, Warwickshire, and Stephen J. Baker, Staffordshire, both of England, assignors to The Torrington Company, Torrington, Conn.
Filed Nov. 20, 1995, Ser. No. 560,723
Claims priority, application United Kingdom, Dec. 1, 1994, 9424251
Int. Cl.[6] B62D *1/18*
U.S. Cl. 74—493 **8 Claims**

1. A clamping mechanism for an adjustable steering column, the clamping mechanism comprising:
a clamping member means for clamping the steering column;
a linkage mechanism coupled to the clamping member means, the linkage mechanism having two first arms, one end of each first arm being pivotally connected to the clamping member means, the other end of each first arm being pivotally connected to one another at a first common pivot point;
a resilient means for normally biasing the clamping member means into clamping engagement with the steering column; and

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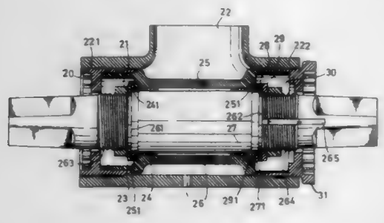
an operator means for moving the linkage arms against the bias of the resilient means to unclamp the steering column, the operator means being connected to the linkage mechanism first common pivot point.

5,626,060

BICYCLE BOTTOM BRACKET AND BEARING AXLE ARRANGEMENT

Wen-Hwa Lin, No. 812, Chan Shen Rd., Tiah Shen Tsun, Wei Pu Hsiang, Taichung Hsien, Taiwan

Filed Jun. 26, 1996, Ser. No. 670,444
Int. Cl.[6] G05G *1/14;* **F16C** *13/08*
U.S. Cl. 74—594.1 **1 Claim**



1. A bicycle bottom racket and bearing axle arrangement comprised of an externally threaded left end cap, a left nut, a bottom bracket, a left locating clamp, a left axle bearing, a bushing, a bottom bracket bearing axle, a right axle bearing, a right locating clamp, a cushion, a right nut, and an externally threaded right end cap, said bottom bracket having two inner threads at two opposite sides, said left end cap and said right end cap being respectively threaded into the inner threads of said bottom bracket to hold said bushing inside said bottom bracket, said bushing having an inside annular flange, wherein:

said bearing axle is inserted through said right end cap, said bushing, and said left end cap, comprising two outer threads near two opposite ends, two annular grooves made around the periphery and space within the outer threads of said bearing axle, and four longitudinal sliding grooves equiangularly spaced around the periphery near one end;

said left axle bearing and said right axle bearing are respectively made from oil modified resin and mounted around said bearing axle in two opposite ends of said bushing and respectively stopped at two opposite ends of the inside annular flange of said bushing, having a respective outward flange respectively stopped outside two opposite ends of said bushing;

said left locating clamp and said right locating clamp are respectively fastened to the annular grooves of said bearing axle to hold said left axle bearing and said right axle bearing in place;

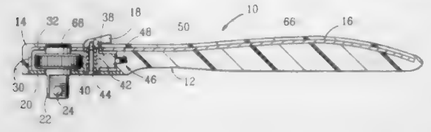
said cushion is mounted around said bearing axle and retained between said right locating clamp and said right nut, having four inward teeth respectively engaging the longitudinal sliding grooves of said bearing axle.

5,626,061

COMPOSITE RATCHET

Lowell B. Whitley, Arlington, Tex., assignor to Stanley Mechanics Tools, Carrollton, Tex.

Filed Jul. 13, 1995, Ser. No. 502,272
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—63 **60 Claims**



1. A reversible drive ratchet wrench having a head and a handle which are connected together by an intermediately disposed unitary body, comprising:

a single piece insert formed of a singular piece of metal and extending substantially the full length of said ratchet wrench, from the distal end of said handle to said head, to define a supporting handle portion of said handle, a neck portion of said unitary body and a supportive head portion of said head, said singular piece of metal having a thickness which is substantially less than an overall thickness of said handle prior to forming said singular piece of metal into said single piece insert;

said supportive head portion of said single piece insert defining a peripheral wall portion and a base portion of a cup having an opening which is disposed within said wall portions and adjacent to said base portion;

a ratchet mechanism disposed in said cup;

a clamp plate extending across said opening of said cup, opposite of said base portion, with said ratchet mechanism disposed therebetween;

said single piece insert having a multiplicity of cross-sectional shapes which vary along said full tenth of said ratchet, from a wide cross-section at said supportive head portion which is widely sized relative to other cross-sections of said single piece insert, to a thin cross-section at said neck portion which is thinly sized relative to said wide cross section of said supportive head portion and to an intermediately widened cross-section at said supporting handle portion which is intermediately sized relative to said wide cross-section of said supportive head portion and said thin cross-section of said neck portion;

said thin cross-section of said neck portion of said single piece insert being formed into a first concave shape such that said neck portion provides the primary load bearing means between said head and said handle of said ratchet wrench:

said intermediately widened cross-section of said supporting handle portion of said single piece insert being formed into a second concave shape having a contoured exterior profile; and

a non-metallic, moldable covering, said covering molded around said metallic insert and encapsulating said head and said full length of said metallic insert except for said opening for said ratchet mechanism, and said covering molded around said supporting handle portion of said single piece insert to have a substantially uniform thickness along at least one side of said contoured exterior profile of said supporting handle portion to define an ergonomic style grip for said handle.

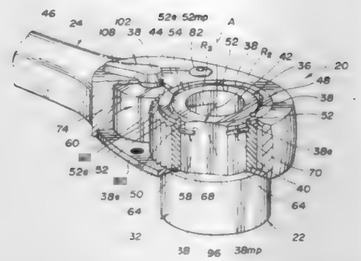
5,626,062

SOCKET AND RATCHET WRENCH

David S. Colvin, 3786 Ranya, Union Lake, Mich. 48387

Continuation-in-part of Ser. No. 57,426, May 4, 1993, abandoned, which is a continuation of Ser. No. 822,178, Jan. 16, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 213,383
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—63.2 **9 Claims**

1. A socket and ratchet wrench combination, comprising:



a socket of a unitary construction having a central rotational axis, the socket having a driving end including internal engagement surfaces for receiving a nut to be torqued, the socket also having a driven end including a plurality of flat drive surfaces located about the rotational axis in a spaced relationship to each other, each flat drive surface of the socket having opposite ends and a midpoint therebetween, the driven end also including curved connecting surfaces that connect the flat drive surfaces, each curved connecting surface of the socket having opposite ends and a midpoint therebetween, the midpoints of the flat drive surfaces of the socket being located radially inward with respect to the rotational axis from the midpoints of the curved connecting surfaces of the socket, the curved connecting surfaces including retaining grooves that extend between the adjacent flat drive surfaces, and the driven end having a through hole extending along the rotational axis so as to be capable of receiving a threaded shank extending through the nut being torqued; and

a ratchet wrench including a head and a handle extending from the head, said head including a drive gear supported for rotation thereon and having external drive teeth, the drive gear including inwardly facing flat drive surfaces located about the rotational axis in a spaced relationship to each other and the drive gear also including curved connecting surfaces that connect the flat drive surfaces thereof, the flat drive surfaces and connecting surfaces of the drive gear cooperatively defining a through opening for receiving the driven end of the socket with the flat drive surfaces of the drive gear engaging the flat drive surfaces of the driven end of the socket to provide rotational driving thereof, the flat drive surfaces and curved connecting surfaces of the drive gear each having opposite ends and a midpoint therebetween, the midpoints of the flat drive surfaces of drive gear being located radially inward with respect to the rotational axis from the midpoints of the curved connecting surfaces of the drive gear, the drive gear including retaining grooves extending along the flat drive surfaces and connecting surfaces thereof, the drive gear including a deflectable retainer received by the retaining grooves in the flat drive surfaces and connecting surfaces thereof, the retainer deflecting to be received by the retaining grooves in the connecting surfaces of the driven end of the socket to detachably retain the socket to the head of the ratchet wrench for use, and a reversing pawl mounted on the head and having teeth for engaging the drive teeth of the drive gear to provide driving and ratcheting of the socket in opposite directions that are reversible by movement of the reversing pawl.

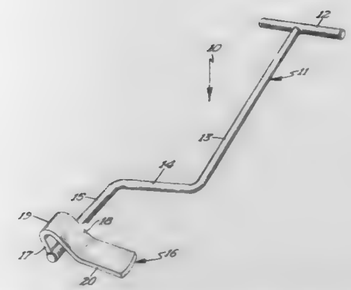
5,626,063

TOOL FOR UNLOCKING A FIFTH WHEEL LOCKING HANDLE

Delbert D. Kosbab, 305 19th N. St., New Ulm, Minn. 56073

Filed Feb. 8, 1996, Ser. No. 598,342
Int. Cl.[6] B66F *15/00;* **B25B** *2/16*
U.S. Cl. 81—488 **1 Claim**

1. A tool for use in shifting the locking handle of a fifth wheel device for a tractor from the locked position to the unlocked position for releasing a trailer from coupled relation with respect to the tractor, the locking handle having an offset outer end, said tool comprising,



an elongate rigid handle including an elongate straight portion, a handle grip element secured to one end of said straight portion,

an elongate offset portion integral with straight said portion and extending angularly therefrom,

an elongate terminal portion integral with said offset portion and extending angularly therefrom, said terminal portion being disposed in substantially parallel relation to said straight portion,

a generally U-shaped member rigidly connected with the end of said terminal portion and extending angularly therefrom, said U-shaped member embracing and engaging a fifth wheel locking handle when the terminal portion is disposed in engaging and underlying relation with the offset end of the fifth wheel locking handle whereby when the tool is rotated about its longitudinal axis, the fifth wheel locking handle will be shifted from the locked position to the unlocked position,

and a tab element integral with said U-shaped member and extending therefrom, and being disposed substantially parallel with said hand grip element, said tab being adapted to wedge between the brake shoe and brake drum of a vehicle for freeing a frozen brake shoe from the drum when the tool is rotated about its longitudinal axis,

and said hand grip element being of elongate straight configuration and disposed normal to the straight portion to define a T-type gripping handle.

5,626,064

LATHES FOR CUTTING STRAIGHT AND HELICAL THREADS

Pierre Gradel, Les folliets, 74130 Ayze, and Serge Revillod Delisle, 226 rue de l'Eglise, 74970 Marignier, both of France

Filed Jun. 7, 1995, Ser. No. 483,319
Claims priority, application France, Jun. 9, 1994, 94 07399
Int. Cl.[6] B23G *1/00*
U.S. Cl. 82—110 **10 Claims**

1. Lathe for carrying out various machining operations on workpieces, including turning, said lathe comprising a frame carrying:

at least one workpiece support spindle rotatable about its axis on said frame,

a first mechanical transmission for driving said workpiece support spindle, including a feed gearbox coupled to a main motor and driving a feed shaft of said lathe coupled selectively to said workpiece support spindle by a first spindle clutch selectively to rotate said workpiece support spindle at an appropriate speed from said main motor,

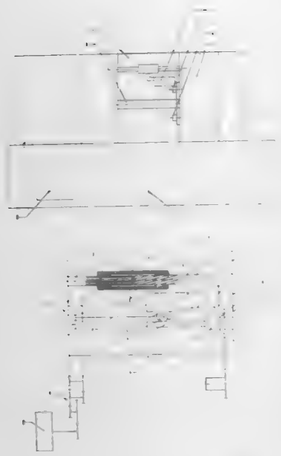
at least one toolholder carriage mobile in translation on said frame along a radial crossfeed axis perpendicular to the axis of the workpiece support spindle and along a feed axis parallel to the axis of said workpiece support spindle, with drive means for displacing said toolholder carriage along said feed axis,

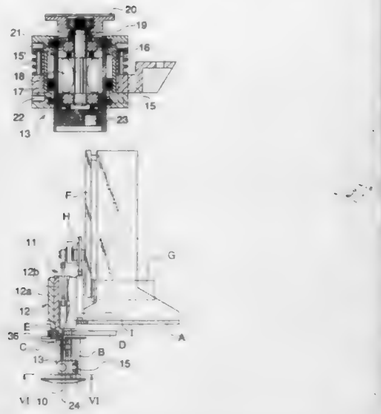
at least one rotary toolholder spindle on said toolholder carriage adapted to be rotated by a tool drive mechanical transmission coupled to said main motor and adapted to carry a milling tool and to rotate it at an appropriate tool speed,

wherein:

the orientation of said rotary toolholder spindle on said toolholder carriage is adjustable,

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a second mechanical transmission for driving said workpiece support spindle and comprising a second gearbox coupled to said main motor selectively rotates said workpiece support spindle via a second spindle clutch,

said second mechanical transmission is adapted to rotate said workpiece support spindle with a variable demultiplication ratio calculated to obtain a particular integer ratio between the rotation speed of said milling tool and the rotation speed of said toolholder spindle, and

said second mechanical transmission for driving said workpiece support spindle comprises a mechanical angular offset device for angularly offsetting said workpiece support spindle about its axis by an amount proportional to the displacement of said toolholder carriage along said feed axis so that said milling tool can cut in said workpiece helical threads, the number of which is equal to said ratio of rotation speeds, or longitudinal straight threads,

and wherein:

said mechanical angular offset device comprises an intermediate shaft in said second mechanical transmission driving said workpiece support spindle and formed of successive coaxial first and second half-shafts coupled together to rotate together by a sliding coaxial coupling sleeve,

said coupling sleeve is rotationally coupled to a corresponding coupling end of said first half-shaft by first teeth allowing axial relative displacement of said coupling sleeve,

said coupling sleeve is rotationally coupled to a corresponding coupling end of said second half-shaft by second teeth allowing axial relative displacement of said coupling sleeve, and

said coupling sleeve is displaced in axial translation directly or indirectly by said toolholder carriage to which it is coupled by a mechanical coupling allowing it to rotate.

5,626,065

CUTTING DEVICE WITH AUTOMATIC SHARPENER

Flavio Cattini, Bergamo, Italy, assignor to F.K. Systema S.r.l., Dalmine, Italy

Continuation-in-part of Ser. No. 57,323, May 5, 1993, abandoned. This application Nov. 30, 1994, Ser. No. 317,884

Claims priority, application Italy, May 6, 1992, BS92A0050

Int. Cl.[6] B65D *7/12*

U.S. Cl. 83—174 **7 Claims**

6. A self-sharpening cutting device for cutting material, the cutting device comprising:

a body;

reciprocating means mounted on said body and for providing a reciprocating motion in a cutting direction;

a blade having at least one beveled surface forming a cutting edge, said blade being connected to said reciprocating means;

head means connected to said body for positioning said blade in a plurality of different angular positions, said head means including a stationary outer part and an inner part rotatable with respect to said outer part, said head means including passage means for passing fluid into said outer part, then into said inner part, and then out of said inner part;

sharpening means connected to said inner part of said head means and movable into said plurality of angular positions with said inner part of said head means, said sharpening means for sharpening said blade, said sharpening means being spaced substantially perpendicular from said bevel surface, said sharpening means including a sliding chamber and a piston slidable in said sliding chamber in a sharpening direction toward and substantially perpendicular to said beveled surface, said piston including a motor movable with said piston, said motor having an outlet shaft substantially aligned in said sharpening direction and said outlet shaft having a grinding wheel attached thereto with a grinding surface substantially parallel with said beveled surface, said sharpening means also including inlet/outlet passage means for guiding said fluid in and out of said slidable chamber to move said piston towards and away from said beveled surface.

5,626,066

SUCTION DEVICE FOR AN AUTOMATIC CUTTING MACHINE AND A CUTTING METHOD IMPLEMENTING SAID DEVICE

Régis Lallement, Cestas, France, assignor to Lectra Systems, Cestas, France

PCT No. PCT/FR93/00800, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO94/05470, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 10, 1993, Ser. No. 392,894

Claims priority, application France, Sep. 1, 1992, 92 10455

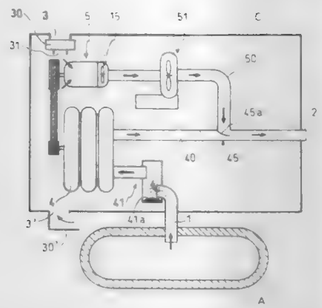
Int. Cl.[6] B25B *11/00*

U.S. Cl. 83—451 **4 Claims**

1. A suction device for holding a stack of sheet material on a cutting table of an automatic cutting machine, comprising:

a turbine having an air exhaust circuit for air exhaust from said turbine and an inlet circuit for air sucked in from a cutting zone to establish suction enabling said stack to be held on said cutting table;

an electric drive motor for driving said turbine, said electric drive motor fitted with a first fan, said first fan having an air outlet duct, said electric drive motor having a speed varying means for varying the speed of rotation of said electric drive motor so as to adjust the amount of suction; and



a junction between said air outlet duct and said air exhaust circuit, said junction having a curved internal flap to prevent reverse flow of air.

5,626,067

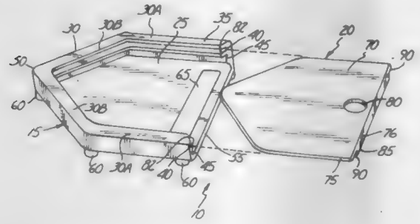
SLICER GUIDE

Arlan D. Lothe, Sun Prairie, Wis., assignor to McGowan Manufacturing Co., Hutchinson, Minn.

Filed Dec. 1, 1994, Ser. No. 348,047

Int. Cl.[6] B26D *7/01*

U.S. Cl. 83—761 **10 Claims**



1. A slicer guide, suitable for use with a sliceable food item and a blade, the slicer guide comprising:

a base having a generally planar upper surface suitable for abutting the food item thereon;

a flange affixed to the base, the flange having:

a top surface spaced-apart from the base and suitable for guiding the blade when sliding along the top surface; and

a plurality of spaced-apart generally parallel grooves formed therein, the grooves being spaced-apart from the top surface and the base; and

a cutting board having:

a generally planar first cutting surface also suitable for abutting the food item thereon;

a generally planar second cutting surface also suitable for abutting the food item thereon;

an edge proximate the first cutting surface and the second cutting surface;

a tongue having a first tongue surface and a second tongue surface, the tongue affixed to the edge wherein a first distance from the first tongue surface to the first cutting surface is different from a second distance from the second tongue surface to the second cutting surface; and

wherein the tongue is slidable within and into a selected groove in a first orientation having the first-mentioned cutting surface toward the upper surface and in a second orientation having the second cutting surface toward the upper surface to provide varied thickness corresponding with the orientation of the cutting board within the selected groove.

5,626,068

HYDRAULIC RECIPROCATING MECHANISM

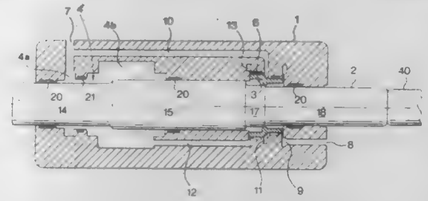
Michael R. Davies, Norwood, South Africa, assignor to White Manufacturing (Proprietary) Limited, New Era Springs, South Africa

Filed Apr. 5, 1995, Ser. No. 417,020

Claims priority, application South Africa, Apr. 12, 1994, 94/2503

Int. Cl.[6] F01B *7/18*

U.S. Cl. 91—235 **8 Claims**



1. An hydraulic reciprocating mechanism comprising:

housing;

a piston located reciprocably in the housing and defining, with the housing, a supply chamber and a return chamber, the return chamber having respective first and second ends and the piston presenting exposed, differential piston areas on which hydraulic forces act, during, operation of the mechanism, to cause reciprocation of the piston;

an inlet to the supply chamber for pressurized hydraulic fluid;

an exhaust outlet from the return chamber;

an interconnecting passage extending between the supply chamber and the return chamber; and

a single poppet valve which is located reciprocably in the return chamber for movement, under the influence of hydraulic forces, between:

a first position in which the poppet valve seats against the first end of the return chamber so as to close the exhaust outlet and open the interconnecting passage to admit hydraulic fluid from the supply chamber to the return chamber with the result that the hydraulic fluid in the return chamber drives the piston in a first direction; and

a second position in which the poppet valve seats against the second end of the return chamber so as to close the interconnecting passage and open the exhaust outlet to allow hydraulic fluid to be exhausted from the return chamber by the piston as the piston is driven a second direction, opposite to the first direction, by hydraulic fluid in the supply chamber.

5,626,069

VALVE PLUNGER RETAINING STRUCTURE IN A BOOSTER DEVICE

Shintaro Uyama, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1995, Ser. No. 563,457

Claims priority, application Japan, Dec. 28, 1994, 6-339746

Int. Cl.[6] F15B *9/10*

U.S. Cl. 91—369.3 **4 Claims**

1. In a booster device comprising:

a power piston arranged in a shell and slidable along an axis;

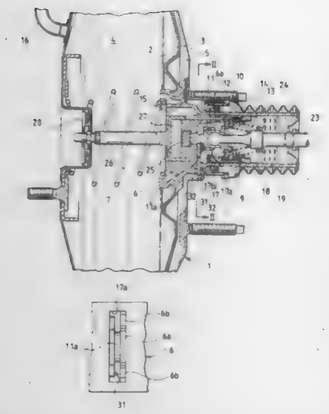
a constant pressure chamber formed on a front side of said power piston, and a variable pressure chamber formed on a rear side of said power piston;

a valve body provided along said axis;

a valve mechanism provided in said valve body and having a valve plunger;

a variable pressure passage formed in said valve body through which said valve mechanism is communicated with said variable pressure chamber;

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an input shaft which operates in association with said valve plunger to switch flow paths in said valve mechanism; and

a key member for engagement with said valve plunger to prevent said valve plunger from being removed from said valve body,

a valve plunger retaining structure comprising an improvement wherein:

a portion of said valve body which is located on a rear side of said key member is formed into a guide portion having an inner cylindrical surface on which said valve plunger is slidably supported;

said variable pressure passage is formed by an axial passage provided along said axis and located radially outwardly with respect to said inner cylindrical surface, and a radial passage extended radially outwardly from a front end of said axial passage;

said key member is inserted into said radial passage and engaged with said valve plunger; and

an end face of said guide portion is protruded forwardly relative to a wall surface of said valve body, said wall surface defining said radial passage and located behind said key member, wherein

when said booster device is returned from an operative state to a non-operative state, said key member is abutted against said end face of said guide portion with a gap between said key member and said wall surface of said valve body.

5,626,070

CONTROL LOGIC FOR A MULTIPLE USE HYDRAULIC SYSTEM

Dennis L. Sorbel, Maple Park, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 29, 1996, Ser. No. 608,917

Int. Cl.[6] F15B *11/00*
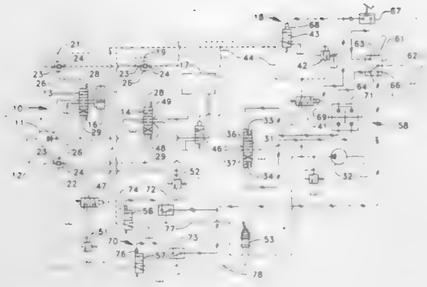
U.S. Cl. 91—521 **7 Claims**

1. A control logic for a multiple use hydraulic system having a tank, a supply pump, a pilot pump, and a first pilot operated directional control valve connected to the tank and the supply pump and having first and second ends, the control logic comprising:

a resolver having an output connected to the first end of the control valve and first and second inputs;

a solenoid actuated first pilot valve connected to the pilot pump and having first and second solenoids at its opposite ends, a first control port connected to the first input of the resolver and a second control port connected to the second end of the control valve;

a solenoid actuated second pilot valve connected to the second input of the resolver;



a source of electrical energy;

a selector switch connected to the source of electrical energy and having first and second poles, a first position connecting the source of electrical energy to the first pole and a second position connecting the source of electrical energy to the second pole;

a first switch connected to the first pole and being operative to connect the first pole to the second pilot valve; and

a second switch connected to the second pole and to the solenoids of the first pilot valve and being operative to selectively connect the second poles to the first and second solenoids.

5,626,071

HYDRAULIC RAM WITH ADJUSTABLE STOP

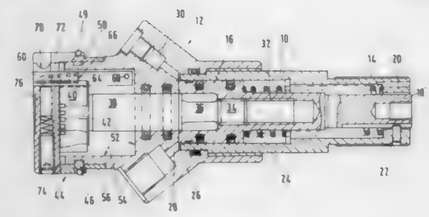
Dominik Schneider, Chur, and Markus Engler, Zizers, both of Switzerland, assignors to Eckold AG, Rheinstrawse, Switzerland

Filed Sep. 22, 1995, Ser. No. 532,922

Claims priority, application Germany, Sep. 28, 1994, 44 34 665.4

Int. Cl.[6] F01B *31/14*

U.S. Cl. 92—13.8 **14 Claims**



1. A hydraulic ram comprising:

a tubular cylinder having a head end and a bottom end;

a piston slidably received in the tubular cylinder;

a cylinder head secured to the head end of the tubular cylinder;

a stop member threadably received in the piston and extending from the piston toward the cylinder head, wherein rotation of the stop member axially displaces the stop member relative to the piston;

a counter stop member in the cylinder head disposed so that said counter stop member engages the stop member to limit travel of the piston toward the bottom of the cylinder; and

an adjustment ring rotatably mounted on the cylinder head, wherein the adjustment ring is coupleable to the stop member so that rotation of the adjustment ring can rotate and axially position the stop member relative to the cylinder.

5,626,072

PISTON ASSEMBLY FOR USE WITH A BICYCLE OPERATED AIR PUMP

Mauricio Mirand, Lakewood, Calif.; Robert Brown, Jamestown, N. Dak.; Jeffrey C. Brown, Seattle, and Buford H. Hopper, Bothell, both of Wash., assignors to Velo Research, Inc., Lynnwood, Wash.

Division of Ser. No. 169,424, Feb. 28, 1994, Pat. No. 5,397,144, which is a continuation-in-part of Ser. No. 808,049, Dec. 12, 1991, Pat. No. 5,318,317, which is a continuation of Ser. No. 518,986, May 4, 1990, abandoned. This application Dec. 21, 1994, Ser. No. 361,194

Int. Cl.[6] F16J *1/12*

U.S. Cl. 92—256 **16 Claims**



6. A piston, for use in an air pump adapted to be powered by a bicycle to inflate bicycle tires, comprising:

(a) a cap having:

(i) an exposed surface forming a head of the piston; and

(ii) a projection extending from a side of the cap opposite the exposed surface, said projection having a notch;

(b) linkage means with a cavity having a tang therein for receiving and engaging said notch of said projection; and

(c) sealing means for preventing compressed air flowing past said piston during a compression stroke, and for allowing air to flow past said piston during an intake stroke.

5,626,073

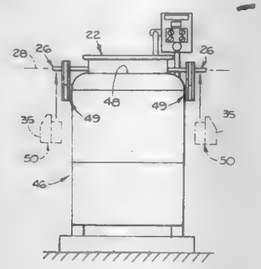
TILTING MECHANISM

William A. Bauer, Chicago, Ill., assignor to Savage Bros. Co., Elk Grove Village, Ill.

Filed May 30, 1996, Ser. No. 655,622

Int. Cl.[6] A47J *27/00*; **B65G** *3/04*;*65/23*

U.S. Cl. 99—337 **10 Claims**



1. Apparatus for handling an open top kettle or bowl having loop handles on opposite sides, on a diameter of the kettle, each with an elongated horizontal outer element perpendicular to said diameter, the kettle holding a content of caramel or batter, said apparatus being operable for tilting the kettle for emptying the content therefrom,

said apparatus comprising,

a stand,

a lift truck having a vertically movable fork mounted thereon, the fork having horizontally spaced arms which in operation straddle the kettle or bowl and extend to a working position where their free ends are adjacent to the middle of the kettle at said diameter,

a tilting unit on the extended end of each arm,

each tilting unit including a double tab latching member having latching elements spaced along the length of the outer element of the handle, and

the tilting units being operable for receiving the corresponding outer elements of the handles, and the latching elements being operable for gripping said outer element,

one of the tilting units being a drive unit and the other being an idler unit, and

the drive unit in cooperation with the idler unit being operable for rotating on a transverse axis adjacent said kettle diameter for tilting the kettle.

5,626,074

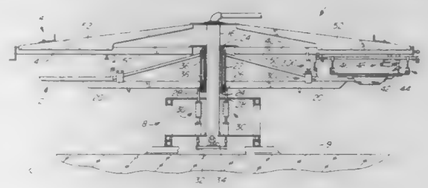
SCREEN PRINTING MACHINE

Steve Zelko, 1907 Triumph Street, Vancouver, British Columbia, Canada

Continuation of Ser. No. 138,074, Oct. 20, 1993, abandoned. This application Sep. 18, 1995, Ser. No. 529,860

Int. Cl.[6] B41F *15/04*

U.S. Cl. 101—115 **21 Claims**



4. A screen printing machine, comprising:

a support structure for supporting said machine on a floor;

said support structure comprising a vertical support having a vertical axis;

a first arm structure;

a bearing arrangement co-axial with said vertical cylindrical support and supporting said first arm structure for rotation about the vertical axis;

said first arm structure comprising a plurality of first arms equiangularly distributed about the vertical axis;

said first arms extending radially outwardly of said vertical axis and having free outer ends;

printing screen support platens carried on said free outer ends of said first arms;

a second arm structure mounted on said vertical support above said first arm structure;

said second arm structure comprising a plurality of second arms equiangularly distributed about said vertical axis;

said second arms extending radially outwardly of said vertical axis above said first arm structure and having free outer ends;

said second arms carrying, at said free outer ends thereof, squeegee mechanisms and printing screen supports for holding printing screens below said squeegee mechanisms;

an indexing mechanism connected between said first arm structure and said support structure and operable to rotate said first arm structure stepwise around the vertical axis so as to posi-

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tion said printing screen support platens in succession in registry with said squeegee mechanisms;

a lifting device connected between said first arm structure and said support structure and operable to displace the former to and from a raised position;

interengageable pairs of connectors provided on said first and second arms, respectively, at locations adjacent and radially inward of said printing screen supports and operable to forcibly connect said first arms to said second arms on displacement of said first arm structure into the raised position, and thereby to counteract bending of said arms during the operation of said squeegee mechanisms;

a stop mounted on said support structure for limiting the upward movement of said first arm structure towards said second arm structure;

a height adjustment mechanism connected to said stop for adjustably raising and lowering said stop and thereby adjusting the limit of the upward movement of said first arm structure; and

said height adjustment mechanism including a manually adjustable member, which is readily accessible from the exterior of said screen printing machine, for operating said height adjustment mechanism.

5,626,075

SHEET GUIDING CYLINDER

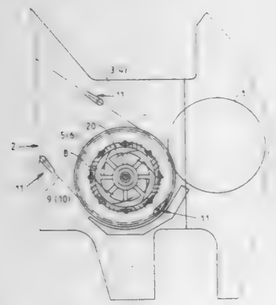
Andreas Detmers, Mauer, and Joachim Herrmann, Mannheim, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 17, 1995, Ser. No. 373,026

Claims priority, application Germany, Jan. 17, 1994, 44 01 114.8

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—232 **2 Claims**



1. Sheet guiding cylinder of a printing press, comprising a cylinder casing rotatable about an axis of rotation, and having an outer cylindrical surface defining a skeletal framework enclosing an interior within the sheet cylinder; a vane ring disposed in the interior of the sheet guiding cylinder for effecting an air flow through said skeletal framework; said skeletal framework including guide vanes extending in a longitudinal direction of the sheet guiding cylinder and having a curved guide vane profile disposed in planes perpendicular to said axis of rotation, said guide vanes beginning from respective locations radially inward from said outer cylindrical surface and terminating substantially radially in an imaginary cylindrical envelope surface enveloping said outer cylindrical surface and being symmetrical with said axis of rotation.

5,626,076

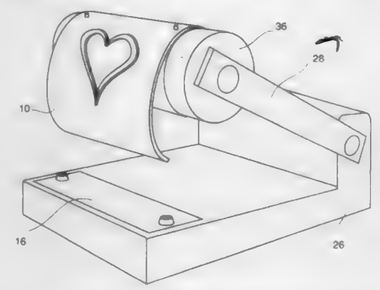
PRINTING PLATE MOUNTING SYSTEM, PHYSICAL REGISTER RECORD PLATE AND METHOD EMPLOYING THE SAME

Robert E. Ireton, 7865 John Elwood Dr., Centerville, Ohio 45459

Filed Nov. 9, 1995, Ser. No. 555,608

Int. Cl.[6] B41C *1/02*

U.S. Cl. 101—401.1 **17 Claims**



12. A method for mounting flexible printing plates, comprising the steps of:

(a) forming a flexible printing plate having a microdot thereon;

(b) forming a flexible physical register record plate (PRRP) having a microring formed thereon, wherein said microring is configured to have a receiving surface generally complimentary to an outer surface of said microdot;

(c) orienting said PRRP onto a surface;

(d) interfacing said printing plate with said PRRP such that said microdots are positioned within said microring to ready said printing plate for mounting; and

(e) drawing into contact with said printing plate a print cylinder in a manner wherein said printing plate adheres to said cylinder upon contact and separates from said PRRP resulting in said printing plate being registered.

5,626,077

METHOD FOR CONTROLLING SHEET FEED

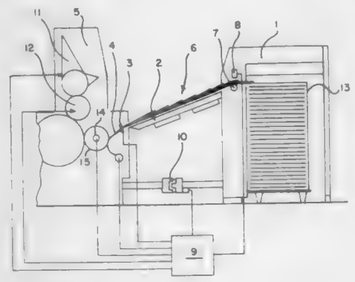
Joachim Muller, Pullach, Germany, assignor to MAN Roland Druckmaschinen AG, Germany

Filed Feb. 15, 1996, Ser. No. 601,874

Claims priority, application Germany, Feb. 18, 1995, 195 05 560.8

Int. Cl.[6] B41F *1/66;33/04;33/06*

U.S. Cl. 101—484 **3 Claims**



1. A process for controlling the sheet feed in an offset printing machine comprising:

transporting sheets from a feeder stack of a feeding unit over a predetermined conveyance stretch to the offset printing machine;

detecting the presence of double or misfed sheets within the predetermined conveyance stretch;

terminating the transporting of sheets from the feeder stack to the offset printing machine upon the detection of double or misfed sheets;

conveying the sheets preceding the detected double or misfed sheets into the offset printing machine;

terminating the ink feed in the offset printing machine prior to the conveyance of a last sheet preceding the double or misfed sheets into the offset printing machine; and

stopping the conveying of the sheets into the offset printing machine when the double or misfed sheets reach the printing machine.

5,626,078

CABLE CAR SYSTEM WITH PASSENGER CARRIERS SUSPENDED FROM A SUSPENSION AND TRACTION CABLE GUIDED AROUND TWO DEFLECTION PULLEYS

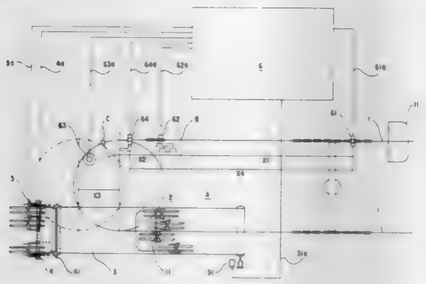
Elmar B. Fuchs, Schwarzach, Austria, assignor to Konrad Doppelmayr & Sohn Maschinenfabrik Gesellschaft mbh & Co. KG, Wolfurt, Austria

Filed Mar. 26, 1996, Ser. No. 621,574

Claims priority, application Austria, Apr. 7, 1969, A622/95

Int. Cl.[6] B61B *1/00*

U.S. Cl. 104—28 **10 Claims**



1. A cable car system, comprising:

a suspension and traction cable, passenger carriers suspended from said cable, a plurality of deflection-pulleys about which said cable is deflected, a boarding area defining a boarding point at which passengers board said passenger carriers, a conveyor device disposed at said boarding area for conveying the passengers to said boarding point, an entrance gate disposed at said boarding area, and a central control unit connected to and controlling said entrance gate and said conveyor device;

a signal transducer connected to said central control unit for sensing said passenger carriers passing by said signal transducer and for issuing an output signal;

a speed transducer connected to said central control unit for detecting a travel speed of said cable and for issuing an output signal;

a measuring instrument for detecting a distance traveled by a respective said passenger carrier after having tripped said signal transducer; said central control unit opening said entrance gate as a function of the output signals received from said signal transducer and from said measuring instrument.

5,626,079

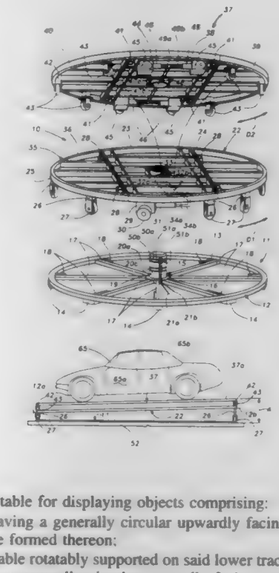
OSCILLATING TURNTABLE FOR DISPLAYING VEHICLES

Rodney E. Summers, Grand Blanc, Mich., assignor to Advanced Vehicle Concepts, Inc., Grand Blanc, Mich.

Filed Jan. 5, 1996, Ser. No. 583,555

Int. Cl.[6] B60S *13/00*

U.S. Cl. 104—44 **20 Claims**



1. A turntable for displaying objects comprising:

a base having a generally circular upwardly facing lower track surface formed thereon;

a lower table rotatably supported on said lower track surface and having a generally circular upwardly facing upper track surface formed thereon;

a first drive means attached to said lower table and engaging said lower track surface for rotating said lower table in a selected first direction of rotation at a selected first speed of rotation;

an upper table rotatably supported on said upper track surface; and

a second drive means attached to said upper table for rotating said upper table in a selected second direction of rotation at a selected second speed of rotation.

5,626,080

TRAVELING CARRIAGE FOR THE TRANSPORTING OF WORKPIECES

Albrecht Trenner, Langendorf, and Erich Grossenbacher, Derendingen, both of Switzerland, assignors to Montech AG, Germany

Filed Feb. 21, 1996, Ser. No. 603,612

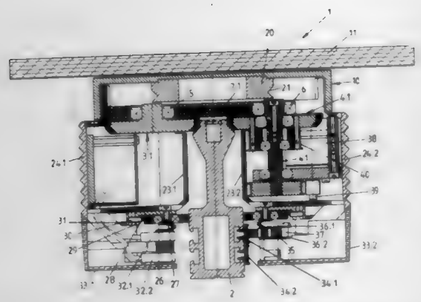
Claims priority, application Germany, Feb. 25, 1995, 195 06 670.7

Int. Cl.[6] B61B *13/04*

U.S. Cl. 104—118 **9 Claims**

1. A traveling carriage for the transporting of workpieces or material, which comprises: a longitudinal transfer system including a rail; travel rollers which move on the rail; at least one support plate supporting said rollers; said support plate being turnably connected around a swivel shaft on the one hand to the travel rollers and on the other hand to a mounting plate for the workpieces or material; straight-line rollers arranged, offset from the swivel shaft, on the support plate on both sides of the rail; and

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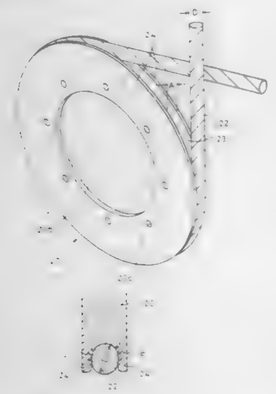


support rollers which are displaceable transversely with respect to the rail and are associated with the travel rollers.

5,626,081
ROPE TRACTION DEVICE

Shizuka Kuryu, Tokyo, Japan, assignor to Nihon Biso Co. Ltd., Tokyo, Japan

Division of Ser. No. 268,340, Jun. 30, 1994, Pat. No. 5,515,790. This application Nov. 24, 1995, Ser. No. 562,422
Claims priority, application Japan, Jul. 16, 1993, 5-198976
Int. Cl.[6] B61D *1/00*
U.S. Cl. 104—197 2 Claims

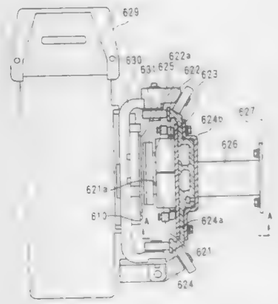


1. A rope traction device including a sheave having an annular rope receiving groove which sheave is driven and rotated with a traction rope made of a wire rope having a fixed diameter and a substantially circular cross-section which is received in said rope receiving groove to be wound on said sheave and thereby moving along said traction rope, said rope traction device being characterized in that said sheave of said rope traction device comprises a pair of side walls which come into contact with said wire rope and are formed integrally with said sheave to form said rope receiving groove, said rope receiving groove being formed in a combination of a V-shaped section and a U-shaped section with the inner surfaces of said side walls which come into contact with said wire rope being formed in inclined surfaces that define a radially, outwardly enlarging taper, said rope receiving groove having a bottom surface which is substantially in the shape of a semi-circle, the distance between the inner surfaces of said side walls in a rope holding position being made smaller than said diameter of said wire rope by a predetermined value when said wire rope is not received in said rope receiving groove and said side walls being made entirely of a material having such elasticity that, said side walls are elastically pushed apart to receive and clamp said wire rope at said rope holding position.

5,626,082
EMERGENCY BRAKING DEVICE FOR LINEAR MOTOR DRIVEN TRANSPORT SYSTEM

Takashi Nozaki, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 281,347, Jul. 27, 1994, Pat. No. 5,492,066. This application Nov. 13, 1995, Ser. No. 559,759
Claims priority, application Japan, Jul. 30, 1993, 5-206851; Jul. 30, 1993, 5-206852; Aug. 5, 1993, 5-212095; Aug. 5, 1993, 5-212096; Aug. 30, 1993, 5-235884; Sep. 20, 1993, 5-255253; Sep. 20, 1993, 5-255254
Int. Cl.[6] B61K *7/00*
U.S. Cl. 104—252 6 Claims



1. An emergency braking device for a linear motor driven transport system which drives a transport vehicle along a track rail by a linear motor system comprising a transport vehicle-based secondary conductor and a plurality of ground-based primary drive units having iron cores and coils wrapped about said iron cores, said device comprising:

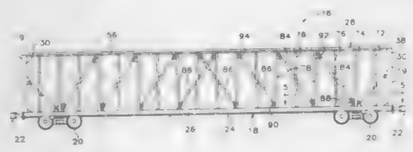
an actuator attached to a vertical surface of the track rail; and

a brake shoe attached to said actuator for opposing said transport vehicle-based secondary conductor, motion of the transport vehicle being retarded and stopped by frictional resistance generated upon said brake shoe being brought into contact with said transport vehicle-based secondary conductor by operating said actuator.

5,626,083
RAILROAD CAR WITH LIGHTWEIGHT CENTER BEAM STRUCTURE

Gregory J. Saxton, Portland, Oreg., assignor to Gunderson, Inc., Portland, Oreg.

Filed May 31, 1996, Ser. No. 655,861
Int. Cl.[6] B61D *17/00*
U.S. Cl. 105—355 7 Claims



1. A railroad freight car, comprising:

(a) an elongate body having upstanding transverse bulkheads located at opposite ends of said body and including a vertical center beam extending longitudinally of the car between said bulkheads, the center beam including

(i) a center sill, extending the length of said body;

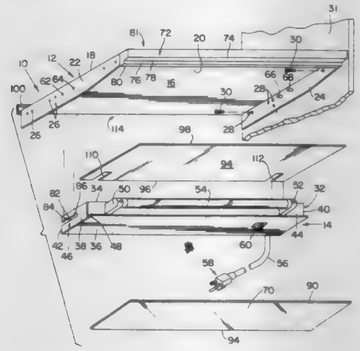
(ii) a top chord extending parallel with and spaced upwardly apart from the center sill; and

(iii) at each end of the car, an elongate diagonal structural member having a first end interconnected with one of said bulkheads at an intermediate height between said center sill and said top chord and a second end interconnected with said center sill at a location spaced apart from said one of said bulkheads.

5,626,084
SHELF AND LIGHT ASSEMBLY

Richard E. Kelly, Orland, and Rodney A. Williams, Auburn, both of Ind., assignors to Custom Lights, Inc., Kendallville, Ind.

Filed Jan. 27, 1995, Ser. No. 378,810
Int. Cl.[6] A47B *85/00*
U.S. Cl. 108—23 36 Claims



1. An assembly, comprising:

a shelf;

a light module having a housing, a portion of the housing cooperating with structure on the shelf to removably secure the light module to the shelf in a mounted position, the housing being formed of folded metal and including a flange that cooperates with the lens to support the lens and to secure the light module in the mounted position; and

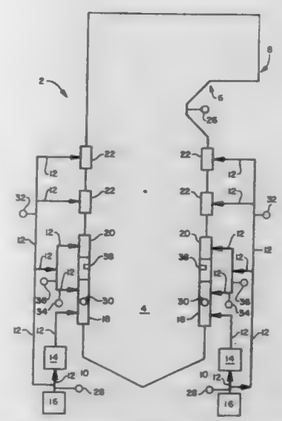
a lens disposed adjacent the light module and cooperating with the housing and the shelf to secure the light module against removal from the mounted position.

5,626,085
CONTROL OF STAGED COMBUSTION, LOW NO_X FIRING SYSTEMS WITH SINGLE OR MULTIPLE LEVELS OF OVERFIRE AIR

Richard E. Donais, West Suffield; Todd D. Hellewell, Windsor; Paul D. Kuczma, Enfield, and Jonathan S. Simon, Barkhamsted, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 26, 1995, Ser. No. 578,254
Int. Cl.[6] F23N *5/18*
U.S. Cl. 110—188 19 Claims

1. In a fossil fuel-fired furnace having a plurality of walls embodying therewithin a main burner zone, a windbox mounted in supported relation within the main burner zone of the fossil fuel-fired furnace, close coupled overfire air means mounted in the windbox, low separated overfire air means located within the main burner zone of the fossil fuel-fired furnace in spaced relation to the windbox, high separated overfire air located within the main burner zone of the fossil fuel-fired furnace in spaced relation to both the low separated overfire air means and the windbox, means for supplying overfire air to the close coupled overfire air means, the low separated overfire air means and the high separated overfire air



means, damper means operative to effect the apportioning of the flow of overfire air amongst the close coupled overfire air means, the low separated overfire air means and the high separated overfire air means, and a firing system operative to effect therewith the combustion within the fossil fuel-fired furnace of fossil fuels such that flue gases are generated as a consequence of the combustion of the fossil fuels, a control system for effecting control over the firing system comprising:

a. means for determining the mass flow rate of the overfire air required to be supplied to the close coupled overfire air means, the low separated overfire air means and the high separated overfire air means in order to maintain a predetermined stoichiometric ration within the main burner zone of the fossil fuel-fired furnace;

b. means for determining the windbox-to-furnace pressure differential within the fossil fuel-fired furnace;

c. means for effecting control over the windbox-to-furnace pressure differential such that the windbox-to-furnace pressure differential maintains precedence over said means for determining the mass flow rate of overfire air supplied to the close coupled overfire air means, the low separated overfire air means and the high separated overfire air means; and

d. means for effecting control over the apportioning of the mass flow rate of overfire air amongst the close coupled overfire air means, the low separated overfire air means and the high separated overfire air means.

5,626,086
METHOD AND APPARATUS FOR CONTROLLING A WASTE DISPOSAL SYSTEM

Patrick C. Malone, The Colony, Tex., assignor to NCE Concepts, Ltd., Carrollton, Tex.

Continuation of Ser. No. 135,792, Oct. 12, 1993, Pat. No. 5,425,316. This application May 15, 1995, Ser. No. 440,992
Int. Cl.[6] F23G *5/00*
U.S. Cl. 110—190 8 Claims

1. A system for controlling a plurality of waste disposal systems located at remote locations, the system comprising:

a plurality of waste disposal systems each comprising,

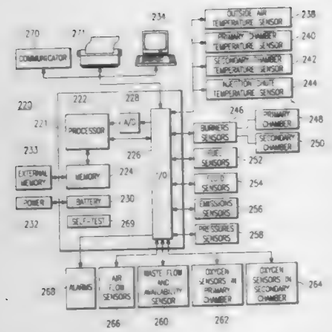
a plurality of subsystems, and

a control system comprising,

a plurality of sensors operable to measure conditions throughout the waste disposal system,

a controller operable to continuously monitor the measured conditions and to compare one or more of the measured conditions to a predetermined performance range for each condition and to automatically determine and implement action modifying the performance of one or more of said subsystems so as to operate the waste disposal system at a predetermined performance level,

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a memory operable to store a plurality of predetermined performance ranges for the conditions and the measured conditions, and

a communication device operable to provide a communication link to the controller;

a communication network linking each of the waste disposal systems through the communication device associated with each of said waste disposal systems; and

a control center connected to said communication network and comprising communication circuitry operable to couple said control center to said control system associated with each of said plurality of waste disposal systems, the control center operable to continuously monitor and control each of said plurality of waste disposal systems at each location.

5,626,087

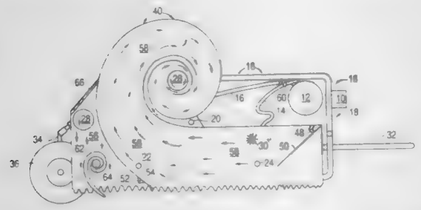
MOBILE SMOKELESS AGRICULTURAL FIELD BURNER

Tye E. Lompa, Hollister, Calif., assignor to Unverferth Manufacturing Company, Inc., Kalida, Ohio

Filed Jul. 26, 1994, Ser. No. 280,777

Int. Cl.° F23B *1/28*

U.S. Cl. 110—196 **15 Claims**



1. A mobile smokeless agricultural field burner for burning waste products in a field of soil and decontaminating the soil of said field while eliminating excess pollution release into an environment outside said field, comprising:

(a) a burn chamber oriented in direct contact with the soil of said field comprising a combustion means for burning said waste products and decontaminating the soil of said field, wherein said burning forms by-products from said waste products;

(b) an exhaust chamber separate from said burn chamber and located rearwardly of said burn chamber on said field burner, said exhaust chamber comprising a filtering means for filtering exhaust gases before their release into the environment and a tillage means for turning remaining by-products, including debris and ash, into the soil;

(c) an exhaust duct for carrying said by-products from said burn chamber to said exhaust chamber, said exhaust duct containing a combustion means for further burning said by-products;

(d) a system for generating air currents within the mobile burner to direct said by-products of said waste products from said burn chamber, through said exhaust duct and into said exhaust chamber;

(e) transportation means for moving the mobile burner from place to place when not in use; and

(f) shielding means for preventing flames inside said burn chamber from escaping to an area outside the mobile burner.

5,626,088

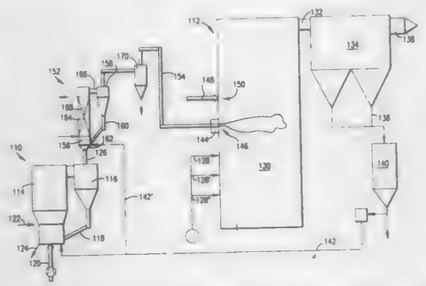
METHOD AND APPARATUS FOR UTILIZING BIOFUEL OR WASTE MATERIAL IN ENERGY PRODUCTION

Matti A. Hiltunen, Karhula, and Jorma J. Nieminen, Varkaus, both of Finland, assignors to Foster Wheeler Energia OY, Helsinki, Finland

Filed Nov. 28, 1995, Ser. No. 563,844

Int. Cl.° F23G *7/00*

U.S. Cl. 110—243 **23 Claims**



13. Apparatus for utilizing biofuel or waste material or both for energy production comprising:

a fluidized bed gasifier for gasifying biofuel or waste material or both;

a steam-generating boiler equipped with fossil fuel burners in a lower part thereof;

means for transporting gas produced in said gasifier to said boiler; and

means disposed at a level of said boiler above the level of said burners for introducing said gas into said boiler.

5,626,089

GRATE PLATE FOR PUSHER GRATE COOLERS FOR THE COOLING OF HOT MATERIAL

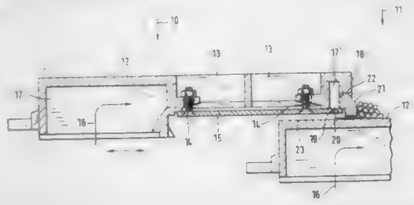
Richard Schneider, Wermelskirchen, and Hans-Jürgen Stahl, Köln, both of Germany, assignors to Klöckner-Humboldt-Duetz AG, Cologne, Germany

Filed Jan. 16, 1996, Ser. No. 587,888

Claims priority, application Germany, Feb. 11, 1995, 195 04 588.2

Int. Cl.° F23H *11/08*

U.S. Cl. 110—281 **9 Claims**



1. A grate plate for a pusher grate cooler for the cooling of hot cement clinker of the type having a plurality of grate plates

through which cooling air flows, said grate plates being fastened to grate plate supports alternately stationary and movable back and forth in the grate conveying direction, said grate plate comprising:

a grate plate body (**12**) having upwardly open material-receiving pans (**13**),

a base plate (**15**) forming a bottom wall for said material-receiving pans (**13**) releasably secured to the bottom of said grate plate body (**12**),

cooling air ducts formed by said grate plate body (**12**) and said base plate (**15**), said cooling air ducts extending parallel to the longitudinal axis of said grate plate and having lateral air discharge slots for supplying cooling air to said pans and,

a pushing edge on said grate plate body (**12**) including a replaceable wearing part (**21**), said replaceable wearing part (**21**) being held in an operative installed position on said grate plate body (**12**) by said base plate (**15**).

5,626,090

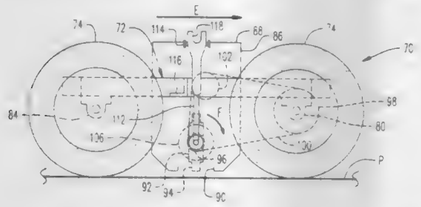
PLANTING HOLE BURNING APPARATUS

Kenneth E. Thompson, and Harold F. Guerndt, Jr., both of P.O. Box 1017, Zolfo Sprongs, Fla. 33890

Filed Jun. 26, 1996, Ser. No. 672,273

Int. Cl.° A01C *11/00*

U.S. Cl. 111—200 **15 Claims**



1. A planting hole burning apparatus for forming a row of spaced planting holes through a plastic film positioned atop a seed growing bed comprising:

a frame supported above the bed by spaced rotatable ground engaging wheels;

a heat dispensing rotor connected to said frame for rotation about an axis substantially transverse to a direction of travel of said apparatus;

drive means connected between one of said wheels and said rotor for rotating said rotor at a rotational speed corresponding to a ground speed of said apparatus whereby a first distal end of said rotor passes in close proximity to the plastic film beneath said apparatus at an arcuate speed substantially equal to the ground speed of said apparatus;

heating means for applying heat against the plastic film by said first distal end sufficient to substantially melt each of said holes in the plastic film as said apparatus travels over the plastic film.

5,626,091

SYSTEM FOR SUPPLYING AND SETTING MATERIALS IN A CONDITION TO BE SEWN BY A SEWING MACHINE

Yukihito Kobayashi, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1995, Ser. No. 542,132

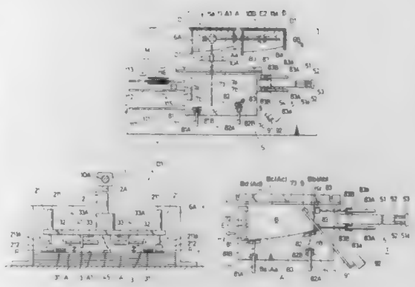
Int. Cl.° D05B *21/00*

U.S. Cl. 112—470.07 **17 Claims**

1. A system for supplying and setting two separate base materials in a condition to be sewn by a sewing machine, said system comprising:

a table adapted to mount said sewing machine;

a movable guide means which is slidably mounted on said table:



a supplying mechanism for supplying said two separate base materials to said movable guide means, said supplying mechanism being provided at said table and including:

a first storage means in which a plurality of one of said two base materials are stored in a piled-up manner;

a second storage means in which a plurality of another of said two base materials are stored in a piled-up manner; and

a robot-hand means displaceable between a selected one of said first and second storage means and said movable guide means, said robot-hand means including a pair of catching means for releasably engaging and catching a selected one of said two base materials and a pair of pressing means for applying a pressure to said selected one of said two base materials; and

a setting mechanism for setting said two separate base materials and juxtaposing them together at a predetermined position upon said movable guide means, said setting mechanism including:

a setting means arranged at and adjacent said movable guide means, said setting means being operable to act on said two base materials which are supplied to and juxtaposed on said movable guide means by means of said supplying mechanism, such that both said two separate base materials may be neatly set at said predetermined position on said movable guide means;

a partition means extendable over said movable guide means and retractable therefrom, an arrangement of said partition means being such as to partition one of said two separate base materials which is directly placed by said supplying mechanism on said movable guide means, from another of said two separate base materials which is to be juxtaposed on the thus-placed one of said two base materials by said supplying mechanism; and

a retaining means for pressingly retaining said another of said two separate base materials which is juxtaposed on and partitioned via said partition means, from said another of said two separate base materials.

5,626,092

WATER EQUILIBRATING ARRANGEMENT

Ray Essén; Tom Degerman; Anna-Lea Rimpelä , and Esko Immonen, all of Turku, Finland, assignors to Kvaerner Masa-Yards Oy, Helsinki, Finland

Filed Feb. 7, 1996, Ser. No. 598,153

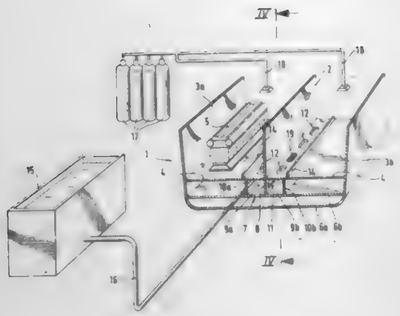
Claims priority, application Finland, Feb. 8, 1995, 950557

Int. Cl.° B63B *25/08*

U.S. Cl. 114—74 R **19 Claims**

1. A water equilibrating arrangement for a marine vessel having a first substantially closed or closeable compartment that is subject to being at least partly filled with water in case of damage to the vessel, a second substantially closed or closeable compartment, and an essentially imperforate structure separating the first and second compartments, said water equilibrating arrangement comprising means defining a trough that is in fluid flow communication with the first and second compartments, and baffle means that extend downward from said structure into the trough and define at

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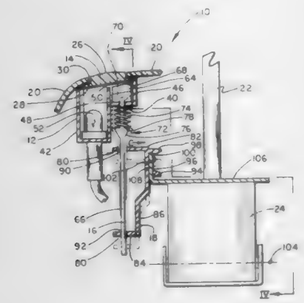
least one passage that provides fluid flow communication between the first and second compartments, whereby water can flow rapidly from the first compartment into the second compartment for equilibrating water load in the first and second compartments and flow of gas through the trough is prevented when a substantial portion of the trough is filled with a flowable material.

5,626,093

SHIFT LEVER INDICATOR APPARATUS AND METHOD

Randy Jacobs, St. Clair Shores, and Robert W. Roossien, Grand Haven, both of Mich., assignors to JSJ Corporation, Grand Haven, Mich.

Filed Nov. 21, 1994, Ser. No. 342,770
Int. Cl.[6] G09F *9/40*
U.S. Cl. 116—28.1 **22 Claims**



20. A shift lever assembly for a vehicle comprising:

a shift lever;

supporting means for pivotally supporting the shift lever for movement about a pivot axis between a plurality of gear shift portions, the movement of the shift lever between the gear shift positions defining a vertical plane extending vertically and in a longitudinal direction; and

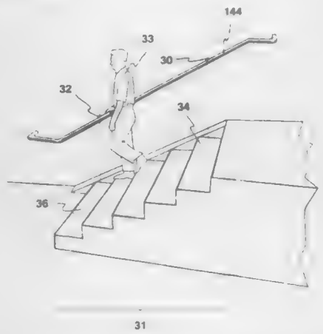
a shift lever indicator assembly including a track, a flag, and an indicator arm, the track being elongated and extending generally in the longitudinal direction parallel the vertical plane but having at least a portion that extends laterally in a second direction not parallel the plane, the flag being constructed to slidably follow the track as the shift lever is pivoted between the gear shift positions and having a portion visible from a location generally above the shift lever for indicating a selected one of the gear shift positions, the indicator arm being loosely connected to the shift lever for movement therewith and operably engaged with the flag so as to move the flag longitudinally and laterally as the shift lever is moved.

5,626,094

TACTILE LAST-STEP INDICATOR FOR STAIR SAFETY

Robert T. Jeffery, 60 Ora Way, #306, San Francisco, Calif. 94131; Brian F. Donnelly, 1118 Salamanca Ct., Davis, Calif. 95616, and Robert S. Krolick, 4 Viscaino Way, San Rafael, Calif. 94903

Filed Mar. 3, 1995, Ser. No. 398,360
Int. Cl.[6] G08B *6/00;* **A62B** *3/00*
U.S. Cl. 116—205 **17 Claims**



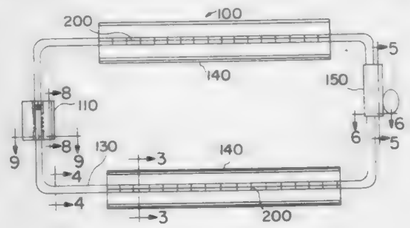
1. In a staircase structure having at least a staircase section including a handguide therefor, a staircase-end warning device comprising: a relatively small size, unitary, tactile element of a predetermined configuration; said element operably attached a predetermined distance before an end of said staircase section; said tactile element having a surface for providing a humanly discernible interrupting sensation to a hand of a pedestrian traversing said staircase section; and wherein said tactile element is positioned so that said pedestrian will encounter said tactile element when said pedestrian is near said end of said staircase section, thereby warning said pedestrian of the end of said staircase section.

5,626,095

POULTRY FEED CONVEYOR SYSTEM

Derwood L. Runion, Rte. 2, Box 300, Timberville, Va. 22853

Filed Dec. 15, 1994, Ser. No. 358,657
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—57.2 **18 Claims**



1. A poultry feed conveyor system, comprising:

a feed retaining trough,

a feed transporting member disposed within said feed retaining trough,

said feed transporting member including an endless flexible core and a plurality of feed engaging elements spaced apart along said core,

said feed engaging elements extending generally radially outward from said core, and

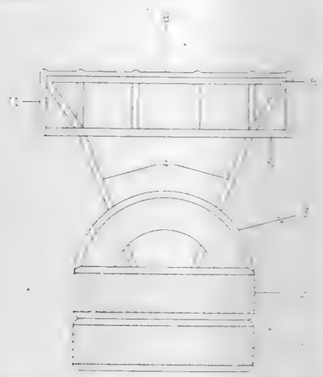
said core being formed about a single strand wire joined at its ends.

5,626,096

TRUCK TIRE CATTLE FEEDER

Jerry D. Sibley, 537 Sandy Point Rd., Campti, La. 71411

Continuation-in-part of Ser. No. 196,655, Jun. 6, 1994, abandoned. This application Aug. 24, 1995, Ser. No. 518,827
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—61 **1 Claim**



1. A mineral feeder utilizing used truck tires, said mineral feeder allowing cattle access to mineral which said mineral feeder contains while protecting mineral from rain and spilling due to actions of cattle upon said mineral feeder comprising:

(a) means for a stable and durable base including two used truck tires laid horizontally on top of each other and bolted together through contacting sidewalls;

(b) means for containing mineral including containing area formed by cutting away upper rim bead and part of upper sidewall of upper used truck tire of base, said containing means including separating cavities of two used truck tires that comprise base by a partition being a flat piece of material between sidewalls of two used truck tires comprising base;

(c) means for shock absorbent roof support including a used truck tire tilted from vertical and positioned so that sidewall of said tilted used truck tire contacts treads of two horizontal used truck tires comprising base, said base being bolted to tilted used truck tire at each point of contact;

(d) means for extending height and strengthening of shock absorbent roof support, said means including two pieces of angle iron of equal length with ends connected at an acute angle by weld, said weld being positioned inside tilted used truck tire in such position that one bolt can pass through and connect said two pieces of angle iron near said weld, sidewall of tilted used truck tire and tread of lower used truck tire of base; said base being bolted to angle iron at two other points where tread of upper used truck tire of base makes contact with angle iron; said angle iron being bolted to tilted used truck tire at two points where angle iron contacts sidewall of tilted used truck tire;

(e) means for protecting mineral from rain, said protecting means including a metal roof, said metal roof including metal roofing material and steel frame fastened together, said metal roof being bolted and braced to means for extending height and strengthening of shock absorbent roof support.

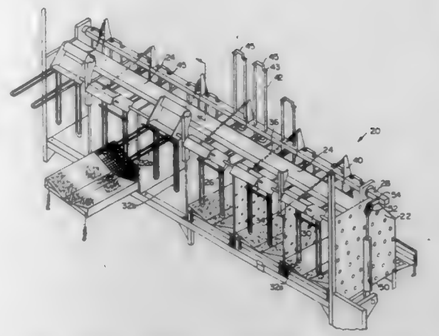
5,626,097

AUTOMATIC ENCLOSURE NEST FOR DOMESTIC FOWL

Brian E. Mast, Harrisonburg, Va., assignor to Shenandoah Manufacturing Company, Inc., Harrisonburg, Va.

Filed Oct. 13, 1995, Ser. No. 542,972
Int. Cl.[6] A01K *31/16*
U.S. Cl. 119—339 **9 Claims**

1. An automatic enclosure nest for domestic fowl comprising:



a frame including a plurality of side partitions defining therebetween a plurality of nests, with each nest having an entrance side and an exit side;

a trap mechanism positioned at the entrance side of each nest, each of said trap mechanisms having a plurality of bent rods extending across the entrance side of each nest and a counterweight connected to the plurality of bent rods and being pivotally mounted at the entrance of each nest;

an ejector mechanism being pivotally mounted at the exit side of each nest; and

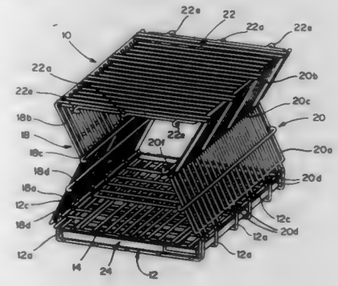
an automatic trap reset mechanism being connected between said counterweight and said ejector mechanism such that movement of said ejector mechanism causes movement of said counterweight and said trap mechanism.

5,626,098

COLLAPSIBLE CAGE

William E. Askins; Michael W. Stewart; Gary H. Roulston, all of Lititz, and Joseph F. Fiore, Jr., Lebanon, all of Pa., assignors to Woodstream Corporation, Lititz, Pa.

Continuation of Ser. No. 459,497, Jun. 2, 1995, Pat. No. 5,549,073. This application Jul. 23, 1996, Ser. No. 681,403
Int. Cl.[6] A01K *1/03;31/08*
U.S. Cl. 119—474 **12 Claims**



1. In a collapsible cage structure comprising a base, a pair of end walls, a pair of side walls and a roof, the walls and roof each formed of grids with parallel rods, wherein selected ends of said walls, said base and said roof are hinged together and other ends of said walls, said base and said roof have releasable latching means therebetween whereby the cage structure can be secured in a erected condition by engaging the latching means and can be folded into a collapsed condition by disengaging the latching means, the improvement wherein said walls, said base and said roof to be releasably secured to each other include juxtaposed end rods in the erected condition of the cage structure, said latching means comprising a plurality of releasable clips, each clip including spaced end portions and an intermediate portion, one end

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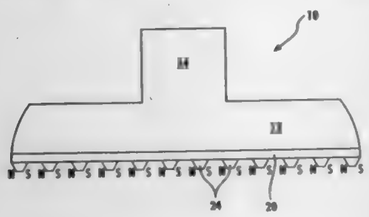
portion of each clip being pivotally mounted on a selected rod of one of said grids for swinging over an end rod of an adjacent grid to releasably grip said end rods together in the erected condition of the cage structure, at least one end portion of said clip engaging a rod parallel to, and spaced from, said end rod of one of said grids.

5,626,099

THERAPEUTIC GROOMER

Gregory S. Staller, 15 Sawmill Rd., Lebanon, N.J. 08833, and Linda K. Tucker, P.O. Box 885 Lower Hollow Rd., Dorset, Vt. 05251

Filed Aug. 21, 1995, Ser. No. 517,098
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—625 18 Claims



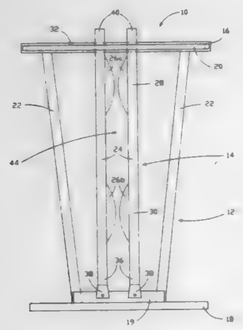
1. A device for grooming an animal comprising:
a base having a grip portion configured to be hand-held;
a grooming pad adapted for grooming formed on one side of the base, said grooming pad having a plurality of non-movable projections extending therefrom, at least said projections being magnetic, each of said projections having a first face facing in a first direction and a second face facing in a second direction opposite said first direction, said first and second faces having opposite magnetic polarities,
wherein said grooming pad is further adapted for massaging and providing magnetic therapy.

5,626,100

UNIVERSAL HEADGATE

Reid K. Stubbs, Genoa, Utah, and Willard B. Walch, deceased, late of Bountiful, Utah, assignors to Powder River, Inc., Provo, Utah

Filed May 5, 1995, Ser. No. 435,491
Int. Cl.[6] A01K *1/062*
U.S. Cl. 119—734 20 Claims



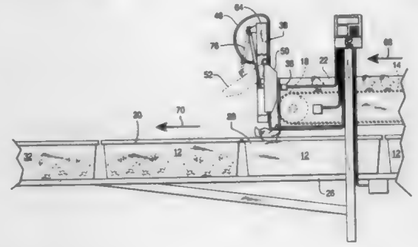
1. A headgate, which comprises:
a. a pair of spaced apart stanchions operable to move from an open position to a closed position;
b. an opening in the headgate, the opening being sized and shaped so that the animal is confined about its neck within the opening when the stanchions are in the closed position; and
c. opposing yokes positioned along the stanchions, the yokes having a curved perimeter extending away from the stanchions defining at least in part the size and shape of the opening.

5,626,101

APPARATUS FOR CONTINUOUS HIGH SPEED LOADING OF CHICKS INTO HANDLING TRAYS

Jeffrey B. Kuhl, P.O. Box 26, Kuhl Rd., Flemington, N.J. 08822-0026

Filed Oct. 23, 1995, Ser. No. 547,097
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—845 20 Claims



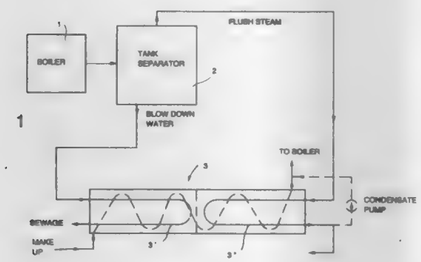
1. An apparatus for continuous high speed loading of chicks into handling trays comprising:
A. a chick conveyor means for transporting chicks thereon, said chick conveyor means including:
(1) an input end;
(2) an output end with said chick conveyor means traveling from said input end toward said output end for urging the chicks carried thereon to exit from said chick conveyor means adjacent said output end thereof;
B. a divider means positioned above said chick conveyor means and including a plurality of divider walls to separate chicks being transported thereon into a plurality of rows of chicks traveling thereon;
C. a tray conveyor means traveling below said chick conveyor means and adapted to transport handling trays to a location approximately below said output end of said chick conveyor means to receive chicks exiting therefrom, said tray conveyor means defining a first tray position and a second tray position thereon, said tray conveyor means being operative to move each handling tray thereon initially to said first tray position for initial filling thereof and to thereafter move the handling tray to said second tray position for filling thereof to full capacity and to remove the handling tray from the loading apparatus for exiting therefrom;
D. a chick counter means positioned adjacent said chick conveyor means to count the number of chicks passing therealong into a handling tray positioned upon said tray conveyor means therebelow;
E. a diverter assembly means positioned adjacent said output end of said chick conveyor means to control the movement of chicks from said chick conveyor means into the handling trays positioned on said tray conveyor means therebelow at said first tray position and said second tray position, said diverter assembly means including a plurality of diverter members positioned adjacent said output end of said chick conveyor for controlling movement of chicks exiting therefrom, each one of said diverter members being positioned adjacent one associated row of chicks exiting from said chick conveyor means to facilitate control of movement thereof into the handling trays therebelow, each of said diverter members being selectively pivotally movable to a closed diverter position for deflecting chicks exiting said chick conveyor means from the associated row of chicks into a handling tray positioned on said tray conveyor means at said first tray position therebelow, each of said diverter members also being selectively pivotally movable to an open diverter position for deflecting chicks exiting said chick conveyor means from the associated row of chicks into a handling tray positioned on said tray conveyor means at said second tray position therebelow; and
F. a controller means operatively secured to said diverter assembly means for controlling pivotal movement of said diverter members between the open and the closed position thereof and operatively secured to said chick counter means to determine the number of chicks having been loaded into each handling tray on said tray conveyor means, said controller means also being operatively secured to said tray conveyor means to cause periodic movement of each handling tray carried thereon to said first tray position, said second tray position and for exiting thereof, said controller means being responsive to the handling tray located in said second tray position being filled with chicks to full capacity to move all of said diverter members to the closed diverter position for loading of chicks in the handling tray located in said first tray position.

5,626,102

HEAT RECOVERY SYSTEM FOR A BOILER AND A BOILER PROVIDED THEREWITH

Ari Nir, 2600 Netherlands Ave., Bronx, N.Y. 10463

Filed Mar. 14, 1996, Ser. No. 615,809
Int. Cl.[6] F22G *1/00*; F22B *37/26*
U.S. Cl. 122—7 R 7 Claims



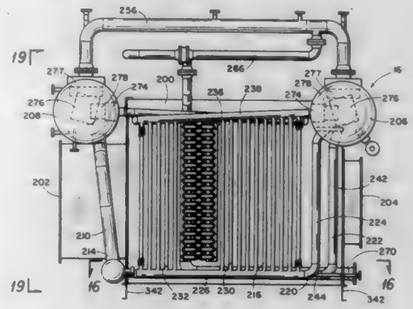
1. A heat recovery system for a boiler, comprising a tank separator connectable to a boiler and receiving a liquid from the boiler as well as separating the liquid into a blow down liquid and a flush vapor; a heat exchanger having an upstream portion and a downstream portion and receiving a make up water to be heated, said tank separator being connected with said upstream portion of said heat exchanger so as to apply hot blow down water into said upstream portion of said heat exchanger therefore to heat the make up water in said upstream portion of said heat exchanger by heat given out by the blow down water, said heat exchanger further having a downstream portion connected with said upstream portion so that the make up water heated by the heat given out by the blow down water further flows into the downstream portion of said heat exchanger, said tank separator being connected with said downstream portion of said heat exchanger so as to supply the flush steam into said downstream portion of said heat exchanger and further heat the make up water in said downstream portion of said heat exchanger by heat given out by the flush steam in said downstream portion of said heat exchanger.

5,626,103

BOILER SYSTEM USEFUL IN MOBILE COGENERATION APPARATUS

Michael G. Haws, Tulsa; James L. Coombs, Mounds; Glenn R. Gilbert, Tulsa; Donald E. Payne, Broken Arrow; Dennis L. Denton, Owasso; William P. Helean; Cordell Cullens, both of Tulsa; James W. King; Dennis L. Messner, both of Bixby; Tommy R. Cox, Tulsa; Jackie L. Hutson, Broken Arrow; David M. Ketrick, Tulsa; James H. Tighe, Tulsa; George W. Schwerzel, Tulsa, and Dennis J. Cousino, Owasso, all of Okla., assignors to Applied Energy Systems of Oklahoma, Inc., Tulsa, Okla.

Division of Ser. No. 77,135, Jun. 15, 1993, Pat. No. 5,517,822.
This application Jun. 7, 1995, Ser. No. 472,541
Int. Cl.[6] F22B *15/00*
U.S. Cl. 122—235.14 23 Claims



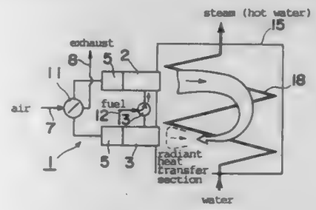
10. A boiler comprising:
a housing;
a first container for receiving steam and separating water therefrom;
a second container for receiving steam and separating water therefrom;
a plurality of boiler tubes positioned inside said housing; and
conduit means for (a) conducting steam from said boiler tubes to said first container and (b) conducting steam from said boiler tubes to said second container.

5,626,104

BOILER WITH INCREASED FLAME TEMPERATURE AND OUTPUT

Ryoichi Tanaka; Mamoru Matsuo; Yosuke Kataoka, and Hitoshi Yahara, all of Yokohama, Japan, assignors to Nippon Furnace Kogyo Kabushiki Kaisha, Kanagawa, Japan

Continuation-in-part of Ser. No. 199,205, Feb. 28, 1994, Pat. No. 5,522,348. This application Oct. 18, 1995, Ser. No. 544,562
Int. Cl.[6] F22B *23/06*
U.S. Cl. 122—367.1 11 Claims



1. A boiler with increased flame temperature and output, comprising:
a combustion chamber;

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a radiation heat transfer section in the combustion chamber:

at least one regenerative-heating burner system connected to said combustion chamber, the regenerative-heating burner system having a pair of regenerative beds and a burner connected to each bed;

first means for supplying combustion air through each regenerative bed and to each burner at a jet flow rate of at least 60 m/s at the time of maximum combustion;

second means for supplying fuel to each burner system for forming, with the combustion air, a flame which produces combustion gas which is exhausted into the combustion chamber and past the radiation heat transfer section, the flame being at a first temperature and the combustion gas being at a second temperature, the fuel having an ignition temperature; and

third means connected to said first and second means for causing a flow of said combustion air and flow of said combustion gas to be changed over, relative to each other, for first heating one of the regenerative beds with combustion gas passing therethrough to a temperature above the ignition temperature of the fuel, while combustion air is being supplied through the other one of the regenerative beds for being heated to above the ignition temperature of the fuel before combining with the fuel to form the flame;

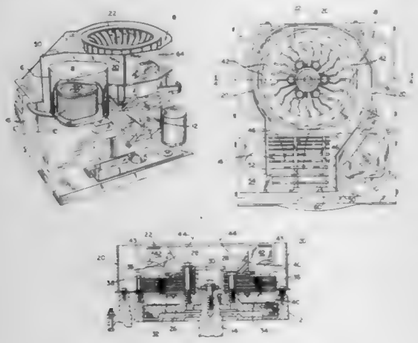
the first and second means being operatively connected to said regenerative-heating burner systems for heating the combustion air in the regenerative beds to above the ignition temperature of the fuel and substantially to the same temperature as said second temperature of the combustion gas so that the first temperature of the flame is increased to increase heat transfer to the radiation heat transfer section while creating a substantially flat and high temperature across the combustion chamber.

5,626,105

VERTICAL SHAFT GENERATOR WITH SINGLE COOLING FAN

Richard D. Locke, Sheboygan, and Terrence M. Rotter, Sheboygan Falls, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Oct. 24, 1995, Ser. No. 547,261
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—3 **8 Claims**



1. An engine driven generator set which comprises:

an air-cooled engine which rotates a vertically disposed shaft that extends upward from the engine and which has a cylinder head that extends laterally outward to one side of the engine;

a generator mounted above the engine and having a rotor coupled for rotation by the shaft and a stator disposed around the rotor and supporting stator windings;

a fan mounted above the generator and coupled for rotation by the shaft to blow cooling air over the stator windings;

a plenum formed around the fan to confine the air blown over the stator windings; and

an air duct coupled to the plenum to direct cooling air from the plenum to cool the engine cylinder head;

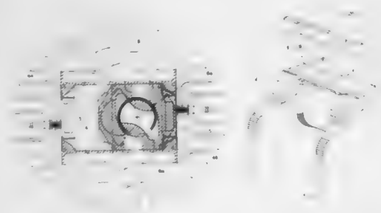
wherein the fan is a centrifugal fan which draws cooling air in from above and blows it radially outward over the stator winding and into the surrounding plenum.

5,626,106

MIGRATING COMBUSTION CHAMBER ENGINE

Frederick L. Erickson; Frederick Lynn Erickson, and Jeffrey L. Erickson, all of Fort Wayne, Ind., assignors to Engine Research Associates, Inc., Fort Wayne, Ind.

Filed Apr. 10, 1996, Ser. No. 628,998
Int. Cl.[6] F02B *59/00*
U.S. Cl. 123—42 **22 Claims**



1. In a migrating combustion chamber internal combustion engine having a stationary power block housing, a combustion chamber member, an orbiting piston, a crankshaft, and bearing means rotatably joining said crankshaft and said orbiting piston, wherein the orbiting piston is adapted to reciprocate inside and along a first axis relative to the combustion chamber member whereby two combustion chambers are formed with the orbiting piston separating them, and wherein said combustion chamber member is adapted to reciprocate inside and relative to the stationary power block housing along a second axis generally perpendicular to said first axis, whereby the orbiting piston is guided through a circular motion by the crankshaft; and whereby the combustion chambers simultaneously change volume and position, the improvement comprising a plurality of strip seals between said combustion chamber member and orbiting piston, said seals adapted to respond to the pressure of combustion to increase contact pressure and improve retention of the gases in the combustion chambers.

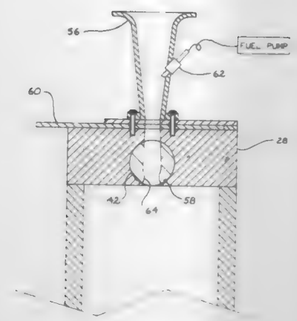
5,626,107

VALVE SYSTEMS FOR INTERNAL COMBUSTION PISTON ENGINES

Italo De Blasi, R.R. #1, Manilla, Ontario, Canada

Filed Nov. 17, 1995, Ser. No. 560,452
Int. Cl.[6] F01L *7/02;7/16*
U.S. Cl. 123—81 B **8 Claims**

1. In an internal combustion engine having at least one gas passage communicating with a combustion chamber, a normally closed valve in said passage, and a valve actuator for opening said valve during a portion of an operating cycle of the engine, the valve being a member mounted for rocking movements about an axis transverse to said passage, the member defining a passage portion extending perpendicular to said axis, the improvement wherein the valve actuator is operative to rock said valve member about said axis between end positions in one of which said valve member obturates said passage, and in the other of which said passage portion is aligned with said gas passage, the passage



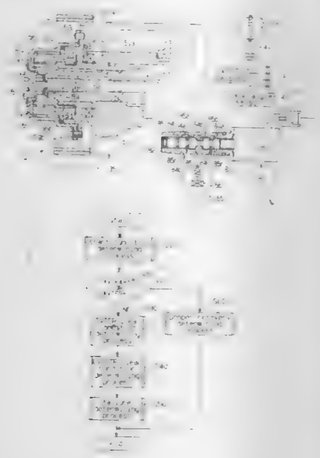
portion and said gas passage conjointly defining, when aligned, a venturi opening into said combustion chamber.

5,626,108

ABNORMALITY DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Senji Kato, Aichi-ken; Tadashi Saito, Nisshin; Tadahisa Naganawa, Toyota; Kouji Endou, Mizunami, and Nobuhisa Ohkawa, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 22, 1996, Ser. No. 605,571
Claims priority, application Japan, Feb. 27, 1995, 7-038722; Mar. 8, 1995, 7-048853
Int. Cl.[6] F01L *1/34*
U.S. Cl. 123—90.15 **22 Claims**



1. An abnormality detecting apparatus for detecting an abnormality of an internal combustion engine, wherein said engine includes a crankshaft, an intake port, a corresponding intake valve, an exhaust port, and a corresponding exhaust valve, wherein said valves are driven in a predetermined timing relationship with respect to the crankshaft, wherein said intake valve and exhaust valve selectively open or close the intake port and exhaust port, respectively, and the valve timing of at least one of the intake valve and exhaust valve is altered by a variable valve timing mechanism, said abnormality detecting apparatus comprising:

means for detecting running conditions of the internal combustion engine,

means for determining a target valve timing of the valve altered by said variable valve timing mechanism in accordance with the running conditions of the engine,

means for detecting a real valve timing of the valve altered by said variable valve timing mechanism,

means for controlling said variable valve timing mechanism to change the valve timing of the valve to be altered to converge said detected real valve timing to said determined target valve timing, and

means for detecting generation of abnormality in said variable valve timing mechanism, wherein said abnormality generation detecting means decides that an abnormality has been generated in said variable valve timing mechanism when the absolute difference between said determined target valve timing and detected real valve timing is at least a first predetermined value and an amount of change in said detected real valve timing over a predetermined time is at most a second predetermined value.

5,626,109

VALVE TIMING CONTROL APPARATUS FOR ENGINE

Atsushi Yasumura, Toyota; Senji Kato, Aichi-ken, and Nobuhisa Ohkawa, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 29, 1996, Ser. No. 625,267
Claims priority, application Japan, Mar. 31, 1995, 7-076333
Int. Cl.[6] F01L *1/34;* **F02D** *13/02*
U.S. Cl. 123—90.15 **22 Claims**



1. A valve timing control apparatus for an engine having a combustion chamber for combusting a mixture of fuel mist and air therein, an air intake passage for introducing the air to a combustion chamber and exhaust passage for exhausting gas from the combustion chamber, said passages respectively having an intake valve and an exhaust valve therein, and said intake valve and said exhaust valve being actuated in synchronism with the rotation of a crank shaft of the engine to be alternately opened and closed to regulate introduction of the air to and exhausting of the gas from the combustion chamber and to be simultaneously open during a valve overlap period causing a reverse flow of the air-fuel mixture from the combustion chamber to the air intake passage, wherein the fuel mist adheres to an inner surface of the air intake passage; said apparatus comprising:

adjusting means for adjusting the valve timing at least one of the intake valve and the exhaust valve to obtain a valve overlap mode in which the valve timing is optimized and a non-overlap mode in which valve overlap is eliminated;

condition detecting means for detecting a running condition of the engine;

first control means for controlling the adjusting means to operate within the valve overlap mode based on said detected running condition;

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temperature detecting means for detecting a temperature of the engine;

second control means for controlling said adjusting means to operate in said non-overlap mode when the detected engine temperature is below a predetermined value; and

selecting means for selecting the valve overlap mode in place of the non-overlap mode by deactivating the second control means and actuating the first control means when the detected temperature is in excess of the predetermined value, wherein said predetermined value is based on a value selected such that the adhered fuel mist is substantially unchanged in amount before and after the valve timing is changed to the overlap mode from the non-overlap mode.

5,626,110

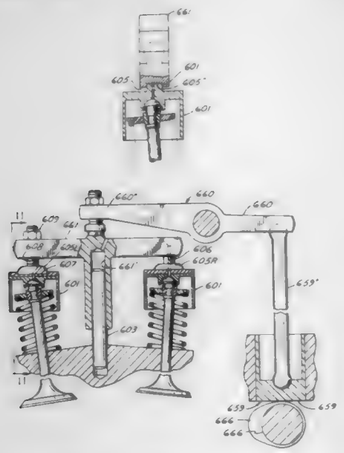
VALVE TRAIN FOR INTERNAL COMBUSTION ENGINE

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Division of Ser. No. 416,245, Apr. 4, 1995, Pat. No. 5,570,665. This application Jul. 24, 1996, Ser. No. 686,650

Int. Cl.° F01L *1/26; 1/18*

U.S. Cl. 123—90.22 **2 Claims**



1. A valve train for an internal combustion engine having an engine block with cylinders, a camshaft with lobes and a cylinder head, a piston operatively disposed in each of said cylinders to define one end portion of a respective combustion chamber, said cylinder head operatively disposed on said engine block and having curved recesses therein aligned with said cylinders to define respective second end portions of said combustion chambers, at least two intake valves and two exhaust valves provided in said cylinder head per cylinder for opening and closing the cylinders, valve seats for each of said intake and exhaust valves, each of said valves having an enlarged head portion for sealing engagement with an associated one of said valve seats and each of said valves further having an elongated stem portion extending from said head portion through associated stem openings in said cylinder head and terminating at an upper end portion, each of said stem portions defining an axis and each axis being inclined so as to diverge away from the axis of any other of said stem portions, an inverted bucket tappet for each of said valves and being supported for movement by said cylinder head, each tappet and valve stem portion being angulated with respect to one another so that a resultant contact patch therebetween shifts sideways during operative opening of said valves, a T-shaped bridge member supported by said cylinder head and disposed to contact a pair of tappets for operating upper end portions of a pair of valve stem portions simultaneously by means of a portion of said bridge member extending in a substantially transverse plane relative to a centerline of the engine, a rocker arm With an end portion associated with said T-shaped bridge member, a rocker shaft with a centerline parallel to said camshaft about which said rocker ann can pivot, one end of said rocker arm engaging said T-shaped bridge member and the other end being operatively actuated by one of said camshaft lobes, said T-shaped member having at least one foot portion for engaging an associated tappet, said associated tappet having a portion for receiving said foot portion to inhibit rotation of said T-shaped bridge member and dislocation of its contact with said tappet.

5,626,111

STRUCTURE FOR BLOCKING OIL SUPPLY HOLE OF KICK IDLE GEAR BEARING PORTION

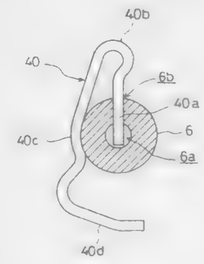
Hiroyuki Kawakubo, and Satoru Narita, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Jun. 7, 1995, Ser. No. 476,321

Claims priority, application Japan, Dec. 26, 1994, 6-336578

Int. Cl.° F01M *11/00;* **F02N** *3/04*

U.S. Cl. 123—179.24 **12 Claims**



1. A structure for blocking an oil supply hole of a kick idle gear bearing portion in an internal combustion engine wherein a kick starting mechanism is removably mounted for transmitting an input from a kick arm to a crankshaft by way of a kick idle gear rotatably supported by a counter shaft comprising:

a case in which a kick starting mechanism is removably positioned;

a self starting mechanism;

a blocking member; and

an oil supply hole of a bearing portion exposed when the kick idle gear of the counter shaft is removed, said blocking member forming a closure for said oil supply hole and having a slip preventive function;

said blocking member including an insertion portion inserted in the oil supply hole, and an abutment portion integrally formed with the insertion portion, which is abutted on the outer peripheral surface of the bearing portion;

wherein said blocking member is a bar having a diameter being substantially the same as that of said oil supply hole, and one end of said bar is provided as said insertion portion while part of a bent portion is provided as said abutment portion.

9. A blocking member for blocking an oil supply aperture formed in a bearing member, said blocking member including a bar comprising:

an insertion portion located at one end of said bar and having a cross-sectional configuration substantially the same as a cross-sectional configuration of said oil supply aperture; and

an abutment portion affixed to said insertion portion for releasably mounting said blocking member relative to said bearing member.

5,626,112

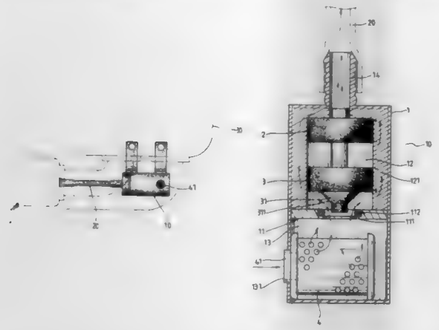
AIR-INLET ASSISTOR FOR A VEHICLE ENGINE

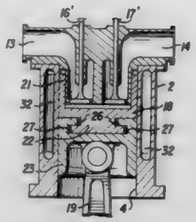
Chun-Yao Liao, No.159, Lane 247, Ta Chiao first St., Yung Kang City, Tainan Hsien, Taiwan

Filed Oct. 2, 1995, Ser. No. 538,000

Int. Cl.° F02M *3/00*

U.S. Cl. 123—184.21 **1 Claim**





1. An air-inlet assistor for a vehicle engine, comprising:

a main body formed by a container having a cylindrical wall to define an internal cavity of said main body, said main body having a partition formed therein to divide said internal cavity into a working chamber and an inlet chamber, said partition having an aperture formed therethrough for providing fluid communication between said working chamber and said inlet chamber, said partition having a counter bore formed concentrically about said aperture on a side of said partition facing said working chamber, said working chamber having a plurality of guide bars extending from an internal wall surface disposed in radially spaced relationship and an outlet connection coupled to a vehicle engine for drawing air from said working chamber, said inlet chamber having an opening formed through a portion of said cylindrical wall;

an O-ring disposed within said counter bore;

an air cleaner disposed within said inlet chamber, said air cleaner having an inlet coupled in fluid communication with said inlet chamber opening;

a first magnet having a plate-like contour with a pair of opposing circular end faces, said first magnet being disposed within said working chamber between said plurality of guide bars; and,

a second magnet disposed within said working chamber between said plurality of guide bars in longitudinally spaced relationship with said first magnet, said second magnet having a first circular end face directed toward a respective end face of said first magnet and poled for generating a repulsive force therebetween, said second magnet having a second circular end face with an inverted cone extending therefrom for insertion into said partition aperture in sealing engagement with said O-ring, wherein a vacuum communicated from the engine to said outlet connection displaces said first and second magnets to draw ambient air through said air cleaner, said partition aperture and said outlet connection to the engine.

5,626,113

PISTON-CYLINDER ASSEMBLY AND DRIVE TRANSMITTING MEANS

Pao C. Pien, Marbelle Club, 840 S. Collier Blvd., Marco Island, Fla. 33937

Filed Nov. 7, 1995, Ser. No. 551,797

Int. Cl.° F02B *75/08*

U.S. Cl. 123—193.4 **11 Claims**

1. A piston-cylinder assembly comprising, a cylinder body having a bore formed therein, means defining an annular recess within said body, said annular recess having opposite ends, one of said ends being open and in communication with said bore, the other of said ends of the recess being permanently closed, an inlet means in communication with said bore, an outlet means in communication with said bore, a piston mounted for reciprocation within said bore, said piston including an annular skirt defining a space therewithin, said skirt being adapted to fit within said annular recess, said skirt reciprocating within said recess during reciprocation of said piston within said bore and compressing air within said annular recess as the skirt moves toward the closed end of said annular recess to provide an annular body of compressed air forming an annular seal of compressed air within said annular recess between said skirt and said closed end of the recess.

5,626,114

FUEL PUMP FOR HIGH-PRESSURE FUEL INJECTION SYSTEM

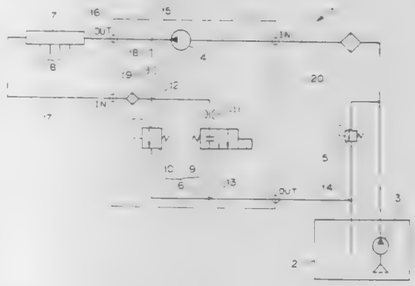
Takeo Kushida; Hideya Kikuchi, and Etsuro Hozumi, all of Saitama Prefecture, Japan, assignors to Zexel Corporation, Japan

Filed Dec. 4, 1995, Ser. No. 566,721

Claims priority, application Japan, Dec. 7, 1994, 6-330342

Int. Cl.° F02M *37/04;* **F02B** *77/00*

U.S. Cl. 123—198 D **7 Claims**



1. A fuel pump for a high-pressure fuel injection system comprising:

a high-pressure fuel pump for supplying high-pressure fuel to injectors for injecting high-pressure fuel into cylinders of an engine,

a pressure control valve for controlling the fuel pressure of the high-pressure fuel pump,

a high-pressure fuel supply pipe connecting the high-pressure fuel pump and the injectors,

a high-pressure fuel control pipe connecting the injectors and the pressure control valve, and

a pump-control valve communication passage formed to communicate the high-pressure fuel pump with the pressure control valve and bypass the injectors, the sectional area of the pump-control valve communication passage being smaller than those of the high-pressure fuel supply pipe and the high-pressure fuel control pipe.

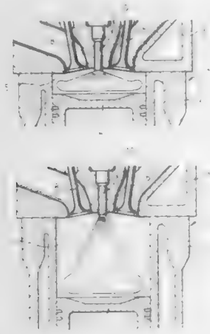
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5,626,115

COMPRESSION-IGNITION TYPE ENGINE

Akio Kawaguchi, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 7, 1996, Ser. No. 610,819
Claims priority, application Japan, Mar. 10, 1995, 7-051060
Int. Cl.[6] F02B *3/08*; F02M *61/00*
U.S. Cl. 123—305 12 Claims



1. A compression-ignition type engine having a piston and a combustion chamber defined by the piston, said engine comprising:

injection means for conically injecting fuel into the combustion chamber toward a top face of the piston and forming fuel droplets dispersed in the combustion chamber, the mean value of the particle size of said fuel droplets being larger than a predetermined particle size at which the temperature of the fuel droplets having the predetermined particle size reaches a boiling point of a main component of said fuel, which boiling point is determined by pressure in the combustion chamber, at about the top dead center of the compression stroke;

injection time control means for controlling said injection means to carry out an injecting action at a predetermined timing during a period from the start of an intake stroke to approximately 60 degrees before top dead center of the compression stroke; and

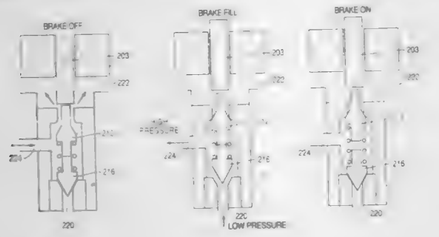
spread angle control means for controlling a spread angle of the conically injected fuel to make said spread angle smaller as the position of the piston becomes closer to the bottom dead center when the fuel injection is carried out.

5,626,116

DEDICATED ROCKER LEVER AND CAM ASSEMBLY FOR A COMPRESSION BRAKING SYSTEM

Steven W. Reedy, Nashville, and David A. Vittorio, Columbus, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Nov. 28, 1995, Ser. No. 563,333
Int. Cl.[6] F02D *13/04*
U.S. Cl. 123—321 23 Claims



1. A braking system for an internal combustion engine having at least one engine piston reciprocally mounted within a cylinder for cyclical successive compression and expansion strokes and at least one exhaust valve operable to open near the end of an expansion stroke of the engine piston when the engine is operated in a power mode and operable to open in a variable timed relationship to the engine piston compression stroke when the engine is operated in a braking mode, said braking system comprising:

a first exhaust valve actuating means for imparting reciprocable movement to said at least one exhaust valve when the engine is operated in the power mode, said first exhaust valve actuating means including a power mode rocker lever pivotally mounted adjacent said at least one exhaust valve for opening said at least one exhaust valve when the engine is operated in the power mode and a first cam means for pivoting said power mode rocker lever; and

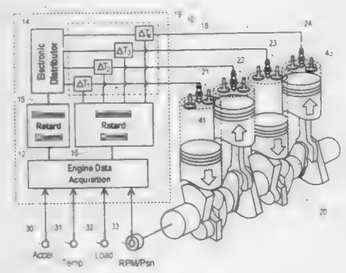
a second exhaust valve actuating means for imparting reciprocable movement to said at least one exhaust valve when the engine is operated in the braking mode, said second exhaust valve actuating means including a braking mode rocker lever pivotally mounted adjacent said at least one exhaust valve for opening said at least one exhaust valve and a second cam means for pivoting said braking mode rocker lever.

5,626,117

ELECTRONIC IGNITION SYSTEM WITH MODULATED CYLINDER-TO-CYLINDER TIMING

Gordon Wright, Plymouth; James R. Clark, Northville, and Mark B. Barron, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 8, 1994, Ser. No. 272,057
Int. Cl.[6] F02P *5/00*
U.S. Cl. 123—406 9 Claims



1. Apparatus for increasing the temperature of the exhaust system of a multi-cylinder internal combustion engine comprising:

means for sensing the rotational position of the crankshaft of the engine and generating an ignition pulse for each given one of said cylinders in synchrony with the motion of the piston in said given cylinder,

sensing means for detecting the presence of a first predetermined engine operating condition indicative of an abnormally cold exhaust system,

means responsive to said for sensing means for delaying the application of said ignition pulses to predetermined selected ones of said cylinders by a significant delay interval such that additional combustion of the fuel supplied to said selected cylinders occurs within said exhaust system to increase the temperature of said exhaust system, and

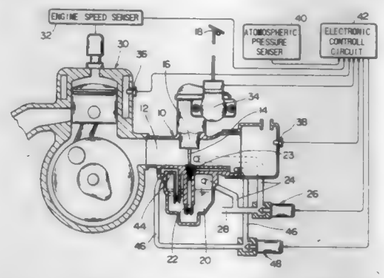
means for varying the duration of said delay interval as a predetermined function of a second engine operating condition.

5,626,118

PISTON VALVE TYPE CARBURETOR

Toshio Sugii, Odawara, Japan, assignor to Mikuni Corporation, Japan

Filed Nov. 20, 1995, Ser. No. 560,644
Claims priority, application Japan, Dec. 13, 1994, 6-332238
Int. Cl.[6] F02M *7/17*; *7/18*
U.S. Cl. 123—439 14 Claims



1. A piston valve type carburetor including a float chamber having fuel stored therein, a piston valve adapted to be directly actuated to variably change a sectional area of a suction passage, and a jet needle secured to said piston valve to adjust a quantity of fuel to be ejected from a float chamber to said suction passage, comprising;

an atmospheric passage by way of which said float chamber is normally communicated with atmosphere,

a negative pressure introduction passage of which one end is opened at the position of said suction passage or the position in the vicinity of said suction passage of which sectional area is varied by said piston valve and of which other end is opened at the position located above a fuel surface of said float chamber,

opening/closing means for opening or closing the intermediate part of said negative pressure introduction passage,

a temperature sensor for sensing the temperature of atmosphere,

a pressure sensor for sensing the atmospheric pressure, and

electronical controlling means for controlling opening or closing of said opening/closing means in response to informations from said temperature sensor and said pressure sensor.

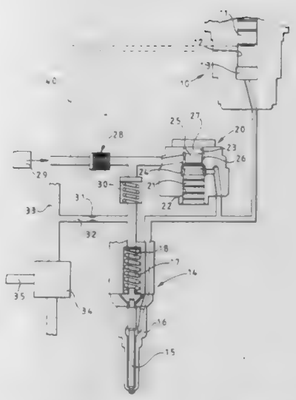
5,626,119

FUEL SYSTEM

Colin T. Timms, Middlesex, Great Britain, assignor to Lucas Industries Public Limited Company, Solihull, United Kingdom

Filed Mar. 21, 1996, Ser. No. 619,248
Claims priority, application United Kingdom, Apr. 4, 1995, 9506959
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—467 8 Claims

1. A fuel injection system for an internal combustion engine comprising a plurality of pump/injectors actuable by engine driven cams, the pump/injectors delivering fuel to the combustion chambers of the engine respectively, each pump/injector comprising a housing in which is defined a bore, a reciprocable plunger in the bore, the plunger being movable inwardly in the bore by a respective engine cam, the plunger and bore defining a pumping chamber from which fuel is expelled during inward movement of the plunger, a fuel injection nozzle mounted on the housing, the nozzle having an inwardly opening valve member which is biased by a spring to a closed position and is movable to an open position to allow fuel flow to the engine by fuel under pressure supplied from the pumping chamber, the spring being housed in a spring chamber the fuel pressure in which acts to assist the action of the spring, an electromagnetically operable spill valve having a pair of ports which are connected together when the spill valve is open, one of said ports communicating with the pumping chamber and the other of said ports communicating with the spring chamber, means restricting the flow of fuel from the spring chamber, and a first non-return valve interposed between said other port of the spill valve and the spring chamber, the restricting means of each pump injector being interposed between the spring chamber and a common passage and pressure control valve means for controlling the pressure in said common passage.

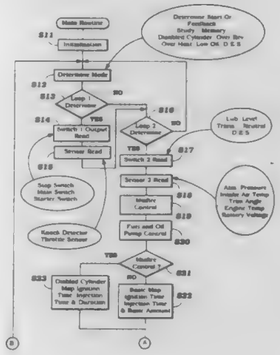


5,626,120

ENGINE CONTROL SYSTEM AND METHOD

Hidenori Akatsuka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 5, 1996, Ser. No. 658,375
Claims priority, application Japan, Jun. 5, 1995, 7-137590
Int. Cl.[6] F02M *51/00*
U.S. Cl. 123—479 20 Claims



1. An engine control system for an internal combustion engine having a combustion chamber, an induction and charge forming system for supplying an air fuel charge to the engine, an exhaust system for discharging a burnt charge from the engine, an air fuel control system including an engine speed sensor for sensing the speed of said engine, and an engine throttle position sensor which senses the condition of the operator demand for engine output, said air fuel control system setting a fuel supply amount from the outputs from the engine speed and operator demand signals indicated by said engine speed sensor and said engine throttle position sensor if the output of said throttle position sensor is deemed to be accurate based upon a map indicative of air fuel ratio in relation to

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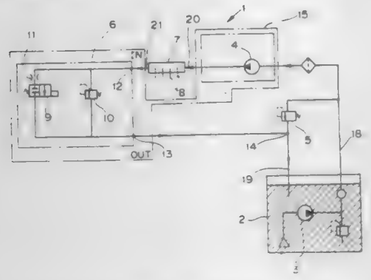
engine operator control position and engine speed and in another way if said throttle position sensor is deemed to be inaccurate.

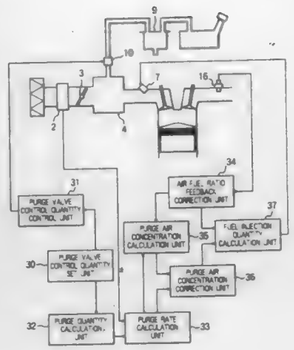
5,626,121

FUEL PUMP FOR HIGH-PRESSURE FUEL INJECTION SYSTEM

Takeo Kushida; Hideya Kikuchi, and Etsuro Hozumi, all of Saitama Prefecture, Japan, assignors to Zexel Corporation, Japan

Filed Nov. 27, 1995, Ser. No. 562,997
Claims priority, application Japan, Dec. 2, 1994, 6-323959
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—514 **10 Claims**





1. A fuel pump for a high-pressure fuel injection system comprising:

a high-pressure fuel pump for supplying high-pressure fuel to injectors for injecting high-pressure fuel into cylinders of an engine,

a pressure control valve for controlling the fuel pressure of the high-pressure fuel pump,

the high-pressure fuel pump and the pressure control valve being integrated to constitute a pump unit,

the pump unit being adapted for mounting on the engine,

the high pressure fuel pump has a cover, a pump housing and a flange, and

the pressure control valve has a unit housing,

the unit housing of the pressure control valve and the cover of the high-pressure fuel pump being constituted integrally,

clustered on a side of the pump unit separate from the flange of the high-pressure fuel pump are

a supply pipe connector for connecting a fuel supply pipe from a fuel tank for the fuel,

a low-pressure side outlet port for connecting a fuel return pipe passing from the high-pressure control valve to the fuel tank,

a high-pressure supply pipe connector for connecting a high-pressure fuel supply pipe passing from the pump unit to the injectors, and

a high-pressure side inlet port for connecting a high-pressure fuel control pipe passing from the injectors to the pump unit.

5,626,122

AIR-FUEL RATIO CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Tadahiro Azuma, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1996, Ser. No. 596,767
Claims priority, application Japan, Mar. 20, 1995, 7-060436
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—685 **5 Claims**

1. An air-fuel ratio control apparatus for an internal combustion engine, comprising:

operative state detection means for detecting an operative state of said internal combustion engine;

purge quantity control means for controlling a quantity of purge air that is introduced into an engine intake system, based on a detection output of said operative state detection means;

purge quantity calculation means for calculating said purge air quantity that is introduced into said engine intake system by said purge quantity control means;

purge rate calculation means for calculating a purge rate from said purge air quantity calculated by said purge quantity calculation means and from said operative state detected by said operative state detection means;

an air-fuel ratio sensor for sensing an air-fuel ratio of an air-fuel mixture supplied to said internal combustion engine;

air-fuel ratio control means for controlling an air-fuel ratio feedback correction coefficient which makes a correction so that said air-fuel ratio of said air-fuel mixture, which is supplied to said internal combustion engine, becomes a target value, based on an output of said air-fuel ratio sensor;

purge air concentration calculation means for calculating a purge air concentration from said purge rate and said air-fuel ratio feedback correction coefficient;

purge air concentration correction means for calculating a purge air concentration correction coefficient, based on said purge rate and said purge air concentration; and

fuel injection quantity calculation means for calculating an injection quantity of fuel which is supplied to said internal combustion engine, based on said air-fuel ratio feedback correction coefficient and said purge air concentration correction coefficient.

5,626,123

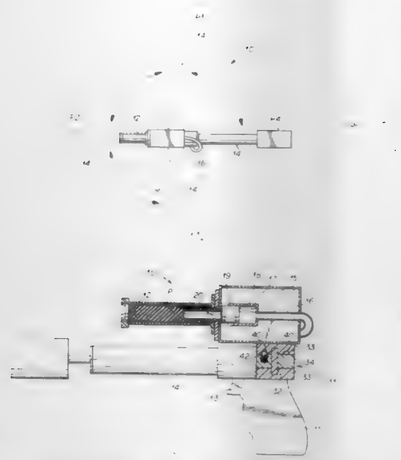
COMPRESSED AIR GUN

Lonnie G. Johnson, Smyrna, and John Applewhite, Atlanta, both of Ga., assignors to Johnson Research & Development Co., Inc., Smyrna, Ga.

Continuation of Ser. No. 223,559, Apr. 6, 1994, Pat. No. 5,553,598. This application Apr. 27, 1995, Ser. No. 429,604
Int. Cl.[6] F41B *11/26;11/32*
U.S. Cl. 124—69 **20 Claims**

6. A compressed air gun comprising a stock; a barrel mounted to said stock; a manually operated air pump in fluid communication with said barrel; and mounting means for pivotably mounting said pump to said stock for the manual operation of said pump for movement between a forward, operable position generally parallel to said barrel and facing forward and a rearward, operable position generally parallel to said barrel and facing rearward in a direction substantially opposite to said forward position.

19. A compressed air gun comprising a stock; a barrel mounted to said stock; a manually operated air pump in fluid communication with said barrel; mounting means for pivotably mounting said pump to said stock for the manual operation of said pump in a



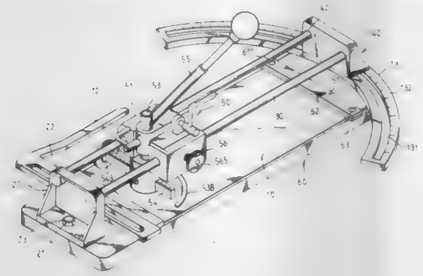
plurality of positions relative to said barrel; and holding means for releasably holding said pump in each of said pump positions, said holding means having a detent.

5,626,124

CUTTER FOR TRIMMING TILES

Wen-Chih Chen, Suite 2, 7F, No. 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed May 6, 1996, Ser. No. 643,383
Int. Cl.[6] B28D *1/32*
U.S. Cl. 125—23.02 **4 Claims**



1. A cutter for trimming a tile comprising:

a flat rectangular base, said base having a threaded axle hole at a center of one end thereof, a square scale abutting a positioning plate transversely and slidably secured on said base adjacent the threaded axle hole, an arcuate rail secured to the other end perpendicular to the axis of said base and a collapsible sustainer foldably secured on said base and abutting said arcuate rail;

a first trapezoidal seat pivotally secured to the threaded axle hole at one end of said base and fastened by a threaded pin, said first trapezoidal seat having an axle hole centrally formed on a bottom made in registry with said threaded axle hole of said base and a pair of transverse recesses respectively formed at the upper corners;

a second trapezoidal seat slidingly secured to said arcuate rail at the other end of said base by a T-shaped pin, said second trapezoidal seat having an axle hole centrally formed at a bottom and a pair of transverse recesses respective formed at the upper corners and made in registry with the pair of recesses of said first trapezoidal seat;

a pair of rail rods of elongate cylinder body secured at their two end into the transverse recesses of said first and second trapezoidal seats and positioned parallel to the axis of said base thereabove;

a cutting tool sliding on said rail rods thereabout and along the axis thereof;

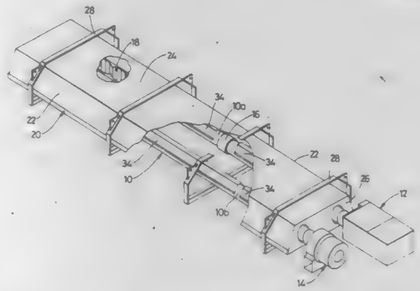
whereby said rail rods can laterally slide about said arcuate rail on the thread axle hole of said base and said cutting tool slides on said rail rods to trim a straight line, a beveled straight line, a circle or a curve in a tile.

5,626,125

SPACE HEATING APPLIANCES

Robert N. Eaves, Lutley, Great Britain, assignor to AMBI-RAD Limited, Halesowen, United Kingdom

Filed Aug. 7, 1995, Ser. No. 512,115
Claims priority, application United Kingdom, Aug. 10, 1994, 9416130
Int. Cl.[6] F24C *3/04*
U.S. Cl. 126—91 A **13 Claims**



1. A radiant tube space heating appliance, comprising:

a radiant duct capable of emitting radiant heat in response to being heated by hot gases directed through said duct for heating an area adjacent said duct;

at least one shield member fabricated of thermally insulating material supported in closely spaced relation to said duct adjacent a side thereof opposite the area to be heated, said shield member partially surrounding said duct but extending no further than about half of the circumference of the duct for insulating the space between said shield member and said duct against heat loss and redirecting any heat emitted into said space back toward said tube; and

a heat projection cowling member supported in spaced relation to each of said duct and said shield member, said cowling extending beyond said shield member and terminating at an end open to the area to be heated and lying in a plane generally common with a peripheral part of the duct furthest from said shield member such that said cowling substantially encloses said shield member and said duct, said cowling having an inner wall formed of rigid sheet material and an outer backing layer formed of thermally insulating material.

5,626,126

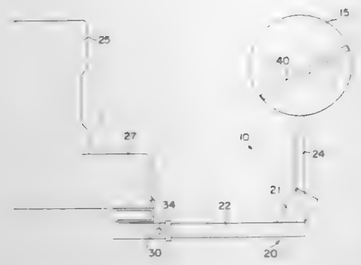
TRANSPORTABLE BARBEQUE APPARATUS

Bill McNulty, P.O. Box 511, Stevensville, Mont. 59870

Filed May 1, 1995, Ser. No. 431,963
Int. Cl.[6] F24C *1/16*
U.S. Cl. 126—276 **13 Claims**

1. Transportable barbecue apparatus for detachable attachment to a land vehicle having a rear transverse member having connection means thereon, said apparatus comprising a barbecue cooker and an articulated support arm having an inner end portion and an outer end portion, said arm (i) adapted to be detachably secured at

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its inner end portion to said connection means and (ii) secured or adapted to be detachably secured at its outer end portion to said cooker, wherein:

1) said arm comprises (a) a first segment having said inner end portion and a back end portion, (b) a second segment having said outer end portion and a front end portion, and (c) a channel affixed to said first segment proximate the back end portion thereof to extend upwardly and rearwardly at an angle from the vertical to receive and detachably secure said second segment proximate the front end portion thereof in at lease one upwardly extending position: and

2) said articulated arm when detachably secured to said connection means and to said cooker extends rearwardly in a planar zone substantially perpendicular to said transverse member thereby securing said cooker in a preselected position above the land and spaced apart from said vehicle.

5,626,127

CLEAN FACE AIR CIRCULATING FIREPLACE

Kenneth R. Maitland, Huntington; Robert H. Buzzard, Warren; Mark R. Barnes, Fort Wayne, and Brian S. Ohlwine, Zanesville, all of Ind., assignors to The Majestic Products Company, Huntington, Ind.

Filed Feb. 22, 1995, Ser. No. 394,647

Int. Cl.[6] F24B *1/188*

U.S. Cl. 126—523 **21 Claims**

1. A fireplace for a room to be heated comprising:

a combustion chamber whereat fuel is combusted and products of combustion are created, said combustion chamber comprising an opening through which combustion air is introduced, said combustion chamber further comprising a floor;

a flue positioned for exhausting the products of combustion from said combustion chamber;

a housing comprising a front panel including a frontal surface facing toward the room, said front panel having a combustion chamber access opening;

a transparent door positioned within said front panel access opening and openable to access said combustion chamber;

a duct manifold including a plurality of horizontally aligned openings through which room air passes during heat exchanging circulation, said plurality of duct manifold openings including a first room air intake opening and a second room air discharge opening, said duct manifold openings disposed in said front panel access opening;

a heat exchanger positioned beneath said combustion chamber floor, said heat exchanger including at least one fan for circulating air therethrough;

a first duct providing flow communication between an inlet of said heat exchanger and said duct manifold first opening for the introduction of air from the room being heated; and

a second duct providing flow communication between an outlet of said heat exchanger and said duct manifold second opening to exhaust warmed room air to the room being heated;

whereby during fireplace operation said fan circulates room air in a flow path from the room being heated into said duct manifold first opening, through said first duct, through said heat exchanger, through said second duct, and out through said duct manifold second opening.

5,626,128

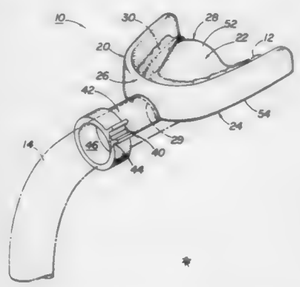
ENDOTRACHEAL TUBE FIXATION DEVICE AND METHOD OF USING THE SAME

J. Warren Bradley, and Richard L. Wilson, both of Mount Pleasant, S.C., assignors to University of South Carolina, S.C.

Filed Aug. 31, 1995, Ser. No. 520,934

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—200.26 **19 Claims**



1. An medical device for maintaining by means of an oral adhesive composition an endotracheal tube having an exterior surface in proper position in a patient's mouth and protecting a patient from endotracheal intubation associated injury, comprising:

a. a body member having a superior surface, an inferior surface, an anterior aspect and a posterior aspect, said body member defining a passage for receiving an endotracheal tube through the anterior aspect thereof, and said superior surface being complimentarily shaped to a patient's superior and anterior oral cavity for positioning thereagainst;

b. a channel integrally formed on said superior surface of said body member in registry with a patient's upper teeth or gums, adapted for receiving the adhesive composition for temporarily maintaining said body member in a patient's mouth; and,

c. means for affixing an endotracheal tube to the body member, comprising, a forward portion extending from said anterior aspect of said body member about said endotracheal tube passage and terminating in a forward end and a clamping means on the forward end for selectively maintaining an endotracheal tube in proper position.

5,626,129

DEVICE FOR MONITORING AT LEAST ONE CONNECTION IN A MEDICAL TUBING SYSTEM

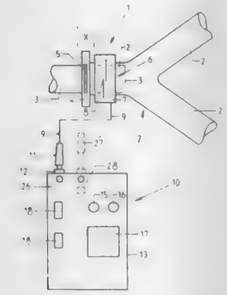
Josef Klimm, Karthauserstrasse, Regensburg, Germany, and Thomas Schmid, Mintraching, Germany, assignors to Josef Klimm, Germany

Filed Nov. 30, 1994, Ser. No. 346,765

Claims priority, application Germany, Apr. 2, 1993, 43 10 855.5

Int. Cl.[6] A62B *9/04;27/00*

U.S. Cl. 128—202.22 **15 Claims**



1. A system for monitoring a connection (**1**) between two tube elements (**2**, **3**) of a medical tube conduction system said system comprising:

a first sensor element (**4**) provided in the region of the connection (**1**) on a first one of said two tube elements,

a second sensor element (**6**) provided in the region of the connection (**1**) on a second of the two tube elements,

the first sensor element (**4**) having at least one permanent magnet (**5**) generating a magnetic field,

the second sensor element (**8**) being, a magnetic field response signal transducer formed by one of a magnetically actuable electrical contact and an electronic sensor responsive to a magnetic field,

with the second sensor element being positioned adjacent to the first sensor element and being actuated by the magnetic field of the permanent magnet of the first sensor element when the two tube elements of the medicinal tube conduction system are connected to one another, and with the second sensor element being deactivated, when the connection of two tube elements has become loose and wherein the two sensor elements (**4**, **6**) are separated from each other by more than a maximum predetermined amount,

a monitoring and indicating device (**10**) connected to the second sensor element (**6**) for generating at least one of an acoustic and optical alarm signal when said second sensor element (**6**) is deactivated.

5,626,130

RESPIRATORY NOSE-ONLY DEVICE AND SYSTEM FOR LABORATORY ANIMALS

Renaud Vincent, Aylmer, and Josée Guénette, Hull, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Health, Ottawa, Canada

Filed Nov. 22, 1995, Ser. No. 563,945

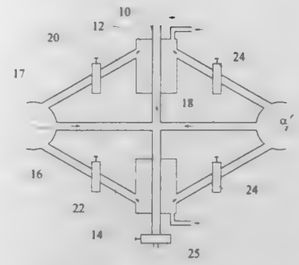
Int. Cl.[6] A61D *7/04*

U.S. Cl. 128—203.12 **12 Claims**

1. An apparatus for exposing laboratory animals to a test substance, the apparatus comprising:

at least two separate supply manifolds for supplying each a gaseous or a vaporous substance,

a plurality of inhalation chambers, each chamber dimensioned to accommodate a nasal part only of the animal's head,



a first plurality of separate passageways each for conveying said substance from a first of said at least two supply manifolds directly to one of said inhalation chambers,

a second plurality of separate passageways each for conveying said substance from a second of said two supply manifolds directly to one of said inhalation chambers,

wherein said substances supplied through said at least two supply manifolds are substantially prevented from mixing with each other before entering said inhalation chambers respectively, and

an exhaust manifold in fluid communication with said inhalation chambers for removing an exhalate of said animals and unused portion of said test substance.

5,626,131

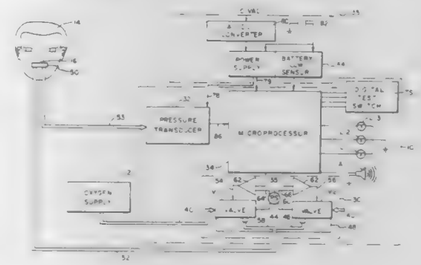
METHOD FOR INTERMITTENT GAS-INSUFFLATION

James Chua; Peter W. Salter, both of Tehachapi; Francis J. Kelly, Upland; Robert T. Wada, Claremont, and Roy Y. Fujimoto, Upland, all of Calif., assignors to Salter Labs, Arvin, Calif.

Filed Jun. 7, 1995, Ser. No. 480,354

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23 **3 Claims**



1. A method for maintaining a preselected blood-oxygen concentration in a patient receiving supplemental oxygen from an intermittent supplemental oxygen delivery system comprising the steps of:

a) monitoring the blood-oxygen concentration in a patient to determine whether the blood-oxygen concentration of the patient is below the preselected blood-oxygen concentration;

b) providing an intermittent supplemental oxygen delivery system having means for delivering oxygen to only one entrance to a patient's respiratory system and responsive to a patient's breathing cycle sensed by monitoring the pressure differences at the other entrance to the patient's respiratory system to intermittently provide oxygen delivery only in the latter portion of the patient's expiratory cycle and the initial portion of a patient's inspiratory cycle at preselected flow rates and time duration; and

c) supplying a larger volume of oxygen to a patient during the latter portion of the expiratory phase of a patient's breathing

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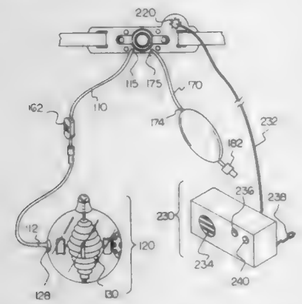
cycle from the intermittent oxygen delivery system when a patient's blood-oxygen concentration is below the preselected blood-oxygen concentration.

5,626,132

TRACHEAL TUBE WITH BUILT-IN VOCALIZATION CAPABILITY

Elizabeth L. Miller, 5231 Evonne Ave., Rohnert Park, Calif. 94928, and Andras Westwood, 176 Wildhorse Valley Dr., Novato, Calif. 94947

Filed Nov. 29, 1995, Ser. No. 564,647
Int. Cl.° A61M *16/00*; **A62B** *9/06*
U.S. Cl. 128—207.14 **1 Claim**



1. A tracheal tube with built-in vocalization capability for allowing a user who has undergone a tracheotomy to breathe freely as well as speak comprising, in combination:

a generally oval planar neck piece having an inner surface, an outer surface, a resilient inner portion, a pair of integral and generally flexible opposed outer wing flaps extended outwards from each side of the inner portion, a central bore disposed through the neck piece, a plurality of ventilation holes disposed on the inner portion and around the bore with the ventilation holes having a diametric extent that is less than that of the bore, a strap anchor with U-shaped configuration secured to an exterior surface of each wing flap, a pair of flexible straps with each strap having a distal free end and a proximal end secured to each strap anchor, a strip of pile-type fastener secured to one of the distal ends of one of the straps, and a complimentary strip of pile-type fastener secured to the other distal end of the other strap and with the fasteners securable in a closed loop configuration about a neck of a user to place the bore in alignment with a stoma formed on a user's trachea and to further place the inner surface of the neck piece in contact with a user's neck;

a flexible throat piece bent in a general J-shaped configuration with a lower straight portion insertable within the user's trachea through the stoma and an upper curved portion extended through the stoma and through the bore of the neck piece and secured to the neck piece with a nut having an annular central portion with two diametrically opposed eyelets formed thereon which permit ease of insertion of external trachea flaps for holding an external oxygen source in a stationary position for use, the throat piece including:

an outer cannula having a baffled open upper end with an outwardly projecting cylindrical lip disposed within the bore of the neck piece, an open lower end, and an intermediate portion therebetween,

an inner cannula slidably disposed within the outer cannula and having a flanged open upper end which extends radially ¼ an inch with a thickness of 1/32 inch, the flanged open upper end projected outwards from the upper end of the outer cannula, an open lower end projected outwards from a distal end of the outer cannula, an intermediate necked portion therebetween thereby creating a bulb-like projection, wherein behind the flanged open upper end, is a movable portion which allows forward movement of the throat piece by about ½ inch with respect to the outer canula to allow ease in removal and replacement of conventional trachea dressings; and

an air bladder having an upper extent secured around the intermediate portion of the upper cannula, a lower extent secured around the intermediate portion of the inner cannula, and a smooth intermediate portion, wherein the bladder inflatable with air for holding the throat piece in a fixed position within the user's trachea and said securement is accomplished with an adhesive;

a flexible tubular first air line having an open distal free end, a sealed proximal end extended through the neck piece and secured to an exterior surface of the intermediate portion of the outer cannula, and a plurality of linearly aligned and a spaced vent holes for allowing the supply of air to vocal cords of the user, wherein the flexible first air line is off set with respect to the central bore of the neck piece;

a flexible tubular second air line having an open distal free end and an open proximal end extended through the neck piece and secured to the upper extent of the bladder for supplying air thereto, wherein the flexible second air line is off set with respect to the central bore of the neck piece;

an air-fillable pilot balloon for providing an indication of a fill state of the bladder, the balloon having a sealable inlet for receiving air and an outlet coupled to the distal end of the second air line;

an electric pump for providing air for filling the pilot balloon and the bladder, the air pump having a hollow and box-shaped rigid metal housing with a plurality of feet extended downwards therefrom and positionable upon a recipient surface, the air pump further including a pneumatic diaphragm powered with a removable battery;

a microphone coupled to the neck piece and responsive to the user's voice; and

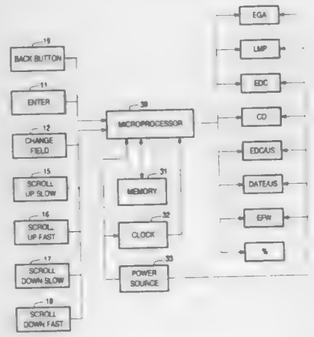
an amplifier coupled to the microphone for amplifying the user's voice with an associated speaker.

5,626,133

GESTATIONAL COMPUTER

Mary A. Johnson, 706 Greenview Ave., Des Plaines, Ill. 60016, and Erwin G. Szela, Jr., 211 E. Forest, Palatine, Ill. 60067

Filed Aug. 11, 1995, Ser. No. 514,067
Int. Cl.° A61B *8/00*
U.S. Cl. 128—630 **10 Claims**



1. A hand-held gestational computer comprising

a microprocessor programmed to receive input signals representing the current date and at least one parameter selected from the group consisting of the date of the first day of the last menstrual period, estimated gestation age, conception date, estimated date of confinement by ultrasound analysis, and estimated fetal weight, and to produce output signals representing the value of at least one parameter selected from the group consisting of estimated gestation age, estimated date of confinement, conception date, estimated fetal weight, and the percentile of the estimated fetal weight for the estimated gestation age,

display means responsive to said output signals for producing displays of the parameter values represented by said output signals,

a palm-sized housing for said microprocessor and said display means,

first manually operable means connected to said microprocessor for sequentially selecting different display fields in which data is to be entered, and

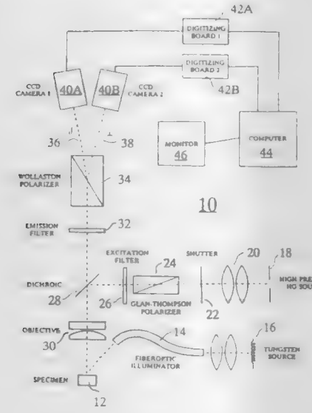
second manually operable means connected to said microprocessor for sequentially displaying data available for entry in the display field selected by said first manually operable means.

5,626,134

METHOD AND APPARATUS FOR THE MEASUREMENT OF ANALYTE CONCENTRATION LEVELS BY THE STEADY-STATE DETERMINATION OF FLUORESCENCE LIFETIME

Ralph Zuckerman, 226 W. Rittenhouse Square, Philadelphia, Pa. 19103

Continuation-in-part of Ser. No. 231,191, Apr. 21, 1994, Pat. No. 5,515,864. This application Apr. 20, 1995, Ser. No. 425,757
Int. Cl.° A61B *5/00*
U.S. Cl. 128—633 **36 Claims**



1. A method of measuring concentration of an analyte in a medium, the method comprising the steps of:

a) introducing, into the medium, a probe substance which becomes luminescent when irradiated and whose luminescence is quenched by the analyte in the medium,

b) irradiating the medium with linearly polarized light so as to cause the probe substance to become luminescent,

c) resolving luminescence emitted by the probe substance into vector components parallel and perpendicular to a plane of polarization of said linearly polarized light,

d) calculating a luminescence anisotropy, as a function of said vector components, in space or in time, of the irradiated medium, and

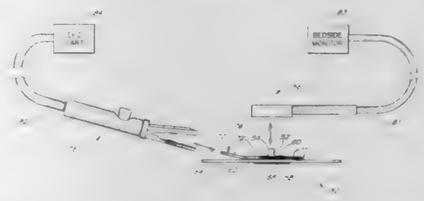
e) applying a mathematical function which relates said luminescence anisotropy to said concentration of the analyte in said medium, the mathematical function being in the form of an equation.

5,626,135

MEDICAL ELECTRODE

Robert M. Sanfilippo, Glendale, Calif., assignor to R.S. Supplies, Inc., Fullerton, Calif.

Filed Apr. 12, 1995, Ser. No. 420,418
Int. Cl.° A61B *5/0408*
U.S. Cl. 128—640 **27 Claims**



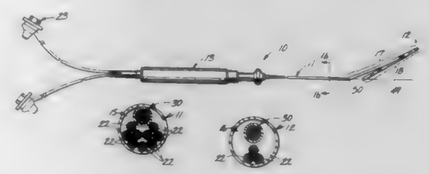
1. A medical electrode for simultaneous use with a primary electrical instrument and an auxiliary electrical instrument, said medical electrode comprising an electrically-conductive base supporting an electrically-conductive post, said post including an engagement end distal of said base, an electrically-conductive tab coupled to said post, and an adhesive pad including an adhesive surface intended to adhere to a patient's skin, said tab being positioned on a side of said adhesive pad opposite of the adhesive surface to separate said tab from the patient's skin.

5,626,136

ELECTROPHYSIOLOGY CATHETER WITH PRE-CURVED CIRCULAR TIP

Wilton W. Webster, Jr., Altadena, Calif., assignor to Cordis Webster, Inc., Baldwin Park, Calif.

Continuation-in-part of Ser. No. 55,194, Apr. 28, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,963
Int. Cl.° A61B *5/0402*
U.S. Cl. 128—642 **22 Claims**



1. An elongated electrode catheter comprising:

an elongated flexible tubular catheter body having an axis and proximal and distal ends;

a tubular tip portion at the distal end of the tubular body having a preformed generally circular curve transverse to the axis of the catheter body, said tip portion having proximal and distal ends and carrying a plurality of spaced apart electrodes;

an electrode lead wire associated with each electrode, said electrode lead wire having proximal and distal ends and extending through the catheter body and into the catheter tip portion, the distal end of the electrode lead wire being electrically connected to its associated electrode;

a puller wire having proximal and distal ends extending through the tubular body and into the tip portion, the distal end of the puller wire being fixedly attached to the distal end of the tip portion, whereby longitudinal movement of the puller wire relative to the tubular body results in contraction of the generally circular curve; and

handle means connected to the proximal ends of the catheter body and puller wire for moving the puller wire longitudinally relative to the catheter body to thereby control the diameter of the generally circular curve of the tip portion.

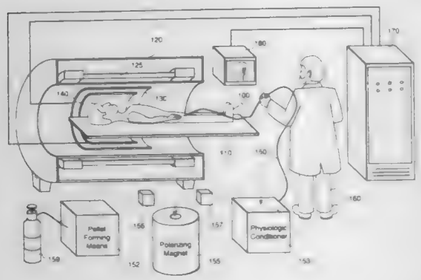
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5,626,137

APPARATUS AND METHODS FOR MAGNETIC RESONANCE (MR) ANGIOGRAPHY USING FLUIDS POLARIZED AT LOW TEMPERATURES

Charles L. Dumoulin, Ballston Lake, N.Y.; Steven P. Souza, Williamstown, Mass., and Robert D. Darrow, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 2, 1995, Ser. No. 537,572
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 7 Claims



1. A magnetic resonance (MR) imaging system for obtaining vessel-selective MR angiographic images from a subject comprising:
a) an imaging magnet for applying a substantially uniform magnetic field over said subject;
b) a cryogenic pellet-forming means for freezing a portion of a selected fluid to form pellets;
c) a high-field polarizing magnet having a cavity for receiving and polarizing the pellets;
d) a physiologic conditioner means for heating the polarized pellets into a polarized contrast fluid of a temperature suitable for injection into said subject;
e) an invasive device for routing the polarized contrast fluid from the physiologic conditioner means into said subject;
f) an RF transmitter means for transmitting RF energy into said subject of a selected duration, amplitude and frequency to cause nutation of the contrast fluid and other tissue within said subject;
g) a gradient means for varying the amplitude of the magnetic field in at least one spatial dimension over time;
h) an RF receive coil for detecting a set of MR response signals from the contrast fluid and other tissue within said subject;
i) a receiver means coupled to the RF receive coil for receiving the detected MR response signals;
j) a calculation means for calculating an image from the detected MR response signals;
k) a controller means connected to the RF transmitter means, the receiver means, the calculation means and the gradient means, for activating the RF transmitter means, the receiver means, the calculation means and the gradient means each according to a predetermined MR pulse sequence; and
l) a display means connected to the calculation means for displaying the calculated image to an operator.

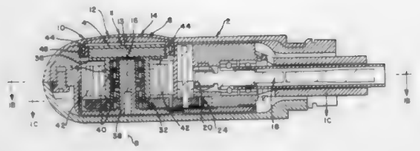
5,626,138

ULTRASONIC TRANSDUCER PROBE WITH AXISYMMETRIC LENS

John A. Hossack; John W. Eaton, both of Palo Alto, and Thomas G. Cooper, Menlo Park, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 267,318, Jun. 28, 1994, Pat. No. 5,562,096. This application Jun. 7, 1995, Ser. No. 482,922
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 18 Claims

1. An ultrasonic transducer probe, comprising:



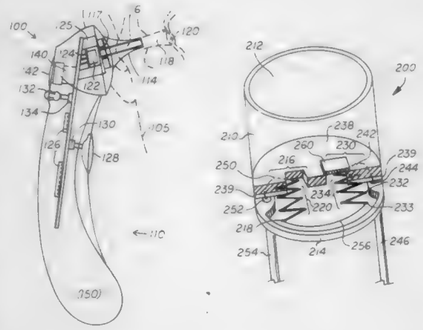
an ultrasound transducer array disposed within a housing of the probe; and
a resilient material filling an interface between the ultrasound transducer array and the housing, the resilient material being formed from a curable gel and being self-sealing against leakage with respect to the housing.

5,626,139

TYMPANIC THERMOMETER

Donald M. Szeles, Ann Arbor, and Walter Rubinstein, Southfield, both of Mich., assignors to Artech Industries, Inc., Keego Harbor, Mich.

Filed Sep. 23, 1994, Ser. No. 311,642
Int. Cl.[6] A61B *5/00;6/00;* G01J *5/16*
U.S. Cl. 128—664 9 Claims



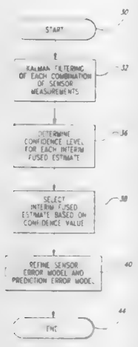
1. A tympanic thermometer, comprising:
a hand-held enclosure supporting a user-control, a temperature display and elongated means for guiding radiation representative of tympanic temperature onto a sensor assembly within the enclosure, the sensor assembly further including:
dual, physically symmetrical thermopiles supported adjacent one another on the same substrate, each thermopile including a set of sensing junctions and a set of reference junctions, resulting in four sets of such junctions, the thermopiles being connected in electrical opposition, and
optical blocking means in physical contact with the substrate and in thermal proximity with three of the four sets of the thermopile junctions, so that the three blocked junctions sense only the temperature of the ambient environment while the fourth set of junctions receives radiation from the ambient environment and the radiation representative of tympanic temperature in a total and unimpeded path to allow an accurate temperature measurement to be calculated which is substantially independent of radiation wavelength.

5,626,140

SYSTEM AND METHOD OF MULTI-SENSOR FUSION OF PHYSIOLOGICAL MEASUREMENTS

Jeffrey M. Feldman, Mount Laurel, N.J., and Mehboob H. Ebrahim, Philadelphia, Pa., assignors to SpaceLabs Medical, Inc., Redmond, Wash.

Filed Nov. 1, 1995, Ser. No. 551,522
Int. Cl.[6] A61N *1/36*
U.S. Cl. 128—671 36 Claims



1. A system for estimation of heart rate subject, the system comprising:
a plurality of sensors coupled to the subject, each providing a physiological signal capable of producing a heart rate measurement;
a filter circuit receiving said heart rate measurements and producing a fused heart rate estimate for each possible combination of said heart rate measurements from said plurality of sensors in which each of said heart rate measurements in said combinations are considered to be acceptable or unacceptable; and
a confidence calculator coupled to said filter circuit to receive said fused heart rate estimates and to determine a confidence level value for each of said fused heart rate estimates indicative of an accuracy of each of said fused heart rate estimates, said confidence calculator selecting said one of said fused heart rate estimates as the estimated heart rate based on said confidence level.

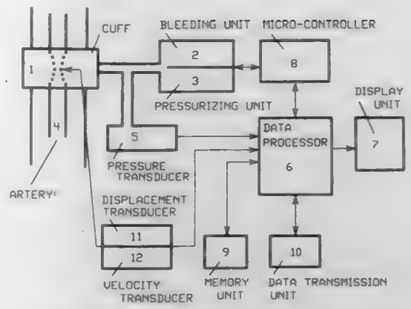
5,626,141

BLOOD PRESSURE MEASUREMENT APPARATUS AND ASSOCIATED METHOD

Fumihide Takeda, Minamiku, Japan, assignor to Takeda Engineering Consultant Inc., Japan

Division of Ser. No. 81,584, Jun. 22, 1993, Pat. No. 5,425,372, and a continuation-in-part of Ser. No. 509,029, Apr. 13, 1990, Pat. No. 5,222,020. This application Jun. 2, 1995, Ser. No. 458,867
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—672 5 Claims

1. A method for measuring dynamic parameters of arterial wall motion, comprising:
presurizing a cuff that surrounds an artery;
measuring the cuff pressure;
determining from the cuff pressure a velocity and acceleration of the arterial wall; determining power of the arterial wall motion as the wall stretches and contracts in response to the cuff pressure, the power being defined as the product of the velocity of the arterial wall and the acceleration of the arterial wall; and
from the power, determining changes in energy of the arterial wall, the energy being defined as the power measured over a predetermined time.



5,626,142

MULTIPLE CUFF BLOOD PRESSURE SYSTEM

Lloyd A. Marks, 1021 Minisink Way, Westfield, N.J. 07090

Filed May 5, 1995, Ser. No. 435,158
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—686 28 Claims

1. A multiple cuff blood pressure system for measuring the blood pressure of different patients comprising:
a fluid pressure source;
at least three differently-sized inflatable cuffs from the group consisting of an infant cuff, a pediatric cuff, an adult cuff, a large adult cuff and a thigh cuff, each cuff being connected to said pressure source;
means connected between said pressure source and said inflatable cuffs for directing fluid flow to a selected one of said inflatable cuffs; and
means connected to said fluid pressure source for measuring fluid pressure in said selected inflatable cuff.

5,626,143

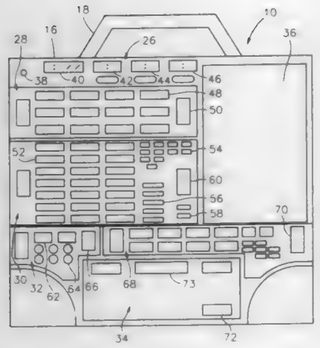
PORTABLE CORDLESS CARDIOPULMONARY ARREST RECORDER AND METHOD

Magnus O. Meyer, III, 305 Berry Brook Ct., Ellisville, Mo. 63011

Filed Jan. 12, 1995, Ser. No. 372,037
Int. Cl.[6] A61B *5/0404*
U.S. Cl. 128—700 15 Claims

1. A system for recording cardiopulmonary arrest data comprising a portable hand held recorder having a self contained battery,

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chronometer means for timing significant events, said recorder having means physically engageable by a user for recording rhythm, medications, cardiovert/defibrillation data, and physical procedures in the recorder, a central processing unit said recorder comprising a housing and means for being physically interfacing said housing with said central processing unit for transferring the recorded data from said recorder, said means comprising receiving means in said processing unit physically engageable by said recorder housing in toto, said receiving means comprising a slot within which the recorder is deposited.

5,626,144

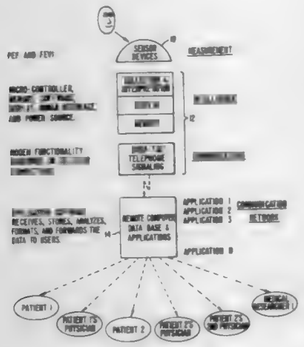
SYSTEM FOR MONITORING AND REPORTING MEDICAL MEASUREMENTS

Christopher A. Tacklind, Palo Alto; Matthew H. Sanders, Los Altos Hills, and Geoffrey B. Waine, Atherton, all of Calif., assignors to Enact Health Management Systems, Mountain View, Calif.

Division of Ser. No. 247,727, May 23, 1994. This application Dec. 22, 1995, Ser. No. 576,941

Int. Cl.° A61B *5/08*

U.S. Cl. 128—725 **3 Claims**



1. A medical information report generating system for receiving information from a patient sensor device including a transducer for generating, in real time, raw data generated by the transducer when a measurement is taken by the patient, and with the patient sensor device including a remote interface device for processing raw data to calculate actual values of measure physiological health parameters indicative of a patient's physiological characteristics, generating a time stamp indicating when the raw data was generated, for creating data records including a unique ID code identifying a patient using the interface device, said calculated measured physiological parameters, and said time stamp, and for initiating a data transfer protocol to transmit said data records, said report generating system comprising:

a report-side communication interface;

a report generating unit;

a relational data-base, including a set of patient records each including a unique ID code pairing a patient and a remote sensor, with each patient record including measured value data indicating the value of the measured physiological parameters and a time stamp indicating when the measured physiological parameter was measured by the patient;

a communication controller, coupled to said report-side communication interface and a data manager and responsive to said data transfer protocol initiated by said remote interface device, for controlling transfer of data records received from said remote interface device to a data manager;

with said data manager coupled to said communication controller to receive data records transferred from a particular remote interface device and to transfer information from received data records to a patient record of a patient paired with said unique ID device included in a data record to update said patient record to include the information from received data records, and with said data manager coupled to said report generating unit to supply a patient record in said database of a patient identified in a report request received by said report generating unit;

with said report generating unit coupled to receive a report request for a particular patient and for transferring said report request to said data manager to obtain a requested patient record for the particular patient identified from said database and for utilizing information in the requested patient record to generate a report format presenting said measured physiological parameter and time encoding information included in said patient record in a selected format.

5,626,145

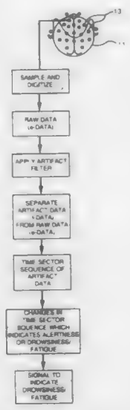
METHOD AND APPARATUS FOR EXTRACTION OF LOW-FREQUENCY ARTIFACTS FROM BRAIN WAVES FOR ALERTNESS DETECTION

Ned E. Clapp, and Lee M. Hively, both of Knoxville, Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 20, 1996, Ser. No. 619,031

Int. Cl.° A61B *5/04*

U.S. Cl. 128—731 **14 Claims**



1. A method for automatically extracting low-frequency artifact data from brain wave data comprising the steps of:

(a) utilizing a standard method selected from the group of methods consisting of electroencephalogram method and magnetoencephalogram method to provide at least one channel of raw brain wave data, called e-data, selected from the group consisting of electroencephalogram data and magnetoencephalogram data; and

(b) separating artifact data, called f-data, from the e-data while preventing phase distortions in the data, by passing the e-data through a zero-phase filter means for providing an output of f-data, whereby the f-data may be further analyzed to detect alertness.

5,626,146

ELECTRICAL IMPEDANCE TOMOGRAPHY

David C. Barber, Sheffield, and Brian H. Brown, Holmesfield, both of England, assignors to British Technology Group Limited, London, England

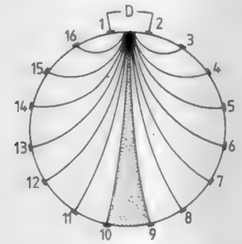
PCT No. PCT/GB93/02564, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO94/15228, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 16, 1993, Ser. No. 454,137

Claims priority, application United Kingdom, Dec. 18, 1992, 9226376

Int. Cl.° G06F *15/42;17/00;* **A61B** *5/05*

U.S. Cl. 128—734 **8 Claims**



1. A method of data collection for use in the construction of a tomographic image of a body comprising:

placing a plurality of electrodes adjacent the surface of the body at spaced intervals on the body;

applying, in successive manner through the electrodes, an electrical input signal to at least one electrode pair to generate a potential difference between other electrode pairs; and

measuring, at the said other electrode pairs and at each stage of the successive application of input signal, output signals representing an electrical characteristic of that body subjected to each applied input signal, wherein the measurements are made over varying periods of time.

5,626,147

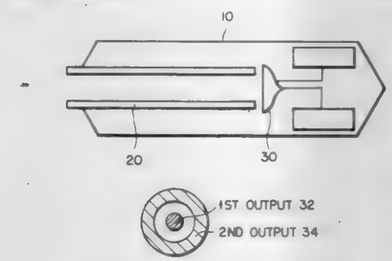
TYMPANIC THERMOMETER

Robert P. Lackey, Carlsbad, Calif., assignor to Thermoscan, Inc., San Diego, Calif.

Filed Nov. 23, 1993, Ser. No. 156,448

Int. Cl.° A61B *5/00*

U.S. Cl. 128—736 **28 Claims**



1. In an apparatus for measuring body temperature by correlating IR emissions from a tympanic membrane within an ear canal of said body, said apparatus including a housing to be handheld, a probe tip for insertion into said ear canal to guide IR emissions within said housing wherein said apparatus further comprises:

wave guide means in IR communication with said probe tip and connected to a sensor means wherein said sensor means further comprises a first IR communicating sensor and a second IR communicating sensor each having a discrete field of view of said tympanic membrane relative to said wave guide means to create at least two IR dependant signals that differ from each other in fields of view, for IR communication;

said wave guide means has a single, effective diameter that is greater than said first sensor but less than said second sensor; and

signal processing means for ascertaining a signal from each of said sensors and based thereon, providing a corrected temperature reading compensating for sensor placement geometry in said ear canal.

5,626,148

DEVICE FOR INTRAUTERINE USE

Matti Lehtinen, Kaarina, Finland, assignor to Leiras Oy, Turku, Finland

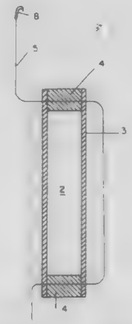
PCT No. PCT/FI92/00189, § 371 Date Feb. 22, 1994, § 102(e) Date Feb. 22, 1994, PCT Pub. No. WO93/00055, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 17, 1992, Ser. No. 167,792

Claims priority, application Finland, Jun. 20, 1991, 913025

Int. Cl.° A61F *6/06;6/14*

U.S. Cl. 128—830 **3 Claims**



1. A device for intrauterine use comprising attachment means selected from the group consisting of a knot or a hook attachable to the interior wall of the uterus which is connected to an active agent releasing member in the form of a capsule shaped container having end parts and having walls which are permeable to the active agent, said attachment means being connected to said capsule shaped container by a thread threaded in the transverse direction though the end parts of said capsule shaped container.

5,626,149

MEDICATION DISPENSING FACILITATION SHEATHS AND METHODS OF USE THEREOF

Alan N. Schwartz, 19211 - 93rd Pl. West, Edmonds, Wash. 98020

Continuation-in-part of Ser. No. 912,683, Jul. 13, 1992, Pat. No. 5,513,652. This application Mar. 21, 1996, Ser. No. 619,372

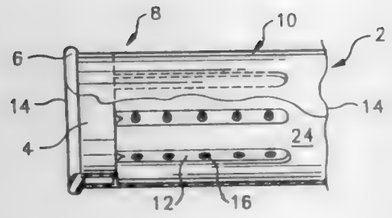
Int. Cl.° A61F *6/02*

U.S. Cl. 128—842 **9 Claims**

4. A facilitator for dispensing flowable medication or the like onto a penis, comprising:

an elastic sheath open at both ends and adapted to fit onto a penis;

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at least one fluid retaining chamber incorporated in said elastic sheath; and

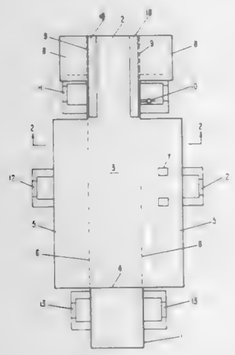
means for initially partitioning and for subsequently providing communication between said at least one fluid retaining chamber and the interior of said elastic sheath such that fluid in said fluid retaining chamber can be dispensed into the interior of said sheath.

5,626,150

EXTRICATION VACBOARD

David R. Johnson, Placitas, and Mark B. Napier, Albuquerque, both of N.M., assignors to University of New Mexico, Albuquerque, N.M.

Filed Jul. 3, 1996, Ser. No. 675,647
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—870 **7 Claims**



1. An extrication vacboard device for the extrication, immobilization, and transport of patients comprising:

a) an elongated sleeve containing a rigid board having a head end, a foot end, a top side and a bottom side;

b) a main vacuum mattress upon which a patient can be placed comprising an airtight and flexible casing containing small beads and air attached to the top side of said elongated sleeve and being approximately the same width as said sleeve;

c) a large wing vacuum mattress attached to each elongated side of said main vacuum mattress by a partial seam, each large wing vacuum mattress being located such that it approximately extends from the arm pit to the knee region of an adult patient lying upon said main vacuum mattress with his head at the head end, and further, said partial seam permitting air but not said small beads to pass through and permitting said wing to pivot about said seam;

d) means to secure and quickly release said large wing vacuum mattresses to the bottom side of said sleeve, whereby the narrow profile of the extrication vacboard is available for extrication but can subsequently be quickly released to enclose the patient;

e) a small wing vacuum mattress attached to each elongated side at the head end of said main vacuum mattress by a partial seam;

f) evacuation valve means enabling evacuation of air from said main, small wing, and large wing vacuum mattresses for developing a vacuum in said mattresses to thereby convert said mattresses from a relatively flexible state to a semi-rigid state;

g) a first strapping means coupled to said sleeve adapted to extend across the large wing vacuum mattresses for urging the sides of said large wing vacuum mattresses against the patient's torso to thereby cradle and support the patient;

h) a first pair of carrying handles located on opposite sides of the sleeve between the small wings and the large wings;

i) a second pair of carrying handles located on opposite sides of the sleeve near the mid region of the large wings;

j) a third pair of carrying handles located on opposite sides of the sleeve near the foot end; and

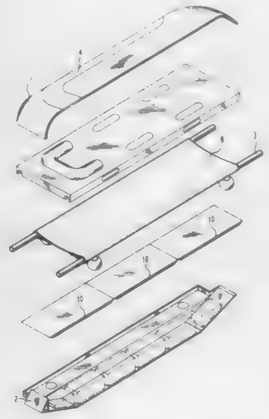
k) a second strapping means coupled to said large wings such that the patient's arms may be secured thereto.

5,626,151

TRANSPORTABLE LIFE SUPPORT SYSTEM

Charles Linden, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1996, Ser. No. 610,823
Int. Cl.[6] A61G *1/02*
U.S. Cl. 128—897 **89 Claims**



1. A transportable life support system comprising:

a) a base including:

i) a ventilator having a means for supplying and maintaining delivery of air, said means constructed so as to direct air down a patient's trachea and lungs, said ventilator may or may not have a carbon dioxide scrubber constructed so as to remove carbon dioxide from expired air when rebreathing of carbon dioxide may be a hazard, a means for filtering intake and exhaust air of contaminants, said ventilator constructed so as to ventilate said patient;

ii) an oxygen source connected to said ventilator, said oxygen source constructed so as to provide oxygen to said patient;

iii) an environmental control unit having a means for providing contaminant-free air to the unit, said unit constructed so as to control said patient's temperature;

iv) a suction unit constructed so as to remove unwanted fluids from the patient;

v) a defibrillator constructed so as to provide cardioversion for correcting life threatening arrhythmias;

vi) a monitor comprising a touch screen constructed so as to display vital signs of the patient;

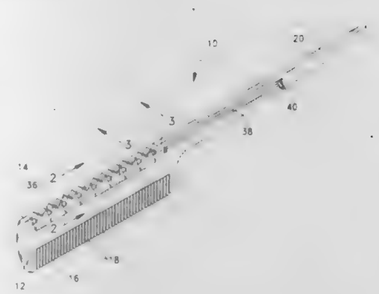
vii) a receiver/transmitter connected to said monitor, said receiver/transmitter constructed so as to transmit information to, and receive information from, a remote location;

viii) an on-board computer connected to said ventilator, said oxygen source, and said environmental control unit, said monitor and said receiver/transmitter so as to control care administered to the patient; and

ix) a power source constructed to operate said ventilator, said oxygen source, said environmental control unit, said suction unit, said defibrillator, said on-board computer, said monitor and said receiver transmitter;

b) a stretcher removably attached to the base; and

c) a canopy connected to the base, said canopy and base constructed so as to form a fluid impermeable seal.



5,626,152

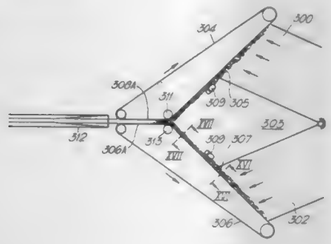
CIGARETTE MAKING MACHINE

Paul Davis, Coventry; John Dawson, Bucks; Derek H. Dyett, Bucks; Norman L. Sharp, Bucks, and James R. Stembridge, Coventry, all of England, assignors to Molins PLC, Milton Keynes, England

Continuation-in-part of Ser. No. 111,411, Aug. 25, 1993, Pat. No. 5,413,121. This application Feb. 10, 1995, Ser. No. 386,668

Claims priority, application United Kingdom, Aug. 26, 1992, 9218176; Nov. 11, 1992, 9223611; May 19, 1994, 9410014; Nov. 9, 1994, 9422607

Int. Cl.[6] A24C *5/18*
U.S. Cl. 131—84.1 **19 Claims**



1. A method of making cigarettes, in which tobacco is showered onto two suction bands to form two tobacco sub-streams of similar width which are then merged to form a cigarette filler stream which is used to form a continuous cigarette rod, including the step of forming or feeding onto at least one of the sub-streams a continuous or substantially continuous layer of material different from the tobacco of the sub-streams, the said layer or layers being narrower than each of the sub-streams and being centrally placed in relation thereto so that each of the sub-streams extends laterally beyond the lateral edges of the layer or layers, and so that the layer or layers will form a core in the finished cigarette filler stream surrounded by tobacco.

5,626,153

SPECIAL APPLICATION COMB

Edward Petrarca, 154 Phenix Ave., West Warwick, R.I. 02893

Filed Mar. 24, 1995, Ser. No. 409,601
Int. Cl.[6] A45D *24/04*
U.S. Cl. 132—126 **9 Claims**

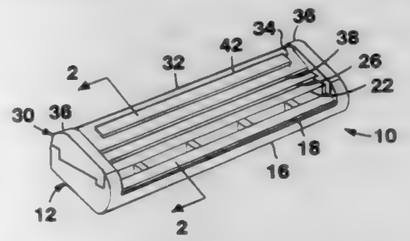
1. A comb for separating strands of hair to implement and facilitate highlighting, streaking or frosting, comprising an elongated body with a handle at one end and a plurality of longitudinally separated major teeth outwardly projecting from the body at the other end thereof, said major teeth being separated by major grooves in turn each having an outer open end and a closed base portion vertically separated from said open end for receipt of hair strands therein, said body further having hair strand separating means mounted for longitudinal movement with respect to said body and said major grooves from a first non-operating position to a second operating position wherein said hair separating means spans at least one of said major grooves at a point removed from the base thereof wherein some hair strands positioned in said major grooves are in turn further separated by said separating means, and wherein said major teeth are disposed in-line with each other wherein said hair separating means includes a longitudinally slidable shaft, said shaft disposed in said handle in said non-operating position and slidable through said body in said operable position, said major teeth each having an aligned longitudinal bore for receipt of said shaft.

5,626,154

METHOD AND SYSTEM FOR SHAVING INCLUDING A LUBRICANT AND A WATER-SWELLABLE POLYMER

Brian A. Rogers, Boston; Frank E. Badin, Scituate; James A. Rudolph, Stoneham, and Mingchih M. Tseng, Hingham, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Sep. 13, 1993, Ser. No. 121,153
Int. Cl.[6] B26B *21/44*
U.S. Cl. 132—200 **26 Claims**



1. A shaving system for wet shaving comprising support structure supporting a blade member and defining an external skin engaging portion adjacent to said blade member, said skin engaging portion including a composite comprising a water-insoluble polymer, a lubricant, and a water-swellable polymer that can absorb at least five times its weight in water at 22° C. and has a solubility in water of less than 1000 ppm at 22° C.

16. A method of shaving, comprising contacting skin in the presence of water with a razor so as to sever hair on said skin, said razor having a blade and a skin engaging composite comprising a water insoluble polymer, a lubricant, and a water-swellable polymer, said water-swellable polymer having a solubility in water of less than 1000 ppm at 22° C. and absorbing at least five times its weight in water at 22° C., wherein said contacting step includes the steps of contacting said skin engaging composite of said razor with said water to cause said water-swellable polymer to swell, and

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contacting said skin with said composite of said razor to transfer said lubricant from said composite onto said skin.

5,626,155

METHOD OF CREATING FRAGRANCES IN SITU

Robert E. Saute, 10236 Mossy Rock Cir., Los Angeles, Calif. 90077

Continuation of Ser. No. 139,570, Oct. 21, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,727
Int. Cl.[6] A45D *34/00*
U.S. Cl. 132—200 11 Claims

1. The method of producing a custom fragrance directly upon one's skin comprising the steps of:

A. selecting at least two scents:

B. mixing each selected scent with a nonvolatile vehicle having a physical state selected from the group consisting of a gel, wax and pressed powder to produce at least two coresponding scented products;

C. placing each scented product within a respective separate containment means;

D. applying a first one of said scented products to said skin;

E. applying a second one of said scented products to said skin; and,

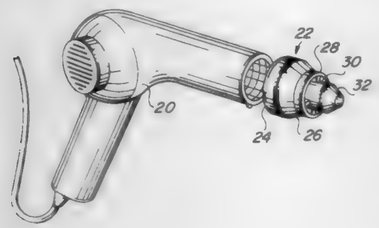
F. mixing together said first one and said second one of said scented products while on said skin to create a custom fragrance.

5,626,156

HAIR STYLING SYSTEM

Gary L. Vicory, Sr., 2162 E. Sesame St., Tempe, Ariz. 85283

Filed Apr. 24, 1995, Ser. No. 427,127
Int. Cl.[6] A45D *1/04;2/36;4/00*
U.S. Cl. 132—229 21 Claims



1. A kit for a hair styling system for use with a forced air hair dryer including in combination:

a coupling member having a first end with internal dimensions selected to fit over the end of a forced air electric hair dryer and having a concentric smaller hollow tubular section mounted in said first end by means of spacers with apertures therebetween to permit air flow over the outer periphery of said smaller tubular section, said smaller hollow tubular section extending beyond said first end and terminating in a coupling portion;

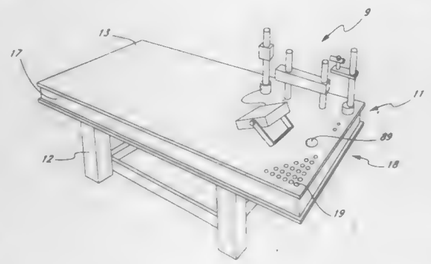
at least a first elongated hollow tubular body with first and second ends, said body being open at the first end thereof and closed at the second end thereof, with said first end configured to matingly couple with said smaller tubular section of said coupling member, said hollow tubular body having spaced apertures therethrough at predetermined intervals along the length thereof and about the periphery thereof.

5,626,157

OPTICAL TABLE

John D. Galpin, and Valerie J. Galpin, both of Cardinal's Green, England, assignors to Melles Griot, Inc., Irvine, Calif.

Division of Ser. No. 58,769, Apr. 29, 1993, Pat. No. 5,402,734, which is a continuation-in-part of Ser. No. 989,107, Dec. 11, 1992, abandoned. This application Jan. 9, 1995, Ser. No. 370,263
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—115 R 8 Claims



1. A system for cleaning a tabletop including a top structural layer having an upper face, a lower face and defining a plurality of holes, said tabletop further including a plurality of debris retention structures positioned against said lower face, each sized and shaped to surround at least two of said plurality of holes, said system comprising:

a source of cleaning fluid;

a first adapter connected to said source of cleaning fluid including a sealing portion for securing said adapter to one of said at least two of said plurality of holes to permit said source of cleaning fluid to communicate with said debris retention structure;

a source of suction; and

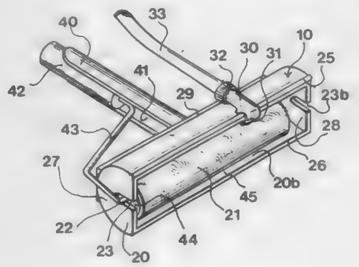
a second adapter connected to said source of suction including a sealing portion for securing said adapter to another of said at least two of said plurality of holes to permit said source of suction to communicate with said debris retention structure, said debris retention structure forming a cavity that has a maximum dimension substantially shorter than that of said top layer.

5,626,158

PAINT ROLLER WASHER AND DRYER

Merlin Gratopp, 766 Michigan, Lincoln Park, Mich. 48146

Filed Nov. 24, 1993, Ser. No. 156,734
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—138 5 Claims



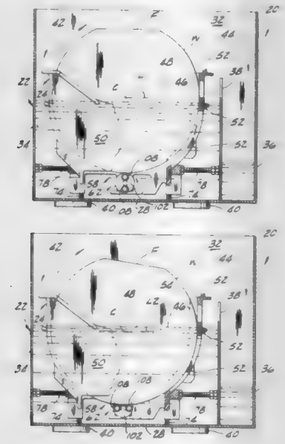
1. A paint roller washer and dryer comprises a walled semicircular roller brush cradle having oppositely displaced nubs comprising the termination of the walled cradle edges, said walled cradle cross terminating with bulkheads having slots for rigidly maintaining a paint roller brush support rod thereby allowing a free-wheeling elevation of a paint roller brush within said walled cradle for the engagement of a cleaning fluid regulated through a fluid nozzle, said fluid nozzle having a channel adapted to be snapped onto the nubular edges of said walled cradle thereby allowing linear travel of said fluid nozzle for dispensing fluid against a soiled paint roller brush at such an angle as to cause said soiled paint roller brush to centrifugally dislodge both soil and backwash respectively.

5,626,159

APPARATUS FOR CLEANING SEMICONDUCTOR WAFERS

Henry F. Erk, St. Louis; Ronald D. Bartram, Webster Groves; Eugene R. Hollander, Wentzville, and Jing Chai, St. Charles, all of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Division of Ser. No. 424,904, Apr. 19, 1995. This application Jul. 25, 1996, Ser. No. 686,367
Int. Cl.[6] B08B *3/12*
U.S. Cl. 134—147 18 Claims



1. Apparatus for cleaning a semiconductor wafer comprising:

a tank adapted to contain a liquid, said liquid having an upper surface; and

means for directing sonic energy through liquid contained in the tank;

a wafer holder for holding the semiconductor wafer in a position within the tank with a central region of the semiconductor wafer being about level with the surface of liquid contained in the tank; and

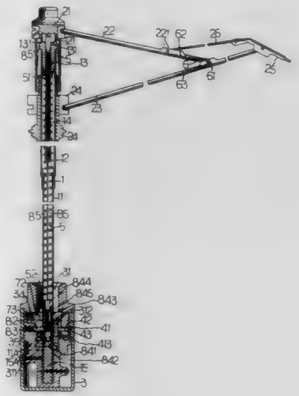
a wafer-moving mechanism constructed for engaging the semiconductor wafer in the wafer holder to impart a rotating motion to the semiconductor wafer in the tank and to impart a reciprocating motion to the semiconductor wafer so that the central region of the wafer repeatedly passes through the surface of the liquid.

5,626,160

UMBRELLA HAVING MEANS FOR OPENING AND CLOSING THE SAME AUTOMATICALLY

Chin-Sung Ko, 7, Lane 30, Chung Hsiao Street, Changhua, Taiwan

Filed Aug. 13, 1996, Ser. No. 695,957
Int. Cl.[6] A45B *25/14*
U.S. Cl. 135—22 5 Claims



1. An umbrella comprising:

a handle provided at an upper end thereof with a fastening hole extending in the direction of a longitudinal axis thereof, said fastening hole provided thereto with a spring and a cushioning sleeve which is provided in a periphery thereof with a slot having two protuberances opposite to each other, said handle further provided with an upper slot, a lower slot, and button slot;

a shaft comprising an inner tube, an upper sleeve, an outer tube, and a lower sleeve, said inner tube having one end secured to said fastening hole of said having one end secured to said fastening hole of said handle such that said inner tube is fitted slideably over with said outer tube, said outer tube having a hole in which a hollow inner block is received such that said upper sleeve is inserted into said hollow inner block, said lower sleeve fastened with a lower end of said inner tube and provided with a tapered opening and a cross through hole, said inner tube further provided with a cross through hole;

a rib frame comprising an upper rib holder secured to one end of said outer tube of said shaft, a plurality of upper ribs fastened pivotally and respectively at one end thereof with said upper rib holder, a lower rib holder slideably fitted over said outer tube of said shaft, a plurality of lower ribs fastened pivotally and respectively at one end thereof with said lower rib holder, and a plurality of outer ribs fastened pivotally and respectively at one end thereof with a connection rib which is in turn fastened at one end thereof with one of said upper ribs;

a plurality of umbrella closing elastic elements provided respectively with a torsion portion fastened with a pivot point at which one of said upper ribs and one of said lower ribs are pivoted, said elastic elements further provided respectively with an upper leg and a lower leg;

a control device comprising a control button, an arresting piece, and a torsion spring, with said control button being slideably engaged with said button slot of said handle and provided with a through hole, said arresting piece having a shaft rod provided with a protuberance, two arms, an axial hole, and a slot for receiving said torsion spring;

an umbrella opening control member comprising two arms, one retaining piece, and a spring, said retaining piece located between said two arms and provided with an inclined surface, said spring being received in said upper slot of said handle such that said spring is capable of urging said arms to cause said retaining piece to engage said lower rib holder; and

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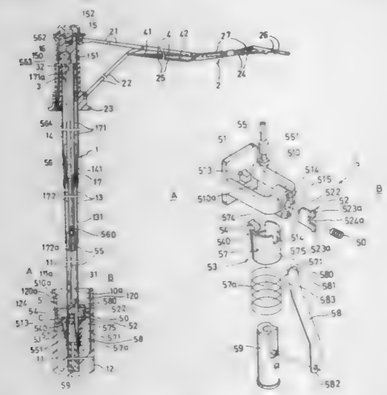
an umbrella closing control member comprising two protruded pieces, one arresting piece located between said two protruded pieces, a biasing means, a retaining piece, and two pull cords, said biasing means being received in said lower slot of said handle such that said biasing means of capable of driving said arresting piece to engage said slot of said cushioning sleeve of said handle, said cross through hole of said inner tube and said cross through hole of said lower sleeve fastened with said inner tube of said shaft, said two pull cords being fastened respectively at one end thereof with said retaining piece and at another end thereof with said lower rib holder.

5,626,161

MULTIPLE-FOLD AUTOMATIC UMBRELLA WITH SIMPLIFIED RELIABLE CONTROL MEANS

Chung-Kuang Lin, and Jung-Jen Chang, both of Taipei Hsien, Taiwan, assignors to Fu Tai Umbrella Works, Ltd., Taipei Hsien, Taiwan

Filed Apr. 29, 1996, Ser. No. 639,696
Int. Cl.[6] A45B *25/14*
U.S. Cl. 135—24 **2 Claims**



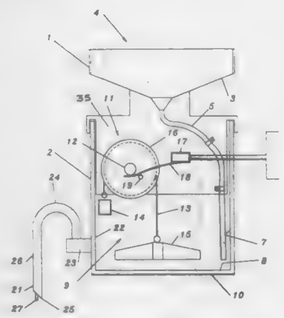
1. An automatic umbrella comprising:
a central shaft means including: an inner tube, a grip secured with the inner tube, a middle tube slidably held on an outer and upper side of the inner tube, an outer tube slidably held on an outer and upper side of the middle tube, an upper notch secured on a top portion of the outer tube, and a central sleeve set having an inner and outer sleeve section telescopically held within said inner, middle and outer tubes;
a rib assembly including a plurality of ribs pivotally connected with one another and pivotally secured between the upper notch and a lower runner slidably held on said central shaft means;
an opening spring for opening an umbrella retained in said central shaft means and slidably disposed about the central sleeve set;
a plurality of closing springs respectively secured on said rib assembly for operatively closing an umbrella from an opened state by an elastic energy stored when opening the umbrella; and
a control means including: a push button resiliently held in the grip, an upper latch slidably held in a slotted arm member perpendicularly protruding from a middle button portion of the push button from a first side of the central shaft means towards a second side of the shaft means and operatively depressed by the push button for opening the umbrella, a closing controller having a lower latch resiliently held in the grip and operatively depressible by the push button for inwardly pushing a locking head, which is secured with a drag rod coupled to a drag rope which is linked through the lower runner to an upper portion of the outer tube, for disengaging the locking head from a detent protrusion formed in a lower portion of the inner tube, thereby allowing each said closing spring to be restored to release a pre-stored elastic energy for closing the umbrella from an opened state, with the lower latch resiliently secured to an anti-false operation safety means which is lowered by the outer and middle tubes when closing the umbrella to prevent a false depression of the closing controller as depressed by the push button;
said upper latch including: a spring notch formed at the second side of the shaft means to be resiliently urged towards the first side of the shaft means by a restoring spring retained in the grip adjacent to the second side of the shaft means to be engageable with a lower hole in the outer tube, and a lower hole formed in the middle tube for locking an umbrella under a closed state; and said push button having the slotted arm member formed with a central hole in a central portion of the slotted arm member for downwardly passing a bottom tube portion of each said outer tube and said middle tube when folding the central shaft means for closing the umbrella, and a central thrusting block formed on a central portion inside the push button and protruding inwardly towards the second side of the shaft means:
the improvement which comprises:
said upper latch including: a pair of lugs protruding outwardly towards the second side of the central shaft means from a sloping latch portion to be engaged with two sockets formed in an inner portion of the slotted arm member of the push button, a latch slot formed through an inner end portion of the slotted arm member adjacent to the second side of said shaft means for slidably holding the sloping latch portion in the latch slot, whereby upon an inward depression of the push button to allow the two sockets of the slotted arm member of the push button to retract the two lugs of said upper latch for disengaging the sloping latch portion from the lower holes of the outer and middle tubes, the umbrella will be opened; and
said convex spring plate having a lower spring end fixed to a plug inserted in the inner tube inserted into the inner hole of the grip, said convex spring plate having a pair of flaps disposed on two opposite side portions thereof for slidably holding the locking head to be locked on the detent protrusion when closing the umbrella.

5,626,162

WATER CONTROL GAUGE

A. Charles Dispenza, 29970 Lower Valley Rd. P.O. Box 4400-103, Tehachapi, Calif. 93561

Filed Mar. 8, 1996, Ser. No. 613,113
Int. Cl.[6] F16K *17/36;21/18*
U.S. Cl. 137—78.2 **10 Claims**



1. An apparatus for measuring water precipitation and controlling water irrigation comprising:
a water collector having a means to channel water into a reservoir;

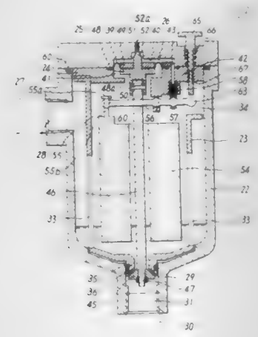
a float measurer mounted in the reservoir comprising a wheel mounted on a shaft which is attached to an inner wall of the reservoir wherein the wheel is part of a pulley having a cord attached on the wheel with a float on one end and a weight on an opposite end;
a switch attached to the inner wall and a lever attached to the switch wherein the lever engages a dowel on the wheel; and
a siphon attached to a reservoir wall.

5,626,163

AUTO-DRAIN UNIT

Toru Kushiya, Ibaraki, Japan, assignor to SMC Corporation, Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,887
Claims priority, application Japan, Sep. 30, 1993, 5-268079; Jul. 13, 1994, 6-183870; Jul. 13, 1994, 6-183871; Jul. 13, 1994, 6-183872
Int. Cl.[6] F16K *31/34*
U.S. Cl. 137—181 **7 Claims**



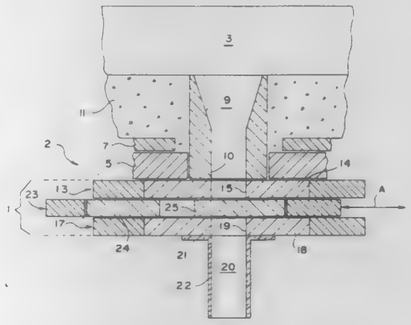
1. An auto-drain unit comprising: a bowl of cylindrical shape for storing liquid and provided with a drain inlet at an upper portion and a drain outlet at a bottom portion, a drain valve seat for discharging drain and mounted on the drain outlet, a drain valve disc for opening and closing the drain valve seat, a pressure receiving member for opening and closing the drain valve disc by moving up and down as pilot air is supplied to or discharged from a pilot chamber, a pilot valve seat for communicating the pilot chamber with an interior of the bowl, a pilot valve disc for opening and closing the pilot valve seat, an exhaust orifice having an effective opening area smaller than the pilot valve seat and communicating the pilot chamber to atmospheric air, a float moving up and down according to a liquid level of drain in the bowl, and a lever tilted by upward or downward movement of the float and for opening and closing the pilot valve disc, wherein:
said pressure receiving member, said pilot valve seat, said pilot valve disc, said exhaust orifice and said lever are provided at positions higher than the liquid level of the liquid stored in the bowl;
said bowl is provided with a cover, which can be freely opened, said pressure receiving member, said pilot valve seat, said exhaust orifice and said lever are mounted on said cover, said lever is tiltably supported by said cover at an intermediate point, said float is connected to one side of the intermediate point, and said pilot valve disc is mounted on the other side of the intermediate point; and
said pressure receiving member is provided with a needle valve for opening and closing said exhaust orifice and also with a pin to be inserted into the exhaust orifice with a gap, and said pin is moved within the exhaust orifice as said needle valve is opened or closed in order to prevent clogging of said orifice.

5,626,164

CRACK RESISTANT VALVE PLATE ASSEMBLY FOR A MOLTEN METAL SLIDE GATE VALVE

Francois N. Richard, Nancy, France, and Patrick D. King, Rantoul, Ill., assignors to Vesuvius Crucible Company, Wilmington, Del.

Filed Aug. 2, 1995, Ser. No. 510,418
Int. Cl.[6] F16L *7/00*
U.S. Cl. 137—375 **15 Claims**



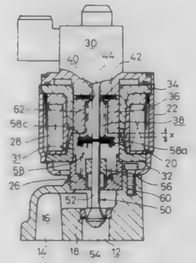
12. A crack resistant valve plate assembly for controlling a flow of molten metal in a slide gate valve, comprising
a refractory valve plate having an axis, and an orifice for conducting molten metal that is positioned along said axis, and truncated corners for focusing a clamping force toward said axis in the vicinity of said orifice to prevent the formation and spreading of cracks therein,
wherein an angular orientation of each of said truncated corners with respect to said axis varies with the position of said orifice along said axis.

5,626,165

VALVE FOR RE-CIRCULATING EXHAUST GAS

Hideyuki Shinobu, Kakuda, Japan, assignor to Hadsys, Inc., Miyagi-ken, Japan

Filed Oct. 17, 1995, Ser. No. 543,947
Claims priority, application Japan, Oct. 17, 1994, 6-250807
Int. Cl.[6] F16K *31/06*
U.S. Cl. 137—556 **8 Claims**



1. A valve for re-circulating exhaust gas, comprising:
a body having a passage therein for re-circulating an exhaust gas, the body including an inlet port and an outlet port;
a valve seat provided in said passage for recirculating the exhaust gas;

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a valve body for controlling the amount of exhaust gas flowing through said passage for re-circulating the exhaust gas by seating or separating the valve body from said valve seat;

an armature for separating said valve body from said valve seat under the action of a current flowing through an electromagnetic coil;

a first elastic member for normally driving said valve body in a direction to close said valve, one end of the first elastic member engaging with a holding plate provided on a valve shaft which constitutes a part of said valve body, and the other end of the first elastic member being secured in place; and

a second elastic member for normally driving said valve body in a direction to open said valve, one end of the second elastic member engaging with said armature, and the other end thereof engaging with said holding plate.

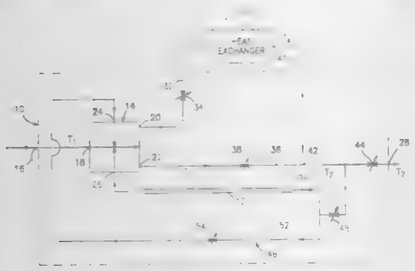
8. The valve for re-circulating exhaust gas according to claim 1, further comprising a sensor for detecting the position of said valve body, wherein a sensor rod extends from said sensor and slidably penetrates through a hole provided in said armature, said sensor rod engaging with an end of said valve shaft.

5,626,166

TEMPERATURE CONTROL VALVE WITHOUT MOVING PARTS

Scott E. Hassan, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 7, 1996, Ser. No. 605,312
Int. Cl.[6] F15C *1/04*
U.S. Cl. 137—828 16 Claims



1. A temperature control valve comprising:

a fluid inlet and a fluid outlet;

a fluidic amplifier communicating with said fluid inlet, said fluidic amplifier having a first outlet port for distributing a flow of fluid directly to an external device, a second outlet port in communication with said fluid outlet, and two control ports;

means for controlling said fluidic amplifier comprising a feedback loop having a first channel with a temperature sensitive element and a second channel with means for setting a desired output temperature for fluid flowing through said fluid outlet; and

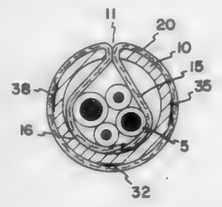
said first and second channels being in fluid communication with said control ports and creating a desired head difference between said control ports, which head difference corresponds to the desired output temperature.

5,626,167

TUBULAR SHEATH SOUND INSULATION FOR ELECTRIC CABLES AND A PROCESS FOR ITS PRODUCTION

Bernard Streit, Clerval, France, assignor to Sofanou S.A., Clerval, France

Division of Ser. No. 12,594, Feb. 4, 1993, Pat. No. 5,435,871.
This application May 9, 1995, Ser. No. 437,688
Claims priority, application France, Feb. 12, 1992, 92 01793
Int. Cl.[6] F16L *11/12*
U.S. Cl. 138—118.1 3 Claims



1. A cover for the mechanical and/or thermal protection of electric cabling, comprising:

a tubular sheath of flexible plastic;

a strip of sound-insulating felt glued to the sheath and folded longitudinally over the sheath in order to wrap the sheath; and

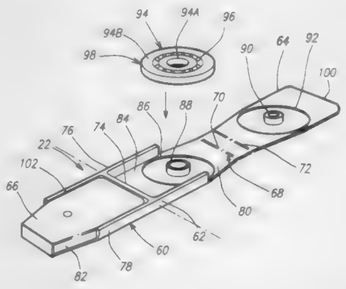
wherein the sheath is split longitudinally along a slit, and lateral parts of the sound-insulating felt are folded and inserted longitudinally inside the sheath through the slit to provide sound insulation against both an external surface and internal surface of the sheath.

5,626,168

DOUBLE ROLLER ELEMENTS FOR JACQUARD MACHINES

David Garnett, Ilkley, England, assignor to BNL Limited, Knaresborough, England

Filed Jan. 11, 1995, Ser. No. 371,920
Claims priority, application United Kingdom, Jan. 13, 1994, 9400635
Int. Cl.[6] D03C *3/40*
U.S. Cl. 139—59 10 Claims



1. A roller element for a Jacquard machine, said roller element comprising:

a) an elongated plastics material body comprising a middle region between two end portions;

b) two cord receiving rollers;

c) two cover plates;

d) means for connecting the cover plates to respective ends of the body;

e) means for receiving the respective rollers and defining spindles therefor: said means for receiving being disposed in the middle region of the body and between the rollers; and

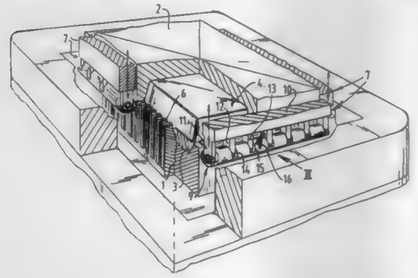
f) gaps between the plates and body enabling cords on the rollers to be looped over the plates for the disconnection of the roller element from the Jacquard machine.

5,626,169

DEVICE FOR BENDING LEADS OF A LEAD FRAME

Van Dalen W. Adrianus, Nijmegen, Netherlands, assignor to FICO B.V., Netherlands

PCT No. PCT/EP93/03043, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO94/12009, PCT Pub. Date May 26, 1994
PCT Filed Mar. 31, 1993, Ser. No. 428,090
Claims priority, application Netherlands, Nov. 6, 1992, 9201950
Int. Cl.[6] B21F *1/00*
U.S. Cl. 140—105 6 Claims



1. A device for bending leads of a lead frame comprising:

two mould halves which are movable relative to each other and which are movable between an open position and a closed position leaving free a space for receiving the lead frame, wherein the leads are supported on edges of the mould halves; and

a movable bending tool in the form of a cylinder-like roller is rotatably mounted on a rotating shaft and said roller having at least one slot-like recess between first and second ends of the roller, for passage of a bearing for the rotating shaft.

5,626,170

AUTOMATIC TRANSMISSION FLUID CHANGER APPARATUS

Zachary T. Parker, Huntington Beach, Calif., assignor to Flo-Dynamics, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 145,686, Oct. 29, 1993, Pat. No. 5,370,160, which is a continuation-in-part of Ser. No. 11,992, Feb. 1, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 348,614
Int. Cl.[6] B65B *1/04;3/04;* B67C *3/02*
U.S. Cl. 141—98 27 Claims

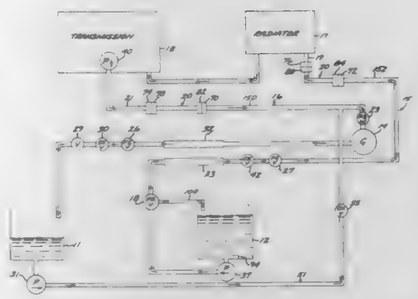
1. A transmission fluid changer apparatus for tapping into a downstream transmission component downstream of an automatic transmission pump operative to pump transmission fluid at a predetermined rate and into an upstream component upstream of said transmission pump for removing used fluid from said transmission to a drain tank while pumping clean fluid from a supply tank to said transmission, said apparatus comprising:

a housing;

a fluid circuit mounted in said housing, including a drain tube for connection on one end to said drain tank and including on its opposite end a drain coupler for connection to said downstream transmission component for receiving transmission fluid at said predetermined rate and a supply tube for connection on one end to said supply tank and including on its opposite end a supply coupler for connection to said upstream component;

a supply pump device connected to said supply tube for pumping clean transmission fluid through said supply tube; and

a flow control device in said supply tube for controlling the rate of fluid flow through said supply tube whereby said drain coupler may be coupled with said downstream component and said supply coupler coupled with said upstream component, said transmission pump operated to pump used transmission fluid at said predetermined rate and said flow control device adjusted to control the flow rate of unused transmission fluid through said supply tube at a rate substantially equal to said predetermined rate.

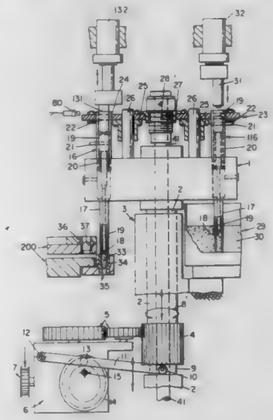


5,626,171

APPARATUS FOR MEASURING AND DISPENSING PREDETERMINED AMOUNTS OF POWDERED MATERIAL

Nerio Mirri, Imola, Italy, assignor to I.M.A. Industria Macchine Automatiche S.p.A., Italy

Filed Apr. 19, 1995, Ser. No. 424,617
Claims priority, application Italy, Apr. 22, 1994, BO94A0175
Int. Cl.[6] B65B *1/00*
U.S. Cl. 141—152 12 Claims



1. An apparatus for measuring and dispensing doses of powdered material comprising:

a store having hard gelatine capsules;

a plurality of tube-type distributors, each having a distribution chamber with a changeable volume;

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a distributor carousel having a vertical axis, said distributors being mounted onto said distributor carousel about said vertical axis of said distributor carousel;

means for remote regulation of the changeable volume of said distributors;

a centralized drive unit for inserting doses of the powdered material into said hard gelatine capsules, wherein said capsules are collected from said store;

a second carousel for handling said capsules, said second carousel co-operating with said distributor carousel and being activated in phase therewith by said centralized drive unit;

a projection provided externally on said distributors, said projection being connected to a movement piece;

a plate which supports supporting stops, wherein said movement piece cooperates with said stops, said plate being fitted to the distributor carousel and having said remote regulation means and including means for micrometric axial movement;

wherein said axial movement means permits variations of the changeable volume of the distributors, are connected operatively to an upper end of an inner shaft which passes axially through a hollow shaft of the distributor carousel, and project from a lower end of said distributor carousel;

a regulation shaft having a reduction/differential gear unit;

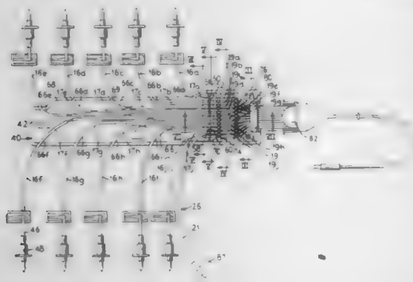
means for interconnecting lower ends of each of said inner and hollow shaft outside a working environment of the distributors, wherein said interconnecting means includes two sets of gears, and said reduction/differential gear unit located on said regulation shaft, said regulation shaft being fitted to a regulation shaft motor which is a two-way electric motor; and

a kinematic chain designed such that when the regulation shaft is at a standstill, the inner and hollow shafts of the distributor carrousel rotate at a same speed and in a same direction, whereas when the regulation shaft is rotated in either direction by the regulation shaft motor, the inner shaft rotates slowly in one direction or the other relative to the outer shaft by an extent necessary to provide the required regulation of volume of the distributors resulting from use of the reduction/differential gear unit, independent of whether the hollow shaft of the carrousel is rotating or at a standstill.

5,626,172
TRANSFER SET

William L. Schumacher, Spring Grove; Edward G. Oilschlager, North Chicago; Thomas R. Lillegard, Crystal Lake; Arnold C. Bilstad, Deerfield; Robert E. Lewis, Lindenhurst, and Sidney T. Smith, Lake Forest, all of Ill., assignors to Clintec Nutrition Company, Deerfield, Ill.

Continuation of Ser. No. 863,439, Apr. 3, 1992, abandoned.
This application Dec. 23, 1993, Ser. No. 173,147
Int. Cl.[6] B65B *3/00*
U.S. Cl. 141—236 **23 Claims**



1. A transfer set comprising:

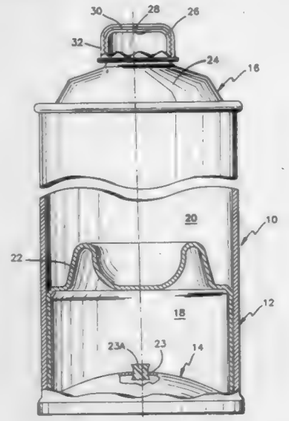
a plurality of fluid conduits, each of the fluid conduits including a first section of substantially equal lengths and a second section, the first and second sections coupled together in fluid communication with a coupler; and

a housing for receiving at least a portion of the plurality of fluid conduits and the coupler, the housing defining a plurality of separate channels for receiving a portion of the second section of each of the plurality of fluid conduits wherein the portions of the second sections within the housing have different lengths, each of the plurality of channels extending for at least substantially an entire distance that the second sections are located in the housing thereby securing the second sections in place in the housing wherein each of the plurality of channels is continuous, equally sized and non-linear and further wherein the housing comprises a first section and a second section removably secured together.

5,626,173
CONTAINER FOR PRESSURIZED FLUID, PRESSURIZED-FLUID DELIVERY ASSEMBLY AND METHOD OF BLEEDING A HYDRAULIC BRAKE CIRCUIT

Jacques Groult, Verneuil-sur-Avre, France, assignor to Safet Embamet, Villeneuve-la-Garenne, France

Filed Jun. 20, 1994, Ser. No. 262,253
Claims priority, application France, Jun. 18, 1993, 93 07422
Int. Cl.[6] A65B *1/04;3/04;* **B67C** *3/00*
U.S. Cl. 141—329 **7 Claims**



1. Container for a pressurized fluid comprising a container having brake fluid therein for a motor vehicle, the container including a neck having a free end which is equipped with an orifice for outflow of the pressurized brake fluid contained in the container, closed off by a perforatable cover in order to release the pressurized brake fluid.

5,626,174
RADIATOR FUNNEL AND ADAPTER MEANS FOR SPILL PREVENTION

John Schaffner, 314 Weatherby Way, Bismarck, N. Dak. 58501

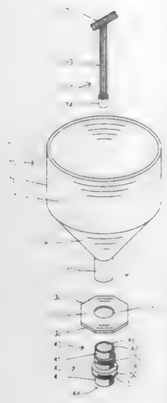
Filed Apr. 10, 1995, Ser. No. 419,116
Int. Cl.[6] B67C *11/00*
U.S. Cl. 141—386 **4 Claims**

1. A radiator funnel and adapter means comprising:

a funnel having a spout with a bore therethrough;

an adapter means comprising a tubular member having a top end and a bottom end and further having a bore therethrough, said bore of said adapter means being tapered inwardly from said top end to said bottom end to sealingly and engageably receive said spout of said funnel so as to substantially prevent fluid from leaking out between said spout and said adapter means, said adapter means being removably and securely disposed in a fill opening of a radiator such that said adapter means substantially prevents fluid in said radiator from leaking out between itself and said radiator, said tubular member having a sealing flange with a flexible seal member being about said tubular member for substantially preventing fluid in said radiator from leaking out of said radiator between said adapter means and said radiator, said adapter means further comprising a cap abutment member disposed about the outer side of said tubular member and a cap having a hole through a top thereof and through which a portion of said tubular member is extendable, said cap being fastenable upon said fill opening of said radiator and engageable to said cap abutment member for urging said flexible seal member tightly against said radiator so that fluid in said radiator cannot leak out between said adapter means and said radiator; and

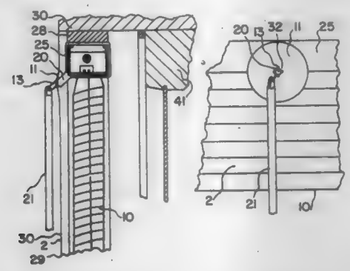
a stopper means insertable in said bore of said spout to prevent fluid in said funnel from being dispensed through said spout.



5,626,175
PLASTIC FILM INDOOR WINDOW INSULATION KIT WITH REINFORCED ACCESS PORTS

Donald B. Keys, 983 Pembrook Rd., Cleveland Heights, Ohio 44121

Filed Apr. 3, 1995, Ser. No. 415,417
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—168.1 **19 Claims**



1. A method of insulating a window of a window installation on an interior of a building, the window installation carrying an adjustable privacy device having an operator control mechanism, the method of insulating comprising the steps of:

applying, in a substantially air tight configuration, a sheet of stretchable insulation, material to the window insulation, whereby the adjustable privacy device having the operator control mechanism is isolated from a user on the interior of the building;

bonding an access port material to a surface of the sheet of stretchable insulation material;

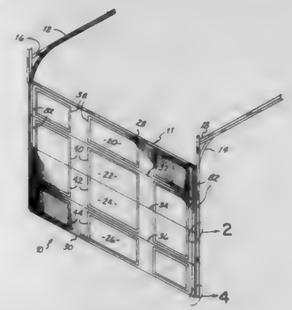
providing an incision through both the access port material and the sheet of stretchable insulation material at substantially identical locations forming an access port; and

passing the operator control mechanism through the formed access port.

5,626,176
MULTIPLE SECTION MODULAR DOOR AND JOINT STRUCTURE

Richard J. Lewis, Jr., Loveland, and Bobby G. Bailey, Trenton, both of Ohio, assignors to Clopay Building Products Company, Inc., Cincinnati, Ohio

Continuation of Ser. No. 435,796, May 5, 1995, abandoned.
This application Jun. 30, 1995, Ser. No. 497,653
Int. Cl.[6] E05D *15/16*
U.S. Cl. 160—201 **28 Claims**



1. A sectional door comprising:

a plurality of elongate panels, each panel having first and second longitudinal edges;

an elongate structured joint member affixed along each of said first and second longitudinal edges, each said structured joint member including a bearing member having a continuously curving bearing surface;

an elongate intermediate joint member including two continuously curving bearing members having curved bearing surfaces mating with the curved bearing surfaces of two adjacent structured joint members of adjacent panels to connect said adjacent panels together; and,

a hinge connecting said two adjacent structured joint members and presenting a hinge line extending generally along a centerline disposed between said two continuously curving bearing surfaces of said intermediate joint member.

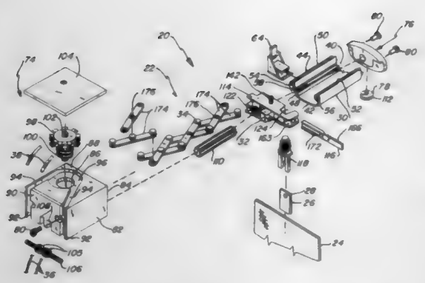
5,626,177
CONTROL AND SUSPENSION SYSTEM FOR A VERTICAL VANE COVERING FOR ARCHITECTURAL OPENINGS

Wendell B. Colson, Boulder, and David G. Mateer, Niwot, both of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Filed Jun. 7, 1995, Ser. No. 472,992
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—168.1 **24 Claims**

1. A control system for a vertical blind wherein the blind includes a plurality of vertically suspended vanes comprising in combination:

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an elongated substantially U-shaped channel headrail having an open top side, substantially vertically oriented sidewalls, a bottom wall and a hollow interior,

a plurality of carriers at least some of said carriers being interconnected to each other and mounted on and vertically supported by said headrail so as to extend through said open top side and be selectively movable along the length of the headrail, only a minority portion of each of said carriers being disposed in the hollow interior of said headrail, said carriers each including a hanger system for suspending an associated vane and pivotally moving the vane about a vertical axis, and

an operating system for selectively moving said carriers along the length of said headrail and for selectively pivoting the vanes about said vertical axis.

5,626,178

BREAST BOX FOR A PAPERMAKING MACHINE

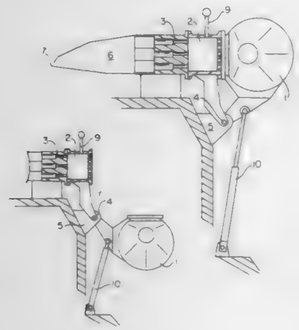
Thomas Merath, Weingarten, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Oct. 17, 1995, Ser. No. 544,152

Claims priority, application Germany, Oct. 18, 1994, 9416731 U

Int. Cl.[6] D21F *1/02;1/08*

U.S. Cl. 162—272 21 Claims



1. A breast box for a papermaking machine comprising at least one distribution device, for a material suspension extending over the width of the papermaking machine, at least one adjacent intermediate chamber located downstream of the distribution device, at least one guiding device for the suspension, located adjacently downstream of the intermediate chamber, a nozzle chamber, having a wide aperture, located adjacently downstream of the guiding device, and a common fixed axis, wherein the guiding device, the intermediate chamber and the distribution device are releasably connected with each other and, wherein the intermediate chamber and the distribution device are pivotally journalled about the common fixed pivot axis.

5,626,179

PROCESS FOR MANUFACTURE OF CASTINGS OF REACTIVE METALS

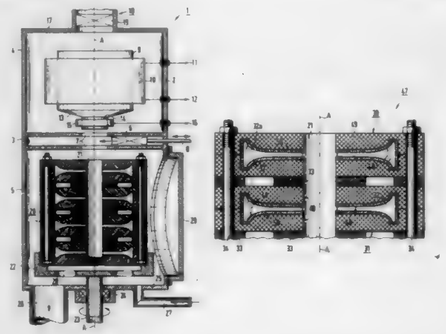
Alok Choudhury, Püttlingen; Matthias Blum, Büdlingen; Harald Scholz, Rodenbach, and Georg Jarczyk, Grosskrotzenburg, all of Germany, assignors to Ald Vacuum Technologies GmbH, Erlensee, Germany

Filed Jun. 2, 1995, Ser. No. 458,904

Claims priority, application Germany, Jun. 9, 1994, 44 20 138.9; Feb. 20, 1995, 195 05 689.2

Int. Cl.[6] B22C *1/00;3/00*

U.S. Cl. 164—66.1 13 Claims



1. Process for production of castings comprising

providing a reusable casting mold having a surface which comes in contact with molten metal, said surface consisting of at least one metal selected from the group consisting of tantalum, tantalum alloys, niobium, niobium alloys, zirconium, and zirconium alloys, and

casting in said mold a melt of a reactive metal selected from the group consisting of titanium and titanium alloys.

5,626,180

PROCESS AND DEVICE FOR CASTING COMPONENTS

Friedhelm Kahn, and Joachim Kahn, both of Mühlbachstrasse 2, D-35630 Ehringshausen, Germany

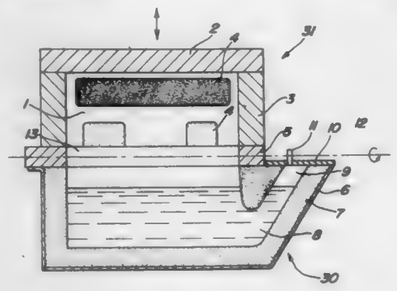
PCT No. PCT/EP94/01813, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/29050, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 379,544

Claims priority, application Germany, Jun. 2, 1993, 43 18 252.6

Int. Cl.[6] B22D *23/00*

U.S. Cl. 164—136 20 Claims



1. A process for casting components from metal alloy, by rotating an apparatus comprising a mould (**31**) and casting container (**30**);

said mould having a mould cavity (**1**) and said casting container having an interior for containing a melt, said mould and casting container held in fixed relationship to one another, wherein said container is located below said mould prior to rotating;

said apparatus further comprising at least one ingate (**13**) which extends substantially from one end of the mould to an opposite end of said mould in a horizontal direction along an axis of rotation, said ingate providing an open connection between said mould cavity (**1**) of said mould (**31**) and the interior of the casting container;

said apparatus also comprising at least one communication channel (**14**), which provides an additional open connection between the mould cavity (**1**) and the casting container (**30**);

the casting process comprising:

rotating the apparatus, so that the casting container (**30**) is located below the mould (**31**);

filling the casting container (**30**) with sufficient melt for a single casting, with both the at least one ingate and the at least one communication channel being free of melt prior to rotating;

sealing said casting container so as to be gas-proof;

rotating the apparatus around a horizontal axis (**12**) in such a way that the melt is conveyed into the mould (**31**), with the flow of melt being effected through the at least one ingate and with a flow of gases being effected through the at least one communication channel (**14**) at a beginning of said rotating step;

further rotating said apparatus until said casting container (**30**) is positioned above said mould (**30**) and said mould cavity (**1**), said at least one ingate and said at least one communication channel are filled with melt, wherein said at least one ingate and communication channel act as raisers;

pressurizing the interior of the casting container at least temporarily during the mould filling and solidification process.

5,626,181

CONTINUOUS STEEL CASTING PLANT WITH AN IN- OR OFF-LINE SYSTEM TO DEBURR OXY-GAS CUTTING BEARDS AND CUTTING BEADS AT STRANDS, SLABS, AND BLOOMS

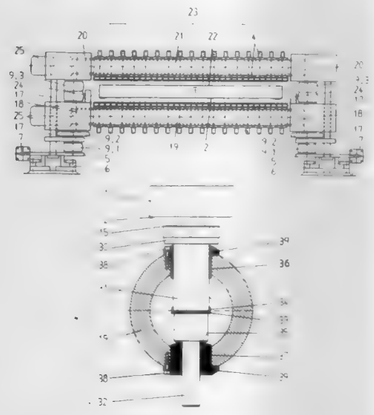
Horst K. Lotz, and Matthias Lotz, both of Hofheim-Wallau, Germany, assignors to Gega Corporation, Pittsburgh, Pa.

Filed Mar. 10, 1995, Ser. No. 402,993

Claims priority, application European Pat. Off., Mar. 11, 1994, 94103765

Int. Cl.[6] B22D *11/12*

U.S. Cl. 164—263 12 Claims



1. Apparatus for removing burrs from flame cut steel slabs comprising:

at least one substantially airtight piston chamber comprising a hollow interior;

a plurality of deburring pistons extendably mounted on the at least one substantially airtight piston chamber and communicating with the hollow interior thereof;

means for pressurizing the hollow interior of the substantially airtight piston chamber to extend the deburring pistons therefrom;

means for supporting the at least one substantially airtight piston chamber; and

means for moving the substantially airtight piston chamber with respect to the slab to achieve deburring engagement between the deburring pistons and the slab.

5,626,182

DIE FOR CASTING VEHICLE WHEEL RIMS WITH TUBULAR SPOKES AND OBTAINED WHEEL RIM

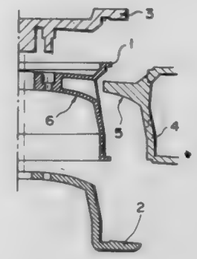
Andrea Bortoloni, 191 via Noventana, Noventa Padovana, Italy

Filed Sep. 14, 1995, Ser. No. 528,417

Claims priority, application Italy, Feb. 15, 1995, PD95A0039; Mar. 8, 1995, PD95A0053; Mar. 20, 1995, PD95A0059

Int. Cl.[6] B22C *9/28*

U.S. Cl. 164—340 3 Claims



1. A die for use in casting vehicle wheel rims which include a hub from which extend a plurality of spokes which spokes are generally hollow from a point spaced from the hub to an outer channel in which a tire is selectively mountable, the die comprising,

first and second parts corresponding to the inner and outer sides of the wheel rim, said first and second parts including central portions for forming a hub of a wheel rim and intermediate portions extending from the central portions for forming the spokes and outer portions,

a plurality of circumference components engageable with said outer portions of said first and second parts,

a plurality of protuberances equal in number to the plurality of spokes of the wheel rim extending inwardly relative to one another from the circumference components, each protuberance being of a dimension such that when inserted between the first and second parts of the die, such protuberances are spaced from said central portions thereof wherein the wheel hub is formed whereby the spokes are solid extending from the hub and are hollow thereafter to the outer channel.

5,626,183

SYSTEM FOR A CROWN CONTROL ROLL CASTING MACHINE

Christopher A. Romanowski, Lake Arrowhead, Calif., and Bruno Amateis, Turin, Italy, assignors to FATA Hunter, Inc., Riverside, Calif.

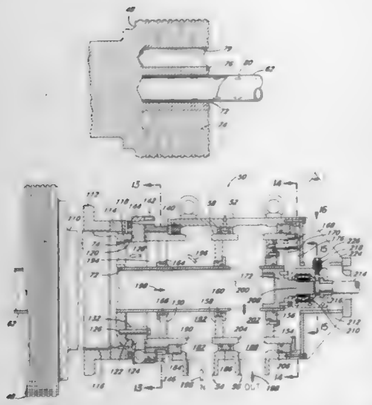
Continuation-in-part of Ser. No. 670,497, Jun. 6, 1991, Pat. No. 5,228,497, which is a continuation of Ser. No. 379,884, Jul. 14, 1989, abandoned. This application Jul. 20, 1993, Ser. No. 95,761

Int. Cl.[6] B22D *11/06;11/124*

U.S. Cl. 164—428 57 Claims

1. A roll casting machine including a pair of work rolls mounted in a frame for rotation about a centerline of said rolls, each roll

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including a shell mounted on a central core and a nozzle for introducing molten metal between said rolls, at least one of said rolls including a cooling system for controlling the shape of said roll, comprising:

at least two axially aligned inlet plenums located parallel to said centerline within said core for allowing cooling water to enter said roll;

a single outlet plenum located concentrically along the centerline of the core of said roll for allowing water to exit said roll;

a number of circumferential cooling channels formed between said shell and said core;

a number of substantially radial inlet passages connecting each inlet plenum to said channels on said core;

a number of radial outlet passages connecting said channels to said outlet plenum;

a sleeve located in said outlet plenum and connected to said roll for rotation therewith, said sleeve having a number of openings therein;

a water manager having a rotating portion attached to said roll and a fixed portion attached to the frame, said water manager including a thrust bearing journalled to an end of said sleeve, wherein said sleeve rotates with said roll and extends out one end of the roll;

a linear actuator attached to said fixed portion of said water manager, the linear actuator providing linear displacement to said sleeve through said thrust bearing for moving said sleeve between a first position where said openings in said sleeve are aligned with said radial outlet passages along the length of said roll, and a second position where said openings are aligned with said outlet passages only in particular areas along the length of said roll, whereby the shape of said roll is controlled by the variation in temperature along said roll caused by differentially metering the cooling water flow rate through various ones of said outlet passages with respect to other outlet passages along the roll, more cooling water flowing through a particular outlet passage resulting in more cooling and a smaller roll diameter at that axial location from thermal contraction of the core, and less cooling water resulting in less cooling and a larger roll diameter from thermal expansion of the core.

5,626,184

SOOTBLOWER

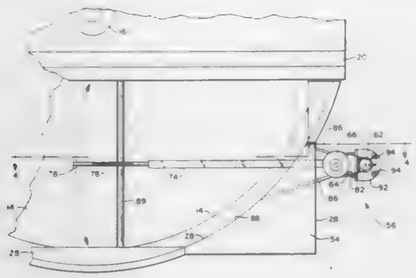
Barry E. Campbell, Canisteo, N.Y., and Harlan E. Finnemore, Pocatello, Id., assignors to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Aug. 24, 1995, Ser. No. 518,797

Int. Cl.[6] F23L *15/02*

U.S. Cl. 165—8 **8 Claims**

1. A sootblower arrangement for a rotary regenerative air preheater having a heat exchange rotor with a center portion and a peripheral portion and comprising:



a. a drive motor,

b. a speed reducer connected to said drive motor including an output shaft,

c. a rotatable drive means attached to said speed reducer output shaft rotatable at a constant speed proportional to the speed of said drive motor,

d. a rotatable driven means connected to an oscillatable swivel shaft,

e. means for driving said rotatable driven means and said oscillatable swivel shaft from said rotatable drive means at a constant speed proportional to the speed of said rotatable drive means,

f. a sootblower arm attached to said oscillating swivel shaft, said sootblower arm extending over a portion of said heat exchange rotor and adapted to swing through an arc extending between an end point adjacent said center portion of said rotor and an end point adjacent said peripheral portion of said rotor, and

g. means for turning said drive motor off as said sootblower arm reaches one of said end points of said arc.

5,626,185

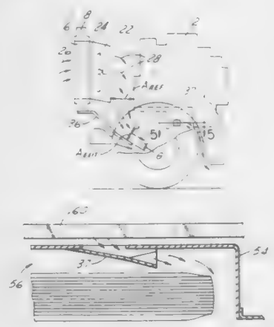
AIRFLOW EJECTOR SYSTEM FOR AN AUTOMOTIVE VEHICLE WITH WHEEL-WELL EJECTORS

Thomas P. Gielda, Brighton; Christopher M. Greiner, Birmingham, and Mark Q. Haddlesey, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1994, Ser. No. 270,537

Int. Cl.[6] B60K *11/00;11/02;* **B62D** *35/02*

U.S. Cl. 165—41 **5 Claims**



1. A cooling system for cooling an engine disposed in an engine compartment of an automotive vehicle, the vehicle including a pair of front steerable wheels and a pair of inner fender members, each one of said pair of inner fender members being interposed between one of said wheels and said engine, the cooling system comprising:

a radiator disposed in the engine compartment of the vehicle and secured therein by support members;

a rotatable axial flow fan having a plurality of circumferentially spaced impeller blades extending radially from a hub and disposed on one side of said radiator;

a shroud member at least partially surrounding said fan and said radiator, said shroud member being operative to direct the flow of air through said radiator and into said engine compartment, said shroud member being disposed a predetermined distance from said engine to define a reference area of predetermined size therebetween; and

a pair of ejectors, each one of said pair being disposed on an inner fender member proximate a steerable wheel, each of said ejectors being operative to direct the flow of air from said engine compartment toward the rear of said vehicle while said vehicle is stationary so as to create an underbody entrainment flowfield thereby and to prevent recirculation of air exiting the shroud member back to the fan, each of said ejectors comprising a web having a longitudinal and transverse axes and including a first portion inclined at an angle of less than 35 degrees relative to the plane of the inner fender member, a second portion connected to said inner fender member and a plurality of generally vertical tab members disposed on the first portion, said tab members having a height to length ratio of between 0.30–0.75.

5,626,186

AIR CONDITIONING APPARATUS FOR VEHICLES

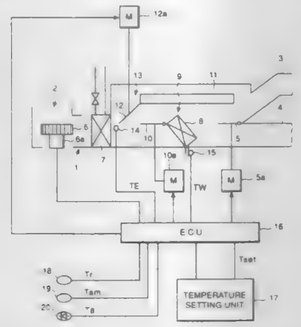
Yuji Honda; Tomotsugu Terada, both of Okazaki, and Katsuhiko Samukawa, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 17, 1995, Ser. No. 406,342

Claims priority, application Japan, Mar. 17, 1994, 6-046878

Int. Cl.[6] B60H *3/00*

U.S. Cl. 165—43 **12 Claims**



1. An air conditioning apparatus for a vehicle having a passenger compartment, said apparatus comprising:

an air duct forming an air passage therein, said air duct comprising:

an inlet for receiving air to be conditioned,

a face outlet, directed to an upper portion of said passenger compartment, to supply conditioned air into said passenger compartment, and

a foot outlet, directed to a lower portion of said passenger compartment, to supply conditioned air into said passenger compartment;

a blower for blowing air in said air passage;

temperature setting means for setting a target temperature in said passenger compartment;

temperature adjusting means for controlling independently a first temperature of conditioned air blown out from said face air outlet and a second temperature of conditioned air blown out from said foot air outlet;

an inside air temperature sensor for detecting an inside air temperature of said passenger compartment;

a sunlight sensor for detecting an amount of sunlight entering said passenger compartment;

required air temperature computing means for computing a required temperature of air blown into said passenger compartment based at least on a deviation between said target temperature set by said temperature setting means and said inside air temperature detected by said inside air temperature sensor;

face target air temperature computing means for computing, in a bi-level mode of said air conditioning apparatus wherein air is blown out from both said face air outlet and said foot air outlet, a face target air temperature of air blown from said face air outlet, said face target air temperature being lowered in accordance with a corresponding increase of said amount of sunlight detected by said sunlight sensor;

face target air temperature correcting means for correcting said face target air temperature to be higher in accordance with an increase of a volume of said air blown out from said face air outlet; and

face air temperature control means for controlling, in said bi-level mode of said air conditioning apparatus, said temperature adjusting means to set said first temperature to said face target air temperature;

foot air temperature control means for controlling, in said bi-level mode of said air conditioning apparatus, said temperature adjusting means to set said second temperature to said required air temperature computed by said required air temperature computing means.

5,626,187

HEAT-EXCHANGER TUBE

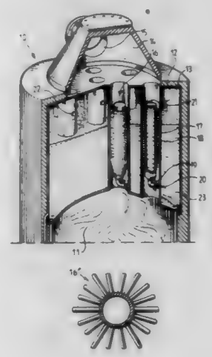
Håkan Nilsson, Fölvägen 12, S-175 39 Järfälla, Sweden

Filed Dec. 13, 1994, Ser. No. 355,072

Claims priority, application European Pat. Off., Dec. 14, 1993, 93850231

Int. Cl.[6] F28F *19/00;21/02*

U.S. Cl. 165—134.1 **3 Claims**



1. A heat-exchanger tube for use in boilers, comprising:

a tubular body having an outer surface and surface enlarging elements provided on the outer surface of the tubular body communicating with hot flue gases within the boiler, and the surface enlarging elements being a plurality of pins affixed to the tubular body at the outer surface thereof and extending in outward directions from the tubular body, said tubular body and the pins being of carbon steel, with the pins having a substantially lower carbon content than the tubular body, wherein the pins are of carbon steel having a carbon content of about 0.03% by weight thereby to reduce the risk of crack formation in joints between the tubular body and the pins.

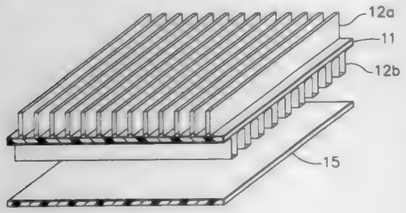
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5,626,188

COMPOSITE MACHINED FIN HEAT EXCHANGER

Douglas M. Dewar; Alexander F. Anderson, both of Rolling Hills Estates, and Christopher K. Duncan, Long Beach, all of Calif., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Apr. 13, 1995, Ser. No. 422,207
Int. Cl.[6] F28D *1/03*
U.S. Cl. 165—166 15 Claims



1. A heat exchanger comprising:

a block of anisotropic fibrous carbon composite material specially aligned to provide a structure having a predominant axis of thermal conductivity specially oriented in a first direction whereby significant heat is transferred along the predominant axis than is transferred along any other orthogonal axis;

first and second arrays of substantially parallel planar fins extending in said first direction and machined along the predominant axis on opposite sides of the block respectively; said fins having tips positioned at their ends projecting in said first direction and

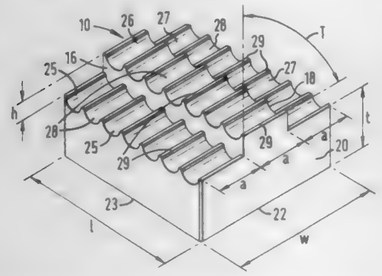
a first composite plate bonded to the tips of the array of composite fins to form a passageway.

5,626,189

WELLBORE MILLING TOOLS AND INSERTS

Christopher P. Hutchinson, Houston, Tex., assignor to Weatherford U.S., Inc., Houston, Tex.

Filed Sep. 22, 1995, Ser. No. 532,474
Int. Cl.[6] E21B *10/46*
U.S. Cl. 166—55.6 6 Claims



1. A cutting insert for a tool for wellbore milling operations, the cutting insert comprising

a body having a top, a bottom, and a rectangular base, and

a plurality of cutting surfaces on the top of the body, at least one of the cutting surfaces at a different height above the base than the other cutting surfaces, each cutting surface defined by linear boundaries extending from a first edge of the cutting insert to a second edge of the cutting insert, and the linear boundaries parallel to each other,

the plurality of cutting surfaces comprising three cutting surfaces including a first side cutting surface, a second middle cutting surface, and a third side cutting surface with the second middle cutting surface disposed between the first side cutting surface and the third side cutting surface,

the second middle cutting surface is at a height above the rectangular base which is greater than a height above the rectangular base of the first side cutting surface, and

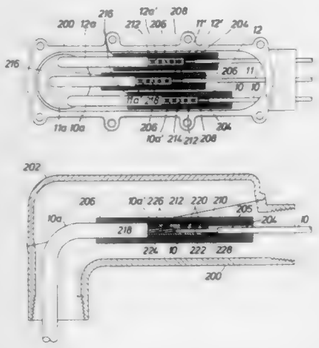
the second middle cutting surface is at a height above the rectangular base greater than a height above the rectangular base of the third side cutting surface.

5,626,190

APPARATUS FOR PROTECTING ELECTRICAL CONNECTION FROM MOISTURE IN A HAZARDOUS AREA ADJACENT A WELLHEAD BARRIER FOR AN UNDERGROUND WELL

Boyd B. Moore, 427 Mignon, Houston, Tex. 77024

Division of Ser. No. 448,575, Aug. 7, 1995, which is a continuation-in-part of Ser. No. 651,633, Feb. 6, 1991, Pat. No. 5,289,882. This application Feb. 16, 1996, Ser. No. 602,964
Int. Cl.[6] E21B *33/03*; H01R *4/00*
U.S. Cl. 166—65.1 6 Claims



1. An apparatus for protecting and insulating an electrical connection in a hazardous area adjacent a wellhead barrier of a well enclosing fluids, the electrical connection being between a first electrical conductive means extending from a non-hazardous area and a second electrical conductive means extending through the wellhead barrier, wherein the second electrical conductive means includes a conductive portion circumscribed by insulation, said apparatus comprising:

means for electrically and mechanically coupling the first and second electrical conductive means together forming the electrical connection;

a breather boot for protecting and insulating the electrical connection, said breather boot including an inner cavity for containing said electrical coupling means, a first opening for receiving the first electrical conductive means, a second opening for receiving the second electrical conductive means within which the insulation is terminated, a header space located where the insulation is terminated within the second opening, a gas block seal passage adjacent the header space allowing passage of the conductive portion of the second electrical conductive means from the second opening to said electrical coupling means, and a breather passage allowing fluid communication between the header space and the area surrounding said breather boot; and

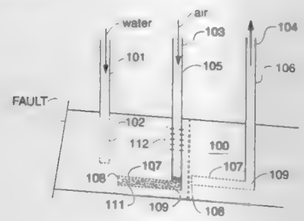
wherein said breather passage and said header space are filled with a dielectric compound so that in the event well fluids escape between the insulation and conductive portion of the second electrical conductive means, said well fluids will escape without migrating through the gas block seal passage.

5,626,191

OILFIELD IN-SITU COMBUSTION PROCESS

Malcolm Greaves, Avon, United Kingdom, and Alexandru T. Turta, Calgary, Canada, assignors to Petroleum Recovery Institute, Calgary, Canada

Filed Jun. 23, 1995, Ser. No. 494,300
Int. Cl.[6] E21B *43/24;43/243;43/30*
U.S. Cl. 166—245 7 Claims



1. A process for reducing the viscosity of oil and recovering it from an underground oil-containing reservoir, comprising:

providing an injection well, completed relatively high in the reservoir, for injecting a gaseous fluid into the reservoir to form an advancing, laterally extending displacement front operative to reduce the viscosity of reservoir oil;

providing at least one open production well having a horizontal leg completed relatively low in the reservoir and positioned substantially perpendicular to and in the path of the advancing displacement front;

injecting the fluid through the injection well and advancing the displacement front along the leg; and

producing the production well to recover reduced-viscosity oil from the reservoir.

2. An in-situ combustion process for recovering oil from an underground oil-containing reservoir, comprising:

providing a generally linear air injection source completed relatively high in the reservoir;

providing at least one open production well comprising a horizontal leg having a toe and heel and being completed relatively low in the reservoir and positioned generally perpendicularly to the injection source so as to lie in the path of a combustion front established by the source;

injecting air through the injection source and initiating and propagating a combustion front, extending laterally of the production well horizontal leg, so that it advances toward and along the leg; and

producing the production well to recover heated oil from the reservoir.

5,626,192

COILED TUBING JOINT LOCATOR AND METHODS

Michael L. Connell, Duncan, Okla.; Jack G. Clemens, Plano, and John J. Goiffon, Dallas, both of Tex., assignors to Halliburton Energy Services, Inc., Duncan, Okla.

Filed Feb. 20, 1996, Ser. No. 603,960
Int. Cl.[6] E21B *47/09*
U.S. Cl. 166—255.1 20 Claims

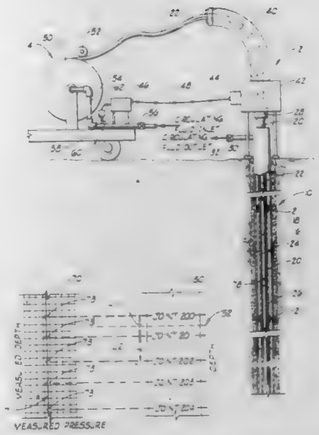
6. A method of accurately determining the depth of subterranean pipe string joints while lowering or raising coiled tubing within said pipe string and flowing fluid through said coiled tubing comprising the steps of:

connecting a pipe string joint locator to the end of said coiled tubing prior to injecting said coiled tubing into said pipe string, said joint locator having a fluid flow passageway therethrough and at least one valved lateral port therein communicated with said passageway and said joint locator momentarily opening or closing said valved lateral port each time it moves through a pipe joint;

injecting said coiled tubing having said joint locator connected thereto into said pipe string and moving said coiled tubing and said joint locator through said pipe string while flowing fluid through said coiled tubing and said joint locator whereby said valved lateral port of said joint locator momentarily opens or closes each time said joint locator passes through a pipe joint thereby creating a surface detectible pressure drop or rise in the flowing fluid indicative of the location of said pipe joint;

continuously measuring the depth of said joint locator and the surface pressure of said flowing fluid; and

recording the measured depth of said joint locator corresponding to each detected pressure drop or rise in the flowing fluid to thereby accurately determine the measured depth of each detected pipe joint.

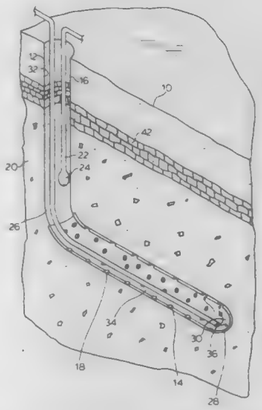


5,626,193

SINGLE HORIZONTAL WELLBORE GRAVITY DRAINAGE ASSISTED STEAM FLOODING PROCESS

Ben I. Nzekwu; Peter D. Sametz, and Peter J. Pelensky, all of Calgary, Canada, assignors to Elan Energy Inc., Calgary, Canada

Filed Apr. 11, 1995, Ser. No. 420,038
Int. Cl.[6] E21B *43/24*
U.S. Cl. 166—303 20 Claims



1. A method for recovering heavy oil from reservoirs in thin formations, which formations are provided with a drilled, cased and cemented well having a vertical portion and a horizontal

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portion wherein there is a foraminous liner along the horizontal portion, the horizontal portion having a proximal end and a distal end extending into a wellbore, said method comprising:

(a) providing a steam injection tubing within the vertical and horizontal portions of the well, said tubing extending to near the distal end of said horizontal portion and being provided with insulation along said vertical portion and along said horizontal portion and extending towards said distal end substantially to said distal end to provide a minimal temperature gradient along said tubing;

(b) providing a production tubing within the vertical portion of the well terminating adjacent the lower end of the vertical portion of the well;

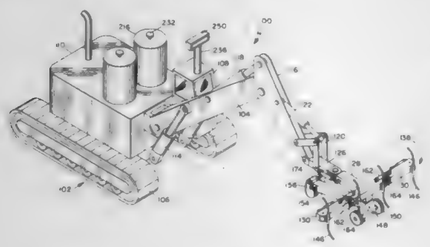
(c) injecting steam vapour and hot water condensate into the steam injection tubing to effect flow of a first portion of said steam vapour and hot water condensate along the liner back towards the vertical portion of the well and to effect transfer of a second portion of said steam vapour into said formation, the second portion of the injected steam vapour rising vertically into the reservoir and heating the oil to effect drainage of steam condensate and oil downward and towards said proximal end of the horizontal portion and drainage of steam condensate and oil through said foraminous liner to be transported to said surface through said production tubing.

5,626,194

FIRE FIGHTING SYSTEM

Richard W. White, San Diego, Calif., assignor to FAV, Inc., San Diego, Calif.

Filed Sep. 20, 1994, Ser. No. 308,981
Int. Cl.[6] A62C *27/00*
U.S. Cl. 169—24 **18 Claims**



1. A fire fighting system comprising:

a base comprising a construction equipment-type vehicle with a substantially enclosed operator compartment and at least one hydraulic take-off,

a hydraulically controlled arm extensible outwardly from said vehicle to at least a distance from said vehicle equal to its own length,

a support bar mounted at the distal end of said arm,

a plurality of motorized rotary cutting devices mounted along the length of said bar,

control means to orient said bar and cutters relative to the ground and the advancement path of said vehicle in motion,

and means to control and drive operation of said motorized cutters,

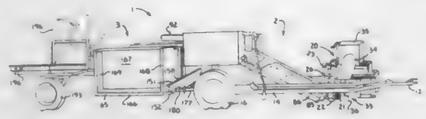
and means for heat deflection and fire retardation mounted on said vehicle, operator compartment, arm and cutting devices whereby said vehicle may safely advance into a burning fire front and clear a path through the burning material by operation of said cutters.

5,626,195

SOD HARVESTING SYSTEM

Gary H. Dover, Bucyrus, Kans., assignor to Bucyrus Equipment Co., Inc., Bucyrus, Kans.

Filed Jul. 10, 1995, Ser. No. 500,492
Int. Cl.[6] A01B *45/04*
U.S. Cl. 172—19 **21 Claims**



1. An apparatus for harvesting sod comprising:

(a) a cutting unit frame;

(b) means for allowing movement of said cutting unit frame with respect to the ground in a cutting direction;

(c) sod cutting means connected to said cutting unit frame for cutting a strip of sod from the ground;

(d) a sod cut-off mechanism selectively engageable to cut a strip of sod transverse to its length at set intervals; said sod cut-off mechanism being secured to said cutting unit frame;

(e) conveyor means connected to said cutting unit frame for conveying said strips of sod away from said cutting means;

(f) first rolling means selectively engageable for rolling strips of sod to form small rolls; said first rolling means being securable to said apparatus adjacent said conveying means;

(g) second rolling means selectively engageable for rolling strips of sod to form large rolls; said second rolling means being securable to said apparatus adjacent said conveying means; and

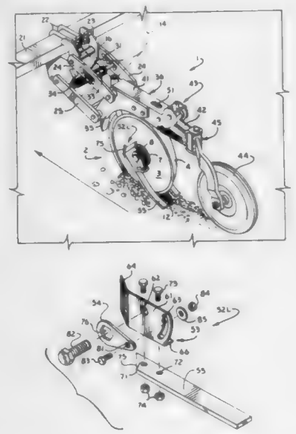
(h) a sod stacking attachment removably securable to said cutting unit frame and upon which sod in the form of slabs and small rolls may be stacked.

5,626,196

SEED DRILL WITH SCRAPER/SOIL FIRMING ATTACHMENT

Jeffrey S. Hughes, Glen Elder, Kans., assignor to Sunflower Manufacturing Co., Inc., Beloit, Kans.

Filed Jan. 16, 1996, Ser. No. 585,452
Int. Cl.[6] A01B *15/16*
U.S. Cl. 172—558 **18 Claims**



1. A seed drill comprising:

a. a soil opener including a first soil opening disc blade rotatably attached to a first axle, said first axle and said first disc blade being oriented such that said first disc blade is angled across a path of travel of said seed drill so that said first disc blade opens a seed trench along said path of travel;

b. a first scraping/soil blow-out prevention assembly attached via said first axle of said soil opener, said first scraping/soil blow-out prevention assembly including a blade, said blade being sized and positioned such that it simultaneously:

i. scrapes an outside surface of said first disc blade as it rotates; and

ii. prevents soil blow-out alongside the outside of said first disc blade.

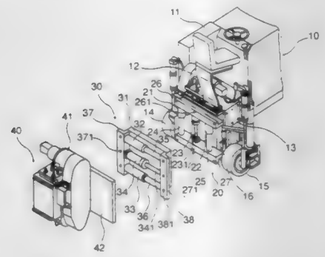
a second scraping device having a width smaller than that of said first scraping device, and an oil pressure motor oriented towards a direction opposite to that of said oil pressure motor of said first scraping device, said second scraping device being provided with a vertical side plate at an inner side thereof for securement to said right vertical positioning seat and said left vertical positioning seat, wherein by actions of said vertical displacement mechanism and said horizontal displacement mechanism, said second scraping device may extend from a lateral side of said road scraper to scrape road surfaces.

5,626,197

ROAD SCRAPER HAVING VERTICALLY AND HORIZONTALLY DISPLACEABLE AUXILIARY SCRAPING DEVICE

An-Ping Tseng, 6F, No. 630-10, Ta You Road, Taoyuan, Taiwan

Filed Jan. 16, 1996, Ser. No. 585,625
Int. Cl.[6] E02F *3/76*
U.S. Cl. 172—815 **4 Claims**



1. A road scraper comprising:

a scraper including a removable car body and a first scraping device mounted at a rear end thereof and driven by an oil pressure motor, said first scraping device having two liftable wheels disposed at two lateral sides thereof for lifting said first scraping device above the ground surface or lowering said first scraping device onto the ground surface to perform scraping actions, said first scraping device further having a tail plate disposed at a rear end thereof;

a vertical displacement mechanism including two vertical sleeves disposed at spaced-apart outer sides of a surface of said tail plate of said first scraping device, and a vertical oil cylinder securely located between said two vertical sleeves and equidistant therefrom, said two vertical sleeves being respectively provided with vertical slide rods of equivalent lengths, each of said vertical slide rods having two ends respectively secured onto inner sides of an upper horizontal positioning seat and a lower horizontal positioning seat, said vertical oil cylinder being provided with a piston which has an outer end pivotally connected to the inner side of the horizontal positioning seat;

a horizontal displacement mechanism including a vertical plate for securement to said upper horizontal positioning seat and said lower horizontal positioning seat of said vertical displacement mechanism, said vertical plate being provided with two spaced-apart horizontal sleeves disposed at outer sides of a surface thereof, and a horizontal oil cylinder securely located between said two horizontal sleeves and equidistant therefrom, said horizontal sleeves being respectively provided with horizontal slide rods of equivalent lengths, each of said horizontal slide rods having two ends respectively secured onto inner sides of a left vertical positioning seat and a right vertical positioning seat, said horizontal oil cylinder being provided with a piston which has an outer end pivotally connected to the inner side of the right vertical positioning seat; and

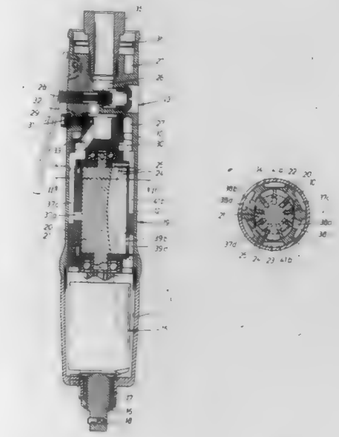
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5,626,198

PNEUMATIC TORQUE IMPULSE TOOL

Lars M. Peterson, Nacka, Sweden, assignor to Atlas Copco Tools, Nacka, Sweden

Filed Apr. 22, 1996, Ser. No. 635,757
Claims priority, application Sweden, Apr. 26, 1995, 9501535
Int. Cl.[6] B25B *7/02;23/14*
U.S. Cl. 173—93 **3 Claims**



1. A pneumatic torque impulse tool, comprising a housing (**10**) with an impulse chamber (**11**) at a forward end thereof, a motor chamber (**12**) having a cylindrical wall (**14**) and disposed rearwardly of said impulse chamber (**11**), a vane type rotation motor (**19**) disposed in said motor chamber (**12**), an air inlet passage (**26**), and an air outlet passage (**27**), both of said air inlet and outlet passages (**26**, **27**) communicating with a rear end of said motor (**19**), a hydraulic impulse generator (**15**) rotatively supported in said impulse chamber (**11**), said motor (**19**) including a cylinder (**20**) and a vane carrying rotor (**21**) drivingly connected to said impulse generator (**15**), said cylinder (**20**) having three or more radial air communication openings (**37***a*,*b*, **38***a*,*b*, **39***a*,*b*), at least one (**39***a*,*b*) of which permanently acts as an outlet opening means, wherein:

said cylinder (**20**) is formed with external grooves (**37***c*,*d*, **38***c*,*d*, **39***c*,*d*, **41***a*,*b*) extending from either ends of said cylinder (**20**) and which define together with said cylindrical wall (**14**) parts of said air inlet and outlet passages (**26**, **27**),

each one of said air communication openings (**37***a*,*b*, **38***a*,*b*, **39***a*,*b*) is separately located in one of said grooves (**37***c*,*d*, **38***c*,*d*, **39***c*,*d*),

said at least one air communication opening (**39***a*,*b*) permanently acting as an outlet opening means is located in one of said grooves (**39***c*,*d*) extending from the forward end of said cylinder (**20**) and communicating with said impulse chamber (**11**), whereas the other ones (**37***a*,*b*, **38***a*,*b*) of said air com-

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municating openings are located in those of said grooves (**37***c,d*, **38***c,d*) extending from the rear end of said cylinder (**20**), and

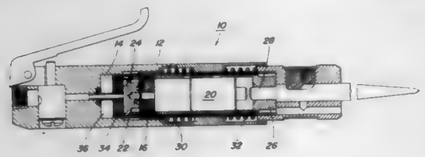
at least one (**41***a,b*) of said grooves extends over the entire length of said cylinder (**20**) without coinciding with any one of said air communication openings (**37***a,b*, **38***a,b*, **39***a,b*), thereby connecting said impulse chamber (**11**) to said air outlet passage (**27**).

5,626,199

PNEUMATIC IMPACT TOOL HAVING IMPROVED VIBRATION AND NOISE ATTENUATION

Edgar G. Henry, Kirtland; Frank W. Schossler, Willoughby Hills, and Donald K. Kuhl, Chesterland, all of Ohio, assignors to T.C. Service Company, Highland Heights, Ohio

Filed Jul. 5, 1995, Ser. No. 498,370
Int. Cl.[6] B25D *17/11*
U.S. Cl. 173—211 **14 Claims**



1. A pneumatic powered impact tool having improved vibration attenuation which comprises:

(a) a housing member having a central passageway with front and back ends,

(b) a closed end hollow sleeve member having front and back ends which is slidably engaged in the central passageway of said housing member and which includes a free piston member movably disposed therein with respect to both sleeve and housing members,

(c) a reciprocating impact member closing the front end of said sleeve member for cyclical engagement with said free piston member,

(d) a pneumatic valve mechanism closing the back end of said sleeve member for axially exerting pressurized fluid against opposite ends of said free piston member,

(e) the back end of the central passageway in said housing member forming a pneumatic vibration dampening chamber devoid of mechanical spring means and with a volume which is compressed by rearward movement of said sleeve member, and

(f) resilient seal means disposed at the back end of said sleeve member for cooperative association with said vibration dampening chamber.

5,626,200

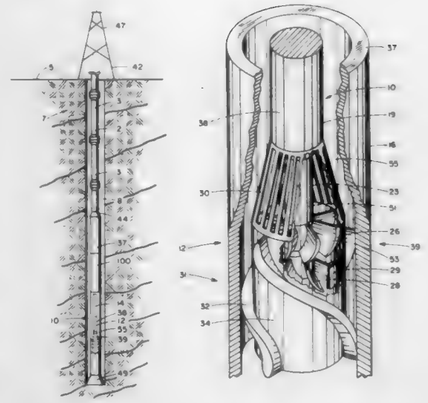
SCREEN AND BYPASS ARRANGEMENT FOR LWD TOOL TURBINE

Gregory N. Gilbert, Missouri City, and Martin L. Tomek, Houston, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 476,970
Int. Cl.[6] E21B *47/18*
U.S. Cl. 175—40 **8 Claims**

1. A logging-while-drilling tool for use in a wellbore having a hollow drill string positioned in the wellbore, wherein a well fluid is being circulated into the wellbore through the hollow drill string, the tool comprising:

(a) an elongated tool body adapted to be positioned within the hollow drill string and sized to form an annular fluid flow passage between the drilling string and the tool body for allowing passage of the drilling fluid;



(b) drilling string coupling attached to a top end of the tool body for coupling the tool to the drill string;

(c) measurement electronics attached to the tool body for gathering wellbore information;

(d) an alternator attached to the tool body for generating electrical power for the measurement electronics;

(e) a turbine attached to the tool body, and having blades adapted to be driven by the well fluid being circulated through the annular fluid flow passage; and

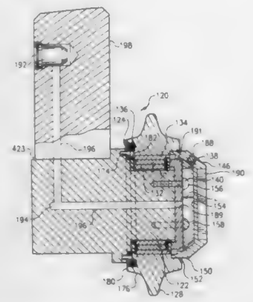
(f) a deflector positioned on the tool between the top end and the turbine, and adapted to cause a portion of the well fluid to bypass the turbine blades.

5,626,201

DISC CUTTER AND METHOD OF REPLACING DISC CUTTERS

James E. Friant, Seattle, Wash., and Levent Ozdemir, Golden, Colo., assignors to Excavation Engineering Associates, Inc., Seattle, Wash.

Filed Sep. 20, 1993, Ser. No. 125,011
Int. Cl.[6] E21B *10/12*; **E21D** *9/10*
U.S. Cl. 175—365 **95 Claims**



82. A kit for replacement of wear parts in a rolling cutter apparatus, said kit comprising:

(a) a cutter ring assembly, said cutter ring assembly further comprising

(i) an annular cutter ring having an interior annulus defining portion and an outer ring portion, said outer ring portion including a cutting edge having diameter OD and radius R_1

(ii) a bearing assembly, said bearing assembly adapted to substantially fit into said annulus of said cutter ring, and to

be entirely laterally removable from a single side of said cutter ring, said bearing assembly comprising

(A) a bearing, and

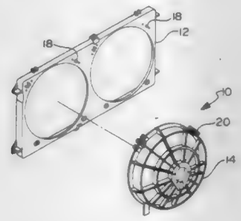
(B) a seal.

5,626,202

PUSH CLIP FASTENER WITH RETENTION TABS

Steven J. Barnes, Kettering, and Russell Bignell, II, Fairborn, both of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 474,344
Int. Cl.[6] B60K *11/04*
U.S. Cl. 180—68.1 **1 Claim**



1. A motor vehicle fan shroud comprising:

a first shroud portion engaging a radiator of the motor vehicle;

a second shroud portion engaging the first shroud portion;

a receiving member integral with one of the first shroud portion and the second shroud portion having an aperture and having a predetermined material thickness between a front surface and a back surface; and

a clip member integral with the other of the first shroud portion and the second shroud portion having a base surface, having a pair of substantially parallel tangs projecting outwardly from the base surface and each tang having an engaging barb and the tangs disposed in part within the aperture with barb engagement surfaces engaging the back surface, having a pair of cantilevered spring tabs each with a tab engaging surface engaging the front surface and adjacent the tangs and extending from the base surface substantially parallel thereto, the tab engaging surface defining a distance to the barb engagement surfaces in a unassembled condition less than the thickness of the receiving member,

wherein, when the clip member is pressed into the aperture in the receiving member, the tangs are bent as the barbs enter through the front surface, the engaging surfaces of the spring tabs initially engage the front surfaces of the receiving member before the barbs exit this aperture at the rear surface, the spring tabs are deflected after initial engagement as the barbs move through the aperture and develop a spring load between the first shroud portion and the second shroud portion, and the tangs snap back after the barbs exit the aperture at the rear surface to engage the rear surface, thereby positively retaining the receiving member and maintaining the spring load between the first shroud portion and the second shroud portion.

5,626,203

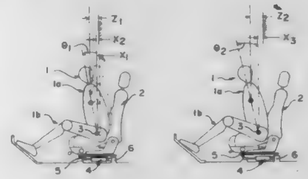
ACTIVE CONTROL OF A VEHICLE OCCUPANT'S BODY IN FRONTAL COLLISION

Mostafa S. Habib, Dept. of Mech. Eng., Univ. of Bahrain, P.O. Box 32038, Bahrain, Bahrain

Filed Nov. 1, 1995, Ser. No. 551,707
Int. Cl.[6] B60K *28/10*
U.S. Cl. 180—274 **8 Claims**

1. An active control for damping a vehicle occupant's body motion during a frontal collision comprising, a vehicle frame, a





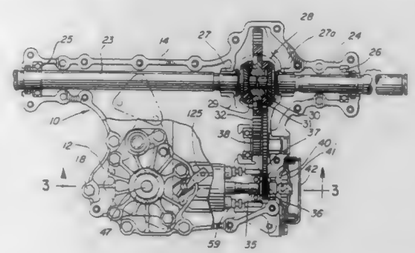
seat frame slidably mounted on said vehicle frame, said seat frame being slidable along a longitudinal axis relative to the vehicle, a seat mounted on said seat frame, said seat adapted to support an occupant, a fluid motor connected between the vehicle frame and the seat frame, an hydraulic circuit connected to said fluid motor, and control means for measuring the seat position relative to the longitudinal axis of the Vehicle and the angular position of an occupant's upper torso relative to the lower torso for controlling the flow of hydraulic fluid to said fluid motor, whereby the impact from a frontal collision is dampened by energizing the fluid motor, to thereby apply a force to the vehicle seat in a direction opposite from the point of impact to dampen the forward linear movement of the seat.

5,626,204

HYDROSTATIC TRANSAXLE

Alan W. Johnson, Ames, Iowa, assignor to Sauer Inc., Ames, Iowa

Continuation of Ser. No. 182,769, Jan. 14, 1994, Pat. No. 5,577,572, which is a continuation of Ser. No. 706,279, May 28, 1991, Pat. No. 5,505,279, which is a continuation of Ser. No. 482,656, Feb. 21, 1990, abandoned, which is a continuation of Ser. No. 319,164, Mar. 3, 1989, Pat. No. 4,903,545.
This application Jun. 5, 1996, Ser. No. 658,535
Int. Cl.[6] B60K *7/00*
U.S. Cl. 180—305 **1 Claim**



1. A hydrostatic transaxle having a housing with an interior cavity, an axle assembly in said housing including a differential assembly, the improvement comprising,

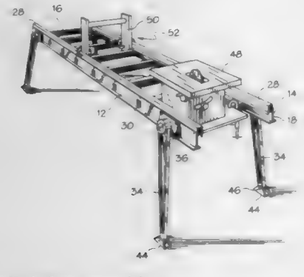
a hydrostatic transmission mounted within said cavity and including a generally L-shaped member completely housed within said cavity and having first and second hydrostatic unit mounting surfaces thereon disposed at right angles to each other,

at least a pair of fluid ports in each of said mounting surfaces, and internal passageways in said L-shaped member connecting at least one of said fluid ports on one of said mounting surfaces with at least one of said fluid ports on the other of said mounting surfaces,

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said L-shaped member comprising first and second legs integrally joined and extending at right angles to each other,
said first leg having first and second opposite surfaces with said first mounting surface being located on said first surface,
said second leg having a first surface extending at right angles away from the first surface of said first leg, and a second surface opposite to the first surface of said second leg with the other of said mounting surfaces being on said second surface of said second leg,
said L-shaped member having means for accommodating the mounting thereof within the interior cavity of said housing,
and means for operatively connecting said hydrostatic transmission to said differential assembly.

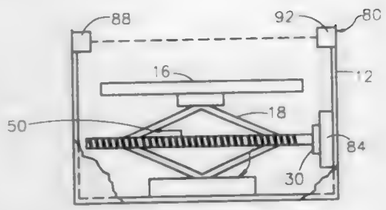
5,626,205
PORTABLE WORK PLATFORM
Richard C. Martin, c/o New Ventures Product Development and Marketing, Inc., 137 Barre St., Montpelier, Vt. 05602
Filed Nov. 18, 1994, Ser. No. 342,108
Int. Cl.° E04G *1/00*
U.S. Cl. 182—153 **19 Claims**



1. A work platform comprising:
a pair of substantially parallel rails:
a first crossbar positioned at a first end of said parallel rails and a second crossbar positioned at a second end of said parallel rail, said first and second crossbars extending perpendicular to said rail, for interconnecting said rails;
at least one additional crossbar intermediate said first and second crossbars for interconnecting said rails, said crossbars each have a rectangular cross-section and being shaped to accomodate a clamp, whereby a workpiece clamped thereto is held in a substantially upright position;
support means connected to said rails; and
means removably attached to said rails for protecting a workpiece supported thereon and for protecting said rails, said protecting means being disposable and replaccable, wherein said rails futher comprise channels shaped to recieve said disposable protecting means.

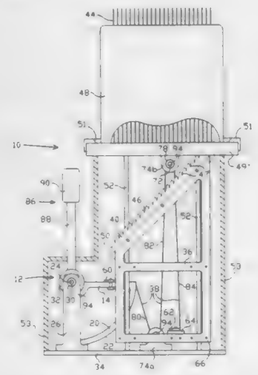
5,626,206
DEVICE FOR AND METHOD OF VERTICALLY ADJUSTING PARTS IN A BIN
Dennis R. Weber, 92 Elmridge Rd., and Matthew Z. Neal, 424 Clearview Rd., both of Mansfield, Ohio 44907
Filed Mar. 9, 1995, Ser. No. 401,402
Int. Cl.° B66B *9/16*
U.S. Cl. 187—244 **1 Claim**

1. An ergonomic parts bin, comprising:.
a container;
a platform disposed within said container constructed so as to hold parts thereon;
lifting means for lifting, where said lifting means is disposed between said base and said platform, said lifting means for lifting further constructed so as to vertically adjust said platform; and,



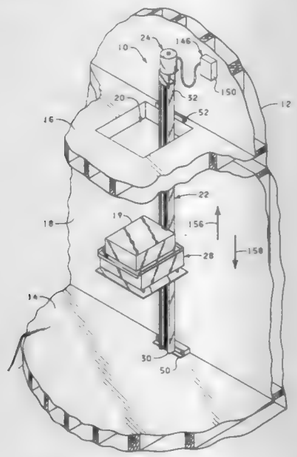
means for keeping parts in said container, said means for keeping parts constructed so as to be in communication with a leveling means, said leveling means constructed so as to maintain said means for keeping parts at a constant level as parts in the container are removed, where said leveling means is in communication with said lifting means and said leveling means comprises:
a) a light-emitting diode, positioned on an inside top portion of one of said walls of said container such that light is emitted toward one of said walls positioned directly across from said wall having said light-emitting diode positioned thereon;
b) a photo-detector, positioned on one of said walls, said photo-detector being positioned so as to be directly across from said light-emitting diode, said photo-detector being further positioned so as to be in a path of the emitted light; and,
c) a processor in communication with said light-emitting diode, said photo-detector, and said lifting means, said processor constructed so as to cause said lifting means to vertically adjust said platform whenever said photo-detector detects light from said light-emitting diode, the light from said light-emitting diode being interrupted whenever parts in said container are vertically adjusted to a proper level.

5,626,207
MANUAL WAFER LIFT
Ernest C. Nichols, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Oct. 23, 1995, Ser. No. 546,724
Int. Cl.° B66B *11/08*
U.S. Cl. 187—263 **19 Claims**



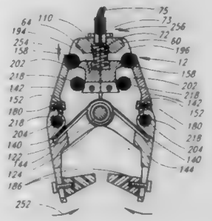
6. A manual wafer lift for lifting a series of vertically oriented wafers arranged parallel to one another, which comprises:
a. a bell crank having first and second crank arms extending radially from a pivotal axis of the bell crank and an arcuate member extending circumferentially between and joining the crank arms, whereby the arcuate member defines a circumferential perimeter of the bell crank;
b. a lift plate positioned above the bell crank having a contact surface for engaging an edge of each of the wafers, the contact surface extending upward at a predetermined angle so that, when the lift plate is raised and the contact surface engages the edge of the wafers, each wafer is lifted incrementally higher than the preceding wafer; and
c. a belt having one end attached to the perimeter of the bell crank and the other end operatively connected to the lift plate for vertical movement therewith, the belt running under a first roller and over a second roller, the belt having a first segment between the bell crank and the first roller, a second segment between the first and second rollers, and a third segment between the second roller and the lift plate, the rollers being configured so that rotation of the bell crank about its pivotal axis pulls the first segment of the belt upward, the second segment downward and the third segment upward to raise the lift plate to engage and lift the wafers.

5,626,208
LIFT ASSEMBLY
Randy L. Sprague, 4088 Washington, Piedmont, Okla. 73078, and Lyndall G. Bodkin, Rte. 1, Box 253, Cashion, Okla. 73016
Filed Jul. 13, 1995, Ser. No. 501,916
Int. Cl.° B66B *9/02*
U.S. Cl. 187—267 **12 Claims**



1. A lift assembly for moving an object between a first vertical position and a second vertical position, the lift assembly comprising:
a guide rail having a first end adapted to be positioned near the first vertical position and a second end adapted to be positioned near the second vertical position, the guide rail having a bore extending from the first end to the second end thereof, a traveler slot extending from the first end to the second end thereof, and a pair of wheel guides extending from the first end to the second end thereof;
traveler means slidingly engaged with the guide rail for selective movement along the guide rail between the first vertical position and the second vertical position, the traveler means comprising:
a body member slidingly disposed in the guide rail;
a first wheel connected to the body member so as to be rollingly engaged with the guide rail within one of the wheel guides;
a second wheel connected to the body member so as to be rollingly engaged with the guide rail within the other wheel guide of the guide rail;
a guide block connected to the body member of the traveler means, the guide block having a traveler guide portion slidingly disposed in the traveler slot of the guide rail; and
a gear block extending from the guide block and into the bore of the guide rail, the guide block having a threaded edge;
carrier means connected to the traveler means for carrying the object as the traveler means moves between the first vertical position and the second vertical position; and
drive means matingly engaged with the traveler means for selectively moving the traveler means between the first vertical position and the second vertical position, the drive means comprising:
a lift screw rotatably disposed in the bore of the guide rail, the lift screw matingly engaged with the threaded edge of the gear block to move the traveler means in an upward direction when the lift screw is rotated in a first direction and in a downward direction when the lift screw is rotated in a second direction;
a motor operably connected to the lift screw such that the lift screw is rotatable in the first direction and the second direction;
a power source; and
a switch interposed between the power source and the motor, the switch being positionable in a first closed position such that electrical continuity is established between the power source and the motor to rotate the lift screw in the first direction, the switch being positionable in a second closed position such that electrical continuity is established between the power source and the motor to rotate the lift screw in the second direction, and the switch being positionable in an open position such that electrical continuity is interrupted between the power source and the motor.

5,626,209
CENTER PULL BICYCLE BRAKE ASSEMBLY
Barry J. Viola, 5 Valley Rd., Arkansas City, Kans. 67005
Filed Dec. 26, 1995, Ser. No. 579,852
Int. Cl.° B62L *3/00*
U.S. Cl. 188—24.14 **18 Claims**



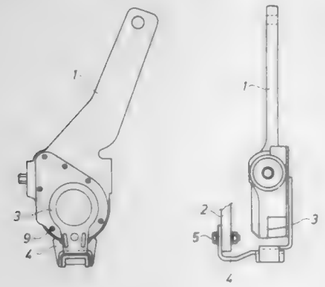
1. A center pull bicycle brake assembly operable to apply a braking force to a tire member on a bicycle assembly, comprising:
a) a cable connector and cam actuator assembly includes a cam actuator assembly connected to an actuator member;
b) said actuator member selectively movable to move said cam actuator assembly in a braking operation;
c) a main support member connected to a portion of a bicycle assembly;
d) a brake contact caliper assembly which is pivotally connected to a caliper support housing which is pivotally connected to said main support member; and
e) said cam actuator assembly moved during the braking operation and operable to contact and pivotally move said brake contact caliper assembly and said caliper support housing and cause a dual pivoting brake action of said brake contact caliper assembly.

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5,626,210
CONTROL ARM ARRANGEMENT FOR A BRAKE LEVER

Ake Nelander, Bunkeflostrand, Sweden, assignor to Haldex AB, Sweden

PCT No. PCT/SE93/00081, § 371 Date Aug. 22, 1995, § 102(e) Date Aug. 22, 1995, PCT Pub. No. WO93/16429, PCT Pub. Date Aug. 19, 1993
PCT Filed Mar. 2, 1993, Ser. No. 256,307
Int. Cl.[6] G05G *23/00;* **F16D** *65/14*
U.S. Cl. 188—79.55 **1 Claim**



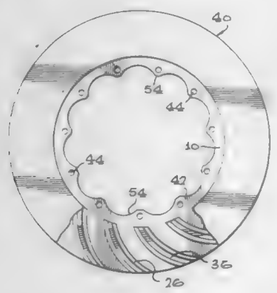
1. In a control arm arrangement for a road vehicle brake lever having a control arm pivotably connected to the brake lever and an anchor bracket connected to an underframe part of a vehicle to establish a fixed reference point on the vehicle, wherein the improvement comprises:

a control arm configuration with two facing ends of a first flange having an U-shaped cross section and two facing ends of an anchor bracket second flange having an U-shaped cross section for fitting closely with the first flange facing ends to produce a contact area between the first and second flanges, thereby to withstand vibrations and forces between the vehicle and the brake lever with minimal wear.

5,626,211
MULTI-LAYER DISK BRAKE ROTOR

Ytzhak Gewelber, 15510 Olive Branch, La Mirada, Calif. 90638, and Peter J. Kinney, 19512 Pompano La. #102, Huntington Beach, Calif. 92648

Filed Oct. 3, 1995, Ser. No. 538,598
Int. Cl.[6] F16D *65/12*
U.S. Cl. 188—218 **24 Claims**



1. A process for manufacturing a disk used in a disk brake system comprising the steps of:

a) forming a plurality of solid metal plates with a center hole;

b) forming a plurality of plates having a center hole and cut out sections defining generally radially directed passages;

c) stacking said plates with said cut out sections aligned and secured in position and with at least one of said solid plates on each end of said stack;

d) brazing said plates together, to form a unitary assembly;

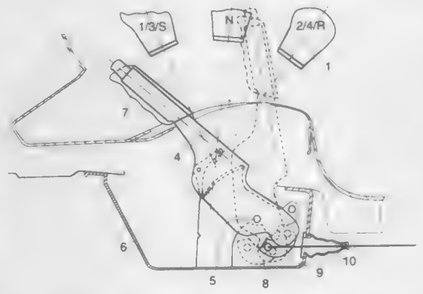
e) trimming the inside and outside edge surfaces of said brazed assembly to open said passages, leaving an inwardly extending flange on at least one of said solid metal plates; and

f) drilling mounting holes in said flange.

5,626,212
MOTOR VEHICLE WITH A GEARSHIFT LEVER AND A HAND BRAKE LEVER IN THE CENTER OF THE VEHICLE

Metin Ersoy, Walluf, Germany, assignor to Lemförder Metallwaren AG, Lemförde, Germany

Filed May 19, 1995, Ser. No. 446,013
Claims priority, application Germany, May 21, 1994, 44 17 987.1
Int. Cl.[6] B60K *41/26;20/04*
U.S. Cl. 192—4 A **5 Claims**



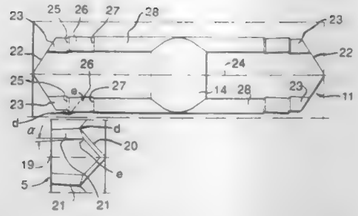
1. A gearshift lever and hand brake lever for a motor vehicle wherein the gearshift lever and hand brake lever are arranged next to each other, comprising: a short-arm hand brake lever, mounted pivotably around a transverse axis; a progressively acting leverage-increasing mechanism connected to said short-arm hand brake lever; a gearshift lever, said short-arm hand brake lever being arranged laterally next to said gearshift lever; a common module including said short-arm hand brake lever arranged laterally next to said gearshift lever, premounted on a plate of an underbody whereby said underbody is subsequently connected to a body of the motor vehicle and wherein said common module includes a common housing with said short-arm hand brake lever and said gearshift lever mounted therein, said common housing being premounted with said short-arm hand brake lever and said gearshift lever on said underbody, whereby said body is subsequently connected to said underbody.

5,626,213
ENGAGING DEVICE IN A VEHICLE GEAR BOX

Grzegorz Janiszewski, Angered, Sweden, assignor to AB Volvo, Gothenburg, Sweden

PCT No. PCT/SE94/00231, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/21935, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 16, 1994, Ser. No. 522,334
Claims priority, application Sweden, Mar. 19, 1993, 9300913
Int. Cl.[6] F16D *23/02;11/06*
U.S. Cl. 192—53.4 **4 Claims**

1. In an engaging device for a gear freely rotatably mounted on a shaft in a transmission, for locking the gear to the shaft or releasing the gear from the shaft, comprising an engaging sleeve mounted non-rotatable but axially displaceable relative to the shaft,

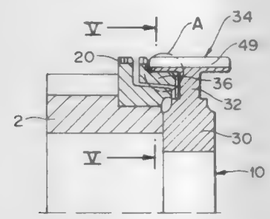


and provided with engaging teeth, and a tooth rim adapted to be joined to the gear and provided with corresponding engaging teeth, said engaging teeth of the sleeve having pointed end portions and opposite flanks connected thereto, each of said flanks being provided with a first step spaced from said end portion, so as to form first surface portions inclined from the pointed end portion towards the first step, on the engaging teeth of the engaging sleeve and of the gear, the improvement wherein the tooth flanks of the engaging sleeve are provided with a second step spaced from said first step so that second surface portions are formed which are inclined from the first step towards the second step and which have a smaller angle of inclination relative to a plane parallel to adjacent flank surfaces inside the second step than said first surface portions.

5,626,214
ARRANGEMENT FOR PREVENTING RATTLING IN A SYNCHRONIZED GEARBOX

Birger Schlaich, Stockholm; Thord Karlsson, Gnesta, and Tord Andersson, Södertälje, all of Sweden, assignors to Saab Automobile Aktiebolag, Sweden

Filed Dec. 12, 1995, Ser. No. 571,256
Claims priority, application Sweden, Dec. 21, 1994, 9404489-8
Int. Cl.[6] F16D *23/06*
U.S. Cl. 192—53.34 **23 Claims**



1. An arrangement for preventing the rattling of a synchronizing ring for an unengaged gearwheel in a synchronized gearbox, comprising:

the synchronized gearbox including a rotatable shaft, a hub fixed for rotation with the shaft, a gearwheel located at one axial side of the hub and mounted for rotation around and with respect to the shaft;

a synchronizing sleeve around the hub to rotate with the hub and also being axially movable with respect to the hub and along the shaft toward the gearwheel, the synchronizing sleeve is for transmitting torque from the shaft to the gearwheel toward which the sleeve is moved;

a synchronizing ring around the shaft and between the hub and the gearwheel, the synchronizing sleeve being movable into engagement with the synchronizing ring for pushing the synchronizing ring in the direction toward the gearwheel toward which the sleeve is moved;

a selectively engageable friction connection between the gearwheel and the synchronizing ring such that the synchronizing sleeve pressing on the synchronizing ring makes the frictional connection between the synchronizing ring and the gearwheel for causing rotation of the gearwheel;

the synchronizing ring including blocking means for blocking the movement of the synchronizing sleeve into engagement with the gearwheel toward which the synchronizing sleeve is being moved until the rotation speeds of the synchronizing ring and the gearwheel have been synchronized with the rotation speed of the synchronizing sleeve and the hub, and the blocking means then permitting the synchronizing sleeve to be moved into driving engagement with the gearwheel toward which the sleeve is being moved for driving the gearwheel at the rotation speed of the synchronizing sleeve;

the synchronizing hub including a rim with a first peripheral exterior engaged by the synchronizing sleeve, the hub including a peripheral interior surface which defines a space;

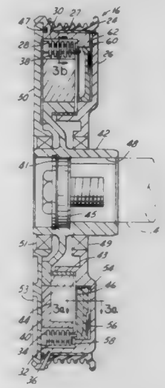
the synchronizing ring including a portion which extends into the space defined inside the interior surface of the rim of the synchronizing hub, and the portion has a second exterior surface, the second exterior surface and the interior surface of the hub being respectively of such diameters to define an arcuate space between the second exterior surface and the interior surface of the rim of the synchronizing hub;

radially acting spring clamping elements inserted with prestress in the respective arcuate space between the second exterior surface of the synchronizing ring and the interior surface of the rim of the hub, the clamping elements being shaped, sized and prestressed for holding the synchronizing ring in a rotational generally centered prestressed position relative to the rim portion of the synchronizing hub.

5,626,215
SPEED LIMITING ACCESSORY DRIVE

Alvin H. Berger, Brownstown; Roy E. Diehl, Northville, and Anthony Verduce, Riverview, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1995, Ser. No. 578,112
Int. Cl.[6] F16D *35/00;43/284*
U.S. Cl. 192—58.42 **15 Claims**



1. A speed limiting accessory drive, adapted to be rotationally driven by a crankshaft of an engine and drive engine accessories, which limits the maximum speed at which the accessories are driven, the speed limiting accessory drive comprising:

a hub member adapted to be rotationally fixed to the crankshaft;

a housing mounted about and rotatable relative to the hub, the housing including a cavity;

a pulley member mounted on and rotationally fixed relative to the housing;

a wet clutch assembly, mounted radially outward within the housing cavity, including a plurality of friction discs and a plurality of separator plates interleaved with the friction discs,

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with the friction discs being rotationally fixed relative to the hub and the separator plates being rotationally fixed relative to the housing;

a front cover mounted to the housing for sealing the cavity in the housing;

biasing means, located in the cavity and rotationally fixed relative to the housing, for exerting a first force on the clutch assembly to press the separator plates into contact with the friction discs;

fluid, filling the cavity in the housing, whereby the pulley member will be driven at crankshaft speed for low crankshaft rotational speeds, and the fluid will exert a second force on the biasing means opposite the first force to allow clutch slip at a maximum pulley rotational speed for high crankshaft rotational speeds; and

temperature compensating means for creating a third force on the biasing means in the direction of the first force as the temperature of the biasing means rises.

5,626,216

TOOL HOLDER, IN PARTICULAR FOR ROBOT WELDING OR CUTTING TORCHES

Hermann Sperling, Am Schwarzfelder Weg 24, D-55296 Bau-Bischhofsheim; Jörg Schwarz, Kleinfeldchen 4, D-35418 Alten-Buseck, and Jörg Manche, Herborner - Strasse 43, D-35614 Asslar, all of Germany

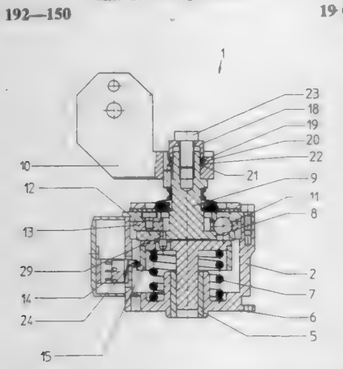
PCT No. PCT/EP94/03053, § 371 Date Aug. 3, 1995, § 102(e) Date Aug. 3, 1995, PCT Pub. No. WO95/07802, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 13, 1994, Ser. No. 436,314

Claims priority, application Germany, Sep. 13, 1993, 43 30 877.5

Int. Cl.[6] B25J *19/06*

U.S. Cl. 192—150 **19 Claims**



1. A tool holder for robotic cutting or welding torches, comprising:

a housing having a facing part thereof;

a stop plate at least partially disposed within said housing and having a home position in which said stop plate is disposed proximate said housing facing part;

a tool connection coupled to said stop plate so that movement of said tool connection causes movement of said stop plate;

a piston element axially movably mounted in said housing, said piston element biased toward said stop plate, said piston element disposed to be contacted by said stop plate and selectively slid axially in response to movement of either of said tool connection and said stop plate;

a detector sensor device including a trigger, said trigger disposed on said housing to be triggered by axial movement of said piston element; and

a plurality of positioning elements mounted on at least one of said stop plate and said housing facing part, said positioning elements being positioned in recesses in at least one of said stop plate and said housing facing part, three of said positioning elements being located in recesses of a first depth and at least one additional positioning element being located in a recess of greater depth than said first depth so that in said home position only three of said positioning elements contact and position said stop plate relative to said housing facing part and form three home positioning elements, at least one additional positioning element in addition to said home positioning elements being adapted to position said stop plate in response to either of said tool connection and said stop plate being tilted.

5,626,217

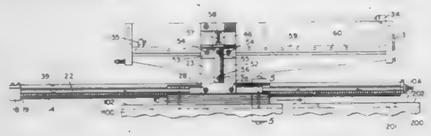
STACK PUSHER

Robert J. Watkinson, Long Beach, and W. Vernon Smith, Tustin, both of Calif., assignors to Excellon Automation Co., Torrance, Calif.

Filed May 18, 1995, Ser. No. 443,722

Int. Cl.[6] B65B *47/00*

U.S. Cl. 198—468.2 **20 Claims**



13. An apparatus for moving objects comprising,

support means,

a plurality of elements mounted on said support means so that said elements are individually capable of movement normal to said support means,

stop means mounted on said support means to retain said plurality of elements therebetween, and

transport means connected to said support means to selectively move said support means,

said transport means includes a pistonless cylinder.

5,626,218

BELT UNLOADER PROVIDED WITH A SCREW FEEDER SYSTEM

Tadayoshi Kamiwaki, Ehime, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 470,714

Claims priority, application Japan, Jun. 8, 1994, 6-159072; Oct. 31, 1994, 6-288661

Int. Cl.[6] B65G *65/16*

U.S. Cl. 198—518 **6 Claims**

1. A belt unloader for carrying bulk cargo, said belt unloader comprising a movable boom and a vertical carrier connected to said boom such that said carrier can swing, wherein said vertical carrier comprises:

a body frame suspended from said boom;

a supporting frame pivotally mounted to said body frame;

a driving unit arranged between said supporting frame and said body frame for tilting said supporting frame;

a screw feeder system supported by said supporting frame; and

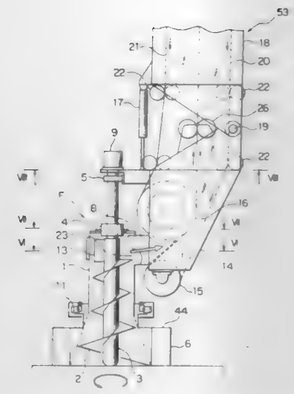
a conveyor, including two belts extending along said body frame and said supporting frame, for vertically carrying bulk cargo from a bulk cargo loading orifice of said screw feeder system;

said screw feeder system further comprising:

a rotatable screw shaft extending in a vertical direction and having an upper part supported through a plurality of bearings;

a bulk cargo releasing plate disposed on said screw shaft below said plurality of bearings, said bulk cargo loading orifice being formed at a side of said releasing plate;

a screw propeller disposed on said screw shaft below said releasing plate; and



an external cylinder having an open lower end and surrounding said releasing plate and said screw propeller.

5,626,219

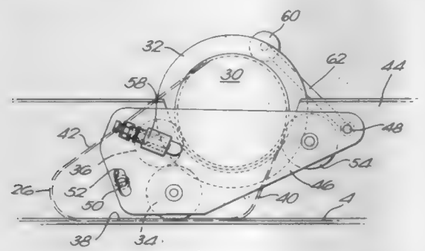
APPARATUS AND METHOD FOR STABILISING MATERIAL TRANSPORTED ON CONVEYOR BELTS

Benedict M. M. Deefholts, London, and Robert J. Harris, Wickford, both of England, assignors to Sortex Limited, London, England

Filed Nov. 8, 1994, Ser. No. 335,911

Int. Cl.[6] B65G *15/14*

U.S. Cl. 198—626.5 **24 Claims**



1. A stabiliser unit for stabilizing material on a moving conveyor, said conveyor having opposed material contacting and non-contacting surfaces; comprising a framework mountable over the conveyor and having a drive pulley drivingly engageable with the material contacting surface; a drum rotatably supported in the framework and carrying a stabiliser belt; means coupling the drive pulley to the drum to rotate the drum with its peripheral velocity substantially equal to that of the drive pulley, the stabiliser belt following a path with a first section capable of overlaying the conveyor, a second section in engagement with a segment of the drum surface, and third and fourth sections extending between the drum surface and the first section, whereby movement of the conveyor rotates the drive pulley and thereby the drum to advance the stabiliser belt around its path at a velocity substantially equal to the velocity of the conveyor and stabilise material held between the stabiliser belt and the conveyor along the first section of the path.

5,626,220

BUCKET CONVEYOR

Otto E. Rieger, Aalen-Unterkochen; Hans H. Dalferth, Aalen-Wasseralfingen; Zvonimir Bogdan, Aalen-Abstgmünd, and Hartwig Zenker, Aalen-Ebnat, all of Germany, assignors to RUD Kettenfabrik Rieger & Dietz GmbH u. Co., Aalen-Unterkochen, Germany

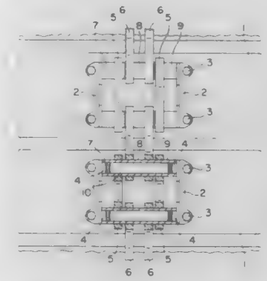
PCT No. PCT/DE93/00927, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO94/07778, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 29, 1993, Ser. No. 406,962

Claims priority, application Germany, Sep. 30, 1992, 42 33 552.3

Int. Cl.[6] B65G *17/36*

U.S. Cl. 198—712 **20 Claims**



1. A bucket conveyor, in which the buckets are fastened by connector webs to a plate link chain exhibiting outer and inner link plates interconnected by chain pins and in which, in transverse bores of the inner link plates, there are pressed bearing bushes for the chain pins, wherein also the outer link plates (5; 16) are equipped with pressed-in bearing bushes (7, 9; 13, 14) and are connected by the latter to the connector webs (2; 11).

5,626,221

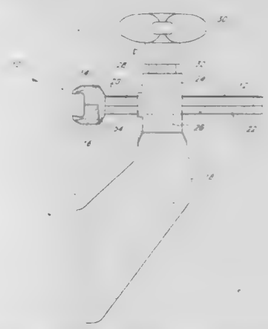
TAPERED CLAMP SUPPORT ROD

Stuart J. Ledingham, Coto de Caza, Calif., assignor to Valu Engineering, Inc., Irvine, Calif.

Filed Oct. 6, 1995, Ser. No. 539,988

Int. Cl.[6] B65G *21/20*

U.S. Cl. 198—836.3 **20 Claims**



1. A rail guide assembly for gripping and supporting a guide rail, comprising:

an elongate support rod, said support rod having a proximal end, a tapered distal end, and a plurality of ribs extending laterally to the longitudinal axis of said rod, wherein said tapering commences at about the most distal rib; and

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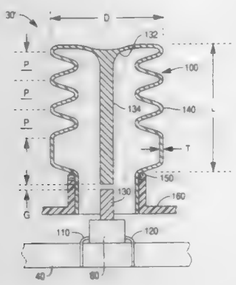
a guide rail clamp attached to said proximal end of said support rod.

5,626,222

FORCE CONTROLLABLE SHIELDED MECHANICAL SWITCH ACTUATORS

Rafael E. Aguilera, 126 Greenapple Way, Simpsonville, S.C. 29681.

Filed Oct. 6, 1995, Ser. No. 540,230
Int. Cl.° H01H *9/02*
U.S. Cl. 200—305 **21 Claims**



1. A switch, comprising:

a mechanical actuator responsive to actuation displacement force causing said mechanical actuator to enter a desired switch state; and

a flexible-walled closed housing, surrounding said mechanical actuator, that is fabricated from a metal and includes first and second pleated regions having respective first and second housing wall thicknesses causing a transfer function of actuator force applied to said switch versus actuator travel to be substantially linear in a first region with a first gain and to be substantially linear in a second region with a second, different, gain.

5,626,223

CAM-ASSISTED SWITCH

James S. Lee, Niles, Ohio, assignor to Packard Hughes Interconnect Company, Irvine, Calif.

Filed Jul. 1, 1996, Ser. No. 673,585
Int. Cl.° H01H *3/02*
U.S. Cl. 200—529 **3 Claims**

1. A cam-assisted switch comprising:

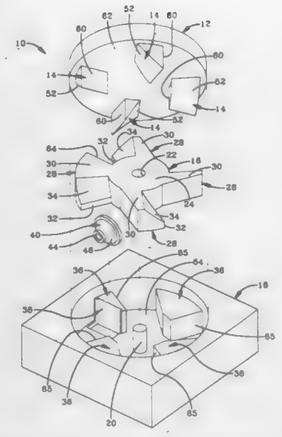
a base having an electric circuit thereon, said circuit having spaced apart electrical contacts;

a cam having a body portion and at least three outwardly extending fingers, said cam overlying said base and constructed and arranged for rotational movement on said base; each of said cam fingers having a top surface and opposed downwardly extending side surfaces, and a sloped surface extending from the top surface downward towards the base, said sloped surface on each of said cam fingers being identically constructed;

a keycap having a contact point associated with each of said cam fingers constructed and arranged for engaging said sloped surface on said contact fingers;

said base having a stop associated with each cam finger for limiting the rotational movement of said cam in one direction;

a dome support surface connected to said base, and a nonmetallic, flexible, dome secured to said dome support and constructed and arranged to engage one of said cam fingers and biasing said finger in a first position against said stop and wherein said keycap is in a first position;



whereby said keycap is depressible so that each of said contact points moves downwardly along said sloped surface on said cam finger causing said cam to rotate in a first direction wherein said cam finger is in a second position displaced from said stop and said flexible dome is compressed, and upon release of said keycap said resilient dome biases said cam finger moving said finger back to said first position against said stop causing said contact points to move upwardly along said sloped surface and causing said keycap to return to said first position;

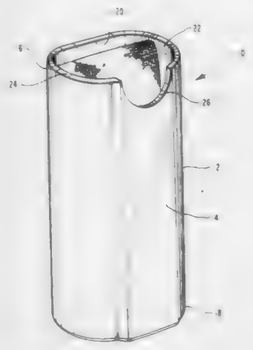
one of said keycap, cam, or dome having an electrical contact associated therewith for engaging said spaced apart electrical contacts and for closing said electrical circuit upon movement of said cam finger to said second position.

5,626,224

EYEGLASS CONTAINER WITH COMPRESSING MEANS

Stewart F. Clark, and K. Wade Karren, both of Salt Lake City, Utah, assignors to Glassafe, Inc., Salt Lake City, Utah

Filed Dec. 4, 1995, Ser. No. 566,927
Int. Cl.° A45C *11/04*
U.S. Cl. 206—5 **27 Claims**



1. A case for holding eyeglasses comprising:

(a) a rigid unitary tubular container having:

(i) a continuously open end;

(ii) a closed end; and

(iii) an interior surface extending between the open end and the closed end, the interior surface defining a holding chamber for receiving the eyeglasses; and

(b) means positioned within the holding chamber for compressing the eyeglasses received within the holding chamber against said interior surface to snugly hold the eyeglasses within the holding chamber, the compressing means permitting convenient insertion and removal of the eyeglasses through the continuously open end.

27. A case for holding eyeglasses comprising:

(a) a rigid tubular container having a first end and an opposing second end, the container further comprising:

(i) an interior surface defining a holding chamber having a maximum inner diameter, the interior surface being defined in part by a first wall and an opposing second wall;

(ii) an annular lip formed at the first end and defining an opening to the holding chamber; and

(iii) a base member positioned at the second end;

(b) a retaining insert positioned within the holding chamber and comprising:

(i) a resiliently compressible pad having opposing top and bottom ends, opposing first and second sides, and a maximum width; and

(ii) a thin soft covering folded over the top end of the pad, the covering comprising:

(A) a wide portion secured to at least a portion of the second side of the pad and having a width greater than the maximum width of the pad; and

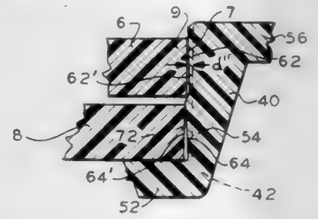
(B) a narrow portion secured to at least a portion of the first side of the pad and also being secured to the first wall on the interior surface so that a receiving slot is formed between the wide portion of the cover and the second wall of the interior surface.

5,626,225

MULTIPLE COMPACT DISC SUPPORTING TRAY

Michael P. Joyce, Jr., Kinnelon, N.J., assignor to Joyce Development Corporation, Rockaway, N.J.

Filed Oct. 23, 1995, Ser. No. 546,918
Int. Cl.° B65D *85/57*
U.S. Cl. 206—308.1 **30 Claims**



1. A tray assembly including a plurality of compact disc recording medias comprising:

a plurality of said compact disc recording medias;

a plate having opposing sides; and

compact disc recording media securing means upstanding from one of said sides and releaseably securing said plurality of said compact disc recording medias in overlying relation to each other and in overlying relation to said one side.

24. A tray for securing a plurality of disc recording medias thereto comprising:

a plate having opposing sides; and

disc securing means upstanding from one at least one of said sides for releaseably securing a plurality of said discs in overlying relation to each other and to said at least one side;

said disc securing means comprising an upstanding shoulder on each of a plurality of inwardly extending fingers, each shoulder having an outer disc receiving surface and a pair of spaced ribs on each outer surface, the ribs on said shoulders collectively forming first and second disc receiving regions on said shoulders.

25. A tray for securing a plurality of compact disc recording medias thereto comprising:

a plate having opposing sides and an opening; and

disc recording media securing means upstanding from one of said sides for releaseably securing a plurality of said disc recording medias in overlying relation to each other and in overlying relation to said one side;

said disc recording media securing means comprising a plurality of first fingers arranged in an annular array, said first fingers each having an upstanding first shoulder, said first shoulder for receiving at least one of said plurality of disc recording medias;

said fingers extending inwardly in said opening, said fingers each having a finger tip extending from said first shoulder, said first shoulders for engaging said at least one of said plurality of received disc recording medias;

said tray including further fingers extending inwardly into said opening in said annular array, each further finger including an upstanding second shoulder, said further fingers each having a finger tip extending inwardly from its corresponding second shoulder, and rib means interconnecting and stiffening said further fingers;

the first shoulders in the annular array defining a first disc recording media receiving and engaging diametrical dimension and the second shoulders defining a second diametrical dimension smaller than that of the first diametrical dimension.

27. A tray for securing a plurality of compact disc recording medias thereto comprising:

a plate having opposing sides; and

disc recording media securing means upstanding from one of at least one of said sides for releaseably securing a plurality of said disc securing means in overlying relation to each other and in overlying relation to said at least one side;

said disc recording media securing means comprising a plurality of first fingers arranged in an annular array, said first fingers each having an upstanding first shoulder;

said first shoulder being dimensioned to receive said plurality of disc recording medias, said first shoulder on at least a portion of said first fingers including first and second spaced projections defining corresponding first and second disc recording media receiving regions.

28. A tray for securing a plurality of compact disc recording medias thereto comprising:

a plate having opposing sides; and

disc recording media securing means upstanding from one of at least one of said sides for releaseably securing a plurality of said disc recording medias in overlying relation to each other and in overlying relation to said at least one side;

said disc recording media securing means comprising an annular array of disc securing fingers extending radially inwardly, each finger including an upstanding first shoulder, said first shoulders including projection means for receiving and securing at least two disc recording medias in said overlying relation;

said projection means comprising first and second arrays of projections on each said fingers, the first array for receiving a first disc recording media and the second array for receiving a second disc recording media.

5,626,226

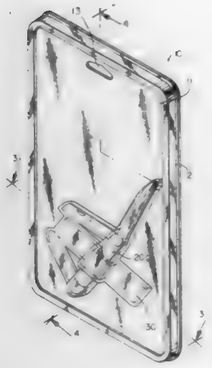
TAMPER-RESISTANT, POINT-OF-SALE, ARTICLE DISPLAY PACKAGE

Walter A. Gardiner, Waccabuc; David A. Swinden, Ellenville, both of N.Y., and Joseph A. Hufnagel, Bethel, Conn., assignors to Imperial Schrade Corp., Ellenville, N.Y.

Filed Aug. 9, 1995, Ser. No. 512,802
Int. Cl.° A45C *11/26*
U.S. Cl. 206—349 **5 Claims**

1. An improved, point-of-sale, tamper-resistant package for displaying an article to be protected from tampering, the package including a front panel constituted of a cuttable, transparent material having a peripheral portion, and a rear panel secured to the

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peripheral portion of the front panel, said panels containing the article therebetween, the improved package comprising:

a central region on the front panel interiorly of the peripheral portion, said central region having article-confining wall portions in close, adjacent confronting relationship with top and side surfaces of the article to hold the article in position;

a holding element between the panels and having element portions extending in close, adjacent confronting relationship across the top and side surfaces of the article;

said central region also having element-confining wall portions in close, adjacent confronting relationship with the holding element to hold the holding element in position; and

said holding element overlying the article underneath the central region and being constituted of a material more resistant to cutting than said front panel to resist cutting through the holding element to reach the article and to block removal of the article from the package.

5,626,227

CASE FOR INSTRUMENT AND APPARATUSES FOR DENTISTRY

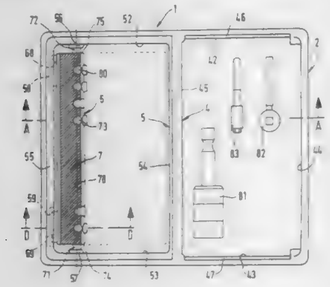
Thomas Wagner, Reiden; Roland Scacchi, Oberdorf; Pascal Rerat, Bubendorf, and Paul Keller, Witterswil, all of Switzerland, assignors to Institut Straumann AG, Waldenburg, Switzerland

Filed May 17, 1995, Ser. No. 442,933

Claims priority, application Switzerland, Jun. 6, 1994, 1767194

Int. Cl.[6] B65D *83/10*

U.S. Cl. 206—369 **9 Claims**



1. A case for dental instruments and apparatus, comprising:

a container;

a lid for closing the container,

at least one tray located in the container;

an insert located in the container alongside with the tray and including an instrument-receiving unit comprising a holder and a carrier, the instrument-receiving unit being pivotable between a folded down horizontal position in which the instrument-receiving unit can be removed from the insert, and an opened, vertical position;

swivel axles means for supporting the instrument-receiving unit for pivotal movement between the folded down and opened positions, the swivel axle means comprising swivel journals provided on opposite sides of the instrument-receiving unit and swivel journal guides arranged in opposite end walls of the insert for receiving the swivel journals; and

means for releasably holding the instrument-receiving unit in the opened position, the holding means comprising resilient beads provided on the instrument-receiving unit and bulge means provided in a respective side wall of the insert for engaging the resilient beads,

wherein the carrier has a plurality of insert openings for receiving dental instruments and the holder has a plurality of stop arms for immovably retaining the instruments in respective insert openings.

5,626,228

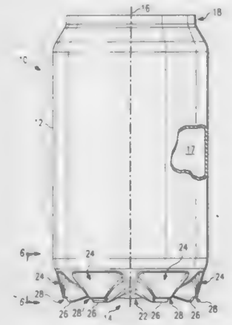
THIN-WALLED CAN HAVING PLURALITY OF SUPPORTING FEET WITH TWO SUPPORT FEATURES

David J. Wiemann, O'Fallon, and David H. Henkelmann, Imperial, both of Mo., assignors to Anheuser-Busch Incorporated, St. Louis, Mo.

Filed May 1, 1996, Ser. No. 640,461

Int. Cl.[6] B65D *8/00*

U.S. Cl. 206—511 **21 Claims**



1. A metal container, comprising:

a generally cylindrical side wall and a bottom wall formed integrally with said side wall from a single sheet of metal;

said side wall having a longitudinal axis and extending substantially axially upward from said bottom wall to define an interior cavity and an open end of the container adapted to be closed with a lid seamed onto said open end;

said bottom wall including a externally convex dome portion and a plurality of discrete supporting feet formed therein, said feet being circumferentially spaced apart from each other and projecting generally downward beyond said dome portion in the absence of internal pressure in the interior cavity;

each said foot having formed thereon stand features and stacking features;

said stand features radially spaced from said longitudinal axis and disposed at downwardmost locations on said feet and alone supporting the container in an upright position on a flat horizontal surface in the absence of internal pressure in the interior cavity;

said stacking features disposed adjacent to said stand features and defining, in cross-section elevation view, axial stacking surfaces and lateral stacking surfaces; and

said axial stacking surfaces being axially positioned in relation to said stand features and said lateral stacking surfaces being radially positioned in relation to said longitudinal axis to interfit with an upper seamed edge of an adjacent below container whereby said stacking features alone support the container in stacking engagement in the absence of internal pressure in the interior cavity.

5,626,229

GAS-CONTAINING PRODUCT SUPPORTING STRUCTURE AND PACKAGE

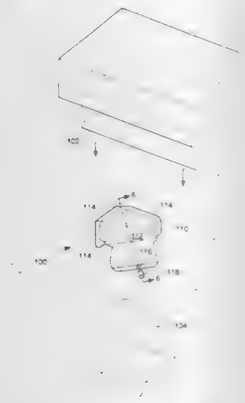
Robert G. Dickie, and Michael D. Clee, both of Newmarket, Canada, assignors to Intepac Technologies Inc., Toronto, Canada

Continuation of Ser. No. 128,265, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 851,333, Mar. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 612,239, Nov. 5, 1990, abandoned. This application Feb. 15, 1994, Ser. No. 196,792

The portion of the term of this patent subsequent to Jun. 6, 2015, has been disclaimed.

Int. Cl.[6] B65D *85/30;81/02*

U.S. Cl. 206—522 **22 Claims**



22. Protective product packaging, comprising:

a semi-rigid, self-supporting monolith including a plurality of discrete chambers, a plurality of said chambers being in fluid communication with at least one other chamber through a passage formed between said chambers,

said chambers being semi-rigid, self-supporting, and defined by walls, each of said chambers being partially collapsible, sealed from the ambient surroundings, and containing a gas,

said monolith having a preformed product receiving portion having a predetermined configuration and dimensions so as to be co-operative with a predetermined portion of a product and so as to receive said predetermined configuration of said predetermined portion of said product;

said walls being formed of a plastic resin selected from the group consisting of polyethylene, polypropylene and co-polymers thereof, vinyl, polyvinylchloride and nylon, said walls being resiliently and elastically deformable under dynamic loading conditions while being strong enough to support a static load imposed thereon from a product.

5,626,230

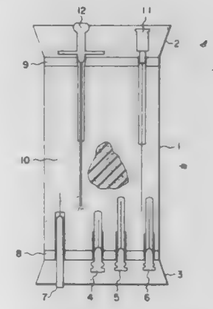
SHARPS KIT FOR PERCUTANEOUS CATHETERIZATION

Laurence M. Shanley; Hal Hansford, and David Schultz, all of 20 NW. 181st St., Miami, Fla. 33169

Filed Apr. 28, 1995, Ser. No. 431,503

Int. Cl.[6] B65D *81/00*

U.S. Cl. 206—571 **5 Claims**



1. A sharps kit for percutaneous catheterization, comprising:

a basic housing with walls defining an interior space therein; moisture adsorbing material disposed in said interior space;

said walls of said housing having openings formed therein; a plurality of hypodermic needles inserted in said openings and extending into said interior space so as to allow flushing of said needles into said moisture adsorbing material, said plurality of hypodermic needles including a two-part needle with a stylet and a cannula, and a plurality of anaesthetic needles of various lengths; and

each of said needles having Luer lock means for lockingly attaching to a syringe.

5,626,231

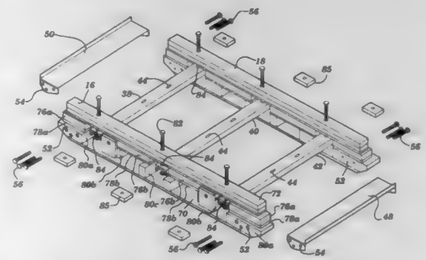
CRATE AND PALLET ASSEMBLY

Cyril P. Kwong, Quincy; Mark E. Tellam, Boston, both of Mass.; Gregg R. King, Londonderry, N.H., and Viwanna Buck, Reading, Mass., assignors to AGFA Division, Bayer Corp., Wilmington, Mass.

Filed Nov. 27, 1995, Ser. No. 562,662

Int. Cl.[6] B65D *19/44*

U.S. Cl. 206—600 **16 Claims**



1. A pallet assembly for supporting and protecting a load during transportation of the load, comprising:

two elongated members spaced apart and substantially parallel to one another so as to be located on opposite sides of the load;

a plurality of support means for supporting the load with a clearance space between said support means and the ground, wherein said support means are removably attached to said

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two elongated members and are substantially perpendicular to said two elongated members; and

adjusting means for adjusting the support means relative to said two elongated members to lower said support means and the load supported thereon toward the ground and reduce the clearance space between said support means and the ground.

5,626,232

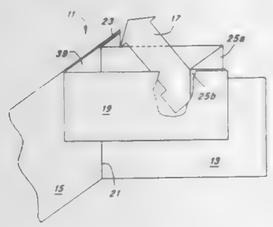
ITEM HAVING PIVOTING THREE-DIMENSIONAL DISPLAY

Carolyn K. Volkert, Northfield, Ill., and Andrew M. Volkert, Cardiff by the Sea, Calif., assignors to Volkert, Inc., Northfield, Ill.

Filed May 15, 1995, Ser. No. 440,717

Int. Cl.[6] B65D *5/52*

U.S. Cl. 206—768 **20 Claims**



1. A sheet material item which comprises

front and rear cover panels which are interconnected so as to be hinged together along a straight hinge line,

intermediate sheet material disposed between said cover panels and affixed thereto so as to form a tubular structure in combination with said cover panels when said cover panels are opened by pivoting along said straight hinge line,

said structure having a major front wall, a pair of minor side walls, and a major rear wall, and

a display panel being located in at least partially hidden orientation behind said major front wall,

said display panel having a hinged subpanel which is affixed to an interior surface of said structure in the region of one of said side walls so that said display panel moves in a plane generally along one of said major walls which constitute said structure in pivoting from its location at least partially within said structure to a prominent attention-attracting position exterior thereof.

5,626,233

EDDY CURRENT SEPARATOR

Rano R. Wells, II, Franklin, Wis., assignor to Venturedyne, Ltd., Milwaukee, Wis.

Filed Mar. 7, 1995, Ser. No. 399,815

Int. Cl.[6] B03C *1/00*

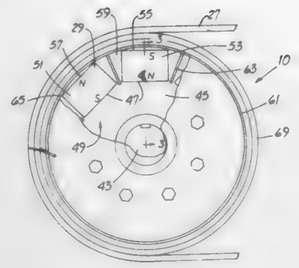
U.S. Cl. 209—219 **15 Claims**

1. In a separator for removing metal pieces from waste moved by a conveyor, the separator including a magnet assembly rotating at a speed and comprised of a plurality of radially-arranged magnets, the improvement wherein:

the separator includes a conveyor belt supported by a shell;

the magnet assembly is in the shell and rotates on a shaft;

the magnet assembly includes a metal sleeve around the magnets wherein the metal sleeve is positioned between the shaft and the shell,



whereby the magnets are protected from impact by objects piercing the conveyor.

5,626,234

SIFTING SCREEN

Gordon J. Cook, Newtonhill, and Andrew Hughes, Edinburgh, both of Scotland, assignors to United Wire Limited, Edinburgh, Scotland

PCT No. PCT/GB95/00411, § 371 Date Aug. 29, 1995, § 102(e) Date Aug. 29, 1995, PCT Pub. No. WO95/23655, PCT Pub. Date Sep. 8, 1995

PCT Filed Feb. 28, 1995, Ser. No. 513,825

Claims priority, application United Kingdom, Mar. 3, 1994, 9404071

Int. Cl.[6] B07B *1/28*

U.S. Cl. 209—315 **25 Claims**



1. A sifting screen comprising:

(1) a frame

(2) a first woven cloth of hard wearing metal wire, stretched across the frame and secured thereto, and

(3) a second woven cloth having a coarser mesh than the first cloth and being woven from an elongate material of greater cross-section than the first and which is also stretched across the frame, and secured thereto, below the first cloth, to support the latter against sagging,

wherein

at least the wearing surface of the material from which the lower cloth is woven is selected to be significantly less hard wearing than that from which the upper cloth is woven, so that wear due to rubbing and vibration during use, occurs to a greater extent in the lower cloth than in the upper cloth.

5,626,235

PAPERMAKING SCREEN

Yoshihiko Aikawa, Shizuoka, Japan, assignor to Aikawa Iron Works Co., Ltd., Shizuoka-ken, Japan

Filed Nov. 2, 1995, Ser. No. 552,083

Claims priority, application Japan, Sep. 21, 1995, 7-242651

Int. Cl.[6] B07B *1/49*

U.S. Cl. 209—395 **12 Claims**

1. A papermaking screen comprising:

a first annular supporting member having a first annular recess formed at one side,

a second annular supporting member having a second annular recess at one side, said second annular recess having a size corresponding to that of the first annular recess and orienting toward the first annular recess,



a plurality of space holding members fixed to the first and second annular supporting members to establish a predetermined distance therebetween, and

a plurality of elongated members situated in the first and second annular recesses and arranged parallel to each other between the first and second annular supporting members, at least one of two elongated members situated adjacent to each other having space forming means thereon relative to the other of the two elongated members, said space forming means being at least one projection integrally formed with the elongated member so that when the elongated members are arranged parallel to and contacted to each other, said at least one projection contacts the elongated member situated adjacent thereto to thereby form a space between the elongated members situated adjacent to each other, each elongated member having a semicircular shape with a curved portion and a flat portion in a lateral cross section for a substantial length thereof, said elongated members being arranged such that the curved portion in each of the elongated members faces the flat portion of each of the elongated members situated adjacent thereto.

5,626,236

METHOD AND APPARATUS FOR HANDLING OBJECTS

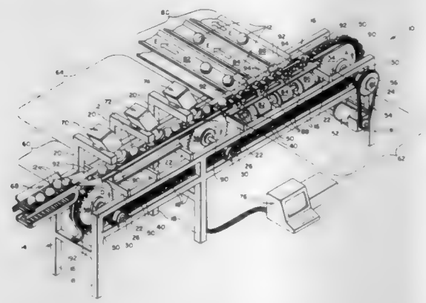
Jacob F. Hiebert, Reedley, Calif., assignor to Autoline, Inc., Reedley, Calif.

Continuation of Ser. No. 168,260, Mar. 15, 1988. This application Jan. 11, 1993, Ser. No. 2,663

The portion of the term of this patent subsequent to Mar. 15, 2018, has been disclaimed.

Int. Cl.[6] B07C *5/02*

U.S. Cl. 209—538 **10 Claims**



1. A system for handling objects, comprising:

(a) a moveable chain defining a conveying path;

(b) roller mounts secured to said chain, each of said roller mounts capable of upholding a roller for rotation on an axis substantially normal to said conveying path and being provided with a pivot pin extending parallel to said conveying path;

(c) rollers upheld by said roller mounts for rotation on axes substantially normal to said conveying path, adjacent pairs of said rollers together forming a conveying pocket and providing rotating support of individual ones of said objects whereby said objects are rotated while being conveyed;

(d) discharge plates disposed sufficiently below each of said conveying pockets pivotally mounted on said pivot pins such that said objects are not substantially contacted by said discharge plates so that the objects are freely rotated upon said adjacent pairs of rollers prior to discharge of the objects; and

(e) activation means for tilting selected individual ones of said discharge plates upward to tip an object supported in said conveying pocket above said discharge plate off the side of said chain.

5,626,237

PROCESS FOR THE RAPID RECOGNITION AND FILTERING OUT OF DIFFERENTLY COLORED FOREIGN BODIES IN FIBER PROCESSING LINES

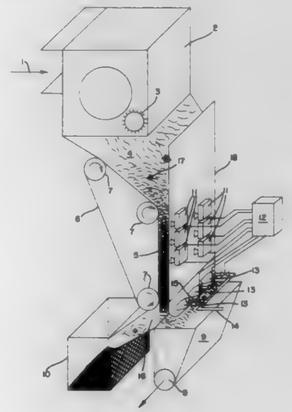
Hubert A. Hergeth, Konigsmuhlenweg 11, 52076 Aachen, Germany

Filed Nov. 23, 1994, Ser. No. 344,822

Claims priority, application Germany, Nov. 25, 1993, 43 40 165.1

Int. Cl.[6] B07C *5/342*; **G01J** *3/50*

U.S. Cl. 209—580 **13 Claims**



1. A process for the recognition and filtering out of differently colored foreign bodies from fibre flocks in processing lines, said process including the steps of:

continuously transporting the fibres over a measuring distance and past a plurality of color sensors to detect the presence of said in bodies in the flocks; and

compacting the fibres in a converging shaft, one wall of which is formed by a conveyor belt which moves the fibres along and past the color sensors;

the color sensors being disposed in columns one beside the other.

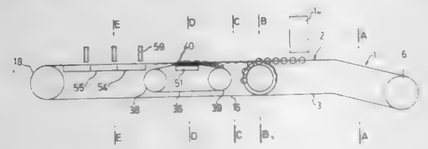
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5,626,238

DEVICE FOR CONVEYING PRODUCTS, IN PARTICULAR FRUIT, ADAPTED TO SORT THESE PRODUCTS AS A FUNCTION OF PREDETERMINED SELECTION CRITERIA

Philippe Blanc, Montauban, France, assignor to Materiel Pour L'ArboricultureFruitiere (Societe Anonyme), Montauban, France

Filed Mar. 3, 1995, Ser. No. 397,977
Claims priority, application France, Mar. 3, 1994, 94 02675
Int. Cl.[6] B07C *5/24*
U.S. Cl. 209—646 **18 Claims**



1. A device for conveying products, in particular fruit, and for sorting these products as a function of predetermined selection criteria, comprising in combination:

a first conveyor provided with a loading zone (**1**) for the products and comprising a plurality of rollers (**7**) mounted freely to rotate about a shaft (**8**) borne by an endless chain (**3**) and extending at right angles with respect to the latter, said rollers being spaced such that two successive rollers (**7**) define between one another a housing for a product, and said rollers being formed by spaced parallel disks (**10**, **11**) disposed at right angles with respect to said shaft (**8**),

a second conveyor comprising a plurality of conveyor receptacles (**15**) articulated on a support (**21**) borne by an endless chain (**16**) and maintained in a conveyor position by a locking system (**24**, **30**, **31**);

said second conveyor, extending over its largest length as an extension of the first conveyor, having an initial transfer zone in which the conveyors are disposed side by side and parallel to one another,

said conveyor receptacles having an upper surface of a general concave shape adapted to provide support for a fruit and comprising a central bar (**22**) extending transversely with respect to the endless chain (**16**), and a plurality of fingers (**23**) disposed at right angles on either side of the central bar (**22**), said fingers being distributed such that the disks (**10**, **11**) of the rollers (**7**) may be interposed between these latter,

said second conveyor being disposed at a distance from the first conveyor and said conveyor receptacles (**15**) being distributed along said second conveyor such that:

in the transfer zone, each receptacle (**15**) is adapted to be interposed between two rollers (**7**), the fingers (**23**) of each receptacle and the disks (**10**, **11**) of the rollers being adapted to overlap with one another,

each conveyor receptacle (**15**) supports a product initially housed between two rollers (**7**) after retraction of said rollers on their return towards the loading zone (**1**),

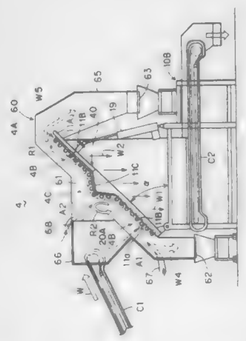
means (**57**, **59**; **64**, **66**) for triggering the locking system (**24**, **30**, **31**) for the receptacles (**15**), for selectively causing the tilting of said receptacles in order to unload the products borne thereby into the unloading zones (**54**, **55**).

5,626,239

SEPARATING MACHINE

Yoshikazu Kobayashi, Hiroshima, Japan, assignor to Kabushiki Kaisha Miike Tekkosho, Hiroshima, Japan

Division of Ser. No. 259,468, Jun. 14, 1994, Pat. No. 5,480,034. This application Jun. 7, 1995, Ser. No. 486,728
Claims priority, application Japan, Jun. 22, 1993, 5-176001; Dec. 1, 1993, 5-338816; Dec. 27, 1993, 5-353235; Feb. 7, 1994, 6-35368; Mar. 18, 1994, 6-73987; Mar. 18, 1994, 6-73988; May 12, 1994, 6-124600
Int. Cl.[6] B07B *13/05*
U.S. Cl. 209—667 **12 Claims**



1. A separating machine comprising a plurality of rotors (**20**) provided in a frame (**10**) such that axes of said rotors are arranged parallel to one another from a supply side where objects to be screened (W) including mixed substances different at least in size are supplied from above by a conveying means (**C1**) to a discharge side where the remainders after screening are discharged, a series of rotors (**20**) being arranged in an inclined plane with a series of said rotors (**20**) on the discharge side being placed partially higher than those on the supply side and the inclined plane having at least one raised area (**4C**) provided between said discharge and supply sides, and such that said rotors (**20**) are rotated in the same direction by a rotating drive means (**30**) to feed the objects to be screened from the supply side to the discharge side, and each rotor (**20**) further comprises a plurality of large diameter sections (**25**) and a plurality of small diameter sections (**28**) alternately disposed in the axial direction of each rotor (**20**) and arranged in a staggered relation in the feeding direction to define screening gaps (G) having desired dimensions between said large and small diameter sections (**25**–**28**), and each of said large diameter sections (**25**) of said rotor (**20**) has a plurality of projections (**26***a*) at least on one side, which do not interfere with said large diameter sections (**25**) and said small diameter sections (**28**) of adjacent rotors (**20**).

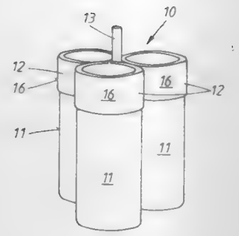
5,626,240

UNIT FOR SEPARATING WASTE AND VALUABLE MATERIALS

Oliver K. Friedrichs, Düsseldorf, Germany, and Nicholas B. White, Lancashire, Great Britain, assignors to Lune Objekteinrichtung GmbH, and Lune Metal Products Co., Ltd, both of Lancashire, England

Filed Aug. 5, 1994, Ser. No. 286,877
Claims priority, application Germany, Aug. 13, 1993, 9312129 U
Int. Cl.[6] B07C *7/04*
U.S. Cl. 209—702 **18 Claims**

1. A unit for separating waste and valuable materials comprising several mutually connected waste containers, each of which is equipped with identifying means comprising an interchangeable ring configured to be mounted in modular fashion on the waste container such that one end of each said ring is flanged around the upper limiting edge of an attached corresponding waste container and the other opposing end extends over an outer surface region of the attached corresponding waste container, whereby each ring labels the corresponding waste containers for the purpose of assigning a particular waste or recyclable fraction to them, characterized in that the unit for separating waste and valuable materials (**10**) is constructed so as to be adaptable in modular fashion.



5,626,241

AIRCRAFT TIRE STORAGE AND INSPECTION RACK

Peter B. Holden, 5 Welbley Ct., Sterling, Va. 20165

Continuation-in-part of Ser. No. 26,036, Jul. 18, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,778
Int. Cl.[6] A47F *7/04;5/00*
U.S. Cl. 211—23 **21 Claims**

1. A storage and inspection structure for wheel/tire assemblies and tires comprising

in combination, an exterior frame having a front, a rear, two opposing sides and a top, a protective cover for the frame and at least one roller carriage assembly,

said frame comprising a plurality of upright and horizontal members joined together forming a structure having a plurality of separated, side-by-side bay members, each bay member having two opposing bay sides, a rear, a front and a top, each bay member enclosed on the two opposing sides and in the rear by the upright and horizontal members, and open at the front,

said protective cover comprising releasable plastic flaps mounted over the frame's opposing sides and individual plastic flaps over the front of each bay member,

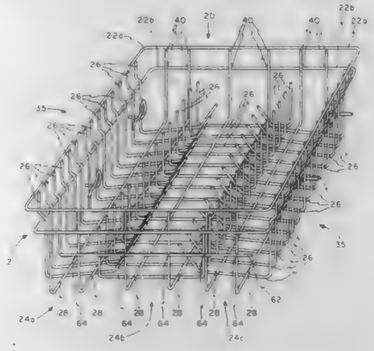
said roller carriage assembly housed in one bay member, said roller carriage assembly comprising two spaced apart rubber formed, inwardly tapered rollers rotatably mounted on opposing slots in opposing side supports, said rollers capable of supporting and rotating a wheel/tire assembly or tire in an upright position.

5,626,242

DISHRACK AND METHOD AND APPARATUS FOR MAKING SAME

Thomas C. Weizer, South Russell, Ohio, assignor to Axia Incorporated, Oak Brook, Ill.

Filed Jul. 18, 1994, Ser. No. 276,538
Int. Cl.[6] A47G *19/08*
U.S. Cl. 211—41.8 **11 Claims**



1. A dishrack for use in a dishwasher comprising:

a plurality of subassemblies, each of the subassemblies having at least one length wire, and a plurality of peg wires having base portions disposed adjacent to the length wire, the base portions having opposite ends and being transverse to the length wire and laterally spaced from each other to form first intersection points between the peg wires and the length wire, the peg wires being connected to the length wire at the intersection points

a frame wire having a front, a rear, and opposing sides defining a perimeter around the subassemblies, the subassemblies connected to the frame wire;

wherein the plurality of subassemblies includes a central subassembly and two outer subassemblies, the two outer subassemblies located adjacent to and on either side of the central subassembly;

wherein the peg wires of the outer subassemblies include inner and outer peg ends, the outer peg ends extending upwardly from the base portions and connected at second intersection points to the opposing sides of the frame wire to form dishrack sides, the inner peg ends extending upwardly from the base portions and within the perimeter of the frame without contacting any of the other wires of the dishrack, and

wherein the peg wires of the central subassembly include opposing peg ends extending upwardly from the opposite ends of the base portions without contacting any of the other wires of the dishrack, the opposing peg ends intermeshing with the inner peg ends of the outer subassemblies;

whereby the number of wire intersections which are susceptible to catching soil from dishes in the dishwasher is limited to the first and second intersection points.

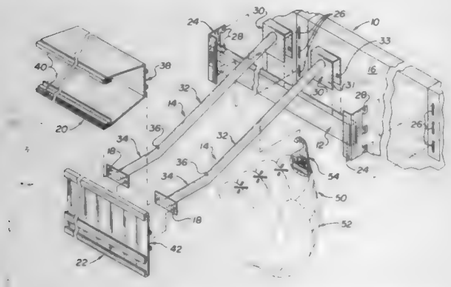
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5,626,243

GRAVITY FED MERCHANDISING SYSTEM

Emory N. Brozak, Jr., Strongsville, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 57,659, May 4, 1993, Pat. No. 5,439,120. This application Jun. 7, 1995, Ser. No. 477,367
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—59.1 11 Claims



1. A combination clip for holding a product for display upon a display stand which has an arm for supporting a product-holding clip, the combination clip comprising,

a body portion, a hook extending from said body portion, a structure extending from said body portion, said structure including a notch, retainer pins also extending from said body portion adjacent said structure,

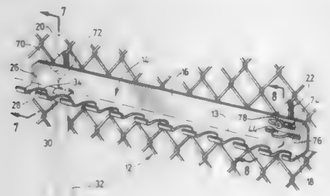
and a product support wire having a central section configured to engage said notch and said retainer pins on said body portion of said clip, and generally symmetrical product support arms which extend generally laterally outwardly from said central section of said wire, said product support arms configured to be engageable with a product to be displayed, whereby a product engaged upon said product support wire may be supported by said clip on a product display stand.

5,626,244

BAT RACK FOR CHAIN LINK FENCE

Larry D. Mesna, 32118 Hunsacker Way; Gregory C. Mesna, and Wendy L. Mesna, both of P.O. Box 2344, all of Running Springs, Calif. 92382

Continuation-in-part of Ser. No. 114,786, Aug. 30, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 411,266
Int. Cl.[6] A47F *1/04;7/00*
U.S. Cl. 211—60.1 4 Claims



1. A bat rack comprising:

at least two spaced apart hooks, each hook including a first element and a second element integral with said first element and disposed with said first element in an L-shape before said first and second elements are folded relative to one another;

said first and second elements are bent through an angle of approximately 180 degrees, wherein said first and second elements are disposed generally parallel to each other and spaced one from the other;

said first and second elements form a fold line which is approximately 45 degrees relative to a horizontal or a vertical reference;

an elongated member having an L-shape with two walls and a longitudinal axis, the first wall having a series of recesses adapted to receive a plurality of baseball bats, and a second wall being connected to the second element of each hook wherein the connection with at least one of said hooks allows said hook to move parallel to the longitudinal axis of said elongated member;

a weld connecting said elongated member and one of said hooks;

a fastener being mounted to the other of said hooks; and

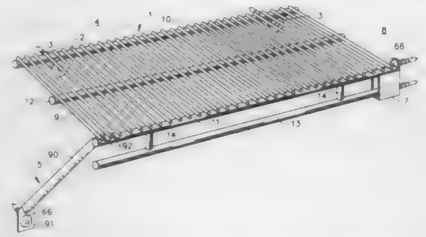
a slot in the second wall of said elongated member, said fastener extending through said slot whereby the spacing between said two hooks may be adjusted.

5,626,245

ANCHOR FOR SECURING WIRE SHELVING, SHELVING SYSTEM, AND FASTENER FOR SAME

John D. Kokenge, Bloomington, Ind.; F. A. Backscheider, Batavia, Ohio; Steven Egolf, Bloomington, Ind., and Elmer J. Kokenge, Loveland, Ohio, assignors to Schulte Corporation, Cincinnati, Ohio

Filed Jan. 27, 1995, Ser. No. 378,282
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—90 28 Claims



1. An anchor for securing wire shelving to a wall, said anchor comprising:

a spool-like head comprising a front portion, a rear portion, and an intermediate semi-circular arcuate groove extending about the entire circumference of said head, such that a portion of said wire shelving may be positioned in said groove;

a bore extending through said head; and

a means for securing said head to a wall structure comprising a threaded shank extending perpendicularly away from said front portion;

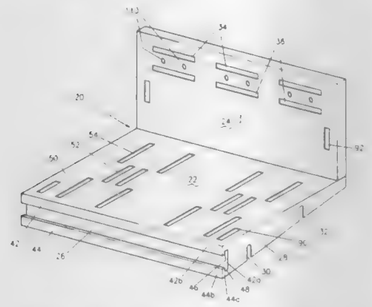
wherein said threaded shank comprises a screw inserted through said bore, said screw having a head and a shaft, said bore further comprising a shoulder sized to permit passage of said shaft of said screw through said bore, while not permitting the head of said screw to pass through said bore, wherein said screw may be secured to a wall with said front portion positioned adjacent said wall.

5,626,246

MODULAR DISPLAY RACK

Kim D. Roddy, Collegedale, Tenn., and Kenneth Glasener, Glenview, Ill., assignors to McKee Foods Corporation, Collegedale, Tenn.

Filed Apr. 13, 1995, Ser. No. 421,488
Int. Cl.[6] A47B *57/00*
U.S. Cl. 211—186 14 Claims



1. A modular display unit, comprising:

a support unit consisting of a base member and a back member;

said base member and said back member being interconnected and disposed at substantially right angles to each other;

said base member having a rear edge at which said back member is interconnected and a forward edge spaced away from said rear edge;

said support unit further including a front member depending from said forward edge of said base member;

said front member including engagement means along the forward surface thereof;

said back member having a front surface directed toward said base member front edge and an opposed rear surface;

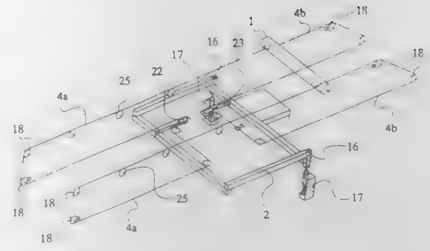
said back member engagement means being removably interengageable with said front member engagement means of another support unit whereby two support units can be coupled by interengaging said back member engagement means from one support unit with said front member engagement means of another support unit.

5,626,247

PROCEDURE AND APPARATUS FOR MOVING THE MAIN GIRDER AND TROLLEY OF A CRANE

Ilpo Hakala, Hyvinkää, and Soini Söderena, Röykkä, both of Finland, assignors to KCI Konecranes International Corporation, Finland

PCT No. PCT/FI94/00069, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/19273, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 23, 1994, Ser. No. 325,259
Claims priority, application Finland, Feb. 24, 1993, 930810
Int. Cl.[6] B66C *5/04*
U.S. Cl. 212—325 18 Claims



horizontally moved and the elevation means lowering the main girder when the main girder is fixed in position relative to the gantry.

12. An apparatus for moving a main girder and trolley of a crane, the crane including a gantry, the apparatus comprising:

drive means for selectively moving the trolley and main girder;

at least one traversing rope connected to the trolley and to the drive means;

locking means for locking the trolley in place with respect to the gantry, the main girder being movable by the drive means when the locking means locks the trolley in place and the trolley being movable by the drive means when the locking means releases the trolley; and

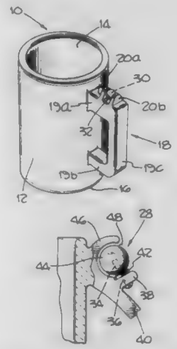
elevation means for raising and lowering the main girder with respect to the gantry, the elevation means raising the main girder relative to the gantry when the main girder is to be

5,626,248

THERAPEUTIC HAND-HELD DRINKING APPARATUS

Michael McConnell, Durham, N.H., and David L. McClees, Lewisoon, Me., assignors to Talus Corporation, Westbrook, Me.

Filed Apr. 17, 1995, Ser. No. 422,860
Int. Cl.[6] B65D *1/00;1/04*
U.S. Cl. 215—383 22 Claims



1. A hand-held drinking apparatus, comprising:

a vessel having an open end and a closed end;

a handle associated with the vessel and extending outwardly therefrom;

a shaft secured to the handle; and

an object mounted for rotation on the shaft and defining an axis of rotation located in a plane extending substantially radially from the vessel and which intersects the vessel at at least one of the open end and the closed end.

5,626,249

PLASMALYSIS TREATMENT METHOD FOR WASTE MATTER

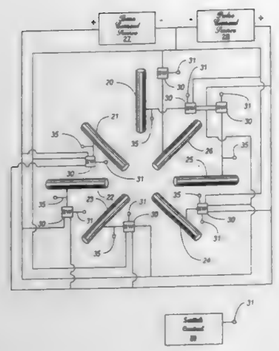
Jozef K. Tylko, Minneapolis, Minn., assignor to Refranco Corp., Minneapolis, Minn.

Continuation-in-part of Ser. No. 109,606, Aug. 19, 1993, Pat. No. 5,403,991. This application May 25, 1994, Ser. No. 249,153
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.59 12 Claims

1. A method of treating particulate waste matter by electrical discharge comprising the steps of:

positioning a plurality of electrode structures to define an inter-electrode plasmalysis zone;

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establishing an atmosphere free of ambient reactants within said plasmalysis zone;

introducing the particulate matter to be treated into the plasmalysis zone; and

producing a plurality of discrete electrical discharges within said plasmalysis zone, said discrete electrical discharges being produced independently of each other in a desired sequence between said electrode structures.

5,626,250

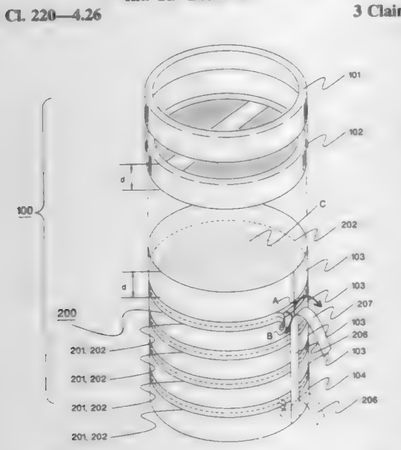
CONTAINER APPARATUS HAVING DETACHABLE AND DISCARDABLE WALL SECTIONS

Alfonse A. Dorazio, 1645 W. Montebella Pl., Tucson, Ariz. 85704

Filed Jul. 1, 1996, Ser. No. 674,138

Int. Cl.[6] B65D *8/04*

U.S. Cl. 220—4.26 **3 Claims**



1. A geometrically designed container apparatus, said apparatus comprising:

(a) a body defining a volume, said body comprising:

(i) a main wall section,

(ii) a plurality of wall section detachment elements spatially disposed on said main wall section, said detachment elements delineating a plurality of detachable and discardable wall sections, each of said wall section detachment elements comprise a strip member, each strip member includes a perforating element in contact with art underlying region of said main wall section, each perforating element being selectively utilized to cause said underlying region to be perforated for forming a detachable wall section, each strip member having a pull tab portion and an end portion, in an un-utilized state, said pull tab portion and said end portion being disposed on said body in an overlapping configuration and forming a junctional region, and

(iii) a tamper-proof seal covering said junctional region; and

(b) a lid for enclosing said body.

5,626,251

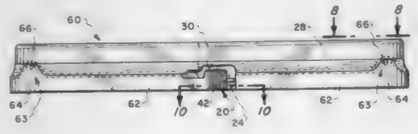
CONTAINER LID

Frano Luburic, Fullerton, and Dennis R. Willis, Corona, both of Calif., assignors to Ropak Corporation, Fullerton, Calif.

Continuation of Ser. No. 60,215, May 7, 1993, abandoned. This application Jun. 30, 1995, Ser. No. 497,596

Int. Cl.[6] B65D *17/40*

U.S. Cl. 220—276 **11 Claims**



1. A container and mating lid, said container having an opening and an externally projecting bead disposed about said opening to help retain said lid over said opening, said lid including a centrally disposed cover portion having tamper-evidencing means for indicating whether said lid has been removed from said container, said lid further including a downwardly projecting peripheral skirt having a lower edge, said tamper-evidencing means including tab means for initiating the operation of said tamper-evidencing means, said tab means having a lower edge which lies substantially along a line between adjacent portions of said lid prior to initiating the operation of said tamper-evidencing means, said tab means projecting upwardly from said lower edge of said skirt and including at least a portion thereof which protrudes from a plane formed by adjacent portions of said lid, said tab means having one or more edges spaced upwardly from said lower edge of said skirt, an uppermost of said one or more edges on said tab means extending upwardly beyond a portion of said lid to which said tab means is attached, said downwardly projecting peripheral skirt further including an opening contiguous to said tab means to facilitate a user gripping said tab means, said opening adjacent said tab means being defined at least in part by a defining edge, said defining edge being spaced from said one or more edges of said tab means in one or more directions lying in said plane formed by adjacent portions of said lid, said downwardly projecting peripheral skirt including inwardly protruding lip means configured to matingly engage said externally projecting bead on said container, said tamper-evidencing means including a tear-strip member disposed at the periphery of said lid, said tab means being operatively affixed to said tear-strip member, in which said lid and the container opening covered thereby are substantially rectangular, and said tear-strip member includes corner extension means at the corners of said lid for permitting greater flexure of said lid at said corners after removal of said tear-strip member.

5,626,252

RUBBER PLUG SYSTEM FOR A VIDEO TAPE CASSETTE RECORDER

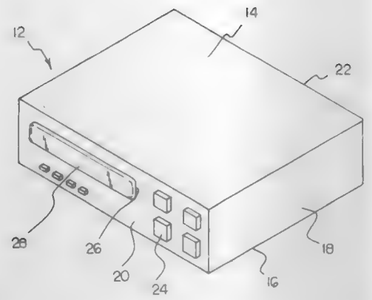
David R. Trotman, 27749 Tolima Dr., Canyon Country, Calif. 91351

Filed Jun. 3, 1996, Ser. No. 656,813

Int. Cl.[6] G11B *23/02*

U.S. Cl. 220—789 **1 Claim**

1. A new and improved rubber plug system for a video tape-cassette door on video cassette recorders to prevent young children



from putting foreign objects into a video tape cassette recorder comprising, in combination:

a video tape cassette recorder in a generally rectilinear configuration having an enlarged rectangular upper face and a parallel lower rectangular face, the recorder also including small parallel side faces and front and rear faces with controls located in the front face and a rectangular recess with a door also located in the front face, the recess having a width of about 7½ inches and a height of about 1⅛ inches forming a rectangular periphery;

a plug constructed from rubber positionable within the recess of the recorder, the plug having a trapezoidal shaped interior section with a small rectangular interior region and an enlarged exterior region forming a periphery equal in size to the periphery of the recess of the recorder, the interior region being formed with a smaller height and width than that of the exterior region, the interior section also having trapezoidal upper and lower surfaces and trapezoidal side surfaces therebetween, the area of the interior region being 90 percent of the exterior region; and

an exterior section formed as part of the plug, the exterior section having a rectangular configuration with a periphery surface 30 percent greater than the periphery of the exterior section of the interior member, the periphery of the exterior member being semicircular in cross section, the interior and exterior member each having a depth with the depth of the exterior member being between about 25 and 50 percent of the depth of the interior member.

5,626,253

BULK MATERIAL CONTAINER WITH AN EMPTYING ARRANGEMENT

Gerhard Schütz, Hintere Grundstrasse 11, CH-8320 Fehratorf, Switzerland

PCT No. PCT/CH93/00250, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO95/10466, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 25, 1993, Ser. No. 464,843

Claims priority, application Switzerland, Oct. 8, 1993, 3033/93

Int. Cl.[6] B65D *90/04;6/34*

U.S. Cl. 220—401 **12 Claims**

1. Apparatus for storing and dispensing bulk materials and which has at least one base emptying aperture, said apparatus comprising:

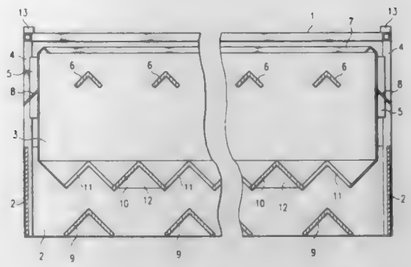
(a) a frame which is formed in the general shape of a rectangular box having a length, a width, an upper portion and a lower portion, said frame comprising:

(1) vertical struts formed of square tubes having an upper end portion and a lower end portion;

(2) horizontal struts which are connected to the upper end portion of the vertical struts;

(3) metal side plates which are connected to the lower end portion of the vertical struts; and

(4) a plurality of roof-shaped webs positioned horizontally in the lower portion of the frame and extending between the metal side plates extending along the length of the frame and connected thereto, the plurality of roof-shaped webs are positioned along the length of the frame to provide an aperture between adjacent roof-shaped webs; and



(b) a container which is formed in the general shape of a rectangular box for vertical movement within the frame and having a length, a width, an upper portion and a lower portion, said upper-portion having an upper edge, said container comprising:

(1) a guide attached to each corner of the container for vertical movement with respect to the adjacent vertical strut of the frame;

(2) a plurality of roof-shaped connecting struts positioned horizontally in the upper portion of the container and extending between the sides extending along the length of the container and connected thereto;

(3) the lower portion of the container is retracted in the shape of a truncated pyramid and includes a plurality of roof-shaped webs which extend between the sides extending along the length of the container and connected thereto, the plurality of roof-shaped webs are positioned along the length of the container to provide an aperture between adjacent roof-shaped webs such that a roof-shaped web is in vertical alignment with the aperture between adjacent roof-shaped webs of the frame when the container is positioned within the frame; and

(4) two plates are connected to each of the plurality of roof-shaped webs which are connected to the sides of the container, one each of the two plates is positioned at opposite ends of each of the roof-shaped webs and on the downward-facing surface of each of the roof-shaped webs, whereby, when said container is moved upwardly relative to said frame, the apertures between adjacent roof-shaped webs in said frame and the apertures between adjacent roof-shaped webs in said container open to release the bulk material in the container.

5,626,254

APPARATUS AND METHOD FOR RAPID INSTALLATION OF CONTAINER LINER AND ACCESS PORTS

Stephen D. Podd, 1321 Sherbrooke St. West, Apt. E1, Montreal, Quebec, Canada, and Victor I. Podd, 2582 NW. 59th St., Boca Raton, Fla. 33496

Filed Aug. 26, 1994, Ser. No. 297,254

Int. Cl.[6] B65D *33/00*

U.S. Cl. 220—403 **4 Claims**

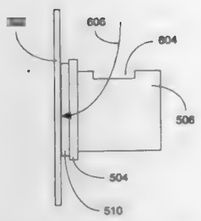
1. A quick attachment port for rapid attachment of a discharge tube to a bulk container liner, comprising:

a port providing a path for bulk cargo, the port having a first aperture at a first end and a second aperture at a second end;

a double stick tape seal attached to a first end of the port, such that the first end of the port can be sealed to a wall of a liner by the double stick tape prior to unloading the container;

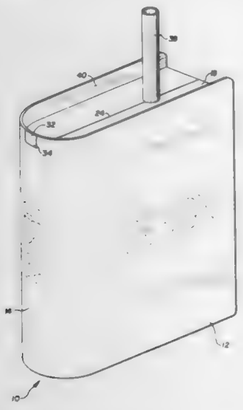
access means to allow opening of a portion of the liner wall which is surrounded by the first end of the port, the access means of a sufficient size to allow the liner wall to be accessed from outside the conduit; and

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discharge tube attachment means on the second end of the port; whereby the bulk container liner can be rapidly prepared for unloading by attaching the port to a surface of a container liner.

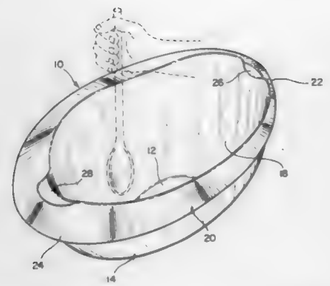
5,626,255
VIDEO CASSETTE CASE STYLE DRINK CONTAINER
William H. Myers, Laguna Niguel, Calif., assignor to Strottman International, Inc., Irvine, Calif.
Filed Dec. 2, 1994, Ser. No. 352,860
Int. Cl.[6] B65D *6/00*
U.S. Cl. 220—411 **5 Claims**



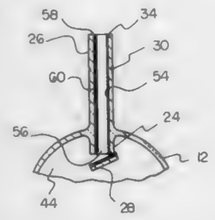
1. A drink box comprising:
a generally box-shaped, liquid impermeable, container having a bottom wall, a front wall, a rear wall, and two side walls, said container having an open top; and
a lid pivotally mounted in said top, said lid forming a substantially liquid tight seal with said container, said lid including means defining an opening therethrough dimensioned and configured to provide for insertion of a drinking straw; wherein
said rear wall and said side walls extend beyond said lid, said front wall and said bottom wall to form a peripheral flange, whereby said drink box has an appearance simulating a video cassette storage box.

5,626,256
BOWL FOR HAND MIXING
Frederik J. Onneweer, Tervuren, Belgium, assignor to Dart Industries Inc., Orlando, Fla.
Filed Aug. 22, 1995, Ser. No. 506,842
Int. Cl.[6] A47J *47/01;* **B65D** *1/42*
U.S. Cl. 220—574 **7 Claims**

1. An upwardly opening bowl for the mixing of foodstuffs with a hand held stirring implement, said bowl having a base, a peripheral wall integral with said base, extending upward therefrom and defining a bowl interior, said wall terminating in an upper rim with a peripheral flange integral therewith and inclining outwardly and downwardly therefrom, said flange having a peripheral outer edge, said base being substantially elliptical, said wall rim defining an elliptical configuration generally centered over said base and substantially greater than said base in both length and width, said peripheral wall being of a partial ellipsoidal configuration and both outwardly and upwardly arcing from said base to said rim, said wall having a smooth and uninterrupted interior surface for the full extent thereof between said base and rim for unrestricted vertical and peripheral travel of a hand held stirring implement thereabout, said bowl having a first end and an opposed second end, and opposed sides extending between said first and second ends, said bowl flange, at said first end, having a first recess of predetermined width and depth defined therein and extending outward from the interior wall surface, said first recess forming a pouring spout, said flange, at said second end, having a second recess defined therein and extending outward from the interior wall surface, said second recess being of a substantially greater width and depth than said first recess, said second recess forming, with the flange, a handle for the bowl and a seat for a stirring implement when the bowl is tipped for pouring said first and second recesses each having a radially outermost portion which is in inwardly spaced relation from said peripheral outer edge and is at a height higher than said peripheral outer edge.

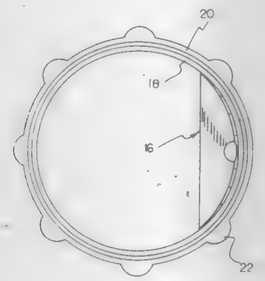


5,626,257
PAINT BLADDER
Leonard E. Carlson, 72 Washburn Ave., Rumford, R.I. 02916
Filed Nov. 8, 1995, Ser. No. 555,320
Int. Cl.[6] B65D *88/00*
U.S. Cl. 220—578 **1 Claim**



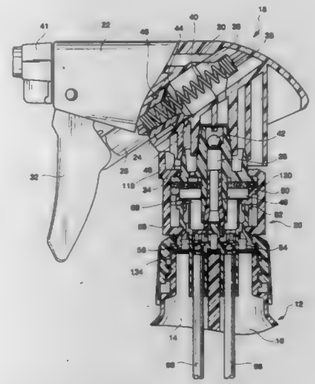
1. A new and improved paint bladder for placing in a partially filled paint can comprising in combination:
a collapsible pneumatic bladder having an elastomeric exterior surface, a top portion and a bottom portion, the bladder having a uniform construction and a smooth exterior for preventing air seepage from within the bladder, the bladder having a generally linear construction when at rest, the top portion of the bladder having a cylindrical stem with an internal portion and an external portion having a notch therearound, the internal portion having a valve lip being connected by a flexible hinge integral thereto;
a generally cylindrical cap having a ridge spaced from a bottom of the cap, the ridge encircling the cap along an interior diameter of the cap, the cap being capable of slidable engagement of the external portion of the cylindrical stem of the bladder, the ridge engaging the notch for allowing the cap to be lockingly positioned on the stem;
a hollow inner core for holding a pressurized inflation medium within the bladder, the inner core having an inflated shape with a constant diameter and a variable length which approximates that of a paint level within a paint can in which the bladder being positioned;
a rigid cylindrical tube positionable within the cylindrical stem of the top portion of the bladder, the tube having a length equal to a length of the stem, the tube having a first end opening adjacent the internal portion within the hollow inner core, the first end opening capable of being sealed by the valve lip, the tube having a second end opening adjacent the external portion exterior the hollow inner core of the bladder, the tube having an outer surface being in gripping contact with the cylindrical stem of the bladder for support against vertical movement within the stem;
the tube being capable of operating as an air valve when the second end opening receiving an amount of the inflation medium being passed therethrough, the inflation medium being capable of forcing the valve lip away from the first end opening for entering into the hollow inner core, the amount of the inflation medium capable of passing into the hollow for expansion of the bladder when the cap being removed form the external portion, the inflation medium being capable of causing the bladder to expand outwardly form the linear construction; and
a disc-like sealing piece being formed onto an interior side of the valve lip, the sealing piece capable of resting against the first end opening of the tube and the internal portion of the bladder, the sealing piece being capable of providing an air tight sealing of the tube within the hollow inner core.

5,626,258
PAINT LID FOR USE WITH A BRUSH
Anthony E. Maiorino, 15 Timothy Dr., North Haven, Conn. 06473-3530
Filed Aug. 31, 1995, Ser. No. 522,072
Int. Cl.[6] B65D *25/38*
U.S. Cl. 220—695 **1 Claim**



1. A paint container lid comprising:
a rim engaging means having a radially extending edge for coupling to a rim of an open upper end of a container, the rim engaging means comprising an inner annular ring, an outer annular ring concentrically positioned and disposed outwardly of the inner annular ring, a plurality of handling tabs extending from the annular outer ring in a spaced relationship along a peripheral edge thereof and a compressible annular projection extending axially downward between the inner ring and the outer ring, the compressible annular projection comprising an inner cylindrical member extending substantially orthogonally downward from an outer peripheral edge of the inner annular ring; an outer cylindrical member concentrically positioned relative to the inner cylindrical member and being coupled thereto by an integral bend extending between lower annular edges of the cylindrical members, the outer cylindrical member orthogonally coupled to an inner peripheral edge of the outer annular ring, wherein the outer cylindrical member is permitted to articulate relative to the inner cylindrical member as the integral bend resiliently deforms;
a fluid guide means having a radially exterior edge coupled to the rim engaging means in a coplanar relationship and extending across a portion thereof for guiding fluid from a brush scraped thereagainst back into the container through an aperture in the fluid guide means and for directing fluid poured from the container in a directed stream over the rim of the container, the fluid guide means comprising a depending arcuate guide plate secured to an inner peripheral edge of the inner annular ring and extending downwardly therefrom; an inclined planar guide plate coupled to and extending along a lower inclined edge of the depending arcuate guide plate, with the inclined planar guide plate being positioned at a downward angle relative to a plane containing the annular rings of the rim engaging means; and a dispensing aperture directed through both the depending arcuate guide plate and the inclined planar guide plate at a juncture of the depending arcuate guide plate and the inclined planar guide plate.

5,626,259
TWO LIQUID SPRAYER ASSEMBLY
Wilhelmus J. J. Maas, Someren, and Petrus W. L. Hurkmans, Someren-Eind, both of Netherlands, assignors to AFA Products, Inc., Forest City, N.C.
Filed Nov. 16, 1995, Ser. No. 558,885
Int. Cl.[6] B67D *5/52*
U.S. Cl. 222—136 **13 Claims**



1. An apparatus for simultaneously dispensing multiple liquids comprising:
a container having two liquid reservoirs, each reservoir being capable of storing a separate liquid;
a trigger operated liquid dispensing pump including a pump body having an outwardly opening bore, a piston having a peripheral sealing means which traverses along said bore, said piston defining a variable sized compartment within said bore, an inlet port and an outlet port for delivering liquid into and out of the variable sized compartment, a manually actuated trigger coupled to said piston for causing said piston to traverse from a non-pumping position to a pumping position within said bore as said trigger is actuated, and a venting path

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extending through said pump body and opening at one end into the bore at a point along the path of travel of said sealing means of said piston when said manually actuated trigger is actuated and, when said sealing means of said piston is in a non-pumping position, said venting path is prevented from communicating with the ambient atmosphere by said sealing means and when said piston is moved to a pumping position, said venting path is permitted to communicate with the ambient atmosphere; and

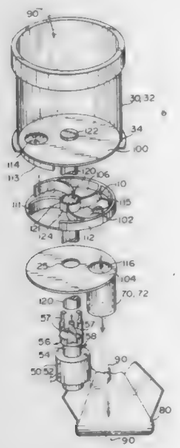
a valve assembly for opening and closing a first and a second set of passageways, said first set of passageways comprising a plurality of liquid transfer passageways, each liquid transfer passageway for transferring fluid from one of said liquid reservoir to said inlet port of said liquid dispensing pump, said second set of passageways comprising a plurality of venting passageways, each venting passageway for coupling a liquid reservoir to said venting path of said liquid dispensing pump.

5,626,260

DRY COMPOSITION DISPENSER

David J. Waldner, R.R. 2 Box 48, Elkton, S. Dak. 57026

Filed Jul. 1, 1994, Ser. No. 269,833
Int. Cl.[6] B67D *5/60*
U.S. Cl. 222—144 **28 Claims**



28. A method for dispensing at least two powdered or granular materials in predetermined amounts from a dispenser comprising a frame, a support surface rotatably secured to said frame, a rotator for selectively rotating said support surface, a first bin secured to said support surface and containing a first material to be dispensed, a second bin secured to said support surface and containing a second material to be dispensed, a metering assembly disposed in each of said first bin and said second bin, and at least one metering assembly activator which may be selectively engaged with each of said metering assemblies, said method comprising:

rotating said support surface until said metering assembly of said first bin containing said first material is in position for engagement with said metering assembly activator;

engaging said metering assembly of said bin containing said first material with said metering assembly activator;

activating said metering assembly activator to drive said metering assembly and dispense said first material from said first bin until a predetermined amount has been dispensed therefrom;

disengaging said metering assembly from said first bin;

rotating said support surface until said metering assembly of said second bin containing said second material is in position for engagement with said metering assembly activator;

engaging said metering assembly of said bin containing said second material with said metering assembly activator; and

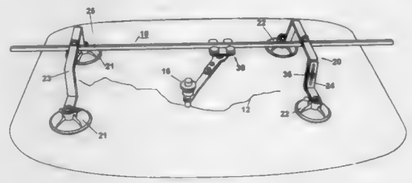
activating said metering assembly activator to drive said metering assembly and dispense said second material from said second bin until a predetermined amount has been dispensed therefrom.

5,626,261

RESIN INJECTOR GUIDE FOR WINDSHIELD CRACK REPAIR

Daniel M. Wanstrath, Durango, Colo., assignor to Glass Technology Inc., Durango, Colo.

Filed Oct. 25, 1995, Ser. No. 548,232
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—181.2 **23 Claims**



1. Apparatus for repairing an elongated crack in a surface layer of a vehicle windshield by injector means movable along the crack to inject a transparent filler into the crack along its length,

said apparatus comprising a bridge structure having one or more feet for resting on the windshield,

means for securing said bridge structure to the windshield, said injector means comprising an injector having a portion engageable with the windshield and overlying the crack with a filler discharge opening facing the crack in a preferred orientation of the injector to dispense filler into the crack,

a movable carrier carrying said injector,

interconnecting means between said bridge structure and said carrier for supporting and guiding said carrier to enable movement of the injector in contact with the windshield surface along the crack in any direction generally parallel to the windshield to enable the injector to trace the path of the crack and for maintaining the injector in said preferred orientation for dispensing filler into the crack as the injector is moved along said crack during a crack repair operation.

5,626,262

DISPENSING CONTAINER WITH DRAINAGE PASSAGES

Timothy E. Fitten, Chaska, Minn.; Dieter F. Lay, Oconomowoc, Wis., and Thomas M. Bender, Reading, Pa., assignors to Redmond Products, Inc., Chanhassen, Minn.

Filed Jun. 7, 1995, Ser. No. 477,534
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—184 **19 Claims**

1. A dispensing container comprising:

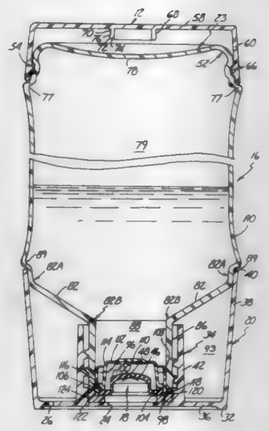
a bottle having an inner cavity for storing material, the bottle having a main container segment having a closed end and a neck, the neck having a mouth opened to the inner cavity to connect the inner cavity to ambient and defining an opened end of the container, the cross sectional area of the neck being smaller than the cross sectional area of the main container segment and the bottle having a shoulder portion connecting the main container segment and the neck;

a base for supporting the container in an upright position, said base comprising a support face, side wall and a through opening, the support face being dimensioned larger than the neck of the bottle, said side wall extending from said face to define a base cavity therein, said base cavity being sized to house the opened end of the bottle, said through opening extending through the face and being coupled with the mouth to collectively define a dispensing opening for discharging material from the inner cavity of the container, said container being supported at its base with the through opening normally opened to ambient;

means for attaching the base relative to the bottle for supporting the container in an upright position relative to the support face of the base;

a valve operably coupled with the dispensing opening for regulating discharge of material from the inner cavity of the container; and

a drain hole extending through the face of the base to ambient for fluidly connecting the base cavity to ambient, the drain hole being normally opened to ambient when the container is supported at its base for draining fluid from the base cavity.

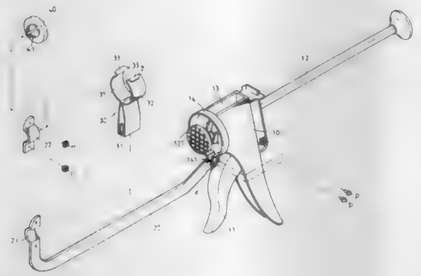


5,626,263

C-CLAMP ASSEMBLY

Liang-Kuen Lii, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jun. 21, 1996, Ser. No. 667,720
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—192 **1 Claim**



1. A C-clamp assembly comprising:

a fixed handle;

a circular holding seat disposed in a front of the fixed handle;

a driving handle inserted in an interior of the fixed handle;

a push rod passing through the circular holding seat and the fixed handle transversely;

a movable jaw disposed in a front end of the push rod;

a generally C-shaped frame extending from the circular holding seat transversely;

an elastic clamp device positioned on the generally C-shaped frame;

a fixed jaw disposed on a front end of the generally C-shaped frame;

an arc end formed on the front end of the generally C-shaped frame;

an arc plate engaged with the arc end and fastened by a plurality of screws;

the fixed jaw which has a lobe positioned between the arc plate and the arc end;

a rear end of the generally C-shaped frame inserted in a spacing beneath the circular holding seat and positioned by a plurality of fasteners;

the elastic clamp device having a bottom recess to receive the generally C-shaped frame;

two outcurved plates extending upward from the elastic clamp device; and

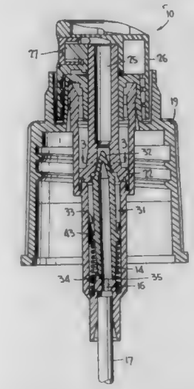
two lips formed on distal ends of the outcurved plates, respectively.

5,626,264

PRECOMPRESSION PUMP SPRAYER

Robert L. Florez, Covina, and Adonis Spathias, Duarte, both of Calif., assignors to Calmar Inc., City of Industry, Calif.

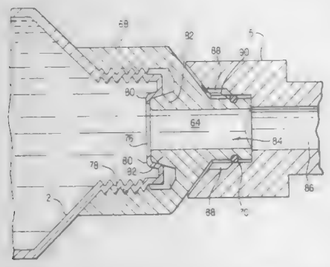
Filed Aug. 9, 1996, Ser. No. 694,523
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—321.2 **7 Claims**



1. A precompression pump sprayer, comprising a pump housing having a pump cylinder, a pump piston mounted for reciprocation within said cylinder to therewith define a variable volume pump chamber, said piston having a hollow stem defining a discharge passage, a discharge valve seat in said passage confronting said chamber, a discharge valve member mounted for reciprocation within said housing, said valve member comprising a poppet valve in sealing engagement with said valve seat in a discharge closed position, means for reciprocating said piston and said valve member substantially in unison against the bias of a return spring, deflecting means within said housing located out of alignment with a central longitudinal axis of said housing, said deflecting means extending toward said valve member in the path of reciprocation of a lower end of said valve member, said lower end impacting against said deflecting means during the downstroke movement of said piston for deflecting said lower end away from said axis for cocking said popper valve to disrupt the sealing engagement of said poppet valve with said valve seat for expelling entrapped air from said pump chamber through said discharge passage.

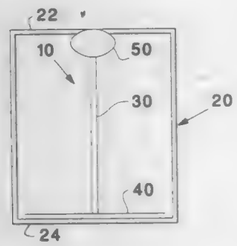
VOL 1198 ISS 1 MY 6 1997 UMI

5,626,265
DISPENSER GUN FOR VISCOUS OR SEMI-VISCOUS PRODUCTS
Keith F. Woodruff, Mountainside, N.J., assignor to American Cyanamid Company, Wayne, N.J.
Division of Ser. No. 151,729, Nov. 12, 1993, Pat. No. 5,441,180, which is a continuation of Ser. No. 82,405, Jun. 23, 1993. This application Jun. 7, 1995, Ser. No. 473,310
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—327 3 Claims



1. In a device for dispensing selected quantities of liquid product, said device comprising a housing having an inlet end defining an inlet opening and an outlet end defining a discharge opening, and pump means for causing said liquid product to flow between said inlet opening and said discharge opening of said housing, the improvement comprising:
a product reservoir removably received within an adapter, said adapter being removably mountable to said housing in an operating position therein for providing fluid communication between the product within said product reservoir and said inlet opening of said housing, and means for venting air from said housing as said adapter and said inlet opening of said housing are moved in a relative direction towards each other.

5,626,266
CONTAINER CONTENT REMOVAL DEVICE
Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291
Continuation of Ser. No. 97,153, Jul. 26, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 391,255
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—386 28 Claims



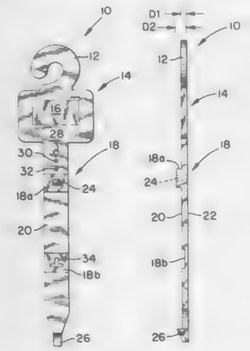
1. A container comprising an enclosed member having a side wall having top and bottom edges, and top and bottom covers, said top and bottom covers having an inside surface and an outside surface, said top and bottom cover being formed integrally with the top and bottom edges of said side wall, said top and bottom covers being of substantially the same size, a lower internal rigid support plate for supporting contents within said container, said support plate being movable in relationship to said top and bottom covers, a connecting member attached at its lower end to said support plate, the upper end of said connecting member extending from said support plate substantially to said top cover.

5,626,267
GARMENT SHAPING TAPE AND METHOD
Robert Peruski, 6686 Orchard Lake Rd., West Bloomfield, Mich. 48322
Filed Aug. 11, 1993, Ser. No. 104,667
Int. Cl.[6] D06C *15/00*; A41M *43/00*; A41B *3/12*
U.S. Cl. 223—84 7 Claims



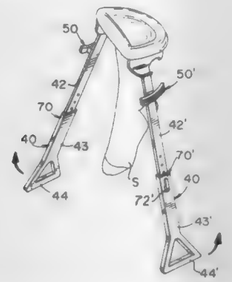
1. A method for selectively shaping by hand a member of a group of garments consisting of collars, lapels and bow ties, said method comprising:
a) providing a garment shaping tape which is comprised of a thin narrow malleable metal strip which is formable by hand and is pre-coated on one side with an adhesive; and an easily removable protective strip bonded to said pre-coated side of said metal strip;
b) removing said protective strip to expose said adhesive;
c) attaching said metal strip with said pre-coated adhesive to an underside of one of said members of said group of garments; and
d) forming said metal strip by hand to selectively shape said garment.

5,626,268
ENHANCED RETENTION BELT HANGER
Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., Newark, N.J.
Filed Jan. 11, 1994, Ser. No. 180,032
Int. Cl.[6] A47G *25/14*
U.S. Cl. 223—85 9 Claims



1. In a hanger consisting of an elongate, one-piece body of plastic material, said hanger having a main body portion having a front surface for logo display and a tail portion extending downwardly of said main body portion, said tail portion having a first part depending from said main body portion, a second part depending from said first part and defining a passage therethrough and a third, foldable part depending from said second part and defining at a free end thereof a projection configured to be insertable in said passage to retentively retain said foldable part in folded condition, the improvement wherein said tail portion second part has a thickness exceeding the thickness of said tail portion first and third parts and extends forwardly of said main body portion front surface, said tail portion second part defining first and second mutually acutely angled interior surfaces in part bounding said passage.

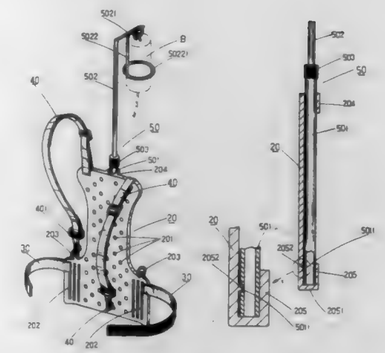
5,626,269
DEVICE FOR DONNING SOCKS ON A USER
Jose Duarte, 8000 W. 16th Ave., Hialeah, Fla. 33014
Filed Dec. 5, 1995, Ser. No. 567,657
Int. Cl.[6] A47G *25/90*
U.S. Cl. 223—112 5 Claims



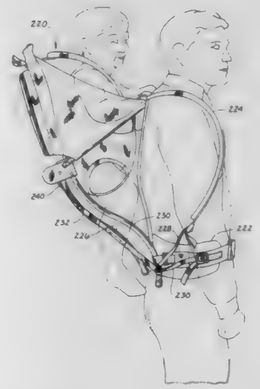
1. A device to aid a user in donning a sock having a top opening onto his or her foot, said device comprising:
a semi-circular adjustable means for holding the top opening of the sock in an expanded position to allow the user to insert his or her foot into the sock:
an extension arm assembly mounted by a hinge on each of two opposing sides of the adjustable means for allowing the device to be pulled along the user's leg;
and a clamping means mounted to each extension arm assembly to hold the sock between the adjustable means and the respective extension arm assembly for gripping the sock therebetween:
wherein the sock may be placed over the adjustable means, clamped between the clamping means and the adjustable means, and pulled upward onto a user's legs using the extension arm assembly.

5,626,270
DRIP SYRINGE NEW BACKPACK FRAME
Chun-Long Tseng, Taipei, Taiwan, assignor to Chyi Shing Plastic Factory Co., Ltd., Taipei, Taiwan
Filed Sep. 19, 1995, Ser. No. 530,420
Int. Cl.[6] A45F *3/10*; *5/00*; A61M *5/14*
U.S. Cl. 224—148.7 1 Claim

1. A drip syringe backpack frame, comprising:
an inverted T-shaped backpack plate having a plurality of aeration holes formed therethrough, said backpack plate having a central portion extending longitudinally between upper and lower ends thereof and a pair of opposing side portions extending transversely from said lower end of said central portion, each of said pair of side portions having a plurality of longitudinally elongated slots formed therethrough and a pair of fastening rings respectively secured thereto adjacent an upper edges thereof, said central portion having a rear surface with a pair of longitudinally spaced anchor sleeves coupled thereto, a first of said pair of anchor sleeves having a longitudinally directed first bore extending between opposing open ends thereof and a second of said pair of anchor sleeves having a second bore extending from an upper end thereof to a closed lower end and a tab extending into said second bore;
an extendable drip syringe suspension rod coupled to said backpack plate, said suspension rod having a longitudinally extended tubular outer tube received within said first and second bores of said first and second anchor sleeves and an inner rod telescopically received within said outer tube, said outer tube having through hole formed therein adjacent one end thereof for receiving said tab therein, said inner rod having a distal end adapted for supporting a drip syringe solution container;
waist belt means coupled on opposing ends to a respective one of said longitudinally elongated slots of each of said side portions for releasable securement around a user's waist; and,
a pair of shoulder straps, each of said pair of shoulder straps being coupled to said upper end of said central portion on a first end thereof and releasably coupled to a respective one of said pair of fastening rings on an opposing second end thereof.



5,626,271
CHILD CARRIER WITH KICKSTAND
Christopher J. Messey, St. Louis, Mo.; Timothy O'Shea, and Terry Ellard, both of Seattle, Wash., assignors to American Recreation Products, Inc., St. Louis, Mo.
Filed Aug. 11, 1995, Ser. No. 514,186
Int. Cl.[6] A61G *1/00*
U.S. Cl. 224—161 10 Claims



1. A child carrier for supporting a child adjacent the back of a hiker's torso comprising:

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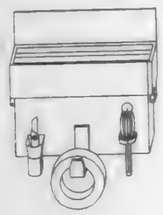
a forward portion having straps engageable with the hiker's torso for enabling the hiker to tote the child carrier in a hands-free manner;
a rearward portion generally rearward of and spaced from the forward portion;
a seat portion generally between the forward and rearward portions and operatively connected thereto for supporting a child;
a child compartment between the forward and rearward portions and defined at least in part by the seat portion;
a generally rigid frame member operatively connected to and adjacent the rearward portion of the child carrier;
a kickstand having a ground-engageable portion;
a hinge operatively connecting the kickstand to the frame member for pivotal movement of the kickstand relative to the frame member between a retracted position in which the ground-engageable portion of the kickstand is positioned generally adjacent the frame member, and a propping position in which the ground-engageable portion of the kickstand is positioned away from the frame member for engaging a generally horizontal surface to prop the child carrier in a generally upright position on said generally horizontal surface when the child carrier is not being worn by the hiker;
at least one of the straps of the forward portion being operatively connected to the kickstand so that tensioning of said at least one of the straps causes the kickstand to move to its retracted position.

5,626,272

DRYWALL PAK

Darryn M. Klemansky, 104 Marian Ave., Pittsfield, Mass. 01201

Filed Jun. 30, 1995, Ser. No. 497,379
Int. Cl.[6] A45F *3/00*; **B65D** *3/00*
U.S. Cl. 224—674 **2 Claims**



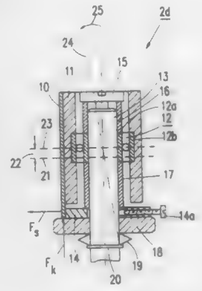
1. A cleaning and holding device for drywall taping knives and accessories comprising:
a box-like tub for holding a cleaning solution;
said tub having spaced apart sidewalls and endwalls, a flat bottom wall and a snap-down lock top;
one sidewall having a belt loop attached thereto;
another sidewall having attachments for accessories attached thereto including a screwdriver holder, a drywall tape hanger and a sheetrock knife holder;
said snap-down lock top is removably attached for easy access to clean and fill said tub;
said top having spaced apart sidewalls and endwalls wherein one sidewall is at least four times as large as the other sidewall for use as a body guard to protect a user against sharp drywall knives and to keep the clothes of the user clean;
said top having an inner, peripheral, flexible rubber seal attached thereto to establish a seal between said tub and said top to prevent cleaning solution leakage when said top is attached to said tub;
said snap-down lock top includes a cut-out central portion;
said cut-out central portion contains a flat, centrally slotted rubber piece aligned with and attached thereto for holding drywall taping knives;
each endwall of said top contains one female snap-down lock; and
each endwall of said tub contains a male snap-lock tab attached thereto to accept each female snap-down lock.

5,626,273

RECORDING AND/OR REPRODUCING APPARATUS WITH MOVABLE GUIDE ROLLER

Wolfgang Fell, Seeheim, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1995, Ser. No. 381,605
Claims priority, application Germany, Feb. 18, 1994, 44 05 154.9
Int. Cl.[6] B65H *23/32*; *57/14*
U.S. Cl. 226—194 **20 Claims**



1. A magnetic-tape recording and/or reproducing apparatus comprising a guide roller for guiding and diverting a magnetic tape, which guide roller comprises a shaft, a first roller member rotatably and pivotably mounted on said shaft, and a guide flange disposed near said first roller member for receiving an edge of the magnetic tape, the edge of the magnetic tape being pressed against the guide flange during operation over a wrapping angle, the wrapping angle having a bisector, comprising:
a second roller member interposed between the first roller member and the guide flange,
said second roller member being adjustable relative to the first roller member in the direction of said bisector,
and means for affixing said first and second rollers relative to each other.

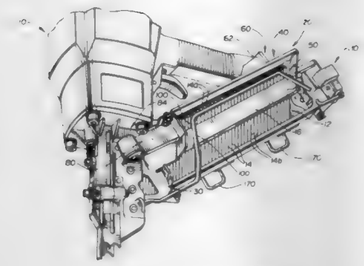
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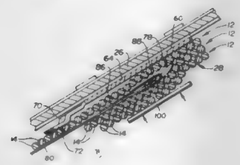
NAIL STRIP MAGAZINE WITH SPRING LEAF TO BIAS FEEDING MEMBER AND TO SEPARATE NAIL STRIPS

Yury Shkolnikov, Glenview; Tony Deieso, Wadsworth; Mohamed K. Wagdy, Arlington Heights, and Frank C. Howard, Mount Prospect, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 5, 1996, Ser. No. 597,071
Int. Cl.[6] B25C *1/04*
U.S. Cl. 227—109 **20 Claims**

1. A magazine, for use with a nail-driving tool adapted to receive at least one nail strip comprising a plurality of collated nails and to drive said nails individually and successively from said nail strip, for storing a plurality of said nail strips in a side-by-side relationship with respect to one another so that each stored nail strip has a nail defining a leading end of said nail strip and a nail defining a trailing end of said nail strip, said magazine being elongate, having an outlet end, an opposite end, and a side rail along one side of said magazine, said outlet end of said magazine having an outlet through which the stored strip disposed nearest to said side rail of said magazine is feedable, and wherein each nail of each nail strip stored within said magazine has a head an shank, said magazine comprising:





a frame;
means for biasing said stored strips of nails toward said side rail of said magazine;
a feeding member movable along said frame between an advanced position near said outlet end of said magazine and a retracted position near said opposite end of said magazine, said feeding member having a nail-engaging portion for engaging said nail defining said trailing end of said stored nail strip disposed nearest to said side rail of said magazine when said feeding member is released from said retracted position, after having been moved to said retracted position, so as to feed said nail strip, having said engaged nail, toward said outlet of said magazine when said feeding member is moved from said retracted position toward said advanced position; and
means comprising a leaf spring for biasing said feeding member toward said advanced position, said leaf spring having a leading end secured to said frame at a position near said outlet end of said magazine, a trailing end secured to said feeding member and movable along with said feeding member, said leaf spring being disposed so as to uncoil as said feeding member is moved toward said retracted position, to recoil as said feeding member is moved toward said advanced position, and to be longitudinally interposed between said stored nail strip disposed nearest to said side rail of said magazine and the next nail strip stored within said magazine when said feeding member is moved from said advanced position to said retracted position as well as when said feeding member is moved from said retracted position to said advanced position.

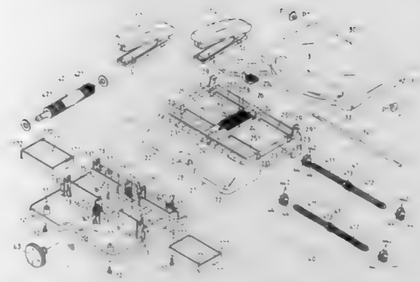
5,626,275

TWIN STAPLER DEVICE

Chun-Ku Chen, 58, Ma Yuan West St., Taichung, Taiwan

Filed Feb. 15, 1996, Ser. No. 602,032
Int. Cl.[6] B25C *5/11*; *7/00*
U.S. Cl. 227—110 **2 Claims**

1. A twin stapler device comprising:
a base having a plurality of hollow cylinders in four corners of said base;
two parallel block walls disposed in said base;
two slide passages disposed in said base;
a plurality of supporting plates disposed in said base;
a plurality of props disposed in said base;
a U-groove formed on a front periphery of said base to receive a rotor;
a platform disposed on said base;
said platform having an interior therein, at least two seats formed on said platform;
a corresponding plurality of staplers received in said at least two seats;



each said seat having two parallel elongated holes;
a ridge disposed between two of said seats;
two rows of a plurality of parallel positioning holes formed on said ridge;
a slot formed between two rows of said positioning holes;
two lugs disposed on two rear corners of said platform;
a plurality of threaded cylinders disposed in said corners of said platform;
each said lug having a round hole thereon;
an L-shaped block plate disposed on said ridge;
a block plate having a front surface, two click hooks under said block plate, two elastic arms, and two protrusions disposed at an end of each said elastic arms;
said click hooks inserted in said slot;
said protrusions clicked in said corresponding positioning holes;
a notch formed on a front bottom of said platform;
a cover having a press portion in a front of said cover, a circular hole and a through hole thereon;
said cover and said platform connected pivotally;
a restrained rod passing through said through hole and an upper front portion of said corresponding staplers;
an adjusting device having a front and rear screw rods disposed on said corresponding supporting plates;
two ends of each said screw rod inserted in corresponding recesses of said supporting plates;
a left portion of each said screw rod having a clockwise external thread, and a right portion of each said screw rod having a counterclockwise external thread;
a gear ratchet disposed at a middle portion of each said screw rod;
each said screw rod having two rotatable blocks screwed thereon;
each said rotatable block having an inner threaded hole and two upper inserting arms;
said inner threaded hole receiving said corresponding screw rod;
said inserting arm inserted in said corresponding elongated hole;
a guide rod disposed on said props;
said guide rod having front and rear outer threads thereon engaged with said corresponding screw rods;
a rotor connecting to a front end of said guide rod;
an inserted recess which is formed at a bottom of each said stapler receiving said inserting arm;
a plurality of threaded fasteners inserted in said corresponding hollow cylinders and said corresponding threaded cylinders to fasten said base and said platform together.

5,626,276

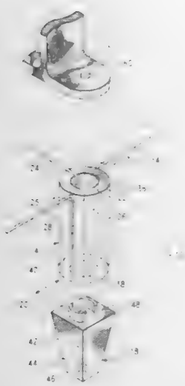
LINKAGE DRIVE MECHANISM FOR ULTRASONIC WIREBONDING

Jiann-Chang Lo, and Michael Servedio, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1996, Ser. No. 616,127
Int. Cl.[6] H01L *21/603*
U.S. Cl. 228—4.5 **10 Claims**

1. Apparatus for performing wirebonding operations on circuit chips, wherein said apparatus comprises:
a first drive arm mounted to pivot about a first stationary pivot axis;

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a second drive arm mounted to pivot about a second stationary pivot axis, wherein said second stationary pivot axis is parallel to said first stationary pivot axis;

a linkage extending between said first and second drive arms, wherein said linkage is pivotably attached to said first and second drive arms, allowing said second drive arm to move independently from said first drive arm;

a wirebonding assembly mounted on said linkage, wherein pivoting movement of said first drive arm and pivoting movement of said second drive arm each effect movement of said wirebonding assembly;

first drive means for pivoting said first drive arm about said first stationary pivot axis; and

second drive means for pivoting said second drive arm about said second stationary pivot axis.

5,626,277

MOUNTING APPARATUS OF SOLDER-BALLS

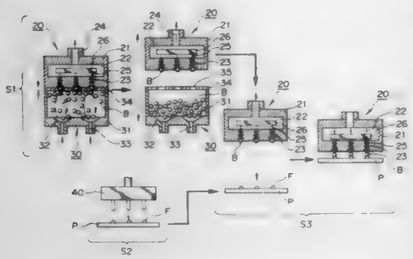
Yasuo Kawada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 18, 1995, Ser. No. 516,823

Claims priority, application Japan, Aug. 19, 1994, 6-217901

Int. Cl.[6] B23K *3/00;3/06*

U.S. Cl. 228—41 **19 Claims**



1. An apparatus for mounting solder-balls on a plurality of pad electrodes formed on a circuit substrate, comprising:

a ball suction jig having a plurality of ball suction holes formed in a jig body in correspondence with an electrode pattern of the substrate and a hollow space formed in an interior of the jig body in communication with each of the ball suction holes;

a ball feed jig having a ball tank receiving the solder-balls for feeding the solder-balls to said ball suction jig through an opening portion of said ball tank; and

a blow means for agitating the solder-balls received in said ball tank, said blow means comprising blow out holes arranged through a bottom wall of said ball tank and connectable to a supply of pressurized gas, and said bottom wall comprises annular concave ball receivers surrounding said blow out holes.

5,626,278

SOLDER DELIVERY AND ARRAY APPARATUS

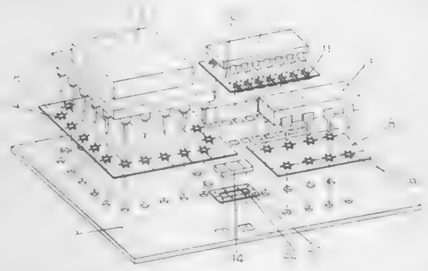
Ching C. Tang, 2066 Verbena Ct., Fremont, Calif. 94539

Continuation of Ser. No. 228,275, Apr. 15, 1994, abandoned.

This application Nov. 20, 1995, Ser. No. 562,542

Int. Cl.[6] B23K *35/14*

U.S. Cl. 228—56.3 **17 Claims**



15. A solder delivery and array device for soldering electronic components having surface mounting leads or through hole pins to a printed circuit board, comprising:

a solder preform, said solder preform having a body portion, a plurality of lugs and corresponding lockers,

a means for retaining said solder preform including a flexible sheet material having a plurality of apertures for receiving said lugs, and an opening,

wherein each of said lockers includes an enlarged portion for locking said plurality of lugs in said plurality of aperatures to prevent said body portion from withdrawing from said retaining means, and

wherein said opening exposes said solder preform body portion to one side of the retaining means that is opposite to said solder preform body portion.

5,626,279

METHOD FOR FASTENING A FIRST SUBSTRATE ON A SECOND SUBSTRATE AND EMPLOYMENT OF SAID METHOD FOR MANUFACTURING A THREE-DIMENSIONAL CIRCUIT ARRANGEMENT

Werner Pamler, Munich, and Siegfried Schwarzl, Neubiberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 13, 1995, Ser. No. 555,855

Claims priority, application Germany, Nov. 17, 1994, 44 40 982.6

Int. Cl.[6] H05K *3/34*

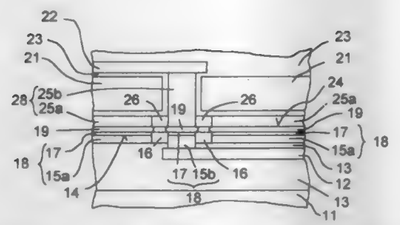
U.S. Cl. 228—123.1 **20 Claims**

1. A method for electrically connecting and mechanically securing a first substrate to a second substrate, said method comprising the steps of:

providing a first substrate including at least one surface having electrically conductive structures and insulating structures defined thereon;

selectively depositing a gallium layer onto surfaces of the electrically conductive structures by vapor phase deposition using a metalloorganic compound;

providing a second substrate including at least one surface having electrically conductive structures and insulating structures defined thereon;



moving the first and the second substrates relative to each other so that at least portions of their respective electrically conductive structures are disposed in abutting face to face relationship to provide an assembly; and

thereafter, subjecting the assembly to conditions sufficient to cause the gallium layer to melt and to form an intermetallic phase with the electrically conductive regions on the first and second substrates to electricaily connect and mechanically secure the first and second substrates together.

5,626,280

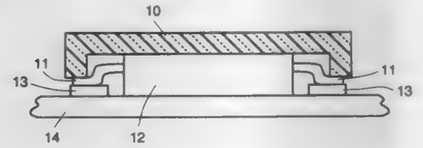
INFRARED TRANSPARENT SOLDERING TOOL AND INFRARED SOLDERING METHOD

David F. Ciambrone, Lake Forest, Calif., assignor to HE Holdings, Inc., Los Angeles, Calif.

Filed Jun. 5, 1995, Ser. No. 462,721

Int. Cl.[6] H05K *3/34*

U.S. Cl. 228—180.21 **11 Claims**



5. A method of infrared soldering leads of a component to pads of a printed wiring board, said method comprising the steps of:

fabricating a soldering tool from a selected material that is transparent to infrared radiation that is formed into a predetermined shape such that it matches the shape of the component and that is disposed over the component whose leads are to be soldered to the pads of the printed wiring board, and that is configured such that the tool contacts the leads and causes the leads to contact the pads of the printed wiring board;

placing the tool over a leaded component that is to be soldered such that the tool **10** holds the leads of the component in place;

disposing the leaded component and the tool in an inert atmosphere in a infrared reflow soldering machine; and

infrared soldering the leads to the pads of the printed wiring board using the infrared reflow soldering machine.

5,626,281

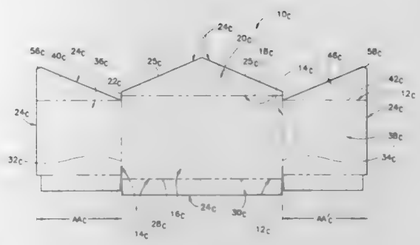
FOLDED ENVELOPES, UNITARY BLANKS FOR FORMING FOLDED ENVELOPES AND METHODS FOR MANUFACTURING FOLDED ONE-PIECE ENVELOPES

Benjamin H. Bloom, 1103 Berwind Rd., Wynnewood, Pa. 19096

Filed Jan. 26, 1994, Ser. No. 188,138

Int. Cl.[6] B65D *27/14*

U.S. Cl. 229—75 **3 Claims**



1. A foldable blank for forming an envelope, comprising:

a. a material sheet having linear scores of reduced strength therein to facilitate folding of said sheet therealong;

b. adjacent ones of said scores being transverse to one another;

c. said scores defining a rectangular boundary of a central rectangular portion of said sheet forming a front of said envelope when folded;

d. a first one of said scores defining one boundary of a first triangular portion of said sheet adjoining said central portion;

e. a second score parallel with said first score defining one boundary of a second generally rectangular portion of said sheet adjoining said central portion;

f. third and fourth scores spaced from one another, extending between said first and second scores and respectively defining boundaries of respective third and fourth generally rectangular portions of said sheet adjoining said central portion;

g. parallel fifth and sixth scores extending respectively transversely from said third and fourth scores parallel with said first and second scores and defining additional boundaries of said third and fourth generally rectangular portions of said sheet and respective boundaries of respective second and third triangular portions of said sheet;

h. said third and fourth portions being respectively foldable along said third and fourth scores to form a rectangular back, substantially congruent with said front of said envelope;

i. said first triangular portion of said sheet being foldable along said first score separating said central portion from said first triangular portion to form a closure flap of said envelope;

j. said second and third triangular portions of said sheet being respectively foldable along said fifth and sixth scores to overlay said third and fourth rectangular portions and form respective portions of a triangular safety flap underlying said closure flap when said third and fourth rectangular portions are convergingly folded along said third and fourth scores to form said rectangular envelope back;

k. said second generally rectangular portion of said sheet being foldable along said second score to partially overlay said back of said envelope formed by said third and fourth rectangular portions and provide a closed bottom of said envelope after said third and fourth generally rectangular portions have been respectively folded along said third and fourth scores to form said rectangular back;

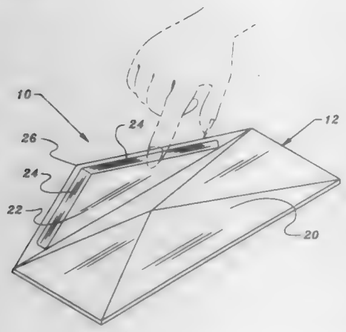
l. parallel seventh and eighth scores extending respectively transversely from said third and fourth scores parallel with said first and second scores and defining additional boundaries of said third and fourth generally rectangular portions of said sheet and respective boundaries of respective fifth and sixth rectangular portions of said sheet;

m. said second and third triangular portions of said sheet being respectively foldable along said fifth and sixth scores to overlay said third and fourth rectangular portions and form respective portions of a triangular safety flap underlying said closure flap when said third and fourth rectangular portions are folded along said third and fourth scores to form said rectangular back; and

n. said fifth and sixth rectangular portions of said sheet being respectively foldable along said seventh and eighth scores to overlay said third and fourth rectangular portions and form respective portions of a rectangular safety flap underlying said second rectangular portion when said second rectangular portion has been folded along said third and fourth scores to form a closed bottom of said envelope.

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5,626,282
ENVELOPE SEALING SYSTEM
Gerald C. Lewis, 120-T W. Barnes St., P.O. Box 233, Centralia, Mo. 65240-0233
Filed Dec. 6, 1995, Ser. No. 567,914
Int. Cl.[6] B65D *27/16*
U.S. Cl. 229—80 1 Claim



1. A new and improved envelope sealing system comprising, in combination:

an envelope comprising a generally rectangular shaped lower pocket and a triangular shaped upper flap, the upper flap having two angled side edges meeting to form a point, a strip of glue being positioned adjacent to each side edge of the upper flap;

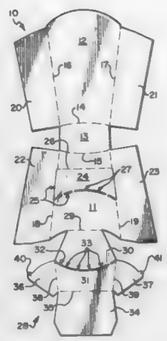
an adhesive band formed in an elongated generally rectangular configuration, equidistantly spaced perforations separating the adhesive band into segments, the band being foldable along the perforations to permit easy storage of the envelope sealing system, the band including a sealant strip formed in an elongated rectangular configuration with an upper surface and a lower surface, each surface including adhesive material positioned thereupon, the band further including a peel off cover couple to its upper and lower surfaces, the peel off covers retaining the adhesive properties of the strip during storage, each segment of the band being appropriately sized and shaped so that the lower surface of an exposed sealant strip may be easily coupled upon the glue strips of the upper flap, the envelope being easily sealable after affixation of the sealant strips to the upper flap by simply folding the flap downward so that the upper surface of the sealant strips become adhesively affixed to the lower pocket of the envelope.

5,626,283
CONTAINER FOR FOOD AND CONDIMENTS
Mark Mellon, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.
Filed Feb. 7, 1996, Ser. No. 598,122
Int. Cl.[6] B65D *25/04*
U.S. Cl. 229—120.13 7 Claims

1. A combination container having two separate compartments formed from a single blank of foldable material for holding two different products comprising,

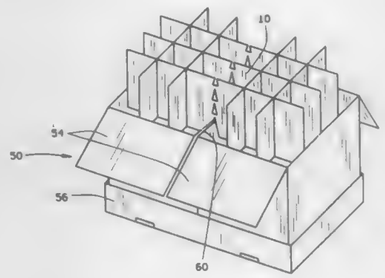
(a) a scoop compartment having integral front, rear and bottom walls connected together along fold lines and side walls formed by overlapping side flaps foldably attached to each side of said front and rear walls; and,

(b) a pouch compartment located adjacent to and adapted to be extended outwardly from the front wall of the scoop compartment, said pouch compartment having a front panel, a pair of



side panels foldably attached to the front panel and a rear panel, each being formed from auxiliary blank material that is foldably attached to the front wall of the scoop compartment.

5,626,284
DIVIDABLE PARTITION ASSEMBLY
John J. Franzen, Oconomowoc, Wis., assignor to Rock-Tenn Company, Norcross, Ga.
Filed Nov. 22, 1995, Ser. No. 562,030
Int. Cl.[6] B65D *5/49*
U.S. Cl. 229—120.36 20 Claims

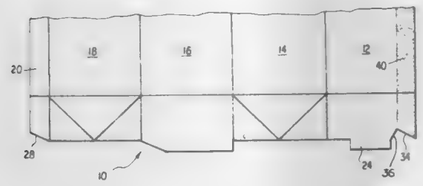


1. A dividable partition assembly defining a plurality of compartments for use in a container having an interior with a longitudinal length and a lateral width, said container further consisting of at least two substantially identical subcontainers positioned side by side and serving to divide said container longitudinally, each subcontainer interior being defined by a horizontal bottom surrounded by laterally opposite front and back walls and longitudinally opposite left and right side walls, the walls having substantially equal vertical heights, the right side wall of one subcontainer and the left side wall of the other subcontainer serving to form a dividing wall which divides said container longitudinally, said partition assembly comprising:

a plurality of longitudinal panels having a breakaway segment located at the center of each longitudinal panel allowing said longitudinal panels to be divided in half; and

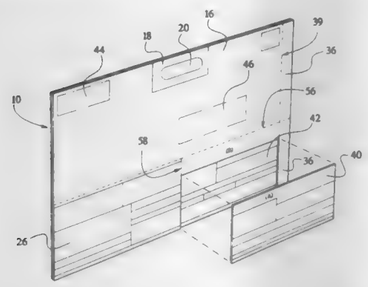
a plurality of lateral panels engaging said longitudinal panels.

5,626,285
SIDESEAM JOINT FOR CARTON
Richard A. Tedford, Jr., Wallkill, N.Y., and Joseph Blackman, Durham, N.C., assignors to International Paper Company, Purchase, N.Y.
Filed May 11, 1995, Ser. No. 439,320
Int. Cl.[6] B65D *5/06*
U.S. Cl. 229—132 4 Claims



3. A tubular structure formed from a paperboard blank having first, second, third, fourth, and fifth parallel panels foldably joined in series, a sideseam defined by overlapping said fifth panel onto a free edge portion of said first panel, said fifth panel having a taper at one end thereof by having a portion removed from said one end, the improvement comprising, an end of said free edge of said first panel having a cutout, said cutout having an edge substantially coinciding with said taper.

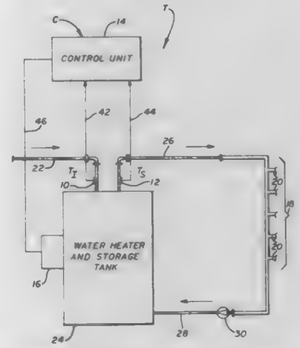
5,626,286
ONE-PIECE SPECIAL SERVICE MAILING ASSEMBLY WITH FLAPLESS SEALING AND A METHOD FOR FORMING A UNITARY MAILPIECE
Glenn Petkovsek, 20 Tortoise Park Cove, Little Rock, Ark. 72211-2349, assignor to Glenn Petkovsek, Little Rock, Ark.
Filed Mar. 6, 1995, Ser. No. 398,747
Int. Cl.[6] B65D *27/00*
U.S. Cl. 229—300 18 Claims



1. A system for mailing an article requiring special services, the system comprising:

an envelope having an interior compartment formed by a first sheet and a second sheet wherein a first portion of the first sheet and the second sheet is adhesively sealed around their peripheral edges to form the interior compartment and further wherein a second portion of the first sheet and the second sheet extends beyond one of the sealed sides of the first portion to form both a return postcard and at least one form wherein each of the return postcard and the at least one form is integrally formed with and adjacently attached directly to the envelope and is independently detachable from the envelope.

5,626,287
SYSTEM AND METHOD FOR CONTROLLING A WATER HEATER
Timothy D. Krause, Cypress, Calif., and Leo J. Weeks, Las Vegas, Nev., assignors to TDK Limited, Cypress, Calif.
Filed Jun. 7, 1995, Ser. No. 476,319
Int. Cl.[6] F24H *1/00*; F23N *1/08*
U.S. Cl. 236—20 R 18 Claims



1. A controller for a water heating system having a heater, an outlet conduit for supplying heated water to a plurality of users, and an inlet conduit for introducing unheated water through an inlet orifice to replenish heated water supplied to said users, the controller comprising:

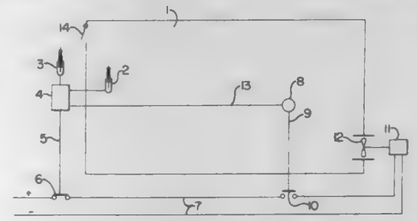
an outlet sensor for measuring an outlet temperature of said heated water and generating an outlet temperature signal representative thereof;

an inlet sensor for measuring an inlet temperature of said unheated water at a location adjacent the inlet orifice such that said inlet temperature drops when unheated water is introduced;

logic responsive to said inlet temperature signal to derive a control temperature value which varies continuously with the amount by which said inlet temperature drops; and

control circuitry responsive to said outlet temperature signal for controlling the heater to maintain a preselected relationship between said outlet temperature and said control temperature value.

5,626,288
PROCESS AND APPARATUS FOR VENTILATING AN ENCLOSED SPACE
Jakob Huber, 8 Chemin des Avenyers, 1806 St. Legier, Switzerland
Filed Jun. 6, 1995, Ser. No. 466,352
Claims priority, application Switzerland, Jan. 26, 1994, 3201/94
Int. Cl.[6] F24F *7/013*
U.S. Cl. 236—49.3 14 Claims



1. An apparatus for ventilating an enclosed air space of a building and comprising

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first and second spaced apart openings for admitting air into and from the space,

ventilating fan means positioned in at least one of said first and second openings,

control means for operating said ventilating fan means so as to ventilate the space with outside air upon

(1) the absolute temperature in the space reaching a predetermined upper limit, and the temperature of the outside air being below the temperature of the space by a predetermined differential, and so as to cool the space, and upon

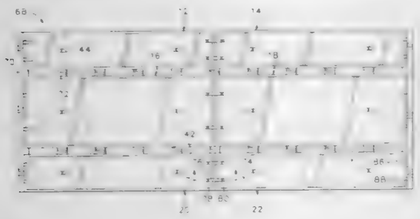
(2) the absolute temperature in the space reaching a predetermined lower limit, and the temperature of the outside air exceeding the temperature of the space by a predetermined differential, and so as to warm the space.

5,626,289

PRECAST CONCRETE RAILROAD CROSSING AND METHOD FOR MAKING

Albert P. Demers, Jr., 4087 Colts Foot La., Lake Oswego, Oreg. 97035, and David Brandt, 6345 Caufield La., Stayton, Oreg. 97383

Filed Aug. 25, 1995, Ser. No. 519,110
Int. Cl.[6] E01B *2/00*
U.S. Cl. 238—8 **20 Claims**



1. A grade crossing on a roadway intersected by a pair of railroad tracks supported on ties, said grade crossing comprising:

a pair of precast concrete panels laid end to end between such rails on such ties, each of said panels including a recess cast into an upper surface thereof; and

a strap substantially coated with a substantially non-conductive elastomer having a first end secured to one of said panels and a second end secured to the other of said panels, said strap being substantially received within said recesses.

5,626,290

RAIN MAKING SYSTEM

W. Donald Kuntz, 1830 Park Ave., Bridgeport, Conn. 06604-2226

Filed Aug. 28, 1995, Ser. No. 520,068
Int. Cl.[6] A01G *15/00*
U.S. Cl. 239—2.1 **9 Claims**

1. A rain making system comprising a network of plurality of filaments arranged outdoors and wherein said network is symmetrical and comprises a plurality of vertical filaments hanging from a plurality of horizontal cords and wherein said horizontal cords are anchored on a plurality of poles.

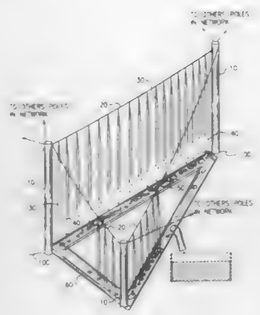
5,626,291

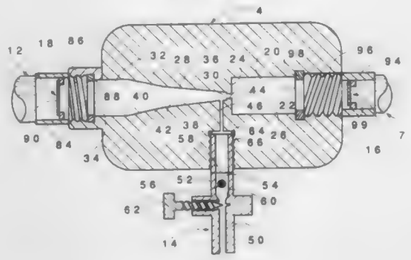
CLEANING SOLUTION SPRAYING SYSTEM

Robert A. Flinn, 411 Live Oak Rd., and Alfred E. Flinn, 875 Live Oak La., both of Vero Beach, Fla. 32963

Filed Nov. 14, 1994, Ser. No. 338,038
Int. Cl.[6] B05B *7/28*
U.S. Cl. 239—310 **3 Claims**

1. A cleaning solution spraying system comprising:





a venturi unit, a nozzle unit including a shut-off valve, coupling means to connect said venturi unit with a pressurized water stream source, tubular means to connect said venturi unit with a source of liquid cleaning chemical, said tubular means including an adjustable valve means, conduit means joining said venturi unit to said nozzle unit, a first check valve means to prevent flow of liquid from said venturi unit through said tubular means and a second check valve means to prevent flow of liquid from said venturi unit through said coupling means, a third check valve means to prevent flow from said nozzle unit to said venturi unit,

said venturi unit comprises:

a tubular inlet portion of length L1 defined by a first inlet end including a circular inlet opening of diameter D1, a first outlet end, and a first central passage integrally joining said first inlet end to said first outlet end,

an tubular outlet portion of varying longitudinal circular cross-section defined by:

a second inlet end,

a second outlet end including a circular outlet opening of diameter D2 and

a second central passage integrally joining said second inlet end to said second outlet end,

said second central passage being defined by an inflow section of length L2 and an outflow section of length L3,

said inflow section tapering outwardly from said second inlet end toward said outflow section, the circular junction of said inflow section with said outflow section having a diameter of D3,

said outflow section tapering outwardly from said inflow section toward said second outlet end, and

a throttle portion of circular cross-section having a diameter D4 and a longitudinal length L4 joining said first outlet end to said second inlet end,

a lateral conduit of circular cross-section of diameter D5 positioned a distance L5 from said second inlet end communicating with said inflow section,

first connection means associated with said first inlet end to connect said venturi unit to said coupling means, and

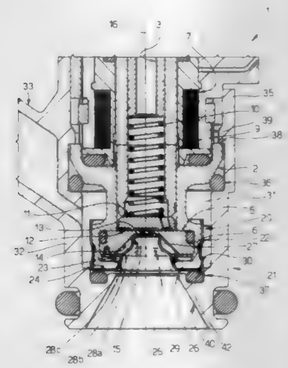
second connection means associated with said second outlet end to connect said venturi unit to said conduit means.

5,626,292

INJECTOR WITH HIGH ATOMIZATION CAPACITY

Massimo Armaroli, Albani, and Roberto Consolini, Volta, both of Italy, assignors to Magneti Marelli, S.p.A., Italy

Filed May 17, 1995, Ser. No. 443,014
Claims priority, application Italy, May 18, 1994, BO94A0223
Int. Cl.[6] B05B *7/12*
U.S. Cl. 239—408 **14 Claims**



1. Injector with a high atomization capacity, in particular for the supply of a motor vehicle engine, the injector comprising:

an electromagnetic actuator;

a distributor element provided with at least one atomization hole;

a stop valve controlled by said elelctromagnetic actuator to control the formation of at least one jet of fuel throughout said atomization hole;

a casing having one axis of symmetry and housing said electromagnetic actuator, said distributor element and said stop valve;

auxiliary atomization means disposed immediately after the distributor element and comprising a chamber (**25**) delimited internally at least partially by a truncated conical surface (**28***b*) into which said atomization hole opens, and at least one substantially radial hole (**29**) which has an axis orthogonal to said truncated conical surface and which has one end opening laterally inside said chamber and the opposite end communicating with means for supplying an auxiliary air flow;

wherein said auxiliary atomization means is carried by a mixer element, said mixer element being defined at least partially by said truncated conical surface, and by a cap partially defining said chamber;

wherein said mixer element is fitted on and axially projects from said distributor element, and said cap being fitted axially on and projecting from said mixer element externally on said casing;

wherein said distributor element comprises a plate fixed to said casing, said plate being provided with a central portion through which said at least one atomization hole is made, and said plate having a cavity (**14**) disposed after said at least one atomization hole and delimited by a first conical surface; and

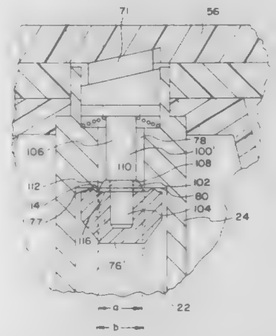
wherein said mixer element includes a truncated conical wall (**23**) that includes said truncated conical surface (**28***b*) and is delimited externally by another conical surface (**26**), wherein said wall (**23**) is inserted into said cavity of said plate in such a way that said mixer element forms a fluid-tight seal between said first truncated conical surface of the distributor element and said truncated conical wall (**23**) of said mixer element, said another conical surface (**26**) having a lesser conicity than that of said first conical surface of the cavity (**14**) so as to form between said first conical surface and said another conical surface (**26**) an annular void (**27**) of pre-determined dimensions into which said auxiliary air flow emerges.

5,626,293

NOZZLE CONTROL FOR SPRAY HEAD ASSEMBLY

S. Spear Lancaster, 1188 Bacon Ridge Rd., Crownsville, Md. 21132

Filed May 18, 1995, Ser. No. 443,778
Int. Cl.[6] B05B *1/30*
U.S. Cl. 239—530 **6 Claims**



1. A spray head assembly comprising a housing shell, a movable actuator arm including a handle and an actuator shaft, said housing shell defining a spray-head compartment into which said actuator shaft of said actuator arm extends and from which liquid is sprayed through at least one spray-nozzle pore, and a liquid-supply pipe defining a liquid-supply passageway leading into said spray-head compartment, wherein the assembly further includes:

a resilient poppet member positioned inside said liquid-supply passageway for being moved away from a valve seat having a valve-seat passageway therethrough for allowing flow of water from said water-supply passageway into said spray-head compartment, said poppet member being driven closed by liquid flow toward said spray-head compartment;

a rigid valve shaft extending from said spray-head compartment through said valve-seat passageway to said poppet member for moving said poppet member away from said valve seat against liquid flow in said liquid-supply passageway;

a mechanical movement transmitter coupled between said actuator shaft and said valve shaft for transmitting motion from said actuator shaft into axial motion of said valve shaft to thereby move said poppet member away from said valve seat when said handle of said actuator arm is moved;

wherein is further included a relatively-rigid, annularly-shaped, separate flange, mounted on said valve shaft extending radially outwardly from said valve shaft, said flange having a bearing face for impinging on a sealing face of said poppet member directed substantially toward said valve seat and having a maximum outer diameter which is only slightly smaller than an inner diameter of said valve-seat passageway whereby said separate flange almost completely fills said valve-seat passageway so as to significantly impede a flow of liquid through said valve-seat passableway;

wherein said valve shaft has at least two different diameter portions so as to form a shoulder at a transition between a larger diameter portion and a smaller diameter portion, said separate flange having a central opening which is large enough for receiving said smaller diameter portion but which is not large enough for receiving said larger diameter portion so that said separate flange impinges against said shoulder, said valve poppet having a hole therein for receiving an end of said smaller diameter portion for holding the valve poppet on said smaller diameter portion of said valve shaft and impinging on said flange to hold said flange on said valve shaft.

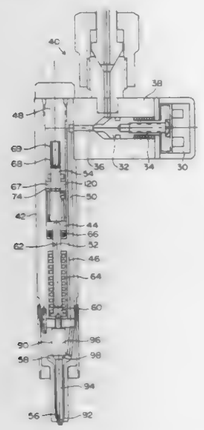
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5,626,294

DIMETHYL ETHER POWERED ENGINE

James C. McCandless, Grosse Pointe Park, Mich., assignor to Navistar International Transportation Corp., Chicago, Ill.

Division of Ser. No. 393,103, Feb. 22, 1995, Pat. No. 5,485,818. This application Nov. 28, 1995, Ser. No. 563,800
Int. Cl.[6] F02M *39/00*
U.S. Cl. 239—533.3 2 Claims



1. A fuel injector for an internal combustion engine comprising:

an elongated cylindrical shaped nozzle holder including a fuel inlet passage that is controlled by a fuel inlet valve, said fuel inlet valve being controlled by a solenoid carried by said nozzle holder to initiate a fuel injection cycle;

a cylindrical pintle valve body secured to said nozzle body and having an inlet port associated with said inlet passage, an internal cavity communicating with said inlet port, and a single axially aligned discharge aperture, said valve body having an beveled surface disposed interiorly adjacent to and about said discharge aperture;

a stepped-diameter pintle valve member mounted for reciprocal movement in said valve body between a closed position and a lifted position, said valve member including a discharge end having a first beveled portion, a cylindrical portion adjacent said first beveled portion of a given diameter slightly smaller than said discharge aperture, and a second beveled portion adjacent said cylindrical portion, said discharge end extending into said discharge aperture when said valve is in a closed position wherein said second beveled portion of said valve member abuts said beveled surface of said valve body, said valve member discharge end and said discharge aperture defining a variable flow area orifice therebetween dependent on the degree of movement of said valve member from said closed position toward said lifted position,

said valve member further having an upper portion including an end extending into a central bore of said nozzle holder, and a stepped diameter portion in said cavity such that when pressurized fuel enters said cavity, the pressurized fuel exerts a force on the stepped diameter portion of the valve member causing it to move toward said nozzle holder to open said orifice;

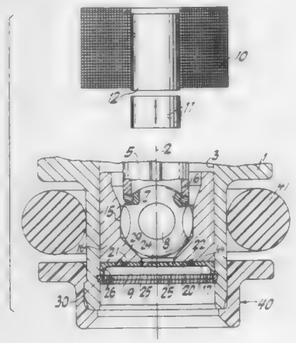
a damping device in said nozzle holder central bore and operatively associated with said valve member end to throttle the flow area of said orifice during the initial portion of the fluid injection cycle by limiting movement of said valve member.

5,626,295

INJECTION VALVE

Joerg Heyse, Markgroeningen, and Norbert Belzner, Heilbidun, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 3, 1995, Ser. No. 415,272
Claims priority, application Germany, Apr. 2, 1994, 44 11 554.7
Int. Cl.[6] B05B *1/00*
U.S. Cl. 239—596 6 Claims



1. In an injection valve having an upstream direction and a downstream direction, a perforated disk comprising:

(a) a first surface;

(b) a second surface arranged upstream of the first surface; and

(c) at least one spray hole, the at least one spray hole being produced by punching from the first surface to the second surface,

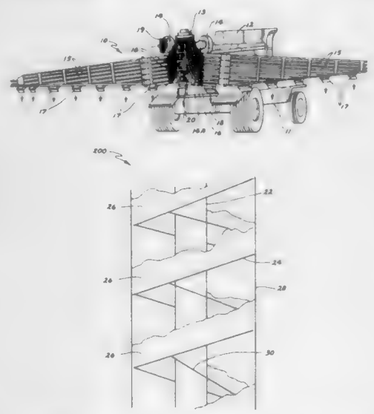
wherein the perforated disk has a tensile strength of at least 800N/mm^2.

5,626,296

QUICK REACTING AIR SPREADER APPARATUS

Robert J. Monson, 1027 Brenner Ave., St. Paul, Minn. 55113, and Laura K. Ehleringer, P.O. Box 54, Lowry, Minn. 56349

Filed Dec. 27, 1994, Ser. No. 364,673
Int. Cl.[6] B65G *33/00*
U.S. Cl. 239—655 8 Claims



1. In a system for distributing particulate solids, said system including a reservoir containing said particulate solids to be distributed and a vertical auger for conveying said particulate solids from said reservoir, said vertical auger having a housing and a generally continuous auger flighting rotatably mounted within said housing such that rotation of said generally continuous auger flighting transports said particulate solids in an upstream direction, the improvement comprising:

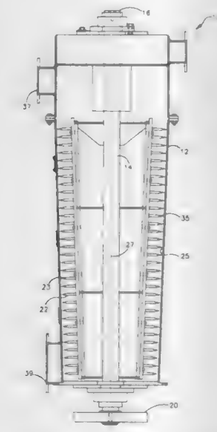
at least one baffle pivotally connected to the generally continuous auger flighting at a predetermined position and orientation such that said at least one baffle moves between a closed position obstructing the passage of the particulate solids through the housing of the vertical auger and an open position, wherein pressure exerted by the movement of the particulate solids through the housing of the vertical auger in the upstream direction pivots said at least one baffle to said open position permitting passage of the particulate solids past said at least one baffle, and movement of the particulate solids through the housing of the vertical auger in a downstream direction exerts pressure against said at least one baffle to pivot said at least one baffle to said closed position, thereby blocking further downstream movement of the particulate solids disposed upstream of said at least one baffle.

5,626,297

WOOD PULP OZONE BLEACHING CONTACTOR

Lawrence A. Carlsmith, Amherst; A. Sean Vote; Oscar Luthi, both of Nashua, and Anthony G. Abdulmassih, Hudson, all of N.H., assignors to Beloit Technologies, Inc., Wilmington, Del.

Division of Ser. No. 125,053, Sep. 21, 1993. This application Jun. 30, 1995, Ser. No. 491,351
Int. Cl.[6] B02C *19/12*
U.S. Cl. 241—57 11 Claims



10. A high consistency pulp ozone bleaching contactor comprising:

a generally vertically oriented and conically shaped housing having an interior surface, a vertical axis, an inlet and an outlet, the outlet being axially separated from and lower than the inlet;

a means for introducing high consistency pulp into the housing;

a means for introducing a flow of ozone into the housing;

a combing means for combing high consistency pulp, for contacting the ozone with the high consistency pulp and for rotating the high consistency pulp about a vertical axis to form a rotating annulus of high consistency pulp adjacent the housing interior surface; and

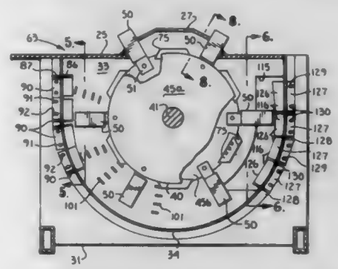
a relief means for limiting the build up of high consistency pulp fibers on the pin tips, wherein the relief means comprises the pin rotor being eccentrically mounted within the housing, the eccentric mounting of the pin rotor creating a close clearance on one side of the housing, between the pin tips and the housing interior surface, and a large clearance on the opposite side.

5,626,298

TUB GRINDER WITH REAR DISCHARGE HAMMER MILL AND ANGLED SHEAR PLATES

Adrian F. Arnoldy, Box 127, 712 Gambrinus St., Tipton, Kans. 67485

Filed Oct. 20, 1995, Ser. No. 546,492
Int. Cl.[6] B02C *13/286*
U.S. Cl. 241—101.761 28 Claims



1. A tub grinder for chopping and grinding material comprising:

a. a frame;

b. a stationary floor secured to said frame and having a floor opening extending therethrough;

c. a tub side wall rotatably mounted relative to said floor for rotation thereabout by first rotating means; said floor and said tub side wall forming a tub into which material to be processed is placed;

d. a mill having a mill housing including a first side wall, a second side wall and an end wall extending between said first and second side walls and which define a milling chamber; said mill housing secured to said frame and extending below said floor such that said floor opening opens into said milling chamber;

e. a rotor rotatably secured within said mill housing and connected to second rotating means;

f. a plurality of hammer assemblies secured to and rotatable by said rotor for chopping and grinding material in said milling chamber; at least a portion of each of said hammer assemblies extending above said floor along a portion of the path of travel of said hammer assemblies during rotation for cutting and pulling material into said milling chamber;

g. at least one of said side walls of said mill housing having a discharge opening formed therein adjacent a portion of said mill housing end wall; and

h. deflecting means for deflecting material in said milling chamber out said discharge opening.

5,626,299

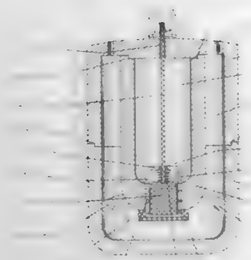
CONDIMENT MILL WITH CONVEYING SPACE

Brian T. Haynes, 119 W. Schubert Ave., Glendale Heights, Ill. 60139

Filed Jun. 1, 1995, Ser. No. 456,807
Int. Cl.[6] A47J *42/40*
U.S. Cl. 241—169.1 7 Claims

1. A mill for grinding condiment comprising a hollow body reservoir defining a condiment storage well with a grinding stator mounted at one end thereof and a grinding rotor rotatably seated within and in close spacial relation to said grinding stator with a rotational energy transfer device mounted at one end to said grinding rotor and at the other end removably attached to a

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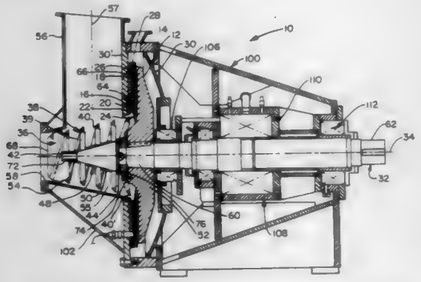
manipulatable top with a conveying means below said reservoir comprising a base with continuous raised edge and a means for suspending said base, with raised edge facing the reservoir, below said grinding stator whereby all condiment ground or falling from said grinding stator or said grinding rotor is retained upon said base inside the raised edge thereby defining a condiment conveying space.

5,626,300

DISC REFINER WITH CONICAL RIBBON FEEDER

Gregory R. Kohler, Williamsport, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed May 3, 1995, Ser. No. 434,017
Int. Cl.[6] B02K *23/02*
U.S. Cl. 241—247 **15 Claims**



1. A refiner for defibrating lignocellulosic feed material comprising:

a rotatable disc having a working face including a radially inner first inlet surface and a radially outer first grinding surface;

a second inlet surface juxtaposed with said first inlet surface, thereby forming an inlet gap which has an inlet entrance;

a second grinding surface juxtaposed with said first grinding surface, thereby forming a grinding gap extending substantially radially outwardly from said inlet gap;

a shaft connected to said disc for rotating the disc about a rotation axis;

a feed assembly including a feed mechanism supported for rotation about said rotation axis and a feed housing surrounding the feed mechanism, to advance feed material toward the face of said disc and into said inlet gap;

means for receiving feed material and directing said feed material to said feed assembly;

said feed mechanism including a substantially helical ribbon defined by coiled turns, the turns having an increasing diameter form one end of the feed mechanism remote from the disc face to another end of the feed mechanism at said face such that the perimeter of the turn at the greatest diameter of the ribbon, is situated at the entrance to said inlet gap; and

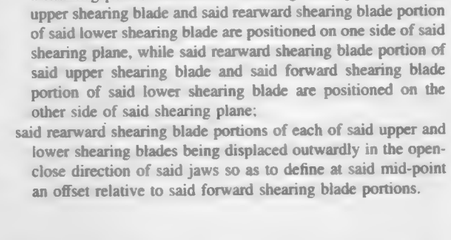
said feed housing enlarges toward the face of said disc and closely surrounds said ribbon.

5,626,301

STEEL MATERIAL SHEARING MACHINE

Sumio Morikawa, Sakai, and Masahiro Kondoh, Osaka, both of Japan, assignors to Ohyodo Diesel Co., Ltd., Osaka-fu, Japan

Filed Apr. 13, 1995, Ser. No. 422,521
Claims priority, application Japan, Apr. 18, 1994, 6-078289
Int. Cl.[6] B02C *1/06*
U.S. Cl. 241—266 **2 Claims**



1. A shearing machine for steel material adapted to be mounted, as an attachment, on a forward end of an arm of a working machine comprising:

a body of the shearing machine having a longitudinal axis;

a pair of upper and lower jaws pivotably supported at a forward end portion of said body by means of a common shaft for open-close movement relative to one another;

a shearing blade attached to each of said upper and lower jaws;

said shearing blades attached to said jaws defining a shearing plane in which shearing action for a steel material proceeds;

a pair of hydraulic cylinders disposed respectively adjacent to upper and lower longitudinal edges of said shearing machine body and extending substantially in parallel with said longitudinal axis of said body;

each of said hydraulic cylinders having a piston rod and each said piston rod having a forward end pivotably connected to a respective one of said upper and lower jaws at the rearward end portion thereof;

each of said upper and lower shearing blades having a forward shearing blade portion and a rearward shearing blade portion, said forward and rearward shearing blade portions defining a longitudinal mid-point therebetween;

said forward and rearward shearing blade portions of each of said upper and lower shearing blades being mutually angularly displaced at an angle less than 180 degrees which faces inwardly in the open-close direction of said jaws at said mid-point;

said upper and lower shearing blades being configured so that, when the pair of jaws engage a workpiece to be sheared along a shearing plane, said forward shearing blade portion of said upper shearing blade and said rearward shearing blade portion of said lower shearing blade are positioned on one side of said shearing plane, while said rearward shearing blade portion of said upper shearing blade and said forward shearing blade portion of said lower shearing blade are positioned on the other side of said shearing plane;

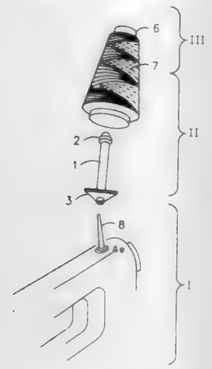
said rearward shearing blade portions of each of said upper and lower shearing blades being displaced outwardly in the open-close direction of said jaws so as to define at said mid-point an offset relative to said forward shearing blade portions.

5,626,302

SEWING MACHINE CONE SPOOL TO SPINDLE ADAPTER

Nancy H. Hrobar, Rte. 2, Box 133, Ben Wheeler, Tex. 75754

Filed Aug. 28, 1995, Ser. No. 519,970
Int. Cl.[6] B65H *49/06*
U.S. Cl. 242—130 **2 Claims**



1. A Sewing Machine Cone Spool to Spindle Adapter comprising:

a support conduit having a top end and a bottom end,

a bottom lip secured to said support conduit near said bottom end thereof, and

a spindle bearing surface being the inside surface of a ⅛-inch lavatory supply tube coaxially secured within said support conduit and extending from said bottom end of said support conduit towards said top end of said support conduit wherein said lavatory supply tube has a top end and a bottom end and having a molded ferrule at said bottom end thereof, wherein said molded ferrule is glued within said support conduit such that said lavatory supply tube, containing said spindle bearing surface, is coaxially received within said support conduit.

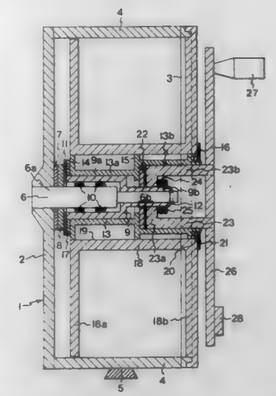
5,626,303

FLY-FISHING WITH VARIABLE DRAG

Berne Bringsen, Parkvägen 33, S-375 00 Mörrum, Sweden

PCT No. PCT/SE94/00132, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/19937, PCT Pub. Date Sep. 5, 1994
PCT Filed Feb. 17, 1994, Ser. No. 507,443
Claims priority, application Sweden, Mar. 10, 1993, 9300785
Int. Cl.[6] A01K *89/015*
U.S. Cl. 242—265 **4 Claims**

1. A fly-fishing reel, comprising: a frame, a shaft fixedly connected to the frame, a line spool rotatable about the shaft, a handle for rotating the line spool in a winding direction for winding a line thereon, a brake mechanism having two cooperating drag washers for braking the line spool when rotated in an unwinding direction for unwinding the line, an inner sleeve rotatably mounted on the shaft, one of the drag washers being fixed at a first end of the inner sleeve, and an outer sleeve rotatably mounted on the inner sleeve forming a hub non-rotatably connected to the line spool, wherein the inner sleeve is mounted on the shaft by a free-wheeling bearing so as to be freely rotatable about the shaft in the winding direction and non-rotatable about the shaft in the unwinding direction, the inner sleeve has an externally threaded portion at a second end, the outer sleeve is freely rotatable about the inner sleeve in the winding and unwinding directions, the other drag washer is fixed to the outer sleeve, and an operating sleeve non-rotatably connected to the handle, is screwed on the threaded portion of the inner sleeve so as to be further screwed on the threaded portion when the handle is rotated in the winding direction and to axially press the operating sleeve against the outer sleeve so that the two drag washers are pressed harder against one another.

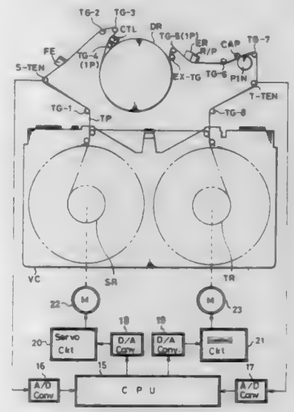


5,626,304

APPARATUS FOR CONTROLLING TAPE TENSION

Masataka Mukai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,940
Claims priority, application Japan, Oct. 21, 1992, 4-283211
Int. Cl.[6] G11B *15/46*
U.S. Cl. 242—334.6 **17 Claims**



1. A tape tension servo apparatus for maintaining a desired target tension of a magnetic tape which is guided along a predetermined tape path between a supply reel and a take-up reel, comprising:

tension detecting means for detecting a current tension of said magnetic tape in said tape path;

means for providing a transitional reference tension which is in the region intermediate the detected current tension and the target tension;

control means for periodically varying said transitional reference tension so as to approach said target tension;

comparing means for comparing said detected current tension with said transitional reference tension; and

tension regulating means for regulating said current tension in response to an output of said comparing means so that said current tension is regulated to approach said target tension.

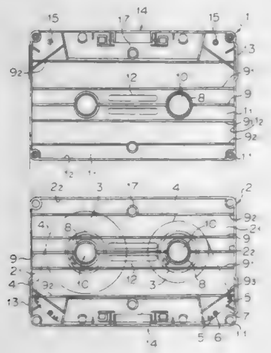
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5,626,305

TAPE CASSETTE HAVING RIBS AND WINDOW

Kenji Hashizume, Miyota-machi; Masatoshi Okamura, Saku, and Haruo Shiba, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 987,599, Dec. 9, 1992, abandoned.
This application Jul. 11, 1994, Ser. No. 272,620
Claims priority, application Japan, Dec. 9, 1991, 3-108901 U; Dec. 9, 1991, 3-108902 U; Dec. 9, 1991, 3-108903 U; Dec. 9, 1991, 3-108904 U; Dec. 9, 1991, 3-108905 U; Dec. 27, 1991, 3-112790 U
Int. Cl.[6] **G11B** *23/04;* **G03B** *23/02*
U.S. Cl. 242—347 **6 Claims**



1. A tape cassette comprising:

a cassette casing composed of an upper half casing and a lower half casing, each formed of a flat surface wall portion and an outer peripheral wall portion, the outer peripheral wall portion of each of said upper and lower half casings cooperating to define finger touch portions protruding from the outer peripheral wall portions,

a pair of hubs around which a tape is wound and which are rotatably fitted into openings defined by circular peripheral wall portions projected from an inner surface of the flat surface wall portion of one of said cassette half casings,

tape guide members formed in the cassette casing at positions through which the tape wound around the hubs is traveled,

wherein the thickness of the flat surface wall portion and the thickness of the outer peripheral wall portion of the upper and lower half casings, including said finger touch portions, are uniform,

a plurality of parallel linear ribs projected from the inner surface of the one of the half casings in the vicinity of the circular peripheral wall portions, said linear ribs including a center rib contiguous with said circular peripheral wall portions and extending on a line extending through centers of the openings defined by the circular peripheral wall portions, said linear ribs further including at least one pair of side ribs, each side rib disposed at an opposite side of said center rib and spaced therefrom at a predetermined distance to define spacings between said ribs, and

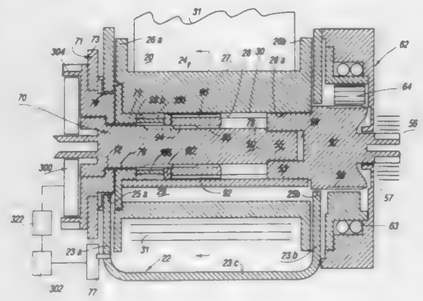
elongate windows formed in said flat surface wall portion of said one of said cassette half casings at locations limited to said spacings between said side ribs and said center rib so that said center rib is continuous between said circular peripheral wall portions.

5,626,306

MULTIPLE LEVEL LOAD LIMITER FOR PRIMARY AND SECONDARY COLLISIONS

Harold J. Miller, III, Troy, and Niels Dybro, Utica, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 11, 1995, Ser. No. 514,287
Int. Cl.[6] **B60R** *22/28*
U.S. Cl. 242—379.1 **5 Claims**



1. A seat belt retractor (**20**) for protecting an occupant during a vehicle impact comprising:

a rotating spool or reel (**24**),

seat belt webbing (**31**) wound about the spool and adapted to extend about the occupant;

first locking means (**71**) operatively connected to the spool for initially preventing the rotation of the spool during a first impact,

first means (**90**, **100**) associated with the spool, for enabling the spool to rotate after a predetermined load, in excess of a first level, has been applied to the webbing, and for generating a generally constant reaction force of a first level on the webbing opposing occupant motion, including a deformable bushing and a displaceable member which compresses the bushing, wherein the bushing deforms outwardly as it is compressed;

second means, active after belt forces reach the predetermined load on the seat belt webbing, for increasing the reaction force as a function of further protraction of the seat belt webbing from the spool and to generate a higher reaction force of a second level on the webbing, including wherein the spool includes a bore disposed about the bushing and wherein after a predetermined amount of motion of the displaceable member the bushing is deformed sufficiently outwardly to abut an inner wall of the bore thereby effectively increasing the stiffness of the bushing, whereupon any further outward expansion of the bushing is prohibited and further motion of the displaceable member is resisted thereby generating the reaction force at the second level.

5,626,307

MOBILE SWIMMING POOL MAINTENANCE SUPPLIES STORAGE CABINET WITH VENTILATION AND DRAINAGE AND WITH VACUUM HOSE REEL ENCLOSED UNDER SLIDABLE ROOF

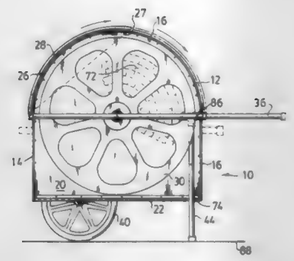
Jeffrey M. Smith, 6750 Lamont Rd., Castile, N.Y. 14427

Filed May 20, 1994, Ser. No. 246,620
Int. Cl.[6] **B65H** *75/40*
U.S. Cl. 242—403.1 **17 Claims**

1. A pool equipment cart comprising:

a cabinet witch a pair of opposing end panels connected to a pair of opposing side panels and to a bottom panel to form a container, said container defining a cabinet interior;

said cabinet having at least one opening which provides access to the cabinet interior; and



said end, side, and bottom panels constructed from materials which are waterproof and resistant to corrosion from pool chemicals;

said bottom panel having at least one hole to permit water and fumes to pass out of said cabinet;

a pool vacuum hose take-up reel rotatably seated on a first axle in the cabinet interior, said first axle supported by said pair of side panels, said pool vacuum hose take-up reel spaced from one of said side panels by a first distance and from the other side panel by a second distance, wherein said second distance is at least twice the distance of said first distance to provide storage space in said cabinet; and

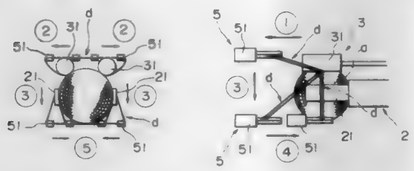
a pair of rigid handles extending from at least one of said end panels and extending through said cabinet interior.

5,626,308

WINDING METHOD AND APPARATUS FOR WOUND BALLS

Fumio Fukazawa, Chichibu, Japan, assignor to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,548
Claims priority, application Japan, Dec. 15, 1994, 6-333477
Int. Cl.[6] **B65H** *54/64*
U.S. Cl. 242—435.2 **9 Claims**



1. A method for making a wound core for a wound ball having a wound core with a rubber thread wound on a spherical center and a cover on the core, comprising the steps of:

continuously feeding rubber thread to the spherical center and rotating the spherical center, thereby winding the rubber thread on the spherical center to form a wound core,

clamping the wound core with a pair of grasping fingers such that the core is held between the fingers,

placing a pair of spaced apart parallel wrapping rolls at a predetermined distance from the wound core,

wrapping a trailing section of said rubber thread around the wrapping rolls to form a loop of rubber thread,

bringing the wrapping rolls in pressure contact with the peripheral surface of the wound core for interposing a portion of the loop between the wrapping rolls and the wound core surface, thereby securing the portion of the loop,

removing the loop from the wrapping rolls and turning it down toward the opposite side of the wound core so as to extend around the wound core over the grasping fingers,

causing a rubber thread holder to abut under pressure the wound core through the turned-down loop on the opposite side of the wrapping rolls to the wound core with the rubber thread holder and the wrapping rolls and securing the loop to the wound core surface,

in this state, withdrawing the grasping fingers from between the loop and the wound core surface, and

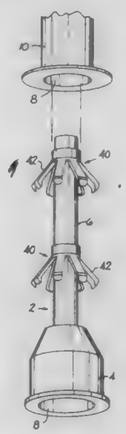
taking the wound core from among the wrapping rolls and the rubber thread holder.

5,626,309

COLLAR ATTACHMENTS FOR A CREEL ADAPTER

Arthur C. Morgan, P.O. Box 3187, Cumberland, Md. 21504

Filed Oct. 30, 1995, Ser. No. 544,997
Int. Cl.[6] **B65H** *75/24;49/02*
U.S. Cl. 242—571.4 **4 Claims**



1. A device allowing differing sizes and geometrical shapes of material packaging spools to engage a particular spindle, comprising:

A creel adaptor for slidingly engaging an existing machinery spindle having a base plate, a rear hub connected to said base plate, a conical portion extending longitudinally from said rear hub with a central shaft extending axially therefrom;

a first creel adaptor attachment, having a mounting collar, said collar having an inner surface for frictionally engaging the circumference of said central shaft, said first creel adaptor attachment removably engaging an inner surface of a packaging tube.

5,626,310

SPACE LAUNCH VEHICLES CONFIGURED AS GLIDERS AND TOWED TO LAUNCH ALTITUDE BY CONVENTIONAL AIRCRAFT

Michael S. Kelly, Redlands, Calif., assignor to Kelly Space & Technology, Inc., San Bernardino, Calif.

Filed Nov. 21, 1994, Ser. No. 342,596
Int. Cl.[6] **B64D** *5/00*
U.S. Cl. 244—2 **17 Claims**



1. A towed glider space launch vehicle adapted to be towed by an aircraft comprising:

a first vehicle having

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aerodynamic lifting surfaces providing lift sufficient to support atmospheric flight of the first vehicle at an airspeed less than the takeoff speed of a conventional aircraft,

an integral payload bay,

access means for ingress and egress from the payload bay,

means for releasable attachment of a tow cable, and

a throttleable rocket propulsion engine for increasing the velocity of the first vehicle;

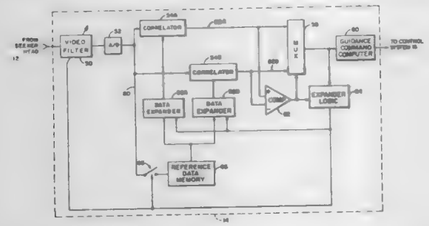
means for receiving a spacecraft in the payload bay through said access means, said spacecraft ejectable through said access means during flight of the first vehicle.

5,626,311

METHOD OF GUIDING MISSILES

Charles P. Smith, Harvard, and John A. Beale, Lunenburg, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 12, 1988, Ser. No. 256,676
Int. Cl.[6] F41G 7/22
U.S. Cl. 244—3.16 **4 Claims**



1. In a missile having a seeker head which forms successive frames containing images of a target area, each such frame represented by an array of digital words, an improved method of guiding the missile toward a target comprising the steps of:

(a) selecting a portion of a first frame as a reference array;

(b) expanding the reference array by a first amount to form a first expanded reference array and expanding the reference array by a second amount to form a second expanded reference array;

(c) correlating a second frame to the first expanded reference array to produce a first correlation score and a first indication of target location and correlating the second frame to the second expanded reference array to produce a second correlation score and a second indication of target location;

(d) generating missile guidance commands in response to the first correlation score, the second correlation score, the first indication of target location, and the second indication of target location; and

(e) selecting the first and second amounts to expand the reference array in response to the first and second correlation scores and repeating steps b, c, d, and e.

5,626,312

PIEZOELECTRIC ACTUATOR

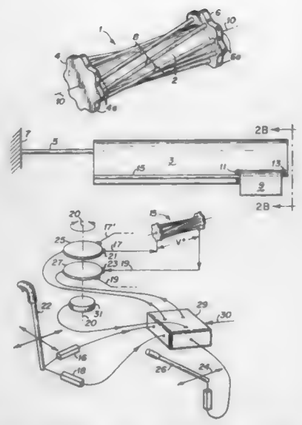
Robert E. Head, Tempe, Ariz., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Jul. 6, 1994, Ser. No. 271,120
Int. Cl.[6] B64C 13/24
U.S. Cl. 244—75 R **15 Claims**

1. An electromechanical transducer, comprising:

a cylindrical shaped core, said core being torsionally flexible and longitudinally stiff, said core further defining an axis and having first and second ends;

first and second end support plates fixed to the respective ends of said core, each said end plate including a peripheral portion extending radially outward beyond the outer surface of said core;



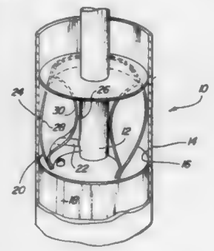
a plurality of elongate rods of piezoelectric material, said plurality being equal to the integral number N, said rods being positioned about said core in non-intersecting relationship and skew to said core axis, with all of said rods being inclined at the same angle to said first support plate as measured in a counterclockwise direction about said core axis; said elongate rods having first and second ends attached respectively to said first and second end plates; each said rod being axially expandable to increase in length, responsive to and in dependence upon application of voltage of a first polarity applied between said rod ends, whereby one of said support plates rotationally moves through a circular arc relative to the other of said support plates.

5,626,313

ENGINE ASSEMBLY INCLUDING FUEL STORAGE BLADDER

Sanford Davis, Fair Haven, Mich., assignor to Minowitz Manufacturing Company, Mt. Clemens, Mich.

Filed Jun. 2, 1989, Ser. No. 360,775
Int. Cl.[6] B64D 37/06
U.S. Cl. 244—135 B **11 Claims**



1. An engine assembly (**10**) comprising:

an inner housing (**12**) containing an engine;

an outer housing (**14**) disposed about said inner housing (**12**) and defining a sealed chamber (**16**) therebetween;

pressurizing means (**18**) for forcing fluid pressure into said chamber (**16**); and

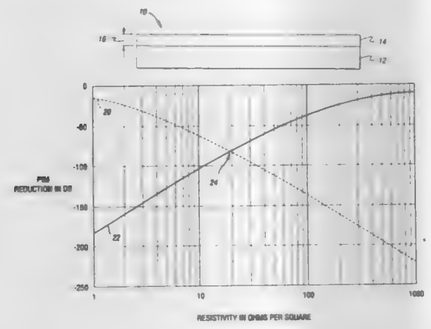
a fuel storage bladder (**20**) disposed within said chamber (**16**) in fluid communication with the engine through said inner housing (**12**), said bladder (**20**) including a first wall. (**24**) and a second wall (**26**) and seam means for perfecting a peripheral fuel-tight seam interconnecting said first and second walls (**24**, **26**) said walls (**24**, **26**) being flexible for bowing away from each other to contain fuel therebetween and lie against each other upon the application of fluid pressure by said pressurizing means (**18**) to empty of fuel, each of said walls (**24**, **26**) having an inner surface (**28**, **30**) facing the inner surface of the other of said walls, said inner surfaces (**28**, **30**) having an equal surface area whereby said inner surfaces (**28**, **30**) completely engage each other when said bladder (**20**) is emptied of fuel.

5,626,314

PASSIVE INTERMODULATION SHIELD

Robert L. Reynolds, Los Angeles; Jodi L. Larson, Yorba Linda, and Judy V. May, Los Angeles, all of Calif., assignors to Hughes Aircraft Co., Los Angeles, Calif.

Continuation-in-part of Ser. No. 784,338, Oct. 29, 1991. This application Nov. 30, 1995, Ser. No. 565,567
Int. Cl.[6] B64G 1/58
U.S. Cl. 244—158 A **20 Claims**



1. A passive intermodulation shield comprising:

a substrate; and

a conducting layer deposited over the substrate to produce a surface resistivity between 2 ohms per square and 200 ohms per square;

wherein the surface resistivity is greater than 2 ohms per square to limit an amount of inherent passive intermodulation generation, and wherein the surface resistivity is less than 200 ohms per square to limit an amount of passive intermodulation passthrough.

5,626,315

APPARATUS CONTROLLING THE PITCH ATTITUDE OF A SATELLITE BY MEANS OF SOLAR RADIATION PRESSURE

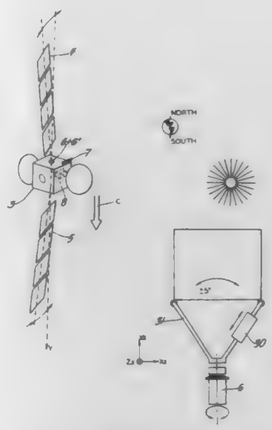
Patrick Flament, Le Cannet; Michel Perdu, Frejus; Jean Portier, Cannes, and Pierre Brunet, Auribeau S/Siagne, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Continuation of Ser. No. 225,892, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 916,153, Jul. 24, 1992, Pat. No. 5,312,073. This application Sep. 5, 1995, Ser. No. 523,367
Claims priority, application France, Nov. 30, 1990, 90 15050
Int. Cl.[6] B64G 1/24
U.S. Cl. 244—168 **25 Claims**

1. An apparatus for controlling the attitude of a yaw, roll and pitch three-axis stabilized satellite about a predetermined attitude control axis, said apparatus comprising:

a satellite body;

an onboard computer mounted to said satellite body;



an orbit correction and attitude sensor propulsion system in communication with said onboard computer; and

attitude control means mounted to said satellite body, said attitude control means comprising:

at least one member having a flat surface extending in a direction away from said satellite body for exposure to solar radiation pressure, said flat surface having a central axis;

means for rotating said flat surface of said at least one member, said rotating means interconnecting said at least one member with said satellite;

said rotating means having a central axis and mounted to said satellite with said central axis substantially coaxial with said predetermined attitude control axis; and

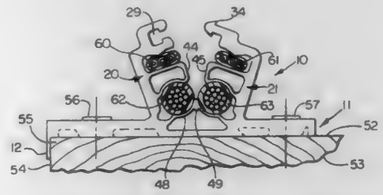
means mounted to said satellite body for tilting said flat surface of said at least one member with respect to said predetermined attitude control axis, said tilting means mounted adjacent said means for rotating such that said tilting means tilts said central axis of said flat surface of said at least one member while under the influence of said onboard computer, said rotating means rotating said flat surface of said at least one member such that said flat surface is substantially transverse to said solar radiation pressure so as to generate correction torques about said predetermined attitude control axis to offset disrupting torques generated by attitude disturbances by action of said solar radiation pressure on said satellite body.

5,626,316

WIRING CLIP

Robert Smigel, North Royalton, and Raymond S. Laughlin, Cuyahoga Falls, both of Ohio, assignors to Erico International Corporation, Solon, Ohio

Filed Mar. 27, 1995, Ser. No. 410,823
Int. Cl.[6] F16L 3/22
U.S. Cl. 248—68.1 **17 Claims**

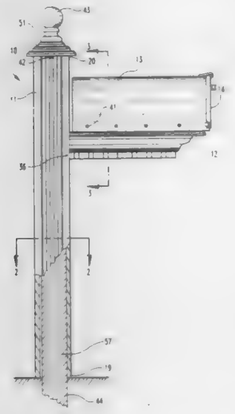


1. A one piece cable clip comprising a base adapted to be secured to a stud, two arms extending outwardly from the base,

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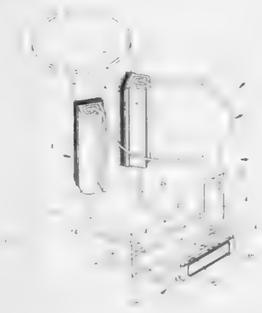
each arm having cable receiving slots, said arms being movable from an open cable receiving position to a closed locked position, and said clip including means to constrict said slots as the arms move to the closed position firmly to grip the cable when closed, said arms extending generally parallel to each other when closed.

5,626,317
REPLACEMENT MAILBOX POST
William R. Altman, 2233 Bemiss Rd., Valdosta, Ga. 31602
Filed Jun. 26, 1995, Ser. No. 494,373
Int. Cl.[6] F16L *3/00*
U.S. Cl. 248—121 5 Claims



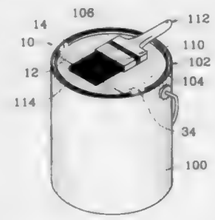
1. A mailbox holder mountable upon an upright post in the ground comprising:
a vertically extending post having a hollow interior sized to mount to the upright post, said hollow interior having an internal cross sectional area larger than said upright post but being geometrically compatible therewith to allow said vertically extending post to be slipped onto and completely around said upright post, said vertically extending post having a bottom end and a top end with said hollow interior extending from said bottom end toward said top end a sufficient distance allowing said upright post to be located therein when said bottom end is adapted to rest atop and contact the ground;
a horizontally extending shelf mounted to said vertically extending post;
first fastening means securing said shelf to said vertically extending post;
second fastening means securing said vertically extending post to said upright post;
third fastening means operable to secure said shelf to a mailbox;
a cover mounted to said top end of said vertically extending post capping said hollow interior and limiting rain from entering therein;
a pair of parallel mailbox mounting rails mounted atop said shelf, said shelf includes a proximal end and a distal end and is cantileverly mounted to said vertically extending post, said rails extend from said vertically extending post outwardly toward said distal end of said shelf and are spaced apart to fit beneath the mailbox located thereatop; and wherein:
said vertically extending post includes a pair of wooden side walls with opposite longitudinally extending edge portions and a pair of wooden end walls connected together in a rectangular configuration with said side walls and said end walls extending from said bottom end toward said top end, said hollow interior having a rectangular cross sectional area formed by said side walls and said end walls;
one of said side walls includes a shelf mounting opening, said end walls have mutually facing surfaces with parallel and aligned grooves formed therein extending from said opening in said one of said side walls toward the other of said side walls, said shelf extends horizontally into said grooves and said hollow interior.

5,626,318
UNIVERSAL MOUNT URINAL HOLDER
Conrad H. Boettger, and Bill J. Hawks, Jr., both of Wichita, Kans., assignors to Via Christi Research, Inc., Wichita, Kans.
Filed Jan. 26, 1995, Ser. No. 378,637
Int. Cl.[6] A44B *21/00*
U.S. Cl. 248—205.2 10 Claims



1. A receptacle holder assembly, comprising:
a receptacle holder unit including structure for supporting a removable receptacle, and a pair of elongated, generally parallel and spaced apart mounting legs; and
an attachment member operatively coupled to each leg for mounting the unit on a support surface, each attachment member including structure permitting pivoting movement thereof about one of said holder unit legs for engaging mounting surfaces of varying configuration,
each of said attachment members comprising an elongated body having an axially extending opening therethrough receiving one of said holder unit legs, each of said bodies having an axially extending, generally spiral-like passageway in communication with said opening therethrough for permitting detachment of the attachment members from said legs.

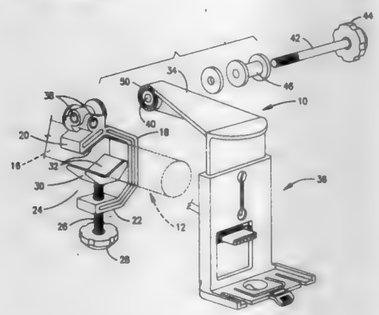
5,626,319
PAINT BRUSH HOLDER
Dennis Fusillo, Tequesta, Fla., assignor to Fred and Myrna Cohen as Tenants by the Entireties, North Palm Beach, Fla.
Continuation of Ser. No. 260,774, Jun. 16, 1994, abandoned.
This application Dec. 21, 1995, Ser. No. 576,864
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—213.2 3 Claims



1. A paint brush holding device comprising:

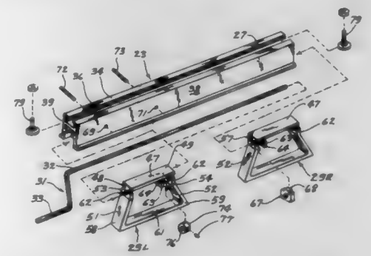
a one piece support structure defined by a first inverted U-shaped end element constructed from resilient deformable material, said end element having a distal end and a proximal end, said distal end operatively associated with and insertable into a perimeter receptacle of a paint can;
a first locking tab justapositioned to said proximal end of said first end element and extending outwardly therefrom below said distal end, said first locking tab positionable beneath said paint can perimeter receptacle;
a second end element spaced apart from said first end element forming a mirror image thereof, said second end element insertable into the perimeter receptacle of said paint can at a position diametrically opposed to the positioning of said first end element;
a second locking tab extending outwardly from said second end element forming a mirror image of said first locking tab, said second locking tab positionable beneath said paint can perimeter receptacle; an inclined slat support member of nominal thickness formed integral to and maintaining said first and second end elements in a spaced apart relationship, said slat support member having an upper surface and a lower surface;
wherein said support structure is positionable over paint material stored in a paint can upon removal of a paint can lid from a perimeter receptacle whereby placement of said distal ends of said end members into said perimeter receptacle and positioning of said locking tabs beneath said perimeter receptacle providing a rigid support for a paint brush over the paint material, said deformable material of said end elements allowing replacement of said paint can lid while said end members are secured in said perimeter receptacle.

5,626,320
MOUNTING BRACKET FOR USE WITH AIRCRAFT YOKES
Jonathan C. Burrell, Olathe, and Christopher J. Hanshew, Lenexa, both of Kans., assignors to Garmin Corporation, Olathe, Kans.
Filed Dec. 30, 1994, Ser. No. 366,980
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—230.6 17 Claims



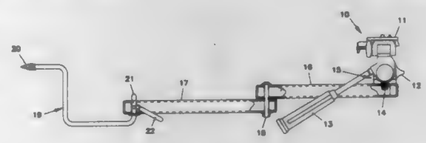
1. A mounting bracket for a control yoke of an aircraft, such control yoke including a control shaft and a control handle on said shaft, said mounting bracket supporting an aircraft instrument mount, comprising:
a main body constructed and arranged to be selectively mounted to the control shaft, said main body including two identical mounting holes, when said main body is mounted on said control shaft a first of said identical mounting holes extending substantially parallel to a longitudinal axis of the control shaft and a second of said identical mounting holes extending substantially perpendicular to said first mounting hole;
an extension arm having a first end including a pass hole extending therethrough and a second end for supporting the instrument mount; and
a bolt extending through said pass hole of said extension arm end being engaged within one of said identical mounting holes, said bolt including an enlarged portion abutting against said extension arm with said extension arm intermediate said main body and said enlarged section, such that said extension arm is mounted to and extends from said main body.

5,626,321
WOODWORKING PORTABLE TOOL MOUNTING ASSEMBLY FOR SAWHORSE
Carl Ulshafer, Jr., 501A W. 7th St., Ida Grove, Iowa 51445
Filed Feb. 27, 1995, Ser. No. 394,770
Int. Cl.[6] E04G *1/00*
U.S. Cl. 248—231.41 11 Claims



1. For use with a stationary, elongated board having a substantially flat top surface and laterally spaced side edges, an assembly for removably mounting a woodworking portable tool onto the board, comprising:
an elongated track unit having a length such that upon placing said track unit upon the board wherein the length of said track unit is normal to the length of the board, said track unit has outer opposed end portions extended beyond the board side edges, said track unit having further an upper track slot for use in attachment to a portable tool, said track unit having still further a lower track slot;
means including a pair of clamps slidably mounted within said lower track slot, said clamps slidably movable relative to each other respectively on said outer end portions and relative to said board side edges whereby to engage said board; and
motion transmitting means inserted through and operably engaged with said clamps to slidably move said clamps into and out of engagement with said board side edges whereby to releasably fasten said track unit to the board.

5,626,322
PORTABLE INSTRUMENT SUPPORT AND POSITIONING SYSTEM
David G. Braun, St. Joseph, Minn., assignor to Tree-Pod, Inc., St. Cloud, Minn.
Filed Dec. 2, 1994, Ser. No. 348,794
Int. Cl.[6] E04G *3/00*
U.S. Cl. 248—282.1 24 Claims



1. A portable instrument support system comprising:
(a) a mounting member having a first end and a second end, wherein a means having a platform for supporting a portable

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instrument is mounted to said first end, the second end having an opening therein; and

(b) a mounting device having a threaded end portion for attaching the support system to a post or a tree, a center portion, and an opposite end portion constructed and arranged to extend vertically upward when said mounting device is attached and in use;

wherein the opposite end portion of said mounting device extends through said opening to support said mouting member for pivotal movements in a generally horizontal plane and wherein the threaded end portion for attaching the support system to a post or a tree, the center portion, and the end portion are included in a single, one-piece unit.

5,626,323

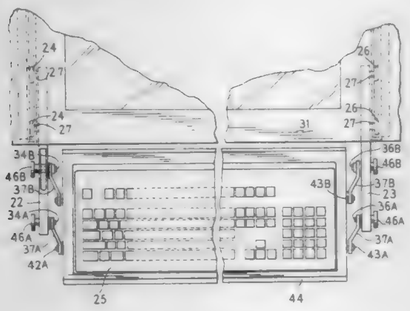
ADJUSTABLE KEYBOARD HOLDER

John N. Lechman, Effingham, and Anne T. Risse, Oak Lawn, both of Ill., assignors to Nova Solutions, Inc., Effingham, Ill.

Filed May 31, 1995, Ser. No. 454,646

Int. Cl.[6] A47B *83/00*

U.S. Cl. 248—286.1 **15 Claims**



11. An adjustable keyboard holder comprising in combination:

(a) a pair of spaced, parallel, stationary, elongated rail members including upper and lower support surfaces;

(b) a pair of elongated, spaced, parallel beam means having interconnected roller means for associating each one of said beam means with said support surfaces of a different one of said rail members for slidable extension and retraction movements of each said beam means along and relative to each said associated rail member;

(c) a keyboard means having opposite end portions and associated interconnection means at said opposite end portions;

(d) two pairs of lever arm members,

the lever arm members of each pair being in laterally spaced, parallel relationship to each other and located adjacent a different one of said keyboard support opposite end portions,

the respective lever arm members of one said pair being in transversely spaced, parallel relationship to the corresponding respective lever arm members of the second said pair,

a corresponding one end region of each lever arm member of each said pair of lever arm members being pivotably associated with a different one of said beam means, including pivot shaft means therefor, and

a corresponding opposite end region of each said lever arm member of each said pair of lever arm members being pivotably associated with a different one of said keyboard interconnection means, including pivot shaft means therefor, thereby to provide a forward pair of lever arm members and a rearward pair of lever arm members relative to said keyboard support means;

(e) said rearward pair of lever arm members additionally being slidably horizontally movable along each respective so associated said beam means; and

(f) adjustable friction enhancer means functionally associated between said end region of each said lever arm member and said respective so associated said beam means for restricting movement of each of said lever arm members and including adjustment means therefor; whereby said keyboard support means is horizontally extensible and retractable, and, when extended, said keyboard support means is height adjustable and tilt angle adjustable.

5,626,324

NON-SLIDING VACUUM GATE VALVE

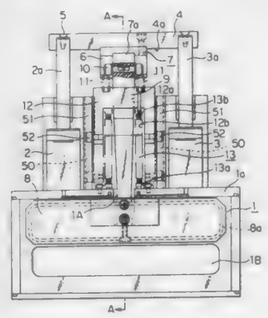
Yoshinobu Nakamura, and Yuzo Hayashi, both of Tokyo, Japan, assignors to Irie Koken Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 306,452

Claims priority, application Japan, Jul. 28, 1994, 176899

Int. Cl.[6] F16K *3/18*

U.S. Cl. 251—58 **11 Claims**



1. A non-sliding vacuum gate valve for performing opening and closing operations on an opening of a valve housing by a valve body which is connected to one end of a linearly and tiltably movable valve rod having an opposite end portion, based on the movement and tilting of said valve rod, by means of a seal bellows, one end of which is provided on said valve housing, said seal bellows having an opposite end, the valve so constructed as comprising: a plurality of cylinders having respective pistons and piston rods, each said piston rod having an end, a connecting member between and attached to said piston rod ends, said cylinders being provided on said valve housing; a cam body which has a cam hole and is provided on said connecting member; a cam follower which engages in said cam hole and is provided at said opposite end portion of said valve rod; and a slide body attached to said valve rod and to said opposite end of said seal bellows and connected to said cam body by means of a plurality of compression spring supporting members extending in the direction of said linear movement of said valve rod to permit linear and tilting movement between said valve rod and said cam body; wherein linear movement of said cam body causes linear and tilting movement of said valve rod and valve body.

5,626,325

HIGH PRESSURE CONTROL VALVE FOR A FUEL INJECTION SYSTEM

David L. Buchanan, Westport, and Donald J. Benson, Columbus, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

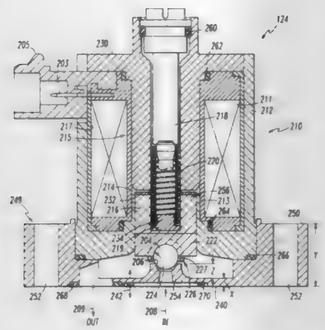
Filed Sep. 14, 1995, Ser. No. 528,303

Int. Cl.[6] F16K *31/02*

U.S. Cl. 251—129.14 **25 Claims**

1. A control valve mounted to a compliant member of an internal combustion engine for selectively controlling fluid flow, comprising:

a housing having at least one fluid passage formed therein;



a valve seat surrounding said at least one passage formed in said housing;

a valve element for contacting with said valve seat for selectively stopping fluid flow through said at least one passage;

a biasing means for applying a closure force against said valve element in a direction towards said valve seat; and

an actuation means for selectively causing movement of said valve element within an inner bore region formed in said housing,

wherein said actuation means comprises:

an armature positioned in said inner bore region in said housing for controlling the movement of said valve element between a closed position of said valve element in contact with said valve seat and an open position spaced away from said valve seat,

a valve element supporting member positioned in said inner bore region of said housing in between said armature and said valve element wherein said valve element supporting member has a recessed area abutting with a majority of a surface area of said valve element;

a limiting means positioned in said inner bore region for limiting the movement of said armature when said valve element moves from said closed position to said open position; and

an armature shim means positioned between said armature and said limiting means for preventing contact between said armature and said limiting means.

5,626,326

SELF-SEALING VALVE ASSEMBLY

Andre F. L. Goossens, Rumst, Belgium; Helmut Weisbrod, Bad Nauheim; Ulrich Zutt, Niedernhausen, both of Germany; Antoine Rottiers, Londerzeel, Belgium; Dalibor Zaviska, Eschborn/Ts, and Peter Volz, Darmstadt, both of Germany, assignors to Alfred Teves Metallwarenfabrik GmbH & Co. OHG, Germany

PCT No. PCT/EP93/00250, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO94/01708, PCT Pub. Date Jan. 20, 1994

PCT Filed Feb. 4, 1993, Ser. No. 204,167

Claims priority, application Germany, Jul. 4, 1992, 42 21 988.4

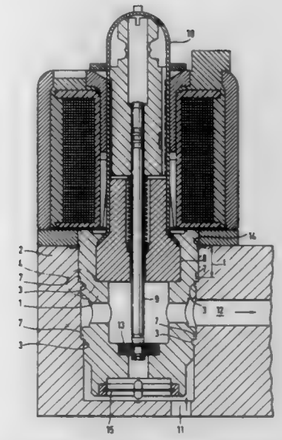
Int. Cl.[6] F16K *31/06*

U.S. Cl. 251—129.15 **5 Claims**

1. A self-sealing valve assembly comprising:

a valve housing formed of a first material and having a first diameter portion and larger second diameter portion of a predetermined depth and an annular recess defining a shoulder at a transition from the first diameter to the second diameter with the annular recess having a third diameter smaller than the first diameter; and

a valve accommodating body formed of a second material softer than the first material and having a bore with a first diameter portion approximately equal in diameter to the first diameter portion of the valve housing and distal to an outer surface of the valve accommodating body and the bore having a larger second diameter portion of a predetermined length and approximately equal in diameter to the second diameter portion of the valve housing and opened to the outer surface of the valve accommodating body defining a step at a transition from the first diameter portion to the second diameter portion of the valve accommodating body wherein displacement of the valve housing into the valve accommodating body by a predetermined distance after initial engagement between the shoulder and the step displaces a volume of the second material approximately equal to a volume of the annular recess into the annular recess.



5,626,327

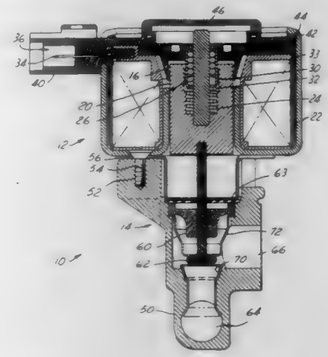
SOLENOID-DRIVEN VALVE HAVING A ROLLER BEARING

Michael T. Clark, Polo, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Apr. 27, 1995, Ser. No. 430,203

Int. Cl.[6] F16K *31/06*

U.S. Cl. 251—129.15 **10 Claims**



1. An exhaust gas recirculation valve comprising:

a solenoid device having an armature and a coil, the solenoid device including a roller bearing to support a stem guide mechanically coupled to the armature, wherein the armature and the stem guide translate with respect to the roller bearing

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in response to energizing the solenoid device, the solenoid device energized by applying an electrical signal to the coil; and

a valve mechanism having an inlet port and an outlet port, the valve mechanism including a stem member which translates with the stem guide for varying fluidic communication between the inlet port and the outlet port in response to the electrical signal, said valve member including a bronze graphite bushing supporting said stem member.

5,626,328

FLAT LIFTING DEVICE

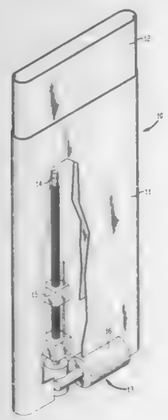
Johannes Schneider, Bünde, Germany, assignor to Dewert Antriebs- und Systemtechnik GmbH & Co. KG, Kirchlengern, Germany

Filed Nov. 30, 1994, Ser. No. 346,768

Claims priority, application Germany, Dec. 6, 1993, 9318553 U; Oct. 4, 1994, 9415930 U

Int. Cl.[6] B66F *3/08*

U.S. Cl. 254—98 **30 Claims**



1. A flat lifting device, in particular for pieces of furniture or the like; comprising:

an outer hollow section rail;

an inner hollow section rail accommodated within the outer section rail, said outer and inner section rails having a closed cross section and being defined by a thickness and a width, with the width being substantially greater than the thickness; and

a drive unit having an linearly moving output member which is operatively connected to one of said section rails;

guide means in form of guide rods insertable in one of said section rails for effecting a spacing between said section rails and reducing friction during relative movement of said section rails, wherein said outer section rail has an inner surface area provided with axial grooves for securely receiving said guide rods which project beyond the inner surface area to bear upon said inner section rail.

5,626,329

SUCTION OPERATED CARPET LAYING DEVICE

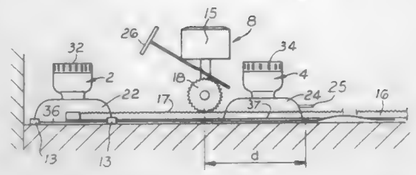
Ralph Herdan, 4 Hillside View, New Mills, Stockport, Cheshire SK123DF, Great Britain

Filed Jan. 9, 1995, Ser. No. 370,242

Int. Cl.[6] B25B *25/00;* **B65H** *77/00*

U.S. Cl. 254—200 **20 Claims**

1. A carpet laying device comprising:



track forming means having a first end and a second, opposite, end, for extending across a carpet covering a floor so that the first end and second, opposite, end are adjacent first and second, opposite, edges of the carpet, respectively;

securing means on the first end of the track forming means for securing the first end relative to the first edge of the carpet;

suction producing, engaging means for slidingly engaging the carpet by suction; and,

means for advancing the engaging means along the track forming means over the carpet in continuous sliding engagement therewith from a position adjacent the first end away from the securing means to a position adjacent the second end while applying a suction force to the carpet continuously throughout such advance so that an increasing length of carpet between the engaging means and the securing means is progressively drawn taut and flat and maintained in taut and flat condition by suction produced by the engaging means.

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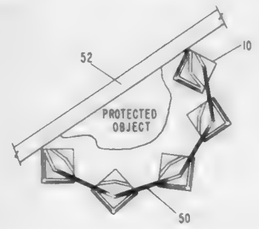
BARRICADE SYSTEM

Ferris F. Young, 6341 Ocotillo Ave., Apt. G, Twentynine Palms, Calif. 92277

Filed Sep. 25, 1995, Ser. No. 533,437

Int. Cl.[6] E04H *17/00*

U.S. Cl. 256—19 **19 Claims**



19. A protection system to prevent wheeled vehicles from making contact with an object comprising a plurality of supporting means and elongated rigid stop means, each of said stop means having one end resting on one of said supporting means and the other end resting on another spaced apart supporting means, each of said supporting means including a plurality of rest means, each of said rest means comprising an elongated opening for receiving the end of one of said stop means at least one of said openings extending from one of the edges to the other edge, each of said openings disposed at an angle to at least one of the other openings, whereby a series of said supporting means and stop means form a fence of selected shape and length.

5,626,331

COMPOSITE SPINDLE

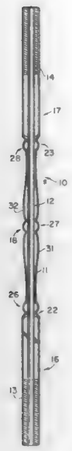
Ronald D. Erwin, Fayetteville, Ga., assignor to Erwin Industries, Inc., Peachtree City, Ga.

Filed Jan. 3, 1996, Ser. No. 582,312

Int. Cl.[6] E04F *11/18*

U.S. Cl. 256—59 **8 Claims**

1. A spindle for use in a fence or a deck railing and comprising:



a. a plastic outer shell having a first end section, a second end section opposite said first end section, and a middle section intermediate said first and second end sections, said middle section having at least one portion having an internal transverse dimension which is smaller than an internal transverse dimension of each of said first and second end sections;

b. an elongate metal reinforcing element disposed within said outer shell and extending from said first end section to said second end section, wherein said metal reinforcing element contacts said at least one portion of said middle section; and

c. a rigid plastic foam disposed within at least a portion of said first and second end sections and at least substantially surrounding portions of said metal reinforcing element.

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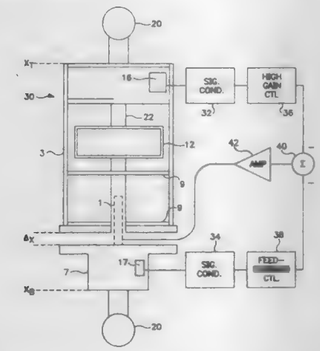
VIBRATION ISOLATION SYSTEM USING PLURAL SIGNALS FOR CONTROL

Douglas J. Phillips, Melbourne; Gerry E. Riveros, Ihb; S. Richter; Dave Hyland, both of Melbourne Beach; John W. Shipley, Sebastian, and S. Greeley, Rockledge, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 29, 1994, Ser. No. 281,982

Int. Cl.[6] F16F *9/50;* **F16M** *13/00*

U.S. Cl. 267—140.14 **48 Claims**



1. An apparatus for isolating an element from vibrations experienced in a base element to which the element is attached, comprising:

first vibration measurement means producing a signal related to the vibration experienced by said base element;

second vibration measurement means producing a second signal related to vibrations experienced by said element;

actuator means for selectively changing the separation between said element from said base element; and,

control means for selectively operating said actuator means responsively to said signal and to said second signal to reduce the transmission of vibration between said element and said base element.

5,626,333

SORTER, SHEET JOGGING DEVICE, STAPLING DEVICE, AND STAPLING SORTER USING THOSE DEVICES FOR COPYING MACHINE

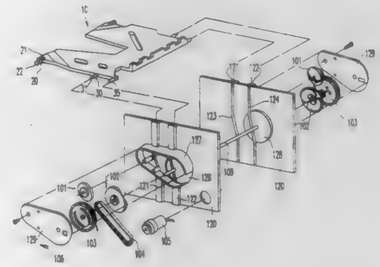
Jae H. Chung; Yeon K. Jung, and Seung K. Noh, all of Seoul, Rep. of Korea, assignors to Sindo Richo Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 12, 1995, Ser. No. 489,404

Claims priority, application Rep. of Korea, Jan. 12, 1995, 95-448

Int. Cl.[6] B65H *39/02;39/10*

U.S. Cl. 270—58.16 **26 Claims**



1. A sorter for a copying machine, said sorter comprising

a plurality of trays **10** having a couple of trunnions **30** and **35** at rear opposite lateral ends;

a tray supporter **80** for stacking said trays **10** thereon;

a pair of side walls **120** having a couple of vertical slots **121** and **122** having through holes **123** and **124** at the outlet into which said trunnions **30**, **35** are inserted;

a pair of drive wheel assemblies **100** which are installed opposite said through holes **123** and **124** of said side walls **120** which shift said trunnions **30** and **35** along said through holes **123** and **124**; wherein the drive wheel assembly **100** includes a cam wheel **101** and a supplementary wheel **102** cooperated with the cam wheel **101**, the cam wheel having a slot **101B** through which the first trunnion **30** of said tray **10** passes as said supplementary wheel **102** having at least one cam surface **102D** which supports the second trunnion **35** of the tray **10**; and

a pair of tension springs **126** having one end fixed to upper part of said side wall and the other end fixed to said tray supporter **80**, which ascend said trays **10** and said supporter **80** along vertical holes **125** formed at lower part of said side wall **120**.

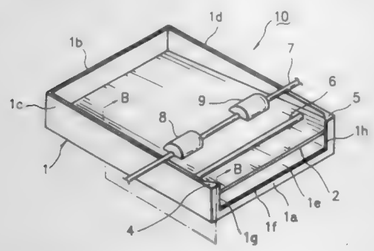
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DEVICE AND METHOD FOR FEEDING CUT SHEETS OF PAPER IN A ONE-BY-ONE PICKING UP MANNER WITHOUT JAMMING

Makoto Kondo, and Shigeki Muramatsu, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed May 4, 1995, Ser. No. 434,952
Claims priority, application Japan, May 13, 1994, 6-124545
Int. Cl.[6] B65H *3/52*
U.S. Cl. 271—121 13 Claims



1. An automatic paper feed device for picking up and feeding a plurality of cut sheets of paper to a recorder, in a one-by-one manner, said paper feed device comprising:

a stack plate for supporting said plurality of cut sheets placed on a paper stacking side thereof;

a spring member provided on a side opposite to said paper stacking side of said stack plate;

a feed roller rotatable to force out said cut sheets one-by-one in a paper feed direction, said forced out sheets being taken from said plurality of cut sheets placed on said stack plate, said spring member urging said stack plate toward said feed roller;

a pawl member for separating said one of said plurality of cut sheets from the rest of said cut sheets, as said feed roller forces said one cut sheet in said paper feed direction; and

a convex stripe part provided on said paper stacking side of said stack plate, said convex strip being located at a position along said paper feed direction between said feed roller and said pawl member;

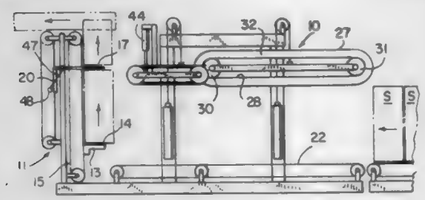
said stripe part extending in a direction transverse to said paper feed direction.

5,626,335

VERTICAL LIFT SYSTEM FOR DELIVERING SHEETS IN STACKS

Raymond E. Radwanski, Ladysmith; John J. Kondratuk, Kenan; Carl R. Marschke, Phillips, and James A. Voirath, Prentice, all of Wis., assignors to Marquip, Inc., Phillips, Wis.

Filed Feb. 1, 1996, Ser. No. 595,048
Int. Cl.[6] B65H *1/30*
U.S. Cl. 271—159 4 Claims



1. A lift apparatus for the continuous delivery of sheets provided in successive stacks comprising:

a first lift defined by a plurality of spaced first forks adapted to receive and support a stack of sheets at a lower infeed position;

first lift drive means for moving the first lift at a variable speed in a generally vertical path including an upward first speed;

a second lift defined by a plurality of spaced second forks;

means for moving said second forks between an operative position supporting a stack of sheets and an inoperative position withdrawn from the supporting position;

saidmeans for moving the second forks including means for pivotally attaching each of said second forks to the end of one of a plurality of pivot arms, means for rigidly attaching the opposite ends of the pivot arms to a common rotatable pivot tube, means for reciprocally rotating the pivot tube to move said second forks between the operative and inoperative positions, and bearing means for supporting the free ends of the second forks and maintaining said second forks in a generally horizontal plane of movement;

second lift drive means for moving the second lift in the operative position upwardly along a portion of said vertical path at said first speed and in the inoperative position vertically downwardly; and,

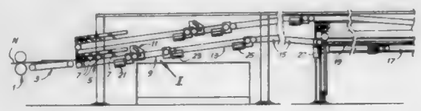
drive control means for cycling said first and second lifts to provide continuous lifting support of the stack by at least one of said plurality of first and second forks and constant upward movement of the top of the stack at said first speed.

5,626,336

STORAGE AND STACKING DEVICE FOR SHEETS OF LAMINAR MATERIAL

Mauro Adami, Lucca, Italy, assignor to Fosber S.p.A., Lucca, Italy

Continuation-in-part of Ser. No. 18,055, Feb. 16, 1993, Pat. No. 5,415,389. This application Feb. 1, 1995, Ser. No. 381,742
Claims priority, application Italy, Feb. 20, 1992, FI92A0042
Int. Cl.[6] B65H *29/68*
U.S. Cl. 271—182 12 Claims



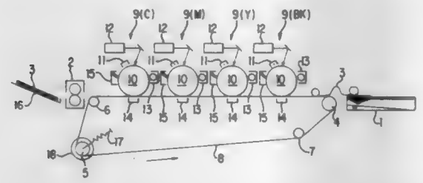
1. An automatic storage and stacking device for sheets of laminar material, such as corrugated cardboard or the like, comprising a conveyor including a transportation unit which removes the sheets of laminar material from a cutting group, overlaps said sheets and conveys them towards a storage surface, said transportation unit including a plurality of conveyors in series, with means to move said conveyors at varying speeds so as to allow separation of a first series of sheets from a successive second series of sheets; and combined with one of said conveyors a means for lifting the first sheet of said second series, characterized in that said lifting means includes a gripper member associated with said one of said conveyors and including an upper and a lower gripping means which are reciprocatingly moved along said one of said conveyors with which said gripper member is associated, and that said lower gripping means is arranged below the trajectory of said overlapped sheets and said upper gripping means is arranged above the trajectory of said overlapped sheets, said lower gripping means being movable from a first position wherein it is clear of the sheets, to a second position wherein it lifts said first sheet from said one of said conveyors with which said gripper member is associated.

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BELT FEEDING DEVICE

Shuji Iseki, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,039
Claims priority, application Japan, May 10, 1994, 6-096652
Int. Cl.[6] B65H *43/04*
U.S. Cl. 271—198 8 Claims



1. A belt feeding device having a roll, said belt feeding device having a belt member supported by and revolvable around said roll, said roll comprising:

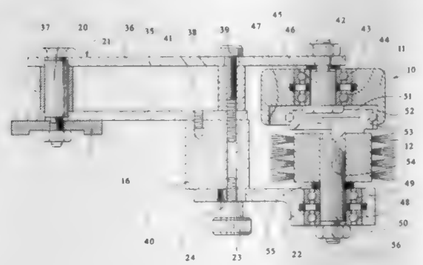
a plurality of disk-shaped fins having outer circumferential ends, said outer circumferential ends being angled with respect to a longitudinal axis of said roll and having outermost portions that are at a constant distance from the longitudinal axis of said roll.

5,626,338

AUXILIARY DRIVING DEVICE FOR THE TRANSPORT OF SHEETS OF PAPER OR CARDBOARD

Roland Fattebert, Echallens, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed May 24, 1995, Ser. No. 449,790
Claims priority, application Switzerland, May 24, 1994, 01593/94
Int. Cl.[6] B65H *5/02*
U.S. Cl. 271—274 5 Claims



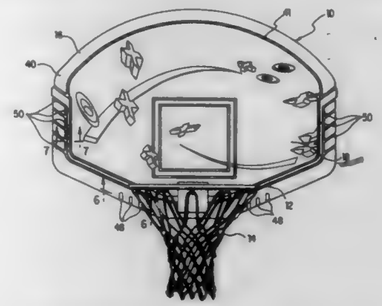
1. In an auxiliary driving device for the transport of sheets of paper or cardboard that are arranged tilewise in a stream from a feeding station of a die-cutting press to the die-cutting station of the press, said auxiliary driving device including a driving roller, a rotary brush, means for coupling the driving roller to the rotary brush to form an assembly arranged between a lower section and an upper section of a feeding table, said assembly including pressure means for biasing and urging the assembly onto an upper surface of the stream of sheets, the improvements comprising the means for coupling including a toric ring mounted on a circumference of a cylindrical head of an axle of the rotary brush, said toric ring being disposed in a circular recess of the driving roller, and means for adjusting the pressure between the ring and surface of the recess by moving the rotary brush relative to the driving roller.

5,626,339

STRUCTURAL FOAM BASKETBALL BACKBOARD WITH INMOLD GRAPHICS

Randy R. Schickert, Kewaskum, and James N. Fitzsimmons, Waukesha, both of Wis., assignors to Huffy Corporation, Miamisburg, Ohio

Filed Feb. 3, 1994, Ser. No. 190,914
Int. Cl.[6] A63B *71/02*
U.S. Cl. 473—481 14 Claims



1. A basketball backboard comprising:

a rigid backboard structure formed from molded plastic defining a front face and a rear face, said front face including graphics and a border area surrounding said graphics, and

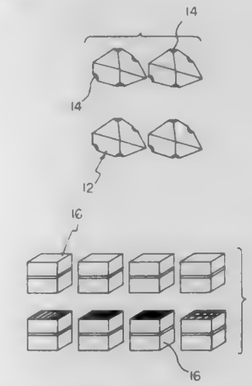
at least one recess defining a sculpted three-dimensional appearance in said front face, said at least one recess being formed in said border area during molding of the backboard structure.

5,626,340

THREE DIMENSIONAL TOKEN GAME

Steven C. Phillips, 135 Gablo Rd., Paoli, Pa. 19301-1847

Filed Apr. 5, 1996, Ser. No. 630,922
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—241 9 Claims



1. A new and improved three dimensional token game in which players build a playing field for game movement while the game progresses comprising in combination:

a plurality of dice with each die having four concave members, one of each concave member being positionable within one of four diametrically opposed corners of each die, each concave member having a color painted thereon with the color being chosen from a group of colors consisting of yellow, red, blue and black;

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a plurality of player pieces having a box-like shape for each of the game players, each player piece having dimensions being 1½ by 1½ inches, each player piece being stackable one upon the other, each player piece being a color chosen from the group of colors consisting of blue, red, yellow and black for matching the color of any one of the player pieces with one of the colors of the concave member of each die;

a plurality of field squares for building and rearranging a playing field setup during game play, four of the plurality of field squares being capable of being chosen by the player upon each player rolling the dice, each square being 1½ inch in length with a thickness of ⅛ inches, each field square being a color chosen from the group of colors consisting of blue, red, yellow and black, each field square being stackable one on top of another field square, each field square capable of being positioned in a line-up with one field square next to another field square on a playing surface for creating the playing field setup, each field square capable of being positioned in the line-up with one field square next to another field square, having one or more field squares stacked thereon for creating the playing field setup;

a plurality of winning squares for positioning on the playing field at the end of the line-up of field squares after play has begun, each winning square having four equal portions with each portion having a different color, the color of each portion being one of the group of colors consisting of blue, red, yellow and black, each winning square having a length of 3 inches and a thickness of ¾ inch;

an elongated measuring stick for maintaining a distance between any two of the plurality of winning squares being positioned adjacent one of the field squares; and

a generally cylindrical cup for shacking up the plurality of dice prior to being rolled onto the playing surface, wherein the dice being rolled onto the playing surface from within the cup by each player for determining which of the players will make the first move of the game.

5,626,341

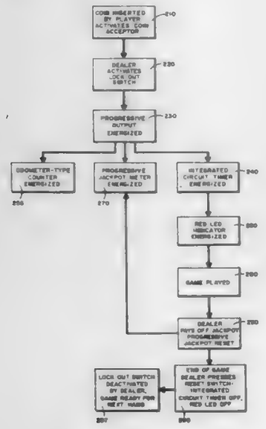
METHODS OF PROGRESSIVE JACKPOT GAMING

Daniel A. Jones, and James P. Suttle, both of Las Vegas, Nev., assignors to Progressive Games, Inc., Ft. Lauderdale, Fla.

Division of Ser. No. 40,925, Mar. 31, 1993, Pat. No. 5,364,104, which is a division of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,836,553. This application Nov. 9, 1994, Ser. No. 337,661

Int. Cl.° A63F *1/00*

U.S. Cl. 273—292 **73 Claims**



1. A method of playing a simulated game of baseball, comprising the steps of:

a) placing a plurality of disks onto disk locations of a simulated baseball field, each disk having an attachment material;

b) throwing a ball at said disks, said ball having attachment material that becomes attached to said attachment material of said disks when said ball comes into contact with said disks; and,

c) repeating step (b) until all of said disks are removed from said field.

36. A method of including a jackpot component in a live casino table game, comprising the steps of:

(a) a player making a first wager to participate in the live casino game;

(b) a player making a second wager to participate in the jackpot component;

(c) a dealer dealing a hand of playing cards to the player; and

(d) if the player's hand comprises a predetermined arrangement of cards, the player wins a preselected amount of the jackpot.

5,626,342

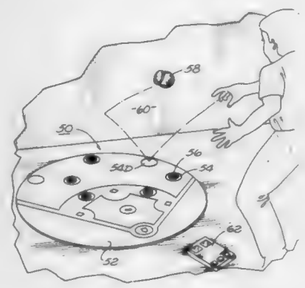
FLOOR GAME FOR VELCRO-RECEPTIVE BALLS AND VELCRO BEARING DISKS

George Foster, Signal Hill, Calif., assignor to Elliot Rudell, Torrance, Calif.

Division of Ser. No. 508,485, Jul. 28, 1995, Pat. No. 5,538,253, which is a continuation-in-part of Ser. No. 276,818, Jul. 18, 1994, Pat. No. 5,452,902. This application Dec. 19, 1995, Ser. No. 574,772

Int. Cl.° A63B *67/02*

U.S. Cl. 273—348.4 **3 Claims**



1. A water targeting game comprising:

a) a targeting vest comprising:

(1) a front vest comprised of a rear section and an attached front section, wherein between the rear and front sections is located a sealed cavity, with the front section further having a plurality of water-collecting openings, a vertical sealed window, and a water inlet/outlet port having attached a quick-disconnect hose fitting,

(2) a back vest identical to said front vest,

(3) means for adjusting and attaching said front and back vests,

(4) means for allowing said front and back vests to fit snugly against a person's waist,

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5,626,343

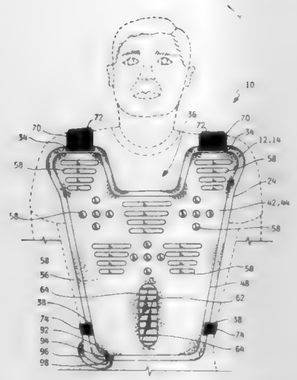
WATER TARGETING GAME

Gary M. Sanders, 355 N. Lantana #720, Camarillo, Calif. 93010

Filed Jul. 29, 1996, Ser. No. 688,288

Int. Cl.° A63F *9/02*

U.S. Cl. 273—349 **18 Claims**



(5) a flexible hose having on each end a fitting designed to be releasably-attached to said quick-disconnect hose fitting, and

b) a water gun having means for storing a quantity of water and means for creating a stream of water having sufficient force to strike and flow into at least one of said water-collecting openings, wherein the quantity of water collected is determined by viewing the level of water visible through said vertical sealed window.

5,626,344

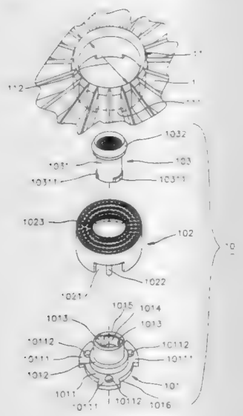
DOUBLE BULL'S-EYE DEVICE

Chun-Mu Huang, 6F, No. 60-5, Cheng I S. Rd., Sanchung City, Taipei Hsien, Taiwan

Filed Jul. 10, 1995, Ser. No. 500,008

Int. Cl.° F41J *3/00*

U.S. Cl. 273—376 **20 Claims**



1. A double bull's-eye device adapted to be incorporated within a circular rib formed on a dart frame, comprising:

a base having a top end and a bottom end engageable with the circular rib, and said base being independent of said circular rib;

an outer bull's-eye independent of said base and sleeved from an outer surface of said top end on said base; and

an inner bull's-eye independent of said base, passing from said top end through said base to be mounted on said base and separated from said outer bull's eye by said base.

5,626,345

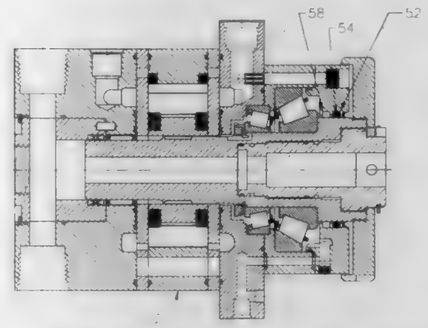
DUAL GROOVE SEAL

Robert B. Wallace, Corpus Christi, Tex., assignor to Rineer Hydraulics, Inc., Corpus Christi, Tex.

Filed Jun. 26, 1995, Ser. No. 494,479

Int. Cl.° F16J *9/20*

U.S. Cl. 277—1 **5 Claims**



1. A method of reducing wear within a mechanical apparatus having first and second adjacent, sealable surfaces which move relative to each other, one or both of the surfaces defining a plurality of adjacent grooves, comprising the steps of:

placing a seal within a first of the plurality of adjacent grooves whereby a seal is formed between the first and second adjacent surfaces while leaving an adjacent groove empty,

when the seal fails removing the seal from the first of the plurality of adjacent grooves, and

placing a seal in one of the adjacent grooves.

5,626,346

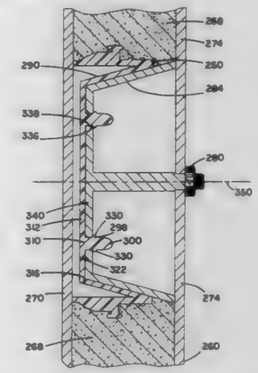
EMBEDDED IN CONCRETE, ELASTOMERIC SEAL FOR PIPES

Norman W. Gavin, 2545 Ridge Rd., North Haven, Conn. 06473

Continuation-in-part of Ser. No. 412,673, Mar. 29, 1995. This application Jun. 19, 1995, Ser. No. 491,770

Int. Cl.° F16J *15/10*

U.S. Cl. 277—9.5 **6 Claims**



1. A molded elastomeric seal adapted for casting in a concrete wall, for sealingly receiving

a pipe through a concrete wall of a subterranean vessel, said seal comprising:

a cylindrical housing having a central axis, a first end, a second end, an inner side and an outer side,

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anchor means comprising said outer side of said cylindrical housing, adapted for being cast in said concrete wall so there is a watertight seal between said concrete wall and said cylindrical housing,

a first, frustoconical wall around said axis, having a first end, a second end, and being attached to said cylindrical housing,

a second, generally radial wall attached to said first frustoconical wall in a watertight seal of said first frustoconical wall,

said second wall being generally planar, normal to said axis, and comprising means for sealing around a pipe of a predetermined diameter when said pipe is inserted through said cylindrical housing, said means for sealing around a pipe comprising an annular separation ring,

temporary fastening means mounted on said second wall so that the fastening means prevents axial withdrawal of said seal from the core of a mold for casting the molded elastomeric seal in the concrete wall and permits withdrawal of said seal from said core for mounting of another seal on said core for casting,

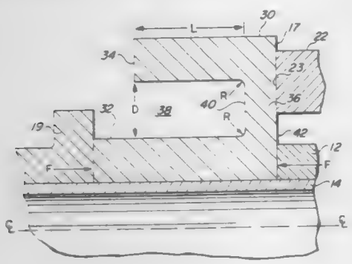
said temporary fastening means being spaced radially inward from said annular separation ring.

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CONING RESISTANT FACE SEAL HAVING A "U" SHAPE

M. Rifat Ullah, Phoenix, Ariz., assignor to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 314,753, Sep. 29, 1994, abandoned.
This application Feb. 2, 1996, Ser. No. 597,572
Int. Cl.[6] F16J *15/34*
U.S. Cl. 277—96.1 **5 Claims**



1. A face seal comprising:

an annular carbon stator having a first flat, sealing surface; and

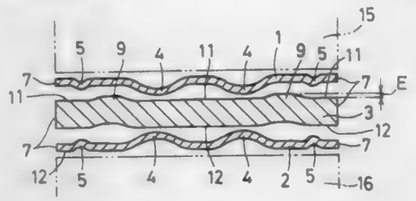
an annular metal rotor, said rotor having a head portion connected to a base portion by a neck portion, said annular rotor further including a second flat surface a portion of which is in sealing contact with said first sealing surface, said base portion adapted for direct mounting to an axially extending rotating shaft and extending a first distance from said second flat surface, said head portion extending a second distance from said second flat surface in the same direction as said base portion, and said neck portion extending a third distance from said second flat surface in the same direction as said base and head portions, said third distance being less than said first and second distances thereby defining an annular groove bounded by said base, neck, and head portions and having an axial length greater than said third distance.

5,626,348

METAL GASKET

Kazukuni Takada, Ibaragi; Kenji Kubouchi, Hirakata; Kunitoshi Inoue, Higashiosaka; Tadayoshi Akutsu, Fujisawa, and Masahiko Miura, Kawachinagano, all of Japan, assignors to Nippon Gasket Co., Ltd., Osaka-fu, Japan

Filed Jan. 25, 1996, Ser. No. 591,690
Claims priority, application Japan, Feb. 6, 1995, 7-039451
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—180 **9 Claims**



1. A metal gasket comprising:

a pair of bead base plates comprising elastic metal plates provided with beads along the circumferences of parallel-arranged holes, said beads on said bead base plates being disposed so as to be opposed to each other, and

an intermediate plate interposed between said bead base plates, a constant intermediate plate thickness of said intermediate plate being three to five times as large as a base plate thickness of said bead base plates, said intermediate plate including stoppers on inner sides of said beads and along circumferences of said holes,

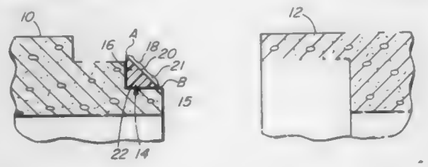
at least one of said bead base plates being provided with auxiliary beads formed on inner sides of said beads and along the circumferences of said holes so as to project in the same direction as said beads and have a height smaller than that of said beads.

5,626,349

SELF-LUBRICATING SEALING RING

Ian B. Sutherland, and Anthony R. Paleczny, both of Kitchener, Canada, assignors to N C Rubber Products Inc., Kitchener, Canada

Filed May 22, 1995, Ser. No. 445,830
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—207 A **10 Claims**



1. A sealing ring for fitting between and sealing an annular space between connecting pipe joint members which are slid into each other to an assembled position to form a pipe joint, said sealing ring comprising:

an annular main body having a substantially triangular shape having a vertex and a base, said base engaging one of the pipe joint members, and said body having an inclined surface between said vertex and said base defining a corner with said base, for engaging the other pipe joint member during the formation of the pipe joint;

a thin rupturable membrane of a thickness less than 0.008 inches attached to said inclined surface proximate said vertex and proximate said corner about the circumference of the annular main body defining an annular cavity, said cavity defined between said membrane and said inclined surface;

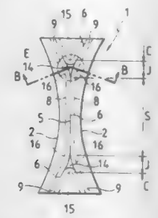
a lubricant disposed in said cavity about the circumference of the annular main body whereby said pipe joint members are slid into each other to form a pipe joint, said rupturable membrane is ruptured and said lubricant is released.

5,626,350

METAL GASKET

Kenji Kubouchi, Hirakata, and Kunitoshi Inoue, Higashiosaka, both of Japan, assignors to Nippon Gasket Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 83,435, Jun. 29, 1993, Pat. No. 5,516,124.
This application Dec. 26, 1995, Ser. No. 578,485
Claims priority, application Japan, Jun. 30, 1992, 4-194651
Int. Cl.[6] B65D *53/00*
U.S. Cl. 277—235 B **7 Claims**



1. A metal gasket including:

an elastic metal plate;

adjacent cylinder bore holes in said metal plate;

beads formed around said cylinder bore holes by a deformation of the metal plate such that one surface of the metal plate is convex and the other surface of the metal plate is concave;

said beads further comprising:

independent bead parts formed in a region other than a region between said cylinder bore holes;

junction bead parts formed in a region where said independent bead parts merge with each other; and

common bead parts connecting with said junction bead parts and disposed in a region between said cylinder bore holes;

wherein each of said independent bead parts has a first width, between inner borders and outer borders, extending along said cylinder bore holes, and said first width-is substantially uniform around said cylinder bore holes;

said common bead parts having a second width between said inner borders extending from one to another of said adjacent cylinder bore holes, and said common bead parts are straight;

said junction bead parts each encompassed by an arcuate smooth line connecting said outer borders of said independent bead parts, and by a smooth curve line connecting said independent bead parts and said common bead parts; and

a face-to-face pressure regulation means for controlling face-to-face pressure at said junction bead parts, said pressure regulation means including a triangular recess formed at the center of a triangular flat portion encompassed by the center lines of said junction bead parts formed at said junction bead parts, said triangular recess being triangular in a plane of the flat portion.

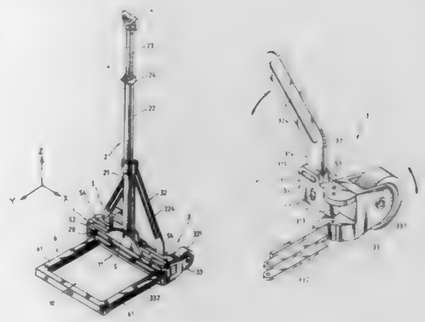
5,626,351

COLLAPSIBLE HAND CART

Cheng-Hsien Tsai, 103, Da-Ming 1st Rd., Tien-Tzu Hsiang, Taichung Hsien, Taiwan

Filed Jun. 16, 1995, Ser. No. 491,588
Int. Cl.[6] B62B *1/04*
U.S. Cl. 280—40 **4 Claims**

1. A collapsible hand cart comprising a base frame unit, a collapsible driving mechanism pivotally connected to said base frame unit and two steering mechanisms mounted on said base frame unit at two opposite sides for moving said base frame unit by said driving mechanism, wherein each steering mechanism comprises:



a wheel holder pivotally connected to said base frame unit, said wheel holder having a roller wheel thereon at one end for supporting and moving said base frame unit and an extension bar extending therefrom at an opposite end;

a movable member pivotally connected to said wheel holder, said movable member having an opening at one end, a first oblong slot and two parallel upright lugs at two opposite sides, each upright lug having a second oblong slot; and

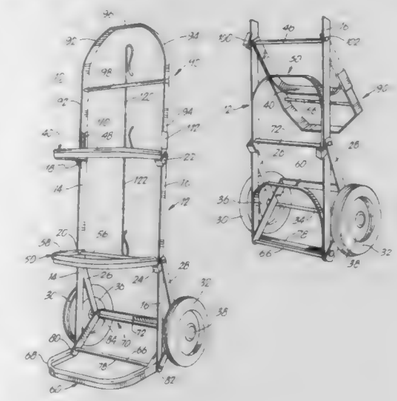
a link having a bottom end inserted into the opening in said movable member and pivotably connected to said movable member, and a top end connected to said driving mechanism through a slip joint, the bottom end of said link having two vertically spaced pivot holes respectively coupled to the first oblong slot on said movable member and to the second oblong slots on said upright lugs by pivot pins, the top end of said link having an elongated sliding slot connected to a slide vertically movable along a longitudinal sliding slot on said driving mechanism.

5,626,352

COLLAPSIBLE AND FOLDABLE CART HAVING A STABILIZATION MEMBER

John Grace, 558 W. Scott Ave., Rahway, N.J. 07065

Filed Aug. 22, 1995, Ser. No. 518,045
Int. Cl.[6] B62B *1/04;1/12*
U.S. Cl. 280—47.29 **6 Claims**

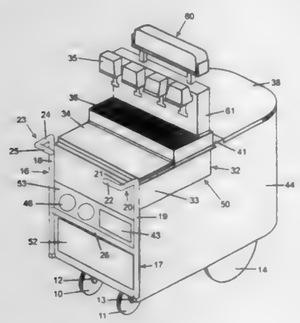


1. A collapsible, foldable cart, comprising:

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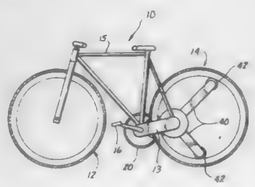
a) a frame having spaced-apart first and second longitudinal frame members defining a plane, and a pair of wheels and a wheel axle connected to said frame;
b) at least one foldable shelf member pivotally connected to said frame and movable between a first position for carrying a load on said shelf member, and a second position wherein said shelf member is disposed in said plane and is between said first and second longitudinal frame members;
c) a handle section pivotally connected to said frame and movable between a first position wherein said handle section is disposed in an operative position in said plane and a second position wherein said handle section is rotated approximately 180° degrees from said first position toward said frame to fold-up and collapse said handle section;
d) a bottom-most stabilizing shelf member pivotally connected to said frame and movable between a first position for carrying a load on said stabilizing shelf member and a second position wherein the stabilizing shelf member is folded toward said frame to fold-up and collapse said cart; and
e) a stabilizing member connected to said bottom-most stabilizing shelf member and detachably connected to said wheel axle, so that when said stabilizing member is detached from said wheel axle, said stabilizing member may be actuated to move said bottom-most stabilizing shelf member from said first position to said second position.

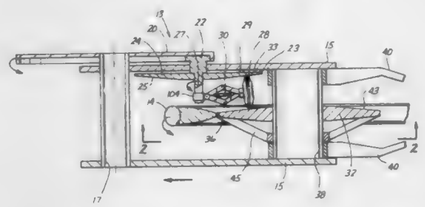
5,626,353
MOBILE CART INCLUDING BEVERAGE CHILLING AND DISPENSING APPARATUS
Craig Campbell, 90 Wilson Ave., Englishtown, N.J. 07726
Filed Jun. 9, 1994, Ser. No. 257,167
Int. Cl.[6] B62B *3/02;3/10*
U.S. Cl. 280—47.35 **22 Claims**



1. A mobile cart, comprising:
a frame module including a plurality of frame members, the frame members including a perimeter frame member having at least one segment, and a caster wheel supporting assembly attached in the vicinity of a first end of said perimeter frame member;
at least one handle member connected in the vicinity of the first end of said perimeter frame member;
right and left main supporting wheels supported by a main supporting wheel mounting assembly, said main supporting wheel mounting assembly including at least one axle member, said at least one axle member being at least partially supported by said perimeter member, said main supporting wheels being located near a second end of said perimeter frame member;
at least one caster wheel supported by said caster wheel supporting assembly, said caster wheel supporting assembly including at least one axle upon which said at least one caster wheel is mounted;
a floor member supported by said frame module, said floor member including a beverage, beverage component, or carbon dioxide container retaining assembly;
a cooling and dispensing module for receiving, chilling and dispensing a beverage, said cooling and dispensing module adapted to be interconnected with a beverage or beverage component container, said cooling and dispensing module including a beverage chilling assembly, and a dispensing unit including at least one dispensing valve for dispensing a beverage under pressure, said beverage chilling assembly including a cold plate for chilling a beverage to be dispensed;
a substantially vertical side module extending at least partially around said perimeter member, said side module including at least one side member; and
a lid member at least partially supported by said side member and covering at least said beverage, beverage component, or carbon dioxide container retaining assembly.

5,626,354
BICYCLE TRANSMISSION AND THE METHOD OF UTILIZING THE SAME
David H. Elliott, 10510 N. Oakwilde, Stockton, Calif. 95212
Continuation-in-part of Ser. No. 254,611, Jun. 6, 1994, abandoned. This application May 18, 1995, Ser. No. 444,032
Int. Cl.[6] B62M *11/04*
U.S. Cl. 280—236 **18 Claims**

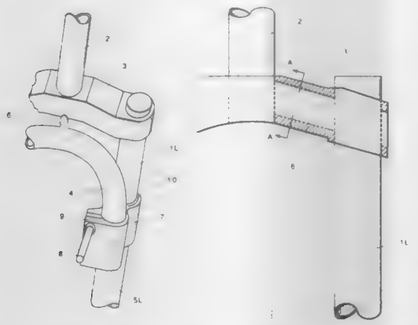




1. In a bicycle having a frame, a pedal assembly rotatably coupled to said frame, and a bicycle wheel, an improved bicycle transmission comprising:
a driver plate coupled and rotated by said pedal assembly;
a rim driver rotatably coupled to and rotatable with said bicycle wheel; and
a transmission driver wheel selectively positionable between said driver plate and said rim driver and in continuous frictional engagement with either one of said driver plate or rim driver;
shifting means for moving said driver wheel radially across said either one of said driver plate or rim driver to provide a continuously variable transmission ratio between said driver plate and said rim driver when said driver plate and rim driver are coupled with each other through said driver wheel,
said shifting means automatically disengaging said rim driver from said driver plate by allowing movement of said driver wheel out of engagement with the other one of said driver plate or rim driver, while maintaining said driver wheel in engagement with said either said rim driver or driver plate when freewheeling, said rim driver and driver plate being completely disengaged from each other when said driver wheel is allowed rotate; and

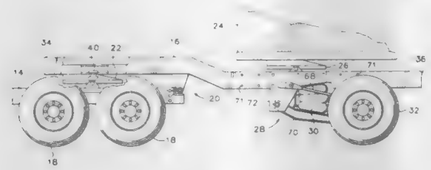
said shifting means automatically allowing said driver wheel to move back into engagement with both said driver plate and said rim driver when force is a gain transmitted from said pedal assembly to said bicycle wheel, whereby a continuously variable, free-wheeling bicycle transmission is provided.

5,626,355
TELESCOPING-TYPE FRONT FORK BICYCLE SUSPENSIONS
Darrell W. Voss, 687 Coal Creek Rd., and Gary G. Klein, 103 Smith Dr., both of Chehalis, Wash. 98532
Filed Apr. 1, 1994, Ser. No. 221,011
Int. Cl.[6] B62K *19/30;19/38*
U.S. Cl. 280—276 **8 Claims**



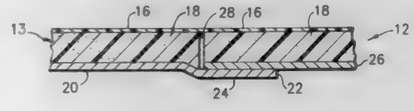
1. An improved brake bridge in combination with a front fork bicycle suspension system having a pair of telescoping strut stanchion tubes wherein said brake bridge comprises a hollow member having two ends and a pair of socket connectors respectively securing each of said ends to each of said telescoping strut stanchion tubes, said brake bridge being made from a selected one of a metal extrusion and a reinforced plastic molding, each said socket connector comprising a shaped body with a cylindrical hole of constant diameter to accommodate one of the telescoping strut stanchion tubes, a constant diameter cylindrical socket for supporting respective ones of said ends of said hollow member and a threaded hole to support a brake stud, each said socket connector encircling a respective telescoping stanchion strut tube and secured thereto by a structural adhesive.

5,626,356
ADJUSTABLE WEIGHT DISTRIBUTION SYSTEM FOR HIGHWAY VEHICLES
Michael R. Harwood, 30104 Heather Oak Dr., Junction City, Oreg. 97448
Filed Feb. 28, 1995, Ser. No. 395,424
Int. Cl.[6] B60D *1/42*
U.S. Cl. 280—405.1 **19 Claims**



1. A system for distributing weight between a truck having rear drive wheels and a trailer, comprising:
a dolly having a front end and a rear end;
a king pin slidingly joined to the front end of the dolly for interlocking to a first fifth wheel on the truck, the first fifth wheel repositionable along a longitudinal direction of the truck and the king pin repositionable along a longitudinal direction of the dolly to align with the first fifth wheel;
a second fifth wheel joined to the rear end of the dolly for receiving the trailer; and
a pivot member joined to a center section of the dolly and pivotally joined to a rear end of the truck for pivoting weight between the front and rear end of the dolly according to the longitudinal positions of the fifth wheel and the king pin while at the same time locking the dolly and truck together in a rigid longitudinal and lateral alignment.

5,626,357
PASSENGER AIRBAG MODULE USING AN ESSENTIALLY UNITARY COVER
Timothy J. Leonard, Stuttgart, Germany; Joseph L. Ralston; Donald J. Bolieau, both of North Ogden, Utah; Mark Rogers, Roy, Utah; Daniel W. Anderson, South Weber, Utah, and Axel W. Kaiser, Vaihingen, Germany, assignors to Morton International, Inc., Chicago, Ill., and Robert Bosch GmbH, Stuttgart-Feuerbach, Germany
Continuation-in-part of Ser. No. 341,677, Nov. 17, 1994, Pat. No. 5,466,000. This application Oct. 2, 1995, Ser. No. 538,025
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **4 Claims**



1. An airbag cover assembly having an integral airbag deployment door incorporated in a vehicle panel for deployment of an airbag from an airbag module positioned behind said panel and deployment door, comprising:
a panel front surface facing an interior of a vehicle compartment,
a panel rear surface substrate,
a foam core positioned between and separating said panel front surface from said panel rear surface substrate,
said panel rear surface substrate having a dropped lip extending from an end thereof,
a deployment door defined in said panel and hinged along one side thereon in said panel,
said deployment door comprises a door front surface, a door rear surface substrate and a foam core positioned between and separating said door front surface from said door rear surface substrate and a complete discontinuity existing between the foam core of the door and the foam core of the adjacent portions of the panel and between the door rear surface substrate and the adjacent portions of the panel rear surface substrate whereby the foam core of the door is completely separated from the foam core of said panel except at the hinged side of the door,
said deployment door positioned in said panel on said dropped lip of said panel rear surface substrate whereby said deployment door and adjacent portions of said panel extend side by side at the same level and whereby the deployment door can be opened without ripping any part of said foam cores, thereby preventing foam core debris from being emitted through an open deployment door on deployment of said airbag.

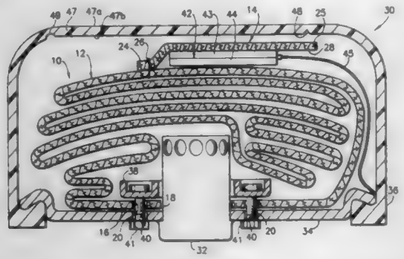
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5,626,358

AIRBAG CUSHION ASSEMBLY WITH HORN SWITCH POCKET

Merle K. Ricks, Layton, and Kristen K. S. Boyd, West Haven, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jan. 11, 1996, Ser. No. 587,855
Int. Cl.[6] B60R 21/16;21/22
U.S. Cl. 280—731 22 Claims



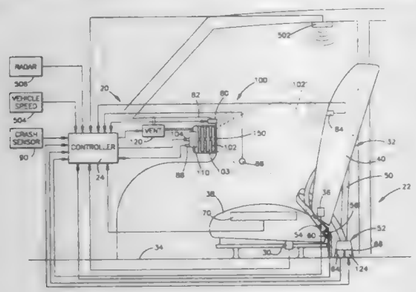
1. An airbag cushion assembly for use in an airbag module, the assembly comprising:
an airbag cushion having a collar defining an open mouth for receiving inflation fluid; and
a horn switch pocket sized to contain a horn switch assembly, the horn switch pocket having a pocket opening sized to receive a horn switch assembly, the horn switch pocket secured to the airbag cushion.

5,626,359

METHOD AND APPARATUS FOR CONTROLLING AN ACTUATABLE RESTRAINING DEVICE IN RESPONSE TO DISCRETE CONTROL ZONES

Charles E. Steffens, Jr., Washington; Thomas H. Vos, Rochester; Scott B. Gentry, Romeo; Joseph F. Mazur, Washington, and Brian K. Blackburn, Rochester, all of Mich., assignors to TRW Vehicle Safety Systems, Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 161,654, Dec. 2, 1993, Pat. No. 5,413,378. This application Mar. 22, 1995, Ser. No. 408,480
Int. Cl.[6] B60R 21/26
U.S. Cl. 280—735 25 Claims



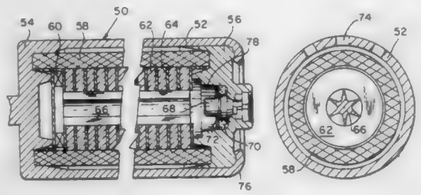
1. An apparatus for controlling an occupant restraint system, said apparatus comprising:
sensing means for sensing at least two parameters that could affect an occupant restraining function of said restraint system;
regulating means operatively connected to an occupant restraining device of said occupant restraint system for regulating the occupant restraining function of said occupant restraining device in response to a control signal; and
control means operatively connected to said sensing means and to said regulating means for selecting one of a plurality of discrete control zones dependent upon said at least two sensed parameters and for providing said control signal based on the selected one of said discrete control zones, said control means including a look-up table having a matrix of control characterization blocks, said control characterization blocks being defined by boundary lines so that said control characterization blocks are non-uniform.

5,626,360

LINEAR IGNITERS FOR AIRBAG INFLATORS

Donald R. Lauritzen, Hyrum; David J. Green, Brigham City; Robert D. Taylor, Hyrum, and Scott C. Mitson, Honeyville, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 213,176, Mar. 14, 1994, Pat. No. 5,441,705. This application Feb. 23, 1995, Ser. No. 392,578
Int. Cl.[6] B60R 21/28
U.S. Cl. 280—741 35 Claims



1. An igniter for use in a vehicle airbag assembly comprising an igniter material which is maintained in its intended functional shape by a solid body of a consumable material which is essentially consumed to a non-solid phase upon ignition of the igniter material.

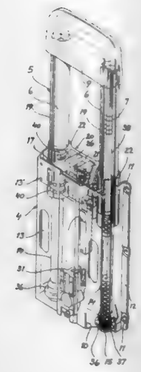
5,626,361

ROLL-OVER PROTECTION ARRANGEMENT FOR A MOTOR VEHICLE

Lothar Heiner, Munich, Germany, assignor to Bayerische Motoren Werke AG, Munich, Germany

Continuation of Ser. No. 237,102, May 3, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,501
Claims priority, application Germany, May 3, 1993, 43 14 538.8
Int. Cl.[6] B60R 21/00
U.S. Cl. 280—756 30 Claims

1. A roll-over protection arrangement for a motor vehicle which has a vehicle railing extending along at least portions of a passenger accommodating area, said roll-over protection arrangement comprising:
an approximately U-shaped roll-over bar having downwardly directed U-legs and an upper bridging portion between top portions of the U-legs,
a guiding arrangement for supportably guiding the U-shaped roll-over bar for movement between a downward inoperative position for normal driving operations and an upper operative position above the vehicle railing for protecting vehicle passengers in the event of a vehicle roll-over, said guiding arrangement including guiding elements slidably engageable with the U-legs,



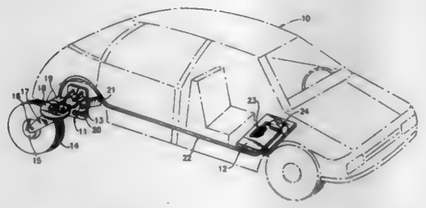
a releasable holding device for holding the U-legs in the downward position,
a locking device for locking the U-legs in the upper position, and
a force-applying mechanism for rapidly moving the U-shaped roll-over bar from the downward position to the upper position,
wherein the U-legs and the guiding elements are made from extruded profile aluminum alloy or other light weight material members, which are fitted to slidably engage with one another during respective movements between the downward and upper positions.

5,626,362

SIMULATOR FOR TEACHING VEHICLE SPEED CONTROL AND SKID RECOVERY TECHNIQUES

Frederik R. Mottola, Cheshire, Conn., assignor to Interactive Driving Systems, Inc., Cheshire, Conn.

Filed Jun. 7, 1994, Ser. No. 255,172
Int. Cl.[6] B62D 63/00
U.S. Cl. 280—767 16 Claims



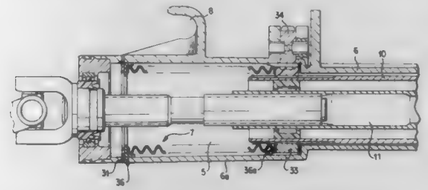
1. A front wheel drive automotive vehicle for simulating speed control having a pair of rear wheel assemblies one on each side of said vehicle, each of said wheel assemblies comprising a rigid support fixedly secured to said vehicle, a castering wheel mounted to said support and pivotable about an axis, a locking member axially mounted to and rotatable with said castering wheel, means for restricting rotation of said locking member and in turn said castering wheel and means for releasing said restricting means to simulate excessive speed resulting in a skid producing roadway condition, said releasing means being positioned at a location remote from said wheel assemblies.

5,626,363

ADJUSTABLE STEERING DEVICE

Siegfried Rispeter, Besigheim, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Division of Ser. No. 404,317, Mar. 15, 1995, Pat. No. 5,562,306. This application Mar. 15, 1996, Ser. No. 616,600
Claims priority, application Germany, Mar. 14, 1994, 44 09 250.4; Apr. 20, 1994, 44 13 798.2
Int. Cl.[6] B62D 1/19
U.S. Cl. 280—775 11 Claims



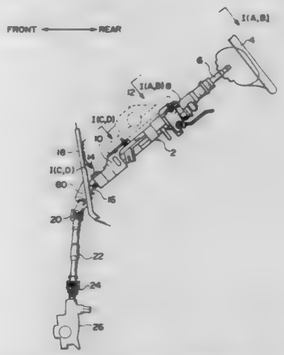
1. A steering assembly for motor vehicles comprising:
a steering spindle,
a protective tube surrounding said spindle,
a jacket tube surrounding the protective tube, said jacket tube being fixed in position when in an in use position in a vehicle,
a rotatable spindle nut threadably connected with a threaded portion of the protective tube so as to axially adjustably move the protective tube and spindle in response to rotation of the spindle nut,
a motor drivingly connected to the spindle nut,
and a tubular energy absorbing deformation element interposed between the spindle nut and an end of the jacket tube.

5,626,364

STEERING SYSTEM FOR VEHICLE

Kunihiro Nakamura, Nagoya, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1995, Ser. No. 437,384
Claims priority, application Japan, May 10, 1994, 6-120644
Int. Cl.[6] B62D 1/19
U.S. Cl. 280—777 11 Claims

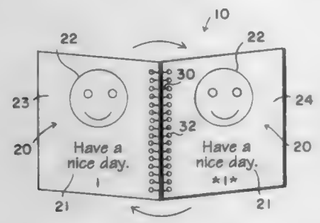


1. A steering system for a vehicle, comprising:
a) a shaft unit passing through a dashboard, the shaft unit being coupled to a steering wheel and a steering gear box at opposite ends thereof, and
b) a bearing member for attaching the shaft unit to the dashboard and being capable of detaching the shaft unit from the dashboard at the time of collision of the vehicle,
wherein the bearing member includes a bearing for supporting the shaft unit in a rotatable manner, and a bracket member for supporting the bearing and being attached to the dashboard,

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the bracket member including a first bracket attached to the dashboard and supporting the bearing at a side confronting a rear part of the vehicle, and a second bracket attached to the first bracket and supporting the bearing at a side confronting a front part of the vehicle, the second bracket capable of being disengaged from the first bracket at the time of collision and freeing the shaft unit from the dashboard.

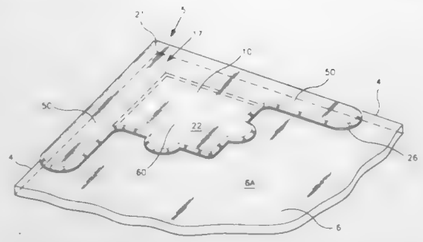
5,626,365
TWO-WAY BOOK
Becky A. Petteway, 1654 S. Raford, Springfield, Mo. 65809
Filed May 24, 1995, Ser. No. 448,800
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—15.1 **6 Claims**



1. A book comprising:
a plurality of sheets having front and rear opposed surfaces;
means for binding said sheets in a stack to position a rear surface of a preceding sheet of said plurality of sheets contiguous to a front surface of a sheet subsequent to said preceding sheet;
a first set of indicia on a rear surface of at least one of said preceding sheets and on a rear surface of at least one said subsequent sheet, said indicia being generally equivalent and in a same spatial relationship relative to said binding means;
a second set of equivalent indicia on a front surface of said subsequent sheet and on a front surface of a sheet proceeding said subsequent sheet and in a same spatial relationship relative to said binding means and said first set of indicia;
said preceding sheet rear surface and said front surface of said subsequent sheet being rotatable about said binding means to a position facing away from a front surface of said sheet proceeding said subsequent sheet and a book user, said positioned preceding subsequent and proceeding sheets simultaneously displaying said first and second sets of equivalent indicia in opposed normal directions relative to said binding means and a book user, whereby to allow a book user to simultaneously display to another and view said first and second sets of indicia in opposed normal directions.

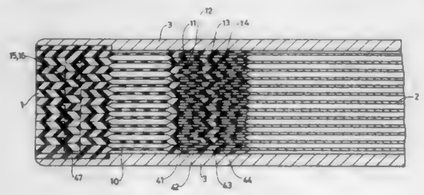
5,626,366
BOOK COVER CORNER GUARD
Ken Lee, 2332 Sable Tree Cir., Tustin, Calif. 92680
Continuation-in-part of Ser. No. 423,773, Apr. 18, 1995. This application Jun. 13, 1995, Ser. No. 490,072
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—20 **19 Claims**

1. A book cover corner guard device for reinforcing a corner of a book cover of a book, the book corner having book corner edges, the guard comprising:
a guard body aligned with an outer surface of the book corner, and providing a bottom surface contacting the book cover and a top surface facing outwardly from the book cover; wherein the bottom surface, is coated with an adhesive for adhering the body to the outer surface of the book cover;
a first and second fixed edge tab portions of the body, the tab portions aligned in mutual orthogonal juxtaposition, each of the tabs abutting one of the book corner edges;



a central portion of the guard body contiguous with the two fixed edge tab portions and extending therebetween, the central portion providing an edge extending between the tab portions, said edge being non-linear.

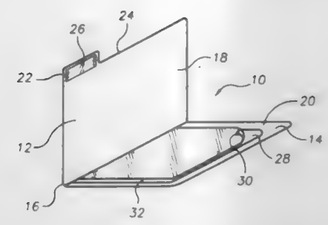
5,626,367
LOOSE LEAF BINDER
Steven Lu, No. 33, Jui-Chu Rd., Fengshan, Kaohsiung Hsien, Taiwan
Filed Jul. 15, 1994, Ser. No. 275,263
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—21.1 **4 Claims**



1. A loose leaf binder for papers comprising:
a plurality of first binding elements each including a front portion and a rear portion, said front portion including a first flange and a second flange, said flanges including engaging means for engaging with said papers so as to secure said papers to said flanges;
securing means for securing said rear portions of said first binding elements together; and
at least one second binding element including a front portion having a pair of second flanges formed therein and including a rear portion, said second flanges including a second engaging means for engaging with said papers, means for securing said rear portion of said second binding element to said rear portions of said first binding elements, and said second binding element including a flap secured thereto for engaging with a cover layer.

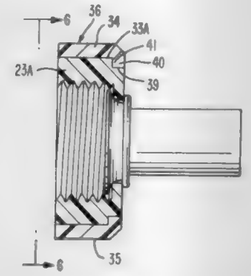
5,626,368
FILE FOLDER SYSTEM
Jeffrey H. St. Romain, 2025 Trinity Dr., Mandeville, La. 70448
Filed Jan. 24, 1996, Ser. No. 590,582
Int. Cl.[6] B42D *3/00*
U.S. Cl. 281—29 **6 Claims**

1. A file folder system comprising:
a file folder comprising:
a first and second folder member, foldably connected in a manner to create a storage space between said first and second folder members; and a labeling tab extending from a perimeter edge, one of said first and second folder members having an ink receiving surface disposed on an area thereof that will receive a quantity of ink thereon in a semi-permanent fashion;



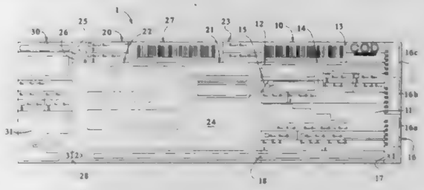
said file folder including a second ink receiving surface area disposed on an interior surface of one of said first and second folder members, and
a second flexible, transparent cover member is secured to said file folder in a manner such that said transparent cover member is normally disposed over said second ink receiving surface area.

5,626,369
HOSE ASSEMBLY, INTERNALLY THREADED MEMBER THEREFOR AND METHODS OF MAKING THE SAME
Jerry Shifman, Prospect; Leonard D. Horst, Bucyrus, both of Ohio; Jon H. Snyder, Arden, N.C.; Richard C. Kucyr, Gallion, Ohio, and Harold D. Beck, Strafford, Mo., assignors to Dayco Products, Inc., Dayton, Ohio
Filed May 10, 1995, Ser. No. 438,868
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—38 **21 Claims**



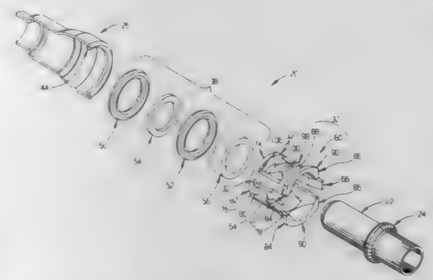
1. In a hose assembly comprising a flexible hose having opposite ends, an internally threaded member mounted on one of said opposite ends in a manner to swivel thereon to permit said internally threaded member to be finger coupled to an externally threaded part of a liquid dispensing spigot, said internally threaded member having an outer peripheral surface, and an annular member disposed around said internally threaded member in a manner to engage said outer peripheral surface thereof and having an external peripheral surface to be finger engaged for turning said internally threaded member in unison therewith relative to said hose, the improvement wherein said annular member comprises a SANTOPRENE material and includes an inwardly extending edge portion that engages a recessed shoulder of said internally threaded member.

5,626,370
ONE-PIECE SPECIAL SERVICE MAILING FORM AND RETURN ENVELOPE AND A METHOD FOR ASSEMBLING SAME
Glenn Petkovsek, 20 Tortoise Park Cove, Little Rock, Ark. 72211-2349, assignor to Glenn Petkovsek, Little Rock, Ark.
Filed Dec. 12, 1994, Ser. No. 353,621
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—116 **18 Claims**



1. An assembly for delivering a mailing attached to an article requiring special services, the assembly comprising:
a form capable of printing with information related to the special services required for the mailing of the article;
a return envelope detachably connected to the form having an interior compartment;
means for securing the form and the return envelope as an integral combination to the article for delivery; and
perforated tear lines between the form and the return envelope to selectively detach one from the other.

5,626,371
QUICK CONNECTOR WITH ONE-PIECE RETAINER
Donald D. Bartholomew, 35442 Jefferson, Mt. Clemens, Mich. 48045
PCT No. PCT/US92/02703, § 371 Date Sep. 23, 1994, § 102(e) Date Sep. 23, 1994, PCT Pub. No. WO93/20379, PCT Pub. Date Oct. 14, 1993
Continuation-in-part of Ser. No. 465,773, Jan. 16, 1990, abandoned. This PCT application Apr. 2, 1992, Ser. No. 313,220
Claims priority, application WIPO, Apr. 2, 1992, PCT/US92/02703
Int. Cl.[6] F16L *39/00*
U.S. Cl. 285—319 **19 Claims**



1. A quick connector assembly comprising:
a conduit having a radially outward extending annular flange at a predetermined distance from an end of said conduit;
a housing having an axial bore formed therein for receiving said conduit, said housing having a radially inward turned flange;
seal means for sealing said conduit with said housing, said seal means positioned in said axial bore of said housing; and
retainer means for retaining said conduit in said housing, said retainer means positioned in said housing axial bore and including a ring means for maintaining said sealing means in said housing, and a first pair of arms extending from said ring means, and a second pair of arms extending from said ring

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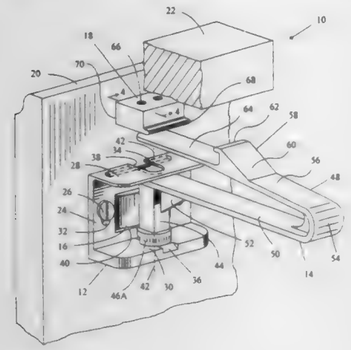
means, said ring means including an axial bore enabling passage of said conduit, and said second pair of arms alternating between said first pair of arms, each of said first pair of arms including a pair of spaced apart strips extending axially from said ring means, a leg portion spaced from said ring means and engaging both strips, and a cantilevered tab extending from said leg portion toward said ring means, said cantilevered tab having a ring means-facing annular flange abutting surface formed thereon.

5,626,372

ENGAGEABLE AND DISENGAGEABLE SAFETY LATCH

Peter A. Vogt, 29256 Kestrel La., Laguna Niguel, Calif. 92677

Filed Oct. 6, 1995, Ser. No. 540,564
Int. Cl.[6] E05L *19/06*
U.S. Cl. 292—87 **6 Claims**



1. A latch comprising:

a stop member for latching said latch;

a mechanical latching means for latching engagement with said stop member, said latching means having an apex portion and a support arm that extends away from said apex portion and a latching arm that extends away from the opposite side of said apex portion, said support arm and said latching arm are substantially parallel to each other, wherein said support arm is substantially rigid, said latching arm having an abutting mechanism about the center length of said latching arm thereon, wherein said abutting mechanism having an inclined cam surface facing said apex and an abutment surface facing away from said apex, said latching arm having a flexible portion between said cam surface and said apex and a substantially rigid release lever portion extending out from said abutment surface, said latching arm having a first position in which said abutment surface is engageable with said stop member and a second position in which said abutment is not engageable with said stop member;

pivot means for pivotally mounting said latching means to a support thereon, wherein said abutting mechanism is pivotable about said pivot means between a latchable position where said abutting mechanism engages said stop member and an unlatchable position where said abutting mechanism does not engage said stop member;

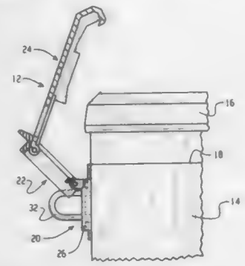
spring means disposed between said support and said pivot means for resiliently biasing said restraining member in a predefined engageable position, and in a predefined position which is not engageable with said stop member.

5,626,373

DRAW LATCH ASSEMBLY

William M. Chambers, Valley City, and Mark S. Coats, Warrensville Hts., both of Ohio, assignors to The Lamson & Sessions Co., Cleveland, Ohio

Filed Jul. 19, 1995, Ser. No. 503,928
Int. Cl.[6] E05C *5/00*
U.S. Cl. 292—113 **7 Claims**



1. A draw latch assembly for releasably connecting first and second components comprising:

a base member having first and second ends with said second end having a hinge formed integrally therewith;

a connecting element for permitting the base member to be selectively connected to the first component, wherein the base member is alternatively connectable to the connecting member in either of two positions so that the second end of the base member is respectively either adjacent or spaced from the connected location of the second component;

a bail member having a first end for releasable connection to the second component and a spaced second end;

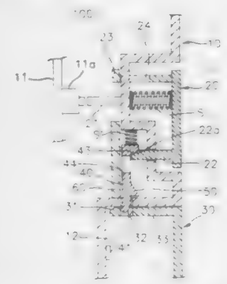
a link member having a first end pivotally connected to the second end of the bail member and a second end including cooperating means permitting selective connection to the hinge on the second end of the base member in said respective either of two positions.

5,626,374

VIDEO CASSETTE RECORDER INCORPORATING THEREIN A DOOR OPENING DEVICE FOR SELECTIVELY EXPOSING/CONCEALING OPERATING BUTTONS ON A FRONT PANEL THEREOF

Heong-Ill Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 27, 1996, Ser. No. 622,224
Claims priority, application Rep. of Korea, Mar. 31, 1995, 95-6237
Int. Cl.[6] E05C *1/12*
U.S. Cl. 292—170 **3 Claims**



1. A video cassette recorder provided with a door opening device for selectively exposing or concealing operating buttons used to input recording reservation data and mounted on a front panel thereof, wherein the door opening device comprises:

a preprogramming start button slidably mounted on the front panel from a first position to a second position and including a button body positioned outside of the front panel, a depressing bar extending from the button body to pass through the front panel, and an urging member having an end-slanted surface and extending from the button body to pass through the front panel;

a door member pivotably attached to a lower portion of the front panel from a position wherein, when the preprogramming start button is in the first position, the door member is completely closed, to a position wherein, when the preprogramming start button is in the second position, the door is completely opened, and including a folded extension having a pin receiver and a slant surface at its free end; and

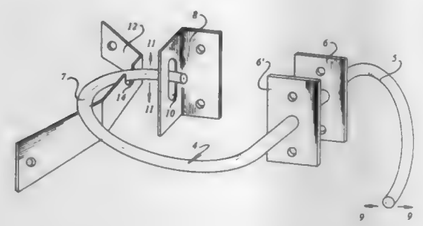
an interlocking means slidable from a position wherein, when the preprogramming start button is in the first position, the interlocking means is retained through the pin receiver, to a position wherein, when the preprogramming start button is in the second position, the interlocking means is released from the pin receiver.

5,626,375

GATE LATCH MECHANISM

Henry Plett, 4031 Rundlehorn Drive N.E., Calgary, Alberta, Canada

Continuation of Ser. No. 227,127, Apr. 13, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 571,033
Int. Cl.[6] E05C *3/06*
U.S. Cl. 292—238 **5 Claims**



1. A gate latching mechanism comprising:

solid bar means having an exaggerated "S" curvature and wherein a first half of the bar means is twisted to lie in a plane substantially perpendicular to the plane of the second half;

means for mounting the bar means through a gate so that the first half of the bar means is exposed on one side of the gate in a plane substantially vertical to the gate and the second half of the bar means is exposed on the other side of the gate in a plane substantially horizontal to the gate;

keeper plate means, the body thereof defining an elongate, substantially vertical opening therein, the keeper plate means mounted to the gate and in alignment with the end of the second half of the bar means so as to capture the end of the bar means within the confines of the plate means vertical opening limiting vertical movement of the bar means; and

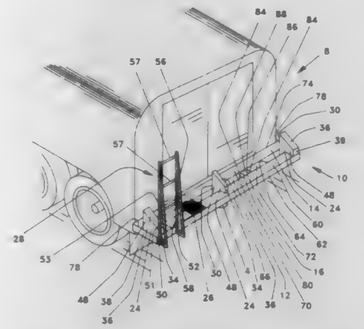
striker plate means having a notch therein, the striker plate means mounted to a gate post and positioned to capture a portion of the body of the second half of the bar means within the notch when gate is closed with respect to the gate post, the striker plate means further having a ramping leading edge in direct alignment of the body of the bar means with the striker plate notch as the gate is moved toward closure with the gate post a portion of the body of the second half resting on the leading edge when the gate is in a closed position to compensate for gate sag.

5,626,376

IMPACT BUMPER APPARATUS AND METHOD

Lloyd J. Parker, 2020 Nottingham Cir., Junction City, Kans. 66441

Filed Sep. 6, 1994, Ser. No. 300,921
Int. Cl.[6] B60R *19/02*
U.S. Cl. 293—102 **11 Claims**



1. An impact bumper comprising a first generally hollow longitudinal member (**12**); a second generally hollow longitudinal member (**14**); at least one generally hollow spacer member (**16**) secured to said first generally hollow longitudinal member (**12**) and to said second generally hollow longitudinal member (**14**); at least one generally hollow guide assembly (**24**) having a slanted surface (**36**) and being secured to said first generally hollow longitudinal member (**12**) and said second generally hollow longitudinal member (**14**) for absorbing and elevating a direction of an impact force; and at least one base support assembly (**20–22**) secured to said first generally hollow longitudinal member (**12**) and to said second generally hollow longitudinal member (**14**) for absorbing and lowering a direction of an impact force; said least one generally hollow guide assembly (**24**) additionally comprising a first guide plate member (**34**) normal to and secured to said first generally hollow longitudinal member (**12**); a second guide plate member (**32**) normal to and secured to said first generally hollow longitudinal member (**12**); a third guide plate member (**30**) normal to and secured to said second generally hollow longitudinal member (**14**); and a top guide plate member secured to said first guide plate member (**34**), said second guide plate member (**32**), and said third guide plate member (**30**) for defining said slanted surface (**36**); said least one guide assembly additionally comprising an outer left guide assembly, an outer right guide assembly, and an inner guide assembly equispaced from said outer left guide assembly and said outer right guide assembly.

5,626,377

APPARATUS FOR CLEANING DRAIN TROUGHS

William C. Carroll, Jr., 360 Hub Tatum Rd., Sautee, Ga. 30571; Timothy P. Carroll, 175 Farm Hill Cir., Roswell, Ga. 30075, and William C. Carroll, Sr., 131 Laurel Park Dr., Cleveland, Ga. 30528

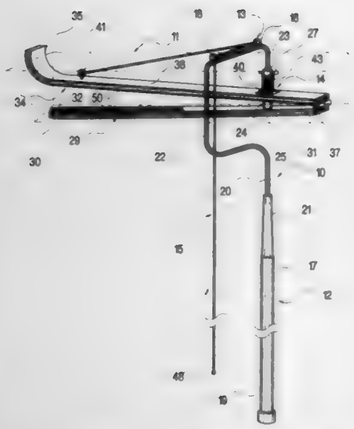
Filed May 15, 1996, Ser. No. 647,673
Int. Cl.[6] E04D *13/076*
U.S. Cl. 294—19.1 **8 Claims**

1. An apparatus for removing debris from a straight, horizontally disposed eaves drain trough, said apparatus comprising:

a) elongated handle means having a top end and a bottom end adapted to be held by an operator,

b) a support arm having a lower extremity that removably engages the top end of said handle means, a middle portion of substantially U-shaped configuration located above and offset from said lower extremity, and a downwardly directed upper extremity disposed at an elevation within said middle portion,

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said upper and lower extremities and middle portion lying in the same vertical plane,

c) a gripping mechanism comprising:

1) a control tube vertically elongated between a lower extremity and an open upper extremity that removably receives and engages the upper extremity of said support arm,

2) a lower gripping member horizontally elongated between a leading extremity and trailing extremity and further bounded by upper and lower surfaces, said lower gripping member being fixedly attached to the lower extremity of said control tube in orthogonal relationship to the plane of said support arm,

3) an upper gripping member horizontally elongated between a leading extremity and a trailing extremity that hingedly engages the trailing extremity of said lower gripping member, and further bounded by upper and lower surfaces, said upper gripping member having a slotted aperture that is penetrated by said control tube, and tether-securing means associated with its upper surface adjacent its leading extremity, and

4) restoring means for urging said upper gripping member downwardly into contact with said lower gripping member,

d) a control tether extending from a proximal extremity secured by said tether-securing means to a free distal extremity disposed adjacent the bottom end of said handle means, and

e) guide means associated with said support arm that permit sliding passage of said control tether.

5,626,378

SELF-ACTUATED VACUUM GRIP

Michael E. Puhl, Hartford, and Daniel D. Dorzok, Kewaskum, both of Wis., assignors to Vactech, Inc., Hartford, Wis.

Filed Aug. 11, 1994, Ser. No. 289,301

Int. Cl.[6] B66C *1/02*

U.S. Cl. 294—64.1 **6 Claims**

1. A self-actuated vacuum grip comprising:

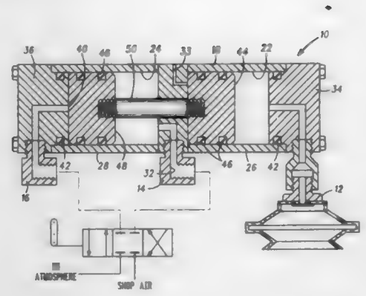
an elongate housing having a hollow interior and having a partition dividing said hollow interior into first and second chambers;

a first piston reciprocable in said first chamber;

a second piston reciprocable in said second chamber;

means for coupling said first and second pistons for colinear movement with each other so that reciprocating movement of said second piston in said second chamber results in reciprocating movement of said first piston in said first chamber; and

means for selectively reciprocating said second piston in said second chamber so as to reciprocate said first piston in said first chamber;



said first piston thereby creating in said first chamber a partial vacuum when said first piston is moved in one direction and said first piston destroying said partial vacuum when said first piston is moved in the opposite direction.

5,626,379

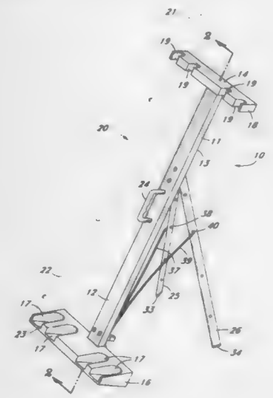
PORTABLE GUN RACK

Barry Scott, 41162 Montelimar Ct., Murrietta, Calif. 92562

Filed Jul. 31, 1995, Ser. No. 509,230

Int. Cl.[6] A45F *5/00*; **A47B** *43/00*

U.S. Cl. 294—143 **7 Claims**



1. A portable gun rack for transporting and supporting at least one firearm of the type having an elongated barrel and a stock having a butt, said rack comprising:

an elongated rack frame having a top and a bottom, a front and a rear;

a butt support shelf held near the bottom of said elongated rack frame, said butt support shelf having at least one shaped recess for holding a butt of a firearm;

a barrel support arm held near the top of said elongated rack frame, said barrel support arm having at least one barrel support recess;

a first and a second leg each leg being pivotally held at a pivot point to said elongated rack frame between said barrel support arm and said butt support shelf, each leg having a pivoted end pivotally attached to said elongated rack frame and a foot, each leg being movable from a closed position wherein it lies against said elongated rack frame to an open position wherein it is pivoted away from the elongated rack frame and the foot of the first leg being moved away from the foot of the second leg; and

leg actuating means comprising a first arm affixed to said first leg between its pivoted end and its foot and a second arm affixed to said second leg between its pivoted end and its foot and said first arm and said second arm being connected to an actuating foot which touches the ground when said gun rack is placed with its butt support shelf adjacent the ground and moves said first arm and said second arm upwardly along said frame thus pivoting the feet of said first and second leg away from said frame to an open position and said leg actuating means including biasing means so that when said gun rack is lifted upwardly from the ground, the first and second legs move to a closed position.

5,626,380

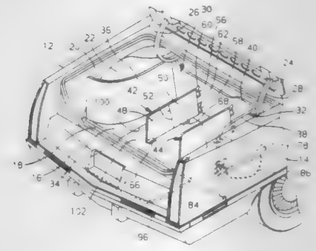
STORAGE DEVICE FOR VEHICLE LUGGAGE COMPARTMENT

Gerald L. Elson, Rochester; Barbara A. Sanders, Troy, and David G. Hlavaty, Northville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 1, 1995, Ser. No. 522,717

Int. Cl.[6] B62D *33/06*

U.S. Cl. 296—39.1 **1 Claim**



1. A storage device for a luggage compartment in a vehicle of the type having a spare tire stowage recess in the floor of the luggage compartment, comprising:

a storage box positioned within the luggage compartment, said box having a horizontal floor panel and a vertical upstanding front and side walls and remaining open at the top and at the rear to enable placement of luggage into the box;

first and second laterally spaced apart slide tracks positioned respectively on opposite sides of the spare tire stowage recess and mounting the box on the floor of the luggage compartment for fore and aft sliding movement;

an opening in the floor panel of the box to allow access to the spare tire stowage recess in the floor of the luggage compartment when the box is slid aft;

and a door panel hingedly mounted on the box to normally close the opening in the floor panel and being hingedly raised to an open position to provide access to the spare tire storage recess when the box is slid aft.

5,626,381

SUN-VISOR FOR MOTOR VEHICLES

Pascal Gervasoni, Carling; René Lecorvaisier, Hombourg-Haut; Patrick Sauder, Folochviller, and Didier Weiss, Guerting, all of France, assignors to Gebr. Happich GmbH, Germany

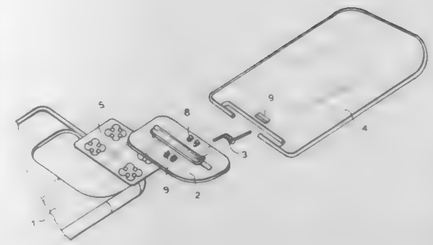
Filed Feb. 9, 1996, Ser. No. 599,046

Claims priority, application Germany, Feb. 9, 1995, 195 04 248.4

Int. Cl.[6] B60J *3/00*

U.S. Cl. 296—97.8 **15 Claims**

1. A sun-visor for a motor vehicle including a flat, elongate sun-visor body including an edge, and means toward the edge of the sun-visor body for supporting the sun-visor body for swinging between a position of non-use above a windshield of the vehicle and a position of use in front of the windshield of the vehicle;



the sun-visor body having opposite lateral ends in the length direction thereof;

a plate for providing glare protection,

a hinge means operatively connected to the plate and disposed inward from one of the lateral ends of the visor body, the hinge means enabling the plate to swing outward beyond the lateral end of the visor body to elongate the visor body in the length direction, the hinge means further enabling the plate to swing inward to a position of non-use which shortens the length of the visor body,

the hinge means comprising a hinge plate anchored in the sun-visor body, first detent elements on the hinge plate and second detent elements on the plate respectfully positioned for securing the plate in each of its inwardly-swung and outwardly-swung positions by engagement of the respective detent elements on the plate and the hinge plate at each of those orientations.

5,626,382

MOLDED PLASTIC PANEL HAVING INTEGRATED, LOCALIZED SOFT-TOUCH AESTHETIC FEATURE

David H. Johnson, Canton, Mich.; William M. Bolle, Manitowoc, Wis.; Eric C. Buckley, and Theodore J. Peterson, both of Sheboygan, Wis., assignors to Lear Corporation, Southfield, Mich.

Filed Apr. 3, 1995, Ser. No. 416,033

Int. Cl.[6] B60J *5/00*

U.S. Cl. 296—146.7 **10 Claims**



1. An automotive interior panel comprising:

an injection-molded, rigid plastic substrate configured to fit onto an inside of a vehicle door and having a shelf configured as an armrest;

a cover secured to an outer face of the substrate, the cover having sufficient flexibility to yield readily under the weight of a human hand; and

a pad of resilient foam material covering part of the outer face of the substrate, which pad is disposed on the shelf of the substrate and closely secured between and encapsulated by the substrate and the cover along an outer peripheral edge of the pad, the cover covering the outer peripheral edge of the pad at an inwardly facing portion of the interior panel, so that the pad and a portion of the cover overlying the pad provide a

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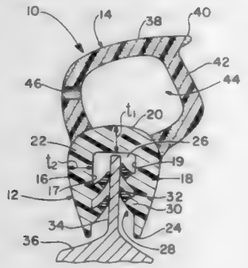
soft, compressible cushion for the armrest without a visible outline of the pad being visible on the cover along the outer peripheral edge of the pad.

5,626,383

WIRELESS WEATHERSTRIP PROFILES

Ching-Chih Lee, Hudson; Richard A. Miranda, Berlin Center, and James F. Stevenson, Hudson, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Dec. 28, 1994, Ser. No. 365,718
Int. Cl.[6] B62D *25/00*
U.S. Cl. 296—146.9 **5 Claims**



1. A weatherstrip profile, comprising;

a carrier structure having two legs with opposing walls defining a channel therebetween and being connected by a base, said walls having a plurality of inwardly extending fingers each having a root portion and a tip portion, said root portions being attached to said walls and said tip portions being attached to said root portions, said fingers being adapted to grip a profile-mounting flange positioned in said channel,

a weather-sealing structure having a sealing surface, said weather-sealing structure extending from said carrier structure and being attached thereto,

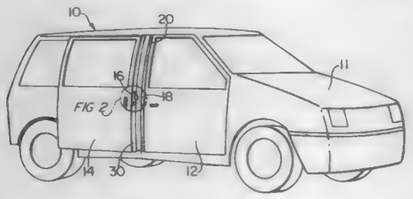
said carrier legs decreasing in thickness as they proceed outwardly from said base, said walls converging towards each other as they proceed from said base at a convergent angle of from about 5°–60°, and said legs, base, and root portions having a Shore A durometer hardness of about 70–100.

5,626,384

VEHICLE SLIDING DOOR STABILIZER

Ronald D. Walther, Jacobson, Minn., assignor to U.S. Farathane Corporation, Utica, Mich.

Filed Sep. 19, 1995, Ser. No. 530,007
Int. Cl.[6] B60J *5/06*
U.S. Cl. 296—155 **20 Claims**



1. A stabilizer assembly for a sliding door of a vehicle comprising:

a male part including a first portion formed at least partially of urethane;

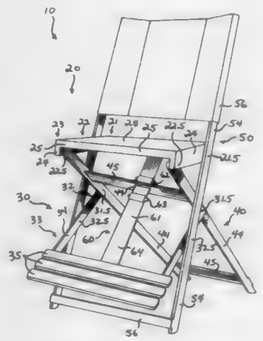
a female part formed at least partially of nylon.

5,626,385

VERSATILE SUPPORT FOR DYNAMICALLY FRACTIONAL GROSS LOADS

Dean A. Shinn, P.O. Box 1031, Oakridge, Oreg. 97463

Continuation-in-part of Ser. No. 816,298, Dec. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 24,178, Mar. 10, 1987, abandoned. This application Dec. 30, 1993, Ser. No. 179,509
Int. Cl.[6] A47C *4/14*
U.S. Cl. 297—18 **12 Claims**



1. A foldable article of furniture in the form of a chair, table, or other such load-support device, comprising an upper load-bearing structure and a lower load-bearing structure, each having a plurality of load-sharing portions thereof defined by the pivotally articulated integration of said upper and lower load-bearing structures with intersecting front and rear leg frames so as to move through a desired range of operating positions in response to changing load conditions when in use, so as to apportion and redistribute loads between said upper and lower load-bearing structures, said load-sharing portions thereof, and said integrating front and rear leg frames, so as to balance and counterbalance dynamic fractional loads among said structures, said portions thereof, and said leg frames and in so doing to conform implicitly and spontaneously to the specific and dynamic postures, proportions, purposes, and actions of a user and thereby to provide comprehensively adaptable support for all dynamic fractional and gross loads bearing on said load-bearing structures and said integrating leg frames; said article being characterized by:

said front leg frame comprising spaced side elements and at least one cross-member, said front leg frame defining a first imaginary plane inclined with respect to the horizontal when the article is in use;

said rear leg frame comprising spaced side elements and at least one cross-member, said rear leg frame defining a second imaginary plane oppositely inclined with respect to the horizontal and intersecting said first imaginary plane between said front leg frame side elements when said article is in use;

said upper load-bearing structure comprising spaced side elements, at least one cross-member, and at least one surface element, said upper load-bearing structure being pivotally connected to said rear leg frame above said intersection of said first and second imaginary planes by aligned pivotal connecting means at a first pair of pivot points rearward of the forward end of said upper load-bearing structure, so as to define a boundary between an intermediate upper load-sharing portion and a front upper load-sharing portion of said upper load-bearing structure, and being pivotally connected to said front leg frame above said intersection of said first and second imaginary planes by aligned pivotal connecting means at a second pair of pivot points rearward of said first pair of pivot points, so as to define a boundary between a rear upper load-sharing portion and said intermediate upper load-sharing portion of said upper load-bearing structure, the outer lateral surfaces of said upper load-bearing structure side elements being generally adjacent the inner lateral surfaces of said front leg frame side elements at said second pair of pivot points and the inner lateral surfaces of said upper load-bearing structure side elements being generally adjacent the outer lateral surfaces of said rear leg frame side elements at said first pair of pivot points;

said lower load-bearing structure comprising spaced side elements and at least one cross-member, said lower load-bearing structure being pivotally connected to said front leg frame below said intersection of said first and second imaginary planes by aligned pivotal connecting means at a third pair of pivot points rearward of the forward end of said lower load-bearing structure, so as to define a boundary between an intermediate lower load-sharing portion and a front lower load-sharing portion of said lower load-bearing structure, and being pivotally connected to said rear leg frame below said intersection of said first and second imaginary planes by aligned pivotal connecting means at a fourth pair of pivot points rearward of said third pair of pivotal points, so as to define a boundary between a rear lower load-sharing portion and said intermediate lower load-sharing portion of said lower load-bearing structure, the outer lateral surfaces of said lower load-bearing structure side elements being generally adjacent the inner lateral surfaces of said front leg frame side elements at said third pair of pivot points and the inner lateral surfaces of said lower load-bearing structure side elements being generally adjacent the outer lateral surfaces of said rear leg frame side elements at said fourth pair of pivot points;

the relative distances between said first, second, third, and fourth pairs of pivot points and the relative dimensions of said upper and lower load-bearing structures and of said integrating front and rear leg frames being proportioned to afford optimum versatility, adaptability, and utility in said article when said article is in use and when appropriate to allow said article to be folded to a substantially flat disposition when not in use; and

motion governing means, by which at least one of said upper and lower load-bearing structures cooperates with at least one of said integrating front and rear leg frames, so as to govern the relative pivotal movements of said upper and lower load-bearing structures and of said front and rear leg frames of said article through said desired range of operating positions when said article is in use;

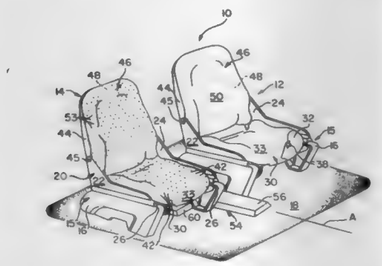
whereby said article is an integrated assemblage of reciprocally interactive load-bearing structures, of co-responsive, load-distributing, balancing, implicity load-reapportioning, and mutually counterbalancing load-sharing portions thereof, and of cooperating supportive leg frames.

5,626,386

AIR COOLED/HEATED VEHICLE SEAT ASSEMBLY

Michael E. Lush, Waterford, Mich., assignor to Atoma International, Inc., Newmarket, Canada

Filed Jul. 16, 1996, Ser. No. 680,667
Int. Cl.[6] A47C *7/72*
U.S. Cl. 297—180.13 **15 Claims**



14. A vehicle seat assembly comprising:

a pair of vehicle seats for mounting in spaced relation within a passenger compartment of a vehicle, each said seat comprising:

a seat frame structure having a riser constructed and arranged to be fixedly mounted on a floor of a vehicle, and a movable portion including a seat pan constructed and arranged to be movable in relation to said riser in fore and aft directions with respect to a longitudinal axis of the vehicle,

a seat cushion assembly including an open-cell foam seat cushion mounted on said seat pan, said seat cushion having a top surface and a bottom surface and including a plurality of air channels therein extending generally from said bottom surface to said top surface to direct air to said top surface of said seat cushion, said seat cushion being of sufficient thickness and density to support an occupant thereon, said seat cushion assembly including a seat cushion cover material covering at least said top surface of said seat cushion, said seat cushion cover material being constructed and arranged to permit air to pass therethrough,

a seat back frame coupled to said movable portion of said frame structure, and

a seat back pad assembly including an open-cell foam seat back pad mounted on said seat back frame, said seat back pad having a front surface and a rear surface and having a thickness and density generally equal to the thickness and density of said seat cushion, said seat back pad including a plurality of air channels therein extending generally from said rear surface to said front surface to direct air to said front surface of said seat back pad, said seat back pad assembly including a seat back cover material covering at least said front surface of said seat back pad, said seat back cover material being constructed and arranged to permit air to pass therethrough,

air flow directing structure including:

an air receiving member adapted to be coupled to a source of forced air and constructed and arranged to be mounted on the floor of the vehicle,

a pair of seat manifolds, one seat manifold of the pair being coupled to a seat pan of an associated seat, each of said seat manifolds being in fluid communication with said air receiving member and being coupled to an associated seat pan in such a manner that forced air flowing from said source and through said air receiving member flows through each of said seat manifolds to said channels in an associated seat cushion to said top surface of the associated seat cushion and through said cover material of the associated seat cushion,

a pair of seat back manifolds, one seat back manifold of the pair being mounted with respect to an associated seat back pad assembly and being fluidly coupled to an associated seat manifold, each of said seat back manifolds being in fluid communication with said channels of an associated seat back pad such that forced air may flow through a seat manifold to the associated seat back manifold and to said channels of an associated said seat back pad to said front surface of the associated seat back pad and through the associated seat back pad cover material.

5,626,387

CUSHION WITH COOLING STUBS

Ching-Hsiu Yeh, No. 56, Lane 240, Li-Jen Rd., Ta-Li City, Taichung Hsien, Taiwan

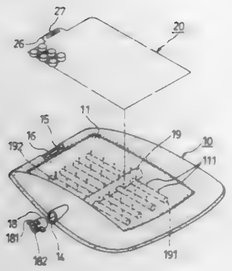
Filed Feb. 27, 1995, Ser. No. 394,807
Int. Cl.[6] A47C *7/72*
U.S. Cl. 297—180.14 **4 Claims**

1. A cushion, comprising:

a resilient seat body having an upper surface formed with a central depression and an inner periphery which defines said central depression;

a retaining member disposed on said upper surface of said seat body in said depression and retained therein by said inner

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periphery of said seat body, said retaining member being made of a flexible material and being formed with an array of positioning holes;

a plurality of cylindrical cooling stubs made of stone, each of which having a lower portion fittingly received in a respective one of said positioning holes; and

a conduit unit, embedded in said seat body, said conduit unit permitting passage of a cooling medium therein and cooling of said cylindrical cooling stubs.

5,626,388

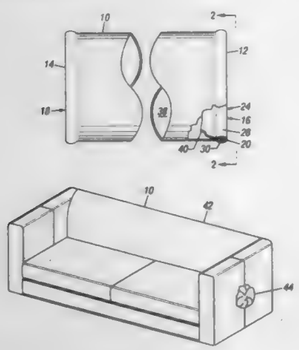
FURNITURE COVER

Holly N. Haltner, 1200 Post Oak Blvd. Suite 346, Houston, Tex. 77056

Filed Nov. 1, 1994, Ser. No. 332,921

Int. Cl.[6] A47C *31/00*

U.S. Cl. 297—228.11 **10 Claims**



1. A furniture cover comprising

a fabric sidewall in the shape of a tube and forming a tubular fabric sidewall, said tubular fabric sidewall having a first end, a second end, a length measured between the first end and the second end, and a circumference, at least a longitudinally extending portion of said tubular fabric sidewall being circumferentially stretchable;

a first tubular fabric sidewall closure means positioned to close the first end of the tubular fabric sidewall;

a second tubular fabric sidewall closure means positioned to close the second end of the tubular fabric sidewall;

wherein the first tubular fabric sidewall closure means releasably closes the first end of the tubular fabric sidewall;

wherein the second tubular fabric sidewall closure means releasably closes the second end of the tubular fabric sidewall;

wherein the first tubular fabric sidewall closure means comprises a draw string; and means for slidably circumferentially mounting the drawstring adjacent to the tubular fabric sidewall;

wherein the means for slidably circumferentially mounting the drawstring comprises a tubular fabric strip circumferentially mounted to the sidewall to define a circumferentially extending tunnel, said tunnel having a first end and a second end positioned closely together and the drawstring is positioned in the tunnel with a first end of the drawstring protruding from the first end of the tunnel and a second end of the drawstring protruding from a second end of the tunnel;

wherein the tunnel is positioned on an inside surface of the tubular sidewall at a position closely adjacent to the first end of the tubular fabric sidewall, wherein the furniture cover further comprises a fabric flap extending alongside the circumferentially extending tunnel, said fabric flap having a first edge attached to the tubular sidewall adjacent to the tunnel, said flap extending from the first edge toward the second end of the tubular fabric sidewall.

5,626,389

LIFT SEAT

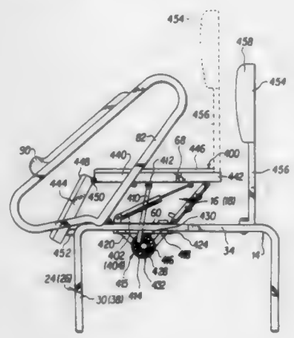
Emanuel Logan, Jr., Columbia, Md., assignor to Dynamic Seating LLC, Washington, D.C.

PCT No. PCT/US93/07476, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO94/03087, PCT Pub. Date Feb. 17, 1994

Continuation-in-part of Ser. No. 926,430, Aug. 10, 1992, Pat. No. 5,312,157, and a continuation-in-part of Ser. No. 702,387, Feb. 20, 1991, abandoned. This PCT application Aug. 10, 1993, Ser. No. 379,658

Int. Cl.[6] A47C *1/08*

U.S. Cl. 297—250.1 **5 Claims**



1. A lift seat for moving a person from an initial raised position to a subsequent lowered position for sitting and thereafter back to the initial raised position to facilitate standing, the lift seat comprising: a seating surface upon which the person sits and applies a force due to the weight of the person; a frame for supporting the seating surface; a linkage movable between a raised and lowered orientation, comprising first link means pivoted at one end to the seat and at another end to the frame and second link means spaced from the first link means, pivoted at one end to the seat and at another end to the frame; armrest means for supporting the person using the seat and for initiating operation of the seat, the armrest means being secured to one of the links; and spring means coupled to the linkage and frame for resisting lowering of the seating surface from the raised to the lowered position and for storing energy provided by the weight of the person sitting on the seat for subsequently lifting the person from the lowered to the raised position, the spring means comprising an annular elastomeric spring connected to an arm which engages the seat wherein as the seat collapses, the arm deforms the spring by twisting the spring to store energy therein.

5,626,390

ARCHING MECHANISM

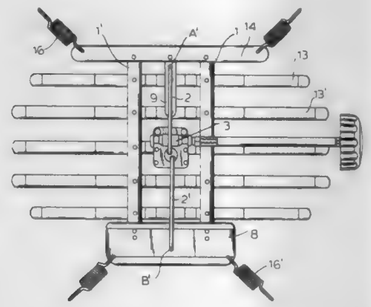
Wilhelm Schuster, Neubauzeile 87, A-4030 Linz, Austria, and Wilhelm Schuster, Gallneukirchen, Austria, assignors to Wilhelm Schuster, Linz, Austria

Division of Ser. No. 352,374, Dec. 8, 1994, Pat. No. 5,498,063, which is a division of Ser. No. 820,870, Jan. 17, 1992, Pat. No. 5,397,164. This application Jun. 7, 1995, Ser. No. 488,117

Claims priority, application Austria, Aug. 4, 1989, 1882/89; Sep. 12, 1989, 2133/89

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—284.1 **10 Claims**



1. A lumbar support for a back of a seat, comprising:

an upper member and a lower member spaced below said upper member;

a flexible structure connecting said members and adapted to bow upon displacement of said members toward one another, thereby forming a curvature having an apex;

a respective multiplicity of ribs projecting outwardly from each of two opposite sides of said flexible structure; and

traction means drawing said members toward one another said traction means comprising:

a bowden cable having a wire anchored to one of said members and a sleeve through which said wire is guided and anchored to the other of said members, each of said members being displaceable with respect to the other and to said apex whereby said apex is movable transversely to a generally vertical plane passing through said upper and lower members upon operation of said traction means,

a mechanism connected to said wire for tensioning said wire to draw said members toward one another, thereby controlledly arching said structure, and

a handwheel connected to said mechanism for operating same.

5,626,391

UPTILTABLE REAR VEHICLE SEAT ASSEMBLY

Michael P. Miller, New Hudson; Wojciech Smuk, Troy, and Herbert A. Richter, Waterford, all of Mich., assignors to Bertrand Faure Ltd., Mississauga, Canada

Filed May 25, 1995, Ser. No. 450,797

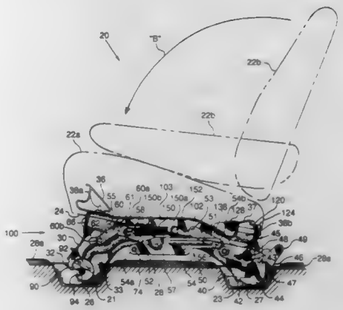
Int. Cl.[6] B60N *2/08*

U.S. Cl. 297—331 **25 Claims**

1. A rear vehicle seat assembly comprising:

a seat cushion member having an underside;

a support sub-assembly supporting said seat cushion member and comprising two or more downwardly extending front seat legs and two or more downwardly extending rear seat legs, each of said front seat legs including a forked leg member co-operable with a fixed attachment rod supported by a vehicle floor and each of said rear seat legs including a forked leg portion co-operable with a fixed attachment rod supported by said vehicle floor;



a first moveable lock member mounted on each of said rear seat legs for selectively locking the respective one of said rear seat legs on the corresponding attachment rod;

a return biasing means operatively connected to each first lock member for respectively urging each said first lock member into a locked position on the corresponding attachment rod;

a first manually operable means mounted on each of said rear seat legs to provide for selective manipulation of each first moveable lock member to an unlocked position against said return biasing means so as to release said rear seat legs with respect to the corresponding attachment rod, thereby to allow the vehicle seat assembly to be pivotally moveable about the corresponding attachment rod associated with each of the front seat legs between a lowered position and an uptilted position;

a first control rod system pivotally connected to said support sub-assembly and selectively moveable between a stowed position whereat said first control rod system is retracted adjacent the underside of said seat cushion member, and a deployed support position whereat said first control rod system is situated in stable, interposed relation between the underside of said seat cushion member and said vehicle floor, when said vehicle seat assembly is in said uptilted position, so as to support said vehicle seat assembly in said uptilted position.

5,626,392

MOTOR VEHICLE SEAT MOVABLE IN THE LONGITUDINAL DIRECTION IN THE TIPPED STATE

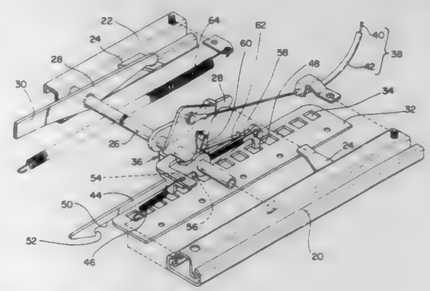
Heinz Bauer; Burckhard Becker, and Ernst-Reiner Frohnhaus, all of Solingen, Germany, assignors to C. Rob Hammerstein GmbH & Co. KG, Solingen, Germany

Filed May 18, 1995, Ser. No. 444,241

Claims priority, application Germany, May 19, 1994, 44 17 447.0

Int. Cl.[6] A47C *1/06;* **B60N** *2/02*

U.S. Cl. 297—341 **11 Claims**

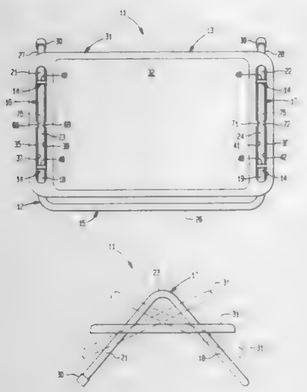


1. A motor vehicle seat comprising

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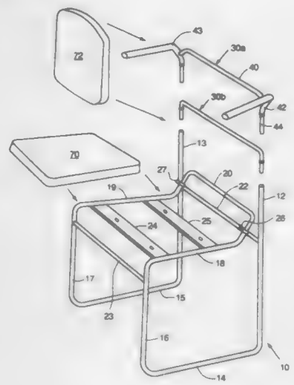
a) a longitudinal guide that can be locked by means of a locking device (**24**),
b) a backrest that can be tipped forward, said backrest having a release lever for tilting the seat forward, and whose operation releases the backrest from a locked upright position, and allows said backrest to be tipped forward, said backrest connected to the locking device (**24**) of the longitudinal guide by means of a release mechanism so that when the backrest is tipped forward, the locking device (**24**) of the longitudinal guide can be released and the motor vehicle seat can be manually moved by a user along said longitudinal guide and that if the backrest is in the upright position the locking device (**24**) is either one of ready to operate or operating and
c) a memory device for again finding a previously engaged position of the locking device (**24**) following said longitudinal movement in the said longitudinal guides.

5,626,393
FOOTREST
Leon E. Levasseur, and Leon J. Levasseur, both of 50 Whitney St., Holliston, Mass. 01746
Filed Aug. 28, 1995, Ser. No. 519,884
Int. Cl.[6] A47C *16/02*
U.S. Cl. 297—423.46 **20 Claims**



1. A footrest comprising:
frame means including a base portion for placement on a supporting surface, and a standard portion projecting upwardly from said base portion; said standard portion comprising a pair of substantially parallel horizontally spaced apart uprights, and a pair of substantially parallel horizontally spaced apart struts, each said strut having an upper end joined to an upper end of a different one of said uprights by a joining means to form a joined upright and strut pair, and each said joined upright and strut in each said pair sloping upwardly toward each other in a given direction;
platform means defining a substantially planar surface straddled between said joining means and having first and second edge portions disposed adjacent to, respectively, each of said joined upright and strut pair; and
support means engaged between each of said edge portions and said adjacent joined upright and strut, each said support means including an upright support engaged and slidable in said given direction between said adjacent upright and said platform means and a strut support spaced apart from said upright support by an adjustable spacing, engaged between said adjacent strut and said platform means and slidable in said given direction, each said support being shaped and arranged to permit separation of said platform means from said frame means; and including adjustment means allowing independent adjustment of said adjustable spacing between each pair of said spaced apart upright and strut supports whereby a vertical position of said platform means on said standard portion can be adjusted.

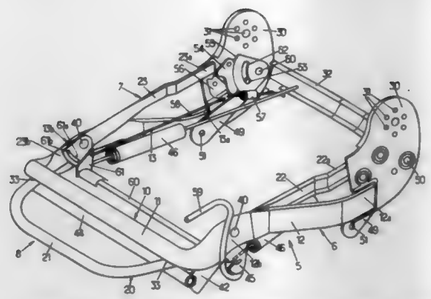
5,626,394
TUBULAR CHAIR FRAME
Charles O. Perry, 20 Shorehaven Rd., Norwalk, Conn. 06855
Filed Jun. 7, 1995, Ser. No. 484,657
Int. Cl.[6] A47C *1/12*
U.S. Cl. 297—448.2 **10 Claims**



8. A chair, comprising:
a frame having symmetrically disposed side frame members, each side frame member having a back leg portion oriented substantially vertical and contiguous with a bottom leg portion oriented substantially horizontal and contiguous with a front leg portion oriented substantially vertical and contiguous with a seat bottom portion oriented substantially horizontal,
a seat having a front and a rear and coupled to the seat bottom portions of the frame such that the seat bottoms portions extend beyond the rear of the seat,
a back having an upper back portion coupled to the back leg portions of the frame and a lower back portion coupled to the seat bottom portions of the frame which extend beyond the rear of the seat, and
a pair of stacking tabs extending forwardly from the frame just above the rear of the seat.

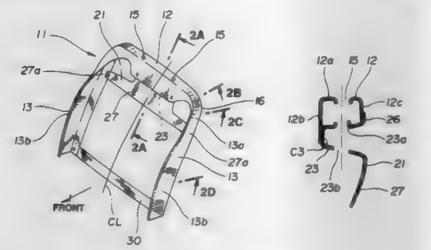
5,626,395
SEAT BASE FRAMEWORKS FOR VEHICLE SEATS
Christophe Aufrere, Marcoussis, France, assignor to Bertrand Faure Equipements SA, Boulogne, France
Filed Dec. 19, 1995, Ser. No. 574,915
Claims priority, application France, Dec. 20, 1994, 94 15323
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.18 **12 Claims**

1. A seat base framework for a vehicle seat which has a seat base and a backrest, this framework including a frame made of section pieces which includes two lateral longitudinal members each one extending between a rear end and a front end, the respective rear ends of the two lateral longitudinal members being intended for the mounting of the backrest of the seat and the respective front ends of these longitudinal members being joined together by a front crossmember,
in which the frame of the framework includes two rigid section pieces of similar dimensions which each have an overall U shape, with a base arranged toward the front and two lateral branches which extend backward from the base as far as rear



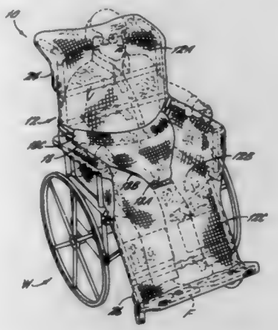
ends, the respective bases of the two section pieces being arranged substantially parallel to one another to form the front cross member of the frame, each lateral longitudinal member being formed by two lateral branches belonging respectively to the two section pieces, associated with a vertical rigid fastening plate, the rear ends of these two lateral branches being separated from one another vertically and being fastened to said fastening plate, and the two section pieces being fastened rigidly to one another at two front fastening points situated respectively close to each lateral longitudinal member and toward the front of the frame.

5,626,396
FRAME STRUCTURE OF SEAT
Kentarou Kuragano, and Hirotoshi Kojo, both of Yokohama, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Feb. 7, 1996, Ser. No. 597,797
Claims priority, application Japan, Feb. 13, 1995, 7-047812
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.2 **3 Claims**



1. A frame structure for a seat, comprising:
a frame including
an upper frame section having opposite end portions and a generally channel-shaped central section, said channel-shaped section having an upper end wall portion with through-holes adapted for receipt of holders for stays of a head rest, and
first and second side frame sections integrally connected respectively to the opposite end portions of said upper frame section; and
a support bracket adapted for supporting the holders for the head rest stays, fixed to said upper frame section, said support bracket including a channel-shaped support section adapted for supporting the holders, said channel-shaped support section including a first wall portion located opposite to said upper end wall portion of said upper frame section, said first wall portion being formed with through-holes adapted for supporting the holders for the head rest stays, said through-holes of said support section being located opposite to said through-holes of said upper end wall portion of said upper frame section,
wherein said channel-shaped section of said upper frame and said first wall portion of said channel-shaped support section form a substantially tubular structure,
wherein said channel-shaped support section extends substantially parallel with said channel-shaped section of said upper frame, and
wherein said support bracket has laterally extending sections, ends of said laterally extending sections being fixed respectively to said first and second side frame sections.

5,626,397
ADULT PASSIVE RESTRAINT APPARATUS AND METHOD OF PASSIVE RESTRAINT
Laura A. Reid, 764 8th Ave. S.E., Hickory, N.C. 28602
Filed Aug. 14, 1995, Ser. No. 514,680
Int. Cl.[6] A62B *35/00*
U.S. Cl. 297—467 **8 Claims**



1. A passive restraint apparatus for supporting a user thereof in a substantially upright seated position in a chair so as to allow free upper torso movement of the user, the restraint apparatus comprising:
an elongate body panel including a back section adapted and configured to extend along a back portion of a chair, a seat section connected to the lower end portion of said back section and adapted to extend along a seat portion of a chair, a lower leg section connected to the lower end portion of said seat section for extending downwardly from a seat portion of a chair and along a lower leg portion thereof, arm sections connected to and extending outwardly from said seat section and adapted to connected to said back and lower leg sections for covering arms of a chair and inhibiting a user's interference with the arms of a chair, and wherein said elongate body panel has a substantially constant width along said back, seat, arm, and lower leg sections, and a foot section connected to the lower end portion of said lower leg section and adapted to extend along foot supports connected to and extending outwardly from a chair;
means connected to said elongate panel for securing said elongate body panel to a chair; and
a lower torso panel secured to and extending outwardly from said elongate body panel for positioning between the legs of and around the lower torso of a user, said lower torso panel including means for securing said lower torso panel around the lower torso of the user and around a back of a chair.

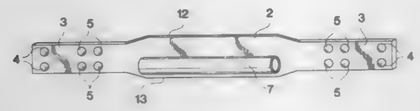
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5,626,398

SAFETY STRAP FOR A WHEELCHAIR

Brenda G. Wooldridge, HC 60, Box 299, Graham, Tex. 76450

Filed Jan. 5, 1996, Ser. No. 583,594
Int. Cl.[6] B60R 22/12
U.S. Cl. 297—488 4 Claims



1. A safety strap to assist in restraining a person in a chair comprising:

a center section having a top edge and a bottom edge,

means for joining said edges together to form a pouch,

a tubular piece of soft material inside said pouch,

a pair of end sections secured to said center section,

each said end section having means for attaching a first portion of each said end section to a second portion of said end sections for forming a loop which is adapted to be secured to a chair,

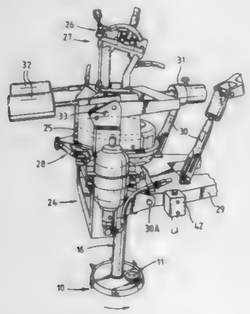
whereby when said end sections are secured to portions of a chair a person in the chair will be restrained in the chair.

5,626,399

APPARATUS FOR CUTTING AND EXCAVATING SOLIDS

Christopher A. Bunker, Brisbane, Australia, assignor to The University of Queensland, Queensland, Australia

PCT No. PCT/AU93/00439, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO94/04791, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 26, 1993, Ser. No. 379,677
Claims priority, application Australia, Aug. 26, 1992, PL4302
Int. Cl.[6] E21C 25/18
U.S. Cl. 299—41.1 18 Claims



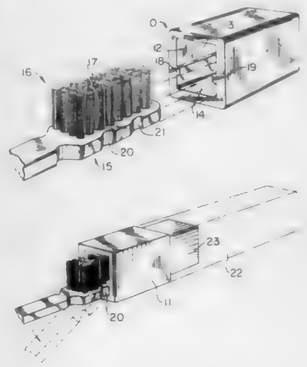
16. An apparatus for cutting and breaking a solid, the apparatus comprising a member having a centre of rotation and adapted to be mounted for rotation to a shaft, the member having a generally planar main body portion and a peripheral edge, the peripheral edge having a cutting edge adapted to accommodate a plurality of cutting picks, the apparatus further having a first wedge extending from a top wall of the main body portion, and a second wedge extending from a bottom wall of the main body portion, the wedges being mounted for rotation relative to the main body portion.

5,626,400

TOOTHBRUSHES

Victor A. Humphries, 83 River Road, Emu Plains, New South Wales, 2750, Australia

PCT No. PCT/AU92/00231, § 371 Date Nov. 16, 1993, § 102(e) Date Nov. 16, 1993, PCT Pub. No. WO92/20256, PCT Pub. Date Nov. 26, 1992
PCT Filed May 22, 1992, Ser. No. 142,295
Claims priority, application Australia, May 22, 1991, PK6253
Int. Cl.[6] A46D 3/00
U.S. Cl. 300—21 1 Claim



1. A method for deforming the head of a deformable toothbrush the said deformable toothbrush having at least one region of a head thereof weakened so that a sharp and discrete deformation or bending about the weakened region may occur, said head including bristles projecting from an upper surface thereof, the upper surface of said head including peripheral surfaces on opposite sides of said bristles, said method comprising:

(i) providing a toothbrush head deforming device comprising a housing that includes an opening that allows access of said head within the housing and means for obstructing the movement of a desired part of the head adjacent a weakened region, said obstructing means comprising a groove for slidably engaging said head within said housing, and a pair of lips defining an upper opening of said groove for protrusion of the bristles;

(ii) engaging said toothbrush in said groove so that the lips abut against said peripheral surfaces of the upper surface of the head so as to provide a snug fit of said head within said groove and lips;

(iii) applying pressure on the part of the head that does not have its movement obstructed so that a sharp and discrete deformation or a bending of said head about said weakened region may occur.

5,626,401

SPOKED WHEEL HUB

Maurice C. Terry, Sr., Bellevue, and Stephen G. Christ, Bellingham, both of Wash., assignors to Innovative Bicycle Components Company, Bellevue, Wash.

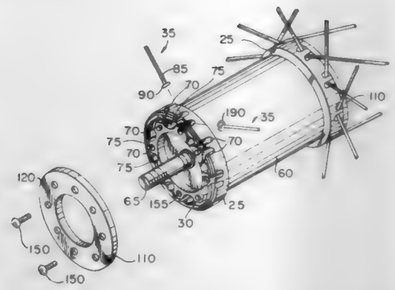
Filed May 17, 1994, Ser. No. 243,973
Int. Cl.[6] B60B 1/14
U.S. Cl. 301—59 15 Claims

1. A spoke hub for bicycles and the like, comprising:

a hub ring having an interior face and an exterior rim portion, and

drop-in straight pull spokes each having a straight section and an enlarged retention end,

said interior face of said hub ring having plurality of retention openings therein for receiving the straight section of said drop-in straight pull spokes, said retention openings being smaller than the enlarged retention end of said spokes to axially retain said spokes, wherein adjacent enlarged retention heads of respective spokes are retained in contiguous ones of said retention openings.

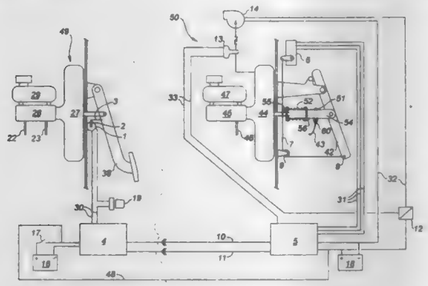


5,626,402

APPARATUS FOR SIMULTANEOUSLY APPLYING BRAKES OF A TRAILER WHEN BRAKES OF A TOWING VEHICLE ARE APPLIED

Gene E. Saffran, Red Deer, Canada, assignor to Gordon Wilbur Chiles, Red Deer, Canada

Filed Jun. 20, 1995, Ser. No. 492,697
Claims priority, application Canada, Jun. 21, 1994, 2126433
Int. Cl.[6] B60T 7/20
U.S. Cl. 303—7 2 Claims



1. An apparatus for simultaneously applying brakes of a trailer when brakes of a towing vehicle are applied, comprising:

a. a vacuum pump communicating with a vacuum booster in a braking system of the trailer thereby providing vacuum pressure to the vacuum booster;

b. a servomotor linked to an activating arm that moves a plunger that acts through the vacuum booster upon a master brake cylinder of the trailer, upon activation, the servomotor provides force to move the plunger thereby sending braking fluid from the master cylinder to brakes in the trailer;

c. a pedal position sensor communicating with a brake pedal in the towing vehicle, whereby the brake pedal position of the towing vehicle is sensed;

d. an encoder communicating with the pedal position sensor, the encoder receiving data from the pedal position sensor regarding the brake pedal position of the towing vehicle and encoding such data;

e. a decoder communicating with the encoder and the servomotor, the decoder receiving an encoded signal from the encoder regarding the brake pedal position of the towing vehicle and sending a decoded signal to the servomotor to move the plunger in the trailer thereby creating a master to slave connection between the brake pedal of the towing vehicle and the plunger acting upon the master braking cylinder of the trailer; and

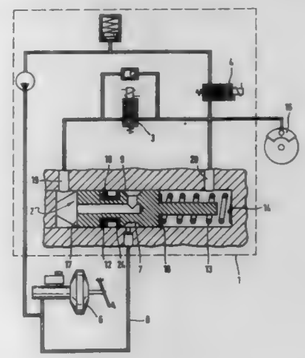
f. the plunger having a first portion telescopically received in a second portion with a tightly compressed spring disposed between the first portion and the second portion, a pin extending through aligned apertures in the first portion and the second portion to contain the biasing force of the tightly compressed spring, a dynamite cable having a first end secured to the pin and a second end secured to the towing vehicle such that upon separation of the towing vehicle and the trailer the dynamite cable stays with the towing vehicle pulling the pin out of the aligned apertures thereby permitting the tightly compressed spring to release its biasing force telescopically moving the plunger into the master cylinder sending braking fluid from the master cylinder to the brakes of the trailer.

5,626,403

BRAKE PRESSURE REGULATOR

Erhard Beck, Weilburg, and Georg Sonnenschein, Eschborn, both of Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP93/03267, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO94/12376, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 22, 1993, Ser. No. 436,335
Claims priority, application Germany, Nov. 21, 1992, 42 39 178.4
Int. Cl.[6] B60T 8/32; B60K 28/16; F15B 9/12; G05D 13/00
U.S. Cl. 303—117.1 10 Claims



1. A brake pressure regulator, comprising:

a valve-receiving body including two pressure fluid channels and a feed-in channel,

a hydraulically actuable slide valve integrated into a receiving bore within the valve receiving body, said slide valve including having first and second front faces terminating on said pressure fluid channels of said valve receiving body,

wherein said slide valve includes a circular groove having a control edge, wherein said circular groove, through said feed-in channel terminates in the receiving bore wherein the receiving bore includes at least one gasket which in a hydraulically actuated position of the slide valve locks the hydraulic connection between the feed-in channel and at least one of the pressure fluid channels.

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5,626,404

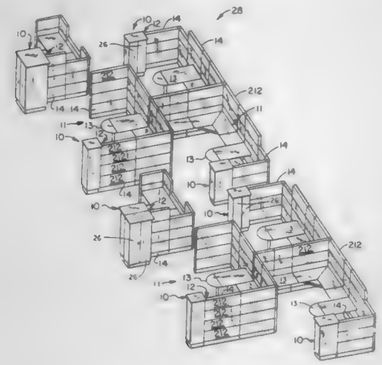
WORK SPACE MANAGEMENT SYSTEM AND CABINET THEREFOR

James O. Kelley, Spring Lake; Robert L. Beck, Zeeland; Jerry A. DeFouw, Grand Rapids; Andrew J. Kurrasch, Saugatuck; George A. Williams, Hudsonville, all of Mich., and Geoffrey A. Hollington, London, England, assignors to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 656,992, Feb. 15, 1991, which is a continuation-in-part of Ser. No. 533,367, Jun. 5, 1990, Pat. No. 5,078,461, which is a continuation-in-part of Ser. No. 342,957, Apr. 25, 1989, Pat. No. 4,976,502, which is a continuation-in-part of Ser. No. 205,307, Jun. 10, 1988, abandoned. This application Jun. 8, 1995, Ser. No. 488,482

Int. Cl.[6] A47B *53/00*

U.S. Cl. 312—198 43 Claims



1. In a work space management system for offices in a room having a floor, the work space management system having at least one freestanding wall supported by the floor and comprising rigid frames having edge faces, the frames rigidly joined together at said edge faces to define work spaces, the wall being relatively thin compared to the height and width of the wall, and at least one freestanding cabinet supported on the floor and having a back wall, first and second side walls, a top wall and bottom wall, the back wall and side walls extending from the bottom wall to said top wall and joined together to form an integral unit defining an enclosed storage area having an open front; the improvement which comprises: one of said back wall and said side walls being in facing contact with one of said rigid frames and a connector between said one of said back wall and said side walls for rigidly joining said one cabinet to said one of said frames of said freestanding wall to provide lateral bending moment stability for the freestanding wall.

5,626,405

UNIVERSAL TRAVEL SLIDE

Ridgway M. Banks, 7411 Park Vista, El Cerrito, Calif. 94530

Filed Oct. 24, 1995, Ser. No. 547,258

Int. Cl.[6] A47B *88/00*

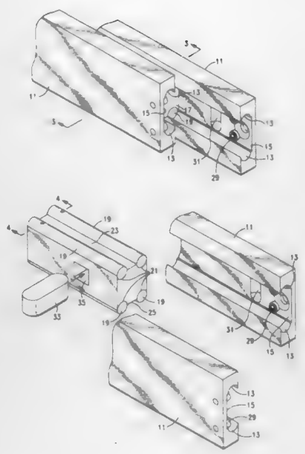
U.S. Cl. 312—334.8 9 Claims

1. A universal travel slide comprising

a pair of parallel opposing slide rails, each of said rails having a pair of opposed recessed parallel grooves formed therein,

a pair of sabots interconnecting said slide rails, each of said sabots having two pairs of projecting bearing members, each of said pairs of said bearing members being captured in sliding relation in one of said slide rails in the opposed grooves thereof whereby said sabots can slide in said grooves with respect to each of said rails and said slide rails can reciprocate longitudinally with respect to each other,

stops disposed at each end of said slide rails preventing said sabots from sliding out of engagement therewith.



detents formed in said slide rails at opposite ends thereof, and a reciprocating bolt disposed in each of said sabots and formed for engaging alternatively said detents in said opposing slide rails as said rails are reciprocated longitudinally with respect to each other.

5,626,406

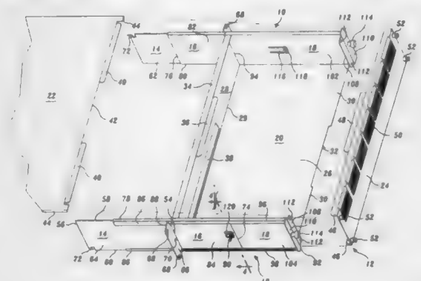
INTEGRATED CHASSIS SLIDE ASSEMBLY

Hartmut Schmid, North Vancouver, Canada, assignor to Glenayre Electronics, Inc., Charlotte, N.C.

Filed Feb. 2, 1995, Ser. No. 382,620

Int. Cl.[6] A47B *88/00;81/00*

U.S. Cl. 312—334.28 9 Claims



1. An integrated chassis slide assembly, integrated with a chassis and used with a mounting rack, comprising:

(a) a fixed slide having front and back edges, top and bottom edges, and inside and outside faces;

(b) at least one intermediate slide having front and back edges, top and bottom edges bent over and outward to form opposed U-shaped channels to slidably interlock with the top and bottom edges of the fixed slide to allow slidable movement of said intermediate slide along said fixed slide, and inside and outside faces, wherein the outside face of said intermediate slide abuts the inside face of said fixed slide; and

(c) a side panel of the chassis forming a unitary one-piece integrated chassis slide, having front and back edges, top and bottom edges bent over and outward to form opposed U-shaped channels to slidably interlock with the U-shaped channels of the top and bottom edges of said intermediate slide to allow slidable movement of said integrated chassis slide along said intermediate slide, and inside and outside faces, wherein the outside face of the integrated chassis slide abuts the inside face of said intermediate slide.

5,626,407

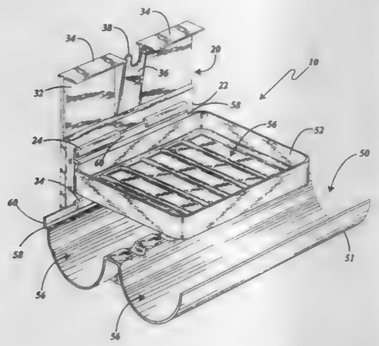
STORAGE SYSTEM FOR REFRIGERATORS

Michael Westcott, Cohasset, Mass., assignor to Emplast, Inc., Shakopee, Minn.

Filed May 10, 1996, Ser. No. 643,307

Int. Cl.[6] A47B *96/04;* A47F *5/00*

U.S. Cl. 312—408 4 Claims



1. An improved storage system in which a plurality of trays, each including a receptacle, are configured to be mounted in selected positions adjacent one another on a rack, the improvement comprising:

(a) said rack including (i) a vertically oriented surface, (ii) a plurality of retaining hooks projecting from said vertically oriented surface, each retaining hook having an inner surface, (iii) a plurality of support members projecting from said vertically oriented surface, each support member associated with at least one of said retaining hooks, and (iv) at least one mounting member projecting above said vertically oriented surface and terminating in an inwardly extending top flange, and (v) a biasing member cooperating with said mounting member to hold the rack in a desired position; and

(b) each of said plurality of trays including an attachment member having a first wall projecting outwardly from the receptacle and a second wall projecting upwardly from said first wall so that when said tray is mounted to said rack, said first wall rests on at least one of said support members of said rack and said second wall engages the inner surface of at least one of said retaining hooks of said rack.

5,626,408

ILLUMINATION SYSTEM FOR A COLOR PROJECTION DEVICE AND CIRCULAR POLARIZER SUITABLE FOR USE IN SUCH AN ILLUMINATION SYSTEM, AND COLOR IMAGE PROJECTION DEVICE COMPRISING SUCH AN ILLUMINATION SYSTEM AND CIRCULAR POLARIZER

Ingrid E. J. R. Heynderickx, and Dirk J. Broer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,947

Claims priority, application Belgium, Dec. 17, 1993, 09301412

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—20 27 Claims

1. An illumination system for a colour image projection device, successively comprising a radiation source for supplying a radiation beam of unpolarized radiation and at least a cholesteric mirror for splitting the radiation beam into at least two sub-beams, each sub-beam having a different wavelength, characterized in that a composite circular polarizer for directly converting the unpolarized radiation into circularly polarized sub-beams is arranged in the path of the radiation beam between the radiation source and the cholesteric mirror, said polarizer comprising a polarization-sensitive beam splitter for splitting the radiation beam into two mutually perpendicularly and linearly polarized sub-beams, and a polarization converter for converting the linearly polarized sub-beams into circularly polarized sub-beams, the circularly polarized sub-beams from the polarizer jointly forming one beam.

5,626,409

PROJECTION-TYPE DISPLAY APPARATUS

Tadaaki Nakayama, Osaka; Yoshitaka Itoh, and Akitaka Yajima, both of Suwa, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

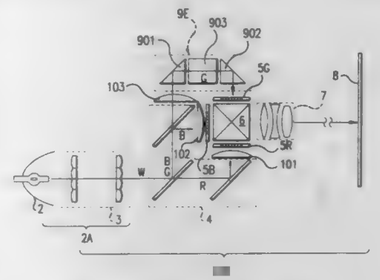
PCT No. PCT/JP94/00419, § 371 Date Jan. 4, 1995, § 102(e) Date Jan. 4, 1995, PCT Pub. No. WO94/22042, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 335,778

Claims priority, application Japan, Mar. 16, 1993, 5-055952

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—31 29 Claims



11. A projection-type display apparatus, comprising:

a light source;

color separating means for separating a white light beam emitted from said light source into three color beams;

three light valves for modulating said separated color beams;

light guide means located on an optical path of a color beam having a longest optical path length among said color beams separated by said color separating means and respectively incident on said light valves;

color synthesizing means for synthesizing a projection beam from said color beams modulated through said light valves;

a projection lens for projecting said projection beam onto a screen;

uniform illumination optical means interposed on an optical path between said light source and said color separating means for

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converting said white light beam emitted from said light source into a uniform rectangular beam and for outputting said uniform rectangular beam toward said color separating means; and

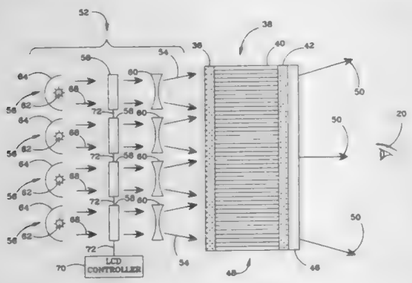
three condenser lenses located respectively in outputting portions of said color separating means for outputting said color beams, said condenser lenses converting said color beams output from said uniform illumination optical means and separated by said color separating means into almost collimated beams, wherein said color synthesizing means is a dichroic prism, said light guide means is provided with an incident side triangular prism located on an incident side for folding an optical path at a right angle, an output side triangular prism located on an output side for folding the optical path at a right angle, and a light guide member located between said triangular prisms.

5,626,410

REAR PROJECTION SCREEN WITH UNIFORM BRIGHTNESS FOR TILING THE IMAGES FROM AN ARRAY OF PROJECTORS

James M. Chambers, Carlsbad, and Steven E. Shields, San Diego, both of Calif., assignors to Palomar Technologies Corporation, Carlsbad, Calif.

Filed Sep. 20, 1995, Ser. No. 530,856
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—94 **16 Claims**



8. An optical projection system for displaying an image, comprising:

a first diffusing assembly,

a plurality of image sources for generating respective portions of said image and directing said portions to said first diffusing assembly, so that said image portions are adjacent to each other at said first diffusing assembly, and are diffused by said first diffusing assembly, and

a second diffusing assembly for further diffusing said diffused image portions.

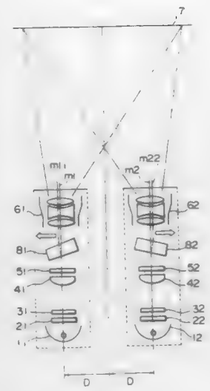
5,626,411

LIGHT RAY SHIFT DEVICES AND PROJECTION DISPLAY APPARATUS USING THE SAME

Yukio Takahashi, Kodaira; Tomoyoshi Nomura, Tokyo, and Takayuki Okimura, Tokorozawa, all of Japan, assignors to Nippon Telegraph and Telephone Corportion, Tokyo, Japan

Continuation of Ser. No. 358,626, Dec. 14, 1994, abandoned, which is a division of Ser. No. 91,005, Jul. 13, 1993. This application Mar. 5, 1996, Ser. No. 611,023
Claims priority, application Japan, Jul. 14, 1992, 4-186440; Aug. 27, 1992, 4-228448; Oct. 23, 1992, 4-286373
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—94 **12 Claims**

1. An interleave projection display apparatus comprising a plurality of projectors, in which each of said plurality of projectors includes a separate projector lens system and projects an image component provided on a light valve to synthesize a composite image on a screen, wherein each of a plurality of light ray shift elements provides a shift of a light ray path to a parallel path and is associated with a respective one of said plurality of projectors, and said each of said plurality of light ray shift elements is disposed on a side of a corresponding to one of each said projector lens system selected from a ray entry side and a ray exit side of said projector lens system.

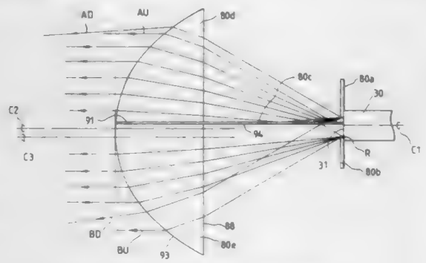


5,626,412

LIGHTING DEVICE FOR VEHICLE

Hideyuki Kato, Nishio, and Hiroshi Ito, Tokyo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 14, 1994, Ser. No. 355,694
Claims priority, application Japan, Dec. 15, 1993, 5-315604
Int. Cl.[6] F21V *7/04*
U.S. Cl. 362—32 **10 Claims**



1. A lighting device for a vehicle, comprising:

an optical fiber having a light emitting end;

a reflecting plate extending from said light emitting end of said optical fiber and separating a region forward of said light emitting end of said optical fiber into first and second sub regions, said reflecting plate being constructed and arranged to reflect a portion of light emitted from said light emitting end of said optical fiber; and

a first optical member located in said first sub region and being spaced away from said light emitting end of said optical fiber, said first optical member acting on light emitted from the light emitting end of the optical fiber and light reflected by the reflecting plate, wherein said first optical member is constructed and arranged to form a hot illuminated zone having a first brightness; and

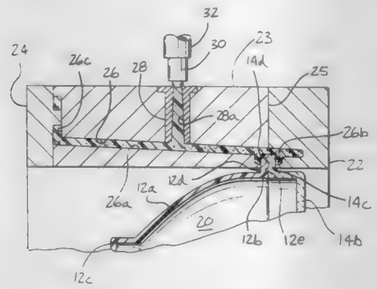
a second optical member located in said second sub region and acting on light emitted from said light emitting end of said optical fiber into said second sub region, wherein said second optical member is constructed and arranged to form an elongate illuminated zone having a second brightness lower than said first brightness.

5,626,413

HEADLAMP ASSEMBLY

Richard M. Ferrell, Livonia, Mich., assignor to ADAC Plastics, Inc., Grand Rapids, Mich.

Filed Nov. 6, 1995, Ser. No. 553,834
Int. Cl.[6] F21V *31/00*
U.S. Cl. 362—61 **13 Claims**



1. A method of forming a headlamp assembly, the headlight assembly including a reflector defining an open front end and having an annular flange portion formed proximate the front end of the reflector, a lens adapted to close the open front end of the reflector to form a lamp chamber and having an annular flange portion formed on the lens, and a bulb mounted in the lamp chamber, said method including the steps of:

seating the flange portions together to form an interface therebetween; and

injection molding plastic material around an exterior periphery of the seated together flange portions to form an annular seal sealing the interface between the flange portions and sealing the lamp chamber.

5,626,414

FOLDING KNIFE WITH LASER INDICATOR

Shun-fu Chen, No. 6, Alley 8, Lane 162, Kuang Hua Rd., Lu Chou, Taipei Hsien, Taiwan

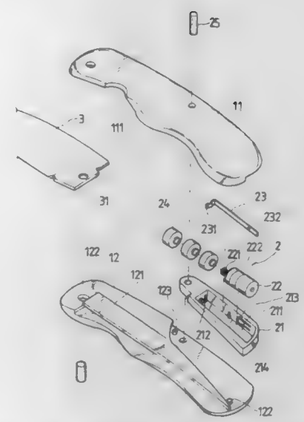
Filed Apr. 12, 1996, Ser. No. 631,192
Int. Cl.[6] F23D *5/12*
U.S. Cl. 362—119 **2 Claims**

1. A folding knife with laser indicator, comprising an upper and a lower cases, a blade pivotally connected to and between said cases, and a laser indicating means pivotally connected to and between said two cases;

said lower case being formed on an inner surface with an inclined brake plate, said upper case being formed at one side with a dent to expose a small part of said brake plate so that said brake plate may be depressed with a finger via said dent;

said blade being allowed to be pivotally turned into and between said two cases or be pivotally turned out of said cases with said brake plate abutting a distal edge against a rear edge of said extended blade to prevent said blade from moving at the extended position; and

said laser indicating means further comprising a supporting plate pivotally connected to and between said two cases and formed with a long recess, a laser emitter disposed in said long recess of said supporting plate and having a laser diode, a controlling circuit, and a focusing lens mounted therein, a series of cells disposed in said long recess opposite to said laser emitter, a spring provided to an inner end of said laser emitter to contact with said series of cells, and a springy conductive plate disposed in said long recess along an inner wall thereof with a bent end contacting with said cells and an extension part extending to a point near a conductive contact of said laser emitter; said supporting plate being provided at an outer side with a push button slightly projected from an outer periphery of said supporting plate, and depression of said push button allowing said push button to press said extension part of said springy conductive plate against said contact on said laser emitter and thereby electrically connects said laser diode in said laser emitter for said laser emitter to emit light spot from a through hole provided to an outer end of said supporting plate.

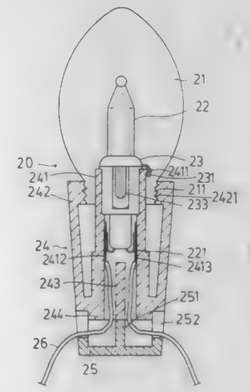


5,626,415

MOISTUREPROOF DECORATIVE BULB FOR CHRISTMAS DECORATIONS

Shun-Feng Huang, No. 13, Lane 84, Nei Hu Road, Nei Nu Sub-Ward Hsin-Chu, Taiwan

Filed Jun. 12, 1995, Ser. No. 491,294
Int. Cl.[6] F21V *31/00*
U.S. Cl. 362—226 **1 Claim**



1. A decorative bulb having:

a bulb casing whose lower end is a male-threaded end;

a bulblet with a filament therein;

a hollow bulblet socket having a hollow middle interior and two through holes in a lower interior of said bulblet socket;

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a flexible rod disposed on an upper outer periphery of said bulblet socket;

a casing socket having an outer sleeve which has a lower protruded end and upper inner female threads and an inner sleeve which has a snap fastener disposed on an upper outer periphery of said inner sleeve;

a lower end of said inner sleeve connected and disposed in said outer sleeve;

said bulblet socket being inserted into said inner sleeve;

an upper portion of said bulblet being inserted in said bulb casing;

a lower portion of said bulblet being inserted in said bulblet socket;

a central hole formed in a central portion of said inner sleeve;

two ends of said filament being bent outside said bulblet socket via said through holes respectively to contact a corresponding copper cathode and copper anode which are connected to two corresponding wires respectively;

a cover with a central protruded post and two recess holes;

said wires being drawn out from said inner sleeve to said recess holes respectively;

said female threads engaging with said male-threaded end tightly to position said male-threaded end between said inner sleeve and said outer sleeve;

said protruded end of said outer sleeve being inserted into said cover;

said inner sleeve having a separator which is disposed in an inner lower portion of said inner sleeve; and

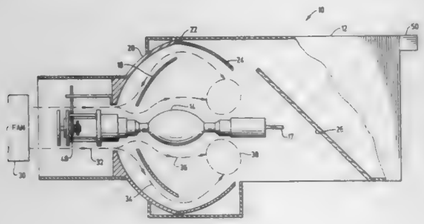
said inner sleeve higher than said outer sleeve at a predetermined height.

5,626,416

LAMP MODULE APPARATUS

Richard J. Romano, 2478 Peacock La., Corona, Calif. 91720, and Robert A. Fry, 22265 Tiburon St., Laguna Hills, Calif. 92653

Filed Nov. 29, 1994, Ser. No. 350,094
Int. Cl.° F21V *29/00*
U.S. Cl. 362—264 **5 Claims**



1. A lamp module apparatus comprising:

a casing;

a xenon lamp connecting to said casing;

an elliptically shaped dichroic reflector connected to said casing and disposed about said lamp; and

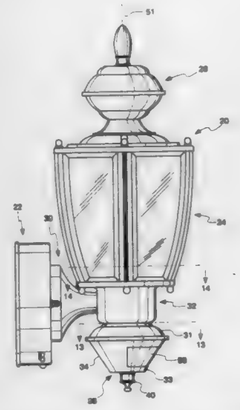
a spherically shaped secondary dichroic reflector connected to said casing disposed about said lamp and adjacent said elliptically shaped reflector.

5,626,417

MOTION DETECTOR ASSEMBLY FOR USE WITH A DECORATIVE COACH LAMP

Kim I. McCavit, St. Joseph, Mich., assignor to Heath Company, Benton Harbor, Mich.

Filed Apr. 16, 1996, Ser. No. 632,676
Int. Cl.° F21V *23/00*
U.S. Cl. 362—276 **9 Claims**



1. A motion detector assembly adapted to be rigidly secured to a lamp assembly of a coach lantern, the motion detector assembly comprising:

an upper housing portion and a lower housing portion, said lower housing portion formed with an annular window;

a sensor carrier subassembly configured to fit within said housing;

a passive infrared (PIR) sensor for detecting moving sources of infrared radiation, said PIR sensor carried by said sensor carrier subassembly so as to be generally aligned with said annular window and said lower housing portion;

a Fresnel lens member formed from a generally planar material, carried by said sensor carrier subassembly in a generally cylindrical configuration in spaced relation to said annular window and generally aligned with said PIR sensor and said annular window; and

a lens cover disposed adjacent to annular window and conforming to the shape of the annular window.

5,626,418

FLEXIBLE OUTDOOR LIGHTING STAND

David Angelis, Sr., and David L. Angelis, Jr., both of 18 Bremen Lane, Mississauga, Ontario, Canada

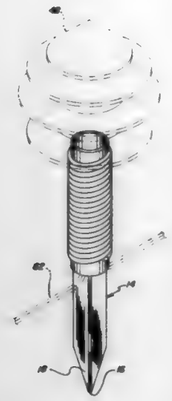
Filed Apr. 15, 1996, Ser. No. 632,112
Int. Cl.° F21J *15/04*
U.S. Cl. 362—390 **5 Claims**

1. A new and improved flexible outdoor lighting stand comprising in combination:

a rigid stake member having a tapered point at a lower end for piercing the ground and a flat upper end, the stake member having a plurality of blades, the stake being a solid having a "+" cross section;

a generally cylindrical flexible post member, the post member having an upper sleeve, a lower sleeve and a spring member therebetween, the lower sleeve of the post member being positionable over the upper end of the stake member, the spring member being a heavy duty coil spring and capable of maintain an upright position when; and

the upper sleeve of the post member having a threaded interior, the threaded interior being capable of coupling with a light source while the lower sleeve being positioned over the stake



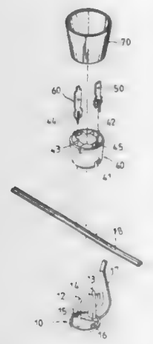
member, the light source coupled to the post member prior to positioning the stake member into the ground, the upper sleeve of the post member being capable of moving from side to side when pressure being applied thereto by an external force that causes the spring to bend.

5,626,419

STRUCTURE OF CHRISTMAS LIGHT

Mei M. Lin, Suite 1, 11F, No. 95-8, Chang Ping Road., Sec. 1., Taichung, Taiwan

Continuation of Ser. No. 126,513, Sep. 27, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 351,575
Int. Cl.° H01R *4/24*
U.S. Cl. 362—391 **3 Claims**



1. A structure of Christmas light comprising a bottom base, a light stand and a lamp holder mutually connected by means of snap fitting;

said bottom base comprising a pair of vertical poles perpendicularly and upwardly projected from opposing sides thereof having each a means for snap fastening formed at an upper end thereof, a pair of support means protruded at another opposing side between said vertical poles and a hook means attached to a periphery thereof;

said light stand comprising a pair of slots symmetrically formed at opposing sides of a bottom edge thereof for passage of a pair of electric wires, a pair of the vertical wedge recesses symmetrically formed at opposing edges thereof for respectively retaining said vertical poles therein and a pair of the T-shape cross-section vertical sockets symmetrically formed at another opposing edges thereof bisecting between said pair of wedge recesses;

a pair of the first and second copper conductors:

said first copper conductor comprising a tip point at one end abutting a reinforcement groove, a plurality of triangular barbs respectively formed on lateral sides and flat side thereof and a rectangular upper section which is bent transversely to form a ring contact;

said second copper conductor comprising said a tip point at one end abutting a reinforcement groove, a plurality of triangular barbs respectively formed on lateral sides and a flat side thereof and a rectangular upper section including a narrow strip extended from a free end thereof which is then bent transversely into an U-shape to form a tip contact;

said first and second copper conductors being inserted into said respective T-shape vertical sockets of said light stand and retained therein by said barbs thereon with said tip points thereof protruded out of said light stand;

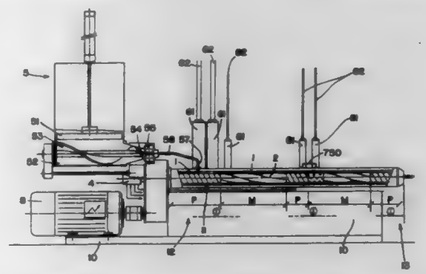
whereby, said bottom base is connected to said light stand together with said pair of electric wires disposed on said pair of support means thereof and retained by said vertical poles inside said wedge recesses of said light stand in a snap fitting, wherein said pair of electric wires are punctured by said tip points of said first and second copper conductors respectively for communication of electric power between said wires and an incandescent bulb which is engaged therewith after said lamp holder is connected to said light stand.

5,626,420

APPARATUS FOR THE CONTINUOUS MIXING OF RUBBER

Michel Deal, St. Remy en Rollat, and Daniel Laurent, Meylan, both of France, assignors to Sedepro, Paris, France

Continuation of Ser. No. 161,783, Dec. 2, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 574,983
Claims priority, application France, Dec. 7, 1992, 92 14890
Int. Cl.° B28C *7/04*
U.S. Cl. 366—76.6 **38 Claims**



1. A continuous mixing apparatus for preparing a rubber composition, comprising:

a mixing chamber having an upstream end and a downstream end and including a stator and at least one rotor rotating within the stator and extending between the upstream end and the downstream end between which the material moves progressively to discharge the rubber composition from the downstream end,

a confined enclosure in communication with the upstream end of the mixing chamber,

means for force feeding by a volumetric pump a predetermined volume of the unmixed base elastomer at a controlled rate into the upstream end directly through the confined enclosure completely filled with base elastomer to impart heat by mechanical working to the base elastomer as it is force fed from the volumetric pump and through the confined enclosure,

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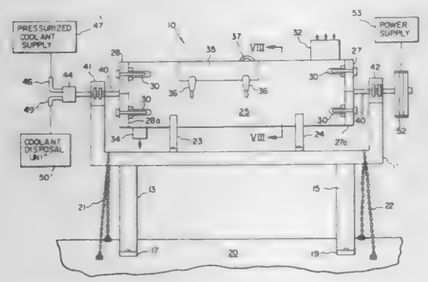
dosaging and introduction means for introducing other components of the rubber composition at at least one location spaced longitudinally between the upstream end and the downstream end.

5,626,421

BLENDER CONSTRUCTION

Craig C. Campbell, 211 Isabella Ave., Washington, N.C. 27889

Filed May 28, 1996, Ser. No. 654,078
Int. Cl.[6] B01F *15/06;7/04*
U.S. Cl. 366—147 **20 Claims**



1. A blender for uniformly mixing solid particles with an adhesive to blend the mixture into a unitary mass, comprising in combination:

a unitary elongated tubular blender housing;

said blender housing having first and second oppositely disposed open ends;

a first end cap for closing said first open end of said blender housing, and a second end cap for closing said second open end of said blender housing;

a plurality of latch means for releasably securing said first and said second end caps in sealed relationship, respectively, to said first and said second oppositely disposed open ends of said blender housing;

each of said plurality of latch means including a first portion attached to said blender housing and a second portion attached to one of said first and said second end caps;

inlet means provided adjacent said first end of said blender housing for receiving a quantity of solid particles and a supply of adhesive therefor for mixing in said blender housing;

outlet means provided adjacent said second end of said blender housing to provide an exit for the blended solid particles and adhesive from said blender housing after mixing thereof;

a removable elongated, hollow, mixing shaft extending through said first and said second end caps and said blender housing;

said elongated mixing shaft having a first end supported by and extending through a first bearing assembly;

a drive pulley keyed to said first end of said hollow mixing shaft;

a power supply connected to said drive pulley serving to impart a drive force to said drive pulley and cause rotation of said mixing shaft;

said elongated mixing shaft having a second end supported by and extending through a second bearing assembly; and

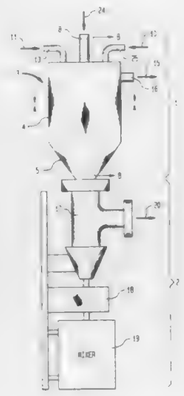
coolant means connected to the interior of said elongated mixing shaft to provide a coolant medium therein during a blending operation.

5,626,422

CONTINUOUS SOLUTION METHOD

Joseph R. Adamo, Lansdale; Gloria M. Lipovsky, Langhorne; Robert Hecker, Jr., Levittown, all of Pa., and Leon D. Ranalli, Murrells Inlet, S.C., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 109,784, Aug. 20, 1993, Pat. No. 5,368,385. This application Jul. 8, 1994, Ser. No. 272,177
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—173.1 **2 Claims**



1. A method for preparing a homogenous solution of a powder, comprising:

(1) feeding simultaneously a powder and a liquid solvent for the powder to a column of a high-speed in-line mixer minimizing contact between said powder and liquid solvent before said powder and said liquid solvent enter a mixing chamber of said mixer;

(2) mixing said powder and said liquid solvent in said mixer to form a dispersion of said powder in said liquid solvent; and

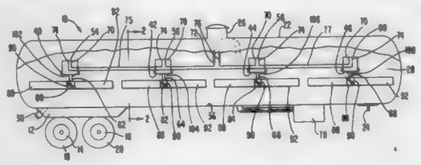
(3) dissolving said dispersed powder in said solvent.

5,626,423

APPARATUS AND METHOD FOR TRANSPORTING AND AGITATING A SUBSTANCE

Robert M. Rumph, Sumter, S.C., assignor to The Maitland Company, Sumter, S.C.

Continuation-in-part of Ser. No. 294,495, Aug. 23, 1994, Pat. No. 5,385,402, which is a continuation of Ser. No. 175,726, Dec. 30, 1993, Pat. No. 5,340,213, which is a continuation of Ser. No. 939,424, Sep. 4, 1992, Pat. No. 5,275,487, which is a continuation of Ser. No. 622,104, Dec. 4, 1990, abandoned. This application Jan. 30, 1995, Ser. No. 378,799
Int. Cl.[6] B01F *7/20*
U.S. Cl. 366—270 **25 Claims**



10. An apparatus for transporting and agitating a substance having solid and liquid constituents, the apparatus comprising:

a chassis having rotatable wheels;

a pressure vessel mounted on the chassis, the vessel including a shell defining an interior space for containing the substance, the shell having a ceiling, a floor, and an intermediate region between the ceiling and floor, and a discharge passage located in said shell, the discharge passage being operable between an open position and a closed position, the vessel being constructed and pressure sealed to permit off-loading of the substance through said discharge passage by internal pressurization of said vessel when the discharge passage is opened;

a support mounted within the vessel interior space;

a motor connected to the support and located entirely within the pressure vessel interior space, the motor having a shaft positioned in a substantially vertical orientation and being operational in a pressurized environment; and

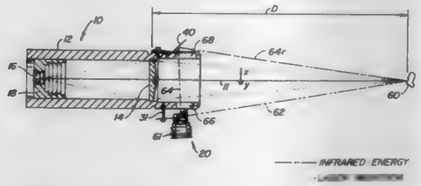
an agitator blade located in the vessel interior space and coupled to the shaft, the agitator blade being rotatable about a substantially vertical axis for directing the substance from the intermediate region toward the floor.

5,626,424

DUAL LIGHT SOURCE AIMING MECHANISM AND IMPROVED ACTUATION SYSTEM FOR HAND-HELD TEMPERATURE MEASURING UNIT

Timothy J. Litvin, Santa Cruz, and Ronald P. Briars, Campbell, both of Calif., assignors to Raytek Subsidiary, Inc., Santa Cruz, Calif.

Filed Jul. 21, 1994, Ser. No. 278,310
Int. Cl.[6] G01K *1/00;* **G01J** *5/02;* **G01B** *11/00*
U.S. Cl. 374—121 **8 Claims**



4. An infrared temperature sensor, comprising:

an elongated body having an interior cavity surrounded by a body surface with an interior side and an exterior side, with the body having an IR opening at one end, and first and second beam openings oppositely disposed on said body surface;

an infrared light sensor, located within said body and comprising a focusing element and a detector, with the focusing element for focusing IR radiation emitted from a focal area disposed along an optical axis, and with the IR radiation passing through the IR opening onto said detector;

a beam splitter assembly including a beam splitter for splitting an incident beam of light into first and second beams;

a beam splitter positioning mechanism, mounting said beam splitter on the exterior side of said body above said first beam opening, for adjusting the vertical and azimuthal position of the first and second beams; and

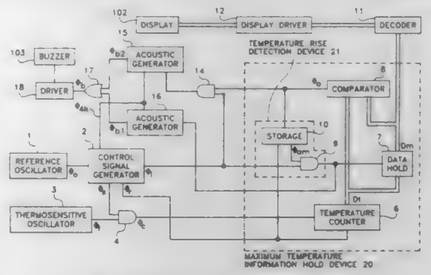
a mirror assembly, mounted on the exterior side of said body above said second beam opening, including a reflecting element and a positioning mechanism for adjusting the vertical and azimuthal position of the second light beam that traverses said first and second beam openings and is incident on the reflecting element.

5,626,425

ELECTRONIC THERMOMETER WITH AUDIBLE TEMPERATURE RISE INDICATOR

Toyoharu Fujikawa, Saitama, Japan; Tim H. Gordon, Rivervale, and Louis A. Marcelina, Ridgewood, both of N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J., and Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 6, 1995, Ser. No. 384,122
Int. Cl.[6] G01K *7/00*
U.S. Cl. 374—163 **7 Claims**



1. An electronic thermometer comprising:

a thermosensitive oscillator for producing an output signal, the oscillating frequency of which changes depending on a change in a measured temperature;

a reference oscillator for generating a reference signal;

a temperature counter for measuring the output signal from said thermosensitive oscillator on the basis of the reference signal and for producing a temperature count;

a data hold unit for holding a maximum value of the signal measured by said temperature counter;

a comparator for comparing data in said data hold unit with new measured data in said temperature counter and to rewrite the data in said data hold unit with the new measured data in accordance with the result of the comparison by said comparator;

temperature rise detection means for detecting that the measured temperature is rising in accordance with the result of the comparison by said comparator and for producing a temperature rise detection signal; and

sound generating means provided such that the temperature rise detection signal from said temperature rise detection means drives said sound generating means to indicate that the measured temperature is rising.

5,626,426

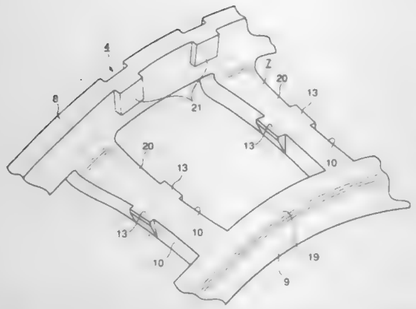
SELF-ALIGNING ROLLER BEARING WITH RETAINER

Akiyoshi Honda; Masahide Matsubara; Eiichi Kawamura; Fukuji Kikkawa; Kunio Fukuda, all of Fujisawa, and Teruo Nagao, Osaka, all of Japan, assignors to NSK Ltd., Tokyo, and Nakanishi Metal Works Co., Ltd., Osaka, both of Japan

Filed Apr. 25, 1996, Ser. No. 636,544
Claims priority, application Japan, Apr. 26, 1995, 7-101962
Int. Cl.[6] F16C *33/46*
U.S. Cl. 384—568 **3 Claims**

1. A self aligning roller bearing with retainer comprising: an outer ring having an inner peripheral face formed with an outer ring raceway in a shape of a spherical concave surface with a single center, an inner ring having an outer peripheral face formed with a pair of inner ring raceways opposite to the outer ring raceway, a plurality of convex rollers with first and second opposite end faces provided so as to be freely rotatable between the outer ring raceway and the inner ring raceway, and a pair of retainers comprising a main portion formed in a hollow cylindrical frustum shape, with larger and smaller diameter ends and having a plurality of crossbars, an outwardly flanged portion extending radially outward from the larger diameter end of the main portion

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and an inwardly flanged portion extending radially inward from the smaller diameter end of the main portion, and connected to the outwardly flanges portion by the crossbars so as to form a plurality of pockets, each pocket defined by two of the crossbars and outwardly and inwardly flanged portions to receive one of the convex rollers, the outwardly flanged portion having protrusions each protruding towards the pocket so as to rub against or be in close proximity to the first end face of the convex rollers, and the protrusions having an end face for guiding each of the convex rollers retained inside the respective pockets.

5,626,427

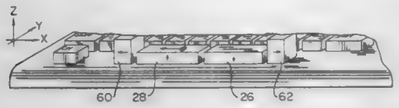
KEYBOARD WITH TRANSVERSE THUMB ACTIVATED CURSOR CONTROL

Robert D. Klauber, and Steven W. Hathaway, both of Fairfield, Iowa, assignors to Keyboard Advancements, Inc., Fairfield, Iowa

Continuation-in-part of Ser. No. 849,533, Mar. 11, 1992, Pat. No. 5,358,343, which is a continuation-in-part of Ser. No. 813,289, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 339,075, Apr. 14, 1989, Pat. No. 5,143,462. This application Sep. 13, 1994, Ser. No. 305,097

Int. Cl.[6] B41J *5/28*

U.S. Cl. 400—486 **15 Claims**



1. A keyboard for a computer, electronic typewriter, word processor, and the like comprising:

a plurality of alphanumeric keys comprising at least twenty-six alphanumeric keys and ten numeric keys arranged corresponding to touch typing position each of which alphanumeric keys automatically types a different alphanumeric character in response to downward actuation thereof,

four cursor control actuators actuable transversely, each cursor control actuator having means for automatically effecting cursor movement in a direction different from each other cursor control actuator in response to actuation in a direction other than downward,

the first of said cursor control actuators being within reach and located left of the left thumb of a touch typist having hands and fingers in touch typing position,

the second of said cursor control actuators being located within reach of the left thumb of the touch typist having hands and fingers in touch typing position,

the third of said cursor control actuators being located within reach of the right thumb of the touch typist having hands and fingers in touch typing position, and

the fourth of said cursor control actuators being within reach and located right of the right thumb of the touch typist having hands and fingers in touch typing position,

each of said four cursor control actuators comprising a separate key of said keyboard.

5,626,428

KEYBOARD DEVICE

Takahiro Miwa, Konan, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 18, 1995, Ser. No. 529,335

Claims priority, application Japan, Nov. 10, 1994, 6-276497

Int. Cl.[6] B41J *5/10*

U.S. Cl. 400—486 **20 Claims**



1. A keyboard device for a compact electronic device, comprising a plurality of keys arranged in at least two sets, wherein each set of keys comprises a first horizontally extending row of keys and a second horizontally extending row of keys, wherein the keys of the first and second rows of each set are arranged in a staggered fashion, and wherein a vertical distance between the centers of adjacent keys in different rows of a set is smaller than a vertical distance between the centers of adjacent keys of different sets.

5,626,429

KEYBOARD ARRANGEMENT TO MAXIMIZE ONE-HANDED TYPING SPEED AND TRAINING FOR ENGINEERING AND ARCHITECTURAL COMPUTER ASSISTED DRAWING AND DESIGN OR DISABLED TYPISTS

John I. M. Choate, c/o Pecan Pl., Ponca City, Okla. 74604

Filed Apr. 3, 1995, Ser. No. 415,562

Int. Cl.[6] B41J *5/10*

U.S. Cl. 400—487 **3 Claims**



1. A keyboard having a complete alphabet, punctuation marks, and Arabic numerals of a base ten system arranged in 3 or more rows, each row having 9 or more keys, the keys are lined in 9 or more columns and located on the keyboard based on a conventional QWERTY layout, said keyboard comprising:

a column of 1 Q A Z keys having the same shape, color and tactile stimulus;

a column of 2 W S X keys having the same shape, color and tactile stimulus which are different from the shape, color and tactile stimulus of the 1 Q A Z keys on the left and a column of 3 E D C keys on the right;

a column of 3 E D C keys having the same shape, color and tactile stimulus which are different from the shape, color and tactile stimulus of the 2 W S X keys on the left and a column of 4 R F V keys on the right;

a column of 4 R F V keys and a column of 5 T G B keys having the same shape, color and tactile stimulus which are different from the shape, color and tactile stimulus of the 3 E D C keys on the left and a column of 6 Y H N keys on the right;

a column of 6 Y H N keys and a column of 7 U J M keys having the same shape, color and tactile stimulus which are different from the shape, color and tactile stimulus of the 5 T G B keys on the left and a column of 8 I K comma keys on the right;

a column of 8 I K comma keys having the same shape, color and tactile stimulus which are different from the shape, color and tactile stimulus of the 7 U J M keys on the left and a column of 9 O L period keys on the right; and

a column of 9 O L period keys having the same shape, color and tactile stimulus which are different from the shape, color and tactile stimulus of the 8 I K comma keys on the left and a column of zero P semicolon slash keys on the right.

5,626,430

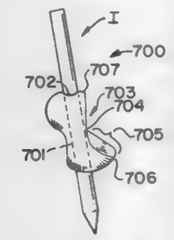
ADAPTABLE PRESSURING WRITING INSTRUMENT HOLDER

Carl Bistrack, 301 Heights La., Apt. 15F, Feasterville, Pa. 19047

Continuation-in-part of Ser. No. 968,210, Oct. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 652,067, Feb. 7, 1991, Pat. No. 5,180,239. This application May 3, 1994, Ser. No. 237,552

Int. Cl.[6] B43K *23/00*

U.S. Cl. 401—6 **1 Claim**



1. In combination, a hand-held device and an instrument, said hand-held device for aiding in the gripping of said instrument, said instrument having an elongated body shaped to be normally held by pressing at least two fingers of a user's hand against the elongated body and without any additional member which aids in holding the instrument and having an operating portion extending from one end of the elongated body for performing an operation, said device comprising:

a single, one-piece body having first and second ends;

a bore extending in a longitudinal direction between said first and second ends and terminating in respective openings in said first and second ends;

said instrument having a length greater than a length of said device;

said device removably receiving the elongated body of said instrument which is inserted into said bore so that at least the operating portion extends beyond the first end and an end of the elongated body opposite said operating portion extends beyond said second end;

at least said openings frictionally engaging said elongated body of said instrument to firmly retain said device at a selected portion along the length of said elongated body;

said one-piece body having a single support shelf at the first end and having a generally hour-glass shape on two opposing sides, one of said two opposing sides being expanded at said first end to form said support shelf for supporting a portion of a single finger;

two remaining sides of said device having generally flat surfaces; and

said two remaining sides and a remaining one of the opposing sides having a generally hour glass shape serving as single or plural finger support surfaces.

5,626,431

FELT-TIP PEN WTH REFILLING MEANS

Norbert Hetzer, Lobbach, and Michael Schwarz, Herne, both of Germany, assignors to Esselte Meto International GmbH, Heppenheim, Germany

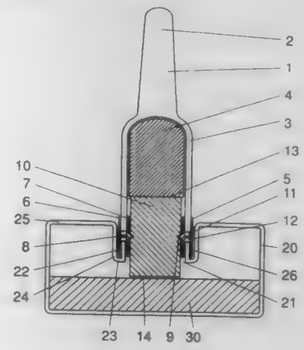
PCT No. PCT/EP94/02199, § 371 Date May 16, 1996, § 102(e) Date May 16, 1996, PCT Pub. No. WO95/04661, PCT Pub. Date Feb. 16, 1995

PCT Filed Jul. 5, 1994, Ser. No. 592,334

Claims priority, application Germany, Aug. 4, 1993, 43 26 174.4

Int. Cl.[6] B43K *11/00*

U.S. Cl. 401—119 **5 Claims**



1. A device for writing on posters and the like, comprising an inkwell and a felt-tip pen, with the felt-tip pen including a handle member and a felt tip secured therein which has one end thereof extending out of the handle member, characterized in that a groove (**12**) concentric with the longitudinal axis of the felt tip (**10**) is provided, said groove encompassing the felt tip (**10**) immediately behind the protruding end of the felt tip (**10**) and being open in the direction of said end, thus enabling the felt-tip pen (**1**) to be introduced into an opening (**21**) of the inkwell (**20**), in which a collar (**22**) encompassing the opening (**21**) engages said groove (**12**), the felt tip (**10**) encountering an ink-impregnated absorbent body (**30**) before the collar (**22**) reaches the bottom of the groove.

5,626,432

ADJUSTABLE LOCKING BINDER

Daniel P. Swift, 1918 Curtis, Laramie, Wyo. 82070; Thomas R. La Croix, 244 E. Fallen Rock, Grand Junction, Colo. 81503, and William E. Bullock, P.O. Box 1328, Glenwood Springs, Colo. 81602

Filed Feb. 13, 1996, Ser. No. 600,453

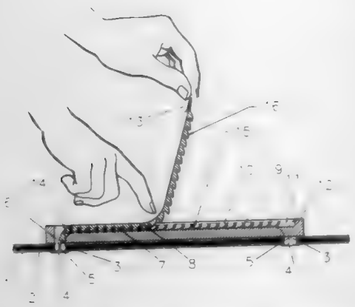
Int. Cl.[6] B42F *3/00*

U.S. Cl. 402—8 **8 Claims**

1. A paper binding device for fastening one or more sheets comprising:

an elongated flexible strand with a plurality of locking elements evenly spaced along the length of said strand and, attached to said strand, a flanged backing base at one end, a tab and an engaging element at the opposing end of said strand;

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a receiving member having a plurality of elongated filisters oriented side by side and extending a distance generally longitudinal, the length of said receiving member, said filisters being of size and shape to receive above said strand, said strand being movable between a locked and released position relative to said filisters;

a plurality of apertures, passing through said receiving member and into said elongated filisters and being spaced apart a distance to receive above said strand;

a groove in one or more walls of said elongated filisters positioned to receive said engaging elements of said strand when said strand is in locked position in said filister;

a plurality of locking elements compatible to engage the locking elements spaced along the length of above said strand, evenly spaced along the interior of above said elongated filisters and of a shape and position to engage said locking elements on said strand, said locking elements of said strand and said elongated filister being engaged and interlocked when said strand is in position in elongated void, and said locking elements of a shape to nondestructively disengage when said strand end is lifted and rotated from said filister by means of said tab and the strand is pulled in a generally upward direction, and said locking elements on said strand and in said filister allow said strand to be locked in said filister in numerous positions relative to said filister.

5,626,433

BALL JOINT

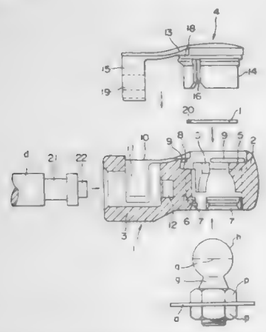
Takashi Iwamoto, Tokyo, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Mar. 4, 1996, Ser. No. 610,191

Claims priority, application Japan, Apr. 25, 1995, 7-124341

Int. Cl.° F16C *11/06*

U.S. Cl. 403—76 **8 Claims**



1. A combination comprising a ball joint and a strut bar, said ball joint comprising:

a joint device including a ball holder, said ball holder having a through hole and an inner surface around the through hole, and a bar connecting part situated adjacent to the ball holder for connecting the ball holder to the strut bar, said bar connecting part having a hollow portion extending inwardly from a side portion thereof and an opening disposed at an upper surface thereof and communicating with the hollow portion,

a plurality of ball abutting ribs projecting inwardly from the inner surface of the ball holder,

a ring-shaped projecting stand formed at a lower part of the ball holder, said projecting stand extending along a periphery of the inner surface of the ball holder,

a fitting ring disposed on said projecting stand, said fitting ring being elastically deformable and having a slit,

a ball stud having a spherical fitting part, said fitting part being disposed between the fitting ring and the ball abutting ribs,

a rotation preventing rib projecting inwardly from the inner surface of the ball holder, said rotation preventing rib being placed in the slit of the fitting ring to thereby prevent the fitting ring from moving on the projecting stand, and

a cap fitted in an upper surface of the joint device and having a ball holder closing part for closing the through hole of the ball holder and a fitting convex for fixing the strut bar to the bar connecting part.

5,626,434

CONNECTOR FOR VARIABLE-CURVATURE SPACEFRAME STRUCTURAL SYSTEM

Robert W. Cook, P.O. Box 41144, Tucson, Ariz. 85717

Filed Aug. 21, 1995, Ser. No. 517,062

Int. Cl.° F16B *17/00*

U.S. Cl. 403—176 **12 Claims**

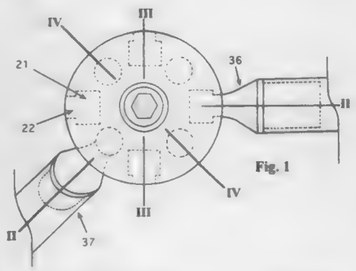


Fig. 1

10. In a spaceframe connector of the type comprising:

a plurality of parts which are stacked one on the other on a common axis,

said parts having interior faces each of which mates and abuts against the interior face of another part,

said mating faces having a plurality of matching recesses which, in pairs, form sockets for joining headed ends of elongated frame members, said headed frame member ends having a headed end portion, a substantially cylindrical neck adjoining said end portion, a substantially conical base adjoining said neck, and an adapting formation adjoined to said base and adapted for attachment to said elongated frame members,

said parts having other matched recessed formations adjoining said sockets and which extend to the exterior of said connector,

said other recessed formations substantially including circumferentially enlarged recesses which permit the longitudinal axes of said frame members to vary with respect to each other and to said common axis and, by this means, permit angular freedom through a hinging action of said elongated frame members, and fastening means extending parallel to said axis and securing said parts together, the improvement wherein:

a minimum of two said pairs of matching recesses have a substantially T-shape to receive substantially T-shaped headed ends of a minimum of two said elongated frame members,

said T-shaped headed frame member ends have a substantially cylindrical shaped end portion, the axis of said

substantially cylindrical shaped end portion being perpendicularly aligned to the axis of said adjoining cylindrical neck and, by this means, producing said T-shape,

said T-shaped headed frame member ends being located in said T-shaped matching recesses and said other matched recessed formations of the connector, and by this means, restricting said angular freedom to a single-planar hinging action, said single-planar hinging action being stopped in each direction by said other matched recessed formations.

5,626,435

COUPLING ASSEMBLY

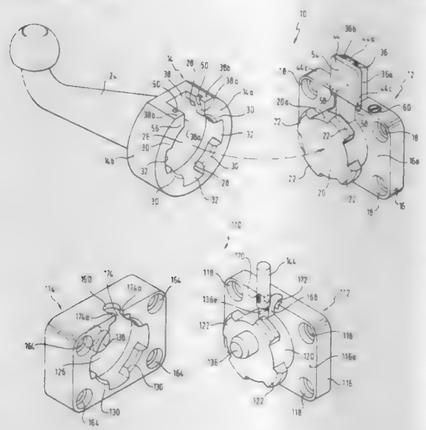
Gerhard Wohlhüter, Munich, Germany, assignor to Rockinger Spezialfabrik fur Anhangerkupplungen GmbH & Co., Munich, Germany

PCT No. PCT/EP93/03029, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO95/11811, PCT Pub. Date May 4, 1995

PCT Filed Oct. 29, 1993, Ser. No. 481,431

Int. Cl.° B60D *1/56*

U.S. Cl. 403—348 **15 Claims**



1. A coupling assembly, comprising:

a first coupling element and a second coupling element releasably couplable with each other;

said first and second coupling elements each having a respective contact face and, in a coupled position, are in mutual abutment with said respective contact faces in a coupling plane;

said first coupling element having on its respective contact face a recess provided with at least one undercut;

said second coupling element having on its respective contact face a trunnion provided with a plurality of spaced apart arresting projections;

said plurality of arresting projections of the second coupling element, in the coupled position of said first and second coupling elements, positively cooperating with a wall section confining the undercut of the first coupling element towards the coupling plane;

said first and second coupling elements, in a ready-for-coupling rotational position with respect to an axis of rotation orthogonal to the coupling plane, being approachable towards each other in the direction of the axis of rotation until the respective contact faces abut each other, in which ready-for-coupling rotational position the plurality of arresting projections of the second coupling element and the wall section of the first coupling element do not overlap, and being rotatable relative to each other about the axis of rotation for establishing a positive overlapping of the plurality of arresting projections of the second coupling element and the wall section of the first coupling element, for bringing about the coupled position of said first and second coupling elements;

a securing element provided on one of the first and second coupling elements, said securing element having a spring, said securing element being displaceable between a securing position and a non-securing position and, in the securing position, securing the first and second coupling elements in the coupled position against uncoupling relative rotation;

the securing element having an abutment face which, in the course of an approaching motion of the first and second coupling elements in the direction of the axis of rotation, is engaged by the other of the first and second coupling elements and, following the further course of the approaching motion, causes a transfer of the securing element from the securing position to the non-securing position against the force of the spring;

said other coupling element being provided with a securing recess into which the securing element snaps due to the action of the force of the spring upon relative rotation of said first and second coupling elements about the axis of rotation to the coupled position; and

a locking element mounted on the securing element and being movable between a locking position and a release position and being biased into the locking position, said locking element, in the coupled position of the first and second coupling elements, preventing the displacement of the securing element out of the securing position.

5,626,436

DOUBLE HOOK TO FASTEN CROSSED BARS

Mario Dragone, Via S. Antonio 18, 64100 Teramo, Italy

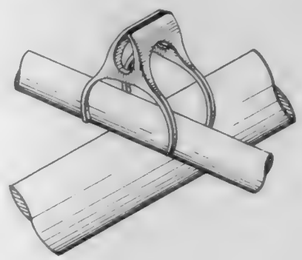
PCT No. PCT/IT94/00083, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO94/29543, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 10, 1994, Ser. No. 379,438

Claims priority, application Italy, Jun. 14, 1993, TE93A0003

Int. Cl.° E04C *5/16*

U.S. Cl. 403—400 **7 Claims**



1. A clip for holding together two transversely positioned bars, said clip defining a seat for positioning of one bar and a plurality of hooks for the positioning of the second bar, at least one of said hooks having an upper body defining a lever and said hooks are joined by structure defining a fulcrum.

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5,626,437

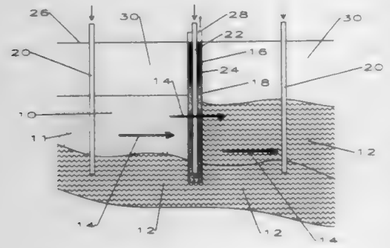
METHOD FOR IN-SITU BIOREMEDIATION OF CONTAMINATED GROUND WATER

Seth C. Hunt, Lakewood, and Theodore O. Meiggs, Golden, both of Colo., assignors to Foremost Solutions Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 272,816, Jul. 11, 1994, Pat. No. 5,570,973. This application Aug. 21, 1995, Ser. No. 517,103

Int. Cl.[6] B09B *1/00*

U.S. Cl. 405—128 19 Claims



1. A method for in-situ bioremediation of contaminated ground water wherein porous inorganic support spheres such as diatomaceous earth pellets are treated by inoculation with selected nonpathogenic microbes for destroying or converting the contaminant, the steps comprising:

digging of a trench perpendicular to the movement of the ground water and downstream from the contaminated ground water, the trench dug below the level of the contaminated ground water;

filling the trench with porous inorganic support spheres inoculated with selected microbes thereby creating a porous wall; and

directing a flow of the contaminated ground water through the trench filled with the inoculated support spheres and destroying and converting the contaminants in the ground water.

5,626,438

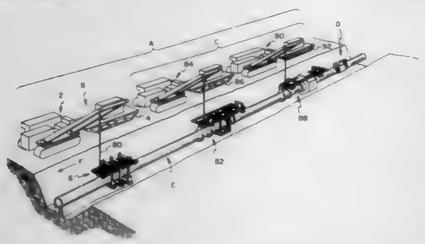
SYSTEM FOR EXCAVATING AND REHABILITATING UNDERGROUND PIPELINES

Thomas J. Etheridge, Columbus, Tex., assignor to Pipeline Rehab, Inc., Columbus, Tex.

Continuation of Ser. No. 126,223, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 62,953, Jan. 15, 1993, Pat. No. 5,359,748, and Ser. No. 60,619, May 14, 1993, abandoned. This application Mar. 26, 1996, Ser. No. 621,903

Int. Cl.[6] F16L *1/00*

U.S. Cl. 405—154 20 Claims



1. A system for excavating and rehabilitating underground pipelines having a protective coating formed thereon; comprising:

a) an earth removal device for removing earth surrounding at least a portion of an underground pipeline having a protective coating thereon, said earth removal device including a housing, an excavating member and at least one wheel, said housing being adapted to fit about an exposed portion of the underground pipeline; and,

b) a coating removal device for removing the protective coating from the underground pipeline, said coating removal device including a support member for supporting an endless chain having an endless chain which is positioned about the underground pipeline for removing the coating from the underground pipeline said coating removal device being adapted to be positioned rearwardly of said earth removal device with respect to a direction of travel of said earth removal device.

5,626,439

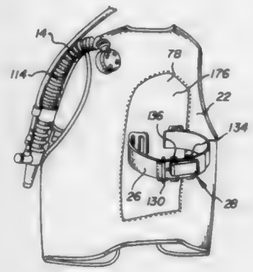
DIVER'S VEST HAVING COMPRESSED AIR TIGHTENING DEVICE

Albert J. Rowlands, Rte. 6, Box 360, Charleston, W. Va. 25311

Filed Dec. 7, 1995, Ser. No. 568,842

Int. Cl.[6] B63C *11/02*

U.S. Cl. 405—186 5 Claims



1. A diving outfit comprising:

(a) a vest garment element having a front opening and arm openings,

(b) a belt attached to said element for securing a compressed air tank to said element,

(c) belt tightening means for tightening the belt by compressed air pressure,

(d) an air tank having a gas at a pressure of between 300 and 3000 pounds per square inch,

(e) an air pressure reduction unit attached to said tank, said unit having a first stage having a gas pressure of between 300 and 3000 pounds per square inch and having a second stage having a gas pressure of between 90 and 150 pounds per square inch,

(f) an air hose extending from said second stage of said unit to said means for tightening, and

(g) a pull release coupler for releasably coupling said hose to said belt tightening means.

5,626,440

RETRACTABLE BEACH STAIRWAY

G. Nash Greene, Jr., 914 Ocean Blvd. West, and Donald M. Campbell, 117 Seaside Dr., both of Holden Beach, N.C. 28462

Filed Feb. 16, 1995, Ser. No. 389,493

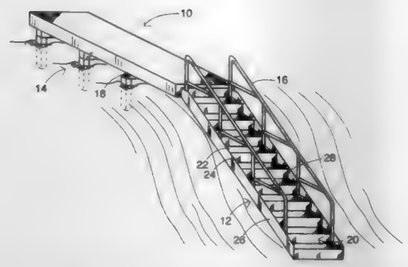
Int. Cl.[6] E02B *3/20*

U.S. Cl. 405—218 18 Claims

1. A retractable stairway comprising

a) a housing section having a top wall with an upper surface suitable for use as a walkway and a cavity beneath said top wall;

b) a stair section moveable between a retracted position within said cavity and an extended position and;



c) pivotal mount beneath said housing section, said housing section being pivotal on said mount between a horizontal position and a tilted position.

5,626,441

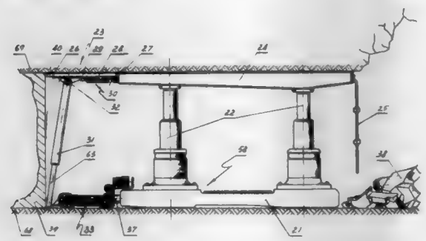
SLIDING STABILIZER

Boris Grebenyuk, 2567 Sandalwood Cir., Ann Arbor, Mich. 48105

Filed Jul. 7, 1995, Ser. No. 499,741

Int. Cl.[6] E21D *15/14;23/00*

U.S. Cl. 405—293 2 Claims



1. A sliding stabilizer for supporting a roof in a work zone of a mine in tandem with a mine roof support machine comprising:

a hood smaller than a roof covering of the support machine;

a flexible sheet joined to the hood, the flexible sheet extending toward and engaging the roof covering of the support machine;

a junction of the flexible sheet and hood in the half of the hood furthest from the roof covering of the support machine;

a leg mounted to the hood and having a gear wheel; and

a means for rotating the gear wheel.

5,626,442

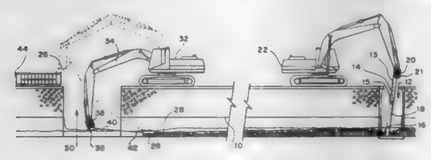
PIPE REHABILITATION SYSTEM AND METHODS

Mark L. Boyer, Houston, Tex., assignor to Boyer, Inc., Houston, Tex.

Filed Oct. 24, 1995, Ser. No. 547,472

Int. Cl.[6] F16L *1/00*

U.S. Cl. 405—303 18 Claims



1. A method for using a system for cleaning pipe comprising the steps of

(a) selecting the length of host pipe for cleaning;

(b) accessing the host pipe on both ends of the selected length of the host pipe to be cleaned;

(c) positioning a down hole boom vertically in a shaft that accesses one end of the host pipe to be cleaned that has a winch and a guide roller mounted thereon whereby the winch drives a cable down the shaft into the host pipe over the guide roller;

(d) mounting a winch on a movable mount positioned at an access area to the end of the pipe opposite to the end where the down hole boom is placed, the movable mount is capable of movement from above the access shaft on the surface into the access shaft to the host pipe;

(e) placing a cable between the two winches which can be spooled and released by either winch;

(f) attaching a cleaning bucket to the cable whereby the cable and cleaning bucket attachment may be manipulated to move through the host pipe, the cleaning bucket has an open top, open end and a flap door opposite the open end, the flap door capable of opening when pulled in one direction through the host pipe and closing when pulled in the opposite direction while trapping debris;

(g) dragging the cleaning bucket through the host pipe on the cable by the winch on the down hole boom to the opposite end of the host pipe such that the flap door is open during the dragging process;

(h) reversing the drag of the cleaning bucket by spooling the winch on the movable mount such that the flap door is closed as it collects debris;

(i) withdrawing the cleaning bucket from the host pipe through the access shaft by the movable mount and winch;

(j) discharging the accumulated debris from the cleaning bucket;

(k) lowering the cleaning bucket into the mouth of the host pipe with the winch and the movable mount; and

(l) repeating the steps of (g) through (k) to clean the host pipe.

5,626,443

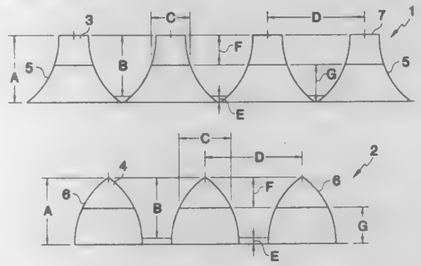
CONVEX-CONCAVE HOBS

Johnnie W. Clark, 2511 S. 57th Ct., Cicero, Ill. 60650

Filed Mar. 1, 1996, Ser. No. 613,451

Int. Cl.[6] B23F *21/16*

U.S. Cl. 407—26 1 Claim



1. Gear cutting hobs comprising:

a pair of complimentary hobs including a convex hob and a concave hob.

said convex hob having a plurality of hob teeth,

each convex hob tooth defining, on opposite sides thereof, cutting edges having a convex shape,

said convex hob teeth having a bottom and all of said bottoms of said convex hob teeth lying in a plane,

said convex shape is defined by an arc with a center of radius which lies in said plane of the bottom of said convex hob teeth.

said concave hob having a plurality of teeth which are complimentary with said convex hob teeth,

each concave hob tooth defining, on opposite sides thereof, cutting edges having a concave shape,

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said concave hob teeth having a top and all of said tops of said concave hob teeth lying in a plane.

said concave shape is defined by an arc with a center of radius which lies in the plane of the tops of said concave hob teeth.

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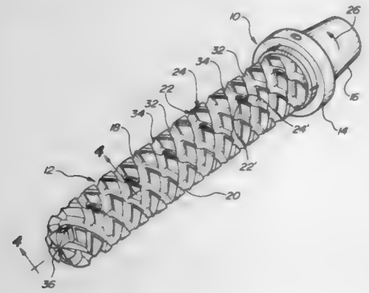
ROTARY CUTTING TOOL

Jonathon Campian, 1900 E. 14 Mile Rd., Madison Heights, Mich. 48071

Continuation-in-part of Ser. No. 208,616, Mar. 9, 1994, Pat. No. 5,429,460. This application Aug. 19, 1994, Ser. No. 293,143

Int. Cl.[6] B26D *1/12*

U.S. Cl. 407—54 **1 Claim**



1. A rotary cutting tool particularly adapted for cutting plastic material comprising:

a longitudinally extending cylindrical shank having an axially extending evacuation bore;

right-hand longitudinally extending helical flute grooving in said cylindrical shank;

left-hand longitudinally extending helical flute grooving in said cylindrical shank;

a cutter located at each intersection of the right-hand and the left-hand helical flute groovings, each cutter having a pair of cutting edges, one cutting edge being parallel to said right-hand flute grooving and the other cutting edge being parallel to said left-hand flute grooving; and

radially extending passages between at least one of said flute grooving and said axially extending evacuation bore;

wherein said passage means is fluidly connected to said axially extending evacuation bore so that material removed from a workpiece by said cutters is evacuated through said passage means and said axial bore.

5,626,445

TUBE CUTTER TOOL AND METHOD OF USE FOR COUPON REMOVAL

Henry D. Nachbar; Marvin P. Etten, Jr., both of Ballston Lake, and Paul A. Kurowski, Scotia, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 23, 1995, Ser. No. 376,150

Int. Cl.[6] B23B *35/00;41/00*

U.S. Cl. 408—1 R **15 Claims**

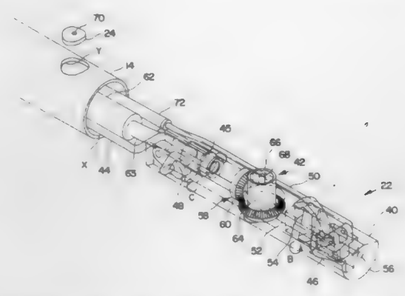
1. A method of removing a portion of a tube comprising the steps of:

locating a damaged site on a tube from the interior of said tube;

inserting a cutting tool into said tube;

confirming the location of said damaged site and said cutting tool using fiber optic means;

cutting said tube with said cutting tool; and



monitoring said cutting using fiber optic means, to obtain a coupon from said tube at said damaged site.

5,626,446

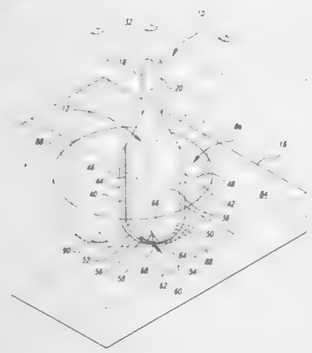
FLAT DRILL BIT WITH OPPOSING VERTICAL CUTTING EDGES

Edwin K. W. Ching, P.O. Box 8648, Tamuning, Guam

Filed Aug. 9, 1995, Ser. No. 512,877

Int. Cl.[6] B23B *51/08;* **B23C** *5/10*

U.S. Cl. 408—1 R **19 Claims**



1. A flat drill bit head connected to a drill bit shaft having an axis of rotation, comprising:

opposing flat front and back faces;

a flat first side extending between said front and back faces, said first side being parallel to the axis of rotation, said first side being at an angle relative to said back face to define a continuous first cutting edge parallel to the axis of rotation;

a flat second side extending between said front and back faces, said second side being parallel to the axis of rotation and spaced away from and opposite said first side, said second side being at an angle relative to said front face to define a continuous second cutting edge parallel to the axis of rotation; and

a bottom side extending between said first and second sides, said bottom side being at an angle relative to said front and back faces to define a continuous bottom cutting edge that extends fully between said first and second cutting edges, each of said first and second cutting edges being connected to said bottom cutting edge to define one of an obtuse angle and a right angle therebetween to allow the drill bit head to cut a workpiece in a direction parallel to the axis of rotation to form a depression and to allow movement and cutting of the workpiece in a direction transverse to the axis of rotation to transversely enlarge the depression.

5,626,447

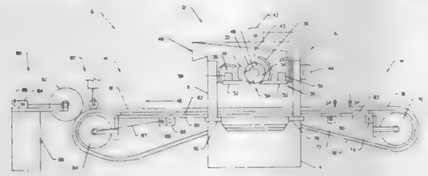
BELT REFURBISHING METHOD AND APPARATUS

Jeffrey L. Buysman, 1911 Eleanor St., Worthington, Minn. 56187, and Thomas E. Bomgaars, R.R. 1, Box 25, Worthington, Minn. 56187

Filed Sep. 14, 1994, Ser. No. 306,009

Int. Cl.[6] B23C *3/13*

U.S. Cl. 409—139 **7 Claims**



1. A system for refurbishing modular belting used on conveyor systems in the food processing industry, the modular belting having a damaged surface, the system comprising:

a. a frame;

b. conveyor means for selectively moving the modular belting on the conveyor bed relative to the frame; and

c. means attached to the frame for selectively removing a desired amount of the surface of the modular belting as the belting moves relative to the frame on the conveyor means;

d. means for adjusting the conveyor frame to accommodate different widths and lengths of conveyor belting.

5,626,448

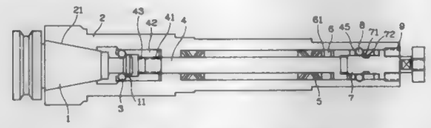
TOOL PULLING FORCE MAGNIFICATION MECHANISM OF SPINDLE

Chun-Hung Huang, and Tong-Jou Shien, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 31, 1995, Ser. No. 414,805

Int. Cl.[6] B23B *31/10*

U.S. Cl. 409—233 **4 Claims**



1. A tool pulling force magnification mechanism for use in a spindle, said spindle having a hollow portion and said tool pulling force magnification mechanism comprising:

a draw bar, contained in the hollow portion of the spindle shaft, said draw bar having a front end and a back end relative to a tool to be pulled;

a spring, sleeved on the draw bar at the back end therefore;

a slider, located at the back end of the draw bar behind the spring to receive a squeezing force therefrom, said slider is provided with a first ring slot having a first forwardly tapered surface on an outer surface thereof;

a second ring slot having a second forwardly tapered surface formed on an external surface of the hollow portion of the spindle shaft near the first forwardly tapered ring slot;

a hole provided at the back end of the draw bar having an end face;

wherein the first forwardly tapered ring slot, the second forwardly tapered ring slot, and the hole are so structured such that (a) during a pulling action, a pulling force equal to a spring force from the spring acting on the ball at the end face plus a compressing force from the spindle shaft acting on the ball at the second forwardly tapered surface will be generated, and (b) during a releasing action, forwardly tapered surface is no long acting on the ball, so that only a releasing force that can overcome the spring force will be required.

5,626,449

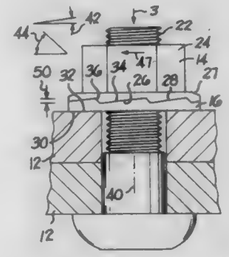
WEDGE-LOCKING FASTENER ASSEMBLY WITH A CAMMED FLANGE

Alistair N. McKinlay, Marina Del Rey, Calif., assignor to Hong Kong Disc Lock Company Limited, Hong Kong, Hong Kong

Filed Sep. 15, 1995, Ser. No. 528,857

Int. Cl.[6] F16B *39/24;43/00*

U.S. Cl. 411—149 **13 Claims**



1. In a wedge-action annular fastener assembly comprising a nut having a threaded internal surface rotatable about an axis, a multi-sided wrench engaging head, a cam end face on the nut;

an annular lock washer being capable of relative axial motion toward or away from the nut; said annular lock washer having a second cam end face interengaged with the cam face on the nut; each of said cam faces comprising a plural number of circumferentially-spaced ramps and a corresponding number of interconnecting shoulders; each ramp being sloped at a relatively slight acute angle to a plane normal to the nut rotational axis; each shoulder being sloped at a relatively steep acute angle to said plane; said shoulders and said ramps being connected at acute angles so that the respective cam surfaces have an undulating contour; the threaded internal surface on said nut comprising a continuous thread having a pitch distance; said shoulders having axial thickness dimensions less than said thread pitch distance; said cam faces being mated so that when the nut is turned in a tightening direction, the nut urges the washer in the tightening direction, and when the nut is turned in the opposite, loosening direction and the washer is fixed with respect to a workpiece, the nut becomes wedged between the ramps on the washer, and the threads on a threaded shank on which the nut is threadably mounted, the improvement comprising:

the nut having an integral annular flange having a diameter at least as great as the multi-sided wrench-engaging head and the cam end face on the nut being formed on the annular flange.

5,626,450

EXPANSION PLUG FASTENING ASSEMBLY WITH POSITION ADJUSTMENT FOR HARDWARE ELEMENTS IN PARTICULAR FOR RUNNERS FOR DRAWERS

Franco Ferrari, Frazione Deviscio, 2, 22053 Lecco, and Carlo Migli, Lecco, both of Italy, assignors to Franco Ferrari, Lecco, Italy

Filed May 25, 1995, Ser. No. 450,690

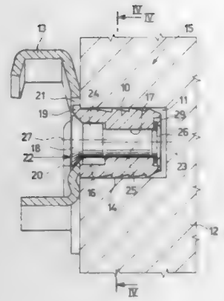
Claims priority, application Italy, Jun. 21, 1994, MI94U0451

Int. Cl.[6] F16B *19/00*

U.S. Cl. 411—510 **7 Claims**

1. An expansion plug fastening assembly for fastening a hardware element, in particular a runner for drawers, to a hole in a surface, comprising an expansion plug casing which fits into the hole, the casing internally comprising an axial housing rotatably supporting therein the shank of a pin, said pin having a head facing out from the housing for fastening engagement with the hardware element, and means for guiding the head in a direction transverse to the axis of said pin, including at least a first segment of the shank having an axis eccentric with respect to said head to effect

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adjustment of the position of the hardware element in a plane perpendicular to the axis of the pin upon rotation of the pin; and characterized by the fact that the shank comprises a second segment coaxial to the head, the housing comprises a first portion which receives the first segment and a second portion which receives the second segment, the first portion being extended in a first direction radial to the casing of the expansion plug and the second portion being extended in a second direction radial to the casing of the expansion plug and perpendicular to the first direction, whereby upon rotation of the pin each segment moves in the direction of extension of the respective portion of the housing.

5,626,451

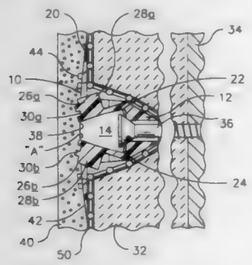
WASHER FOR USE WITH EXTERIOR INSULATION

William B. Seibert, Birdsboro, Pa., assignor to Wind-Lock Corporation, Leesport, Pa.

Filed Oct. 12, 1995, Ser. No. 542,380

Int. Cl.[6] F16B *33/00;43/00*

U.S. Cl. 411—533 **19 Claims**



1. A washer for use with a fastener having a head and a shank, comprising:

a hollow body having a central passageway extending along an axis from an entry aperture to a bottom aperture, the central passageway being capable of receiving the fastener through the entry aperture;

an annular skirt extending in a transverse direction from the hollow body adjacent to the entry aperture;

means within said hollow body, engageable by the head of a fastener, for preventing the head of the fastener from exiting the hollow body through the bottom aperture;

said hollow body having a plurality of fingers extending along the central passageway, each finger having a portion located adjacent to the entry aperture; and

the washer having means for causing the portion of each finger adjacent to the entry aperture to move radially inward toward said axis in response to tightening of the fastener;

whereby when the washer is fastened against a substrate, the finger at least partially blocks the entry aperture.

5,626,452

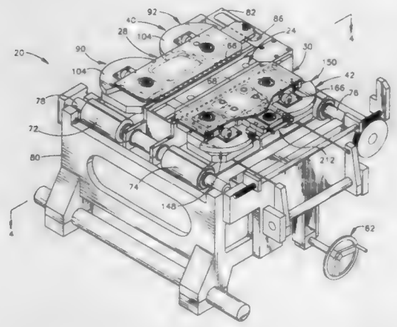
METHOD OF APPLYING COVERS TO BOOKS

Richard B. Hawkes, Bethlehem, Pa., assignor to Heidelberg Finishing Systems, Inc., Dayton, Ohio

Division of Ser. No. 161,932, Dec. 3, 1993, Pat. No. 5,441,375. This application Jun. 27, 1995, Ser. No. 495,717

Int. Cl.[6] B42C *11/00*

U.S. Cl. 412—4 **18 Claims**



1. A method of sequentially applying covers to a series of books of different thicknesses, said method comprising the steps of engaging a cover on a thin book with a first breaker member, moving a second breaker member from a retracted position through a first distance into engagement with the cover on the thin book, thereafter, engaging a cover on the next book in the series of books with the first breaker member, said next book being a thick book which is thicker than the thin book, and moving the second breaker member from the retracted position through a second distance into engagement with the cover on the thick book, said second distance being less than said first distance.

5,626,453

STORAGE SYSTEM HAVING LOAD-BEARING ELEMENTS AND AN APPARATUS FOR LOADING AND UNLOADING THE LATTER

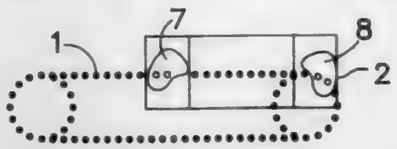
Norbert Bouché , Kuhardt, Germany, assignor to Bellheimer Metallwerk GmbH, Pfalz, Germany

Filed Mar. 28, 1995, Ser. No. 406,963

Claims priority, application Germany, Oct. 2, 1992, 42 33 690.2

Int. Cl.[6] B65G *1/04*

U.S. Cl. 414—280 **5 Claims**



1. A storage system comprising load-bearing elements and an apparatus for loading and unloading load-bearing elements onto and off of shelving; said load-bearing elements being provided at their mutually opposing ends with abutments for carriers; said loading and unloading of the load-bearing elements being performed by carriers driven by rotating drive strands and disposed in mutually offset arrangement in the direction of said drive strands; said carriers, under jolt-free forced guidance, interacting with mutually opposing walls of the abutments for transporting the load-bearing elements; wherein the carriers (**7**, **8**) are connected at two respective, mutually spaced points to the drive strands (**1**); wherein the jolt-free forced guidance of the load-bearing elements (**2**) into their respective end positions is secured by a cam profile of the carriers (**7**, **8**); wherein the drive strands (**1**) pass only one respective deflection pulley at each of the mutually opposing ends of the apparatus; and wherein the carriers (**7**, **8**) have longitudinal axes (**10**, **11**), said longitudinal axes, when a load-bearing element (**2**) is unloaded off of shelving and is carried on said apparatus in at least one position on said drive strand between said opposing ends of said apparatus, form the sides of an isosceles triangle having as its base line a part (**13**) of the drive strand (**1**) which interconnects the carriers (**7**, **8**).

5,626,454

BAR STORAGE APPARATUS

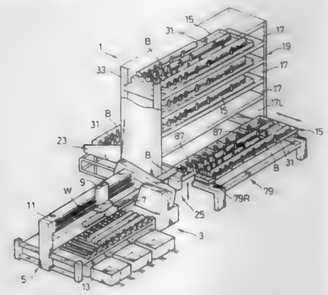
Toru Tokiwa, and Takayoshi Hasegawa, both of Hadano, Japan, assignors to Amada Company, Limited, Kanagawa, Japan

Division of Ser. No. 396,610, Mar. 1, 1995, Pat. No. 5,490,752, which is a division of Ser. No. 73,063, Jun. 8, 1993, Pat. No. 5,427,490. This application Jun. 7, 1995, Ser. No. 487,658

Claims priority, application Japan, Jun. 9, 1992, 4-149475; Jun. 18, 1992, 4-159238; Oct. 27, 1992, 4-288414

Int. Cl.[6] B21B *43/02*

U.S. Cl. 414—280 **5 Claims**



1. A bar storage apparatus comprising:

a shelf frame provided with a plurality of pallet accommodating shelves each for movably accommodating a pallet on which a plurality of bars are mounted;

an elevator device disposed on one side of said shelf frame so as to be movable up and down and provided with a traverser for moving each pallet into and from each of the pallet accommodating shelves; and

a bar supplying device for supplying a bar, mounted on the pallet moved from the pallet accommodating shelf and further located at a predetermined position by said elevator device, to a bar processing machine, wherein said bar supplying device comprises a bar lifting device for lifting a bar on the pallet located at the predetermined position, and a bar conveying and feeding device for receiving the bar lifted by said bar lifting device and further feeding the received bar in a longitudinal direction of the bar.

5,626,455

ETHYLENE OXIDE CATALYST LOADING DEVICE

James S. Keller, and David W. Embry, both of Baton Rouge, La., assignors to BASF Corporation, Mt. Olive, N.J.

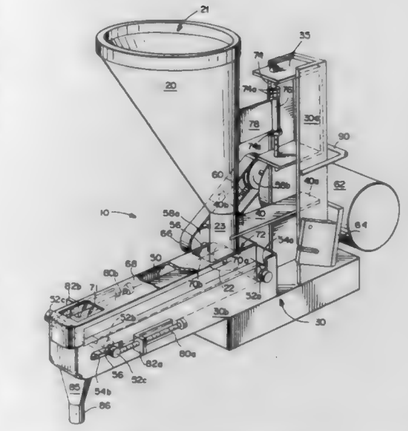
Continuation of Ser. No. 190,742, Jan. 27, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,647

Int. Cl.[6] B65G *47/18*

U.S. Cl. 414—288 **32 Claims**

19. A device for transporting particulate material comprising:

a support stand assembly including a generally horizontally disposed support base having a particulate material receiving section and a particulate material discharge section, and an upright support stand member fixed to said support base;



an endless transport belt assembly connected to said support base for transporting the particulate material between said receiving and discharge sections of said support base;

a loading hopper having an upper hopper inlet to allow particulate material to be introduced thereinto, and a lower hopper outlet to allow particulate material to be discharged therefrom; and

a hopper mounting assembly for mounting the hopper laterally of said upright support stand member so that said hopper outlet is in juxtaposed relationship to said particulate material receiving section of said support base, wherein said hopper mounting assembly includes,

(i) a hopper support bracket radially extending between said hopper and said upright support stand member;

(ii) a hopper adjustment assembly which connects said hopper support bracket to said upright support stand member for vertically moving said hopper so as to permit vertical height adjustments of said lower hopper outlet relative to said transport belt at said particulate material receiving section to thereby control discharge rates of the particulate material from the transport belt at said discharge section; and

(iii) a lateral support brace positioned below and substantially parallel to said radially extending support bracket, said lateral support brace having a proximal end rigidly connected to said hopper and an opposite distal end in sliding contact with said upright support member so as to buttress said hopper against said upright support member.

5,626,456

TRANSFER DEVICE

Hironobu Nishi, Sagamihara, Japan, assignor to Tokyo Electron Limited, Tokyo, and Tokyo Electron Tohoku Limited, Esashi, both of Japan

Continuation of Ser. No. 214,210, Mar. 17, 1994, abandoned. This application Jul. 27, 1995, Ser. No. 508,242

Claims priority, application Japan, Mar. 18, 1993, 5-085754

Int. Cl.[6] B65G *65/00*

U.S. Cl. 414—404 **14 Claims**

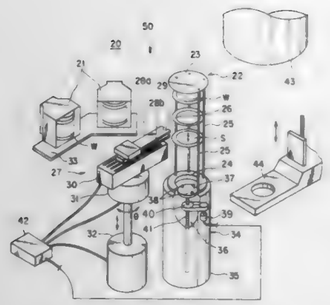
1. A transfer device for transferring plate-shaped objects comprising:

(a) a containing section for containing the plate-shaped objects, having:

(i) a container, and a container table for receiving said container, said container having a plurality of object-receiving levels which are vertically arranged having intervals therebetween;

(b) a push-up mechanism having;

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(i) a holding member, and a base for receiving said holding member, said holding member having a plurality of ring-shaped support plates which are vertically arranged having intervals therebetween, said ring-shaped support plates each having a hole in a center portion, and defining a vertical passage.

(ii) a push-up disk movable upwards and downwards through the vertical passage, and

(iii) an extension member extending through the vertical passage with a lower end portion disposed below a lowermost one of the ring-shaped support plates, said extension member having an upper end portion which supports the push-up disk; and

(iv) drive means connected to the lower end portion of the extension member, for moving the extension member to thereby move the push-up disk up and down;

(c) a carrying mechanism having:

(i) horizontal carrying means for horizontally carrying plate-shaped objects into and out of said container between the object-receiving levels and also into and out of said holding member between the ring-shaped support plates, said horizontal carrying means having at least two forks for holding the plate-shaped objects, and horizontal drive means for independently moving the at least two forks horizontally; and

(ii) lift means for holding the horizontal carrying means and for moving the horizontal carrying means upwards and downwards;

(d) the transfer device further including control means for controlling the push-up mechanism and the carrying mechanism, wherein the control means controls the carrying mechanism to simultaneously move the at least two forks forward or backward with respect to said container in order to simultaneously move at least two of the plate-shaped objects horizontally into and out of said container and to simultaneously position at least two of the plate-shaped objects at the object-receiving levels in the container, and wherein said control means controls the carrying mechanism and the push-up mechanism to cooperate with each other such that at least two of the plate-shaped objects respectively supported by at least two of the forks are placed one at a time on a respective one of the support plates of said holding member and such that at least two of the plate-shaped objects respectively supported by said holding member are removed one at a time on a respective one of said at least two forks.

5,626,457

GRAPPLE IMPACTOR

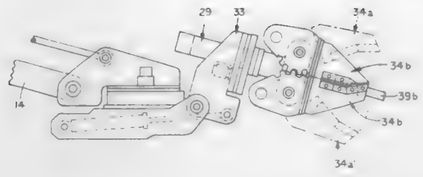
Halbert I. Hickman, Jr., Alabaster, Ala., assignor to Action Machinery Company of Alabama, Inc., Helena, Ala.

Filed Nov. 20, 1995, Ser. No. 560,833

Int. Cl.[6] E02F *3/96*

U.S. Cl. 414—739 **41 Claims**

1. In combination with a base and an articulated boom having one end attached to said base and a free end, an apparatus for grappling, manipulating, and impacting objects, comprising:



a) a grapple having a central axis;

b) orientation means interposed between said grapple and said free end for orienting said axis relative to said boom;

c) an impact hammer disposed within said grapple for impacting objects along said axis proximate and external of said grapple; and

d) grapple actuation means for actuating said grapple for selective movement to an open position and a closed position relative to said axis.

5,626,458

DEVICE FOR SIDEWISE ALIGNMENT OF FLAT WORKPIECES ON A TABLE

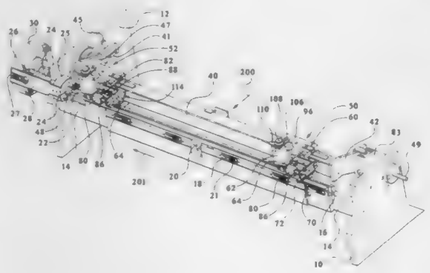
Fabio Bettinelli, Ecublens, and Jean-Claude Rebeaud, Le Mont, both of Switzerland, assignors to Bobst SA, Lausanne, Switzerland

Filed Feb. 23, 1995, Ser. No. 393,365

Claims priority, application Switzerland, Feb. 24, 1994, 00550/94

Int. Cl.[6] B65G *25/00*

U.S. Cl. 414—751 **11 Claims**



1. In a device for lateral alignment of a flat workpiece on a table, said device including lower means for carrying the flat workpiece toward a side stop, upper means for pressing the flat workpiece onto the lower means, and support means for mounting the upper means above the lower means including a bar supporting the upper means and means for lowering the bar, the improvements comprising the lower means including a pull member movable toward the side stop when the bar is lowered; the upper means including a pad, pad mounting means for mounting the pad for movement in translation along an axis parallel to the pull member so as to follow the motion of the flat workpiece and the pull member when said pad is pushed against the flat workpiece by the bar, and elastic means for acting on the pad to return the pad to an initial position when the bar is in a raised position to disengage the pad from the workpiece; and control and actuator means for moving the bar and pull member.

5,626,459

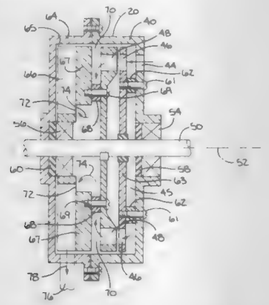
UNITARY TURBINE/COMPRESSOR ENGINE

Thomas L. Cosby, 1639 E. 84th Pl., Chicago, Ill. 60617

Continuation of Ser. No. 304,869, Sep. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 959,435, Oct. 13, 1992, abandoned. This application Mar. 4, 1996, Ser. No. 610,673

Int. Cl.[6] F04D *25/04*

U.S. Cl. 415—143 **14 Claims**



1. A unitary turbine and compressor assembly, the assembly comprising:

a turbine for producing a work output having means for causing expansion of a working fluid at an incoming temperature and pressure and exhausting the working fluid at a first temperature and pressure below said incoming temperature and pressure;

a compressor downstream of the turbine, the compressor receiving the fluid exhaust of the turbine for compression thereby; and

heat exchange means between the fluid exhaust and the compressor so that fluid in the compressor is cooled and the fluid exhaust from the turbine is heated by the compressor through heat exchange therewith to a temperature above the first temperature.

5,626,460

CENTRIFUGAL PUMP SYSTEM WITH INTEGRATED HEAT BARRIER

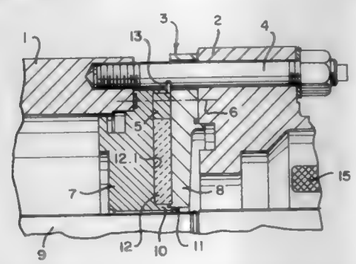
Hans-Joachim Franke, Braunschweig; Harald Hartmann, Kindenheim, and Roland Lachmayer, Braunschweig, all of Germany, assignors to KSB Aktiengesellschaft, Frankenthal, Germany

Filed Mar. 8, 1996, Ser. No. 613,014

Claims priority, application Germany, Mar. 9, 1995, 19508321.0

Int. Cl.[6] F04D *29/58*

U.S. Cl. 415—177 **13 Claims**



1. A centrifugal pump system for moving hot media, comprising:

a pump section;

a motor section;

mounting elements holding the pump and motor sections together thereby creating a force that is transmitted between the pump section and the motor section; and

a heat barrier positioned between the pump section and the motor section, said heat barrier including an insulating ceramic element, said force transmitted between the pump section and the motor section being transferred through said ceramic element.

5,626,461

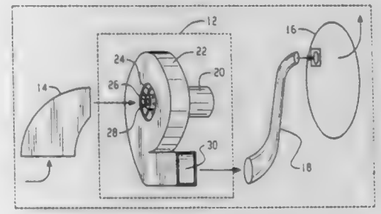
STRANDED IMPELLER

Mitchell Rose, South Euclid, Ohio, assignor to The Scott Fetzer Company, Westlake, Ohio

Division of Ser. No. 495,362, Jun. 28, 1995, Pat. No. 5,584,656. This application Mar. 26, 1996, Ser. No. 622,704

Int. Cl.[6] F04D *29/44*

U.S. Cl. 415—206 **10 Claims**



1. A vacuum cleaner comprising:

a nozzle for receiving dirt removed by an airflow;

a filter bag for depositing said dirt received from said nozzle;

an impeller for creating said airflow, said impeller comprising:

a plurality of pliable blades for centrifugally displacing a volume of air upon rotation of the impeller, wherein said blades comprise a plurality of strips; and

a hub for retaining said plurality of blades, wherein said hub secures the impeller to a motor-driven shaft for producing rotation.

5,626,462

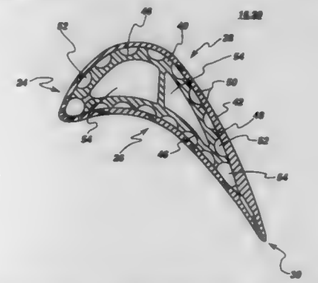
DOUBLE-WALL AIRFOIL

Melvin R. Jackson, Niskayuna; David W. Skelly, Burnt Hills; Raymond G. Rowe, Schenectady, all of N.Y.; Donald G. LaChapelle, Cincinnati, and Paul S. Wilson, Sharonville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1995, Ser. No. 368,512

Int. Cl.[6] F01D *5/18;5/28*

U.S. Cl. 416—97 R **20 Claims**



1. An airfoil having an outer double-wall, comprising;

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a partially hollow airfoil support wall that is attached to and extends longitudinally from an airfoil base and has an airfoil-shaped outer surface, the airfoil support wall formed from a first material and having at least one longitudinally-extending recessed channel formed in the airfoil-shaped outer surface; and

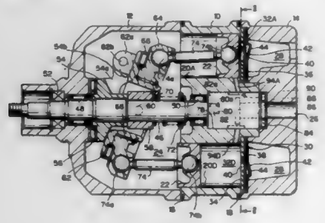
an airfoil skin made from a second material which conforms to, covers and is metallurgically bonded to the airfoil-shaped outer surface of the airfoil support wall and covers the at least one longitudinally-extending recessed channel, wherein the combination of the airfoil skin and the airfoil support wall form a double-wall airfoil structure and the covered, recessed channel forms at least one longitudinally-extending integral internal channel located within the double-wall, and wherein the second material comprises an I_s/M or I_s/I_M composite in the form of a micro-laminate having a plurality of alternating layers of I_s and M or I_M.

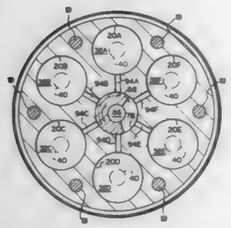
5,626,463

AXIAL MULTI-PISTON COMPRESSOR HAVING ROTARY VALVE FOR ALLOWING RESIDUAL PART OF COMPRESSED FLUID TO ESCAPE

Kazuya Kimura; Shigeyuki Hidaka; Hiroaki Kayukawa; Toru Takeichi; Chuichi Kawamura, and Hideki Mizutani, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Continuation of Ser. No. 131,452, Oct. 4, 1993, abandoned.
This application May 15, 1995, Ser. No. 441,605
Claims priority, application Japan, Oct. 5, 1992, 4-266187
Int. Cl.[6] F04B *1/14*
U.S. Cl. 417—269 **5 Claims**





1. An axial multi-piston compressor comprising:

a drive shaft;

a cylinder block having cylinder bores formed therein and surrounding said the drive shaft;

a plurality of pistons slidably received in the respective cylinder bores;

a conversion means for converting a rotational movement of said drive shaft into a reciprocation of each piston in the corresponding cylinder bore such that a suction stroke and a discharge stroke are alternatively executed therein, a fluid being introduced into said cylinder bore during the suction stroke, and during the compression stroke, the introduced fluid being compressed and discharged from said cylinder bore such that a residual part of the compressed fluid remains in said cylinder bore when the compression stroke is finished; and

a valve means for allowing the introduction of fluid into each of said cylinder bores during the suction stroke thereof; and

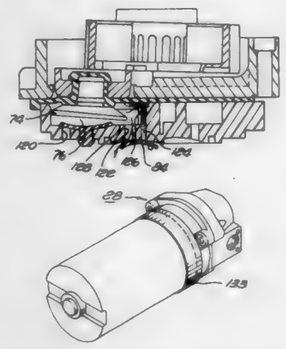
an escaping means associated with said valve means for allowing the residual part of the compressed fluid to escape from a cylinder bore, in which the compression stroke is just finished, into a cylinder bore in which an associated piston in a compression stroke has passed bottom dead center by a predetermined distance.

5,626,464

WOBBLE PLATE PUMP

Ivar L. Schoenmeyr, San Juan Capistrano, and Dave M. Slagle, Escondido, both of Calif., assignors to Aquatec Water Systems, Inc., Anaheim, Calif.

Filed May 23, 1995, Ser. No. 447,994
Int. Cl.[6] F04B *1/12*
U.S. Cl. 417—269 **31 Claims**



1. A wobble plate pump, comprising:

a pump housing that has an inlet port and an outlet port;

a diaphragm support plate attached to said pump housing, said diaphragm support plate having an opening, said opening having an inner lip with both a first radius located adjacent to a center of said diaphragm support plate and a second radius located opposite from said first radius, wherein said second radius is larger than said first radius;

a manifold plate that contains a pump chamber;

a valve assembly that provides fluid communication between said pump chamber and said inlet and outlet ports;

a piston located within said pump chamber;

a rocker arm attached to said piston through said diaphragm support plate opening;

a diaphragm that is attached to said piston and said rocker arm, and covers said diaphragm support plate opening; and,

a wobble plate coupled to said rocker arm.

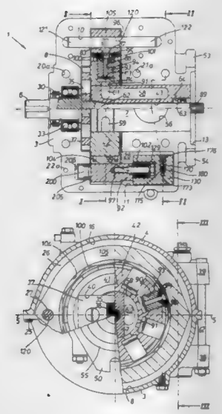
5,626,465

HYDRAULIC PISTON MACHINES

Christian H. Thoma, Jersey, Great Britain, assignor to Unipat AG, Glarus, Switzerland

Filed Dec. 9, 1994, Ser. No. 354,897
Claims priority, application United Kingdom, Dec. 15, 1993, 9325631; Oct. 19, 1994, 9421103
Int. Cl.[6] F04B *1/04*
U.S. Cl. 417—273 **20 Claims**

1. In a hydrostatic piston machine of the positive displacement type, a housing having a drive-shaft for the transmission of mechanical power comprising: two shells connectable together along a parting-plane in which the rotating axis of said drive-shaft extends and the interior of each said shell is formed with a number



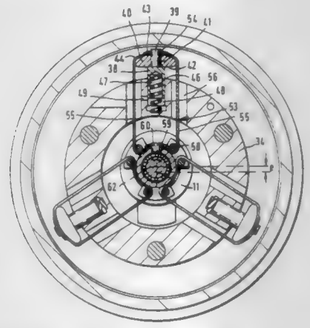
of generally semi-circular recesses, respective pairs of said recesses form recesses to receive internal elements of said hydrostatic piston machine, and at least one opening is formed in at least one of said shells for intercommunicating said interior with an exterior surface of said shells; a non-deformable liner-element positioned within at least one of said openings and extending through said opening and preventing high-pressure fluid passing through said hydrostatic piston machine from coming into direct contact with said opening; and wherein said internal elements of said hydrostatic piston machine convert said mechanical power at said drive-shaft into hydraulic power passing through said non-deformable liner-element.

5,626,466

PISTON PUMP

Manfred Ruoff, Moeglingen; Helmut Rembold, Stuttgart, and Ernst Linder, Muehlacker, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00698, § 371 Date Feb. 7, 1996, § 102(e) Date Feb. 7, 1996, PCT Pub. No. WO95/33924, PCT Pub. Date Dec. 14, 1995
PCT Filed May 27, 1995, Ser. No. 591,581
Claims priority, application Germany, Jun. 8, 1994, 44 19 927.9
Int. Cl.[6] F04B *1/04;9/06;9/04*
U.S. Cl. 417—273 **24 Claims**



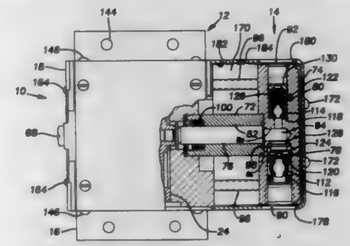
1. A piston pump having at least one pump cylinder (**36**, **236**), disposed radially relative to a center axis (**11**) of a drive shaft (**2**) in a pump housing (**1**), a pump piston (**38**, **238**) is driven in said cylinder relative to a pump work chamber (**48**) toward the center axis (**11**) for its compression stroke by an actuating element, an inlet bore (**49**) supplies pressure fluid to said pump work chamber and fluid under a higher pressure is forced from the pump work chamber via an outlet (**50**) which is controlled by a one-way check valve (**51**), and the actuating element is supported on an eccentric element (**12**) driven by the drive shaft (**2**), the actuating element comprises at least a partially annular part (**20**, **820**) rotatably supported on the eccentric element, and a circumferentially flexible transmission element (**53**, **153**,**253**) is joined to said actuating element on one end and to the pump piston on another end.

5,626,467

MODULAR PUMP

George A. Cantley, Akron, Ohio, assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Apr. 4, 1996, Ser. No. 627,503
Int. Cl.[6] F04B *39/00*
U.S. Cl. 417—312 **20 Claims**



1. An air-driven pump comprising:

an air motor including first and second bulkheads, a motor cylinder held between said first and second bulkheads, a motor piston within said motor cylinder, and an air control system for supplying air from an air inlet to said motor cylinder alternately on each side of said motor piston while venting said motor cylinder on an opposite side of said motor piston to an air outlet to reciprocate said motor piston in said motor cylinder, said first bulkhead having an opening substantially coaxial with said motor cylinder and first and second stepped recesses at an outward side of said first bulkhead which surround said opening, said second recess being laterally larger and longitudinally smaller than said first recess; and

first and second fluid pumps interchangeably mountable to said first bulkhead of said fluid motor, each of said first and second fluid pumps including an end block, a pump cylinder held between said end block and said first bulkhead substantially coaxial with said motor cylinder and within one of said recesses, and a pump piston within said pump cylinder and removably connected to said motor piston through said opening for reciprocable movement of said pump piston with said motor piston, said pump cylinder of said first fluid pump being sized and shaped for cooperating with said first recess of said first bulkhead, and said pump cylinder of said second fluid pump being sized and shaped for cooperating with said second recess of said first bulkhead.

5,626,468

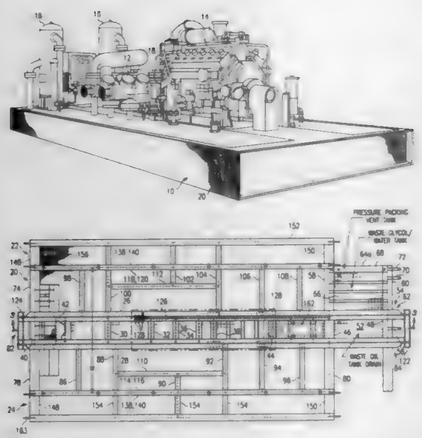
SKID FOR COMPRESSOR

K. Douglas Muir; Randy V. Franiel, and Rowan B. Walter, all of Calgary, Canada, assignors to Enterra Compression Company, Corpus Christi, Tex.

Filed May 9, 1995, Ser. No. 437,395
Int. Cl.[6] F16M *3/00*
U.S. Cl. 417—360 **15 Claims**

1. A compressor skid for mounting a compressor and a power source, comprising:

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a mainframe having a lateral width and a longitudinal length for mounting the compressor and power source;

first and second longitudinal main beams and a plurality of inner lateral beams extending between the longitudinal main beams, the compressor and power source mounted between the longitudinal main beams;

an upper deck plating mounted on the first and second longitudinal main beams between the compressor and power source; and

at least one first side wing, the first side wing having a pair of elongate channels parallel to the first and second longitudinal main beams and a plurality of lateral beams interconnecting the elongate channels, wherein said first side wing is attached to the mainframe to extend the width of the mainframe.

5,626,469

SCROLL APPARATUS

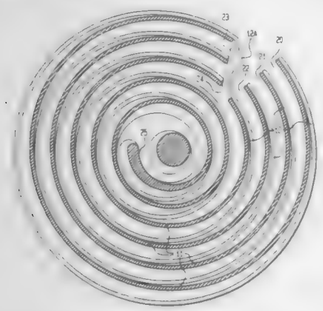
Nigel P. Schofield, West Sussex, Great Britain, assignor to The BOC Group plc, Windlesham, United Kingdom

Filed Apr. 27, 1995, Ser. No. 430,053

Claims priority, application United Kingdom, Apr. 29, 1994, 9408653

Int. Cl.[6] **F04C** *18/04;25/02*

U.S. Cl. 418—6 **7 Claims**



1. A vacuum pump of the scroll type comprising: fast and second scroll components, each having a scroll structure defined thereon; said first and second scroll components arranged in the vacuum pump such that the respective scroll structures inter-engage with the fast scroll component held stationary and the second scroll component orbiting to the first scroll component to trap a volume of gas and urge the volume from one end to the other end of the respective scroll structures; the first and second scroll components having an initial multi-start portion and a subsequent single start portion including a pump outlet; the initial multi-start portion positioned to receive gas and urge the volume of gas to the subsequent single start portion; the initial multi-start portion having at least two passageways defined between at least two said first and at least two second scroll structures and at least two pump inlets for the gas to enter the at least two passageways, said pump inlets being located at substantially the same circumferential location.

5,626,470

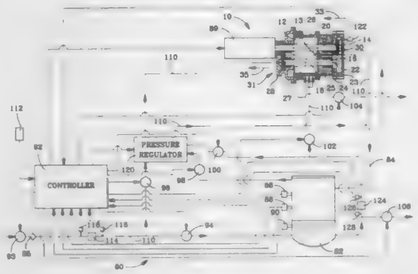
METHOD FOR PROVIDING LUBRICANT TO THRUST BEARING

Don J. Gerhardt, Clemmons, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 10, 1996, Ser. No. 631,858

Int. Cl.[6] **F01C** *21/04*

U.S. Cl. 418—84 **19 Claims**



1. In a rotary screw compressor having a compressor housing with an inlet for flowing a gas to the compressor, a discharge port for flowing compressed gas and a lubricant from the compressor; a first rotor mounted on a first shaft; a second rotor mounted on a second shaft, said rotors and shafts being enclosed by the compressor housing; a first thrust bearing located along the first shaft; and a second thrust bearing located along the second shaft; a separator means for separating the lubricant and compressed gas said separator means having a sump portion and a sump discharge port, an apparatus for supplying the lubricant to the thrust bearings and compressor rotors, the apparatus comprising:

a) first valve for controlling flow of lubricant to the apparatus;

b) second valve connected to the discharge port of the sump of the separator means the second valve means for supplying lubricant from the sump to the rotors;

c) temperature sensing means for sensing the temperature of the lubricant supplied to the rotors;

d) pressure sensing means for measuring the pressure of the compressed gas discharged from the compressor;

e) speed sensing means for detecting the operating speed of the rotors;

f) electronic control means responsive to signals received from the temperature sensing means, the pressure sensing means and the speed sensing means for selectively opening and closing the second valve to optimize the volume of lubricant supplied to the compressor rotors, said control means also for controlling the first valve for controlling the flow of lubricant to the thrust bearings;

g) pressure regulator means for controlling the supply of lubricant to the thrust bearings in response to input signals received from the electronic control means, said pressure regulator being flow connected to each thrust bearing by an independent lubricant supply line to thereby alter the pressure of each thrust bearing independent of the other thrust bearing.

9. In a compressor having a first rotary element mounted on a first shaft, a second rotary element mounted on a second shaft, thrust bearing mounted on each shaft to counteract thrust loads in the compressor, where the thrust bearing includes a unitary thrust bearing plate which has a lubricant supply side, a bearing side, at least one bearing bearing pad along the bearing side with a lubricant distribution recess formed on each of the at least one bearing pads, at least one lubricant distribution recess on the supply side of the thrust bearing plate and lubricant flow passages flow connecting associated lubricant supply and distribution recesses, the method comprising the steps of:

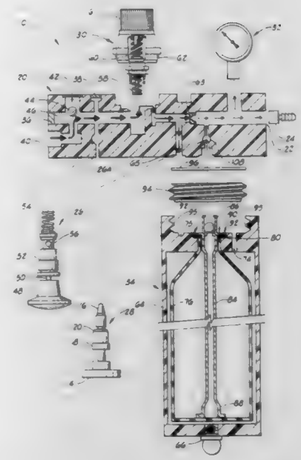
sensing the ambient temperature;

sensing the rotational velocity of the first rotary element;

transmitting signals representing the sensed ambient temperature value and sensed rotational velocity to a microprocessor based controller;

controlling a pressure regulator that is flow connected to the thrust bearings by separate flowlines for each bearing in response to the sensed temperature and rotational velocity, to thereby effect the volume of lubricant that is supplied to the thrust bearings; and

flowing a lubricant to the supply side of the thrust bearing plate, through the passages and onto the bearing surface to form a lubricant film on each of the at least one bearing pads.



5,626,471

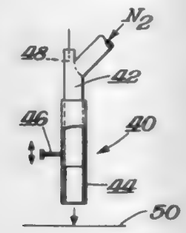
ADJUSTABLE HOT GAS TORCH NOZZLE

Ian Howie; Roderic Don, both of Newark; John W. Gillespie, Hockessin, all of Del., and Scott Holmes, St. Louis, Mo., assignors to University of Delaware, Newark, Del.

Filed May 10, 1994, Ser. No. 240,279

Int. Cl.[6] **F23D** *14/52*

U.S. Cl. 431—251 **19 Claims**



1. A nozzle device comprising a movable nozzle slide in the form of a cylinder telescopically mounted over a torch tip, said movable nozzle slide being mounted to move in an up and down direction, and a linear variable potentiometer mounted to said nozzle slide for joint movement therewith, and said nozzle slide having a free end extending downwardly below said potentiometer, said linear variable potentiometer measures the position of the nozzle slide and said nozzle slide varies the temperature of the torch on a material which is melted by said torch by adjusting the distance of said nozzle slide to said material being melted, by moving said nozzle slide closer or further away from said material.

5,626,472

SHOWER MOUNTED DENTAL HYGIENE DISPENSER

Richard J. Pennetta, 6 Stonegate, Upper Saddle River, N.J. 07458

Filed May 26, 1995, Ser. No. 452,118

Int. Cl.[6] **A61C** *17/00*

U.S. Cl. 433—80 **19 Claims**

1. A hygiene dispenser connectable to a domestic water source, comprising:

conduit housing means for providing a flow of water from the domestic water source; and

dispensing means connected to the conduit housing means for selectively dispensing a hygienic fluid into the flow of water to provide a mixture of water and hygienic fluid, the dispensing means comprising:

bag means for retaining an amount of the hygienic fluid, the bag means comprising:

a dispenser bag having an opening and a collapsible wall, the collapsible wall having a distal end extending a selected distance from the dispenser bag opening, and

a dispenser tube disposed within the dispenser bag, the dispenser tube having a first end proximate the distal end of the collapsible wall and a second end proximate the dispenser bag opening, and

pressure means for exerting a pressure on the collapsible wall to selectively dispense the hygienic fluid in the bag means into the flow of water, the pressure means causing the hygienic fluid to flow through the dispenser tube by passing in a first opening in the first end of the dispenser tube and out a second opening in the second end of the dispenser tube, the dispenser tube nominally maintaining the distal end of the collapsible wall the selected distance from the dispenser bag opening to prevent the collapsible wall from blocking the dispenser bag opening and interrupting the flow of hygienic fluid from the dispenser bag.

5,626,473

DENTAL COMPOUND APPLICATOR

Ernst Mühlbauer, and Edgar Lein, both of Hamburg, Germany, assignors to Ernst Mühlbauer KG, Hamburg, Germany

Filed Nov. 21, 1995, Ser. No. 560,807

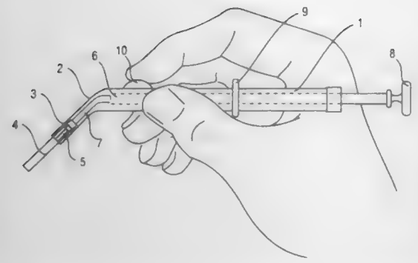
Claims priority, application Germany, Nov. 30, 1994, 9419200.6

Int. Cl.[6] **A61C** *5/04*

U.S. Cl. 433—89 **3 Claims**

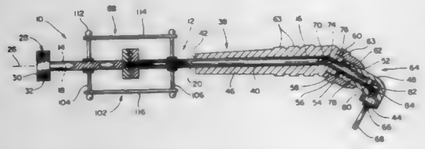
1. A dental compound applicator having a shaft that can be gripped in pencil-hold fashion, the shaft having a front end connected to a syringe containing dental compound, a plunger, and a piston for driving the plunger forward, said piston being connected to an actuation device in a region of the shaft where a fingertip is located when gripping in pencil-hold fashion, wherein the actuation device comprises a toothed wheel mounted on the shaft that can be rotated by the fingertip and engages a rack provided on the piston;

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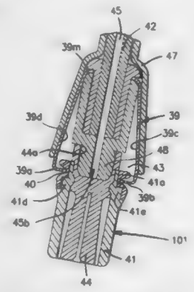
wherein the toothed wheel has, in addition to a pinion cooperating with the rack, a grip wheel of larger diameter.

5,626,474
IMPLANT TORQUE WRENCH
Thomas S. Kukla, and Ali Nematollahi, both of 1307 N. Court St., McHenry, Ill. 60050
Filed Jun. 28, 1995, Ser. No. 495,360
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—141 20 Claims



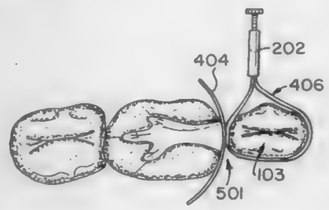
1. A manually operated dental implant torque wrench comprising:
(a) an elongated shaft assembly having a first shaft end and a second shaft end, the elongated shaft assembly having a first shaft member and a second shaft member, the second shaft member having a bore, the first shaft member having a shaft extension portion movably engaging the bore of the second shaft member;
(b) manually operable control means connected to the first shaft end of the elongated shaft assembly for rotating the elongated shaft assembly;
(c) an angled housing assembly having a passageway extending from a first open end of the angled housing assembly to a second open end of the angled housing assembly, the angled housing assembly having a first portion and a second portion in an angled relationship to the first portion;
(d) drive means extending within the passageway and operatively connected to the elongated shaft assembly for transferring rotational forces from the elongated shaft assembly to a receptacle end rotatably mounted to the second open end, the receptacle end being adapted for attaching a dental tool thereto; and
(e) adjustable torque limiting means connected to the elongated shaft assembly for disengaging the elongated shaft assembly from rotation of the drive means when rotation of the elongated shaft assembly has reached an adjustable predetermined torque setting, the adjustable torque limiting means being positioned remote from the second open end of the angled housing assembly, the adjustable torque limiting means including a first gear connected in axial alignment to the first shaft member of the elongated shaft assembly, a second gear connected in axial alignment to the second shaft member of the elongated shaft assembly, the first gear and the second gear each having a set of gear teeth matingly engageable with one another, and tension means for holding the first gear and the second gear in mated engagement for rotation with one another up to a predetermined torque setting.

5,626,475
DENTAL MATRIX TENSIONER
Hans Von Weissenfluh, Magadino, and Beat Von Weissenfluh, Gentilino, both of Switzerland, assignors to Hawe-Neos Dental Dr. H. Von Weissenfluh S.A., Bioggio, Switzerland
PCT No. PCT/EP93/02940, § 371 Date Jun. 20, 1994, § 102(e) Date Jun. 20, 1994, PCT Pub. No. WO94/09716, PCT Pub. Date May 11, 1994
PCT Filed Oct. 25, 1993, Ser. No. 256,010
Claims priority, application Switzerland, Oct. 28, 1992, 3366/92; Oct. 5, 1993, 2989/93
Int. Cl.[6] A61C *5/04*
U.S. Cl. 433—155 7 Claims



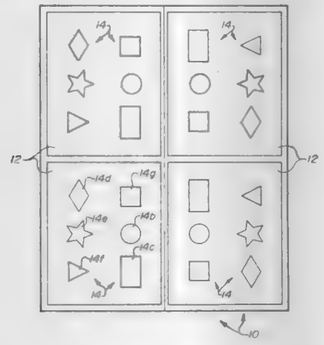
1. In a dental matrix tensioner comprising a casing containing a pin rotatable relative to the casing, the pin having a slot therein for releasably receiving a dental matrix and for tightening the matrix about a tooth upon rotation of the pin relative to the casing, and means to rotate the pin relative to the casing; the improvement wherein the rotating means comprises an elongated assembly, and means movable lengthwise of and relative to the assembly in one direction to grip said casing and in an opposite direction lengthwise of and relative to the assembly to release said casing thereby selectively releasably to retain said rotating means in assembled relation with said casing.

5,626,476
TECHNIQUE FOR REPAIRING TEETH
Richard Champagne, 88 Holly Dr., Eatontown, N.J. 07724
Continuation-in-part of Ser. No. 637,834, Apr. 25, 1996. This application Jun. 27, 1996, Ser. No. 671,332
Int. Cl.[6] A61C *5/04*
U.S. Cl. 433—226 8 Claims



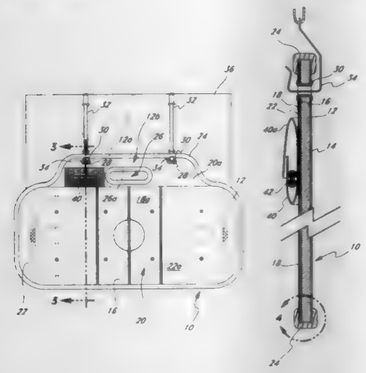
1. A method of repairing a tooth to be repaired comprising the steps of:
wrapping a matrix band around a tooth adjacent to said tooth to be repaired, said matrix band having a partial matrix band attached thereto; and
placing said partial matrix band partially around said tooth to be repaired, thereby forming a volume between said partial matrix band and said tooth to be repaired said volume including substantially all interproximal spacing between said tooth to be repaired and said adjacent tooth; and
filling said volume with repair material.

5,626,477
EDUCATION SYSTEM
Joan F. Adkison, Rte. 5 Box 24, Havana, Fla. 32333
Filed Sep. 28, 1995, Ser. No. 535,470
Int. Cl.[6] A63F *3/00*; G09B *1/06*
U.S. Cl. 434—128 7 Claims



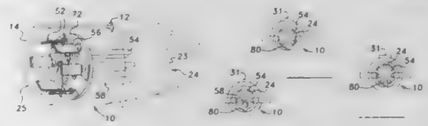
1. An education system comprising:
a playing board divided into a plurality of identically detailed and different colored sections with a plurality of unique shape outlines located in each of the different colored sections;
a plurality of sets of blocks each set in a color corresponding to one of the colors of the sections, in corresponding number to the number of the sections, each of the set of blocks being in shapes corresponding to the shapes of the outlines; and
a color selection means.

5,626,478
PORTABLE COACHING DEVICE AND METHOD
Gray Gatlin, 2701 Lorenzo Ave., Costa Mesa, Calif. 92626
Filed Oct. 27, 1995, Ser. No. 549,621
Int. Cl.[6] A63B *69/00*; G09B *19/00*
U.S. Cl. 434—247 20 Claims



1. A portable coaching device, including
a thin, rigid support board having opposed sides and a perimeter with an exposed edge,
one side covered with a coating and the other side covered with a sheet having a surface bearing an image of an area in which a game is played, including lines defining boundaries of the playing area and other regulation designations displayed within the playing area,
a sheet of transparent polymeric material covering the surface of said sheet and bonded by an adhesive to said surface,
a border element that is attached to the perimeter to cover said exposed edge, said border element being flexible and bent to conform said border element to the shape of said edge,
said coating and the sheet of transparent polymeric material being capable of being written upon with a dry erase marker,
a handle in the form of an elongated opening near the perimeter of said board, and
a case adapted to hold a dry erase marker attached to the board near the perimeter of said board.

5,626,479
UNIFIED CONNECTOR INTERFACE ADAPTER
Michael T. Hughes, 5865 The Twelfth Fairway, Suwanee, Ga. 30174
Continuation-in-part of Ser. No. 302,447, Sep. 12, 1994, which is a continuation-in-part of Ser. No. 91,927, Jul. 16, 1993, Pat. No. 5,443,389. This application May 30, 1995, Ser. No. 454,508
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—35 5 Claims

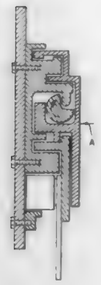


1. A unified connector interface adapter apparatus, comprising:
a.) a molded one-piece dielectric electrical connector housing having a first end and a second end;
b.) said second end of said housing forming a plug having an end face with openings therein and terminals recessed from respective ones of said openings, said terminals being oriented in a generally square, hexagonal, pentagonal or circular configuration;
c.) said first end forming a hollow receptacle adapted to receive therein a mating connector;
d.) said receptacle having a plurality of electrical terminals therein oriented in a generally square, hexagonal, pentagonal or circular configuration;
e.) electrical circuitry located within said housing to interconnect the electrical terminals located at said first end with respective ones of said terminals at said second end;
f.) said adapter apparatus adapted to mate with other electrical connectors only at said first and second ends.

5,626,480
HIGH DENSITY PRINTED ELECTRICAL CIRCUIT BOARD CARD CONNECTION SYSTEM
Alan E. Baumbaugh, Aurora, Ill., assignor to Universities Research Association, Inc., Washington, D.C.
Filed Jun. 15, 1995, Ser. No. 490,674
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—64 9 Claims

1. An electrical connector for introducing electrical signals to a circuit board comprising:
(a) a first extrusion attached to an edge of a circuit board having a plurality of electrical signal receiving locations along said edge of the circuit board, the first extrusion having a cam surface;
(b) a second extrusion coupled to the first extrusion, the first and second extrusions defining an interior channel having a longitudinal length and an opening at one end of said longitudinal length;
(c) a cam member disposed between the first and second extrusions rotatably engaging the cam surface such that rotation of

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the cam member urges the second extrusion between first and second positions; and,

(d) a third extrusion attached to a housing for receiving the circuit board, the third extrusion being inserted through said opening and moved along said length of said channel, the third extrusion including a plurality of electrical contacts;

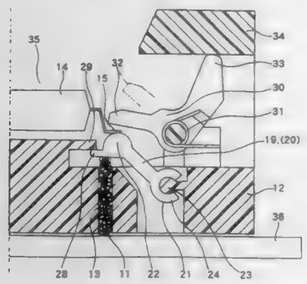
wherein movement of the second extrusion into the first position urges the plurality of electrical contacts apart from the plurality of electrical signal receiving locations and movement of the second extrusion into the second position urges the plurality of electrical contacts to engage the plurality of electrical signal receiving locations.

5,626,481

STRUCTURE FOR ELECTRICAL CONNECTION OF ELECTRIC PART

Shunji Abe, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,637
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—73 **16 Claims**



1. A structure for use in electrical connection of an electric part, said structure comprising:

a base member having a through-hole formed therein;

a longitudinally compressible contact probe mounted in said through-hole of said base member so as to protrude upwardly therefrom when in an uncompressed state;

an intermediate contact member having a first extreme end and a second extreme end, said first extreme end constituting a fulcrum and being rotatably attached to and supported by said base member such that said intermediate contact member is pivotable about said first extreme end between a rest position in which said second extreme end is in an upper position and a compressing position in which said second extreme end is in a lowered position;

wherein said intermediate contact member includes a contact point at which said intermediate contact member contacts a protruding end of said compressible contact probe; and

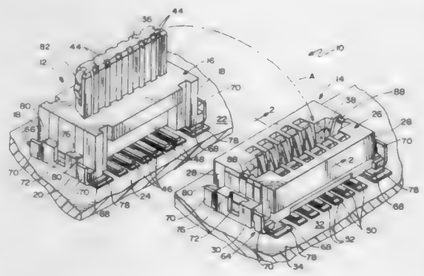
wherein said fulcrum at said first extreme end of said intermediate contact member is disposed at a level below a level of said contact point when said intermediate contact member is in either said rest position or said compressing position.

5,626,482

LOW PROFILE SURFACE MOUNTABLE ELECTRICAL CONNECTOR ASSEMBLY

Hee C. Chan, Singapore, Singapore; Daniel A. Dixon, Naperville, Ill.; Wee C. Lee, Singapore, Singapore; George M. Simmel, Singapore, Singapore; Wee P. Tay, Singapore, Singapore; Yuen P. Wong, Singapore, Singapore, and Khee T. Yeo, Singapore, Singapore, assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 15, 1994, Ser. No. 356,420
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—74 **8 Claims**



1. An electrical connector assembly, comprising:

plug and receptacle connectors having mating dielectric housings each mounting a plurality of terminals which include contact portions for interengagement with the contact portions of the terminals of the other connector, the housing of each connector having opposite ends with a mounting face extending therebetween and adapted for surface mounting to one side of a printed circuit board, the terminals including feet portions for surface connection to circuit traces on the board;

at least one of the terminals of at least one of the connectors including a generally U-shaped contact portion defined by a first leg that is joined to the respective foot portion of the terminal and a free spring contact leg that is engageable with the contact portion of one of the terminals of the other connector, the first leg being fixed to the housing at a proximal end thereof with a distal end of the first leg being joined to said free spring contact leg;

a stamped and formed retention member mounted at each end of each connector housing for securing the connector to its respective printed circuit board, each retention member being generally L-shaped with a first leg attached to the respective end of one of the housings and a second leg adapted for surface securement to said one side of the printed circuit board; and

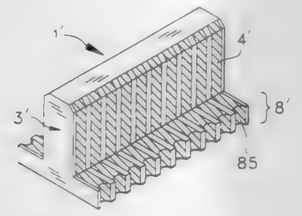
complementary interengaging metal spring members near the opposite ends of the connector housings for holding the connectors in mated condition, wherein said metal spring members are interference fit within corresponding cavities in the respective connector housings.

5,626,483

ELECTRICAL CONNECTOR HAVING CONTACTS FORMED BY METAL PLATING

Takaki Naitoh, Inagi, Japan, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 11, 1995, Ser. No. 514,037
Claims priority, application Japan, Sep. 20, 1994, 6-251474; Mar. 10, 1995, 7-079808
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—74 **8 Claims**



1. An electrical connector comprising:

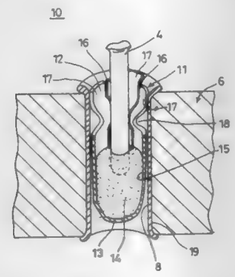
a dielectric housing made of a heat-resistant plastic that can accept metal plating and having a roughened surface covered with a metal layer, a conductor pattern formed by photolithography on the metal layer, excess metal removed from the housing leaving the conductor pattern thereon in the form of closely spaced contact members, the housing including a contact section and a soldering section, with the contact members extending along one surface of the contact section and along one part of the soldering section including a side surface and a bottom surface of the soldering section, and the side surface of the soldering section having arcuate depressions along which the contact members extend.

5,626,484

CONNECTOR EMPLOYING LIQUID CONDUCTOR FOR ELECTRICAL CONTACT

Takeshi Okuyama; Kouji Watanabe; Tatsuo Chiyonobu; Kaoru Hashimoto, and Kyoichiro Kawano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 17, 1994, Ser. No. 261,926
Claims priority, application Japan, Sep. 20, 1993, 5-233864
Int. Cl.[6] H01R *3/08*
U.S. Cl. 439—179 **24 Claims**



1. A connector comprising:

a first contact member comprising a liquid conductor which comes into contact with a second contact member so as to establish an electric connection between the two contact members; and

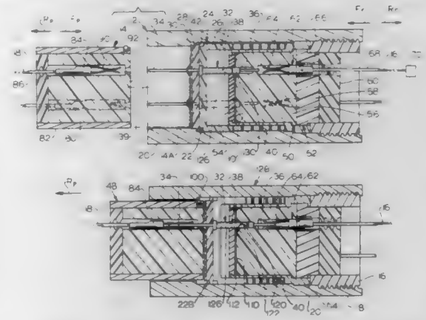
a container for containing said first contact member therein, wherein said container has an opening for allowing said second contact member to be inserted into said container, and wherein said container includes an outer wall with a middle portion, said middle portion being bent inwardly so said container has a diameter at said middle portion which is less than a diameter of the opening and also less than a diameter of a lower portion of said container, for preventing said liquid conductor in said container from being splashed.

5,626,485

SWITCHING CONNECTOR APPARATUS

Clarence L. Clyatt, III, Goodyear, and James E. Thompson, Phoenix, both of Ariz., assignors to ITT Industries, New York, N.Y.

Filed Oct. 6, 1994, Ser. No. 319,061
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **9 Claims**



1. Connector apparatus which comprises a first connector that includes a first shell and a front insert assembly that is mounted in said first shell, with said front, insert assembly including a plurality of front contact devices that each includes an electrically conductive parts, characterized by:

said first connector includes a rear insert assembly that is mounted in said first shell and that includes a plurality of rear contacts;

said front insert assembly is movable within said shell between forward and rearward positions wherein said front contact devices lie respectively unmated and mated to said rear contacts;

said first connector includes an electrically grounded member having contact engaging parts positioned to engage and not engage said conductive parts of said front contact devices when said front insert assembly lies in said forward and rearward positions, respectively.

5,626,486

HIGH VOLTAGE LOW CURRENT CONNECTOR INTERFACE WITH COMPRESSIBLE TERMINAL SITE SEAL

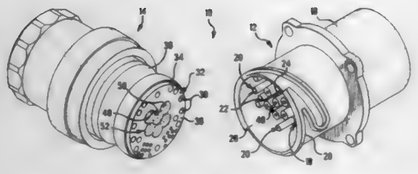
Christopher W. Shelly, Hummelstown, Pa., and James D. Hutchinson, London, England, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 10, 1995, Ser. No. 402,081
Int. Cl.[6] H01R *15/00*
U.S. Cl. 439—281 **18 Claims**

1. An electrical connector assembly suitable for high voltage low current transmission, comprising:

a first connector including a housing including elastomeric portions surrounding each terminal site of said first connector, and respective socket terminals terminated to respective conductor wires disposed within respective passageways through respective said elastomeric portions and extending from a first mating face of said first connector to a wire exit face thereof,

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with socket contact sections of said socket terminals disposed within respective forwardly-extending silos of said elastomeric portions to socket contact leading ends exposed along said first mating face for electrical engagement, with said socket contact sections adapted to permit relative movement with respect to adjacent surfaces of said passageways through said elastomeric portions;

a second connector including a housing of substantially rigid dielectric material and including passageways extending therethrough from a wire exit face to a mating face thereof, said housing including pin terminals terminated to respective conductor wires and disposed through respective said passageways, said pin terminals including pin contact sections complementary with and matable with respective said socket contact sections upon connector mating, and said housing including silo-receiving recesses extending rearwardly from said mating face complementary with respective said silos;

each said silo defining an outer surface and each said silo-receiving recess defining an inner surface dimensioned for sealing engagement therewith upon full connector mating, and said inner surface of each said silo-receiving recess has a gradual taper and said outer surface of each said silo has a complementary taper; and

each said silo extending a first selected distance, and each said silo-receiving recess having a recess bottom abuttable by said silo leading end and spaced a second selected distance from said second mating face, all such that said silo leading end abuts said recess bottom prior to full connector mating and is longitudinally compressed upon complete connector mating and is radially expanded for said outer surface of said silo to be compressed tightly against said inner surface of said silo-receiving recess upon full connector mating,

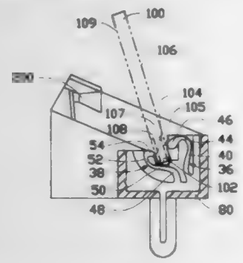
whereby assured seals are established surrounding and adjacent said sites of said pin and socket terminals when electrically engaged minimizing formation of voltage leakage paths and inhibiting corona formation during high voltage low current transmission.

5,626,487

CONTACT FOR SLANTED SIMM SOCKET

Lee-Ming Cheng, Cupertino, and Yu-Hsu Lin, Fremont, both of Calif., assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Feb. 3, 1995, Ser. No. 383,088
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—326 **11 Claims**



1. A contact for use with a slanted SIMM socket, comprising:

an elongated base for reception within a corresponding cavity in the socket;

a tail integrally extending from the base for mounting on a PC board on which the socket is mounted; and

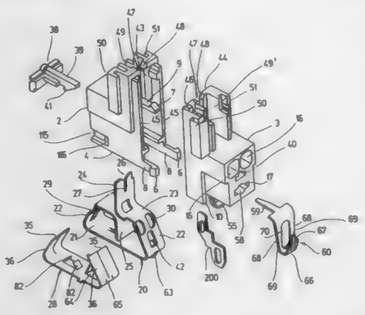
a pair of contact beams extending upward from a corner of the base, said contact beams including a high beam and a low beam wherein the high beam has less space to be configured in comparison with the low beam, each beam having contact apex portion thereof for engagement with a corresponding pad on a module inserted into the socket, and the contact apex portions of said pair of beams defining a distance therebetween for allowing zero insertion force of the module in a first position, at least one beam being composed of segments which generate an accumulative component, to its contact apex portion, along a surface of said module for not moving away from the corresponding pad on the module and assuring a reliable mechanical and electrical engagement between said contact apex portion and said pad when the module is rotated to a second position, said beam is deflected, and displacement of said contact apex portion occurs, accordingly.

5,626,488

ELECTRICAL TERMINAL AND COUPLING CONNECTOR

Bernhard Albeck, Lorch-Waldhausen; Dieter Hammer, Waiblingen, and Christian Gerstberger, Menden, all of Germany, assignors to Vossloh-Schwabe GmbH, Urbach, Germany

Filed Mar. 29, 1995, Ser. No. 412,755
Claims priority, application Germany, Apr. 20, 1994, 44 13 643.9
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—395 **37 Claims**



1. Electrical terminal and coupling connector having at least two spatially separated terminal connections adapted for connection to external electrical conductors;

contact elements associated with each one of the connections, said contact elements being electrically interconnected interiorly of said coupling connector,

wherein, in accordance with the invention,

the connector comprises at least two parts (**2**, **3**; **2***a*, **3***a*, **2***b*, **3***b*),

each one of said parts having at least one of the terminal connections (**14**, **16**; **14***a*, **16***a*; **14***b*, **16***b*);

said parts including interengaging interlocking means (**6**, **7**, **8**; **10**, **11**), locking said parts together into a single unit and thereby forming said connector;

at least one of said terminal connections comprising a slit-blade insulation piercing connector (SBIP) (**18**);

wherein said connector includes interengaging locking means (**50**, **51**) for interengaging locking connection with another connector, wherein said other connector has complementary interengaging locking means;

wherein said single unit comprises a two-part housing **1***a*; **1***b*), the parts of said housing being joined together at a parting face (**5**); and

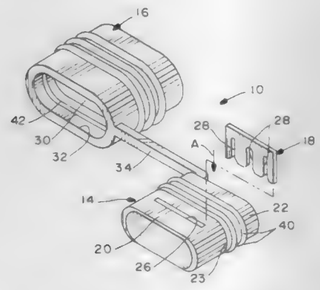
wherein at least one contact spring (**20**; **20***a*: **20***b*), forming one of the contact elements, is located in said single unit.

5,626,489

SEALED ELECTRICAL CONNECTOR ASSEMBLY

Robert C. Marshall, and James R. Pelletier, both of St. Petersburg, Fla., assignors to Molex Incorporated, Lisle, Ill.

Filed Apr. 13, 1995, Ser. No. 421,335
Int. Cl.[6] H01R *11/20*
U.S. Cl. 439—402 **17 Claims**



1. A sealed insulation displacement connector assembly for interconnecting two or more insulated electrical wires, comprising:

a dual-durometer body including a relatively rigid portion and a relatively resilient portion with channels extending through both portions of the body for receiving the wires;

a conductive contact element movably mounted on the rigid portion of the body and adapted to displace the insulation and electrically interconnect the wires;

a relatively resilient cover adapted to telescope with the body and enclose the body substantially entirely around its periphery, wherein said cover includes an internal cavity for receiving the body with a mouth communicating with the cavity for inserting bony thereinto, wherein the cover surrounds substantially the entire body except for a portion of the body exposed at the mouth; and

said body and cover having complementary interengaging latching means for retaining the body and cover in an interengaged sealed condition.

5,626,490

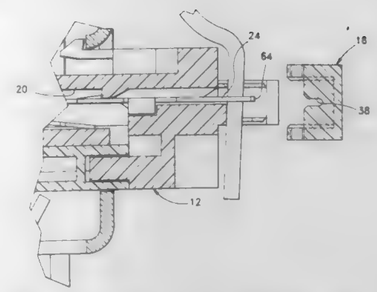
WIRE STUFFER CAP/STRAIN RELIEF FOR COMMUNICATION NETWORK OUTLET

Terry L. Pitts, Greensboro, and Mitchell E. Miller, Clemmons, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 25, 1995, Ser. No. 533,598
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—404 **6 Claims**

1. In a communication network outlet utilizing a card-edge type connector, where said connector comprises a housing having a through cavity containing a plurality of axially arranged terminal contacts, and each said contact is composed of a pair of blades having a slot therebetween for receiving a respective conductor normal to said slot, said contacts being exposed to the rear of said housing, and a card-receiving opening communicating with said through cavity from the front of said housing, where the rear portion of said housing is generally of a rectangular cross-section having a uniform predetermined heights

the improvement comprising in combination therewith the provision of a strain relief member press fit onto said rear portion, said strain relief member comprising a dielectric housing having a top wall, a bottom wall and a rear wall extending therebetween, wherein said top and bottom walls include plural aligned slots for receiving said respective conductor in an opposed pair of said slots, wherein said housing includes a recessed wall extending between said top and bottom walls and aligned with said opposed pair of said slots for urging said respective conductor between said blades of said contact when said strain relief member is installed on said rear portion of said connector, wherein a height of said recessed wall between said top and bottom walls is greater than said predetermined height, where internally said top and bottom walls include at least a pair of opposing ribs, and a distance between said ribs is slightly less than said predetermined height so as to provide a press fit engagement with said rear portion of said connector housing.

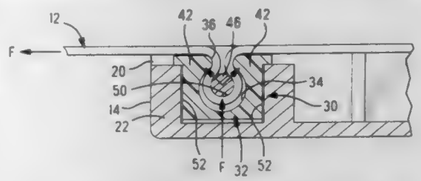


5,626,491

ELECTRICAL CONNECTOR STRAIN RELIEF FOR CABLE

Alexander W. Hasircoglu, Columbia, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 18, 1995, Ser. No. 516,706
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—459 **14 Claims**



1. A strain relief for an electrical connector terminatable onto an end of electrical cable, comprising:

a block at least affixable to a cable exit portion of an electrical connector and having a cable-proximate surface extending along said electrical cable axially and transversely;

a recess into said block having a narrow entrance extending through and transversely across said cable-proximate surface, said narrow entrance having a dimension in the axial direction at least equal to twice the thickness of said cable and said recess having a dimension in the axial direction greater than said narrow entrance dimension; and

a retention rod insertable into said recess to extend transversely across the cable width and having a diameter greater than the difference between said narrow entrance dimension and two times the thickness of said cable, and said block being adapted to permit receipt of said retention rod into said recess,

whereby a loop of said cable is insertable into said recess with portions of said cable on either side of the loop positioned in the narrow entrance, and the retention rod is insertable substantially through said loop from side to side, and upon complete assembly of the connector said loop of cable is retained in said recess by the retention rod when the cable is subjected to strain.

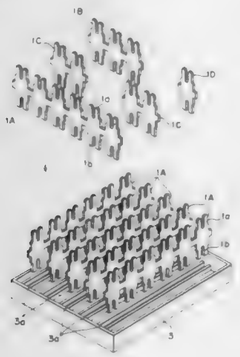
VOL 1198 ISS 1 MAY 6 1997 UMI

5,626,492

BUS BAR CONSTRUCTION OF ELECTRICAL CONNECTION BOX

Takahiro Onizuka, and Jun Yamaguchi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Oct. 3, 1994, Ser. No. 316,723
Claims priority, application Japan, Nov. 22, 1993, 5-292254
Int. Cl.[6] H01R *9/24*
U.S. Cl. 439—512 4 Claims



1. A bus bar construction of an electrical connection box, comprising:

a plurality of m and n (m=integer≧2, n=integer≧2) bus bar pieces in each of which a predetermined number of substantially H-shaped bus bars are arranged in series at a preset pitch and intermediate portions of neighboring ones of the H-shaped bus bars are linked with each other;

the H-shaped bus bars each having an upper portion formed with a first slot and a lower portion formed with a second slot;

the m bus bar pieces being arranged longitudinally in m columns;

the n bus bar pieces being arranged laterally in n rows on the m bus bar pieces so as to fit the second slots of the n bus bar pieces into the first slots of the m bus bar pieces from above such that the m and n bus bar pieces are assembled with each other in latticed shape; and

the intermediate portions of each of the n bus bar pieces being cut off in accordance with a necessary circuit pattern and the m and n bus bar pieces are press fitted into a casing of the electrical connection box.

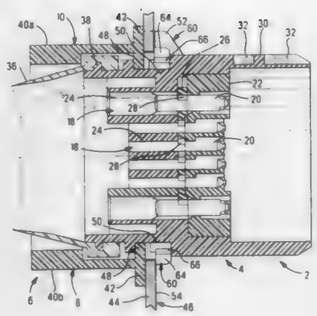
5,626,493

THROUGH-WALL ELECTRICAL CONNECTOR

Lothar A. Post, Offenbach, and Harald Schmitt, Alsbach-Hähnlein, both of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 1, 1995, Ser. No. 551,619
Claims priority, application United Kingdom, Nov. 15, 1994, 9423021
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—555 15 Claims

1. An electrical connector fixable within an opening through a wall comprising an inner housing having at least one terminal receiving passage therein and an outer housing mounted thereupon, the electrical connector having a back-up shoulder extending outward beyond the opening to interfere with the wall to prevent overinsertion characterized in that the electrical connector includes at least one resiliently expansive retention member having a first position where the retention member passes through the wall and a second position, achieved by relative movement between the inner



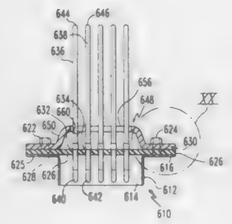
and outer housings, wherein the retention member overlaps the wall to retain the connector therewith.

5,626,494

LOW COST FILTERED AND SHIELDED ELECTRONIC CONNECTOR AND METHOD OF USE

Yakov Belopolsky, Harrisburg, Pa., and Wim V. Alst, St. Oedenrode, Netherlands, assignors to Berg Technology, Inc., Reno, Nev.

Division of Ser. No. 332,691, Oct. 31, 1994, Pat. No. 5,580,279. This application Feb. 29, 1996, Ser. No. 608,683
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 1 Claim



1. An electrical connector comprising:

(a) a front retaining means comprising a conductive shell having a peripheral flange and a pin receiving passageway and said conductive shell having integral conductive fastening means;

(b) a plurality of conductive pins extending through the passageway of the front retaining means;

(c) a rear retaining means having pin receiving means; and

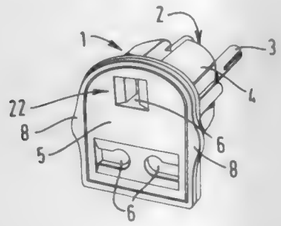
(d) a capacitive means comprising a printed circuit board having a plurality of central apertures and being interposed between said front retaining means and rear retaining means so as to receive the pins in said apertures, and said board having a component side oriented toward the rear retaining means and a reverse side oriented toward the front retaining means and fixed to the front retaining means a peripheral edge, and on the component side of said board there is a conductive strip adjacent the peripheral edge, on said component side and outwardly adjacent at least some of the central apertures there are conductive bands and a capacitor is positioned between at least some of said conductive bands and the conductive strip adjacent the peripheral edge, and on the reverse side of said board a non-conductive area surrounds at least some of the central apertures and said non-conductive areas are surrounded by conductive areas and wherein the integral fastening means on the conductive shell effect grounding of the capacitive means.

5,626,495

SCREWLESS CONNECTOR

Richard Drewnicki, Leicestershire, United Kingdom, assignor to Rutland Gilts Limited, London, England

Filed Apr. 13, 1994, Ser. No. 227,143
Int. Cl.[6] H01R *33/92*
U.S. Cl. 439—651 18 Claims



1. An electrical connector, comprising:

a hollow electrically insulating body having opposed ends;

a set of male electrical contact members projecting from one end of the body;

electrical conductor means disposed within the body and cooperating with the electrical contact members;

first and second body parts which together define the body, one of the body parts defining said one end of the body and a hollow interior thereof, and the other of the body parts defining the other end of the body;

a recess formed in said one body part, which recess communicates with the hollow interior of the body and receives said other body part;

means extending from said other body part into the hollow interior for locating and retaining therein said electrical conductor means associated with the male electrical contact members, and

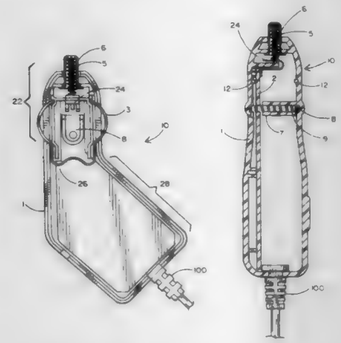
at least one spigot projecting from said one body part, and wherein the extending means includes at least one socket for receiving the at least one spigot.

5,626,496

CIGARETTE LIGHTER ADAPTER WITH FLEXIBLE DIAMETER

Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.

Filed Mar. 30, 1995, Ser. No. 414,208
Int. Cl.[6] H01R *17/18*
U.S. Cl. 439—668 11 Claims



1. An electrical adapter plug comprising:

a cylindrically shaped housing;

an electrical contact at one axial end of said housing and at least one additional electrical contact at the radial surface of said housing for connection to corresponding contacts within a hollow cylindrical connector;

a non-conductive mechanical compensator for providing a selected minimum frictional engagement between the housing and the connector despite differences in respective diameters of the housing and the connector, to assure proper electrical interface between the plug contacts and the connector contacts, said mechanical compensator comprising:

a base member formed integrally with said radial surface,

a tip member nominally extending away from said housing for engagement with said connector; and

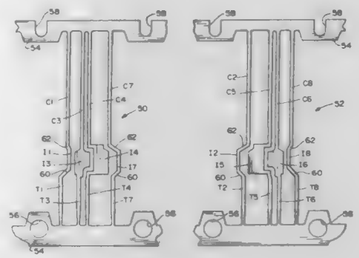
an elongated member integral to said base member and to said tip member and being flexible for limited radial movement relative to said housing.

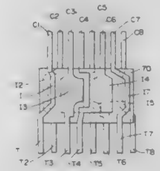
5,626,497

MODULAR JACK TYPE CONNECTOR

Christophe Bouchan, Longjumeau; Franck Bordron, Paris, and Pascal Grandclaude, Suresnes, all of France, assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 12, 1995, Ser. No. 489,600
Claims priority, application European Pat. Off., Jul. 14, 1994, 94110980
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—676 10 Claims





1. A modular jack type connector, comprising:

a dielectric housing means defining a plug-receiving cavity; and

a plurality of terminals mounted on the housing means and including

spring beam contact portions extending in cantilever fashion in a single row within the plug-receiving cavity,

the contact portions extending from curved base portions located in the housing means,

tail portions projecting from the housing means in two rows generally parallel to said single row such that each pair of adjacent terminals includes a tail portion in each row thereof,

intermediate portions extending between the curved base portions and the tail portions with the intermediate portions of at least one of said pair of adjacent terminals being separated from each other in a direction generally parallel to said rows,

bowed portions joining the intermediate portions and the tail portions of said at least one pair of adjacent terminals with the bowed portions overlapping each other in a plane transverse to said rows.

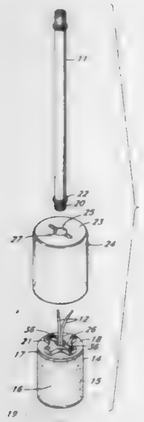
VOL 1198 ISS 1 MY 6 1997 UMI

enlarged sections of the intermediate portions of at least one other pair of terminals overlapping each other in a plane generally parallel to said rows to define a physical capacitor between said other pair of terminals,

wherein the connector includes eight terminals that can be numbered **1** through **8** seriatim along said row, terminals **1** and **2** and terminals **7** and **8** comprising two pairs of adjacent terminals at opposite ends of the row that include said transversely separated intermediate portions and said transversely bowed portions, and terminals **3** and **5** and terminals **4** and **6** comprising two pairs of terminals that include said enlarged sections to define two physical capacitors therebetween, and

wherein corresponding tail portions of said terminals numbered **1** through **8** are arranged seriatim in alternate parallel rows.

5,626,498
LAMP SOCKET ASSEMBLY
Reynolds K. Ohai, and Jeffrey L. Ohai, both of 8135 Pinositas Rd., Whittier, Calif. 90605
Filed Oct. 7, 1994, Ser. No. 319,922
Int. Cl.[6] H01R *33/05*
U.S. Cl. 439—703 **9 Claims**



1. A lamp socket assembly of the type having an insulative husk having a cylindrical outer surface, a top surface and an internal conductive lamp holding shell and two leads connected to the conductive lamp holding shell and extending upwardly from the top surface, wherein the improvement comprises:

a cap affixed above the top surface of the insulative husk, said cap having an indexing surface irregularity and said cap having a threaded central passageway for the passage of said two leads and for the affixing of a stem;

a cover member having a cap portion having a matching indexing surface irregularity to that of said cap, said cover member extending downwardly over said husk and said cover member also having a threaded central opening for the passage of a stem and the leads therein; and

a stem having a hollow portion and a threaded internal end with a threaded length extending inwardly from said threaded end and said stem having an external end and a flange near the internal end thereof adjacent said threaded length and said flange abutting said cap and being positioned so that when said threaded internal end is tightened into said threaded central opening of said cover member, said flange forces the surface irregularity of the cap against the surface irregularity of the cover member, whereby when the cover is placed over the cap, the indexing surface irregularity on the cap is matched against the indexing surface irregularity of the cover member and the stem is tightened into the cap so that the flange thereof abuts the cap portion of the cover member, the cover member is prevented from turning with respect to the husk and cap.

5,626,499
CONNECTOR
Sakai Yagi; Masanori Tsuji, and Keishi Jinno, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Feb. 7, 1995, Ser. No. 385,120
Claims priority, application Japan, Feb. 10, 1994, 6-016625
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—752.5 **5 Claims**



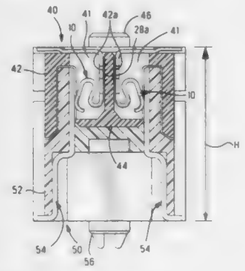
1. A connector comprising:

a connector housing having a terminal insertion hole for receiving a connection terminal; and

a groove formed at the terminal insertion hole for receiving an erroneous insertion prevention projection of the connection terminal, and for preventing a front end portion of the connection terminal from falling into said groove, said groove having a width that is larger than a width of the front end portion of said connection terminal,

wherein when the erroneous insertion prevention projection is fitted in the groove, opposite side edges of the groove are offset in the same direction from the front end portion of the connection terminal.

5,626,500
CONTACT AND CONNECTOR
Yohji Yoshimura, Yokohama, Japan, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Apr. 6, 1995, Ser. No. 418,053
Claims priority, application Japan, May 30, 1994, 6-116866
Int. Cl.[6] H01R *4/48*
U.S. Cl. 439—862 **16 Claims**



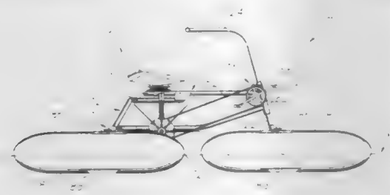
1. An electrical contact comprising:

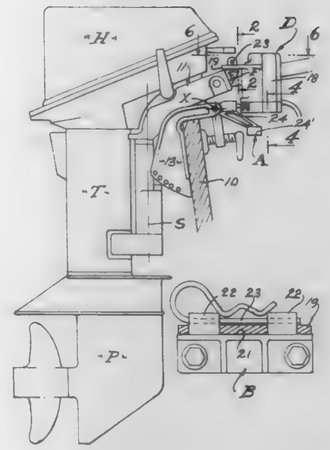
a main body section;

a contacting section extending from one end of said main body section for making contact with a mating contact, said contacting section including a first curved section extending from a front end of the main body section defining a first bend extending in a direction towards a rear end of the main body section, and a second curved section extending from said first curved section defining a second bend extending in an opposite direction of said first bend, said first curved section having a cross section with slanted surfaces to facilitate the engagement with a mating contact; and

at least one protrusion on said main body section said protrusion defining a fulcrum enhancing the flexibility of said contacting section upon engagement by the mating contact.

5,626,501
PONTOON WATER BIKE
Xiaohai He, 4013 Brookway Dr., Fort Worth, Tex. 76123
Filed Feb. 12, 1996, Ser. No. 598,613
Int. Cl.[6] B63H *16/20*
U.S. Cl. 440—30 **18 Claims**





1. A pontoon water bike symmetric about a longitudinal axis and comprising

a front pontoon centered on the axis;

a vertical frame coupled to the front pontoon and extending rearward along the axis and bearing a seat for a driver;

a transverse truss means coupled to the rear of the frame opposite the front pontoon;

two rear pontoons, one coupled to each end of the truss means;

a cylindrical housing coupled to the front of the frame;

a shaft received within the housing at its proximate end and coupled to the front pontoon at its distal end;

handle means coupled to the shaft and extending upward and rearward therefrom toward the seat;

positive steering means for positively aligning the front pontoon with the axis when the handle means is released by the driver; and

propulsion means for propelling the water bike through water.

5,626,502
POWER STEERING ADAPTER FOR OUTBOARD POWERHEADS OF VARIOUS SIZE
Richard T. Novey, 688 #100 Oak Way, Eagle Lake, Calif. 96130
Filed Jun. 7, 1996, Ser. No. 659,870
Int. Cl.[6] B63H *5/125*
U.S. Cl. 440—60 **14 Claims**

1. An adapter for the coupling of a power steering servo unit to a mounting bracket of an outboard motor powerhead to steer a boat;

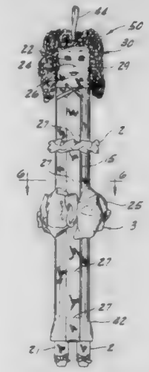
the outboard motor powerhead being carried by a mounting bracket pivoted on a horizontal transverse mounting axis to a clamp frame secured to the boat and having a turning center axis from which a steering bracket extends forwardly, the steering bracket and powerhead turning center axis being adapted to swing with the mounting bracket about said transverse axis,

the power steering servo unit having a reversible motor fixed to the steering bracket and with a drive pinion on a drive axis and a segment gear meshed therewith to shift the servo unit transversely about a steering center axis parallel to and eccentrically spaced from said turning center axis of the mounting bracket, there being a tiller member extending rearwardly from the segment gear and in radial alignment with said steering center axis,

the adapter for coupling of the servo unit being comprised of a mounting tube rotatable on the horizontal transverse mounting axis, and a forwardly open anchor member carried by the mounting tube and having an anchor socket slidably receiving the rearwardly extending tiller member and pivotally engaged with said tiller member for lateral angular displacement of the tiller member within the anchor socket,

whereby lateral displacement of the steering center axis from the turning center axis is accommodated for when the powerhead is turned.

5,626,503
ARTICLE FOR HOLDING ACCESSORIES
William R. Heftel; Barbara A. Heftel, and Lisa R. Heftel, all of Chesterfield, Mo., assignors to Heftel Creations, Inc., Chesterfield, Mo.
Continuation-in-part of Ser. No. 345,986, Nov. 28, 1994, abandoned. This application May 17, 1995, Ser. No. 442,982
Int. Cl.[6] A63H *3/00;3/02*
U.S. Cl. 446—73 **10 Claims**

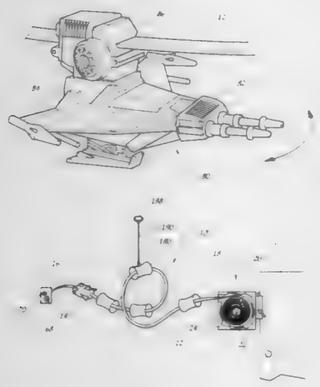


1. In combination, a plurality of annular elastic hair ties and an article holding the hair ties, each hair tie comprising a length of material sized and shaped such that, when removed from the article, the hair tie may encircle long human hair for holding the hair in a selected position on the head, the article comprising an elongate cylindrical body having a face depicted at one end, the body including a hair tie receiving portion extending generally from an end of the body opposite the face to a location adjacent to the face receiving a multiplicity of the hair ties along the entire length of the body, the hair tie receiving portion having a length

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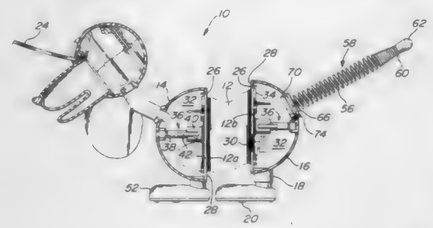
and a cross sectional dimension larger than an internal diameter of the hair ties whereby the hair ties received on the hair tie receiving portion grip the body and are self-retaining on the body, the cross sectional dimension of the hair tie receiving portion being substantially constant along the length of the hair tie receiving portion and free of obstructions which would inhibit placement of the hair tie at any place along the length of the hair tie receiving portion from that end of the hair tie receiving portion removed from the face to the end of the hair tie receiving portion adjacent the face to facilitate movement of the hair ties along the full length of the hair tie receiving portion with minimal stretching to increase the internal diameter of the hair ties to an amount greater than the cross sectional dimension of the hair tie receiving portion, each hair tie encircling the hair tie receiving portion of the body and being disposed in generally side-by-side relation with the other hair ties on the hair tie receiving portion of the body, the hair tie receiving portion and hair ties disposed thereon being arranged in relation to the face of the article whereby hair ties received thereon appear as a dress being worn by the article.

5,626,504
TOY VEHICLE AND TRACK ASSEMBLY
Ting Liu, 1006 Chelsea Pl., Matthews, N.C. 28105
Continuation-in-part of Ser. No. 979,163, Nov. 19, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 252,752
Int. Cl.° A63H *21/02;* **B61B** *13/00*
U.S. Cl. 446—229 **52 Claims**



1. A toy vehicle and track assembly comprising:
an electric power source;
track means formed as an elongate flexible member of a predetermined length having flexible electrical conducting means along the longitudinal extent thereof;
vehicle means having means for connecting said vehicle means to said track means, an electric motor, means for connecting said electric motor to said conducting means for communication with said electric power source, and drive means driven by said electric motor and disposed for engagement with said track means for propelling said vehicle means along said track means in an actual direction of travel, said vehicle means having a front end and a back end defining an apparent direction of travel with said front end projecting in said actual direction of travel;
means for maintaining said apparent direction of travel coincident with said actual direction of travel; and
control means for selectively connecting and disconnecting said electric power source with said conducting means and for controlling the actual direction of travel of said vehicle means and mounting means for mounting said track means to a support object, said mounting means including at least one tunnel for supporting passage therethrough of said track means, said tunnel having means for mounting said tunnel to a support object, and having means for communicating said electrical power source with said conducting means, said electric communication means including at least two displaceable conductive members of a positive polarity and at least two displaceable conductive members of a negative polarity projecting from the interior walls of said tunnel and being resiliently biased into contact with said conducting means, said conductive members being in electrical communication with said electric power source, and being temporarily displaceable from contact with said conducting means by contact with said vehicle means as it passes through said tunnel, said conductive members being biased into recontacting said conducting means after said vehicle means has traveled therepast.

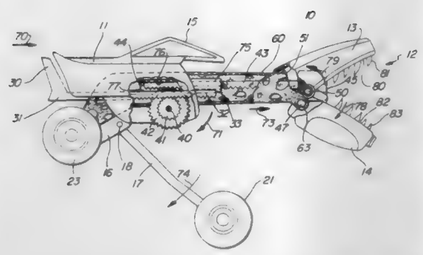
5,626,505
SPRING-ANIMATED TOY FIGURE
Simon K. H. Cheng, Kwun Tong, Hong Kong, assignor to James Industries, Inc., Hollidaysburg, Pa.
Filed Feb. 6, 1996, Ser. No. 597,294
Int. Cl.° A63H *11/12*
U.S. Cl. 446—278 **14 Claims**



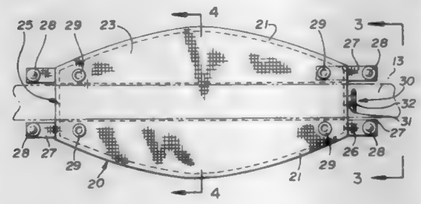
1. In an articulated toy figure having fore and aft body sections connected together by a helical spring forming an intermediate section affording relative movement of the body sections when the fore body section is advanced along a surface, the helical spring having fore and aft terminal coil portions and means for attaching said coil portions to the fore and aft body sections respectively, the improvement wherein at least one of the body sections includes a recess, and said attaching means comprises a first fastening member designed as a plate which is secured across said recess forming a closure across said recess and a second fastening member within said closure secured to said first fastening member and telescopically matingly engaged to one of said coil portions to effect a concealed connection of said spring to said body section.

5,626,506
TOY VEHICLE HAVING CONCEALED EXTENDABLE JAWS
Wayne R. Halford, Hermosa Beach, and Philip O. Riehlman, Redondo Beach, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.
Filed Aug. 15, 1995, Ser. No. 515,337
Int. Cl.° A63H *17/00*
U.S. Cl. 446—465 **14 Claims**

1. A toy vehicle comprising:
a rear body;
an actuator slidably supported by said rear body portion;
a front body formed of at least two pivotally coupled portions;
gear drive means coupled between said front body and said actuator operative to move said front body forwardly from said rear body as said actuator is moved with respect to said rear body; and
a resilient membrane defining a plurality of apertures and having a first end coupled to said rear body and a second end coupled to said front body, said resilient membrane being stretched between said front and rear body portions when said front body is moved forwardly to elongate said plurality of apertures as said membrane is stretched.



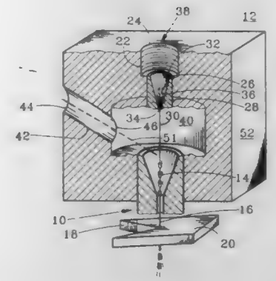
5,626,507
PAD FOR SHOULDER STRAPS
Frederick H. Gillen, 194 Delaware Trail, Akron, Ohio 44321
Filed Oct. 27, 1995, Ser. No. 549,330
Int. Cl.° A41D *27/26*
U.S. Cl. 450—86 **9 Claims**



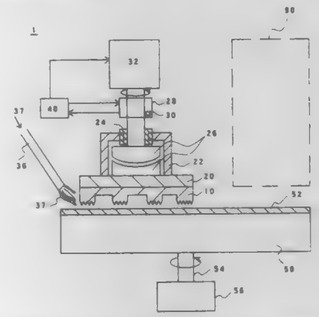
1. A pad for a shoulder strap, comprising:
(a) a substantially closed, expandable envelope fabricated from a substantially fluid impermeable material; said envelope having
(1) opposed top and bottom walls,
(2) opposed side walls, and
(3) opposed end walls; said opposed side walls and opposed end walls being joined together to form a substantially fluid-tight, hollow body;
(b) a through, central, strap-receiving passageway extending between said end walls; and
(c) means for securing said envelope to the shoulder strap.

5,626,508
FOCUSING NOZZLE
George J. Rankin, and Samuel Wu, both of Houston, Tex., assignors to Aqua-Dyne, Inc., Houston, Tex.
Filed Apr. 20, 1995, Ser. No. 425,791
Int. Cl.⁶ B24C *5/04*
U.S. Cl. 451—102 **9 Claims**

1. A focusing nozzle for producing a cohesive focused jet of a mixture of liquid and particulate material, used to make precision cuts in generally hard surfaced materials comprising:
an elongated tubular body having a first end, a second end, a circular inlet formed at the first end of said body and a non-circular outlet formed at the second end of said body, wherein a cohesive jet of liquid and a quantity of particulate material separately enter the circular inlet;
a central, longitudinal bore retained within said elongated body and disposed between and in contact with the circular inlet and the non-circular outlet, said longitudinal bore having a first circular bore portion commencing at the circular inlet and extending toward the non-circular outlet, and a second non-circular bore portion commencing at the non-circular outlet and extending toward the circular inlet, wherein the circular bore portion tapers in a narrowing, conical manner in the direction of the non-circular outlet;
an intersection within said central, longitudinal bore, wherein the first circular bore portion intersects the non-circular bore portion, such that the diameter of the circular bore is a maximum at the circular inlet and a minimum at said intersection; and
a non-circular cohesive focused jet of a mixture of liquid and particulate material, egressing from the non-circular outlet formed at the second end of said elongated body, formed from the cohesive let of liquid and the quantity of particulate material entering the circular inlet.



5,626,509
SURFACE TREATMENT OF POLISHING CLOTH
Yoshihiro Hayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 28, 1995, Ser. No. 395,310
Claims priority, application Japan, Mar. 16, 1994, 6-045826
Int. Cl.⁶ B24B *29/00*
U.S. Cl. 451—285 **24 Claims**



1. An apparatus for surface treatment of a polishing cloth, comprising:
a rotary cloth mounting section on which a polishing cloth is attached;
a rotary surface treatment tool comprised of a base member made of a material other than metal and having a plurality of protrusions formed integrally thereon by grooves cut in said rotary surface treatment tool, each of said protrusions having an irregular surface;
first rotating means for rotating said cloth mounting section;
second rotating means for rotating said rotary surface treatment tool, a position of a rotation axis of said first rotating means being different from that of a rotation axis of said second rotating means; and

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pressing means for pressing said rotary surface treatment tool against said cloth mounting section with a predetermined pressure while said rotary surface treatment tool and cloth mounting section are rotated.

5,626,510

POWER TOOL FOR SURFACE TREATMENT

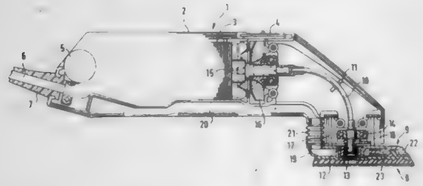
Joao Bergner, Leonberg, and Steffen Wuensch, Holzgerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 3, 1994, Ser. No. 191,002

Claims priority, application Germany, Feb. 4, 1993, 43 03 044.0

Int. Cl.[6] B24B *23/00*

U.S. Cl. 451—357 **40 Claims**



1. A power tool for surface treatment, comprising a housing; a motor accommodated in said housing; a tool holder; a tool supported in said tool holder and driveable by said motor, said tool having a substantially triangular base surface for receiving a substantially triangular grinding sheet, said tool holder being concavely shell-shaped and having a substantially triangular contour substantially corresponding to said base surface of said tool, and also having an outer edge abutting on said tool so that a concave side of said tool holder forms a cavity in connection with a back side of said tool.

5,626,511

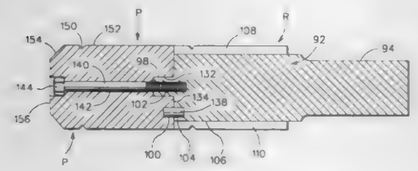
COMBINATION LENS EDGER, POLISHER, AND SAFETY BEVELER, TOOL THEREFOR AND USE THEREOF

Brian H. Kennedy, Charlottesville, and Lewis D. Houchens, Jr., North Garden, both of Va., assignors to National Optronics, Inc., Charlottesville, Va.

Filed Oct. 3, 1994, Ser. No. 316,780

Int. Cl.[6] B24B *9/20*

U.S. Cl. 451—461 **7 Claims**



1. A tool for edging and polishing the edge of an eyeglass lens, comprising:

a) a longitudinally extending generally cylindrical body rotatable on the axis thereof;

b) said body including a tool contacting end portion and an oppositely disposed polishing tool contacting portion, said polishing tool contacting portion includes an axially extending projection and an annular radially extending shoulder extending therefrom;

c) a bore extends through said shoulder into said body, and said bore is intermediate said projection and the periphery of said body;

d) a threaded bore extends into said projection;

e) a longitudinally extending generally cylindrical polishing tool is secured to said body and rotatable on the axis thereof, said polishing tool has an abrasive coating bonded to the exposed periphery thereof;

f) said polishing tool has a distal end portion and an oppositely disposed body contacting portion, said body contacting portion includes an annular shoulder and first and second bores and said first bore is sized and configured to accept said projection and said second bore sized and configured to correspond to said body shoulder bore;

g) a third bore extends axially through said polishing tool from said distal end portion to said first bore;

h) a bolt extends through said first and third bores and has a threaded end portion received within said body threaded bore for securing said body and polishing tool; and

i) a pin is positioned within said shoulder bore and said second bore for aligning said polishing tool relative to said body.

5,626,512

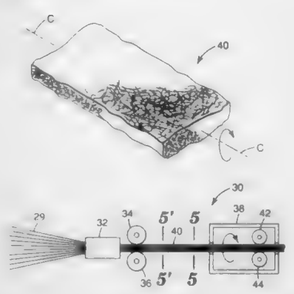
SCOURING ARTICLES AND PROCESS FOR THE MANUFACTURE OF SAME

Liana V. Palaikis, Woodbury; Gary L. Olson, Shoreview, and Rufus C. Sanders, Jr., Burnsville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1995, Ser. No. 434,612

Int. Cl.[6] B24D *11/02*

U.S. Cl. 451—536 **12 Claims**



1. An article useful in cleaning, scouring, polishing and other surface conditioning applications, comprising:

A bundle of discontinuous fibers bonded to one another at points of mutual contact, said fibers arranged within said bundle to provide a dense longitudinal central portion extending to opposite ends of said bundle, less dense side portions, a longitudinal tensile strength and a transverse tensile strength, wherein the longitudinal tensile strength is greater than the transverse tensile strength.

5,626,513

CLAMPING DEVICE DURING SKINNING OF A FISH

James L. Curtis, 44247 12th St. East, Lancaster, Calif. 93535

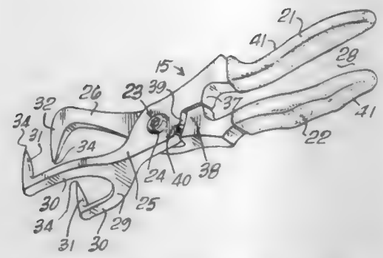
Filed Jan. 16, 1996, Ser. No. 586,578

Int. Cl.[6] A22C *25/17*

U.S. Cl. 452—125 **12 Claims**

1. In a tool that is hand-held during the process of skinning a catfish or the like, and said tool including a pair of handles mounted to one another in a pivotal assembly, crossing over each other, and an extension member integrally mounted on each of said handles and which crosses over the other of said handles past beyond said pivotal assembly, the improvement comprising

each said extension member in the tool extending forwardly of said handles an in a direction away from a plane passing



through said pivotal assembly and laterally through a spatial area disposed between said handles in their closed mode,

a first said extension member including a bifurcated yoke positioned on the side of the plane passing through the pivotal assembly opposite of the other of said pair of handles on the other side of such plane, said yoke having separate arms extending therefrom and first prong means extending towards the plane mounted on each of said arms,

a second said extension member including a single prong means also extending towards the plane, and

boss means mounted in alignment on said handles for engaging one another to stop further closing between said handles in the step of said first and second prong means gripping the catfish or the like during the skinning thereof.

5,626,514

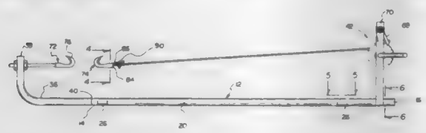
SMALL GAME SKINNING DEVICE

Herman H. Rothove, HCR 65 Box 13, Westphalia, Mo. 65085

Filed Mar. 19, 1996, Ser. No. 617,643

Int. Cl.[6] A27B *5/16*

U.S. Cl. 452—128 **9 Claims**



1. A new and improved small game skinning device for removal of an animal's skin prior to dressing comprising in combination:

an elongated frame tubing having a first end and a second end, the elongated frame tubing having a plurality of mounting ears for attaching the tubing to a work table, the elongated frame tubing having a left side and a right side with each side having two of the mounting ears positionable thereon, the two mounting ears of the left side being spaced apart, the two mounting ears of the right side being spaced apart;

a short frame tubing being L-shaped, the short frame tubing having an upper end and a back end being positionable over the first end of the elongated frame tubing, the short frame tubing being coupled with the elongated frame tubing being capable of extending beyond the work table;

a ratcheting mechanism with a spool being supported above the second end of the elongated frame tubing by a pair of support arms and an axial rod, the pair of support arms having a left support arm being adjacent a ratchet wheel and crank of the ratcheting mechanism, the pair of supports arms having a right support arm being spaced from a large wheel of the spool and having one end of the axial rod therethrough, the spool having a drum being capable of having a heavy-duty cord wound therearound;

a pair of claws forming a first claw and a second claw, each claw being three pronged with two large outer J-hook members and one small J-hook member, the first claw being fixedly attached to a threaded rod, the threaded rod being positionable through the upper end of the short frame tubing, the threaded rod being locked within the short frame and having the first claw being directed toward the ratcheting mechanism; and

the second claw having an eyelet for receiving one end of the cord therethrough, the cord being threaded through the eyelet and secured therein by a clamp, the cord having another end being wrapped around the spool, the first claw being hooked onto a part of a small animal while the second claw grapples with the animals back skin, the second claw capable of being pulled toward the second end of the elongated frame tubing by the ratcheting mechanism, the second claw being pulled toward the second end being capable of bringing the skin of the small animal therewith while the animal remains hooked onto the first claw.

5,626,515

METHOD AND APPARATUS FOR FIXATION OF A CUT OPEN, AT THE HIND LEGS SUSPENDED CARCASS OF A SLAUGHTER HOG

Knud Krogh, Indkildevej, Denmark, assignor to Danfotech & Slagteriernes Forskningsinstitut, Denmark

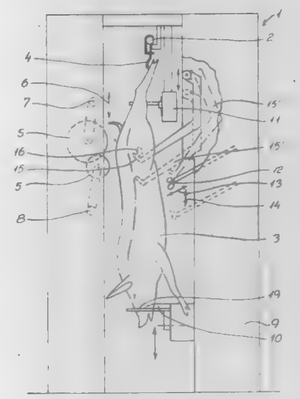
PCT No. PCT/DK94/00161, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/24873, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 22, 1994, Ser. No. 535,144

Claims priority, application Denmark, Apr. 26, 1995, 0471/93

Int. Cl.[6] A22B *5/06;5/20*

U.S. Cl. 452—187 **29 Claims**



1. A method for fixation of cut up carcasses of slaughtered animals (**3**), which are suspended by their hind legs and which have been eviscerated after the carcasses have been cut, each animal having, in particular, a spinal column, which during fixation is aligned relative to a median plane of the carcass by means of a member (**10**) clutching the animal by its snout, said member exerting a downwards pull to stretch out the animal during the cutting of the carcass, or for processes requiring a fixation of the carcass relative to a median plane, characterized in comprising the following steps:

measuring the height at which the pubic bone (**16**) of the carcass is placed,

introducing a carrier under the pubic bone (**16**) of the carcass, said carrier (**15**) having a pair of fingers adapted to be spread out in a horizontal plane by a movement away from each other and raised, said fingers, when raised, being further adapted to contact the pubic bone in the pelvis region of the animal and then to lift the pelvic region of the carcass relative to the measured height prior to or in connection with the stretching of the carcass.

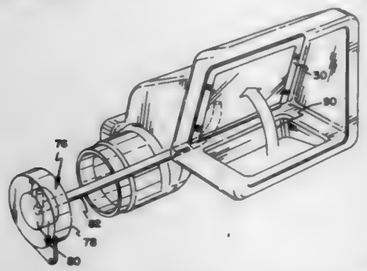
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5,626,516

PRESSURE ACTUATED DOOR

Francis C. Peterson, Prescott, Wis., assignor to Phillips Plastics Corporation, Prescott, Wis.

PCT No. PCT/US93/08806, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO94/06644, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 17, 1993, Ser. No. 403,902
Int. Cl.[6] B60H *1/24*
U.S. Cl. 454—69 1 Claim



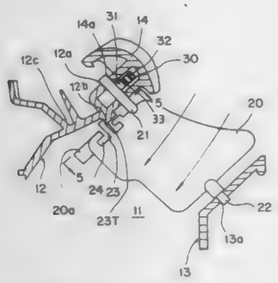
1. A door assembly for controlling air flow through a ventilation duct, said door assembly of the type having a reservoir and a movable panel; wherein the improvement comprises:
a tube connected to said movable panel and communicating with said reservoir;
a rotary piston coupled to said tube and having a port which communicates with said reservoir; and
an annular control ring mounted concentric with said rotary piston and having a slot in communication with a source of pressurized fluid, whereby the position of said slot with respect to said port determines the position of said door panel.

5,626,517

AIR VENT CONTROL APPARATUS

Yong H. Kil, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 13, 1995, Ser. No. 403,272
Claims priority, application Rep. of Korea, Aug. 11, 1994, U. M. 94-20298
Int. Cl.[6] F24F *13/075*
U.S. Cl. 454—315 7 Claims



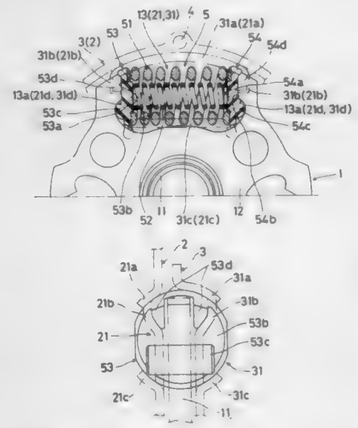
1. An air vent control apparatus for controlling a direction of air flow through a passage, comprising:
a series of louvers disposed in said passage;
a housing including a louver support;
hinge pins carried by respective louvers and mounted in said louver support for rotation about parallel axes of rotation; and
a connecting member interconnecting a plurality of said hinge pins for common rotation so that rotation of one hinge pin is transmitted to the remaining hinge pins by said connecting member;
each hinge pin connected to said connecting member by a protrusion which is fixedly connected to said connecting member and its respective hinge pin, said protrusion including a reduced thickness region between its ends defining a non-rigid connection enabling said pins to rotate relative to said connecting member.

5,626,518

TORQUE ABSORBING DEVICE

Naoyuki Maki, Hazu-gun, and Yukihisa Takashi, Chita-gun, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 28, 1995, Ser. No. 508,557
Claims priority, application Japan, Jul. 12, 1994, 6-178255; Jul. 29, 1994, 6-178256
Int. Cl.[6] F16D *3/12*
U.S. Cl. 464—64 17 Claims



1. A torque absorbing device comprising:
a hub member having a flange portion and a hub portion;
plate members disposed around the hub portion of the hub member and positioned opposite to the flange portion in the axial direction,
a plurality of torsion members elastically interconnecting the hub member and the plate members in the circumferential direction; and
a plurality of seat members each of which is disposed among each of the torsion members, the plate members and the hub member, each of the seat members having a first side face contacting an end surface of one of the torsion members and an opposite second side face contacting the plate members and the flange portion of the hub member, the second side face of each seat member being provided with a projecting holding portion which is held on the flange portion of the hub member so as to be immovable relative to the hub member and a guide portion which nips the flange portion of the hub member in an axial direction.

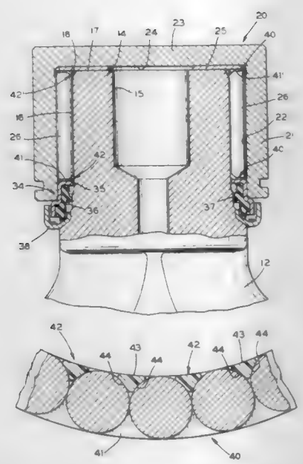
5,626,519

BEARING RETAINER WITH BEARING RETAINING PROJECTION

Robert G. Joyner, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 4, 1995, Ser. No. 566,930
Int. Cl.[6] F16C *33/46*
U.S. Cl. 464—128 20 Claims

1. A bearing cup assembly adapted to be installed on a trunnion of a universal joint, said bearing cup assembly comprising:



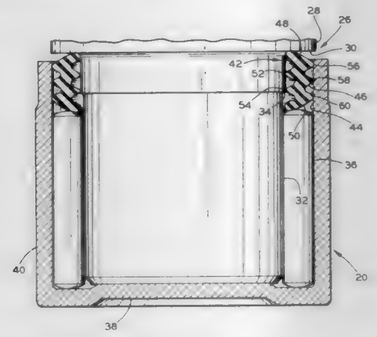
a bearing cup including an inner surface, a closed end, and an open end;
a plurality of bearings disposed within said bearing cup inwardly of and adjacent to said inner surface thereof; and
a bearing retainer disposed within said bearing cup, said bearing retainer including a plurality of projections extending adjacent to and engaging only the portions of said bearings which are remote from the inner surface of the bearing cup to retain said bearings adjacent to said inner surface of said bearing cup prior to installation on the trunnion of the universal joint.

5,626,520

REVERSIBLE UNIVERSAL JOINT SEAL

Philip J. Mazziotti, Toledo, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Filed Jun. 14, 1995, Ser. No. 490,542
Int. Cl.[6] F16D *3/41*
U.S. Cl. 464—131 1 Claim



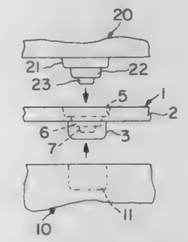
1. In combination, a universal joint seal, a cross, and a bearing cup, said cross having a body and a trunnion, said cross also having an annular shoulder at the juncture of said body and said trunnion, said bearing cup having a cylindrical inner surface, said trunnion being received in said bearing cup, a plurality of needle bearings in said bearing cup between the inner surface thereof and said trunnion, said universal joint seal comprising a reversible, resilient sealing member having at least two first spaced lips engaging said trunnion adjacent said annular shoulder, said reversible, resilient sealing member also having at least two second spaced lips engaging said cylindrical inner surface, said second spaced lips being staggered with respect to said first spaced lips, said reversible, resilient sealing member having a first end lip on a first annular end exerting pressure on said plurality of needle bearings, and said reversible, resilient sealing member having a second end lip on a second annular end extending toward said annular shoulder of said cross, said first end lip and said second end lip being equal in size and shape, said reversible, resilient sealing member being symmetrical with respect to a plane taken centrally therethrough whereby said reversible, resilient sealing member is adapted to be inserted in said bearing cup with either annular end extending into the bearing cup.

5,626,521

METHOD OF MANUFACTURING A SCREW WASHER

Takashi Hirai, Kobe, Japan, assignor to Hirai Kosaku Kabushiki Kaisha, Kobe, Japan

Filed Sep. 1, 1993, Ser. No. 115,010
Claims priority, application Japan, Sep. 1, 1992, 4-233915
Int. Cl.[6] B21D *53/24*
U.S. Cl. 470—25 4 Claims



1. A method of manufacturing a screw washer comprising the sequential steps of:
punching out part of a metal plate with a punch and a die (2);
said punched out part having three different sized diameters in a descending order along a central axis with a closed end part to form a nut (3) which protrudes from one surface of said metal plate continuous to said metal plate (2);
punching a hole entirely through said closed end part to form a surface about (7) the central axis of said nut (3), (7); and
forming screw threads along said surface of said punched hole (7) in said nut (3) in a manner coaxial with said punched hole (7) to form a tapped hole (4).

5,626,522

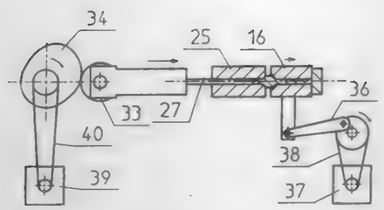
METHOD AND AN APPARATUS FOR MAKING A HEAD ON AN ELONGATE BLANK

Ove Nielsen, Skanderborg, Denmark, assignor to Enkotec A/S, Skanderborg, Denmark

PCT No. PCT/DK93/00079, § 371 Date Oct. 14, 1994, § 102(e) Date Oct. 14, 1994, PCT Pub. No. WO93/17808, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 3, 1993, Ser. No. 295,627
Claims priority, application Denmark, Mar. 3, 1992, 0280/92
Int. Cl.[6] B21K *1/44*
U.S. Cl. 470—141 12 Claims

1. A method of forming a head on an elongate blank, comprising the steps of:
moving an elongated blank into a die having a bottom stop such that one end of the blank contacts the bottom stop and an opposite portion of the elongated blank extends from the die at an end thereof opposite said bottom stop.
engaging said portion of the blank extending from the die by a pre-upsetting bushing positioned in extension of the die.

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slidably moving a punch in said pre-upsetting bushing to engage said blank and apply pressure thereto,

providing relative movement between said pre-upsetting bushing and said die away from each other while applying said pressure to the blank by said punch to form a space between the pre-upsetting bushing and the die and to deform a portion of the blank into said space, said portion of the blank which is deformed forming a head for said blank, and

controlling relative movement of both the punch and the pre-upsetting bushing positively with respect to the die so that during a final part of the deforming of said portion of the blank, said pre-upsetting bushing and said die are moved away from each other to form said space, while said punch continues to move relative to said die and apply pressure to said blank in a direction toward the die whereby said deformed portion of the blank is produced in said space between the die and the bushing.

5,626,523

AUTOMATIC BOWLING CENTER SYSTEM

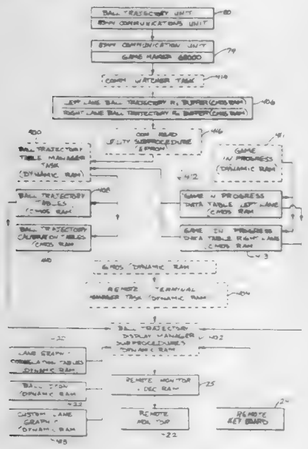
David L. Mowers, Muskegon, Mich.; David J. Mueller, Naperville, Ill.; Gerald A. Pierce, Redwood City, and David C. Wyland, San Jose, both of Calif., assignors to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

Continuation of Ser. No. 177,610, Jan. 5, 1994, Pat. No. 5,446,894, which is a continuation of Ser. No. 962,492, Nov. 23, 1992, Pat. No. 5,450,318, which is a continuation of Ser. No. 724,793, Jul. 2, 1991, Pat. No. 5,255,185, which is a division of Ser. No. 182,977, Apr. 18, 1988, Pat. No. 5,101,354.

This application May 24, 1995, Ser. No. 449,793

Int. Cl.[6] A63D *5/04*

U.S. Cl. 473—58 **8 Claims**



1. A bowling lane display control system comprising:

a bowling game control unit including a central processing unit, a memory means for storing data, and a display terminal operable to display video information responsive to a received video signal;

means for generating trajectory data representing a path of a bowling ball during a time when a bowling ball is in motion on a bowling lane;

means coupled to said game control unit for sensing when a bowling ball is thrown;

means coupled to said generating means and said game control unit for transferring and trajectory data to said game control unit for storing in said memory means responsive to said sensing means sensing that a bowling ball is thrown; and

a display control means operating under the control of said central processing unit and operable to access said trajectory data for transmitting a display signal to said display terminal, said display signal conveying information representing path of a ball on a bowling lane.

5,626,524

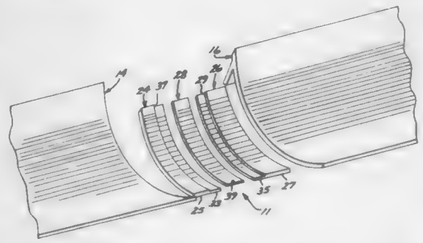
GUTTER CONNECTOR SPLICE AND METHOD OF CONSTRUCTING SAME

Gordon W. Murrey, Torrance, Calif., assignor to Murrey International, Gardena, Calif.

Continuation-in-part of Ser. No. 353,638, Dec. 12, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 497,609

Int. Cl.[6] A63D *1/08*

U.S. Cl. 473—113 **16 Claims**



1. A bowling ball gutter apparatus comprising:

a plurality of upwardly opening semi-circular concave gutter sections of respective selected lengths with respective undersides to abut one another in end-to-end relation to define a smooth joint line between said sections;

respective pairs of elongated arcuate semi-circular splice collars formed with respective mount sections for mounting to the respective undersides at an end of a respective gutter section and having respective retainer sections projecting therefrom and spaced a selected distance from said undersides when said mount sections are mounted to the respective undersides of said respective gutter section to cooperate therewith in forming respective confronting open ended arcuate grooves;

a bonding agent interposed between the respective mount sections and undersides of the respective gutter sections to bond the respective pairs of splice collars to said respective gutter section; and

respective elongated, arcuate splice tongues having opposing sides disposed in spanning relation between the confronting open ended arcuate grooves to form a structural support connecting abutting gutter sections without degrading said joint line therebetween.

5,626,525

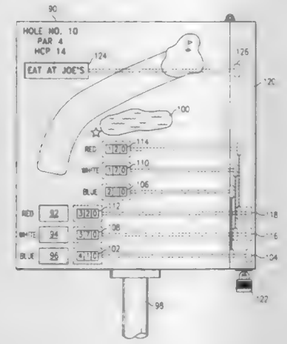
GOLF DISTANCE MARKER

Philip A. Tolley, 4016 Tumbril Rd., Plano, Tex. 75023, and Kraig A. Walker, 2104 Brabant Dr., Plano, Tex. 75025

Continuation of Ser. No. 418,553, Apr. 7, 1995, Pat. No. 5,497,988. This application Mar. 11, 1996, Ser. No. 613,977

Int. Cl.[6] A63B *57/00*

U.S. Cl. 473—150 **2 Claims**



1. A distance marker for use on the tee box of a golf hole, comprising:

a sign face comprising a graphic representation of the layout of the golf hole, including the positions of a plurality of tee boxes associated with the golf hole;

a first distance indicator associated with each tee box and disposed on the sign face proximate the graphic representation of each of the tee boxes;

a selector dial coupled to each of the first distance indicators such that the first distance indicated on the first distance indicators can be set to reflect the placement of the tees boxes;

a graphic representation of a point on the golf hole; and

second distance indicators associated with the plurality of tee boxes placed proximate the graphic representation of the point on the golf hole, the second distance indicators each coupled respectively to the selector dial associated with the tee boxes associated with each first distance indicator such that when the selector dial is used to change the first distances as the tee box is moved to a given location, the second distance indicators associated with the point on the golf hole will also reflect the change in the first distances.

5,626,526

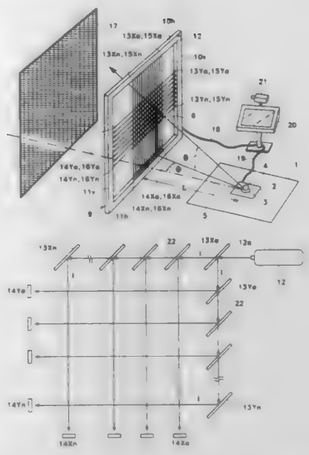
GOLF TRAINING DEVICE HAVING A TWO-DIMENSIONAL, SYMMETRICAL OPTICAL SENSOR NET

Yi-Ching Pao, 1586 Hyde Dr., Los Gatos, Calif. 95030, and Mark V. Weckwerth, 128 Seale Ave., Palo Alto, Calif. 94301-3729

Filed Mar. 31, 1995, Ser. No. 422,067

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—156 **26 Claims**



1. A golf training device having a two-dimensional, single planar and total symmetrical optical sensor net for detecting movement of a golf ball impacted to display data on the ball, comprising:

a golf ball sensor means placed on a reference axis of a golf ball traveling direction for detection of a golf ball movement at initial impact;

a square frame placed further along the golf ball traveling direction with respect to the golf ball sensor means, said square frame having a signal producing means holding part to support a light signal producing means on a first horizontal and a first vertical sides of the square frame and a signal detecting means holding part to support a light signal detecting means on a second horizontal and a second vertical sides of the square frame wherein the first horizontal and first vertical sides forming a first right angle diagonally above and opposed to a second right angle formed between the second horizontal and second vertical sides with respect to the golf ball sensor means;

a light emitting means adapted to said light signal producing means to emit multiple light signals produced from a beam of light from one focused light source to generate a two-dimensional, single planar optical net wherein the multiple light signals emitting from the first horizontal and first vertical sides of the square frame are perpendicularly intercepted in that any area of the optical net in which the golf ball interrupts has a uniform density;

a means to output a detection signal adapted to said light signal detecting means; said light signal detecting means being symmetrically arranged in accordance with the light emitting means to form a totally symmetrical optical sensor net for detecting the multiple light signals emitting from the light emitting means; said optical sensor net having a dimension no less than 4 feet;

a data processing means which receives and processes output signals from the light signal detecting means based on a movement of the golf ball; and

a display means to display data generated from the movement of said golf ball.

5,626,527

GOLF GRIP INSTALLABLE OVER PRE-EXISTING GRIP

Timothy Eberlein, 7638 Nueva Castilla Way, LaCosta, Calif. 92009

Filed Dec. 13, 1995, Ser. No. 572,290

Int. Cl.[6] A63B *53/14*

U.S. Cl. 473—203 **16 Claims**

1. A grip installable on a golf club over a pre-existing grip comprising:

(a) a unitary tubular body means for enveloping and frictionally engaging the pre-existing grip,

(b) means, projecting outwardly from the tubular body means, for assisting a golfer in the proper positioning of his or her thumbs, and

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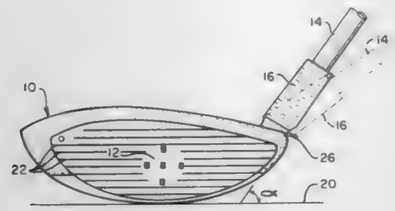
(c) means, projecting outwardly from the tubular body means, for assisting a golfer in the proper positioning of his or her fingers.

5,626,528

GOLF CLUB HEAD AND HOSEL CONSTRUCTION

Sean G. Toulon, Vista, Calif., assignor to Zevo Golf, Inc., Temecula, Calif.

Filed Jan. 26, 1996, Ser. No. 592,648
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—248 **8 Claims**



1. A golf club construction, comprising:

a ball-striking metal head;

a hosel integrally unitary with the head having an opening extending from an outer surface into said hosel and including a continuous groove extending in an outer surface of said hosel about the opening at which groove bending can be effected in any direction to adjust club head lie and a shaft having an end portion received with said head opening.

5,626,529

GOLF CLUB SHAFT AND METHOD OF MANUFACTURE

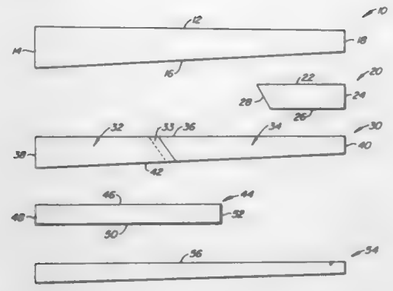
Paul A. Roy, Poway, Calif., assignor to Vantage Associates, Inc., San Diego, Calif.

Filed Sep. 18, 1995, Ser. No. 530,779
Int. Cl.[6] A63B *53/10*
U.S. Cl. 473—319 **15 Claims**

1. A golf club shaft, comprising: an elongated tube having a first diameter grip end tapering to a smaller second diameter head end, said tube formed as a composite from a first and second kind of circumferentially superimposed resin-impregnated unidirectional filamentary materials having different moduli of elasticity wherein;

said first diameter grip end of said tube comprises said first filamentary material having a high modulus of elasticity;

the remainder of said tube consists of said second filamentary material having a lower modulus of elasticity; and



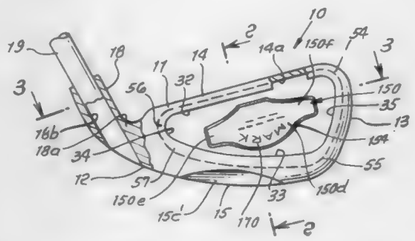
said grip end of said tube has a lower degree of flexibility than the remainder of said tube.

5,626,530

GOLF CLUB HEAD WITH SOLE BEVEL INDICIA

Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.

Continuation-in-part of Ser. No. 414,552, Apr. 6, 1995, which is a continuation-in-part of Ser. No. 119,622, Sep. 13, 1993, Pat. No. 5,409,229, which is a continuation-in-part of Ser. No. 999,250, Jan. 19, 1993, Pat. No. 5,301,946, which is a continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application Jun. 7, 1995, Ser. No. 479,778
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—324 **33 Claims**



1. A golf club head having a body defining a heel, toe, top wall, sole defining a bottom wall, and a front wall defining an upwardly and rearwardly inclined front face, and comprising

a) said bottom wall having a local bevel located medially of the head and extending rearwardly and upwardly toward said rear wall,

b) there being indicia on said local bevel.

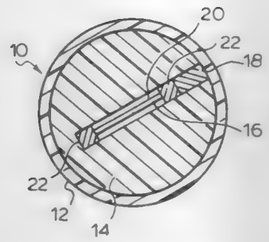
5,626,531

GOLF BALL WITH TAG, AND DETECTING SYSTEM

Philip L. Little, Shanty Bay, Canada, assignor to Tee To Green Inc., Woodstock, Canada

Filed Feb. 2, 1996, Ser. No. 596,402
Int. Cl.[6] A63B *43/00*
U.S. Cl. 473—353 **13 Claims**

1. A golf ball having an inner portion, a passive, filed-responsive electronic signalling tag including at least one capacitor positioned within the ball and having a predetermined response frequency, to generate a signal output of predetermined frequency range in response to the presence of an electromagnetic field having predetermined frequency and field strength characteristics; and an outer



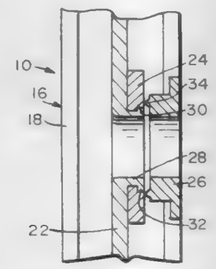
cover in sealing relation with said inner portion and said passive tag.

5,626,532

DRIVE ASSEMBLY WITH INTERFERENCE-FIT MOUNTED LIGHTWEIGHT NON-FERROUS PULLEY

Zdenek Cerny, Brampton, Canada, assignor to Tesma International Inc., Concord, Canada

Filed Sep. 5, 1995, Ser. No. 523,598
Int. Cl.[6] F16H *55/36*
U.S. Cl. 474—168 **17 Claims**



1. A drive assembly for rotating a shaft of a belt driven device comprising

a hub in the form of an annular body of ferrous metal having a radially outwardly projecting annular portion,

a pulley made of light weight non-ferrous metal, and

a connecting ring of ferrous metal,

said pulley having a web portion formed with an axially extending annular portion at a radially inward position thereon,

said connecting ring being disposed in surrounding relation with said axially extending annular portion and having a connection therewith constructed and arranged to rigidify said connecting ring and said pulley,

said hub having a connection with said connecting ring constructed and arranged to rigidify said hub with said pulley through said connecting ring,

said web portion including the annular extension thereof and said hub having a bore therethrough defining a single machined annular shaft-engaging surface,

said shaft-engaging surface being constructed and arranged to engage a periphery of the shaft in an interference-fitted manner so as to maintain torque transfer between the pulley and shaft in the event of the failure of either or both of said connections,

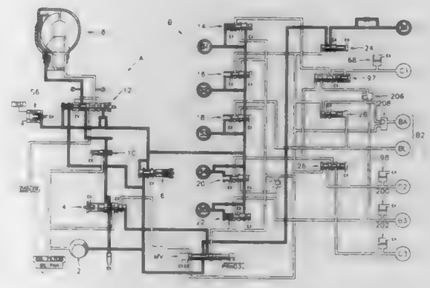
said hub and said connecting ring being constructed and arranged with respect to said axially extending annular portion to provide an annular space adjacent the radially outwardly projecting annular portion of said hub of a size to allow a pulling tool to enter the annular space and act upon said radially outwardly projecting annular portion to remove said pulley from the periphery of the shaft.

5,626,533

HYDRAULIC CONTROL SYSTEM OF AN AUTOMATIC TRANSMISSION USED IN A VEHICLE

Jaeduk Jang, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed Nov. 8, 1995, Ser. No. 554,371
Claims priority, application Rep. of Korea, Nov. 9, 1994, 94-29308; Nov. 9, 1994, 94-29310
Int. Cl.[6] F16H *59/00*
U.S. Cl. 475—129 **6 Claims**



1. A hydraulic control system of an automatic transmission comprises a line pressure regulator for regulating hydraulic pressure supplied from an oil pump to a hydraulic control line, and a shift structure for selectively delivering the regulated hydraulic pressure to friction elements, wherein said shift structure further comprises a manual valve operatively linked with a shift lever for delivering the regulated hydraulic pressure according to shift ranges, a plurality of solenoid valves controlled on/off by a transmission control unit to control the fraction elements, a first, second, third, fourth, and a fifth pressure control valve for simultaneously controlling both releasing and connecting of said friction elements, a first-to-second shift valve for making a port change by the hydraulic pressure flowing out from said pressure control valves to deliver the pressure to said friction elements, a forward drive clutch release valve, a second-to-third shift valve, and a reverse drive clutch valve.

5,626,534

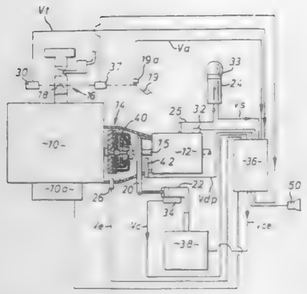
CLUTCH CONTROL SYSTEM

Jonathan D. Ashley, Solihull, and Charles J. Jones, Coventry, both of United Kingdom, assignors to Automotive Products, plc, Leamington Spa, United Kingdom

PCT No. PCT/GB95/00236, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO95/21073, PCT Pub. Date Aug. 10, 1995
PCT Filed Feb. 6, 1995, Ser. No. 525,687
Claims priority, application United Kingdom, Feb. 5, 1994, 94 02252
Int. Cl.[6] B60K *41/22*; **F16H** *59/02;59/04;59/70*
U.S. Cl. 477—79 **18 Claims**

1. A clutch control system for the automatic control of a motor vehicle clutch which connects an engine with a gearbox under the control of a driver-operated gear ratio selector lever, the control system comprising an electronic control unit which controls initial clutch take-up on starting of the vehicle, clutch re-engagement following each ratio change, clutch disengagement on movement of the gear selector lever to change the operative ratio of the gearbox, and clutch disengagement on the coming to rest of the vehicle, the control unit including an automatic calibration routine which is invoked on the initial keying-on of the system, said routine comprising a predetermined sequence of events (A to U) in which the system responds to actions (B,L,P3.R3) of an operator of the vehicle and at predetermined points (K,N,P11,T) in the calibra-

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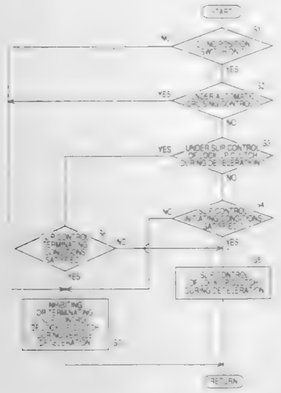
tion routine advises the operator that the system is ready to proceed to the next stage of the calibration.

5,626,535

AUTOMOBILE CONTROL APPARATUS HAVING FUEL CUTTING MEANS, LOCK-UP CLUTCH CONTROL MEANS AND AUTO-CRUISING MEANS

Katsumi Kono, Toyota, and Shinya Nakamura, Owariasahi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 26, 1995, Ser. No. 533,781
Claims priority, application Japan, Oct. 12, 1994, 6-246134
Int. Cl.[6] F16D *48/00;* **B60K** *41/02*
U.S. Cl. 477—169 **13 Claims**



1. An apparatus for controlling a motor vehicle having an engine, a throttle valve for controlling an intake air quantity of the engine, a fluid-filled power transmitting device connected to the engine, and a lock-up clutch disposed in parallel with the power transmitting device, said throttle valve having an engine idling position for idling of the engine, said apparatus comprising:

fuel cutting means for cutting a fuel supply to said engine while said throttle valve is placed in said engine idling position;

clutch control means for effecting at least partial engagement of said lock-up clutch while said throttle valve is placed in said engine idling position;

automatic cruising control means for automatically controlling an amount of opening of said throttle valve so that a running speed of the vehicle is substantially constant; and

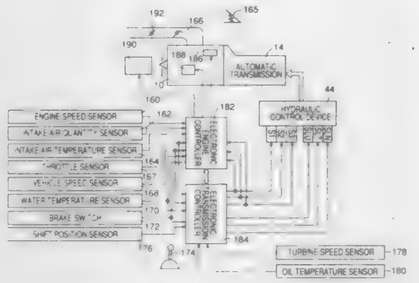
clutch engagement restricting means for restricting engagement of said lock-up clutch by said clutch control means, while said throttle valve is controlled by said automatic cruising control means.

5,626,536

LOCK-UP CLUTCH SLIP CONTROL APPARATUS AND ENGINE FUEL-CUT CONTROL APPARATUS FOR MOTOR VEHICLE

Katsumi Kono, Toyota, and Shinya Nakamura, Owariasahi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 17, 1995, Ser. No. 503,214
Claims priority, application Japan, Jul. 19, 1994, 6-188961; Jul. 21, 1994, 6-169583; Jul. 22, 1994, 6-191989
Int. Cl.[6] F16H *61/14;* **F02D** *41/12*
U.S. Cl. 477—181 **32 Claims**



1. An apparatus for controlling an amount of slip of a lock-up clutch disposed between a pump impeller and a turbine impeller in a power transmitting device of a motor vehicle equipped with a fuel-cut device for cutting a fuel supply to an engine while a speed of the engine is higher than a predetermined fuel-cut speed during deceleration of the vehicle, said apparatus including slip control means for producing a slip control output for controlling the amount of slip of said lock-up clutch during the deceleration of the vehicle, the motor vehicle having an engine-driven device which is operated by said engine, said apparatus comprising:

deceleration monitoring means for determining whether the vehicle is in a deceleration state following an accelerating state;

timing control means for commanding said slip control means to initiate a slip control operation to control the amount of slip of said lock-up clutch, upon determination of said deceleration monitoring means that said vehicle is in said decelerating state, said timing control means inhibiting said fuel-cut device from initiating a fuel-cut operation to cut the fuel supply to said engine, for a predetermined delay time after the initiation of said slip control operation of said slip control means, for thereby reducing an amount of change of the speed of the engine in an initial period of said slip control operation; and

slip control output changing means for changing said slip control output of said slip control means such that an actual slip speed of said lock-up clutch eventually coincides with a predetermined target slip speed, after said fuel-cut operation of said fuel-cut device is initiated said predetermined delay time after said initiation of said slip control operation of said slip control means.

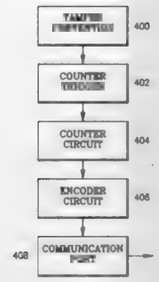
5,626,537

EXERCISE COMPLIANCE APPARATUS AND METHOD

J. Joseph Danyo, 960 Upland Rd., York, Pa. 17403; Clark S. Hammaker, 1364 Springhouse Rd., Middletown, Pa. 17057; Todd M. Hammaker, 3 Woodlawn Ter., Hollidaysburg, Pa. 16648, and Mark K. Hammaker, 154 Montgomery Ave., Phoenixville, Pa. 19460

Filed Nov. 23, 1993, Ser. No. 155,793
Int. Cl.[6] A61B *5/103*
U.S. Cl. 482—8 **12 Claims**

1. A compliance apparatus for use with a device which monitors a particular aspect associated with an anatomy comprising:



at least one electromechanical switch assembly for detecting a condition, other than said particular aspect, indicating that said apparatus is placed on said anatomy, wherein said switch assembly must be actuated before the compliance apparatus will function; and,

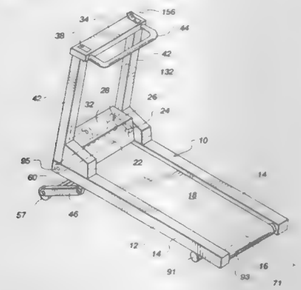
at least one monitoring element for monitoring said particular aspect associated with said anatomy only when said switching assembly for detecting a condition detects a condition indicating that said apparatus is placed on said anatomy.

5,626,538

ADJUSTABLE INCLINE SYSTEM FOR EXERCISE EQUIPMENT

William T. Dalebout; S. Ty Measom, and Scott R. Watterson, all of Logan, Utah, assignors to ICON Health & Fitness, Inc.

Continuation of Ser. No. 353,930, Dec. 12, 1994, which is a continuation of Ser. No. 27,351, Mar. 8, 1993, Pat. No. 5,372,559, and Ser. No. 806,977, Dec. 12, 1991, Pat. No. 5,192,255, which is a continuation of Ser. No. 494,590, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 256,486, Oct. 12, 1988. This application Jun. 7, 1995, Ser. No. 481,554
Int. Cl.[6] A63B *23/00*
U.S. Cl. 482—54 **18 Claims**



1. An adjustable incline system for use with an exercise apparatus which has a first end and a second end and which is physically accessible in different angular orientations, said adjustable incline system comprising:

a support means pivotally mounted to said exercise apparatus proximate the first end thereof for supporting said first end above a floor-like support surface;

an adjustable pneumatic spring means interconnected between said support means and said exercise apparatus for applying a force to urge said support means away from said exercise apparatus, said adjustable pneumatic spring means including an actuation pin adapted for controlling said force exerted by said adjustable pneumatic spring means; and

control means mechanically associated with said adjustable pneumatic spring means for operating said actuation pin, said control means including a control member, linkage means and an actuating lever member, said actuating lever member being actuated via said control member and said linkage means so as to mechanically engage said actuation pin, said actuating lever member being displaceable to effect a corresponding displacement of said actuation pin and said control member being positioned on said exercise apparatus for hand operation by an upright user positioned on said exercise apparatus; and

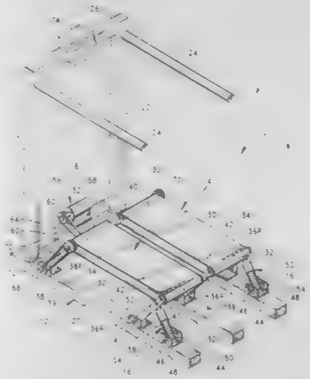
a fulcrum attached to said exercise apparatus to engage said floor-like support surface and spaced from said second end toward said first end a distance selected for said upright user positioned on said exercise apparatus to vary the effective force of the weight of said upright user at said first end by varying the position of said upright user on said exercise apparatus relative to said fulcrum.

5,626,539

TREADMILL APPARATUS WITH DUAL SPRING-LOADED TREADS

Gary D. Piaget, 3390 American Saddler Dr., and Trace O. Gordon, 3880 W. Lariat Rd., both of Park City, Utah 84060

Filed Jan. 19, 1996, Ser. No. 589,120
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **16 Claims**



1. Treadmill apparatus comprising:

first and second adjacent treadmills each having a continuous tread, and first and second ends, each of said treadmills including a rigid platform and rollers at each of said first and second ends for rotatably supporting said continuous tread on said rigid platform;

a frame positionable on a supporting surface;

first and second link means for respectively independently supporting the first and second ends of each of said first and second treadmills above said frame, each of said first and second link means having a first end pivotally connected to the frame and a second end pivotally connected to the rigid platform of each respective treadmill adjacent said respective end thereof;

first and second means for resiliently supporting the respective first and second treadmills in a first position above a supporting surface;

first and second resistance means for resisting downward movement of said first and second treadmills from said first position to a second position as weight is placed upon said treadmills, said first and second resilient supporting means returning said first and second treadmills from said second position to said first position when said weight is removed from said first and second treadmills, said first and second treadmills alternately moving up and down as an operator treads thereon; and

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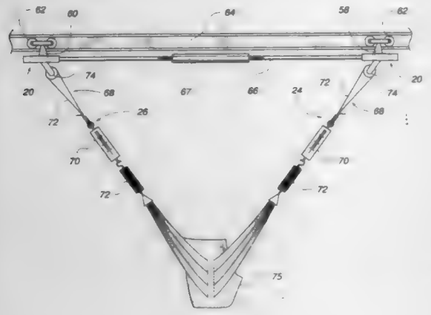
drive means for respectively independently driving rotation of said continuous treads as said first and second treadmills are alternately reciprocated downward and upward during use.

5,626,540

AMBULATORY TRACTION ASSEMBLY

Raymond F. Hall, 10780 Santa Monica Blvd., Suite 440, Los Angeles, Calif. 90025

Filed Jul. 6, 1994, Ser. No. 271,363
Int. Cl.[6] A61H *3/00*
U.S. Cl. 482—69 20 Claims



13. A traction system for use in assisting a patient comprising:

a frame having a front section and a rear section, said frame including at least two overhead horizontal beams longitudinally extending in parallel with each other between the front section and the rear section of said frame;

a front wheeled sliding assembly slidably engaging said two over head horizontal beams for horizontal linear displacement along said horizontal beams, said front wheeled sliding assembly having a pair of laterally spaced front coupling devices;

a rear wheeled sliding assembly longitudinally spaced from said front wheeled sliding assembly and slidably engaging said two over head horizontal beams for horizontal linear displacement along said horizontal beams, said rear wheeled sliding assembly having a pair of laterally spaced rear coupling devices;

a harness assembly suspended from said front and rear wheeled sliding assemblies, said harness assembly including a main body for releasable attachment to the body of the patient, a pair of front straps respectively connected to said pair of front coupling devices and a pair of rear straps respectively connected to said pair of rear coupling devices, wherein said pair of front straps and said rear straps diagonally angled with each other to define four sides of an inverted quadrangular pyramid and connect to said main body;

a variable length rigid bar means connecting said front wheeled sliding assembly and said rear wheeled sliding assembly, said bar means having means for longitudinally adjusting the separation between said front wheeled sliding assembly end said rear wheeled sliding assembly to thereby adjust the angle between said pair of front straps and said pair of rear straps;

a length adjustment device provided in each of said straps for adjusting the length of each of said straps; and

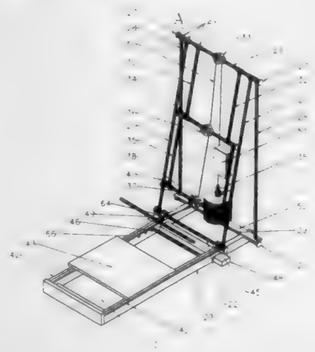
a treadmill including means for changing at least one of speed, inclination and declination thereof, said treadmill being positioned below said harness assembly to allow the patient to use said treadmill while being suspended by said harness assembly.

5,626,541

COLLAPSIBLE ROWING AND NON-ROWING EXERCISE MACHINE

Rohit P. Ramlogan, 152-20 79th Ave., Queens, N.Y. 11367, and Ali M. Sadegh, 33 Greenway Ct., Closter, N.J. 07624

Filed Mar. 24, 1995, Ser. No. 409,458
Int. Cl.[6] A63B *21/06;69/06*
U.S. Cl. 482—72 7 Claims



1. An exercising apparatus of the aerobic type for rowing and non-rowing exercises; with a free weight loading system, said apparatus comprising:

(i) an elongated tubular foldable frame body generally having a right angle all triangular shaped portion positioned vertically and having:

(a) two parallel elongated tubular back legs and two parallel elongated tubular front legs, said legs having tubular T-shaped connection at both ends, and said members being pivotally connected to a top axle and front and back cross bars having the bottom ends of said back legs and said front legs bottom ends of said back legs and said front legs pivotally attached thereto;

(b) two parallel elongated tubular top arms having tubular T-shaped connections at both ends and being pivotally connected on the top axle at one and pivotally connected to a middle axle at the other end;

(c) two parallel elongated tubular bottom arms having tubular T-shaped connections at both ends pivotally connected to the middle axle at one end and pivotally connected to a bottom axle at the other end;

(d) wherein said back and said front cross bars and said top axle, and said middle axle are generally elongated tubes threaded at both ends and having an outer diameter that is slightly less than the inner diameter of said T-shaped end tubing for smooth rotation; and,

(e) an elongated tubular bottom axle having a tubular T-shaped connection at both ends such that said T-shaped connection easily slides over said front legs, said member having a chain and a pin that is inserted into the holes on the said T-shaped connections and goes through the corresponding holes on the said front legs;

(ii) a stationary horizontal base that is perpendicular to the said vertical tubular frame and having:

(a) two parallel rectangular elongated base frames each having two corresponding holes near one end through which the said back cross bar passes supporting the said legs, the said base frame also having U-shaped grooves for holding the said front cross bar;

(b) two bottom cross bars comprising flat rectangular sections located at the ends and close to the middle of the said base frames and rigidly and perpendicularly attached to the said base frames, and a stopper comprising an elongated rectangular section rigidly connecting the ends of the said base frame;

(c) a base frame including two metal tracks comprising elongated rectangular sections attached longitudinally to the base frame and a wheeled seat located on the said tracks for rowing exercise, and a flat rectangular section platform positioned between the elongated rectangular sections for use in non-rowing exercises; and,

(iii) a cable pulley weight system having:

(a) a weight support member comprising an elongated flat rectangular section having a circular groove at each end to fit onto and slide along the said back legs, a short cylindrical section attached perpendicularly at one end to the middle of the said flat section and having a receptor hook at the other end;

(b) a cable having a small hook attached to it at one end and a big hook attached top the other end, a cable holder having the cable wrapped thereabout and including a wide short U-shaped figure with a circular section mounted at its center, said circular section being centered such that the said cable entering from one side and wrapped around the circular section exits through the other hole in the other vertical side of the U-shaped sections, said small hook of the said cable being attached to the said receptor hook of the said weight support section, and the big hook of the said cable being hooked to a handle; and,

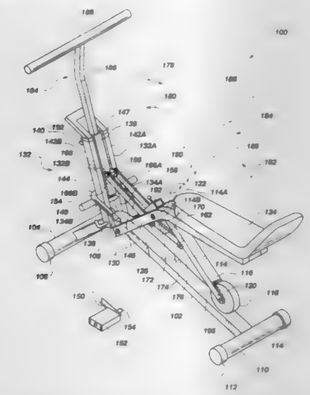
(c) a pulley located at the middle section of the said top axle, a pulley of the same size located at the middle of the said middle axle, and a pulley located at the middle of the said bottom axle, each engaging the cable.

5,626,542

FOLDING RIDER EXERCISER

William T. Dalebout, and Richard B. Ellis, both of Logan, Utah, assignors to Icon Health & Fitness, Inc., Logan, Utah

Filed Jan. 31, 1996, Ser. No. 594,940
Int. Cl.[6] A63B *69/06*
U.S. Cl. 482—96 17 Claims



1. A riding exercise machine reconfigurable between a use configuration and a storage configuration, said riding machine comprising:

a base having a guide surface associated therewith;

feet means attached to said base for supporting said base on a support surface;

user support means for supporting a riding user thereon, said user support means being rotatably attached to said base to be movable between a use configuration and a storage configuration, and in said use configuration to be moveable between a first position and a second position spaced from said first position;

guide means rotatably connected to said user support structure to extend away therefrom and to contact said guide surface, said guide means being moveable between a use configuration and a storage configuration, and in said use configuration said guide means being movable between a first position when said user support means is in its first position and a second position when said user support means is in its second position;

forward support structure having a lower end and an upper end, said lower end being attached to said base in said use configuration and being detached from said base and oriented toward alignment with said base in said storage configuration;

a pull receiver rotatably attached to said forward support structure to be movable between a first position and a second position rotatably spaced from said first position;

a push receiver rotatably adapted to said base for pushing movement by a riding user on said user support means from a first position in which said user support means is in its first position to a second position in which said user support means is hi its second position;

handle structure having a handle portion for grasping and movement by a user riding on said user support means, said handle structure being mechanically associatable with said pull receiver to be moveable with said pull receiver from a use configuration to a storage configuration and when in said use configuration to be pullable from a first position when said pull receiver is in its first position to a second position when said pull receiver is in its second position, said second position of said handle structure being spaced toward said user support means from said first position of said handle and said handle structure being mechanically associatable with said push receiver to be moveable from a first position in which said push receiver is in its first position to a second position in which said push receiver is in its second position;

attaching means associated with one of said handle structure and said pull receiver and said push receiver for removably attaching said handle structure to one of said push receiver and said pull receiver;

synchronizing means extending between and connected to said pull receiver and to said guide means, said synchronizing means including,

first connecting means having a first end and a second end, said first end being rotatably connected to said pull receiver and said second end being rotatably connected to said push receiver, said first connecting means connecting said pull receiver to said push receiver so that upon movement of said user support means from its first position to its second position, pull receiver moves from its first position to its second position;

second connecting means having a first end and a second end, said first end being rotatably connected to said push receiver and said second end being rotatably connected to said guide means, said second connecting means connecting said push receiver to said guide means so that upon movement of said push receiver between its first position and its second position, said guide means moves from its first position to its second position; and

wherein said synchronizing means is disconnected from said guide means in said storage configuration and is connected in said use configuration.

5,626,543

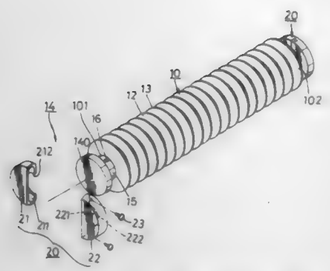
BELLOWS-LIKE EXERCISER

Ping Chen, No. 20, Nan-Mei St., Taichung City, Taiwan

Filed Apr. 3, 1996, Ser. No. 627,890
Int. Cl.[6] A63B *21/008*
U.S. Cl. 482—112 1 Claim

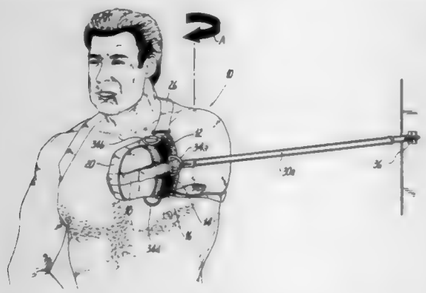
1. An exerciser comprising a bellows including an elongated wall body made from a pressible and expandable resilient material and defining a sealed interior chamber therein, said wall body having a first end portion, a second end portion and a plurality of pleated sections located between and integrally formed with said first and second end portions, said first end portion having an axially extending hole formed therethrough and a radially extending circular orifice which is formed through a wall thereof and which has a predetermined diameter for communicating an exterior

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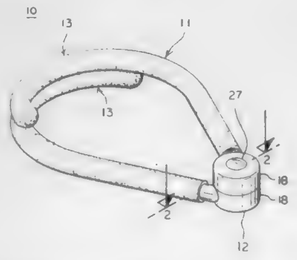
of said wall body with said interior chamber thereof, so as to permit air to enter into and exit from said interior chamber only via said orifice; and a pair of gripping units respectively attached to said first and second end portions of said wall body such that said wall body can be compressed or stretched by applying a force on said first and second end portions so as to vary volume of said chamber in said wall body, thereby enabling a user to achieve an alternate pull and push exercising effect, wherein each of said gripping units includes a tubular adjustment plug that is press-fitted into said axially extending hole of said first end portion and that has a radially extending adjustment hole which is formed through a wall of said plug and which is adjacent to and aligned with said orifice of said first end portion of said wall body, said plug being capable of being rotated within said wall body so as to deflect a portion of said adjustment hole from said orifice, thereby reducing flow rate of air between said adjustment hole and said orifice, and wherein each of said gripping units includes a cover attached to a corresponding one of said first and second end portions of said wall body, one of said covers being attached to said first end portion and having a curved circumferentially extending guide slot formed therein, said plug including guide tongue projecting axially and inwardly therefrom to engage said guide slot so as to confine said tongue in said slot, rotation of said plug relative to said wall body moving said tongue in said slot, engagement of said tongue in said slot registering said adjustment hole with at least a portion of said orifice.

5,626,544
EXERCISE DEVICE FOR AMPUTEES
Michael A. Foresto, 503 Pulaski Rd., Greenlawn, N.Y. 11740
Filed Nov. 22, 1994, Ser. No. 343,771
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—124 **20 Claims**



1. An exercise device for an amputee comprising:
a) a harness assembly configured to engage the stump of an amputated limb and including a circumferential support strap and a depending retention portion defining a basket-like structure;
b) resistance means for affording dynamic resistance to the amputee during the performance of an exercise;
c) engagement means associated with said circumferential support strap for engaging said resistance means;
d) an elongate bracing strap having opposed ends secured to said circumferential support strap at diametrically opposed locations to define a loop which can extend around the back of an amputee and over a shoulder of the amputee and;
e) means for adjusting the length of said bracing strap.

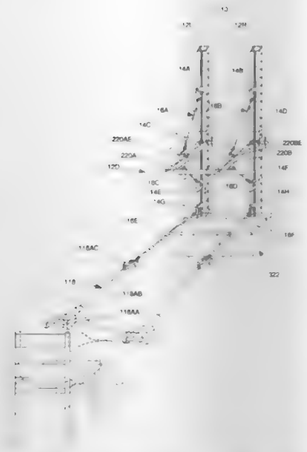
5,626,545
EXERCISE DEVICE
Geraldine Newman, 315 E. 72nd St., Apt. 5K, and Catherine McWilliams, 201 E. 69th-Ste. 2C, both of New York, N.Y. 10021
Continuation-in-part of Ser. No. 222,681, Apr. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 70,907, Jun. 4, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 574,814
Int. Cl.[6] A63B *21/045*
U.S. Cl. 482—127 **7 Claims**



1. An exercising device comprising a pair of hook shaped thigh engaging clamp members, means supporting said clamp members for lying and swinging in parallel planes about an axis perpendicular to said planes for relative movement between a closed contracted condition and an open extended condition, said parallel planes being mutually axially spaced, said clamp members having opposite confronting inside concave faces and outer free end sections which overlap when said clamp members are in said contracted condition, and means biasing said clamp members to said contracted condition.

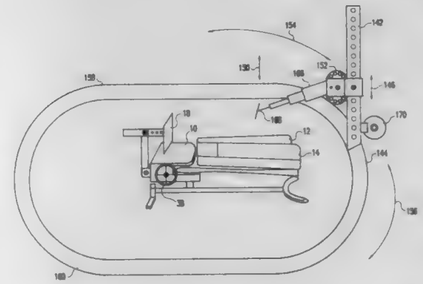
5,626,546
WALL MOUNTED EXERCISE UNIT
James R. Little, 12700 New Providence Rd., Alpharetta, Ga. 30201
Filed May 28, 1996, Ser. No. 654,220
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—129 **10 Claims**

1. A wall mount exercise unit (**10**) comprising:
A) a wall mount (**12**) comprises a wall mount left channel (**12L**) and a wall mount right channel (**12R**) which are securely attached to a wall with spacing complementary to a structural members located within the wall, the wall mount (**12**) functions to support adapters that facilitate exercising by an user, the wall mount left channel (**12L**) comprises a wall mount left channel front left member (**12LAB**) perpendicularly attached to one distal end of a wall mount left channel left side member (**12LAC**), an opposite distal end of the wall mount left channel left side member (**12LAC**) is perpendicularly attached to one distal end of a wall mount left channel back member (**12LAD**), an opposite distal end of the wall mount left channel back member (**12LAD**) is perpendicularly attached to one distal end of a wall mount left channel right side member (**12LAE**), an opposite distal end of the wall mount left channel right side member (**12LAE**) is attached



perpendicularly to one distal end of a wall mount left channel front right member (**12LAF**), the wall mount right channel (**12R**) comprises: a wall mount right channel top (**12RA**) and a wall mount right channel bottom (**12RB**) securely fastened to a wall at a spacing complementary to the hidden structural members of the wall, the wall mount right channel top (**12RA**) and wall mount right channel bottom (**12RB**) are sized to fit within the third storage box (**322**) for shipping, the wall mount right channel front left member (**12RAB**) is perpendicularly attached to one distal end of a wall mount right channel left side member (**12RAG**), an opposite distal end of the wall mount right channel left side member (**12RAC**) is perpendicularly attached to one distal end of a wall mount right channel back member (**12RAD**), an opposite distal end of the wall mount right channel back member (**12RAD**) is perpendicularly attached to one distal end of a wall mount right channel right side member (**12RAE**), an opposite distal end of the wall mount right channel right side member (**12RAE**) is attached perpendicularly to one distal end of a wall mount right channel front right member (**12RAF**);
B) at least one universal block (**14**) which is slidably and security attached within the wall mount (**12**), the at least one universal block (**14**) is selected from a group consisting of first universal block (**14A**), second universal block (**14B**), third universal block (**14C**), fourth universal block (**14D**), fifth universal block **14E**, sixth universal block **14F**, seventh universal block **14G**, eighth universal block **14H**, ninth universal block **14I**, and tenth universal block **14J**), the universal block (**14**) functions to attach an adapter means and an elastic means to the wall mount (**12**), the first universal block (**14A**) comprises a first universal block cube top face (**14AA**) attached perpendicularly to a first universal block cube side face (**14AB**) which has a first universal block cube aperture (**14AC**) centrally located and passing through to the opposite side, the first universal block cube side face (**14AB**) is further attached to a first universal block cube front face (**14AD**) along the front edge, the first universal block cube from face (**14AD**) has a first universal block tab (**14AE**) attached perpendicularly, along the central vertical line, the first universal block tab (**14AE**) protrudes through the wall mount left channel slot (**12LAA**) functioning to permit attachment of adapters to a first universal block tab aperture (**14AG**), the first universal block (**14A**) is secured within the wall mount left channel (**12L**) by a first universal block clevis pin (**14AH**) passing through the wall mount left channel aperture (**12LAG**) and the universal block tab aperture (**14AG**), the first universal block clevis pin (**14AH**) comprises a first universal block clevis pin head (**14AHA**) securely attached to one distal end of a first universal block clevis pin shaft (**14AHB**), an opposite distal end of the first universal block clevis pin shaft (**14AHB**) has a first universal block clevis pin aperture (**14AHC**) functioning to removably secure a first universal block retaining pin (**14AHD**) which prevents the first universal block clevis pin (**14AH**) from inadvertently dislodging.

5,626,547
STRETCH THERAPY APPARATUS FOR PHYSICAL FITNESS, REHABILITATION AND MEDICAL TREATMENT
D. Robert Davies, III, Richmond, Va., and David Dise, 8532 Waxford Rd., Richmond, Va. 23235, assignors to David Dise, Richmond, Va.
Division of Ser. No. 231,067, Apr. 22, 1994, Pat. No. 5,529,560, which is a continuation-in-part of Ser. No. 73,945, Jun. 8, 1993, Pat. No. 5,421,801. This application Jun. 2, 1995, Ser. No. 459,666
Int. Cl.[6] A63B *23/035*
U.S. Cl. 482—131 **12 Claims**

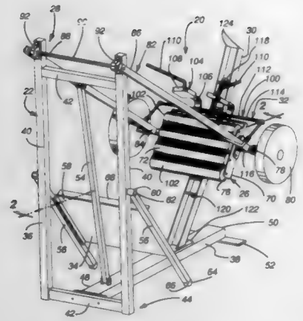


1. A stretching apparatus, comprising:
a set;
a pair of leg supports extending in a generally forward direction from said seat, said leg supports for holding the legs of a user perpendicular to the user'torso when in a sitting position in said seat;
a first pole;
tracking means, a predetermined distance from said seat, for selectively positioning said first pole at any position relative to the circumference of said seat;
a second pole pivotally connected to said first pole;
second pole positioning means for selectively positioning said second pole along said first pole;
pivot means connecting said first pole to said second pole for moving said second pole;
locking means for selectively positioning said second pole in a desired orientation; and
hand-grip means for gripping said second pole.

5,626,548
LOWER-BODY EXERCISE MACHINE
Randy Coyle, 5-A Great Meadow La., East Hanover, N.J. 07936
Filed Mar. 3, 1995, Ser. No. 398,373
Int. Cl.[6] A63B *21/08;23/04*
U.S. Cl. 482—137 **24 Claims**

1. A lower-body exercise machine, said machine comprising:
a. a frame adapted to be supported upon a support surface;
b. a carriage assembly having a first end and a second end, said second end pivotally attached to said frame causing said carriage assembly to pivot about said frame substantially upwardly and downwardly in an arcuate path;

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c. a support beam fixedly attached to and extending upwardly beyond said frame and being positioned outside of the arcuate path of motion permitted of said first end of said carriage assembly;

d. a platform pivotally attached to said frame at first end and adapted to engage the support surface at a second edge; and

e. a hookbar assembly pivotally attached to said carriage assembly, said hookbar assembly being pivotable to releasably engage said support beam and arrest the downward pivotable motion of said carriage assembly.

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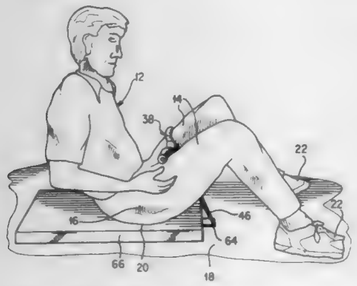
PORTABLE EXERCISING SYSTEM

Brad Olschansky, and Scott Olschansky, both of Smyrna, Ga., assignors to Torso Technology, Inc., Smyrna, Ga.

Continuation of Ser. No. 294,578, Aug. 23, 1994, abandoned, which is a division of Ser. No. 97,209, Jul. 27, 1993, Pat. No. 5,372,566. This application Jun. 12, 1996, Ser. No. 662,282

Int. Cl.[6] A63B *21/02*

U.S. Cl. 482—142 **2 Claims**



1. A portable exercising system comprising:

(a) means for applying a resistive force load to a user, resistive force load applying means including a longitudinally extended planar board member having opposing upper and lower sides and longitudinally opposed frontal and rear end surf, said upper side for engaging a gluteus portion of a user's body and said lower side being adapted to rest upon a base surface;

(b) stabilization means coupled to said resistive force load applying means for coupling said resistive force load applying means to said planar board member, said stabilization means including a fastening member secured to and extending beyond said frontal end surface and;

(c) force load application means coupled to said fastening member in longitudinally and angularly spaced relationship, said force load application means for engaging a thigh portion of a user's body oriented in non-parallel relationship with said planar board member for application of said resistive force load thereto, said force load application means including a rod member and means for adjustably securing said rod member and said fastening member each to the other at a predetermined and adjustable longitudinal displacement distance therebetween, said force load application means including a substantially inelastic length adjustable strap member coupled on opposing ends to said rod member and said stabilization means.

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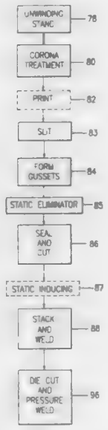
EASY DISPENSE T-SHIRT BAGS

John S. Amero, Villa Park; Carmelo Piraneo; Gary A. Woodruff, both of Torrance, and John E. Alvey, Fullerton, all of Calif., assignors to Orange Plastics, Inc., Compton, Calif.

Filed Oct. 1, 1993, Ser. No. 130,310

Int. Cl.[6] B31B *27/60;23/86*

U.S. Cl. 493—204 **25 Claims**



1. A method for forming a bag pack comprising a plurality of easy open bags from a elongated, flattened tube, the tube having a external surface and an internal surface, the method comprising the steps of:

(a) treating at least a portion of the external surface of the tube with a corona discharge;

(b) forming a series of individual bags from the treated tube, wherein each individual bag of said series of bags has a front panel with respective exterior and interior surfaces and a back panel with respective exterior and interior surfaces;

(c) inducing an alternating static charge on the series of bags by inducing a first charge on said respective exterior and interior surfaces of both the front and back panels of a first individual bag and by inducing a second charge on said respective exterior and interior surfaces of both the front and back panels of a second individual bag adjacent to said first individual bag, so that at least a portion of each bag is charged, with adjacent bags being at different polarities and said front and rear panels of the individual bags are at the same polarity, thereby forming a series of alternatively charged bags;

(d) stacking the series of alternatively charged bags in a pack such that adjacent exterior surfaces of respective front and back panels of each adjacently stacked bag attract each other and the interior surfaces of respective front and back panels of each individual bag repel each other so the bags are easy to open; and

(e) pressure welding the exterior surfaces of all the bags in the pack together at selected spots.

wherein the power of the corona discharge and the force of the pressure weld are such that (i) the interior surfaces of each bag are not welded together, (ii) when a respective bag is pulled from the pack, an adjacent next bag in the pack is at least partly opened, and (iii) when a bag is pulled from the pack, the adjacent next bag is not torn at the selected spots.

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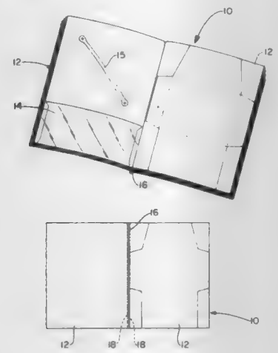
GREETING CARD KIT AND METHOD

Elizabeth J. Kearns, 1425 Cuyahoga St., Akron, Ohio 44313, and Bethany L. Miller, 613 Tallmadge Ave., Kent, Ohio 44240

Filed Jan. 13, 1995, Ser. No. 372,108

Int. Cl.[6] B31B *1/26*

U.S. Cl. 493—231 **22 Claims**



1. A kit for manufacturing a greeting card and an envelope for mailing said greeting card, the kit comprising a booklet having a plurality of pages, said plurality of pages including at least one page of card paper stock from which a card is selectively removed and formed; and

card template means for forming said at least one page of card paper stock into a decorative greeting card shape.

5,626,552

METHOD OF WASTE DISPOSAL

Takuji Nomura; Hidekazu Kuromatsu, and Masakazu Uekita, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP94/01909, § 371 Date Jul. 14, 1995, § 102(e) Date Jul. 14, 1995, PCT Pub. No. WO95/13886, PCT Pub. Date May 26, 1995

PCT Filed Nov. 11, 1994, Ser. No. 464,865

Claims priority, application Japan, Nov. 15, 1993, 5-195388; Dec. 28, 1993, 5-337889; Oct. 20, 1994, 6-255152; Oct. 20, 1994, 6-255153; Oct. 20, 1994, 6-255154

Int. Cl.[6] B09B *3/00*

U.S. Cl. 588—256 **28 Claims**

1. A waste treatment method, comprising the steps of:

mixing ash and fly ash resulting from incineration of waste containing calcium compounds such as calcium hydroxide, calcium oxide, and calcium chloride with a treating agent composed mainly of water glass solution and optional water such that the total amount of water is 25–75 parts by weight for 100 parts by weight of the ash and fly ash resulting from incineration of waste; and

kneading the resulting mixture.

5,626,553

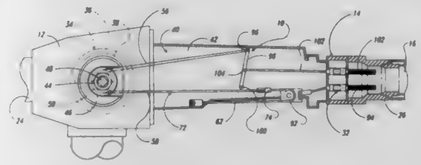
ENDOSCOPE ARTICULATION SYSTEM TO REDUCE EFFORT DURING ARTICULATION OF AN ENDOSCOPE

James J. Frassica, Clelmsford, and Robert E. Ailinger, Norwood, both of Mass., assignors to Vision-Sciences, Inc., Natick, Mass.

Division of Ser. No. 464,260, Jun. 5, 1995. This application Apr. 29, 1996, Ser. No. 639,981

Int. Cl.[6] A61B *1/005*

U.S. Cl. 600—146 **8 Claims**



1. An endoscope, comprising:

a handle;

an insertion tube having a proximal section attached to said handle and having a distal section opposite said proximal section, said distal section being articulatable relative to said proximal section;

a control cable attached to said distal section of said insertion tube, said control cable being axially movable relative to said insertion tube, said distal section of said insertion tube being articulated upon axial movement of said control cable;

a control member attached to said handle and positioned for movement by a user relative to said handle; and

at mechanical advantage coupler connected to said control member and to said control cable, said mechanical advantage coupler including a lever and a connecting cable, a first portion of said lever being connected to said handle and a second portion of said lever being connected to said control cable, and said connecting cable having a first end connected to said lever and a second end connected to said control member, said mechanical advantage coupler providing a mechanical advantage between said movement of said control member and axial movement of said control cable.

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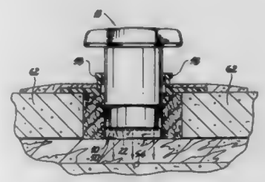
GEL CONTAINMENT STRUCTURE

John P. Ryaby, Essex Fells; Roger J. Talish, Fairfield, both of N.J., and Joan M. McCabe, White Plains, N.Y., assignors to Exogen, Inc., Piscataway, N.J.

Filed Feb. 21, 1995, Ser. No. 391,109

Int. Cl.[6] A61B *17/56*

U.S. Cl. 601—2 **33 Claims**



1. Ultrasonic delivery system for therapeutic use having a base; ultrasonic generation means mounted to the base, the ultrasonic generation means including an exposed operative surface positionable adjacent a skin location; a coupling gel and

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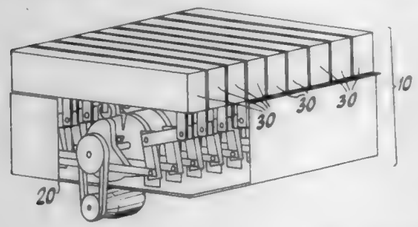
enclosure means for sealingly retaining the coupling gel substantially adjacent the operative surface and for isolating the operative surface from a skin location, the enclosure means being attached to the ultrasonic generation means immediately adjacent the outer periphery of the operative surface.

5,626,555

SUPPORT STRUCTURE CONSISTING OF A PLURALITY OF MOBILE ELEMENTS FOR CHAIRS, BEDS AND THE LIKE

Carmelo Di Blasi, and Carlo M. Di Blasi, both of Francofonte, Italy, assignors to Di Blasi Industriale S.r.l., Vizzini, Italy

Filed Sep. 27, 1994, Ser. No. 312,582
Claims priority, application Italy, Sep. 28, 1993, FI93A0185
Int. Cl.° A61G *7/015*
U.S. Cl. 601—98 **7 Claims**



1. A support structure for chairs, beds and the like, comprising:
a plurality of support elements movable individually or in groups between a support position and a lower position, wherein at any given time at least some of said support elements are in said support position and said support elements in said support position at any given time generally define a body support surface for supporting a person's body; and
a plurality of mechanisms each associated with one of said support elements for lowering support elements from and successively returning said support elements to said support position to temporarily relieve body supporting pressure on a portion of the body, each mechanism including an articulated parallelogram structure including the respective support element, said parallelogram structure hingedly connected to a frame, each mechanism also including a follower connected to said support element and a cam engaging said follower, said cam comprising a disk mounted on-center on a shaft supported by said frame and including a circular portion and a depression, said support elements being lowered from and successively returned to said support position when respective followers travel along the depressions of said cams during rotation of said cams, said support elements remaining at said support position when respective followers travel along said circular portion of said cams during rotation of said cams.

5,626,556

HOOK AND LOOP ATTACHMENT FOR A COMPRESSION SLEEVE AND METHOD OF ATTACHING A HOOK AND LOOP FASTENER TO A COMPRESSION SLEEVE

Arnold Tobler, Liberty; Lafoy Ellenburg, Seneca; David T. Melton, West Union, and John E. Pendergrass, Seneca, all of S.C., assignors to The Kendall Company, Mansfield, Mass.

Continuation of Ser. No. 280,800, Jul. 26, 1994, abandoned.
This application Dec. 5, 1995, Ser. No. 567,397
Int. Cl.° A61H *9/00*
U.S. Cl. 601—151 **8 Claims**

8. A device for applying compressive pressure against a patient's leg from a source of pressurized fluid, comprising:



an elongated pressure sleeve for enclosing a length of the patient's leg;
said sleeve having a pair of opposed sheets, each of which having a perimeter, each said sheet being attached to the other along their respective perimeters;
at least one pressure chamber within said sleeve;
conduit means for introducing pressurized fluid into said at least one pressure chamber from the source of pressurized fluid; and
a fastener assembly for releasably securing said sleeve around the patient's leg, said assembly comprising separate loop and hook fastener components adapted for placement over each other when said sleeve is wrapped around the patient's leg, the loop fastener component having a perimeter and comprising a loop fastener portion having a back surface and a backing having a front surface, said loop fastener portion laminated to said backing with said back surface contacting said front surface, said loop fastener portion and said backing having the same dimensions, and wherein said loop fastener portion is attached to one of said pair of sheets by RF welding said backing to one of said pair of sheets with a continuous single RF weld within the perimeter of the loop fastener component.

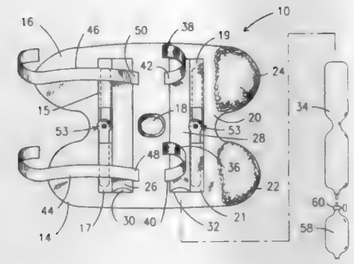
5,626,557

KNEE BRACE HAVING AN INFLATABLE BLADDER AND EXTERIOR SUPPORT ELEMENT

Donaerl B. Mann, Ft. White, Fla., assignor to D'Mannco, Inc, High Springs, Fla.

Filed Jan. 11, 1996, Ser. No. 583,849
The portion of the term of this patent subsequent to Aug. 22, 2014, has been disclaimed.
Int. Cl.° A61F *5/00*
U.S. Cl. 602—26 **20 Claims**

1. An orthopedic appliance for surrounding a knee of a patient to treat knee flexion contractures, the appliance comprising,
a cloth body having a top and bottom layer, a foam layer located intermediate the top and bottom layers, and a generally centrally located hole, the top layer covered by a tightly woven fabric, the bottom layer covered by a soft non-abrasive material for contact with the skin of the patient, the cloth body wrapped around the knee of the patient such that an area is provided from which a patella portion of the knee can protrude and the centrally located hole exposes a posterior portion of the knee.
means attached to the top layer of the cloth body for securing the cloth body in a wrapped position.



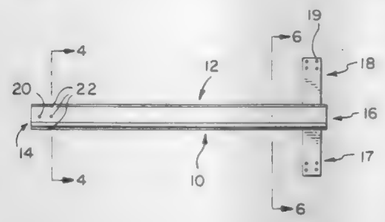
at least two longitudinal pockets integrally attached to the top layer of the cloth body, each longitudinal pocket having an opening formed therein,
an air bladder mounted within each longitudinal pocket, the air bladders permitting inflation to rigidly set the knee in a desired position and deflation so that the patient can flex the knee, the air bladders having been inserted through the openings in the longitudinal pockets,
a support element adjacent at least one of the longitudinal pockets containing the air bladder and means for mounting the support element to the top layer of the cloth body adjacent the air bladder, the support element providing lateral and medial support to the knee of the patient.

5,626,558

ADJUSTABLE FLOW RATE GLAUCOMA SHUNT AND METHOD OF USING SAME

John Suson, 362F Willow Grove Dr., Pewaukee, Wis. 53072

Filed May 5, 1995, Ser. No. 435,037
Int. Cl.° A61M *5/00;35/00*
U.S. Cl. 604—8 **7 Claims**



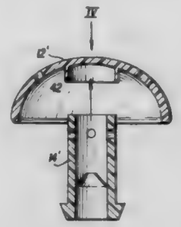
1. An adjustable flow rate implant device for draining aqueous humor from an eye, comprising:
a hollow tubular member having a first and second end, the first end being sealed and having a size and shape to allow the first end to be inserted in anterior portion of an eye, the second end being open, and the first and second ends being connected by a wall, and wherein the flow rate of aqueous humor from the device may be adjusted after implantation by providing the portion of the wall of the tubular member located within the anterior portion of the eye with at least one opening to allow a sufficient flow rate of aqueous humor from the eye into the first end of and through the tubular member to the exterior of the implant device, to relieve damaging intraocular pressure, wherein at least one portion of the wall connecting the first and second ends of the tubular member is thinner than the remaining portion of the wall.

5,626,559

OPHTHALMIC DEVICE FOR DRAINING EXCESS INTRAOCULAR FLUID

Arie Solomon, Givatayim, Israel, assignor to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel Aviv, Israel

Filed May 1, 1995, Ser. No. 431,530
Claims priority, application Israel, May 2, 1994, 109499
Int. Cl.° A61M *5/00;35/00*
U.S. Cl. 604—9 **5 Claims**



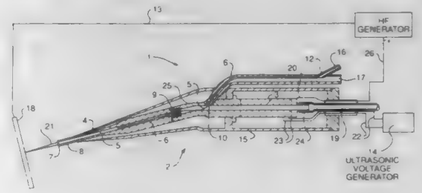
1. An implant device for draining intraocular fluid from the anterior cavity of an eye comprising:
a generally domed shaped head portion having a concave inner surface and at least one opening for draining fluid, said head portion terminating in a circular or elliptical edge adapted to engage the eye so as to define a fluid receiving space bounded by said head portion and said eye;
a leg portion comprising a first end adapted to pierce the sclera or cornea of the eye, an opposite second end mounted to the concave inner surface of said head portion, a first fluid opening at said first end, a second fluid opening at said second end in communication with said fluid receiving space, and a fluid duct communicating said first and second fluid openings;
wherein an opening is defined between said edge and said leg portion for absorption of said fluid by the area of the eye between said edge and said leg; and
a valve for controlling fluid flow through said implant.

5,626,560

DIATHERMIC HAND-HELD INSTRUMENT WITH AN ENDOSCOPIC PROBE

Holger Söring, Quickborn, Germany, assignor to Soring Medizintechnik GmbH, Quickborn, Germany

Continuation of Ser. No. 222,301, Apr. 4, 1994, abandoned.
This application Nov. 13, 1995, Ser. No. 558,930
Claims priority, application Germany, Apr. 13, 1993, 93 05 428.9; May 12, 1993, 93 07 183.3
Int. Cl.° A61B *17/20*
U.S. Cl. 604—22 **17 Claims**



1. A diathermic handpiece for use in medical procedures for conducting ultrasonic dissection and for welding blood vessels in a subject connected to a pole plate (18), said handpiece (1) comprising: a sonotrode (8), the sonotrode (8) being coupled to a sleeve of said handpiece (1), the sleeve having disposed therein a transducer (3) for supplying ultrasonic oscillations to the sonotrode (8), and

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(ii) a suction drain (**6**) in fluid communication with the sonotrode (**8**) for removal of fluids therethrough, said handpiece (**1**) further comprising:

gas supply means coupled to the sonotrode (**8**) for supplying inert gas to the sonotrode (**8**), said gas supply means being disposed in a center part of the sleeve; and

a rinsing agent supply hose (**5**) disposed in an inner part of the sonotrode (**8**) and the suction drain (**6**), and ending shortly before a tip (**7**) of the sonotrode (**8**),

wherein the sonotrode (**8**) is composed of electrically conductive material, and has (a) an exit opening disposed at the tip (**7**) and (b) an inert gas passage (**6'**) in fluid communication with said gas supply means, said inert gas passage (**6'**) extending through the sonotrode (**8**) to the exit opening through which the inert gas supplied by the gas supply means flows, and

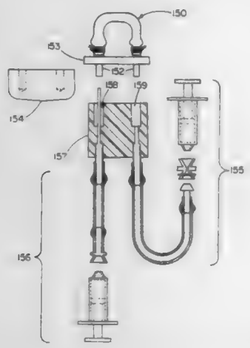
wherein, upon application of inert gas from a gas supply to said gas supply means and application of high-frequency energy to the sonotrode (**8**) and the pole plate (**18**), a plasma beam for inert gas coagulation is generated between the sonotrode (**8**) and the subject.

5,626,561

IMPLANTABLE CONTAINMENT APPARATUS FOR A THERAPEUTICAL DEVICE AND METHOD FOR LOADING AND RELOADING THE DEVICE THEREIN

Mark D. Butler, and Stanley L. Mish, both of Flagstaff, Ariz., assignors to Gore Hybrid Technologies, Inc., Flagstaff, Ariz.

Filed Jun. 7, 1995, Ser. No. 479,932
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—49 **6 Claims**



1. A method of repeatedly filling and emptying an implantable containment apparatus tube with a therapeutical device, which comprises:

(a) providing an implantable containment apparatus in the form of a tube comprised of a selectively permeable polymeric material having an exterior surface, an interior surface defining a luminal space of substantially uniform diameter, and an access means at each end of the tube that permits access to the luminal space of the tube;

(b) opening both access means of the implantable containment apparatus tube to access the luminal space of the tube;

(c) providing a means of establishing and maintaining a fluid stream through the luminal space of the implantable containment apparatus tube;

(d) connecting the fluid stream means of step (c) to one of the opened access means of the implantable containment apparatus tube:

(e) establishing a fluid stream through the luminal space of the implantable containment apparatus tube with the fluid stream means of step (c);

(f) entraining a therapeutical device in the fluid stream;

(g) delivering the entrained therapeutical device into the luminal space of the implantable containment apparatus with the fluid stream;

(h) discontinuing the fluid stream;

(i) disconnecting the fluid stream means of step (c) from the opened access means;

(j) closing both access means of the implantable containment apparatus to contain the therapeutical device within the luminal space of the implantable containment apparatus;

(k) providing a means of establishing and maintaining a fluid stream around the therapeutical device and through the luminal space of the implantable containment apparatus;

(l) opening both access means of the implantable containment apparatus;

(m) connecting the fluid stream means of step (k) to one of the opened access means of the implantable containment apparatus;

(n) establishing a fluid stream around the therapeutical device and through the luminal space of the implantable containment apparatus tube to entrain the therapeutical device in the fluid stream;

(o) removing the entrained therapeutical device from the luminal space of the implantable containment apparatus with the fluid stream of step (n); and

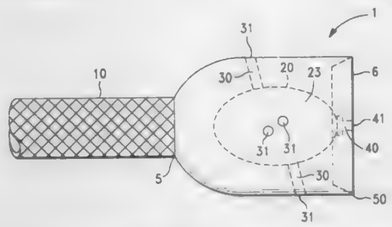
(p) repeating steps (c) through (o) as desired.

5,626,562

DRUG DELIVERY CATHETER

Anthony J. Castro, San Francisco, Calif., assignor to Devices for Vascular Intervention, Santa Clara, Calif.

Filed Nov. 28, 1994, Ser. No. 345,104
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—53 **24 Claims**



1. A device for the application of medicaments to a biological conduit, comprising:

a rotatable and axially translatable applicator, the applicator including:

an outer surface;

a distal end and a proximal end;

an interior reservoir for containing a medicament;

at least one delivery path connecting the interior reservoir to the surface of the applicator; and

a drive cable attached to the proximal end of said applicator for imparting and translational motion to the applicator,

whereby the medicament contained in the reservoir is deliverable to the biological conduit when the applicator is rotated.

5,626,563

IRRIGATION SYSTEM WITH TUBING CASSETTE

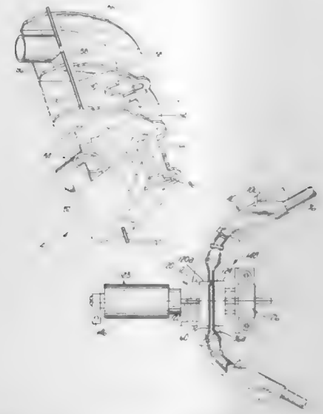
Larry H. Dodge, River Falls, Wis.; Ulf B. Dunberger, Portsmouth, N.H.; Thomas D. Egan, Marblehead, Mass.; Harpreet Kaur, Woodbury, Minn., and Kenneth E. Merte, Saline, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 3,475, Jan. 12, 1993, Pat. No. 5,403,277. This application Jan. 11, 1995, Ser. No. 371,011
Claims priority, application European Pat. Off., Jan. 12, 1994, 94 906653
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—153 **49 Claims**

1. A tubing set for use in an irrigation system of the type comprising a housing having a cassette-receiving passageway, a race mounted on one side of the passageway, a peristaltic pump head mounted on the opposing side of the passageway, and means for moving the race and pump head relative to one another between a pumping position and a release position. wherein in the pumping position the pump head and the race are positioned in close proximity and further wherein in the release position the pump head and the race are positioned distally from one another, the tubing set comprising:

an inflow line for providing irrigation fluid to the internal body irrigation site;

a cassette having a generally arcuate shape, the cassette retaining a portion of the inflow line and including an opening for receiving the pump head and the race on opposing sides of the inflow line, a segment of the portion of the inflow line being exposed within the opening such that the pump head and the race at least partially compress the segment when in the pumping position.

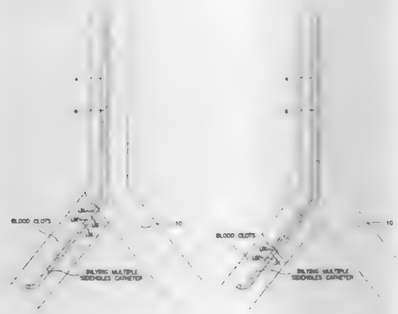


5,626,564

ADJUSTABLE SIDEHOLES CATHETER

Xiao X. Zhan, and Patricia E. Thorpe, both of Omaha, Nebr., assignors to Creighton University, Omaha, Nebr.

Filed Mar. 31, 1995, Ser. No. 414,298
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—164 **18 Claims**



1. An adjustable sideholes catheter, comprising

an inlying catheter having a distal end and a proximal end wherein said distal end has multiple sideholes and wherein said distal end has at least two discrete radiopaque marks;

an outlying catheter having a distal end and a proximal end wherein said proximal end has an irrigation port;

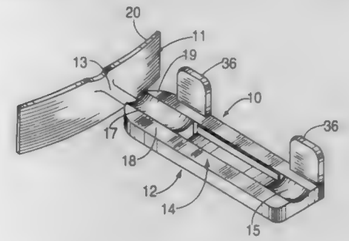
wherein said outlying catheter has a slightly greater diameter than said inlying catheter, enabling said outlying and inlying catheters to be moved slidably back and forth.

5,626,565

MEDICAL TUBE HOLDER AND SUPPORT STRUCTURE

Robert M. Landis, Mountainside, and Bernard Ackerman, Metuchen, both of N.J., assignors to Ackrad Laboratories, Inc., Cranford, N.J.

Filed Jan. 25, 1995, Ser. No. 377,857
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—174 **24 Claims**



1. A medical tube holder of resilient material for the placement of endotracheal, gastrointestinal and other such tubes relative to a patient's body comprising:

a body attachment site compatible with contact with human flesh:

a medical tube support extension projecting from said body attachment site, said extension comprising at least two regions; a first of said regions being a stress dissipation region having means for reduction of stress forces exerted on said medical tube holder; and a second of said regions being a medical tube support region having a concave trough running along at least a portion of its length;

frictional tube engaging means associated with said tube support extension for inhibiting longitudinal motion of an inserted tube pressed against said engaging means; and

means for securing a medical tube within said holder.

5,626,566

LARGE DOSE PEN

Lars P. K. Petersen, Gentofte, and Niels-Aage B. Hansen, Havdrup, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00267, § 371 Date Mar. 24, 1994, § 102(e) Date Mar. 24, 1994, PCT Pub. No. WO93/07922, PCT Pub. Date Apr. 29, 1993
PCT Filed Sep. 7, 1992, Ser. No. 211,131
Claims priority, application Denmark, Oct. 18, 1991, 1754/91
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—208 **6 Claims**

1. An apparatus for use with a pen shaped syringe for repetitive injection of individually set doses of a medicine from a cylinder ampoule reservoir, comprising:

a housing,

a nut member with an internal thread fixed in the housing,

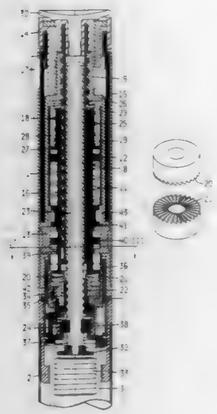
a dose setting member rotatable in a fist direction to set a dose and in a second direction to inject a set dose, and comprising a spindle with an external thread engaging the internal thread of said nut member,

a dosing member coupled to the dose setting member to be rotated with this dose setting member,

an indicator member, rigidly connected to the dose setting member to follow axial and rotational movement of this dose setting member,

a piston drive member which when rotated in said second direction moves a piston into the cylinder ampoule,

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a unidirectional coupling provided between the dosing member and the piston drive member, by a first coupling part on the dosing member engaging a second coupling part on the piston drive member and so directed that the rotation of dosing member induced by dose setting rotation of the dose setting member is not transmitted to the piston drive member whereas rotation in the opposite dosing direction is; wherein a nut/screw connection is established between the housing and the dose setting member and means are provided to optionally release the unidirectional coupling between the dosing member and the piston drive member.

5,626,567

SYRINGE ASSEMBLY

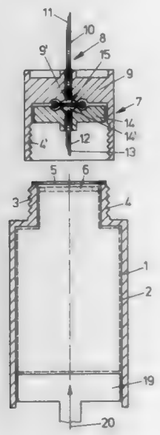
Wilhelm Gmeiner, AM Sudhang 31, 92224 Amberg, Germany

Filed Jun. 21, 1995, Ser. No. 493,387

Claims priority, application Germany, Jun. 21, 1994, 44 21 617.3; Feb. 3, 1995, 195 03 474.0

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—236 **5 Claims**



1. An insulin syringe with an exchangeable injection needle and an insulin ampulla replaceably connected to said needle and received within a syringe casing, said needle comprising:

two substantially coaxial needle portions, disposed apart from each other, and separated from each other by a flexible foil-type membrane made of a self-sealing elastomeric material and provided with passage stopping means in line with said two coaxial needle portions, an outer injection needle portion being fastened within a needle receiving body of a needle casing, and an inner needle portion for connection to said insulin ampulla, fastened to a guide body positioned within said needle casing, said passage stopping means being formed as one of a tiny slit and a hole, allowing fluid to flow from said insulin ampulla through said inner needle portion to said outer needle portion, when said fluid is pressure actuated, and in absence of pressure said passage stopping means prevents any fluid flow to said outer needle portion,

said guide body being inserted into said needle casing by said inner needle portion, and said needle casing having threads, on a cylindrical inner wall, which engage outer threads formed on a neck of said syringe casing so that screwing said syringe casing with said insulin ampulla onto said needle casing causes a tip of said inner needle portion to pierce said insulin ampulla closure and pass insulin to a tip of aid outer needle portion.

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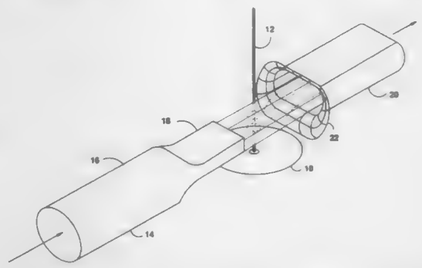
SMOKE EVACUATION APPARATUS

Charles R. Yeh, Plantation, and Paul J. Celauro, Sunrise, both of Fla., assignors to Acuderm Inc., Fort Lauderdale, Fla.

Filed Dec. 26, 1995, Ser. No. 579,615

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—315 **10 Claims**



1. A smoke evacuator for use in electrosurgery and laser surgery for removing smoke and surgical debris from the surgical site comprising:

(a) a fluid nozzle positioned adjacent to a surgical site and adapted to supply a rapidly moving fluid stream to entrain smoke and surgical debris in the rapidly moving fluid stream to thereby remove the smoke and surgical debris from the surgical site;

(b) a collection nozzle including a flared horn portion having a hyperbolic configuration positioned adjacent to the surgical site and positioned to receive the rapidly moving fluid stream having smoke and surgical debris entrained therein; and,

(c) evacuation means operatively connected to the collection nozzle in fluid flow communication therewith, said evacuation means creating a reduced pressure in the collection nozzle whereby substantially all the rapidly moving fluid stream having smoke and surgical debris entrained therein is drawn into the collection nozzle to remove the smoke and surgical debris from the environment.

5,626,569

DEVICE FOR VENTING AND CONTROLLING THE PRESSURE INSIDE A STOMA COLLECTION BAG

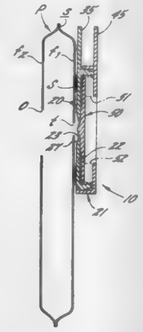
Henri Holtermann, Saint-Jean-de-Luz, and Claude Hamelin, Ascain, both of France, assignors to B. Braun Biotrol, Boulogne Billancourt, France

Filed Nov. 3, 1994, Ser. No. 333,643

Claims priority, application France, Nov. 8, 1993, 93 13246; May 11, 1994, 94 05805

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—333 **19 Claims**



1. A vent device configured to adapt to a stoma bag, said vent device comprising an essentially flat housing comprising: a base having a face inside the housing and a face outside the housing, said vent device being adapted to be fixed via said outside face to an exposed face of said bag and having an opening communicating with said bag, a cover configured to be removably assembled with said bag and to close said base when said cover and said base are assembled together, a valve which is closed at rest, the valve being formed by a valve member adapted to bear against the inside face of said opening in said base, said valve member being integral with said cover and being integral with resilient means for urging said valve member against said base with a predetermined return force, said resilient means being constituted by at least one resiliently deformable flat extending between said cover and said valve member, said housing being further provided with manual actuator means to place said valve member in a closed or opened position.

5,626,570

OSTOMY APPLIANCE BELT

Kerry R. Gallo, 20733 Elberta Rd., Lynnwood, Wash. 98036

Filed Jun. 11, 1996, Ser. No. 661,626

Int. Cl.[6] A61F *5/44*

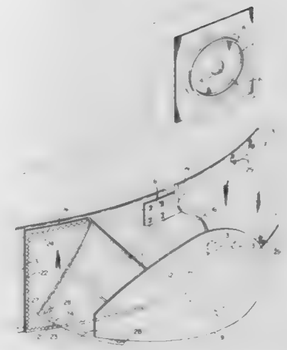
U.S. Cl. 604—345 **10 Claims**

1. An ostomy belt for supporting an ostomy apparatus connected to an ostomy appliance comprising, in combination:

an elongated waist-encircling band of elastic material having a front surface with end connectors and cut-out areas in the terminal ends for accommodating an ostomy appliance,

a pocket forming elastic fabric panel connected to said front surface on one terminal end area of said band to form an ostomy apparatus support pocket, and

a flap on said panel having a free end sized to extend across said terminal ends and being connectable to the other end of the band when the band is secured about the wearer's waist,



whereby said flap may be connected to said other end of the band to close said pocket and conceal said ostomy appliance.

5,626,571

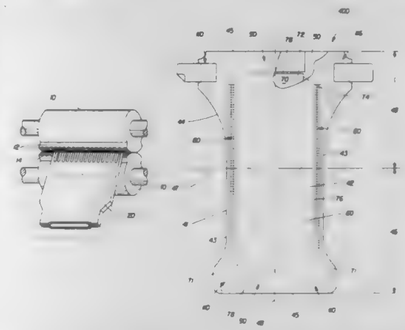
ABSORBENT ARTICLES HAVING SOFT, STRONG NONWOVEN COMPONENT

Terrill A. Young, and George C. Dobrin, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 30, 1995, Ser. No. 565,461

Int. Cl.[6] A61F *13/15;13/20;* **B32B** *27/14;* **D04H** *1/04*

U.S. Cl. 604—370 **21 Claims**



1. A disposable absorbent article comprising a liquid pervious topsheet, a liquid impervious backsheet, and an absorbent core disposed between said topsheet and said backsheet, wherein said topsheet comprises: a apertured nonwoven comprising fibers comprising polyethylene, at least a portion of said fibers being consolidated, said nonwoven being permanently mechanically stretched in the cross-machine direction and having a cross-machine direction tensile strength of at least about 300 g/in and a cross-machine direction elongation at break of at least about 40%.

5,626,572

ABSORBENT ARTICLE WITH MULTIPLE FLAPS

Nicholas A. Ahr, Cincinnati, and Edward J. Milbrada, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

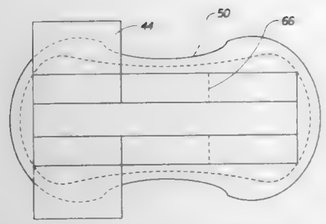
Filed Nov. 10, 1994, Ser. No. 337,700

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—385.1 **21 Claims**

1. A disposable absorbent article for protecting an undergarment form soiling, said absorbent article comprising:

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a central absorbent body having longitudinal and transverse centerline and first and second longitudinal edges, said central absorbent body comprising;

a liquid pervious topsheet;

a liquid impervious backsheet joined with said topsheet;

an absorbent core between said topsheet and said backsheet; and

an adjustable undergarment protection system joined to said central absorbent body, said adjustable undergarment protection system comprising a plurality of longitudinally adjacent flap pairs arranged so that each of said flap pairs can be separately deployed from a retracted position to an extended position, each of said flap pairs comprising a material, wherein at least one of said plurality of flap pairs is also joined to at least one of said plurality of flap pair longitudinally adjacent thereto along a transverse line of weakness in said material wherein said line of weakness allows controlled tearing of said material.

5,626,573

PANTS TYPE DISPOSABLE DIAPER

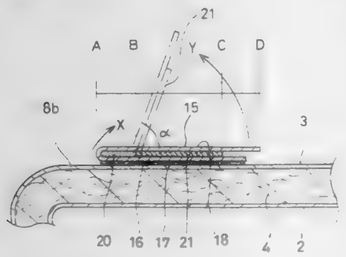
Takamitsu Igaue; Tohru Sasaki, and Hiroyuki Soga, all of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Sep. 14, 1995, Ser. No. 528,458

Claims priority, application Japan, Sep. 20, 1994, 6-225290

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—385.1 **2 Claims**



1. A disposable pants, comprising:

a liquid-permeable topsheet;

a liquid-impermeable backsheet;

a liquid-absorbent core disposed between said topsheet and said backsheet;

said topsheet, backsheet and core establishing a front section, a rear section and a crotch section therebetween of said pants;

first and second elastic members provided around waist portions and leg-portions, respectively, formed in said front, rear and crotch sections; and

a discard fastening tape extending longitudinally of said backsheet at said crotch section on an outer surface of said backsheet, said fastening tape being folded into upper and lower longitudinally extending sections, an outer surface of said lower section being attached to the outer surface of said backsheet, an inner surface of said upper section being applied with a first adhesive so that said inner surface is releasably bonded to an inner surface of said lower section; and

wherein said upper and lower sections are bonded to each other with a second adhesive having an adhesive strength higher than that of the first adhesive, said second adhesive being disposed directly adjacent a fold line along which said tape is folded longitudinally thereof into said upper and lower sections.

5,626,574

DISPOSABLE DIAPER

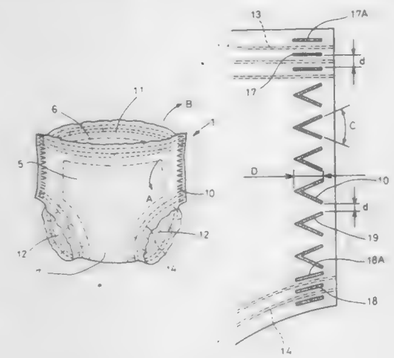
Tohru Sasaki, and Toshifumi Ohtsubo, both of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Dec. 6, 1994, Ser. No. 354,134

Claims priority, application Japan, Dec. 10, 1993, 5-066021

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 **6 Claims**



1. A disposable diaper comprising:

a liquid-permeable topsheet;

a liquid-impermeable backsheet;

a liquid-absorbent core sandwiched between said topsheet and said backsheet;

the topsheet, backsheet and core forming a front body and a rear body, said front and rear bodies separated longitudinally by a crotch zone;.

the diaper having front and rear bodies seamed to each other by a series of intermittent welded zones having first and second side edges and arranged along transversely opposite side portions of said front and rear bodies, the transversely opposite side portions being defined by portions of the front and rear bodies extending outwardly from transversely opposite side edges-of said core;

the diaper having a plurality of elastic members along peripheries of at least one of a waist-opening and a pair of leg openings, wherein a first generally rectangular weld pattern including a plurality of intermittent generally rectangular welds is provided at said transversely opposite side portions of said front and rear bodies with one of said plurality of intermittent rectangular welds disposed between pairs of adjacent elastic members with long sides of the first generally rectangular welds generally parallel to the elastic members; and

wherein welded patterns define each of said welded zones, each welded pattern having an outer contour portion defined by outer edges, said outer edges being spaced apart at said second side edge and being connected to each other at said first side edge;

the combination of rectangular welds and welded patterns along the intermittent welded zones permitting the diaper to be torn off a user longitudinally along the welded zones.

5,626,575

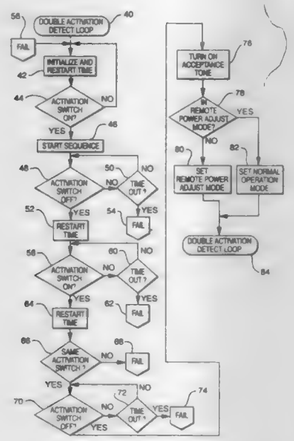
POWER LEVEL CONTROL APPARATUS FOR ELECTROSURGICAL GENERATORS

James C. Crenner, Golden, Colo., assignor to Conmed Corporation, Utica, N.Y.

Filed Apr. 28, 1995, Ser. No. 431,013

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—34 **22 Claims**



1. An electrosurgical generator system, said system comprising:

an electrosurgical generator for producing electrosurgical power,

an electrosurgical handpiece including an active electrode for receiving said electrosurgical power from said generator, a first coagulation mode switch connected to said electrosurgical generator, for, when in an activated state, providing a coagulation mode of operation of said generator, and a first cut mode switch connected to said electrosurgical generator for, when in an activated state, providing a cut mode of operation of said generator, and

a foot activated switch device including a second coagulation mode switch connected to said electrosurgical generator for, when in an activated state, providing said coagulation mode of operation of said generator and a second cut mode switch connected to said electrosurgical generator for, when in an activated state, providing said cut mode of operation of said generator,

said generator including signal processing means connected to said handpiece and said foot activated switch device for monitoring for the activated state of at least one switch of said first and second coagulation mode switches and said first and second cut mode switches so as to detect any activation of the at least one switch being monitored, and for, responsive to at least two successive activations of only a single switch of the at least one switch being monitored, providing control of the power produced by said electrosurgical generator by further activation of said single switch.

5,626,576

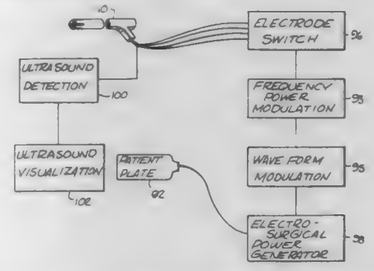
ELECTROSURGICAL CATHETER FOR RESOLVING ATHEROSCLEROTIC PLAQUE BY RADIO FREQUENCY SPARKING

Michael Janssen, Englewood, Colo., assignor to Advanced Coronary Intervention, Inc., Englewood, Colo.

Division of Ser. No. 230,439, Apr. 19, 1994, Pat. No. 5,454,809, which is a continuation of Ser. No. 96,651, Jul. 22, 1993, abandoned, which is a continuation of Ser. No. 974,670, Nov. 22, 1992, abandoned, which is a continuation of Ser. No. 849,638, Mar. 5, 1992, abandoned, which is a continuation of Ser. No. 637,992, Jan. 3, 1991, abandoned, which is a continuation of Ser. No. 294,270, Jan. 6, 1989, abandoned. This application Sep. 21, 1995, Ser. No. 531,453

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—41 **21 Claims**



1. An electrosurgical device for resolving an occlusive deposit in a lumen of a subject, said device having a distal end which is insertable within and along the lumen and manipulatable therethrough to a desired position where the device is operated to resolve the occlusive deposit by radio frequency sparking, said device comprising:

(a) an elongated flexible hollow tube having a distal end, a proximal end, and a diameter smaller than the diameter of the lumen into which said device is being inserted;

(b) a plurality of electrodes proximate or on said distal end of the tube, the electrodes being radially spaced about the tube;

(c) selection means in electrical communication with the electrodes for selectively supplying a radio frequency electrical current to at least one of said electrodes whereby said at least one electrode becomes a transmitting electrode and a user can select the radial location of the occlusive deposit corresponding to the transmitted electrode so as to minimize damage to the lumen and maximize occlusive deposit removal; and wherein said radio frequency sparking occurs between said electrodes and said occlusive deposit and the current returns to said selection means via a patient plate adapted to be attached to a portion of the subject remote from the location of the occlusive deposit.

5,626,577

MANUALLY EXTENDABLE ELECTROCAUTERY SURGICAL APPARATUS

George A. Harris, P.O. Box 9811, Washington, D.C. 20016

Continuation-in-part of Ser. No. 202,637, Feb. 28, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 578,205

Int. Cl.[6] A61B *17/39*

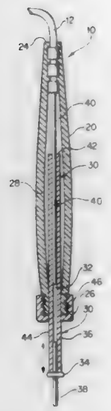
U.S. Cl. 606—45 **20 Claims**

1. A manually extendable electrocautery surgical apparatus, comprising:

a) an elongated, non-conductive main housing having a cord end and a distal end, with an elongated aperture extending into the main housing from the distal end;

b) an elongated electrode housing having an internal aperture extending therethrough, with an electrically conductive material surrounding the internal aperture, and an insulating sleeve surrounding the electrically conductive material, the electri-

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cally conductive material surrounding the internal aperture receiving a portion of an electrode therein, and the insulating sleeve sized to be slidably received at least partially within the elongated aperture extending into the main housing from the distal end;

c) an elongated, electrically conductive post extending within the elongated aperture in the main housing, the post sized to provide electrical contact with the electrically conductive material within the internal aperture of the slidably received, elongated electrode housing; and

d) an actuating means for selectively actuating an electrical current passing through an electrical cord from remote electrical supply means, through the electrically conductive post to the electrode;

wherein the elongated electrode housing is slidably positioned in relation to the main housing, to adjustably position the electrode to a desired depth suitable for selectively cauterizing and cutting a patient's tissue during an operation.

5,626,578

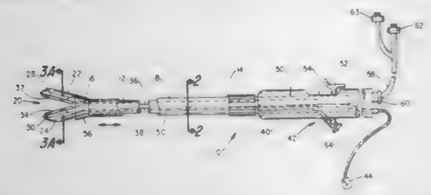
RF VALVULOTOME

Claude Tihon, 11304 Bluestem La., Eden Prairie, Minn. 55347

Filed May 8, 1995, Ser. No. 437,020

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—48 **25 Claims**



1. A bipolar electrosurgical instrument for performing a valvulotomy procedure on a vein to disable venous valves contained therein comprising:

(a) an elongated, flexible catheter having a proximal end, a distal end and at least one lumen extending therebetween, the catheter being of a cross-sectional size permitting its insertion into a vein to be treated and having at the distal end thereof first and second spaced-apart paddle members dimensioned to fit within opposing pockets defining cusps of venous valves, the paddle members having opposed facing surfaces, each with a pattern of metallization thereon, and

(b) a pair of conductors insulated from one another extending through the at least one lumen from the proximal end and individually electrically joined to the pattern of metallization on the spaced-apart paddle members.

5,626,579

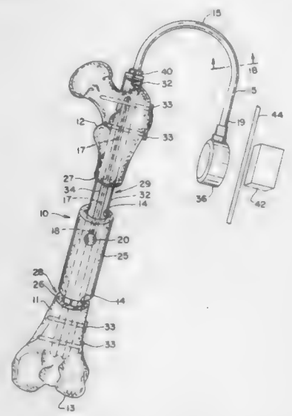
BONE TRANSPORT AND LENGTHENING SYSTEM

George F. Muschler, Cleveland Heights; Helmuth Kotschi, Strongsville, and William A. Smith, Lyndhurst, all of Ohio, assignors to The Cleveland Clinic Foundation, Cleveland, Ohio

Continuation-in-part of Ser. No. 17,622, Feb. 12, 1993, Pat. No. 5,429,638. This application Jun. 28, 1995, Ser. No. 495,924

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—60 **56 Claims**



1. A surgically implantable cable apparatus for post-operative, gradual in vivo bone transport of a first bone segment between a second bone segment and a third bone segment comprising:

a means for securing the second bone segment and the third bone segment a fixed distance from one another;

a flexible cable having a first end portion for attaching to the first bone segment, and a second end portion;

an implantable prosthetic flexible, non-compressible sheath having a bore for accepting the cable, the sheath having a first end, a second end, and a means for securing the first end to the second bone segment, the sheath being adapted to transmit a counter-compression force to the second bone segment;

an implantable actuator connected to the second end portion of the flexible cable and to the second end of the sheath, and in response to a transcutaneous energy signal, the implantable actuator moves the flexible cable relative to the sheath; and,

an energy source for generating the transcutaneous energy signal, the transcutaneous energy signal being capable of activating the implantable actuator through an intact skin layer.

5,626,580

MULTI-SECTION INTRAMEDULLARY NAIL

Robert Brosnahan, 2936 Waterleaf, Germantown, Tenn. 38138

Filed Jul. 15, 1994, Ser. No. 275,783

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—63 **11 Claims**

1. An implantable modular intramedullary nail, comprising:

a) a proximal nail component

b) a distal nail component;

c) a central nail component having proximal and distal end portions that are respectively connected during use to the proximal and distal nail components to define therewith upon



assembly a modular intramedullary nail unit of generally uniform outer diameter having a generally smooth continuous outer surface and that is free of sharp curves, enabling the assembled nail unit to be surgically inserted into a patient's intramedullary canal;

d) connecting members for securing the proximal and distal nail components to the respective proximal and distal end portions of the central nail component, the connection members including corresponding conical socket and conical projecting end portions of adjoining nail components that can be fitted together and secured upon impact;

e) self orienting interlocking portions positioned adjacent the respective conical socket and conical projecting end portions for resisting relative rotational movement between the components; and

f) wherein the central nail component is much larger than either of the proximal or distal nail sections.

5,626,581

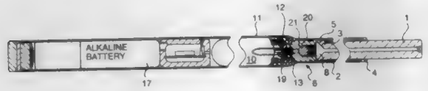
IMPLANTABLE BONE LENGTHENING APPARATUS

John H. Staehlin, Lutherville; Amy Corvelli, Baltimore, both of Md.; Stanley Lu, Bridgewater, N.J., and Garret Taylor, Olean, N.Y., assignors to Volunteers for Medical Engineering, Baltimore, Md.

Filed Nov. 27, 1995, Ser. No. 562,872

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—63 **24 Claims**



1. A bone lengthening nail assembly comprising:

a first nail body section;

a second nail body section; and

a power cartridge located within either of said first or second nail body sections and including a powered hydraulic pump which forces hydraulic fluid from a hydraulic fluid reservoir and into a sealed chamber between said first and second sections thereby forcing said first nail section to extend longitudinally relative to said second nail section, and increasing the length of said bone lengthening nail.

5,626,582

Patent Not Issued For This Number

5,626,583

PROXIMAL MANDIBULAR SEGMENT POSITIONER

Wilbur M. Davis, Jr., 610 North Mills Ave., Orlando, Fla. 32803

Filed Apr. 21, 1995, Ser. No. 426,823

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—72 **15 Claims**

1. A method of seating a condyle of a proximal mandibular segment in a fossa, said method comprising the steps of:



osteotomizing a patient's mandible into at least one proximal segment and a distal segment;

providing a hole in the proximal segment;

inserting a tip of an elongated instrument into the hole, said instrument having a handle and a shaft transitioning to the tip, said tip having a smaller peripheral width than a peripheral width of the shaft, said tip being angled relative to an axis of said handle;

limiting the tip insertion by an engagement of a peripheral width of the tip and the hole; and

manipulating the instrument by the handle to seat the condyle in the fossa.

5,626,584

MEANS FOR REMOVAL OF OSTEAL PROSTHESES

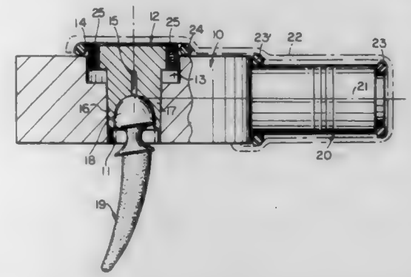
Michael J. R. Young, Ashburton, United Kingdom, assignor to Orthosonics Ltd., Ashburton, United Kingdom

Division of Ser. No. 216,805, Mar. 23, 1994, Pat. No. 5,536,272. This application Apr. 17, 1995, Ser. No. 422,988

Claims priority, application United Kingdom, Mar. 26, 1993, 9306380

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—99 **27 Claims**



1. A tool for use in revision arthroplasty, wherein a prosthetic member to be removed is encumbered by bone cement and exposes a head adapted for assembled joint articulation, said tool comprising a circumferentially continuous annular body having a central bore, chuck means adapted for selectively locked engagement of an exposed prosthetic head to the bore of said body, and an ultrasonic driver having a central axis of mechanically resonant oscillation, said driver being connected to said body with its oscillation axis directed generally radially inward with respect to said central bore.

5,626,585

LIGATING CLIP ADVANCE

William A. Mittelstadt, Woodbury, and Arthur V. Lang, Maplewood, both of Minn., assignors to United States Surgical Corporation, Norwalk, Conn.

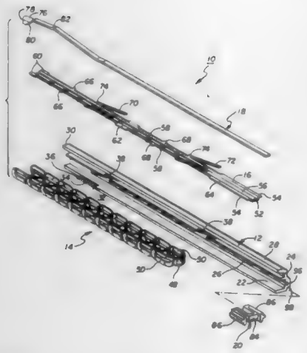
Filed Sep. 16, 1994, Ser. No. 308,084

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—143 **18 Claims**

1. A surgical clip applier for applying a plurality of surgical clips comprising a clip advance for sequentially advancing the plurality of surgical clips, the clip advance comprising:

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a longitudinally extending housing having a first channel for receiving the plurality of surgical clips;

a pusher, and

means mounting said pusher in the housing for reciprocating longitudinal movement adjacent the plurality of clips, the pusher having a plurality of tabs arranged to correspondingly engage and distally move respective ones of the plurality of clips when said pusher is moved distally;

wherein one of said pusher and housing has a cam and the other of said pusher and housing has a cam surface, the cam and the cam surface configured and arranged relative to each other such that, upon proximal movement of the pusher, the cam and the cam surface interact to move the tabs out of longitudinal contacting alignment with the clips.

5,626,586

PISTOLS FOR SETTING SURGICAL CLAMPS

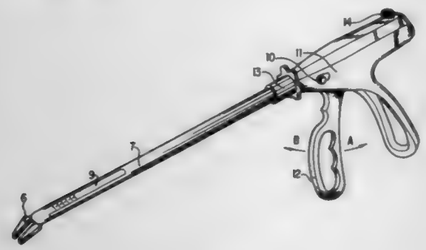
Gerald Pistl, Braunsdorf, and Petra Böhme, Chemnitz, both of Germany, assignors to Wilo-Medizintechnik Lothar Wilberg GmbH, Flocha, Germany

Filed Mar. 24, 1995, Ser. No. 410,172

Claims priority, application Germany, May 5, 1994, 44 15 891.2

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—143 **1 Claim**



1. A clamping apparatus for applying surgical clamps, comprising:

a pistol grip actuator having an operating grip movable from an intermediate position in a first direction for setting one of said surgical clamps and in a second direction for disassembly of said clamping apparatus;

a hollow shaft having a first end removably connected to said pistol grip actuator;

a removable magazine for holding said surgical clamps;

slide means for slidably receiving said removable magazine in said hollow shaft through an open second end of said hollow shaft;

said removable magazine having a channel containing said surgical clamps;

a forceps closing member slidably disposed in said hollow shaft beneath said removable magazine and responsive to movement of said operating grip;

said removable magazine having an elastic catch biased downward for engaging a catch member of said hollow shaft extending through said forceps closing member;

forceps means, slidably disposed in said forceps closing member, for receiving and compressing one of said surgical clamps by a cam action movement of said forceps closing member in response to actuation of said operating grip in said first direction;

said forceps means having a catch hook engageable with a stop member extending from said hollow shaft and through said forceps closing means to maintain said forceps means fixed relative to said hollow shaft permitting said cam action movement of said forceps closing means to compress said one of said surgical clamps;

said forceps closing means having a filler member disposed to maintain engagement of said catch hook with said stop member during said cam action movement of said forceps closing means;

said magazine having a feeding slide for advancing said surgical clamps toward said second end of said hollow shaft;

a push rod means extending from said pistol grip actuator into said hollow shaft responsive to movement of said operating grip in said first direction;

means for disengagably connecting said feeding slide with said push rod means to permit advancement of said surgical clamps in response to movement of said operating grip; and

said forceps closing means being responsive to movement of said operating grip in said second direction to effect displacement of said filler member from said catch hook to permit removal of said forceps means and displacement of said elastic latch from said catch member to allow removal of said magazine.

5,626,587

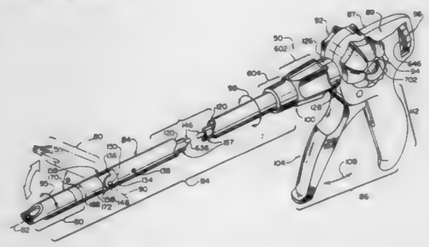
METHOD FOR OPERATING A SURGICAL INSTRUMENT

Gregory D. Bishop, Hamilton; Sean P. Conlon; Jorge Gutierrez, both of Cincinnati; John A. Hibner, Mainville; Michel A. Paul; Livyn O. Okorocha, both of Cincinnati; Narinderjit Sambi, Mason, and Edward Rhad, Fairfield, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 259,322, Jun. 10, 1994, Pat. No. 5,601,224, which is a continuation-in-part of Ser. No. 959,184, Oct. 9, 1992, Pat. No. 5,381,943. This application May 17, 1995, Ser. No. 442,783

Int. Cl.[6] A61B *17/10*

U.S. Cl. 606—143 **5 Claims**



1. A method for operating a surgical instrument wherein said instrument has (1) a frame having a pistol handle grip which is fixed relative to said frame and which is adapted to be held in the palm of the hand while the fingers of the hand extend around one side of the grip and the thumb of the hand extends around another side of the grip, (2) an elongated shaft mounted to said frame for rotation relative thereto, (3) a rotatable first knob on said shaft located adjacent said frame; (4) a support defining a longitudinal axis and movably mounted to said shaft for movement to an angled orientation relative to said shaft, (5) a rotatable second knob on said frame spaced proximally of said first knob and operatively engaged with said support for effecting pivoting of said support, (6) an end effector mounted to said support for rotation about said longitudinal axis, (7) a rotatable third knob on said frame operatively engaged with said end effector for effecting rotation of said end effector on said support, and (8) a trigger lever mounted distally of said handle grip on said frame for pivotal movement toward and away from said handle grip and operatively engaged with said end effector for effecting operation of said end effector, said method comprising the steps of:

(A) engaging said first knob with a digit of said hand to turn said first knob and rotate said shaft to a selected orientation;

(B) moving a digit of said hand to engage said second knob without extending said digit to and adjacent said first knob, and turning said second knob with said digit to move said support to a selected orientation while said digit is free of engagement with said first knob;

(C) engaging said third knob with a digit of said hand to turn said third knob and rotate said end effector to a selected orientation; and

(D) after performing steps (A), (B), and (C) in any desired sequence, pulling said trigger lever proximally toward said handle grip with a digit of said hand to operate said end effector.

5,626,588

TROCAR WOUND CLOSURE DEVICE

Jude S. Sauer, Pittsford; Roger J. Greenwald, Holley, and Mark A. Bovard, Palmyra, all of N.Y., assignors to Laser-Surge, Inc., Rochester, N.Y.

Continuation of Ser. No. 324,944, Oct. 18, 1994, Pat. No. 5,507,757, which is a division of Ser. No. 876,511, Apr. 30, 1992, Pat. No. 5,368,601. This application May 3, 1995, Ser. No. 433,592

The portion of the term of this patent subsequent to Apr. 30, 2012, has been disclaimed.

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—144 **20 Claims**



1. A trocar wound closure device, which comprises:

a) an elongated body;

b) first and second needle holders operably disposed at a distal end of the elongated body and defining first and second needle holding portions to hold first and second needles therein, respectively, the first and second needle holders bring movable from a retracted position to an extended position, wherein in the extended position of the needle holders, the first and second needle holding portions are spaced a predetermined distance from the central longitudinal axis of the elongated body; and

c) an actuator operatively associated with the first and second needle holders to effect movement thereof from the first position to the second position.

5,626,589

Patent Not Issued For This Number

5,626,590

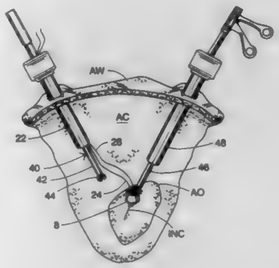
LAPAROSCOPIC SUTURING TECHNIQUE AND ASSOCIATED DEVICE

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 195,749, Feb. 10, 1994, Pat. No. 5,391,173. This application Feb. 21, 1995, Ser. No. 391,237

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—148 **26 Claims**



1. A laparoscopic surgical closure method comprising the steps of:

disposing a first and a second laparoscopic cannula in a skin surface of a patient;

moving at least one end section of a suture through said first laparoscopic cannula and into a body cavity of the patient;

upon completion of said step of moving, using a laparoscopic instrument to pass said end section of said suture around internal organic tissues of the patient, thereby defining two strands of said suture extending from the internal organic tissues of the patient;

providing a locking device comprising a body member made of biocompatible material and provided with a passageway for receiving said suture, said body member being further provided with locking means for effectively preventing said suture from passing in a first predetermined direction along said passageway, said body member being of dimensions sufficiently small to enable insertion of the device into a patient's body via one of said first and said second laparoscopic cannula;

inserting said locking device into the patient through said one of said first and said second laparoscopic cannula;

manipulating said suture and said locking device so that said strands are connected to said locking device and so that at least one of said strands passes through said passageway and is locked thereto by said locking means;

positioning said locking device and said suture so that said locking device is substantially juxtaposed to said internal organic tissues; and upon completion of said steps of inserting, manipulating and positioning, severing said strands on a side of said locking device opposite said internal organic tissues.

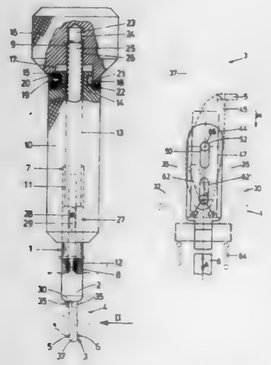
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SURGICAL ANASTOMOSIS RING INSERTION DEVICE

Ferdinand Köckerling, Hindenburgstrasse 28a, D-91054, Erlangen, and Ignaz Schneider, Haupstrasse 52, D-91301, Forchheim, both of Germany

Filed Feb. 22, 1995, Ser. No. 392,110
Claims priority, application Germany, Mar. 9, 1994, 44 07 668.1
Int. Cl.[6] A61B 17/11
U.S. Cl. 606—153 9 Claims



1. A surgical anastomosis ring insertion device comprising:
a leading-in tube (1) insertable into an intestinal tract of a patient and having a distal end (2) and a proximal end (7),
a cylindrical anastomosis ring (4) retaining head (3) disposed on the distal end (2) of the leading-in tube (1),
a slider mechanism, disposed in the vicinity of the retaining head (3), for engaging and locking the anastomosis ring (4),
a transmission (9) for actuating said slider mechanism from the proximal end (7) of the leading-in tube (1), and
a drive (16), disposed on the proximal end (7) of the leading-in tube (1), for the transmission (9) of the slider mechanism, wherein the drive and the transmission for the slider mechanism are designed as a spindle drive (9), which comprises a spindle wheel (16) arrested longitudinally axially in relation to a longitudinal axis (A) of the leading-in tube (1) and rotatably supported coaxially thereto and a push bar (8), which is arrested in a direction of rotation and displaceable longitudinally axially in the leading-in tube (1) and of which an external thread (26), on an outer end (27) of the push bar (8), is in engagement with an internal thread (24) of the spindle wheel (16) and a distal end (43) of which push bar (8) is coupled with the slider mechanism.

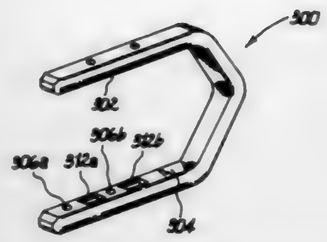
5,626,592

SURGICAL HEMOSTATIC CLIP

Paul J. Phillips, Middlebury; Mark S. Peyser, Monroe, and John Webster, Cromwell, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 283,949, Aug. 17, 1994, Pat. No. 5,509,920, which is a continuation of Ser. No. 48,467, Apr. 16, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 560,850
Int. Cl.[6] A61B 17/08
U.S. Cl. 606—157 20 Claims

1. A hemostatic clip for application to body tissue comprising: a clip body defining first and second opposed leg portions having respective proximal and distal ends with the proximal ends thereof connected to one another to form a bail portion, each of said first and second leg portions having a tissue contacting surface defined thereon which includes a plurality of tissue contacting structures, said tissue contacting structures on each of said leg portions



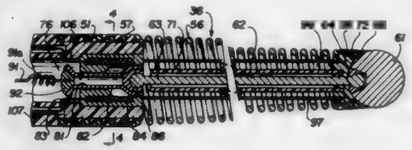
including at least two spherical protuberances and at least two elongated hexahedral recesses disposed in spaced apart relationship in an alternating arrangement.

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FLEXIBLE ELONGATE DEVICE HAVING A DISTAL EXTREMITY WITH A VIBRATORY IMPACT TIP AND METHOD

Mir A. Imran, Palo Alto, Calif., assignor to Intella Interventional Systems, Sunnyvale, Calif.

Continuation of Ser. No. 235,127, Apr. 28, 1994, Pat. No. 5,449,369, which is a continuation of Ser. No. 983,837, Dec. 1, 1992, abandoned. This application May 18, 1995, Ser. No. 444,311
Int. Cl.[6] A61B 17/22
U.S. Cl. 606—159 14 Claims



1. A flexible elongate device for crossing a stenosis of a totally or almost totally occluded vessel of a patient, comprising a flexible elongate tubular member having proximal and distal extremities, a rounded tip, electrically actuatable means carried by the distal extremity of the flexible elongate tubular member, means for connecting the electrically actuatable means to the rounded tip and means for supplying electrical energy from the proximal extremity of the flexible elongate tubular member to the electrically actuatable means at the distal extremity of the flexible elongate tubular member for imparting vibratory impact motion to the rounded tip for facilitating advancement of the rounded tip through the stenosis.

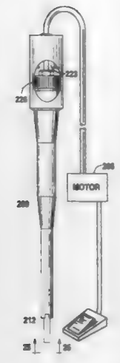
5,626,594

KERATOSCOPIC SURGICAL INSTRUMENT FOR MAKING RADIAL AND ARCUATE CORNEAL INCISIONS

Alan D. Smith, 5757 Colorado Ave., Odessa, Tex. 79762

Division of Ser. No. 151,996, Nov. 15, 1993, Pat. No. 5,486,188. This application Dec. 19, 1995, Ser. No. 574,615
Int. Cl.[6] A61B 17/32
U.S. Cl. 606—166 18 Claims

1. A scalpel for performing corneal surgery, said scalpel comprising:
a) a knife housing substantially cylindrical in shape for easy gripping by a surgeon, said knife housing having a first end, a second end, a central axis, and an axial bore passing therethrough, said first end being externally threaded along an axial extent thereof,
b) an actuator rod guided concentrically within said knife housing axial bore, said actuator rod having a first end, a second



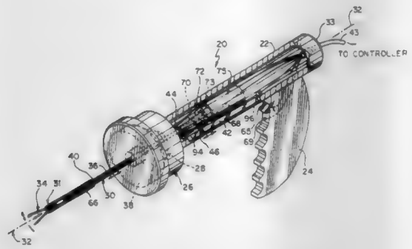
end, and an axial bore passing therethrough, with said first end flared out in the shape of a cone,
c) a surgical blade and holding means for securing said surgical blade in said second end of said actuator rod,
d) a cable extending along said knife housing central axis through said actuator rod axial bore from said actuator rod first end to a point in said actuator rod axial bore adjacent said actuator rod second end,
e) an adjustment bushing surrounding a portion of said cable, said adjustment bushing being externally threaded, and
f) thimble means for adjusting an axial position of said actuator rod relative to said knife housing, wherein said thimble means has a radially inner cylindrical portion having an axial bore therethrough and internal threads, a radially outer overhanging portion bounding an axially extending annular groove in said thimble means, said annular groove receiving the first end of the knife housing therein and said inner cylindrical portion threadedly engaged with said adjustment bushing and flared radially inwardly towards a central axis of said thimble means at an end of said thimble means which matingly receives the cone-shaped end of the actuator rod.

5,626,595

AUTOMATED SURGICAL INSTRUMENT

Martin J. Sklar, Needham; Ronald J. Sampson, Jr., Haverhill, and Jonathan D. Schiff, Andover, all of Mass., assignors to Automated Medical Instruments, Inc., Needham, Mass.

Continuation-in-part of Ser. No. 270,821, Jul. 5, 1994, which is a continuation of Ser. No. 837,352, Feb. 14, 1992, Pat. No. 5,350,355. This application Oct. 11, 1994, Ser. No. 321,070
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—170 35 Claims



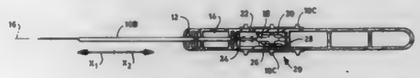
1. An automated surgical instrument comprising:
surgical tool;
a rigid cannula constructed and arranged for insertion through an incision in a body of a patient, the cannula having a lumen that receives the surgical tool therein and the cannula being elongated along a first direction;
a drive for moving the cannula along the first direction;
an arm having a proximal end and a distal end, the cannula being supported at the distal end, the arm having a second drive to move the cannula along a second direction transverse to the first direction;
an arm support located adjacent the proximal end of the arm and a third drive that moves the cannula in a third direction that is transverse to each of the first direction and the second direction; and
a swivel assembly having a swivel base mounted at the distal end of the arm and having a pivot member that rotates relative to the swivel base along at least one pivot axis that is aligned with at least one of the second direction and the third direction whereby the cannula pivots about the axis.

5,626,596

TOOL SUPPORT ASSEMBLY WITH BIDIRECTIONAL POSITION CONTROL

Allen DeSatnick, and Roger J. Simpson, both of Marblehead, Mass., assignors to Questus Corporation, Marblehead, Mass.

Filed Feb. 15, 1995, Ser. No. 388,955
Int. Cl.[6] A61B 17/32
U.S. Cl. 606—170 3 Claims



1. A tool support assembly with a bi-directional position control, comprising:
A. a housing defining an interior channel extending along an axis,
B. a tool support element positioned within said channel and movable in said channel along said axis, and
C. a bidirectional positioning assembly coupling said tool support element and said housing, including:
i. at least one detent element affixed to said housing, said detent element including at least one detent extending transverse to said axis and facing said channel,
ii. a latch element captively positioned within said channel and selectively movable along said axis, said latch element including at least one lock arm resiliently biasable toward and for selectively engaging at least one of said detents,
iii. a control element captively positioned within said housing and movable relative to said housing along said axis,
wherein said latch element and said control element cooperate whereby:
a. in response to substantially no force F applied to said control element relative to said housing and when at least one of said lock arms is engaged with one of said detents, said tool support element is fixedly positioned relative to said housing, and
b. in response to a force F applied to said housing in a first direction along said axis, said lock arms disengage said at least one of said detents and said tool support element moves relative to said housing in said first direction, wherein said latch element and said control element further cooperate whereby in response to a force F applied to said control element relative to said housing in a second direction along said axis, said second direction being opposite to said first direction, said lock arms disengage said detents and said tool support element moves relative to said housing in said second direction, and
wherein said bidirectional positioning assembly includes a first detent element on a first side of said channel and a second detent element on a second side of said channel, said second side being opposite said first side, and each of said first and second detent elements including a linear array of detents extending along said axis and facing said channel, and

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wherein said latch element includes first and second lock arms, said first lock arm being resiliently biasable toward and for selectively engaging one of said detents of said first detent element, and said second lock arm being resiliently biasable toward and for selectively engaging one of said detents of said second detent element.

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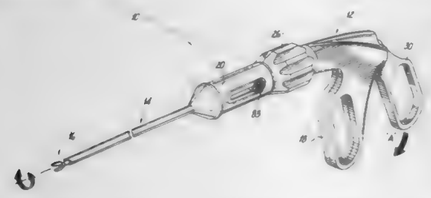
PERCUTANEOUS INTRODUCER

Carl T. Urban, Portland, Oreg.; Scott W. Larsen, Newtown, and Marc J. Theroux, Bethel, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 21, 1995, Ser. No. 391,882

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **44 Claims**



1. A surgical instrument for percutaneously accessing an operative site within a body, which comprises:

a frame having first and second ends;

a tissue piercing assembly having an elongated tubular portion forming a tissue piercing portion at a distal end, the elongated tubular portion defining a longitudinal axis;

a tool assembly disposed at least partially within the elongated tubular portion and having at least one working member; and

an actuating mechanism operatively associated with the frame and the tool assembly, wherein the actuating mechanism manipulates the at least one working member.

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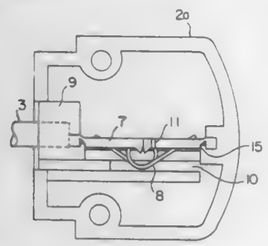
RETRACTING TIP TROCAR ASSEMBLY

Alex T. Roth, Foster City, Calif., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 850,089, Mar. 12, 1992, Pat. No. 5,441,513. This application Apr. 12, 1995, Ser. No. 421,354

Int. Cl.[6] A61B *5/00*

U.S. Cl. 606—185 **6 Claims**



1. A retracting tip trocar assembly comprising:

an elongated trocar tube defining a longitudinal axis and having a proximal end and a distal end;

an elongated obturator having a proximal end and a piercing tip at a distal end thereof, said piercing tip being movable along said longitudinal axis relative to said trocar tube between a cutting position at which the piercing tip extends beyond said distal end of said trocar tube and a shielded position at which the piercing tip is positioned entirely within the trocar tube;

a trocar handle housing within which said proximal end of said obturator is movably mounted;

first and second link arms positioned within said trocar handle housing and joined at a hinge, said hinge moving both transversely and longitudinally relative to said longitudinal axis as said piercing tip moves between said cutting position and said shielded position; a spring mounted within said trocar handle housing that biases said piercing tip toward said shielded position; and

a catch associated with said trocar handle housing which releasably maintains said piercing tip in said cutting position against the bias of said spring.

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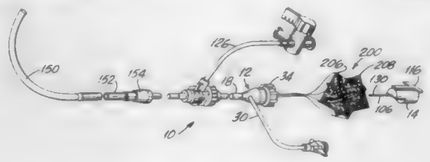
METHOD FOR THE PERCUTANEOUS TRANSLUMINAL FRONT-END LOADING DELIVERY OF A PROSTHETIC OCCLUDER

George Bourne, Libertyville, Ill.; Randall W. Davis, Chelmsford, Mass.; George Duval, New Ipswich, N.H.; Dennis Goodine, Dracut, Mass.; James E. Lock, Newton, Mass.; Gerry Ouellette, Framingham, Mass.; Stanton B. Perry, Marblehead, Mass.; Maria S. Wagner, Groton, Mass., and Gregory R. Whittaker, Burlington, Mo., assignors to C. R. Bard, Murray Hill, N.J.

Division of Ser. No. 49,162, Apr. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 824,019, Jan. 22, 1992, abandoned. This application May 1, 1995, Ser. No. 431,582

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **4 Claims**



1. A method of delivering a prosthetic device into a lumen of a percutaneous transluminal introducer sheath, comprising:

collapsing the prosthetic device in a lumen of a front-end loading portion; infusing fluid through a port extending into the front-end loading portion in communication with the front-end loading portion lumen to remove air bubbles from the collapsed prosthetic device; and

advancing the prosthetic device from the front-end loading portion into the introducer lumen.

5,626,600

REINFORCED BALLOON DILATATION CATHETER WITH SLITTED EXCHANGE SLEEVE AND METHOD

Michael J. Horzewski, Sunnyvale, and Paul G. Yock, San Fransisco, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 69,297, May 25, 1993, Pat. No. 5,496,346, which is a continuation of Ser. No. 728,812, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 199,025, May 26, 1988, abandoned, which is a continuation of Ser. No. 653, Jan. 6, 1987, Pat. No. 4,748,982. This application Jun. 7, 1995, Ser. No. 482,093

Int. Cl.[6] A61M *25/00*

U.S. Cl. 606—194 **8 Claims**

1. A rapid exchange type intravascular catheter adapted to be utilized with a guidewire, comprising:

an elongated catheter shaft which has a proximal end, a distal end, a long relatively stiff proximal shaft section, a short relatively flexible distal shaft section;



a distal guidewire port in the distal end of the catheter shaft;

a proximal guidewire port in the catheter shaft which is at a location a short distance proximal to the distal end of the catheter shaft and a substantial distance distal to the proximal end of the catheter shaft; and

an inner lumen which is configured to receive a guidewire therein and which extends within the catheter shaft and is in fluid communication with the proximal guidewire port and the distal guidewire port; and

a slit in a wall of the catheter shaft in fluid communication with the inner lumen which opens to the proximal guidewire port.

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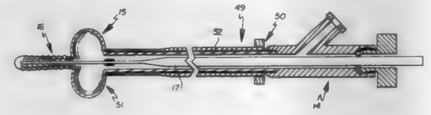
VASCULAR SEALING APPARATUS AND METHOD

Gary Gershony, 44332 S. El Macero Dr., El Macero, Calif. 95618; Daniel J. Kasprzyk, Fogelsville, Pa., and Michael J. Horzewski, San Jose, Calif., assignors to Gary Gershony, El Macero, Calif.

Filed Oct. 27, 1995, Ser. No. 549,332

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **21 Claims**



1. A medical sealing apparatus for use in closing an opening in a blood vessel, comprising:

(a) a body structure having a proximal and a distal end, said body structure timber having an elongated tubular shaft with proximal and distal ends, an adapter connected to said proximal end of said shaft, and a central lumen extending axially through said shaft and said adapter;

(b) an inflatable member disposed adjacent said distal end of said shaft and communicatively connected to said lumen, said inflatable member having an inflated diameter and a deflated diameter which is less than that of said inflated diameter;

(c) means to introduce a procoagulant to the blood vessel opening at a point proximally located with respect to said inflatable member; and

(d) means, connected to said body structure, to longitudinally compress said inflatable member so that it assumes a predetermined configuration during an inflation and to longitudinally stretch said inflatable member so that it returns to said deflated diameter subsequent to an inflation.

5,626,602

CATHETER WITH A VASCULAR SUPPORT

Marc Gianotti, Wiesendangen, and Paul Lehmann, Winterthur, both of Switzerland, assignors to Schneider (Europe) A.G., Bulach, Switzerland

Division of Ser. No. 97,799, Jul. 27, 1993, Pat. No. 5,405,380. This application Jan. 17, 1995, Ser. No. 375,591

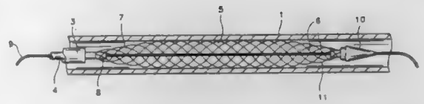
Claims priority, application European Pat. Off., Oct. 12, 1992, 92203134.9

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—198 **2 Claims**

1. A process for making a device with a radially self-expanding permeable mesh vascular support, the process comprising:

(a) providing a tubular outer catheter having a proximal end and a distal end defining a first lumen with a distal opening;



(b) providing an inner catheter having a proximal portion and a distal portion defining a second, guidewire receiving lumen;

(c) providing a vascular support means formed from a radially self-expanding permeable mesh of braided fibers and having a proximal portion and a distal portion;

(d) providing a tapered tip with a proximal portion;

(e) placing the proximal portion of the vascular support means on the distal portion of the inner catheter;

(f) placing a first heat shrink tube over the proximal portion of the vascular support means;

(g) placing the distal portion of the vascular support means on the proximal portion of the tip;

(h) placing a second heat shrink tube over the distal portion of the vascular support means;

(i) heating the first and second heat shrink tubes to simultaneously compress and affix the proximal portion of the vascular support means to the distal portion of the inner catheter and to simultaneously compress and affix the distal portion of the vascular support means to the proximal portion of the tip, such that the vascular support means forms a proximal mesh cone at the proximal portion of the vascular support means and a distal mesh cone at the distal portion of the vascular support means; and

(j) disposing the tubular outer catheter about the inner catheter such that the inner catheter is coaxially disposed in the first lumen of the tubular outer catheter and axially movable with respect to the tubular outer catheter, and the tip is adapted to close and seal the distal opening of the outer catheter when the distal opening of the outer catheter is adjacent the proximal portion of the tip.

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HYDRAULIC STENT INSERTER

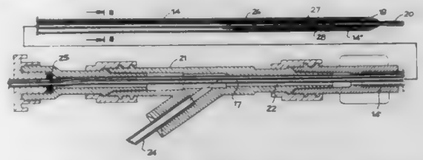
Luigi Venturelli, Concesio, Italy, and Giancarlo Biamino, Berlin, Germany, assignors to Fogazzi Di Venturelli Andrea & C. S.n.c., Concesio, Italy

Filed Oct. 3, 1995, Ser. No. 538,551

Claims priority, application Italy, Oct. 5, 1994, BS94A0115

Int. Cl.[6] A61M *25/00*

U.S. Cl. 606—198 **10 Claims**



1. An instrument to insert stents into arterial ducts, comprising:

a flexible hose with a passage opening and having one hose proximal end and one hose distal end;

a flexible sheath placed around said hose, said sheath having one sheath proximal end and one sheath distal end;

a union applied on said hose proximal end of said hose and provided with a coupling to insert at least one element into said hose;

a push rod fixed to said hose distal end and forming hose extension connection means for connecting said hose to a hose extension;

housing means defined by said hose cooperating with said sheath, said housing means being positioned adjacent to said push rod;

a stent received in said housing; and

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a pressure chamber formed with closed ends, said pressure chamber being entirely disposed between said hose and said sheath, behind said housing and said stent, said sheath sliding longitudinally with respect to said hose due to thrust of fluid pressurized in said pressure chamber wherein said movement of the sheath with respect to the hose opens said housing causing said stent to be released.

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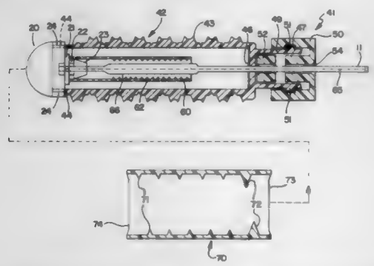
HAND HELD STENT CRIMPING DEVICE

Robert J. Cottone, Jr., Fort Lauderdale, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Dec. 5, 1995, Ser. No. 567,313

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—198 **19 Claims**



10. A stent crimping device comprising a stent holding member, a stent held within the stent holding member, a guide wire secured to the device and within said stent holding member and extending longitudinally through said stent and device, a collet having radially compressible fingers longitudinally extending in said device and about said stent and said guide wire, and a rotatable sleeve having a driver for compressing said collet fingers, said sleeve being about said fingers, said stent and said guide wire;

whereby when said sleeve is rotated about said collet fingers said driver radially compresses said fingers to crimp said stent by said stent holding member.

5,626,605

THROMBOSIS FILTER

Toshiyuki Irie, and Shigeru Frui, both of Tokorozawa, Japan, assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

PCT No. PCT/US92/11311, § 371 Date Jun. 27, 1994, § 102(e) Date Jun. 27, 1994, PCT Pub. No. WO93/15136, PCT Pub. Date Aug. 5, 1993

Continuation of Ser. No. 42,424, Mar. 26, 1993, Pat. No. 5,370,657. This PCT application Dec. 30, 1992, Ser. No. 256,551

Claims priority, application Japan, Dec. 30, 1991, 3-113712 U

Int. Cl.[6] A61M *29/00*

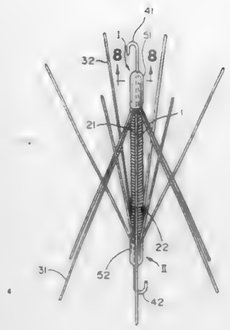
U.S. Cl. 606—200 **15 Claims**

1. A medical filter adapted to be percutaneously implanted, in and removed from a blood vessel having an inner wall, through an endovenous route via a tube, said medical filter comprising:

a filtering and holding device that extends along a longitudinal axis and is flexible in its radial dimension.

said filtering and holding device being dimensioned such that it can be compressed radially into a collapsed condition in which it can be received in said tube and will open out and expand into biased engagement with the inner wall of said blood vessel when it emerges from the tube.

said filtering and holding device including coupling mechanisms at both ends, said coupling mechanisms accessible through endovenous routes to enable the filtering and holding device



to be seized, released from the inner wall of said blood vessel and withdrawn percutaneously from the blood vessel.

5,626,606

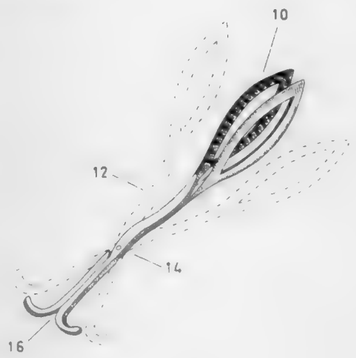
LAPAROSCOPIC TISSUE RETRIEVAL FORCEPS

Michael A. Schellpfeffer, 1400 75th St., Kenosha, Wis. 53143

Filed Jul. 11, 1995, Ser. No. 500,699

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—205 **16 Claims**



1. A method of removing tissue, comprising:

a) providing

i) a patient having tissue to be removed, and

ii) a tissue removal device, comprising first and second detachable members, said members each comprising a blade portion, a shank portion and a connection means;

b) making a surgical incision in said patient, said surgical incision dimensioned to permit the introduction of said device;

c) introducing said first member of said device into said surgical incision under conditions such that said first member contacts said tissue;

d) introducing said second member of said device into said surgical incision under conditions such that said second member contacts said tissue;

e) connecting said first and second members via said connection means under such conditions that said tissue is encompassed by said blade portions of said first and second members; and

f) removing said tissue from said patient through said surgical incision.

5,626,607

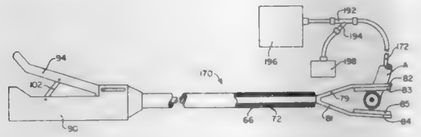
CLAMP ASSEMBLY AND METHOD OF USE

William W. Malecki; Wesley D. Sterman, both of San Francisco; Hanson S. Gifford, III, Woodside, and Scott H. Miller, Sunnyvale, all of Calif., assignors to Heartport, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 567,996, Dec. 4, 1995, which is a continuation-in-part of Ser. No. 415,273, Apr. 3, 1995, Pat. No. 5,536,251. This application Feb. 1, 1996, Ser. No. 595,568

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—205 **33 Claims**



11. A clamp for clamping a body structure in a patient, comprising:

a handle having a first sheath holder;

a clamp having a second sheath holder, a cable holder, a first jaw and a second jaw, the first jaw being movable relative to the second jaw between an open position and a closed position, at least the first jaw being operably coupled to the cable holder for moving the first jaw between the open and closed positions;

a flexible sheath extending between the first and second sheath holders;

a flexible cable at least partially housed within the sheath and generally conforming to a shape of the sheath;

a spring biasing the cable relative to the sheath, the spring biasing the first and second jaws toward the closed position; and

a cable puller movably coupled to the handle, the cable puller being configured to displace the cable relative to the sheath when the flexible sheath is curved.

5,626,608

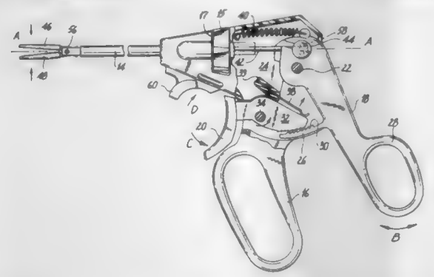
SURGICAL INSTRUMENT HAVING LOCKING HANDLE

Douglas J. Cuny, Bethel; Ernie Aranyi, Easton, and Paul A. Matula, Brookfield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 29, 1996, Ser. No. 625,454

Int. Cl.[6] A61B *17/00; 1/00*

U.S. Cl. 606—205 **14 Claims**



1. An endoscopic or laparoscopic surgical instrument which comprises:

a) a handle assembly including a barrel portion, a stationary handle and a pivoting handle extending from the barrel portion, the barrel portion having an interior cavity accommodating at least a portion of the pivoting handle, the stationary handle having an interior cavity, the pivoting handle having a lower portion forming ratchet teeth;

b) a body assembly comprising a pair of coaxial members attached at one end to the barrel portion, and including an inner rod member slidable within an outer tube member in response to movement of the pivoting handle, the body assembly terminating at one end remote from the handle assembly in a reciprocatingly movable tool mechanism; and

c) a ratchet assembly operatively associated with the body assembly to provide incremental movement of the tool mechanism, the ratchet assembly including a trigger attached to the stationary handle and having trigger ratchet teeth for engagement with the ratchet teeth of the pivoting handle; and

d) an override member that prevents engagement of said ratchet teeth when said override member engages said trigger.

5,626,609

ENDOSCOPIC SURGICAL INSTRUMENT

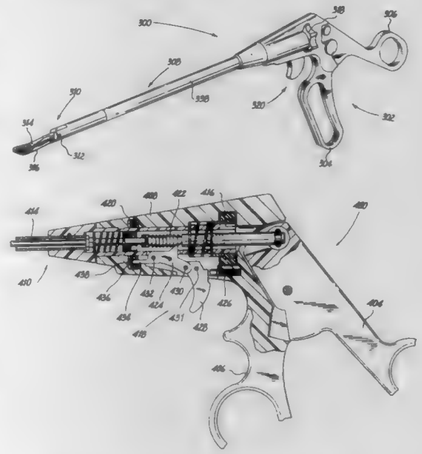
Boris Zvenyatsky, Bronx, N.Y., and Ernie Aranyi, Easton, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 934,728, Aug. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 780,273, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 593,670, Oct. 5, 1990, abandoned. This application Dec. 16, 1994, Ser. No. 357,536

The portion of the term of this patent subsequent to Feb. 15, 2014, has been disclaimed.

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—208 **11 Claims**



1. An endoscopic surgical instrument comprising:

a handle assembly including a barrel portion, a stationary handle and a pivoting handle extending from said barrel portion, said barrel portion having an interior cavity accommodating at least a portion of said pivoting handle;

a housing assembly extending distally from said handle assembly and defining a longitudinal axis, said housing assembly having a pair of coaxial members including an inner rod member reciprocatingly slidable longitudinally within an outer tube member in response to movement of said handle assembly;

a tissue gripping mechanism positioned at a distal end of said housing assembly pivotably secured to said outer tube member and operatively attached to said inner rod member, said tissue gripping mechanism including a pair of jaw members reciprocatingly movable between open and closed positions in response to movement of said inner rod member and said handle assembly;

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wherein each of said jaw members of said gripping mechanism includes a camming portion attached to said inner rod member, a gripping portion at a distal end and a curved transition portion sloping with respect to said longitudinal axis between said camming portion and said gripping portion, said gripping portion tapering from said distal end towards said transition portion to form a triangular shaped portion having at least two substantially equal sides and said distal end forms a base of said triangular shaped portion perpendicular to said longitudinal axis, said triangular shaped portion having a corresponding triangular shaped central opening, and a plurality of parallel ribs extending transverse to said longitudinal axis for enhancing gripping of tissue therebetween, and wherein said curved transition portion is offset from said gripping portion such that said camming portion and said gripping portion are in substantially parallel planes when said jaw members are in said closed position; and

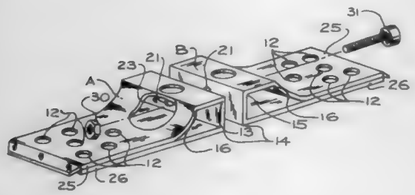
a ratchet mechanism at least partially positioned within said interior cavity of said barrel portion of said handle assembly, said ratchet mechanism being operatively associated with at least one of said pair of coaxial members of said housing assembly to provide incremental movement of said tissue gripping mechanism.

5,626,610

DRAW CLAMP

Richard C. Janke, N7560 Bell School Rd., Burlington, Wis. 53105

Filed Oct. 6, 1995, Ser. No. 540,565
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—212 **5 Claims**



1. A draw clamp apparatus for repair of a hoofed animal Quarter Crack, the apparatus comprising plate members arranged for securement to hoof portions located at opposite sides of an affected Crack, and with each plate member being provided with cooperating elements for bridging said Crack and arranged to draw the respective plates toward one another for closure of said Crack;

the respective plate members being of substantially identical configuration, and each being formed from a stamping of relatively thin metallic stock;

the respective plate members being formed intermediate their ends to provide an upstanding surface defining an opening for receiving a respective threaded nut and mating bolt elements for drawing said plates toward one another to close said Quarter Crack;

the respective plate members each having a plurality of apertures proximate to opposite end portions of said stamping, and wherein the plate members are further formed with a reverse bend intermediate respective plate member ends with said apertures of each adjacent plate end being located in registered alignment for receiving screw fasteners for securing the respective plate members to the animal hoof.

5. A draw clamp apparatus for repair of a hoofed animal Quarter Crack, the apparatus comprising:

a pair of plate members arranged for securement to hoof portions located at opposite sides of an affected Crack, and with each plate member having cooperating elements for bridging said Crack and arranged to draw the respective plates toward one another for closure of said Crack;

the adjoining respective plates being doubled over by means of a reverse bend, thus forming a double thickness and providing an upstanding surface at one end of each plate member creating an enclosure for receiving the cooperating elements; and

each plate end opposite said enclosure having a plurality of apertures for receiving screw fastener for securing each plate to opposite sides of said Crack.

5,626,611

COMPOSITE BIOABSORBABLE MATERIALS AND SURGICAL ARTICLES MADE THEREFROM

Cheng-Kung Liu, Norwalk; Ying Jiang, North Haven; Mark S. Roby, Killingworth; Steven L. Bennett, New Haven; Richard P. Stevenson, Colchester, and Jeffrey P. Pietrangeli, Bridgeport, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 10, 1994, Ser. No. 194,766
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—230 **15 Claims**



1. A bioabsorbable filament implantable within a living organism comprising:

a core portion formed from a first bioabsorbable material;

a shell portion joined to said core portion formed from a second bioabsorbable material;

wherein said first bioabsorbable material has a greater rate of bioabsorption than said second bioabsorbable material, and

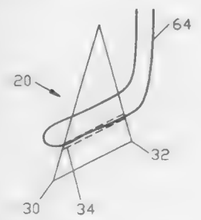
wherein said bioabsorbable filament is formed by coextruding said core portion and said shell portion.

5,626,612

APPARATUS AND METHOD FOR ANCHORING SUTURES

Edwin C. Bartlett, 609 Bremerton Dr., Greenville, N.C. 27858

Continuation-in-part of Ser. No. 124,163, Sep. 20, 1993, Pat. No. 5,540,718. This application Sep. 19, 1994, Ser. No. 308,286
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—232 **15 Claims**



1. A suture anchor having:

a first conical surface;

a base at a larger end of said conical surface and an apex at a smaller end thereof;

a central axis through said base and said apex; and

an anchor bore extending through said anchor from a first location on said conical surface to a second location on said conical surface;

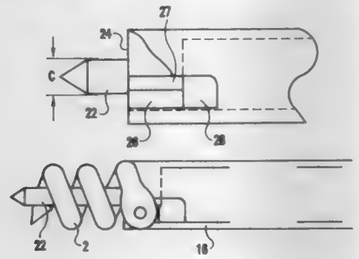
said base being a substantially planar wall oblique to said central axis.

5,626,613

CORKSCREW SUTURE ANCHOR AND DRIVER

Reinhold Schmieding, Naples, Fla., assignor to Arthrex, Inc., Naples,, Fla.

Filed May 4, 1995, Ser. No. 433,974
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—232 **8 Claims**



1. A suture anchor and driver assembly for driving a corkscrew suture anchor into bone, comprising:

a suture anchor comprising a spiral-shaped body having a hollow central core, a distal end, and a proximal end, the distal end of the spiral body terminating in a sharp point, and the proximal end of the spiral-shaped body being provided with an eye for receiving suture; and

a driver including:

a shaft having a central axis, a length, a distal end, and a proximal end, the shaft being provided at its distal end with:

(i) a stud aligned with the central axis of the shaft, for insertion into the hollow, central axis of the spiral-shaped body of the suture anchor; and

(ii) a notch disposed adjacent to the stud for driveably engaging the proximal end of the spiral-shaped body of the suture anchor; and

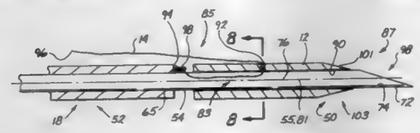
(iii) a sharp edge for cutting a trough into the bone to allow the suture eye of the suture anchor to be driven below the bone surface.

5,626,614

T-ANCHOR SUTURING DEVICE AND METHOD FOR USING SAME

Charles C. Hart, Huntington Beach, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Dec. 22, 1995, Ser. No. 577,651
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—232 **21 Claims**



16. A surgical anchor device adapted for insertion through a body wall, including:

an anchor bar extending longitudinally along an axis between a proximal end and a distal end, the anchor bar having a side surface extending generally between the proximal end and the distal end of the anchor bar; a suture having a first end and a second end, the first end of the suture having a fixed relationship with the anchor bar and extending from the anchor bar at the side surface of the anchor bar between the distal end and the proximal end; and

portions of the anchor bar disposed at the distal end of the anchor bar and defining an outer surface having an inclined relationship with the axis of the anchor bar; whereby

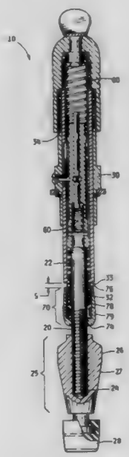
the inclined outer surface at the distal end of the anchor bar contacts the body wall and facilitates axial insertion of the anchor device through the body wall.

5,626,615

CHIROPRACTIC ADJUSTING INSTRUMENT

Tony S. Keller, Burlington, Vt., and Arian W. Fuhr, Phoenix, Ariz., assignors to Activator Methods, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 39,207, May 23, 1995, Pat. No. Des. 374,081, which is a continuation-in-part of Ser. No. 489,102, Jun. 9, 1995. This application Aug. 15, 1995, Ser. No. 515,521
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—238 **6 Claims**



1. An improved chiropractic adjusting instrument of the type having:

a thrust element including a shank portion and an outer end portion;

a removable body contact member positioned adjacent to the outer end portion of the thrust element;

a main body having a first end and a second end, the first end longitudinally slidably receiving the shank portion of the thrust element;

an end cap longitudinally slidably mounted on the second end of the main body;

a first handle member disposed on the main body;

a second handle member disposed on the end cap;

the first handle member being squeezably disposed relative to the second handle member such that the first handle member moves toward the second handle member and the shank portion of the thrust element retracts inwardly within the main body when the first and second handle members are squeezed together;

an adjustment knob movably disposed on the thrust element for controlling retraction of the shank portion of the thrust element within the main body when the first and second handle members are squeezed together;

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a spring means disposed within the main body for propelling the thrust element outwardly; and

a trigger means for actuating the spring means when the first and second handle members have been squeezed together a predetermined distance,

wherein the improvement comprises:

a shaped mass positioned on the thrust element and disposed between the removable body contact member and the adjustment knob for mechanically tuning the chiropractic adjusting instrument to a desired frequency.

5,626,616

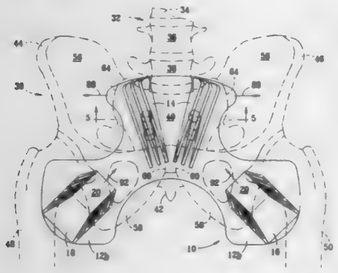
SACROILIAC JOINT MOBILIZATION DEVICE

Conrad A. Speece, 10477 Silverock Dr., Dallas, Tex. 75218

Filed May 31, 1995, Ser. No. 456,160

Int. Cl.[6] A61F *5/00*

U.S. Cl. 606—240 **9 Claims**



1. A device for localized bone manipulation in the pelvic area of the human body, the pelvis having a sacrum, a pair of ilia, and a sacroiliac joint between the sacrum and each ilium, and a pair of ischia, the device comprising:

a base member having a top, bottom, and sides;

first and second force generating means disposed adjacent said base member top and extending upwardly from said base member and outwardly toward said base member sides, said first and second force generating means each being positioned at an angle with respect to said base member and angled with respect to one another for generating laterally directed forces on each ilium said laterally directed forces generated in a direction generally perpendicular to said base member sides when the device is in use, stud first and second force generating means sized and configured to be positioned substantially parallel to the sacroiliac joints to direct a force generally perpendicular to the sacroiliac joints to thereby spread the pair of ilia apart;

third and fourth force generating means disposed adjacent said base member bottom and extending upwardly from said base member and outwardly toward said base member bottom and sized and configured to be positioned adjacent the ischia, said third and fourth force generating means each being positioned at an angle with respect to said base member and angled with respect to one another for generating superiorly and medially directed forces in each ischial area of the pelvis, said superiorly and medially directed forces generated in a direction toward said base member top when the device is in use to thereby compress a lower portion of the pelvis; and

said first, second, third, and fourth force generating means positionable to generate forces simultaneously on the pelvis in a direction towards said sides and said top of said base member.

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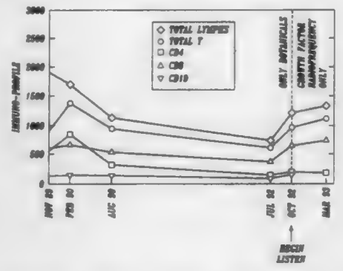
METHODS FOR TREATING DISORDERS BY ADMINISTERING RADIO FREQUENCY SIGNALS CORRESPONDING TO GROWTH FACTORS

Barbara Brewitt, 6812 Woodlawn Ave. NE., Seattle, Wash. 98115-5420

Continuation of Ser. No. 221,365, Mar. 31, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,840

Int. Cl.[6] A61M *39/00*

U.S. Cl. 607—2 **18 Claims**



1. A method for treating a patient having a disorder selected from the group consisting of chronic viral infections, cancer and diabetes comprising administering a radio frequency signal selected to correspond to a dilution of less than about 10^{-6} molar of one or more growth factors at one or more skin conductance points.

5,626,618

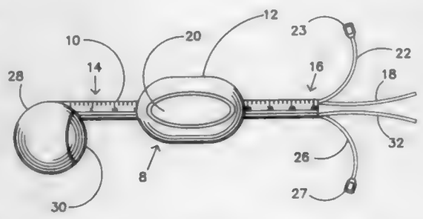
MECHANICAL ADJUNCT TO CARDIOPULMONARY RESUSCITATION (CPR), AND AN ELECTRICAL ADJUNCT TO DEFIBRILLATION COUNTERSHOCK, CARDIAC PACING, AND CARDIAC MONITORING

Kevin R. Ward; Charles G. Brown, and Roger R. Dzwonczyk, all of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Sep. 24, 1993, Ser. No. 126,542

Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—5 **22 Claims**



1. In an apparatus for treating cardiac patients, having at least two electrodes connected to a defibrillator, an improved apparatus comprising:

(a) an expansible walled body forming a bladder for positioning in a patient's esophagus near the posterior of the patient's heart said body having walls which are sufficiently inelastic to provide a rigid support against which the heart and aorta can be forced and compressed, wherein the anteroposterior dimension of the bladder is decreased by not more than about five percent during a properly administered CPR chest compression; and

(b) a first electrode of said two electrodes attached to the expansible walled body for, in combination with a second electrode of said two electrodes and a defibrillator, inducing a

flow of electrical current between the electrodes, through at least a portion of the heart.

5,626,619

OPTICALLY ISOLATED SHOCK CIRCUIT FOR IMPLANTABLE DEFIBRILLATOR

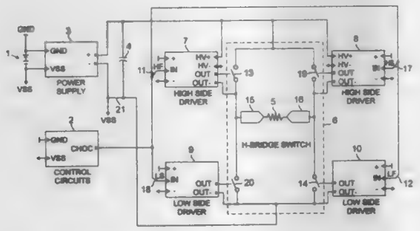
Peter Jacobson, 4, Route de Marienthal, 67500 Haguenau; Daniel Kroiss, 22, Rue Georges Clemenceau, 67590 Schweighouse-Moder, and Alan Ostroff, 21, Rue de l'Eglise, 67250 Preuschdorf, all of France

Filed Oct. 11, 1994, Ser. No. 320,874

Claims priority, application France, Oct. 8, 1993, 93 11993

Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—5 **58 Claims**



1. A shock delivery circuit, comprising:

a battery having stored energy;

a control circuit having an electrical output signal to time a shock;

a shock charging circuit coupled to the battery and operable to convert battery energy to shock energy, the shock charging current having an output;

a first capacitor coupled to the shock charging circuit output to store shock energy;

a controllable electronic switch having an open state and a closed state, selectively connecting said first capacitor to a load;

an optical transmitter receiving said electrical output signal from said control circuit and emitting an optical signal corresponding to said electrical output signal;

an optical receiver receiving said optical signal and generating therefrom an electrical control signal corresponding to said optical signal to control said electronic switch state; and

an electrically isolated optical path conveying said optical signal from said optical transmitter to said optical receiver.

5,626,620

DUAL CHAMBER PACING SYSTEM AND METHOD WITH CONTINUAL ADJUSTMENT OF THE AV ESCAPE INTERVAL SO AS TO MAINTAIN OPTIMIZED VENTRICULAR PACING FOR TREATING CARDIOMYOPATHY

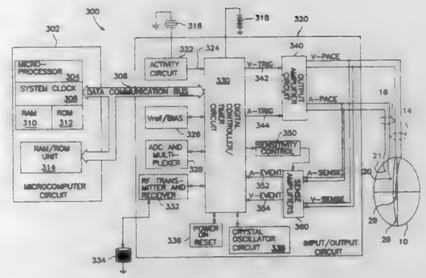
Robert S. Kieval, Golden Valley, and Michael F. Hess, Minneapolis, both of Minn., assignors to Medtronic, Inc., Mpld., Minn.

Filed Feb. 21, 1995, Ser. No. 391,883

Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—9 **13 Claims**

1. A dual chamber pacemaker, having atrial sense means for sensing atrial signals from a patient, ventricular sense means for sensing ventricular signals from a patient, ventricular pace means for generating and delivering ventricular pace pulses to said patient's right ventricle, and sync control means for controlling said ventricular pace means to generate and deliver a ventricular pace pulse at a controlled AV escape interval following a sensed



atrial signal, said sync control means having AV_{esc} means for setting said AV escape interval, said AV_{esc} means comprising:

fusion means for detecting occurrence of fusion beats, rate means for determining a rate of occurrence of fusion beats over a plurality of pacemaker cycles, and adjustment means for adjusting said AV escape interval as a function of said determined rate.

5,626,621

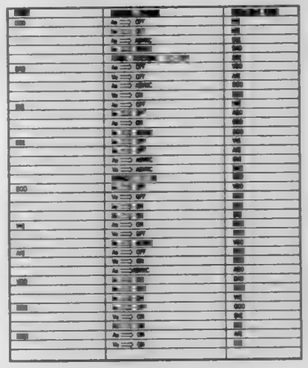
DUAL CHAMBER, MULTI-MODE EXTERNAL PACEMAKER

Richard A. Skoglund, Maple Grove; Carl D. Schmuland, Lino Lakes, and Robert A. Colbert, Minneapolis, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 7, 1995, Ser. No. 554,877

Int. Cl.[6] A61N *1/368*

U.S. Cl. 607—10 **29 Claims**



29. An external cardiac pacemaker operable in first and second pacing modes, the first pacing mode having a first operating function that is disabled in the second mode, comprising:

adjustable means for selecting an operative characteristic of a second operating function over a pre-defined range of values when the pacemaker is operating in the first mode, and

means, responsive to adjustment of the selecting means to an operative characteristic value inside the pre-defined range of values when the pacemaker is operating in the second mode, for enabling the first operating function.

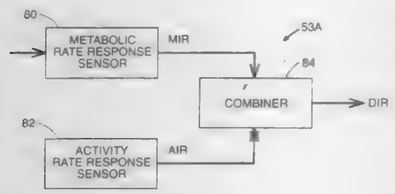
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5,626,622

DUAL SENSOR RATE RESPONSIVE PACEMAKER

Daniel Cooper, Lakewood, Colo., assignor to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Sep. 21, 1994, Ser. No. 309,760
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—18 29 Claims



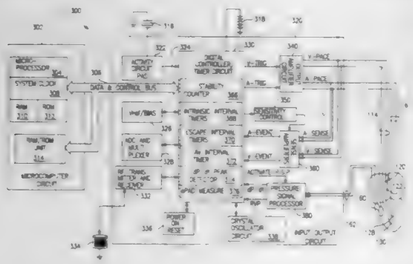
1. A pacemaker comprising:
metabolic rate sensor means for generating a metabolic indicated rate signal dependent on a physiological demand of a patient in response to a physical activity by the patient;
activity rate sensor means for generating an activity indicated rate signal dependent on an electromechanical measurement indicative of an instantaneous parameter characteristic of said physical activity;
combining means for generating a time dependent combined rate signal dependent on said metabolic indicated rate, said combining means including transition means for detecting a transition in said physical activity, said metabolic indicated rate being enhanced with said activity indicated rate during said transition; and
pacing means for generating pacing signals in response to said combined rate.

5,626,623

METHOD AND APPARATUS FOR OPTIMIZING PACEMAKER AV DELAY

Robert S. Kieval, Golden Valley, and Tommy D. Bennett, Shoreview, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1996, Ser. No. 640,434
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—23 28 Claims



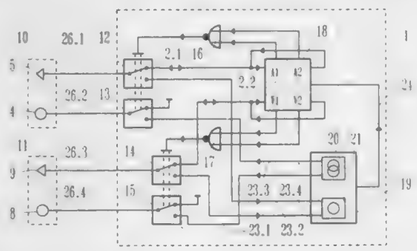
1. In a dual chamber pacemaker pulse generator operating in accordance with an atrial-ventricular (AV) synchronous pacing method comprising the steps of:
timing a ventricular-atrial (V-A) pacing escape interval from a paced ventricular event;
delivering an atrial pace pulse to an atrium of a patient's heart at the time out of the V-A pacing escape interval unless an atrial sensed event occurs within said pacing escape interval;
prematurely terminating the V-A pacing escape interval on the sensing of an atrial sensed event within said V-A pacing escape interval;
timing an AV delay interval starting from a sensed atrial event or delivery of an atrial pace pulse;
delivering a ventricular pace pulse to a ventricle of the patient's heart at the termination of the AV delay interval unless a ventricular sensed event occurs within the AV delay interval;
prematurely terminating the AV delay interval on the sensing of a ventricular sensed event within the AV delay interval; and
restarting the V-A pacing escape interval on a ventricular pace pulse or a ventricular sensed event,
an AV delay interval optimization method for establishing an optimum AV delay interval for optimal left heart AV mechanical synchrony and function operable in conjunction with the AV synchronous pacing method steps comprising the further optimization method steps of:
(a) determining a stable atrial heart rate;
(b) on determination of a stable heart rate in step (a), continuing with steps (c)–(i) with an initial test AV delay interval;
(c) in the time period following a ventricular pace pulse delivered at the end of the initial test AV delay interval, measuring right ventricular blood pressure and providing a right ventricular pressure (RVP) signal;
(d) deriving a pressure rate of change signal (dP/dt) from the measured RVP signal;
(e) determining a peak amplitude of the dP/dt signal;
(f) measuring the RVP signal amplitude at the determined peak dP/dt signal as an estimated Pulmonary Artery Diastolic (EPAD) pressure;
(g) repeating steps (c)–(f) while a stable atrial heart rate continues with a set of adjusted test AV delay intervals changed by a predetermined delta value between a minimum and a maximum AV delay interval to derive a set of EPAD pressure values;
(h) identifying the test AV delay interval providing the lowest amplitude EPAD pressure value; and
(i) selecting the identified test AV delay interval as the AV delay interval employed in the A-V synchronous pacing method.

5,626,624

ARRANGEMENT FOR CONTROLLING A PACEMAKER

Max Schaldach, Erlangen, and Gustav Boheim, Bad Bergaabern, both of Germany, assignors to Biotronik Mess-und Therapiegeraete GmbH & Co. Ingenieurbuero Berlin, Berlin, Germany

PCT No. PCT/DE93/00890, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/06513, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 16, 1993, Ser. No. 403,702
Claims priority, application Germany, Sep. 17, 1992, 42 31 601.4
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—24 16 Claims



1. An arrangement for controlling a stimulation frequency of a pacemaker, comprising:
an atrial bipolar electrode system;
a ventricular bipolar electrode system;

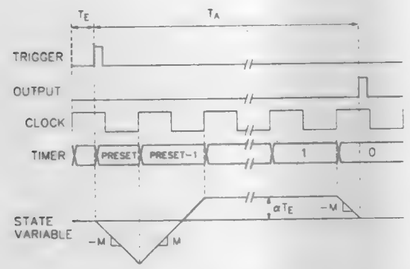
a first electrode pair comprising an electrode from each of the atrial and ventricular bipolar electrode systems, with the electrodes of the first electrode pair being disposed intracardially in the atrium and ventricle, respectively;
a pacemaker control means for generating stimulation pulses for stimulating the heart;
a constant current source for impressing a constant current to a second electrode pair, comprising at least one electrode from one of the atrial and ventricular bipolar electrode systems disposed intracardially in one of the atrium and ventricle, for developing an electrical potential between the electrodes of the first electrode pair during predetermined cardiac phases; and
means for measuring an impedance between the electrodes of the first electrode pair based upon said electrical potential and said constant current, and generating a control signal representing relative cardiac volume as a function of the measured impedance, the control signal being fed to the pacemaker control means for influencing a stimulation frequency of the stimulation pulses.

5,626,625

METHOD AND APPARATUS FOR MEASURING THE PERIOD OF RESPONSE OF AN IMPLANTABLE MEDICAL DEVICE BASED UPON THE DIFFERENCE IN PHASE BETWEEN A TRIGGER SIGNAL AND AN INTERNAL CLOCK SIGNAL

Kenneth W. Fernald, Lake Jackson, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Division of Ser. No. 333,163, Nov. 1, 1994, Pat. No. 5,522,866.
This application Jan. 25, 1996, Ser. No. 591,317
Int. Cl.[6] A61N *1/08;1/02*
U.S. Cl. 607—32 17 Claims



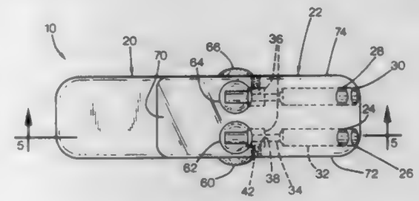
1. A method for measuring phase difference between a trigger signal and an internal clock signal in an implantable device, said phase difference indicating the period of response of the implantable device after the trigger signal is received by the implantable device, said method comprising the steps of:
setting a state variable equal to an initial value;
changing the value of the state variable from the initial value at a first fixed rate after receiving the trigger signal;
changing the value of the state variable at a second fixed rate opposite in polarity to said first fixed rate when a first clock edge of said clock signal occurs subsequent to receiving the trigger signal;
beginning to count a preset period when said first clock edge occurs;
maintaining the value of the state variable when a second clock edge of said clock signal occurs;
completing the count of said preset period;
changing the value of the state variable at said first fixed rate after said count of said preset period is completed; and
producing an output signal when said state variable returns to said initial value.

5,626,626

IMPLANTABLE MEDICAL APPARATUS WITH MAGNIFYING HEADER

Dean F. Carson, Mountain View, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed May 17, 1995, Ser. No. 443,127
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—36 14 Claims



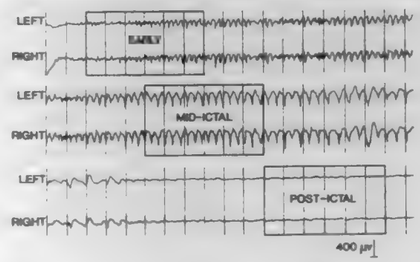
1. An implantable medical apparatus operable in conjunction with attachable lead, the apparatus comprising:
a housing;
an electronic component contained within the housing;
a header connected to the housing, the header defining a connector cavity, wherein at least a portion of the header is transparent or translucent;
a connector element, at least a portion of which is positioned within the connector cavity, the connector element being operably connected to the electronic component; and
the header including a flexible lens, such that the connector element may be viewed through the lens to facilitate confirmation of proper connection of a lead to the connector element, wherein the lens is removable from the header, such that the lens may be removed after confirming that the lead is properly connected.

5,626,627

ELECTROCONVULSIVE THERAPY METHOD USING ICTAL EEG DATA AS AN INDICATOR OF ECT SEIZURE ADEQUACY

Andrew D. Krystal, and Richard D. Weiner, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Jul. 27, 1995, Ser. No. 508,062
Int. Cl.[6] A61N *1/32*
U.S. Cl. 607—45 23 Claims



1. A method in electroconvulsive therapy (ECT) to use ictal EEG data and to compute certain parameters therefrom, wherein the EEG data is obtained from at least one seizure of a known seizure adequacy, for clinical determination of the adequacy of an induced seizure in a patient, the method comprising the steps of:
(a) employing an ECT device to apply electricity, having a stimulus intensity, to the patient in an electroconvulsive therapy session of a course of treatment to induce seizure;
(b) generating EEG data and to compute certain parameters therefrom by detecting the electrical brain waves of the

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patient during at least one of the seizure and immediate post seizure and selecting the certain EEG data parameters therefrom;

(c) computing a likely therapeutic adequacy of the induced seizure by comparing the selected certain EEG data parameters of the patient to the ictal EEG data parameters of known seizure adequacy; and

(d) displaying the computed likely therapeutic adequacy of the induced seizure.

5,626,628

USES FOR AN ELECTRO-ANAESTHESIA APPARATUS

Michel Ganansia, 8, Allée des Pêcheurs, 91120 Palaiseau, France

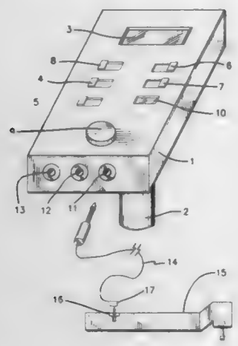
PCT No. PCT/FR93/00759, § 371 Date Jan. 23, 1995, § 102(e) Date Jan. 23, 1995, PCT Pub. No. WO94/02200, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 23, 1993, Ser. No. 374,600

Claims priority, application France, Jul. 23, 1992, 92 09276

Int. Cl.[6] A61N *1/20*

U.S. Cl. 607—47 **3 Claims**



1. Use of an electronic medical electro-anaesthesia apparatus based on an adjustable D.C. power source outputting a D.C. current, said apparatus comprising electrodes which are interchangeable depending on a kind of operation, said electrodes being electrically connected to said D.C. power source, said apparatus comprising a housing with electronic means for regulating and controlling the D.C. power source, said use comprising the steps of:

adjusting said D.C. current;

gripping, by a patient, of a housing member, said housing member being one of said electrodes;

applying said D.C. current to an enamel of teeth of said patient with a practitioner's scaling instrument; said scaling of said enamel of the teeth with the aid of said scaling instrument arriving at one of a total and partial desensitization of the teeth during a scaling operation, said scaling instrument being another of said electrodes.

5,626,629

PROGRAMMING OF A SPEECH PROCESSOR FOR AN IMPLANTABLE COCHLEAR STIMULATOR

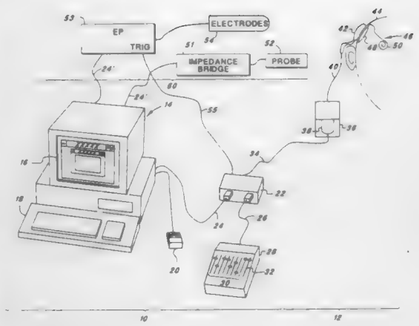
Michael A. Faltys, Northridge; James H. Wolfe, Canyon Country; Kitti McMeel, Simi Valley, and Chris J. Hetlinger, Canyon Country, all of Calif., assignors to Advanced Bionics Corporation, Sylmar, Calif.

Filed May 31, 1995, Ser. No. 456,141

Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—57 **32 Claims**

1. A method of fitting an auditory stimulation system, the stimulation system including an implanted unit and a programmer



unit; the implanted unit having means for generating a stimulating current and at least one electrode channel associated therewith through which said stimulating current is applied to a patient, said at least one electrode channel having a gain associated therewith and means for adjusting the gain within limits so that the magnitude of the stimulating current may be adjusted; and the programmer unit having coupling means for coupling it to the implanted unit, storage means for storing information, prompting means for prompting entry of specified information, and entry means for entering information into the storage means, the method comprising:

coupling the programmer unit to the implanted unit implanted in the patient;

detecting whether demographic information of the patient is stored in a patient database stored in the storage means of the programmer unit, and if not prompting an operator of the programmer unit to enter demographic information of the patient for storage in the patient data base;

prompting the operator to enter a fitting session for the patient;

entering the fitting session into the storage means of the programmer unit, whereby a record is made within the storage means that the patient was fitted during the entered fitting session;

prompting the operator to enter an objective measurement;

receiving the objective measurement into the programmer unit; and

determining an initial threshold stimulation current for the at least one electrode channel of the implanted unit as a function of the objective measurement.

5,626,630

MEDICAL TELEMETRY SYSTEM USING AN IMPLANTED PASSIVE TRANSPONDER

Raymond S. Markowitz, Elkins Park, Pa.; Robert E. Roy, Herndon, Va., and Xiaoguang G. Sun, King of Prussia, Pa., assignors to AEL Industries, Inc., Lansdale, Pa.

Filed Oct. 13, 1994, Ser. No. 322,852

Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—60 **39 Claims**



1. A telemetry system for allowing an electronic device implanted in an object to communicate with a remote monitoring station, the telemetry system comprising

(a) a passive transponder attached to the implanted electronic device, the implanted electronic device having condition monitoring circuitry, the transponder being electrically connected to the monitoring circuitry, the transponder automatically receiving, encoding, and reflecting an interrogation signal containing condition information when the transponder receives the interrogation signal; and

(b) a two-way repeater external to the object and in close proximity thereto, the repeater including

(i) a first transceiver for generating the interrogation signal and for communicating with the transponder; and

(ii) a second transceiver for communicating with the remote monitoring station, thereby allowing the condition information received by the first transceiver to be transmitted to the remote monitoring station.

5,626,631

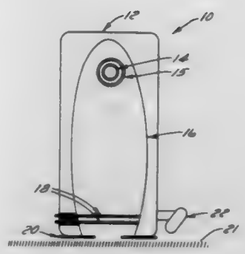
METHOD AND APPARATUS FOR THERAPEUTIC ELECTROMAGNETIC TREATMENT

Shimon Eckhouse, Haifa, Israel, assignor to ESC Medical Systems Ltd., Yokneam, Israel

Continuation-in-part of Ser. No. 964,210, Oct. 20, 1992, Pat. No. 5,405,368. This application Feb. 3, 1995, Ser. No. 383,509

Int. Cl.[6] A61N *5/06*

U.S. Cl. 607—88 **10 Claims**



1. A therapeutic treatment device for coagulating blood in blood vessels underlying an epidermal layer comprising an incoherent light source operable to provide a pulsed light output for coagulation blood and a driver circuit, including a switch capable of being electrically turned on and being electrically turned off to thereby provide a first interval of light, connected to the light source to control the pulse width and delay between pulses.

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5,626,632

PROCESS FOR DYEING CATIONIC DYEABLE POLYAMIDE FIBER

Geoffrey Boyes, Roanoke, Va., assignor to Ronile, Inc., Rocky Mount, Va.

Filed Jun. 6, 1995, Ser. No. 470,697
Int. Cl.[6] D06P *1/39;3/06*
U.S. Cl. 8—483 **11 Claims**

1. A process for dyeing a cationic dyeable polyamide fiber by continuous dyeing, space dyeing wherein a length of the fiber is contacted at intermittent spaces along its length with a dye, or a printing process which comprises applying a premetalized acid or acid dye as defined by the Colour Index to the fiber at a pH of 2.5 or below.

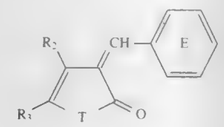
5,626,633

BULK DYEING OF PLASTICS

Peter Roschger, Köln, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 263,222, Jun. 21, 1994, abandoned. This application Dec. 1, 1995, Ser. No. 566,317
Claims priority, application Germany, Jun. 28, 1993, 43 21 420.7; Nov. 29, 1993, 43 40 560.6
Int. Cl.[6] D06P *3/00;3/24;3/52*
U.S. Cl. 8—506 **7 Claims**

1. A process for bulk dyeing of plastics wherein a dyestuff of the formula



(III)

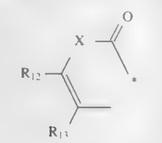
wherein

T represents O or N—R_0

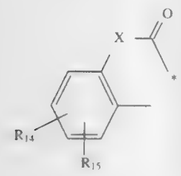
wherein

R_0 denotes H, alkyl, aryl or acyl,

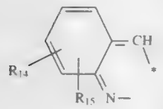
R_2 and R_3 together form a radical of the formula



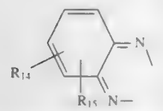
(F 1)



(F 2)



(F 3)



(F 4)

wherein the bond labelled with * identifies the R_2 linkage, and wherein

X represents O or N—R_{16}, wherein R_{16} denotes H, C_1–C_6-alkyl or phenyl,

R_{12} represents H, phenyl or C_1–C_4-alkyl,

R_{13} represents H, phenyl, C_1–C_4-alkyl, C_1–C_4-alkoxycarbonyl, aminocarbonyl, mono- or dialkylaminocarbonyl, arylaminocarbonyl, C_1–C_4-alkylcarbonyl, benzyl or Cl,

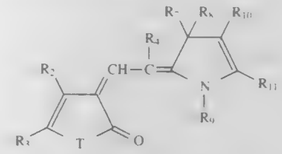
R_{14} and R_{15} independently of one another represent H, Cl, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxycarbonyl substituents, or together form the radical of a benzo ring unsubstituted or substituted by these substituents, or

R_2 and R_3 together form the radical of an unsubstituted or substituted benzo or naphtho ring,

and

the ring E carries a C_1–C_4-dialkylamino radical, which is substituted by Cl, phenyl, CN, OH, alkoxy, dialkylamino, alkoxycarbonyl wherein said E ring is optionally further substituted by (i) up to 2 C_1–C_6alkyl groups or halogen atoms, which are independent of one another, (ii) an acylamino-, acyloxy- or hydroxy-group, (iii) or a combination of (i) and (ii),

or a dyestuff of the formula



(IV)

wherein

R_2, R_3 and T have the above-mentioned meaning,

R_4 represents H or alkyl,

R_7 and R_8 independently of one another represent C_1–C_4-alkyl or together form the radical of an unsubstituted or substituted carbocyclic 5- or 6-membered ring,

R_9 denotes a C_1–C_4-alkyl group which is unsubstituted or substituted by phenyl, Cl, OH, CN, alkoxycarbonyl, alkoxy, dialkylamino or alkoxy and

R_{10} and R_{11} together form the radical of an unsubstituted or substituted benzene or naphthalene ring,

is incorporated into a molten plastics composition or wherein the dyestuff is already added to starting components for the preparation of the plastic before the polymerization.

5,626,634

AQUEOUS COMPOSITIONS OF SOLVENT-SOLUBLE DYESTUFFS

Jürgen Goldmann, Münchenstein, and Bansi L. Kaul, Biel-Benken, both of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 123,958, Sep. 20, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 347,986
Claims priority, application United Kingdom, Sep. 21, 1992, 9219909
Int. Cl.[6] C09B *67/00*
U.S. Cl. 8—527 **11 Claims**

1. A process for the preparation of a liquid dyestuff composition comprising the steps of:

mixing an aqueous presscake with a water content of 30–60% by weight of a C.I. Solvent Dye into a water miscible organic solvent; and

subsequently raising the temperature of the mixture to provide a liquid dyestuff composition consisting essentially of per 100 parts by weight:

in excess of 0 parts and up to 15 parts water,

at least 25 parts of a C.I. Solvent Dye, and

a water miscible organic solvent.

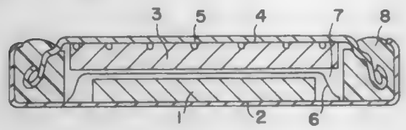
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5,626,635

PROCESSES FOR MAKING POSITIVE ACTIVE MATERIAL FOR LITHIUM SECONDARY BATTERIES AND SECONDARY BATTERIES THEREFOR

Junichi Yamaura, Kobe; Kazuhiro Okamura, Kadoma, and Yoshiaki Nitta, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 15, 1995, Ser. No. 573,505
Claims priority, application Japan, Dec. 16, 1994, 6-313140; Dec. 16, 1994, 6-313141; Mar. 2, 1995, 7-042900
Int. Cl.[6] H01M *4/26*
U.S. Cl. 29—623.5 10 Claims



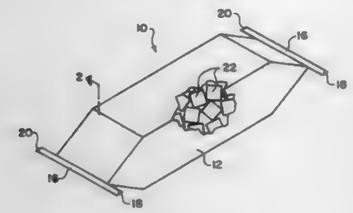
1. A process for making positive active materials for lithium secondary batteries comprising lithium containing oxides, nickel and cobalt, represented by a formula $LiNi_xCo_{(1-x)}O_2$, where the value x is $0.5 \leqq x \leqq 0.95$; comprising the steps of forming composite hydroxides comprising cobalt and nickel through co-precipitation of cobalt and nickel hydroxides by adding caustic alkali aqueous solutions to mixed aqueous solutions containing cobalt and nickel salts, mixing said composite hydroxides with lithium compounds and burning said mixture.

5,626,636

COMBUSTIBLE BAG FOR IGNITING MATERIAL CONTAINED THEREIN APPARATUS AND METHOD

Freddy E. Carter, P.O. Box 1644, Brownwood, Tex. 76804

Filed Sep. 13, 1995, Ser. No. 527,710
Int. Cl.[6] C10L *5/00*
U.S. Cl. 44—533 4 Claims



1. A combustible double bag for igniting pre-treated material contained therein comprising:

a) an inner liner with an inside and an outside, the inside conformed to contain the material to be ignited;

b) the outside of the inner liner covered with a separate combustible product so that when the separate combustible product is ignited, the inner liner is ignited and, in turn, so is the pre-treated material;

c) an outer liner with an inside and an outside, the outside conformed to contain the inner liner;

d) the inside of the outer liner covered with a separate combustible product so that when the outer liner is ignited, the inside of the outer liner is ignited and, in turn, the separate combustible product covering the outside of the inner liner is ignited; and

e) a lighting strip for igniting the outside of the outer liner, which is attached to the outer liner so that igniting the lighting strip ignites the outside of the outer liner.

5,626,637

LOW PRESSURE METHANE STORAGE WITH HIGHLY MICROPOROUS CARBONS

Frederick S. Baker, Wando, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 243,155, May 16, 1994, abandoned, which is a division of Ser. No. 143,551, Oct. 25, 1993, Pat. No. 5,416,056. This application Mar. 14, 1995, Ser. No. 403,389
Int. Cl.[6] F17C *11/00;* B01J *20/20*
U.S. Cl. 48—127.3 4 Claims

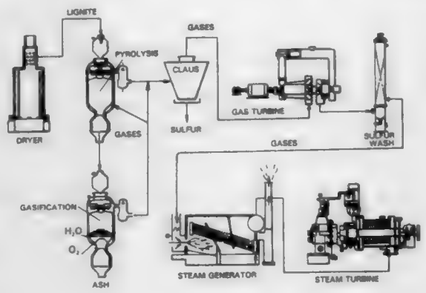
1. An improved process for storing gaseous hydrocarbon fuel in a storage container comprising filling the storage container with activated carbon prior to filling with the gaseous hydrocarbon fuel wherein the improvement comprises activated carbon prepared by a two stage phosphoric acid/potassium hydroxide activation of lignocellulosic material wherein greater than 50% of the total pore volume of the activated carbon is comprised of pores in the range of greater than 8 Å up to 20 Å in width and greater than 95% of the total pore volume of the activated carbon is comprised of pores up to 50 Å in width, the gaseous hydrocarbon fuel is natural gas which is stored at a pressure of about 500 psi, and the filled storage container delivers at least 150 v/v of natural gas.

5,626,638

GASIFICATION OF LOW CALORIFIC VALUE SOLID FUELS TO PRODUCE ELECTRIC ENERGY

George N. Valkanas, Marousi, Greece, assignor to Biokat Corporation, Athens, Greece

PCT No. PCT/GR94/00011, § 371 Date Feb. 6, 1995, § 102(e) Date Feb. 6, 1995, PCT Pub. No. WO94/29410, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 3, 1994, Ser. No. 379,667
Int. Cl.[6] C10J *3/46;3/60*
U.S. Cl. 48—197 R 18 Claims



1. A process for producing fuel gases from a solid fuel comprising carbonaceous material and having a calorific value of between about 800 to 3,000 Kcal/Kg, the process comprising:

a) pyrolyzing the solid fuel under reaction conditions and for a time sufficient to pyrolyze about 40–80% of the carbonaceous material whereby to form a first gas and a carbon residue without formation of tar; and

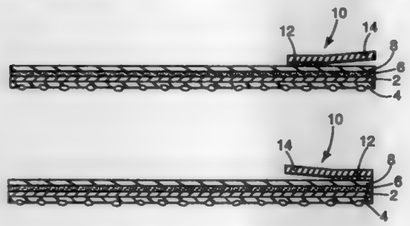
b) gasifying the carbon residue by heating the carbon residue in the presence of oxygen or oxygen-steam; or burning the carbon residue.

5,626,639

ABRASIVE ARTICLES AND METHOD OF MAKING THE SAME

William B. King, Nuneaton, United Kingdom, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1995, Ser. No. 559,200
Claims priority, application United Kingdom, Nov. 19, 1994, 9423268
Int. Cl.[6] B24D *11/00*
U.S. Cl. 51—297 14 Claims



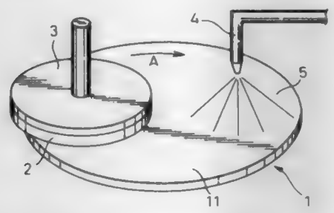
1. An abrasive article comprising a substrate having a first major surface bearing an abrasive layer and a second major surface having a layer of pressure-sensitive adhesive and a protective liner covering said layer of pressure-sensitive adhesive, the liner having a perimeter coterminous with the perimeter of said substrate in which the liner has a lift flap secured thereto with a greater bond strength therebetween than the bond strength developed between the liner and the pressure-sensitive adhesive, the lift flap not extending beyond the perimeter of the liner and having free portion accessible to finger grip.

5,626,640

COMPOSITION ADAPTED FOR USE IN TEXTURING PROCESS FOR MAGNETIC DISC

Ken Ishitobi, Tokyo, Japan, assignor to Showa Denko K.K., Tokyo, Japan

Filed Apr. 12, 1996, Ser. No. 631,174
Claims priority, application Japan, Apr. 13, 1995, 7-88406
Int. Cl.[6] B24B *3/34*
U.S. Cl. 51—306 12 Claims



1. A composition adapted for use in a texturing process of a magnetic disc, comprising:

(A) minute grains or powder of at least one material selected from the group consisting of diamond, CBN, alumina and silicon carbide;

(B) an alkylene glycol monoalkyl ether having the general formula:

$$R_1O[(CH_2)_nO]_mH$$

wherein R_1 represents a straight or branched chain of an alkyl group having 1 to 4 carbon atoms, m is an integer of 1 to 3, and n is an integer of 2 or 3; and

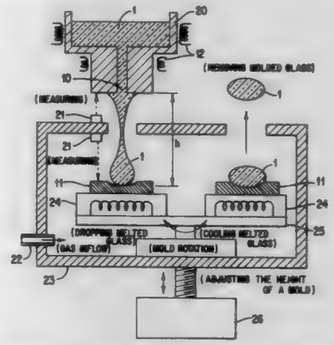
(C) at least one compound selected from the group of a fatty acids having 10 to 22 carbon atoms or a metallic salt thereof.

5,626,641

METHOD OF MANUFACTURING A GLASS BLANK USED FOR OPTICAL GLASS ELEMENTS

Tadayoshi Yonemoto, Moriguchi; Yoshiyuki Shimizu, Neyagawa; Takashi Inoue, Hirakata, and Toshihiko Muroi, Minami Aizu-gun, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, and Sumita Optical Glass Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 65,500, May 24, 1993, abandoned.
This application Jan. 23, 1995, Ser. No. 376,677
Claims priority, application Japan, Jun. 4, 1992, 4-143927
Int. Cl.[6] C03B *7/00*
U.S. Cl. 65—29.12 14 Claims



1. A method of manufacturing a glass blank used for optical elements comprising the steps of:

allowing molten glass to flow from a glass outlet of a glass melting furnace to a mold so that a constriction point is formed in said molten glass between said glass outlet and said mold;

allowing said molten glass to spontaneously separate at said constriction point by surface tension of the glass flowing from said glass outlet above said constriction point and by the weight of the molten glass and surface tension between the glass said constriction point and the molten glass contacting the mold so as to drop a fixed amount of molten glass on said mold; and

cooling and solidifying the fixed amount of molten glass on said mold to form a glass blank;

wherein a distance between said glass outlet and said mold is arranged so that said molten glass first contacts said mold before separation at the constriction point, and so that said molten glass is separated at said constriction point by surface tension of the glass flowing from said glass outlet above said constriction point and by the weight of the molten glass and surface tension between the glass below said constriction point and the molten glass contacting the mold, and further wherein the distance does not change substantially during dropping of the molten glass.

5,626,642

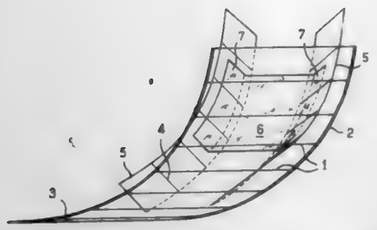
METHOD FOR THE PRODUCTION OF CURVED GLASS SHEETS

Bernard Letemps, Thourotte, and Jacques Leclercq, Roisel, both of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 237,419, May 3, 1994, abandoned, which is a continuation of Ser. No. 810,178, Dec. 19, 1991, abandoned. This application Sep. 11, 1995, Ser. No. 526,458
Claims priority, application France, Dec. 21, 1990, 90 16178
Int. Cl.[6] C03B *23/023*
U.S. Cl. 65—106 8 Claims

1. Method of curving glass sheets preheated to curving temperature, comprising the steps of:

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a first step of passing the glass sheets over a curved principal shaping bed located outside of a furnace and having a substantially circular longitudinal trajectory so as to produce a principal curvature; and

simultaneously with said first step, a second step of producing a secondary curvature by passing the glass sheets between, and in contact with, two series of revolving elements forming at least one secondary shaping bed, the generatrix of which is inclined relative to that of the principal bed and intersects said principal bed.

5,626,643

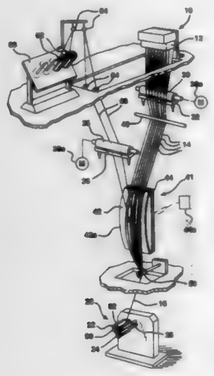
CONTACT DRYING OF FIBERS TO FORM COMPOSITE STRANDS

Andrew B. Woodside, Pickerington; James V. Gauchel, Newark; Larry J. Huey, Granville; David L. Shipp, Newark; Frank Macdonald, Granville; Peggy M. Woodside, Pickerington, and Douglas B. Mann, Westerville, all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Sep. 26, 1994, Ser. No. 311,817

Int. Cl.[6] C03B *37/022*

U.S. Cl. 65—442 **17 Claims**



1. A method for forming one or more composite strands comprising the steps of:

drawing a plurality of glass first fibers from a source of molten glass;

providing a supply of one or more second fibers of a second material;

applying a size to said first and second fibers;

contacting said sized first and second fibers with a heated member to effect drying of said size on said first and second fibers, said contacting of said sized first and second fibers with said heated member occurring in-line with said drawing of said first fibers; and

gathering said first and second fibers into one or more composite strands.

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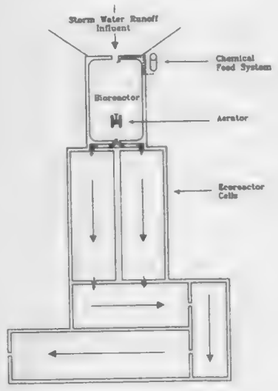
STORM WATER REMEDIATORY BIOCONVERSION SYSTEM

Jere Northrop, North Tonawanda, N.Y., assignor to Bion Technologies, Inc., Amherst, N.Y.

Continuation of Ser. No. 165,172, Dec. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 120,164, Sep. 10, 1993, Pat. No. 5,472,472. This application Oct. 10, 1995, Ser. No. 541,320

Int. Cl.[6] C05F *3/00;* **C02F** *3/02*

U.S. Cl. 71—9 **9 Claims**



1. A process for the bioconversion of soluble and suspended organics from storm water runoff, consisting essentially of:

introducing an aqueous storm water runoff stream comprising insoluble debris, inorganic materials and an aqueous component comprising suspended potassium, phosphorus and nitrogen values containing materials and soluble potassium, phosphorus and nitrogen values containing materials, into a bioreactor having an aerobic zone and an anaerobic zone;

settling inorganic materials and insoluble debris in a generally anaerobic zone of said bioreactor;

treating said aqueous component of said stream with a metallic salt to form a precipitable phosphorus complex and having suspended phosphorus, potassium and nitrogen containing materials within said aqueous component;

conditioning, within said aerobic zone, said treated aqueous component in which a precipitable phosphorus complex has been formed to enhance the formation of facultative bacteria therein;

forming, within said aerobic and anaerobic zones, a biomass containing enhanced facultative bacteria sufficient to actively bioconvert soluble phosphorus, potassium and nitrogen materials contained within said aqueous component;

transporting said aqueous component containing enhanced facultative bacteria, bioconverted phosphorus, complexed and precipitable phosphorus, suspended phosphorus, suspended potassium and nitrogen materials, precipitatable potassium and nitrogen containing materials and bioconverted potassium and nitrogen materials to an ecoreactor;

bioconverting said transported aqueous component and precipitating a beneficial humus material containing complexed and bioconverted phosphorus, potassium and nitrogen containing organics; and,

recovering or discharging water from said ecoreactor, said water containing phosphorus, potassium and nitrogen values in an amount reduced from the values introduced to said bioreactor.

5,626,645

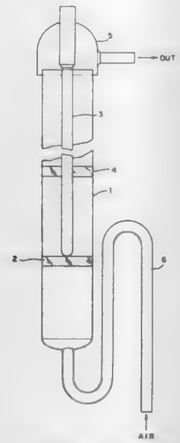
PROCESS FOR MAKING SILVER METAL FILAMENTS

Carlos E. Bamberger, Oak Ridge, Tenn., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 27, 1995, Ser. No. 534,438

Int. Cl.[6] B22F *9/24*

U.S. Cl. 75—366 **12 Claims**



1. A process for making silver metal particles from silver salt particles having the same morphology, comprising the steps of:

a) providing precursor silver salt particles selected from the group consisting of silver acetate end silver sulfide having a selected morphology;

b) containing said precursor silver salt particles in a reactor vessel having means for supporting said particles in an air suspension to prevent the agglomeration of said particles;

c) flowing air through said reactor vessel at e flow rate sufficient to suspend said particles in said reactor vessel;

d) heating said suspended precursor silver salt particles simultaneously with said flowing step to a processing temperature and at a heating rate below which physical deterioration of said suspended precursor silver salt particles takes place; and

e) maintaining said suspended precursor silver salt particles at said processing temperature for a period of time sufficient to convert said particles into silver metal particles having the same morphology as said precursor silver salt particles.

5,626,646

METHOD OF RECOVERING METALS AND PRODUCING A SECONDARY SLAG FROM BASE METAL SMELTER SLAG

David Krofchak, Oakville, Canada, assignor to Fenicem Minerals Inc., Copper Cliff, Canada

Continuation-in-part of Ser. No. 494,665, Jun. 26, 1995, Pat. No. 5,593,493. This application Jun. 14, 1996, Ser. No. 663,724

Int. Cl.[6] C21B *15/00*

U.S. Cl. 75—500 **6 Claims**

1. A method of recovering metals and producing a secondary slag from base metal smelter slag produced by a copper or nickel smelter, said smelter slag comprising iron silicate and other metallic compounds and elements including (by weight):

from about 15% to about 40% SiO_2

from about 1% to about 8% Al_2O_3

from about 35% to about 60% Fe_2O_3

from about 2% to about 20% CaO

from about 1% to about 3% MgO

from about 0.2% to about 1% Cu (when from a copper smelter)

from about 0.1% to about 1% Ni (when from a nickel smelter)

from about 0.1% to about 0.3% Co

from about 0.2% to about 2% S

said method comprising: mixing the smelter slag with at least one reducing agent selected from the group consisting of carbon and aluminum, said carbon being from about 1% to about 10% by weight of the slag and said aluminum being from about 5 to about 30% by weight of the slag, and with from zero to about 60% calcium oxide by weight of the slag, and heating the mixture above a eutectic melting point thereof to reduce the iron silicate to ferrosilicon containing copper, nickel or cobalt which was in the smelter slag and thereby also produce a secondary slag comprising at least one compound selected from the group consisting of calcium silicate, calcium aluminate and calcium iron aluminum silicate, and separating the ferrosilicon from the secondary slag.

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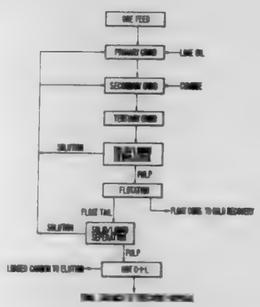
METHOD FOR RECOVERING GOLD AND OTHER PRECIOUS METALS FROM CARBONACEOUS ORES

William J. Kohr, San Mateo, Calif., assignor to Geobiotics, Inc., Hayward, Calif.

Continuation of Ser. No. 324,363, Oct. 14, 1994, Pat. No. 5,443,621, which is a continuation of Ser. No. 57,300, May 3, 1993, Pat. No. 5,364,453, which is a continuation-in-part of Ser. No. 950,576, Sep. 22, 1992, Pat. No. 5,338,338. This application Jun. 7, 1995, Ser. No. 483,747

Int. Cl.[6] C22B *3/12*

U.S. Cl. 75—711 **41 Claims**



1. A process for recovering precious metal from carbonaceous ores comprising:

a. leaching carbonaceous ore with a lixiviant solution to thereby cause the production of precious metal-lixiviant complexes;

b. concentrating at least a portion of the precious metal-lixiviant complexes from the lixiviant solution to the native carbonaceous component of the ore;

c. separating the precious metal containing carbonaceous component from the ore to thereby form (1) a concentrate of the precious metal containing carbonaceous component and (2) a tail;

d. recovering precious metal from the precious metal containing carbonaceous component concentrate;

e. further treating the tail in a hot carbon in leach process;

f. separating the activated carbon used in the hot carbon in leach process from the tail; and

g. recovering precious metal from the activated carbon.

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RECOVERY OF NICKEL FROM BIOLEACH SOLUTION

Willem P. C. Duyvesteyn, and Matt Omofoma, both of Reno, Nev., assignors to BHP Minerals International Inc., Reno, Nev.

Filed Jul. 17, 1995, Ser. No. 503,130
Int. Cl.[6] C22B *3/18*
U.S. Cl. 75—712 14 Claims

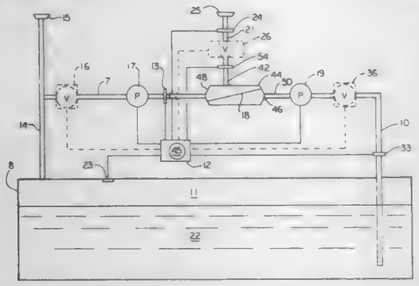
1. A bioleaching method of recovering nickel from an ore selected from the group consisting nickel-containing lateritic ores and nickel-containing sulfidic material which comprises:
where the ore selected is a nickel-containing lateritic ore, at least one micro-organism selective to the leaching of the lateritic ore is added to an aqueous slurry thereof maintained at a pH ranging from about 1 to 3 including a nutrient for said micro-organism;
said at least one micro-organism used in leaching said lateritic ore being a fungi that systemically produces a carboxylic acid conducive for chelating the nickel in the ore and thus produce a solution containing nickel;
where the ore selected is a nickel-containing sulfidic ore or a concentrate thereof, at least one micro-organism comprising an ore biooxidizing bacterium selective to the leaching of sulfidic ore is added to an aqueous slurry of said sulfidic ore maintained at a pH of about 1 to 3 including a nutrient for said bacterium;
the biooxidation of said ore being effected by using at least one bacterium selected from the group consisting of *Thiobacillus thiooxidans, Thiobacillus ferrooxidans,* Leptospiritum species, Sulfobacillus, *thermosulfidooxidans* or similar species, *Sulfolobus brierleyi, Sulfolobus acidocaldarius,* Sulfolobus BC and *Sulfolobus sulfataricus;*
bioleaching a slurry of said selected ore for a time sufficient to effect the dissolution of said nickel in said ore and form a pregnant solution thereof and a residue;
separating said nickel solution from said residue;
contacting said separated nickel solution with an ion exchange resin containing as an active ingredient bis-picolylamine specific to the absorption of said nickel and thereby form a nickel loaded resin;
extracting said absorbed nickel from said resin by contacting said resin with a mineral acid solution;
and recovering said nickel from said mineral acid solution.

5,626,649

VOLATILE ORGANIC CHEMICAL TANK ULLAGE PRESSURE REDUCTION

Seifollah S. Nanaji, Greensboro, N.C., assignor to Gilbarco Inc., Greensboro, N.C.

Division of Ser. No. 440,312, May 12, 1995, Pat. No. 5,571,310. This application Aug. 26, 1996, Ser. No. 697,285
Int. Cl.[6] B01D *61/00*
U.S. Cl. 95—12 11 Claims



1. A method for reducing the pressure in a volatile chemical tank ullage comprising
detecting the pressure in the volatile chemical tank ullage,
withdrawing vapor from the volatile chemical tank ullage when the detected pressure exceeds a pressure threshold,
directing the withdrawn vapor to a first side of a separation membrane,
creating a lower pressure on the second, downstream side of the separation membrane so as to induce selected vapors to permeate through said separation membrane,
returning the permeate to the volatile chemical tank,
permitting the escape of retentate from adjacent the first side of the separation membrane to atmosphere,
detecting VOC concentrations in the escaping retentate, and
controlling the rate of the vapor withdrawing step to control the concentration of VOC's in the escaping retentate to maintain such concentration at a low level.

5,626,650

PROCESS FOR SEPARATING COMPONENTS FROM GASEOUS STREAMS

Nelly M. Rodriguez, and R. Terry K. Baker, both of State College, Pa., assignors to Catalytic Materials Limited, Mansfield, Mass.

Continuation-in-part of Ser. No. 374,033, Jan. 17, 1995, Pat. No. 5,458,784, which is a continuation-in-part of Ser. No. 947,416, Sep. 18, 1992, Pat. No. 5,413,866, which is a continuation-in-part of Ser. No. 602,182, Oct. 23, 1990, Pat. No. 5,149,584. This application May 5, 1995, Ser. No. 435,337
Int. Cl.[6] B01D *53/04*
U.S. Cl. 95—116 19 Claims

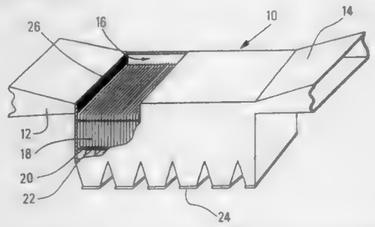
1. A process for selectively separating components from a gaseous stream, which components are those having a molecular diameter equal to or less than about 0.67 nm; which process comprises: (a) introducing a gaseous stream containing: (i) gaseous components having a molecular diameter equal to or less than about 0.67 nm, and (ii) gaseous components having a molecular diameter greater than about 0.67 nm into a bed of layered nanostructures characterized as having: (i) a surface area from about 0.2 to 3,000 m^2/g by N2 adsorption at −196° C., (ii) a crystallinity from about 5% to about 100%, and (iii) interstices from about 0.335 nm to about 0.67 nm between graphite platelets.

5,626,651

METHOD AND APPARATUS FOR REMOVING SUSPENDED FINE PARTICLES FROM GASES AND LIQUIDS

Francis A. L. Dullien, 36, Stoke Drive, Kitchener, Ontario, Canada, assignor to Francis A. L. Dullien, Ontario, Canada, and Institut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 290,883, Sep. 13, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 638,577
Claims priority, application United Kingdom, Feb. 18, 1992, 92/03437
Int. Cl.[6] B01D *45/00*
U.S. Cl. 95—214 17 Claims



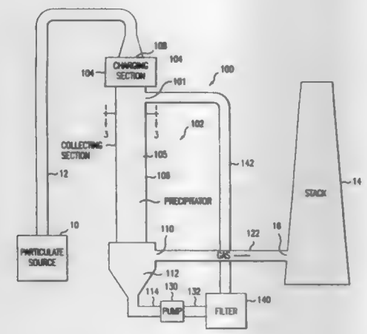
1. A method for removing particulates from a gas stream containing the particulates, which comprises:
(a) passing said gas stream, with turbulent flow, through a flow passage in a given direction in a housing over a plurality of stagnant, turbulent-free regions of gas in which there is no net gas flow and which communicate with said gas stream; and
(b) arranging a plurality of surfaces transversely to the direction of flow of the gas stream, said surfaces extending away from the gas stream and being spaced closely together to define the turbulent-free regions, said regions each communicating with the gas passage at one end and being closed at another end, with each region occupying substantially all of the space between adjacent surfaces so that turbulent eddies of said gas stream carrying suspended particulates enter spaces between the surfaces and then decay in said plurality of stagnant, turbulent-free regions and said particulates are trapped and deposited mechanically on the surfaces defining each of said stagnant, turbulent-free regions.

5,626,652

LAMINAR FLOW ELECTROSTATIC PRECIPITATOR HAVING A MOVING ELECTRODE

Robert E. Kohl, Ellicott City; Paul L. Feldman, Sykesville, both of Md., and Krishnaswamy S. Kumar, Millford, N.J., assignors to Environmental Elements Corporation, Baltimore, Md.

Filed Jun. 5, 1996, Ser. No. 658,717
Int. Cl.[6] B03C *3/53*
U.S. Cl. 96—45 20 Claims



13. A laminar flow electrostatic precipitator, comprising:
a housing having a longitudinal axis oriented in a vertical direction, said housing having a gas inlet disposed at an upper end thereof and a gas outlet disposed at an opposing lower end;
a power source having a first output for supplying a reference potential and a second output for supplying a potential that is of a polarity opposite with respect to said reference potential;
charging means disposed within said housing and coupled in fluid communication with said gas inlet for flow of a gas having entrained particulates therein, said charging means being coupled to said first and second outputs of said power source for imparting a charge to the entrained particulates; and,
collecting means disposed within said housing downstream of said charging section for providing laminar flow of the gas therethrough and attraction and removal of charged particulates from the gas, said collecting means including moving collection electrode means electrically coupled to said first output of said power source for attracting and carrying away charged particulates, said moving collection electrode means being displaced at substantially the same speed as a flow rate of the gas and in substantially the same direction.

5,626,653

SURFACE TREATMENT SOLUTION AND METHOD OF APPLICATION

Richard D. Frazer, Jr., Williamsville, and Scott G. Howard, Orchard Park, both of N.Y., assignors to Crescent Marketing, Inc., Eden, N.Y.

Filed Nov. 13, 1995, Ser. No. 556,577
Int. Cl.[6] C09D *5/08*
U.S. Cl. 106—14.41 12 Claims

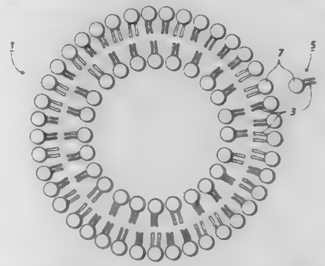
1. A solution for use in treating a painted surface or glass surface to form a protective streak-free coating thereon, the surface treatment solution comprising:
a) a surfactant selected from the group consisting of butanedioic acid, sulfo-1,4-dioctyl ester, sodium salt and a fluorochemical surfactant comprising potassium fluoroalkyl carboxylate, the surfactant present in the solution in an amount of about 5% to about 17%, by volume thereof;
b) a solvent that reduces the viscosity of the surfactant so that at such time as the solution is applied to the surface to be treated, dried and rinsed off, the protective coating is provided; and
c) an acid neutralizing agent that prevents acidic contaminants present on the surface prior to application of the treatment solution from damaging the surface treated with the solution.

5,626,654

INK COMPOSITIONS CONTAINING LIPOSOMES

Marcel P. Breton; Jaan Noolandi; MaryAnna Isabella, all of Mississauga, Canada; Susanne Birkel, Glashutten, Germany, and Gordon K. Hamer, Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1995, Ser. No. 567,464
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.33 28 Claims



1. An ink composition which comprises an aqueous liquid vehicle, a dye, and a vesicle-forming lipid, wherein vesicles of the lipid are present in the ink, wherein the vesicles have membranes of lipid molecules, wherein at least some of the lipid molecules are bonded to other lipid molecules in the membrane by a polymerization process.

5,626,655

USE OF CO-SURFACTANTS TO ADJUST PROPERTIES OF INK-JET INKS

Norman E. Pawlowski; Loren E. Johnson; Hiang P. Lauw, all of Corvallis; James P. Shields, Philomath, and Zia Rehman, Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 501,262, Jul. 11, 1995, Pat. No. 5,536,306. This application Apr. 17, 1996, Ser. No. 634,057
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.27 21 Claims

1. An ink-jet ink composition comprising at least one substantially water-soluble dye and a vehicle, said vehicle including at

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least one first surfactant and at least one second surfactant, said at least one second surfactant having a hydrophilic-lipophilic balance that is at least about 1.5 units higher than that of said at least one first surfactant.

5,626,656

STOCK SOLUTION OF RELEASE AGENT FOR GREEN SAND MOLD FORMING

Kazumitsu Kondo, Inuyama, and Keiichi Ito, Kasugai, both of Japan, assignors to Tetra Co., Ltd., Kasugai, Japan

Continuation of Ser. No. 284,433, Aug. 10, 1994, abandoned. This application May 22, 1996, Ser. No. 653,920

Claims priority, application Japan, Dec. 28, 1992, 4-348185; Apr. 12, 1993, 5-084715

Int. Cl.[6] B28B *7/36;* **C09D** *5/00*

U.S. Cl. 106—38.24 **6 Claims**

3. A release agent for green sand mold forming, which comprises an oil-in-water emulsion consisting essentially of water; a hydrocarbon oil as a main lubrication component; a nonionic surfactant as a release agent; an anionic surfactant and not less than 1 wt % of an amine selected from the group consisting of morpholine, piperidine, piperazine, pyrrolidine, pyrrole, imidazole, diethylamine and benzylamine, as wettability improving agents; and a fatty acid having 8 to 20 carbon atoms as a release agent assistant.

5,626,657

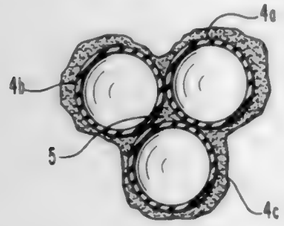
COMPOSITE MICROSPHERE AND LUBRICANT MIXTURE

Tony M. Pearce, Alpine, Utah, assignor to TekSource, LC; Nike, Inc., and Nike International, Ltd., all of Draper, Utah

Continuation-in-part of Ser. No. 472,011, Jun. 5, 1995, Pat. No. 5,549,743, which is a continuation-in-part of Ser. No. 81,467, Jun. 22, 1993, Pat. No. 5,421,874. This application Aug. 22, 1996, Ser. No. 701,427

Int. Cl.[6] C09D *5/00;* **B68G** *5/00*

U.S. Cl. 106—122 **29 Claims**



11. A composite mixture comprising:

a) a plurality of microspheres, and

b) a quantity of visco-elastic fluid on the exterior surface of substantially all of said microspheres, said visco-elastic fluid comprising a principle molecule and an elastomeric polymer, said visco-elastic fluid being present in a quantity less than would cause dispersion of said microspheres in said visco-elastic fluid sufficient such that said microspheres objects would be significantly separated from each other by said visco-elastic fluid; and

wherein said microspheres are movable in low-friction sliding and rolling contact with each other in all three dimensions.

5,626,658

METHOD OF ENHANCING INTERNAL ADHESION OF CEMENTITIOUS COMPOSITIONS AND COMPOSITIONS THEREFOR

Blaise McArdle, 17 Leonard St., Annisquam, Mass. 01930-1321

Continuation-in-part of Ser. No. 523,163, Sep. 5, 1995, Pat. No. 5,514,412. This application Mar. 4, 1996, Ser. No. 610,658

Int. Cl.[6] C04B *24/14;* **C09D** *7/12;105/00;195/00*

U.S. Cl. 106—144.1 **48 Claims**

16. An asphalt or bitumen containing composition having improved resistance to erosion and enhanced internal adhesion comprising a protein-polysaccharide complex composition comprising:

between about 90% to 99.5% by weight of a water-soluble polysaccharide impregnated with between about 10% to 0.5% by weight of a substantially water-insoluble protein.

48. A cementitious composition having improved resistance to erosion and enhanced internal adhesion comprising a protein-polysaccharide complex composition comprising:

between about 90% to 99.5% by weight of a water-soluble polysaccharide impregnated with between about 10% to 0.5% by weight of a substantially water-insoluble protein.

5,626,659

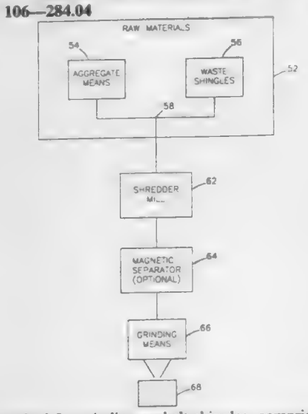
MEANS AND METHOD OF RECYCLING ASPHALT COMPOSITION SHINGLES

Morgan A. Chivers, 38544 Jones Way, Fremont, Calif. 94536

Filed Feb. 14, 1996, Ser. No. 605,327

Int. Cl.[6] C09D *195/00;* **C08L** *95/00*

U.S. Cl. 106—284.04 **16 Claims**



1. A method for grinding asphalt shingles, comprising the steps of:

a) combining limestone ore or dolomite with the asphalt shingles; and

b) grinding the combined asphalt shingles with limestone ore or dolomite to provide an asphalt shingle/aggregate powder suitable for making asphalt shingles.

5,626,660

OPTICALLY CLEAR AMINOSILICONE COMPOSITIONS

Hans-Jürgen Lautenschlager, Haiming, and Günter Mahr, Burghausen, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 30, 1996, Ser. No. 594,044

Claims priority, application Germany, Feb. 23, 1995, 19506396.1

Int. Cl.[6] C09D *183/08*

U.S. Cl. 106—287.11 **8 Claims**

1. An optically clear composition comprising

(A) an organopolysiloxane which contains at least one monovalent SiC-bonded radical with primary, secondary and/or tertiary amino groups,

(B) 0.01 to 1 part by weight per 100 parts by weight of organopolysiloxane (A) of compounds from a group consisting of water, methanol and ethanol and

(C) 0.05 to 20 parts by weight of a solubilizing agent per 100 parts by weight of organopolysiloxane (A), chosen from a group consisting of

(C1) C_1- to C_{10}-carboxylic acid C_1- to C_{12}-alkyl esters and -glycol esters,

(C2) C_3- to C_{20}-alkanols and C_3- to C_{20}-alkanol-C_1- to C_{12}-alkoxylates and

(C3) organosilicon compounds containing glycoside radicals.

4. A process for the preparation of an optically clear composition as claimed in claim 1, in which

(E) compounds which are chosen from

(E1) organosilanes which contain at least one monovalent SiC-bonded radical with primary, secondary and/or tertiary amino groups and at least one C_1- to C_4-alkoxy group and

(E2) organopolysiloxanes which contain at least one monovalent SiC-bonded radical with primary, secondary and/or tertiary amino groups and at least one C_1- to C_4-alkoxy and/or silanol group and

(F) compounds which are chosen from

(F1) organosilanes which contain at least one C_1- to C_4-alkoxy group and

(F2) organopolysiloxanes which contain at least one C_1- to C_4-alkoxy group and/or silanol group

are reacted as starting compounds in the presence of

(C) 0.01 to 20 parts by weight of the solubilizing agent per 100 parts by weight of the starting compounds (E) and (F).

5,626,661

LUSTER PIGMENTS BASED ON MULTIPLY COATED PLATELETLIKE SILICATIC SUBSTRATES

Raimund Schmid, Neustadt; Norbert Mronga, Dossenheim; Harald Ochmann, Dannstadt-Schauernheim, and Joerg Adel, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/02793, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO93/12182, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 3, 1992, Ser. No. 244,711

Claims priority, application Germany, Dec. 13, 1991, 41 41 069.6

The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.

Int. Cl.[6] C04B *14/20*

U.S. Cl. 406—415 **14 Claims**

1. Luster pigments of multiply coated platelet-shaped silicatic substrates, obtained by coating silicate substrates, already coated with a first layer comprising a colorless or selectively absorbing metal oxide, with a second, nonselectively absorbing layer consisting essentially of a metal or a metal oxide,

wherein the metal layer is applied by gas phase decomposition of a volatile compound of a metal in an inert gas, or

wherein the metal oxide layer is applied by gas phase decomposition of a volatile compound of a metal in the presence of oxygen, water vapor or mixtures thereof, to said substrates coated with a first metal oxide layer.

5,626,662

FINE DIVISION IN THE PREPARATION OF ORGANIC PIGMENTS

Manfred Urban, Wiesbaden, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Apr. 13, 1995, Ser. No. 421,196

Claims priority, application Germany, May 21, 1994, 44 13 849.0

Int. Cl.[6] C09B *48/00;3/14*

U.S. Cl. 106—497 **18 Claims**

1. A process for the fine division of crude polycyclic organic pigments, which comprises first of all subjecting the crude, coarsely crystalline pigments to dry milling and wet-milling the resulting finely divided prepigments in aqueous suspension in a stirred ball mill which is operated at a power density of more than 2.5 kW per liter of milling space and a peripheral stirrer speed of more than 12 m/s under the action of grinding media having a diameter of less than or equal to 1 mm with the proviso that there is no inorganic salt present in the dry milling step.

5,626,663

COMPOSITION AND METHOD FOR INHIBITING DRYING SHRINKAGE OF CONCRETE

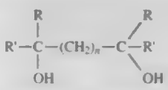
Neal S. Berke, Chelmsford, Mass.; Michael P. Dallaire, Dover, N.H., and Awdhoot V. Kerkar, Columbia, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 295,975, Aug. 25, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,628

Int. Cl.[6] C04B *24/00*

U.S. Cl. 106—696 **19 Claims**

1. An improved particulate cement composition comprising a mixture of a hydraulic cement powder selected from portland cement, blended cement or alumina cement and having distributed therein from 0.8 to 5 weight percent based on the cement of at least one polyol compound represented by formula:



(I)

wherein each R is independently selected from hydrogen atom or a C_1–C_2 alkyl; each R' independently selected from a C_1–C_2 alkyl and n is an integer of 1 or 2.

5,626,664

WASTE TREATMENT PROCESS

Dirk Osing, Hohegrabenweg 109, 4005 Meerbusch 1; Günter Ritter, Gothestr. 29, 5040 Brühl; Günter Treutlein, Diepenbeekallee 2, 5000 Köln 40, and Manfred Erken, Lothringer Ring 27, 5010 Bergheim, all of Germany

Division of Ser. No. 370,522, Jan. 3, 1995, Pat. No. 5,538,552, which is a continuation of Ser. No. 825,392, Jan. 24, 1992, abandoned. This application Jan. 16, 1996, Ser. No. 586,170

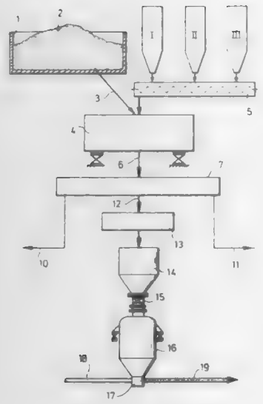
Claims priority, application Germany, Jan. 24, 1991, 41 02 032.4

Int. Cl.[6] C04B *18/14*

U.S. Cl. 106—697 **13 Claims**

1. A process for carrying out a melt in a metallurgical furnace, the process comprising injecting, by means of a carrier gas, into the furnace a source of metal in the form of dry bonded agglomerates of up to about 4 mm grain size, the agglomerates comprising the product of force mixing a homogenized metal-containing mix-

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ture of liquid and solids with a dry fine grained additive selected from the group of fly ash, coke and blast furnace flue gas dust.

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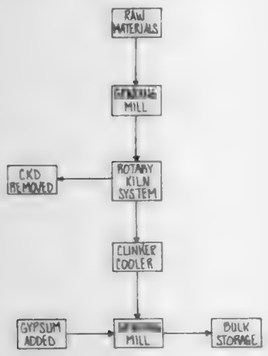
CEMENTITIOUS SYSTEMS AND NOVEL METHODS OF MAKING THE SAME

Gregory S. Barger, Overland Park, and Eric R. Hansen, Shawnee, both of Kans., assignors to Ash Grove Cement Company, Overland Park, Kans.

Filed Nov. 4, 1994, Ser. No. 334,820

Int. Cl.[6] C04B *11/00;11/30*

U.S. Cl. 106—706 **13 Claims**



1. A blended pozzolan for use with Portland cement for use in preparing a cementitious composition having a water demand of less than about 33% normal consistency as tested by ASTM C 187 or equivalent and certifiable under ASTM C 595 or ASTM C 1157 and comprising:

(a) calcined clay which has a low alkali of less than 3.0% Na_2O equivalent and which has been soft fired at a sufficient temperature to drive off approximately all bound water, said calcined clay being ground so as to maintain said water demand in said cementitious composition at less than about said 33% normal consistency;

(b) 2–30% by weight gypsum.

5,626,666

MILLING AGENT FOR CEMENTS

Jean Briat, Saint Marcel, and Catherine Fontaine, Chambourcy, both of France, assignors to Ciments Francais, Puteaux, France

Division of Ser. No. 501,673, Jul. 12, 1995, abandoned. This application Apr. 29, 1996, Ser. No. 639,818

Claims priority, application France, Jul. 13, 1994, 94 08715

Int. Cl.[6] C04B *7/52*

U.S. Cl. 106—728 **8 Claims**

1. A method of milling a cement, which method comprises: milling the cement using a milling agent consisting essentially of a sugar-syrup derivative prepared by oxidizing or hydrogenating said sugar syrup.

5,626,667

PROCESS AND APPARATUS FOR PRODUCING SO_2-CONTAINING GAS AND CEMENT CLINKER FROM WASTE GYPSUM

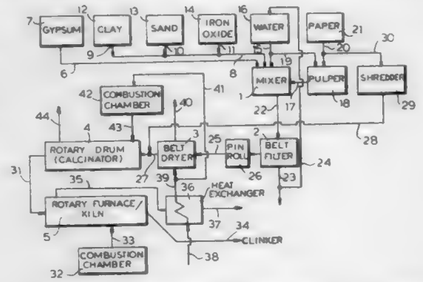
Hartwig Böhle, Ludwigsau, Germany, assignor to Babcock BSH Aktiengeseilschaft, Krefeld, Germany

Filed Sep. 6, 1995, Ser. No. 524,418

Claims priority, application Germany, Sep. 16, 1994, 44 33 049.9

Int. Cl.[6] C04B *11/02*

U.S. Cl. 106—745 **12 Claims**



1. A process for producing SO_2-containing gas and cement clinker from waste gypsum, comprising the steps of:

(a) transforming waste gypsum into a calcium sulfate anhydrite;

(b) decomposing said anhydrite in the presence of paper fibers as a reducing agent into an SO_2-containing gas and a decomposition residue;

(c) admixing cement-forming additives with said residue to form a mixture; and

(d) firing said mixture to form cement clinker therefrom.

5,626,668

PROCESS FOR THE WATER-REPELLENT IMPREGNATION OF PLASTER

Dieter Gerhardinger; Richard Weidner, and Hans Mayer, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Apr. 9, 1996, Ser. No. 629,667

Claims priority, application Germany, Apr. 20, 1995, 195 14 639.5

Int. Cl.[6] C04B *11/00;24/40*

U.S. Cl. 106—781 **7 Claims**

1. Water-repellent plaster compositions comprising

(A) 100 parts by weight of gypsum plaster,

(B) from 0.05 to 50 parts by weight of an oxide or hydroxide of alkali or alkaline earth metals or mixtures thereof, and

(C) from 0.05 to 20 parts by weight of an organopolysiloxane which has hydroxyl and/or alkoxy groups bonded to silicon atoms.

5,626,669

HIGH EFFICIENCY MARINE VEHICLE

Donald E. Burg, Miami, Fla., assignor to Paulette Renee Burg, Miami, Fla.

Continuation-in-part of Ser. No. 737,403, Nov. 1, 1976, abandoned, Ser. No. 818,303, Jul. 25, 1977, Pat. No. 4,165,703, Ser. No. 69,771, Aug. 27, 1979, abandoned, Ser. No. 207,789, Nov. 17, 1980, abandoned, Ser. No. 269,908, Jun. 3, 1981, Pat. No. 4,392,445, Ser. No. 289,769, Aug. 3, 1981, abandoned, Ser. No. 343,287, Jan. 27, 1982, abandoned, Ser. No. 458,738, Jan. 17, 1983, abandoned, Ser. No. 465,670, Feb. 10, 1983, abandoned, Ser. No. 584,728, Feb. 29, 1984, Pat. No. 4,587,918, Ser. No. 844,529, Mar. 27, 1986, Pat. No. 4,735,164, Ser. No. 862,300, May 12, 1986, Pat. No. 4,739,719, Ser. No. 183,588, Apr. 19, 1988, Pat. No. 4,890,564, Ser. No. 458,575, Dec. 29, 1989, Pat. No. 5,000,107, Ser. No. 653,724, Feb. 11, 1991, abandoned, Ser. No. 728,887, Jul. 10, 1991, Pat. No. 5,176,095, Ser. No. 871,387, Apr. 21, 1992, abandoned, Ser. No. 151,253, Nov. 12, 1993, Pat. No. 5,415,120, Ser. No. 283,647, Aug. 1, 1994, abandoned, Ser. No. 347,859, Dec. 1, 1994, abandoned, and Ser. No. 468,876, Jun. 6, 1995. This application Jun. 7, 1995, Ser. No. 483,791

Int. Cl.[6] B63B *1/30;1/38*

U.S. Cl. 114—67 A **21 Claims**



1. In an improved marine vehicle that is at least partially supported when waterborne by an artificially pressurized gas cushion with said gas cushion supplied with gas by at least one gas pressurization means, the improvement comprising:

said artifically pressurized gas cushion at least partially disposed in an open bottomed recess in a main hull of said marine vehicle with boundaries of said open bottomed recess at least partially defined by substantially rigid water contacting sidekeels and a recess aft seal and where, as seen in a calm sea surface waterline with the gas cushion pressurized and the marine vehicle waterborne and moving forward at high speed, the main hull is substantially boat shaped with a narrow bow forward that then diverges, by way of the substantially rigid water contacting sidekeels, and with said sidekeels becoming more parallel over their aft portions and wherein an average total divergence angle of said water contacting sidekeels, as measured from the narrow bow to where the sidekeels become more parallel over their aft portions, is on average less than twenty-two degrees and where each of said sidekeels diverges over a minimum of one third of its water contacting length going aft from the narrow bow; and which further comprises outrigger hulls disposed either side of the main hull with mechanical communication of said outrigger hulls with the main hull including outrigger wings.

5,626,670

METHOD FOR PRODUCING LOW THERMAL BUDGET FERROELECTRIC THIN FILMS FOR INTEGRATED DEVICE STRUCTURES USING LASER-CRYSTALLIZATION OF SPIN-ON SOL-GEL FILMS

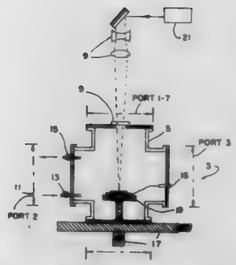
Usha Varshney, Radford, Va., and Angus I. Kingon, Cary, N.C., assignors to American Research Corporation of Virginia, Radford, Va.

Filed Oct. 3, 1994, Ser. No. 316,358

Int. Cl.[6] C30B *25/06*

U.S. Cl. 117—7 **20 Claims**

1. A method for crystallizing a ferroelectric thin film on a substrate comprising the steps of creating a film precursor solution, depositing the film precursor solution as a thin film on the substrate, thus creating a thin film-coated substrate, heat treating the film and pyrolyzing residual organic species in the film, placing the film-coated substrate in a laser crystallization chamber, evacuating the chamber providing an inert environment in the chamber, providing a laser beam, directing the laser beam into the chamber, directing the laser beam onto the film on the substrate, relatively moving the laser beam and the film-coated substrate, and laser crystallizing the film on the substrate in a laser crystallization chamber.



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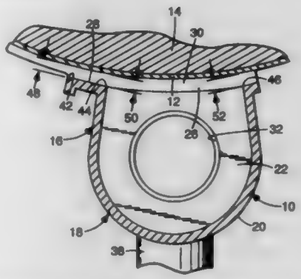
CROSS FLOW KNIFE COATER FOR APPLYING A COATING TO A WEB

Kai Grimmel, Hilden; Klaus Schmehl, Toenisvorst, both of Germany; Mark R. Strenger, Woodbury, Minn., and Norbert J. Wallraff, Meerbusch, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 193,425, Feb. 8, 1994, Pat. No. 5,514,416. This application Oct. 16, 1995, Ser. No. 543,588

Int. Cl.[6] B05C *11/04*

U.S. Cl. 118—126 **10 Claims**



1. A coating apparatus for applying a coating fluid, having a thickness, on to a surface comprising:

means for providing relative movement between the coating apparatus and the surface;

means for applying coating to the surface, wherein the applying means comprises a trough, having a width, which extends transversely across at least a desired width of the coating, wherein the trough has an inner surface and an opening through which coating fluid exits onto the surface, and having first and second transverse ends, wherein the inner surface of the trough can be cleaned without disassembly of the trough and the trough opening prevents resistance to flow of the coating fluid;

means for feeding the coating fluid directly into the trough without requiring resistance to flow of the coating fluid for cross web distribution;

means for flowing the coating fluid across the width of the trough while coating fluid exits the opening; and

a knife for regulating the thickness of the coating applied on the surface and for providing resistance to flow of the coating fluid;

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wherein the means for providing relative movement between the coating apparatus and the surface and the means for flowing the coating fluid across the width of the trough combine to create a spiral flow of coating fluid within the trough and adjacent the trough opening.

5,626,672

DECORATING ROLLER FOR PRODUCING CONTRAST EFFECTS SUCH AS THOSE PRODUCED WITH PADS

Edoardo Rossetti, Finale Emilia, Italy, assignor to SPETRA S.R.L., Modena, Italy

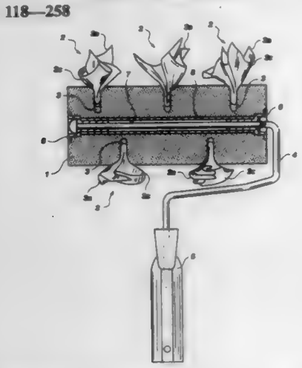
PCT No. PCT/EP93/00157, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/14879, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 25, 1993, Ser. No. 256,857

Claims priority, application Italy, Jan. 27, 1992, MO92A0008

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—258 **10 Claims**



1. A decorating roller comprising:

a roller body, rotatably connected to a support structure;

decorating elements projecting from a peripheral surface of the roller body, each decorating element being connected to said roller body at a respective tip region of said decorating element, at least one decorating element (**2**, **9**, **19**) being formed by folding a flexible flat element along at least two lines of an inner region of said flexible flat element so that said at least one decorating element has an edge raised in a calyx-shaped tuft.

5,626,673

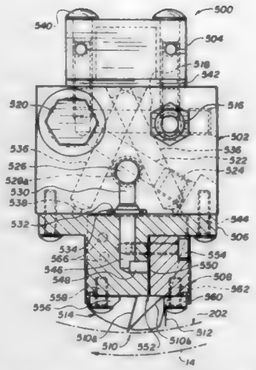
STATIC AGITATOR FOR ADJUSTABLE SLOT COATER DIE IN A ROTARY COATER

Richard E. Leeds, Snellville; James G. Himes, Jr., Woodstock, and Gregory A. Earle, Tyrone, all of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Apr. 12, 1995, Ser. No. 422,496

Int. Cl.[6] B05B *7/06;* **B05C** *5/02;* **B29C** *47/16*

U.S. Cl. 118—315 **18 Claims**



1. An adjustable slot coater die (**500**) for use in a rotary coater device including a screen (**202**) surrounding the die through which hot melt material is applied from the die to a moving web, comprising:

a die manifold (**502**) for accepting hot melt material, said manifold including a longitudinally extending central channel (**528**) and a plurality of distribution channels (**530**) each of which is connected with said manifold central channel, the hot melt material able to exit said manifold through said plurality of distribution channels;

an adapter (**506**) connected to said die manifold, said adapter including (i) distribution channel extensions (**546**) which connectably align with said manifold distribution channels (**530**), (ii) a longitudinally extending central channel (**548**) connected with the distribution channel extensions (**546**), and (iii) at least one die opening (**552**) connected with said adapter central channel (**548**), the hot melt material able to exit said adapter through said at least one die opening; and

a static agitator (**512**) attached to and extending downwardly from said adapter proximate to said opening (**552**), said static agitator providing tines which agitate hot melt material accumulating on an inner surface of the screen of the rotary coater device upstream of said opening.

5,626,674

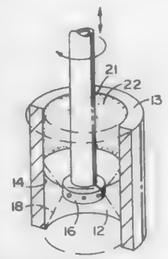
HIGH PRESSURE WATER JET APPARATUS FOR PREPARING LOW DENSITY METALLIC SURFACE FOR APPLICATION OF A COATING MATERIAL

Lewis L. VanKuiken, Jr., Grand Rapids; Larry E. Byrnes, Rochester Hills, and Martin S. Kramer, Washington, all of Mich., assignors to Progressive Technologies, Inc., Grand Rapids, Mich.

Division of Ser. No. 77,677, Jun. 15, 1993, Pat. No. 5,380,564, which is a continuation-in-part of Ser. No. 875,280, Apr. 28, 1992, abandoned, and Ser. No. 932,528, Aug. 20, 1992, abandoned. This application Oct. 18, 1994, Ser. No. 325,034

Int. Cl.[6] G05F *3/16*

U.S. Cl. 118—317 **15 Claims**



1. Apparatus for roughening the wall surfaces of a cylinder bore of an engine block cast from a malleable low density metal selected from a group consisting of aluminum magnesium and titanium for application of a wear-resistant coating comprising:

means for creating jets of water having pressures at least as high as 35,000 psi, said means including a rotating member of a size for fitting into and movable along the axis of said bore, said rotating member being rotatable about the axis of said bore and having means for directing the jets in a direction substantially radially outwardly of said axis against the wall surfaces of said cylinder bore; and

means for moving said rotating member substantially along said axis the length of said bore whereby said jets strike said surfaces to thereby clean and erode said surfaces to provide a pitted surface with pits and undercuts.

5,626,675

RESIST PROCESSING APPARATUS, SUBSTRATE PROCESSING APPARATUS AND METHOD OF TRANSFERRING A PROCESSED ARTICLE

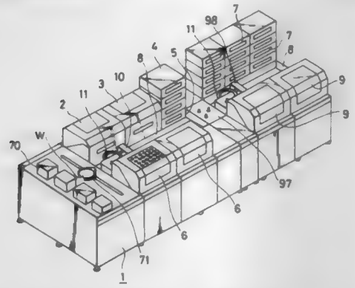
Yasuhiro Sakamoto; Masami Akimoto; Kiyohisa Tateyama, and Shinzi Kitamura, all of Tosu, Japan, assignors to Tokyo Electron Limited, and Tokyo Electron Kyushu Limited, both of Japan

Filed Nov. 16, 1994, Ser. No. 340,758

Claims priority, application Japan, Nov. 18, 1993, 5-312539; Dec. 24, 1993, 5-347868

Int. Cl.[6] B05C *13/00*

U.S. Cl. 118—663 **15 Claims**



1. A resist processing apparatus comprising:

a plurality of processing units for resist processing articles to be processed, each of said articles having a peripheral edge portion, an undersurface and an uppersurface portion;

a transferring unit in communication with said processing units for transferring said articles to said processing units, said transferring unit having arm means comprising supporting means for supporting said peripheral edge portion of each of said articles at a plurality of pawls of said transferring unit and holding means provided with sucking means to contact said undersurface portion of each of said articles for holding each of said articles; and

selection means connected to said transferring unit for selecting either one of said supporting means and said holding means according to a condition of each of said articles.

5,626,676

SIZING APPLICATOR

Gerhard Voswinckel, Aachen, Germany, assignor to Sucker-Muller-Hacoba GmbH & Co., Moenchengladbach, Germany

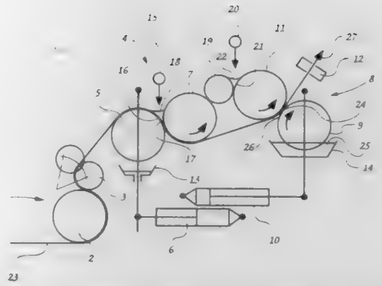
Filed Dec. 11, 1995, Ser. No. 570,123

Claims priority, application Germany, Dec. 20, 1994, 44 45 478.3

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—712 **10 Claims**

1. A sizing applicator for impregnating a yarn sheet guided in web form with an impregnating solution, comprising means for delivering impregnating solution to the yarn sheet, and first and second pairs of guide rollers, each pair defining a gap between the rollers thereof at a common tangent therebetween, the first and second pairs of rollers being arranged in sequence with one another along the travel path of the yarn sheet, each pair of rollers having one roller disposed at a lower elevation than the other roller of the pair and the two roller pairs being relatively arranged such that their respective common tangents intersect beneath the roller pairs approximately midway between the roller pairs, the upper rollers of the two pair of rollers being arranged relative to one another such that the yarn sheet can be passed selectively in one of a first path of travel in peripheral contact with each upper roller of each of the roller pairs over limited circumferential extent thereof and a second path of travel moving downwardly through the gap between the first pair of rollers and then upwardly through the gap of the second pair of rollers.



5,626,677

ATMOSPHERIC PRESSURE CVD APPARATUS

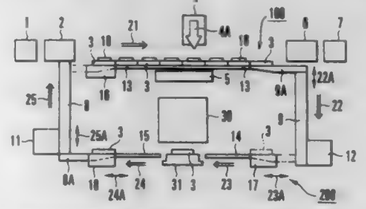
Kazuhiro Shirahata, Yamagata, Japan, assignor to NEC Corporation, Japan

Filed Apr. 23, 1996, Ser. No. 636,237

Claims priority, application Japan, Apr. 27, 1995, 7-103749

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **5 Claims**



1. An atmospheric pressure CVD apparatus comprising:

an upper convey mechanism for horizontally conveying a susceptor to be mounted with a semiconductor wafer, said upper convey mechanism having a wafer loader mechanism, an upper rail, an upper susceptor driving portion, a heater, a dispersion head, and a wafer unloader mechanism;

a lower convey mechanism arranged below said upper convey mechanism to horizontally convey said susceptor, said lower convey mechanism having a first lower rail, a first lower susceptor driving portion, a plasma reaction portion, a second lower rail, and a second lower susceptor driving portion;

a loader susceptor up mechanism for moving up and conveying said susceptor from said lower convey mechanism to said upper convey mechanism; and

a loader susceptor down mechanism for moving down and conveying said susceptor from said upper convey mechanism to said lower convey mechanism, and

wherein, in said upper convey mechanism, said wafer loader mechanism mounts said semiconductor wafer on said susceptor moved up and conveyed from said lower convey mechanism by said loader susceptor up mechanism, said upper susceptor driving portion conveys said susceptor mounted with said semiconductor wafer to said loader susceptor down mechanism along said upper rail, a thin CVD (Chemical Vapor Deposition) film is formed on a surface of said semiconductor wafer heated to a predetermined temperature by said heater, using a reaction gas through said dispersion head in the conveying process, and said wafer unloader mechanism removes said semiconductor wafer on which the thin CVD film is formed, from said susceptor before conveyance to said loader susceptor down mechanism; and

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in said lower convey mechanism, said first lower susceptor driving portion conveys said susceptor moved down by said loader susceptor down mechanism, to said plasma reaction portion along said first lower rail, said plasma reaction portion cleans the thin CVD film formed on said susceptor, and said second lower susceptor driving portion conveys said cleaned susceptor to said loader susceptor up mechanism along said second lower rail.

5,626,678

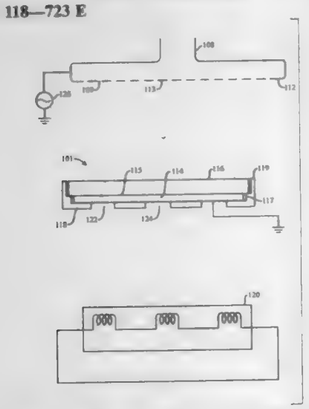
NON-CONDUCTIVE ALIGNMENT MEMBER FOR UNIFORM PLASMA PROCESSING OF SUBSTRATES

Turgut Sahin, Cupertino, and David W. Cheung, Foster City, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 187,279, Jan. 25, 1994, abandoned. This application Jun. 20, 1995, Ser. No. 492,659

Int. Cl.[6] C23C *16/50*

U.S. Cl. 118—723 E **32 Claims**



1. A plasma chamber assembly for processing substrates in ionizable gas, comprising:

a conductive support having a supporting surface for supporting a substrate within the chamber so as to expose a surface of said substrate to the ionizable gas;

a non-conductive aligning member comprising a lip extending transversely about the periphery of said conductive substrate support; and

an electrode in facing relationship to said supporting surface, said electrode and said conductive support being adapted to be energized so as to establish an electric field having good uniformity between said electrode and said supporting surface,

whereby a plasma may be established within said chamber and the processing of said substrate surface may proceed with enhanced uniformity over said surface.

5,626,679

METHOD AND APPARATUS FOR PREPARING A SILICON OXIDE FILM

Akio Shimizu, and Naoto Tsuji, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 937,552, Aug. 31, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,320

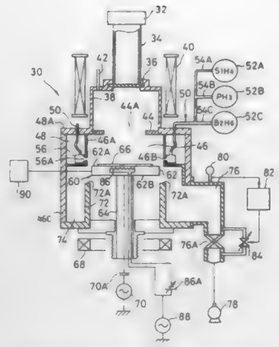
Claims priority, application Japan, Sep. 2, 1991, 3-220810; Jan. 16, 1992, 4-005249

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 MR **26 Claims**

1. An apparatus for forming a silicon oxide film, comprising:

microwave generation means for generating microwaves;



microwave transmission means for transmitting the microwaves generated by said microwave generation means;

a plasma generation chamber having a wall, said plasma generation chamber being in communication with said microwave transmission means and having gas supply means and an opening defined at an end portion in an opposing relationship with said microwave transmission means;

a first excitation solenoid, disposed around said plasma generation chamber in coaxial relationship therewith, for producing a magnetic field for generating plasma from gas introduced into said plasma generation chamber by a resonant effect with said microwaves;

a plasma reaction chamber for forming a silicon oxide film on a surface of a substrate disposed therein with said plasma, said plasma reaction chamber being in communication with said plasma generation chamber through said opening, and having a side wall, a substrate holder with a substrate holding surface on which the substrate is mounted, reactive gas supply means for supplying a reactive gas into said plasma reaction chamber, and gas exhaust means in communication with said plasma reaction chamber, said gas exhaust means having a vacuum pump;

a second excitation solenoid, disposed in an opposing relationship with said first excitation solenoid relative to the substrate, for producing a magnetic field whose polarity is opposite to that of the magnetic field produced by said first excitation solenoid so as to provide a cusp-shaped magnetic field in the vicinity of said surface of said substrate;

a power supply for applying high frequency power to the substrate; and

pressure control means associated with said plasma reaction chamber for controlling gas pressure in said plasma reaction chamber

wherein said second solenoid has an end opposing the surface of said substrate on which a silicon oxide film is to be formed, which end is disposed at a distance of 10 cm or more from the surface of said substrate on which a film is to be formed, so that said cusp-shaped magnetic field has a cusp plane in a region between a distance of 10 cm above the surface of said substrate on which a silicon oxide film is to be formed and a distance of 10 cm below the surface of said substrate on which a silicon oxide film is to be formed.

5,626,680

THERMAL PROCESSING APPARATUS AND PROCESS

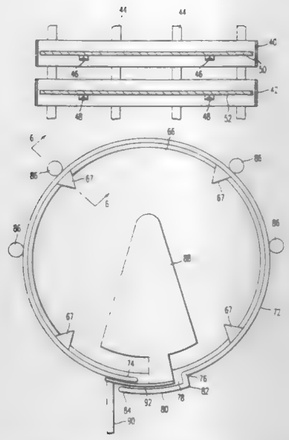
Cole D. Porter; Jessie R. Sanchez, and Jeffrey M. Kowalski, all of San Jose, Calif., assignors to Silicon Valley Group, Inc., San Jose, Calif.

Filed Mar. 3, 1995, Ser. No. 399,108

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—725 **15 Claims**

1. A thermal treatment boat wafer treatment section comprising a circular shield wall having an upper edge, a lower edge, the shield



being an incomplete circle with opposed first and second end surfaces defining a wafer transport slot therebetween, the inner shield wall surface thereof having a plurality of wafer support projections extending inwardly therefrom, each wafer support projection having a wafer support surface positioned for supporting a wafer thereon in a position which is substantially centered between said upper edge and said lower edge of the circular shield wall, the treatment section including a wafer transport slot shield element, laterally displaced from said shield wall and positioned to block direct radiant heat passage through the wafer transport slot.

9. A thermal treatment apparatus comprising a combination of heating chamber surrounded by a heater and a thermal treatment boat comprising a plurality of thermal treatment sections positioned in coaxial parallel orientation, the support projections for each treatment section each having a wafer support surface, the wafer support surfaces for each treatment section being substantially coplanar, and the distance between the planes of wafer support surfaces in adjacent wafer support sections being from 0.5 to 2.5 cm, each thermal treatment section comprising a circular shield wall having an upper edge and a lower edge, the inner shield wall surface thereof having a plurality of wafer support projections extending inwardly therefrom, wherein the inner diameter of the circular shield wall is from 20.3 to 21.0 cm and the height thereof is from 0.35 to 0.95 cm, and wherein each wafer support projection has a wafer support surface positioned for supporting a wafer thereon, the wafer being supported in a position which is substantially centered between said upper edge and said lower edge of the circular shield wall.

5,626,681

METHOD OF CLEANING SEMICONDUCTOR WAFERS

Masami Nakano; Isao Uchiyama, both of Fukushima-ken, and Hiroyuki Takamatsu, Shirakawa, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,464

Claims priority, application Japan, Oct. 21, 1994, 6-257032

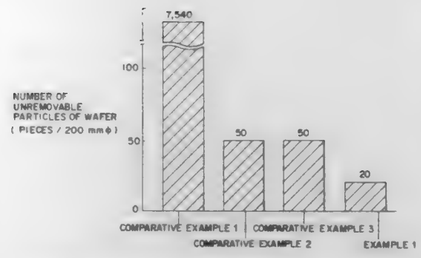
Int. Cl.[6] B08B *3/08*

U.S. Cl. 134—3 **4 Claims**

1. A semiconductor wafer cleaning method comprising the steps of:

(a) cleaning a polished surface of a wafer, comprising silicon with an aqueous solution comprising hydrofluoric acid;

(b) then, rinsing the wafer with a rinsing composition consisting



essentially of water and ozone; and

(c) thereafter, brush-scrubbing the wafer.

5,626,682

PROCESS AND APPARATUS FOR TREATING INNER SURFACE TREATMENT OF CHAMBER AND VACUUM CHAMBER

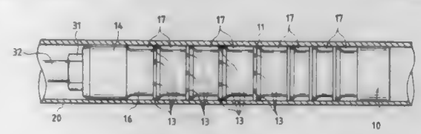
Toshiaki Kobari; Nobuo Hirano; Manabu Matsumoto, all of Ibaraki-ken; Mamoru Katane, Hitachi; Hiroaki Sakurabata, Hitachi, and Shiro Matsuzaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 17, 1995, Ser. No. 405,768

Claims priority, application Japan, Mar. 17, 1994, 6-047061

Int. Cl.[6] B08B *9/00*

U.S. Cl. 134—8 **4 Claims**



1. A process for treating an inner surface of a vacuum chamber comprising the steps of

contacting at least one cutting edge of a broach with the inner surface,

cutting off a contaminated layer on the inner surface with cutouts in an outer periphery of the broach with relative movement in an axial direction of the vacuum chamber between the broach and the vacuum chamber, and

supplying to a cutting edge, during the cutting off step, at least one of an inert gas, nitrogen and a mixture of the inert gas and nitrogen.

5,626,683

METHOD OF CLEANING AN INTERIOR CAVITY OF A CONTAINER WITH A SCRAPER

Bernadette D. Blouin, R.R.#1, Range Road 263, St. Albert, Alberta, Canada

Division of Ser. No. 213,580, Mar. 16, 1994, Pat. No. 5,467,499. This application Sep. 19, 1995, Ser. No. 530,087

Int. Cl.[6] B08B *9/20*; **A47L** *17/06*

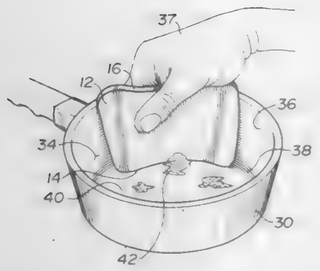
U.S. Cl. 134—8 **5 Claims**

1. A method of cleaning a circumferential interior sidewall of a container, comprising the steps of:

a. firstly, inserting a hard pliant card with rapid elastic recovery to within 96% of original into an interior cavity of a container, the hard pliant card having three scraping edges and a beaded gripping edge, the hard card being sufficiently pliant to conform to a one inch radiused curve and to a substantially 90 degree corner;

b. secondly, exerting a force upon the card until the card deforms to assume an arcuate shape substantially conforming with an interior contour of the container; and

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c. thirdly, moving the card along the interior contour of the container in a scraping action such that an edge of the card scrapes residue from the interior contour of the container.

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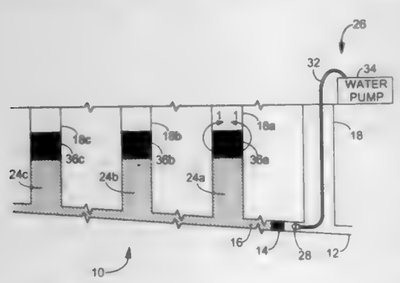
METHOD AND APPARATUS FOR SEWAGE SURCHARGE DISSIPATION

Frank Rodarte, 337 Sunpark La., San Jose, Calif. 95136, and Albert Nodal, 1395 Sherman St., San Jose, Calif. 95110

Continuation of Ser. No. 378,546, Jan. 26, 1995, abandoned. This application Mar. 21, 1996, Ser. No. 621,197

Int. Cl.[6] B08B *3/02;9/06*

U.S. Cl. 134—22.12 **4 Claims**



1. A method of liquefying a solidified sewage surcharge consisting of liquid and solid waste that rises up, thickens and solidifies within a vertically oriented sewer system manhole; the vertically oriented sewer system manhole extending from ground level down to an almost horizontally oriented sewer pipe, and being located upstream from a blockage in the almost horizontally oriented sewer pipe; the method comprising the steps of:

supplying a source of high pressure water to a sewage surcharge dissipation head;

inserting the sewage surcharge dissipation head downward into the vertically oriented manhole; and

pumping said high pressure water through said sewage surcharge dissipation head, so said high pressure water exits said sewage surcharge dissipation head downward against the solidified surcharge to thereby agitate and liquefy the surcharge that is disposed within the vertically oriented sewer system manhole above the almost horizontally oriented sewer pipe.

5,626,685

METHOD OF REMOVING A WATER INSOLUBLE SURFACE COATING FROM A SURFACE

William E. Spindler, 5505 S. Wayne Ave., Fort Wayne, Ind. 46807

Continuation of Ser. No. 683,491, Apr. 9, 1991, abandoned, which is a continuation of Ser. No. 331,061, Mar. 28, 1989, abandoned, which is a continuation of Ser. No. 218,498, Jul. 5, 1988, abandoned, which is a continuation of Ser. No. 110,045, Oct. 13, 1987, abandoned, which is a continuation of Ser. No. 788,910, Oct. 18, 1985, abandoned. This application May 24, 1994, Ser. No. 248,631

Int. Cl.[6] B08B *7/00*

U.S. Cl. 194—40 **9 Claims**

1. A method of removing a water insoluble paint from a paint applicator, wherein the paint is of the type applied to a surface in liquid form and is then capable of hardening over time, said method comprising the following sequence of steps:

(a) providing an aqueous liquid consisting essentially of a mixture of the following ingredients:

a fatty acid selected from the group consisting of unsaturated fatty acids, saturated fatty acids, polyunsaturated fatty acids and mixtures thereof, said fatty acid having between 14 and 26 carbon atoms and being present in an amount between about 0.25 weight percent and about 99.9 weight percent of the aqueous liquid;

an inorganic alkaline builder selected from the group consisting of alkali phosphates, alkali silicates, alkali hydroxides, alkali borates, alkali carbonates, alkali bicarbonates and mixtures thereof, said inorganic alkaline builder being present in an amount effective to saponify the fatty acid and still maintain the constituents substantially in solution;

a surfactant in an amount effective to form a homogeneous mixture with said fatty acid and said inorganic alkaline builder; and

water;

(b) applying the aqueous liquid to the paint applicator;

(c) allowing the aqueous liquid to contact the paint for a selected time; and

(d) removing the liquid and paint from the applicator by rinsing the applicator in water.

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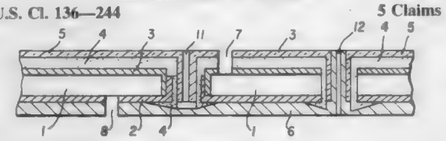
THIN-FILM SOLAR CELL AND METHOD OF MANUFACTURING THE SAME

Takashi Yoshida, Kanagawa, Japan, assignor to Fuji Electric Co. Ltd., Japan

Filed Dec. 28, 1995, Ser. No. 580,337

Int. Cl.[6] H01L *31/05;31/20*

U.S. Cl. 136—244 **5 Claims**

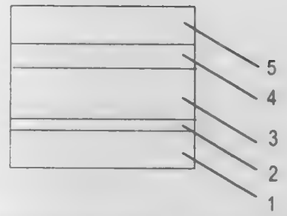


1. A thin-film solar cell comprising:

an insulating flexible substrate;

a plurality of photoelectric conversion regions arranged on a first surface of said flexible substrate, each of said photoelectric conversion regions comprising a rear electrode layer, an amorphous semiconductor layer having a junction, and a transparent electrode layer, which are successively formed on said flexible substrate; and

a connecting electrode layer formed on a second surface of said flexible substrates so as to extend over two adjacent ones of said plurality of photoelectric conversion regions, said rear electrode layer of one of said photoelectric conversion regions being connected with said connecting electrode layer, through extended parts of the rear electrode layer and the connecting electrode layer which are deposited on an inner wall of a first hole formed through the rear electrode layer the substrate and the connecting electrode layer, said amorphous semiconductor layer including a portion covering a surface of a portion of said connecting electrode layer located on a periphery of said first hole, said transparent electrode layer of one of two adjacent ones of said photoelectric conversion regions being connected with said connecting electrode layer, through extended parts of the transparent electrode layer and the connecting electrode layer which are deposited on an inner wall of a second hole formed through the transparent electrode layer, the amorphous semiconductor layer, the rear electrode layer, the substrate and the connecting electrode layer, whereby said plurality of photoelectric conversion regions are connected in direct series with each other.



a diffusion barrier layer disposed on said surface sufficient to prevent diffusion of alkali metal ions from the substrate across said diffusion barrier layer;

a back electrode layer disposed on said diffusion barrier layer;

a chalcopyrite absorber layer disposed on said back electrode layer, a lower portion of said chalcopyrite absorber layer adjacent said back electrode layer including a controlled amount of dopant selected from alkali metals and alkali metal compounds;

a window layer disposed on the chalcopyrite absorber layer; and

a front electrode disposed on said window layer.

5,626,687

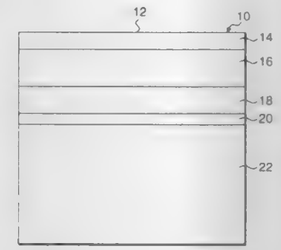
THERMOPHOTOVOLTAIC IN-SITU MIRROR CELL

Brian C. Campbell, Scotia, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 29, 1995, Ser. No. 412,039

Int. Cl.[6] H01L *31/06*

U.S. Cl. 136—259 **19 Claims**



1. A photovoltaic cell for use in a direct energy conversion thermophotovoltaic generator for converting heat to electricity, said generator including an emitter for emitting infrared photons which are received by said cell, said cell consisting essentially of:

a plurality of single crystal infrared-sensitive active semiconductor layers having a low energy bandgap of about 0.75 eV or less; said active layers having a total thickness of about 3–10 micrometers;

a substrate; and

a reflective layer comprising a metal selected from the group consisting of gold, silver, platinum, copper, palladium, aluminum, and alloys thereof, said reflective layer being disposed within the cell between the rear-most of said active layers and the substrate for reflecting infrared photons of energy below the energy bandgap back to the emitter for reabsorption whereby and for reflecting infrared photons of energy greater than the energy bandgap back to the active layers for conversion into electricity.

5,626,688

SOLAR CELL WITH CHALCOPYRITE ABSORBER LAYER

Volker Probst; Joerk Rimmasch, both of Munich, and Hauke Harms, Salem, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 1, 1995, Ser. No. 565,978

Claims priority, application Germany, Dec. 1, 1994, 44 42 824.3

Int. Cl.[6] H01L *31/072;31/0392;31/18*

U.S. Cl. 136—265 **20 Claims**

2. A solar cell comprising:

a substrate having a surface;

5,626,689

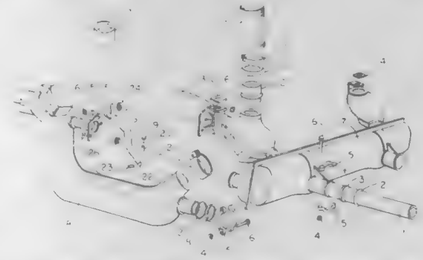
METHOD OF GENERATING HEAT USING CATALYTIC MATERIAL

Jack H. Taylor, Jr., 6250 Valley Wood Dr., Reno, Nev. 89523

Division of Ser. No. 384,133, Feb. 6, 1995, Pat. No. 5,505,745, which is a continuation-in-part of Ser. No. 197,979, Feb. 17, 1994, Pat. No. 5,387,565, which is a continuation-in-part of Ser. No. 783,877, Oct. 29, 1991, Pat. No. 5,288,674. This application Sep. 29, 1995, Ser. No. 536,198

Int. Cl.[6] C21D *9/00;6/00;5/00*

U.S. Cl. 148—606 **6 Claims**



1. A method of generating heat comprising subjecting a mineral composition to sub-atmospheric pressure conditions in a controlled environment, said mineral component comprising plagioclase feldspar in an amount greater than 50 wt % based on the weight of the mineral component, said feldspar mainly comprising albite and anorthite minerals.

5,626,690

LOW BORON AMORPHOUS ALLOY HAVING EXCELLENT SOFT MAGNETIC CHARACTERISTICS

Kensuke Matsuki; Masao Yukumoto, and Fumio Kogiku, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Aug. 28, 1995, Ser. No. 520,367

Claims priority, application Japan, Jan. 13, 1995, 7-003918

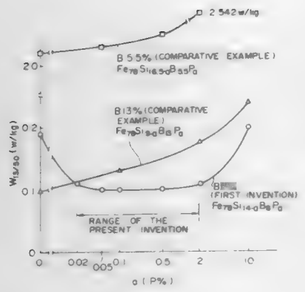
Int. Cl.[6] H01F *1/153*

U.S. Cl. 148—304 **4 Claims**

1. A low boron amorphous alloy having excellent soft magnetic characteristics, consisting of:

about 6–10 at % B;

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about 10–17 at % Si;

about 0.02–2 at % P; and

the balance Fe and incidental impurities.

5,626,691

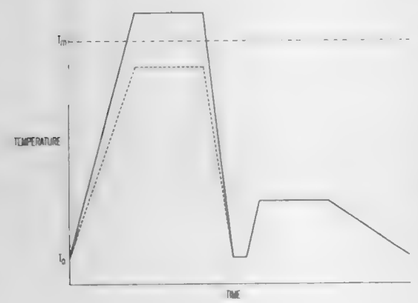
BULK NANOCRYSTALLINE TITANIUM ALLOYS WITH HIGH STRENGTH

Dongjian Li; Joseph Poon, and Gary J. Shiflet, all of Charlottesville, Va., assignors to The University of Virginia Patent Foundation, Charlottesville, Va.

Filed Sep. 11, 1995, Ser. No. 526,096

Int. Cl.[6] C22C *14/00*

U.S. Cl. 148—421 **13 Claims**



1. A high strength nanocrystalline titanium-based alloy having a composition represented by the formula:

$Ti_aCr_bCu_cM_d$ wherein M is at least one metal element selected from the group consisting of Mo, Mn and Fe, and wherein a, b, c, and d are atomic percentages falling within the following percentages:

60<a<90, 2<b<20, 2<c<25, and 0<d<15,

obtained by annealing the metastable crystalline phase β produced from either (1) a melt or (2) a high temperature solid phase, of the above metal elements in the above atomic percentages, to produce a nanocrystalline structure in at least a part of said alloy, the remaining part of said alloy having an amorphous or microcrystalline structure.

5,626,692

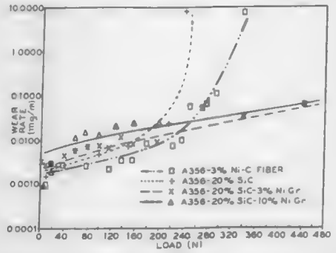
METHOD OF MAKING AN ALUMINUM-BASE METAL MATRIX COMPOSITE

Pradeep K. Rohatgi, Milwaukee, Wis.; James A. E. Bell, Oakville, and Thomas F. Stephenson, Toronto, both of Canada, assignors to INCO Limited, Toronto, Canada

Division of Ser. No. 33,250, Mar. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 871,274, Apr. 21, 1992, abandoned. This application Mar. 1, 1994, Ser. No. 204,030

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—538 **17 Claims**



1. A method of forming an aluminum-base composite comprising:

a) introducing 5 to 30 weight percent carbide particles into a molten aluminum-base alloy, said carbide particles being selected from the group consisting of silicon carbide, titanium carbide, tungsten carbide, vanadium carbide and a mixture therof;

b) introducing 0.5 to 30 weight percent nickel-coated lubricating phase particles into said molten aluminum-base alloy to form a molten aluminum-base mixture containing nickel dissolved from said nickel-coated lubricating phase particles, said nickel-coated lubricating phase particles being a material selected from the group consisting of carbon, graphite and a mixture thereof;

c) forming a neutral buoyancy mixture by distributing said carbide particles and said lubricating phase particles within said molten aluminum-base alloy; and

d) solidifying said neutral buoyancy mixture in a mold to form the aluminum-base composite containing an aluminum-base matrix, carbide particles, nickel aluminide dispersoids and lubricating phase particles.

5,626,693

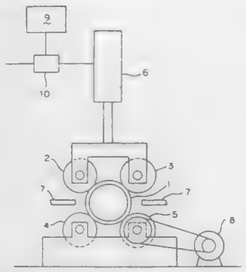
METHOD AND APPARATUS FOR QUENCHING A TUBULAR WORKPIECE

Yugo Yao; Tetsukazu Fukuhara; Yoshiki Seto, and Junichi Kato, all of Hiratsuka, Japan, assignors to Neturen Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 504,755

Int. Cl.[6] C21D *9/08;1/667*

U.S. Cl. 148—594 **13 Claims**



1. A method for quenching a tubular workpiece while preventing warping of the workpiece by applying a constraining force, wherein the constraining force is increased from a beginning of the quenching to a termination thereof, corresponding to an increase of an elasticity limit stress of the workpiece due to decrease in the temperature of the workpiece, wherein the constraining force does not exceed 20% of the elasticity limit stress at respective temperatures of the workpiece.

5,626,694

PROCESS FOR THE PRODUCTION OF STAINLESS STEEL SHEETS HAVING AN EXCELLENT CORROSION RESISTANCE

Yoshikazu Kawabata; Susumu Satoh; Mitsuyuki Fujisawa, and Kunio Fukuda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

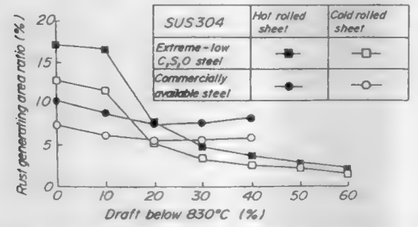
PCT No. PCT/JP95/00092, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO95/20683, PCT Pub. Date Mar. 8, 1995

PCT Filed Jan. 26, 1995, Ser. No. 522,383

Claims priority, application Japan, Jan. 26, 1994, 6-007021

Int. Cl.[6] C21D *8/02*

U.S. Cl. 148—609 **7 Claims**



1. A process for the production of stainless steel sheets having an excellent corrosion resistance, wherein said stainless steel sheet contains C: not more than 0.01 wt %, S: not more than 0.005 wt % and O: not more than 0.005 wt % said stainless steel being produced by the steps of:

hot rolling said stainless steel sheet at a draft below 830° C. of greater than about 30%,

cooling the resulting hot rolled sheet at a cooling rate of greater than about 25° C./sec.

coiling said stainless steel sheet at a temperature of less than about 650° C., and thereafter subjecting said stainless steel sheet to annealing and pickling.

5,626,695

PNEUMATIC RADIAL TIRES WITH MONOSTRAND BEAD CORE FOR SMALL-SIZE PASSENGER CARS

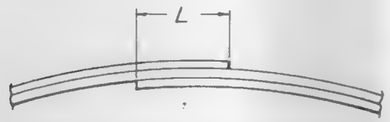
Masahiko Yamamoto, Tachikawa, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed May 30, 1995, Ser. No. 452,541

Claims priority, application Japan, Oct. 20, 1994, 6-279711; Apr. 25, 1995, 7-123035

Int. Cl.[6] B60C *3/00;15/04;* **B29D** *30/48;* **B21F** *37/00*

U.S. Cl. 152—454 **5 Claims**



1. A pneumatic radial tire for a small-size passenger car comprising; a tread portion, a pair of sidewall portion extending from both side ends of the tread portion, and a pair of bead portions each including a bead core therein and extending from an inner peripheral end of the sidewall portion, said bead core being a monostrand bead core having a compact unit structure of 3 to 10 steel wire windings in cross-section and formed by spirally winding a steel wire of circular cross-section covered with a coating rubber and binding the steel wire windings into a bundle, said steel wire having a diameter (D) of 1.2–2.2 mm, and a ratio of distance between center points of adjacent steel wire windings in said bead core (H) to the diameter (D) of said steel wire is within a range of 1.01–1.2, and a length L in mm overlapping a winding start point of said steel wire with a winding terminal point thereof satisfies the following equation:

$$L \geq 4.0 \times 10 \times \pi r^2 \times (f/A)$$

wherein r is a radius in mm of the steel wire, f is a tensile strength in kgf/mm^2 of the steel wire and A is a drawing force in kgf of the steel wire from the coating rubber.

5,626,696

DEVICE FOR RUNNING ON A FLAT TIRE FOR A MOTOR VEHICLE

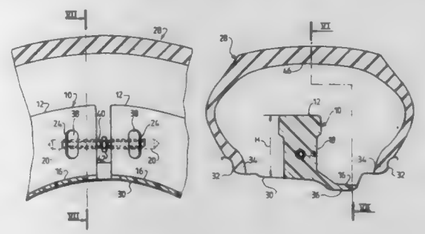
Bernard Boni, Burty; Didier Riquier, Persan, both of France, and Pascal Seradarian, Lawrenceville, N.J., assignors to Hutchinson, Paris, France

Filed Apr. 21, 1995, Ser. No. 425,875

Claims priority, application France, Apr. 27, 1994, 94 05101

Int. Cl.[6] B60C *17/04*

U.S. Cl. 152—520 **14 Claims**



1. A device for running on a flat tire for a motor vehicle with wheels having rims fitted with tubeless tires, the device comprising, for each wheel, a rigid ring mounted on the wheel rim, said ring being constituted by at least one circularly arcuate sector having ends which are connected together end-to-end on the rim by linking and clamping means, wherein said at least one sector is a solid or single-piece part made of reinforced thermoplastic resin having a coefficient of thermal expansion substantially equal to that of the rim.

5,626,697

TIRE WITH RUBBER SIDEWALL

Paul H. Sandstrom, Tallmadge; Thomas J. Segatta, Fairlawn, and Johnny D. Massie, II, Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 380,524, Jan. 30, 1995, abandoned, which is a continuation of Ser. No. 151,312, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 779,668, Oct. 21, 1991, Pat. No. 5,386,865. This application Jun. 27, 1996, Ser. No. 684,765

Int. Cl.[6] C08L *9/00;7/00;* **B60C** *13/00*

U.S. Cl. 152—525 **6 Claims**

1. A pneumatic rubber tire is provided having an outer rubber sidewall layer where said outer layer is a sulfur cured rubber composition where said rubber consists essentially of, based on 100 parts by weight rubber (phr), (i) about 40 to about 60 parts by weight of a trans 1,4-polybutadiene rubber and, correspondingly,

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(ii) about 60 to about 40 parts by weight of an additional elastomer wherein said additional elastomer is cis 1,4-polyisoprene rubber or a mixture of cis 1,4-polyisoprene rubber with cis 1,4-polybutadiene rubber and/or styrene/butadiene copolymer rubber; wherein said trans 1,4-polybutadiene rubber is characterized by having a trans 1,4-content in a range of about 75 to about 85 percent, about 2 to about 18 percent of its units of a 1,2-structure and about 2 to about 18 percent of its units of a cis 1,4-structure and a number average molecular weight (Mn) of about 205,000.

5,626,698

PNEUMATIC RADIAL TIRES WITH STIFFENERS COMPOSED OF THREE STIFFENER MEMBERS

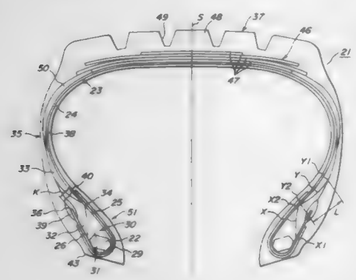
Makoto Tsuruta, and Yasutoshi Aoki, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,177

Claims priority, application Japan, Jun. 28, 1994, 6-146367; Dec. 27, 1994, 6-337894; Jun. 3, 1995, 7-159974

Int. Cl.[6] B60C *9/02;9/08;15/00;15/06*

U.S. Cl. 152—541 **19 Claims**



1. A pneumatic radial tire comprising; a pair of bead cores, at least one radial carcass ply comprised of a main body extending between the bead cores and a turnup portion wound around each bead core from inside toward outside, a stiffener arranged between the main body and the turnup portion of a radially outermost carcass ply and extending from each bead core along the main body outward in substantially a radial direction of the tire, said stiffener composed of first, second and third stiffener members successively arranged from inside toward outside in the radial direction and made from rubbers being lower in hardness in this order, and a boundary surface X between the first and second stiffener members being inclined outward in the radial direction to approach to the main body and a boundary surface Y between the second and third stiffener members being inclined outward in the radial direction to separate away from the main body, and a ply end rubber member made from rubber having a hardness between the hardnesses of the first and third stiffener members arranged on an outer end region of the turnup portion in the radial direction, and an outer end Y1 of the boundary surface Y between the second and third stiffener members in the radial direction being located outward from an outer end of the ply end rubber member in the radial direction and an inner end X1 of the boundary surface X between the first and second stiffener members in the radial direction being located inward from an outer end of the turnup portion in the radial direction.

5,626,699

PROCESS FOR THE PRODUCTION OF AN ASYMMETRIC LAMINATED PANE BY CALENDERING

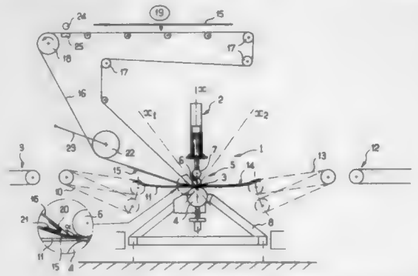
Claude Didelot, Thourotte; Jean Ducret, Clairoix, and Edouard Kadzialka, Ribecourt, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France, and Asahi Glass, Tokyo, Japan

Continuation of Ser. No. 350,887, Dec. 7, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,737

Claims priority, application France, Dec. 7, 1993, 93 14661

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—99 **8 Claims**



1. A process for assembling a blank sheet of plastic material with a rigid support for the purpose of forming a laminated pane, comprising the steps of:

bringing the support to be covered to an upstream end of a passage between rollers of a calenderer;

electrostatically adhering a blank sheet onto an endless conveyor belt which travels at the same speed as the support to be covered;

using the endless conveyor belt to bring the blank sheet above, and into contact with, the support to be covered so as to form an assembly of the blank sheet and the support to be covered;

progressively separating the blank sheet from the endless conveyor by passing the conveyor belt around an electrically grounded guide member having a curve of small radius; and

pressing the assembly of the support and the blank sheet in contact therewith in the passage between the rollers as the assembly passes through the passage between the rollers.

5,626,700

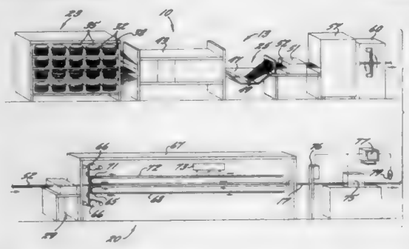
METHOD FOR FORMING REINFORCING STRUCTURAL REBAR BY PULTRUDING A CORE AND MOLDING THEREOVER

Mark A. Kaiser, Elida, Ohio, assignor to Marshall Industries Composites, Lima, Ohio

Division of Ser. No. 467,157, Jun. 6, 1995, which is a continuation of Ser. No. 267,565, Jun. 28, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,247

Int. Cl.[6] B29C *67/00*

U.S. Cl. 156—180 **6 Claims**



1. A process for forming reinforcing structural rebar comprising a core of a thermosetting resin containing reinforcing material and an outer cladding layer of sheet molding compound, said process comprising the steps of:

impregnating a reinforcing material with a thermosetting resin;

pulling the reinforcing material through a shaping die to form the core of the thermosetting resin containing reinforcing material;

guiding sheet molding compound onto the core to provide an outer layer; and

molding the outer cladding layer of sheet molding compound into a desired configuration on the core.

5,626,701

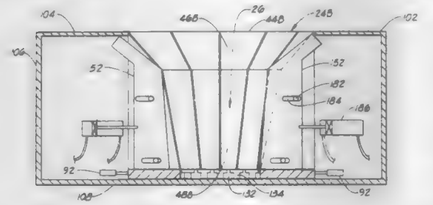
METHOD USING BLADES AND FINS TO FORM SHEET MATERIAL INTO A FLOWER POT COVER HAVING INWARD FINS

Donald E. Weder, 1111 Sixth St., Highland, Ill. 62249; Franklin J. Craig, 90 Inez Ave., Valley Park, Mo. 63088, and Joseph G. Straeter, 3817 Prairie Rd., Highland, Ill. 62249

Division of Ser. No. 80,906, Jun. 21, 1993, Pat. No. 5,523,046, which is a continuation-in-part of Ser. No. 805,419, Dec. 10, 1991, Pat. No. 5,221,248, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, and Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,425, Sep. 22, 1989, Pat. No. 5,034,584, said Ser. No. 422,653is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, and Ser. No. 367,098, Jun. 15, 1989, Pat. No. Des. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224, said Ser. No. 219,083is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 488,007

Int. Cl.[6] B29C *53/04*

U.S. Cl. 156—227 **3 Claims**



1. A method of forming a flower pot or flower pot cover having a plurality of radially inwardly extending fins, the steps of the method comprising:

providing a male tool having a plurality of radially extending first plates and a plurality of radially extending second plates, each of the first plates corresponding with one of the second plates to define a fin forming pair of plates, the plates movable between an open position wherein each of the first plates is spaced a distance from the corresponding second plate to define a fin-forming space therebetween and a closed position wherein each of the first plates and the corresponding second plate are substantially together;

providing a blade assembly having a plurality of blades adapted for movement between a storage position wherein the blades are spaced a distance from the male tool and a fin-forming position wherein each blade is disposed in a corresponding one of the fin-forming spaces;

placing a sheet of material between the male tool and the blade assembly with the blade assembly in the storage position;

moving each of the blades radially inwardly into the fin-forming position with the plates of the male tool in the open position so as to force a portion of the sheet of material radially inwardly into each of the fin-forming spaces;

moving the blade assembly to the storage position to withdraw the blades from the fin-forming spaces; and

moving the plates of the male tool to the closed position after the blades have been withdrawn from the fin-forming space to form the portions of the sheet of material disposed in the fin-forming spaces into radially inwardly extending fins.

5,626,702

PROCESS FOR PRODUCTION OF FLEXIBLE LAMINATE

Richard A. Sharpe, and Mia J. Manners, both of San Francisco, Calif., assignors to Holotex Limited, England

Continuation of Ser. No. 150,057, Nov. 17, 1993, abandoned. This application Apr. 25, 1996, Ser. No. 638,010

Claims priority, application United Kingdom, May 17, 1991, 9110765

Int. Cl.[6] B44C *1/165*

U.S. Cl. 156—233 **25 Claims**

1. A process for the production of a flexible laminate, the process consisting essentially of applying to a surface of a flexible substrate a curable composition in fluid form and comprising a plastics material as a pattern which can provide a desired image or imaging effect, positioning a metal foil bearing a holographic image and having a layer of plastics size, with the size layer overlying the pattern while the composition remains fluid, applying to the combination heat and pressure at a level and for a time sufficient to adhere the foil to the substrate via the plastics material but insufficient to destroy the holographic effect, and thereafter removing excess foil not adhered to the substrate to expose the desired image or imaging effect.

5,626,703

METHOD FOR PREPARING A LIQUID CRYSTAL RESIN COMPOSITE MATERIAL AND MOLDING A PRODUCT FROM THE SAME

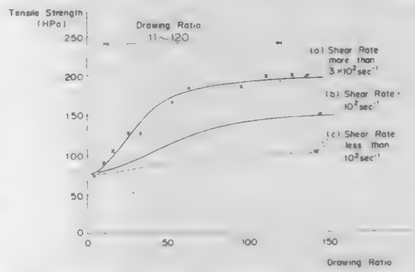
Takashi Tomita, Hiroshima; Masakatsu Ohsugi, Hiroshima-ken; Yushi Matsuda, Hiroshima; Mitsuharu Kaneko, Hiroshima; Keita Sasaki, Hiroshima; Kazuhisa Toh, Kure; Masayasu Nishihara, Hiroshima, and Kenji Moriwaki, Hiroshima-ken, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Jan. 21, 1993, Ser. No. 4,901

Claims priority, application Japan, Jan. 20, 1992, 4-007623; Jan. 20, 1992, 4-007634; Apr. 30, 1992, 4-111358

Int. Cl.[6] B29C *47/00*

U.S. Cl. 156—244.11 **10 Claims**



6. A method for preparing a composite material comprising preparing a composition of a matrix resin of a non-liquid crystal thermoplastic resin and a liquid crystal resin which has a liquid crystal transition temperature higher than the minimum molding temperature of said thermoplastic resin and which is formed into a

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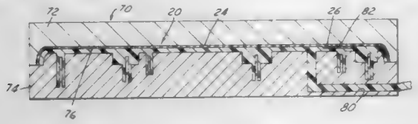
fiber structure as a reinforcing material and melt extruding the composition at a shear rate of 3×10^2 to 10^5 sec^{-1} and a temperature above the liquid crystal transition temperature to form fibers of the liquid crystal resin.

5,626,704

COMPOSITE ARTICLE OF AN AUTOMOTIVE VEHICLE AND METHOD OF MAKING THE SAME

Holton D. Bowers, Jr., Northville, and Stephen F. Lange, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 11, 1995, Ser. No. 540,697
Int. Cl.[6] B29C *43/18;43/20*
U.S. Cl. 156—245 **2 Claims**



1. A method of making a composite automotive trim strip composed of a supporting member, a thermoplastic shell for covering at least a portion of the supporting member and having a front and a back, and a metallic icon having a front and a back, comprising:

providing the icon and the shell,

applying spaced-apart globs of a heat-curable adhesive to the back of the icon and adhering the back of the icon to the front of the shell,

providing a mold having a mold cavity formed with a mold surface shaped to receive the shell,

placing the shell and adhered icon in the mold cavity in position with the front of the shell and the front of the icon opposed to the mold surface, and

introducing into the mold cavity a flowable hot melt material which is compatible with the material of the shell to form the supporting member and, at the same time, by the heat of the hot melt material

(a) bonding the shell to the supporting member,

(b) softening the shell enough to cause the icon to form a recess in the shell and the icon to become fully embedded in the recess with the front of the icon flush with the front of the shell, and

(c) curing the adhesive to form a strong bond between the back of the icon and the recess in the shell.

5,626,705

RAPID SETTING ADHESIVE AND METHOD OF ITS USE

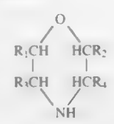
Jack G. Winterowd, Puyallup; Harvey H. Cox, Seattle; Roland E. Kreibich, Auburn; Stanley L. Floyd, Enumclaw, and Hans Gross, Auburn, all of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Filed Jun. 7, 1995, Ser. No. 482,512
Int. Cl.[6] B29C *65/00*
U.S. Cl. 156—304.5 **21 Claims**

11. A method of bonding two wood surfaces which comprises:

coating one surface with the first part of a two part resin adhesive system, said first part comprising a resorcinol-formaldehyde or phenol-resorcinol-formaldehyde adhesive resin and a first hardener comprising an alkylene group donor in a sufficient mount to effect an ultimate thermosetting cure of said adhesive resin,

coating another surface with the second part of the two part resin adhesive system, said second part comprising a resorcinol-formaldehyde or phenol-resorcinol-formaldehyde adhesive resin containing a sufficient amount of a modifier to induce rapid curing of the two parts when mixed, said modifier comprising a heterocyclic oxygen and nitrogen containing compound of the formula



wherein any of R_1 to R_4 are hydrogen or C_1–C_2 alkyl; and

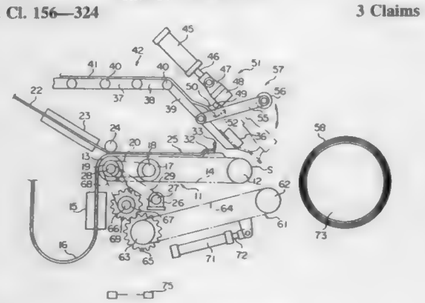
pressing the adhesive coated surfaces together with sufficient pressure to cause mixing of the two adhesive parts in order to effect a rapid and durable bond.

5,626,706

METHOD AND APPARATUS FOR PREPARING STRIP MATERIAL

Naruhiro Akiyama, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 558,178
Claims priority, application Japan, Dec. 27, 1994, 6-337892
Int. Cl.[6] B29D *30/30*
U.S. Cl. 156—324 **3 Claims**



1. A method for preparing a laminated strip material comprising the steps of:

holding, by means of a transfer means, the forward end of a second strip supported from its lower side while being permitted free movement in the longitudinal direction by a supporting means,

causing the transfer means to extend ahead toward a joining position on a transfer conveyor located directly below the supporting means and thereby transferring the forward end of the second strip to the joining position while drawing the second strip from the supporting means to shift the second strip in the lengthwise direction by a predetermined amount relative to a first strip supported from its lower side by the transfer conveyor, and

pressing the first and second strips against the transfer conveyor by means of a joining means while drawing and transferring forward the first and second strips by the transfer conveyor, thereby joining the first and second strips one upon the other to form a laminated strip material.

2. An apparatus for preparing a laminated strip material comprising:

a transfer conveyor extending in the longitudinal direction and capable of transferring a first strip forward while supporting the first strip from its lower side,

a supporting means located directly above the transfer conveyor and extending in the longitudinal direction and capable of supporting a second strip from its lower side while permitting free movement of the second strip in the longitudinal direction,

a transfer means for extending toward a joining position on the transfer conveyor with the forward end of the second strip held by the transfer means and thereby transferring forward the forward end of the second strip to the joining position while drawing the second strip from the supporting means to shift the second strip relative to the first strip in the lengthwise direction by a predetermined amount, and

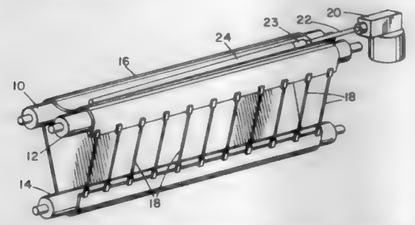
a joining means for pressing the first and second strips against the transfer conveyor while drawing and transferring forward the first and second strips by the transfer conveyor, thereby joining the first and second strips one upon the other to form a laminated strip material.

5,626,707

APPARATUS FOR MANUFACTURING COMPOSITE TUBULAR ARTICLES

David H. Hadzicki; James E. Hadzicki, both of San Diego; Joseph R. Hadzicki, Coronado; Dale F. Thompson, San Diego, and Milton G. Evangelou, Jr., Lakeside, all of Calif., assignors to Revolution Golf, Inc., San Diego, Calif.

Filed Feb. 9, 1995, Ser. No. 386,097
Int. Cl.[6] B65H *81/00*
U.S. Cl. 156—446 **13 Claims**



1. An apparatus for wrapping material around a mandrel, said apparatus comprising:

a frame;

first and second spindles connected to said frame;

a belt in contact with a portion of each of said first and second spindles, said belt movable in a belt movement direction, said belt having two ends and including a resilient member connecting said ends; and

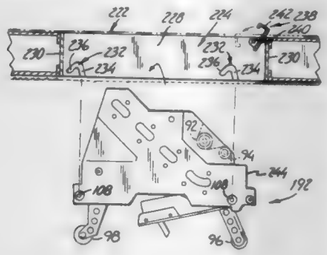
a drive mechanism having a rotatable driven portion with an axis of rotation extendable perpendicular to said belt movement direction, said mandrel mountable on said driven portion said belt and said resilient member movable in said belt movement direction as a result of actuation of said drive mechanism.

5,626,708

TAPE APPLYING APPARATUS

Lloyd S. Vasilakes, Stillwater, Minn., and Adelio Lissoni, Vedano Olona, Italy, assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Nov. 9, 1990, Ser. No. 611,997
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—468 **16 Claims**



1. A mounting mechanism for mounting a taping head in a tape applying machine, the mechanism comprising:

first and second spaced apart panels within the machine defining a taping head receiving aperture, each panel having a pair of spaced apart J-configured slots, each slot having two sections, both sections having a component extending in a vertical direction, one of the two sections having an open end; and

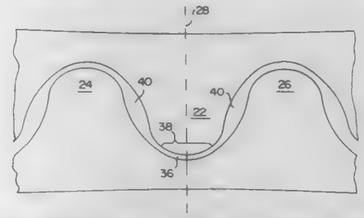
first and second pairs of pin members extending outwardly from first and second opposing sides of the taping head, the pin members being disposed to engage the J-configured slots.

5,626,709

SINGLE FACER CORRUGATING ROLL FLUTE CONTOUR

Thomas R. Keeny, Clementon, N.J., assignor to The Langston Corporation, Cherry Hill, N.J.

Filed Nov. 15, 1994, Ser. No. 340,098
Claims priority, application United Kingdom, Nov. 20, 1993, 9323946
Int. Cl.[6] B31F *1/26;1/28*
U.S. Cl. 156—472 **11 Claims**



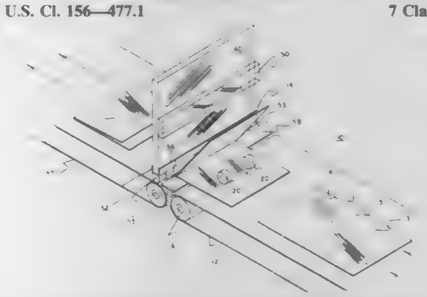
1. A single facer corrugating machine, the improvement comprising two cooperating fluted corrugating rolls of which the flute tip and root curves have a relatively large radius at the center line and a reduced radius on each side of the center line leading to the flanks between the tip and root curves, the tip and root curves differing so that, when their center lines are aligned, they define a gap of approximately uniform thickness extending for a predetermined distance in both directions from the center line, the root contour extending beyond that predetermined distance, on each side of the center line, as a curve which extends to a flank contour spaced from the opposed flank of the cooperating flute by a distance greater than the thickness of the gap along substantially the entire length of the flank, the flank contours on at least one of the corrugating rolls being concave.

5,626,710

FOLD PLATE FOR INLINE FOLDER/GLUER MACHINES

Richard J. Moll, 415 Constance Dr., Warminster, Pa. 18974

Filed Jun. 5, 1995, Ser. No. 461,148
Int. Cl.[6] B31F *1/00*
U.S. Cl. 156—477.1 **7 Claims**



1. In an apparatus with an inline folder/gluer machine for forming a folded product from a prescored card stock blank, which blank has at least one score line which divides it into a plurality of

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panels, which include at least a main panel and an end panel, which machine includes: a gluing section, a forming section and a delivery section, said forming section includes an endless conveyor belt to receive and transport blanks to be folded, deflector means to cause a portion of said blank to be deflected upwardly, top drive wheel means to contact said blank, said gluing section having glue dispensing means to dispense measured amounts of glue onto said blank, and said delivery section having conveyor belt means to receive finished folded products, and transport them for packaging and shipping, the improvement which comprises

fold plate means to cooperate with said conveyor belt and said deflector means to cause said end panels to be folded down onto said main panels,

said fold plate means including

a vertically adjustable fold plate mounted to bracket means carried on said machine,

vertically adjustable stop plate means carried on said plate, and

roller assembly means carried on the bottom of said fold plate means to contact said end panel of said blank and cause it to fold down about said score line onto said main panel as said blank is urged by said conveyor belt under said fold plate.

5,626,711

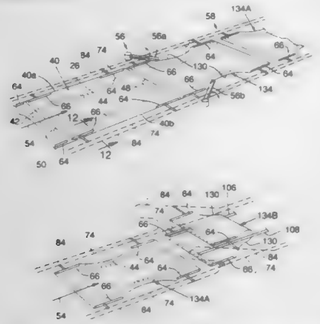
APPARATUS FOR PRODUCING ELASTICIZED UNDERGARMENT PRODUCTS

Thomas R. Herrmann, Federal Way, Wash., assignor to Paragon Trade Brands, Inc., Norcross, Ga.

Filed May 27, 1994, Ser. No. 250,289

Int. Cl.[6] **A61F** *13/15*

U.S. Cl. 156—496 **12 Claims**



1. In an apparatus for producing an absorbent garment the improvement comprising

a mechanism for joining together a first elongate web of flexible sheet material, a second elongate web of flexible sheet material, absorbent pad material interposed and encased between said first and second webs, and elastic material extending laterally and longitudinally of the sheet material to form an elongate composite, said composite having sections adapted to be separated therefrom to form discrete products each having opposed ends and opposed sides,

at least four spaced apart engaging members operable to engage and hold the composite adjacent portions thereof which define opposed end regions and Opposed side region of a discrete product, each member positioned to engage the product adjacent an intersection between an end region and a side region thereof and said engaging members being spaced apart a distance to maintain the product stretched longitudinally and laterally,

a conveyor comprising a pair of spaced elongate first conveyor elements disposed adjacent and extending along opposite side margins of the path for the product on which conveyor elements said engaging members are mounted to maintain selected spacing between said engaging members to maintain said product stretched both longitudinally and laterally of the product and to carry said engaging members along the path for the product at a selected speed for the product while maintaining said selected spacing therebetween, said conveyor further comprising means for driving said conveyor elements in the direction of said path, and

severing mechanism operable to sever a discrete product from the composite formed, said engaging members being positioned to engage the discrete product adjacent opposed ends and sides thereof to maintain a stretched condition for the product against the urging of the elastic to contract the product as it is moved along the path after severing.

5,626,712

DEVICE FOR FILLING INSULATING GLASS PANES WITH HEAVY GAS

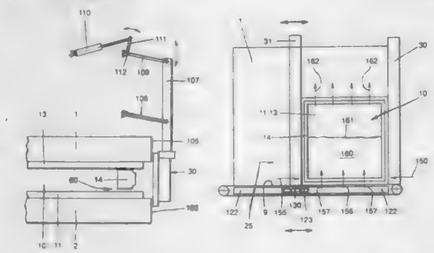
Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria

Filed Mar. 24, 1995, Ser. No. 410,307

Claims priority, application Austria, Mar. 24, 1994, 628/94; Mar. 24, 1994, 631/94; Jun. 17, 1994, 1204/94; Sep. 13, 1994, 1749/94

Int. Cl.[6] **E06B** *3/677*; **B65G** *47/00*

U.S. Cl. 156—497 **16 Claims**



1. In a device for filling an insulating glass pane (**10**) with heavy gas, comprising upright plates (**1**, **2**) adapted to be located on either side of said insulating glass pane (**10**) to be filled, of which at least one movable plate (**2**) can move transversely to its plane relative to the other plate (**1**), conveyor means (**9**) for supporting lower edges of said plates (**1**, **2**), the conveyor means being made gas-tight, and upright sealing means (**30**, **31**, **80**) adapted to seal opposite upright edges of the insulating glass pane (**10**), one said sealing means (**31**, **80**) being movable parallel to the planes of the plates (**1**, **2**) without contacting said upright edges of the insulating glass pane (**10**): the improvement wherein said one sealing means (**31**, **80**) is mounted with its ends on carriages (**90**, **91**) which can be moved parallel to the upper and lower horizontal edges of said one movable plate (**2**).

5,626,713

METHOD FOR MANUFACTURING MULTI-LAYER PRINTED BOARD

Shoji Yamaguchi; Akira Yamada; Yasuo Furuhashi, and Fumiaki Baba, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

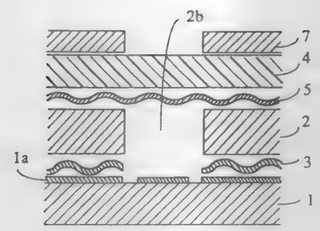
Division of Ser. No. 183,920, Jan. 19, 1994, Pat. No. 5,460,680, which is a continuation of Ser. No. 968,288, Oct. 29, 1992, abandoned. This application Dec. 30, 1994, Ser. No. 366,615

Claims priority, application Japan, Nov. 8, 1991, 3-292892; Nov. 11, 1991, 3-293985; Jun. 25, 1992, 4-167360

Int. Cl.[6] **B32B** *35/00*

U.S. Cl. 156—537 **14 Claims**

1. An apparatus for use in producing a multi-layer printed board having a hole board as a top layer, a bottom layer board, and an adhesive sheet having holes corresponding to the holes in the hole board and being located between the hole board and the bottom layer board, the apparatus being positioned against the hole board before the apparatus and the hole board, bottom layer, and adhesive are heated, pressed, and cooled, the apparatus comprising:



a mold release sheet:

a thermoplastic resin sheet over the mold release sheet, wherein the thermoplastic resin sheet begins to soften at a temperature lower than the melting temperature of the adhesive; and

means, disposed adjacent the thermoplastic resin sheet, for controlling contraction by the thermoplastic resin sheet which occurs when the thermoplastic resin sheet cools.

5,626,714

METHOD FOR DETECTING ETCHING ENDPOINT AND ETCHING APPARATUS AND ETCHING SYSTEM USING THE METHOD THEREOF

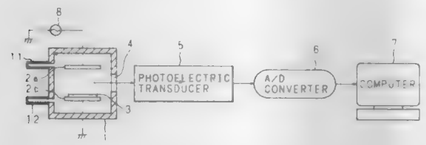
Toshiya Miyazaki; Toshihiro Hayami; Tadao Nakatsuka; Hiroyuki Tanaka, and Toshiyuki Nakamura, all of Osaka, Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Dec. 6, 1995, Ser. No. 568,371

Claims priority, application Japan, Dec. 8, 1994, 6-305193; Nov. 24, 1995, 7-306152

Int. Cl.[6] **C23F** *1/02*; **H01L** *21/306*

U.S. Cl. 216—60 **2 Claims**



1. A method for detecting an etching endpoint, comprising steps of:

receiving plasma light generated during the plasma etching process;

producing time series data of a signal corresponding to the amount of received light;

performing an arithmetic operation on the time series data and thereby correcting the change of light amount, wherein said correction step corrects: the time series data by a function holding the ratio between values apart from each other by a set period;

setting an unstable rise time in a test run, wherein said correction step corrects the time series data after for the unstable rise time;

calculating an average value of the time series data for said unstable rise time, wherein said correction step causes the initial value of the corrected time series data to coincide with said average value; and

detecting an etching endpoint from the corrected time series data.

5,626,715

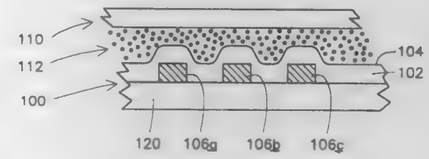
METHODS OF POLISHING SEMICONDUCTOR SUBSTRATES

Michael D. Rostoker, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 14,432, Feb. 5, 1993, abandoned. This application Oct. 12, 1995, Ser. No. 542,284

Int. Cl.[6] **H01L** *21/00*; **B24B** *1/00*

U.S. Cl. 438—4 **19 Claims**



1. A method of removing excess material from an in-process semiconductor layer, comprising the steps of:

providing an in-process semiconductor device having a layer with excess material;

providing a polishing medium, the medium comprising a plurality of aluminum oxide particles having a size "X", a size distribution "Y", and an alpha phase percentage "Z", wherein "X" is 10–100 nm, "Y" is "P" percent of "X", where "P" is at most 50%, and "Z" is at least 50%;

providing a polishing pad;

positioning the polishing pad proximate to the layer with excess material, the polishing medium therebetween; and

polishing the layer with the polishing pad and the polishing medium until the excess material has been substantially removed and the layer substantially planarized.

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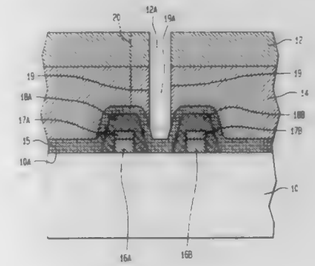
PLASMA ETCHING OF SEMICONDUCTORS

William F. Bosch, San Jose; Helen H. Zhu, Santa Clara, and Syed A. Haider, Fremont, all of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Sep. 29, 1995, Ser. No. 537,309

Int. Cl.[6] **H01L** *21/302*

U.S. Cl. 438—723 **18 Claims**



1. A dry etching process for use in the manufacture of silicon integrated circuit devices comprising the steps of:

positioning in the chamber of a plasma etching apparatus a silicon wafer having a surface layer of a doped oxide of silicon that is to be etched;

flowing a mixture consisting essentially of CHF_3 and neon into the chamber; and

applying radio frequency energy to the chamber for providing a discharge in the chamber that ionizes the mixture and forms a plasma that etches the surface layer.

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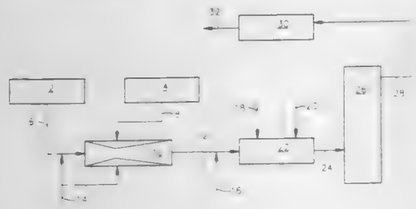
OXIDATIVE TREATMENT OF BLEACH PLANT EFFLUENT

Caifang Yin, Monroe; Christopher P. Hung, Highland Mills; Hugh P. Gallagher, and Jasper H. Field, both of Goshen, all of N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Jun. 1, 1995, Ser. No. 456,729

Int. Cl.[6] D21C *11/00*

U.S. Cl. 162—30.11 **25 Claims**



1. A method for treating effluent from a kraft pulp bleaching sequence having a chlorine and/or chlorine dioxide stage generating an organic chloride compound-containing filtrate (F_D) and an alkaline extraction stage generating an extraction stage filtrate (F_E) wherein the F_D and F_E filtrates contribute to the amount of the chemical oxygen demand (COD), adsorbable organic halides (AOX), color bodies, and toxicity in the bleach plant effluent, the method comprising:

contacting F_D filtrate with the F_E filtrate at a pH above about 10 to provide an F_DF_E mixture;

vigorously mixing the F_DF_E mixture for a mixing interval sufficient to reduce the AOX of the F_D;

lowering the pH of the F_DF_E mixture to from about 3.0 to about 5.0;

contacting the F_DF_E mixture prior to any biological treatment thereof with from about 0.2 to about 2.0 grams per liter of peroxy compound in the presence of a catalytic amount of a metal catalyst; and

holding the F_DF_E mixture in contact with the peroxide compound and catalyst in a hold vessel for a reaction time sufficient to substantially reduce the amount of AOX, COD, color bodies and/or toxicity initially present in the F_D and F_E filtrates.

5,626,718

USE OF POLYMERS IN THE RECYCLED FIBER WASHING/DEINKING PROCESS

Irenee J. Philippe; Frank J. Sutman; Thomas E. Taggart; Mary B. K. Letscher; Michael A. Schuster, and John C. Harrington, IV, all of Jacksonville, Fla., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sep. 16, 1994, Ser. No. 307,969

Int. Cl.[6] D21C *9/02*

U.S. Cl. 162—60 **32 Claims**

1. In the deinking of wastepaper in which ink particles are removed from an aqueous slurry of recycled fibers, followed by a washing and thickening step wherein said slurry is treated to further remove ink particles from said recycled fibers, the improvement comprising adding to the slurry an effective amount of cationic polyacrylamide polymer to increase the retention of recycled fibers in said washing and thickening step.

5,626,719

SYSTEM FOR SIZING PAPER AND CARDBOARD

Anthony C. Tansley, Amersfoort, Netherlands, and John D. Ballantine, Ilford, United Kingdom, assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 94,273, Jul. 19, 1993, Pat. No. 5,456,800. This application Jun. 7, 1995, Ser. No. 478,628

Claims priority, application United Kingdom, Jul. 21, 1992, 9215422

Int. Cl.[6] D21H *21/16*

U.S. Cl. 162—158 **5 Claims**

1. A process for making a container for consumable liquids that comprises the steps of forming an aqueous pulp slurry at neutral to alkaline pH, adding to the pulp a thermosetting resin, a cellulose-reactive size, and a non-cellulose-reactive size selected from the group consisting of bis-stearamides and glycerol triesters of natural fatty acids, wherein the cellulose reactive size is present in an amount of from about 0.01 to about 0.48 percent, the non-cellulose reactive size is present in the amount of from about 0.01 to about 2.0 percent and the thermosetting resin is present in an amount of from about 0.03 to about 0.60 percent, all based on the dry weight of the pulp, forming paperboard from an aqueous pulp slurry at neutral to alkaline pH, cutting the board to packaging size and thereby exposing cut edges of the board, coating the board with a water-proofing substance, treating it with a hot aqueous solution of hydrogen peroxide, and forming a packaging unit from the board.

5,626,720

METHOD FOR CONTROLLING PITCH ON A PAPERMAKING MACHINE

Thord Gustav G. Hassler, Helsingborg, Sweden, assignor to W.R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 38,736, Mar. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 368,972, Jun. 20, 1989, Pat. No. 5,223,097, which is a continuation of Ser. No. 263,963, Oct. 26, 1988, abandoned, which is a continuation of Ser. No. 1,611, Jan. 8, 1987, abandoned. This application May 19, 1995, Ser. No. 440,299

Claims priority, application United Kingdom, Jan. 9, 1986, 8600506

Int. Cl.[6] D21H *23/50*

U.S. Cl. 162—161 **15 Claims**

1. A method for the control of pitch on papermaking machinery during papermaking which comprises spraying onto the paper making machinery an effective amount of a water soluble polymer derived from (a) an epihalohydrin, a diepoxide or a precursor of an epihalohydrin or diepoxide, (b) an alkyl amine having functionality with respect to an epihalohydrin of 2 and (c) an amine which has a functionality with respect to an epihalohydrin greater than 2 and which does not possess any carbonyl groups.

5,626,721

PROCESS FOR PREPARING WATER SOLUBLE POLYALUMINOSILICATES

John D. Rushmere, Wilmington, Del., and Robert H. Moffett, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 515,789, Aug. 16, 1995, Pat. No. 5,543,014, which is a continuation-in-part of Ser. No. 347,232, Nov. 23, 1994, Pat. No. 5,470,435, which is a division of Ser. No. 212,744, Mar. 14, 1994, Pat. No. 5,482,693. This application Dec. 6, 1995, Ser. No. 568,068

Int. Cl.[6] D21H *21/10*

U.S. Cl. 162—181.6 **4 Claims**

1. A process for making paper comprising the steps of

(a) adding to an aqueous paper furnish containing pulp, anionic polymer and optionally inorganic filler, 0.01–1% by weight, based on the dry weight of the furnish, of a water soluble polyparticulate polyaluminosilicate microgel having a mole ratio of alumina:silica of between 1:10 and 1:1500 prepared by a process comprising the steps of

(i) acidifying an aqueous solution of an alkali metal silicate containing 0.1–6% by weight of SiO_2 to a pH of 2–10.5 by adding an aqueous acidic solution containing sufficient aluminum salt to provide said mole ratios; and

(ii) adjusting the pH of the product of step (i) to between 1–4 before, after or concurrently with a dilution step, but prior to gelation, to achieve a SiO_2 content of ≦5% by weight; and at least approximately 0.001% by weight, based on the dry weight of the furnish, of a water soluble cationic polymer; and

(b) forming and drying the product of step (a).

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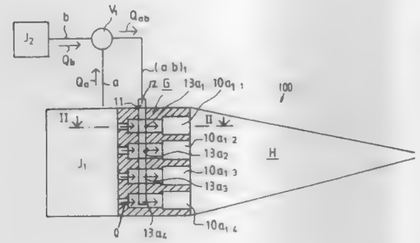
HEADBOX OF A PAPER/BOARD MACHINE

Jyrki Huovila, Muurame, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Jun. 1, 1995, Ser. No. 457,327

Int. Cl.[6] D21F *1/06*

U.S. Cl. 162—343 **21 Claims**



1. A headbox of a paper/board machine, comprising

a stock inlet header arranged at an initial end of the headbox and providing a first and second stock flow having the same concept.

a tube bank coupled to said stock inlet header and arranged after said stock inlet header in a flow direction of said first stock flow, said tube bank comprising a plurality of tubes having inlets for receiving said first stock flow from said stock inlet header, said tubes of said tube bank situated alongside one another in a direction transverse to the flow direction of said first stock flow across substantially the entire width of the headbox whereby individual ones of said tubes at a first location in the transverse direction are fluidly isolated from individual ones of said tubes at a second location in the transverse direction,

a plurality of valves, each of said valves having a first input flow line for receiving said second stock flow from said stock inlet header and a second input flow line for receiving a diluting flow, said second stock flow and said diluting flow being combined in said valve to form a combined flow.

passing means for passing the combined flow from a respective one of said valves into at least one of said tubes in said tube bank arranged only at a single respective location in the direction transverse to the flow direction of said first stock flow to mix with said first stock flow from said stock inlet header, said passing means being arranged to pass the combined flow into said at least one of said tubes at a feeding point located between said inlet of said at least one of said tubes and an outlet of said at least one of said tubes, each of said valves comprising regulating means for regulating the quantity of the combined flow and the consistency of the combined flow independent of one another such that the quantity and consistency of the combined flow from each of said valves is independently regulatable to provide a stock flow rate profile and consistency profile across the width of the headbox,

pressure loss means for creating a pressure loss in said first stock flow arranged between said stock inlet header and said feeding point, and

a slice duct coupled to said tube bank and arranged after said tube bank in the flow direction of said first stock flow, said slice duct receiving the stock from said tubes and discharging the stock from the headbox.

5,626,723

SURFACE CONTOURED PRESS JACKET FOR A SHOE PRESS

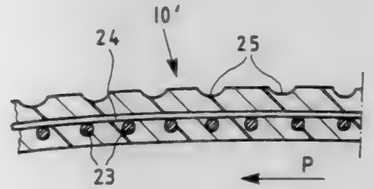
Christian Schiel, Heidenheim, and Harald Aufrecht, Aalen, both of Germany, assignors to J. M. Voith GmbH, Germany

Division of Ser. No. 184,554, Jan. 21, 1994, Pat. No. 5,472,573, which is a division of Ser. No. 9,882, Jan. 27, 1993, Pat. No. 5,302,251. This application Oct. 10, 1995, Ser. No. 541,518

Claims priority, application Germany, Jan. 31, 1992, 42 02 731.4

Int. Cl.[6] D21F *3/02*

U.S. Cl. 162—358.4 **3 Claims**



1. A press jacket in a shoe press in a press section of a paper making machine, wherein the press jacket moves in a travel direction between a sliding surface of a stationary shoe and a rotating counter roll and the counter roll forms a lengthened press nip with the slide surface of the shoe, the press jacket comprising:

an elastomeric jacket material having an initially flat surface and an outer surface; reinforcement material being embedded in the elastomeric material of the press jacket and spaced away from the outer and the inner surfaces thereof;

longitudinally extending grooves defined in the outer surface of the press jacket, as seen in a cross-section through the press jacket in the travel direction, the outer surface longitudinal grooves being spaced apart at intervals in the travel direction of the press jacket and each outer surface groove extending generally in the longitudinal direction and generally parallel to the axis of the press jacket and across the travel direction of the press jacket; the outer surface grooves in the press jacket being so placed and the elastomeric material of the press jacket being of such material and the reinforcement material being of such material and being so placed that upon the application of pressure to the inner surface of the press jacket by the press shoe, the inner surface is deformed by the pressure to assume a generally corrugated contour having a series of longitudinal grooves extending transversely to the direction of travel of the press jacket and the inner surface grooves having a depth of at most 0.25 mm, whereby the outer surface grooves are effectively transferred to the inner surface.

VOL 11 98 ISS 1 MY 6 1997 UMI

5,626,724

RECOVERY OF N-ETHYLPIPERAZINE BY DISTILLATION

Klaus-Dieter Malsch, Schifferstadt; Douglas Hutton, Limburgerhof, and Ernst Lang, Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 2, 1995, Ser. No. 510,562

Claims priority, application Germany, Aug. 3, 1994, 44 27 511.0

Int. Cl.[6] B01D *3/10;3/38*

U.S. Cl. 203—76 4 Claims

1. A process for the recovery of N-ethylpiperazine by distillation from mixtures with N,N'-diethylpiperazine, piperazine, ethanol, water and accompanying substances in a distillation column having a still, trays or packings and at its top a condenser for producing reflux, wherein, a stepwise distillation of the mixture proceeds as follows:

a) in the first distillation step at about 98° C., a forerun comprising water, piperazine and small amounts of N-ethypiperazine is obtained;

b) in the subsequent second distillation step at about 150° C., water is added to the reflux and a fraction of piperazine, water and small amounts of N-ethylpiperazine is obtained;

c) in the third distillation step at 155° C. pure N-ethylpiperazine is removed; leaving a bottom fraction which contains N,N'-diethylpiperazine and other high-boiling components.

5,626,725

PROCESS FOR SEPARATION OF 1,1-DIFLUOROETHANE FROM ITS MIXTURE WITH HYDROGEN FLUORIDE

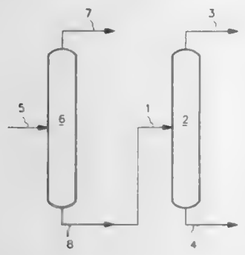
Dominique Balthasart, Brussels, and Philippe Decap, Woluwe-St-Pierre, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Apr. 10, 1995, Ser. No. 419,557

Claims priority, application France, Apr. 11, 1994, 94 04354

Int. Cl.[6] B01D *3/10*

U.S. Cl. 203—91 5 Claims



1. A process for the manufacture of 1,1-difluoroethane comprising:

(a) reacting, at a pressure higher than 10 bar, hydrogen fluoride with a chlorinated compound selected from vinyl chloride and 1,1-dichloroethane, to obtain a mixture of reaction products containing 1,1-difluoroethane, hydrogen chloride and unconverted hydrogen fluoride;

(b) distilling said mixture in a column having a top operating at a pressure of 10 bar or less; and

(c) recovering, at the top of said column, a purified stream of 1,1-difluoroethane, said stream containing less than 1 mol % of hydrogen fluoride.

5,626,726

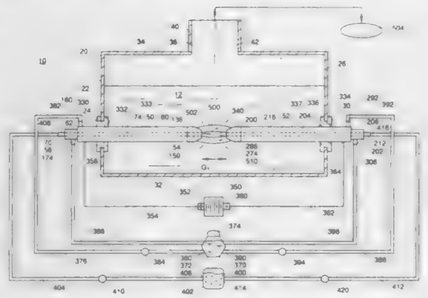
METHOD FOR CRACKING HYDROCARBON COMPOSITIONS USING A SUBMERGED REACTIVE PLASMA SYSTEM

Peter C. Kong, Idaho Falls, Id., assignor to Lockheed Idaho Technologies Company, Idaho Falls, Id.

Filed Sep. 27, 1995, Ser. No. 534,602

Int. Cl.[6] C10G *15/00*

U.S. Cl. 204—172 20 Claims



11. A method for cracking hydrocarbon compositions comprising the steps of:

providing a containment vessel comprising a supply of a liquid hydrocarbon composition therein;

providing an elongate conductive primary electrode and an elongate conductive secondary electrode, said primary electrode comprising an open first end, an open second end, and a gas flow passageway extending continuously through said primary electrode from said first end to said second end, said secondary electrode comprising an open first end, an open second end, and a gas flow passageway extending continuously through said secondary electrode from said first end of said secondary electrode to said second end of said secondary electrode;

positioning said first end of said primary electrode within said liquid hydrocarbon composition so that said first end of said primary electrode is entirely submerged within said hydrocarbon composition inside said containment vessel with said second end of said primary electrode being positioned outside said containment vessel;

positioning said first end of said secondary electrode within said liquid hydrocarbon composition so that said first end of said secondary electrode is entirely submerged within said hydrocarbon composition inside said containment vessel with said second end of said secondary electrode being positioned outside said containment vessel, said first end of said secondary electrode being faced directly opposite to and spaced apart from said first end of said primary electrode in order to form a gap between said primary electrode and said secondary electrode;

applying an electrical potential to said primary electrode and said secondary electrode so that an electrical arc is generated within said gap between said first end of said primary electrode and said first end of said secondary electrode, said electrical arc being entirely submerged within said liquid hydrocarbon composition; and

delivering at least one reactive gas into said passageway through said primary electrode and into said passageway through said secondary electrode, said gas passing out of said open first end of said primary electrode and out of said open first end of said secondary electrode, said gas thereafter coming in contact with said electrical arc within said liquid hydrocarbon composition, said electrical potential applied to said primary electrode and said secondary electrode being sufficient to cause said gas to form a plasma bubble surrounding said arc, said plasma bubble cracking said hydrocarbon composition to produce a cracked hydrocarbon product.

5,626,727

SPUTTERING APPARATUS AND METHOD

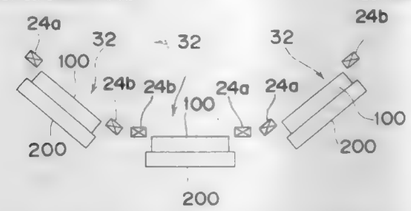
Hitoshi Yamanishi, Higashiosaka; Isamu Aokura, Osaka; Masahide Yokoyama, Hirakata, and Takahiro Takisawa, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Jul. 20, 1995, Ser. No. 504,516

Claims priority, application Japan, Jul. 20, 1994, 6-167800

Int. Cl.[6] C23C *14/35*

U.S. Cl. 204—192.12 21 Claims



1. A sputtering apparatus using a plurality of rectangular targets to form a thin film on a substrate, comprising:

a plurality of magnets disposed along both side edges of each target in such a manner that the polarities of adjacent magnets along the side edges of the target are opposite, and the polarities of the magnets confronting each other across the target are opposite, the surfaces of at least two said targets being inclined to a surface of said substrate at an angle not smaller than 30° and not larger than 60°.

5,626,728

PIEZOELECTRIC LEAD ZIRCONIUM TITANATE DEVICE AND METHOD FOR FORMING SAME

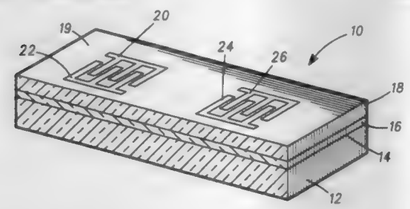
Ed S. Ramakrishnan, and Wei-Yean Howng, both of Albuquerque, N.M., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 57,027, May 5, 1993, Pat. No. 5,338,999.

This application May 27, 1994, Ser. No. 250,214

Int. Cl.[6] C23C *14/34;* B05D *5/12*

U.S. Cl. 204—192.18 11 Claims



6. A method for coating a piezoelectric film onto a silicon substrate, said method comprising

sputtering a lead-free zirconium titanate compound onto the substrate to form a first film having a thickness between about 750 and 2500 Angstroms, said lead-free zirconium titanate compound having the formula

$$Zr_yTi_{1-y}O_4$$

where y is between about 0.3 to 0.65,

annealing the first film by heating at a temperature effective to densify the lead-free zirconium titanate compound,

sputtering a lead zirconium titanate compound onto the annealed first film to form a second film having a thickness between about 2 and 10 microns, said lead zirconate titanate compound having the formula

$$Pb_aM_{1-a}(Zr_bTi_{1-b})O_3$$

where M is a metal selected from the group consisting of lanthanum, niobium, antimony, tungsten, tantalum, barium, strontium, neodymium, and tin and a is between about 0.9 and 1.0 and b is between about 0.5 and 0.7, and

annealing the second film by heating at a temperature effective to produce piezoelectric properties.

5,626,729

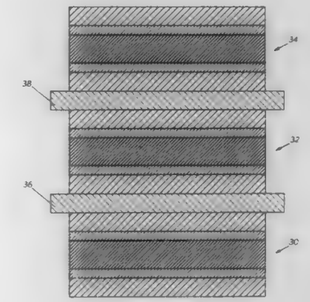
MODIFIED POLYMER ELECTRODES FOR ENERGY STORAGE DEVICES AND METHOD OF MAKING SAME

Lillian C. Thompson, Buffalo Grove; Changming Li, Vernon Hills, and Ke K. Lian, Northbrook, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 1, 1996, Ser. No. 586,618

Int. Cl.[6] C25B *9/00*

U.S. Cl. 204—252 16 Claims



1. An electrode assembly for an electrochemical capacitor device comprising a titanium or stainless steel substrate having a nitride layer formed on a surface thereof, and a layer of polyaniline deposited upon said nitride layer.

5,626,730

ELECTRODE STRUCTURE

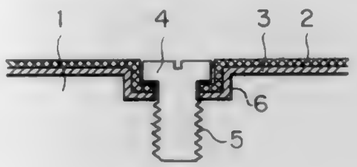
Takayuki Shimamune; Yasuo Nakajima, both of Tokyo, and Yoshiaki Suganuma, Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed May 17, 1995, Ser. No. 442,768

Claims priority, application Japan, May 24, 1994, 6-109710

Int. Cl.[6] C25D *17/12*

U.S. Cl. 204—290 R 12 Claims



1. An electrode structure comprising an electrode substrate, an elastic electrically conductive material, and an electrode which is coated with an electrode material, wherein said elastic electroconductive material is directly disposed between the electrode substrate and the electrode over the entire surfaces thereof and wherein the electrode substrate and the electrode are fixed by a detachable fixing means from the surface of the electrode.

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5,626,731

CATION EXCHANGE MEMBRANES AND METHOD FOR THE PREPARATION OF SUCH MEMBRANES

Graham E. Cooley, Oxon, United Kingdom, and Vincent F. D'Agostino, Dix Hills, N.Y., assignors to National Power PLC, Wiltshire, United Kingdom

Continuation-in-part of Ser. No. 226,825, Apr. 13, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 418,997

Int. Cl.[6] C25B *13/00*

U.S. Cl. 204—296 13 Claims

1. A modified polymeric cation exchange membrane for use in an electrochemical cell, the membrane comprising a polymer matrix and a water insoluble ionic salt of a material selected from the group consisting of silver, tungsten, molybdenum and a mixture thereof deposited within the polymer matrix, the ionic salt being insoluble in electrolytes which, in use, contact either side of the membrane.

5,626,732

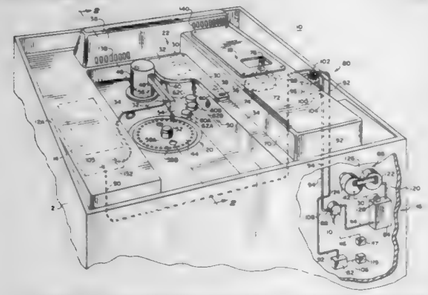
CAPILLARY ELECTROPHORESIS TECHNIQUE

Robert W. Allington, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Continuation of Ser. No. 212,241, Mar. 14, 1994, abandoned, which is a division of Ser. No. 277,566, Nov. 29, 1988, Pat. No. 5,354,440. This application Nov. 21, 1995, Ser. No. 561,552

Int. Cl.[6] G01N *27/26;27/443*

U.S. Cl. 204—453 5 Claims



5. A method of controlling the amount of sample introduced into a separating means by means of a vacuum controlled sample injector comprising the steps of:

creating vacuum pressure in a vacuum chamber in contact with a first end of the separating means;

aspirating sample into a second end of the separating means;

generating a signal representative of the vacuum pressure in said vacuum chamber;

integrating the vacuum pressure in said vacuum chamber wherein an indication is provided of the amount of sample introduced; and

using said indication to control the amount of sample.

5,626,733

PROCESS FOR THE PREPARATION OF KETO COMPOUNDS

Srinivasan Sridhar, Marl, Germany, assignor to Huels Aktienegsellschaft, Marl, Germany

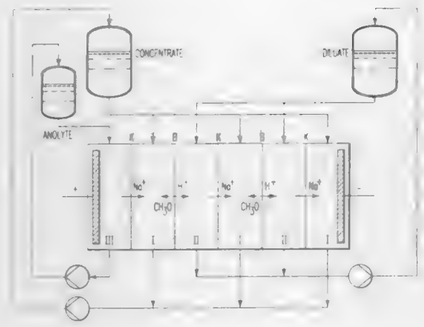
Filed Sep. 22, 1995, Ser. No. 531,589

Claims priority, application Germany, Sep. 22, 1994, 44 33 823.6

Int. Cl.[6] B01D *61/44*

U.S. Cl. 204—529 9 Claims

1. A process for the preparation of keto compounds from alkali metal salts thereof, comprising the step of protonation of said alkali metal salts by electrodialysis in a nonaqueous medium



without the addition of acid and removing the alkali metal ion to form the keto compound.

5,626,734

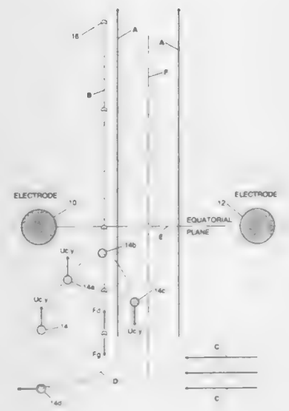
FILTER FOR PERFUSION CULTURES OF ANIMAL CELLS AND THE LIKE

Aristides Docoslis, Buffalo; Nicolas Kalogerakis, Clarence, both of N.Y.; Leo A. Behie, and Karan V. I. S. Kaler, both of Calgary, Canada, assignors to University Technologies International, Inc., Calgary, Canada

Filed Aug. 18, 1995, Ser. No. 516,698

Int. Cl.[6] C25B *1/00;7/00;* G01N *27/26*

U.S. Cl. 204—547 24 Claims



17. A method for filtering target particles from a fluid contained in a bioreactor, the method comprising the steps of:

pumping fluid from the container into a conduit through an opening in the conduit;

moving fluid in the container in a direction that includes a component of flow parallel to the opening to sweep material away from the opening; and

applying a negative dielectrophoretic force to target particles at the opening, the negative dielectrophoretic force having sufficient strength to prevent the target particles from entering the conduit.

5,626,735

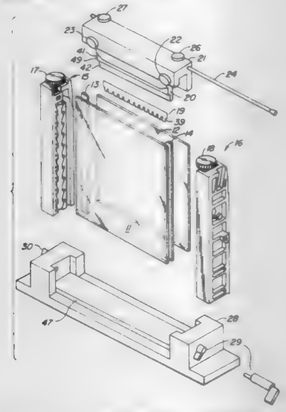
ELECTROPHORESIS SLAB GEL ENCLOSURE FOR GRADIENT GELS

Daniel Y. Chu, San Francisco, Calif., assignor to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed May 26, 1994, Ser. No. 249,566

Int. Cl.[6] C25B *9/00*

U.S. Cl. 204—606 6 Claims



1. An enclosure for a slab gel for electrophoretic separations, comprising:

first and second plates, each with four edges defined as two opposing side edges, a top edge and a bottom edge;

first and second spacer strips for placement between said plates to define an open space for said slab gel;

a first aperture in a longitudinal edge of said first spacer strip at a location displaced from either end thereof, a second aperture in said first spacer strip at a location other than said longitudinal edge and closer to one end of said first spacer strip, means for communicating said second aperture with a supply of gel-forming liquid, and a channel in said first spacer strip communicating said first aperture with said second aperture; and

clamping means for clamping said first and second plates together with said first and second spacer strips in between.

5,626,736

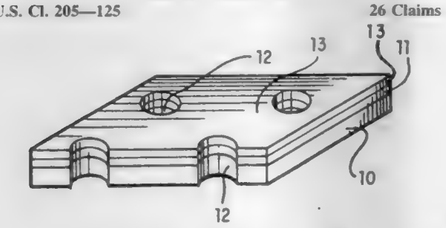
ELECTROPLATING PROCESS

Steven M. Florio, Hopkinton; Jeffrey P. Burress, Milford; Carl J. Colangelo, New Bedford; Edward C. Couble, Brockton, and Mark J. Kapeckas, Worcester, all of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Filed Jan. 19, 1996, Ser. No. 589,048

Int. Cl.[6] C25D *5/02*

U.S. Cl. 205—125 26 Claims



1. A process for depositing metal on the walls of openings passing through a copper clad non-metallic planar substrate, said process comprising the steps of forming a sacrificial coating over said copper cladding, without removing the sacrificial coating, providing a dispersion of carbonaceous particles in an aqueous medium and contacting said substrate having said openings with said dispersion to form a porous coating of said carbonaceous dispersion over the surfaces of said substrate including said sacrificial coating over the copper cladding, removing said carbonaceous coating from the copper cladding by contacting the substrate with an etchant that dissolves said sacrificial coating preferentially to the copper cladding, and plating metal on at least those portions of said substrate coated with said carbonaceous coating from an electrolytic metal plating solution.

5,626,737

METHOD OF FABRICATING A HIGH POWER DENSITY ELECTROCHEMICAL CHARGE STORAGE DEVICE

Gretchen E. Fougere, Glencoe; Han Wu, Barrington, and Ke K. Lian, Northbrook, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1996, Ser. No. 611,319

Int. Cl.[6] C25D *9/00*

U.S. Cl. 205—316 11 Claims

1. A method of activating an electrode for a high power density charge storage device, said method comprising the steps of:

providing an electrode consisting of nickel-chromium-molybdenum based alloy material;

immersing said electrode in an ionic conducting solution for forming an oxide layer on the surface of said electrode; and

passing a current through said electrode.

5,626,738

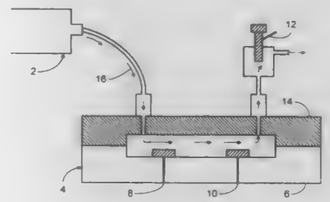
METHODS FOR THE SEPARATION AND DETECTION OF NITROSOTHIOLS

John P. Richie, Yorktown Hts., N.Y., assignor to American Health Foundation, Valhalla, N.Y.

Filed Nov. 17, 1995, Ser. No. 560,341

Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—444 21 Claims



1. A method for detecting a nitrosothiol in an eluant comprising a) passing the eluant through a series of electrodes comprising an upstream working electrode and a downstream working electrode, the upstream working electrode being maintained at a potential adequate to reduce said nitrosothiol to a corresponding thiol, said downstream electrode being maintained at a potential to detect said corresponding thiol, and b) detecting said correspond thiol.

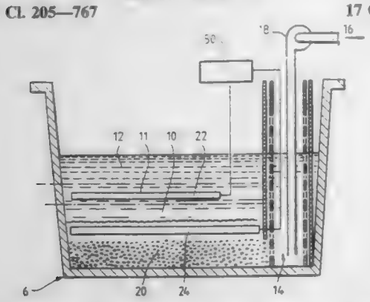
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ELECTROKINETIC LEACHING

Colin J. Burns, 11 Hollywood Court, Bendigo, Victoria, Australia, and David J. Wright, 2 Peg Leg Road, Eagle Hawke, Victoria, Australia

PCT No. PCT/AU93/00318, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/00608, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 29, 1993, Ser. No. 360,781
Claims priority, application Australia, Jun. 29, 1992, PL3205
Int. Cl.[6] C25C *1/00*
U.S. Cl. 205—767 17 Claims



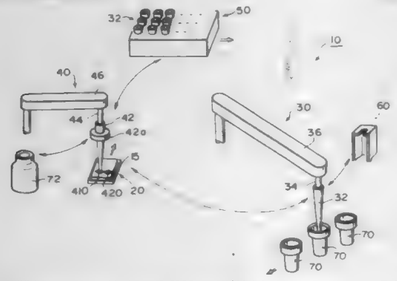
1. A method of treating a solid material containing a substance of economic importance to recover or extract the substance from the material, said method comprising forming a conducting mixture of the solid with a liquid so that at least some of the substance of economic importance is dissolved in the liquid, said liquid being at least partially conducting, applying an electrical potential difference between at least two electrodes in contact with the mixture at spaced apart locations so as to impart opposite charges to the respective electrodes thereby attracting the liquid containing the dissolved substance to one of the electrodes, removing the attracted liquid from an area surrounding or from a vicinity of the one electrode, and treating the removed liquid containing the substance of economic importance so as to recover or extract the substance.

5,626,740

METHOD OF AND APPARATUS FOR MEASURING ELECTROLYTE

Shunichi Seto, Kanagawa-ken; Kenichiro Yazawa, and Osamu Seshimoto, both of Saitama-ken, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Continuation of Ser. No. 305,027, Sep. 13, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 587,249
Claims priority, application Japan, Sep. 14, 1993, 5-228415
Int. Cl.[6] G01N *27/26*
U.S. Cl. 205—789 9 Claims



1. A method for measuring electrolyte for determining an activity of particular chosen ions in a sample liquid by use of a device for measuring ionic activity comprising an ion-selective electrode pair consisting of a pair of ion-selective electrodes which are selectively responsive to the same particular chosen ions, a pair of spotting holes through which a sample liquid and a reference liquid are respectively supplied to the ion-selective electrodes and a porous bridge which communicates the spotting holes with each other to permit the sample liquid and the reference liquid spotted to the spotting holes to electrically contact with each other, the method comprising the steps of

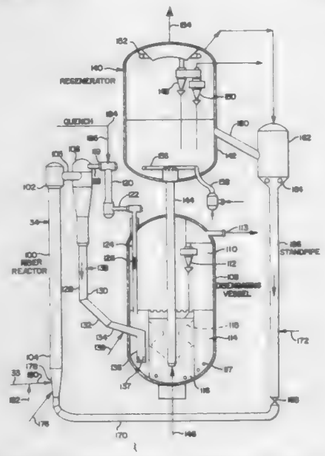
spotting one of the sample liquid and the reference liquid to one of the spotting holes of the device for measuring ionic activity with a first spotting tool, thereafter moving at least one of the first spotting tool and the device for measuring ionic activity to remove the first spotting tool away from the device for measuring ionic activity, and then spotting the other of the sample liquid and the reference liquid to the other spotting hole of the device for measuring ionic activity with a second spotting tool within a chosen time after said one of the sample liquid and the reference liquid is spotted to said one of the spotting holes wherein the chosen time is set such that the lower limit thereof is the minimum time required to remove one spotting means away from its spotting position and to subsequently move the other spotting means to its spotting position, and the upper limit is determined based on the type of device used for measuring ionic activity.

5,626,741

CATALYTIC CRACKING WITH QUENCHING

James F. Mosby, Burr Ridge; F. William Hauschildt, Naperville; George P. Quinn, Winfield; Douglas N. Rundell, Glen Ellyn; John G. Schwartz, Naperville; Mark S. Camp, LaGrange Park, and John M. Forgac, Elmhurst, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 756,312, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 499,163, Mar. 26, 1990, abandoned. This application Dec. 14, 1995, Ser. No. 572,087
Int. Cl.[6] C10G *11/00*
U.S. Cl. 208—113 23 Claims



1. A catalytic cracking process, comprising the steps of:

catalytically cracking feed oil in a reactor of a catalytic cracking unit in the presence of a cracking catalyst to produce a catalytically cracked effluent product stream of upgraded oil containing particulates of spent coked cracking catalyst in a catalytic cracking reactor selected from the group consisting of a riser reactor and a fluidized bed reactor;

substantially separating said catalytically cracked effluent product stream in a gross-cut separator spaced downstream of said catalytic cracking reactor into a catalyst lean stream of vaporized upgraded oil and a catalyst-laden oil-lean stream of spent cracking catalyst, passing said catalyst lean stream of vaporized upgraded oil through an oil outlet of the gross-cut separator, discharging said catalyst-laden oil-lean stream of spent cracking catalyst substantially downwardly through a catalyst outlet of an elongated dipleg of said gross-cut separator substantially below said oil outlet of said gross-cut separator into a dense catalyst bed in a lower portion of a disengaging vessel, said dense catalyst bed being at an elevation substantially below said oil outlet of said gross-cut separator; and

quenching said catalyst lean stream of upgraded oil by spraying said upgraded oil with an anhydrous quench, said anhydrous quench being sprayed adjacent to said oil outlet of said gross-cut separator in an open area located externally and downstream of said reactor, said anhydrous quench being introduced and sprayed at a location substantially spaced above said dipleg of said gross-cut separator, said spraying comprising injecting said quench generally downwardly towards said oil outlet of said gross-cut separator at an elevation substantially above said dense catalyst bed of said disengaging vessel, said quench comprising at least one member selected from the group consisting of light catalytic cycle oil, heavy catalytic cycle oil, kerosene, coker distillate, hydrotreated distillate, and virgin gas oil to decrease the temperature of said catalyst lean stream of upgraded oil by a temperature of from about 30° F. to about 200° F. and substantially minimize thermal cracking of said product stream to less valuable hydrocarbon products and light hydrocarbon gases.

5,626,742

CONTINUOUS IN-SITU PROCESS FOR UPGRADING HEAVY OIL USING AQUEOUS BASE

Glen Brons, Phillipsburg, N.J., and Ronald D. Myers, Calgary, Canada, assignors to Exxon Reseach & Engineering Company, Florham Park, N.J.

Filed May 2, 1995, Ser. No. 433,912
Int. Cl.[6] C10G *19/08;29/00;45/02*
U.S. Cl. 208—235 5 Claims

1. A continuous in-situ process for the removal of organically bound sulfur in a heavy oil existing as mercaptans, sulfides and thiophenes, heteroatoms selected from the group consisting of oxygen and nitrogen and metals selected from the group consisting of iron, nickel, vanadium and mixtures thereof, comprising the steps of:

(a) contacting a heavy oil with aqueous sodium hydroxide at a temperature of about 380° to about 450° C. for a time sufficient to form sodium sulfide;

(b) steam stripping the sodium sulfide of step (a) at a temperature of about 380° C. to about 425° C. sufficient to convert said sodium sulfide to sodium hydroxide, hydrogen sulfide and metals; and

(c) recirculating said sodium hydroxide from step (b) to step (a) and removing said hydrogen sulfide and said metals.

5,626,743

TAR SANDS EXTRACTION PROCESS

Reginald D. Humphreys, Edmonton, Canada, assignor to Geopetrol Equipment Ltd., Edmonton, Canada

Continuation-in-part of Ser. No. 317,482, Oct. 4, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,667
Claims priority, application Canada, Nov. 4, 1994, 2135120
Int. Cl.[6] C10G *1/04*
U.S. Cl. 208—391 22 Claims

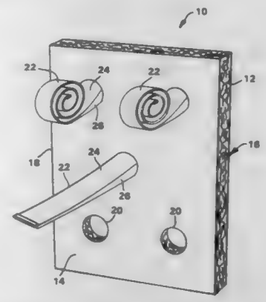
1. A process for extraction of bitumen from tar sand comprising providing a slurry comprising the tar sand and a solution of hot water and a conditioning agent selected from the group consisting of sodium bicarbonate, potassium bicarbonate and a combination thereof, wherein the slurry contains conditioning agent in an amount of between at least about 0.012% and 0.420% by weight of the slurry; and the slurry includes the solution and the tar sand in a ratio of 0.5:1 to 5:1 by weight; mixing and aerating the slurry to form a froth containing bitumen within the slurry; separating the froth from the slurry.

5,626,744

PRESSURE SENSITIVE EXTENDED LIFE FILTER

Joseph G. Neuwirth, Gainesville, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 31, 1995, Ser. No. 414,820
Int. Cl.[6] B01D *33/00*
U.S. Cl. 210—97 21 Claims



1. A device adapted to remove particulates from a fluid passed through the device, the device comprising:

a porous filtration medium defining at least one orifice through said planar portion, the planar portion comprising:

a first surface being arranged to receive unfiltered fluid for passage through the medium;

a second surface from which the fluid exits the medium the medium also comprising;

a respective spirally wound tubular portion having an area and configured about each of the at least one orifice; and

wherein each of the at least one spirally wound tubular portion is adapted to unwind and extend from the second surface in response to a fluid pressure differential between the first surface and the second surface; and

whereby the device is adapted to variably increase the area of the at least one tubular portion in response to an increase in the differential in fluid pressure between the first surface and the second surface.

5,626,745

WASTE WATER PURIFICATION SYSTEM

Jay M. Hawkinson, Coal Valley, Ill., assignor to Water Recycling Systems, Inc., Coal Valley, Ill.

Continuation of Ser. No. 329,839, Oct. 27, 1994, abandoned. This application Dec. 1, 1995, Ser. No. 566,372
Int. Cl.[6] C02F *1/78;* B01D *36/04*
U.S. Cl. 210—101 11 Claims

1. Apparatus for treating waste water comprising:

a) a plurality of serially interconnected tanks, each tank having a baffle means;

b) a first one of said tanks having an inlet for waste water;

c) a source of ozone purified water, including intake of water and a pump outlet having ozonated water, the intake and outlet of said source connected to a third one of said tanks;

d) a plurality of filters for removing impurities from ozonated waste water to produce a partially filtered water;

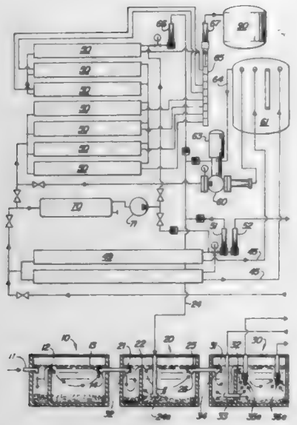
e) a plurality of pumps for forcing ozonated waste water through said filters;

f) a tank for holding partially filtered ozonated waste water;

g) a plurality of control means connected to said pumps;

h) a tank for holding environmentally approved recycled water;

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i) conduit connecting ozonated waste water in said third tank to a first one of said pumps;

j) conduit serially connecting said pumps, the filters and the filter output of said filters to each other and to said holding tank for said environmentally approved recycled purified water; and

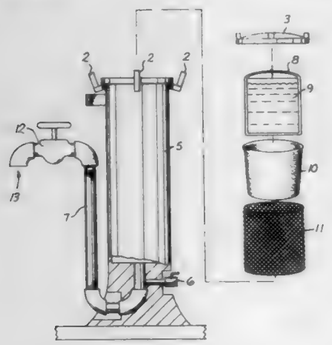
k) conduit delivering partially filtered water from certain of said filters to a second one of said tanks immediately upstream of said third tank; whereby purified water is delivered to said holding tank.

5,626,746

FILTERING DEVICE CONTAINING CHEMICAL ENCAPSULATION FILTER AND SIZE DISCRIMINATING FILTER

William C. Rose, 6911 Harewood Park Dr., Baltimore, Md. 21220

Filed Jul. 25, 1995, Ser. No. 506,817
Int. Cl.[6] B01D *17/12;36/00*
U.S. Cl. 210—109 **8 Claims**



1. A liquid treatment device, comprising: means for removing contaminants from a liquid and chemically bonding said removed contaminates to a media;

means for size discriminating contaminants from said liquid;

means for supporting said means for size discriminating;

means for housing said removing and chemically bonding means, said size discriminating means and said supporting means, said means for housing defining a chamber; and

means for controlling the level of said liquid in said chamber so as to control the time the treatment of said liquid in said housing means.

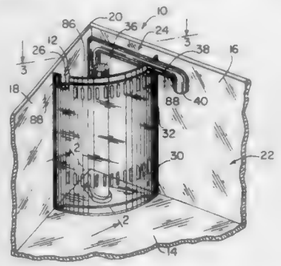
8. A liquid treatment device, as recited in claim 1, wherein said means for controlling the level of said liquid is a level control pipe and a vacuum break connected thereto.

5,626,747

AQUARIUM OVERFLOW FILTER SYSTEM HAVING A PRE-OVERFLOW WALL

Gerald R. Ritzow, Franklin; Denis A. Dann, Milwaukee, and Kenneth K. Leis, Waukesha, all of Wis., assignors to All-Glass Aquarium Co., Inc., Franklin, Wis.

Filed Dec. 1, 1995, Ser. No. 566,138
Int. Cl.[6] A01K *63/04*
U.S. Cl. 210—169 **14 Claims**



1. An aquarium having an overflow filter system comprising:

a tank having an overflow wall that separates the tank into a main aquarium region and a filter intake region;

a filter intake located within the filter intake region;

a filter that receives water passing through the filter intake from the filter intake region;

a filtered water return tube that returns filtered water to the main aquarium region; and

a pre-overflow wall located outside the filter intake region and encasing at least part of the overflow wall to form a mixing chamber therebetween, the pre-overflow wall having one or more openings that allow water from the main region of the aquarium tank to flow through the pre-overflow wall into the mixing chamber;

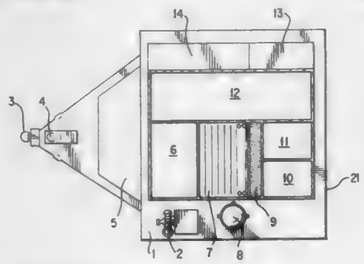
wherein water flows from the mixing chamber over the overflow wall into the filter intake region.

5,626,748

LIQUID SEPARATOR

William C. Rose, 6911 Harewood Rd., Baltimore, Md. 21220

Filed Apr. 27, 1995, Ser. No. 429,684
Int. Cl.[6] C02F *1/40*
U.S. Cl. 210—241 **2 Claims**



1. A liquid separating device, comprising:

a vertical plate separator for separating positively and negatively buoyant contaminants from a liquid;

a vertical coalescing tank containing a vertical coalescing bundle for separating neutrally buoyant contaminants from said liquid attached to and downstream from said vertical plate separator;

a skimmer tube connected to said vertical coalescing tank for removing neutrally buoyant material from said vertical coalescing tank;

a bag filter for discriminating contaminants by size from said liquid attached to and downstream from said vertical coalescing tank;

a hydrocarbon encapsulation tank containing a hydrocarbon bonding media for removing hydrocarbons from said liquid attached to and downstream from said bag filter; and

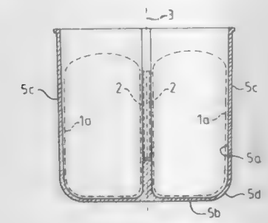
a heavy metals bonding tank containing a heavy metal bonding media for removing heavy metals from said liquid attached to and downstream from said hydrocarbon encapsulation tank.

5,626,749

APPARATUS FOR CENTRIFUGING OF A LIQUID PACKAGED IN FLEXIBLE-WALLED BAGS CONNECTED TO AT LEAST ONE FILTER

Roland J. L. R. Lambert, Reze, and Jean-Claude C. M. Letourneur, Pornichet, both of France, assignors to Jouan (societe anonyme), Saint-Nazaire, France

Filed Nov. 21, 1994, Ser. No. 345,437
Claims priority, application France, Nov. 23, 1993, 93 14003
Int. Cl.[6] B01D *21/26;35/02*
U.S. Cl. 210—257.1 **9 Claims**



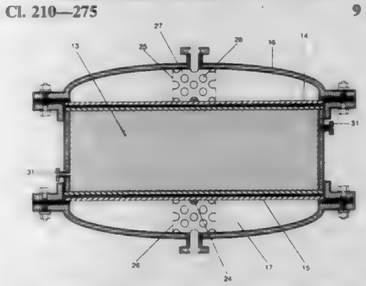
1. A device for treatment by centrifuging of a liquid package in a plurality of flexible-walled bags which are connected via a flexible tube to at least one filter of substantially flat shape with opposite faces, according to which the bags are placed, with the filter, in a confinement space which is rotated about a central rotation axis passing through said space, wherein said at least one filter is placed in said faces of said at least one filter parallel to said central rotation axis, and said bags are respectively placed on said opposite faces of said at least one filter in said device and including a centrifuging support container having an open side constructed and arranged to be driven in rotation at high speed about said central rotation axis, and which defines said confinement space, wherein the support includes means for supporting and positioning at least one filter and for constituting with the latter a partition of plane general shape, passed through substantially in its mid-plane by said central rotation axis and subdividing the internal volume of the support into two compartments constructed and arranged to contain said bags.

5,626,750

APPARATUS FOR TREATING A FLUID IN AN ION EXCHANGE PROCESS

Alan F. Chinn, Mississauga, Canada, assignor to Drake Recovery Systems, Inc., Burlington, Canada

Filed Jul. 26, 1995, Ser. No. 507,208
Int. Cl.[6] B01D *24/02;24/12;24/14;24/46*
U.S. Cl. 210—275 **9 Claims**



1. An apparatus for treating a fluid to remove at least part of a component or components from the fluid in a reciprocating flow ion exchange system, the apparatus comprising:

an enclosed vessel having a central holding chamber that contains a packed bed of ion exchange particles, said ion exchange particles capable of taking up said component from said solution and capable of being regenerated in situ;

upper and lower retaining means disposed within said vessel to confine said bed of ion exchange particles within said central holding chamber in a substantially flat configuration, said enclosed vessel having a cavity free of said ion exchange particles above said upper retaining means and below said lower retaining means, each of said particle-free cavities being in communication with at least one end port extending through said vessel for introducing or removing fluid from said vessel; and,

upper and lower support means disposed within said vessel adjacent to said upper and lower retaining means, for maintaining said upper and lower retaining means in place, and also for maintaining said packed bed of ion exchange particles in said substantially flat configuration, said upper and lower support means comprising support columns in the form of pipes having perforations through their walls, said pipes aligning with said end ports such that when fluid is introduced into said vessel through said and ports said fluid passes through said perforations in said pipes and into said particle-free cavities, said pipes not substantially restricting the flow of fluid through said vessel.

5,626,751

FILTER UNIT AND HIGH-PRESSURE SIZING APPARATUS

Hiroshi Kikuchi; Hitoshi Yamauchi, both of Tokyo; Kiyoto Yachi, Chiba; Hiroshi Honda, Matsudo; Norio Suzuki, Chiba; Akinori Hoshio, and Takazo Hirose, both of Kanagawa-ken, all of Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo; Nomura Micro Science Co., Ltd., Kanagawa-ken, and NOF Corporation, Tokyo, all of Japan

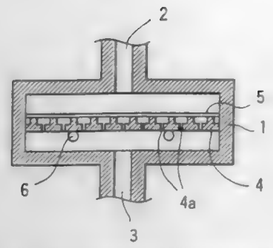
Filed Jul. 15, 1993, Ser. No. 91,714
Claims priority, application Japan, Jul. 15, 1992, 4-187905; Jul. 15, 1992, 4-187911; Aug. 25, 1992, 4-225645
Int. Cl.[6] B01D *63/00;29/05;35/30*
U.S. Cl. 210—321.75 **14 Claims**

5. A high-pressure sizing apparatus comprising:

a sealed chamber comprising a first pressureproof housing comprising a sealing part and a second pressureproof housing comprising a sealing part, each said sealing part comprising an opposed surface in close contact;

a filter unit set in an area proximate to each said sealing part of said sealed chamber, and adapted to partition an inner empty

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space into a first pressureproof housing area and a second pressureproof housing area;

an inlet communicating with said first pressureproof housing area partitioned by said filter unit for introducing a substance for treatment by sizing under pressure into said sealed chamber;

an outlet communicating to said second pressureproof housing area partitioned by said filter unit for discharging the substance after sizing from said sealed chamber; and

temperature controlling means disposed on an outer surface of said first pressureproof housing for controlling temperature of said substance being introduced for treatment,

wherein said filter unit comprises:

a pressureproof supporting means for supporting a supporting plate comprising orifices, said orifices comprising openings with a larger diameter in one surface and openings with a smaller diameter in another surface; and

a membrane filter disposed on said surface of said supporting plate comprising larger-diameter openings in said first pressureproof housing area.

5,626,752

DEVICE FOR SEPARATING BIOLOGIC-ORGANIC FLOW MEDIA WITH FILTER ELEMENTS IN THE FORM OF MEMBRANE CUSHIONS

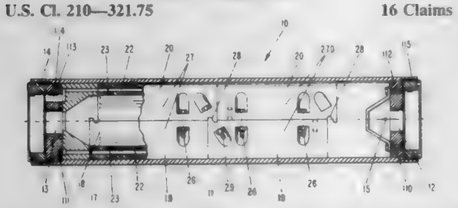
Jürgen Mohn, Reinbek; Wilhelm Heine, Hamburg; Robert Rautenbach, Sprockhövel; Rainer Mellis, and Klaus Vossenkaul, both of Aachen, all of Germany, assignors to DT Membranfilter Vertriebs GmbH, Hamburg, Germany

Filed Oct. 20, 1995, Ser. No. 546,178

Claims priority, application Germany, Oct. 21, 1994, 9416938 U; Nov. 9, 1994, 44 39 982.0

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.75 **16 Claims**



1. A device for filtering and separating a flow medium by one of the methods selected from the group consisting of reverse osmosis, microfiltration, ultrafiltration, and nanofiltration, said device comprising:

a pressure-tight housing having an inlet for the flow medium and a first outlet for the retentate and a second outlet for the permeate;

a plurality of stacked units comprised of spaced apart membrane filter elements, wherein said membrane filter elements are stacked atop one another to form a stack;

said stacked units sequentially arranged in said housing, wherein the flow medium flows in sequence through said stacked units;

wherein each one of said membrane filter elements comprises a first and a second areal outer membrane elements and an inner areal stabilizing element positioned between said first and said second areal outer membrane elements;

wherein for spacing said stacked membrane filter elements strip-shaped spacer elements are provided between neighboring ones of said membrane filter elements; and

wherein each one of said stacked units further comprises a receptacle consisting of two receptacle parts for enclosing said stack of said membrane filter elements, said receptacle parts having a substantially semi-circular outer contour.

5,626,753

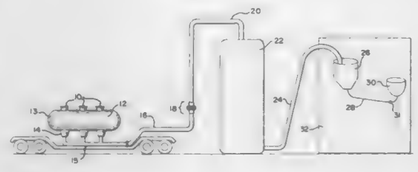
SYSTEM AND METHOD FOR THE TRANSPORT OF LIME

David Zenere, 700 E. Joe Orr Rd., Chicago Heights, Ill. 60411

Continuation of Ser. No. 398,390, Mar. 3, 1995, abandoned. This application Jun. 12, 1996, Ser. No. 662,818

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—445 **7 Claims**



1. A method for transporting dry lime from a movable carrier to a processing pot in a steel mill and preventing contaminants that could damage components of the steel mill from being transported with the lime, said method comprising:

transporting dry lime from the movable carrier through a tubing in which a filter is positioned to exclude the contaminants commonly present in lime, said filter comprising a plurality of openings sized and positioned to allow passage of the lime and to exclude contaminants of a size larger than the size of the opening;

wherein said filter is reinforced at least on a portion of the perimeter of selected openings of said plurality of openings, said reinforcements comprised of material resistant to corrosion by lime; and

transporting the filtered dry lime to the processing pot in a steel mill.

5,626,754

APPARATUS AND PROCESS FOR BIOLOGICAL WASTEWATER TREATMENT WITH CONTROLLED ADDITION OF CARBONACEOUS ORGANIC SUBSTRATES IN THE ANOXIC PHASE

Wilhelm Ballnus, Finkenschlag, Germany, assignor to Schreiber Corporation, Trussville, Ala.

Filed Jul. 10, 1995, Ser. No. 500,398

Claims priority, application Germany, Jul. 8, 1994, 44 24 298.0

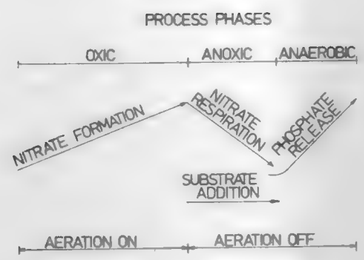
Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 **4 Claims**

1. An activated sludge process for biological wastewater treatment wherein oxic, anoxic, and anaerobic process phases are controlled sequentially over the entire volume of a single tank reactor for the treatment of the wastewater, the process comprising:

a) supplying oxygen containing gas to the wastewater to initiate an oxic reaction;

b) stopping the supply of oxygen containing gas to the wastewater and initiating an anoxic reaction;



c) adding a carbonaceous organic substrate or its corresponding salt to the activated sludge tank for denitrification of nitrate at the end of the oxic process phase when the aeration is stopped;

d) continuing the addition of carbonaceous substrate or its corresponding salt during the anoxic phase;

e) detecting phosphate release in the wastewater; and

f) stopping the addition of carbonaceous organic substrate or its corresponding salt when phosphate release is detected.

5,626,755

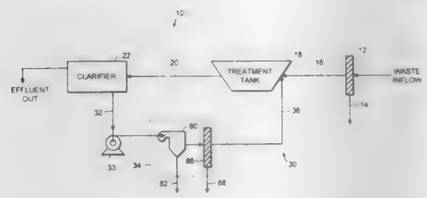
METHOD AND APPARATUS FOR WASTE DIGESTION USING MULTIPLE BIOLOGICAL PROCESSES

Gene E. Keyser, Jacksonville, and Don M. Holcombe, Orange Park, both of Fla., assignors to Micronair, Inc., Jacksonville, Fla.

Filed Nov. 8, 1995, Ser. No. 555,153

Int. Cl.[6] C02F *3/30;3/20*

U.S. Cl. 210—614 **24 Claims**



1. A method of treating liquid-borne waste containing at least two different types of waste-digestive microorganism, the different types of microorganism requiring mutually incompatible chemical environments and comprising an aerobic and a non-aerobic species, the method comprising:

a. introducing the waste into a treatment vessel having a bottom region;

b. continuously introducing a supply of micronized air bubbles into the bottom region of the waste-containing treatment vessel, the continuous supply of air bubbles corresponding to a quantity of introduced air thereby creating in the bottom region an aerobic zone compatible with and containing the aerobic species;

c. controlling the quantity of introduced air and the degree of agitation of the waste so as to produce in the waste at least one distinct non-aerobic zone vertically adjacent to the aerobic zone having a chemical environment compatible with and containing the non-aerobic species, thereby effecting biodegradation of the waste.

5,626,756

PROCESS FOR FRACTIONATING AND REFINING NATURAL LIPID SUBSTANCES

Jürgen Heidlas, Trostberg, and Georg Huber, Altenmarkt, both of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Germany

Filed Dec. 27, 1995, Ser. No. 578,077

Claims priority, application Germany, Dec. 29, 1994, 44 47 116.5

Int. Cl.[6] B01D *11/00*

U.S. Cl. 210—634 **11 Claims**

1. A process for fractionating and/or refining a natural lipid substance, comprising:

extracting the natural substance, which is in a liquid form, by contacting the natural substance with a liquid mixture of 50 to 90% by weight propane and 10 to 50% by weight carbon dioxide which is in a subcritical state with respect to temperature and pressure.

5,626,757

MACROCYCLIC ANTIBIOTICS AS SEPARATION AGENTS

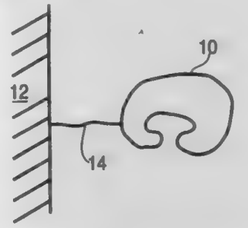
Daniel Armstrong, Rolla, Mo., assignor to Advanced Separation Technologies Inc., Whippany, N.J.

PCT No. PCT/US95/02071, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO95/22390, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 17, 1995, Ser. No. 532,581

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—635 **10 Claims**



1. A process for sequentially separating enantiomers from a fluid solution containing said enaantiomers comprising the steps of:

(a) treating a fluid containing said enantiomers with a macrocyclic antibiotic by means of chromatography to cause said enantiomers to sequentially separate one from another, said macrocyclic antiobiotic being a glycopeptide, a glycopeptide derivative, an ansamacrolide or an ansamacrolide derivative, said macrocyclic antibiotic is affixed to a support such that said macrocyclic antibiotic is a stationary phase, said macrocyclic antibiotic interacting with said enantiomers to cause sequential separation by means of more than one of the follfowing mechanisms: complexation, charge-charge interaction, hydrogen bonding, inclusion in a hydrophobic pocket, dipole stacking, and steric interaction; and

(b) recovering the sequentially separated enantiomers as individual enantiomers.

5,626,758

COILED MEMBRANE FILTRATION SYSTEM

Georges Belfort, Slingerlands, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

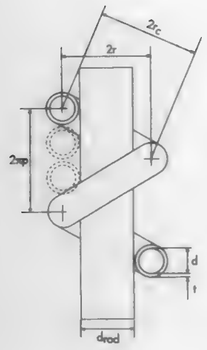
Filed Aug. 8, 1995, Ser. No. 512,567

Int. Cl.[6] B01D *69/04*

U.S. Cl. 210—636 **13 Claims**

1. A method of defouling and depolarizing an inner surface of a hollow curved tubular membrane which comprises:

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moving a fluid containing a component selected from the group consisting of a solute, solid particles and a mixture of a solute and solid particles to produce Dean vorticies in the fluid which move across said inner surface of said tubular membrane.

5,626,759

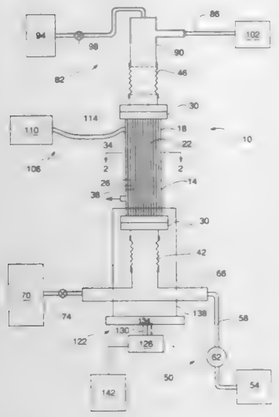
BLOOD TREATMENT DEVICE WITH MOVING MEMBRANE

William B. Krantz, Boulder, Colo.; Robert R. Bilodeau, Old Towne, Me.; Roger J. Elgas, Lakewood, and Marc E. Voorhees, Arvada, both of Colo., assignors to Regents of the University of Colorado, Boulder, Colo.

Filed Aug. 1, 1994, Ser. No. 284,057

Int. Cl.[6] A61M *1/14;* **B01D** *61/00;* **C02F** *1/44*

U.S. Cl. 210—645 **40 Claims**



1. A method for affecting mass transfer between a fluid and blood, comprising the steps of:

separating a flow of blood and a flow of fluid with a membrane;

moving an entirety of said membrane relative to at least one mass transfer boundary layer associated with at least one of the flow of blood and the flow of fluid in a direction which is substantially parallel with a primary direction of at least one of the flow of blood and the flow of fluid; and

transferring at least one component of at least one of the blood and the fluid through said membrane.

5,626,760

MULTIFUNCTION DEVICE FOR THE TREATMENT OF BLOOD

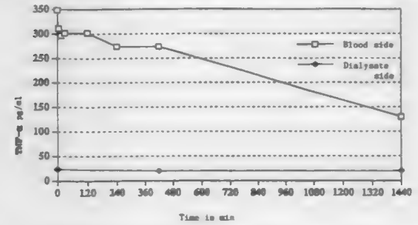
Dominique Pouchoulin, Tramoyes, France, assignor to Hospal Industries (S.A.), Meyzieu Cedex, France

Filed Jun. 6, 1995, Ser. No. 466,687

Claims priority, application France, Jun. 20, 1994, 94 07752

Int. Cl.[6] B01D *61/00;63/00*

U.S. Cl. 210—645 **29 Claims**



1. A multifunction device for extrarenal purification by extracorporeal circulation of blood, comprising a semipermeable separator component, wherein

a) the separator component is active in adsorption and has at least one of the adsorption capacities below:

a1: adsorption of the TNF-α greater than or equal to approximately 600 ng;

a2: adsorption of the complement factor D greater than or equal to approximately 30 mg;

a3: adsorption of interleukin 1-β greater than or equal to approximately 300 ng;

b) the separator component has a urea clearance greater than or equal to approximately 20 ml/min for rates of blood flow, of dialysis liquid flow and of ultrafiltration equal respectively to approximately 100 ml/min, 33 ml/min and 0 m/min;

c) the separator component has an ultrafiltration coefficient in the presence of blood greater than approximately 5 ml/(h.mmHg); and

d) the device contains a compartment for circulation of blood having a volume less than or equal to approximately 150 ml.

21. A process for extrarenal purification by extracorporeal circulation of blood, comprising subjecting blood of a patient to circulation in a device in accordance with claim **1**.

5,626,761

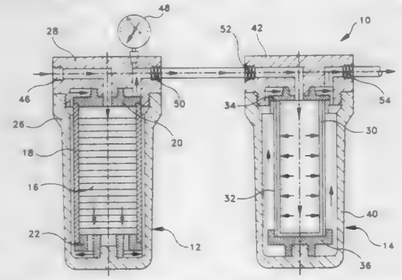
CHEMICAL AND PARTICULATE FILTRATION SYSTEM/APPARATUS

Kenneth A. Howery, Martinsville, and John W. Howery, South Orange, both of N.J., assignors to Poly-Bio-Marine, Inc., South Orange, N.J.

Filed Dec. 17, 1993, Ser. No. 169,668

Int. Cl.[6] B01D *61/00*

U.S. Cl. 210—651 **16 Claims**



10. A high flow rate filtration method for removal of organic and inorganic solutes and particulate comprising:

contacting a liquid to be filtered in sequential single-pass, non-recirculating reverse flow with:

a first filtration unit arranged for passage of said liquid to be filtered, said first unit having a molecular absorption filter media, wherein said liquid flows through said molecular absorption filter media from a defined input chamber in a diffused flow path to an output chamber; and

a second filtration unit arranged downstream from and connected for fluid flow with said first unit, said second unit having a submicron filter media, wherein said liquid from said first unit flows from a defined input chamber through said submicron filter media in a diffused flow path to an output chamber whereby organic and inorganic solutes having a particle size of less than 0.1 micron aggregate into particles having a size of at least 0.1 micron for removal as particulate;

wherein said molecular absorption filter media comprises a material formed from a composition consisting of 48 to 62 weight percent water; 10 to 18 weight percent of an aqueous solution containing 70 weight percent of a polymer consisting essentially of 60–95 weight percent of at least one alkylacrylate or alkylmethacrylate and 5–40 weight percent acrylic acid; 14 to 22 weight percent of a forty percent by weight solids, prepolymer solution; 2.5 to 7.2 weight percent of a 3 percent by volume ammonia solution, and 3.5 to 7.2 weight percent of an epoxy resin.

5,626,762

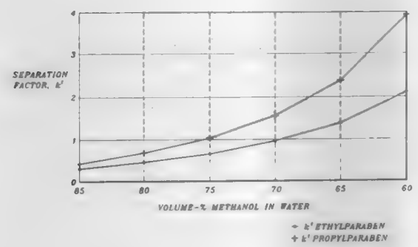
SEPARATIONS BY SIMULATED MOVING BED CHROMATOGRAPHY OPERATING AT LOW K' VALUES USING WEAKLY INTERATING ADSORBENTS AS THE STATIONARY PHASE

James W. Priegnitz, Elgin, and Beth McCulloch, Clarendon Hills, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 387,984, Feb. 13, 1995, Pat. No. 5,518,625. This application Dec. 18, 1995, Ser. No. 573,977

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—659 **3 Claims**



1. In a process for the separation of at least one material from a mixture of organic materials by simulated moving bed chromatography using a weakly interacting adsorbent as a solid stationary phase, said adsorbent selected from the group consisting of silica, alumina, titania, magnesia, and layered double hydroxides, the improvement comprising effecting said separation using a liquid mobile phase which affords a retention capacity, k', such that $0.1<k'<1.0$.

5,626,763

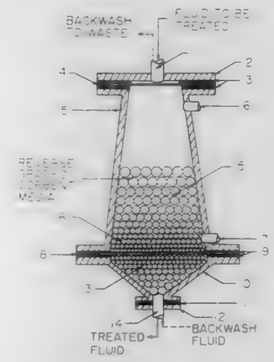
TAPERED BED APPARATUS FOR FLUID-SOLID MASS TRANSFER OPERATIONS

Alexander P. Mathews, 2033 Somerset Sq., Manhattan, Kans. 66502

Filed Oct. 11, 1995, Ser. No. 540,669

Int. Cl.[6] C02F *1/42*

U.S. Cl. 210—660 **6 Claims**



1. A mass transfer method for transferring at least one dissolved component of a fluid phase into porous granules having external and internal surfaces which are active for said transference of said component, said method comprising the steps of:

providing a mass transfer adsorption apparatus having a fluid phase inlet and a spaced fluid phase outlet, a bed of porous granules disposed between said inlet and said outlet for passage of said fluid through said bed of porous granules along a direction of flow from said inlet to said outlet,

said apparatus further having a first casing and a lower second casing, the first casing being coupled to said lower casing, the inlet being connected to the distal end of said first casing, and the outlet being connected to the distal end of the said lower casing,

said apparatus further comprising a screen disposed between said first casing and said lower casing, a first sealing means disposed between said screen and said first casing, and a second sealing means disposed between said screen and said lower second casing,

said first casing having an elongated sidewall between said inlet and said screen, said sidewall defining an internal chamber housing said bed of porous granules, said chamber having a longitudinal axis and a transverse cross-sectional area, said transverse cross-sectional area increasing from said inlet to said screen,

said bed of porous granules being stratified within said chamber, said bed of porous granules having relatively larger and smaller diameters with said larger diameter granules being disposed closer to said inlet than said smaller diameter granules, said smaller diameter granules being disposed closer to said screen than said larger diameter granules,

said lower second casing containing a stratified bed of inert nonporous particles having relatively larger and smaller diameters with said larger diameter particles being disposed closer to said outlet than said smaller diameter particles, said smaller diameter particles being disposed closer to said screen than said larger diameter particles,

wherein said method further comprises passing said fluid phase into said inlet, through said beds, and out said outlet,

wherein, by said passing of said fluid phase through said beds, the velocity of the fluid phase from said inlet to said outlet is decreased and mass transfer of said component from said fluid phase into said porous granules is enhanced.

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5,626,764

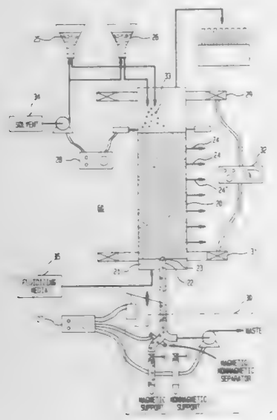
CONTINUOUS MULTICOMPONENT FOCUSING IN A MAGNETICALLY STABILIZED FLUIDIZED BED

Mark A. Burns, and Lisa L. Evans, both of Ann Arbor, Mich., assignors to The Board of Regents acting for and on the behalf of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 167,620, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 795,905, Nov. 15, 1991, abandoned. This application Dec. 14, 1994, Ser. No. 355,817

Int. Cl.[6] B01D *15/04*

U.S. Cl. 210—661 12 Claims



1. A process for separating at least one component of a multicomponent feedstream on a magnetically stabilized fluidized bed, the process comprising the steps of:

a. providing in a column having a predetermined length, a bed of magnetizable adsorbent solids for which the at least one component of the multicomponent feed stream has an affinity, the magnetizable adsorbent solids comprising a solid phase within the column which travels countercurrently to a flow of a fluid through a fluidizing medium in a predetermined flow portion of the column, the column having a first location where the multicomponent feed stream is introduced into the column, and a second location, distal from the first location, where the magnetizable adsorbent solids are introduced into the column, the predetermined flow portion of the column being disposed intermediate of the first and second locations of the column;

b. stabilizing the bed by a magnetic means of sufficient strength to suppress solids backmixing and to preserve staging therein;

c. introducing the multicomponent feedstream into the column with the fluidizing medium at the first location on the column;

d. introducing the magnetizable adsorbent solids into the column with the fluidizing medium at the second location on the column;

e. providing a gradient of a process condition of the type which affects the affinity of the at least one component to the adsorbent solids, the gradient of a process condition being maintained in a time-invariant fixed spatial relationship over the length of the predetermined flow portion of the column during operation thereby resulting in concentration of the at least one component at a predeterminable fixed component concentration location along the predetermined flow portion of the column corresponding substantially to the point of separation in the vicinity wherein a change in the binding affinity of the solute for the adsorbent solids occurs; and

f. removing the concentrated component from the column at the predeterminable fixed component concentration location.

5,626,765

METHOD FOR ADSORBING AND SEPARATING HEAVY METAL ELEMENTS BY USING A TANNIN ADSORBENT

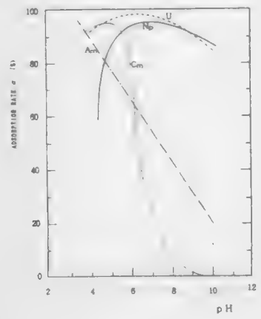
Wataru Shirato, and Yoshinobu Kamei, both of Ibaraki-ken, Japan, assignors to Mitsubishi Nuclear Fuel Company, Ltd., Tokyo, Japan

Division of Ser. No. 926,950, Aug. 10, 1992, Pat. No. 5,460,791. This application Dec. 23, 1993, Ser. No. 172,547

Claims priority, application Japan, Aug. 23, 1991, 3-237378

Int. Cl.[6] B01D *15/00*

U.S. Cl. 210—670 1 Claim



1. A method for adsorbing and separating a heavy metal element in a solution of one or more of said heavy metal elements using a tannin adsorbent comprising the steps of:

a) adjusting the pH of the solution to a first value predetermined to be conducive to the adsorption of at least one of the elements therein onto a tannin adsorbent;

b) contacting an adsorbent selected from the group consisting of insoluble tannin and gelled tannin with the solution from step a) to adsorb the element thereon; and

c) contacting the adsorbent from step b) with an aqueous solution of a mineral acid or an aqueous alkaline solution having a pH conducive to desorb the metal element from the adsorbent.

5,626,766

PROCESS FOR CONTROLLING SOLIDS-LIQUID SEPARATION

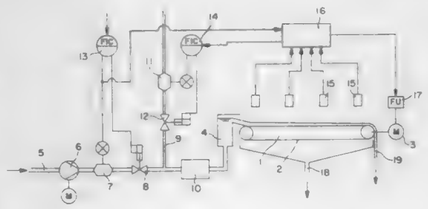
Walter Cadek; Johannes Kappel, both of Graz, and Rudolf Neuhold, Gratwein, all of Austria, assignors to Andritz-Patentverwaltungs-Gesellschaft M.B.H., Graz, Austria

Division of Ser. No. 338,756, Nov. 10, 1994, Pat. No. 5,534,139. This application Mar. 20, 1996, Ser. No. 618,797

Claims priority, application Austria, Nov. 12, 1993, 2298/93

Int. Cl.[6] C02F *11/14*

U.S. Cl. 210—709 15 Claims



1. A method of separating liquid from a solid-liquid mixture comprising:

continuously separating liquid from a bed of said solid-liquid mixture moving through a liquid separating zone of a liquid separating device, said mixture having an upper surface,

projecting light at a first angle with respect to said upper surface from a light source in a photodetector assembly onto a first illumination area on the upper surface of said mixture within said liquid separating zone,

detecting light reflected from said first illumination area at a second angle with respect to said upper surface by a first photodetector,

detecting light reflected from said first illumination area at a third angle with respect to said upper surface by a second photodetector, wherein said first and second photodetectors are positioned above said separation zone in said photodetector assembly,

generating output signals from each of said first and second photodetectors corresponding to said detected light at said second and third angles, respectively,

transmitting said output signals to a main control means and generating a control signal in response to said output signals, and transmitting said control signal to said liquid separating device and adjusting the rate of separation of liquid from said mixture.

5,626,767

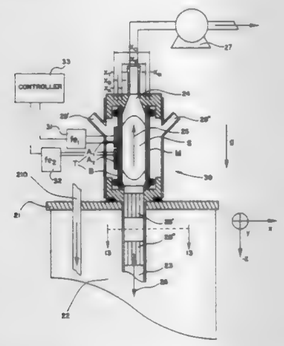
ACOUSTIC FILTER FOR SEPARATING AND RECYCLING SUSPENDED PARTICLES

Felix Trampler, Hinterbruehl, Austria; James M. Piret, Vancouver, Canada; Stefan A. Sonderhoff, Vancouver, Canada, and Douglas G. Kilburn, Vancouver, Canada, assignors to SonoSep Biotech Inc., Richmond, Canada

Filed Jul. 2, 1993, Ser. No. 88,547

Int. Cl.[6] C02F *1/36*

U.S. Cl. 210—748 27 Claims



1. A method of separating particles from a liquid comprising:

generating an acoustic standing wave in an acoustic resonation chamber; and

drawing the liquid containing the particles through the acoustic resonation chamber at a selected flow rate, the flow rate of liquid through the acoustic resonation chamber being a value selected such that the phase shift change in acoustic standing wave in the liquid is less than one-half of π due to a temperature change in the liquid within the resonation chamber.

5,626,768

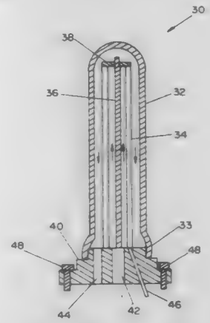
STERILIZATION OF OPAQUE LIQUIDS WITH ULTRAVIOLET RADIATION

Barry Ressler, Weston, Conn.; Gary L. Morgan, Elkridge, Md.; Richard J. Herbermann, Huntington, N.Y.; David A. Wright, Solomons, Md., and James E. Stangroom, Sheffield, United Kingdom, assignors to Triton Thalassic Technologies, Inc., Ridgefield, Conn.

Filed Dec. 7, 1995, Ser. No. 569,830

Int. Cl.[6] C02F *1/32*

U.S. Cl. 210—748 7 Claims



1. A method of destroying bacteria within a liquid which is opaque to ultraviolet radiation comprising:

establishing a flow path for an opaque liquid wherein at least a portion of the flow path is irradiated with ultraviolet radiation from two radiating surfaces which are concentric cylinders including an inner cylinder and an outer cylinder, with one radiating surface irradiating the region enclosed by the inner cylinder and the other radiating surface irradiating the region outside the outer cylinder, and the flow path passes through the inner cylinder and outside the outer cylinder; and

moving the opaque liquid at a velocity which causes the liquid to move within the irradiated portion of the flow path in a turbulent flow pattern.

5,626,769

OZONE WATER TREATMENT METHOD AND APPARATUS

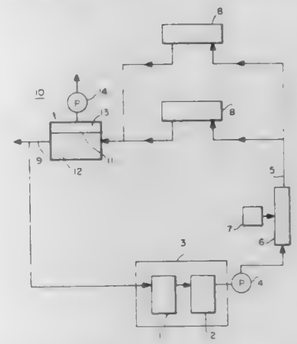
Isao Sawamoto, Kanagawa, Japan, assignor to Permelec Electrode Ltd., Kanagawa, Japan

Filed Aug. 4, 1994, Ser. No. 285,698

Claims priority, application Japan, Aug. 6, 1993, 5-215218

Int. Cl.[6] C02F *1/78*

U.S. Cl. 210—760 5 Claims



1. An ozone water treatment method comprising the steps of:

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(A) injecting an ozone-containing gas into pure water to prepare ozone water,

(B) supplying the ozone water to at least one use point for treatment of materials to be treated,

(C) circulating for reuse or discharging the ozone water after use at a downstream side of the use point to a deozonizing apparatus, wherein the deozonizing apparatus has an inside which is divided into an ozone water passing zone and a reduced pressure zone by a diaphragm,

(D) supplying the ozone water after use to the ozone water passing zone of the deozonizing apparatus, and

(E) removing residual ozone and residual oxygen in the ozone water after use by contacting the water with the reduced pressure zone through the diaphragm;

wherein the diaphragm is formed from an ozone resistant fluorine resin selected from the group consisting of an ethylene tetra fluoride resin, an ethylene tetrafluoride-perfluoroalkoxyethylene copolymer resin, a vinylidene fluoride resin, an ethylene tetrafluoride-propylene hexafluoride copolymer resin, and an ethylene tetrafluoride-ethylene copolymer resin.

5,626,770

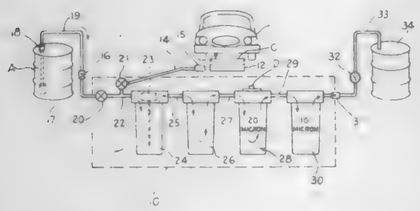
APPARATUS AND METHOD FOR FILTERING USED ENGINE COOLANT

Richard W. Pacosz, Myrtle Beach, S.C., assignor to Recovery Systems, Inc., Myrtle Beach, S.C.

Filed Aug. 1, 1995, Ser. No. 509,998

Int. Cl.[6] B01D *35/027*

U.S. Cl. 210—799 **5 Claims**



1. The method of filtering out hydrocarbons and particulate matter introduced into anti-freeze liquid through use in automotive vehicles comprising the steps of:

placing a pre-filter beneath an automotive vehicle for receiving used anti-freeze liquid from the cooling system of the automotive vehicle;

carrying said pre-filter in a drain pan positioning the pre-filter in the drain pan beneath said automotive vehicle for receiving and pre-filtering said anti-freeze liquid removing hydrocarbons therefrom and for receiving the pre-filtered anti-freeze liquid prior to filtering same;

providing a plurality of serially disposed filters receiving anti-freeze liquid for removing particulate matter from said pre-filtered anti-freeze liquid; and

providing a cart carrying said plurality of serially disposed filters for receiving said pre-filtered anti-freeze liquid;

whereby said used anti-freeze liquid is filtered for removal of hydrocarbons and particulate matter to an extent sufficient to restore the usefulness of the anti-freeze liquid.

5,626,771

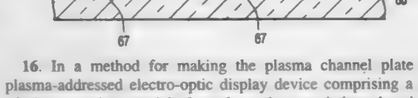
DESIGN OF HIGH DENSITY STRUCTURES WITH LASER ETCH STOP

Charles R. Davis, Wappingers Falls; Frank D. Egitto, and Eugene R. Skarvinko, both of Binghamton, all of N.Y., assignors to International Business Machines Corporation, Endicott, N.Y.

Division of Ser. No. 253,084, Jun. 2, 1994, Pat. No. 5,536,579. This application Jun. 6, 1995, Ser. No. 470,270

Int. Cl.[6] H01L *21/268*

U.S. Cl. 216—13 **7 Claims**



1. A method of forming a multi-layer electronic circuit package, wherein at least one layer of the multi-layer package includes an electrically conductive plane with an organic, polymeric dielectric deposited on major surfaces thereof, said method comprising the steps of:

a) depositing a first layer of a first organic polymeric dielectric material on a major surface of the conductive plane, said first organic polymeric material having a first optical absorbency to an ablating wavelength of laser light;

b) forming circuitization, including lands, on said first layer of organic, dielectric material;

c) depositing a second layer of a second organic, polymeric dielectric material atop said circuitized first layer, said second organic polymeric material having a second optical absorbency different than said first optical absorbency of said first layer at a laser ablating wavelength; and

d) laser ablating a via through said second layer to said circuitization at said laser ablating wavelength.

5,626,772

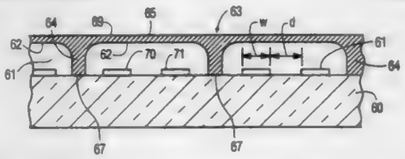
PLASMA ADDRESSED LIQUID CRYSTAL DISPLAY WITH ETCHED PLASMA CHANNELS

Petrus F. G. Bongaerts, Waalre; Jacob Bruinink, Eindhoven; Adrianus L. J. Burgmans, Eindhoven; Henri R. J. R. Van Helleputte, Eindhoven, all of Netherlands; Babar A. Khan, Ossining, N.Y.; Karel E. Kuijk, Dommelen, Netherlands; Thomas S. Buzak; Kevin J. Ilcisin, both of Beaverton, Oreg., and Paul C. Martin, Vancouver, Wash., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,536

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—24 **17 Claims**



16. In a method for making the plasma channel plate of a plasma-addressed electro-optic display device comprising a layer of electro-optic material, data electrodes coupled to the electro-optic layer and adapted to receive data voltages for activating portions of the electro-optic layer, a plurality of elongated plasma channels extending generally transverse to the data electrodes for selectively switching on said electro-optic portions, and a dielectric sheet closing off the plasma channels on the side facing the data electrodes, said plasma channels each comprising spaced elongated cathode and anode plasma electrodes and an ionizable gas filling, said method being characterized in that:

(a) providing a first glass bottom plate,

(b) providing a second glass top plate,

(c) subjecting the second glass top plate to a plasma etching process to etch therein spaced elongated cavities each forming a thin top wall flanked by substantially vertical side walls with the thin top wall having a substantially flat inner surface,

(d) providing spaced electrodes on the first glass plate or on the flanking side walls,

(e) disposing the etched second glass plate over the first glass plate with the cavities facing the first glass plate to form plasma channels with spaced electrodes inside each of the plasma channels.

5,626,773

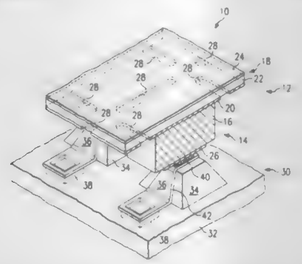
STRUCTURE AND METHOD INCLUDING DRY ETCHING TECHNIQUES FOR FORMING AN ARRAY OF THERMAL SENSITIVE ELEMENTS

James F. Belcher, Plano; Howard R. Beratan, Richardson, and Scott R. Summerfelt, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1995, Ser. No. 367,659

Int. Cl.[6] B44C *1/22*; **C03C** *15/00;25/06*; **C23F** *1/00*

U.S. Cl. 216—47 **20 Claims**



1. A method for forming an array of thermal sensitive elements from a substrate having portions of an infrared absorber and common electrode assembly attached thereto, comprising the steps of:

forming a first layer of electrically conductive contacts on one side of said substrate to at least partially define masked and unmasked regions thereof;

forming a second layer of electrically conductive contacts on said first layer of contacts;

encapsulating the exposed portions of said second layer of contacts with a radiation etch mask layer;

encapsulating the exposed portions of said first layer of contacts and said radiation etch mask layer with a dry-etch mask layer;

dry etching through an initial portion of each of said unmasked regions;

exposing a remaining portion of each of said unmasked regions to an etchant;

irradiating said remaining portions of said unmasked region with electromagnetic energy to substantially increase the reactivity between said remaining portions and said etchant; and

wherein during said step of irradiating, said etchant etches said remaining portions substantially faster than said first layer of contacts and said radiation etch mask layer.

5,626,774

SOLDER MASK FOR MANUFACTURE OF PRINTED CIRCUIT BOARDS

James R. Paulus, La Crosse, Wis., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 11, 1995, Ser. No. 570,260

Int. Cl.[6] G03F *7/00*

U.S. Cl. 216—47 **6 Claims**

1. A method of forming a solder mask on the surface of a printed circuit board comprising:

(a) applying to said surface a sheet of copper foil having a layer of partially cured thermosetting resin on one surface of the foil disposed so that the resin layer is between the copper foil and the circuit board surface and leaving the opposite face of the copper foil exposed;

(b) applying an etch resist over the exposed surface of the copper foil;

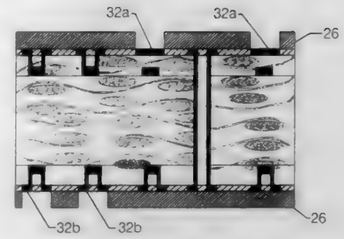
(c) photoimaging regions of the etch resist and removing uncured areas of the etch resist to leave copper areas exposed;

(d) etching away the copper areas exposed in (c), leaving the resin layer of (a) exposed;

(e) removing the exposed resin layer of (d) to expose a circuit feature which is to be soldered;

(f) removing the cured etch resist with a suitable solvent; and

(g) etching the remaining copper foil and exposing the uncured resin as a solder mask.



5,626,775

PLASMA ETCH WITH TRIFLUOROACETIC ACID AND DERIVATIVES

David A. Roberts, Escondido; Raymond N. Vrtis, Carlsbad; Arthur K. Hochberg, Salana Beach; Robert G. Bryant, Carlsbad, all of Calif., and John G. Langan, Wescosville, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 13, 1996, Ser. No. 645,439

Int. Cl.[6] H01L *21/00*

U.S. Cl. 216—67 **20 Claims**

1. A method for etching a material selected from the group consisting of silicon dioxide, silicon nitride, boronphosphorus silicate glass, fluorosilicate glass, siliconoxynitride, tungsten, tungsten silicide and mixtures thereof under plasma reaction conditions with an etching chemical, the improvement comprising using an etching chemical selected from the group consisting of trifluoroacetic acid, trifluoroacetic anhydride, trifluoromethyl ester of trifluoroacetic acid, trifluoroacetic acid amide and mixtures thereof.

5,626,776

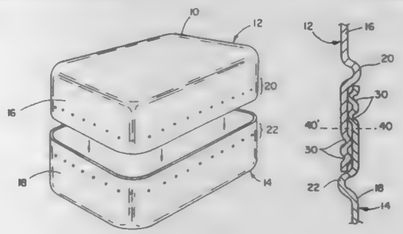
FLANGELESS FUEL TANK

H. Edward Morris, Jr., Northville, Mich., assignor to Morris Holmes & Co., Novi, Mich.

Division of Ser. No. 140,664, Oct. 21, 1993, Pat. No. 5,454,480. This application Jun. 5, 1995, Ser. No. 463,918

Int. Cl.[6] B23K *26/00*; **B65D** *90/04;6/32;8/22*

U.S. Cl. 219—121.64 **10 Claims**



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1. A method for producing a flangeless tank by interfitting and welding together a male and female tank half, wherein at least one of said tank halves is coated with a material having a vaporization temperature lower than the temperature necessary to weld said tank halves, the method comprising the steps of:

stamping at least one of said tank halves with an arrangement of spacing dimples along a weld line;

stamping said tank halves with locating protrusions of substantially greater depth than said spacing dimples and in such a manner that said locating protrusions are disposed adjacent to said arrangement of spacing dimples on the side longitudinally opposite the exterior edge of said tank halves, said locating protrusions on said male tank half extending toward the exterior of said flangeless fuel tank, and said locating protrusions on said female tank half extending toward the interior of said flangeless fuel tank;

interfitting said fuel tank halves such that said male tank half is received within said female tank half up to the extent that said female tank half abuts with said locating protrusions of said male tank half and said male tank half abuts with said locating protrusions of said female tank half, thereby defining an overlap position having the weld line disposed circumferentially thereon, the spacing dimples maintaining a vent space between the two tank halves;

applying an electromagnetic clamping means to forcibly secure said tank halves, said electromagnetic clamping means comprised of two distinct electromagnetic clamping heads disposed in such a manner as to allow access to said weld line; and

laser beam welding said tank halves along the entire length of said weld line.

5,626,777

PROCESS FOR PRODUCING DIVIDABLE PLATES OF BRITTLE MATERIAL WITH HIGH ACCURACY AND APPARATUS FOR RECEIVING AND PRECISION-GRINDING THE END FACES OF A PLATE

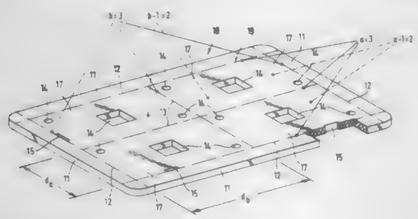
Kurt Hügl, and Roland Leneis, both of Marktredwitz, Germany, assignors to Hoechst CeramTec AG, Selb, Germany

Filed Mar. 1, 1994, Ser. No. 203,417

Claims priority, application Germany, Mar. 2, 1993, 43 06 296.2; Dec. 24, 1993, 43 44 383.4

Int. Cl.[6] B23K *26/00;* **B26F** *3/02;3/16*

U.S. Cl. 219—121.72 **13 Claims**



1. A process for producing a plate from a brittle material which can be individually separated by breaking to form one or more smaller platelets, wherein laser scoring is used to produce in a single plate of large dimensions

a parallel first predetermined breaking points respectively at the distance d_a and

b parallel second predetermined breaking points respectively at the distance d_b,

which intersect the first predetermined breaking points, a and b being integers over 1, the border zone is removed in the outer region at the distance d_a from the two outer first predetermined breaking points and at the distance d_b from the two outer second predetermined breaking points, so that the remaining plate, without border pieces, contains (a−1)× (b−1) platelet sections of the same size, which are bounded by in each case four predetermined breaking points.

5,626,778

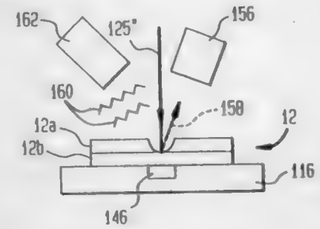
MULTI-WAVELENGTH PROGRAMMABLE LASER PROCESSING MECHANISMS AND APPARATUS UTILIZING SPECTROMETER VERIFICATION

Candace J. Freedenberg, Poughkeepsie; David C. Long, Wappingers Falls; Joshua M. Cobb, Millbrook; Mark J. LaPlante, Walden; Uldis A. Ziemins, Poughkeepsie; Daniel G. Patterson, Wappingers Falls, and James G. Balz, Maybrook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 430,480, Apr. 28, 1995. This application Jun. 6, 1995, Ser. No. 465,688

Int. Cl.[6] B23K *26/04*

U.S. Cl. 219—121.74 **5 Claims**



1. An apparatus for verifying machining system operations on a workpiece comprising at least two different materials having different identifying spectra comprising:

means for generating a machining beam;

means for generating a tracking beam, said tracking beam being separate from said machining beam;

at least two lenses, one lens being positioned to at least partially focus said machining beam, another lens being positioned to at least partially focus said tracking beam;

means for tilting each of said at least two lenses at an angle to said machining and tracking beams to add an amount of astigmatism opposite to astigmatism in the remainder of said apparatus;

means for scanning said machining and tracking beams along an axis after said astigmatism is added by said lenses, said scanning means being movable and having a first surface for reflecting said machining beam and a second surface for reflecting said tracking beam;

at least two concave cylindrical mirrors having curved reflective surfaces, the curvatures of the reflective surfaces being substantially identical, one concave cylindrical mirror being positioned to receive and interrupt said reflected machining beam directly from said scanning means first surface and at least partially focus said machining beam at a workpiece, another concave cylindrical mirror being positioned to interrupt said reflected tracking beam directly from said scanning means second surface and at least partially focus said tracking beam at a detector;

a workpiece holder for securing a workpiece to receive said machining beam after reflection from said scanning means and said one concave cylindrical mirror;

a detector for receiving said tracking beam after reflection from said scanning means and said another concave cylindrical mirror;

feedback control means for determining the position of the reflected tracking beam relative to said detector and controlling the firing rate of said machining beam as said machining beam is being scanned by determining the position of said machining beam relative to said workpiece based upon the position of the reflected tracking beam relative to said detector;

a spectrometer located proximate said workpiece holder for detecting identifying spectra generated by vaporization of different materials in said workpiece by said machining beam; and

electronic control means for verifying an end point of machining based upon the identification of spectra of said different materials in said workpiece detected by said spectrometer.

5,626,779

MICROMACHINE TRANSDUCER WITH CANTILEVERED MOVABLE PORTION

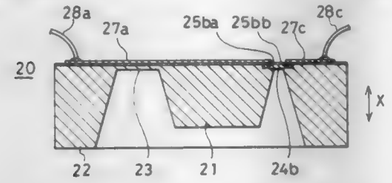
Hiroyuki Okada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1994, Ser. No. 250,829

Claims priority, application Japan, Jun. 7, 1993, 5-135507

Int. Cl.[6] H05B *3/00;* **G01L** *1/22*

U.S. Cl. 219—201 **10 Claims**



1. A micromachine comprising:

a movable portion;

an unmovable portion surrounding said movable portion;

a connecting portion which connects said movable portion with said unmovable portion in a cantilever fashion; and

a support member which connects said movable portion with said unmovable portion at a location other than a location at which said movable portion is connected with said unmovable portion through said connecting portion,

said support member being formed of weaker material than material of which all of said portions are formed, with respect to any one of a number of physical properties shared by all of said portions,

whereby said support member is adapted to be cut off by applying energy effective to said any one of properties thereto after said micromachine has been packaged.

5,626,780

HANDGRIP WITH BUILT-IN HEATER HAVING CHAMFERED SURFACE

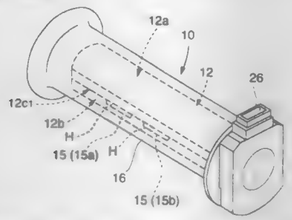
Toru Ogata, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1995, Ser. No. 501,925

Claims priority, application Japan, Jul. 15, 1994, 6-163825

Int. Cl.[6] B60L *1/02;* **B62K** *21/26*

U.S. Cl. 219—204 **8 Claims**



1. A handgrip with a built-in heater for a motorcycle comprising:

a synthetic resin inner piece of a substantially hollow cylindrical shape and having an opening formed in a hollow cylindrical or peripheral portion thereof;

a flexible printed circuit heater wound around said inner piece over a range covering a half circumference or more of said inner piece but less than the full circumference of said inner piece; and

a cladding rubber layer integrally molded on said inner piece and said flexible printed circuit heater, said flexible printed circuit heater extending between said inner piece and said cladding rubber layer, said cladding rubber layer being molded in such a form that a circumferential region on said inner piece where said flexible printed circuit heater is not wound faces a parting position of a mold for forming said cladding rubber layer.

5,626,781

GLOW PLUG WITH PROTECTIVE COATING

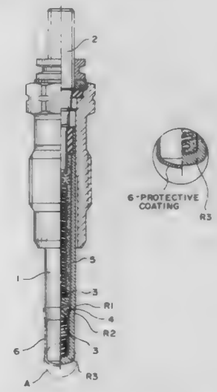
Gabriele Schmidt; Karl-Heinz Schmidt, both of Ludwigsburg, and Hans Delesky, Sachsenheim, all of Germany, assignors to Beru Ruprecht GmbH & Co., Germany

Filed Mar. 28, 1996, Ser. No. 623,217

Claims priority, application Germany, Mar. 28, 1995, 195 11 376.4

Int. Cl.[6] F23Q *7/00*

U.S. Cl. 219—270 **9 Claims**



1. Glow plug with a heating rod formed of an inner pole, a glow tube, and a heating element, said heating element being electrically connected to the inner pole and being located in said glow tube; wherein the glow tube is provided with a coating of a material which is selected from the group consisting of materials which include NiCrAlY, CoCrAlY, CoNiCrAlY, NiCrAl, NiCr, NiCrFe and NiCrWCo, said coating be provided at least in an area of the glow tube in which the heating element is located.

5,626,782

POSTEXPOSURE BAKING APPARATUS FOR FORMING FINE RESIST PATTERN

Hiroshi Maeda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1995, Ser. No. 398,825

Claims priority, application Japan, Oct. 12, 1994, 6-246166

Int. Cl.[6] H05B *3/68;* **G03C** *5/00*

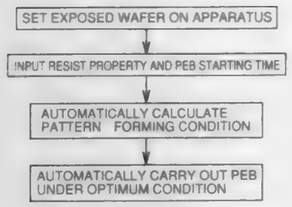
U.S. Cl. 219—449 **6 Claims**

1. A postexposure baking apparatus for postexposure-baking an exposed chemical amplification resist on a front surface of a wafer, said apparatus comprising:

a hot plate for postexposure-baking said exposed chemical amplification resist;

first input means for inputting a relation between an elapsed time from exposure to said postexposure baking and change of a

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line width of a resist pattern as finished as to said chemical amplification resist in said apparatus;

second input means for inputting a relation between a temperature for said postexposure baking and said change of said line width of said resist pattern as finished as to said chemical amplification resist in said apparatus;

calculation means for calculating said temperature for said postexposure baking for obtaining a resist pattern having a desired line width on the basis of information being inputted by said first input means and that being inputted by said second input means; and

control means for controlling said hot plate to be capable of postexposure-baking said chemical amplification resist at or for said temperature being obtained by said calculation means.

5,626,783

TEMPERATURE COMPENSATION DEVICE AND METHOD FOR MAINTAINING WARMTH OF A COOKER UTILIZING AN INVERTER CIRCUIT

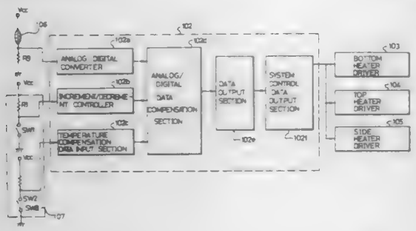
Chang W. Lee, and Jong I. Park, both of Changwon, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 16, 1994, Ser. No. 307,883

Claims priority, application Rep. of Korea, Sep. 17, 1993, 93-19023

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—497 **4 Claims**



1. A device for compensating for temperature deviations to maintain warmth of a cooker having an inverter circuit, a bottom heater, a top heater, and a side heater, the device comprising:

a temperature detecting means for detecting a present temperature;

a compensation temperature selection means for selecting temperature compensation data in order to compensate for deviations of said present temperature detected from said temperature detecting means; and

a system controller, coupled to said temperature detecting means and said compensation temperature selection means, and also coupled to said bottom heater, top heater and side heater, for controlling said bottom heater, said top heater, and said side heater according to a final compensation data calculated by comparing said temperature compensation data selected from said compensation temperature selection means with the present temperature detected from said temperature detecting means.

5,626,784

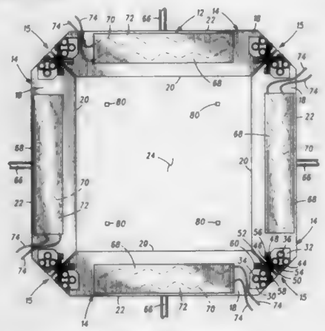
IN-SITU SIZING OF PHOTOLITHOGRAPHIC MASK OR THE LIKE, AND FRAME THEREFORE

Everett F. Simons, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1995, Ser. No. 414,898

Int. Cl.[6] H05B *3/06*

U.S. Cl. 219—521 **4 Claims**



3. A frame for holding a mask comprising

a plurality of sides, each said side comprising an inner edge, said sides being arranged such that the inner edges define an opening for positioning a workpiece therein, and

means for attaching a mask to said frame such that the mask covers the opening,

at least one side including heating means for heating said at least one side independent of the remaining sides to expand said at least one side and thereby stretch said mask attached to the frame.

5,626,785

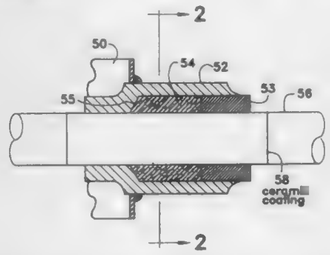
ELECTRODE ASSEMBLY AND METHOD

Lawrence S. Rajnik, Corning, and David F. Thompson, Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,207

Int. Cl.[6] H05B *3/08;* **B60L** *1/02;* **H01R** *9/24*

U.S. Cl. 219—541 **10 Claims**



1. A method for mounting an electrode in an envelope enclosing an electric heater for combustion engine exhaust gas connected to the electrode which comprises the steps of:

(a) providing an electrode opening in a wall of the envelope;

(b) providing a hollow fitting on the envelope wall, the fitting having a through bore which is in registry with the electrode opening;

(c) providing a circumferential stop within or proximate to the bore;

(d) positioning an electrode within the bore;

(e) providing between the electrode and bore at least one sleeve of a relatively deformable, high-temperature-resistant, dielectric material;

(f) providing at least one rigid spacing element formed of a high-temperature-resistant dielectric material between the electrode and adjacent electrically conductive portions of the envelope, fitting, and stop;

(g) securing sleeve compression means to the fitting while applying to the deformable sleeve a compressive force at least sufficient to bring the sleeve into sealing conformity with the electrode and bore, such that the electrode assembly provides an electrically insulated, gas-tight seal effective to prevent exhaust gas leakage from the envelope at high temperatures.

5,626,786

LABILE BROMINE FIRE SUPPRESSANTS

John H. Huntington, 424 S. 16th St., San Jose, Calif. 95112, and Peter D. Haaland, 518 W. Linden St., Louisville, Colo. 80027

Filed Apr. 17, 1995, Ser. No. 423,209

Int. Cl.[6] A62D *1/00;1/08*

U.S. Cl. 252—2 **4 Claims**

1. A fire suppressant composition consisting essentially of at least one brominated, non-carbon compound selected from the group consisting of PBr_3, $POBr_3$, $SOBr_2$, BrF_3, BrF_5, PBr_5, $TiBr_4$, $SiBr_4$, IBr, CuBr, NOBr, BrF, and BBr_3, which is combined with a propellant such that the ozone depletion potential of the composition is less than 0.1.

5,626,787

FIRE EXTINGUISHING COMPOSITION

Ronald A. Porter, 52 Main St., Delaware, Ontario, Canada

Filed Jun. 30, 1995, Ser. No. 497,688

Claims priority, application Canada, Jul. 4, 1994, 2127341

Int. Cl.[6] A62D *1/06*

U.S. Cl. 252—4 **13 Claims**

1. A fire extinguishing composition, consisting essentially of a mixture of (i) desiccated expanded perlite having a specific gravity of 0.08–0.20 and (ii) a mono- and di-ammonium phosphate composition fraction, said fire extinguishing composition including from about 99% to about 50% by weight of said perlite, said phosphate fraction including urea, ammonium chloride, glycerine, and mono-ethylene glycol.

5,626,788

PRODUCTION OF MAGNETIC OXIDE POWDER

Shinsei Okabe, Takatsuki, and Yukio Hamaji, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 23, 1995, Ser. No. 447,933

Claims priority, application Japan, May 25, 1994, 6-111378

Int. Cl.[6] C04B *33/26*

U.S. Cl. 252—62.6 **7 Claims**

1. A method for producing powder of spinel structure magnetic oxides given by the general formula:

$$MeFe_2O_4$$

where Me is at least one element of divalent metal element selected from the group consisting of Ni, Zn, Cu, Mn and Co, said method comprising the steps of providing a magnetic oxide precursor composed of α-FeOOH having a complex carbonate compound of said at least one divalent metal element deposited on surfaces of particles of said ferric hydroxide; and then treating the resultant magnetic oxide precursor with heat at a temperature ranging from 450° to 600° C.

5,626,789

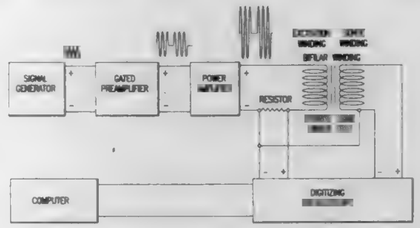
FERRIMAGNETIC CORE MATERIALS FOR MEGAHERTZ FREQUENCY HIGH FLUX DENSITY TRANSFORMERS AND INDUCTORS

Usha Varshney, Radford, Va., assignor to American Research Corp. of Virginia, Radford, Va.

Filed Sep. 11, 1991, Ser. No. 757,568

Int. Cl.[6] C04B *35/30*

U.S. Cl. 252—62.62 **14 Claims**



1. An improved transformer or inductor ferrimagnetic core material for megahertz frequency high flux density applications, said ferrimagnetic core material consisting essentially of a compound of the formula RFe_2O_4 where R is $Ni_{1-x-y}Zn_xCo_yCr_z$, said core material being further characterized in that x is in the range of from about 0.01 to about 0.7, y is in the range of from about 0.001 to about 0.25 and z is in the range of from about 0.01 to about 0.4.

5,626,790

REFRIGERANT COMPOSITIONS INCLUDING 1,1,2-TRIFLUOROETHANE AND HEXAFLUOROPROPANE

Barbara H. Minor, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 980,320, Nov. 19, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 213,339

Int. Cl.[6] C09K *5/04*

U.S. Cl. 252—67 **3 Claims**

1. A composition consisting essentially of an azeotropic or azeotrope-like composition consisting of 1–99 weight percent 1,1,2-trifluoroethane and 99–1 weight percent of a hexafluoropropane selected from the group consisting of 1,1,2,2,3,3-hexafluoropropane, 1,1,1,2,2,3-hexafluoropropane and 1,1,2,3,3,3-hexafluoropropane wherein when the temperature has been adjusted to about 25° C., said composition has an initial vapor pressure of about 24.9 to about 33.3 psia, and, the vapor pressure of said composition changes no more than 3 percent after 50 percent of the initial composition has been evaporated.

5,626,791

AROMATIC COMPOUNDS, AND THEIR USE IN LIQUID-CRYSTALLINE MIXTURES

Franz Fenkl, Kelsterbach; Javier Manero, Frankfurt; Hubert Schlosser, Glashütten, and Dietmar Jungbauer, Weiterstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 2, 1994, Ser. No. 284,796

Claims priority, application Germany, Aug. 4, 1993, 43 26 151.5

Int. Cl.[6] C09K *19/52;19/34*

U.S. Cl. 252—299.01 **7 Claims**

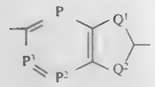
1.A ferroelectric liquid crystal mixture, comprising one or more aromatic compounds of the formula (I)

$$R^1(—A^1)_a(—M^1)_b(—A^2)_c(—M^2)_d—B(13\ M^3)_e(—A^3)(—M^4)_g(—A^4)_h—R^2 \quad (I)$$

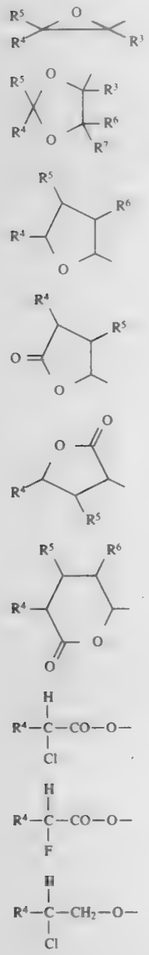
in which the symbols and indices have the following meanings:

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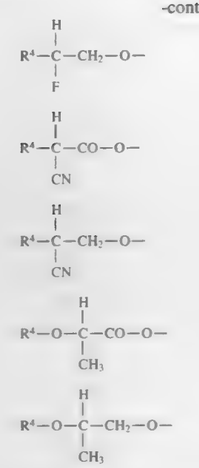
B is



R^1 and R^2 are identical or different and are hydrogen, or a straight-chain or branched alkyl radical having 1 to 20 carbon atoms (with or without an asymmetrical carbon atom), where one or more $—CH_2—$ groups may also be replaced by —O—, —S—, —CO—, —CS—, —CH═CH—, —C≡C—, ∧, $—Si(CH_3)_2—$, 1,4-phenylene, trans-1,4-cyclohexylene or trans- 1,3-cyclopentylene, with the proviso that oxygen atoms and sulfur atoms must not be bonded directly to one another, and/or one or more H atoms of the alkyl radical may be substituted by —F, —Cl, or $—OR^2$, or are alternatively one of the following chiral groups:



-continued



R^3, R^4, R^5, R^6 and R^7 are identical or different and are hydrogen or a straight-chain or branched alkyl radical having 1–16 carbon atoms (with or without an asymmetrical carbon atom), where one or more $—CH_2—$ groups may also be replaced by —O— with the proviso that oxygen atoms must not be bonded directly to one another, and/or one or more H atoms of the alkyl radical may be substituted by —F or —Cl; R^4 and R^5 may also together be $—(CH_2)_4—$ or $—(CH_2)_5—$ if they are bonded to an oxirane, dioxolane, or tetrahydrofuran system;

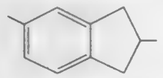
Q^1 and Q2 are identical or different and are CH_2, CF_2, or O;

P^1, P^2 and P^3 are identical or different and are C—H, C—F or N;

M^1, M^2, M^3 and M^4 are identical or different and are —CO—O—, —O—CO—, $—CH_2—O—$, $—O—CH_2—$, —CH═CH—, —C≡C—, —O—CO—CH═CH—, —CH═CH—COO—, —O—CO—$CH_2—CH_2—$, $—CH_2—CH_2—COO—$, $—O—CH_2—CH_2—CH_2—$, $—CH_2—CH_2—CH_2—O—$ or a single bond;

A^1, A^2, A^3 and A^4 are identical or different and are 1,4-phenylene, in which one or more H atoms may be replaced by F, pyridine-2,5-diyl, in which one or more H atoms may be replaced by F, pyrimidine- 2,5-diyl, in which one or two H atoms may be replaced by F, trans-1,4-cyclohexylene, in which one or two H atoms may be replaced by CN and/or CH_3, 1,3,4-thiadiazole-2,5-diyl, 1,3-dioxane-2,5-diyl, 1,3-thiazole-2,4-diyl, in which one H atom may be replaced by F, 1,3-thiazole- 2,5-diyl, in which one H atom may be replaced by F, thiophene-2,4-diyl, in which one H atom may be replaced by F, thiophene-2,5-diyl, in which one or two H atoms may be replaced by F, naphthalene-2,6-diyl, in which one or more H atoms may be replaced by F;

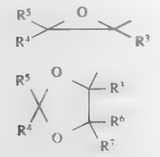
a, b, c, d, e, f, g and h are zero or one; with the following proviso: if the group B is



at least one of the radicals R^1 must comprise an $—Si(CH_3)_2—$ and/or



group and/or be one of the following chiral groups:



5,626,792

HIGH BIREFRINGENCE LIQUID CRYSTAL COMPOUNDS

Michael Wand, Boulder; William N. Thurmes, Longmont; Kundalika Moré , Denver, and Rohini T. Vohra, Boulder, all of Colo., assignors to Displaytech, Inc., Longmont, Colo.

Filed Sep. 6, 1994, Ser. No. 301,121
Int. Cl.[6] C09K *19/52;19/34;19/06;19/32*
U.S. Cl. 252—299.01 **28 Claims**

1. A liquid crystal composition comprising a liquid crystal host material and a high birefringence liquid crystal dopant having the formula:

$$R_1X—C—\equiv—D—YR_2$$

wherein

C and D, independently of one another, are aromatic ring systems each of which has one or two 6-member carbon rings wherein one or two carbons of any ring in C or D can be substituted with a nitrogen atom and wherein any ring in C or D can be substituted with one or two halogen atoms;

YR_2 where Y is a —COS—, $—CS_2—$, —CH═CH—CO—S—, —CH═CH—CS—S— or —CH═CH—CO—O— group;

X is a single bond, double bond, triple bond, O or S atoms or a cyclohexane or cyclohexene group, Z—Q—W, where Q is a cyclohexane or cyclohexene ring in which one or two of the ring carbons can be replaced with an O atom or in which one or more of the ring carbons can be substituted with a halogen atom or a cyano group, Z is a single bond or an O or S atom and W is a single bond, a $—CH_2—$ group, a $—CH_2—CH_2—$ group, or a $—CH_2—O—$ group; and

R_1 and R_2 are, independently of one another, alkyl groups having from about 3 to 20 carbon atoms in which one or more $—CH_2—$ groups can be halogenated, two neighboring $—CH_2—$ groups can be substituted with an epoxide, or one or more non-neighboring $—CH_2—$ groups can be substituted with a double bond, triple bond, an O atom, a S atom, or a silyl group SiR_AR_B wherein R_A and R_B, independently of one another, are alkyl or alkenyl groups having 1 to about 6 carbon atoms.

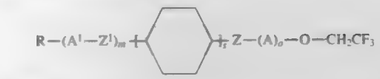
5,626,793

LIQUID-CRYSTALLINE COMPOUNDS

Volker Reiffenrath, Rossdorf; Herbert Plach; Detlef Pauluth, both of Darmstadt; Reinhard Hittich, Modautal; Eike Poetsch, Mühltal; Thomas Geelhaar, Mainz; Georg Weber, and Ekkehard Bartmann, both of Erzhausen, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 844,676, Apr. 10, 1992. This application Jun. 5, 1995, Ser. No. 464,938
Claims priority, application Germany, Feb. 2, 1991, 41 04 126.7; Mar. 26, 1991, 41 09 809.9; Aug. 3, 1991, 41 25 844.4; Aug. 20, 1991, 41 27 450.4
Int. Cl.[6] C09K *19/30;19/12*
U.S. Cl. 252—299.63 **9 Claims**

1. A nematic liquid-crystalline medium having at least two liquid-crystalline components, characterized in that it contains at least one compound of formula I



in which

R is H, a straight-chain C_{1-15}-alkyl or C_2–C_{15}-alkenyl, it also being possible to replace one or more CH_2 groups in these radicals, independently of one another, by —O—, —S—,



—CO—, —CO—O—, —O—CO— or —O—CO—O— in such a way that oxygen atoms are not linked directly to one another.

Z^1 and Z are each, independently of one another, $—CH_2CH_2—$, —CH═CH—, —C≡C— or a single bond, and one of the radicals Z^1 and Z is optionally $—(CH_2)_4—$ or —CH═CH—$CH_2CH_2—$,

A and A^1 are each, independently of one another, trans-1,4-cyclohexylene in which, in addition, one or two non-adjacent CH_2 groups may be replaced by —O—, or are 1,4-phenylene which is unsubstituted or monosubstituted or disubstituted by fluorine and/or Cl atoms and in which, in addition, one or two CH groups may be replaced by N,

m is 0, 1, 2 or 3,

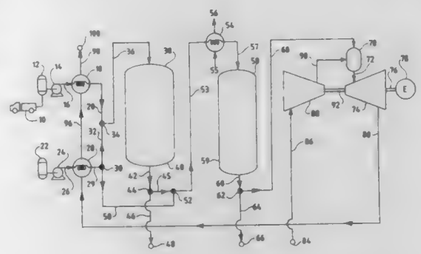
o and s are 0, 1 or 2, where (s+o) is ≧2.

5,626,794

PROCESS FOR HYDROSHIFTING DIMETHYL ETHER

Alakananda Bhattacharyya, Wheaton, and Arunabha Basu, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 356,492, Dec. 15, 1994, Pat. No. 5,498,370. This application Feb. 6, 1996, Ser. No. 597,209
Int. Cl.[6] C07C *1/00;1/02*
U.S. Cl. 252—373 **20 Claims**



1. A process for hydroshifting dimethyl ether and producing a combustion product stream, which comprises:

passing a feed stream which includes about one to about six molar parts steam and one molar part dimethyl ether at a temperature of about 150 to about 800 degrees C. to a hydroshifting reaction zone including an essentially alkali metal-free catalytic composition substantially composed of copper or nickel in elemental form to produce a hydroshifted stream which is relatively rich in hydrogen, carbon monoxide and carbon dioxide as compared to the feed stream, and

mixing an oxidizer stream including oxygen with the hydroshifted stream and combusting the hydroshifted stream to produce heat and a combustion product stream.

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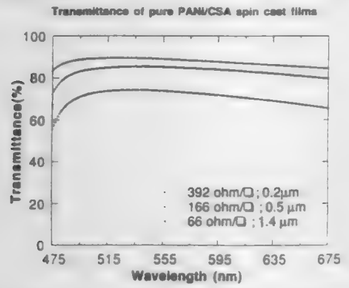
OPTICAL QUALITY TRANSPARENT CONDUCTORS

Paul Smith; Alan J. Heeger, both of Santa Barbara, and Yong Cao, Goleta, all of Calif., assignors to Uniax Corporation, Santa Barbara, Calif.

Division of Ser. No. 265,683, Jun. 23, 1994, abandoned, which is a continuation of Ser. No. 800,555, Nov. 27, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,422

Int. Cl.° H01B *1/00;1/20;1/24*

U.S. Cl. 252—500 **6 Claims**



1. A processible, essentially solvent-free liquid conductive polymeric composition for forming transparent conductors comprising a liquid substrate selected from the group consisting of molten matter solvent, molten or liquid bulk polymer and mixtures thereof each having a dielectric constant smaller than about 22 having intimately admixed therewith polyaniline of film-forming molecular weight in admixture with an effective protonating amount of a protonic acid, the counterion of said protonic acid being functionalized so as to be compatible with the substrate and forming a complex with the polyaniline and imparting conductivity to the composition said composition being solidifiable into a transparent conductor having a conductivity greater than about 10^{-8} S-cm^{-1}, a surface resistance of less than 10^{6} ohms/square and an integrated transmittance of more than 60% over the spectral range of 485 to 675 nm.

5,626,796

LIGHT SENSITIVE COMPOSITION FOR BLACK MATRIX, SUBSTRATE FOR COLOR FILTER, AND LIQUID CRYSTAL DISPLAY

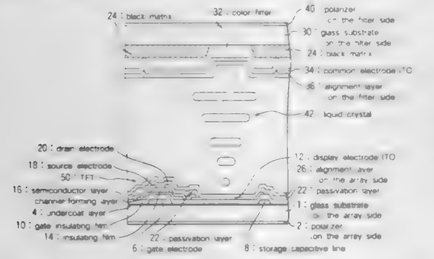
Naoyuki Tsujimura; Toshihiro Ueki, both of Kawasaki; Akira Ushimaru, and Kesanao Kobayashi, both of Shizuoka-Ken, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan, and International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1995, Ser. No. 385,884

Claims priority, application Japan, Mar. 18, 1994, 6-048888

Int. Cl.° F21V *9/00;* **G02F** *1/1335*

U.S. Cl. 252—582 **12 Claims**



1. A light-sensitive composition for forming a black matrix which comprises (a) a photopolymerizable unsaturated compound, (b) a photopolymerization initiator, (c) a binder and (d) a pigment, wherein the amount of monovalent metallic cations present in the pigment as impurities is 5 ppm or less.

5,626,797

NON LINEAR OPTICAL MATERIAL AND METHOD FOR ORIENTATION THEREOF

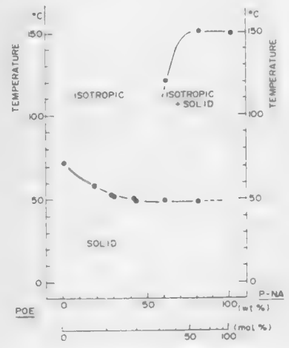
Seizo Miyata, Houya; Kazuo Yoshinaga, Machida, and Takeshi Miyazaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 697,007, May 8, 1991, abandoned, which is a continuation of Ser. No. 629,165, Dec. 19, 1990, Pat. No. 5,037,582, which is a continuation of Ser. No. 164,414, Mar. 4, 1988, abandoned. This application Feb. 13, 1995, Ser. No. 387,615

Claims priority, application Japan, Mar. 6, 1987, 62-051786; Mar. 9, 1987, 62-054439; Jan. 29, 1988, 63-018812; Feb. 1, 1988, 63-021497

Int. Cl.° F21V *9/00;* **G02F** *1/35*

U.S. Cl. 252—582 **16 Claims**



1. An optical modulation system comprising:

a laser, and

an optical modulator including a film of a nonlinear optical material and an electrode disposed on said film, said nonlinear optical material, comprising: a solid solution of from 5–80 parts by weight of a centrosymmetric para-disubstituted organic guest compound showing no second harmonic generation (SHG) by itself and having a molecular dipole moment in 100 parts by weight of polyoxyalkylene matrix, wherein the polyoxyalkylene matrix comprises oxyalkylene units of the formula (1) below at least as a partial structure including two or more successive oxyalkylene units in a proportion of 30 mol % or more in the polyoxyalkylene,

Formula (1): $(R—O)_n$,

wherein R denotes an alkylene group containing 1–6 carbon atoms, and n is 2–200,000; and the organic guest compound comprises a para-disubstituted benzene ring to which an electron donative group and an electron attractive group are attached to provide the molecular dipole moment,

wherein said electron donative group is an amino group, alkyl group, alkoxy group, alkylamino group, hydroxyalkylamino group, dialkylamino group, hydroxyalkyl-alkylamino group, dihydroxyalkylamino group, mercapto group, or hydroxy group; and said electron attractive group is a nitro group, cyano group, halogen atom, trifluoromethyl group, carboxyl group, carboxy ester group, carbonyl group or sulfonyl group.

5,626,798

ARYLLITHIUM PRODUCTS AND PROCESSES

James A. Schwindeman, Lincolnton; Douglas E. Sutton, Kings Mountain; Robert C. Morrison, Gastonia, and Sonia S. Stryker, Charlotte, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jan. 5, 1996, Ser. No. 587,813

Int. Cl.° C07F *1/02*

U.S. Cl. 260—665 R **9 Claims**

1. An improved process for producing high purity solutions of aryllithium compounds comprising reacting a particulate alkali metal having a particle size in the range of 10 to 300 microns, with an aryl halide in a normally liquid ethereal solvent of the formula ROR^1, wherein R and R^1 are selected from alkyl radicals containing from 3 to 6 carbon atoms, in the presence of a Lewis base compound selected from compounds of the formula: $R^2AR^3(R^4)_z$ and



wherein A is selected from oxygen, nitrogen, phosphorus or sulfur; R^2, R^3, and R^4 are selected from alkyl radicals containing from 1 to 6 carbon atoms; R^5 and R^6 are independently selected from hydrogen or alkyl radicals containing one to six carbon atoms; y is an integer from 4 to 6; but when A is oxygen or sulfur, z is zero; and when A is nitrogen or phosphorus, z is one, and provided there is a mole ratio of ether to aryl halide of at least 1.3 to 1 and a mole ratio of Lewis base to aryl halide of from 0.01 to 0.50, wherein the ethereal solvent is different from the Lewis base compound.

5,626,799

HEAT-MASS EXCHANGE SYSTEM

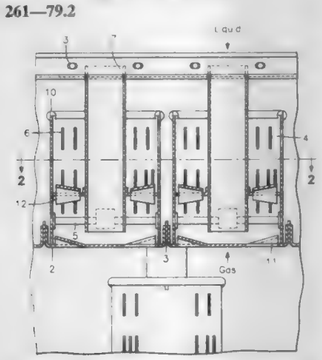
Vladimir I. Sheinman, Moscow, Russian Federation, assignor to Tovarischestvo S Ogranichennoi Otvetstvennostju Nauchno-Proizvod-Stvennaya Kompaniya "Kedr-89", Moscow, Russian Federation

PCT No. PCT/RU93/00181, § 371 Date Jan. 29, 1996, § 102(e) Date Jan. 29, 1996, PCT Pub. No. WO95/03865, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 28, 1993, Ser. No. 586,710

Int. Cl.° B01F *3/04*

U.S. Cl. 261—79.2 **3 Claims**



1. A heat-mass exchange system comprising a housing with plates on whose blade are arranged turbulence contact elements including coaxially mounted cylindrical shell with apertures in a lower section and vertical slits in an upper section, a baffle, an overflow pipe and a swirl vane wherein the blade is manufactured in the form of a set of upwardly flanged shelves along which longitudinal axis are mounted in series the turbulent contact elements while grooves are fashioned around the circumference underneath to intake sections of the overflow pipes mounted therein; the blade of the plates is provided with longitudinal plates, secured between the flanges of the shelves and in grooves formed in the intake sections of the overflow pipes, which protrude above the blade, while the longitudinal axis of the abutting shelves intersect at right angles.

5,626,800

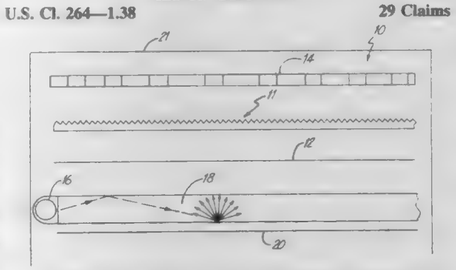
PREVENTION OF GROOVE TIP DEFORMATION IN BRIGHTNESS ENHANCEMENT FILM

Todd R. Williams, Lake Elmo, Minn., and Daniel J. Kingston, Hudson, Wis., assignors to Minnesota Mining and Manufacturing company, St. Paul, Minn.

Filed Feb. 3, 1995, Ser. No. 382,997

Int. Cl.° B29D *11/00*

U.S. Cl. 264—1.38 **29 Claims**



1. A method of improving groove tip impression resistance in a microstructure bearing article, the method comprising:

forming a desired microstructure in a first layer on a base from an oligomeric resin;

curing the resin of the first layer; and

heat treating the first layer at a temperature that is at least equal to a normal glass transition temperature of the resin, the heat treating raising the glass transition temperature of the resulting polymer above about 333° K. such that groove tip impression is reduced.

5,626,801

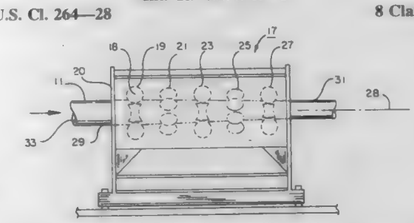
METHOD OF LINING A HOST PIPE WITH A LINER BY DIAMETER REDUCTION WITH ANGULARLY OFFSET ROLLERS

Jim S. McMillan, Benbrook, and Simon Tarsha, Fort Worth, both of Tex., assignors to Pipe Rehab International, Inc., Memphis, Tenn.

Continuation of Ser. No. 966,807, Oct. 26, 1992, abandoned, which is a division of Ser. No. 884,698, May 18, 1992, Pat. No. 5,256,342, which is a continuation of Ser. No. 672,831, Mar. 21, 1991, Pat. No. 5,114,634. This application Jul. 1, 1994, Ser. No. 268,798

Int. Cl.° B29C *63/42*

U.S. Cl. 264—28 **8 Claims**



1. A method of lining a host pipe with a generally cylindrical, polyolefin liner having an outside diameter which is initially greater than the inside diameter of the host pipe, the method comprising the steps of:

reducing the outside diameter of a length of the generally cylindrical liner by feeding a length of the liner along an axis which defines a path of travel axis for the liner to a rolling

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station, the rolling station having at least two sets of downsizing rollers spaced apart along the path of travel axis, each set of downsizing rollers being arranged about the polyolefin liner and having at least three downsizing rollers contained therein and having external roller surfaces which define a 360 degree region of contact with the outside surface of the liner, and each roller of one set of downsizing rollers has an axis of rotation and is positioned about the path of travel axis so that its axis of rotation is at an angularly rotated position about the path of travel axis relative to an axis of rotation of each roller of a preceding set of downsizing rollers, and wherein each roller set is arranged to provide a progressively smaller liner receiving opening to progressively downsize the polyolefin liner;

inserting the downsized, generally cylindrically shaped liner into the host pipe to be lined; and

allowing the downsized liner to expand to substantially its original outside diameter to thereby secure the liner within the host pipe.

5,626,802

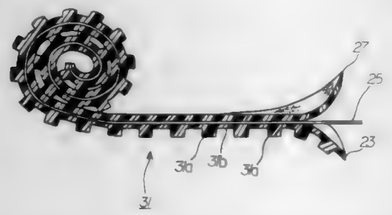
APPARATUS AND METHOD FOR RESURFACING FIBERGLASS BOAT HULLS AND OTHER SURFACES

Gibbs M. Slaughter, Jr., Rte. 9, Box 146-B, Fort Worth, Tex. 76179

Continuation-in-part of Ser. No. 122,728, Sep. 13, 1993, Pat. No. 5,462,702, which is a continuation-in-part of Ser. No. 830,837, Feb. 4, 1992, Pat. No. 5,246,642. This application Jan. 19, 1995, Ser. No. 375,282

Int. Cl.[6] B32B *35/00;* **B29C** *33/74;73/00*

U.S. Cl. 264—36 **16 Claims**



15. A method of adhering a flexible mold to a surface comprising the steps of:

providing a laminar, dimensionally stable, flexible mold having:

an impression of a surface texture on one side thereof and an adhesive material on an opposite side thereof for adhering the flexible mold to a surface; and

a plurality of backing strips on the adhesive-backed side of the flexible mold, the backing strips extending parallel to one another transversely across a longitudinal axis of the flexible mold and being individually removable from the flexible mold;

removing one of the backing strips from a portion of the flexible mold to expose the adhesive material;

securing the portion of the flexible mold having the backing strip removed and the adhesive material exposed to the surface, wherein the flexible mold is aligned relative to the surface; and

removing the remainder of the backing strips and securing the remainder of the mold to the surface.

5,626,803

PROCESS FOR ECONOMICAL MANUFACTURE OF BRUSHES OF PREDETERMINED ANISOTROPY

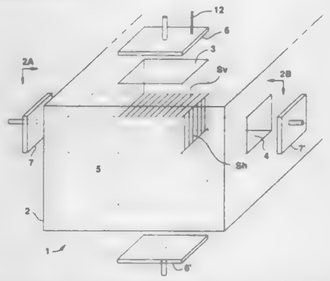
Horst Siegemund, Schmitten/Taunus, Germany, assignor to Deutsche Carbone AG, Frankfurt am Main, Germany

Filed Dec. 21, 1994, Ser. No. 360,302

Claims priority, application France, Dec. 23, 1993, 93 15769

Int. Cl.[6] C04B *35/00*

U.S. Cl. 264—40.5 **7 Claims**



1. A method of manufacturing a brush having a head portion and a foot portion, comprising the steps of:

a) providing a female die with two sheaths intersecting 90° from each another, one said sheath vertical and the other said sheath horizontal, each said sheath provided with at least one male die, said sheaths forming a compression cavity of useful volume (V_u);

b) with the compression means spaced-apart, introducing a batch of volume (V_n), of at least one conductive powder into said cavity;

c) performing a first compression under displacement control using compression means of one of the two sheaths, so as to obtain an intermediate tubular cavity of volume (V_i), having the cross section of the other sheath, and to keep this cross section constant during a second compression of the brush, in such a way as to obtain an crude brush having a cross section properly calibrated after a second compression;

d) performing a second compression under pressure control using the compression means of the other sheath so as to obtain a crude brush of final volume (V_f) with the desired final compression rate;

e) moving the compression means of each of the sheaths apart from one another, first those under pressure control and then those under displacement control, and ejecting the crude brush.

thereby forming a crude brush of predetermined dimensions and favorably oriented anisotropy,

wherein the compression under displacement control initially has a mean rate $T_i=V_o/V_i$ between 1.5 and 3.5, and wherein the compression under pressure control has a rate $T_o=V_f/V_i$ between 1.1 and 1.2, and

wherein there is a total compression rate $T_r=T_i \times T_{Tc}$ between 2.5 and 4, depending on the nature of the at least one conductive powder.

5,626,804

ROLLER POSITION CONTROLLER FOR A CONTINUOUS BELT PRESS

Frank J. Benkowski, New Philadelphia, Ohio; Eric S. Delligatti, Clifton, N.Y., and David A. Kadri, West Lafayette, Ohio, assignors to General Electric Company, Coschocton, Ohio

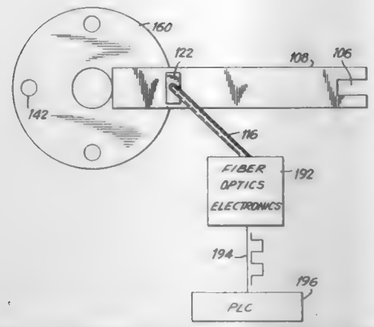
Division of Ser. No. 84,694, Jun. 29, 1993, abandoned. This application Nov. 22, 1995, Ser. No. 562,312

Int. Cl.[6] B30B *5/06;15/26*

U.S. Cl. 264—40.5 **15 Claims**

1. A roller position controller for use in a continuous belt press having a plurality of rollers mounted upon a chain driven by a sprocket turned by a motor, said controller comprising:

an apertured disk mounted upon and synchronously rotated with said sprocket;



sensing means disposed about said apertured disk for sensing the angular position of apertures of said apertured disk; and

controlling means attached to said motor for adjusting the speed of said motor in response to said sensing means.

5,626,805

PROCESS OF MAKING VINYLIDENE FLUORIDE POROUS MEMBRANE

Kazuhiro Meguro, Ryugasaki; Toshiya Mizuno, Tsuchiura; Yoshikiti Teramoto, Ami-machi, and Hiroshi Sato, Tamarimura, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 318,332, Oct. 5, 1994, Pat. No. 5,514,461. This application Jun. 7, 1995, Ser. No. 477,888

Claims priority, application Japan, Oct. 5, 1993, 5-273045

Int. Cl.[6] B29C *67/20*

U.S. Cl. 264—41 **6 Claims**

1. A method of preparing a vinylidene fluoride porous membrane having pores which satisfy the following numerical expression (A):

$$4.0<P_1/P_2 \leqq 10.00 \quad (A)$$

wherein P_1 is an average pore diameter, measured in μm, in a surface which has a larger average pore diameter, and P_2 is an average pore diameter, measured in μm, in the other surface of the membrane, the method comprising the steps of:

adding, as a plasticizer, 30 to 250 parts by weight of an aliphatic polyester to 100 parts by weight of a vinylidene fluoride resin having an inherent viscosity, measured in dimethylformamide at a concentration of 0.4 g/dl and a temperature of 30° C., from 1.4 to 15.0 dl/g, to form a composition,

extruding the so-formed composition to form a molten film,

cooling one surface of the extruded molten film by contact with a chill roll having a temperature of not more than 150° C. and air-cooling the other surface to make a solid film, and

extracting the plasticizer from the solid film.

5,626,806

CARBON BLACK INCORPORATION IN POLYMERIC MATERIAL

Eric Holroyd, Knutsford, and Colin Holroyd, Southport, both of United Kingdom, assignors to Holroyd Associates Limited, Wigan, United Kingdom

PCT No. PCT/GB93/01030, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/23230, PCT Pub. Date Nov. 25, 1993

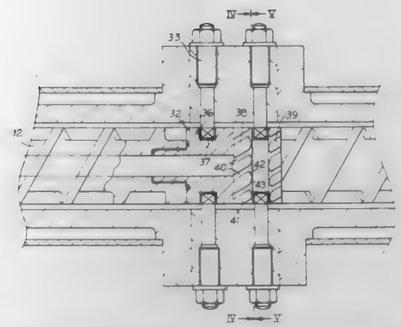
PCT Filed May 20, 1993, Ser. No. 335,815

Claims priority, application United Kingdom, May 20, 1992, 9210720

Int. Cl.[6] B29C *47/50;47/64*

U.S. Cl. 264—140 **12 Claims**

1. Method for incorporating a primary aggregate of carbon black into a polymeric material, comprising:



subjecting a loose, previously unworked dry mixture of the carbon black and said polymeric material to a shearing and smearing action between a plurality of combinations of relatively moving blunt hammer and anvil components, said relatively moving blunt hammer components comprising a stationary member and each of said anvil components comprising a milling tool, said subjecting step including:

an incorporating procedure in which a flow of the mixture is produced along an incorporating screw, and the mixture is sheared and smeared between end faces of selected ones of said milling tools rotating with a shaft of said incorporating screw and selected ones of said stationary members, said stationary members being arranged adjacent to said end faces in a circumferentially spaced array around said incorporating screw shaft, to thereby produce an incorporated, smeared mixture, and

a deagglomerating procedure wherein the incorporated, smeared mixture is further subjected to a deagglomerating shearing and smearing action between selected relatively moving blunt hammer and anvil components, in which a flow of the incorporated, smeared mixture is caused to flow between a surface of each of said selected anvil components mounted oblique to a direction of flow of the mixture and each of said selected relatively moving blunt hammer components mounted transversely relative to the direction of flow and in proximity to a corresponding anvil surface, such that the incorporated, smeared mixture is smeared between said surface of each of said selected anvil components and each of said selected blunt hammer components, to thereby form a deagglomerated mixture; and

maintaining, during said subjecting step, the polymeric material below a temperature at which said polymeric material plasticizes.

7. Apparatus for the incorporation of a primary aggregate of carbon black into a polymeric material, comprising:

a first incorporating screw having a first and second end;

a feed hopper at said first end of said first incorporating screw; and

an incorporating shear and smear assembly at said second end of said first incorporating screw, comprising a first array of incorporation shear and smear tools arranged along a path of a first internal bore which houses said first incorporating screw, the first incorporating screw comprising a first milling tool component adjacent said incorporation shear and smear tools, a mixture of said carbon black and said polymeric material being smeared between adjacent surfaces of said first milling tool and of said incorporation shear and smear tools which move relative to one another in a direction transverse to a direction of flow along said first internal bore, said first milling tool comprising teeth projecting in circumferentially spaced relation from a shaft of said first incorporating screw to define therebetween parallel channels which are oblique with respect to an axis of said shaft, said teeth each having, at a downstream end, major and minor end faces which form an obtuse angle with one another and acute angles with a plane to which said shaft is perpendicular, each of said incorporation shear and smear tools being generally of rectangular

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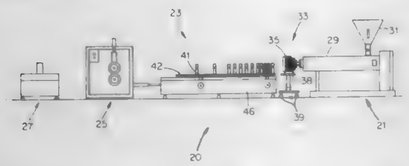
cross section to present a corner toward the major end faces of the teeth, as the teeth approach the incorporation shear and smear tools, such that said mixture is smeared in a progressively narrowing gap between said corner and said major end faces of the teeth as said corner approaches said major end faces when said milling tool rotates along with said shaft.

5,626,807

METHOD FOR MAKING RETAINING WALL MEMBERS

Stephen O'Halloran, Middletown, N.Y., assignor to Tri-Seal International, Inc., Blauvelt, N.Y.

Filed Jul. 6, 1995, Ser. No. 498,817
Int. Cl.[6] B29C *47/90*
U.S. Cl. 264—148 7 Claims



1. A method of making a U-shaped retaining wall member comprising a center section and a pair of outer sections, each outer section forming an obtuse angle with respect to the center section, each outer section terminating in a U-shaped interlocking portion, each said U-shaped interlocking portion including one flange leg having a T-shaped end and another flange leg having an L-shaped end, the T-shaped end positioned between said L-shaped end and said outer section, the method comprising the steps of:

a) heating a polymeric material;

b) forcing said polymeric material through a sequential series of heated extrusion die pieces to form an extruded U-shaped retaining wall member containing the center and outer sections, a first extrusion die piece of said series having a U-shaped die orifice corresponding in size to a reduced dimension U-shaped retaining wall member and successive extrusion dies progressively increasing in size, a last extrusion die piece of said series having a U-shaped die orifice matching a final size of said extruded U-shaped retaining wall member;

c) pulling and controllably cooling said extruded U-shaped retaining wall member after it exits the last extrusion die through a successive series of calibration blocks, each calibration block having an orifice corresponding in size to said final size of said extruded U-shaped retaining wall member, said calibration blocks being spaced apart with a gradually increasing spacing from a first calibration block to a last calibration block, wherein at least the first calibration block is heated to a first temperature above ambient temperature and a remainder of the calibration blocks are at a temperature less than the first temperature so that said U-shaped retaining wall member does not distort when passing through the calibration blocks; and

d) recovering said extruded U-shaped retaining wall member.

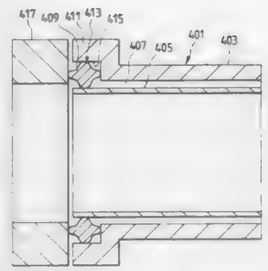
5,626,808

METHOD OF MANUFACTURING HOLLOW RESIN MOLDING

Hidenobu Miyajima, Shizuoka, Japan, assignor to Asahi Tec Corporation, Shizuoka, Japan

Division of Ser. No. 353,217, Dec. 1, 1994, Pat. No. 5,538,571.
This application Aug. 1, 1995, Ser. No. 509,097
Claims priority, application Japan, Dec. 1, 1993, 5-301601; Dec. 1, 1993, 5-301602
Int. Cl.[6] B29C *43/18*
U.S. Cl. 264—161 11 Claims

1. A method of manufacturing a hollow resin molding comprising the steps of:



forming an external molding having a predetermined shape of an exterior of said hollow resin molding and being split into a plurality of parts;

forming an internal molding having a predetermined shape of a hollow portion of said hollow resin molding; and

integrating said internal molding with said external molding;

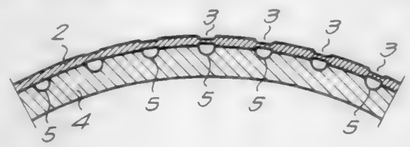
wherein a seal member is inserted into a gap portion at an end portion of said hollow resin molding as well as between said external molding and said internal molding, to form said hollow resin molding.

5,626,809

METHOD FOR MAKING A FILM OF POLYVINYL BUTYRAL USED FOR MAKING LAMINATED GLASS

Johan F. Mortelmans, Lier, Belgium, assignor to Tale Consultants, T.D., Dublin, Ireland

Filed May 26, 1995, Ser. No. 452,091
Claims priority, application Belgium, May 30, 1994, 09400534
Int. Cl.[6] B32B *3/28;* B29C *59/00*
U.S. Cl. 264—167 11 Claims



1. Method for treating a film of polyvinyl butyral, whereby its initial surface roughness was obtained at a temperature above 120° C., characterized in that the film (**2**) is guided at a temperature between 50° and 120° C. over a revolving cooled roller (**4**) provided with grooves (**5**) and in that thinned patches (**3**) are made in the film due to the difference in cooling rate opposite the grooves (**5**) and on the cooling surfaces in between the grooves.

5,626,810

PROCESS FOR THE PREPARATION OF CELLULOSE SOLUTIONS

Stefan Zikeli, Regau, and Peter Hinterholzer, Schörfling, both of Austria, assignors to Lenzing Aktiengesellschaft, Austria

Filed Mar. 10, 1994, Ser. No. 209,439
Claims priority, application Austria, Oct. 19, 1993, 2104/93
Int. Cl.[6] C08B *1/00;* C08J *3/09*
U.S. Cl. 264—187 9 Claims

1. Process for the preparation of a shapeable solution of cellulose in an aqueous tertiary amine-oxide, comprising the steps of:

(a) introducing previously comminuted cellulose material into an aqueous solution of a tertiary amine-oxide to prepare an initial suspension with a consistency of at least 10 wt % cellulose,

(b) subjecting the initial suspension to high-consistency milling whereby a second suspension is obtained, and

(c) converting the second suspension into the shapeable solution of cellulose by heating under reduced pressure.

5,626,811

PROCESS OF MAKING A MONOFILAMENT

Cheng-Kung Liu, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 164,512, Dec. 9, 1993, abandoned.
This application Aug. 1, 1995, Ser. No. 509,948
Int. Cl.[6] D01D *5/08;5/12*
U.S. Cl. 264—210.7 13 Claims



1. A method of manufacturing a monofilament which comprises:

a) extruding and quenching a polymer derived in whole or in part from p-dioxanone to provide a solidified monofilament; and

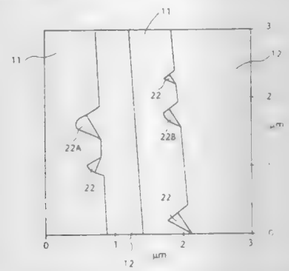
b) increasing the tensile strength of the monofilament by cold drawing the solidified monofilament, whereby the cold drawn monofilament has a higher tensile strength compared to a monofilament similarly processed except using only hot drawing.

5,626,812

METHOD OF PRODUCING CARBON MATERIAL BY BENDING AT LEAST ONE CARBON ATOM LAYER OF GRAPHITE

Thomas Ebbesen; Hidefumi Hiura, and Katsumi Tanigaki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 202,061, Feb. 25, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 465,427
Claims priority, application Japan, Feb. 26, 1993, 5-037701
Int. Cl.[6] B29C *53/04;53/36;* C01B *31/02;31/04*
U.S. Cl. 264—248 6 Claims



1. A method of producing a carbon material, comprising the steps of:

bending at least one carbon atom layer of graphite in at least on selected region along at least one of a first line, which extends generally in the direction of a straight line connecting the middle points of two parallel sides of a hexagonal ring of carbon atoms and contains two adjacent sides of said hexagonal ring forming an angle of 30° with said straight line, and a second line which extends generally in the direction of a diagonal of said hexagonal ring and contains three adjacent sides of said hexagonal ring on one side of said diagonal by scanningly picking up said at least one carbon atom layer with a probe of a scanning microscope which is sharply pointed on the atomic level,

bending step comprises bending said at least one carbon atom layer to form a flap region having a polygonal shape in a plan view.

5,626,813

PROCESS FOR THE PRODUCTION OF A TRANSPARENT POLYOLEFIN MULTILAYER FILM

Ursula Murschall, Nierstein; Angela Speith, Wiesbaden, and Gunter Schloegl, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 22,150, Feb. 23, 1993, Pat. No. 5,436,041.
This application Apr. 20, 1995, Ser. No. 425,210
Claims priority, application Germany, Feb. 24, 1992, 42 05 555.5
Int. Cl.[6] B29C *55/12*
U.S. Cl. 264—469 18 Claims

1. A process for the production of a transparent, printable, biaxially oriented polyolefin multilayer film which can be sealed on both sides, comprising a base layer B and different top layers A and C located on both sides thereof corresponding to a layer build-up of ABC; wherein

a) the base layer B comprises a peroxidically degraded polypropylene polymer having a degradation factor in the range from about 3 to about 10, and

b) the top layer A comprises a polymer mixture of two or more of the following polymers: a copolymer of
ethylene and propylene or
ethylene and butylene or
propylene and butylene or
ethylene and another α-olefin having 5 to 10 carbon atoms or
propylene and another α-olefin having 5 to 10 carbon atoms or
a terpolymer of
ethylene and propylene and butylene or
ethylene and propylene and another α-olefin having 5 to 10 carbon atoms; and
a polydiorganosiloxane and silicon dioxide, and

c) the top layer C comprises
a copolymer of
ethylene and propylene or
ethylene and butylene or
propylene and butylene or
ethylene and another α-olefin having 5 to 10 carbon atoms or
propylene and another α-olefin having 5 to 10 carbon atoms or
a terpolymer of
ethylene and propylene and butylene or
ethylene and propylene and another α-olefin having 5 to 10 carbon atoms, and a non-cohesive covering of polydialkylsiloxane on its outer surface, comprising:

(i) coextruding through a flat die melts corresponding to the individual layers of the film,

(ii) taking off and cooling to consolidate the resulting film, via a take-off roll,

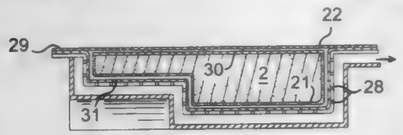
(iii) biaxially stretching the consolidated film,

(iv) thermofixing the biaxially stretched film, and

(v) covering top layer C with a non-cohesive layer of polydialkylsiloxane.

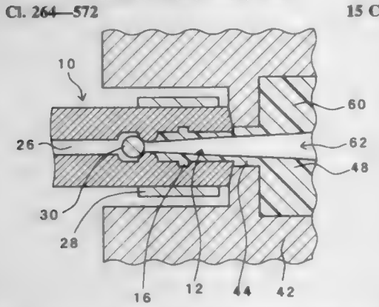
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5,626,814
METHOD OF MAKING A SELF-INFLATING STRUCTURE
Robert K. Vicino, 6064 Mohler St., San Diego, Calif. 92120
Filed Nov. 20, 1995, Ser. No. 560,842
Int. Cl.° B29C *41/04;51/10;51/14*
U.S. Cl. 264—511 **26 Claims**



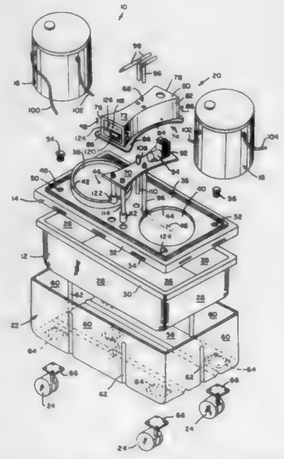
1. A process for making a self-inflating copy of a three-dimensional structure which comprises:
selecting at least one block of open-cell, resiliently compressible foam material;
shaping at least one portion of said block into an image of said structure;
making an envelope having at least one opening with at least one pliable sheet of material around said block;
collapsing said envelope and block by removing fluid held therein; and
constraining said envelope and block into a collapsed state;
wherein said step of making said envelope comprises:
selecting a first of said pliable sheet and at least one additional sheet;
forming said first pliable sheet into a soft and pliable cradle shaped and dimensioned to intimately contact a surface area of the shaped portion of said block;
placing said block between said first and said at least one additional sheet; and
bonding peripheral areas of said first sheet to said at least one additional sheet around said block.

5,626,815
GAS-FEEDING NOZZLE AND APPARATUS AND METHOD EMPLOYING SUCH NOZZLE
Akimasa Kaneishi, and Shinji Kiboshi, both of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan
Filed Oct. 26, 1994, Ser. No. 329,518
Claims priority, application Japan, Nov. 15, 1993, 5-285131
Int. Cl.° B29C *44/02;45/00*
U.S. Cl. 264—572 **15 Claims**



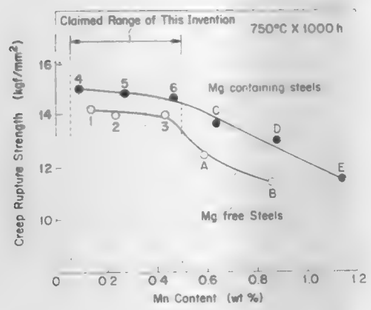
11. A gas-assisted injection molding method employing an apparatus including a mold having therein a cavity, molten resin injecting means for injecting molten resin into said cavity, and a gas-feeding nozzle for introducing pressurized gas into said molten resin in said cavity to produce a molded resin article having a hollow structure, said gas-feeding nozzle being located at a position separate and spaced from said molten resin injecting means and comprising a member having therethrough a passage including an upstream pressurized gas introduction portion, a downstream pressurized gas ejection portion, and a gas introducing port leading from said gas introduction portion to said gas ejection portion, said gas ejection portion being defined by an inner side wall of said member and having a gas ejection port at a downstream end of said member, said gas introducing port extending through a rear wall defining an upstream end of said gas ejection portion, said rear wall extending radially inwardly from said inner side wall, a non-return valve in said passage upstream of said gas introducing port, and said inner side wall of said gas ejection portion having a concavo-convex structure, said method comprising:
positioning said gas-feeding nozzle at said position with said gas ejection portion in communication with said cavity;
injecting molten resin into said cavity by said injecting means at a location separate and spaced from said position, and allowing molten resin to pass from said cavity at said position into said gas ejection portion and to accumulate and undergo solidification therein, while preventing flow of said molten resin from said gas ejection portion to said gas introduction portion by said non-return valve; and
passing pressurized gas through said passage and said non-return valve and introducing said pressurized gas from said gas ejection portion into said molten resin in said cavity, while preventing blow-off of said resin in said gas ejection portion by maintaining engagement of said concavo-convex structure with said resin in said gas ejection portion;
thereby forming said molded resin article having a hollow structure.

5,626,816
SILVER RECOVERY SYSTEM
Jean G. Fournier, P.O. Box 238, Marble Falls, Tex. 78654
Filed Aug. 7, 1995, Ser. No. 511,617
Int. Cl.° C22B *3/00*
U.S. Cl. 266—170 **17 Claims**



1. A system for recovering silver from a silver-bearing liquid, comprising:
a holding tank for receiving silver-bearing liquid, said holding tank having an opening in its top;
a removable cover for closing said opening;
a first cartridge carried by said cover, said first cartridge adapted to contain a source of ions above silver in electromotive force series for reacting with silver-bearing liquid so that silver is recovered within said first cartridge;
a second cartridge carried by said cover and serially connected with said first cartridge, said second cartridge adapted to contain a source of ions above silver in electromotive force series for reacting with silver-bearing liquid so that silver is recovered within said second cartridge; and,
a pump, having an inlet in fluid communication with said holding tank and an outlet in fluid communication with said first cartridge, secured to said cover for delivering silver-bearing liquid from said holding tank to said first and second cartridges.

5,626,817
AUSTENITIC HEAT RESISTANT STEEL EXCELLENT IN ELEVATED TEMPERATURE STRENGTH
Yoshiatsu Sawaragi, and Hiroyuki Senba, both of Nishinomiya, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
Filed Jun. 26, 1995, Ser. No. 494,736
Claims priority, application Japan, Jun. 28, 1994, 6-146438
Int. Cl.° C22C *38/42*
U.S. Cl. 420—49 **12 Claims**



1. A heat resistant austenitic stainless steel having high strength at elevated temperatures, consisting essentially of, on the weight percent basis, 0.05 to 0.15% carbon, not more than 0.3% silicon, 0.05 to 0.50% manganese, 17 to 25% chromium, 7 to 20% nickel, 2.0 to 4.5% copper, 0.10 to 0.80% niobium, 0.001 to 0.010% boron, 0.05 to 0.25% nitrogen, 0.003 to 0.030% sol. aluminum and the balance being iron and incidental impurities.

5,626,818
PROCESS FOR INHIBITING CORROSION
Oskar K. Wack, Stammham-Westerhofen, and Martin Hanek, Hilpoltstein, both of Germany, assignors to Dr. O.K. Wack Chemie GmbH, Germany
Continuation of Ser. No. 277,186, Jul. 19, 1994, abandoned. This application Jun. 3, 1996, Ser. No. 657,432
Claims priority, application Germany, Jul. 27, 1993, 43 25 133.1
Int. Cl.° C23F *11/00;11/12*
U.S. Cl. 422—14 **3 Claims**

1. A process for inhibiting corrosion of metal articles comprising,
rinsing the articles in an aqueous rinsing bath, said rinsing bath including 10–50% by weight glycolethers of the following composition:
60–90% by weight propyleneglycolether of the formula

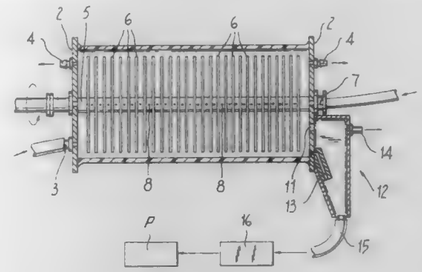
$$R_1—O—CH_2—CH(OH)—CH_3$$

R_1 being selected from the group CH_3, C_2H_5, n—C_3H_7, or iso—C_3H_7, and 40-10% by weight propyleneglycolether of the formula

$$R_2—O—CH_2—CH(OH)—CH_3$$

R_2 being selected from the group n—C_3H_7, iso—C_3H_7, n—C_4H_9, or iso—C_4H_9.

5,626,819
BLOOD OXYGENATORS
Waldyr P. Novello, Campinas; Mario Drummond, and Adolfo A. Leirner, both of São Paulo, all of Brazil, assignors to Fundaçao E. J. Zerbini, Sao Paulo - SP, Brazil
Filed Jul. 26, 1995, Ser. No. 507,749
Int. Cl.° A61M *1/14;1/34*
U.S. Cl. 422—45 **11 Claims**

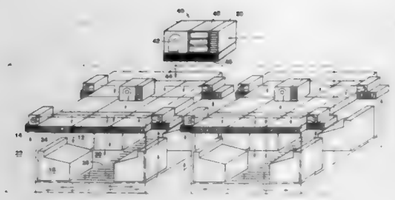


1. A blood oxygenator comprising:
a. a horizontally disposed cylindrical reservoir having a first end and a second end;
a. a first cap, closing said first end, having a lower blood inlet and an upper gas outlet;
b. a second cap closing said second end;
c. a hollow median shaft attached to said caps, disposed longitudinally within said cylindrical reservoir, said shaft provided with a plurality of orifices;
d. an oxygen providing means attached to one end of said shaft to allow oxygen to enter said shaft axially and centrally and to be diffused radially through said orifices and into said reservoir;
e. a plurality of disks attached to said shaft; and
f. a means for rotating said shaft about its longitudinal axis.

5,626,820
CLEAN ROOM AIR FILTERING
Devon A. Kinkead, 10 Hector Ave., Cumberland, R.I. 02864; Robert W. Rezuke, 127 Worcester Rd., North Grafton, Mass. 01536, and John K. Higley, 14 Saddlebrook Rd., Sherborn, Mass. 01770
Continuation-in-part of Ser. No. 807,151, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 283,318. Dec. 12, 1988, abandoned. This application Dec. 2, 1993, Ser. No. 161,931
Int. Cl.° A62B *7/08;* **B05B** *15/12;* **B01D** *46/00*
U.S. Cl. 422—122 **19 Claims**

1. An air filtering system for filtering an air stream for use in a clean room comprising
a HEPA (high efficiency particulate air) filter positioned to introduce air into the clean room and comprising borosilicate glass, and
an upstream air filtering bed positioned upstream of said HEPA filter to receive from the clean room an air stream containing fluorine and comprising a basic reagent selected to effectively remove boron contamination from the air stream as said air

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stream passes through the upstream air filtering bed, said boron contamination resulting from the interaction of fluorine with borosilicate glass in said HEPA filter.

5,626,821

CASH TRANSACTION MACHINE

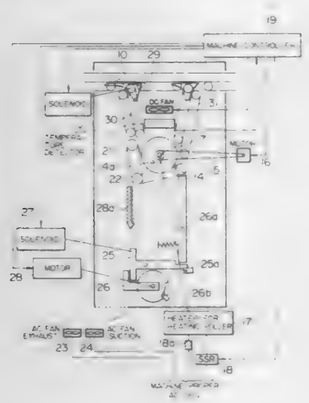
Yutaka Kako, Nagoya; Asahiko Isobe, Tokyo; Masataka Kawauchi, Ishioka; Tomomi Mizuno, Aichi-ken; Teruaki Mitsuya, Katsuta; Minoru Kadowaki, Toyota; Atsuko Uozumi, Owariasahi; Ryozo Nakamura, Aichi-ken; Riichi Kato, Owariasahi; Kousuke Noda, Tsuchiura, and Hiroyuki Kashiwada, Nagoya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 297,093, Aug. 26, 1994, Pat. No. 5,578,281, and Ser. No. 310,379, Sep. 22, 1994, Pat. No. 5,504,313, which is a division of Ser. No. 637,785, Jan. 7, 1991, Pat. No. 5,374,814. This application Apr. 26, 1995, Ser. No. 430,798

Claims priority, application Japan, Jan. 12, 1990, 2-003585; Sep. 3, 1990, 2-233017; Aug. 27, 1993, 5-212487; Dec. 16, 1993, 5-316267

Int. Cl.[6] **A61L** *2/04*

U.S. Cl. 422—307 **18 Claims**



1. A cash transaction machine for performing receiving transactions and/or paying transactions of bills by a user's manipulation, comprising:

a receptacle for depositing and/or withdrawing said bills;

storing means for storing said bills;

transport means for transferring said bills between said receptacle and said storing means; and

sterilizing means for transferring said bills to and from said transport means, and sterilizing the bills as they are moved through the sterilizing means to kill 80% or more order of staphylococcus aureus adhering to said bills.

5,626,822

CASH TRANSACTION MACHINE AND METHOD THEREFOR

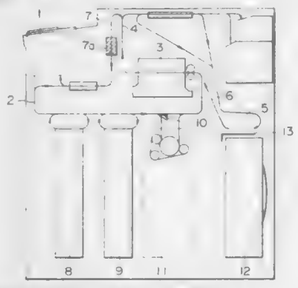
Minoru Kadowaki, Toyota; Atsuko Uozumi, Owariasahi; Ryozo Nakamura, Aichi-ken; Riichi Kato, Owariasahi; Kousuke Noda, Tsuchiura; Hiroyuki Kashiwada, Nagoya; Yoshio Horiba, and Takashi Hanamura, both of Seto, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 297,093, Aug. 26, 1994, Pat. No. 5,578,281, and Ser. No. 310,379, Sep. 22, 1994, Pat. No. 5,504,313, which is a division of Ser. No. 637,785, Jan. 7, 1991, Pat. No. 5,374,814. This application Apr. 26, 1995, Ser. No. 430,801

Claims priority, application Japan, Jan. 12, 1990, 2-003585; Sep. 3, 1990, 2-233017; Aug. 27, 1993, 5-212487; Dec. 16, 1993, 5-316267; Nov. 10, 1994, 6-276377

Int. Cl.[6] **B01B** *1/00*; **A61L** *2/04*

U.S. Cl. 422—307 **42 Claims**



1. A cash transaction machine, comprising:

a receptacle for depositing and withdrawing bills;

storing means for storing said bills;

transporting means for transporting said bills between said receptacle and said storing means;

sterilizing means for transferring said bills to and from said transport means, and heat-sterilizing said bills;

temperature detecting means for sensing a temperature of said sterilizing means; and

control means for controlling an execution of transaction performed in the cash transaction machine according to a temperature detected by said temperature detecting means.

5,626,823

STERILIZING APPARATUS AND MANUFACTURING APPARATUS FOR LIQUEFIED PRODUCT

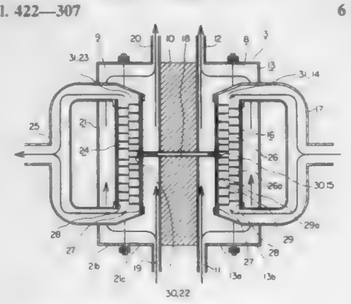
Tomio Niimi, Nagoya, Japan, assignor to Kankyokagakukogyo Kabushiki Kaisha, and Hitoshi Imai, both of Nagoya, Japan

Filed Aug. 22, 1995, Ser. No. 517,747

Claims priority, application Japan, Aug. 24, 1994, 6-224268

Int. Cl.[6] **A23C** *3/02*

U.S. Cl. 422—307 **6 Claims**



3. A sterilizing apparatus comprising:

a cylindrical casing having openings at both ends thereof;

cover bodies respectively having through holes detachably mounted on said openings of said cylindrical casing;

a heating portion comprising a heating element having a first inlet through which a raw material to be heated is introduced, and a first outlet through which a heated raw material is discharged, and a heating means for heating said heating element;

a cooling portion comprising a cooling element having a second inlet through which a raw material to be cooled is introduced, and a second outlet through which a cooled raw material is discharged, and a cooling means for cooling said cooling element;

a heat insulating material interposed between said heating portion and said cooling portion respectively provided in said casing, an outer diameter of said heat insulating material being smaller than an inner peripheral surface of said casing;

wherein said heating element and said cooling element each concentrically comprises a pair of larger and smaller diameter heat transfer discs having a plurality of polygonal chambers thereon which are open at fronts thereof, in each pair said larger and smaller diameter heat transfer discs being coupled to each other face to face, wherein said chambers of said larger and smaller diameter transfer discs are alternately arranged with one another so as to communicate with one another, and said larger diameter heat transfer disc has a circulation hole formed at a center of said heat transfer disc;

wherein said larger diameter heat transfer discs are disposed in said casing and peripheries of said larger diameter heat transfer discs are brought into close contact with said inner peripheral surface of said casing;

wherein said circulation hole of said heating element serves as said first inlet and circumferential openings define between said larger and smaller diameter heat transfer discs serve as the first outlet, and said circulation hole of said cooling element serves as said second inlet and said circumferential openings between said larger and smaller diameter heat transfer discs serve as said second outlet;

wherein an inner space defined between said heat insulating material and said inner peripheral surface of said casing serves as a raw material connecting passage for connecting said first outlet of said heating element and said second inlet of said cooling element, in which said first inlet and said first outlet of said heating element communicate with said through holes;

a first heating chamber, which is heated, contacts a rear surface of said larger diameter heat transfer disc of said heating element in said heating means;

a second heating chamber, which is heated, contacts a rear surface of said smaller diameter heat transfer disc;

a first cooling chamber, which is cooled, contacts the rear surface of said larger diameter heat transfer disc of said cooling element in said cooling means; and

a second cooling chamber, which is cooled, contacts the rear surface of the smaller diameter heat transfer disc, of said cooling element in the cooling means.

5,626,824

AUTOCLAVE

Yoichi Ishikawa; Shuji Yokoo, and Akira Mizoguchi, all of Tokyo, Japan, assignors to Able Corporation, Tokyo, Japan

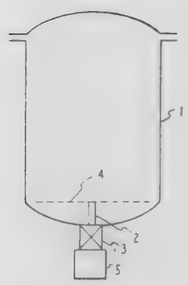
Continuation of Ser. No. 188,040, Jan. 28, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,258

Claims priority, application Japan, Jan. 29, 1993, 5-049835; Mar. 29, 1993, 5-108698

Int. Cl.[6] **A61L** *9/00*

U.S. Cl. 422—307 **2 Claims**

1. An autoclave for agitating and sterilizing a liquid, said autoclave comprising a sterilizer tank having a vertical axis; a table for supporting a liquid, said table having a horizontally disposed upper surface with respect to said vertical axis and said vertical axis extending through said table horizontal upper surface; and means for effecting movement of said table upper surface in a manner



such that said liquid is agitated in said sterilizing tank, wherein said movement of said table consists of rotating it in a first direction around said vertical axis, stopping said rotation in said first direction and then rotating said table in the opposite direction around said vertical axis.

5,626,825

PROCESS FOR THE PURIFICATION OF MAGNESIUM HYDROXIDE

Giancarlo Verri, Segrate, Italy, assignor to V.B.C. S.r.l., Milan, Italy

Filed Jul. 3, 1995, Ser. No. 497,898

Claims priority, application Italy, Jul. 21, 1994, MI94A1543

Int. Cl.[6] **C01F** *5/14*

U.S. Cl. 423—155 **9 Claims**

1. A process for preparing substantially pure magnesium hydroxide from raw magnesium hydroxide, which comprises dispersing raw magnesium hydroxide in water, under stirring to form a dispersion; bringing the pH of the dispersion to a value between 10.0 and 14.0; adding a chelating agent to the dispersion; and separating the resulting phases to isolate a substantially pure magnesium hydroxide product; and optionally washing said product with water.

5,626,826

ZIRCONIUM/CERIUM MIXED OXIDE CATALYST/ CATALYST SUPPORT COMPOSITIONS HAVING HIGH/ STABLE SPECIFIC SURFACES

Thierry Chopin, Saint Denis, France, and Gabriel Vilmin, Princeton, N.J., assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 194,529, Feb. 10, 1994. This application May 25, 1995, Ser. No. 450,999

Claims priority, application France, Feb. 10, 1993, 93 01450

Int. Cl.[6] **B01D** *53/94*; *53/38*

U.S. Cl. 423—213.2 **1 Claim**

1. In a process for the catalytic conversion of exhaust gases emanating from an internal combustion engine, the improvement which comprises, as the catalyst/catalyst support therefor, a zirconium/cerium mixed oxide having a specific surface area of greater than 10 m^2/g.

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5,626,827

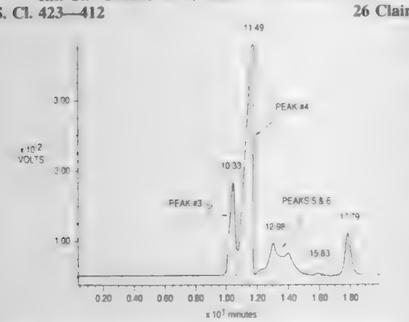
BASIC ALUMINUM ANTIPERSPIRANT ACTIVE MATERIALS HAVING ENHANCED ACTIVITY, ANTIPERSPIRANT ACTIVE COMPOSITIONS CONTAINING SUCH MATERIALS, AND METHODS FOR PREPARATION OF SUCH MATERIALS AND COMPOSITIONS

Morton L. Barr, Rockaway; Paul J. Vincenti, Jefferson, and Elaine L. Vanderhoof, Long Valley, all of N.J., assignors to The Mennen Company, Morristown, N.J.

Division of Ser. No. 97,620, Jul. 27, 1993, which is a continuation of Ser. No. 550,683, Jul. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,516, May 2, 1990, Pat. No. 5,202,115, which is a continuation-in-part of Ser. No. 233,008, Aug. 17, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 456,307

Int. Cl.[6] **C01B** *21/072;* **C01F** *7/56;* **A61K** *7/38*

U.S. Cl. 423—412 **26 Claims**



1. Basic aluminum materials having the empirical formula:

$$Al_2(OH)_{6-a}X_a,$$

where $0.5 \leqq a \leqq 5.0$; and X is a univalent complex oxoanion of nitrogen or a halogen, which forms salts with Al^{3+} in aqueous solution, so that these salts are essentially completely dissociated, which is readily soluble in water with metallic ions in the solution, and which forms conjugate acids that are strong acids, the materials being further characterized by:

(a) size exclusion high performance liquid chromatography peaks corresponding to peak 3 and peak 4 of the size exclusion chromatogram produced from a high performance liquid chromatography technique;

(b) a peak 4 relative area of at least 25%, and a peak 3 relative area of less than 60%, the sum of the relative peak 3 and peak 4 areas being at least 50%;

(c) less than 10% chromatographic peaks eluting at shorter retention times than peak 3, corresponding to peaks 1 and 2;

(d) less than 25% of the aluminum being in the form of Al^b polyhydroxyaquoaluminum;

(e) an ^{27}Al NMR spectrum wherein 5% to 30% of the total area under the spectrum from 140 ppm to −80 ppm is contained in a resonance line at 71.5–73.5 ppm; and

(f) an ^{27}Al NMR spectrum in which the area of the 71.5–73.5 ppm resonance line includes more than 50% of the combined areas of the 62.5–63.5 ppm and 71.5–73.5 ppm resonance lines.

5,626,828

ZEOLITE GZS-11 AND ITS DYNAMIC PREPARATION PROCESS

Jianxin Wu, Elkridge; Robert R. Gatte, Columbia, and Terry G. Roberie, Ellicott City, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 93,249, Jul. 16, 1993, Pat. No. 5,389,358. This application Oct. 18, 1994, Ser. No. 324,949

Int. Cl.[6] **C01B** *39/48*

U.S. Cl. 423—702 **2 Claims**

1. A method of preparing a GZS-11 zeolite comprising the steps of:

(1) preparing a synthesis gel mixture of a first composition by mixing a reactive source containing a trivalent element, a reactive source containing a tetravalent element, one or more organic structure directing agents and a reactive source containing mono or divalent inorganic cations;

(2) heating the gel mixture and aging until nucleation and initial zeolite crystallization begin;

(3) altering the gel mixture by adding at least one reactant containing a trivalent element into the gel mixture after crystallization has begun;

(4) continuing the aging of the gel mixture to allow the completion of the crystallization of zeolite from the altered gel mixture; and

(5) recovering the crystalline zeolite product.

5,626,829

METHOD AND APPARATUS FOR INTERSTITIAL RADIATION OF THE PROSTATE GLAND

Panos G. Koutrouvelis, McLean, Va., assignor to PGK, Enterprises, Inc., McLean, Va.

Filed Nov. 16, 1994, Ser. No. 340,288

Int. Cl.[6] **A61K** *51/00;* **A61B** *19/00*

U.S. Cl. 424—1.11 **4 Claims**

1. A method for treating prostate cancer using a stereotactic assembly including a support structure for supporting a protractor in a desired fixed position, the protractor supporting a needle guide, and at least a portion of the stereotactic assembly including the protractor and the needle guide being movable into and out of an imaging device, said method comprising the steps of:

placing a patient in the prone position on a movable surface movable into and out of the imaging device;

moving the movable surface into the imaging device and obtaining at least one two-dimensional image of the prostate of the patient at a predetermined image angle;

removing the movable surface from the imaging device and adjusting the stereotactic assembly such that the needle guide is disposed adjacent the gluteal region of the patient at an angle substantially identical al to said image angle;

placing at least one needle in the vicinity of the prostate of the patient through the gluteal region using the needle guide, thereby engaging the patient and the stereotactic assembly via said needle;

verifying placement of said needle using the imaging device without disengaging said needle from the patient and the stereotactic assembly by moving the movable surface and at least said portion of the stereotactic assembly into the imaging device; and

placing radioactive seeds in the vicinity of the prostate using said needle.

5,626,830

ANTI-MYOSIN MOUSE MONOCLONAL ANTIBODY AND METHOD OF USE FOR DIAGNOSIS OF MYOCARDIAL INFARCTION

Hanna Sikorska, Ile Bizard; Sylvine Savoie, Montréal, and Clémence Desputeau, Bellefeuille, all of Canada, assignors to Biotech Cardio-Vision, Societe en Commandite Enregistree, Montreal, Canada

Continuation-in-part of Ser. No. 905,526, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 327,747, Mar. 23, 1989, abandoned. This application May 31, 1994, Ser. No. 251,813

Int. Cl.[6] **A61K** *51/10;* **C12N** *15/20;* **A07K** *16/18*

U.S. Cl. 424—1.49 **10 Claims**

1. A monoclonal antibody which is produced by the hybridoma deposited with the American Type Culture Collection (ATCC) having the accession number ATCC HB9916 or an antigen binding fragment thereof.

5,626,831

METHOD FOR RELIEF AND PREVENTION OF COMMON COLD, AND COMPOSITIONS

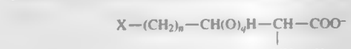
Arthur Van Moerkerken, 18761 W. Dixie Hwy., #209, North Miami Beach, Fla. 33180

Filed Dec. 20, 1995, Ser. No. 575,858

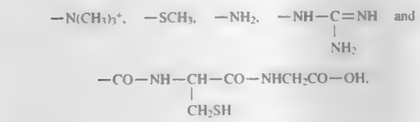
Int. Cl.[6] **A61K** *49/00;* **G01N** *31/00;33/48*

U.S. Cl. 424—9.2 **35 Claims**

1. An oral dosage form for relieving symptoms of the common cold in a person in need of such relief comprising a carrier and a quantity of at least one nutrient compound having the formula



in which X is selected from the group consisting of —SH, $—CONH_2$,



n is zero, one, or two, and p and q are each zero or one, provided that p and q are not both zero and p is zero and q is one only when X is $—N(CH_3)_3+$.

5,626,832

INJECTABLE OPACIFYING COMPOSITION CONTAINING LIPOSOMES OF HIGH ENCAPSULATION CAPACITY FOR X-RAY EXAMINATIONS

Michel Schneider, Troinex, Switzerland; Hervé Tournier, Valleiry, France, and Bernard Lamy, Carouge, Switzerland, assignors to Bracco S.p.A., Milan, Italy

Continuation of Ser. No. 128,206, Sep. 29, 1993, Pat. No. 5,445,810, which is a continuation of Ser. No. 302,690, Jan. 19, 1989, Pat. No. 5,312,615. This application May 12, 1995, Ser. No. 440,134

Claims priority, application Switzerland, May 22, 1987, 1991/87-3; WIPO, May 16, 1988, PCT/EP88/00447

Int. Cl.[6] **A61K** *49/00*

U.S. Cl. 424—9.4 **7 Claims**

1. A method of diagnostic examination with X-rays which comprises injecting into the circulation of patients to be examined, for the purpose of opacifying organs, an aqueous composition formed of a suspension in a physically tolerable medium of liposome vesicles having a lipidic membrane containing, encapsulated in these vesicles, at least one iodinated organic compound opaque to X-rays in aqueous solution, wherein the vesicles of the liposomes have a mean size which is between 0.15 and 3 μm, and that the ratio of the weight of the iodine encapsulated in the liposomic vesicles to the weight of the lipids of said membrane is from (1.75–6):1.

5,626,833

ULTRASOUND IMAGING METHOD USING MICROBUBBLES

Ernest G. Schutt, San Diego, Calif.; Charles D. Anderson, Lebanon, N.J., and David P. Evitts, La Jolla, Calif., assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Division of Ser. No. 284,083, Aug. 1, 1994, which is a continuation-in-part of Ser. No. 99,951, Jul. 30, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,853

Int. Cl.[6] **A61B** *8/13*

U.S. Cl. 424—952 **19 Claims**

1. A method for imaging an object or body part or body cavity, comprising the steps of:

introducing into said object or body part or body cavity a microbubble preparation comprising a first gas, a second gas, a membrane forming material, and a liquid, wherein said first gas and said second gas are present in a molar ratio of about 1:100 to about 1,000:1, and wherein said first gas has a vapor pressure of at least about (760−x) mm Hg at 37° C., where x is the vapor pressure of the second gas at 37° C., and wherein said vapor pressure of each of said first and second gases is greater than about 75 mm Hg at 37° C., and the boiling point of at least one said second gas at atmospheric pressure is greater than about 37° C., with the proviso that said first gas and said second gas are not water vapor, wherein said first and second gases are surrounded with said membrane forming material; and

imaging at least a portion of said object or body by ultrasound or magnetic resonance.

5,626,834

SNAKE-CONTROLLING AGENT

Michihisa Toriba, Takasaki; Kenji Tsuda, Musashino; Satoshi Senbo; Yoshiaki Kosuge, both of Takarazuka; Hiroshi Fukui, Yokohama, and Yoichiro Tsubaki, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 30, 1992, Ser. No. 921,109

Claims priority, application Japan, Oct. 17, 1991, 3-269341

Int. Cl.[6] **A01N** *25/06*

U.S. Cl. 424—45 **7 Claims**

1. A method for controlling snakes selected from the group consisting of *Infraorder Scolecophidia, Infraorder Henophilia* and *Infraorder Caenophidia* which comprises applying to the snakes of this group an amount effective for killing snakes of this group of at least one pyrethroid compound.

5,626,835

LOW VOC HAIR SPRAY COMPOSITION

Edward G. Malawer, Wayne; Kolazi S. Narayanan, Palisades Park, both of N.J.; James Cullen, Bartonsville, Pa., and Colleen M. Rocafort, Lake Hiawatha, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Jun. 7, 1994, Ser. No. 255,192

The portion of the term of this patent subsequent to Jan. 5, 2015, has been disclaimed.

Int. Cl.[6] **A61K** *7/11*

U.S. Cl. 424—47 **21 Claims**

1. A low volatile organic compounds hair spray concentrate microemulsion in the form of a stable, clear, single phase system in which the particles therein have a diameter of less than 1 micron, consisting essentially of, by weight,

(a) an ethyl half-ester of a copolymer of maleic anhydride and an alkyl vinyl ether in an amount of less than 20%, optionally neutralized up to 20 mole %,

(b) an ethoxylated glycerol fatty acid ester as the surfactant having a hydrophobic-lipophilic balance of 10–18, in an amount of 0.2% to 2%,

(c) ethanol in an amount of 55% or less, and

(d) water to 100%.

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5,626,836

LOW VOC HAIR SPRAY COMPOSITIONS CONTAINING TERPOLYMERS OF VINYL PYRROLIDONE, VINYL CAPROLACTAM AND 3-(N-DIMETHYLAMINOPROPYL) METHACRYLAMIDE

Kou-Chang Liu, Wayne; Colleen M. Rocafort, Lake Hiawatha; Lowell R. Anderson, Morristown,, and Yakir Reuven, West Orange, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Dec. 28, 1994, Ser. No. 365,259
Int. Cl.[6] A61K *7/11*
U.S. Cl. 424—47 **17 Claims**

1. A homogeneous polymerization process for forming a clear solution of a hair fixative resin which is a homogeneous terpolymer of vinyl pyrrolidone (VP), vinyl caprolactam (VCL) and 3-(N-dimethylaminopropyl) methacrylamide (DMAPMA) monomers, in a compositional range of 60–95% VCL, 1–20% VP and 1–10% DMAPMA, by weight in alcohol or water, or mixtures thereof, at a solids content of 10–70%, having a clarity of less than 10 NTU, and a Brookfield viscosity of less than 300,000 cps, at a polymerization temperature of about 65° C., for about 5 hours, in the presence of a radical initiator at a pH of about 7.5, which consists essentially of the steps of:

(a) charging a reactor with VCL, optionally with an amount of VP and/or DMAPMA, and

(b) introducing VP and DMAPMA incrementally into the reactor wherein the rate of disappearance of VCL, VP and DMAPMA are matched during the polymerization.

5,626,837

ORAL COMPOSITION

Toshiya Shimada, Tokyo; Kazuo Mukasa, Konosu; Tetsuo Gomi, Tokyo, and Takao Yokoo, Kasubake, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Division of Ser. No. 284,212, Aug. 2, 1994, abandoned. This application Feb. 15, 1996, Ser. No. 601,831
Claims priority, application Japan, Aug. 12, 1993, 5-220646
Int. Cl.[6] A61K *7/16;7/18;7/22*
U.S. Cl. 424—49 **6 Claims**

1. An oral composition comprising:

a cationic bactericide and

a water-soluble flavor obtained by extracting an oil-soluble flavor with an aqueous ethanol solution:

the composition being free of anionic and nonionic surfactants.

5,626,838

USE OF KETOROLAC FOR TREATMENT OF SQUAMOUS CELL CARCINOMAS OF THE ORAL CAVITY OR OROPHARYNX

Paul F. Cavanaugh, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 13, 1995, Ser. No. 402,587
Int. Cl.[6] A61K *47/36*
U.S. Cl. 424—54 **8 Claims**

1. A method of treatment for primary and recurring squamous cell carcinoma of the oral cavity or oropharynx of a human or mammal having said carcinoma, comprising the topical administration to the oral cavity or oropharynx of said human or lower animal, of a composition, free of hyaluronic acid, comprising an effective amount of an NSAID, alone or as an adjunct to surgery and/or radiation therapy, wherein said composition is held in the oral cavity for a period of from about 15 seconds to about 10 minutes, then largely expectorated rather than being swallowed.

5,626,839

LIGHT RESPONSIVE SELF-TANNING PRODUCTS AND METHODS FOR USE

Virginia Scales-Medeiros, 520 Eureka Ave., Santa Rosa, Calif. 95403

Filed Nov. 8, 1994, Ser. No. 337,489
Int. Cl.[6] A61K *7/42;7/00*
U.S. Cl. 424—59 **11 Claims**

1. A method for imparting a tanned appearance simulative a tan derived from solar radiant exposure by effecting color change in selected areas of skin of a human body surface comprising the steps:

a) selecting areas of skin for color change;

b) applying an artificial tanning composition comprising a self-tanning agent, a fluorescent agent, and a cosmetically acceptable carrier to approximately the selected areas of skin, said self-tanning agent is selected from the group consisting of dihydroxyacetone, glucose, xylose, fructose, reose, ribose, pentose, arabinose, allose, tallose, altrose, mannose galactose, lactose, sucrose, erythrose, glyceraldehyde, and 5,6-dihydroxy indole; and said fluorescent agent includes a fluorescent dye selected from the group consisting of rhodamine, fluorescein, napthalimide, and xanthene dye;

c) exposing the body surface to a light source of frequency and intensity to produce fluorescence in said composition;

d) inspecting the body surface to determine whether said fluorescence produced is limited to substantially said selected areas of skin;

e) reapplying said composition to said selected areas of skin which show no fluorescence;

f) removing said composition from areas of the body surface outside those selected areas of skin which show fluorescence; and

g) allowing sufficient time for said self-tanning agent of said composition to impart a tanned appearance to substantially said selected areas of skin.

5,626,840

USE OF POLYURETHANES WITH CARBOXYLATE FUNCTIONALITY FOR HAIR FIXATIVE APPLICATIONS

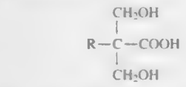
John Thomaides, Berkeley Heights; Julie V. Russo, Freehold; Gary T. Martino, Plainsboro, and Dilip K. Ray-Chaudhuri, Bridgewater, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 351,903, Dec. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 43,241, Apr. 6, 1993, abandoned. This application Nov. 30, 1995, Ser. No. 565,353
Int. Cl.[6] A61K *7/11*
U.S. Cl. 424—70.11 **12 Claims**

1. An aqueous based hair fixative composition that comprises

(A) an effective percent by weight, based on the total weight of the hair fixative composition, of a fully reacted carboxylated linear polyurethane prepared from

(i) one or more 2,2-hydroxymethyl-substituted carboxylic acids, represented by the formula



in which R represents C_1–C_8 alkyl, present in a sufficient amount by weight to give 0.35–2.25 milliequivalents of carboxyl functionality per gram of polyurethane.

(ii) 10–90% by weight, based on the weight of the polyurethane, of one or more organic compounds, having a number average molecular weight of greater than 1000, selected from the group consisting of polyethylene glycol and polypropylene glycol, and

(iii) one or more organic diisocyanates selected from the group consisting of methylene-di-p-phenyl diisocyanate, methylene-bis-(4-cyclohexylisocyanate), isophorone diisocyanate, and toluene diisocyanate and present in a sufficient amount to react with the active hydrogens of the 2,2-hydroxymethyl-substituted carboxylic acid and the organic compounds, excepting the hydrogen on the carboxylate of the 2,2-hydroxymethyl-substituted carboxylic acid;

(B) an effective amount of one or more cosmetically acceptable organic or inorganic bases, selected from the group consisting of sodium hydroxide, potassium hydroxide, 2-amino-2-methyl-1-propanol, histidine, tris(hydroxymethyl)-aminomethane, triethanolamine, and triethylamine, to neutralize a sufficient proportion of the available carboxyl groups on the polyurethane to make the polyurethane soluble or dispersible in water or in a mixture of water and polar organic solvent; and

(C) a solvent comprising

(i) water, and

(ii) 0–90%, by weight of the solvent, of one or more polar organic solvents selected from the group consisting of ethanol, propanol, isopropanol, butanol, dimethyl ether, acetone, methylethyl ketone and dimethoxymethane.

5,626,841

USE OF INTRA-PLATELET UROKINASE-TYPE PLASMINOGEN ACTIVATORS FOR LONG-TERM INHIBITION OF THROMBOSIS

Victor Gurewich, 11 Reservoir St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 14,207, Feb. 5, 1993, abandoned. This application Jun. 7, 1994, Ser. No. 254,922
Int. Cl.[6] A61K *38/49;* **C12N** *9/64;9/72*
U.S. Cl. 424—94.63 **13 Claims**

1. A method of adjunctive therapy to inhibit reocclusion in a patient after thrombolytic treatment, said method comprising administering to the patient a bolus of an amount of purified pro-urokinase ("pro-UK"), said amount of pro-UK is administered after the completion of the thrombolytic treatment and once every 1 to 10 days thereafter for the period of risk of reocclusion, wherein said pro-UK becomes incorporated by platelets of the patient for subsequent activation during thrombosis to inhibit reocclusion in the patient.

5,626,842

Patent Not Issued For This Number

5,626,843

TREATMENT OF AUTOIMMUNE DISEASES, INCLUDING AIDS, BY REMOVEL OF INTERFERONS, TNFS AND RECEPTORS THEREFOR

Simon V. Skurkovich, Rockville, Md., and Boris Skurkovich, Pawtucket, R.I., assignors to Advanced Biotherapy Concepts, Inc., Rockville, Md.

Filed Feb. 26, 1993, Ser. No. 25,408
Int. Cl.[6] A61K *39/395*
U.S. Cl. 424—140.1 **16 Claims**

1. A method of removing antigens from a patient with autoimmune disease or AIDS comprising the steps of:

drawing fluid from said patient;

passing said fluid through immunosorbent comprising a combination of antibodies, consisting essentially of: (a) one or more antibodies to at least one interferon, selected from the group consisting of alpha interferons and gamma interferons, and receptors therefor; and (b) one or more antibodies to tumor necrosis factors, and receptors therefor; and

returning said fluid to said patient.

5,626,844

MONOCLONAL ANTIBODY AGAINST RICIN A CHAIN

Paul V. Lemley, Gettysburg, Pa., and D. Craig Wright, Gaithersburg, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 787,352, Nov. 4, 1991, abandoned. This application Dec. 27, 1994, Ser. No. 363,204
Int. Cl.[6] A61K *39/395;* **C07K** *16/16;* **A61M** *5/20*
U.S. Cl. 424—141.1 **10 Claims**

1. A monoclonal antibody of isotype IgG1 having the binding characteristics of the antibody produced by the hybridoma which is deposited in the American Type Culture Collection and assigned the ATCC accession number HB-12054 said characteristics include:

a) binding specifically to the neutralizing epitope of the ricin A chain; and

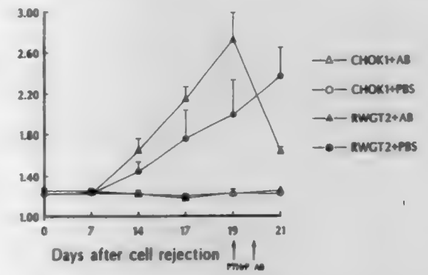
b) providing in vitro protection of at least 95% of EL-4 cells from 100 ng/mL ricin challenge when said antibody is present in the tissue culture at a level of at least 1000 ng/mL.

5,626,845

METHOD TO AMELIORATE OSTEOLYSIS AND METASTASIS

Toshiyuki Yoneda, and Gregory R. Mundy, both of San Antonio, Tex., assignors to Xenotech Incorporated, Foster City, Calif.

Filed Jan. 23, 1995, Ser. No. 376,359
Int. Cl.[6] A61K *39/395*
U.S. Cl. 424—145.1 **14 Claims**



1. A method of treating growth of metastasized cancer cells on bone which method comprises administering to a subject in need of such treatment an amount of anti-PTH-rp sufficient to treat said growth.

5,626,846

CONTRACEPTIVE VACCINE BASED ON ALLOIMMUNIZATION WITH ZONA PELLUCIDA POLYPEPTIDES

Jurrien Dean, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Rockville, Md.

Division of Ser. No. 38,948, Mar. 26, 1993, which is a continuation-in-part of Ser. No. 930,462, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 364,379, Jun. 12, 1989, abandoned. This application May 30, 1995, Ser. No. 453,472
Int. Cl.[6] A61K *39/00;38/00;* **C12P** *21/04;* **C07K** *2/00*
U.S. Cl. 424—184.1 **6 Claims**

1. A contraceptive vaccine for use in a mammalian female comprising an amino acid sequence for binding of an antibody that inhibits fertilization of an egg by a sperm, said amino acid sequence comprising a peptide consisting of mouse zona pellucida 2 (ZP2) amino acid sequence Ile-Arg-Val-Gly-Asp-Thr-Thr-Thr-

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Asp-Val-Arg-Tyr-Lys-Asp-Asp-Met (amino acid residues 114–129 of SEQ. ID NO. 6) and conservatively modified variants thereof;

or a homologous region of ZP2 protein originating from a mammalian species which said vaccine is used and conservatively modified variants of said homologous region; and a pharmacologically acceptable carrier.

5,626,847

METHOD OF PURIFYING CYCLITOLS

Pramod Agrawal, 5007 Birchwood Rd., Santa Barbara, Calif. 93111, and Israel Rabinowitz, 2534 Foothill Rd., Santa Barbara, Calif. 93105

Filed Dec. 20, 1990, Ser. No. 634,089

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **11 Claims**

1. A method of purifying cyclitols comprising:

preparing a plant extract mixture containing at least one cyclitol and other carbohydrates;

adding to said plant extract mixture a microorganism which consumes an alditol; and

substantially reducing the concentration of an alditol in the plant extract mixture, whereby the concentration of said cyclitol or cyclitols is enhanced relative to the concentration of said alditol.

5,626,848

REDUCED-CLOUD-POINT CLARIFIED NEEM OIL AND METHODS OF PRODUCING

Deborah H. Barnette, Baltimore, and James F. Walter, Ashton, both of Md., assignors to Thermo Trilogy Corporation, Waltham, Mass.

Filed Jun. 6, 1995, Ser. No. 470,798

Int. Cl.[6] A01N *65/00*

U.S. Cl. 424—195.1 **3 Claims**

1. A method for preparing a neem oil having an acceptably low foliar phytotoxicity, the method comprising the steps of:

treating a crude neem oil preparation comprising lipid material with an amount of an enzyme having a lipid-degrading activity, at a temperature at which the enzyme retains the lipid-degrading activity to degrade a percentage of the lipid material until a clarified neem oil is formed;

inactivating the enzyme; and

determining the foliar phytotoxicity of the enzyme-treated neem oil.

wherein the foliar phytotoxicity of the clarified neem oil is lower than the foliar phytotoxicity of the crude neem oil.

5,626,849

WEIGHT LOSS COMPOSITION FOR BURNING AND REDUCING SYNTHESIS OF FATS

Carl W. Hastings, Glenco, and David J. Barnes, St. Louis, both of Mo., assignors to Reliv International, Inc., Chesterfield, Mo.

Filed Jun. 7, 1995, Ser. No. 484,378

Int. Cl.[6] A61K *35/78;47/00;33/24;31/70*

U.S. Cl. 424—195.1 **20 Claims**

1. A weight loss composition comprising:

250 to 500 mg (–) hydroxycitric acid;

50 to 125 mg L-carnitine;

25 to 100 mcg Chromium;

25 to 100 mg Choline;

25 to 100 mg Inositol;

25 to 100 mg Gamma-Linolenic Acid;

15 to 75 mg herbs; and

5 to 30 mg antioxidants.

5,626,850

NON-SHEDDING LIVE HERPESVIRUS VACCINE

Nicolaas Visser; Petrus A. M. van Woensel, both of Boxmeer, Netherlands, and Thomas C. Mettenleiter, Tubingen, Germany, assignors to Akzo Nobel N.V., Arnhem, Netherlands

PCT No. PCT/EP93/01661, § 371 Date Mar. 28, 1994, § 102(e) Date Mar. 28, 1994, PCT Pub. No. WO94/03595, PCT Pub. Date Feb. 17, 1994

PCT Filed Jun. 28, 1993, Ser. No. 211,278

Claims priority, application European Pat. Off., Jul. 30, 1992, 92202370

Int. Cl.[6] A61K *39/245;39/295;* **C12N** *7/00;5/10*

U.S. Cl. 424—199.1 **17 Claims**

1. A live pseudorabies virus vaccine, comprising: live pseudorabies viruses that are not able to produce a functional gp50 protein in an infected animal as the result of a mutation comprising the deletion of the entire gp50 gene; and a pharmaceutically acceptable carrier or diluent.

8. A live pseudorabies virus vaccine, comprising: non-complementing cells harboring, in a cell-associated form, live pseudorabies viruses that are not able to produce a functional qp50 in an infected animal as a result of a mutation in the gp50 gene or the region controlling the expression thereof; and a pharmaceutically acceptable carrier or diluent.

5,626,851

ROTAVIRUS REASSORTANT VACCINE

H. Fred Clark; Paul Offit, both of Philadelphia, Pa., and Stanley A. Plotkin, Paris, France, assignors to The Wistar Institute of Anatomy and Biology, and The Children's Hospital of Philadelphia, both of Philadelphia, Pa.

Continuation-in-part of Ser. No. 121,220, Sep. 14, 1990, abandoned, and Ser. No. 249,696, May 26, 1994, abandoned, which is a continuation of Ser. No. 902,321, Jun. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 558,884, Jul. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 126,477, Nov. 30, 1987, abandoned, said Ser. No. 121,220is a continuation of Ser. No. 558,884, which is a continuation-in-part of Ser. No. 126,477. This application Dec. 9, 1994, Ser. No. 353,547

Int. Cl.[6] A61K *39/12;39/295;* **C12N** *7/00;* **C12Q** *1/70*

U.S. Cl. 424—205.1 **39 Claims**

15. A vaccine useful in reducing the clinical symptoms associated with gastroenteritis caused by rotavirus infection comprising:

(a) a first rotavirus reassortant having RNA comprising a gene segment encoding vital protein (v.p.) 4 derived from a selected human rotavirus strain and ten gene segments derived from a human rotavirus strain and bovine rotavirus strain WC3 or progeny thereof, wherein at least one of said ten gene segments is derived from the bovine rotavirus strain; and

(b) a second rotavirus reassortant having RNA comprising a gene segment encoding viral protein (v.p.) 7 derived from a selected human rotavirus strain, and ten gene segments derived from a human rotavirus strain and bovine rotavirus strain WC3 or progeny thereof, wherein at least one of said ten gene segments is derived from the bovine strain;

wherein said reassortants are suitable for use in a human vaccine.

5,626,852

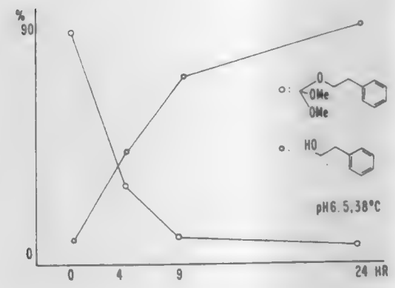
COMPOSITION CONTAINING BODY ACTIVATED FRAGRANCE FOR CONTACTING THE SKIN AND METHOD OF USE

Robert Suffis, Ho-Ho-Kus; Morton L. Barr, East Brunswick, both of N.J.; Kenya Ishida, Yokohama; Kiyohito Sawano, Hiratsuka, both of Japan; Augustinus G. van Loveren, Bedford, N.Y.; Tetsuo Nakatsu, Danville, Calif.; Carter B. Green, Vacaville, Calif.; Gary A. Reitz, Antioch, Calif.; Raphael K. L. Kang, Pleasant Hill, Calif., and Toshiya Sato, deceased, late of Tama-ku, Japan, assignors to The Mennen Company, Morristown, N.J., and Takasago International Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 948,510, Sep. 22, 1992, Pat. No. 5,378,468. This application Dec. 23, 1994, Ser. No. 364,927

Int. Cl.[6] A61K *7/00;7/46*

U.S. Cl. 424—401 **35 Claims**



1. A composition for application to the skin, the composition being capable of producing an alkaline pH when in contact with water and including (1) a vehicle such that when the composition is in contact with water, the composition is at the alkaline pH, and (2) at least one potential fragrance, the at least one potential fragrance being at least one compound having a first level of aroma in the composition, and reacting when in contact with the skin to respectively produce a compound having a fragrance, the fragrance being of a second level of aroma, the second level being stronger than the first level, wherein the at least one potential fragrance is selected from the group consisting of heliotropine ethylene glycol acetal, ionone dialkyl ketal, methyl naphthyl ketone dialkyl ketal, citral polyol acetal, α-amyl cinnamaldehyde dialkyl acetal, α-amyl cinnamaldehyde polyol acetal, vanillin dialkyl acetal, vanillin alkylene acetal, anisic aldehyde dialkyl acetal, anisic aldehyde polyol acetal, citral dialkyl acetal, and vanillin polyol acetal.

5,626,853

AQUEOUS MAKE-UP GEL CONTAINING ORGANOPOLYSILOXANE

Isabelle Bara, Paris, and Myriam Mellul, L'Hay-les-Roses, both of France, assignors to L'Oreal, Paris, France

Filed Mar. 14, 1995, Ser. No. 403,398

Claims priority, application France, Mar. 14, 1994, 94 02944

Int. Cl.[6] A61K *6/00*

U.S. Cl. 424—401 **19 Claims**

1. A make-up gel comprising an aqueous phase, a hydrophilic polymer as a gelling agent, and a colouring material which is soluble or dispersible in the aqueous phase, and further comprising at least one organopolysiloxane solubilized in the aqueous phase, wherein said at least one organopolysiloxane solubilized in the aqueous phase is selected from dimethicone copolyols and their derivatives and organopolysiloxanes solubilized using a surfactant of HLB (hydrophilic-lipophilic balance) value above 8.

5,626,854

BATH COMPOSITION

Yuji Ichii; Norihiro Tanaka; Shinobu Mori, and Hidenori Yorozu, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,961

Claims priority, application Japan, Mar. 17, 1994, 6-047181; Mar. 18, 1994, 6-048497

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **10 Claims**

1. A method for imparting a moist feel to the skin and improving a warm feel of the body, which comprises bathing the body in: a bath containing a bathing composition comprising at least one of a xanthine or a β-adrenergic stimulant in an amount effective to achieve the functions of imparting a moist feel to the skin and improving a warm feel of the body.

5,626,855

SERINE COMPOUNDS, THEIR PREPARATION AND THEIR USE IN COSMETIC OR DERMATOLOGICAL COMPOSITIONS

Michel Philippe, Wissous, France, assignor to L'Oreal, Paris, France

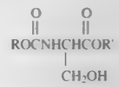
Filed May 9, 1995, Ser. No. 437,809

Claims priority, application France, May 9, 1994, 94 05689

Int. Cl.[6] A61K *7/00;7/06*

U.S. Cl. 424—401 **5 Claims**

1. A cosmetic or dermatological composition, comprising at least one racemic mixture of a serine compound corresponding to Formula I:



wherein R and R', which are identical or different, are selected from a linear or branched hydrocarbon radical having from 8 to 30 carbon atoms:

the D-optical isomer of Formula (I);

the L-optical isomer of Formula (I); or

a non-racemic mixture of at least two of said optical isomers, in a cosmetically acceptable carrier.

5,626,856

COSMETIC DELIVERY VEHICLES AND RELATED COMPOSITIONS

Dieter Berndt, Incline Village, Nev., assignor to Safe & Dry Company, Inc., Spring Lake, N.J.

Filed Jun. 30, 1995, Ser. No. 497,454

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—401 **42 Claims**

1. A delivery composition for use in a cosmetic or pharmaceutical formulation consisting essentially of a volatile cyclosiloxane ranging from about 10% to about 90% by weight of said composition and a translucent mixture of an oil or glyceride ester and a particulate carbohydrate, said mixture ranging from about 10% to about 90% by weight of said composition, said oil or glyceride ester ranging from about 5:1 to about 1:10 by weight of said particulate carbohydrate in said mixture, said composition optionally comprising at least one additive selected from the group consisting of active agents, fragrances, coloring additive, emollients, surfactants, medicinal and fill formers.

14. An antiperspirant composition consisting essentially of a volatile cyclosiloxane ranging from about 10% to about 70% by weight of said composition; a translucent mixture of an oil or glyceride ester and a particulate carbohydrate, said translucent mixture ranging from about 15% to about 70% by weight of said composition, said oil or glyceride ester ranging from about 5:1 to about 1:3 by weight of said particulate carbohydrate in said mixture; and about 5% to about 35% by weight of an antiperspirant material.

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41. A non-aqueous, volatile cyclosiloxane-free translucent cosmetic or pharmaceutical film-forming composition consisting essentially of:

at least about 60% by weight of a translucent mixture comprising an oil or glyceride ester and a particulate carbohydrate in a weight ratio ranging from about 5:1 to about 1:3; where in said oil or glyceride ester being included at about 20% to about 85% by weight of said composition and said particulate carbohydrate being included in said composition at about 10% to about 70% by weight and

about 0.001% to about 40% by weight of at least one additive selected from the group consisting of anti-fungal agents, anti-perspirant materials, antimicrobial agents, anti-inflammatory agents, anti-puritic agents, anti-acne agents, hemostatic agents, anti-histaminic agents, medicinals, fragrances, coloring additives, emollients, surfactants, film formers and mixtures thereof.

5,626,857

PERSONAL CARE COMPOSITIONS CONTAINING POLYALKYLSILOXANE COPOLYMERS

Raymond J. Thimineur, Scotia; Frank J. Traver, Troy, and Virginia M. Van Valkenburgh, West Lebanon, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 370,918, Jan. 10, 1995, Pat. No. 5,541,276, which is a division of Ser. No. 223,246, Apr. 1, 1994, Pat. No. 5,397,566, which is a division of Ser. No. 742,258, Aug. 8, 1991, Pat. No. 5,338,536. This application Sep. 29, 1995, Ser. No. 536,410

Int. Cl.[6] **A61K** *7/00;7/06*

U.S. Cl. 424—401 **9 Claims**

1. A silicone composition comprising:

(A) a polyalkylsiloxane copolymer having a melting point of from about –40° C. to about +40° C. selected from the group consisting of:

(1) fluid **1**, a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having the general formula $R_1R_b{}^1SiO_{1/2}$,

(b) difunctional units having the general formula $RR^1SiO_{2/2}$, and

(c) difunctional units having the general formula $RR^2SiO_{2/2}$;

(2) fluid **2**, a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having the general formula $R_aR_b{}^1SiO_{1/2}$,

(b) difunctional units having the general formula $RR^1SiO_{2/2}$, and

(c) difunctional units having the general formula $RR^3SiO_{2/2}$;

(3) fluid **1**, a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having the general formula $R_aR_b{}^1SiO_{1/2}$,

(b) difunctional units having the general formula $RR^2SiO_{2/2}$, and

(c) difunctional units having the general formula $RR^3SiO_{2/2}$;

(4) fluid **4**, a polyalkylsiloxane copolymer fluid comprising:

(a) monofunctional units having the general formula $R_aR_b{}^1SiO_{1/2}$,

(b) difunctional units having the general formula $RR^1SiO_{2/2}$, and

(c) difunctional units having the general formula $RR^2SiO_{2/2}$,

(d) d/functional units having the general formula $RR^3SiO_{2/2}$;

(5) resin **5**, a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^1SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^2SiO_{1/2}$, and

(c) tetrafunctional units having the formula $SiO_{4/2}$;

(6) resin **6**, a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^1SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^3SiO_{1/2}$, and

(c) tetrafunctional units having the formula $SIO_{4/2}$;

(7) resin **7**, a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^2SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^3SiO_{1/2}$, and

(c) tetrafunctional units having the formula $SiO_{4/2}$; and

(8) resin **8**, a polyalkylsiloxane copolymer resin comprising:

(a) monofunctional units having the general formula $R_cR_d{}^1SiO_{1/2}$,

(b) monofunctional units having the general formula $R_cR_d{}^2SiO_{1/2}$,

(c) monofunctional units having the general formula $R_cR_d{}^3SiO_{1/2}$, and

(d) tetrafunctional units having the formula $SiO_{4/2}$:

wherein

"a" is a number from 0 to 3,

"b" is a number from 0 to 3,

"c" is a number from 0 to 2,

"d" is a number from 1 to 3,

"c"+"d" is equal to 3; and

wherein

each R is independently an alkyl radical having from 1 to about 4 carbon atoms, a phenyl radical, or a phenethyl radical;

each R^1 is independently a linear alkyl radical having from about 15 to 36 carbon atoms;

each R^2 is independently a linear alkyl radical having from about 6 to about 14 carbon atoms;

each R^3 is independently a branched alkyl radical having from about 5 to about 36 carbon atoms;

wherein the weighted average of R^1, R^2, and R^3 in the copolymer is sufficient to provide an average of from about 14 to 30 carbon atoms in the sum of $R^1+R^2+R^3$; and

(B) a cosmetically acceptable carrier medium.

5,626,858

PESTICIDE OR HERBICIDE POLYMER COMPLEXES FOR FORMING AQUEOUS DISPERSIONS

Kolazi S. Narayanan, Palisades Park, and Ratan K. Chaudhuri, Butler, both of N.J., assignors to ISP Investments Inc., Wayne, N.J.

Division of Ser. No. 975,812, Nov. 13, 1992, Pat. No. 5,476,662. This application Jun. 7, 1995, Ser. No. 476,337

Int. Cl.[6] **A01N** *25/08*

U.S. Cl. 424—405 **13 Claims**

1. A method for producing a solid insertion complex of a polymer and an active ingredient which provides a stable dispersion of the active ingredient in water comprising:

providing a polymer having acid groups in a polymer matrix thereof for forming an insertion complex via hydrogen bonding with the active ingredient,

dissolving the polymer in a solvent,

dissolving the active ingredient in the polymer solvent solution, and

co-precipitating the polymer and active ingredient as a solid insertion complex.

5,626,859

ECTOPARASITE CONTROL STICK FOR DOMESTICATED ANIMALS

Joanne A. Fitch; Kanta Kumar, and Duane M. Pinault, all of P.O. Box 33427, St. Paul, Minn. 55133-3427

Continuation of Ser. No. 176,535, Dec. 30, 1993, abandoned. This application May 10, 1995, Ser. No. 438,648

Int. Cl.[6] **A01N** *25/08*

U.S. Cl. 424—409 **4 Claims**

1. A solid ectoparasite control composition for use on an animal's coat comprising

1) about 0.05–20 wt. % pyrethrin insecticide;

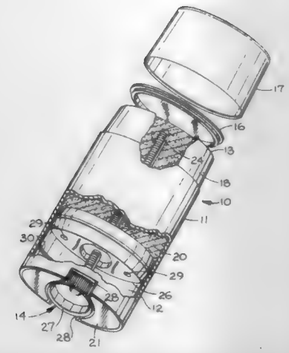
2) about 16 wt. % piperonyl butoxide;

3) about 0.5–5 wt. % poly(isobutyl methacrylate-co-N-methyl perfluorooctylsulfonamidoethyl acrylate)-g-poly(dimethylsiloxane);

4) about 2–10 wt. % sodium stearate;

5) about 15–45 wt. % polyoxypropylene polyoxyethylene cetyl ether;

6) about 15–35 wt. % C_{12-15} alkylbenzoate and propylene glycol; and



7) about 10 wt. % poly(dimethylsiloxane)cyclic tetramer; and

8) about 15–30 wt. % water.

wherein the solid ectoparasite control composition is adapted to be rubbed or spread by hand on an animal's coat to transfer or deposit a thin, solid, cosmetically acceptable, substantive coating on the animal's coat to kill or repel ectoparasites which are on or come on the animal.

5,626,860

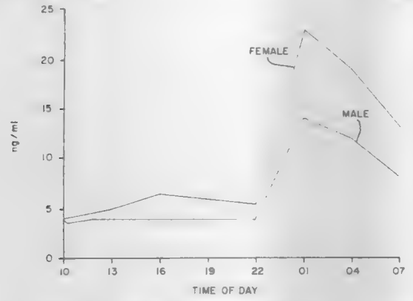
METHOD FOR REGULATING METABOLISM WITH DOPAMINE BETA HYDROXYLASE INHIBITORS

Anthony H. Cincotta, Charlestown, Mass.; Albert H. Meier, Baton Rouge, La., and John M. Wilson, Charlestown, Mass., assignors to The Board of Supervisors of Louisana State and Agricultural and Mechanical College, Baton Rouge, La., and Ergo Science Incorporated, Charlestown, Mass.

Filed Jun. 7, 1995, Ser. No. 486,188

Int. Cl.[6] **A61F** *2/02*

U.S. Cl. 424—423 **17 Claims**



1. A method for modifying glucose metabolism in a vertebrate animal or human subject in need of such treatment which comprises administering to said subject at a predetermined time of day, an effective amount for inhibiting DBH in said animal or human of a compound having the property of inhibiting DBH.

5,626,861

POLYMERIC-HYDROXYAPATITE BONE COMPOSITE

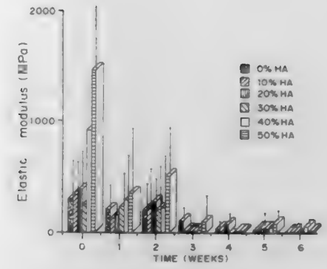
Cato T. Laurencin, Somerville, Mass.; Jessica Devin, Sunnyvale, Calif., and Muhammed Attawia, Watertown, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 1, 1994, Ser. No. 222,539

Int. Cl.[6] **A61F** *2/02*; **A61K** *9/50*

U.S. Cl. 424—426 **6 Claims**

1. A method for making a porous composite for repair or replacement of hone comprising hydroxyapatite mixed with a biodegradable, biocompatible polymer, wherein the pores have a diameter in the range of between approximately 100 and 250 microns comprising



mixing hydroxyapatite particles having a particle size in the range of approximately 10 and 100 microns in diameter with a non-aqueous solution of a biodegradable, biocompatible polymer dissolved in a polymer solvent,

suspending particles of an inert leachable material with the hydroxyapatite particles, wherein the particles of inert leachable material have a diameter between approximately 100 and 250 microns and are not soluble in the polymer solvent,

removing the polymer solvent, and

removing the inert leachable material to yield a composite having pores with a diameter of at least 100 microns wherein the effective strength of the composite is a function of the hydroxyapatite:polymer ratio.

5,626,862

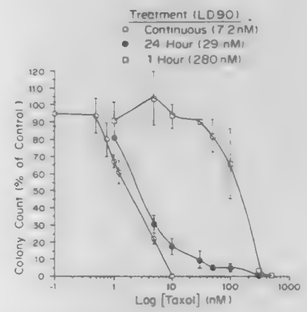
CONTROLLED LOCAL DELIVERY OF CHEMOTHERAPEUTIC AGENTS FOR TREATING SOLID TUMORS

Henry Brem, Lutherville, Md.; Robert S. Langer, Newton, Mass., and Abraham J. Domb, Efrat, Israel, assignors to Massachusetts Institute of Technology, Cambridge, Mass., and The Johns Hopkins University, Baltimore, Md.

Filed Aug. 2, 1994, Ser. No. 284,341

Int. Cl.[6] **A61K** *31/335*

U.S. Cl. 424—426 **18 Claims**



1. A chemotherapeutic composition comprising

a biocompatible polymeric matrix and a water insoluble, lipid insoluble chemotherapeutic agent, which does not cross the blood-brain barrier.

wherein the agent is incorporated into and released from the polymeric matrix by degradation of the matrix or diffusion of the agent out of the matrix over a period of time of at least eight hours in an amount effective to inhibit growth of a solid tumor when administered to the tumor.

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5,626,863

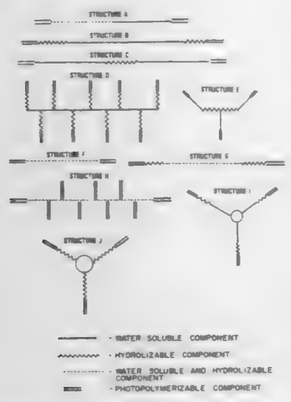
PHOTOPOLYMERIZABLE BIODEGRADABLE HYDROGELS AS TISSUE CONTACTING MATERIALS AND CONTROLLED-RELEASE CARRIERS

Jeffrey A. Hubbell, Austin, Tex.; Chandrashekhar P. Pathak, Waltham; Amarpreet S. Sawhney, Newton, both of Mass.; Neil P. Desai, Los Angeles, Calif., and Jennifer L. Hill, Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 22,687, Mar. 1, 1993, Pat. No. 5,410,016, which is a continuation-in-part of Ser. No. 843,485, Feb. 28, 1992, abandoned. This application Jan. 27, 1995, Ser. No. 379,848

Int. Cl.[6] A61K *9/58;* **C08G** *63/08*

U.S. Cl. 424—426 **43 Claims**



1. A method of forming a polymeric, biocompatible material on tissue or cells, the method comprising applying to the tissue or cells a solution of biodegradable, polymerizable macromer having a solubility of at least about 1 g/100 ml in an aqueous solution comprising at least one water soluble region, at least one degradable region which is hydrolyzable under in vivo conditions, and free radical polymerizable end groups having the capacity to form additional covalent bonds resulting in macromer interlinking, wherein the polymerizable end groups are separated from each other by at least one degradable region, in the presence of a free radical initiator, and polymerizing the macromer.

5,626,864

PREPARATION OF COLLOIDAL AQUEOUS SOLUTIONS OF ACTIVE SUBSTANCES OF LOW SOLUBILITY

Joerg Rosenberg, Ellerstadt, Germany; Cynthia Romerdahl, Wayland, Mass., and Juergen Heberger, Schifferstadt, Germany, assignors to Knoll Aktiengesellscahft, Ludwigshafen, Germany

PCT No. PCT/EP94/00332, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO94/19018, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 7, 1994, Ser. No. 495,597

Claims priority, application Germany, Feb. 18, 1993, 43 05 003.5

Int. Cl.[6] A61K *47/24;47/26*

U.S. Cl. 424—426 **4 Claims**

1. A process for the production of unaggregated homogeneous emulsions of basic active substances having nitrogen atoms protonatable in acids and in ionic form at acidic pH, with phospholipids which comprises

a) creating a mixture comprising an active substance and a phospholipid by dissolving the active substance and the phospholipid in an organic solvent and then removing the solvent; or by mixing the active substance and the phospholipid without a solvent, and then

b) adding an acidic aqueous solution of a carbohydrate to the mixture at an elevated temperature, and stirring this mixture at said temperature until a homogeneous colloidal emulsion is produced; and then

c) cooling the emulsion, adjusting to pH 4–5;

wherein said pH-adjusted emulsion is able to pass through a filter having a pore size of 0.2 μm.

5,626,865

ENZYME-ORTHOKERATOLOGY

Donald H. Harris, Laguna Niguel; Charles May, San Diego, and Hampar Karageozian, San Juan Capistrano, all of Calif., assignors to Advanced Corneal Systems, Inc., Irvine, Calif.

PCT No. PCT/US92/08791, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/07840, PCT Pub. Date Apr. 29, 1993

Continuation-in-part of Ser. No. 776,211, Oct. 15, 1991, Pat. No. 5,270,051. This PCT application Oct. 15, 1992, Ser. No. 211,749

Int. Cl.[6] A61F *2/14;9/013;* **A61K** *38/48*

U.S. Cl. 424—427 **46 Claims**

1. A method of correcting refractive errors in an eye of a subject mammal, comprising the steps of:

administering to said subject a corneal softening amount of an agent that softens the cornea in said eye of said subject so that said cornea can be reshaped from a first configuration to a desired second configuration, wherein said agent is an enzyme which breaks down proteoglycans in said cornea;

fitting said cornea with a rigid contact lens having a concave curvature of said desired second configuration;

permitting said cornea to reshape to said desired second configuration under the influence of said lens; and

removing said lens when said cornea is capable of maintaining said desired second configuration without the support of said lens.

5,626,866

DRUG-CONTAINING ADHESIVE COMPOSITE TRANSDERMAL DELIVERY DEVICE

Charles D. Ebert; Srinivasan Venkateshwaran; Werner Heiber, and Suresh Borsadia, all of Salt Lake City, Utah, assignors to Theratech, Inc., Salt Lake City, Utah

Continuation of Ser. No. 207,786, Mar. 7, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 544,110

Int. Cl.[6] A61F *13/00;13/02*

U.S. Cl. 424—447 **60 Claims**

1. A method for making a transdermal or transmucosal drug delivery device including a drug-containing adhesive composite layer consisting essentially of first and second drug permeable adhesive layers containing a drug in gel form, said composite layer having a distal backing material impermeable to said drug laminated to the distal surface of said composite layer and a proximal peelable film which is substantially impermeable to said drug and adapted for removal for administering a drug to the skin or mucosa laminated to the proximal surface of said composite layer, said method comprising the steps of:

(a) providing a first adhesive laminate comprising said first adhesive layer having laminated to one surface thereof said distal backing material and having the opposing surface of said first adhesive layer exposed;

(b) providing a second adhesive laminate comprising said second adhesive layer having laminated to one surface thereof said proximal peelable film and having the opposing surface of said second adhesive layer exposed;

(c) extruding said drug, in gel form, onto at least one exposed surface of said first or second adhesive laminate; and

(d) laminating together the exposed surfaces of said first adhesive laminate and said second adhesive laminate, at least one of which contains said extruded gelled drug, such that said first and second adhesive layers and said gelled drug are combined to form said drug-containing adhesive composite layer having said distal backing material covering one surface thereof and said proximal peelable film covering the opposite surface thereof.

5,626,867

LIPOSOMES WITH A NEGATIVE EXCESS CHARGE

Hansjörg Eibl, Bovenden-Eddigehausen; Petra Kaufmann-Kolle, Gleichen-Diemarden; Anneliese Kranich, Freiburg, and Clemens Unger, Göttingen, all of Germany, assignors to Max-Planck Gesellschaft zur Forderung der Wissenschaften E.V., Munich, Germany

PCT No. PCT/EP93/00605, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO93/18749, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 16, 1993, Ser. No. 295,797

Claims priority, application Germany, Mar. 17, 1992, 42 08 527.6

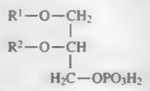
Int. Cl.[6] A61K *9/14;9/127*

U.S. Cl. 424—450 **19 Claims**

1. Unilamellar liposomes containing a pharmaceutical active substance,

wherein

the liposomes contain 30 to 50 mol % cholesterol, 49 to 56 mol % of at least one first phospholipid and 1 to 14 mol % of at least one second phospholipid of the general formula I



(I)

or salts thereof in relation to the total lipid components of the liposomes, in which R^1 and R^2 are the same or different and represent hydrogen, C_1–C_4 alkyl groups or saturated or unsaturated C_8–C_{24} acyl groups which are unbranched or branched or/and unsubstituted or substituted, provided that at least one of the residues R^1 and R^2 is an acyl group as defined above,

wherein the liposomes are filtered through a filter having a pore diameter of 0.2 μm.

5,626,868

COSMETIC AND/OR PHARMACEUTICAL COMPOSITION CONTAINING A DISPERSION OF LIPID VESICLES, PROCESS FOR THE PREPARATION OF THE SAID DISPERSION AND DISPERSION OF LIPID VESICLES

Jean-Luc Morancais, Ozoir-La-Ferriere; Alain Lety, Lagny-Sur-Marne, and Guy Vanlerberghe, Villevaude, all of France, assignors to L'Oreal, Paris, France

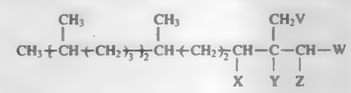
Continuation of Ser. No. 133,140, Oct. 14, 1993, Pat. No. 5,443,840. This application Feb. 8, 1995, Ser. No. 385,552

Claims priority, application France, Feb. 18, 1992, 92 01821

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **15 Claims**

1. A composition comprising, in an aqueous dispersion phase, a dispersion of lipid vesicles encapsulating an aqueous phase, said lipid vesicles comprising a lipid phase containing (a) an ionic amphiphilic lipid or (b) a nonionic amphiphilic lipid, or a mixture of (a) and (b), together with (c) a compound having the formula



(I)

wherein

(a) W represents —CH_2OH, —COOM or —$(CH_2)_2$—COOM, wherein M represents H, alkali metal or alkaline earth metal and X, Y, Z and V, each independently, represent hydrogen or hydroxyl, with the proviso that when W represents —CH_2OH at least one of X, Y, Z or V represents hydroxyl, or

(b) W represents —CH_3 and X, Y, Z and V represent H or OH combined as shown in each line of the table below:

X	Y	Z	V
OH	OH	OH	OH
H	OH	OH	H
H	H	OH	OH
OH	H	OH	H

with the proviso that the compound of formula (I) is not phytanetriol; 3-hydroxymethyl-7,11-15-trimethyl-1,2,4-trihydroxyhexadecane; 5,9,13,17-tetramethyloctadecanoic acid or 3,7,11,15 tetramethyloctadecanoic acid.

5,626,869

PHARMACEUTICAL COMPOSITION CONTAINING A DEFINED LIPID SYSTEM

Håkan Nyqvist, Tullinge; Monica Einarsson, Upsala, and Christer Mattsson, Kungsbacka, all of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden

Continuation of Ser. No. 321,620, Oct. 12, 1994, abandoned, which is a continuation of Ser. No. 142,345, Nov. 23, 1993, abandoned. This application Jun. 29, 1995, Ser. No. 497,381

Claims priority, application Sweden, Mar. 27, 1992, 9200951; WIPO, Mar. 26, 1993, PCT/SE93/00258

Int. Cl.[6] A61K *9/127;9/16*

U.S. Cl. 424—450 **15 Claims**

1. A pharmaceutical composition comprising:

a) a well defined lipid system containing:

i) at least one amphiphatic, polar and bilayer forming phospholipid component in an amount of 5 to 50 w/w of the lipid system; and

ii) a non-polar lipid component comprising a mixture of monoglycerides wherein the fatty acid portion of each of said monoglycerides is from an acid selected from the group consisting of 8:0 caprylic acid and 10:0 capric acid;

b) a therapeutically effective amount of a heparin present in an amount of 1–200% (w/w) with respect to said lipid system; and

c) water present in amount such that individual lipid particles are formed spontaneously when interacting with excess water.

5,626,870

METHOD OF FORMING HYDROGEL PARTICLES HAVING A CONTROLLED SIZE USING LIPOSOMES

Mariam Monshipouri, Bethesda, and Alan S. Rudolph, Bowie, both of Md., assignors to Georgetown University, Washington, D.C.

Division of Ser. No. 152,366, Nov. 16, 1993, Pat. No. 5,464,629. This application Nov. 2, 1995, Ser. No. 556,849

Int. Cl.[6] A61K *9/127;* **B01J** *13/02*

U.S. Cl. 424—450 **10 Claims**

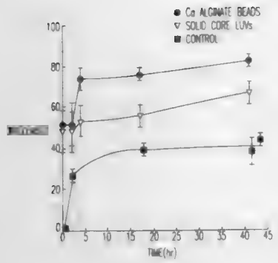
1. Hydrogel particles having a size of from about 0.05 μm to 3.0 μm, which are produced by a process, which comprises:

a) encapsulating one or more hydrogel-forming substances in liposomes in a liquid medium, said hydrogel-forming substances being selected from the group consisting of sodium alginate, chitosan and K-carrageenan;

b) removing any unencapsulated hydrogel-forming substances from the liquid medium by centrifugation, filtration or column chromatography;

c) adding calcium ions, as an initiator, to the liquid medium, thereby initiating cross-linking of the hydrogel-forming substances; and

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d) removing any extra calcium ions from the liquid medium by centrifugation, filtration or column chromatograph.

5,626,871

PREPARATION FOR INTRATRACHEOBRONCHIAL ADMINISTRATION

Yuji Makino; Hideki Kobayashi, and Yoshiki Suzuki, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP93/00785, § 371 Date Feb. 14, 1994, § 102(e) Date Feb. 14, 1994, PCT Pub. No. WO93/25193, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 11, 1993, Ser. No. 193,141

Claims priority, application Japan, Jun. 12, 1992, 4-153538

Int. Cl.[6] A61K *9/48;9/72;9/14*

U.S. Cl. 424—451 **13 Claims**

1. A preparation for intratracheobronchial administration comprising a powder preparation for intratracheobronchial administration contained in a receptacle comprising at least one component selected from the group consisting of hydroxypropyl methyl cellulose, methyl cellulose, hydroxypropyl cellulose, starch, hydroxypropyl starch, and sodium alignate, wherein the amount of said component is at least 80% by weight of said receptacle, and wherein at least 80% by weight of the particles in said powder preparation, based on the weight of said preparation, have a diameter ranging from about 0.5 to 149 μm.

5,626,872

PHARMACEUTICAL SOFT CAPSULES CONTAINING LYSINE CLONIXINATE AND A PROCESS FOR THEIR PREPARATION

Carlos E. M. Vasquez, Buenos Aires, Argentina, assignor to Roemmers S.A.I.C.F., Argentina

Continuation-in-part of Ser. No. 78,081, Jun. 16, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 353,777

Claims priority, application Germany, Jun. 16, 1992, 42 19 702.3

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—451 **12 Claims**

1. A pharmaceutical dosage unit form of the type soft gelatin capsule with a filling comprising lysine clonixinate as active ingredient, said filling being based on a hydrophilic matrix comprising polyethylene glycol having an average molecular weight of from about 200 to 1000, or a mixture of the polyethylene glycol with propylene glycol and/or propylen carbonate, glycerol in 3 to 10% by weight and water in 5 to 15% by weight, and with a shell comprising about 30 to 70% by weight gelatin and a plasticizer, wherein the improvements is that said shell includes 50 to 10% by weight sorbitol.

5,626,873

EMULSIONS

Alan L. Weiner, Lawrenceville, N.J., and Sharon Carpenter-Green, Gaffney, S.C., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 927,114, Aug. 7, 1992, abandoned, which is a division of Ser. No. 318,774, Mar. 3, 1989, Pat. No. 5,171,737. This application May 16, 1995, Ser. No. 442,080

Int. Cl.[6] A61K *9/66;38/00*

U.S. Cl. 424—455 **12 Claims**

1. A method of administering a bioactive agent to a mammal by parenterally administering to the mammal a composition comprising an emulsion which comprises:

(a) the bioactive agent;

(b) water;

(c) a pharmaceutically acceptable oil having an HLB requirement of between about 8 and less than about 17.4; and,

(d) a phospholipid surfactant comprising from about 5% to about 30% (w/w) of the emulsion and providing an HLB value equal to the HLB requirement of the oil,

wherein dioleoyl phosphatidylethanolamine and a phosphatidylcholine having an HLB value of about 7.6 comprise 100% by weight of the phospholipid surfactant; wherein the weight percentage of dioleoyl phosphatidylethanolamine in the phospholipid surfactant and is from about 4.1% by weight of the phospholipid surfactant to less than 100% by weight of the surfactant; and,

wherein the weight percentage of the phosphatidylcholine in the phospholipid surfactant is equal to 100% by weight of the surfactant minus the weight percentage of dioleoyl phosphatidylethanolamine in the surfactant and is from greater than about 0% by weight of the surfactant to at most about 95.9% by weight of the surfactant.

5,626,874

CONTROLLED RELEASE PHARMACEUTICAL TABLET HAVING LENTICULAR FORM

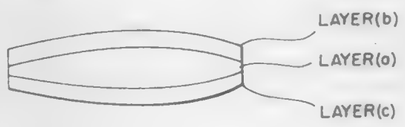
Ubaldo Conte, Busto-Arsizio; Aldo La Manna, and Lauretta Maggi, both of Pavia, all of Italy, assignors to Ekita Investments N.V., Curacao, Netherlands Antilles

Filed Nov. 30, 1994, Ser. No. 352,072

Claims priority, application Italy, Nov. 30, 1993, MI93A2519

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—464 **6 Claims**



1. A controlled release pharmaceutical tablet, having a lenticular form consisting of the 3 following over-imposed layers:

a central layer or core (a) comprising an active principle,

2 external barrier layers (b) and (c) respectively upon and under said core (a) limiting the active principle release, each barrier (b) and (c) comprising a gellable and/or erodible polymeric material,

wherein said barrier layers (b) and (c) have the same or different composition and leave exposed only the lateral surface of the core (a), said exposed lateral surface ranging from 5 to 35% of the total tablet surface.

5,626,875

STABILIZED GALENIC FORMULATIONS COMPRISING AN ACID LABILE BENZIMIDAZOLE COMPOUND AND ITS PREPARATION

Montserrat Ballester Rodes, and Marinus Van Boven, both of Barcelona, Spain, assignors to Esteve Quimica, S.A., Barcelona, Spain

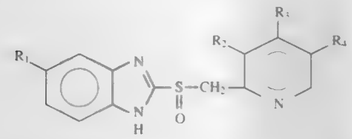
Filed Apr. 27, 1995, Ser. No. 429,689

Claims priority, application Spain, Feb. 1, 1995, 9500181

Int. Cl.[6] A61K *9/16;9/50*

U.S. Cl. 424—464 **14 Claims**

1. A stable oral pharmaceutical preparation containing an acid labile benzimidazole compound of formula I:



wherein R_1 is hydrogen, methoxy or difluoromethoxy; R_2 is methyl or methoxy; R_3 is methoxy, 2,2,2-trifluoroethoxy or 3-methoxypropoxy and R_4 is hydrogen or methoxy, which comprises:

(a) a nucleus formed by an inert core, the acid labile benzimidazole compound of formula I, a non-alkaline inert water soluble polymer and non-alkaline reacting pharmaceutical acceptable exicipients;

(b) an inert non-alkaline coating disposed on said nucleus, formed by a non-alkaline water soluble polymer and non-alkaline pharmaceutical excipients, and

(c) an outer layer disposed on the previous coating comprising an enteric coating.

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FLOATING SYSTEM FOR ORAL THERAPY

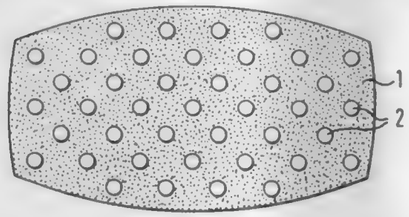
Walter Müller, Neuwied, and Edzard Anders, Bornheim, both of Germany, assignors to LTS Lohmann Therapie-Systeme GmbH & Co., KG, Neuwied, Germany

Continuation of Ser. No. 821,269, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 671,676, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 427,834, Oct. 10, 1989, abandoned. This application Oct. 25, 1993, Ser. No. 142,843

Claims priority, application Germany, Feb. 5, 1988, 38 03 382.4

Int. Cl.[6] A61K *9/22;* **A61M** *31/00*

U.S. Cl. 424—484 **15 Claims**



1. A therapeutic system for the oral administration of a medicament comprising a mixture of particles of the medicament in a therapeutically effective amount and a floatable aid part,

wherein the floatable aid is a microporous foam material of a polymer selected from the group consisting of polyethylene, polypropylene, polyamide, polystyrene, polyester, polyacrylate, polytetrafluoroethylene, polyvinylchloride, polyvinylidene chloride, copolymers from the monomers on which said polymers are based and polysiloxane,

wherein the floatable aid comprises a microporous foam material having a pore diameter of in the range of between 0.2 and 100 micrometers,

wherein the microporous foam material does not contain the medicament within its pores,

wherein the system delivers the medicament into gastric juices, and

wherein the system floats in the gastric juices.

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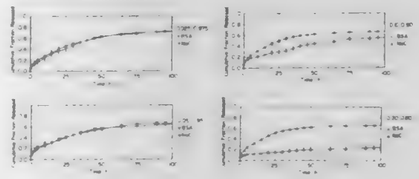
POLYMER-BASED DRUG DELIVERY SYSTEM

Brian G. Amsden, 40 Fountainhead Road, Apt. #1516, Downsview, Ontario, Canada, and Yu-Ling Cheng, 1379 Glenburnie Road, Mississauga, Ontario, Canada

Division of Ser. No. 793,836, Nov. 19, 1991, Pat. No. 5,302,397. This application Feb. 9, 1994, Ser. No. 193,997

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 **6 Claims**



1. A substantially homogeneous assemblage of particles which when dispersed in a wettable polymeric matrix is useful to deliver a drug which is a protein in low dosage levels to a patient in a sustained and controlled fashion, said particles comprising a substantially homogeneous blend of osmotically active excipient and said drug which is a protein, wherein said drug component of the particles is not more than about 10% by weight of each particle and the excipient component of the particles is not less than about 90% by weight of each particle.

5,626,878

REDUCTION OF ELECTROSTATIC FORCES BETWEEN MAGNESIUM TRISILICATE ADSORBATES

Felipe Garay, Ogdensburg; Stanley Lech, Rockaway, both of N.J., and Mark Oehling, East Stroudsburg, Pa., assignors to Warner Lambert Company, Morris Plains, N.J.

Filed Jan. 10, 1995, Ser. No. 370,927

Int. Cl.[6] A61K *9/18;9/20*

U.S. Cl. 424—489 **24 Claims**

1. A medicament adsorbate which comprises an effective amount of a binder to reduce the electrostatic forces of the adsorbate and containing adsorbed therein from about 10% to about 90% by weight of the adsorbate magnesium trisilicate wherein the magnesium trisilicate has a surface area of at least 400 m^2/g and a structure with multiple interstitial spaces and containing adsorbed therein from about 0.5% to about 30% by weight of the adsorbate of a medicament drug, the medicament adsorbate being of a size characterized by a density in the range from about 700 to about 1000 grams/liter.

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5,626,879

TERFENADINE ORAL GRANULES

Aloysius O. Anaebonam, Burlington, Mass.; Abdel A. Fawzy, Nashua, N.H., and Emmett Clemente, Manchester, Mass., assignors to Ascent Pharmaceuticals, Inc., Billerica, Mass.

Continuation-in-part of Ser. No. 368,421, Jan. 4, 1995, Pat. No. 5,455,049. This application Oct. 2, 1995, Ser. No. 537,538

Int. Cl.[6] A61K *9/16*

U.S. Cl. 424—489 **20 Claims**

1. A dry, granular terfenadine composition that comprises

(a) a mixture of:

(i) about 0.20 to about 25 parts by weight particulate terfenadine and

(ii) about 0.1 to about 15 parts by weight a polyethylene oxide-polypropylene oxide-polyethylene oxide block copolymer having an HLB number of 24 that is a wetting agent for said terfenadine;

that are dry-blendedly dispersed into:

(b) about 10 to about 80 parts by weight spray-dried sorbitol particles that are loosely packed, randomly oriented filamentary crystals having pores that entrap said terfenadine particles and wetting agent upon said dry-blended dispersal, said components being further dry blended with

(c) about 0.5 to about 10 parts by weight dry polyvinylpyrrolidone;

(d) about zero to about 5 parts by weight dry microcrystalline cellulose mixture that contains about 7 to about 20 weight percent sodium carboxymethylcellulose; and

(e) a dry flavorant that is absent or present in an amount sufficient to provide a desired taste to said powder;

said composition being free-flowing and is substantially free from the taste of solubilized terfenadine when placed on the human tongue in dry form or when dispersed in water and tasted within about five minutes of said dispersal.

5,626,880

INFUSION PREPARATION

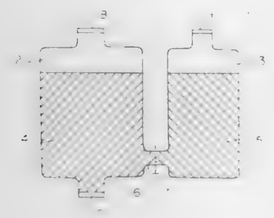
Tadaaki Inoue; Hideto Kodaira; Yoshihito Nawa; Ryoichiro Murashima; Shunichi Abe, and Kazumasa Yokoyama, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Continuation of Ser. No. 133,792, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 873,229, Apr. 24, 1992, abandoned. This application Jan. 22, 1996, Ser. No. 589,207

Claims priority, application Japan, Apr. 26, 1991, 3-124866; Apr. 27, 1991, 3-124863; Apr. 28, 1991, 3-123739; Jul. 26, 1991, 3-209944; Jul. 26, 1991, 3-209945; Jul. 26, 1991, 3-209946; Jul. 26, 1991, 3-209947; Aug. 6, 1991, 3-222031; Aug. 6, 1991, 3-222032; Jan. 17, 1992, 4-027338

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 **3 Claims**



1. A process for producing an infusion preparation comprising an infusion liquid containing a nutrient-supplying fat emulsion having a mean particle size of 0.17 μm or less which comprises emulsifying a fat using an emulsifying agent together with one or more compounds present during the emulsification and selected from the group consisting of glycerol and glucose.

5,626,881

HUMATE DIETARY SUPPLEMENT

John F. Lown, Dallas, Tex., assignor to Menefee Mining Corporation, Dallas, Tex.

Filed May 16, 1995, Ser. No. 442,333

Int. Cl.[6] A61K *35/12*

U.S. Cl. 424—520 **28 Claims**

1. A human dietary supplement, comprising:

a humate of prehistoric origin;

some carbon;

some organic matter; and

a mixture of said humate, carbon, and organic matter being made for human ingestion.

5,626,882

METHOD OF USING EMU OIL AS AN INSECT REPELLENT

Pamela G. Marrone, and Stephen A. Judd, both of Davis, Calif., assignors to AgraQuest, Inc., and P.E. Zoogen, both of Davis, Calif.

Filed Mar. 15, 1996, Ser. No. 616,708

Int. Cl.[6] A61K *35/12*

U.S. Cl. 424—522 **1 Claim**

1. A method for repelling biting insects comprising the step of topically applying emu oil to the skin of a subject.

5,626,883

ASCORBIC ACID COMPOSITIONS PROVIDING ENHANCED HUMAN IMMUNE SYSTEM ACTIVITY

Stephen M. Paul, Rancha Santa Margarita, Calif., assignor to Metagenics, Inc.

Filed Apr. 15, 1994, Ser. No. 228,587

Int. Cl.[6] A01N *31/02;43/08;57/00;59/26*

U.S. Cl. 424—605 **34 Claims**

1. A dietary ascorbic acid supplement composition providing enhanced human immune system activity with substantially no post administration transient suppression of human NK immune cell activity, the ascorbic acid supplement comprising:

a water soluble form of ascorbic acid selected from the group consisting of ascorbic acid, biologically acceptable mineral salts of ascorbic acid, niacinamide ascorbate and mixtures thereof;

a fat soluble ascorbyl ester selected from the group consisting of ascorbyl palmitate, ascorbyl arachidonate, ascorbyl stearate, ascorbyl linoleate, ascorbyl linoleneate, ascorbyl oleate, ascorbyl acetate, ascorbyl butyrate, and mixtures thereof, wherein the weight ratio between said water soluble form of ascorbic acid and said fat soluble ascorbyl ester is between about 50:1 and about 5:1; and

at least one ascorbic acid metabolite selected from the group consisting of basic amino acids, metabolic by-products of ascorbic acid breakdown, flavonoid, sulfur containing amino acids, tetrasodium pyrophosphate, and glutathione.

5,626,884

TREATMENT OF SICKLE CELL DISEASE

Curtis G. Lockett, 3063 N. Galvez St., New Orleans, La. 70117

Filed Aug. 18, 1995, Ser. No. 516,737

Int. Cl.[6] A61K *33/32;33/24;33/36;33/06;33/04;35/78;31/70;31/51, 31/44;31/355;31/34;31/07*

U.S. Cl. 424—639 **4 Claims**

1. A method for treating or preventing sickle cell crises in a person having sickle cell disease which comprises administering to said person a cumulative daily dosage of from about 8,250 to 250,000 I.U. vitamin A; from about 25 to 1000 mg. each of vitamin B-1, vitamin B-2, vitamin B-6, vitamin C, niacinamide, para-aminobenzoic acid, pantothenic acid, choline bitartrate, and inositol; from about 25 to 1000 mcg. each of vitamin B-12 and biotin; from about 100 to 4000 I.U. of vitamin D; from about 100–4000 mcg. of folic acid; from about 25 to 1000 I.U. of vitamin E; from about 8.25 to 250 mg. each of rutin, citrus bioflavonoid complex, betaine hydrochloride, and iron; from about 1.25 to 50 mg. of hesperidin complex, from about 10 to 400 mg. of calcium; from about 5 to 100 mg. of magnesium; from about 5 to 100 mg. of zinc; from about 3.75–150 mg. of potassium; from about 1.5 to 60 mg. of manganese; from about 37.5 to 1500 mcg. of iodine; from about 3.75 to 150 mcg. of chromium; and from 2.5–100 mcg. of selenium.

5,626,885

METHOD OF MANUFACTURING AN OPTICALLY READABLE DISC, AND ARRANGEMENT FOR CARRYING OUT THE METHOD

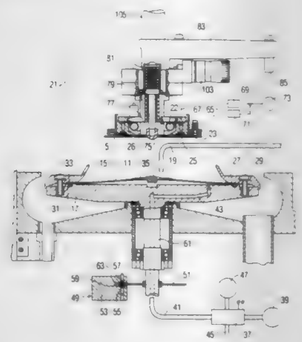
Petrus H. G. M. Vromans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 56,644, May 3, 1993, abandoned, which is a division of Ser. No. 795,167, Nov. 18, 1991, Pat. No. 5,242,629. This application Oct. 10, 1995, Ser. No. 542,000

Claims priority, application Netherlands, Nov. 19, 1990, 9002517

Int. Cl.[6] B29C *35/00*

U.S. Cl. 425—110 **6 Claims**



1. An arrangement for manufacturing an optically readable disc by forming an optically readable structure in a structure zone on a substrate, the arrangement comprising a mold, a mold carrier for supporting the mold, application means for applying a replication material in a deformable phase to the mold, a substrate carrier movable relative to the mold, said substrate carrier being provided with means for holding a substrate, transfer means for transferring the substrate carrier together with the substrate to and from the mold and pneumatic means for bulging up the mold by means of compressed air.

5,626,886

TRANSFER MOLDING MACHINE FOR ENCAPSULATION OF SEMICONDUCTOR DEVICES

Masaaki Ishii, Fukuoka, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Japan

Filed Feb. 21, 1995, Ser. No. 391,024

Int. Cl.[6] B29C *45/14*

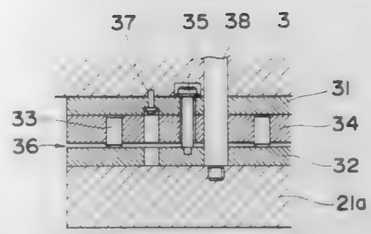
U.S. Cl. 425—116 **8 Claims**

1. A transfer molding machine for encapsulation of semiconductor devices with a resin, comprising:

a clamping mechanism including a stationary base platen provided with tie rods, a moving platen movably mounted on said tie rods, a stationary upper platen fixed to said tie rods, and an electrically actuated toggle mechanism are ranged between said base platen and said moving platen to force the moving platen to move;

a transfer mold including a pair of upper and lower mold sections respectively mounted on said upper stationary platen and said moving platen; and

at least one compensation unit arranged either between said upper stationary platen and said upper mold section or between said moving platen and said lower mold section, each said compensation unit including upper and lower plates, a holding plate arranged between said upper and lower plates and provided with a plurality of through-holes, and a plurality of elastic members each being held in said through-holes of said holding plate, said elastic members having a length slightly greater than the thickness of said holding plate so as to provide a gap between said holding plate and one of said upper and lower plate.



5,626,887

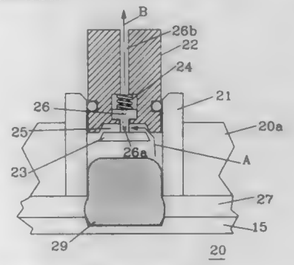
AIR EXHAUST MOLD PLUNGER

C. H. Chou, Taipei; T. H. Wang, and C. S. Chen, both of Taipei Hsien, all of Taiwan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1994, Ser. No. 327,737

Int. Cl.[6] B29C *45/02;45/34*

U.S. Cl. 425—129.1 **3 Claims**



1. A molding apparatus, comprising:

a molding compound pot for holding mold compound;

a bushing in said molding pot;

a runner connected to said pot for carrying mold compound to mold cavities;

a plunger movably mounted in said bushing for forcing mold compound from said pot, said plunger having an end in which a cavity is formed and a first channel for venting air;

a vent seal attached to said plunger, said vent seal including a cavity sealing portion for sealing said cavity and a shaft attached to said cavity sealing portion, said shaft extending into said plunger, said shaft including a second channel for venting air to said first channel, said second channel having an opening in said shaft adjacent said cavity sealing portion; and

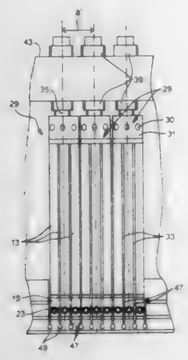
a compressible member located in said plunger for biasing said shaft to a first position in which said cavity sealing portion is spaced from said cavity so as to vent air in said molding pot through said opening, said second channel and said first channel.

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5,626,888
WIDE SLOT DIE

Jöhannes Sänze, Bergen; Jürgan Breil, Grabanstätt, both of Germany; Paul Lindner, Henndorf, Austria, and Ulrich Rühlemann, Traunstein, Germany, assignors to Brückner Maschinenbau GmbH, Siegsdorf, Germany

PCT No. PCT/EP94/01630, § 371 Date Mar. 3, 1995, § 102(e) Date Mar. 3, 1995, PCT Pub. No. WO94/27802, PCT Pub. Date Dec. 8, 1994
PCT Filed May 19, 1994, Ser. No. 373,210
Claims priority, application Germany, May 20, 1993, 43 16 913.9
Int. Cl.[6] B29C *47/16*
U.S. Cl. 425—141 **16 Claims**



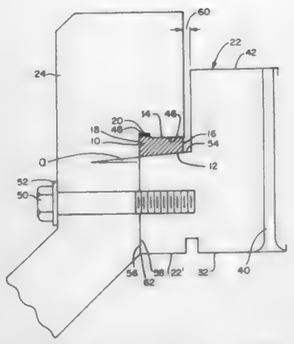
1. A wide slot die of an extrusion system for producing flat sheets comprising:
upper and lower die parts having upper and lower die lips delimiting a longitudinally extending outlet gap;
length-adjustable actuators;
means for positively adjusting the length of each said actuator, at least one of the two die lips being flexibly adjusted to vary a width of the gap by said length-adjustable actuators; and
a plurality of preadjusting devices for adjusting the position of said adjustable actuators to vary the width of the gap, said actuators being arranged in the longitudinal direction of the longitudinally extending outlet gap and athwart the direction of extrudate flow, each said preadjusting device being common to a group of at least two actuators to commonly preadjust said group of actuators.

5,626,889
SINGLE TAPERED DIE MOUNT

Oszkar Bittner, Muncy, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed Dec. 29, 1994, Ser. No. 365,897
Int. Cl.[6] B29B *9/00*
U.S. Cl. 425—186 **4 Claims**

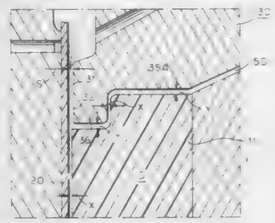
1. A pelletizer comprising:
a frame;
a die holder rotatably mounted to said frame, said holder defining an axis of rotation, said die holder further defining a die holder side face substantially perpendicular to said axis and a lip extending from said die holder side face and defining a die holder radially inner surface;
a die mount in contact with said die holder radially inner surface, said die mount defining a die mount radially inner surface at an acute angle to said axis of about 4°– 5° defined from said axis in a direction extending from opposite said lip;
an annular die having an annular shoulder projecting toward the die holder and received within the die holder lip and having a radially outer surface tapered with an angle substantially equal to the acute angle of the die mount inner surface, and in compressive contact with said die mount radially inner surface and in compressive contact with said die holder side face; and
means extending through said die holder side face and engaging said die shoulder for drawing said die and die holder toward each other wherein said die holder radially inner surface includes a groove; and said die mount further comprises a ridge fitting in said groove.



5,626,890
MOLD FOR MOLDING DISCS

Ikuo Asai, Nagoya, Japan, assignor to Meiki Co., Ltd., Ohbu, Japan

Filed Oct. 30, 1995, Ser. No. 550,468
Claims priority, application Japan, Nov. 8, 1994, 6-300311
Int. Cl.[6] B29C *45/43*
U.S. Cl. 425—556 **6 Claims**



1. A mold for molding discs, comprising:
a stationary mold half on which are mounted a stationary cylindrical member and a stationary mirror plate fixed inside thereof, the stationary mold half defining a stationary side wall of a mold cavity when the mold is closed;
a movable mold half on which are mounted a movable cylindrical member and a movable mirror plate fixed inside thereof, the stationary mirror plate concentric with the movable mold half, the movable mold half defining a movable side wall of a mold cavity when the mold is closed;
a stamper set in concentrically on the movable mirror plate;
an outer peripheral ring fixed so that a large inner peripheral surface thereof is in close contact and concentric with the outer peripheral surface of the mirror plate, of which a small inner peripheral surface defines an outer peripheral surface of the mold cavity, having a protrusion at the lower portion of the small inner peripheral surface so as to prevent leakage of blown air along the inner periphery of the outer peripheral ring; and
a first air passage in an interior of the outer peripheral ring, the first air passage connected to a second air passage provided in an interior of the movable cylindrical member, the first air passage and the second air passage to blow air into the mold cavity.

5,626,891
COMPOUND FOR POULTRY FEEDS AND A METHOD FOR FEEDING POULTRY WITH THE SAME

Takamitsu Aii; Fuminori Terada; Makoto Muraoka, all of Kikuchi-gun; Masanobu Tsurusaki, Chikushino; Harumi Ono, Chikushino; Yuji Kojima, Chikushino; Tadakatsu Murakami; Masaharu Matsuzaki, both of Kikuchi-gun; Hirotoshi Hayasawa, Funabashi; Takashi Shimizu; Shuzo Ishida, both of Yokohama, and Toshihiro Nakamura, Higashikurume, all of Japan, assignors to Japan as represented by Director General of Kyusyu National Agricultural Experiment Station of Ministry of Agriculture, Forestry, and Fisheries, Kumamoto; Fukuoka Prefectural Government, Fukuoka; Kumamoto Prefectural Government, Kumamoto; Morinaga Milk Industry Co., Ltd., Tokyo, and Taiyo Yushi K.K., Yokohama, all of Japan

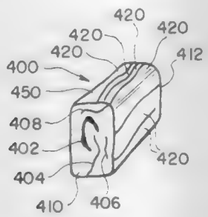
PCT No. PCT/JP93/00416, § 371 Date Mar. 31, 1994, § 102(e) Date Mar. 31, 1994, PCT Pub. No. WO93/19618, PCT Pub. Date Oct. 14, 1993
PCT Filed Apr. 1, 1993, Ser. No. 150,066
Claims priority, application Japan, Apr. 1, 1992, 4-108577
Int. Cl.[6] A23K *1/02;1/18*
U.S. Cl. 426—2 **6 Claims**

1. A compound for poultry feeds, which comprises long-chain unsaturated fatty acid calcium salts consisting essentially of fatty acid calcium salts having at least 18 carbon atoms, and a material selected from the group consisting of a molasses, a browning material formed heating a saccharide, and a browning material formed by heating a saccharide and amino acids; at a weight ratio of the fatty acid calcium salts to the material of about 90:10 to 99.5:0.5.

5,626,892
METHOD FOR PRODUCTION OF MULTI-FLAVORED AND MULTI-COLORED CHEWING GUM

Gary Kehoe, Ossining, N.Y.; Thomas J. Carroll, Oak Ridge, N.J., and Donald L. Mihalich, Brooklyn, N.Y., assignors to Nabisco, Inc., Parsippany, N.J.

Filed Nov. 24, 1993, Ser. No. 158,067
Int. Cl.[6] A23G *3/30*
U.S. Cl. 426—3 **36 Claims**



1. A method for the production of chewing gum comprising the steps of:
a) admixing chewing gum ingredients comprising a gum base, to obtain a substantially homogenous mixture,
b) injecting a plurality of liquid compositions that are solid or semi-solid at room temperature comprising at least one chewing gum additive into said homogeneous mixture at separate locations within said homogeneous mixture,
c) partially mixing said homogenous mixture to partially distribute at least one of said injected liquid compositions in said homogenous mixture,
d) extruding the homogeneous mixture to obtain at least one extrudate rope, each rope having discrete regions of said additive,
e) cooling said extrudate rope so that said liquid compositions are of non-sticky consistency, and
f) cutting said at least one extrudate rope into pieces each having cut ends, said pieces having a plurality of discrete regions of said additive at separate locations on the surface of at least one of the cut ends of the pieces.

5,626,893
METHOD OF TREATING A DIVIDED CHEESE PRODUCT FOR ANTICAKING

Malireddy S. Reddy, 78 Cherry Hills Farm Dr., Englewood, Colo. 80110

Filed Oct. 18, 1994, Ser. No. 324,897
Int. Cl.[6] A23C *9/12*
U.S. Cl. 426—36 **33 Claims**

20. A method of treating a divided cheese product for anticaking and improved functionality, comprising:
applying to a divided cheese product a mixture of dry, powdered flour and dry, powdered bentonite, wherein said bentonite comprises no more than 10 percent by weight of the mixture.

5,626,894
PROCESS FOR THE PRODUCTION OF A FLAVORING AGENT

Bengt Bengtsson, Seuzach, Switzerland; Sunil Kochhar, New Milford, Conn.; Eric Raetz, Lausanne, and Jaak J. Sihver, Gutenswil, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

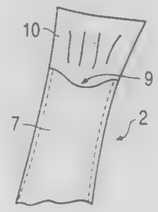
Filed Dec. 15, 1995, Ser. No. 573,048
Claims priority, application European Pat. Off., Dec. 16, 1994, 94119932
Int. Cl.[6] A23L *1/00*
U.S. Cl. 426—62 **16 Claims**

1. A process for converting adenosine-5'-monophosphate (AMP) to inosine-5'-monophosphate (IMP) for use as a flavoring agent, which process comprises mixing sufficient amounts of a yeast lysate and a moromi or a moromi fraction to form a mixture, allowing the mixture to react at a temperature of between about 30° and 70° C. and for a time sufficient to convert at least a portion of the AMP of the lysate to IMP, thus producing a flavoring agent.

5,626,895
INFUSION BAG

Christoph Götz, Hanover, Germany, assignor to Abraham's Tea House GmbH, Hanover, Germany

Filed Feb. 10, 1995, Ser. No. 387,045
Claims priority, application Germany, Feb. 14, 1994, 44 04 611.1
Int. Cl.[6] A47G *19/16*
U.S. Cl. 426—82 **5 Claims**



1. An infusion bag of liquid-pervious filter material having a bottom edge and opposite side edges; said bag consisting of face-to-face arranged first and second panels secured to one another along said bottom edge and said side edges; said first and second panels together defining an opening spaced from said bottom edge; said first and second panels having a length dimension viewed in a direction away from said bottom edge; the length dimension of said first panel being greater than the length dimen-

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sion of said second panel, such that said first panel includes a flap extending beyond said opening in a direction away from said bottom edge; said flap having a length such that when the flap is bent in its longitudinal direction, said opening is enlarged and a charging space is formed above the opening such that upon placing a substance to be infused on the bent flap, the bent flap serves as a hopper or slide for the substance to be filled in the bag, the length of said flap also being of sufficient length such that said flap may be positioned over the edge of a teapot and clamped thereon with a teapot lid, such that said bag may be suspended in the teapot in a vertical position; said flap serving as a sole means for suspending the bag.

5,626,896

METHOD FOR MAKING LIQUID-CENTERED JELLY CANDIES

Carl O. Moore, Rochester, and James R. Dial, Moweaqua, both of Ill., assignors to A.E. Staley Manufacturing Co., Decatur, Ill.

Filed Dec. 9, 1994, Ser. No. 353,449
Int. Cl.[6] A23G *3/00*
U.S. Cl. 426—103 **8 Claims**

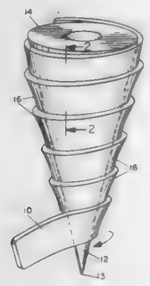
1. A method of making a liquid-filled confection comprising:
encapsulating a solid hygroscopic sugar composition within a water-containing jelly candy, said solid sugar composition capable of absorbing sufficient water from the jelly candy to form an aqueous dispersion of the sugar within the jelly candy.

5,626,897

CONICAL FOOD ARTICLE AND PROCESS FOR MAKING SAME

Ward J. Goldstein, Solana Beach, Calif., assignor to Conewich Enterprises L.P., San Diego, Calif.

Continuation-in-part of Ser. No. 973,904, Nov. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 715,628, Jun. 14, 1991, abandoned. This application May 26, 1995, Ser. No. 450,488
Int. Cl.[6] A21D *13/08*
U.S. Cl. 426—139 **10 Claims**



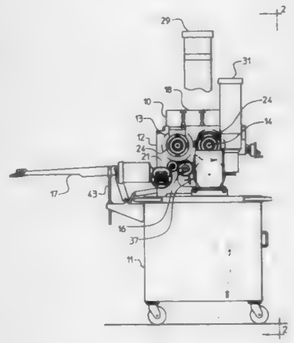
1. A process for making an edible food container, comprising the steps of:
forming an uncooked flat strip of uncooked bread dough;
winding the elongate strip of uncooked bread dough spirally around a conical mandrel starting at the widest end of the mandrel to form a plurality of successive spiral turns of the dough strip along the height of the mandrel up to the apex of the mandrel, with an overlap of predetermined height between each pair of adjacent spiral turns along the entire length of the mandrel;
applying a coating comprising a mixture of water, baking soda and cornstarch to the surface of the wrapped spiral strip prior to baking whereby the baking soda will give a brownish color to the outer surface of the container after baking and the cornstarch helps to seal the overlaps; and
cooking the wrapped spiral strip on the mandrel in an oven cooking cycle, to form a bread cone having the consistency of soft bread which is resistant to liquid leakage out of the cone, the bread cone comprising means for receiving any selected savory or sweet filling.

5,626,898

MASA SHEETING PROCESS WITH PRODUCT LENGTH CONTROL

Andrew A. Caridis, San Carlos; Anthony A. Caridis, Belmont; Clark K. Benson, Millbrae; Lawrence F. Klein, Hillsborough, and Daniel E. Brown, San Mateo, all of Calif., assignors to Heat and Control, Inc., South San Francisco, Calif.

Division of Ser. No. 482,572, Jun. 20, 1995, Pat. No. 5,580,583, which is a continuation of Ser. No. 110,392, Aug. 23, 1993, abandoned. This application Oct. 23, 1995, Ser. No. 546,927
Int. Cl.[6] A21D *8/08*
U.S. Cl. 426—502 **1 Claim**



1. The process of sheeting masa or other food product dough from a supply thereof, including the steps,
providing front and back pinch rolls arranged to define a substantially horizontally extending nip between the rolls,
receiving the masa from the supply into the nip to pass therethrough thereby consolidating the masa into a sheet while counter-rotating the rolls,
providing means serving to establish a differential adhesion potential between the masa and the back roll from the masa and the front roll so that the masa, below the nip, departs from the surface of the back roll without the intervention of a stripper wire or doctor blade and so that it fully adheres to the surface of the front roll for piece shape cutting purposes,
cutting the sheeted masa against the front roll into selected shapes while the masa adheres to the front roll, stripping the selected cut shapes from the front roll by means of a stripping wire engaging the front roll following the cutting action, the cutting action and the stripping wire tending to create compressive, piece length shortening forces in the cut masa pieces,
and the step of controlling the cut to length size of the selected shapes by selectively varying the relative speed between the rotatable cutting means and the front roll.

5,626,899

PROCESS FOR MAKING VEGETABLE-BASED MEAT EXTENDERS

Tony Payne, and Russ Egbert, both of Decatur, Ill., assignors to Archer Daniels Midland Company, Decatur, Ill.

Filed Jun. 7, 1995, Ser. No. 482,878
Int. Cl.[6] A23L *1/052;* A23J *3/14*
U.S. Cl. 426—574 **8 Claims**

1. A process for making a protein crumble comprising the steps of:
(a) chopping and blending one part soy protein isolate or soy protein concentrate with 3.5 to 5.0 parts water at ambient room temperature for a period of time adequate to hydrate said soy protein isolate;
(b) adding to the blend of step (a) a food ingredient combination including at least one powdered food ingredient taken from a group consisting of a vegetable protein and a complex carbohydrate;
(c) chopping material produced in step (b) for an additional period, the additional period being adequate to form a viscous gel materials, wherein a total chopping time for step a and c being in the range of about 3 to 7 minutes;
(d) cooling said viscous gel material of step (c) for enhancement of a textural integrity of the gel in step (c);
(e) separating said viscous gel material cooled in step (d) into discrete protein crumbles having a textural characteristic for use as a fat replacer or meat extender.

5,626,900

METHOD OF PREPARATION OF CHOCOLATE CRUMB, AND PRECURSOR COMPONENT THEREFOR

Van Miller, R.R. #2, Brisbane, Erin, Ontario, Canada

Filed Feb. 16, 1996, Ser. No. 602,417
Int. Cl.[6] A23G *3/00;* A23C *9/18*
U.S. Cl. 426—580 **20 Claims**

1. A method of preparation of an anhydrous milk and sugar precursor component intended for use in the production of milk chocolate, in which said milk and sugar precursor component will provide the entire dried milk solids content and flavor ingredient thereof;
wherein at least a first sugar portion of said milk and sugar precursor component is molasses;
said method comprising the steps of:
(a) selecting a total weight of dried milk solids to be present in said milk and sugar precursor component;
(b) selecting a quantity of molasses as said flavor ingredient to be present in said milk and sugar precursor component;
(c) mixing said selected quantity of molasses with at least a first portion of liquid milk comprising a first portion of milk solids and a first portion of water, where said first portion of water is sufficient to hydrate said selected quantity of molasses so as to form a slurry batch of hydrated molasses and liquid milk;
(d) if necessary, mixing said slurry batch with a second portion of liquid milk chosen so that the total weight of milk solids in said further mixed slurry batch from said first portion of liquid milk and said second portion of liquid milk is said total selected weight of milk solids;
(e) drying said slurry batch from either step (c) or step (d) so as to obtain said selected total weight of milk solids as dried milk solids, together with said selected quantity of molasses as precipitate after dehydration thereof in a dried milk and sugar precursor component; and
setting aside said dried milk and sugar precursor component for later use in the preparation of milk chocolate to be produced.

5,626,901

NO AND LOW FAT SALAD DRESSING COMPOSITIONS

Hans C. Ambjerg Pedersen, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 9, 1995, Ser. No. 512,875
Int. Cl.[6] A23L *1/24*
U.S. Cl. 426—589 **40 Claims**

1. A no and low fat salad dressing composition comprising a continuous aqueous phase containing a semi-gelled system comprising at least one pectin with a degree of esterification having an upper limit of 55% and a lower limit of 5% and degree of amidation having an upper limit of 50% and a lower limit of 0.05% crosslinked with a cation and a fat phase having a fat content with a lower limit of 0 and an upper limit of 35% by weight.

5,626,902

FATS HAVING FUNCTION FOR PREVENTING SWELLING CAUSED BY OIL ABSORPTION AND CONFECTIONERY USING THE SAME

Kouichi Kuramori, Kitasoma-gun; Nobuo Sagi, Tsukuba-gun, and Hiroyuki Mori, Abiko, all of Japan, assignors to Fuji Oil Company, Limited, Osaka-fu, Japan

Filed Mar. 31, 1995, Ser. No. 415,043
Claims priority, application Japan, Mar. 31, 1994, 6-064192
Int. Cl.[6] A23G *1/00*
U.S. Cl. 426—607 **3 Claims**

1. A method for preventing fat migration of a complex confectionery composed of chocolate and a baked confectionery which comprises adding a fat comprising 1,3-dibehenoyl-2-oleyl glycerides to the chocolate, wherein said glycerides are used in the form of a melted state together with other triglycerides.

5,626,903

FAT SPARING SYSTEM, ESPECIALLY FOR COOKIE FILLER CREMES

Peter M. Gautchier, McHenry, and William Dyer, St. Charles, both of Ill., assignors to Van Den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Jun. 7, 1995, Ser. No. 475,147
Int. Cl.[6] A23D *9/007*
U.S. Cl. 426—611 **2 Claims**

1. A fat sparer comprising from 0.1 to 10 wt. % of an emulsifier selected from the group consisting of phosphated monoglyceride, phosphated diglyceride and polyglycerol polyricinoleate, and a triglyceride fat or triglyceride fat blend having an SFC at 20° C. of from 5–15, at 25° C. of from 1–25, at 30° C. of from 1–10 and at 35° C. a maximum of 4.

5,626,904

SALT PRODUCT AND A METHOD FOR THE PREPARATION THEREOF

Wilmar F. Frederiksen, Vedbæk, Denmark, assignor to Hitavejta Sudurnesja, Njardvik, Iceland

PCT No. PCT/DK93/00100, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO93/18668, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 18, 1993, Ser. No. 295,800
Claims priority, application Denmark, Mar. 19, 1992, 0362/92
Int. Cl.[6] A23L *1/237;* A01N *59/08;* C01D *3/04*
U.S. Cl. 426—649 **13 Claims**

1. A method for the preparation of a salt product comprising NaCl, K/Mg-double salt and optionally KCl wherein the molar ratio of K to Mg is ≧1, wherein the salt product comprises particles, in which NaCl, KCl, and K/Mg-double salt are homogeneously distributed throughout each particle, comprising providing an aqueous salt mixture of salt ions of NaCl, K/Mg double salt and

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optionally KCl, having a water content of 50 to 90% by weight and subjecting the aqueous salt mixture to a one-step instant drying at a temperature of 70° to 200° C. for a period of 1 to 60 seconds to obtain a dry product.

5,626,905

PROCESS FOR THE PREPARATION OF ASBESTOS-FREE MICROPOROUS ELECTROCONDUCTIVE SUBSTRATE

Jean Bachot, Bourg la Reine, and Frédéric Kuntzburger, Le Plessis Bouchard, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 265,786, Jun. 27, 1994. This application May 31, 1995, Ser. No. 450,677

Claims priority, application France, Jun. 25, 1993, 93 07742

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—122 **7 Claims**

1. A process for the preparation of an asbestos-free microporous electroconductive substrate, comprising (a) providing an aqueous suspension of a mixture of carbon or graphite fibers, polytetrafluoroethylene fibers, inert mineral fibers, at least one fluorinated polymer, a silica porogen, and, optionally, at least one thickening agent; (b) depositing a coating onto a porous support by programmedly vacuum filtering said suspension therethrough, the coating comprising a liquid medium; (c) removing the liquid medium from said coating and then drying same; (d) sintering the coating thus formed; and (e) extracting the silica porogen therefrom to form a substrate comprising intimate admixture of carbon or graphite fibers, polytetrafluoroethylene fibers and 10 to 100 parts by weight of inert mineral fibers, and optionally, at least one thickening agent, consolidated by 10 to 60 parts by weight of at least one fluorinated polymer.

5,626,906

ELECTRODES COMPRISING CONDUCTIVE PEROVSKITE-SEED LAYERS FOR PEROVSKITE DIELECTRICS

Scott R. Summerfelt, and Howard R. Beratan, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 283,468, Aug. 1, 1994, abandoned. This application Feb. 21, 1996, Ser. No. 604,268

Int. Cl.[6] B05D *5/12;1/36*

U.S. Cl. 427—126.3 **21 Claims**



1. A method of forming a microelectronic structure, said method comprising:

(a) forming a conductive oxide layer comprising a first metal;

(b) forming a conductive perovskite-seed layer comprising said first metal on said conductive oxide layer; and

(c) forming a perovskite dielectric layer on said perovskite-seed layer, whereby the similar crystal structure of the perovskite-seed layer improves the crystal quality of the perovskite dielectric layer and minimizes the formation of non-perovskite crystal structures.

5,626,907

PROCESS FOR COATING METAL SURFACES WITH A FLUORORESIN USING A PRIMER

Minori Hagiwara; Kenji Kiwa, both of Yokohama; Tatsuya Ogita, Tokyo, and Luc G. P. J. D'Haenens, Yokohama, all of Japan, assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 182,633, Feb. 26, 1994, abandoned. This application Jul. 28, 1995, Ser. No. 508,509

Int. Cl.[6] B05D *1/36*

U.S. Cl. 427—202 **12 Claims**

1. A process for coating a metal surface with a fluororesin comprising applying to said metal surface a primer composition comprising a solution or a dispersion in an organic solvent, of a polyether sulfone, a fluorinated resin, at least one polymer selected from the group consisting of a polyamideimide, and a polyimide, and a particulate metal, in which the proportion of the polyether sulfone: one or both of polyamideimide and polyimide is from 55:45 to 95:5 and the ratio of the total polyether sulfone and one or both of polyamideimide and polyimide to the fluororesin is 20:80 to 70:30 by weight, and; applying the fluororesin to the resultant primed layer as a powder coating.

5,626,908

METHOD FOR PRODUCING SILICON NITRIDE BASED MEMBER COATED WITH FILM OF DIAMOND

Satoshi Iio, and Masakazu Watanabe, both of Komaki, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 10,383, Jan. 28, 1993, abandoned. This application May 30, 1995, Ser. No. 453,464

Claims priority, application Japan, Jan. 28, 1992, 4-013212

Int. Cl.[6] C23C *16/26;* **B05D** *3/06*

U.S. Cl. 427—249 **23 Claims**

1. A method for coating a substrate of a cutting tool formed of a silicon nitride based material with a diamond film by a gas phase synthesis technique comprising

providing a substrate of a sintered silicon nitride based material having grain boundary components which volatilize at a lower temperature than silicon nitride;

a first step of applying said diamond film at a temperature less than a temperature at which the grain boundary components of said substrate volatilize, to a thickness which is sufficient to suppress volatilization of elements constituting a grain boundary phase during a subsequent step, and

a second step of synthesizing said diamond film at a temperature which expedites synthesis of said diamond film to increase the thickness.

5,626,909

FABRICATION OF BRAZABLE IN AIR TOOL INSERTS

Charles D. Iacovangelo, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 7, 1994, Ser. No. 350,572

Int. Cl.[6] C23C *16/00;* **B05D** *3/02*

U.S. Cl. 427—250 **12 Claims**

1. A method for manufacturing a tool insert comprising the steps of:

a. depositing a metal bonding layer on a tool compact of cubic boron nitride.

b. depositing a protective layer on the metal bonding layer to form a multilayer coated tool insert.

c. heating the metal bonding layer at a temperature and for a time sufficient to form a metal carbide or nitride at the interface between the metal bonding layer and the tool compact to provide adhesion of the metal bonding layer to the tool compact.

d. heating the protective layer to provide adhesion of the protective layer to the metal bonding layer, either simultaneously or sequentially with Step c.

5,626,910

SURFACE-MODIFIED MOLDED PRODUCT OF SYNTHETIC RESIN AND PROCESS FOR PRODUCING IT

Yasuo Tanabe, Tokyo; Koshi Sasaki, Kawasaki; Hidehiko Ohara, Yokohama, and Naoshi Imaki, Atsugi, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 103,684, Aug. 10, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 379,768

Claims priority, application Japan, Aug. 10, 1992, 4-234231; Mar. 23, 1993, 5-064297

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—255.1 **6 Claims**

1. A process for producing a surface-modified molded product of synthetic resin, which consists essentially of:

(i) contacting a gas containing fluorine gas in an amount of no more than 20% weight with the surface of a molded product of synthetic resin to form radical reactive sites thereon; and then

(ii) contacting a radical polymerizable monomer with the Alfrey-Price's value e as an index of the reactivity of the monomer being 1.7>e>−1.0 thereto to form a polymer layer having a thickness of from 1 Å to 500 μm initiated by said radical reactive sites on the surface of the molded product.

5,626,911

METHOD FOR THE PRE-TREATMENT OF COATED GLASSES BEFORE HEAT TREATMENT

Aulis Bertin, Hauvola, Harjavalta, Finland, and Yrjö Välimäki, Salmentie 5 D, Alavus, Finland

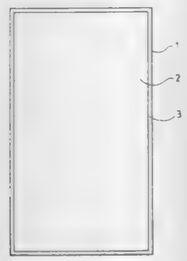
PCT No. PCT/FI93/00255, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO93/25487, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 11, 1993, Ser. No. 356,223

Claims priority, application Finland, Jun. 15, 1992, 922754

Int. Cl.[6] B05D *5/12;* **C03C** *17/23;19/00*

U.S. Cl. 427—271 **4 Claims**



1. A method for treating a coated glass plate before heat treatment, the coated glass plate having an edge area parallel to the plane of the glass plate and further having a resistive, heat radiation reflecting coating layer over at least the edge area of the glass plate, the coating layer containing conduction electrons, the heat treatment including heating the glass plate to an elevated temperature ranging from 580° C. to 700° C., cooling the glass plate rapidly so as to produce surface compression stresses on the glass plate and interior tensile stresses in the glass plate, the method comprising removing an edge part of the coating layer from the edge area of the glass plate to produce an uncoated portion of the glass plate before the heat treatment, so as to maintain a substantially uniform resistivity across the glass plate when cooling from the elevated temperature.

5,626,912

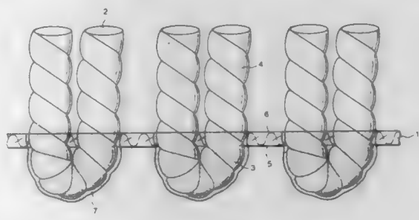
TUFTED FABRICS

Jan A. J. Hendrix, Born; Arnoldus M. Kerssemakers, Valkenburg a/d Geul, both of Netherlands; Yousef Mohajer, Midlothian, and Forrest E. Sloan, Chesterfield, both of Va., assignors to DSM N.V., Netherlands, and AlliedSignal Inc., Morristown, N.J.

Filed Apr. 14, 1995, Ser. No. 422,527

Int. Cl.[6] B05D *3/02;5/00*

U.S. Cl. 427—288 **14 Claims**



1. A process for forming a tufted fabric comprising the steps of:

mounting tufts in a primary backing having a faceside and a backside, said tufts forming piles at said faceside and loops at said backside of said primary backing;

applying a reactive mixture to at least said loops on said backside of said primary backing, said reactive mixture comprising a polymerizable monomer; and

in-situ polymerizing said monomer to obtain a thermoplastic polymer adhesive, said thermoplastic polymer adhesive binding said tufts to said primary backing.

5,626,913

RESIST PROCESSING METHOD AND APPARATUS

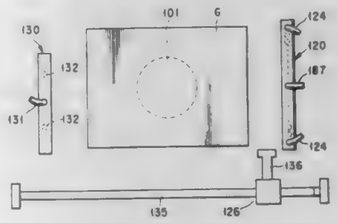
Takayuki Tomoeda; Masaaki Murakami, and Kenichi Nishioka, all of Kumamoto-ken, Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Filed Mar. 9, 1995, Ser. No. 400,935

Claims priority, application Japan, Mar. 9, 1994, 6-064345; Mar. 30, 1994, 6-084064

Int. Cl.[6] B65D *3/00*

U.S. Cl. 427—299 **8 Claims**



1. A resist processing method comprising the steps of:

supplying a resist processing solution onto an object and performing a process on said object; and

supplying a cleaning solution onto said object to clean said object;

wherein said processing step at least partially overlaps with the cleaning step, and resist processing solution is not a cleaning solution, and a supply amount of at least one of said resist processing solution and said cleaning solution is changed while said processing step overlaps with said cleaning step.

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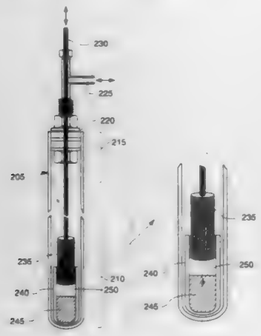
CERAMIC-METAL COMPOSITES

Marcus A. Ritland, Golden, and Dennis W. Readey, Lakewood, both of Colo., assignors to Coors Ceramics Company, Golden, Colo.

Continuation-in-part of Ser. No. 946,972, Sep. 17, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 220,569

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—377 38 Claims



1. A method for making a ceramic-metal composite, comprising the steps of:

(a) contacting a sintered ceramic body having at least about 5 volume percent open porosity with molten copper metal;

(b) maintaining said sintered ceramic body in contact with said copper metal in the absence of substantial overpressure for an amount of time sufficient to infiltrate at least a portion of the open porosity in said sintered ceramic body with said copper metal; and

(c) cooling said metal-infiltrated ceramic body to solidify said copper metal and form a ceramic-metal composite.

5,626,915

AQUEOUS COATING COMPOSITION

Alger E. Laura, New Boston; Ronald J. Easton, Clio; Kurt C. Frisch, Grosse Ile, and Han X. Xiao, Farmington Hills, all of Mich., assignors to A-Line Products Corporation, Detroit, Mich.

Continuation of Ser. No. 220,729, Mar. 31, 1994, Pat. No. 5,427,856, which is a continuation of Ser. No. 20,654, Feb. 22, 1993, Pat. No. 5,300,363, which is a continuation of Ser. No. 599,664, Oct. 18, 1990, Pat. No. 5,227,198, which is a continuation-in-part of Ser. No. 340,845, Apr. 20, 1989, abandoned. This application Feb. 7, 1995, Ser. No. 384,775

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—385.5 21 Claims



1. An aqueous coating, composition, comprising effective film-forming amounts of:

(a) about 0.5 to about 40 parts by weight of a thermoplastic polyolefinic resin, said resin having a molecular weight up to about 40.000, or a softening point of about 150° F. to about 350+ F.;

(b) at least one constituent selected from the group consisting of a polyol in an amount up to about 40 parts by weight, a surfactant in an amount up to about 15 parts by weight and mixtures thereof;

(c) about 0.01 to about 10 parts by weight of an amine having an amine functionality of between 1 and 3; and

(d) the balance water, wherein said composition is substantially free of aromatic organic solvents.

5,626,916

CLOTH PREPREG, PROCESS FOR PRODUCING THE SAME AND REINFORCING FABRIC

Hajime Kishi; Nobuyuki Odagiri; Tokuo Tazaki; Hideo Nagata; Takeshi Terashita; Akira Nishimura, all of Iyo-gun, and Hiroyasu Kato, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 368,674, Jan. 4, 1995, which is a division of Ser. No. 88,635, Jul. 9, 1993, Pat. No. 5,447,785, which is a continuation-in-part of Ser. No. 24,957, Mar. 2, 1993, abandoned. This application Jan. 31, 1996, Ser. No. 594,848

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—386 6 Claims

1. A process of producing a cloth prepreg comprising impregnating a resin composition into a woven fabric in two steps, said resin composition comprising an epoxy resin, a curing agent and a solid acrylonitrile-butadiene rubber having a functional group and having a weakly cross-linked structure, wherein in the first impregnation step, the resin is impregnated so as to attain a resin content W_R of 10–30%.

5,626,917

PROCESS FOR THE MULTI-LAYER LACQUER COATING OF SUBSTRATES

Thomas Brock, Hurth, and Erwin Wilczek, Cologne, both of Germany, assignors to Herberts GmbH, Wuppertal, Germany

PCT No. PCT/EP94/01675, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/28076, PCT Pub. Date Dec. 8, 1994

PCT Filed May 25, 1994, Ser. No. 374,538

Claims priority, application Germany, May 28, 1993, 43 17 861.8

Int. Cl.[6] B05D *1/36;7/16*

U.S. Cl. 427—407.1 22 Claims

1. Process for the multi-layer lacquer coating of a substrate by applying a base lacquer layer of an aqueous coating composition onto an optionally precoated substrate and subsequently overcoating with a clear lacquer, which process is characterised in that a clear lacquer is used which contains:

A) at least one copolymer containing hydroxyl groups which is obtained by reacting

a) one or more esters of aliphatic saturated monocarboxylic acids branched in α-position with one or more epoxide groups in the alcohol portion with

b) one or more alkyl esters of α, β-ethylenically unsaturated carboxylic acids, and

c) one or more hydroxyalkyl esters of α, βB-ethylenically unsaturated carboxylic acids, and

B) one or more polyisocyanates with an average of at least 1.5 NCO groups per molecule in a quantity such that the equivalent ratio of OH groups in component A) to NCO groups of component B) is 1:1.6 to 1:2.2,

C) one or more solvents.

5,626,918

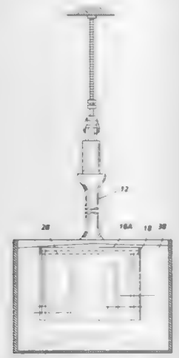
METHOD FOR HANDLING AND DIPPING FLEXIBLE BELTS USING A SPRING AND SHAFT ASSEMBLY

John S. Chambers, Rochester; Ronald E. Godlove, Bergen; Huoy-Jen Yuh, Pittsford; Timothy J. Leenhouts, Fairport; Rachael A. Forgit, and Robert T. Cosgrove, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1995, Ser. No. 556,246

Int. Cl.[6] B05D *1/18*

U.S. Cl. 427—430.1 9 Claims



1. A method of handling and dipping a flexible belt defining a closed loop comprising:

a) providing a mechanical handling device at an end of a spring and shaft assembly, wherein said spring and shaft assembly includes a spring mounted to a shaft such that an inside surface of said spring is attached to an outer surface of said shaft;

b) placing said spring of said spring and shaft assembly inside a circumference defined by the flexible belt;

c) expanding said spring in a radial direction from said shaft, to engage an interior portion of the flexible belt in sealing and carrying relationship therewith;

d) transporting said spring and shaft assembly and the flexible belt along a path to a fluid reservoir;

e) dipping the flexible belt in a fluid contained in said fluid reservoir;

f) transporting said spring and shaft assembly and the flexible belt out of and away from said fluid reservoir; and

g) removing said spring and shaft assembly from the interior of the flexible belt.

5,626,919

SOLID IMAGING APPARATUS AND METHOD WITH COATING STATION

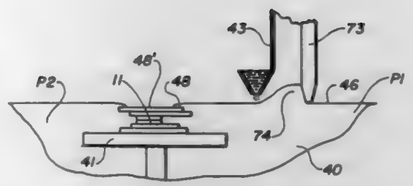
Brian G. Chapman, Elkton, Md.; Christian H. Clausen, Woodbury, N.J.; Daniel J. Mickish, Wilmington, and Eustathios Vassiliou, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 804,269, Dec. 5, 1991, abandoned, which is a continuation of Ser. No. 488,095, Mar. 1, 1990, abandoned. This application May 18, 1992, Ser. No. 884,030

Int. Cl.[6] C08J *7/04;* B05C *3/02;* B29B *17/00;* B29C *35/02*

U.S. Cl. 427—510 28 Claims

1. In an apparatus for fabricating an integral three-dimensional object by selectively exposing successive layers of a liquid photoformable composition to actinic radiation, said apparatus including imaging means for exposing said layers, a vessel for containing a fixed amount of said composition so as to present a free surface at a substantially constant position relative to said imaging means, and a movable platform disposed within said vessel below said free surface, the improvement in said apparatus comprising:



a dispenser adapted to be dipped under said free surface and directly transfer part of said composition above said free surface;

means attached to said dispenser for lowering and raising said dispenser at predetermined positions alongside said platform; and

layering means for contacting the composition transferred above said free surface and moving over said platform to form a layer of said composition.

5,626,920

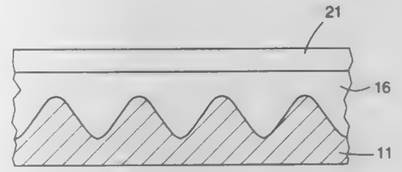
METHOD FOR COATING METAL DISC SUBSTRATES FOR MAGNETIC-RECORDING MEDIA

Richard D. Weir, Agoura Hills, and Carl W. Nelson, Santa Cruz, both of Calif., assignors to Tulip Memory Systems, Inc., Fremont, Calif.

Continuation of Ser. No. 96,730, Jul. 23, 1993, abandoned, which is a division of Ser. No. 771,348, Oct. 4, 1991. This application Apr. 21, 1995, Ser. No. 427,975

Int. Cl.[6] C23C *14/06;14/08;14/32;* B05D *5/12*

U.S. Cl. 427—530 21 Claims



21. A method for fabricating a magnetic recording medium comprising the steps of:

providing a metal substrate;

depositing a first layer on the substrate, wherein the first layer is composed of an element selected from the group consisting of aluminum, silicon, titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, and tungsten, and wherein depositing the first layer creates a graded interfacial diffusion of said element into the substrate, and then;

depositing a second layer on the first layer, wherein the second layer is selected from the group consisting of aluminum nitride, silicon nitride, silicon carbide, and nitrides, carbides, and borides of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, or tungsten, and the second layer includes the element of the first layer, and wherein depositing the second layer creates a graded interfacial diffusion of the second layer into the first layer, wherein the second layer is characteristic of an energetic-atom-deposited dense fibrous Zone T structure on a Movchan-Demchishin-Thornton zone-structure diagram and wherein said second layer is deposited by evaporative reactive ion plating or by reactive sputtering, and then;

depositing a layer of ferromagnetic material.

VOL 1198 ISS 1 MY 6 1997 UMI

5,626,921

METHOD FOR FORMING PHOTOLUMINESCENCE LAYER ON A SEMICONDUCTOR LAYER BY ION IRRADIATION

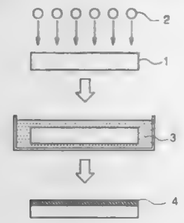
Yukinori Ochiai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 982,985, Nov. 30, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 381,442

Claims priority, application Japan, Nov. 29, 1991, 3-315846; Dec. 10, 1991, 3-350170; Dec. 20, 1991, 3-355008; Dec. 28, 1991, 3-360577; Dec. 28, 1991, 3-360579

Int. Cl.[6] **C23C** *14/14*; **H05H** *1/00*; *1/24*

U.S. Cl. 427—533 **5 Claims**



1. A method for forming a photoluminescence layer on a substrate having a silicon surface portion, said photoluminescence layer emitting light at an intensity and a wavelength, by performing the steps of

irradiating with ions said surface portion where the photo luminescence layer is to be formed;

immersing said surface portion in a solution containing hydrofluoric acid; and

controlling at least one of a solution concentration and an immersion time in said solution in order to control said intensity and said wavelength;

whereby the ion-irradiated and hydrofluoric acid-treated surface portion forms the photoluminescence layer.

5,626,922

PLASMA PROCESSING METHOD

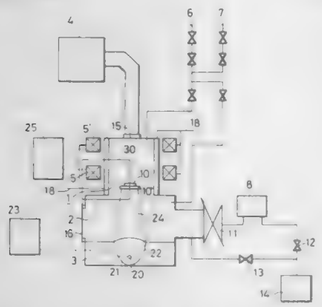
Akiharu Miyanaga; Tohru Inoue, both of Kanagawa, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 426,483, Apr. 20, 1995, which is a continuation of Ser. No. 120,222, Sep. 14, 1993, abandoned, which is a continuation of Ser. No. 763,595, Sep. 23, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 463,058

Claims priority, application Japan, Sep. 25, 1990, 2-254520; Sep. 25, 1990, 2-254521; Sep. 25, 1990, 2-254522

Int. Cl.[6] **H05H** *1/00*

U.S. Cl. 427—535 **15 Claims**



1. A plasma processing method comprising the steps of:

introducing a reactive gas into a reaction chamber;

inputting pulsed high frequency electromagnetic waves to said reaction chamber in order to produce a plasma of said reactive gas;

treating a substrate with said plasma in said chamber;

wherein the high frequency electromagnetic waves are complex such that each pulse of said pulsed high frequency electromagnetic waves comprises at least first and second rectangular pulses having a different pulse height and occurring with a lapse of time therebetween, said second pulse occurring after said first pulse.

5,626,923

METHOD OF APPLYING CERAMIC COATING COMPOSITIONS TO CERAMIC OR METALLIC SUBSTRATE

Jerry M. Fitzgibbons, Cahokia, Ill., and James E. French, Ballwin, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sep. 19, 1995, Ser. No. 531,228

Int. Cl.[6] **H05H** *1/24*; **B05D** *3/02*

U.S. Cl. 427—535 **6 Claims**

1. A method for applying a ceramic coating to a ceramic or metallic substrate, comprising:

(a) forming a sol of a colloidal silica dispersed in a polar organic solvent;

(b) adding a base to the sol in an amount of from 0.1 to 1.0 mole per mole of the colloidal silica, to produce a corresponding silica gel;

(c) adding at least one filler to the silica sol formed in step (a), or to the silica gel formed in step (b), in an amount of about 2 to 20 times the weight of the colloidal silica, wherein the filler is a ceramic, glass, metallic, polymeric or carbonaceous filler material, or a mixture thereof;

(d) mixing the sol or gel after addition of the filler in step (c) to thoroughly disperse the filler therein;

(e) at least partially drying the filler-containing silica gel to form a coating composition in the form of a paste, said composition incorporating no more than 50 wt. % of volatile solvents;

(f) applying the coating composition to a ceramic or metallic substrate; and

(g) curing the coated substrate to form the ceramic coating thereon.

5,626,924

METHOD OF FORMING OXIDE FILM

Yoshimitsu Ishikawa, Nagasaki, Japan, assignor to Sony Corporation, Japan

Filed Sep. 1, 1995, Ser. No. 522,658

Claims priority, application Japan, Sep. 8, 1994, 6-240592

Int. Cl.[6] **H05H** *1/24*; **C23C** *16/00*

U.S. Cl. 427—579 **13 Claims**

1. An oxide film forming method comprising the steps of:

supplying a reactant gas into a plasma chemical vapor deposition (CVD) apparatus in which a wafer is disposed and applying a plasma generating voltage to form a first silicon oxide film on said wafer;

performing a first hydrophobic rendering process on the first silicon oxide film comprising the steps of:

stopping the supply of said reactant gas into said plasma CVD apparatus;

stopping the application of said plasma generating voltage;

introducing tetraethylorthosilicate (TEOS) gas into said plasma CVD apparatus to establish an atmosphere of said TEOS gas in a process chamber of said plasma CVD apparatus, and allowing the first silicon oxide film on said wafer to react with said TEOS gas in said process chamber for a predetermined time to allow a condensation reaction between Si—OH on a surface of the first silicon oxide film, and said TEOS gas to impart hydrophobic characteristics on the first silicon oxide film; and

reacting O_3 with the TEOS gas to form a second oxide film on said first silicon oxide film after the first silicon oxide film has been rendered hydrophobic by the condensation reaction between the Si—OH on the surface of the first silicon oxide film and the TEOS gas.

5,626,925

LIQUID CRYSTAL DEVICE

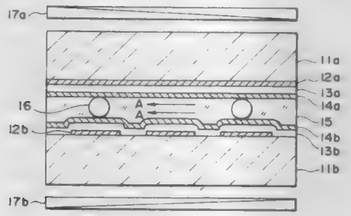
Masanobu Asaoka, Yokohama; Hideaki Takao, Sagamihara, and Makoto Kojima, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 13,327, Feb. 4, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 401,658

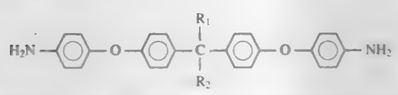
Claims priority, application Japan, Feb. 5, 1992, 4-47805

Int. Cl.[6] **C09K** *15/00*

U.S. Cl. 428—1 **7 Claims**



1. A liquid crystal device, comprising: a pair of opposing substrates and a liquid crystal disposed between the substrates, at least one of said pair of opposing substrates having thereon an alignment film comprising a polyimide formed by reaction between a single acid component and at least two different diamine components of formula (1) below:



wherein R_1 and R_2 independently denote methyl, ethyl, propyl, butyl or pentyl.

5,626,926

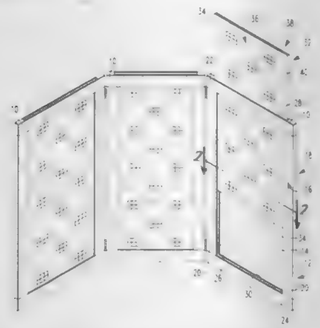
STAND-ALONE DECORATIVE ASSEMBLY

Gilchrist P. Roberts, Snellville, Ga., assignor to Lin Pac, Inc., Atlanta, Ga.

Filed Oct. 12, 1994, Ser. No. 321,913

Int. Cl.[6] **G09F** *7/18*

U.S. Cl. 428—14 **7 Claims**



1. A stand-alone decorative assembly comprising:

a frame having opposite side members connected together at opposite ends by top and bottom frame members respectively, said bottom frame member being shaped to provide stand-alone stability to said frame;

said frame members defining a central display area therebetween, said display area being open along front and back surfaces of said frame;

grooves extending along opposite frame members separated by said display area;

a slot formed in one of said frame members, said slot being aligned with said grooves, said slot having an entrance leading exteriorly of said frame and communicating with said display area; and

a substantially rigid corrugated paperboard, decorative panel removably supported along said frame and adapted to be inserted within said slot, said panel having a bottom edge supported by said bottom frame member, said panel having ends adapted to be aligned within said grooves for sliding said panel into said display area, whereby front and back surfaces of said panel are exposed along said central display area.

5,626,927

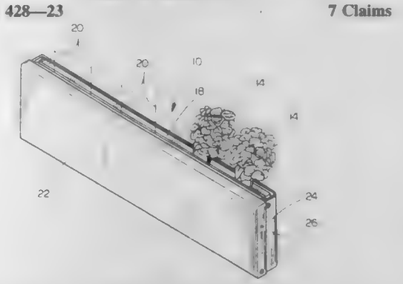
TRAVEL WINDOW BOX

Claude A. Reed, 4810 S. 136th St., Omaha, Nebr. 68137

Filed Aug. 22, 1995, Ser. No. 517,898

Int. Cl.[6] **A01G** *9/02*

U.S. Cl. 428—23 **7 Claims**



1. A portable box for artificial plants, comprising:

a housing having a generally vertical back panel, a generally horizontal bottom panel affixed along a lower edge of the back panel, and a pair of opposing end panels connecting the back and bottom panels, said back, bottom and end panels forming four sides of an enclosure;

a front panel connected to said housing to form a fifth side of the enclosure;

a support bar operably mounted to the enclosure, having means for releasably supporting plants in an upright position, and forming an operable sixth side of the enclosure;

said support bar operably mounted for movement between a first position wherein plants supported thereon project upwardly from an upper end of the enclosure, and a second position wherein plants supported thereon project within an interior of the enclosure.

5,626,928

ADHESIVE IN THE FORM OF A FILM

David C. Summer, Nr. Pickering, United Kingdom, assignor to R.A. Adhesive Products Limited, West Midlands, United Kingdom

Continuation of Ser. No. 39,032, Apr. 5, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,636

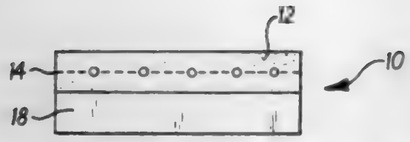
Claims priority, application United Kingdom, Oct. 11, 1990, 9022129

Int. Cl.[6] **B32B** *7/00*

U.S. Cl. 428—41.8 **9 Claims**

1. An article of manufacture comprising:

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a transfer adhesive structure having first and second opposite faces and comprising a film of adhesive and support material embedded in the adhesive film, the adhesive film being exposed at both said first and second faces, and

a release paper on which the adhesive film and support material form a coating, for storage before use,

the support material comprising a net which defines regularly spaced lines along which the support material is weak relative to the remainder of the support material and along which the support material will preferentially break, and wherein the transfer adhesive structure may be broken after removal of the release paper by applying a longitudinal force against resistance provided by adhesion of the film to an article, and wherein adhesion of the film to the support material in the region of a break supports the film against stretching, whereby the adhesive film and support material will, in use, break together along a weakness line defined in the support material.

5,626,929

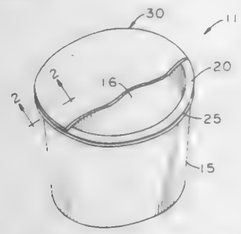
PEELABLE AND HEAT SEALABLE LIDSTOCK MATERIAL FOR PLASTIC CONTAINERS

James A. Stevenson, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 7, 1995, Ser. No. 476,524

Int. Cl.[6] B65D *41/20*

U.S. Cl. 428—35.8 **15 Claims**



1. A peelable and heat sealable lidstock material comprising a metal or polymer substrate laminated with a single layer film comprising:

a) about 30–70 wt. % of a butene-1 and ethylene copolymer wherein ethylene comprises about 1–15 mole percent of the copolymer,

b) about 10–40 wt. % of an ethylene homopolymer or an ethylene-vinyl acetate copolymer or an ethylene-methyl acrylate copolymer, and

c) at least about 18 wt. % of a particulate inorganic filler.

5,626,930

MULTI-LAYER COMPOSITIONS HAVING A FLUOROPLASTIC LAYER

Tatsuo Fukushi, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 328,080, Oct. 24, 1994, Pat. No. 5,512,225. This application Feb. 22, 1996, Ser. No. 605,577

Int. Cl.[6] B32B *25/14*

U.S. Cl. 428—36.9 **3 Claims**

1. A multi-layer composition comprising (A) a first layer comprising a fluoroplastic polymer comprising interpolymerized units derived from vinylidene fluoride and (B) a second layer comprising a peroxide-curable hydrocarbon elastomer having a number-average molecular weight of at least 50,000 and a primary-amine containing unsaturated compound or polymer having a number-average molecular weight of less than 10,000; wherein substantially all of said primary-amine containing compound or polymer is located in said second layer and is present in an amount sufficient to increase the adhesion between said layers compared to compositions without said primary-amine containing compound or polymer.

5,626,931

ADHESIVE FILM STRIP

Bernd Lühmann, Norderstedt, Germany, assignor to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Jul. 27, 1995, Ser. No. 508,288

Claims priority, application Germany, Aug. 12, 1994, 44 28 587.6

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—40.1 **6 Claims**

1. An adhesive film strip for an adhesive bond which can be separated again by pulling on the strip in the direction of the bond plane, the adhesive film strip having upper and lower surfaces and first and second ends, the first strip end terminating in a pointed, serrated, convex curved or wavy shape and the first strip from said end extending to said second end which serves as a tab for pulling, the bond area of the strip increasing from said first end toward said second end, said second end-tab being provided with a cover which is UV-opaque, said strip being adhesive on its upper and lower surfaces, the adhesive being based on a thermoplastic rubber and tackifying resins, the adhesive film having high elasticity and low plasticity, and the adhesion being lower than the cohesion, the adhesive strength substantially disappearing on stretching of the film, the ratio between peel force and tear strength being at least 1:1.5, and the adhesive composition being self-adhesive or heat-activatable.

5,626,932

ADHESIVE FILM STRIP

Bernd Lühmann, Norderstedt, and Andreas Junghans, Hamburg, both of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Aug. 16, 1995, Ser. No. 515,886

Claims priority, application Germany, Sep. 8, 1994, 44 31 914.2

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—40.1 **9 Claims**

1. Strip of an adhesive film for a bond which can be redetached without residue, based on thermoplastic rubber and tackifying resins, the adhesive film possessing high elasticity and low plasticity and the adhesion being less than the cohesion, the adhesion disappearing when the film is extended, the ratio of pulling force to tearing load being at least 1:1.5, and an adhesive bond produced therewith being able to be separated by pulling on the adhesive film in the direction of the bonding plane, one end of the strip being provided on both sides with a covering which is adhesive on the side facing the adhesive film and which serves at the same time as a grip tab for pulling, the release force of the covering film being less than 3N/cm.

5,626,933

MODULAR FLOOR COVER

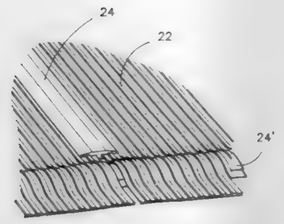
Marcel Long, 2271 Rue Centrale, Saint-Hilaire, N.B., Canada

Filed Jan. 16, 1996, Ser. No. 585,724

Int. Cl.[6] B32B *3/02;7/08;* **A47K** *7/02*

U.S. Cl. 428—52 **20 Claims**

1. A modular floor cover comprising:



at least two rectangular strips of impermeable ribbed matting laid side-by-side on a floor, with adjacent longitudinal edges thereof being spaced apart from one-another a distance of a nominal gap, said plurality of rectangular strips defining an overall floor covering area having a perimeter comprised of two outermost longitudinal edges and two transversal edges being substantially at right angle with said outermost longitudinal edges;

a first elongated joining means enclosing said gap and said adjacent longitudinal edges;

a second elongated joining means having an overall thickness, located under said transversal edges;

whereby a plurality of valleys between the ribs of said ribbed matting and between said second elongated joining means, form a basin of a first level for retaining water, slush, automotive fluids and debris falling off a vehicle when said vehicle is parked over said floor cover.

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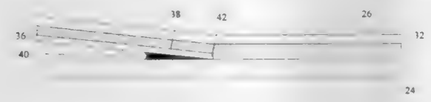
ENHANCING DAMAGE TOLERANCE OF ADHESIVE BONDS

John C. Brewer, Norfolk, Mass., assignor to United States of America, Washington, D.C.

Filed Oct. 20, 1995, Ser. No. 546,388

Int. Cl.[6] B32B *3/26*

U.S. Cl. 428—63 **5 Claims**



1. A patch for a crack in a surface comprising a surface, a crack in said surface, a patch applied to said surface over said crack, an adhesive joining said patch to said surface, and means creating at least one gap in said adhesive prior to curing said adhesive.

5,626,935

MAGNETIC DISK SUBSTRATE AND METHOD FOR MANUFACTURING THE SAME

Naoyuki Goto, and Katsuhiko Yamaguchi, both of Sagamihara, Japan, assignors to Kabushiki Kaisya Ohara, Japan

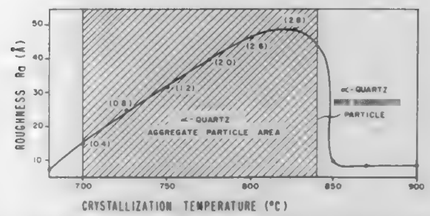
Continuation-in-part of Ser. No. 248,757, May 25, 1994, Pat. No. 5,391,522, which is a continuation of Ser. No. 92.551, Jul. 16, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,889

Claims priority, application Japan, May 19, 1993, 5-139989

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—64.1 **22 Claims**

1. A magnetic disk substrate made of a glass ceramic having crystal phases which consist of lithium disilicate ($Li_2O.2SiO_2$) and alpha-quartz (SiO_2) characterized in that said crystal phase of alpha-quartz is formed of grown crystal grains each having a globular grain structure made of aggregated particles, each globular grain having a size within a range from 0.3 μm to 3 μm and said crystal grains of alhpa-quartz being randomly scattered in the finer particles of lithium disilicate said magnetic disk substrate having a polished surface having a surface roughness (Ra) within a range of from 15 Å to 50 Å.



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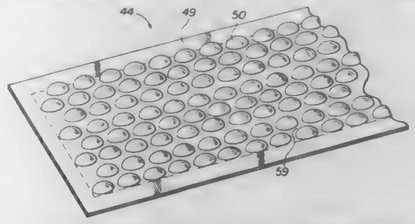
PHASE CHANGE INSULATION SYSTEM

Robert J. Alderman, Ruskin, Fla., assignor to Energy Pillow, Inc., Seguin, Tex.

Filed Sep. 9, 1993, Ser. No. 118,567

Int. Cl.[6] B32B *3/06*

U.S. Cl. 428—68 **26 Claims**



1. A thermally insulated wall structure of a building placed in heat exchange relationship between a first space maintained at a generally constant predetermined temperature and a second space of a variable temperature within a range of temperatures extending higher than and lower than the temperature of the constant temperature space during the course of a twenty-four hour day, comprising:

a first layer of heat insulation material having an insulation value and positioned adjacent the constant temperature space,

a second layer of heat insulation material overlying said first layer of heat insulation material and positioned adjacent the variable temperature space,

an intermediate layer of phase change material dispersed between said first and second layers of heat insulation materials comprising a phase change material that changes between a solid state and a liquid state at a predetermined phase change temperature, said phase change temperature falling within said range of temperatures of the variable temperature space during the course of a twenty-four hour day,

said intermediate layer of phase change material contained in a plurality of pockets formed by bonding two sheets of material together for maintaining the phase change material in fixed dispersed positions between said first and second layers of heat insulation material during both phases of the phase change material,

said phase change material between the layers of heat insulation material being arranged to absorb heat from the variable temperature space in response to the temperature of the variable temperature space becoming higher than the phase change temperature, or to give up heat to the variable temperature space in response to the temperature of the variable temperature space becoming lower than the phase change temperature, and

the insulation value of said second layer of insulation material being lower than the insulation value of said first layer of insulation so that said phase change material more readily

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absorbs heat from or gives up heat to the variable temperature space than to the constant temperature space.

5,626,937

COMPOSITE CARDS

Masaki Morikawa; Naoyuki Hosoda, and Naoki Uchiyama, all of Sanda, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

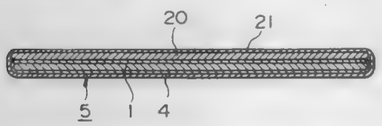
Continuation of Ser. No. 863,754, Apr. 6, 1992, Pat. No. 5,364,482, which is a division of Ser. No. 614,116, Nov. 16, 1990, Pat. No. 5,120,589, which is a continuation-in-part of Ser. No. 536,996, Jun. 13, 1990, abandoned, which is a continuation of Ser. No. 219,263, Jul. 15, 1988, abandoned. This application Jun. 14, 1994, Ser. No. 260,404

Claims priority, application Japan, Feb. 10, 1988, 63-29118; Mar. 1, 1988, 63-27298; Mar. 1, 1988, 63-27299; Apr. 13, 1988, 63-91069; Apr. 14, 1988, 63-92315; Apr. 28, 1988, 63-106710; Apr. 28, 1988, 63-106711; Apr. 28, 1988, 63-106712

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[6] B32B *1/04;3/02*

U.S. Cl. 428—76 7 Claims



1. A precious metal composite comprising:

a precious metal member defining a substantially planar plate element having first and second planar surfaces and an outer periphery;

a first plate element having a pictorial pattern on a surface thereof mounted in side-by-side, parallel-facing relation to said first planar surface; and

a cover element made from a polymeric material encapsulating the combination of said first plate element and said substantially planar plate element;

wherein said outer periphery of said substantially planar plate element is surrounded by said cover element.

5,626,938

FLAME-RETARDANT POLYAMIDE FIBER

Gary W. Shore, Asheville, N.C., assignor to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 109,413, Aug. 19, 1993, Pat. No. 5,604,007, which is a continuation of Ser. No. 846,510, Mar. 6, 1992, abandoned. This application May 16, 1995, Ser. No. 441,861

Int. Cl.[6] B32B *3/02;* C08L *83/05*

U.S. Cl. 428—92 9 Claims

1. A melt-spun polyamide fiber formed of a polyamide mixture comprising:

(i) at least about 80% by weight of a polyamide, wherein at least 90% of the polyamide is at least one nylon selected from the group consisting of nylon 6, nylon 6/6, copolymers thereof, and combinations thereof; and

(ii) an additive containing (1) a thermoplastic matrix polymer, (2) silicones in an amount between about 5% to about 20% based on the total weight of the additive, and (3) a platinum complex catalyst; wherein

said additive is present in said polyamide mixture in an amount between about 0.05% to about 20% by weight of the polyamide mixture so that said silicones are present in the polyamide mixture in an amount less than about 1.0% by weight sufficient to render said polyamide mixture more flame retardant than said polyamide mixture is without the additive, and wherein said polyamide fiber has a denier per filament of between about 6 to about 35.

5,626,939

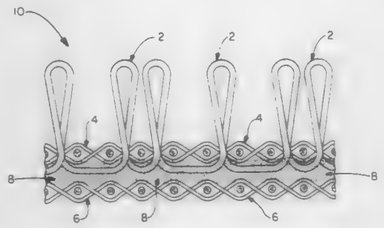
SYNTHETIC WOOD FROM WASTE FIBROUS WASTE PRODUCTS

Abraham M. Kotlair, Athens, Ga., and Daniel P. Fountain, Kirksville, Mo., assignors to Georgia Tech, Atlanta, Ga.

Filed Sep. 5, 1995, Ser. No. 523,257

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—97 48 Claims



1. A fibrous composite which comprises:

(a) 10 to 95% by weight carpet, the carpet comprising an unmelted face yarn,

a backing, and

a fiber adhesive; and

(b) 5 to 90% by weight of a structural adhesive.

5,626,940

STORAGE SLEEVE AND METHOD OF MANUFACTURING THE SAME

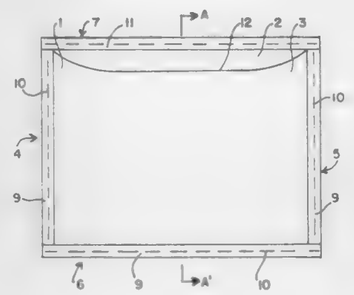
Douglas J. Selwyn-Smith, Selwyns, Unit 2, Vastre Industrial Estate, Newtown, Powys SY16 1DZ, Great Britain

Filed Jan. 27, 1995, Ser. No. 379,307

Claims priority, application United Kingdom, Jan. 28, 1994, 9401606

Int. Cl.[6] B32B *3/06*

U.S. Cl. 428—102 3 Claims



1. A storage sleeve comprising a substantially rigid reinforcing panel and a single flexible sheet, said sheet being folded over said panel so as to sandwich said panel therebetween, wherein said sheet and said panel are joined by welding and subsequent sewing to form a pocket on either side of said panel.

5,626,941

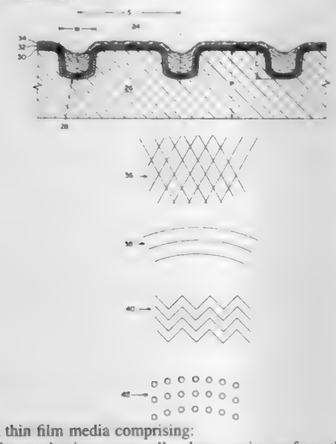
THIN FILM MEDIA FOR VERY LOW FLYING HEIGHT/ CONTACT RECORDING APPLICATION

Augustus C. Ouano, Shrewsbury, Mass., assignor to Quantum Corporation, Milpitas, Calif.

Filed May 27, 1992, Ser. No. 889,157

Int. Cl.[6] B32B *3/10;9/00;17/06;* G11B *5/66*

U.S. Cl. 428—141 14 Claims



1. A thin film media comprising:

a substrate having a generally planar major surface, the surface having a predetermined pattern of depressions formed thereon, the depressions being defined by plateaus of uniform height therebetween, the predetermined pattern of depressions generating a frequency modulated tracking servo signal in an adjacent, relatively moving transducer for positioning a read/write head over a track during use of the media, wherein the predetermined pattern is a series of fishnets; and

a magnetic film deposited uniformly over the major surface and in a conforming contact relationship over the major surface.

5,626,942

POLYESTER FILM AND PROCESS FOR PRODUCING THE SAME

Katsuya Okamoto, Hirakata; Koichi Abe, Kyoto, and Shoji Nakajima, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 5, 1993, Ser. No. 57,642

Int. Cl.[6] B32B *27/36;5/16;27/06*

U.S. Cl. 428—141 13 Claims

1. A polyester film comprising a biaxially oriented polyester film comprising polyester A, wherein the number of protrusions formed on at least one surface of said film is not less than $5\times10^3/mm^2$ and the ratio N_R of said number of protrusions to the number of particles contained in a surface layer forming said at least one surface of said film is not less than 5, and the crystallization parameter Δ Tcg of said polyester A is not more than 70° C., wherein not less than 70% of said protrusions are formed from crystallization.

5,626,943

ULTRA-SMOOTH CERAMIC SUBSTRATES AND MAGNETIC DATA STORAGE MEDIA PREPARED THEREFROM

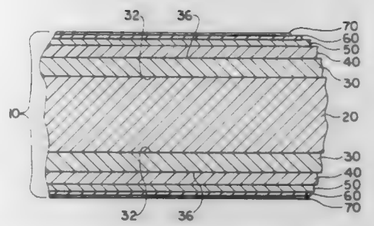
Michael A. Tenhover, East Amherst, N.Y., assignor to The Carborundum Company, Worcester, Mass.

Filed Jun. 2, 1994, Ser. No. 253,002

Int. Cl.[6] G11B *5/66;* B32B *3/10*

U.S. Cl. 428—141 50 Claims

1. A layered substrate capable of being adapted for use as a magnetic data storage medium, the substrate comprising:



a non-oxide ceramic core having a plurality of surfaces; and

a smoothing layer with an inner surface contacting at least one surface of the ceramic core and an outer surface having a surface roughness of less than 100 Å Ra, the smoothing layer comprising a non-magnetic, substantially amorphous metal having a fracture toughness of at least 10 $MPa\cdot m^{1/2}$;

an electrical conductivity or less than about 200 μΩ-cm; a crystallization temperature of at least about 400° C.; and a coefficient of thermal expansion o between about 2 to about 7 ppm/°C.; and wherein the amorphous metal is an alloy which corresponds to the formula:

$$M^1{}_aM^2{}_bX_c$$

wherein

M^1 is selected from the group consisting of chromium, molybdenum, tungsten, and mixtures thereof;

M^2 is selected from the group consisting of titanium, zirconium, hafnium, tantalum, vanadium, niobium, iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, iridium, platinum, and mixtures thereof;

X is selected from the group consisting of nitrogen, aluminum, boron, silicon, phosphorous, germanium, arsenic, antimony, carbon, tin, and mixtures thereof;

a is from about 0.5 to about 0.95;

b is from 0 to about 0.3; and

c is from greater than 0 to about 0.3, and a+b+c is 1.

5,626,944

LAMINATED FILMS

Ole-Bendt Rasmussen, Obersecki 5, Walchwil/Zug, Switzerland

PCT No. PCT/GB93/00177, § 371 Date Jun. 16, 1994, § 102(e) Date Jun. 16, 1994, PCT Pub. No. WO93/14928, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 28, 1993, Ser. No. 244,860

Claims priority, application United Kingdom, Jan. 29, 1992, 9201880

Int. Cl.[6] B32B *3/00;31/00;* A01J *21/00;* B29C *55/00*

U.S. Cl. 428—172 42 Claims



1. An elongated cross-laminate of at least two films formed from orientable thermoplastic polymer material, in which each film is uniaxially oriented or biaxially oriented in an unbalanced manner to thereby have a major direction of orientation, and the major orientation directions of the individual films criss-cross each other with the major direction of orientation of at least one of said films extending at an angle to the length direction of the cross-laminate, and the cross-laminate exhibits a pattern of generally parallel lengthwise extending striations constituted by thickness variations therein resulting from stretching at a given stretch ratio of the cross-laminate transversely to the length direction, wherein said pattern of striations comprises elongated ribs extending in said length direction each of which is substantially defined between generally concave and generally convex curved surfaces which are in generally coincident relation transversely of said length direction on opposite faces of said cross-laminate, the radius of curvature of said concave surface being generally greater than that of said convex surface whereby the ribs have a maximum thickness

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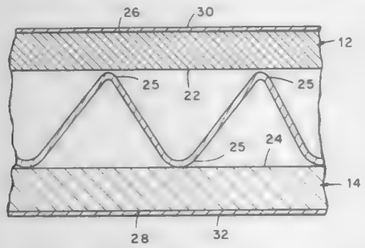
greater than the average thickness of the laminate, and each rib as a whole has a generally shallow U-shaped transverse cross-section, and the laminate material in or adjacent to lateral boundaries of the ribs in the tensionless state of the material are generally reversely curved relative to the rib curvature to give the material between adjacent pairs of ribs a generally flattened condition.

5,626,945

REPULPABLE, WATER REPELLANT PAPERBOARD

Arnold L. Berzins, Westwood; Tung C. Ma, Fort Lee, both of N.J., and Charles J. Davis, Goshen, N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Sep. 28, 1993, Ser. No. 128,582
The portion of the term of this patent subsequent to Aug. 15, 2014, has been disclaimed.
Int. Cl.° B32B 9/06
U.S. Cl. 428—174 13 Claims



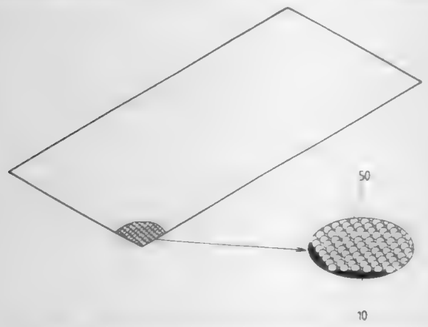
1. A water-repellant paperboard comprising a fibrous web having a coating consisting essentially of:
a wax component selected from the group consisting of paraffin wax and polyethylene wax emulsions and mixtures thereof; and
a polymer matrix of polymer chains comprising a polystyrene-butadiene polymer copolymerized with a monomer having pendant carboxylic acid groups;
wherein said pendant carboxylic acid groups of said polymer chains are cross-linked by a zinc ion ionically bonded between carboxylic acid groups of adjacent polymer chains.

5,626,946

FLEXIBLE AND PERMEABLE SHEET

Ding-Yuh Liou, No. 4, Lane 429, Lu Shan Rd., Chu Shan Jenn, Nan Tou Hsien, Taiwan

Filed Aug. 11, 1995, Ser. No. 518,593
Int. Cl.° B32B 3/00
U.S. Cl. 428—195 14 Claims



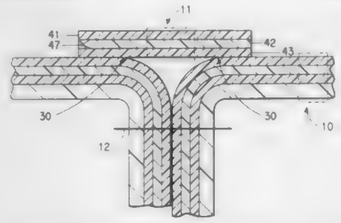
1. A sheet material having an upper surface and a lower surface comprising a net of fibers having plastic beaded bodies integrally molded therein such that the upper surface of the material has discrete elevated portions and the lower surface of the material is flat.

5,626,947

COMPOSITE CHEMICAL BARRIER FABRIC FOR PROTECTIVE GARMENTS

Ernst J. Hauer, Steinheim; Stasys K. Rudys, Luxembourg, both of Luxembourg, and James P. Zeigler, Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 63,389, May 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 891,360, May 29, 1992, abandoned. This application Sep. 25, 1995, Ser. No. 533,407
Int. Cl.° B32B 3/00
U.S. Cl. 428—195 10 Claims



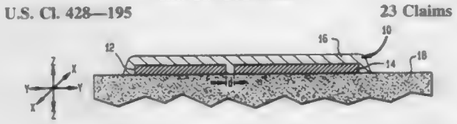
1. A chemical protective garment comprising a plurality of interconnected protective material pieces, each of said protective material pieces consisting essentially of: (a) a point bonded nonwoven, flexible, reinforcing, fabric substrate: (b) a barrier film selected from the group consisting of oriented nylon, polyethylene terephthalate, and polyethylene naphthalate films laminated to the fabric substrate by a thermoplastic polymeric adhesive layer; and (c) a thermoplastic polymeric adhesive topcoat adhered to the unlaminated side of the barrier film, the protective material pieces of the garment having a burst strength of at least 75 psi, a chemical barrier rating of at least 50 when the barrier film is less than 0.5 mils thick, and a chemical barrier rating of at least 75 when the barrier film is greater than 0.5, but less than 1.3 mils thick.

5,626,948

ELECTRICAL SYSTEM HAVING A MULTILAYER CONDUCTIVE COMPOSITION

Andrew R. Ferber, New York, N.Y.; Terrance Z. Kaiserman, Loxahatchee, Fla., and Adrian I. Rose, Gillette, N.J., assignors to Ferber Technologies L.L.C., Roseland, N.J.

Filed Jan. 3, 1996, Ser. No. 582,486
Int. Cl.° B32B 9/00
U.S. Cl. 428—195 23 Claims



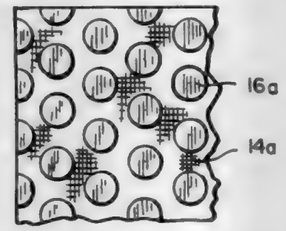
1. An electrical system comprising: at least one current operated module adapted to provide an output response to applied current; a power source for providing current to said at least one current operated module; a substrate; and a multi-layer conductive composition arranged on said substrate for providing an electrical current path between said power source and said at least one current operated module, said multi-layer conductive composition comprising a first composition including electrically conductive material present in an amount sufficient to provide said first composition with a first level of conductivity, said first composition being arranged on said substrate, and a second composition including electrically conductive material present in an amount sufficient to provide said second composition with a second level of conductivity, said second composition being arranged over said first composition, said first level of conductivity of said first composition being greater than said second level of conductivity of said second composition, said second level of conductivity of said second composition is selected so that substantial electric current can flow along the z axis thereof to said first composition while electric current is substantially prevented from flowing along the x and y axes of said second composition, and the first level of conductivity of said first composition is such that electric current can flow along the x, y and z axes thereof, and a pigment present in an amount to provide a desired color to said second composition.

5,626,949

BREATHABLE SHELL FOR OUTERWEAR

Stephen J. Blauer; Charles Blauer, both of Lexington, Mass.; Mark A. Mordecai, Hampton, N.H., and Richard Satterfield, Wellesley, Mass., assignors to Blauer Manufacturing Company, Boston, Mass.

Continuation-in-part of Ser. No. 222,524, Apr. 4, 1994, Pat. No. 5,466,515. This application Oct. 30, 1995, Ser. No. 549,928
Int. Cl.° B32B 3/00
U.S. Cl. 428—196 11 Claims



1. A shell for outerwear comprising:
(a) an outer woven synthetic fabric, a stratum printed on the inner face thereof, and release agent impregnation thereof;
(b) said stratum having a pattern characterized by 10 to 90% coverage of the area of said outer shell fabric; and
(c) said stratum being composed of a high tensile strength material that is adhesively bonded to said shell outer fabric and adapted to prevent said shell outer fabric from unraveling and to maintain the shape of said shell.

5,626,950

MOISTURE PERMEABLE, WATERPROOF FABRIC AND ITS PRODUCTION PROCESS

Yasunao Shimano; Masashi Mukai; Hideki Chatani; Kazuhiko Takashima; Yoshihiro Umezawa, and Dai Hara, all of Nomi-gun, Japan, assignors to Komatsu Seiren Co., Ltd., Ishikawa, Japan

PCT No. PCT/JP94/00687, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/25663, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 25, 1994, Ser. No. 356,347
Claims priority, application Japan, Apr. 28, 1993, 5-103043; Jun. 29, 1993, 5-159326; Jun. 29, 1993, 5-159336
Int. Cl.° B32B 27/04:27/08;27/12; B05D 5/00
U.S. Cl. 442—76 4 Claims

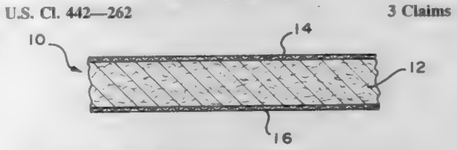
1. A moisture-permeable, waterproof fabric comprising a textile fabric and a resin coating on at least one side of said textile fabric, said resin coating comprising a fluorine-containing polyurethane resin and a polyurethane resin having a number average molecular weight from 1,000 to 50,000, said moisture-permeable, waterproof fabric having a water resistance pressure of greater than 6,000 mmH_2O as measured by method B of JIS L 1092, and a water vapor permeability of greater than 8,000 $g/m^2/24$ hours as measured by method A-1 of JIS L 1099.

5,626,951

THERMAL INSULATION SYSTEM AND METHOD OF FORMING THEREOF

Peter A. Hogenson, Long Beach, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 3, 1995, Ser. No. 416,125
Int. Cl.° B32B 7/00
U.S. Cl. 442—262 3 Claims



1. A thermal insulation blanket, comprising:
a flexible insulator core formed of ceramic fibrous materials;
an outer layer integrally connected on an inner surface to a first side of said insulator core, said outer layer comprising a woven ceramic material impregnated with a ceramic matrix, said woven ceramic being impregnated by infiltration or deposition; and
an tuner layer connected to a second side of said insulator core, said inner layer comprising a woven material.

5,626,952

PROCESS FOR SIZING SPUN YARNS

Michael L. McAbee, Cataula; Warren S. Perkins, Watkinsville, and Donald H. Shomake, Buford, all of Ga., assignors to Callaway Corporation, Columbus, Ga.

Filed Dec. 15, 1995, Ser. No. 573,059
Int. Cl.° B32B 7/00
U.S. Cl. 442—154 21 Claims

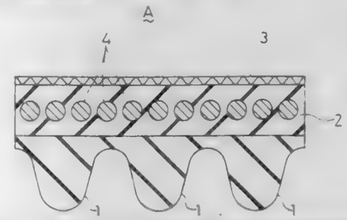
1. In the sizing of a spun yarn by performing the steps of: (1) applying to a yarn substrate an aqueous solution comprising a solution polymerized polyacrylamide polymer which has a viscosity of about 400 to 900 cps at 20% solids and (2) drying the treated substrate,
the improvement comprising adding urea to the polymer solution to form a mixed solution and applying the mixed solution, wherein the urea is added in an amount of about 10 to 50% by weight of the weight of the polyacrylamide polymer and wherein the polymer and urea are applied in an amount sufficient to impart a high order of abrasion resistance to the yarn while being capable of being removed from the yarn by aqueous washing.

5,626,953

FIBER-REINFORCED ELASTIC BODY AND POWER TRANSMISSION BELT USING THE SAME

Hiroshi Fujimoto, and Kimichika Ohno, both of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Filed May 26, 1995, Ser. No. 451,547
Claims priority, application Japan, May 31, 1994, 6-118739
Int. Cl.° B32B 27/00
U.S. Cl. 428—296.4 6 Claims



1. A fiber-reinforced elastic body composed of chlorosulfonated polyolefin reinforced by polyester fibers, which fibers are treated

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with a first adhesive comprising an isocyanate compound or an epoxy compound and are then treated with a second adhesive formed from a mixture comprising resorcinol-formaldehyde resin liquid and a 2,3 dichlorobutadiene polymer, wherein the chlorosulfonated polyolefin has a chlorine content of 15 to 35 wt. % and a sulfur content of 0.5 to 2.5 wt. %,

wherein a wetting agent is added to the second adhesive, the concentration of the wetting agent being set to 0.08 to 0.35 parts by weight with respect to 100 parts by weight of total water content in the second adhesive.

5,626,954

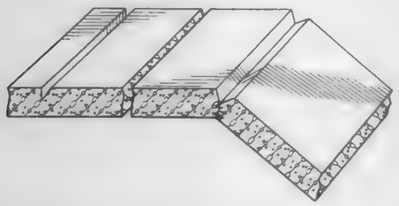
SHEETS MADE FROM MOLDABLE HYDRAULICALLY SETTABLE MATERIALS

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, and a continuation-in-part of Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, and a continuation-in-part of Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764. This application Aug. 3, 1993, Ser. No. 101,630

Int. Cl.[6] B32B *5/02;5/08;* **C04B** *14/00*

U.S. Cl. 428—294.7 **130 Claims**



1. An article of manufacture comprising a sheet having a hydraulically settable matrix formed from a hydraulically settable mixture comprising a hydraulically settable binder, rheology-modifying agent, fibers, and water, wherein the fibers are substantially homogeneously dispersed throughout the hydraulically settable matrix of the sheet such that the sheet can be bent, folded or rolled to significantly mechanically deform the sheet after the hydraulically settable matrix has been substantially dried without complete rupture of the hydraulically settable matrix, the hydraulically settable matrix of the sheet having a maximum thickness of about 3 mm.

5,626,955

MICROPARTICLE-CONTAINING PRESSURE SENSITIVE ADHESIVE TAPE

Richard J. Goetz, Woodbury; Daniel P. Pohl, Oakdale, and Mary L. Brown, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 4, 1994, Ser. No. 222,668

Int. Cl.[6] C09J *7/02*

U.S. Cl. 428—315.7 **18 Claims**

1. A microparticle-containing pressure sensitive adhesive tape comprising a water-absorbing backing having first and second opposed surfaces, and a first microparticle-containing pressure sensitive adhesive surface on at least a portion of the first surface of the backing wherein said first microparticle-containing pressure sensitive adhesive surface comprises:

a) from about 90 to 99.75 parts by weight of a microparticle-containing component; and correspondingly

b) from about 10 to 0.25 parts by weight of a water-dispersible component;

which first microparticle-containing pressure sensitive adhesive surface forms an essentially permanent bond to a substrate when said first surface is wetted with water, applied to said substrate, and dried.

5,626,956

HEXAGONAL MAGNETIC FERRITE PIGMENT FOR HIGH DENSITY MAGNETIC RECORDING APPLICATIONS

David M. Hopstock, Roseville; John S. Roden; Gunther H. Dierssen, both of White Bear Lake, and Ronald S. Sapieszko, Woodbury, all of Minn., assignors to Imation Corp., St. Paul, Minn.

Division of Ser. No. 762,596, Sep. 19, 1991, Pat. No. 5,378,384. This application Dec. 28, 1993, Ser. No. 174,136

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—323 **11 Claims**

1. A magnetic recording medium comprising:

(a) a nonmagnetizable substrate; and

(b) a magnetizable layer disposed on the substrate, said magnetizable layer comprising a magnetic pigment dispersed in a binder, wherein the magnetic pigment comprises hexagonal, platelet-shaped magnetic ferrite particles having a modified magnetoplumbite structure and having approximately the formula:

$$B(II)M(II)_uM(III)_vM(IV)_xM(V)_yM(VI)_zFe(III)_wO_p$$

wherein

B(II) is at least one metal ion selected from the group consisting of Ba, Sr, Pb, and Ca;

M(II) is at least one divalent metal ion other than Ba, Sr, Pb, Fe(II), and Ca;

M(III) is at least one trivalent metal ion other than Fe(III);

M(IV) is at least one tetravalent metal ion;

M(V) is at least one pentavalent metal ion;

M(VI) is at least one hexavalent metal ion;

Fe(III) is trivalent iron ion;

p is 19+4u−4x−8y−12z;

u satisfies the relationships $0.5+x+2y+3z \leq u \leq 2+x+2y+3z$ and $u>0.5v+2x+3.5y+5z$;

v is 0 to 0.1;

x is 0 to 0.7;

y is 0 to 0.7;

z is 0 to 0.7;

w is greater than 12 and is 90% to 115% of the value given by 12+2u−v−4x−7y−10z; and

$0 \leq x+y+z \leq 0.7$.

5,626,957

ANTISTATIC X-RAY INTENSIFYING SCREEN COMPRISING SULFONYL METHIDE AND SULFONYL IMIDE AND AMIDE SALTS

Paolo Benso, Savona; Dario Ballerini, Genova, both of Italy; William M. Lamanna, Stillwater; George G. I. Moore, Afton, both of Minn., and William A. Huffman, Pittsford, N.Y., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 16, 1995, Ser. No. 491,116

Claims priority, application European Pat. Off., Jul. 12, 1994, 941108029

Int. Cl.[6] B32B *5/16;19/00*

U.S. Cl. 428—323 **8 Claims**

1. An X-ray intensifying screen comprising a support, a fluorescent layer coated thereon which comprises fluorescent phosphor particles dispersed in a binder, and a protective top-coat layer covering said fluorescent layer, wherein at least one of said fluorescent and top-coat layers comprises at least one salt selected from the group consisting of fluoroalkylsulfonyl methides, fluoroalkylsulfonyl imides, and fluoroalkylsulfonyl amides, wherein said

salts are represented by the following formula:

$$[Rf-SO_2\overset{-}{\underset{m-1}{\vdots}}X^{-}\overset{+}{\underset{v-1}{\vdots}}Y-R]_m \quad Me^{+}$$

wherein Me is an organic or inorganic cation, Rf is a highly fluorinated alkyl group having 1 to 12 carbon atoms, X is nitrogen or carbon atom, Y is —C(O)—, —SO_2— or a single bond, R is an alkyl or aryl group, v is the valence of X, and m is 0 or 1, when X is nitrogen atom, and m is 0 or 1 or 2 when X is carbon atom, and wherein two Rf groups can join together to form a fluorinated cyclic alkyl ring.

5,626,958

BASE PAINTS COMPRISED OF POLYAMIDE POWDERS FOR USE IN COATING PVC STRUCTURES

Bruno D'Herbecourt, Bernay, and Thierry Moulin, Saint Foy Les Lyons, both of France, assignors to Elf Atochem S.A., Paris-la-Défense, France

Filed Feb. 1, 1994, Ser. No. 190,748

Claims priority, application France, Feb. 5, 1993, 93 01316

Int. Cl.[6] B32B *5/16;27/18;27/26;27/30*

U.S. Cl. 428—327 **10 Claims**

1. A coating composition suitable for coating polyvinyl chloride articles of manufacture, said composition being curable on a substrate (i) in an oven at a temperature between 20° C. and 80° C. or (ii) under infrared stoving at a surface temperature of between 50° C. and 100° C.,

said composition comprising:

a) a vehicle comprising polyacrylate, epoxy resin, polyether, polyester, polycaprolactone, vinyl chloride polymers or mixtures thereof, which polymers contain hydroxyl groups, carboxyl groups, or both said groups,

b) an isocyanate crosslinking agent.

c) a solvent for said vehicle and crosslinking agent, and

d) finely divided thermoplastic resin particles ranging in size from 0.05 to 200 μm in suspension,

wherein said vehicle is branched to the extent that the paint film which is obtained by crosslinking said composition to form a film that is adherent to said PVC article of manufacture allows the plasticizers used in making said PVC article of manufacture to exude through said paint film and wherein said composition contains essentially no silicone oil.

5,626,959

POLYMERIC FILM COMPRISING FILLER PARTICLES OBTAINED BY CALCINING PRECURSOR SILICONE RESIN PARTICLES

Paul D. A. Mills, Darlington, England; Junaid A. Siddiqui, Richmond, Va., and Karl Rakos, Nr Ferryhill, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 7, 1994, Ser. No. 271,138

Int. Cl.[6] B32B *5/16;27/36*

U.S. Cl. 428—331 **10 Claims**

1. A polymeric film comprising from 0.0005% to 0.5% by weight, based upon the weight of the polymer in the film, of calcined filler particles having a volume distributed median particle diameter of from 0.1 to 12.5 μm, a skeletal density in the range from 1.95 to 2.3 g/cm^3, and a BET specific surface area of less than 80 m^2/g, the filler particles being obtained by calcining precursor silicone resin particles prior to incorporation into the film polymer.

5,626,960

SPANDEX CONTAINING A HUNTITE AND HYDROMAGNESITE ADDITIVE

Thomas E. Carney, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 7, 1995, Ser. No. 518,148

Int. Cl.[6] D02G *3/00;* **D01F** *6/00*

U.S. Cl. 428—372 **6 Claims**

1. A spandex containing particles of a mineral mixture of huntite and hydromagnesite dispersed within the spandex in an amount effective for decreasing the tackiness and increasing the chlorine-resistance of the spandex.

5,626,961

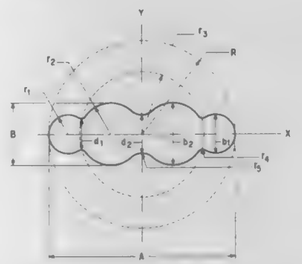
POLYESTER FILAMENTS AND TOWS

Arun P. Aneja, Greenville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 497,499, Jun. 30, 1995, abandoned. This application May 3, 1996, Ser. No. 642,650

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—397 **1 Claim**



1. A polyester filament having a scalloped-oval peripheral cross-section that is of aspect ratio (A:B) about 3:1 to 1.1:1, B being maximum width and A being measured along major axis of the scalloped-oval peripheral cross-section, and having 6 grooves extending along the filament, 3 of said 6 grooves being located on each side of the major axis, 4 of said 6 grooves being located towards the ends of the major axis and being referred to herein as outer grooves, wherein a pair of said outer grooves that are located at the same end of the major axis define between them a lobe at that same end of the major axis and are separated from each other by a minimum distance between said pair of d_1, the width of the cross-section as measured at the lobe being b_1, and remaining 2 of said 6 grooves that are not outer grooves being located between outer grooves on a side of the major axis and being referred to herein as inner grooves, wherein said inner grooves are separated from each other by a minimum distance between them of d_2, wherein bulges in the generally oval peripheral cross-section are defined by being between one of said inner grooves and one of said outer grooves, the width of the cross-section as measured at such bulge being b_2, and wherein the numerical relationships between the widths b_1 and b_2 and the distances d_1 and d_2 are as follows: d_1/b_1 is about 0.5 to about 1; d_2/b_2 is about 0.5 to about 0.9; and b_1/b_2 is about 0.25 to about 0.9.

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5,626,962

CO-COATED ACICULAR MAGNETITE PARTICLES AND PROCESS FOR PRODUCING THE SAME

Minoru Yamasaki; Junichi Kawano, both of Ube; Hideaki Sadamura, Onoda, and Katsumi Yamashita, Ube, all of Japan, assignors to Toda Kogyo Corporation, Japan

Filed Feb. 27, 1995, Ser. No. 394,349
Claims priority, application Japan, Mar. 4, 1994, 6-060036
Int. Cl.[6] B32B 5/16
U.S. Cl. 428—403 6 Claims

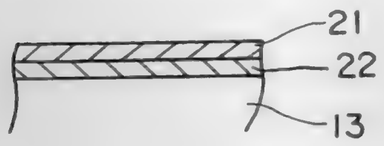
1. Co-coated acicular magnetite particles each comprising:
an acicular magnetite particle as the core particle;
a lower coating layer 4 to 50 Å thick of Co-containing spinel ferrite, which is formed on the surface of said acicular magnetite particle; and
an upper coating layer of 2 to 20 Å thick Co- and Mg-containing spinel ferrite, which is formed on said lower coating layer,
said particles having an aspect ratio (major axial diameter/minor axial diameter) of not less than 4, a coercive force of 580 to 900 Oe, a saturation magnetization of 77 to 90 emu/g, a reduction ratio of the Fe^{2+} content after said Co-coated acicular magnetite particles were permitted to stand at a temperature of 60° C. and a humidity of 90% for 14 days of not more than 51%, and a change of the coercive force after said Co-coated acicular magnetite particles were permitted to stand at a temperature of 60° C. and a humidity of 90% for 14 days of −10 to +5%,
the Fe^{2+} content of the Co-coated acicular magnetite particles being 10 to 24 wt %, the cobalt content thereof being 0.1 to 10 wt % (calculated as Co), and the magnesium content thereof being 0.2 to 3.5 wt % (calculated as Mg).

5,626,963

HARD-CARBON-FILM-COATED SUBSTRATE AND APPARATUS FOR FORMING THE SAME

Hitoshi Hirano; Keiichi Kuramoto; Yoichi Domoto, and Seiichi Kiyama, all of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 14, 1994, Ser. No. 259,480
Claims priority, application Japan, Jul. 7, 1993, 5-167866; Jul. 29, 1993, 5-188084; Aug. 23, 1993, 5-207912
Int. Cl.[6] C23C 16/26
U.S. Cl. 428—408 19 Claims



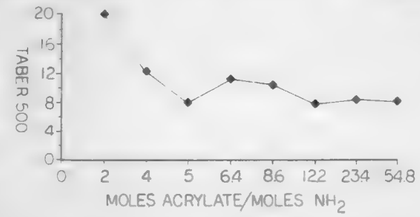
1. A hard-carbon-film-coated substrate comprising:
a substrate consisting of a metal or an alloy at least mainly composed of Ni or Al, or stainless steel;
an intermediate layer at least mainly composed of Ru arranged on said substrate; and
a predominantly amorphous hard carbon film arranged on said intermediate layer.

5,626,964

RADIATION-CURABLE SILICONE RESINS FORMULATED FROM AMINE ALCOHOLS, TETRA-ALKOXYSILANES AND MULTIFUNCTIONAL ACRYLATES

John D. Blizzard, Bay City; Arne R. Jarnholm, Midland, and James S. Tonge, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 24, 1995, Ser. No. 547,189
Int. Cl.[6] B32B 27/36;9/04; C08K 5/05; C08F 2/46
U.S. Cl. 428—412 22 Claims



1. A radiation-curable silicone resin composition comprising the reaction product of:
(A) at least one multifunctional acrylate selected from the group consisting of multifunctional acrylate monomers and oligomers;
said at least one multifunctional acrylate being present in a predetermined quantity that defines a predetermined sum of methacrylate and acrylate groups;
(B) a predetermined quantity of at least one tetra-alkoxysilane of the general formula $Si(OR)_4$ wherein each OR is an alkoxy group;
(C) at least one amine alcohol, said amine alcohol including at least one nucleophilic nitrogen-bonded hydrogen atom and at least one hydroxyl group per molecule thereof;
said hydroxyl group being condensable with an hydrolyzate formed from said tetra-alkoxysilane (B);
said amine alcohol being present in a predetermined quantity that defines a predetermined number of nucleophilic nitrogen-bonded hydrogen atoms;
the ratio of said predetermined number sum of acrylate and methacrylate groups to said predetermined number of nucleophilic nitrogen-bonded hydrogen atoms being at least about 1:1;
(D) a predetermined quantity of water which is sufficient to cause hydrolysis and condensation of said tetra-alkoxysilane (A) without gelling the combination of components (A)–(D) or causing a precipitate to form therefrom; and
said predetermined quantities of each of components (A)–(D) being present in said coating composition such that said composition, when radiation-cured, exhibits a Taber Abrasion T-500 of 15 or less.

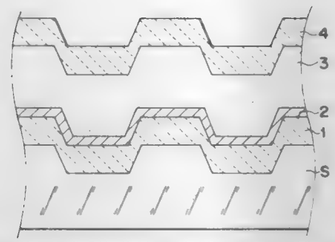
5,626,965

MAGNETOOPTICAL RECORDING MEDIUM

Haruhisa Iida, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 233,333, Apr. 26, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 482,507
Claims priority, application Japan, Apr. 27, 1993, 5-100701
Int. Cl.[6] G11B 5/66
U.S. Cl. 428—332 1 Claim

1. A magnetooptical recording medium comprising:
a substrate formed with a guide groove for tracking a laser beam; and
first and second magnetic layers which are stacked on said substrate, the first magnetic layer consisting of GdFeCo and the second magnetic layer consisting of an amorphous heavy rare earth-transition metal alloy, said first and second magnetic layers being magnetically coupled to each other, said



first magnetic layer having a Curie temperature that is higher than the Curie temperature of said second magnetic layer and having a coercivity at room temperature that is lower than the coercivity of said second magnetic layer at room temperature,
wherein a film thickness t_1 of said first magnetic layer and a film thickness t_2 of said second magnetic layer satisfy:

$t_2/t_1 \geq 2.5$.

5,626,966

SINGLE-LAYER LASER LABEL

Klaus Külper, Pinneberg, and Ralf Hirsch, Hamburg, both of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Jun. 2, 1995, Ser. No. 459,077
Claims priority, application Germany, Jun. 22, 1994, 44 21 865.6
Int. Cl.[6] B32B 27/00
U.S. Cl. 428—423.1 5 Claims

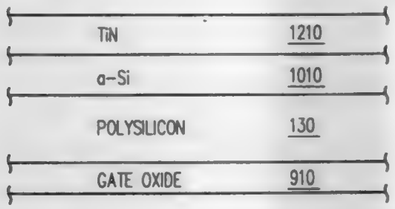
1. Single-layer laser label comprising a
a) backing of an electron beam-cured polyurethane acrylate coating material, which
b) contains an additive that causes color changes from originally light, pale to dark under laser irradiation and which
c) is coated on one side with a self-adhesive composition which
d) is optionally covered with a release paper or a release film.

5,626,967

STRUCTURE AND METHOD FOR EXPOSING PHOTORESIST

Shekhar Pramanick, Fremont; Scott Luning, Menlo Park, and Jonathon Fewkes, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 346,041, Nov. 29, 1994. This application May 25, 1995, Ser. No. 452,589
Int. Cl.[6] H01L 29/06
U.S. Cl. 428—446 11 Claims



1. A structure for reducing light reflection in patterning a polysilicon layer, said structure comprising:
a polysilicon layer;
a first layer above said polysilicon layer; and
a second layer above said first layer, said second layer reflecting less light than said polysilicon layer would reflect,
wherein substantially no particles from said second layer diffuse through said first layer during subsequent processing in patterning said polysilicon layer.

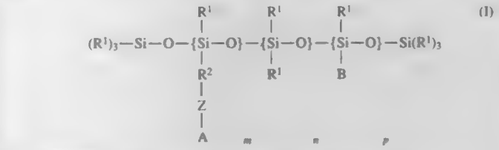
5,626,968

POLYMERIC ORGANOMETALLIC PHOTOINITIATORS AND THE CATIONICALLY CROSSLINKABLE POLYORGANOSILOXANE COMPOSTIONS WHICH COMPRISE THEM

Christian Priou, Villeurbanne, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jan. 30, 1995, Ser. No. 380,038
Claims priority, application France, Jan. 31, 1994, 94 01239
Int. Cl.[6] C08G 77/08; B32B 9/04
U.S. Cl. 428—447 8 Claims

1. Cationic polymerization photoinitiators of formula (I)



wherein:
m is an integer or fractional number ranging from 0.5 to 50;
n is an integer or fractional number ranging from 0 to 500;
p is an integer or fractional number ranging from 0 to 50;
the sum m+n is greater than or equal to 2;
the R^1 symbols are identical or different and each represents a linear or branched alkyl radical having from 1 to 6 carbon atoms or a phenyl radical;
the A symbol represents an organometallic salt of formula (II):

$$(L^1L^2M)^{q+}X^-_q \quad \text{(II)}$$

in which formula:
M represents a metal selected from the group consisting of Mn, Cr, Mo, W, Fe, Re and Co;
L^1 represents one ligand or 2 ligands, which are identical or different, bonded to the metal M by π bonds, which ligand(s) are selected from the group consisting of η^3-allylalkyl, η^5-cyclopentadienyl, η^7-cycloheptatrienyl and η^6-aromatic compounds selected from the group consisting of η^6-benzene ligands and compounds having from 2 to 4 aromatic rings, each ring being capable of contributing 3 to 8 π electrons to the valency layer of the metal M;
L^2 represents 0 to 3 identical or different ligand(s) bonded to the metal M by σ electrons, and is selected from the group consisting of CO and NO_2^+;
X^- is a halogenated complex anion selected from the group consisting of BF_4^-, PF_6^-, AsF_6^-, and SbF_6^- and SbF6 and mixtures thereof;
q is a positive integer equal to 1 or 2;
the valency bond uniting the monovalent symbol A to Z being carried by a carbon atom of the ligand L^- or one of the two ligands L^1;
R^2 represents a divalent organic radical selected from the group consisting of:
(1) linear or branched alkylene radicals having from 2 to 6 carbon atoms;
(2) radicals of formula:

$$—R^3—O—R^4— \quad \text{(III)}$$

in which the R^3 and R^4 radicals, which are identical or different, represent linear or branched alkylene radicals having from 1 to 6 carbon atoms;
(3) alkylenecyclohexylene radicals in which the alkylene portion of the radical, which is linear or branched, contains from 2 to 4 carbon atoms and the cyclohexylene portion of the radical, which is connected to the Z group, contains an OH group; and

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(4) radicals of formula:

$$—R^5—O—R^6— \quad (IV)$$

in which the R^5 and R^6 radicals, which are identical or different, represent linear or branched alkylene radicals having from 1 to 6 carbon atoms and wherein the R^6 radical is substituted by one or two OH groups;

Z is selected from the group consisting of:

(5) $—Si(R^7)_2—$ (V)

in which the R^7 radicals are identical or different and each represent a linear or branched alkyl radical having from 1 to 6 carbon atoms when R^2 is represented by (1) or (2); and

(6) the radical —O—CO— wherein the free bond of the CO is connected to the A residue when R^2 is represented by (3) or (4);

B is a radical containing an epoxy group;

with the following provisos:

(7) when R^2 is represented by (1) or (2) and Z is represented by (5), p is equal to zero;

(8) when R^2 is represented by (3) or (4) and Z is represented by (6), p is a number equal to zero or a positive number.

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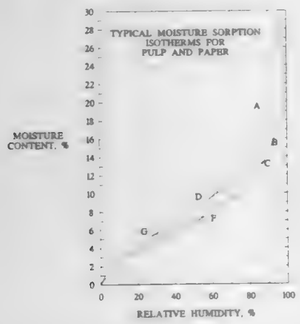
METHOD OF MANUFACTURING FILM FOR LAMINATION

Luis Joson, Lincolnwood, Ill., assignor to General Binding Corporation, Addison, Ill.

Continuation of Ser. No. 838,915, Feb. 21, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 128,062

Int. Cl.[6] **B32B** *27/08*

U.S. Cl. 428—474.4 **14 Claims**



6. A one sided lamination for a flexible soft cover for a soft cover book having at least one free corner, consisting essentially of:

a flexible, thin paper layer forming a cover to the book and being of a thickness which causes the paper layer to be susceptible to corner curl;

a coextensive clear nylon film layer covering said paper layer, said nylon film layer having substantially the same ambient moisture absorption, measured as a percentage moisture content as the flexible, thin paper layer.

5,626,970

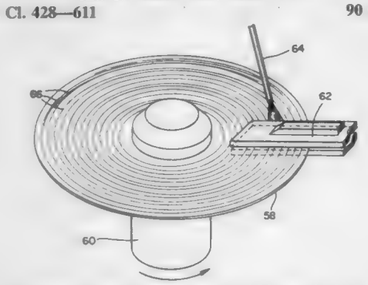
SPUTTERED MAGNETIC THIN FILM RECORDING DISK

Virgle L. Hedgcoth, 1524 Hacienda Pl., Pomona, Calif. 91768

Continuation of Ser. No. 250,521, May 27, 1994, abandoned, which is a division of Ser. No. 822,589, Jan. 17, 1992, Pat. No. 5,316,864, which is a division of Ser. No. 464,339, Jan. 12, 1990, Pat. No. 5,082,747, which is a division of Ser. No. 210,119, Jun. 22, 1988, Pat. No. 4,894,133, which is a division of Ser. No. 926,676, Nov. 3, 1986, abandoned, which is a division of Ser. No. 796,768, Nov. 12, 1985, Pat. No. 4,735,840. This application Jan. 19, 1996, Ser. No. 588,617

Int. Cl.[6] **H01F** *1/00*; **B32B** *15/04*

U.S. Cl. 428—611 **90 Claims**



1. A magnetic thin film recording disk formed by a series of sequential sputtering processes within an environment of a low pressure inert gas, comprising:

a substrate having a nickel phosphorous surface layer, the substrate including aluminum, the substrate characterized by a surface having texturing in a circumferential direction prior to any sputtering operation contributing to an anisotropic orientation of coercivity in the circumferential direction while not interfering with fly characteristics of a recording head across the recording disk, an Ra, arithmetic average radial roughness of the texturing contributing to a magnetic switching field distribution of less than 0.20;

a thin film nucleating layer containing chromium, and substantially free of oxidation, deposited above the textured nickel phosphorous surface by a first sputtering process;

a thin film magnetic layer containing a cobalt alloy deposited above the nucleating layer by a second sputtering process and having an anisotropic orientation of coercivity in the circumferential direction; and

a thin film protective layer containing carbon deposited above the magnetic layer by a third sputtering process.

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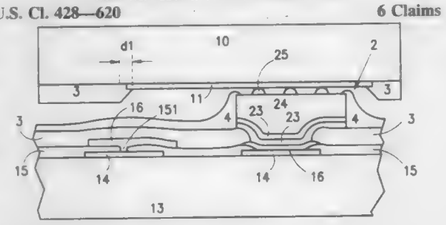
THIN FILM PROBE

Shei-Kung Shi, 6007 Porto Alegre Dr., San Jose, Calif. 95120; Fu-Hsiang Iseng, 19961 Buckhaven La., Saratoga, Calif. 95070, and Chong-Kai Kuo, 3582 Pleasant Echo Dr., San Jose, Calif. 95148

Division of Ser. No. 365,135, Dec. 28, 1994. This application Apr. 24, 1995, Ser. No. 427,268

Int. Cl.[6] **H01L** *21/66*; **G01R** *31/26*

U.S. Cl. 428—620 **6 Claims**



1. A thin film probe device comprising:

a substrate which comprises a non-conducting material;

a stacked structure of patterned multiple metal layers and multiple intermetal dielectric layers deposited on the substrate;

a Cr film deposited on part of said stacked structure;

a Cu film deposited on the Cr film;

a patterned soft conducting solder material deposited on the Cu film to position the thin film probe;

several round tip heads comprising hard conducting material formed on top of said soft conducting solder material;

a passivation layer covering the whole surface of the device, exposing only the thin film probe.

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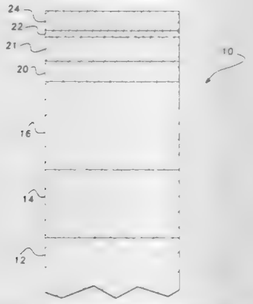
ARTICLE HAVING A DECORATIVE AND PROTECTIVE MULTILAYER COATING SIMULATING BRASS

Stephen R. Moysan, III, Douglasville, and Rolin W. Sugg, Reading, both of Pa., assignors to Baldwin Hardware Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 329,383, Oct. 26, 1994, Pat. No. 5,476,724, which is a continuation of Ser. No. 252,793, Jun. 2, 1994, Pat. No. 5,413,874. This application May 11, 1995, Ser. No. 439,012

Int. Cl.[6] **B32B** *45/04*; **C25D** *3/26*

U.S. Cl. 428—627 **27 Claims**



1. An article comprising a metallic substrate having disposed on at least a portion of its surface a multi-layer coating simulating brass comprising:

layer comprised of nickel;

layer comprised of substantially amorphous nickel-tungsten-boron alloy with at least about 0.05 weight percent boron;

layer comprised of chrome;

layer comprised of zirconium or titanium; and

a top layer comprised of zirconium compounds or titanium compound.

5,626,973

MAGNETO-OPTICAL LAYER AND MAGNETO-OPTICAL RECORDING MEDIUM

Yoshihiko Takeda, Hino; Tomokazu Umezawa, Hachioji, and Kiyoshi Chiba, Chofu, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 79,946, Jun. 23, 1993, abandoned. This application Aug. 4, 1994, Ser. No. 283,197

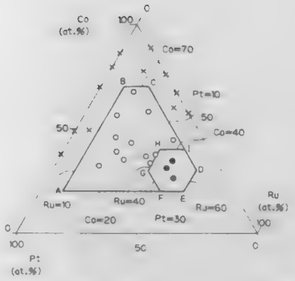
Claims priority, application Japan, Jun. 25, 1992, 4-167551; Sep. 20, 1992, 4-258233; Aug. 9, 1993, 5-197260; Aug. 9, 1993, 5-197261; Aug. 9, 1993, 5-197262; Aug. 9, 1993, 5-197263

Int. Cl.[6] **G11B** *5/66*

U.S. Cl. 428—694 ML **22 Claims**

1. A magneto-optical layer of a polycrystalline tertiary or quaternary alloy, having an easy magnetization axis perpendicular to the surface of the magneto-optical layer and having a composition represented by one of the following:

(i) $Co_aPt_bRu_c$ where $20 \leqq a \leqq 70$, $10 \leqq b \leqq 70$, $10 \leqq c \leqq 60$ and $a+b+c=100$;



(ii) $Co_dPt_eRe_f$ where $d \leqq 80$, $5 \leqq e$, $5 \leqq f$, $40 \leqq 4d-5f$ and $d+e+f=100$;

(iii) $Co_gPt_hRe_iRu_j$ where

$15 \leqq g(2g+2h+j)/(2g+2h) \leqq 80$

$5 \leqq h(2g+2h+j)/(2g+2h)$,

$5 \leqq i+(j/2)$,

$2g(2g+2h+j)/(2g+2h) \leqq 3i+(3j/2)$.

$g+h+i+j=100$, and

$ghij \neq 0$;

(iv) $Co_kPt_lQ_m$ where $30 \leqq k \leqq 75$, $1 \leqq l \leqq 20$ and $k+l+m=100$.

(v) $Co_nPt_pMo_q$ where $50 \leqq n \leqq 85$, $10 \leqq p$, $3 \leqq q \leqq 20$, $n-q \geqq 40$ and $n+p+q=100$;

(vi) $Co_rPt_sNb_t$ where $60 \leqq r \leqq 80$, $1 \leqq c \leqq 5$, and $r+s+t=100$; and

(vii) $Co_uPt_vTa_w$, wherein $40 \leqq u \leqq 80$, $1 \leqq w \leqq 5$, and $u+v+w=100$,

wherein the magneto-optical layer has a perpendicular saturated magnetic field of 6 kOe or less.

5,626,974

ROLLING BEARING FOR USE UNDER HIGH TEMPERATURE CONDITIONS

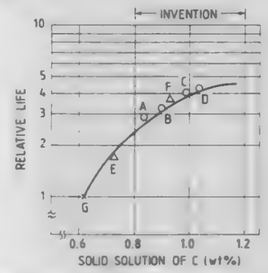
Nobuaki Mitamura, Kanagawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Aug. 25, 1995, Ser. No. 519,643

Claims priority, application Japan, Aug. 25, 1994, 6-224134

Int. Cl.[6] **C23C** *8/32*

U.S. Cl. 428—698 **1 Claim**



1. In a rolling bearing comprising an inner race, an outer race and a plurality of rolling elements wherein at least one member of the inner race, the outer race and the rolling elements is made of a high carbon steel material and comprises a surface layer having a hardness of H_RC 60 or more,

the improvement wherein the surface layer comprises solid solution of carbon (C) and solid solution of nitrogen (N) which satisfy the following relationships:

0.8 wt %≦C≦1.2 wt % and 0.1 wt %≦N≦0.5 wt %,

and

wherein a retained austenite existing in all portions of the member is adjusted to substantially 0 wt % by tempering at a temperature range of 270° to 300° C. after the member is subjected to carbonitriding and hardening.

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5,626,975

ELECTRICALLY CONDUCTIVE TRANSPARENT DOPED TIN OXIDE FILMS

Thomas F. Swank, Sudbury, Mass., assignor to Nyacol Products Inc., Ashland, Mass.

Division of Ser. No. 323,622, Oct. 17, 1994, which is a continuation-in-part of Ser. No. 194,739, Feb. 14, 1994, abandoned. This application Mar. 30, 1995, Ser. No. 413,828
Int. Cl.[6] H01B 1/06
U.S. Cl. 428—701 1 Claim

1. A transparent substrate having a transparent anti-static coating prepared by the method consisting essentially of the steps of:

coating onto the substrate a layer of tin oxide colloid stabilized with ammonium ions, which colloid has been doped with antimony; and

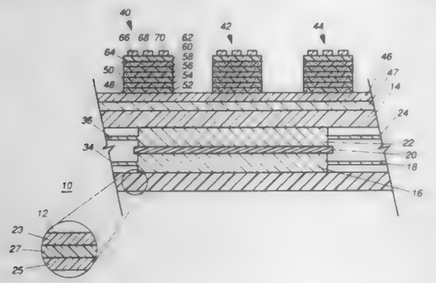
thereafter drying the coated substrate to provide an anti-static coating consisting of tin oxide stabilized with ammonium ions and doped with antimony, the coating having a sheet resistance no greater than about 10^8 ohms.

5,626,976

FLEXIBLE ENERGY STORAGE DEVICE WITH INTEGRAL CHARGING UNIT

Gerald W. Blanton, Flowery Branch; Simon Thomas, Lawrenceville, both of Ga., and Kenneth M. Massaroni, Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 24, 1995, Ser. No. 506,159
Int. Cl.[6] H01M 12/00
U.S. Cl. 429—9 11 Claims



1. A flexible energy storage device comprising:

first and second sheets of flexible polymeric sealing materials enclosing a flexible battery device comprising a battery anode and a battery cathode and having an electrolyte material disposed therebetween; and

at least one flexible photovoltaic device having an anode and a cathode, and disposed on a layer of metallic reflecting material deposited on the outer surface of one of said first or second sheets of polymeric sealing materials, said battery anode being electrically coupled to said photovoltaic device anode, and said battery cathode being electrically coupled to said photovoltaic device cathode; and

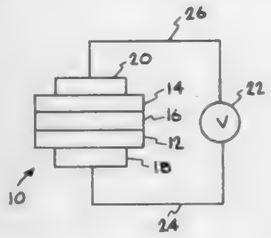
wherein said layer of reflecting material renders said one layer of polymeric sealing materials substantially liquid and vapor impermeable.

5,626,977

COMPOSITE CARBON FOAM ELECTRODE

Steven T. Mayer, San Leandro; Richard W. Pekala, Pleasant Hill, and James L. Kaschmitter, Pleasanton, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Feb. 21, 1995, Ser. No. 393,588
Int. Cl.[6] H07M 8/10
U.S. Cl. 429—44 9 Claims



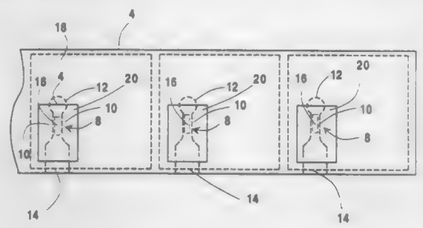
1. An electrode comprising a composite carbon foam derived from the pyrolysis of mixtures of granularized material, polyhydroxybenzene compounds, and formaldehyde or furfural, the composite carbon foam having a surface area between about 100 m^2/g to about 1200 m^2/g.

5,626,978

METHOD FOR SECURING A TESTER DEVICE TO A BATTERY AND THE BATTERY SO PRODUCED

Victor H. Weiss, Plantation, Fla., and David P. McConnon, Monticello, Minn., assignors to Morgan Adhesives Company, Stow, Ohio

Continuation of Ser. No. 56,157, May 3, 1993, Pat. No. 5,409,788. This application Apr. 21, 1995, Ser. No. 426,367
Int. Cl.[6] H01M 2/02
U.S. Cl. 429—43 12 Claims



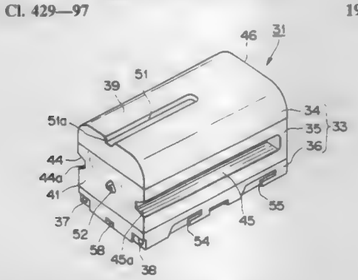
1. A battery having a first terminal and a second terminal of opposite polarity; said battery at least partially encased with a nonconductive film having a top surface and bottom surface; a conductive circuit layer disposed on at least a portion of the bottom surface and extending such that a first area is disposed over the first terminal and a second area is disposed over the second terminal of the battery; a nonconductive material disposed over a portion of the conductive circuit layer exposing at least a portion of the first and second areas over the first terminal and second terminal, respectively so that the first area cart be deflected into contact with the first terminal and the second area can be deflected into contact with the second terminal of the battery with the remainder of the conductive circuit layer being electrically and thermally insulated from the terminals of the battery by the nonconductive material; a thermally sensitive material disposed on said top surface of said nonconductive film opposite said conductive circuit layer such that when the first area and second area of the conductive circuit layer contact the first terminal and second terminal, respectively, a current will flow through the conductive circuit layer and heat the thermally sensitive material which will indicate battery capacity.

5,626,979

BATTERY DEVICE AND ELECTRONIC EQUIPMENT EMPLOYING THE BATTERY DEVICE AS POWER SOURCE

Hidero Mitsui; Toshitaka Takei, both of Kanagawa; Hisashi Aoki, Aichi; Masahito Kishi, and Koji Yaginuma, both of Kanagawa, all of Japan, assignors to Sony Corporation, Japan

Filed Apr. 3, 1995, Ser. No. 415,457
Claims priority, application Japan, Apr. 8, 1994, 6-070363; Apr. 15, 1994, 6-076828
Int. Cl.[6] H01M 2/02:2/20
U.S. Cl. 429—97 19 Claims



1. A battery pack comprising

a housing unit having a cell housing unit,

a plurality of cells housed within said cell housing unit, and

first and second grooves formed on both lateral surfaces of the cell housing unit extending parallel to the direction of insertion of the housing unit into an electronic device,

wherein said first and second grooves extend into a forward end face of the cell housing unit in the direction of insertion,

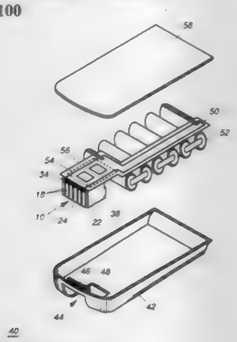
wherein said first and second grooves do not extend into a rear end face of the cell housing unit.

5,626,980

CONTACT BLOCK IN A BATTERY PACK HAVING SNAP IN FEATURES

Barbara A. Ruth, Cumming; Aaron P. Clark, Buford; Micheal M. Austin, Lilburn, and Raymond J. Kleinert, Atlanta, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 28, 1995, Ser. No. 520,359
Int. Cl.[6] H01M 2/10
U.S. Cl. 429—100 12 Claims



1. A battery pack, comprising:

a housing fabricated of an electrically insulative material and having a opening formed therein, said opening having first and second edges;

a battery circuit comprising at least one battery cell disposed in said housing;

a contact block for connecting said battery circuit with an electrical device, said contact block having a body made of an electrically insulative material and having ledges for deflectably engaging said first and second edges of said opening in said housing; and

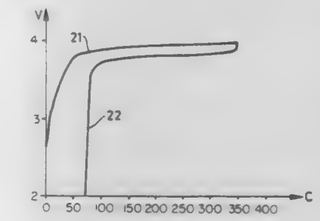
a cover for covering said battery pack and securing said contact block.

5,626,981

RECHARGEABLE LITHIUM ELECTROCHEMICAL CELL

Bernard Simon, Issy Les Moulineaux, and Jean-Pierre Boeuve, Marcoussis, both of France, assignors to SAFT, Romainville, France

Filed Apr. 21, 1995, Ser. No. 426,665
Claims priority, application France, Apr. 22, 1994, 94 04889
Int. Cl.[6] H01M 4/38;4/48;6/16
U.S. Cl. 429—105 14 Claims



1. A rechargeable lithium electrochemical cell comprising:

a cathode,

an anode containing a carbon-containing material with a degree of crystallinity which is greater than 0.8 and

an electrolyte comprising a lithium salt and a mixture of at least two aprotic saturated organic solvents wherein at least one of the two solvents contains a carbonate, of which the first solvent has a high dielectric constant and the second solvent has low viscosity and is selected from the group consisting of an ether, a diethyl carbonate, a dimethyl carbonate, a dioxolane, a dioxolane derivative, a tetrahydrofuran, a tetrahydrofuran derivative, and a propylene oxide, characterized in that the electrolyte further contains a soluble compound which is a carbonate containing at least one unsaturated carbon-carbon bond, and which can be reduced at the anode at a potential of more than 1 volt with respect to lithium to form a passivation layer.

5,626,982

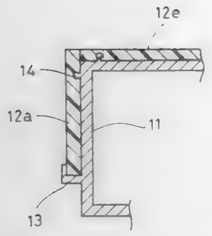
HEAT INSULATING PAD MATERIAL, PARTICULARLY FOR USE IN BATTERY SHIELD AND MANUFACTURE OF THE SAME

Tamotsu Kawai, Shiga; Masao Ando, Hyogo; Masahiro Chikada, and Yoshihiro Yamamoto, both of Osaka, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Filed Feb. 27, 1995, Ser. No. 394,575
Int. Cl.[6] H01M 2/02;10/50; B32B 3/12
U.S. Cl. 429—120 17 Claims

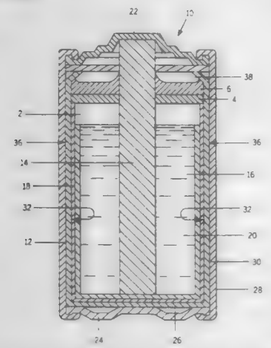
5. A heat insulating assembly for a battery, said assembly comprising a battery case having outer walls provided with, at lower and upper locations thereon, hook holding locks and lock pins protruding thereover, respectively; and a pad made of a molded polyolefin foam and formed with supplementary recesses for lockingly receiving the lock pins disposed at opposed positions to the lock pins, the pad being mounted on the outer walls of the battery case in such a manner that a bottom side of the pad is received in the holding locks and the lock pins of the battery case are lockingly

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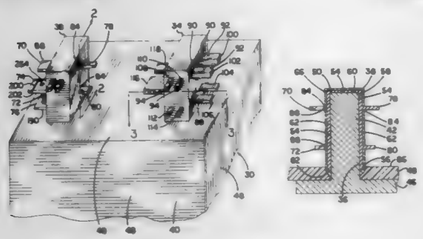
received in the recesses of the pad, thus uniting the pad and the surrounding walls of the battery case together.

5,626,983
ZINC ANODE FOR REDUCED ENVIRONMENTAL HAZARD LECLANCHE CELL HAVING IMPROVED PERFORMANCE
Ronald J. Ekern, and Terry G. Messing, both of Verona, Wis., assignors to Rayovac Corporation, Madison, Wis.
Filed Jul. 13, 1994, Ser. No. 275,019
Int. Cl.[6] H01M *6/08*
U.S. Cl. 429—166 **103 Claims**



1. A zinc anode configured for use in a round LeClanche cell, the anode consisting essentially of a zinc alloy containing at least 95% zinc and no more than about 12 ppm iron by weight, the anode forming a cylindrical can having a bottom and a sidewall extending upwardly therefrom, the can having an initially open top end.

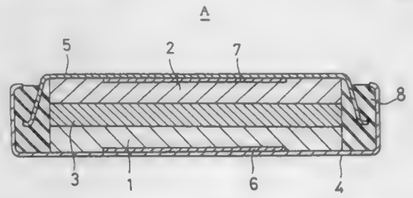
5,626,984
BATTERY TERMINAL SYSTEM
Salvatore Albini, 445 Highland Ave., Waterbury, Conn. 06708
Filed Nov. 16, 1995, Ser. No. 558,453
Int. Cl.[6] H01M *2/26*
U.S. Cl. 429—178 **8 Claims**



1. A battery terminal system comprising:

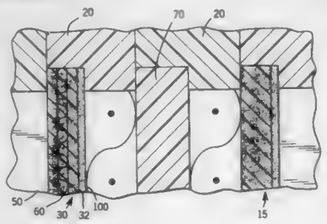
a battery housing comprising an insulator panel having a top side and a bottom side, a lead terminal post being solid, having an outer surface, a top end and a bottom end, said bottom end being connected in said housing to a bus, said terminal post extending through said bottom side and said top side of said insulator panel of said battery, a metallic cap being a unitary continuous element harder than lead and having an electrical resistance/cm at least as low as that of lead, cup shaped, having a top and a bottom, covering said lead terminal post from over said top end of said terminal post to below said top side of said insulator and being fused directly to the outer surface of said terminal post below said top side of said insulator panel, and a stiff terminal bar extending from said metallic cap being an integrally formed portion of said unitary continuous element.

5,626,985
NONAQUEOUS ELECTROLYTE BATTERY
Yoshihiro Shoji, Hirakata; Mayumi Uehara, Ukyo-Ku; Koji Nishio, Hirakata, and Toshihiko Saito, Mihara-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Aug. 25, 1995, Ser. No. 519,520
Claims priority, application Japan, Aug. 25, 1994, 6-225926
Int. Cl.[6] H01M *6/14*
U.S. Cl. 429—197 **6 Claims**



1. A nonaqueous electrolyte battery comprising a positive electrode, a negative electrode having lithium as an active material, a nonaqueous electrolyte comprising a solute, a solvent, and a separator, said solvent being a mixed solvent consisting essentially of a cyclic carbonate, a chain carbonate and an ether in a ratio amount as defined by the hatched area of FIG. **2**.

5,626,986
CARBON COATING FOR AN ELECTRODE
Carl D. Jahns, Franklin; Peter J. Lex, Wauwatosa, and Ralph A. Petersen, West Allis, all of Wis., assignors to ZBB Technologies, Inc., Wauwatosa, Wis.
Filed Oct. 12, 1995, Ser. No. 542,288
Int. Cl.[6] H01M *4/62*
U.S. Cl. 429—210 **11 Claims**



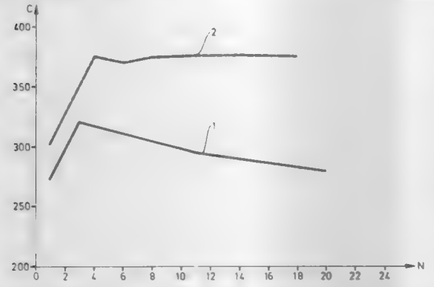
1. An electrode comprising:

a substrate of electrically conductive material formed of a plastic material containing electrically conductive particles, the substrate of electrically conductive material having a first surface and an opposite second surface; and

a carbon coating applied to the first surface of the substrate, the carbon coating including carbon particles of different sizes,

and wherein the particles have a BET surface area of greater than about 700 m^2/g, and a mean size of greater than about 100 microns; and wherein the particles are distributed within the carbon coating so that about 90 percent, by volume, of the particles are greater than about 70 microns in size.

5,626,987
HYDRIDABLE MATERIAL FOR THE NEGATIVE ELECTRODE IN A NICKEL-METAL HYDRIDE STORAGE BATTERY
Bernard Knosp, Neuilly-sur-Seine; Jacques Bouet, Paris; Christian Jordy, Dourdan; Michel Mimoun, Neuilly-sur-Marne, and Daniel Gicquel, Lanorville, all of France, assignors to SAFT, Romainville, France
Filed Apr. 14, 1995, Ser. No. 421,783
Claims priority, application France, Apr. 15, 1994, 94 04555
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—218 **4 Claims**



1. A hydridable material for the negative electrode of a nickel-metal hydride storage battery consisting of a monophase alloy with a structure of hexagonal C14 type (Lavés phase), and a general formula:

$$Zr_{1-x}Ti_xNi_aMn_bAl_cCo_dV_e$$

where:

$0.036 \leqq x \leqq 0.456$ $0.7 \leqq a \leqq 0.9$

$0.8 \leqq a+e \leqq 1.2$ $0.7 \leqq b \leqq 0.9$

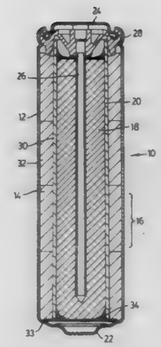
$0.8 \leqq b+c+d \leqq 1.2$ $0 \leqq c \leqq 0.2$

$1.9 \leqq a+b+c+d+e \leqq 2.1$ $0.1 \leqq d \leqq 0.2$

$0.77 \leqq b/a \leqq 1.29$ $0.05 \leqq e \leqq 0.3$.

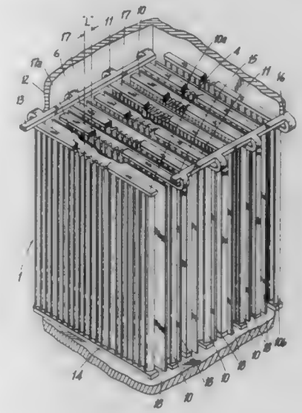
5,626,988
SEALED RECHARGEABLE CELLS CONTAINING MERCURY-FREE ZINC ANODES, AND A METHOD OF MANUFACTURE
Josef Daniel-Ivad, Richmond Hill; R. James Book, and Klaus Tomantschger, both of Mississauga, all of Canada, assignors to Battery Technologies Inc., Richmond Hill, Canada
Filed May 6, 1994, Ser. No. 239,059
Int. Cl.[6] H01M *4/42*
U.S. Cl. 429—229 **45 Claims**

1. A mercury-free rechargeable cell that performs at least twenty charge and discharge cycles comprising: a cathode; an electrolyte; an anode; and a separator between the anode and the cathode, wherein the anode comprises a zinc active powder that has been coated with a film of one of a surfactant and a solution of a surfactant; and a film of an aqueous, acidic solution of indium sulphate, to retard dendrite growth and hydrogen evolution during at least twenty charge and discharge cycles wherein each of the surfactant and the indium sulphate have been uniformly distributed



as a film on the zinc active powder prior to assembly into the rechargeable cell, and wherein the coated zinc active powder is subsequently assembled into the electrochemical cell, without removal of zinc sulphate, and the surfactant, any solvent for the surfactant and the solution of the indium sulphate comprise a minor part the zinc active powder.

5,626,989
QUASI-SOLID PLATE STORAGE BATTERY
George J. Doundoulakis, North Bellmore, N.Y., assignor to Long Island Lighting Company, Hicksville, N.Y.
Filed Nov. 22, 1994, Ser. No. 344,337
Int. Cl.[6] H01M *4/74*
U.S. Cl. 429—233 **32 Claims**



1. A storage battery, which comprises:

a casing;

at least one battery cell positioned within said casing, said battery cell including at least one pleated negative polarity plate having a thickness of between about 1.5 mm and about 7.5 mm and positioned adjacent at least one pleated positive polarity plate having a thickness of about between 1.5 mm and about 7.5 mm, said pleated negative and positive polarity plates being immersed in an electrolyte;

at least one separator positioned between said at least one pleated negative polarity plate and said at least one pleated positive polarity plate;

a negative conductor monolithically coupled to said at least one pleated negative polarity plate to form a monolithic plate and conductor construction;

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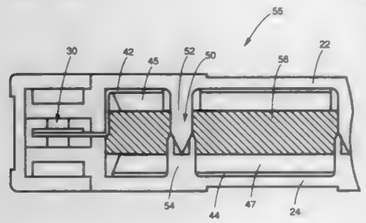
a positive conductor monolithically coupled to said at least one pleated positive polarity plate to form a monolithic plate and conductor construction;
a negative output terminal coupled to said negative conductor and extending at least partially from said casing; and
a positive output terminal coupled to said positive conductor and extending at least partially from said casing.

5,626,990

RECOMBINANT LEAD ACID BATTERY AND METHOD OF MAKING SAME

Robert B. Miller, San Jose, and Larry F. Miller, Los Gatos, both of Calif., assignors to Portable Energy Products, Inc., Scotts Valley, Calif.

Filed Feb. 2, 1996, Ser. No. 596,400
Int. Cl.[6] H01M *2/14*
U.S. Cl. 429—247 **14 Claims**



1. A recombinant lead acid battery comprising:
a first and a second metallic plate;
a first active paste material applied to the first plate;
a second active paste material applied to the second plate, the second paste material being charged opposite the first paste material;
an electrolyte saturated compressible separator material positioned between the first and second paste materials for isolating the first and second paste materials and for retaining an electrolyte; and
a casing for enclosing the plates, separator, and active materials such that the casing compresses the separator material and maintains the separator material at a substantially evenly distributed pressure of at least approximately 8 psi.

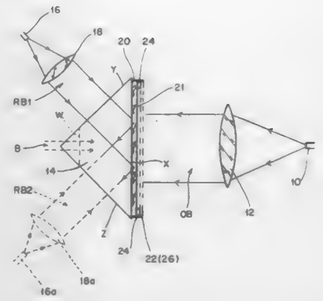
5,626,991

MANUFACTURE OF FLAT PANEL DISPLAYS

William B. Hugle, 2 Avenue de la Gare, Neuchatel, Switzerland

PCT No. PCT/GB90/00589, § 371 Date Nov. 12, 1991, § 102(e) Date Nov. 12, 1991, PCT Pub. No. WO90/13062, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 18, 1990, Ser. No. 776,308
Claims priority, application United Kingdom, Apr. 19, 1990, 8908871
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.
Int. Cl.[6] G03H *1/00*
U.S. Cl. 430—1 **14 Claims**

1. A method for forming a flat panel display, which includes forming a volume holographic image on a recording medium by interference between an object beam (OB) and a reference beam (RB1) of coherent light which is totally internally reflected at a surface on which the recording medium is disposed, then continuing by forming a plurality of holographic images on the recording medium in a stacked manner by successive exposures with different spacings between the mask and the recording medium, so that during replay each point of the flat panel display will have focussed thereon one or another of these stacked holographic images, replacing the mask with a flat panel display which has a coating (PC) of a photosensitive substance and forming an image



of the holographic recordings on the photosensitive coating using a second reference beam (RB2) replayed in the opposite direction from the first reference beam.

5,626,992

Patent Not Issued For This Number

5,626,993

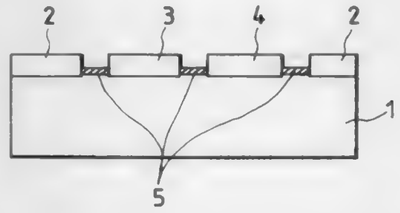
Patent Not Issued For This Number

5,626,994

PROCESS FOR FORMING A BLACK MATRIX OF A COLOR FILTER

Takashi Takayanagi, and Fumiaki Shinozaki, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 13, 1995, Ser. No. 572,168
Claims priority, application Japan, Dec. 15, 1994, 6-311706; Dec. 15, 1994, 6-311707; Jan. 26, 1995, 7-10755
Int. Cl.[6] G02B *5/20*
U.S. Cl. 430—7 **21 Claims**



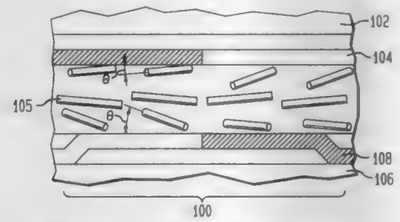
1. A process for forming a black matrix comprising the steps of:
(a) providing a transparent substrate having provided thereon a patterned aqueous resin layer containing physical development nuclei;
(b) supplying a developer for physical development on the patterned aqueous resin layer;
(c) superposing a donor sheet containing a metallic compound comprising metal ions on the patterned aqueous resin layer via the developer for physical development; and
(d) precipitating a metal of said metallic compound in said patterned aqueous resin layer by physical development.

5,626,995

METHOD FOR MANUFACTURING LIQUID CRYSTAL DISPLAYS

Mayumi Teruya, Tokyo; Hideo Takano, Atugi; Yukito Saitoh; Hiroyuki Kamiya, both of Sagamihara, and Masaki Hasegawa, Kamakura, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1995, Ser. No. 520,796
Claims priority, application Japan, Aug. 30, 1994, 6-205720
Int. Cl.[6] C09K *19/00;* **G02F** *1/03;1/1337*
U.S. Cl. 430—20 **7 Claims**



1. A method for manufacturing a liquid crystal display, comprising:
applying polyimide, whose effect on the pretilt angle of liquid crystal is varied by heating, to a region corresponding to the pixels on one side of each of a first and a second substrate;
on both said first and second substrates, heating a first portion of said polyimide film applied to the regions corresponding to said pixels at a first temperature and drying said polyimide film in a second portion of said polyimide films applied to the regions corresponding to said pixel other than said first portion at a second temperature which is lower than said first temperature so that the first and second portions are cured at different temperatures;
laminating said first and second substrates together with a space between them with said dried polyimide film sides facing each other; and
injecting liquid crystal into the space between said first and second substrates.

5,626,996

ELECTROPHOTOGRAPHIC MATERIAL FOR COLOR PROOFING

Eiichi Kato, and Sadao Osawa, both of Shizuoka-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 40,021, Mar. 30, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,630
Claims priority, application Japan, Jun. 4, 1992, 4-143928; Jun. 24, 1992, 4-168737; Jul. 14, 1992, 4-186997
Int. Cl.[6] G03G *5/04*
U.S. Cl. 430—46 **24 Claims**

1. An electrophotographic material for color proofing which comprises a substrate, a photoconductive layer and a transfer layer in this order, and is used for preparing a color proof in a process wherein at least one color toner image is electrophotographically formed on the transfer layer and then transferred together with said transfer layer to a sheet material to prepare the color proof, wherein said photoconductive layer comprises a polymer (P) which contains at least one polymer segment (X) containing not less than fifty percent by weight of units having fluorine atom(s) and/or silicon atom(s) based on the total weight of the segment (X) and at least one polymer segment (Y) containing units having photosetting and/or thermosetting group(s), said polymer (P) being selected from the group consisting of the following polymers (P_1), (P_2), (P_3) and (P_4); a polymer (Q) selected from the group consisting of the following polymers (Q_1) and (Q_2); and a polymer (R) containing units having photosetting and/or thermosetting group(s), but not containing said polymer segment (X) and having a weight average molecular weight of at least 3×10^4, where
the polymer (P) is present at least in the region near the surface facing said transfer layer, said polymer segment X being oriented toward the surface facing the transfer layer, and said polymer segment Y being oriented away from the surface facing the transfer layer,
the polymer (P_1) is a linear block copolymer which contains said at least one polymer segment (X) and said at least one polymer segment (Y),
the polymer (P_2) is a star copolymer which contains at least three linear block copolymer chains consisting of said polymer segment (X) and said polymer segment (Y), and said block copolymer chains are bonded through an organic group (Z),
the polymer (P_3) is a graft copolymer which contains said at least one polymer segment (X) and said at least one polymer segment (Y),
the polymer (P_4) is an AB or ABA block copolymer which contains said at least one polymer segment (X) and said at least one polymer segment (Y), wherein at least one said polymer segment (X) is the following graft polymer segment (X'), and/or at least one said polymer segment (Y) is the following graft polymer segment (Y'); the graft polymer segment (X') is a polymer segment which has a weight-average molecular weight of 1×10^3 to 2×10^4, and contains at least one macromonomer segment (M_A) which contains not less than fifty percent by weight of units having fluorine atom(s) and/or silicon atom(s) based on the total weight of the macromonomer segment (M_A), and the graft polymer segment (Y') is a polymer segment which has a weight-average molecular weight of 1×10^3 to 2×10^4, and contains at least one macromonomer segment (M_B) which does not contain units having fluorine atom(s) and/or silicon atom(s),
the polymer (Q_1) is a star copolymer which has a weight-average molecular weight of 1×10^3 to 2×10^4; and contains at least three polymer chains comprising, at random, units represented by the formula I

$$—CH(a_1)—C(a_2)(COOR_3)— \quad I \qquad (I)$$

wherein a_1 and a_2 each independently represent a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group, and R_3 represents a hydrocarbon group and units having polar group(s) selected from the group consisting of $—PO_3H_2$, $—SO_3H$, —COOH, $—PO(OH)(R_1)$ wherein R_1 is a hydrocarbon group or $—OR_2$ where R_2 is a hydrocarbon group, and a cyclic anhydride group, wherein said polymer chains are bonded through an organic group (Z), the units represented by the formula I are present in an amount of not less than thirty percent by weight based on the weight of the polymer (Q_1), and the units having the polar group(s) are present in an amount of 1 to 20% by weight based on the weight of the polymer (Q_1),
the polymer (Q_2) is a star copolymer which has a weight-average molecular weight of 1×10^3 to 2×10^4; and contains at least three linear block copolymer chains comprising at least one polymer segment (M) containing units represented by formula I and at least one polymer segment (N) containing units having polar group(s) selected from the group consisting of $—PO_3H_2$, $—SO_3H$, —COOH, $—PO(OH)(R_1)$, wherein R_1 is a hydrocarbon group or $—OR_2$ where R_2 is a hydrocarbon group, and a cyclic anhydride group, wherein said polymer chains are bonded through an organic group (Z),
wherein said segment (Y) of polymer (P) is compatible with polymer (R), and
wherein the surface of the photoconductive layer which contacts the transfer layer has a tack strength of not more than 150 gram-force.

5,626,997

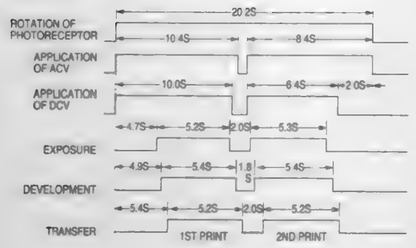
ELECTROPHOTOGRAPHIC PROCESS

Kiyokazu Mashimo; Fumio Ojima; Tomozumi Uesaka; Tomoo Kobayashi, and Toru Ishii, all of Minami -ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1995, Ser. No. 396,729
Claims priority, application Japan, Mar. 4, 1994, 6-58355
Int. Cl.[6] G03G *13/24*
U.S. Cl. 430—55 **5 Claims**

1. An electrophotographic process comprising:
(a) an image forming process comprising:

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(i) a charging step of bringing a conductive charging member into contact with a surface of a photoreceptor and applying a superimposed voltage of a direct current voltage and an alternating current voltage to said conductive charging member to directly charge the surface of the photoreceptor,
(ii) an image exposing step having an exposure stop point,
(iii) a developing step having a developer stop point after said exposure stop point, and
(iv) a transfer step having a transfer stop point;
(b) repeating the steps of (i), (ii), (iii) and (iv); and
(c) a step of interrupting each application of the direct current voltage, after said exposure stop point and before said developer stop point, and the alternating current voltage to said conductive charging member between each consecutive image exposing step (ii).

5,626,998
PROTECTIVE OVERCOATING FOR IMAGING MEMBERS

Edward F. Grabowski; Anita P. Lynch, both of Webster, and Emery G. Tokoli, deceased, late of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 476,927
Int. Cl.[6] G03G *5/14*
U.S. Cl. 430—67 **24 Claims**

1. An imaging member comprising a dielectric layer capable of retaining an electrostatic latent image and an overcoat layer comprising an amorphous fluoropolymer.

5,626,999
PHTHALOCYANINE COMPOSITION, PROCESS FOR PREPARING THE SAME AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME

Mikio Itagaki; Shigeru Hayashida; Megumi Matsui; Hiroko Ishikawa, all of Ibaraki; Yoshii Morishita, Tochigi, and Takayuki Akimoto, Ibaraki, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

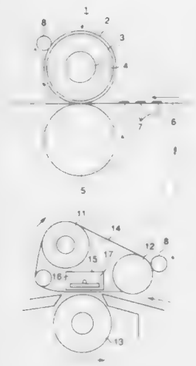
Division of Ser. No. 186,706, Jan. 25, 1994, Pat. No. 5,494,767, which is a division of Ser. No. 15,836, Feb. 10, 1993, Pat. No. 5,304,445. This application Jun. 5, 1995, Ser. No. 460,867
Claims priority, application Japan, Feb. 12, 1992, 4-025215; Apr. 17, 1992, 4-097815; Oct. 6, 1992, 4-266420
Int. Cl.[6] G03G *5/00:15/06:15/02*
U.S. Cl. 430—78 **4 Claims**

1. A coating solution for preparing a charge generation layer which comprises a phthalocyanine composition having main diffraction peaks at 7.5°, 22.5°, 24.3°, 25.3° and 28.6° of Bragg angles (2θ±0.2°) in an X-ray diffraction spectrum with Cu Kα in a solvent for said composition; said composition being made from a mixture of a titanylphthalocyanine and a halogenated group IIIA metal phthalocyanine which has been made amorphous by strong mineral acid and crystallized from an organic solvent.

5,627,000
HEAT FIXING METHOD

Hiroshi Yamazaki; Tatsuya Nagase; Meizo Shirose, and Yoshiki Nishimori, all of Tokyo, Japan, assignors to Konica Corporation, Japan

Filed Sep. 29, 1995, Ser. No. 536,449
Claims priority, application Japan, Oct. 7, 1994, 6-244060; Dec. 27, 1994, 6-324898; Mar. 7, 1995, 7-047163
Int. Cl.[6] G03G *13/20*
U.S. Cl. 430—99 **16 Claims**



1. A fixing method comprising passing a recording material with a toner image between a heat fixing member and a pressure applying member contacting the heat fixing member to fix the toner onto the recording material, a silicone oil being coated on the surface of the heat fixing member, wherein the toner contains a binder resin and a low molecular weight polyolefin, and the silicone oil is a fluorine-containing silicone oil having a viscosity of 20 to 1,000 centipoise at 25° C. and having a structural unit represented by the following Formula:



wherein X represents a saturated hydrocarbon group having 1 to 4 carbon atoms or an aryl group; R_f represents $Z-(CF_2)_m-$ in which Z represents a hydrogen atom or a fluorine atom and m represents an integer of 2 to 10; and n represents an integer of 1 to 4.

12. The fixing method of claim **1**, wherein the heat fixing member is a heat roller.

5,627,001
COATED CARRIER PARTICLE CONTAINING A CHARGE CONTROL AGENT

Wilfred E. Vail, Litchfield, N.H., assignor to Nashua Corporation, Nashua, N.H.

Filed Oct. 5, 1995, Ser. No. 539,401
Int. Cl.[6] G03G *9/113*
U.S. Cl. 430—108 **21 Claims**

1. A carrier particle for use with a toner in electrostatic copying comprising:
an electroconductive core; and
a coating on said electroconductive core, said coating comprising a fluorocarbon resin and a charge control agent wherein said charge control agent has about the same polarity as said toner.

5,627,002
LIQUID DEVELOPER COMPOSITIONS WITH CYCLODEXTRINS

David H. Pan, Rochester; Scott D. Chamberlain, Macedon; George A. Gibson, Fairport; John W. Spiewak, Webster, and Frank J. Bonsignore, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1996, Ser. No. 690,881
Int. Cl.[6] G03G *9/135*
U.S. Cl. 430—115 **24 Claims**

1. A positively charged liquid developer comprised of a nonpolar liquid, thermoplastic resin particles, pigment, a charge director, and a charge control agent is a cyclodextrin or a cyclodextrin derivative containing one or more organic basic amino groups.

5,627,003
CLEANING PROCESSES

John R. Laing, Rochester, and Don B. Jugle, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 3, 1991, Ser. No. 753,541
Int. Cl.[6] G03G *9/08*
U.S. Cl. 430—125 **14 Claims**

1. A process for cleaning imaging members consisting essentially of forming an electrostatic latent image on the said member, developing the image with a toner composition consisting essentially of resin particles, carbon black particles, magnetite, charge additive, or a mixture of charge additives, and a wax component comprised of an alcohol of the formula

$$CH_3(CH_2)_nCH_2OH$$

wherein n is a number of from about 30 to about 300, thereafter transferring the developed image to a suitable substrate, subsequently applying to the surface of the imaging member a toner consisting essentially of resin particles, carbon black particles, magnetite, charge additive, or a mixture of charge additives and said alcohol, thereafter transferring said toner to paper whereby there is removed from the imaging members debris of magnetite by attraction to the wax component and subsequent adherence of said debris to said toner.

5,627,004
PROCESSES FOR PRODUCING NEGATIVELY CHARGED TONER

Bernard Grushkin, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

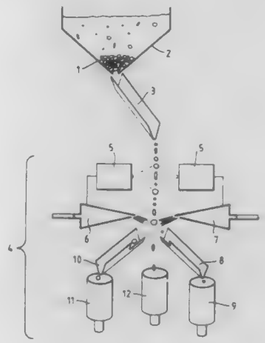
Filed Sep. 27, 1996, Ser. No. 721,688
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—137 **25 Claims**

1. A process for the preparation of negatively charged toner comprising:
(i) preparing a pigment dispersion, which dispersion is comprised of a pigment, an ionic surfactant, and optionally a charge control agent;
(ii) shearing said pigment dispersion with a latex or emulsion blend comprised selected from the group consisting of a resin of styrene-vinylidene chloride-acrylic acid, styrene-vinyl chloride-acrylic acid, styrene-chloroprene-acrylic acid, styrene-butylacrylate-vinylidene chloride-acrylic acid, styrene-butylacrylate-vinyl chloride-acrylic acid, styrene-butadiene-vinylidene chloride-acrylic acid, or styrene-isoprene-vinylidene chloride-acrylic acid, a counterionic surfactant with a charge polarity of opposite sign to that of said ionic surfactant and a nonionic surfactant to produce a sheared blend;
(iii) heating the above sheared blend below about the glass transition temperature (Tg) of the resin to form electrostatically bound toner size aggregates with a narrow particle size distribution; and
(iv) heating said bound aggregates above about the Tg of the resin.

5,627,005
KIT FOR SUPPLYING PHOTOPROCESSING CHEMICALS

Andrew Green, Middlesex, and Paul C. Ward, Herts, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 275,220, Jul. 14, 1994, Pat. No. 5,499,488. This application Sep. 12, 1995, Ser. No. 527,119
Claims priority, application United Kingdom, Jul. 14, 1993, 9314621
Int. Cl.[6] G03C *5/29:5/38:5/26*
U.S. Cl. 430—138 **9 Claims**



1. A kit for supplying processing chemicals for use in a photographic process including a plurality of processing stages, the kit comprising a plurality of different photoprocessing chemical components which are to be kept separate from one another before being supplied to the processing stages in the photographic process, said plurality of different photoprocessing chemical components being encapsulated within a plurality of discrete shells which serve to keep said plurality of different photoprocessing chemical components separate from each other, the shells for said plurality of different photoprocessing chemical components being distinguishable from each other so as to permit sorting of the encapsulated photoprocessing chemical components prior to use in said processing stages of said photographic process.

5,627,006
RESIST MATERIAL

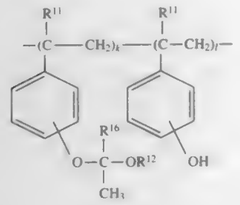
Fumiyoshi Urano; Keiji Oono, and Hirotoshi Fujie, all of Kawagoe, Japan, assignors to Wako Pure Chemical Industries, Ltd., and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

Continuation of Ser. No. 295,154, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 990,397, Dec. 11, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 425,220
Claims priority, application Japan, Dec. 16, 1991, 3-352755
Int. Cl.[6] G03F *7/023:7/004*
U.S. Cl. 430—192 **14 Claims**

1. A photoresist composition comprising a solution of (a) a difficulty alkali-soluble resin obtained by reacting isopropenyl alkyl ether, 2-alkoxy-1-butene, isopropenyl trimethylsilyl ether or isopropenyl benzyl ether with a resin having phenolic hydroxyl groups,

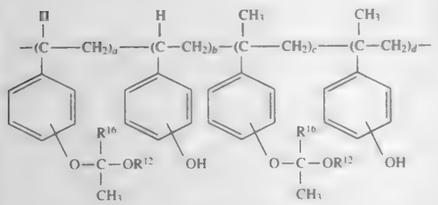
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said resin represented by the formula:



(7)

wherein R^{11} is a hydrogen atom or a methyl group; R^{16} is a methyl group or an ethyl group; R^{12} is a linear, branched or cyclic alkyl group having 1 to 6 carbon atoms, a trimethylsilyl group or a benzyl group; k and l are independently a natural number (0.1<k/(k+l)<0.7); and the position of each substituent is the m-position or the p- position, or



(8)

wherein R^{12} and R^{16} are as defined above; a, b, c and d are independently a natural number (0.1<a/(a+b)<0.7, 0.1<c/(c+d)<0.7); and the position of each substituent is the m-position or the p-position, (b) a photosensitive compound which generates an acid consisting of a carboxylic acid upon exposure to light, and (c) a solvent capable of dissolving the components (a) and (b), whereby the resin (a) become alkali-soluble by the acid generated by exposure to light.

5,627,007

METHOD FOR USE FORMATION OF AN IMPROVED IMAGE

Rudolf Van den Bergh, Herenthout; Johan Lamotte, Leuven, and André Bellens, Pulle, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Oct. 18, 1995, Ser. No. 544,661

Claims priority, application European Pat. Off., Oct. 24, 1994, 94203084

Int. Cl.[6] G03C *5/16;* **G03F** *7/34;* **G03B** *27/32*

U.S. Cl. 430—200 **11 Claims**

1. Method of information-wise exposing by means of laser radiation a radiation sensitive material comprising a transparent support and on one side thereof at least one radiation sensitive layer comprising one or more compounds capable of producing information-wise differentiation between the exposed and non-exposed areas of said material, characterized in that the same information is recorded by simultaneous or consecutive exposure in register on both sides of said radiation sensitive material.

5,627,008

THERMAL TRANSFER PRINTING PROCESS USING A MIXTURE OF REDUCING AGENTS FOR IMAGE-WISE REDUCING A SILVER SOURCE

Geert Defieuw, Kessel-Lo; Wilhelmus Janssens, Aarschot, and Jean-Marie Dewanckele, Drongen, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 400,344, Mar. 8, 1995. This application Mar. 19, 1996, Ser. No. 618,399

Claims priority, application European Pat. Off., Mar. 25, 1994, 94200795

Int. Cl.[6] G03C *8/00*

U.S. Cl. 430—200 **3 Claims**

1. A thermal imaging process comprising, in order, the steps of:
a) bringing a donor layer of a donor element into face to face relationship with a receiving layer of a receiving element to obtain an assemblage,
b) image-wise heating the assemblage, thereby causing image-wise transfer of an amount of a plurality of thermotransferable reducing agents to said receiving element in accordance with the amount of heat supplied,
c) separating said donor element from said receiving element, and
d) overall heating said receiving element, wherein
(i) said donor element comprises on a support (a) a donor layer comprising a binder and a mixture of said plurality of thermotransferable reducing agents which are capable of reducing a silver source to metallic silver upon heating, and (b) on a side of the support opposite a side comprising said donor layer, a heat-resistant backing layer, and
(ii) said receiving element comprises said receiving layer on a support, said receiving layer comprising a silver source which is capable of being reduced by means of heat in the presence of a reducing agent.

5,627,009

PROCESS FOR THE PRODUCTION OF A MULTICOLORED IMAGE

Karin Maerz, Mainz; Ine Gramm, Wiesbaden; Manfred Hilger, Konz; Dieter Mohr, Budenheim, and Stephan J. W. Platzer, Eltville-Erbach, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Division of Ser. No. 62,882, May 17, 1993, Pat. No. 5,478,694. This application Sep. 26, 1995, Ser. No. 533,971

Claims priority, application Germany, May 18, 1992, 42 16 359.5

Int. Cl.[6] G03C *11/12*

U.S. Cl. 430—257 **15 Claims**

1. A process for the production of a multicolored image, which comprises:
(1) laminating a photosensitive material under pressure onto an image-receiving material, wherein the photosensitive material comprises:
(A) a transparent, flexible film support,
(B) a photopolymerizable layer comprising:
(B1) a polymeric binder,
(B2) a free radical-polymerizable compound,
(B3) a compound which is capable of initiating the polymerization of (B2) on exposure to actinic light, and
(B4) a dye or colored pigment in a primary color of multicolor printing, and
(C) a thermoplastic adhesive layer on the photopolymerizable layer, wherein the adhesive layer (C) comprises at least about 1.5% by weight of a water soluble, colorless, low molecular weight salt whose aqueous solution has a pH of above about 3,
(2) exposing the photosensitive material imagewise through the film support with a color separation,
(3) peeling the film support together with the exposed areas off from the image-receiving material to produce a first positive image in a primary color, and

(4) repeating the steps (1)–(3) with at least one further color separation, the exposure being carried out in register with the first primary-color image on the image-receiving material.

5,627,010

PHOTOIMAGEABLE RESIST COMPOSITIONS CONTAINING PHOTOBASE GENERATOR

Daniel Y. Pai, Millbury; Stephen S. Rodriguez, Monument Beach; Kevin J. Cheetham, Millbury; Gary S. Calabrese, North Andover, and Roger F. Sinta, Woburn, all of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Continuation of Ser. No. 836,789, Feb. 14, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 228,187

Int. Cl.[6] G03C *1/73;* **G03F** *7/031;7/032*

U.S. Cl. 430—270.1 **36 Claims**

1. An aqueous developable negative acting photoimageable resist composition that undergoes photobase-initiated hardening to produce a negative relief image upon exposure and development, the composition comprising an organic photobase generator compound, an aqueous base soluble resin binder selected from the group consisting of a novolak resin, a poly(vinylphenol) resin, a resin containing phenolic units and cyclic alcohol units, an acrylic resin, a resin having acrylic and phenolic units and a blend of an acrylic resin with a phenolic resin, and a compound that crosslinks with the resin binder in the presence of a base, said photobase generator compound being present in an amount sufficient to crosslink said compound with said resin binder to enable development of a coating layer of the photoimageable resist composition following exposure to activating radiation, the composition being free of an acid or acid generating material.

5,627,011

HIGH RESOLUTION I-LINE PHOTORESIST OF HIGH SENSITIVITY

Norbert Münzel, Heitersheim; Reinhard Schulz, Staufen-Wettelbrunn; Heinz Holzwarth, Bad Krozingen, all of Germany, and Stephan Ilg, Giebenach, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

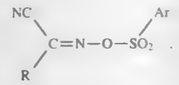
Continuation of Ser. No. 61,652, May 13, 1993. This application May 12, 1995, Ser. No. 440,388

Claims priority, application Switzerland, May 22, 1992, 1656/92; Oct. 29, 1992, 3368/92

Int. Cl.[6] G03F *7/038*

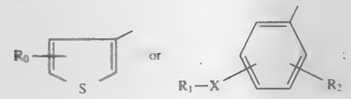
U.S. Cl. 430—270.1 **6 Claims**

1. A chemically amplified, negative-working photoresist composition containing at least one film-forming phenolic resin binder, which is developable in conventional aqueous-alkaline developers of resist technology and is based on an oxime sulfonate as radiation-sensitive photoacid generator, which photoresist composition contains as oxime sulfonate a compound of formula (1) in an amount effective to render the negative-working photoresist composition sensitive to radiation of a wavelength in the range from 340 to 390 nanometers:



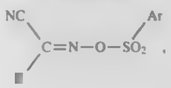
(1)

wherein
R is naphthyl,



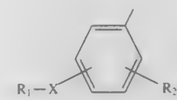
Ar is an unsubstituted aryl group or an aryl group which carries one or more than one substituent selected from the group consisting of nitro, chloro, bromo, hydroxyl, C_1–C_4alkyl, C_1–C_4perfluoroalkyl and C_1–C_4alkoxy,
R_0 is either a R_1—X group or R_2;
X is oxygen or a sulfur atom;
R_1 is hydrogen, C_1–C_4alkyl or unsubstituted phenyl or phenyl which is substituted by a member selected from the group consisting of chloro, bromo, C_1–C_4alkyl and C_1–C_4alkoxy, and R_2 is hydrogen, chloro or C_1–C_4alkyl.

6. A chemically amplified, negative-working photoresist composition containing at least one film-forming phenolic resin binder which is developable in alkaline medium and is based on an oxime sulfonate as radiation-sensitive photoacid generator, which photoresist composition contains as oxime sulfonate a compound of formula (1) in an amount effective to render the negative-working photoresist composition sensitive to radiation of a wavelength in the range from 340 to 390 nanometers:



(1)

wherein R is



Ar is an aryl group of formula



X is an oxygen atom, R_1 is C_1C_4alkyl or phenyl, and R_2, R_3 R_4 are each independently of one another hydrogen, chloro or methyl.

5,627,012

METHOD FOR PREPARING PHASE CHANGE OPTICAL RECORDING MEDIUM

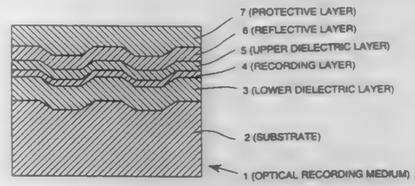
Junji Tominaga; Ryo Inaba, both of Nagano, and Susumu Haratani, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 9, 1996, Ser. No. 598,913

Claims priority, application Japan, Feb. 13, 1995, 7-047822

Int. Cl.[6] C23C *14/34*

U.S. Cl. 430—270.13 **15 Claims**



1. A method for preparing an optical recording medium comprising the step of forming a phase change recording layer on a substrate, said recording layer comprising a recording material containing elements A, B and C, wherein A is at least one element of silver and gold, B is at least one element of antimony and bismuth, and C is at least one element of tellurium and selenium,
said recording layer having a thickness of 100 to 500Å,
said recording layer forming step including successively manner the step of sputtering from an A—C base metal target composed mainly of elements A and C and the step of sputtering from a B base metal target composed mainly of element B, and

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the method being free of a separate step for crystallizing the recording layer for initialization.

5,627,013

METHOD OF FORMING A FINE PATTERN OF FERROELECTRIC FILM

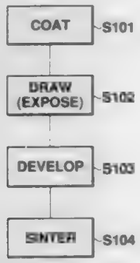
Akira Kamisawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 12, 1992, Ser. No. 974,497

Claims priority, application Japan, Nov. 14, 1991, 3-299287; Nov. 14, 1991, 3-299288; Nov. 14, 1991, 3-299289

Int. Cl.[6] G03F *7/30;7/40*

U.S. Cl. 430—325 **17 Claims**



1. A method for forming a fine pattern of ferroelectric film, comprising the steps of:

(a) coating onto a substrate a pattern forming agent for forming the fine pattern of ferroelectric film, said pattern forming agent being a solution containing a polyalkoxide having ferroelectric components in the backbone structure of the polyalkoxide, and functional groups attached to the backbone structure of the polyalkoxide to be activated when exposed to electromagnetic waves or corpuscular beams;

(b) drawing a circuit pattern on the substrate by radiating electromagnetic waves or corpuscular beams along the circuit pattern;

(c) developing the circuit pattern on the substrate by soaking the radiated substrate in an organic solvent having an aromatic group; and

(d) firing the developed circuit pattern.

5,627,014

BENZPYRYLIUM SQUARYLIUM AND CROCONYLIUM DYES, AND PROCESSES FOR THEIR PREPARATION AND USE

Peter K. Chu, Acton; Serajul Haque, Braintree; Anthony J. Puttick, Arlington; Socorro M. Ramos, Belmont; Robert P. Short, Arlington; Stephen G. Stroud, Medford; Stephen J. Telfer, and Michael J. Zuraw, both of Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 65,350, May 20, 1993, which is a continuation-in-part of Ser. No. 795,038, Nov. 20, 1991, which is a continuation-in-part of Ser. No. 616,639, Nov. 21, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 460,229

Int. Cl.[6] G03C *1/725;1/735;1/73*

U.S. Cl. 430—332 **13 Claims**

1. A process for generating heat in a medium comprising a dye, said dye comprising an inner salt of a compound of the formula:

$$Q^1{=}Z{-}Q^2$$

wherein:

Q^1 is a 4-(benz[b]-4H-pyrylium)methylidene, 4-(benz[b]-4H-thiopyrylium)methylidene or 4-(benz[b]-4H-selenopyrylium)methylidene grouping;

Z is a 1,3-(2-hydroxy-4-oxo-2-cyclobutylidene) hydroxide or 1,3-(2-hydroxy-4,5-dioxo-2-cyclopentylidene) hydroxide ring; and

Q^2 is a 4-(benz[b]-4H-pyran-4-ylidene)methyl, 4-(benz[b]-4H-thio-pyran-4-ylidene)methyl or 4-(benz[b]-4H-selenopyran-4-ylidene)methyl grouping;

wherein at least one of the groupings Q^1 and Q^2 carries at its 2-position a substituent in which a non-aromatic carbon atom is bonded directly to the benzpyrylium, benzthiopyrylium or benzselenopyrylium nucleus, subject to the proviso that if said 2-substituent contains an aromatic nucleus, this aromatic nucleus is not conjugated with the benzpyrylium, benzthiopyrylium or benzselenopyrylium nucleus to which it is attached, which process comprises exposing at least part of the medium to infra-red actinic radiation of a frequency absorbed by the dye, whereby the radiation is absorbed by the dye and heat is generated within the parts of the medium exposed to the radiation.

5,627,015

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hisashi Okada, and Yoshihiro Fujita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

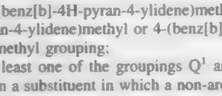
Filed Dec. 7, 1994, Ser. No. 350,969

Claims priority, application Japan, Dec. 7, 1993, 5-306813

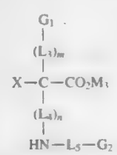
Int. Cl.[6] G03C *7/42*

U.S. Cl. 430—393 **9 Claims**

1. A method for processing a silver halide color photographic material comprising processing an imagewise exposed silver halide color photographic material with a processing solution having bleaching ability after color development, wherein said processing solution having bleaching ability comprises at least one ferric complex salt of the compound represented by formula (I) or (II) and at least one compound represented by formula (III), said at least one ferric complex salt of the compound represented by formula (I) or (II) is present in said processing solution having bleaching ability in an amount of from 0.005 to 1 mol per liter of said processing solution having bleaching ability, and said at least one compound represented by formula (III) is present in said processing solution having bleaching ability in an amount of from 0.001 to 0.3 mol per liter of said processing solution having bleaching ability:

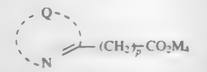

(I)

wherein R_1, R_2, R_3, R_4 and R_5 each represents a hydrogen atom, an aliphatic group, an aryl group, a heterocyclic group, a carboxyl group, a phosphono group, a hydroxy group or a sulfo group, with the proviso that at least one of R_1, R_2, R_3, R_4 and R_5 represents a carboxyl group, a phosphono group, a sulfo group, or an aliphatic, aryl or heterocyclic group substituted by a carboxyl group; L_1 and L_2 each represents a divalent aliphatic group, a divalent aromatic group or a divalent linking group composed of a combination thereof; and M_1 and M_2 each represents a hydrogen atom or a cation:


(II)

wherein G_1 and G_2 each represents a carboxyl group, a phosphono group, a hydroxyl group, a sulfo group, a mercapto to group, an aryl group, a heterocyclic group, an alkylthio group, an amidino group, a guanidino group or a carbamoyl group; L_3, L_4 and L_5 each

represents a divalent aliphatic group, a divalent aromatic group or a divalent linking group composed of a combination thereof; m and n each represents 0 or 1; X represents a hydrogen atom, an aliphatic group, an aryl group or a heterocyclic group; and M_3 represents a hydrogen atom or a cation;


(III)

wherein Q represents a pyridine group, a pyrazine group, a pyrimidine group, a pyridazine group, a pyrrole group, an imidazole group, a pyrazole group, a thiazole group, an oxazole group, a triazole group, a thiadiazole group, a triazine group or an indole group.

5,627,016

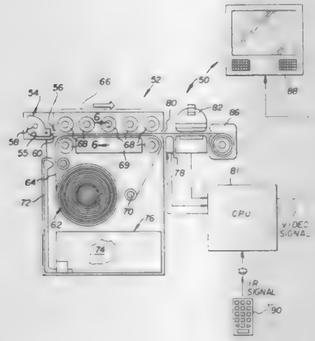
METHOD AND APPARATUS FOR PHOTOFINISHING PHOTOSENSITIVE FILM

Joseph A. Manico, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 29, 1996, Ser. No. 608,828

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—434 **5 Claims**



1. A method for developing a strip of photosensitive film provided in a thrust type film cartridge, said strip of photosensitive film comprising a support web having a back side and a front side, an emulsion layer on said back side, and a filter array on said front side, comprising the steps of:

thrusting said filmstrip out of said thrust film cartridge;

applying a developing activator on said emulsion layer so as to develop any exposed images present on said strip of film;

scanning said strip of film after said images have been developed; and thrusting said film back into said cartridge.

5,627,017

LOW MELTING POINT IONIZABLE EPOXY SCAVENGERS FOR RESIDUAL MAGENTA COUPLERS

Krishnan Chari; Paul P. Spara, both of Fairport, and Sundaram Krishnamurthy, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

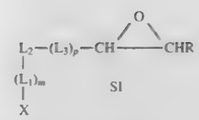
Filed Apr. 25, 1995, Ser. No. 427,764

Int. Cl.[6] G03C *7/388*

U.S. Cl. 430—546 **8 Claims**

1. A method of preparing a photographic element comprising

a) forming an aqueous dispersion of an epoxy compound of the structural formula SI:


SI

wherein:

R is H, an alkyl group, or an aryl group;

L_1 is an alkyl group or an aryl group;

L_2 is —O—, —CO—, —S—, $—SO_2—$, $—PO_2—$, $—CO_2—$, —NHCO— or $—NHSO_2—$, wherein L_2 may be orientated in either direction;

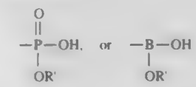
L_3 is an alkyl group;

m is 0 or 1;

p is 0 or 1;

X is

$—NHSO_2R'$, $—SO_2NHR'$,


or

wherein R' is H or an alkyl or aryl group, with the proviso that where L_2 comprises an ionizable group, X may also be an alkyl group or an aryl group; wherein the compound has a melting point of less than about 50° C. and the dispersion is formed by adding the compound in a liquid state to an aqueous solution, and directly dispersing the compound in the aqueous solution;

(b) coating on a support a photosensitive first layer comprising

(i) a silver halide emulsion and

(ii) a magenta coupler dispersed therein; and

(c) coating on the support a second layer comprising an epoxy compound dispersion prepared according to step (a).

5,627,018

SILVER HALIDE PHOTOGRAPHIC EMULSION

Tomoyuki Nakayama, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jun. 8, 1995, Ser. No. 482,149

Claims priority, application Japan, Jun. 17, 1994, 6-135987

Int. Cl.[6] G03C *1/09;1/035;1/015*

U.S. Cl. 430—567 **17 Claims**

1. A silver halide photographic emulsion comprising silver halide grains containing a metal ion and reduction sensitization nucleus in an internal portion of the grains,

said grains having an average iodide content (I_2) of 2 to 30 mol % and satisfying the following requirement,

$$I_1 < I_2$$

wherein I_1 represents an average iodide content of an outermost surface layer of the grains; and

said metal ion is selected from the group consisting of In^{3+} and Pb^{2+}.

11. A method of preparing a silver halide emulsion comprising the steps of:

(i) forming silver halide grains by adding into a reaction vessel a water-soluble silver salt and water-soluble halide salt, or silver halide fine grains to form an emulsion and

(ii) subjecting the emulsion formed to desalting to remove soluble salts.

wherein, in the step of (i), a metal ion is introduced and the emulsion is reduction-sensitized by ripening the emulsion in the presence of a reducing agent or at a pH of 7.0 or more or pAg of 7.0 or less before 97% of the ultimate grain volume of said silver halide grains is reached, said silver halide grains having an average iodide content (I_2) of 2 to 30 mol % and satisfying the following requirement,

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$I_1 < I_2$

wherein I_1 represents an average iodide content of an outermost surface layer of the grains; and said metal ion is selected from the group consisting of Pb^{2+} and In^{3+}.

5,627,019

METHOD OF PREPARING LIGHT-SENSITIVE SILVER HALIDE EMULSIONS AND DISPERSIONS OF PHOTOGRAPHICALLY USEFUL COMPOUNDS

Hubert Vandenabeele, Mortsel, and Eric Bertels, Schaffen-Diest, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 31, 1995, Ser. No. 522,098

Claims priority, application European Pat. Off., Sep. 27, 1994, 94202774

Int. Cl.° G03C *1/015*

U.S. Cl. 430—569 **9 Claims**

1. Method of preparing a light-sensitive silver halide emulsion or a dispersion of a photographically useful compound comprising the steps of precipitation of silver halide or a photographically useful compound in the presence of colloidal silica serving as a protective colloid, coagulation washing of the precipitate formed and redispersing the silver halide or the photographically useful compound, characterized in that the coagulation takes place in the presence of hydroxy ethyl cellulose as a polymer capable of forming hydrogen bridges with the silica, in an amount sufficient to form coagulable aggregates with the silica particles.

5,627,020

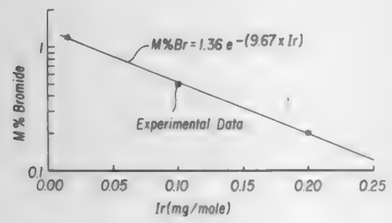
DOPED FINE GRAIN SILVER HALIDE GRAINS AS A MEANS OF INCORPORATING METAL DOPANT IN EMULSION FINISHING

Paul T. Hahm, Hilton, and Walter H. Isaac, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1996, Ser. No. 584,503

Int. Cl.° G03C *1/015;1/09*

U.S. Cl. 430—569 **15 Claims**



1. A method of forming a sensitized high chloride content silver halide emulsion comprising providing a high chloride content emulsion, bringing a Lippmann emulsion comprising fine grains of silver bromide doped with metal into contact with said high chloride emulsion at a temperature of above 50° C. wherein said metal is present in an amount between 0.001 and 0.25 mg/silver mole. said bromide is present in an amount between 0.05 and 3.0 mole percent bromide with respect to silver and the relationship of bromide and metal is

Mole percent $Br = Xe^{-(Y \cdot Mt)}$,

X=1.36±0.65.

Y=10±5.

Mt=metal in milligrams per silver mole.

5,627,021

THREE-DIMENSIONAL CO-CULTURE PROCESS

Thomas J. Goodwin, and David A. Wolf, both of Houston, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 939,791, Sep. 3, 1992, Pat. No. 5,308,764, which is a continuation of Ser. No. 317,931, Mar. 2, 1989, Pat. No. 5,153,132, which is a continuation-in-part of Ser. No. 213,558, Jun. 30, 1988, Pat. No. 5,026,650, and a continuation-in-part of Ser. No. 213,559, Jun. 30, 1988, Pat. No. 4,988,623. This application Dec. 17, 1993, Ser. No. 170,488

The portion of the term of this patent subsequent to May 25, 2013, has been disclaimed.

Int. Cl.° A01N *1/02;* **C12N** *5/00;5/02*

U.S. Cl. 435—1.1 **8 Claims**

1. An artificially produced mammalian organoid differentiation model comprising a three-dimensional tumor mass having a diameter not exceeding about 1.0 centimeter, wherein said three-dimensional tumor mass has a multiplicity of microcarriers which organize into said three-dimensional tumor mass.

5,627,022

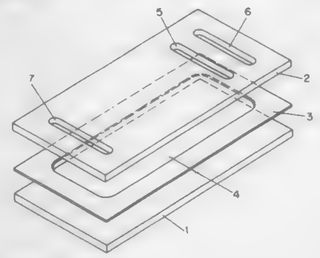
MICROGELS FOR USE IN MEDICAL DIAGNOSIS AND HOLDERS USEFUL IN FABRICATING SAME

John A. Renfrew, Burlington; Paul Waterhouse, Copetown, and John K. Stevens, Toronto, all of Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Nov. 1, 1994, Ser. No. 332,577

Int. Cl.° C12Q *1/00;* **C12M** *1/40*

U.S. Cl. 435—4 **33 Claims**



1. A microgel comprising:

(a) a top substrate;

(b) a bottom substrate;

(c) a spacer formed from an adhesive having a plurality of solid particles dispersed therein disposed between the top substrate and the bottom substrate, said spacer establishing a compartment having a thickness of 250 microns or less between the top substrate and the bottom substrate wherein the thickness of the compartment is defined by the diameter of the particles disposed therein; and

(d) an electrophoresis gel filling the compartment between the top and bottom substrate.

5,627,023

SUPPRESSOR OF HIV REPLICATION AND TRANSCRIPTION

Dani P. Bolognesi, Durham; Chin-Ho Chen, Chapel Hill; Michael L. Greenberg, and Kent Weinhold, both of Durham, all of N.C., assignors to Duke University, Durham, N.C.

Filed Mar. 29, 1993, Ser. No. 38,387

Int. Cl.° C12Q *1/02;1/70*

U.S. Cl. 435—5 **5 Claims**

1. A method for detecting a CD8 suppressor molecule that has anti-HIV activity, comprising:

(a) culturing a host cell line transfected with a recombinant DNA expression vector in which a reporter gene is operatively associated with an HIV LTR promoter sequence;

(b) contacting the cell line with a sample comprising enriched CD8 cells or cell cultures of CD8 cells; and

(c) measuring the inhibition of reporter gene activity, wherein inhibition of reporter gene activity correlates with anti-HIV activity.

2. A diagnostic assay for monitoring the clinical progression of HIV infection comprising:

(a) collecting successive blood samples from an HIV infected individual;

(b) culturing a host cell line transfected with a recombinant DNA expression vector in which a reporter gene is operatively associated with an HIV LTR promoter sequence;

(c) contacting the cell line with the samples from the HIV infected individual;

(d) measuring the inhibition of reporter gene activity, wherein inhibition of reporter gene activity correlates with anti-HIV activity; and

(e) comparing the inhibition of reporter gene activity in each of the samples wherein a decrease in reporter gene activity in each of the successive samples indicates progression of HIV infection.

5,627,024

LAMBDOID BACTERIOPHAGE VECTORS FOR EXPRESSION AND DISPLAY OF FOREIGN PROTEINS

Ichiro Maruyama; Hiroko Maruyama, both of San Diego, Calif., and Sydney Brenner, Cambridge, England, assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Aug. 5, 1994, Ser. No. 286,888

Int. Cl.° C12Q *1/70;1/68;* **C12N** *15/09;* **C07H** *21/04*

U.S. Cl. 435—5 **22 Claims**

1. A recombinant lambdoid bacteriophage vector comprising a nucleotide sequence that (i) defines the lambdoid elements for replication and packaging of the vector into an assembled bacteriophage, and (ii) encodes a conditionally suppressible cistron for expression of a tail protein and a fusion protein that comprises:

a) a promoter for transcribing the cistron,

b) a first upstream translatable sequence that encodes a pV lambdoid bacteriophage tail polypeptide,

c) a first ribosome binding site to initiate translation of said upstream translatable sequence,

d) a second translatable sequence operatively linked downstream to said first translatable sequence that (1) encodes a linker polypeptide in frame with said tail polypeptide and (2) includes a sequence adapted for ligation of an insert polynucleotide that defines a third translatable sequence downstream from said second translatable sequence that encodes a preselected polypeptide, and

e) a suppressor termination codon within said second translatable sequence that upon suppression results in read-through to form a fusion polypeptide consisting of said tail polypeptide, linker polypeptide and preselected polypeptide.

9. A recombinant lambdoid bacteriophage comprising a matrix of proteins encapsulating a lambdoid genome encoding a fusion protein, said matrix including said fusion protein, wherein the fusion protein is surface accessible in said matrix, and said fusion protein comprising, in the direction of amino terminus to carboxy terminus, a pV lambdoid bacteriophage tail polypeptide, a linker polypeptide and a preselected polypeptide.

19. A method for detecting the presence of a preselected target in a sample comprising the steps of:

a) admixing a sample containing said preselected target with a recombinant lambdoid bacteriophage according to claim 9, wherein said preselected polypeptide defines a biologically active ligand or receptor which binds to said preselected target, under binding conditions sufficient for said target-binding bacteriophage to bind said target and form a target-ligand or receptor complex;

b) detecting the presence of said complex, and thereby the presence of said preselected target.

5,627,025

METHOD FOR THE IDENTIFICATION OF COMPOUNDS CAPABLE OF ABROGATING HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION OF DENDRITIC CELLS AND T-LYMPHOCYTES

Ralph M. Steinman, Westport, Conn.; Melissa Pope, New York, N.Y.; Michiel Betjes, Amsterdam, Netherlands, and Lloyd Hoffman, Great Neck, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Aug. 12, 1994, Ser. No. 290,432

Int. Cl.° C12Q *1/70;* **G01N** *33/53;33/567;33/555*

U.S. Cl. 435—5 **12 Claims**

1. An in vitro method for the identification of agents capable of inhibiting human immunodeficiency virus (HIV) infection of dendritic cell-T lymphocyte conjugates found in skin and mucous membranes related to skin, comprising the following steps:

a) contacting a first skin explant with an agent to be assayed for its ability to inhibit HIV infection of dendritic cell-T lymphocyte conjugates;

b) floating the first skin explant dermal side down in culture medium at 37° C.;

c) allowing dendritic cells and T-lymphocytes to emigrate from the skin explant of (b) and form dendritic cell-T lymphocyte conjugates;

d) floating a second control skin explant dermal side down in control culture medium, which is not contacted with the agent of step (a), at 37° C.;

e) allowing dendritic cells and T-lymphocytes to emigrate from the skin explant of step (d) and form dendritic cell-T lymphocyte conjugates;

f) exposing said conjugates of both the first and second skin explants to infectious HIV; and,

g) determining whether said conjugates become productively infected with HIV;

wherein a decrease in the level of HIV infection in conjugates from the first skin explant, as compared to conjugates in the second skin explant, is indicative of said agent being capable of inhibiting HIV infection of dendritic cells and T-lymphocytes obtained from skin and mucous membranes related to skin.

5,627,026

DETECTION OF BOTH AN ANTIBODY AND AN ANTIGEN IN A SINGLE SAMPLE ALIQUOT

Thomas P. O'Connor, Yarmouth, and Quentin J. Tonelli, Portland, both of Me., assignors to IDEXX Laboratories, Inc., Westbrook, Me.

Continuation of Ser. No. 83,790, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 219,100, Jul. 14, 1988, abandoned. This application Dec. 27, 1994, Ser. No. 364,432

Int. Cl.° C12Q *1/70;* **G01N** *33/569*

U.S. Cl. 435—5 **15 Claims**

1. A method for detecting an antibody and an antigen in a single biological sample, said method comprising:

(a) providing an antigen which selectively forms a first immune complex with a sample antibody, said antigen being directly bound to a solid support at a first location;

(b) providing an antibody which selectively forms a second immune complex with a sample antigen, said antibody being directly bound to said solid support at a second location;

(c) contacting said first location on said solid support with at least a portion of a biological sample under conditions whereby said first immune complex can form and contacting said second location on said solid support with at least a portion of said sample under conditions whereby said second immune complex can form;

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(d) washing unbound material from said first location and from said second location; and

(e) separately detecting whether said first immune complex is formed and whether said second immune complex is formed, said first immune complex being detected with a labelled antigen which selectively binds to said first complex and said second immune complex being detected by adding a labelled antibody which selectively binds to said second complex, said labelled antibody being presented to both said first and said second locations.

5,627,027

CYANINE DYES AS LABELING REAGENTS FOR DETECTION OF BIOLOGICAL AND OTHER MATERIALS BY LUMINESCENCE METHODS

Alan S. Waggoner, Pittsburgh, Pa., assignor to Carnegie Mellon University, Pittsburgh, Pa.

Continuation of Ser. No. 854,347, Apr. 18, 1986, abandoned. This application Sep. 22, 1992, Ser. No. 831,759

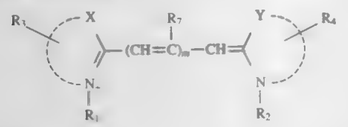
The portion of the term of this patent subsequent to Apr. 19, 2015, has been disclaimed.

Int. Cl.° C12Q *1/68*

U.S. Cl. 435—6 **10 Claims**

1. A method for imparting luminescence for luminescence detection to a component which contains or is derivatized to contain an amine or hydroxy group in a liquid, said method comprising the steps of:

adding to a liquid containing said component, wherein said component is selected from the group consisting of proteins, cells, nucleic acids and DNA, a luminescent cyanine dye having the structure



wherein:

the dotted lines each represent carbon atoms necessary for the formulation of said cyanine dye;

X and Y are selected from the group consisting of O, S and $CH_3—C—CH_3$;

m is an integer selected from the group consisting of 1, 2, 3 and 4;

at least one of R_1, R_2, R_3, $R_4$and R_7 contain a reactive group to make said dye covalently reactive with said amine or hydroxy group available for covalent bonding on said component, said reactive group selected from the group consisting of isothiocyanate, isocyanate, monochlorotriazine, dichlorotriazine, mono-or di-halogen substituted pyridine, mono- or di-halogen substituted diazine, aziridine, sulfonyl halide, acid halide, hydroxysuccinimide ester, hydroxy sulfosuccinimide ester, imido ester, glyoxal and aldehyde; and

reacting said cyanine dye with said component at said amine or hydroxy group under reaction conditions sufficient for forming a covalent bond between said reactive group and said amine or hydroxy group so that said dye labels said component, wherein said labeled component is luminescent and absorbs and emits light in the 400 to 900 nm spectral range for luminescence detection.

5,627,028

WATER-SOLUBLE TETRAAZAPORPHINS AND FLUOROCHROME FOR LABELING

Seiji Tai; Mitsuo Katayose, and Hiroo Watanabe, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 3, 1993, Ser. No. 145,199

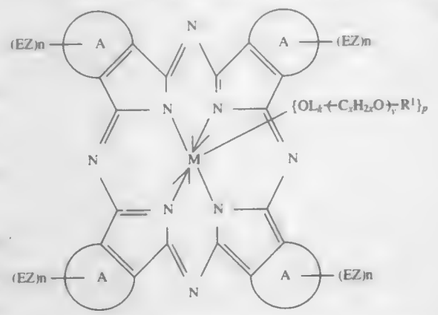
Claims priority, application Japan, Nov. 10, 1992, 4-299773; Aug. 25, 1993, 5-210059

Int. Cl.° C12Q *1/68*

U.S. Cl. 435—6 **4 Claims**

1. A process for analyzing a substance, which comprises attaching a fluorochrome for labeling to a substance to be analyzed, and measuring a fluorescence intensity, said fluorochrome for labeling being a water-soluble tetraazaporphin represented by the formula:

(1)



wherein M is Al, Si, P, Ga, Ge or Sc; k is zero or an integer of 1; in the case of k being 1, L is

$—Si(CH_3)_2(CH_2)_aNH—$,

$Si(CH_3)_2(CH_2)_bNH.COO—$,

$—Si(CH_3)_2O—$

or

$—Si(CH_3)_2NH—$;

a and b are independently an integer of 1 to 6; x is an integer of 1 to 6; y is an integer of 1 to 200; R^1 is a linear, branched or cyclic alkyl group, an aryl group, a heterocyclic group or an aralkyl group; p is an integer of 1 or 2 indicating the number of groups represented by the formula $—OL_k—(C_xH_{2x}O)_y—R^1$ which is bonded to M; four A's which may be used the same or different, are independently a fused polycyclic aromatic ring formed from two or more aromatic rings, which may have substituents XQ's or Q's in a number of m, X is an oxygen atom, a sulfur atom, a nitrogen atom, a phosphorus atom, a silicon atom, a selenium atom, NH.CO, $NH.PO_2$, $NH.SO_2O.CO$, $O.SO_2$, $O.PO_2$, S.CO, $S.SO_2$, $S.PO_2$, CO, SO_2 or PO_2; Q is a saturated or unsaturated hydrocarbon group or a heterocyclic group; and each m is the same or different and independently an integer of 1 to 4, each n is the same or different and independently zero or an integer of 1 or more; 4n, the sum of four n's or the total number of EZ's, being an integer of 1 or more; each substituent (EZ) in a number of n is the same or different and independently bonded to the fused polycyclic aromatic ring A and/or Q; and E is a cationic group in the case of Z being an anion, E is an anionic group in the case of Z being a cation, and E is a bonded group containing a polyethylene glycol residue, a polyether residue, a polyamine residue, a polyalcohol residue or a polycarboxylic acid residue in the case of Z being absent.

5,627,029

METHOD FOR OBTAINING INFORMATIVE CELLS

Timothy W. Houseal, Westborough; Karen Pavelka, Northbridge; Katherine W. Klinger, Sudbury, and William R. Dackowski, Hopkinton, all of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 877,337, May 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 695,267, May 3, 1991, abandoned. This application May 16, 1994, Ser. No. 243,647

Int. Cl.° C12Q *1/68;* **H01L** *21/20;* **C07H** *21/02;* **C12N** *15/00*

U.S. Cl. 435—6 **10 Claims**

1. A method for processing a liquid sample of uncultured cells for in situ hybridization analysis, wherein the sample cells that are informative are separated from sample cells that are non-informative, comprising the steps of:

a) transferring a liquid sample contàining both uncultured informative cells and non-informative cells onto a solid substrate wherein the surface tension of the liquid sample is sufficient to maintain the liquid sample beaded on the surface of the solid substrate;

b) incubating the beaded liquid sample on the surface substrate for a period of time in the range of about 15 minutes to about 30 minutes for the selective settling of informative cells onto the surface of the solid substrate; and

c) breaking the surface tension of the liquid sample wherein the liquid portion of the sample is removed along with the non-informative cells and wherein the informative cells remain on the surface of the solid substrate.

5,627,030

METHOD OF AMPLIFICATION FOR INCREASING THE SENSITIVITY OF DETECTING NUCLEIC ACID-PROBE TARGET HYBRIDS

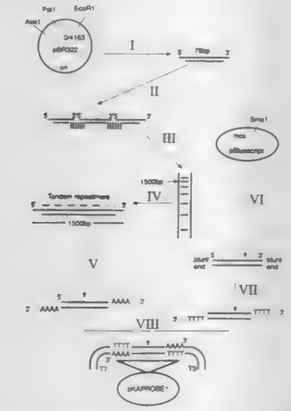
Sithian Pandian, Orleans; Eng J. Aw, Kanata, and David I. Smith, Richmond, all of Canada, assignors to Kalyx Biosciences Inc., Canada

Filed Jul. 15, 1994, Ser. No. 275,849

Claims priority, application Canada, Jun. 28, 1994, 2126952

Int. Cl.° C07H *21/04;* **C12Q** *1/68*

U.S. Cl. 435—6 **20 Claims**



1. A method for enhancing detectable labeling of probe-target complexes in nucleic acid hybridization assays comprising hybridizing a complex of a selected nucleic acid target and a selected primary probe with an amplification probe adapted to permit enhanced detectable labelling of said selected nucleic acid target, said probe comprising at least two regions of nucleic acid sequences: a first region including a sequence complementary to a sequence on said selected primary probe which also contains a sequence complemental to a sequence of said selected nucleic acid target, and a second region including a plurality of discretely labelable mixed polynucleotide sequence units linearly arranged.

5,627,031

Patent Not Issued For This Number

5,627,032

COMPOSITE PRIMERS FOR NUCLEIC ACIDS

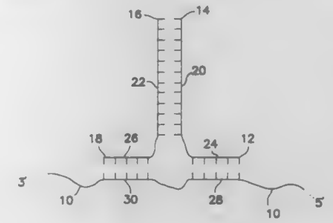
Levy Ulanovsky, c/o Dr. Margit Burmeister 3544 Chatham Way, Ann Arbor, Mich. 48105-2828

Continuation of Ser. No. 810,898, Dec. 20, 1991, abandoned. This application Feb. 6, 1995, Ser. No. 384,699

Claims priority, application Israel, Dec. 24, 1990, 098775

Int. Cl.° C12Q *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **13 Claims**



1. A method for sequence specific priming of an extension reaction comprising;

a) annealing two or more covalently unconnected oligonucleotides to a template to form a composite primer, wherein at least two of said oligonucleotides comprise mutually complementary sequences and each oligonucleotide comprises a sequence complementary to a sequence in said template; and two or more of said oligonucleotides anneal to adjacent sites on the template and to each other thereby increasing the sequence specificity of priming as compared to the sequence specificity of priming by one of said oligonucleotides alone: and

b) extending the composite primer with a nucleic acid polymerase.

5,627,033

MAMMALIAN EXPRESSION VECTORS

John M. Smith, Columbia Heights; John E. Humphrey, Maple Grove; Monica L. Tsang, and James A. Weatherbee, both of North Oaks, all of Minn., assignors to Research & Diagnostics Systems, Inc., Minneapolis, Minn.

Filed Mar. 28, 1995, Ser. No. 411,490

Int. Cl.° C12Q *1/68*

U.S. Cl. 435—6 **29 Claims**

1. A vector useful for selection and expression of a cDNA gene sequence in a mammalian system, the vector comprising:

a) a cDNA structural gene sequence encoding a protein product of choice;

b) a cDNA promoter sequence controlling the cDNA sequence;

c) a native marker protein sequence encoding a detectable protein product; and

d) a marker promoter sequence controlling the marker protein sequence;

wherein the cDNA structural gene and marker promoter sequences are cotransformed, and the marker sequence promoter is mutated so as to exhibit an activity level substantially below that of its corresponding wild type.

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5,627,034

ASSAY FOR CARCINOMA PROLIFERATIVE STATUS BY MEASURING NGAL EXPRESSION LEVEL

Michael N. Gould, and Steven P. Stoesz, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 5, 1995, Ser. No. 567,509
Int. Cl.[6] C12Q *1/68;* G01N *33/574;33/53;* C07H *21/04*
U.S. Cl. 435—6 11 Claims

1. A method of determining the relative degree of proliferation of a human breast carcinoma, comprising:
(a) obtaining a sample of carcinoma from human breast tissue;
(b) quantitatively analyzing the sample for an NGAL gene expression product; and
(c) determining the relative degree of proliferation of the carcinoma from the quantitative analysis of the NGAL expression product by determining whether NGAL protein is present in a concentration above a selected normal human value.

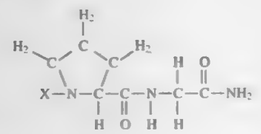
5,627,035

PEPTIDES THAT BLOCK HUMAN IMMUNODEFICIENCY VIRUS AND METHODS OF USE THEREOF

Anders Vahlne, Hovås; Bo Svennerholm, Göteborg; Lars Rymo, Hovås; Peter Horal, and Stig Jeansson, both of Göteborg, all of Sweden, assignors to Syntello Vaccine Development AB, Goteborg, Sweden

Continuation of Ser. No. 988,127, Feb. 12, 1993, which is a continuation-in-part of Ser. No. 571,080, Aug. 22, 1990, abandoned. This application Jun. 26, 1995, Ser. No. 494,763
Int. Cl.[6] G01N *33/53;* A61K *39/21;* C07K *5/00;16/00*
U.S. Cl. 435—7.2 7 Claims

1. A method of inhibiting human immunodeficiency virus infection of host cells and syncytia formation between infected and non-infected cells, comprising administering to said cells an effective amount of a polypeptide having a C-terminal amide group of the molecular formula:



wherein X is selected from the group consisting of hydrogen and about one to four additional amino acid residues.

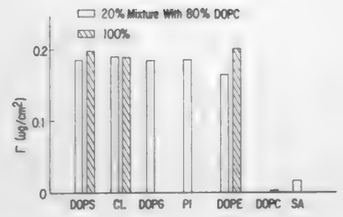
5,627,036

USE OF AN ANTICOAGULANT AS A DIAGNOSTIC AGENT

Christiaan Reutelingsperger, Maastricht, Netherlands, assignor to Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany

Continuation of Ser. No. 904,366, Jun. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,572, Jun. 26, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,788
Claims priority, application Germany, Dec. 27, 1989, 39 42 988.1; WIPO, Dec. 19, 1990, PCT/EP90/02257
Int. Cl.[6] G01N *33/566*
U.S. Cl. 435—7.21 27 Claims

1. A method for diagnosing a prothrombic state in an individual comprising:
(a) contacting the blood of said individual with an annexine in the presence of calcium;
(b) detecting whether an annexine-platelet complex is formed; and



(c) correlating the forenation of an annexine-platelet complex with a prothrombic state.

5,627,037

ONE STEP METHOD FOR DETECTION AND ENUMERATION OF ABSOLUTE COUNTS OF ONE MORE CELL POPULATIONS IN A SAMPLE

Anthony J. Ward, San Ramon; Thomas J. Mercolino, Pleasanton, and Diether J. Recktenwald, Cupertino, all of Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 46,343, Apr. 8, 1993, abandoned, which is a continuation of Ser. No. 570,569, Aug. 7, 1990, abandoned. This application Aug. 9, 1994, Ser. No. 287,759
Int. Cl.[6] G01N *33/53;33/96*
U.S. Cl. 435—7.21 17 Claims

1. A method for determining the absolute counts of $CD4^+$ lymphocytes within a whole blood sample by means of flow cytometry comprising the steps of:
(a) adding the sample to a tube containing a diluent comprising an anti-CD4 monoclonal antibody bound to phycoerythrin, paraformaldehyde and a known concentration of a 2 μm autofluorescent coumarin microparticle;
(b) setting a fluorescence trigger in the second fluorescence channel to include at least 99% of all microparticles and $CD4^+$ lymphocytes;
(c) setting fluorescence gates in the first and second fluorescence channels to distinguish between the phycoerythrin fluorescence associated with the labelled $CD4^+$ lymphocytes and the autofluorescence of the microparticle;
(d) counting the number of $CD4^+$ lymphocytes and microparticles from step (c); and
(e) calculating the number of $CD4^+$ lymphocytes per microparticle from step (d) and multiplying by the concentration of microparticles resulting in the absolute count of $CD4^+$ lymphocytes per unit volume.

5,627,038

FACTOR IX CHROMOGENIC ASSAY

H. C. Hemker, Maastricht, Netherlands, assignor to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 954,126, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 394,822, Aug. 17, 1989, abandoned. This application Oct. 13, 1994, Ser. No. 322,970
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.21 16 Claims

1. A method for determining coagulation Factor IX in a blood, serum, plasma or other fluid sample suspected of containing Factor IX comprising:
a) combining into a mixture said fluid sample with blood coagulation Factor XIa in the presence of calcium ions and Factor IIa;
b) incubating the mixture for a time sufficient to convert substantially all of the Factor IX to Factor IXa;
c) further combining the mixture with Factor X in the presence of phospholipids, Factor VIII and calcium ions;

1) Factor IX —(Factor XIa, Ca^{++}, Factor IIa)→ Factor IXa
2) Factor X —(Factor IXa, Phospholipid, Factor VIIIa, Ca^{++})→ Factor Xa
3) Indicator Agent, Thrombin Inhibitor —(Factor Xa)→ signal molecule

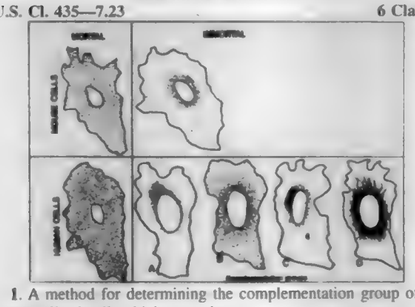
d) incubating the mixture for a time sufficient to convert all or a portion of the Factor X to Factor Xa;
e) adding to the mixture a Factor IIa inhibitor and an indicator agent capable of reacting chemically with the Factor Xa to generate a measurable signal;
f) measuring the signal; and
g) correlating the measured signal molecule to the level of blood coagulation Factor IX in the fluid sample.

5,627,039

MORTALIN AND METHODS FOR DETERMINING COMPLEMENTATION GROUP ASSIGNMENT OF CANCER CELLS

Olivia M. Pereira-Smith, Houston, Tex., and Renu Wadhwa, Tsukuba, Japan, assignors to Baylor College of Medicine, Houston, Tex.

Filed Mar. 18, 1994, Ser. No. 214,583
Int. Cl.[6] G01N *33/574*
U.S. Cl. 435—7.23 6 Claims



1. A method for determining the complementation group of an immortalized cell, which comprises:
(A) determining the intracellular distribution of a mortalin in said cell; and
(B) correlating the determined distribution with the distribution of mortalin exhibited by cells of complementation group A, B, C or D.

5,627,040

FLOW CYTOMETRIC METHOD FOR AUTOCLUSTERING CELLS

Pierre Bierre, San Mateo, and Ronald A. Mickaels, Mountain View, both of Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

PCT No. PCT/US92/07291, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993
Continuation-in-part of Ser. No. 751,020, Aug. 28, 1991, abandoned. This PCT application Aug. 28, 1992, Ser. No. 39,465
The portion of the term of this patent subsequent to Feb. 10, 2013, has been disclaimed.
Int. Cl.[6] G01N *33/533;33/536;33/49*
U.S. Cl. 435—7.24 17 Claims

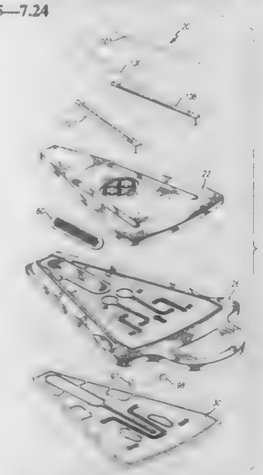
1. A method for classifying a sample of particles into one or more clusters comprising the steps of:
(a) collecting a plurality of parameters for each particle in a sample of particles;
(b) displaying said parameters for each particle in the sample of particles on a set of two-dimensional scatterplots;
(c) manually positioning a geometric boundary surface on the set of two-dimensional scatterplots for at least one cluster of particles so as to enclose a group of the displayed particles in the cluster, the geometric boundary surface having a user-defined, center location, shape, size, radius and orientation;
(d) defining a vector for each particle in the sample of particles and testing if each vector is contained within the geometric boundary surface;
(e) summing each vector contained within the geometric boundary surface to calculate a vector mean;
(f) after a user-defined number of vectors are summed to calculate the vector mean, calculating a new center location for the geometric boundary surface using the vector mean;
(g) moving the geometric boundary surface on the set of two-dimensional scatterplots to relocate the geometric boundary surface about the new center location;
(h) repeating steps d)–g) until a user-defined number of vectors or all available vectors have been included in the calculation of a final center location;
(i) moving the geometric boundary surface on the set of two-dimensional scatterplots to relocate the geometric boundary surface about the final center location; and
(j) comparing all subsequently received particles with the geometric boundary surface for inclusion within or exclusion outside the cluster associated with the geometric boundary surface.

5,627,041

DISPOSABLE CARTRIDGE FOR AN ASSAY OF A BIOLOGICAL SAMPLE

Robert J. Shartle, Livermore, Calif., assignor to Biometric Imaging, Inc., Mountain View, Calif.

Filed Sep. 2, 1994, Ser. No. 300,360
Int. Cl.[6] G01N *33/536;33/558*
U.S. Cl. 435—7.24 16 Claims



8. A fluidics circuit which permits fluid flow at low centrifugal accelerations, the fluidics circuit comprising:
a first capillary including an inlet and an outlet having a radial position outward from the inlet, said first capillary including a fluid passage having a capillary back pressure which allows fluid flow through the outlet of said first capillary;
a second capillary including an inlet in fluid communication with the outlet of said first capillary, said second capillary further including an outlet and a fluid passage having a

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capillary back pressure which prohibits fluid flow through the outlet of said second capillary; and

a chamber providing a stop junction in fluid communication with the outlet of said second capillary, wherein the radial position of the inlet and the outlet of said first capillary are selected such that fluid will flow through said second capillary when a low level of centrifugal acceleration having a range of one to one hundred meters per second per second is applied to said first capillary and said second capillary.

5,627,042

METHOD FOR COUNTING THE NUMBER OF LIVING MICROORGANISMS

Atsumi Hirose, deceased, late of Kanagawa-ken; Susumu Seto, Kanagawa-ken; Takuji Kataoka, Shizuoka-ken, all of Japan, and David Wang, Lexington, Mass., assignors to Nihon Millipore Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 959,232, Oct. 9, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,350

Claims priority, application Japan, Feb. 13, 1991, 3-40615

Int. Cl.[6] C02F *3/00;* **C12Q** *1/06;1/66*

U.S. Cl. 435—8 **8 Claims**

1. A method for counting the number of living microorganisms in a test solution which comprises:

filtering said solution through a membrane filter element having a plurality of hydrophilic membrane filter sections substantially surrounded by a plurality of hydrophobic partitions, so that said living microorganisms contained in said solution are entrapped within said sections;

drying said membrane filter element;

spraying an ATP extracting reagent over said membrane filter element to extract ATP of said living microorganisms entrapped within said sections;

spraying a luminescence-inducing reagent over said membrane filter element to allow said luminescent reagent to emit luminescence within said sections;

displaying said emitted luminescence as a bright spot, using a luminescence image analyzing system; and

counting the number of said bright spots wherein the number of said bright spots represents the number of living microorganisms in said test solution.

5,627,043

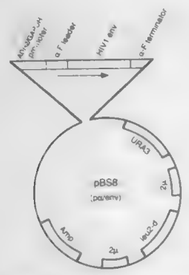
YEAST STRAINS USED TO IDENTIFY INHIBITORS OF DIBASIC AMINO ACID PROCESSING ENDOPROTEASES

Alex Franzusoff, Boulder, Colo., assignor to The Regents of the University of Colorado, Boulder, Colo.

Division of Ser. No. 88,322, Jul. 7, 1993, Pat. No. 5,413,914. This application May 9, 1995, Ser. No. 437,820

Int. Cl.[6] C12Q *1/37;* **C12N** *1/19*

U.S. Cl. 435—23 **17 Claims**



1. A yeast strain which produces a heterologous dibasic amino acid processing endoprotease and a heterologous precursor protein of an infectious agent, said precursor protein having a dibasic amino acid processing site, wherein said yeast strain processes said precursor protein into at least one cleavage protein.

5,627,044

COMPOSITIONS AND METHODS FOR PROTEIN STRUCTURAL DETERMINATIONS

Jonathan M. Brown, Baltimore, Md., assignor to Martek Biosciences Corporation, Columbia, Md.

PCT No. PCT/US94/01329, § 371 Date Sep. 27, 1994, § 102(e) Date Sep. 27, 1994, PCT Pub. No. WO94/18339, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 7, 1994, Ser. No. 307,768

Int. Cl.[6] C12Q *1/02;* **C12P** *13/14;13/12;13/10*

U.S. Cl. 435—29 **28 Claims**

1. A nutrient media capable of supporting the growth of a mammalian or insect cell culture, which contains all amino acids that are essential for growth of the cells, an assimilable source of carbohydrate, and essential minerals and growth factors, wherein the amino acids and any other substrate used by the cells for protein synthesis are substantially labeled with ^{13}C or with both ^{13}C and ^{15}N and in which from about 20% to about 100% of the hydrogen atoms in the amino acids in such nutrient medium are ^{2}H.

5,627,045

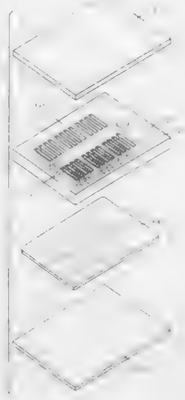
MULTI-TEST FORMAT WITH GEL-FORMING MATRIX FOR CHARACTERIZATION OF MICROORGANISMS

Barry Bochner, Alameda, and Maria C. Ralha, San Francisco, both of Calif., assignors to Biolog, Inc., Hayward, Calif.

Filed Apr. 12, 1995, Ser. No. 421,377

Int. Cl.[6] C12Q *1/04;1/00;1/18;1/02*

U.S. Cl. 435—34 **19 Claims**



1. A method for testing microorganisms selected from the group consisting of bacteria and fungi, comprising the steps of:

a) providing a testing device comprising a plurality of testing wells, wherein said wells contain a testing substrate and one or more gel-initiating agents;

b) preparing a suspension comprising a pure culture of microorganisms and an aqueous solution comprising a gelling agent, under conditions such that said suspension remains ungelled;

c) introducing said suspension into said wells of said testing device under conditions such that said suspension forms a gel matrix within said well, such that said microorganisms are within said gel matrix; and

d) detecting the response of said microorganisms to said testing substrate.

5,627,046

YEAST PROMOTER AND ITS USE

Claudio Falcone, Rome, Italy; Reinhard Fleer, Bures sur Yvette, France, and Michele Saliola, Rome, Italy, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR92/00803, § 371 Date Feb. 22, 1994, § 102(e) Date Feb. 22, 1994, PCT Pub. No. WO93/04176, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 19, 1992, Ser. No. 196,178

Claims priority, application France, Aug. 21, 1991, 91 10476

Int. Cl.[6] C12N *15/11;* **C12P** *21/02*

U.S. Cl. 435—69.1 **27 Claims**

1. A DNA sequence selected from the group consisting of:

(a) the DNA sequence presented in FIG. 1 (SEQ ID NO: 1);

(b) the complement of the DNA sequence presented in FIG. 1 (SEQ ID NO: 1);

(c) the DNA sequence of (a) or (b) further comprising one or more regulatory elements of activator regions; and

(d) the DNA sequence of (a), (b) or (c) comprising one or more deletions;

wherein said DNA sequence possesses transcriptional promoter activity.

5,627,047

ASTROCYTE-SPECIFIC TRANSCRIPTION OF HUMAN GENES

Michael Brenner, Gaithersburg; Francois Besnard, Rockville, and Yoshihiro Nakatani, Bethesda, all of Md., assignors to United States of America Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 769,626, Oct. 4, 1991, abandoned. This application Feb. 16, 1994, Ser. No. 197,463

Int. Cl.[6] C12N *15/85;15/62;15/10*

U.S. Cl. 435—69.1 **37 Claims**

1. A recombinant DNA molecule comprising a nucleotide sequence from nucleotide position −2163 to nucleotide position +88 of a human gene encoding glial fibrillary acidic protein, where +1 is the RNA start site, operably linked to a heterologous gene.

28. A method for expressing a protein comprising transfecting a mammalian glial cell line with the recombinant DNA molecule of claim 1 and culturing said cell line under conditions suitable to express said protein.

5,627,048

AEDES AEGYPTI DENSOVIRUS EXPRESSION SYSTEM

Boris N. Afanasiev; Jonathan O. Carlson; Barry Beaty, all of Fort Collins, Colo.; David R. Higgins, and Kelly J. Thibault, both of San Diego, Calif., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Nov. 4, 1994, Ser. No. 334,669

Int. Cl.[6] C12P *21/06;* **C12N** *5/06;15/86*

U.S. Cl. 435—69.1 **37 Claims**

1. An expression vector comprising the 5' and 3'-termini of Aedes Densonucleosis Virus (AeDNV) genomic DNA flanking at least one expression cassette comprising an AeDNV promoter operably linked to a heterologous gone.

5,627,049

K. LACTIS RP28 RIBOSOMAL PROTEIN GENE PROMOTER AND USE THEREOF

Sandrine Menart, Les Ulis, and Monique Bolotin, Gif-sur-Yvette, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00695, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/01570, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 6, 1993, Ser. No. 367,198

Claims priority, application France, Jul. 8, 1992, 92 08429

Int. Cl.[6] C12P *21/06;* **C07H** *21/04;* **C12N** *1/00;15/63*

U.S. Cl. 435—69.1 **20 Claims**

1. An isolated DNA sequence selected from the group consisting of:

(a) SEQ ID NO:4; and

(b) a fragment of (a);

wherein said DNA sequence possesses transcriptional promoter activity.

5,627,050

BONE-RELATED SULFATASE-LIKE PROTEIN AND PROCESS FOR ITS PRODUCTION

Sunao Takeshita, Tokorozawa; Toshimi Ito, Sayama; Yoko Otawara-Hamamoto, Kamifukuoka, and Egon Amann, Tokyo, all of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

Continuation of Ser. No. 111,887, May 26, 1993, abandoned. This application May 22, 1995, Ser. No. 445,586

Claims priority, application Japan, Aug. 28, 1992, 4-230030; Dec. 3, 1992, 4-324034

Int. Cl.[6] C12P *21/02;* **C12N** *9/16*

U.S. Cl. 435—69.1 **3 Claims**

1. A process for the production of a recombinant mammalian osteocyte specific factor OSF-8 protein comprising the steps of:

(a) obtaining a population of cells containing a heterologous DNA composed of the following DNA sequences:

(i) a sequence that can function in the cells to control transcription and translation, and

(ii) a DNA sequence joined downstream of said controlling sequence to code for said recombinant OSF-8 protein, and

(b) culturing said population of cells under conditions which permit the production of said recombinant protein; and wherein said OSF-8 protein comprises mouse OSF-8 having an amino acid sequence at the 19th to 556th positions in Sequence ID No. 2 of the Sequence Listing.

5,627,051

NUCLEIC ACID SEQUENCES ENCODING DENDROIDES ANTIFREEZE PROTEINS

John G. Duman, South Bend, Ind., assignor to University of Notre Dame du Lac, Notre Dame, Ind.

Filed Jun. 7, 1995, Ser. No. 485,359

Int. Cl.[6] C12P *21/02;* **C07H** *21/04*

U.S. Cl. 435—69.1 **4 Claims**

1. A method for using a cell transformant comprising a heterologous DNA Sequence selected from the group consisting of Seq ID NO:1and Seq ID NO:3 to produce a protein having antifreeze properties, said method comprising the step of

culturing said cell transformant under conditions conducive to the expression of the antifreeze protein.

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5,627,052

METHODS FOR THE PRODUCTION OF PROTEINS WITH A DESIRED FUNCTION

John W. Schrader, Vancouver, Canada, assignor to B.R. Centre, Ltd., Vancouver, Canada

Continuation of Ser. No. 88,601, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 561,984, Aug. 2, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 464,261

Int. Cl.[6] A61K *39/395*

U.S. Cl. 435—69.6 **38 Claims**

1. A method for producing an antibody, antibody variable region, or a portion thereof which has an antibody binding region with a desired function, comprising:

(a) obtaining from a warm-blooded animal a population of antibody-forming B cells or antibody-forming progeny thereof wherein the B cells or progency thereof are non-hybridoma or non-Epstein Barr virus (EBV) transformed, and wherein the B cells or progency thereof contain at least one cell that produces an antibody exhibiting a desired function, followed by;

(b) suspending the population of antibody-forming B cells or progency thereof in a medium, the medium having an indicator system incorporated therein which indicates the presence and location of a cell which forms antibodies exhibiting the desired function;

(c) identifying a cell forming an antibody exhibiting the desired function;

(d) isolating the identified antibody-forming cell from the medium;

(e) determining the amino acid sequence of the variable region or a portion thereof which exhibits the desired function of the antibody produced by the isolated antibody-forming cell; and

(f) synthesizing an antibody, antibody variable region, or a portion thereof which has the amino acid sequence of the variable region or portion thereof which exhibits the desired function.

5,627,053

2'DEOXY-2'-ALKYLNUCLEOTIDE CONTAINING NUCLEIC ACID

Nassim Usman; Alexander Karpeisky, both of Boulder; Leonid Beigelman, Longmont, and Anil Modak, Boulder, all of Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 218,934, Mar. 29, 1994, and Ser. No. 222,795, Apr. 4, 1994. This application May 2, 1995, Ser. No. 432,874

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;1/70;* **C07H** *21/04*

U.S. Cl. 435—91.1 **5 Claims**

2. Enzymatic nucleic acid Capable of cleaving single-stranded RNA or DNA comprising a 2'-deoxy-2'-alkylnucleotide.

5,627,054

COMPETITOR PRIMER ASYMMETRIC POLYMERASE CHAIN REACTION

David Gillespie, deceased, late of Glenmore, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

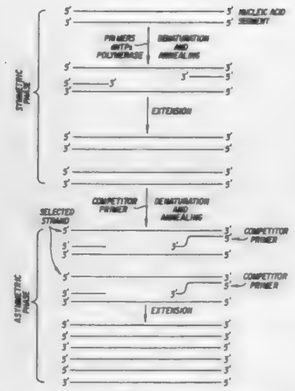
Filed Apr. 5, 1996, Ser. No. 628,417

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.2 **10 Claims**

1. A process for amplifying an unknown or known staffing amount of a double-stranded nucleic acid segment having first and second complementary strands to produce single-stranded nucleic acid in an amount that is proportional to the starting amount of the nucleic acid segment, which comprises:

(a) symmetrically amplifying the nucleic acid segment to generate a double-stranded nucleic acid product in an amount that is proportional to the starting amount of the nucleic acid



segment, wherein the symmetrical amplifying is carried out by thermal cycling a reaction mixture comprising:

(i) the nucleic acid segment,

(ii) a first primer for annealing to the first complementary strand at a first primer specific binding site,

(iii) a second primer, which is different from the first primer, for annealing to the second complementary strand at a second primer specific binding site,

(iv) a nucleotide for each of adenine, guanine, cytosine and thymine,

(v) a reaction buffer, and

(vi) a thermally stable polymerase for extending annealed primers,

(b) asymmetrically amplifying the double-stranded nucleic-acid product to generate a single-stranded nucleic acid product in an amount that is proportional to the amount of double-stranded product generated by the symmetrical amplifying, wherein the asymmetrical amplifying comprises:

(i) adding a competitor primer to the reaction mixture, wherein the competitor primer prevents one of the first and second primers from annealing to the first or second complementary strands and is incapable of being extended by the polymerase, and

(ii) continuing the thermal cycling.

5,627,055

FINDERONS AND METHODS OF THEIR PREPARATION AND USE

John Goodchild, Westborough, and Thomas E. Leonard, Marlboro, both of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Division of Ser. No. 315,287, Sep. 29, 1994. This application Jun. 7, 1995, Ser. No. 475,867

Int. Cl.[6] C12P *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—91.31 **15 Claims**

1. A method of site-specifically cleaving a single-stranded, RNA-containing substrate, comprising the step of contacting the RNA-containing substrate with a finderon for a time sufficient for the finderon to hybridize to and cleave the RNA containing substrate, the finderon comprising:

(a) a first flanking region comprising from four to fifteen contiguous, covalently-linked nucleotides, at least a portion of the first flanking region being complementary to a first target region located at a 3' position of a cleavage site on a substrate RNA molecule;

(b) a second flanking region comprising from four to fifteen contiguous, covalently-linked nucleotides, at least a portion of the second flanking region being complementary to a second target region located at a 5' position of the cleavage site; and

(c) a rigid linker covalently bound to a 3' terminus of the first flanking region and to a 5' terminus of the second flanking

region, the linker comprising from one to twelve non-nucleotidic units maintaining the cleavage site in a trigonal bipyramidal transition state conformation, and wherein the non-nucleotidic unit is selected from the group consisting of a cyclohexane diol, asteroid, a lupene diol, an isosorbide, and combinations thereof and a linear distance of about 15 to 30 Angstroms is established between the first and second flanking regions.

5,627,056

METHOD OF SYNTHESIZING LIPIDS AND COSMETIC COMPOSITION COMPRISING THEM

John Casey, Wellingborough; Peter S. Cheetham, Harrold; Peter C. Harries, Risely; Della Hyliands, St. James; John T. Mitchell, Bedford, all of United Kingdom, and Anthony V. Rawlings, Wyckoff, N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 146,550, Nov. 2, 1993, abandoned. This application Feb. 9, 1995, Ser. No. 386,140

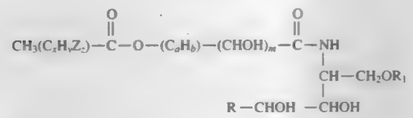
Claims priority, application United Kingdom, Nov. 3, 1992, 9223001; Apr. 3, 1993, 9306973; Aug. 10, 1993, 9316629

Int. Cl.[6] C12P *7/64;* **C12N** *1/00;1/14*

U.S. Cl. 435—134 **7 Claims**



1. A method of producing a phytosphingosine-containing ceramide one having the general structure (1):



(1)

where

R represents a linear or branched, saturated or unsaturated, hydroxylated or non-hydroxylated aliphatic hydrocarbon having from 8 to 28 carbon atoms;

R_1 represents H, a phosphate residue, a sulphate residue or a sugar residue

Z is —OH or an epoxy oxygen

a is an integer of from 7 to 50

b is an integer of from 10 to 100

m is 0 or 1

x is an integer of from 12 to 20;

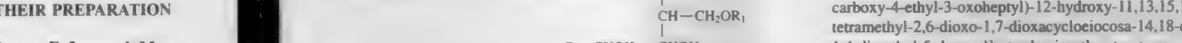
y is an integer of from 20 to 40

z is 0 or an integer of from 1 to 4

comprising:

(a) obtaining a phytoshingosine base from tetraacetylphytosphingosine by a deacetylation reaction wherein the tetraacetylphytosphingosine is produced by fermentation of cells of the F-60-10 mating type strain of *Hansenula ciferrii* using a fed-batch mode and a non-fermentable carbon source; and

(b) coupling together the phytosphingosine base and a fatty acid/ω-hydroxy fatty acid component having the general structure (2) via an amide linkage:



(2)

where

Z is —OH or an epoxy oxygen

a is an integer of from 7 to 50

b is an integer of from 10 to 100

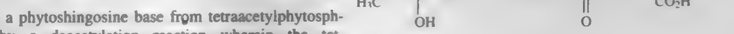
m is 0 or 1

x is an integer of from 12 to 20

y is an integer of from 20 to 40

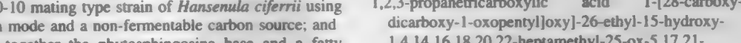
z is 0 or an integer of from 1 to 4

wherein the fatty acid/ω-hydroxy fatty acid component having the general structure (2) is prepared by linking together an ω-hydroxy fatty acid having the structure (3):



(3)

and a fatty acid having the general structure (4)



(4)

5,627,057

INHIBITOR COMPOUNDS OF FARNESYL-PROTEIN TRANSFERASE AND CHEMOTHERAPEUTIC COMPOSITIONS CONTAINING THE SAME, PRODUCED BY STRAIN ATCC 55532

Sheo B. Singh, Edison; George M. Garrity, Westfield, both of N.J.; Olga Genillourd, Madrid, Spain; Russell B. Lingham, Watchung, N.J.; Isabel Martin, Madrid, Spain; Mary Nallin-Omstead, E. Greenwich, R.I.; Keith C. Silverman, Somerset, and Deborah L. Zink, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

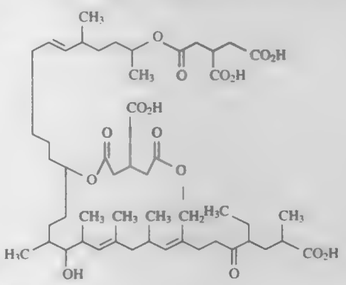
Division of Ser. No. 254,228, Jun. 6, 1994, Pat. No. 5,510,371. This application Mar. 6, 1996, Ser. No. 611,700

Int. Cl.[6] C12N *1/20;* **C12P** *1/06;33/00*

U.S. Cl. 435—135 **3 Claims**

1. A biologically pure culture of Actinoplanes sp. MA 7066 (ATCC 55532), or an active mutant thereof capable of producing in recoverably amounts a compound selected from the group consisiting of:

1,2,3-propanetricarboxylic acid 1-[10-[4-carboxy-19-(6-carboxy-4-ethyl-3-oxoheptyl)-12-hydroxy-11,13,15,17-tetramethyl-2,6-dioxo-1,7-dioxacycloeiocosa-14,18-dien-8yl]-1,4-dimethyl-5-decenyl]ester having the structure:

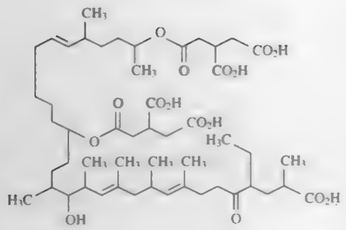


1

and

1,2,3-propanetricarboxylic acid 1-[28-carboxy-11-[[3,4-dicarboxy-1-oxopentyl]oxy]-26-ethyl-15-hydroxy-1,4,14,16,18,20,22-heptamethyl-25-ox-5,17,21-nonacosatrienyl]ester having the structure:

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5,627,058

RETROVIRUS PROMOTER-TRAP VECTORS

H. Earl Ruley, Winchester, and Harold von Melchner, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 523,041, May 14, 1990, Pat. No. 5,364,783. This application Jul. 27, 1994, Ser. No. 281,229
Int. Cl.[6] C12N *5/10;15/10*
U.S. Cl. 435—172.3 17 Claims

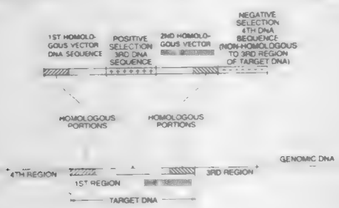
1. A method for putting a protein coding sequence under the control of an endogenous promoter comprising:
introducing into living cells promoterless oligonucleotides coding for a protein, each oligonucleotide joined to a DNA integration sequence, wherein said introducing is carried out by infecting said living cells with a retrovirus having a promoterless oligonucleotide coding for a protein located within a U3 or U5 control region of the retrovirus,
allowing the promoterless oligonucleotides coding for a protein to integrate into genomic DNA, and
selecting a cell that has one of the promoterless oligonucleotides coding for a protein integrated under the regulatory control of a promoter endogenous to the cell to result in a functional gene fusion.

5,627,059

CELLS AND NON-HUMAN ORGANISMS CONTAINING PREDETERMINED GENOMIC MODIFICATIONS AND POSITIVE-NEGATIVE SELECTION METHODS AND VECTORS FOR MAKING SAME

Mario R. Capecchi, and Kirk R. Thomas, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation of Ser. No. 84,741, Jun. 28, 1993, Pat. No. 5,487,994, which is a division of Ser. No. 14.083, Feb. 4, 1993, Pat. No. 5,464,764, which is a continuation of Ser. No. 397,707, Aug. 22, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 461,827
Int. Cl.[6] C12N *5/00;15/00*
U.S. Cl. 435—172.3 10 Claims



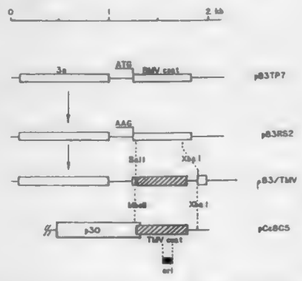
1. A method of producing a transgenic mouse having a genome comprising a modification of a target DNA sequence, said method comprising:
(a) transforming a population of mouse embryonic stem cells with a PNS vector;
(b) identifying a cell having said genome by selecting for cells containing said positive selection marker and against cells containing said negative selection marker and analyzing DNA from cells surviving selection for the presence of said modification;
(c) inserting said cell into a mouse embryo;
(d) propagating a mouse from said embryo; and
(e) breeding said mouse to produce said transgenic mouse having said genome;
wherein said PNS vector comprises:
(1) a first homologous vector DNA sequence capable of homologous recombination with a first region of said target DNA sequence,
(2) a positive selection marker DNA sequence capable of conferring a positive selection characteristic in said cells,
(3) a second homologous vector DNA sequence capable of homologous recombination with a second region of said target DNA sequence, and
(4) a negative selection marker DNA sequence, capable of conferring a negative selection characteristic in said cells, but substantially incapable of homologous recombination with said target DNA sequence,
wherein the spatial order of said sequences in said PNS vector is: said first homologous vector DNA sequence, said positive selection marker DNA sequence, said second homologous vector DNA sequence and said negative selection marker DNA sequence as shown in FIG. 1,
wherein the 5'-3' orientation of said first homologous vector sequence relative to said second homologous vector sequence is the same as the 5'-3' orientation of said first region relative to said second region of said target sequence;
wherein the vector is capable of modifying said target DNA sequence by homologous recombination of said first homologous vector DNA sequence with said first region of said target sequence and of said second homologous vector DNA sequence with said second region of said target sequence.

5,627,060

HYBRID RNA VIRUS

Paul G. Ahlquist; Roy C. French, both of Madison, and Robert F. Sacher, McFarland, all of Wis., assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Division of Ser. No. 445,990, May 22, 1995, which is a continuation of Ser. No. 158,082, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 978,313, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 518,242, May 4, 1990, abandoned, which is a continuation of Ser. No. 12,253, Feb. 9, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 473,617
Int. Cl.[6] C12N *15/40;15/82;15/83*
U.S. Cl. 435—172.3 6 Claims



1. A method for transfecting a plant with functional heterologous RNA comprising:
(a) modifying an RNA viral sequence capable of infecting said plant and derived from a first virion to contain said functional heterologous RNA and a nucleic acid sequence comprising an origin of assembly and encoding a coat protein derived from a second virion, said second virion having a morphologically-different type of coat protein from said first virion;

(b) providing one or more replication gene in cis or in trans to ensure the replication of said modified RNA viral sequence;
(c) contacting said plant with the elements of (a) and (b) so as to initiate infection; and
(d) allowing said infection to spread systemically through said plant.

5,627,061

GLYPHOSATE-TOLERANT 5-ENOLPYRUVYLSHIKIMATE-3-PHOSPHATE SYNTHASES

Gerard F. Barry, St. Louis; Ganesh M. Kishore, Chesterfield; Stephen R. Padgette, Grover, and William C. Stallings, Glencoe, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 306,063, Sep. 13, 1994, which is a continuation-in-part of Ser. No. 749,611, Aug. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 576,537, Aug. 31, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,008
Int. Cl.[6] C12N *15/82*
U.S. Cl. 438—172.3 8 Claims

1. In a method for the transformation and regeneration of transgenic plants, the improvement which comprises the use of a glyphosate-resistance marker gene comprising:
i) a promoter which functions in plant cells to cause the production of an RNA sequence,
ii) a structural DNA sequence that causes the production of an RNA sequence which encodes an EPSPS enzyme having the sequence domains:
-R-X_1-H-X_2-E- (SEQ ID NO:37), in which
X_1 is G, S, T, C, Y, N, Q, D or E;
X_2 is S or T; and
-G-D-K-X_3- (SEQ ID NO:38), in which
X_3 is S or T; and
-S-A-Q-X_4-K- (SEQ ID NO:39), in which
X_4 is A, R, N, D, C, Q, E, G, H, I, L, K, M, F, P, S, T, W, Y or V; and
-N-X_5-T-R- (SEQ ID NO:40), in which
X_5 is A, R, N, D, C, Q, E, G, H, I, L, K, M, F, P, S, T, W, Y or V;
and
iii) a 3' non-translated DNA sequence which functions in plant cells to cause the addition of a stretch of polyadenyl nucleotides to the 3' end of the RNA sequence;
where the promoter is heterologous with respect to the structural DNA sequence and adapted to cause sufficient expression of the polypeptide to render a plant cell transformed with the DNA molecule tolerance to a toxic level of glyphosate.

5,627,062

PREPARATION OF A DEHYDRATED POLYSACCHARIDE GEL CONTAINING MICROORGANISMS AND A HYDROPHILIC SUBSTANCE FOR PRODUCING FERMENTED DRINKS

Charles Divies; Pascal Lenzi, both of Dijon, France; Jacques Beaujeu, Noumea, New Caledonia, and Frederic Herault, La Chapelle sur Erdre, France, assignors to Champagne Moet & Chandon, Epernay, France

Continuation of Ser. No. 161,681, Nov. 22, 1993, Pat. No. 5,389,532, which is a continuation of Ser. No. 635,531, Feb. 25, 1991, abandoned. This application Dec. 13, 1994, Ser. No. 355,042
Claims priority, application France, Jul. 7, 1988, 88 09249
Int. Cl.[6] C12N *11/10;1/04;* C12G *1/00;* C12C *11/00*
U.S. Cl. 435—178 16 Claims

1. A process for the preparation of microorganisms enclosed in at least partially dehydrated gels, said microorganisms exhibiting an improved viability after rehydration, comprising:
(a) dispersing the microorganisms in a gellable polysaccharide solution;
(b) gelling the polysaccharide solution containing the microorganisms to form a gel enclosing the microorganisms;
(c) soaking the gel enclosing the microorganisms in a solution containing a sugar selected from the group consisting of sucrose, glucose and fructose in an amount of at least 500 g/l of the solution and for a period of time sufficient to reach equilibrium;
(d) separating the equilibrated gel containing the microorganisms from the solution and recovering the gel; and
(e) drying the gel to obtain an at least partially dehydrated gel.

5,627,063

DEHYDRATED POLYSACCHARIDE GEL CONTAINING MICROORGANISMS AND A HYDROPHILIC SUBSTANCE

Charles Divies; Pascal Lenzi, both of Dijon, France; Jacques Beaujeu, Noumea, New Caledonia, and Frederic Herault, La Chapelle sur Erdre, France, assignors to Champagne Moet & Chandon, Epernay, France

Division of Ser. No. 355,042, Dec. 13, 1994, which is a continuation of Ser. No. 161,681, Nov. 22, 1993, Pat. No. 5,389,532, which is a continuation of Ser. No. 635,531, Feb. 25, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,059
Claims priority, application France, Jul. 7, 1988, 88 09249
Int. Cl.[6] C12N *11/10;1/04;* C12G *1/00;* C12C *11/00*
U.S. Cl. 435—178 10 Claims

1. An at least partially dehydrated gel containing viable microorganisms and a sugar, which has been obtained by a process comprising:
(a) dispersing the microorganisms in a gellable polysaccharide solution;
(b) gelling the polysaccharide solution containing the microorganisms to form a gel enclosing the microorganisms;
(c) soaking the gel enclosing the microorganisms in a solution containing a sugar selected from the group consisting of sucrose, glucose and fructose in an amount of at least 500 g/l of the solution and for a period of time sufficient to reach equilibrium;
(d) separating the equilibrated gel containing the microorganisms from the solution and recovering the gel; and
(e) drying the gel to obtain an at least partially dehydrated gel.

5,627,064

PROTEIN KINASES

Merl F. Hoekstra, Shohomish, Wash., assignor to The Salk Institute For Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 8,001, Jan. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 728,783, Jul. 3, 1991, abandoned. This application May 23, 1995, Ser. No. 447,500
Int. Cl.[6] C12N *15/54;15/63;5/10;1/15;1/21*
U.S. Cl. 435—194 11 Claims

1. An isolated and purified polynucleotide sequence encoding a polypeptide selected from the group consisting of the polypeptide disclosed in SEQ ID NOs: 4, 6, 8, 10, 12, and 24.

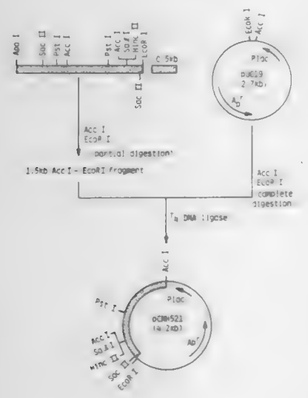
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5,627,065

DNA FRAGMENT CONTAINING A GENE ENCODING CREATININE AMIDOHYDROLASE

Kazumi Yamamoto; Masanori Oka; Toshiro Kikuchi, and Shigenori Emi, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 538,274, Jun. 14, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 908,620
Claims priority, application Japan, Jun. 16, 1989, 1-152182
Int. Cl.[6] C12N *9/80;15/55;15/70;15/74*
U.S. Cl. 435—228 5 Claims



1. An isolated DNA sequence comprising a DNA sequence encoding creatinine amidohydrolase, wherein said creatinine amidohydrolase has an amino acid sequence of FIG. 1.

5,627,066

METHOD AND APPARATUS FOR IN VITRO FERTILIZATION

Jon W. Gordon, New York, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation-in-part of Ser. No. 125,084, Sep. 22, 1993, Pat. No. 5,512,476, which is a continuation of Ser. No. 699,745, May 14, 1991, abandoned. This application Mar. 31, 1995, Ser. No. 414,739
Int. Cl.[6] C12N *5/00;15/00;* A61B *19/00*
U.S. Cl. 435—2 42 Claims

1. A method for concentrating motile sperm in a microchamber comprising the steps of

(a) placing a volume of fertilization medium in a container, said container having at least one microchamber and being shaped such that the fertilization medium, when placed in the container, fills said at least one microchamber and a portion of the container outside of said at least one microchamber, and further such that the medium extends from said portion to said at least one microchamber, said at least one microchamber being formed and positioned in relation to the remainder of said container such that sperm of normal motility, when placed in said portion outside and remote from the microchamber, will tend to swim into the microchamber, said at least one microchamber further being shaped such that motile sperm which swim from said portion into said microchamber tend to remain in said microchamber,

(b) placing a sperm sample containing motile sperm in said portion outside of said microchamber; and

(c) allowing motile sperm in said sample to swim from said portion to said microchamber, thereby concentrating said motile sperm in said microchamber.

5,627,067

MONOCLONAL ANTIBODIES CROSS-REACTIVE AND CROSS-PROTECTIVE AGAINST HUMAN MONOCLONAL ANTIBODIES AGAINST PSEUDOMONAS AERUGINOSA SEROTYPES

Anthony W. Siadak, and Mae J. Rosok, both of Seattle, Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 366,204, Dec. 29, 1994, which is a continuation of Ser. No. 66,604, May 24, 1993, Pat. No. 5,378,812, which is a continuation of Ser. No. 931,179, Nov. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 807,394, Dec. 10, 1985, abandoned. This application Jun. 5, 1995, Ser. No. 462,370
Int. Cl.[6] C12N *5/22;* C07K *16/00;* A61K *39/395*
U.S. Cl. 435—340 9 Claims

1. An immortalized cell line which secretes a human monoclonal antibody or binding fragment thereof which specifically binds to accessible lipopolysaccharide determinants of IATS serotypes 4 and 11 and Fisher immunotype 2 of *Pseudomonas aeruginosa.*

5,627,068

MONASCUS PURPUREUS STRAIN PRODUCER OF PIGMENTS AND BY-PRODUCTS

Anna V. Kujumdzieva, c/s West Park, bl. 124, en B, ap 2, Sofia, 1373, Bulgaria; Jean N. Hallet, 13 rue de la Gourmette, Nantes, 44300, France; Valentin A. Savov, c/s West Park, bl. 124, en B, ap 2, Sofia, 1373, Bulgaria, and Tanya V. Rasheva, c/s Darvenitsa, bl. 13, A, ap 24, Sofia, 1756, Bulgaria

Filed Jun. 22, 1995, Ser. No. 493,691
Claims priority, application Bulgaria, Jun. 24, 1994, 98875
Int. Cl.[6] C12N *1/20*
U.S. Cl. 435—254.1 3 Claims

1. A biologically pure strain of *Monascus purpureus* 94-25 (NBIMCC 2325) which assimilates lactose and produces pigments and biologically active products.

5,627,069

TREATMENT OF ON-SITE ANIMAL WASTE PITS

Owen J. Powlen, R.R. 2, Box 145, Kewanna, Ind. 46939

Division of Ser. No. 988,490, Dec. 10, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 482,828
Int. Cl.[6] C02F *3/34*
U.S. Cl. 435—267 8 Claims

1. A composition for the on-site treatment of an animal waste pit to soften solid wastes collected and hardened therein, comprising a dry, powdered carrier and, dispersed within the carrier, an effective amount of viable Lactobacillus bacteria to substantially fluidize said hardened solid wastes, and an effective amount of a nitrogen-fixing bacteria to increase the amount of fixed nitrogen in wastes removed from animal waste pits treated with the composition.

5,627,070

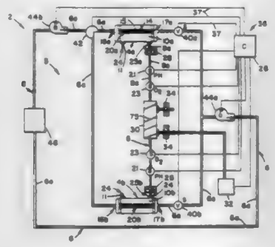
CELL GROWING DEVICE FOR IN VITRO CELL POPULATION EXPANSION

Micheal Gruenberg, Minneapolis, Minn., assignor to Cell-Therapy, Inc., Minneapolis, Minn.

Filed Jul. 26, 1995, Ser. No. 506,173
Int. Cl.[6] C12M *3/06;1/36*
U.S. Cl. 435—786.5 18 Claims

1. A cell growing device for in vitro cell population growth, the cell growth occurring in fluid growth media within the device, the device comprising:

a first hollow fiber cartridge having a housing and a plurality of capillaries, each of the capillaries including walls having interiors and exteriors, the housing having a first inflow opening and a first outflow opening, the plurality of capillaries extending between the first inflow opening and the first outflow opening, at least one of the capillaries having selectively permeable walls, the interiors of the walls of the plurality of capillaries defining a first lumen extending between and being in fluid communication with the first inflow opening and the first outflow opening, the exteriors of the walls of the plurality of capillaries and the housing defining a first extracapillary space, the housing having a first primary orifice in fluid communication with the first extracapillary space;



a second hollow fiber cartridge having a housing and a plurality of capillaries, each of the capillaries including walls having interiors and exteriors, the housing having a second inflow opening and a second outflow opening, the plurality of capillaries extending between the second inflow opening and the second outflow opening, at least one of the capillaries having selectively permeable walls, the interiors of the walls of the plurality of capillaries defining a second lumen extending between and being in fluid communication with the second inflow opening and the second outflow opening, the exteriors of the walls of the plurality of capillaries and the housing defining a second extracapillary space, the housing having a second primary orifice in fluid communication with the second extracapillary space; and

a fluid connecting mechanism for fluidly connecting the first and second cartridges, the fluid connecting mechanism including a recirculation mechanism for recirculating fluid media from the respective outflow openings of the hollow fiber cartridges to inflow openings thereof and an extracapillary space connecting mechanism for fluidly connecting the first extracapillary space with the second extracapillary space, the recirculation mechanism including a mechanism for adjusting oxygen concentration of the media and means for closing one of said first and second outflow openings, wherein all fluid communication between the first cartridge and the second cartridge other than that passing through the recirculation mechanism passes through the extracapillary space connecting mechanism.

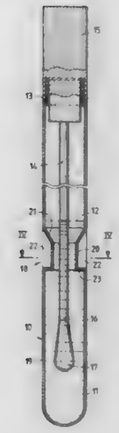
5,627,071

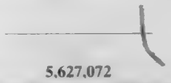
DEVICE FOR SAMPLE COLLECTION AND IN VITRO TRANSPORT, MAINLY FOR DIAGNOSTIC USE

Daniele Triva, Bovezzo, Italy, assignor to Copan Italia S.p.A., Bovezzo, Italy

Filed Aug. 12, 1994, Ser. No. 289,447
Claims priority, application Italy, Sep. 9, 1993, MI93A1934
Int. Cl.[6] C12M *3/00*
U.S. Cl. 435—307.1 12 Claims

1. An apparatus for sample collection and in vitro transport for diagnostic use, said apparatus comprising a test tube for containing transport medium in gel form; and a rod bearing at one end a cap for sealing said test tube, and, at an opposite end, means for collecting a sample to be dipped into the transport medium, wherein said test tube has an essentially cylindrical shape interrupted by a neck adjacent to a level inside said test tube intended to be reached by a free surface of the transport medium in gel form whereby when said rod is placed into said test tube which contains the transport medium in gel form the means for collecting said sample is dipped into said transport medium, below a level of the free surface of the transport medium.





5,627,072

FOOD-GRADE VECTOR SUITABLE FOR TRANSFORMING A FOOD-GRADE HOST CELL USE OF SAID VECTOR FOR TRANSFORMING FOOD-GRADE HOST CELLS AND USE OF SAID TRANSFORMED CELLS IN BIOTRANSFORMATION PROCESSES

Cornelis J. Leenhouts, Haren; John D. Marugg, Utrecht, and Cornelis T. Verrips, Maassluis, all of Netherlands, assignors to Van Den Bergh Foods Co., Division of Conopco Inc., Lisle, Ill.

Continuation of Ser. No. 32,739, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 795,412, Nov. 20, 1991, abandoned. This application Jan. 3, 1995, Ser. No. 368,397
Claims priority, application European Pat. Off., Nov. 23, 1990, 90203114
Int. Cl.[6] C12N *15/00;1/20;* C12P *21/06;* A23L *1/00*
U.S. Cl. 435—320.1 30 Claims

1. A food-grade vector suitable for transforming a food-grade host cell, said vector comprising:

1) a nucleic acid which hybridizes with a non-essential portion of chromosomal DNA of a non-transformed host cell enabling said vector to integrate stably into a chromosome of said host cell after transformation to form a transformed host cell without leading to a loss of an essential function of said host cell, wherein said host cell is a lactic acid bacterium; and

2) foreign DNA selected from the group consisting of

i. foreign DNA having a DNA sequence that codes for a food-grade selectable marker enabling the transformed host cell to metabolize a substrate that cannot be metabolized by the non-transformed host cell, where at least said DNA sequence and the product encoded by said DNA sequence are foreign for a prototrophic strain of said non-transformed host cell,

ii. foreign DNA having a DNA sequence that codes for at least one product enabling the transformed host cell to grow in the presence of a food-grade natural bacteriocidal agent wherein at least said DNA sequence and the product encoded by said sequence are foreign for the non-transformed host cell, and

iii. a mixture of both (i) and (ii);

the food-grade vector being suitable for transforming a food-grade gram positive bacterial host cell, and the food-grade vector having been made incapable of autonomously replicating in the bacterial host cell by removal of its replicase gene.

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5,627,073

HYBRIDOMAS PRODUCING ANTIBODIES TO CARDIAC HYPERTROPHY FACTOR

Joffre Baker, El Granada; Kenneth Chien, La Jolla; Kathleen King, Pacifica; Diane Pennica, Burlingame, and William Wood, San Mateo, all of Calif., assignors to Genentech, Inc., and The Regents of the University of California

Division of Ser. No. 286,304, Aug. 5, 1994, which is a continuation-in-part of Ser. No. 233,609, Apr. 25, 1994, abandoned. This application May 17, 1995, Ser. No. 443,129

Int. Cl.[6] **C12N** *5/18;5/22*

U.S. Cl. 435—331 **18 Claims**

1. A hybridoma cell line producing an antibody that specifically binds cardiotrophin having amino acid sequence SEQ ID NO.:8.

5,627,074

METHOD OF REDUCING INTERFERENCE IN A FLUORESCENT ASSAY

Gérard Mathis, Bagnols sur Cèze; Christophe DuMont, Connaux, and Etienne J. Jolu, Bagnols sur Cèze, all of France, assignors to CIS Bio International, Saclay, France

PCT No. PCT/FR91/00566, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO92/01224, PCT Pub. Date Jan. 23, 1994

PCT Filed Jul. 12, 1991, Ser. No. 956,487

Claims priority, application France, Jul. 13, 1990, 90 08982

Int. Cl.[6] **G01N** *33/543:33/20;33/53*

U.S. Cl. 436—518 **20 Claims**

1. A method of reducing interference in a fluorescent assay of an analyte using at least one fluorescent compound as the tracer, which comprises adding fluoride ions to the measuring medium.

5,627,075

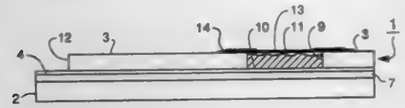
STABLE DIAGNOSTIC REAGENT

Joseph E. Bateson, Carmel, Ind., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Continuation of Ser. No. 80,263, Jun. 21, 1993, abandoned. This application Mar. 20, 1996, Ser. No. 619,118

Int. Cl.[6] **G01N** *31/00*

U.S. Cl. 436—8 **20 Claims**



1. A process for stabilizing a diagnostic reagent composition comprising glucose oxidase, the process comprising the step of adding succinic acid or a salt thereof to the composition in an amount effective to stabilize the composition.

5,627,076

METHOD FOR DETERMINATION OF GLYCOLS AND POLYGLYCOLS IN DRILLING FLUID FILTRATES

Nyal S. Walker, and Patrick L. Henderson, both of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Nov. 13, 1995, Ser. No. 555,682

Int. Cl.[6] **G01N** *33/24;* **B01L** *9/00;* **G01J** *3/52*

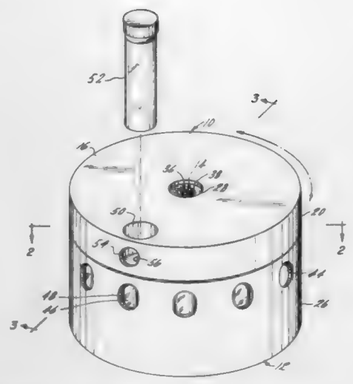
U.S. Cl. 436—30 **6 Claims**

1. A method for determining concentrations of glycols and/or polyglycols in fluids, comprising the steps of:

filtering particulates from the fluid to obtain a filtrate;

mixing an aliquot of the filtrate with a cobaltothiocyanate indicator solution to form a test solution, wherein said cobaltothiocyanate solution comprises cobalt nitrate hexahydrate, ammonium chloride, potassium thiocyanate, water and an immiscible organic solvent;

comparing the resulting color of the test solution with at least one standard cobaltothiocyanate solution to determine the concentration of glycols and/or polyglycols.



5,627,077

ANILINES AS MARKERS FOR MINERAL OILS

Rainer Dyllick-Brenzinger, Weinheim, Germany; Friedrich-Wilhelm Raulfs, Kobe, Japan, and Ulrike Schlösser, Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03133, § 371 Date Jun. 22, 1995, § 102(e) Date Jun. 22, 1995, PCT Pub. No. WO94/11466, PCT Pub. Date May 26, 1994

PCT Filed Nov. 9, 1993, Ser. No. 424,497

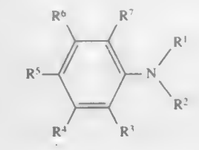
Claims priority, application Germany, Nov. 19, 1992, 42 38 994.1

Int. Cl.[6] **G01N** *33/00;37/00*

U.S. Cl. 436—106 **9 Claims**

1. A method of marking mineral oils, comprising:

mixing, into a mineral oil, a marker aniline compound of formula I:



(I)

where

R^1 and R^2 independently of one another are each hydrogen, C_1–C_{18}-alkyl which is unsubstituted or substituted and may be interrupted by 1 to 3 oxygen atoms as ether functional groups or from 1 to 3 C_1–C_4-alkylimino groups, or C_3–C_{18}-alkenyl or unsubstituted or substituted phenyl, or R^1 and R^2, together with the nitrogen atom which links them, may be a 5-membered or 6-membered saturated heterocyclic radical which may have a further hetero atom, or R^1 may furthermore be a radical of the formula OL^1 or NL^1L^2, where L^1 and L^2 independently of one another are each hydrogen, unsubstituted or substituted C_1–C_{18}-alkyl, C_3–C_{18}-alkenyl or unsubstituted or substituted phenyl,

R^3 and R^7 independently of one another are each hydrogen, unsubstituted or substituted C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, cyano, nitro, formyl, unsubstituted or substituted C_2–C_4-alkanoyl, formylamino, unsubstituted or substituted C_2–C_4-alkanoylamino, benzoylamino or a radical of the formula OL^1, CH_2COOL^1, NL^1L^2, SL^1 or $SO_2NL^1L^2$, where L^1 and L^2 each have the above-mentioned meanings, or together with R^2 are C_2- or C_3-alkylene which is unsubstituted or monosubstituted to trisubstituted by methyl or are unsubstituted or phenyl-substituted C_2- or C_3-alkenylene,

R^4 is hydrogen, unsubstituted or substituted C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, nitro or a radical of the formula OL^1, NL^1L^2, $COOL^1$ or $SO_2L^1L^2$, where L^1 and L^2 each have the above-mentioned meanings, and

R^5 and R^6 independently of one another are each hydrogen, unsubstituted or substituted C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, unsubstituted or substituted phenyl, nitro, formylamino, unsubstituted or substituted C_2–C_4-alkanoylamino, benzoylamino or a radical of the formula OL^1, NL^1L^2, $SO_2NL^1L^2$, SO_2L^3, COL^1 or $COOL^1$, where L^1 and L^2 each have the above-mentioned meanings and L^3 is unsubstituted or substituted C_1—C_{18}-alkyl, C_3–C_{18}-alkenyl or unsubstituted or substituted phenyl,

with the proviso that at least one of R^3, R^5 or R^7 is hydrogen and with the proviso that aniline and all toluidine isomers are excluded.

5,627,078

MULTIVALENT DEXTRAN REAGENT FOR USE IN PRECIPITATION TESTS

Johann Karl, Peissenberg, and Josef Maier, Weilheim, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 987,491, Dec. 7, 1992, abandoned. This application Jun. 1, 1994, Ser. No. 252,539

Claims priority, application Germany, Dec. 5, 1991, 41 40 142.5

Int. Cl.[6] **G01N** *33/563*

U.S. Cl. 436—512 **10 Claims**

1. A nephelometric or turbidimetric method for determining a specifically bindable substance, which substance is bivalent or polyvalent, comprising

providing a reaction mixture by reacting a test sample suspected for containing the specifically bindable substance with a precipitation reagent comprising a solution of multivalent dextran reagent comprising soluble dextran of molecular weight 10,000 to about 2 million, having a plurality of receptors R1 covalently bound thereto, where said R1 specifically binds to any of the specifically bindable substance in the test sample to form a precipitate which remains in solution in said reaction mixture.

measuring the extent of precipitation in said reaction mixture by nephelometric or turbidimetric measurement means to determine the amount of the specifically bindable substance present in the test sample.

5,627,079

REFUNCTIONALIZED OXYFLUORINATED SURFACES

Joseph A. Gardella, Jr., Buffalo, N.Y., and Terrence G. Vargo, Fairfax Station, Va., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 151,533, Nov. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 522,532, May 11, 1990, Pat. No. 5,266,309, which is a continuation-in-part of Ser. No. 328,852, Mar. 27, 1989, Pat. No. 4,946,903. This application Sep. 16, 1994, Ser. No. 307,919

Int. Cl.[6] **G01N** *33/543;* **H05H** *1/00;* **B05D** *5/00;* **B32B** *27/00*

U.S. Cl. 436—525 **19 Claims**

1. An oxyfluorinated substrate comprising a non-fluorinated material selected from the group consisting of polymeric, ceramic and metallic materials, the surface of said polymeric material modified with (a) molecularly bonded fluorine atoms, or (b) a fluorocarbon film, the surface of said ceramic and metallic materials modified with a fluorocarbon film, the modified surfaces having up to 98 percent of their fluorine atoms to depths from about 10 to about 100 Å permanently substituted with hydrogen and oxygen or oxygen-containing groups to form substrates with oxyfluorinated surfaces of which from about 3 to about 30 percent of the substituted fluorine is replaced with oxygen or oxygen-containing groups and from about 70 to about 97 percent of the fluorine is replaced with hydrogen atoms, the morphological and hydrophobic properties of the oxyfluorinated surfaces remaining substantially unchanged from that of the unmodified surfaces having said fluorine atoms and fluorocarbon films while wettability with respect to low surface tension liquids and surface free energy (γ_s) as determined through critical surface tension (γ_c) are increased.

5,627,080

DETERGENT-FACILITATED IMMUNOASSAY FOR THE RAPID AND QUANTITATIVE ASSAY OF PHARMACOLOGICAL AGENTS

Anthony K. Cheng, Anaheim; Julie S. Kim, Placentia, and Chan S. Oh, Chino Hills, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 29, 1994, Ser. No. 283,116

Int. Cl.[6] **G01N** *33/546*

U.S. Cl. 436—534 **28 Claims**

1. An immunoassay for determining the presence of a target analyte in a test sample comprising the steps of:

(1) forming a reaction mixture by contacting a test sample with an anti-target analyte antibody capable of binding to a target analyte, a soluble bidentate reagent, a biotin-binding agent selected from the group consisting of avidin and streptavidin, and a detergent, wherein the detergent is present in the reaction mixture at a selected concentration greater than about 1%, and wherein the soluble bidentate reagent comprises a biotin member, an analyte member, and a spacer member, wherein:

(i) the biotin member of the reagent is capable of binding to the biotin-binding agent, the biotin-binding agent being immobilized to a solid support;

(ii) the analyte member of the bidentate reagent is capable of specifically binding to the anti-target analyte antibody; and

(iii) the intermediate spacer member is of sufficient length to permit the analyte member to bind to the anti-target analyte antibody and the biotin member to bind to the biotin-binding agent simultaneously;

(2) incubating the reaction mixture under conditions sufficient to permit the formation of a complex among the bidentate reagent, the biotin-binding agent, and the anti-target analyte antibody; and

(3) determining the presence of the target analyte in the test sample by measuring the extent of any formation of the complex, the extent being inversely proportional to the concentration of the target analyte in the sample, and wherein the selected concentration of detergent is determined by the steps of:

(a) identifying a first, non-zero physiologically relevant, calibrator concentration of the target analyte;

(b) identifying a second, physiologically relevant, calibrator concentration of the target analyte, wherein the second calibrator concentration is higher than the first calibrator concentration;

(c) performing steps (1), (2), and (3) at different test detergent concentrations until there is achieved an immunoassay having:

i) a rate of complex formation greater than about 0.2 O.D. units per minute at a concentration of the target analyte of 0 μg/ml;

ii) a rate of complex formation greater than about 0.02 O.D. units per minute at the second calibrator concentration;

iii) a rate of complex formation at the first calibrator concentration equal to at least about 75% of the reaction rate at a concentration of the target analyte of 0 μg/ml; and

iv) a rate of complex formation at the second calibrator concentration of less than 25% of the reaction rate at a concentration of the target analyte of 0 μg/ml.

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5,627,081

METHOD FOR PROCESSING SILICON SOLAR CELLS

Y. Simon Tsuo, Golden; Marc D. Landry, Lafayette, and John R. Pitts, Lakewood, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Nov. 29, 1994, Ser. No. 346,010
Int. Cl.° H01L 31/18;21/306
U.S. Cl. 438—57 19 Claims

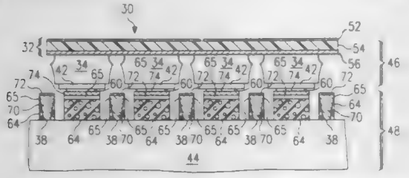
1. A method of forming a front-surface junction and back-surface field, comprising:
providing a semiconductor substrate containing a dopant and having a front surface and a back surface;
depositing a dopant source layer on said front surface of the substrate, said dopant source layer being of opposite doping type than the dopant of the substrate;
depositing a second dopant source layer on said back surface of the substrate, said second dopant source layer being of the same doping type as the dopant of the substrate;
exposing the substrate to concentrated solar radiation.

5,627,082

HIGH THERMAL RESISTANCE BACKFILL MATERIAL FOR HYBRID UFPA'S

Howard R. Beratan, and Chih-Chen Cho, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 29, 1995, Ser. No. 412,817
Int. Cl.° H01L 31/00;31/15
U.S. Cl. 438—55 7 Claims



1. A method for fabricating a hybrid thermal detector structure, comprising the steps of:
providing integrated circuitry;
depositing a precursor film on said integrated circuitry;
gelling said precursor film to form a porous film;
patterning said porous film to form holes in said porous film;
filling said holes with metal to form plugs, said plugs in electrical contact with said integrated circuitry;
forming arms on said porous film in contact with said plugs and forming contact pads on said porous film in contact with said arms to leave portions of said porous film exposed;
providing an infrared sensing array comprising at least three thermally sensitive pixels, electrical contacts abutting a first side of said pixels, and an optical coating in contact with a second side of said pixels; and
coupling said contact pads to said electrical contacts of said infrared sensing array.

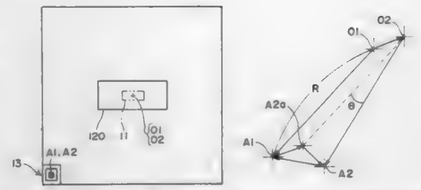
5,627,083

METHOD OF FABRICATING SEMICONDUCTOR DEVICE INCLUDING STEP OF FORMING SUPERPOSITION ERROR MEASURING PATTERNS

Keiichiro Tounai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 283,164, Aug. 3, 1994, abandoned. This application May 12, 1995, Ser. No. 439,947
Claims priority, application Japan, Aug. 3, 1993, 5-191539
Int. Cl.° H01L 21/66
U.S. Cl. 438—18 9 Claims

1. A method of fabricating a semiconductor device having an inner circuit including a plurality of recurring basic cells which are



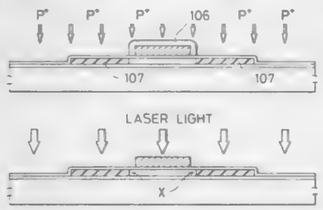
formed on a semiconductor substrate through a first and a second lithographic step, said method comprising steps of:
forming a cell test pattern at a peripheral portion of said inner circuit, including a test cell array having at least one test basic cell of a same design and being subject to a same proximity effect as said basic cells and a plurality of test dummy cells of the same design as said basic cells, placed in a same disposition as said basic cells around said test cell array within said inner circuit and used solely for testing purposes and possessing a same light reflection influence as that of said basic cells; and
forming a superposition error measurement pattern which is disposed in the vicinity of said cell test pattern, including a first and a second pattern formed in the steps of said first and second lithographic steps, respectively, performed in the formation of said basic cells, such that a measurement is substantially free of image distortion, wafer distortion, and reticle manufacture errors,
said inner circuit, said cell test pattern and said superposition error measurement pattern being integrated on the same semiconductor substrate; and performing a superposition error measurement using said basic test cell and said superposition error measurement pattern.

5,627,084

METHOD FOR FABRICATING MIS SEMICONDUCTOR DEVICE

Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Jan. 18, 1994, Ser. No. 181,907
Claims priority, application Japan, Jan. 18, 1993, 5-023287; Nov. 29, 1993, 5-323117
Int. Cl.° H01L 21/336
U.S. Cl. 437—21 14 Claims



1. A method for fabricating a MIS semiconductor device comprising:
a first step of forming a wiring comprising an anodizable material on an active region provided in a semiconductor with an insulating film between said wiring and said active region;
a second step of anodizing the surface of said wiring, to form an anodic oxide;
a third step of injecting an impurity into the semiconductor in a self-aligning manner using said wiring or a region defined by said wiring substantially as a mask after the anodization;
a fourth step of removing the anodic oxide after the injecting step;
a fifth step of improving a crystallinity of an impurity region in said semiconductor into which the impurity has been injected by rendering a boundary between said impurity region and

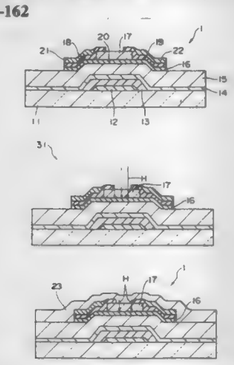
said active region or a portion adjacent thereto substantially transparent to light to be radiated and by radiating said light from thereabove.

5,627,085

METHOD FOR HYDROGENATING A POLYCRYSTAL SILICON LAYER OF A THIN FILM TRANSISTOR

Dharam P. Gosain; Jonathan Westwater, and Setsuo Usui, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 499,651
Claims priority, application Japan, Jul. 8, 1994, 6-180734
Int. Cl.° H01L 21/265;21/20;21/02
U.S. Cl. 438—162 4 Claims



1. A method of hydrogenating a polycrystal silicon layer of a thin film transistor comprising:
providing a thin film transistor including a polycrystal silicon layer on a substrate;
doping hydrogen into the polycrystal silicon layer by exposing the thin film transistor to a hydrogen plasma processing;
forming an amorphous silicon nitride film including hydrogen oil the thin film transistor; and
annealing to release and diffuse hydrogen from the amorphous silicon nitride film into the doped polycrystal silicon layer to provide a hydrogenated polycrystal silicon layer.

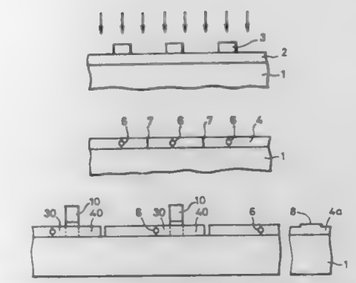
5,627,086

METHOD OF FORMING THIN-FILM SINGLE CRYSTAL FOR SEMICONDUCTOR

Takashi Noguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 164,807, Dec. 10, 1993, abandoned. This application May 11, 1995, Ser. No. 438,792
Claims priority, application Japan, Dec. 10, 1992, 4-330523
Int. Cl.° H01L 21/322;21/84
U.S. Cl. 438—162 6 Claims

1. A method of growing a thin-film semiconductor crystal comprising the steps of:
depositing a thin film of amorphous silicon on a substrate;
covering a plurality of separate first regions of the amorphous silicon with a mask;
introducing ions selectively into a plurality of separate second regions on said thin film of amorphous silicon, said amorphous silicon being substantially free of implanted ions prior to said step of introducing ions selectively; and
growing a large crystal grain in each of said plurality of separate first regions of said thin film of amorphous silicon by solid-phase crystal growth and such that grain boundaries are formed in each of said plurality of separate second regions;
forming an alignment mark prior to forming said large crystal grains;



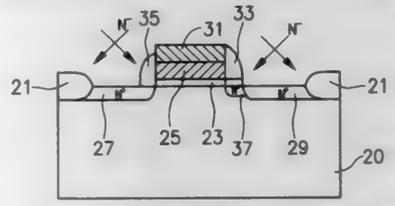
separating said separate first regions by removing said plurality of separate second regions containing said grain boundaries using the alignment mark as a reference; and forming a device in each first region.

5,627,087

PROCESS FOR FABRICATING METAL-OXIDE SEMICONDUCTOR (MOS) TRANSISTORS BASED ON LIGHTLY DOPED DRAIN (LDD) STRUCTURE

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Filed Mar. 11, 1996, Ser. No. 612,817
Int. Cl.° H01L 21/266
U.S. Cl. 438—302 19 Claims



1. A process for fabricating an LDD-based MOS transistor, comprising the steps of:
(1) preparing a silicon substrate having a surface with a field oxide layer formed thereon to define an active region;
(2) forming successively a first gate oxide layer and a first polysilicon layer on the silicon substrate;
(3) performing lithographic processes to etch away predetermined portions of the first gate oxide layer and the first polysilicon layer so as to expose areas where heavily doped source/drain regions are to be formed, yielding an etched first gate oxide layer and an etched first polysilicon layer;
(4) forming a second polysilicon layer and then using the etched first gate oxide layer and the etched first polysilicon layer as a mask to perform a first ion implantation process to form the heavily doped source/drain regions;
(5) etching successively the second polysilicon layer and the etched first polysilicon layer so as to form a gate polysilicon layer having lateral sides and so as to expose a part of the gate oxide layer proximate to the heavily doped drain;
(6) depositing a second oxide layer and then performing an anisotropic etching process thereon so as to form a first spacer and a second spacer on lateral sides of the gate polysilicon layer, the first spacer being formed above the part of the gate oxide layer proximate to the heavily doped drain region and the second spacer being formed above the heavily doped source region; and
(7) performing a second ion implantation process at a slant angle with respect to the surface of the silicon substrate so as to implant ions respectively into the heavily doped source and drain regions and into an area below the part of the oxide layer underlying the first spacer.

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5,627,088

METHOD OF MAKING A DEVICE HAVING A TFT AND A CAPACITOR

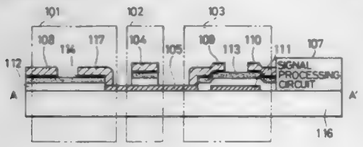
Masaki Fukaya, Isehara; Soichiro Kawakami, Nagahama; Satoshi Itabashi, Atsugi; Katsunori Terada, Sagamihara; Ihachiro Gofuku, Hiratsuka; Katsumi Nakagawa, Nagahama; Katsunori Hatanaka; Yoshinori Isobe, both of Yokohama; Toshihiro Saika, Atsugi; Tetsuya Kaneko, Yokohama; Nobuko Kitahara, Tama, and Hideyuki Suzuki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 907,287, Jul. 1, 1992, Pat. No. 5,306,648, which is a division of Ser. No. 496,402, Mar. 20, 1990, abandoned, which is a division of Ser. No. 412,586, Sep. 25, 1989, Pat. No. 4,931,661, which is a continuation of Ser. No. 246,962, Sep. 21, 1988, abandoned, which is a continuation of Ser. No. 5,886, Jan. 22, 1987, abandoned. This application Sep. 29, 1993, Ser. No. 128,108

Claims priority, application Japan, Jan. 24, 1986, 61-11981; Jan. 24, 1986, 61-11982; Feb. 20, 1986, 61-33777; Jun. 7, 1986, 61-131099; Jun. 23, 1986, 61-144990; Jun. 30, 1986, 61-153281

Int. Cl.[6] H01L *31/18;21/265*

U.S. Cl. 438—155 3 Claims



1. A method of producing a device having a thin film transistor and a capacitor comprising steps of:

forming, on a substrate, a first and a second conductive layer;

depositing, over the conductive layers, a first insulating layer, a semiconductor layer and a second insulating layer, in sequence, in this order;

fabricating the capacitor having the second conductive layer, a part of the first insulating layer, a part of the semiconductor layer, a part of the second insulating layer and a third conductive layer; and

fabricating the transistor comprising the steps of:

selectively removing the second insulating layer in an area in which source and drain are to be formed;

depositing a doped semiconductor layer on the second insulating layer remaining on a channel and on the semiconductor layer exposed through the second insulating layer; and

selectively removing the doped semiconductor layer on the second insulating layer remaining on the channel,

wherein both of the first and second insulating layers are made of silicon nitride formed by a glow discharge process.

5,627,089

METHOD FOR FABRICATING A THIN FILM TRANSISTOR USING APCVD

Jeong H. Kim, Seoul, and Eui Y. Oh, Kyungki-do, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

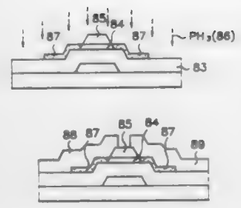
Filed Jul. 28, 1994, Ser. No. 281,926

Claims priority, application Rep. of Korea, Aug. 2, 1993, 14962/1993; Aug. 16, 1993, 15805/1993; Sep. 3, 1993, 17660/1993

Int. Cl.[6] H01L *21/84;21/265*

U.S. Cl. 438—158 6 Claims

1. A method for fabricating a thin film transistor comprising processes for:



forming a gate electrode having sloped sides on an insulating substrate;

forming a gate insulation film, a semiconductor layer and a channel protection layer successively using atmospheric pressure chemical vapor deposition on the entire insulating substrate;

patterning the channel protection layer such that the channel protection layer is to have a narrower width than the width of the gate electrode leaving the channel protection layer only on the semiconductor layer over the gate electrode;

forming an impurity injected semiconductor layer for making ohmic contacts on the gate insulation film by injecting impurity ions into the semiconductor layer; and,

forming source and drain electrodes over the channel protection layer and the gate insulation film so that the upper surface of the channel protection layer can be exposed.

5,627,090

SEMICONDUCTOR ELEMENT AND PROCESS FOR PRODUCTION FOR THE SAME

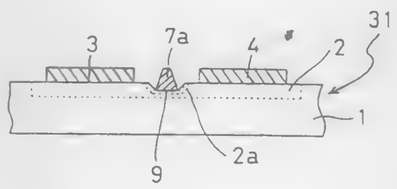
Takashi Marukawa, and Hiroyuki Nakano, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 301,961, Sep. 7, 1994, abandoned. This application May 31, 1995, Ser. No. 454,958

Claims priority, application Japan, Sep. 7, 1993, 5-222555; Jul. 28, 1994, 6-197888

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—167 16 Claims



1. A process for the production of a semiconductor element comprising the steps of:

forming an active layer on a compound semiconductor substrate;

forming a modified layer in the active layer by treating at least a portion of a region on which the Schottky electrode is to be formed and a vicinity region of said region with plasma, the modified layer having a lower carrier concentration than that of the active layer; and

forming a Schottky electrode which forms a Schottky junction with the active layer such that the Schottky electrode is at least partially in contact with or adjacent to the modified layer.

5,627,091

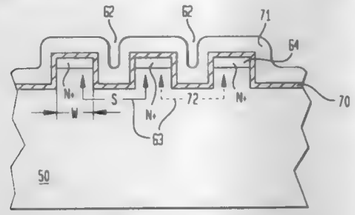
MASK ROM PROCESS FOR MAKING A ROM WITH A TRENCH SHAPED CHANNEL

Gary Hong, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Jun. 1, 1994, Ser. No. 251,979

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—276 9 Claims



1. A process for making a memory array comprising:

forming a first doped layer having a second conductivity type in a substrate having a first conductivity type,

forming and patterning a first photo-resist layer over said first doped layer,

using said patterned first photo-resist layer as a mask to form a trench shaped channel having two vertical sides, each side having substantially the same height, and a bottom having a width, in said first doped layer and said substrate to form buried bit source and drain lines in said first doped layer, said source and drain lines being separated by said channel so that an effective channel length of said channel between said source line and said drain line is approximately equivalent to twice the height of said vertical side of said channel plus the width of said bottom of said channel,

growing an oxide layer over said substrate including said first doped layer, and

depositing a word line over said oxide layer.

5,627,092

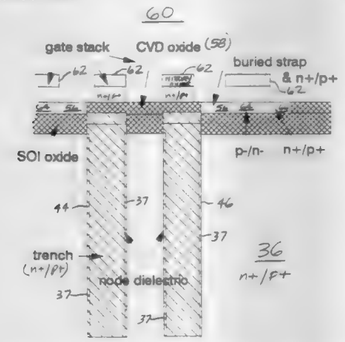
DEEP TRENCH DRAM PROCESS ON SOI FOR LOW LEAKAGE DRAM CELL

Johann Alsmeier, and Reinhard J. Stengl, both of Wappinger Falls, N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 26, 1994, Ser. No. 313,507

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—152 17 Claims



1. A method for forming a dynamic random access memory cell (DRAM), comprising the steps of:

doping a silicon on isolator (SOI) substrate with dopants of a first conductivity type;

forming an SOI oxide layer on said substrate;

forming a silicon device layer over said SOI oxide layer;

doping said silicon device layer with dopants of a second conductivity type opposite that of said first conductivity type;

forming a pad nitride layer over said silicon device layer;

forming a TEOS etch mask layer over said pad nitride layer;

etching a trench into said substrate at a first region thereof;

forming a dielectric layer on interior walls of said trench;

filling said trench to the top level of said TEOS etch mask layer with a polysilicon material doped to said first conductivity type;

removing said TEOS etch mask layer;

recess etching said polysilicon material down to about the mid-level of said SOI oxide layer;

isotropic etching away said dielectric layer from end portions of said silicon device layers;

refilling said trench with intrinsic polysilicon material above the remaining first conductivity type doped polysilicon material;

recess etching said intrinsic polysilicon material down to about the middle of said silicon device layer, thereby leaving a polysilicon stud protruding from said trench;

etching away said pad nitride layer and said silicon device layer on one side of said trench, using the associated portion of said SOI oxide layer as an etch stop;

thermally oxidizing said polysilicon stud, while permitting out-diffusion of dopant material from the underlying doped polysilicon material, into and through a remaining portion of initially intrinsic polysilicon material, into an adjacent portion of said silicon device layer on an opposite side of said trench for providing a buried strap;

chemical vapor depositing (CVD) an oxide layer over said polysilicon stud and said SOI layer adjacent said one side of said trench to above the top level of said silicon device layer adjacent the opposite side of said trench;

planarizing said CVD oxide to the level of the remaining portion of said silicon device layer;

oxidizing said silicon device layer with gate sacrificial oxide; and

implanting an MOS transistor switch including adjacent drain, channel, and source regions in said silicon device layer, with a gate stack consisting of a first gate layer of said first conductivity overlying said channel region, and portions of said drain and source regions, and an intrinsic second gate layer overlying said first gate layer.

5,627,093

METHOD OF MANUFACTURING A WIRING LAYER FOR USE IN A SEMICONDUCTOR DEVICE HAVING A PLURALITY OF CONDUCTIVE LAYERS

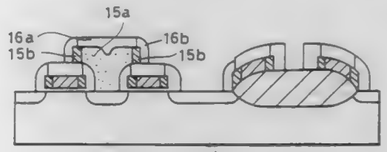
Atsushi Hachisuka, and Yoshinori Okumura, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 363,548, Dec. 23, 1994, Pat. No. 5,502,324, which is a continuation of Ser. No. 220,587, Mar. 31, 1994, abandoned, which is a continuation of Ser. No. 75,909, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 814,274, Jan. 2, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,809

Claims priority, application Japan, Jan. 8, 1991, 3-719(P)

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—649 9 Claims



1. A method of manufacturing a semiconductor memory device, which method comprises:

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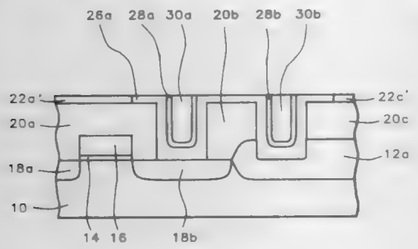
forming an insulating layer on a main surface of a semiconductor substrate;
forming a bit line on said insulating layer by:
forming a patterned first conductive layer of said polycrystalline silicon;
forming a similarly patterned insulating layer on said upper surface of said first conductive layer of said polycrystalline silicon; and
forming a pair of second conductive layers of said refractory metal silicide contacting said first conductive layer only on said side surfaces, wherein said bit line comprises:
a first conductive layer of polycrystalline silicon formed on said insulating layer, said first conductive layer having a upper surface, a lower surface and a pair of side surfaces between said upper and lower surfaces; and
a pair of second conductive layers of a refractory metal silicide formed on said insulating layer contacting said first conductive layer only at said side surfaces.

5,627,094

STACKED CONTAINER CAPACITOR USING CHEMICAL MECHANICAL POLISHING

Lap Chan, and Yeow M. Teo, both of Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Pte, Ltd., Singapore, Singapore

Filed Dec. 4, 1995, Ser. No. 566,809
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—253 **21 Claims**



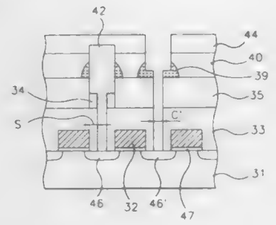
1. A method for forming a stacked container capacitor for use within an integrated circuit comprising:
forming upon a semiconductor substrate a first dielectric layer having a first isotropic etch rate in an isotropic etch process;
forming upon the first dielectric layer a second dielectric layer, the second dielectric layer having a second isotropic etch rate in the isotropic etch process, the second isotropic etch rate being greater than the first isotropic etch rate;
forming a patterned mask layer upon the second dielectric layer;
anisotropically etching through the patterned mask layer an anisotropically etched aperture at least partially through the first dielectric layer, the anisotropic etching being accomplished with an anisotropic etch process;
isotropically etching through the patterned mask layer the second dielectric layer to yield an isotropically etched aperture, the isotropically etched aperture having a ledge formed above the first dielectric layer and below the patterned masking layer, the anisotropic etching and the isotropic etching together yielding a completely etched aperture;
removing then the patterned masking layer;
forming then into the completely etched aperture a first polysilicon layer, the first polysilicon layer not completely filling the completely etched aperture; forming upon the first polysilicon layer a third dielectric layer, the third dielectric layer not completely filling the completely etched aperture; forming upon the third dielectric layer a second polysilicon layer; and
planarizing then the completely etched aperture until there is revealed a flange formed from the first polysilicon layer where the first polysilicon layer is formed into the ledge.

5,627,095

METHOD FOR FABRICATING SEMICONDUCTOR DEVICES HAVING BIT LINES AND STORAGE NODE CONTACTS

Yo-Hwan Koh; Chan-Kwang Park; Seong-Min Hwang, and Kwang-Myoung Rho, all of Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,327
Claims priority, application Rep. of Korea, Dec. 31, 1994, 40303/1994
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—672 **11 Claims**



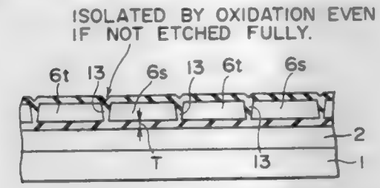
1. A method of manufacturing a semiconductor device comprising the steps of:
depositing a first insulating layer on a semiconductor substrate having active electrodes of source, drain and gate;
forming a conductive layer pattern to provide a bit line pattern on said first insulating layer;
depositing a second insulating layer that completely covers said first insulating layer and bit line pattern;
depositing sequentially a third insulating layer and a fourth insulating layer which have different etch rates on the second insulating layer;
masking and etching said fourth and third insulating layers to form T-shaped patterns in cross-sectional view, wherein the fourth insulating layer corresponds to a head portion of the T-shaped pattern, and the third insulating layer corresponds to a leg portion of the T-shaped pattern, wherein one of said T-shaped, patterns forms a bit line contact and another one of said T-shaped patterns forms a storage node contact;
forming polysilicon spacers at a sidewall of the T-shaped patterns;
depositing a fifth insulating layer on an entire surface of a resultant structure including the T-shaped patterns;
forming first photoresist mask patterns for forming bit line contact holes on said fifth insulating layer over said one of said T-shaped patterns;
etching portions of said fifth insulating layer and said one of said T-shaped insulating layer pattern using said first photoresist mask, etching a portion of said second insulating layer by using a polysilicon spacer as an etch barrier, etching the bit line pattern using the etched second insulating layer as an etch barrier and etching the first insulating layer using said bit line as an etch barrier, thereby forming a bit line contact hole;
depositing and patterning a conducting material on an entire surface of the fifth insulating layer including said bit line contact hole;
depositing a sixth insulating layer on an entire surface of said fifth insulating layer and said conducting material pattern;
forming a second photoresist mask pattern for forming a storage node contact hole on said sixth insulating layer over said another one of said T-shaped patterns;
etching portions of said sixth and fifth insulating layers and T-shaped pattern using said second photoresist mask, etching portions of said second insulating layer and said first insulating layer using said polysilicon spacer which acts as an etch barrier, thereby forming a storage node contact hole.

5,627,096

MANUFACTURING METHOD OF ELECTRIC CHARGE TRANSFERRING DEVICES

Yukihide Keigo, Kagoshima, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 23, 1996, Ser. No. 590,178
Claims priority, application Japan, Jan. 25, 1995, 7-030033
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—144 **8 Claims**



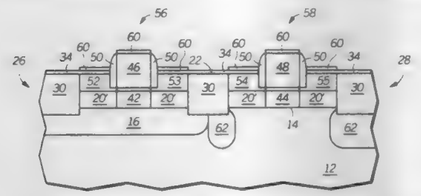
1. A method of manufacturing electric charge transferring devices comprising a plurality of transfer gate electrodes formed on a gate insulating layer on a semiconductor substrate by carrying out processes of:
forming said gate insulating layer on a semiconductor region serving as a transfer channel;
forming a conductive layer serving as said transfer gate electrodes on said gate insulating layer;
forming an etching mask layer on said conductive layer, said etching mask layer having openings on portions supposed to serve as boundaries between any two of said adjacent transfer gate electrodes;
etching said conductive layer with said etching mask layer used as a mask: and
forming insulating layers between any adjacent two of said transfer electrodes from each other for isolating any adjacent two of said transfer gate electrodes by oxidization of the surface of said conductive layer.

5,627,097

METHOD FOR MAKING CMOS DEVICE HAVING REDUCED PARASITIC CAPACITANCE

Suresh Venkatesan; Stephen Poon, and Jeffrey Lutze, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1995, Ser. No. 498,709
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—217 **13 Claims**



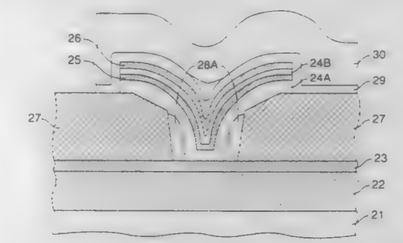
1. A process for fabricating a semiconductor device comprising the steps of:
providing a semiconductor substrate having an undoped silicon layer overlying a buried layer;
forming a trench isolation structure in the undoped silicon layer to define an active region therein;
forming a masking layer on the undoped silicon layer, the masking layer having an opening therein exposing a channel portion of the active region;
doping the channel portion with a first dopant, using the masking layer as a doping mask, wherein the first dopant extends from an upper surface of the undoped silicon layer to the buried layer;
depositing a layer of polycrystalline silicon to overlie the masking layer and the channel portion;
planarizing the polycrystalline silicon to form a gate electrode overlying the channel portion;
removing the masking layer; and
forming source and drain regions in the undoped silicon layer on either side of the gate electrode, wherein the source and drain regions are vertically separated from the buried layer by a portion of the undoped silicon layer.

5,627,098

METHOD OF FORMING AN ANTIFUSE IN AN INTEGRATED CIRCUIT

Ali A. Iranmanesh, Sunnyvale, Calif., assignor to Crosspoint Solutions, Inc., Milpitas, Calif.

Division of Ser. No. 221,637, Mar. 31, 1994, Pat. No. 5,514,900. This application Jan. 26, 1996, Ser. No. 592,039
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—600 **14 Claims**



1. A method of forming an antifuse in an integrated circuit having a first insulating layer on a semiconductor substrate, said method comprising:
forming a first interconnection layer on said first insulating layer;
forming a second insulating layer over said first metal interconnection layer;
forming an aperture through said second insulating layer where said antifuse is to be located to expose a portion of said first interconnection layer;
forming a first programming layer on said first interconnection layer;
forming a barrier metal layer in said aperture on said first programming layer;
forming a second programming layer on said barrier metal layer in said aperture; and
forming a second interconnection layer on said barrier metal layer;
whereby, upon programming said antifuse, a consistent conducting link is formed between said first and second metal interconnection layers.

5,627,099

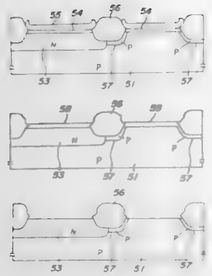
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Yoshitaka Sasaki, Tsukuba, Japan, assignor to LSI Logic Japan Semiconductor, Inc., Tsukuba, Japan

Filed Dec. 7, 1994, Ser. No. 351,516
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—448 **4 Claims**

1. A method of manufacturing a semiconductor device, said method comprising:
preparing a semiconductor substrate having a surface;
forming a semiconductor film having a first thickness on said surface of the semiconductor substrate, said semiconductor film comprising a semiconductor material in direct contact with said surface of said semiconductor substrate;

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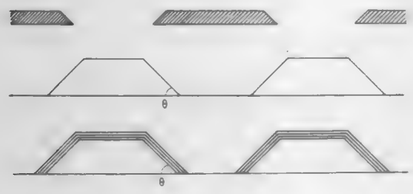
forming an anti-oxidation film on said semiconductor film;
patterning said anti-oxidation film;
performing a thermal oxidation to form a first oxide film having a second thickness greater than said first thickness in said surface of the semiconductor substrate, said first oxide film serving as a field oxide film for isolating elements;
removing said anti-oxidation film;
forming a second oxide film by oxidizing said semiconductor film; and
removing said second oxide film to expose a clean surface of the semiconductor substrate.

5,627,100

METHOD FOR THE MAKING OF SURFACE-EMITTING LASER DIODES WITH MECHANICAL MASK, THE APERTURES HAVING INCLINED FLANKS

Philippe Maurel, Sevres; Jean-Charles Garcia, Athis-Mons, and Jean-Pierre Hirtz, L'Haye Les Roses, all of France, assignors to Thomson-CSF, Paris, France

Filed Sep. 7, 1995, Ser. No. 524,907
Claims priority, application France, Sep. 16, 1994, 94 11071
Int. Cl.[6] H01R *21/22*
U.S. Cl. 438—32 **6 Claims**



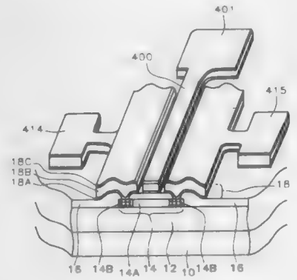
1. A method for the making of an optoelectronic power device that emits coherent light given by a plurality of surface-emitting elementary lasers, wherein said method comprises the following steps:
the making, through a mechanical mask with apertures having inclined flanks, of reflectors by the epitaxial growth of at least one semiconductor material, said reflectors having flanks that form an angle θ with the plane of the substrate on which they are made;
the growth by selective epitaxy of the constituent layers of the laser structure on said reflectors.

5,627,101

METHOD OF FABRICATING POLYSILICON ELECTROMIGRATION SENSOR WHICH CAN DETECT AND MONITOR ELECTROMIGRATION IN COMPOSITE METAL LINES ON INTEGRATED CIRCUIT STRUCTURES

Chih-Sheng Lin, and Shun-Yi Lee, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Dec. 4, 1995, Ser. No. 566,808
Int. Cl.[6] H01L *21/283;21/66*
U.S. Cl. 438—18 **19 Claims**



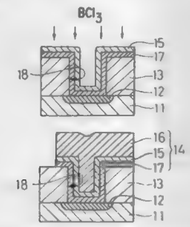
1. A method of fabricating an electromigration sensor structure comprising:
providing a semiconductor substrate; forming a first insulating layer of silicon oxide over said semiconductor substrate;
depositing a layer of intrinsic polysilicon over said first insulating layer;
depositing a first layer of photoresist over said polysilicon layer;
patterning said first layer of photoresist to form a photoresist stripe;
implanting dopant atoms into the polysilicon adjacent to said photoresist stripe;
stripping said first photoresist layer; depositing a second layer of photoresist over said polysilicon layer;
patterning said second layer of photoresist to form a wider stripe of photoresist which straddles the position of the first photoresist stripe such that the second photoresist stripe covers a portion of the ion implanted polysilicon on each side of the intrinsic section defined by said first photoresist layer;
etching said polysilicon layer utilizing an anisotropic etching technique with end point detect capability thereby forming a polysilicon stripe having an intrinsic center section and heavily doped side sections;
stripping said second photoresist layer; depositing a second insulating layer over said semiconductor substrate;
depositing a third photoresist layer over said second insulating layer;
patterning said third photoresist layer to expose said second insulating layer over said heavily doped side sections;
etching said second insulating layer with an anisotropic etching technique with end point detect capability to expose said heavily doped side sections of said polysilicon stripe;
stripping said third photoresist layer; depositing a metallization layer over the surface of said semiconductor substrate;
depositing a fourth layer of photoresist over said metallization layer and patterning said photoresist to expose 1) connections from the heavily doped edges of the polysilicon stripe to probe contact pads and 2) a metal stripe over the intrinsic section of the polysilicon stripe with connections from each end of said metal stripe to probe contact pads;
etching said metallization layer in the areas exposed by said fourth layer of photoresist using an anisotropic etching technique with end point detect capability; and
stripping said fourth photoresist layer.

5,627,102

METHOD FOR MAKING METAL INTERCONNECTION WITH CHLORINE PLASMA ETCH

Hiroshi Shinriki; Takeshi Kaizuka; Nobuyuki Takeyasu; Tomohiro Ohta; Eiichi Kondoh, all of Chiba; Hiroshi Yamamoto; Tomoharu Katagiri, both of Chiyoda-ku; Tadashi Nakano, and Yumiko Kawano, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Continuation of Ser. No. 215,581, Mar. 22, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,319
Claims priority, application Japan, Mar. 23, 1993, 5-064117; Mar. 26, 1993, 5-068673; Mar. 29, 1993, 5-070342; Nov. 11, 1993, 5-282493
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—192 **23 Claims**



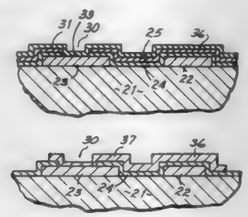
1. A method for forming a metal interconnection for use in a semiconductor device, said device comprising a semiconductor substrate, said method comprising the steps of:
forming an insulating film having at least one connection hole the semiconductor substrate;
forming an underlying metal film containing a refractory metal or a refractory metal compound on the insulating film and in the a least one connection hole;
plasma etching a surface portion of the thickness of the underlying metal film in a gas atmosphere containing chlorine, the etched underlying metal film remaining on the insulating film; and
forming an interconnecting metal film containing predominantly a component selected from the group consisting of Al, Cu, Au and Ag on the etched underlying metal film in the at least one connection hole.

5,627,103

METHOD OF THIN FILM TRANSISTOR FORMATION WITH SPLIT POLYSILICON DEPOSITION

Jia Li, San Antonio, Tex., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed Mar. 2, 1995, Ser. No. 397,748
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 438—158 **9 Claims**



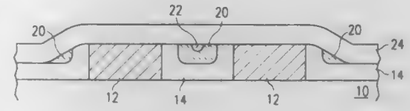
1. A method of forming an interconnect between a transistor body above a gate electrode and a conductor, said conductor and said gate electrode deposited on a semiconductor substrate, the method comprising:
depositing a continuous insulating layer covering said conductor and said gate electrode said conductor and said gate electrode being laterally spaced apart on said semiconductor substrate;
depositing a first polysilicon layer on said continuous insulating layer, said first polysilicon layer covering at least a portion of said gate electrode and said conductor;
defining a contact opening through said first polysilicon layer and said continuous insulating layer to said conductor;
depositing a second polysilicon layer over said first polysilicon layer and into said contact opening to said conductor, thereby providing a combined polysilicon layer providing an electrical connection from said conductor to said first polysilicon layer above said gate electrode, removing portions of said first and second polysilicon layers to establish a transistor body above said gate electrode, connected to said conductor.

5,627,104

METHOD TO IMPROVE INTERLEVEL DIELECTRIC PLANARIZATION USING SOG

Frank R. Bryant, Denton, and Charles R. Spinner, III, Dallas, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 974,923, Nov. 12, 1992, Pat. No. 5,331,117. This application Mar. 31, 1994, Ser. No. 221,071
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 438—631 **17 Claims**



1. A method of forming a planarized semiconductor integrated circuit, comprising the steps of:
forming a conductive area over a dielectric region;
etching portions of the conductive area to form a plurality of conductive regions exposing a portion of the dielectric region;
forming a conformal dielectric layer over the conductive regions and exposed dielectric region;
forming a first spin-on-glass layer over the conformal dielectric layer;
forming a second spin-on-glass layer over the first spin-on-glass layer; wherein the second spin-on-glass layer has a slower etch rate than the first spin-on-glass layer; and
performing a partial etchback of the first and second spin-on-glass layers wherein a portion of the conformal dielectric layer is exposed, forming a planar surface.

5,627,105

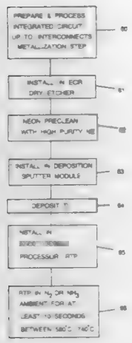
PLASMA ETCH PROCESS AND $TISI_x$ LAYERS MADE USING THE PROCESS

Michelangelo Delfino; Mary E. Day, both of Los Altos, and Wilman Tsai, Cupertino, all of Calif., assignors to Varian Associates, Inc., Palto Alto, Calif.

Filed Apr. 8, 1993, Ser. No. 44,869
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—627 **8 Claims**

1. A method for making an improved metal silicide layer on a silicon substrate having a native oxide layer thereon comprising,
installing said silicon substrate in a vacuum chamber; exciting in said vacuum chamber a downstream neon microwave plasma employing an electron cyclotron resonance apparatus and flowing said plasma towards said substrate in said plasma chamber and bombarding said substrate with neon ions from said plasma;
stopping said bombardment when essentially all native oxide on said substrate is volatized;
depositing a metal layer on said substrate;

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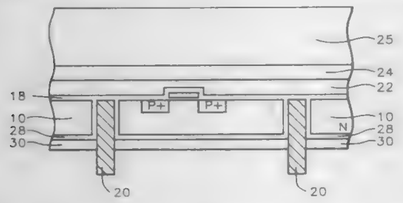
annealing said metal layer at a temperature high enough to cause said metal and said silicon underlying said metal to chemically react to form a metal silicide.

5,627,106

TRENCH METHOD FOR THREE DIMENSIONAL CHIP CONNECTING DURING IC FABRICATION

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed May 6, 1994, Ser. No. 239,281
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—459 **33 Claims**



1. The method of connecting two three-dimensional integrated circuit chips comprising:
providing semiconductor device structures in and on the top side of a semiconductor substrate of a first and a second three-dimensional integrated circuit chip;
preparing said first integrated circuit chip for connection as follows:
etching deep trenches into said first semiconductor substrate;
depositing an insulating film over the entire surface of said first semiconductor substrate and within said deep trenches;
selectively etching away said insulating film from the bottom of said trenches;
depositing a conductive material into said trenches;
depositing an isolation material over the surface of said insulating film and polishing and planarizing said isolation material;
grinding, polishing, and selectively etching the bottom side of said first semiconductor substrate wherein said deep trenches form protrusions from said bottom surface of said first semiconductor substrate;
depositing a bottom passivation layer on said bottom surface of said first semiconductor substrate;
etching away said bottom passivation layer around said protrusions;
depositing a polyimide coating over the surface of said bottom passivation layer; and
etching away said polyimide coating around said protrusions completing preparation of said first integrated circuit for connection:
preparing said second integrated circuit chip for connection as follows:
depositing a passivation layer over the top surface of said second semiconductor substrate;
depositing a polyimide coating over said passivation layer; and
etching through said polyimide and said passivation layers to said top conducting surface of said second semiconductor substrate to provide connection windows for said connection completing preparation of said second integrated circuit for connection:
aligning said first and second integrated circuits wherein said protrusions on said bottom surface of said first integrated circuit chip fit into said connection windows in said top surface of said second integrated circuit chip and wherein said polyimide layer on said bottom surface of said first integrated circuit contacts said polyimide layer on said top surface of said second integrated circuit; and
completing said connection between said two three-dimensional integrated circuit chips.

5,627,107

SEMICONDUCTOR DEVICES ENCAPSULATED WITH ALUMINUM NITRIDE-FILLED RESINS AND PROCESS FOR PREPARING SAME

Kevin E. Howard, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 410,464, Mar. 24, 1995, which is a continuation-in-part of Ser. No. 351,450, Dec. 8, 1994, Pat. No. 5,508,110, which is a continuation-in-part of Ser. No. 895,496, Jun. 8, 1992, Pat. No. 5,234,712. This application Jun. 7, 1995, Ser. No. 474,228
Int. Cl.[6] H01L *21/60*
U.S. Cl. 264—272.17 **6 Claims**

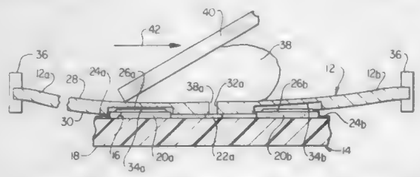
1. In a semiconductor encapsulating process wherein a normally solid, heat softened, uncured thermosetting resin is injected into a mold cavity using a resin transfer molding apparatus which contains a semiconductor semiconductor device in electrical connection with a plurality of leads, and said thermosetting resin is subsequently cured to form an encapsulated semiconductor device having leads extending through the cured encapsulating resin, the improvement wherein:
(a) the thermosetting resin is filled with from about 1 to about 90 weight %, based on the combined weight of the resin and aluminum nitride particles, of aluminum nitride particles which have an outer layer which renders the particles hydrolyrically stable, and
(b) no separate preheating of said filled thermosetting resin is performed outside of the resin transfer molding apparatus.

5,627,108

SOLDER PASTE AND GLUE DOT-BASED METHODS OF SECURING COMPONENTS TO A PRINTED CIRCUIT BOARD

Andrew A. Alibocus, Tomball; John F. Haarde, The Woodlands; Troy W. Beacleay, Houston; John Hua, Cypress, and Mark A. Smith, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 21, 1995, Ser. No. 492,972
Int. Cl.[6] H01L *71/60*
U.S. Cl. 228—175 **16 Claims**



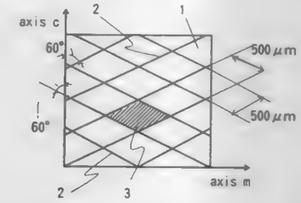
1. A method of operatively mounting an electrical component on a spaced pair of electrically conductive mounting pads disposed on a first side of a partially completed circuit board, said method comprising the steps of:
depositing quantities of solder paste on the mounting pads;
providing a stencil plate having a spaced pair of recesses formed in a first side thereof, and a glue discharge opening disposed between and spaced apart from said pair of recesses and extending between the first and second sides of said stencil plate;
positioning said stencil plate in a glue depositing orientation in which said first stencil plate and circuit board sides are in a parallel, opposing relationship with said recesses being aligned with and receiving said mounting pads without appreciably disturbing the quantities of solder paste thereon;
forcing a quantity of glue through said glue discharge opening and onto the first circuit board side;
moving said stencil plate away from the circuit board in a manner leaving a glue dot on the first circuit board side; and
positioning an electrical component on the first circuit board side by pressing the component against the solder paste quantities and said glue dot.

5,627,109

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE THAT USES A SAPPHIRE SUBSTRATE

Michinari Sassa, 57, Morinakamichi, Jimokuji-cho, Ama-gun, Aichi-ken, 490-11, and Norikatsu Koide, 1-409-2, Amakota, Moriyama-ku, Nagoya-shi, Aichi-ken, 463, both of Japan

Filed Sep. 15, 1995, Ser. No. 529,134
Claims priority, application Japan, Sep. 16, 1994, 6-248834
Int. Cl.[6] H01L *21/302*
U.S. Cl. 438—460 **17 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:
utilizing a sapphire as a wafer;
forming at least one semiconductor layer on a crystal surface "a" {1120} of said sapphire wafer;
fixing boundaries so as to define chips by use of two directional lines on said sapphire wafer, each said directional line crossing an axis "c" (0001) and making an angle of less than 90 degrees to said axis "c" (0001);
forming scribe line by use of a scriber along said two directional lines; and
breaking said sapphire wafer along said scribe lines by applying external energy thereto.

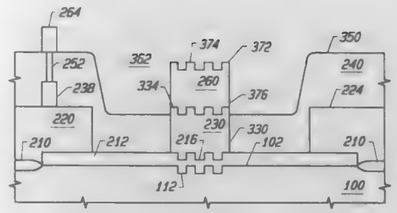
5,627,110

METHOD FOR ELIMINATING WINDOW MASK PROCESS IN THE FABRICATION OF A SEMICONDUCTOR WAFER WHEN CHEMICAL-MECHANICAL POLISH PLANARIZATION IS USED

Raymond T. Lee, Sunnyvale, and Richard K. Klein, Mountain View, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 24, 1994, Ser. No. 327,757
Int. Cl.[6] H01L *21/465*
U.S. Cl. 438—692 **28 Claims**

1. A method of replicating a first topographical mark on a wafer, comprising:
(a) depositing a first removable insulative layer on the wafer;
(b) removing a portion of said first removable insulative layer to form a large window relative to and around said first topographical mark and to retain an area of said first removable insulative layer around said large window;
(c) forming an island of conductive material within said window and over said first topographical mark, said island having a top surface of a second topographical mark replicating said first topographical mark;
(d) depositing a second removable insulative layer over the wafer including over said area and said island:
(e) chemical-mechanical polishing said second removable insulative layer to planarize said second removable insularire layer; and
(f) removing said second removable insulative layer deposited over said area and said island to expose said second topographical mark.

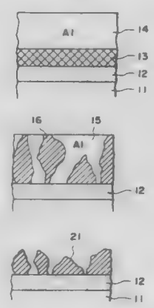


5,627,111

ELECTRON EMITTING DEVICE AND PROCESS FOR PRODUCING THE SAME

Takeo Tsukamoto, Atsugi; Akira Shimizu, Sagamihara; Akira Suzuki; Masao Sugata, both of Yokohama; Isamu Shimoda, Zama, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 418,091, Apr. 6, 1995, Pat. No. 5,559,342, which is a continuation of Ser. No. 213,512, Mar. 16, 1994, abandoned, which is a division of Ser. No. 874,218, Apr. 27, 1992, Pat. No. 5,327,050, which is a continuation of Ser. No. 525,314, May 21, 1990, abandoned, which is a continuation of Ser. No. 370,125, Jun. 20, 1989, abandoned, which is a continuation of Ser. No. 69,215, Jul. 2, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 472,111
Claims priority, application Japan, Jul. 4, 1986, 61-156265; Sep. 9, 1986, 61-210588
Int. Cl.[6] H01L *21/465*
U.S. Cl. 438—20 **6 Claims**



1. A process for producing an electron emitting device provided with a resistor film composed at least of a crystalline silicon film, comprising the steps of:

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forming, on a silicon layer, an aluminum layer thicker than said silicon layer;

effecting a heat treatment to cause silicon in said silicon layer to crystallize locally in said aluminum layer; and

eliminating aluminum in said aluminum layer, thereby forming said crystalline silicon film.

5,627,112

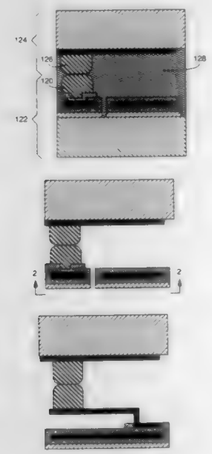
METHOD OF MAKING SUSPENDED MICROSTRUCTURES

William E. Tennant; Isoris S. Gergis, both of Thousand Oaks, and Charles W. Seabury, Agoura Hills, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Nov. 13, 1995, Ser. No. 555,668

Int. Cl.[6] H01L *21/77*

U.S. Cl. 438—113 **10 Claims**



1. A method of making a suspended microstructure, comprising the steps of:

providing a temporary substrate having a first surface;

fabricating a first microstructure on the first surface to form a first microstructure assembly;

providing a final substrate having a second surface;

fabricating a second microstructure on the second surface to form a second microstructure assembly;

forming at least one connecting element joining the first microstructure assembly and the second microstructure assembly such that the first and second surfaces are opposed with a predetermined separation and alignment between the first and second microstructures;

introducing a removable bonding medium into the separation between the first and second microstructures to temporarily secure the first microstructure assembly to the second microstructure assembly;

removing the temporary substrate after introducing the removable bonding medium; and

removing the bonding medium, thereby leaving; the first micro, structure affixed to the final substrate while preserving the separation and alignment between the first and second microstructures.

5,627,113

COPPER ACTIVATED THERMOLUMINESCENCE DOSIMETER AND METHOD

Radhaballabh Debnath, Calcutta, India, assignor to Council of Scientific & Industrial Research, New Delhi, India

Filed Feb. 22, 1995, Ser. No. 393,936

Int. Cl.[6] C03C *3/06;* **C09K** *11/08*

U.S. Cl. 501—54 **1 Claim**

1. A glass composition, comprising a blend having an ultimate composition including:

(a) by weight, about 94–97 percent SiO_2;

(b) by weight, about 0.4 to 2 percent Al_2O_3;

(c) by weight, about 0.2 to 1 percent M_2O, where M is Na^+ or K^+;

(d) by weight, about 2 to 6 percent B_2O_3; and

(e) Cu(I), wherein Cu(I) is present between about 10^{18} to 10^{19} ions/cm^3.

5,627,114

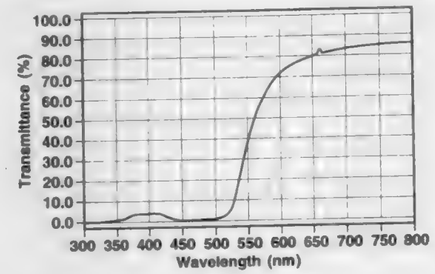
LASER EYEWEAR PROTECTION

Thomas G. Havens, Painted Post; David J. Kerko, Corning, and JoAnn Morrell, Horseheads, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 334,929, Nov. 7, 1994, Pat. No. 5,534,041. This application Nov. 27, 1995, Ser. No. 562,951

Int. Cl.[6] C03C *3/11;4/08;* **F21V** *9/06*

U.S. Cl. 501—56 **10 Claims**



1. A shield for laser radiation comprising a $R_2O—B_2O_3—Al_2O_3—SiO_2$ glass article containing a silver halide, the shield being essentially opaque to ultraviolet radiation and to radiation ranging in wavelength up to 550 nm, but is transparent to visible radiation having a wavelength longer than the radiation within the region of opacity, said article having at least an exposed front surface having an integral reduced layer therein, the depth of that layer being sufficient to effectively prevent the transmission therethrough of ultraviolet radiation and radiation ranging in wavelength up to 550 nm.

5,627,115

COLORED BOROSILICATE GLASS

Eckhart Watzke; Andrea Kämpfer; Thomas Kloss, and Gerhard Kemmler, all of Jena, Germany, assignors to JENAer Glaswerk GmbH, Jena, Germany

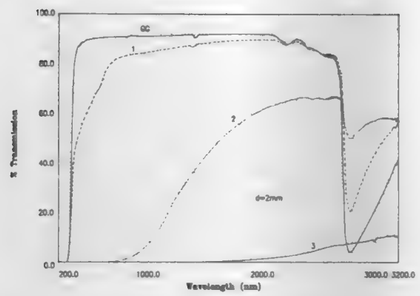
Filed Aug. 7, 1995, Ser. No. 512,157

Claims priority, application Germany, Aug. 10, 1994, 44 28 235.4

Int. Cl.[6] C03C *3/091;4/08*

U.S. Cl. 501—65 **3 Claims**

1. A colored borosilicate glass composition comprising (in percent by weight on oxide basis) SiO_2>78; B_2O_3>8; Al_2O_3 1.5 to 3.5; alkali oxides>2, having a transmission in the near infrared radiation (NIR) range with a glass exhibiting a color from brown to black while the NIR transmission is correspondingly reduced to complete non-transparency and further comprising (in percent by



weight on oxide basis) 0.5 to 2.0 percent by weight titanium carbide (TIC) and/or 0.05 to 0.5 percent by weight silicon (metallic).

5,627,116

METHOD OF MAKING A TRANSLUCENT POLYCRYSTALLINE ALUMINA

Karlene J. Zuk, Hathorne, Mass., assignor to Osram Sylvania Inc., Danvers, Mass.

Division of Ser. No. 491,064, Jun. 16, 1995, Pat. No. 5,587,346. This application Sep. 24, 1996, Ser. No. 718,887

Int. Cl.[6] C04B *35/115*

U.S. Cl. 264—1.21 **3 Claims**

1. A method of making a translucent ceramic article comprising the steps of: forming an aqueous slurry of a substantial amount of alpha alumina, an amount up to 0.05 wgt. percent magnesia and an amount up to about 0.035 wgt. percent lutetium oxide or a precursor therefore; adding nitric acid to adjust the pH to 4.6; adding an aqueous binder and plasticizer in the amount of 2.5 solids wgt. percent to form a slurry; spray-drying said slurry; forming an article by wet-bag isopressing; prefiring said article in air at about 1325° C. for about 2 hours; and sintering said air-fired article in hydrogen for about 3 hours at 1800° C.

5,627,117

OLEFIN POLYMERIZATION CATALYST AND PROCESS FOR OLEFIN POLYMERIZATION

Teruaki Mukaiyama, Tokyo; Makoto Mitani, and Kunihiro Oouchi, both of Sodegaura, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

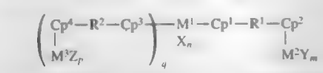
Filed Dec. 27, 1994, Ser. No. 364,477

Claims priority, application Japan, Dec. 27, 1993, 5-333623; Dec. 27, 1993, 5-333624

Int. Cl.[6] C08F *4/622;4/623;10/00*

U.S. Cl. 502—113 **24 Claims**

1. An olefin polymerization catalyst comprising (A-1) a transition metal compound and (B) an organoaluminum oxy-compound selected from the group consisting of an aluminoxane compound and a benzene-insoluble organoaluminum oxy-compound or an organoboron compound, said transition metal compound being represented by the following formula (I):



(I)

wherein M^1, M^2 and M^3 are the same metals as each other and are each one metal selected from Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W and lanthanoid metals;

Cp^1, Cp^2, Cp^3 and Cp^4 are each one group having a cyclopentadienyl skeleton, which may have a substituent, and the groups having a cyclopentadienyl skeleton may be the same as or different from each other;

R^1 and R^2 are each one bond group selected from the group consisting of an alkylene group, a substituted alkylene group, a silylene group, a substituted silylene group, a divalent tin-containing group and a divalent germanium-containing group or a single bond and the groups may be the same as or different from each other; and

X, Y and Z are each one group selected from a hydrocarbon group, a nitrogen-containing group, an oxygen-containing group, a silicon-containing group, a phosphorus-containing group and a sulfur-containing group, or an atom selected from a halogen atom and a hydrogen atom, the groups or atoms indicated by X, Y and Z may be the same as or different from each other, and a pair of X and Y, a pair of Y and Z, or a pair of X and Z may form a bond group selected from —O— and —S—, or may form a divalent bond group containing at least one atom selected from an oxygen atom, a carbon atom, a silicon atom, a germanium atom, a phosphorus atom and a sulfur atom; and

n is an integer of 1–5;

m is an integer of 1–5;

p is an integer of 1–5; and

q is 0 or 1.

5,627,118

SILYL BRIDGED METALLOCENES AND USE THEREOF

Syriac J. Palackal, Bartleville, Okla.; Helmut G. Alt; Konstantinos Patsidis, both of Bayreuth, Germany; Tara G. Hill, Fairfield, Ohio; Gil R. Hawley, Dewey, Okla.; Peter P. Chu, Bartleville, Okla.; M. Bruce Welch, Bartlesville, Okla., and Rolf L. Geerts, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 64,630, May 20, 1993, Pat. No. 5,401,817, which is a continuation-in-part of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305, and Ser. No. 984,054, Nov. 30, 1992, Pat. No. 5,393,911, and Ser. No. 697,363, May 9, 1991, Pat. No. 5,191,132. This application Dec. 9, 1994, Ser. No. 352,933

Int. Cl.[6] B01S *31/00;* **C07F** *7/12*

U.S. Cl. 502—117 **17 Claims**

1. A bridged sandwich-bonded metallocene of a metal selected from Group IV of the Periodic Table wherein the organic ligand is selected from compounds of the formula



wherein Z and Z' are different, Z is an unsubstituted fluorenyl radical or a symmetrically substituted fluorenyl radical and Z' is an unsubstituted cyclopentadienyl radical, a symmetrically substituted cyclopentadienyl radical, an unsubstituted fluorenyl radical, or a symmetrically substituted fluorenyl radical; and each R' is the same or different organo radical having 1 to 20 carbon atoms.

5,627,119

CATALYTIC SYSTEM AND PROCESS FOR THE PRODUCTION OF POYDIOLEFINS

Paolo Biagini, Trecate; Gabriele Lugli, S. Donato Milanese; Fabio Garbassi, Novara, and Piero Andreussi, Milan, all of Italy, assignors to Enichem Elastomeri S.r.l., Milan, and Eniricerche S.p.A., S. Donato Milanese, both of Italy

Filed Feb. 3, 1995, Ser. No. 383,234

Claims priority, application Italy, Feb. 11, 1994, MI94A0241

Int. Cl.[6] B01J *31/14*

U.S. Cl. 502—152 **14 Claims**

1. Catalytic system for the polymerization of dienic monomers, consisting essentially of:

(A) a salt having the formula

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ML_3

wherein M represents Sc or Y or a metal with an atomic number between 57 and 71, and L is an anion with the sole exclusion of halogen,

(B) an alkyl, hydride or alkyl-hydride compound having the formula

MeR^1_z

wherein,

Me is a metal belonging to group I, II or III of the periodic table;

R^1 is:

an aliphatic or cycloaliphatic radical containing from 1 to 20 carbon atoms,

an aromatic radical containing from 6 to 20 carbon atoms, or a hydrogen atom,

z is an integer from 1 to 3 equal to the valence of Me, on condition that, if z is equal to 3, only one of the three R^1 groups bound to the metal can be hydrogen,

(C) an organometallic derivative of boron having the formula

$BR^2_{3-m}(C_6H_{5-n}R^3_n)_m$

wherein,

R^2 is an aliphatic radical, linear or branched, containing from 1 to 20 carbon atoms; a cycloaliphatic group containing from 6 to 20 carbon atoms; or an aromatic group containing from 6 to 20 carbon atoms,

R^3 is a fluorine atom or CF_3 group;

m is an integer from 1 to 3

n is an integer from 1 to 5.

5,627,120

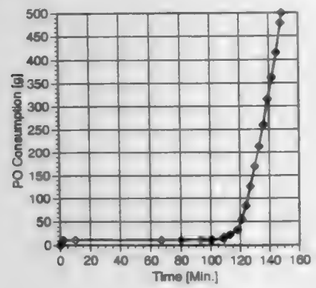
HIGHLY ACTIVE DOUBLE METAL CYANIDE CATALYSTS

Bi Le-Khac, West Chester, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Apr. 19, 1996, Ser. No. 634,998

Int. Cl.[6] B01J *31/00*

U.S. Cl. 502—156 **16 Claims**



1. A solid double metal cyanide (DMC) catalyst useful for epoxide polymerization, said catalyst comprising:

(a) a double metal cyanide compound;

(b) an organic complexing agent; and

(c) from about 5 to about 80 wt. %, based on the amount of catalyst, of a polyether having a number average molecular weight less than about 500.

5,627,121

PROCESS FOR PREPARING ALKOXYLATION CATALYSTS AND ALKOXYLATION PROCESS

John Lin, Cedar Park; Upali Weerasooriya; Bruce E. Leach, both of Austin, and Steve V. Orsak, Cedar Park, all of Tex., assignors to Condea Vista Company, Houston, Tex.

Filed Jun. 15, 1995, Ser. No. 490,990

Int. Cl.[6] B01J *31/00*

U.S. Cl. 502—170 **16 Claims**

1. A process for preparing an alkoxylation catalyst comprising:

admixing an alkoxylated alcohol mixture, a calcium-containing compound that is at least partially dispersible in said alkoxylated alcohol mixture and a carboxylic acid having from about 4 to about 15 carbon atoms, the mole ratio of calcium to said carboxylic acid being from about 15:1 to 1:1, to produce a calcium-containing composition having titratable alkalinity, said calcium-containing composition being obtained under conditions to prevent loss of water; and

adding an amount of an inorganic acid to neutralize at least 25% of said titratable alkalinity under conditions to prevent loss of water to produce a partially neutralized calcium-containing catalyst.

5,627,122

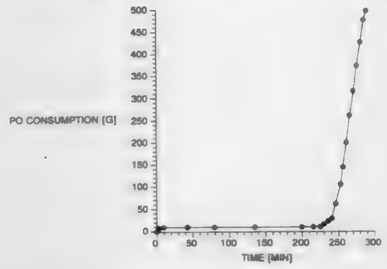
HIGHLY ACTIVE DOUBLE METAL CYANIDE COMPLEX CATALYSTS

Bi Le-Khac, West Chester, Pa.; Harry R. Hinney, Cross Lanes, and Paul T. Bowman, Hurricane, both of W. Va., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Jul. 24, 1995, Ser. No. 505,938

Int. Cl.[6] B01J *27/26*

U.S. Cl. 502—175 **25 Claims**



1. A double metal cyanide (DMC) complex catalyst which comprises a DMC compound, an organic complexing agent, and a metal salt, wherein the catalyst contains less than about 0.2 moles of the metal salt per mole of DMC compound.

5,627,123

SOX CONTROL COMPOSITIONS

Gwan Kim, Olney, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 182,468, Jan. 18, 1994, Pat. No. 5,399,327, which is a division of Ser. No. 831,610, Feb. 5, 1992, Pat. No. 5,288,675. This application Jan. 5, 1995, Ser. No. 368,923

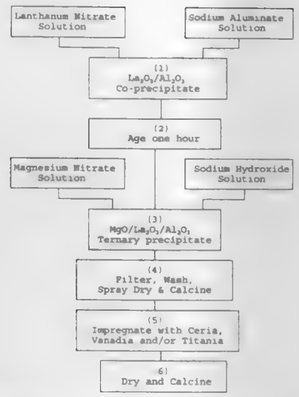
Int. Cl.[6] B01J *23/10*

U.S. Cl. 502—303 **7 Claims**

1. A coprecipitated ternary oxide composition having the formula:

30 to 50 MgO/5 to 30 RE_2O_3/30 to 50 Al_2O_3

wherein (1) the amounts of MgO, RE_2O_3 and Al_2O_3 are expressed



as weight percent. (2) RE_2O_3 is La-rich rare earth oxide, and (3) the MgO is present as a microcrystalline component.

5,627,124

CERIA-ALUMINA OXIDATION CATALYST

Robert J. Farrauto, Westfield; Kenneth E. Voss, Somerville, and Ronald M. Heck, Frenchtown, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 247,625, May 23, 1994, Pat. No. 5,462,907, which is a continuation of Ser. No. 973,461, Nov. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 798,437, Nov. 26, 1991, abandoned. This application Jun. 19, 1995, Ser. No. 492,178

Int. Cl.[6] B01J *23/10;21/04*

U.S. Cl. 502—304 **12 Claims**

1. An oxidation catalyst composition comprises a refractory carrier on which is disposed a coating of a ceria-alumina catalytic material consisting essentially of a combination of ceria having a BET surface area of at least about 10 m^2/g and alumina having a BET surface area of at least about 10 m^2/g, in the absence of a platinum group metal.

5,627,125

PROCESS FOR PREPARING CARBOXYLIC ACID SALTS AND METHODS FOR MAKING SUCH CATALYSTS AND CATALYSTS USEFUL IN SUCH PROCESS

Jerry R. Ebner, St. Peters, and Thaddeus S. Franczyk, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 407,723, Mar. 20, 1995, which is a continuation-in-part of Ser. No. 269,718, Jul. 1, 1994. This application May 31, 1995, Ser. No. 454,757

Int. Cl.[6] B01J *23/72*

U.S. Cl. 502—331 **39 Claims**

1. A supported catalyst useful in the preparation of carboxylic acid salts, said catalyst comprising:

(a) an alkali resistant support;

(b) a plurality of noble metal particles dispersed and partially embedded in said support, the non-embedded portion of said particles having non-embedded surfaces, said noble metal on said surfaces being in an elemental state;

(c) a coating of a catalytically active metal selected from the group of copper, cobalt, nickel, cadmium or mixture thereof, said cataytically active metal being in elemental form, said coating being attached to and covering at least some of the non-embedded surfaces of said noble metal particles, said coating having an outside catalytically active surface.

5,627,126

REVERSIBLE THERMOSENSITIVE RECORDING MEDIUM AND METHOD OF PRODUCING THE SAME

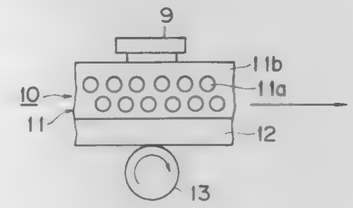
Tetsuya Amano, Numazu; Yoshihiko Hotta, Mishima, and Makoto Kawaguchi, Shizuoka-ken, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 6, 1994, Ser. No. 267,918

Claims priority, application Japan, Jul. 6, 1993, 5-191954; Nov. 8, 1993, 5-302416

Int. Cl.[6] B41M *5/40*

U.S. Cl. 503—226 **34 Claims**



1. In a reversible thermosensitive recording medium comprising a support and a reversible thermosensitive recording layer whose transparency or color reversibly changes by the application of heat thereto formed on said support, the improvement wherein said reversible thermosensitive recording layer has a thermal pressure level difference of 40% or less, and a thermal pressure level difference change ratio of 70% or less.

5,627,127

THERMAL TRANSFER SHEET

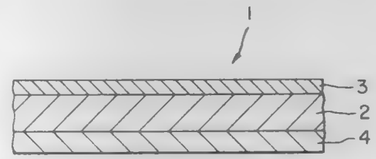
Junichi Hiroi; Haruo Takeuchi, and Naoto Satake, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 80,834, Jun. 24, 1993, Pat. No. 5,418,209. This application Feb. 9, 1995, Ser. No. 385,977

Claims priority, application Japan, Jun. 29, 1992, 4-170687; Jul. 31, 1992, 4-214738; Dec. 28, 1992, 4-358502

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **14 Claims**



1. A thermal transfer sheet comprising:

a substrate film;

a recording agent layer formed on one surface of said substrate film; and

a back surface layer formed on the other surface of said substrate film, said back surface layer comprising (i) at least one lubricant having a heat decomposition temperature of 200° C. or above, said at least one lubricant comprising an alkali metal salt, and (ii) particles having a Mobs hardness of less than 3.

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5,627,128

THERMAL DYE TRANSFER SYSTEM WITH LOW TG POLYMERIC RECEIVER MIXTURE

Wayne A. Bowman, Walworth; Daniel J. Harrison, Pittsford; Karen M. Kosydar, Penfield; Teh-Ming Kung; Kristine B. Lawrence, both of Rochester, and William H. Simpson, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1996, Ser. No. 609,817
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **8 Claims**

5. A process of forming a dye transfer image comprising imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder, said dye being a deprotonated cationic dye which is capable of being reprotonated to a cationic dye having a N—H group which is part of a conjugated system, and imagewise transferring said dye to a dye-receiving element to form said dye transfer image, said dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer, said polymeric dye image-receiving layer comprising a mixture of an organic polymeric or oligomeric acid which is capable of reprotonating said deprotonated cationic dye and a polymer having a Tg of less than about 19° C. and having no or only slight acidity.

5,627,129

STABILIZERS FOR RECEIVER USED IN THERMAL DYE TRANSFER

Teh-Ming Kung, Rochester; Daniel J. Harrison, Pittsford, and Steven Evans, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

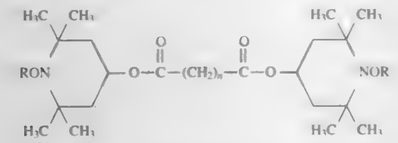
Filed Mar. 29, 1996, Ser. No. 624,331
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **18 Claims**

7. A process of forming a dye transfer image comprising:

a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and

b) transferring a dye image to a dye-receiving element to form said dye transfer image,

wherein said dye-receiving element comprises a support having on one side thereof, in order, a subbing layer of an amino-functionalized polymer, and a polymeric dye image-receiving layer, said dye image-receiving layer containing a stabilizer having the following structure:



wherein

n is an integer of about 4 to about 12, and

R is a substituted or unsubstituted alkyl group of at least 6 carbon atoms.

5,627,130

SLIPPING LAYER FOR DYE-DONOR ELEMENT USED IN THERMAL DYE TRANSFER

David B. Bailey, and Linda Kaszczuk, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1996, Ser. No. 633,238
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **18 Claims**

7. A process of forming a dye transfer image comprising:

(a) imagewise-heating a dye-donor element comprising a support having on one side thereof a dye layer and on the other side a slipping layer comprising a lubricating material, and

(b) transferring a dye image to a dye-receiving element to form said dye transfer image, wherein said slipping layer comprises a polyvinyl-block-siloxane copolymer, the polysiloxane component comprising from about 2 to about 30 weight % of said copolymer, and the polysiloxane component having a molecular weight of at least about 3900.

5,627,131

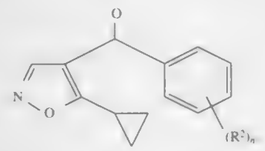
HERBICIDAL COMPOSITIONS OF 4-BENZOYLISOXAZOLE AND ANTIDOTES THEREFOR

John M. Shribbs, Petaluma, and David L. Lee, Pleasant Hill, both of Calif., assignors to Zeneca Limited, London, England

Filed Jan. 9, 1995, Ser. No. 370,070
Int. Cl.[6] A01N *25/32*
U.S. Cl. 504—105 **4 Claims**

1. An herbicidal composition comprising:

(a) an herbicidally effective amount of an herbicidal 4-benzoylisoxazole compound, or an agriculturally acceptable salt thereof, of the formula



wherein:

each R^2 is independently selected from the group consisting of halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4haloalkyl, —$S(O)_pR^6$, and —OSO_2R^7, wherein R^6 is methyl or ethyl, p is zero, one or two, and R^7 is C_1–C_4 alkyl; and

n is 2 or 3 and the benzoyl ring of said 4-benzoylisoxazole compound is 2,3-disubstituted, 2,4-disubstituted or 2,3,4-trisubstituted; and

(b) an antidotally effective amount of an antidote compound which is antidotally effective for corn for said 4-benzoylisoxazole, said antidote compound being selected from the group consisting of 2,2,5-trimethyl-N-dichloroacetyl oxazolidine; 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine; 2,2-dimethyl-5-(2-furanyl)-N-dichloroacetyl oxazolidine; 2,2-dimethyl- 5-(2-thienyl), N-dichloroacetyl oxazolidine; N,N-diallyl dichloroacetamide; 2,2-dimethyl-N-dichloroacetyl oxazolidine; 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine; 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyl]pyridine; 4-(dichloroacetyl)-1-oxa-4-azaspiro-[4,5]-decane; 2,2-dichloro-1-(1, 2, 3, 4-tetrahydro-1-methyl-2-isoquinolyl)ethanone; cis/trans-1,4-bis(dichloroacetyl)-2, 5-dimethylpiperazine; N-(dichloroacetyl)- 1, 2, 3, 4-tetrahydroquinaldine; 1,5-bis(dichloroacetyl)-1, 5-diazacyclononane; and 1-(dichloroacetyl)-1-azaspiro[4,4]-nonane.

5,627,132

METHOD AND COMPOSITION FOR PLANT PRESERVATION WITHOUT LEAF CURLING

Raoul J. LeBeau, East Brookfield, Mass., assignor to Voyager Enterprises Inc., Leominster, Mass.

Filed Nov. 7, 1995, Ser. No. 554,457
Int. Cl.[6] A01N *3/02*
U.S. Cl. 504—114 **17 Claims**

1. A plant preservation solution, comprising:

(a) a solution of glycerin and water;

(b) a simple sugar;

(c) a phosphate;

(d) an inorganic molecule selected from the group consisting of potassium sulfate, sodium nitrate, oxalic acid, and magnesium carbonate.

5,627,133

ENVIRONMENTALLY BENEFICIAL SOIL AMENDMENT

Sidney G. Nelson, Hudson, Ohio, assignor to Sorbent Technologies Corporation, Twinsburg, Ohio

Filed May 31, 1996, Ser. No. 658,963
Int. Cl.[6] A01N *25/00*
U.S. Cl. 504—116 **3 Claims**

1. A soil amendment for reclaiming and enriching soils, comprising:

an expanded mineral support selected from the group consisting of vermiculite, perlite, and mixtures thereof, and making up from 10 to 40 percent by weight of said amendment;

a liming agent selected from the group consisting of calcium hydroxide, calcium carbonate, calcium oxide, and mixtures thereof and making up from 10 to 50 percent by weight of said amendment;

calcium-sulfur-oxygen compounds making up from 10 to 40 percent by weight of said amendment; and

fly ash having a size of 28 mesh or less and making up from 0 to 50 percent by weight of said amendment;

wherein said mineral supports, liming agents, calcium-sulfur-oxygen compounds, and fly ash are essentially derived from the waste materials of a duct-injection flue gas desulfurization and particulate control process.

5,627,134

PLANT GROWTH REGULATING COMPOSITIONS AND METHODS

Thomas D. O'Neal, Durham, N.C.; David E. Millhouse, Visalia, Calif., and Wilhelm Rademacher, Limburgerhof, Germany, assignors to BASF Corporation, Mount Olive, N.J.

Filed Jun. 5, 1995, Ser. No. 464,221
Int. Cl.[6] A01N *43/40*
U.S. Cl. 504—130 **6 Claims**

1. A cotton plant growth regulator (PGR) composition containing a cotton plant growth regulating synergistic effective amounts of a mixture which comprises:

(A) between about 1 to about 20 grams active ingredient per acre per application of an N,N-dimethyl-piperidinium salt; and

(B) a hexitol; said hexitol is present in said composition in an amount between about 0.1 to about 2.0 grams active ingredient per acre per application.

5,627,135

SUSPENSION FOMULATIONS OF 2,2-DIBROMO-3-NITRILOPROPIONAMIDE

Charles D. Gartner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 20, 1996, Ser. No. 618,908
Int. Cl.[6] A01N *25/04;37/18;37/34*
U.S. Cl. 504—159 **13 Claims**

1. A process which comprises suspending from about 3 to about 70 weight percent of 2,2-dibromo-3-nitrilopropionamide in about 30 to about 97 weight percent water in the presence of a suspending amount of a thixotrope that exhibits Ellis-Plastic behavior at a pH of from about 1 to about 4.

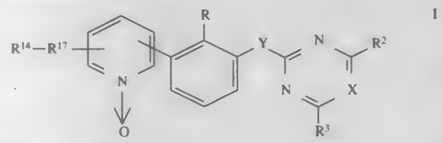
5,627,136

PYRIDINE-N-OXIDE-SUBSTITUTED SALICYLALDEHYDE OR SALICYCLIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR USE AS HERBICIDES

Joachim Rheinheimer; Uwe J. Vogelbacher, both of Ludwigshafen; Ernst Baumann, Dudenhofen; Matthias Gerber, Limburgerhof; Karl-Otto Westphalen, Speyer, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 1, 1994, Ser. No. 332,037
Claims priority, application Germany, Nov. 2, 1993, 43 37 322.4
Int. Cl.[6] C07D *239/32;239/46;401/10;* **A01N** *43/54*
U.S. Cl. 504—242 **8 Claims**

1. A pyridine-N-oxide substituted salicylaldehyde or salicylic acid of the formula I



where R is a group



where R^1 has the following meanings:

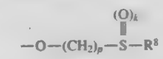
a) hydrogen;

b) a succinylimidoxy group;

c) a pyrrolyl, pyrazolyl, imidazolyl or triazolyl group linked via a nitrogen atom, which can carry one to two halogen atoms and/or one to two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

d) a radical —$(O)_m$—NR^6R^7, where m is 0 or 1 and R^6 and R^7, which can be identical or different, have the following meanings: hydrogen; C_1–C_8-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_3–C_8-cycloalkyl, these radicals in each case being able to carry one to five halogen atoms and/or one to two of the following groups: C_1–C_4-alkyl, C_1–C_4-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, C_1–C_4-alkylthio, C_3–C_6-alkenylthio, C_3–C_6-alkynylthio, C_1–C_4-haloalkoxy, C_1–C_4-alkylcarbonyl, C_3–C_6-alkenylcarbonyl, C_3–C_6-alkynylcarbonyl, C_1–C_4-alkoxycarbonyl, C_3–C_6-alkenyloxycarbonyl, C_3–C_6-alkynyloxycarbonyl, di-(C_1–C_4-alkyl)amino, C_3–C_8-cycloalkyl, phenyl or phenyl which is mono- or polysubstituted by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio; phenyl, which can be substituted by one or more of the following radicals: halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio; R^6 and R^7 together are an unsubstituted or substituted C_4–C_7-alkylene chain closed to give a ring, selected from the group consisting of —$(CH_2)_4$—, —$(CH_2)_5$—, —$(CH_2)_6$—, —$(CH_2)_7$, —CH_2—CH=CH—CH_2—, and —CH=CH—$(CH_2)_3$— or together are an unsubstituted or substituted C_3–C_6-alkylene chain which contains a heteroatom and is closed to give a ring, selected from the group consisting of —$(CH_2)_2$—O—$(CH_2)_2$—, —CH_2—S—$(CH_2)_3$—, —$(CH_2)_2$—O—$(CH_2)_3$—, —NH—$(CH_2)_3$, —CH—NH—$(CH_2)_2$—;

e) R^1 is additionally a group



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where R^8 is C_1–C_4-alkyl, phenyl, phenyl which is mono- or polysubstituted by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl, p assumes the values 1, 2, 3 or 4 and k assumes the values 0, 1 or 2;

f) a radical OR^9, where R^9 is:

i) hydrogen, an alkali metal cation, the equivalent of an alkaline earth metal cation, the ammonium cation or an organic ammonium ion;

ii) a C_3–C_8-cycloalkyl group, which can carry one to three C_1–C_4-alkyl radicals;

iii) a C_1–C_8-alkyl group, which can carry one to five halogen atoms and/or one of the following radicals:

C_1–C_4-alkoxy, C_1–C_4-alkylthio, cyano, C_1–C_4-alkylcarbonyl, C_3–C_8-cycloalkyl, C_1–C_4-alkoxycarbonyl, phenyl, or phenyl or phenoxy which is mono- or polysubstituted by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

iv) a C_1–C_8-alkyl group, which can carry one to five halogen atoms and carries one of the following radicals: a 5-membered heteroaromatic selected from the group consisting of pyrazolyl, imidazolyl, benzimidazolyl, triazolyl, benzotriazolyl, isoxazolyl, oxazolyl and thiazolyl, bonded via a C atom or, if possible, an N atom, which can carry one to four halogen atoms and/or one to two of the following radicals: nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

v) a C_2–C_6-alkyl group, which in the 2-position carries one of the following radicals: C_1–C_4-alkoxyimino, C_3–C_6-alkenyloxyimino, C_3–C_6-haloalkenyloxyimino or benzyloxyimino;

vi) a C_3–C_6-alkenyl group or a C_3–C_6-alkynyl group, where these groups in turn can carry one to five halogen atoms;

vii) a phenyl radical which can carry one to five halogen atoms and/or one to three of the following radicals: nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

viii) a 5-membered heteroaromatic selected from the group consisting of pyrazolyl, imidazolyl, benzimidazolyl, triazolyl and benzotriazolyl and linked via a nitrogen atom which can carry one to two halogen atoms and/or one to two of the following radicals: nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

ix) R^9 is additionally a group —N=C—$R^{10}R^{11}$, where R^{10} and R^{11}, which can be identical or different, are:

C_1–C_{12}-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_8-cycloalkyl, these radicals being able to carry a C_1–C_4-alkoxy or C_1–C_4-alkylthio radical and/or a phenyl radical;

phenyl which can be substituted by one or more of the following radicals: halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

or R^{10} and R^{11} together form a C_3–C_{12}-alkylene chain which can carry one to three C_1–C_4-alkyl groups;

g) or R^1 forms a radical —NH—SO_2R^{12}, where R^{12} is:

C_1–C_4-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_3–C_8-cycloalkyl, these radicals being able to carry a C_1–C_4-alkoxy or C_1–C_4-alkylthio radical and/or a phenyl radical;

phenyl which can be substituted by one or more of the following radicals: halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

R^2 is halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

X is CR^{13}, R^{13} being hydrogen or halogen or together with R^3 forming a 3- to 4-membered alkylene or alkenylene chain in which one methylene group in each case is replaced by oxygen, such chain selected from the group consisting of —CH_2—CH_2—O—, —CH=CH—O—, —CH_2—CH_2—CH_2—O— and —CH=CH—CH_2—O—;

R^3 is halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio, or R^3 is linked with R^{13} as indicated above to give a 5- or 6-membered ring;

Y is oxygen or sulfur;

R^{14}–R^{17} are

a) a C_3–C_8-cycloalkyl group, which can carry one to three C_1–C_4-alkyl radicals;

b) a C_1–C_8-alkyl group, a C_1–C_8-alkoxy group or a C_1–C_4-alkylthio group, the groups mentioned in each case being able to carry one to five halogen atoms and/or one of the following radicals:

C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, cyano, C_3–C_8-cycloalkyl or di-C_1–C_4-alkylamino;

c) a di-C_1–C_4-alkylamino or a di-C_1–C_4-alkylaminoxy group;

d) a C_2–C_6-alkenyl group or a C_2–C_6-alkynyl group, which can carry one to five halogen atoms and/or one of the following radicals:

C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

e) hydrogen, halogen, nitro or cyano.

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SUBSTITUTED PHTHALIDES AND HETEROCYCLIC PHTHALIDES

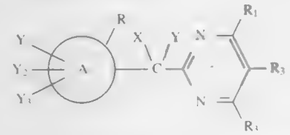
Richard J. Anderson, Palo Alto; Ian S. Cloudsdale, Boulder Creek, and Takeo Hokama, Sunnyvale, all of Calif., assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 201,150, Feb. 23, 1994, Pat. No. 5,506,192, which is a continuation of Ser. No. 36,006, Mar. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 804,150, Dec. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 633,592, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 534,794, Jun. 7, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 457,907

Int. Cl.[6] A01N *43/54;* **C07D** *239/52;239/34;239/26*

U.S. Cl. 504—243 **15 Claims**

1. A compound of formula I



(I)

wherein ring system A is naphthyl

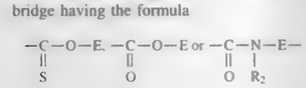
R is cyano, formyl, $CX_1X_2X_3$, a ketone forming group, a carboxyl group which may be in the form of the free acid or in ester or salt form, a thiocarboxyl group which may be in the form of the free acid or in ester form, a carbamoyl group or a mono- or di-substituted carbamoyl group, hydroxyalkyl, hydroxybenzyl, —CH=NOH, —CH=NO-lower alkyl, the group —CH_2—O—C(O)— which bridges adjacent carbon atoms in ring A,

Y_1, Y_2 and Y_3 are attached to carbon atoms and are independently hydrogen, halogen, hydroxy, alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, alkylsulfonyloxy, dialkylsulfamoyloxy, alkylsulfonyl, alkylsulfinyl, dialkylcarbamoyloxy, alkylthio, alkenylthio or alkynylthio each of which may in turn be substituted by 1 to 6 halogen atoms; dialkoxymethyl, conjugated alkoxy, hydroxyalkyl, carboxyl, acyl, acylalkyl, acyloxy, acyloxyalkyl, trialkylsilyloxy, trialkylsilyl, cyano, nitro, amino or substituted amino, aminosulfonyl; cycloalkyl, aryl, aralkyl, aralkenyl, aralkynyl, aryloxy, aralkoxy, arylsulfonyl, arylsulfinyl, arylthio or aralkylthio, each of which may be substituted by one to three substituents selected from halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, nitro, cyano, alkylthio, acyl, amino or substituted amino; a group



wherein R' is hydrogen, lower alkyl, or lower alkoxy;

or Y_1 and R taken together on adjacent carbon atoms form a bridge having the formula

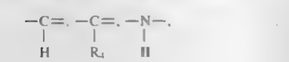


wherein E is a 1 to 3 membered linking group with elements selected from methylene, substituted methylene,



and oxygen;

or Y_1 and Y_2 taken together on adjacent carbon atoms form a 3- to 5-membered bridge comprised of elements selected from methylene, substituted methylene,



oxygen, and



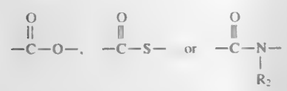
R_1, R_3' and R_3 are independently hydrogen; halogen; alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, alkylthio, alkenylthio or alkynylthio, each of which may in turn be substituted by 1 to 6 halogen atoms; cycloalkyl, heterocycloalkoxy, aryloxy, aralkoxy or aralkylthio each of which may be substituted by 1 to 3 substituents selected from halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, nitro, cyano, alkylthio, acyl, amino or substituted amino; aminoxy; substituted aminoxy; iminoxy; substituted iminoxy; amino; substituted amino; amido; substituted amido; alkylsulfonylmethyl; cyano; nitro; or —C—Y_4

wherein Y_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy or unsubstituted or substituted phenyl;

R_4 is as defined for Y_1 except for hydrogen;

X and Y each is independently hydrogen, hydroxy, halogen, cyano, alkyl, alkoxy, alkoxycarbonyl, alkoxycarbonyloxy, hydroxyalkyl, haloalkyl, acyl, acyloxy, carbamoyl, carbamoyloxy, alkylthio, alkylsulfinyl, alkylsulfonyl or alkylsulfonyloxy; aryl, aryloxy, arylS(O)p, aralkyl, aralkoxy, aralkS(O)p, arylsulphonyloxy, each of which may in turn be substituted by 1 to 3 substituents selected from halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, nitro, cyano, alkylthio, acyl; amino, substituted amino or together represent =O, =S, =NH, $=NOR_{12}$ or $=CR_{13}R_{14}$; or

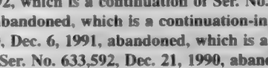
X and R together may form a bridge having the formula —O—E—,



wherein the carbonyl is attached to A, E is defined above and R_2 represents hydrogen, hydroxy, alkyl, haloalkyl, alkoxyalkyl, alkoxy, aralkoxy, unsubstituted or substituted aryl, unsubstituted or substituted aralkyl or is as otherwise defined for R_7 hereinafter;

P is 0, 1 or 2;

X_1, X_2 and X_3 are independently hydrogen, hydroxy, alkoxy, alkylthio, hydroxyalkyl or hydroxybenzyl whereby at least one of X_1, X_2 and X_3 is other than hydrogen; or X_3 represents hydrogen and X_1 and X_2 together form a four or five membered bridge comprising elements selected from —$O(CH_2)_nO$—,



and —$S(CH_2)_nS$—;

R_{12} is hydrogen or alkyl,

R_{13} and R_{14} are independently hydrogen, alkyl or halogen,

m is one or two,

n is zero, one or two, and

n' is two or three.

5,627,138

SUBSTITUTED PHTHALIDES AND HETEROCYCLIC PHTHALIDES

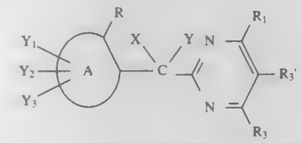
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Int. Cl.[6] A01N *43/54;* **C07D** *239/52;239/34;239/26*

U.S. Cl. 504—243 **16 Claims**

1. A compound of formula I



wherein ring system A a five membered heteroaromatic ring comprising oxygen, sulphur or nitrogen as heteroatom(s) which ring may be fused to a benzene ring or may comprise nitrogen as an additional heteroatom;

R is cyano, formyl, $CX_1X_2X_3$, a carboxyl group which may be in the form of the free acid or in ester or salt form, a thiocarboxyl group which may be in the form of the free acid or in ester form, a carbamoyl group or a mono- or di-substituted carbamoyl group, hydroxyalkyl, hydroxybenzyl, —CH=NOH, —CH=NO-lower alkyl, the group —CH_2—O—C(O)— which bridges adjacent carbon atoms in ring A,

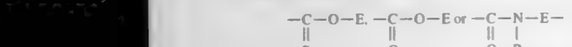
Y_1, and Y_2 are attached to carbon atoms and are independently hydrogen, halogen, hydroxy, alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, alkylsulfonyloxy, dialkylsulfamoyloxy, alkylsulfonyl, alkylsulfinyl, dialkylcarbamoyloxy, alkylthio, alkenylthio or alkynylthio each of which may in turn be substituted by 1 to 6 halogen atoms; dialkoxymethyl, conjugated alkoxy, hydroxyalkyl, carboxyl, acyl, acylalkyl, acyloxy, acyloxyalkyl, trialkylsilyloxy, trialkylsilyl, cyano, nitro, amino or substituted amino, aminosulfonyl; cyclo-alkyl, aryl, aralkyl, aralkenyl, aralkynyl, aryloxy, aralkoxy, arylsulfonyl, arylsulfinyl, arylthio or aralkylthio, each of which may be substituted by one to three substituents selected from halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, nitro, cyano, alkylthio, acyl, amino or substituted amino; a group

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wherein R' is hydrogen, lower alkyl, or lower alkoxy;

or Y_1 and R taken together on adjacent carbon atoms form a bridge having the formula



wherein E is a 1 to 3 membered linking group with elements selected from methylene, substituted methylene,



and oxygen;

or Y_1 and Y_2 taken together on adjacent carbon atoms form a 3- to 5-membered bridge comprised of elements selected from methylene, substituted methylene,



oxygen, and



R_1, R_3' and R_3 are independently hydrogen; halogen; alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, alkylthio, alkenylthio or alkynylthio, each of which may in turn be substituted by 1 to 6 halogen atoms; cycloalkyl, heterocycloalkoxy, aryloxy, aralkoxy or aralkylthio each of which may be substituted by 1 to 3 substituents selected from halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, nitro, cyano, alkylthio, acyl, amino or substituted amino; aminoxy; substituted aminoxy; iminoxy; substituted iminoxy; amino; substituted amino; amido; substituted amido; alkylsulfonylmethyl; cyano; nitro; or

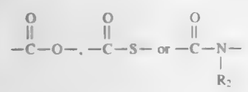


wherein Y_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy or unsubstituted or substituted phenyl;

R_4 is as defined for Y_1 except for hydrogen;

X and Y each is independently hydrogen, hydroxy, halogen, cyano, alkyl, alkoxy, alkoxycarbonyl, alkoxycarbonyloxy, hydroxyalkyl, haloalkyl, acyl, acyloxy, carbamoyl, carbamoyloxy, alkylthio, alkylsulfinyl, alkylsulfonyl or alkylsulfonyloxy; aryl, aryloxy, arylS(O)p, aralkyl, aralkoxy, aralkS(O)p, arylsulphonyloxy, each of which may in turn be substituted by 1 to 3 substituents selected from halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, nitro, cyano, alkylthio, acyl; amino, substituted amino or together represent =O, =S, =NH, $=NOR_{12}$ or $=CR_{13}R_{14}$; or

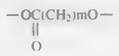
X and R together may form a bridge having the formula —O—E—.



wherein the carbonyl is attached to A, E is defined above and R_2 represents hydrogen, hydroxy, alkyl, haloalkyl, alkoxyalkyl, alkoxy, aralkoxy, unsubstituted or substituted aryl, unsubstituted or substituted aralkyl or is as otherwise defined for R_7 hereinafter;

P is 0, 1 or 2;

X_1, X_2 and X_3 are independently hydrogen, hydroxy, alkoxy, alkylthio, hydroxyalkyl or hydroxybenzyl whereby at least one of X_1, X_2 and X_3 is other than hydrogen; or X_3 represents hydrogen and X_1 and X_2 together form a four or five membered bridge comprising elements selected from $—O(CH_2)_nO—$,



and $—S(CH_2)_nS—$;

R_{12} is hydrogen or alkyl,

R_{13} and R_{14} are independently hydrogen, alkyl or halogen,

m is one or two,

n is zero, one or two, and

n' is two or three.

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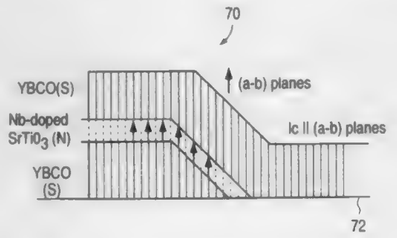
HIGH-TEMPERATURE SUPERCONDUCTING JOSEPHSON DEVICES HAVING A BARRIER LAYER OF A DOPED, CUBIC CRYSTALLINE, CONDUCTIVE OXIDE MATERIAL

David K. Chin, Kensington, and Theodore Van Duzer, El Cerrito, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 183,581, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 864,122, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 586,693, Sep. 24, 1990, abandoned. This application Mar. 17, 1995, Ser. No. 407,043

Int. Cl.[6] H01L *39/22;39/00*

U.S. Cl. 505—238 **20 Claims**



1. A structure comprising:

first and second layers each including a high-temperature superconducting material including a copper oxide and having a critical temperature greater than 25 K; and

a third layer connecting said first and second layers, said third layer including a conductive material having a cubic crystal structure which is lattice matched to said first and second electrodes; and wherein

at least a portion of said third layer is underneath an epitaxial portion of said first layer; and

a separation of said first and second layers is appropriate to produce a Josephson effect.

5,627,140

ENHANCED FLUX PINNING IN SUPERCONDUCTORS BY EMBEDDING CARBON NANOTUBES WITH BSCCO MATERIALS

Kristian Fossheim, Trondheim, Norway, and Thomas W. Ebbesen, Plainsboro, N.J., assignors to NEC Research Institute, Inc., Princeton, N.J., and Florida State University, Tallahassee, Fla.

Filed May 19, 1995, Ser. No. 445,366

Int. Cl.[6] H01B *1/08;1/18;* **C04B** *35/45;* **H01L** *39/12*

U.S. Cl. 505—401 **37 Claims**

1. A superconductor comprising: high-Tc BSCCO family superconducting material, and carbon nanotubes embedded in the high-Tc superconducting material.

5,627,141

METHOD OF PRODUCING CERAMICS SYSTEM SUPERCONDUCTING WIRE

Kazuhiko Hayashi, and Hisao Nonoyama, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 78,806, Jun. 17, 1993, abandoned, which is a continuation of Ser. No. 932,998, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 598,702, Sep. 13, 1990, abandoned. This application May 22, 1995, Ser. No. 446,347

Claims priority, application Japan, Jan. 14, 1989, 1-6638

Int. Cl.[6] H01L *39/24*

U.S. Cl. 505—433 **9 Claims**



1. A method of producing a ceramics system superconducting wire, said method comprising the following steps:

preparing a bulk type ceramics system superconductor comprising a Bi—Sr—Ca—Cu—O system oxide or a Bi—Pb—Sr—Ca—Cu—O system oxide and having the longitudinal direction of said superconductor oriented perpendicularly to the c-axes of its crystals;

charging said superconductor into a metallic pipe;

performing diameter reduction working by deforming said metallic pipe into a tape-shaped wire and rolling said tape-shaped wire at a reduction rate of about 6.25% to 11.1%, thereby elongating said metallic pipe while causing separation of some said crystals and also causing some of said crystals to have their c-axis become non-perpendicular with the longitudinal direction of said superconductor; and

heat treating said metallic pipe and said superconductor at a temperature of about 840° C., thereby combining crystals separated during the step of diameter reduction working, and

alternately repeating the diameter reduction working and the heat treating steps so that the extent to which crystal orientation is lost is limited.

5,627,142

METHOD OF PRODUCING COMPOSITE METAL OXIDE MATERIAL

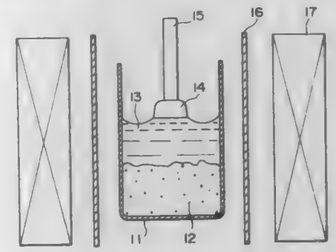
Yasuji Yamada, Tokyo; Masaru Nakamura, Mitaka; Noriyuki Tatsumi; Jiro Tsujino, both of Tokyo; Kanshi Ohtsu, Musashino; Yasuo Kanamori, Tokyo; Minoru Tagami, Funabashi; Atsushi Kume, Tokyo; Yuh Shiohara, Chigasaki, and Shoji Tanaka, Tokyo, all of Japan, assignors to International Superconductivity Technology Center; Hitachi Cable, Ltd.; Hokkaido Electric Power Co., Inc.; Kyushu Electric Power Co., Inc.; Kansai Electric Power Co., Inc., and Fujikura, Ltd., all of Japan

Filed Jul. 25, 1994, Ser. No. 279,416

Claims priority, application Japan, Jul. 27, 1993, 5-184712

Int. Cl.[6] C30B *15/02*

U.S. Cl. 505—451 **7 Claims**



1. A method of producing a composite material having a layer of a first metal oxide having the formula:

$LnBa_2Cu_3O_y$

wherein Ln stands for Y or an element belonging to the lanthanoid and y is a number of 6–7, said method comprising the steps of:

providing a seed material including a substrate comprising an alkaline earth metal oxide, and a non-uniformly oriented film with a x-ray diffraction pattern showing a diffraction peak for one axis, which is normal to the plane of the substrate, and additional diffraction peaks, said oriented film having a thickness of 0.01–1 μm and provided over a surface of said substrate, said oriented film being formed of a second metal oxide which has a crystal structure of a Y123 metal oxide and which has the formula:

$LnBa_2Cu_3O_y$

wherein Ln stands for Y or an element belonging to the lanthanoid and y is a number of 6–7; and

contacting said oriented film with a liquid phase which contains a melt composed of Cu, Ba and O and in which a solid phase is present at a position separated by said liquid phase from the position at which said oriented film contacts said liquid phase, said solid phase providing said liquid phase with solutes which constitute said first metal oxide so that said solutes are transported to the position at which said oriented film and said liquid phase contact, thereby permitting said first metal oxide to grow on said oriented film as a single crystal.

5,627,143

WELLBORE FLUID

Christopher A. Sawdon, Par, United Kingdom, assignor to Dowell Schlumberger Incorporated, Houston, Tex.

PCT No. PCT/GB94/01878, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO95/06695, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 30, 1994, Ser. No. 379,608

Claims priority, application United Kingdom, Sep. 1, 1993, 9318100; Jun. 29, 1994, 9413075

Int. Cl.[6] C09K *7/02;7/06*

U.S. Cl. 507—103 **12 Claims**

1. A biodegradable wellbore fluid which is an emulsion of a

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dispersed hydrophilic liquid in a continuous oil phase comprising at least 50% by weight of the oil phase of an n-alk-1-ene having from 12 to 20 carbon atoms or a linear polyunsaturated olefin having one of the double bonds in the 1-position and having from 12 to 22 carbon atoms, or a mixture thereof, wherein the oil phase contains less than 10% by weight of aromatic hydrocarbons, cycloparaffins, cycloalkenes, iso-alkanes, no more than 35% by weight of branched chain alk-1-enes, and no more than 20% by volume of polyalphaolefins.

5,627,144

COMPOSITION FOR ENHANCED CRUDE OIL RECOVERY OPERATIONS CONTAINING HYDROCHLORIC ACID OR HYDROFLUORIC ACID, OR MIXTURES THEREOF WITH ESTER QUATERNARY AMMONIUM COMPOUNDS OR/AND ALKYL QUATERNARY AMMONIUM COMPOUNDS

Allen D. Urfer, Lansdale, Pa.; Oriol P. Obiols, Barcelona, and Núria Bonastre, Barberà del Vallès, both of Spain, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany; Pulcra S.A., Barcelona, Spain, and Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 943,957, Sep. 11, 1992. This application Jun. 7, 1995, Ser. No. 473,678

Int. Cl.[6] C09K *7/00*

U.S. Cl. 507—211 **13 Claims**

1. A composition for enhanced crude oil recovery comprised of:

(a) a compound of the formula I

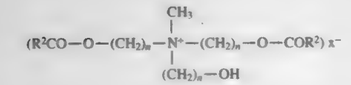
(I)

wherein R^1 is an alkyl or alkenyl group having from 1 to 22 carbon atoms, (G) is a sugar residue having 5 or 6 carbon atoms and p is a number of 1 to 10;

(b) aqueous HCl or HF or a combination thereof; and

(c) at least one quaternary ammonium compound selected from the group consisting of

(i) an ester quat of the formula (II)



(II)

wherein R^2CO is an aliphatic acyl radical containing 12 to 22 carbon atoms and 3 double bonds or less, n=2 or 3, and X is halide, methosulfate or methophosphate ion; and

(ii) a quaternary ammonium compound of the formula (III)



(III)

wherein R_2 is a C_{6-22} alkyl group, and each of R_3, R_4, and R_5 is independently an alkyl group having from about 1 to about 22 carbon atoms and X is a halide ion or a sulfate ion;

wherein the ratio by weight of component (a) to component (c) is from about 50:1 to about 1:5.

5,627,145

COMPOSITION AND METHOD FOR CONTROLLING PHOSPHONATES TENDING TO PRECIPITATE METAL IONS IN WATER

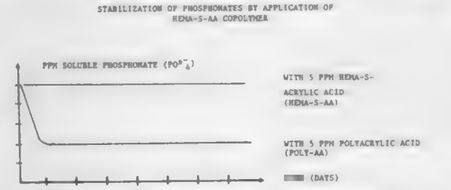
Peter K. L. G. Thevissen, Herent, Belgium, assignor to BetzDearborn Inc., Trevose, Pa.

Continuation of Ser. No. 301,161, Sep. 6, 1994, Pat. No. 5,453,416, which is a continuation of Ser. No. 868,079, Apr. 13, 1992, abandoned, Continuation-in-part of Ser. No. 701,301, May 13, 1991, abandoned, which is a continuation of Ser. No. 372,121, Jun. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 78,799, Jul. 28, 1987, abandoned. This application May 25, 1995, Ser. No. 446,134

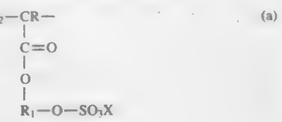
Claims priority, application European Pat. Off., Jul. 30, 1986, 86201341

Int. Cl.[6] C09K *7/00; C02F 5/10*

U.S. Cl. 507—224 **10 Claims**



1. A composition of matter, comprising; a water soluble copolymer having a molecular weight from about 500 to about 100,000 containing the following monomeric units (a) and b):



(a)

in which:

R is hydrogen, or an alkyl group,

R_1 is an alkylene group and

X is hydrogen, NH^+_4, a water soluble metal ion or an organic base; and

(b) a monocarboxylic acid monomer selected from the group consisting of acrylic acid and methacrylic acid.

5,627,146

LUBRICATING OIL COMPOSITION

Noriyoshi Tanaka; Aritoshi Fukushima; Yukio Tatsumi, and Yoko Saito, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 579,163

Claims priority, application Japan, Dec. 27, 1994, 6-325890

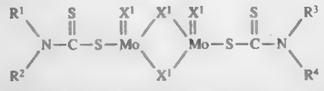
Int. Cl.[6] C10M *135/18*

U.S. Cl. 508—363 **14 Claims**

1. lubricating oil composition comprising:

a base oil for a lubricating oil consisting of a mineral oil and/or a synthetic oil, having a viscosity index of at least 115, and having a viscosity of 2 to 50 Cst at 100° C.; and

a molybdenum dithiocarbamate expressed by the following general formula (1) as Component (A) :



(1)

wherein both R^1 and R^2 each represent a C_8 to C_{13} alkyl group having a branched chain, both R^3 and R^4 each represent a C_8 to C_{13} alkyl group having a branched chain and/or a straight chain, with the provision that, R^1 and R^2 are the same, R^3 and R^4 are the same, and R^1 is different from R^3, and X^1 represents a sulfur atom or oxygen atom.

5,627,147

LUBRICATING FLUID COMPOSITION FOR DYNAMIC PRESSURE BEARING

Masamichi Hayakawa; Toshihiro Kobayashi, both of Shimosuwa-machi; Kazuya Shimizu, Fujisawa; Yuusuke Matsumura, Tokyo; Masuhiro Onoyama, Isehara, and Katsumi Nagano, Chita, all of Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano, and Taiho Industries Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1996, Ser. No. 622,249

Claims priority, application Japan, Mar. 25, 1995, 7-091549

Int. Cl.[6] C10M *141/02*

U.S. Cl. 508—501 **13 Claims**

1. A lubricating fluid composition for dynamic pressure bearings which support the shaft of the bearing by dynamic pressure, comprising:

said lubricating fluid composition including fine magnetic particles dispersed in a base oil solvent which comprises a hydrogenated poly-α-olefin (PAO) and a polyol ester.

5,627,148

WASHING AND/OR CONDITIONING COMPOSITION FOR KERATINOUS MATERIALS BASED ON A SILICONE CONTAINING A HYDROXYACYLAMINO FUNCTIONAL GROUP AND ON SUBSTANTIVE POLYMERS

Claude Dubief, 9,rue Edmond Rostand, F-78150 Le Chesnay, France, and Daniele Cauwet, 53,rue de Charonne, F-75011 Paris, France

Continuation of Ser. No. 906,540, Jun. 30, 1992, abandoned. This application Feb. 3, 1995, Ser. No. 384,604

Claims priority, application France, Jul. 4, 1991, 91 08388

Int. Cl.[6] C11D *1/90*

U.S. Cl. 510—122 **18 Claims**

1. A composition for washing or conditioning keratinous materials, comprising

(a) 0.1 to 20% by weight of a silicone containing a hydroxyacylamino functional group chosen from the compounds corresponding to the formula:



in which:

R_1 and R_2 denote $(CH_2)_2$, $(CH_2)_3$, $(CH_2)_4$, or $-CH_2CH(CH_3)CH_2-$;

R_3 denotes hydrogen, hydroxyl, alkyl or hydroxyalkyl;

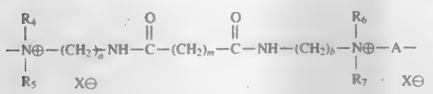
n is an integer varying from 2 to 7;

x is an integer varying from 20 to approximately 1,500;

y varies between approximately 0.5 and 10;

and the y/x ratio is less than 0.05;

(b) 0.05 to 8% by weight of a substantive polymer wherein the substantive polymer consists of units which correspond to the formula:



in which:

R_4, R_5, R_6 and R_7 represent a substituent selected from the group consisting of a hydrogen atom, a methyl group, an ethyl group, a propyl group, a β-hydroxyethyl group and a $-CH_2CH_2(OCH_2CH_2)_pOH$ radical, and wherein R_4, R_5, R_6 and R_7 do not simultaneously represent a hydrogen atom, wherein p is 0 to 6, wherein a and b are 1 to 6, m is 0 to 34, $X\ominus$ is a halogen atom, and A is a divalent radical; and

(c) an effective amount of at least one detergent surface-active agent which is selected from a group of agents consisting of

(i) anionic surface-active agents selected from the group consisting of alkali metal salts, ammonium salts, amine salts, aminoalcohol salts of alkyl ether sulphates, alkylamidoether sulphates, alkylarylpolyether sulphates, and monoglyceride sulphates; magnesium salts of alkyl ether sulphates, alkylamidoether sulphates, alkylarylpolyether sulphates, and monoglyceride sulphates; alkylsulphonates, alkylamidesulphonates, alkylarylsulphonates, olefinsulphonates, paraffinsulphonates, alkylsulphosuccinates, alkylethersulphosuccinates, alkylamidesulphosuccinates, alkylsulphosuccinamates, alkylsulphoacetates, alkyl ether phosphates, acylsarcosinates, N-acyltaurates, fatty acid salts, acids of copra oil, acids of hydrogenated copra oil, and acyl lactylates wherein the acyl radical contains from 8 to 20 carbon atoms;

(ii) amphoteric agents;

(iii) zwitterionic agents;

(iv) non-ionic surface active agents selected from the group consisting of polyethoxylated fatty acids with a fatty chain containing 8 to 18 carbon atoms, polypropoxylated fatty acids with a fatty chain containing 8 to 18 carbon atoms, polyglycerolated fatty acids with a fatty chain containing 8 to 18 carbon atoms, alcohols with a fatty chain containing 8 to 18 carbon atoms, α-diols with a fatty chain containing 8 to 18 carbon atoms, alkylphenols with a fatty chain containing 8 to 18 carbon atoms, copolymers of ethylene oxide and propylene oxide, condensates of ethylene oxide with fatty alcohols, condensates of propylene oxide with fatty alcohols, polyethoxylated fatty amides, polyglycerolated fatty amides, polyethoxylated fatty amines, oxyethylenated fatty acid esters of sorbitan, fatty acid esters of sucrose, fatty acid esters of polyethylene glycol, fatty acids esters of glycols, alkylpolyglycosides, oxides of $(C_{10}$-$C_{14})$alkylamines, oxides of N-acylamidopropylmorpholine and amine oxides; and

(v) mixtures thereof, in an aqueous medium, wherein said composition does not contain an alcohol suspending agent having 27 to 44 carbon atoms and one to two functional groups selected from the group consisting of an ether group, a thioether group and a sulphoxide group.

5,627,149

COMPOSITION

Amrit Patel, and Suman K. Chopra, both of Dayton, N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Filed Nov. 17, 1994, Ser. No. 340,918

Int. Cl.[6] C11D *1/02:1/22:1/62:3/37*

U.S. Cl. 510—125 **5 Claims**

1. A method for preparing an aqueous fluid personal care composition having a hydrotropic short chain alkyl aromatic sulfonate and a cationic polymer therein which comprises:

a. contacting at least about 0.2 mole % of said aromatic sulfonate with a charge neutralizing amount of a cationic polymer in a reactor and forming an essentially chargeless complex in the reactor which is essentially free of other components of the said composition, and

b. thereafter mixing the preformed complex with the remainder of the composition components.

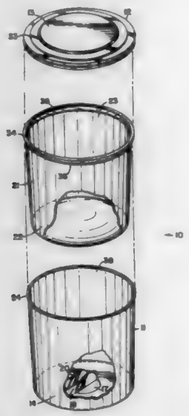
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5,627,150

PAPERBOARD CONTAINER FOR SOLID BLOCK DETERGENTS

Jeff W. Peterson, Hudson, Wis.; Tina O. Outlaw, Inver Grove Heights, and Debra A. Crea, Stillwater, both of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Oct. 16, 1995, Ser. No. 543,289
Int. Cl.[6] C11D *17/00;* **B65D** *90/04;43/04;21/00*
U.S. Cl. 510—439 **23 Claims**



1. A detergent-containing article, for insertion into a dispensing apparatus, said article comprising:

a) a semi-rigid bladder made of a plastic material;

b) a solid block chemical composition within said bladder, said chemical composition being a detergent composition for the washing of dishes, laundry, ware or hard surfaces, said bladder surrounding and in contact with the detergent composition on all but one surface thereof, said one surface being an eroding surface;

c) a housing surrounding said bladder, said housing having a first end which has an opening proximate said eroding surface of the detergent composition, said housing being made of a paperboard material having a waterproof coating, said housing having a substantially uniform cross-section and being sized and configured to fit within a dispensing apparatus;

d) a cap which is removably attached to said first end of said housing.

5,627,151

USE OF VINYLPYRROLIDONE COPOLYMERS AS DETERGENT ADDITIVES, NOVEL POLYMERS OF VINYLPYRROLIDONE, AND PREPARATION THEREOF

Juergen Detering, Limburgerhof; Christian Schade; Wolfgang Trieselt, both of Ludwigshafen, and Juergen Tropsch, Altrip, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/02851, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO94/10281, PCT Pub. Date May 11, 1994
PCT Filed Oct. 15, 1993, Ser. No. 325,177
Claims priority, application Germany, Oct. 23, 1992, 42 35 798.5
Int. Cl.[6] C11D *3/28;3/37*
U.S. Cl. 510—475 **7 Claims**

2. A polymer prepared by free-radically initiating polymerization of a monomer mixture consisting essentially of:

(a) 1-vinylimidazole, or a 1-vinylimidazolium compound of the formula



(I)

where R is hydrogen, C_1–C_{18}-alkyl or benzyl and $X^{\ominus}$ is an anion, or mixtures thereof, and optionally

(b) other nitrogen-containing, basic ethylenically unsaturated monomers in the form of the free bases, in the form of the salts with organic or inorganic acids or in quaternized form, and/or

(c) other monoethylenically unsaturated monomers which are copolymerizable with the monomers (a) and (b), in an aqueous medium in the presence of from 0.5 to 400 parts by weight of water-soluble proteins or partially degraded proteins per 100 parts by weight of monomer.

5,627,152

METHOD FOR INCREASING BODYWEIGHT

Thomas M. Kenyhercz, Hillsborough, N.J., and Ellen D. Jorgensen, Pound Ridge, N.Y., assignors to Telluride Pharmaceutical Corporation, Hillsborough, N.J.

Filed Jan. 18, 1995, Ser. No. 374,187
Int. Cl.[6] A61K *38/00*
U.S. Cl. 514—2 **7 Claims**

1. A method for increasing lean bodyweight in a mammal, said method comprising the step of administering, in each 24 hour period, an amount of glutathione or a physiologically acceptable salt or ester thereof effective to increase bodyweight, to a mammal in need of such treatment.

5,627,153

ANTI-FUNGAL METHODS AND MATERIALS

Roger G. Little, II, Benicia; Edward Lim, Walnut Creek; Patrick J. Scannon, San Francisco, and Lewis J. Lambert, Jr., Fremont, all of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 273,540, Jul. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 209,762, Mar. 11, 1994, which is a continuation-in-part of Ser. No. 183,222, Jan. 14, 1994, abandoned. This application Jan. 13, 1995, Ser. No. 372,105
Int. Cl.[6] A61K *38/00;* **C07K** *1/00*
U.S. Cl. 514—12 **16 Claims**

1. A method of treating fungal infections comprising administering to a subject suffering from a fungal infection a therapeutically effective amount of a bactericidal/permeability-increasing (BPI) protein product.

5,627,154

CALCIUM CHANNEL BLOCKING POLYPEPTIDES FROM *HETEROPODA VENATORIA*

Paul R. Kelbaugh, Niantic; Nicholas A. Saccomano, Ledyard, and Robert A. Volkmann, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/07555, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO94/10195, PCT Pub. Date May 11, 1994
PCT Filed Aug. 16, 1993, Ser. No. 428,248
Int. Cl.[6] A61K *38/00*
U.S. Cl. 514—12 **36 Claims**

1. A substantially pure polypeptide comprising the amino acid sequence, SEQ ID NO: 1, or a polypeptide having substantially the same amino acid sequence and substantially the same calcium channel blocking activity as said polypeptide, or a pharmaceutically acceptable salt thereof.

5,627,155

BCRF1 PROTEINS AS INHIBITORS OF INTERFERON-γ

Kevin W. Moore, Palo Alto, and Robert A. Kastelein, Redwood City, both of Calif., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 343,297, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 132,679, Oct. 6, 1993, abandoned, which is a continuation of Ser. No. 16,175, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 830,763, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 453,931, Dec. 20, 1989, abandoned. This application May 26, 1995, Ser. No. 450,749
Int. Cl.[6] A61K *38/20;38/16;* **C07K** *14/05;14/54*
U.S. Cl. 514—12 **21 Claims**

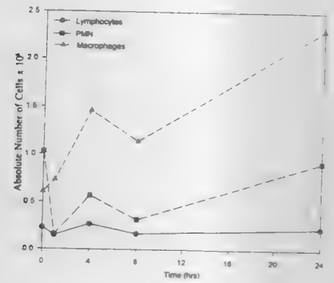
1. A method of treating an individual to control a disease associated with excessive interferon-γ production, the method comprising the step of administering a therapeutically effective amount of BCRF1.

5,627,156

POLYPEPTIDE AGONISTS FOR HUMAN INTERLEUKIN-8

James E. Talmadge, Bellevue, Nebr., assignor to University of Nebraska Board of Regents, Lincoln, Nebr.

Filed Sep. 23, 1994, Ser. No. 311,307
Int. Cl.[6] A61K *38/10;* **C07K** *7/08*
U.S. Cl. 514—13 **15 Claims**



1. A peptide having agonistic activity for alpha chemokines selected from the group consisting of

i. Glu-Leu-Arg-Cys-Gln-Cys-Ile-Lys-Thr-Tyr-Ser-Lys-Pro-Phe-His-Pro-Lys (SEQ. I.D. No. 1);

ii. Glu-Leu-Arg-Cys-Gln-Cys-Ile-Lys-Thr-Tyr-Ser-Lys-Pro-Phe (SEQ. I.D. No. 2);

iii. Glu-Leu-Arg-Cys-Gln-Cys-Leu-Gln-Thr-Leu-Gln-Gly-Ile-His-Pro-Lys (SEQ. I.D. No. 3);

iv. Glu-Leu-Arg-Cys-Gln-Cys-Leu-Gln-Thr-Leu-Gln-Gly-Ile-His-Leu-Lys (SEQ. I.D. No. 4);

v. Glu-Leu-Arg-Cys-Gln-Cys-Leu-Gln-Thr-Met-Thr-Gly-Val-His-Leu-Lys (SEQ. I.D. No. 5);

vi. Glu-Leu-Arg-Cys-Gln-Cys-Leu-Gln-Thr-Leu-Gln-Gly-His-Leu-Lys (SEQ. I.D. No. 6);

vii. Glu-Leu-Arg-Cys-Met-Cys-Ile-Lys-Thr-Thr-Ser-Gly-Ile-His-Pro-Lys (SEQ. I.D. No. 7);

viii. Glu-Leu-Arg-Cys-Gln-Cys-Ile-Ser-Thr-His-Ser-Lys-Phe-Ile-His-Pro-Lys (SEQ. I.D. No. 8);

ix. Glu-Leu-Arg-Cys-Gln-Cys-Leu-Gln-Thr-Val-Ala-Gly-Ile-His-Phe-Lys (SEQ. I.D. No. 10);

x. Glu-Leu-Arg-Cys-Val-Cys-Leu-Gln-Thr-Thr-Gln-Gly-Val-His-Pro-Lys (SEQ. I.D. NO. 11) and derivatives of said peptides wherein at least one cysteine is substituted by an amino acid of the group consisting of alpha aminobutyric acid, homocysteine and diaminosuberic acid.

5,627,157

α-GLYCOSYL HESPERIDIN AND ITS USES

Hiromi Hijiya, and Toshio Miyake, both of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation of Ser. No. 949,376, Sep. 23, 1992, abandoned, which is a continuation of Ser. No. 531,491, May 31, 1990, abandoned. This application Nov. 28, 1994, Ser. No. 348,146
Claims priority, application Japan, Jun. 3, 1989, 1-141902
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—25 **7 Claims**

4. In a pharmaceutical composition comprising a pharmaceutically acceptable carrier and hesperidin as an effective ingredient, the improvement comprising said hesperidin being an α-glucosyl hesperidin which is hydrolyzable in vivo by α-glucosidase (EC 3.2.1.20) to exhibit the physiological activities inherent to hesperidin, whereby the water solubility, light resistance and stability of said pharmaceutical composition are improved.

5,627,158

ANTISENSE OLIGONUCLEOTIDES OF HUMAN REGULATORY SUBUNIT RI-$_\alpha$ OF CAMP DEPENDENT PROTEIN KINASES FOR THE TREATMENT OF CANCER

Yoon S. Cho-Chung, 7017 Kenhill Rd., Bethesda, Md. 20817

Division of Ser. No. 702,163, May 20, 1991, Pat. No. 5,271,941, which is a continuation-in-part of Ser. No. 680,198, Apr. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 607,113, Nov. 2, 1990, abandoned. This application May 14, 1993, Ser. No. 60,984
Int. Cl.[6] A61K *48/00;* **C07H** *21/04;21/02;* **C12Q** *1/68*
U.S. Cl. 514—44 **10 Claims**

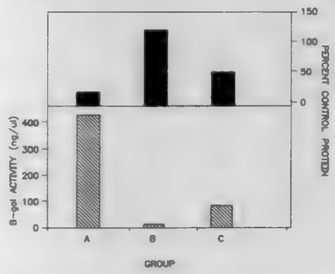
1. A method for reducing growth of cancer cells susceptible to growth reduction in a mammal comprising administering subcutaneously or parenterally to a mammal in need of such treatment a cancer cell growth-reducing amount of at least one 15- to 30-mer antisense 5' to 3'-oligonucleotide which is complementary to a region in the nucleic acid encoding the first 100 N-terminal amino acids of RI_α, which nucleic acid consists of the nucleotide sequence shown as SEQ. ID No:6.

5,627,159

ENHANCEMENT OF LIPID CATIONIC TRANSFECTIONS IN THE PRESENCE OF SERUM

PoJen Shih, Columbia; Pamela Hawley-Nelson, Silver Spring, and Joel A. Jessee, Mt. Airy, all of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Filed Oct. 27, 1994, Ser. No. 329,969
Int. Cl.[6] A61K *48/00;9/127;* **C12N** *5/00*
U.S. Cl. 514—44 **11 Claims**



2. In a method of transfecting an animal cell in the presence of serum, comprising contacting said cell with a lipid aggregate comprising nucleic acid and a cationic lipid, wherein the improvement comprises: either (a) first contacting said cell with a polyca-

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tionic compound to form a complex of said cell with said polycationic compound followed by contacting said cell complex with said lipid aggregate; or (b) first contacting said lipid aggregate with said polycation compound to form a mixture followed by contacting said cell with said mixture, thereby transfecting said animal cell with said nucleic acid.

5,627,160

L-2',3'-DIDEOXY NUCLEOSIDE ANALOGS AS ANTI-HEPATITIS B (HBV) AND ANTI-HIV AGENTS

Tai-Shun Lin, North Haven, and Yung-Chi Cheng, Woodbridge, both of Conn., assignors to Yale University, New Haven, Conn.

Continuation-in-part of Ser. No. 67,299, May 25, 1993. This application Jul. 28, 1993, Ser. No. 98,650

Int. Cl.[6] A61K *31/70; C07H 19/06*

U.S. Cl. 514—49 **4 Claims**

1. A method for treating a patient infected with human immunodeficiency virus comprising administering to said patient an amount of 1-(2,3)-didehydro-dideoxy-beta-L-ribofuranosyl)-5-fluorocytosine effective for inhibiting the growth or replication of said virus.

5,627,161

METHOD FOR TREATING TUMORS WITH UDPG

M. Earl Balis, New York, N.Y., assignor to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.

Continuation of Ser. No. 921,357, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 570,206, Jul. 17, 1990, abandoned, which is a continuation of Ser. No. 802,519, Nov. 27, 1985, abandoned, which is a continuation-in-part of Ser. No. 683,873, Dec. 20, 1984, abandoned. This application Mar. 8, 1993, Ser. No. 27,547

Int. Cl.[6] A61K *31/70;31/505;31/52*

U.S. Cl. 514—51 **1 Claim**

1. A method of affecting the intracellular PRPP pool size which comprises exposing normal or tumor cells to pharmacologically active levels of UDPG.

5,627,162

METHODS AND MEANS FOR CONTROL OF PROLIFERATION OF REMNANT CELLS FOLLOWING SURGERY

Arlene E. Gwon, 8 Trafalgar, Newport Beach, Calif. 92660, and Charles J. Hagemeier, 22261 Caminito Escobedo, Laguna Hills, Calif. 92653

Continuation of Ser. No. 463,390, Jan. 11, 1990, abandoned. This application Jan. 18, 1995, Ser. No. 374,360

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—54 **10 Claims**

1. A method for control of the proliferation of remnant epithelial cells in a remaining lens capsular bag structure following removal of the natural lens, comprising applying an effective amount of a mixture of chondroitin sulfate and hyaluronic acid directly into the remaining lens capsular bag structure.

5,627,163

TREATMENT OF TRAVELLER'S DIARRHEA

Louis D. Heerze, and Glen D. Armstrong, both of Edmonton, Canada, assignors to Synsorb Biotech, Inc., Calgary, Canada

Filed Jun. 5, 1995, Ser. No. 461,294

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—61 **15 Claims**

1. A method to treat traveller's diarrhea mediated by enterotoxigenic *E. coli* in a subject, which method comprises administering to a subject in need of such treatment an effective amount of a composition comprising an oligosaccharide sequence covalently attached to a pharmaceutically acceptable solid, inert support through a non-peptidyl compatible linker arm, wherein said oligosaccharide sequence binds at least one serotype of enterotoxigenic *E. coli*, and wherein said composition is capable of being eliminated from the gastrointestinal tract.

5,627,164

PYRAZOLYL BORATES COMPLEXES-(LAW294)

Sergiu M. Gorun, Upper Montclair, and Robert T. Stibrany, Long Valley, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jun. 13, 1995, Ser. No. 489,860

Int. Cl.[6] A61K *31/41*

U.S. Cl. 514—64 **9 Claims**

1. A composition of matter having the $M_xL_yP_z.nQ$ where M is a metal ion selected from the group consisting of Co, Ni, Zn, Mn, Cr, Zr, Ti, Hf, V and Fe; L is a fluoroalkyl substituted tris or bis pyrazole borate ion, or mixture thereof; P is a counterion; x, y and z are integers sufficient to render the composition electronically neutral; Q is a solvent; and n is a numerical value of from 0 to about 12.

5,627,165

PHOSPHOROUS PRODRUGS AND THERAPEUTIC DELIVERY SYSTEMS USING SAME

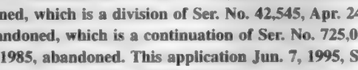
Arnold Glazier, Newton, Mass., assignor to Drug Innovation & Design, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 714,130, Jun. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 537,332, Jun. 13, 1990, abandoned. This application Sep. 23, 1994, Ser. No. 310,972

Int. Cl.[6] A61K *31/66;31/70*

U.S. Cl. 514—75 **38 Claims**

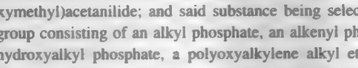
1. A prodrug compound for a parent drug, wherein the parent drug has the structure:



wherein X is oxygen or sulfur;

n is 1 or 2; and

Y is defined by the remainder of the parent drug, with the proviso that the parent drug is not phosphoric acid; wherein the prodrug compound has the structure:



wherein X, n and Y are defined above; and

A is a benzyloxy derivative with one or more acyloxy groups in para or ortho positions relative to the phosphoester.

36. A method for treating herpesvirus infection in a mammal in need thereof comprising administering a prodrug of claim **1** in a pharmaceutically acceptable carrier wherein the parent drug is an antiviral agent.

5,627,166

ACTIVATOR FOR ACARACIDE

Tetsuji Iwasaki, Wakayama, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 451,187, May 26, 1995, abandoned, which is a division of Ser. No. 166,597, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 418,903, Oct. 5, 1989, abandoned, which is a continuation of Ser. No. 139,720, Dec. 30, 1987, abandoned, which is a division of Ser. No. 42,545, Apr. 24, 1987, abandoned, which is a continuation of Ser. No. 725,028, Apr. 19, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 478,266

Claims priority, application Japan, Apr. 23, 1984, 59-081538

Int. Cl.[6] A01N *57/26;31/04*

U.S. Cl. 514—78 **17 Claims**

1. An agricultural acaricidal composition which consists essentially of an effective amount of an agricultural chemical acaricide and an effective amount of a substance for increasing the acaricidal rate of said acaricide, said acaricide being selected from the group consisting of 2-(p-tert-butylphenoxy) cyclohexyl-2-propinyl sulfite and 1,1-bis(p-chlorophenyl)-2,2,2-trichloroethanol; and said substance being selected from the group consisting of an alkyl phosphate, an alkenyl phosphate, a hydroxy alkyl phosphate, a polyoxyalkylene alkyl ether phosphate, a polyoxyalkylene alkenyl ether phosphate, a polyoxyalkylene hydroxyalkyl ether phosphate and salts thereof, said substance having from 1 to 22 carbon atoms in the alkyl or alkenyl group thereof, the weight ratio of said substance/said acaricide being in the range of 1/1 to 15/1.

5,627,167

ACTIVATOR FOR HERBICIDE

Tetsuji Iwasaki, Wakayama, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 451,187, May 26, 1995, which is a division of Ser. No. 166,597, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 418,903, Oct. 5, 1989, abandoned, which is a continuation of Ser. No. 139,720, Dec. 30, 1987, abandoned, which is a division of Ser. No. 42,545, Apr. 24, 1987, abandoned, which is a continuation of Ser. No. 725,028, Apr. 19, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 478,267

Claims priority, application Japan, Apr. 23, 1984, 59-81538

Int. Cl.[6] A01N *57/26*

U.S. Cl. 514—78 **12 Claims**

1. An agricultural herbicidal composition which consists essentially of an effective amount of an agricultural chemcial herbicide and an effective amount of a substance for increasing the herbicidal rate of said herbicide; said herbicide being 2-chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide; and said substance being selected from the group consisting of an alkyl phosphate, a alkenyl phosphate, a hydroxyalkyl phosphate, a polyoxyalkylene alkyl ether phosphate, a polyoxyalkylene alkenyl ether phosphate, a polyoxyalkylene hydroxyalkyl ether phosphate and salts thereof, said substance having from 1 to 22 carbon atoms in the alkyl or alkenyl group thereof, the weight ratio of said substance/said herbicide being in the range of 1/1 to 15/1.

5,627,168

PHARMACEUTICAL COMPOSITION FOR AND A METHOD OF USING A COMBINATION OF AN URICOSURIC AGENT AND AN EAA ANTAGONIST

Christopher F. Bigge; Graham Johnson, both of Ann Arbor; Charles P. Taylor, Jr., Chelsea, and Devin F. Welty, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 285,381, Aug. 3, 1994, abandoned, which is a division of Ser. No. 49,228, Apr. 19, 1993, Pat. No. 5,407,935, which is a continuation of Ser. No. 756,401, Sep. 9, 1991, abandoned. This application Oct. 5, 1995, Ser. No. 539,398

Int. Cl.[6] A61K *31/675;31/47;31/195*

U.S. Cl. 514—85 **4 Claims**

1. A pharmaceutical composition for the treatment of epilepsy, schizophrenia, anxiety or pain which comprises:

a. an amount of an AMPA excitatory amino acid antagonist effective to treat the disease;

b. an amount of a uricosuric agent effective to inhibit unidirectional efflux of the AMPA excitatory amino acid antagonist through the blood brain barrier; and

c. a pharmaceutical carrier, provided that the AMPA excitatory amino acid antagonist is not 2,3-dihydro-6-nitro-7-sulfamoylbenzo(F)-quinoxaline.

5,627,169

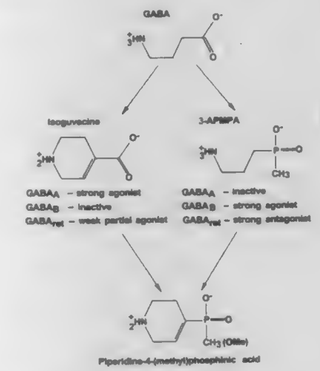
SELECTIVE ANTAGONISTS FOR $GABA_{RHO}$ RECEPTOR

Ricardo Miledi, Irvine; Larry E. Overman, Corona del Mar; Yoshinori Murata, Irvine, and Richard M. Woodward, Aliso Viejo, all of Calif., assignors to The Regents of The University of California, Oakland, Calif.

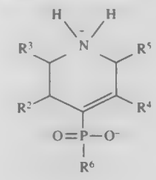
Filed Jul. 20, 1994, Ser. No. 277,735

Int. Cl.[6] C07F *9/58;* **A61K** *31/675*

U.S. Cl. 514—89 **9 Claims**



1. A compound having the formula:



wherein each of R^2, R^3, R^4, and R^5 is hydrogen; and R^6 is selected from the group consisting of C_{6-10} aryl, branched or straight chain C_{-10} alkyl, and branched or straight chain C_{1-10} alkoxy; or a pharmaceutically acceptable salt thereof.

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5,627,170

PHOSPHONIC ACID COMPOUND CONTAINING HETEROCYCLIC SUBSTITUENTS, PHARMACEUTICAL COMPOSITION CONTAINS SAME AND A METHOD OF TREATING CALCIUM METABOLISM DISTURBANCE

Christos Tsaklakidis; Elmar Bosies, both of Weinheim; Angelika Esswein, Singen, and Frieder Bauss, Lambsheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Division of Ser. No. 244,245, Jun. 3, 1994, Pat. No. 5,538,957. This application Jun. 5, 1995, Ser. No. 465,360

Claims priority, application Germany, Dec. 19, 1991, 41 41 928.6

Int. Cl.[6] A61K *31/40;* C07D *203/08;205/04;207/06*

U.S. Cl. 514—91 6 Claims

1. A phosphonosuccinic acid compound of the formula



(I)

wherein:

R is a nitrogen atom containing heterocyclic ring selected from the group consisting of aziridine, azetidine, and pyrrolidine, wherein the heterocyclic ring is unsubstituted or substituted once or twice by C_1–C_6 alkyl or halogen;

alk is a valency bond, methylene or a saturated or unsaturated, straight-chained or branched alkylene chain of 2–6 carbon atoms; and

R_3, R_4 and R_5 are independently hydrogen, C_1–C_6-alkyl or benzyl;

or a pharmacologically acceptable salt or enantiomer thereof.

5,627,171

SPHINGOSINE-1-PHOSPHATE/ TRIMETHYLSPHINGOSINE COMPOSITION

Yong S. Park; Yasuyuki Igarashi, and Sen-itiroh Hakomori, all of Seattle, Wash., assignors to The Biomembrane Institute, Seattle, Wash.

Filed Apr. 11, 1994, Ser. No. 225,796

Int. Cl.[6] A61K *31/66;31/14;9/127*

U.S. Cl. 514—114 5 Claims

1. A composition comprising N,N,N-trimethylsphingosine and sphingosine-1-phosphate in potentiate amounts.

5,627,172

METHOD FOR REDUCTION OF SERUM BLOOD LIPIDS OR LIPOPROTEIN FRACTION

Anthony Almada, Aptos, and Edward Byrd, Pacific Grove, both of Calif., assignors to Natural Supplement Association, Incorporated, Golden, Colo.

Filed Mar. 4, 1994, Ser. No. 206,089

Int. Cl.[6] A61K *31/66;31/22;31/195*

U.S. Cl. 514—120 15 Claims

1. A method for lowering the concentration of a serum lipid or lipid component in a mammal, comprising the step of administering to a mammal in need of such treatment a hypolipidemic, therapeutically effective amount of a creatine derivative or combination of creatine derivatives selected from the group consisting of creatine monohydrate, a pharmaceutically acceptable creatine salt and creatine phosphate.

5,627,173

PHOSPHONOACETIC ACID DERIVATIVES AND THEIR USE FOR TREATING DEGENERATIVE JOINT DISORDERS

Rolf Graeve, Taunustein; Werner Thorwart, Hochheim; Ruth Raiss, Frankfurt; Klaus U. Weithmann, Hofheim, and Stefan Müllner, Hochheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

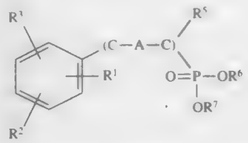
Filed Jan. 23, 1996, Ser. No. 590,300

Claims priority, application Germany, Jan. 25, 1995, 195 02 209.2

Int. Cl.[6] A61K *31/66;* C07F *9/38;9/40*

U.S. Cl. 514—120 32 Claims

1. A compound selected from at least one of a compound of the formula (I)



(I)

a physiologically tolerated salt thereof, and a stereoisomer thereof, where at least two of the radicals R^1, R^2 and R^3 are present and are, independently of one another, selected from:

1) OH,

2) (C_1–C_{12})-alkoxy,

3) —O—(C_1–C_{12})-alkyl-COOH,

4) —O—(C_1–C_{12})-alkyl-C(O)—O—(C_1–C_{12})-alkyl,

5) (C_3–C_{12})-cycloalkoxy,

6) (C_3–C_6)-alkenyloxy,

7) (C_5–C_7)-cycloalkyl-(C_1–C_3)-alkoxy,

8) heteroaryl-(C_1–C_3)-alkoxy, where the hetero atoms are selected from N, S and O,

9) heterocycloalkyl-(C_1–C_3)-alkoxy where the heteroatoms are selected from N, S and O, the heterocyclo alkyl radical is unsubstituted or substituted once to three times by (C_1–C_3)-alkyl, and the heterocycloalkyl group has five or six members,

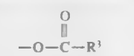
10) phenyl-(C_1–C_3)-alkoxy,

11) benzyloxy substituted once to three times by halomethyl or (C_1–C_3)-alkoxy,

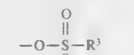
12) phenoxy substituted once to three times by (C_1–C_3)-alkoxy,

13) two of the radicals R^1, R^2 or R^3 which are substituents on two directly adjacent carbon atoms of the aromatic ring together form a methylenedioxy or ethylenedioxy radical on the aromatic ring,

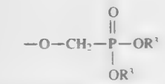
14) a radical of the formula II, III or IV



(II)



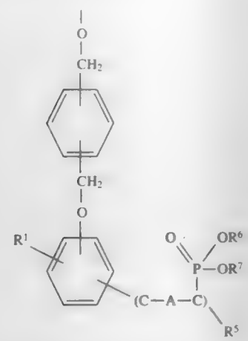
(III)



(IV)

where R^8 is (C_1–C_4)-alkyl, or hydrogen,

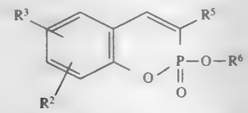
15) a group of the formula V



(V)

R^1, is defined as for R^1 from 1) to 12), and (C-A-C), R^5, R' and R^7 are as defined below, or

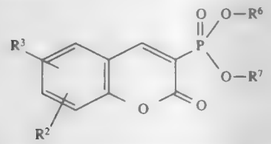
16) R^1 and R^7 are a covalent bond and thus form a compound of the formula Ia



(Ia)

where R^2 and R^3 are as defined above and R^5 and R^6 are as defined below, or

17) R^1 and R^5 are a covalent bond and thus form a compound of the formula 1b



(Ib)

where R^2 and R^3 are as defined above and R^6 and R^7 are as defined below, and

R^5 is

1) CN,

2) CH_2NHR^9 where R^9 is hydrogen atom or —(C_1–C_3)-alkyl, or

3) a radical of the formula VI



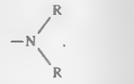
(VI)

where

R^{10} is

1) hydrogen,

2) (C_1–C_6)-alkyl, unsubstituted or substituted once to four times by —COOH, —C(O)—O—(C_1–C_3)-alkyl or



where R is hydrogen, (C_1–C_3)-alkyl or forms, together with the nitrogen atom to which it is bonded, a morpholine ring, or

3)trialkylsilyl,

R^6 and R^7 are, independently of one another,

1) hydrogen or

2) (C_1–C_6)-alkyl, (C-A-C) is

1) (CH═CH—CH═C),

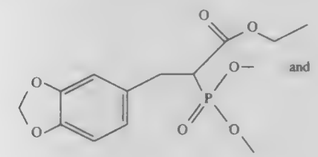
2) (CH_2—CH_2—CH_2—CH),

3) (CH_2—CH_2—CH),

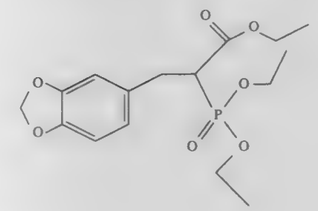
4) (—CH_2—C) or

5) (—CH═C)

with the proviso that when the radical R^5 is a CN group, not more than one of the radicals R^1, R^2 or R^3 is a hydroxyl radical, or when the radical R^{10} is a hydrogen atom, none of othe radicals R^1, R^2 or R^3 is a hydroxyl radical, or when the radical R^{10} is methyl, ethyl or t-butyl, the radicals R^1, R^2 or R^3 are not methoxy, and the compounds



and



are excepted.

5,627,174

FLUOROALKENYL COMPOUNDS AND THEIR USE AS PEST CONTROL AGENTS

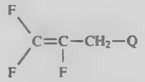
Dennis P. Phillion, St. Charles; Peter G. Ruminski, Ballwin, and Gopichand Yalamanchili, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 329,593, Oct. 26, 1994. This application May 23, 1995, Ser. No. 447,871

Int. Cl.[6] A61K *31/66;* C07F *9/09*

U.S. Cl. 514—134 9 Claims

1. A compound having the structure:



wherein q is -(P═W)R_3R_4; wherein W is O or S;

R_3 and R_4 are independently R_{15}, —OR_{15}, -SR_{15}, -$NR_{15}R_{16}$ where R_{15} and R_{16} are independently selected from the group consisting of an aromatic group, optionally substituted with at least one group selected from a radical of sulfonic acid, phosphonic acid, phosphonic acid, carboxylic acid, their esters, amides and thiol esters, cyano, trimethylsilyl, hydroxy, alkoxy, halo, nitro, amino, thiol, alkylthio, phenyl, or any agronomically acceptable salt thereof.

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5,627,175

AZOXYCYANOBENZENE COMPOUNDS

Werner E. J. Simon, Jungenheim, Germany, assignor to Shell-Internationale Research Maatschappij B.V., The Hague, Netherlands

PCT No. PCT/EP93/03370, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/12470, PCT Pub. Date Jun. 9, 1994

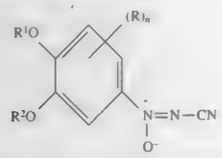
PCT Filed Nov. 29, 1993, Ser. No. 446,716

Claims priority, application European Pat. Off., Dec. 2, 1992, 92120580

Int. Cl.[6] C07C *291/08;* **A01N** *51/00*

U.S. Cl. 514—150 **13 Claims**

1. A compound of formula



(I)

in which n is 0, 1, 2 or 3; each R independently represents a halogen atom, nitro, cyano, alkyl, haloalkyl, alkoxy or haloalkoxy group; and each of R^1 and R^2 independently represents a C_{1-8} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-8} cycloalkyl or benzyl group unsubstituted or substituted by one or more substituents selected from halogen atoms, nitro, cyano, hydroxyl, C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, phenoxy, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino, C_{1-4} alkoxycarbonyl, morpholinocarbonyl and C_{1-4} alkylcarbamoyl groups.

10. A method of combating fungus at a locus which comprises treating the locus with a fungicidally effective amount of a compound of formula I as defined in claim 1.

5,627,176

SUBSTITUTED AZETIDINONE COMPOUNDS USEFUL AS HYPOCHOLESTEROLEMIC AGENTS

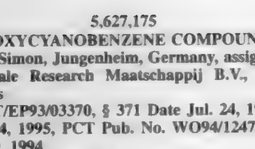
Michael P. Kirkup, West Windsor, and Sundeep Dugar, Bridgewater, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 218,498, Mar. 25, 1994, abandoned. This application Mar. 13, 1995, Ser. No. 403,081

Int. Cl.[6] A61K *31/395;* **C07D** *205/08;403/06;403/04*

U.S. Cl. 514—210 **9 Claims**

1. A compound represented by the structural formula



or a pharmaceutically acceptable salt thereof, wherein:

Ar^1 is R^3-substituted phenyl;

Ar^2 is R^4-substituted phenyl;

Ar^3 is R^5-substituted phenyl;

Y and Z are $—CH_2—$;

A is —O—, —S—, —S(O)— or $—S(O)_2—$;

R^1 is selected from the group consisting of $—OR^6$, $—O(CO)R^6$, $—O(CO)OR^9$ and $—O(CO)NR^6R^7$; R^2 is hydrogen; or R^1 and R^2 together are =O;

q is 1, 2 or 3;

p is 0, 1, 2, 3 or 4;

R^3 is 1–3 substituents independently selected from the group consisting of hydrogen, $—CONR^6R^7$, $—COR^6$, $—SO_2NR^6R^7$, $—SO_{0-2}$-alkyl, $—SO_{0-2}$-aryl, $—NH_2$ and halogeno;

R^4 is 1–3 substituents independently selected from the group consisting of hydrogen, lower alkyl, $—OR^6$, $—OC(O)R^6$, $—OC(O)OR^9$, $—OC(O)NR^6R^7$, $—NR^6R^7$, $—COR^6$ and halogeno;

R^5 is 1–3 substituents independently selected from the group consisting of $—OR^8$, $—O(CO)R^6$, $—O(CO)OR^9$, $—O(CO)NR^6R^7$, $—NR^6R^7$, -(lower alkylene)-$COOR^6$ and $—CH=CH—COOR^6$;

R^6, R^7 and R^8 are independently selected from the group consisting of hydrogen and lower alkyl; and

R^9 is lower alkyl.

5,627,177

PIPERAZINE DERIVATIVES

Ian A. Cliffe; Christopher I. Brightwell; Howard L. Mansell, all of Slough, and Alan C. White, Staines, all of England, assignors to John Wyeth & Brother, Ltd., United Kingdom

PCT No. PCT/GB93/02660, § 371 Date May 24, 1995, § 102(e) Date May 24, 1994, PCT Pub. No. WO94/15919, PCT Pub. Date Jul. 21, 1994

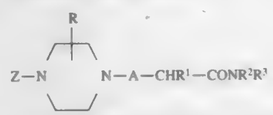
PCT Filed Dec. 24, 1993, Ser. No. 446,601

Claims priority, application United Kingdom, Jan. 6, 1993, 9300195

Int. Cl.[6] A61K *31/55;* **C07D** *487/12*

U.S. Cl. 514—212 **13 Claims**

1. A compound of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein

A is a C_1–C_2 alkylene chain, optionally substituted by one or more C_1–C_6 alkyl groups, Z is a bicyclic nitrogen containing heteroaromatic radical selected from the group consisting of indolyl, isoindolyl, quinolinyl, isoquinolinyl, indazolyl and benzotriazolyl, which may be optionally substituted by one or two substitutents selected from C_1–C_6 alkyl, halogen, trifluoromethyl, nitro, cyano, oxo, hydroxy, C_1–C_6 alkoxy, hydroxy-C_1–C_6 alkyl, C_1–C_6 alkoxy-C_1–C_6 alkyl, C_1–C_6 alkanoyloxy-C_1–C_6 alkyl, C_1–C_6 acyl, C_1–C_6 acyl-C_1–C_6 alkyl, carboxamido, C_1–C_6 alkoxycarbonyl, amino, mono- or di-C_1–C_6 alkylamino;

R represents H or one or two same or different C_1–C_6 alkyl groups;

R^1 is an aryl radical or aryl-C_1–C_6 alkyl where aryl is phenyl or naphthyl, optionally substituted by 1 or 2 groups selected from C_1–C_6alkyl, C_1–C_6alkoxy, C_1–C_6alkylthio, cyano, amino, mono- or di-C_1–C_6alkylamino;

R^2 and R^3 together with the nitrogen atom to which they are both attached represent a saturated heterocyclic ring having 4 to 8 members, one of which can be an additional heteroatom selected from oxygen, sulfur, or nitrogen wherein said ring may be optionally substituted by C_1–C_6 alkyl, phenyl or phenyl-C_1–C_6 alkyl.

5,627,178

2-METHYL-THIENO-BENZODIAZEPINE

Jiban K. Chakrabarti, Camberley; Terrence M. Hotten, Hants, and David E. Tupper, Reading, all of England, assignors to Lilly Industries Limited, Basingstoke, England

Continuation-in-part of Ser. No. 44,844, Apr. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 890,348, May 22, 1992, Pat. No. 5,229,382, which is a continuation of Ser. No. 690,143, Apr. 23, 1991, abandoned. This application Feb. 13, 1995, Ser. No. 387,997

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—220 **10 Claims**

1. A method of treating a patient suffering from or susceptible to psychosis selected from the group consisting of Schizophrenia, Catatonic, Subchronic; Schizophrenia, Catatonic, Chronic; Schizophrenia, Catatonic, Subchronic with Acute Exacerbation; Schizophrenia, Catatonic, Chronic with Acute Exacerbation; Schizophrenia, Catatonic, in Remission; Schizophrenia, Catatonic, Unspecified; Schizophrenia, Disorganized, Subchronic; Schizophrenia, Disorganized, Chronic; Schizophrenia, Disorganized, Subchronic with Acute Exacerbation; Schizophrenia, Disorganized, Chronic with Acute Exacerbation; Schizophrenia, Disorganized, in Remission; Schizophrenia, Disorganized, Unspecified; Schizophrenia, Paranoid, Subchronic; Schizophrenia, Paranoid, Chronic; Schizophrenia, Paranoid, Subchronic with Acute Exacerbation; Schizophrenia, Paranoid, Chronic with Acute Exacerbation; Schizophrenia, Paranoid, in Remission; Schizophrenia, Paranoid, Unspecified; Schizophrenia, Undifferentiated, Subchronic; Schizophrenia, Undifferentiated, Chronic; Schizophrenia, Undifferentiated, Subchronic with Acute Exacerbation; Schizophrenia, Undifferentiated, Chronic with Acute Exacerbation; Schizophrenia, Undifferentiated, in Remission; Schizophrenia, Undifferentiated, Unspecified; Schizophrenia, Residual, Subchronic; Schizophrenia, Residual, Chronic; Schizophrenia, Residual, Subchronic with Acute Exacerbation; Schizophrenia, Residual, Chronic with Acute Exacerbation; Schizophrenia, Residual, in Remission; Schizophrenia, Residual, Unspecified; Delusional (Paranoid) Disorder; Brief Reactive Psychosis; Schizophreniform Disorder; Schizoaffective Disorder; Induced Psychotic Disorder; Psychotic Disorder NOS (Atypical Psychosis); Bipolar Disorder, Mixed, with Psychotic Features; Bipolar Disorder, Manic, with Psychotic Features; Bipolar Disorder, Depressed, with Psychotic Features; and Major Depression, Single Episode, with Psychotic Features; comprising administering to a patient in need thereof an effective amount of 2-methyl-4-(4-methyl-1-piperazinyl)-10H-thieno-[2,3-b][1,5] benzodiazepine, acid addition salt thereof.

5. A method of treating a patient suffering from or susceptible to an anxiety disorder selected from the group consisting of Psychoactive Substance Anxiety Disorder; Organic Anxiety Disorder; Obsessive Compulsive Disorder; Post-traumatic Stress Disorder; Generalized Anxiety Disorder; and Anxiety Disorder NOS; comprising administering to a patient in need thereof an effective amount of 2-methyl-4-(4-methyl-1-piperazinyl)-10H-thieno[2,3-b][1,5]benzodiazepine, or an acid addition salt thereof.

8. A method of treating a patient suffering from or susceptible to a pathologic psychological condition wherein delusions, hallucinations, disorganized behavior, or anxiety are a consistent manifestation of the pathologic condition, comprising administering to a patient in need thereof an effective amount of 2-methyl- 4-(4-methyl-1-piperazinyl)-10H-thieno[2,3-b][1.5]benzodiazepine, or an acid addition salt thereof.

5,627,180

SUBSTITUTED THIOSEMICARBAZONETHIONES

Martin Missbach, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/03778, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO95/14686, PCT Pub. Date Jun. 1, 1995

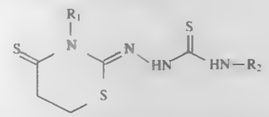
PCT Filed Nov. 15, 1994, Ser. No. 500,989

Claims priority, application Switzerland, Nov. 25, 1993, 3524/93

Int. Cl.[6] A61K *31/54;* **C07D** *279/06*

U.S. Cl. 514—228.8 **10 Claims**

1. A compound of formula I



(I)

wherein R_1 is lower alkyl, lower alk-2-en-1-yl, lower alk-2-yn-1-yl, or aryl-lower alkyl, R_2 is hydrogen, lower alkyl, lower alk-2-en-1-yl, lower alk-2-yn-1-yl, aryl, aryl-lower alkyl, unsaturated or saturated heterocyclyl-lower alkyl, lower alkoxycarbonyl-lower alkyl or a group $—C(=O)-R_3$ or $—C(=S)-R_3$, wherein R_3 is lower alkyl, aryl, aryl-lower alkyl, aryl-lower alkenyl, heteroaryl (hetaryl), aryloxy, aryl-lower alkoxy or lower alk-2-en-1-yloxy, or a salt thereof.

5,627,181

6-MEMBERED NITROGEN-CONTAINING HETEROARYL-OXAZOLIDINONES

Bernd Riedl; Dieter Häbich; Andreas Stolle, all of Wuppertal, Germany; Hanno Wild, Orange, Conn.; Rainer Endermann, Wuppertal, Germany; Klaus D. Bremm, Recklinghausen, Germany; Hein-Peter Kroll, Wuppertal, Germany; Harald Labischinski, Wuppertal, Germany; Klaus Schaller, Wuppertal, Germany, and Hans-Otto Werling, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

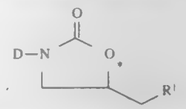
Filed Jul. 17, 1995, Ser. No. 503,369

Claims priority, application Germany, Jul. 20, 1994, 44 25 612.4

Int. Cl.[6] A61K *31/44;31/535;* **C07D** *413/04;413/14*

U.S. Cl. 514—236.8 **5 Claims**

1. Heteroaryl-oxazolidinones of the general formula (I)



(I)

in which

R^1 represents azido or hydroxyl, or represents a group of the formula $—OR^2$, $—O—SO_2R^3$ or $—NR^4R^5$,

wherein

R^2 denotes straight-chain or branched acyl having up to 8 carbon atoms or a hydroxyl-protective group,

R^3 denotes straight-chain or branched alkyl having up to 4 carbon atoms or phenyl, which is optionally substituted by straight-chain or branched alkyl having up to 4 carbon atoms,

R^4 and R^5 are identical or different and cycloalkyl having 3 to 6 carbon atoms, hydrogen, phenyl or straight-chain or branched alkyl having up to 8 carbon atoms or an amino-protective group, or

R^4 or R^5 denotes a group of the formula $—CO—R^6$,

wherein

R^6 denotes cycloalkyl having 3 to 6 carbon atoms, straight-chain or branched alkyl having up to 8 carbon atoms, phenyl or hydrogen,

D represents a 6-membered aromatic heterocyclic radical which has at least one nitrogen atom and is bonded directly via a carbon atom, or represents a bi- or tricyclic aromatic radical

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5,627,179

MAGNESIUM SALT OF 3-ISOPROPYL-2, 1, 3-BENZOTHIADIAZIN -4-ONE 2,2-DIOXIDE, ITS PREPARATION AND ITS USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Karl-Friedrich Jaeger, Limburgerhof; Adolf Parg, Bad Durkheim, and Alfons Durein, Roemerberg, all of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/01391, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO94/26727, PCT Pub. Date Nov. 24, 1994

PCT Filed May 2, 1994, Ser. No. 537,909

Claims priority, application Germany, May 12, 1993, 43 15 878.1

Int. Cl.[6] C07D *285/16;* **A01N** *25/08*

U.S. Cl. 514—222.8 **12 Claims**

1. A solid, non-hygroscopic magnesium salt of 3-isopropyl-2,1,3-benzothiadiazin-4-one 2,2-dioxide (I).

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which has at least one nitrogen-containing ring, is bonded directly via a carbon atom and is in each case 6-membered, or represents β-carbolin-3-yl, or represents indolizinyl bonded directly via the 6-membered ring, wherein the cyclic radicals are optionally substituted in each case up to 3 times in an identical or different manner by carboxyl, halogen, cyano, mercapto, formyl, trifluoromethyl, nitro, straight-chain or branched alkoxy, alkoxycarbonyl, alkylthio or acyl having in each case up to 6 carbon atoms or by straight-chain or branched alkyl having up to 6 carbon atoms, which can in turn be substituted by hydroxyl, by straight-chain or branched alkoxy or acyl having up to 5 carbon atoms or by a group of the formula $—NR^7R^8$,

wherein

R^7 and R^8 are identical or different and denote hydrogen, formyl, straight-chain or branched alkyl or acyl having in each case up to 4 carbon atoms, phenyl or cycloalkyl having 3 to 6 carbon atoms, or together with the nitrogen atom form a 5- to 6-membered saturated heterocylic radical which optionally has a further hetero atom from the series consisting of N, S and/or O and can in turn be optionally substituted, including on a further nitrogen atom, by phenyl, pyrimidyl or straight-chain or branched alkyl or acyl having in each case up to 3 carbon atoms,

and/or

the cyclic radicals are optionally substituted by a group of the formula $—NR^7R^8$,

wherein

R^7 and R^8 are identical or different and have the abovementioned meaning of R^7 and R^8 and are identical to or different from these,

and/or

the cyclic radicals are optionally substituted by $(C_2–C_8)$-alkenylphenyl, phenyl or by a 5- or 6-membered saturated or unsaturated heterocylic radical having up to 3 hetero atoms from the series consisting of S, N and/or O, which are in turn optionally substituted by a group of the formula $—CO—NR^9R^{10}$, $—NR^{11}R^{12}$, $—NR^{13}—SO_2—R^{14}$, $R^{15}R^{16}N—SO_2—$, $R^{17}—S(O)_a—$, $R^{18}—N{=}CH—$ or by the radical $—CH(OH)—SO_3R^{20}$,

wherein

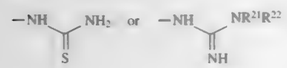
a denotes a number 0, 1 or 2,

R^9, R^{10}, R^{13}, R^{15} and R^{16} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, tolyl or phenyl,

R^{11} and R^{12} are identical or different and have the abovementioned meaning of R^7 and R^8 and are identical to or different from these,

R^{14} and R^{17} are identical or different and have the abovementioned meaning of R^3 and are identical to or different from this,

R^{18} denotes hydroxyl, benzyloxy or a radical of the formula $—NH—CO—NH_2$.

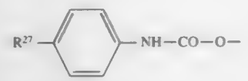


wherein

R^{21} and R^{22} are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms, which can in turn be substituted by phenyl or pyridyl,

R^{20} denotes hydrogen or a sodium ion,

and/or in turn are optionally substituted up to twice in an identical or different manner by carboxyl, halogen, cyano, mercapto, formyl, trifluoromethyl, nitro, phenyl, straight-chain or branched alkoxy, alkoxycarbonyl, alkylthio or acyl having in each case up to 6 carbon atoms or by straight-chain or branched alkyl having up to 6 carbon atoms, which can in turn be substituted by hydroxyl, azido, by straight-chain or branched alkoxy or acyl having up to 5 carbon atoms or by a group of the formula $—NR^{23}R^{24}$, $R^{25}—S—$, $R^{26}—SO_2O—$ or



wherein

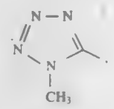
R^{23} and R^{24} have the abovementioned meaning of R^7 and R^8 and are identical to or different from these, or denote a radical of the formula $—P(O)(OR^{28})(OR^{29})$ or $R^{30}—SO_2—$

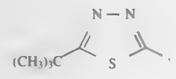
wherein

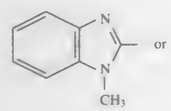
R^{28} and R^{29} are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 3 carbon atoms and

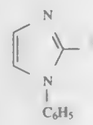
R^{30} denotes methyl, phenyl or tolyl,

R^{25} denotes a radical of the formula







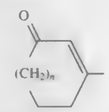


R^{26} denotes straight-chain or branched alkyl having up to 3 carbon atoms,

R^{27} denotes straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms or carboxyl

and/or

the cyclic radicals are optionally substituted by a radical of the formula



wherein

n denotes a number 0, 1 or 2,

and salts and N-oxides thereof.

5,627,182

δ-AMINO-γ-HYDROXY-ω-ARYL-ALKANOIC ACID AMIDES

Richard Göschke, Bottmingen, Switzerland; Jürgen K. Maibaum, Weil-Haltingen, Germany; Walter Schilling, Himmelried; Stefan Stutz, Basel, both of Switzerland; Pascal Rigollier, Sierentz, France; Yasuchika Yamaguchi, Basel, Switzerland; Nissim C. Cohen, Village-Neuf, France, and Peter Herold, Arlesheim, Switzerland, assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

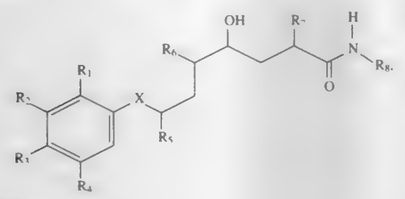
Division of Ser. No. 416,242, Apr. 4, 1995, Pat. No. 5,559,111. This application Jul. 25, 1996, Ser. No. 687,878

Claims priority, application Switzerland, Apr. 18, 1994, 1169/94

Int. Cl.[6] A61K *31/165;31/535;* **C07C** *237/20;* **C07D** *293/14*

U.S. Cl. 514—237.8 **10 Claims**

1. A novel δ-amino-γ-hydroxy-ω-aryl-alkanoic acid amide of formula I



wherein

R_1 is hydrogen, hydroxy, lower alkoxy, cycloalkoxy, lower alkoxy-lower alkoxy or free or esterified or amidated carboxy-lower alkoxy,

R_2 is hydrogen, lower alkyl, cycloalkyl, lower alkoxy-lower alkyl, lower alkoxy-lower alkoxy-lower alkyl, cycloalkoxy-lower alkyl, hydroxy, optionally lower alkanoylated, halogenated or sulfonylated hydroxy-lower alkoxy; amino-lower alkyl that is unsubstituted or substituted by lower alkyl, by lower alkanoyl and/or by lower alkoxycarbonyl; optionally hydrogenated heteroaryl-lower alkyl; amino-lower alkoxy that is substituted by lower alkyl, by lower alkanoyl and/or by lower alkoxycarbonyl; oxo-lower alkoxy, lower alkoxy, cycloalkoxy, lower alkenyloxy, cycloalkoxy-lower alkoxy, lower alkoxy-lower alkoxy, lower alkoxy-lower alkenyl, lower alkenyloxy-lower alkoxy, lower alkoxy-lower alkenyloxy, lower alkenyloxy-lower alkyl, lower alkanoyl-lower alkoxy, optionally S-oxidised lower alkylthio-lower alkoxy, lower alkylthio-(hydroxy)-lower alkoxy, aryl-lower alkoxy, optionally hydrogenated heteroaryl-lower alkoxy, cyano-lower alkoxy, free or esterified or amidated carboxy-lower alkoxy or free or esterified or amidated carboxy-lower alkyl,

R_3 is optionally halogenated lower alkyl, lower alkoxy-lower alkyl, cycloalkoxy-lower alkyl, hydroxy-lower alkyl, optionally S-oxdised lower alkylthio-lower alkyl, optionally hydrogenated heteroarylthio-lower alkyl, optionally hydrogenated heteroaryl-lower alkyl; amino-lower alkyl that is unsubstituted or N-mono- or N,N-di-lower alkylated, n-lower alkanoylated or N-lower alkane-sulfonylated or N,N-disubstituted by lower alkylene, by unsubstituted or N'-lower alkylated or N'-lower alkanoylated aza-lower alkylene, by oxa-lower alkylene or by optionally S-oxidised thia-lower alkylene; cyano-lower alkyl, free or esterified or amidated carboxy-lower alkyl, cycloalkyl, aryl, hydroxy, lower alkoxy, cycloalkoxy, lower alkoxy-lower alkoxy, cycloalkoxy-lower alkoxy, hydroxy-lower alkoxy, aryl-lower alkoxy, optionally halogenated lower alkoxy optionally S-oxidised lower alkylthio-lower alkoxy, optionally hydrogenated heteroaryl-lower alkoxy, optionally hydrogenated heteroarylthio-lower alkoxy, amino-lower alkoxy that is unsubstituted or N-mono- or N,N-di-lower alkylated, N-lower alkanoylated or N-lower alkanesulfonylated or substituted by lower alkylene, by unsubstituted or N'-lower alkylated or N'-lower alkanoylated aza-lower alkylene, by oxa-lower alkylene or by optionally S-oxidised thia-lower alkylene; cyano-lower alkoxy or free or esterified or amidated carboxy-lower alkoxy,

R_4 is hydrogen, lower alkyl, hydroxy, lower alkoxy or cycloalkoxy,

X is hydroxymethylene,

R_5 is lower alkyl or cycloalkyl,

R_6 is unsubstituted or N-mono- or N,N-di-lower alkylated or N-lower alkanoylated amino,

R_7 is lower alkyl, lower alkenyl, cycloalkyl or aryl-lower alkyl, and

R_8 is lower alkyl, cycloalkyl, free or aliphatically esterified or etherified hydroxy-lower alkyl; amino-lower alkyl that is unsubstituted or N-lower alkanoylated or N-mono- or N,N-di-lower alkylated or N,N-disubstituted by lower alkylene, by hydroxy-, lower alkoxy- or lower alkanoyloxy-lower alkylene, by unsubstituted or N'-lower alkanoylated or N'-lower alkylated aza-lower alkylene, by oxa-lower alkylene or by optionally S-oxidised thia-lower alkylene; free or esterified or amidated carboxy-lower alkyl, free or esterified or amidated dicarboxy-lower alkyl, free or esterified or amidated carboxy-(hydroxy)-lower alkyl, free or esterified or amidated carboxycycloalkyl-lower alkyl, cyano-lower alkyl, lower alkanesulfonyl-lower alkyl, unsubstituted or N-mono- or N,N-di-lower alkylated thiocarbamoyl-lower alkyl, unsubstituted or N-mono- or N,N-di-lower alkylated sulfamoyl-lower alkyl, or a heteroaryl radical bonded via a carbon atom and optionally hydrogenated and/or oxo-substituted, or lower alkyl substituted by a heteroaryl radical bonded via a carbon atom and optionally hydrogenated and/or oxo-substituted,

or a salt thereof.

5,627,183

METHODS FOR TREATING URTICARIA USING OPTICALLY PURE (+) CETIRIZINE

Nancy M. Gray, Marlboro, Mass., assignor to Sepracor, Inc., Marlborough, Mass.

Continuation of Ser. No. 167,722, Dec. 15, 1993, abandoned, which is a continuation of Ser. No. 950,910, Sep. 24, 1992, abandoned. This application Mar. 26, 1996, Ser. No. 622,617

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—255 **6 Claims**

1. A method of treating chronic and physical urticaria in a human which comprises administering to a human in need of such therapy an amount of (+) cetirizine, or a pharmaceutically acceptable salt thereof, substantially free of its (−) stereoisomer, said amount being sufficient to alleviate symptoms of chronic and physical urticaria.

5,627,184

METHODS OF TREATING *GIARDIA LAMBLIA*

David W. Boykin, Atlanta, Ga.; Christine C. Dykstra, Chapel Hill, N.C.; Richard R. Tidwell, Pittsboro, N.C.; James E. Hall, Chapel Hill, N.C.; W. David Wilson, and Arvind Kumar, both of Atlanta, Ga., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C., and Georgia State University Research Foundation, Inc., Atlanta, Ga.

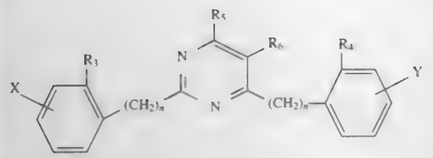
Division of Ser. No. 305,823, Sep. 13, 1994, Pat. No. 5,521,189, which is a continuation-in-part of Ser. No. 238,766, May 6, 1994. This application May 31, 1995, Ser. No. 454,838

Int. Cl.[6] A61K *31/505;* **C07D** *239/26*

U.S. Cl. 514—256 **11 Claims**

1. A method of treating *Giardia lamblia* in a subject in need of such treatment, comprising administering to said subject a compound of Formula I:

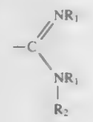
VOL 1198 ISS 1 MY 6 1997 UMI



(I)

wherein:

X and Y are located in the para or meta positions and are each



wherein:

each R_1 is H, R_2 is H, n is O, R_3 is H, R_4 is H, R_5 is H, and R_6 is H;

or a pharmaceutically acceptable salt thereof, in an amount effective to treat *Giardia lamblia*.

5,627,185

ACYCLOVIR DERIVATIVES AS ANTIVIRAL AGENTS

Gilles Gosselin, Rue Paul-Rimbaud, 34000 Montpellier, and Jean-Louis Imbach, Place Eugene Bataillon, 34095 Montpellier, both of France

Continuation-in-part of Ser. No. 416,515, Apr. 4, 1995, which is a continuation-in-part of Ser. No. 343,433, Nov. 23, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 465,450

Int. Cl.[6] A61K *31/52*

U.S. Cl. 514—269 **14 Claims**

1. A phosphotriester compound of the structure:

$(RO)_2$—P(=O)—O—ACV

where:

R is —$(CH_2)_n$—S—X wherein:

X is —C(=Z)—Y or S—U;

Z is O or S;

Y and U are alkyl, aryl or a saccharide which is optionally substituted with OH, SH or NH_2;

n is equal to 1 to 4; and

ACV is an acyclovir moiety.

5,627,186

ANTIVIRAL COMBINATIONS

Janet M. Cameron, and Nicholas Cammack, both of Greenford, Great Britain, assignors to Glaxo Group Limited, Great Britain

Continuation of Ser. No. 883,169, May 15, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 219,176

Claims priority, application United Kingdom, May 16, 1991, 9110624; Oct. 8, 1991, 9121381; Nov. 6, 1991, 9123581

Int. Cl.[6] A61K *31/70;31/505*

U.S. Cl. 514—274 **6 Claims**

1. A combination of drugs which are active against HIV wherein said combination comprises a mixture of first and second compounds wherein said first compound is (2R,cis)-4-amino-1-(2-hydroxymethyl- 1,3-oxathiolan-5-yl)-1H-pyrimidin-2-one or a pharmaceutically acceptable salt, ester or salt of said ester of said first compound and said second compound is 3'-azido-3'-deoxythymidine or a pharmaceutically acceptable salt, ester or salt of said ester of said second compound; said first and second compounds being in a ratio which is synergistic against HIV wherein the ratio of said first compound to said second compound is from about 1.8:1 to about 167:1 by weight.

5,627,187

5-FU FOR TREATING ACTINIC KEROTOSES

Bruce E. Katz, 14 E. 82nd St., New York, N.Y. 10028

Filed Apr. 12, 1995, Ser. No. 421,674

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—274 **13 Claims**

1. A method for the low morbidity treatment of actinic skin damage, said method comprising the step of:

applying to the skin, a composition comprising, by weight: about 0.10–10% of 5-fluorouracil; about 5–70% of a superficial dermal peel agent selected from the group consisting of: glycolic acid, lactic acid, salicylic acid, and combinations thereof; and a pharmaceutically acceptable carrier; wherein said application results in a reduction in the number or severity of actinic lesions, with a low incidence of inflammation.

5,627,188

COMPOSITIONS AND METHODS OF COMBATTING FUNGI EMPLOYING TRIAZOLES AND A PYRIMIDINAMINE DERIVATIVE

Ludwig Mittermeier, Freiburg, Germany, and Wilhelm Ruess, Pfeffingen, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

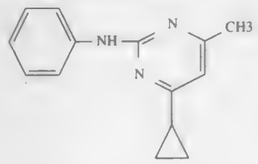
Continuation of Ser. No. 354,974, Dec. 13, 1994, abandoned, which is a division of Ser. No. 991,674, Dec. 16, 1992, Pat. No. 5,403,844. This application Jul. 18, 1995, Ser. No. 503,748

Claims priority, application Switzerland, Dec. 19, 1991, 3780/91

Int. Cl.[6] A01N *43/54;43/64*

U.S. Cl. 514—275 **4 Claims**

1. A synergistic, fungicidal, two-component composition, having an effective amount of an ergosterin-biosynthesis inhibitor of the triazole series as component I and a 2-anilinopyrimidine derivative as component II, wherein component I is 4-(4-chlorophenyl)-2-phenyl-2-(1,2,4-triazol-1 -ylmethyl)-butyronitrile or a salt or metal complex thereof, and component II is 4-cyclopropyl-6-methyl-N-phenyl- 2-pyrimidinamine of the formula



or a salt or metal complex thereof, wherein the synergistic weight ratio of component I to component II is in the range of 2:1 to 1:20, together with a carrier.

5,627,189

INSECTICIDAL 5-SUBSTITUTED-2,4-DIAMINOPYRIMIDINE DERIVATIVES

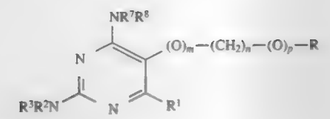
Robert N. Henrie, II, East Windsor; Clinton J. Peake, Trenton; Thomas G. Cullen, Milltown; Albert C. Lew, Princeton Junction; Munirathnam K. Chaguturu, Lawrenceville, all of N.J.; Partha S. Ray, Memphis, Tenn., and Walter H. Yeager, Yardley, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 237,481, May 3, 1994, Pat. No. 5,521,192, which is a continuation-in-part of Ser. No. 985,084, Dec. 2, 1992, abandoned. This application Nov. 8, 1995, Ser. No. 555,249

Int. Cl.[6] A01N *43/54;* **A61K** *31/535*

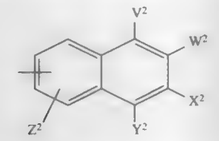
U.S. Cl. 514—275 **10 Claims**

1. An insecticidal composition comprising, in admixture with an agriculturally acceptable carrier, and a surface-active agent an insecticidally effective amount of a compound of the formula:



wherein

R is naphthyl, or substituted naphthyl of the formula:



(IV)

wherein

V^2, W^2, X^2, Y^2, and Z^2 are independently selected from hydrogen, halogen, lower alkyl, lower haloalkyl, lower alkylsulfonyl, cyano, and aminocarbonyl;

and wherein

R^1 is hydrogen, lower alkyl, amino, phenyl, or phenyl lower alkyl;

R^2, R^3, R^7 and R^8 are independently selected from hydrogen, lower alkyl, lower alkylcarbonyl, and lower alkoxycarbonyl;

or R^2 and R^3, taken together, form the group —R^6—O—R^6—, wherein R^6 is lower alkylene;

m is 0 or 1;

n is 2 to 11; and

p is 0 or 1,

and agriculturally acceptable salts thereof.

5,627,190

MESO-AZACYCLIC AMIDES OF IMIDAZOPYRIDINE CARBOXYLIC ACIDS AND ANALOGS THEREOF

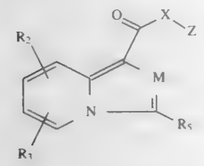
Daniel P. Becker, Glenview; Daniel L. Flynn, Mundelein; Alan E. Moormann, Skokie, and Clara I. Villamil, Glenview, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 140,374, Oct. 21, 1993, Pat. No. 5,430,040, which is a division of Ser. No. 896,273, Jun. 10, 1992, Pat. No. 5,280,029, which is a division of Ser. No. 666,278, Mar. 7, 1991, Pat. No. 5,137,893. This application Apr. 6, 1995, Ser. No. 417,583

Int. Cl.[6] A61K *31/44;* **C07D** *471/04;221/06*

U.S. Cl. 514—294 **2 Claims**

1. A compound of the formula

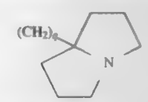


the stereoisomers and pharmaceutically acceptable salts thereof, wherein M is N or CR_4, R_2 and R_3 are independently H or halogen, R_4 is H or C_{1-6} alkoxy, R_5 is H, halogen, CF_3, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, C_{1-7} acyl, cyano, C_{1-6} alkoxycarbonyl, C_{1-7} acylamino, hydroxy, nitro, amino, aminocarbonyl, or aminosulfonyl optionally N-substituted by one or two groups selected from C_{1-6} alkyl and C_{3-8} cycloalkyl, C_{1-4} alkyl or disubstituted by C_4 or C_5 polymethylene, phenyl or phenyl C_{1-4} alkyl group optionally substituted on the phenyl ring by one or two of halogen, C_{1-6} alkoxy or C_{1-6} alkyl groups;

X is NH or O; and

Z represents a radical of the formula

(I)



wherein q is 1 or 2.

5,627,191

THERAPEUTIC AGENTS

Alan M. Birch; Robert W. Steele; Barbara W. Hitchin, and John P. Watts, all of Nottingham, England, assignors to The Boots Company PLC, Notts, England

PCT No. PCT/EP93/01774, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/01436, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 3, 1993, Ser. No. 362,492

Claims priority, application United Kingdom, Jul. 10, 1992, 9214690; Aug. 29, 1992, 9218449; Sep. 5, 1992, 9218848; Sep. 5, 1992, 9218849

Int. Cl.[6] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—303 **5 Claims**

1. A 3-[4'-(2-Ethyl-5,7-dimethyl-3H-imidazo[4,5-b]pyrid-3-ylmethyl)biphenyl-2-yl]-4-hydroxycyclobut-3-ene-1,2-dione or a pharmaceutically acceptable salt thereof.

5,627,192

ANTIHYPERLIPIDEMIC/ANTIOXIDANT DIHYDROQUINOLINES

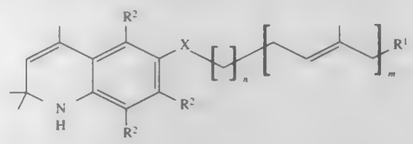
Bradley C. Pearce, East Hampton, and John J. Wright, Guilford, both of Conn., assignors to Bristrol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 48,696, Apr. 16, 1993, Pat. No. 5,411,969. This application Mar. 15, 1995, Ser. No. 405,619

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—311 **2 Claims**

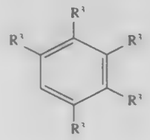
1. A method of inhibiting cholesterol biosynthesis, lowering LDL cholesterol, and inhibiting LDL oxidation which comprises administering to a host in need thereof an effective amount of a compound having the formula



wherein

X is O, S or Ch_2

R^1 is H or



R^2 and R^3 are independently H, C_1–C_5 alkyl, CF_3, CN, halogen or OCH_3,

n is an integer of 1 to 3, and

m is an integer of 1 to 3, or

a pharmaceutically acceptable salt thereof.

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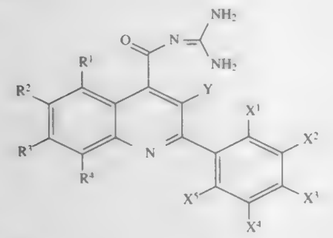
5,627,193

QUINOLINE-4-CARBONYLGUANIDINE DERIVATIVES, PROCESS FOR PRODUCING THE SAME AND PHARMACEUTICAL PREPARATIONS CONTAINING THE COMPOUNDS

Junya Fujiwara; Haruki Mori; Hiroyuki Yamashita; Takashi Kitamori; Junko Hosoya, and Hitoshi Banno, all of Chiba-ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,789
Claims priority, application Japan, Feb. 9, 1995, 7-021765
Int. Cl.[6] A61K *31/47*
U.S. Cl. 514—311 **27 Claims**

1. A quinoline-4-carbonylguanidine derivative represented by formula (1)



(1)

wherein

R^1, R^2, R^3 and R^4 are the same or different and each represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, a halogen atom, a nitro group, an amino group, a hydroxyl group, an alkyloxy group having from 1 to 6 carbon atoms, an alkyloxy group having from 1 to 6 carbon atoms and containing a terminal alkyloxy group having from 1 to 6 carbon atoms, an alkylsulfonylamino group having from 1 to 6 carbon atoms, or an alkanoylamino group having from 2 to 6 carbon atoms,

X^1, X^2, X^3, X^4 and X^5 are the same or different and each represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, a halogen atom, a nitro group, an amino group, a hydroxyl group, a trifluoromethyl group, an alkyloxy group having from 1 to 6 carbon atoms, an alkyloxy group having from 1 to 6 carbon atoms and containing a terminal alkyloxy group having from 1 to 6 carbon atoms, or a trifluoromethoxy group, and

Y represents a hydrogen atom, or an alkyl group having from 1 to 6 carbon atoms,

or a pharmaceutically acceptable salt thereof.

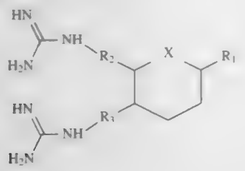
5,627,194

ANTI-VIRAL GUANIDINO-SUBSTITUTED COMPOUNDS

Sumanas Rakhit, and Abdelmalik Slassi, both of Mississauga, Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 153,981, Nov. 17, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 322,492
Int. Cl.[6] A61K *31/35;31/38;31/445;31/17*
U.S. Cl. 514—315 **19 Claims**

1. A compound of formula (I):



or a salt thereof, wherein

X is selected from C, O, N and S;

R_1 is selected from H, OH, and linear or branched lower alkyl, lower alkoxy, lower (alkyl-substituted alkoxy), lower alkyl-amine, lower alkyl-thio, hydroxy substituted lower alkoxy, lower alkoxy-alkoxy substituted lower alkoxy, hydroxy substituted lower alkyl-amine, alkoxy substituted lower alkyl-amine and terminally guanidino-substituted linear or branched lower alkyl, lower alkoxy, lower (alkyl-substituted alkoxy), lower alkyl-amine or lower alkyl-thio; and

R_2 and R_3 are independently selected from linear or branched lower alkylene in which one of the carbon atoms thereof is optionally replaced by an atom selected from nitrogen or oxygen.

5,627,195

TREATMENT FOR OCULAR INFLAMMATION

Shixing Hu, Cambridge, Mass., assignor to Massachusetts Eye and Ear Infirmary, Boston, Mass.

Filed Apr. 11, 1995, Ser. No. 420,244
Int. Cl.[6] A61K *31/445*
U.S. Cl. 514—321 **20 Claims**

1. A method of treating a subject with ocular inflammation is associated with keratitis or conjunctivitis, which method comprises administering to the subject an amount of a pharmaceutical composition containing tetrandrine or a tetrandrine agonist, said amount being effective to reduce the inflammation.

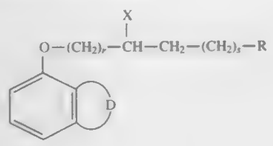
5,627,196

COMPOUNDS HAVING EFFECTS ON SEROTONIN-RELATED SYSTEMS

James E. Audia, Indianapolis; David J. Hibschman, Bargersville; Joseph H. Krushinski, Jr.; Thomas E. Mabry, both of Indianapolis; Jeffrey S. Nissen; Kurt Rasmussen, both of Fishers; Vincent P. Rocco, Indianapolis; John M. Schaus, Zionsville; Dennis C. Thompson, and David T. Wong, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 373,823, Jan. 17, 1995, abandoned. This application Jun. 6, 1995, Ser. No. 468,948
Int. Cl.[6] A61K *31/445;* **C07D** *409/00*
U.S. Cl. 514—323 **56 Claims**

1. A compound of the formula



I

wherein

r is 0–4;

s is 0–1;

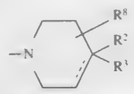
D is a residue which combines with the carbon atoms to which it is attached to complete a pyrrolyl group;

wherein

X is hydrogen, phenyl, hydroxy or methoxy;

provided that X is hydrogen or phenyl when r is 0;

R is



III

the dotted line is an optional double bond;

R^2 is hydroxy, hydrogen, cyano, C_1–C_4 alkyl, or (phenyl or benzyl substituted with 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy or halo groups);

or R^2 is amino substituted with phenyl or benzyl, substituted with 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy, halo or trifluoromethyl groups;

or R^2 is absent when the dotted line is a double bond;

R^3 is C_1–C_4 alkyl, substituted with 0–2 phenyl groups, substituted with 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy or halo groups;

or R^3 is C_1–C_4 alkyl substituted with hydroxyimino or hydroxy;

or R^3 is phenoxy, substituted with 0–1 methylenedioxy or substituted with 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy, trifluoromethyl or halo groups;

or R^3 is dibenzocycloheptenyl, benzodioxolyl, benzodioxinyl, or dibenzocyclohexenyl;

or R^3 is phenyl, naphthyl, tetralinyl, tetrazolyl, benzimidazolyl, indolyl, benzofuryl, benzothienyl, piperidino or morpholino, substituted with 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy, C_4–C_8 cycloalkylalkoxy, halo, nitro, trifluoromethyl, difluoromethyl, hydroxy or trifluoromethoxy groups;

or substituted with 0–1 phenyl, piperidinonyl, hexahydropyridazinonyl or piperazinonyl group, substituted with 0–2 C_1–C_3 alkyl, oxo, C_1–C_3 alkoxy, halo or trifluoromethyl groups;

provided that R^3 is not halo- or trifluoromethyl-substituted phenyl when R^2 is hydroxy;

or R^2 and R^3 combine to form C_1–C_4 alkylidene, substituted with 0–2 phenyl groups, substituted with 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy, halo or trifluoromethyl groups;

R^8 is hydrogen or C_1–C_3 alkyl;

or a pharmaceutically acceptable salt thereof.

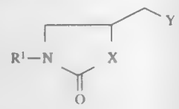
5,627,197

ADHESION RECEPTOR ANTAGONISTS

Joachim Gante, Darmstadt; Horst Juraszyk; Peter Raddatz, both of Seeheim; Hanns Wurziger, Darmstadt; Sabine Bernotat-Danielowski, Bad Nauheim, and Guido Melzer, Hoheim/Ts., all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Feb. 14, 1996, Ser. No. 601,400
Claims priority, application Germany, Feb. 15, 1995, 195 04 954.3
Int. Cl.[6] A61K *31/445;* **C07D** *211/48*
U.S. Cl. 514—326 **26 Claims**

1. A compound of formula I

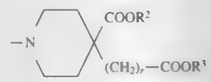


(I)

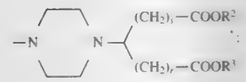
wherein

X is O, S, NH or NA;

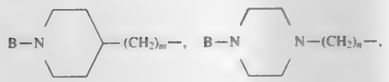
Y is



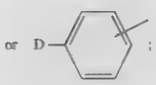
or



R^1 is



-continued



R^2 and R^3 are, in each case independently of one another, H, A or benzyl;

A is alkyl having 1 to 6 C atoms;

B is H, A, benzyl or amidino;

D is amidino, aminomethyl, aminohydroxyiminomethyl, 5-oxo-1,2,4-oxadiazolin-3-yl, 5-methyl- 1,2,4-oxadiazolin-3-yl or guanidinomethyl;

m, r and s are, in each case independently of one another, 0, 1, 2, 3 or 4; and

n is 2, 3 or 4;

wherein each free amino or amidino group is optionally protected by an amino protective group; or

a physiologically acceptable salt thereof.

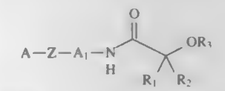
5,627,198

HETEROCYCLIC AMIDES

Peter Esch, Linz; Robertson Towart, Pasching, and Franz Rovenszky, Linz, all of Austria, assignors to Hafslund Nycomed Pharma Aktiengesellschaft, Austria

Filed Dec. 4, 1995, Ser. No. 567,057
Claims priority, application Austria, Dec. 5, 1994, 2252/94
Int. Cl.[6] C07D *285/135;* **A61K** *31/425*
U.S. Cl. 514—363 **12 Claims**

1. A heterocyclic amide of the formula I

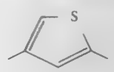


I

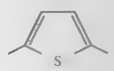
in which

A is an aromatic or S- or N-heteroaromatic ring having 5–10 carbon atoms which can be unsubstituted or mono- or polysubstituted by straight-chain or branched C_1–C_4alkyl, C_1–C_4 alkoxy, hydroxyl, halogen or CF_3, CF_3CF_2, Z is a radical C=O, SO or SO_2,

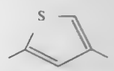
A_1 is a heteroaromatic system of the formula IIa–IIc



IIa

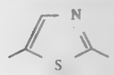


IIb

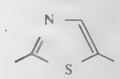


IIc

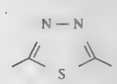
or a heteroaromatic system of the formula IIIa–IIIc



IIIa



IIIb



IIIc

VOL 1198 ISS 1 MY 6 1997 UMI

R_1 and R_2 independently of one another are H, straight-chain or branched (C_1–C_4)-alkyl or fluorinated alkyl, and R_3 is H, straight-chain or branched (C_1–C_4)-alkyl, acetyl, alkylacetyl or a group which can be eliminated under physiological conditions.

5,627,199

6-HETEROCYCLIC-4-AMINO-1,2,2A,3,4,5-HEXAHYDROBENZ [CD] INDOLES

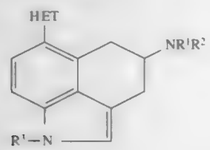
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Michael J. Martinelli; Charles J. Paget, Jr., both of Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to ELi Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 263,910, Jun. 20, 1994, which is a division of Ser. No. 954,171, Sep. 20, 1992, Pat. No. 5,347,013, which is a continuation-in-part of Ser. No. 676,679, Mar. 28, 1991, Pat. No. 5,244,911: This application Jun. 2, 1995, Ser. No. 459,368

Int. Cl.[6] A61K *31/475*

U.S. Cl. 514—365 **11 Claims**

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, —$(CH_2)_nS(C_1$–C_4 alkyl), —$C(O)R^4$, or —$(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

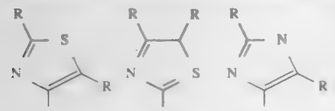
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of



where R is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

5,627,200

β_3-ADRENOCEPTOR AGONISTS AND ANTAGONISTS FOR THE TREATMENT OF INTESTINAL MOTILITY DISORDERS, DEPRESSION, PROSTATE DISEASE AND DYSLIPIDEMIA

David K. Kreutter, Madison, and Robert L. Dow, Waterford, both of Conn., assignors to Pfizer Inc, New York, N.Y.

Filed Sep. 26, 1994, Ser. No. 312,027

Int. Cl.[6] A61K *31/38;31/415;31/42;31/425*

U.S. Cl. 514—367 **6 Claims**

1. A method for treating prostate disease in a mammal comprising administering to said mammal a β_3-adrenoceptor antagonizing or agonizing effective amount of a β_3-adrenoceptor antagonist or agonist or a pharmaceutically acceptable salt or prodrug thereof.

5,627,201

PHENYLIMIDAZOLIDINES HAVING ANTIANDROGENIC ACTIVITY

Martine Gaillard-Kelly; Francois Goubet, both of Paris; Daniel Philibert, La Verenne Saint Hilaire, and Jean-Georges Teutsch, Pantin, all of France, assignors to Roussel Uclaf, France

Division of Ser. No. 64,257, May 18, 1993, Pat. No. 5,411,981, which is a continuation-in-part of Ser. No. 819,910, Jan. 9, 1992, abandoned. This application Jan. 13, 1995, Ser. No. 372,648

Claims priority, application France, Jan. 9, 1991, 91 00185; Jul. 8, 1992, 92 08431

Int. Cl.[6] A61K *31/415;* **C07D** *233/72*

U.S. Cl. 514—386 **19 Claims**

1. A compound selected from the group consisting of a compound of the formula

wherein R_1 is selected from the group consisting of —CN, —NO_2 and halogen, R_2 is —CF_3, or halogen, —A—B—is

X is —O— or —S—, R_3 is a) alkyl, alkenyl and alkynyl of up to 6 carbon atoms uninterrupted or interrupted with oxygen or unoxidized or oxidized sulfur, phenyl and phenylalkyl of 1 to 6 alkyl carbon atoms and all substituted with at least one member of the group consisting of —SH, acyloxy of an aliphatic carboxylic acid up to 7 carbon atoms, —phenyl, —O—phenyl, —O—phenalkyl, halo —S—phenyl, with the sulfur being unoxidized or oxidized to sulfone or sulfoxide, or heterocyclic of 3 to 6 ring members and containing at least one heteroatom selected from the group consisting of oxygen, sulfur and nitrogen, phenyl and phenalkyl being unsubstituted or substituted with a member of the group consisting of halogen, —CF_3, alkyl, alkoxy, alkenyl, alkenyloxy, alkynyl and alkynyloxy, b) trialkylsilyl with alkyl of 1 to 6 carbon atoms, c) acyl and acyloxy of an organic carboxylic acid of 1 to 7 carbon atoms, Y is selected from the group consisting of =O, =S and =NH and their non-toxic, pharmaceutically acceptable acid addition salts.

15. A method of inducing anti-androgenic activity in warm-blooded animals comprising administering to warm-blooded animals an anti-androgenically effective amount of at least one compound of claim **1**.

5,627,202

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

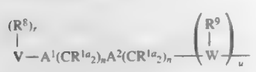
S. Jane deSolms, Norristown, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 412,828, Mar. 29, 1995, abandoned. This application Feb. 13, 1996, Ser. No. 600,794

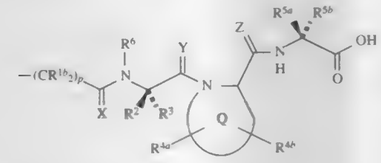
Int. Cl.[6] C07D *401/06;* **A61K** *31/415*

U.S. Cl. 514—397 **30 Claims**

1. A compound which inhibits farnesyl-protein transferase having the Formula I:



I



wherein:

R^{1a} and R^{1b} are independently selected from:

a) hydrogen,

b) aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, NO_2, $(R^{10})^2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—,

c) C_1–C_6 alkyl unsubstituted or substituted by aryl, heterocyclic, cycloalkyl, alkenyl, alkynyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)$—NR^{10}—;

R^2 and R^3 are independently selected from:

a) a side chain of a naturally occurring amino acid,

b) an oxidized form of a side chain of a naturally occurring amino acid which is:

i) methionine sulfoxide, or

ii) methionine sulfone, and

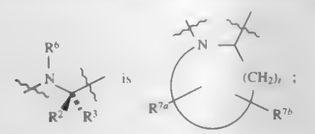
c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group,

wherein the substituent is selected from F, Cl, Br, $N(R^{10})_2$, NO_2, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, $R^{11}OC(O)NR^{10}$— and C_1–C_{20} alkyl, and

d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocycle and C_3–C_{10} cycloalkyl; or

R^2 and R^3 are combined to form —$(CH_2)_s$—; or

R^2 or R^3 are combined with R^6 to form a ring such that



R^{4a}, R^{4b}, R^{7a} and R^{7b} are independently selected from:

a) hydrogen,

b) C_1–C_6 alkyl unsubstituted or substituted by alkenyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, N_3, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—,

c) aryl, heterocycle, cycloalkyl, alkenyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—CN, NO_2, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—, and

d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocyclic and C_3–C_{10} cycloalkyl;

R^{5a} and R^{5b} are independently selected from:

a) a side chain of a naturally occurring amino acid,

b) an oxidized form of a side chain of a naturally occurring amino acid which is:

i) methionine sulfoxide, or

ii) methionine sulfone,

c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocycle group,

wherein the substituent is selected from F, Cl, Br, $(R^{10})_2NC(O)$—, NO_2, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, $R^{11}OC(O)NR^{10}$— and C_1–C_{20} alkyl,

d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocycle and C_3–C_{10} cycloalkyl; or

R^{5a} and R^{5b} are combined to form —$(CH_2)_s$— wherein one of the carbon atoms is optionally replaced by a moiety selected from: O, $S(O)_m$, —NC(O)—, and—$N(COR^{10})$—;

R^6 is independently selected from hydrogen or C_1–C_6 alkyl;

R^8 is independently selected from:

a) hydrogen,

b) aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, NO_2, $R^{10}{}_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—, and

c) C_1–C_6 alkyl unsubstituted or substituted by aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)$—, $R^{10}C(O)NH$, CN, H_2N—$C(NH)$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{10}OC(O)NH$—;

R^9 is selected from:

a) hydrogen,

b) alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, NO_2, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—, and

c) C_1–C_6 alkyl unsubstituted or substituted by perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—;

R^{10} is independently selected from hydrogen, C_1–C_6 alkyl, benzyl and aryl;

R^{11} is independently selected from C_1–C_6 alkyl and aryl;

A^1 and A^2 are independently selected from: a bond, —CH=CH—, —C≡C—, —C(O)—, —C(O)NR^{10}—, —$NR^{10}C(O)$—, O, —$N(R^{10})$—, —$S(O)_2N(R^{10})$—, —$N(R^{10})S(O)_2$—, or $S(O)_m$;

Q is a substituted or unsubstituted nitrogen-containing C_4–C_9 mono or bicyclic ring system, wherein the non-nitrogen containing ring may be a C_5–C_7 saturated ring;

V is selected from:

a) hydrogen,

b) heterocycle,

c) aryl,

d) C_1–C_{20} alkyl wherein from 0 to 4 carbon atoms are replaced with a a heteroatom selected from O, S, and N, and

e) C_2–C_{20} alkenyl,

provided that V is not hydrogen if A^1 is $S(O)_m$ and V is not hydrogen if A^1 is a bond, n is 0 and A^2 is $S(O)_m$;

W is a heterocycle;

X, Y and Z are independently H_2 or O;

m is 0,1 or 2;

n is 0,1,2,3 or 4;

p is 0,1,2,3 or 4;

r is 0 to 5, provided that r is 0 when V is hydrogen;

s is 4 or 5;

t is 3,4 or 5; and

u is 0 or 1;

or a pharmaceutically acceptable salt thereof.

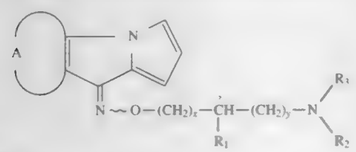
VOL 1198 ISS 1 MY 6 1997 UMI

5,627,203
TRICYCLIC OXIME ETHERS

Sylvain Rault, Moult; Max Robba, Paris; Jean-Charles Lancelot, Le Bourg; Hervé Prunier, Caen; Pierre Renard, Versailles; Bruno Pfeiffer, Eaubonne; Béatrice Guardiola-Lemaitre, Saint-Cloud, and Marie-Claire Rettori, Courbevoie, all of France, assignors to Adir et Compagnie, Courbevoie, France

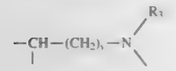
Filed Dec. 21, 1995, Ser. No. 576,678
Claims priority, application France, Dec. 22, 1994, 94 15431
Int. Cl.[5] A61K *31/40;* **C07D** *513/14*
U.S. Cl. 514—411 **11 Claims**

1. A compound selected from those of formula (I):

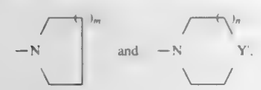


(I)

wherein
R_1 is selected from:
hydrogen,
alkyl,
alkenyl,
cycloalkyl,
cycloalkyl in which the alkyl chain is straight or branched and has 1 to 4 carbon atoms inclusive,
hydroxy,
alkoxy,
unsubstituted or substituted phenyl,
unsubstituted of substituted phenylalkyl in which the alkyl chain is straight or branched and has 1 to 4 carbon atoms inclusive,
unsubstituted or substituted phenoxy, and
unsubstituted or substituted phenylalkoxy in which the alkyl chain is straight or branched and has 1 to 4 carbon atoms inclusive,
or R_1 forms with R_2 and the chain



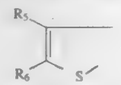
carrying them
a nitrogen-containing ring system having 5 to 8 ring members inclusive,
R_2 and R_3 are each selected, independently of the other, from:
hydrogen,
alkyl,
alkenyl,
cycloalkyl,
unsubstituted or substituted indanyl,
cycloalkylalkyl in which the alkyl chain is straight or branched and has 1 to 4 carbon atoms inclusive,
unsubstituted or substituted phenyl, and
unsubstituted or substituted phenylalkyl in which the alkyl chain is straight or branched and has 1 to 4 carbon atoms inclusive,
or R_2 and R_3 form together with the nitrogen atom carrying them a heterocyclic system selected from:



wherein:
m is 0, 1, 2, 3, or 4,
n is 0, 1, or 2,
Y' is selected from oxygen, sulfur and

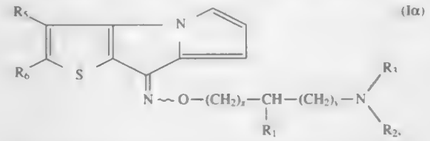


R_4 being selected from:
hydrogen,
alkyl, and
unsubstituted or substituted $-(CH_2)_\sigma$-phenyl, wherein σ is 0, 1, 2, 3, or 4,
x and y are identical or different and are 0, 1, 2, 3, or 4,
A represents:
a group of formula (α):



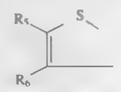
(α)

and thus forms with the heterocyclic system carrying it a thieno[2,3-d]pyrrolo[1,2-a]pyrrole of the formula (I_α):



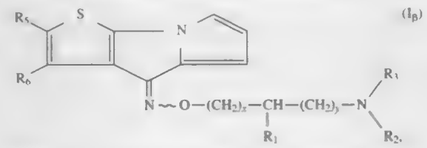
(Iα)

wherein R_1, R_2, R_3, x, and y are as defined hereinbefore and R_5 and R_6, which are identical or different, each represents, independently of the other, a group selected from:
hydrogen,
alkyl,
hydroxy,
alkoxy,
halogen,
trifluoromethyl,
alkoxycarbonyl,
unsubstituted or substituted $-(CH_2)_p$-phenyl wherein p is 0, 1, 2, 3, or 4, and
unsubstituted or substituted $-O-(CH_2)_{p'}$-phenyl wherein p' is 0, 1, 2, 3, or 4,
a group of formula (β):



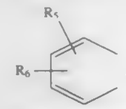
(β)

and thus forms with the heterocyclic system carrying it a thieno[3,2-d]pyrrolo[1,2-a]pyrrole of the formula (I_β):



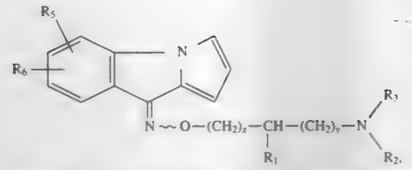
(I_β)

wherein R_1, R_2, R_3, R_5, R_6, x and y are as defined hereinbefore,
a group of formula (γ):



(γ)

and thus forms with the heterocyclic system carrying it a pyrrolo[1,2-a]indole of the formula (Iγ):



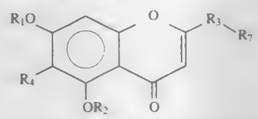
wherein R_1, R_2, R_3, R_5, R_6, x and y are as defined hereinbefore,
their cis or trans isomers in respect of the oxime ether,
their enantiomers or diastereoisomers, and
their hydrates and/or pharmaceutically-acceptable addition salts with an acid or a base,
it being understood, unless specified otherwise, that:
the terms "alkyl" and "alkoxy" represent a straight-chain or branched group having 1 to 6 carbon atoms inclusive,
the term "alkenyl" represents a straight-chain or branched unsaturated group having 2 to 6 carbon atoms inclusive,
the term "cycloalkyl" represents a carbon ring system having 3 to 8 ring members inclusive,
the expressions "substituted indanyl", "substituted phenyl", "substituted phenoxy", "substituted phenylalkyl", "substituted $-(CH_2)_\sigma$-phenyl", "substituted $-(CH_2)_p$-phenyl", substituted "$-O-(CH_2)_{p'}$-phenyl" and "substituted phenylalkoxy" denote that the phenyl radical is substituted by one or more identical or different substituents selected from alkyl, alkoxy, hydroxy, halogen, trifluoromethyl, nitrile and nitro.

5,627,204
CHROMONE DERIVATIVE, AND ALDOSE REDUCTASE INHIBITOR COMPRISING SAID COMPOUND AS ACTIVE COMPONENT

Yasushi Igarashi; Takuji Yamaguchi; Yoshimitsu Ogawa; Mika Tomita; Hiroko Hayashi; Toshitsugu Sato, and Kunio Hosaka, all of Ibaraki-ken, Japan, assignors to Tsumura & Company, Tokyo, Japan

Division of Ser. No. 322,396, Oct. 12, 1994, Pat. No. 5,455,267, which is a continuation of Ser. No. 915,995, Jul. 30, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 465,950
Claims priority, application Japan, Nov. 30, 1990, 2-330519; Nov. 30, 1990, 2-330520
Int. Cl.[6] A61K *31/355;31/495;31/44;31/415*
U.S. Cl. 514—456 **16 Claims**

1. A method for inhibiting aldose reductase comprising: employing a chromone derivative or a pharmaceutically acceptable salt thereof represented by Formula (I):



(I)

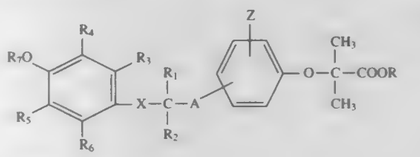
wherein R_1 and R_2 are selected from the group consisting of a hydrogen atom, a lower alkyl group, a lower alkenyl group, an aliphatic acyl group and an aromatic acyl group; R_3 represents a sulfur atom; R_4 is selected from the group consisting of a hydrogen atom and a lower alkoxy group; R_7 is selected from the group consisting of a phenyl, benzyl, and a nitrogen-containing heterocyclic group selected from the group consisting of pyridyl, benzimidazolyl, benzthiazolyl, thiazolynyl and thiadiazolyl, substituted or unsubstituted, wherein substituents are selected from the group consisting of C_{1-6} alkyl group, a halogen atom, an amino, hydroxy, nitro, carboxyl, hydroxymethyl, methylenedioxy, C_{1-6} alkoxy, C_{2-6} alkenyloxy, C_{1-6} alkoxycarbonyl, tert-butyldimethylsilyloxy, a glycyloxy group, a β-aspartyloxy group, a 4-(4-methylpiperazinomethyl)benzoyloxy group and a benzoyloxy group.

5,627,205
(I$_y$) SUBSTITUTED PHENOXYISOBUTYRIC ACIDS AND ESTERS

Gilbert Regnier, Chatenay Malabry; Claude Guillonneau, Clamart; Jean-Paul Vilaine, Chatenay Malabry; Albert Lenaers, Triel sur Seine, and Christine Breugnot, Paris, all of France, assignors to Adir Et Compagnie, Courbevoie, France

Division of Ser. No. 230,143, Apr. 19, 1994, Pat. No. 5,512,595. This application Aug. 3, 1995, Ser. No. 510,857
Claims priority, application France, Apr. 20, 1993, 93 04606
Int. Cl.[6] A61K *31/35;31/34;* **C07D** *311/72;307/80*
U.S. Cl. 514—456 **5 Claims**

1. A substituted phenoxyisobutyric acid or ester selected from those of formula I:



(I)

wherein:
X represents oxygen;
A represents a single bond or an alkylene radical having 1 to 9 carbon atoms inclusive in a straight or branched chain optionally including a double bond, a cyclopropyl radical, an oxygen atom or a carbonyl radical, or optionally substituted by halogen or hydroxy;
R represents hydrogen or alkyl having 1 to 6 carbon atoms inclusive in a straight or branched chain and optionally substituted by one or two hydroxy;
R_1 and R_3:
together form a $(CH_2)_n$ bridge wherein n is 1 or 2;
each of R_2 and R_6, which may be identical or different, represents hydrogen or methyl;
each of R_4 and R_5, which may be identical or different, represents alkyl having 1 to 6 carbon atoms inclusive in a straight or branched chain;
R_7 represents hydrogen or CH_3CO-, $C_2H_5O-CH_2-$, or benzyl; and
Z represents hydrogen, halogen, alkyl or alkoxy, each containing 1 to 5 carbon atoms inclusive in a straight branched chain;
and, when they exist, its corresponding enantiomers and diastereoisomers,
and also its physiologically-tolerable salts with suitable bases.

5. A method for treating a mammal, afflicted with a pathology in which membrane lipid peroxidation plays an initiating and/or aggravating role, comprising the step of administering to the said mammal an amount of a compound of claim 1 which is effective for alleviation of the said condition.

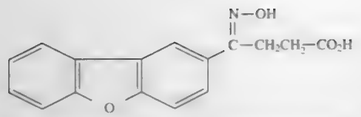
5,627,206
TRICYCLIC INHIBITOR OF MATRIX METALLOPROTEINASES

Donald Hupe; Linda Lea Johnson, and Qi-Zhuang Ye, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 2, 1995, Ser. No. 460,437
Int. Cl.[6] C07D *307/91;* **A61K** *31/34*
U.S. Cl. 514—468 **5 Claims**

1. A method of treating multiple sclerosis comprising administering to a host suffering therefrom a therapeutically effective amount of the compound of Formula I

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or corresponding isomers thereof; or a pharmaceutically acceptable salt thereof in unit dosage form.

5,627,207

ARYLETHENYLENE COMPOUNDS WHICH ARE USEFUL AS TYROSINE KINASE INHIBITORS

Franco Buzzetti, Monza; Antonio Longo, Milan, and Maristella Colombo, Cesano Boscone, all of Italy, assignors to Farmitalia Carlo Erba S r l, Milan, Italy

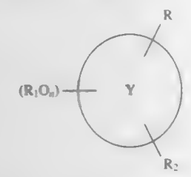
Division of Ser. No. 294,350, Aug. 23, 1994, Pat. No. 5,488,057, which is a division of Ser. No. 126,687, Sep. 27, 1993, Pat. No. 5,374,652, which is a continuation of Ser. No. 768,259, Oct. 28, 1991, abandoned. This application May 31, 1995, Ser. No. 455,688

Claims priority, application United Kingdom, Feb. 28, 1990, 9004483

Int. Cl.[6] A61K *31/275;* **C07C** *255/30*

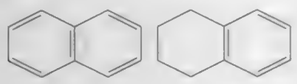
U.S. Cl. 514—520 **8 Claims**

1. A compound of the formula (I)

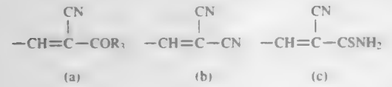


wherein

Y is a bicyclic ring system selected from the group consisting of (A) and (B):



R is a group of formula (a), (b) or (c)



in which R_1 is —OH or $—NH_2$;

R_1 is hydrogen, C_1–C_6 alkyl or C_2–C_6 alkanoyl; R_2 is hydrogen, halogen, cyano or C_1–C_6 alkyl;

n is zero or an integer of 1 to 3; n is zero or an integer of 1 to 3 when Y is a ring system (A) or it is zero, 1 or 2 when Y is a ring system (B); or a pharmaceutically acceptable salt thereof; and wherein each of the substituents R, OR_1 and R_2 may be independently on either aryl moiety of the bicyclic ring system (A), whereas only the benzene moiety may be substituted in the bicyclic ring system (B); and with the proviso that when Y is a ring system (A), R is other than a group (a) or (b).

5,627,208

PROSTAGLANDIN DERIVATIVES FOR THE TREATMENT OF GLAUCOMA OR OCULAR HYPERTENSION

Johan W. Stjernschantz, and Bahram Resul, both of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Division of Ser. No. 986,943, Dec. 8, 1992, Pat. No. 5,422,368, which is a continuation of Ser. No. 469,442, Apr. 10, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 470,607

Claims priority, application Sweden, Sep. 6, 1988, 8803110; Oct. 28, 1988, 880385; WIPO, Sep. 6, 1989, PCT/SE89/00475

Int. Cl.[6] A61K *31/557*

U.S. Cl. 514—530 **8 Claims**

1. In a therapeutic composition for topical treatment of ocular hypertension or glaucoma containing a prostaglandin PGA, PGB, PGE or PGF in an amount sufficient to reduce intraocular pressure without causing substantial ocular irritation and an ophthalmologically compatible vehicle, the improvement comprising the omega chain of the prostaglandin having the formula

$$C_{13}—B—C_{14}—D_{15-24}—R_2$$

wherein

C is a carbon atom (the number according to standard prostaglandin nomenclature being indicated by the subscript);

B is a single bond, a double bond, or a triple bond;

D represents a sub-chain of 1–10 carbon atoms with 1–2 heteroatoms selected from the group that consisists of N, and S, with substituents on each carbon atom that are selected from the group consisting of a hydrogen atom, an alkyl group, an oxo group and a hydroxyl group, and

an cycloalkyl or cycloalkenyl ring structure, with 3–7-carbon atoms in the ring, which is

(1) unsubstituted or

(2) substituted with at least one lower alkyl group containing 1–5 carbon atoms.

5,627,209

USE OF CERTAIN 9-HALOPROSTAGLANDINS TO TREAT GLAUCOMA AND OCULAR HYPERTENSION

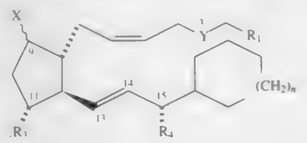
Louis DeSantis, Jr., Fort Worth, and Verney L. Sallee, Burleson, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 167,747, Dec. 15, 1993, abandoned. This application Oct. 25, 1995, Ser. No. 548,257

Int. Cl.[6] A61K *31/215;31/19*

U.S. Cl. 514—530 **7 Claims**

1. A method of treating glaucoma and ocular hypertension which comprises topically administering to the affected eye a therapeutically effective amount of a compound of formula:



wherein:

R_1=CO_2R_2, wherein R_2=H, a cationic salt moiety, or an ophthalmically acceptable ammonium moiety; or R_1 may also represent an ophthalmically acceptable ester moiety;

X=halogen in either configuration;

Y=O;

R_3, R_4 can be the same or different, and are selected from: free or functionally modified hydroxy groups; and

n=0 or 1.

5,627,210

BRANCHED COMBINATORIAL LIBRARIES

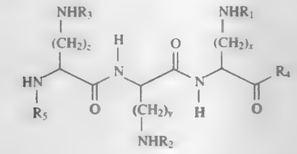
Robert Valerio, Cranbourne South, and Jian-Xin Wang, Melbourne, both of Australia, assignors to Chiron Corporation, Emervylle, Calif.

Filed Feb. 6, 1995, Ser. No. 385,112

Int. Cl.[6] A61K *31/24;31/195;31/16;* **C07C** *233/00*

U.S. Cl. 514—535 **6 Claims**

1. A compound of the formula:



where R_1, R_2, and R_3 are each independently groups of the formula —C(O)R, where

R is an organic radical;

x, y, and z are each independently 1, 2, 3, or 4;

R_4 and R_5 are each independently alkyl, alkenyl, aryl, aralkyl, acyl, amino, hydroxy, alkoxy, aryloxy, aryl-alkoxy, heterocyclyl, or H.

5,627,211

CYCLOHEXYL AMINE DERIVATIVES AND THEIR USE AS TACHYKININ ANTAGONISTS

Martin R. Teall, Bishop Storford, United Kingdom, assignor to Merck Sharp & Dohme Limited, Hoddesdon, England

PCT No. PCT/GB93/01961, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/07843, PCT Pub. Date Apr. 14, 1994

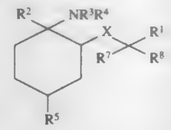
PCT Filed Sep. 16, 1993, Ser. No. 397,234

Claims priority, application United Kingdom, Sep. 25, 1992, 9220286

Int. Cl.[6] A61K *31/24;* **C07C** *271/24;229/28;211/34*

U.S. Cl. 514—539 **14 Claims**

1. A compound of formula (I), or a salt or prodrug thereof:



wherein

X represents O or S;

R^1 represents phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6} alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a or —$CONR^aR^b$;

R^2 represents phenyl optionally substituted by C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl;

R^3 and R^4 each independently represent H, —COR^a, —CO_2R^a or C_{1-6}alkyl optionally substituted by a group selected from (—CO_2R^a, —$CONR^aR^b$, hydroxy, cyano, —COR^a, —NR^aR^b, and phenyl optionally substituted by C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl);

R^5 represents H or XCH_2R^6 wherein R^6 represents phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6} alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a or —$CONR^aR^b$ and X is as previously defined;

R^7 and R^8 each independently represent H or C_{1-6}alkyl; and

R^a and R^b each independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl

with the exception of 2-amino-2-phenyl-1-benzyloxycyclohexane.

5,627,212

ESTERS OF L-CARNITINE AND ACYL L-CARNITINE WITH HYDOXY ACIDS FOR PRODUCING PHARMCAEUTICAL COMPOSITIONS FOR TREATING DERMATOSES

Claudio Cavazza, and Paolo Cavazza, both of Rome, Italy, assignors to Avantgarde S.p.A., Rome, Italy

Filed Jun. 6, 1994, Ser. No. 254,766

Claims priority, application Italy, Jun. 22, 1993, RM93A0399

Int. Cl.[6] A61K *31/225;31/22*

U.S. Cl. 514—547 **10 Claims**

1. A method of treating dermatosis comprising: topically applying an effective amount of an ester of L-carnitine or an acyl L-carnitine with a hydroxy carboxylic acid selected from the group consisting of α-hydroxybutyric acid, α-hydroxyisocaproic acid, α-hydroxyisovaleric acid, malic acid and tartronic acid, said acyl group being a C_{1-5} alkanoyl radical selected from the group consisting of acetyl, propionyl, butyryl, isobutyryl, valeryl and isovaleryl, and the pharmaceutically acceptable salts of said esters, to a patient in need thereof.

5,627,213

PREPARATION FOR LYSING ERYTHROCYTES

André Van Agthoven, Marseilles, France, assignor to Immunotech, Marseilles, France

Filed May 19, 1994, Ser. No. 246,240

Claims priority, application France, May 19, 1993, 93 06333

Int. Cl.[6] A61K *31/19;31/11;31/135;31/045*

U.S. Cl. 514—557 **31 Claims**

1. A preparation for lysing erythrocytes, characterized herein insofar as it concerns an aqueous preparation with a substantially physiological ionic strength comprising a mixture:

of an aliphatic aldehyde,

of a polyhydric alcohol and,

of a salt of a strong acid and of an alkali metal or an alkaline earth metal.

5,627,214

USE OF DIAMINES IN OPHTHALMIC COMPOSITIONS

Rolf Schäfer, Bubendorf, Switzerland; Ronald L. Schlitzer, Fort Worth, and Nissanke L. Dassanayake, Arlington, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Division of Ser. No. 142,624, Oct. 25, 1993, Pat. No. 5,415,837. This application Feb. 16, 1995, Ser. No. 389,669

Int. Cl.[6] A61K *31/14*

U.S. Cl. 514—642 **4 Claims**

1. A method of preserving an ophthalmic composition which comprises including in the composition an amount of a compound of the following formula effective to preserve the composition from microbial contamination:

$$R—NH—(CH_2)_n—NH_2 \quad (I)$$

wherein: R is C_6 to C_{18} saturated or unsaturated alkyl, alkylaryl or alkoxyaryl, and n is 2 to 16, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable vehicle therefor.

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5,627,215

UNSATURATE AMINO COMPOUNDS FOR USE AS ANTICANCER AND ANTIPROTOZOIC AGENT

Jörg Frei, Hölstein, and Jaroslav Stanek, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/04230, § 371 Date Aug. 18, 1995, § 102(e) Date Aug. 18, 1995, PCT Pub. No. WO95/18091, PCT Pub. Date Jul. 6, 1995

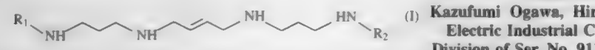
PCT Filed Dec. 14, 1994, Ser. No. 505,329

Claims priority, application Switzerland, Dec. 27, 1993, 3876/93

Int. Cl.[6] A61K *31/13;* **C07C** *211/22;211/25*

U.S. Cl. 514—674 **11 Claims**

1. A compound of formula I,



(I)

wherein R_1 and R_2, each independently of the other, are selected from C_2–C_4alkyl, C_3–C_4alkenyl wherein the double bond does not originate from the carbon atom that is bonded to a nitrogen bonding R_1 or R_2, and from C_3–C_4cycloalkylmethyl, or a salt thereof.

5,627,216

MEDICINAL OINTMENT FOR HEMORRHOID AND SKIN CARE

George D. Papadopoulos, P.O. Box 11686, Costa Mesa, Calif. 92627

Continuation-in-part of Ser. No. 192,630, Feb. 7, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 418,278

Int. Cl.[6] A61K *35/78*

U.S. Cl. 514—783 **1 Claim**

1. A medicinal composition for the treatment of hemorrhoids and for skin care consisting essentially of an aqueous solution of genus *Solanum melongena* and virgin olive oil wherein the improvement comprises:

(a) cutting the outer skin from the stalk of a *Solanum melogena* plant;

(b) drying said outer skin from the stalk;

(c) grinding said skin into a fine powder;

(d) placing said powder into a receptacle containing boiling virgin olive oil and,

(e) boiling the mixture of powder and virgin olive oil for approximately 30 minutes.

5,627,217

INTERFACIAL POLYMERIZATION IN A POROUS SUBSTRATE AND SUBSTRATES FUNCTIONALIZED WITH PHOTOCHEMICAL GROUPS

Ken Rilling; James Dickson, both of Hamilton; Ronald Childs, Dundas, all of Canada, and David R. Gagnon, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 84,891, Jun. 29, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 536,044

Int. Cl.[6] B01D *39/14;* **C08J** *9/00*

U.S. Cl. 521—50 **12 Claims**

1. A porous article comprising a porous substrate having a polymer deposited on the pore-defining surfaces thereof, the deposited polymer leaving the pores unblocked and said polymer having photochemically reactive groups capable of undergoing a substantially nonreversible chemical transformation to provide functional groups on the pore surfaces upon exposure to ultraviolet, visible or near infrared irradiation at wavelengths which avoid light-induced deterioration of the substrate.

5,627,218

COMPARTMENTED THERMOPLASTIC PELLETS

Rexford H. Bradt, 725 E. Fort Wayne St., Warsaw, Ind. 46580

Filed Mar. 20, 1995, Ser. No. 406,582

Int. Cl.[6] C08J *9/22;9/224*

U.S. Cl. 521—57 **11 Claims**

1. A heat softenable, hopper feedable plastic molding pellet containing at least two different chemical reactants separately disposed in distinct zones within the pellet, the chemical reactants combining when mixed at an elevated temperature.

5,627,219

FORMED PLASTIC AND METHOD OF MANUFACTURING THE SAME

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 913,727, Jul. 16, 1992, Pat. No. 5,461,083. This application Jun. 7, 1995, Ser. No. 478,752

Claims priority, application Japan, Jul. 26, 1991, 3-187696

Int. Cl.[6] C08J *9/08*

U.S. Cl. 521—99 **4 Claims**

1. A method of manufacturing a foamed plastic comprising foamed cells, said method comprising sealing a mixture of a resin and a volatile polymerizable foaming agent within an airtight film bag, foaming the mixture, and irradiating the foamed mixture with an energy beam through the airtight film, wherein the foaming agent has a boiling point of 30° C. to 81° C., at least one unsaturated carbon-carbon bond, and is contained in the foamed cells.

5,627,220

PROCESS OF THE PREPARATION OF MODIFIED POLYISOCYANURATE FOAMS FOR HEAT INSULATION MATERIALS

Morihiro Matsumoto, Osaka; Noboru Yoshida, Nishinomiya; Kiyotake Morimoto, Koshigaya, and Satoshi Nakamura, Tokyo, all of Japan, assignors to Daido Steel Sheet Corporation, Hyogo, and Nisshinbo Industries, Inc., Tokyo, both of Japan

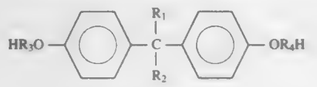
Filed Jun. 22, 1995, Ser. No. 493,409

Claims priority, application Japan, Dec. 7, 1994, 6-304019

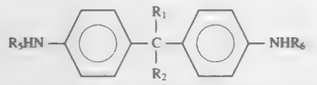
Int. Cl.[6] C08G *18/16*

U.S. Cl. 521—108 **11 Claims**

1. A process of preparing a foam of modified polyisocyanurate comprising mixing a polyisocyanate, a polyol, and water in the presence of a first catalyst promoting the formation of isocyanurate linkages, and a second catalyst, comprising phospholene oxide, promoting the formation of carbodiimide linkages and the generation of carbon dioxide as a blowing agent, and an aromatic compound which is different from said polyol and is represented by at least one compound of the following formula (I) and (II):



(I)



(II)

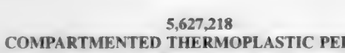
wherein R_1 and R_2 represents at least one of H and —CH_3, R_3 and R_4 represent at least one of the following (α) and (β):



(α)

and

-continued



(β)

R_5 and R_6 represent the same or different C_1-C_4 alkyl groups, and n represents an integer from 1 to 4; and

reacting said mixture in the substantial absence of a chlorofluorohydrocarbon (CFC) blowing agent to form a foam with improved adhesion, improved compression strength and reduced friability and properties which are at least comparable to these characteristics in similar foams made with chlorofluorohydrocarbon blowing agents.

5,627,221

PROCESS FOR PRODUCTION OF LOW DENSITY WATER-BLOWN RIGID FOAMS WITH FLOW AND DIMENSIONAL STABILITY

Donald W. Schumacher, Antioch; George Magnus, Arlington Heights, and Joanne M. Moster, Chicago, all of Ill., assignors to Stepan Company, Northfield, Ill.

Continuation of Ser. No. 222,073, Apr. 4, 1994, Pat. No. 5,240,169, which is a continuation of Ser. No. 937,052, Aug. 27, 1992, abandoned. This application May 15, 1995, Ser. No. 441,124

Int. Cl.[6] C08G *18/32;18/34*

U.S. Cl. 521—173 **19 Claims**

1. A water-blown rigid foam comprising a mixture of polyols and an isocyanate, the mixture of polyols comprising a polyester polyol and a polyether polyol,

the polyether polyol having an average functionality of at least 2, and where at least about 60% by weight of the mixture of polyols, based on the weight of the polyols, is a polyester having a functionality of from about at least about 1.6 and an OH value of at least 200,

the foam having a free rise density of from less than about 2.5 pounds/ft^3 and exhibiting less than a 5.5% volume change when stored at 158° F. for 28 days.

5,627,222

TOUGHENED, FIBER-REINFORCED THERMOSETTING RESIN MATRIX PREPREGS AND COMPOSITES MADE THEREFROM

Hans G. Recker, Irvine, Calif.; Volker Altsaedt, Gernsheim, Germany; Helmut Tesch, Roedersheim/Gronau, Germany, and Thomas Weber, Ludwigshafen, Germany, assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 126,013, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 738,006, Jul. 30, 1991, abandoned. This application Jan. 9, 1995, Ser. No. 370,338

Int. Cl.[6] C08G *73/10;* **C08J** *5/24*

U.S. Cl. 523—400 **22 Claims**

1. A curable thermosetting resin system for forming a toughened single phase cured matrix resin, said resin system consisting essentially of:

A. a base resin system consisting essentially of

(i) one or more thermosetting resin monomers selected from the group consisting of the bismaleimide resins, epoxy resins, cyanate resins, and mixtures thereof:

(ii) at least one curing agent

(iii) optionally catalysts; and

(iv) optionally at least one dissolved thermoplastic in an amount effective to assist the toughness of the single phase cured matrix resin;

B. optionally, particulate engineering thermoplastics in an amount of from 10 to 30 weight percent based on the total resin system weight; and

C. from about 1 percent to about 10 percent by weight relative to the total system weight of preformed functionalized, lightly crosslinked elastomer particles having a T_g of less than 10° C., and a particle size of from about 2 μm to about 70 μm wherein said elastomer particles remain in substantially particulate form.

5,627,223

POLYMERIC COMPOSITIONS FOR THE PRODUCTION OF HIGH-FREQUENCY-WELDABLE ARTICLES, MASTER MIXTURE FOR THE PREPARATION OF THESE COMPOSITIONS AND ARTICLES PRODUCED FROM THE LATTER

Claude Dehennau; Thierry Depireux, both of Waterloo, and Ivan Claeys, Zemst, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Aug. 30, 1993, Ser. No. 113,083

Claims priority, application Belgium, Sep. 1, 1992, 09200774

Int. Cl.[6] B32B *31/28;* **C08K** *3/00*

U.S. Cl. 524—47 **13 Claims**

1. In a process for producing a high-frequency-welded article comprising a polymeric composition, the improvement comprising welding a polymeric composition comprising at least three constituents:

(a) at least one polyolefin,

(b) from 1% up to 50% by weight, compared to the total weight of said composition, of at least one thermoplastic starch, and

(c) from 0.5% to 30% by weight, compared to the total weight of said composition, of at least one coupling agent (other than said at least one polyolefin) selected from the group consisting of polyolefins modified by grafting with maleic anhydride and copolymers and terpolymers of ethylene containing units derived from maleic anhydride and at least one ionic compound selected from the group consisting of cationic thermoplastic starch, anionic thermoplastic starch, an inorganic ionic compound and an organic ionic compound in a amount such that the concentration of anions and of cations is from 0.002 to 5 mol/kg of said composition.

5,627,224

AQUEOUS COMPOSITIONS FOR SIZING OF PAPER

Ebbe Lyrmalm, Kungälv, Sweden, and Bruno Carré , Grenoble, France, assignors to Eka Nobel AB, Sweden

PCT No. PCT/SE93/00541, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO94/01619, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 17, 1993, Ser. No. 367,118

Claims priority, application Sweden, Jul. 7, 1992, 9202106

Int. Cl.[6] C08K *3/10*

U.S. Cl. 524—52 **16 Claims**

1. An aqueous sizing composition which comprises a sizing agent which is selected from the group consisting of cyclic dicarboxylic acid anhydride and alkyl ketene dimer, a stabilizing and/or dispersing agent which is an amphoteric polymer selected from the group consisting of amphoteric starch and amphoteric acrylamide based polymer, and a polyaluminum compound.

5,627,225

ROAD PAVING BINDERS

Martin L. Gorbaty, Westfield, N.J.; Christian G. Lenoble, Bordeaux, France; Nicholas C. Nahas, Chatham, and Dennis G. Peiffer, Annandale, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 31, 1995, Ser. No. 551,078

Int. Cl.[6] C08L *95/00*

U.S. Cl. 524—71 **19 Claims**

1. A road paving binder composition, comprising: a storage stable blend of a sulfonated, unhydrogenated random copolymer selected from the group consisting of styrene butadiene copoly-

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mers and styrene isoprene copolymers having a sulfonation level of from 1 to 100 meq SO_3H/100 g of polymer and a sulfonated asphalt.

5,627,226

POLYPROPYLENE/FIBER COMPOSITES

Arnold Lustiger, Edison; Cary N. Marzinsky, Stockton, both of N.J., and Yann Devorest, Lynchburg, Va., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Nov. 3, 1995, Ser. No. 552,714

Int. Cl.[6] C08K *5/34*

U.S. Cl. 524—90 **8 Claims**

1. A method of forming a composite having improved stiffness without reduction in toughness comprising:

providing a polypropylene polymer selected from the group consisting of polypropylene homopolymer, a polypropylene-olefin copolymer containing up to about 10 weight percent olefin, a polypropylene homopolymer having fibers dispersed therein and a polypropylene-olefin copolymer containing up to about 10 weight percent olefin having fibers dispersed therein;

combining a beta-nucleating agent with the polypropylene polymer in an amount ranging from about 50 to about 200 ppm based on the weight of polymer, the nucleating agent being capable of inducing the beta crystal form of the polypropylene polymer;

adding fibers to the polymer if the polymer does not already have fibers dispersed therein; and

inducing nucleation whereby a composite of improved stiffness with no reduction in toughness is formed.

5,627,227

ULTRAVIOLET ABSORBER AND COATING MATERIAL

Masanobu Suga; Tsuyoshi Asano, and Nobuyuki Kuroda, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

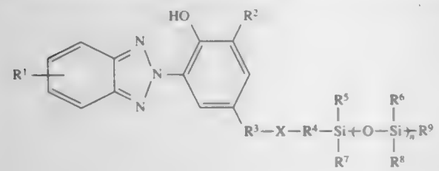
Filed Mar. 1, 1996, Ser. No. 609,558

Claims priority, application Japan, Mar. 13, 1995, 7-052992

Int. Cl.[6] C07D *249/00;* **C08K** *5/3495*

U.S. Cl. 524—91 **19 Claims**

1. An ultraviolet absorber comprising as an effective component a compound represented by the formula:



wherein R^1 denotes a hydrogen atom, a halogen atom or an alkyl group having 1 to 10 carbon atoms, R^2 denotes a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, R^3 and R^4 denote the same or different groups and denote an alkylene group having 1 to 10 carbon atoms, R^5 to R^9 denote the same or different groups and denote an alkyl group having 1 to 10 carbon atoms, an alkoxy group having 1 to 10 carbon atoms, and an aryl group having 6 to 10 carbon atoms, a hydroxyl group or a hydrogen atom, X denotes an amido bond (CONH), a urethane bond (OCONH) or an ester bond (COO), and n is an integer of $n \geqq 0$.

5,627,228

FLAME-RETARDANT RESIN COMPOSITION

Michio Kobayashi, Sakai, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed May 1, 1995, Ser. No. 431,753

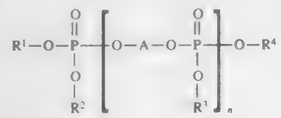
Claims priority, application Japan, May 10, 1994, 6-121907; Oct. 26, 1994, 6-287309

Int. Cl.[6] C08K *5/523*

U.S. Cl. 524—127 **11 Claims**

1. A flame-retardant resin composition which comprises:

10 to 30 parts by weight of a flame-retardant composition comprising an aromatic phosphoric acid ester shown by the following formula (I);



(I)

wherein R^1, R^2, R^3 and R^4 independently represent a phenyl group substituted with 0 to 3 alkyl groups each having 1 to 3 carbon atoms, A represents a 1,3-phenylene group and n denotes an integer of 0 to 5; R^1, R^2, R^3 and R^4 comprise at least (a) a 2,4-dimethylphenyl group, a 3,4-dimethylphenyl group or a 3,5-dimethylphenyl group and (b) a monoalkylphenyl group; and the proportion of the amount of the 2,4-dimethylphenyl group, the 3,4-dimethylphenyl group and the 3,5-dimethylphenyl group relative to the amount of the monoalkylphenyl group in R^1, R^2, R^3 and R^4 is such that the former/the latter is 60/40 to 90/10 (mole percent) wherein 0 to 10 mole percent has the repeating unit n of 0, 40 to 90 mole percent has the repeating unit n of 1, 5 to 40 mole percent has the repeating unit n of 2 and 5 to 25 mole percent has the repeating unit of n of not less than 3;

0.1 to 2 parts by weight of polytetrafluoroethylene (D); and

100 parts by weight of a mixture of thermoplastic resins comprising 50 to 90% by weight of an aromatic polycarbonate resin (A) and 10 to 50 % by weight of a stytonic resin (B).

5,627,229

HOT MELT ADHESIVE HAVING CONTROLLED PROPERTY CHANGE

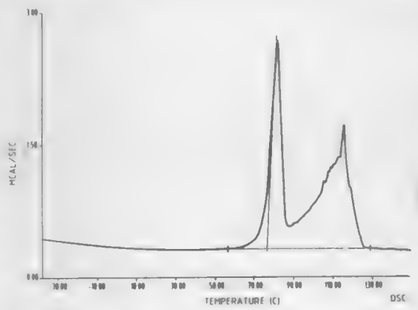
William L. Bunnelle, Hugo Township, and Christopher M. Ryan, Chisago City, both of Minn., assignors to H.B. Fuller Licensing & Financing, Inc., St. Paul, Minn.

Division of Ser. No. 919,999, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 385,315, Jul. 25, 1992, abandoned. This application Mar. 2, 1995, Ser. No. 397,377

The portion of the term of this patent subsequent to Mar. 1, 2015, has been disclaimed.

Int. Cl.[6] C09J *9/00;* **A61C** *19/02;* **B65D** *77/02;21/00*

U.S. Cl. 524—270 **5 Claims**



1. A cigarette carton secured by an effective amount of a hot melt adhesive composition comprising:

(a) about 5 to 40 wt % of a cyclohexane dimethanol dibenzoate plasticizer;

(b) about 20 to 80 wt % of a tackifier selected from the group consisting of an aromatic tackifying resin, aromatic-aliphatic tackifying resin, aliphatic tackifying resin, rosin derived tackifying resin, and mixtures thereof;

(c) about 5 to 35 wt % of a thermoplastic polymer; wherein the composition, after application, cold flows for a controllable period of time at ambient temperature prior to subsequently increasing in modulus (G').

5,627,230

COATING COMPOSITION FOR PULTRUSION PROCESS AND METHOD OF APPLICATION

Richard A. Weidner, St. John, Ind., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Aug. 8, 1994, Ser. No. 287,319

Int. Cl.[6] C08K *5/10*

U.S. Cl. 524—306 **13 Claims**

1. A coating composition for use in a pultrusion process comprising:

a. a polyisocyanate;

b. at least one active hydrogen-containing material having at least one active hydrogen group per molecule;

c. at least one solvent having an evaporation rate equal to or less than about 0.5 as compared to n-butyl acetate=1; and comprising at least about 60% by weight of the total solvent present; and

wherein the viscosity of the coating composition is at least about 15,000 cps at 25° C. and the solids content is about 60–90% by weight.

5,627,231

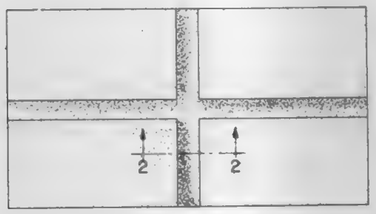
DECORATIVE FLOOR COVERINGS HAVING THE APPEARANCE OF CERAMIC TILE AND COMPOSITIONS AND METHODS FOR MAKING SAME

Alan A. Shalov, Freehold, N.J.; Eugene Morselander, Humble, Tex., and Ronald Dixon, Warminster, Pa., assignors to Congoleum Corporation, Lawrenceville, N.J.

Continuation of Ser. No. 830,727, Feb. 4, 1992, abandoned. This application Aug. 11, 1994, Ser. No. 289,335

Int. Cl.[6] C08J *3/05*

U.S. Cl. 524—523 **21 Claims**



1. A decorative surface covering comprising a layer of a solid composition comprising plasticizer, first organic polymeric material fused in said plasticizer and particles of second polymeric material comprising particles of poly(ethylene methacrylate) in an amount of from about 10 percent to about 25 percent by weight of said solid composition not fused in said plasticizer, said plasticizer increasing the flexibility of said first polymeric material, said particles of second polymeric material having a softening point temperature below about the fusion temperature range of said first organic polymeric material in said plasticizer, whereby said particles are substantially swollen and deformed particles.

5,627,232

WATER-BASED COMPOSITION CONTAINING AN AMINOPLAST-ETHER COPOLYMER

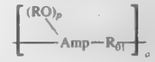
Charles W. Glancy, and Alan L. Steinmetz, both of Louisville, Ky., assignors to United Catalysts, Inc., Louisville, Ky.

Filed Jun. 7, 1995, Ser. No. 476,209

Int. Cl.[6] C08G *12/32;12/26;* **C08L** *61/32*

U.S. Cl. 524—590 **118 Claims**

1. A water-containing composition comprising a minor amount of a linear aminoplast-ether copolymer of the formula:



where the divalent R_{01} contains a divalent alkyleneoxy containing moiety, Amp is the skeletal residue of an aminoplast, R is hydrogen, alkyl containing 1 to about 4 carbon atoms, or acyl containing 1 to about 4 carbon atoms, p is a positive number that is equal to the free valence of Amp minus 2, RO is bonded to alkylene units of Amp, and a is a number greater than 1.

5,627,233

MULTIFUNCTIONAL ORGANIC POLYMERS

Jeffrey A. Hubbell; Donald Elbert; Jennifer L. Hill-West; Paul D. Drumheller, all of Austin; Sanghamitra Chowdhury, Round Rock, all of Tex., and Amarpreet Sawhney, Newton, Mass., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 132,507, Oct. 5, 1993, Pat. No. 5,462,990, which is a continuation-in-part of Ser. No. 740,703, Aug. 5, 1991, Pat. No. 5,380,536, which is a division of Ser. No. 598,880, Oct. 15, 1990, Pat. No. 5,232,984. This application Jun. 6, 1995, Ser. No. 465,949

Int. Cl.[6] C08L *1/00;* **C08G** *69/48*

U.S. Cl. 525—54.1 **17 Claims**

1. A method for making a biocompatible polymeric material the method comprising

forming a biocompatible copolymer which is selected from the group consisting of copolymers having the formulas (A)x(B)y; (A)x(B)y(A)z; (B)x(A)y(B)z; and a brush copolymer (A)x-(B)y having bristles of poly(A);

wherein (A)x, (A)y and (A)z are biocompatible synthetic polymers and mixtures of polymers that form a region which is polynonionic at a pH of between 6.5 and 8.5 and does not bind tissue; and

wherein (B)y, (B)x, and (B)z are biocompatible, water-soluble synthetic polymers or mixture of polymers that form a region which is polycationic at a pH of between 6.5 and 8.5 and binds to tissue; and

wherein x is an integer of greater than or equal to 5, y is an integer of greater than or equal to 3, and z is an integer of greater than or equal to 0;

wherein the polymer has a molecular weight of at least 300 g/mole.

5,627,234

HOT MELT ADHESIVE COMPOSITION FOR LABELS

Sergio Giordano, Borromeo; Antonio Gurnari, Ravenna; Carla Parodi, Genoa, and Giantommaso Viola, Cervia, all of Italy, assignors to Enichem Elastomeri S.r.l., Milan, Italy

Filed Mar. 30, 1995, Ser. No. 413,897

Claims priority, application Italy, May 20, 1994, MI94A1022

Int. Cl.[6] C08L *53/02*

U.S. Cl. 525—89 **19 Claims**

1. A block copolymer composition prepared by copolymerizing a monoalkenyl-arene and a conjugated diene having from 4 to 5 carbon atoms, comprising:

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(a) a linear, non-coupled block copolymer of the formula A—B, in an amount comprised within the range of from 30 to 55% by weight;

(b) a linear, coupled block copolymer of the formula $(A—B)_n—X$, $(B_1—A—B_2)—X$, and $(B_1TA—B_2)_n—X$ where n=2, in an amount comprised within the range of from 25% to 40% by weight; and

(c) a branched, coupled block copolymer of the formula $(A—B)_n—X$, $(B_1—A—B_2)_n—X$, and $(B_1TA—B_2)_n—X$ wherein $n \geq 3$ and in an amount comprised within the range of from 20% to 40% by weight;

wherein A is a polymer block of said monoalkenyl-arene, B is a polymer block of said conjugated diene, T is a random copolymer segment of said monoalkenyl-arene and said conjugated diene, and X in (b) and (c) is an organic radical derived from coupling agents selected from monobromo-derivatives having the formula $R_1—Br$ in which R_1 is a monofunctional C_1–C_{10} hydrocarbyl radical selected from the group consisting of alkyl, cycloalkyl and aryl radicals, and wherein the total percent of said (a), (b) and (c) is equal to one hundred %.

5,627,235

MULTIBLOCK HYDROGENATED POLYMERS FOR ADHESIVES

Glenn R. Himes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 320,033, Oct. 7, 1994, and a continuation-in-part of Ser. No. 147,218, Nov. 3, 1993, abandoned. This application Oct. 26, 1995, Ser. No. 548,719

Int. Cl.[6] C08L *53/02;* **C08F** *297/04*

U.S. Cl. 525—98 **3 Claims**

1. An adhesive composition comprising

(I) a nontapered multiblock copolymer of the formula

D—A—(B—A)$_n$—D

(a) wherein A is a styrene polymer block having a peak molecular weight as determined by gel permeation chromatography of from 4000 to 35,000, (b) B is a hydrogenated isoprene polymer block having a peak molecular weight as determined by gel permeation chromatography of from 20,000 to 200,000, (c) D is a hydrogenated isoprene homopolymer block having a peak molecular weight as determined by gel permeation chromatography of from 5,000 to 50,000, (d) the ratio of the molecular weight of D to the molecular weight of B ranges such that the normalized peak molecular weight as determined by gel permeation chromatography factor ranges from greater than 0 to 180×10^{-6}, (e) n is an integer from 1 to 5, and (f) the copolymer has a styrene content of from 9 to 35 percent by weight; and

(II) a tackifying resin.

5,627,236

BONDING RESIN AND METHODS RELATING THERETO

Edward J. Deyrup, North East, Md.; Diane M. Hahm, and Herbert V. Bendler, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 390,145, Feb. 17, 1995, abandoned, which is a continuation of Ser. No. 57,072, May 4, 1993, abandoned. This application Dec. 8, 1995, Ser. No. 569,377

Int. Cl.[6] C08L *67/02*

U.S. Cl. 525—173 **4 Claims**

1. A multi-phase heat sealing composition comprising:

a) 55–98 weight percent (based upon 100 weight percent of the multi-phase composition) of a copolyester continuous phase having a glass transition temperature ("Tg") in the range of about 35°–70° C., the copolyester being derived from:

1. 50–95 mole percent (based upon 100 mole percent diacid) of an aromatic diacid from the group consisting of: terephthalic acid, isophthalic acid, naphthalaic dicarboxylic acid and mixtures thereof (hereafter, "Monomer A");

2. 2–40 mole percent (based upon 100 mole percent diacid) of a saturated aliphatic dicarboxylic acid from the group consisting of dicarboxylic acids containing from 5 to 12 carbon atoms and mixtures thereof (hereafter, Monomer B);

3. 60 to about 94 mole percent (based upon 100 mole percent diol) of a ethylene glycol and the balance being diethylene glycol (hereafter, Monomer C);

wherein the copolyester is derived only from Monomer A, Monomer B, Monomer C and 0–2 moles of a branching agent per 100 moles diacid,

b) 2–45 weight percent (based upon the weight of the multi-phase composition) of a substantially discontinuous phase comprising a low modulus ethylene copolymer.

5,627,237

TIRE TREAD CONTAINING 3,4-POLYISOPRENE RUBBER

Adel F. Halasa, Bath; Wen-Liang Hsu, Cuyahoga Falls; David J. Zanzig, Uniontown; Gerald L. Allen, Mogadore, and Laurie E. Austin, Hartville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 6, 1996, Ser. No. 642,180

Int. Cl.[6] C08L *9/00;9/06;* **B60C** *9/02*

U.S. Cl. 525—236 **22 Claims**

1. A pneumatic tire having an outer circumferential tread wherein said tread is a sulfur-cured rubber composition comprised of, based on 100 parts by weight of rubber, (1) from about 20 to about 60 parts of natural rubber, (2) from about 5 to about 30 parts of high cis-1,4-polybutadiene rubber, (3) from about 10 to about 50 parts of styrene-butadiene rubber and (4) from about 5 to about 30 parts of 3,4 -polyisoprene rubber, wherein the 3,4-polyisoprene rubber has (a) a 3,4-isomer content of from 75 percent to 95 percent, (b) a 1,2-isomer content of from 5 percent to 25 percent, (c) a glass transition temperature from 5° to 25° C., and (d) a number average molecular weight which is within the range of 30,000 to 150,000.

5,627,238

COATING COMPOSITIONS OF AN ACRYLIC POLYMER AND A FLUORINATED POLYISOCYANATE

Douglas R. Anton, Wilmington, Del.; Michael J. Darmon, Aston; William F. Graham, Wayne, both of Pa., and Richard R. Thomas, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1995, Ser. No. 543,677

Int. Cl.[6] C08G *18/70;* **C08F** *20/10*

U.S. Cl. 525—330.3 **7 Claims**

1. A coating composition containing about 45–80% by weight of a binder and 20–55% by weight of an organic liquid; wherein the binder comprises

(A) about 40–90% by weight, based on the weight of the binder, of an acrylic polymer consisting essentially of about 20–50% by weight, based on the weight of the acrylic polymer, of polymerized hydroxyl containing monomers selected from the group consisting of hydroxy alkyl acrylate and hydroxy alkyl methacrylates having 1–4 carbon atoms in the alkyl groups, 50–80% by weight, based on the weight of the acrylic polymer, of polymerized monomers selected from the group consisting of alkyl acrylates and alkyl methacrylates having 1–18 carbon atoms in the alkyl groups, styrene or any mixtures of the above and acrylic polymer having a weight average molecular weight of about 2,000–20,000 determined by gel permeation chromatography,

(B) about 10–60% by weight, based on the weight of the binder, of a fluorinated organic polyisocyanate crosslinking agent consisting essentially of an adduct of a fluorinated monofunctional alcohol and an organic polyisocyanate where the fluorinated monofunctional alcohol is represented by the formula

$$R_f—(X)_n—(CH_2CH(R^3)—O)_m—H$$

where R_f is a fluoroalkyl containing group having at least 4 carbon atoms, X is a divalent radical, R^3 is H or an alkyl group having 1–4 carbon atoms, n is 1 and m is 1–30, and where about 0.1–33 mole percent of active isocyanate groups are reacted with the fluorinated monofunctional alcohol.

5,627,239

COMPOSITIONS HAVING ETHYLENIC BACKBONE AND BENZYLIC, ALLYLIC, OR ETHER-CONTAINING SIDE-CHAINS, OXYGEN SCAVENGING COMPOSITIONS CONTAINING SAME, AND PROCESS FOR MAKING THESE COMPOSITIONS BY ESTERIFICATION OR TRANSESTERIFICATION OF A POLYMER MELT

Ta Y. Ching, Novato; Kiyoshi Katsumoto, Cerrito; Steven P. Current, Novato, all of Calif., and Leslie P. Theard, Houston, Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Division of Ser. No. 377,872, Jan. 25, 1995, which is a continuation-in-part of Ser. No. 275,056, Jul. 13, 1994, Pat. No. 5,404,053, and Ser. No. 275,058, Jul. 13, 1994, abandoned, said Ser. No. 275,056, said Ser. No. 275,058is a continuation-in-part of Ser. No. 91,120, Jul. 13, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 475,918

Int. Cl.[6] C08F *8/42*

U.S. Cl. 525—330.6 **32 Claims**

1. A composition comprising a transition-metal salt and a compound having an ethylenic or polyethylenic backbone, wherein the compound has pendant or terminal moieties which contain a carbon atom that forms a resonance stabilized free radical under oxygen-scavenging conditions, wherein the transition-metal salt contains a transition metal selected from the group consisting of manganese, cobalt, nickel, rhodium, and ruthenium.

5,627,240

LOW-TEMPERATURE CURABLE COMPOSITION

Masamichi Furukawa, Neyagawa; Satoshi Urano, Tsuzuki-gun, and Noriyuki Tsuboniwa, Higashiosaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka-fu, Japan

Filed Dec. 27, 1995, Ser. No. 579,257

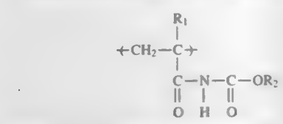
Claims priority, application Japan, Dec. 28, 1994, 6-326841

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—384 **9 Claims**

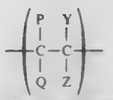
1. A low-temperature curable composition comprising:

(a) an acyl carbamate group-containing acrylic polymer having repeating units represented by the formula:



(I)

wherein, R_1 is a hydrogen atom, or an alkyl group having 1 to 4 carbon atoms; R_2 is an alkyl group having 1 to 12 carbon atoms; an alkoxycarbonylalkyl group having 1 to 12 carbon atoms; an alkoxyalkyl group having 1 to 12 carbon atoms; an acyl alkyl group having 1 to 12 carbon atoms; an alkyleneimino group (RR'C=N—) having 1 to 12 carbon atoms; an aryl group having 6 to 25 carbon atoms; and an aralkyl group having 7 to 12 carbon atoms; and the formula:

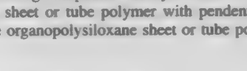


(II)

wherein, P, Q, Y and Z is independently a member selected from the group consisting of hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkenyl group having 1 to 20 carbon atoms, an aryl group having not more than 10 carbon atoms, an aralkyl group having not more than 10 carbon atoms, a halogen atom, a cyano group and —$COOR_m$, in which R_m is an alkyl group having 1 to 20 carbon atoms, an aryl group having not more than 10 carbon atoms, or an aralkyl group, having not more than 10 carbon atoms;

wherein, the acyl carbamate group-containing acrylic polymer is composed of m repeating units of the formula (I) in which m is a positive integer and n repeating units of the formula (II) in which n is 0 or a positive integer, and has an acyl carbamate group content of 0.5 to 6.5 mmol/g and a number average molecular weight of 2,000 to 10,000; and

(b) a lactone-modified polyol having a number molecular weight of 200 to 20,000, represented by the formula:



(III)

wherein A is a residue of a polyol; k is an integer of 1 to 5; l is an integer of 1 to 3; and x is an integer of not less than 2; wherein the low-temperature curable composition comprises the acyl carbamate group-containing acrylic polymer (a) and the lactone-modified polyol (b) in an amount that a mol ratio of acyl carbamate groups to hydroxyl groups becomes 0.5 to 2.0.

5,627,241

SHEET AND TUBE ORGANOSILICON POLYMERS

Chenggang Chen, Cleveland, Ohio; Dimitris E. Katsoulis, Midland, Mich., and Malcolm E. Kenney, Cleveland Heights, Ohio, assignors to Dow Corning Corporation, Midland, Mich., and Case Western University, Cleveland, Ohio

Filed Sep. 19, 1996, Ser. No. 710,700

Int. Cl.[6] C08G *77/00*

U.S. Cl. 525—474 **16 Claims**

1. A method of making an organopolysiloxane sheet or tube polymer comprising contacting a sheet or tube silicate with an organo-H-chlorosilane to form an organosiloxane sheet or tube polymer with pendent ≡Si—H groups, and subsequently contacting the organosiloxane sheet or tube polymer with pendent ≡Si—H groups with an alkenyl group containing compound in the presence of a hydrosilation catalyst, in an amount effective to catalyze a hydrosilation reaction between the alkenyl group on the alkenyl group containing compound and hydride functionality on the organosiloxane sheet or tube polymer with pendent ≡Si—H groups, to form the organopolysiloxane sheet or tube polymer.

5,627,242

PROCESS FOR CONTROLLING GAS PHASE FLUIDIZED BED POLYMERIZATION REACTOR

Lance L. Jacobsen, Scott Depot; Kiu H. Lee, South Charleston, and John R. Parrish, Cross Lanes, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 28, 1996, Ser. No. 623,016

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—60 **11 Claims**

1. A process for controlling a gas phase polymerization reaction in a reactor when changing from a first product made at a first set of conditions to a second product made at a second set of conditions, said process comprising the steps off:

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(a) comparing the first product reaction temperature and the second product reaction temperature, change the product reaction temperature setpoint to the second product reaction temperature if said second product reaction temperature is lower than said first product reaction temperature,

(b) setting a melt index setpoint that is either 0–150% higher or 0–70% lower than the desired second product melt index value,

(c) setting a reaction temperature setpoint that is: 1°–15° C. above the desired second product reaction temperature if the second product melt index value is higher than the first product melt index value, or 1°–15° C. below the actual second product reaction temperature if the second product melt index is lower than the first product melt index,

(d) setting a product rate-limiting reactant partial pressure setpoint that is: 1–25 psig either below the first product rate-limiting reactant partial pressure if the second product melt index value is higher than the first product melt index value, or above the first product rate-limiting reactant partial pressure if the second product melt index value is lower than the first product melt index value;

(e) maintaining said melt index setpoint, temperature setpoint, and rate-limiting reactant partial pressure setpoint values until said polymerization product exhibits an average melt index and average product density with an acceptable range from the desired second product melt index value and second product density value;

(f) changing said melt index setpoint to the desired second product melt index value;

(g) changing said product reaction temperature setpoint to a value that is: (i) 0°–15° C. above said desired second product reaction temperature if the second product melt index value is higher than the first product melt index value, or (ii) 0°–15° C. below said desired second product reaction temperature if the second product melt index value is lower than the first product melt index value;

(h) changing said rate-limiting partial pressure setpoint to a value that is: (i) 0–25 psig either below the desired second product rate-limiting partial pressure if the second melt index value is higher than the first melt index value, or (ii) 0–25 psig above the second product rate-limiting partial pressure if the second melt index value is lower than the first melt index value; and

(i) changing the reaction temperature setpoint and the rate-limiting reactant partial pressure setpoint values to the desired second product reaction temperature and second rate-limiting reactant partial pressure value when the reaction product exhibits an average melt index value within acceptable limits of the second product melt index value.

5,627,243

FLUIDIZED-BED REACTOR

Matti Hämäläinen, Monninkylä; Isto Eilos, Porvoo; Simo Jortikka, Helsinki, and Tuomo Hyvönen, Porvoo, all of Finland, assignors to Borealis Polymers Oy, Porvoo, Finland

Filed Dec. 22, 1994, Ser. No. 362,248

Claims priority, application Finland, Dec. 27, 1993, 935856

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—68 **10 Claims**

1. A method for polymerizing or copolymerizing olefins in a fluidized bed reactor, comprising:

providing a fluidized-bed reactor for polymerization of olefins having an upper section acting as a polymerization space in which olefin monomers are polymerized or copolymerized to form polyolefins,

directing a circulating gas flow and monomers into a lower section of said reactor via one or more inlet nozzles,

directing at least part of the circulating gas flow through flow control elements situated in said lower section, wherein from about 1 to about 50 percent of a surface area of said flow control elements are perforated with holes having a diameter of from about 1 to about 80 mm such that a major part of the gas flow is directed sideways and a minor part of the gas flow is directed upward through said holes, said perforated flow control elements being selected from the group consisting of planar elements, conical elements and combinations thereof, and

passing said circulating gas flow and monomers from the lower section of the reactor through a horizontal gas distributor plate into said upper section,

whereby said olefins are polymerized or copolymerized.

5,627,244

PROCESS PRODUCING A POLYMER COMPRISING AN UNSATURATED CARBOXYLIC ACID OR A DERIVATIVE THEREOF

Tsuneyuki Sato, Tokushima, Japan, assignor to Sumitomo Chemical Co., Ltd., Osaka-fu, and Nichia Chemical Industries Ltd., Tokushima, both of Japan

Filed Apr. 26, 1995, Ser. No. 427,841

Claims priority, application Japan, Apr. 27, 1994, 6-089664

Int. Cl.[6] C08F *4/76;120/14*

U.S. Cl. 526—92 **20 Claims**

1. A process for producing a polymer comprising a monomer selected from the group consisting of an unsaturated carboxylic acid, an anhydride of an unsaturated carboxylic acid, an ester of an unsaturated carboxylic acid, a salt of an unsaturated carboxylic acid, an amide of an unsaturated carboxylic acid, a nitrile of an unsaturated carboxylic acid, an allyl glycidyl ether and a methallyl glycidyl ether, the process comprising subjecting a starting mixture containing (a) said monomer and (b) a mixture of a water-soluble organic solvent and water to polymerization in the presence of a polymerization catalyst,

wherein the starting mixture contains said monomer at a concentration of 50 to 700 g per liter of the total volume of (a) said monomer and (b) the mixture of the water-soluble organic solvent and water,

wherein the volume ratio of the water-soluble organic solvent (A) to water (B) is (A):(B)=1:9 to 9:1, and

wherein the polymerization catalyst is at least one member selected from the group consisting of

(1) a metal compound represented by the formula (1)

$$L_pM.X_q \quad (1)$$

wherein M is a member selected from the group consisting of Ti, Zr, Hf and V; L is at least one member selected from the group consisting of a cyclopentadienyl group, an indenyl group, a fluorenyl group, methylcyclopentadienyl, 1,2-dimethylcyclopentadienyl, 1,3-dimethylcyclopentadienyl, pentamethylcyclopentadienyl, n-butylcyclopentadienyl, tertbutylcyclopentadienyl, trimethylsilylcyclopentadienyl, 3-methylindenyl, 4-methylindenyl, 5-methylindenyl, 5-ethylindenyl and 4,7-dimethylindenyl; X is at least one member selected from the group consisting of a halogen atom, a hydrogen atom, a lower alkyl group, a lower alkoxy group, an aryloxy group, a phenyl group and a benzyl group; p represents an integer of at least 1, q represents an integer including 0 and the sum of p and q equals the valence of M, and

(2) a metal compound represented by the formula (2)

$$R.M.Y, \quad (2)$$

wherein M is a member selected from the group consisting of Ti, Zr, Hf and V; R is a group formed by bonding two identical or different groups selected from the group consisting of a cyclopentadienyl group, an indenyl group, a fluorenyl group, methylcyclopentadienyl, 1,2-dimethylcyclopentadienyl, 1,3-dimethylcyclopentadienyl, pentamethylcyclopentadienyl, n-butylcyclopenta-dienyl, tert-butylcyclopentadienyl, trimethylsilylcyclopentadienyl, 3-methylindenyl, 4-methylindenyl, 5-methylindenyl, 5-ethylindenyl and 4,7-dimethylindenyl, the two groups being bonded to each other via a lower alkylene or di(lower alkyl)silylene group; Y is at least one member selected from the group consisting of a halogen atom, a hydrogen atom, a lower alkyl group, a lower alkoxyl group, an aryloxy group, a phenyl group and a benzyl group; r is equal to (n–2) wherein n is the valence of M.

5,627,245

PROCESS FOR THE PREPARATION OF A SYNDIOTACTIC PROPYLENE COPOLYMER

Andreas Winter; Volker Dolle, both of Kelkheim; Jürgen Rohrmann; Walter Spaleck, both of Liederbach, and Martin Antberg, Hofheim am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 203,514, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 996,868, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 630,263, Dec. 19, 1990, abandoned. This application Apr. 24, 1995, Ser. No. 427,499

Claims priority, application Germany, Dec. 21, 1989, 39 42 366.2

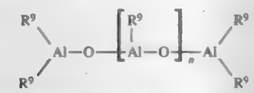
Int. Cl.[6] C08F *4/42;4/64*

U.S. Cl. 526—127 **7 Claims**

1. A process for the preparation of a syndiotactic propylene copolymer comprising 99.9 to 50% by weight, relative to the entire polymer, of propylene units and 0.1 to 50% by weight, relative to the entire polymer, of units derived from ethylene or an olefin having at least 4 carbon atoms of the formula R^a—CH=CH—R^b, in which R^a and R^b are identical or different and are a hydrogen atom or an alkyl radical having 1 to 20 carbon atoms or R^a and R^b together with the carbon atoms linking them form a ring of 4 to 10 carbon atoms, said process comprising polymerization of 50 to 99.5% by weight, relative to the total amount of the monomers, of propylene and 0.5 to 50% by weight, relative to the total amount of the monomers, of at least one representative from the group comprising ethylene and olefins having at least 4 carbon atoms of the formula R^a—CH=CH—R^b, in which

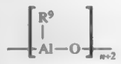
R^a and R^b have the above mentioned meaning, at a temperature of –40° C. to 150° C. and a pressure of 0.5 to 100 bar in solution, in suspension or in the gas phase,

in the presence of a catalyst which comprises a metallocene as the transition metal component and an aluminoxane of the formula II



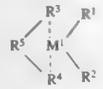
(II)

for the linear type and/or the formula III



(III)

for the cyclic type, R^9 in formulae II and III being a C_1–C_6-alkyl group or phenyl or benzyl and n an integer from 2 to 50, which comprises carrying out the polymerization in the presence of a catalyst whose transition metal component is a metallocene compound of the formula I



(I)

in which

M^1 is titanium, zirconium, hafnium, vanadium, niobium or tantalum,

R^1 and R^2 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{10}-arylalkyl group, a C_7–C_{40}-alkylaryl group or a C_8–C_{40}-arylalkenyl group,

R^3 and R^4 are different and are a mono- or polynuclear hydrocarbon radical which together with the central atom M^1 can form a sandwich structure,

R^5 is

in which R^6 and R^7 are identical or different and R^6 is a C_6–C_{10} aryl group and R^7 is a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-fluoroaryl group, a C_6–C_{10}-aryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group or a C_7–C_{40}-alkylaryl group or R^6 and R^7 in each case together with the atoms linking them form a ring.

5,627,246

SUPPORTED METALLOCENE COMPLEXES HAVING HETEROFUNCTIONAL GROUPS IN THE CYCLOPENTADIENYL SYSTEM AS CATALYST SYSTEMS

Franz Langhauser, Bad Dürkheim; David Fischer, Gönnheim; Jürgen Kerth, Carlsberg; Günther Schweier, Friedelsheim; Elke Barsties, Constance, all of Germany; Hans-Herbert Brintzinger, Taegerswilen, Switzerland; Stefan Schaible, and Werner Roell, both of Constance, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 1, 1995, Ser. No. 396,716

Claims priority, application Germany, Mar. 3, 1994, 44 06 964.2

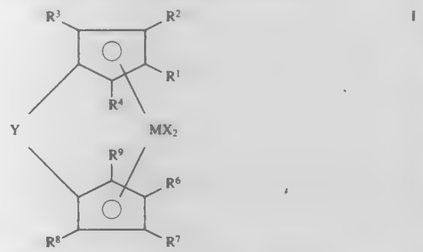
Int. Cl.[6] C08F *4/628;10/00*

U.S. Cl. 526—128 **4 Claims**

1. A supported catalyst system obtained by

a) reacting a finely divided carrier with an α-trisalkoxy-silyl-ω-haloalkyl compound,

b) adding a metallocene complex of the formula I



(I)

where

M is titanium, zirconium, hafnium, vanadium, niobium or tantalum,

X is fluorine, chlorine, bromine, iodine, hydrogen, C_1–C_{10}-alkyl, C_6–C_{15}-aryl or —OR^5,

R^5 is C_1–C_{10}-alkyl, C_6–C_{15}-aryl, alkylaryl, arylalkyl, fluoroalkyl or fluoroaryl, where in each case the alkyl radical is of 1 to 10 carbon atoms and the aryl radical is of 6 to 20 carbon atoms,

R^1 to R^3 and

R^6 to R^8 are each hydrogen, C_1–C_{10}-alkyl, 5-membered to 7-membered cycloalkyl which in turn may carry C_1–C_{10}-alkyl radicals as substituents, C_6–C_{15}-aryl or arylalkyl, where two neighboring radicals together may furthermore be a cyclic group of 4 to 15 carbon atoms, or $Si(R^{10})_3$,

R^{10} is C_1–C_{10}-alkyl, C_6–C_{15}-aryl or C_3–C_{10}-cycloalkyl,

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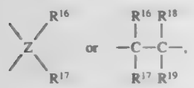
R^4 is



Q^1 is nitrogen, phosphorus, arsenic, antimony or bismuth,
R^{11} and R^{12} are each C_1–C_{10}-alkyl, C_3–C_{15}-cycloalkyl, C_6–C_{15}-aryl, alkylaryl, arylalkyl, fluoroalkyl or fluoroaryl, where in each case the alkyl radical is of 1 to 10 carbon atoms and the aryl radical is of 6 to 20 carbon atoms, or the two radicals together may be a cyclic group of 2 to 15 carbon atoms which in turn may contain 1 to 8 heteroatoms of main groups III to VI of the Periodic Table of Elements
R^9 is hydrogen, C_1–C_{10}-alkyl, 5-membered to 7-membered cycloalkyl which in turn may carry C_1–C_{10}-alkyl radicals as substituents, C_6–C_{15}-aryl or arylalkyl, where two neighboring radicals together may furthermore be a cyclic group of 4 to 15 carbon atoms, or $Si(R^{13})_3$ or



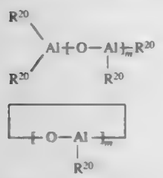
R^{13} is C_1–C_{10}-alkyl, C_6–C_{15} -aryl or C_3–C_{10}-cycloalkyl,
Q2 is nitrogen, phosphorus, arsenic, antimony or bismuth,
R^{14} and R^{15} are each C_1–C_{10}-alkyl, C_3–C_{15}-cycloalkyl, C_6–C_{15}-aryl, alkylaryl, arylalkyl, fluoroalkyl or fluoroaryl, where in each case the alkyl radical is of 1 to 10 carbon atoms and the aryl radical is of 6 to 20 carbon atoms, or the two radicals together may be a cyclic group of 2 to 15 carbon atoms which in turn may contain 1 to 8 heteroatoms of main groups III to VI of the Periodic Table of Elements,
Y is



Z is silicon, germanium, tin or carbon and,
R^{16}, R^{17}, R^{18} and R^{19} are each hydrogen, C_1–C_{10}-alkyl, C_3–C_{10}-cycloalkyl or C_6–C_{15}-aryl, where two neighboring radicals together may furthermore be a cyclic group of 4 to 15 carbon atoms,
c) reacting with a quaternizing agent of the formula V

$$A_aX^2 \qquad V$$

where
is C_1–C_{10}-alkyl, C_3–C_{15}-cycloalkyl, C_6–C_{15}-aryl, alkylaryl, arylalkyl, fluoroalkyl or fluoroaryl, where in each case the alkyl radical is of 1 to 10 carbon atoms and the aryl radical is of 6 to 20 carbon atoms,
X^2 is fluorine, chlorine, bromine, iodine, SO_3^{2-}, SO_4^{2-} or NO_3^- and
a is 1 or 2,
and
d) optionally, adding an open-chain or cyclic alumoxane compound of the formula VI or VII



where
R^{20} is C_1–C_4-alkyl and
m is an integer from 5 to 30.
in the stated sequence.

5,627,247

ORGANOMETALLIC FLUORENYL COMPOUNDS AND USE THEREOF IN OLEFIN POLYMERIZATION

Helmut G. Alt, Bayreuth, Germany; Gil R. Hawley, Dewey, Okla.; Paul D. Smith, Seabrook, Tex.; Syriac J. Palackal, Bartlesville, Okla.; Michael Schmid, Bayreuth, Germany; M. Bruce Welch, Bartlesville, Okla.; Konstantinos Patsidis, Berlin, Germany; Rolf L. Geerts, Bartlesville, Okla.; Eric T. Hsieh, Bartlesville, Okla., and Max P. McDaniel, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 194,944, Feb. 14, 1994, abandoned, and a continuation of Ser. No. 226,600, Apr. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 192,223, Feb. 3, 1994, which is a continuation of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305, which is a continuation-in-part of Ser. No. 697,363, May 9, 1991, Pat. No. 5,191,132, said Ser. No. 194,944is a continuation-in-part of Ser. No. 71,906, Jun. 3, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 408,468

Int. Cl.[6] C08F *4/642;10/04;* **C07F** *17/00*

U.S. Cl. 526—160 **48 Claims**

1. An unbridged metallocene of the formula $(FIR_n)(CpR_m)MeQ_k$ wherein Fl is a fluorenyl radical, Cp is a cyclopentadienyl or indenyl radical, each R is the same or different and is an organo radical having 1 to 20 carbon atoms, Me is a metal selected from the group consisting of IVB metals of the Periodic Table, each Q is the same or different and is selected from the group consisting of hydrocarbyl or hydrocarbyloxy radicals having 1 to 20 carbon atoms and halogens, k is a number sufficient to fill out the remaining valences of Me, n is a number in the range of 0 to 7, m is a number in the range of 0 to 7, further characterized by the fact that the Fl has no R in the 9 position.

42. An unbridged metallocene of the formula $(FIR_n)(CpR_m)_2MeQ$ wherein Fl is a fluorenyl radical, Cp is a cyclopentadienyl, indenyl, or tetrahydroindenyl radical, each R is the same or different and is an organo radical having 1 to 20 carbon atoms, Me is metal selected from the group consisting of IVB, VB, and VIB metals of the Periodic Table, each Q is the same or different and is selected from the group consisting of hydrocarbyl or hydrocarbyloxy radicals having 1 to 20 carbon atoms, and halogens, n is a number in the range of 0 to 8, m is a number in the range of 0 to 7, further characterized by the fact that the Fl has no R in the 9 position.

5,627,248

DIFUNCTIONAL LIVING FREE RADICAL POLYMERIZATION INITIATORS

Robert A. Koster; Duane B. Priddy, and Irene Li, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 26, 1995, Ser. No. 533,799

Int. Cl.[6] C08F *2/00;220/10;12/08;* **B01J** *31/06*

U.S. Cl. 526—217 **15 Claims**

1. A living free-radical polymerization process for preparing telechelic polymers from vinyl aromatic monomers comprising polymerizing the vinyl aromatic monomer in the presence of a difunctional nitroxyl initiator.

5,627,249

ACRYLAMIDE POLYMERS AND USE THEREOF

Hirotoshi Doki; Hitoshi Ishigaki; Toshiki Oyanagi; Tsugio Matsubara, all of Yokoyama, and Shigeo Watanabe, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,268

Claims priority, application Japan, Dec. 24, 1993, 5-326553; May 13, 1994, 6-100038; Jun. 14, 1994, 6-131664; Jun. 19, 1994, 6-138733

Int. Cl.[6] C08F *220/56;228/02*

U.S. Cl. 526—303.1 **6 Claims**

1. An acrylamide polymer having
(a) a weight-average molecular weight of from 1,500,000 to 10,000,000 and
(b) a weight-average root mean square radius of from 30 to 150 nm,
the ratio (b)/(a) of the weight-average root mean square radius to the weight-average molecular weight being 0.00004 or smaller
which has been obtained by polymerizing acrylamide, methacrylamide, or one or more monomers in addition to acrylamide and/or methacrylamide; one or more of compounds and/or salts thereof, said compounds being represented by the following formula (1):

$$CH_2=C(R)-(CH_2)_n-SO_3H \qquad (1)$$

wherein R represents a hydrogen atom or a lower alkyl group and n stands for an integer of from 1 to 8 and/or salts thereof,
which comprises a crosslinking monomer as a copolymer component.

5,627,250

UNSATURATED NITRILE-CONJUGATED DIENE COPOLYMER, PROCESS FOR PRODUCING SAME AND RUBBER COMPOSITION

Suguru Tsuji, Tokyo; Yuichi Uchizono, Yokosuka, and Misako Asada, Yokohama, all of Japan, assignors to Nippon Zion Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00524, § 371 Date Mar. 29, 1995, § 102(e) Date Mar. 29, 1995, PCT Pub. No. WO94/22924, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 30, 1994, Ser. No. 406,903

Claims priority, application Japan, Mar. 30, 1993, 5-095664

Int. Cl.[6] C08F *236/04;2/38*

U.S. Cl. 526—338 **16 Claims**

1. An unsaturated nitrile-conjugated diene copolymer having at least 0.03 mole, per 100 moles of the monomeric units constituting the molecule, of an alkylthio group having 12 to 16 carbon atoms, which include at least three tertiary carbon atoms, and having a sulfur atom which is directly bound to at least one of the tertiary carbon atoms; said copolymer having a Mooney viscosity of 15 to 65.

6. A process for producing an unsaturated nitrile-conjugated diene copolymer, comprising the step of copolymerizing an unsaturated nitrile and a conjugated diene are copolymerized in the presence of a free-radical initiator by using as a molecular weight modifier an alkylthiol compound having 12 to 16 carbon atoms, which include at least three tertiary carbon atoms, and having a sulfur atom which is directly bound to at least one of the tertiary carbon atoms.

5,627,251

ORGANOSILICON COMPOUND AND PROCESS FOR ITS PRODUCTION

Shinichi Sato; Noriyuki Koike; Takashi Matsuda, and Kouichi Ishida, all of Matsuida, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

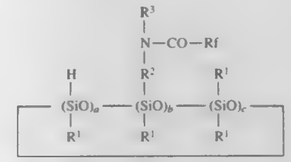
Filed Jun. 16, 1995, Ser. No. 491,110

Claims priority, application Japan, Jun. 17, 1994, 6-159510

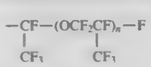
Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **8 Claims**

1. An organosilicon compound represented by the following general formula (1):



wherein:
Rf represents a perfluoroalkyl ether group of the formula



wherein n is an integer of 1 to 5;
R^1 may be the same or different and each represent a monovalent hydrocarbon group;
R^2 represents an alkylene group;
R^3 represents a hydrogen atom or a monovalent hydrocarbon group; and
a is an integer of 1 to 4, b is an integer of 1 to 3 and c is zero, provided that a, b and c satisfy the relationship of $3 \leq a+b+c \leq 6$.

5,627,252

SILYL GROUP CONTAINING ORGANIC POLYMERS

Jean De La Croi Habimana, S. Glamorgan, United Kingdom, assignor to Dow Corning S. A., Seneffe, Belgium

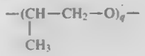
Filed Nov. 30, 1995, Ser. No. 568,897

Claims priority, application United Kingdom, Dec. 1, 1994, 9424247

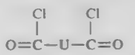
Int. Cl.[6] C08G *77/18*

U.S. Cl. 528—26 **8 Claims**

1. A polymer prepared by reaction between (A) condensation reaction product of a linear alpha, omego-dihydroxyl polyoxyalkylene material having chain units



with or without chain units $—(CH_2CH_2—O)_p—$ where p has a value of 0 to about 100 and g has a value of 1 to 300, with a diacid chloride of a saturated aliphatic dicarboxylic acid of the formula



in which U represents $—(CH_2)_s—$ where s has a value from 0 to 10, in proportions such that the ratio of chlorine of the acid chloride to hydroxyl groups of the polyoxyalkylene glycol is not greater than 1,to form an OH terminated reaction product of the polyacid chloride and the polyoxyalkylene glycol, and (B) a silane or siloxane having at least one oximo or epoxy group which reacts

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with a hydroxyl group of the reaction product of (A), and the remaining substituents of (B) are selected from the group consisting of alkyl, aryl, alkoxy, and acetoxy groups.

5,627,253

SIH-FUNCTIONAL POLYIMIDE RESIN

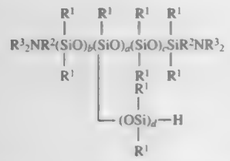
Hisataka Nakashima, Fukuoka Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 579,508
Claims priority, application Japan, Dec. 27, 1994, 6-340566
Int. Cl.[6] C08G *77/12*
U.S. Cl. 528—31 **16 Claims**

1. A polyimide resin prepared by reacting

(A) a tetracarboxylic dianhydride and

(B) a diamino-functional siloxane compound having the general formula



in which each R^1 is independently selected from C_1 to C_{20} monovalent hydrocarbon radicals, each R^2 is independently selected from C_1 to C_{20} divalent hydrocarbon radicals, R^3 is selected from the group consisting of hydrogen and $—SiR^{13}$ wherein R^1 is defined as above, a is an integer from 1 to 20, b is an integer from 1 to 20, c is an integer from 0 to 20, and d is an integer from 1 to 20.

5,627,254

RIGID THERMOPLASTIC PLYURETHANE COMPRISING UNITS OF BUTANE DIOL AND A POLYETHYLENE GLYCOL

Steven R. Oriani, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 3, 1996, Ser. No. 642,744
Int. Cl.[6] C08G *18/32*
U.S. Cl. 528—76 **19 Claims**

1. A rigid thermoplastic polyurethane comprising: a) units of a diisocyanate; b) units of a polyethylene glycol having the structure $HO—(CH_2CH_2O)_n—H$, where n is an integer from 2 to 6; c) units of butane diol; and d) not more than 25 weight percent of units of a high molecular weight diol based on the total weight of the rigid thermoplastic polyurethane, the rigid thermoplastic polyurethane being further characterized by having a T_g of at least 50° C., with the proviso that when the polyethylene glycol is triethylene glycol, at least one of the following limitations apply: a) the mole-to-mole ratio of the units of the triethylene glycol to the units of the butane diol is from 25:75 to 90:10: b) the rigid thermoplastic polyurethane comprises not more than 1.9 weight percent of units of the high molecular weight diol; or c) the thermoplastic polyurethane is optically transparent.

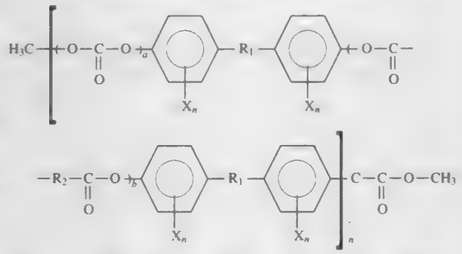
5,627,255

POLY(ARYLESTER-CARBONATE)S AND A PROCESS FOR THE PREPARATION OF POLY(ARYLESTER-CARBONATE)S

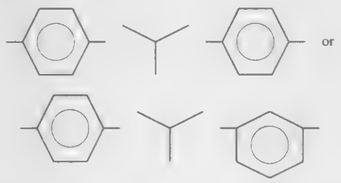
Abbas-Alli G. Shaikh, District Solapur, and Swaminathan Sivaram, Pune, both of India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Mar. 30, 1994, Ser. No. 220,182
Int. Cl.[6] C08G *64/00;63/02*
U.S. Cl. 528—196 **5 Claims**

1. A novel poly(arylester-carbonate)s of the formula,



where a=0.33 and b=0.67 moles, R_1 isopropylidene, methylene, ethylmethylene, phenylmethylene, hexafluoroisopropylidene, phthalines, phthalimides, N-substituted phthalimides (methyl, phenyl), 1,4-phenylene, 1,4-naphthalene, 2,6-naphthalene, dihydroanthracene, spirobisindanes, indanes, thiophenes, azo, dimethyldiphenylsilane, tetraphenylsilane, siloxane, hydroquinoids, cyclopentane, cyclohexane, ether, sulfide, sulfoxide, ketone, ester, and amide, R_2 represents 1,4-benzene, 1,3-benzene, 4,4-biphenyl, p-terphenyl, m-terphenyl, 1,4-naphthalene, 2,6-naphthalene, and compounds having the structure



wherein Y represents isopropylidene, methylene, hexafluoroisopropylidene, ethylmethylene, isobutylmethylmethylene, diphenylmethylene, phenylmethylmethylene, phthalines, phthalimides, N-substituted phthalimides (phenyl, methyl), dihydroanthracene, indanes, spirobisindanes, thiophenes, azo, dimethyldiphenylsilane, tetraphenylsilane, hydroquinoids, cyclohexane, sulfide, sulfone, sulfoxide, ketone, ester, and amide and X represents substituents on aromatic ring which consist of a straight chain of carbon atoms or an alkyl group consisting of branching chain or a phenyl group or a halogen atom and n is an integer from 1 to 4.

5,627,256

POLYCARBONATES CONTAINING ARYL PHOSPHINES

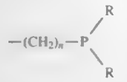
Helmut-Martin Meier, Ratingen; Hartmut Löwer, Krefeld; Wolfgang Ebert, Krefeld, and Claus Wulff, Krefeld, all of Germany, assignors to Bayer AG, Leverkusen, Germany

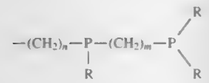
Filed Dec. 11, 1995, Ser. No. 570,399
Claims priority, application Germany, Dec. 21, 1994, 44 45 786.3
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—198 **20 Claims**

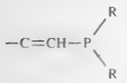
1. Thermoplastic aromatic polycarbonates having a content of phosphine stabilizers, wherein the phosphine stabilizers correspond to formula (I)

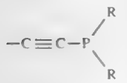


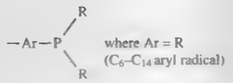
where R is an unsubstituted or substituted C_6–C_{14} aryl radical, and where R^1 is one of the following radicals (Ia) to (Ih):

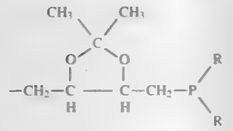
(Ia) 

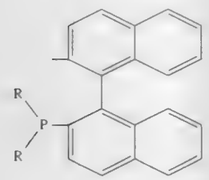
(Ib) 

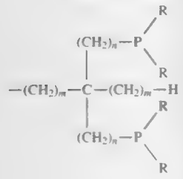
(Ic) 

(Id) 

(Ie) 

(If) 

(Ig) 

(Ih) 

where R has the meaning cited for formula (I), "n" and "m" are each, independently of each other, an integer from 1 to 7, and where the H atoms of radicals (Ia) to (Ic) can also be replaced by substituents and where R^1 can also be 4-phenyl phenyl or α-naphthyl when both R's in formula (I) are likewise each 4-phenyl phenyl or α-naphthyl, further wherein the content of the phosphine stabilizers of formula (I) is between 0.001% by weight and 1% by weight with respect to the total weight of the polycarbonate and phosphine stabilizers.

5,627,257

PROCESS FOR THE PRODUCTION OF POLYAMIDES ON THE BASIS OF α,ω-DINITRILES

Hartmut Liehr, Frankfurt am Main, Germany, assignor to Zimmer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 333,270, Nov. 2, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 600,116
Claims priority, application Germany, May 27, 1994, 44 18 540.5
Int. Cl.[6] C08G *69/28*
U.S. Cl. 528—335 **7 Claims**

1. A process for the synthesis of spinnable polyamide (nylon) from α, ω-(C_{2-12}-alkyl)dinitriles and α, ω-(C_{2-12}-alkyl)diamines and excess water, comprising

a) mixing an aqueous solution of said dinitrile with a catalytic amount of at least one oxygen-containing acid of phosphorus and/or at least one water-soluble salt of calcium, zinc, manganese, or cadmium in the absence of the diamine, adjusting the pH of this solution to an initial value in the range of 2.0 to 4.0 before hydrolysis by adding a sufficient amount of at least one saturated aliphatic or aromatic dicarboxylic acid and hydrolyzing the dinitrile and the amide-containing precursors derived therefrom almost completely to dicarboxylic acid at a temperature of at least 200° C. under autogenous pressure, wherein the hydrolysis is continued until at least 85% of the hydrolysis product is dicarboxylic acid.

b) reacting the dicarboxylic acid solution from step a) with at least an equimolar amount of diamine, expelling the resulting ammonia and water at an elevated pressure and at a rising temperature, and then polycondensing the mixture to yield spinnable nylon while gradually releasing the pressure.

5,627,258

BINDER FOR USE IN METAL POWDER INJECTION MOLDING AND DEBINDING METHOD BY THE USE OF THE SAME

Takemori Takayama; Masato Miyake; Yoshitaka Ohyama, all of Osaka; Katsuyoshi Saito, Kyoto, and Hiroshi Ono, Saitama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 13, 1995, Ser. No. 403,199
Claims priority, application Japan, Mar. 14, 1994, 6-042643
Int. Cl.[6] C08G *73/10;* **C08K** *5/20;5/3477*
U.S. Cl. 528—338 **36 Claims**

1. A binder for use in metal powder injection molding comprising:

(a) 40 to 70 wt % of a water-soluble amide material and/or water-soluble amine material; and

(b) 25 to 60 wt % of a polyamide resin component containing (i) a polyamide resin material having 8 carbon atoms or more on average between amido groups and (ii) an aromatic bisamide serving as a compatibilizer and having 8 carbon atoms or more on average between amido groups, the amount of the aromatic bisamide mixed with the polyamide resin material being up to an amount substantially equal to the amount of the polyamide resin material.

5,627,259

AMIDATION OF ESTER FUNCTIONALIZED HYDROCARBON POLYMERS

Warren A. Thaler, Flemington; Stephen Zushma, Clinton; Joseph V. Cusumano, Watchung; David C. Dankworth, Whitehouse Station; William D. Diana, Belle Mead; William B. Eckstrom, Fanwood, all of N.J.; Jacob I. Emert, Brooklyn, N.Y.; Keith R. Gorda, Little York, N.J., and Antonio Gutierrez, Mercerville, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 261,507, Jun. 17, 1994, abandoned. This application Nov. 28, 1995, Ser. No. 563,518
Int. Cl.[6] C08F *20/10;* **C08G** *69/26*
U.S. Cl. 528—342 **20 Claims**

1. A process for preparing a polymeric amide which comprises the steps of:

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(A) reacting a mixture of (1) functionalized hydrocarbon polymer containing ester functional groups comprising at least one member selected from the group consisting of

(i) substituted alkyl ester functional groups of formula (I):



(I)

wherein Ak is a substituted, linear or branched C_2 to C_{10} alkyl group containing at least one electron withdrawing substituent group, and

(ii) aryl ester functional groups of formula (II):



(II)

wherein Ar is an aryl group selected from an aromatic radical or a substituted aromatic radical,

wherein at least 50 mole % of the ester functional groups are neo ester functional groups, the hydrocarbon polymer having a number average molecular weight of at least about 500 prior to functionalization, and (2) an amine having at least one reactive —NH_2 moiety, for a time and under conditions sufficient to form amide groups; and

(B) removing from the mixture during step (A) hydroxy compound released from the ester functional groups in forming the amide groups, the released hydroxy compound having a pK_a of less than 12.

5,627,260

QUATERNIZED TERTIARY AMINOMETHYL ACRYLAMIDE POLYMER MICROEMULSIONS WITH IMPROVED PERFORMANCE

Sun Y. Huang, Stamford; Andrea Leone-Bay; Joseph M. Schmitt, both of Ridgefield, and Paul S. Waterman, Shelton, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Feb. 12, 1993, Ser. No. 18,858

Int. Cl.[6] C08L *33/26;* C08K *3/24*

U.S. Cl. 528—486 13 Claims

1. A method of treating a water-in-oil microemulsion containing, as the dispersed phase, an aqueous solution of a quaternized amino methylated acrylamide polymer which comprises:

(a) adding to said microemulsion:

(i) acid in an amount sufficient to provide a pH of from about 3.6 to about 4.8 in the microemulsion;

(ii) from about 0.1 to about 30 mole percent of a formaldehyde scavenger, based on the total moles of quaternized amino methylated acrylamide polymer in the microemulsion; and

(iii) water in an amount such that the dispersed aqueous phase of the resulting microemulsion comprises from about 10 to about 45 weight percent of quaternized amino methylated acrylamide polymer; and

(b) heating the microemulsion obtained in step (a) to a temperature of from about 40 to about 80° C. for from about 3 to about 20 hours,

wherein the quaternized amino methylated acrylamide polymer is substituted with at least about 1 mole percent of tertiary aminomethyl groups and the dispersed aqueous phase comprises droplets having an average size of from about 200 to about 4000 Å in diameter.

5,627,261

ALDEHYDE RESINS WITH REDUCED AND STABILIZED FREE-FORMALDEHYDE CONTENT

Norman G. Albrecht, Salisbury, N.C., and Michael T. Foran, Somerville, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Mar. 15, 1994, Ser. No. 213,288

Int. Cl.[6] C08F *6/10*

U.S. Cl. 528—492 15 Claims

1. In a process for preparing a low formaldehyde crosslinking additive wherein a ketone and formaldehyde are reacted in a molar ratio of 1 mole of ketone to about 2 to 5 moles of formaldehyde under aqueous alkaline conditions at about 20 to 80° C. to obtain a water-soluble ketone-formaldehyde condensate containing about 1 to 4% by weight of unreacted formaldehyde and wherein at least an effective amount of hydrogen peroxide is added to said condensate to react with the unreacted formaldehyde present therein and allowing the reaction to proceed at about 60 to 100° C. at a pH of about 3.0 to 6.5 until the unreacted formaldehyde is reduced to less than about 0.4% by weight of the condensate, the improvement comprising further treating the condensate by adding an effective amount of urea or dihydroxyethylene urea to provide a stable free formaldehyde content.

5,627,262

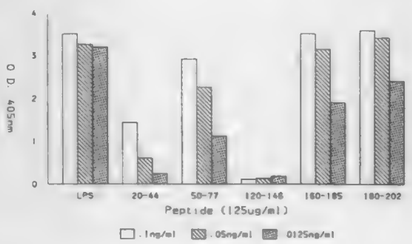
METHOD AND COMPOSITION FOR THE TREATMENT OF SEPTIC SHOCK

Heloise A. Pereira, Edmond, Okla., assignor to The Board of Regents of the University of Oklahoma, Norman, Okla.

Continuation-in-part of Ser. No. 235,399, Apr. 29, 1994, Pat. No. 5,607,916, which is a continuation-in-part of Ser. No. 969,931, Oct. 30, 1992, Pat. No. 5,458,874, which is a continuation of Ser. No. 855,417, Mar. 19, 1992, Pat. No. 5,484,885, which is a continuation-in-part of Ser. No. 543,151, Jun. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 375,739, Jul. 5, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 482,328

Int. Cl.[6] C07K *14/00;14/435;* A61K *38/16;38/17*

U.S. Cl. 530—324 11 Claims



1. A peptide capable of binding bacterial lipopolysaccharide, comprising the amino acid sequence as defined in the Sequence Listing of SEQ ID NO:3.

5,627,263

INTEGRIN-BINDING PEPTIDES

Erkki Ruoslahti, Rancho Santa Fe, and Erkki Koivunen, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 158,001, Nov. 24, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 425,238

Int. Cl.[6] A61K *38/04;* C07K *7/06;7/08*

U.S. Cl. 530—327 2 Claims

1. A peptide whose amino acid sequence is GACRRETAWACGA [SEQ ID NO:3].

5,627,264

CHIMERIC COMPLEMENT INHIBITOR PROTEINS

William L. Fodor, New Haven; Scott Rollins, Monroe, and Stephen P. Squinto, Bethany, all of Conn., assignors to Alexion Pharmaceuticals, Inc., New Haven, Conn.

Filed Mar. 3, 1994, Ser. No. 205,508

Int. Cl.[6] C07K *19/00;14/47*

U.S. Cl. 530—350 5 Claims



1. A chimeric complement inhibitor protein comprising a first functional domain having C3 inhibitory activity and a second functional domain having C5b-9 inhibitory activity; wherein

(a) said first functional domain is amino terminal to said second functional domain;

(b) said first functional domain comprises at least a portion of a naturally occurring C3 inhibitor protein;

(c) said second functional domain comprises at least a portion of a naturally occurring C5b-9 inhibitor protein; and

(d) the protein has complement inhibitory activity against human complement.

5,627,265

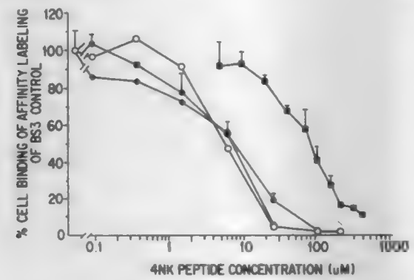
RECEPTOR FOR CELL-BINDING DOMAIN OF THROMBOSPONDINS

William A. Frazier, and Ai-Guo Gao, both of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 29,333, Mar. 5, 1993, Pat. No. 5,399,667. This application Nov. 30, 1994, Ser. No. 347,000

Int. Cl.[6] C07K *14/47;14/705*

U.S. Cl. 530—350 1 Claim



1. An isolated 52 kDa protein receptor of the COOH-terminal cell-binding domain peptides adjacent to the RGD sequence in the last of the type 3 repeats in the linear amino acid sequence of thrombospondin 1 having the following characteristics:

(a) VVM-containing peptides label said protein receptor,

(b) the property of endothelial cell adhesion to said VVM containing peptides, wherein said endothelial cell contains said protein receptor, parallels the property of radio-labeling of said protein receptor by said VVM-containing peptides,

(c) said protein receptor is an integral membrane glycoprotein component,

(d) the VVM containing peptide binding site of said protein receptor is accessible to binding on the intact cell surface of said endothelial cell,

(e) prior blockage of said protein receptor by reaction of said endothelial cell containing said protein receptor with said cell-binding domain peptides and cross linking reagent inhibits said endolethial cell adhesion, and

(f) said protein receptor mediates said adhesion of said endothelial cell to said cell-binding domain of thrombospondin 1.

5,627,266

ENDOTOXIN BINDING AND NEUTRALIZING PROTEIN AND USES THEREOF

Norman R. Wainwright, Falmouth, and Thomas J. Novitsky, E. Falmouth, both of Mass., assignors to Associates of Cape Cod, Inc., Falmouth, Mass.

Division of Ser. No. 264,244, Jun. 22, 1994, which is a continuation of Ser. No. 883,457, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 701,501, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 480,957, Feb. 16, 1990, abandoned, which is a division of Ser. No. 210,575, Jun. 23, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 476,940

Int. Cl.[6] C07K *14/00*

U.S. Cl. 530—350 3 Claims

1. An endotoxin binding protein having SEQ. ID NO. III immobilized on a solid phase support.

5,627,267

CYTOKINE DESIGNATED ELK LIGAND

Stewart Lyman, Seattle; M. Patricia Beckmann, Poulsbo, and Peter R. Baum, Seattle, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 213,403, Mar. 15, 1994, Pat. No. 5,512,457, which is a continuation-in-part of Ser. No. 977,693, Nov. 13, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 458,077

Int. Cl.[6] C07K *14/52*

U.S. Cl. 530—351 10 Claims

1. A substantially homogeneous purified mature elk-L protein, wherein said elk-L protein binds elk, wherein said elk-L protein comprises an amino acid sequence that is at least 80% identical to a sequence selected from the group consisting of amino acids 1–322 of SEQ ID NO:2 and amino acids 1–213 of SEQ ID NO:2.

5,627,268

HEMOGLOBIN COMPRISING GLOBIN FUSION PROTEINS

Ramesh Kumar, Pennington; Ajay Sharma, Laurenceville, both of N.J., and Anastasia M. Khoury-Christianson, Philadelphia, Pa., assignors to DNX BioTherapeutics, Princeton, N.J.

Filed Jun. 7, 1994, Ser. No. 255,272

Int. Cl.[6] C07K *14/805;14/815;14/585;* C12P *21/06*

U.S. Cl. 530—385 11 Claims

1. A hemoglobin comprising at least one fusion protein comprising a globin polypeptide and a predetermined peptide having less than about 65 amino acids, wherein the globin polypeptide is attached to the predetermined peptide through a selectively cleaveable peptide bond and wherein the net charge of the selectively cleaveable peptide bond and the predetermined protein is –4 to +5.

5,627,269

PROCESS FOR THE EXTRACTION OF SOLUBLE POLYSACCHARIDES

David C. Herak, Wilmington, and John J. Hogien, Newark, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

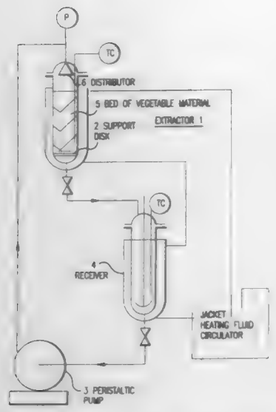
Filed Jun. 22, 1994, Ser. No. 264,107

Int. Cl.[6] C08B *37/04;37/06;* C07H *1/06;1/08*

U.S. Cl. 536—2 30 Claims

1. A process for the extraction of soluble polysaccharides from solid vegetable material comprising percolating an extraction fluid through a fixed bed of a polysaccharide-containing vegetable material mixed with a filler to simultaneously hydrolyze and extract the polysaccharide from the vegetable material and separate a

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polysaccharide-containing solution from the remaining solid vegetable material.

5,627,270

GLYCOSYLATED STEROID DERIVATIVES FOR TRANSPORT ACROSS BIOLOGICAL MEMBKANES AND PROCESS FOR MAKING AND USING SAME

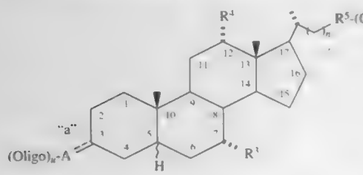
Daniel E. Kahne; Suzanne W. Kahne, both of Princeton; Michael J. Sofia, Laurenceville, and Nicole T. Hatzenbuhler, Kendall Park, all of N.J., assignors to Trustees of Princeton University, Princeton, and Transcell Technologies, Inc., Monmouth Junction, both of N.J.

Continuation-in-part of Ser. No. 230,685, Apr. 20, 1994, which is a continuation-in-part of Ser. No. 989,667, Dec. 14, 1992, which is a continuation-in-part of Ser. No. 806,985, Dec. 13, 1991, Pat. No. 5,338,837. This application Jun. 23, 1994, Ser. No. 264,488

Int. Cl.[6] **C07J** *17/00;* **C07H** *21/02;21/04*

U.S. Cl. 536—5 **7 Claims**

1. A compound having the formula (III):



(III)

wherein

A is H, O, OH, OR^6, NR^7R^8, N_3, $NHCOR^7$, OCOAr, O—CO—OR^9, O—CO—R^9, $NCH_2C_6H_5$, and in which Ar is phenyl or phenyl substituted with 1–3 groups selected from the group consisting of halogen, C_1–C_{12} alkyl or C_1–C_3 alkoxy;

"a" is a single bond in the alpha or beta configuration with the proviso that when A=O, "a" is a double bond;

R^3 is H, OH or OR^6;

R^4 is H, OH or OR^6;

R^5 is CO_2R^{10}, CH_2OR^9, $CONH_2$, $CONHR^7$, $CONR^7R^8$, CO—S—R^{10}, $CH_2S(O)_p$—S—R^{10}, CH_2NH_2, CH_2NHR^7, $CH_2NR^7R^8$, CH_2—$S(O)_p$—S—R^{10};

R^6 is glycosyl moiety comprising 1–10 monosaccharide units in which the glycosidic linkage at the anomeric carbon atom of each monosaccharide unit is independently alpha or beta;

R^7 and R^8, independently are H, C_1–C_4 alkyl, C_3–C_7 cycloalkyl, C_4–C_{10} alkylcycloalkyl, phenyl, benzyl, or, taken together are $(CH_2)_f$ where f=3–6;

R^9 is H or C_1–C_3 alkyl;

R^{10} is H, C_1–C_{10} alkyl, C_1–C_{10} alkenyl, C_1–C_{10} alkynyl, C_6H_5 or $CH_2C_6H_5$;

p is 0, 1 or 2;

n is 0, 1 or 2;

u is 0, 1, 2, 3, 4 or 5;

v is 0, 1, 2, 3, 4 or 5, so long as u and v are not both 0;

Oligo represents an oligonucleotide covalently attached to the group A or R^5 either directly or via a linker group;

or a salt thereof.

5,627,271

GLYCOLIPIDS, THEIR PREPARATION AND USE

Sabine L. Flitsch, Oxford, United Kingdom, and Benedicte Guilbert, Saint-Renan, France, assignors to Genzyme Limited, Haverhill, United Kingdom

PCT No. PCT/GB93/00687, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/20226, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 1, 1993, Ser. No. 318,758

Claims priority, application United Kingdom, Apr. 1, 1992, 9207182

Int. Cl.[6] **C07G** *3/00;* **A61K** *38/51;* **C12N** *9/10*

U.S. Cl. 536—18.5 **13 Claims**

1. A process for preparing a glycolipid of formula I

$$[(sac)_{m+n}]\text{—O—}CH_2\text{—}CHX\text{—}CH(OQ)\text{—}Y$$

wherein Q is H or a blocking group; X is N_3 or NH_2; Y is a lipid residue; each sac is a saccharide; and m and n are each integers; which comprises reacting a corresponding glycolipid of formula II

$$(sac)_n\text{—O—}CH_2\text{—}CHX\text{—}CH(OQ)\text{—}Y$$

with the corresponding saccharide $(sac)_n$ or a reactive derivative thereof, in the presence of an enzyme that catalyses the reaction.

5,627,272

PROCESS FOR PREPARING SUGAR ACETONIDES

Rainer Sobotta, Ingelheim am Rhein; Franz Dietrich Klinger, Griesheim, and Heinrich Schneider, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

Filed Sep. 6, 1994, Ser. No. 301,099

Claims priority, application Germany, Sep. 10, 1993, 43 30 701.9

Int. Cl.[6] **C07H** *1/00*

U.S. Cl. 536—18.6 **15 Claims**

1. A process for preparing an acetonide of a monosaccharide comprising the steps of

(a) reacting a monosaccharide with acetone in the presence of a Lewis acid and a carboxylic acid derivative of the formula



wherein X is a leaving group and R^1 is methyl, ethyl, propyl, isopropyl, butyl, pentyl, or hexyl to produce a reaction mixture;

(b) cooling the reaction mixture;

(c) contacting the cooled reaction mixture produced in step (b) with a dilute aqueous solution of an alkali or alkaline earth metal to form a solution;

(d) extracting the solution produced in step (c) with an aliphatic or aromatic hydrocarbon to produce a combined extract; and

(e) isolating the acetonide of a monosaccharide from the combined extract of step (d).

5,627,273

METHOD FOR PREPARING HYDROPHOBICALLY-TERMINATED POLYSACCHARIDE POLYMERS AND DETERGENT COMPOSITIONS COMPRISING THE POLYSACCHARIDE POLYMERS

John S. Thomaides, Berkeley Heights, and James Burkert, Rahway, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jan. 31, 1995, Ser. No. 381,624

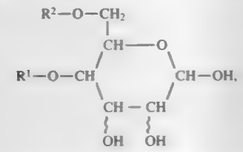
Int. Cl.[6] **C07H** *1/00;5/04;13/02;* **C08B** *37/00*

U.S. Cl. 536—18.7 **16 Claims**

1. A process for preparing polysaccharide polymers, the process comprising:

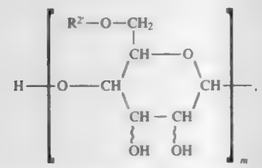
(a) mixing together, in water and in the absence of a cosolvent,

(i) a polysaccharide represented by structure (I):



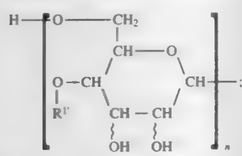
(I)

wherein, R^1 is H or is represented by structure I(a)



(I(a))

R^2 is H, or is represented by structure I(a) or structure I(b)



(I(b))

wherein

$R^{1'}$ is H or is represented by structure I(a),

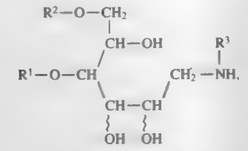
$R^{2'}$ is H or is represented by structure I(a) or structure I(b),

R^1 and R^2 are not both H, and

the average of $(\Sigma m+\Sigma n)$ is greater than or equal to 3; and

(ii) an amine selected from the group consisting of R^3NH_2, where R^3 is selected from the group consisting of a C_1–C_3 alkyl group, H or NH_2, thereby producing an aqueous admixture of the polysaccharide and the amine,

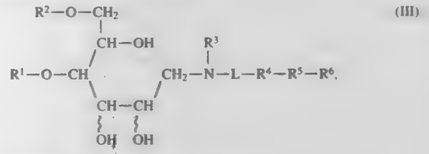
(b) contacting the aqueous admixture of the polysaccharide and the amine with hydrogen, under pressure, in the presence of a Group VIIIB metal catalyst and under conditions effective to produce an N-substituted amino polysaccharide of structure (II):



(II)

(c) adding to the N-substituted amino polysaccharide a reagent which is terminated with one of an amine-reactive functionality selected from the group consisting of a monocarboxylic acid chloride, isocyanate, chloroformate, mixed or symmetric anhydrides of carboxylic acids, epoxide, primary alkyl halide, primary alkyl sulfonate, primary alkyl sulfate, methylene beta-lactone and alkenyl succinic anhydride; and

(d) mixing the N-substituted amino polysaccharide and the reagent under conditions effective to produce a polysaccharide polymer of structure (III),



(III)

wherein

R^1, R^2, R^3, $R^{1'}$ and $R^{2'}$ are as above,

R^4 represents from 1 to 50 independently selected alkyleneoxy groups or is absent,

R^5 is a phenylene linkage or is absent,

R^6 is H, or a C_1–C_{24} alkyl group, or the residue of a C_8–C_{20} alkenyl succinic anhydride, provided that; when R^5 is absent and R^6 represents H or contains not more than 4 carbon atoms, then R^4 must contain an alkyleneoxy group with at least 3 carbon atoms; when R^4 is absent, R^6 is not H; and when R^4 and R^5 are absent, then R^6 must contain at least 5 carbon atoms, L is the residue of the amine-reactive functionality, and the average of $(\Sigma m+\Sigma n)$ is greater than or equal to 3;

wherein excess amine and the catalyst are removed from the reaction.

5,627,274

ANTISENSE OLIGONUCLEOTIDES WHICH COMBAT ABERRANT SPLICING AND METHODS OF USING THE SAME

Ryszard Kole, and Zbigniew Dominski, both of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 379,079, Jan. 26, 1995, which is a continuation of Ser. No. 62,471, May 11, 1993, abandoned. This application May 30, 1995, Ser. No. 453,224

Int. Cl.[6] **C07H** *21/00;* **A61K** *48/00;* **C12Q** *1/68*

U.S. Cl. 536—23.1 **4 Claims**

1. An oligonucleotide consisting of the nucleotide sequence shown as SEQ ID NO: 1, 3, 4, 5, or 7, which oligonucleotide does not activate RNase H.

5,627,275

DETECTION AND IDENTIFICATION OF ENTERIC PATHOGENS

Bruce Roll, Honolulu, Hi., assignor to University of Hawaii, Honolulu, Hi.

Division of Ser. No. 232,778, Apr. 25, 1994. This application Jun. 6, 1995, Ser. No. 486,283

Int. Cl.[6] **C07H** *21/02;21/04*

U.S. Cl. 536—23.7 **3 Claims**

1. A composition comprising one or more isolated and purified nucleic acid sequences selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, and SEQ ID NO:9.

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5,627,276

PEROXIDE DEGRADATION OF DNA FOR VISOCITY REDUCTION

William Greer, Billingham, United Kingdom, assignor to Zeneca Limited, London, England

PCT No. PCT/GB93/02208, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO94/10289, PCT Pub. Date May 11, 1994

PCT Filed Oct. 27, 1993, Ser. No. 424,458

Claims priority, application United Kingdom, Oct. 27, 1992, 9222561

Int. Cl.[6] C07H *1/00;21/04*

U.S. Cl. 536—25.3 **9 Claims**

1. In a process of recovering a product from an aqueous preparation which comprises a quantity of nucleic acid sufficient to lead to a viscosity high enough to cause difficulty in a processing stage, wherein the improvement is degrading the nucleic acid by contacting it at a temperature in the range of 15° to 35° C. with a peroxide before or during the said stage, the peroxide being used in sufficient amount to degrade the nucleic acid and reduce the viscosity of said aqueous preparation to facilitate the processing thereof to recover the product therefrom.

5,627,277

METHOD FOR ANALYZING OLIGONUCLEOTIDE ANALOGS

Aharon S. Cohen, Brookline; Andre Bourque, Marlboro, and Maria Vilenchik, Waban, all of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Continuation-in-part of Ser. No. 32,856, Mar. 16, 1993, which is a continuation-in-part of Ser. No. 991,466, Dec. 16, 1992, Pat. No. 5,420,265. This application Jan. 7, 1994, Ser. No. 178,660

Int. Cl.[6] C07H *21/00;* **G01N** *27/26;* **A61K** *48/00;* **C12P** *19/34*

U.S. Cl. 536—25.4 **25 Claims**

1. A method of separating modified mononucleotides and/or modified oligonucleotides, comprising the steps of:

(a) providing, in a capillary, a substrate comprising at least 12% (weight:volume) of a polymer suitable for use in high performance capillary electrophoresis, at least 5M urea and at least 32% (volume:volume) organic solvent, wherein the organic solvent is a chemically stable liquid at room temperature and has a dielectric constant of at least 20;

(b) contacting the substrate with the mononucleotides and/or oligonucleotides to be separated;

(c) applying an electric field greater than 200 volts/cm across the substrate in the capillary to separate the mononucleotides and/or oligonucleotides; and

(d) detecting the separated mononucleotides and/or oligonucleotides.

5,627,278

PROCESS FOR PREPARING COMPOUNDS CONTAINING A FUSED BICYCLIC RING

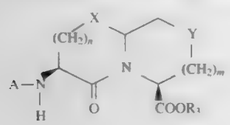
Jeffrey A. Robl, Newtown, Pa., assignor to Bristol-Myers Squibb Co., Princeton, N.J.

Division of Ser. No. 238,764, May 5, 1994, Pat. No. 5,508,272, which is a continuation-in-part of Ser. No. 77,978, Jun. 15, 1993, abandoned. This application Jan. 4, 1996, Ser. No. 582,798

Int. Cl.[6] C07D *337/06;513/02;279/04;279/08*

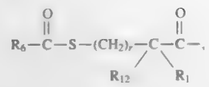
U.S. Cl. 544—47 **10 Claims**

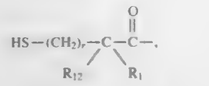
1. A process for preparing the compounds of the formula

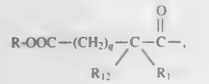


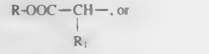
wherein:

A is











X is O or S:

R_1 and R_{12} are independently selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, substituted alkyl, substituted alkenyl, aryl, substituted aryl, heteroaryl, cycloalkyl-alkylene-, aryl-alkylene-, substituted aryl-alkylene-, and heteroaryl-alkylene- or R_1 and R_{12} taken together with the carbon to which they are attached complete a cycloalkyl ring or a benzofused cycloalkyl ring;

R_3, R_5 and R_7 are independently selected from the group consisting of hydrogen and an acid protecting group;

R_4 is alkyl, cycloalkyl-$(CH_2)_p$—, substituted alkyl, aryl-$(CH_2)_p$—, substituted aryl-$(CH_2)_p$—, or heteroaryl-$(CH_2)_p$—;

R_6 is alkyl, substituted alkyl, cycloalkyl-$(CH_2)_p$—, aryl-$(CH_2)_p$—, substituted aryl-$(CH_2)_p$—, or heteroaryl-$(CH_2)_p$—;

m is zero or one;

Y is CH_2, S, or O provided that Y is S or O only when m is one;

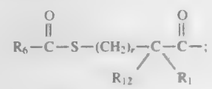
n is one or two;

p is zero or an integer from 1 to 6;

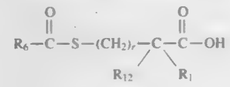
q is zero or an integer from 1 to 3; and

r is zero or one; which comprises

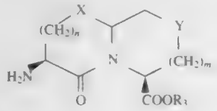
a) when A is



coupling the acylmercapto sidechain of the formula

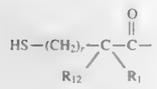


or an activated form thereof with the amine of the formula



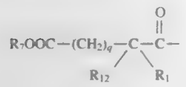
in the presence of a coupling reagent;

b) when A is

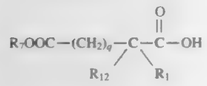


and R_3 is hydrogen, treating the product from part (a) to remove the acyl group R_6—C(O)— and the R_3 acid protecting group;

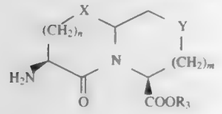
c) when A is



coupling the carboxylic acid of the formula

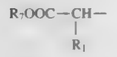


or an activated form thereof with the amine of the formula

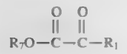


in the presence of a coupling reagent;

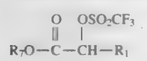
d) when A is



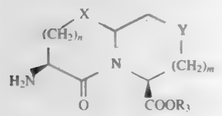
and R_3 is hydrogen, reacting the keto acid or ester of the formula



under reducing conditions or the triflate of the formula



with the amine of the formula



followed by removal of the R_3 acid protecting group; or

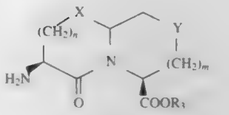
e) when A is



and R_3 is hydrogen, coupling a phosphonochloridate of the formula

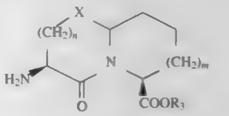


with the amine of the formula



followed by removal of the R_3 and R_5 acid protecting groups.

9. A process for preparing the compounds of the formula



wherein:

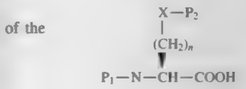
X is O or S;

n is one or two;

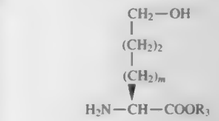
m is zero or one; and

R_3 is an acid protecting group; which comprises:

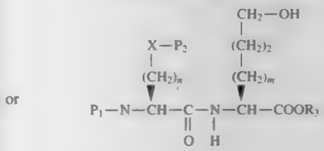
a) coupling an amino acid of the formula



with the hydroxy amino acid ester of the formula



to give the dipeptide of the formula



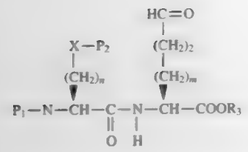
wherein:

P_1 is an amino protecting group or a group which together with the N-atom forms a protecting group; and

P_2 is a hydroxy or mercapto protecting group;

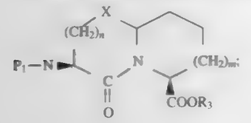
b) oxidizing the hydroxy product of part (a) to the aldehyde of the formula

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c) selectively removing the P_2 protecting group from the aldehyde product of part (b);

d) cyclizing the product of part (c) to give



e) removing the P_1 protecting group of the product of part (d) to give the desired product.

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Patent Not Issued For This Number

5,627,280

SYNTHESIS OF (+)-PANCRATISTATIN

Tomas Hudlicky, Blacksburg, Va.; Xinrong Tian, Beising, China, and Kurt Konigsberger, Oberndorf, Austria, assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

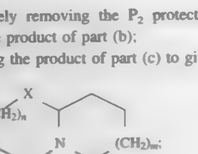
Filed Feb. 16, 1995, Ser. No. 389,477

Int. Cl.[6] C07D *491/056*

U.S. Cl. 546—65 **11 Claims**

1. A method for the asymmetric synthesis of (+)-pancratistatin, the method comprising:

a) providing an aziridine of the formula:



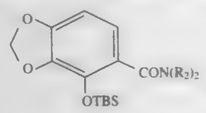
(8)

wherein:

X is H or halogen; and

R_1 is CBZ or tosyl;

b) adding to the aziridine (8) an amide of the formula:

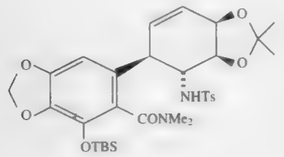


(9)

wherein:

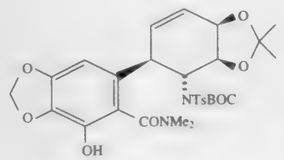
R_2 is methyl, ethyl or alkyl of C1-C5;

under appropriate conditions to yield an amide of the formula:



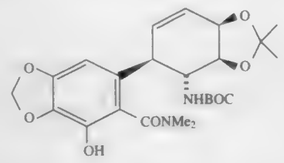
(10a)

c) acylating the amide product of Step b) with $(BOC)_2O$ to yield a compound of the formula:



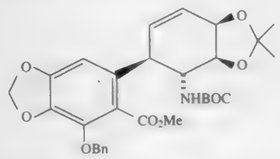
(10b)

d) detosylating (10b) to yield a dimethylamide of the formula:



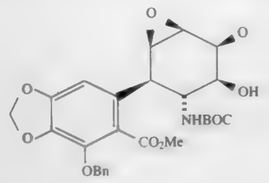
(11b)

e) reducing the dimethylamide (11b) to yield an aldehyde which can be further converted to a methyl ester of the formula:



(15)

f) deprotecting the methyl ester and subjecting the deprotected compound to epoxidation to yield an epoxide of the formula:



(16)

and

g) opening the epoxide of Step f) with an appropriate nucleophile to yield pancratistatin (1).

5,627,281

INTERMEDIATE COMPOUNDS OF FUSED CYCLOALKYLIMIDAZOPYRIDINES

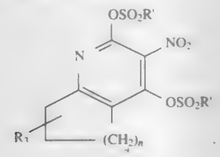
Nick Nikolaides, and John F. Gerster, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 471,442, May 31, 1995, abandoned, which is a division of Ser. No. 277,959, Jul. 20, 1994, Pat. No. 5,444,065, which is a division of Ser. No. 92,014, Jul. 15, 1993, Pat. No. 5,352,784. This application Jul. 3, 1996, Ser. No. 675,204

Int. Cl.[6] C07D *215/42;221/04*

U.S. Cl. 546—112 **3 Claims**

1. A compound of the formula



wherein n is 1, 2, or 3, R_3 is selected from the group consisting of hydrogen, fluoro, chloro, straight chain or branched chain alkyl containing one to about four carbon atoms, and straight chain or branched chain fluoro- or chloroalkyl containing one to about four carbon atoms and at least one fluorine or chlorine atom, and R' is alkyl, perfluoroalkyl, phenyl, phenylalkyl, alkylphenyl, or halophenyl.

5,627,282

PROCESS FOR THE PREPARATION OF OPTICALLY PURE 1,2,3,4-TETRAHYDRO-3-ISOQUINOLINECARBOXYLIC ACID AND ITS DERIVATIVES

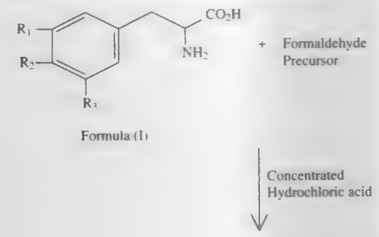
Taesoo Kwon, Flanders, and Francis J. Taplin, Caldwell, both of N.J., assignors to Yukong Limited, Seoul, Rep. of Korea

Filed Jan. 3, 1996, Ser. No. 582,497

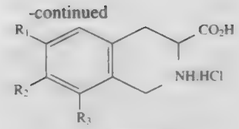
Int. Cl.[6] C07D *217/26*

U.S. Cl. 546—147 **4 Claims**

1. A process for the preparation of an optically pure tetrahydro-3-isoquinolinecarboxylic acid derivative of formula (III) which comprises the reaction of an optically pure phenylalanine derivative of formula (I) with a formaldehyde precursor for about 10 hours to 60 hours at about 40° C. to about 60° C. in concentrated hydrochloric acid to give the compound of formula (II), followed by neutralization in hot water at about 70° C. to 100° C. with a base in accordance with the following reaction scheme:

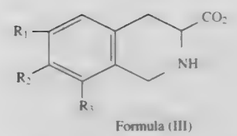


-continued



Formula (II)

Base



Formula (III)

wherein in formula (I), (II), and (III): R_1 and R_2 are H, alkyl of C_1 to C_7, alkoxy of C_1 to C_7 —OCH_2O—, or halogen, which is selected from fluorine, chlorine, bromine, and iodine; R_3 is H or alkoxy of C_1–C_6.

5,627,283

AMIDINOPHENYLALANINE DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF, USE THEREOF AND AGENTS CONTAINING THESE AS ANTICOAGULANTS

Werner Stüber, Lahntal; Gerhard Dickneite, Marburg; Rainer Koschinsky, Kirchhain, and Cenek Kolar, Marburg, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

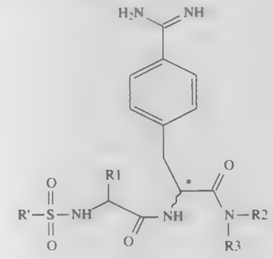
Division of Ser. No. 190,682, Jan. 25, 1994, Pat. No. 5,457,114, which is a continuation of Ser. No. 879,360, May 7, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,691

Claims priority, application Germany, May 11, 1991, 41 15 468.1

Int. Cl.[6] C07D *211/06;* **C07H** *21/04*

U.S. Cl. 546—205 **1 Claim**

1. A process for the preparation of a compound of the formula I



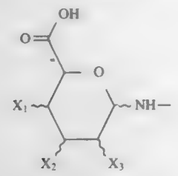
in which

R' is a naphthalene ring which is bonded in the alpha or beta position and is optionally substituted with up to 5 alkyl groups which contain up to 3 carbon atoms, and/or up to 5 alkoxy groups each with up to 3 carbon atoms, or is a tetralin ring or indane ring which is bonded in the alpha or beta position and is optionally substituted with up to 5 alkyl groups which are composed of up to 3 carbon atoms, and/or up to 5 alkoxy groups each with up to 3 carbon atoms, or is a phenyl ring which is optionally with up to 5 alkyl groups which contain up to 4 carbon atoms, and/or with up to three groups of the structure O-X in which O is oxygen and X is hydrogen, methyl, ethyl, n-propyl, i-propyl, tert.-butyl, i-butyl, i-pentyl

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or neo-pentyl, or is a chroman system which is optionally substituted with up to 5 alkyl groups which contain up to 3 carbon atoms.

R^1 is a group of the structure A-B with A=—$(CH_2)_n$— and n=1–4 and B is selected from carboxyl, C_1–C_{17} alkoxycarbonyl, carboxamide, sulfonic acid, an acid of phosphorous, boronic acid and tetrazole group, or R^1 is a group of the structure A-B-R- where A has the above meaning, B is carbonyl or sulfonyl, and the group R is an N-bonded naturally-occurring amino acid or gamma-butyric acid, optionally in esterified form, or R is a structure



wherein X1, X2 and X3 are identical or different and are hydrogen, hydroxyl, methyl or O-acetyl, and

R^2 and R^3 can be identical or different and are alkyl groups with up to 4 carbon atoms or together form a heterocyclic ring selected from pyrrolidine, piperidine, or azacycloheptane which can be optionally substituted with a hydroxyl group or a hydroxyalkyl group with up to 3 carbon atoms, and this hydroxyl group is optionally in esterified form, the corresponding acids being carboxylic acids which contain up to 17 carbon atoms, and in which the carbon atom marked with * is in the R or S configuration,

which process comprises coupling a protective acidic amino acid via the carboxyl group in the alpha position to the alpha-amino functionality of a p-cyanophenylalanine amide derivative, removing the N-alpha protective group, coupling a sulfonyl chloride to this nitrogen group, convening the cyano group into the amidino functionality and, where appropriate, eliminating a protective group which is present on the third functionality of the acidic amino acid.

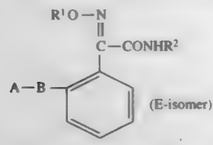
5,627,284

PROCESS FOR PRODUCING (E)-ALKOXYIMINO OR HYDROXYIMINOACETAMIDE COMPOUNDS AND INTERMEDIATES THEREFOR

Akira Takase, Otsu; Hiroyuki Kai, Yamatokoriyama; Moriyasu Masui, Yokkaichi, and Kuniyoshi Nishida, Shiga-ken, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 144,425, Nov. 2, 1993, Pat. No. 5,442,063.
This application May 2, 1995, Ser. No. 433,931
Claims priority, application Japan, Nov. 2, 1992, 4-294225; Dec. 3, 1992, 4-324120
Int. Cl.[6] C07D *213/62*
U.S. Cl. 546—300 **13 Claims**

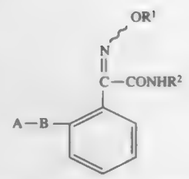
1. A process for producing a compound of the formula (II-1):



(II-1)

(E-isomer)

wherein A is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, cycloalkyl, cycloalkenyl, optionally substituted phenyl or an optionally substituted heterocyclic group; B is —CH_2—, —O—, —S—, —CH(OH)—, —CO—, —NR^3— wherein R^3 is hydrogen or lower alkyl, —CH_2CH_2—, —CH=CH—, —C≡C—, —CH_2O—, —CH_2S—, —CH_2SO—, —OCH_2—, —SCH_2—, —$SOCH_2$— or epoxy; and R^1 and R^2 are identical or different and are hydrogen or lower alkyl; which comprises treating a compound of the formula (I-1):



(I-1)

wherein ~ represents any configuration of the Z-isomer or a mixture of the E- and Z-isomers and other symbols are as defined above, with an acid or an acid addition salt of an organic base, provided that, when R^2 is lower alkyl, this process is carried out in the presence of a hydrocarbon, halogenated hydrocarbon, ether, ketone or mixed solvent thereof.

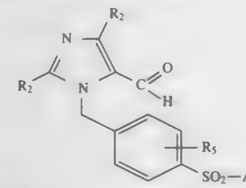
5,627,285

SULPHONYLBENZYL-SUBSTITUTED IMIDAZOLYLPROPENOIC ACID DERIVATIVES

Rudolf Hanko, Duesseldorf; Jürgen Dressel, Wuppertal; Peter Fey, Wuppertal; Walter Hübsch, Wuppertal; Thomas Krämer, Wuppertal; Ulrich E. Müller, Wuppertal; Matthias Müller-Gliemann, Solingen-Ohligs; Martin Beuck, Erkrath; Stanislav Kazda; Claudia Hirth-Dietrich, both of Wuppertal; Andreas Knorr, Erkrath; Johannes-Peter Stasch, Wuppertal; Stefan Wohlfeil, Hilden, and Özkan Yalkinoglu, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 19,001, Feb. 18, 1993, Pat. No. 5,475,016.
This application Sep. 6, 1995, Ser. No. 524,279
Claims priority, application Germany, Feb. 27, 1992, 42 06 041.9
Int. Cl.[6] C07D *403/12*
U.S. Cl. 548—314.7 **3 Claims**

1. An aldehyde of the formula



(II)

in which

R^1 represents straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, each of which is optionally substituted by cycloalkyl having 3 to 6 carbon atoms, or represents cycloalkyl having 3 to 8 carbon atoms,

R^2 represents hydrogen, halogen or straight-chain or branched perfluoroalkyl having up to 8 carbon atoms,

R^5 represents hydrogen, halogen or straight-chain or branched alkyl having up to 8 carbon atoms, or represents straight-chain or branched perfluoroalkyl having up to 6 carbon atoms, or represents a group of the formula —OX, in which

X denotes hydrogen, benzyl, a hydroxyl protective group selected from the group consisting of benzyloxycarbonyl, methanesulphonyl, toluenesulphonyl, 2-nitrobenzyl, 4-nitrobenzyl, 2-nitrobenzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, tert-butoxycarbonYl, allyloxycarbonyl, 4-methoxycarbonyl, acetyl, trichloroacetyl, 2,2,2-trichloroethoxycarbonyl, 2,4-dimethoxybenzyloxycarbonyl, 2-(methylthiomethoxy)ethoxycarbonyl, benzoyl, 4-methylbenzoyl, 4-nitrobenzoyl, 4-fluorobenzoyl, 4-chlorobenzoyl or 4-methoxybenzoyl

or denotes straight-chain or branched alkyi having up to 8 carbon atoms

A represents pyrrolidinyl which is optionally substituted up to 2 times by identical or different perfluoroalkyl having up to 5 carbon atoms or a salt thereof.

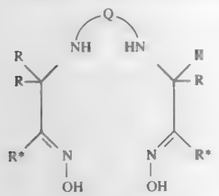
5,627,286

HETEROATOM-BEARING LIGANDS AND METAL COMPLEXES THEREOF

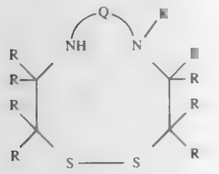
Kondareddiar Ramalingam, Dayton, and Natarajan Raju, Kendall Park, both of N.J., assignors to Bracco International B.V., Amsterdam

Division of Ser. No. 242,093, May 18, 1994, which is a continuation-in-part of Ser. No. 77,981, Jun. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 472,058
Int. Cl.[6] C07C *249/00;* **C07F** *5/00;* **C07D** *233/54;* **A61K** *51/04*
U.S. Cl. 548—341.1 **12 Claims**

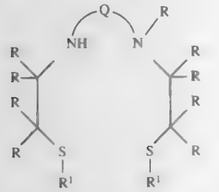
1. A compound of the following formula Ia, Ib or Ic:



Ia



Ib



Ic

where

Q is the group —$(C(RR))_{m1}$—Y^1—$(C(RR))_{m2}$—$(Y^2$—$(C(RR))_{m3})_n$—, where Y^1 is —O—, —S—, —SO—, —SO_2—, or —Se— and Y^2 is independently —NR—, —O—, —S—, —SO—, —SO_2 —, or —Se—; n is an integer selected from 0 or 1; and m1, m2 and m3 are integers independently selected from 0 to 4, provided that the sum of ml and m2 is greater than zero; with the proviso that if the compound is of the formula Ic, Y^1 is —SO_2—, and n=0, then either m1=0 or m2=0;

all R and R* groups are independently:

(i) R^2;
(ii) halogen;
(iii) —OR^2;
(iv) —C(O)—OR^2;
(v) —C(O)—$N(R^2)_2$;
(vi) —$N(R^2)_2$;
(vii) -alkyl—C(O)—OR^2;
(viii) -alkyl—C(O)—$N(R^2)_2$;
(ix) -alkyl-$N(R^2)_2$;
(x) -aryl-C(O)—OR^2;
(xi) -aryl-C(O)—$N(R^2)_2$;
(xii) -aryl-$N(R^2)_2$;
(xiii) acyl;
(xiv) acyloxy;
(xv) heterocyclo;
(xvi) hydmxyalkyl;
(xvii) —SO_2—R^2;
(xviii) -alkyl-SO_2—R^2;
(xix) -(A)p-R^3, where A is a linking group, p is 0 or a positive integer, and R^3 is a bioactivc moiety; or
(xx) two R groups, or an R group and an R* group, taken together with the one or more atoms to which they are bonded, form a saturated or unsaturated, spiro or fused, carbocyclic or heterocyclic ring which may be unsubstituted or substituted by one or more groups selected from the groups (i) to (xix) above;

with the proviso that a carbon atom bearing an R group is not directly bonded to more than one heteroatom;

R^1 is hydrogen, a thiol protecting group, or the group —(A)p-R^3 defined above; and

R^2 is independently hydrogen, alkyl, alkenyl, allkynyl, or aryl.

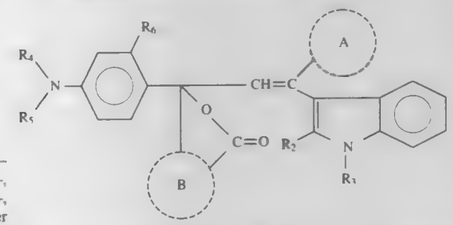
5,627,287

PHTHALIDE COMPOUND AND A NEAR INFRARED ABSORBER AND A RECORDING MATERIAL EACH COMPRISING THE SAME COMPOUND

Hiroyuki Sasaki; Shinzo Nawamoto; Jun-ichi Taniguchi; Toshihiro Masaoka; Bunji Sawano; Sayuri Wada, and Yojiro Kumagae, all of Osaka, Japan, assignors to Yamamoto Chemicals, Inc., Osaka, Japan

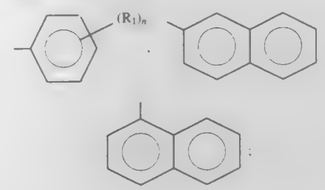
Filed Jan. 24, 1995, Ser. No. 377,237
Claims priority, application Japan, Jan. 25, 1994, 6-006279; Feb. 10, 1994, 6-037965; Jun. 3, 1994, 6-145673
Int. Cl.[6] C07D *209/14*
U.S. Cl. 548—463 **19 Claims**

1. A phthalide compound of general formula (I)



(I)

wherein ring A represents a substituent group of the following structural formula

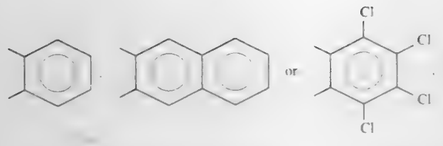


or

where R_1 represents hydrogen, alkyl, alkoxy or halogen; n represents an integer of 1–3, inclusive;

ring B represents a substituent group of the following structural formula

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where R_2 represents alkyl or aryl; R_3 represents alkyl; R_4 and R_5 independently represent alkyl or unsubstituted or substituted phenyl wherein the substituent on said phenyl is selected from the group consisting of alkyl, alkoxy and halogen; and R_6 represents hydrogen, alkyl or alkoxy.

5,627,288

METHOD FOR PRODUCING ROSEFURAN PRECURSOR AND INTERMEDIATES THEREFOR

Hidemichi Fukawa; Masamichi Nishitani; Mitsuo Chiba, and Ruriko Murakami, all of Tokyo, Japan, assignors to Toyotama Perfumery Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1996, Ser. No. 613,868

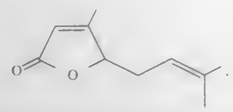
Claims priority, application Japan, Aug. 24, 1995, 7-237916

Int. Cl.[6] C07D *307/88*

U.S. Cl. 549—326 **6 Claims**

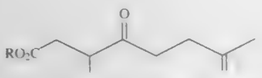
6. A method for producing 3,7-dimethyl-2,6-octadien-4-olide of a formula:

[2]



comprising obtaining methyl 3,7-dimethyl-4-oxo-7-octenoate of a formula:

[1]



wherein R represents methyl, by coupling reaction of 2-methyl-3-methoxycarbonylpropionic acid chloride with 3-methyl-3-butenylmagnesium chloride (Grignard reagent), then hydrolyzing the resulting keto-ester into 3,7-dimethyl-4-oxo- 7-octenoic acid and thereafter subjecting the resulting acid to cyclization and dehydration along with rearrangement of the double bond in the molecule.

5,627,289

RECOVERY OF TOCOPHEROL AND STEROL FROM TOCOPHEROL AND STEROL CONTAINING MIXTURES OF FATS AND FAT DERIVATIVES

Lutz Jeromin, Hilden; Wilhelm Johannisbauer, Erkrath; Bernhard Gutsche, Hilden; Volkmar Jordan, Mettmann, and Herbert Wogatzki, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/02207, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/00650, PCT Pub. Date May 17, 1994

PCT Filed Aug. 18, 1993, Ser. No. 387,933

Claims priority, application Germany, Aug. 27, 1992, 42 28 476.7

Int. Cl.[6] C07D *311/72*

U.S. Cl. 549—413 **12 Claims**

12. A process for the recovery of tocopherol and sterol concentrates from tocopherol and sterol-containing mixtures of fats and fat derivatives comprising:

(a) esterifying free fatty acids in said mixture with methanol, said mixture being a steamer distillate of soybean oil, in the presence of a solid acidic catalyst to form an esterified mixture containing fatty acid methyl esters;

(b) separating the acidic catalyst from the esterified mixtures;

(c) removing water from the esterified mixture to form a dried esterified mixture;

(d) transesterifying triglycerides in said dried esterified mixture by alkali-catalyzed transesterification with methnol to form a transesterified mixture;

(e) removing unreacted methanol from the transesterified mixture to form a demethanolized mixture;

(f) acidifying the demethanolized mixture to neutralize said demethanolized mixture and then washing the demethanolized mixture with water to form a washed mixture; and

(g) removing by distillation fatty acid methyl esters from the washed mixture to recover a mixture comprising tocopherol and sterol.

5,627,290

2,3-DIDEHYDROSIALIC ACID SUBSTITUTED WITH FLUORINE AT 7-POSITION AND SYNTHETIC INTERMEDIATE THEREOF

Takao Iida, and Yutaka Ohira, both of Ibaraki, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP95/00820, § 371 Date Jan. 26, 1996, § 102(e) Date Jan. 26, 1996, PCT Pub. No. WO95/32955, PCT Pub. Date Dec. 7, 1995

PCT Filed Apr. 26, 1995, Ser. No. 586,908

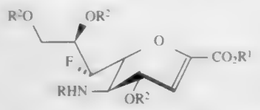
Claims priority, application Japan, May 27, 1994, 6-115014

Int. Cl.[6] C07D *309/14;309/28;* **C07H** *5/06;5/10*

U.S. Cl. 549—419 **11 Claims**

1. A compound represented by the formula (I):

(I)



wherein R is an aliphatic acyl group; R^1 is a hydrogen atom or a lower alkyl group; each R^2 is selected from the group consisting of a hydrogen atom, an aliphatic acyl group and an aromatic acyl group, and each R^2 may be the same or different, provided that (i) when R^1 is a hydrogen atom then each R^2 is a hydrogen atom, and (ii) when R^1 is a lower alkyl group then each R^2 is the same or different and is selected from the group consisting of an aliphatic acyl group and an aromatic acyl group.

5,627,291

PREPARATION OF 2,5-DIHYDROFURAN

Martin Fischer, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 6, 1995, Ser. No. 498,973

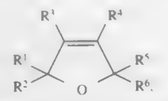
Claims priority, application Germany, Jul. 9, 1994, 44 24 219.0

Int. Cl.[6] C07D *307/02*

U.S. Cl. 549—507 **18 Claims**

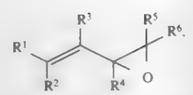
1. A process for the preparation of a 2,5-dihydrofuran of the general formula I

(I)



in which the radicals R^1, R^2, R^3, R^4, R^5, and R^6 are the same or different and stand for hydrogen or C_1–C_4 alkyl groups, by the catalytic rearrangement of 3,4-epoxy-1-butenes of the general formula II

(II)



in the presence of a Lewis acid or elementary iodine and in the presence or absence of an organic solubilizing agent at a temperature of from 60° to 200° C., wherein the reaction is carried out in the presence of a phosphazenium halide or a phosphazanium halide or in the presence of mixtures of phosphazenium and phosphazanium halides.

5,627,292

MONOMERS DERIVED FROM PERHALOGENATED SULTONES AND POLYMERS OBTAINED FROM THESE MONOMERS

Michel Armand, Saint-Martin D'Uriage; Jean-Yves Sanchez, Saint-Ismier, both of France, and Salime Sylla, Bamako, Mali, assignors to Centre National de la Recherche Scientifique, Paris, France, and Hydro-Quebec, Montreal, Canada

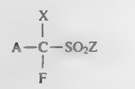
Continuation-in-part of Ser. No. 137,020, Mar. 8, 1994, Pat. No. 5,414,117. This application Mar. 9, 1994, Ser. No. 207,608

Claims priority, application France, Feb. 21, 1992, 92 02027; WIPO, Feb. 19, 1993, PCT/FR93/00167

Int. Cl.[6] C07C *303/12*

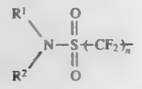
U.S. Cl. 549—555 **3 Claims**

1. Compound corresponding to the following general formula (1)



in which:

A denotes



Z denotes F, Cl, —$OSi(CH_3)_3$ or an ionic group:

X denotes F, Cl, H or R_F;

at least one of the radicals R^1 and R^2 are selected from polymerizable nonperfluorinated organic radicals, R^1 or R^2 being a nonperfluorinated organic radical when nonpolymerizable;

R_f is chosen from perfluoroalkyl radicals and perfluoroaryl radicals;

n=1, 2 or 3,

wherein said ionic group is selected from the group consisting of $1/mM^{m+}[—NSO_2Q]^-$, $[—CH—(SO_2Q)]^-$, $1/mM^{m+}[—C(SO_2Q)_2]^-$, where Q denotes —R_F or —CFX—A; M^{m+} denotes an ion of a metal which has the valency m, chosen from alkali metals, alkaline-earth metals, transition metals and the rare earths, a hydronium ion, or an ammonium ion corresponding to the formula $NH_{(4-j)}R_j^+$, or an amidinium ion corresponding to the formula $RC(NH_{2-j}R_j)_2^+$, or an guanidinium ion corresponding to the formula $C(NH_{2-j}R_j)_3^+$, with j=0, 1 or 2, R being chosen from hydrogen and an alkyl, oxaalkyl or aryl group,

wherein the groups R^1 and R^2 contain double bonds of the vinyl, allyl, vinylbenzyl or acryloyl type or an oxirane functional group, an oxetane functional group, an azetidine functional group, an aziridine functional group, an alcohol functional group, a thiol functional group, an amine functional group, an isocyanate functional group or a trialkoxysilane functional group.

5,627,293

SILYLATED FERROCENYLDIPHOSPHINES, SILYLATED FERROCENYLDIPHOSPHINES BOUND TO INORGANIC OR POLYMERIC ORGANIC SUPPORTS AND ALSO METAL COMPLEXES THEREOF, THEIR PREPARATION AND USE

Benoit Pugin, Münchenstein, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Feb. 23, 1996, Ser. No. 606,156

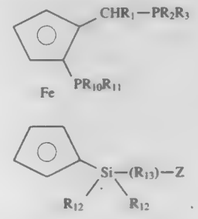
Claims priority, application Switzerland, Feb. 24, 1995, 543/95

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—11 **26 Claims**

1. A compound of the formula I

(I)

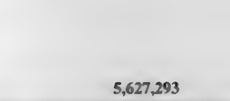


in which

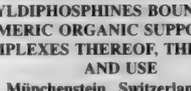
R_1 is C_1–C_8alkyl, phenyl or phenyl substituted by from 1 to 3 C_1–C_4alkyl or C_1–C_4alkoxy groups;

R_2, R_3, R_{10} and R_{11}, are independently of one another, C_1–C_{12}alkyl, C_5–C_{12} cycloalkyl, phenyl, C_5–C_{12}cycloalkyl substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or phenyl substituted by from one to three C_1–C_4alkyl, C_1–C_4alkoxy, —$SiR_4R_5R_6$, halogen, —SO_3M, CO_2 M, —PO_3M, —NR_7R_8, $-[^+NR_7R_8R_9]X^-$ *or* C_1–C_5fluoroalkyl groups; or the groups —PR_2R_3 and —$PR_{10}R_{11}$ are each, independently of one another, a radical of the formula II, IIa, IIb or IIc

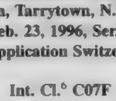
(II)



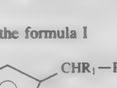
(IIa)



(IIb)



(IIc)



and

R_4, R_5 and R_6 are, independently of one another, C_1–C_{12}alkyl or phenyl;

R_7 and R_8 are H, C_1–C_{12}alkyl, phenyl or

R_7 and R_8 are together tetramethylene, pentamethylene or 3-oxa-1,5-pentylene,

R_9 is H or C_1–C_4alkyl;

R_{12} are identical or different radicals and are, independently of one another, C_1–C_{12}alkyl,

C_3–C_7cycloalkyl, benzyl or phenyl or together are C_5–C_{12}alkylene and

R_{13} is C_1–C_{12}alkylene or phenylene,

M is H or an alkali metal,

X^- is the anion of a monobasic acid,

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Z is Cl, NH_2, NH—C_1—C_{12}alkyl, or a group —A—CO—NH—R_{14}—$Si(R_a)_n(OR_{15})_{3-n}$,
in which
A is NH or N(C_1–C_{12}alkyl),
R_{14} is C_1–C_{12}alkylene,
R_{15} is C_1–C_{12}alkyl,
R_a is C_1–C_4alkyl or OR_{15},
n is 0, 1 or 2;
and the compound of the formula I is in the form of its racemates and diastereomers or a mixture of diastereomers.

5,627,294

MANUFACTURE OF DIHYDROCARBYL DITHIOPHOSPHATES

David R. Adams, Faringdon, and Patrick F. Ginnelly, Reading, both of United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Feb. 24, 1995, Ser. No. 393,649

Claims priority, application United Kingdom, Feb. 25, 1994, 9403604

Int. Cl.[6] C07F *9/02;1/00;3/00;5/00*

U.S. Cl. 556—13 **17 Claims**

1. A process for the manufacture of a metal or ammonium dihydrocarbyl dithiophosphate by reacting a dihydrocarbyl dithiophosphoric acid and a metal compound or an ammonium compound, which process comprises the step of mixing the acid, the metal compound or ammonium compound, and an added hydrocarbyl alcohol containing at least five carbon atoms to form a reaction mixture.

5,627,295

SYNTHESIS OF HIGHER ALCOHOLS

Alkeos Sofianos, and Michael S. Scurrell, both of Pretoria, South Africa, assignors to Patlico International BV, Rotterdam, Netherlands

Filed Mar. 21, 1994, Ser. No. 215,199

Claims priority, application South Africa, Mar. 19, 1993, 93/1979

Int. Cl.[6] B01J *23/80*

U.S. Cl. 556—27 **9 Claims**

1. A higher alcohol synthesis catalyst precursor, which comprises a homogeneous highly crysalline hydroxycarbonate compound containing copper, zinc, and at least one element selected from the group consisting of aluminium and chromium, the hydroxycarbonate compound having a hydrotalcite-type structure having the general formula $Cu_xZn_{(6-x)}M_2(OH)_{16}CO_3{\cdot}4H_2O$ where M is Cr or Al, with the atomic ratio of [Cu+Zn]:M therein being between 2:1 and 4:1, and the atomic ratio of Cu:Zn therein being between 0.4:1 and 1.2:1; and an element from Group VIIB of the Periodic Table of Elements.

5,627,296

PHOSPHORUS-CONTAINING ORGANOSILICON COMPOUNDS

Jochen Dauth; Hans Mayer; Bernward Deubzer, all of Burghausen, and Petra Gratzl, Tüsling, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Nov. 15, 1995, Ser. No. 559,269

Claims priority, application Germany, Jan. 5, 1995, 195 00 253.9

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—405 **4 Claims**

1. A process for the preparation of phosphorus-containing organosilicon compounds, of the formula

$$\left[\begin{array}{c} O \\ \| \\ M_cO-P-Z \\ | \\ R^1 \end{array}\right]_a R_bSiX_cO_{\frac{4-(a+b+c)}{2}} \quad (I)$$

wherein organosilicon compounds having units of the formula

$$B_aR_bSiX_cO_{\frac{4-(a+b+c)}{2}} \quad (II)$$

R is identical or different and is a monovalent, optionally halogenated hydrocarbon radical having 1 to 18 carbon atoms per radical,
R^1 is a hydrogen atom, a hydroxyl group, a monovalent hydrocarbon radical having 1 to 18 carbon atoms per radical, or a radical of the formula

$$-Z-SiR_bX_cO_{\frac{4-(a+b+c)}{2}}$$

B is a monovalent hydrocarbon radical having aliphatic multiple bonds and having 2 to 18 carbon atoms per radical,
Z is a divalent hydrocarbon radical having 2 to 18 carbon atoms per radical,
X is identical or different and is a halogen atom or a radical of the formula —OR^2,
R^2 is an alkyl radical having 1 to 8 carbon atoms per radical, optionally substituted by an ether oxygen atom,
a is 0, 1, 2, 3 or 4,
b is 0, 1, 2 or 3,
c is 0, 1, 2 or 3,
c is 0, 1, 2 or 3,
the sum a+b+c≧4,
are reacted with alkali metal or alkaline earth metal salts of phosphinic or phosphonic acid of the formula

$$M_cO-\overset{\overset{O}{\|}}{\underset{|}{P}}(R^3)-H. \quad (III)$$

wherein
R^3 is a hydrogen atom, a hydroxyl group or a monovalent hydrocarbon radical having 1 to 18 carbon atoms per radical,
M is an alkali metal or alkaline earth metal and
f is 0.5 or 1,
in the presence of catalysts (3) which form free radicals.

5,627,297

PROCESS FOR CLEAVING THE BY-PRODUCTS OF THE DIRECT SYNTHESIS OF ALKYLCHLOROSILANES

Laurent Gilbert, Paris, and Gilles Laroze, Genas, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Apr. 4, 1996, Ser. No. 628,179

Claims priority, application France, Apr. 10, 1995, 95 04486

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—467 **31 Claims**

1. A process for cleaving heavy by-products derived from the synthesis of alkylchlorosilanes, by treatment with hydrochloric acid in the presence of a catalytic system, wherein the catalytic system comprises at least one metal phosphate.

5,627,298

ONE STEP PROCESS FOR CONVERTING HIGH-BOILING RESIDUE FROM DIRECT PROCESS TO MONOSILANES

Steven K. Freeburne, Edgewood, and Robert F. Jarvis, Jr., Union, both of Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 13, 1996, Ser. No. 662,576

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—467 **19 Claims**

1. A one-step process for converting a high-boiling residue resulting from the reaction of an organochloride with silicon metalloid to monosilanes, the process comprising: contacting a mixture comprising a high-boiling residue resulting from the reaction of an organochloride with silicon metalloid, an organotrichlorosilane described by formula

$$RSiCl_3,$$

where R is selected from a group consisting of alkyls comprising one to six carbon atoms, aryls, alkoxys comprising one to six carbon atoms, trimethylsilyl, and trifluoropropyl; and hydrogen chloride with a catalytic amount of a catalyst composition effective in promoting the formation of monosilanes from the high-boiling residue at a temperature within a range of about 150° C. to 500° C. and a pressure within a range of about 100 psig to 5,000 psig.

5,627,299

PROCESS FOR PREPARING TRIBROMONEOPENTYL CHLOROALKYL PHOSPHATES

Noriaki Tokuyasu, Nara, and Nobutaka Miyano, Aichi, both of Japan, assignors to Daihachi Chemical Industry Co., Ltd., Osaka, Japan

Filed Mar. 15, 1996, Ser. No. 616,601

Claims priority, application Japan, Mar. 29, 1995, 7-071750; Jan. 9, 1996, 8-001744

Int. Cl.[6] C07F *9/09*

U.S. Cl. 558—91 **24 Claims**

1. A process of preparing tribromoneopentyl chloroalkyl phosphates comprising:
reacting phosphorus oxychloride with tribromoneopentyl alcohol to obtain a first reaction mixture;
removing hydrochloric acid and unreacted phosphorus oxychloride present in the first reaction mixture to obtain a second reaction mixture; and
reacting the second reaction mixture with alkylene oxide to obtain a compound represented by the formula (1):

$$[(BrCH_2)_3C-CH_2O]_nP(OCHCH_2Cl)_{3-n},$$

wherein R represents a hydrogen atom, or an alkyl or chloroalkyl group and n is from 0.95 to 1.15.

5,627,300

CARBAMATE COMPOUNDS CONTAINING THIOCARBAMOYL GROUP AND PROCESS FOR PREPARING THE SAME

Yong M. Choi, Towaco, N.J.; Dong I. Han, and Hyung C. Kim, both of Taejon, Rep. of Korea, assignors to Yukong Limited, Seoul, Rep. of Korea

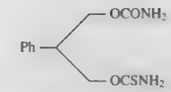
Filed Jan. 3, 1996, Ser. No. 582,498

Claims priority, application Rep. of Korea, Jan. 3, 1995, 1995-17

Int. Cl.[6] C07C *333/04*

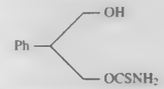
U.S. Cl. 558—234 **36 Claims**

1. 3-Thiocarbamoyl-2-phenyl-1,3-propandiol carbamate, represented by the following structural formula I:



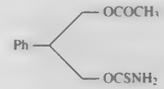
[I]

4. 2-Phenyl-1,3-propandiol monothiocarbamate, represented by the following structural formula IV:



[IV]

6. 3-Acetoxy-2-phenylpropanol thiocarbamate, represented by the following structural formula VI:



[VI]

5,627,301

PROCESS FOR THE PREPARATION OF MONO-ALKYLCARBONATE OF BISPHENOLS

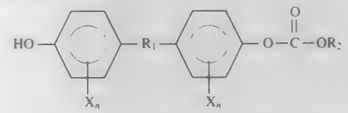
Sivaram Swaminathan, and Abbas A. G. Shaikh, both of Maharashtra, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Mar. 29, 1994, Ser. No. 219,497

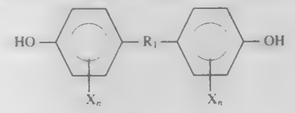
Int. Cl.[6] C07C *68/06*

U.S. Cl. 558—270 **12 Claims**

1. A process for the preparation of mono-alkylcarbonate of bisphenols of formula I



where R_1 represents an ispropylidene, hexafluoroispropylidene, cyclohexane, sulphone, keto, ether, phthaline or phthalimide group, R_2 represents an alkyl group with 1–8 carbon atoms, X is selected from straight or branched, chain alkyl groups of 1 to 4 carbon atoms, a phenyl group and halogen atoms and n is from 1 to 4 which comprises reacting a bisphenol of the formula II



where R_1 represents an ispropylidene, hexafluoroispropylidene, cyclohexane, sulphone, keto or phthalimide group, X is selected from straight or branched chain alkyl groups of 1 to 4 carbon atoms, a phenyl group and halogen atoms and n is from 1 to 4 with a dialkylcarbonate in the presence of a catalyst selected from organometallic compounds from the group consisting of di-n-butyltin oxide, di-n-butyltin diacetate, tri-n-butyltin hydroxide n-butyltin tributoxide, di-n-butyltin dimethoxide, tin oxalate, di-n-butyltin dilaurate, tri-n-butyltin halides, stannoxanes, titanium isopropoxide, titanium butoxide, and titanium aryl oxides, under inert atmosphere at a temperature in the range 60°–150° C.

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5,627,302

ASYMMETRICALLY SUBSTITUTED DIAMINODICARBOXYLIC ACID DERIVATIVES

Johann Hiebl, Pichling, and Franz Rovenszky, Linz, both of Australia, assignors to Hafslund Nycomed Pharma Aktiengesellschaft, Linz, Australia

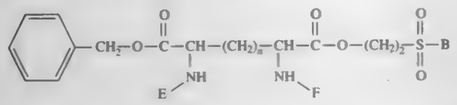
Continuation-in-part of Ser. No. 293,034, Aug. 19, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 637,052

Claims priority, application Australia, Aug. 20, 1993, 1683/93

Int. Cl.[6] C07C *261/00*

U.S. Cl. 560—158 **2 Claims**

1. An asymmetrically substituted diaminodicarboxylic acid derivative of the formula (I)



wherein

B represents methyl or phenyl,

E and F in each case represent an optionally halogenated straight chain, branched or cyclic alkyl radical having 1 to 10 C atoms or



where W represents 9-fluorenylmethyl, benzyl which is optionally mono-, poly- or mixed substituted by halogen, $-NO_2$, alkoxy or —CN or W represents a straight chain or branched alkyl radical having 1 to 4 C atoms,

and n represents an integer from 2 to 10.

5,627,303

PREPARATION OF ISOPHORONE

John Braithwaite, Charleston, and Manuk Colakyan, South Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 112,092, Aug. 25, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 405,921

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—388 **17 Claims**

1. A vapor phase aldolization process for producing isophorone and mesityl oxide from acetone which comprises contacting said acetone with a calcined magnesium/aluminum mixed oxide catalyst derived from an aqueous mixture consisting of from about 0.1 to about 5 parts by weight of a water-insoluble magnesium carbonate selected from the group consisting of magnesium carbonate hydroxide pentahydrate, anhydrous magnesium carbonate, magnesium carbonate monohydrate, and magnesium carbonate hydroxide trihydrate, per one part by weight of a water-insoluble aluminum hydroxide carbonate hydrate, said catalyst being calcined at a temperature of from about 300° C. to about 500° C. and from about 1 to about 10 parts by weight of water per one part of the total weight of said water-insoluble aluminum and magnesium compounds employed, and recovering an aldolization product of isophorone, mesityl oxide and unreacted acetone.

5,627,304

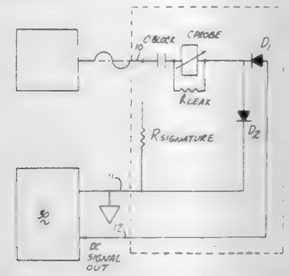
SYSTEM FOR AUTOMATIC REAL-TIME CALIBRATION OF REMOTELY-LOCATED CAPACITIVE-TYPE FUEL QUANTITY MEASUREMENT PROBES

Neil R. Jacob, Largo; Joe K. Winner, and Douglas C. Smythe, both of Clearwater, all of Fla., assignors to Smiths Industries, Florham Park, N.J.

Filed May 23, 1994, Ser. No. 247,239

Int. Cl.[6] G01F *25/00*

U.S. Cl. 73—1.73 **2 Claims**



1. A liquid level measuring arrangement comprising:

a capacitive liquid level probe disposable in a liquid for measuring the level thereof and generating a probe output signal in response to an input signal;

a signal source connected to one side of the probe for applying the input signal to the probe;

signal measuring apparatus connected to another side of the probe for generating an output signal indicative of probe capacitance and comprising a look-up table of capacitance values: and

a signature resistor connected in parallel with said probe and having a predetermined resistance value;

the signal measuring apparatus operative to measure the predetermined value of the signature resistor and to use the predetermined value as a pointer to the look-up table to thereby obtain an associated capacitance value from the look-up table and further operative to compute a liquid level output value on the basis of the output signal indicative of probe capacitance and the capacitance value obtained from the look-up table.

5,627,305

GAS SENSING APPARATUS AND METHOD

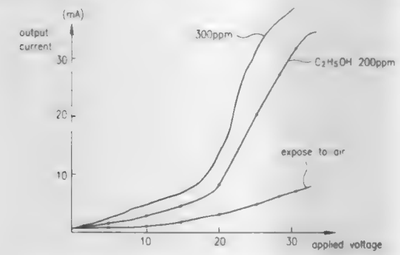
Dong H. Yun, Anyang-si; Chul H. Kwon; Kyuchung Lee, both of Seoul; Hyung K. Hong, Kwacheon-si; Hyeon S. Park, Seoul; Hyun W. Shin, Kwacheon-si, and Sung T. Kim, Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Feb. 23, 1996, Ser. No. 605,889

Claims priority, application Rep. of Korea, Feb. 24, 1995, 3681/1995

Int. Cl.[6] G01N *27/04;31/12;* **G01R** *3/00*

U.S. Cl. 73—23.2 **7 Claims**



7. A gas sensing method for sensing gases using a gas sensing device having a sensing layer that has a voltage supplied thereto in which the sensing layer is self-heated by the supplied voltage and that reacts with particular gases of interest and a current detection circuit for detecting the current level flowing through the sensing layer, the method comprising the steps of:

storing current-voltage reference data corresponding to measured values of current flowing through the sensing layer for a plurality of voltages for each of a plurality of gases at different densities for the plurality of gases in an ambient atmosphere;

applying a variable voltage to the self-heated sensing layer and detecting the resultant currents flowing through the sensing layer;

referencing the stored current-voltage reference data in accordance with the measured voltage supplied to the sensing layer and the corresponding detected current level flowing through the sensing layer for the supplied voltage: and

identifying the kind and density of the particular gases of interest by identifying the kind and density of gas corresponding to the current/voltage reference data that most closely matches the applied voltage and resultant current levels.

5,627,306

OXYGEN CONCENTRATION SENSOR

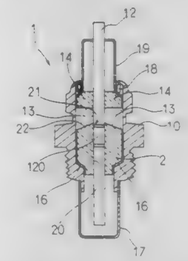
Masanobu Yamauchi, Kariya, and Isao Watanabe, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 23, 1996, Ser. No. 605,917

Claims priority, application Japan, Mar. 3, 1995, 7-070758

Int. Cl.[6] H01C *07/00;* **G01N** *31/12;27/26*

U.S. Cl. 73—23.2 **14 Claims**



1. An oxygen concentration sensor constructed mainly of cylindrical parts along a central axis through said sensor including a housing,

a longitudinally extending slab-shaped sensor element,

a ceramic holding member which is disposed in said housing and has a centrally-disposed hole through it for holding said sensor element therein, a pressurizing member and powder filled volume occupying an insulating space between said holding member and said pressurizing member, wherein

the top of said ceramic holding member has an inclined surface extending outward and downward directly from an upper opening end of said hole to a periphery of said sensor housing to provide a generally conical surface for causing continuous flow of said powder when said powder is filled and pressurized by said pressurizing member.

5,627,307

METHOD FOR MEASURING INTENSITY INDEX OF ODOR

Yoshikazu Hayashi, Inuyama, Japan, assignor to Fortec Co., Ltd., Aichi, Japan

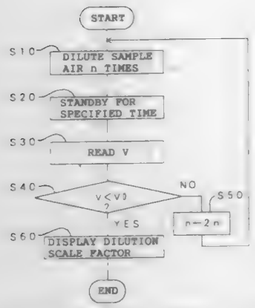
Filed Nov. 20, 1995, Ser. No. 559,838

Int. Cl.[6] G01N *27/00;1/00*

U.S. Cl. 73—23.34 **7 Claims**

1. A method of measuring odor intensity index with a testing chamber and an odor sensor comprising the steps of:

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introducing sample gas the odor of which is to be measured into said chamber;

repeatedly diluting sample gas with odorless air;

updating a dilution scale factor every time sample gas is diluted;

measuring odor intensity with said odor sensor every time sample gas is diluted;

determining whether or not measured odor intensity becomes lower than a predetermined odor intensity; and

notifying the updated dilution scale factor as an odor intensity index when the measured odor intensity becomes lower than the predetermined odor intensity.

5,627,308

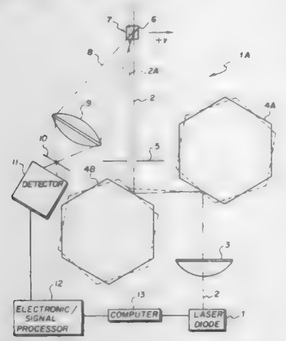
METHOD AND APPARATUS FOR MEASURING MOTION OF A SUSPENDED PARTICLE OR A SUSPENDING FLUID

Barton E. Dahneke, 930 Johnson Rd., Palmyra, N.Y. 14522

Filed May 31, 1995, Ser. No. 455,700

Int. Cl.[6] G01N *37/00*

U.S. Cl. 73—28.01 **20 Claims**



1. A method for determining at least two particle motion parameters $P_1, P_2, \ldots$ of one or more sets of particle motion parameters, where each set defines motion of a particle in a specified direction at or near a specified time and, when desired, using the set(s) of particle motion parameters for determining one or more of, (I) one or more of at least one set of fluid motion parameters $F_1, F_2, \ldots$ which define motion of a fluid in at least one specified direction at or near a specified time, (II) at least one property of a particle, (III) at least one property of a fluid, and (IV) at least one external force acting on a particle in a specified direction or a derivative of this force with respect to time, comprising:

a) observing a radiation signal from at least one particle, where the signal is at least one of an electromagnetic or acoustic radiation signal reflected, scattered or emitted from the particle;

b) modulating the radiation signal from the particle by modulating the radiation illuminating or radiation from the particle, where the modulation causes the signal, or a signal derived therefrom, to contain at least one set of distinct features which repeat in time, an mth and an nth of which features of a set occur at times t_m and t_n separated by interval $t_{mn}=t_m-t_n$ which is a time interval from a reference time t_r, where t_m and t_n may differ for different sets, and where a net displacement Δ_{mn} of the particle in a specified direction during interval t_{mn} is related to t_{mn} by at least one equation $\Delta_m=F(t_{mn})$, where $F(t_{mn})$ is a known function of t_{mn} for particle motion in at least one specified direction;

c) detecting at least one modulated radiation signal from the particle or a signal derived therefrom to convert the at least one modulated radiation signal or the signal derived therefrom into at least one signal which can be processed;

d) processing the at least one signal in a manner detecting at least one set of N+1 distinct features dependent on time t and on particle location x_p in at least one specified x_p-direction, where the distinct features in a set occur at times t_j and locations x_{pj} with j=1, 2, 3, . . . , N, N+1, N is a positive integer greater than one which may differ for different sets, and $1 \leqq \pm(m-n) \leqq N$ for each set;

e) processing further the signal in a manner determining N of the t_{mn} intervals between N unique pairs of the N+1 values of t_j for at least one set of t_j values corresponding to particle motion in at least one specified x_p-direction, and (optionally) determining the values of X_{pj} for j=1, 2, 3, . . . , N, N+1;

f) processing further the signal determining at least one set of net displacements $\Delta_{mn}=x_{pm}-x_{pn}$ of the particle in a specified x_p-direction which occur during the set of N unique t_{mn} intervals using an expression $\Delta_{mn}=F(t_{mn})$ or (optionally) using $\Delta_{mn}=x_{pm}-x_{pn}$ and the N+1 values of X_{pj}; and,

g) utilizing the processed signals to solve a set of N equations relating Δ_m and t_{mn} values for motion in each specified x_p-direction with each of the equations containing two or more particle motion parameters $P_1, P_2, \ldots$ of at least one set of particle motion parameters for particle motion in at least one specified x_p-direction, which motion parameters are the only unknown quantities in the general equation

$$\Delta_{mn} = F(t_{mn}) = \sum_{k=1}^{k=M} [P_k \times t_{mn}^k]/k!,$$

or an equivalent general equation, where index mn denotes in turn each of N (Δ_{mn}, t_{mn}) data pairs which give by the general equation the set of N equations, one mn-specific equation for each of the N mn data pairs, the Greek sigma denotes a sum over M terms for which index k takes values 1, 2, 3, . . . , M, M is an integer value selected to be equal to or greater than a desired number of particle motion parameters, particle motion parameter $P_k=d^k x_p/dt^k$ is a kth derivative with respect to time of particle location x_p at or near a specified time t_n, and $k!=1\times2\times3\times\ldots\times k$; and, when desired, one or more of,

h1) determining at least one fluid motion parameter F_k with k=1 or 2 or 3 or . . . for fluid motion in at least one specified x_p-direction by solving at least one particle equation of motion

$$F_1=P_1+(m_p\times P_2-G_o/f.$$

or an equivalent equation including one obtained by taking a kth derivative of this equation with respect to time, to obtain at least one fluid motion parameter $F_k=d^k x_f/dt^k$ for a fluid element for at least one specified x_p-direction with x_f an x_p-direction displacement of the fluid element at time t, m_p is a known particle mass or is related in a known way to at least one other particle or fluid property, f is a known particle-fluid friction coefficient or is related in a known way to at least one particle or fluid property, $G_{k-1}=d^{(k-1)}G_o/dt^{(k-1)}$ is a known

(k−1)st derivative with respect to time of an external force G_o in a specified x_p-direction, and P_k and P_{k+1} are measured particle motion parameters for motion in a specified x_p-direction; or,

h2) determining at least one property of a particle suspended in a fluid at one or more times by measuring the values of particle motion parameters P_1 and P_2, or P_k and P_{k+1}, for a specified x_p-direction and using the values in solving particle equation of motion

$$m_p/f=(F_1-P_1-G_o/f)/P_2,$$

or an equivalent equation including one obtained by taking a kth derivative of the particle equation of motion with respect to time, to obtain one or more values of property m_p/f or G_o/f or of G_o/m_p or of one or more other properties using known values for the suspending fluid properties, at least one known fluid motion parameter F_1 or F_k for fluid motion in the specified x_p-direction and either (i) a known (k−1)st derivative with respect to time $G_{k-1}=d^{(k-1)}G_o/dt^{(k-1)}$ of an external force G_o in the specified x_p-direction, or (ii) a known relationship between at least one particle property and a particle motion parameter and an external force or time-derivative thereof, G_o or $G_{(k-1)}$, which is changeable multiple times during the course of multiple measurements of the particle motion parameters to provide data which is usable with the known relationship to determine multiple particle properties, with k=1 or 2 or 3 or . . . ; or,

h3) determining at least one property of a fluid in which at least one particle is suspended by solving a particle equation of motion

$$m_p/f=(F_1-P_1-G_o/f)/P_2,$$

or an equivalent equation including one obtained by taking a kth derivative with respect to time of this equation, to obtain one or more values of at least one fluid property for the case when two or more particle motion parameters P_k and P_{k+1} for particle motion in a specified x_p-direction are known, at least one fluid motion parameter F_k for motion in the specified x_p-direction is known, and one of (i) at least one external force G_o in the specified x_p-direction, or (ii) a (k−1)st derivative with respect to time of G_o in the specified x_p-direction, or (iii) a relationship between G_O and at least one particle or fluid property is known for k=1 or 2 or 3 or . . . ; or,

h4) determining one or more values of an external force G_O acting on a particle in at least one specified x_p-direction by solving a particle equation of motion

$$G_o=m_p\times P_2-f\times(F_1-P_1),$$

or an equivalent equation including one obtained by taking a kth derivative with respect to time of this equation with k=1 or 2 or 3 or . . . , for the case when all quantities in the equation are known except G_o or a derivative with respect to time thereof.

5,627,309

METHOD FOR DETERMINING PRESENCE OF WATER

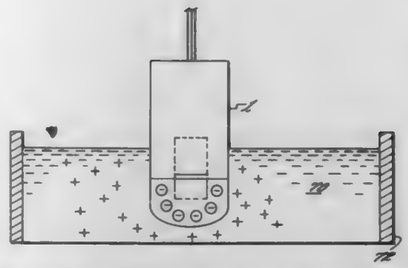
James R. Heckman, 3883 Tanager Pl., Palm Harbor, Fla. 34685

Division of Ser. No. 226,958, Apr. 13, 1994, Pat. No. 5,564,904. This application Oct. 19, 1995, Ser. No. 545,138

Int. Cl.[6] G01N *33/18*

U.S. Cl. 73—61.43 **4 Claims**

1. A method for determining presence of water in a fluid, comprising the steps of:



providing a probe responsive only to the presence of water;

placing the probe in a supply of fluid; and

determining the presence of water in the fluid responsive to an output signal of the probe representative of an electrical potential between the probe and the fluid having a predetermined value.

5,627,310

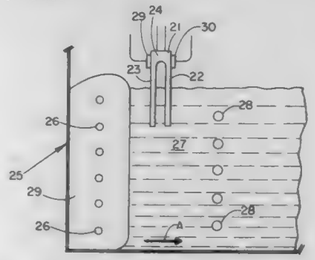
SENSOR ARRANGEMENT FOR ICE BANK CONTROL

Martin Johnson, Kenilworth, England, assignor to IMI Cornelius, Inc., Anoka, Minn.

Filed Oct. 20, 1995, Ser. No. 546,002

Int. Cl.[6] G01N *29/00*

U.S. Cl. 73—64.53 **6 Claims**



1. A sensor control for detecting and regulating the growth of an ice bank in a water bath of a beverage dispensing machine, the ice bank formed on an evaporator of a refrigeration means, the sensor control, comprising:

a probe positioned in the water bath so that ice growth of the ice bank impinges on the probe at a predetermined point,

a piezo-electric oscillating means for vibrating the probe at a predetermined source vibrational level,

a piezo-electric vibration sensing means for sensing the vibration of the probe, and control means connected to the oscillating means and the vibration sensing means, the control means comparing the sensed vibration of the probe as determined by the vibration sensing means with the source vibrational level for shutting off the refrigeration means when the sensed vibration of the probe is below a predetermined level relative to the source vibrational level and turning on the refrigeration means when the sensed vibrational level returns to the source vibrational level and the control means periodically stopping the operation of the oscillating means for periodically stopping the vibrating of the probe so that ice can form thereon.

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5,627,311

TRANSPORTABLE THREE-DIMENSIONAL CALIBRATION WIND TUNNEL SYSTEM, VERIFICATION METHOD OF FLIGHT CONTROL SYSTEM AND FLIGHT SIMULATOR USING SAME

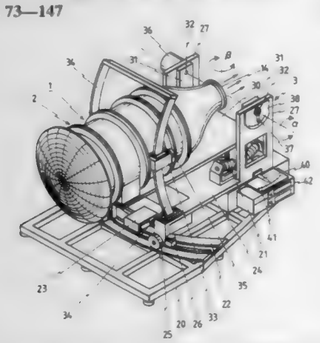
Teruomi Nakaya, Machida; Osamu Okamoto, Higashi-Yamato; Naoaki Kuwano, Chofu; Seizo Suzuki, Mitaka; Shuichi Sasa, Hachioji; Hidehiko Nakayasu, Kashiwa, and Masakazu Sagisaka, Hino, all of Japan, assignors to National Aerospace Laboratory of Science & Technology Agency, and National Space Development Agency of Japan (NASDA), both of Tokyo, Japan

Filed Aug. 22, 1995, Ser. No. 517,969

Claims priority, application Japan, Aug. 23, 1994, 6-219581

Int. Cl.[6] G01M *9/02;9/04;17/00*

U.S. Cl. 73—147 6 Claims



1. A transportable three-dimensional calibration wind tunnel system comprising:

a small wind tunnel portion having a nozzle for creating a three-dimensional airflow having a suitable wind velocity; and

a two-axis rotational deformation means connected to said small wind tunnel portion for causing said wind tunnel portion to effect a conical motion with a nozzle blow port being in close proximity to an apex to suitably change a flow angle.

5,627,312

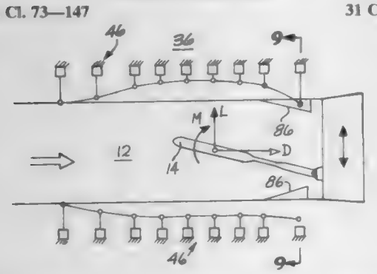
VARIABLE RESISTANCE VENTILATED ADAPTIVE WIND TUNNEL WALLS

Alexander J. Krynytzky, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1995, Ser. No. 577,982

Int. Cl.[6] G01M *9/04*

U.S. Cl. 73—147 31 Claims



1. An adaptive wall wind tunnel test section for minimizing fluid flow interference effects at the wall of the tunnel when a test model is located in said test section, said tunnel comprising:

(a) wall means defining said test section,

(b) a plenum surrounding said test section,

(c) ventilation means for providing fluid communication through said test section wall means between said plenum and said test section,

(d) flexible throttle plate means positioned proximate said ventilation means for controlling fluid flow from said test section to said plenum, said throttle plate means being deflectable from a first position precluding fluid flow from said test section into said plenum to another position permitting said fluid flow from said test section into said plenum, and

(e) means for deflecting said throttle plate means from said first position to said another position.

5,627,313

POSITIVE DISPLACEMENT VOLUMETRIC MEASURING DEVICE

Tremiño J. A. Gomez, C/ Juan Bravo, no 58, Madrid, and Redondo S. R. Valbuena, C/ Acera de Recoletos, no 3, Valladolid, both of Spain

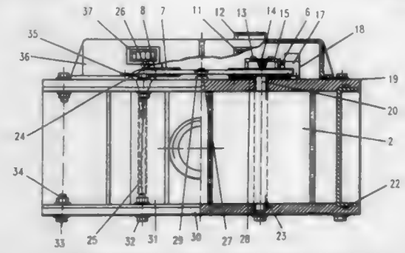
PCT No. PCT/ES94/00118, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO95/14216, PCT Pub. Date May 26, 1995

PCT Filed Nov. 15, 1994, Ser. No. 491,867

Claims priority, application Spain, Nov. 15, 1993, P9302381

Int. Cl.[6] G01F *3/04*

U.S. Cl. 73—261 4 Claims



1. A positive displacement volumeter, which is of the type of those formed from two rotary bodies which tangentially mesh there between and being impelled by liquid passing there between, each of the two rotary bodies turning around its respective axis, a first of the rotary bodies being connected to a drive pulley, via a drive shaft, the volumeter also having a driven pulley, and having been provided a tightening trapezoidal belt between said pulleys, wherein both of the rotary bodies adopt approximately the form of a racetrack, both being arranged such that each minor rounded side in a rotary body respectively meshes with a large flat side of the other rotary body in the form of a racetrack.

5,627,314

MICROMACHINED RATE AND ACCELERATION SENSOR

Rand H. Hulsing, II, Redmond, Wash., assignor to AlliedSignal, Inc., Morristown, N.J.

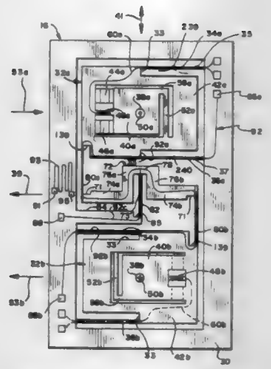
Division of Ser. No. 207,328, Mar. 7, 1994, Pat. No. 5,557,046, which is a division of Ser. No. 73,818, Jun. 8, 1993, Pat. No. 5,331,854, which is a division of Ser. No. 653,533, Feb. 8, 1991, Pat. No. 5,241,861. This application Sep. 1, 1995, Ser. No. 522,812

Int. Cl.[6] G01D *9/04*

U.S. Cl. 73—504.04 22 Claims

1. In an apparatus for measuring the specific force and angular rotation rate of a moving body, a micromachined silicon structure comprising:

a) a monolithic silicon substrate having first and second substantially planar surfaces disposed substantially parallel to each other:



b) a first accelerometer formed of said substrate and having a first force sensing axis for producing a first output signal indicative of the acceleration of the moving body along said first force sensing axis, said first accelerometer having a first proof mass, a first support frame, and first flexure means for connecting said first proof mass to said first support frame;

c) a second accelerometer formed of said substrate and having a second force sensing axis for producing a second output signal indicative of the acceleration of the moving body along said second force sensing axis, said second accelerometer having a second proof mass, a second support frame, and second flexure means for connecting said second proof mass to said second support frame; and

d) mounting means formed of said substrate for mounting said first and second accelerometers to be moved along a vibration axis substantially parallel to said first and second planar surfaces;

wherein dithering of said first and second accelerometers along said vibration axis permits measurement of said specific force and angular rotation rate of said moving body.

5,627,315

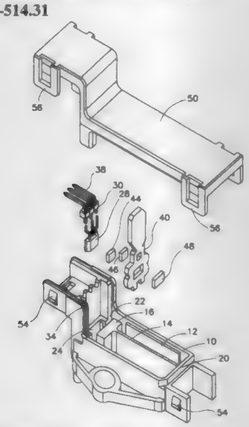
ACCELEROMETER WITH A CANTILEVER BEAM FORMED AS PART OF THE HOUSING STRUCTURE

Bruce B. Figi, Davis, and Thomas R. Giuffre, Freeport, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 18, 1995, Ser. No. 423,196

Int. Cl.[6] G01P *15/08*

U.S. Cl. 73—514.31 10 Claims



1. An accelerometer comprising:

a housing structure having a cavity formed therein;

a cantilever beam extending inwardly into said cavity from a first wall of said housing structure;

a magnet structure attached to a distal end of said cantilever beam, said distal end being movable along a first path in response to flexure of said cantilever beam; and

a magnetically sensitive component attached to a second wall of said housing structure, said magnetically sensitive component being displaced from said magnet structure by a preselected distance, said magnetically sensitive component having an output signal which is representative of the position of said magnet structure relative to said magnetically sensitive component, said housing structure and said cantilever beam being formed as parts of a single unitary plastic structure which is produced by a single injection molding process.

5,627,316

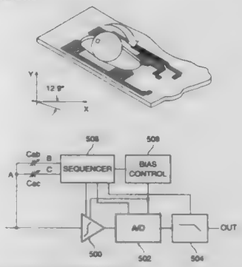
CAPACITIVE INCLINATION AND ACCELERATION SENSOR

Rudi De Winter, Heusden-Zolder, and Roger Dieis, Erps-Kwerps, both of Belgium, assignors to Sigma-Delta N.V., Tessenderlo, Belgium

Filed Mar. 24, 1995, Ser. No. 410,183

Int. Cl.[6] G01P *15/125;* H01H *35/02;* G01C *9/06*

U.S. Cl. 73—514.32 14 Claims



1. A position sensor comprising:

a printed circuit board (PCB) having an elongated aperture stamped therethrough, a first terminal of electrically conductive track disposed on a surface of said PCB along a first side of said elongated aperture, and a second terminal of electrically conductive track disposed on said surface of said PCB along a second side of said elongated aperture;

a ball rollably disposed in said elongated aperture; and

a capacitance detection circuit coupled to said first and second terminals for detecting a change in the capacitance between said first and second terminals, as said ball rolls along said elongated aperture.

5,627,317

ACCELERATION SENSOR

Michael Offenberg, Tuebingen; Wolfgang Buchholtz, Pfullingen, and Markus Lutz, Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 6, 1995, Ser. No. 466,841

Claims priority, application Germany, Jun. 7, 1994, 44 19 844.2

Int. Cl.[6] G01P *15/125*

U.S. Cl. 73—514.32 8 Claims

1. A sensor for measuring a force or acceleration, comprising:

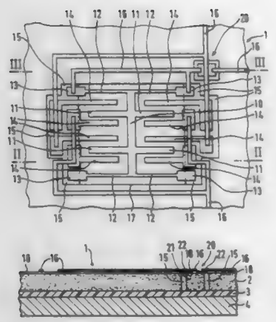
a laminated substrate including:

an upper silicon layer including a movable element which can be moved due to the force or acceleration and a stationary element,

an underlying layer,

means for insulating the upper silicon layer from the underlying layer, and

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electrical supply lines arranged on an upper surface of the upper silicon layer, the electrical supply lines being coupled to the movable and stationary elements; and

a conductor track crossing which includes a region insulated from a remainder of the upper silicon layer, wherein a conductor track lies directly on the insulated region between two contacts and is insulated from the insulated region by means of a surface insulation layer,

wherein:

the upper silicon layer includes insulation trenches which penetrate the upper silicon layer completely, for mutually insulating individual regions of the upper silicon layer, and

the electrical supply lines bridge the insulation trenches between the mutually insulated regions of the upper silicon layer.

5,627,318

MECHANICAL FORCE SENSING SEMICONDUCTOR DEVICE

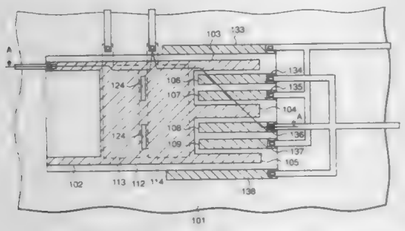
Tetsuo Fujii, Toyohashi, and Masahito Imai, Chita, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 109,504, Aug. 20, 1993, Pat. No. 5,461,916. This application Jul. 27, 1995, Ser. No. 508,170

Claims priority, application Japan, Aug. 21, 1992, 4-223072; Oct. 12, 1992, 4-273202; Apr. 2, 1993, 5-77151

Int. Cl.[6] G01P *15/125*

U.S. Cl. 73—514.32 **8 Claims**



1. A mechanical force sensing semiconductor device comprising:

a substrate:

a semiconductor layer having a first surface adjacent said substrate and a second surface disposed in spaced parallel relation with respect to said substrate, said semiconductor layer having a fixed portion connected with said substrate and a movable portion linked with said fixed portion;

a first electrode formed as part of said movable portion;

a second electrode formed as part of said fixed portion and disposed in spaced relation from said movable portion and thus said first electrode:

internal wiring formed as part of said fixed portion of said semiconductor layer and electrically connected with said second electrode;

a first external contacting electrode disposed at said second surface of said semiconductor layer and electrically connected with said first electrode; and

a second external contacting electrode disposed at said second surface of said semiconductor layer and electrically connected with said internal wiring through a portion of said semiconductor layer;

said movable portion and said fixed portion being constructed and arranged such that movement of said movable portion effectuates a change in capacitance between said first electrode and said second electrode to enable movement of said movable portion to be detected as a result of said change in capacitance.

5,627,319

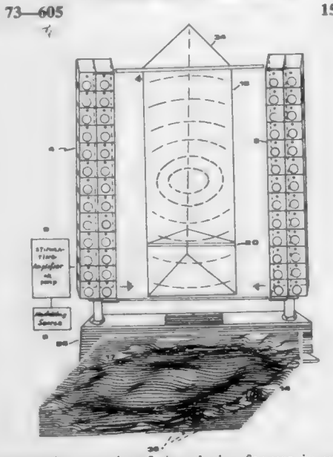
MOTION ACOUSTIC HOLOGRAPH

Ronald J. Greene, 29301 Carmel Rd., Sun City, Calif. 92586

Filed Feb. 12, 1996, Ser. No. 599,802

Int. Cl.[6] G01N *29/22;* **G03B** *42/06*

U.S. Cl. 73—605 **15 Claims**



1. An acoustic wave interfering device for use in generating, decoding and illuminating moving acoustic holograms from the frequency, amplitude and phase distribution information present on conventional analogue records, CD's and tapes comprising

a perpendicularly oscillating variable frequency tuning fork formed from two columns of high and low frequency oscillating dome shaped oscillator elements mounted perpendicularly on the oscillating free ends of a centrally damped non-metalic flat spring mounted on an open ended boxed double fulcrum attached between two triangular bases; and

means to provide for connecting said oscillator columns to the ends of said spring; and

means to provide for aligning, clamping and damping said spring to the double fulcrum mounted on a triangular base; and

means to provide for continuously stimulating, synchronizing and phase modulating said columns over a 30 to 20,000 cps frequency range; and

means to provide for increasing the number of oscillations produced per second by an individual oscillator element in said columns; and

means to provide for adjusting the height of said oscillator columns; and

means to provide for the electronic division of a single electronic stimulating wave into two identical electronic stimulating waves with the same frequency, same direction, same phase, and same polarization; and

means to provide electrical connections to said acoustic oscillator columns; and

means to provide for reflecting the acoustic waves vertically back and forth in front of the inner oscillator columns and differentiating the input from the output and extrating energy from said circuits; and

means to provide for activating the outer oscillator's columns which form the reflective wave amplifier's isolator circuits; and

means to provide to adjust the distance between said oscillator columns so that when placed in the corner of an average room their respective highly coherent subject and reference waves emitted interfere with each other to form a moving rectangular interference pattern of circular zone plates one for each audiable point in a 3-D scene; and

means to provide for controlling the directions of the individual spherical wavefronts generated so that the two high and low frequency oscillator columns can be disposed at differing angles of obliquity from a line between the two oscillator columns, whereby the coherent phase modulated subject and reference waves generated interfere at a predetermined distance from the oscillators where they simultaneously impring to produce a rectangular interference pattern of circular zone plates one for each audiable point in a 3-D scene;

means to provide for stacking the oscillator elements in columns; and

a matched frequency triangular shaped wideband high-Q resonator chamber or reflective wave amplifier; and

means to provide for mounting said tuning fork in the rectangular mouth of said chamber; and

means to provide for tuning the length of said resonator chamber to the wide range of frequencies produced by said oscillator columns; and

means to provide for reflecting the acoustic waves horizontally back and forth in the resonator chamber and differentiating the input from the output of the horizontal circuit of the reflective wave amplifier and extrating energy from said circuit; and

means to provide to regulate the oscillations of said tuning fork by resonance or forced resonance; and

means to provide for adding resistance to the push-pull horizontal circuit; and

means to provide to stabilize the 3-D acoustic image over a 30 to 20,000 cps frequency range; and

a wave generated hologram; and

means to provide for the hologram's use as a partially transparent end mirror and output port that seals the front of the high-Q chamber and determines the thickness of the said moving hologram; and

means to provide the moving hologram's use to drive a straight-sided corner horn; and

means to provide for control of the impedence of the corner horn; and

means to provide for the control of the air movement generated by the moving hologram's motion; and

means to provide to enhance the absorption of the reflective wave amplifier's output by the said oscillator column's and

means to provide for transferring acoustic energy radiated by said oscillator columns to said horizontal and vertical circuits; and

means to provide for adjusting the thickness of the sidewalls of the open ended boxed double fulcrum whereas the number of oscillations per second produced by the recoil forces increases and the size and definition of the acoustic image increases; and

means to provide for stabilizating the tops of the two said oscillator columns; and

means to provide for phase-inverting the hologram.

5,627,320

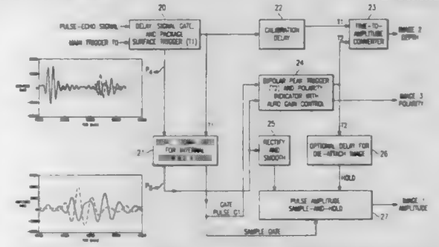
APPARATUS AND METHOD FOR AUTOMATED NON-DESTRUCTIVE INSPECTION OF INTEGRATED CIRCUIT PACKAGES

Thomas M. Moore, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 963,929, Oct. 20, 1992, which is a continuation of Ser. No. 431,686, Nov. 3, 1989, which is a continuation of Ser. No. 172,043, Mar. 23, 1988. This application Jun. 7, 1995, Ser. No. 479,274

Int. Cl.[6] G01N *29/06*

U.S. Cl. 73—606 **2 Claims**



1. A display system for a scanning acoustic microscope having a transducer system operable to generate a series of acoustic pulses of ultrasonic frequency and predetermined magnitude, an acoustic scanning system operable to direct the acoustic pulses to impinge upon and insonify an object with predetermined timing and in accordance with a preselected scanning pattern, and a receiver system operable to receive ultrasonic pulse echoes reflected from the object and to develop an initial electrical signal of varying amplitude and polarity representative of the magnitude and phase, respectively, of the ultrasonic pulse echoes, the display system comprising:

a) a signal amplifier connected to the receiver system and operable to generate an amplitude content signal representative of amplitude of the initial electrical signal, independent of polarity;

b) a signal comparator connected to the receiver system and operable to generate a polarity content signal representative of polarity of the initial electrical signal, independent of amplitude; and

c) a signal display actuated by the respective amplitude and polarity content signals, operable to display a unified, consolidated image of the object in which acoustic impedance transitions for at least one depth level of the object from which echoes of different polarities occur are distinguished from each other.

5,627,321

METHOD OF STRAINING A DIAPHRAGM AND A DEVICE THEREFOR

Jukka Korhonen, Vantaa, and Gustaf Järnefelt, Helsinki, both of Finland, assignors to Instrumentarium Corporation, Finland

Filed Jun. 19, 1995, Ser. No. 491,744

Claims priority, application Finland, Jun. 17, 1994, 942920; Jun. 13, 1995, 952881

Int. Cl.[6] G01L *7/08;* **G01R** *3/00*

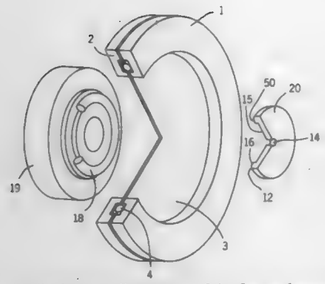
U.S. Cl. 73—715 **32 Claims**

1. A method of straining a diaphragm to provide a desired tension therein, said method comprising the steps of:

providing a first frame part and a second frame part, at least one of said frame parts having a projection defining the periphery of an interior area surrounded by the projection;

providing an annular, resilient body having a configuration such that said annular, resilient body can lie around the exterior of the projection;

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placing the diaphragm adjacent one of the first and second frame parts so that the diaphragm is aligned with the area defined by the projection;

placing the annular, resilient body intermediate one of the frame parts and the diaphragm so that the annular, resilient body can lie around the exterior of the projection when the first and second frame parts are contiguous;

orienting the first frame part and the second frame part in an opposed relationship with the diaphragm therebetween and with said projection on said one of said frame parts extending toward the other of said frame parts;

pressing the first and second frame parts together to bring the diaphragm into engagement with the annular resilient body to strain the diaphragm;

fastening the diaphragm in the strained state on at least one of the first and second frame parts; and

removing frame parts that are not fastened together.

5,627,322

MEASUREMENT SENSOR FOR A VORTEX FLOWMETER

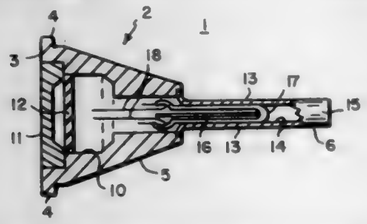
Ingo Osterloh, Dessau, Germany, assignor to Bopp & Reuther Messtechnik GmbH, Mannheim, Germany

Filed Jun. 1, 1995, Ser. No. 457,530

Claims priority, application Germany, Nov. 21, 1994, 44 41 129

Int. Cl.[6] G01F *1/32*

U.S. Cl. 73—861.22 **11 Claims**



1. A high-temperature-tolerant measurement sensor for a vortex flowmeter having

a damming member (2),

a scanning element (6) disposed downstream of the damming member (2),

a piezoelectric transducer (1) associated with the scanning element (6) and embedded therein, and

a deformable compensating; layer (17) provided, at least in portions, between the piezoelectric transducer and the scanning element,

wherein, in order to provide temperature resistance up to at least about 400° C., the compensating layer is a glass silk laminate.

5,627,323

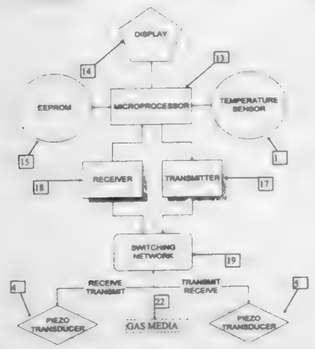
ULTRASONIC BINARY GAS MEASURING DEVICE

Michael Stern, 2505 Oakrill Rd., Marietta, Ga. 30062

Filed May 25, 1995, Ser. No. 450,580

Int. Cl.[6] G01F *1/00*

U.S. Cl. 73—861.28 **25 Claims**



1. A method of measuring the ratio of gasses in a binary gas mixture comprising the steps of;

transmitting a first sound wave from an initial transmission point through the gas mixture,

detecting the arrival of said first sound wave at a receiving point a preselected distance from said initial transmission point,

then, after a given delay, transmitting an echo wave from said receiving point in the opposite direction, through the gas mixture, back to said initial transmission point,

said echo wave being of the same frequency and wave length as said first sound wave and superimposed thereon,

receiving said echo wave at said initial transmission point,

then measuring the travel time from the initial transmission to the time of reception of said echo wave to provide a measure of the relative proportions of the gases in said mixture, and

providing a display indicative of the relative proportions of said gasses.

5,627,324

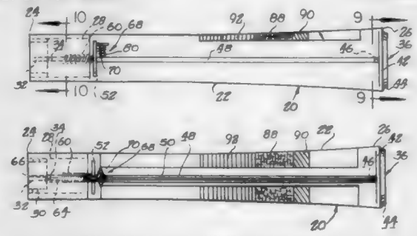
PEAK FLOW METER

William R. Shene, Plattsburgh, N.Y., assignor to Trudell Medical Limited, Canada

Continuation of Ser. No. 153,091, Nov. 17, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,530

Int. Cl.[6] A16B *5/08*

U.S. Cl. 73—861.53 **42 Claims**



18. A peak flow meter for determining peak air flow of an exhaling patient, comprising:

a hollow body for accommodating a flow of exhaled air therethrough;

an indicator adjacent to said body and movable relative to said body to a position along a scale on said body, said position related to a peak of the flow of exhaled air through said body;

said body having an internal area related to said scale such that said scale represents a logarithmic scale of the peak of the exhaled flow of air through said body; and

at least one zone adjacent said logarithmic scale said zone indicating a predetermined range of a patient's air flow independent of placement along said logarithmic scale.

5,627,325

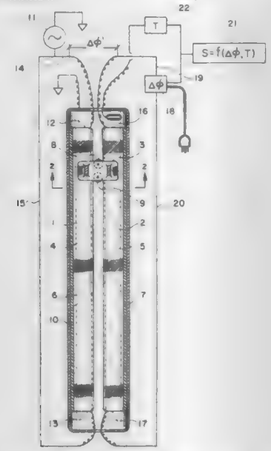
CAPACITIVELY COUPLED OHMIC RESISTANCE POSITION SENSOR

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Continuation of Ser. No. 133,349, Oct. 19, 1993, Pat. No. 5,499,544, which is a continuation-in-part of Ser. No. 36,953, Mar. 25, 1993, Pat. No. 5,347,875. This application Jun. 8, 1995, Ser. No. 488,599

Int. Cl.[6] G01F *1/22;23/68*

U.S. Cl. 73—861.56 **20 Claims**



1. An apparatus for measuring position of a target member comprising in combination:

a) an elongated cylindrical member including at least one of the following two surfaces; an external cylindrical surface of a constant cross sectional geometry wherein the elongated cylindrical member may have only the external cylindrical surface, and an internal cylindrical surface of a constant cross sectional geometry wherein the elongated cylindrical member has a hollow construction;

b) a first electrically conducting elongated member having a finite value of ohmic resistance per unit length thereof and a sizable surface area disposed parallel to the central axis of the elongated cylindrical member in a relationship wherein the sizable surface area of the first electrically conducting elongated member is disposed adjacent to one of the external and internal cylindrical surfaces of the elongated cylindrical member;

c) a second electrically conducting elongated member having a finite value of ohmic resistance per unit length thereof and a sizable surface area disposed parallel to the central axis of the elongated cylindrical member and parallel to the first electrically conducting elongated member in a relationship wherein the sizable surface area of the second electrically conducting elongated member is disposed adjacent to said one of the external and internal cylindrical surfaces of the elongated cylindrical member;

d) a capacitively coupling member having a sizable surface area disposed in a sliding relationship following the central axis of the elongated cylindrical member in a relationship wherein the sizable surface area of the capacitively coupling member maintains a close surface-to-surface proximity relationship with a portion of the sizable surface area of the first electrically conducting elongated member and with a portion of the sizable surface area of the second electrically conducting elongated member in an electrically nonconducting relationship at all instants during sliding movement of the capacitively coupling member relative to the first and second electrically conducting elongated members;

e) means for supplying an input alternating electrical signal to the first electrically conducting elongated member;

f) means for taking off two output alternating electrical signals respectively from two opposite extremities of the second electrically conducting elongated member; and

g) means for obtaining an electrical variable related to a phase angle difference between the two output alternating electrical signals as a measure of position of the capacitively coupling member relative to at least one of two extremities of the elongated cylindrical member.

5,627,326

CORIOLIS TYPE APPARATUS FOR MEASURING MASS FLOW OF A FLUID STREAM

József Alesz; Imre Busznyák; István Glódi; András Kiss; Józsefné Kukta, all of Budapest; Béla Nagy, Budakeszi; Péter Salamon, Budapest; Elemér Szentpéteri, Budapest; Zoltán Tóth, Budapest, and Tamás Ujhelyi, Budapest, all of Hungary, assignors to MMG Automatika Muvek Reszvenytarsasag, Hungary

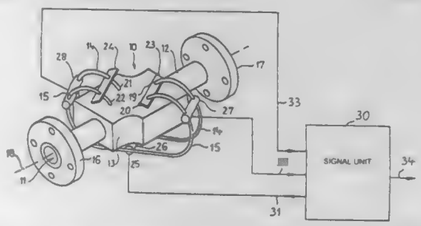
PCT No. PCT/HU93/00026, § 371 Date Feb. 6, 1995, § 102(e) Date Feb. 6, 1995, PCT Pub. No. WO93/22629, PCT Pub. Date Nov. 4, 1993

PCT Filed Apr. 26, 1993, Ser. No. 318,841

Claims priority, application Hungary, Apr. 24, 1992, PATP 9201369

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.357 **4 Claims**



1. A Coriolis type apparatus for measuring mass flow of a fluid stream, comprising:

at least one flow conduit which is oscillated at a resonant frequency transverse to the direction of flow while said fluid flows therethrough, two sensors for generating two analog signals corresponding to the motion of said flow conduit, two incremental type analog-digital converters for converting said analog signals into series of digital signals, each of said incremental type analog-digital converters comprising a comparator, an up-down counter and a digital-analog converter,

a common clock signal source for driving said up-down counters of said two incremental type analog-digital converters,

means for computing from said series of digital signals a value corresponding to a time difference between said analog signals by using Fourier transformation,

controlled latches for forwarding said series of digital signals to said computing means, and control means for controlling said latches in synchronism with at least one of said analog signals.

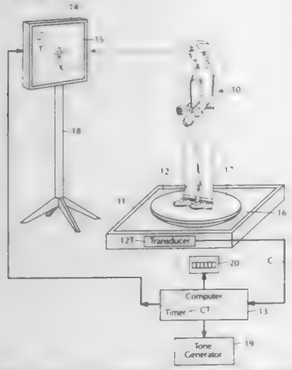
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5,627,327

DYNAMIC SYSTEM FOR DETERMINING HUMAN PHYSICAL INSTABILITY

Michael Zanakis, 1 Ken Pl., Port Jefferson Station, N.Y. 11776

Filed Jul. 22, 1996, Ser. No. 685,951
Int. Cl.[6] A61B 5/00
U.S. Cl. 73—862.042 10 Claims



1. A dynamic system adapted to test a human subject to determine the degree to which his physical stability is impaired without regard to the cause of impairment, the system comprising:

A. a stable platform having a horizontal face below which is a transducer yielding signals which are a function of the magnitude and direction of a force applied to the face; and

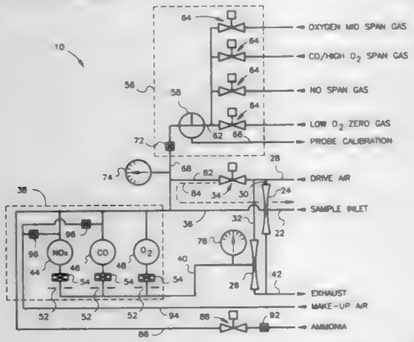
B. a rocker platform formed by a convex dish which rests on the face of the stable platform and is provided with a flat top on which the subject to be tested stands, the flat top being normally parallel to the face, whereby when the standing subject shifts his weight on the dish to change the orientation of the flat top relative to the face, the resultant signals are indicative of the degree to which the stability of the subject is impaired.

5,627,328

GAS SAMPLING SYSTEM AND METHOD

David R. Sheridan, Menlo Park, and Glenn C. Morrison, Berkeley, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Dec. 29, 1995, Ser. No. 580,574
Int. Cl.[6] G01N 1/24
U.S. Cl. 73—863.83 17 Claims



1. A gas sampling system for analyzing components of a gas sample extracted from a gas emission stream in an exhaust stack of a process by a probe, comprising:

a first vacuum means for drawing said gas sample from said gas emission stream in said exhaust stack at a first flow rate;

a second vacuum means for drawing a portion of said gas sample from said first vacuum means at a second flow rate;

a sensor array including at least two sensors configured such that a specified quantity of said portion of said gas sample is delivered to each of said sensors at a specified sensor flow rate for each said sensor; and

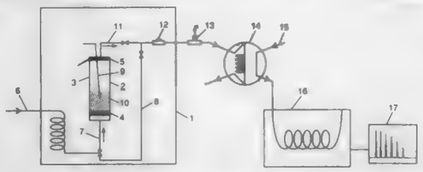
a critical orifice downstream of each of said sensors in order to desensitize said sensor flow rate of each said sensor from changes in pressure downstream of each respective said critical orifice.

5,627,329

DETERMINATION OF DIFFUSION COEFFICIENT

Chandrasekhar Krishnan, Grand Island; Jian S. Qi, Amherst; Joseph A. Incavo, Snyder; William L. Reuter, Niagara Falls, and Vivek Jain, Grand Island, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Sep. 13, 1995, Ser. No. 527,609
Int. Cl.[6] G01N 15/00; 13/00
U.S. Cl. 73—866 20 Claims



1. A method of determining a diffusion coefficient for a diffusant in a particulate comprising

(A) passing an inert gas through said particulate containing said diffusant;

(B) measuring over time a parameter that is proportional to the concentration of said diffusant in said inert gas to produce a relationship between time and said parameter, said relationship having a linear portion and a non-linear portion;

(C) determining the slope of said linear portion of said relationship; and

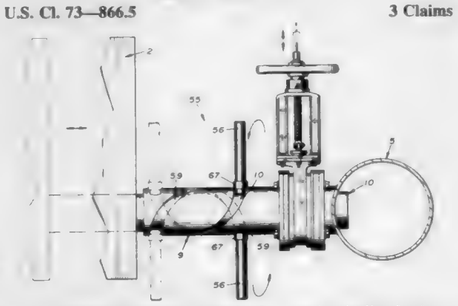
(D) multiplying said slope by a constant, whereby the product is said diffusion coefficient.

5,627,330

LEVERAGE INSERTION ASSEMBLY

Ekhard Preikschat, Bellevue, and Robert J. Hilker, Bothell, both of Wash., assignors to Appa Systems, Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 525,945, Sep. 8, 1995, Pat. No. 5,600,058. This application Mar. 29, 1996, Ser. No. 624,982
Int. Cl.[6] G01N 11/14
U.S. Cl. 73—866.5 3 Claims



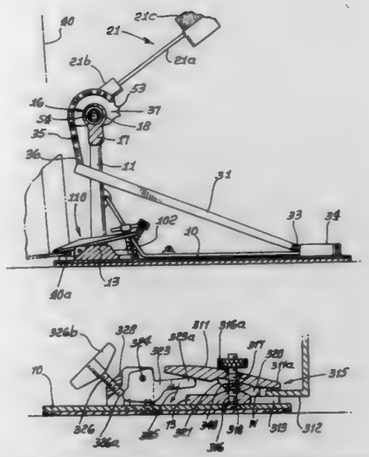
1. A leverage insertion assembly, for a main pipeline having a fluid flowing therethrough, said insertion assembly, comprising:

a. a positioning pipe connected to and communicating with the main pipeline, said positioning pipe having an inner passageway, an outer distal opening, and an outer surface;

b. a control valve connected to said positioning pipe to open or close said positioning pipe on the main pipeline;

c. a carrying pipe capable of being longitudinally disposed inside said positioning pipe and partially extended into the main pipeline;

d. a leverage means attached to said carrying pipe capable of longitudinally moving said carrying pipe inside said positioning pipe so that said carrying pipe may be extended into or retracted from said main pipeline and pass said control valve, said leveraging means includes positioning pipe having a spiral cut-out and at least one handle attached to said carrying pipe and extending through said cut-out, said handle capable of sliding along said cut-out when said handle is forcibly turned to rotate and longitudinally move said carrying pipe inside said positioning pipe.

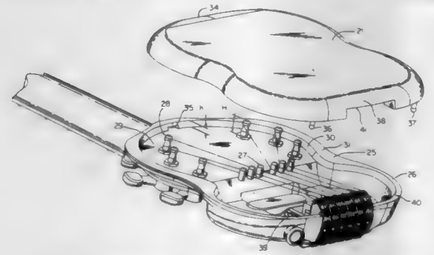


5,627,331

GUITAR HAVING IMPROVED ACCESSIBILITY FOR STRING ATTACHMENT

T. John Devitrysmith, 17005 NE. 101 St. Pl., Redmond, Wash. 98052

Filed Mar. 5, 1996, Ser. No. 610,857
Int. Cl.[6] G10D 3/14
U.S. Cl. 84—304 1 Claim



1. A guitar comprising a head assembly, said head assembly further comprising a functional portion and a cover, said functional portion further comprising a plurality of tuning machines and having a back having a flat surface and a rim, said rim having a first height h, said tuning machines having tuning machine posts, said tuning posts extending from said flat surface, each of said tuning posts having a second height H, the ratio h/H being in a range of 0 to 0.5, said cover being detachably attachable to said back surface such that said tuning machine posts are fully enclosed when said cover is attached.

5,627,332

DRUM BEATER AND PEDAL APPARATUS WITH INTERFITTING DUAL ADJUSTMENT OF DRUM RIM CLAMP

Donald G. Lombardi, 2118 E. Hillcrest Dr., Thousand Oaks, Calif. 91360

Continuation-in-part of Ser. No. 354,212, Dec. 12, 1994, Pat. No. 5,578,777, which is a continuation-in-part of Ser. No. 190,499, Feb. 2, 1994, Pat. No. 5,396,826, which is a continuation-in-part of Ser. No. 35,065, Mar. 22, 1993, Pat. No. 5,361,670, which is a continuation of Ser. No. 783,864, Oct. 28, 1991, Pat. No. 5,204,485. This application May 20, 1996, Ser. No. 650,370
Int. Cl.[6] G10D 13/02
U.S. Cl. 84—422.1 11 Claims

1. In a drum beating assembly, the combination comprising:

a) a frame, including at least one pedestal,

b) an axle carried by the pedestal to rotate relative thereto, the axle having an axis of rotation,

c) a drum beater carried by the axle,

d) a pedal operatively connected to the axle to rotate the axle and beater in response to pedal movement,

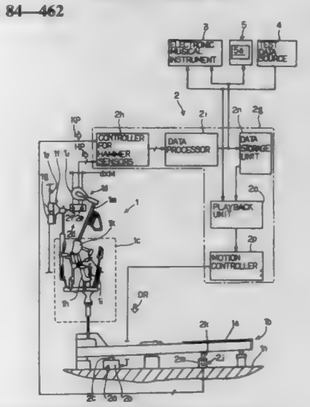
e) the frame including a base plate, there being a clamp arm to clamp a drum rim, means supporting the arm on the plate to pivot relative thereto, and clamp said rim, and a first adjustable member located to pivot said arm as said member is moved.

5,627,333

KEYBOARD MUSICAL INSTRUMENT EQUIPPED WITH BUILT-IN DISTANCE MEASURING INSTRUMENT FOR HAMMER SENSORS

Wayne L. Stahnke, Los Angeles, Calif.; Yuji Fujiwara, Shizuoka, Japan; Taro Kawabata, Shizuoka, Japan; Rei Furukawa, Shizuoka, Japan, and Takashi Tamaki, Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed May 29, 1996, Ser. No. 654,563
Int. Cl.[6] G10G 3/04
U.S. Cl. 84—462 10 Claims



1. A keyboard musical instrument comprising:

an acoustic piano including

a plurality of keys independently turnable on a stationary board member,

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a plurality of strings for generating tones through vibrations thereof, respectively,

a plurality of hammer assemblies rotatable from respective rest positions for striking said plurality of strings at respective impact points, and

a plurality of key action mechanisms respectively associated with said plurality of keys and respectively connected between said plurality of keys and said plurality of hammer assemblies for rotating said plurality of hammer assemblies when said plurality of keys are selectively moved;

a plurality of hammer sensor units respectively associated with said plurality of hammer assemblies for monitoring the motions of said plurality of hammer assemblies, and each of said plurality of hammer sensor units including at least one first sensor provided at a first position and a second sensor provided at a second position closer to said impact point than said first position so as to change a hammer position signal when the associated hammer assembly passes through said first position and said second position;

a controlling unit connected to said plurality of hammer sensor units for producing a set of music data codes representative of a music performance from said hammer position signals; and

a distance measuring means including said plurality of hammer sensor units and said controlling unit, and determining an actual distance between said second position and said impact point for each of said plurality of hammer sensor units on the basis of changes of the hammer position signal supplied from said each of said plurality of hammer position units.

5,627,334

APPARATUS FOR AND METHOD OF GENERATING MUSICAL TONES

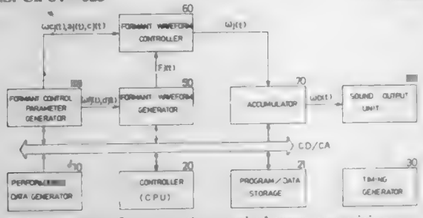
Sayoko Hirano, and Yutaka Washiyama, both of Hamamatsu, Japan, assignors to Kawai Musical Inst. Mfg. Co., Ltd., Shizuoka-ken, Japan

Continuation-in-part of Ser. No. 312,612, Sep. 27, 1994. This application Feb. 24, 1995, Ser. No. 394,279

Claims priority, application Japan, Sep. 27, 1993, 5-239669; Feb. 24, 1994, 6-027041; Mar. 10, 1994, 6-040182; Mar. 10, 1994, 6-040185

Int. Cl.[6] **G10H** *7/00*

U.S. Cl. 84—623 **48 Claims**



1. An apparatus for generating musical tones comprising:

formant waveform signal generating means for generating at least one formant waveform signal having a waveform obtained by synthesizing frequency components of a formant of a musical tone;

component waveform generating means for generating component waveforms as formant center signals for synthesis as center signals with the formant waveform signal generated by said formant waveform signal generating means;

amplitude coefficient generating means for generating amplitude coefficients for the component waveforms generated by said component waveform generating means;

operation means for operating the amplitude coefficients generated by said amplitude coefficient generating means upon corresponding component waveforms generated by said component waveform generating means;

formant center signal generating means for synthesizing the component waveforms upon which the amplitude coefficients are operated on by said operation means and for outputting the synthesized component waveforms as at least one synthesized formant center signal; and

synthesizing means for synthesizing the formant waveform signal generated by said formant waveform signal generating means with the synthesized formant center signal generated by said formant center signal generating means to generate musical tones.

5,627,335

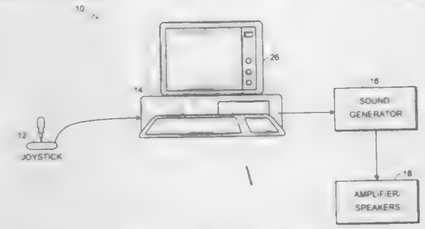
REAL-TIME MUSIC CREATION SYSTEM

Alexander P. Rigopulos, Boxford, and Eran B. Egozy, Cambridge, both of Mass., assignors to Harmonix Music Systems, Inc., Cambridge, Mass.

Filed Oct. 16, 1995, Ser. No. 543,768

Int. Cl.[6] **G10H** *7/00*

U.S. Cl. 84—635 **18 Claims**



1. A system for creating music in real time, comprising:

an input mechanism which provides rhythm-related input signals and pitch-related input signals;

one or more computer storage media having a plurality of selectable musical accompaniment tracks over which music can be created and played in real time, having a plurality of rhythm blocks wherein each rhythm block defines, for at least one note, at least a time at which the note should be played, and for storing at least a portion of the music created in real time over a predetermined time interval in the past;

a rhythm generator which in real time: receives the rhythm-related input signals from the input mechanism; selects one of the rhythm blocks from the computer storage media based on the rhythm-related input signals; and outputs an instruction to play the note at the time defined by the selected rhythm block;

a pitch selector which in real time: receives the pitch-related input signals from the input mechanism; selects an appropriate pitch based on the pitch-related input signals, a selected one of the musical accompaniment tracks, and the stored music; and outputs the appropriate pitch; and

a sound generator which in real time: receives instructions from the rhythm generator, pitches from the pitch selector, and the selected musical accompaniment track; and generates an audio signal representative of at least the created music.

5,627,336

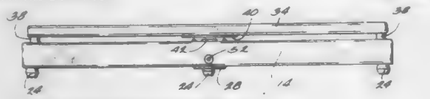
PERCUSSION INSTRUMENT HAVING AN ELECTROMAGNETIC SENSOR

William L. Stevens, Janesville, Wis., assignor to Nadene Isackson, Janesville, Wis.

Filed May 19, 1995, Ser. No. 444,408

Int. Cl.[6] **G10H** *1/32;3/00*

U.S. Cl. 84—746 **12 Claims**



1. A musical instrument comprising:

a base board;

an elongated tone board mounted on the base board, the tone board having a first portion made of a material that is not ferro-magnetic and a second portion that is made of a ferro-magnetic material;

a sensor mounted on the base board and providing a flux path and an output terminal; and

a damper located between the tone board and the base board for isolating vibrations in the tone board from the sensor.

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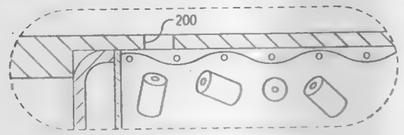
HYBRID INFLATOR AND RELATED PROPELLANTS

Brian K. Hamilton, Littleton, and James L. Baglini, Englewood, both of Colo., assignors to OEA, Inc., Aurora, Colo.

Division of Ser. No. 328,657, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 210,668, Mar. 18, 1994. This application Jan. 11, 1996, Ser. No. 584,439

Int. Cl.[6] **C06D** *5/00;* **B60R** *21/28*

U.S. Cl. 102—290 **5 Claims**



1. A method for inflating an air/safety bag of an automotive inflatable safety system comprising an inflator housing, a stored gas within said housing, a gas generator interconnected with said housing, and a propellant contained within said housing, comprising the steps of:

a) igniting said propellant, said propellant being a solid and comprising a secondary explosive and a binder system, wherein said propellant has a burn rate ranging from about 0.1 inches per second (0.25 cm/sec) to about 1 inch per second (5.0 cm/sec) at 4,000 psi (27.6 MPa), a combustion temperature ranging from about 2,000° K. to about 3,800° K, and has long-term thermal stability;

b) combusting said propellant to form combustion gases comprising carbon monoxide and hydrogen;

c) mixing said combustion gases with said stored gas within said system, said stored gas consisting essentially of inert gas and oxygen; and

d) generating heat and converting at least some of said carbon monoxide and hydrogen into carbon dioxide and water during said mixing step.

5,627,338

FIREWORKS PROJECTILE HAVING DISTINCT SHELL CONFIGURATION

Kyle W. Poor, Clermont; B. Thomas Craven, Windermere, and Bernard M. Durgin, Orlando, all of Fla., assignors to The Walt Disney Company, Burbank, Calif.

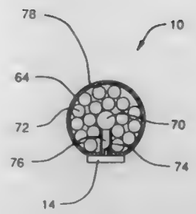
Division of Ser. No. 98,423, Jul. 27, 1993, Pat. No. 5,526,750, which is a continuation-in-part of Ser. No. 97,007, Jul. 27, 1993, which is a division of Ser. No. 817,591, Jan. 7, 1992, Pat. No. 5,339,741. This application Jun. 6, 1995, Ser. No. 471,609

Int. Cl.[6] **F42B** *4/04*

U.S. Cl. 102—361 **20 Claims**

1. A fireworks projectile for exploding into an aerial fireworks display, comprising:

(a) an explosive charge adapted for connection to a detonating fuse, wherein the charge contains a composition adapted to explode into a fireworks display upon ignition by the fuse; and



(b) a shell containing the explosive charge, wherein the shell has a substantially smooth, uninterrupted external surface geometry comprising a substantially cylindrical body having semi-spherical opposing end portions, the external surface of the shell comprising:

i) a recess adapted to receive the fuse underneath the external surface of the shell; and

ii) a cover for covering the recess and substantially maintaining the continuity of the external surface geometry of the shell.

5,627,339

ENERGETIC COMPOSITIONS CONTAINING NO VOLATILE SOLVENTS

Jerry S. Brown, Woodford, Va., and John A. Conkling, Chestertown, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 195,249, Feb. 14, 1994, Pat. No. 5,531,844. This application Mar. 28, 1996, Ser. No. 626,748

Int. Cl.[6] **C06B** *45/10*

U.S. Cl. 149—19.3 **4 Claims**

1. A method of making an organic solvent free energetic composition comprising the steps of:

(a) providing a quantity of a liquid perfluorinated polyether having a molecular weight in the range of approximately 2000 to approximately 5000;

(b) providing a quantity of a metal fuel in the form of a powder consisting of 3 to 10 micron size particles;

(c) combining 2.3 parts, by weight, of the liquid perfluorinated polyether with 1.0 parts, by weight, of the metal fuel powder to yield an organic solvent free energetic composition.

5,627,340

FLOOR BOX WITH IMPROVED ACTIVATION RING

Donald E. Smith; David C. Weaver, both of Memphis, Tenn., and Timothy S. Bowman, Parkersburg, W. Va., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Dec. 7, 1994, Ser. No. 350,602

Int. Cl.[6] **H02G** *3/18*

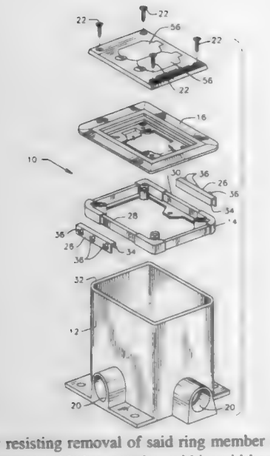
U.S. Cl. 174—48 **11 Claims**

8. An activation ring assembly for use with a plastic electric floor box having an open top end, comprising:

a ring member comprising an annular wall adapted to fit within said open top end of said box;

at least one retaining clip secured to said wall of said ring member, said clip having gripping means associated therewith for engaging said top end of said box upon insertion of said ring member therein, said gripping means including at least one barb extending outwardly and upwardly from said retaining clip, said barb being operative to engage said open top,

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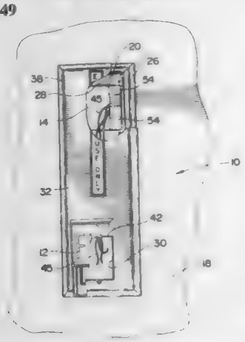
thereby resisting removal of said ring member from said box and retaining said ring member within said box.

5,627,341

ELECTRICAL CABLE RACEWAY ASSEMBLY FOR REPOSITIONING AN ELECTRICAL FIRE ALARM PULL STATION ON A WALL

David S. Bernstein, 4937 Northwest Foxworth Ave., Port St. Lucie, Fla. 34983

Filed Dec. 12, 1995, Ser. No. 570,736
Int. Cl.[6] H02G *3/10*
U.S. Cl. 174—49 **10 Claims**



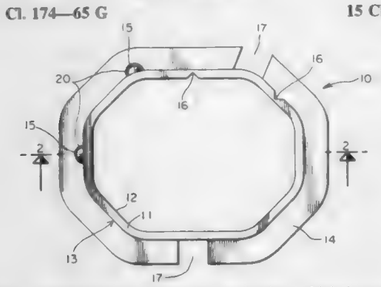
1. A raceway assembly for repositioning an electrical fire alarm from a first position to a second position on a wall, said assembly comprising:
- a base plate defining a first front surface, a second opposed rear surface, a first bevelled edge substantially surrounding said surfaces, a first opening and a second opening;
- a cover plate defining a third front surface, a fourth opposed rear surface, a second bevelled edge substantially surrounding said third and fourth surfaces and a third opening;
- an electrical junction box positioned within and extending through said second opening and attached to said base plate;
- first means in operative relationship with said base plate for attaching said base plate to said wall with said first opening located at said first position and with said junction box located at said second position; and
- second means in operative relationship with said cover plate and with said base plate for attaching said cover plate to said base plate with said junction box positioned at said third opening.

5,627,342

OPEN AND CLOSE-ENDED GROMMETS HAVING ONE OR MORE FLANGE CUT-OUT AND CREASE-MARKS FOR FURTHER FLEXIBILITY IN THEIR ATTACHMENT TO APERTURES OF METAL STUDS OR PANELS

Hy Kramer, 1457 Bassett Ave., Bronx, N.Y. 10461

Filed Nov. 7, 1995, Ser. No. 551,822
Int. Cl.[6] H02G *3/22*
U.S. Cl. 174—65 G **15 Claims**



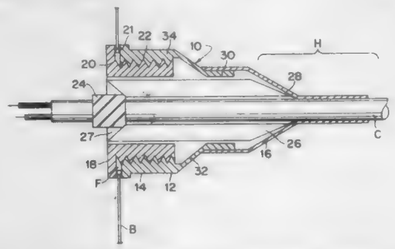
13. A grommet device for wires and tubes which is attached along rims of an aperture in metal studs comprising:
- a body made of a flexible plastic material defined by a wall having an inner and outer wall surface, wherein the body can be pinched into attachment within an aperture in a metal stud;
- one or more crease-marks arranged along the inner wall surface;
- one or more crease-marks arranged along the outer wall surface;
- a flange, said flange is formed around the periphery of said wall;
- one or more cut-outs are arranged along the flange;
- one or more male nubs protrude from the outer wall surface of said body thereby defining a gap between said one or more male nubs and said flange for receiving, therebetween, rims of the aperture in the metal stud; and
- one or more cut-outs along the flange, wherein said wall crease-marks, said flange cut-outs, and said one or more male nubs can be arranged on the body in various combinations.

5,627,343

RE-ENTERABLE CONDUIT SEALING ASSEMBLY

Henry E. Brandolf, Kernersville, N.C., assignor to XL Technologies, Inc., Atlanta, Ga.

Filed Aug. 3, 1994, Ser. No. 283,918
Int. Cl.[6] H01B *17/30*
U.S. Cl. 174—153 R **13 Claims**



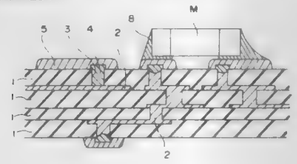
1. A cable sealing assembly for a feedthrough, comprising:
- a) expansion mandrel means for securing about a conduit, said expansion mandrel means having a first end, a second beveled end, and a conduit channel;
- b) clamping means for abutting said first end and assisting to positionally secure said expansion mandrel on the conduit; and
- c) a transition boot generally defining a cylindrical body including a coupling element for securing said transition boot to said feedthrough, and a heat shrinkable sleeve positionable to shrink about the beveled second end of said expansion mandrel.

5,627,344

MULTILAYER CERAMIC CIRCUIT SUBSTRATE, PROCESS FOR PRODUCING THE SAME, AND ELECTRICALLY CONDUCTIVE MATERIAL FOR USE IN MULTILAYER CERAMIC CIRCUIT SUBSTRATE

Nozomi Tanifuji; Akihiko Naito, both of Nagoya; Koji Sawada, Konan; Tohru Nomura, Kariya; Yoshiyuki Miyase, Okazaki, and Takashi Nagasaka, Anjo, all of Japan, assignors to Sumitomo Metal Ceramics Inc., Yamaguchi, and Nippondenso Co., Ltd., Aichi, both of Japan

Filed Dec. 22, 1994, Ser. No. 362,129
Claims priority, application Japan, Dec. 27, 1993, 5-330831
Int. Cl.[6] H05K *1/09*
U.S. Cl. 174—257 **6 Claims**





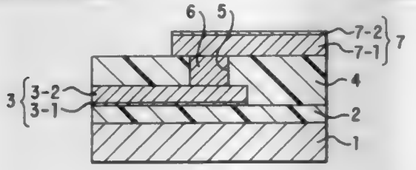
1. A multilayer ceramic circuit substrate having therein internal conductor patterns comprising at least one element selected from the group consisting of W and Mo as a main component and surface conductor patterns comprising Cu as a main component formed onto a surface layer of the multilayer ceramic circuit substrate, wherein an intermediate metal layer comprising 40 to 90 wt. % of at least one element selected from the group consisting of W and Mo and 10 to 60 wt. % of at least one element selected from the group consisting of Ir, Pt, Ti, and Cr is formed in through-holes of the surface layer and on parts of the surface layer in the vicinity of the through holes on the surface layer, whereby the internal conductor patterns and the surface conductor patterns are electrically connected through the intermediate metal layer.

5,627,345

MULTILEVEL INTERCONNECT STRUCTURE

Hiroshi Yamamoto; Tomohiro Ohta, and Nobuyuki Takeyasu, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 965,780, Oct. 23, 1992, Pat. No. 5,305,519. This application Feb. 18, 1994, Ser. No. 198,788
Claims priority, application Japan, Oct. 24, 1991, 3-277803; Oct. 20, 1992, 4-281802
Int. Cl.[6] H05K *1/09;1/14*
U.S. Cl. 174—265 **92 Claims**



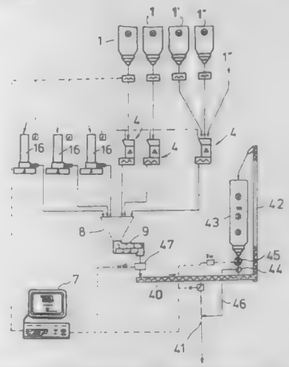
1. A multilevel interconnect structure formed on a surface of a substrate of a semiconductor device comprising:
- a lower metal wiring including one of an aluminum and an aluminum alloy film;
- an upper metal wiring including one of an aluminum and an aluminum alloy film;
- an interlayer insulating film formed between said lower and upper metal wirings such that the lower and upper metal wirings are electrically isolated from each other by said interlayer insulating film;
- a via hole formed in said interlayer insulating film such that the lower and upper metal wirings are communicated with each other by said via hole; and
- a plug made of one of aluminum and an aluminum alloy and formed in said via hole such that upper and lower ends of the plug contact the upper and lower metal wirings, respectively; wherein
- at least one of said lower and upper metal wirings further comprises one of a high melting point metal and a high melting point metal alloy film; and
- said plug contacts said at least one of the lower and upper metal wirings which comprises one of the high melting point metal and the high melting point metal alloy film by means of an interface including one of aluminum-aluminum, aluminum-aluminum alloy, and aluminum alloy-aluminum alloy.

5,627,346

PLANT FOR CONTINUOUS MIXING AND HOMOGENIZATION

Roman Weibel, Oberuzwil; Bruno Gmuer, St. Gallen, and Peter Naef, Heiden, all of Switzerland, assignors to Bühler AG, Uzwil, Switzerland

Division of Ser. No. 375,169, Jan. 18, 1995, Pat. No. 5,527,107, which is a continuation of Ser. No. 156,410, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 768,640, Dec. 2, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 485,148
Claims priority, application Switzerland, Feb. 20, 1990, 349/90
Int. Cl.[6] G01G *13/00;* **B01F** *15/04*
U.S. Cl. 177—64 **3 Claims**



1. An aparatus for transporting foodstuff material comprising:
- a foodstuff material product discharge line;
- a conveyor for receiving and transporting the mixed foodstuff material to the product discharge line;
- a product station for temporarily storing the foodstuff material being operatively connected to the conveyor and the product discharge line; and
- a controller operatively connected to said product station, the product discharge line, and the conveyor, wherein the conveyor further comprises a horizontal screw for receiving the mixed foodstuff material, the discharge line being connected to the horizontal conveyor, and a vertical screw operatively

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connected to transport the foodstuff material from the horizontal conveyor to an inlet in the product station.

5,627,347

DIGITIZER HAVING IMPROVED SIGNAL TO NOISE CHARACTERISTICS

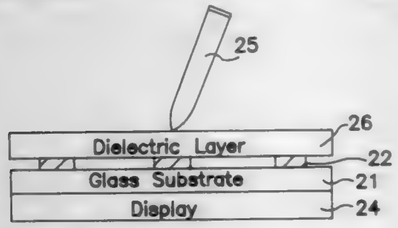
Ki-Duck Kwon, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Apr. 14, 1994, Ser. No. 227,630

Claims priority, application Rep. of Korea, Apr. 20, 1993, 93-6286

Int. Cl.[6] G08C *21/00*; **G09G** *3/02*

U.S. Cl. 178—18 **4 Claims**



1. A digitizer comprising:

a non-conductive flat panel glass substrate having a predetermined thickness;

a resistor disposed on said non-conductive flat panel glass substrate, said resistor being laminated on said non-conductive flat panel glass substrate in a predetermined pattern and having a predetermined conductivity;

a thin film dielectric layer laminated on said resistor; said thin film dielectric layer including an electrostatic capacitance and a signal-to-noise ratio functionally related to the electrostatic capacitance; and

outputting means for visualizing and outputting information, said non-conductive flat panel glass substrate being laminated on said outputting means.

5,627,348

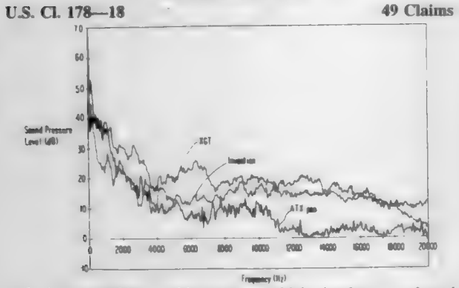
ELECTRONIC STYLUS WITH WRITING FEEL

Mitchell Berkson, Providence, R.I., and David Arthur, Norwood, Mass., assignors to A.T. Cross Company, Lincoln, R.I.

Filed Apr. 7, 1995, Ser. No. 418,938

Int. Cl.[6] B08C *21/00*

U.S. Cl. 178—18 **49 Claims**



1. A non-marking, writing system which simulates a selected physical writing system having characteristic ranges of writing resistance, sound, resilience and thermal conductivity, the non-marking writing system comprising:

a non-marking writing instrument having an elongated shank with opposite ends;

a non-marking tip connected to one end of the shank for engagement against and movement across a writing surface;

a writing surface onto and across which the tip is moved for non-marking writing under an actual writing resistance; and

the tip being structured and made of selected material and the writing surface being made of selected material so that the actual writing resistance falls within the characteristic range of writing resistance for the selected physical writing system;

movement of the tip onto and across the writing surface producing sound, the system including selecting the structure and material of the tip and writing surface so that the sound falls within the characteristic range of sound of the selected physical writing system.

5,627,349

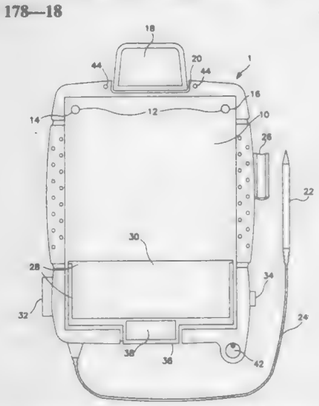
INTERACTIVE DATA ENTRY APPARATUS

Mohan S. Shetye, Amherst; Paul F. Boden, Blasdell, and Michael T. Brash, Amherst, all of N.Y., assignors to Integral Information Systems, Amherst, N.Y.

Continuation-in-part of Ser. No. 84,472, Jul. 1, 1993, Pat. No. 5,444,192. This application Jun. 7, 1995, Ser. No. 479,449

Int. Cl.[6] G08C *21/00*

U.S. Cl. 178—18 **41 Claims**



1. A data collection, analysis, and recording apparatus for simultaneously producing a written and a computer data record comprising:

a data entry form having data entry spaces;

a processor for receiving and recording a description of said form and commands for manipulating data collection, analysis, and recording;

a digitizer for retrieving said description of said form, for generating a data entry area having data entry locations corresponding to said data entry spaces and command selection locations, and for receiving and recording in said processor entries made at said data entry locations;

a clip attached to said digitizer, such that said clip holds said form against said data entry area, whereby said data entry spaces are aligned with said data entry locations; and

a stylus for selecting said command selection locations and for simultaneously entering data in said spaces and at said data entry locations.

5,627,350

SPEAKER HOUSING COMBINATION

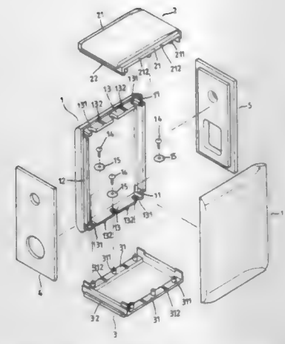
Shih-Chang Kang, No. 33, Hsia-Hsi, Hsia-Hsi Li, Hu-Wei Chen, Yun-Lin County, Taiwan

Filed Dec. 7, 1995, Ser. No. 568,786

Int. Cl.[6] A47B *81/06*

U.S. Cl. 181—199 **2 Claims**

1. A speaker housing combination comprising:



two side plates each including an upper portion and a lower portion each having a strip extending therefrom so as to define a channel in said upper and said lower portions respectively, and each including a front portion and a rear portion each having a first shoulder formed therein, said strips each including at least one notch formed therein and each including at least one rib formed thereon,

a top plate and a bottom plate each including two side portions each having a flange extended therefrom for engaging with said channels of said side plates, and each including a front portion and a rear portion each having a second shoulder formed therein, said top plate and said bottom plate each including at least one projection extended therefrom for engaging with said notches of said side plates and each including at least one depression formed therein for engaging with said ribs so as to solidly secure said top plate and said bottom plate to said side plates,

a front plate including an upper and a lower portion engaged with said second shoulders of said top plate and said bottom plate respectively and including two side portions engaged with said first shoulders of said side plates; and

a rear plate including an upper and a lower portion engaged with said second shoulders of said top plate and said bottom plate respectively and including two side portions engaged with said first shoulders of said side plates.

5,627,351

SPARK ARRESTER FOR AN EXHAUST UNIT OF A VEHICLE

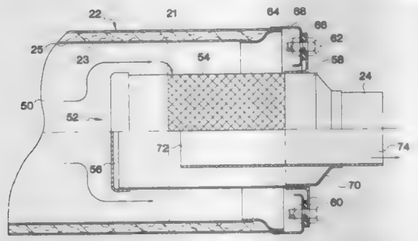
Takanori Okuma; Fumiaki Okubo, and Hideyuki Tawara, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 476,328

Claims priority, application Japan, Jun. 11, 1994, 6-152772; Apr. 5, 1995, 7-080321

Int. Cl.[6] F01N *3/02*

U.S. Cl. 181—231 **10 Claims**



1. A spark arrester for an exhaust unit of a vehicle including a muffler having a diameter defining an expansion chamber within the muffler, and a tail pipe having a diameter smaller than said diameter of said muffler, said tail pipe being placed in a downstream section of the muffler, said spark arrester comprising:

a cylindrical metal net mesh filter arranged coaxially relative to said muffler and having a diameter larger than the diameter of the tail pipe and disposed in the expansion chamber so as to surround a portion of the tail pipe extending within the expansion chamber;

a cap attached to an outer periphery of said mesh filter for closing a first end of said mesh filter disposed within said muffler;

an end cap for partially closing a second end of said mesh filter and surrounding said tail pipe; and

a flange disposed on an outer surface of said end cap for securing said mesh filter and said tail pipe to said muffler to thereby support the mesh filter within the muffler.

5,627,352

STEERING WHEEL

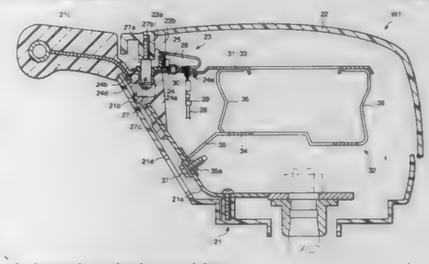
Kazumasa Suzuki, Ogaki; Yoshiyuki Fujita, and Motoi Isomura, both of Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, Japan

Filed Sep. 22, 1995, Ser. No. 532,269

Claims priority, application Japan, Sep. 28, 1994, 6-233391; Mar. 22, 1995, 7-062778

Int. Cl.[6] H01H *9/00*; **B60R** *21/00*; **B62D** *1/04*

U.S. Cl. 200—61.54 **9 Claims**



1. A steering wheel comprising:

a steering wheel body;

a horn pad provided above said steering wheel body; and

a plurality of horn switches forming part of a horn operating circuit, provided between said horn-pad and said steering wheel body;

wherein each of said horn switches comprises an insulating spacer, a horn spring electrically connected to one electrode of said horn operating circuit, said horn spring being in contact with said horn pad to urge said horn pad upwardly, a tongue electrically connected to another electrode of said horn operating circuit, said tongue having a contact portion disposed beneath said contact portion of said horn spring, and a shoulder bolt screw-mounted to said horn pad;

said spacer including a tubular portion having an enlarged portion formed on an outer peripheral surface thereof at a distal end thereof;

said shoulder bolt including an axially extending shank which passes through said tubular portion, said shank being longer than said tubular portion, an externally-threaded portion which extends from one end of said shank and being screw-mounted to said horn pad, and a head which is provided at another end of said shank, said head having a diameter larger than an inner diameter of said tubular portion;

said horn spring and said tongue are mounted on said spacer in an insulated manner, and said tubular portion is retained in a retaining hole provided in said steering wheel body, and said shoulder bolt is inserted into said tubular portion from an end thereof opposite to said horn pad.

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5,627,353

SPHERES CONTAINING ACTIVE COMPOUNDS, THEIR SYNTHESIS AND THE METHOD OF OPENING THE SPHERES

Franz D. Oeste, Kirchhain-Schönbach, Germany, assignor to Udo Schlagwein, Bad Nauheim, Germany

Filed Dec. 14, 1993, Ser. No. 165,927

Claims priority, application Germany, Dec. 15, 1992, 42 42 216.7

Int. Cl.[6] **C07C** *61/00*

U.S. Cl. 204—157.15 **5 Claims**

1. The method of releasing active compounds from spheres of tetrahedral, octahedral or icosahedral symmetry, filled with active compounds, the spheres encompassing nearly the same volume as symmetrically identical fullerenes, comprising the step of irradiating the spheres so that the spheres are destroyed to release the active compounds.

5,627,354

SYSTEM FOR HANDLING SHEET FILM

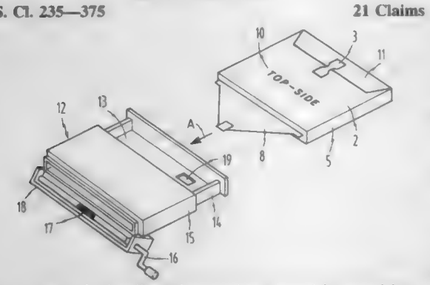
Rudolf Schneider, Pfaffenhofen; Georg Lechner, Aying; Thomas Zehetmaier, Naufarn; Michael Reichart, München, all of Germany; Frans Feytens, Meise, and Gilbert Hersschens, Mol, both of Belgium, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Sep. 29, 1995, Ser. No. 536,439

Claims priority, application Germany, Oct. 14, 1994, 44 36 835.6

Int. Cl.[6] **G03C** *3/00*

U.S. Cl. 235—375 **21 Claims**



1. A system for handling photosensitive material, comprising a lightproof receptacle enclosing the photosensitive material; a data carrier provided with information about the photosensitive material, said carrier being discrete from, and enclosed in, said receptacle; a receiver for said receptacle, said receiver including a window in register with said information; and a removing device for removing said receptacle from the photosensitive material in said receiver.

5,627,355

TRANSACTION DEVICE, EQUIPMENT AND METHOD FOR PROTECTING ACCOUNT NUMBERS AND THEIR ASSOCIATED PERSONAL IDENTIFICATION NUMBERS

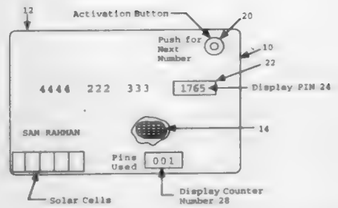
Sam Rahman, 4809 Laurette St., Torrance, Calif. 90503; James Magner, 5092 Tripoli Ave., Los Alamitos, Calif. 90720; John Brown, 12831 Longden St., Garden Grove, Calif. 92645; Adarsh Pun, 5404 White Fox Dr., Rancho Palos Verdes, Calif. 90274, and Grant Parker, 3996 Myra Ave., Los Alamitos, Calif. 90720

Continuation-in-part of Ser. No. 274,252, Jul. 13, 1994, Pat. No. 5,478,994. This application Apr. 13, 1995, Ser. No. 422,708

Int. Cl.[6] **G06K** *5/00*

U.S. Cl. 235—380 **19 Claims**

1. A secure credit card including



a body member including a memory element in which is stored a series of unique numbers in a predetermined sequence,

said unique numbers being identical to numbers stored in a memory of a host control computer and in the identical sequence as the numbers in the host computer, said host computer being accessible upon each use of the credit card,

said memory element accessing the next number in sequence with each use of the credit card to permit verification by comparing the number provided by said memory element upon each use of the credit card with the next number in sequence as indicated by the host computer,

a switch actuated with each use of the credit card to activate the memory element to provide the next number in the sequence,

a counter which counts each use of the credit card, and

a display device in the body member connected electrically to the memory element, said display device displaying the next number in the sequence with each use of the credit card.

5,627,356

CARD FOR RECORDING THE NUMBER OF GAME PLAY MEDIA, A CARD DISPENSING DEVICE, AND A CARD RECEIVING DEVICE

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

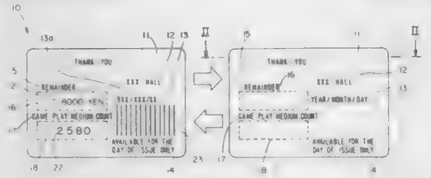
PCT No. PCT/JP92/01307, § 371 Date Apr. 8, 1994, § 102(e) Date Apr. 8, 1994, PCT Pub. No. WO93/06903, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 8, 1992, Ser. No. 211,550

Claims priority, application Japan, Oct. 8, 1991, 3-260879; Oct. 21, 1991, 3-272659

Int. Cl.[6] **G06F** *7/08*

U.S. Cl. 235—381 **18 Claims**



1. A gaming system comprising:

a card dispensing device for recording the number of game play media paid out to a player from a game machine for winning plays on a card and issuing the card to the player, said card dispensing device comprising:

a case for housing a plurality of cards, each one of said plurality of cards comprising a substrate and a substance, whose physical properties reversibly change by heating, disposed like a layer on said substrate for visibly recording data by local heating according to a heating pattern corresponding to an image of data to be recorded, said substance being made of any organic compound having properties that a crystal aggregates upon application of heat at a second temperature different from the first temperature,

a section for discharging the cards to the outside of said card dispensing device;

a transporter which forms a card transport route from said case to said discharge section and takes out said cards one at a time from said case for transporting along the transport route; and

a recording section for recording a bar code in a first region of the transported card and for recording the number of game play media in at least a second region of the transported card, said second region being formed in an area where at least a plurality of digits can be easily read; and

a card receiving device for reading the data recorded by said recording section of said card dispensing device and erasing the data to make the card reusable comprising:

a card housing section having an inlet for housing cards and being capable of housing a plurality of cards taken in through the housing inlet;

a transporter having a card insertion slit and a transport route for linking the card insertion slit and the housing inlet of said card housing section for transporting the cards along said transport route;

a card housing mechanism for housing the cards transported via said transport route in said card housing section through said housing inlet;

a data display section being disposed at a location where an external observer can view said section for displaying data;

a bar code reader, disposed along said transport route, for reading the bar code recorded on the transported card and displaying the coded information represented by the bar code on said data display section; and

an erasion section, disposed along said transport route, for erasing data erasably recorded on the transported card by applying heat at said second temperature to said recording region of said card transported.

5,627,357

MAGNET INFORMATION CARDS

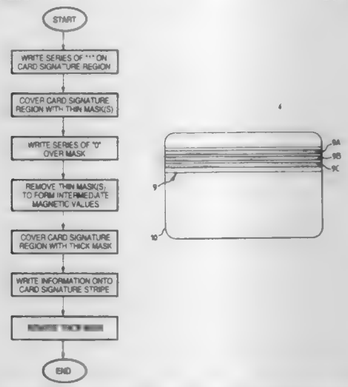
Lee M. Cheng, Flat 0A, Ground Floor, Block 7, Tak Chee Yuen, 88 Tat Chee Avenue, Kowloon, Hong Kong; Lee L. Cheng, Flat 05, 19th Floor, Block 33, Heng Fa Chuen, Chai Wan, Hong Kong, and Man C. Chu, 15th Floor, Flat 12, 124-134 Belcher's St., Kennedy Town, Hong Kong

Filed May 31, 1995, Ser. No. 456,038

Claims priority, application United Kingdom, Jun. 28, 1994, 9412968

Int. Cl.[6] **G06K** *7/08;19/06*

U.S. Cl. 235—449 **10 Claims**



1. A magnetic card having normal coded information carried on the card, each bit of the normal coded information being formed by a magnetic value representing either a one or a zero for detection by a card reader arranged to normally allocate either a one or a zero to each bit, including a card signature formed by bits positioned at fixed relative positions on the card having intermediate magnetic values to which in use the reader randomly allocates a one or a zero.

5,627,358

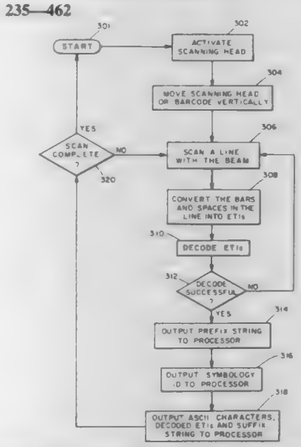
SYSTEM AND METHOD FOR READING TWO-DIMENSIONAL BARCODES

Alexander Roustaei, 2454 Rue Denise, La Jolla, Calif. 92037

Filed Jun. 20, 1994, Ser. No. 262,152

Int. Cl.[6] **G06K** *7/10*

U.S. Cl. 235—462 **15 Claims**



1. A method for reading a two-dimensional barcode symbology, said two-dimensional barcode symbology having a plurality of lines, each of said lines having a plurality of bars and spaces, each of said plurality of bars and spaces having a width, said method comprising

scanning one of said plurality of lines of said two-dimensional barcode symbology using a CCD optical scanning head to obtain a scanned line;

converting said plurality of bars and spaces in said scanned line into a plurality of element time intervals, each of said plurality of element time intervals corresponding to, and representing said width of, one of said plurality of bars and spaces, thereby obtaining a converted line; and

outputting from said CCD optical scanning head to a processor, for said converted line, a prefix message, followed by said plurality of element time intervals, followed by a suffix message, wherein the prefix message comprises a prefix string followed by at least three characters encoded in an ASCII format.

5,627,359

LASER CODE SYMBOL SCANNER EMPLOYING OPTICAL FILTERING SYSTEM HAVING NARROW BAND-PASS CHARACTERISTICS AND SPATIALLY SEPARATED OPTICAL FILTER ELEMENTS WITH LASER LIGHT COLLECTION OPTICS ARRANGED ALONG LASER LIGHT RETURN PATH DISPOSED THEREBETWEEN

Thomas Amundsen, Turnersville; Robert Blake, Woodbury; George Rockstein, Audubon; David Wilz, Sr., Sewell, and Carl H. Knowles, Moorestown, all of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation-in-part of Ser. No. 293,491, Aug. 19, 1994, abandoned, which is a continuation of Ser. No. 761,123, Sep. 17, 1991, Pat. No. 5,340,971. This application May 11, 1995, Ser. No. 439,224

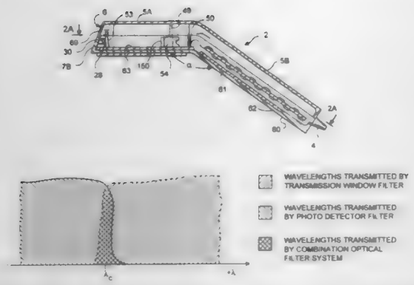
Int. Cl.[6] **G06K** *7/10*

U.S. Cl. 235—462 **17 Claims**

1. A laser code symbol scanning system, comprising:

a compact housing having a light transmission aperture through which visible light can exit and enter said compact housing;

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a first optical filter element installed over said light transmission aperture disposed along a laser light return path extending through said light transmission aperture, and having wavelength-selective filtering characteristics in the visible band, said first optical filter, element functioning as a scanning window in said compact housing, and preventing light having wavelengths up to slightly below a predetermined wavelength in said visible band from passing from the outside of said compact housing, through said scanning window, and into said compact housing; and

a scan data producing means disposed in said compact housing, for producing scan data indicative of the intensity of laser light reflected off a code symbol on an object located within at least a portion of a scan field defined external to said compact housing, said scan data producing means including

a laser beam producing means for producing a visible laser beam characterized by said predetermined wavelength,

a laser beam scanning means for projecting said visible laser beam and repeatedly scanning said visible laser beam through said scanning window and across said scan field and said code symbol,

a laser light collection means for collecting along said laser light return path, laser light reflected off said code symbol and passing through said scanning window, and

a laser light detection mean disposed along said laser light return path, for detecting the intensity of laser light reflected off said code symbol and collected by said laser light collection means, and automatically producing scan data indicative of the detected light intensity;

a second optical filter element, spatially separated from said first optical filter element, disposed along said laser light return path between said first optical filter element and said laser light detection means, and having wavelength-selective filtering characteristics in said visible band, said second optical filter element cooperating with said first optical filter element so as to form a band-pass optical filtering system having a narrow wavelength bandwidth positioned about said predetermined wavelength, and passing only laser light reflected off said code symbol and having wavelengths within said narrow wavelength bandwidth; and

a scan data processing means for processing produced scan data code indicative of said detected light intensity.

5,627,360

SYMBOLOGY READER WITH CONVERGING CURSOR BEAMS

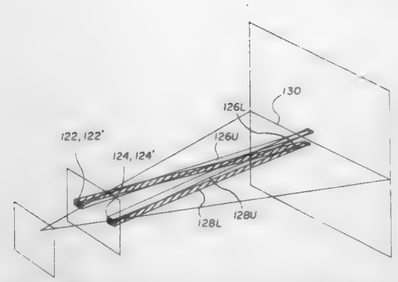
Robert W. Rudeen, Eugene, Oreg., assignor to Intermec Corporation, Everett, Wash.

Continuation of Ser. No. 215,852, Mar. 21, 1994, Pat. No. 5,550,364. This application Dec. 19, 1995, Ser. No. 575,160

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **7 Claims**

1. A method of identifying a fixed focusing distance in a symbol reader, the focusing distance being established by a detector assembly fixedly mounted within the reader, comprising the steps of:



emitting light beams from two fixed, spaced apart locations on the reader;

directing the beams along fixed, converging beam paths such that the beams converge at the focusing distance;

aiming the beams toward a surface bearing a symbol by positioning the reader such that the beam paths intersect at the surface to form two spotter images on the symbol; and

adjusting the position of the reader to cause the beams to converge to a composite image indicative of the reader being at the focusing distance.

5,627,361

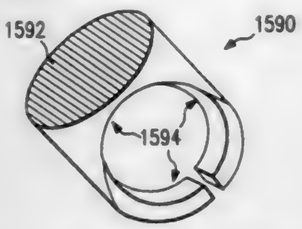
WAND FOR READING AND WRITING INFORMATION TO ELECTRONIC TOKENS

Robert D. Lee, Denton, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Division of Ser. No. 19,932, Feb. 19, 1993, Pat. No. 5,398,326, which is a division of Ser. No. 352,581, May 15, 1989, Pat. No. 5,210,846. This application Dec. 13, 1994, Ser. No. 355,389

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **15 Claims**



1. A wand for manually contacting an electronic token module, comprising:

a base shaped to be firmly supported by a hand of a user;

a surface attached to said base, said surface positioned so that said user can bring said surface into contact with said electronic token module to be contacted, said surface having a recess therein that is shaped to mate with said electronic token module to be contacted, said recess having an inner perimeter and an inner region, said inner perimeter of said recess bordered by a conductive ring of conductive material, said conductive ring of conductive material electrically coupled to a first lead wire;

an additional exposed contact positioned in said inner region of said recess, said additional exposed contact being connected to a second lead wire, whereby said first lead wire and said second lead wire are electrically coupled to a host computer system to provide a data interface to said electronic token module.

5,627,362

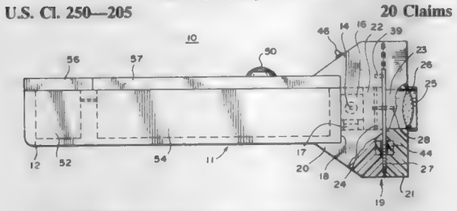
PORTABLE LIGHT SOURCE UNIT FOR SIMULATING FIRES HAVING AN ADJUSTABLE APERTURE

Robert C. Youngquist, Cocoa; John S. Moerk, Titusville, and James P. Strobel, Brandenton, all of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 1, 1995, Ser. No. 431,801

Int. Cl.[6] G01J *1/32*

U.S. Cl. 250—205 **20 Claims**



1. A portable light source device comprising:

a) a housing;

b) a light source disposed in said housing;

c) a battery power supply disposed in said housing for powering said light source;

d) a switch for connecting said power supply to said light source;

e) an aperture in said housing for emitting radiation from said light source, said aperture having a diameter; and

f) means for adjusting the size of said aperture diameter to one of a plurality of discrete sizes;

whereby, the intensity of the radiation emitted from said housing is adjustable by adjusting the size of said aperture diameter.

5,627,363

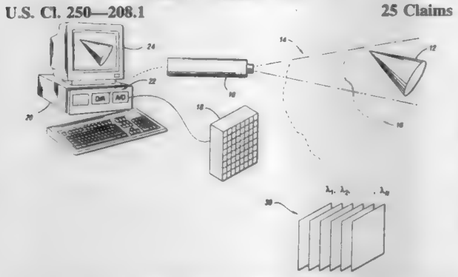
SYSTEM AND METHOD FOR THREE-DIMENSIONAL IMAGING OF OPAQUE OBJECTS USING FREQUENCY DIVERSITY AND AN OPACITY CONSTRAINT

Richard G. Paxman, Ann Arbor, and Joseph C. Marron, Brighton, both of Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 16, 1995, Ser. No. 389,718

Int. Cl.[6] G01B *11/124*

U.S. Cl. 250—208.1 **25 Claims**



1. A system for determining an image of an opaque object, the system comprising:

a source of coherent radiation for illuminating the opaque object at a plurality of frequencies to create a corresponding plurality of speckle patterns;

a detector for performing intensity detection of scattered radiation forming the speckle patterns at each of the plurality of frequencies;

a computer in communication with the detector for storing a representation of the detected intensities and executing logic to determine an estimate of the object based on the stored representation and knowledge that the object is opaque such that the representation is confined to a two-dimensional surface embedded in a three-dimensional space.

5,627,364

LINEAR ARRAY IMAGE SENSOR WITH THIN-FILM LIGHT EMISSION ELEMENT LIGHT SOURCE

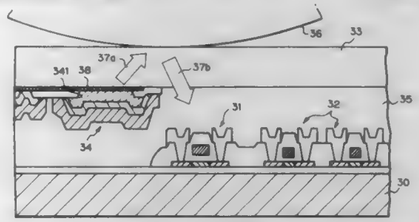
Mitsufumi Codama, Kanagawa, and Michio Arai, Tokyo, both of Japan, assignors to TDK Corporation, Tokyo, and Semiconductor Energy Laboratory Co., Ltd., Kanagawa, both of Japan

Filed Oct. 10, 1995, Ser. No. 541,871

Claims priority, application Japan, Oct. 11, 1994, 6-245162; Oct. 12, 1994, 6-245841; Oct. 18, 1994, 6-252028

Int. Cl.[6] H01L *27/146*; **H05B** *33/00*

U.S. Cl. 250—208.1 **24 Claims**



1. A linear array image sensor with a light source, comprising:

a first substrate made of a transparent plate, said first substrate having a first surface and a second surface;

at least one thin-film light emission element disposed on said first surface of the first substrate and linearly elongated in a direction;

a second substrate having two surfaces; and

a plurality of solid-state image pickup elements disposed on one of said two surfaces of the second substrate and linearly aligned along said elongated direction of the thin-film light emission element,

said first and second substrates being fixed to and integrated with each other by a transparent material so that light originated by said thin-film light emission element is emitted from said second surface of said first substrate and reflected by an image carrier to be detected, and that the reflected light is applied to the plurality of the solid-state image pickup elements through the first substrate.

5,627,365

SCANNING NEAR-FIELD OPTIC/ATOMIC FORCE MICROSCOPE IN WHICH IMAGING LIGHT IS CONTROLLED IN RELATION TO A VIBRATING POSITION OF AN OPTICAL FIBER PROBE

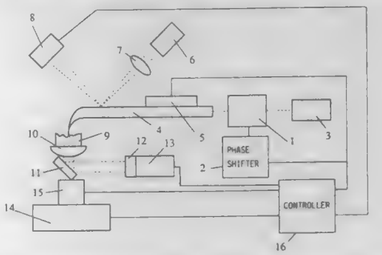
Norio Chiba, and Hiroshi Muramatsu, both of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 22, 1995, Ser. No. 408,622

Claims priority, application Japan, Mar. 24, 1994, 6-054093

Int. Cl.[6] H01J *3/14*

U.S. Cl. 250—234 **3 Claims**



1. A scanning near-field optic/atomic force microscope comprising:

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a probe made of a light-propagating body for scanning above a sample to observe a topography and optical characteristics thereof;

vibration means for vibrating a distal end of the probe and the sample relative to one another;

a light source for generating a radiating light onto the sample;

optical modulating means for modulating an amplitude of the radiating light in synchronism with a vibrating position of the distal end of the probe;

a phase shifter for modifying a phase and/or an intermittent rate of the radiating light of the optical modulating means;

displacement detection means for optically detecting displacement of the probe;

a photoelectric converter and optical system for detecting light from the sample; and

a rough-motion mechanism and a fine-motion mechanism for moving the sample and the probe relative to each other.

5,627,366

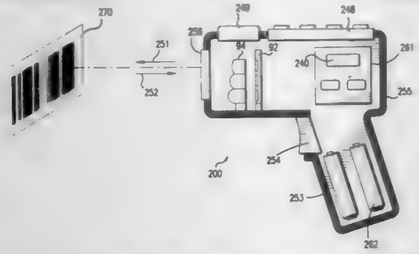
OPTICAL SCANNER WITH EXTENDED DEPTH OF FOCUS

Joseph Katz, Stony Brook, N.Y., assignor to Symbol Technologies, Inc., Holtsville, N.Y.

Filed May 19, 1995, Ser. No. 445,228

Int. Cl.[6] H10J *3/14*

U.S. Cl. 250—234 **7 Claims**



1. A bar code reading device with an extended depth of focus for reading complete lines of bar code information by optically scanning light reflected from a bar code symbol having bars and spaces of different light reflectivity, said bar code reading device comprising:

a) a single integrated circuit comprising a plurality of independently addressable charge-coupled device detectors, each of said detectors comprising an array of individual photosensors arranged so as to receive light reflected from the entirety of said bar code symbol without requiring any movement of the bar code reading device as a whole relative to the bar code symbol;

b) a plurality of lenses, each of said lenses having a focal length different from each other, each of said lenses associated with and focused on a corresponding one of said detectors so as to provide a plurality of lens/detector pairs, wherein each of said lens/detector pairs provides an optical axis different from and substantially parallel with each other;

c) processing means for selecting the lens/detector pair that provides a desired optical property when said bar code symbol is placed in a field of view of at least one of said lens/detector pairs.

5,627,367

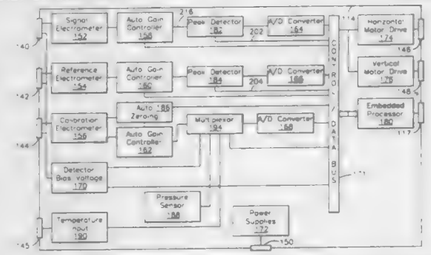
RADIATION BEAM CALIBRATER

Jack C. Sofield, Seymour, Tenn., assignor to Sofield Science Services, Inc., Seymour, Tenn.

Division of Ser. No. 541,374, Oct. 10, 1995. This application Jun. 13, 1996, Ser. No. 662,313

Int. Cl.[6] G01T *1/29*

U.S. Cl. 250—252.1 **7 Claims**



1. A method of calibrating a medical linear accelerator comprising the steps of:

providing a medium for receiving radiation from the linear accelerator;

sensing radiation produced by the linear accelerator with a radiation detector disposed within the medium, said radiation detector producing a detector output in the form of an electrical current representative of the amount of radiation output by the linear accelerator;

providing an integrating, automatic, self-zeroing, calibration electrometer for converting the detector output from an electrical current to an electrical voltage corresponding to the amount of radiation output by the linear accelerator; and

determining from said electrical voltage an adjustment value necessary to bring the linear accelerator into calibration.

5,627,368

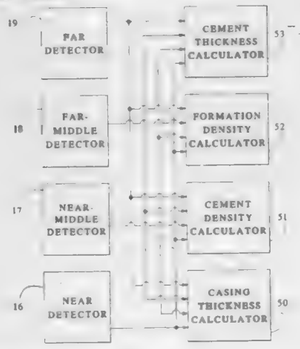
FOUR-DETECTOR FORMATION-DENSITY TOOL FOR USE IN CASED AND OPEN HOLES

Gordon L. Moake, Houston, Tex., assignor to Gas Research Institute, Chicago, Ill.

Filed Jul. 5, 1995, Ser. No. 498,069

Int. Cl.[6] G01V *5/12*

U.S. Cl. 250—269.3 **29 Claims**



1. A formation-density tool comprising:

a housing, the housing accommodating a gamma ray source, at least four detectors including a near detector, a near-middle detector, a far-middle detector and a far detector;

the near detector spaced axially from the gamma ray source, the distance between the near detector and the gamma ray source is defined as a first spacing, the near detector detecting intensities of the gamma rays that engage the near detector, the near detector also generating a first signal that is proportional to the intensities of the gamma rays detected by the near detector;

the near-middle detector spaced axially from the near detector and the gamma ray source, the distance between the near-middle detector and the gamma ray source is defined as a second spacing, the near-middle detector detecting intensities of the gamma rays that engage the near-middle detector, the near-middle detector also generating a second signal that is proportional to the intensities of the gamma rays detected by the near-middle detector;

the far-middle detector spaced axially from the near detector and the gamma ray source, the distance between the far-middle detector and the gamma ray source is defined as a third spacing, the far-middle detector detecting intensities of the gamma rays that engage the far-middle detector, the far-middle detector also generating a third signal that is proportional to the intensities of the gamma rays detected by the far-middle detector; and

a far detector spaced axially from the near, near-middle and far-middle detectors and the gamma ray source, the distance between the far detector and the gamma ray source is defined as a fourth spacing, the far detector detecting intensities of the gamma rays that engage the far detector, the far detector also generating a fourth signal that is proportional to the intensities of the gamma rays detected by the far detector; and

means for calculating the density of the formation from the first, second, third and fourth signals.

5,627,369

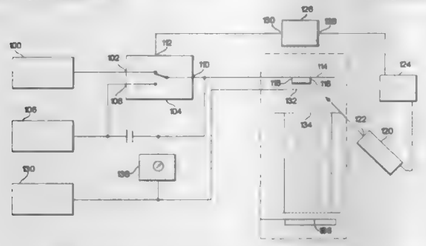
TIME-OF-FLIGHT MASS SPECTROMETRY ANALYSIS OF BIOMOLECULES

Marvin L. Vestal, Houston, Tex., and Peter Juhasz, Watertown, Mass., assignors to PerSeptive Biosystems, Inc., Framingham, Mass.

Continuation of Ser. No. 446,544, May 19, 1995. This application Jun. 7, 1995, Ser. No. 488,127

Int. Cl.[6] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—287 **10 Claims**



1. A time-of-flight mass spectrometer for measuring the mass-to-charge ratio of ions generated from a sample comprising:

a) a sample holder;

b) a sample ionizer for generating a pulse of sample ions from a sample disposed on the holder;

c) a first element spaced apart from the sample holder;

d) a power source electrically coupled to the first element and the holder for

i) applying a variable potential to each of the first element and the holder to establish a first electric field wherein the first element and holder potentials are variable independently before ion extraction, and

ii) applying a second variable potential to each of the first element and the holder to establish a second electric field for ion extraction, wherein the second variable potential is applied at a predetermined time subsequent to establishing the first electric field and the first element and holder potentials are variable independently; and

e) an ion reflector spaced apart from the first element,

wherein a flight time of extracted ions of like mass-to-charge ratio from the reflector to a detector will be independent to second order of the initial velocity.

5,627,370

Patent Not Issued For This Number

5,627,371

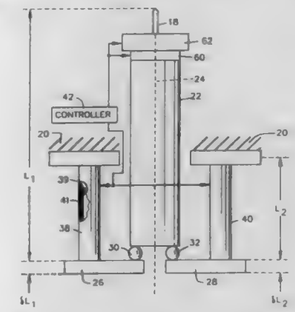
TILTING POSITIONER FOR A MICROPOSITIONING DEVICE

Joseph E. Griffith, Berkeley Heights, and Rafael N. Kleiman, New Brunswick, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 9, 1996, Ser. No. 600,658

Int. Cl.[5] G01N *23/00*

U.S. Cl. 250—306 **21 Claims**



1. A positioner for a micropositioning device to control one dimensional horizontal movement between a pair of elements, the positioner comprising:

a rigid elongated member having a first free end and a second pivot end, said member being coupled at said free end to a first of said elements so as to prevent relative horizontal movement therebetween, and said member having a longitudinal axis extending from said free end to said pivot end;

a pair of rigid intermediate support members;

a first pivotal coupling on a first side of said longitudinal axis for pivotably coupling the pivot end of said elongated member to a first of said support members;

a second pivotal coupling across said longitudinal axis from said first pivotal coupling for pivotably coupling the pivot end of said elongated member to a second of said support members;

a first small motion transducer actuator having a first end coupled to said first support member so as to prevent relative movement therebetween and an opposite end coupled to a second of said elements so as to prevent relative movement therebetween, said first actuator being controllable for effecting relative movement between said first support member and said second element so as to cause said elongated member to tilt;

a second small motion transducer actuator having a first end coupled to said second support member so as to prevent relative movement therebetween and an opposite end coupled to the second of said elements so as to prevent relative movement therebetween, said second actuator being controllable for effecting relative movement between said second support member and said second element so as to cause said elongated member to tilt; and

control means for selectively energizing said first and second actuators to cause differential motion of said first and second support members;

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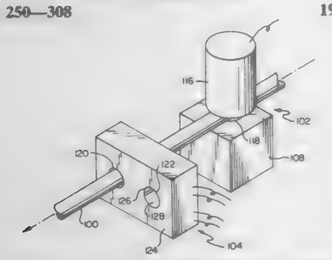
whereby said elongated member is caused to tilt in a controlled manner to move the elongated member free end along a tilt line.

5,627,372

MEASURING ON-LINE TOBACCO ROD BASIS WEIGHT USING COMBINED HIGH ACCURACY/SLOW RESPONSE AND LOW ACCURACY/FAST RESPONSE GAUGES

Steven P. Sturm, Columbus, Ohio, assignor to ABB Industrial Systems, Inc., Columbus, Ohio

Filed Dec. 21, 1995, Ser. No. 576,472
Int. Cl.[6] G01N *23/00*
U.S. Cl. 250—308 **19 Claims**



1. A method for on-line determination of basis weight of a rod of material comprising the steps of:

measuring basis weight of a rod of material with a high accuracy low radiation beta gauge having a slow response time;

measuring basis weight of said rod of material with a low accuracy dielectric sensor having a fast response time; and

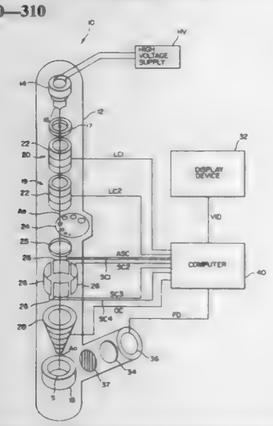
calibrating said dielectric sensor using said low radiation beta gauge to obtain a fast response high accuracy signal.

5,627,373

AUTOMATIC ELECTRON BEAM ALIGNMENT AND ASTIGMATISM CORRECTION IN SCANNING ELECTRON MICROSCOPE

William A. Keese, Philomath, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 17, 1996, Ser. No. 664,578
Int. Cl.[6] H01J *37/252*
U.S. Cl. 250—310 **15 Claims**



1. A method for automatically aligning electron beam axis to an objective lens axis in a scanning electron microscope, the method comprising the steps of:

imaging a specimen at a first point within a focal range of an objective lens to form a first image sample defining a straight edge oriented in a first direction;

generating a first indication signal of the first image at the first point within the focal range of the objective lens, the first indication signal indicative of a first position of the straight edge within a field of view of the microscope;

imaging the specimen at a second point within the focal range of the objective lens;

generating a second indication signal at the second point within the focal range of the objective lens, the second indication signal being indicative of a second position of the straight edge within a field of view of the microscope;

comparing the first and second indication signals for determining translation of the straight edge;

adjusting alignment of the electron beam axis to the objective lens axis in the first direction;

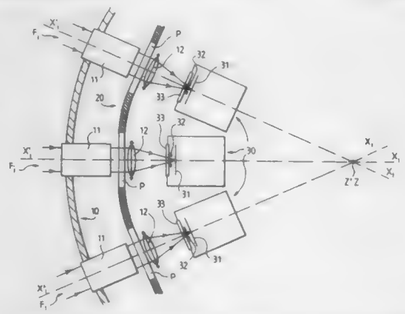
repeating the steps of imaging at a first point, generating a first indication signal, imaging at a second point, generating a second indication signal, comparing and adjusting for subsequent image samples of the specimen defining a straight edge, wherein for each subsequent image sample the straight edge is in a direction orthogonal to the direction of the previous sample, said repeated step of adjusting for each one subsequent sample comprising adjusting alignment of the electron beam axis to the objective axis in the direction of the straight edge of said one subsequent sample, and wherein said repeating occurs until the first position differs from the second position by less than a predetermined threshold.

5,627,374

STATIC INFRARED PANORAMIC WATCHING DEVICE WITH MULTIPLE MATRIX DETECTORS

Georges Couderc, Bures sur Yvette, and François Micheron, Gif-sur-Yvette, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 17, 1995, Ser. No. 544,441
Claims priority, application France, Nov. 18, 1994, 94 13841
Int. Cl.[6] G02B *26/10*
U.S. Cl. 250—334 **10 Claims**



1. A static infrared panoramic watching device with a multiple number of matrix detectors formed by elementary sensors comprising an optical system associated with each detector for the projection, on each detector, of an observation light flux coming from a portion of space demarcated by a visual field with an aperture defined as a function of the number of detectors, wherein the detectors are fixed and distributed in a circle about an elevation axis and wherein prisms are distributed in a circle on a rotational drum with a rotational axis that is identical with the elevation axis so that, during rotation of this drum, each prism successively intercepts, as a parallel beam, the light flux going through the optical system of each detector, each prism having an angle at a vertex with a specified value and orientation so as to then bring about an elementary deflection of the light fluxes of observation

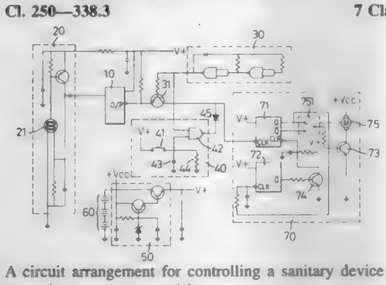
corresponding to a virtual elementary shift of each sensor and defining a micro-scanning pitch.

5,627,375

CIRCUIT ARRANGEMENT FOR A SANITARY APPARATUS

Chin-Hua Hsieh, 4Fl., No. 19, Lane 60, Chunghua Rd., Hsin-tien City, Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 335,123, Nov. 7, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,299
Int. Cl.[6] E03C *1/05*; **G01J** *5/10*
U.S. Cl. 250—338.3 **7 Claims**



1. A circuit arrangement for controlling a sanitary device in a non-contacting manner, comprising:

a pyroelectric detecting means for detecting heat radiating from a human body part within a predetermined location and outputting a signal in response to such detection;

a programmable means for:

receiving the signal from the pyroelectric detecting means;

converting the received signal into a corresponding digital data;

reading the converted digital data in bytes;

logically exclusively ORing two sequential bytes and acquiring a resultant byte; and

outputting a triggering signal from an output terminal thereof when two sequential resultant bytes have three "1" bits or more; and

a driving means for receiving the triggering signal from the programmable means to activate a valve in the sanitary device.

5,627,376

WIRE CORONA CHARGING APPARATUS

Rajan A. Jaisinghani, Midlothian, and Tim G. Christensen, Chester, both of Va., assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 8, 1995, Ser. No. 525,163
Int. Cl.[6] H01T *19/04*
U.S. Cl. 250—325 **27 Claims**

1. A wire corona charging apparatus, comprising:

an electrically conductive wire exhibiting a length;

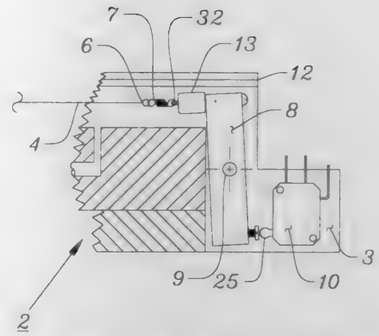
a frame formed by a first plate of a non-electrically conducting material, said frame having a channel extending along one surface over a distance accommodating disposition of said wire within said channel;

means for resiliently supporting said wire within said channel while maintaining said wire under an axial tensile force and spaced-apart from interior surfaces of said channel, while applying an electrical current to said wire;

a shield of an electrically insulating material positioned in juxtaposition to said frame to slide along said distance and adjustably enclose part, but less than all, of said length within said channel;

means for converting a source of electrical energy into said electrical current; and

switching means interposed within an electrical circuit controlling application of said electrical current to said supporting means, biased by said tensile force into a first mode of enabling conduction of said electrical energy to said converting means, for interrupting said application of said electrical current to said supporting means upon breakage of said wire.

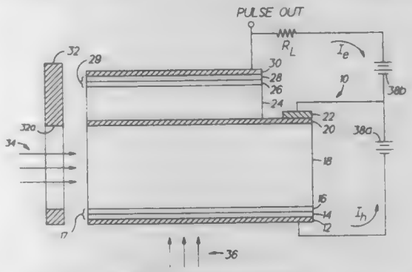


5,627,377

SINGLE CARRIER-TYPE SOLID-STATE RADIATION DETECTOR DEVICE

William J. Hamilton, Jr., Ventura, and David R. Rhiger, Santa Barbara, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Sep. 7, 1995, Ser. No. 525,998
Int. Cl.[6] G01T *1/24*
U.S. Cl. 250—370.13 **21 Claims**



1. An ionizing radiation detector, comprising:

a first layer comprised of semiconductor material, said first layer being responsive to incident ionizing radiation for generating electron-hole pairs;

a second layer comprised of semiconductor material;

electrode means interposed between a first surface of said first layer and a first surface of said second layer; and

means for establishing an electric field across said first layer and said second layer such that holes move away from said electrode means and electrons move towards and through said electrode means, through said second layer, and generate a detectable output signal.

5,627,378

DIE SET FOR AUTOMATIC UV EXPOSURE SYSTEM

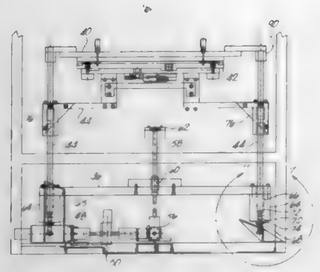
Greg Baxter, Orange, Calif., assignor to ORC Electronic Products, A Divison of Benson Eyecare Corporation, Azusa, Calif.

Filed Feb. 28, 1996, Ser. No. 608,168
Int. Cl.[6] G03B *27/04*
U.S. Cl. 250—455.11 **14 Claims**

1. A double-sided UV exposure system comprising:

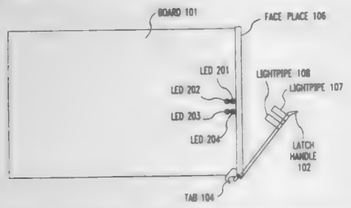
an exposure cabinet having a base and a support frame;

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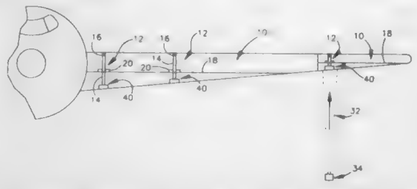
a phototool die set having
an upper die structure having four rod caps mounted in a spaced quadrilateral relation thereon and
a lower die structure rigidly mounted to the support frame and having four bearing blocks mounted thereon in said spaced quadrilateral relation;
an elevation structure having four closed end bearing blocks mounted thereon in said spaced quadrilateral relation;
means for reversibly raising the elevation structure from a first lower position to a second upper position; and
four rods removably supported in said closed end bearing blocks, said rods extending through said bearing blocks mounted to the lower die structure and received in said rod caps mounted to the upper die structure whereby raising the elevation structure from said first position to said second position raises the upper die structure from a first closed position to a second open position.

5,627,379
DUPLICATION DETECTION OF CIRCUIT BOARD REMOVAL USING TWO LIGHT EMITTING DIODES
James R. Bortolini, Broomfield, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 23, 1994, Ser. No. 370,774
Int. Cl.[6] G02B *27/00;* **H05K** *7/14*
U.S. Cl. 250—551 **5 Claims**



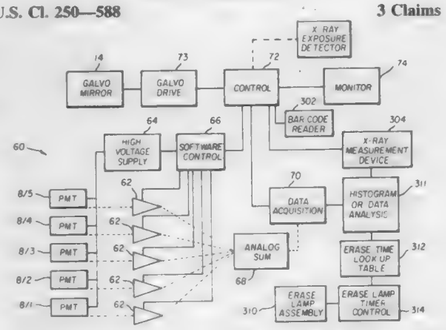
1. An apparatus for detecting print circuit board removal and providing a state indication, comprising:
a first pair of light emitting diodes having a first and second light emitting diode mounted on a print circuit board;
a latch handle mounted on the print circuit board;
a first light pipe mounted on and projecting through the latch handle such that in a locked position of the latch handle the first light pipe covers the first pair of light emitting diodes wherein light generated from first light emitting diode of the first pair is communicated through the first light pipe to the second light emitting diode of the first pair and though an opening in the latch handle;
with the latch handle in an unlocked position, the first light pipe no longer covers both of the light emitting diodes of the first pair and the unlocked position indicates that the print circuit board is being removed;
a controller responsive to a first signal to turn on a first indicator turns on the first light emitting diode of the first pair and responsive to a second signal to turn off the first indicator turns off the first light emitting diode of the first pair;
the controller detects if light is being received by the second light emitting diode of the first pair when the first indicator is turned on and signals printed circuit board removal upon no light being detected; and
the controller flashes on the first light emitting diode of the first pair while the first indicator is turned off, detects if light is being received by the second light emitting diode of the first pair during the flash, and signals printed circuit board removal upon no light being detected during the flash.

5,627,380
FLUID GAUGING APPARATUS USING INTEGRAL ELECTRICAL SENSOR AND A STICK GAUGE
David H. Crowne, Middlebury, Vt., assignor to Simmonds Precision Products, Inc., Akron, Ohio
Continuation-in-part of Ser. No. 69,263, May 28, 1993, Pat. No. 5,399,875. This application Jun. 28, 1994, Ser. No. 268,002
Int. Cl.[6] G01N *15/06*
U.S. Cl. 250—577 **6 Claims**



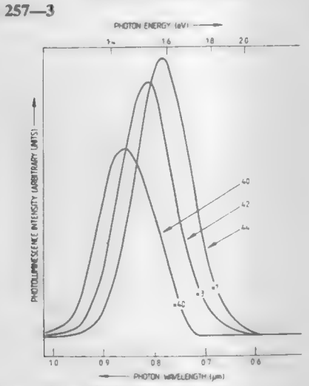
1. A gauging apparatus for measuring liquid quantity in a container comprising: a magnetic float in the container with the float position corresponding to the liquid level in the container; a dripstick in the form of a housing that is manually withdrawn from the container in relation to the position of the float to obtain a visual reading of the liquid quantity; a sensor disposed in said housing that produces an output related to the position of the float and gauging means for receiving the sensor output to determine liquid quantity in the container.

5,627,381
OPTIMIZED STORAGE PHOSPHOR ERASE TIME
Robert W. Kulpinski, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 22, 1996, Ser. No. 620,433
Int. Cl.[6] G03B *42/02*
U.S. Cl. 250—588 **3 Claims**



1. In a storage phosphor imaging system including a scanner for scanning a storage phosphor storing an x-ray image to produce an x-ray light image, a converter for converting the x-ray light image into a digital x-ray image signal having a range of code values, and a storage phosphor erase light assembly for erasing said storage phosphor of substantially all residual image, an apparatus for controlling said erase light assembly, said apparatus comprising;
a digital image processor for determining the maximum code value of a digital x-ray image signal which is produced from an x-ray image stored in a storage phosphor to be erased;
a controller for controlling the time of actuation of said erase light assembly as a function of said determined maximum code value; and
wherein said digital image processor produces a histogram of the code values of said digital x-ray image signal and determines said maximum code value from said histogram.

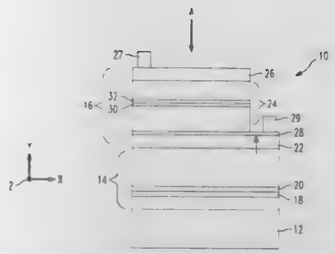
5,627,382
METHOD OF MAKING SILICON QUANTUM WIRES
Leigh-Trevor Canham; John M. Keen, and Weng Y. Leong, all of Worcestershire, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Division of Ser. No. 960,694, Oct. 14, 1992, which is a division of Ser. No. 852,208, Jun. 4, 1992, Pat. No. 5,348,618. This application Jun. 1, 1995, Ser. No. 457,596
Claims priority, application United Kingdom, Dec. 7, 1989, 8927709
Int. Cl.[6] H01L *47/00*
U.S. Cl. 257—3 **18 Claims**



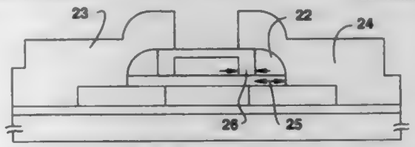
1. A light emitting device comprising:
silicon material at least a portion of which comprises porous silicon, said porous silicon having a porosity of at least 60% and incorporating silicon quantum wires having a thickness of less than 3 nm; and
means for exciting said porous silicon to emit light.

5,627,383
OPTOELECTRONIC DEVICES UTILIZING MULTIPLE QUANTUM WELL PIN STRUCTURES
John E. Cunningham, Lincroft; Keith W. Goossen, Aberdeen; William Y. Jan, Scotch Plains, and Michael D. Williams, Freehold, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 314,023, Sep. 28, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 606,509
Int. Cl.[6] H01L *29/06;31/0328;31/0336*
U.S. Cl. 257—17 **6 Claims**

1. An optoelectronic device comprising:
a substrate comprised of semiconductor material;
a first substantially transparent, electrically conductive layer of a first conductivity type having an upper surface and a lower surface and disposed on said substrate, said first conductive layer being doped to a first conductivity type to obtain a surface impurity concentration of between approximately 6×10^{13} to 6×10^{14} atoms/cm^2;
a quantum-well intrinsic region formed on said first conducting layer, said quantum-well intrinsic region comprising a buffer layer grown on said first conductive layer, said buffer layer having an upper surface and a lower surface and being doped with a dopant for forming a doping gradient having maximum impurity concentration at said lower surface of at least 1×10^{18} atoms/cm^3 and a minimum surface impurity concentration at said upper surface of at least 1×10^{15} atoms/cm^3; and
a second substantially transparent, electrically conductive layer formed on said quantum-well intrinsic region and doped to a second conductivity type.



5,627,384
SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME
Satoshi Teramoto; Hongyong Zhang, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan
Continuation of Ser. No. 252,197, Jun. 1, 1994, abandoned. This application Apr. 23, 1996, Ser. No. 636,820
Claims priority, application Japan, Jun. 4, 1993, 5-160258
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—57 **22 Claims**



1. A semiconductor device comprising:
a gate electrode;
a first insulating layer comprising an anodic oxide of a material of the gate electrode provided at a side and upper surface of the gate electrode; and
a second insulator having a first and second side and comprising a second material different from said anodic oxide, wherein said first side is in contact with the first insulating layer, and at least one of source and drain electrodes is in contact with said second side of said second insulator,
wherein said second insulator does not extend on an upper surface of the anodic oxide.

5,627,385
LATERAL SILICON CARBIDE TRANSISTOR
Mohit Bhatnagar, and Charles E. Weitzel, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 28, 1995, Ser. No. 520,123
Int. Cl.[6] H01L *31/0312*
U.S. Cl. 257—77 **15 Claims**

1. A silicon carbide transistor comprising:

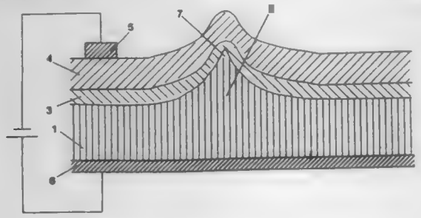
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5,627,386

SILICON NANOSTRUCTURE LIGHT-EMITTING DIODE

James F. Harvey, Research Triangle Park, N.C.; Robert A. Lux, Toms River, N.J., and Raphael Tsu, Charlotte, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 289,471, Aug. 11, 1994, abandoned.
This application Oct. 27, 1995, Ser. No. 549,286
Int. Cl.[6] H01L 27/15
U.S. Cl. 257—79 5 Claims



1. A semiconductor light source, comprising

a nonporous silicon substrate having at least one external protuberance on an emitting surface of said silicon substrate;

an oxide film on said emitting surface of said silicon substrate, said oxide film covering the entire external protuberance;

a conductive film entirely covering said oxide film that covers said external protuberance; and

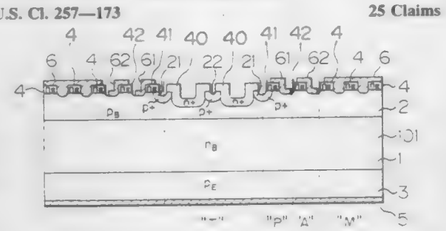
means to apply an electrical bias across said silicon substrate, oxide film and said conductive film.

5,627,387

OVERVOLTAGE SELF-PROTECTION SEMICONDUCTOR DEVICE, METHOD OF FABRICATION THEREOF AND SEMICONDUCTOR CIRCUIT USING THE SAME

Susumu Muraikami; Yoshiteru Shimizu, both of Katsuta; Takeshi Yokota, Hitachi, and Yasuhiro Mochizuki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 994,969, Dec. 22, 1992, abandoned.
This application Mar. 1, 1995, Ser. No. 396,259
Claims priority, application Japan, Dec. 26, 1991, 3-345197
Int. Cl.[6] H01L 29/74
U.S. Cl. 257—173 25 Claims



1. An overvoltage self-protection semiconductor device comprising a thyristor portion and an overvoltage protection portion:

said thyristor portion including:

a first semiconductor layer of first conductivity type formed in a semiconductor substrate;

a second semiconductor layer of second conductivity type formed on one of main surfaces of said semiconductor substrate adjacently to one of the surfaces of said first semiconductor layer;

a third semiconductor layer of second conductivity type adjacent to another surface of said first semiconductor layer;

a plurality of fourth semiconductor layers of first conductivity type formed in spaced relationship with each other on said third semiconductor layer;

a first electrode formed on said second semiconductor layer; and

a second electrode formed on said third semiconductor layer and said fourth semiconductor layers;

said overvoltage protection portion including:

said first semiconductor layer;

said second semiconductor layer;

said third semiconductor layer;

a fifth semiconductor layer of first conductivity type having a high impurities concentration formed on said third semiconductor layer; and

a sixth semiconductor layer of second conductivity type having a high impurities concentration formed on said third semiconductor layer adjacent to said fifth semiconductor layer to form a pn junction between said fifth and sixth semiconductor layers, said sixth semiconductor layer bridging said fifth semiconductor layer and one of said fourth semiconductor layers;

wherein the breakover voltage of said overvoltage protection portion is lower than that of the thyristor portion, and

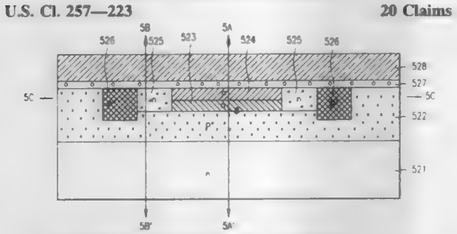
wherein said fifth semiconductor layer of the overvoltage protection portion is spaced apart from a main junction between the first and third semiconductor layers by a predetermined distance so that when a predetermined overvoltage is applied to said first electrode and said second electrode, a depletion layer extending from said main junction due to the overvoltage will punch through the third semiconductor layer to the fifth semiconductor layer to provide overvoltage protection to the main device.

5,627,388

CCD-SOLID STATE IMAGE SENSOR USING ELECTRON AND HOLE SIGNAL CHARGES AND METHOD FOR PROCESSING SIGNAL THEREOF

Uya Shinji, Kyungki-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Feb. 14, 1996, Ser. No. 599,969
Claims priority, application Rep. of Korea, Aug. 2, 1995, 23853/1995
Int. Cl.[6] H01L 27/148;29/768
U.S. Cl. 257—223 20 Claims



1. A CCD-solid state image sensor, comprising:

a sensing area for generating signal charges in response to incident light;

a storage area for storing the signal charges from the sensing area;

a horizontal charge coupled device for extracting the signal charges stored in the storage area;

a high sensitivity signal charge detection and amplification circuit for detecting and amplifying signal charges of electrons from the horizontal charge coupled device; and

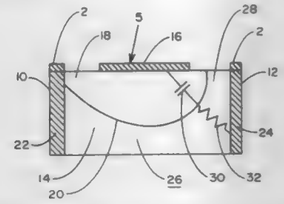
a low sensitivity signal charge detection and amplification circuit for detecting and amplifying signal charges of holes from the horizontal charge coupled device.

5,627,389

HIGH-FREQUENCY TRAVELING WAVE FIELD-EFFECT TRANSISTOR

Alison Schary, 600 Warren Rd. Apt. 9-2D, Ithaca, N.Y. 14850

Filed Jul. 15, 1994, Ser. No. 275,999
Int. Cl.[6] H01L 29/80
U.S. Cl. 257—275 21 Claims



1. A method of improving the performance of a traveling wave field-effect transistor operated at frequencies in the microwave range or above the microwave range, and having signals propagating therethrough generally from and to electrodes attached thereto defining a traveling wave signal direction, said traveling wave field-effect transistor defining a semiconductor structure, said semiconductor structure, taken in cross section in a transverse direction at right angles to said traveling wave signal direction, corresponding to a field effect transistor defining a maximum frequence of signal amplification, comprising the steps of:

forming a depletion region generally beneath a gate electrode wherein, in a plane transverse to said direction of signal propagation, said depletion region defining an edge located between the gate electrode and a drain electrode region; and

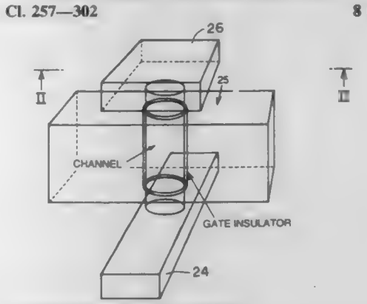
separating the depletion region edge from the drain electrode region such that said traveling wave field effect transistor provides useful traveling wave signal gain at frequencies higher than said maximum frequency.

5,627,390

SEMICONDUCTOR DEVICE WITH COLUMNS

Shigenobu Maeda; Yasuo Inoue; Hirotada Kuriyama; Shigeto Maegawa; Kyozo Kanamoto, and Toshiaki Iwamatsu, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 313,472, Sep. 27, 1994, abandoned.
This application May 16, 1996, Ser. No. 648,828
Claims priority, application Japan, May 26, 1994, 6-112997
Int. Cl.[6] H01L 27/108;29/76;29/94;31/119
U.S. Cl. 257—302 8 Claims



1. A semiconductor device comprising:

a substrate on which a buried dielectric layer and a semiconductor layer are formed successively;

a first impurity diffusion layer of a first conductivity type in said semiconductor layer forming a source/drain region and a bit line;

a first interlayer insulating film disposed on said substrate covering said first impurity diffusion layer;

a gate electrode, having upper and lower surfaces, disposed on said first interlayer insulating film and forming a word line;

a second interlayer insulating film disposed on said first interlayer insulating film and covering said gate electrode;

a contact hole penetrating said first interlayer insulating film, said gate electrode and said second interlayer insulating film exposing but not extending below a portion of a surface of said first impurity diffusion layer;

a gate insulating film covering a side wall of said contact hole;

a first semiconductor column of the first conductivity type formed in said contact hole and in contact with said first impurity diffusion layer, thereby serving as one of said source/drain regions;

a channel semiconductor column of the second conductivity type disposed in said contact hole in contact with said first semiconductor layer;

a second semiconductor column of the first conductivity type disposed on said channel semiconductor column in contact with a source/drain region and a storage node;

a capacitor insulating film disposed on said second semiconductor layer; and

a cell plate electrode disposed on said storage node with said capacitor insulating film therebetween.

5,627,391

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Yasuhiro Shimada, Osaka; Atsuo Inoue, Kyoto; Koji Arita, Osaka; Toru Nasu, Kyoto; Yoshihisa Nagano, and Akihiro Matsuda, both of Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

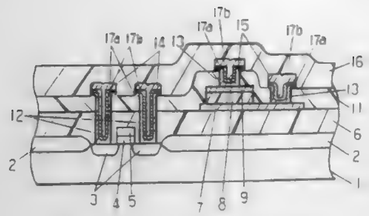
Filed Jun. 20, 1995, Ser. No. 492,913
Claims priority, application Japan, Jun. 28, 1994, 6-146265
Int. Cl.[6] H01L 29/76;27/108;23/48
U.S. Cl. 257—310 5 Claims

1. A semiconductor device comprising:

(a) a substrate wherein an integrated circuit is formed,

(b) a first insulating layer formed on said substrate,

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(c) a capacitor comprising a lower electrode formed on said first insulating layer, a dielectric film having a high dielectric constant formed on said lower electrode, and an upper electrode formed on said dielectric film,

(d) a second insulating layer covering said capacitor and having contact holes leading to said lower electrode and upper electrode respectively,

(e) a diffusion barrier layer covering at least inside walls of said contact holes, and touching said lower electrode as well as said upper electrode at the bottom of said contact holes, said diffusion barrier layer including a lamellar region comprised of granular crystal structure at the bottom of said contact holes having a thickness ranging from 200 nm to 300 nm, and

(f) an interconnection layer formed on said diffusion barrier layer.

5,627,392

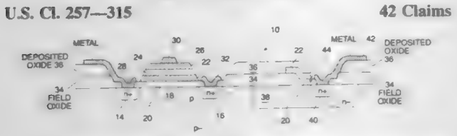
SEMICONDUCTOR STRUCTURE FOR LONG TERM LEARNING

Christopher J. Diorio, Torrance; Paul E. Hasler, Pasadena; Bradley A. Minch, Pasadena, and Carver A. Mead, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 7, 1995, Ser. No. 399,966

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—315 **42 Claims**



1. A semiconductor structure for long term learning comprising:

a p– type region in a semiconductor substrate;

a first n+ type region disposed in said p– type region;

a second n+ type region disposed in said p– type region;

an n– type region disposed in said p– type region, said n– type region including an n+ doped region surrounded by said n– type region within said p– type region;

a channel disposed between said first n+ type region and said second n+ type region, said channel additionally p doped to an impurity level in the range of about 1E17/cm^3 to about 2E17/cm^3;

a floating gate disposed over said channel and separated from said channel by an insulator, a portion of said floating gate also disposed over said n– type region;

an insulating layer disposed over said floating gate;

a conductive region disposed over said insulating layer and capacitively coupled to said floating gate;

means for applying a first positive potential to said second n+ type region with respect to said p– type region to reverse bias said second n+ type region with respect to said p– type region, said first positive potential having a magnitude of greater than about +2.5 volts relative to said p– type region, but less than the voltage required to induce avalanche breakdown in a junction formed between said second n+ type region and said p– type region;

means for capacitively coupling a second positive potential to said floating gate, said second positive potential having a magnitude of greater than about +2.5 volts relative to said p– type region;

means for applying a third potential to said first n+ type region with respect to said p– type region, said third potential in the range of about zero to about +2.0 volts relative to said p– type region; and

means for selectively applying a fourth potential to said n– type region, said fourth potential being positive with respect to said floating gate.

5,627,393

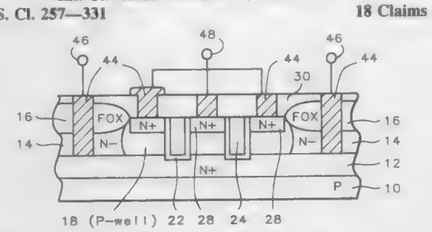
VERTICAL CHANNEL DEVICE HAVING BURIED SOURCE

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 351,492, Dec. 7, 1994, Pat. No. 5,455,190. This application Aug. 9, 1995, Ser. No. 512,833

Int. Cl.[6] H01L *29/76;29/74;31/062;31/113*

U.S. Cl. 257—331 **18 Claims**



10. A vertical channel integrated circuit comprising:

a semiconductor substrate having a first doped layer of a first conductivity type;

a buried source/drain region having a second conductivity type opposite said first conductivity type overlying said first doped layer;

a second doped layer of said second conductivity type overlying said buried source/drain region;

a well region of said first conductivity type within a portion of said second doped layer;

a layer of silicon oxide overlying said well region;

trenches having walls extending through said well region to said buried source/drain region;

a gate insulator layer coveting said walls of said trenches

polysilicon gate electrodes within said trenches, said polysilicon gate electrodes separated from said buried source/drain region by said gate insulator layer;

source/drain regions of said second conductivity type within said well region;

conducting regions extending through said silicon oxide layer and contacting said source/drain regions of said second conductivity type within said well region; and

a conductor-filled trench extending to electrically contact said buried source/drain region.

5,627,394

LD-MOS TRANSISTOR

Chi-Sung Chang, Tempe, and Judith L. Sutor, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 12, 1996, Ser. No. 599,898

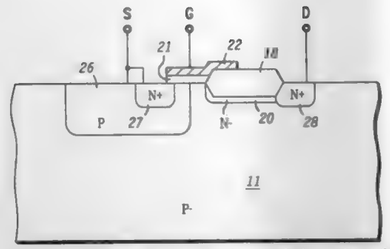
Claims priority, application Japan, Mar. 6, 1995, 7-045416

Int. Cl.[6] H01L *29/76;23/58*

U.S. Cl. 257—335 **3 Claims**

1. An LD-MOS transistor comprising:

a source region of a second conductivity type formed on a surface of a silicon semiconductor substrate of a first conductivity type, the polarity of said first and second conductivity



types being opposite to each other; a drain region of said second conductivity type, forming a channel region between said source region and said drain region; and a conductive gate layer overlying via a gate insulation layer on said channel region, and further comprising:

a body region of said first conductivity type surrounding said source region and having a dopant concentration higher than that of said silicon semiconductor substrate;

an extended drain region of said second conductivity type, formed in said channel region toward said source region, said extended drain region being in contact with said drain region wherein a portion of the first conductivity type substrate separates the extended drain region from the body region; and

an additional insulation layer formed between said extended drain region and said conductive gate layer, said additional insulation layer being thicker than said conductive gate layer, wherein said extended drain region is doped with phosphorus.

5,627,395

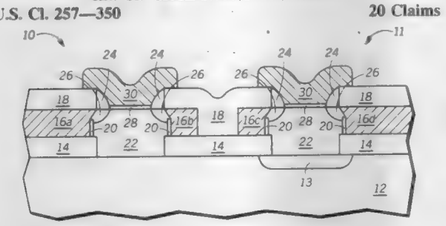
VERTICAL TRANSISTOR STRUCTURE

Keith E. Witek; Jon T. Fitch, and Carlos A. Mazuré, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 316,754, Oct. 3, 1994, Pat. No. 5,527,723, which is a division of Ser. No. 215,888, Mar. 15, 1994, Pat. No. 5,393,681, which is a division of Ser. No. 940,026, Sep. 2, 1992, Pat. No. 5,272,257. This application Nov. 2, 1995, Ser. No. 552,180

Int. Cl.[6] H01L *27/01;27/12;31/0392*

U.S. Cl. 257—350 **20 Claims**



1. A vertically raised transistor comprising:

a substrate having a surface;

a first dielectric layer overlying the substrate;

a doped layer overlying the first dielectric layer, the doped layer being doped with dopant atoms;

a second dielectric layer overlying the doped layer;

an opening formed through a portion of the first dielectric layer, a portion of the doped layer, and a portion of the second dielectric layer which exposes the surface of the substrate and forms a sidewall of the doped layer;

a conductive plug region formed within the opening, the conductive plug region being laterally adjacent the doped layer and electrically coupled to the doped layer by a sidewall connection;

a first current electrode and a second current electrode formed in the conductive plug region and in electrical contact with a portion of the doped layer, the first and second current electrodes being physically separated by a channel region; and

a control electrode overlying the channel region.

5,627,396

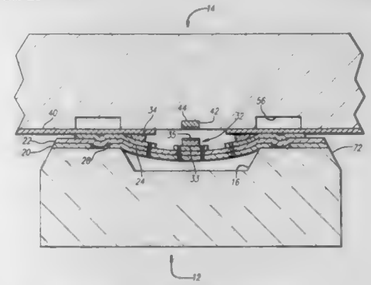
MICROMACHINED RELAY AND METHOD OF FORMING THE RELAY

Christopher D. James, Carlsbad, and Henry S. Katzenstein, Arroyo Grande, both of Calif., assignors to Brooktree Corporation, San Diego, Calif.

Continuation of Ser. No. 12,055, Feb. 1, 1993, Pat. No. 5,479,042. This application May 18, 1995, Ser. No. 443,456

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—415 **43 Claims**



15. In combination in a micromachined relay,

a substrate made from a semiconductor material having properties of being anisotropically etched,

a cavity disposed in the substrate and formed from an anisotropic etching of the substrate and having opposite ends,

a bridging member supported on the substrate at the opposite ends of the cavity, the bridging member being provided with at least one hole,

the cavity being formed by the passage of etching material through the hole in the bridging member, and

an electrical contact disposed on the bridging member at an intermediate position between the opposite edges of the cavity,

the bridging member having a composition different from that of the substrate.

5,627,397

SEMICONDUCTOR ACCELERATION SENSOR WITH SOURCE AND DRAIN REGIONS

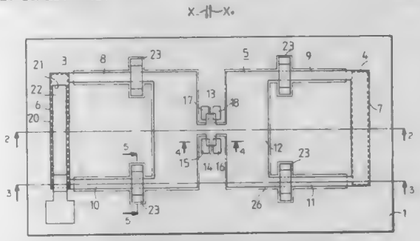
Kazuhiko Kano, Obu; Yukihiro Takeuchi, Seto; Takamoto Watanabe, Nagoya; Kenichi Ao, Tokai; Masakazu Kanosue, Nagoya; Hirofumi Uenoyama, Anjo, and Kenichi Nara, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 13, 1995, Ser. No. 402,949

Claims priority, application Japan, Mar. 15, 1994, 6-044354; Feb. 10, 1995, 7-023162

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—417 **14 Claims**



1. A semiconductor acceleration sensor, comprising:

a semiconductor substrate;

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a movable member supported in a movable state above said semiconductor substrate with a predetermined gap interposed therebetween, a predetermined electrical potential being applied to said movable member with respect to said semiconductor substrate;

a first pair of source and drain diffusion regions disposed on a surface of said semiconductor substrate in correspondence to said movable member; and

a second pair of source and drain diffusion regions disposed on a surface of said semiconductor substrate in correspondence to said movable member, said second pair of source and drain diffusion regions being disposed proximate to said first pair of source and drain diffusion regions,

wherein a first current flowing through said first pair of source and drain diffusion regions and a second current flowing through said second pair of source and drain diffusion regions change in a mutually reverse phase if said movable member is subjected to an acceleration and is displaced.

5,627,398

HALL-EFFECT SENSOR INCORPORATED IN A CMOS INTEGRATED CIRCUIT

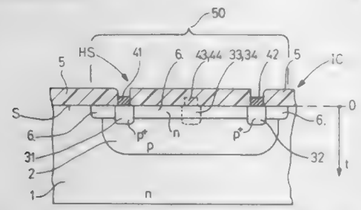
Silvo Zlebir, Cerklje, and Andrej Belič , Kranj, both of Slovenia, assignors to Iskra Stevci—Industrija Merilne in Upravljalne Tehnike Kranj, D.O.O., Kranj, Slovenia

Continuation of Ser. No. 851,527, Mar. 16, 1992. This application Feb. 2, 1994, Ser. No. 190,768

Claims priority, application Slovenia, Mar. 18, 1991, P-476/91

Int. Cl.[6] H01L *29/82;43/00*

U.S. Cl. 257—427 **1 Claim**



1. In a combination of a CMOS integrated circuit and a Hall-effect sensor incorporated in the CMOS integrated circuit, a substrate of a first electrical conductivity type, a well of a second electrical conductivity type formed on one surface of said substrate, first and second heavily doped regions in the well and separated from each other on a first axis and having the second electrical conductivity type, third and fourth heavily doped regions in the well and separated from each other on a second axis and having the second electrical conductivity type, said second axis being perpendicular to said first axis, first and second metal electric supply contacts of the Hall-effect sensor over said first and second heavily doped regions, respectively, and first and second metal electric pick-up contacts of the Hall-effect sensor over said third and fourth heavily doped regions, respectively, said first metal electric pick-up contact of the Hall-effect sensor being connected to a virtual ground of the Hall-effect sensor supplying circuit, the improvement comprising:

a field oxide layer having a thickness approximately between 0.8 μm and 1.0 μm on an upper plane of the substrate and overlying said well of the second electrical conductivity type everywhere except in locations over said electric supply contacts and said electric pick-up contacts; and

a layer of conductive polysilicon formed over the field oxide layer and connected to a ground of the integrated circuit.

5,627,399

SEMICONDUCTOR DEVICE

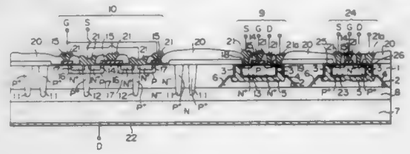
Tetsuo Fujii, Toyohashi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 345,818, Nov. 21, 1994, abandoned, which is a division of Ser. No. 213,450, Mar. 15, 1994, Pat. No. 5,403,769, which is a division of Ser. No. 829,591, Feb. 3, 1992, Pat. No. 5,306,942, which is a continuation-in-part of Ser. No. 597,698, Oct. 10, 1990, abandoned. This application Nov. 28, 1995, Ser. No. 565,052

Claims priority, application Japan, Oct. 11, 1989, 1-265453; Jan. 19, 1990, 2-11584

Int. Cl.[6] H01L *29/00;27/01;27/12;31/0392*

U.S. Cl. 257—501 **4 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

a semiconductor layer disposed on said semiconductor substrate;

a first element formed in a first region of said semiconductor layer, an outer surface of said first element including side walls and a bottom;

a second element formed in a second region of said semiconductor layer, an outer surface of said second element including side walls and a bottom; and

first and second insulating layers surrounding said outer surface of said first element and said second element respectively, to electrically insulate and separate said first element from said second element and from said semiconductor substrate;

a first electrical shield layer disposed between said first insulating layer and said first element, said first electrical shield layer surrounding said outer surface of said first element, said first electrical shield layer being biasable to a first reference electric potential applied thereto, said first electrical shield layer shielding said first element from an electrical fluctuation of said semiconductor substrate caused by an element other than said first element;

a second electrical shield layer disposed between said second insulating layer and said second element, said second electrical shield layer being biasable to a second reference electric potential applied thereto;

a first electrode connection portion of said first electrical shield layer formed by an enlarged portion of said first electrical shield layer;

a second electrode connection portion of said second electrical shield layer formed by an enlarged portion of said second electrical shield layer;

a first electrode, connected to said first electrode connection portion of said first electrical shield layer, for receiving and applying said first reference electric potential to said first electrical shield layer; and

a second electrode, connected to said second electrode connection portion of said second electrical shield layer, for receiving and applying said second reference electric potential to said second electrical shield layer;

whereby said first electrical shield layer and said second electrical shield layer are capable of being biased simultaneously at different reference electric potentials.

5,627,400

SEMICONDUCTOR MEMORY DEVICE

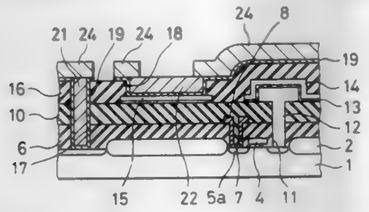
Hiroki Koga, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 31, 1995, Ser. No. 509,235

Claims priority, application Japan, Aug. 1, 1994, 6-197160

Int. Cl.[6] H01L *27/10;29/00;23/48*

U.S. Cl. 257—529 **26 Claims**



1. A semiconductor memory device wherein a defective bit cell can be substituted with a redundant bit cell by breaking a fuse, said semiconductor memory device comprising:

an upper insulative layer having an upper and a lower surface;

a plug formed in a contact hole formed through said upper insulative layer, said plug comprising a metal having a high melting point;

a fuse formed in a channel formed in the upper surface of said upper insulative layer, said fuse comprising the same material as said plug; and

an interconnection layer formed on said upper insulative layer and connected to said plug and opposite ends of said fuse.

5,627,401

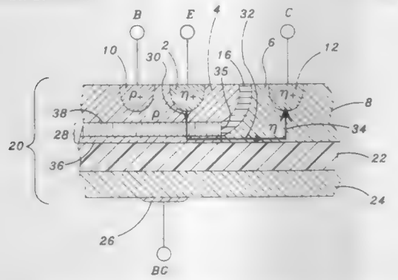
BIPOLAR TRANSISTOR OPERATING METHOD WITH BASE CHARGE CONTROLLED BY BACK GATE BIAS

Kevin J. Yallup, 81 Monaleen Park, Limerick, Ireland

Continuation of Ser. No. 307,296, Sep. 14, 1994, abandoned, which is a division of Ser. No. 88,173, Jul. 7, 1993, Pat. No. 5,448,104. This application Nov. 15, 1995, Ser. No. 559,504

Int. Cl.[6] H01L *27/01;27/12;29/00*

U.S. Cl. 257—557 **2 Claims**



1. A method of operating a bipolar transistor that includes an emitter region, a collector region spaced laterally from the emitter region, and a base region that underlies the emitter region and extends between the emitter and collector regions with a boundary between the base and collector regions that is laterally offset from the emitter region, comprising:

applying operating signals to said emitter, collector and base regions to establish a base-collector depletion region, and an emitter-collector current flow, and

applying, through a nonconductive substrate which directly underlies both said base and collector regions, a back gate bias voltage to the underside of said base region of a polarity and magnitude to repel base dopant, establish an inversion layer in the base region adjacent its underside which effectively functions as an extension of the collector region, and establish a depletion region in the base region as a continuation of said base-collector depletion region immediately above said inversion layer, so that the transistor's emitter-collector current flows through said continuation of the base-collector depletion region and through said inversion layer and is substantially independent of the transistor's collector-base voltage over a substantial collector-base voltage operating range.

5,627,402

VARIABLE-CAPACITANCE DEVICE AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING SUCH VARIABLE-CAPACITANCE DEVICE

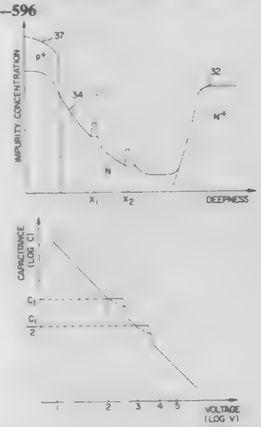
Hisashi Takemura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 341,141, Nov. 16, 1994, Pat. No. 5,506,442. This application Aug. 29, 1995, Ser. No. 520,738

Claims priority, application Japan, Nov. 25, 1993, 5-295428

Int. Cl.[6] H01L *29/93;21/90*

U.S. Cl. 257—596 **2 Claims**



1. A process of preparing a variable-capacitance device on a semiconductor substrate comprising the steps of:

disposing a first-conductivity-type region on said semiconductor substrate;

disposing a second-conductivity-type region on said first-conductivity-type region;

forming a junction between said first and second-conductivity-type regions, said first-conductivity-type region and second-conductivity-type region having a capacitance variable in response to a change in voltage applied thereto;

growing epitaxially said first-conductivity-type region having an impurity concentration which varies perpendicularly in a depth direction from a junction surface of the first-conductivity-type region and the second-conductivity-type region, and the first-conductivity-type region such that a region where the capacitance varies to a large extent in response to the change in applied voltage and a region where the capacitance remains substantially constant in response to the change in applied voltage are alternately repeated;

forming said first-conductivity-type region at a predetermined growth temperature ranging from 500° C. to 700° C.;

wherein, in said growing step, said first conductivity-type region is grown to have an impurity concentration which decreases continuously in a perpendicularly depth direction from a junction surface of the first-conductivity-type region and the second-conductivity-type region, and one of increases and remains constant locally, at and around at least one deepness from the junction surface of the first-conductivity-type region.

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5,627,403

ADHESION BETWEEN DIELECTRIC LAYERS IN AN INTEGRATED CIRCUIT

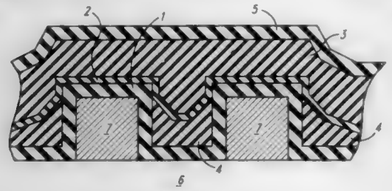
Maurizio Bacchetta, Cologno Monzese; Laura Bacci, Milan, and Luca Zanotti, Crema, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Division of Ser. No. 235,173, Apr. 28, 1994. This application Jun. 6, 1995, Ser. No. 473,552

Claims priority, application European Pat. Off., May 31, 1993, 93830243

Int. Cl.[6] H01L *21/471;23/485*

U.S. Cl. 257—639 12 Claims



1. An integrated circuit, comprising:
a substrate of a semiconductor material;
a first patterned conductor layer formed over said substrate;
a dielectric; and
a second upper patterned conductor layer;
wherein said dielectric comprises:
a first layer of a first silicon nitride compound;
a thin silicon dioxide layer in contact with said first layer of said first silicon nitride compound at least in a region; and
a second layer of a second silicon nitride compound overlaying said first layer of said first silicon nitride compound at least in said region and in contact with said thin silicon dioxide layer at least in said region;
the thickness of said thin silicon dioxide being less than both the thicknesses of said first and second layers of said first and second silicon nitride compounds
wherein the thickness of said thin silicon dioxide layer is in the range between 5 and 50 nm.

5,627,404

SEMICONDUCTOR DEVICE PROVIDED ON AN ORGANIC RESIN SUBSTRATE

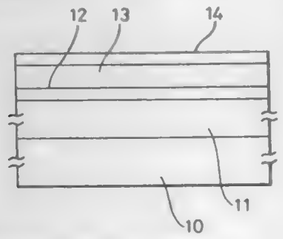
Akemi Takenouchi; Makoto Hosokawa; Yasuyuki Arai, and Setsuo Nakajima, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 19,849, Feb. 19, 1993, Pat. No. 5,427,961. This application Feb. 13, 1995, Ser. No. 387,232

Claims priority, application Japan, Feb. 21, 1992, 4-072491

Int. Cl.[6] H01L *23/58;35/24*

U.S. Cl. 257—642 20 Claims



1. A semiconductor device comprising:
an organic resin substrate;
an organic resin coating provided on said substrate for preventing the formation of oligomers from said substrate; and
a semiconductor provided on said organic resin coating.

5,627,405

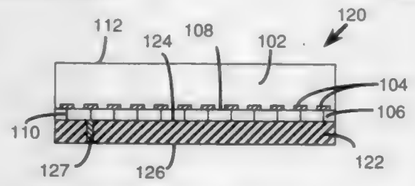
INTEGRATED CIRCUIT ASSEMBLY INCORPORATING AN ANISOTROPIC ELECCTRICALLY CONDUCTIVE LAYER

Satya Chillara, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 17, 1995, Ser. No. 503,302

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—668 9 Claims



1. An integrated circuit assembly, comprising:
(a) a dielectric substrate having first and second surfaces and a plurality of electrically conductive traces, wherein first terminal trace portions of said plurality of electrically conductive traces are arranged on the first surface of the dielectric substrate and second terminal trace portions of said plurality of electrically conductive traces are arranged on the second surface of the dielectric substrate, the first terminal trace portions being electrically connected to the second terminal trace portions of said electrically conductive traces, the second surface further including an array of contacts that are electrically connected to the second terminal trace portions;
(b) an integrated circuit chip having a first surface having a plurality of input/output terminals thereon, the integrated circuit chip having a footprint that is substantially the same size as said dielectric substrate; and
(c) an anisotropic electrically conductive layer interposed between said first surface of the dielectric substrate and said first surface of the integrated circuit chip for electrically connecting respective traces of said plurality of electrically conductive traces of said dielectric substrate with respective terminals of said plurality of input/output terminals of said integrated circuit chip, wherein said anisotropic electrically conductive layer provides a plurality of electrically conductive paths formed by a plurality of electrically conductive particles randomly dispersed within said anisotropic electrically conductive layer.

5,627,406

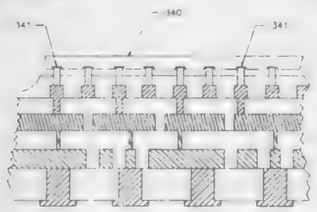
INVERTED CHIP BONDED MODULE WITH HIGH PACKAGING EFFICIENCY

Benedict G. Pace, 2200 Smithtown Ave., Ronkonkoma, N.Y. 11779

Continuation of Ser. No. 361,931, Dec. 22, 1994, abandoned. This application Aug. 12, 1996, Ser. No. 689,388

Int. Cl.[6] H01L *23/48;23/04;23/053;23/06*

U.S. Cl. 257—700 26 Claims



1. An electronic module for packaging at least one semiconductor device comprising:
a rigid, planar, inorganic, insulating substrate;

the substrate having thereon a metallic, conductive pattern of one or more conductive pattern layers;
the substrate having metal contacts, the contacts being connected to the conductive pattern, and being capable of making electrical connection to another electronic package or a higher level of electronic packaging;
the conductive pattern layer(s) being separated by insulating layer(s);
the conductive pattern layers being interconnected by metal filled vias in the insulating layers;
an outermost, conductive pattern layer having metal protuberances less than 150 μm (6 mils) in diameter protruding 5–80 μm (0.2–3 mils) above the surface of the outermost layer, and the metal protuberances being a soft, ductile metal capable of being metallurgically bonded to input/output pads of the semiconductor device(s), and
the metal protuberances being capable of providing input/output connections for the semiconductor devices through the connections to the conductive pattern of the electronic packaging module and through the metal contacts to another electronic package or electronic assembly.

5,627,407

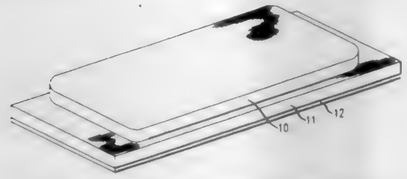
ELECTRONIC PACKAGE WITH REDUCED BENDING STRESS

Ephraim Suhir, Randolph, and John D. Weld, Succasunna, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 28, 1995, Ser. No. 430,664

Int. Cl.[6] H01L *23/053*

U.S. Cl. 257—701 9 Claims



1. In a package for electronic components comprising a body of molded plastic on one side of insulating substrate, said body of molded plastic having a molding temperature and containing one or more electronic components, and said insulating substrate subject to bending stress caused by thermal expansion mismatch with said molded plastic, the improvement wherein:
said substrate is provided with a surrogate layer on the side opposite said molded plastic body, said surrogate layer having a thickness less than 2 mm, and a coefficient of thermal expansion greater than 40×10^{-6}/°C. for reducing the bending stress on said substrate at a temperature below said molding temperature.

5,627,408

WIRE BONDING STRUCTURE FOR SEMICONDUCTOR DEVICES

Megumi Kusumi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

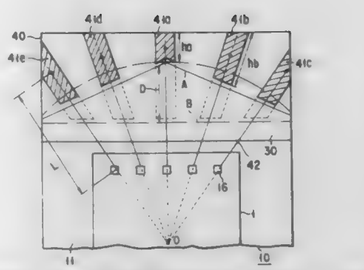
Filed May 18, 1995, Ser. No. 444,039

Claims priority, application Japan, May 19, 1994, 6-129640

Int. Cl.[6] H01L *23/053;23/06;23/48*

U.S. Cl. 257—784 6 Claims

1. A semiconductor device comprising:
a semiconductor substrate on which an integrated circuit is formed;
a mounting portion having corners and having a cavity in which said semiconductor substrate is positioned;



a plurality of inner leads including signal leads and power supply leads arranged on a peripheral region of a surface of said mounting portion, with their ends opposed to said semiconductor substrate;
a plurality of superposed layers partially overlapped with one another and formed along the periphery of said mounting portion, said layers having surfaces on which said inner leads are arranged, and an opening formed in one of said superposed layers which supports said signal leads, the opening having more corners than said mounting portion; and
bonding wires for connecting said ends of said inner leads to bonding pads formed on said semiconductor substrate;
wherein lengths of the bonding wires for connecting said signal leads, arranged on said one of the superposed layers, to said bonding pads are substantially equal to each other.

5,627,409

METER MODULE ASSEMBLY

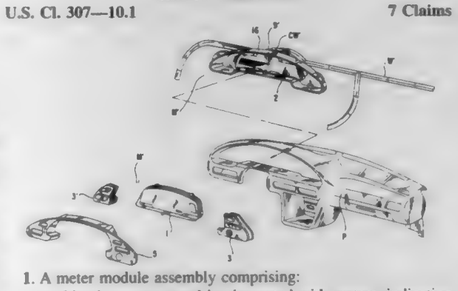
Keizo Nishitani, Susono, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 397,496

Claims priority, application Japan, Mar. 28, 1994, 6-057072

Int. Cl.[6] H02B *1/04*

U.S. Cl. 307—10.1 7 Claims



1. A meter module assembly comprising:
a combination meter panel implemented with meters, indicating lamps and a drive circuit therefor and including connectors;
an electric junction box means for integrating functional circuits to distribute and control power sources and input and output signals for vehicle-mounted electric equipment including said meters and said indicating lamps, wherein said electric junction box means includes a circuit base board having holes therein and connectors attached thereto;
at least one switch means for integrating switches of said vehicle-mounted electric equipment, wherein each said switch means includes operational switches and connectors;
a finish panel provided in front of said combination meter panel, wherein said finish panel includes indication screens for said operational switches; and
wherein said combination meter panel, said electric junction box means, and said switch means are mounted and integrally united in a rear frame attached to an instrument panel, said switch means having an external form guided along an inner surface of said rear frame to position in said rear frame, said connectors provided to said combination meter panel and said

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switch means coupled with said connectors in said electric junction box means, said rear frame having an external form fitted into an open recess provided in said instrument panel.

5,627,410

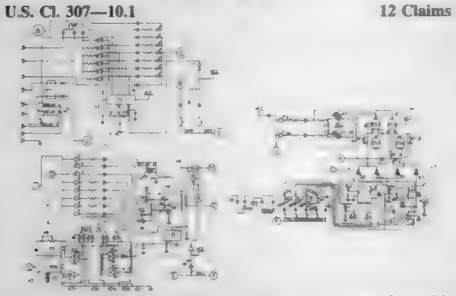
CONTROL CIRCUIT PUSH-CONTROL AND DISPLAY APPARATUS FOR MULTI-PURPOSE POWER LEISURE CAR

Lin Yu-Shu, 7F, No. 2-1, Lane 130, Shing-Yi Road, Pei Tou, Taipei, Taiwan

Continuation-in-part of Ser. No. 103,929, Aug. 6, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 523,170

Int. Cl.[6] A63F *9/14*

U.S. Cl. 307—10.1 **12 Claims**



1. A control circuit push-control and display apparatus for multi-purpose power leisure car, comprising:

a push-control display panel mounted on said leisure car includes a plurality of push button switches;

control means including a turning left/right display control circuit, a obstacle display control circuit, a headlamp display control circuit, a six-speed shift display control circuit, a warning display circuit and a brake function display circuit coupled to said push-control display panel and to a output means and responsive to a plurality of a user push-control commands for controlling said output means; and

said output means coupled to said control means for displaying the driving states of said leisure car and offering a warning while said leisure car has a obstacle condition or a shortage of battery.

5,627,411

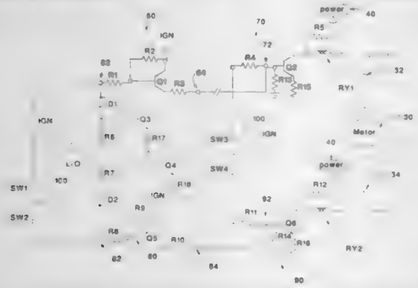
SWITCHING CIRCUIT WITH LOCKOUT FEATURE

Jeffrey Bochenek, Dearborn, Mich., assignor to Atoma International, Inc., Farmington Hills, Mich.

Filed Sep. 19, 1995, Ser. No. 530,496

Int. Cl.[6] H02P *1/22*

U.S. Cl. 307—10.1 **20 Claims**



1. An electrical circuit for selectively activating a bi-directional motor in a first or a second direction comprising:

a power source;

a bi-directional motor having a first and a second motor terminal;

a lockout switch switchable between an ON and an OFF position, said lockout switch outputting a lockout signal reflective of said lockout switch position;

a first primary switch switchable between an ON and an OFF position, said first primary switch outputting a first primary signal reflective of said first primary switch position;

a second primary switch switchable between an ON and an OFF position, said second primary switch outputting a second primary signal reflective of said second primary switch position;

a first auxiliary switch switchable between an ON and an OFF position, said first auxiliary switch outputting a first auxiliary signal reflective of said first auxiliary switch position;

a second auxiliary switch switchable between an ON and an OFF position, said second auxiliary switch outputting a second auxiliary signal reflective of said second auxiliary switch position;

a primary circuit having means for supplying a first tri-state signal having a level responsive to said lockout signal and said first primary signal, and a second tri-state signal having a level responsive to said lockout signal and said second primary signal;

an auxiliary circuit having means for supplying a first switching signal having a level responsive to said first auxiliary signal and said first tri-state signal, and a second switching signal having a level responsive to said second auxiliary signal and said second tri-state signal;

a first power switch for connecting said power source to said first motor terminal in response to said first switching signal;

a second power switch for connecting said power source to said second motor terminal in response to said second switching signal;

wherein said bi-directional motor is operated in said first direction by switching ON one of said first primary switch and said first auxiliary switch and said bi-directional motor is operated in said second direction by switching ON one of said second primary switch and said second auxiliary switch, said first and second auxiliary switches causing said motor to operate only when said lockout switch is OFF.

5,627,412

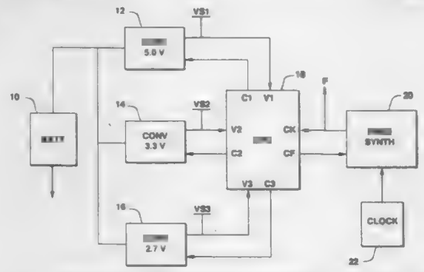
DYNAMICALLY SWITCHABLE POWER SUPPLY

Paul Beard, Milpitas, Calif., assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 399,060, Mar. 8, 1995, which is a continuation-in-part of Ser. No. 335,209, Nov. 7, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,812

Int. Cl.[6] H02J *1/00;3/00;1/10;* **H02M** *7/00*

U.S. Cl. 307—82 **24 Claims**



1. A dynamically switchable power supply in an electronic system having varying power requirements, said dynamically switchable power supply comprising:

(a) a central processing unit, said central processing unit capable of operating at a plurality of voltages;

(b) a plurality of voltage converters, said plurality of voltage converters supplying a plurality of operational voltages to said central processing system and to the electronic system;

(c) a frequency synthesizer, said frequency synthesizer providing a timing control signal of multiple variable frequencies to said central processing unit and to the electronic system; and

(d) said central processing unit capable of dynamically switching the supply of operational voltages from said voltage converters and the timing control signal of said frequency synthesizer supplied to said central processing unit and to the electronic system wherein operational voltages and the timing control signals are selected according to the varying power requirements of the electronic system such that power consumption of the electronic system is minimized.

5,627,413

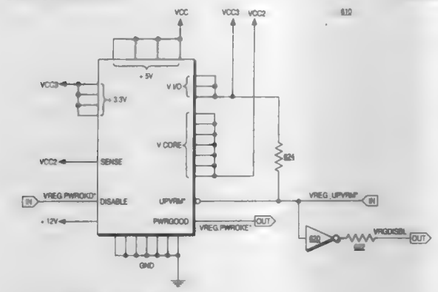
VOLTAGE REGULATOR DISABLE CIRCUIT

Taha Mughir, Portland; Tom Rampone, Hillsboro; Dave Landolf, Beaverton, and Hal Massie, Westlynn, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 17, 1995, Ser. No. 423,978

Int. Cl.[6] H02J *3/14*

U.S. Cl. 307—86 **9 Claims**



1. A system comprising:

an on-board voltage regulator circuit;

a receptacle, coupled to said on-board voltage regulator circuit, for receiving an upgrade voltage regulator module; and

a disable circuit for disabling an output stage of said on-board voltage regulator circuit, said disable circuit being coupled to said on-board voltage regulator circuit and said receptacle, said disable circuit being activated upon insertion of said upgrade voltage regulator module.

5,627,414

AUTOMATIC MARINE CATHODIC PROTECTION SYSTEM USING GALVANIC ANODES

Fordyce M. Brown, 2485 Indigo Pl., Clearwater, Fla. 34623, and Robert P. Mason, 7739 Quaker Neck Rd., Bozman, Md. 21612-0047, assignors to Fordyce M. Brown, Clear water, Fla., and Robert P. Mason, Bozman, Md.

Filed Feb. 14, 1995, Ser. No. 388,572

Int. Cl.[6] C23F *13/02*

U.S. Cl. 307—95 **21 Claims**

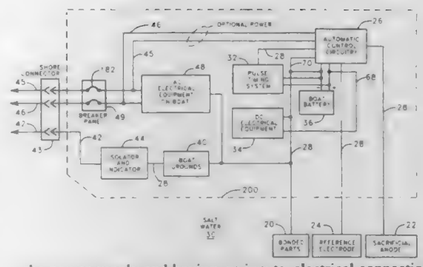
1. In a cathodic protection system protecting a metal part of a marine structure having an electrical ground, the part immersed in an electrolyte, the system comprising a sacrificial anode immersed in the electrolyte, an improvement comprising:

a metal reference electrode continually immersed in the electrolyte;

a controller powered by an electrical power supply, the controller switching from an active mode having a first predetermined duration to a passive mode having a second predetermined duration, the controller powered in the active mode by the power supply and having, as inputs, electrical connections to the electrical ground and to the reference electrode, the controller having an electrical output when in the active mode, the controller having no electrical output when in the passive mode; and

a variable resistor electrically connected intermediate the sacrificial anode and the protected metal part;

wherein the output of the controller controls the voltage between the reference electrode and the protected part by controlling the electrical resistance of the variable resistor.



5,627,415

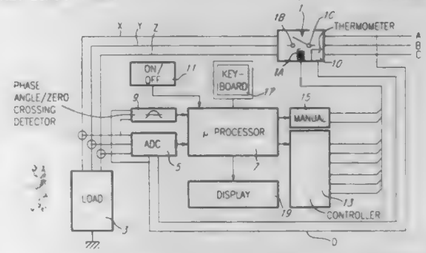
SYSTEM AND METHOD FOR OPENING/CLOSING CIRCUIT BREAKERS

Claude Charpentier, Verdun, and Raymond Rajotte, St. Leonard, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Continuation-in-part of Ser. No. 34,397, Mar. 18, 1993, Pat. No. 5,430,599. This application Jul. 5, 1995, Ser. No. 498,049

Int. Cl.[6] H01H *9/00*

U.S. Cl. 307—116 **12 Claims**



1. A system for timing the opening and closing of a switching arrangement used in high power electrical transmission systems which transmit at least one phase of an AC power signal (A,B,C) comprising:

phase angle detector means for detecting a phase of said power signal and for providing a phase indication signal;

sensing means for sensing a temperature and controlling operation of said switching arrangement and producing a temperature signal; and

control means connected to said phase detector means, and said sensing means for opening and closing said switching arrangement;

switch means for providing an OPEN/CLOSE initiating signal for initiating the opening/closing of said switch arrangement; wherein

said sensing means sense only ambient temperature;

said control means are connected to said switch means and generate a switching arrangement opening and closing signal in response to said initiating signal timed as a function of said temperature signal and said phase indication signal;

said control means include means for calculating t_{mn2} for different temperatures according to the formula:

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$$t_{mc2}=t_{mc1}-a_c(T_2-T_1)$$

where

a_c is a value which is indicative of the sensitivity of the switching arrangement to temperature and is given by a manufacturer of the switching arrangement

T_2 is the ambient temperature

T_1 is a standard temperature

t_{mc1} is a precalibrated switch opening time at said standard temperature

t_{mc2} is a switch opening time at temperature T_{mc2}; and

said control means include means for calculating t_{mc} for different temperatures according to the formula:

$$t_{mc2}=t_{mc1}a_c(T_2-T_1)$$

where

a_c=a value which is indicative of the sensitivity of the switching arrangement to temperature and is given by a manufacturer of the switching arrangement

T_2=ambient temperature

T_1=a standard temperature

t_{mc1}=a precalibrated switch closing time at said standard temperature

t_{mc2}=switch closing time at temperature T_2.

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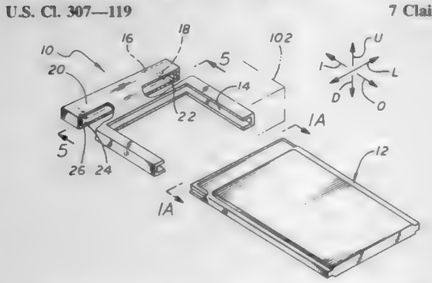
MULTI-VOLTAGE IC CARD HOST

Edward A. Kantner, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Jul. 21, 1995, Ser. No. 505,609

Int. Cl.° H01H *35/00*

U.S. Cl. 307—119 **7 Claims**



1. An IC card-receiving host for connecting a received IC card to an electronic device that has circuitry which can be switched to operate at first or second voltages, wherein said host has a card-receiving slot with first and second sides, wherein said slot can receive first and second IC cards where said first card is designed to operate at said first voltage and said second card is designed to operate at said second voltage, and wherein said cards have differently keyed first sides (**52**A and **52**B) that each indicates the designed voltage for that card, said keyed first sides of said cards constructed so they both have corresponding discrimination locations and said second card has a discrimination key portion (**66**B) lying at its discriminating location but said first card does not have a key portion at its discrimination location, characterized by:

a switch (**82**) located at said card host first side, said switch having an actuator (**80**) positioned to be operated by said discrimination key portion (**66**B) of said second card and to not be operated by said first card, and said switch being connected to said circuitry which can be switched.

5,627,417

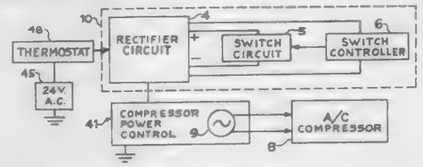
COMPRESSOR MINIMUM OFF-TIME SWITCH FOR SERIES CONNECTION WITH DELAY-ON-BREAK FEATURE

Roger Clarke, Corydon, Ky., assignor to Diversified Electronics, Inc., Evansville, Ind.

Filed Nov. 4, 1993, Ser. No. 145,511

Int. Cl.° H01H *7/00*

U.S. Cl. 307—141 **17 Claims**



1. Compressor minimum off-time switch apparatus for series connection in one side of the electrical connection from a thermostat to an air conditioner compressor actuator circuit with delay-on-break feature having no battery supplemental power source comprising:

a) a full-wave rectifier circuit having a first input terminal, a second input terminal, a first output terminal, and a second output terminal, said first input terminal and said second input terminal serving as terminals for series connection of said switch apparatus in one side of said electrical connection from a thermostat to an air conditioner compressor actuator circuit,

b) an electrical resistor of from 100 to 5000 ohms connected between said first input terminal and said second input terminal,

c) a thyristor with an anode and a cathode connected to pass current from said first to said second output terminal, said thyristor having a gate electrode for switching said thyristor "on" with a high conductivity in response to a control signal applied to said gate electrode,

d) a control circuit connected to said full wave rectifier circuit and to be responsive to an electrical potential between said first input terminal and said second input terminal, said control circuit including means for generating a control signal with a predetermined time delay relative to changes of said electrical potential, said full-wave rectifier circuit supplying sufficient current to said control circuit through said first output terminal and said second output terminal as necessary to eliminate the need for a battery power source,

e) an electrical connection for applying said control signal to said gate electrode, and

f) means for providing holding current to said thyristor to maintain it in "on" condition,

whereby a high electrical potential produced by high current through said resistor will cause said thyristor to be gated on only if there has been a previous time delay of predetermined length following a drop in said electrical potential to cause said control circuit to transmit a control signal to said gate electrode.

5,627,418

COMBINED LINEAR-ROTARY STEPPING MOTOR

Hirobumi Satomi, and Takao Iwasa, both of Kashiwa, Japan, assignors to Oriental Motor Co., Ltd., Tokyo, Japan

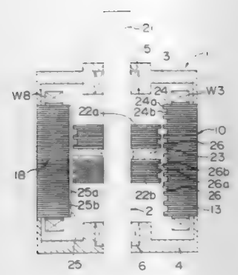
Filed Nov. 17, 1994, Ser. No. 341,099

Claims priority, application Japan, Nov. 19, 1993, 5-290176; Aug. 23, 1994, 6-198082

Int. Cl.° H02K *41/00*

U.S. Cl. 310—12 **11 Claims**

1. A combined linear-rotary stepping motor comprising a stator including a stator iron core having a plurality of salient poles of two kinds disposed radially inward, said two kinds being alternately arranged in a circumferential direction, said salient poles of one kind having a plurality of first stator teeth formed in an inner peripheral surface thereof in the shaft direction, said salient poles



of the other kind having a plurality of second stator teeth formed in an inner peripheral surface thereof in the circumferential direction and a mover including a mover iron core supported within said stator movably in the shaft direction and rotatably in the rotation direction and having a plurality of mover teeth formed in an outer peripheral surface thereof at an equal pitch in the shaft direction and the circumferential direction in opposing relation to said first and second stator teeth,

said stator iron core being defined by laminated stator iron plates including said salient poles constituting tooth tops of said teeth and said salient poles constituting tooth bottoms of said teeth, which are disposed in a predetermined relation, successive ones of said stator iron plates being rotationally displaced from one another by a predetermined angle determined by the number of phases, the number of salient poles and the predetermined relation so that said first stator teeth are formed in the inner peripheral surface of said salient pole in the shaft direction.

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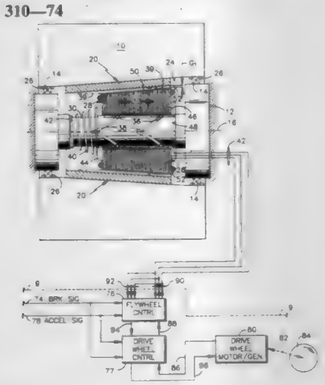
SELF-ADJUSTING AIRGAP MOTOR/GENERATOR FOR FLYWHEEL SYSTEM

Robin M. Miller, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 31, 1994, Ser. No. 220,778

Int. Cl.° H02K *7/02*

U.S. Cl. 310—74 **5 Claims**



1. A flywheel system, comprising:

a first shaft having a longitudinal axis; flywheel means, comprising:

a flywheel capable of rotating about said shaft having a flywheel inner diameter;

a plurality of permanent magnets disposed in said flywheel inner diameter; and

said flywheel means having an inner diameter which is tapered:

at least one bearing which facilitates said rotating of said flywheel about said first shaft:

a second shaft having substantially the same longitudinal axis as said first shaft:

a stator, disposed on said second shaft, having a stator outer diameter disposed at least partially within said inner diameter of said flywheel means, which couples electromagnetic energy to and from said flywheel means and which moves axially along said longitudinal axis;

said stator outer diameter and said inner diameter of said flywheel means having shapes that create an adjustable gap between said stator and said flywheel means as said stator moves axially along said longitudinal axis;

said stator being rotatable about said longitudinal axis;

self-engaging means for automatically decreasing said gap in response to electromagnetic torques exerted on said stator when said flywheel is being spun-up and spun-down, thereby increasing electromagnetic forces between said stator and said flywheel; and

self-disengaging means for automatically increasing said gap when said flywheel is freewheeling, thereby decreasing electromagnetic drag on said flywheel.

5,627,420

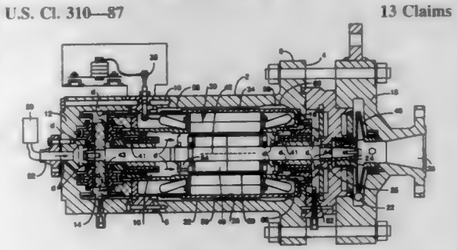
PUMP POWERED BY A CANNED ELECTRIC MOTOR HAVING A REMOVABLE STATOR CARTRIDGE

Eric D. Rinker, Penn Township; William J. Elzer; James C. Hahn, both of Plum Borough, and Linda O. Backo, Baldwin Borough, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1994, Ser. No. 357,004

Int. Cl.° H02K *7/06*

U.S. Cl. 310—87 **13 Claims**



1. A pump powered by a canned motor comprising:

a generally hollow pressure housing having a forward end and an aft end and a hollow portion;

an end cap removably attached to said aft end of said pressure housing and in communication with the hollow portion of said pressure housing;

a generally hollow pump housing secured to said forward end of said pressure housing, said pump housing having an inlet port and a discharge port and a hollow portion, with the hollow portion of said pump housing being in communication with the hollow portion of said pressure housing;

a generally annular, hermetically sealed stator cartridge removably positioned in the hollow portion of said pressure housing and removably secured to said pressure housing so that a generally annular gap is formed between an inner surface of said pressure housing and an outer surface of said stator cartridge, said annular gap being in communication with the hollow portion of said pump housing adjacent to said aft end

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of said pressure housing and said hollow portion of said pressure housing adjacent to said forward end of said pressure housing, said annular gap defining a flow path from said ends of said pressure housing;

energizing means for supplying electrical energy to said stator cartridge;

a generally annular, hermetically sealed rotor operatively positioned inside said annular stator cartridge so that electrical energization of said stator will cause rotation of said rotor, said rotor having an output shaft mounted for rotation therewith and extending into said hollow portion of pump housing;

an impeller mounted on said output shaft of said rotor for rotation therewith to create a flow of fluid from said inlet port to said outlet port of said pump housing; and

bearing means for rotatably supporting said rotor.

5,627,421

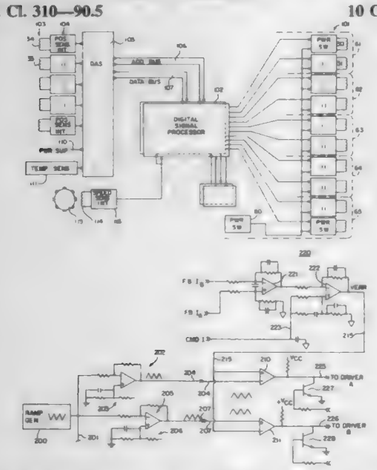
HIGH EFFICIENCY DRIVE CIRCUIT FOR AN ACTIVE MAGNETIC BEARING SYSTEM

Lance F. Miller, Rockford, and Kenneth J. Eakman, Oregon, both of Ill., assignors to Barber-Colman Company, Loves Park, Ill.

Filed Oct. 28, 1994, Ser. No. 331,306

Int. Cl.[6] H02K *7/09*

U.S. Cl. 310—90.5 **10 Claims**



1. A magnetic bearing system in which at least one magnetic bearing array supports a shaft;

the magnetic bearing array having pairs of opposed electromagnets arranged on diametrically opposite sides of the shaft, and a plurality of pairs at equiangular displacements about the shaft;

a shaft position sensor for the magnetic bearing array;

a drive circuit for the coil of each electromagnet for supplying current thereto from a DC power supply having positive and negative busses;

each drive circuit including a first switch connected between the positive bus and a positive side of the coil and a second switch connected between the negative bus and a negative side of the coil, and circulating diodes connected from the negative side of the coil to the positive bus and from the positive side of the coil to the negative bus; and

a control circuit for activating the drive circuits in a cyclical sequence, switched modulation means in the control circuit for modulating current flow to the coils in each electromagnet pair in dependence on signals received from the shaft position sensor, the control circuit interleaving the on and off intervals for the coils in the electromagnet pairs so that one coil of the pair is being switched off at about the same time as the other coil of the pair is being switched on, the circulating diodes being polled to return energy from a coil turning off to the power supply to make the returned energy available to the coil turning on thereby to reduce net current drain from the power supply.

5,627,422

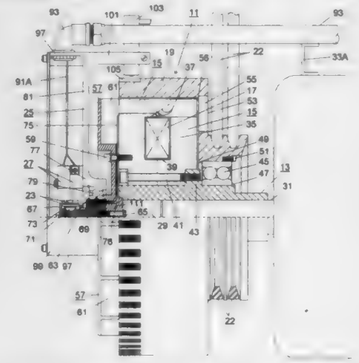
SHAFT MOUNTED EDDY CURRENT DRIVE

Paul D. Boggs, III, 8265 Lupine Cir., Ft. Worth, Tex. 76135, and Timothy J. Boggs, Fort Worth, Tex., assignors to Paul D. Boggs, III, Ft. Worth, Tex.

Continuation-in-part of Ser. No. 179,485, Jan. 7, 1994, Pat. No. 5,446,327, which is a continuation-in-part of Ser. No. 56,132, Apr. 30, 1993, Pat. No. 5,434,461, which is a continuation-in-part of Ser. No. 35,981, Mar. 18, 1993, Pat. No. 5,465,018. This application Dec. 30, 1994, Ser. No. 366,629

Int. Cl.[6] H02K *49/04*; **H02P** *15/00*

U.S. Cl. 310—105 **34 Claims**



1. A variable speed shaft mounted eddy-current drive, comprising:

a first rotatable member that comprises pole pieces and a drive coil;

a second rotatable member that comprises an armature;

one of said first rotatable member or said second rotatable member comprising a hub that is structured and arranged to be rotated by a motor, the other of said first rotatable member or said second rotatable member being structured and arranged to be coupled to a load;

said hub has first and second ends, said hub first end being structured and arranged to be mounted to said motor;

a shaft coupled to said first rotatable member, said shaft being located adjacent to said hub second end;

said pole pieces having plural interdigitated poles, said poles being separated from said armature by a gap;

said drive coil located adjacent to said pole pieces, said pole pieces providing a path for a magnetic field produced by said drive coil, wherein when electrical current is provided to said drive coil the other of said first rotatable member or said second rotatable member rotates due to coupling between said pole pieces and said armature;

a stationary electrical conductor;

a bearing having first and second raceways and rollers in contact with said first and second raceways, said first raceway being coupled with said drive coil so as to rotate in unison with said drive coil, said first raceway being electrically connected to said drive coil, said second raceway being coupled to said stationary conductor and being electrically connected to said stationary conductor, said first raceway rotating with respect to said second raceway, said first and second raceways being electrically coupled together by way of said rollers, said bearing first raceway being mounted to said shaft so as to rotate in unison therewith.

5,627,423

PERMANENT-MAGNET ROTOR FOR ELECTRIC MOTORS AND METHOD OF MANUFACTURING THE SAME

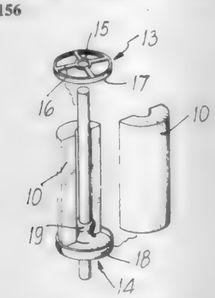
Elio Marioni, Dueville, Italy, assignor to Askoll S.p.A., Povolaro Dueville, Italy

Filed Jun. 2, 1994, Ser. No. 253,268

Claims priority, application Italy, Jun. 11, 1993, PD93A0129; Apr. 7, 1994, PD94A0066

Int. Cl.[6] H02K *21/12*; *15/00*

U.S. Cl. 310—156 **16 Claims**



1. A permanent-magnet rotor for electric motors comprising:

a shaft having a longitudinal extension;

at least two semitubular permanent magnet segments arranged about said shaft;

a molded casing including a central cylindrical portion interposed between said shaft and said permanent magnet segments; and

a bottom flange portion connected to said permanent magnet segments and said shaft and said central cylindrical portion of said molded casing at a bottom end region of the rotor, said bottom flange portion comprising a bottom wall portion and a central hole in said bottom wall portion through which said shaft extends, said bottom flange further comprising an inner circumferential lip protruding from said bottom wall portion about said central hole in a direction substantially parallel to said longitudinal extension of the shaft in a space between said shaft and said permanent magnet segments, said inner circumferential lip engaging internal surface portions of said permanent magnet segments so as to retain said permanent magnet segments in position relative to said shaft whereby to properly form said central cylindrical portion of said molded casing between said shaft and permanent magnet segments, and said inner circumferential lip extending in said space between said shaft and said permanent magnet segments for a limited extent with respect to the extension of said shaft whereby for permitting said central cylindrical portion of said molded casing to be interposed between said shaft and said permanent magnet segments.

5,627,424

TWIN BOBBIN FOUR POLE MOTORS AND METHODS FOR MAKING SAME

Robert E. Steiner, 1760 Horseshoe Ridge, Chesterfield, Mo. 63005

Continuation-in-part of Ser. No. 129,336, Sep. 30, 1993, Ser. No. 199,600, Feb. 22, 1994, Ser. No. 381,187, Jan. 31, 1995, and Ser. No. 372,035, Jan. 12, 1995. This application Jan. 31, 1995, Ser. No. 381,188

Int. Cl.[6] H02K *1/12*

U.S. Cl. 310—258 **32 Claims**

1. A four pole motor comprising:

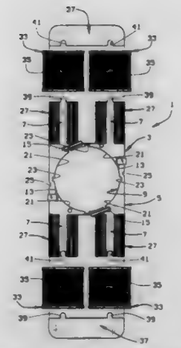
magnetically conductive stacked laminations each having a one-piece four pole central portion with a rotor opening and two spaced pairs of side legs, each spaced pair of side legs being connected to and extending from circumferentially spaced areas of the central portion on opposite sides of the central portion generally in mirror image relationship with one another, each of the spaced pair of side legs being connected at a first end to one circumferentially spaced area and being connected at a second end opposite from said central portion to an end leg, the combined stacked laminations providing spaced pairs of stacked side legs connected to stacked end legs on opposite sides of stacked central portions having aligned rotor openings for receiving a rotor;

the first end of each of said stacked side legs at its associated circumferentially spaced area around the central portion having a different polarity from each adjacent stacked side leg in order to provide an alternating polarity of four poles around the central portion, the second end of each stacked side leg having a different polarity than its first end;

each of the stacked side legs and stacked end legs having combined predetermined outer cross sectional configurations;

at least one electrically conductive coil positioned about the combined predetermined outer cross sectional configuration of at least one of said stacked side legs or stacked end legs on each side of said central portion; and

each of the electrically conductive coils being connected in series with one another.



5,627,425

VIBRATING UNIT

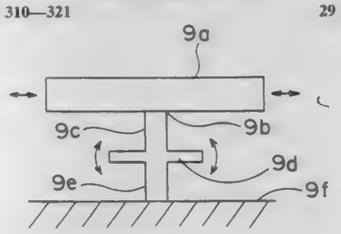
Hiroaki Kaida, and Jiro Inoue, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 387,391, Feb. 13, 1995, Pat. No. 5,442,251, which is a continuation of Ser. No. 87,478, Jul. 2, 1993, abandoned. This application May 30, 1995, Ser. No. 452,516

Claims priority, application Japan, Jul. 3, 1992, 4-177068; Jul. 14, 1992, 4-187135; Jul. 16, 1992, 4-189726; Jul. 23, 1992, 4-196914; Jul. 27, 1992, 4-200037; Aug. 11, 1992, 4-214152

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—321 **29 Claims**



1. A vibrating unit comprising:

a vibration source that generates vibration;

a vibration transfer part connected to said vibration source, said vibration transfer part receiving and propagating said vibration from said vibration source; and

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a vibration cancelling device connected to said vibration transfer part for receiving the propagated vibration, said vibration cancelling device vibrating at a frequency such that said propagated vibration is cancelled in accordance with a dynamic vibration absorbing phenomenon; wherein

said vibration cancelling device is a dynamic damper and said vibration cancelling device vibrates at a natural frequency substantially identical to a frequency of said vibration propagated from said vibration source.

5,627,426

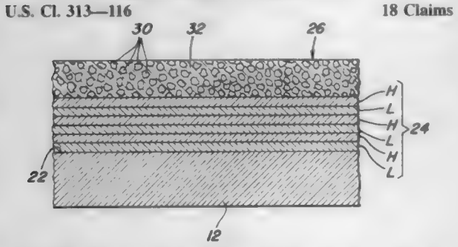
LAMP WITH IR REFLECTING FILM AND LIGHT-SCATTERING COATING

Pamela K. Whitman; Thomas G. Parham, both of Gates Mills, and Thomas M. Sharda, Willoughby, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 22, 1993, Ser. No. 513,564

Int. Cl.[6] H01J *5/16;* **H01K** *1/32*

U.S. Cl. 313—116 **18 Claims**



1. A light-transmissive article having at least one surface with at least a portion of said surface having a multilayer optical interference filter with a light-scattering coating comprising light-scattering particles in a vitreous substantially pure, silica binder disposed adjacent said filter.

5,627,427

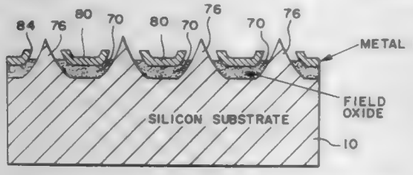
SILICON TIP FIELD EMISSION CATHODES

John H. Das, Gaithersburg, Md.; Noel C. MacDonald, Ithaca, N.Y.; James W. Mayer, Phoenix, Ariz., and James P. Spallas, Dublin, Calif., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 67,838, May 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 8,510, Jan. 25, 1993, abandoned, which is a division of Ser. No. 803,986, Dec. 9, 1991, Pat. No. 5,199,917. This application Jun. 5, 1995, Ser. No. 464,532

Int. Cl.[6] H01J *1/46*

U.S. Cl. 313—308 **23 Claims**



3. A silicon tip field emission micro-cathode, comprising:

a silicon substrate having a top surface;

a silicon emitter tip integral with said silicon substrate and extending upwardly from the top surface thereof, said tip having a base portion at said substrate and tapering inwardly and upwardly from said base portion to a terminal tip end;

an electrically insulating layer on said substrate top surface and covering at least the base portion of said tip, said insulating layer having a predetermined thickness on said base portion;

a metal gate electrode layer on said insulating layer and surrounding said base portion, said metal gate electrode layer including an upwardly extending, inwardly tapering dimple portion spaced from and surrounding said tip below said terminal end thereof, said dimple portion having an open upper end forming an aperture surrounding and self-aligned with said tip and spaced therefrom by a gap determined by the thickness of said insulating layer on said tip base portion, the diameter of said aperture being determined by the height of said open upper end of said dimple portion with respect to the terminal end of said tip.

5,627,428

SINGLE-BASED HIGH-PRESSURE DISCHARGE LAMP PARTICULARLY FOR AUTOMOTIVE-TYPE HEADLIGHTS

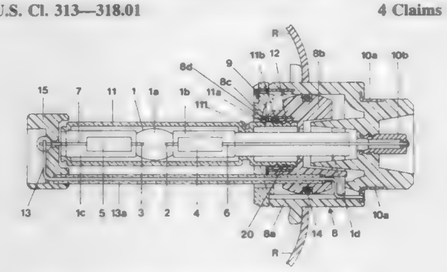
Peter Helbig, Sontheim; Gerhard Behr, Altheim; Claus Regitz, Overath, and Hans-Juergen Keck, Berlin, all of Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrisohe Cluehlampen mbH, Munich, Germany

Filed Jun. 27, 1995, Ser. No. 495,719

Claims priority, application Germany, Aug. 4, 1994, 44 27 593

Int. Cl.[6] H01J *5/48;* **F21M** *7/00*

U.S. Cl. 313—318.01 **4 Claims**



1. Single base, high-pressure discharge lamp having

a base (**8**) including

a base sleeve portion (**8***a*), and

an adjustable holder portion (**8***b*) located within the base sleeve portion, and which is adjustable with respect to the base sleeve portion (**8***a*);

a double-ended discharge vessel (**1**) defining a discharge bulb portion (**1***a*), a proximate end portion (**1***b*), and a distal end portion (**1***c*);

an outer envelope (**11**) which is formed with a tubular extension (**11***a*) surrounding at least the discharge bulb portion (**1***a*) of the discharge vessel, said outer envelope being melt-connected (**111**) to the discharge vessel so that the discharge vessel (**1**) and the envelope (**11**) form a single structural unit (**1**, **11**),

and comprising

a melt connection (**20**) between the envelope (**11**) of the single structural unit (**1**, **11**) and the holder portion (**8***b*) of the base (**8**), securely connecting and securing the single structural unit (**1**, **11**) to the base (**8**);

wherein the holder portion (**8***b*) of the base (**8**) is formed with a reception region for the outer envelope (**11**);

the reception region of the holder portion (**8***b*) is formed of a meltable plastic material;

the melt connection being formed between the tubular extension (**11***a*) of the outer envelope (**11**) and the holder portion (**8***b*) of the base; and

wherein the reception region of the holder portion (**8***b*) includes means (**12**) subject to high-frequency induced heating from melting the holder portion (**8***b*) of the base (**8**) and the outer envelope (**11**) together and form said melt connection.

5,627,429

COLOR CATHODE RAY TUBE HAVING AN INTERMEDIATE LAYER BETWEEN A FACE PLATE AND A TRICOLOR PHOSPHOR LAYER

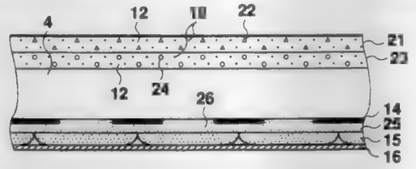
Yasuo Iwasaki, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Kyoto, Japan

Filed May 15, 1992, Ser. No. 883,171

Claims priority, application Japan, May 24, 1991, 3-119977; May 24, 1991, 3-119979

Int. Cl.[6] H01J *29/30*

U.S. Cl. 313—474 **24 Claims**



1. A color cathode ray tube comprising:

a face plate including an inner surface onto which electron beams are projected;

a transparent functional film formed on an outer surface of the face plate;

a tricolor phosphor layer, provided on the inner surface side of the face plate including red, green and blue phosphors which emit light when the electron beams are impinged thereon; and

an intermediate layer, having predetermined optical characteristics, provided between the inner surface of the face plate and the tricolor phosphor layer, wherein the intermediate layer is a selective light absorption layer having a light absorption characteristic common to the red, green and blue phosphors.

5,627,430

DISCHARGE LAMP HAVING A CATHODE WITH A SINTERED TIP INSERT

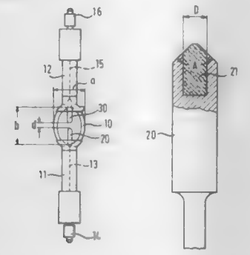
Takehiro Kira, Himeji; Takanori Serizawa, Gotenba, and Koichi Ario, Himeji, all of Japan, assignors to Ushiodenki Kabushiki Kaisha, Japan

Filed Jun. 29, 1995, Ser. No. 496,904

Claims priority, application Japan, Jun. 29, 1994, 6-168701; Sep. 6, 1994, 6-236089

Int. Cl.[6] H01J *61/04*

U.S. Cl. 313—570 **2 Claims**



1. A discharge lamp comprising an emission part within which an anode and a cathode are located, the cathode having a tip in which a sintered body made of a powdered high melting point metal and a powdered emitter material is inserted, and wherein the unitless relationship:

$$(-0.002d+0.01) \leq D/W \leq (-0.002d+0.04)$$

is fulfilled, where D is an outside diameter of the sintered body in millimeters (mm), W is a lamp input power in watts (w) and d is a distance between the anode and cathode in millimeters (mm).

5,627,431

ELECTRO-OPTICAL DEVICE

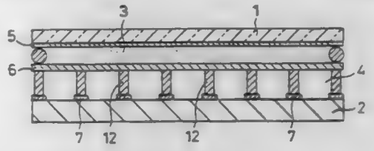
Masatake Hayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 310,039, Sep. 22, 1994, Pat. No. 5,495,142, which is a continuation of Ser. No. 837,962, Feb. 20, 1992, abandoned. This application Nov. 16, 1995, Ser. No. 559,060

Claims priority, application Japan, Feb. 20, 1991, 3-47733

Int. Cl.[6] H01J *17/58*

U.S. Cl. 313—584 **8 Claims**



2. An addressing structure including:

a first substrate which has a plurality of non-overlapping first electrodes formed on a major surface thereof;

a second substrate which is opposed to the first substrate and which has a plurality of non-overlapping second electrodes formed on a major surface thereof, the second electrodes being disposed substantially perpendicular to the first electrodes and positioned at equal intervals, so that any adjacent second electrodes constitute a pair of discharge electrodes;

an electro-optical material layer positioned between the first and second substrates; and

a discharge chamber formed between the electro-optical material layer and the second substrate, and containing an ionizable gas,

further including a dielectric material layer positioned between the electro-optical material layer and the discharge chamber;

wherein said discharge chamber comprises a plurality of scanning units, each of the scanning units being formed by plasma discharge between adjacent pairs of the second electrodes;

wherein said second electrodes are arranged in the second substrate so that all of the scanning units are formed as a continuous space; and

further including partition walls formed on the second electrodes so as to support the dielectric material layer.

5,627,432

COMPACT FLUORESCENT LAMP HAVING A LAMP ENVELOPE WITH A REFLECTIVE LAYER APPLIED TO THE ENDS THEREOF

Laszlo Balazs; Emoke Abasari; Ferenc Lantos; Istvanne Cserteg, and Veronika V. Bobayne, all of Budapest, Hungary, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1995, Ser. No. 410,448

Claims priority, application Hungary, Mar. 29, 1994, 9400885

Int. Cl.[6] H01J *61/35*

U.S. Cl. 313—635 **12 Claims**

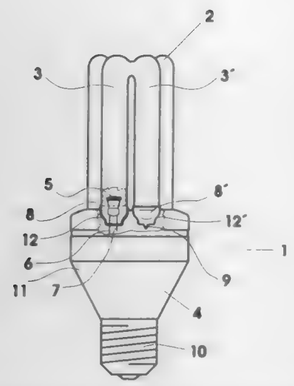
1. A low pressure discharge lamp comprising:

a lamp envelope containing a gas fill and being coated along an inner surface with a phosphor layer, at least two ends of the lamp envelope having electrodes therein for selectively energizing the gas fill;

a housing receiving the at least two ends of the lamp envelope therein, the remainder of the envelope extending outwardly of the housing; and

a reflective coating disposed on the at least two ends of the envelope disposed in the housing for reflecting light emitted

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from the at least two ends of the lamp envelope and increasing the luminous flux emitted from the lamp envelope.

5,627,433

SINGLE-ENDED DISCHARGE LAMP HAVING AN IMPROVED ELECTRICAL CONNECTION ARRANGEMENT

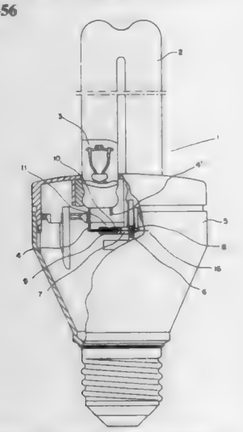
Jozsef Fulop, Budapest, Hungary; Clarence J. Harsa, Broadview Heights, Ohio; Ferenc Papp, and Jozsef Tokes, both of Budapest, Hungary, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 23, 1995, Ser. No. 376,498

Claims priority, application Hungary, Jan. 25, 1994, P9400205

Int. Cl.[6] H01J *5/50;61/56*

U.S. Cl. 315—56 **6 Claims**



1. A low pressure discharge lamp comprising:

a lamp envelope having an internal coating and fill contained therein;

electrodes disposed within said lamp envelope;

lead wires extending from said electrodes and through a sealed region of said lamp envelope;

said lamp envelope being mounted on a base housing member, said base housing member further having a screw base mounted thereon, said screw base being receptive of line power;

a ballast circuit arrangement disposed within said base housing member, said ballast circuit arrangement being receptive of such line power and effective so as to develop therefrom, an operating signal for driving said discharge lamp;

at least two connector members mounted on a circuit board portion of said ballast circuit arrangement, each of said at least two connector members simultaneously mechanically and electrically connecting a corresponding one of said lead wires to said ballast circuit arrangement without a need of a solder joint;

wherein said lead wires are mechanically secured to an interior wall portion of a cavity formed in each of said at least two connector members by means of a deformation joint; and,

wherein said at least two connector members are cylindrical in shape and the cavity formed therein is a blind hole in which the lead wires are placed in the direction of the axis of said at least two connector members, and the electrode inlead is mechanically fixed in the blind hole by means of an indentation made in a direction perpendicular to the axis.

5,627,434

APPARATUS FOR OPERATING A FLUORESCENT LAMP OF AN IMAGE FORMING APPARATUS

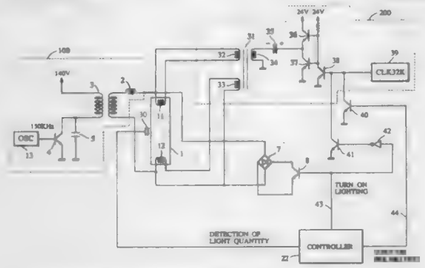
Toshiyuki Sekiya, Yokohama; Tadashi Ishikawa, Tokyo, and Atsushi Asayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1994, Ser. No. 326,238

Claims priority, application Japan, Oct. 26, 1993, 5-267236; Jan. 31, 1994, 6-009466

Int. Cl.[6] H05B *39/00*

U.S. Cl. 315—94 **32 Claims**



1. An apparatus for operating a fluorescent lamp comprising:

first power source means for supplying a tube electric current to the fluorescent lamp to turn on the fluorescent lamp;

second power source means for supplying pre-heating electric currents to filaments of the fluorescent lamp; and

switching means for switching an electric power level of the pre-heating electric currents to be supplied to the filaments by said second power source means by changing a ratio of supply/non-supply of the pre-heating electric currents to the filaments.

5,627,435

HOLLOW CATHODE ARRAY AND METHOD OF CLEANING SHEET STOCK THEREWITH

Frank Jansen, Walnut Creek, Calif.; Steven K. Krommenhoek, Madison, N.J.; Abraham I. Belkind, North Plainfield, N.J., and Zoltan Orban, Jr., Franklin Park, N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

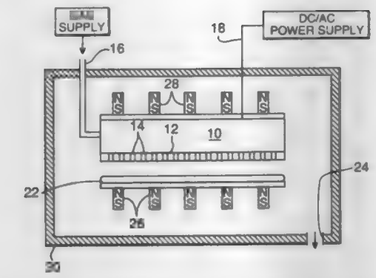
Continuation of Ser. No. 89,875, Jul. 12, 1993, abandoned. This application Feb. 15, 1996, Ser. No. 601,888

Int. Cl.[6] H01P *5/12*

U.S. Cl. 315—111.21 **14 Claims**

1. A hollow cathode array comprising

a vacuum chamber;



a housing within said chamber having a plurality of uniformly spaced openings in a wall thereof, the size of the openings and the thickness of the housing wall chosen so that a plasma is generated within the housing and emitted from the housing through said openings;

a means of supplying a plasma precursor gas to said housing; and

a means of supplying sufficient power to said housing to generate a plasma within said housing.

5,627,436

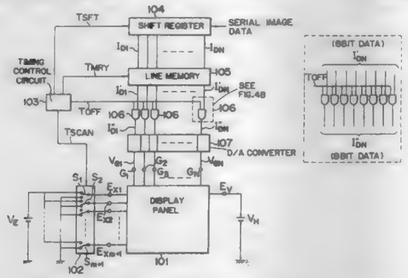
MULTI-ELECTRON BEAM SOURCE WITH A CUT OFF CIRCUIT AND IMAGE DEVICE USING THE SAME

Hidetoshi Suzuki; Ichiro Nomura, both of Atsugi; Tetsuya Kaneko, Yokohama, and Haruhito Ono, Minami Ashigara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 314,966, Sep. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 42,586, Apr. 5, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 517,658

Int. Cl.[6] H05B *41/14;* **G09G** *3/10*

U.S. Cl. 315—169.1 **12 Claims**



1. A multi-electron beam source comprising:

an electron-emitter including a plurality of electron-emitting elements provided two-dimensionally in a matrix-like arrangement on a substrate, opposing terminals of said electron-emitting elements arranged adjacently in the column direction thereof being electrically connected to each other, terminals on the same side of said electron-emitting elements in the same row being electrically connected, and said plurality of electron-emitting elements being arranged in "m" rows, "m" representing a number of two or more;

a driving circuit for driving said electron-emitter;

grid electrodes for modulating electron beams emitted from said electron-emitting elements; and

cut-off means for cutting off the electron beams caused by spike noises superposed on a driving pulse generated by said driving circuit.

5,627,437

HORIZONTAL RASTER SIZE CONTROLLER FOR A MONITOR

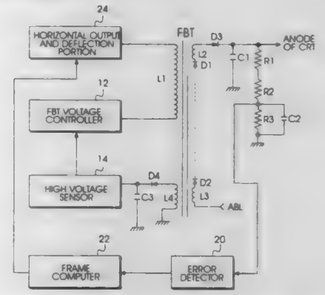
Seog-gi Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Suwon, Rep. of Korea

Filed Aug. 30, 1995, Ser. No. 521,539

Claims priority, application Rep. of Korea, Aug. 30, 1994, 21468/1994

Int. Cl.[6] H01J *29/70*

U.S. Cl. 315—399 **6 Claims**



1. A horizontal raster size controller for a monitor, comprising:

a horizontal output and deflection circuit providing a first signal to a primary winding of a horizontal flyback transformer, said flyback transformer providing a second signal to an anode of a cathode ray tube of said monitor;

error detection means for generating an error detection signal by detecting overcurrent in said second signal provided to said anode of said cathode ray tube;

comparison means for generating a first voltage signal indicative of a difference between said error detection signal and a reference potential;

voltage-to-current conversion means for converting said voltage signal to corresponding current;

means for providing a second voltage signal, said second voltage signal being varied in response to current output by said voltage-to-current conversion means;

differential amplifying means for generating a differentially amplified signal by amplifying said second voltage level; and

means for generating said compensation signal in response to said differentially amplified signal.

5,627,438

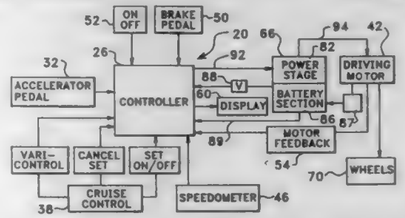
PULSING CONTROL FOR AN INERTIAL DRIVE SYSTEM FOR A MULTI-MOTOR BINARY ARRAY VEHICLE

Robert D. Barrett, 10261 Canterbury St., Westchester, Ill. 60154

Filed Jan. 25, 1995, Ser. No. 378,173

Int. Cl.[6] B60K *1/02;31/04;* **B60L** *11/18*

U.S. Cl. 318—139 **26 Claims**



1. A power system for a vehicle having rotating masses and inertia, wherein the vehicle is capable of forward motion and the vehicle has a first output wheel for placing the vehicle in motion, the power system comprising:

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a controller receiving a desired velocity signal corresponding to a desired mean velocity and a desired minimum and maximum velocity;

a motor primarily adapted to continuously operate at substantially maximum efficiency when provided with energy for driving the rotating masses and the first output wheel of the vehicle; and

means for selectively allowing communication of energy to the first output wheel for sustaining forward motion of the vehicle;

the controller communicating pulsed signals to the means for selectively allowing communication of energy for intermittently supplying energy for rotation to the first output wheel in power pulses in accordance with the desired velocity signal received by the controller, whereby the vehicle automatically accelerates and decelerates between the minimum and maximum desired velocity and is substantially maintained at the mean velocity.

8. A method for powering a vehicle comprising:

selecting a desired velocity;

providing an automatic control means which accelerates the vehicle at a rate of between 1.6 and 2.7 ft/sec^2 for a period of between three and seven seconds;

after the acceleration is applied, automatically ceasing delivery of power to the vehicle during a coast-down period until the desired velocity is again reached; and

automatically repeating the pulsed acceleration and coast-down until the desired velocity is changed.

18. A method for optimizing the efficiency of a motor vehicle having a motor, rotating masses, inertia, a controller and a means for selectively allowing communication of energy for rotation to the motor, wherein the vehicle is capable of forward motion and the vehicle has a first output wheel for placing the vehicle in motion, the method comprising the steps of:

providing the controller with a desired velocity signal corresponding to a desired mean velocity and a desired minimum and maximum velocity;

operating the motor continuously at substantially maximum efficiency when the motor is provided with energy and thereby driving the rotating masses and the first output wheel of the vehicle; and

providing pulsed signals corresponding to the desired velocities from the controller to the means for selectively allowing communication of energy to the first output wheel and thereby intermittently supplying energy to the first output wheel in power pulses in accordance with the desired velocity signal received by the controller, whereby the vehicle automatically accelerates and decelerates between the minimum and maximum desired velocity and is substantially maintained at the mean velocity.

5,627,439

LIGHT BARRIER FOR REOPENING ELEVATOR DOORS

Richard A. Gregory, Chicago, Ill., and Nicholas Kassetas, Vernon, N.J., assignors to Inventio AG, Hergiswil, Switzerland

Filed Jul. 8, 1996, Ser. No. 677,600

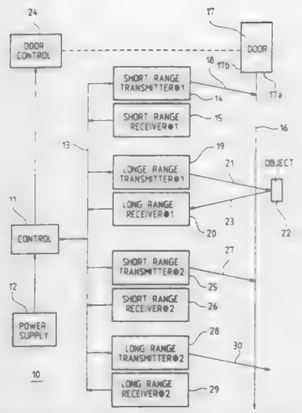
Int. Cl.^{6} H02P *3/00*

U.S. Cl. 318—480 **20 Claims**

1. An apparatus for reopening a closing door upon detecting an object adjacent a door opening comprising:

a short range detector pair (**50**) adapted to be mounted along a path of travel (**16**) of a door (**17**) across a door opening (**38**), said short range detector pair (**50**) including a short range beam transmitter (**14**) for generating a relatively short range infrared beam (**18**) toward the path of travel (**16**) and a short range receiver (**15**) for detecting a reflection (**31**) of said short range beam (**18**) from a facing surface (*17b*) of the door (**17**) and generating a short range beam detection signal;

a long range detector pair (**53**) adapted to be mounted adjacent said short range detector pair (**50**) along the path of travel (**16**) of the door (**17**) whereby the door (**17**) passes said short range detector pair (**50**) before passing said long range detector pair



(**53**) as the door (**17**) closes the door opening (**38**), said long range detector pair (**53**) including a long range beam transmitter (**19**) for generating a relatively long range infrared beam (**21**) across the path of travel (**16**) and a long range receiver (**20**) for detecting a reflection (**23**) of said long range beam (**21**) from an object (**22**) near the door opening (**38**) and generating a long range beam detection signal; and

a control (**11**) connected to said short range detector pair (**50**) and said long range detector pair (**53**) for turning on said transmitters (**14**,**19**) to generate said beams (**18**,**21**), said control means (**11**) responding to said long range beam detection signal generated by said long range receiver (**20**) during closing of the door (**17**) by generating a reopen signal to a door control (**24**) controlling movement of the door (**17**), said control (**11**) responding to said short range beam detection signal generated by said short range receiver (**15**) during closing of the door (**17**) by disabling said long range detector pair (**53**) and responding to termination of said short range beam detection signal generated by said short range receiver (**15**) during opening of the door (**17**) for enabling said long range detector pair (**53**).

5,627,440

METHOD OF COMPUTING DRIVE PATTERN FOR SUPPRESSING VIBRATION OF INDUSTRIAL ROBOT

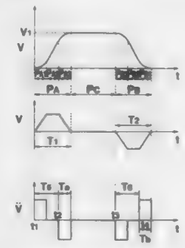
Tsuyoshi Yamamoto; Katsuhisa Tanaka, both of Toyota, and Fumihiko Komuro, Aichi-ken, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 19, 1995, Ser. No. 423,458

Claims priority, application Japan, Jun. 3, 1994, 6-122843

Int. Cl.^{6} G05B *5/01*; **B25J** *9/18*

U.S. Cl. 318—568.21 **17 Claims**



10. A method of controlling a moving part of an industrial robot, comprising the steps of: driving the moving part; and controlling the moving part in a predetermined drive pattern in which a time difference of rise and fall portions of a differential value of acceleration with respect to time of the moving part is substantially an integral number times a natural vibration period of said moving part.

12. A method of controlling a moving part of an industrial robot, comprising the steps of: driving the moving part; and controlling the moving part in a predetermined drive pattern in which a time difference of torque peaks in accelerating and slowing down the moving part is substantially an integral number times a natural vibration period of the moving part.

16. An apparatus for computing a drive pattern for suppressing vibration of a moving part of an industrial robot, comprising:

(a) means for obtaining a drive pattern of the moving part;

(b) means for calculating a time difference of torque peaks in acceleration and slowdown periods of the drive pattern; and

(c) means for correcting said drive pattern in such a manner that said time difference changes substantially by an integral number times a natural vibration period of the moving part.

5,627,441

APPARATUS FOR CONTROLLING MOTOR DRIVE AND METHOD FOR CONTROLLING THEREOF

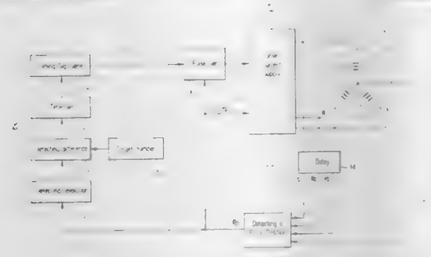
Tetsuji Sakurai, and Katsuhiko Kaida, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jun. 6, 1995, Ser. No. 465,719

Claims priority, application Japan, Jun. 8, 1994, 6-126391

Int. Cl.^{6} H02P *6/14*; *5/05*

U.S. Cl. 318—599 **17 Claims**



1. An apparatus for controlling revolution drive of a motor comprising:

a motor including a rotor and a plurality of drive coils for defining a number of excitation phases for making said rotor complete each one cycle revolution,

means for supplying a plurality of drive currents in a successive order to said respective coils from a voltage source directly,

means for detecting a rotational position of said rotor in each excitation phase,

means for detecting a number of revolution of said rotor by using a position signal from said rotational position detecting means,

means for determining a current supply time in each excitation phase by detecting a difference between said detected number of revolution of said rotor and a predetermined target number of revolution of said rotor, and

means for generating a drive pulse signal supplied to said supplying means in accordance with a timing signal from said determining means, said drive pulse signal being a single pulse in each of said excitation phases having a duration corresponding to said determined current supply time,

whereby said supplying means supplies a maximum value of drive currents synchronized to said excitation phases.

5,627,442

METHOD AND APPARATUS FOR CONTROLLING COORDINATE DISPLACEMENTS OF A PLATFORM

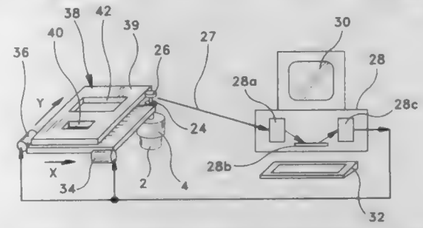
Peter D. Engelse, Voorschoten; Alexander Flipse, Leiden, and Walter Janus, Haarlem, all of Netherlands, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 53,057, Apr. 26, 1993, Pat. No. 5,459,384. This application Oct. 3, 1995, Ser. No. 538,332

Claims priority, application European Pat. Off., Apr. 30, 1992, 92107387

Int. Cl.^{6} G05D *3/10*; **G02B** *21/24*; **G01B** *21/00*

U.S. Cl. 318—640 **5 Claims**



1. Method for controlling coordinate displacements of a platform in a microscope stage, the method comprising the following steps:

providing a mechanical input signal of the desired displacement in two directions x, y by manually actuating two coaxially arranged, independently operable wheels;

assigning the first wheel and an associated displacement signal channel to the x-coordinate and assigning the second wheel and an associated displacement signal channel to the y-coordinate of the platform;

transmitting the mechanical input signal indicating the desired displacement to a position encoder acting as an electromechanical transducer;

transducing the mechanical input signal by the position encoder into a number of pulses which number is proportional to the mechanical input signal in accordance with the resolution of the position encoder given in pulses per displacement unit;

transmitting the pulses to a pulse decoder which registers the pulses as the pulse input displacement signal for each coordinate x, y;

converting the pulse input displacement signal into a motor drive signal; and

driving a motor according to the motor drive signal at the output of each displacement signal channel, each motor acting as an electromechanical transducer for displacing the platform along the coordinates x, y.

5,627,443

METHOD OF DRIVING STEPPING MOTOR

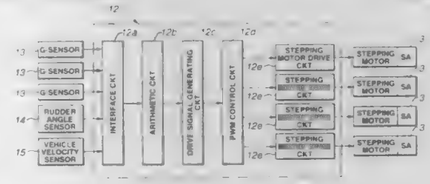
Makoto Kimura; Junichi Emura; Shinobu Kakizaki, and Mitsuo Sasaki, all of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Mar. 31, 1995, Ser. No. 414,426

Claims priority, application Japan, Apr. 6, 1994, 6-068341; Jun. 16, 1994, 6-134614

Int. Cl.^{6} H02P *8/00*

U.S. Cl. 318—696 **3 Claims**



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1. A method of driving a stepping motor for driving means for varying a damping-force characteristic of a shock absorber, the stepping motor having a plurality of drive steps, the method comprising the steps of:

dividing a drive signal for each drive step of the stepping motor into a plurality of portions in a direction of a time axis;

controlling each portion of said drive signal in a way of PWM so as to obtain a pattern of a gradual change in an on-duty ratio of said each portion of said drive signal, said pattern being dependent on a voltage supplied to the stepping motor; and

supplying said each portion of said drive signal as controlled to the stepping motor.

5,627,444

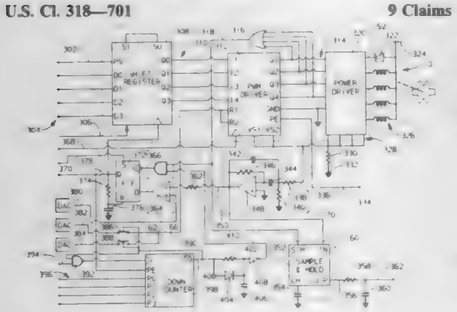
SWITCHED RELUCTANCE MOTOR CONTROL

Gary C. Fulks, Spring Valley, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 30, 1995, Ser. No. 453,688

Int. Cl.[6] H02P *1/46*

U.S. Cl. 318—701 **9 Claims**



1. A synchronous reluctance motor control apparatus, comprising:

a sensor for sensing inductance through an energized coil of a stator;

a filter receiving a signal from the sensor and providing a filtered signal responsive thereto;

a comparator circuit receiving the filtered signal and a threshold signal and providing a comparison output responsive to a comparison between the filtered signal and the threshold signal;

a microprocessor controller comprising

(i) means for monitoring the sensed inductance to determine a minimum inductance of the energized coil, wherein the minimum inductance reflects manufacturing tolerances in the energized coil and dynamic inductance changes due to operating temperature and aging of the stator, and

(ii) trigger set means for dynamically determining the threshold responsive to the determined minimum inductance of the energized coil; and

a trigger circuit, receiving the comparison signal and outputting a trigger signal responsive thereto, wherein the trigger signal triggers energization of a next phase coil of the stator, wherein the motor control apparatus compensates for the manufacturing tolerances and the dynamic inductance changes of the stator.

5,627,445

SENSING PHASE CURRENT IN SWITCHED RELUCTANCE MACHINES

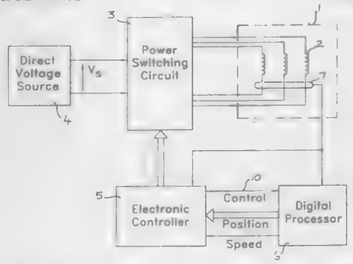
Paul D. Webster, Headingley, United Kingdom, assignor to Switched Reluctance Drives, Ltd., Harrowgate, United Kingdom

Filed Jun. 7, 1995, Ser. No. 472,958

Claims priority, application United Kingdom, May 10, 1995, 9509408

Int. Cl.[6] H02P *7/05*

U.S. Cl. 318—701 **11 Claims**



1. A multi-phase switched reluctance machine comprising a stator, defining stator poles and having a plurality of phase windings, a rotor, defining rotor poles, and an electrically isolated current transducer arranged in current sensing relationship with at least a group of the phase windings, the current transducer having an output that is indicative of current in the group of phase windings wherein the current transducer is arranged to sense current in a separate electrical conductor associated with each phase winding in the group.

5,627,446

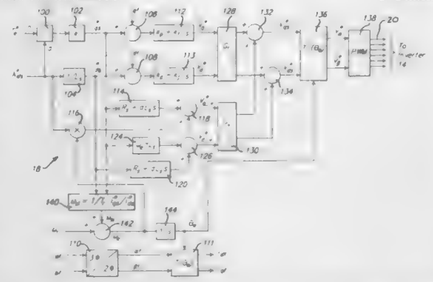
INDUCTION MOTOR CONTROL METHOD

Doug Deng, and Xingyi Xu, both of Canton, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1995, Ser. No. 498,163

Int. Cl.[6] H02P *5/402*

U.S. Cl. 318—799 **8 Claims**



1. A control method for an induction motor comprising the steps of:

(a) calculating desired variables for control of said motor according to voltage control;

(b) calculating desired variables for control of said motor according to current control;

(c) applying said desired variables calculated according to voltage control and said desired variables calculated according to current control in relative proportions to control said motor;

wherein said relative proportions are functions of a motor operating condition.

5,627,447

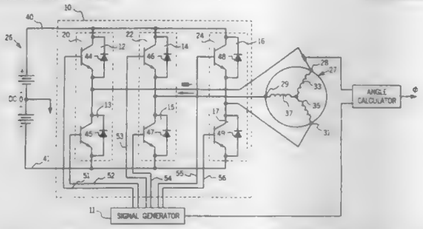
METHOD AND APPARATUS FOR DETECTING CURRENT DELAY ANGLE FROM MOTOR TERMINAL VOLTAGE

Peter J. Unsworth, East Sussex, England, and Jinghan Tao, Shorewood, Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 29, 1995, Ser. No. 536,728

Int. Cl.[6] H02P *5/40*

U.S. Cl. 318—801 **15 Claims**



1. A method to be used with a motor controller having an inverter which provides a high frequency voltage sequence on each of three phases of an AC motor, a changing average value of the voltage sequence generating a low frequency alternating voltage and an associated alternating current which lags the alternating voltage by a current angle, the inverter controlled by a series of triggering pulses characterized by turn on delay periods, the method for determining zero crossing times of the alternating current on a single monitored phase, the method comprising the steps of:

identifying the occurrences of turn on delay periods on the monitored phase;

sensing the voltage sequence on the monitored phase during the turn on delay periods; and

determining the current zero crossings from the sensed voltage sequence during the turn on delays periods.

5,627,448

ELECTRIC VEHICLE CHARGING CONNECTOR ASSEMBLY

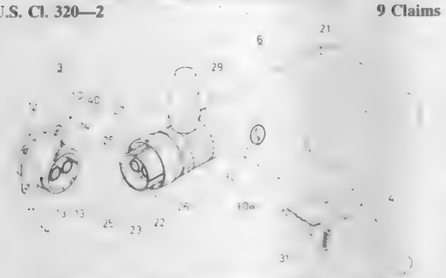
Hajime Okada; Sinichi Yamada, and Eiji Saijo, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Apr. 20, 1994, Ser. No. 230,251

Claims priority, application Japan, Apr. 22, 1993, 5-120498; Apr. 27, 1993, 5-125118

Int. Cl.[6] H01M *10/46*; **H01R** *13/44*

U.S. Cl. 320—2 **9 Claims**



1. An electric vehicle charging connector assembly for use in externally charging a power battery provided in a body of an electric vehicle, thereby powering the electric vehicle, the connector assembly comprising:

a) a vehicle side connector housing provided on the body of the electric vehicle;

b) vehicle side terminals enclosed in the vehicle side connector housing;

c) a power source side connector housing configured to be mated with and unmated from the vehicle side connector housing;

d) power source side terminals enclosed in the power source side connector housing to be electrically connected to the respective vehicle side terminals when the power source side connector housing is mated with the vehicle side connector housing;

e) engagement means for holding the power source and vehicle side connector housings in a mating engagement when assuming a first state, and for releasing the connector housings from the mating engagement when assuming a second state;

f) preventing means for preventing the engagement means from being changed from the first state to the second state; and

g) locking means provided in the power source side connector housing for activating the preventing means, when assuming a locking state, to cause the engagement means to be prevented from being moved from the first state to the second state, and for deactivating the preventing means, when assuming an unlocking state, allow the engagement means to be moved from the first state to the second state.

5,627,449

ELECTRONIC DEVICE, BATTERY PACK AND CHARGER FOR THE BATTERY PACK

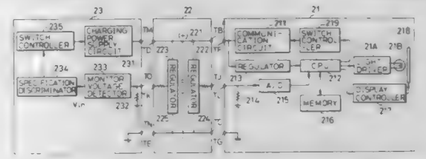
Shiro Fujiki, Tokyo, Japan, assignor to Yaesu Musen Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1994, Ser. No. 291,858

Claims priority, application Japan, Aug. 30, 1993, 5-214207

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—5 **23 Claims**



1. An electronic device having terminals connected to those of any of a plurality of battery packs of different specifications when selectively attached to a main body of said electronic device, thereby allowing output of a battery incorporated in the attached battery pack as a supply voltage to said main body of said electronic device, and switching of an operation mode in accordance with a type of the attached battery pack,

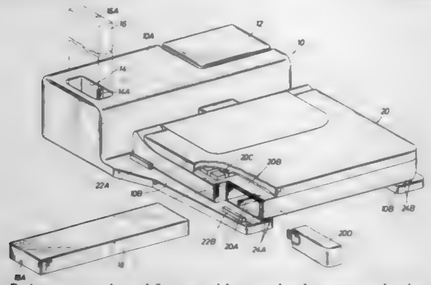
said electronic device (**21**) and each of the battery packs (**22**) having specification-discriminating terminals (TL, TJ) which are connected when said electronic device and the battery pack are connected together;

each of said battery packs (**22**) having a regulator (**222**) for generating a regulated voltage from an output voltage of the incorporated battery (**221**) and a first monitor resistor (**224**) connected between an output terminal of said regulator (**222**) and said specification-discriminating terminal (TJ) thereof and having a resistance corresponding to said specification of said incorporated battery (**221**); and

said main body (**21**) having a second monitor resistor (**214**) connected between said specification-discriminating terminal (TL) thereof and ground, the output voltage of the regulator (**222**) in said battery pack (**22**) being divided by the first and Second monitor resistors (**214**, **224**), monitor voltage detecting means (**215**) for detecting a monitor voltage generated across said second monitor resistor (**214**), specification discriminating means (**212**, **216**) for discriminating said specification of said incorporated battery of said attached battery pack (**22**) from said monitor voltage detected by said monitor voltage detecting means (**215**), and operation mode switching means (**212**, **219**) for switching said operation mode in accordance with said specification discriminated by said specification discriminating means (**212**, **216**).

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5,627,450
TILTABLE DOCKING BASE WITH A BATTERY CHARGER
Sean P. Ryan, The Woodlands; James J. Tumlinson, Tomball, and Teodros Mesfin, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Continuation of Ser. No. 188,488, Jan. 28, 1994, abandoned. This application Feb. 7, 1996, Ser. No. 598,163
Int. Cl.[6] H01M *10/44;* **H05K** *7/00*
U.S. Cl. 320—15 **22 Claims**



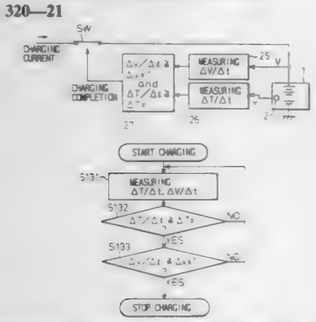
8. Apparatus adapted for use with a notebook computer having a front end and a rear end, a keyboard, a connector, and a screen, said connector provided in said computer rear end, comprising

a docking base housing having a top, bottom, front portion, a front end and rear portion, said top front portion of said docking base housing and said top rear portion of said docking base housing providing a shoulder in said docking base housing,

a connector disposed in said docking base housing shoulder for disengageable connection with the notebook computer connector to limit movement of the rear end of the notebook computer relative to the docking base housing shoulder, and,

movable tilt member disposed on the bottom of said base housing to raise the bottom rear portion of said base housing relative to said bottom front portion of said base housing.

5,627,451
CONTROL METHOD AND CONTROL APPARATUS FOR SECONDARY BATTERY CHARGING IN CONSTANT CURRENT CHARGING METHOD
Yoshiro Takeda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 28, 1994, Ser. No. 202,506
Claims priority, application Japan, Apr. 28, 1993, 5-102407
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—21 **4 Claims**



1. A method for controlling a constant current battery charging method which charges a secondary battery in a short time, comprising the steps of:

measuring a change in battery voltage per unit time $\Delta V/\Delta t$;

measuring a change in battery temperature per unit time $\Delta T/\Delta t$;

stopping the battery charging when both the change in battery voltage per unit time $\Delta V/\Delta t$ and the change in battery temperature per unit time $\Delta T/\Delta t$ are at least as great as a predetermined change in battery voltage per unit time ΔV_{X1} and a predetermined change in battery temperature per unit time ΔT_X, respectively.

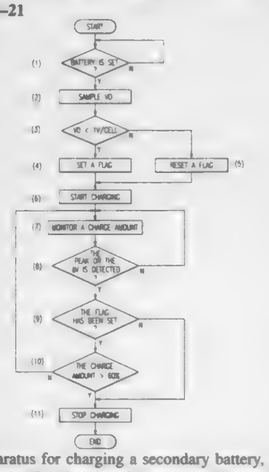
3. An apparatus for controlling a constant current battery charging method which charges a secondary battery in a short time, comprising:

first measuring means for measuring a change in battery voltage per unit time $\Delta V/\Delta t$;

second measuring means for measuring a change in battery temperature per unit time $\Delta T/\Delta t$;

judging means for stopping the battery charging when it is judged that both the change in battery voltage per unit time $\Delta V/\Delta t$ and the change in battery temperature per unit time $\Delta T/\Delta t$ are at least as great as a predetermined change in battery voltage per unit time ΔV_{X1} and a predetermined change in battery temperature per unit time ΔT_X, respectively.

5,627,452
CHARGING METHOD OF SECONDARY BATTERY
Tetsuya Okada, Hyogo, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Sep. 27, 1995, Ser. No. 534,789
Claims priority, application Japan, Sep. 30, 1994, 6-237289
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—21 **19 Claims**



15. An apparatus for charging a secondary battery, comprising:

charging means for charging the secondary battery with a constant current;

sampling means for sampling a terminal voltage of the secondary battery when charging starts;

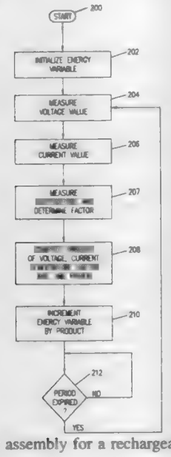
comparison means for comparing the sampled terminal voltage to a predetermined voltage value;

detecting means for detecting one of a peak and a decrease of a predetermined voltage ΔV after the peak;

monitoring means for monitoring a charge amount of the secondary battery from the start of charging until the terminal voltage shows one of a peak and a decrease of a predetermined voltage ΔV after the peak;

control means responsive to the comparison means and the detecting means for providing a full charge level indication signal in response to the detection of one of a peak and a decrease of the predetermined voltage ΔV when 1) the sampled terminal voltage is more than the predetermined voltage value; or 2) the sampled terminal voltage is not more than the predetermined voltage value, and the monitored charge amount is more than the predetermined charge amount; said control means further providing a less than full charge level indication signal in response to the detection of one of the peak and the decrease of the predetermined voltage ΔV when the sampled terminal voltage is not more than the predetermined voltage value and the monitored charge amount is not more than the predetermined charge amount.

5,627,453
SMART BATTERY ODOMETER
Ed Sheehan, Cedar Park, and Leslie Thompson, Austin, both of Tex., assignors to Dell USA, L.P., Austin, Tex.
Filed Jan. 11, 1995, Ser. No. 372,277
Int. Cl.[6] H01M *10/46;10/48*
U.S. Cl. 320—30 **20 Claims**



1. A battery pack assembly for a rechargeable battery, comprising:

a microcontroller;

a memory device electrically connected to said microcontroller for storing a number representing a total quantity of energy output by said battery throughout its life;
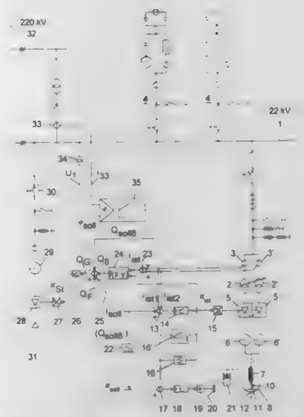
a voltage measuring circuit for measuring a voltage across said battery and, generating to said microcontroller signals indicative of said measured voltage;

a current measuring circuit for measuring a current output by said battery and generating to said microcontroller signals indicative of said measured current;

said microcontroller being operative, upon each elapse of a predetermined time period during each discharge cycle of said battery, for computing a product of said measured voltage, said measured current, and a length of said time period, said computed product being indicative of an mount of energy output by said battery during said time period, and incrementing said stored number by said computed product.

5,627,454
METHOD FOR STABILIZING A POWER SUPPLY NETWORK AGAINST REACTIVE LOAD FLUCTUATIONS, AND A POWER FACTOR COMPENSATION DEVICE
Hanspeter Aebischer, Büttikon, and Roger Mathys, Ennetbürgen, both of Switzerland, assignors to ABB Management AG, Baden, Switzerland
Filed Aug. 2, 1994, Ser. No. 284,109
Claims priority, application Germany, Aug. 19, 1993, 43 27 894.9
Int. Cl.[6] G05F *1/70*
U.S. Cl. 323—210 **9 Claims**

1. Method for stabilizing a power supply against reactive load fluctuations of at least one electric device or installation of at least one variable reactive load, comprising the steps of:



a) controlling current intensity by means of a control signal or manipulated variable signal (α_{act}) to a prescribable current desired value or reactive power desired value,

b) compensating reactive power fluctuations produced in the at least one variable reactive load as a function of the manipulated variable signal (α_{act}) and as a function of a current actual value signal (i_{act}) or of the current desired value;

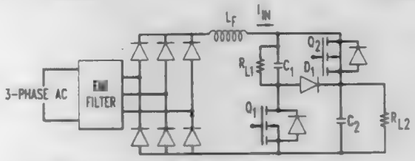
c) compensating the reactive power fluctuations as a function of a total current intensity, which in addition to the current through the at least one variable reactive load, further comprises current through at least one power factor compensation device; and

d) compensating the reactive power fluctuations as a function of a reactive power actual value signal Q_8 of the at least one variable reactive load, wherein the reactive power actual value signal Q_8 is formed in accordance with:

$$Q_8 = k1 \cdot i_{act} \cdot [\{1-(\cos \alpha_{act} - k2 \cdot i_{act})^2\}]^{0.5}$$

k1 and **k2** being load-specific factors with $0.1 \leqq k1 \leqq 1$ and $0.7 \cdot 10^{-3} \leqq k2 \leqq 1.3 \cdot 10^{-3}$.

5,627,455
BOOST TOPOLOGY WITH TWO OUTPUTS FOR POWER FACTOR CORRECTION APPLICATION
Mark E. Jacobs, Dallas, and Richard W. Farrington, Mesquite, both of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Nov. 22, 1994, Ser. No. 344,309
Int. Cl.[6] G05F *1/10;1/656;* **H02M** *5/42;7/68*
U.S. Cl. 323—222 **4 Claims**



1. A boost converter, comprising:

an input to accept a DC voltage which may be derived from a rectified AC voltage;

an inductor connected to the input;

first and second output capacitors each connected to first and second outputs;

first and second power switches for alternatively connecting first and second capacitors in a series and parallel connection, respectively;

a diode switch connecting a common node of the first capacitor and first power switch to a common node of the second

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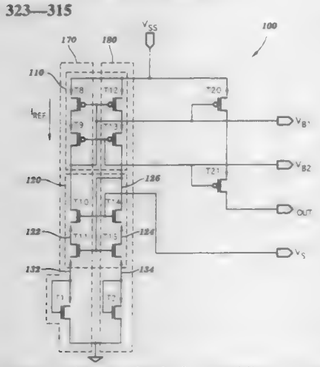
capacitor and the second power switch and when biased conducting connecting the first and second capacitors in series connection when the first and second power switches are simultaneously non-conducting and when biased non-conducting electrically isolating the first and second capacitors from each other when the first and second power switches are conducting.

5,627,456

ALL FET FULLY INTEGRATED CURRENT REFERENCE CIRCUIT

Ilya I. Novof, Essex Junction; John E. Gersbach, Burlington, and Frank D. Ferraiolo, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 477,208
Int. Cl.° G05F *3/20*
U.S. Cl. 323—315 **5 Claims**



1. A current reference circuit for providing a predetermined current output with a predetermined temperature coefficient, comprising:

a first voltage supply, a ground node, and an output node;

a current mirror, coupled to the first voltage supply, for providing a reference current of equal magnitude in each of two branches of the circuit;

control means, coupled between the current mirror and the ground node, for compensating for variations in one branch with corresponding variations in the other branch, to provide the reference current in each branch with the predetermined temperature coefficient; and

current output means, coupled between the first voltage supply and the output node, and coupled to the current mirror, for providing the current output with the predetermined temperature coefficient;

wherein the circuit is made only from field effect transistors.

5,627,457

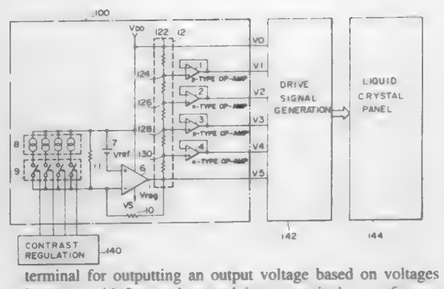
POWER SUPPLY DEVICE, LIQUID CRYSTAL DISPLAY DEVICE, AND METHOD OF SUPPLYING POWER

Hisanobu Ishiyama, and Shigeki Aoki, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 18, 1994, Ser. No. 276,470
Claims priority, application Japan, Jul. 21, 1993, 5-180392; Aug. 3, 1993, 5-192543; Jun. 7, 1994, 6-148533
Int. Cl.° G05B *24/02*; **H02J** *1/00*
U.S. Cl. 323—318 **41 Claims**

1. A power supply device comprising a voltage regulation means and configured to supply a supply voltage that has been regulated by said voltage regulation means to an object to be driven, wherein:

said voltage regulation means comprises an operational amplifier which has first and second input terminals and an output terminal for outputting an output voltage based on voltages input to said first and second input terminals: a reference voltage source electrically connected to said first input terminal; a first resistor electrically connected at one end to said second input terminal of said operational amplifier and at the other end to a fixed potential; a second resistor electrically connected at one end to said second input terminal of said operational amplifier and at the other end to said output terminal of said operational amplifier; variably controlling means for variably controlling a current which flows through said second resistor.

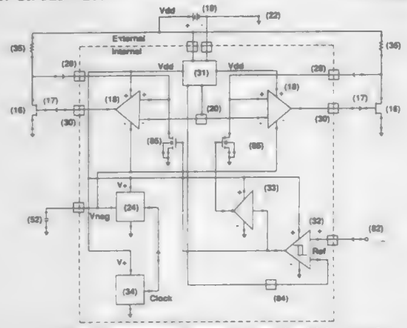


5,627,458

INTEGRATED NEGATIVE D-C BIAS CIRCUIT

Larry J. Nevin, 1551 La Granada Dr., Thousand Oaks, Calif. 91362

Filed Jul. 14, 1995, Ser. No. 502,073
Int. Cl.° H02M *3/18*
U.S. Cl. 323—267 **15 Claims**



1. A monolithic integrated circuit of the C-MOS type for controlling a plurality of external devices each of which has a feedback terminal for generating a feedback voltage indicative of a circuit parameter, and a control terminal for controlling said parameter, said integrated circuit comprising:

(a) a plurality of differential amplifiers, one for controlling each of said external devices;

(b) means for feeding a positive supply voltage from an external source into said monolithic integrated circuit;

(c) means within said monolithic integrated circuit responsive to said positive supply voltage for generating an internal negative supply voltage;

(d) means for applying both said positive supply voltage and said internal negative supply voltage to each of said differential amplifiers, so that the output of each of said differential amplifiers may be either a positive or a negative voltage;

(e) means for deriving from said positive and negative supply voltages an internal error reference voltage, and applying it to each of said differential amplifiers;

(f) means for supplying a voltage feedback signal from the feedback terminal of each of said external devices to the corresponding one of said differential amplifiers;

(g) each of said differential amplifiers being operable for comparing the received voltage feedback signal and said internal error reference voltage to produce an error signal indicative of an error in said circuit parameter in the respective external device, and also for amplifying said error signal; and

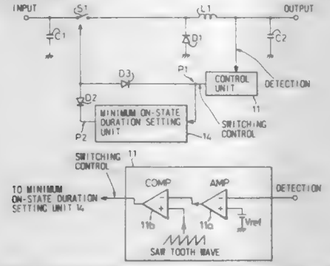
(h) means for supplying each said amplified error signal to the control terminal of the associated external device.

5,627,459

DC/DC CONVERTER

Masami Itoyama; Shigeru Honda, both of Kawasaki, and Masaharu Kagawa, Kurashiki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 214,588, Mar. 18, 1994, abandoned. This application Feb. 16, 1996, Ser. No. 603,956
Claims priority, application Japan, Apr. 19, 1993, 5-091232
Int. Cl.° G05F *1/40*
U.S. Cl. 323—283 **18 Claims**



1. A DC/DC converter that converts a DC input voltage to a DC output voltage which is supplied to an electric load, the DC/DC converter comprising:

a control unit producing a control signal on the basis of a voltage difference between said DC output voltage and a predetermined reference voltage, the control signal being a pulse width modulated control signal with a constant switching frequency;

a switching element connected in series with a line for supplying said DC input voltage, and adapted to become ON-state or OFF-state in accordance with the pulse width modulation and constant switching frequency of said control signal, so as to obtain said DC output voltage having an output voltage level sufficient for said electric load; and

a minimum ON-state duration setting unit defining a predetermined minimum value of an ON-state duration for which said switching element remains in ON-state and, when said DC output voltage level sufficient for said electric load is low, said minimum ON-state duration setting unit adjusts the control signal produced by the control unit to fix said ON-state duration to a value which corresponds to said predetermined minimum value defined by said minimum ON-state duration setting unit, to thereby control the ON-state and OFF-state of said switching element on the basis of the fixed ON-state duration.

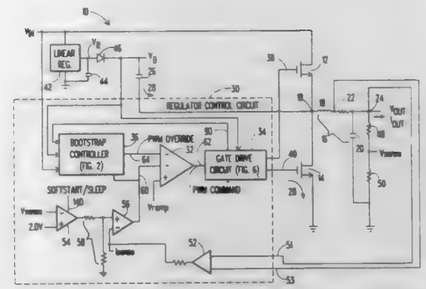
5,627,460

DC/DC CONVERTER HAVING A BOOTSTRAPPED HIGH SIDE DRIVER

John P. Bazinet, Concord, and John A. O'Connor, Merrimack, both of N.H., assignors to Unitrode Corporation, Billerica, Mass.

Filed Dec. 28, 1994, Ser. No. 365,349
Int. Cl.° G05F *1/618*
U.S. Cl. 323—288 **14 Claims**

1. A step-down converter for converting an input voltage to a lower output voltage, said converter comprising:



a pair of NMOS switches coupled in series, a first one of said switches being coupled to said input voltage and a second one of said switches being coupled to ground;

an output filter coupled to said pair of switches, said output filter providing an output terminal at which said output voltage is provided;

a bootstrap capacitor charged by said input voltage through a path including said second switch and having a bootstrap voltage thereacross; and

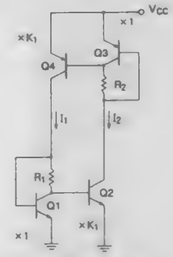
a control circuit receiving a signal indicative of said output voltage and providing gate drive signals to each of said pair of switches to control the duty cycles of said switches so as to maintain said output voltage substantially constant, said control circuit including a sensor for sensing said bootstrap voltage and increasing the duty cycle of said second switch in response to said bootstrap voltage being below a first predetermined level and said first switch being closed.

5,627,461

REFERENCE CURRENT CIRCUIT CAPABLE OF PREVENTING OCCURRENCE OF A DIFFERENCE COLLECTOR CURRENT WHICH IS CAUSED BY EARLY VOLTAGE EFFECT

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,137
Claims priority, application Japan, Dec. 8, 1993, 5-308162; Dec. 28, 1993, 5-336604
Int. Cl.° G06F *7/556*
U.S. Cl. 323—312 **28 Claims**



1. A reference current circuit comprising:

a primary pair of first and second transistors, said first transistor having a first emitter electrode grounded and a first emitter area, said second transistor having a second base electrode connected to a first collector electrode of said first transistor, a second emitter electrode grounded, and a second emitter area which is equal to e times as large as said first emitter area, where e represents the base of natural logarithm;

a secondary pair of third and fourth transistors, said third transistor having a third base electrode connected to a second collector electrode of said second transistor, a third emitter electrode connected to a power supply terminal which is supplied with a power supply voltage, and a third emitter area

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which is equal to said first emitter area, said fourth transistor having a fourth base electrode connected to a third collector electrode of said third transistor, a fourth collector electrode connected to a first base electrode of said first transistor, a fourth emitter electrode connected to said power supply terminal, and a fourth emitter area which is equal to said second emitter area;

a first resistor connected between said first collector electrode and said first base electrode; and

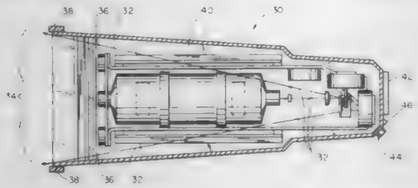
a second resistor connected between said second collector electrode and said second base electrode.

5,627,462

APPARATUS AND METHOD FOR MEASURING POWER DEMAND FROM CONVENTIONAL WATT-HOUR UTILITY METERS

Culbreath C. Whitehead, Jr., Sarasota, Fla., assignor to The Right Company, Sarasota, Fla.

Filed Sep. 1, 1995, Ser. No. 522,549
Int. Cl.[6] G01R *21/00*
U.S. Cl. 324—103 R **10 Claims**



1. A method for determining the electrical power demand from a conventional, watt-hour meter including a disk having a black mark imprinted on an edge thereof and means for rotating the disk in proportion to the amount of electrical power demanded by the energized electrical equipment connected thereto, comprising the steps of:

positioning a scanning laser beam in front of the rotating disk of the watt-hour meter in a position transverse to the rotating disk such that the edge of the rotating disk is within the field of view of the scanning laser beam;

scanning and then detecting the passings of the black mark as the disk rotates through at least two revolutions; and

computing the power demanded by the connected and energized electrical equipment based upon the amount of time between successive passings of the black mark.

5,627,463

AUTOMATIC MULTI-FUNCTION TESTING MACHINE FOR ELECTRIC APPLIANCES

Jui-Pin Lin, P.O. Box 90, Tainan 704, Taiwan

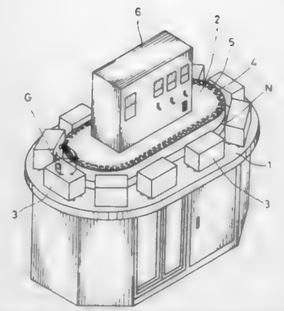
Filed Feb. 12, 1996, Ser. No. 600,068
Int. Cl.[6] G01R *31/02;33/00*
U.S. Cl. 324—158.1 **5 Claims**

1. An automatic multi-function testing machine for electric appliances comprising:

an oval annular testing table having a flat upper surface for placing carriers described later equidistantly spaced apart thereon;

a plurality of carriers for respectively carrying an electric appliance on a flat upper surface thereof, having ball feet to move on said oval annular testing table, and having a socket fixed on an upper surface and connected by means of lead wires with first two brushes brushes described later;

an oval support base located higher inside said oval annular testing table than the level of said annular testing table and insulatingly separated by an annular aperture of proper width between the both;



a first electric rail deposited annularly under a bottom surface of said oval supporting base near its peripheral edge, having two or three lines being in contact with first two brushes;

first two brushes firmly attached with each said carrier contacting with bottom surfaces of the lines of said first electric rail, being used for various testing except temperature testing;

a gauge panel supported on said oval support base and having various testers and meters fixed with itself to let front sides of the testers and the meters to expose out of the front side thereof for watching; and

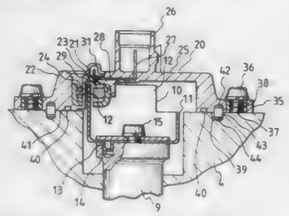
one electric appliance to be tested being carried on one of said carriers, said carrier being moved annularly on said testing table by means of a moving mechanism with two electric contacts of said electric appliance electrically connected with said first electric rail via said first brushes secured on each said carrier, said first electric rail connected electrically with various testers and meters on said gauge panel, said testers and meters showing the value of tested result of the electric appliance on the carrier.

5,627,464

ROTATION ANGLE DETECTING DEVICE FOR A CAMSHAFT PROVIDED IN AN INTERNAL COMBUSTION ENGINE

Izuru Shinjo; Noriaki Hayashi, and Akio Saito, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1995, Ser. No. 506,346
Claims priority, application Japan, Mar. 17, 1995, 7-059353
Int. Cl.[6] G01B *7/30;* **F02P** *17/00;* **F01L** *1/00*
U.S. Cl. 324—207.2 **5 Claims**



1. A rotation angle detecting device comprising:

a sensor having a first yoke made of a magnetic material on which a magnet is mounted, a second yoke made of a magnetic material on which a magnetic flux detector is mounted, the second yoke being disposed opposite to said first yoke with a preset space set between the first and second yokes, and a housing for supporting said first yoke and said second yoke; and

a vane having a wall portion, said vane being secured directly to a camshaft of an internal combustion engine and positioned relative to said first and second yokes so that said wall portion

can pass through said preset space between said first yoke and said second yoke as the vane rotates with the camshaft;

wherein said vane further comprises a pin-shaped projection positioned within a knock hole of said camshaft at a predetermined radial distance relative to a center axis of said camshaft

wherein said housing is mounted on said internal combustion engine; and

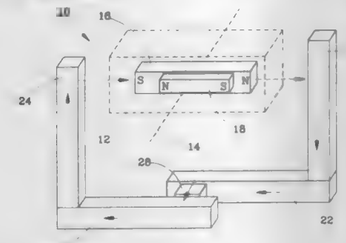
wherein a rotation angle of said shaft of the internal combustion engine is detected in accordance with a signal produced at said magnetic flux detecting device by passage of the wall portion of said vane through said space which blocks the passage of magnetic flux generated by said magnet.

5,627,465

ROTATIONAL POSITION SENSOR WITH MECHANICAL ADJUSTMENT OF OFFSET AND GAIN SIGNALS

Eugene D. Alfors, Rockford, and Ronald G. Cox, Cedarville, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 25, 1995, Ser. No. 548,108
Int. Cl.[6] G01B *7/30*
U.S. Cl. 324—207.2 **18 Claims**



1. An angular position sensor, comprising:

a primary magnet having first and second magnetic poles aligned along a first magnetic axis, said first magnetic axis being rotatable within a first plane;

a secondary magnet being rigidly attached in a permanent position relative to said primary magnet to form a magnetic structure having a generally constant effective combined magnetic field emanating therefrom, said secondary magnet having first and second magnetic poles aligned along a second magnetic axis, said second magnetic axis being rotatable within a second plane, said first and second planes being generally parallel to each other, said magnetic structure being rotatable about a rotational axis; and

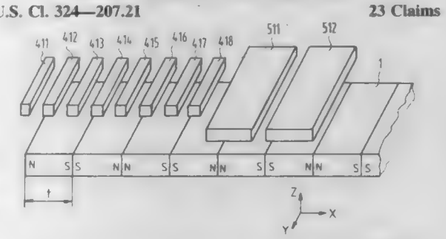
a first magnetically sensitive component having a first output signal, said first magnetically sensitive component being responsive to the combined magnetic field of said primary and secondary magnets, said first output signal being representative of the angular position of said magnetic structure relative to said first magnetically sensitive component, said first and second planes being displaced from each other by a preselected distance to affect rate of change of said first output signal as a function of said angular position of said magnetic structure, said first and second magnetic axes being angularly offset from each other to affect the offset magnitude of said first output signal for each angular position of said magnetic structure, said primary and secondary magnets being arranged in parallel magnetic association with each other to provide said combined magnetic field, said combined magnetic field passing from a first polar end of the parallel magnetic association through the first magnetically sensitive component and returning to a second polar end of the parallel magnetic association.

5,627,466

POSITION MEASURING DEVICE HAVING A SENSOR FOR SENSING THE DISTANCE BETWEEN A SCANNING UNIT AND A SCALE

Alfons Spies, Seebruck, and Josef Müller, Garching, both of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed May 27, 1994, Ser. No. 250,369
Claims priority, application Germany, Jun. 11, 1993, 43 19 322.6
Int. Cl.[6] G01B *7/14;7/30;* **G01R** *33/09*
U.S. Cl. 324—207.21 **23 Claims**



1. A position measuring device for measuring the relative position of a first object with respect to a second object, comprising:

a scale located on the first object having a periodic graduation in the form of a magnetized pattern;

a scanning unit located on the second object for scanning the graduation located on the first object;

a plurality of magneto-resistive elements disposed on the scanning unit, wherein the elements are exposed to the periodic graduation to generate position-dependent scanning signals wherein the scanning signals are dependent on the instantaneous position of the scale in the measurement direction; and

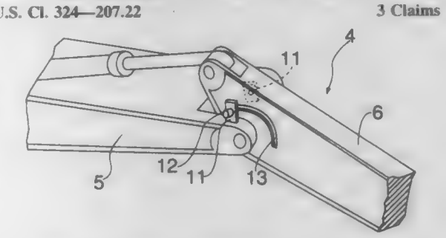
a sensor disposed on the scanning unit, wherein the sensor detects the distance between the scanning unit and the graduation and generates a correction signal dependent upon the distance detected wherein the sensor includes said plurality magnetoresistive elements placed directly opposite of the periodic graduation for scanning this periodic graduation wherein the magnetoresistive elements of the sensor are distributed three-dimensionally relative to the scale and are electrically wired together so that a largely unmodulated correction signal appears at the output of the sensor unit.

5,627,467

DEVICE FOR SENSING THE DISPLACEMENT OF WORKING MEMBERS INDUSTRIAL EQUIPMENT

Seong H. Lee; Sang T. Chung, and Dong S. Lee, all of Seoul, Rep. of Korea, assignors to Samsung Heavy Industries Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 564,826
Claims priority, application Rep. of Korea, Dec. 23, 1994, 94-36423
Int. Cl.[6] G01B *7/30;* **G01D** *5/20;* **E02F** *5/14*
U.S. Cl. 324—207.22 **3 Claims**



1. A device for sensing the displacement of an industrial equipment's working member, comprising:

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a plurality of sensor housings mounted on two sides of a support member of said working member, each housing having a sensor mount hole;

a plurality of grooves formed on two sides of said working member so as to face said housings while said working member moves relative to said support member, a depth of each groove varying from one end toward the other end of said groove;

sensing means fixed to the sensor mount hole of each housing, said sensing means being adapted for sensing the variations of an associated groove's depth and outputting displacement data of said working member; and

control means adapted for receiving the displacement data outputted from said sensing means and calculating an angular displacement of the working member relative to the support member prior to outputting a control signal to said working member in accordance with calculating results.

5,627,468

METHOD AND SYSTEM FOR CARRYING OUT MAGNETIC RESONANCE IMAGING USING THE MTC EFFECT FOR ANGIOGRAPHY

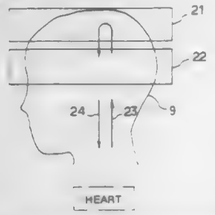
Fumitoshi Kojima, and Mitsue Miyazaki, both of Otawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 2, 1994, Ser. No. 236,544

Claims priority, application Japan, May 12, 1993, 5-110735

Int. Cl.[6] G01R *33/563;* **A61B** *5/055*

U.S. Cl. 324—307 **10 Claims**



1. A magnetic resonance imaging method utilizing a magnetization transfer contrast (MTC) effect, in which an examinee is placed under a static magnetic field and three dimensional magnetic resonance angiography is carried out for blood flowing into an imaging plane within the examinee, the method comprising the steps of:

executing a first pulse sequence for causing the MTC effect in an MTC excitation plane in the examinee, said first pulse sequence including the steps of:

applying a magnetization transfer contrast (MTC) pulse causing the MTC effect in the MTC excitation plane in the examinee, the MTC pulse being formed by superimposing an offset pulse and a spatial selective excitation pulse, said spatial selective excitation pulse for exciting protons contained in water in the examinee, said offset pulse for exciting protons contained in macromolecules in the examinee by having a frequency range shifted by an offset amount from a resonance frequency of said protons contained in the water, and

applying a slice gradient magnetic field at substantially the same timing as said application of said MTC pulse for positioning the MTC excitation plane adjacent a side of the imaging plane that is opposite to the side of the imaging plane where the blood to be imaged flows into the imaging plane; and

executing a second pulse sequence after said execution of said first pulse sequence for acquiring image data of the imaging plane for the three-dimensional magnetic resonance angiography.

5,627,469

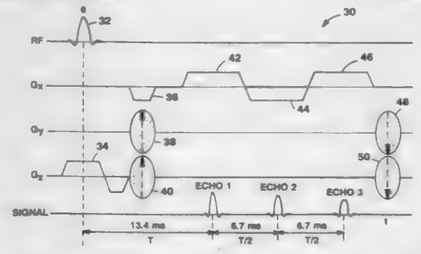
SEPARATION OF FAT AND WATER MAGNETIC RESONANCE IMAGES

Xiaole Hong, Acton; Douglas A. C. Kelley, North Andover; Jianyu Lian, Cambridge; Peter B. Roemer, North Andover, and Robert M. Weisskoff, Marblehead, all of Mass., assignors to Advanced Mammography Systems, Inc., Wilmington, Mass.

Filed Jul. 31, 1995, Ser. No. 509,538

Int. Cl.[6] G01R *33/48*

U.S. Cl. 324—309 **27 Claims**



1. A method for generating a magnetic resonance image of a region comprised of a first species of nuclei having a first Larmor frequency and a second species of nuclei having a second Larmor frequency different from said first Larmor frequency, said method comprising:

generating a RF excitation pulse for exciting said first species of nuclei and said second species of nuclei in said region;

generating a phase-encoding magnetic gradient pulse after generating said RF excitation pulse;

generating a first read-out magnetic gradient pulse after generating said RF excitation pulse and said phase-encoding magnetic gradient pulse and before generating another RF excitation pulse and another phase-encoding magnetic gradient pulse, nuclei of said first and second species having a first relative phase offset at the center of said first read-out gradient pulse;

generating a second read-out magnetic gradient pulse after generating said RF excitation pulse and said phase-encoding magnetic gradient pulse and before generating another RF excitation pulse and another phase-encoding magnetic gradient pulse, nuclei of said first and second species having a second relative phase offset at the center of said second read-out gradient pulse, said second relative phase offset being different from said first relative phase offset;

generating a third read-out magnetic gradient pulse after generating said RF excitation pulse and said phase-encoding magnetic gradient pulse and before generating another RF excitation pulse and another phase-encoding magnetic gradient pulse, nuclei of said first and second species having a third relative phase offset at the center of said third read-out gradient pulse, said third relative phase offset being different from said second relative phase offset;

acquiring RF resonant signals emitted by excited first and second species of nuclei during said first read-out gradient pulse, said second read-out gradient pulse, and said third read-out gradient pulse; and

processing RF resonant signals acquired in said acquiring step to generate a magnetic resonant image, said processing step including the substep of phase-correcting data used to generate said magnetic resonance image.

5,627,470

MAGNETIC RESONANCE APPARATUS WITH AN ILLUMINATION MEANS

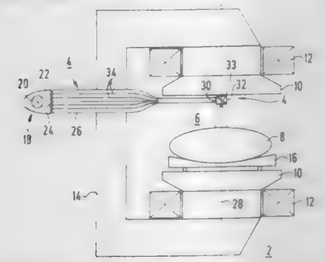
Rainer Kuth, Herzogenaurach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 6, 1995, Ser. No. 554,358

Claims priority, application Germany, Nov. 10, 1994, 44 40 226.0

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **6 Claims**



1. In a magnetic resonance imaging apparatus having an upper pole shoe and a lower pole shoe disposed and vertically spaced from and opposite each other and defining an examination space therebetween, said examination space having a symmetry line, the improvement of illumination means for illuminating at least a portion of said examination space, said illumination means comprising:

a light source arrangement disposed outside of said examination space;

a light guide having a first end optically coupled to said light source arrangement and extending into said examination space between said pole shoes and having a second end terminating said light guide at said symmetry line;

said light guide having a plurality of optical fibers disposed side-by-side exclusively in a single plane disposed in said examination space with each of said optical fibers adjacent a surface of the upper pole shoe; and

optical deflection means disposed at said second end of said light guide in said examination space for deflecting light emerging from said second end of said light guide vertically downwardly.

5,627,471

POLE PIECE FOR MR IMAGER

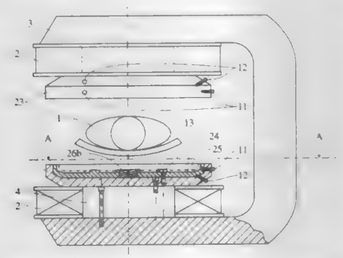
Ilmari V. Kinanen, Espoo, Finland, assignor to Picker Nordstar Inc., Helsinki, Finland

Continuation of Ser. No. 297,981, Aug. 30, 1994, abandoned. This application Sep. 17, 1996, Ser. No. 714,968

Claims priority, application Finland, Sep. 1, 1993, 933834

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—319 **19 Claims**



1. A magnetic resonance imaging system comprising:

a magnetically permeable core;

two pole pieces, each pole piece having a face, said pole pieces disposed on said core such that the pole faces are in opposed relationship forming a first gap therebetween, at least one of said pole pieces being comprised of

an outer ferromagnetic pole piece connected to the core and

an inner ferromagnetic pole piece interposed between the outer pole piece and the first gap and connected to the outer pole piece said inner pole piece forming at least a portion of the face of said pole piece;

means for producing a main magnetic field in the gap; and

means for translating the inner pole piece relative to the outer pole piece in a direction along the principal plane of the inner pole piece.

5,627,472

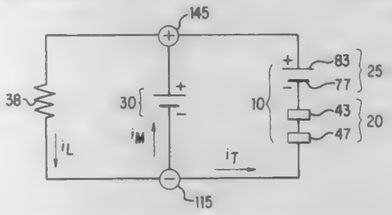
CONDITION TESTER FOR A BATTERY

David Ofer, Newton, Mass.; Gary M. Searle, North Smithfield, R.I., and Joseph Bernier, Cambridge, Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Jan. 26, 1995, Ser. No. 378,688

Int. Cl.[6] G01N *27/416;* **G01R** *31/36*

U.S. Cl. 324—435 **13 Claims**



1. A condition indicator for an electrochemical power source, said condition indicator comprising an electrolytic cell having essentially no electromotive force (e.m.f.) of its own, said electrolytic cell comprising an anode, a cathode, and an electrolyte, said electrolyte electrically contacting at least a portion of both said anode and cathode, and said condition indicator further comprising an auxiliary cell electrically connected in series to the electrolytic cell, wherein the auxiliary cell is an electrochemical power generating cell, and wherein said power source is an electrochemical cell other than the auxiliary cell, the electrochemical power source comprising a positive and a negative terminal whereinsaid electrochemical power source is electrically connected to the auxiliary cell with one of (i) and (ii) being in effect, said (i) being the positive terminal of said electrochemical power source electrically connected to the cathode of the auxiliary cell and said (ii) being the negative terminal of said electrochemical power source electrically connected to the anode of the auxiliary cell.

5,627,473

CONNECTOR INSPECTION DEVICE

Atsushi Takani, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Apr. 25, 1995, Ser. No. 428,579

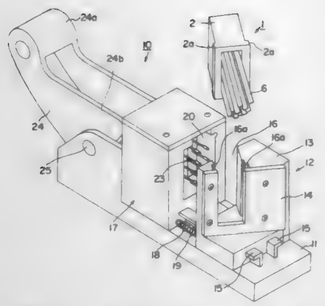
Claims priority, application Japan, Jun. 10, 1994, 6-152974

Int. Cl.[6] H01H *31/04*

U.S. Cl. 324—538 **11 Claims**

1. An inspection device for a connector wherein said connector comprises a housing containing at least one cavity, an electrical terminal in said cavity, and an electrical conductor connected to a rear end of said terminal, said terminal having, on a front end remote from said rear end, an element for electrically contacting a mating contact,

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said inspection device comprising a connector retainer, adapted to removably retain said connector, and a probe holder containing at least one probe corresponding to said terminal, said retainer and said holder having a separated position, wherein said probe and said terminal are out of contact, and a test position, wherein said probe contacts said terminal other than at said element, thereby forming an electrical circuit with electrical current flowing therein;

said terminal having a first longitudinal axis, said probe having a second longitudinal axis, said first axis and said second axis intersecting each other at an angle greater than 0° and less than 90°.

5,627,474

CONTINUITY CHECKER FOR ALLOCATING INDIVIDUAL CORES OF MULTI-CORE CABLES

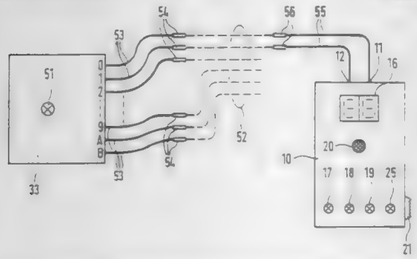
Peter Baudisch, Waeschenbeuren, Germany, assignor to Ch. Beha GmbH Technische Neuntwicklungen, Glottertal, Germany

Filed May 17, 1995, Ser. No. 442,678

Claims priority, application Germany, May 18, 1994, 44 17 351.2

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—539 **17 Claims**



1. A continuity checker for allocating individual cores of multi-core cables having a plurality of conductors, each conductor having a first end and a second end, said continuity checker comprising:

a signal transmitter means for applying different identification signals into each of said plurality of conductors, said signal transmitter means including a signal generator for generating said identification signals and applying said signals to each first end of said plurality of conductors multiple times with no signal overlapping; and

signal receiver means capable of being connected to the second ends of said plurality of conductors for decoding the different identification signals, said signal receiver means including a decoding device for representing an allocated identification signal on a visual display, said signal receiver further including a sequential switching device for supplying the connected conductors individually and successively with a reference potential in a repeated cycle.

5,627,475

METAL DETECTOR COIL RESISTANCE TESTING

Richard P. Strosser, Akron, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Filed Mar. 31, 1995, Ser. No. 414,788

Int. Cl.[6] G01R *31/06*

U.S. Cl. 324—546 **11 Claims**

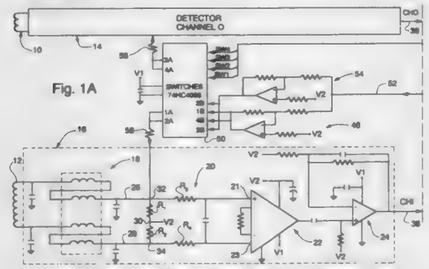


Fig. 1A

1. A method of testing the resistance of a detection coil in a magnetic metal detector wherein the detection coil has first and second ends connected to first and second inputs of a detector circuit which produces an output signal having a magnitude proportional to a difference in potential at said first and second ends, said method comprising:

injecting a test signal of varying magnitude into one of said first and second ends of the detection coil to whereby the detector circuit output signal has a magnitude that varies as said test signal varies and is dependent on the resistance of the detection coil;

while said test signal is varying, determining the magnitude of the output signal produced by said detector circuit relative to first and second reference signal values representing a maximum and a minimum magnitude, respectively, that said output signal may have when the resistance of said detection coil is within a normal range; and

producing an indication that the resistance is outside said normal range when the magnitude of said output signal is greater than said first reference signal value or less than said second reference signal value.

5,627,476

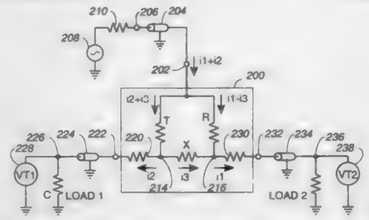
MILLIOHM IMPEDANCE MEASUREMENT

Barbara L. Chambers, Scotts Valley, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 27, 1995, Ser. No. 496,845

Int. Cl.[6] G01R *27/16*

U.S. Cl. 324—704 **21 Claims**



1. An impedance probe circuit having two terminals for connection to the terminals of an unknown impedance device and for measurement of the value of the unknown impedance device, the impedance probe circuit comprising:

a source terminal S, adapted to having a voltage source with a series impedance C coupled thereto;

a test resistor T having a first terminal connected to the source terminal S and having a second terminal connected to a terminal X1, where terminal X1 is adapted to having a first terminal of an unknown impedance device X connected thereto;

a reference resistor R having á first terminal connected to the source node S and having a second terminal connected to a terminal X2, where terminal X2 is adapted to having a second terminal of the unknown impedance device X connected thereto;

a third resistor, which has an impedance substantially equal to C/3, which has a first terminal connected to the terminal X1, and which has a second terminal connected to a first voltage test terminal;

a first load impedance LOAD1 coupled to the first voltage test terminal;

a fourth resistor, which has an impedance substantially equal to C/3, which has a first terminal connected to the terminal X2, and which has a second terminal connected to a second voltage test terminal;

a second load impedance LOAD2 coupled to the second voltage test terminal;

wherein the values of the test resistor T and of the reference resistor R are selected such that the parallel combination of the test resistor T and the reference resistor R has an impedance value substantially equal to C/3 and wherein the values of the test resistor T and of the reference resistor R are selected such that the ratio of the voltages across the first and the second load impedances LOAD1 and LOAD2 is proportional to the value of the unknown impedance X.

5,627,477

SEMICONDUCTOR DEVICE AND BURN-IN METHOD THEREOF

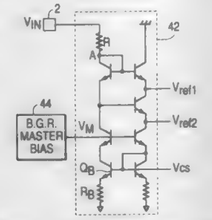
Tadahiro Kuroda, Ichikawa, and Makoto Noda, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 212,882, Mar. 15, 1994, abandoned. This application May 22, 1996, Ser. No. 651,769

Claims priority, application Japan, Mar. 15, 1993, 5-054044

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—760 **7 Claims**



1. A semiconductor device, comprising: compare means for comparing an input signal potential having a level that is less than a maximum level and greater than a minimum level with a reference potential which is set to an intermediate level between the maximum level and the minimum level to output an output signal according to the comparison result in an ordinary operation, and

switching means for switching the reference potential level from the intermediate level set during the ordinary operation to a level higher than the maximum level and then to another level lower than the minimum level during a burn-in operation.

5,627,478

APPARATUS FOR DISABLING AND RE-ENABLING ACCESS TO IC TEST FUNCTIONS

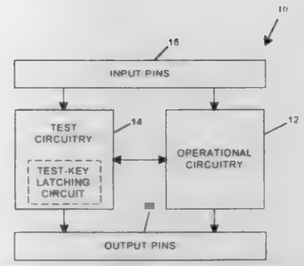
Daryl L. Habersetzer; Casey R. Kurth, both of Boise; Patrick J. Mullarkey, Meridian, and Jason E. Graalum, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 6, 1995, Ser. No. 498,823

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—763 **14 Claims**

1. An integrated circuit having a resident apparatus for enabling entry into test modes of the integrated circuit, the apparatus comprising:



a first circuit having one of either an enable state or a disable state, the first circuit storing a test mode identification in response to a test select signal during an enable state, the test mode identification corresponding to a predefined test mode of the integrated circuit;

a re-enable circuit that switches the first circuit from the disable state into the enable state while a re-enable circuit output is active, the re-enable circuit output becoming active in response to a first signal that defines a signal magnitude level exceeding a first threshold, the first threshold being greater than specification rating signal levels for the integrated circuit, the re-enable circuit output remaining active after the first signal level falls below the first threshold.

5,627,479

METHOD AND APPARATUS FOR DETERMINING CHARACTERISTIC ELECTRICAL MATERIAL PARAMETERS OF SEMI-CONDUCTING MATERIALS

Petr Viscor, Espergærde, and Jan Vedde, Birkerød, both of Denmark, assignors to Peter Viscor, Espergærde, Denmark

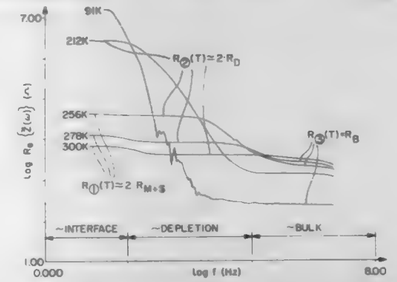
PCT No. PCT/DK93/00410, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO94/14078, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 7, 1993, Ser. No. 446,857

Claims priority, application Denmark, Dec. 7, 1992, 1466/92

Int. Cl.[6] G01R *27/26;31/26*

U.S. Cl. 324—765 **12 Claims**



1. A method for determining characteristic electrical properties of semi-conducting materials wherein the time or frequency dependent electrical impedance Z(t) or $\bar{Z}(\omega)$, respectively, or admittance Y(t) or $\bar{Y}(\omega)$, respectively, is measured, comprising the steps of establishing a finite, positive (n-type material) or negative (p-type material) difference in the chemical potential between the inner and the surface of the material or between the inner of the material and the metal electrode—material surface interface layer, thereby causing the formation of depletion regions near the electrical contacts and by using the effect of this established difference in the

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chemical potential on the measured electrical impedance or admittance the step of determining from this measured electrical impedance or admittance one, more or all of the following electrical parameters f the material:

the difference $\Delta\mu^{ch}$ in chemical potential,

the dielectric constant ϵ,

the density N of majority mobile charge carriers,

the density N_{min} of minority mobile charge carriers,

the electrical mobility μ of majority mobile charge carriers,

the electrical mobility μ_{min} of minority mobile charge carriers,

the emission and capture rates E.R and C.R, respectively, for mobile positive and negative charge carriers characterizing the effect of surface and bulk localized states within the band gap (Eg), when they are present, on the electrical transport and the measured electrical impedance, whereby the determination of the electrical parameters of the material is carried out by solving a system of equations for the total charge density $\rho(x,t)$ consisting of the mobile negative and positive charge densities and localized negative and positive charge densities in the material supplemented with initial and boundary conditions, where the space-time development of $\rho(x,t)$ determines the electric current running in the external circuit in response to the applied electric voltage thereby defining the electrical complex impedance $\bar{Z}_s(\omega)$ of the material.

5,627,480

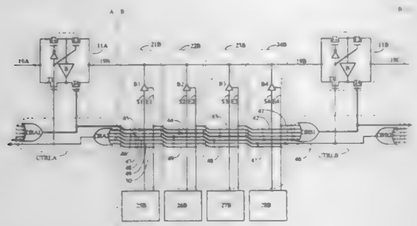
TRISTATABLE BIDIRECTIONAL BUFFER FOR TRISTATE BUS LINES

Steven P. Young, San Jose, and Trevor J. Bauer, Campbell, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Feb. 8, 1996, Ser. No. 598,308

Int. Cl.[6] H03K *19/01*

U.S. Cl. 326—17 **4 Claims**



1. A bus structure comprising:

(a) a bus line;

(b) at least one bidirectional buffer separating said bus line into at least two bus line segments;

(c) for each said bus line segment, at least one tristate buffer for controllably applying a signal to said bus line segment, said tristate buffer receiving an input signal on a tristate buffer input signal line and an enable signal on a tristate buffer enable signal line, and applying said input signal to said bus line segment in response to an enable signal on said tristate buffer enable signal line;

(d) at least one control unit for controlling the direction of said at least one bidirectional buffer, said control unit being controlled by signals from said tristate buffer enable signal lines to direct said bidirectional buffer to carry said signal applied to said bus line segment away from said tristate buffer input signal line.

5,627,481

FAST TRANSMISSION LINE IMPLEMENTED WITH RECEIVER, DRIVER, TERMINATOR AND IC ARRANGEMENTS

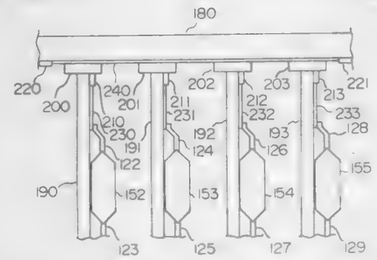
Toshitsugu Takekuma, Ebina; Ryoichi Kurihara, and Akira Yamagiwa, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 269,352, Jun. 30, 1994. This application Feb. 5, 1996, Ser. No. 596,724

Claims priority, application Japan, Dec. 28, 1993, 5-334631

Int. Cl.[6] H03K *17/16;19/003*

U.S. Cl. 326—30 **10 Claims**



1. A signal transmitting device comprising:

a main transmission line terminated by elements each having a resistance substantially equal to an impedance value of said main transmission line itself;

a first circuit block connected to said main transmission line, said first circuit block including a driving circuit for driving a signal, and a first intra-block transmission line with a predetermined impedance for transmitting the signal outputted from said driving circuit to said main transmission line, said first circuit block including an element having a resistance substantially equal to a value derived by subtracting a half of an impedance of said main transmission line from the predetermined impedance of said first intra-block transmission line;

an at least one second circuit block connected to said main transmission line, said at least one second circuit block including a receiving circuit for receiving a signal; a second intra-block transmission line with a predetermined impedance for transmitting a signal inputted from said main transmission line to said receiving circuit, said second circuit block including an element having a resistance substantially equal to a value derived by subtracting a half of an impedance of said main transmission line from said predetermined impedance of said second intra-block transmission line;

a mother board on which said main transmission line is formed;

a first daughter connected to said mother board, said first daughter having said first intra-block transmission line and said driving circuit mounted thereon; and

a second daughter connected to said mother board, said second daughter having said second intra-block transmission line and said receiving circuit mounted thereon.

5,627,482

ELECTRONIC DIGITAL CLOCK DISTRIBUTION SYSTEM

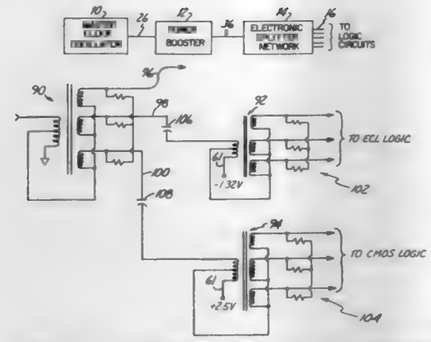
Michael J. Lamatsch, Roseville, Minn., assignor to Ceridian Corporation, Minneapolis, Minn.

Filed Feb. 7, 1996, Ser. No. 598,233

Int. Cl.[6] H03K *19/00*

U.S. Cl. 326—93 **12 Claims**

1. An electronic digital clock distribution system for providing a plurality of working rank clock signals to respective ones of a plurality of logic circuits, each clock signal having a predetermined frequency and each logic circuit requiring a working rank clock signal having a predetermined level of electrical power, the system comprising:



oscillator means for producing a master clock signal having the predetermined frequency and an electrical power level at least equal to the sum of the power requirements for all working rank clock signals of the plurality of logic circuits; and

an electronic splitter network connected to the oscillator means for splitting the master clock signal into the plurality of working rank clock signals.

5,627,483

EMITTER COUPLED LOGIC CIRCUIT WITH MOS DIFFERENTIAL STAGE

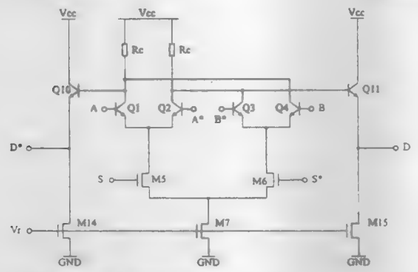
Patrick Bernard, Poisat; Didier Belot, Rives, and Jacques Quervel, Montbonnot Saint Martin, all of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Aug. 30, 1995, Ser. No. 521,518

Claims priority, application France, Aug. 31, 1994, 94 10633

Int. Cl.[6] H03K *19/003*

U.S. Cl. 326—110 **34 Claims**



1. A logic circuit comprising:

a first differential stage including a plurality of bipolar transistors operating in a linear mode, each of the plurality of bipolar transistors having a base terminal, a collector terminal, and an emitter terminal, each of the emitter terminals being coupled together;

a second differential stage having a branch that is coupled to the emitter terminals of the first differential stage, the second differential stage including MOS transistor having a gate terminal, a source terminal and a drain terminal; and

a current source coupled to the second differential stage, that biases the first differential stage so that each of the plurality of bipolar transistors operate in the linear mode, the current source including MOS transistors;

wherein gates of the MOS transistors of the second stage receive the same voltage levels as the base terminals of the bipolar transistors of the first stage.

5,627,484

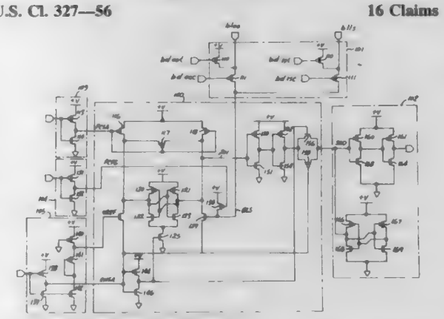
CMOS SENSE AMPLIFIER

Arthur D. Tuminaro, LaGrangeville; Yuen H. Chan, Poughkeepsie, and Philip T. Wu, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,046

Int. Cl.[6] H03F *3/45*

U.S. Cl. 327—56 **16 Claims**



1. A sense amplifier comprising:

a latch formed from interconnected CMOS gates and having a pair of latch nodes;

charge circuitry for selectively charging the latch nodes;

a latch input gate connected between a first of the latch nodes and an amplifier ground terminal and a latch reference gate connected between a second of the latch nodes and the amplifier ground terminal;

a source of reference voltage connected to the latch reference gate and generating a reference voltage signal of a predetermined value;

an input conductor connected to the latch input gate providing an input signal to the input gate having a high voltage level state greater than the predetermined value and a low voltage level value lower than the predetermined state;

the latch input gate operative to discharge the first node when the high voltage level state input signal is provided on the input conductor and the latch reference gate operative to discharge the second node when the low voltage level state is provided on the input conductor.

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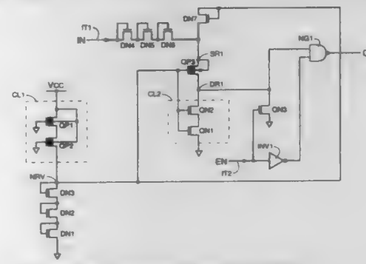
VOLTAGE-INDEPENDENT SUPER VOLTAGE DETECTION CIRCUIT

Stephen L. Casper, and James E. Miller, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 26, 1995, Ser. No. 494,483

Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—77 **23 Claims**



1. A super voltage detection circuit comprising:

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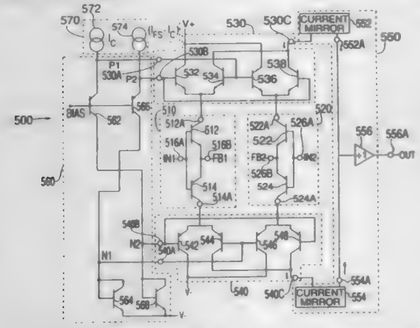
(a) an input terminal to which a super voltage may be selectively applied;
(b) a first and second pluralities of series-coupled diodes;
(c) first and second current-limiting devices;
(d) a reference voltage node coupled to both a first potential through said first plurality of series-coupled diodes, and to a second potential through said first current-limiting device; and
(e) an insulated-gate field-effect transistor having its gate coupled to the reference voltage node, a first source/drain region coupled to said input terminal through said second plurality of series-coupled diodes, and a second source/drain region coupled to said first potential through a second current-limiting device, the potential on said second source/drain region being indicative of the presence of a super voltage on said input terminal.

5,627,486

CURRENT MIRROR CIRCUITS AND METHODS WITH GUARANTEED OFF STATE AND AMPLIFIER CIRCUITS USING SAME

William H. Gross, Sunnyvale, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.

Division of Ser. No. 346,395, Nov. 29, 1994, Pat. No. 5,517,143. This application Jun. 7, 1995, Ser. No. 479,009
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—108 **23 Claims**



1. A driver circuit for providing a pair of inversely-related first and second predistorted control voltages to an amplifier circuit, the driver circuit comprising:

a first current mirror circuit that provides a first predistortion current substantially proportional to a control current when the control current falls within a first predetermined range, the first predistortion current being offset by a first offset amount from its ideal proportional level when the control current falls outside the first predetermined range;

a second current mirror circuit that receives a differential current, equivalent to the amount by which a reference current exceeds the control current, and that provides a second predistortion current substantially proportional to the differential current when the differential current falls within a second predetermined range, the second predistortion current being offset by a second offset amount from its ideal proportional level when the differential current falls outside the second predetermined range; and

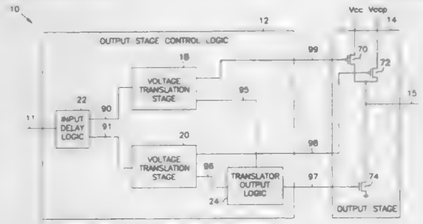
a predistortion circuit that provides (1) the first predistorted control voltage in response to the first predistortion control current being output by the first current mirror circuit and (2) the second predistorted control voltage in response to the second predistortion control current being output by the second current mirror circuit.

5,627,487

CHARGE CONSERVING DRIVER CIRCUIT FOR CAPACITIVE LOADS

Brent Keeth, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 28, 1995, Ser. No. 495,889
Int. Cl.[6] H03K *17/687*
U.S. Cl. 327—112 **12 Claims**



4. A CMOS driver device, comprising:

a controllable CMOS output stage for providing a translated output signal based on an input signal;

output stage control logic for receiving the input signal, the output gage control logic including:

first and second parallel voltage translators to generate control signals for controlling the controllable CMOS output stage; and

input delay logic to control the first and second parallel voltage translators such that the translated output signal representative of the input signal is derived in part from one of first and second voltages during a first time period and in part from the other of the first and second voltages during a subsequent second time period;

wherein the controllable CMOS output stage includes:

a first PMOS transistor and an NMOS transistor serially connected between the first voltage and a third voltage;

a second PMOS transistor and the NMOS transistor serially connected between the second voltage and the third voltage; and

wherein the control signals generated by the output stage control logic are coupled to the first and second PMOS transistors and the NMOS transistor for turning the first and second PMOS transistors and the NMOS transistor "off" and "on" such that the translated output signal representative of the input signal is derived in part from one of the first and second voltages during the first time period and in part from the other of the first and second voltages during the subsequent second time period when the input signal transitions between first and second levels.

5,627,488

DELAY CIRCUIT, OSCILLATION CIRCUIT AND SEMICONDUCTOR MEMORY DEVICE

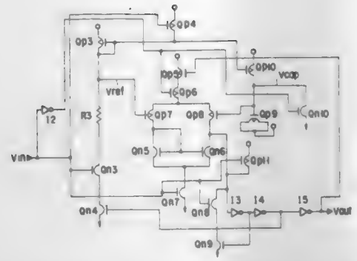
Toru Tanzawa, Ebina; Tomoharu Tanaka; Toshio Yamamura, both of Yokohama, and Koji Sakui, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 23, 1995, Ser. No. 494,010
Claims priority, application Japan, Jun. 23, 1994, 6-141598; Aug. 19, 1994, 6-195827; Aug. 22, 1994, 6-219496; Jan. 5, 1995, 7-000297
Int. Cl.[6] H03K *5/13;4/08*
U.S. Cl. 327—261 **20 Claims**

1. A delay circuit having a standby state and an active state and configured to output at least one delayed signal obtained by delaying an input signal, comprising:

a storage circuit comprising,

a constant voltage generator for generating a first voltage when the delay circuit enters the active state which occurs when the input signal changes from a first level to a second level,



at least one constant-current generating section configured to generate at least one current proportional to a difference between said first voltage and a first supply voltage, and

at least one capacitor comprising,

a first terminal set to at least one of the first supply voltage or a second supply voltage, and

a second terminal set respectively to said second supply voltage or said first supply voltage while the delay circuit is in said standby state, and respectively charged or discharged to a second voltage by the current provided by said constant current generating section while in the active state;

at least one amplifier circuit configured to output the delayed signal as an output signal by amplifying a difference between the first voltage and the second voltage; and

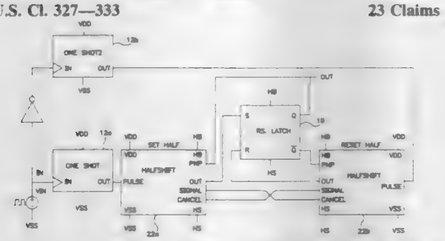
at least one feed-back means for preventing a DC current from flowing in said at least one amplifier circuit after said output signal is inverted and for keeping a logic level of the output signal constant until said input signal returns to said first level.

5,627,489

LEVEL SHIFTER WITH IMPROVED REJECTION OF VOLTAGE VARIATIONS

Thomas A. Jochum, Durham, N.C., assignor to Harris Corp., Melbourne, Fla.

Filed Jun. 22, 1995, Ser. No. 493,824
Int. Cl.[6] H03L *5/00*
U.S. Cl. 327—333 **23 Claims**



1. In a level shifter for shifting a digital signal from a digital signal input voltage to a digital signal output voltage, the level shifter having (a) first connections for an input supply voltage and for an input reference voltage, (b) second connections for an output supply voltage and for an output reference voltage, (c) a trigger connected to the first connections for triggering a pulse at a transition of the digital signal between the input supply voltage and the input reference voltage, and (d) a latch connected to the second connections for switching the digital signal to one of the output supply voltage and the output reference voltage in response to each pulse from the trigger and holding the digital signal at that voltage, the improvement comprising:

a first half-shifter connected between the trigger and the latch for providing the pulse to the latch when the digital signal transitions from the input supply voltage to the input reference voltage; and

a second half-shifter connected between the trigger and the latch for providing the pulse to the latch when the digital signal transitions from the input reference voltage to the input supply voltage,

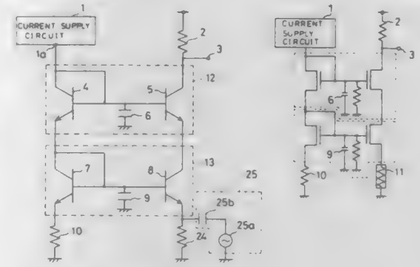
wherein said first and second half-shifters each comprise a selector circuit with plural current mirrors for rejecting voltage variations in said selector circuit that would induce the latch to switch other than in response to the pulse if the voltage variations were provided to the latch.

5,627,490

AMPLIFIER CIRCUIT

Koji Sushihara; Takashi Yamamoto, both of Iizuka; Ikuo Imanishi, Nagaokakyo; Tsuyoshi Nakamura, Iizuka; Michinori Kishimoto, Iizuka, and Kenichi Ishida, Iizuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 6, 1996, Ser. No. 597,258
Claims priority, application Japan, Feb. 23, 1995, 7-034878
Int. Cl.[6] H03K *3/45*
U.S. Cl. 327—510 **19 Claims**



1. An amplifier circuit, comprising:

a first current mirror circuit and a second current mirror circuit;

a first resistor;

a resistor member whose resistance value changes due to an external factor;

a current supply circuit; and

a second resistor,

wherein said first and said second current mirror circuits have the same structure, said first and said second current mirror circuits each comprise: a first input terminal and a first output terminal; a first transistor which is coupled between the first input terminal and the first output terminal, said first transistor having a control electrode connected to said first input terminal; a second input terminal and a second output terminal; and a second transistor which is coupled between the second input terminal and the second output terminal, said second transistor having a control electrode connected to said first input terminal, said control electrodes of said first and said second transistors are connected to a set potential through a capacitance,

the first and the second input terminals of said first current mirror circuit are connected to the first and the second output terminals of said second current mirror circuit, respectively,

said first resistor is coupled between the first output terminal of said first current mirror circuit and a set constant potential,

said resistor member is disposed between the second output terminal of said first current mirror circuit and said set constant potential,

said current supply circuit is connected to the first input terminal of said second current mirror circuit,

said second resistor is coupled between a power source and the second input terminal of said second current mirror circuit, and

a change in the resistance value of said resistor member is outputted as a change in a voltage which is developed across said second resistor.

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PLURAL STAGE CIRCUIT WITH AUTOMATIC ADAPTATION TO FIRST AND SECOND VOLTAGE RANGES OF A COMMON VOLTAGE SOURCE

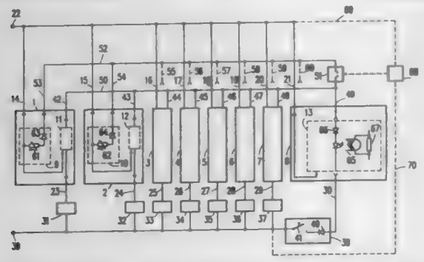
Walter Lösel, Fürth, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 20, 1995, Ser. No. 504,815

Claims priority, application Germany, Jul. 27, 1994, 44 26 511.5

Int. Cl.° G05F *1/10*

U.S. Cl. 327—530 15 Claims



1. A circuit arrangement comprising: at least one stage which is to be fed by a source voltage which can have a value within a first or second value range from a common voltage source at least one of said stages comprising a control signal generating circuit which can apply a control signal, to be derived from the source voltage, to a control signal output bus conductor which is common to all of said stages, a control signal input bus conductor which can be connected to the control signal output bus conductor via a central bridge when the source voltage has a value within the first value range and which can be isolated from the control signal output bus conductor by the central bridge when the source voltage has a value within the second value range, each stage comprising a respective control circuit connected to the control signal input bus conductor in order to adjust the associated stage to a source voltage from the first or second value range by application or interruption of the control signal.

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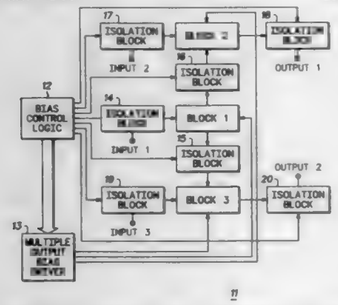
CIRCUIT AND METHOD FOR ISOLATING CIRCUIT BLOCKS FOR REDUCING POWER DISSIPATION

Mark Weaver, Phoenix; Robert D. Berger, Chandler, and Dwight D. Esgar, Queen Creek, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1995, Ser. No. 552,709

Int. Cl.° G05F *1/10*

U.S. Cl. 327—544 13 Claims



1. A method for reducing power consumption of an integrated circuit comprising current source based circuitry, the method including the steps of:

dividing circuitry of the integrated circuit into functional blocks;

turning off current sources of a functional block to reduce power consumption during periods when said functional block is idle; and

isolating signal lines out of said functional block to prevent propagation of erroneous signals from said functional block to remaining functional blocks still in operation in the integrated circuit.

5,627,493

SEMICONDUCTOR DEVICE HAVING SUPPLY VOLTAGE DEBOOSTING CIRCUIT

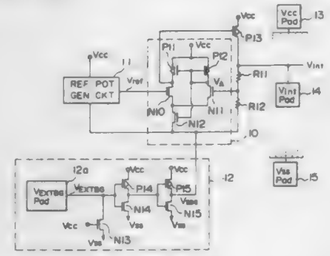
Yoshiaki Takeuchi; Hiroaki Tanaka, and Masaru Koyanagi, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 109,346, Aug. 20, 1993, abandoned. This application Aug. 25, 1995, Ser. No. 519,249

Claims priority, application Japan, Aug. 21, 1992, 4-223022

Int. Cl.° G05F *3/02*

U.S. Cl. 327—546 23 Claims



1. A semiconductor device, comprising:

a reference potential generating circuit for receiving a power supply voltage and for outputting a reference potential;

a differential amplifier connected to the reference potential generating circuit, said differential amplifier receiving the reference potential and a first signal, said differential amplifier comparing the first signal with the reference potential, and outputting a second signal based on a result of the comparison;

an output circuit connected to the differential amplifier and having an internal power supply voltage terminal connected to a first bonding pad, said output circuit receiving the second signal and the power supply voltage, said output circuit generating and outputting an internal power supply voltage based on the second signal from the internal power supply voltage terminal, and outputting the first signal based on the internal power supply voltage to the differential amplifier; and

a control circuit having an input terminal connected to a second bonding pad, said control circuit outputting a control signal to control operations of the reference potential generating circuit, the differential amplifier, and the output circuit,

wherein, in a case when the first and second bonding pads are connected to a power supply voltage terminal, the reference potential generating circuit, the differential amplifier, and the output circuit do not operate as controlled by the control signal, and the power supply voltage is output as the internal power supply voltage from the internal power supply voltage terminal.

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HIGH SIDE CURRENT SENSE AMPLIFIER

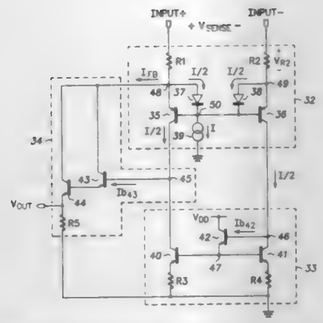
Thomas A. Somerville, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1995, Ser. No. 566,748

Int. Cl.° H03F *3/45*

U.S. Cl. 330—257 8 Claims

1. A high side current sense amplifier having a first input, a second input, and an output for amplifying a differential voltage comprising:



a common base stage having a first input and a second input coupled respectively to the first and second input of the high side current sense amplifier, a third input, a first output, and a second output wherein said common base stage comprises:

a first resistor having a first terminal and a second terminal coupled respectively to said first input and said third input of said common base stage;

a second resistor having a first terminal coupled to said second input of said common base stage and a second terminal;

a first transistor having a first electrode coupled to said first output of said common base stage, a control electrode, and a second electrode coupled to said third input of said common base stage;

a first diode having a first electrode coupled to said third input of said common base stage and a second electrode coupled to said control electrode of said first transistor;

a second transistor having a first electrode coupled to said second output of said common base stage, a control electrode coupled to said control electrode of said first transistor, and a second electrode coupled to said second terminal of said second resistor;

a second diode having a first electrode coupled to said second electrode of said second transistor and a second electrode coupled said control electrode of said first transistor;

a current source having a first terminal coupled to said control electrode of said first transistor and a second terminal coupled to a first power supply terminal for receiving a first power supply voltage;

a current mirror stage having a first terminal and a second terminal coupled respectively to said first and second outputs of said common base stage; and

a voltage to current stage for providing a feedback current to said common base stage, said voltage to current circuit having an input coupled to said first terminal of said current mirror stage, a first output coupled to said third input of said common base stage, and a second output coupled to the output of the high side current sense amplifier.

5,627,495

TOPOGRAPHY FOR INTEGRATED CIRCUIT OPERATIONAL AMPLIFIER

Joel M. Halbert, and Kenneth W. Murray, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

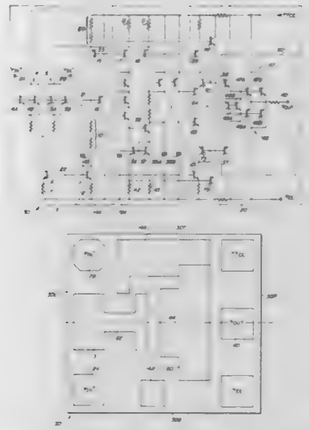
Filed Sep. 26, 1995, Ser. No. 534,039

Int. Cl.° H03F *1/30*

U.S. Cl. 330—307 14 Claims

9. A high speed integrated circuit operational amplifier chip including sequential first, second, third and fourth edges, the operational amplifier chip comprising in combination:

(a) approximately equal size first and second half sections of the operational amplifier chip located on opposite sides of a stationary thermal centerline parallel to the second and fourth edges;



(b) an output driver circuit located adjacent to the third edge and disposed approximately symmetrically about the thermal centerline to provide approximately balanced differential heating of the operational amplifier chip relative to the thermal centerline, wherein the output driver circuit includes first and second parallel-connected NPN output transistors and first and second parallel-connected PNP output transistors, the first and second PNP output transistors being symmetrically disposed immediately adjacent to and on opposite sides of the thermal centerline, the first and second NPN output transistors being disposed symmetrically about the thermal centerline immediately adjacent to the first and second PNP output transistors, respectively;

(c) a low gain differential input circuit disposed generally in a left half of the operational amplifier chip bounded by the first edge approximately symmetrically about the thermal centerline to provide approximately balanced responses of various matched transistors in the low gain differential input circuit to isotherms produced by the differential heating; and

(d) a plurality of low gain amplification circuit transistors located between the low gain differential input circuit and the output driver circuit and disposed along the thermal centerline to provide approximately balanced response to the low gain amplification circuit transistors to differential heating by the output driver circuit.

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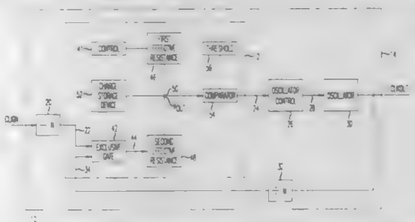
PLL AND PHASE DETECTION CIRCUIT THEREFOR

George F. Gross, Jr., Reading, Pa., and Thayamkulangara R. Viswanathan, Addison, Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 17, 1996, Ser. No. 664,655

Int. Cl.° H03L *7/085*; G01R *25/00*

U.S. Cl. 331—25 15 Claims



1. An integrated circuit including a phase detection circuit, comprising:

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an exclusive gate having first and second gate inputs for receiving first and second gate input signals, and a gate output providing a gate output signal that is the exclusive combination of the first and second gate input signals;

a first resistance coupled between a first voltage source and a common node;

a second effective resistance coupled between a second voltage source and the common node, the second effective resistance receiving the gate output signal to control the resistance thereof, the first and second resistance cooperating to develop a signal at the common node; and

a comparator having first and second comparator inputs and a comparator output, the first comparator input coupled to the common node, the second comparator input coupled to a threshold value, the comparator output providing a signal that takes on a first value when the average value of the signal developed at the common node is greater than the threshold value, and a second value when the average value of the signal developed at the common node is less than the threshold value, whereby the comparator output signal is indicative of whether the first and second gate input signals to the exclusive gate are in phase.

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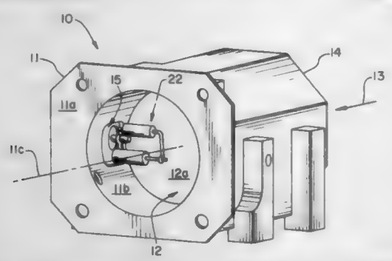
RESONATOR PACKAGE FOR ATOMIC FREQUENCY STANDARD

Gerold Skoczen, Chino Hills, Calif., assignor to Efratom Time and Frequency Products, Inc., Irvine, Calif.

Filed Feb. 16, 1996, Ser. No. 602,987

Int. Cl.° H03B *17/00*

U.S. Cl. 331—94.1 **47 Claims**



1. In a resonator package for an atomic frequency standard, comprising a microwave container forming a light window at one end and a connection for light detection means, and an absorption cell and microwave exciter for said absorption cell carried within said microwave container wherein the improvement comprises a microwave container that is untuned, and the microwave exciter for said absorption cell is carried by said microwave container.

5,627,498

MULTIPLE FREQUENCY OSCILLATOR

Charles S. Meyer, Nevada City, Calif., assignor to Nvision, Inc., Grass Valley, Calif.

Filed Feb. 9, 1996, Ser. No. 598,953

Int. Cl.° H03L *7/16*

U.S. Cl. 331—117 R **18 Claims**

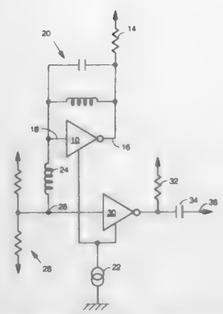
1. An oscillator comprising:

a first inverter having a signal input terminal, a signal output terminal, and a power supply terminal,

a second inverter having a signal input terminal, a signal output terminal, and a power supply terminal,

a DC bias means for maintaining the signal input terminal of the second inverter at the same DC level as the signal input terminal of the first inverter,

a feedback network connected between the signal output terminal of the first inverter and the signal input terminal thereof, said feedback network having a resonant frequency, and



a current source means having a current supply terminal connected to the power supply terminal of the first inverter and to the power supply terminal of the second inverter.

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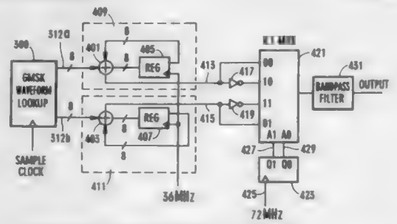
DIGITAL MODULATOR AND UPCONVERTER HAVING SINGLE-BIT DELTA-SIGMA DATA CONVERTERS

Steven H. Gardner, San Diego, Calif., assignor to Pacific Communication Sciences, Inc., San Diego, Calif.

Filed Oct. 13, 1995, Ser. No. 542,808

Int. Cl.° H03C *3/00;* **H04L** *27/12*

U.S. Cl. 332—101 **10 Claims**



1. A digital upconverter/modulator including:

(a) a digital modulator having an in-phase and quadrature digital output;

(b) a first single-bit resolution delta-sigma data converter, coupled to the in-phase digital output, having an output with one digital bit of resolution;

(c) a second single-bit resolution delta-sigma data converter, coupled to the quadrature digital output, having an output with one digital bit of resolution;

(d) a first inverter coupled to the output from the first single-bit resolution delta-sigma data converter;

(e) a second inverter coupled to the output from the second single-bit resolution delta-sigma data converter; and

(f) a multiplexer, coupled to the first and second inverters, and to the output of the first and second single-bit resolution delta-sigma data converters, the multiplexer having an output that is selectively coupled to any one of the multiplexer inputs.

5,627,500

PHASE MODULATOR HAVING INDIVIDUALLY PLACED EDGES

Dan H. Wolaver, West Brookfield, Mass., and Daniel G. Knierim, Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

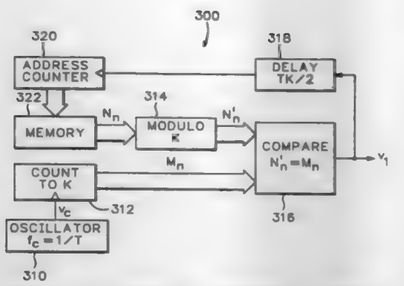
Filed Dec. 26, 1995, Ser. No. 578,748

Int. Cl.° H03B *29/00;* **H03C** *3/00*

U.S. Cl. 332—112 **28 Claims**

1. A phase modulator for modulating a waveform comprising:

a programmable pulse generator for producing a pulsed output signal wherein the position of each edge of the output signal



relative to the waveform is determined in response to a control value provided to the programmable pulse generator, comprising:

a counter coupled to receive the waveform repeatedly counting to a nominal pulse period constant; and

a comparator coupled to the counter for generating the pulsed output signal when the pulse period count equals the control value; and

a control value source coupled to the programmable pulse generator for producing a sequence of control values.

5,627,501

SIGNAL COUPLER WITH AUTOMATIC COMMON LINE ATTENUATION COMPENSATION

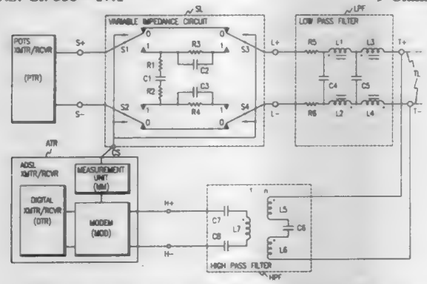
Bernard Biran, Brussels, and Peter P. F. Reusens, Laarne, both of Belgium, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Apr. 5, 1995, Ser. No. 417,374

Claims priority, application European Pat. Off., Apr. 14, 1994, 94201015

Int. Cl.° H04M *11/06;* **H03H** *7/46*

U.S. Cl. 333—17.1 **9 Claims**



1. Signal coupler including a first branch (ATR, HPF) for transmission and receipt of a first signal and a second branch (PTR, SL, LPF) for transmission and receipt of a second signal, said first and second branches both being coupled to a common transmission line (TL), said first signal having a first frequency spectrum and said second signal having a second frequency spectrum, said first and second frequency spectra being non-overlapping, said first branch including the cascade coupling of a first signal means (ATR) and a first bandpass filter (HPF) both adapted to said first frequency spectrum, said second branch including the cascade coupling of a second signal means (PTR) and a second bandpass filter (LPF) both adapted to said second frequency spectrum, wherein said second branch includes a variable impedance (SL) and said first signal means (ATR) includes measurement means (MM) to measure attenuation caused by said common line (TL) and to generate a control signal (CS) adapted to modify the value of said variable impedance (SL).

5,627,502

RESONATOR FILTER WITH VARIABLE TUNING

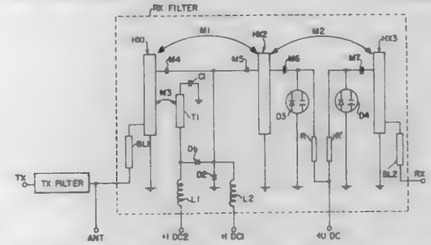
Kimmo Ervasti, Varjakka, Finland, assignor to LK Products Oy, Kempele, Finland

Filed Jan. 26, 1995, Ser. No. 391,192

Claims priority, application Finland, Jan. 26, 1994, 940388

Int. Cl.° H01P *1/20;1/213*

U.S. Cl. 333—134 **11 Claims**



10. A duplex filter with a receiver branch and a transmitter branch for a frequency division duplex telephone transceiver, the duplex filter including a variable filter in its receiver branch, the variable filter comprising:

i) at least first and second resonators electromagnetically coupled to each other and forming a bandpass filter arrangement; and

ii) control circuitry coupled to the first and second resonators to control the bandwidth of the receiver branch in response to .separate first and second control signals by controlling the coupling between the first and second resonators, said first control signal causing said control circuitry to effect a narrowing of the passband to a first bandwidth in a first frequency range and said second control signal causing said control circuitry to effect a move of the narrowed passband to a second frequency range.

5,627,503

RELAY

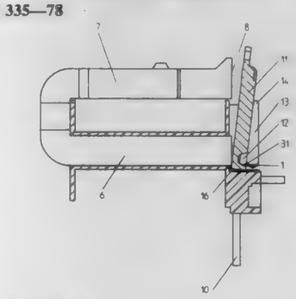
Leopold Mader, Mödling, Austria, assignor to Eh-Schrack Components Aktiengesellschaft, Vienna, Austria

Filed Oct. 10, 1995, Ser. No. 544,382

Claims priority, application Austria, Oct. 10, 1994, 1911/94

Int. Cl.° H01H *51/22*

U.S. Cl. 335—78 **13 Claims**



1. A relay, comprising:

a magnetic system forming a support surface and including an armature defining a longitudinal axis and exhibiting an extreme edge pivotally supporting the armature on the support surface for rotation of the armature about the extreme edge relative to a first pole face in an actuation direction between a release position and an attracted position upon energizing and deenergizing of a coil of the magnetic system, with the support surface extending in the plane of a second pole face; and

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a retention spring received by a support area of the armature for holding the armature in contact with the support surface and acting on the armature in direction of the longitudinal axis to load the armature to seek the release position, with the support area defining the position of the armature in direction of longitudinal extension of the support surface, said retention spring being configured in form of a carrier bilaterally clamped at pertaining attack points which extend substantially in alignment at least in one plane with the support area for the retention spring.

5,627,504

ELECTROMAGNETIC ACTUATING DEVICE, IN PARTICULAR FOR A VALVE

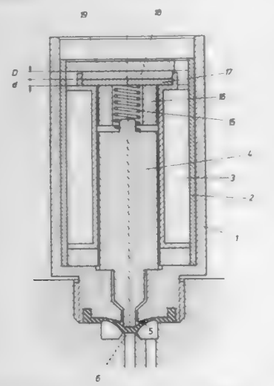
Erich Kleinhappl, Weinitzen, Austria, assignor to AVL Medical Instruments AG, Schaffhausen, Switzerland

Continuation of Ser. No. 84,230, Jul. 7, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,528

Claims priority, application Austria, Apr. 7, 1992, 729/92

Int. Cl.[6] H01F *7/00;7/10;* **F16K** *31/02*

U.S. Cl. 335—230 **7 Claims**



1. Electromagnetic actuating device, comprising:

a plunger which is axially movable between a first and a second extreme position, said plunger defining a first diameter,

an electromagnetic coil surrounding said plunger for actuation of said plunger,

a permanent magnet configured as a non-perforated flat disk and located outside said electromagnetic coil for holding said plunger in said first extreme position, said non-perforated flat disk defining a second diameter which is greater than said first diameter, and

a non-perforated first pole plate located between said plunger and said permanent magnet, said first pole plate being dimensioned to completely cover said permanent magnet on a side thereof facing said plunger.

5,627,505

MAGNETIC CYLINDER WITH AXIAL EXTENDING PERMANENT BAR MAGNETS

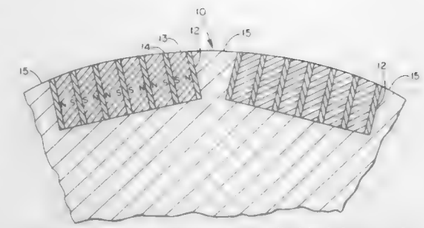
Thaddeus T. Iwaszek, St. Paul, Minn., assignor to T. D. Wright, Inc., St. Paul, Minn.

Filed Jul. 1, 1996, Ser. No. 674,254

Int. Cl.[6] H01F *7/02;* **B41F** *27/02*

U.S. Cl. 335—302 **5 Claims**

1. A cylinder for magnetically holding a printing plate, comprising:



a) a suitably magnetically insulated cylindrical drum, and

b) a plurality of elongated permanent ceramic bar magnets, each of said magnets extending uninterrupted substantially across the axial length of the drum, said magnets arranged substantially parallel to one another at the outer surface of said drum with a pole piece between and in intimate contact with each magnet, the magnets being magnetically oriented such that each successive pole piece is oppositely polarized.

5,627,506

OVERLOAD PROTECTOR

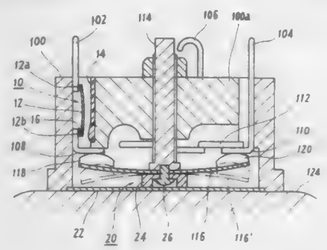
Satoru Suzuki, Shizuoka-ken, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 6, 1995, Ser. No. 384,178

Claims priority, application Japan, Feb. 8, 1994, 6-035493

Int. Cl.[6] H01H *37/00*

U.S. Cl. 337—298 **13 Claims**



1. A protector for an electrical load comprising a housing, a fixed contact means contained within said housing which is electrically connected to said electrical load through a terminal means, a movable contact means contained within said housing positioned to make contact with said fixed contact means, a first bimetallic element capable of movement between a first position and a second position at a first action temperature in response to heat generated reflecting the electric current level that flows to said load, said first position being where said movable contact means engages said fixed contact means and said second position being where said movable contact means separates from said fixed contact means thereby opening the electrical connection between the protector and the load, and a second auxiliary snap-acting bimetal element capable of movement between a first position and a second position at a second higher action temperature than said first action temperature in the event said first bimetallic element fails to move from the first position to the second position, said first position being where said auxiliary bimetal member electrically connects said fixed contact means and said terminal means and said second position being where said auxiliary bimetal breaks electrical connection between said fixed contact means and said terminal means thereby opening the circuit between the protector and the load.

5,627,507

TEMPERATURE CONTROL DEVICE WITH A SPRING-BIASED STEM AND A SWITCH SPRING OF BRIDGE-LIKE CONFIGURATION

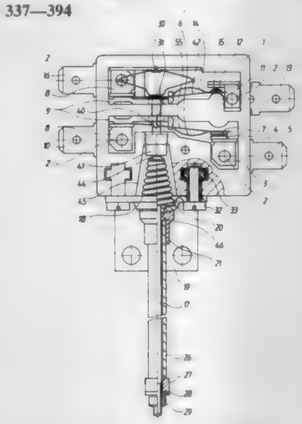
Hans-Peter Morbitzer, Langenlebarn, and Peter Sekira, Vienna, both of Austria, assignors to Electrovac, Fabrikation elektronischer Spezialartikel Gesellschaft m.b.H., Klosterneuburg, Austria

Filed Dec. 5, 1994, Ser. No. 350,218

Claims priority, application Austria, Dec. 3, 1993, A2453/93

Int. Cl.[6] H01H *37/48*

U.S. Cl. 337—394 **14 Claims**



1. A temperature control device, comprising:

a housing having a switching contact; and

actuation means for operating said contact, said actuation means including a pipe having a temperature expansion coefficient, a spring-biased stem guided in said pipe and having a temperature expansion coefficient differing from the temperature expansion coefficient of said pipe, a plunger operatively connected to said stem and a spring assembly cooperating with said plunger,

said spring assembly including a switch spring in form of a bridge for actuation of said contact, said switch spring having a central area which supports said plunger and exhibiting lateral areas extending from said central area, said central area being raised relative to the lateral areas of said switch spring.

5,627,508

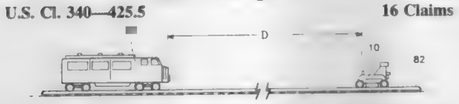
PILOT VEHICLE WHICH IS USEFUL FOR MONITORING HAZARDOUS CONDITIONS ON RAILROAD TRACKS

Guy F. Cooper, and Robert F. Anderson, both of Ventura, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 10, 1996, Ser. No. 644,464

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—425.5 **16 Claims**



1. A system for surveying railway tracks ahead of a train, said train being adapted to travel along said railway tracks, said system comprising:

a pilot vehicle traveling along said railway tracks ahead of said train, said pilot vehicle including:

drive means for propelling said pilot vehicle along said railway tracks;

processing means for receiving position information and control signals transmitted by said train, said processing means processing said position information and control signals to determine a safe distance said pilot vehicle is to be disposed away from said train;

drive control means operatively connected to said processing means and said drive means for maintaining said pilot vehicle at said safe distance from said train;

television camera means mounted on said pilot vehicle at a front end of said pilot vehicle, said television camera means monitoring a visual scene presented to said pilot vehicle as said pilot vehicle travels along said railway tracks, said television camera means generating a video signal representative of said visual scene presented to said pilot vehicle as said pilot vehicle travels along said railway tracks;

transmitter/receiver means connected to said television camera means to receive said video signal from said television camera means, said transmitter/receiver means including modulating means for modulating a first radio frequency signal responsive to said video signal and an antenna for transmitting said first radio frequency signal to said train;

magnetic signature sensing means mounted on an underside of said pilot vehicle in proximity with a pair of rails of said railroad track, said magnetic signature sensing means measuring a magnetic field generated by a current flowing through at least one of said pair of rails of said railroad track, said magnetic signature sensing means generating a first electrical signal proportional to an intensity of said magnetic field;

said processing means receiving said first electrical signal from said magnetic signature sensing means, said processing means generating a warning message whenever a voltage level of said first electrical signal decreases below a predetermined voltage level;

said modulating means modulating a second radio frequency signal responsive to said warning message;

said antenna transmitting said second radio frequency signal to said train;

an infrared camera mounted on the front end of said pilot vehicle, said infrared camera monitoring an infrared scene presented to said pilot vehicle as said pilot vehicle travels along said railway tracks, said infrared camera generating a second electrical signal representative of said infrared scene presented to said pilot vehicle as said pilot vehicle travels along said railway tracks;

said transmitter/receiver means being connected to said infrared camera to receive said second electrical signal from said infrared camera;

said modulating means modulating a third radio frequency signal responsive to said second electrical signal; and

said antenna transmitting said third radio frequency signal to said train.

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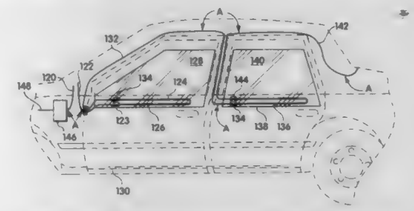
GLAZING UNIT SECURITY SYSTEM

Kenneth J. Gajewski, Woodhaven, and Larry R. Lyke, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 29, 1994, Ser. No. 294,852

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **13 Claims**



2. A motor vehicle glazing unit security system comprising:

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multiple glazing units each mounted in a door and having a tempered glass pane movable between an open and a closed position and having an area hidden from view in both the open and closed position, and an electrically conductive strip of frangible cured polymeric material self-adhered to a surface of the glass pane in the area hidden from view, the polymeric material being electrically conductive ink;

electrical connection means for electrically interconnecting the conductive strips; and

security means electrically connected to the connection means for sensing and responding to a loss of electrical continuity of any of the conductive strips.

5,627,510

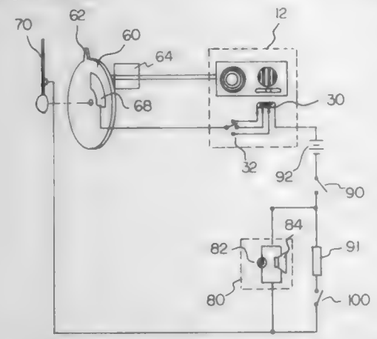
VEHICULAR SAFETY DISTANCE ALARM SYSTEM

Zhiping Yuan, 9817 High Point Dr., Shreveport, La. 71106

Filed Sep. 12, 1994, Ser. No. 304,250

Int. Cl.° B60Q *1/00*

U.S. Cl. 340—435 **1 Claim**



1. A vehicular safety distance alarm system for monitoring a travelling distance between a source vehicle and a remote target vehicle and activating an alarm when a predetermined safety distance defined between said source and target vehicles for a given speed is compromised comprising, in combination:

1) a distance meter further comprising:

a hollow, rigid, and essentially box-shaped container having a pivotable stand coupled thereto and extended downwards therefrom for adhesively coupling with a dashboard of a source vehicle and a bubble-level coupled thereto for ensuring its proper positioning on the stand for use;

a distance measuring circuitry disposed within the container, the distance measuring circuitry having a transmitter for transmitting a plurality of incident pulse signals towards the remote target vehicle, a receiver for receiving reflected incident pulse signals from the target vehicle, a timer coupled to the receiver and the transmitter for determining a time period between a transmitted incident pulse signal, and a signal generator circuitry for transmitting a distance signal representing the travelling distance between the source vehicle and the target vehicle based upon a known velocity of the incident pulse signals and the time period from the timer; and

a selection circuitry disposed within the container and coupled to the distance measuring circuitry for receiving the distance signal therefrom, the selection circuitry having an orientable selector switch extended from the container with the selection circuitry transmitting a first deflection signal when the selector switch is placed in a first mode indicating a two second safety distance between the source vehicle and the target vehicle is desired and the selection circuitry transmitting a second deflection signal when the selector switch is placed in a second mode indicating that a three second safety distance between the source vehicle and the target vehicle is desired;

2) a readout meter further comprising:

a scaling plate adapted to be coupled to the dashboard of the source vehicle, the scaling plate having a first scale disposed thereon indicating the speeds of the source vehicle, a second scale disposed thereon indicating safety distances as measured in a time interval of two seconds with the safety distances on the second scale correlated to the speeds on the first scale, and a third scale disposed thereon indicating safety distances as measured in a time interval of three seconds with the safety distances on the third scale correlated to the speeds on the first scale;

a distance measurement needle having a generally circular plastic plate with an upper surface and a lower surface, a prong peripherally extended from the circular plastic plate defining a measurement point with the prong having a leading edge and a trailing edge, a contact pad formed of an electrically conductive material disposed on the upper surface of the circular plastic plate beginning at a location near the leading edge of the prong and terminated at a clockwise angular distance therefrom, the distance measurement needle couplable with deflection means of the dashboard of the source vehicle for allowing it to be angularly deflected with respect to the second scale upon receipt of the first deflection signal in the first mode and deflected with respect to the third scale upon receipt of the second deflection signal in the second mode;

a speed measurement needle formed of an electrically conductive material disposed over the scaling plate, the speed measurement needle coupleable with the deflection means of the dashboard of the source vehicle for allowing it to be angularly deflected with respect to the first scale upon receipt of an indication of the speed of the source vehicle, with deflection of the speed measurement needle upon the contact pad of the distance measurement needle generating an alarm signal indicating that a safety distance has been compromised;

3) the alarm having a light source and a speaker extended from the container and coupled to the readout meter, the alarm providing a visual and audible indication that a safety distance has been compromised upon receipt of the alarm signal;

4) a power switch extended from the container, the power switch having a terminal with a first port connected to the alarm and connectable to an automatic brake system of the source vehicle and a second port connectable to a power source of the source vehicle, the power switch having one mode for energizing the distance meter, the readout meter, and the alarm and another mode for de-energizing the distance meter, the readout meter, and the alarm; and

5) an auto-brake switch extended from the container, the auto-brake switch having a terminal with a first port connected to the speed measurement and the alarm and a second port connectable to the automatic brake system of the source vehicle, the auto-brake switch having one mode for energizing the automatic brake system of the source vehicle, whereby allowing the automatic brake system to be engaged upon receipt of the alarm signal, and another mode for de-energizing the automatic brake system of the source vehicle.

5,627,511

DISTANCE MEASURING APPARATUS FOR AUTOMOTIVE VEHICLES THAT COMPENSATES FOR THE INFLUENCE OF PARTICLES FLOATING IN THE AIR

Kiyokazu Takagi, Toyokawa, and Yoshiaki Hoashi, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

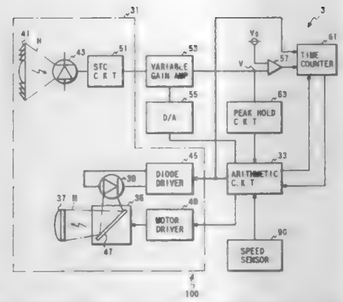
Filed Aug. 30, 1995, Ser. No. 520,692

Claims priority, application Japan, Aug. 30, 1994, 6-205325; Jun. 26, 1995, 7-159216

Int. Cl.° B60Q *1/00*

U.S. Cl. 340—435 **17 Claims**

1. A distance measuring apparatus comprising:



signal outputting means for outputting signals at preselected angular intervals over a given object detectable zone;

signal receiving means for receiving a signal produced by reflection of at least one of the outputted signals from an object present in the given object detectable zone;

time difference determining means for determining a time difference between output of said one of the outputted signals and reception of the signal by said signal receiving means;

storange means for storing a reference distance range determined based on a period of time required for one of the signals, provided by said signal outputting means to be reflected by a given particle floating in the air and received by said signal receiving means after the one of the signals is outputted; and

distance determining means for determining a distance to the object present in the given object detectable zone based on the time difference determined by said time difference determining means and the reference distance range stored in said storange means.

5,627,512

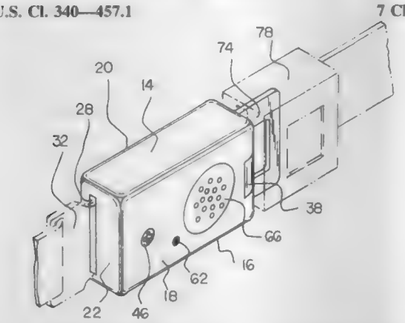
SEAT BELT SAFETY ALARM

Marcia M. Bogar, 51 Spokane Apt. 11, Pontiac, Mich. 48341

Filed Jun. 7, 1995, Ser. No. 485,280

Int. Cl.° B60Q *1/00*

U.S. Cl. 340—457.1 **7 Claims**



1. A seat belt safety alarm for preventing a child from disengaging a seat belt comprising, in combination:

a housing having a front, a rear, a top, a bottom, a left side, a right side, and an interior, the left side having a slotted opening therein, the interior having a heel secured therein adjacent to the slotted opening, the slotted opening being adapted to receive an existing seat belt tongue therein with the tongue fitting over the heel, the interior having a ledge secured therein disposed above the slotted opening, the interior having a wall therein inwardly of the heel, the right side having an opening formed therein, the opening having a door removably coupled thereto;

a clamp having a first end and a second end, the first end secured within the top of the housing, the second end extending into the interior of the housing through the ledge thereof, the second end having a plate secured thereto, the clamp adjusting the plate up or down between the ledge and the heel of the housing;

a battery secured within the opening formed in the right side of the housing;

a circuit board secured within the interior of the housing disposed above the battery, the circuit board having a wire electrically coupled with the battery, the circuit board having a sensitivity adjustment screw extending outwardly of the top of the housing;

a speaker secured within the top of the housing disposed above the circuit board, the speaker having a wire coupled to the circuit board;

a tongue secured to the right side of the housing, the tongue having a first end and a second end, the first end of the tongue being adapted for coupling with a seat belt buckle, the second end of the tongue extending within the interior of the housing, the second end having a U-shaped portion secured thereto with a furthestmost portion overlapping the wall within the interior, the furthestmost portion and the wall having a spring therebetween;

a rheostat secured between the furthestmost portion of the U-shaped portion of the tongue and the wall of the interior, the rheostat having a wire coupled with the circuit board;

a sensor switch secured within the interior against the right side of the housing, the sensor switch having a wire coupled with the circuit board, the sensor switch having a switch portion extending outwardly of the right side of the housing disposed above the first end of the tongue.

5,627,513

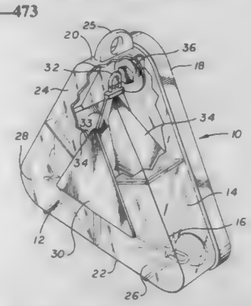
PORTABLE VISUAL EMERGENCY SIGNAL DEVICE

Leonard E. Weed, 10405 Oklahoma Ave., Chatsworth, Calif. 91311; Ronald J. Weed, 3844 W. Channel Islands Blvd., Channel Islands Harbor, Calif. 93001, and Dwight V. Call, 18935 Granada Cir., Northridge, Calif. 91326

Filed Apr. 25, 1995, Ser. No. 428,909

Int. Cl.° B60Q *7/00*

U.S. Cl. 340—473 **24 Claims**



1. A portable visual emergency signal device, comprising:

a hollow housing having a face spaced-apart from a backplate and a sidewall extending from a perimeter of said face towards said backplate to thereby enclose said housing;

said face divided into a plurality of wedges, each of said plurality of wedges being translucent and having a unique color;

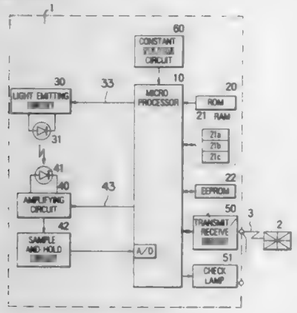
a plurality of sequentially fired lamps contained in said housing;

at least one reflective surface cooperating with each of said plurality of lamps;

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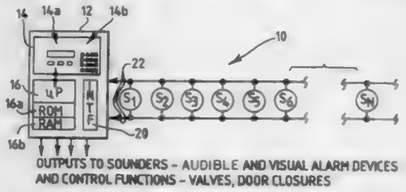
a battery; and
an alarm means for indicating a low battery.

5,627,514
FIRE DETECTOR AND FIRE RECEIVER
Toshikazu Morita, Tokyo, Japan, assignor to Nohmi Bosai Ltd., Tokyo, Japan
Filed Mar. 7, 1995, Ser. No. 399,598
Claims priority, application Japan, Mar. 18, 1994, 6-073864
Int. Cl.[6] G08B *29/00*
U.S. Cl. 340—507 **16 Claims**



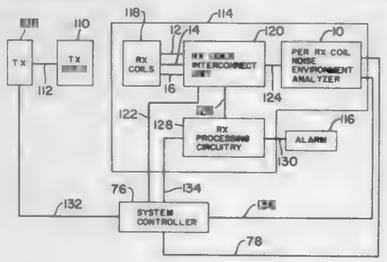
7. A fire detector comprising:
a physical quantity detecting means for detecting the physical quantity of a fire phenomenon;
a first upper limit value setting means for setting a first upper limit value for an output level of said physical quantity detecting means;
a second upper limit value setting means for setting a second upper limit value which is larger than said first upper limit value;
a first lower limit value setting means for setting a first lower limit value for the output level of said physical quantity detecting means;
a second lower limit value setting means for setting a second lower limit value which is smaller than said first lower limit value;
a first time duration setting means for setting a first time duration;
a second time duration setting means for setting a second time duration which is shorter than said first time duration;
a third time duration setting means for setting a third time duration;
a fourth time duration setting means for setting a fourth time duration which is shorter than said third time duration; and
a determining means for determining that said physical quantity detecting means is faulty if it is detected that the output level of said physical quantity detecting means is larger than said first upper limit value for said first time duration, for determining that said physical quantity detecting means is faulty if it is detected that the output level of said physical quantity detecting means is larger than said second upper limit value for said second time duration, for determining that said physical quantity detecting means is faulty if it is detected that the output level of said physical quantity detecting means is smaller than said first lower limit value for said third time duration, and for determining that said physical quantity detecting means is faulty if it is detected that the output level of said physical quantity detecting means is smaller than said second lower limit value for said fourth time duration.

5,627,515
ALARM SYSTEM WITH MULTIPLE COOPERATING SENSORS
Donald D. Anderson, Easton, Conn., assignor to Pittway Corporation, Chicago, Ill.
Filed Feb. 24, 1995, Ser. No. 396,179
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—517 **13 Claims**



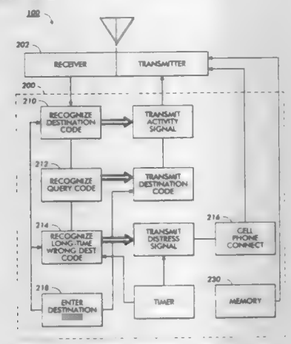
1. An ambient condition detection apparatus comprising:
a plurality of separate, spaced apart detectors wherein said detectors provide indicia of respective, sensed, ambient conditions;
a control unit;
a communications link wherein said detectors are in bi-directional communication with said control unit, wherein said unit receives indicia therefrom indicative of the respective, sensed ambient conditions, wherein said unit includes circuitry for processing selected, predetermined groups of indicia, wherein at least one of the groups overlaps another one of the groups, wherein each said group is associated with a selected member thereof, wherein the members of said group are located physically adjacent to at least one other member of said group and wherein said processing circuitry raises each indicium in a group to a first exponent, having a value greater that one, forms of a summed total of the exponentially raised indicia of each member of said group and raises said total to a second exponent having a value less than one thereby providing a processed value for said selected member corresponding to ambient conditions sensed by said detectors of said group.

5,627,516
ELECTRONIC ARTICLE SURVEILLANCE INPUT CONFIGURATION CONTROL SYSTEM EMPLOYING EXPERT SYSTEM TECHNIQUES FOR DYNAMIC OPTIMIZATION
Brent F. Balch, Fort Lauderdale; William R. Accolla, Loxahatchee, and Scott A. Tribbey, Pompano Beach, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Filed Sep. 28, 1994, Ser. No. 313,848
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 **20 Claims**



1. In combination, in an electrical article surveillance system:
(a) a plurality of receiving coils;
(b) noise environment analysis means for determining the noise environment individual to each of said receiving coils; and
(c) receiver coil interconnecting means for variably interconnecting said receiving coils responsively to noise environment determinations of said noise environment analysis means.

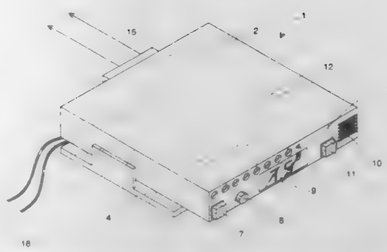
5,627,517
DECENTRALIZED TRACKING AND ROUTING SYSTEM WHEREIN PACKAGES ARE ASSOCIATED WITH ACTIVE TAGS
Marvin M. Theimer, and Roy Want, both of Mountain View, Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 1, 1995, Ser. No. 548,360
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 **24 Claims**



1. A method of managing a plurality of non-self-propelled packages in a distribution system, comprising the steps of:
physically associating with each package a package transceiver including a processor associated therewith;
disposing at each of a plurality of fixed nodes in the distribution system a location transceiver, each location transceiver adapted to communicate a unique location code to a package transceiver at the node;
programming each processor with a destination code representative of a location in the distribution system where the package is intended to be disposed; and
a package transceiver transmitting an activity signal in response to receiving a location code of a location transceiver related to the destination code.

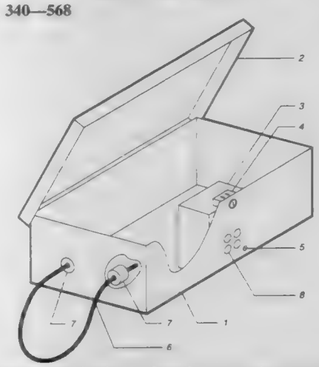
5,627,518
INFRARED ANIMAL DETECTOR AND DRIVER WARNING SYSTEM
James F. Wishart, P.O. Box 323, Heppner, Oreg. 97836
Filed Apr. 23, 1996, Ser. No. 636,223
Int. Cl.[6] G08B *13/18*
U.S. Cl. 340—567 **4 Claims**

1. An animal detector and driver warning system comprising:
a detector housing, said housing being compact and portable and having a front control panel on a front of said housing;
a mounting bracket for affixing to and supporting said detector housing, said mounting bracket for temporarily attaching to the dashboard of the car or truck;



a thermometer mounted in said housing for reading and indicating ambient temperature;
an infrared sensor mounted in said housing for reading and indicating localized increased fluctuations in infrared radiation;
a signal processor for converting the sensed radiation signal from said infrared sensor into a first electronic signal, said signal processor further for receiving and converting the ambient temperature signal from said thermometer into a second electronic signal; and
a temperature intensity indicator for receiving said first electronic signal and displaying temperature intensity in proportion to the sensed intensity of the infrared radiation given off by the animal and received by said infrared sensor.

5,627,519
ACOUSTICAL ALARM STRONG BOX
Mike Hatchimonji, 7942 Barbi La., La Palma, Calif. 90623
Filed Jul. 29, 1994, Ser. No. 282,988
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—568 **6 Claims**



1. An apparatus having a forced entry-resistant container for protecting valuables and an alarm device responsive to attempted theft of such valuables, the apparatus comprising:
a container in which valuables are placed;
a lock to prevent opening of the container;
a first external power source;
a self-contained second power source;
an alarm circuit including an acoustical alarm means incorporated within the container and responsive to disconnection of the first external power source from the container to emit an alarm;
a high strength cable secured within the container and forming a loop outside of the container to wrap around an immovable object; and

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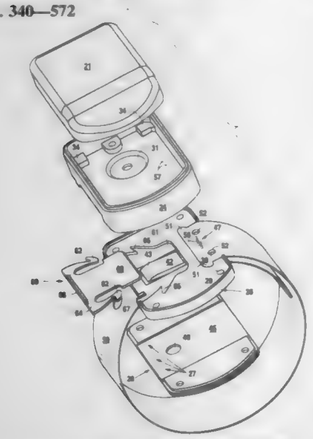
an electrical interlock responsive to disengagement of the lock to disable the acoustical alarm means.

5,627,520

TAMPER DETECT MONITORING DEVICE

Christopher A. Grubbs, New Braunfels, and Matthew W. Ip, Austin, both of Tex., assignors to ProTell Systems International, Inc., New Braunfels, Tex.

Filed Jul. 10, 1995, Ser. No. 500,270
Int. Cl.° G08B *13/14*
U.S. Cl. 340—572 18 Claims



1. An electronic tagging device for attachment to an object or person to be monitored, for use in conjunction with a remote detection unit in a position monitoring system, said electronic tagging device comprising:

a transmitter assembly comprising;

electronic circuitry capable of transmitting signals to said remote detection unit;

a transmitter housing enclosing said circuitry, said transmitter housing defining first and second passages and a latch guide channel;

a circuitry activating switch extending into said latch guide channel; and

a flexible strap locking arm having a strap locking plunger and positioned between said latch guide channel and said second passage;

a strap for attachment to said object to be monitored, said strap having at a first end a set of connecting pins terminating a circuitous conductive circuit within said strap, and having at a second end multiple apertures formed in longitudinal spaced relation with the length of said strap, said first end of said strap configured for mechanical and electronic connection to said transmitter assembly via placement in said first passage, said set of connecting pins extending through pin connection guides positioned in said transmitter assembly to said electronic circuitry, said second end of said strap slidably insertable into said second passage; and

a latch key slidably insertable into said latch guide channel such that insertion of said latch key activates said electronic circuitry by contact with said circuitry activating switch, and displaces said strap locking arm into said second passage through one of said apertures in said second end of said strap positioned therein, said strap locking plunger holding said second end of said strap within said transmitter assembly.

5,627,521

PERSONAL MICROWAVE AND RADIO FREQUENCY DETECTOR

Richard G. Olsen, and John R. Forstall, both of Pensacola, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 9, 1994, Ser. No. 208,248
Int. Cl.° G08B *17/12*
U.S. Cl. 340—600 8 Claims



1. In a standard hearing aid configured to normally convert input sound waves into electrical signals and, in turn, into amplified electrical signals within the audio frequency range, the standard hearing aid including a housing, a detachable ear-canal shell operatively attached to the housing, a microphone operatively attached to the housing and the detachable ear-canal shell for converting the input sound waves into the electrical signals within the audio frequency range at an output terminal of the microphone, an amplifier having an input terminal operatively connected to the output terminal of the microphone for increasing the level of the electrical signals within the audio frequency range at the output terminal of the microphone so as to produce at an output terminal of the amplifier amplified electrical signals within the audio frequency range, a battery operatively connected to the amplifier for supplying power thereto, a volume control operatively connected to the amplifier for controlling the level of the amplified electrical signals within the audio frequency range at the output terminal thereof and a loudspeaker operatively connected to the output terminal of the amplifier for converting the amplified electrical signals within the audio frequency range into output sound waves which are amplified facsimiles of the input sound waves and which are radiated, via the detachable ear-canal shell, into the ear-canal of a wearer, the standard hearing aid being modified to improve the reception of input modulated electromagnetic waves within a predetermined microwave frequency range and eliminating the reception of the input sound waves to produce a self-contained personal microwave detector, wherein the modification comprises:

disconnecting the output terminal of the microphone from the input terminal of the amplifier; and

connecting a wire to the input terminal of the amplifier and through and outside of the housing such that when the input modulated electromagnetic waves within the predetermined microwave frequency range are received, an audible signal is produced whose level and frequency is related to the modulation of the input modulated electromagnetic waves within the predetermined microwave frequency range thereby warning a wearer of the self-contained personal microwave detector of the presence of input modulated electromagnetic waves within the predetermined microwave frequency range whose levels are dangerously high.

5,627,522

AUTOMATED LIQUID LEVEL SENSING SYSTEM

Donny R. Walker, Coppell; James A. Vaught, Euless, and David B. Hills, Plano, all of Tex., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 126,411, Sep. 24, 1993, which is a continuation-in-part of Ser. No. 859,218, Mar. 27, 1992, Ser. No. 915,162, Jul. 20, 1992, Pat. No. 5,376,313, Ser. No. 915,163, Jul. 20, 1992, abandoned, Ser. No. 915,164, Jul. 20, 1992, abandoned, Ser. No. 915,166, Jul. 20, 1992, abandoned, Ser. No. 915,167, Jul. 20, 1992, abandoned, Ser. No. 915,168, Jul. 20, 1992, abandoned, Ser. No. 916,425, Jul. 20, 1992, abandoned, Ser. No. 916,551, Jul. 20, 1992, abandoned, Ser. No. 916,556, Jul. 20, 1992, abandoned, Ser. No. 916,737, Jul. 20, 1992, Pat. No. 5,451,528, Ser. No. 917,253, Jul. 20, 1992, abandoned, Ser. No. 917,634, Jul. 20, 1992, abandoned, Ser. No. 27,268, Mar. 18, 1993, abandoned, Ser. No. 27,270, Mar. 18, 1993, abandoned, Ser. No. 27,387, Mar. 18, 1993, abandoned, Ser. No. 27,388, Mar. 18, 1993, Ser. No. 27,481, Mar. 18, 1993, Ser. No. 27,269, Mar. 18, 1993, abandoned, and Ser. No. 27,482, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 916,556, which is a continuation-in-part of Ser. No. 859,218, said Ser. No. 915,162Ser. No. 915,163, Ser. No. 915,164, Ser. No. 915,166, Ser. No. 915,167, Ser. No. 915,168, Ser. No. 916,425, Ser. No. 916,737, Ser. No. 917,253, Ser. No. 917,634, Ser. No. 27,268, Ser. No. 27,270, Ser. No. 27,387, Ser. No. 27,388, Ser. No. 27,481, Ser. No. 27,269, and Ser. No. 27,482, , each is a continuation-in-part of Ser. No. 859,218, said Ser. No. 27,269is a continuation-in-part of Ser. No. 917,634. This application Jan. 3, 1994, Ser. No. 176,610
Int. Cl.° B01L *3/02*
U.S. Cl. 340—618 17 Claims

1. An automated liquid level sensing system for detecting the presence of liquid in a container, said liquid level sensing system comprising:

a vertically oriented, electrically conductive probe positioned above said container;

means for vertically moving said probe into and out of said container;

a signal source electrically connected to said probe, said signal source capable of energizing said probe with an electrical signal and causing said probe to transmit said electrical signal at a given frequency;

a receiving antenna positioned below said container for receiving said transmitted electrical signal;

means for transferring said received electrical signal from said receiving antenna to an analyzing means;

means for analyzing said received electrical signal for indications that said probe has contacted liquid in said container, wherein said means for analyzing said received electrical signal includes:

(1) means for detecting changes in received signal amplitude, wherein said means for detecting changes in received signal amplitude includes:

(a) means for multiplying said received signal by a reference signal, said reference signal having a frequency substantially equal to the frequency of the transmitted signal; and

(b) a low pass filter through which is passed said multiplied received signal; and

(2) means for measuring rate of change of said change in received signal amplitude; and

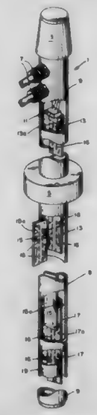
means connected to said analyzing means for indicating that liquid has been detected.

5,627,523

LIQUID LEVEL SENSOR DEVICE

Leonid R. Besprozvanny, San Marcos, Calif., and Alan R. Ball, Gilbert, Ariz., assignors to Power Paragon Inc., Anaheim, Calif.

Filed Jun. 3, 1996, Ser. No. 657,369
Int. Cl.° G08B *21/00*
U.S. Cl. 340—623 16 Claims



1. A liquid level sensor device comprising in combination:

(a) a tube, said tube being sealed at its bottom end and having an exterior threaded portion at its top end;

(b) a cap member having an interior threaded portion sized to screw tightly over the top threaded portion of said tube;

(c) a first means fop gripping wires, said first means being attached externally to near the top end of said tube;

(d) a float member, having a substantially annular, cylindrical form and sized to fit slidingly over the outside diameter axis of said tube; said float member including a multiplicity of permanent magnets embedded in its periphery;

(e) a second means for electrical conduction disposed inside said tube for providing electrical signal connection to a top sensor circuit assembly inside said tube and to externally located equipments through said first means;

(f) a top sensor circuit assembly located inside said tube near said top end, comprising:

an RS-485 serial communication bus; an interface connector for connecting said communication bus to said second means; a multiplicity of reed switches that are arranged in two lines along the length of said top sensor circuit assembly, said reed switches being staggered along the length of said lines so that the center-to-center distance between reed switches is approximately 0.5 inches;

a third means for master control of said top sensor circuit assembly and all lower sensor circuit assemblies and for communication with an external computer, said third means including & first microcomputer following a predetermined program which includes procedures for detection of faulty reed switches as well as reed switch status data collection, said reed switches having their output signals connected input to said first microcomputer; and

a fourth means for a power supply for all electrical circuits that are mounted on said top sensor circuit assembly; and

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an interconnect connector for transmitting and receiving signals to and from lower sensor circuit assemblies, said interconnect connector being connected to said third means for master control;

(g) a multiplicity of lower sensor circuit assemblies located inside said tube below said top sensor circuit assembly, each lower sensor circuit assembly comprising:

a first interconnect connector for input/output signal electrical connection to the next circuit assembly that is connected above said lower sensor circuit, assembly;

a multiplicity of reed switches that are arranged in two lines along the length of said lower sensor circuit assembly, said reed switches being staggered along the length of said lines so that the center-to-center distance between reed switches is approximately 0.5 inches;

a second microcomputer for reed switch status data collection, following a predetermined program, and being electrically connected to the output signals of said reed switches and to said first interconnect connector for input/output signals; and

a fifth means for a power supply for all electrical circuits that are mounted on said lower sensor circuit assembly; and

a second interconnect connector for input/output signals electrical connection to the next circuit assembly connected below said lower sensor circuit assembly; and

(h) a sixth means for releasably connecting said sensor circuit assemblies by mechanical connection to each other, to permit bending of said sensor circuit assemblies at or near said mechanical connection without breakage of component parts;

said float member moving up and down with the liquid level of the container in which said sensor device is immersed, and interacting magnetically with said reed switches to activate them;

said first microcomputer, on said top sensor circuit assembly, initializing itself upon powering up, then reading its configuration data and scanning top sensor circuit reed switch and other sensor data, then polling each of the lower sensor circuit microcomputers in turn and receiving lower sensor circuit reed switch data, then communicating said reed switch data indicating a liquid level and any other sensor data obtained from all assemblies to an external computer over an RS-485 serial interface.

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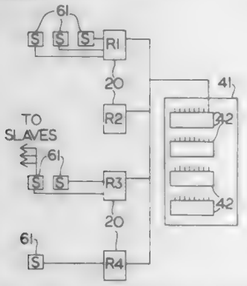
INFRARED LOCATOR SYSTEM

Dennis Fredrickson, Jacksonville, and Howard Richmond, Orange Park, both of Fla., assignors to Lifecom, LLC, Huntsville, Ala.

Continuation of Ser. No. 73,139, Jun. 7, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 398,058

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.07 **30 Claims**



1. A locator system comprising a number of individual portable transmitter units, a number of individual stationary receiver units, and central data processing means;

said transmitter units each comprising infrared transmission means and programmable microprocessor means such that a unique identity data stream is transmitted by each transmitter unit;

said receiver units each comprising in combination infrared receiving means and programmable microprocessor means remotely separated from said central data processing means such that each said receiver unit has the capability to store multiple said unique identity data streams received from multiple said transmitter units and can communicate said identity data streams to said central data processing means.

5,627,525

ELECTRONIC POCKET NOTEBOOK-TYPE PAGER

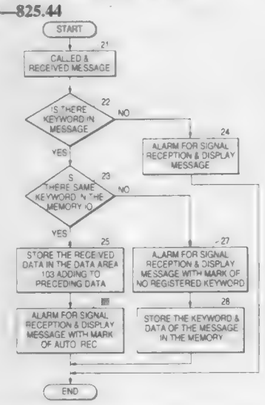
Kazuhiro Kudoh, and Teruyuki Motohashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 798,728, Nov. 29, 1991, abandoned. This application Aug. 1, 1994, Ser. No. 284,049

Claims priority, application Japan, Nov. 30, 1990, 2-336535; Dec. 27, 1990, 2-414885; Mar. 30, 1991, 3-093371

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.44 **5 Claims**



1. A display-equipped radio pager comprising:

a display;

means for inputting a keyword and corresponding data to said radio pager, said keyword being distinguished by a predetermined mark;

a memory in which keywords and data are registered;

a first register means for registering inputted keywords and data in said memory;

a first display controller means for displaying inputted keywords and data registered within the memory;

a first detection means for detecting keywords contained within a received paging message;

a second detection means for detecting whether a keyword which is detected by the first detection means is previously registered in the memory;

a second register means for registering in the memory the data received with the keyword detected by the first detection means, the data being added to previously registered data corresponding to said keyword when the second detection means detects that the data received with said keyword is not previously registered; and

a second display controller means for displaying, with a mark indicating newly automatically registered data, the data registered by the second register means, together with the previously registered data corresponding to said keyword.

5,627,526

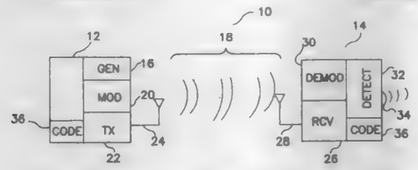
PROXIMITY DETECTION USING DPSK WAVEFORM

Donald K. Belcher, Melbourne; Albert D. Darby, Jr., Valkaria, and Lamar G. McBryde, Palm Bay, all of Fla., assignors to Harris Corp., Melbourne, Fla.

Filed Sep. 30, 1994, Ser. No. 315,348

Int. Cl.[6] G08C *21/00*

U.S. Cl. 340—825.54 **20 Claims**



1. A system for determining whether a first device is proximate a second device,

said first device comprising a magnetic field generator for providing a plurality of time-sequential magnetic fields, said plurality of fields comprising a differential phase shift key (DPSK) modulated code; and

said second device comprising means for determining whether a predetermined number of repetitions of said code have been received within a predetermined period of time.

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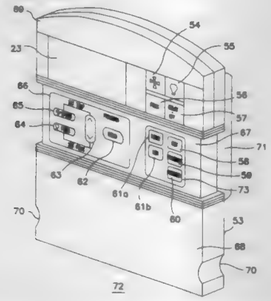
THERMOSTATICALLY CONTROLLED REMOTE CONTROL FOR A CEILING FAN AND LIGHT

Vinay Mehta, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.

Continuation of Ser. No. 143,192, Oct. 29, 1993, Pat. No. 5,528,229. This application Dec. 11, 1995, Ser. No. 570,490

Int. Cl.[6] G05R *19/02*

U.S. Cl. 340—825.06 **3 Claims**



1. An apparatus for remotely controlling the operation of a light associated with a ceiling fan comprising:

an input device which enables a user to select a program number from a set of program numbers, the input device comprising means for increasing the program number and means for decreasing the program number;

a display means for displaying the selected program number to enable the user to determine which program number has been selected;

memory means for storing a look-up table comprising the set of program numbers with each program number in the set of program numbers corresponding to a particular on-time value and duration value for said light;

a clock which provides a time of day signal;

a processor, responsive to a selected program number, for indexing the look-up table in said memory means to select the on-time value and duration value corresponding to the selected program number, said processor generating a light control signal for operating the light in real time from the selected on-time and duration value and the time of day signal from the clock;

a transmitter for transmitting the light control signal from said processor;

a receiver for receiving the light control signal; and

a light driving device connected to the light for turning the light on and off in response to the light control signal received by said receiver.

5,627,528

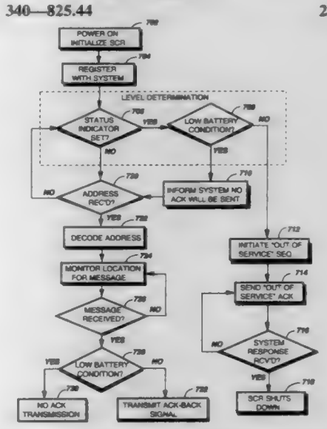
SELECTIVE CALL RECEIVER CAPABLE OF SUSPENDING ACKNOWLEDGE-BACK SIGNALS AND METHOD THEREFOR

William J. Kuznicki, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1995, Ser. No. 395,254

Int. Cl.[6] H04Q *7/14*

U.S. Cl. 340—825.44 **28 Claims**



1. A selective call system having at least two base sites for communicating with a plurality of selective call receivers wherein at least one of the plurality of selective call receivers having acknowledge-back capability, a base site comprising:

a base site transmitter for communicating with a selective call receiver;

a base site receiver for receiving an acknowledge-back signal from the selective call receiver, the selective call receiver comprising:

a receiver for receiving a signal from the base site;

a decoder/controller, coupled to the receiver, for decoding the signal received from the base site transmitter, the decoder/controller further comprising a status indicator for indicating a predetermined status of a power supply for the selective call receiver;

an acknowledge-back transmitter, coupled to the decoder/controller, for transmitting acknowledge-back signals to the base site wherein said acknowledge-back transmitter, in response to the status indicator transmits a signal to inform the base site that no further acknowledge-back signals will be transmitted; and

an acknowledge-back suspension circuit, coupled to the acknowledge-back transmitter, for inhibiting transmissions of acknowledge-back signals in response to the status indicator.

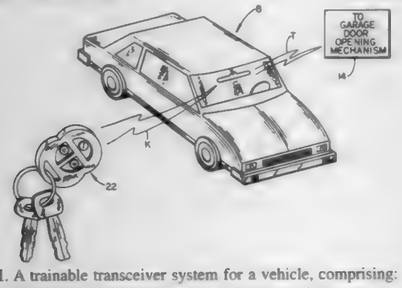
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5,627,529

VEHICLE CONTROL SYSTEM WITH TRAINABLE TRANSCEIVER

Paul C. Duckworth; Kurt A. Dykema, and Mark L. Zeinstra, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Mar. 11, 1994, Ser. No. 209,947
Int. Cl.[6] G08C *19/00*
U.S. Cl. 340—825.69 **28 Claims**



1. A trainable transceiver system for a vehicle, comprising:

a transceiver operable in one of a plurality of operating modes including a training mode, a signal transmission mode, and a transmitter signal detection mode, said transceiver including an input circuit for receiving radio frequency signals transmitted from a remote control transmitter and from a second transmitter, said input circuit including a variable amplitude controller having an amplitude control input; and

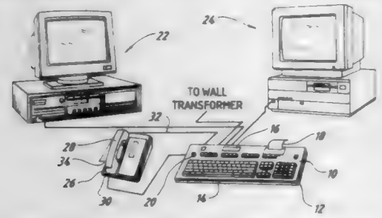
a control circuit coupled to said amplitude control input of said input circuit for selectively varying the amplitude of said variable amplitude controller to decrease the sensitivity of said input circuit when said transceiver is operating in the training mode for receiving signals from said remote control transmitter and, when said transceiver is in said signal detection mode, said control circuit receives signals from said second transmitter.

5,627,530

DEVICE OPERABLE AS A TDD AND A STANDARD COMPUTER KEYBOARD

Albert Israel, Montreal; Roger Lasry, Cote Saint Luc, and Jean F. Larivee, Montreal, all of Canada, assignors to Positron Industries, Inc., Montreal, Canada

Filed Oct. 7, 1992, Ser. No. 958,099
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—21 **28 Claims**



1. A device operable as a standard keyboard for a computer and as a telecommunication device for the dear comprising:

a housing separate and apart from the computer;

a computer keyboard having alpha, numeric and function keys mounted on said housing, said keys being actuable to provide keyboard inputs;

a TDD communication interface for receiving telecommunications for the deaf from and transmitting telecommunications for the deaf to a telephone line, said interface being mounted in said housing;

a mode switch mounted on said housing, said mode switch being actuable to indicate operation of said device in a first mode and actuable to indicate operation of said device in a second mode; and

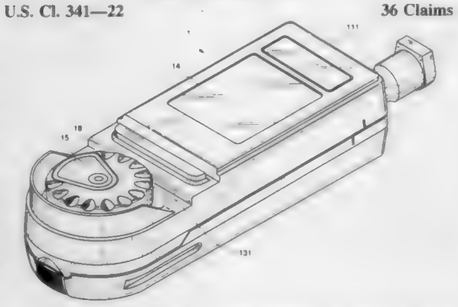
a controller mounted in said housing and responsive to a mode switch indication of first mode operation to couple keyboard inputs to said TDD communication interface, said controller being responsive to a mode switch indication of second mode operation to couple keyboard inputs to said computer to allow a single device to operate as a TDD device and a computer keyboard.

5,627,531

MULTI-FUNCTION MENU SELECTION DEVICE

Oliver A. Posso, Golden, and Julie A. Reichert, Aurora, both of Colo., assignors to Ohmeda Inc., Liberty Corner, N.J.

Filed Sep. 30, 1994, Ser. No. 315,750
Int. Cl.[6] H03M *11/00*
U.S. Cl. 341—22 **36 Claims**



1. A multi-function menu selection apparatus for selecting a one of a plurality of menu entries that are contained in a user selectable hierarchically organized menu, wherein said menu includes a plurality of menu categories, each menu category containing at least one of said plurality of menu entries, comprising:

means, rotatable by a user about an axis to a plurality of predetermined rotational positions, at least two of which rotational positions correspond to ones of said plurality of menu categories, for selecting a one of said plurality of menu categories corresponding to a present rotational position of said selecting means; and

means, actuatable in an axial direction along said axis, for enabling said one of said plurality of menu categories selected by said selecting means only in response to actuation of said enabling means in said axial direction.

21. A multi-function menu selection apparatus for setting a plurality of operating characteristics of a pulse oximeter instrument, which operating characteristics are contained in a hierarchical menu, wherein said menu includes a plurality of menu categories, each of which corresponds to an operating characteristic of said pulse oximeter, each menu category containing at least one menu entry corresponding to a value of an operating characteristic, comprising:

means, rotatable by a user about an axis to a plurality of predetermined rotational positions, at least two of which rotational positions correspond to ones of said plurality of menu categories, for selecting a one of said plurality of menu categories corresponding to a present rotational position of said selecting means; and

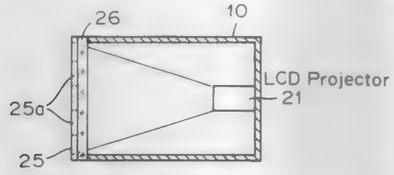
means, actuatable in an axial direction along said axis, for enabling a pulse oximeter operating characteristic corresponding to said one one of said plurality of menu categories selected by said selecting means only in response to actuation of said enabling means in said axial direction.

5,627,532

SWITCH PANEL DEVICE

Masamitsu Ishiguro, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 351,499
Claims priority, application Japan, Dec. 24, 1993, 5-328044; Oct. 5, 1994, 6-241345
Int. Cl.[6] H03M *11/00*
U.S. Cl. 341—23 **13 Claims**



1. A switch panel device comprising:

a switch panel having a plurality of switch elements; and

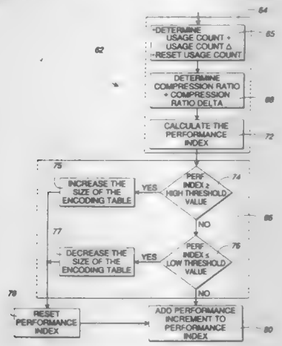
an LCD projector disposed behind and spaced apart from said switch panel for projecting enlarged switch element-identifying images of indicia such as characters, symbols and figures identifying said switch elements onto portions of said switch panel that are respectively adjacent to the corresponding switch elements, those portions of said switch panel on which said enlarged switch element-identifying images are projected being visible from an outer surface of the switch panel.

5,627,533

ADJUSTING ENCODING TABLE SIZE AND MEMORY ALLOCATION FOR DATA COMPRESSION IN RESPONSE TO INPUT DATA

Alan D. Clark, Roswell, Ga., assignor to Hayes Microcomputer Products, Inc., Norcross, Ga.

Filed Aug. 5, 1994, Ser. No. 286,705
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **20 Claims**



2. In a device for compressing a stream of data characters, the device including an encoding table that includes a plurality of strings of characters, the strings of characters in said encoding table being correlated to codewords that may be substituted for portions of the stream of data characters when a portion of the stream of characters matches one of the strings of characters in said encoding table, a method for controlling the encoding table to improve the efficiency and rate of data compression, comprising the steps of:

estimating the correlation between data characters in the stream of data characters by

determining a compression ratio for the stream of data characters input to the device, said compression ratio being equal to the number of characters input to the device divided by the number of data bytes output from the device, and

determining a usage count, said usage count being used to estimate one of the average length and width characteristics of at least one of said trees in said encoding table:

adjusting a performance index in response to said estimated correlation between data characters: and

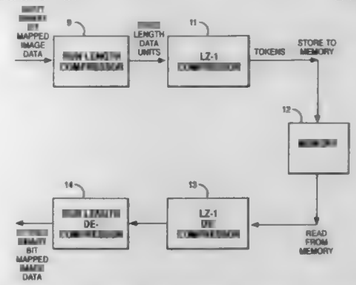
changing the memory space allocated to said encoding table in response to said performance index.

5,627,534

DUAL STAGE COMPRESSION OF BIT MAPPED IMAGE DATA USING REFINED RUN LENGTH AND LZ COMPRESSION

David J. Craft, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1995, Ser. No. 409,766
Int. Cl.[6] H03M *7/42*
U.S. Cl. 341—87 **24 Claims**



1. A digital data lossless compression apparatus, comprising:

a source of binary format serial input data;

first compression means for receiving the serial input data and run length compressing the binary format serial input data into first data units of a fixed first size;

means for coding the first data units of fixed first size to individually represent run lengths of consistent binary value as appears within the serial input data;

second compression means for receiving succession of first data units of fixed first size and Lempel-Ziv sliding window compressing the first data units of fixed first size into tokens of both fixed size types and variable size types; and

means for transmitting the tokens.

5,627,535

QUANTIZATION APPARATUS

Gen Ichimura, Tokyo; Masayoshi Noguchi, Chiba, and Yuichi Inomata, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Sep. 8, 1994, Ser. No. 302,539
Claims priority, application Japan, Sep. 10, 1993, 5-225717
Int. Cl.[6] H03M *1/20*
U.S. Cl. 341—131 **15 Claims**

2. A quantization apparatus for quantizing and word length limiting digital stereo input signals, comprising:

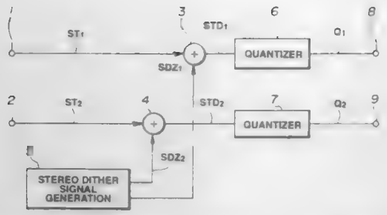
stereo dither signal generating means for generating stereo dither signals synthesized from distinct dither signals of at least two different routes not correlated to each other at an arbitrary ratio;

first addition means for adding one of the stereo dither signals to one of the digital stereo input signals;

second addition means for adding the other of the stereo dither signals to the other of the digital stereo input signals;

first quantization means for quantizing and word length limiting an output signal of the first addition means; and

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second quantization means for quantizing and word length limiting an output signal of the second addition means, wherein the stereo dither signal generating means comprises,

first and second dither signal generating means for generating first and second dither signals not correlated with each other,

first multiplication means for multiplying the first dither signal with an arbitrary coefficient,

second multiplication means for multiplying the second dither signal with an arbitrary coefficient,

third addition means for adding a multiplication output of the first multiplication means to the second dither signal,

fourth addition means four adding a multiplication output of the second multiplication means to the first dither signal, and

third and fourth quantization means for quantizing outputs of the third and fourth addition means, respectively.

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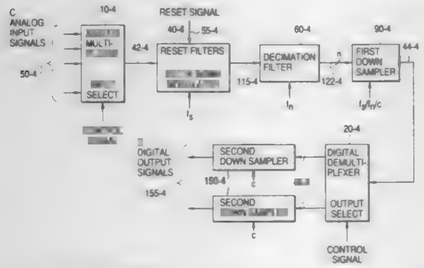
MULTIPLEXED DELTA-SIGMA MODULATOR

Sergio R. Ramirez, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 27, 1994, Ser. No. 364,039

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—141 **21 Claims**



1. A system comprising:

an multiplexer having a plurality of input ports and a single output port, said multiplexer receiving an analog signal on each respective one of said plurality of input ports, said multiplexer selecting said analog signal on each of said plurality of input ports at a first predetermined rate, and outputting a time-division-multiplexed analog signal,

a delta-sigma modulator connected to receive said time-division multiplexed analog signal on an input port thereof, said delta-sigma modulator sampling said time-division multiplexed analog signal at a second predetermined rate, and outputting a time-division multiplexed modulated signal on an output port,

a decimator connected to receive said time-division multiplexed modulated signal, and outputting an n-bit time-division multiplexed digital signal at a third predetermined rate,

a first down-sampler connected to sample said n-bit time-division multiplexed digital signal, and outputting a first down-sampled signal at a fourth predetermined rate,

a demultiplexer connected to receive said first down-sampled signal on an input port and having a plurality of output ports for outputting a digital signal on each respective one of said plurality of output ports in a one-to-one correspondence with said analog signal on each respective one of said plurality of input ports of said multiplexer, wherein each of said plurality of output ports is operatively connected to said single input port at said first predetermined rate, and

a plurality of second down-samplers, each of said plurality of down-samplers being respectively connected to one of said plurality of output ports of said demultiplexer, said plurality of second down-samplers sampling said digital signal on said respective output port of said demultiplexer at a fifth predetermined rate.

5,627,537

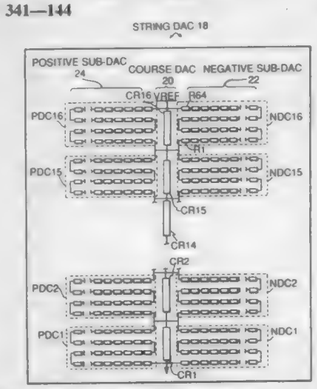
DIFFERENTIAL STRING DAC WITH IMPROVED INTEGRAL NON-LINEARITY PERFORMANCE

Philip Quinlan, and Kenneth T. Deevy, both of Limerick, Ireland, assignors to Analog Devices, Inc.

Filed Nov. 21, 1994, Ser. No. 342,769

Int. Cl.[6] H03M *1/68*

U.S. Cl. 341—144 **12 Claims**



1. A differential string DAC comprising:

a coarse DAC including a plurality of coarse resistors connected in series between first and second reference voltage leads;

a positive sub-DAC including a plurality of positive sub-DAC cells, each sub-DAC cell including a plurality of series-connected fine resistors; and

a negative sub-DAC including a plurality of negative sub-DAC cells, each sub-DAC cell including a plurality of series-connected fine resistors;

wherein each coarse resistor is electrically connected in parallel with one positive sub-DAC cell and one negative sub-DAC cell, said one positive sub-DAC cell and one negative sub-DAC cell are substantially symmetrically disposed about the coarse resistor.

5,627,538

CONVOLUTIONAL DIGITAL TO ANALOG CONVERTER

Michel Ferry, Vallauris, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 4, 1995, Ser. No. 368,199

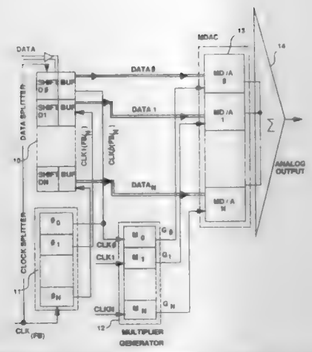
Claims priority, application European Pat. Off., Jan. 14, 1993, 94480007

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—144 **4 Claims**

1. A digital to analog converter for generating a smoothed signal having a limited high frequency spectrum, said converter receiving incoming data on a data bus and being clocked by a clock signal of frequency Fb, characterized in that it comprises:

means (**10**) for receiving said incoming data and for splitting it into N units data, said means being composed of N shift registers and N data buffers, the N shift registers sorting the



incoming data to store successive of units of the N data in successive data buffers;

means (**11**) for splitting the clock signal (Fb) into N signals having a frequency equal to Fb/N with a phase delay of N/Fb respective to each other, each said signal clocking a specific data buffer:

means (**13**) comprising N multiplying digital to analog converters (DACs) being delayed by a phase T=N/Fb, each said multiplying DAC receiving data from the corresponding data buffer through a data bus; and

means (**12**) for providing N multiplier generators, each one using identical periodic functions (M1, . . . , Mn) of period N/Fb, the phase of each multiplier generator being shifted by a delay of N/Fb respective to the previous generator according to the corresponding phase of the clock splitter, each said multiplier generator being clocked by the corresponding clock signal of frequency (Fb/N) for modulating the multiplying DAC reference with periodic signals (G1, . . . Gn) which are convoluted with the digital inputs.

5,627,539

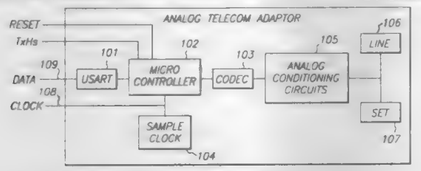
BIDIRECTIONAL SIGNALLING MECHANISM FOR INTERFACING COMPUTING DEVICES TO THE ANALOG TELEPHONE NETWORK

John Lynch, San Jose; James B. Nichols, San Mateo, and Mark Devon, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 180,925, Jan. 11, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 635,789

Int. Cl.[6] H03M *1/12*

U.S. Cl. 341—155 **14 Claims**



1. For interfacing a telephone line to a computer, an apparatus comprising:

means for sampling said telephone line to produce a series of data samples;

detection means for detecting the presence of a ring signal on said telephone line and producing a signal indicative of whether or not a ring signal is currently present;

means, responsive to said means for sampling and said detection means, for combining said signal with at least one of said data samples to give an encoded data sample; and

means responsive to said means for combining for transmitting said encoded data sample to said computer.

5,627,540

REMOTE CONTROL SYSTEM HAVING FULL-FUNCTION AND ABBREVIATED-FUNCTION REMOTE CONTROL UNITS

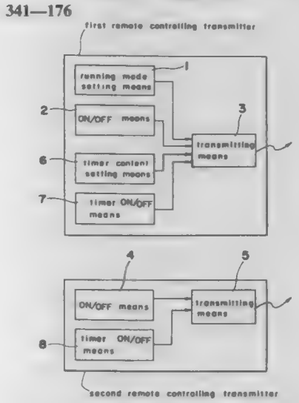
Takashi Deguchi, Kusatsu; Makoto Hori, Ohmihachiman; Morihiro Nakayama, and Hiroyuki Unida, both of Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 41,892, Apr. 2, 1993, Pat. No. 5,461,382, which is a continuation of Ser. No. 505,655, Apr. 6, 1990. This application May 19, 1995, Ser. No. 445,100

Claims priority, application Japan, Apr. 7, 1989, 1-88881

Int. Cl.[6] H03J *9/06*

U.S. Cl. 341—176 **6 Claims**



1. A remote control system for controlling the operation of an apparatus, comprising:

a full-function remote control unit including a timer content setting means for setting timing parameters of a timer which is associated with the apparatus and which controls the operation of the apparatus in accordance with set timing parameters when the timer is activated, a first timer ON/OFF means for activating and deactivating the timer associated with the apparatus, and a first transmitting means for transmitting a first remote control signal in accordance with said timer content setting means and said first timer ON/OFF means;

an abbreviated-function remote control unit including a second timer ON/OFF means for activating and deactivating the timer associated with the apparatus, and a second transmitting means for transmitting a second remote control signal in accordance with said first timer ON/OFF means, and being devoid of a timer content setting means for setting the timing parameters of the timer associated with the apparatus; and,

a receiver means for receiving said first and second remote control signals from said full-function remote control unit and said abbreviated-function remote control unit, respectively, and for controlling the timer associated with the apparatus in accordance with said first and second remote control signals to thereby control the operation of the apparatus.

5,627,541

INTERFERENCE TYPE RADIATION ATTENUATOR

Donald D. Haley, and Louis Maus, both of Tulsa, Okla., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jul. 8, 1968, Ser. No. 743,260

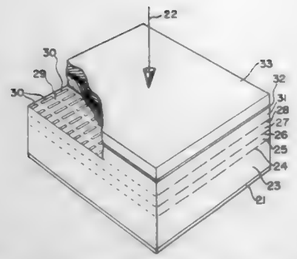
Int. Cl.[6] H01Q *17/00*

U.S. Cl. 342—1 **16 Claims**

1. An attenuator of electromagnetic radiation comprising:

an impedance layer having a uniform impedance which is substantially the same impedance as free space, said radiation passing through said layer; and

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a reflective and transparent layer tuned to reflect a selected frequency of electromagnetic radiation and transmit other frequencies, said reflective and transparent layer being spaced from said impedance layer at a distance of one fourth of the wavelength of electromagnetic radiation of the selected frequency.

5,627,542

METHOD OF MAKING A RADAR TRANSPARENT WINDOW MATERIAL OPERABLE ABOVE 2000° C.

David G. Paquette, Costa Mesa, Calif., assignor to Loral Vought Systems Corporation, Grand Prairie, Tex.

Filed Dec. 23, 1985, Ser. No. 812,420

Int. Cl.[6] H01Q *17/00*; **C04B** *35/64*

U.S. Cl. 264—122 **8 Claims**

1. A method of making a microwave radar transparent window material operable at temperatures above 2000° C., comprising:

(a) blending a powder mixture of 20–60% by weight silicon nitride, 12–40% boron nitride, 15–40% SiO_2, and 1–20% oxygen carrying sintering aids;

(b) molding said mixture to shape a preform; and,

(c) densifying the thus shaped preform by simultaneous application of heat and pressure to form a monolithic window.

5,627,543

METHOD OF IMAGE GENERATION BY MEANS OF TWO-DIMENSIONAL DATA PROCESSING IN CONNECTION WITH A RADAR WITH SYNTHETIC APERTURE

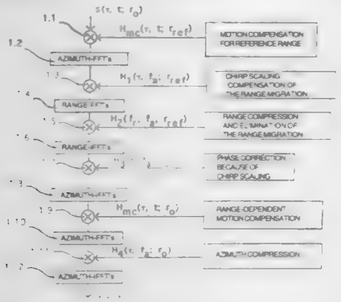
Alberto Moreira, Garching, Germany, assignor to Deutsche Forschungsanstalt für Luft-und Raumfahrt e.V., Köln, Germany

Filed Aug. 3, 1995, Ser. No. 510,698

Claims priority, application Germany, Aug. 5, 1994, 44 27 657.5

Int. Cl.[6] G01S *13/90*

U.S. Cl. 342—25 **4 Claims**



1. A method for image generation by means of two-dimensional data processing in connection with a radar with synthetic aperture SAR, characterized in that, for the insertion of a motion compensation and for processing at a large drift angle, received SAR data ($s(\tau, t; r_o)$),

wherein the time in a range direction is identified by τ, the time in the azimuth direction by t and the shortest range between the target subject and the radar system by r_o,

are multiplied by a phase correction;

$$H_{mc}(\tau, t; r_{ref}) = exp\,[j \cdot \phi_{mc}(\tau, t; r_{ref})]$$

where j describes a complex part and ϕ_{mc} is a line-of-sight phase formation compensation for a reference range (r_{ref}) in a first multiplication unit;

an additional cubic phase term is inserted via a second multiplication unit following the performance of azimuth FFTs for compensating a range migration by means of a function;

$$H_1(\tau, f_a; r_{ref}) =$$

$$\exp\left[-j \cdot \pi \cdot k(f_a; r_{ref}) \cdot a'(f_a) \cdot \left(\tau - \frac{2 \cdot R'(f_a; r_{ref})}{c}\right)^2\right] \cdot$$

$$\exp\left[-j \cdot \pi \cdot k_r^2 \cdot \frac{\lambda \cdot (\beta^2 - 1)}{3 \cdot c \cdot \beta^3} \cdot \left(\tau - \frac{2 \cdot R'(f_a; r_{ref})}{c}\right)^3\right]$$

wherein f_a is the azimuth frequency, k is a modulation rate as a function of the range and azimuth frequency, a' is a linear scaling factor, R' the range migration, k_r the modulation rate of a transmitted chirp signal, λ the wave length, c the speed of light and β^2 and β^3 are respectively a square and a cube of a parameter β defined as

$$\beta = \sqrt{1 - \left(\frac{\lambda \cdot f_a}{2 \cdot v}\right)^2}$$

wherein v is a platform speed;

following a performance of range FFTs after compensation of the range migration by means of the function H_1, the range migration is entirely eliminated by means of an additional linear frequency displacement (f_r) in a function

$$H_2(f_r, f_a; r_{ref}) = \exp\left[-j \cdot \pi \cdot \left(\frac{1}{k_r \cdot (1 + a'(f_a))} - r_{ref} \cdot \frac{2 \cdot \lambda \cdot (\beta^2 - 1)}{(1 + a'(f_a)) \cdot \beta^3 \cdot c^2}\right) \cdot f_r^2\right] \cdot \exp\left[j \frac{4 \cdot \pi \cdot r_{ref} \cdot a'(f_a)}{c} \cdot f_r\right]$$

by multiplication in a third multiplication unit;

subsequently the SAR data are transformed back into a two-dimensional range-Doppler domain having coordinates of range time and azimuth frequency, by means of range IFFTs;

a remaining phase flow created by a chirp scaling function is corrected by multiplication in a fourth multiplication unit by a function:

$$H_3 = (\tau, f_a; r_o) =$$

$$\exp\left[j \cdot \pi \cdot k(f_a; r_{ref}) \cdot (1 + a'(f_a)) \cdot a'(f_a) \cdot \left(\frac{2}{c} \cdot (r - r_{ref})\right)^2\right] \cdot \exp\left[-j \cdot \pi \cdot k_r^2 \cdot \frac{8 \cdot \lambda \cdot (\beta^2 - 1)}{c^4 \cdot \beta^3} \cdot (r_o - r_{ref})^3 \cdot \left(a'^2(f_a) - \frac{1}{3}\right)\right]$$

subsequently the SAR data are transformed back into a time domain by means of azimuth IFFTs;

then a range-dependent phase correction

$$H_{mc}(\tau, t; r_o) = exp[j \cdot (\phi_{mc}(\tau, t; r_o) - \phi_{mc}(\tau, t; r_{ref}))]$$

is performed by multiplication in a fifth multiplication unit for the exact motion compensation in the time domain;

then, after performing further azimuth FFTs for azimuth compression, a one-dimensional reference function in the frequency domain

$$H_4(\tau, f_a; r_o) =$$

$$\exp\left[j \cdot \frac{4 \cdot \pi}{\lambda} \cdot r_o \cdot \left(\sqrt{1 - \left(\frac{\lambda \cdot f_a}{2 \cdot v}\right)^2} - 1\right)\right]$$

is performed by multiplication in a sixth multiplication unit, and following the performance of azimuth IFFTs, two-dimensional SAR data (corresponding to a function $f(\tau, t)$) are obtained.

5,627,544

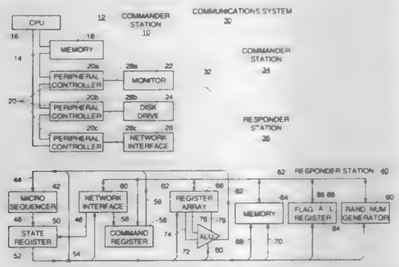
DATA COMMUNICATION METHOD USING IDENTIFICATION PROTOCOL

Charles K. Snodgrass, Boise, Id.; David H. Allen, Rochester, Minn.; John R. Tuttle, Boise, Id.; Robert R. Rotzoll, Boise, Id., and George E. Pax, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 990,915, Dec. 15, 1992, Pat. No. 5,500,650. This application Mar. 18, 1996, Ser. No. 619,274

Int. Cl.[6] G01S *13/76*

U.S. Cl. 342—42 **53 Claims**



1. A method for one of a plurality of responder transceivers to respond to interrogation messages from two or more commander transceivers, wherein the responder is characterized by an address, and wherein each of the interrogation messages specifies a set of one or more addresses for response, comprising the steps of:

(a) upon receiving a first interrogation message from a first one of the commander transceivers, said one responder transceiver determining whether the first interrogation message specifies for response a set of one or more addresses which includes the responder's address, and

(1) if so, then said responder transceiver transmitting a response message to the first commander transceiver, otherwise

(2) if not, then said responder transceiver initiating a waiting period of time during which the responder will not transmit a response message to any subsequent interrogation message which the responder may receive from any other one of the commander transceivers, wherein the waiting period is great enough that any response message transmitted by the responder after the waiting period would not collide with any response message transmitted by any other one of the responder transceivers in response to said first interrogation message; and

(b) upon receiving a second interrogation message from a second one of the commander transceivers, said one responder transceiver transmitting a response message to the second commander transceiver if the waiting period has expired and the second interrogation message specifies for response a set of one or more addresses which include the responder's address;

(c) whereby any response message transmitted by said one responder transceiver to a second commander transceiver will not collide with any response message transmitted by another responder transceiver in response to the first interrogation message, thereby avoiding any false indication that two responder transceivers both have addresses belonging to said set of one or more addresses specified for response in the first interrogation message.

5,627,545

RADAR APPARATUS

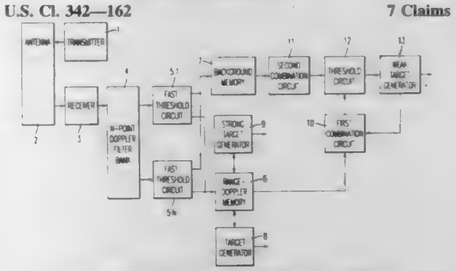
Pieter Van Genderen, Haaksbergen, and Wietze J. H. Meijer, Enschede, both of Netherlands, assignors to Hollandse Signaalapparaten B. V., Hengelo, Netherlands

Filed Oct. 13, 1995, Ser. No. 542,940

Claims priority, application Netherlands, Oct. 25, 1994, 9401767

Int. Cl.[6] G01S *13/22*

U.S. Cl. 342—162 **7 Claims**



1. A radar apparatus for detecting a target, comprising:

an antenna;

transmitting means, connected to said antenna, for generating plural bursts of radar transmit pulses, each having a pulse repetition frequency and a radar transmit frequency;

receiving means, connected to said antenna, for receiving plural signals indicative of said plural bursts of radar transmit pulses;

a doppler filterbank connected to said receiving means and configured to generate plural range-doppler matrices, each comprising range-doppler elements and corresponding to respective of said plural bursts;

combination means for combining the plural range-doppler matrices to provide a combined range-doppler matrix; and

threshold means for thresholding the combined range-doppler matrix so as to detect the target.

5,627,546

COMBINED GROUND AND SATELLITE SYSTEM FOR GLOBAL AIRCRAFT SURVEILLANCE GUIDANCE AND NAVIGATION

Robert P. Crow, 4725 Bywood Ct., Colorado Springs, Colo. 80906

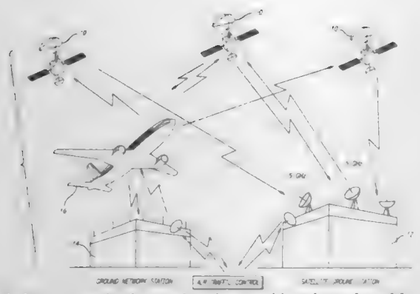
Filed Sep. 5, 1995, Ser. No. 523,348

Int. Cl.[6] H04B *7/185*

U.S. Cl. 342—352 **15 Claims**

1. A combined ground and satellite system for providing aircraft guidance, said system comprising: a satellite subsystem which includes a constellation of satellites and a plurality of ground stations positioned at selected locations; a ground subsystem which

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includes a network of ground stations positioned at selected locations; and an airborne subsystem which includes a plurality of transponder units located in respective ones of aircraft utilizing the system; the transponder units of the airborne subsystem each including means providing a first spread spectrum band data link with the satellites and ground stations of the ground subsystem, the satellites each including means providing a second spread spectrum band data link with the airborne subsystem, and the ground stations of the ground subsystem each including means providing a third spread spectrum band data link with the airborne subsystem, each of said spread spectrum band data links including means providing a selected form of spread spectrum coding comprising a plurality of different codes to provide identification of individual ones of said satellites, and ground stations.

5,627,547

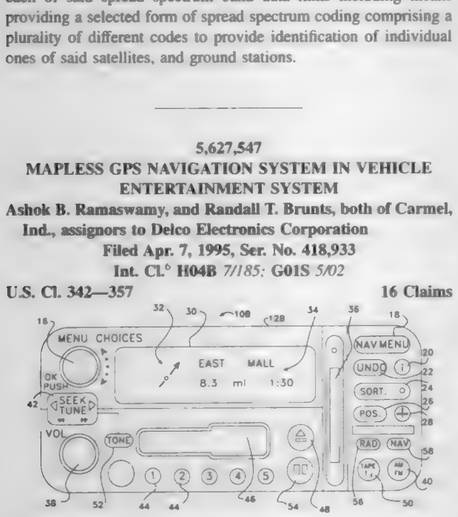
MAPLESS GPS NAVIGATION SYSTEM IN VEHICLE ENTERTAINMENT SYSTEM

Ashok B. Ramaswamy, and Randall T. Brunts, both of Carmel, Ind., assignors to Delco Electronics Corporation

Filed Apr. 7, 1995, Ser. No. 418,933

Int. Cl.[6] H04B *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **16 Claims**



1. An integrated navigation/audio entertainment system for use in a vehicle, said system comprising:

an audio entertainment unit including audio electronics for producing audio signals;

a position sensing receiver for receiving signals containing position information and determining a current position thereof;

a destination database containing a plurality of selectable destinations and destination position coordinates;

user selectable input means for selecting at least one of said destinations; processor means for determining a distance and a direction from the determined current position to the selected destination;

a housing substantially enclosing at least the audio entertainment unit and said processor means, said housing being adapted to be located in a vehicle; and

a mapless display for providing a visual indication of the determined distance and the direction to the selected destination when in a navigation display mode and for displaying audio entertainment information when in an audio display mode.

5,627,548

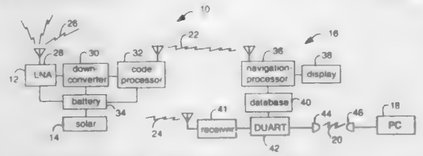
NAVIGATION WRISTWEAR

Arthur N. Woo, Cupertino; Kiyoko M. Mura-Smith, Los Altos Hills, both of Calif., and Gregory T. Janky, Bellingham, Wash., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Nov. 30, 1995, Ser. No. 563,568

Int. Cl.[6] G01S *5/02*

U.S. Cl. 342—357 **12 Claims**



1. A navigation wristwear device, comprising:

means for establishing a radio link to communicate downconverted and demodulated code suitable for navigation processing;

a first part including an antenna to receive L-band microwave signals from orbiting navigation satellites, a downconverter connected to remove the carrier frequencies from said signals, and a code processor connected to despread and track said signals and connected to communicate corrected ranging and timing information via the radio link means; and

a wrist watch type housing with straps in which is disposed a navigation processor connected to receive said corrected ranging and timing information via the radio link means, and a display connected to receive position, velocity and time information from triangulation of said corrected ranging and timing information.

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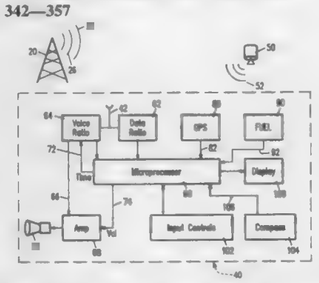
DUAL CHANNEL ADVERTISING REFERENCING VEHICLE LOCATION

Michael C. Park, Portland, Oreg., assignor to Seiko Communications Holding N.V., Netherlands Antilles

Continuation of Ser. No. 282,893, Jul. 29, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,604

Int. Cl.[6] H04B *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **2 Claims**



1. A method for providing specific time and location sensitive advertising information to a moving vehicle, said specific time and location sensitive advertising information being selected from a large body of advertising information including a large number of records, each record including a specific time and location sensitive advertising information, the method comprising the steps:

transmitting to said vehicle by radio time said large body of advertising information,

receiving at said vehicle said large body of advertising information;

at a specific time, determining the location of said vehicle; and

selecting for display at said vehicle one of said records for display, said selection being at least in part based on the time of day and upon the location of said vehicle.

5,627,550

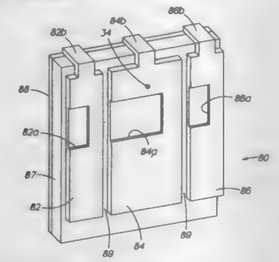
WIDEBAND DOUBLE C-PATCH ANTENNA INCLUDING GAP-COUPLED PARASITIC ELEMENTS

Mohamed Sanad, San Diego, Calif., assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Jun. 15, 1995, Ser. No. 490,641

Int. Cl.[6] H01Q *1/38;13/10*

U.S. Cl. 343—700 MS **30 Claims**



1. An antenna structure, comprising:

a ground plane;

a layer of dielectric material having a first surface overlying said ground plane and an opposing second surface;

an electrically conductive layer overlying said second opposing surface of said dielectric layer, said electrically conductive layer being differentiated into a plurality of antenna elements including a driven antenna element and at least one non-driven, parasitic antenna element, individual ones of said parasitic antenna elements being disposed on opposite sides of said driven antenna element, each of said antenna elements having a shape of a parallelogram and having a first radiating aperture having a length that extends along a first edge of said electrically conductive layer and a width that extends towards an oppositely disposed second edge, said electrically conductive layer further having a second radiating aperture having a length that extends along said first edge of said electrically conductive layer and a width that extends towards said oppositely disposed second edge, said first and second radiating apertures having a zero potential plane disposed therebetween; and

means for coupling at least one of radio frequency energy into and out of said electrically conductive layer of said driven antenna element, said coupling means being located within said zero potential plane and further being located nearer to one of said radiating apertures than the other.

5,627,551

ANTENNAS FOR SURFACE MOUNTING AND METHOD OF ADJUSTING FREQUENCY THEREOF

Teruhisa Tsuru, and Toshifumi Oida, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 12, 1995, Ser. No. 501,459

Claims priority, application Japan, Aug. 5, 1994, 6-184934

Int. Cl.[6] H01Q *1/38*

U.S. Cl. 343—700 MS **7 Claims**

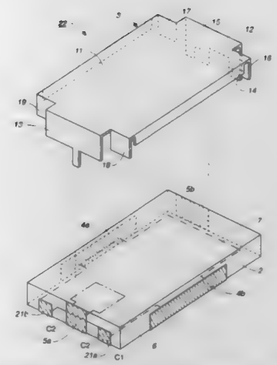
1. An antenna for surface mounting, comprising:

a dielectric substrate having a top surface, a bottom surface and side surfaces therebetween;

at least one primary grounding electrode on said dielectric substrate;

a connector electrode on said dielectric substrate, said primary grounding electrode and said connector electrode together serving as a capacitor;

at least one secondary grounding electrode formed adjacent to but insulated from said connector electrode, said secondary grounding electrode and said connector electrode together serving as a second capacitor for adjusting the resonance frequency of said antenna; and



a radiative member disposed on said dielectric substrate, said radiative member having a principal surface, a first holder and a second holder, said first and second holders extending from said principal surface and supporting said dielectric substrate therebetween, said first holder having a power feed electrode and a grounding terminal formed at one end thereof, and said second holder being connected to said connector electrode on said dielectric substrate.

5,627,552

ANTENNA STRUCTURE FOR USE IN A TIMEPIECE

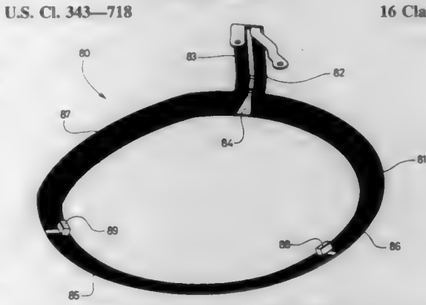
Penny Farrar, and Bjorn Kjelsberg, both of Bienne, Switzerland, assignors to ETA SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed May 26, 1995, Ser. No. 451,539

Claims priority, application European Pat. Off., May 5, 1995, 95106835

Int. Cl.[6] H01Q *1/12*

U.S. Cl. 343—718 **16 Claims**



1. An antenna structure for mounting inside the case of a timepiece (**100**) adapted to be worn on the wrist and including a microreceiver (**117,118**), said antenna structure comprising:

an antenna (**81**) comprising at least one coil (**85,86,87**) and being capable of capturing an electromagnetic field bearing radio diffused messages for receipt and transformation by said microreceiver (**117,118**) into data perceptible to a user of said timepiece;

conductive leads (**82,83**) for connecting said antenna (**81**) to said microreceiver (**117,118**); and,

a non-conductive support structure (**84**) configured for mounting within the case of the timepiece and comprising a first portion (**90**) onto which said antenna (**81**) is mounted;

characterised in that said support structure (**84**) further comprises

a second portion (**91**) unitary with and projecting from said first portion (**90**) and onto which said conductive leads (**82,83**) are mounted.

VOL 1198 ISS 1 MY 6 1997 UMI

5,627,553

FOLDED LENS ANTENNA

Geoffery T. Poulton, Westleigh, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Australia

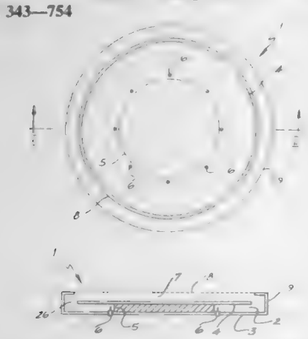
PCT No. PCT/AU93/00200, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO93/22806, PCT Pub. Date Nov. 11, 1993

PCT Filed May 5, 1993, Ser. No. 335,838

Claims priority, application Australia, May 5, 1992, PL2277

Int. Cl.[6] H01Q *19/06*

U.S. Cl. 343—754 **20 Claims**



1. A folded lens transmit/receive antenna comprising:

a first curved parallel plate waveguide;

a second curved parallel plate waveguide;

waveguide coupling means operatively associated with the first and second waveguides for communicating a signal therebetween as to transform a signal comprising a wave having a substantially curved wave front from the first waveguide to a signal comprising a wave having a substantially planar wave front in the second waveguide;

free space coupling means for coupling a signal between the second waveguide and free space, the free space coupling means being operatively associated with the second parallel plate waveguide; and

plurality of coupling devices arranged about a curved reflector disposed in the first waveguide for coupling a signal between the first waveguide and transmit/receive apparatus connectable to said coupling devices to enable scanning of an antenna radiation pattern

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5,627,554

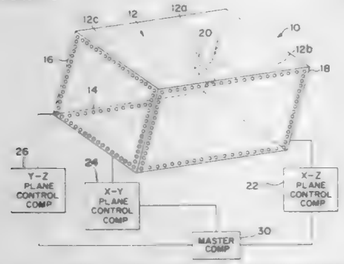
SEGMENTED DIRECT VOLUME DISPLAY DEVICE AND METHOD

Gordon V. Jefferson, 2505 Briarhurst Ct., Simi Valley, Calif. 93063

Filed Apr. 18, 1995, Ser. No. 423,372

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—5 **19 Claims**



1. A segmented direct volume display device comprising:

a volume containing a medium;

two mutually orthogonal matrices of light guns capable of providing light beams, each matrix outputting light at different wavelengths;

means for generating images in said volume by selectively activating said light guns, an image being formed at an intersection of two beams, one from each of said two matrices;

means for displaying images in different colors in different segments of said volume; and

means for altering an attribute of an image in response to a parameter of an object being imaged being exceeded.

5,627,555

LINE FLICKER SUPPRESSION BY ADAPTIVE DE-INTERLACING

Willem den Hollander, Schlieren, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

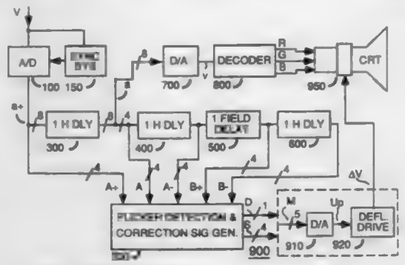
PCT No. PCT/US93/12082, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO94/24811, PCT Pub. Date Oct. 27, 1994

PCT Filed Dec. 13, 1993, Ser. No. 343,418

Claims priority, application United Kingdom, Apr. 14, 1993, 9307681

Int. Cl.[6] G09G *1/04*

U.S. Cl. 345—12 **15 Claims**



1. A video display comprising:

a CRT having a scanning electron beam describing a raster;

means (**950**) for supplementary deflection of said electron beam;

means (**200**) coupled to a source of display video signals for detecting therein flicker causative signals and generating therefrom a shift signal (S) of magnitude related to an amplitude of said flicker causative signals and a direction signal (D) indicative of a direction required for flicker compensation;

means (**910**) coupled to said shift signal and said direction signal for generating an analog signal (Up); and

means (**920**) for coupling said analog signal to said supplementary deflection means (**950**) for deflection of said electron beam in said direction established by said direction signal (D) and by an amount related to said shift signal (S).

5,627,556

CIRCUIT FOR DRIVING ALTERNATING CURRENT THIN FILM ELECTROLUMINESCENCE DEVICE USING RELATIVE POTENTIAL DIFFERENCE

Yong-Moo Kwon, and Myung Hwan Oh, both of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Rep. of Korea

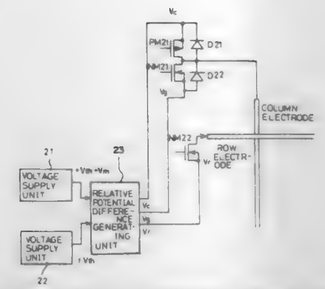
Filed Oct. 20, 1994, Ser. No. 326,548

Claims priority, application Rep. of Korea, Dec. 8, 1993, 26934/1993

Int. Cl.[6] G09G *3/30*

U.S. Cl. 345—76 **3 Claims**

1. A circuit for driving an alternating current thin film electroluminescence device using a relative potential difference, comprising:



a first voltage supply unit for generating a voltage corresponding to the sum of a luminescence threshold voltage and a modulation voltage;

a second voltage supply unit for generating the luminescence threshold voltage;

a relative potential difference generating unit for directly receiving an input clock signal in the delayed and inverted form and switching the output voltages from the first and second voltage supply units to perform AND and OR operations for the voltages, thereby generating a column electrode voltage, a reference voltage and a row electrode voltage;

a pair of drive integrated elements having a push-pull structure and respectively adapted to receive the column electrode voltage and the reference voltage from the relative potential difference generating unit, perform a push-pull operation in accordance with an input gate signal, and thereby output the column electrode voltage; and

another drive integrated element having an open-drain structure and adapted to receive the row electrode voltage from the relative potential difference generating unit and output the received row electrode voltage in accordance with the input gate signal.

5,627,557

DISPLAY APPARATUS

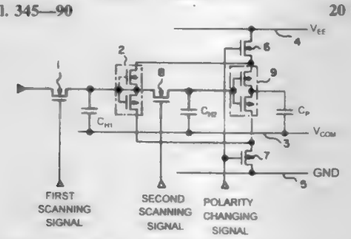
Akira Yamaguchi, Soraku-gun; Yutaka Ishii, Nara; Yoshitaka Yamamoto, Yamatokoriyama, and Tomoaki Toichi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 18, 1993, Ser. No. 107,895

Claims priority, application Japan, Aug. 20, 1992, 4-221774; Aug. 20, 1992, 4-221775; Aug. 20, 1992, 4-221776; Jul. 26, 1993, 5-184189

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—90 **20 Claims**



1. A display apparatus comprising:

a plurality of pixels, each of which is supplied with a pixel data;

a pixel capacitance for accumulating an electric charge in accordance with the pixel data;

a holding capacitance provided to each of the pixels to hold the pixel data;

a buffer amplifying means for supplying the electric charge to the pixel capacitance in accordance with a voltage of the holding capacitance, wherein the buffer amplifying means is a bidirectional amplifying means for supplying positive and negative charges to pixel capacitance in accordance with a voltage of the holding capacitance;

a charging load means having a load connected in parallel with the pixel capacitance, wherein the pixel capacitance is supplied with the positive and negative electric charges by the bidirectional amplifying means, and the positive and negative electric charges pass through the charging load means via the load; and

a charging load control means for connecting the charging load means in parallel with the pixel capacitance during a charge supply period including at least a predetermined period from a start of supplying positive and negative electric charges based on a new pixel data from the bidirectional amplifying means to the pixel capacitance, and for cutting off the charging load means from the pixel capacitance during any period except for the charge supply period.

5,627,558

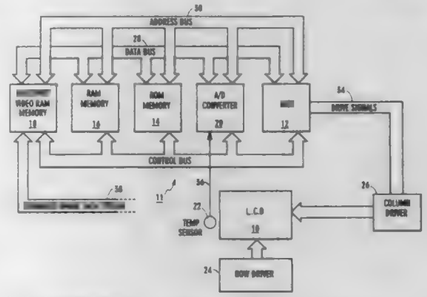
DC INTERATING DISPLAY DRIVER EMPLOYING PIXEL STATUS MEMORIES

Robert Hotto, 3109 Evening Way, La Jolla, Calif. 92037, assignor to Robert Hotto, La Jolla, Calif.

Continuation of Ser. No. 88,256, Jul. 7, 1993, Pat. No. 5,444,457, which is a continuation of Ser. No. 705,190, May 24, 1991, Pat. No. 5,280,280. This application May 17, 1995, Ser. No. 446,898

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—94 **29 Claims**



1. In combination,

display means formed from a plurality of elements each constructed to provide for the display of an image in accordance with the introduction of signals to such element,

first means for providing a plurality of signals each representing the image to be displayed on an individual one of the elements in the plurality, and

second means for applying direct voltages to at least some of the elements simultaneously in accordance with the signals provided for such elements to obtain a display of the images for such elements on the display means.

5,627,559

ELECTROOPTICAL DISPLAY APPARATUS AND DRIVER

Akira Tsuboyama, and Kazunori Katakura, both of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 968,494, Oct. 29, 1992, abandoned. This application Feb. 3, 1995, Ser. No. 384,451

Claims priority, application Japan, Oct. 31, 1991, 3-311496

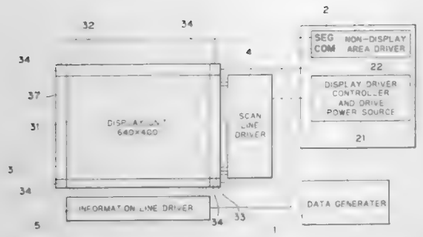
Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—97 **16 Claims**

1. A display apparatus comprising:

a display panel comprising an image information display section having N scanning electrodes arranged side by side, and M information electrodes crossing said N scanning electrodes, and an image information non-display section having addi-

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tional electrodes arranged at an outside of and along said N scanning electrodes; and

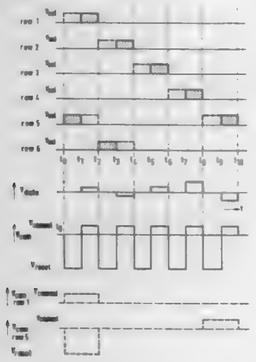
driving means having means for supplying a scanning signal to a selected scanning electrode, while supplying a predetermined voltage to another of said scanning electrodes that is non-selected, means for supplying an information signal to said M information electrodes synchronously with the scanning signal, and means for applying a non-display section drive signal to said additional electrodes during only a predetermined time period and for applying a predetermined voltage in a period other than the predetermined period,

wherein said additional electrodes are supplied with the non-display section driving signal, to set said non-display section at a predetermined optical state, during the period of supplying the scanning signal to any of said N scanning electrodes.

5,627,560
DISPLAY DEVICE

Antonius G. H. Verhulst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1995, Ser. No. 470,893
Claims priority, application European Pat. Off., Jun. 9, 1994, 94201651
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—97 **4 Claims**

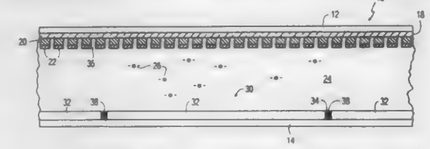


1. A display device comprising a first substrate having a group of selection electrodes and a group of data electrodes and a matrix of picture electrodes arranged in rows and columns at the locations of ferro-electric liquid crystal display elements between the first substrate and a second substrate provided with a counter electrode, each display element being connected to a data electrode via an active switching element and the display device comprising means for bringing, prior to selection, a row of display elements to an extreme optical transmission state by means of an auxiliary signal, characterized in that the display device comprises a drive circuit for alternately applying the auxiliary signal and a data-offset voltage (V_{comset}) to the counter electrode on the second substrate, said data-offset voltage being applied to said counter electrode during the application of a data voltage to one of said data electrodes.

5,627,561
ELECTROPHORETIC DISPLAY PANEL WITH SELECTIVE CHARACTER ADDRESSABILITY

Christopher A. Laspina, Syosset, and Edward G. Lewit, Roslyn Heights, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Continuation of Ser. No. 346,838, Nov. 30, 1994, abandoned, which is a continuation of Ser. No. 118,515, Sep. 9, 1993, abandoned. This application Apr. 10, 1996, Ser. No. 630,555
Int. Cl.[6] G09G *3/34*
U.S. Cl. 345—107 **16 Claims**



1. In an electrophoretic display for displaying characters in a plurality of character positions of a predetermined area, wherein said display includes a cathode structure, a grid structure, an anode structure and an electrophoretic suspension disposed in between said cathode structure and said anode structure, an improved anode structure comprising:

a substrate;

a plurality of conductive character blocks disposed on said substrate to lie in a single plane and arranged in a matrix containing columns and rows, each of said character blocks being a single unitary solid layer of conductive material of said predetermined area, wherein each of said character blocks is separated from each other on said substrate by column spaces and row spaces that define said predetermined area of each of said character blocks, and wherein each of said character blocks corresponds in position to one of the character positions in said display;

row control lines disposed on said substrate in each of said row spaces, wherein a single row control line is coupled to each of said character blocks in a common row in said matrix;

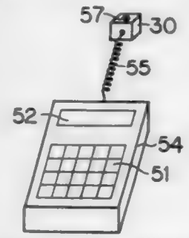
column control lines disposed on said substrate in each of said column spaces, wherein a single column control line is coupled to each of said character blocks in a common column in said matrix, and;

means for selectively applying voltage to one said row control line and one said column control line to selectively change the voltage of one of said conductive character blocks in said matrix.

5,627,562
MAGNETIC DISPLAY APPARATUS

Rafael Skodlar, 1585 Keesling Ave., San Jose, Calif. 95125

Continuation of Ser. No. 157,316, Nov. 26, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 401,479
Int. Cl.[6] G09G *3/00*
U.S. Cl. 345—111 **11 Claims**



1. A labeling system for providing human readable information on a label comprising

said label including a multi-character display area for displaying said human readable information,

said information being magnetically recorded and stored in said display area;

said label being devoid of any power supply and retaining said magnetically recorded human readable information until said human readable information is altered by magnetically recording different human readable information in another recording operation;

a recording apparatus for magnetically recording data representing said human readable information onto said display area, including

a keyboard for entering data and commands, a write head for generating magnetic fields, and processing means for receiving said data and generating control signals for said write head for generating said magnetic fields;

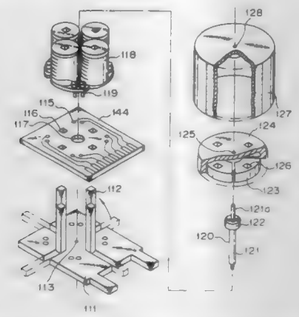
said write head including a plurality of electromagnets arranged for recording said data representing said human readable information in said display area;

said write head being void of any mechanical linkage to said label and being moved into operational proximity to said label for recording said human readable information into said multi-character display area.

5,627,563
MULTICOLOR DISPLAY APPARATUS

Tadahiko Nakagiri; Kazuo Teramoto, both of Tokyo, and Mitsuhiro Okamoto, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., and T.I.C.-Citizen Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 384,589, Feb. 3, 1995, which is a continuation of Ser. No. 904,575, Jun. 26, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,309
Claims priority, application Japan, Jun. 28, 1991, 3-158374
Int. Cl.[6] G09G *3/16*
U.S. Cl. 345—111 **8 Claims**



1. A method for driving a multicolor display element having a rotary member with a plurality of separate display regions of different colors, for displaying one of the colors at a time, the rotary member having a shaft to which the rotary member is fixedly mounted, a support member for rotatably supporting the shaft, drive means coupled to the support member for rotating the rotary member, the drive means including

a permanent circular magnet, having a circular peripheral side surface, fixed to the shaft to rotate with the rotary member,

a plurality of stators coupled to the support member, and arranged close to and around the circular peripheral side surface of the permanent circular magnet so as to substantially surround the circular peripheral side surface thereof, each one of said plurality of stators having an arcuate inner side surface which is provided on a portion of each said stator opposite said circular peripheral side surface of said magnet, said arcuate inner side surface having a uniform radius from the center of said magnet, said plurality of stators being mutually arranged in an identical plane with a first clearance formed between said circular peripheral side surface of said magnet and said arcuate inner side surface of each said respective stator, said first clearance being uniform along the overall peripheral side surface of said magnet, each of the plurality of stators including a magnetizable core with a magnetizing coil wound thereon, the method, comprising:

applying to said magnetizing coils a driving waveform corresponding to an acceleration pulse,

selectively polarizing the cores in response to the magnetization of the goils by the acceleration pulse to cause the rotary member to rotate to display a selected display region,

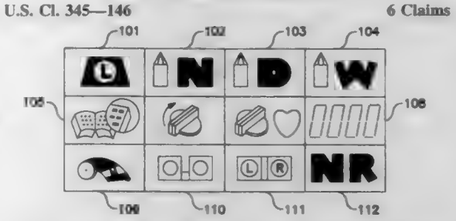
applying to said magnetizing coils a driving waveform corresponding to a braking pulse, and

selectively polarizing the cores in response to the magnetization of the coils by the braking pulse to stop the rotation of the rotary member at the selected display region.

5,627,564
GRAPHIC ON-SCREEN DISPLAY METHOD

Dong-Ha Yang, Seoul, Rep. of Korea, assignor to L G Electronic Inc., Rep. of Korea

Continuation of Ser. No. 657,454, Feb. 19, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,549
Claims priority, application Rep. of Korea, Feb. 28, 1990, 90-2710
Int. Cl.[6] G09G *5/00;* **H04N** *5/44*
U.S. Cl. 345—146 **6 Claims**



1. A method for displaying on a TV screen each of a plurality of selectable optional functions for a VCR and for selecting a desired one of said optional functions, from among said displayed functions on a single on-screen display, with a remote controller, said method comprising the steps of:

generating a single on-screen display signal with the remote controller for producing on the TV screen a display comprising a plurality of graphic expressions corresponding respectively to each of the optional VCR functions, each said graphic expression being available for selection and defining a graphic block having a unique lateral and longitudinal font address on the TV screen, and each said graphic block having a graphic color disposed on a background color, the graphic color for one said graphic block being substantially the same as the background color for the other said graphic blocks, and the background color for said one graphic block being substantially the same as the graphic color for the other of said graphic blocks, such that said one graphic block is displayed in an inverted manner;

selectively generating lateral and longitudinal directional control signals with the remote controller for moving the inverted manner display laterally and longitudinally, among said plurality of graphic expressions available for selection, to a lateral and longitudinal font address corresponding to the graphic expression of the desired optional function of the VCR to display said graphic expression of the desired optional function in an inverted manner; and

generating a selection signal with the remote controller for selecting the optional function having the inverted manner

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display expression on said single on-screen display, whereby the method enables selection of an optional function from among said plurality of graphic expressions available for selection with a single selection from a single on-screen display.

5,627,565

SPACE COORDINATES DETECTING DEVICE AND INPUT APPARATUS USING SAME

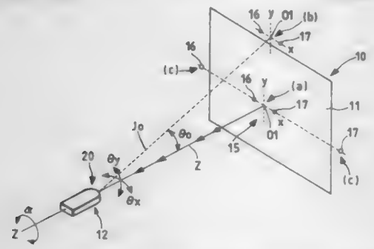
Ichiro Morishita, Sendai; Yuichi Yasuda; Yuichi Umeda, both of Iwaki; Arao Sato, Sendai; Junichi Saito, Iwaki; Masahiro Tanaka, Iwaki; Tomomitsu Muta, Iwaki; Masatoshi Uchio, Iwaki; Kazuhiro Katagiri, Sendai, and Masaru Nakayama, Natori, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 26, 1995, Ser. No. 452,453

Claims priority, application Japan, May 26, 1994, 6-138182; Sep. 28, 1994, 6-233234; Oct. 5, 1994, 6-241505; Oct. 13, 1994, 6-247878

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—158 **35 Claims**



1. A space coordinates detecting device characterized in that a light emitting section and a detecting section are disposed in spaced relation to each other, said light emitting section having two light sources each adapted to emit a distinguishable light and spaced from each other, said detecting section having an aperture for making each light into a light spot of a predetermined area, said detecting section further having an X side light sensing portion for detecting movement in X axis direction of each light spot and a Y side light sensing portion for detecting movement in Y axis direction of each light spot when X-Y orthogonal coordinates intersecting an axis which passes through the center of said aperture are set, and there is provided a computing section which determines the position of each light spot on the basis of a difference in the amount of light received in the X side light sensing portion between both light spots and a difference in the amount of light received in the Y side light sensing portion and then determines an inclination angle of a line connecting the centers of both light spots on said X-Y coordinates.

5,627,566

KEYBOARD

Dietmar Litschel, Käferkreuzg. 37, Klosterneuburg, Austria

PCT No. PCT/AT92/00073, § 371 Date Dec. 6, 1993, § 102(e) Date Dec. 6, 1993, PCT Pub. No. WO92/21519, PCT Pub. Date Dec. 10, 1992

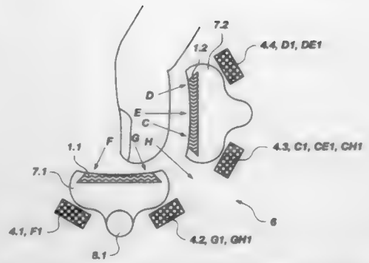
PCT Filed Jun. 9, 1992, Ser. No. 157,169

Claims priority, application Austria, Jun. 6, 1991, 1148/91

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—168 **16 Claims**

1. Keyboard comprising at least one key providing more than one reproducible character, a triggering unit operably disposed in connection with the key, and sensors arranged on the key, said key



having at least two selectively actuated sensors, wherein each sensor generates at least one unique signal, each of said signals representative of one of said reproducible characters, said sensors interacting with a device for displaying said signals, and whereby a response behavior of an actuation of the sensors is different from that of the triggering unit to provide means for displaying one of said unique signals before a final triggering of a final signal by means of actuating said triggering unit.

5,627,567

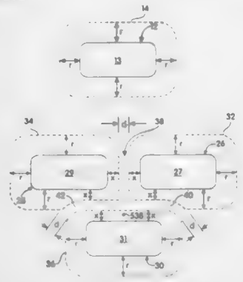
METHOD AND APPARATUS FOR ADAPTIVE TOUCH RECOGNITION IN A TOUCH SENSITIVE USER INTERFACE

Marc Davidson, Andover, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 287,447, Aug. 8, 1994, abandoned, which is a continuation of Ser. No. 54,113, Apr. 27, 1993, abandoned. This application Jan. 30, 1996, Ser. No. 594,356

Int. Cl.[6] G08G *5/00*

U.S. Cl. 345—173 **12 Claims**



1. A method for operating a touch sensitive user interface panel, the user interface panel having one or more active control keys, each of which indicates an active control function within a display area and which causes selection of the active control function when a user touches the panel within the display area, the method comprising the steps of:

defining expanded touch zones for each active control key, the expanded touch zone for each active control key having an area that is larger than the corresponding display area for the control key, including the step of displaying at least one additional control key based upon selection of one control key, and adaptively redefining the dimensions and shape of the expanded touch zone for each active control key based upon the selection of said one control key and the location of said additional control key; and

when the user touches the interface panel within an expanded touch zone for an active control key, selecting the active control function indicated by the active control key corresponding to the expanded touch zone that was touched.

5,627,568

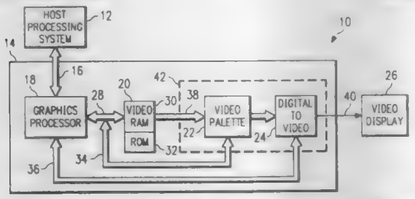
DISPLAY BUFFER USING MINIMUM NUMBER OF VRAMS

Ian J. Sherlock, Houston, Tex.; Richard D. Simpson, Bedford, England, and Michael D. Asal, Sugarland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1992, Ser. No. 990,971

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—185 **20 Claims**



19. A method of storing a plurality of sequenced data lines, each data line comprising a plurality of sequenced data words including a first word and a last word, in a memory system comprising a plurality of memory banks, each bank having a plurality of ordered rows of data storage locations including a first row and a last row, the storage locations of each row ordered and including a first and a last storage location, the method comprising the steps of:

storing at least a portion of a first one of the sequenced data lines in the first row of a first one of the memory banks, the first word of the first line being stored in a location offset from the first location of the first row such that the last word of a last line being stored in the first bank is stored in the last location of the last row of the first memory bank;

storing the next line in the sequence of lines in the first row of a second memory bank, the first word of the next line stored in the first location of the first row of the second bank;

storing a last one of ones of the lines being stored in the second bank in the locations of the second bank such that the last word of the last line being stored in the second bank is stored in the last location of a selected row;

storing the following line in the sequence of lines in a third memory bank, the first word of the following line being stored in a location in a row other than said first row of the third memory bank; and

storing a subsequent line of ones of the lines being stored in the third memory bank in the locations of the third memory bank such that a word of the subsequent line is stored in the last location of the last row of the third bank and the next word in the sequence of words of the subsequent line is stored in the first location in the first row of the third memory bank.

5,627,569

DISPLAY CONTROL APPARATUS AND METHOD WITH INITIALIZATION CAPABILITY

Eiichi Matsuzaki, Kawasaki; Hiroshi Nonoshita, Fujisawa, and Takayuki Seki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,341

Claims priority, application Japan, Jun. 22, 1992, 4-162946

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—214 **28 Claims**

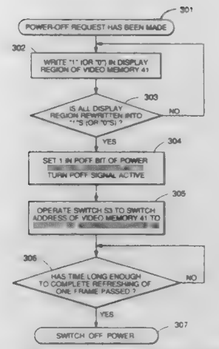
1. A display control apparatus comprising:

storing means having memories for storing display data to be displayed on a display panel;

display control means for achieving an image on the display panel in accordance with the data stored in said storing means;

detecting means for detecting a power-off signal; and

rewriting means for rewriting the display data stored in said storing means by a predetermined data when said detecting means detects a power-off signal, wherein the display panel is initialized by reading the predetermined data from said storing means and said display control means achieves a refreshed image on the display panel corresponding to the predetermined data thereby erasing the image on the display panel and displaying the refreshed image on the display panel.



5,627,570

INK JET RECORDING METHOD USING MOVABLE DETECTION FLAGS

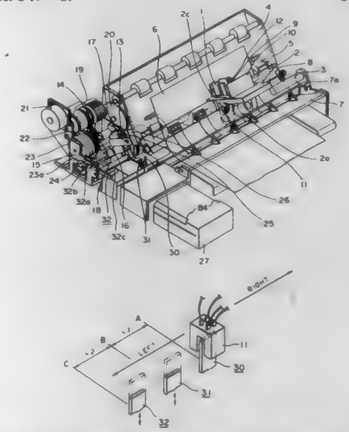
Soichi Hiramatsu; Kenichirou Hashimoto, and Hideo Fukazawa, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 928,357, Aug. 12, 1992, abandoned, which is a division of Ser. No. 513,932, Apr. 24, 1990, Pat. No. 5,168,291. This application May 20, 1994, Ser. No. 247,118

Claims priority, application Japan, Apr. 24, 1989, 1-101662; Jun. 2, 1989, 1-139307; Apr. 19, 1990, 2-103755

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—19 **6 Claims**



1. An ink jet recording method comprising the steps of:

providing a movable carriage for carrying a recording head and having a sensor;

providing in a carriage moving path a plurality of flags including a flag movable into and away from the carriage moving path in accordance with mounting and demounting of an ink cartridge;

moving the carriage before executing a recording operation, during which the sensor senses a presence or absence of the ink cartridge by sensing which flag is present or absent in the carriage moving path;

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outputting an error signal when the ink cartridge is not sensed in said moving step; and

effecting the recording operation when the ink cartridge is sensed in said moving step.

5,627,571

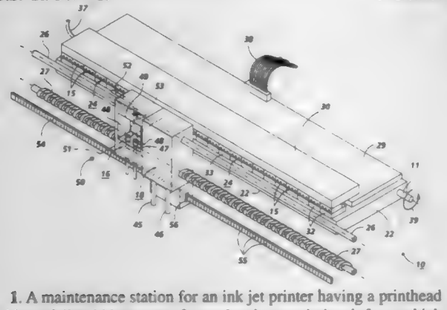
DROP SENSING AND RECOVERY SYSTEM FOR AN INK JET PRINTER

David G. Anderson; Alfred J. Claflin, both of Ontario; Fred F. Hubble, III, and James P. Martin, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 13, 1994, Ser. No. 322,129

Int. Cl.[6] B41J *29/393*

U.S. Cl. 347—19 **9 Claims**



1. A maintenance station for an ink jet printer having a printhead with a full width array of nozzles in a printhead face which confirms the satisfactory operation of each nozzle one at a time and identifies problem nozzles, so that only the problem nozzles may be serviced and recovered, comprising:

a droplet sensor and a problem nozzle recovery device being mounted on a translatable carriage for translation along and parallel to the array of nozzles in the printhead;

means for translating the carriage;

means for monitoring the location of the droplet sensor and recovery device relative to each nozzle in the array of nozzles as the carriage is being translated;

the printhead selectively ejecting at least one ink droplet through the droplet sensor from a predetermined nozzle in the array of nozzles, when said predetermined nozzle is aligned with the droplet sensor as the droplet sensor moves therepast on said carriage, the droplet sensor sensing whether a droplet was ejected or not and, if a droplet was ejected, sensing the trajectory of the droplet and determining whether the trajectory is within the limits of a predetermined directionality, the droplet sensor identifying a problem nozzle as one either not ejecting a droplet or ejecting a droplet outside the limits of a predetermined directionality during one traversal of the nozzle array; and

the recovery device performing a recovery operation on each problem nozzle identified.

5,627,572

PROGRAMMABLE HEAD TYPE DETECTION AND MAINTENANCE SYSTEM

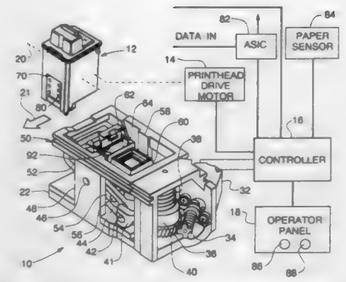
Paul Harrington, III, Versailles; Edmund H. James, III, Lexington, and Randall D. Mayo, Georgetown, all of Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Continuation-in-part of Ser. No. 327,935, Oct. 24, 1994. This application Feb. 10, 1995, Ser. No. 386,590

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—23 **13 Claims**

1. A maintenance system for maintaining an installed printhead in an ink jet printer capable of printing with a plurality of different species of printheads of a first type, printheads of each species of



printheads of said first type having different maintenance requirements from other species of printheads of said first type, said installed printhead including encoding means for identifying it as being of a certain species of said first type, said maintenance system comprising:

a programmable controller including,

wiper means for wiping nozzles provided on said printhead; and,

control means for executing a maintenance program to cause wiping and firing of said nozzles, said maintenance program including a first algorithm for maintaining an installed printhead of said first type, regardless of the species of the installed printhead, by controlling repetitions of the wiping and firing of said nozzles,

a writable non-volatile memory for storing a descriptor record for each species of printhead that may be installed in said printer, each descriptor record including a head detection pattern and parameters for use in said first algorithm; and,

selecting means responsive to said encoding means and the head detection patterns in said descriptor records for selecting the parameters in one of said descriptor records for use in said first algorithm whereby the repetitions of the wiping and firing of said nozzles during execution of said first algorithm varies according to the species of said installed printhead of said first type.

5,627,573

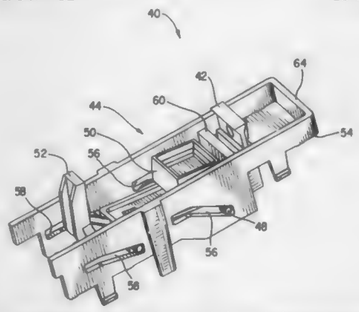
MAINTENANCE DEVICE IN AN INK JET PRINTING APPARATUS

Cathal L. Fahy, Memphis, Tenn., assignor to Brother International Corporation, Somerset, N.J.

Filed Jan. 4, 1995, Ser. No. 368,308

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—32 **16 Claims**



1. A maintenance device in an ink jet printing apparatus, the maintenance device comprising:

a movable cap carriage supporting a cap and including a first guide pin and a second guide pin, wherein said cap is engageable with an ink jet head of said ink jet printing apparatus; and

a guide member including a first guide slot and second guide slot guiding said first guide pin and said second guide pin of said cap carriage, respectively, wherein said first guide slot and said second guide are inclined at different angle with respect to each other.

5,627,574

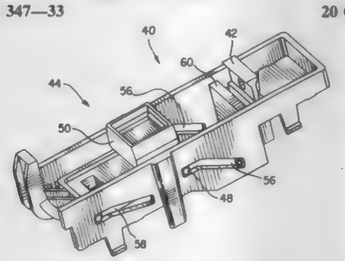
MAINTENANCE DEVICE IN AN INK JET PRINTING APPARATUS

Cathal L. Fahy, Memphis, Tenn., assignor to Brother International Corporation, Somerset, N.J.

Filed Jan. 4, 1995, Ser. No. 368,353

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **20 Claims**



1. An ink jet printing apparatus comprising:

a printing carriage that is movable between a maintenance area and a printing area, said printing carriage supporting a print cartridge having ink jet nozzles;

a maintenance device located at the maintenance area including a wiper disposed in a traveling path of said print cartridge to wipe residual ink from said ink jet nozzles of said print cartridge when said print cartridge is moved from said printing area to said maintenance area; and

means for preventing said wiper from deflecting beyond a predetermined position, said preventing means being spaced from said wiper to allow the wiper to deflect a predetermined amount before making contact with said preventing means, wherein said wiper and said preventing means are positioned such that said wiper and said preventing means are facing said printing carriage when said printing carriage is in the maintenance area.

5,627,575

INK JET PRINT HEAD AND INK JET PRINTER

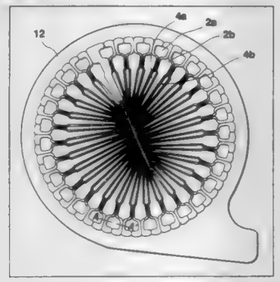
Hisayoshi Fujimoto, and Nobuhisa Ishida, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 28, 1994, Ser. No. 281,693

Claims priority, application Japan, Nov. 30, 1993, 5-299618

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—40 **11 Claims**



1. An ink jet print head, comprising:

a plurality of nozzles capable of ejecting ink toward an object;

at least two sets of pressure chambers, each set comprising a plurality of pressure chambers circularly or arcuately arranged around said nozzles, with each pressure chamber having a shape defined by a circumferential length and a radial length;

a plurality of ink flow paths communicating said pressure chambers with corresponding ones of said nozzles;

a diaphragm defining one surface of said pressure chambers, said diaphragm capable of vibrating to apply a pressure to said pressure chambers, thereby causing the ink within said pressure chambers to be discharged from said nozzles by way of said ink flow paths; and

a plurality of piezoelectric elements attached to an external surface of said diaphragm to thereby vibrate said diaphragm,

wherein a first, outer set of said at least two sets of pressure chambers is disposed radially outside a second, inner set of said at least two sets of pressure chambers, said first set of pressure chambers having (i) a circumferential length equal to or greater than a circumferential length of said second set of pressure chambers, and (ii) a radial length equal to or smaller than a radial length of said second set of pressure chambers.

5,627,576

INK JET HEAD USING EXCITED PROGRESSIVE WAVES

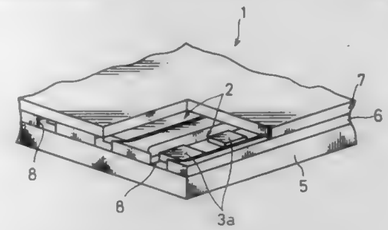
Tetsuya Inui, Nara; Susumu Hirata, Ikoma-gun; Yorishige Ishii, Yamatotakada; Kenji Ohta, Kitakatsuragi-gun, and Kazuhiro Kimura, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 183,410, Jan. 19, 1994, Pat. No. 5,491,500. This application Nov. 7, 1995, Ser. No. 551,768

Claims priority, application Japan, Jan. 22, 1993, 5-09436

Int. Cl.[6] B41J *2/065*

U.S. Cl. 347—48 **2 Claims**



1. An ink jet head comprising:

a head device that forms an ink-spraying unit, the head device being comprised of:

a nozzle from which ink is sprayed;

an ink passage that is connected to the nozzle; and

progressive-wave generating means, driven by ac voltages having different phases, for generating progressive waves in the ink inside the ink passage, which progressive waves impart a velocity to the ink in a direction of the progressive waves.

5,627,577

INK JET CARRIER WITH FLEXIBLE ELECTRICAL CABLE FOR CONNECTION TO A PRINTING APPARATUS

Eugene Buican, Cordova, Tenn., assignor to Brother International Corporation, Somerset, N.J.

Filed Jan. 4, 1995, Ser. No. 368,306

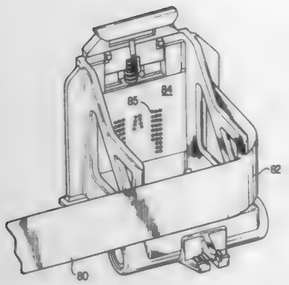
Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—50 **21 Claims**

1. A cable connection for use in an ink jet printer, comprising:

an ink cartridge carrier of one piece construction having at least a first section, a second section, a cable mounting section

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extending between said first section and said second section and a base section to form a substantially box shaped structure with two open sides;

a first wing extending from said first section and a second wing extending from said second section in a direction away from and parallel to said cable mounting section;

a first slot positioned between said first wing and said cable mounting section at an intersection where said cable mounting section and said first section are joined and a second slot positioned between said second wing and said cable mounting section at an intersection where said cable mounting section and said second section are joined; and

means for mounting a cable to said ink cartridge carrier.

5,627,578

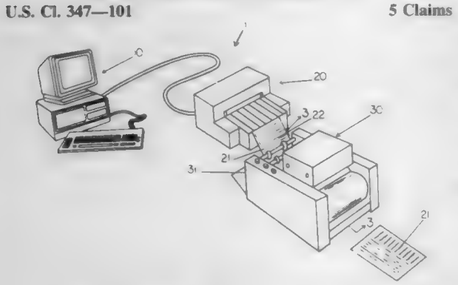
DESK TOP PRINTING OF RAISED TEXT, GRAPHICS, AND BRAILLE

Jeffrey Weintraub, Fort Washington, N.Y., assignor to Thermotek, Inc., New York, N.Y.

Filed Feb. 2, 1995, Ser. No. 382,434

Int. Cl.[6] B41J *2/01;3/32;* **B41M** *3/16*

U.S. Cl. 347—101 **5 Claims**



1. A system for printing raised text and/or graphics on a single sheet substrate, said system comprising:

a. an ink jet printer having at least one ink cartridge containing delayed drying ink, said ink jet printer being attached to controlling computer means having software instructions loaded therein, wherein wet, delayed drying ink, from the ink cartridge, is sprayed by the ink jet printer, in accordance with instructions from said software controlled computer means, on said single sheet substrate in the configuration of said text and/or graphics,

b. means for conveying the inked single sheet substrate, while said delayed drying ink remains wet, to means for dusting the substrate with a thermographic powder which adheres only to said wet ink,

c. means for removing excess thermographic powder; and

d. means for heating the adhered thermographic powder to a temperature and for a time sufficient to raise the lettering and/or graphics defined by the initially placed ink to at least a height of 0.019 inches.

5,627,579

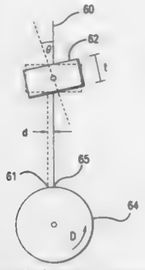
RASTER SCANNING OPTICAL SYSTEM AND METHOD FOR ADJUSTING SCAN LINE LOCATIONS ON A PHOTORECEPTOR

Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 29, 1994, Ser. No. 350,051

Int. Cl.[6] B41J *2/47;* **G01D** *15/14;15/06;* **G03G** *15/01*

U.S. Cl. 347—225 **57 Claims**



1. A raster scanning optical system comprising:

a light receiving member that receives a light beam, the light receiving member advancing in a process direction;

a scanning device that scans the light beam across the light receiving member at a scan line location in a direction perpendicular to the process direction;

a light transmissive plate located in a path of the light beam between the scanning device and the light receiving member; and

an adjusting device, contacting the light transmissive plate, for controllably adjusting a position of the light transmissive plate to displace the scan line location on the light receiving member, the light transmissive plate being adjustably controlled by the adjusting device to displace the scan line location on the light receiving member by a desired amount in a direction parallel to the process direction.

5,627,580

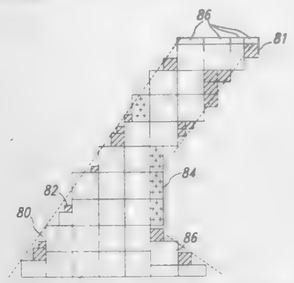
SYSTEM AND METHOD FOR ENHANCED PRINTING

William E. Nelson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 97,419, Jul. 26, 1993. This application Jun. 7, 1995, Ser. No. 482,476

Int. Cl.[6] H04N *1/21*

U.S. Cl. 347—239 **4 Claims**



1. A method of high resolution printing, comprising:

a. processing and analyzing data to alter the final image by at least one of three methods, said methods comprising:

i. time-delaying the image data to achieve finer vertical control over print images;

ii. horizontally offsetting pixel images to achieve finer horizontal control over print images; and

iii. using pixels of fractional sized to achieve finer control over filling in print image.

5,627,581

ENCODING APPARATUS AND ENCODING METHOD

Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

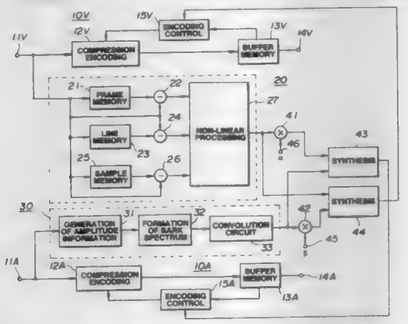
PCT No. PCT/JP94/00921, § 371 Date Mar. 29, 1995, § 102(e) Date Mar. 29, 1995, PCT Pub. No. WO94/30013, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 7, 1994, Ser. No. 379,558

Claims priority, application Japan, Jun. 8, 1993, 5-164029

Int. Cl.[6] H04N *7/26*

U.S. Cl. 348—17 **12 Claims**



1. An encoding apparatus adapted for respectively compression-encoding a digital video signal and a digital speech signal related thereto to transmit encoded signals, the apparatus comprising:

first characteristic detecting means for detecting the characteristic of the digital video signal;

second characteristic detecting means for detecting the characteristic of the digital speech signal;

synthesizing means for synthesizing outputs of the first and second characteristic detecting means; and

control means for controlling allocated information quantities of compression encoding of the digital video signal and the digital speech signal on the basis of an output of the synthesizing means.

5,627,582

STEREOSCOPIC COMPRESSION PROCESSING WITH ADDED PHASE REFERENCE

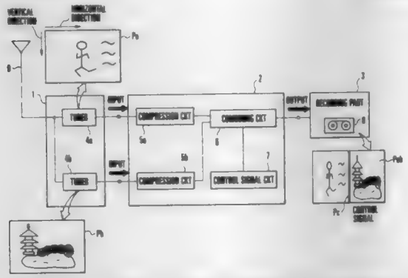
Tomotaka Muramoto, and Masakuni Yamamoto, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 345,628

Claims priority, application Japan, Nov. 29, 1993, 5-325843; Oct. 21, 1994, 6-256719

Int. Cl.[6] H04N *13/02;13/04*

U.S. Cl. 348—43 **6 Claims**



1. A stereoscopic image processing apparatus for recording on a recording medium a stereoscopic image signal for a stereoscopic image which is composed of left and right images, comprising:

a) time base compressing means arranged to time-base-compress and output image signals corresponding respectively to the left and right images for every horizontal scanning period;

b) image signal combining means for combining and outputting the image signals which correspond respectively to the left and right images and are time-base-compressed by said time base compressing means by proving a predetermined blanking period within every horizontal scanning period in such a way as to have the image signals located across the blanking period in the direction of the time base;

c) signal adding means for adding to the time-base-compressed and combined image signals both a horizontal synchronizing signal during a horizontal blanking period provided at the front of a portion of the time-base-compressed and combined image signals outputted by said image signal combining means, said portion corresponding to the left image, and a phase reference signal during a blanking period provided at between portions of the time-base-compressed and combined image signals corresponding respectively to the left and right images, said phase reference signal being different from said horizontal synchronizing signal and serving as a phase reference at the time of reproduction and thereby outputting a signal obtained by the above addition; and

d) recording means for recording on the recording medium the signal outputted from said signal adding means.

5,627,583

ELECTROENDOSCOPE APPARATUS

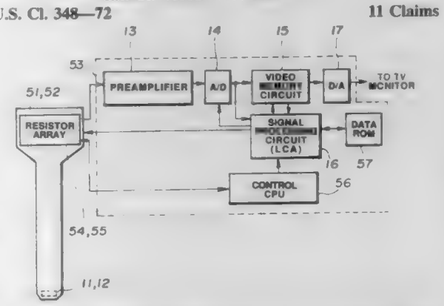
Kazunari Nakamura, Hino; Hisao Yabe, Hachioji; Shigeru Nakajima, Hachioji; Hiroyuki Sasa, Hachioji; Katsuyuki Saito, Hachioji; Yoshihiro Okada, Hachioji, and Seiji Yamaguchi, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 980,751, Nov. 24, 1992, abandoned. This application Jun. 14, 1994, Ser. No. 261,249

Claims priority, application Japan, Feb. 7, 1992, 4-022896; Aug. 26, 1992, 4-227559

Int. Cl.[6] A61B *1/05;* **H04N** *7/18*

U.S. Cl. 348—72 **11 Claims**



1. An electroendoscope apparatus which uses a plurality of types of electroendoscopes having solid-state imaging devices of different specifications and which performs signal processing in conformity with a plurality of signal processing systems, comprising:

video memory means supplied with an output signal from any of said solid-state imaging devices, said video memory means being used commonly for said plurality of types of electroendoscopes and for said plurality of signal processing systems;

signal processing means connected to said video memory means said signal processing means having a memory control function for writing in and reading from said video memory means, and a signal processing function for processing signals written in and read from said video memory means, said signal processing means comprising a plurality of programmable logic elements consisting of a field programmable gate array;

means for recording circuit formation data for rearranging the formation of said programmable logic elements, said circuit

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formation data corresponding to at least one of said plurality of types of electroendoscopes and said plurality of signal processing systems being recorded in said means, and said circuit formation data being used for rearranging said programmable logic elements so as to render operative said memory control function and said signal processing function; and

control means for rearranging the formation of said programmable logic elements in said signal processing means based on said circuit formation data, said control means being used for rearranging the formation of said programmable logic elements based on said circuit formation data corresponding to the type of the electroendoscope connected to said electroendoscope apparatus and the signal processing system, thereby to form a signal processing circuit exclusively used for said signal processing means,

wherein said field programmable gate array in said signal processing means is adaptable for processing signals of solid state imaging devices which vary in a plurality of different specification parameters, including number of pixels,

wherein said field programmable gate array in said signal processing means is adaptable for processing signals of both a surface sequential imaging system and a simultaneous imaging system, and

wherein said field programmable gate array in said signal processing means is adaptable for processing signals of both a PAL TV system and an NTSC TV system.

5,627,584

ENDOSCOPE SYSTEM WITH CENTRALIZED CONTROL OF ASSOCIATED PERIPHERAL EQUIPMENT

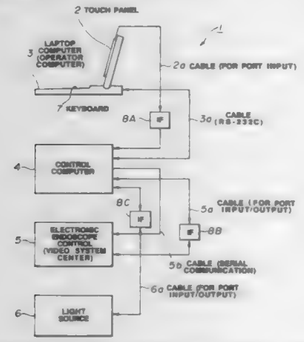
Toshiaki Nishikori, Sagamihara; Yasuyuki Kaneko, Yokohama; Atsushi Amano; Masahiko Hamano, both of Hachioji; Kazufumi Takamizawa, Chofu; Hideyuki Shoji; Mutsumi Oshima, both of Hachioji, and Ken-ya Inomata, Mitaka, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 51,812, Apr. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 820,994, Jan. 15, 1992, abandoned. This application Oct. 19, 1994, Ser. No. 325,628

Claims priority, application Japan, Jan. 17, 1991, 3-004026

Int. Cl.° H04N *7/18*

U.S. Cl. 348—72 **31 Claims**



1. An endoscope system including an endoscope, a light source for supplying illuminating light to said endoscope, and a video signal processor for processing an image signal obtained by said endoscope, said endoscope system comprising:

an electric treatment device combined with said endoscope for performing electric treatment;

a centralized operation computer including a display for operating at least one of peripheral equipment including said light source, said video signal processor and said electric treatment device, said centralized operation computer having a touch panel serving as an input means on the display, and outputting a command for operating at least one of said peripheral equipment by touching a given area on said touch panel; and

a control computer connected to said light source, and said video signal processor, said electric treatment device, and said centralized operation computer via interfaces and providing centralized control for said light source, said video signal processor and said electric treatment device based on a command from said centralized operation computer,

wherein either one of said centralized operation computer and said control computer can set an area on said touch panel, and

wherein said centralized operation computer and said control computer monitor each other such that a graphical display of an operation panel of said peripheral equipment appearing on the display does not deviate from a touched state of said touch panel sensed by said control computer.

5,627,585

ARRANGEMENT FOR HIGH-RESOLUTION SCANNING OF LARGE IMAGE FORMATS WITH EXACT GEOMETRICAL CORRESPONDENCE

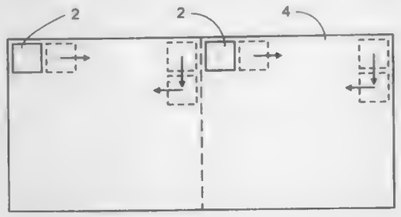
Ralf Goldschmidt, and Werner Borchardt, both of Jena, Germany, assignors to Rheinmetall Jenoptik Optical Metrology GmbH, Germany

Continuation of Ser. No. 393,247, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 57,258, May 4, 1993, abandoned. This application Jul. 19, 1996, Ser. No. 684,320

Claims priority, application Germany, May 6, 1992, 42 14 926.6

Int. Cl.° H04N *7/18;1/387*

U.S. Cl. 348—142 **5 Claims**



1. In an arrangement for high-resolution scanning of large image formats for providing scanned images of said large-image formats with substantially exact geometrical correspondence, said arrangement having at least one CCD matrix whose magnitude constitutes only a fraction of the image model to be scanned, a frame grabber, and a movement mechanism, the improvement comprising:

means for provision of an accurate measure of length and width dimensions of the CCD matrix, wherein the measurement is performed, prior to high-resolution scanning of a large image format, by evaluating local light response distributions of all the pixels to determine actual distances between pixels of the CCD matrix, said matrix itself representing an absolute dimensional embodiment in the form of a premeasured pixel raster;

said CCD matrix including an active pixel area corresponding to maximum memory area of said frame grabber and being fixed with respect to the number and position of pixels;

means, based on pixel synchronization of image read-in to the frame grabber for assuring constancy of a one-to-one correspondence allocation of the pixel area to the memory; and

said movement mechanism being a high-precision scanning means whose operation is in accordance with and determined by the premeasured pixel raster, said mechanism for scanning the active pixel area of the CCD matrix in the image format to be scanned so as to cover the surface without gaps and substantially without overlaps, said scanning being effected without the use of any auxiliary means.

5,627,586

MOVING BODY DETECTION DEVICE OF CAMERA

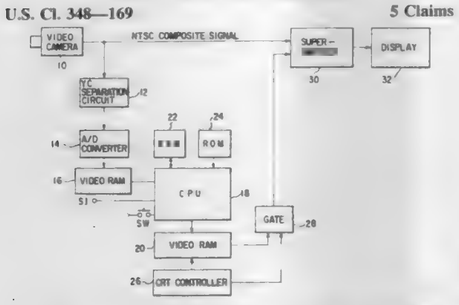
Masafumi Yamasaki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 45,039

Claims priority, application Japan, Apr. 9, 1992, 4-088630; Apr. 9, 1992, 4-088631; Apr. 9, 1992, 4-089091

Int. Cl.° H04N *5/225;* **G06K** *9/00*

U.S. Cl. 348—169 **5 Claims**



1. A moving object-detection device of a camera, comprising:

video signal output means for outputting a video signal representing an object to be photographed;

input means for inputting a position of a gazing point;

first storing means for storing a first video signal representing images which are included in a moving object detection zone and four corners of an image plane at a first timing, as basis signals, and second storing means for storing a second video signal representing images which are included in the moving object detection zone and the four corners of the image plane at a second timing after a predetermined time period from the first timing, as reference signals, the moving object detection zone being a part of an image represented by the video signal and the four corners being parts of the image represented by the video signal, and wherein the moving object detection zone has the gazing point and a periphery region which extends from the gazing point and comprises a plurality of divided zones such that the divided zones partially overlap each other;

contrast determination means for determining contrast of each of the images of the moving object detection zone and the four corners on the basis of the first video signals;

third storing means for storing a determination result indicating that the contrast of the divided zones of the moving object detection zone and the four images of the four corners is low, in association with a number assigned to the divided zone and the four images, respectively;

correlation calculation means for performing a correlation calculation with respect to said each of the images of the divided zones and the four corners which are represented by the first video signal and said each of the images of the divided zones and the four corners which are represented by the second video signal, in each of horizontal and vertical directions, thereby to obtain a correlation value, in association with a number assigned to an associated one of the divided zones and the four corners, respectively;

reliability determination means for determining reliability of the correlation value;

fourth storing means for storing a determination result indicating that the reliability of the correlation value of each of the images of the divided zones and the four corners is low, in association with a number assigned to an associated one of the divided zone and the four corners, respectively;

classifying means for classifying the images, which are other than the images determined to have low contrast or low reliability of the correlation value, thereby to determine whether or not the correlation value of said each of the images to be classified, in said each of the horizontal and vertical directions, falls within a predetermined range;

determination means for determining that the image included in the moving object detection zone is static when the number of the images, each of which has the correlation value determined to fall within the predetermined range, is one, the image included in the moving object detection zone has moved in a direction differing from a direction where the four images have moved, when the number of the images, each of which has the correlation value determined to fall within the predetermined range, is two, and the image included in the moving object detection zone is unable to be tracked when the number of the images, each of which has the correlation value determined to fall within the predetermined range, is three or more.

5,627,587

SOLID-STATE CAMERA IN WHICH A REMOVABLE SOLID STATE MEMORY HAVING A BACKUP BATTERY IS USED AS AN IMAGE RECORDING DEVICE

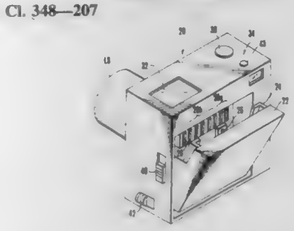
Yoshitaka Murata, Kanagawa-ken; Kan Takaiwa, Tokyo, and Hiroyuki Horii, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

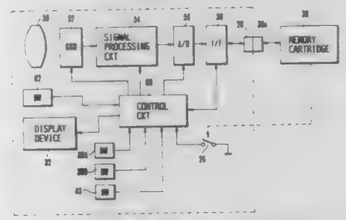
Continuation of Ser. No. 228,922, Apr. 18, 1994, abandoned, which is a continuation of Ser. No. 97,943, Jul. 26, 1993, abandoned, which is a continuation of Ser. No. 975,901, Nov. 10, 1992, abandoned, which is a continuation of Ser. No. 483,352, Feb. 22, 1990, abandoned. This application Dec. 14, 1994, Ser. No. 355,803

Claims priority, application Japan, Mar. 2, 1989, 1-050528

Int. Cl.° H04N *5/225*

U.S. Cl. 348—207 **18 Claims**





1. A solid-state camera in which a removable solid-state memory having a backup battery is used as an image recording means, comprising:

detecting means for detecting said backup battery does not have a predetermined remaining power before a recording operation starts; and

control means for inhibiting said recording operation in response to an output of said detecting means, said solid-state camera being arranged to effect recording on said solid-state memory in response to an operation of a release operating member,

said detecting means being further operative for detecting the loading of said solid-state memory on said solid-state camera and a condition of the backup battery by effecting communication with said solid-state memory.

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5,627,588

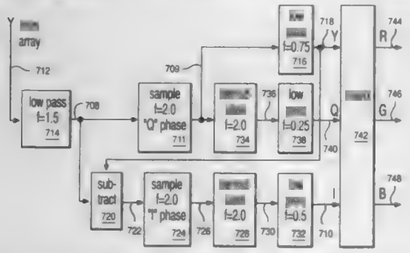
VIDEO SIGNAL PROCESSING STRIPE COLOR DEMODULATOR SYSTEM AND METHOD

Albert D. Edgar, Travis, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1995, Ser. No. 413,339

Int. Cl.° H04N *5/228;9/07*

U.S. Cl. 348—222 **44 Claims**



1. A method for demodulating color from a striped array sensor signal comprising:

capturing an image with a striped array sensor in a video signal having upper and lower sidebands and a color carrier with a predominant I color vector; and

demodulating said I color vector from said color carrier with an asymmetric sideband filter.

5,627,589

IMAGING APPARATUS WITH CCD HOLDERS

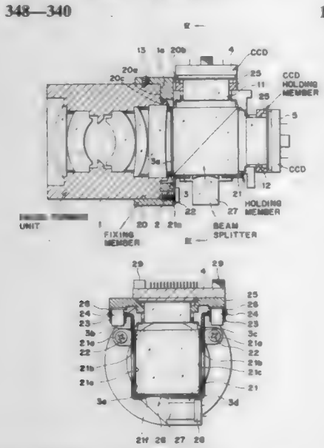
Satoshi Ejima, Tokyo, and Osamu Inoue, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 341,992, Nov. 16, 1994, abandoned, which is a continuation of Ser. No. 240,805, May 11, 1994, abandoned, which is a continuation of Ser. No. 955,255, Oct. 1, 1992, abandoned. This application Feb. 20, 1996, Ser. No. 602,265

Claims priority, application Japan, Oct. 7, 1991, 3-287042

Int. Cl.° H04N *5/225*

U.S. Cl. 348—340 **19 Claims**



16. An imaging apparatus comprising:

an imaging device to convert an image formed by light of a subject into electric signals;

an image forming device to form an image of the light of said subject;

a connecting device to connect said image forming device to said imaging device so that said imaging device is substantially perpendicular to an optical axis of said image forming device;

said image forming device having at least three holes; and

said connecting device having at least three pins slidable in said holes along axes of said holes, and slidable on a confronting surface provided on said imaging device, and a fixing member to fix said pins to surfaces defining said holes and to fix said pins to said confronting surface provided on said imaging device.

5,627,590

IMAGE ENCODING AND TRANSMITTING SYSTEM

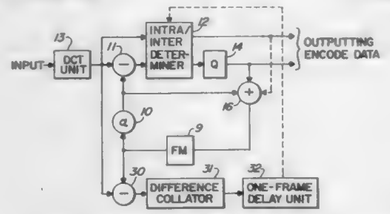
Takashi Hamano; Kiyoshi Sakai, and Kiichi Matsuda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 440,481, May 12, 1995, abandoned, which is a division of Ser. No. 909,044, Jul. 6, 1992, Pat. No. 5,510,839. This application Jan. 26, 1996, Ser. No. 592,771

Claims priority, application Japan, Jul. 4, 1991, 3-164422

Int. Cl.° H04N *7/50*

U.S. Cl. 348—402 **12 Claims**



1. An image encoding and transmitting system for dividing inputted frame image data into a plurality of blocks comprising picture elements, encoding them in block units, and transmitting said encoded data in packet units, said system comprising on its sending side:

intra-frame/inter-frame determining means for receiving inputted frame data, and first difference data as the difference between inputted frame data and data obtained by multiplying the inputted frame data in the preceding frame by a constant α, and selecting and outputting either of the intra-frame data as the inputted frame data or the inter-frame data as the first difference data, and

difference collating means for receiving second difference data as the difference between said inputted frame data and the data in one frame before the present frame, and having said inter-frame/intra-frame determining means compulsorily output the intra-frame data at the data input of the next frame for the same block position when more than one piece of data in each block forming the second difference data are larger than a predetermined threshold.

5,627,591

IMAGE PROCESSING SYSTEM USING A PIXEL-BY-PIXEL MOTION ESTIMATION BASED ON FEATURE POINTS

Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd., Seoul, Rep. of Korea

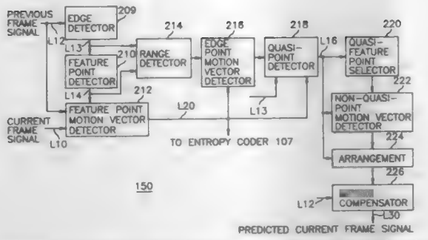
Filed Sep. 13, 1995, Ser. No. 527,613

Claims priority, application Rep. of Korea, Aug. 8, 1995, 95-24376

Int. Cl.° H04N *7/36*

U.S. Cl. 348—416 **2 Claims**

1. An apparatus, for use in a motion-compensated video signal encoder, for determining a predicted current frame based on a current frame and a previous frame of a digital video signal, comprising:



means for detecting edge points representative of pixels forming edges of an image in the previous frame;

means for selecting a number of pixels among the edge points in the previous frame as feature points;

means for detecting a first set of motion vectors for the feature points, each of the first set of motion vectors representing a spatial displacement between one of the feature points and a most similar pixel thereto in the current frame;

means for detecting a second set of motion vectors for non-selected edge points in the previous frame by using the first set of motion vectors and the edge points;

means for detecting quasi-feature points in the current frame corresponding to the feature points and a third set of motion vectors for the quasi-feature points based on each of the first set of motion vectors and detecting quasi-edge points in the current frame based on each of the second set of motion vectors and a fourth set of motion vectors for the quasi-edge points;

means for selecting one or more influential quasi-feature points for all non-quasi-edge and non-quasi-feature points such that a straight line drawn between each of the non-quasi-edge and non-quasi-feature points and each of the corresponding one or more influential quasi-feature points intersects none of the quasi-feature points and the quasi-edge points;

means for detecting a fifth set of motion vectors for the non-quasi-edge and non-quasi-feature points, each of the fifth set of motion vectors being determined by averaging the motion vectors of said one or more influential quasi-feature points for each of the non-quasi-edge and non-quasi-feature points;

means for arranging the third, the fourth and the fifth sets of motion vectors to determine a group of motion vectors for all of the pixels in the current frame; and

means for providing a pixel value from the previous frame based on the position data of each pixel in the current frame and a motion vector thereof, to thereby determine the predicted current frame.

5,627,592

START CODE FOR SIGNALLING BITS

Johannes Y. Tichelaar, Eindhoven; Franciscus H. M. Bergen, Best, both of Netherlands; Philippe A. M. Van Overmeire, Ghent, Belgium, and Jilles Ultee, Hapert, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 15,192, Feb. 10, 1993, Pat. No. 5,323,236, which is a continuation of Ser. No. 373,184, Jan. 17, 1995. This application Mar. 13, 1996, Ser. No. 618,942

Claims priority, application European Pat. Off., Jan. 17, 1995, 93201514

Int. Cl.° H04N *7/015*

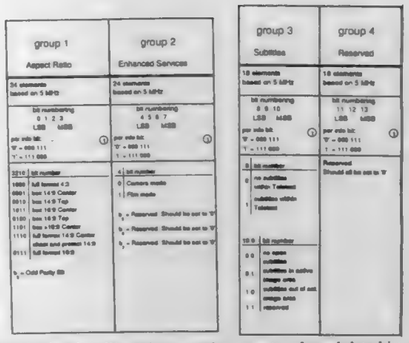
U.S. Cl. 348—429 **26 Claims**

1. A method for encoding an extended television signal comprising the steps:

generating signalling bits for conveying control information to control an extended decoder;

inserting the signalling bits into an extended television signal; and

providing said extended television signal with said signalling bits for transmission;



wherein the signalling bits comprise a start code and data bits, the start code having a main lobe of spectral energy residing in a lower spectral area of a baseband television signal, said lower spectral area having a maximum frequency below 2 MHz, the start code having an amplitude dip at zero frequency, and the start code having minimum predetermined aperiodic correlation properties and a predetermined minimum bit Hamming distance to the data bits when shifted in the direction of the data bits following the start code.

5,627,593

METHOD FOR PROCESSING TELETEXT DATA PRESENT IN A TELEVISION SIGNAL

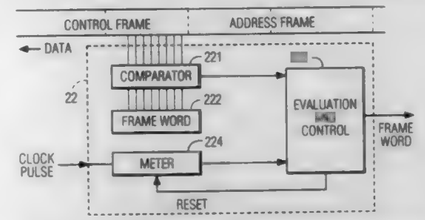
Gerhard Eitz, Poing, and Sandor Gyarmati, Villingen-Schwenningen, both of Germany, assignors to Deutsche Thomson Brandt GmbH, Villingen-Schwenningen, Germany

Filed Dec. 21, 1994, Ser. No. 361,324

Claims priority, application Germany, Dec. 22, 1993, 43 43 951.9

Int. Cl.° H04N *7/087*

U.S. Cl. 348—466 **9 Claims**



1. Method of processing teletext data present in a television signal, comprising:

separating out a data stream from the television signal,

gathering together the data appertaining to a respective teletext page as teletext rows;

storing the thus compiled teletext pages in a buffer stored,

selecting and decoding a control frame from a data stream by means of a bit by bit comparison with a frame word,

continuing and counting the clock rate of the items of teletext data of a last television line when decoding the control frame,

the following steps being carried out in dependence on coincidences occurring during the bit by bit comparison with the frame word:

a) if, during the bit by bit comparison, eight coincidences are detected, the control frame is considered to have been identified and the counter is reset; and

b) if less than eight coincidences are detected, it is determined whether a particular number or a multiple of the particular number has been reached on the basis of the count-state of a clock pulse counter, whereby, in the event that this

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number has been reached, the control frame is considered to have been identified and the clock pulse counter is reset.

5,627,594

METHOD OF TRANSMITTING TELETEXT PAGES

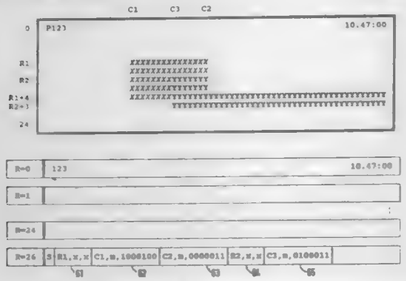
Henricus A. W. van Gestel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1995, Ser. No. 498,249

Claims priority, application European Pat. Off., Jul. 8, 1994, 94201990

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—468 **8 Claims**



1. A method of transmitting teletext pages, comprising the steps of:

(a) transmitting a teletext page with first display attributes; and

(b) transmitting extension signals for transmitting further attributes for display from predetermined row positions and predetermined column positions such that the extension signals comprise height codes indicating the number of further rows in which the further attributes are repeated from the predetermined column positions.

5,627,595

SDYSTEM FOR TRANSMITTING AND DECODING BIPHASE DATA, IN PARTICULAR FOR VPS

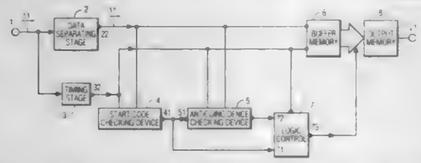
Arthur Heller, Eichenried, and Klaus Schuster, Landshut, both of Germany, assignors to Telefunken, Hanover, Germany

Continuation of Ser. No. 363,953, Jun. 9, 1994, abandoned, which is a continuation of Ser. No. 27,733, Feb. 22, 1993, abandoned. This application Sep. 7, 1995, Ser. No. 524,730

Claims priority, application Germany, Jun. 23, 1990, 40 20 066.3

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—478 **5 Claims**



1. A method of transmitting and decoding biphase coded signals individually representing separate data services and inserted in the line blanking interval of a video signal, said biphase coded data comprising pairs of bi-phase elements, said method comprising the steps of:

allocating a unique start code to each of the data services prior to transmitting said video signal;

receiving said video signal and separating said biphase coded data from said video signal without field or line windowing, and distinguishing between data of said separate data services by examining said start code for a particular value;

checking every pair of said biphase elements occurring after said start code for anticoincidence errors;

storing all wanted bits in a buffer memory; and

transferring said wanted bits from said buffer memory to an output memory only when said particular value of said start code has been detected and no anticoincidence error has occurred between said start code and the last wanted bit.

5,627,596

VIDEO SYNCHRONIZATION CIRCUIT COMPRISING A PLL WITH A CIRCUIT TO SET THE FREQUENCY OF THE OUTPUT SIGNAL WHEN THE FEEDBACK SIGNAL IS NOT PRESENT

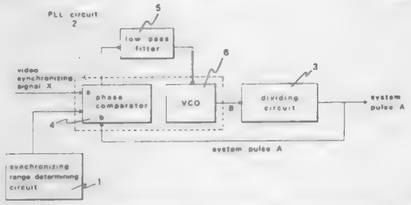
Hisatoshi Shiramizu, Chikugo, Japan, assignor to Rohm Co. Ltd., Kyoto, Japan

Filed Jul. 7, 1995, Ser. No. 499,503

Claims priority, application Japan, Jul. 13, 1994, 6-161337

Int. Cl.[6] H04N *5/04*

U.S. Cl. 348—536 **2 Claims**



1. A video system pulse generating circuit for generating a video system pulse for driving an image processing system, the video system pulse having a frequency of an integral multiple of a frequency of an input video synchronizing signal and being synchronized with the video synchronizing signal, comprising:

(a) a phase locked loop circuit for receiving the video synchronizing signal and an output signal of the circuit for generating the video system pulse, and for synchronizing phases of the video synchronizing signal and of the output signal of the circuit for generating the video system pulse;

(b) a dividing circuit for reducing a frequency of an output of the phase locked loop circuit to 1/N (wherein N is an integer); and

(c) a synchronizing range determining circuit connected to the phase locked loop circuit in order to set a frequency of an output signal to an expected value of the video system pulse instead of the frequency of the video system pulse which is fed back and input into the phase locked loop circuit,

wherein, upon start of synchronizing operation in the synchronizing range determining circuit, when the video system pulse is not generated, a signal to be input into the phase locked loop circuit instead of the video system pulse is a pulse from the synchronizing range determining circuit.

5,627,597

DEVICE AND METHOD FOR INTERLACING A VIDEO SIGNAL HAVING AN INTEGRAL NUMBER OF SCAN LINES IN EACH FIELD

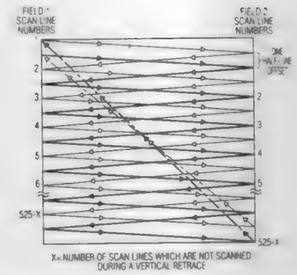
Lawrence E. Donovan, Knoxville, Tenn., assignor to Philips Electronics North America Corporation, New York, N.Y.

Continuation of Ser. No. 304,736, Sep. 12, 1994. This application Apr. 23, 1996, Ser. No. 636,679

Int. Cl.[6] H04N *5/68*

U.S. Cl. 348—550 **15 Claims**

1. A vertical deflection circuit for use in a picture display device having a vertical deflection yoke and means for scanning an interlaced video signal, the video signal having a first field having an integral n number of scan lines, a second field having an integral n number of scan lines which two fields form a single



picture when interlaced, and vertical sync signals for indicating the end of each field, the vertical deflection circuit comprising:

means for receiving the vertical sync signals;

a ramp generator for generating a ramp-like signal for inducing a ramp-like current in the vertical deflection yoke upon receipt of each vertical sync signal, the ramp-like current being generated for each field of the video signal and causing vertical deflection of the video signal such that the means for scanning scans the scan lines of each field spaced from one another on the picture display device; and

jog means for changing the amount of ramp-like current in the vertical deflection yoke by a predetermined amount during scanning of the scan lines of the second fields, such that the amount of current in the vertical deflection yoke for each scan line of the second field differs from the amount of current in the vertical deflection yoke for the same numbered scan line of the first field by the predetermined amount which causes the vertical deflection yoke to deflect each of the scan lines of the second fields such that they are scanned in the spaces between the scan lines of the first fields and wherein the spaces are not blanked scan lines but are the spaces normally found between two consecutively numbered scan lines.

5,627,598

DISPLAY APPARATUS INCLUDING ASPECT RATIO CONVERTER AND CHILD PICTURE PROCESSING WITH FOUR FIELD SEQUENCE MEMORY

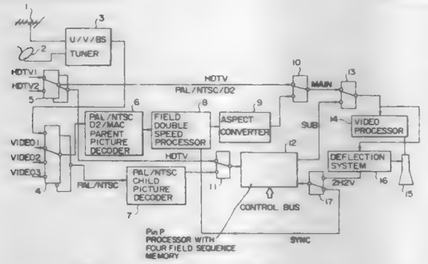
Susumu Tsuchida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 217,969, Mar. 25, 1994, abandoned. This application Oct. 20, 1995, Ser. No. 546,286

Claims priority, application Japan, Mar. 30, 1993, 5-093827

Int. Cl.[6] H04N *5/45;5/445*

U.S. Cl. 348—567 **14 Claims**



1. A video display apparatus, comprising:

frequency conversion means for converting a first video signal of a parent picture into a second video signal of a double speed field frequency;

aspect ratio conversion means for converting an aspect ratio of the second video signal whose field frequency has been converted by said frequency conversion means and producing a third video signal having a predetermined aspect ratio;

child picture processing means including a four field sequence memory for converting a fourth video signal of a child picture into a fifth video signal of the double speed field frequency;

display means for inserting the fifth video signal output from said child picture processing means into the third video signal output from said aspect ratio conversion means and for displaying a combined video signal on a scanning screen, said display means including a deflection system for generating a double-speed vertical synchronizing signal and a double-speed horizontal synchronizing signal by using at least the fifth video signal converted from the fourth video signal of the child picture and for controlling a scanning of the Scanning screen;

thinning out means for thinning out a double speed synchronizing signal for scanning said display means by using a window signal of a predetermined width centered at a vertical synchronization position prior to conversion to the double speed; and

a control circuit for forming an area control signal for said four field sequence memory of said child picture processing means by using a thinned out vertical synchronization pulse signal output from said thinning out means and the double-speed vertical synchronizing and horizontal synchronizing signals from said deflection system, for reading out said four field sequence memory twice for each field in accordance with the area control signal, and for controlling write and read-out areas of said four field sequence memory in accordance with the area control signal so as to display the child picture free from read/write address passing in said four field sequency memory.

5,627,599

CHROMINANCE SIGNAL PROCESSING APPARATUS FOR DIGITAL TELEVISION RECEIVER

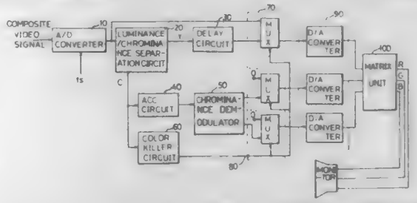
Sung-Hoon Hong, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 24, 1995, Ser. No. 547,609

Claims priority, application Rep. of Korea, Oct. 24, 1994, 27128/1994

Int. Cl.[6] H04N *9/70;9/68*

U.S. Cl. 348—643 **35 Claims**



1. A chrominance signal processing apparatus for a digital television receiver, comprising:

analog/digital conversion means for converting a transmitted analog composite video signal into a digital signal in response to a clock frequency;

luminance/chrominance separation means for separating a luminance signal and a chrominance signal from an output signal from said analog/digital conversion means;

delay means for delaying the luminance signal from said luminance/chrominance separation means for a predetermined time period;

automatic color control means for controlling an amplitude of the chrominance signal from said luminance/chrominance separation means;

chrominance demodulation means for detecting color difference signals from an output signal from said automatic color control means;

color killer means for detecting a maximum amplitude value of a color burst signal from the chrominance signal from said luminance/chrominance separation means, comparing the

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detected maximum amplitude value of the color burst signal with a predetermined reference level and outputting a color killer signal in accordance with the compared result;

first multiplexing means for selecting one of the output signal from said analog/digital conversion means and an output signal from said delay means in response to the color killer signal from said color killer means;

second multiplexing means for selecting the color difference signals from said chrominance demodulation means or low level signals in response to the color killer signal from said color killer means;

digital/analog conversion means for converting output signals from said first and second multiplexing means into analog signals; and

matrix means for combining output signals from said digital/analog conversion means to produce primary color signals and outputting the produced primary color signals to a monitor.

5,627,600

LUMINANCE AND CHROMINANCE SIGNAL SEPARATOR USING CORRELATION DETECTION

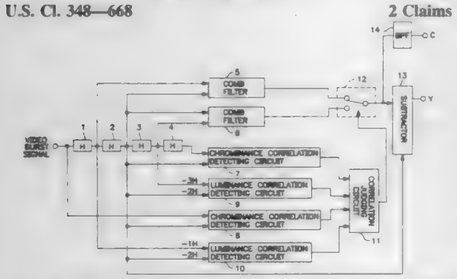
Takahisa Hatano, Sapporo, and Yoshihisa Nishigori, Itami, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 326,764, Oct. 20, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 688,232

Claims priority, application Japan, Oct. 21, 1993, 5-263398

Int. Cl.° H04N *9/78*

U.S. Cl. 348—668 **2 Claims**



1. A luminance and chrominance signal separating apparatus comprising:

a cascade connection of at least four delay means, where each delay means delays a composite color television signal by a horizontal period and a signal at a junction point of said cascade connected delay means is regarded as a reference signal;

at least two chrominance correlation detecting means for calculating chrominance correlation values of a chrominance signal between said reference signal and signals at the vertical vicinity of said reference signal on the screen, wherein each of the signals in the vertical vicinity of said reference signal is separated from the reference signal by a delay greater than one horizontal period;

at least two luminance correlation detecting means for calculating luminance correlation values of a luminance signal between said reference signal and signals vertically adjacent to said reference signal on the screen;

a correlation judging means for judging if there is correlation or not from the chrominance correlation values and luminance correlation values;

a plurality of comb filters for separating a chrominance signal from said composite color television signal;

selecting means for selecting the outputs of said comb filters according to the correlation judged at said correlation judging means;

frequency band limiting means for limiting the output signal of said selecting means and outputting a chrominance signal; and

subtracting means for subtracting the output signal of said selecting means from said reference signal and outputting a luminance signal.

5,627,601

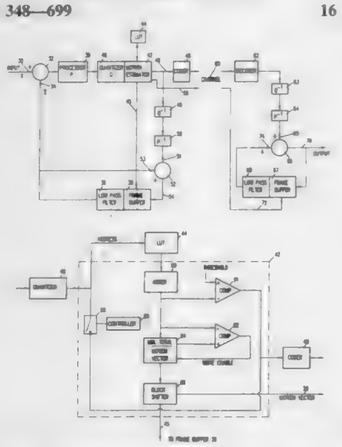
MOTION ESTIMATION WITH BIT RATE CRITERION

Xiaonong Ran, Cupertino, and Michael van Scherrenburg, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 30, 1994, Ser. No. 348,265

Int. Cl.° H04N *7/32;7/30*

U.S. Cl. 348—699 **16 Claims**



1. A method for generating compressed video data comprising the steps of:

receiving video data from a first frame;

generating a difference signal representing differences between said video data from said first frame and video data from a memory storing at least a portion of a previous frame;

motion compensating said video data outputted from said memory if it is determined in said step of generating a difference signal that differences exist between said previous frame and said first frame, said step of motion compensating comprising the steps of:

addressing a look-up table using an address corresponding to said difference signal, which cross-references said difference signal to the number of bits required to be transmitted in order to convey said difference signal; and

selecting for motion compensation of said video data from said memory a motion vector which produces a fewest number of bits required to be transmitted to convey said difference signal; and

after said step of motion compensating, transmitting said motion vector and said difference signal which resulted in said fewest number of bits required to convey said difference signal.

5,627,602

SIGNAL PROCESSING APPARATUS FOR PLURAL KINDS OF VIDEO SIGNALS

Yutaka Nio, Osaka, and Yosuke Izawa, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

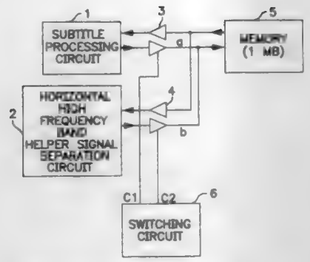
Filed Feb. 3, 1995, Ser. No. 382,908

Claims priority, application Japan, Feb. 4, 1994, 6-012468

Int. Cl.° H04N *5/268*

U.S. Cl. 348—705 **13 Claims**

1. A signal processing apparatus for plural kinds of video signals comprising:



memory means which can read and write;

first video signal processing means for processing a first video signal, which is included in a composite video signal, using said memory means;

first three state bus transceiver means for selecting an input signal and an output signal of said first video signal processing means by a first switching signal;

second video signal processing means for processing a second video signal included in the composite video signal using said memory means;

second three state bus transceiver means for selecting an input signal and an output signal of said second video signal processing means by a second switching signal;

discrimination means for discriminating the first video signal and the second video signal and forming a discrimination result therefrom; and

control means for receiving the discrimination result and for generating said first switching signal and said second switching signal based on the discrimination result;

wherein said first three state bus transceiver means and said second three state bus transceiver means are connected to said memory means.

5,627,603

IMAGE PROCESSING APPARATUS UTILIZING A CONVENTIONAL SIGNAL PROCESSOR TO PROCESS HIGH-DEFINITION ELECTRONIC CAMERA SIGNALS

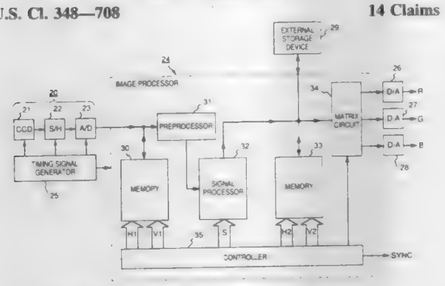
Shinji Sakai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 81,163, Jun. 25, 1993, abandoned. This application Jun. 27, 1996, Ser. No. 671,079

Claims priority, application Japan, Jun. 30, 1992, 4-196588

Int. Cl.° H04N *9/64*

U.S. Cl. 348—708 **14 Claims**



1. An image processing apparatus comprising:

a first memory for storing input image data along a scanning line in pixel units;

control means for dividing the image data stored in said first memory into a plurality of blocks, and reading out the image data blocks sequentially in block units; and

a standard signal processor for performing a predetermined signal processing based on the image data read out in the block units;

wherein said standard signal processor generates at least one of a luminance signal and color difference signals by operating on the image data sequentially read out of said first memory in a predetermined block unit.

5,627,604

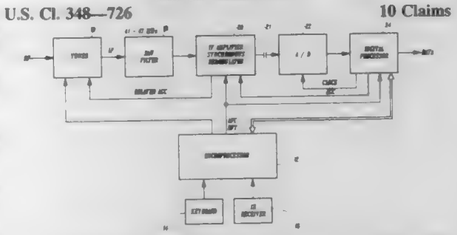
STABILIZING THE LOCK UP OF A BI-PHASE STABLE FPLL BY AUGMENTING A RECOVERED DC PILOT

Gopalan Krishnamurthy, Wheeling; Victor G. Mycynek, Des Plaines, and Gary J. Sgrignoli, Mount Prospect, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 223,077, Apr. 4, 1994. This application Dec. 12, 1994, Ser. No. 354,408

Int. Cl.° H04N *5/455*

U.S. Cl. 348—726 **10 Claims**



1. A method of operating a receiver including a bi-phase stable synchronous demodulator responsive to a received signal to recover data and a DC pilot component therein, said data being formatted in successive data segments, with each data segment including a sync character comprising:

deriving data segment sync information including a sign bit from the recovered data; and

using said sign bit to augment said DC pilot component.

5,627,605

METHOD FOR CORRECTING DIGITAL CONVERGENCE OF MULTI-MODE PROJECTION TELEVISION

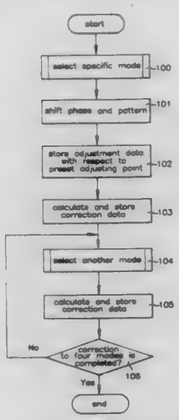
Jae J. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 7, 1995, Ser. No. 399,604

Claims priority, application Rep. of Korea, Mar. 7, 1994, 4398/1994

Int. Cl.° H04N *9/28*

U.S. Cl. 348—745 **17 Claims**



1. A method for correcting digital convergence in multi-mode projection television comprising the steps of:

selecting a specific mode with respective adjusting points set on a controlling picture of a test pattern;

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calculating adjustment data including the steps of setting scanning lines corresponding to the specific mode selected by use of a microcomputer and storing the adjustment data for adjusting points set by shifting the phase and adjustment pattern;

obtaining an adjustment data vector from the stored adjustment data and obtaining in advance for a selected mode respective coefficient values and initial values for respective finite differential equations by means of interpolation from the adjustment data vector; and

obtaining and storing correction data in a mode other than said selected mode, wherein said other mode is calculated by interpolating with the coefficient and initial values using the finite differential equations.

5,627,606

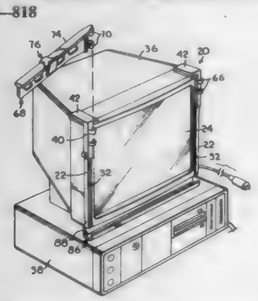
COMPUTER SCREEN FILTER ASSEMBLY

Gary L. Pember; Robert R. Deines, and R. Reed Hinkel, all of Wichita, Kans., assignors to Interex, Inc., Wichita, Kans.

Filed Apr. 13, 1995, Ser. No. 421,528

Int. Cl.[6] **H04N** *5/65;5/72;* **G02B** *27/00;* **A47B** *81/06*

U.S. Cl. 348—818 **5 Claims**



1. A computer screen filter assembly comprising:

a filter;

a frame for receiving said filter, said frame having a pair of generally longitudinally disposed sawtooth surfaces, one of said sawtooth surfaces disposed adjacent one side of said filter and the other of said sawtooth surfaces disposed adjacent the other side of said filter;

a pair of brackets slidably attached to said frame adjacent the upper corners of said frame, said brackets each having a horizontally disposed support adapted to engage the top surface of a computer monitor so that said filter is disposed over the computer screen, said brackets each having a pawl capable of engaging and disengaging a respective sawtooth surface so that said frame and said filter can be adjusted to a variety of vertical locations with respect to the computer screen; and

a utility tray removably attached along the bottom edge of said frame, said tray having an elongated horizontally disposed attaching plate capable of being inserted into and removed from an elongated horizontally disposed attaching gap formed along the bottom edge of said frame so that said tray can be removably attached to said frame.

5,627,607

SPECTACLES WITH MOVABLE GEMS

Werner Grau, Friedberg, Germany, assignor to Alpina International Sport, + Optik-Vertriebs-GmbH, Friedberg/Derching, Germany

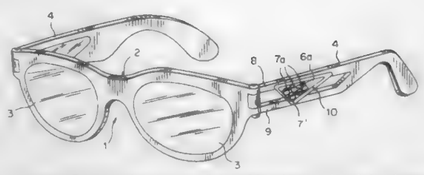
Filed Oct. 25, 1995, Ser. No. 548,144

Claims priority, application Germany, Nov. 9, 1994, 9417947 U

Int. Cl.[6] **G02C** *11/02;* **A44C** *13/00*

U.S. Cl. 351—52 **4 Claims**

1. A pair of spectacles comprising a spectacle frame (**2**) and side-pieces (**4**) laterally articulated to the frame (**2**),



a recess (**5**) on at least one of the side-pieces (**4**) of the frames (**2**),

the recess (**5**) being covered by a transparent cover (**6**) on an outer side of the at least one of the side-pieces (**4**), decoration elements (**7**, **7***a*) being disposed in the recess (**5**),

the decoration elements (**7**, **7***a*) being gems or semi-precious stones having a length in a direction perpendicular to a plane of the at least one of the side-pieces compared to a depth of the recess (**5**) such that the gems or semi-precious stones are able to move in relation to each other along a direction of said plane when covered by the transparent cover (**6**).

5,627,608

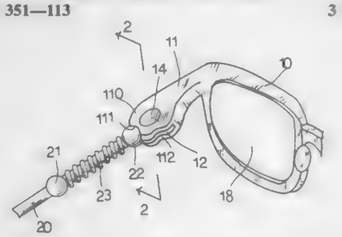
SPECTACLE FRAME HAVING RESILIENT LEGS

Richard Chao, No. 43-4, Yi Hsin Tsuen, Shui San Hsiang, Chia Yi Hsien, Taiwan

Filed Nov. 20, 1995, Ser. No. 561,128

Int. Cl.[6] **G02C** *5/16;5/14;5/22*

U.S. Cl. 351—113 **3 Claims**



1. A spectacle frame comprising, in combination:

a frame body for supporting lenses therein, said frame body including at least one side portion, with each side portion having an extension extended therefrom, said extension including a free end having a pivot shaft rotatably secured therein and having a channel formed therein, and with each side portion further including

a leg including a first end engaged through said channel and secured to said pivot shaft so as to allow said leg to be rotated about said pivot shaft, said leg further including a middle portion having an outer portion,

a slide slideably engaged onto the outer portion and a spring member, said spring member being engaged onto the outer portion and including a first end secured to said middle portion of said leg and a second end engaged with said slide for biasing said slide on the outer portion to engage with said free end of said extension.

5,627,609

TEMPLE FOR EYEGLASS FRAME

Niro Kato, Sabae, Japan, assignor to Kato Kogei Co., Ltd., Sabae, Japan

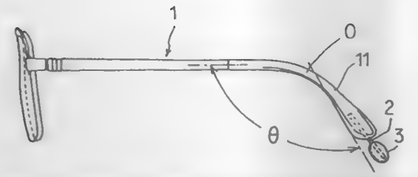
Filed Dec. 12, 1995, Ser. No. 571,249

Claims priority, application Japan, Dec. 14, 1994, 6-310606; Apr. 17, 1995, 7-090450

Int. Cl.[6] **G02C** *5/14*

U.S. Cl. 351—123 **2 Claims**

1. A temple for an eyeglass frame, the temple comprising (a) a downwardly inclined temple end portion which is securely sup-



portable behind-the-ear region at the side head of one who wears the eyeglass frame, and (b) a ball tip attached to the rear end of the inclined temple end portion by a spring,

the inclined temple end portion terminating at substantially the bottom of a concave portion in a curvature of the behind-the-ear region, the inclined temple end portion being shaped to substantially fit along the curvature of the behind-the-ear region,

the spring extending in the direction of inclination of the inclined temple end portion, the spring being a wire or plate spring having high resilience, and

the ball tip being in a position wherein the ball tip contacts the wearer's side head at a rear half region of a concave portion in the curvature of the behind-the-ear region.

5,627,610

SELF-LOCKING NUT FOR EYE GLASSES HAVING AN UNTHREADED HOLE WITH VERTICAL CHANNELS

Koreto Marui; Ryuichi Ohtsuki, and Masahiro Ohara, all of Kyoto, Japan, assignors to Nitto Seiko Co., Ltd., Japan

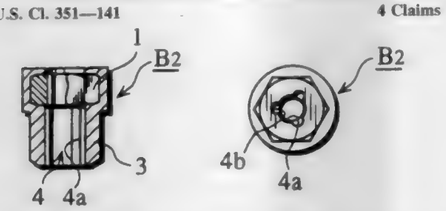
Division of Ser. No. 230,926, Apr. 21, 1994, Pat. No. 5,508,758.

This application Aug. 25, 1995, Ser. No. 519,469

Claims priority, application Japan, Apr. 21, 1993, 5-131499; Jun. 1, 1993, 5-169497; Jul. 28, 1993, 5-227743; Aug. 4, 1993, 5-229730; Aug. 4, 1993, 5-229731; Aug. 27, 1993, 5-248428; Oct. 29, 1993, 5-305718

Int. Cl.[6] **G02C** *5/00;* **F16B** *39/284;39/02;37/00*

U.S. Cl. 351—141 **4 Claims**



1. A self-locking nut for eye glasses into which a male screw is fitted so as to fasten a material to be secured between the head of the male screw and the self-locking nut itself, comprising:

a first member which is a metal nut having (a) a female threaded hole, (b) a pressing end face, which, when the male screw is screwed into said first member, applies pressure on the material to be secured, and (c) an end surface distal with respect to the material to be secured; and

a second member, made of a plastic material, which is formed as to cover the outer surface of the first member and which extends away from said end surface of the first member, said second member having a hole that is concentric with and connected to the female threaded hole in the first member, said hole in the second member being an unthreaded hole having a diameter equal to or smaller than a pitch diameter of the female threaded hole, said unthreaded hole having a plurality of vertical channels formed in its internal surface and extending along the axis of said hole.

5,627,611

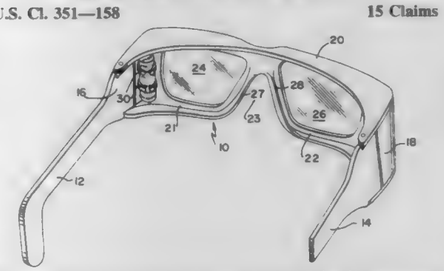
ARTIFICIAL TEARS

Stanley A. Scheiner, P.O. Box 64109, Miami, Fla. 33164

Filed Dec. 29, 1995, Ser. No. 581,458

Int. Cl.[6] **G02C** *1/00;11/08;* **A61M** *35/00*

U.S. Cl. 351—158 **15 Claims**



1. Apparatus for use with an eyeglass frame that is constructed and arranged to define a chamber in front of at least one eyeball of a wearer of said eyeglass frame to reduce the rate at which an exposed surface of said eyeball of a wearer becomes dry, comprising a plug of moisture absorbent material containing evaporable moisture therein carried by said frame, means to cover said plug and to provide at least one path through said cover means in a direction toward said chamber to increase the humidity of said chamber between said frame and said eyeball surface without requiring any pumping action to deliver said moisture to said chamber.

5,627,612

OPHTHALMIC APPARATUS HAVING PROGRAM STORING MEANS

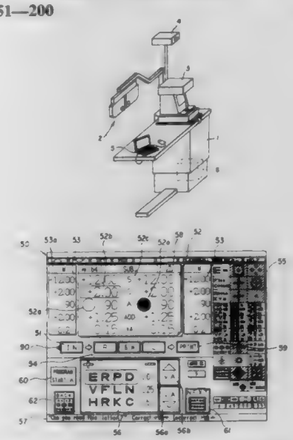
Akihiro Hayashi, Toyokawa, Japan, assignor to Nidek Co. Ltd., Japan

Filed Apr. 22, 1996, Ser. No. 635,728

Claims priority, application Japan, Apr. 21, 1995, 7-120907

Int. Cl.[6] **A61B** *3/00;3/02*

U.S. Cl. 351—200 **10 Claims**



1. An ophthalmic apparatus for inspecting visual functions of eyes to be examined, comprising:

an optical unit having ophthalmic windows, for respectively placing optical elements in the ophthalmic windows by switching;

an object indicating unit for presenting an object to each eye to be examined;

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display means having an operation screen for operating said object indicating unit and said optical unit;

program storing means for storing therein programs for controlling said display means, said programs having a common numeric value switching area for effecting the switching values for respective measuring items such as a spherical degree, an astigmatic degree and an astigmatic axis, and displaying an operation screen displaying an object presented by said object indicating unit and an input screen inputting reference data for inspecting the eyes to be examined within said numeric value switching area;

input means for inputting an operation command through the use of the operation screen of said display means; and

program executing means for executing the programs in accordance with the input operation command.

5,627,613

OPHTHALMOLOGICAL ILLUMINATION DEVICE FOR OBSERVING AN EXAMINED EYE AND METHOD

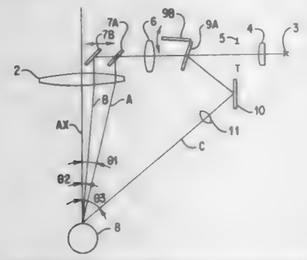
Masanobu Kaneko, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 555,013

Claims priority, application Japan, Dec. 14, 1994, 6-332993

Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—221 **23 Claims**



1. An ophthalmological illumination device illuminating an examined eye, comprising:

a light source generating a light beam; and

an optical system including an object lens, the optical system receiving the light beam and producing a plurality of light beams, the plurality of light beams illuminating the examined eye at a plurality of angles relative to an optical axis of the object lens, a portion of the plurality of angles being changeable.

5,627,614

METHOD FOR IMPARTING BOTH HIGH-IMPACT CINEMATIC IMAGES AND CONVENTIONAL CINEMATIC IMAGES ON THE SAME STRIP OF MOTION PICTURE FILM

Robert C. Weisgerber, 245 E. 93d St., Suite 32A, New York, N.Y. 10128

Filed Aug. 25, 1995, Ser. No. 519,244

Int. Cl.[6] G03B *19/18;41/00;19/24*

U.S. Cl. 352—46 **13 Claims**

1. A method for imparting different image components onto a strip of motion picture film for exhibition to audiences, with the resultant image imparted onto said film strip delivering in part a greater visual impact, and in other part a lesser visual impact to members of said audiences, comprising:

a. photographing or printing successive visual image components photographed or printed at a frame rate of twenty-four frames per second, with the intention that said image components will deliver to the members of said audiences the visual impact typically associated with the viewing of motion pictures;

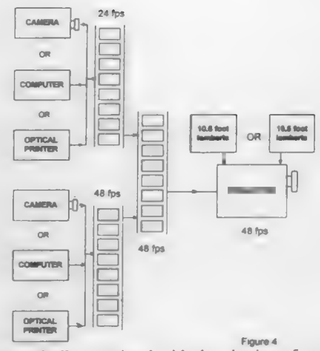


Figure 4

b. photographing or printing successive visual image components which are different from those photographed or printed onto the first strip of motion picture film onto a second strip of motion picture film; said image components photographed or printed at a frame rate of forty-eight frames per second, with the intention that said image components will deliver to the members of said audiences a visual effect that heightens the impact of the illusion of realism on said audience members, in comparison with the image components photographed or printed onto said first strip of film; and

c. superimposing the image components on said first strip of motion picture film and the image components on said second strip of motion picture film onto a third strip of motion picture film, for exhibition to motion picture audiences at the same frame rate as the second strip of film; said third strip of motion picture film further containing audio and other non-picture information normally imparted on such films for exhibition.

5,627,615

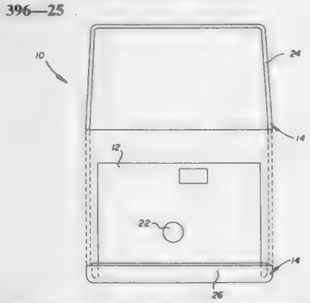
WATER-RESISTANT CAMERA ASSEMBLY

Dwight J. Petruchik, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 25, 1995, Ser. No. 378,208

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—25 **6 Claims**



1. A water-resistant camera assembly comprising a camera body with an interior in which a light-sensitive film is to be exposed, and a water-resistant casing enclosing said camera body, is characterized in that:

said camera body has an opening to its interior; and

said water-resistant casing has one casing section which is joined with said camera body over said opening to form an enclosure with the camera body and has another casing section which fits over the camera body and connects with said one casing section to complete the water-resistant casing.

5,627,616

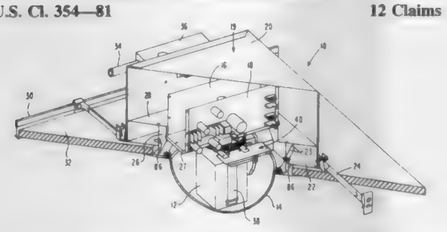
SURVEILLANCE CAMERA SYSTEM

Ronald G. Sergeant, High Point, N.C.; Scott A. Corbin, Stevens, Pa.; Theodore L. Jones, Akron, Pa.; Gopi N. Mehrotra, and Jennifer L. Randall, both of Lancaster, Pa., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Jun. 22, 1994, Ser. No. 263,918

Int. Cl.[6] G03B *29/00;396/427*

U.S. Cl. 354—81 **12 Claims**



1. In a surveillance camera system, a camera module for monitoring a selected area comprising:

(a) a housing;

(b) a pan motor platform fixedly mounted to said housing;

(c) a pan motor fixedly mounted to said pan motor platform;

(d) a tilt motor platform rotatably mounted to said pan motor platform to permit rotation of said tilt motor platform about a pan axis;

(e) a first mechanical coupling between said pan motor and said tilt motor platform for effecting rotation of said tilt motor platform about the pan axis during operation of said pan motor;

(f) a tilt motor fixedly mounted to said tilt motor platform;

(g) a camera rotatably mounted to said tilt motor platform to permit rotation of said camera about a tilt axis;

(h) a second mechanical coupling between said tilt motor and said camera to effect rotation of said camera about the tilt axis during operation of said tilt motor;

(i) a slip ring mounted on said pan motor platform for providing electrical connections to said tilt motor and said camera; and

(j) an auto-pivot means for automatically effecting rotation of said tilt motor platform about the pan axis by operating said pan motor so that said camera pans 180 degrees.

5,627,617

FILM FEEDING CONTROL DEVICE FOR ACCURATE ALIGNMENT OF FILM FRAMES AND CAMERA APERTURE

Kazuyuki Kazami, Tokyo, and Tsutomu Wakabayashi, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 801,905, Dec. 3, 1991, abandoned.

This application Apr. 4, 1994, Ser. No. 222,360

Claims priority, application Japan, Dec. 6, 1990, 2-406295; Dec. 6, 1990, 2-406296; Dec. 10, 1990, 2-409808

Int. Cl.[6] G03B *1/00*

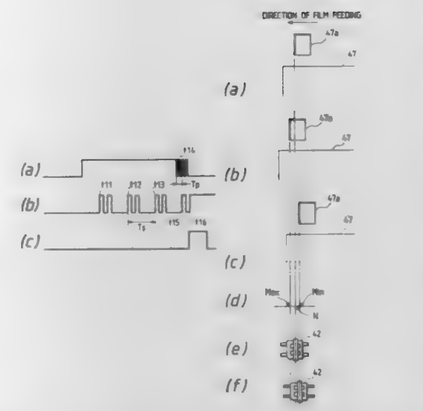
U.S. Cl. 396—395 **6 Claims**

1. A film feeding cessation control device for a camera, comprising:

film feeding means for feeding a film in which each frame has two perforations, said two perforations being spaced in a longitudinal direction of the frame and being positioned adjacent to respective ends of the frame;

control means for controlling said film feeding means; and

perforation detection means which is fixedly located remote from a predetermined perforation-detection reference position by a predetermined distance upstream with respect to a direction in which the film is fed, said predetermined distance being an amount of overrun when film feeding is stopped, said perforation detection means producing a detection signal for causing said control means to stop film feeding of said film feeding means when said perforation detection means detects a predetermined perforation.



5,627,618

COMPACT HIGH-ZOOM-RATIO REAL-IMAGE FINDER

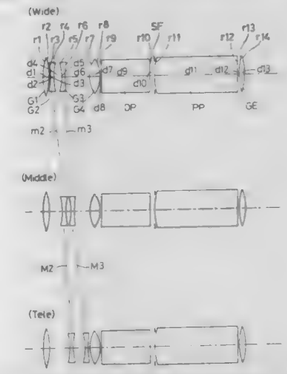
Ichiro Kasai, Sakai, and Katsuto Tanaka, Kawachinagano, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 23, 1994, Ser. No. 264,490

Claims priority, application Japan, Jun. 29, 1993, 5-158571; Jul. 13, 1993, 5-172840

Int. Cl.[6] G03B *13/10;* **G02B** *15/14*

U.S. Cl. 396—379 **8 Claims**



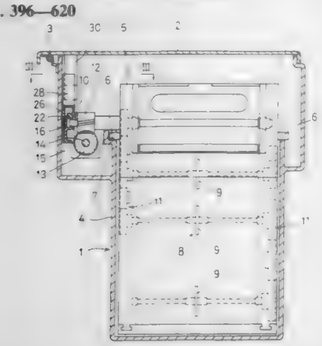
1. A compact high-zoom-ratio real-image finder comprising an objective lens system including from an object side a first lens unit having a positive power, a second lens unit having a negative power, a third lens unit having a negative power and a fourth lens unit having a positive power, wherein zooming is performed by moving the second and third lens units in a same direction.

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5,627,619
AUTOMATIC PHOTOGRAPHIC DEVELOPING MACHINE

Yasuto Kimura; Yoshihiko Nakashima, and Yoshifumi Nakamura, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Jul. 3, 1996, Ser. No. 675,186
Claims priority, application Japan, Jul. 10, 1995, 7-173162
Int. Cl.[6] G03D *3/08*
U.S. Cl. 396—620 **2 Claims**



1. An automatic developing machine for developing photosensitive material, said machine comprising:

a plurality of treating tanks arranged in a row,

a driving unit provided at an upper portion of one side of said treating tanks,

racks each having a feed mechanism for feeding the photosensitive material, each said feed mechanism having an input shaft provided with a torque transmission wheel adapted to mesh with said driving unit when said racks are inserted in respective ones of said treating tanks,

presser holders made of a synthetic resin provided at one side of said driving unit so as to be slidable in a direction in which said tanks are arranged, said presser holders having vertical guide portions into which ends of said input shafts can be inserted, and horizontal guide portions extending from bottom ends of said vertical guide portions in the direction in which said presser holders slide, and

resilient pieces made of a synthetic resin supported by said presser holders so that ends of said resilient pieces will face ends of said input shafts in said horizontal guide portions.

5,627,620
PHOTOMETRY DEVICE AND METHOD

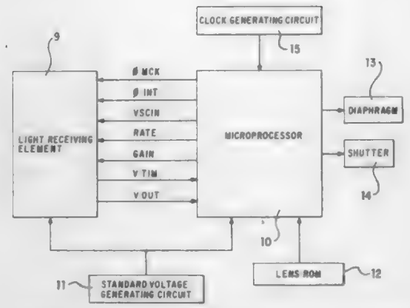
Hiroyuki Iwasaki, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 10, 1995, Ser. No. 419,549
Claims priority, application Japan, Jun. 7, 1994, 6-125340
Int. Cl.[6] G03B *7/08;* **H04N** *9/64;3/14*
U.S. Cl. 396—233 **22 Claims**

1. A photometry device, comprising:

an accumulation-type light receiving element that photoelectrically converts light from a subject field and outputs an electrical signal corresponding to the intensity of the light; and

a brightness value calculating component that calculates a brightness value of the subject field, wherein the brightness value calculating component corrects an accumulation time of

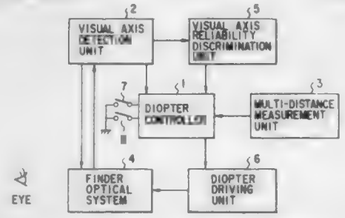


the light receiving element to compensate for the presence of any offset voltage at the light receiving element.

5,627,621
CAMERA

Shinichi Kodama, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,219
Claims priority, application Japan, Jun. 22, 1994, 6-140483
Int. Cl.[6] G03B *13/02*
U.S. Cl. 396—373 **28 Claims**



1. A camera with a finder device which is capable of diopter adjustment, comprising:

detection means, arranged in the finder device, for detecting a visual axis direction and a fundus imaging state of an observer;

multi-distance measurement means for measuring distances to a plurality of positions in a photographing frame;

diopter correction means for adjusting a primary imaging position where an object image is focused by an objective optical system; and

driving means for driving said diopter correction means in accordance with an output from said detection means and an output from said multi-distance measurement means.

5,627,622
TRIMMING CAMERA

Hiroshi Ootsuka, Sakai; Shigeru Wada, Kishiwada; Junichi Tanii, Izumi; Hiroshi Ueda, Habikino; Kohtaro Hayashi, Hirakata; Masaaki Nakai, Kawachinagano, and Hiroyuki Okada, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 836,529, Feb. 18, 1992, abandoned.
This application Mar. 6, 1995, Ser. No. 399,999
Claims priority, application Japan, Feb. 19, 1991, 3-024403
Int. Cl.[6] G03B *7/00;17/24*
U.S. Cl. 396—242 **4 Claims**

1. A camera comprising:

a mode selector which selects one of a first mode in which a first partial range of an exposed image is to be printed and a second mode in which a second partial range of the exposed

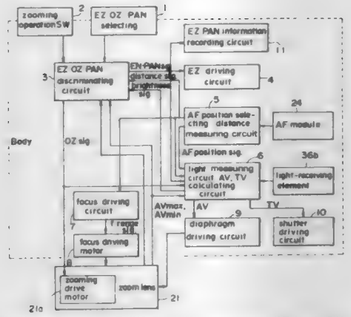


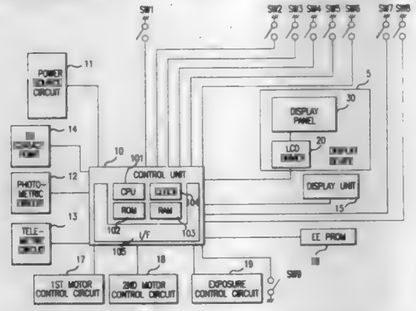
image is to be printed in a subsequent printing process, wherein the aspect ratio of said second range is different from that of said first range and said second range has a lateral size greater than that of said first range; and

a calculation circuit which calculates an exposure value by means of an object brightness and the selected mode, wherein the aperture value of the second mode is greater than that of the first mode.

5,627,623
CAMERA AND METHOD FOR ASSURING PHOTOGRAPHY WITH SELECTED PARAMETER

Nobuaki Sasagaki, and Takashi Saegusa, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,449
Claims priority, application Japan, Feb. 4, 1994, 6-013027
Int. Cl.[6] G03B *17/18;17/00;7/00*
U.S. Cl. 396—299 **16 Claims**



1. A camera comprising:

a memory that stores a plurality of preset parameters used to control the camera during a photographic operation;

a display component coupled to the memory that displays a selection of parameters from the plurality of stored parameters;

a selector coupled to the display component that allows a user to select at least one of the displayed parameters in a user parameter selection sequence;

a controller programmed to automatically select a parameter that controls the photographic operation when an interruption in the user parameter selection sequence occurs, wherein when the selector is operated the parameter is selected using the display component;

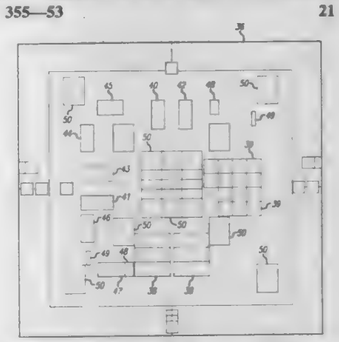
a shutter assembly coupled to the controller that executes the photographic operation based on the selected parameter; and

whereby any parameter selected by the user prior to an interruption of the user parameter selection sequence is maintained and used to control the photographic operation.

5,627,624
INTEGRATED CIRCUIT TEST RETICLE AND ALIGNMENT MARK OPTIMIZATION METHOD

Randy Yim, Pleasanton, and Christopher Neville, Sunnyvale, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 31, 1994, Ser. No. 302,598
Int. Cl.[6] G03B *27/42;27/32;* **G01B** *11/00;* **G03F** *9/00*
U.S. Cl. 355—53 **21 Claims**



1. A method of fabricating a semiconductor integrated circuit including a plurality of overlying process layers, comprising the steps of:

(a) providing a test reticle having a pattern including a plurality of groups of different types of alignment marks, with each group including a plurality of different sizes of said alignment marks respectively;

(b) applying the test reticle to form said pattern on a test wafer;

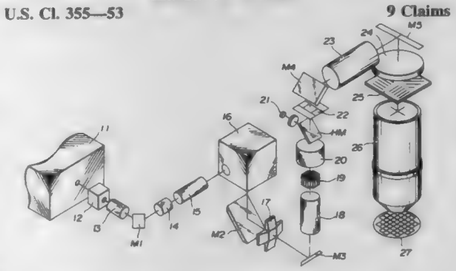
(c) sensing a selected group of said alignment marks of said pattern on the test wafer to determine an optimal size for said alignment marks thereof; and

(d) fabricating said integrated circuit using alignment marks of said selected group and said optimal size to align said overlying process layers.

5,627,625
PATTERN PROJECTING METHOD

Tohru Ogawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 327,054
Claims priority, application Japan, Oct. 27, 1993, 5-268904
Int. Cl.[6] H01L *21/027*
U.S. Cl. 355—53 **9 Claims**



1. A pattern projecting method comprising the steps of:

illuminating a mask having a fine pattern formed therein with an exposure light; and

transmitting a light of the mask to be incident on a pupil of a projection optical system to project an image of the fine pattern onto a substrate with a light intensity distribution having a maximum light intensity in plural peripheral regions around a central region of the pupil, a predetermined light intensity of 20 to 50% of the maximum light intensity in said

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central region, and a light intensity lower than the maximum light intensity in a region connecting the plural regions.

5,627,626

PROJECTIN EXPOSURE APPARATUS

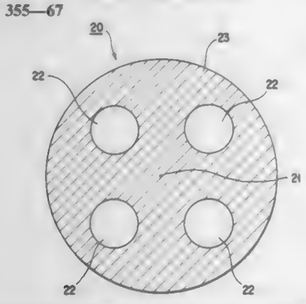
Soichi Inoue, Yokohama; Tadahito Fujisawa, Tokyo; Shin-ichi Ito; Takashi Sato, both of Yokohama; Shuichi Tamamushi, Kawasaki, and Keiji Horioka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 411,844, Mar. 28, 1995, which is a continuation of Ser. No. 961,540, Oct. 15, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,327

Claims priority, application Japan, Jan. 20, 1902, 4-7764; Oct. 15, 1991, 3-295199; Jan. 20, 1992, 4-7674; Jan. 20, 1992, 4-7675; Jan. 20, 1992, 4-7676; Jan. 20, 1992, 4-7834; Jan. 20, 1992, 4-7835; Mar. 27, 1992, 4-70617; Jul. 14, 1992, 4-186673

Int. Cl.[6] G03B *27/42*

U.S. Cl. 355—67 12 Claims



1. A projection exposure apparatus for projecting/exposing a mask pattern formed on a mask onto a wafer through a projection optical system, comprising:

a secondary source modulation filter arranged at a position of a secondary source for illuminating said mask to set intensities of both peripheral and central portions to be larger than an intensity of an intermediate portion of an intensity distribution within an exit plane of said secondary source.

5,627,627

EXPOSURE CONTROL APPARATUS AND METHOD

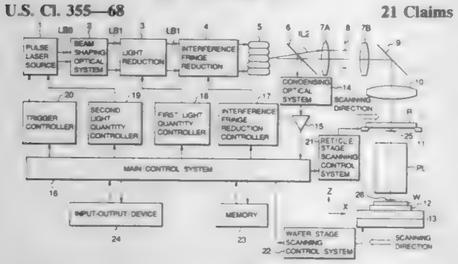
Kazuaki Suzuki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 201,126, Feb. 24, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,468

Claims priority, application Japan, Feb. 24, 1993, 5-035248

Int. Cl.[6] G03B *27/52*

U.S. Cl. 355—68 21 Claims



1. A scanning exposure apparatus comprising:

an illumination system for illuminating a mask with light pulses;

a projection optical system receiving light pulses from said mask and having an image field which is smaller than an exposure region on a photosensitive substrate, in which region an image of a pattern on said mask is to be formed by light pulses radiated from said projection optical system;

a scanning system which synchronously scans said mask and said substrate relative to said projection optical system for scanning exposure;

a measurement system which measures, during the scanning exposure, individual integrated light quantities radiated on each of a plurality of partial regions, respectively in said exposure region, within the image field to be irradiated with a next light pulse, based on intensities of light pulses radiated on said substrate; and

an adjusting system which adjusts an intensity of said next light pulse based on the measured integrated light quantities.

5,627,628

ELECTROPHOTOGRAPHIC APPARATUS

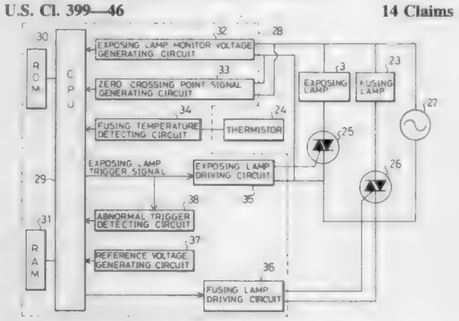
Kazunori Soda, Tenri, and Shigeharu Maehara, Ikoma-gun, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 29, 1996, Ser. No. 609,108

Claims priority, application Japan, Mar. 7, 1995, 7-047508

Int. Cl.[6] G03G *21/14;15/20*

U.S. Cl. 399—46 14 Claims



1. An electrophotographic apparatus comprising:

an exposing light source for irradiating a light beam onto a document upon receipt of power supply;

a fusing heat source for fusing a non-fused image on a sheet onto said sheet upon receipt of power supply;

a power source for supplying power to said exposing light source and said fusing heat source, said exposing light source and said fusing heat source being connected to said power source in parallel;

voltage variance detecting means for detecting variance in voltage of said exposing light source;

exposing amount control means for controlling a phase of a voltage supplied to said exposing light source based on a feedback result of the variance in voltage detected by said voltage variance detecting means to adjust an amount of light of said exposing light source to a predetermined value;

temperature detecting means for detecting a temperature of said fusing heat source;

fusing temperature control means for stabilizing a temperature of said fusing heat source at a predetermined value by switching an ON state and an OFF state based on a detection result of said temperature detecting means, power being supplied to said fusing heat source from said power source in the ON state while no power being supplied in the OFF state; and

phase control data storage means for storing phase control data of said exposing light source, wherein,

when said fusing temperature control means switches the power supply to said fusing heat source to OFF from ON state while said exposing light source stays on, said exposing amount control means suspends said phase control based on the feedback and carries out a phase control based on the phase control data stored in said phase control data storage means within a predetermined period before and after the switching.

5,627,629

IMAGE FORMING APPARATUS FOR FORMING AN IMAGE ON AN IMAGE RECEIVING MEMBER BY MULTIPLE IMAGE TRANSFER

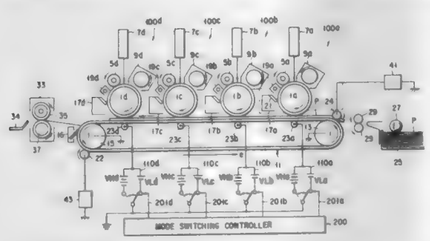
Masashi Takahashi; Toshihiro Kasai, both of Yokohama, and Minoru Yoshida, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1995, Ser. No. 526,089

Claims priority, application Japan, Oct. 6, 1994, 6-242997

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—231 15 Claims



1. An image forming apparatus comprising:

first developing agent image forming means for forming a first developing agent image on an image carrier by using a first developing agent having a volume resistance whose absolute value is a first value;

second developing agent image forming means for forming a second developing agent image on the image carrier by using a second developing agent having a volume resistance whose absolute value is a second value, the second value being lower than the first value; and

transfer means for electrostatically transferring the first developing agent image onto a transfer medium, and for transferring the second developing agent image onto the transfer medium onto which the first developing agent image is transferred.

5,627,630

DEVELOPING APPARATUS HAVING A TONER SUPPORTING ROLLER WITH AN INNER LAYER AND SURFACE LAYER

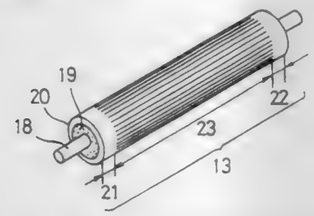
Iwao Matsumae, Tokyo; Yoshiaki Tanaka; Shigekazu Enoki, both of Kawasaki, and Hiroshi Hosokawa, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 19, 1995, Ser. No. 575,129

Claims priority, application Japan, Dec. 21, 1994, 6-318557

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—267 22 Claims



1. A toner supporting roller for a developing roller, comprising:

an inner layer;

a surface layer covering the inner layer, wherein the surface layer includes a central magnetic portion and non-magnetic portions formed at both end portions of the central magnetic portion, wherein the inner layer comprises polybutadiene rubber and has a JIS A-K 6061 hardness of 30°.

5,627,631

DEVELOPER REPLENISHING DEVICE AND DEVELOPER CONTAINER FOR USE THEREWITH

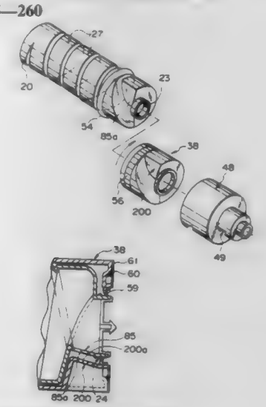
Hideo Ichikawa, Numazu; Takeshi Saito, Tokyo; Sunao Ikeda, Numazu; Nobuhiro Makita, Numazu; Seiji Ozawa, Numazu; Shigeru Yoshiki, Kawasaki, and Takaaki Yanagisawa, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 386,875, Feb. 10, 1995, Pat. No. 5,500,719, which is a continuation of Ser. No. 174,698, Dec. 28, 1993, Pat. No. 5,455,662. This application Jan. 17, 1996, Ser. No. 587,966

Claims priority, application Japan, Dec. 30, 1992, 4-361012

Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—260 7 Claims



1. A developer container comprising:

a hollow substantially cylindrical main body;

a shoulder portion forming a circumferential wall adjacent one end of said body;

a mouth portion provided on said one end of said body, said mouth portion being smaller in diameter than said shoulder portion; and

guide means provided on said shoulder portion for guiding a developer stored in said developer container to substantially said mouth portion as said body is rotated.

5,627,632

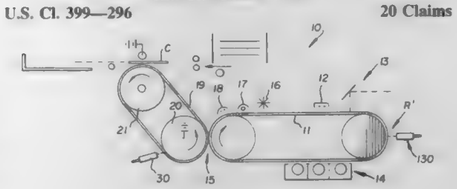
ELECTROSTATOGRAPHIC APPARATUS HAVING A TONER TRANSFER ASSISTANCE SYSTEM AND PROCESS

William J. Staudenmayer, Pittsford, and Douglas E. Bugner, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1996, Ser. No. 613,648

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—296 20 Claims



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1. In electrostatographic apparatus having means for forming an electrostatic image on a support member, means for applying charged toner particles to form a toner image on said support member and means for transferring such toner image to a copy sheet, a system for assisting toner image transfer comprising:

(a) drop generator means for controllably directing a plurality of drops of release liquid to form a release pattern for joining with such toner image; and

(b) supply means for delivering such release liquid to said drop generator means.

5,627,633

PNEUMATIC BRAKING DEVICE FOR A RECORDING SUBSTRATE

Joachim Hoffmann, München; Edmund Creutzmann, Markt Schwaben; Walter Kopp, Taufkirchen, and Helmut Berger, Fürstenfeldbruck, all of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

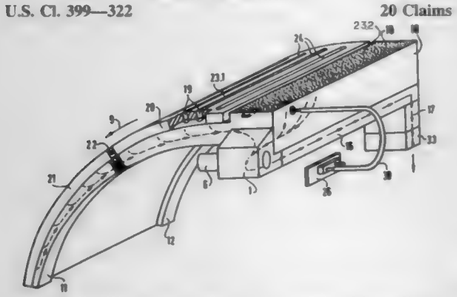
PCT No. PCT/DE93/00632, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO94/09408, PCT Pub. Date Apr. 28, 1994

PCT Filed Jul. 16, 1993, Ser. No. 424,429

Claims priority, application Germany, Oct. 22, 1992, 42 35 705.5

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—322 **20 Claims**



1. A pneumatic braking device for a recording substrate in an electrographic imaging machine, the braking device comprising:

a braking element which has a braking gliding surface accepting the recording substrate and having at least one suction opening;

a guiding saddle of a fixing device, arranged downstream of the braking element in a running direction of the recording substrate, the guiding saddle having a saddle gliding surface accepting the recording substrate, the saddle gliding surface having at least one suction opening;

a vacuum-generating device in communication with each suction opening; and

a valve, the valve including a valve channel and a rotary piston arranged in the valve channel, rotation of the rotary piston varying an effective valve channel cross-sectional area of the valve channel, the rotary piston having a cross-sectional shape such that during rotation of the rotary piston the vacuum is changed approximately linearly with respect to the angle of rotation.

5,627,634

IMAGE FIXING APPARATUS HAVING A HEATER ENERGIZED AND CONTROLLED BY ELECTRIC ENERGY

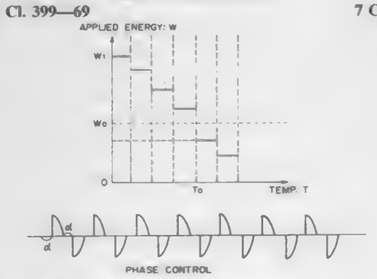
Shokyo Koh, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 829,582, Feb. 3, 1992, abandoned, which is a continuation of Ser. No. 450,560, Dec. 14, 1989, abandoned. This application Nov. 18, 1993, Ser. No. 154,128

Claims priority, application Japan, Dec. 15, 1988, 63-317245; Dec. 15, 1988, 63-317247

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—69 **7 Claims**



1. An image fixing apparatus, comprising:

a heater for generating heat upon electric power supply thereto;

a film movable with an unfixed image on a recording material while being in contact with said heater;

a temperature detecting element for detecting the temperature of said heater;

power supply means for supplying electrical power to said heater; and

control means for controlling the electrical power supplied to said heater from said power supply means so that a temperature detected by said temperature detecting element is maintained substantially at a predetermined fixing temperature,

wherein said control means has at least one power level for raising the temperature of said heater and a plurality of power levels for decreasing the temperature of said heater, and selects the power level in accordance with an output of said temperature detecting element after the temperature of said heater initially reaches the fixing temperature.

5,627,635

METHOD AND APPARATUS FOR OPTIMIZING SUB-PIXEL RESOLUTION IN A TRIANGULATION BASED DISTANCE MEASURING DEVICE

Brian Dewan, Salmon Arm, Canada, assignor to Newnes Machine Ltd., Salmon Arm, Canada

Filed Mar. 25, 1994, Ser. No. 217,678

Int. Cl.[6] G01C *3/00;* **G01B** *11/28;* **G01N** *21/00*

U.S. Cl. 356—3.06 **6 Claims**

1. An apparatus for optimizing sub-pixel resolution in a triangulation based target distance measuring device at a desired stand-off distance comprises

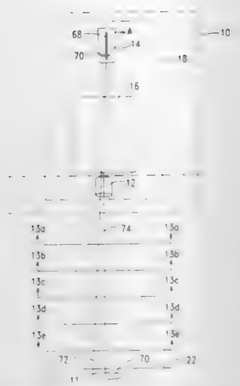
a laser light source projecting a light beam along a light beam axis so as to project a light spot onto a surface of a workpiece,

a lens having an optical axis and a depth of focus dependent on said target distance, said lens for gathering reflected light from said light spot on said surface of said workpiece,

a linear photodetector array of adjacent light detecting pixels, said array having a longitudinal array axis, said array for detecting light impinging said pixels and generating an output signal indicative of the position of said pixels being impinged by said light,

said light beam axis, said optical axis, and said longitudinal array axis co-planar in a first plane,

said lens imaging said reflected light across and impinging said array so as to form an image across said array, said output



signal indicative of an intensity profile of said image impinging said array, said image defocused so as to optimize said output signal from said array, whereby movement of said surface of said workpiece relative to said distance measuring device while said light spot is projected onto said surface causes corresponding movement of said image along said array.

wherein said output signal is optimized over a pre-selected distance range from said desired stand-off distance by fixing at an optimized defocused location said lens along said optical axis relative to said array whereby approximating as closely as possible to a gaussian distribution said intensity profile of said image impinging the said pixels, minimizing saturation of said pixels by said image impinging said pixels, optimizing the number of said pixels impinged by said image, and maximizing the amplitude of said intensity profile subject to minimizing said saturation of said pixels,

wherein said light beam axis, said optical axis, and said longitudinal array axis are non-co-planar so as to impinge on said pixels cross-sections of said image corresponding to an optimal area of image width and intensity.

5,627,636

DISTANCE MEASURING EQUIPMENT

Jun Nishino, and Katsuyuki Fukuda, both of Saitama, Japan, assignors to Kansei Corporation, Saitama, Japan

Filed Feb. 21, 1995, Ser. No. 391,347

Claims priority, application Japan, Feb. 23, 1994, 6-025620; Jun. 21, 1994, 6-139159; Dec. 28, 1994, 6-328507

Int. Cl.[6] G01C *3/08*

U.S. Cl. 356—5.05 **12 Claims**

1. A distance measuring equipment comprising:

a first light emitting element for measurement;

an optically shielded second light emitting element for use during a correction mode;

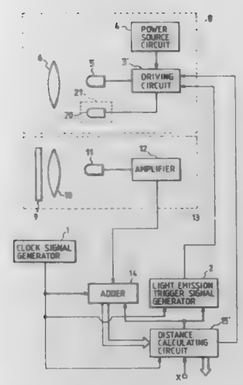
timing means for generating a timing signal;

light emission trigger signal generating means for receiving the timing signal from said timing means and for generating a trigger signal in response to said timing signal;

driving means for receiving the trigger signal from said light emission trigger signal generating means to selectively drive said first and second light emitting elements to emit light;

a light receiving element for receiving light emitted from said first light emitting element for measurement and reflected by a forward object during a measurement mode;

adding means for conducting an adding operation on an output signal delivered from said light receiving element, said adding operation occurring a predetermined number of times during a period between reception of subsequent timing signals from said timing means, and for binarizing and normalizing an addition result of said adding operation; and



distance calculating means for calculating a distance between said equipment and said forward object on the basis of a signal supplied from said adding means and the timing signal from said timing means,

wherein said timing means drives said optically shielded light emitting element during said correction mode to emit light, and thereby generate a correction signal, and wherein said correction signal is utilized by said adding means to correct said output signal delivered from said light receiving element.

5,627,637

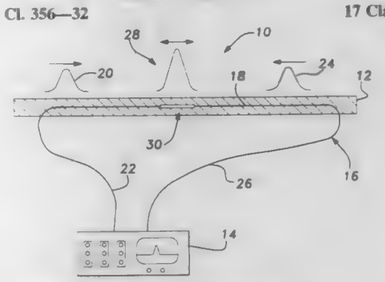
FULLY DISTRIBUTED OPTICAL FIBER STRAIN SENSOR

Kelvin L. Kapteyn, 1918 Axtell Rd., Apt. 1, Troy, Mich. 48084

Filed Feb. 24, 1995, Ser. No. 394,379

Int. Cl.[6] C01B *11/16*

U.S. Cl. 356—32 **17 Claims**



1. A distributed fiber optic sensor comprising:

optical means for generating a first optical beam and a second optical beam;

an optical fiber including a first end responsive to the first optical beam and a second end responsive to the second optical beam, said optical fiber further including a core region and a cladding region, said cladding region surrounding said core region, wherein the core region is made of a first material and the cladding region is made of a second material such that a strain on the fiber causes a change in the index of refraction of the core region that is significantly different than a change in the index of refraction of the cladding region, said first material being a fast Kerr nonlinear material, said fast Kerr nonlinear material having a sufficiently short time response and a sufficiently large Kerr nonlinearity so that the first optical beam and the second optical beam interact in an interaction region within the optical fiber to cause a measurable portion of the first optical beam to be emitted from the core region as a result of the interaction between the first and second optical beams; and

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a detector, said detector being responsive to the first optical beam after it has interacted with the second optical beam, said detector provided an indication of the intensity of the first optical beam.

5,627,638

METHOD AND APPARATUS FOR DETECTING DEFECTS IN LENSES

Peter A. Vokhmin, Dimona, Israel, assignor to Prolaser Ltd., Rosh Ha'ayin, Israel

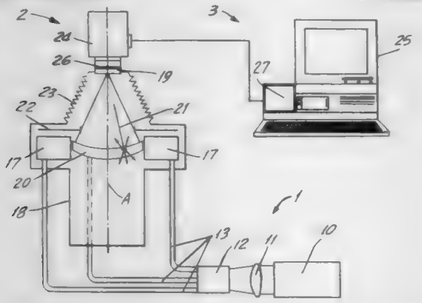
PCT No. PCT/US94/07483, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/01558, PCT Pub. Date Jan. 12, 1995

PCT Filed Jul. 1, 1994, Ser. No. 569,115

Claims priority, application Israel, Jul. 1, 1993, 106207

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—124 **26 Claims**



1. Method for testing an optical component for cosmetic defects, said component having optical surfaces, a peripheral surface and a bulk defined by said optical and peripheral surfaces, a range of inspection of said component including at least one said optical surface and said bulk of the component at least in the vicinity of said one optical surface, said method including producing at least one beam of inspection radiation and directing rays of said at least one beam onto said peripheral surface at such angles as to enable the rays to travel in said bulk of the component by multiple total internal reflections from said at least one optical surface, providing illumination of each point in said inspection range by set of rays at different angles, and to emerge from said component through said peripheral surface, and monitoring a radiation scattered by said defects and emerging from the component through said at least one optical surface, thereby identifying said defects.

5,627,639

CODED APERTURE IMAGING SPECTROMETER

Stephen B. Mende, Los Altos, and Edward S. Claflin, Redwood City, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

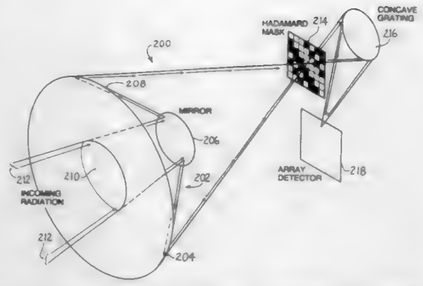
Filed Jun. 6, 1995, Ser. No. 476,708

Int. Cl.[6] G01J *3/04*

U.S. Cl. 356—310 **6 Claims**

1. An imaging spectrometer comprising: a mask having an array of n rows and n columns of transmissive elements for transmitting light from a plurality of locations of a target, and of opaque elements for blocking light from the plurality of locations of the target, the elements of each row arranged in a Hadamard pattern and each row having a different cyclic iteration of an m-sequence;

a grating for dispersing the transmitted light from the transmissive elements in a linear spatial relationship in a predetermined relationship to the wavelength of the transmitted light; and



a detector array having a plurality of detector elements arranged in rows and columns, each row of the detector array being arranged to receive the dispersed transmitted light from the grating corresponding to the transmitted light through a row of the mask, each detector element being arranged to receive a different range of wavelengths of the dispersed light from each transmissive element of the corresponding row of the mask and providing an intensity signal indicative of the intensity of the light impinging thereon.

5,627,640

METHOD FOR MEASURING RADICAL SPECIES DISTRIBUTION IN PLASMA AND AN APPARATUS THEREFOR

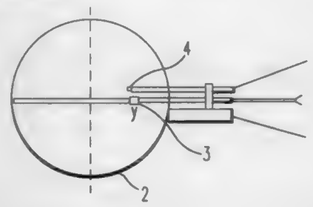
Hong-Young Chang, Taejon; Pyung-Woo Lee, Kyonggi-do, and Yong-Jin Kim, Seoul, all of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Taejon, Rep. of Korea

Filed Jan. 18, 1996, Ser. No. 588,308

Claims priority, application Rep. of Korea, Jan. 20, 1995, 95-945

Int. Cl.[6] G01J *3/30*

U.S. Cl. 356—316 **7 Claims**



1. A method for measuring distribution of radical species in plasma which comprises the steps of:

(i) measuring the integral light intensity in a vacuum container with an optical probe inserted into the vacuum container;

(ii) determining light intensity at each point of the vacuum container by differentiating the integral light intensity;

(iii) measuring current and voltage applied to an electrostatic probe in the vacuum container;

(iv) determining plasma parameters from the measured current and voltage; and,

(v) measuring distribution of radical species from the light intensity and plasma parameters.

5,627,641

ISOTOPIC ANALYSIS PROCESS BY OPTICAL EMISSION SPECTROMETRY ON LASER-PRODUCED PLASMA

Patrick Mauchien, Palaiseau, France; Walter Pietsch, Graz, Austria; Alain Petit, and Alain Briand, both of Paris, France, assignors to Commissariat a l'Energie Atomique, Paris, France

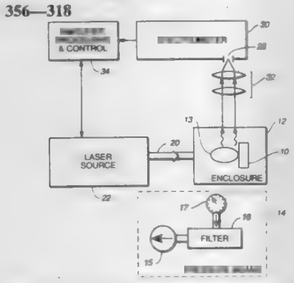
PCT No. PCT/FR94/00708, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/29699, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 14, 1994, Ser. No. 381,991

Claims priority, application France, Jun. 15, 1993, 93 07179

Int. Cl.[6] G01N *21/63*

U.S. Cl. 356—318 **3 Claims**



1. A process for isotropic analysis of a sample comprising the steps of:

irradiating said sample to be analyzed by a pulse-type laser beam to produce a plasma on its surface, said plasma emitting a spectrum of light, and said each pulse of said laser beam having an energy equal to or below ten milliJoules per cm^2;

analyzing said spectrum of the light at a time lag of at least equal to 200 ns relative to said laser pulse, wherein isotropic information is obtainable to allow said isotropic analysis.

5,627,642

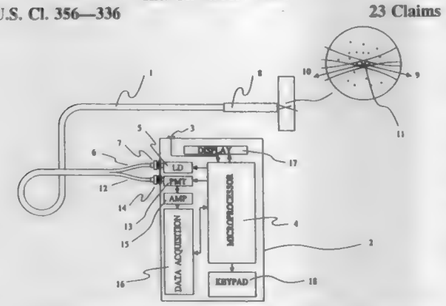
METHOD AND APPARATUS FOR SUBMICROSCOPIC PARTICLE SIZING BY MEASURING DEGREE OF COHERENCE

Harbans S. Dhadwal, Setauket, N.Y., and Kwang I. Suh, Strongville, Ohio, assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Aug. 11, 1995, Ser. No. 514,264

Int. Cl.[6] G01N *15/02*

U.S. Cl. 356—336 **23 Claims**



1. An apparatus for submicroscopic particle sizing, comprising:

a laser source;

means for coherently detecting scattered light;

means for processing scattered light detected by the detecting means into a series of photoelectron pulses;

means for counting the number of photoelectron pulses generated during a plurality of specified integration times;

means for storing pulse counts for a plurality of integration times;

means for measuring the degree of coherence of the pulses for a plurality of values of integration time, and

means for calculating the mean particle diameter from the degree of coherence of the pulses for said plurality of values of integration time,

whereby submicroscopic particle sizing is accomplished without the use of photon correlation means or spectral estimation means.

5,627,643

METHOD AND DETECTOR FOR SEPARATION PROCESSES

Staffan Birnbaum, Gråsparvsvägen 74 S-227 31; Jonas Johansson, Tellusgatan 6 C, S-224 57; Per-Olof Larsson, Fågelhundsvägen 56, S-226 53, all of Lund; Akiyoshi Miyabayashi, Regementsgatan 68 B, S-217 51, Malmö ; Klaus Mosbach, Lackalänga 31-38, S-244 94, Furulund; Staffan Nilsson, Siriusgatan 14, S-224 57, Lund; Sune Svanberg, östgötavnägen 12, S-222 25, Lund, and Karl-Gustav Wahlund, Sångarevägen 6 E, S-224 71, Lund, all of Sweden

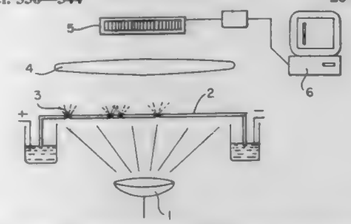
PCT No. PCT/SE93/00305, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO93/20435, PCT Pub. Date Oct., 14, 1993

PCT Filed Apr. 7, 1993, Ser. No. 313,319

Claims priority, application Sweden, Apr. 7, 1992, 9201089

Int. Cl.[6] G01N *27/26*

U.S. Cl. 356—344 **20 Claims**



1. A method of analyzing a sample by separating components of said sample in a thin capillary, irradiating said capillary, and detecting light selected from the group consisting of light emitted by and light absorbed by said components of said sample, comprising detecting said light at short intervals during said separating simultaneously over the whole or at least a large part of said capillary to create successive momentary images of the separation pattern and thereby the progress of the separation, thereby permitting termination of said separating when a desired separation of said components of said sample is achieved.

5,627,644

KERR EFFECT COMPENSATION BY OPTICAL POWER BALANCING IN INTERFEROMETRIC FIBER OPTIC GYROSCOPES

Glen A. Sanders, 13359 N. 101 Pl., Scottsdale, Ariz. 85260

Filed Jun. 7, 1995, Ser. No. 473,053

Int. Cl.[6] G01C *19/64*

U.S. Cl. 356—350 **6 Claims**

1. An interferometric fiber optic gyroscope comprising:

a light source;

a splitter proximate to said light source;

a fiber optic sensing loop connected to said splitter;

a detector connected to said splitter;

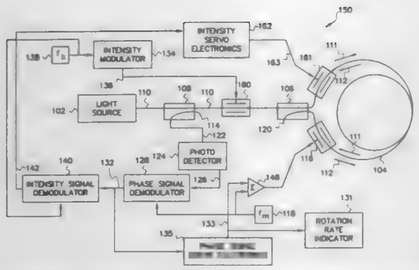
a phase modulator proximate to said splitter;

a phase bias modulation frequency source connected to said phase modulator;

a phase signal demodulator connected to said detector and to said bias modulation frequency source;

a first intensity modulator proximate to said splitter;

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an intensity modulation frequency source connected to said first intensity modulator;

an intensity signal demodulator connected to said phase signal demodulator, and to said intensity modulation frequency source; and

a second intensity modulator proximate to said splitter and connected to said intensity signal demodulator.

5,627,645

METHOD OF AND APPARATUS FOR MEASURING RETARDATION OF COMPOSITE LAYER

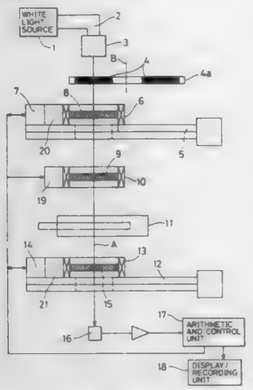
Kyoji Imagawa, Hyogo; Shinichi Nagata, Osaka, and Kiyokazu Sakai, Hyogo, all of Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,715

Claims priority, application Japan, Sep. 30, 1994, 6-238263

Int. Cl.[6] G01N *21/21*

U.S. Cl. 356—364 **12 Claims**



1. A method of measuring retardation of a composite layer, comprising the steps of:

providing a composite layer sample, being obtained by stacking a polarizing filter layer with a birefringent layer, with a compensation polarizing plate on the side of said polarization filter layer and keeping polarization transmission axes of said polarizing filter layer and said compensation polarizing plate in parallel with each other thereby compensating polarization characteristics of said polarizing filter layer; and

applying a measuring beam from the side of said compensation polarizing plate for passing light being transmitted through said compensation polarizing plate and said composite layer sample through an analyzer and relatively rotating the polarization transmission axis of said analyzer with respect to those of said compensation polarizing plate and said composite layer sample for detecting the relation between intensity of said light being transmitted through said analyzer and the polarization orientation of said analyzer thereby obtaining retardation and the optical principal axis direction of said composite layer sample.

5,627,646

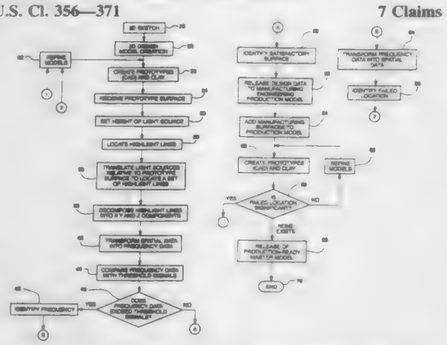
METHOD FOR LOCATING FLAWS IN A SMOOTH SURFACE OF AN OBJECT

Paul J. Stewart, and Yifan Chen, both of Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 21, 1995, Ser. No. 505,426

Int. Cl.[6] G01B *11/30*

U.S. Cl. 356—371 **7 Claims**



1. A method for locating flaws in a smooth surface using at least one light source, the method comprising the steps of:

setting the light source a predetermined length above the smooth surface;

locating a highlight line;

translating the light source across the smooth surface to create a plurality of highlight lines;

decomposing each of the highlight lines into their respective spatial components;

measuring spatial parameters of each of the highlight lines;

transforming the spatial parameters into frequency parameters;

comparing the frequency parameters to a threshold;

identifying frequency parameters exceeding the threshold signal; and

locating flaws in the smooth surface.

5,627,647

HIGH SPEED LASER/AIR SLIDE DIMENSIONAL MEASUREMENT TOOL

Robert L. Baan, Wallkill, and Paul J. Damore, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

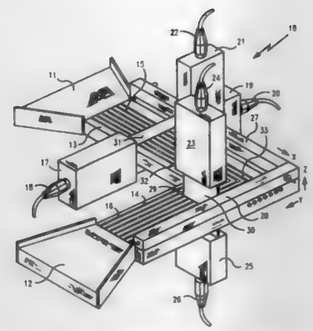
Filed Jun. 21, 1996, Ser. No. 668,292

Int. Cl.[6] G01B *11/04*

U.S. Cl. 356—372 **10 Claims**

1. A method of measuring the x, y and z dimensions of an article, the method comprising:

advancing the article at a controlled speed along a substantially horizontal substantially planar passageway of a measuring device that comprises first, second and third measuring members, the first member positioned to measure the x dimension of the article, the second member positioned to measure the y dimension of the article and the third member positioned to measure the z dimension of the article as the article passes the first, second and third measuring members respectively;



measuring the x or y dimension of the article as the article passes its respective measuring member;

rotating the article 90 degrees;

continuing advancing the article along the passageway of the measuring device and measuring the x or y dimension of the article not previously measured as the article passes its respective measuring member;

measuring the z dimension of the article before or after the article is rotated 90 degrees;

transmitting the measured data from the measuring members to computer or other control means for determining the x, y and z dimensions of the article.

5,627,648

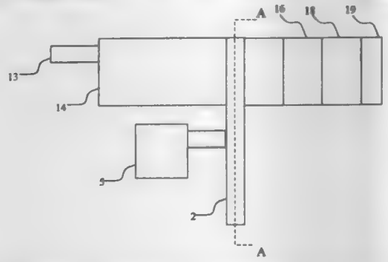
METHOD AND APPARATUS FOR USE IN THE MEASUREMENT OF THE WAVELENGTH OR FREQUENCY OF AN OPTICAL SIGNAL

Carey M. Garrett, Kanata, Canada, assignor to JDS Fitel Inc., Nepean, Canada

Filed Jul. 12, 1995, Ser. No. 502,259

Int. Cl.[6] G01J *3/51;* **G01B** *9/02*

U.S. Cl. 356—416 **13 Claims**



1. A method of measuring the wavelength of an optical beam comprising the steps of:

directing the optical beam along a path toward a detector capable of detecting an intensity of incident light:

detecting a first intensity of the optical beam that is present at the detector absent an optical element having a substantial wavelength dependence:

providing a first optical element having a first wavelength dependence, in the path of the optical beam and detecting a second intensity of the optical beam that is present at the detector; and, approximately determining the wavelength of the optical beam within first predetermined limits in dependence upon the ratio of the second detected intensity of the optical beam present at the detector and the first detected intensity of the optical beam present at the same detector in the absence of an optical element having a substantial wavelength dependence.

5,627,649

METHOD AND DEVICE FOR CORRECTING A POSITION FOR WRITING AN IMAGE

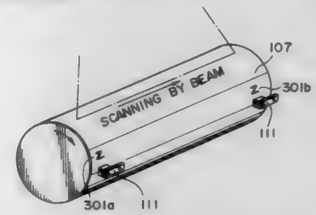
Noboru Sawayama, Tokyo, and Takashi Mama, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 959,094, Oct. 9, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 77,381

Claims priority, application Japan, Oct. 11, 1991, 3-292128; Jun. 17, 1992, 4-158246

Int. Cl.[6] H04N *1/21;* **G01D** *15/14;9/42*

U.S. Cl. 358—296 **18 Claims**



1. A device for correcting a position for writing an image on a photoconductive element included in an image forming apparatus, said device comprising:

pattern forming means for forming a predetermined pattern image in a non-image area of the photoconductive element;

pattern sensing means for optically reading said pattern image; and

writing position adjusting means for adjusting an image writing position in response to an output signal of said pattern sensing means representative of said pattern image,

wherein said pattern image comprises a rectangular pattern longer in a main scanning direction than in a subscanning direction, an image write signal being controlled such that a target image forming position of one edge of said rectangular pattern extending in a vertical direction coincides with a center of a sensing range of said pattern sensing means.

5,627,650

IMAGE FORMING APPARATUS HAVING ELECTRONIC SORTING BY IMAGE ROTATION

Takefumi Nosaki, Odawara; Hironobu Machida, Tokyo; Kouichi Watanabe, and Kazuo Sasama, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Sep. 21, 1994, Ser. No. 309,906

Claims priority, application Japan, Sep. 24, 1993, 5-258919

Int. Cl.[6] H04N *1/23;1/387;* **G03G** *21/00*

U.S. Cl. 358—296 **9 Claims**

1. An image forming apparatus comprising:

means for binding a plurality of to-be-outputted image forming mediums in a predetermined position of the image forming mediums;

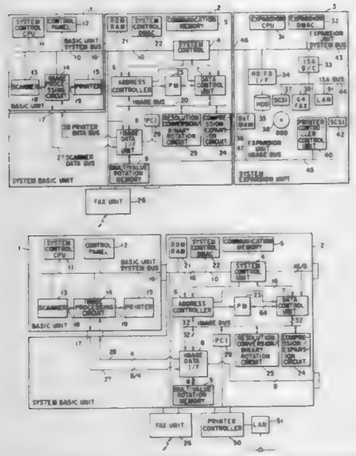
means for reading out a plurality of image data of a plurality of originals;

means for storing the plurality of image data;

means for automatically rotating and storing the plurality of image data to cause the binding means to bind the plurality of image forming mediums in the predetermined position;

means for, when vertical directions of the plurality of image data of the plurality of originals alternately differ, rotating the plurality of image data of the plurality of originals to make the vertical directions thereof uniform; and

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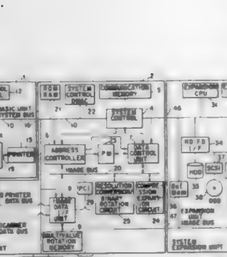
means for reading out and forming the plurality of image data, which have been rotated, on the plurality of image forming mediums.

5,627,651

MODIFYING PRINT INFORMATION BASED ON FEATURE DETECTION

Kaoru Seto, Chigasaki; Kiyoshi Kanaiwa, Kawasaki; Michio Itoh, Hachioji; Hiroshi Mano, Tokyo; Hiromichi Yamada, Yokohama; Atsushi Kashihara, Hachioji; Takashi Kawana, Yokohama, and Tetsuo Saito, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 838,871, Feb. 21, 1992, Pat. No. 5,465,157. This application Jul. 19, 1995, Ser. No. 504,148
Claims priority, application Japan, Feb. 22, 1991, 3-28615; May 17, 1991, 3-113230
Int. Cl.[6] H04N *1/40;* **G06K** *9/46*
U.S. Cl. 358—298 **5 Claims**



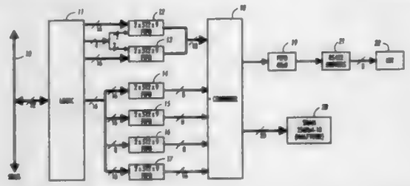
1. An information processing method comprising:
an input step of inputting bit information;
a storage step of temporarily storing a part of bit information from the bit information input in said input step;
a feature detecting step of detecting whether the part of bit information stored in said storage step coincides with one predetermined feature of plural predetermined features; and
an information modifying step of modifying print information of an object pixel which corresponds to a bit in the part of bit information stored in said storage step, in a case where said feature detecting step detects coincidence with the one predetermined feature of the plural predetermined features;
wherein said information modifying step inhibits modification of the object pixel on bit information for a line image, in a case where an arrangement of bit information on a right-or left-hand contour constitutes a rectangular portion with two or more bits in a main scanning direction and two or more bits in a sub scanning direction.

5,627,652

MULTIBIT RAM FOR PARALLEL LOOKUP OF HIGH RESOLUTION HALFTONE SCREENS

Margaret Motamed, Redondo Beach, and William P. Gunther, Simi Valley, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 18, 1995, Ser. No. 544,508
Int. Cl.[6] H04N *1/40;1/46*
U.S. Cl. 358—298 **2 Claims**



1. In a printer which prints a number, n, of bits per colored dot, one dot for each dot clock, the method of generating a transition from one color to another internal to a dot in accordance with a mask, comprising the steps of:
at the time of a first dot clock, generating 2n−1 bits of said first color, and storing the rightmost n−1 bits numbered, in one direction, 1 to n−1,
at the time of a second dot clock, generating 2n−1 mask bits, and numbering the bits, in the same direction, 1 to n−1,
outputting n−1 bits, numbered 1 to n−1 in the same direction, one bit for each numbered bit position, wherein a bit of said first color is output if the same-numbered mask bit is of one state, and wherein a bit of said second color is output if the same-numbered mask bit is of the other state.

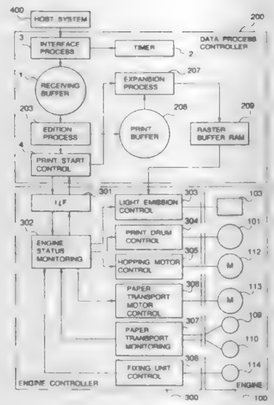
5,627,653

PRINT CONTROL DEVICE FOR DETERMINING A ROTATING SPEED OF A PRINT DRUM OF AN ELECTROPHOTOGRAPHIC PRINTER ACCORDING TO A DATA TRANSMISSION SPEED FROM A HOST SYSTEM

Hirohiko Nakazato, Tokyo, Japan, assignor to Oki Data Corporation, Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 557,752
Claims priority, application Japan, Nov. 22, 1994, 6-312584
Int. Cl.[6] H04N *1/29;1/23;* **G03G** *21/00;* **G06F** *15/00*
U.S. Cl. 358—300 **6 Claims**

1. A print control device for an electrophotographic printer, comprising:
a timer;
an interface process section operatively coupled to a host system for receiving print data therefrom, the interface process section also being operatively coupled to the timer, the interface process section for starting the timer at a time T1 when the print data is initially received from the host system and for stopping the timer at a time T2 when a predetermined amount of the print data is received from the host system;
a receiving buffer operatively coupled to the interface process section for receiving the print data therefrom and for temporarily storing the print data;
a print data converter operatively coupled to the receiving buffer for obtaining the print data therefrom, for converting the print data into image data, and for sequentially supplying the image data and a command signal to an engine controller, the engine controller for controlling a print engine according to the image data and the command signal, the print engine including a print head and a print drum having a rotating speed; and



a print start control section operatively coupled to the interface process section for computing a data transmission speed from the host system according to the time T1, the time T2, and the predetermined amount of the print data, for determining the rotating speed of the print drum according to the data transmission speed, and for supplying the determined rotating speed to the engine controller.

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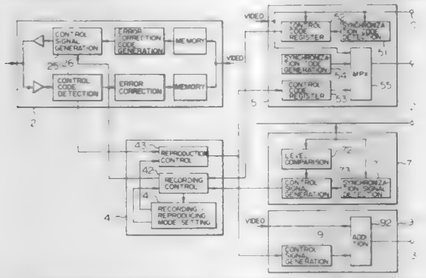
Patent Not Issued For This Number

5,627,655

RECORDING APPARATUS AND REPRODUCING APPARATUS FOR VIDEO SIGNALS

Hiroo Okamoto, Yokohama; Masuo Oku, Kamakura; Takaharu Noguchi, and Takao Arai, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 104,478, Jul. 28, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 331,269
Claims priority, application Japan, Jul. 28, 1992, 4-201414
Int. Cl.[6] H04N *5/76;* **G11B** *23/28*
U.S. Cl. 386—94 **20 Claims**



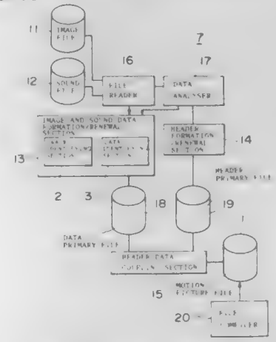
1. A video signal reproducing apparatus with a control code generator arrangement, said apparatus comprising:
a reproducing means for reproducing a video signal recorded on a recording medium;
a control code detection means for detecting a digital control code contained in a reproduced signal reproduced by said reproducing means, said digital control code commanding at least one of a reproduction condition and a recording condition with respect to said video signal;
a control code reconstructing means for forming a reconstructed digital control code to be added to said video signal to command a subsequent at least one of a reproduction condition and a recording condition of said video signal, said subsequent at least one of a reproduction condition and a recording condition being dictated by a content of said digital control code;
a first adding means for adding said reconstructed digital control code from said control code reconstructing means to a portion of a vertical blanking period of said video signal reproduced by said reproducing means to produce an analog video signal with said reconstructed digital control code to output said produced analog video signal; and
a second adding means for adding said reconstructed digital control code to said video signal reproduced by said reproducing means to produce a digital video signal with said reconstructed digital control code to output said produced digital video signal.

5,627,656

MOTION PICTURE REPRODUCING APPARATUS IN SYNCHRONISM WITH SOUND SIGNAL

Satoshi Sonohara; Hitoshi Matsumoto, and Shigeki Furuta, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 390,425, Feb. 17, 1995, abandoned, which is a continuation of Ser. No. 103,788, Aug. 10, 1993, abandoned. This application Aug. 12, 1996, Ser. No. 698,172
Claims priority, application Japan, Nov. 2, 1992, 4-294660
Int. Cl.[6] H04N *5/91;5/96;* **G11B** *5/02*
U.S. Cl. 386—96 **6 Claims**



1. A motion picture reproducing apparatus using a computer, comprising:
a file in a memory unit of the computer, including
an image track of image data, included in a plurality of frames for a unit time, recorded for a period of time extending at least one unit time,
a sound track of sound data recorded for the period of time, corresponding to said image data, and
a header including control information for controlling transfer of said image data and said sound data, said header stored as a separate track from said image and said sound tracks, said control information indicating a relationship between said image data and said sound data, said image and sound tracks not corresponding one-to-one to physical tracks of a recording disk;
track identifying means for imparting, to said image data and said sound data for each unit time, track identifying numbers for identifying either said image track or said sound track;
data identifying means for imparting, to said image data and said sound data for said each unit times, a respective data identifying number representative of an order of data within said image track and said sound track;

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data synchronizing means for reading, in order, said image data and said sound data from said file in response to the control information of said header, and at the same time for synchronously outputting said image data and said sound data to which the same data identifying numbers have been imparted with reference to the track and data identifying numbers of said image and sound data; and

reproduction means for reproducing said image data and said sound data which have been synchronized by said data synchronizing means.

5,627,657

METHOD FOR SEQUENTIALLY DISPLAYING INFORMATION RECORDED ON INTERACTIVE INFORMATION RECORDING MEDIUM

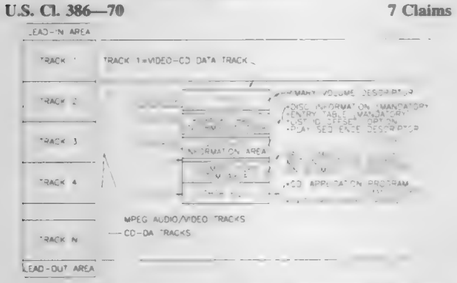
Chan-Sou Park, Cheonan-Shi, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 28, 1996, Ser. No. 613,763

Claims priority, application Rep. of Korea, Feb. 28, 1995, 95-3990; Feb. 28, 1995, 95-3991

Int. Cl.[6] H04N *5/781*

U.S. Cl. 386—70 **7 Claims**



1. A method for sequentially displaying information of an interactive information recording medium, said method comprising the steps of:

i) reading disc information data which are recorded on a video compact disc;

ii) reading user's controlling files to store the user's controlling files in a storing means when the video compact disc is the interactive information recording medium, the user's controlling files including a play sequence descriptor file;

iii) initializing an offset of the play sequence descriptor file when a sequence information play mode is selected by a user;

iv) setting a play time according to a selection of playback modes, and setting a waiting time to be "0";

v) multiplying the initialized offset in the step iii) by a first number, to obtain a mutilplied value;

vi) reading an offset header from the play sequence descriptor files;

vii) reading out a play item number which is defined in a selection list, when the current list of the video compact disc is the selection list not a play list;

viii) initializing a selection item number of a counter, and setting a counting time of the counter to a first time;

ix) reproducing a selection item which is defined in the selection list;

x) judging whether or not the selection item number is larger than a total selection item number recorded in the selection list;

xi) increasing the selection item number by a second number when the selection item number is not larger than the total selection item number;

xii) reading an offset of the increased selection item number in the selection list as an offset of a first selection item selected;

xiii) judging whether or not the offset of a first selection item is a reproduced offset, if a most significant bit of the offset of a first selection item is a third number in a binary number so that the offset of the first selection item is judged as the reproduced offset, returning to the step x) , and if the most significant bit of the offset of a first selection item is a fourth number in a binary number so that the offset of the first selection item is judged as the non-reproduced offset, logically OR-combining the offset of the first selection item and a fifth number to obtain a reproduced offset;

xiv) logically AND-combining the reproduced offset and a sixth number to return the original offset of the first selection item, and returning to the step v);

xv) reading out a play item number which is defined in the play list, when the current list of the video compact disc is the play list;

xvi) initializing a play item number of the counter, and setting a counting time of the counter to be the first time;

xvii) reproducing a play item which is defined in the play list;

xviii) increasing the counted play item number by a seventh number;

xix) judging whether or not the increased play item number is larger than a total play item number recorded in the play list; and

xx) when the increased play item number is not larger than the total play item number recorded in the play list, returning to the step xv), and when the increased play item number is larger than the total play item number recorded in the play list, judging whether or not a next offset is in the play list.

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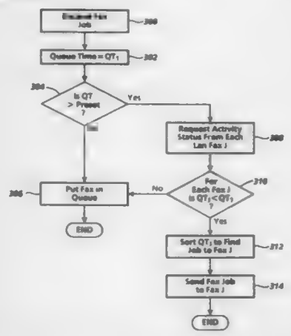
AUTOMATIC NETWORKED FACSIMILE QUEUING SYSTEM

Thomas W. Connors, Rochester, and Andrew J. Aikens, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1994, Ser. No. 355,769

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—407 **18 Claims**



1. A method of optimizing facsimile transmission wait time in a device including a facsimile functionality connected in a network system of devices with said facsimile functionality including:

at a first device, receiving and storing job data and job instructions in a job memory for a facsimile job;

determining a transmission time for the facsimile job as a function of previous stored and uncompleted jobs in said job memory;

querying at least one other facsimile machine connected to the network to determine the likelihood of an earlier transmission time at said other facsimile machine;

transferring said facsimile job to said other facsimile machine upon determination of said earlier transmission time.

5,627,659

IMAGE PROCESSING SYSTEM CAPABLE OF SELECTING FROM AMONG A PLURALITY OF ERROR DIFFUSION MATRICES

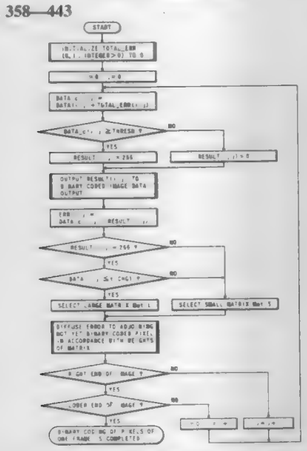
Toshiaki Kakutani, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,430

Claims priority, application Japan, Feb. 14, 1994, 6-017569

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—443 **9 Claims**



1. An image processing system comprising a binary-coding processing apparatus for transforming multigradation image data into bigradation image data formed of only two gradations of a first gradation value and a second gradation value, wherein said binary-coding processing apparatus comprises:

binary-coding means for binary-coding a target pixel into the first gradation value or the second gradation value;

error diffusion means for diffusing a binary-coding error caused during a process of binary-coding said target pixel, to adjoining pixels of said target pixel that are not yet binary-coded;

a plurality of error diffusion matrices available for use by said error diffusion means when said binary-coding error is diffused to said adjoining pixels not yet binary-coded, said error diffusion matrices differing in respective sizes in which said diffusion is conducted;

error diffusion matrix select means for selecting one of said plurality of error diffusion matrices to be used by said error diffusion means, in accordance with an original image gradation data value of said target pixel and a binary-coding result of said target pixel;

wherein, when the binary-coding result of said target pixel is the first gradation value, said error diffusion matrix select means selects an error diffusion matrix of large size in which the binary-coding error is diffused to a relatively broad image area if an original image gradation data value for said target pixel differs greatly from the first gradation value and approximates the second gradation value.

5,627,660

IMAGE READING APPARATUS

Hideaki Kusano, Isehara, and Hiroshi Miura, Yokohama, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

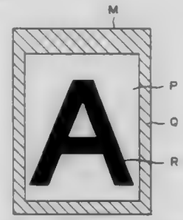
Division of Ser. No. 313,565, Sep. 27, 1994, Pat. No. 5,576,848.

This application Jun. 21, 1996, Ser. No. 670,219

Claims priority, application Japan, Oct. 12, 1993, 5-254310

Int. Cl.[6] H04N *1/387;1/393*

U.S. Cl. 358—449 **15 Claims**



1. An image reading apparatus for synthesizing an original image with a separate image and emitting the synthesized image in such a manner as to be printed on a sheet, comprising:

a detector which detects a width of a margin outside the original image appearing as the difference between the sheet and the original image when the original image is printed on the sheet;

a comparator which compares a width of the separate image subjected to synthesis with the width of the margin outside the original image detected by said detector; and

a controller which shifts and emitts as an output the position for printing the original image based on the result of the comparison by said comparator.

5,627,661

FACSIMILE APPARATUS FOR OPTICALLY RECOGNIZING CHARACTERS AND TRANSMITTING THE RECOGNIZED CHARACTERS AND COMMUNICATION SYSTEM FOR TRANSMITTING THE RECOGNIZED CHARACTERS BETWEEN A TERMINAL AND A CENTER

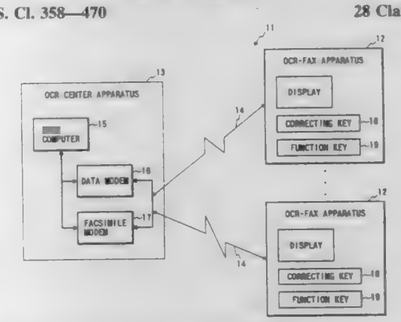
Ryuichi Negishi, Kawasaki; Kiyonori Sekiguchi, Tokyo; Koichi Nagoshi; Hiroshi Saza, both of Yokohama; Kiyohiko Honda, Tokyo; Tsuyoshi Nishijima, Tokyo, and Kazunori Sato, Tokyo, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Mar. 31, 1995, Ser. No. 414,662

Claims priority, application Japan, Nov. 8, 1994, 6-273575

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—470 **28 Claims**



11. A communication system comprising:

an OCR center apparatus;

a plurality of facsimile apparatuses for respectively communicating with the OCR center apparatus; and

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a plurality of communication lines for respectively connecting the OCR center apparatus and one of the facsimile apparatuses,

each of the facsimile apparatuses comprising

program storing means for storing an OCR document sheet recognizing program and a piece of OCR sheet specifying information, the OCR document sheet recognizing program being utilized to recognize a piece of image data as a character, and the OCR sheet specifying information being utilized to specify a type of the OCR document sheet,

reading means for reading contents of an order written in an OCR document sheet and obtaining pieces of image data from the contents of the order,

character recognizing means for recognizing the image data obtained in the reading means according to the OCR document sheet recognizing program and the OCR sheet specifying information stored in the program storing means to convert the image data into pieces of character recognized data,

character pattern generating means for generating a character pattern which supports the realization of the character recognized data obtained in the character recognizing means, and

data transmitting means for transmitting the character recognized data obtained in the character recognizing means to the OCR center apparatus to inform the OCR center apparatus of the contents of the order, and the OCR center apparatus comprising information generating and transmitting means for generating a piece of modified OCR sheet specifying information utilized to specify a type of the OCR document sheet and transmitting the modified OCR sheet specifying information to each of the facsimile apparatuses to replace the OCR sheet specifying information stored in the program storing means with the modified OCR sheet specifying information.

5,627,662

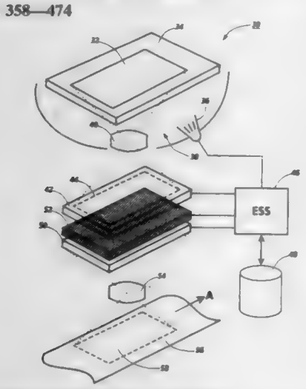
DIGITAL IMAGING SYSTEM USING TWO-DIMENSIONAL INPUT SENSOR ARRAY AND OUTPUT LIGHT VALVE

Maurice F. Holmes, Rochester, N.Y.; John S. Brown; Malcolm J. Thompson, both of Palo Alto, Calif., and William D. Turner, San Marino, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1994, Ser. No. 234,098

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—474 **9 Claims**



1. A digital imaging system comprising:

a document illumination source for simultaneously exposing an entire document page;

a two-dimensional sensor array for capturing an image of said document page when said document page is illuminated by said document illumination source and generating a full frame digital image representing the entire document page;

a two-dimensional output light valve array responsive to said full frame digital image and forming a pattern representing the entire document page;

a light valve illumination source for simultaneously illuminating said two-dimensional output light valve array; and

a photoreceptor having a surface sensitive to light passing through said two-dimensional output light valve array.

5,627,663

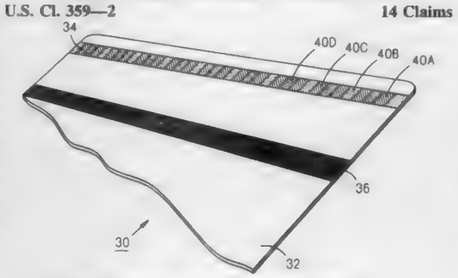
SECURE OPTICAL IDENTIFICATION METHOD AND MEANS

David J. Horan, Westfield, Mass., and James S. Bianco, Enfield, Conn., assignors to Control Module Inc., Enfield, Conn.

Continuation of Ser. No. 115,412, Aug. 31, 1993, abandoned. This application Jul. 3, 1995, Ser. No. 497,778

Int. Cl.[6] G03H *1/00*; G06K *7/10*; B42D *15/00*

U.S. Cl. 359—2 **14 Claims**



1. An article for secure identification, comprising:

(a) a substrate;

(b) a diffraction grating strip disposed on said article, said diffraction grating strip comprising a pattern of a series of diffraction grating elements, each said diffraction grating element to diffract light, from a light source, in one of at least three selected different planes; and

(c) a different coded pattern superposed on said diffraction grating strip, each repetition of one of said coded pattern and said pattern of diffraction grating elements being incrementally displaced with respect to the other of said coded pattern and said diffraction grating strip, compared with the immediately preceding repetition thereof.

5,627,664

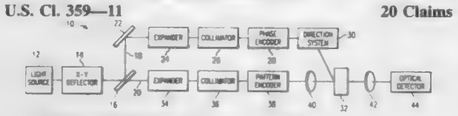
HOLOGRAPHIC STORAGE WITH COMBINED ORTHOGONAL PHASE CODES AND RANDOM PHASE CODES

Jahja I. Trisnadi, Austin, Tex., assignor to Tamarack Storage Devices, Inc., Austin, Tex.

Filed Jun. 29, 1994, Ser. No. 267,969

Int. Cl.[6] G03H *1/12*

U.S. Cl. 359—11 **20 Claims**



1. A holographic storage system, comprising:

a storage medium operable to store holographic images;

a coherent light source operable to generate a reference beam and an object beam;

a phase encoder operable to impose phase patterns on said reference beam;

a pattern encoder operable to impose data patterns on said object beam;

optics operable to direct said reference beam and said object beam to a site on said storage medium; and

a control system operable to control said phase encoder to combine orthogonal phase patterns and random phase patterns such that at least some of said phase patterns imposed upon said reference beam comprise orthogonally encoded, random patterns, thereby increasing the number of said holographic images that can be stored on said storage medium.

5,627,665

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PRODUCING THE SAME

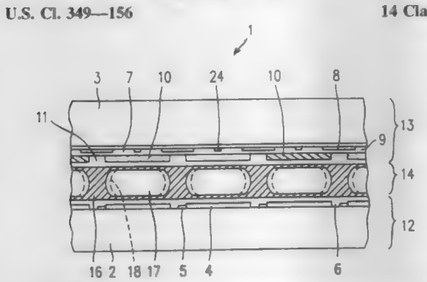
Nobuaki Yamada, Higashiosaka; Nobukazu Nagae, Tenri; Noriaki Onishi; Shuichi Kozaki, both of Nara; Masayuki Okamoto, Tenri; Motohiro Yamahara, Osaka; Masahiko Kondo, Nara-ken, and Wataru Horie, Hashimoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 274,438, Jul. 13, 1994, abandoned. This application May 30, 1995, Ser. No. 452,529

Claims priority, application Japan, Jul. 15, 1993, 5-199285; Aug. 31, 1993, 5-216700; Dec. 28, 1993, 5-338706

Int. Cl.[6] G02F *1/13*

U.S. Cl. 349—156 **14 Claims**



1. A method for producing a liquid crystal display device comprising the steps of:

(1) providing a mixture containing a liquid crystalline compound and a photopolymerizable compound between two substrates, at least one of which is transparent; and

(2) irradiating light having a predetermined irradiation intensity distribution to the mixture between the two substrates, allowing a phase separation of the mixture involved in polymerization thereof to be effected, and uniformly distributing supporting walls made of a resin and a liquid crystal.

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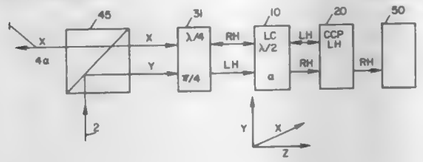
LIQUID CRYSTAL PHASE MODULATOR USING CHOLESTERIC CIRCULAR POLARIZERS

Gary D. Sharp, Boulder; Jay E. Stockley, Broomfield, and Kristina M. Johnson, Longmont, all of Colo., assignors to Board of Regents of the University of Colorado, Boulder, Colo.

Filed Jul. 27, 1994, Ser. No. 282,660

Int. Cl.[6] G02F *1/1347*; *1/1335*

U.S. Cl. 349—74 **36 Claims**



1. A device comprising at least one liquid crystal optical modulator for receiving incident light, wherein said incident light can comprise first and second circularly polarized components of opposite handedness, wherein a first modulator consists essentially of:

a first smectic liquid crystal half-wave retarder having a rotatable optic axis, for modulating the phase of the light as a function of the orientation of said optic axis of said liquid crystal;

electric field means for rotating said optic axis of said first smectic liquid crystal half-wave retarder;

a first cholesteric liquid crystal circular polarizer of a first handedness, optically coupled with said first smectic liquid crystal half-wave retarder; and

a second cholesteric liquid crystal circular polarizer of a second handedness, positioned on the opposite side of said first smectic liquid crystal half-wave retarder from said first cholesteric circular polarizer;

wherein said first cholesteric circular polarizer, said second cholesteric circular polarizer and said first liquid crystal half-wave retarder form a resonance cavity for said first circularly polarized component of said incident light and do not form a resonance cavity for said second circularly polarized component of said incident light.

5,627,667

LIQUID CRYSTAL DISPLAY APPARATUS, A METHOD FOR PRODUCING THE SAME, AND A SUBSTRATE

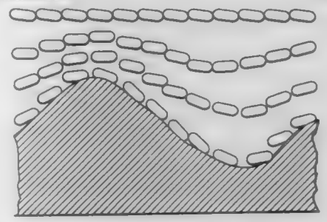
Shigeaki Mizushima, Ikoma; Kazuyuki Aburazaki, Tenri; Noriko Watanabe, Nara; Mitsuaki Hirata, Tenri; Hiroko Iwagoe, Yamatokoriyama, and Tomoko Okamura, Funabashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Division of Ser. No. 187,547, Jan. 28, 1994. This application May 25, 1995, Ser. No. 449,740

Claims priority, application Japan, Jan. 29, 1993, 5-14177; Jun. 4, 1993, 5-134983; Jul. 22, 1993, 5-181738; Jul. 30, 1993, 190499; Aug. 27, 1993, 523229

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 349—124 **20 Claims**



1. A method for producing a liquid crystal display apparatus having a pair of substrates with a liquid crystal layer interposed therebetween and having picture elements disposed in a matrix, the method comprising the steps of:

forming an aligning film on at least one of the pair of substrates, wherein liquid crystal molecules in the liquid crystal layer adjacent the aligning film are at a pretilt angle with respect to the aligning film;

performing a first surface treatment on the aligning film for aligning the liquid crystal molecules adjacent the aligning film; and

performing a second surface treatment for making at least a part of a surface of the aligning film rough to adjust the pretilt angle of the liquid crystal molecules adjacent the aligning film.

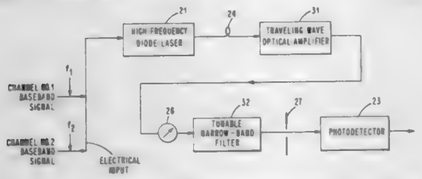
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5,627,668

SUBCARRIER-MULTIPLEXED OPTICAL TRANSMISSION SYSTEMS USING OPTICAL CHANNEL SELECTION

Donald M. Fye, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 833,574, Feb. 10, 1992, Pat. No. 5,537,634. This application Nov. 27, 1995, Ser. No. 562,659
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—124 2 Claims



1. A subcarrier-multiplexed optical transmission system comprising:

an optical transmitter comprising

a high-speed diode laser coupled to be modulated by an plurality of independent baseband information channels carried on separate, appropriately spaced subcarrier frequencies to form a subcarrier-multiplexed signal, and having an output therefrom;

an optical fiber coupled to said output of said laser;

an optical receiver providing a direct optical domain-to-baseband frequency conversion of a selected subcarrier-multiplexed optical channel comprising:

a tunable narrow-bandpass semiconductor laser optical amplifier, having an input and an output, and having a gain bandwidth smaller than wavelength distances between adjacent ones of said subcarrier frequencies;

polarization controlling means coupled to fiber in front of said optical amplifier for maximizing gain in said optical amplifier, and

a photodetector coupled to said output of said amplifier and having an output; whereby

said optical amplifier being of the Fabry-Perot type, and further comprising a blocking filter between said output of said amplifier and said photodetector for rejecting all of the optical channels other than said selected channel which may have been amplified by longitudinal modes of said optical amplifier, thereby allowing only said selected channel to be coupled to said photodetector being tuned to said selected optical channel so that only the baseband signal present in said selected optical channel appears at the photodetector output.

5,627,669

OPTICAL TRANSMITTER-RECEIVER

Kanjo Orino, Kawasaki; Tetsuo Sakanaka, Sagamihara; Yasusaburo Degura, Urawa, and Takehide Hamuro, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,018
Claims priority, application Japan, Nov. 13, 1991, 3-297187; Nov. 13, 1991, 3-297188; Nov. 13, 1991, 3-297193
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—156 6 Claims

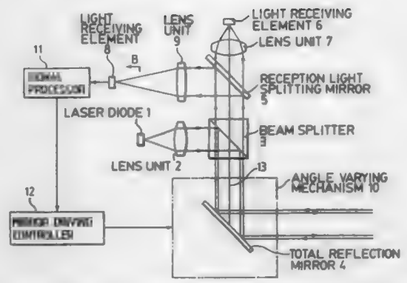
1. A two-way optical communication apparatus comprising:

at least one pair of optical transmitter-receivers, each of said optical transmitter-receivers including:

generating means for generating transmission light;

receiving means for receiving reception light;

optical means for reflecting one of the transmission light and the reception light and for transmitting the other therethrough, said optical means being a polarizing beam splitter;



reflecting means for reflecting the transmission light emerging from said optical means to the transmission side and reflecting the reception light to said optical means;

driving means for rotating said reflecting means about two axes;

a lens unit having positive refractive power between said polarization beam splitter and said generating means; and

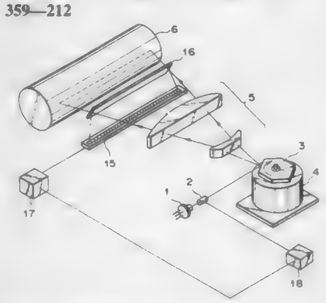
driving means for driving at least a portion of said lens unit along its optical axis.

5,627,670

SCANNING OPTICAL APPARATUS HAVING BEAM SCAN CONTROLLER

Kazuo Minoura, Yokohama; Isamu Shimoda; Masayuki Suzuki, both of Zama; Yoshinobu Shiraiwa, Machida, and Osamu Hoshino, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 139,058, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 547,206, Jul. 3, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,047
Claims priority, application Japan, Jul. 5, 1989, 1-173395; Aug. 2, 1989, 1-201985; Aug. 4, 1989, 1-202384; Aug. 4, 1989, 1-202385
Int. Cl.[6] G02B *26/10;* G03G *15/04*
U.S. Cl. 359—212 6 Claims



1. A scanning optical apparatus comprising:

a light source unit;

scanning means for scanning a scanned surface with a beam from said light source unit;

dividing means, disposed between said scanning means and said scanned surface, for dividing a part of the beam to be scanned on said scanned surface into a divided beam;

detecting means having a plurality of detecting elements provided in a scanning direction of the beam and extending by a length corresponding to an effective scanning length of the beam to be scanned on said scanned surface, said detecting means for detecting the divided beam; and

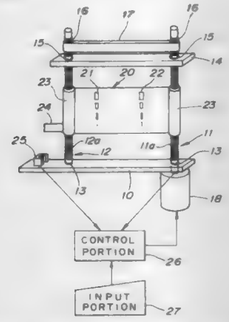
control means for controlling the beam scanned on the scanned surface in a subscanning direction perpendicular to the scanning direction on the basis of signals output from said plurality of detecting elements.

5,627,671

SPECTROMETER SLIT SWITCHING MECHANISM

Hiroaki Yamura; Shigenori Hashimoto; Takeshi Kanomata; Takahiro Kadota, and Shinichi Kikuchi, all of Hachioji, Japan, assignors to JASCO Corporation, Tokyo, Japan

Filed Nov. 7, 1994, Ser. No. 336,750
Claims priority, application Japan, Nov. 8, 1993, 5-302346
Int. Cl.[6] G01J *3/04*
U.S. Cl. 359—232 13 Claims



1. A slit switching mechanism for use in a spectrometer having a light beam that follows a prescribed light path, comprising:

a slit plate having a plurality of entrance slits and exit slits provided therein at predetermined positions;

at least one support rod for supporting the slit plate, the slit plate being movable along the at least one support rod;

a screw portion formed on the at least one support rod for transmitting a translational direction movement to the slit plate; and

a driving motor engaging the at least one support rod along said screw portion so as to provide rotational movement of said at least one support rod;

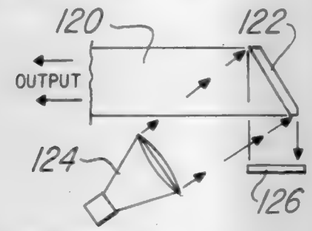
wherein the entrance slits are arranged on a line that runs parallel to the direction of movement of the slit plate and the exit slits are arranged on a line that is both parallel to and spaced a predetermined distance from the line on which the entrance slits are arranged.

5,627,672

CONTROLLABLE OPTICAL PERIODIC SURFACE FILTERS AS A Q-SWITCH IN A RESONANT CAVITY

Charles M. Rhoads, Plano; Gary Frazier, Garland; Richard G. Hoffman, II; Oren B. Kesler, both of Plano, all of Tex., and Daniel J. Ryan, Sycamore, Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 23,989, Feb. 26, 1993, abandoned. This application May 30, 1995, Ser. No. 453,328
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—248 8 Claims



1. A Q-switch comprising:

a. a substrate; and

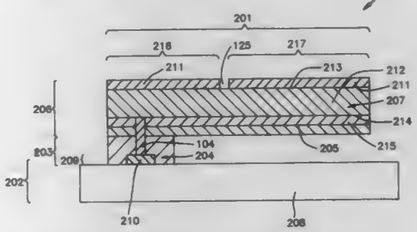
b. a surface filter on said substrate, wherein said surface filter is a switchable mirror for a cavity such that said surface filter is switched rapidly by exposure to a pulse of light at a wavelength to generate photoconductive electrons.

5,627,673

ARRAY OF THIN FILM ACTUATED MIRRORS FOR USE IN AN OPTICAL PROJECTION SYSTEM

Yong-Ki Min, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 28, 1995, Ser. No. 431,522
Claims priority, application Rep. of Korea, Apr. 30, 1994, 94-9505
Int. Cl.[6] G02B *26/00;5/08*
U.S. Cl. 359—290 13 Claims



1. An array of M×N thin film actuated mirrors for use in an optical projection system, each of the M×N thin film actuated mirrors capable of causing a deviation in the optical path of an incident light beam, said array comprising:

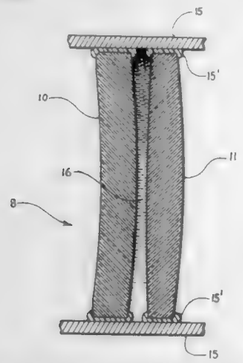
an active matrix including a substrate, a conduction line pattern for carrying a bias voltage to each of the thin film actuated mirrors, an array of M×N transistors, each of the transistors being capable of providing an electrical signal to each of the thin film actuated mirrors, and an array of M×N connecting terminals, wherein each of the connecting terminals is connected electrically to each of the transistors;

an array of M×N supporting members, each of the supporting members being provided with a conduit; and

an array of M×N thin film actuating structures, each of the thin film actuating structures including a first layer made of an electrically conducting and light reflecting material, an electrodisplacive layer having a top and a bottom surfaces, a second layer made of an electrically conducting material, and an elastic layer made of an insulating material, the first and the second layers being placed on the top and the bottom surfaces of the electrodisplacive layer, respectively, the elastic layer being placed on bottom of the second layer, each of the actuating structures being divided into a proximal and a distal ends, the proximal end of each of the actuating structures being secured on top of each of the supporting members, the first layer in each of the actuating structures being divided into a proximal and a distal ends by a gap, the proximal and the distal ends being separated physically and electrically from each other, the proximal end thereof being in an electrical contact with the conduction line pattern to thereby allow it to function as a bias electrode and the distal end thereof to function as a mirror for reflecting the light beam, and the second layer therein is connected electrically to the connecting terminal connected to the transistor through the conduit in each of the supporting members to thereby allow it to function as a signal electrode, wherein the electrical signal applied across the electrodispacive layer in each of the actuating structures between the proximal end of the first layer and the second layer causes a deformation thereof, and hence said each of the actuating structures including the distal end of the first layer acting as the mirror, thereby changing the optical path of the incident light beam.

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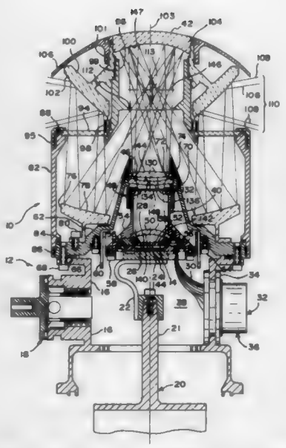
5,627,674
ULTRAVIOLET LENS SYSTEMS INCLUDING LIQUID LENS ELEMENTS
Paul N. Robb, Sunnyvale, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Jun. 17, 1994, Ser. No. 261,418
Int. Cl.[6] G02B *1/02;1/06;13/14;3/12*
U.S. Cl. 359—355 **10 Claims**



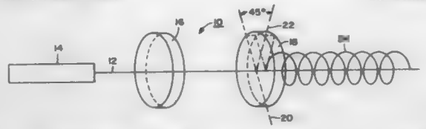
1. A lens system comprising a first rigid lens element, a second rigid lens element, and a liquid lens element, said liquid lens element being contained between said first and second rigid lens elements, said first and second rigid lens elements and said liquid lens element co-acting with each other to cause said lens system to have an RMS wavefront error of less than 0.2 over a continuous ultraviolet wavelength band up to 0.4 micron, wherein said first and second rigid lens elements are each made of a solid material having ultraviolet transparency, and said liquid lens element is made of a liquid having ultraviolet transparency.

5,627,675
OPTICS ASSEMBLY FOR OBSERVING A PANORAMIC SCENE
John E. Davis, Claremont; Marion N. Todd, Monrovia, both of Calif.; Mitchell Ruda, E. Hampton, Ariz.; Tilman W. Stuhlinger, Tucson, Ariz., and Kenneth R. Castle, Tuscon, Ariz., assignors to Boeing North American Inc., Seal Beach, Calif.
Filed May 13, 1995, Ser. No. 455,885
Int. Cl.[6] G02B *17/00;13/06*
U.S. Cl. 359—366 **15 Claims**

1. An optics assembly for observing a panoramic scene, comprising:
a plurality of optical elements, comprising:
a first element for re-directing light in an annular geometry from said panoramic scene, optical power of said first element forming an imaginary pupil;
a second element for receiving said annularly re-directed light and for re-imaging said imaginary pupil to form a real pupil; and
a third element comprising:
a) a sub-element having a curved reflecting surface thereon for receiving light from said second element, and
b) an optical relay system for receiving light being reflected from said sub-element, said optical relay system including a group of reimaging optics, said third element for:
i) relaying said real pupil into said reimaging optics,
ii) establishing a focal length of the optics assembly,
iii) correcting pupil aberrations produced at said real pupil,
iv) correcting field aberrations, and
v) producing an annular image on a flat focal plane, wherein said optics assembly produces a small F-number at field angles near perpendicular to an output optical axis of the optics assembly over a panoramic scene.



5,627,676
BIREFRINGENT GLASS WAVEPLATE CONTAINING COPPER HALIDE CRYSTALS
Nicholas F. Borrelli, Elmira, and Claude L. Davis, Jr., Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.
Filed Dec. 2, 1994, Ser. No. 348,499
Int. Cl.[6] G02B *5/30*
U.S. Cl. 359—494 **12 Claims**



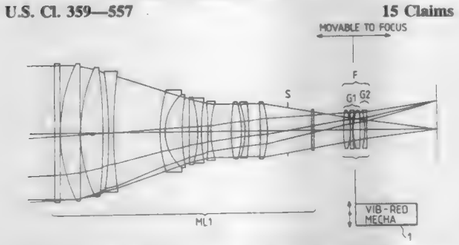
1. A birefringent waveplate that is composed of an integral, transparent, glass body, the glass body comprising non-absorbing, crystalline particles dispersed in a glassy matrix, the dispersed crystalline particles being selected from the group consisting of copper chloride, copper bromide and mixtures thereof, the dispersed crystalline particles having a high aspect ratio and being oriented and aligned along a common axis, whereby the waveplate is rendered birefringent so that polarized components of light transmitted through the waveplate have a phase shift introduced and wherein the glass body has a composition comprising, in weight percent calculated from the glass batch,

SiO_2	40–80
B_2O_3	4–35
Al_2O_3	0–26
Li_2O	0–8
Na_2O	0–15
K_2O	0–20
$Li_2O + Na_2O + K_2O$	2–20
$CaO + BaO + SrO$	0–10
Cu_2O	0.2–2
CdO	0–2
ZrO_2	0–12
SnO_2	0–2.5
$As_2O_3 + Sb_2O_3$	0–2
Cl	0–2
Br	0–2
Cl + Br	0.25–2.0

-continued

F	0–2
R-value	0.15–0.45

5,627,677
REAR CONVERSION LENS WITH VIBRATION-REDUCTION FUNCTION
Kenzaburo Suzuki, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 268,516, Jun. 30, 1994, abandoned.
This application Feb. 23, 1996, Ser. No. 605,700
Claims priority, application Japan, Jul. 12, 1993, 5-195163
Int. Cl.[6] G02B *27/64;15/14*
U.S. Cl. 359—557 **15 Claims**



1. A rear conversion lens having a negative refracting power and a function for magnifying, when mounted on an image side of an objective lens, an image formed by said objective lens, comprising, in the following order from an objective lens side, a first lens group having a positive refractive power and a second lens group having a negative refractive power, wherein said lens groups are shifted as a whole in a direction/perpendicular to an optical axis of said objective lens to stabilize said image magnified by said lens groups and said rear conversion lens satisfies:

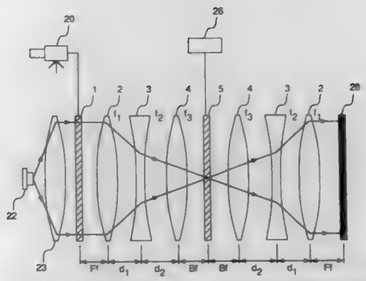
$$|\Delta S/fR|<0.1$$

$$1.1<B<1.8,$$

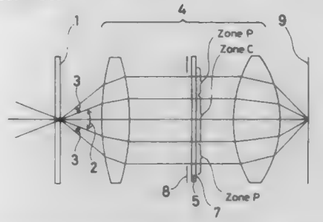
wherein
fR: a focal length of said rear conversion lens
ΔS: a maximum shift amount of said lens groups shifted as a whole in the direction perpendicular to said optical axis of said objective lens for stabilization of said image
B: a magnification of said rear conversion lens.

5,627,678
FOURIER TRANSFORM OPTICAL APPARATUS AND OPTICAL INFORMATION
Kanji Nishii, Osaka; Kenji Takamoto, Neyagawa; Masami Ito, Moriguchi, and Atsushi Fukui, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 15, 1995, Ser. No. 404,900
Claims priority, application Japan, Mar. 15, 1994, 6-044260
Int. Cl.[6] G02B *27/46*
U.S. Cl. 359—561 **8 Claims**

1. A Fourier transform optical apparatus for optically Fourier transforming an input image, comprising:
a display means for displaying an input image;
a light source for irradiating the input image displayed on said display means;
a first convex lens and a first concave lens combined with one another to form a focal optical system and arranged near said display means; and
second convex lens arranged near a composite focal plane of said focal optical system,
wherein a light ray passing an intersection of said display means and an optical axis of said Fourier transform optical apparatus becomes a light ray parallel to said optical axis after passing through said second convex lens and a light ray incident to said first convex lens in parallel to said optical axis is focused at a composite focal point of said focal optical system and said second convex lens.



5,627,679
OPTICAL SYSTEMS MAKING USE OF PHASE TYPE FRESNEL ZONE PLATES
Yoichi Iba, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jun. 10, 1992, Ser. No. 896,450
Claims priority, application Japan, Jun. 10, 1991, 3-137897
Int. Cl.[6] G02B *27/44;5/18*
U.S. Cl. 359—565 **13 Claims**



1. A projection optical system comprising:
an illumination device emitting a single band of wavelengths of light;
an object illuminated by said single band of wavelengths of light and generating diffracted light therefrom;
a projection lens system for projecting an image of said object at a given position, said projection lens system including:
a phase type Fresnel zone plate;
said phase type Fresnel zone plate including a Fresnel patterned surface having a plurality of areas, said plurality of areas including:
a first area where 0-th order light of said diffracted light generated by said object passes, and
a second area where said 0-th order light of said diffracted light generated by said object does not pass;
said Fresnel patterned surface being blazed such that a diffraction efficiency of said phase type Fresnel zone plate reaches a maximum with respect to a first given order of light diffracted in said first area; and
said Fresnel patterned surface being blazed such that said diffraction efficiency of said phase type Fresnel zone plate reaches a maximum with respect to a second given order of

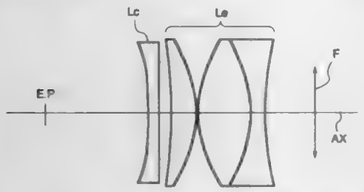
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light diffracted in said second area, said second given order being different from said first given order.

5,627,680
EYEPIECE INCLUDING AN ASPHERICAL LENS SURFACE

Masami Suzuki, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 597,798
Claims priority, application Japan, Feb. 10, 1995, 7-046333
Int. Cl.[6] G02B *25/00;3/02*
U.S. Cl. 359—645 **12 Claims**



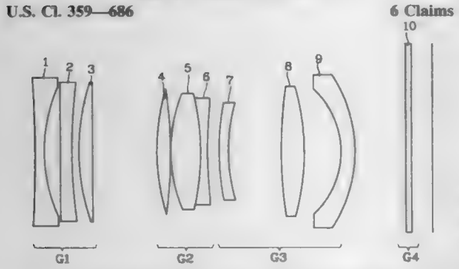
1. An eyepiece having an apparent visual angle of 40° or greater comprising in succession from an eyepoint side:
- a first lens unit having positive refractive power, the first lens unit including a positive lens component;
- a second lens unit having positive refractive power, the second lens unit including a positive lens component; and
- a third lens unit having positive refractive power, the third lens unit including a cemented lens consisting of a positive lens component and a negative lens component,

wherein at least one of a lens surface of said first lens unit which is adjacent to the eyepoint side and a lens surface of said first lens unit which is adjacent to an object side is an aspherical lens surface, and a magnitude of a radius of curvature on a periphery of said aspherical lens surface is greater than a magnitude of a radius of curvature at a vertex of said aspherical lens surface.

5,627,681
ZOOM LENS

Rong-Jyh Tsay, Yunlin, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 13, 1995, Ser. No. 489,779
Int. Cl.[6] G02B *15/14;3/08*
U.S. Cl. 359—686 **6 Claims**



1. A zoom lens system for use in projective image forming systems comprising, in order from an object side, a first lens group with a negative refractive power, a second lens group with a positive refractive power, a third lens group with a negative refractive power, and a fourth lens group with a positive refractive power; wherein said first, second, third, and fourth lens groups are disposed such that, during a zooming from a wide-angle mode to a telephoto mode, said first, second and third lens groups are simultaneously moving toward the object side and said fourth lens group stays stationary, and said first and third zoom lens groups are provided such that:

$$1.6 < \frac{k1}{k3} < 4$$

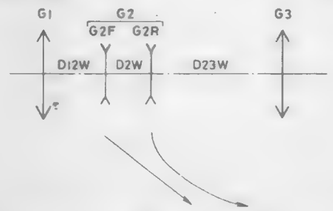
where k1 is an absolute value of the refractive power of said first lens group and k3 is an absolute value of the refractive power of said third lens group;

further wherein said fourth lens group comprises a Fresnel lens.

5,627,682
ZOOM LENS SYSTEM

Toshiyuki Nagaoka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 355,176
Claims priority, application Japan, Dec. 9, 1993, 5-340353
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—688 **15 Claims**



1. A zoom lens system comprising in order from the object side: a first lens unit having a positive refractive power, a second lens unit having a negative refractive power, and at least one additional lens unit disposed immediately after said second lens unit;
- wherein said first lens unit comprises at least three positive lens elements and at least one negative lens element,
- wherein said second lens unit consists essentially of a front subunit having a negative refractive power and a rear subunit having a negative refractive power,
- wherein said lens system is constructed and arranged to be capable of zooming, and wherein a deviation of an image location caused by said zooming is corrected by moving said second lens unit while varying a distance between said front subunit and said rear subunit, said front subunit comprising at least one positive lens element and at least two negative lens elements, and wherein said zoom lens system satisfies the following conditions:

$$0.1 < D_{2w}/D_{23w} < 2.0$$

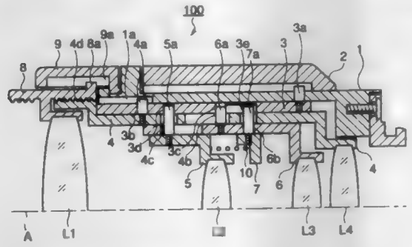
and $4.0 < f_1/f_w 8.0$

wherein the reference symbol D_{2w} represents the distance between the front subunit and the rear subunit of said second lens unit at a wide position of said zoom lens system, the reference symbol D_{23w} represents a distance between said second lens unit and the at least one additional lens unit disposed immediately after said second lens unit, the reference symbol f_1 represents a focal length of said first lens unit, and the reference symbol f_w represents a focal length of said lens system as a whole at said wide position of the zoom lens system.

5,627,683
LENS BARREL HAVING A BIASING MEMBER TO PREVENT BACKLASH BETWEEN LENS UNIT CAM MECHANISMS

Kazumitsu Takezawa, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,762
Claims priority, application Japan, Apr. 26, 1995, 7-101849
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—700 **6 Claims**



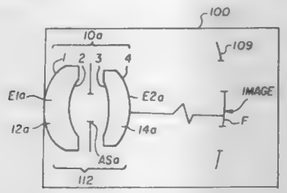
1. A lens barrel comprising:
- a first lens holding member to hold a first lens unit;
- a second lens holding member to hold a second lens unit;
- a biasing force receiving member disposed between said first lens holding member and said second lens holding member and on a line that intersects said first lens holding member and said second lens holding member; and
- a biasing member disposed between said first lens holding member and said biasing force receiving member,

wherein both said first and second lens holding members are movable along an optical axis direction in order to move said first and second lens units.

5,627,684
METHOD OF MANUFACTURING A LENS SYSTEM INSENSITIVE TO ASPHERIC DECENTERING AND A LENS SYSTEM MANUFACTURED THEREBY

Alan E. Lewis, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1995, Ser. No. 430,982
Int. Cl.[6] G02B *3/02;* **G05B** *13/02*
U.S. Cl. 359—717 **10 Claims**

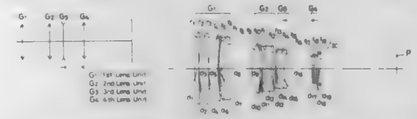


1. A method of making a desensitized lens system having nominal lens system parameters, said method comprising in order, the steps of:
- i) obtaining a starting point lens design having a plurality of aspheric surfaces, each of said aspheric surfaces characterized by surface parameters;
- ii) decentering said surface parameters of one of the aspheric surfaces of said lens system;
- iii) optimizing the starting point lens design with the decentered surface parameters, said optimising includes running an optimization routine of a lens design program and utilizing both positive and negative field rays to come up with optimum surface parameters for aspheric surfaces;
- iv) undecentering previously decentered surface parameters when the optimization is complete to obtain the nominal lens system parameters; and
- v) manufacturing the lens system according to said nominal lens system parameters.

5,627,685
TELEPHOTO LENS SYSTEM

Takanori Yamanashi, Kokubunji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 2, 1995, Ser. No. 432,716
Claims priority, application Japan, May 2, 1994, 6-093202
Int. Cl.[6] G02B *13/02*
U.S. Cl. 359—745 **9 Claims**



1. A telephoto lens system comprising, in order from an object to an image side:
- a first lens unit of positive refracting power;
- a second lens unit of positive refracting power;
- a third lens unit of negative refracting power; and
- a fourth lens unit of positive refracting power,
- said first lens unit comprising, in order from said object side, two positive lenses and a negative meniscus lens having a concave surface with a strong curvature on said image surface side,
- said second lens unit comprising a positive lens having a convex surface with a strong curvature on said object side and a doublet consisting of negative and positive lenses,
- said third lens unit comprising a doublet consisting of negative and positive lenses, and
- said fourth lens unit comprising a cemented doublet consisting of negative and positive lenses,

wherein said third and fourth lens units are movably attached for focusing, and

said first and second lens units remain fixed and further conform to the following four conditions (1) to (4):

$$0.3 < f_1/f_2 < 1.5 \quad (1)$$

$$0.1 < D_1/f_{12} < 0.55 \quad (2)$$

$$0.15 < -f_3/f_4 < 1.0 \quad (3)$$

$$0.3 < -\Delta X_3/\Delta X_4 < 3.1 \quad (4)$$

where:
- f_1 is the focal length of the first lens unit,
- f_2 is the focal length of the second lens unit,
- f_3 is the focal length of the third lens unit,
- f_4 is the focal length of the fourth lens unit,
- f_{12} is the composite focal length of the first and second lens units on the object point at infinity,
- ΔX_3 is the amount of focusing movement of the third lens unit from the object point at infinity to the shortest object distance with the proviso that a plus sign indicates the movement of the third lens unit from the reference position on the object point at infinity to the image surface side,
- ΔX_4 is the amount of focusing movement of the fourth lens unit from the object point at infinity to the shortest object distance with the proviso that a plus sign indicates the movement of the fourth lens unit from the reference position on the object point at infinity to the image surface side, and
- D_1 is the real separation between the first and second lens units.

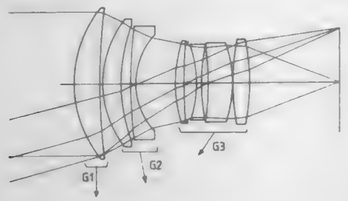
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5,627,686

LARGE-APERTURE MEDIUM-RANGE TELEPHOTO LENS SYSTEM

Koichi Ohshita, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,890
Claims priority, application Japan, Aug. 5, 1994, 6-204595
Int. Cl.° G02B *13/02*
U.S. Cl. 359—745 **12 Claims**



1. A large-aperture medium-range telephoto lens system, which comprises, in the following order from the object side, a first lens unit having a positive refractive power, a second lens unit having a negative refractive power, and a third lens unit having a positive refractive power, and

said telephoto lens system attains focusing by moving said second and third lens units along an optical axis while said first lens unit is fixed in position,

wherein said telephoto lens system satisfies:

$$0.8 < f1/f < 1.5$$
$$-3.0 < f2/f < -1.0$$
$$0.7 < f3/f < 1.0$$
$$0.02 < |x2/x3| < 0.3$$

where f is the focal length of the entire lens system in an infinity in-focus state, f1 is the focal length of said first lens unit, f2 is the focal length of said second lens unit, f3 is the focal length of said third lens unit, x2 is the moving amount of said second lens unit from the infinity in-focus state to a closest distance in-focus state, and x3 is the moving amount of said third lens unit from the infinity in-focus state to the closest distance in-focus state.

5,627,687

OBJECTIVE LENS DRIVING APPARATUS AND METHOD FOR MANUFACTURE THEREOF

Hirotoshi Fujisawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 490,065
Claims priority, application Japan, Jun. 17, 1994, 6-135751; May 2, 1995, 7-108859
Int. Cl.° G02B *7/02*
U.S. Cl. 359—823 **8 Claims**

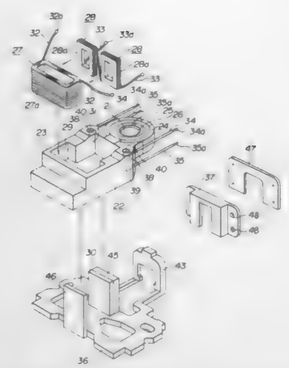
1. An objective lens driving device comprising

an objective lens,

a stationary member,

a holder carrying one or more driving coils and having mounted thereon an objective lens,

a plurality of arm-shaped resilient supporting members, each having one end side mounted on said holder and having an opposite end side mounted to said stationary member so that the resilient supporting members are movable in a direction parallel to the optical axis of the objective lens, each of the resilient supporting members being arranged between said holder and said stationary member parallel to each other along a direction perpendicular to the optical axis of said objective lens and being formed of electrically conductive material, at least two of said resilient supporting members being directly connected to different melted end portions of said one or more driving coils.

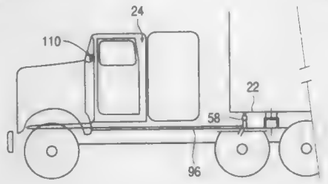


5,627,688

AUTOMATICALLY ADJUSTABLE PASSENGER MIRROR ASSEMBLY FOR A TRAILERED VEHICLE

Joseph A. Valentino, 230 Sycomore Mills Rd., Media, Pa. 19063

Filed Feb. 8, 1995, Ser. No. 385,448
Int. Cl.° G02B *7/182*; **B60R** *1/06*
U.S. Cl. 359—843 **25 Claims**



1. A mirror rotation assembly for a vehicle having a tractor and a pivotally connected semi-detached trailer, the assembly comprising:

an elongated arm having first and second ends, the first end pivotally mountable to a support on a chassis of the tractor with the arm generally transverse to an axis defined by the tractor and the trailer, the second end supporting a rotatable wheel;

a pivot assembly connected to the arm and connectable to the chassis, and configured to pivot the arm from a disengaged position proximate the chassis to an engaged position with the wheel in rolling contact with an underside of the trailer;

a counter operable to count a number of rotations or partial rotations of the wheel as the trailer pivots with respect to the tractor during a vehicle turn and transmit the counted number of rotations or partial rotations;

a motor connectable to a rotatable mirror on the tractor; and

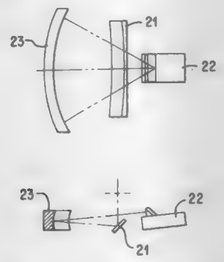
a processor electrically connected to the motor, programmed to receive the number of wheel rotations or partial rotations transmitted by the counter, calculate a degree of vehicle turn corresponding to the number of wheel rotations or partial rotations, calculate a degree of mirror rotation corresponding to the degree of vehicle turn, and instruct the motor to rotate the mirror according to the calculated degree of mirror rotation.

5,627,689

LIGHT-SUPPLYING OPTICAL DEVICE

Nobuhiro Fujinawa; Masayuki Inami, and Toshiya Aikawa, all of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Apr. 7, 1995, Ser. No. 418,280
Claims priority, application Japan, Apr. 8, 1994, 6-095600
Int. Cl.° G03B *27/68*
U.S. Cl. 359—858 **23 Claims**



1. A light-supplying optical device comprising:

a light source that generates an elongated area of light along a path to illuminate an original document;

a first optical element having a curved surface that is in said path so as to collect the light from the light source onto the original document, said curved surface being positioned relative to said path so that the light is incident on said curved surface at a non-zero angle relative to an optical axis of said curved surface, said first optical element being positioned relative to said path so that said curved surface curves the elongated area of light that the first optical element receives on the path for projection onto the original document; and

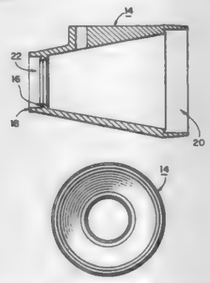
a second optical element having a curved surface, said second optical element being positioned in said path so as to curve the elongated area of light that the second optical element receives on the path and so as to offset an elongated curved area of light that would otherwise be projected onto the original document by said first optical element, whereby a substantially straight elongated area of light is projected onto the original document.

5,627,690

LIGHT-WEIGHT THREE-ELEMENT CLINICAL VIEWER

Charles H. Caplan, Middleton, Wis., and Richard A. Buchroeder, Tucson, Ariz., assignors to Surgical Acuity, Inc., Madison, Wis.

Division of Ser. No. 114,870, Aug. 31, 1993, Pat. No. 5,463,500. This application Jun. 7, 1995, Ser. No. 479,962
Int. Cl.° G02B *13/00;23/00*
U.S. Cl. 359—362 **2 Claims**



1. A method for making viewers for different working distances, comprising the steps of:

(a) providing eyepieces, each eyepiece defining a first curved surface and a second curved surface, said first curved surfaces of all of said eyepieces having the same radii of curvature and the second curved surfaces having various radii of curvature;

(b) providing a lens barrel adapted to receive an objective lens and one of said eyepieces;

(c) assembling one of said eyepieces to one end of said lens barrel such that said second curved surface faces outwardly;

(d) providing objective lenses, each objective lens defining a first curved surface and a second curved surface, the radii of curvatures for said first curved surfaces of each of said objective lenses being the same, and the radii of curvatures for said second curved surface for each of said objective lenses being the same; and

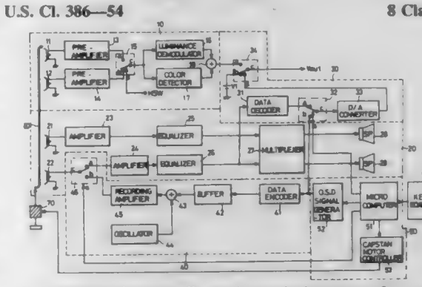
(e) assembling an objective lens to an opposing end of said lens barrel such that it faces said first curved surface of one of said eyepieces to form a viewer with a predetermined working distance, said working distance being changed by changing the radii of curvature for said second curved surface of said one eyepiece with the same radii of curvature of said first and second surfaces of said objective lens.

5,627,691

CHARACTER DATA RECORDING AND REPRODUCING SYSTEM FOR A VCR

Sung H. Hong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Continuation-in-part of Ser. No. 366,012, Dec. 29, 1994, abandoned, and a continuation of Ser. No. 218,735, Mar. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 861,619, Apr. 1, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 473,788
Claims priority, application Rep. of Korea, Apr. 2, 1991, 5307/1991
Int. Cl.° G11B *27/02*
U.S. Cl. 386—54 **8 Claims**



1. A character data recording and reproducing system for recording and retrieving an audio track and a video track on a video tape, wherein character data are recorded on a predetermined portion of the audio track of the video tape, the system comprising:

control means for controlling, in a character editing mode, on-screen display operations and recording control operations for character data inputted into said control means;

recording means for recording said character data inputted into said control means on said predetermined portion of said audio track;

audio reproducing means for retrieving audio signals from said audio track and outputting the retrieved audio signals to a speaker;

character reproducing means for retrieving recorded character data from said predetermined portion of said audio track;

video reproducing means for retrieving video signals from the video track of said video tape; and

output means for receiving and selectively outputting said character data inputted into said control means or said recorded character data retrieved by said character reproducing means, and superimposing the outputted character data on the retrieved video signal from said video reproducing means.

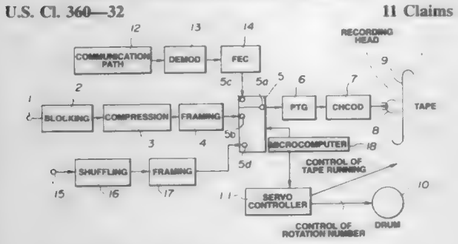
VOL 1198 ISS 1 MY 6 1997 UMI

5,627,692

RECORDING AND REPRODUCING APPARATUS FOR REPRODUCING TIME-BASE COMPRESSED SIGNALS DEPENDENT ON THE TIME-BASE COMPRESSION IMPLEMENTED

Yukio Kubota, Kanagawa, and Hajime Inoue, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 253,283, Jun. 2, 1994, abandoned.
This application Jun. 7, 1996, Ser. No. 662,261
Claims priority, application Japan, Jun. 8, 1993, 5-137651
Int. Cl.[6] G11B *5/00;5/09;5/02;* H04N *5/78*
U.S. Cl. 360—32 11 Claims



1. A recording/reproducing apparatus, comprising:

recording means for recording time base compressed digital data received from an outside source onto a recording medium at a recording speed;

control means for controlling a read out of the digital data from the recording medium at a speed slower than said recording speed, the read out speed being based on processing that had been implemented to time base compress the digital data; and

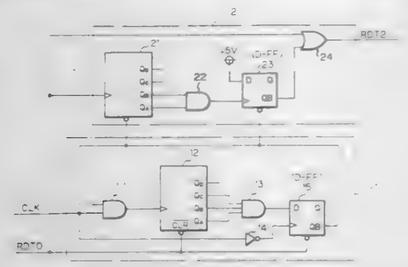
output means for outputting the digital data read out from the recording medium.

5,627,693

ADDRESS MARK DETECTION SYSTEM FOR A MAGNETIC DISK DRIVE

Takashi Hirukawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 24, 1995, Ser. No. 449,774
Claims priority, application Japan, May 26, 1994, 6-112913
Int. Cl.[6] G11B *5/09;5/596*
U.S. Cl. 360—49 1 Claim



1. An address mark detection system for a magnetic disk drive and for detecting an address mark by detecting a data erase portion continuing for a predetermined period of time, said system comprising:

address mark detecting means for monitoring a read data signal, and becoming active on detecting a data erase portion whose duration is shorter than the predetermined period of time, and being cleared on detecting a data input, said address mark detecting means comprising:

(a) a first counter for counting a period of time over which a low level of the read data signal is not input; and

(b) a first D-type flip-flop for outputting a detection signal remaining in a high level from a time when said first counter counts up a predetermined period of time to a time when a low level of the read data signal is input; and

read data masking means for masking any suitable number of read data pulses of the read data signal appeared immediately after said address mark detecting means has been cleared, said read data masking means comprising:

(a) a second counter for counting the read data pulses input after an end of a high level period of said detection signal;

(b) a second D-type flip-flop changing an output from a high level to a low level when said second counter counts up a predetermined period of time, or changing said output from a low level to a high level when said detection signal goes high; and

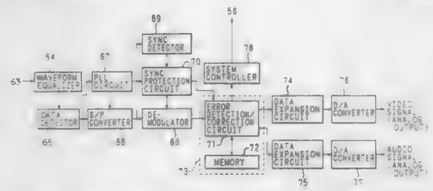
(c) an OR gate for masking the read data signal when the output of said second D-type flip-flop is in a high level.

5,627,694

RECORDING/REPRODUCING APPARATUS FOR RECORDING AND REPRODUCING MULTIPLE KINDS OF DIGITAL SIGNALS HAVING DIFFERENT DATA AMOUNTS PER UNIT TIME

Kihei Ido; Masako Yamada; Hideaki Kosaka, and Masayuki Ohta, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 18,403, Feb. 17, 1993, abandoned. This application Sep. 16, 1993, Ser. No. 121,528
Claims priority, application Japan, Feb. 19, 1992, 4-32077; Feb. 28, 1992, 4-43074
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—51 6 Claims



1. A recording/reproducing apparatus for recording and reproducing multiple kinds of digital signals having different data amounts per unit time on a recording medium, comprising:

blocking means for organizing said multiple kinds of digital signals into a plurality of blocks, at least two of said multiple kinds of digital signals being organized into blocks having different lengths, and for appending a synchronizing signal to each of said plurality of blocks, said synchronizing signal identifying a length of each of said plurality of blocks;

recording means for recording the organized plurality of blocks on one track on the recording medium;

reproducing means for reproducing said plurality of blocks from said recording medium; and

synchronization protecting means for detecting said synchronization signal for each of said plurality of blocks output by said reproducing means, and for performing synchronization protection for a variable protection period for said plurality of blocks based on said synchronization signal; wherein the synchronization protection means includes,

means for detecting said appended synchronizing signal,

means for identifying, by the detected synchronizing signal, the length of each of said plurality of blocks, and

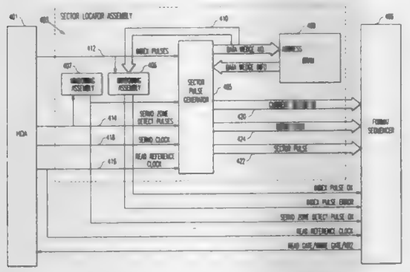
means for changing a counter value of a counter for synchronization protection in accordance with the result of the identification.

5,627,695

SYSTEM AND METHOD FOR GENERATING UNIQUE SECTOR IDENTIFIERS FOR AN IDENTIFICATIONLESS DISK FORMAT

Douglas A. Prins, Huntington Beach; Gary S. Dickinson, Yorba Linda, and Gary E. Schultz, San Juan Capistrano, all of Calif., assignors to QLogic Corporation, Costa Mesa, Calif.

Filed Jan. 12, 1995, Ser. No. 372,072
Int. Cl.[6] G11B *5/09;5/596*
U.S. Cl. 360—51 10 Claims



1. A method for outputting a unique sector identification associated with each sector on a rotating data storage medium having a plurality of servo zones within a data storage device, wherein (1) at least one sector for storing data is positioned between adjacent servo zones to define a data wedge, (2) a non-integer number of sectors are selectably be positioned within a data wedge, and (3) the servo zones and sectors lack an embedded sector identifier, the method comprising the steps of:

(a) initializing a servo zone count value in response to receipt of an index servo zone detect pulse generated when a read/write head is proximate an index servo zone, such that each servo zone count value defines a unique value corresponding to one of such servo zones;

(b) changing the servo zone count value in response to receipt of each next servo zone detect pulse generated when the read/write head is proximate each next servo zone;

(c) for each servo zone count value, retrieving predetermined values for:

(1) a first length value defining a distance from a current servo zone to a fixed position within a first sector within a current data wedge;

(2) at least one next length value defining a distance from a fixed position within a current sector within a current data wedge to a fixed position within a next sector within such current data wedge;

(3) a sector identification value defining a unique identifier for such first sector:

(d) changing a sector count value in response to a received servo clock;

(e) outputting a sector pulse when the changes in the sector count value equal the retrieved first length value, such sector pulse thereby indicating a fixed position within such first sector after such current servo zone;

(f) outputting a next sector pulse when the changes in the sector count value equal each retrieved next length value, each such next sector pulse thereby indicating a fixed position within a next sector within such current data wedge;

(g) repeating step (f) until a next servo zone detect pulse is received;

(h) initializing a sector identification count value to the retrieved sector identification value;

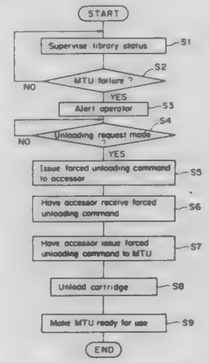
(i) changing the sector identification count value in response to each sector pulse output within a current data wedge, whereby each sector within such data wedge is uniquely identifiable by a corresponding sector identification count value.

5,627,696

FORCED RECORDING MEDIUM CARTRIDGE UNLOADING SYSTEM FOR LIBRARY APPARATUS

Hideyuki Tomi, and Noboru Osada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 59,498, May 10, 1993, abandoned.
This application Jan. 17, 1995, Ser. No. 373,888
Claims priority, application Japan, May 12, 1992, 4-118792
Int. Cl.[6] G11B *15/68*
U.S. Cl. 360—71 6 Claims



1. A forced recording medium cartridge unloading system use with a library apparatus which is operatively coupled to a host computer, wherein the library apparatus includes a cell unit having a plurality of cells each accommodating a recording medium cartridge, a recording medium drive unit for writing and reading data to and from any one of the recording medium cartridges, and an accessor for automatically switching recording medium cartridges between the cell unit and the recording medium drive unit; the forced recording medium cartridge unloading system comprising:

a library controller, operatively coupled to the host computer and the library apparatus, for detecting a recording medium cartridge left loaded in the recording medium drive unit despite the fact that the host computer is not using the recording medium drive unit and for issuing a forced recording medium cartridge unloading command in response to the detection;

wherein said library controller issues said forced recording medium cartridge unloading command in response to a forced unloading request from the host computer;

means, provided in the accessor and operatively coupled to said recording medium drive unit and to said library controller, for issuing a forced recording medium cartridge unloading command to the recording medium drive unit in response to the forced recording medium cartridge unloading command received from said library controller; and

means, provided in the recording medium drive unit, for unloading the recording medium cartridge from the drive unit upon receipt of the forced recording medium cartridge unloading command from said means for issuing a forced recording medium cartridge unloading command to the recording medium drive unit.

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5,627,697

CIRCUIT ARRANGEMENT FOR MOTOR SPEED CONTROL

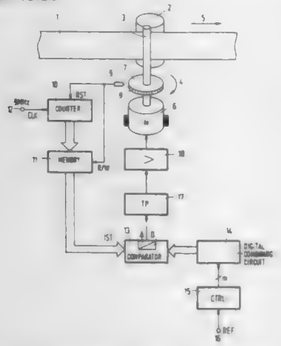
Gerd Eisenberg, Rossdorf, and Werner Laurentius, Gross Zimmern, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 445,982, May 22, 1995, abandoned, which is a continuation of Ser. No. 323,190, Oct. 14, 1994, abandoned, which is a continuation of Ser. No. 963,649, Oct. 20, 1992, abandoned. This application Jan. 11, 1996, Ser. No. 584,998

Claims priority, application Germany, Oct. 25, 1991, 41 35 209.2

Int. Cl.[6] G11B *15/54*

U.S. Cl. 360—73.14 9 Claims



5. A circuit for controlling the speed of rotation of a capstan motor for a magnetic tape recorder, comprising:

scanning means for producing a speed pulse signal having a frequency dependent upon the rotational speed of the motor;

counter means for receiving a clock signal having a pulse repetition frequency higher than the speed pulse signal frequency and for counting pulses of the clock signal which occur between pulses of the speed pulse signal to produce an actual speed value which is quantized in steps of a first size corresponding to the pulse repetition frequency of the clock signal;

combining means for producing a series of data words corresponding to nominal speed values of the motor, each data word in said series being quantized in steps of said first size and having one of two adjacent values, the series of data words having an arithmetical mean corresponding to a nominal speed value that may fall between said two adjacent values in quantization steps of a second size smaller than said first size; and

comparison means for receiving and comparing the nominal speed values and the actual speed value to produce a motor speed setting signal having an average value which is quantized in steps of said second size; and

a low pass filter for smoothing the setting signal for servo control of the rotation speed of the motor in quantization steps of said second size.

5,627,698

SERVO INFORMATION RECORDING METHOD AND APPARATUS FOR AN ENCLOSED DATA STORAGE SYSTEM

Sattar S. Malek, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1994, Ser. No. 323,518

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—75 10 Claims

1. A method of writing servo information to a data storage disk, disposed in an enclosed data storage system housing having a cover and a base, with a servo writer assembly having a pivot assembly, the data storage system having a transducer for transferring data to and from the disk and an actuator, having a central bore and rotatably mounted about a stationary actuator shaft mounted to the housing base, for moving the transducer across the disk, the method of writing servo information comprising the steps of:

accessing the actuator through an access aperture provided on the cover of the housing;

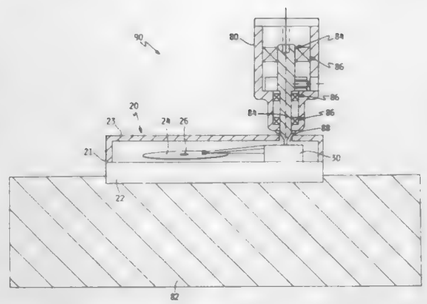
engaging the actuator with the pivot assembly at a plurality of actuator engagement locations spaced around the central bore of the actuator;

rotating the actuator about the stationary actuator shaft with the pivot assembly;

writing servo information to the disk;

disengaging the actuator and pivot assembly; and

removing the pivot assembly from the housing through the access aperture provided on the housing cover.



5,627,699

MAGNETIC DISK UNIT

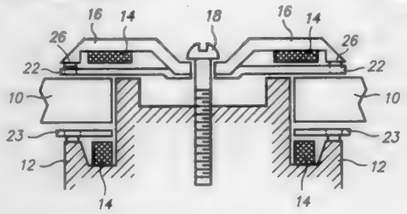
Shunichiro Ota, Yokohama; Masayuki Kanamaru, Fujisawa, and Osaaki Watanuki, Kawasaki, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1995, Ser. No. 385,008

Claims priority, application Japan, Mar. 17, 1994, 6-046697

Int. Cl.[6] G11B *17/32*

U.S. Cl. 360—97.02 7 Claims



1. A magnetic disk unit comprising:

a spindle motor;

a magnetic disk;

a clamp assembly to secure the magnetic disk to the spindle motor the clamp assembly having a plurality of convex parts formed on it;

a material impregnated with lubricant located between the clamp assembly and the magnetic disk;

a porous film permeable by the lubricant and located between the material impregnated with lubricant and the disk, the porous film having notches formed on its outer circumference in accordance with the convex parts; and

an assembly to hold and fix the material impregnated with lubricant and the porous film between the clamp assembly and the disk, wherein the porous film is secured on the disk by the clamp assembly through mating of the notches of the porous film with the convex parts of the clamp assembly, and the lubricant in the material impregnated with lubricant is supplied on the disk surface through the porous film.

5,627,700

FLOATING TYPE MAGNETIC HEAD HAVING FLUSH REAR REFERENCE SURFACE

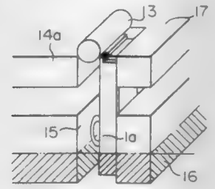
Kelichi Kondo; Masanobu Yamazaki; Ryo Goto, and Manabu Toyoda, all of Mooka, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jul. 22, 1991, Ser. No. 733,629

Claims priority, application Japan, Jul. 23, 1990, 2-078115 U; Nov. 14, 1990, 2-307881

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 4 Claims



1. A floating type magnetic head comprising:

a non-magnetic slider having an air bearing surface and a rear surface;

a magnetic head core formed of a pair of magnetic core elements defining a magnetic gap or of a pair of magnetic core elements having a magnetic gap defined by a butting surface on which is formed a magnetic metallic thin film, said head core having a front gap surface, a back surface and a window section, and being fixed by bonding glass within a groove provided in a flow-out end of the air bearing surface of said slider, said groove extending through said rear surface; and

an excitation coil wound in said window section,

said front gap surface being placed so as to oppose a magnetic recording medium,

said back surface and a portion of said rear surface adjacent said groove being flush,

wherein said back surface is a back gap surface, said back gap surface and said portion of said rear surface each having a maximum surface roughness of 3 to 8 μm when measured by a needle contract type roughness gauge.

5,627,701

SKINNED FOAM CORE E-BLOCK

Nigel F. Misso, 1303 W. Park Ave., Riverton, Wyo. 82501-3260, and Mark R. Scanlan, 4822 Rolling Hills Dr., Hartford, Wis. 53027

Filed Jul. 13, 1994, Ser. No. 274,543

Int. Cl.[6] G11B *21/16;5/54*

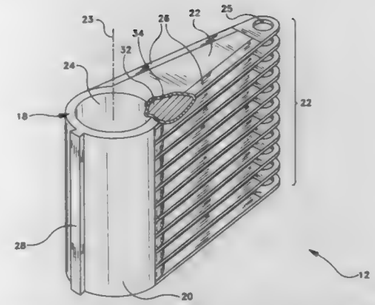
U.S. Cl. 360—106 10 Claims

1. An E-block assembly for supporting a plurality of head assemblies of a disk drive system to write data to and/or retrieve data from tracks of a media disk, the E-block assembly comprising:

an actuator coil;

a casing injection molded around the coil, the casing being formed of an electrically non-conductive polymeric material; and;

a unitary E-block rigidly mounted to the casing and constructed of a foam core with a non-porous stressed skin, the E-block having a pivoting portion having an axis and a plurality of arms extending from the pivoting portion normal to the axis, each arm being capable of supporting at least one head assembly at a free end thereof, the arms being uniformly constructed of a foam core completely surrounded by a non-porous stressed skin.



5,627,702

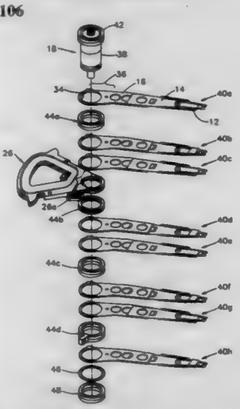
HEAD POSITIONER STACK FOR HIGH-CAPACITY DISC DRIVES

Bradley D. Kelemen, Santa Cruz; Boris Dushine, and Hatem Radwan, both of San Jose, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Aug. 10, 1995, Ser. No. 513,279

Int. Cl.[6] G11B *5/55*

U.S. Cl. 360—106 7 Claims



1. In a disc drive of the type having a controllably rotatable actuator assembly, the actuator assembly comprising:

a substantially cylindrical actuator body having a first end, a second end, and a cylindrical portion therebetween, the actuator body defining a central axis of rotation for the actuator assembly, the actuator body further comprising: a flange radially extending from the first end; and threads located at the second end;

a plurality of actuator arm assemblies, each actuator arm assembly having an opening sized to closely engage the cylindrical portion of the actuator body;

an actuator motor coil assembly having an opening sized to closely engage the cylindrical portion of the actuator body; and

a plurality of spacers, each spacer having an opening sized to closely engage the cylindrical portion of the actuator body;

wherein the actuator arm assemblies, the actuator motor coil assembly and the spacers are arranged to form an actuator stack about the cylindrical portion of the actuator body, and wherein the actuator assembly further comprises a nut engaging the threads and capturing the actuator stack about the cylindrical portion of the

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actuator body, the nut having an outer surface at a radial extent from the actuator body; the improvement comprising:

compliant spring means, disposed between the nut and the actuator stack and having a central opening to accommodate the cylindrical portion of the actuator body, for accommodating differential thermal expansion of the actuator arm assemblies, the actuator motor coil assembly and the spacers, and for providing a clamping force upon the actuator stack at a radius about and in a direction of the central axis.

5,627,703

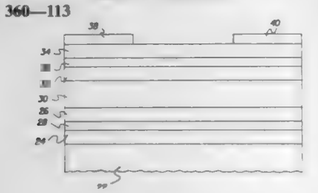
DUAL MAGNETORESISTIVE REPRODUCE HEAD UTILIZING MULTILAYER MAGNETORESISTIVE SENSING ELEMENTS

Neil Smith, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 208,755, Mar. 9, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 501,278

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **14 Claims**





1. A magnetoresistive reproduce head comprising:

a) a substrate,

b) a spin valve structure deposited on said substrate, said structure consisting of a first trilayer, a second trilayer and a central conductive non-magnetic non-antiferromagnetic spacer between said first and second trilayers, said first trilayer consisting of first and second ferromagnetic layers and a first conductive non-magnetic non-antiferromagnetic single layer, said first ferromagnetic layer deposited on said substrate, said first conductive non-magnetic non-antiferromagnetic single layer deposited on and in direct contact with said first ferromagnetic layer, and said second ferromagnetic layer deposited on and in direct contact with said first conductive non-magnetic non-antiferromagnetic single layer, said central conductive non-magnetic non-antiferromagnetic spacer deposited on and in direct contact with said second ferromagnetic layer, said second trilayer consisting of third and fourth ferromagnetic layers and a second conductive non-magnetic non-antiferromagnetic single layer, said third ferromagnetic layer deposited on and in direct contact with said central conductive non-magnetic non-antiferromagnetic spacer, said second conductive non-magnetic non-antiferromagnetic single layer deposited on and in direct contact with said third ferromagnetic layer, said fourth ferromagnetic layer deposited on and in direct contact with said second conductive non-magnetic non-antiferromagnetic single layer,

c) means for producing a current flow through said magnetoresistive reproduce head to generate magnetic bias fields which magnetize said first ferromagnetic layer, said second ferromagnetic layer, said third ferromagnetic layer and said fourth ferromagnetic layer such that said first and said fourth ferromagnetic layers are magnetized substantially antiparallel to each other, said first and said second ferromagnetic layers are magnetized substantially perpendicular to each other, and said third and said fourth ferromagnetic layers are magnetized substantially perpendicular to each other, and

d) means for differentially sensing the variations of resistivity of said first and second trilayers of said magnetoresistive head in response to an applied magnetic field.

5,627,704

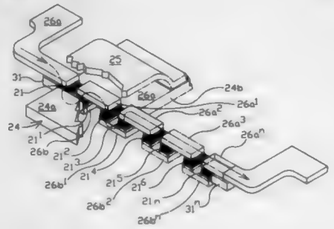
THIN FILM GIANT MAGNETORESISTIVE CPP TRANSDUCER WITH FLUX GUIDE YOKE STRUCTURE

Marcos M. Lederman, San Francisco, and Derek J. Kroes, Fremont, both of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Feb. 12, 1996, Ser. No. 600,239

Int. Cl.[6] G11B *5/39;5/31*

U.S. Cl. 360—113 **4 Claims**



1. A multilayer magnetoresistive thin film transducer for transducing coaction with a magnetic recording medium comprising:

a magnetic yoke including a first flux guide member and a second flux guide member spaced from said first flux guide member, one end of each of said first and said second flux guide members extending to a media-facing end of said transducer to form a transducing gap;

a plurality of spaced multilayer giant magnetoresistive structures, said plurality of spaced multilayer giant magnetoresistive structures being disposed in one of said flux guide members such that said structures lie in the path of magnetic flux induced in said one flux guide member from the magnetic recording medium, said multilayer giant magnetoresistive structures being spaced from said transducing gap;

electrical conductors provided between said spaced magnetoresistive structures so that said plurality of spaced magnetoresistive structures are connected in series electrically with each other for increasing the total electrical resistance of said transducer;

a current source connected to said electrical conductors such that electrical current passed through said conductors flows through said giant magnetoresistive structures in a direction perpendicular to the planes of the individual layers of said multilayer giant magnetoresistive structures; and

magnetic biasing means positioned in magnetic proximity to said multilayer giant magnetoresistive structures for providing a magnetic bias to said giant magnetoresistive structures.

5,627,705

RECORDING AND/OR REPRODUCING APPARATUS HAVING ROTARY DRUM UNIT

Shoichi Ibaraki, Tokyo, and Masahide Hasegawa, Kanagawa-ken, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

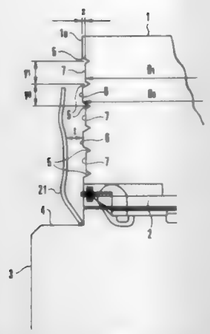
Continuation of Ser. No. 301,488, Sep. 7, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 622,938

Claims priority, application Japan, Sep. 14, 1993, 5-252257

Int. Cl.° G11B *15/61*

U.S. Cl. 360—130.24 **12 Claims**

1. A recording and/or reproducing apparatus for recording and/or reproducing information on or from a tape-shaped recording medium, comprising:



a) a head arranged to record and/or reproduce information on or from the tape-shaped recording medium; and

b) a rotary drum having said head mounted thereon and having an outer peripheral surface around which the recording medium is wrapped, said outer peripheral surface having a plurality of grooves formed surrounding said outer peripheral surface, said outer peripheral surface including at least two first outer peripheral surfaces and at least one second outer peripheral surface which has a smaller diameter than that of said first outer peripheral surfaces, each of said at least one second outer peripheral surface being sandwiched respectively in between said first outer peripheral surfaces, each of said plurality of grooves being sandwiched in between one of said first outer peripheral surfaces and said second outer peripheral surface, and the length of said first outer peripheral surfaces and the length of said second outer peripheral surface in the direction of an axis of rotation of said rotary drum are equal to each other, whereby a first air film thickness between said recording medium and said rotary drum on a recording medium entrance side of said rotary drum is substantially the same thickness as a second air film thickness on a recording medium exit side of said rotary drum.

5,627,706

CASSETTE HALF HAVING MULTI-LAYER MOLDED CONSTRUCTION

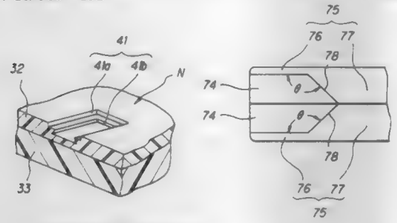
Ko Ishikawa, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 275,364, Jul. 15, 1994, Pat. No. 5,508,870. This application Oct. 30, 1995, Ser. No. 550,402

Claims priority, application Japan, Jul. 20, 1993, 5-179228

Int. Cl.[6] G11B *23/02;* **B29C** *39/12;* **G03B** *23/02*

U.S. Cl. 360—132 **5 Claims**



1. A cassette half comprising:

a first molded body having a first principal surface and a first upstanding wall which is substantially perpendicular to said first principal surface, said first upstanding wall forming an integral part of said first principal surface and a part of a peripheral surface of said half;

a second molded body overlying said first molded body, said second molded body having a second principal surface which overlies said first principal surface, said second molded body having a second upstanding wall which is essentially perpendicular to said second principal surface, said second upstanding wall forming an integral part of said second principal surface and surrounding said second principal surface, said second upstanding wall forming part of the peripheral surface of said half, said second upstanding wall connecting with said first upstanding wall to form a complete peripheral surface of said half, said first and second upstanding walls being connected over a junction area so that, in a plane defined by a surface of said upstanding walls, the respective thickness of the first upstanding wall and the thickness of the second upstanding wall gradually vary in a manner wherein a sum of the thicknesses of said first and second upstanding walls, as measured in said plane, remains constant and equal to the thickness of said cassette half over said junction area.

5,627,707

DISK CARTRIDGE WITH A STOP WALL TO ENGAGE A SHUTTER PLATE PROJECTION AND AT LEAST ONE SUPPORT LOCATED BETWEEN THE STOP WALL AND A CARTRIDGE SIDE EDGE

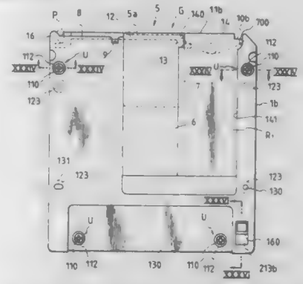
Noboru Akiyama, and Katsumi Kameda, both of Tokyo-to, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 226,489, Apr. 12, 1994, abandoned, which is a division of Ser. No. 116,807, Sep. 3, 1993, Pat. No. 5,325,257, which is a continuation of Ser. No. 654,897, Feb. 13, 1991. This application Sep. 1, 1995, Ser. No. 523,039

Claims priority, application Japan, Feb. 14, 1990, 2-013181 U; Feb. 19, 1990, 2-015465 U; Feb. 26, 1990, 2-018575 U; Mar. 15, 1990, 2-026509 U; Mar. 15, 1990, 2-026510 U; Mar. 28, 1990, 2-032587 U; Apr. 17, 1990, 2-040851 U; Apr. 17, 1990, 2-040853 U; Apr. 17, 1990, 2-040854 U; Apr. 17, 1990, 2-040855 U; Apr. 17, 1990, 2-040856 U; Apr. 17, 1990, 2-040857 U; Apr. 17, 1990, 2-040858 U; Apr. 17, 1990, 2-040859 U; Apr. 17, 1990, 2-040860 U; Apr. 17, 1990, 2-040861 U

Int. Cl.° G11B *23/03*

U.S. Cl. 360—133 **5 Claims**



1. A case of a cartridge for accommodating a disk therein and comprising: upper and lower shell halves assembled with each other, the lower shell half being provided with a head insertion hole for inserting a reading/writing head and a spindle insertion hole for inserting a spindle for rotating the disk, the upper shell half being provided with a head insertion hole, and a shutter having a long main closing plate for opening and closing the head and spindle insertion holes of the lower shell half and a short supplementary closing plate for opening and closing the head insertion hole of the upper shell half when the shutter slidably moves on the case and a base portion formed between the two closing plates of the shutter to engage with a guide portion provided on a front end of the case for slidably guiding the shutter, the main closing plate being slightly narrower in width than that of the supplementary closing plate so that a projection is formed adjacent the base portion of the shutter as part of the main closing plate on a front side of the shutter when the shutter is moved to open the insertion holes of the case, the lower shell half being provided with four support seat places formed separately in its side periphery to place

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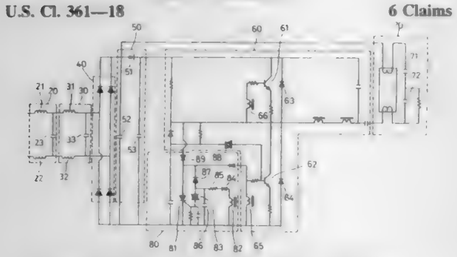
the cartridge on four support pins provided in a disk player when the cartridge is loaded in the disk player, each of said support seat places being a small smooth area to be supported on respective said support pin, the upper and lower shell halves being provided with two shallow recesses, respectively, for slidably receiving each closing plate and two stopping walls, respectively, at peripheries of a side of the case for stopping a side of each closing plate when the shutter is moved to open the insertion holes, a cut away portion being provided at a front end of the case along a stopping wall on the lower shell half to engage with the projection formed on the main closing plate when the shutter is moved completely to open the insertion holes, one of the support seat places being formed between a side edge of the lower shell half and the stopping wall.

5,627,708

HIGH POWER FACTOR ELECTRONIC STABILIZER WITH PROTECTION CIRCUIT

Jin C. Lee, Kaohsiung, Taiwan, assignor to Yin Nan Enterprises Co, Ltd., Kaohsiung Shien, Taiwan

Filed Apr. 10, 1995, Ser. No. 419,085
Int. Cl.[6] H02H *7/00*
U.S. Cl. 361—18 **6 Claims**



1. A high power factor electronic stabilizer, comprising:
a lamp powered by a high frequency lamp voltage;
an oscillating circuit connected to the lamp;
a power input;
a rectifying circuit;
a high frequency filter consisting of induction coils and capacitors connected between the power source input and the rectifying circuit,
a feedback power factor improving circuit including a diode connected in series between the rectifying circuit and the oscillating circuit and an electrolytic capacitor connected in parallel between the rectifying circuit and the oscillating circuit; and
means connected between the lamp and the anode of the feedback power factor improving circuit diode for applying the high frequency lamp voltage directly to an output of the rectifying circuit,
wherein said electrolytic capacitor thereby forms a means for phase shifting the output of the rectifying circuit to which the high frequency lamp voltage has been directly applied and thereby adjust the phase of the oscillating circuit input voltage to match that of the oscillating current supplied to the lamp in order to maximize a power factor of power supplied to the lamp by the oscillating circuit.

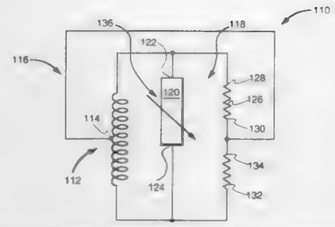
5,627,709

ELECTRICAL CIRCUIT FOR PROTECTING A SUPERCONDUCTING MAGNET DURING A QUENCH

Lembit Salasoo, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 11, 1995, Ser. No. 514,332
Int. Cl.[6] H02H *7/00*
U.S. Cl. 361—19 **8 Claims**

1. A superconductive-magnet electrical circuit comprising:
a) a superconductive magnet coil assemblage;



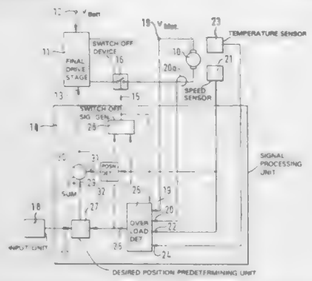
b) means for detecting a magnet quench in said superconductive magnet coil assemblage;
c) a pilot superconductive switch including:
(1) a pilot-switch superconductive wire portion superconductively coupled in series with said superconductive magnet coil assemblage and having a superconductive operating mode and a resistive operating mode; and
(2) a pilot-switch resistive heater portion activated by said quench-detecting means and disposed proximate said pilot-switch superconductive wire portion for switching said pilot-switch superconductive wire portion from said superconductive operating mode to said resistive operating mode; and
d) means for quench protecting said superconductive magnet coil assemblage, said quench-protecting means triggered by said pilot-switch superconductive wire portion switching from said superconductive operating mode to said resistive operating mode, wherein said pilot-switch superconductive wire portion generates a heat pulse in switching from said superconductive operating mode to said resistive operating mode and wherein said quench-protecting means includes said pilot-switch superconductive wire portion disposed proximate said superconductive magnet coil assemblage.

5,627,710

ELECTRIC MOTOR DRIVE SYSTEM

Gerhard Schoeffler, Baden-Baden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00420, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO94/27349, PCT Pub. Date Nov. 24, 1994
PCT Filed Apr. 16, 1994, Ser. No. 362,560
Claims priority, application Germany, May 7, 1993, 43 15 182.5
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—23 **15 Claims**



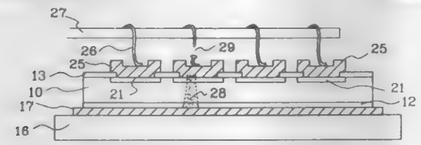
1. A drive system for an electric motor which moves a movable component, comprising:
an input unit to determine a desired position for the movable component;
overload detection means for detecting a motor overload from the motor temperature and for generating an overload signal in response to the overload; and
control means for actuating the motor to move the movable component toward the desired position, and for replacing the desired position with a predetermined resting position if the overload signal is generated and then switching the motor off only after the resting position has been reached, even if the overload signal continues to be present during movement of the movable component to the resting position.

5,627,711

SELF-PROTECTED SEMICONDUCTOR PROTECTION COMPONENT

Robert Pezzani, Vouvray, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Continuation of Ser. No. 10,272, Jan. 28, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,632
Claims priority, application France, Jan. 29, 1992, 92 01245
Int. Cl.[6] H02H *9/04*
U.S. Cl. 361—56 **26 Claims**



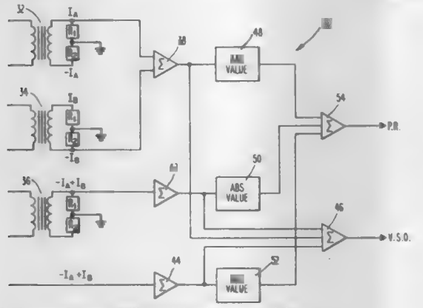
1. A monolithic semiconductor protection component, to be disposed between and coupled to first and second inputs of a circuit to be protected, the first input receiving a supply voltage and being coupled to a common electrode of the protection component, the protection component comprising a first semiconductor region disposed at a first surface of a semiconductor substrate and a second semiconductor region disposed at a second surface of the semiconductor substrate, the first region being divided into more than one nonoverlapping substantially identical area and each nonoverlapping substantially identical area being connected to the common electrode by a respective fuse, wherein each nonoverlapping substantially identical areas provides redundant protection to said circuit to be protected, and when one of said nonoverlapping substantially identical area short circuits to said second semiconductor region, said respective fuse opens and separates said nonoverlapping substantially identical area from said supply voltage.

5,627,712

TRANSFORMER DIFFERENTIAL RELAY

Stanley B. Wilkinson, Havertown, Pa., assignor to General Electric Company, New York, N.Y.

Filed Apr. 19, 1990, Ser. No. 511,248
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—63 **64 Claims**



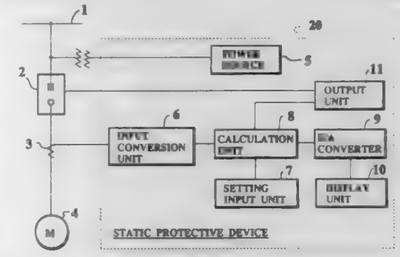
1. A transformer differential relay comprising:
(a) means for generating a first signal representative of currents flowing in at least two windings of a transformer;
(b) means for generating a second signal representative of a positive portion of said first signal and a third signal representative of a negative portion of said first signal;
(c) means for generating a harmonic restraint signal;
(d) means for generating a first output signal when the algebraic sum of the magnitude of said harmonic restraint signal and said second signal exceeds a first predetermined value, and a second output signal when the algebraic sum of the magnitude of said harmonic restraint signal and said third signal exceeds a second predetermined value; and
(e) means for providing a trip signal upon coincidence of said first and second output signals.

5,627,713

PROTECTIVE DEVICE FOR ELECTRIC DISTRIBUTION SYSTEM

Masakazu Takeshi, Tokyo-to, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 675,814, Mar. 27, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 994,079
Claims priority, application Japan, Mar. 27, 1990, 2-075647
Int. Cl.[6] H02H *3/093*
U.S. Cl. 361—67 **8 Claims**



1. A protective device for an electric distribution system in which a circuit breaker is provided between a main distribution bus line and a motor device connected to the main distribution bus line, the protective device comprising:
input means for entering a setting of an operation characteristic of the protective device according to an operation characteristic of the motor device;
means for determining the operation characteristic of the protective device according to the setting entered by the input means; and
display means for displaying the operation characteristic determined by the determining means in a form of an I-T curve graph along with the operation characteristic of the motor device, in order to facilitate a visual inspection of an appropriateness of the setting entered at the input means.

5,627,714

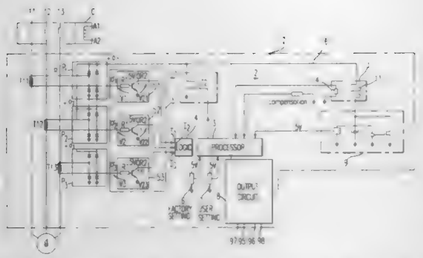
ELECTRONIC THERMAL PROTECTION DEVICE

Gilles Baurand, Montesson, and Antoine Stentz, Rueil Malmaison, both of France, assignors to Schneider Electric SA, Boulogne Billancourt, France

Filed Mar. 7, 1995, Ser. No. 399,599
Claims priority, application France, Mar. 7, 1994, 94 02698
Int. Cl.[6] H02H *3/18*
U.S. Cl. 361—85 **5 Claims**

1. A thermal protection device for an electric load connected to a polyphase power supply, comprising:
a plurality of current transformers, each installed on one line of said polyphase power supply;

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detector means connected to said transformers for supplying logic signals having levels which depend on the direction and magnitude of currents from said transformers;

a processor receiving and combining said logic signals to determine if each logic signal is equal to another logic signal and to determine an unbalance of the primary currents, wherein the processor processes logic signals by means of an operation so as to determine logic states each equal to a first level if a pair of logic signals are equal and to a second level if said pair of logic signals are not equal and to determine the times for which said logic states are at the same level are equal or unequal during a period in order to determine balance or unbalance of the primary currents; and

an output circuit connected to said processor for removing the power supply from said load.

5,627,715

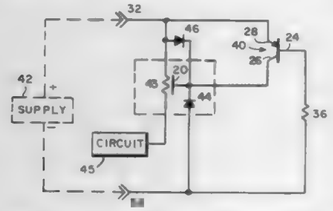
CIRCUIT CONSTRUCTION FOR PROTECTIVE BIASING

A. Paul Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 222,316, Apr. 1, 1994, abandoned, which is a continuation of Ser. No. 848,754, Mar. 10, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,413

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **19 Claims**



1. A circuit construction for protective biasing of an electrical circuit, comprising:

first and second means, for connection to a source, for receiving a supply voltage of a predetermined polarity therebetween;

means for protecting the electrical circuit if and when the source is connected to the first and second means for receiving such that the polarity therebetween is the reverse of the predetermined polarity, the means for protecting including a transistor having a substrate of a first type of semiconducting material, a base of a second type of semiconducting material, formed on the substrate and receiving a base drive current, a collector and an emitter each made of the first type of semiconducting material and formed in the base, and means for collecting carriers reinjected from the collector into the base of the transistor when said transistor is saturated and for reducing the base drive current to a level maintaining the transistor in saturation, wherein the emitter is connected to the second means for receiving, and the collector is connected to the electrical circuit, and

means for connecting the base to the first means for receiving.

5,627,716

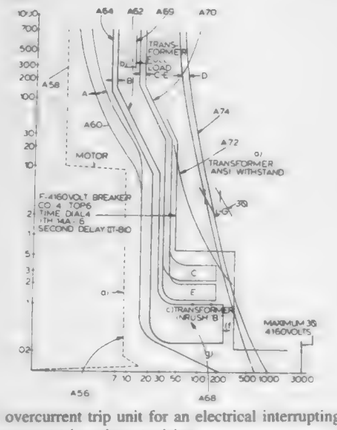
OVERCURRENT PROTECTION DEVICE

James L. Lagree, Plum Borough; Harry W. Wargo, Bethel Park; Anthony Tomeo, Penn Hills, and Joseph C. Engel, Monroeville Boro, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 907,131, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 636,634, Dec. 28, 1990, Pat. No. 5,270,898. This application Mar. 5, 1996, Ser. No. 610,679

Int. Cl.[6] H02H *3/08*

U.S. Cl. 361—93 **34 Claims**



1. An overcurrent trip unit for an electrical interrupting device, said overcurrent trip unit comprising:

means for sensing an electrical current in said electrical interrupting device, the electrical current having a magnitude and a time period; and

means responsive to said sensing means for providing a trip signal in accordance with a selectable predetermined function of the magnitude and the time period of the electrical current flowing in said electrical interrupting device, said selectable predetermined function defining a long time delay portion and is selected from a plurality of programmed functions including the product of the electrical current to a first power (M) and the time ($I^M t$), and the product of the electrical current to a second power (N) and the time ($I^N t$), the second power (N) being greater than two.

5,627,717

ELECTRONIC PROCESSING UNIT, AND CIRCUIT BREAKER INCLUDING SUCH A UNIT

Howard B. Pein, Briarcliff, N.Y.; Gregory T. Divincenzo, Easton, Md.; Paulo Caldiera, Scarsdale, N.Y.; Wen-Jian Gu, Croton, N.Y., and Stephen L. Wong, Scarsdale, N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 28, 1994, Ser. No. 366,149

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—95 **21 Claims**

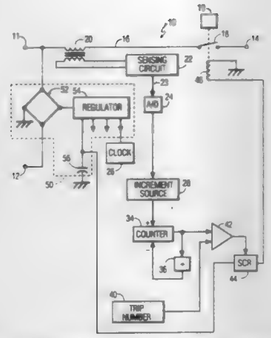
1. An electronically tripped circuit breaker, comprising:

a first line connection point,

a load connection point,

controllable means for establishing a conductive electrical connection between said first line connection point and said load connection point, and for opening said conductive electrical connection in response to a trip signal,

current sensing means for sensing at least the absolute magnitude of load current flow through said conductive electrical connection, and providing a current signal related to said at least the absolute magnitude of load current, and



an electronic processing unit, responsive to said current sensing means, for providing said trip signal to said controllable means,

characterized in that said electronic processing unit comprises:

sampling means for producing successive digital samples of said current signal at a sampling rate,

first means for determining respective increment values at an incrementing rate, each increment value corresponding to at least one of a sequence of said successive digital samples, each increment value being based on a first predetermined current/time relationship, said first predetermined current/time relationship emulating heating of a thermal mass

a counter for counting and storing a value therein,

means for incrementing the value, stored in said counter, with said respective increment values at said incrementing rate,

second means for determining a succession of respective subtraction values based on the value then stored in said counter, taken at a decrementing rate, each subtraction value being based on a second predetermined current/time relationship, said second predetermined current/time relationship emulating cooling said thermal mass through a thermal resistance

means for reducing said value stored in said counter by successively subtracting the respective subtraction values, at said decrementing rate, and

means for providing said trip signal responsive to said counter value reaching a predetermined value.

1. A circuit interrupter for an ac electrical system comprising:

separable contacts for interrupting current in said ac electrical system when opened;

sensing means sensing waveforms in said ac electrical system including at least one current waveform;

sampling means sampling said ac waveforms sensed by said sensing means at sampling instants to generate digital waveform samples;

means generating said sampling instants in pairs spaced 90 electrical degrees of said ac waveforms apart in time with delays between successive pairs of said sampling instants adjusted to produce a selected equivalent sampling rate per cycle of said ac waveforms after a given number of samples; and

processor means for tripping said separable contacts open in response to a predetermined current/time characteristic of said current waveform repetitively determined from said given number of digital current samples taken at said equivalent sampling rate.

5,627,719

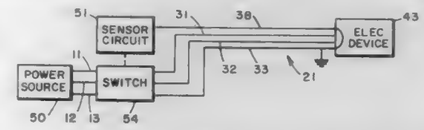
ELECTRICAL WIRING SYSTEM WITH OVERTEMPERATURE PROTECTION

William R. Gaston, P.O. Box 344, Marco Island, Fla. 33969

Division of Ser. No. 107,911, Aug. 17, 1993, Pat. No. 5,424,895. This application Jun. 13, 1995, Ser. No. 490,318

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **4 Claims**



1. In an electric power cable having at least three electrical conductors contained therein, the improvement comprising a fourth conductor contained in the cable and running coextensively with said electrical conductors, said fourth conductor exhibiting a substantial change in a conducting characteristic in response to heating of the cable above a preselected high temperature less than a melting point of the cable.

5,627,718

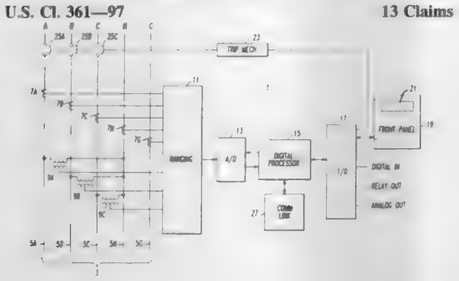
APPARATUS PROVIDING PROTECTION AND METERING IN AN AC ELECTRICAL SYSTEM UTILIZING A MULTI-FUNCTION SAMPLING TECHNIQUE

Joseph C. Engel, Monroeville; Gary F. Saletta, Irwin, and Richard A. Johnson, Hopewell Township, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 18, 1994, Ser. No. 342,208

Int. Cl.[6] H02H *3/18*

U.S. Cl. 361—97 **13 Claims**



5,627,720

POWER DISTRIBUTION BOX WITH SURGE SUPPRESSOR

Keith A. Lewis, 1700 Crisp Rd., Ennis, Tex. 75119

Filed Aug. 11, 1995, Ser. No. 514,191

Int. Cl.[6] H02H *3/22*

U.S. Cl. 361—118 **5 Claims**

1. A power distribution box for connecting a power source to an electrical system in a building, comprising:

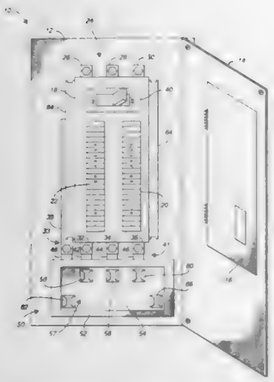
a panel board mounted in the building;

a plurality of circuit breakers housed in the panel board and electrically connected between the power source and the electrical system of the building;

a socket housed in the panel board and directly electrically connected in parallel with the plurality of circuit breakers, the socket including a stab-in connector for at least one power conductor, and a ground conductor, each of the stab-in connectors forming an aperture in a surface of the socket; and

a surge suppression module to suppress an electrical surge in the power source, the surge suppression module including a stab for the at least one power conductor and the ground conductor, the stabs adapted to engage the corresponding stab-in connector in the socket thereby making an electrical connection, wherein the surge suppression module is removably inserted in the socket and when inserted in the socket is

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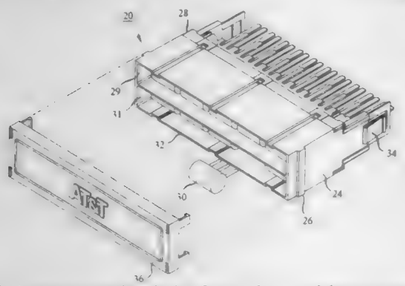
electrically connected to the power source in parallel with the plurality of circuit breakers.

5,627,721

PROTECTOR CARTRIDGE FOR MODULAR CONNECTOR BLOCKS

Antonio A. Figueiredo, Belleville; Adam S. Kane, Morristown, and Jeremia P. Starace, Nutley, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 14, 1995, Ser. No. 502,522
Int. Cl.[6] H02H *3/22*
U.S. Cl. 361—119 **20 Claims**



1. A surge protection device for use in a modular connecting block system, wherein connector modules having terminals on front and rear sides thereof are insertable into a mounting bracket to form a connecting block, and wherein said connector modules are adapted to receive voltage limiting circuit protection devices on said front and rear sides of said connector modules for protecting individual pairs of said terminals, said connector modules including a plurality of receptacles corresponding to said individual pairs of said terminals for insertion of said protection devices, said device comprising:

a plurality of conductive terminals adapted for insertion into said receptacles of said connector modules to thereby couple with individual terminals of said connector modules;

an insulated housing adapted to securably mount said plurality of terminals within said housing, said housing further being adapted to accept a plurality of surge protection means for coupling with said plurality of terminals; and

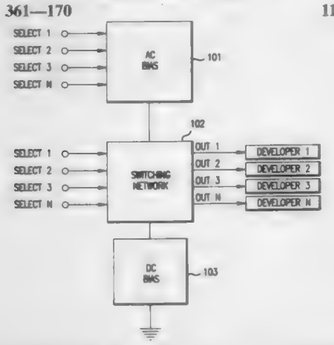
a ground bus insertable within said insulated housing and being adapted to couple with said surge protection means and said mounting bracket to thereby provide an electrical discharge path, said device being symmetrical about a central vertical axis and being insertable in said front or rear side of said connector modules in either orientation of a 180 degree rotation about said axis, thereby adaptively mounting within a single one of said connector modules to protect each pair of said terminals therein.

5,627,722

SINGLE HIGH VOLTAGE SUPPLY FOR USE IN A MULTIPLE DEVELOPER ELECTROPHOTOGRAPHIC PRINTER

B. Mark Hirst, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 5, 1994, Ser. No. 349,239
Int. Cl.[6] G03G *15/01*
U.S. Cl. 361—170 **11 Claims**



1. A voltage supply system for use in a electrophotographic printer where said electrophotographic printer has a plurality of developers, said system comprising:

an alternating current source, said alternating current source receives a plurality of select signals for indicating which one of said plurality of developers is in use, said alternating current source outputs an AC voltage when one of said plurality of developers is active; and

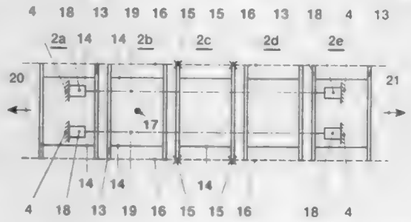
a switching network connected to said alternating current source and connected to said plurality of developers, said switching network receives said plurality of select signals and routes said AC voltage to the active developer.

5,627,723

EARTHQUAKE PROTECTION DEVICE FOR A GAS-INSULATED SWITCHING INSTALLATION

Heinz Hägeli, Würenlos, and Karel Spicak, Zürich, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Mar. 29, 1995, Ser. No. 412,922
Claims priority, application Switzerland, Apr. 19, 1994, 1215/94
Int. Cl.[6] H02B *5/00*
U.S. Cl. 361—602 **7 Claims**



1. An earthquake protection device for a gas-insulated switching installation, comprising:

a gas-insulated switching installation having at least one busbar the busbar having a busbar axis, the switching installation having at least two switch panels and at least two supporting frames, each of the switch panels being mounted on a respective one of the supporting frames;

means for connecting the supporting frames to a foundation such that one or more supporting frames are displaceable supporting frames, the displaceable supporting frames being displaceable relative to at least part of the connecting means at least in a direction of the busbar axis;

at least one shock absorber associated with the displaceable supporting frames, the shock absorber having an active axis lying in a plane of the supporting frames; and

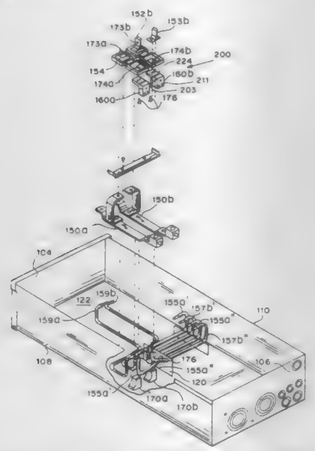
the active axis extending proximate a center of gravity of at least one of the switch panels.

5,627,724

COMBINATION SERVICE ENTRANCE DEVICE WITH PROVISIONS FOR DISTRIBUTING POWER TO MULTIPLE SERVICE DISCONNECTS

Thomas C. Leach, and James P. Mills, Jr., both of Lexington, Ky., assignors to Square D Company, Palatine, Ill.

Filed Jun. 14, 1995, Ser. No. 490,219
Int. Cl.[6] H02B *1/00*
U.S. Cl. 361—663 **8 Claims**



1. An electrical power distribution device, comprising:

(a) a common enclosure having a first section and a second section;

(b) at least two service disconnects placed in the second section;

(c) a meter socket placed in the first section, said meter socket having at least two output terminals;

(d) a separate connector coupled to each of the output terminals of the meter socket, each such connector having a connection outlet in a first plane and a connection outlet in a second plane; and

(e) a flexible insulated conductor routed between each of the said connector and service disconnect.

5,627,725

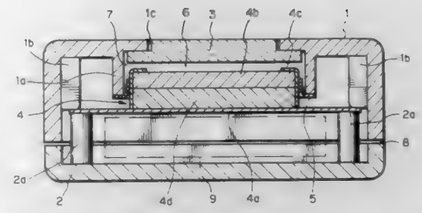
DUSTPROOF STRUCTURE FOR AN ELECTRONIC APPARATUS HAVING A DISPLAY PORTION

Hiroshi Yamada, and Masataka Suzuki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 31, 1995, Ser. No. 550,659
Claims priority, application Japan, Oct. 31, 1994, 6-266910
Int. Cl.[6] G06F *1/16*; **H05K** *5/06*
U.S. Cl. 361—681 **5 Claims**

1. A dustproof structure for an electronic apparatus having a display portion, comprising:

a box-like casing having an open end, and formed with a window at a center thereof, and accommodating said display portion therein;



a screen closing said window of said casing;

a cover removably closing said open end of said casing while maintaining said display portion at a predetermined distance from said screen;

a guide wall extending from an inner periphery of said casing around said window, and surrounding said display portion; and

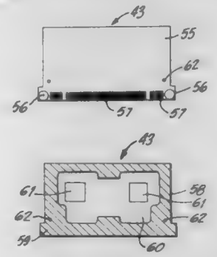
an elastic member hermetically sealing a gap between said guide wall and said display portion, said elastic member comprising a thin sheet formed with a hole at a center thereof for allowing said display portion to be inserted thereinto, inner edges of said sheet defining said hole, said hole of said elastic member being sized slightly smaller than an inserting surface of said display portion, the inner edges of said sheet being elastically deformed toward said screen when said display portion is inserted thereinto to form a hermetically sealed chamber between said screen at said display.

5,627,726

ELECTRONIC CARD WITH PRINTED CIRCUIT BOARD AS OUTER SURFACE

Morton E. David, Montclair; Paul K. Kavanaugh, Eastampton, and Ngoc M. Luong, Maple Shade, all of N.J., assignors to Franklin Electronic Publishers, Inc., Burlington, N.J.

Filed Aug. 7, 1995, Ser. No. 511,738
Int. Cl.[6] G06F *1/16*; **H05K** *7/04*
U.S. Cl. 361—684 **14 Claims**



1. An electronic device for processing information, said device comprising:

a frame with a recess; and,

a removable card for insertion into said recess, said removable card including:

a) a base comprising (i) a first surface and (ii) a second surface; and

b) a circuit board comprising (i) a first surface which exclusively includes a plurality of components, and (ii) a second surface which includes an electrical connection means;

wherein, said first surface of said circuit board is attached to said first surface of said base and said second surface of said circuit board functions as an exterior surface on said removable card.

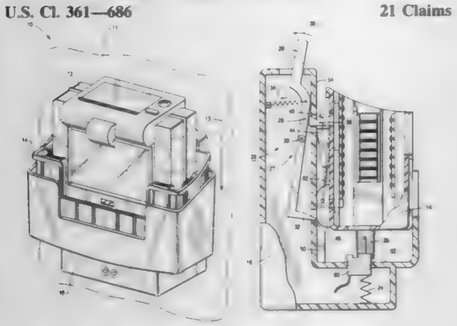
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5,627,727

PORTABLE COMPUTER ASSEMBLY AND METHOD

Rafael E. Aguilera, Simpsonville, and Robert J. Crockett, Central, both of S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 2, 1994, Ser. No. 300,602
Int. Cl.[6] G06F *1/16*; H05K *7/00*
U.S. Cl. 361—686 21 Claims



20. A portable computer storage system, comprising:

a receptacle adapted to hold a portable computer;

a base for supporting said receptacle;

a lock and release mechanism for locking said receptacle to said base; and

wherein said lock and release mechanism comprises a movement actuator, and wherein actuation of the movement actuator allows movement of said receptacle from a first locked position to a second locked position,

wherein the portable computer is locked to said receptacle when (1) the portable computer is held by said receptacle, and (2) said receptacle is in the first locked position, and

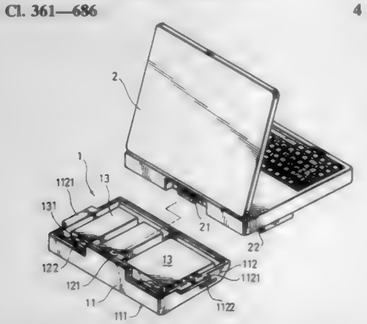
wherein the portable computer is unlocked from said receptacle when (1) the portable computer is held by said receptacle, and (2) said receptacle is in the second locked position.

5,627,728

EXPANSION BOX FOR NOTEBOOK COMPUTERS

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Rd., Taipei, and Yung-Fa Cheng, 3F, No. 8, Alley 2, Lane 30, Deng Gong Rd., Dan Shui, Taipei Hsien, both of Taiwan

Filed Dec. 4, 1995, Ser. No. 567,104
Claims priority, application China, Nov. 13, 1995, 95223985.X
Int. Cl.[6] G06F *1/16*
U.S. Cl. 361—686 4 Claims



1. An expansion box for use with notebook computers, comprising:

a box consisting of four side walls and a base, two lateral sides thereof being provided with male members for connection to female members of a notebook computer; a single expansion board secured within said box and having an expansion connector mounted to an upper side thereof and a plurality of unit connectors mounted to a lower side thereof, said upper side of the expansion board being on an opposite side of said board from said base and said lower side of the expansion board being adjacent said base, with said unit connectors being connected to said expansion connector by wires and both said expansion connector and said unit connectors facing in a same direction; said expansion board further having securing means disposed at both sides thereof for securing said expansion board in said box;

a plurality of expansion units in the form of cartridges or cards situated in said box, said expansion units each having a connector for mating with a corresponding one of said unit connectors on the lower side of said expansion board;

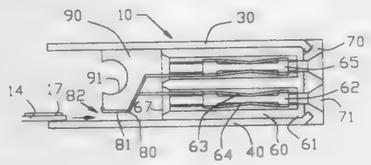
wherein when said expansion box is coupled to the bottom side of the notebook computer by means of said male members fitting into said female members of the notebook computer, and said expansion connector mounted on the upper side of said expansion board is connected to a connector located at a rear side of the notebook computer, said expansion units are positioned below said notebook computer and connected thereto by means of the single expansion board.

5,627,729

ONE-PIECE MEMORY CARD

John Oldendorf, Prospect Heights, and Mark Stack, Hoffman Estates, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Apr. 3, 1995, Ser. No. 415,698
Int. Cl.[6] H05K *1/14*
U.S. Cl. 361—737 15 Claims



1. A one-piece memory card assembly for housing a semiconductor device comprising:

a top metallic cover;

a bottom metallic cover attached to the top cover and providing a one-piece six-sided structure defining a cavity having

an open first end for receiving a circuit board; and

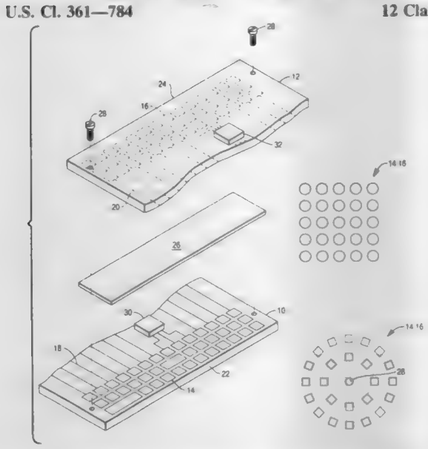
a second end bounded by an electrical connector attachable to the circuit board wherein the electrical connector includes a first side having an aperture having a receptacle contact mounted therein for receiving a contact pin of an external device and a second side having a PCB contact protruding transversely therefrom and electrically connected to the receptacle and the PCB contact having a wiping area spaced from the bottom metallic cover forming a gap in communication with the cavity for receiving an edge of the circuit board therein, the edge having conductive fingers thereon for slidingly engaging the wiping area of the PCB contact to carry electrical signals between the circuit board and the electrical connector.

5,627,730

PRINTED CIRCUIT BOARD ASSEMBLY FOR HIGH SPEED DATA TRANSFER

Walter König, Neusaess; Albert Mödl, Stadtbergen, and Peter F. Baur, Augsburg, all of Germany, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 347,023, Nov. 30, 1994, abandoned.
This application Feb. 26, 1996, Ser. No. 606,663
Int. Cl.[6] H05K *1/11*; H01R *13/40*
U.S. Cl. 361—784 12 Claims



1. An apparatus for coupling first and second printed circuit boards comprising:

a first plurality of metal connection pads arranged in a first plurality of lines in a first two-dimensional pattern on a connecting surface of the first printed circuit board;

wherein at least one of the first plurality of lines includes at least one of the first plurality of metal connection pads and at least another one of the first plurality of lines includes at least two of the first plurality of metal connection pads;

a second plurality of metal connection pads arranged in a second plurality of lines in a second two dimensional pattern on a connecting surface of the second printed circuit board which faces the connecting surface of the first printed circuit board;

wherein at least one of the second plurality of lines includes at least one of the second plurality of metal connection pads and at least another one of the second plurality of lines includes at least two of the second plurality of metal connection pads; and

an anisotropically conducting sheet between the first and second printed circuit boards and having a surface area large enough to cover the connection pads of the first and second printed circuit boards.

5,627,731

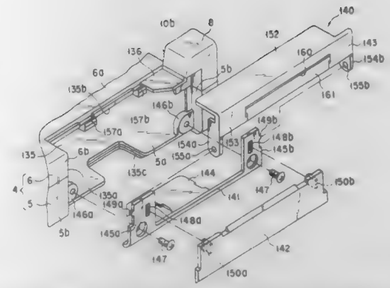
COMPACT ELECTRONIC APPARATUS AND METHOD OF ASSEMBLING THE SAME

Youji Sato, Yokohama; Yuji Nakajima, Tokyo; Kinji Taki, Tokyo, and Toshikazu Konno, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 520,754, Aug. 29, 1995, which is a division of Ser. No. 107,948, Aug. 16, 1993, Pat. No. 5,455,746.
This application Mar. 13, 1996, Ser. No. 615,123
Claims priority, application Japan, Sep. 17, 1992, 4-248361; Sep. 17, 1992, 4-248362; Sep. 30, 1992, 4-262555; Sep. 30, 1992, 4-262556; Mar. 29, 1993, 5-070446
Int. Cl.[6] H05K *7/14*
U.S. Cl. 361—796 2 Claims

1. A compact electronic apparatus comprising:

a substantially rectangular housing having a peripheral wall:



a card storage section having a insertion opening arranged on the peripheral wall and formed in a size capable of storing a function expansion card having the largest permissible dimensions conforming to a given standard, for selectively storing one of the function expansion cards having different dimensions conforming to said standard;

a connector conforming to said standard and arranged within the card storage section, for connection with the expansion card stored in the card storage section; and

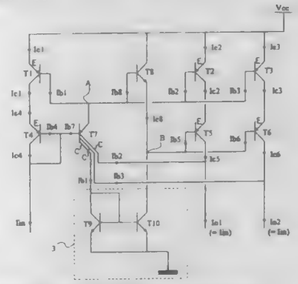
a cover closing an insertion opening.

5,627,732

MULTIPLE OUTPUT CURRENT MIRROR

Gee H. Loh, and Mario Santi, both of Singapore, Singapore, assignors to SGS-Thomson Microelectronics S.A., Saint Geinis Pouilly, France

Filed May 24, 1995, Ser. No. 448,803
Claims priority, application European Pat. Off., May 27, 1994, 94410039
Int. Cl.[6] G05F *3/02*
U.S. Cl. 363—16 38 Claims



1. A multiple output current mirror comprising:

at least three mirror connected PNP transistors, including a first mirror transistor and at least two additional mirror transistors, each mirror transistor having a base, an emitter and a collector, said base of each mirror transistor being connected to a first node;

at least three cascade connected transistors including a first cascade transistor and at least two additional cascade transistors, each one of the cascade transistors having a base and a collector, each one of the cascade transistors being coupled to a corresponding one of the mirror transistors;

a current input terminal coupled to the collector of the first cascade transistor;

at least two mirror output terminals respectively coupled to the collectors of the at least two additional cascade transistors; and

means for detecting a base current of each one of the mirror connected PNP transistors, and for each one of the mirror connected PNP transistors, reproducing its base current on the collector of its corresponding cascade transistor.

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5,627,733

POWER SUPPLY DEVICE

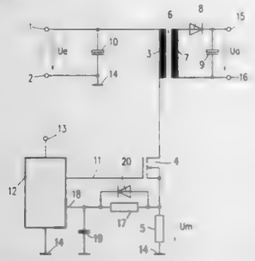
Johann Bressler, Nürnberg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1995, Ser. No. 540,519

Claims priority, application Germany, Oct. 13, 1994, 44 36 553.5

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **4 Claims**



1. A power supply device comprising a series arrangement of an inductance (**3**), a switching device (**4**) clocked by a control circuit (**12**), and a current measuring impedance (**5**), which series arrangement is arranged between two terminals (**1**, **2**) to which a supply voltage (Ue) can be applied, an input resistor (**17**) via which a voltage (Um) appearing across the current measuring impedance (**5**) can be applied to an input (**18**) of the control circuit (**12**) to control the switching device (**4**), and a capacitance (**19**) in parallel with the input (**18**) of the control circuit (**12**),

characterised in that a diode (**20**) is arranged in parallel with the input resistor (**17**) and in that the diode (**20**) and the input resistor (**17**) are dimensioned in such a manner relative to one another that the diode (**20**) becomes conductive only when the voltage (Um) across the current measuring impedance (**5**) exceeds a given limit value, and in that the ohmic resistance of the diode (**20**) together with the capacitance (**19**) forms a smaller time constant than the input resistor (**17**) with the capacitance (**19**).

5,627,734

METHOD AND CONTROL ARRANGEMENT FOR DC TRANSMISSION, AND A CONTROL DEVICE

Franz Karlecik-Maier, Höchstadt, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

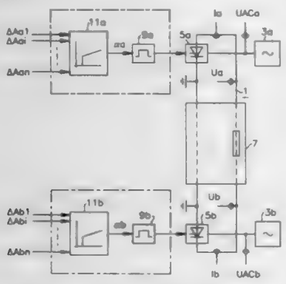
PCT No. PCT/DE94/00227, § 371 Date Sep. 18, 1995, § 102(e) Date Sep. 18, 1995, PCT Pub. No. WO94/22211, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 2, 1994, Ser. No. 525,568

Claims priority, application Germany, Mar. 16, 1993, 43 08 362.5

Int. Cl.[6] H02J *3/36*

U.S. Cl. 363—35 **18 Claims**



1. A method for transmission of direct current between a plurality of converters in a high-voltage direct-current transmission installation, each of which is controlled by a different one of a plurality of control devices, comprising the steps of:

determining a common operating point from a predetermined power to be transmitted,

said common operating point comprising a vector in multi-dimensional space;

determining a plurality of part-deviations between the dimensions of said common operating point and respective dimensions of the actual operating points of each of said plurality of converters;

deriving a plurality of part-control signals each from a different one of said plurality of part-deviations;

for each of said plurality of converters, combining each of said plurality of part-control signals associated with a particular converter in order to form a control signal and using said control signal to alter the operating point of the particular converter such that each of the part-deviations associated with the particular converter are simultaneously controlled to zero.

5,627,735

METHOD AND DEVICE FOR COMPENSATION OF UNBALANCE IN A SERIES COMPENSATED CONVERTER STATION

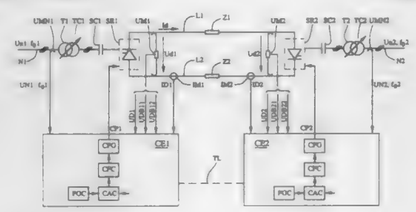
Per-Erik Björklund, Bjursås; Tomas Jonsson, Grängesberg, and Lars-Erik Juhlin, Ludvika, all of Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

Filed Nov. 13, 1995, Ser. No. 558,083

Claims priority, application Sweden, Nov. 15, 1994, 9403924

Int. Cl.[6] H02J *3/36*

U.S. Cl. 363—35 **12 Claims**



1. A method for controlling a series-compensated converter station included in an installation for transmission of high-voltage direct current, said converter station comprising a converter (**SR1**, **SR2**), controlled by control equipment (**CE1**, **CE2**), with at least one 6-pulse bridge (BR), said 6-pulse bridge via series capacitors (SCR, SCS, SCT) being connected to a three-phase alternating-voltage network (**N1**, **N2**) with a fundamental frequency (f_{01}, f_{02}), said control equipment generating an ordered value (AOL) of a control angle (α) for valves (**V1**–**V6**) included in the 6-pulse bridge in dependence on a limiting signal (AMAXL) capable of being controlled, said method comprising the steps of: forming an amplitude signal (AMPL) which corresponds to the amplitude (**C1**) for a component (**C1**$\cdot\sin(2\pi f_0 t+\phi 1)$) of the fundamental frequency in the direct voltage (Udb) of the 6-pulse bridge, continuously calculating a compensating signal (ACOMP) in dependence on a sensed voltage (**Un1**, **Un2**) at the converter station and on the amplitude signal according to a relationship (**H0**, **H1**) which at least approximately imitates a relationship according to which a control-angle addition ($\Delta\alpha$), at a commutating margin (τ_m) for the valves equal to a preselected value (τ_p), is a function (**F0**) of a current (**Id1**, **Id2**) in the converter station, said voltage in the converter station and the amplitude (C_1) for said component of the fundamental frequency in the direct voltage of the 6-pulse bridge, and forming the limiting signal in dependence on the compensating signal for the purpose of maintaining the commutating margin (τ_m) for the valves equal to at least the preselected value (τ_p) in case of unbalance between the voltages (UCR, UCS, UCT) of the series capacitors.

5,627,736

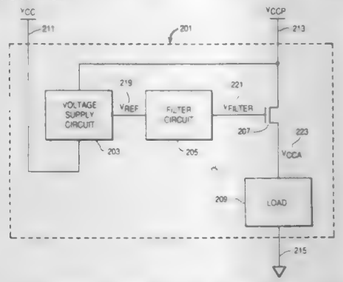
POWER SUPPLY NOISE FILTER

Gregory F. Taylor, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 20, 1995, Ser. No. 575,610

Int. Cl.[6] H02M *1/14*; **H02J** *1/02*

U.S. Cl. 363—39 **20 Claims**



1. A power supply noise filter for filtering noise from power supplied to a load, the power supply noise filter comprising:

a voltage supply circuit coupled between a first voltage and a second voltage, the voltage supply circuit configured to supply a third voltage;

a filter circuit coupled to the voltage supply circuit to receive and filter the third voltage; and

a first transistor coupled between the first voltage and the load, the filter circuit coupled between the gate of the first transistor and the voltage supply circuit, wherein the first transistor is coupled in a source follower configuration so as to supply a fourth voltage to the load.

5,627,737

POWER INVERTER FOR USE IN SYSTEM INTERCONNECTION

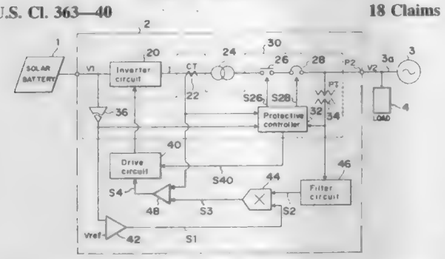
Masahiro Maekawa; Yasuhiro Makino; Etsuko Yamamoto; Masaki Yugo, all of Osaka; Wataru Horio; Takehito Ike, both of Hyogo, and Ding Lu, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 13, 1994, Ser. No. 304,948

Claims priority, application Japan, Sep. 13, 1993, 5-227243; Nov. 9, 1993, 5-279141; May 31, 1994, 6-118466

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—40 **18 Claims**



1. A power inverter for use in system interconnection, comprising:

an inverter circuit changing an output power of a direct-current supply to alternating-current power to be delivered to a load connected to a commercial alternating-current supply system;

means for separating a fundamental frequency component from voltage at a junction point between said inverter circuit and the commercial alternating-current supply system and for providing an output signal having the fundamental frequency, said means having frequency response characteristics such that a phase angle between the voltage and the output signal is reduced to 0° when the fundamental frequency component is at a first frequency which is equal to a commercial frequency, when the fundamental frequency component is at a second frequency which is higher than the commercial frequency, and when the fundamental frequency component is at a third frequency which is lower than the commercial frequency;

a drive circuit capable of driving said inverter circuit into outputting a current in phase with the output signal taken from said means; and

a protection device cutting a connection between said inverter circuit and the commercial alternating-current supply system when a frequency of the voltage at the junction point changes.

5,627,738

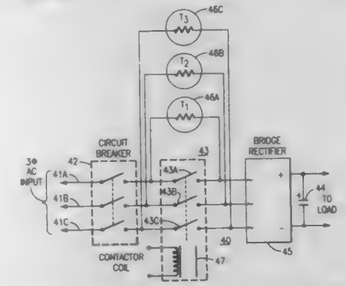
LOW COST, HIGH RELIABILITY SOFT START ARRANGEMENT

Vadim Lubomirsky, Penfield, and Jeff C. Sellers, Palmyra, both of N.Y., assignors to ENI, A Division of Astec America, Inc., Rochester, N.Y.

Filed May 19, 1995, Ser. No. 445,341

Int. Cl.[6] H02H *7/122*

U.S. Cl. 363—49 **8 Claims**



1. Soft start circuit arrangement for a high power module of the type that includes power input conductors, a load device connected to said power input conductors, and a storage capacitor bank coupled across said power input conductors, comprising

a power switch in series with one of said conductors, with one side connected to said capacitor bank and load device, and another side connected to an electrical power source providing AC electrical power;

a rectifier arrangement interposed between said power switch and said capacitor band and load device; and

a charging capacitor coupled in shunt across said power switch for permitting said capacitor bank to charge when said power switch is open so as to avoid power surges when the power switch is actuated closed.

5,627,739

REGULATED CHARGE PUMP WITH LOW NOISE ON THE WELL OF THE SUBSTRATE

Peng Yung-Chow, and Jizoo Lin, both of Hsinchu, Taiwan, assignors to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Apr. 2, 1996, Ser. No. 630,879

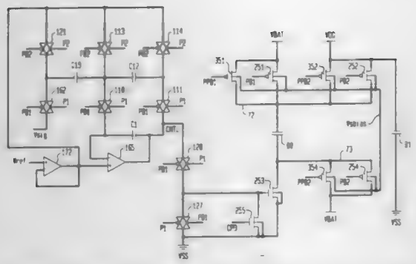
Int. Cl.[6] H02M *3/18*

U.S. Cl. 363—60 **4 Claims**

1. A regulated charge pump comprising:

a charge pump core for boosting a first voltage, which exists at a first terminal of a charging capacitor during a first predetermined time period, by an amount equal to a first power supply voltage referenced to a second voltage during a second predetermined time period, and providing a regulated charge

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pumped voltage in response, said charge pump core comprising a first transistor, said first transistor having a first current electrode for receiving said first power supply voltage and a second current electrode coupled to said first terminal of said charging capacitor;

a second transistor having a first current electrode coupled to a second terminal of said charging capacitor, a control electrode and a second current electrode for receiving a second power supply voltage, said second transistor being proportionately conductive during said first predetermined time period; and

a third transistor having a first current electrode for receiving said first power supply voltage, and a second current electrode coupled to said second terminal of said charging capacitor, said third transistor being conductive during said second predetermined time period;

an integrating means coupled to said control electrode of said second transistor, for changing said second voltage proportionately in response to an integration of a difference between a proportional voltage and a reference voltage by altering a conductivity of said second transistor.

5,627,740

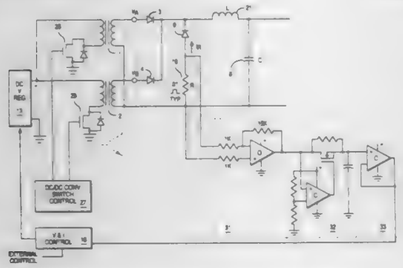
LOW DISSIPATION CURRENT SENSING SYSTEM FOR A SWITCHED DC POWER SUPPLY

Girish C. Johari, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1994, Ser. No. 355,869

Int. Cl.° H02M *5/42*

U.S. Cl. 363—78 **9 Claims**



1. A power supply with current control, comprising:

a source of adjustable DC voltage;

means for generating substantially rectangular voltage pulses, the pulses having an amplitude proportional to the adjustable DC voltage and a constant duty cycle of less than 100 percent;

an inductive means serially connected between the means for generating and a load;

a freewheeling diode means connecting in parallel with a means for generating;

means for relating current pulses through the freewheeling diode means to current drawn by the load; and

means for regulating the magnitude of the adjustable DC voltage responsive to the magnitude of the current pulses through the freewheeling diode means in controlling the current drawn by the load.

5,627,741

POWER SUPPLY APPARATUS

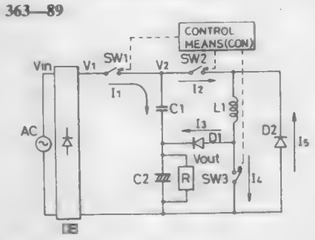
Masahiro Naruo; Takashi Kanda, and Tomoyuki Nakano, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 8, 1996, Ser. No. 597,404

Claims priority, application Japan, Feb. 15, 1995, 7-027140

Int. Cl.° H05B *37/00*

U.S. Cl. 363—89 **26 Claims**



1. A power supply apparatus comprising:

a full-wave rectifier connected to an A.C. power source;

a first switching element and first energy storage means are connected between output ends of said full-wave rectifier;

a load circuit as a parallel circuit of a load and voltage stabilization means is connected to the output ends of the full-wave rectifier through said first switching element and said energy storage means; and

control means for adjusting a voltage across the first energy storage means,

wherein said control means controllably adjusts a voltage across the first energy storage means to cause a sum of the voltage across the first energy storage means and a voltage across said voltage stabilization means to be proportional to an input voltage, to cause the first energy storage means to hold thereacross a voltage corresponding to a difference between the input voltage and output voltage, whereby a desired constant voltage is applied to said load and an envelope line of an input current is proportional to the input voltage.

5,627,742

THREE LEVEL POWER CONVERTING APPARATUS HAVING MEANS FOR BALANCING DC COMPONENT THEREOF

Kiyoshi Nakata, Iwase-machi; Mutsuhiro Terunuma, Mito; Tokunosuke Tanamachi, and Kiyoshi Nakamura, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1994, Ser. No. 297,569

Claims priority, application Japan, Sep. 1, 1993, 5-217185

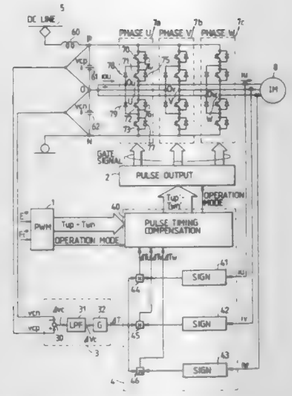
Int. Cl.° G05F *1/10;* **H02M** *1/12*

U.S. Cl. 363—98 **10 Claims**

1. A power converting apparatus comprising:

a plurality of capacitors connected in series across a DC voltage source, converter for converting DC voltages supplied from the capacitors to an AC phase voltage having three potentials, including a positive, zero, and negative potential, and

zero-voltage adjuster for adjusting a zero-voltage duration of the AC phase voltage on a basis of an output current polarity of



the power converting apparatus and a value representing a voltage difference between the voltages of the capacitors connected in series so as to balance the voltages.

5,627,743

CHOPPER POWER SUPPLY ADAPTED TO ENABLE LOW-VOLTAGE SWITCHING TO BE PERFORMED

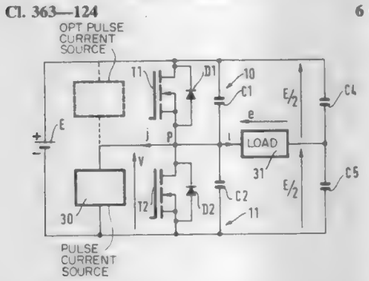
Daniel Sadarnac, and Sylvain d'Almeida, both of Gif sur Yvette, France, assignors to Alcatel Converters, Paris, France

Filed Mar. 2, 1995, Ser. No. 397,773

Claims priority, application France, Mar. 3, 1994, 94 02462

Int. Cl.° H02M *7/00*

U.S. Cl. 363—124 **6 Claims**



1. A chopper power supply including at least one bridge arm constituted by two switching sections in series receiving a DC voltage to be chopped, each switching section including switching means in parallel with a capacitor and a protective diode, said switching means being alternately closed and opened so as to supply an AC voltage at a chopper frequency, which voltage is applied to a load having one of its terminals connected to a common point that is common to said switching sections;

wherein a pulse current source is connected to said common point, said pulse current source being constituted by an LC-type circuit dimensioned so that the current flowing through said circuit is delayed by $\pi/2$ relative to the voltage applied to said load so as to deliver current pulses for alternately charging and discharging each of said capacitors on the edges of said AC voltage.

5,627,744

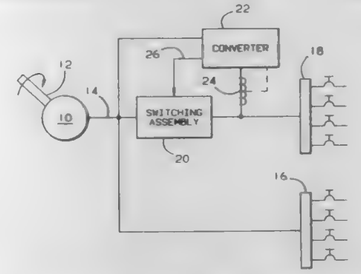
CONVERTER ENHANCED VARIABLE FREQUENCY POWER BUS ARCHITECTURE

Roy S. Baker, and Paul E. Nuechterlein, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Feb. 2, 1996, Ser. No. 603,291

Int. Cl.° H02M *5/04;* **H02P** *5/28*

U.S. Cl. 363—165 **20 Claims**



1. A variable frequency electric power generation and distribution system for supplying electric power to at least one load distribution bus, comprising:

a variable speed generator having a mechanical input driveably coupled to an external prime mover and an electrical output, said generator producing electric power on said output having a frequency related to a speed at which said generator is driven by said external prime mover, said electrical output being coupled to the distribution bus;

first means for converting said frequency of said electric power to a controlled frequency; and

second means for controllably decoupling said generator from the distribution bus when said frequency of said generator deviates from a predetermined acceptable range, said second means thereafter allowing said first means to supply said controlled frequency electric power to the distribution bus.

5,627,745

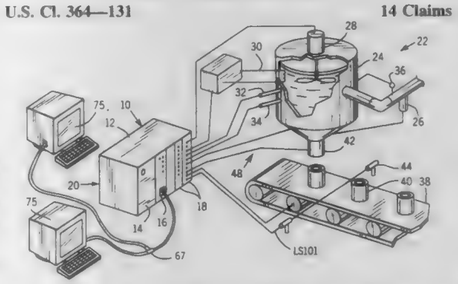
PARALLEL PROCESSING IN A MULTITASKING INDUSTRIAL CONTROLLER

Mark A. Flood, Mayfield Heights, Ohio, assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed May 3, 1995, Ser. No. 434,435

Int. Cl.° G05B *15/00;19/18*

U.S. Cl. 364—131 **14 Claims**



1. A method of providing multitasking of a plurality of separate requests queued as a list in a single task in an industrial controller having a processor, each request including one or more separate segments to be executed in sequential order, the segments executed in a sequence comprising the steps of:

(a) determining a plurality of break points at which the quantity of state information is minimal, each break point located at the end of a segment;

(b) executing the segments of a given request from a start segment until a break point is reached;

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(c) storing state information relating to the state of the given request at the break point at the end of the list, the state information including the next segment of the given request after the break point;
(d) retrieving state information from the list corresponding to the next request, the state information including a next segment of the next request, the next request following the given request in the list;
(e) repeating steps (b) through (d) with the next request as the given request and the next segment of the next request as the start segment; and
(f) repeating step (e) for each of the plurality of requests wherein the following segment after the start segment at step (e) is identical to the next segment stored at step (c) for the given request after the previous execution of the request at step (b).

5,627,746

LOW COST CONTROLLER

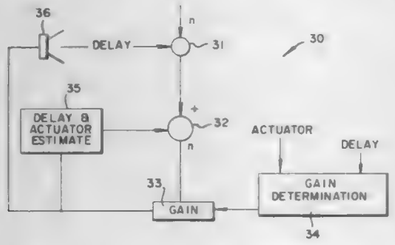
Eldon W. Ziegler, Jr., Clarksville; Dexter Smith, Columbia, and Michael P. McLoughlin, Sykesville, all of Md., assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.

PCT No. PCT/US92/05772, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO94/01810, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 14, 1992, Ser. No. 367,292

Int. Cl.[6] G05B *13/02;* **G06F** *17/00*

U.S. Cl. 364—148 **16 Claims**



1. A low cost active noise control system for canceling band-limited random noise in a physical plant, comprising:
a speaker means which, responsive to a control signal, generates a sound field which operates to cancel said band-limited random noise thereby producing a residual noise equal to the difference of said sound field and said band-limited random noise;
an error sensing means which senses the residual noise and generates a residual signal representative of said residual noise;
a controller means which comprises a single inverting amplifier means having an adjustable gain and which, responsive to a corrected signal, generates said control signal;
a compensation means which, responsive to said control signal, produces a compensation signal; and
a subtraction means which subtracts said compensation signal from said residual signal to produce said corrected signal.

5,627,747

SYSTEM FOR DEVELOPING AND OPERATING AN ACTIVE SOUND AND VIBRATION CONTROL SYSTEM

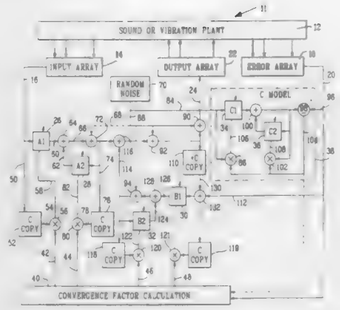
Douglas E. Melton, Stoughton; James E. Allard, Madison; Brian M. Finn, Madison; Jerry J. Trantow, Madison; Steven R. Popovich, Stoughton; Trevor A. Laak, Madison; Mark C. Allie, Oregon, and Larry J. Eriksson, Madison, all of Wis., assignors to Digisonix, Inc., Madison, Wis.

Filed Oct. 13, 1994, Ser. No. 322,585

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—188 **41 Claims**

1. A system for developing and operating an active sound or vibration control system comprising:



a software collection containing generalized control system software to program an electronic controller for use in an active sound or vibration control system, the generalized control system software implementing a generalized adaptive control model for an active sound or vibration control system;
a user interface that prompts a user to enter information pertaining to the generalized adaptive control model to develop a customized adaptive control model;
a code generator that generates customized executable code from the generalized control system software in accordance with the information entered by the user to develop the customized adaptive control model from the generalized adaptive control model; and,
a loader that loads the customized executable code to the electronic controller so that the electronic controller can operate an active sound or vibration control system in accordance with the customized adaptive control model.

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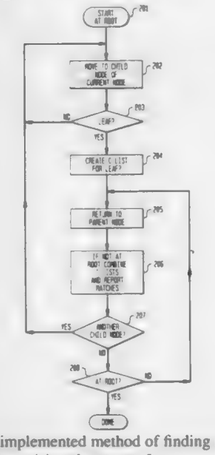
METHOD OF IDENTIFYING PATTERN MATCHES IN PARAMETERIZED STRINGS AND SQUARE MATRICES

Brenda S. Baker, Berkeley Heights, N.J., and Raffaele Giancarlo, New York, N.Y., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 853,459, Mar. 18, 1992. This application May 14, 1993, Ser. No. 61,782

Int. Cl.[6] G06F *17/21;17/40*

U.S. Cl. 395—792 **8 Claims**



1. A computer implemented method of finding maximal matches in a data string comprising the steps of:
creating a suffix tree representing the data string;
for each internal node in said suffix tree, generating a list having an entry for each suffix associated with said node, each entry indicating (i) the position of the start of its associated suffix in said data string and (ii) the left context relative to the position, each node having a pathlength indicating the number of symbols between the root of said suffix tree and said node;
recognizing matches having the length of the pathlength of said node for each pair of entries having different left context;
generating a list of said matches; and
reporting said list of matches.

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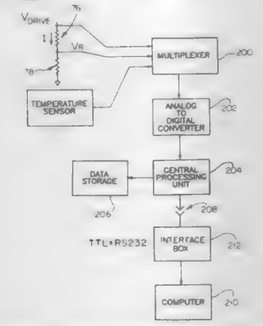
CORROSION MONITORING TOOL

David K. Waterman, Chino, Calif.; Steven W. Powell, Houston, Tex.; Budd Sweetman, Fontana, and Walter J. Maciejewski, Newport Beach, both of Calif., assignors to Rohrback Cosasco Systems, Inc., Santa Fe Springs, Calif.

Filed Feb. 25, 1994, Ser. No. 201,838

Int. Cl.[6] G01N *17/04*

U.S. Cl. 364—422 **16 Claims**



1. An apparatus for measuring environmental parameters within a wellbore having metal material there,, said apparatus comprising:
an elongated housing positionable within the wellbore and including a downhole end;
detecting means disposed within said housing for detecting the environmental parameters within the wellbore proximate said housing, said detecting means including at least one sensor for measuring the loss of metal material within the wellbore; and
data storage means in communication with said detecting means for storing data information communicated by said detecting means, said data storage means being disposed within said housing.

5,627,750

CLUTCH SLIP CONTROL DEVICE AND METHOD OF MANUFACTURING THE SAME, CLUTCH SLIP CONTROL METHOD, AND VEHICLE CONTROL DEVICE

Katsumi Kono; Hiroshi Ito; Kagenori Fukumura, all of Toyota; Shinya Nakamura, Asahi; Masataka Osawa, Nagoya; Ryoichi Hibino, Aichi-ken, and Masatoshi Yamada, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, both of Japan

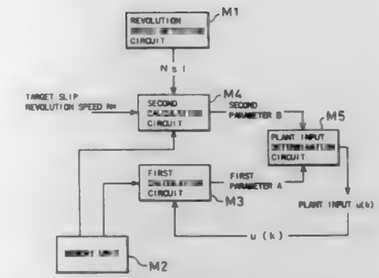
Filed Dec. 29, 1994, Ser. No. 365,797

Claims priority, application Japan, Dec. 29, 1993, 5-354656; Jul. 22, 1994, 6-191988

Int. Cl.[6] F16H *61/00;* **B60K** *41/02;* **G05B** *13/00*

U.S. Cl. 364—424.096 **9 Claims**

1. A clutch slip control device comprising:
slip revolution speed detecting means for detecting an actual slip revolution speed of a clutch;
memory means for storing constants set to satisfy response and stability of a feedback control system of slip conditions of said clutch, said constants being determined by a high-order function approximating variation in input-output frequency characteristics of a plant input for actuating said clutch and of said actual slip revolution speed;



first calculation means for calculating a first parameter using said constants stored in said memory means, said first parameter discretely reflecting past data of said plant input, which are obtained in a current feedback control cycle and in a plurality of preceding feedback control cycles;
second calculation means for calculating a second parameter using said constants stored in said memory means, said second parameter discretely reflecting past data of a deviation of said actual slip revolution speed from a target slip revolution speed, which are obtained in said current feedback control cycle and in said plurality of preceding feedback control cycles;
plant input determination means for determining a next plant input based on said first parameter and said second parameter calculated by said first calculation means and said second calculation means, so as to make said actual slip revolution speed coincident with said target slip revolution speed; and
controlling means for adjusting slip conditions of said clutch by actuating said clutch with said next plant input.

5,627,751

LAND VEHICLE SUSPENSION SYSTEM HAVING A FAILURE DETECTOR FOR DETECTING FAILURE OF A SENSOR OF THE SYSTEM

John P. Davis, Norfolk, and Jeremy H. A. Bliss, Essex, both of United Kingdom, assignors to Lotus Cars Limited, United Kingdom

PCT No. PCT/GB93/01312, § 371 Date May 10, 1995, § 102(e) Date May 10, 1995, PCT Pub. No. WO94/00308, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 22, 1993, Ser. No. 356,188

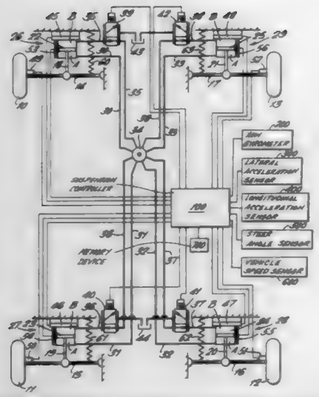
Claims priority, application United Kingdom, Jun. 22, 1992, 9213178

Int. Cl.[6] B60G *17/015*

U.S. Cl. 364—424.034 **15 Claims**

1. A land vehicle suspension system comprising two pairs of actuators, a first pair of actuators connecting wheel and hub assemblies on a first axle with a body of the vehicle and a second pair of actuators connecting wheel and hub assemblies on a second axle with the body of the vehicle the operation of each actuator being controlled by a processor in response to signals received from a plurality of sensors which generate output signals indicative of the attitude of the vehicle body and the forces of the body, the plurality of sensors comprising sensors for measuring extension and contraction of the actuators, wherein:
the processor has failure detection means for detecting failure of each of the sensors for measuring the extension and contraction of the actuators and on detection of said failure replaces the output signal of the failed sensor with a replacement signal and the processor operates in response to the replacement signal and at least one output signal generated by at least one remaining functioning sensor of the plurality of sensors; and

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upon detected failure of a sensor for measuring the extension or contraction of an actuator on the first axle the processor replaces the output signal of the failed sensor with a replacement signal derived by summing the output signal of the sensor measuring the extension and contraction of the other actuator on the first axle with a signal generated as a function of the difference between the output signals of the sensors measuring the extension and contraction of the actuators on the second axle.

5,627,752

CONSUMPTION-ORIENTED DRIVING-POWER LIMITATION OF A VEHICLE DRIVE

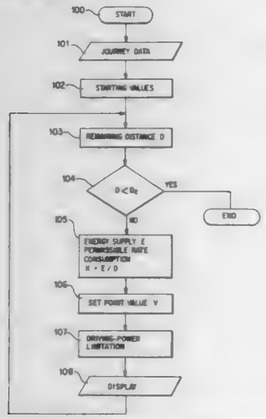
Michael Buck, Winennden; Wolf Boll, Weinstadt, and Günther Knörzer, Sachsenheim, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 27, 1994, Ser. No. 364,198

Claims priority, application Germany, Dec. 24, 1993, 43 44 369.9

Int. Cl.[6] B60L *3/00;* **B60K** *1/04*

U.S. Cl. 364—424.04 **16 Claims**



1. Method for regulating driving-power of a vehicle as a function of at least a distance to a destination and of an available energy supply of the energy accumulator providing the driving power, said method comprising the steps of:

first, at the beginning of a journey, entering journey data into a trip computer via an input unit, from which data at least a total distance to the destination can be determined;

second, during the journey, determining at least a currently remaining distance to said destination;

third, during the journey, measuring a remaining energy supply which is currently available in said energy accumulator;

fourth, during the journey, determining in said trip computer a permissible nominal energy consumption rate which enables said vehicle to travel the remaining distance based on the measured currently available energy supply and determined remaining distance to the destination;

fifth, controlling a set point value for a device for driving-power limitation based on the permissible nominal energy consumption rate so that the driving power is limited more severely the smaller the permissible nominal consumption rate determined; and

sixth repeating said second through fifth steps throughout the journey, whereby said permissible nominal energy consumption rate is continuously updated.

5,627,753

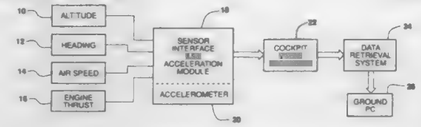
METHOD AND APPARATUS FOR RECORDING DATA ON COCKPIT VOICE RECORDER

William Brankin, and Lev Freidin, both of Simi Valley, Calif., assignors to Patriot Sensors and Controls Corporation, Clawson, Mich.

Filed Jun. 26, 1995, Ser. No. 494,798

Int. Cl.[6] G06F *17/40*

U.S. Cl. 364—424.04 **11 Claims**



1. A system for recording aircraft flight data developed by instruments comprising:

a cockpit voice recorder having a plurality of audio channels, at least one of the audio channels being a voice channel for the recording of cockpit voice communications and one of the channels being reserved for data;

means for collecting flight data from the instruments;

a microprocessor for receiving collected flight data and for serially presenting the collected flight data in an organized format;

means for encoding and scaling the formatted data and transmitting the scaled encoded data in a voice frequency band to the cockpit voice recorder; and

means for recording the transmitted data on the reserved channel of the voice recorder separately from the cockpit voice communications.

5,627,754

METHOD FOR CONTROLLING A FRONT AND REAR WHEEL STEERING VEHICLE

Nobuyoshi Asanuma; Kiyoshi Wakamatsu, and Manabu Ikegaya, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 398,138

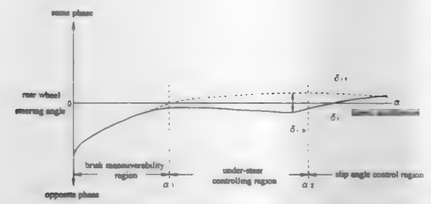
Claims priority, application Japan, Mar. 18, 1994, 6-074202

Int. Cl.[6] B62D *6/00*

U.S. Cl. 364—424.051 **20 Claims**

1. A method for controlling a front and rear wheel steering vehicle having front wheels that can be steered according to a steering input, and rear wheels that can be steered according to the steering angle of the front wheels and a running condition of the vehicle, comprising the steps of:

(a) steering said rear wheels in an opposite phase relationship to said front wheels to offset an under-steer tendency of said vehicle when a lateral acceleration acting on said vehicle is



between a first prescribed value and a second prescribed value higher than said first prescribed value, and

(b) steering said rear wheels in a same phase relationship to said front wheels to prevent an excessive slip angle from developing in said rear wheels when said lateral acceleration is greater than said second prescribed value, and a slip angle of said vehicle body would otherwise develop the excessive slip angle in said rear wheels.

5,627,755

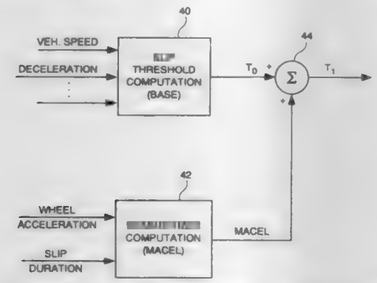
METHOD AND SYSTEM FOR DETECTING AND COMPENSATING FOR ROUGH ROADS IN AN ANTI-LOCK BRAKE SYSTEM

Dan Negrin, Wiesbaden, Germany, assignor to Kelsey-Hayes Company, Livonia, Mich.

Filed Sep. 9, 1994, Ser. No. 303,379

Int. Cl.[6] G06F *7/70;* **B60T** *8/34*

U.S. Cl. 364—426.018 **8 Claims**



1. In a vehicle anti-lock brake system, a method for detecting and compensating for rough roads during vehicle travel, the method comprising the steps of:

determining vehicle speed;

determining a current value of slip threshold based on the vehicle speed;

generating at least one wheel speed signal representing vehicle wheel speed;

processing the at least one wheel speed signal;

calculating acceleration data representing wheel acceleration from the at least one processed wheel speed signal;

processing the acceleration data to obtain a peak value of wheel acceleration;

determining a current value of a desensitizer factor, and whether the peak value of the wheel acceleration is greater than the current value of the desensitizer factor;

changing the current value of the desensitizer factor to a final value which is substantially equal to the peak value of wheel acceleration when the peak value of wheel acceleration is greater than the current value of the desensitizing factor; and

determining a desensitized slip threshold based on the current value of the slip threshold and the final value of the desensitizer factor, the desensitized slip threshold being utilized by the anti-lock brake system to compensate for vehicle travel on rough roads.

5,627,756

DEVICE FOR CONTROLLING TURN BEHAVIOR OF VEHICLE

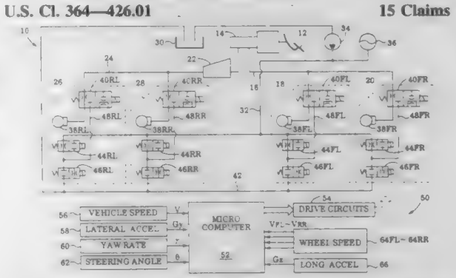
Yoshiki Fukada, and Shoji Inagaki, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Jun. 2, 1995, Ser. No. 459,968

Claims priority, application Japan, Jul. 28, 1994, 6-195912

Int. Cl.[6] B60K *28/16*

U.S. Cl. 364—426.01 **15 Claims**



1. A device for controlling behavior of a vehicle, comprising means for detecting lateral acceleration Gy of a vehicle body, means for detecting vehicle speed V, means for detecting yaw rate r of the vehicle body, means for presuming turn behavior of the vehicle based upon at least lateral slide velocity Vy of the vehicle by obtaining the lateral slide velocity Vy through integration of deviation Gy-Vr with a predetermined integration time constant, and means for controlling turn behavior of the vehicle based upon the presumed turn behavior, wherein said turn behavior presuming means includes means for varying said integration time constant such that said integration time constant is set to be smaller when a stable turn behavior of the vehicle is presumed than when an unstable turn behavior of the vehicle is presumed.

5,627,757

SYSTEM FOR MONITORING THE EFFICIENCY OF A CATALYST, IN PARTICULAR FOR MOTOR VEHICLES

Emilio Comignaghi, Mercallo, and Aldo Perotto, Meana Di Susa, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

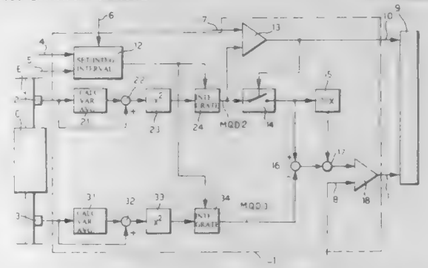
Continuation of Ser. No. 119,503, Sep. 10, 1993, abandoned.

This application Aug. 28, 1995, Ser. No. 520,038

Claims priority, application Italy, Sep. 14, 1992, T092A0760

Int. Cl.[6] G06G *7/70;* **F01N** *3/00*

U.S. Cl. 364—431.051 **27 Claims**



1. A system for measuring an efficiency of a catalyst through which gas flow is intended to pass, including at least two sensors such as lambda sensors which are disposed in use respectively upstream and downstream of said catalyst in the direction of the gas flow and which generate respective output signals, said system including:

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first and second calculation means for calculating moving averages of the output signals:

third and fourth calculation means each for calculating differences between instantaneous values of the output signals from one of said upstream or downstream sensors and said moving averages of the first and second calculation means, respectively, in order to generate difference signals;

fifth calculation means for calculating output efficiency signals having values indicative of the efficiency of the catalyst on the basis of the difference signals or signals derived therefrom; and

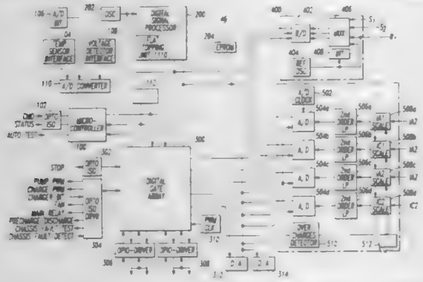
a warning unit, said warning unit responsive to values of said efficiency signals to generate a warning indicating when said catalyst is operating inefficiently.

5,627,758

VECTOR CONTROL BOARD FOR AN ELECTRIC VEHICLE PROPULSION SYSTEM MOTOR CONTROLLER

Geoffrey B. Lansberry, Cambridge, Mass., and James L. Munro, Severna Park, Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 10, 1994, Ser. No. 258,306
Int. Cl.[6] G01R *17/08*
U.S. Cl. 364—481 **4 Claims**



1. A vector control board for an electric vehicle propulsion system comprising:

a microcontroller for generating torque requests; and

a digital signal processor for receiving said torque requests via a digital gate array and generating phase voltage signals,

said digital gate array for receiving said phase voltage signals and for generating pulse-width modulated signals for driving a power bridge.

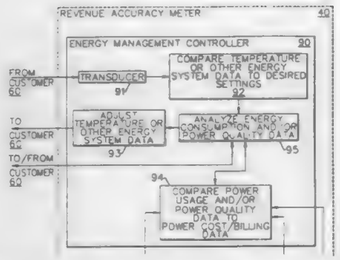
5,627,759

ELECTRICAL ENERGY METERS HAVING REAL-TIME POWER QUALITY MEASUREMENT AND REPORTING CAPABILITY

Michael K. Bearden, Waxhaw; William I. Jenrette, Charlotte, both of N.C., and Bruce E. Randall, Rock Hill, S.C., assignors to Process Systems, Inc., Charlotte, N.C.

Filed May 31, 1995, Ser. No. 455,477
Int. Cl.[6] G01R *19/165*
U.S. Cl. 364—483 **14 Claims**

1. In an electrical energy meter containing means therein for metering a quantity of electrical energy generated by a supplier and transferred via a power supply line to a load of a customer during an energy measurement time interval, a method of monitoring variations in the metered quantity of electrical energy, comprising the steps of:



sensing a line voltage transferred via the power supply line to the load during the energy measurement time interval;

detecting an increase in a magnitude of the sensed line voltage from an acceptable voltage level to a level greater than a first surge threshold voltage, upon commencement of a surge time interval during which the magnitude of the sensed line voltage is at all times greater than the acceptable voltage level;

recording a surge event if the magnitude of the sensed line voltage exceeds the acceptable voltage level for a first predetermined amount of time after commencement of the surge time interval; and then

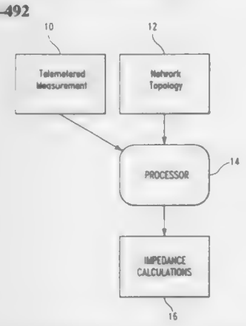
communicating the recorded surge event to at least the supplier or customer before termination of the surge time interval.

5,627,760

METHOD AND APPARATUS FOR REAL TIME RECURSIVE PARAMETER ENERGY MANAGEMENT SYSTEM

Ilya Slutsker, 3755 Trenton La. N., Plymouth, Minn. 55441; Sasan Mokhtari, 2015 Garland La., Plymouth, Minn. 55447, and Kevin Clements, 46 Adams St., Westborough, Mass. 01581

Filed Apr. 17, 1995, Ser. No. 423,609
Int. Cl.[6] H02J *1/10*
U.S. Cl. 364—492 **2 Claims**



1. An energy management system for recursive parameter energy management control, comprising:

measurement means for measuring the status and settings of a power grid or subsystem (grid) and producing representative grid data thereof; and

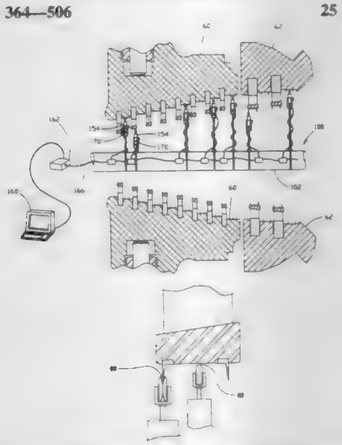
a computer having memory means for storing said grid data and further having a program means for analyzing said grid data and producing values representative of the impedance parameters of said grid, said program means including means for separating said grid data into a plurality of sub-grid data sets, each of said sub-grid data sets containing a predetermined number of unknown grid impedance parameters and means for recursively modeling each of said sub-grid data sets into Markov processes.

5,627,761

INTERNAL ALIGNMENT OF ROTATING AND STATIONARY COMPONENTS WITHIN A STEAM OR GAS TURBINE

Michael A. Pollard, Cary, N.C., assignor to Carolina Power & Light Company, Raleigh, N.C.

Filed Sep. 30, 1994, Ser. No. 316,568
Int. Cl.[6] G01B *7/14*
U.S. Cl. 364—506 **25 Claims**



16. An apparatus for automatically obtaining and analyzing data indicative of the relative position of flowpath component hard bores and seals of a steam or gas turbine section relative to a desired centerline so that proper design clearances may be achieved and to prevent unit rubs and damage that can affect unit operation and performance when the turbine is put into service, said apparatus comprising:

a rotatable elongate structural member located within the turbine section with the axis of the elongate member at approximately the expected centerline of the turbine section;

first and second mechanical supports for supporting the respective ends of said elongate member, said mechanical supports permitting rotation of said elongate member about its axis and permitting precise vertical and horizontal displacement of the elongate member;

a plurality of electronic position transducers installed at selected axial locations along said elongate member where setpoint hard bores and seals reside on flowpath components, each transducer having a radially projecting surface-riding portion for contacting the cylindrical flowpath component hard bore or seal located at its respective axial location;

said transducers having a linear range determined by the sum of expected component ellipticity, variation, misalignment and tube sag;

an adjustable support for supporting and positioning each transducer to hold the transducer surface-riding portion in engagement with the cylindrical flowpath component at its respective axial location;

a programmed computer; and

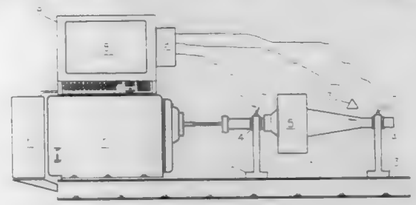
a multi-drop serial connection among the respective transducers for facilitating transmission of data to said programmed computer.

5,627,762

COMPUTER IMPLEMENTED BALANCER

Wayne B. Cameron, Tonawanda; Roger J. Morella, Jr., East Aurora, and Donald W. Davis, Tonawanda, all of N.Y., assignors to Dynamics Research Corp., Tonawanda, N.Y.

Division of Ser. No. 75,178, Jun. 10, 1993, Pat. No. 5,412,583.
This application Jan. 24, 1995, Ser. No. 377,154
Int. Cl.[6] G01N *1/38*
U.S. Cl. 364—508 **13 Claims**



1. An apparatus for balancing a work piece, comprising:

support bearings for said work piece;

means for entering into said apparatus a desired balancing speed for said work piece;

means for rotating said work piece in said support bearings at said desired balancing speed;

means for generating digital data representing the magnitude and phase of vibrations of said work piece in the planes defined by said support bearings; and

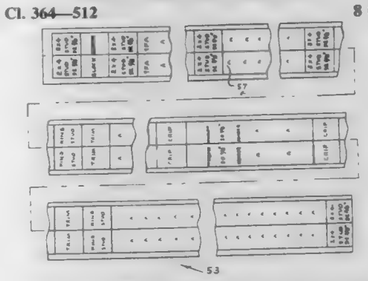
a program driven computing device for providing work piece balancing weight values and weight placement in response to said digital data and operator inputs.

5,627,763

SYSTEM AND METHOD FOR CONSTRUCTION GUIDANCE AND CONTROL

LeWayne P. Carlson, 5 Tecoma Cir., Littleton, Colo. 80127

Filed Dec. 27, 1994, Ser. No. 364,752
Int. Cl.[6] G06F *19/00;* **G01B** *5/14*
U.S. Cl. 364—512 **8 Claims**



1. A method for guiding, controlling and directing the construction of a useful physical entity according to plans and specifications for said entity, said entity including a plurality of components located and oriented with respect to each other and at least one reference structure having a longitudinally extending surface, said method including the steps of:

a) providing a programmable computer, data entry means and monitor connected to said computer, a supply roll of elongate adhesively-backed tape, and printer and tape drive means, controlled by said computer, for advancing said tape through said printer and printing on said tape;

b) using said data entry means to input to said computer information from said plans and specifications regarding the description of said components and their orientation and loca-

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tion relative to the longitudinally extending surface of said reference structure;

c) using said computer, and printer and tape drive means to print out said input information along the length of an elongate section of said tape, said printed information including text and spaced-apart transverse lines to identify said components, beginning end of sad tape and to show locations of said components and their spacing and orientation relative to each other said beginning end and the longitudinally extending surface of said reference structure, and said printed tape comprising a layout tape; and

d) attaching said layout tape along said surface of said reference structure, and locating and assembling said components to said reference structure according to the information on said layout tape.

5,627,764

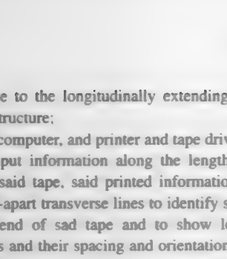
AUTOMATIC ELECTRONIC MESSAGING SYSTEM WITH FEEDBACK AND WORK FLOW ADMINISTRATION

Jeffrey A. Schutzman, Topsfield, and Eugene H. Lee, Cambridge, both of Mass., assignors to Banyan Systems, Inc., Westboro, Mass.

Continuation-in-part of Ser. No. 11,346, Jan. 29, 1993, which is a continuation-in-part of Ser. No. 771,197, Oct. 4, 1991, Pat. No. 5,283,856. This application Jun. 9, 1993, Ser. No. 74,244

Int. Cl.[6] H04N *1/00*

U.S. Cl. 364—514 R **15 Claims**



1. A method for automated processing of electronic messages in a rule based electronic messaging system, said rule based electronic messaging system including at least a first workstation and a second workstation, said first workstation including a first electronic mail utility and said second workstation including a second electronic mail facility for electronic communication therebetween, said method comprising the steps of:

storing in a file accessible to said first workstation at least one user name of at least one user of said second workstation;

accessing, via said first workstation, said file containing said at least one user name of said at least one user to retrieve said at least one username therefrom;

starting said second electronic mail facility with said first workstation without intervention of an actual user;

running said second electronic mail facility without intervention of an actual user to process rules for processing electronic messages of said at least one user; and

reporting status of said step of running said second electronic mail facility to process said rules for processing electronic messages of said at least one user.

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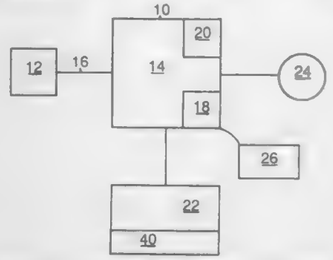
METHOD AND APPARATUS FOR COMPRESSING AND ANALYZING VIDEO AND FOR CREATING A REFERENCE VIDEO

John Robotham, Belmont; Philip Moorby, Boxford; Paul DiLascia, Reading, all of Mass., and Philip Mason, Nashua, N.H., assignors to Avid Technology, Inc., Tewksbury, Mass.

Filed Jul. 25, 1994, Ser. No. 279,939

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 R **17 Claims**



1. A method for compressing a sequence of a plurality of video frames on a computer system, comprising the steps of:

analyzing each of the frames to determine a value for a selected characteristic of each frame;

assigning a characteristic value to each frame dependent on the analysis of the selected characteristic;

establishing a threshold level related to a characteristic value;

comparing the characteristic value of succeeding frames to preceding frames;

deleting from the sequence those frames whose characteristic value is less than the threshold value;

whereby the plurality of video frames are compressed into a video sequence the number of whose frames is reduced in number and;

displaying the compressed video sequence.

5,627,766

PERFORMANCE AND STATUS MONITORING IN A COMPUTER NETWORK

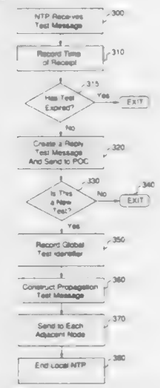
Paul A. Beaven, Romsey, Great Britain, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1995, Ser. No. 368,075

Claims priority, application United Kingdom, Feb. 8, 1994, 9402380

Int. Cl.[6] G06F *11/34*

U.S. Cl. 364—551.01 **18 Claims**



1. A system for monitoring the performance and status of links and/or nodes of a communications network from a first Point of Control (POC) node, by propagating a test message between the nodes of the network, the system comprising:

means for initiating a test by sending to a first Node Test Program (NTP) on one of the network nodes the test message requiring specific information, said test message identifying the POC node for the test;

a NTP at the POC node and at every other node of the network, wherein each node can be a current node for test activity, each NTP including means for receiving the test message and means for performing the operations of sending to the POC node a reply message including information from the current node, and forwarding the test message to the NTP node on each of the current node's adjacent nodes, said operations being done automatically in response to the received test message;

means for receiving said reply messages at the POC node; and

means associated with said POC node for analysis of said rely messages.

5,627,767

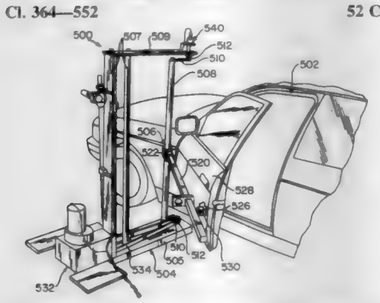
TESTING DEVICE FOR MANUALLY MOVABLE COMPONENTS OF A MOTOR VEHICLE

Joseph V. Gabiniewicz, Novi; Guenther Braeuner; Galus Chelaidite, both of Farmington Hills; Zbigniew A. Paluch, Northville, and Haydn W. C. Yik, Walled Lake, all of Mich., assignors to Atoma International, Inc., Ontario, Canada

Filed Feb. 24, 1995, Ser. No. 393,989

Int. Cl.[6] G01L *5/22*

U.S. Cl. 364—552 **52 Claims**



1. An apparatus for acquiring data relating to an amount of force required to move a manually movable member operatively associated with a motor vehicle through a predetermined range of movement, said manually movable member having a manually engageable portion which is to be manually engaged during manually generated movement of said manually movable member through said predetermined range of movement, said manually engageable portion being moved along a path of driven movement having predetermined configuration during said manually generated movement, said apparatus comprising:

a movable assembly constructed and arranged to be able to engage said manually engageable portion of said manually movable member and maintain said engagement through said predetermined range of movement of said manually movable member, said movable assembly having a movable element which engages said manually engageable portion of said manually movable member and moves along a path of driving movement having a substantially same configuration as said predetermined configuration of said path of driven movement throughout said engagement with said manually movable member through said predetermined range of movement;

a drive mechanism constructed and arranged to drive said movable element along said path of driving movement so that said movable assembly applies a force in a direction along said path of driving movement to said manually movable member and moves said manually movable member through said predetermined range of movement along said path of driven movement having said substantially same configuration as said path of driving movement so as to generally simulate a predetermined manual movement of said manually movable member along said path of driven movement;

circuitry operatively connected with said movable assembly, said circuitry generating electrical signals indicative of the force applied to said manually movable member by said movable assembly during said predetermined simulated manual movement of said manually movable member along said path of driven movement through said predetermined range of movement;

a distance measuring device operatively associated with said movable assembly and constructed and arranged to generate electrical signals indicative of a distance traveled by said movable element, and hence said manually movable member, through said range of movement;

a data processing system responsive to said electrical signals generated by said circuitry and said distance measuring device to generate data indicative of the force applied by said movable assembly along said path of driving movement to said manually movable member as a function of distance during said predetermined simulated manual movement of said manually movable member along said path of driven movement through said predetermined range of movement.

5,627,768

SIGNAL PROCESSING SYSTEM AND METHOD FOR PERFORMING A NONLINEAR TRANSFORMATION

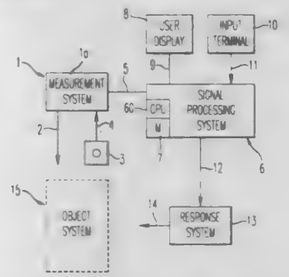
Jeffrey K. Uhlmann, and Simon J. Julier, both of Oxford, United Kingdom, assignors to New Tech Ventures, Company, Jefferson City, Mo.

Filed Jul. 21, 1995, Ser. No. 505,762

Claims priority, application United Kingdom, Aug. 25, 1994, 9417170

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—553 **16 Claims**



1. A specialized or programmed signal processing system for approximating a mean and a covariance of a function Y of a random variable X of a physical system having a dimensionality n, based upon a measured signal $\bar{X}$ for the random variable X, comprising:

a. means for measuring the random variable X a plurality of times to determine a plurality of measured signals $\bar{X}_k$;

b. means for calculating an n x n covariance matrix F from said plurality of measured signals $\bar{X}_k$;

c. means for measuring X to determine the measured signal $\bar{X}$;

d. means for calculating a scaled covariance matrix

$$F=\alpha F$$

wherein α is a positive real number;

e. means for calculating a matrix square root $\sqrt{F}$ for F

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f. means for calculating $X\chi_k$ for k=1 to 2n+1 as follows:

1. for k=0 $\chi_0 = \overline{X}$
2. for k=1 to n $\chi_k = \chi_0 - (\sqrt{P})_k$
   where $(\sqrt{P})_k$ indicates the vector formed from the matrix component of $\sqrt{P}$ along the kth row, and
3. for k=n+1 to 2n $\chi_k = \chi_0 + (\sqrt{P})_{k-n}$

g. means for calculating the values of the function $Y_k = Y(\chi_k)$ for k=0 to 2n;

h. means for calculating the weighted average

$$Y_{av} = \frac{1}{2\alpha}\left[\sum_{i=1}^{2n} Y(\chi_i)\right] + \frac{\kappa}{\alpha} Y(\chi_0)$$

wherein κ is a real number;

i. means for calculating the weighted outer product WOP ($Y(\chi_i(i=0 \text{ to } 2n))$) as:

$$WOP = \frac{\kappa}{\alpha}\{(Y(\chi_0) - Y_{av})(Y(\chi_0) - Y_{av})^T\} + \frac{1}{2\alpha}\sum_{i=1}^{2n}\{(Y(\chi_i) - Y_{av})(Y(\chi_i) - Y_{av})^T\}$$

where the superscript T indicates the transpose;

means for approximating covariance of Y ($\overline{X}$) based upon WOP; and

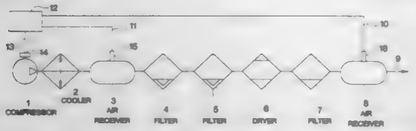
means for transmitting signals representing the weighted average and the approximated covariance of Y ($\overline{X}$) to a response system for responding to the physical system.

5,627,769

METHOD AND CONTROL SYSTEM FOR CONTROLLING A FLUID COMPRESSION SYSTEM

Keijo Hallikainen, Helsinki, Finland, assignor to Sarlin-Hydor Oy, Helsinki, Finland

Filed Jan. 23, 1995, Ser. No. 376,418
Claims priority, application Finland, Nov. 24, 1994, 945526
Int. Cl.[6] G01N *7/00*
U.S. Cl. 364—558 **12 Claims**



1. A method of controlling a fluid compression system, said fluid compression system comprising compression means for compressing a fluid medium to form a compressed fluid medium, means for delivering said compressed fluid medium to a point of demand, and conditioning means for conditioning said compressed fluid medium located between said compression means and the point of demand, the method including the following steps:

defining permissible minimum and maximum pressure values of user line pressure at the point of demand;

utilizing a first pressure sensor to measure a working pressure of the compression means;

utilizing a second pressure sensor to measure the user line pressure;

continuously monitoring the user line pressure;

monitoring the working pressure of said compression means;

monitoring a pressure difference between the working pressure of said compression means and the user line pressure at the point of demand;

monitoring the pressure rate-of-change of the user line pressure at the point of demand; and

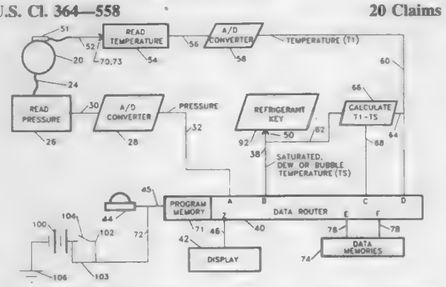
utilizing a control unit to control the compression means on the basis of at least one of the monitored parameters defined in the foregoing steps of the method.

5,627,770

SUPERHEAT GAGE WITH PLUG-IN DATA MODULE

William J. Barbier, Hazelwood, and Andrew R. Chibnall, St. Louis, both of Mo., assignors to Concept Technology, Inc, Hazelwood, Mo.

Filed Dec. 11, 1995, Ser. No. 570,081
Int. Cl.[6] G01N *27/00*
U.S. Cl. 364—558 **20 Claims**



1. A pressure gage having a casing and a display, said gage comprising:

means for supplying electrical power to the gage,

means for connecting the gage to a pressure source whereby a pressure from the source is communicated to the gage,

transducer means within the casing for responding to the pressure and generating an electrical response, including data, related to the pressure,

first non-volatile memory means positioned within the gage casing for storing pressure data and corresponding saturated temperature data, the data being applicable to a first volatile fluid, and means for transferring pressure data from the transducer means to the first non-volatile memory means and for receiving from the first memory means saturated temperature data corresponding to the pressure data,

a unitary memory module separate from the gage casing, including interface means comprising corresponding socket means for mutual engagement between the module and the gage and for providing two way communication between the gage and the memory module for receiving data from the gage and for transmitting data to the gage,

second non-volatile memory means positioned within the module and connected to the interface means for storing pressure data and corresponding saturated temperature data applicable to a second volatile fluid,

means positioned within the gage for transmitting to the module data corresponding to the source pressure and for receiving from the second memory means saturated temperature data corresponding to the pressure data,

and further providing that the condition of mutual engagement of the interface means between the unitary memory module and the gage enables data transfer between the gage and the second non-volatile memory means within the unitary memory module and disables data transfer between the gage and the first non-volatile memory means positioned within the gage casing,

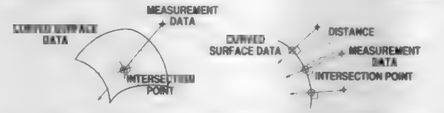
and means for conditioning to a displayable form and for displaying data selected from the group consisting of the pressure and a saturated temperature corresponding to the pressure.

5,627,771

APPARATUS AND METHOD FOR EVALUATING SHAPE OF THREE-DIMENSIONAL OBJECT

Toshikazu Makino, Toyoake, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 264,203, Jun. 22, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 691,640
Claims priority, application Japan, Jun. 22, 1996, 5-150618
Int. Cl.[6] G01B *5/008; 7/008*
U.S. Cl. 364—560 **3 Claims**



1. A method of evaluating the shape for a three-dimensional object, comprising the steps of:

measuring and storing a worked surface of the three-dimensional object through a three coordinate measuring machine at a plurality of measurement points in the form of space coordinates, wherein the space coordinates are measured from any direction;

plotting the measurement points relative to an ideal surface of the three-dimensional object which has previously been stored in the form of three-dimensional shape data;

defining a line from each of the plotted measurement points perpendicularly to the ideal surface to determine an intersection point between said perpendicular line and the ideal surface; and

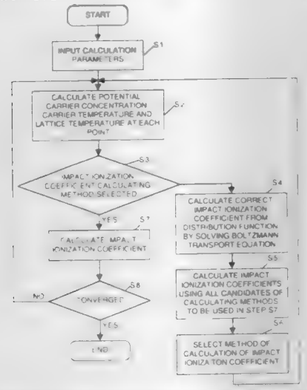
evaluating the precision of the worked surface of the three-dimensional object based on the distance between each of the intersection points and the ideal surface along the respective perpendicular lines.

5,627,772

METHOD AND APPARATUS FOR DEVICE SIMULATION

Kenichiro Sonoda, and Tatsuya Kunikiyo, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 458,202
Claims priority, application Japan, Nov. 10, 1994, 6-0276225
Int. Cl.[6] G06F *17/11*
U.S. Cl. 364—578 **28 Claims**



1. A method of device simulation by a computer, comprising the steps of:

calculating a correct impact ionization coefficient from a distribution function by solving Boltzmann transport equation under a potential in a given semiconductor device;

calculating impact ionization coefficients using all of a plurality of candidates of methods of calculating impact ionization coefficient other than said distribution function;

selecting one of said candidates of methods of calculation capable of providing an impact ionization coefficient which can best approximate the correct impact ionization coefficient obtained by said distribution function; wherein

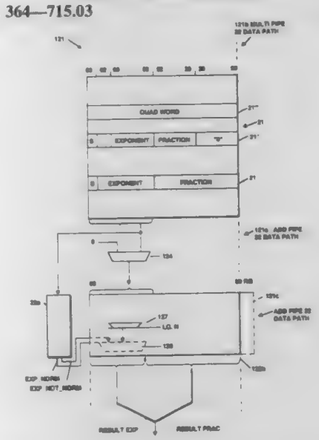
impact ionization coefficient is calculated by using said selected method of calculation thereafter.

5,627,773

FLOATING POINT UNIT DATA PATH ALIGNMENT

Gilbert M. Wolrich, Framingham; Timothy C. Fischer, Boxboro, and John A. Kowaleski, Jr., Princeton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1995, Ser. No. 497,015
Int. Cl.[6] G06F *7/00; 7/38*
U.S. Cl. 364—715.03 **8 Claims**



1. A data path in a floating point processor that performs floating point operations on floating point numbers and converts numbers between floating point and integer formats comprises:

means for aligning a LSB of a register file with an LSB of the data path;

means for providing additional bit positions in the data path for bit positions less significant than the LSB bit;

means, disposed in a last stage of the floating point processor, for selecting an exponent for floating point operands or MSB's of an integer for integer operands to connect to the register file; and

means disposed in the data path for selecting zeros or the MSB's of an integer operand from the register file to connect into the data path.

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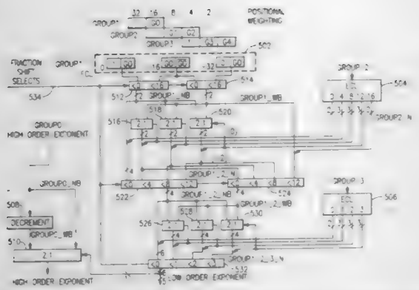
PARALLEL CALCULATION OF EXPONENT AND STICKY BIT DURING NORMALIZATION

Eric M. Schwarz, Gardiner; Robert M. Bunce, Hopewell Junction; Leon J. Sigal, Monsey, and Hung C. Ngo, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 414,072, Mar. 31, 1995. This application Jun. 7, 1995, Ser. No. 473,308
Int. Cl.[6] G06F *7/00; 7/38*
U.S. Cl. 364—715.04 **11 Claims**

1. A system for normalizing a floating point number having a fraction data portion and an exponent data portion by determining

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a resulting exponent in parallel with determining a fractional shift during normalization, said system comprising:

fractional shift data flow circuitry including a plurality of fraction data shifting levels and a plurality of fraction shift amount signals indicative of the fraction shift;

means for determining all possible partial exponent values for each of a plurality of partial exponent groups, the partial exponent groups representing groups of bits of said exponent data portion partitioned according to the fractional data flow; and

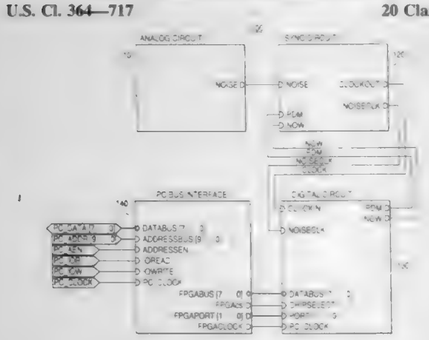
means for providing the resulting exponent by selectively combining possible partial exponents from each partial exponent group according to the fractional data flow.

5,627,775

METHOD AND APPARATUS FOR GENERATING RANDOM NUMBERS USING ELECTRICAL NOISE

Jung P. Hong, and Terry C. Brown, both of Los Alamos, N.M., assignors to Applied Computing Systems, Inc., Los Alamos, N.M.

Filed Apr. 18, 1995, Ser. No. 423,118
Int. Cl.[6] G06F 1/02;7/00; H03B 29/00
U.S. Cl. 364—717 20 Claims



1. A circuit for generating a nonreproducible, nonperiodic sequence of values, comprising:

a noise source;

means for generating timing signals from the noise source;

an independent free-running multistate digital circuit having a predetermined distribution of states; and

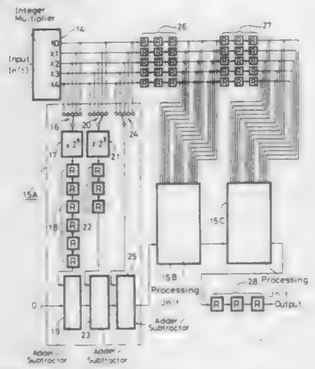
buffering means for storing states of the digital circuit at random times in accordance with the timing signals.

5,627,776

DATA PROCESSING CIRCUIT

Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Japan

Division of Ser. No. 826,523, Jan. 27, 1993, Pat. No. 5,367,700.
This application Aug. 31, 1994, Ser. No. 297,921
Claims priority, application Japan, Jan. 31, 1991, 3-031760
Int. Cl.[6] G06F 7/44
U.S. Cl. 364—724.01 3 Claims



1. An FIR filter, comprising:

an integer multiplier for receiving input data and for outputting a plurality of different multiples of said input data;

a first processing unit for receiving said multiples of said input data, and a low level input, and for outputting a first processed signal;

a second processing unit for receiving and said multiples of said input data delayed by a first amount, said first processed signal, and for outputting a second processed signal;

a third processing unit for receiving said multiples of said input data delayed by a second amount, and said second processed signal, and for outputting a third processed signal; and

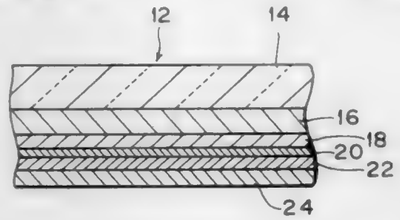
a delay circuit for receiving said third processed signal and for outputting an output of said FIR filter.

5,627,777

MAGNETO-OPTICAL RECORDING MEDIUM

Ken Tamanoi, and Kenji Shono, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed May 30, 1995, Ser. No. 454,504
Claims priority, application Japan, Sep. 5, 1994, 6-211104
Int. Cl.[6] G11C 13/04;11/42
U.S. Cl. 365—122 4 Claims



1. A magneto-optical recording medium comprising:

a transparent substrate;

a magnetic reproducing layer laminated on said transparent substrate, said magnetic reproducing layer having an easy direction of magnetization perpendicular to a film surface;

a nonmagnetic intermediate layers laminated on said magnetic reproducing layer; and

a magnetic recording layer laminated on said nonmagnetic intermediate layer, said magnetic recording layer having an easy direction of magnetization perpendicular to a film surface;

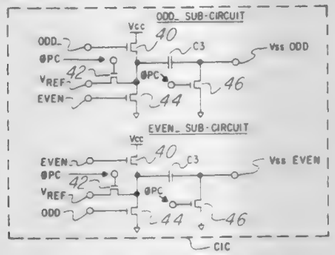
wherein when a reproducing laser beam is directed onto said recording medium forming a beam spot, said medium has a temperature distribution in said beam spot, said temperature distribution comprising a low-temperature region satisfying Hc>Hs and Hc>Hr, an intermediate-temperature region satisfying Hs>Hc and Hs+Hc> Hr, and a high-temperature region satisfying Hr>Hs+Hc, where Hc represents a coercive force of said magnetic reproducing layer, Hs represents a magnetostatic bonding force between said magnetic recording layer and said magnetic reproducing layer, and Hr represents a reproducing magnetic field.

5,627,778

DRAM SENSING SCHEME

Hiep V. Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 24, 1990, Ser. No. 557,249
Int. Cl.[6] G11C 11/40
U.S. Cl. 365—149 16 Claims



1. A memory cell sensing scheme comprising:

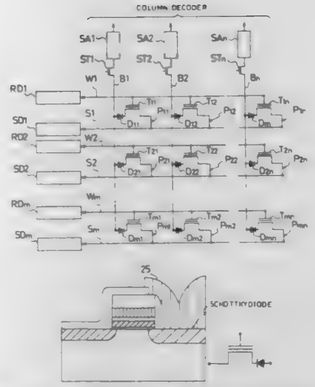
at least one pair of bit lines;

a plurality of decoders capable of being coupled to said bit lines;

a pair of low power supply voltage rails selectively connected to said decoders;

a charge injection circuit connected to said pair of low power supply voltage rails; and

a comparator capable of being coupled to said at least one pair of bit lines.



a plurality of sourcelines, wherein each said sourceline is connected to each of said sources in a row of said memory cell array;

a row decoder circuit for selecting among said plurality of wordlines;

a column decoder circuit for selecting among said plurality of bitlines;

a source decoder circuit for selecting among said plurality of sourcelines;

a plurality of anisotropic resistance sections;

wherein:

each said anisotropic resistance section is arranged in a path from a said bitline to a said sourceline through a said transistor, said anisotropic resistance section is arranged between said channel region of the transistor and said bitline;

each said anisotropic resistance section has voltage-current properties which are different for different levels of voltages applied across said anisotropic resistance section;

each said anisotropic resistance section has a forward direction in which a current flows therethrough with lesser resistance and a reverse direction in which a current flows therethrough with greater resistance, said anisotropic resistance section has properties such that resistance to a current flowing from said memory cell to said bitline is larger than resistance to a current flowing from said bitline to said memory cell.

5,627,779

NON-VOLATILE SEMICONDUCTOR MEMORY HAVING AN ARRAY OF NON-VOLATILE MEMORY CELLS AND METHOD FOR DRIVING THE SAME

Yoshinori Odake; Akira Asai; Yasushi Okuda; Toshiki Mori, and Ichirou Nakao, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 21, 1995, Ser. No. 505,638
Claims priority, application Japan, Jul. 22, 1994, 6-171405; Oct. 3, 1994, 6-238758
Int. Cl.[6] G11C 16/02; H01L 29/788
U.S. Cl. 365—185.01 12 Claims

1. A non-volatile semiconductor memory comprising:

an array of non-volatile memory cells arranged in columns and rows, wherein each said non-volatile memory cell has a transistor and a capacitance section, said transistor being composed of, at least, a gate, a channel region, a source, and a drain;

a plurality of wordlines, wherein each said wordline is connected to each of said gates in a row of said memory cell array;

a plurality of bitlines, wherein each said bitline is connected to each of said drains in a column of said memory cell array;

5,627,780

TESTING A NON-VOLATILE MEMORY

Vijay Malhi, Milan, Italy, assignor to SGS-Thomson Microelectronics Limited, Bristol, United Kingdom

Filed Aug. 24, 1995, Ser. No. 518,919
Claims priority, application United Kingdom, Aug. 26, 1994, 9417266
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—185.09 13 Claims

1. An integrated circuit memory device comprising: a memory array;

a set of data latches for holding data bits to be stored in the memory array;

a plurality of data tracks for supplying data bits to said data latches;

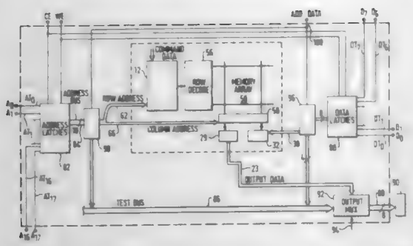
a set of address latches for holding address bits for addressing said memory array;

a plurality of address tracks for supplying address bits to said address latches;

a test bus;

a data bit routing circuit connected to said data latches for selectively routing data bits to one of said array and said test bus;

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an address bit routing circuit connected to said address latches for selectively routing address bits to one of said array and said test bus; and

output circuitry for outputting data bits and address bits on said test bus whereby said data bits and address bits can be checked for accuracy against data bits and address bits originally supplied via said data tracks and address tracks.

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NONVOLATILE SEMICONDUCTOR MEMORY

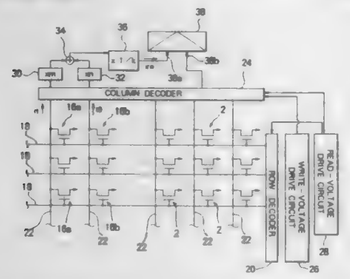
Yutaka Hayashi, and Machio Yamagishi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 8, 1995, Ser. No. 555,144

Claims priority, application Japan, Nov. 11, 1994, 6-277725; Mar. 20, 1995, 7-061166

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—185.2 **7 Claims**



1. A nonvolatile semiconductor memory device, comprising:

a plurality of memory cells having transistors which are electrically and reversibly variable in threshold voltages;

at least one pair of reference cells, provided for each predetermined number of memory cells, having transistors which have a construction in a direction of thickness roughly the same as that in a direction of thickness of the transistors constituting said memory cells;

a driving means for writing and for also driving the at least one pair of reference cells when driving a selected memory cell and writing a first data in one reference cell and writing a second data inverted in phase from the first data in the other reference cell at the time of writing in the selected memory cell;

a driving means for reading a data of the at least one pair of reference cells when reading a data of the selected memory cell;

a reference current production means for combining a current:i_1 of the one reference cell corresponding to the first data and a current:i_0 of the other reference cell corresponding to the second data in the at least one pair of reference cells based on the following Equation (1)·and preparing a k-multiple of a reference current:i_{rr}, or the reference current:i_{rr}

$$i_{rr}=(m\times i_1+n\times i_0)/k \quad (1)$$

where m, n, and k are positive numbers, and both of m and n are smaller than k; and

a comparison means for determining a data stored in the selected memory cell by comparing the reference current: i_{rr} or the k-multiple of the reference current:i_{rr} produced by said production means with a current flowing in the selected memory cell or the k multiple of the current flowing in the selected memory cell.

5,627,782

ELECTRICALLY ERASABLE AND PROGRAMMABLE NON-VOLATILE SEMICONDUCTOR MEMORY WITH AUTOMATIC WRITE-VERIFY CONTROLLER

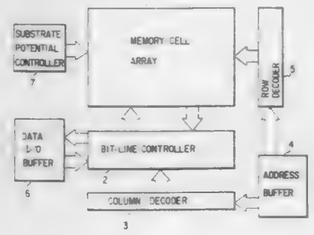
Tomoharu Tanaka, Yokohama; Yoshiyuki Tanaka, Tokyo; Hiroshi Nakamura, Yokohama, and Hideko Odaira, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 277,514, Jul. 19, 1994, Pat. No. 5,566,105, which is a continuation of Ser. No. 948,002, Sep. 21, 1992, Pat. No. 5,357,462. This application Jun. 7, 1995, Ser. No. 473,739

Claims priority, application Japan, Sep. 24, 1991, 3-243743; Dec. 25, 1991, 3-343363

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—185.22 **61 Claims**



1. An electrically erasable and programmable non-volatile semiconductor device comprising:

a semiconductive substrate;

a plurality of bit lines on said substrate;

an array of rows and columns of memory cells connected to said bit lines on said substrate, each of said memory cells including a transistor having an insulated carrier storage layer and a control gate electrode insulatively disposed above said carrier storage layer, said transistor allowing electrical charge carriers to tunnel to or from said carrier storage layer for a data write;

sense/latch circuit means coupled to said bit lines, for selectively performing a sense operation and a data latch operation for latching a write data;

program controller means for writing the write data into a selected memory cell or cells of said memory cells which are included in a designated area during a predetermined length of time period, for reading the contents of said selected memory cell or cells to verify whether or not a resultant threshold voltage thereof is within a predetermined range, for, if an insufficiently written memory cell transistor is found, writing the write data again into the insufficiently written memory cell transistor;

data setter means for performing a logic operation with respect to a read data corresponding to the contents of said selected memory cell or cells and said write data being latched in said sense/latch circuit means, and for automatically updating a rewrite data being stored in said sense/latch circuit means with respect to every bit line in accordance with the actual write state as being presently verified; and

said sense/latch circuit means including a flip-flop circuit which remains as a latch circuit at the beginning of the verify operation, and functions as a sense amplifier circuit after being reset.

5,627,783

SEMICONDUCTOR DISK DEVICE

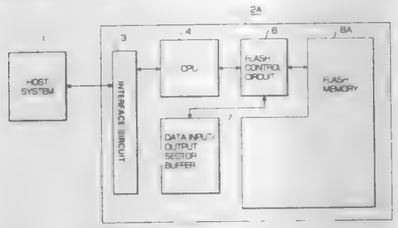
Shigenori Miyauchi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 580,410

Claims priority, application Japan, Jan. 31, 1995, 7-014030

Int. Cl.[6] C11C *13/00*

U.S. Cl. 365—185.33 **9 Claims**



1. A semiconductor disk device comprising:

a non-volatile, electronically programmable and erasable flash memory, the flash memory being erasable by blocks,

interface means for exchanging data and addresses with an external system,

flash control buffer means for performing data exchange between the flash memory and the interface means, and

access means for converting a sector address received from the external system into a logical block number and for accessing the flash memory according to the logical block number.

5,627,784

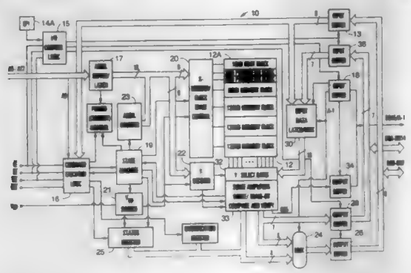
MEMORY SYSTEM HAVING NON-VOLATILE DATA STORAGE STRUCTURE FOR MEMORY CONTROL PARAMETERS AND METHOD

Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jul. 28, 1995, Ser. No. 508,923

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—189.01 **66 Claims**



1. A memory system comprising:

a plurality of memory terminals connected to provide a signal interface between the memory system and an environment external to the memory system;

an array of memory cells arranged in a multiplicity of rows and a multiplicity of columns, with each cell being located in one of the rows and each cell being located in one of the columns;

a memory controller, operably coupled to the array of memory cells, said memory controller configured to control memory operations, with the operations comprising programming the memory cells and reading the memory cells, with the memory operations being controlled in response to control parameters, and with the memory controller comprising command decoding circuitry configured to decode commands received on at least one of the memory terminals, including program commands, and to initiate memory operations in response to receipt of one of the commands;

a data storage structure, operably coupled to the memory controller, the data storage structure being configured to store the control parameters in a non-volatile manner, with the data storage structure being separate from the array of memory cells; and

switching mode circuitry configured to switch the memory system to a normal operating mode wherein data can be programmed into the array and to an alternative operating mode wherein the control parameters in the data storage structure can be modified, with the control parameters being modifiable only when the memory system is in the alternative operating mode and with the switching mode circuitry configured to switch to the alternative operating mode independent of the command decoding circuitry.

5,627,785

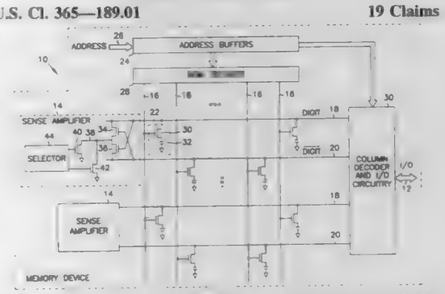
MEMORY DEVICE WITH A SENSE AMPLIFIER

Gary R. Gilliam; Steve G. Renfro; Kacey Cutler; Roland Ochoa, and Craig E. Schneider, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 15, 1996, Ser. No. 619,808

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.01 **19 Claims**



1. A circuit for a sense amplifier for use with a memory device operable under varied power supply voltages, the circuit comprising:

a first device that is operable to drive the sense amplifier with a first current level;

a second device that is operable to drive the sense amplifier with a second current level, different from the first current level; and

a selector coupled to the first and second devices for selectively coupling the first and second devices to the sense amplifier based on the power supply voltage of the memory device.

5,627,786

PARALLEL PROCESSING REDUNDANCY SCHEME FOR FASTER ACCESS TIMES AND LOWER DIE AREA

Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Feb. 10, 1995, Ser. No. 387,018

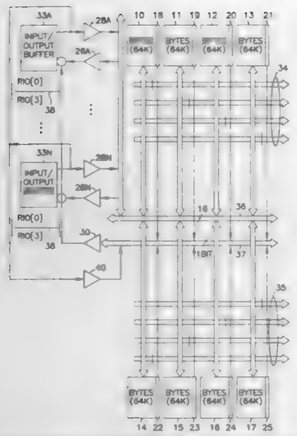
Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—200 **42 Claims**

1. A memory circuit with parallel processing redundancy, comprising:

a memory having multiple memory arrays, each memory array having rows and columns of non-redundant storage elements, one or more columns of redundant storage elements, and addresses associated therewith;

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address lines coupled to transmit access signals to the rows and columns and to the one or more redundant storage elements;

a first data bus coupled to the columns of non-redundant storage elements in each of the memory arrays;

a redundant data bus coupled to the one or more redundant storage elements in each of the memory arrays; and

an access buffer having a first input coupled to the first data bus, a second input coupled to the redundant data bus, a control terminal coupled to receive a signal, and an output, the access buffer selectively coupling the first data bus or the redundant data bus to the output as determined by the signal.

5,627,787

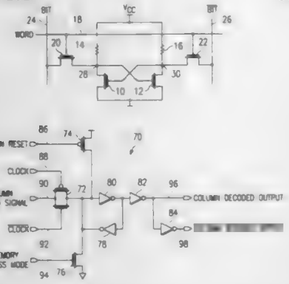
PERIPHERY STRESS TEST FOR SYNCHRONOUS RAMS

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 3, 1995, Ser. No. 367,979

Int. Cl.[6] G11C *7/00;29/00*

U.S. Cl. 365—201 **38 Claims**



1. A method for stress testing decoders and periphery circuits of a synchronous RAM (Random Access Memory) comprising the steps of:

entering a periphery stress mode by forcing a control signal of a synchronous RAM to a first logic level; and

applying a stress voltage to the synchronous RAM in order to stress test a plurality of decoders of the synchronous RAM, wherein entry into and exit from the periphery stress mode is accomplished through a wafer level test pin of the synchronous RAM.

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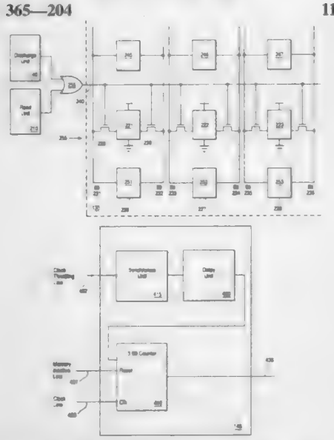
MEMORY UNIT WITH BIT LINE DISCHARGER

Vincent W. Chang, Gold River; Haluk Katircioglu, Fair Oaks; Harsh Kumar, El Dorado Hills, and Nihar Mohapatra, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 5, 1995, Ser. No. 437,090

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—204 **11 Claims**



1. A memory unit comprising:

a memory cell having either a first or a second state;

a bit line coupled to said memory cell;

a sensing unit coupled to said bit line that detects said first or said second state; and

a discharging unit coupled to said memory cell that discharges said bit line, said discharging unit including a counter that counts a number of processor cycles following a last access, and circuitry coupled to said counter that executes a memory read a predetermined number of processor cycles after said last access.

5,627,789

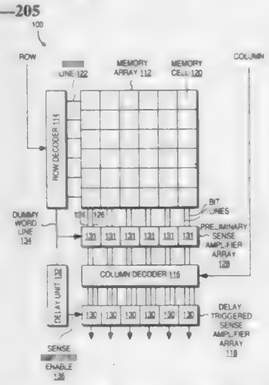
SENSE AMPLIFIER CIRCUITRY FOR DIFFERENTIAL SEMICONDUCTOR MEMORIES

Jeffrey C. Kalb, Jr., Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 27, 1995, Ser. No. 579,299

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—205 **7 Claims**



1. A sense amplifier for use within a memory array having a pair of differential bit lines, said sense amplifier comprising:

a pair of cross-coupled inverters connected between a power supply and a ground and having a pair of output nodes for direct connection to the differential bit lines;

a pair of N-channel pass devices connected between N-channel devices of the cross-coupled inverters and the output nodes; and

a current source coupled to an additional N-channel device connected between the N-channel devices of the cross-coupled inverters and the ground.

5,627,790

READING CIRCUIT FOR AN INTEGRATED SEMICONDUCTOR MEMORY DEVICE

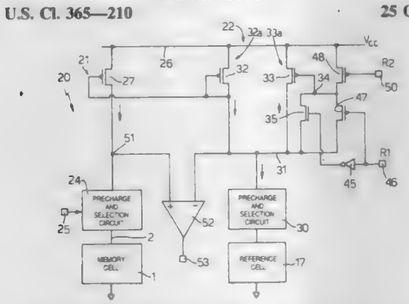
Carla M. Golla, Sesto San Giovanni; Marco Olivo, Bergamo, and Silvia Padoan, Rimini, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Mar. 22, 1995, Ser. No. 408,589

Claims priority, application European Pat. Off., Mar. 22, 1994, 94830124

Int. Cl.[6] G11C *7/02*

U.S. Cl. 365—210 **25 Claims**



2. A memory array cell reading device comprising:

at least one array branch and a reference branch wherein said array branch comprises an array load element interposed between a voltage potential line and an array output node and defining an array current path, and said reference branch comprises at least a first reference load element and a second reference load element interposed, parallel to each other, between said voltage potential line and a reference output node and defining a first and second reference current path;

wherein at least said second reference current path comprises switching means, wherein said array and reference current paths each comprise one transistor element with a control terminal, and wherein said control terminal of said transistor element of said second reference current path defines a turn-on terminal connected to said switching means for enabling and disabling said transistor element of said second reference current path; and

wherein said switching means comprises at least a first controlled switch interposed between a common line and said turn-on terminal, and wherein said control terminals of said transistor elements of said array current path and said first reference current path are connected to said common line.

5,627,791

MULTIPLE BANK MEMORY WITH AUTO REFRESH TO SPECIFIED BANK

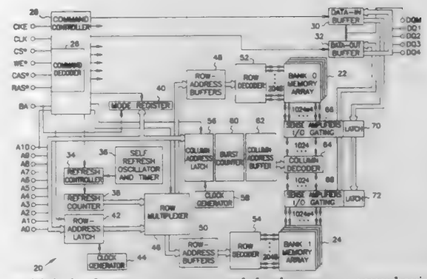
Jeffrey P. Wright, and Hua Zheng, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 16, 1996, Ser. No. 602,593

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **17 Claims**

1. A memory device responsive to command signals and operating in synchronization with active edges of a system clock, the memory device comprising:



multiple bank memory arrays, each bank memory array having storage cells; and

a command decoder/controller responsive to selected command signals to initiate, at a first active edge of the system clock, an auto-refresh command controlling an auto refresh operation to a specified one of the multiple bank memory arrays.

5,627,792

LOC TYPE SEMICONDUCTOR MEMORY DEVICE

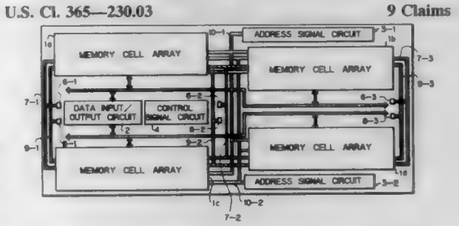
Akira Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 548,948

Claims priority, application Japan, Oct. 27, 1994, 6-263634

Int. Cl.[6] G11C *8/00;5/06*

U.S. Cl. 365—230.03 **9 Claims**



1. A semiconductor memory device comprising:

first, second, third and fourth memory cell arrays, said first and second memory cell arrays being arranged in a first row, said third and fourth memory cell arrays being arranged in a second row, said first and third memory cell arrays being arranged in a first column, said second and fourth memory cell arrays being arranged in a second column;

a data input/output circuit and data input/output pads arranged between said first memory cell array and said third memory cell array;

a control signal circuit and control signal pads arranged between said first memory cell array and said third memory cell array;

a first address signal circuit and first address signal pads arranged outside of said second memory cell array opposite to said fourth memory cell array;

a second address signal circuit and second address signal pads arranged outside of said fourth memory cell array opposite to said second memory cell array;

a first data bus arranged between said first memory cell array and said data input/output circuit, between said first memory cell array and said control signal circuit, and between said second memory cell array and said fourth memory cell array, said first data bus being connected to said first and second memory cell arrays and said data input/output circuit; and

a second data bus arranged between said third memory cell array and said data input/output circuit, between said third memory cell array and said control signal circuit, and between said second memory cell array and said fourth memory cell array, said second data bus being connected to said third and fourth memory cell arrays and said data input/output circuit.

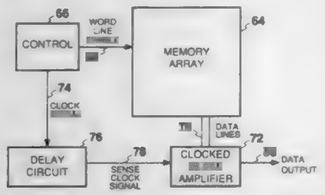
VOL 1198 ISS 1 MY 6 1997 UMI

5,627,793

CLOCK GENERATION CIRCUIT HAVING COMPENSATION FOR SEMICONDUCTOR MANUFACTURING PROCESS VARIATIONS

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 85,751, Jun. 30, 1993, abandoned.
This application Mar. 30, 1995, Ser. No. 413,789
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—233 13 Claims



1. A memory circuit for use with a static memory array comprising:

a memory cell having discharging transistors for discharging a data line in response to an enable signal, wherein the discharging transistors are each fabricated according to a selected set of design parameters, and wherein at least one of the discharging transistors is connected to the data line;

a clocked sense amplifier connected to the data line and a sense clock signal; and

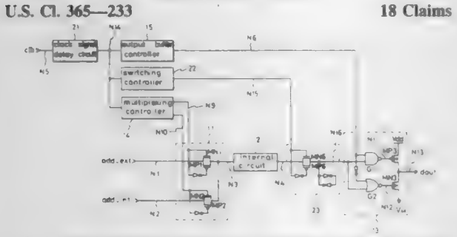
a signal delay circuit for generating the sense clock signal in response to a clock signal, wherein the delay circuit has a plurality of delay circuit transistors, and wherein at least one of the plurality of delay circuit transistors is fabricated according to the selected set of design parameters used to fabricate one of the discharging transistors, wherein said signal delay circuit is affected by process variations during fabrication in a manner in which the memory cell is affected.

5,627,794

SIGNAL TRANSFER CIRCUIT FOR SYNCHRONOUS MEMORY DEVICE

Jae J. Lee, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed May 1, 1996, Ser. No. 641,650
Claims priority, application Rep. of Korea, May 2, 1995, 95-10732
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—233 18 Claims



1. A signal transfer circuit for a synchronous memory device which has memory cell arrays and the associated peripheral circuits, comprising:

an input terminal for inputting a clock signal;

internal address generation means for generating an internal address signal;

multiplexing means for selectively transferring an external address signal and the internal address signal from said internal address generation means;

multiplexing control means for controlling the operation of said multiplexing means in response to the clock signal from said input terminal;

an internal circuit for generating a data signal in response to the external or internal address signal transferred by said multiplexing means;

data output buffer means for buffering the data signal generated by said internal circuit and outputting the buffered data signal externally;

output buffer control means for controlling the operation of said data output buffer means in response to the clock signal from said input terminal;

switching means connected between said internal circuit and said data output buffer means, for performing a switching operation to transfer the data signal from said internal circuit to said data output buffer means; and

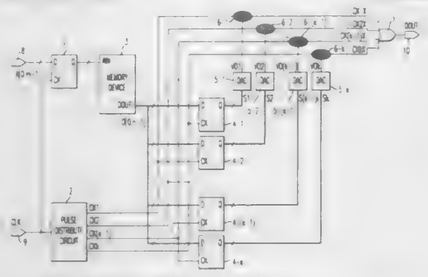
switching control means for controlling the operation of said switching means in response to the clock signal from said input terminal.

5,627,795

TIMING GENERATING DEVICE

Shozo Nitta, Tokyo-To, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 7, 1995, Ser. No. 418,289
Claims priority, application Japan, Apr. 8, 1994, 6-070539
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 32 Claims



1. A timing generating device, comprising:

pulse distributing means for distributing a clock pulse signal to a plurality of routes in sequence and outputting the distributed pulses;

first register means for reading address data in synchronism with the clock signal;

storing means for reading output of said first register means as address data and outputting delay time data;

a plurality of second register means for reading and storing the outputted data of said storing means individually on the basis of the distributed pulses;

a plurality of delaying means for controllably delaying the distributed pulses individually on the basis of the output data of said second register means; and

output means for outputting the delayed distributed pulses.

5,627,796

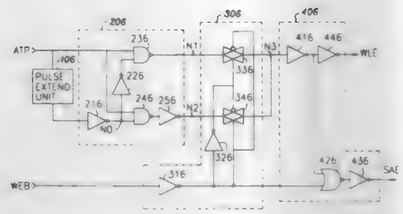
PULSE GENERATION CIRCUIT AND MEMORY CIRCUIT INCLUDING SAME

Jong H. Park, Kyungki-do, and Weon H. Jeong, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Choongchungbook-do, Rep. of Korea

Filed Feb. 12, 1996, Ser. No. 600,159
Claims priority, application Rep. of Korea, Feb. 16, 1995, 2901/1995
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233.5 10 Claims

1. A pulse generation circuit of a memory, comprising:

a first logic operation unit for performing a logical operation on an address transition detection pulse and a delayed address transition detection pulse to produce first and second pulses;



a switching unit controlled by an externally applied write enable signal for selecting one of the first and second pulses as an output pulse and for inverting the write enable signal; and

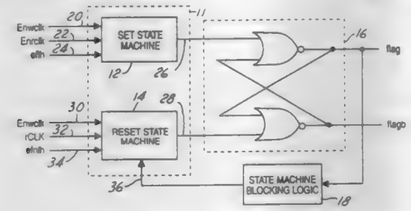
a second logic operation unit for performing a logical operation on the output pulse and the inverted write enable signal from the switching unit to generate a word line enable signal and a sense amplifying enable signal.

5,627,797

FULL AND EMPTY FLAG GENERATOR FOR SYNCHRONOUS FIFOS

Andrew L. Hawkins, and Pidugu L. Narayana, both of Starkville, Miss., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Dec. 14, 1995, Ser. No. 572,623
Int. Cl.[6] H03K *19/01*
U.S. Cl. 365—221 20 Claims



1. An apparatus for generating an output flag representing the fullness of a FIFO buffer, said apparatus comprising:

a state machine having a first input receiving a write clock, a second input receiving a read clock, a third input receiving a look-ahead signal, a fourth input receiving a non look-ahead signal and a fifth input receiving free running read clock, said state machine manipulating said inputs to produce an output that is at a one logic state when said FIFO is empty and is at another logic state when said FIFO is not empty.

5,627,798

HIERARCHICAL TELEMETRY SYSTEM FOR SEISMIC ACQUISITION

Lee E. Siems, Simonton, and Gary L. Scott, Sugar Land, both of Tex., assignors to I/O Exploration Products (U.S.A.), Inc., Stafford, Tex.

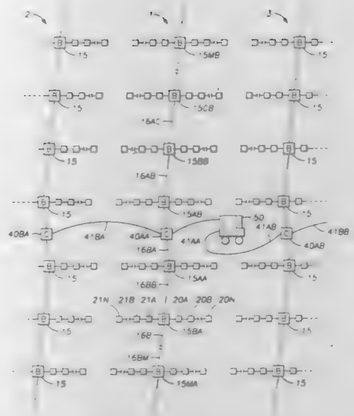
Filed May 5, 1995, Ser. No. 435,889
Int. Cl.[6] G01V *1/22*
U.S. Cl. 367—76 18 Claims

1. A seismic data acquisition system for communicating signals generated by seismic sensors to a recording unit, the system comprising:

a control unit connected to the recording unit; and

analog-to-digital converter units connected to the control unit, each of the converter units including integral interconnecting cables having an hermaphroditic connector at each end, each of the converter units including analog inputs for the signals from the seismic sensors, each of the converter units having signal processing circuitry disposed within a watertight housing forming part of the integral interconnecting cables, the circuitry including analog-to-digital converters connected to the analog inputs, the circuitry including a first buffer for storing digitized signals transmitted to one of the converter units from another one of the converter units, the converter units being interconnected, the circuitry including a first digital transceiver for serially retransmitting digitized signals from the analog to digital converter and signals in the buffer at a first data rate to the control unit, and for retransmitting control signals sent from the control unit to the other converter units, the first transceiver for receiving control signals from the control unit and for receiving the digitized signals from the other ones of the converter units for storage in the first buffer:

the control unit including a second buffer for storing signals from the converter units and for buffering digitized signals retransmitted from other ones of the control units serially connected to the control unit, the control unit further including a second digital transceiver for retransmitting the buffered signals to the recording unit at a second data rate higher than the first data rate, and for receiving control signals transmitted from the recording unit at the second data rate.



5,627,799

BEAMFORMER USING COEFFICIENT RESTRAINED ADAPTIVE FILTERS FOR DETECTING INTERFERENCE SIGNALS

Osamu Hoshuyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 523,059
Claims priority, application Japan, Sep. 1, 1994, 6-208635
Int. Cl.[6] G01S *15/00*
U.S. Cl. 367—121 10 Claims

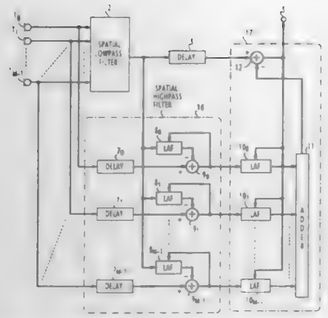
1. An adaptive array beamformer comprising:

an array of spatially distributed sensors;

a spatial beamforming filter connected to said sensors for respectively filtering output signals of the sensors and summing the filtered output signals to produce a first filter output containing a target signal arriving at said array in a specified direction;

a plurality of first adaptive filters, each having a tapped-delay line connected to receive said first filter output, coefficient update means for producing tap weight coefficients indicating correlations between tap signals from the tapped-delay line and a first error signal applied thereto, a multiply-and-sum circuit for weighting said tap signals with said coefficients respectively and summing the weighted tap signals to produce a second filter output not containing said target signal, said

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coefficient update means including restraining means for preventing said coefficients from increasing indefinitely;

a plurality of first subtractors, each detecting a difference between an output signal of a corresponding one of said sensors and the second filter output of a corresponding one of said first adaptive filters and supplying the difference to the coefficient update means of the corresponding first adaptive filter as said first error signal;

a plurality of second adaptive filters, each having a tapped-delay line connected to receive said first error signal from a corresponding one of said first subtractors, coefficient update means for producing tap weight coefficients indicating correlations between tap signals from the tapped-delay line and a second error signal applied thereto, a multiply-and-sum circuit for weighting said tap signals with said coefficients respectively and summing the weighted tap signals to produce a third filter output, said coefficient update means including restraining means for preventing said coefficients from increasing indefinitely;

an adder for summing the third filter outputs from the second adaptive filters; and

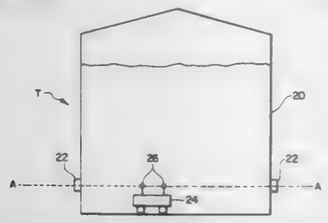
a second subtractor for detecting a difference between the first filter output and a summed signal from said adder and supplying the difference to the coefficient update means of said second adaptive filters as said second error signal.

5,627,800

METHOD AND APPARATUS FOR DETERMINING POSITION OF A MOVING OBJECT IN A TANK

Seymour R. Kotler, 1054 St. Margaret's Dr., Annapolis, Md. 21401, and Harry T. Roman, 25 Laurel Ave., East Orange, N.J. 07017

Filed Jan. 28, 1994, Ser. No. 188,311
Int. Cl.[6] G01S *3/80*
U.S. Cl. 367—127 **34 Claims**



1. An apparatus for determining a position of a device in an enclosure containing a fluid comprising:

at least one first transducer disposed on the device so as to define a measuring point, said first transducer being capable of transmitting energy in response to a transmit signal and generating a reception signal in response to reception of energy;

a plurality of second transducers disposed on an outer peripheral surface of said enclosure so as to define measuring points;

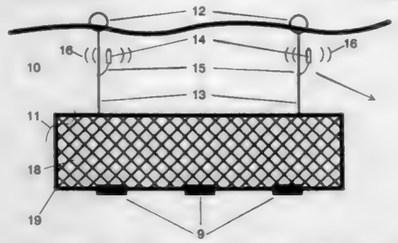
means for detecting travel time of energy between each of said measuring points and all remaining ones of said measuring points, based on transmission and reception of energy by said first and second transducers, and thereby determine the position of said device.

5,627,801

UNDERWATER PINGER ACOUSTIC RESONANCE CHAMBER

David N. Saunders, 82 Industrial Park Dr., Saco, Me. 04072

Filed Jul. 20, 1995, Ser. No. 504,594
Int. Cl.[6] G10K *9/12*
U.S. Cl. 367—139 **16 Claims**



1. An apparatus for alerting marine creatures to the existence of a structure located in water comprising:

a. transducer means for creating and transmitting an acoustic wave;

b. a housing for containing said transducer means and a self-contained power source, said housing including an amplitude-enhancing section; and

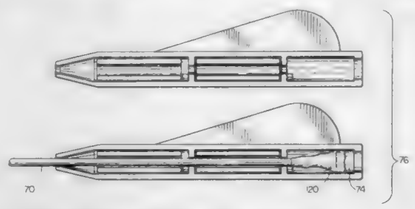
c. an end means of said amplitude-enhancing section for both reflecting and transmitting said acoustic wave, said end means spaced from said transducer means so as to enhance an amplitude of said acoustic wave by reflection of said acoustic wave and providing a point of transmission of said acoustic wave to said water.

5,627,802

SOUND AMPLIFICATION SYSTEM HAVING A SUBMERSIBLE MICROPHONE

Alexander G. Langer, Cudjoe Key, Fla., assignor to Langer Electronics Corp., Cudjoe Key, Fla.

Continuation-in-part of Ser. No. 492,412, Jun. 19, 1995, abandoned. This application Oct. 16, 1995, Ser. No. 543,509
Int. Cl.[6] H04R *17/00;1/44*
U.S. Cl. 367—188 **9 Claims**



1. A sound amplification system comprising:

a waterproof microphone;

a cord in electrical communication with said waterproof microphone;

a non-flotational housing defining a first cavity for receiving at least a portion of said cord and said waterproof microphone, wherein said housing is elongate and defines a first opening through which said cord passes from the exterior of said housing into said first cavity and a second opening at one end of said housing that provides access to said microphone, and wherein said housing further defines a second cavity for receiving a weight; and

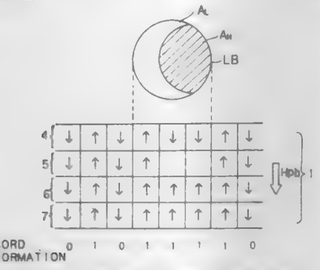
a stabilizing fin secured to an exterior portion of said housing.

5,627,803

MAGNETO OPTICAL RECORDING MEDIUM INCLUDING A PLURALITY OF MAGNETIC LAYERS AND A METHOD FOR REDUCING THEREOF

Nobuyasu Negishi, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Japan

Filed Aug. 9, 1995, Ser. No. 512,978
Claims priority, application Japan, Aug. 11, 1994, 6-189512
Int. Cl.[6] G11B *11/00;5/70*
U.S. Cl. 369—13 **9 Claims**



1. A magneto optical recording medium comprising:

a record layer, to which information is recorded as a directional condition of magnetization thereof and which comprises a magnetic substance having a Curie temperature Tc_2;

a reproduction layer, to which the magnetization of said record layer is transferred at a predetermined reproducing temperature Tpb and which comprises a magnetic substance having a Curie temperature Tc_0;

an intermediate layer disposed between said record layer and said reproduction layer and comprising a magnetic substance having a Curie temperature Tc_1 for allowing the magnetization of said record layer to be transferred therethrough at a temperature lower than the Curie temperature Tc_1 by a switched connection force between said record layer and said intermediate layer and by a switched connection force between said intermediate layer and said reproduction layer, and for disallowing the magnetization of said record layer to be transferred therethrough at a temperature not lower than the Curie temperature Tc_1; and

an intermediate auxiliary layer interposed between said record layer and said intermediate layer and comprising a magnetic substance having a Curie temperature Tc_3 for increasing the switched connection force between said record layer and said intermediate layer, said Curie temperatures satisfying conditions of:

$$Tc_1 < Tpb < Tc_2 < Tc_0$$

and

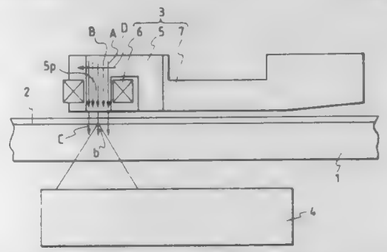
$$Tc_1 \leq Tc_3 \leq Tc_2.$$

5,627,804

MAGNETO-OPTICAL RECORDING APPARARTUS INCLUDING A MAGNETIC HEAD HAVING A CORE COMPOSED OF A SINGLE CRYSTAL FERRITE MATERIAL

Kazuyoshi Ishii, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 304,432, Sep. 12, 1994, abandoned, which is a continuation of Ser. No. 964,846, Oct. 22, 1992, abandoned. This application Jun. 5, 1996, Ser. No. 658,399
Claims priority, application Japan, Oct. 28, 1991, 3-307170; Oct. 14, 1992, 4-300562
Int. Cl.[6] G11B *13/04;11/14*
U.S. Cl. 369—13 **36 Claims**



1. A magneto-optical recording apparatus comprising:

an optical head for irradiating a magneto-optical recording medium with an optical beam; and

a magnetic head for applying a magnetic field to said recording medium, said magnetic head comprising a core and a coil wound around said core, said core including a main pole portion substantially perpendicular to said recording medium, said main pole portion having an end surface parallel to and facing said recording medium, and a magnetic field being applied perpendicularly to said recording medium from said end surface,

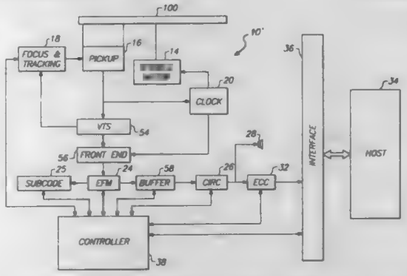
wherein said main pole portion is made of a single crystal ferrite material, and an easy magnetization direction based on a magnetic anisotropy of said single crystal ferrite material constituting said main pole portion is arranged so as to be substantially coincident with a direction of the magnetic field applied to said magneto-optical recording medium.

5,627,805

METHODS AND APPARATUS FOR HIGH SPEED OPTICAL STORAGE DEVICE

Jacob Finkelstein, Kfar Saba, Israel, and Amir Alon, Sunnyvale, Calif., assignors to Zen Research N.V., Curacao, Netherlands Antilles

Filed Nov. 15, 1995, Ser. No. 559,429
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—32 **24 Claims**



1. Apparatus for simultaneously reading multiple data tracks of an optical disk, the apparatus comprising:

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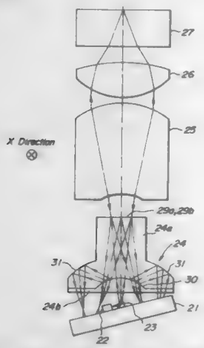
an illumination source that illuminates multiple data tracks on the optical disk;
a detector for receiving illumination reflected from the optical disk and for generating a plurality of data signals corresponding to data stored in the multiple data tracks;
an optical system for directing the illumination reflected from the optical disk to the detector;
circuitry for computing track selection signals corresponding to locations of selected ones of the multiple data tracks;
selector circuitry for selecting a subset of the plurality of data signals for processing responsive to the track selection signals;
synchronizing circuitry coupled to the selector circuitry for synchronizing the recovery of the data from respective ones of the subset of the plurality of data signals to account for variations in the linear velocities of the multiple data tracks; and
circuitry for processing the subset of the plurality of data signals to recover information stored on the optical disk.

5,627,806

OPTICAL HEAD HAVING BEAM SPLITTING SURFACE CURVED TO PRESENT A SUBSTANTIALLY UNIFORM ANGLE

Shohei Kobayashi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 61,034, May 14, 1993, Pat. No. 5,465,247. This application May 30, 1995, Ser. No. 453,830
Claims priority, application Japan, May 14, 1992, 4-122059
Int. Cl.[6] G11B *7/09*
U.S. Cl. 369—44.23 **19 Claims**



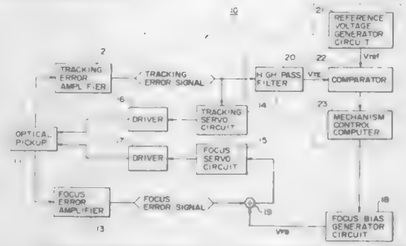
1. An optical head for recording and reproducing information by irradiating a light spot on an optical record medium comprising:
a light source means for emitting a linearly polarized light beam;
an optical lens system including an objective lens for projecting said light beam onto the optical record medium as the light spot and for collecting light reflected by the optical record medium to form a return light beam;
a beam splitting means having a beam splitting surface for splitting said return light beam into a plurality of light beams, said beam splitting surface being curved such that light rays in the return light beam are made incident upon said beam splitting surface substantially at a same incident angle; and
a photoelectric converting means having a plurality of photodetectors for receiving said plurality of light beams split by said beam splitting surface, wherein said optical record medium is formed by an opto-magnetic record medium in which the information is recorded as a direction of magnetization, said light source means comprises a semiconductor laser emitting said linearly polarized light beam, and said beam splitting surface is formed by a polarizing beam splitting surface which substantially transmits a P-polarized component and substantially reflects an S-polarized component.

5,627,807

OPTICAL DISK APPARATUS WITH FOCUS BIAS MEANS

Tetsuya Abe, Sony Corporation 7-35 Kitashinagawa 6-chome, Shinagawa-Ku, Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,038
Claims priority, application Japan, Sep. 19, 1994, 6-249921
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.29 **7 Claims**



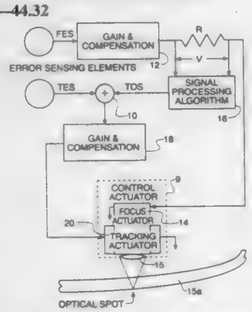
1. An optical disk apparatus with a focus bias means including a focus servo device for an optical pickup, wherein a return light beam from an optical disk is received by a photo detector, then a focus error signal is detected from the outputs of divided sensors of said photo detector, and focus servo control is executed by applying a focus bias from a focus bias generator circuit to the focus error signal, said optical disk apparatus comprising:
an extractor means for extracting a traverse level of a tracking error signal computed on the basis of the outputs of said sensors while changing the focus bias in an off-state of the tracking servo;
a computer circuit for obtaining a focus bias adjustment corresponding to the maximum value of the traverse level extracted by said extractor means; and
a control means for controlling said focus bias generator circuit to adjust said focus bias in accordance with said focus bias adjustment obtained from said computer circuit.

5,627,808

CROSS-TRACK TILT ERROR COMPENSATION METHOD FOR OPTICAL DISC DRIVES

Roger A. Hajjar, Fairport, and Mark A. Barton, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1996, Ser. No. 604,234
Int. Cl.[6] G11B *7/09*
U.S. Cl. 369—44.32 **8 Claims**



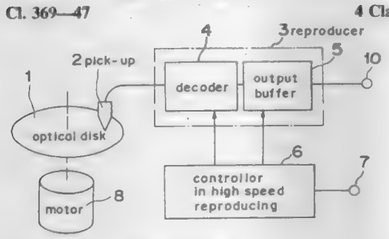
1. A method for deriving a track offset information signal to be applied to an actuator for positioning a read or write spot on a disc in response to the track offset information signal, comprising the steps of:
a) determining a signal representative of the focus height as a function of disc radius;
b) differentiating the focus height signal to derive a cross-track tilt signal; and
c) using the cross-track tilt signal to produce a track offset information signal which is applied to the actuator.

5,627,809

OPTICAL DISK DEVICE HAVING HIGH-SPEED REPRODUCTION CAPABILITY

Masahiro Honjo, Osaka-fu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Continuation-in-part of Ser. No. 415,516, Apr. 3, 1995, which is a continuation-in-part of Ser. No. 224,200, Apr. 6, 1994, abandoned, which is a continuation of Ser. No. 939,684, Sep. 2, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 471,885
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—47 **4 Claims**



1. An optical disk device comprising:
a reproducing means for reproducing from an optical disk in a normal reproduction mode digital picture image data digitally compressed by an in-field or in-frame process and an inter-field or inter-frame process to obtain a plurality of both in-field coded data fields or in-frame coded data frames and inter-field coded data fields or inter-frames coded data frames,
a high-speed reproduction control means for controlling the reproducing means during a high-speed fast forwarding or fast reversing reproduction mode so as to reproduce and output only the data of each field or frame compressed by the in-field or in-frame process to obtain only the in-field coded data fields or the in-frame coded data frames, and
a motor driving means for controlling, during the high-speed fast forwarding or fast reversing reproduction mode, a rotation of the motor in response to a command of said high-speed reproduction control means such that a rotational speed of the optical disk is higher than a minimum required rotational speed of the optical disk, the minimum required rotational speed of the optical disk being a minimum speed needed to reproduce data from the optical disk,
wherein the compressed picture image data is a variable rate data in which the data transfer rate continuously varies within a range between a minimum transfer rate and a maximum transfer rate, and wherein said minimum required rotational speed of the optical disk is a speed necessary to obtain the maximum transfer rate.

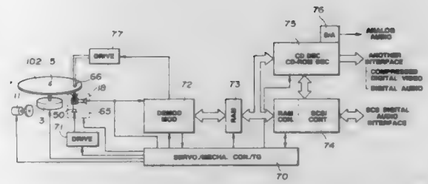
5,627,810

RECORDING/REPRODUCING APPARATUS THAT FORMS READ AND WRITE CLOCK SIGNALS WITH DIFFERING FREQUENCIES FROM THE SERVO CLOCK SIGNALS

Kiyoshi Ohmori, Kanagawa; Tetsu Watanabe, Tokyo; Katsuhiro Seo, Tokyo, and Junichi Kudo, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 481,922, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 270,117, Jul. 1, 1994, abandoned, which is a continuation of Ser. No. 889,494, May 27, 1992, abandoned. This application Jun. 12, 1996, Ser. No. 662,274
Claims priority, application Japan, May 28, 1991, 3-152416
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—47 **6 Claims**

1. A magneto-optical disc recording and reproducing apparatus comprising:
signal recording and reproducing means including optical means for radiating a light beam onto a magneto-optical disc housed within a disc cartridge and for receiving light returning from the disc, the disc having a signal recording region divided from an inner periphery to an outer periphery into a plurality of concentric signal recording zones, each signal recording zone having a plurality of information elements formed on the signal recording region with a substantially equal line recording density so that the number of information elements storable per track increases from zone to zone from the inner periphery to the outer periphery, whereby the information elements are reproduced at increasing frequencies from the innermost zone to the outermost zone, and a plurality of servo clock signals formed in the zones, whereby the servo clock signals recorded at different radial distances from the center of the disc are reproduced at a substantially constant frequency;



magnetic field generating means for applying a magnetic field when information signals are being recorded on the disc;
rotating driving means for rotatably driving the disc at a substantially constant angular velocity;
loading means for loading the disc cartridge onto the signal recording and reproducing means and for unloading the disc cartridge from the signal recording and reproducing means,
controlling means for controlling the signal recording and reproducing means and for converting the substantially constant frequency reproduced from the servo clock signals for use as plural channel clock frequencies for reproducing and recording signals in the signal recording zones, each signal recording zone having one corresponding channel clock frequency, such that the channel clock frequencies of signal recording zones located at larger radial distances from the center of the disc are higher than channel clock frequencies of signal recording zones located at smaller radial distances from the center of the disc; and
an outer casing having a width of no more than 101.6 mm, a length of no more than 150 mm, and a height of no more than 24.5 mm, the outer casing being provided with a cartridge opening on a side of the outer casing.

5,627,811

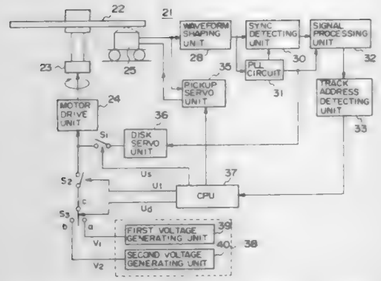
CONSTANT LINEAR VELOCITY OPTICAL DISK APPARATUS HAVING IMPROVED CIRCUITRY FOR SPEED DATA ACCESS

Tsutomu Morita, Mitaka; Hiroyuki Onda, Higashikurume; Masasi Tanaka, Higashimurayama, and Katsumi Aoyama, Higashikurume, all of Japan, assignors to TEAC Corporation, Japan

Filed Jun. 8, 1995, Ser. No. 488,658
Claims priority, application Japan, Jun. 14, 1994, 6-132172
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—50 **5 Claims**

1. An optical disk apparatus including a disk motor and a pickup, wherein the disk motor rotates an optical disk, wherein the pickup moves to a given track of the optical disk by radial movement with respect to the disk, and wherein the disk is irradiated with a laser beam from the pickup to read data from or write data onto the track of the disk, said apparatus comprising:
a disk servo unit generating a servo signal based on a data signal read from the disk, said servo signal controlling the rotation of the motor so that a linear velocity of the disk is kept constant when data is read from or written onto the disk;
switching means for connecting said disk servo unit to the motor when data is read from or written onto the disk, so that the servo signal from the disk servo unit is supplied to the motor, and for disconnecting the disk servo unit from the motor when

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the pickup jumps from a present track of the disk to a destination track thereof during a seek operation, so that the supplying of the servo signal to the motor is prevented;

signal generating means having a first voltage generating unit and a second voltage generating unit, said first voltage generating unit generating a velocity increase signal for increasing the angular velocity of the motor, and said second voltage generating unit generating a velocity decrease signal for decreasing the angular velocity of the motor, one of said first voltage generating unit and said second voltage generating unit generating, during the seek operation, the respective velocity change signal depending on whether a direction of a track jump of the pickup is radially inward or radially outward on the disk;

time estimating means for generating a time signal defining an estimated time required to change the angular velocity of the disk from that existing when the pickup is at the present track to the angular velocity required at the destination track in order to achieve constant linear velocity of the disk, said estimated time being determined based on the track addresses for the present and destination tracks of the disk and based on a motor acceleration coefficient of the motor; and

signal supplying means for supplying the respective velocity change signal, generated by said signal generating means, to the motor during the estimated time defined by the time signal generated by said time estimating means.

5,627,812

OPTICAL HEAD APPARATUS AND DIFFRACTION ELEMENT HAVING AT LEAST TWO DIFFRACTIVE SURFACES

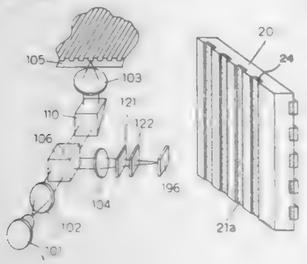
Hiroaki Yamamoto, and Seiji Nishino, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 8, 1994, Ser. No. 337,369

Claims priority, application Japan, Nov. 8, 1993, 5-278323

Int. Cl.[6] G02B *6/12*

U.S. Cl. 369—112 **11 Claims**



1. An optical head apparatus comprising:

a light source,

an optical system for receiving a light beam of linear polarization from the light source and converging the light beam onto an information medium,

an optical system for giving astigmatism to light reflected by the information medium,

a first diffraction element for diffracting at least a portion of the astigmatized light polarized in a first direction, and

a second diffraction element for diffracting at least a portion of the astigmatized light polarized in a second direction orthogonal to the first direction. and

a detector for detecting light transmitted through the first and second diffraction elements based upon the astigmatism, the detector being divided into a plurality of detecting regions.

5,627,813

OPTICAL INFORMATION RECORDING AND/OR REPRODUCING APPARATUS AND METHOD WITH AUTO POWER CONTROL FUNCTION FOR TWO LIGHT SOURCES

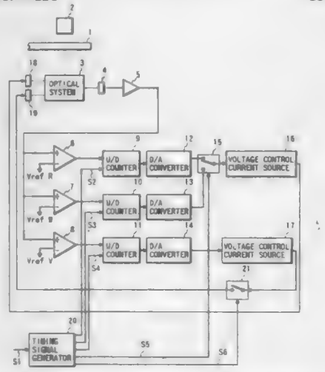
Akira Miyashita, Tokorozawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,912

Claims priority, application Japan, Nov. 16, 1994, 6-281926

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **11 Claims**



1. An optical information recording and/or reproducing apparatus, which is arranged to radiate a leading light beam from a first light source and a trailing light beam from a second light source to follow the leading beam onto an information track in a recording medium and to perform recording of information with said leading beam and verification with the trailing beam, comprising:

a common photosensor for detecting parts of light quantities of the light beams from said first and second light sources;

means for intermittently turning off the light beam not used for reproduction of preformat portions out of said leading beam and trailing beam, with respect to said preformat portions; and

light output controlling means for controlling the leading beam from said first light source and the trailing beam from the second light source at respective predetermined light outputs, based on quantities of light received by said photosensor and reference values preliminarily set, when one of said leading beam and trailing beam is off and when the both of said leading beam and trailing beam are on.

5,627,814

OPTICAL PICKUP SYSTEM FOR READING INFORMATION RECORDED ON AN OPTICAL DISK HAVING MULTIPLE RECORDING SURFACES

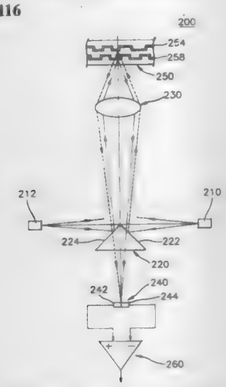
Kwang-Suk Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 26, 1995, Ser. No. 578,303

Claims priority, application Rep. of Korea, Dec. 27, 1994, 94-37245

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **19 Claims**



1. An optical pickup system for reproducing an information signal stored on an optical disk including a first and a second recording surfaces, each of the recording surfaces having a plurality of tracks aligned spirally or concentrically, comprising:

a pair of light sources for generating a first and a second light beams, respectively, each of the light beams having different wavelengths, and each of the light sources being placed opposite each other;

a detector placed opposite the optical disk, the detector being provided with a pair of photoelectric cells, each of the photoelectric cells being capable of measuring a light beam intensity and generating a corresponding output signal;

a beam splitter, disposed between the optical disk and the detector, provided with a first and a second surfaces, the first surface being pervious to the light beams having a wavelength other than the wavelength of the first light beam and the second surface being pervious to the light beam having a wavelength other than the wavelength of the second light beam, the first and the second surfaces arranged in such a way that they are inclined at a predetermined angle with respect to an optical axis formed by a center point of the detector and respective convergence points of the first and the second light beams, the convergence point of the first light beam referring to a point on the first recording surface on which the first light beam converges, and that of the second light beam referring to a point on the second recording surface on which the second light beam converges, wherein the first light beam from the first light source is reflected to the first recording surface of the optical disk by the first surface of the beam splitter, the first light beam reflected from the first recording surface travels toward the detector via the second surface of the beam splitter, the second light beam from the second light source is reflected to the second recording surface of the optical disk by the second surface of the beam splitter, the second light beam reflected by the second recording surface impinges onto the detector via the first surface of the beam splitter to thereby allow the detector to generate selectively a corresponding output signal in response to the information from each of the recording surfaces of the optical disk;

an objective lens, disposed between the beam splitter and the optical disk, for focusing each of the light beams from the beam splitter and for converging each of the light beams reflected from each of the first and the second recording surfaces onto the surfaces of the beam splitter, respectively; and

a signal detection unit, connected to the photoelectric cells of the detector, for generating a focusing error signal by comparing the outputs from the photoelectric cells.

5,627,815

PRECISION MACHINING METHOD PRECISION MACHINING APPARATUS AND DATA STORAGE APPARATUS USING THE SAME

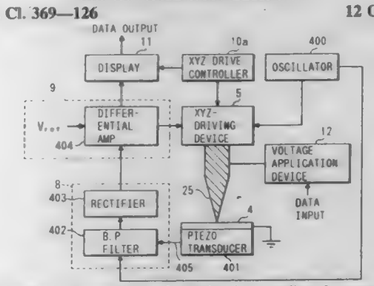
Hajime Koyanagi, Koshigaya; Sumio Hosaka, Hinodemachi, and Ryo Imura, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 120,541, Sep. 14, 1993, Pat. No. 5,471,064. This application Aug. 31, 1995, Ser. No. 521,925

Claims priority, application Japan, Sep. 14, 1992, 4-244508

Int. Cl.[6] G11B *9/00*; **G21K** *5/10*

U.S. Cl. 369—126 **12 Claims**



9. Method of recording information in a medium in response to an input information signal, comprising the steps of:

providing a medium comprising an electrically insulative surface layer formed on an electrically conductive layer;

providing a probe having a pointed tip projecting therefrom, said pointed tip having a surface layer comprising an electrically conductive material;

moving said pointed tip into close proximity to said surface layer of said medium; and

selectively causing ionization of atoms in at least one of an end of said surface layer of said pointed tip, and a portion of said surface layer of said medium in an area adjacent said pointed tip, by applying a voltage between said pointed tip and said electrically conductive layer of said medium in response to said input information signal, whereby atoms are transferred between said electrically conductive surface layer of said pointed tip and said electrically insulative surface layer of said medium in accordance with said input information signal.

5,627,816

MULTILAYER OPTICAL DISK AND APPARATUS

Noboru Ito, Hirakata; Shinichi Tanaka, Kyoto; Sadao Mizuno, Ibaraki, and Kenichi Nishiuchi, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 384,459, Feb. 2, 1995, which is a division of Ser. No. 157,398, Nov. 26, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 401,428

Claims priority, application Japan, Nov. 26, 1992, 4-316831; Jun. 25, 1993, 5-154701

Int. Cl.[6] G11B *7/24*

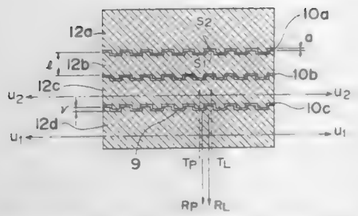
U.S. Cl. 369—275.1 **6 Claims**

1. An optical disk apparatus comprising:

a beam source;

an optical disk having alternately laminated recording layers and transparent bodies wherein each recording layer includes recording pit portions and non-pit portions, wherein a total

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transmissivity of light beams travelling normal to the recording layer from one transparent body to a next transparent body is the same for both the pit portions and the non-pit portions of each recording layer, and wherein said optical disk further comprises means for causing more than 80% of energies of the light beams incident on each pit portion of a one of said recording layers which is recorded with information by a change in optical amplitude or phase to be 0 order transmission beams;

an objective lens for focusing the optical beams from the beam source onto the optical disk, and

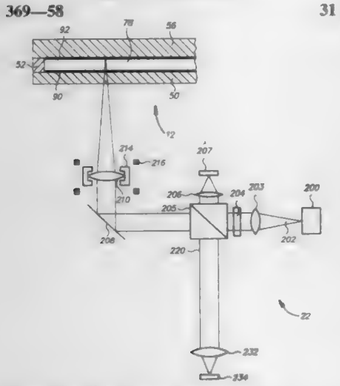
a detector for receiving reflection beams from the optical disk and for detecting the information recorded on the optical disk.

5,627,817

OPTICAL DISK DATA STORAGE SYSTEM WITH MULTIPLE WRITE-ONCE DYE-BASED DATA LAYERS

Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Wade W.-C. Tang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1995, Ser. No. 435,069
Int. Cl.° G11B *7/00*
U.S. Cl. 369—58 **31 Claims**



1. An optical disk drive system comprising:

a laser light source for generating laser light at a predetermined wavelength and at different read and write power levels;

an optical disk comprising (a) a first substrate transmissive to the light and having a first surface that forms a disk outer face onto which the light is incident, (b) a first data layer of dye-based write-once material spaced from the disk outer face by the substrate, the dye material in the first data layer exhibiting, at said predetermined wavelength, an index of refraction greater than the index of refraction of the first substrate and an extinction coefficient less than approximately 1.0, the first data layer having a thickness wherein the first data layer's transmissivity to light at said predetermined wavelengh is greater than its reflectivity, and (c) a second data layer of dye-based write-once material spaced from the first data layer, the dye material in the second data layer exhibiting, at said predetermined wavelength, an extinction coefficient greater than approximately 1.0;

a motor attached to the disk for rotating the disk;

a lens located between the laser light source and said first surface of the first substrate for focusing the laser light to a spot; and

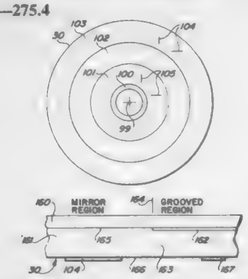
means connected to the lens for moving the lens relative to the disk so the focused spot can be moved from one data layer to another data layer; whereby the light at the read power level is reflected back from the first data layer when the spot is focused on the first data layer and the light at the write power level is transmitted through the first data layer when the spot is focused on the second data layer.

5,627,818

OPTICAL DISK WITH MARKS USED FOR CALIBRATING AN OPTICAL DETECTOR TO MINIMIZE NOISE FROM UNDESIRED PERTURBATIONS IN DISK SURFACES

Timothy S. Gardner; Delbert A. Hansen, and Ronald P. Stahl, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 960,033, Oct. 13, 1992, abandoned.
This application May 27, 1994, Ser. No. 250,320
Int. Cl.° G11B *7/00*
U.S. Cl. 369—275.4 **3 Claims**



1. An optical disk having an axis of rotation and a predetermined annular outwardly-facing surface area on a transparent substrate and with an annular reflective layer disposed in the disk on the substrate facing and spaced axially inwardly from the outwardly-facing surface area, a plurality of substantially concentric data-storing tracks on the disk, each of said tracks having a predetermined radial extent; comprising:

said reflective layer having a predetermined high optical reflectance, said outwardly-facing surface area being subject to having predetermined undesired shadow-causing surface perturbations that interfere with a light beam impinging upon and being reflected from said annular reflective layer;

low reflectance means on a predetermined portion of the surface area for simulating said predetermined undesired surface perturbations and having a reflectance less than said predetermined high optical reflectance;

said reflective layer having substantially circular groove means therein that constitutes said tracks, each of said tracks having a radial extent not greater than five microns, an annular non-grooved mirror area in the reflective layer, said non-grooved mirror area having a radial extent greater than said radial length of said low reflectance means and wholly containing said predetermined area such that the low reflectance means is disposed entirely on said non-groove mirror area; and

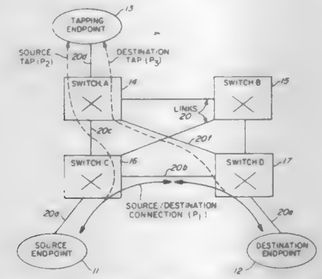
said low reflectance means including a pair of elongated opaque marks, each of said opaque marks having a radial length at least an order of magnitude greater than said radial extent of each of said tracks, said marks being circumferentially spaced-apart, disposed at a first angle with respect to each other and respectively disposed at an acute angle with respect to a radial line disposed between said marks, each said acute angle being substantially one-half of said first angle.

5,627,819

USE OF MULTIPOINT CONNECTION SERVICES TO ESTABLISH CALL-TAPPING POINTS IN A SWITCHED NETWORK

Roger Dev, Durham, N.H.; Prasan Kaikini, Cambridge, Mass.; Jason Jeffords, Dover, and Wallace Matthews, North Hampstead, both of N.H., assignors to Cabletron Systems, Inc., Del.

Filed Jan. 9, 1995, Ser. No. 370,158
Int. Cl.° H04Q *1/24*; **H04L** *12/56*
U.S. Cl. 370—250 **30 Claims**



1. A method for creating a tap point for monitoring data sent between a source node and a first destination node along a source/destination path in a switched network, the network having connection services which provide a point-to-multipoint connection between the source node and a plurality of destination nodes, the method comprising the steps of:

(a) invoking the connection services to provide a source/tap path between the source node and the tap point, including finding a first common segment between the source/tap path and the source/destination path and merging the paths to produce a first merged path having the first common segment and a first diverging segment;

(b) configuring at least one network switch in the first diverging segment to form a first point-to-multipoint connection from the source node to the first destination node and to the tap point; and

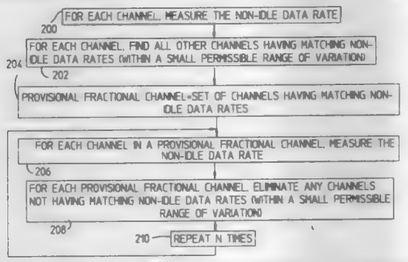
(c) monitoring data sent from the source node to the first destination node by receiving at the tap point data sent by the source node.

5,627,820

AUTOMATIC DETECTION OF A TELECOMMUNICATIONS FRACTIONAL CHANNEL

Michael D. Kwan, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 25, 1995, Ser. No. 548,164
Int. Cl.° H04J *3/14*
U.S. Cl. 370—252 **4 Claims**



1. A method for detecting a fractional channel in a telecommunications circuit, the method comprising the following steps:

(a) measuring a non-idle data rate for each channel in the telecommunications circuit;

(b) grouping channels having the same non-idle data rate, within a fixed range of variation, into sets;

(c) measuring a non-idle data rate, for a particular set from step (b), for each channel in the particular set;

(d) eliminating from the particular set of step (c) any channel having a non-idle data rate that is not approximately the same as a non-idle data rate for the other channels in the particular set;

(e) repeating steps (c) and (d) for all sets from step (b);

(f) repeating steps (c), (d) and (e) multiple times; and

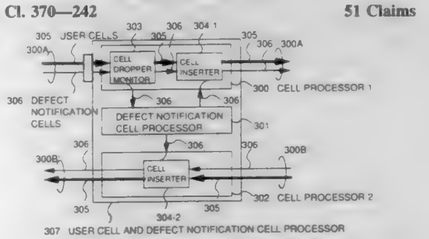
(g) designating each remaining set having at least two channels as a fractional channel.

5,627,821

DEFECT NOTIFICATION METHOD IN A MULTIPOINT ATM NETWORK

Morihito Miyagi, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,748
Claims priority, application Japan, Mar. 15, 1994, 6-043527
Int. Cl.° H04L *1/00*
U.S. Cl. 370—242 **51 Claims**



1. A defect notification method in a multipoint ATM network having a pair of first and second connections for transmitting signals in opposite directions and a plurality of nodes provided on said connections for transmitting and receiving signals to and from upstream and downstream directions of said connections, wherein said nodes includes at least one branching node for transmitting and receiving signals to and from branches of said connections, comprising the steps of:

transmitting, when a node detects a defect on the first connection, a first defect notification signal in the downstream direction of the first connection;

transmitting, when a branching node on the first connection receives the first defect notification signal, a second defect notification signal in the downstream direction of the second connection; and

sequentially transmitting, by nodes on said second connection, said second defect notification signal in the downstream direction of the second connection.

5,627,822

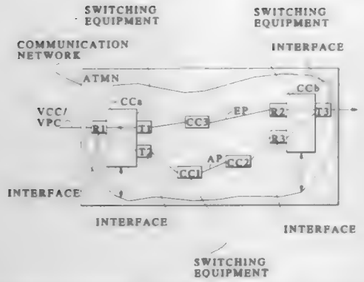
METHOD AND CIRCUIT ARRANGEMENT FOR DISTURBANCE-FREE REDIRECTION OF A MESSAGE CELL STREAM ONTO AN ALTERNATE ROUTE

Bernhard Edmaier, Seefeld, and Wolfgang Fischer, Germering, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 11, 1995, Ser. No. 438,786
Claims priority, application Germany, May 11, 1994, 44 16 718.0
Int. Cl.° H04L *1/22*
U.S. Cl. 370—218 **25 Claims**

19. A circuit arrangement for redirecting a message cell stream transmitted via an active route in a virtual route or during the course of a virtual connection onto an alternate route that forms a

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virtual route pair together with the active route in a cell-oriented communication network having a plurality of switching equipment, comprising:

a first switching equipment located at a start of the route pair and a second switching equipment located at an end of the route pair, the start and end of the route pair being connected by the active route and the alternate route, a message cell stream supplied to the first switching equipment being duplicated to form duplicate first and second message cell streams;

the first switching equipment having a device for separately supplying the first and second message cell streams via the active route and via the alternate route, respectively, to the second switching equipment located at the end of the route pair;

the second switching equipment having a device for monitoring the first and second message cell streams transmitted via the route pair such that only one of the first and second message cell streams is forwarded at an output side of the second switching equipment;

a synchronization means associated with the interface means, the synchronization means receiving the first and second message cell streams and being at least temporally allocated to said virtual route; and

the synchronization means forwarding initially forwarding only the first message cell stream while synchronizing the first and second message cell streams, and then forwarding, when such a synchronization has been achieved by the synchronization means, the second message cell stream supplied via the alternate route via said interface means, instead of the first message cell stream supplied via the active route.

5,627,823

WIRE-FREE TELECOMMUNICATIONS SYSTEM, PREFERABLY A CORDLESS TELECOMMUNICATIONS SYSTEM

Klaus-Dieter Pillekamp, Erkrath, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/01044, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO94/10811, PCT Pub. Date May 11, 1994

PCT Filed Nov. 2, 1993, Ser. No. 428,086

Claims priority, application Germany, Nov. 2, 1992, 9214885 U

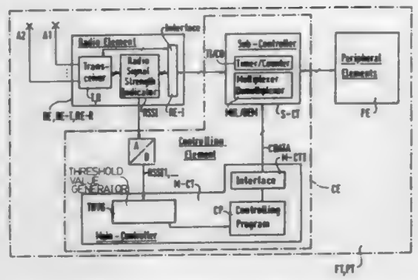
Int. Cl.[6] H04B *7/212*

U.S. Cl. 370—280 **2 Claims**

1. A wire-free telecommunications system having a plurality of base stations and mobile elements which form a wire-free telecommunications subsystem, the wire-free telecommunications system comprising:

each of the base stations and each of the mobile elements having a circuit arrangement to which is assigned a controlling program;

the controlling program forming radio links at predetermined frequencies and in a plurality of time slots in time-division multiplex channels, the controlling program selecting for forming the radio links only a subset of time slots which do not follow one another directly, from a number of time slots of the plurality of time slots, said number of time slots being predetermined for the radio links within one time division multiplex frame.



5,627,824

TELECOMMUNICATIONS NETWORK

John S. Arnold, Nether Heyford, United Kingdom, assignor to GPT Limited, United Kingdom

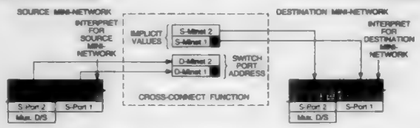
PCT No. PCT/GB94/00029, § 371 Date Jul. 11, 1995, § 102(e) Date Jul. 11, 1995, PCT Pub. No. WO94/16511, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 7, 1994, Ser. No. 446,699

Claims priority, application United Kingdom, Jan. 8, 1993, 9300279

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—396 **4 Claims**



1. A telecommunications switching network comprising a plurality of sub-networks, each sub-network having a plurality of User Network Ports wherein the Destination and Source addresses in a cell-header carried by a cell switched by the network are each divided into a Port Address part and a Sub-network Address part and characterized in that the Source Sub-network part is implicit whilst the cell remains in the Source Sub-network and similarly the Destination Sub-network part is implicit from when the cell arrives in the Destination Sub-network, wherein the Source and the Destination Sub-networks are linked via a cross-connect switching device wherein the address formats are changed.

5,627,825

VIDEO COMMUNICATION APPARATUS

Keith R. Barraclough, and Adrian C. Gay, both of Hampshire, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1994, Ser. No. 300,302

Claims priority, application United Kingdom, Sep. 3, 1993, 9318301

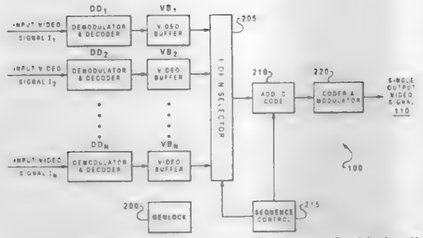
Int. Cl.[6] H04N *7/15*

U.S. Cl. 370—260 **11 Claims**

1. A video communication apparatus for video communication between multiple parties, comprising:

a plurality of first demodulator and decoder units for demodulating and decoding a plurality of input video signals originating from said multiple parties, wherein each of said plurality of first demodulator and decoder units produces a first demodulated video signal including a sequence of fields;

a plurality of video field buffers, each of said plurality of video field buffers storing one of a plurality of first demodulated



video signals produced by an associated one of said plurality of first demodulator and decoder units from one of said plurality of input video signals;

a video field selector that generates a single analog output video signal comprising a sequence of fields, wherein said video field selector selects each field within said single analog output video signal from among fields within said plurality of first demodulated video signals stored within said plurality of video field buffers; and

a code generator which adds field identification codes to each field within said single analog output video signal, wherein each field identification code identifies an input video signal from which an associated field was derived; and

a coder and modulator that codes and modulates said single analog output video signal for transmission to said multiple parties.

5,627,826

TIME-SLOT INTERCHANGER

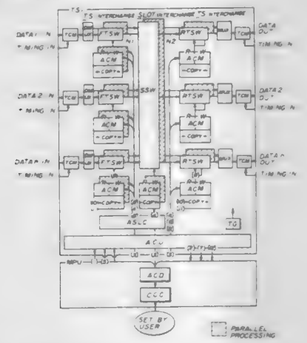
Masaru Kameda; Yukio Suda; Toshiaki Ookubo, all of Oyama, and Hiroshi Yoshida, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 18, 1995, Ser. No. 444,298

Claims priority, application Japan, Oct. 11, 1994, 6-245207

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—371 **14 Claims**



1. A time-slot interchanger comprising:

first and second time switches: and

a space switch installed between the first and second time switches;

wherein:

the first time switch comprises first means for supplying data, which is produced by adding a blank region to input data supplied to the first time switch, in n systems (n is an integer), in parallel to said space switch; and

said second time switch comprises second means for supplying output data, which is produced by removing said blank region from data received in the n systems and in parallel from the space switch.

5,627,827

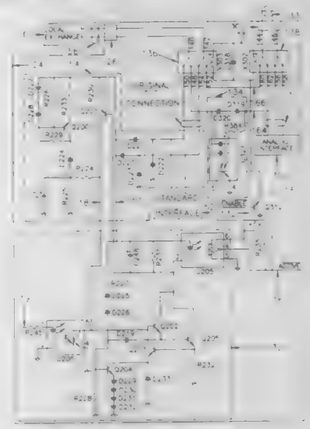
AUTOMATIC SERVICE CUTOVER FOR ISDN PRIVATE EXCHANGE

Allan D. Dale, Haslett, and Earl Goodrich, II, East Lansing, both of Mich., assignors to Omnilink Corporation, Lansing, Mich.

Continuation-in-part of Ser. No. 192,177, Feb. 4, 1994. This application Apr. 28, 1994, Ser. No. 234,548

Int. Cl.[6] H04J *3/12*; **H04M** *1/00*

U.S. Cl. 370—359 **10 Claims**



1. A private exchange comprising:

a first port for connection to a local exchange through a telephone line;

a second port for connection to an analog device;

an exchange analog interface;

a signal conductor;

a first switch connected to said first port and selectively connected to one of said analog interface and said signal conductor;

a second switch connected to said second port and selectively connected to one of said signal conductor and said analog interface;

a detector for detecting whether said first port is connected to a digital local exchange or to an analog local exchange; and

a selector for controlling said first and second switches to connect said second port to said first port through said signal conductor when said first port is connected to an analog local exchange and said selector controlling said switches to connect said first port and second port through said analog interface when said detector determines that said first port is connected to a digital local exchange.

5,627,828

METHOD AND CIRCUIT FOR DETECTING DATA COLLISIONS IN COMMUNICATION NETWORK

Wonro Lee, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Mar. 14, 1995, Ser. No. 403,351

Claims priority, application Rep. of Korea, Mar. 15, 1994, 94-5120

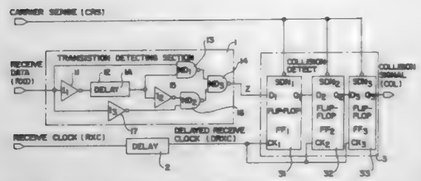
Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—445 **30 Claims**

14. A circuit for detecting data collisions in a communication network, comprising:

a data transition detector receiving a data signal, the data transition detector detecting a transition at a center portion of a bit cell of the data signal and outputting a transition detecting signal of a certain pulse width;

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a delayer delaying a received clock signal having a cycle synchronized with the data signal and outputting delayed clock signal; and

a data collision detector placed in an active mode in response to a data receiving status signal and shifting an output signal in accordance with the transition detecting signal upon clocking of the delayed clock signal;

wherein the data transition detector comprises: a delaying means for delaying the data signal for a certain period of time; and a logic circuit for logic-processing the data signal and the delayed data signal;

wherein the logic circuit comprises:

a first NAND gate having two input terminal of which receives the data signal, and a second input terminal of which receives the output of the delaying means;

a first inverter for inverting the data signal and supplying the inverted data signal to the delaying means;

a second inverter for inverting the output of the delaying means to generate an inverted output;

a third inverter for inverting the data signal to generate an inverted output;

a second NAND gate receiving as inputs the outputs from the second and third inverters; and

a third NAND gate for receiving outputs from the first and second NAND gates as inputs and outputting the transition detecting signal.

5,627,829

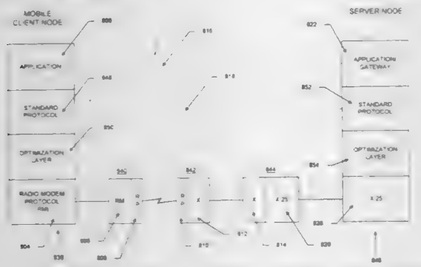
METHOD FOR REDUCING UNNECESSARY TRAFFIC OVER A COMPUTER NETWORK

Bryan J. Gleeson, 19400 Sorensen Ave. #206, Cupertino, Calif. 95014, and Paulette R. Altmaier, 22605 Salem Ave., Cupertino, Calif. 95014

Continuation of Ser. No. 133,513, Oct. 7, 1993, Pat. No. 5,446,736. This application Jun. 6, 1995, Ser. No. 482,929

Int. Cl.[6] H04L *12/66*

U.S. Cl. 370—230 **20 Claims**



1. A method of reducing unnecessary traffic over a wireless network, said wireless network including a plurality of wireless devices, said wireless network further comprising at least one base station which allows said wireless devices to communicate with nodes of a non-wireless wide area network (WAN), said method comprising the steps of:

(a) providing an optimization layer on at least one node of said WAN, said optimization layer provided transparently between a standard protocol stack and a media-specific layer of said node, said standard protocol stack configured to communicate with said media-specific layer without the use of said optimization layer;

(b) intercepting a packet from said standard protocol stack with said optimization layer;

(c) passing said packet to said media-specific layer without modification thereto when said packet is not addressed to said wireless network; and

(d) discarding said packet to inhibit the transmission of said packet over said wireless network when said packet is both (i) addressed to a wireless device of said wireless network and (ii) of a predetermined type.

5,627,830

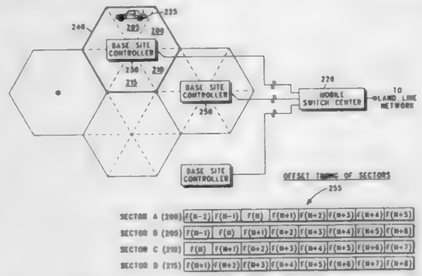
METHOD AND APPARATUS FOR TRANSMITTING INFORMATION FOR MULTIPLE INDEPENDENT USERS IN A COMMUNICATION SYSTEM

Michael D. Kotzin, Buffalo Grove, Ill., assignor to Motorola, Inc., Schamburg, Ill.

Continuation of Ser. No. 485,408, Feb. 27, 1990, Pat. No. 5,228,029. This application Mar. 31, 1993, Ser. No. 40,790

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—336 **30 Claims**



1. In a radio frequency communication system supporting a plurality of traffic channels, the traffic channel being framed so as to implement traffic channel frames, a method of transmitting information for multiple independent users comprising:

independently coding information from at least two of said multiple independent users to produce independently coded information for the at least two of said multiple independent users;

placing said independently coded information for the at least two of said multiple independent users into different traffic channel frames; and

transmitting at least two of said traffic channel frames staggered by a time offset related to the traffic channel frame.

5,627,831

PERSONAL COMMUNICATION NETWORK HAND OVER

Okan Azmak, Dallas, Tex., assignor to Northern Telecom Limited, Ontario, Canada

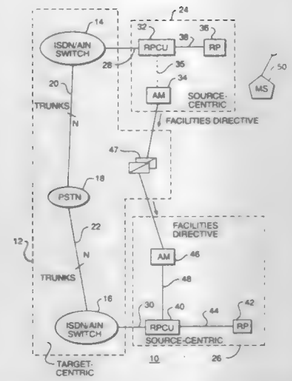
Filed Jul. 31, 1995, Ser. No. 509,699

Int. Cl.[6] H04Q *7/22;* **H04J** *3/16*

U.S. Cl. 370—332 **12 Claims**

1. A method of effecting handover between a first and a second PCS network coupled to an LEC network via a plurality of ISDN/AIN switches; wherein the first and second PCS networks each have a source-centric handover and the LEC has a target-centric handover, the method comprising:

selecting, at a source access system of the first PCS network, a target access system from a list of target access systems compiled in accordance with the relative signal strength of the source access system and access systems other than the source access system of the first PCS network;



sending from the source access system of the first PCS network to the selected target access system of the second PCS network a first request for handover upon the selection of the target access system;

sending from the selected target access system of the second PCS network a second request for handover, including a specified channel, to the LEC network in response to the first request for handover;

initiating handover procedure in the ISDN/AIN switch of the LEC network associated with the target access system; and

rerouting the PCS connection from the source access system of the first PCS network to the target access system of the second network.

5,627,832

SYSTEM FOR PROCESSING SYNCHRONIZATION SIGNALS WITH PHASE SYNCHRONIZATION IN A MOBILE COMMUNICATION NETWORK

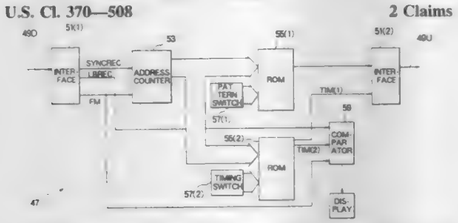
Hironao Tanaka; Toshiya Tsuji, and Junichi Owada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 445,002, May 19, 1995, which is a division of Ser. No. 995,721, Dec. 23, 1992, Pat. No. 5,426,633. This application Feb. 9, 1996, Ser. No. 598,919

Claims priority, application Japan, Jun. 2, 1992, 4-141214; Jun. 2, 1992, 4-141223; Jun. 9, 1992, 4-149041

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—508 **2 Claims**



1. A synchronization signal processing system for use in a local switching center comprising a time division switch for receiving from a higher hierarchy switching center a received synchronization signal having a predetermined period and for producing a clock pulses, said synchronization signal processing system comprising:

an address counter initialized by said received synchronization signal to count said clock pulses and to produce an address signal;

a nonvolatile memory for memorizing a plurality of patterns of different phases, each of said patterns being said predetermined period long and representing a signal datum of a regenerated synchronization signal; and

reading means for reading one of said patterns as a read pattern by said address signal to produce said read pattern as said regenerated synchronization signal.

5,627,833

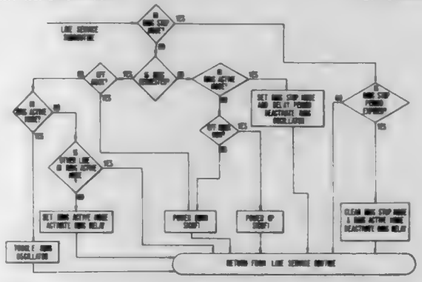
DIGITAL ADDED MAIN LINE SYSTEM WITH POWER-UP AND POWER-DOWN FEATURES

David C. Bliven, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 382,094, Jan. 27, 1995, Pat. No. 5,473,613, which is a continuation of Ser. No. 385,610, Jul. 25, 1989, Pat. No. 5,459,729. This application Nov. 3, 1995, Ser. No. 552,991

Int. Cl.[6] H04J *3/00;* **H04L** *25/34;* **H04M** *1/00;* **H04Q** *5/00*

U.S. Cl. 370—464 **15 Claims**



1. A method for powering a system providing multiple telephone line service over a single twisted pair, said method comprising:

installing the system, the system including master equipment at a first location coupled through said single twisted pair to a remote terminal at a second location, the system using signals from the group consisting of 2B1Q and 4B3T to provide multiple telephone line service over the single twisted pair;

receiving power from telephone company equipment at the first location:

using the power for master equipment operation;

transmitting the power across said single twisted pair to the second location;

using the power for remote equipment operation; and

powering down a portion of the remote terminal when:

the system is not in a ring stop mode,

and a ring request is made,

and a line is off-hook; or

the system is not in a ring stop mode,

and a ring request is not made,

and the line is not in a ring active mode, and the line is not off-hook.

5,627,834

CODE DIVISION MULTIPLE ACCESS (CDMA) AUTOMATIC CALL SIMULATOR

Ki-Chul Han; Duck-Bin Im; In-Myoung Jeong, and Sang-Cheon Lee, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

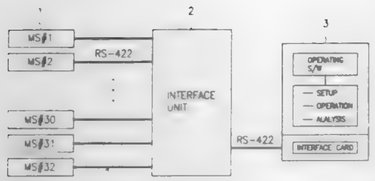
Filed Dec. 19, 1994, Ser. No. 358,531

Int. Cl.[6] H04M *1/24;3/22*

U.S. Cl. 370—241 **12 Claims**

1. A code division multiple access (CDMA) automatic call simulator for simulating call processing capacity and performance of radio communications between an actual base station and at least one actual mobile station of a CDMA mobile communication system, said simulator comprising:

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a connector that can be connected to at least one mobile station having a communication port through that communication port;

an operating unit for controlling said mobile station for generating the state of said mobile station during simulation and a simulation result, and for recording simulation result data; and

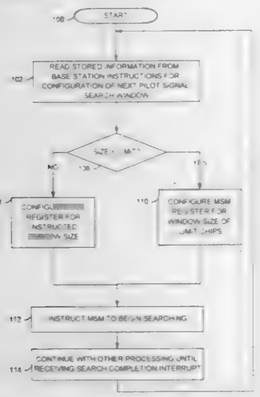
an interface unit for interfacing said mobile station with said operating unit, said interface unit having a first external terminal connected by said connector to said communication port of said mobile station and a second external terminal connected by a second connector to said operating unit, said interface unit being included within a metal enclosure so as not to be influenced by an external electromagnetic wave.

5,627,835

ARTIFICIAL WINDOW SIZE INTERRUPT REDUCTION SYSTEM FOR CDMA RECEIVER

Robert C. Witter, Lawrenceville, Ga., assignor to OKI telecom, Suwanee, Ga.

Filed Apr. 4, 1995, Ser. No. 416,053
Int. Cl.[6] H04B *1/76*
U.S. Cl. 370—320 **6 Claims**



1. A mobile station method of searching for base station pilot signal energy, said method comprising steps of:

receiving from a base station an instructed pilot signal window size;

defining a pilot signal window size lower limit;

comparing the instructed pilot signal window size to the pilot signal window size lower limit;

responsive to determining the instructed pilot signal window size to be below the pilot signal window size lower limit,

configuring a pilot signal search with a window size equal to the pilot signal window size lower limit,

searching for the pilot signal with the window size equal to the pilot signal window size lower limit, including generating result data, and

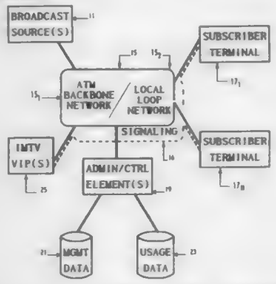
analyzing only a middle portion of the result data corresponding to the instructed pilot signal window size.

5,627,836

VPI/VCI ADMINISTRATION

Lisa Conoscenti, Laurel, Md.; Kathy Daley, Manassas, Va.; Henry Trogden, Fords, N.J.; Carmen Hossain, Olney, and Amos Lucas, Dundalk, both of Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va. .

Filed Jan. 31, 1995, Ser. No. 380,758
Int. Cl.[6] H04N *7/173*; **H04L** *12/56*
U.S. Cl. 370—397 **50 Claims**



18. In a communication system comprising information sources operated by a plurality of service providers, a plurality of subscriber terminals, and a communication network, a method comprising:

supplying a stream of asynchronous transport mode (ATM) cells containing information from one of the information sources to at least one ATM processing element within the communication network, each ATM cell in the stream comprising a payload section containing information from the one information source and a cell header comprising a virtual path identifier (VPI) assigned to the service provider operating the one information source and a virtual circuit identifier (VCI);

routing the ATM cells in the stream through the at least one ATM processing element based on the VPI or the VCI in each cell and keeping at least the VPI constant so that the at least one ATM processing element outputs each cell in the stream with said VPI in the header thereof;

supplying the information from the one information source from payload sections of cells in the stream output by the at least one ATM processing element to one of the subscriber terminals; and

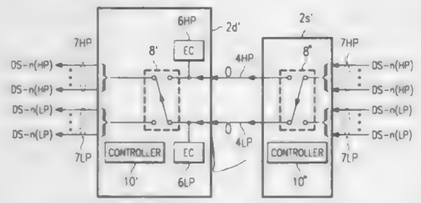
administering at least one function of the communication network based on said VPI.

5,627,837

APPARATUS AND METHOD FOR SUPPRESSING PROTECTION SWITCHING IN A DIGITAL COMMUNICATION SYSTEM IN THE EVENT OF AN ERROR BURST

Mark D. Gillett, Richardson, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Aug. 23, 1994, Ser. No. 294,388
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—5.5 **15 Claims**



10. A communications system having protection switching, comprising:

first and second communications lines, onto which communications traffic is provided by a sending network element; and

a receiving network element, having first and second inputs coupled to the first and second communications lines, having an output, and comprising:

a switch for switching the output to present communications traffic received at either the first or the second inputs of the receiving network element;

a first error counter, coupled to the first input of the receiving network element, for detecting and counting a number of bit errors received from said first communications line; and

a controller for controlling said switch, said controller programmed in such a manner that:

the first error counter is periodically interrogated to determine the number of detected bit errors over a plurality of sample periods;

an error value corresponding to the number of detected bit errors in a first sample period is compared to a burst error threshold;

a value S stored at a memory location for the first sample period is set to reduced error value responsive to the error value for the first sample period exceeding the burst error threshold, while the value S is maintained at the error value for the first sample period responsive to the error value for the first sample period not exceeding the burst error threshold; and

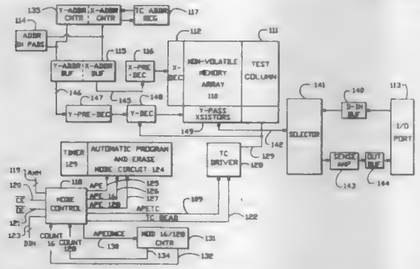
for switching the network element to receive communications traffic from a second communications line responsive to a sum of the value S for the first sample period and values S corresponding to a selected number of preceding sample periods exceeding an error threshold.

5,627,838

AUTOMATIC TEST CIRCUITRY WITH NON-VOLATILE STATUS WRITE

Tien-Ler Lin, Cupertino; Tom D. Yiu; Ray L. Wan, both of Milpitas, and Kong-Mou Liou, San Jose, all of Calif., assignors to Macronix International Co., Ltd., Hsinchu, Taiwan

Filed Sep. 30, 1993, Ser. No. 129,419
Int. Cl.[6] G11C *29/00*
U.S. Cl. 371—21.1 **13 Claims**



10. An integrated circuit, comprising:

an array of non-volatile memory cells, including a port through which data in the array is accessible by external devices;

program and erase circuitry, coupled to the array, including an automatic program and program verify control loop, and an automatic erase and erase verify control loop to program and erase memory cells in the array; wherein

the automatic program and program verify control loop includes logic to retry a programming exercise in response to failure of program verify, and a program retry counter to count retries up to a program retry threshold and signal failure of the programming exercise if the program retry threshold is reached;

the automatic erase and erase verify control loop includes logic to retry an erasing exercise in response to failure of erase verify, and an erase retry counter to count retries up to an erase retry threshold and signal failure of the erasing exercise if the erase retry threshold reached; and

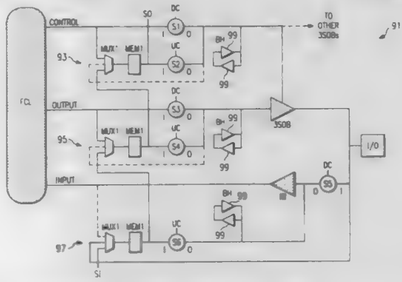
logic to program the program retry threshold and the erase retry threshold in response to user input.

5,627,839

SCAN CELL OUTPUT LATCHES USING SWITCHES AND BUS HOLDERS

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 28, 1995, Ser. No. 395,334
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **10 Claims**



1. An electronic integrated circuit, comprising:

functional circuitry for performing normal operating functions of the integrated circuit; and

a scan cell connected to said functional circuitry, said scan cell including a signal path connected to said functional circuitry for transmitting through said scan cell a signal used by said functional circuitry during performance of said normal operating functions, said signal path including a first switch for selectively breaking said signal path, said first switch having an input for receiving said signal and having an output for passing said signal on through said signal path, said scan cell further including a test data path for providing test data, memory circuitry coupled to said test data path for storing test data received from said test data path, a bus holder circuit connected to said output of said first switch, and a second switch having an input connected to said memory circuitry and having an output connected to said output of said first switch for selectively applying to said signal path the test data stored in said memory circuitry.

5,627,840

MEMORY BASED INTERFACE

Eric K. Hundertmark, Trappe; Duane J. McCrory, Malvern, and Todd M. Rimmer, Exton, all of Pa., assignors to Unisys Corp., Blue Bell, Pa.

Filed Sep. 15, 1995, Ser. No. 529,167
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.3 **31 Claims**

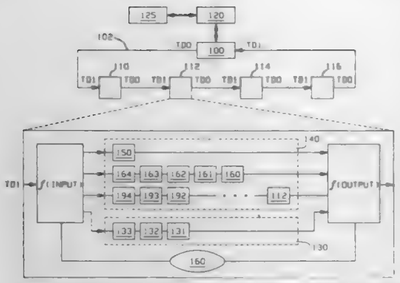
9. A system for accomplishing bit shifting operations between a storage device and a target device, said system comprising:

a selecting means having a plurality of input connections and a data output connection;

a first inserting means, coupled to the storage device and one of said plurality of input connections of said selecting means, for inserting a plurality of bypass bits to said data output connection; and

a controlling means, coupled to said selecting means and said first inserting means, for controlling said first inserting means to insert a programmable number of bypass bits and for

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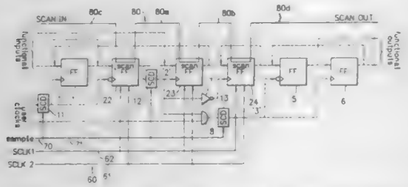
controlling said selecting means to direct said programmable number of bypass bits to said data output connection.

5,627,841

INTEGRATED LOGIC CIRCUIT WITH PARTIAL SCAN PATH CIRCUIT AND PARTIAL SCAN PATH DESIGN METHOD FOR SAME

Yoshiyuki Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 3, 1995, Ser. No. 538,228
Claims priority, application Japan, Oct. 5, 1994, 6-240464
Int. Cl.° G01R *31/28*
U.S. Cl. 371—22.3 **9 Claims**



1. An integrated logic circuit comprising a plurality of flip-flops operative with a plurality of clock signals and permitting partial scan testing, said plurality of flip-flops including:

a plurality of scan flip-flops for said partial scan testing, which are selected such that the flip-flops connected to the output of each of said scan flip-flops include at least one flip-flop which uses a clock different from that of said each of said scan flip-flops; and

two scan clock supply means for supplying two scan clocks to each of said scan flip-flops.

5,627,842

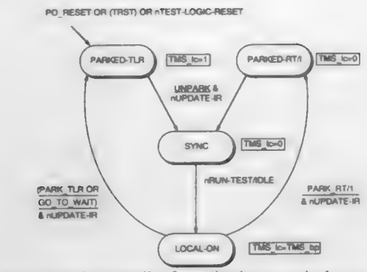
ARCHITECTURE FOR SYSTEM-WIDE STANDARDIZED INTRA-MODULE AND INTER-MODULE FAULT TESTING

Joseph H. Brown, Windham, Me., and Dilip K. Bhavsar, Shrewsbury, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 533,353, Sep. 25, 1995, abandoned, which is a continuation of Ser. No. 7,179, Jan. 21, 1993, abandoned. This application Jun. 4, 1996, Ser. No. 658,011
Int. Cl.° G06F *11/00*
U.S. Cl. 371—22.3 **25 Claims**

1. Boundary-scan test apparatus for use with an electronic system having a printed circuit board, said printed circuit board having one or more test chains of boundary-scan-testable integrated circuits (ICs), wherein said printed circuit board is removably insertable into a circuit board slot, said test apparatus comprising:

(a) a backplane test bus connectable to a central test controller and connected to said circuit board slot; and



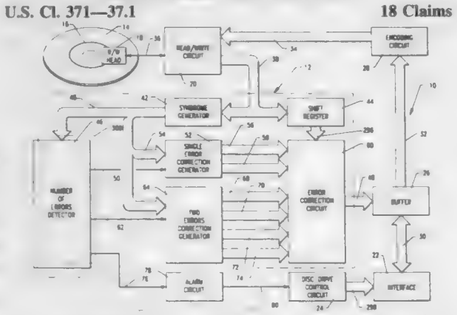
(b) a test chain controller for activating a particular one of said test chains so that a boundary-scan test vector can be transferred to said particular test chain and for then parking said particular chain with said test vector remaining in said chain, wherein said test chain controller is connected to said backplane test bus whenever said board is inserted into said circuit board slot.

5,627,843

CORRECTING UP TO TWO DISC DRIVE READ ERRORS AND DETECTING THE OCCURRENCE OF MORE THAN TWO READ ERRORS

Robert H. Deng; Yuan X. Li, and Eng H. Koh, all of Singapore, Singapore, assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 23, 1995, Ser. No. 393,431
Int. Cl.° H03M *13/00;* **G11B** *20/18*
U.S. Cl. 371—37.1 **18 Claims**



1. An apparatus for correcting up to two read errors in a sequence of m-bit data elements and detecting the occurrence of more than two errors in the sequence, the apparatus comprising:

a shift register for temporarily storing the sequence, the shift register having a number of stages at least as large as the number of data elements in the sequence;

a syndrome generator for generating digital representations of m-bit components S_1, S_2, S_3, and S_4 of a syndrome, determined in relation to a code generating polynomial defined in a Galois field based on the set of m-bit binary numbers;

syndrome weight detector means, connected to the syndrome generator to receive the digital representations of the syndrome components, for generating a syndrome weight signal at a first voltage level at such times that the Hamming weight of the syndrome is zero and at a second voltage level at such times that the Hamming weight of the syndrome is nonzero;

S_1 detector means, connected to the syndrome generator, for generating an S_1 indicator signal at said first voltage level at such times that the value of the syndrome component S_1 is nonzero and at said second voltage level at such times that the value of the syndrome component S_1 is zero;

a determinant generator, connected to the syndrome generator to receive the digital representations of the syndrome components, for generating m-bit digital representations of determi-

nants β_0, β_1, β_2 and β_3 from the components of the syndrome in accordance with the relationships

$$\beta_0 = S_1 S_1 + S_4 S_2,$$

$$\beta_1 = S_2 S_2 + S_1 S_3,$$

$$\beta_2 = S_1 S_4 + S_2 S_3,$$

and

$$\beta_3 = S_3 S_3 + S_2 S_4,$$

defined in a Galois field;

a determinant weight generator, connected to the determinant generator to receive the digital representations of the determinants β_0, β_1 and β_2, for generating a digital determinant weight code indicative of the Hamming weight of the set of determinants β_0, β_1 and β_2;

discriminator detector means, connected to the determinant generator and the syndrome generator, for generating a discriminator signal at said first voltage level at such times that a discriminator determined from the digital representations of the syndrome components S_0, S_1, and S_2 and the determinants β_1, β_2 and β_3 in accordance with the relation $q=S_0\beta_3+S_1\beta_2+S_2\beta_1$ defined in said Galois field is zero and for generating a discriminator signal at said second voltage level at such times that the discriminator is nonzero;

trace detector means, connected to the determinant generator means, for generating a trace signal from the digital representations of the determinants β_1, β_2 and β_3 at the first voltage level at such times that a trace, determined in accordance with the relation

$$T = \sum_{j=0}^{m-1} (\beta_1 \beta_3 / \beta_2 \beta_2)^{2^j}$$

defined in said Galois field, is zero and

for generating a trace signal at said second voltage level at such time that the value of said trace is nonzero;

decoder means, connected to the syndrome weight detector means, the S_1 detector means, the determinant weight generator, the discriminator detector means and the trace detector means, for generating a single error indicator signal in response to a determinant weight code indicative of a Hamming weight of zero for the set of determinants β_0, β_1, and β_2, and an S_1 indicator signal at said first voltage level, for generating a two errors indicator signal in response to a syndrome weight signal at said second voltage level, a determinant weight code indicative of a Hamming weight of three for the set of determinants β_0, β_1, and β_2, a discriminator signal at said first voltage level and a trace signal at said first voltage level, for generating a more than two errors indicator signal in response to a syndrome weight signal at said second voltage level, a determinant weight code indicative of a Hamming weight of zero for the set of determinants β_0, β_1 and β_2, and an S_1 indicator signal at said second voltage level, for generating said more than two errors indicator signal in response to a syndrome weight signal at said second voltage level and a determinant weight code indicative of a Hamming weight of one or two for the set of determinants β_0, β_1 and β_2, and for generating said more than two errors indicator signal in response to a syndrome weight signal at said second voltage level, a determinant weight code indicative of a Hamming weight of three for the set of determinants β_0, β_1, and β_2, and one of a discriminator signal or a trace signal at said second voltage level;

single error correction generator means, connected to the decoder means and the syndrome generator, for generating an m-bit error location signal indicative of the location of a single error in the sequence of data elements and an m-bit error value indicative of the value of the error at said location from said syndrome in response to a single error indicator signal;

two errors correction generation means, connected to the decoder means and the syndrome generator, for generating two m-bit error location signals indicative of two error locations in the sequence of data elements and two m-bit error value signals indicative of the values of the errors at said error locations in response to a two errors indicator signal;

error correction means, connected to the single error connection generator means, the two errors correction generator means, and the shift register, for receiving the sequence of data elements from the shift register and adding an error value received from either error correction generator means to the data element at the error location for such error value; and

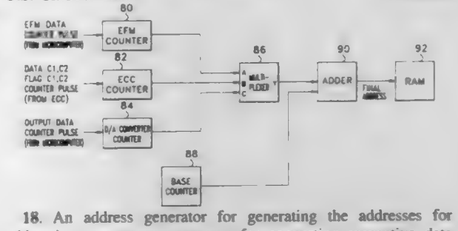
alarm means, connected to the decoder means, for generating an alarm signal in response to a more than two errors indicator signal.

5,627,844

ADDRESS GENERATOR FOR EFM DECODER EMPLOYING SCRAMBLING COUNTERS

Yong-hee Cho, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 21, 1994, Ser. No. 230,903
Claims priority, application Rep. of Korea, Apr. 21, 1993, 1993-6740
Int. Cl.° G11B *20/18*
U.S. Cl. 371—40.1 **23 Claims**



18. An address generator for generating the addresses for addressing a memory necessary for converting respective data symbols of digital signals, whose errors are corrected and then are stored in said memory in a predetermined order, into analog signals, said address generator comprising:

first counting means for sequentially generating symbol addresses or flag addresses in a predetermined order respectively corresponding to said data symbols or flags indicative of an error correction of said respective data symbols, wherein said first counting means is a scrambling counter and does not include a read only memory;

second counting means for generating frame addresses which differentiate positions of respective symbols or respective flags belonging to another frame within said memory, when said respective symbols or said respective flags are written to or read from said memory; and

an adder for adding said symbol addresses or said flag addresses output from said first counting means and said frame addresses output from said second counting means and then providing a result to said memory.

5,627,845

VARIABLE RATE COMMUNICATION METHOD AND A VARIABLE RATE COMMUNICATION SYSTEM

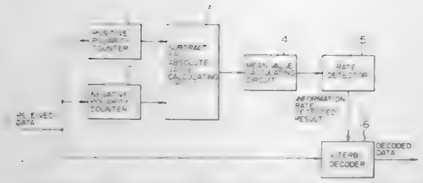
Nobuo Asano, and Osamu Kato, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 7, 1994, Ser. No. 271,668
Claims priority, application Japan, Jul. 16, 1993, 5-199015
Int. Cl.° G06F *11/10;* **H04J** *3/22*
U.S. Cl. 371—43 **4 Claims**

1. A variable rate communication method in which a transmitter transmits frames of transmission data and a receiver receives said transmission data, comprising the steps of:

in said transmitter,

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performing convolution coding of the information data for error correction, an information rate of said information data in each frame being represented by any one of B, B/2, $B/2^2$, —$B/2^n$, where B is a maximum information rate of said information data and n is 0 or a positive integer; and

generating said transmission data by repeating said convolution coded information data in each frame (2^n-1) times when the information rate of said information data is $B/2^n$, the number of times that said convolution coded information data is repeated in a given frame being a repetition number for that frame;

and, in said receiver,

determining the information rate of said information data from said received transmission data by finding the repetition number of said convolution coded information data, for every frame; and

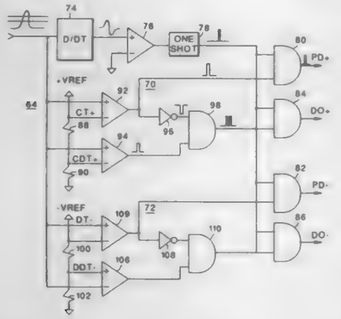
after the information rate of said information data has been detected, performing Viterbi decoding of said received transmission data based on the detected information rate of said information data, for every frame.

5,627,846

DROP-OUT LOCATION DETECTION CIRCUIT

Thomas D. Carr, Leucadia, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 19, 1995, Ser. No. 424,916
Int. Cl.[6] H01S *3/03*
U.S. Cl. 371—65 **16 Claims**



5. Apparatus for locating recording drop-outs in the read out peak signal patterns of encoded data comprising:

means for providing a first threshold for decoding a peak of the read out signal pattern as a valid peak;

means for providing a second threshold lower in absolute magnitude than said first threshold indicative of a drop-out in the readout signal pattern magnitude;

means for comparing the read out signal pattern to the first and second thresholds;

means for decoding a valid peak detect pulse when a predetermined relationship between the magnitude of the read out signal pattern and the first threshold exists;

means for decoding a drop-out pulse when a predetermined relationship between the magnitude of the read out signal pattern and the second threshold exists; and

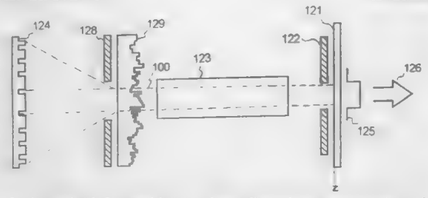
means for inhibiting the decoding of the drop-out pulse when the predetermined relationship between the magnitude of the read out signal pattern and the first threshold exists.

5,627,847

DISTORTION-COMPENSATED PHASE GRATING AND MODE-SELECTING MIRROR FOR A LASER

James R. Leger, Plymouth, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed May 4, 1995, Ser. No. 433,815
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—9 **45 Claims**



1. A method for making a phase-distortion-compensating element for a laser resonator, the laser resonator including a first laser element, the laser resonator having a laser beam that has an optical path the method comprising the steps of:

generating a first and a second light beam;

modifying the first light beam by passing the first light beam though the first laser element to generate a first modified laser beam, the first laser element having a phase-distortion;

modifying the second light beam by passing the second light beam through a second laser element to generate a second modified light beam;

combining the first and second modified light beams to generate an interference pattern;

generating a complex phase conjugate function of an optical phase function representative of the interference pattern; and

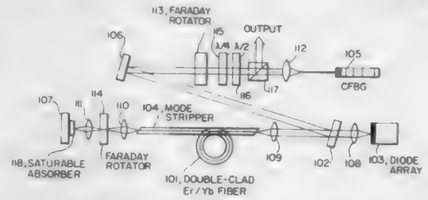
imposing a pattern representative of the complex phase conjugate function onto the phase-distortion-compensating element, thereby substantially reducing a phase aberration of the laser beam.

5,627,848

APPARATUS FOR PRODUCING FEMTOSECOND AND PICOSECOND PULSES FROM MODELOCKED FIBER LASERS CLADDING PUMPED WITH BROAD AREA DIODE LASER ARRAYS

Martin E. Fermann, and Donald J. Harter, both of Ann Arbor, Mich., assignors to Imra America, Inc., Ann Arbor, Mich.

Filed Sep. 5, 1995, Ser. No. 523,808
Int. Cl.[6] H01S *3/098*
U.S. Cl. 372—18 **25 Claims**



1. A modelocked laser, comprising:

a double-clad fiber disposed within a cavity and operating as a gain medium, which generates laser energy in the form of pulses shorter than 100 psec;

a diode laser array coupled to one end of said double-clad fiber, which pumps said double-clad fiber with pump light;

reflecting means disposed within the cavity to reflect energy along an axis which passes through said double-clad fiber;

output means for receiving laser energy generated within the cavity and for outputting a portion of said laser energy;

modelocking initiation means for initiating production of short pulses in the cavity;

means for suppressing cladding modes in said double-clad fiber; and

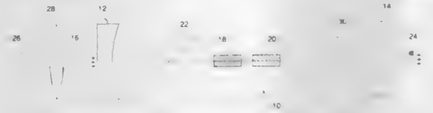
means for controlling dispersion in the cavity.

5,627,849

LOW AMPLITUDE NOISE, INTRACAVITY DOUBLED LASER

Thomas M. Baer, 537 Drucilla Dr., Mountain View, Calif. 94040

Filed Mar. 1, 1996, Ser. No. 609,186
Int. Cl.[6] H01S *3/13*
U.S. Cl. 372—31 **19 Claims**



1. An amplitude-stable intracavity doubled laser comprising:

a pair of end mirrors defining a laser cavity having a length L;

a laser medium positioned within said resonator cavity, said laser medium having a gain region substantially smaller than the length L of said laser cavity;

a doubling crystal positioned within said laser cavity, said doubling crystal having a nonlinear conversion region substantially smaller than the length L of said laser cavity;

a pump source oriented to supply excitation energy to said laser medium;

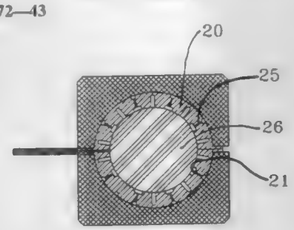
said laser medium and said doubling crystal located at positions within said laser cavity so as to cause said laser to lase in fewer than ten longitudinal modes, to minimize mode coupling interactions between the modes, and to output visible light with an amplitude noise of less than about 3% RMS on visible output from said laser to thereby produce amplitude-stable operation.

5,627,850

LASER DIODE ARRAY

Timothy L. Irwin, Rochester; Michael J. Cook, Lansing; Kirk S. Mellen, Baldwinsville, and Robert J. Kolbet, Penfield, all of N.Y., assignors to Paradigm Lasers, Inc., East Rochester, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,446
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—43 **10 Claims**



1. A laser diode device, including:

a block of dielectric material defining a cylindrical cavity;

a segmented copper ring disposed within said cylindrical cavity and direct bonded to said block;

said copper ring comprising a plurality of separate ring segments, adjacent ring segments and the block bonded thereto defining radial diode bar spaces each having an expanded opening at the radial outer end thereof, and

a laser diode bar disposed in each of said bar spaces to form a cylindrical array of said laser diode bars;

said ring segments and said laser diode bars together forming a series path for electric current around said ring in which each of said laser diode bars carries substantially all of said current;

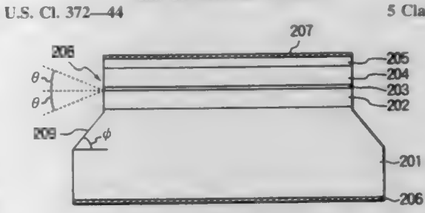
wherein said electric current around said copper ring energizes said laser diode bars.

5,627,851

SEMICONDUCTOR LIGHT EMITTING DEVICE

Takashi Takahashi, Sendai, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 1, 1996, Ser. No. 595,499
Claims priority, application Japan, Feb. 10, 1995, 7-023144
Int. Cl.[6] H01S *3/06; 3/096*
U.S. Cl. 372—44 **5 Claims**



1. A semiconductor light emitting device of an edge emitting type having an active layer surface parallel to a reference plane and having a light emitting surface formed by etching until below the active layer surface in a direction perpendicular to the reference plane;

the semiconductor light emitting device being constructed such that an upper surface of a substrate in front of the light emitting surface is inclined in a direction separated from the active layer surface as this upper surface advances forward from the light emitting surface; and

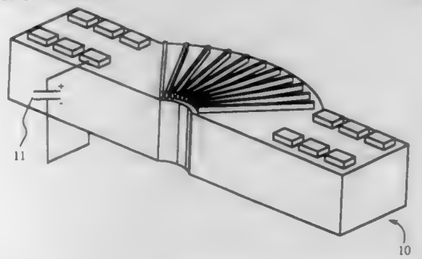
an angle formed between the reference plane and the upper surface of the substrate in front of the light emitting surface is greater than a half beam angle at half-power points of a far-field emission pattern in a vertical direction.

5,627,852

SEMICONDUCTOR LASER GEOMETRY FOR BROAD-ANGLE FAR-FIELD ADDRESSING

Yan Sun, Stanford; Daniel A. Francis; Stephen A. Biellak, both of Palo Alto, and Constance J. Chang-Hasnain, Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Aug. 16, 1995, Ser. No. 515,859
Int. Cl.[6] H01S *3/19; 3/08*
U.S. Cl. 372—50 **9 Claims**



1. A semiconductor laser for broad-angle beam steering comprising:

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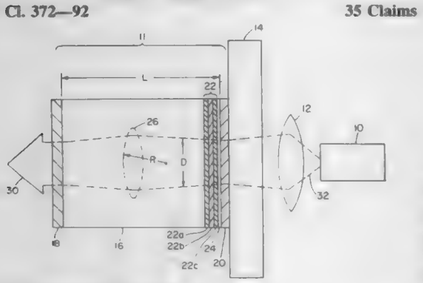
a) a laser block having side walls;
b) a plurality of lasing cavities formed in said laser block, said lasing cavities extending radially from a common geometric center and being electrically insulated from each other, each of said lasing cavities terminating in a planar output facet oriented substantially normal to said lasing cavity and being formed in one of said side walls;
c) a multiplicity of contacts disposed on said laser block substantially along said lasing cavities, such that each of said lasing cavities is in electrical communication with at least one of said contacts; and
d) a current source for applying a current in excess of a lasing threshold to a predetermined set of said contacts to induce lasing in at least one of said lasing cavities, thereby eliciting a laser beam out of at least one of said lasing cavities through said planar output facet terminating said lasing cavity.

5,627,853

OPTIMIZED LASER ENERGY CONVERSION THROUGH AUTOMATIC MODE MATCHED PUMPING

Aram Mooradian, Winchester, and Mark E. Kuznetsov, Lexington, both of Mass., assignors to Coherent, Inc., Santa Clara, Calif.

PCT No. PCT/US95/03375, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO95/25366, PCT Pub. Date Sep. 12, 1995
Continuation-in-part of Ser. No. 214,878, Mar. 16, 1994. This PCT application Mar. 16, 1995, Ser. No. 448,419
Int. Cl.[6] H01S *3/05;3/18*
U.S. Cl. 372—92 **35 Claims**



14. A laser system comprising:
a) an active medium disposed between two opposed substantially parallel reflective surfaces; and
b) a pump source for pumping said active medium through one of said reflective surfaces with a pump beam; said pump beam having a power and being concentrated within a first diameter; said pump beam heating a region of said active medium, forming a positive thermal lens; said lens forming a stable transverse mode resonator between the two reflective surfaces for transverse confinement of a laser beam produced by said pumping within a second diameter, said second diameter being a function of said pump beam; said pump beam being set such that said second diameter is substantially equivalent to said first diameter.

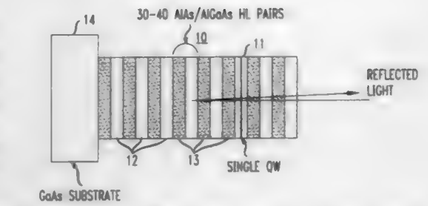
5,627,854

SATURABLE BRAGG REFLECTOR

Wayne H. Knox, Rumson, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 15, 1995, Ser. No. 404,664
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—99 **10 Claims**

1. A laser for generating an optical beam at a first wavelength, said laser comprising first and second end reflectors and a gain medium, said second end reflector including a quarter-wave stack of dielectric material layers and a quantum well layer within one of



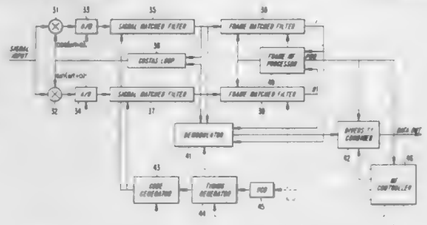
said layers in the quarter wave stack so that said second end reflector provides a nonlinear saturation response to incident radiation in order to modelock said laser.

5,627,855

PROGRAMMABLE TWO-PART MATCHED FILTER FOR SPREAD SPECTRUM

Sorin Davidovici, Jackson Heights, N.Y., assignor to Golden Bridge Technology, Inc., West Long Branch, N.J.

Filed May 25, 1995, Ser. No. 450,312
Int. Cl.[6] H04B *1/707;* **H04L** *27/22*
U.S. Cl. 375—207 **33 Claims**



20. A spread-spectrum-matched-filter apparatus, for use as part of a spread-spectrum receiver on a received spread-spectrum signal having a pilot-spread-spectrum channel generated from spread-spectrum processing a pilot-bit-sequence signal with a pilot-chip-sequence signal and a data-spread-spectrum channel generated from spread-spectrum processing a data-bit-sequence signal with a data-chip-sequence signal, the pilot-chip-sequence signal and the data-chip-sequence signal being different from each other, comprising:
a code generator for generating a replica of the pilot-chip-sequence signal and a replica of the data-chip-sequence signal;
programmable-matched means, coupled to said code generator, responsive to having a programmable-impulse response set from the replica of the pilot-chip-sequence signal generated by said code generator, for correlating the pilot-spread-spectrum channel from the received spread-spectrum signal as a despread-pilot-bit-sequence signal and, responsive to having the programmable-impulse response set from the replica of the data-chip-sequence signal generated by said code generator, for correlating the data-spread-spectrum channel from the received spread-spectrum signal, as a despread data-bit-sequence signal;
a frame-matched filter having a frame-impulse response matched to the pilot-bit-sequence signal for correlating the despread-pilot-bit-sequence signal and outputting a peak-pilot-correlation signal in response to the despread-pilot-bit-sequence signal matching the frame-impulse response; and
a controller, coupled to said programmable-matched means and said code generator, responsive to the peak-pilot-correlation signal from said frame-matched means, for setting, at a first time delay from the peak-pilot-correlation signal, said programmable-matched means with the replica of the pilot-chip-sequence signal generated by said generator for matching said programmable-matched means to the pilot-chip-sequence signal, and responsive to the peak-pilot-correlation

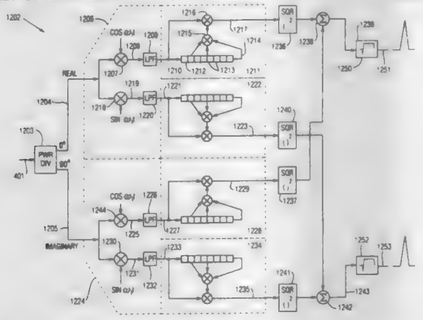
signal, for setting, at a second time delay from the peak-pilot-correlation signal, said programmable-matched means with the replica of the data-chip-sequence signal generated by said code generator for matching said programmable-matched means to the data-chip-sequence signal.

5,627,856

METHOD AND APPARATUS FOR RECEIVING AND DEPREADING A CONTINUOUS PHASE-MODULATED SPREAD SPECTRUM SIGNAL USING SELF-SYNCHRONIZING CORRELATORS

Randolph L. Durrant, Colorado Springs, and Mark Burbach, Peyton, both of Colo., assignors to Omnipoint Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 304,091, Sep. 9, 1994. This application Jun. 7, 1995, Ser. No. 480,442
Int. Cl.[6] H04B *1/707:1/06*
U.S. Cl. 375—209 **21 Claims**



9. A method comprising the steps of:
dividing a received signal into a real signal and an imaginary signal;
generating a real I correlation signal from said real signal without comparing said real signal against a correlation sequence;
generating a real Q correlation signal from said real signal without comparing said real signal against a correlation sequence;
generating an imaginary I correlation signal from said imaginary signal without comparing said imaginary signal against a correlation sequence;
generating an imaginary Q correlation signal from said imaginary signal without comparing said imaginary signal against a correlation sequence;
combining said real I correlation signal and said imaginary I correlation signal into final I correlation signal; and
combining said real Q correlation signal and said imaginary Q correlation signal into a final Q correlation signal.

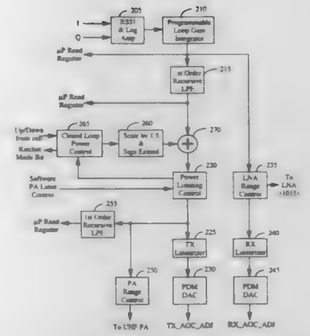
5,627,857

LINEARIZED DIGITAL AUTOMATIC GAIN CONTROL

Nathaniel B. Wilson, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Sep. 15, 1995, Ser. No. 528,969
Int. Cl.[6] H04B *1/38;* **H04L** *5/16*
U.S. Cl. 375—219 **14 Claims**

1. A linearized digital control apparatus for automatic gain control (AGC) in a radio having a transmit AGC amplifier and a receive AGC amplifier, the apparatus comprising:
a received signal strength detector, coupled to the receive AGC amplifier, for generating a digital power level signal from a received signal;
an integrator, coupled to the received signal strength detector, for generating a digital AGC adjust signal;



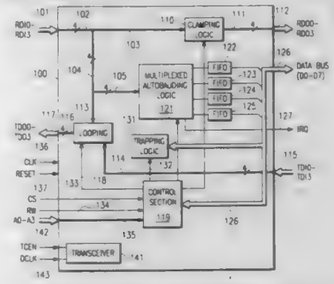
a receive linearizer having a plurality of receive slope values and a plurality of receive offset values, coupled to the integrator, for generating a linearized receive adjust signal in response to one of the plurality of receive slope values and one of the plurality of receive offset values;
a receive digital to analog converter coupled to the receive linearizer for converting the linearized receive adjust signal into an analog receive adjust signal, the analog receive adjust signal controlling the gain of the receive AGC amplifier;
a transmit linearizer having a plurality of transmit slope values and a plurality of transmit offset values, coupled to the integrator, for generating a linearized transmit adjust signal in response to one of the plurality of transmit slope values and one of the plurality of transmit offset values; and
a transmit digital to analog converter coupled to the transmit linearizer for converting the linearized transmit adjust signal into an analog transmit adjust signal, the analog transmit adjust signal controlling the gain of the transmit AGC amplifier.

5,627,858

MULTI-CHANNEL AUTOBAUDING CIRCUIT

Simon C. Mak, Pomona, and William C. Wong, Garden Grove, both of Calif., assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 915,241, Jul. 20, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,546
Int. Cl.[6] H04B *3/46*
U.S. Cl. 375—225 **16 Claims**



1. An autobauding circuit for determining a baud rate for a plurality of channels, each carrying an asynchronous data bit stream, comprising:
means for transparently sampling connected in parallel to said plurality of channels for sampling said data bit streams to output a bit stream sample for each of said plurality of channels; and
a baud rate detection circuit connected to said means for transparently sampling for processing each output bit stream

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sample to determine a baud rate for each data bit stream for each of said plurality of channels, said baud rate detection circuit comprising:

means for measuring a pulse width of a start bit of each output bit stream sample to determine a preliminary baud rate;

a serial receiver for sampling each bit in each bit stream sample at a rate determined from the corresponding preliminary baud rates to identify a test word for each channel;

means for temporarily storing said test word for each channel; and

means for comparing each test word to at least one stored word wherein a match between said test word and said stored word confirms said preliminary baud rate as the baud rate for that channel.

5,627,859

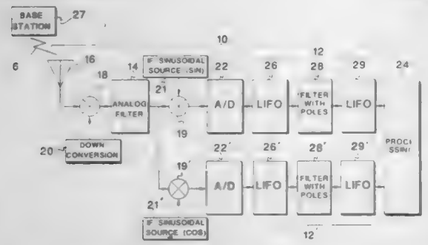
TIME-REVERSED INFINITE IMPULSE RESPONSE DIGITAL FILTERING

Michael Parr, San Diego, Calif., assignor to Huges Electronics, Los Angeles, Calif.

Filed Jul. 11, 1994, Ser. No. 273,661

Int. Cl.[6] H03H *7/30*

U.S. Cl. 375—229 **17 Claims**



1. A device for digitally filtering a digital signal, the digital signal having a group delay, wherein the device includes:

a first memory device that sequentially stores a portion of the digital signal in a forward sequence such that a first sample within the portion is stored first within the first memory device, and a last sample within the portion is stored last within the first memory device;

a pole filter having at least one pole selected to equalize the digital signal by flattening the group delay of the digital signal, the pole filter being coupled to the first memory device, the pole filter reading the portion from the first memory device in a reverse sequence such that the last sample within the first memory device is read first from the first memory device, and the first sample within the first memory device is read last from the first memory device, wherein a time-reversed signal is generated by the first memory device in response to such reading, the time-reversed signal being filtered by the pole filter, and the pole filter generating a filtered time-reversed signal in response to the filtering of the time-reversed signal; and

a second memory device that is coupled to the pole filter and that sequentially stores the filtered time-reversed signal in the forward sequence such that a first sample within the filtered time-reversed signal is stored first within the second memory device, and a last sample within the filtered time-reversed signal is stored last within the second memory device, the second memory device generating a data signal by reading the filtered time-reversed signal in the reverse sequence such that the last signal within the second memory device is read last from the second memory device and the first sample within the second memory device is read first from the second memory device.

5,627,860

PEAK AND VALLEY DETECTOR FOR A SELECTIVE CALL RECEIVING DEVICE

Carol A. McKinny, Delray Beach; Christopher B. Rausch; Mark L. Oliboni, both of Boynton Beach, all of Fla.; Mark R. Whitaker, Pflugerville, Tex.; Mark H. Babcock, and Tuan S. Hoang, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1995, Ser. No. 456,510

Int. Cl.[6] H04L *25/06*

U.S. Cl. 375—317 **68 Claims**



1. In a selective call receiving device, a system for detecting a peak and a valley of a received signal, comprising:

a receiver for receiving a signal;

a memory for storing a received signal value representing said received signal;

a peak comparator for comparing said received signal value to a sum of a peak variable and an attack constant to determine if the received signal value is less than said sum; and

a peak generator for setting said peak variable to a first value if said received signal value is less than said sum and to a second value if said received signal value is not less than said sum to update said peak variable, said first value being greater than said second value.

5,627,861

CARRIER PHASE ESTIMATION SYSTEM USING FILTER

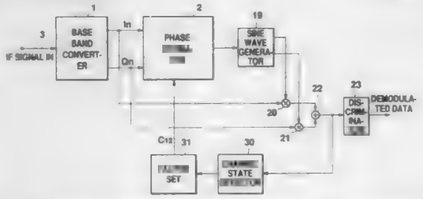
Nobuhisa Kataoka, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 180,049, Jan. 11, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 544,252

Claims priority, application Japan, Jan. 19, 1993, 5-006611; Dec. 2, 1993, 5-302582

Int. Cl.[6] H04L *27/14*

U.S. Cl. 375—324 **13 Claims**



1. A carrier phase estimation apparatus for use in a data demodulation apparatus for providing an estimated phase of a received signal, the data demodulation apparatus having a discriminator that receives at an input a modulated signal and provides at an output a demodulated signal, the carrier phase estimation apparatus comprising:

a) base band converter means for converting the received signal into a base band signal;

b) non-linear converter means for carrying out a non-linear conversion of the base band signal to output a non-linear conversion signal;

c) filter means for sampling the non-linear conversion signal at predetermined time intervals to obtain a plurality of sampled non-linear conversion signals, for selecting a plurality of weighting factors based on a control signal indicative of a signal to noise ratio of the received signal, each weighting factor corresponding to one of the plurality of sampled non-linear conversion signals, for multiplying the plurality of weighting factors with the plurality of sampled non-linear conversion signals to obtain a plurality of resulting signals, and for combining the plurality of resulting signals to obtain a filter output signal;

d) coordinate transform means for transforming the filter output signal into an estimated carrier phase signal; and

e) channel state detecting means for coupling to the input of the discriminator to receive the modulated signal, for detecting the signal to noise ratio of the received signal based on characteristics of the modulated signal and for providing the control signal indicative of the signal to noise ratio to the filter means.

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APPARATUS FOR DEMODULATING PHASE MODULATED WAVE

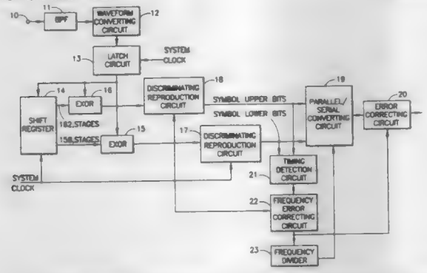
Kenji Mito, and Manabu Honda, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 597,612

Claims priority, application Japan, Feb. 7, 1995, 7-019599

Int. Cl.[6] H03D *3/22*; **H04L** *27/22*

U.S. Cl. 375—329 **10 Claims**



1. A demodulating apparatus in a transmission system in which an n-phase ($n \geqq 2$) shift keying modulated wave carrying information is transmitted by changing a phase of a carrier signal by a predetermined amount on the basis of original base band digital data and is demodulated, comprising:

waveform converting means for converting a transmitted n-phase shift keying modulated wave into a rectangular wave;

latch means for latching said rectangular wave by a clock pulse of a frequency which is substantially equal to an integer multiple of said carrier signal, thereby forming a latch output;

delay means for delaying said latch output, thereby forming a latch component which is delayed by a time corresponding to a predetermined number of time slots;

phase difference detecting means for detecting a phase difference between said latch output and an output signal from said delay means; and

means for extracting said digital data on the basis of said detected phase difference;

wherein said waveform converting means converts said n-phase shift keying modulated wave into a rectangular wave of a deviated duty ratio that is offset from a 50% duty ratio.

5,627,863

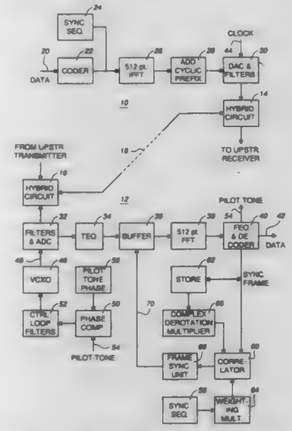
FRAME SYNCHRONIZATION IN MULTICARRIER TRANSMISSION SYSTEMS

James T. Aslanis, and Jacky S. Chow, both of Mountain View, Calif., assignors to Amati Communications Corporation, San Jose, Calif.

Filed Jul. 15, 1994, Ser. No. 275,409

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—357 **21 Claims**



19. A method of monitoring frame synchronization in a multicarrier modulation transmission system in which a synchronizing frame containing at least a synchronizing pattern is transmitted, said method comprising:

(a) receiving values of the synchronizing frame, the values of the synchronizing frame being complex amplitudes;

(b) comparing the values of the synchronizing frame with corresponding stored values of the synchronizing pattern to produce a comparison result;

(c) comparing the comparison result with at least one threshold value to provide an indication of existence or loss of frame synchronization;

(d) determining an adjustment amount to restore frame synchronization when said comparing (c) indicates that the frame synchronization has been lost, said determining (d) including the operations of (d1) derotating of the complex amplitudes of the synchronizing frame in accordance with respective time shifts to produce a plurality of derotated complex amplitudes, and (d2) correlating the stored values of the synchronizing pattern with respective ones of the derotated complex amplitudes of the synchronizing frame to produce a plurality of correlation results; and

(e) adjusting a frame boundary in accordance with the adjustment mount to restore frame synchronization.

5,627,864

PHASE SHIFT CORRECTING APPARATUS OF A SYNC DETECTOR IN A SATELLITE BROADCASTING RECEPTION SYSTEM

Yong T. Yoo, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 563,949

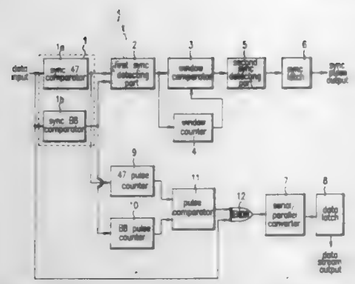
Claims priority, application Rep. of Korea, Nov. 30, 1994, 31926/1994

Int. Cl.[6] H04L *7/04*

U.S. Cl. 375—362 **2 Claims**

1. In a sync detector including a sync comparator for comparing input data and a sync, a first sync detecting part for separating to detect sync data from output data of said sync comparator, a window comparator for comparing said sync data in a sync data

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section from said first sync detecting part, a window counter for providing a window pulse of the sync section to said window comparator, a second sync detecting part for detecting a sync signal from an output signal of said window comparator, a sync latch for latching an output of said second sync detecting part to provide a sync pulse, a serial/parallel converter for converting said input data to parallel data, and a data latch for latching data from said serial/parallel converter to supply data stream,

a phase shift correcting apparatus of said sync detector in a satellite broadcasting reception system comprising:

a sync **47** comparator and a sync **B8** comparator for comparing said input data with sync **47** data and sync **B8** data, respectively;

a **47** pulse counter for counting a sync **47** pulse from said sync **47** comparator;

a **B8** counter for counting a sync **B8** pulse from said sync **B8** comparator;

a pulse comparator for comparing values counted in said counters; and

a data converter for passing said input data or correcting said input data into normal data in accordance with the result of the comparison from said pulse comparator prior to supplying said data.

5,627,865

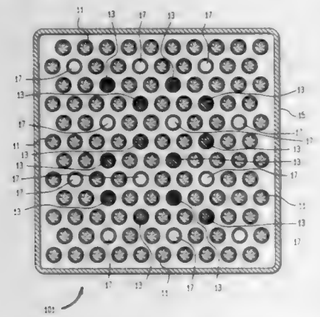
TRIANGULAR LATTICE FOR LWR SQUARE FUEL ASSEMBLIES

Harold E. Williamson, Richland, and Kenneth V. Walters, Kennewick, both of Wash., assignors to Siemens Power Corporation, Richland, Wash.

Division of Ser. No. 315,379, Sep. 30, 1994, Pat. No. 5,555,281. This application Sep. 29, 1995, Ser. No. 536,590

Int. Cl.[6] G21C *3/32*

U.S. Cl. 376—434 **5 Claims**



2. A nuclear fuel assembly for boiling water reactors, the assembly having: a plurality of elongated parallel full length fuel rods supported between a lower tie plate positioned toward the bottom of the assembly and an upper tie plate positioned toward the top of the assembly;

a plurality of spaced apart part length fuel rods supported at their lowermost ends to the lower tie plate, and extending upwards therefrom into an upper portion of the fuel assembly,

a plurality of water rods for conducting coolant/moderator therethrough from the bottom of the assembly toward the top of the assembly;

at least one spacer for positioning and retaining fuel rods;

an outer channel surrounding the plurality of full length fuel rods and part length fuel rods and having a substantially square cross-sectional area for conducting coolant/moderator about the full length fuel rods and part length fuel rods from the bottom of the assembly toward the top of assembly;

the full length fuel rods, part length fuel rods and water rods being arranged with a predetermined pitch in an array of 10×12 where the centers of the full length fuel rods, the part length fuel rods, and the water rods are located at the vertices of equilateral triangles.

5,627,866

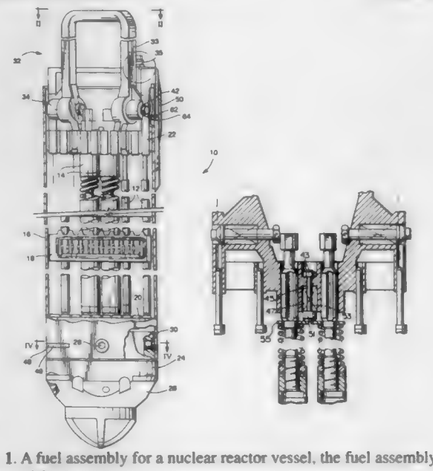
FUEL ASSEMBLY STRUCTURE USING CHANNEL FOR LOAD SUPPORT

Thomas G. Dunlap; Robert B. Elkins; Christian D. Frederickson, and Russell P. Higgins, all of Wilmington, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 12, 1995, Ser. No. 542,382

Int. Cl.[6] G21C *3/322*

U.S. Cl. 376—446 **12 Claims**



1. A fuel assembly for a nuclear reactor vessel, the fuel assembly comprising:

a plurality of fuel rods;

at least one coolant rod;

a channel surrounding said plurality of fuel rods and said at least one coolant rod;

a lower tie plate supporting said plurality of fuel rods and said at least one coolant rod, said lower tie plate being supported by said channel such that said channel carries a load of said fuel assembly;

an upper tie plate disposed inside said channel and laterally supporting said plurality of fuel rods and said at least one coolant rod; and

connecting structure releasably connecting said upper tie plate and said channel, wherein said connecting structure comprises at least one extendible and retractable latch pin, said channel comprising a corresponding at least one aperture for receiving said latch pin,

wherein said upper tie plate comprises a bolt aperture adjacent said coolant rod that opens to a spring channel in said upper tie plate, the fuel assembly further comprising:

a coolant rod main spring disposed surrounding said coolant rod,

a coolant rod main spring support supporting said coolant rod main spring,

a bolt inserted in said bolt aperture and extending into said spring channel,

a substantially cylindrical member fixed to art end of said bolt and delimiting said spring channel, and

a spring disposed surrounding said bolt in said channel between said coolant rod main spring support and an end of said spring channel.

5,627,867

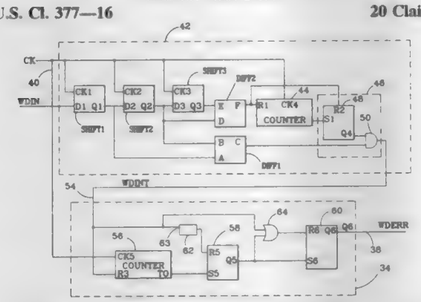
WATCHDOG CIRCUIT EMPLOYING MINIMUM AND MAXIMUM INTERVAL DETECTORS

David Thomson, Fremont, Calif., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 29, 1996, Ser. No. 610,156

Int. Cl.[6] G07C *3/02*

U.S. Cl. 377—16 **20 Claims**



1. A watchdog circuit, comprising:

a minimum interval detector connected to receive a watchdog input signal from a monitored circuit and to determine whether intervals between assertions of the input signal are at least a minimum specified interval and to provide an indication of whether the intervals are the specified minimum,

a maximum interval detector connected to receive a watchdog input signal from a monitored circuit and to determine whether intervals between asssertions of the input signal are less than a maximum specified interval and to provide an indication of whether the intervals are the specified maximum, and

combining circuitry connected to said minimum and maximum interval detectors to combine said indications to produce watchdog alarm output signal.

5,627,868

COMPUTERIZED TOMOGRAPHY APPARATUS

Yasuo Nobuta, Tochigi-ken; Yusuke Toki, Utsunomiya; Manabu Hiraoka, Tochigi-ken; Naoki Sugihara, and Masahiro Ozaki, both of Otawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 347,236, Nov. 23, 1994, Pat. No. 5,513,237. This application Oct. 5, 1995, Ser. No. 538,978

Claims priority, application Japan, Nov. 26, 1993, 5-296346; Apr. 5, 1994, 6-067343; Oct. 31, 1994, 6-267280

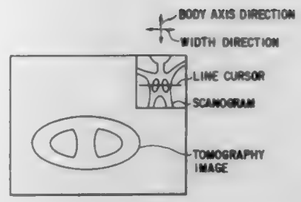
Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—19 **5 Claims**

1. A computerized tomography apparatus comprising:

scan means for successively scanning a slice region in a subject during a scanning operation;

reconstruction means for successively reconstructing tomographic image data regarding the slice region based on projection data obtained by said scan means during the scanning operation;



display means for displaying the reconstructed tomographic image data during the scanning operation;

a couch having a movable top board for placement of the subject and means for moving the top board to change the slice region;

means for displaying a scanogram regarding the subject with a line cursor;

input means for changing the position of the line cursor on the scanogram; and

control means for controlling said couch so that a position of the slice region is changed in accordance with the changed position of the line cursor during the scanning operation.

5,627,869

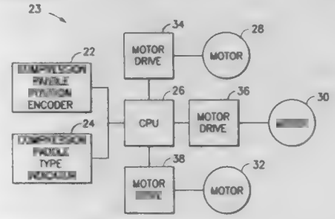
MAMMOGRAPHY APPARATUS WITH PROPORTIONAL COLLIMATION

Ted M. Andrew, New Milford, Conn.; Kenneth F. Defreitas, Patterson, N.Y.; Samson L. Pennatto, Danbury, and James A. Princehorn, Newtown, both of Conn., assignors to ThermoTrex Corporation, San Diego, Calif.

Filed Nov. 22, 1995, Ser. No. 562,115

Int. Cl.[6] H05G *1/30*

U.S. Cl. 378—37 **7 Claims**



1. A mammography apparatus comprising:

an X-ray source;

an X-ray image receiver positioned to receive X-rays from the X-ray source;

means for compressing tissue, the means being positionable between the X-ray source and the X-ray image receiver and wherein the means further providing a compression surface of predetermined dimensions;

a beam collimator positioned between the X-ray source and the means for compressing tissue, the collimator forming an adjustable aperture;

first indicating means for providing a signal proportional to the distance between the means for compressing tissue and the X-ray source;

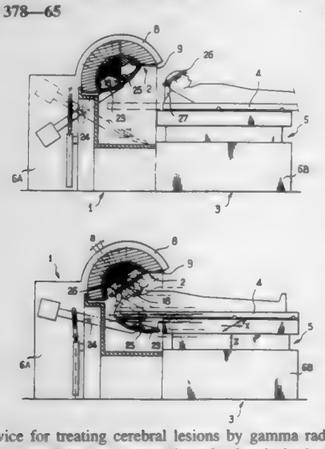
second indicating means for providing a signal proportional to the size of the compression paddle surface;

means, responsive to the first and second indicating means, for determining the size of the aperture of the beam collimator in proportion to the indicated distance between the means for compressing tissue and the X-ray source and in proportion to the indicated size of the compression surface of predetermined dimensions; and

means, responsive to the determining means, for adjusting the size of the beam collimator's aperture.

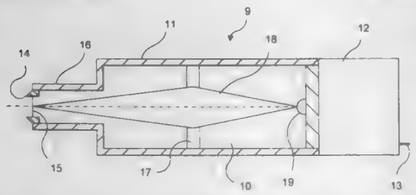
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5,627,870
DEVICE FOR TREATING CEREBRAL LESIONS BY GAMMA RADIATION, AND CORRESPONDING TREATMENT APPARATUS
Bernard Kopecky, Nantes, France, assignor to ATEA, Societe Atlantique De Techniques Avancees, Carquefou, France
PCT No. PCT/FR94/00667, § 371 Date Apr. 14, 1995, § 102(e) Date Apr. 14, 1995, PCT Pub. No. WO94/28973, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 6, 1994, Ser. No. 381,858
Claims priority, application France, Jun. 7, 1993, 93 06787
Int. Cl.[6] A61N *5/10*
U.S. Cl. 378—65 **6 Claims**



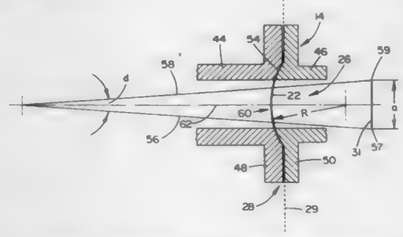
1. Device for treating cerebral lesions by gamma radiation, of the type comprising an approximately hemispherical source/collimator assembly (**2**) which includes a large number of gamma-ray sources (**21**) associated with channels (**20**) which are all oriented towards one and the same focusing point (**18**), characterized in that each gamma-ray source (**21**) is associated with a bundle (**17**) of channels (**20**) bounded by a conical envelope of revolution (**19**), the vertex of which is located at the focusing point (**18**).

5,627,871
X-RAY TUBE AND MICROELECTRONICS ALIGNMENT PROCESS
Chia-Gee Wang, Millwood, N.Y., assignor to Nanodynamics, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 74,786, Jun. 10, 1993, abandoned. This application Jul. 31, 1995, Ser. No. 509,532
Int. Cl.[6] H01J *35/32*
U.S. Cl. 378—121 **16 Claims**



1. A compact x-ray tube assembly of about 9 inches or less in axial length and a diameter of about 4 inches or less comprising an evacuated chamber enclosed by a ceramic tubular envelope, a power supply attached at one end of said envelope and connectable to an electric current supply, emitter means within said chamber and adjacent to said power supply, said emitter means ending in a fine element for emitting an e-beam, electrostatic focusing means within said chamber for focusing said e-beam on a metal foil target, said emitter means and said electrostatic focusing means connected to said power supply, an end window at the opposite end of said envelope comprising an end wall, a window transparent to x rays located in said end wall, an inside surface of said window having thereon said metal foil target, the thickness and composition of the metal foil target and the e-beam energy being selected to generate a microfocused bright beam of x rays of a preselected energy.

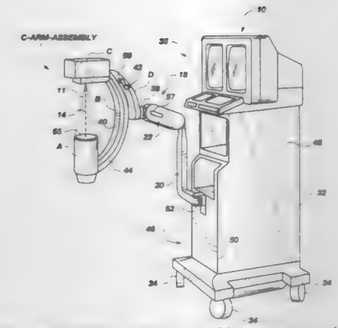
5,627,872
STATIONARY EXIT WINDOW FOR X-RAY LITHOGRAPHY BEAMLINE
John Verga, Rockville Centre, N.Y., assignor to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Feb. 3, 1995, Ser. No. 383,268
Int. Cl.[6] G21K *1/00*
U.S. Cl. 378—161 **10 Claims**



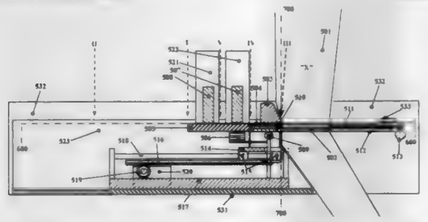
1. A method of scanning an X-ray beam emitted from an X-ray lithography beamline onto an exposure field on a wafer comprising the steps of:
positioning a stationary exit window having an opening that is approximately equal to the exposure field between said X-ray lithography beamline and said wafer, said exit window having a cylindrical cross-section and a thickness such that said window can withstand a pressure differential of 14.7 psi;
drawing a vacuum within said lithography beamline such that there is a pressure differential of at least 14.7 psi between the X-ray lithography beamline and an exposure chamber containing the wafer; and,
scanning the X-ray beam between first and second positions such that the X-ray beam passes through the exit window and is incident on the wafer between first and second edges of the exposure field.

5,627,873
MINI C-ARM ASSEMBLY FOR MOBILE X-RAY IMAGING SYSTEM
Barry K. Hanover; David E. Barker, both of Salt Lake City; Ross A. Riches, Sandy; Blain C. Erickson, Summit Park, and Lonnie B. Weston, Clearfield, all of Utah, assignors to OEC Medical Systems, Inc., Salt Lake City, Utah
Filed Aug. 4, 1995, Ser. No. 511,873
Int. Cl.[6] H05G *1/02*
U.S. Cl. 378—197 **34 Claims**

1. A mobile C-arm apparatus for use with X-ray diagnostic equipment, said apparatus comprising:
a C-arm assembly having a center of mass, said C-arm assembly further comprising a C-arm having a substantially circular movement track formed thereon, and an X-ray source and an image receptor mounted upon opposing locations, respectively, on the C-arm such that said X-ray source and image receptor face each other, wherein the X-ray source includes means for projecting X-rays having a central beam onto the image receptor;
a support arm disposed in slidable engagement with the circular movement track of the C-arm such that the C-arm assembly is selectively slidable relative to said support arm in orbital rotation about a single axis of orbital rotation, said circular movement track being substantially common to a circle having a center point which coincides with said single axis of orbital rotation such that said single axis of orbital rotation remains substantially fixed relative to the support arm for any position of the C-arm assembly relative to said support arm;
an articulating arm assembly comprising a first arm pivotally attached to the support arm such that the support arm is selectively rotatable relative to said first arm about an axis of lateral rotation to selected lateral positions; and
mobile base support means pivotally attached to the first arm for supporting the C-arm assembly in a suspended position, said mobile base support means being moveable along a floor;
wherein the C-arm assembly is mass balanced about the single axis of orbital rotation such that the center of mass of the C-arm assembly substantially coincides with the single axis of orbital rotation for any position of said C-arm assembly relative to the support arm along the circular movement track;
wherein the C-arm assembly and the support arm have a collective center of mass and are collectively mass balanced about the axis of lateral rotation such that said collective center of mass substantially coincides with said axis of lateral rotation for any rotational position of the support arm relative to the first arm of the articulating arm assembly about said axis of lateral rotation.



5,627,874
X-RAY SPECTROSCOPIC ANALYSIS OF POWDER SAMPLES USING A WINDOW-LESS CELL SYSTEM
Allan H. Smallbone, 2905 Piedmont Ave., La Crescenta, Calif. 91214-3840
Filed Apr. 5, 1995, Ser. No. 417,001
Int. Cl.[6] G01N *23/223*
U.S. Cl. 378—208 **3 Claims**



1. An apparatus for collecting, retaining, transporting, analyzing by X-ray spectroscopy means and the discharging of powder samples,
comprising a mechanical system, having a window-less sample cell constructed with four walls, a closed side and one open side, the open side being uppermost to permit the acceptance and discharge of powder samples said window-less sample cell being mounted on a window-less sample cell transportation unit,
said window-less sample cell transportation unit comprising of an associated window-less sample cell mounting platform supporting two linear bearing rods in turn supporting four linear sliding bearings mounted upon the two linear bearing rods,
said window-less cell is filled with a sample of a product stream flowing through the sample inlet chute, said sample being a flowing portion of a main product or process stream, said window-less sample cell containing said sample is moved horizontally forward away from filling position by said window-less sample cell transportation unit by motor drive means and said window-less sample cell and said sample passes between a sample compactor unit and lower roller pressure support unit mounted integrally on said window-less cell mounting platform,
excess said sample powder is removed from said window-less sample cell by said sample compactor and said sample in said window-less sample cell is compressed by said sample compactor and said compactor pressure is supported by said lower roller pressure unit, surface of said sample being compressed by said sample compactor and is smoothed into a continuous surface, said window-less sample cell and sample continue to move and,
said window-less cell transportation unit continues to move and is attached to safety shutters of associated X-ray spectroscopy units having beams of X-ray radiation to excite the elements in the sample and emit secondary elemental radiation which is then absorbed by the associated X-ray detectors, and said X-ray safety shutters are now pushed away from said X-ray spectroscopic beams and said associated X-ray detectors permitting said sample in said window-less sample cell to be bombarded by said beams of X-rays of first X-ray spectroscopic systems and the said sample analyzed by means of said beams of X-rays, and the emanating elemental data are collected by said first X-ray system detectors and the resultant secondary radiation data being the elemental assay of said sample in said window-less sample cell and where said X-ray beams pass through said sample in said window-less cell and said X-ray radiation beam is detected by X-ray density detector situated below said sample and said window-less sample cell, X-ray density, packing factor data are accumulated together with the elemental data and transmitted to micro-processor means and,
said window-less sample cell transportation unit continues to move said window-less sample cell and said sample into the second X-ray spectroscopic system beams of radiation and associated X-ray detectors and as in the first X-ray spectroscopic unit the ensuing secondary radiation data is collected by said second X-ray system detectors and the resultant data being the elemental assay of said sample in said window-less sample cell and said data from said second X-ray system is collected and manipulated by said microprocessor means,
said window-less sample cell transportation unit now stops and reverses direction and said window-less sample cell and said sample are now transported in the reverse direction toward said filling position and said X-ray spectroscopic beams are continuously analyzing said sample until said X-ray safety shutters are closed by said window-less sample cell transportation unit and said window-less sample cell and said sample are now at the said filling position and,
said X-ray beams and said X-ray detectors may analyze all said samples for many elements from Na to U and all data relating to elemental composition, particle size, density, compaction of sample are presented to said micro-processor means and,
said first and said second X-ray tubes employ X-ray tube targets selected from a group which consists of W, Cr, Cu, Mo, Pt, Ag, Rh and said associated detectors are selected to accept all said X-ray primary and secondary beam energy levels emanating from said sample.

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said window-less sample cell transportation unit is now stationary said window-less sample cell is rotated 180° to discharge said sample from said window-less sample cell into said sample chute,

said window-less sample cell is now empty of said sample and said window-less sample cell is now rotated in reverse 180° to bring said window-less sample cell into the original upright start filling position and,

said window-less sample cell transportation unit repeats all said processing movements to analyze singly and repetitively all said samples presented to said window-less sample cell unit and,

where said window-less sample cell transportation unit is manufactured to a size commensurate with analyzing variable quantities of said samples within a given period and where the dimension and composition of said window-less sample cell is variable and,

where motions of said window-less sample cell transportation unit and said window-less sample cell unit maybe varied for speed of operation and duration time of analysis and,

said window-less sample cell transportation unit and said window-less sample cell, are manufactured in a size commensurate where said samples may be inserted manually and sequentially into said window-less sample unit as in a manual laboratory mode, and said samples analyzed in said window-less cell in an automated mode in the said window-less sample cell transportation unit and,

where said window-less sample cell transportation unit and said window-less sample cell and said window-less sample cell transportation unit motions, operations and sequential movement of the said window-less sample cell system are controlled and programmed,

where data from said X-ray spectroscopic elemental detectors and said associated density are collected, evaluated, processed for all standard and test samples and,

said window-less sample cell transportation unit is equipped with apparatus for inserting an atmosphere of helium gas means into areas of said X-ray spectroscopic analytical beams and said X-ray detector units and said window-less sample cells to analyze elements ranging from Na to U within said samples and said window-less sample cells and,

where said window-less sample cell transportation unit of claims listed above, said motions of said sample and said window-less sample cells may be a rotating function.

5,627,875

METHOD IN A TELEPHONE SYSTEM FOR REACHING A SUBSCRIBER UNDER BUSY/NO ANSWER CONDITIONS AND RING/NO ANSWER CONDITIONS

Peter Kapsales, Woodinville, Wash., assignor to AT&T, Middletown, N.J.

Continuation of Ser. No. 569,552, Dec. 8, 1995, abandoned, which is a continuation of Ser. No. 344,306, Nov. 22, 1994, abandoned. This application Aug. 1, 1996, Ser. No. 691,300

Int. Cl.[6] G04M *3/48*

U.S. Cl. 379—57 **8 Claims**

1. A method for use in a telephone system permitting a caller connected to a central platform to attempt to reach a subscriber under a Busy/No answer condition at the subscriber's telephone station, said method comprising the steps of:

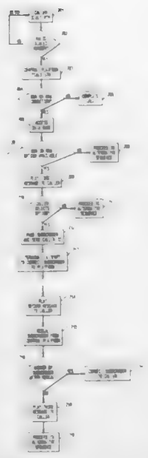
placing a call to said subscriber by dialing said subscriber's telephone station from said central platform;

detecting at said central platform a Busy/No answer condition at said subscriber's telephone station;

determining whether a Busy/No answer option is available for said subscriber;

if said Busy/No answer option is available, informing said caller of said Busy/No answer condition and providing to said caller the option of paging said subscriber;

if said caller elects said option, paging said subscriber by said central platform and providing a caller identification number to said subscriber;



terminating said call; and

redialing said subscriber's telephone station from said central platform.

5,627,876

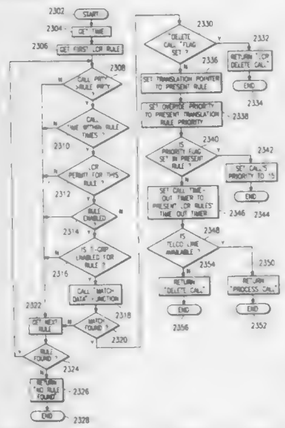
CALL PRIORITY OVERRIDE IN A LAND MOBILE RADIO SYSTEM

Billy G. Moon, Southlake, Tex., assignor to Uniden America Corporation, Fort Worth, Tex.

Filed Jun. 10, 1994, Ser. No. 257,809

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—58 **2 Claims**



1. A method for call priority override in a land mobile radio system in which a cell has a group of repeaters, controlled by a controller, and wherein users may place transmission trunked or conversation trunked calls and repeaters are given a system priority for conversation trunked calls, the method comprising the steps of:

receiving at a cell, from a user's radio, a call request specifying a number for establishing a conversation trunked call;

examining a data structure, by the controller, using said received number to determine a matching corresponding priority;

assigning said determined corresponding priority to override said predetermined priority for said selected user's radio if said matching corresponding priority is determined, and

assigning one of said repeaters to said selected user's radio to carry said conversation trunked call if said assigned corresponding priority is at least equal to said system priority for conversation trunked calls.

5,627,877

METHOD FOR RELOCATING A SUBSCRIBER IN A VOICE MESSAGING SYSTEM

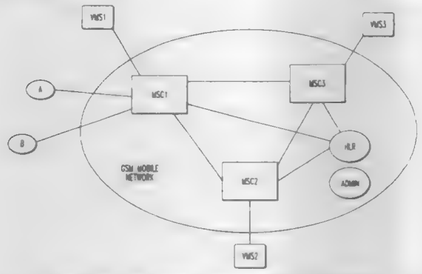
Jyrki Penttonen, Helsinki, Finland, assignor to Tecnomen Oy, Espoo, Finland

Filed May 12, 1995, Ser. No. 439,758

Claims priority, application Finland, May 13, 1994, 942219

Int. Cl.[6] H04Q *7/22;7/24*

U.S. Cl. 379—58 **5 Claims**



1. A method for relocating a subscriber in a plurality of voice messaging systems connected with an extensive digital mobile network (GMS), including a plurality of mobile switching centres (MSC) each having a VMS associated therewith and a home location register (HLR), characterized in that, in the method, each VMS checks HLR repeatedly for the location of a subscriber and concludes on the basis of this information whether the subscriber has moved into the area of some other MSC for a period of time longer than a predetermined period of time and, if so, the old VMS transfers the subscriber-related information to the new VMS, thus accomplishing the automatic relocation of the subscriber's home station in connection with a new MSC.

5,627,878

TELECOMMUNICATION APPARATUS FOR RECEIVING, STORING AND FORWARDING A PLURALITY OF ELECTRICAL SIGNALS TO A WIRELESS NETWORK, IN RESPONSE TO A CONTROL SIGNAL THEREFROM

Roger Strauch, Piedmont, and Daniel H. Miller, Kensington, both of Calif., assignors to TCSI Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 144,127, Oct. 27, 1993. This application May 18, 1995, Ser. No. 444,828

Int. Cl.[6] H04Q *7/20*

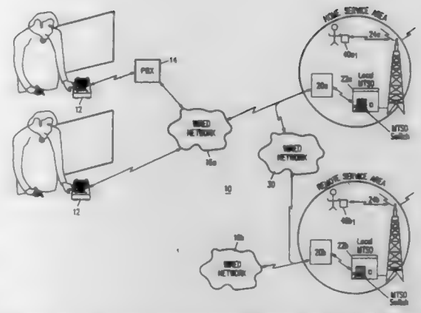
U.S. Cl. 379—58 **28 Claims**

1. A telecommunication system for receiving and forwarding a plurality of electrical signals, said system comprising:

a wired communication network for receiving the plurality of electrical signals and for transmitting the plurality of electrical signals;

a first communication means, connected to said wired network for receiving the plurality of electrical signals, storing the plurality of electrical signals, and retrieving a portion thereof for transmission;

a wireless communication network in communication with said first communication means to receive the portion of electrical signals therefrom and for transmitting the portion of electrical signals and having means for generating a control signal indicative of said wireless network having transmission capacity;



a plurality of second communication means; each of said second communication means including means for communicating with said wireless network to receive one of the electrical signals; and

wherein said first communication means including means for receiving the control signal from the wireless network; means for receiving the plurality of electrical signals transmitted on said wired network; a first storage means for storing a received plurality of electrical signals; a first playback means for retrieving a portion of the stored plurality of electrical signals; and a first control means for controlling said first playback means to transmit the retrieved portion of electrical signals to said wireless network, in response to said control signal indicative of said wireless network having the capacity to receive the portion of stored electrical signals.

5,627,879

CELLULAR COMMUNICATIONS SYSTEM WITH CENTRALIZED BASE STATIONS AND DISTRIBUTED ANTENNA UNITS

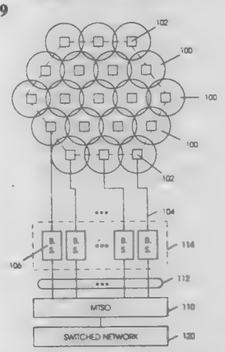
David S. Russell, Minneapolis; Larry G. Fischer; Philip M. Wala, both of Waseca, all of Minn.; Charles R. Ratliff, Crystal Lake, Ill., and Jeffrey Brennan, Waseca, Minn., assignors to ADC Telecommunications, Inc., Bloomington, Minn.

Continuation-in-part of Ser. No. 183,221, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 68,389, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 946,402, Sep. 17, 1992, abandoned, Ser. No. 946,964, Sep. 17, 1992, abandoned, Ser. No. 946,931, Sep. 17, 1992, abandoned, and Ser. No. 946,548, Sep. 17, 1992, abandoned.

This application Mar. 2, 1994, Ser. No. 204,660

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **13 Claims**



1. A microcellular communications system, comprising:

a plurality of commonly located microcell base station units each connected by a fiber path to a plurality of corresponding

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antenna units for transmission of microcell traffic, each base station unit including:

RF transmitters and receivers, one for each channel assigned to the microcell:

combiner means for combining an analog RF signal output from the transmitters;

analog-to-digital means for converting the single combined analog signal to a digitized stream of samples;

framing means for framing the digitized stream;

means for receiving the framed stream and for digitally modulating a laser signal with the framed stream for application to the fiber path for transmission to the corresponding antenna unit; and

optical receiver means for detecting the framed stream modulated on the fiber path.

wherein each antenna unit further includes:

demultiplexer means for receiving the framed stream and extracting the digitized stream;

digital-to-analog means for receiving the digitized stream and reconstructing the analog RF signal output;

amplifier means for amplifying the reconstructed analog signal;

antenna means for receiving the amplified signal and broadcasting it into a microcell area;

means for receiving an RF microcell traffic signal received at the antenna unit;

analog-to-digital converter means for converting the received RF microcell traffic signal to a digitized RF signal data stream;

framer means for framing the digitized RF signal data stream; and

laser means for receiving the framed RF signal data stream and for digitally modulating a laser signal with the framed RF signal data stream for application to the fiber path for transmission to the corresponding base station unit;

wherein each base station unit further includes:

demultiplexer means for receiving the framed RF signal data stream from the antenna unit and extracting the digitized RF signal data stream; and

digital-to-analog converter means for receiving the digitized RF signal data stream and reconstructing the analog RF microcell traffic signal representing all channels assigned to the microcell, the RF microcell traffic signal being applied to the receivers.

5,627,880

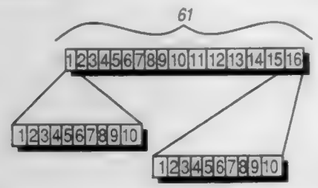
MAHO METHOD FOR SFH-CDMA/TDMA USING PUNCTURED FRAMES

Walter Rozanski, Hurst, and Kamyar Rohani, Ft. Worth, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 970,213, Nov. 2, 1992, abandoned. This application Apr. 19, 1995, Ser. No. 424,823

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **20 Claims**



1. In a frequency hopped cellular communication system having a plurality of base sites, each of the plurality of base sites having a unique hopping sequence, a method of providing identification signals comprising the steps of: changing a transmit channel of the plurality of base sites to an intersite control frequency during a time period used to transmit an intersite control frame; and, transmitting, in a slot of the intersite control frame assigned to a particular base site of the plurality of base sites, an identification signal of the particular base site.

5,627,881

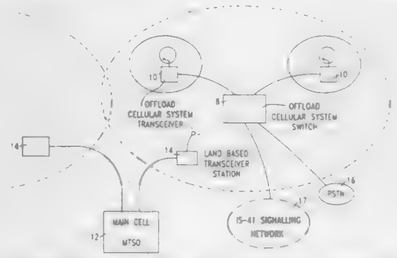
OFF-LOAD-CELLULAR SYSTEM FOR OFF-LOADING CELLULAR SERVICE FROM A MAIN CELLULAR SYSTEM TO INCREASE CELLULAR SERVICE CAPACITY

Anthony G. Fletcher, Corinth, Miss., assignor to Celcore, Inc., Memphis, Tenn.

Continuation of Ser. No. 37,170, Mar. 26, 1993, Pat. No. 5,487,101. This application Jun. 7, 1995, Ser. No. 485,930

Int. Cl.[6] H04Q *7/22;7/24;7/36*

U.S. Cl. 379—60 **21 Claims**



1. A page rebroadcast system for broadcasting a page signal broadcast from a macrocellular system into a microcellular service area serviced by a microcellular system, the macrocellular system having at least one macrocellular service area, the microcellular service area being smaller than and within the at least one macrocellular service area, the page rebroadcast system comprising:

a receiver circuit for monitoring and receiving the page signal broadcast from the macrocellular system, the receiver circuit having an output for outputting the received page signal; and

a rebroadcast circuit for receiving the page signal output from the receiver circuit, and for rebroadcasting the page signal as a rebroadcasted signal, enabling a mobile telephone located in the microcellular service area to receive the page signal from the macrocellular system.

5,627,882

ENHANCED POWER SAVING METHOD FOR HAND-HELD COMMUNICATIONS SYSTEM AND A HAND-HELD COMMUNICATIONS SYSTEM THEREFOR

Cheng-Tung Chien, Chungho; Chang-Wen Chen, and Chiu-Hong But, both of Taipei, all of Taiwan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 26, 1994, Ser. No. 249,428

Claims priority, application European Pat. Off., Jun. 2, 1993, 93201584

Int. Cl.[6] H04Q *7/18*

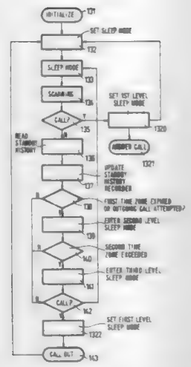
U.S. Cl. 379—61 **6 Claims**

1. A power saving method for a cordless communication system wherein the cordless communication system comprises a receiver to scan and receive signals from a surrounding air, which receiver enters a period of a standby mode when no signal is coming in to be received thereby and which is activated to scan the signals from the surrounding air in accordance with preset scan rates and deactivated for a length of preset delay time to reduce power consumption in an alternate fashion within the standby mode period, said power saving method comprising:

dividing the standby period into a number of successive time zones;

establishing a delay level for each of said time zones, each delay level being associated with a delay time period;

setting a scan rate for each of said delay levels;



continuously allowing the receiver to be activated in accordance with the delay level and the scan rate associated with a current time zone of said time zones to establish a standby time history of the receiver;

recording the standby time history and comparing the standby time history with the definition of said time zones to determine which of said time zones the receiver is operating in;

updating the standby time history to allow the receiver to enter a next time zone next to the current time zone that the receiver was originally operating in so as to scan with the scan rate and to sleep for the delay time associated with the next time zone when the current time zone is exceeded; and

repeating the comparing and updating procedures until being interrupted by an attempt to establish communication via the cordless communication system.

5,627,883

METHOD FOR A CORDLESS TELEPHONE WITH DIVISION OF CHANNELS INTO GROUPS OF CHANNELS

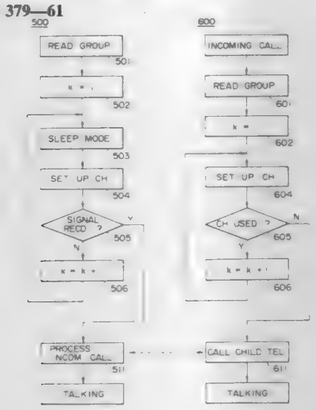
Satoru Maeda; Masaru Nonogaki; Tadao Ishihara, all of Kanagawa, and Munehiro Yoshikawa, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 98,444, Jul. 23, 1993, abandoned. This application Apr. 7, 1995, Ser. No. 418,845

Claims priority, application Japan, Jul. 29, 1992, 4-222178

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 379—61 **7 Claims**



5. A method of facilitating connections between parent telephones and battery-powered child telephones in a cordless telephone system, the method comprising the steps of:

dividing a plurality of 40 channels into a plurality of 4 groups with each group having a plurality of 10 channels;

assigning each of the parent telephones one of the groups;

registering a child telephone with at least one specific parent telephone to transmit and receive speech data to and from the parent telephone using in a time-sharing manner one channel selected out of the group of channels assigned to the parent telephone; and

transmitting the group of the specific parent telephone to the child telephone;

wherein the channels are divided into groups in accordance with an expression C=S+Ik, where I is the channel interval between 1 and 4 inclusive, C is the channel number of a channel belonging to the I-th group, S is an initial value between 1 and 31 inclusive, and k is a variable with a value between 1 and 9 inclusive.

5,627,884

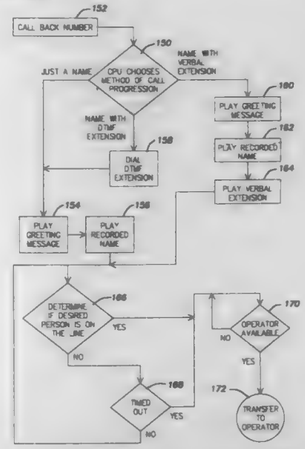
METHOD FOR RETURNING INBOUND CALLS

Mark J. Williams, 1835 Beacon Hill Cir., #11, Cuyahoga Falls, Ohio 44221; Gregory A. Nightingale, 33 Devonshire Dr., Akron, Ohio 44312, and Todd A. Randolph, 87 Wilbur Dr., Monroe Falls, Ohio 44262

Filed Jun. 26, 1995, Ser. No. 494,519

Int. Cl.[6] H04M *1/64;15/06;3/42;3/00*

U.S. Cl. 379—88 **6 Claims**



1. A method for electronically processing a holding inbound telephone call placed by a caller having a called telephone number and a caller name, said method comprising:

determining caller information, said determining caller information including:

transmitting an automatic number identification telephone number by speech to said caller for verification and if said automatic number identification number is not accepted by the caller, using a caller supplied telephone number as said caller telephone number;

prompting said caller for said caller name, and recording said caller name;

prompting said caller for an indication of no extension, a machine dialable extension, or a verbal extension and record-

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ing said indication and said machine dialable extension or said verbal extension, if any; and

entering said caller information in a callback queue;

disconnecting said inbound telephone call;

using said caller information from said callback queue to place a callback call to said caller, wherein said step of using said caller information includes:

if no extension is indicated, dialing said caller telephone number and audibly addressing said caller by said caller name;

if a machine dialable extension is indicated, dialing said caller telephone number and machine dialable extension and audibly addressing said caller by said caller name; or

if a verbal extension is indicated, dialing said caller telephone number, audibly requesting said verbal extension and audibly addressing said caller by said caller name; and

connecting a free agent to said caller.

5,627,885

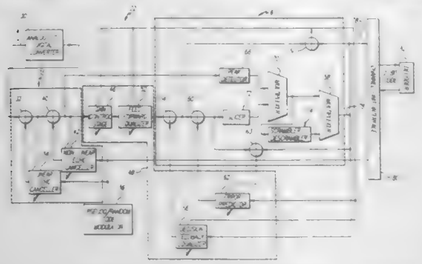
SYSTEM FOR, AND METHOD OF, TRANSMITTING AND RECEIVING THROUGH TELEPHONE LINES SIGNALS REPRESENTING DATA

Eric Paneth, Givatayim; Mordechai Segal, Herzelia; Boaz Rippin, and Ehud H. Rokach, both of Tel-Aviv, all of Israel, assignors to Brooktree Corporation, San Diego, Calif.

Filed Feb. 14, 1994, Ser. No. 195,628

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93 **45 Claims**



6. In combination for initially synchronizing transmission through telephone lines of data represented by successive digital signals from a transmitter and reception at a receiver of such data where the digital signals indicate particular ones of analog levels in a plurality as increments of data,

first means at the transmitter for initially providing successive digital signals having a pseudo random code and representing only a limited number of the analog levels in the plurality,

second means responsive at the transmitter to the successive digital signals from the first means for converting such signals to corresponding analog signals for transmission through the telephone lines,

third means responsive at the receiver to the analog signals transmitted through the telephone lines for converting such analog signals to corresponding digital signals,

fourth means responsive to a limited number of the digital signal from the third means at the receiver for providing the successive digital signals having the pseudo random pattern,

fifth means responsive at the receiver to a limited number of the digital signals from the third means for generating a sequence of digital signals in the pseudo random code with the limited number of analog levels in the plurality, and

sixth means responsive to the signals from the third means and the fifth means for processing such signals to synchronize operation of the receiver with operation of the transmitter.

5,627,886

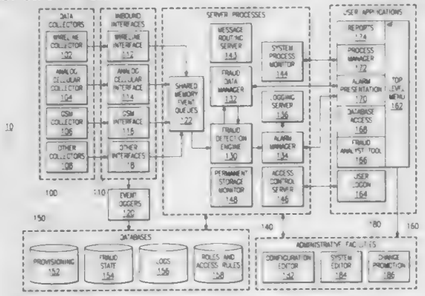
SYSTEM AND METHOD FOR DETECTING FRAUDULENT NETWORK USAGE PATTERNS USING REAL-TIME NETWORK MONITORING

William B. Bowman, Herndon, Va., assignor to Electronic Data Systems Corporation, Plano, Tex.

Continuation of Ser. No. 311,614, Sep. 22, 1994, abandoned. This application Sep. 15, 1995, Ser. No. 528,746

Int. Cl.[6] H04M *15/00;3/00*

U.S. Cl. 379—111 **17 Claims**



1. A computerized fraud detection system for detecting network usage patterns indicative of fraud from at least two disparate networks, each of said networks providing event records resulting from use of the respective network, comprising:

at least one data collector concurrently connected to each of said disparate networks for receiving at least one event record from each of said disparate networks, wherein said event record comprises a plurality of fields;

at least one interface for analyzing each of said at least one received event record to determine its type based on user-defined parameters; and

a fraud detection engine for identifying predetermined fields in said at least one analyzed event record to be used as keys, wherein said user pre-selects at least one of any field in said event record to be a key, for measuring usage associated with said key, for summarizing usage statistics against at least one of said keys in said at least one event record, for comparing statistic totals to predefined thresholds, and for responding when said thresholds are met or exceeded.

5,627,887

METHOD FOR PROCESSING COLLECT CALLS

Barry H. Freedman, Holmdel, N.J., assignor to AT&T, Holmdel, N.J.

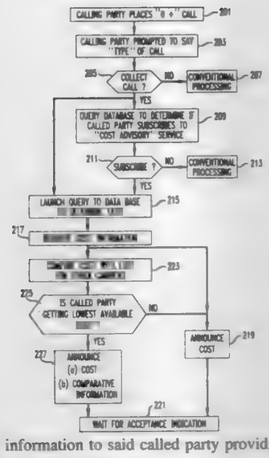
Continuation of Ser. No. 324,942, Oct. 18, 1994, abandoned. This application Feb. 21, 1996, Ser. No. 603,525

Int. Cl.[6] H04M *17/00;15/00;15/06;1/64*

U.S. Cl. 379—144 **17 Claims**

1. A method for use in processing a collect call initiated by a calling party at a calling station to a called party at a called station, comprising the steps of

querying a database using at least a portion of information identifying said calling station and at least a portion of information identifying said called station to determine the anticipated cost for the collect call; and



furnishing information to said called party providing the anticipated cost for the collect call.

5,627,888

TELECOMMUNICATION SYSTEM FOR HANDLING BASIC AND SUPPLEMENTARY FUNCTIONS

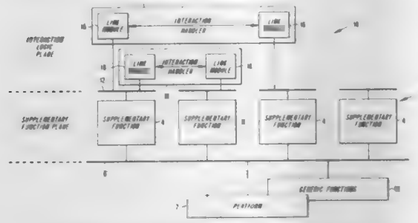
René J. Croughan-Peeren, Oosterhout, Netherlands, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 14, 1995, Ser. No. 388,449

Claims priority, application Sweden, Feb. 15, 1994, 9400505

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **38 Claims**



1. A system for handling basic functions and supplementary functions in a telecommunication network serving a plurality of users, who can communicate with each other by said telecommunication network, and are allowed to subscribe to basic services and supplementary services, enabling the users to make use of said basic functions and supplementary functions, respectively, said system including:

a platform containing said basic functions and implementing supplementary function interfaces which each link one or more of said supplementary functions to [illegible] platform, each supplementary function consisting of one or more supplementary function link modules, one for each of said supplementary function interfaces that the supplementary function may need to use, said supplementary function link modules being located in a supplementary function plane; and

interaction logic for detecting and solving conflicts between said supplementary and consisting of interaction logic link modules located in an interaction logic plane, said supplementary functions and supplementary function interfaces being transparent for the interaction logic and said interaction logic link modules being linkable to the supplementary functions.

5,627,889

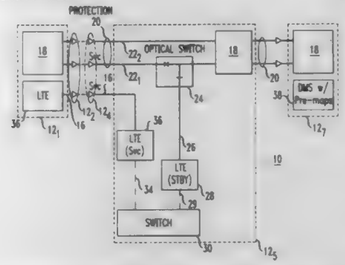
SERVICE RESTORATION TECHNIQUE FOR TELECOMMUNICATIONS FACILITIES HAVING A SINGLE DEGREE OF FREEDOM

Hossein Eslambolchi, Basking Ridge, N.J., assignor to AT&T, Middletown, N.J.

Filed Jun. 29, 1995, Ser. No. 496,786

Int. Cl.[6] H04M *7/00;3/00;* **H04J** *1/16;3/14*

U.S. Cl. 379—221 **8 Claims**



1. In combination with a telecommunications network including a first local exchange at which an inter-exchange carrier has a first Point-Of-Presence, a dead-ended second local exchange coupled to the first exchange by a local trunk, and at least a third local exchange at which the inter-exchange carrier has a second gateway POP linked to the first gateway POP by an express traffic link that passes through the second, dead-ended exchange, the improvement comprising:

a traffic-routing mechanism at the dead-ended second local exchange for routing traffic, otherwise intended for passage on the local trunk to and from the first gateway POP, onto and off the express traffic link for passage to and from the second gateway POP in the event of a failure of the local mink between the dead-ended second local exchange and the first local exchange.

5,627,890

TELEPHONE LINE INTERFACE CIRCUIT

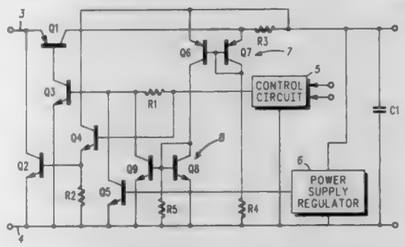
Michael J. Gay, Vaud, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 10, 1995, Ser. No. 419,300

Claims priority, application United Kingdom, Apr. 26, 1994, 9408251

Int. Cl.[6] H04M *1/58;19/00*

U.S. Cl. 379—399 **8 Claims**



1. A telephone line interface circuit for transmitting signals to and receiving signals from a telephone line, the interface circuit comprising first conduction means including first and second terminals in series between the telephone line and storage and voltage regulator means and a control terminal, second conduction means including first and second terminals coupled in parallel across the telephone line and a control terminal, control means coupled to the

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control terminals of the first and second conduction means for presenting predetermined a.c. and d.c. characteristics to the telephone line by modulation of the current in the first and second conduction means, and a negative feedback loop responsive to signals from the storage and voltage regulator means for controlling the first conduction means so that the first conduction means conducts only sufficient quiescent current to power the circuit, any remaining current being conducted by the second conduction means, wherein the control means provides a common control signal to the control terminals of the first and second conduction means.

5,627,891

TUBE MOUNTED TELEPHONE HANDSET IN AN ARMREST

Patrick M. Gallagher, Seattle, Wash.; James B. Robertson, Aptos, and David P. Moriconi, Ben Lomond, both of Calif., assignors to Claircom Communications Group, Inc., Seattle, Wash.

Filed Mar. 10, 1995, Ser. No. 402,094
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—455 **18 Claims**



1. A telephone handset holder, comprising:

a housing defining an elongated enclosed cavity with an opening at a first end, wherein said elongate cavity is configured to receive a telephone handset so that substantially the entire length of the handset is positioned within said cavity;

a carrier tray movably mounted inside the housing so as to be movable between a rear position and a forward position within said cavity wherein said carrier tray is biased to move towards said forward position and wherein said carrier tray is configured to receive a telephone handset so that said telephone handset moves linearly along a longitudinal axis when said carrier tray moves between said rear and said forward positions;

a locking mechanism, secured to the housing, said locking mechanism holds the carrier tray in said rear position of the housing such that a substantial portion of the telephone handset carried on the carrier tray is retained within said elongate enclosed cavity within the housing;

a release mechanism connected to the locking mechanism such that, when activated, the release mechanism disengages the locking mechanism, allowing the carrier tray to move to said forward position within the housing, thereby exposing a first end of the telephone handset carried thereon out of said opening in said enclosed cavity; and

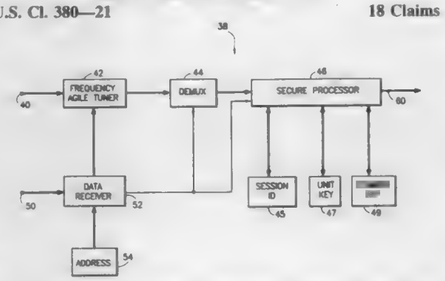
a securing mechanism which securely holds said handset in said carrier tray and wherein said securing mechanism is configured to release said handset from said cavity when said carrier tray is in said forward position, in response to the user pulling said first end of said handset forward out of said housing.

5,627,892

DATA SECURITY SCHEME FOR POINT-TO-POINT COMMUNICATION SESSIONS

Marc W. Kauffman, Ft. Washington, Pa., assignor to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Apr. 19, 1995, Ser. No. 420,710
Int. Cl.[6] H04L *9/00*; **H04N** *7/167*
U.S. Cl. 380—21 **18 Claims**



7. A shared communication network for providing secure point-to-point communication of requested information of an information service from a headend to a specific terminal which is coupled to the network, comprising:

a plurality of terminals coupled to the network including said specific terminal, each terminal having a unique session identifier stored therein in a secure manner;

means for transmitting a request signal from said specific terminal to said headend via said network;

an encryption controller which maintains a record of said unique session identifiers in a secure manner;

means responsive to said encryption controller for encrypting said requested information to be provided to said specific terminal under the session identifier of than terminal;

means for inserting the encrypted information into designated locations in a signal multiplex;

means for transmitting the signal multiplex over a portion of said network serving said specific terminal; and

means associated with said headend for providing an identification signal to said specific terminal for informing said specific terminal of the designated locations of said encrypted information in said signal multiplex and a transmission frequency at which said signal multiplex is carried on said network portion;

said specific terminal including:

a frequency agile tuner which tunes to said transmission frequency to locate said signal multiplex in response to said identification signal,

means for recovering the encrypted information from said designated locations of said signal multiplex, and

means for decrypting the recovered encrypted information using the terminal's session identifier;

wherein said transmission of said encrypted information in said signal multiplex to said specific terminal is initiated by said request signal.

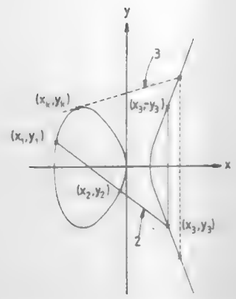
5,627,893

CRYPTOGRAPHIC METHOD

Nicholas Demytko, Mentone, Australia, assignor to Telstra Corporation Limited, Melbourne, Australia

PCT No. PCT/AU93/00665, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/15423, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 20, 1993, Ser. No. 446,816
Claims priority, application Australia, Dec. 22, 1992, PL6502/92
Int. Cl.[6] H04L *9/26*
U.S. Cl. 380—30 **23 Claims**

1. A cryptographic method including:



selecting secret keys p and q, being prime numbers greater than 3;

selecting public parameters for a series of data values which belong to one of a plurality of pairs of groups whereby any one of said data values in one of said pairs of groups is recovered by performing an operation kN_i+1 times modulo n beginning with said any one of said data values, where k is an integer, N_i is the order of the ith pair of groups and n=p.q;

selecting a public encryption key e which is a factor of kN_i+1 for all i; and

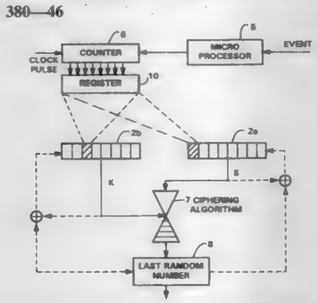
processing communications data as a member of one of said pairs of groups by performing said operation on said communications data, whereby the order N_i of the pair of groups i that said communications data belongs to can be determined on the basis of p and q, and a secret decryption key d, can be determined using $e.d_i=kN_i+1$.

5,627,894

RANDOM NUMBER GENERATOR

Bodo Albert, and Klaus Vedder, both of Munich, Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Germany

Continuation of Ser. No. 61,532, May 14, 1993, abandoned, which is a continuation of Ser. No. 674,747, Mar. 26, 1991, abandoned. This application Feb. 17, 1995, Ser. No. 390,414
Claims priority, application Germany, Mar. 30, 1990, 40 10 305.6
Int. Cl.[6] G06F *1/02*; **H03B** *29/00*
U.S. Cl. 380—46 **12 Claims**



1. A method for generating random numbers comprising:

a. storing input values in a first memory;

b. in response to a request for a random number, generating said random number in accordance with (i) a ciphering algorithm and (ii) said input values;

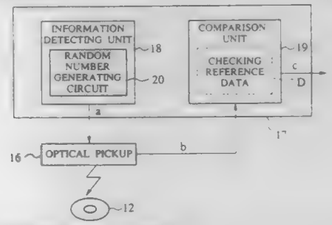
c. in response to a triggering signal, independent from said request for a random number, (i) generating modification data independently from said generation of said random number and (ii) modifying at least a portion of said input values stored in said first memory in accordance with said modification data.

5,627,895

ELECTRONIC DEVICE FOR DETECTING SELECTED VISUALLY PERCEPTIBLE INDICATION INFORMATION ON AN INFORMATION STORAGE MEDIUM FOR SECURITY COMPARISON

Hidetaka Owaki, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Japan

PCT No. PCT/JP94/01463, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO95/14993, PCT Pub. Date Nov. 29, 1993
PCT Filed Sep. 5, 1994, Ser. No. 360,812
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—54 **32 Claims**



3. A CD-ROM device comprising:

a CD-ROM mounting unit on which is detachably mounted a CD-ROM having a region formed with a predetermined visual indication, said visual indication having an area size and a property which enables it to be visually recognizable as the visual indication;

a storing means which stores a reference information representative of said predetermined visual indication;

a detection unit having a selection unit which selects at random part of said region and means for detecting said selected part of the region to output information indicative of part selected at random out of said predetermined visual indication; and

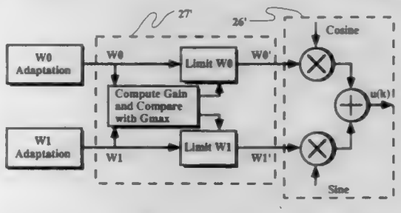
a comparison unit comparing said information with comparison information in the reference information corresponding to said selected part of the region and generating an output of the compared result.

5,627,896

ACTIVE CONTROL OF NOISE AND VIBRATION

Steve C. Southward, Cary; Dino J. Rosetti, Raleigh, and Mark R. Jolly, Holly Springs, all of N.C., assignors to Lord Corporation, Cary, N.C.

Filed Jun. 18, 1994, Ser. No. 260,660
Int. Cl.[6] G10K *11/16*
U.S. Cl. 381—71 **24 Claims**



1. A method of controlling a disturbance at at least one selected location which has been generated by a source of disturbance, comprising the steps of:

(a) extracting a signal indicative of tonal characteristics of said source of disturbance,

(b) converting said signal indicative into a sine wave and a cosine wave;

(c) inputting said sine wave and said cosine wave into an adaptive filter:

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(d) calculating a first filter weight W_1 and a second filter weight W_0 for said adaptive filter according to an algorithm such that said first filter weight W_1 and said second filter weight W_0 are responsive to at least one of said signal indicative and at least one error signal;

(e) calculating an output gain G according to the equation

$$G=\sqrt{W_0^2+W_1^2}\ ;$$

(f) reducing at least one of said first filter weight W_1 and said second filter weight W_0 if said output gain $G>G_{max}$, where said G_{max} is a preselected threshold gain value, such that $G \leqq G_{max}$;

(g) inputting said first filter weight W_1 and said second filter weight W_0 to said adaptive filter to operate on said sine wave and said cosine wave, and thereafter combining said sine wave and said cosine wave for generating a canceling signal; and

(h) outputting said canceling signal to an output device for controlling said disturbance at said at least one selected location and where maintaining $G \leqq G_{max}$ ensures that said canceling signal exiting from said adaptive filter never exceeds a saturation limit.

5,627,897

ACOUSTIC ATTENUATION DEVICE WITH ACTIVE DOUBLE WALL

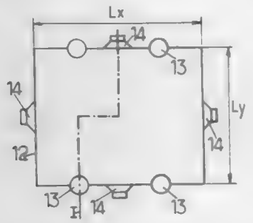
Laurent Gagliardini, Paris, and Jacques Roland, Corenc, both of France, assignors to Centre Scientifique Et Technique Du Batiment, Paris, France

Filed Nov. 2, 1995, Ser. No. 551,951

Claims priority, application France, Nov. 3, 1994, 94 13125

Int. Cl.[6] G10K *11/16*

U.S. Cl. 381—71 **10 Claims**



1. Acoustic attenuation device, comprising two substantially parallel plates defining a rectangularly shaped internal space therebetween, noise detection means arranged between the two plates, inverse noise emission means arranged between the two plates, and control means for controlling the inverse noise emission means in such a way as to minimize a quantity supplied by the noise detection means, wherein the inverse noise emission means comprise four actuators whose respective positions parallel to the plates correspond approximately to the centers of the sides of the rectangular shape of said internal space, wherein the noise detection means comprise four sensors whose respective positions parallel to the plates correspond approximately to four points each situated on a respective long side of the rectangular shape of said internal space and each having a distance of one quarter of the length of a long side with respect to a respective corner of said rectangular shape, wherein the four actuators are controlled in phase, and wherein the quantity to be minimized is represented by the sum of the output signals of the four sensors.

5,627,898

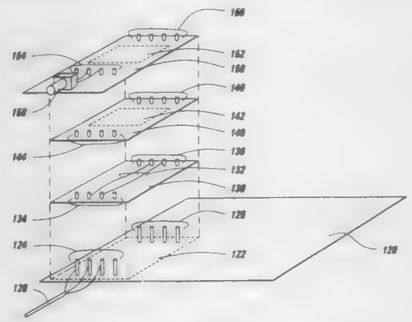
SIGNAL DISTRIBUTION WITH USER-CONFIGURABLE GROUND-LOOP CONTROL

Kinya Washino, 80 Hamilton Ave., Dumont, N.J. 07624

Filed Nov. 19, 1993, Ser. No. 154,599

Int. Cl.[6] H04B *3/00*

U.S. Cl. 381—77 **15 Claims**



6. In an audio/video duplication facility including a source routing unit having a plurality of inputs and outputs, the source routing unit being operative to receive a signal at one of the inputs and route the signal to one or more of the outputs, and at least one distribution amplifier having an input to receive a signal from an output of the source routing unit and distribute the signal to a block of recording devices, a signal distribution system including user-configurable means to cancel ground-loop-induced interference, the system comprising:

a remote-control master controller having a plurality of control outputs;

a remote-control local controller associated with a block of recording devices, the remote-control local controller having an input to receive a control signal from an output of the remote-control master controller and distribute the control signal to one or more of the recording devices associated with the block; and

circuitry-receiving means associated with each output of the remote-control master controller and the input to the remote-control local controller, the circuitry being user-selectable in order to minimize the ground-loop-induced interference, if present in the system.

5,627,899

COMPENSATING FILTERS

Peter G. Craven, Old School House, Main Street, East Challow, Wantage, Oxon, United Kingdom, and Michael A. Gerzon, Ground Floor Flat, 14 Bartlemas Road, Oxford, United Kingdom

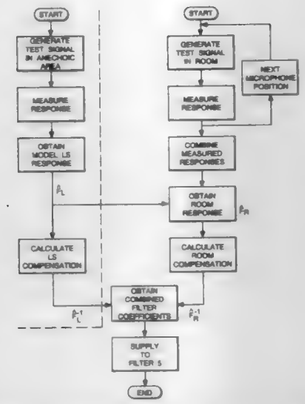
Division of Ser. No. 74,837, Aug. 3, 1993, Pat. No. 5,511,129. This application Nov. 21, 1995, Ser. No. 561,601

Claims priority, application United Kingdom, Dec. 11, 1990, 9026906

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—98 **12 Claims**

1. A method of conditioning a digital filter to filter a signal supplied to an acoustic transducer of a loudspeaker, comprising supplying parameters for storage therein, the parameters being such as to substantially compensate phase delay distortion due to the transducer characterised in that the parameters are derived so as to substantially compensate phase delay distortion which is substantially independent of position or direction relative to said transducer but to leave uncompensated such phase distortion as is directionally or positionally dependent or for which the compensation introduces a pre-response and thereby introduces audible effects.



5,627,900

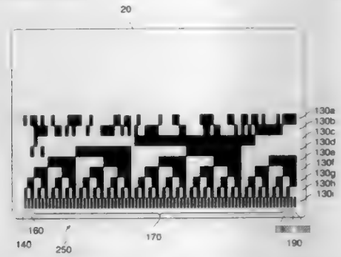
OPTICAL DATA CARDS FOR OPERATING SOUND SYNTHESIZER SYSTEM

Gene W. Wooley, Moorpark, Calif.; Anthony P. Van de Ven, Hong Kong, and John A. Dackombe, Lantau Island, both of Hong Kong, assignors to JAG Design International Limited, Hong Kong

Continuation of Ser. No. 33,642, Mar. 17, 1993, Pat. No. 5,446,791. This application Jan. 24, 1995, Ser. No. 377,090

Int. Cl.[6] G11C *13/04*

U.S. Cl. 381—118 **28 Claims**



1. A card for optical reading by a card reader of a card-programmed sound synthesizer system comprising:

a flat surface having disposed thereon a plurality of parallel tracks of digital information, said tracks comprising optically contrasting marks and spaces and each being disposed a fixed distance from an edge of said card, at least one of said tracks being a timing track formed of uniformly spaced marks and spaces, said marks and spaces representing stored digital signals, said digital signals being formed of a successive plurality of data bytes, each of said data bytes represented on said card in columns orthoganal to said edge, at least one of said data bytes being a stop byte, said columns intersecting each of said plurality of parallel data tracks and corresponding to a timing mark on said timing track, the bits of said data byte, for each said track other than said timing track, determined by whether a mark or space is disposed in said column.

5,627,901

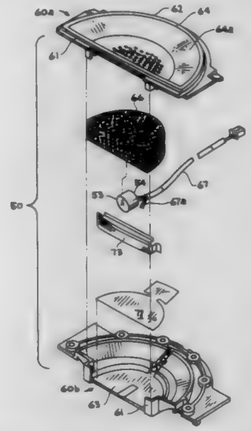
DIRECTIONAL MICROPHONE FOR COMPUTER VISUAL DISPLAY MONITOR AND METHOD FOR CONSTRUCTION

David L. Josephson, San Jose; David A. Lundgren, Mill Valley, and William V. Oxford, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 81,999, Jun. 23, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 378,882

Int. Cl.[6] H04R *1/02;25/00*

U.S. Cl. 381—155 **20 Claims**



1. An arrangement for altering spatial response in a directional microphone mounted in a desktop computer display monitor, said arrangement comprising:

a first acoustically opaque surface having a first edge, said first surface being a housing surface of said computer display monitor and having dimensions longer than wavelengths of sounds in human speech;

a second acoustically opaque surface oriented substantially orthogonally to said first surface, said second surface being a housing surface of said computer display monitor and having a second edge coincident with said first edge, and further having dimensions longer than wavelengths of sounds in human speech; and

a directional microphone having a first spatial response, being mounted in said computer display monitor and disposed substantially along said first and second edges, and receiving primary sounds from locations in front of said directional microphone and secondary sounds from locations not in front of said directional microphone, such that said first spatial response is dependent principally on a pressure value and a pressure gradient value associated with said primary and secondary sounds;

whereby said first and second acoustically opaque surfaces alter said pressure value and said pressure gradient value, thereby altering said first spatial response to a more directional second spatial response.

5,627,902

MAGNETIC RESONANCE IMAGING COMPATIBLE AUDIO HEADSET

Mokhtar Ziarati, Calabasas, Calif., assignor to Resonance Technology, Inc., Van Nuys, Calif.

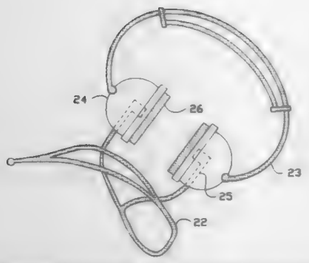
Continuation of Ser. No. 653,711, Feb. 11, 1991, Pat. No. 5,412,419. This application Aug. 2, 1994, Ser. No. 284,838

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—187 **8 Claims**

1. An audio system for a patient disposed within a magnetic resonance imaging device having a magnetic field, said magnetic

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resonance imaging device comprising a control room and a magnet room separated by a penetration panel, said magnet room comprising a main magnet having a bore, said audio system comprising:

an incoming signal comprising an audio signal portion;

means for preventing said audio signal portion from interfering with the magnetic resonance imaging device;

an audio transducer for converting said audio signal portion into audible sound waves;

a hollow tube connected to said audio transducer; and

a magnetically inert headset connected to said hollow tube, said headset comprising an inner set portion adapted to abut a human ear canal to conduct the audible sound waves thereto and disposed inside an outer set portion, wherein the outer set portion is adapted to cover the human ear to block out audible sound, and wherein said outer set portion further comprises an ear cup which substantially completely encloses the ear.

5,627,903

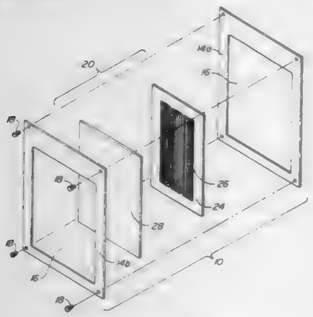
VARIABLE GEOMETRY ELECTROMAGNETIC TRANSDUCER

Edward M. Porrazzo, and Karen P. Orell-Porrazzo, both of Citrus Heights, Calif., assignors to Chain Reactions, Inc., Gold River, Calif.

Filed Oct. 6, 1993, Ser. No. 132,652

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—202 **26 Claims**



1. An electroacoustic transducer comprising:

a flexible diaphragm having:

(a) a first layer of electrically insulating material: and

(b) an electrical conductor layer, attached to said first layer of electrically insulating material, which incorporates both a conductor pattern and permanently magnetized material; and

a frame for supporting said diaphragm.

5,627,904

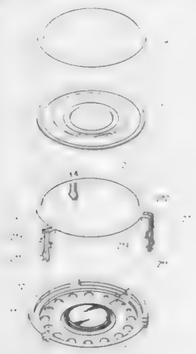
MINIATURE LOUDSPEAKER CLIP STRUCTURE

Su-Pei Yang, 2F, No. 110, Lane 103, Sec. 2, Nei Hu Rd., and Shyh-Lee Chen, No. 16, Alley 12, Lane 190, Chorng Yang Rd., Nan Gang District, both of Taipei, Taiwan

Filed Mar. 27, 1996, Ser. No. 624,742

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—205 **3 Claims**



1. A miniature loudspeaker clip structure comprising:

a loudspeaker shell body having a circumferential stepped wall with a large step wall and a small step wall, the large step wall having a plurality of concave sections;

a circular copper ring located on the small step wall, the copper ring having a plurality of L-shaped elastic clips, each clip having a horizontal portion passing through a corresponding concave section of the large step wall, and a vertical portion extending from the circumference of the loudspeaker shell, a tip of said each vertical portion forming a cone-shaped clipper wherein an arrow-shaped surface of said each clip is divided vertically by a vertical-groove, and a flange located on a side wall of said each clip;

a vibrating membrane located on the copper ring; and,

a circular fix ring attached to the loudspeaker shell body to hold the copper ring and the vibrating membrane thereon wherein the clips of the copper ring, clamp a loudspeaker onto holes of a printed circuit board.

5,627,905

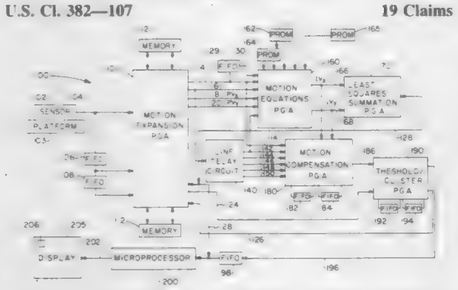
OPTICAL FLOW DETECTION SYSTEM

Thomas J. Sebok, and Dale R. Sebok, both of Tallmadge, Ohio, assignors to Lockheed Martin Tactical Defense Systems, Akron, Ohio

Filed Dec. 12, 1994, Ser. No. 353,589

Int. Cl.[6] G06K *9/00*; **H04N** *5/16*

U.S. Cl. 382—107 **19 Claims**



1. An optical flow detection system for receiving a plurality of pixels so as to derive an instantaneous pixel velocity value and a predicted pixel velocity value for each pixel, comprising:

sensor means for supplying an imaging sequence which includes potential targets represented by at least one pixel;

an image queue for storing said imaging sequence;

gradient means for receiving and comparing said imaging sequence to said stored imaging sequence so as to generate a pixel intensity gradient value for each of said pixels;

calculation means for receiving said pixel intensity gradient values and a predicted pixel velocity value so as to generate an instantaneous pixel velocity value for each pixel; and

smoothing means for receiving said instantaneous pixel velocity values which are employed in a least squares fitting to generate coefficients which are used in a set of quadratic equations to generate said predicted pixel velocity values.

5,627,906

IMAGE PROCESSING SYSTEM FOR PRODUCING AN ATTENUATION MAP OF A SCANNED IMAGE

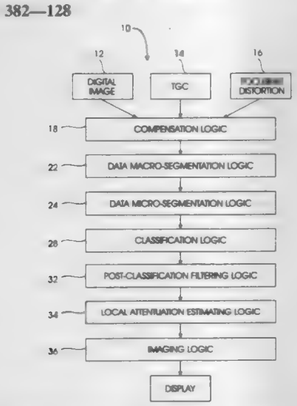
Eugene Walach, Kiriat Motzkin, Israel, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1991, Ser. No. 813,230

Claims priority, application Israel, Dec. 31, 1990, 096842

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—128 **27 Claims**



1. An image processing method for processing an image of a subject, the image having regions based on the subject, the image including an array of image data elements, to generate an attenuation map therefrom, the method comprising the steps of:

for each respective one of the image data elements, macro-segmenting the image into a block, the block including the respective image data element and a plurality of image data elements near the respective image data element;

for each block produced by the step of macro-segmenting, computing a respective average attenuation based on the image data elements included within the block, and assigning the computed average attenuation to the respective one of the image data elements, thereby creating a transformed image made up of image data elements whose values are the computed average attenuations;

micro-segmenting the image data elements of the transformed image into blocks which are mutually exclusive and which are sufficiently small that a given block includes image data elements of at most two of the regions of the subject;

for each block produced by the step of micro-segmenting, computing a block average value based on the average attenuations computed for each image data element therewithin by the step of computing respective average attenuations for each block produced by the step of macro-segmenting;

for each block produced by the step of micro-segmenting, dividing the data elements into groups, the groups including (i) a group of image data elements whose values are greater than the block average computed by the step of computing a block average for each block produced by the step of micro-segmenting, and (ii) a group of image data elements whose values are less than the block average computed by the step of computing a block average for each block produced by the step of micro-segmenting;

for each block produced by the step of micro-segmenting, computing respective average values for the image data elements of each respective one of the groups therewithin produced by the step of dividing, and computing an overall average value between the respective average values; and

using the overall average value as the block average, repeating, iteratively, the step of dividing the data elements of each micro-segment into groups and the step of computing respective average values and an overall average value, a predetermined number of times.

5,627,907

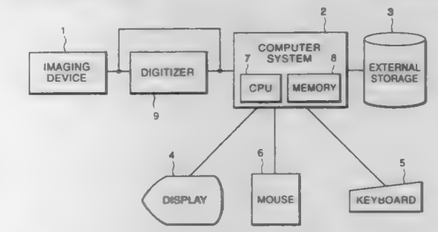
COMPUTERIZED DETECTION OF MASSES AND MICROCALCIFICATIONS IN DIGITAL MAMMOGRAMS

David Gur; Bin Zheng, and Yuang-Hsiang Chang, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 1, 1994, Ser. No. 352,169

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—132 **83 Claims**



1. A method of detecting abnormal regions in living tissue depicted in a radiograph, the method comprising the steps of:

(a) digitizing the radiograph to produce a digitized radiograph;

(b) identifying, according to predetermined criteria, suspected abnormal regions in the radiograph; and

(c) for each identified suspected abnormal region,

(i) extracting multiple topographic layers of the suspected abnormal region from the digitized radiography, the multiple topographic layers being extracted from the same radiograph; and

(ii) evaluating the extracted multiple topographic layers of the suspected abnormal region to determine whether the suspected region is an abnormal region.

5,627,908

METHOD FOR CYTOLOGICAL SYSTEM DYNAMIC NORMALIZATION

Shih-Jong J. Lee, Bellevue; Alan C. Nelson, Redmond; Larry A. Nelson, Bellevue; Carl E. Youngmann, and Keith L. Frost, both of Seattle, all of Wash., assignors to NeoPath, Inc., Redmond, Wash.

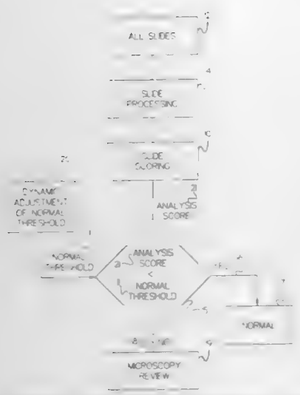
Filed Sep. 20, 1994, Ser. No. 309,063

Int. Cl.[6] G06K *9/00*; *9/38*

U.S. Cl. 382—133 **25 Claims**

2. In a biological specimen examination system where biological specimen slides all originate from a selected laboratory and are

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scored and at least one analysis score threshold has been predetermined, a method of dynamically adjusting the at least one analysis score threshold comprising the steps of:

(a) scoring a new slide from the selected laboratory to generate an analysis score;

(b) dynamically adjusting the at least one analysis score threshold for the selected laboratory based on the analysis score to provide at least one adjusted analysis score threshold so as to assure that a proportion of slides are selected for review.

5,627,909

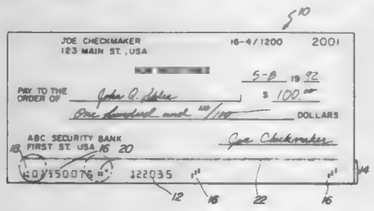
METHOD FOR ENCODING MICR DOCUMENTS

Thomas F. Blaylock, Irvine, and Marvin C. Schroeder, Mission Viejo, both of Calif., assignors to Troy System, Inc., Santa Ana, Calif.

Continuation of Ser. No. 901,403, Jun. 19, 1992, Pat. No. 5,550,932. This application Aug. 29, 1995, Ser. No. 520,829

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—139 **7 Claims**



1. A method for providing a printed identification of the source of a printed document printed by a printer using a character-cell set, said identification being printed directly on said document, the steps of the method comprising:

for each source of a printed document, providing a unique character-cell set having a set of character cells for printing onto a document wherein at least one of said character cells has an identifying code included therein which uniquely identifies said character-cell set used by a printer in printing the document;

loading said character-cell set into the document printer;

selecting characters from said character-cell set for printing onto a document, said selected characters including at least one character cell including said identifying code; and

printing said selected characters onto a document, such that said identifying code is also automatically printed.

5,627,910

PROCESS FOR INSPECTING METALLIC CHIPS FRAGMENTS IN ORDER TO ELIMINATE MORE X-RAY ABSORBENT INCLUSIONS FROM THEM

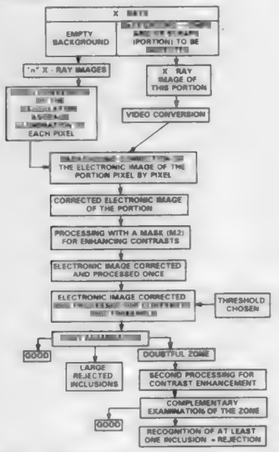
Maurice Gachet, Mercury, and Thierry Ancillon, Albertville, both of France, assignors to Compagnie Europeenne Du Zirconium Cezus, Courbevoie, France

Filed Jun. 28, 1994, Ser. No. 266,709

Claims priority, application France, Jun. 30, 1993, 93 08229

Int. Cl.[6] G06K *9/46*

U.S. Cl. 382—144 **12 Claims**



1. A process for inspecting chips (**8**, **28**) or fragments (**8**) of metal or metallic alloy in order to eliminate from them any inclusions (**29**) that are of a more X-ray absorbent material than said metal or alloy, wherein a field (**1**) which delimits a portion (**13**) of these chips (**8**, **28**) or fragments (**8**) is X-rayed, thus producing an X-ray image (**14**), and this image (**14**) is converted into an electronic image which is analyzed for detecting said inclusion(s) (**29**) of more absorbent material that are present in said portion (**13**), said process comprising:

defining a background correction image for variations in the degree of illumination of each pixel in the field (**1**) of an electronic image in the absence of any chips (**8**, **28**) and/or fragments (**8**), by electronically recording one or more-X-rays of the field (**1**) without any chips or fragments present;

covering the field (**1**) with said portion (**13**) of chips (**8**, **28**) and/or fragments (**8**), generating an x-ray image of the covered field, converting the x-ray image into an electronic image and correcting the electronic image of said covered field (**1**) by subtracting said background correction image from the electronic image; and

rejecting said portion (**13**) of chips (**8**, **28**) and/or fragments (**8**) if said corrected electronic image contains at least one doubtful pixel with a degree of illumination corresponding to a chosen condition.

making a plurality of sporadic and random introductions into said covered field (**1**) of an X-ray absorbent defect-measuring standard (**11**) contained in a casing that is X-ray pervious and has flat supporting sides;

verifying whether each introduction of said defect-measuring standard (**11**) is retrieved from the corrected image of said field (**1**); and if an introduction of said defect-measuring standard is not retrieved, rejecting the portions (**13**) inspected since a preceding introduction of said defect-measuring standard into said covered field was retrieved from the corrected image (**11**); and

stopping the inspection while the process is adjusted for resumption of the inspection,

thereby assuring maintenance of precision of said inspecting.

5,627,911

FIGURE INSPECTION METHOD AND APPARATUS

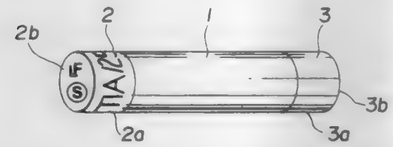
Yoshikazu Inumaru, Tokyo, and Kazuyuki Imamura, Kanagawa, both of Japan, assignors to Sony Corporation, Japan

Filed Sep. 6, 1994, Ser. No. 300,219

Claims priority, application Japan, Sep. 10, 1993, 5-225719; Nov. 26, 1993, 5-296800

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—141 **9 Claims**



1. A method for inspecting a figure which is made up of characters or symbols and which are inscribed on a curved surface of an article, comprising:

rotating an article which is under inspection through a plurality of pre-set angular increments which produce a total rotation of more than 360°;

acquiring a picture fraction of the figure inscribed on said curved surface of the article under inspection for each of the angular increments;

synthesizing a full picture from data included in each of the acquired picture fractions, said synthesizing including discarding redundant picture fraction data resulting from an overlap caused by the rotation of the article through the plurality of angular increments which total more than 360°;

inspecting the figure inscribed on the curved surface of said article under inspection based on the synthesized picture information in a manner wherein the characters or symbols are sequentially recognized on a one-by-one basis using a predetermined character recognition technique;

comparing a character string made up of a series of recognized characters or symbols with a pre-set control character string during figure inspection; and

sorting the article under inspection on the basis of the results of the inspecting step, into one of an acceptable group and an unacceptable group.

5,627,912

INSPECTION METHOD OF INCLINATION OF AN IC

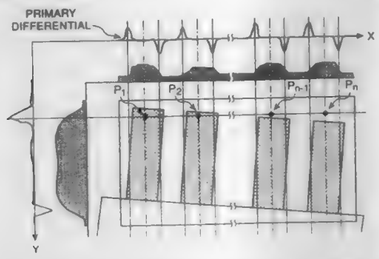
Koji Matsumoto, Tokyo, Japan, assignor to Yozan Inc., Tokyo, Japan

Continuation of Ser. No. 405,405, Mar. 15, 1995, abandoned, which is a continuation of Ser. No. 82,421, Jun. 28, 1993, abandoned. This application Dec. 6, 1995, Ser. No. 568,439

Claims priority, application Japan, Jun. 29, 1992, 4-194920

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—146 **16 Claims**



1. A method of measuring the orientation of an integrated circuit having a first set of pins on a first side thereof and a second set of pins on a second side opposing the first side, wherein a line extending between the first and the second side of the integrated circuit defines a first axis of the integrated circuit, the method comprising steps of:

generating a pixel image of the integrated circuit in a reference coordinate system having a first reference axis and a second reference axis, the pixel image having a first pixel axis corresponding to the first axis of the integrated circuit, the first pixel axis being parallel to one of the first reference axis and the second reference axis if the integrated circuit is disposed at a zero angle of inclination, the first pixel axis being disposed at a non-zero angle with respect to both the first and the second reference axes if the integrated circuit is disposed at a non-zero angle of inclination, pixels in the pixel image representing relative darknesses of the integrated circuit and a background at discrete locations;

generating density projections of the pins in each of the first and the second set of pins along the first and the second reference axes;

detecting coordinates of termini of the first and the second set of pins along the first and the second references axes from the density projections of the pins in the first and the second sets of pins;

determining reference points corresponding to the pins in the first and the second sets of pins based on the detected coordinates of termini of the first and the second set of pins in the first and the second reference axes, each pin having one reference point associated therewith, the reference points associated with pins in a same set of pins being aligned in parallel with the first reference axis;

selecting a first location representative of the first set of pins based on the reference points associated with the pins in the first set;

selecting a second location representative of the second set of pins based on the reference points associated with the pins in the second set;

determining a first relative displacement of the first and the second locations along one of the first and the second reference axes; and

generating a quantitative measure of inclination of the integrated circuit relative to at least one of the first and the second reference axis based on the first relative displacement.

5,627,913

PLACEMENT SYSTEM USING A SPLIT IMAGING SYSTEM COAXIALLY COUPLED TO A COMPONENT PICKUP MEANS

Donald J. Spigarelli, Groton, Mass.; John M. DeCarlo, York, Me.; Ernest LaFleur, Lunenberg, Mass., and Bryan R. Pinette, Derry, N.H., assignors to Sierra Research and Technology, Inc., Westford, Mass.

Continuation of Ser. No. 113,771, Aug. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 873,581, Apr. 21, 1992, Pat. No. 5,251,266, which is a continuation of Ser. No. 573,459, Aug. 27, 1990, abandoned. This application Jan. 26, 1996, Ser. No. 592,599

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—151 **14 Claims**

1. A placement system for placing a circuit component on a circuit board, said placement system comprising:

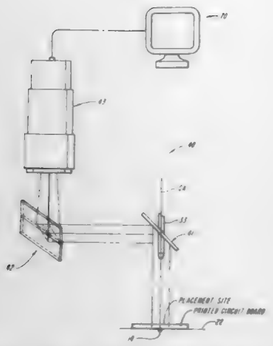
a viewing system providing a single optical perspective via a split imaging system;

a first stage, for positioning the circuit board onto which the component is to be placed within the field of view of said viewing system;

a second stage, coupled to said first stage, for holding the circuit component, said second stage moveable in at least first and second different directions;

a component pick-up system disposed about said first stage, said component pick-up system for picking up components from said second stage and placing the component in a predetermined position on said first stage wherein said viewing system is coaxially coupled to said component pick-up system;

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a monitor having a display screen, coupled to said viewing system, wherein said viewing system provides an image within a predetermined field of view on said monitor display screen; and

a graphical user interface coupled to said monitor, said user interface for providing a position indicator on said monitor display screen, wherein said position indicator identifies the location of a particular feature of said circuit board.

5,627,914

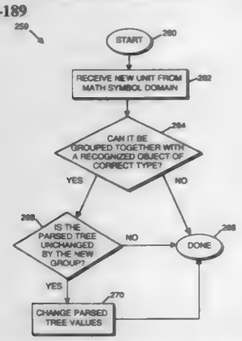
METHOD AND APPARATUS FOR PROCESSING GRAPHICALLY INPUT EQUATIONS

Giulia Pagallo, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 932, Jan. 5, 1993, Pat. No. 5,544,262, and a continuation-in-part of Ser. No. 864,607, Apr. 7, 1992, Pat. No. 5,317,647, Ser. No. 889,216, May 27, 1992, abandoned, and Ser. No. 1,123, Jan. 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 488,039

Int. Cl.[6] G06K *9/72*

U.S. Cl. 382—189 **22 Claims**



1. A method for processing handwritten, graphically input equations on a computer system, comprising the steps of:

(a) receiving an input pattern in a computer system comprising an equation which was derived from user handwritten strokes input using a pointing device;

(b) parsing said input pattern utilizing a defined constrained attribute grammar to determine if said input pattern defines a valid pattern within said constrained attribute grammar, said valid pattern including a set of subpatterns satisfying constraints of production rules included in said constrained attribute grammar, said constraints being used by said parsing step to establish correspondence between said subpatterns and said production rules;

(c) providing a parsed tree from said parsing step, said parsed tree being derived from said input pattern when said input pattern is determined to be a valid pattern in said parsing step;

(d) deriving a result of said equation utilizing said parsed tree by executing an operator at nodes of said parsed tree using operands included in said parsed tree;

(e) detecting an edit made to said equation having said result; and

(f) editing said parsed tree associated with said equation in response to said edit made to said equation and without changing a structure of said parsed tree when said edit changes only a value or an operator of said equation.

5,627,915

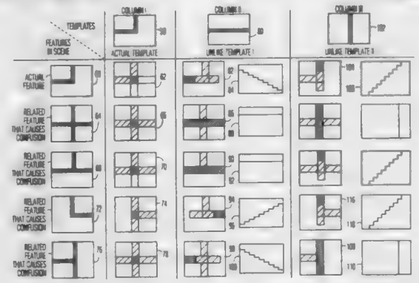
PATTERN RECOGNITION SYSTEM EMPLOYING UNLIKE TEMPLATES TO DETECT OBJECTS HAVING DISTINCTIVE FEATURES IN A VIDEO FIELD

Roy Rosser; Subhodev Das, both of Princeton; Yi Tan, and Peter von Kaenel, both of Plainsboro, all of N.J., assignors to Princeton Video Image, Inc., Princeton, N.J.

Filed Jan. 31, 1995, Ser. No. 381,088

Int. Cl.[6] G06K *9/68*

U.S. Cl. 382—219 **27 Claims**



1. A pattern recognition method for recognizing an object having distinctive features as imaged in a video field, said method comprising the steps of:

(a) passing a first template having a first pattern similar to one of said distinctive features over said video field and comparing the same in order to preliminarily identify at least one possible distinctive feature of said object which could either be a correctly identified distinctive feature or one of a plurality of incorrectly identified features;

(b) passing a second template having a second pattern different from said first template pattern over said possible distinctive feature and comparing the same in order to determine if said possible distinctive feature is at least one of said incorrectly identified features;

(c) passing a third template having a third pattern different from said first and second template patterns over said possible distinctive feature and comparing the same in order to determine if said possible distinctive feature is at least another of said incorrectly identified features;

(d) repeating steps (b) and (c) above until all possible likely falsely identified features have been eliminated as possible candidates for said distinctive feature;

(e) selecting said second pattern, wherein said second pattern includes a first element of said distinctive feature which extends substantially completely across said second template, wherein said correctly identified feature is accurately identified by process of elimination.

5,627,916

IMAGE PROCESSING METHOD AND APPARATUS

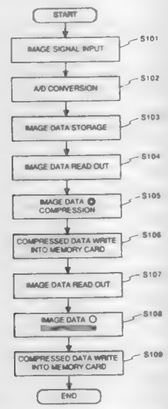
Izuru Horiuchi, Machida, Japan, assignor to Canon Kabushiki Kaisah, Tokyo, Japan

Continuation of Ser. No. 996,648, Dec. 24, 1992, abandoned. This application Dec. 6, 1994, Ser. No. 353,994

Claims priority, application Japan, Jan. 6, 1992, 4-000106

Int. Cl.[6] G06K *9/36;9/46*

U.S. Cl. 382—239 **15 Claims**



1. An image processing method comprising:

a generating step for generating image data by using a sensor which has a plurality of picture cells and color filters which are arranged as a predetermined array;

a separating step for separating the image data generated in said generating step into a plurality of image components, each of the plurality of image components corresponding to each of said color filters;

a setting step for setting quantization parameters suitable for obtaining an objective coding amount, in accordance with a predetermined image component separated in said separating step;

a first coding step for coding the predetermined image component in accordance with the quantization parameters set in said setting step; and

a second coding step for coding another image component separated in said separating step in accordance with the quantization parameters set in said setting step.

5,627,917

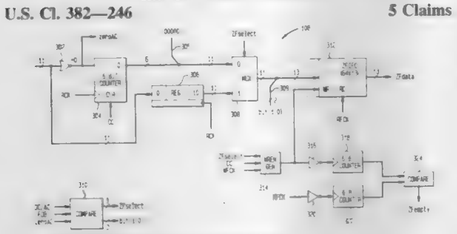
VARIABLE LENGTH CODING SYSTEM HAVING A ZIG-ZAG FIFO FOR SELECTIVELY STORING EACH DATA COEFFICIENT AND ZERO-RUN COUNT

Yueh-Chang Chen, Chang-Hua, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 163,872, Dec. 8, 1993, Pat. No. 5,479,527. This application Jun. 7, 1995, Ser. No. 476,308

Int. Cl.[6] G06K *9/36;9/46*

U.S. Cl. 382—246 **5 Claims**



1. A variable length coder comprising:

a comparator for producing a signal zeroAC indicating whether or not each received coefficient of each data block has a zero amplitude,

a counter responsive to said comparator for incrementing a count of said counter for each received zero AC coefficient of each run of zeros contained in each data block, said counter clearing said count in response to a clear signal CC generated when said comparator receives a non-zero coefficient or an end of block character coefficient,

a register for storing each received coefficient,

a control circuit responsive to said signal zeroAC, a signal EOB indicating whether or not said coefficient is said end of block character, and a signal DC indicating whether or not said coefficient is the DC coefficient of a block, for generating a signal ZFselect,

a multiplexer receiving said count of said counter and said coefficient stored in said register as selectable inputs and said signal ZFselect as a selector input, and

a FIFO responsive to said signals ZFselect and CC and said value selected by said multiplexer, for storing each DC coefficient and each non-zero AC coefficient outputted from said register when said signal ZFselect causes said multiplexer to select said coefficient stored in said register and for storing said count of said counter for each run of zero AC coefficients when said signal ZFselect causes said multiplexer to select said count of said counter and said signal CC causes said counter to clear.

5,627,918

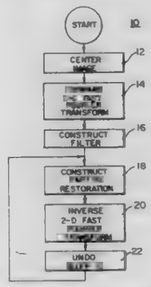
PROCEDURE FOR DIGITAL IMAGE RESTORATION

Alfred S. Carasso, North Potomac, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 991,105, Dec. 16, 1992, Pat. No. 5,414,782. This application Nov. 12, 1993, Ser. No. 151,616

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—254 **7 Claims**



1. An image restoration method including image sensor wherein image degradation creates a degraded image g(x,y) of the form Pf=g, wherein p is an integral operator applied upon an ideal image f(x,y), w(x,y,0)=P[0]f represents the ideal image at time t=0 prior to the operation of p upon f, and w(x,y,1)=Pf=g(x,y) represents the degraded image at time t=1, the restoration method comprising the steps of:

(a) providing an image system described by said operator p;

(b) transmitting said ideal image f(x,y) through an image blurring and degrading transmission medium of said imaging system to provide said degraded image g(x,y);

(c) receiving said degraded image g(x,y) from said transmission medium by said image sensor;

(d) digitizing said received degraded image by said digitizer for comparison with said ideal image f(x,y);

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(e) requiring the magnitude of the difference between the ideal image f and a blurred version of f to be less than a preassigned tolerance value by performing the following steps:

(f) constraining said magnitude of said difference by minimizing $|f-P^sf|$ wherein P^sf represents the image at time t=s and s is a substantially small value;

(g) imposing the constraint $|f-P^tf| \leqq K\epsilon$, where K is a constant and ϵ is representative of at least one image restoration parameter;

(h) imposing the constraint $|Pf-g| \leqq \epsilon$, wherein ϵ is representative of at least one image restoration parameter;

(i) imposing the constraint $|f| \leqq M$, wherein $M>>\epsilon$;

(j) determining a restored image f(x,y) which minimizes the quantity

$$\{|Pf-g|^2+|(\epsilon/M)f|^2+|(1/K)(f-P^2f)|^2\}$$

in accordance with said selected image;

(k) adjusting said image in accordance with steps (f)–(j) to provide a plurality of adjusted images; and

(l) selecting an adjusted image of said plurality of adjusted images.

5,627,919

IMAGE FORMING METHOD AND APPARATUS

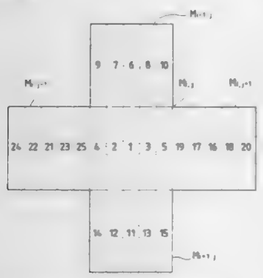
Kazuhisa Kemmochi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 41,259, Apr. 1, 1993, abandoned. This application Feb. 24, 1995, Ser. No. 394,199

Claims priority, application Japan, Apr. 3, 1992, 4-082190

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—254 **18 Claims**



1. An image forming apparatus comprising:

input means for inputting image data;

converting means for converting the input image data into dot information in a unit of a block consisting of plural pixels respectively in a main-scan direction and a sub-scan direction; and

image forming means for forming an image on the basis of the dot information from said converting means,

wherein said converting means converts the input image data of one pixel into multi-level dot information,

as a level of the input image data increases, said converting means grows a dot, within one pixel, from a pixel center alternatively in the main-scan direction and an inverse main-scan direction, and

after growth of the dot within one pixel is completed, said converting means grows the dot information of the pixel in the sub-scan direction prior to an adjacent pixel in the main-scan direction.

5,627,920

OPTICAL-OPTICAL MODULATORS

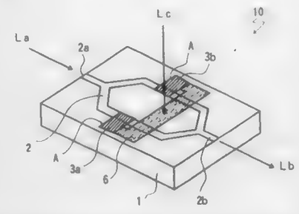
Naohiko Kato, Nisshin; Tadashi Ichikawa, Nagoya; Hiroshi Ito, Kasugai; Tomoyoshi Motohiro, Seto, and Tatsumi Hioki, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed May 22, 1995, Ser. No. 446,308

Claims priority, application Japan, May 23, 1994, 6-133688

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—2 **6 Claims**



1. An optical-optical modulation device comprising:

a substrate;

a waveguide formed on said substrate for guiding a carrier light;

a modulation part having electro-optic effects for modulating said carrier light, being a part of said waveguide;

a pair of electrodes disposed in said modulation part for applying electric field to said modulation part; and

a photoelectric conversion film formed on said substrate for receiving a control light, converting said control light into an electro-control signal, and applying said electro-control signal to said pair of electrodes, said photoelectric conversion film being made of a mixed substance of a semiconductor material with anomalous photovoltaic effects and a conductive material.

5,627,921

OPTICAL FIBER FOR SENSORS INCLUDING HOLES IN CLADDING

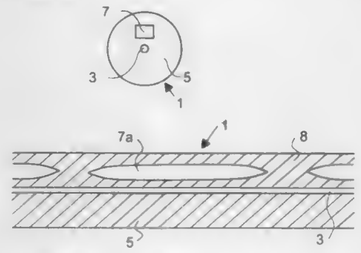
Anne I. B. Lidgard, Stockholm; Leif G. Stensland, and K. A. Mikael Åberg, both of Jäfälla, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 14, 1994, Ser. No. 323,039

Claims priority, application Sweden, Oct. 14, 1993, 9303391

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—12 **21 Claims**



1. An optical fiber, in particular for use as a sensor, comprising

a cylindrical core which extends in the longitudinal direction of the fiber and is located centrally in the fiber,

a cladding which surrounds the core, is connected to the core and has a substantially cylindrical exterior surface, and

a hole located completely in the cladding and extending in the longitudinal direction of the fiber,

and a substance which changes its volume for variations of physical parameters characteristic of a region where the fiber is intended to be used,

the longitudinal hole being completely or partly filled with the substance.

5,627,922

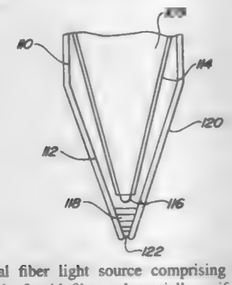
MICRO OPTICAL FIBER LIGHT SOURCE AND SENSOR AND METHOD OF FABRICATION THEREOF

Raoul Kopelman, Ann Arbor, Mich.; Weihong Tan, Ames, Iowa, and Zhong-You Shi, Ann Arbor, Mich., assignors to Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 941,879, Sep. 4, 1992, Pat. No. 5,361,314. This application Mar. 2, 1995, Ser. No. 397,331

Int. Cl.[6] G02B *6/00;21/00;* **G01J** *1/04*

U.S. Cl. 385—12 **23 Claims**



1. An optical fiber light source comprising an optical fiber having one end of said fiber substantially uniformly tapered to define a tapered portion of said optical fiber, said tapered portion having an end face to further define an optical fiber tip, said tapered portion also having sides coated with an opaque material to prevent the escape of light from said tapered portion, and an optically active material photo-chemically attached to said optical fiber tip where said optically active material is responsive to excitation by light wherein the optically active material includes a first dye material photopolymerized onto said fiber optic tip and a second optically active dye material photopolymerized onto said first optically active dye material.

5,627,923

THREE-DIMENSIONAL OPTO-ELECTRIC INTEGRATED CIRCUIT USING OPTICAL WIRING

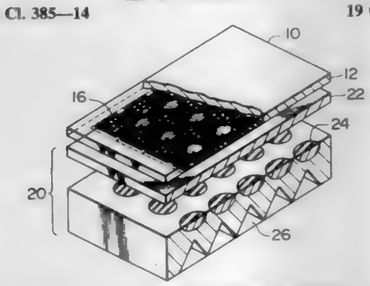
Sunao Kakizaki, Dublin, Ireland, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 307,239

Claims priority, application Japan, Sep. 16, 1993, 5-229869

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **19 Claims**



1. A three-dimensional opto-electric integrated circuit comprising:

an active element substrate having a two-dimensional plane on which a plurality of active elements is disposed;

a passive element formed separately from the two-dimensional plane, said passive element including a plurality of lenses disposed in correspondence to the plurality of active elements and reflective return means for performing an optical path separating operation and an optical turning-back reflective operation to allow rays of light from said active elements to sequentially pass through the lenses and to propagate through said active elements, whereby the propagation of rays of light through a free space is used to optically interconnect said active elements one to the other.

5,627,924

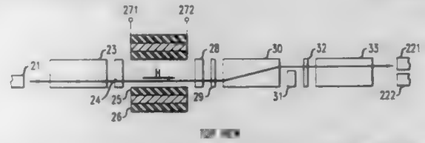
ARTICLE COMPRISING A NON-MECHANICAL OPTICAL FIBER SWITCH

Sungho Jin, Millington, N.J.; James J. Royer, Hanover Township, Northampton County, Pa., and Thomas H. Tiefel, North Plainfield, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 18, 1996, Ser. No. 588,478

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—16 **12 Claims**



1. An article comprising a non-mechanical optical fiber switch for radiation-transmissively connecting a switch port of a first type with one of two switch ports of a second type, said switch ports of the second type being spaced from each other and are facing the switch port of the first type, the optical fiber switch further comprising radiation path-affecting means disposed between said switch ports of the first and second types, the radiation path-affecting means being effective for switchably directing radiation between the switch port of the first type and one or the other of the switch porks of the second type, and comprising a magneto-optic element and a magnet effective for applying a magnetic field to the magneto-optic element;

CHARACTERIZED IN THAT

a) the magnet is a tubular magnet having an axial bore, the magnet disposed such that the radiation paths between said switch port of the first type and said switch ports of the second type pass through the axial bore;

b) the magneto-optic element is disposed outside of the bore of the magnet; and

c) the magnet comprises magnetically anisotropic material having, at 20° C., a coercivity H_c in the range 100–300 Oe and a remanent induction B_r of at least 10 kG.

5,627,925

NON-BLOCKING OPTICAL CROSS-CONNECT STRUCTURE FOR TELECOMMUNICATIONS NETWORK

Rodney C. Alferness, and Adel A. M. Saleh, both of Holmdel, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 7, 1995, Ser. No. 418,335

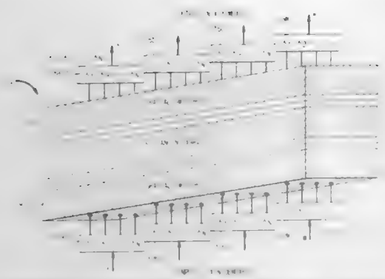
Int. Cl.[6] G02B *6/28*

U.S. Cl. 385—17 **13 Claims**

1. A nonblocking cross-connect structure for establishing connections between M source optical waveguides and M destination optical waveguides, comprising:

wavelength division demultiplexing means for receiving multiple wavelength, information carrying optical signals from each of said source waveguides and for separating said received optical signals into N wavelengths so that said wavelengths are organized according to a corresponding waveguide of origin, each individual wavelength from each source waveguide being capable of carrying information destined for a specific destination waveguide;

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nonblocking optical means for rearranging said wavelengths so as to group together wavelengths having a common destination waveguide, said nonblocking optical means including

first spatial switching means having a plurality of inputs for receiving said separated wavelengths from said wavelength division demultiplexing means and a plurality of outputs, said first spatial switching means being operable to supply any of said separated wavelengths to any of said outputs,

order preserving, wavelength converting means for receiving each separated wavelength from the outputs of said first spatial switching means and for converting any said received wavelength carrying information destined for a specific destination waveguide to a wavelength currently available on said specific destination waveguide, and

second spatial switching means for receiving each converted wavelength from said wavelength converting means and for grouping said converted wavelengths according to destination waveguide; and

wavelength division multiplexing means for multiplexing together wavelengths having the same destination waveguide.

5,627,926

PRISM PLATE FOR EFFICIENTLY EMITTING LIGHT FLUX WITHIN A PREDETERMINED RANGE, AND LIQUID CRYSTAL INDICATOR AND INDICATOR ILLUMINATION METHOD USING THE SAME

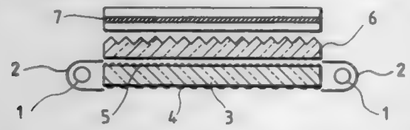
Shigeru Nakamura, Tachikawa; Akira Arimoto, Kodaira; Kenkichi Suzuki, and Katsuhiko Shibata, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 117,789, Sep. 8, 1993, Pat. No. 5,467,417. This application Sep. 25, 1995, Ser. No. 533,547

Claims priority, application Japan, Sep. 16, 1992, 4-246178

Int. Cl.[6] G02B *6/34;* **F21V** *9/04*

U.S. Cl. 385—36 **11 Claims**



1. A prism plate constituting a medium with prism-like protuberance structure formed at a side thereof, wherein

an angle 2θ formed by the prism-like protuberance structure is defined by the formula,

$$2\theta > 2\times(\pi/2+2\times\arcsin(1/n))$$

where n is the refractive index of the prism plate medium.

5,627,927

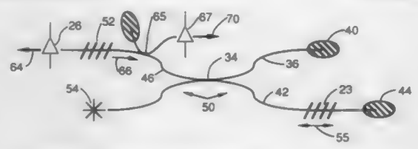
FIBER WITH MULTIPLE OVERLAPPING GRATINGS

Eric Udd, Troutdale, Oreg., assignor to McDonnell Douglas Aerospace West, Huntington Beach, Calif.

Division of Ser. No. 56,444, May 3, 1993, Pat. No. 5,397,891, which is a continuation-in-part of Ser. No. 963,687, Oct. 20, 1992, Pat. No. 5,380,995. This application Jan. 10, 1995, Ser. No. 370,948

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **14 Claims**



1. An optical fiber grating including:

an optical fiber having:

a longitudinal axis;

a first internal grating pattern comprised of:

areas having different indices of refraction whose instantaneous positions relative to each other determine a first relatively narrow band width of frequencies reflected thereby; and

a second internal grating pattern comprised of:

areas having different indices of refraction whose instantaneous positions relative to each other determine a second relatively narrow band width of frequencies reflected thereby, said first and second internal grating patterns having portions that overlap.

5,627,928

OPTICAL BRANCHING DEVICE

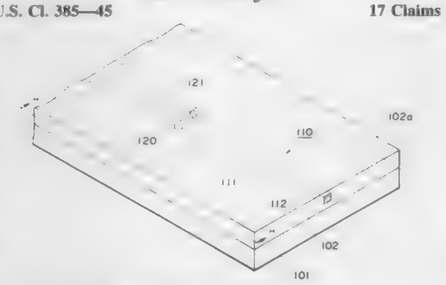
Yuji Matsuura; Eisuke Sasaoka, and Hiroo Kanamori, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 1, 1994, Ser. No. 333,308

Claims priority, application Japan, Nov. 1, 1993, 5-273288; Nov. 16, 1993, 5-286831

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—45 **17 Claims**



1. An optical branching device comprising:

(a) a substrate;

(b) a cladding member disposed on said substrate;

(c) a first core member having an optical axis and an edge face embedded in said cladding member, said edge face being simultaneously perpendicular to the optical axis and an interface between said substrate and said cladding member; and

(d) second and third core members embedded in said cladding member, said second and third core members being separated from one another by a minimum distance, and each of said second and third core members being arranged apart from said edge face via a portion of said cladding member, each of said second and third core members having a face which is in contact with said portion of said cladding member, each face having a width, wherein said edge face is wider than the total of said minimum distance and the sum of the widths of said faces of said second and third core members.

5,627,929

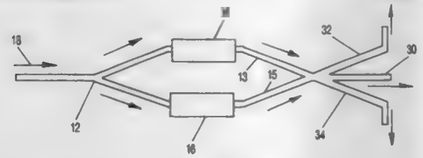
INTEGRATED OPTICAL XY COUPLER

G. Allen Vawter, and G. Ronald Hadley, both of Albuquerque, N.M., assignors to Sandia Corporation, Albuquerque, N.M.

Filed May 4, 1995, Ser. No. 435,023

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—45 **9 Claims**



1. An integrated optical coupler comprising:

two input waveguide arms that converge at the center of a central crossing section;

a central output waveguide arm emanating from the central crossing section;

two flanking waveguide output arms divergingly emanating from the central crossing section on either side of the central output waveguide arm;

and means to supply the input arms of the coupler with coherent phase-modulated light.

5,627,930

ARRAYED OPTICAL FIBER COUPLER AND METHOD OF MANUFACTURING THE SAME

Yoichi Ishiguro; Shigeru Semura; Yuji Kobayashi; Toshiyuki Wakinosono; Tomoyuki Hattori; Hiroshi Suganuma; Eisuke Sasaoka, and Hiroaki Takimoto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

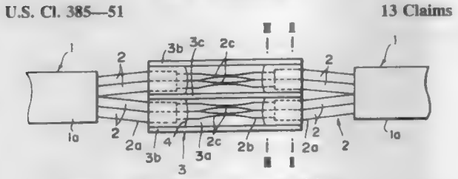
PCT No. PCT/JP94/00638, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO94/24591, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 18, 1994, Ser. No. 360,708

Claims priority, application Japan, Apr. 19, 1993, 5-091094

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—51 **13 Claims**



1. An arrayed optical fiber coupler comprising:

two arrayed optical fiber ribbons that have been connected by melting, bonding, and elongating glass portions of each arrayed optical fiber ribbon, each arrayed optical fiber ribbon including:

a plurality of optical fibers being arranged in parallel to each other, each optical fiber including one of the glass portions and a corresponding protection coating layer, and

a resin coating layer that coats each of the plurality of optical fibers; and

a reinforcement structure including a first reinforcement member to which both a portion of the glass portions and the corresponding protection coating layers are affixed by an first adhesive layer, wherein the resin coating layer and the first reinforcement member are not fixed to each other.

5,627,931

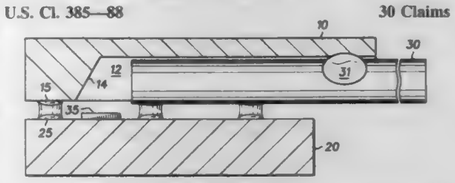
OPTOELECTRONIC TRANSDUCER

Donald E. Ackley, Lambertville, N.J., and John W. Stafford, Phoenix, Ariz., assignors to Motorola, Schaumburg, Ill.

Filed May 28, 1996, Ser. No. 654,488

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—88 **30 Claims**



1. An optoelectronic transducer comprising:

a fiber carrier having a major side with a groove formed in the major side for receiving an optical fiber therein;

an optical fiber fixedly mounted in the groove;

a reflecting surface formed in the major side of the fiber carrier and positioned adjacent one end of the groove so as to direct light in-to/out-of the optical fiber fixedly mounted in the groove;

mounting pads positioned on the major side of the fiber carrier;

a photonic device carrier having a major side;

a photonic device fixedly mounted on the major side of the photonic device carrier, the photonic device having a light outlet/inlet;

mounting pads positioned on the major side of the photonic device carrier so as to mate with the mounting pads positioned on the major side of the fiber carrier; and

the mounting pads of the fiber carrier being affixed to the mounting pads of the photonic device carrier so that the outlet/inlet of the photonic device is substantially optically aligned with the reflecting surface and light traveling in-to/out-of the optical fiber is directed onto the light outlet/inlet of the photonic device.

5,627,932

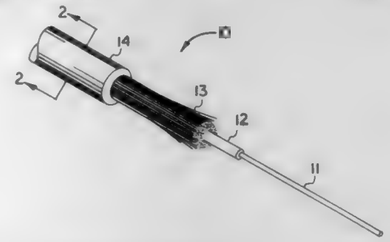
REDUCED DIAMETER INDOOR FIBER OPTIC CABLE

David H. Kiel, Conover, and Keith D. Church, Winston-Salem, both of N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Aug. 23, 1995, Ser. No. 518,211

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—102 **20 Claims**



1. An optical fiber cable, comprising:

a single optical waveguide fiber having an outer coating, said outer coating having a diameter of about 500 μm;

a layer of loose tensile fibers surrounding the optical waveguide fiber outer coating; and,

a tubular jacket of plastic material having an outer diameter D_2 surrounding the layer of loose tensile fibers, D_2 not exceeding about 1500 μm, said cable containing no gel-like compounds.

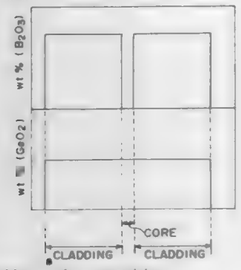
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5,627,933

OPTICAL WAVEGUIDE AND PROCESS FOR PRODUCING IT

Masumi Ito; Maki Inai; Akira Inoue, and Masakazu Shigehara, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 16, 1995, Ser. No. 389,828
Claims priority, application Japan, Feb. 17, 1994, 6-020487
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—123 9 Claims



1. A waveguide member comprising:

a core having an optical waveguide region with a predetermined refractive index and doped with a predetermined concentration of germanium oxide; and

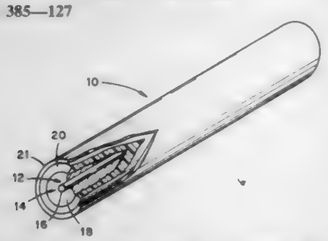
a cladding having a lower refractive index than said core, the cladding being a region covering said core in a close fit and doped with a predetermined concentration of germanium dioxide, wherein said cladding is doped with an index reducer together with germanium dioxide.

5,627,934

CONCENTRIC CORE OPTICAL FIBER WITH MULTIPLE-MODE SIGNAL TRANSMISSION

Jeffrey D. Muhs, Lenoir City, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Aug. 3, 1994, Ser. No. 285,246
Int. Cl.[6] G02B 6/22
U.S. Cl. 385—127 3 Claims



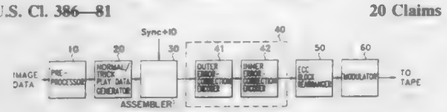
1. An optical fiber sensor system for providing simultaneous signals indicative of any change in different conditions occurring in a single body and comprising a concentric core optical fiber assembly with a first sensor means and a second sensor means supported by said body and with said second sensor mean being less sensitive to the changes in the different conditions than said first sensor means, said optical fiber sensor system consisting of first and second concentrically disposed optical fiber means, a single light source means coupled to a common end of said first and said second optical fiber means for simultaneously transmitting a first light signal at a selected frequency through the first optical fiber means and a second light signal at said selected frequency through the second optical fiber means, first detector means coupled to a region of said first optical fiber means spaced from said common end for detecting and measuring any changes in the frequency of the first light signal from said selected frequency transmitted therethrough independent of any light signal being transmitted through the second optical fiber means, and second detector means coupled to a region of said second optical fiber means spaced from said common end for detecting and measuring any changes in the frequency of the second light signal from said frequency transmitted therethrough independent of any light signal being transmitted through the first optical fiber means, said first optical fiber means having an elongated region thereof defining the first sensor means and consisting essentially of a first core with a first index of refraction and a first cladding concentrically disposed about the first core and having a second index of refraction that is lower than the index of refraction of the first core for the transmission of said first light signal at said selected frequency through the first sensor means with any change in the frequency of the first light signal to a frequency different from said selected frequency for reception by said first detector means being in response to a change in a first condition in the body supporting the first and second sensor means with the extent of the change in the frequency from said selected frequency providing a measurement indicative of the extent of the change in the first condition in said body, and said second optical fiber means consisting essentially of a second core defined by said first cladding and a second cladding concentrically disposed about said first cladding and having a third index of refraction lower than the index of refraction of the first cladding, said second optical fiber means having an elongated region substantially co-linear with the elongated region of the first optical fiber means and define, rig the second sensor means for the transmission of said second light signal at said selected frequency through the second sensor means with any change in said selected frequency of the second light signal to a frequency different from said selected frequency for reception by said second detector means being in response to a change in a second condition in said body with the extent of the change in the frequency from said selected frequency providing a measurement indicative of the extent of the change in the second condition in said body.

5,627,935

ERROR-CORRECTION-CODE CODING & DECODING PROCEDURES FOR THE RECORDING & REPRODUCTION OF DIGITAL VIDEO DATA

Tae-eung Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 10, 1995, Ser. No. 401,498
Int. Cl.[6] H04N 05/76;5/78
U.S. Cl. 386—81 20 Claims



1. A method of generating digital video data that is generated responsive to an ATV signal, said ATV signal including independently decodable frame data supplied in predetermined intervals and dependently decodable frame data supplied at times between said predetermined intervals, said method comprising the steps of:

using said independently decodable frame data supplied in predetermined intervals and said dependently decodable frame data supplied at times between said predetermined intervals as normal-play data;

extracting trick-play data from said independently decodable frame data supplied in predetermined intervals;

outer error-correction encoding said normal-play data, exclusive of said trickplay data, to generate outer error-correction encoded normal-play data;

assembling a data structure with rows of said extracted trick-play data and with rows of said outer error-correction encoded normal-play data; and

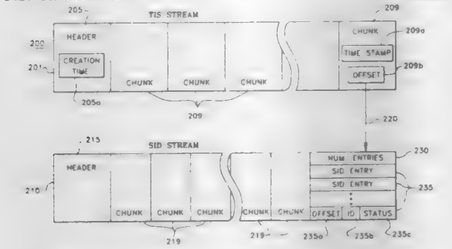
inner error-correction encoding the rows of said data structure to generate a respective inner code for each row.

5,627,936

APPARATUS AND METHOD FOR TEMPORAL INDEXING OF MULTIPLE AUDIO, VIDEO AND DATA STREAMS

Rama R. Prasad, and Ram V. Chary, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1995, Ser. No. 576,179
Int. Cl.[6] H04N 5/91:5/76:7/00
U.S. Cl. 386—96 30 Claims



1. A method for temporal indexing of at least two audio, video, and data (AVD) streams, each AVD stream comprising a plurality of AVD stream chunks, the method comprising the steps of:

(a) storing a stream information data stream (SIDS) having a plurality of SIDS chunks, each SIDS chunk corresponding to a corresponding AVD stream chunk for each of the at least two AVD streams; and

(b) storing a temporal index stream (TIS) having a plurality of TIS chunks, each TIS chunk corresponding to a corresponding SIDS chunk; wherein:

each TIS chunk comprises a time stamp for indicating the current time and an offset for locating the corresponding SIDS chunk; and

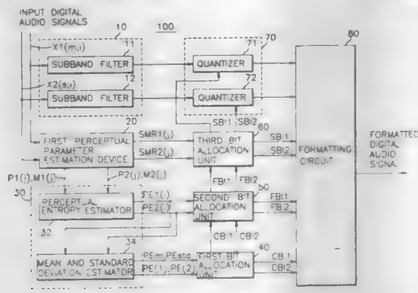
each SIDS chunk comprises an SIDS chunk entry for each of the at least two AVD streams that is currently active, each SIDS chunk entry comprising an offset for locating the corresponding AVD stream chunk of each active AVD stream of the at least two AVD streams.

5,627,937

APPARATUS FOR ADAPTIVELY ENCODING INPUT DIGITAL AUDIO SIGNALS FROM A PLURALITY OF CHANNELS

Jong-Il Kim, Incheon, Rep. of Koren, assignor to Daewoo Electronics Co. Ltd., Incheon, Rep. of Korea

Filed Feb. 23, 1995, Ser. No. 393,294
Int. Cl.[6] G10L 9/00
U.S. Cl. 395—2.38 4 Claims



1. An apparatus for adaptively encoding input digital audio signals from N number of channels wherein each of the input digital audio signals includes a plurality of frames and each frame includes a plurality of subbands wherein N is a positive integer, which comprises:

N number of subband filtering means arranged in parallel for receiving and filtering the input digital audio signals, respectively, on a subband-by-subband basis;

first estimation means for estimating signal-to-mask ratio data, sound pressure levels and masking thresholds for the respective subbands included in each of the input digital audio signals;

second estimation means for estimating perceptual entropies of the respective frames included in each of the input digital audio signals based on the estimated signal-to-mask ratio data, sound pressure levels and masking thresholds, to thereby derive a mean and a standard deviation parameters for an inter-channel frame group including N×F number of current and previous frames for the total N number of channels, said inter-channel frame group corresponding to the estimated perceptual entropies, and for generating an intra-channel frame group including F number of current and previous frames for each of the N number of channels wherein F is a positive integer;

first bit allocation means for adaptively determining bits for each of the intra-channel frame groups based on the estimated perceptual entropy for each of the intra-channel frame groups and the mean and standard deviation parameters and for generating bit allocation information corresponding to the determined bits for each of the intra-channel frame groups;

second bit allocation means for determining bits for the respective subbands included in each of the intra-channel frame groups based on the estimated signal-to-mask ratio data and the generated bit allocation information, and for generating bit allocation information corresponding to the determined bits for each of the subbands;

N number of quantizing means arranged in parallel for quantizing the filtered subband audio signals for the N number of channels in response to the corresponding bit allocation information generated for the respective subbands in each of the intra-channel frame groups; and

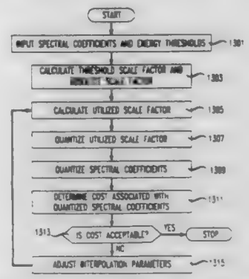
means for formatting the quantized audio signals together with the generated bit allocation information.

5,627,938

RATE LOOP PROCESSOR FOR PERCEPTUAL ENCODER/DECODER

James D. Johnston, Warren, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 844,811, Mar. 2, 1992, abandoned.
This application Sep. 22, 1994, Ser. No. 310,898
Int. Cl.[6] G10L 3/02;9/00
U.S. Cl. 395—2.39 4 Claims



1. A method of coding an audio signal comprising:

(a) converting a time domain representation of the audio signal into a frequency domain representation of the audio signal, the frequency domain representation comprising a set of frequency coefficients;

(b) calculating a masking threshold based upon the set of frequency coefficients;

(c) using a rate loop processor in an iterative fashion to determine a set of quantization step size coefficients for use in encoding the set of frequency coefficients, said set of quantization step size coefficients determined by using the masking threshold and an absolute hearing threshold; and

VOL 1198 ISS 1 MAY 6 1997 UMI

(d) coding the set of frequency coefficients based upon the set of quantization step size coefficients.

5,627,939

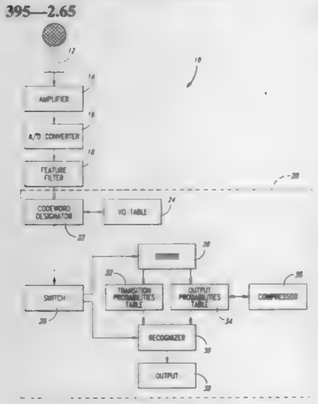
SPEECH RECOGNITION SYSTEM AND METHOD EMPLOYING DATA COMPRESSION

Xuedong Huang, Redmond, and Shenzhi Zhang, Issaquah, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Sep. 3, 1993, Ser. No. 116,900

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.65 **26 Claims**



1. A data compression method for a computerized speech recognizer having a plurality of hidden Markov models representing acoustic utterances, comprising:

receiving a plurality of spoken training utterances; and

convening the spoken training utterances into a stored output probability table, the convening step including:

creating a predetermined number of codewords based on the spoken training utterances, each codeword representing an acoustic feature of the spoken training utterances;

creating the hidden Markov models based on the spoken training utterances, each hidden Markov model being created by steps that include associating a probability value with each codeword, each probability value reflecting a probability that the acoustic utterance represented by the hidden Markov model will be spoken using the acoustic feature represented by the associated codeword; and

compressing at least some of the probability values associated with a selected one of the codewords based on others of the probability values associated with the selected codeword, thereby compressing the stored output probability table.

5,627,940

METHOD AND APPARATUS FOR INTERACTIVE DOCUMENT PREPARATION USING A NATURAL LANGUAGE

Aruna Rohra, Yokohama, and Hiroshi Matsuoka, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

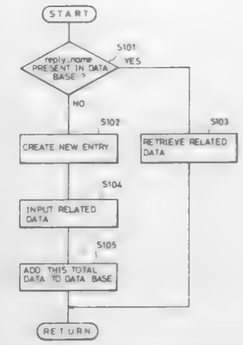
Continuation of Ser. No. 689,510, Apr. 23, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 373,538

Claims priority, application Japan, Apr. 26, 1990, 2-114593

Int. Cl.[6] G06F *17/20;17/28*

U.S. Cl. 395—12 **10 Claims**

1. A method for preparing a document in a text preparation apparatus comprising the steps of:



storing information relating to words to be received from a user in a database, the information relating to the word including attribution thereof and being stored prior to receiving the word from the user;

storing questions to be provided to the user in order to obtain words as answers from the user in a question memory, wherein each of the questions corresponds to respective attributions of the words needed to be input as the answer and requests a brief answer in the form of a word or a phrase, the questions being stored prior to receiving the word from the user;

providing the user with a question stored in the question memory, the question corresponding to an attribution of the word needed to be input as an answer;

receiving an answer from the user in response to the provided question;

determining whether or not the word received from the user as the answer is stored in the database;

retrieving the information stored in the database relating to the word received from the user when the word is determined to be stored in the database;

providing the user with another question to obtain information relating to the word and storing the word with information to be obtained in response to the other question in the database when the word is determined to be stored in the database; and

preparing a document and incorporating the word received from the user as the answer and the information retrieved from the database relating to the received word into the document.

5,627,941

METHOD OF CONFIGURING A NEURAL NETWORK AND A DIAGNOSIS/CONTROL SYSTEM USING THE NEURAL NETWORK

Isao Takahashi; Fumihiro Endo, and Tokio Yamagiwa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,472

Claims priority, application Japan, Aug. 28, 1992, 4-230208; Aug. 31, 1992, 4-230859

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **23 Claims**

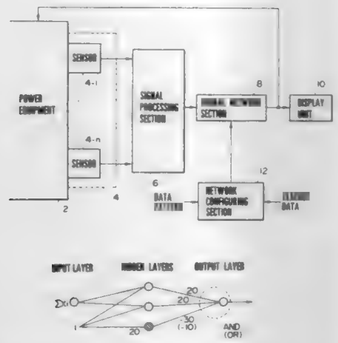
1. A neural network system, comprising:

sensor means including a plurality of sensors for sensing a plurality of states of an object;

network means including a neural network for outputting data for the object based on the sensed states of the object;

means for determining a sum of a plurality of input data constituting a data pattern set which includes teaching data, said means for determining a sum of a plurality of input data determines a plurality of sums of said input data respectively for a plurality of data pattern sets;

means for arranging the plurality of sums of said input data in descending order to obtain an arrangement of respective teaching data;



configuring means for configuring a combination of neurons constituting said neural network by forming a logical operation circuit for outputs of neurons in accordance with the plurality of arranged teaching data.

5,627,942

TRAINABLE NEURAL NETWORK HAVING SHORT-TERM MEMORY FOR ALTERING INPUT LAYER TOPOLOGY DURING TRAINING

Charles Nightingale, Felixstowe, and Peter J. Wyard, Woodbridge, both of England, assignors to British Telecommunications public limited company, London, England

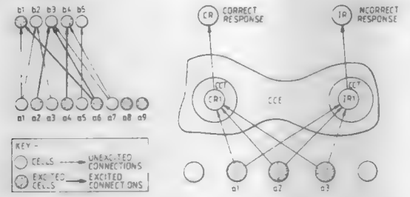
PCT No. PCT/GB90/02006, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO91/10196, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 21, 1990, Ser. No. 867,698

Claims priority, application United Kingdom, Dec. 22, 1989, 8929146

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—23 **17 Claims**



1. A trainable artificial neural network comprising:

input layer means for inputting sets of data items and generating node outputs, each node output corresponding to an occurrence anywhere in a set of a respective predetermined data item;

output layer means for responding to the generation of said node outputs by producing at least one net output, each net output depending upon a plurality of such node outputs weighted by corresponding weight values;

means for storing given data items in said set, each given data item stored not corresponding to any said respective predetermined data item; and

means for causing said input layer means to thereafter generate node outputs corresponding to occurences in a said set of respective said given data items.

5,627,943

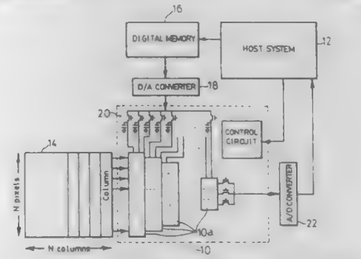
NEURAL NETWORK PROCESSOR INCLUDING SYSTOLIC ARRAY OF TWO-DIMENSIONAL LAYERS

Hideki Yoneda, Tokyo, Japan, and Edgar Sanchez-Sinencio, College Station, Tex., assignors to Kawasaki Steel Corporation, Kobe, Japan, and The Texas A&M University System, College Station, Tex.

Division of Ser. No. 971,823, Feb. 17, 1993, Pat. No. 5,519,811. This application Oct. 13, 1995, Ser. No. 542,832

Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18;* **G06G** *7/00*

U.S. Cl. 395—24 **8 Claims**



1. A pattern recognition processing apparatus, comprising:

a neural network connected to form a feed-forward systolic array, said feed-forward systolic array comprising two dimensional layers of neural processing elements, each two-dimensional layer comprising:

a feature extraction layer, and

a positional error absorbing layer connected to said feature extraction layer with said extraction and absorbing layers performing identical computational operations; and

a host system providing inputs to said network.

5,627,944

PARALLEL DATA PROCESSING SYSTEM

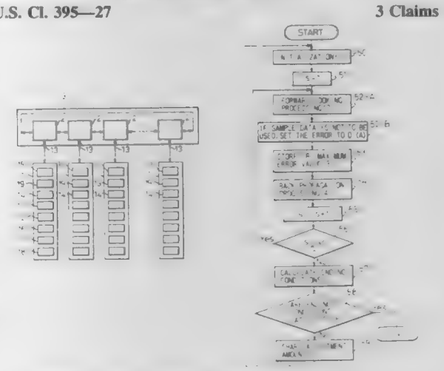
Katsuhito Fujimoto; Hideki Yoshizawa, and Tatsushi Otsuka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 25, 1994, Ser. No. 248,642

Claims priority, application Japan, Jun. 18, 1993, 5-148017

Int. Cl.[6] G06F *15/80;15/18*

U.S. Cl. 395—27 **3 Claims**



1. A parallel data processing system comprising:

plural means for data processing; and

means for data transfer, each of the plural means for data processing being connected to said means for data transfer, and further comprising:

means for holding execution parameters that are required for data processing.

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means for holding partial sample data which comprises at least part of full sample data necessary for required data processing,

adjustment value calculation means for calculating, from said partial sample data stored in said means for holding partial sample data and from said execution parameters held in said means for holding execution parameters, adjustment amounts related to said execution parameters with regard to said partial sample data, and

accumulation means for calculating an overall total of said execution parameter adjustment amounts with regard to the full sample data, and for accumulating the adjustment amounts related to said execution parameters with regard to said partial sample data at said means for data processing and the adjustment amounts related to said execution parameters with regard to partial sample data at other said means for data processing via said means for data transfer.

5,627,945

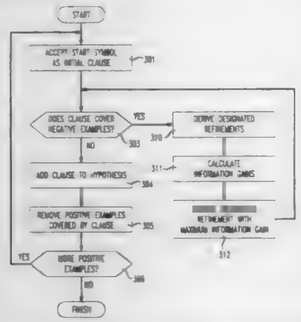
BIASED LEARNING SYSTEM

William W. Cohen, North Plainfield, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 320,102, Oct. 7, 1994, Pat. No. 5,481,650. This application Dec. 1, 1995, Ser. No. 566,198

Int. Cl.° G06F *3/00*

U.S. Cl. 395—77 **3 Claims**



1. In a computer system, an improved apparatus for inducing a hypothesis which is employed to automatically classify items of data from a set of the data items in which each item has been labelled with the item's classification, the apparatus being of the type comprising:

means for learning the hypothesis from the set of the data items,

means for biasing the means for learning to narrow a hypothesis space within which the means for learning operates, and

the improvement comprising in the means for biasing:

a) entities which are mappable to hypotheses to determine whether a given hypothesis is consistent with a given entity and thereby narrow the hypothesis space;

b) means for generating the entities, with,

i) each entity being generated by a sequence of transformations which follow rules of grammar, beginning from an initial entity and

ii) each transformation being such that a later entity produced by a transformation from an earlier entity restricts the hypothesis space to a greater degree than the earlier entity does; and

c) input means for receiving an antecedent description grammar, designed by a user, which defines the rules of grammar which must be followed in transforming the entities.

5,627,946

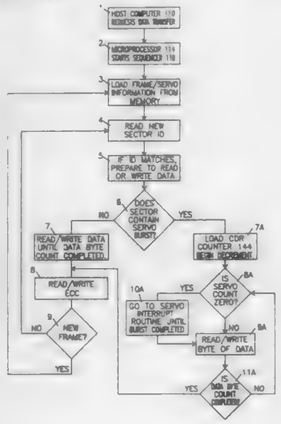
HARD DISK FORMAT USING FRAMES OF SECTORS TO OPTIMIZE LOCATION OF SERVO BURSTS

Clifford E. Strang, Jr., San Jose, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Division of Ser. No. 145,037, Oct. 28, 1993, which is a continuation of Ser. No. 704,568, May 17, 1991, abandoned. This application Apr. 23, 1996, Ser. No. 636,296

Int. Cl.° G11B *5/596*

U.S. Cl. 360—77.08 **10 Claims**



1. A method of recording data on a magnetic disk comprising the steps of:

grouping a number of sectors on a first track on a magnetic disk so as to form a first frame of sectors, wherein said first frame is repeated around said first track, one or more of said sectors within said first frame being interrupted by a servo burst;

grouping a number of sectors on a second track on said magnetic disk so as to form a second frame of sectors, said second frame being different from said first frame, wherein said second frame is repeated around said second track, one or more of said sectors within said second frame being interrupted by a servo burst; and

processing each sector within said first and second frames during reading from or writing to a sector according to whether or not a sector being read from or written to contains a servo burst.

5,627,947

VARIABLE-DURATION PRINTER CARRIAGE MOTOR ACCELERATION METHOD AND APPARATUS

James L. K. Chan, and Ah B. Tan, both of Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 145,281, Oct. 29, 1993. This application Apr. 8, 1996, Ser. No. 629,322

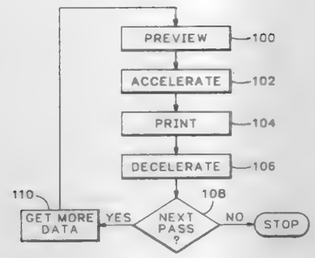
Int. Cl.° B41J *19/30*

U.S. Cl. 395—105 **11 Claims**

1. An improved method of controlling a printhead carriage motor in a printer having print data stored in its memory wherein the method includes the steps of accelerating the carriage motor for a period of time between a nominal stop location and a first printable image location for each of successive passes of a printhead carriage, the improvement comprising:

previewing printable image data for each successive pass of the printhead carriage to identify the first printable image location of such pass for use in determining a maximum acceleration period for each such pass, and

accelerating the carriage motor substantially throughout a corresponding determined maximum acceleration period determined independently for each successive pass of the printhead carriage, the carriage motor thus being accelerated for each successive pass throughout a corresponding determined maximum acceleration period which begins at the nominal stop location and ends upon the carriage reaching the first printable image location.



5,627,948

INFORMATION PROCESSING APPARATUS AND METHOD FOR DISPLAYING FORMAT INFORMATION FOR A LINE TO WHICH A CURSOR IS SHIFTED BY SCROLLING IN A FORMAT DISPLAY AREA

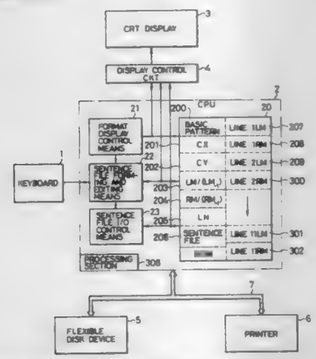
Koji Fukunaga, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 921,592, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 542,647, Jun. 25, 1990, abandoned, which is a continuation of Ser. No. 195,813, May 19, 1988, abandoned, which is a continuation of Ser. No. 707,863, Mar. 4, 1985, abandoned. This application Oct. 11, 1994, Ser. No. 320,554

Claims priority, application Japan, Mar. 9, 1984, 59-44106

Int. Cl.° G06F *3/153*

U.S. Cl. 395—111 **14 Claims**



1. An information processing apparatus comprising:

input means for inputting character information;

memory means for storing the character information input by said input means;

display means for displaying the character information stored in said memory means on a plurality of lines and tab format and a cursor;

format memory means for storing respective tab format information defined for each of the plurality of lines;

position designating means for designating, with the cursor, a display position, on said display means, in which the character information is displayed;

means for, when said position designating means moves the cursor from one of the plurality of lines to another, reading the tab format information for the another line, which tab format information is different from that defined for the one line, from said format memory means; and

means for controlling said display means to display respective tab format information for the line on which the cursor is positioned by said position designation means in response to the updated read tab format information read by said reading means and for controlling said display means to change the tab format information displayed by said display means based on the updated read tab format information read by said reading means when the cursor is moved to a different line by said position designation means.

5,627,949

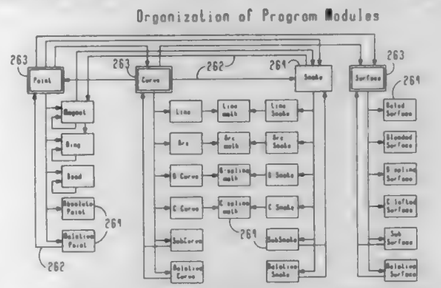
SYSTEM OF RELATIONAL ENTITIES FOR OBJECT-ORIENTED COMPUTER-AIDED GEOMETRIC DESIGN

John S. Letcher, Jr., P.O. Box 684, Southwest Harbor, Me. 04679

Continuation of Ser. No. 70,023, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 810,960, Dec. 19, 1991, abandoned. This application Mar. 17, 1995, Ser. No. 405,739

Int. Cl.° G06F *15/00; 19/00*

U.S. Cl. 395—120 **5 Claims**



1. A method of computer aided design of geometric models constructed from a multiplicity of geometric elements such as points, curves and surfaces in a design space of two or more dimensions, said method comprising:

defining and supporting by computer implemented steps set of geometric entities for use in constructing said geometric models, each of said geometric entities being an abstract geometric object type that is adapted to be actualized into one or more geometric objects, each of said geometric entities comprising data fields and requiring for its actualization into a corresponding geometric object filling specified data fields with data items of valid data types, wherein each corresponding geometric object is stored in a computer accessible memory as a corresponding data structure, each of said geometric entities representing a specific procedure for constructing one or more of said geometric objects from the values in said data fields;

said geometric entities including one or more point class entities, one or more curve class entities, and one or more surface class entities,

wherein each of said point class entities is adapted to be actualized into one or more point class objects, each of said point class objects designating a zero-dimensional point in said design space,

wherein each of said curve class entities is adapted to be actualized into one or more curve class objects, each of said curve class objects designating a one-dimensional continuous point set in said design space,

wherein each of said surface class entities is adapted to be actualized into one or more surface class objects, each of said surface class objects designating a two-dimensional continuous point set in said design space;

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identifying at least some of said geometric objects by corresponding unique object identifiers;

defining and supporting by computer implemented steps a plurality of relational entities among said set of geometric entities, each of said relational entities being adapted to be actualized into one or more corresponding relational objects, wherein each corresponding relational object is stored in said computer accessible memory as a corresponding data structure, wherein each of said relational entities and said corresponding relational objects has one or more object data fields, each of said object data fields being a data field whose valid data type is an object identifier of another geometric object, so as to enable logical specification of one or more relational objects having a dependency relationship upon one or more other geometric objects whose object identifiers are specified within the object data fields of said one or more relational objects;

wherein at least one of said relational entities is one of said curve class entities and has two or more data fields whose valid data type is an object identifier of a point class object;

wherein at least one of said relational entities is one of said surface class entities and has two or more data fields whose said valid data types include an object identifier of a point class object or a curve class object; and

defining and supporting by computer implemented steps a set of subroutines for evaluating the plurality of geometric objects, there being a corresponding subroutine for each of said abstract geometric object types, wherein those subroutines which evaluate relational objects are programmed to make calls to an appropriate one or more subroutines among the set of said subroutines to evaluate the geometric objects on which that relational object depends.

5,627,950

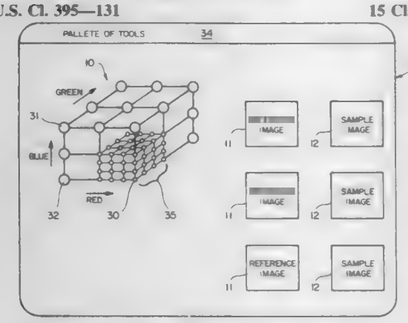
REAL-TIME THREE-DIMENSIONAL COLOR LOOK-UP TABLE INTERACTIVE EDITOR SYSTEM AND METHOD

Michael Stokes, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 16, 1994, Ser. No. 305,959

Int. Cl.° G06T *11/00*

U.S. Cl. 395—131 **15 Claims**



1. In a computer system having at least a first device and a second device for displaying color, said system employing a color look-up table (LUT) to translate color data corresponding to said first device into color data corresponding to said second device, a system for on-line editing of said color LUT comprising:

a means for displaying color images;

a means for causing said display means to display a set of different color reference images, each of said images representing an image type wherein the manner in which colors are visually perceived within each image is dependent on each image's type, said set of color reference images being displayed in a manner characterized by said first display device, said reference images having corresponding color data information;

means for generating an inverted color LUT corresponding to said color LUT;

a means for causing said display means to display a set of color sample images by processing said reference image's color data information through said color LUT and said inverted color LUT such that said set of color sample images are displayed in a manner characterized by said second display device;

means for causing said display means to display a graphic representation of said color LUT, which comprises elements respectively represent colors in said color LUT and which are connected together by axes that are respectively disposed in at least three dimensions;

means for performing input/output (I/O) interfacing with said display means, said (I/O) interface means changing said graphical representation of said LUT, wherein when said graphical representation of said LUT is changed, said color LUT is updated.

5,627,951

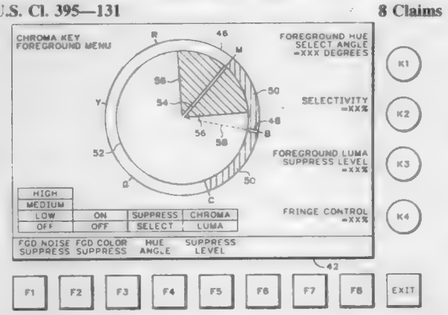
GRAPHICAL DISPLAY OF CHROMA KEYER CONTROLS

Daniel J. Chaplin; Paul M. Trethewey, both of Nevada City, and Paul S. Miller, Granite Bay, all of Calif., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Feb. 27, 1995, Ser. No. 395,233

Int. Cl.° G06T *11/00*

U.S. Cl. 395—131 **8 Claims**



1. A method of graphically displaying chroma keyer controls comprising the steps of:

drawing a first closed figure about a central point representing all values of hue for a background portion of a scene;

drawing a first spoke from the central point to the perimeter of the first closed figure at an angle representing a selected hue for the background portion according to a selected background hue input; and

filling in a first wedge about the first spoke representing a selectivity for the background portion according to a selected background selectivity input.

5,627,952

INFORMATION DISPLAYING SYSTEM WHICH DISPLAYS COMBINED VIDEO AND GRAPHICS IMAGES

Kia Silverbrook, Woollahra, Australia, assignor to Canon Kabushiki Kaisha, Japan, and Canon Information Systems Research Australia Pty Limited, Australia

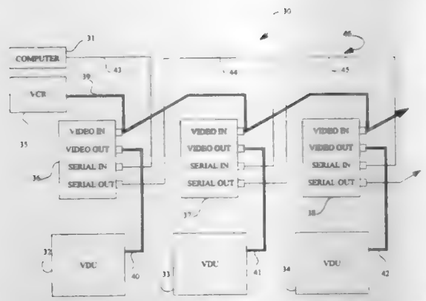
Filed Apr. 28, 1993, Ser. No. 53,218

Claims priority, application Australia, Apr. 29, 1992, PL2151

Int. Cl.° G06T *15/70*

U.S. Cl. 395—135 **16 Claims**

1. An information displaying apparatus for displaying combined source information with animated graphic objects, comprising:



communication means for receiving control signals for said information displaying apparatus from a controlling computer;

host processor means for interpreting the received control signals and for generating graphics commands according to the received controls signals,

real-time object graphics processor means, controlled by said host processor means, for receiving the generated graphics commands and for generating graphics object image data in real-time and in a rasterised display order without the use of an image frame storage according to the received graphics commands; and

video coder means, controlled by said host processor means, for receiving the generated graphics object image data and for outputting a video signal, at least a part of which comprises the received graphics object image data.

5,627,953

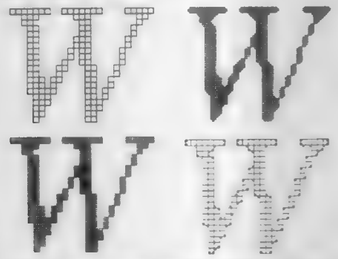
BINARY IMAGE SCALING BY PIECEWISE POLYNOMIAL INTERPOLATION

Jonathan Yen, 1431 Pine Grove Way, San Jose, Calif. 95129

Filed Aug. 5, 1994, Ser. No. 286,561

Int. Cl.° G06F *15/00*

U.S. Cl. 395—139 **20 Claims**



1. A computer-implemented method for binary image scaling by piecewise polynomial interpolation within the memory of a computer device, comprising the steps of:

modeling binary data representing an input pixel image as a three-dimensional data set comprising X, Y, Z, in which the X and Y coordinates are input pixel image dimensions, and the Z coordinate is the intensity of the original pixel image;

fitting said three-dimensional data set by a surface interpolant;

determining the type and the degree of the piecewise polynomial interpolant for surface fitting based on the image scaling factor;

resampling said binary data representing said input pixel image on said fitting surface to provide interpolative data;

correcting for any quantization error problems in said interpolative data, if necessary;

thresholding said interpolative data to produce binary data representing an output pixel image; and

producing said output pixel image, wherein said output pixel image is scaled from said input pixel image.

5,627,954

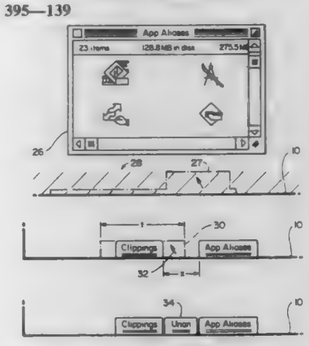
SYSTEMS AND METHODS FOR POSITIONING A DRAWER TITLE BAR ON A GRAPHICAL USER INTERFACE

Max McFarland, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 5, 1995, Ser. No. 435,376

Int. Cl.° G06T *3/00*

U.S. Cl. 395—139 **13 Claims**



1. A method for drawing an object between existing objects on an edge of a display comprising the steps of:

determining if a space exists on said edge in which said object can be drawn on said edge at full length;

if so, drawing said object in said space at said full length;

otherwise, identifying a largest space between said existing objects;

compressing said object to fit into said largest space; and

drawing said compressed object in said largest space.

5,627,955

METHOD AND APPARATUS FOR GENERATING A HARDWARE CONFIGURATION DISPLAY

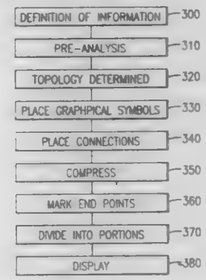
Manfred Gnirss, Boeblingen; Walter Schuppen, Sindenfingen, and Berthold Reddemann, Esslingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1995, Ser. No. 412,809

Claims priority, application European Pat. Off., Mar. 31, 1994, 94105160

Int. Cl.° G06F *15/00*

U.S. Cl. 395—141 **19 Claims**



13. A method for displaying the hardware configuration of a data processing system on an output device, said data processing system comprising a plurality of entities having a defined topology, said entities including a central processor having an associated memory, said method comprising the steps of:

defining displayable information;

creating a configuration display memory space in said memory of said central processor;

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reading configuration data relating to logical connections between said entities from a configuration table stored in said memory of said central processor, said configuration table containing configuration data describing a current hardware configuration of said central processor;

determining said topology of said entities;

placing in said configuration display memory space entries to represent said entities;

extracting connection data between said entities from the read configuration data;

creating in said configuration display memory space connections between said entities using the extracted connection data; and

outputting on said output device the configuration of said data processing system using said configuration display memory space.

5,627,956

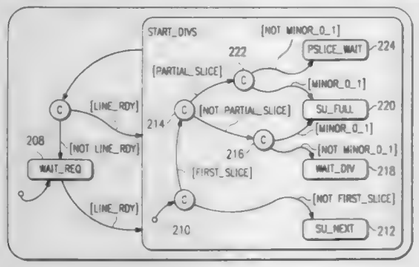
RUN SLICE LINE DRAW ENGINE WITH STRETCHING CAPABILITIES

Giang H. Dao, Houston, and John J. Watters, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 31, 1995, Ser. No. 381,074

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—143 **20 Claims**



1. A method of scaling in a computer a source line of pixels, each pixel having associated color information, to a destination line comprising the steps of:

generating a stretch line having dimensions based on the coordinates of said source and destination lines, said stretch line comprising a plurality of slices, each slice comprising one or more pixels, selected said plurality of slices being processed concurrently;

determining a mapping of pixels from said source line to said destination line responsive to said stretch line;

applying color information from said source line to said destination line responsive to said mapping; and

wherein said destination line is scaled concurrently with a plurality of other destination lines.

5,627,957

RUN SLICE LINE DRAW ENGINE WITH ENHANCED PROCESSING CAPABILITES

Giang H. Dao, Houston, and John J. Watters, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

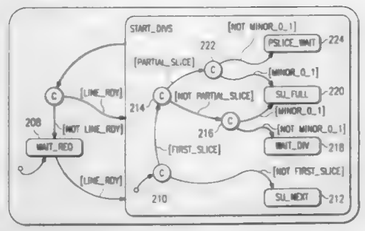
Filed Jan. 31, 1995, Ser. No. 381,104

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—143 **20 Claims**

1. A method of defining a line as a plurality of slices comprising the steps of:

receiving information indicating the coordinates of the line, while processing additional lines simultaneously;



serially generating a plurality of bits defining the length of one of the slices responsive to said information during said simultaneous line processing; and

after each bit is generated, outputting slice information defining a minimum length for said one slice while generating a next bit further defining the length of said one slice during said simultaneous line processing.

5,627,958

SYSTEM AND METHOD FOR IMPROVED COMPUTER-BASED TRAINING

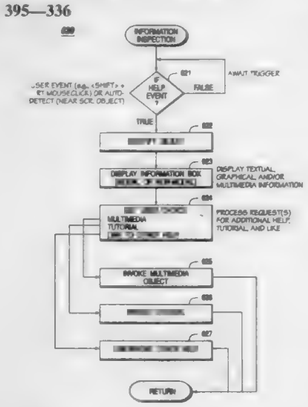
Richard J. Potts, and Mark A. Vershel, both of Palo Alto, Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Division of Ser. No. 970,724, Nov. 2, 1992, Pat. No. 5,432,940.

This application Mar. 17, 1995, Ser. No. 407,438

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—336 **17 Claims**



1. In a computer system having a screen device and an input device, an improved method for aiding a user in operation of the system, the method comprising:

(a) displaying a cursor for indicating a location on the screen device, said cursor responsive to signals from the input device;

(b) displaying on the screen device at least one screen object created by the user; and

(c) if said cursor is within a preselected distance of said at least one object, displaying on the screen device a help dialog means specific for said at least one screen object, said help dialog means including at least one user interface component for receiving user input.

5,627,959

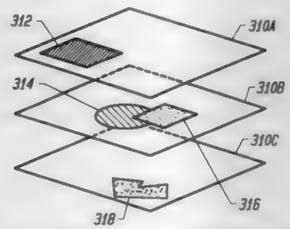
METHOD FOR MANIPULATING GRAPHIC OBJECTS

Bruce Brown, Hak Moon Bay; Ivan Chong, San Mateo; Ernest Wong, San Jose, and James Rhee, Mt. View, all of Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

Continuation of Ser. No. 124,982, Sep. 20, 1993, abandoned. This application Dec. 27, 1995, Ser. No. 579,471

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—356 **12 Claims**



1. A method for manipulating database and graphic objects in a database system, comprising the steps of:

providing a plurality of graphic objects, said plurality of graphic objects stored in a tree;

displaying said plurality of graphic objects;

generating a mouse event by pointing a mouse at one of said plurality of graphic objects and clicking a mouse button;

traversing said tree to locate an active object having a first button procedure that is responsive to a mouse event, said traversing beginning with said one of said plurality of graphic objects;

executing said first button procedure of said active object when said active object is found; and,

wherein said first button procedure includes one or more PL/SQL statements.

5,627,960

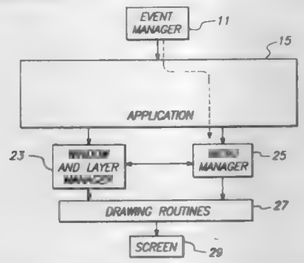
UNIFIED HIERARCHICAL AND TEAR OFF MENUS IN A GRAPHICAL EVENT-DRIVEN COMPUTER SYSTEM

Daniel K. Clifford, Palo Alto, and Timothy J. Craycroft, Mountian View, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 242,674, May 13, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 610,518

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—352 **10 Claims**



1. For use in a graphical, event-driven computer system having a computer display, a method of managing a plurality of menus of an application program, comprising the steps of:

representing each menu of the plurality of menus as a menu window co-extensive with said menu;

providing a display layer of related windows, said display layer being a menu window layer for containing each said menu window;

detecting a first event occurring with respect to the menu window layer;

in response to said first event, opening a menu window and displaying therein a corresponding menu;

detecting a second event occurring with respect to the menu layer; and

in response to said second event, varying display of the menu window.

5,627,961

DISTRIBUTED DATA PROCESSING SYSTEM

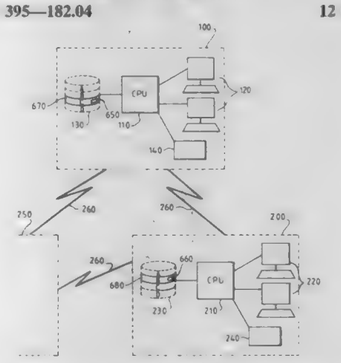
Geoffrey Sharman, Winchester, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 158,105, Nov. 23, 1993, abandoned. This application Jan. 23, 1996, Ser. No. 590,249

Claims priority, application United Kingdom, Dec. 4, 1992, 9225424

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—182.04 **12 Claims**



1. In a distributed data processing system comprising a plurality of data processors in communication with each other and having a central processing unit (CPU) and memory, a method of distributed data processing comprising the steps of:

partitioning a data record into non-overlapping parts;

distributing the parts of the data record across a plurality of data processors such that a first data processor holds a primary copy of a part of the data record;

storing at one or more remote data processors (**200**, **250**) a replicated secondary copy (**310**) of the primary copy of the part of the data record stored at the first data processor (**100**);

propagating (**420**, **570**) updates of said primary copy to the remote data processors (**200**, **250**);

storing at each of the remote data processors (**200**,**250**) a currency expiry time (**320**) associated with each secondary copy stored at a remote data processor, wherein when an update is propagated to the remote data processor, the associated currency expiry time is updated;

in response to a request for data access at a remote data processor having a secondary copy, checking (**510**) whether the currency expiry time (**320**) has passed for the secondary copy of the data.

5,627,962

CIRCUIT FOR REASSIGNING THE POWER-ON PROCESSOR IN A MULTIPROCESSING SYSTEM

Alan L. Goodrum, Tomball; Gary B. Kotzur; Kurt C. Lantz, both of Spring; David F. Heinrich, Tomball, and Jeffrey T. Wilson, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

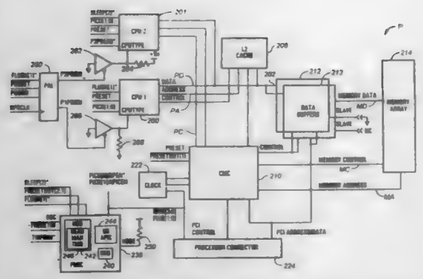
Filed Dec. 30, 1994, Ser. No. 366,509

Int. Cl.[6] G01R *31/28*; **G06F** *11/00*

U.S. Cl. 395—182.11 **12 Claims**

1. A multi-processor computer system incorporating the capability to automatically switch between processors for powering up the computer system, the computer system comprising:

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a first processor normally assigned to power up the computer system;

a second processor capable of powering up the computer system if said first processor fails;

a timer coupled to said first processor and configured to determine if said first processor has failed;

a boot peripheral device coupled to said first and second processors; and

a hot spare boot circuit coupled to said timer and to said first and second processors, said hot spare boot circuit utilizing a single reset signal to place said first and second processors into reset states for a predetermined period if said first processor fails,

said hot spare boot circuit adapted to assert a flush signal to place said first processor into a tristate test mode if said first processor fails, and

said hot spare boot circuit further adapted to thereafter awaken said second processor to power up the computer system and boot the computer system from said boot peripheral device.

5,627,963

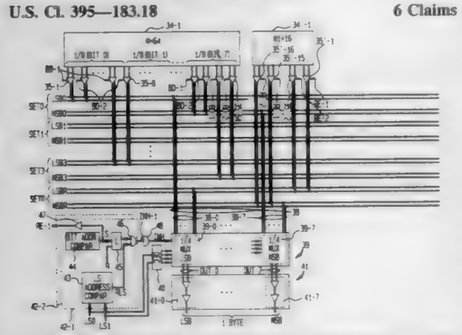
REDUNDANT READ BUS FOR CORRECTING DEFECTIVE COLUMNS IN A CACHE MEMORY

Bertrand Gabillard, Paris; Philippe Girard, Corbeil-Essonnes, and Dominique Omet, Evry, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 46,324, Apr. 15, 1993, abandoned.
This application Jun. 6, 1995, Ser. No. 466,563
Claims priority, application France, Apr. 30, 1992, 92 480062.6

Int. Cl.° G06F *11/00*

U.S. Cl. 395—183.18 **6 Claims**



1. A P-way associative cache memory provided with a system clock, comprising:

P memory read busses, each of said busses transporting memory data sets, each of said memory data sets being M bits long;

at least one word-wide organized memory sub-array comprising memory cell columns arranged in q words, each word being M bits long, said memory sub-array being coupled to one of said memory read busses and being controlled by a first set of control signals that enables said memory data sets to be available at said memory read busses;

a first set of sense amplifiers coupling one of said columns to one of said P memory read busses;

a single redundant read bus for handling redundant data sets, each said redundant data sets being M bits long;

one redundant memory sub-array comprising columns, said redundant memory sub-array being coupled to said redundant read bus and being controlled by a second set of control signals that enables said redundant data sets to be available at said redundant read bus;

a set of redundant sense amplifiers, wherein each of said redundant sense amplifiers is coupled to one of said columns of said redundant memory sub-array and to said single read bus;

P multiplexers respectively coupled to said P memory read busses, to said single redundant read bus and controlled by decoder means, said multiplexers being responsive to signals provided by said memory read busses and by said redundant read bus,

said decoder means for generating signals to control said multiplexers; being provided with at least one input and a plurality of outputs, said outputs generating decoding signals that selectively activate at least one of said multiplexers, and said at least one input provides said decoder with late select address signals; and

at least one logic circuit responsive to defective columns in said at least one memory sub-array, said logic circuit generating a signal for selectively inhibiting said multiplexers, wherein said at least one logic circuit comprises:

a bit address comparator means identifying an address corresponding to a defective column in said at least one memory sub-array; and

a late select signal address comparator means generating a redundant late select address signal in response to said late select address signals,

said identified address corresponding to said defective column and, generated redundant said late select address signal controlling said generation of said inhibit signal to said multiplexers, wherein said inhibit signal and said generated signal from said decoder means control operation of said multiplexers so that

two columns of said redundant memory sub-array replace two defective columns of said memory sub-array irrespective of the location of said defective columns within said memory sub-array.

5,627,964

REDUCE OR FAIL-SAFE BOOTSTRAPPING OF A SYSTEM HAVING A GRAPHICAL USER INTERFACE

Brian A. Reynolds, Redmond; Pierre-Yves Santerre; Darryl S. Richman, both of Bellevue; Ralph A. Lipe, Woodinville, and Robert M. McKaughan, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 13, 1994, Ser. No. 355,074
Int. Cl.° G06F *11/34*

U.S. Cl. 395—183.22 **25 Claims**

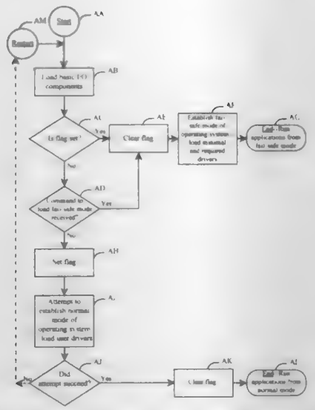
1. In a system comprising a processor, a visual display operatively coupled to the processor, an information storage mechanism operatively coupled to the processor, and software executable by the processor for governing operation of the system, a method of operating the system to provide failure recovery, the method comprising the steps of:

attempting with the processor to establish a normal mode of operation of the system, the normal mode providing the system with a first set of graphical user interface capabilities, by attempting with the processor, in conjunction with the information storage mechanism, to load a first configuration of the software for execution by the processor;

responsively to a failure to complete successfully the step of attempting to establish a normal mode of operation of the system, automatically deciding with the processor to attempt to establish a failure-recovery mode of operation of the system in lieu of the normal mode, the failure-recovery mode providing the system with a second set of graphical user interface capabilities, the second set including a subset of the first set of graphical user interface capabilities;

establishing the failure-recovery mode of operation of the system by loading with the processor, in conjunction with the information storage mechanism, a second configuration of the software for execution by the processor; and

executing software of the second configuration with the processor to provide the system with a graphical user interface capability of the second set.



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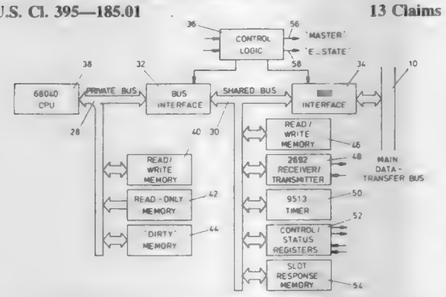
METHOD AND APPARATUS FOR REDUCING THE EFFECTS OF HARDWARE FAULTS IN A COMPUTER SYSTEM EMPLOYING MULTIPLE CENTRAL PROCESSING MODULES

David C. Liddell, Tyne & Wear, and Emrys J. Williams, Milton Keynes, both of United Kingdom, assignors to Integrated Micro Products, Ltd., Durham, England

Continuation of Ser. No. 990,844, Dec. 17, 1992, abandoned.
This application Oct. 27, 1994, Ser. No. 330,238
Claims priority, application United Kingdom, Jul. 17, 1992, 9215212

Int. Cl.° G06F *11/00*

U.S. Cl. 395—185.01 **13 Claims**



1. A fault-tolerant computer system, comprising:

a main data bus for transmitting first data, said main data bus having a plurality of interface slots;

a plurality of computer sub-systems coupled to said main data bus by means of said interface slots, said computer sub-systems receiving and transmitting said first data via said main data bus; and

a central processing sub-system for facilitating transmission of said first data between said computer sub-systems, comprising:

a plurality of central processing modules for executing instructions, each of said central processing modules comprising:

a secondary data bus; and

coupled to said main data bus and said secondary data bus means for comparing said first data on said main data bus with second data on said secondary data bus, said second data corresponding to said first data, said comparing means generating state output signals indicative of inconsistencies between the first and second data; and

a synchronization bus which interconnects said central processing modules, said synchronization bus comprising signal lines which transmit said state output signals from each central processing module to every other central processing module;

wherein said central processing modules operate in a substantially synchronized manner, only one of said central processing modules operating as a master central processing module, said master central processing module both reading from and writing to said main data bus, and interacting with said computer sub-systems and others of said central processing modules by means of said main data bus.

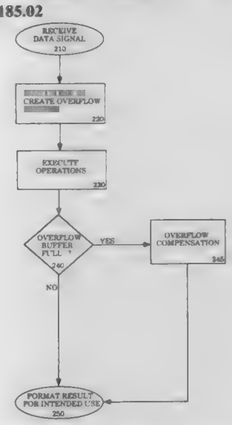
5,627,966

METHOD FOR SIMULATING THE PARALLEL PROCESSING OF VIDEO DATA

James G. Hanko, Redwood City, Calif., assignor to Sun Microsystems, Inc., Calif.

Continuation of Ser. No. 177,285, Jan. 4, 1994, abandoned.
This application Apr. 12, 1995, Ser. No. 421,478
Int. Cl.° G06F *9/30*

U.S. Cl. 395—185.02 **16 Claims**



1. In a computer system, a method for simulating multiple instruction launch comprising the steps of:

executing at least one instruction using a data signal as an operand to produce a result signal, wherein the data signal comprises a plurality of data components that are each separated from a nearest data component by an overflow component at a first predetermined set of one or more bit locations such that at least two data components are operated on simultaneously by the execution of the instruction, and wherein the result signal includes a plurality of data components and overflow components at a second set of predetermined bit

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locations corresponding to said first set of predetermined bit locations of the overflow components in said data signal;

checking each overflow component of the result signal to determine if overflow has occurred; and

applying overflow compensation to the plurality of data components in the result signal if overflow is detected in the step of checking, wherein overflow compensation is performed simultaneously for the plurality of data components of the result signal to generate a compensated result signal.

5,627,967

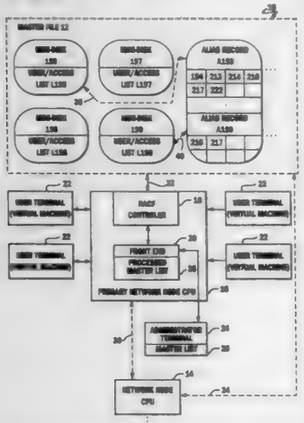
AUTOMATED GENERATION ON FILE ACCESS CONTROL SYSTEM COMMANDS IN A DATA PROCESSING SYSTEM WITH FRONT END PROCESSING OF A MASTER LIST

Norman J. Dauerer, Hopewell Junction, and Edward E. Kelley, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 754,923, Sep. 24, 1991, abandoned. This application May 30, 1995, Ser. No. 456,002

Int. Cl.[6] G06F *17/40*

U.S. Cl. 395—188.01 **24 Claims**



1. A file access controller front end for an access controller of data processing system, said data processing system having a file access controller including a master file, said master file of said data processing system having a plurality of user/access lists, said file access controller front end being connected to said data processing system and including

means for storing a processed master list of authorized users corresponding to data in said user/access lists of said master file of said data processing system, said processed master list being stored seperately from said master file in text form and identifying the authorized users to which said data processing system will grant access,

means for detecting invalid and duplicate user/access authorizations in said processed master list,

means for editing said text of said processed master list to form an edited master list with said invalid and duplicated user/access authorizations remove therefrom, and

means for accessing said file access controller only subsequent to said editing of said text updating said user/access list of said file access controller of said data processing system and said processed master list in response to said edited master list to provide new user/access lists and new processed master list which conform to said edited master list.

5,627,968

DATA TRANSFER APPARATUS WHICH ALLOWS DATA TO BE TRANSFERRED BETWEEN DATA DEVICES WITHOUT ACCESSING A SHARED MEMORY

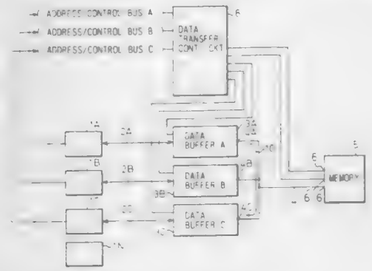
Tohru Ozaki; Rikiya Okamoto; Junichi Sugiyama, and Seiya Shimizu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 18, 1994, Ser. No. 274,732

Claims priority, application Japan, Jul. 27, 1993, 5-185064; May 9, 1994, 6-095076

Int. Cl.[6] G06F *13/362;13/36*

U.S. Cl. 395—200.07 **22 Claims**



1. A data transfer apparatus comprising:

data devices which produce control information;

data buffers respectively corresponding to the data devices, each data buffer having an input terminal and an output terminal, each data device connected to the input terminal of the corresponding data buffer for transferring data between the respective data device and the corresponding data buffer;

a shared memory;

a memory bus connected to the output terminal of each of the data buffers and to the shared memory to allow data to be transferred between the data buffers and between the data devices and the shared memory via the data buffers, data being transferrable between data devices by transferring data from a respective data device defined as a transferring data device to a different data device defined as a receiving data device by connecting the output terminal of the data buffer corresponding to the transferring data device to the output terminal of the data buffer corresponding to the receiving data device via the memory bus to form a data transfer path between the data buffer corresponding to the transferring data device and the data buffer corresponding to the receiving data device, where data is then transferred from the transferring data device to the data buffer corresponding to the transferring data device, from the data buffer corresponding to the transferring data device to the data buffer corresponding to the receiving data device via the data transfer path, and then from the data buffer corresponding to the receiving data device to the receiving data device; and

a data transfer controller which receives the control information produced by the data devices and, in accordance with the control information, forms the data transfer path and controls the data buffers and the shared memory so that the shared memory does not transfer data onto the memory bus when, during the transfer of data between the transferring data device and the receiving data device, data is being transferred in the data transfer path, wherein each data buffer includes

a first bidirectional data buffer connected to the corresponding data device and producing a controllable output signal,

a second bidirectional data buffer connected to the memory bus and producing a controllable output signal,

a write register which receives the output signal produced by the first bidirectional data buffer and produces a corresponding write register output signal which is provided to the second bidirectional data buffer, and

a read register which receives the output signal produced by the second bidirectional data buffer and produces a corresponding read register output signal which is provided to the first bidirectional data buffer.

5,627,969

UNIVERSAL LINK CONFIGURATOR FOR PHYSICAL LINK CONFIGURATIONS IN A DATA LINK NODE

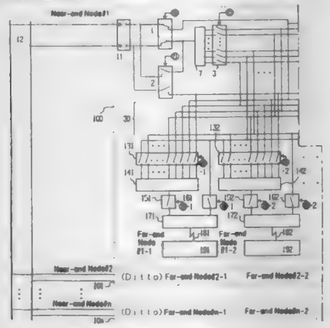
Seiichi Kobayashi, and Taro Asao, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 262,913, Jun. 21, 1994, abandoned. This application Nov. 28, 1995, Ser. No. 563,557

Claims priority, application Japan, Nov. 15, 1993, 5-308776

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.1 **9 Claims**



1. A universal link configurator provided in each of a plurality of add-drop-multiplexers each provided at each node of a plurality of nodes of a network system with each node being connected to adjacent near end nodes by information transfer paths using a hardwire and to adjacent far end nodes by information transfer paths of independent links, for configuring connections of each node with adjacent near end nodes and far end nodes in the network, the universal link configurator comprising:

first means for converting a first data stream on the hard-wire to TTL/CMOS logic level signals and for converting the TTL/CMOS logic level signals to the first data stream;

a transfer switch logic circuit operatively connected to the first means for switching over the converted first data stream of the TTL/CMOS logic level signals to terminate at an aggregate side or relay at a tributary side at a specific node said converted first data stream of the TTL/CMOS logic level signals;

a plurality of second means, each operatively connected to a corresponding one of the far end nodes for converting second data streams from the far end nodes to the TTL/CMOS logic level signals;

a plurality of switch logic circuits operatively connected to the plurality of the second means for switching over the converted second data streams of the TTL/CMOS logic level signals to terminate at an aggregate side or relay at a tributary side at the specific node said converted second streams of the TTL/CMOS logic level signals; and

connecting group means operatively connected to the transfer switch logic circuit and the switch logic circuits for making connections of the first and the second data streams of the TTL/CMOS logic level signals between the first means and the plurality of the switch logic circuits.

5,627,970

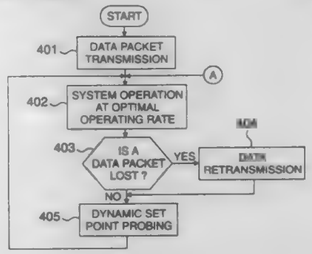
METHODS AND APPARATUS FOR ACHIEVING AND MAINTAINING OPTIMUM TRANSMISSION RATES AND PREVENTING DATA LOSS IN A PROCESSING SYSTEM NEWORK

Srinivasan Keshav, Berkeley Heights, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 8, 1994, Ser. No. 287,018

Int. Cl.[6] G06F *13/36;13/38;13/376*

U.S. Cl. 395—200.13 **35 Claims**



1. A method for controlling data packet transmission from a source node over a processing system network said method comprising the steps of:

a) transmitting a data packet at an adaptive exponential transmission rate from a current operating point to a target operating point, said target operating point being an estimate of an optimal set point;

b) receiving an acknowledgement signal representative of a sequence number of a particular received transmitted data packet;

c) recalculating, upon a determination that said optimal set point has not been reached, said target operating point and returning to step a.

5,627,971

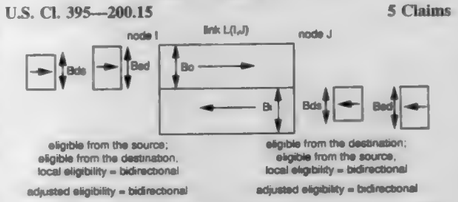
MACHINE METHOD FOR DETERMINING THE ELIGIBILITY OF LINKS IN A NETWORK

Jerzy W. Miernik, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 1, 1995, Ser. No. 457,640

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.15 **5 Claims**



1. A method for determining the eligibility of each of a plurality of bidirectional links to be a potential route available for selection as a shortest route for transmitting messages between a source node and a destination node selected from a plurality of nodes in a network, the nodes being interconnected via the bidirectional links, each link having a free communication bandwidth in each of outbound and inbound directions,

said method comprising the steps of:

A) determining the eligibility of both link ends of the link, by comparing the outbound and inbound bandwidths of the link

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with the bandwidths required for the source-destination direction and for the destination-source direction, the eligibility being bidirectional, source-unidirectional, destination-unidirectional or nondirectional; and

B) determining the eligibility of the link, on the basis of the eligibility of the link ends determined at step A), whether or not the link can become part of the shortest route,

wherein step A) comprises the steps of:

(a) testing whether the outbound bandwidth is smaller than the bandwidth required for the source-destination direction;

(b) testing whether the outbound bandwidth is smaller than the bandwidth required for the destination-source direction;

(c) determining the eligibility of one link end on the basis of the test results at steps (a) and (b) as follows:

(i) in the case where steps (a) and (b) test true, one link end is nondirectional,

(ii) in the case where steps (a) and (b) test false, one link end is bidirectional,

(iii) in the case where steps (a) and (b) test false and true, respectively, one link end is source-unidirectional, and

(iv) in the case where steps (a) and (b) test true and false, respectively, one link end is destination-unidirectional; and

(d) determining the eligibility of the link regarding the other link end, by comparing the inbound bandwidth with the bandwidths required for the destination-source direction and for the source-destination direction.

5,627,972

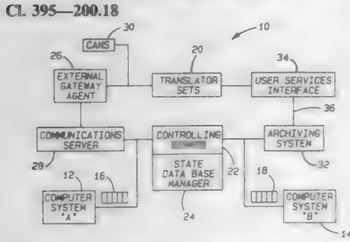
SYSTEM FOR SELECTIVELY CONVERTING A PLURALITY OF SOURCE DATA STRUCTURES WITHOUT AN INTERMEDIARY STRUCTURE INTO A PLURALITY OF SELECTED TARGET STRUCTURES

Timothy A. Shear, Novi, Mich., assignor to RMS Electronic Commerce Systems, Inc., Livonia, Mich.

Continuation of Ser. No. 880,626, May 8, 1992, abandoned. This application May 3, 1994, Ser. No. 238,612

Int. Cl.[6] G06F *5/00;13/00*

U.S. Cl. 395—200.18 **2 Claims**



1. A method to transform data from a first format to a second format comprising the steps of:

creating a quoted character value;

creating a numerical byte value;

creating a data value;

receiving said data;

reviewing said data for occurrences of said quoted character, numerical byte value, and data value;

counting said occurrences of said quoted characters, numerical byte values, and data value within said data;

assigning a priority value to each occurrence of said quoted characters, numerical byte values, and data values;

assigning each of said occurrences of quoted characters, numerical byte values, and data values to an array of variables; and,

creating said second format by arranging said variables, within said linear array, into a format arrangement according to said assigned priority values.

5,627,973

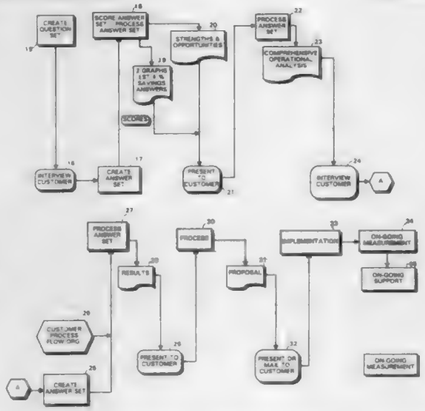
METHOD AND APPARATUS FOR FACILITATING EVALUATION OF BUSINESS OPPORTUNITIES FOR SUPPLYING GOODS AND/OR SERVICES TO POTENTIAL CUSTOMERS

Hugh E. Armstrong, Wilmot, Wis.; Brad B. Bailey, Denton, Tex.; Gregory T. Lynch, Vernon Hills, Ill.; Judith A. McMahon, Libertyville, Ill.; Karen L. Schweinzger, Waukegan, Ill.; Suzanne M. Vaughan, Vernon Hills, Ill., and Gregory C. Schweinzger, Waukegan, Ill., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Mar. 14, 1994, Ser. No. 209,471

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—210 **22 Claims**



1. A method of determining business opportunities for supplying goods and/or services to potential customers, comprising the steps of: (a) in a first computer having an input element and a storage device, inputting and storing in the storage device a series of questions relating to the level of sophistication of a potential customer's predefined business techniques in a plurality of different categories; (b) collecting responses to the series of questions from step (a) and inputting and storing in the storage device the responses into the first computer; (c) assigning and storing numerical weights and values to the question responses so as to indicate a level of sophistication for each possible response of each business technique for each separate category; (d) determining a user's score which reflects the user's capability of supplying goods and/or services to the potential customer related to the potential customer's predefined business techniques; (e) inputting and storing the data from steps (b), (c) and (d) into a second computer having an input element, a storage device and a processor; (f) using the processor of the second computer, taking into account the stored weights and values, to determine for each separate category a potential customer's score, the user's score, and an area of opportunity which is the difference between the potential customer's score and the user's score; and (g) using a computer controlled printer, printing out in graphical form on sheet material the determinations from of step (f).

5,627,974

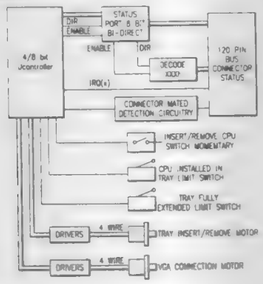
COMPUTER DOCKING SYSTEM WITH MEANS FOR ALLOWING A MICROPROCESSOR IN A DOCKING STATION TO TALK TO A CENTRAL PROCESSING UNIT IN A DOCKED PORTABLE COMPUTER

LaVaughn F. Watts, Jr., Temple, and Robert E. Tonsing, Troy, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 151,225, Nov. 12, 1993, Pat. No. 5,477,415. This application Nov. 8, 1994, Ser. No. 336,133

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—281 **31 Claims**



1. A computer docking system, comprising:

a portable computer;

a docking station having connection means for connecting said portable computer to said docking station; and

means for allowing a microprocessor in the docking station to talk to a central processing unit (CPU) in the portable computer, wherein said means sets up and closes operating system applications.

5,627,975

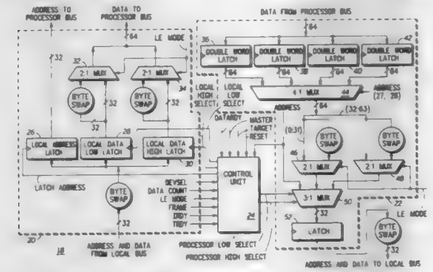
INTERBUS BUFFER FOR USE BETWEEN A PSEUDO LITTLE ENDIAN BUS AND A TRUE LITTLE ENDIAN BUS

Christopher Bryant, Austin, and Brian Reynolds, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1994, Ser. No. 284,945

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—307 **2 Claims**



1. An interbus buffer comprising:

a first data path receiving N data bits from a first bus and transmitting 2N data bits to a second bus, where N is an integer, the first bus coupled to a first device and transmitting data according to a little endian protocol, a second device coupled to the second bus and transmitting data according to a pseudo- or munged little endian protocol, the first data path comprising:

a first latching means coupled to the first bus, the first latching means latching N data bits of 2N data bits responsive to a first control signal;

a first 2:1 switching means coupled to the output of the first latching means and to a byte reversed output of the first latching means, an output of the first 2:1 switching means selected responsive to whether the first device is operating in a big endian byte ordering mode or a little endian byte ordering mode;

a second latching means coupled to the first bus, the second latching means latching a differing N data bits of the 2N data bits responsive to a second control signal,

a second 2:1 switching means coupled to the output of the second latching means and to a byte reversed output of the second latching means, an output of the second 2:1 switching means selected responsive to whether the first device is operating in the big endian byte ordering mode or the little endian byte ordering mode, the output of the first and second 2:1 switching means concatenated to form a data output to the second bus;

a second data path receiving 2N data bits from the second bus and transmitting N data bits to the first bus, the second data path comprising:

a third 2:1 switching means receiving a first N sequential bits of the 2N data bits from the second bus and a byte reversal of the first N sequential bits of the 2N data bits, an output of the third 2:1 switching means selected responsive to whether the second device is operating in a big endian byte ordering mode or a "munged" little endian byte ordering mode;

a fourth 2:1 switching means receiving a second N sequential bits of the 2N data bits from the second bus and a byte reversal of the second N sequential bits of the 2N data bits, an output of the fourth 2:1 switching means selected responsive to whether the second device is operating in a big endian byte ordering mode or a "munged" little endian byte ordering mode;

a fifth 2:1 switching means receiving the output of the third switching means and the output of the fourth switching means, an output of the fifth 2:1 switching means selected responsive to a third control signal; and

a control unit coupled to the first data path and the second data path, the control unit generating the first, second, and third control signals responsive to an input address, the input address identifying a memory address of data to be transferred by the interbus buffer.

5,627,976

CROSSING TRANSFERS FOR MAXIMIZING THE EFFECTIVE BANDWIDTH IN A DUAL-BUS ARCHITECTURE

Harold L. McFarland, San Jose, and Allen P. Ho, Fremont, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 215,232, Mar. 21, 1994, Pat. No. 5,414,820, which is a division of Ser. No. 748,768, Aug. 23, 1991, Pat. No. 5,369,748. This application Mar. 20, 1995, Ser. No. 407,309

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—308 **68 Claims**

1. A method of communicating data between devices in a computer system, the method comprising:

providing a bidirectional first bus, said first bus having an architecture wherein a transfer initiated on said first bus includes an address signifying a device with which communication is to be established, said architecture having a bus control signal selectively indicating that the transfer is claimed by a device addressed by said address;

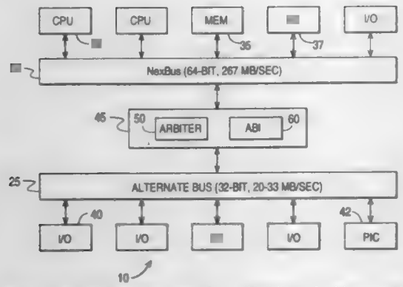
providing a bidirectional second bus;

providing selective bidirectional coupling between said first and second buses;

coupling a bus master to said first bus;

coupling a slave to a selected one of said first and second buses;

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storing bus configuration data for a plurality of address regions, at least some of said configuration data associating at least one of said address regions with said first bus;

initiating a particular transfer on said first bus, said particular transfer being initiated by said bus master and including a particular address;

determining whether said particular address corresponds to one of said address regions associated with said first bus; and

if not, enabling a crossing transfer from said first bus to said second bus without waiting for assertion of said bus control signal.

5,627,977

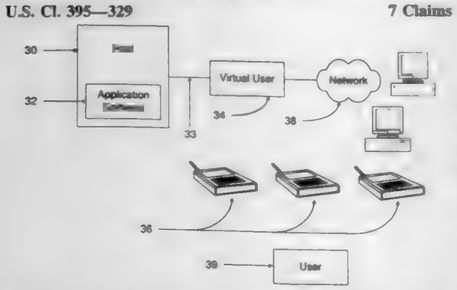
TRAINABLE USER INTERFACE TRANSLATOR

Neil Hickey, Kennebunk, Me.; Robert W. Anthony, Wellesley, Mass., and Seth A. Spiller, York, Me., assignors to Orchid Systems, Inc., Wellesley, Mass.

Filed Apr. 19, 1994, Ser. No. 229,935

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—329 **7 Claims**



1. A system for translating a first user interface of a preexisting application running on a host computer to a second user interface running on a client computer, wherein the user interface consists of prompts for input and a set of displays for output, comprising:

a training computer in communication with said host computer and adapted to interactively monitor and capture a first set of prompts and displays generated by a first user concurrently operating said first user interface of said preexisting application program running on said host computer via said training computer, adapted to convert said first set of prompts and displays into a second set of prompts and displays for presentation via said second user interface on said client computer, said second set of prompts and displays selected by said first user, and further adapted to store said first set of prompts and displays associated with said second set of prompts and displays; and

a translating computer in communication with said host computer and said client computer and adapted to monitor said preexisting application first user interface for said first set of prompts and displays, and further adapted to display on said second user interface on said client computer said second set of prompts and displays associated with said first set of prompts and displays;

whereby a second user operating said client computer interacts, through said translating computer, with said preexisting application running on said host computer via said second set of prompts and displays.

5,627,978

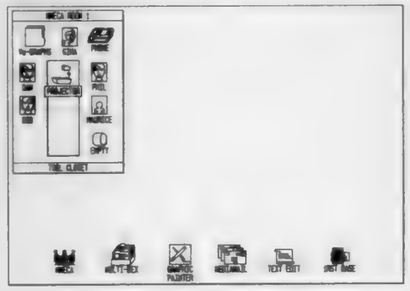
GRAPHICAL USER INTERFACE FOR MULTIMEDIA CALL SET-UP AND CALL HANDLING IN A VIRTUAL CONFERENCE ON A DESKTOP COMPUTER CONFERENCING SYSTEM

Mark W. Altom, Plainfield; Richard L. Pastore, Brick; Diane L. Quarles, Wall, and Dirk Ruiz, Highland Park, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 16, 1994, Ser. No. 357,811

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—330 **26 Claims**



1. A method for use in a user workstation including a pointing device and a visual display unit to provide a graphical user interface for graphically depicting in a realistic manner setting up and/or handling of a multimedia call for a multimedia virtual meeting, comprising the steps of:

initiating a multimedia call from the user workstation to at least one prospective participant of the virtual meeting;

displaying in an area on a screen of the visual display unit at the user's workstation a graphical representation of a realistic virtual meeting room metaphor including realistic icons of at least a table, the user's image, at least one empty chair and a telephone, wherein the user's image icon and the at least one empty chair icon are positioned around the table icon in a realistic, real life manner mad the realistic telephone icon is for use in setting up a multimedia call to the at least one prospective virtual meeting participant, said empty chair being an indication that a prospective participant can be added to the virtual meeting;

filling the empty chair when a participant is added to the virtual meeting,

adding an empty chair if a maximum number of participants has not been attained,

adjusting the virtual meeting room display area on the users workstation screen to accommodate an added chair when that occurs, and

causing the realistic icons to be arranged in the virtual meeting room metaphor being displayed so that the adjusted screen area displaying the virtual meeting room is minimized.

5,627,979

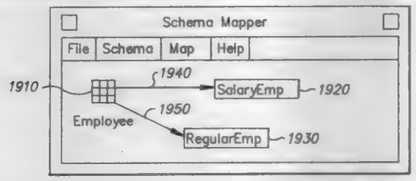
SYSTEM AND METHOD FOR PROVIDING A GRAPHICAL USER INTERFACE FOR MAPPING AND ACCESSING OBJECTS IN DATA STORES

Daniel T. Chang, San Jose, Calif.; Christina Lau, Ontario, Canada, and Taejae Lee, Cupertino, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 18, 1994, Ser. No. 276,389

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—335 **6 Claims**



2. A system for mapping and accessing objects in data stores, said system comprising:

graphical user interface for defining a mapping between an object schema and a data store schema in a high level language;

a first graphical user interface for mapping said object schema to said data store schema;

a data structure for embodying said mapping, said data structure supporting said first graphical user interface and supporting a run-time access;

high level language generator for generating, from said data structure, said high level language representing said mapping;

a parser for parsing said high level language into said data structure;

a translator for creating said first user interface representation of said mapping from said data structure;

a second user interface, dependent upon an application programming interface, for accessing object data from said data store;

said application programming interface, independent of said second user interface, for accessing object data from said data store;

a run-time component executing said application programming interface and implementing said object data access from said data store;

a data store access for said run-time component to utilize said data structure embodying said mapping definition in accessing said objects from said data store; and

a generator for generating, from said data structure, an object oriented programming language and data access language for deleting, adding, retrieving, and updating objects from said data store.

5,627,980

ELISION BASED PRESENTATION OF ORDERED DATA

William N. Schilit, Palo Alto, Calif., and Michael M. Tso, Beaverton, Oreg., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 20, 1995, Ser. No. 407,459

Int. Cl.[6] G06F *3/00;3/14*

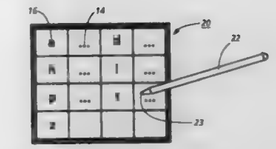
U.S. Cl. 395—353 **33 Claims**

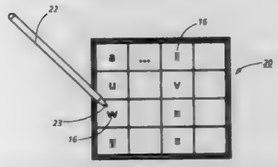
15. A recursive method for accessing members of an ordered data set comprising the steps of

dividing an ordered data set into multiple ordered subsets,

designating at least one member of each ordered subset as a bracket member,

referencing those members of each ordered subset not identified as bracket members with a collective data member symbol,





displaying an ordered set of bracket members, with a collective data member symbol displayed between those bracket members separated from each other by two or more members in the ordered data set, and

performing an operation upon user selection of one of the bracket members.

5,627,981

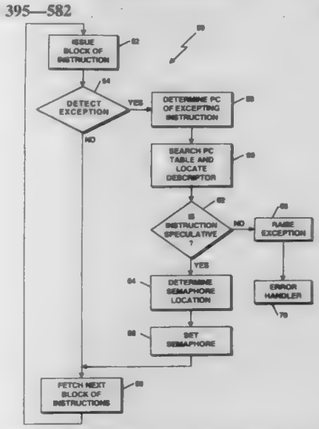
SOFTWARE MECHANISM FOR ACCURATELY HANDLING EXCEPTIONS GENERATED BY INSTRUCTIONS SCHEDULED SPECULATIVELY DUE TO BRANCH ELIMINATION

Michael C. Adler, Lexington; Steven O. Hobbs, Westford, and Paul G. Lowney, Concord, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1994, Ser. No. 270,192

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—582 **12 Claims**



1. A method for handling an exception caused by a speculative instruction provided for an eliminated conditional branch, said speculative instruction is executed within a computer program, said method comprising the steps of:

checking a predicate of said eliminated branch and a semaphore associated with said speculative instruction at a commit point of said speculative instruction;

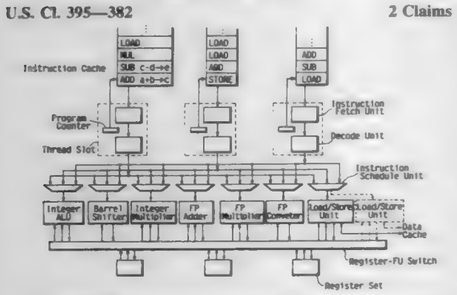
branching to an error handling routine if the predicate indicates that said speculative instruction should have executed, and the semaphore indicates that an exception occurred when said speculative instruction was executed.

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5,627,982
APPARATUS FOR SIMULTANEOUSLY SCHEDULING INSTRUCTIONS FROM PLURAL INSTRUCTION STREAM INTO PLURAL INSTRUCTION EXECUTIONS UNITS

Hiroaki Hirata, Kyoto-fu, and Akio Nishimura, Osaka-fu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 893,466, Jun. 4, 1992, Pat. No. 5,430,851. This application Dec. 23, 1994, Ser. No. 363,519
Claims priority, application Japan, Jun. 4, 1991, 3-134882
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—382 **2 Claims**



1. An information processor processing instructions of multiple instruction streams in parallel, comprising:

multiple instruction setup units;

multiple function execution units;

an instruction schedule unit disposed between the instruction setup units and the function execution units, including means for reading and decoding instructions from the instructions setup units, means for reading data depending information, means for storing instructions and data depending information and dependency analysis means for determining whether or not stored instructions may be output based on the data depending information, wherein each of the instruction setup units reads and decodes instructions from one of different instruction streams, and judges whether the instructions are issuable or not based on information of data dependencies sent from the function execution units;

the instruction schedule unit has means for receiving the decoded instructions from the multiple instruction setup units, selecting issuable instructions among them for the function execution units that are in a state which can receive instructions among the multiple function execution units, and outputting the selected ones to each corresponding function execution unit; and

the function execution units further have means for executing instructions received from the instruction schedule unit and means for reporting the information of dependency elimination to the instruction setup unit which issued the instructions, when the execution is finished, wherein the instruction setup units output

first information to the instruction schedule units, the first information being an operational directive containing detailed directions for operation of a function execution unit, and

second information indicating to which function execution unit, the first information is sent;

the instruction schedule unit outputs

third information to the instruction setup units indicating whether or not it is capable of receiving a next operational directive, said third information comprised of said instruction "done" information;

the function execution units output

fourth information to the instruction schedule units indicating whether or not the function execution units are capable of receiving new instructions; and

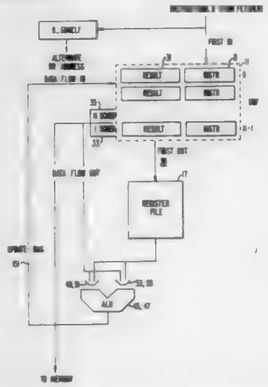
the instruction schedule unit outputs

fifth information to the function execution units corresponding to the operational directive.

5,627,983
PROCESSOR ARCHITECTURE PROVIDING OUT-OF-ORDER EXECUTION

Valeri Popescu, San Diego; Merle A. Schultz, Escondido; Gary A. Gibson, Carlsbad; John E. Spracklen, and Bruce D. Lightner, both of San Diego, all of Calif., assignors to Hyundai Electronics America, San Jose, Calif.

Division of Ser. No. 622,893, Dec. 5, 1990, Pat. No. 5,487,156, which is a continuation-in-part of Ser. No. 451,403, Dec. 15, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 470,408
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—393 **18 Claims**



1. A data processing system for processing information in response to a program including a plurality of instructions including instructions that control arithmetic operations on the information, the data processing system comprising:

a register unit that stores information;

a shelving unit that stores entries representing instructions, each entry within the shelving unit identified by an instruction identifier representing a position of a represented instruction within the program;

a scheduling unit coupled to the shelving unit that continuously selects entries in the shelving unit for which all information required for execution is available in one of the register unit or the shelving unit and for issuing those entries in an order different from the order of instructions represented by those entries within the program;

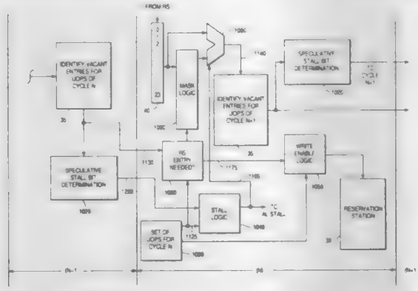
an arithmetic unit coupled to the scheduling unit for performing operations on information in one of the register unit or the shelving unit in response to entries issued by the scheduling unit to generate results, the arithmetic unit further coupled to the shelving unit so that the shelving unit receives the results of operations performed responsive to entries and stores the results; and

a retirement unit for copying results of operation performed responsive to entries stored in the shelving unit representing the earliest instructions in the program from the shelving unit into the register unit and removing those entries from the shelving unit.

5,627,984
APPARATUS AND METHOD FOR ENTRY ALLOCATION FOR A BUFFER RESOURCE UTILIZING AN INTERNAL TWO CYCLE PIPELINE

Shantanu R. Gupta, Beaverton, and James S. Griffith, Aloha, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 269,435, Jun. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 40,659, Mar. 31, 1993, Pat. No. 5,560,025. This application Mar. 28, 1996, Ser. No. 624,187
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—392 **35 Claims**



1. A two cycle pipeline apparatus for allocating vacant entries of a buffer resource to instruction information relating to instructions for storage into said buffer resource of a pipelined superscalar microprocessor, said instructions received during cycle n of said pipelined superscalar microprocessor, said apparatus comprising:

allocation circuitry for generating, during a cycle n−1, a first list of vacant entries available for allocation to said instructions received during cycle n;

a preliminary deallocation vector received during said cycle n and indicating vacant entries within said buffer resource;

circuitry for receiving, during said cycle n, said first list of vacant entries available for allocation to said instructions received during cycle n; and

mask circuitry for masking those entries of said preliminary deallocation vector that correspond to entries of said first list of vacant entries actually allocated to said instructions received during cycle n, so as to generate a modified deallocation vector;

wherein said allocation circuitry, responsive to said modified deallocation vector, is also for generating, during said cycle n, a second list of vacant entries for instructions received during a cycle n+1.

5,627,985
SPECULATIVE AND COMMITTED RESOURCE FILES IN AN OUT-OF-ORDER PROCESSOR

Michael A. Fetterman; Andrew F. Glew, both of Hillsboro; David B. Papworth, Beaverton; Glenn J. Hinton, and Robert P. Colwell, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

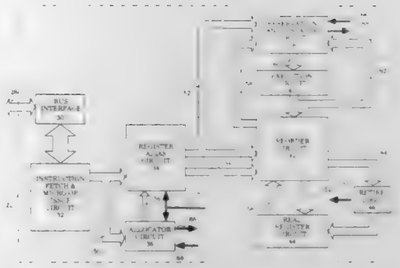
Filed Jan. 4, 1994, Ser. No. 177,244
Int. Cl.[6] G06F *9/34*
U.S. Cl. 395—393 **33 Claims**

1. A processor, comprising:

a source data bus;

a register alias circuit coupled to receive a logical instruction comprising an opcode, and a logical source specifying an architecturalitectural register, the register alias circuit being configured to generate a physical instruction from the logical instruction by replacing the logical source with a physical source specifying either a physical register or a committed state register;

reorder circuit coupled to receive the physical source from the register alias circuit, the reorder circuit including the physical register for buffering a speculative source data value and



being configured to read the speculative source data value from the physical register and to transfer the speculative source data value over a source data bus if the physical source specifies the physical register;

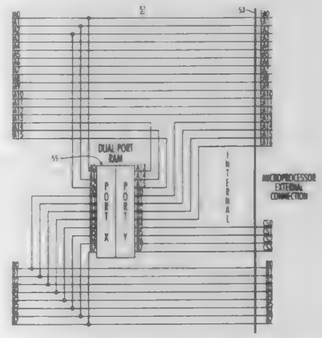
a real register circuit coupled to receive the physical source from the register alias circuit, the real register circuit including the committed state register for buffering a committed source data value and being configured to read the committed source data value from the committed state register and to transfer the committed source data value over the source data bus if the physical source specifies the committed state registers; and

a reservation and dispatch circuit coupled to receive a source data value, comprising either the speculative source data value or the committed source data value, transferred over the source data bus.

5,627,986
DEVICE AND METHOD FOR SELECTING AND ADDRESSING EXTENDED MEMORY ADDRESSES

Robert W. Frankland, Laguna Hills, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 937,082, Aug. 31, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 352,296
Int. Cl.[6] G06F *12/06;12/10*
U.S. Cl. 395—402 **6 Claims**



1. A memory address mapping and access speed selection apparatus for accessing a plurality of external memories with an internal address of a microprocessor, the apparatus comprising:

X external address lines connected to the plurality of external memories;

a chip select line connected to each external memory, said chip select line selecting which memory will be addressed during a particular access;

Y internal address lines connected to a microprocessor;

Z data lines connected to the microprocessor and each of the plurality of extended memories;

a dual-port random access memory (DPRAM) having a write port and a read port;

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said write port having inputs connected to M of the internal address lines, where M is less than Y, said write port further connected to the Z data lines from the microprocessor, wherein the microprocessor inputs data during a programming mode over the Z data lines into the dual-port random access memory at dual-port random access memory addresses indicated by the M internal address lines, wherein the data input into the dual-port random access memory addresses includes high order address bits of an external memory, address and a chip select value indicating a particular one of the plurality of external memories;

said read port having outputs connected to N of the external address lines, where N is less than X, said read port outputting high order address bits and a particular chip select signal of a particular external memory when an internal address value is input to the write port over the M internal address lines during a non-programming access; and

wherein the particular chip select value output by the read port of the dual-port random access memory during a non-programming access is utilized in selecting the speed of access to the particular external memory.

5,627,987

MEMORY MANAGEMENT AND PROTECTION SYSTEM FOR VIRTUAL MEMORY IN COMPUTER SYSTEM

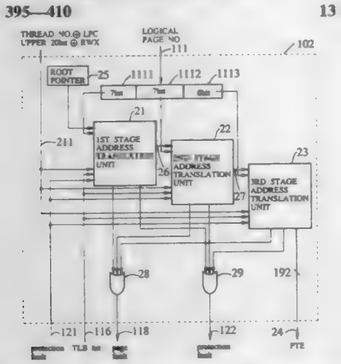
Hiroshi Nozue; Mitsuo Saito; Kenichi Maeda; Shigehiro Asano; Toshio Okamoto; Shin Sungho, and Hideo Segawa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 983,149, Nov. 30, 1992, abandoned. This application Feb. 23, 1993, Ser. No. 21,098

Claims priority, application Japan, Nov. 29, 1991, 3-317085; Jan. 16, 1992, 4-026040; Mar. 31, 1992, 4-076776; Jan. 13, 1993, 5-003937

Int. Cl.[6] G06F *12/00;12/14*

U.S. Cl. 395—410 **13 Claims**



1. A memory management and protection system, comprising:

address table means having a plurality of address table entries, each address table entry storing a logical address and a physical address corresponding to the logical address;

access control list means, attached to each address table entry, for storing a plurality of program numbers for identifying programs which are permitted to make accesses to the logical address stored in said each address table entry;

hit check means for detecting one of the plurality of program numbers stored in the access control list means attached to one of the address table entries storing the logical address to be accessed, which matches with a current program number identifying a currently executing program;

hit notice means for generating an address table hit notice when the hit check means detects said one of the plurality of program numbers; and

means for outputting the physical address stored in said one of the address table entries, when the hit notice means generates the address table hit notice.

5,627,988

DATA MEMORIES AND METHOD FOR STORING MULTIPLE CATEGORIES OF DATA IN LATCHES DEDICATED TO PARTICULAR CATEGORY

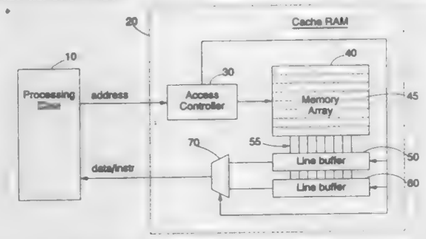
William H. Oldfield, Cambridgeshire, United Kingdom, assignor to Advanced Risc Machines Limited, Cambridge, United Kingdom

Filed Aug. 16, 1995, Ser. No. 515,543

Claims priority, application United Kingdom, Sep. 30, 1994, 9419746

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—428 **15 Claims**



1. A data memory operable to store at least two categories of data, said data memory comprising:

an addressable array of memory cells which can be accessed as predetermined groups of memory cells;

output buffer means for storing the contents of at least a most recently read group of memory cells and another previously read group of memory cells, said output buffer means comprising at least two output latches, each output latch being operable to store the contents of one group of memory cells; and

reading means, responsive to an indication that said contents of said group of memory cells containing a required memory cell are not stored in said output buffer means, for reading said contents of said group of memory cells containing said required memory cell to said output buffer means, in which

said contents of at least said required memory cell are supplied as an output from said output buffer means and

data from each data category stored in said data memory are stored in a respective one of said output latches.

5,627,989

INTEGRATED CIRCUIT HAVING PROCESSOR COUPLED BY COMMON BUS TO PROGRAMMABLE READ ONLY MEMORY FOR PROCESSOR OPERATION AND PROCESSOR UNCOUPLED FROM COMMON BUS WHEN PROGRAMMING READ ONLY MEMORY FROM EXTERNAL DEVICE

Hideo Nakamura, Tokyo, and Terumi Sawase, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 53,826, Apr. 29, 1993, abandoned, which is a continuation of Ser. No. 791,540, Nov. 14, 1991, abandoned, which is a division of Ser. No. 358,523, May 30, 1989, Pat. No. 5,088,023, which is a continuation of Ser. No. 121,913, Nov. 17, 1987, abandoned, which is a continuation of Ser. No. 714,915, Mar. 22, 1985, abandoned. This application Sep. 21, 1994, Ser. No. 308,548

Claims priority, application Japan, Mar. 23, 1984, 59-54240

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—430 **30 Claims**

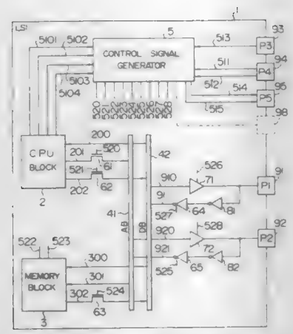
1. A microcomputer implemented as LSI device comprising:

a CPU block;

a memory block including a nonvolatile memory writable by an external device;

an address bus which is coupled to the memory block and which transfers addresses;

a data bus which is coupled to the memory block and which transfers data, which data bus is independent of said address bus;



a first terminal which couples the address bus to the external device;

a second terminal which couples the data bus to the external device and which is independent of said first terminal;

means for selectively coupling the address bus and the data bus to said CPU block;

external terminals;

control means, coupled to the coupling means and the external terminals to receive a first mode control signal indicating external access, a second mode control signal designating a program/verify and a write voltage of a high potential, via the external terminals, the write voltage being also supplied to said nonvolatile memory, for performing the functions:

(1) when the first mode control signal indicating external access, the second mode control signal designating a program, and the write voltage of a high potential are applied to the control means via the external terminals, the control means separates the CPU block from the address bus and the data bus by controlling the coupling means, so that with application of the write voltage of a high potential to the nonvolatile memory, writing to the nonvolatile memory is carried out through the address bus and the data bus independently of the CPU block, and

(2) when the first mode control signal indicating external access and the second mode control signal designating a verify are applied to the control means via the external terminals, the control means separates the CPU block from the address bus and the data bus by controlling the control means, so that reading the nonvolatile memory is carried out through the address bus and the data bus independently of the CPU block.

5,627,990

MANAGEMENT SYSTEM FOR A HIERARCHICAL DATA CACHE EMPLOYING PREEMPTIVE CACHE TRACK DEMOTION AND RESTAGING TO ADAPT TO ACCESS PATTERNS

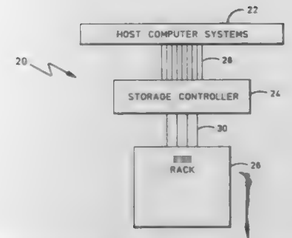
Joel H. Cord; Michael H. Hartung; Joseph S. Hyde; Vernon J. Legvold, and William G. Sherman, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 262,096, Jun. 20, 1994, abandoned. This application Feb. 7, 1996, Ser. No. 597,719

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—449 **17 Claims**

1. In a data storage system for storing a plurality of addressed data ordered as a sequence of data blocks, said system including a host computer channel coupled to a Storage Controller (SC) having a controller cache memory (CCM) for storing a plurality of said data blocks ordered according to a CCM Least Recently Used (LRU) priority list, wherein said SC is coupled to one or more Cached Storage Drawers (CSDs) each having a plurality of Direct Access Storage Devices (DASDs) coupled to at least one drawer



cache memory (DCM) for storing a plurality of said data blocks ordered according to a DCM LRU priority list, a method for transferring addressed data between host computer channel and said plurality of DASDs responsive to an addressed data request from said host computer channel, said method comprising the steps of:

(a) responsive to a read request, transferring said addressed data to the host as a CCM read hit from said CCM if stored therein, otherwise staging to said CCM as a CCM read miss a data block containing said addressed data from the corresponding said DCM and transferring said data block to the host if stored therein, otherwise staging said data block to said corresponding DCM as a DCM read miss from the corresponding said plurality of DASDs and providing said data block to said CCM and then to the host, wherein said data block staging is sequential or nonsequential according to the data addresses contained therein;

(b) responsive to the nonsequential staging of a data block from a DCM to said CCM as a CCM nonsequential read miss, demoting in said DCM said data block to the lowest priority in the corresponding said DCM LRU list;

(c) responsive to the sequential staging of a first data block from a DCM to said CCM as a CCM sequential read miss, demoting in said DCM a second data block sequentially preceding said first data block to the lowest priority in the corresponding said DCM LRU list;

(d) responsive to a write request addressing data contained in a data block stored in said CCM that was staged to said CCM as a CCM nonsequential read miss, restaging to the corresponding said DCM said data block from the corresponding said plurality of DASDs if said data block is not already stored in said corresponding DCM; and

(e) responsive to a demotion in CCM LRU priority of a data block that was previously demoted in the corresponding said DCM to the lowest DCM LRU priority after staging to said CCM as a CCM nonsequential read miss, restaging to said corresponding DCM said demoted data block from said plurality of DASDs.

5,627,991

CACHE MEMORY HAVING A MULTIPLEXOR ASSEMBLY FOR ORDERING OUTPUT ON A DATA CHUNK BASIS

R. Kenneth Hose, Jr., Aloha, Oreg.; Jeffrey L. Miller, Vancouver, Wash., and David P. DiMarco, Hillsborough, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 175,199, Dec. 28, 1993, abandoned. This application Feb. 12, 1996, Ser. No. 600,466

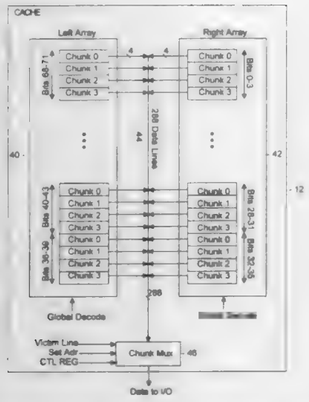
Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—456 **30 Claims**

10. A cache memory for storing data coupled to a central processing unit (CPU) over a system bus having a predefined bus width, said cache memory comprising:

a memory array for storing data comprising data bits, said memory storing said data within said array in data lines, each of said data lines being divided into a plurality of data chunks having a predefined number of said data bits corresponding to the width of said bus to facilitate retrieval of the data line;

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a multiplexor assembly coupled to said memory array over a cache bus, said multiplexor assembly receiving data from said memory array and sending said data to said CPU over said system bus, said multiplexor assembly comprising a plurality of multiplexors and a plurality of latches for receiving in parallel data chunks of a line of said data from said array, selectively latching said received data chunks by one predetermined subset of at least two of said received data chunks at a time, and serially outputting the at least two data chunks of a latched predetermined subset in a variable manner, under the control of said CPU.

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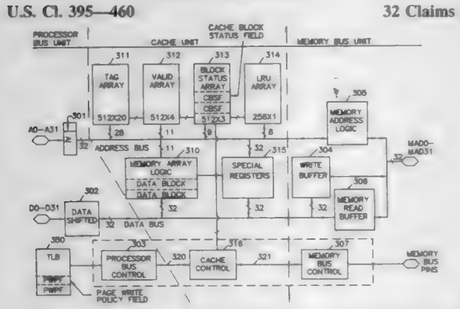
ORGANIZATION OF AN INTEGRATED CACHE UNIT FOR FLEXIBLE USAGE IN SUPPORTING MICROPROCESSOR OPERATIONS

Gigy Baror, Austin, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Continuation of Ser. No. 559,550, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 146,076, Jan. 20, 1988, abandoned. This application May 4, 1995, Ser. No. 434,494

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—460 **32 Claims**



1. A cache memory subsystem operable in a write-through write mode and a copy-back write mode, said cache memory subsystem comprising:

a storage array containing a plurality of blocks;

a plurality of cache block status fields, wherein each of said plurality of cache block status fields corresponds to an individual block in said storage array;

a translation lookaside buffer configured to identify a page of addressed information and including a page write policy field corresponding to said page of addressed information, said TLB write policy field capable of being set in a first TLB write policy state associated with said write-through write mode and in a second TLB write policy state associated with said copy-back write mode, wherein said page of addressed information includes multiple blocks;

one or more write policy pins capable of being placed in a first write policy pin state associated with said write-through write mode and in a second write policy pin state associated with said copy-back write mode; and

a cache control unit for controlling a transfer of data when a write hit operation to a particular block in said storage array occurs, wherein said cache control unit is configured to effectuate said transfer of data in either said write-through write mode or in said copy-back write mode depending upon a state of a cache block status field corresponding to said particular block, and wherein said cache control unit is further configured to update said state of said cache block status field according to a state of said one or more write policy pins in response to one read or write cache operation and according to said TLB write policy field in response to another read or write cache operation, and wherein said state of said one or more write policy pins is independent of said TLB write policy field.

5,627,993

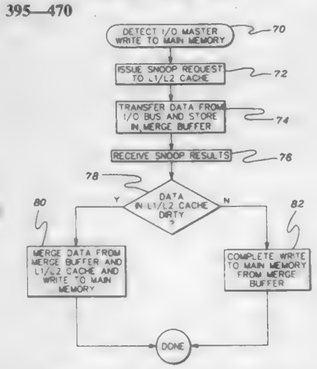
METHODS AND SYSTEMS FOR MERGING DATA DURING CACHE CHECKING AND WRITE-BACK CYCLES FOR MEMORY READS AND WRITES

Richard P. Abato, Brookline, N.H.; William R. Greer, Waterville, Vt., and Christopher M. Herring, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 326,973, Oct. 21, 1994, Pat. No. 5,553,265. This application Apr. 29, 1996, Ser. No. 639,398

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—470 **8 Claims**



1. In a computer system having a main memory, a primary processor, a store-in cache for said primary processor, and a secondary processor, and wherein the computer system performs a plurality of write-back cycles, each write-back cycle updating the main memory with a data stream from said store-in cache, said data stream comprising data elements, a method for responding to a main memory write request from the secondary processor, said method comprising the step of:

(a) inserting secondary processor data elements from the secondary processor into the data stream during at least one of the write-back cycles.

5,627,994

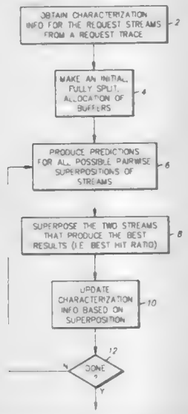
METHOD FOR THE ASSIGNMENT OF REQUEST STREAMS TO CACHE MEMORIES

Hanoch Levy, Rockville, Md., and Robert J. T. Morris, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 29, 1994, Ser. No. 283,098

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—477 **30 Claims**



1. A computer-implemented method for assigning data request streams to various ones of a plurality of data caches, the method comprising the steps of:

obtaining characterization information for the request streams; and

determining an assignment of the request streams to the caches using the characterization information, such that a likelihood is optimized that a request from a given request stream is directed to a data page within a cache to which the given request stream is assigned.

5,627,995

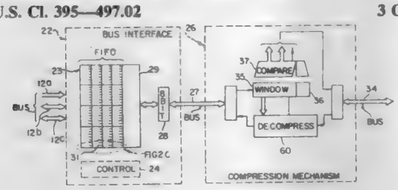
DATA COMPRESSION AND DECOMPRESSION USING MEMORY SPACES OF MORE THAN ONE SIZE

William D. Miller; Gary L. Harrington, both of Colorado Springs, Colo.; Larry M. Fullerton, Chandler, Ariz.; E. J. Weldon, Jr., Honolulu, Hi., and Chris M. Bellman, Colorado Springs, Colo., assignors to Alfred P. Gnadinger, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 679,530, Apr. 2, 1991, Pat. No. 5,490,260, which is a continuation of Ser. No. 627,722, Dec. 14, 1990, abandoned. This application Jun. 1, 1994, Ser. No. 251,465

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—497.02 **3 Claims**



5,627,996

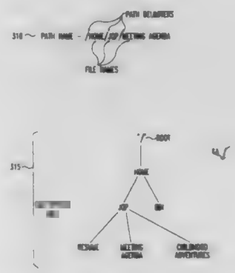
METHOD AND APPARATUS FOR ACCESSING THE SAME COMPUTER FILE USING DIFFERENT FILE NAME FORMATS

Eric J. Bauer, Tinton Falls, N.J., assignor to AT&T, Middletown, N.J.

Filed Aug. 19, 1992, Ser. No. 932,151

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—500 **21 Claims**



1. A computer-based file apparatus for accessing any of a plurality of previously-stored data files, the apparatus comprising

means for storing data files, each file identified by at least two file names formatted using different file name formats;

means for receiving a user request identifying a file name format utilized by said apparatus for a purported file name entered by a user, wherein said user request includes a purported file name having one or more appended segments and a base name, at least one of said appended segments being used to identify the file name format of said base name, said base name being used to locate a data file having a matching file name; and

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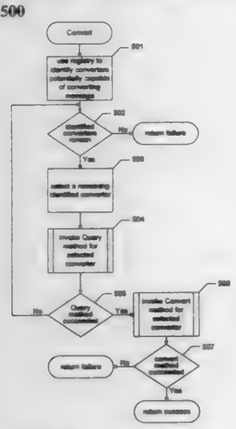
means for accessing said storing means and checking file names therein which utilize said identified file name format, to locate a data file having a file name which matches said purported file name.

5,627,997

METHOD AND SYSTEM FOR CONVERTING COMPUTER MAIL MESSAGES USING AN EXTENSIBLE SET OF CONVERSION ROUTINES

Malcolm E. Pearson, Bellevue, Wash., and Brian D. Bray, Vancouver, Canada, assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 7, 1994, Ser. No. 254,925
Int. Cl.[6] G06F *13/00*; **H04L** *12/54*
U.S. Cl. 395—500 **30 Claims**



1. A method in a computer mail system for converting a message having a class characterizing the content of the message from an original format to a destination format using a set of available conversion routines, each of the set of available conversion routines having selection information describing the classes of messages that the conversion routine was designed to convert and invocation information for use in invoking the conversion routine, the method comprising the steps of:

selecting one of the set of available conversion routines whose selection information indicates that it is designed to convert messages having the class or the message; and

invoking the selected conversion routine to convert the message from the original format to the destination format using the read invocation information of the selected conversion routine, the method further including the step of selecting one or more conversion routines from the set of available conversion routines whose selection information indicates that it is designed to convert messages having the class of the message, and wherein each of the selected conversion routines includes a query method which indicates whether the conversion routine is capable of converting the message and a convert method, and wherein the invoking step includes the steps of:

invoking the query method of each of the selected conversion routines in turn until a query method indicates that the conversion routine is capable of converting the message; and

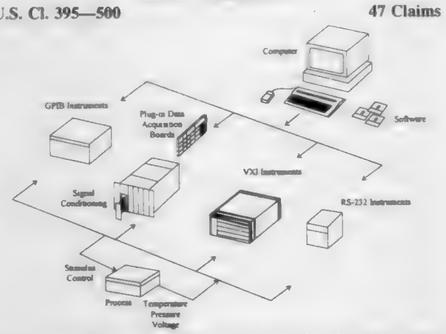
invoking the convert method of the conversion routine that is capable of converting the message in order to convert the message.

5,627,998

SYSTEM AND METHOD FOR MAPPING CALLS TO FUNCTIONS IN A FIRST DRIVER LEVEL LIBRARY TO A SESSION-BASED INSTRUMENTATION CONTROL DRIVER LEVEL SYSTEM

Dan Mondrik, and Bob Mitchell, both of Austin, Tex., assignors to National Instruments Corporation, Austin, Tex.

Filed May 24, 1995, Ser. No. 449,391
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—500 **47 Claims**



1. A method for mapping calls to functions in a first driver level library to the Virtual Instrument Software Architecture (VISA) driver level library, wherein the method is performed in an instrumentation system including a computer system, the method comprising the computer-implemented steps of:

receiving a call to a first function in said first driver level library to initialize said first driver level library;

allocating one or more data structures for storing session identifiers in response to receiving said call to said first function in said first driver level library to initialize said first driver level library;

receiving a call to a second function in said first driver level library, wherein said call to said second function in said first driver level library maps to one or more resources in said VISA driver level library;

determining if sessions have been opened to said one or more VISA resources;

opening sessions to said one or more VISA resources if sessions have not yet been opened to said one or more VISA resources, wherein said step of opening creates session identifiers for each session to said one or more VISA resources;

storing said session identifiers in said one or more data structures created in said step of allocating, wherein said step of storing is performed after said step of opening sessions to said one or more VISA resources; and

performing one or more operations on said one or more VISA resources to implement functionality indicated by said call to said second function in said first driver level library.

5,627,999

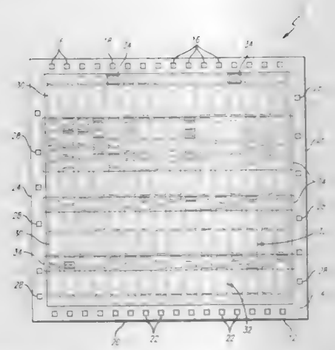
SIMILARITY-EXTRACTION FORCE-ORIENTED FLOOR PLANNER

Eric C. Cheng, Milpitas, and Ching-Yen Ho, Saratoga, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 180,731, Jan. 13, 1994, Pat. No. 5,506,788. This application Feb. 26, 1996, Ser. No. 607,226
Int. Cl.[6] G06F *17/50*; *9/455*
U.S. Cl. 395—500 **18 Claims**

1. A method for floor planning a topology for an integrated circuit having electrical circuit modules of generally uniform width which include electrical circuit cells, modules of data path cells and random logic cells, said method including the steps of:

establishing a cell-space matrix having rows and columns, the columns being of uniform width generally matching that of said modules and the rows being of variable height to cooperatively define with said columns an array of cell spaces;



assigning one or more of said circuit cells to each of said cell spaces; and

assigning said data path cells into said cell-space matrix on a provisional basis before assigning said random logic cells into said cell-space matrix:

wherein said data path cells are separated from said random logic cells by:

identifying cells which have the same topology:

identifying a first sub-set of cells of same topology which connect to a common control connection net:

identifying a second sub-set of cells of same topology which are not cells of said first set: and

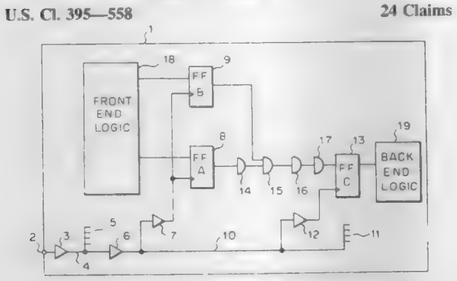
identifying as random logic cells which are not in said first or said second sub-sets.

5,628,000

CLOCK DISTRIBUTING LOGIC AND CLOCK SKEW CONTROL DESIGN METHOD FOR DESIGNING CLOCK DISTRIBUTING LOGIC

Masamori Kashiyama, Isehara, and Teruhisa Shimizu, Oume, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 405,759
Claims priority, application Japan, Mar. 18, 1994, 6-048338
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—558 **24 Claims**



1. A method of designing clock distributing logic such that said clock distributing logic reduces clock skew in a circuit by causing a delay in said clock distributing logic to coincide with a delay of a desired clock signal distributing cycle, said clock distributing logic operates in synchronism with a clock signal to distribute said clock signal applied to a clock input pin of said circuit through at least two stages of clock amplifying gates to flip-flops on source and sink sides of said circuit, said method comprising the steps of:

carrying out delay simulation by simulating a delay which occurs during transfer of said clock signal from said clock input pin through said clock distributing logic to a flip-flop,

wherein said carrying out delay simulation step includes the steps of:

determining a source side clock delay representative of a delay which occurs during transfer of said clock signal from said clock input pin to said flip-flop on the source side of said circuit, and

determining a sink side clock delay representative of a delay which occurs during transfer of said clock signal from said clock input pin to said flip-flop on the sink side of said circuit;

determining a path delay which occurs during transfer of said clock signal from said flip-flop on the source side of said circuit to said flip-flop on the sink side of said circuit;

determining a sum of a difference between said source side clock delay and said sink side clock delay and said path delay; and

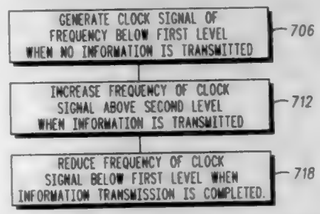
changing driving ability of each clock amplifying gate of a last stage of said at least two stages of clock amplifying gates based on said sum of said difference between said source and sink side clock delays, and said path delay and said delay of said desired clock signal distributing cycle.

5,628,001

POWER SAVING METHOD AND APPARATUS FOR CHANGING THE FREQUENCY OF A CLOCK IN RESPONSE TO A START SIGNAL

Lawrence D. Cepuran, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 980,012, Nov. 23, 1992, abandoned. This application Sep. 18, 1995, Ser. No. 529,766
Int. Cl.[6] G06F *1/04*; *1/08*
U.S. Cl. 395—556 **10 Claims**



10. A serial bus communication system, comprising:

a serial bus including a first unidirectional conductor, a second unidirectional conductor, and a clock conductor;

a system processor including a serial port coupled to the serial bus and a clock signal generator coupled to the serial port for generating a clock signal on the clock conductor of the serial bus, the system processor operative to receive a transmission initiation signal and to control the clock signal generator output frequency supplied to the clock conductor;

a element coupled to the serial bus, the element responsive to a signal input thereto to generate the transmission initiation signal supplied to the system processor prior to communicating, the element communicating at a frequency controlled by the clock signal frequency;

wherein the processor element is responsive to an information-transmission initiation signal to increase the clock frequency on the serial bus, whereby the element and the processor communicate at a higher frequency after receipt of the information-transmission initiation signal to communicate information over the serial bus, and the processor reducing the clock frequency on the serial bus at the conclusion of communication between the processor and the element to conserve energy.

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5,628,002

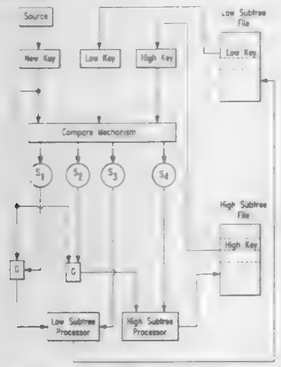
BINARY TREE FLAG BIT ARRANGEMENT AND PARTITIONING METHOD AND APPARATUS

Luther J. Woodrum, P.O. Box 1847, Poughkeepsie, N.Y. 12601

Filed Nov. 2, 1992, Ser. No. 970,399

Int. Cl.[6] G06F *7/24*

U.S. Cl. 395—607 **18 Claims**



1. A method for sorting three keys into two sets, comprising the steps of

computing the three exclusive-OR differences or similarities in values between each of three pairs of keys,

comparing for value the differences or similarities to each other, outputs of said comparing steps thereby determining according to a prescribed rule

a partition of the three keys into said two sets in which every key in one set is lexicographically greater than every key in the other set.

5,628,003

DOCUMENT STORAGE AND RETRIEVAL SYSTEM FOR STORING AND RETRIEVING DOCUMENT IMAGE AND FULL TEXT DATA

Hiromichi Fujisawa, Tokorozawa; Atsushi Hatakeyama, Kokubunji; Yasuaki Nakano, Hino; Junichi Higashino, Koganei, and Toshihiro Hananoi, Naka-gun, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 139,781, Dec. 30, 1987, Pat. No. 5,265,242, which is a division of Ser. No. 894,855, Aug. 8, 1986, abandoned. This application Aug. 24, 1993, Ser. No. 111,511

Claims priority, application Japan, Aug. 23, 1985, 60-184181

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—615 **11 Claims**

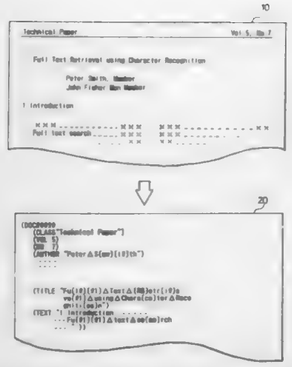
1. A document storage and retrieval system for storing and retrieving textual documents, comprising:

image file means for storing textual documents which are digital image data, said textual documents including bibliographic items providing bibliographic information of said textual documents and body text data providing data of text found in bodies of said textual documents;

document recognition means, coupled to said image file means, for recognizing said textual documents, said document recognition means includes:

(a) means for extracting pattern elements forming character patterns from said digital image data,

(b) a document knowledge file for storing regulations of a layout of said bibliographic items in said textual documents as document knowledge,



(c) character segmentation means for extracting character patterns by analyzing said pattern elements with reference to said document knowledge in said document knowledge file, and

(d) recognition means for recognizing said extracted character patterns, said recognition means outputs a recognition result including said bibliographic items and said body text data with a layout structure name corresponding to the recognition result;

data base file means, coupled to said document recognition means, for storing said bibliographic items and information as bibliographic information of said outputted recognition result with said layout structure name;

text file means, coupled to said document recognition means, for storing at least said body text data as document contents of recognized textual documents;

input means for inputting a request of a search keyword;

retrieval means, coupled to said image file means, said data base file means, said text file means and said input means, for retrieving digital image data of at least one textual document which includes said search keyword based on said stored bibliographic information and said stored body text data; and

output means, coupled to said retrieval means, for outputting said retrieved digital image data of at least one textual document.

5,628,004

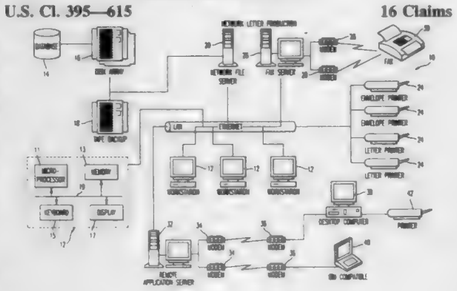
SYSTEM FOR MANAGING DATABASE OF COMMUNICATION OF RECIPIENTS

Michael Gormley, Washington, D.C.; Kevin Potter, Vienna, Va., and Jennifer Kelly, Washington, D.C., assignors to Optima Direct, Inc., Vienna, Va.

Continuation-in-part of Ser. No. 334,127, Nov. 4, 1994, abandoned. This application Nov. 18, 1994, Ser. No. 343,976

Int. Cl.[6] G06F *7/20;17/30*

U.S. Cl. 395—615 **16 Claims**



10. A method of storing and manipulating data relating to recipients of a communication from one or more different contact persons, comprising:

entering a new record into a temporary file in a memory device using a data processing device;

creating a match key for said new record;

searching a database in said memory device for existing records previously entered therein and assigned corresponding match keys which are similar to said new record; and

storing said new record in said database if none of said match keys corresponding to said existing records are similar to said new record match key, and storing said new record in a temporary database file if one of said match keys of said existing records is similar to said new record match key.

5,628,005

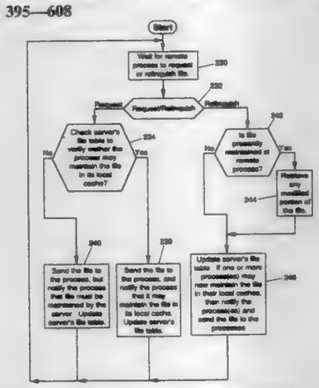
SYSTEM AND METHOD FOR PROVIDING OPPORTUNISTIC FILE ACCESS IN A NETWORK ENVIRONMENT

Hans Hurvig, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 7, 1995, Ser. No. 478,454

Int. Cl.[6] G06F *12/00;17/30*

U.S. Cl. 395—608 **12 Claims**



1. A method for allocating and managing files in a multi-user network environment of the type having at least one server with a file directed for shared usage, and a plurality of clients interconnected with the server through a network link, each client having at least two identifier sockets, wherein a first identifier socket is configured for bi-directional communication between the client and the server and a second identifier socket is configured for unidirectional communications initiated by the server, the method comprising the steps of:

transmitting by the client through said first identifier socket a request to the server for the file;

determining by the server whether the file is available to the client for opportunistic access;

transmitting by the server the file to the requesting client through the first identifier socket;

notifying the client by the server whether the client has an opportunistic lock on the file or whether the file must be maintained at the server; and

sending by the server a message to the client through the second identifier socket that the client must relinquish the opportunistic access to the file when the server determines that opportunistic access is no longer available.

5,628,006

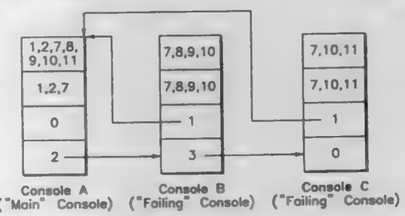
COMPUTER PROGRAM PRODUCT AND PROGRAM STORAGE DEVICE FOR MERGING AND SEPARATING ATTRIBUTES OF CONSOLES

Peter A. Fatzinger, Poughkeepsie; Martin K. Leung, Wattingers Falls; Kevin Chou, and Sockallingam Radhakrishnan, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 368,767, Jan. 4, 1995, Pat. No. 5,491,819, which is a continuation of Ser. No. 775,204, Sep. 5, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 488,028

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—618 **19 Claims**



8. A computer program product for use in a computer system, said computer program product comprising:

a computer usable medium having computer readable program code means embodied in said medium for causing a computer to perform merge transactions and non-failure rollback transactions between data structures without logging, said computer readable program code means comprising:

(a) computer readable program code means for causing a computer to store first and second data structure objects, each object comprising:

(i) computer readable program code means for causing a computer to store original attributes that define that object;

(ii) computer readable program code means for causing a computer to store apparent attributes merged into that object from the other object;

(iii) computer readable program code means for causing a computer to store a switch-to pointer; and

(iv) computer readable program code means for causing a computer to store a switch-chain pointer; and computer program code means for causing a computer to perform at least one of:

(b) processing a merge transaction, including:

(i) computer readable program code means for switching said switch-to pointer of said second object to point to said first object;

(ii) computer readable program code means for switching said switch-chain pointer of said first object to point to said second object to thereby form a switch chain; and

(iii) computer readable program code means for logically ORing said apparent attributes of said first and second objects to thereby render said second object idle and permit said first object to control the attributes of said second object; and

(c) rolling back a merge transaction, including:

(i) computer readable program code means for removing said second object from said switch-chain; and

(ii) computer readable program code means for logically ANDing said original attributes of said first object with said apparent objects of said first object and storing the resulting group of attributes as new apparent attributes for said first object.

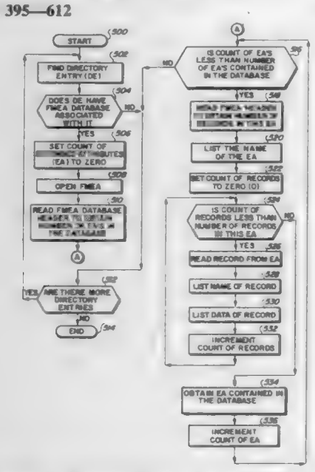
VOL 1198 ISS 1 MY 6 1997 UMI

5,628,007

METHODS FOR STORING A DATABASE IN EXTENDED ATTRIBUTES OF A FILE SYSTEM

Carlos A. Nevarez, Orem, Utah, assignor to Novell, Inc., Orem, Utah

Continuation-in-part of Ser. No. 165,971, Dec. 10, 1993, Pat. No. 5,499,358. This application Jun. 9, 1995, Ser. No. 489,128
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—612 **13 Claims**



1. A method of searching entries corresponding to files in a directory table maintained on a computer network, comprising the steps of:

providing a directory table, comprising a plurality of directory entries, each directory entry having a field corresponding to the location of EA data;

providing a first directory entry having an EA field corresponding to a first location in memory, wherein said first location includes extended attribute information which is compliant with FMEA architecture;

providing a second directory entry having an EA field corresponding to a second location in memory, wherein said second location comprises EA data which is non-FMEA compliant;

searching the EA field associated with a plurality of directory entries in said directory entry table, including said first directory and said second directory entry;

interrogating said first location in memory and said second location in memory; and

identifying said first directory entry as having EA data associated therewith which is FMEA compliant based on the results of said searching steps.

5,628,008

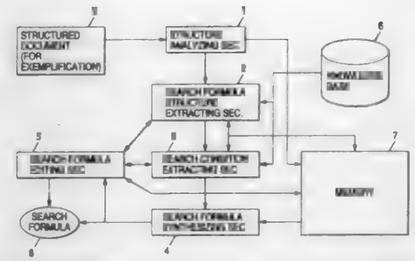
STRUCTURED DOCUMENT SEARCH FORMULA GENERATION ASSISTING SYSTEM

Shoichi Hayashi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1995, Ser. No. 490,249
Claims priority, application Japan, Jun. 15, 1994, 6-133105
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—603 **4 Claims**

1. A system for assisting generation of a search formula used for effecting retrieval processing with respect to a structured document, comprising:

storage means for storing the structured document;



structure extracting means for extracting, based on a substructure of the structured document exemplified by a user as a search result, a substructure including the exemplified substructure; and

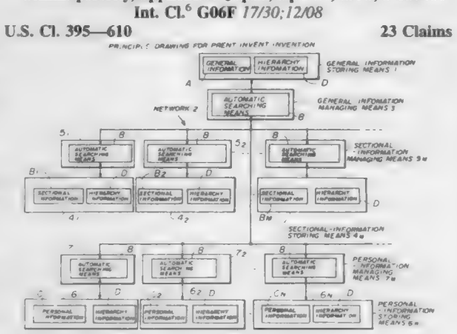
search formula synthesizing means for synthesizing a search formula from the extracted substructure.

5,628,009

INFORMATION RETRIEVAL SYSTEM USING HIERARCHICAL DATA-MANAGEMENT FUNCTION

Yasuyo Kikuta; Akira Murata, and Masaki Hiraga, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 196,849, Feb. 15, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 531,829
Claims priority, application Japan, Apr. 14, 1993, 5-087480
Int. Cl.[6] G06F *17/30;12/08*
U.S. Cl. 395—610 **23 Claims**



1. An information retrieval system comprising:

a plurality of management-means hierarchies, each management-means hierarchy of said plurality of management-means hierarchies comprising at least one storing means and one management means, each storing means storing therein information units to be retrieved, a network being common to all management means and each management means managing the respective storing means; and

automatic retrieval means for automatically retrieving a predetermined information unit from among the information units stored in each of said storing means using hierarchy information which is used for hierarchically managing the information units stored in each of said storing means;

wherein said plurality of management-means hierarchies comprises at least three hierarchies including:

at least one general-information storing means and one general-information managing means, said general-information storing me, arts storing general information sets which are managed by said general-information managing means which is provided in said network;

a plurality of sectional-information storing means and a plurality of sectional-information management means, said plurality of sectional-information sets which are managed by respective ones of said plurality of sectional-information managing means, said plurality of sectional-information managing means being provided in said network; and

a plurality of personal-information storing means and a plurality of personal-information management means, said plurality of personal-information sets which are managed by respective ones of said plurality of personal-information managing means, said plurality of personal-information managing mean being provided in said network; and

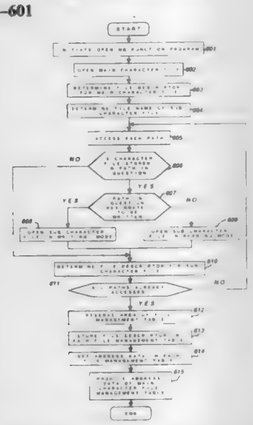
wherein said automatic retrieval means retrieves a predetermined information unit from among said general information sets, said sectional information sets, and said personal information sets, in response to a relevant retrieval command being input to said information retrieval system.

5,628,010

METHOD AND DEVICE FOR ACCESSING CHARACTER FILES IMAGE DATA

Isamu Ooishi, and Fumihisa Kobayashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 108,106, Aug. 17, 1993, abandoned. This application Jul. 17, 1996, Ser. No. 682,384
Claims priority, application Japan, Feb. 19, 1993, 5-030972
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—601 **12 Claims**



1. A method for accessing character files including a read-out only first character file for storing first character code data for independently specifying a character or a graphic of a particular design and first graphic pattern data representing the character or the graphic corresponding to each first character code data, and a read/write second character file for storing user defined second character code data for independently specifying a character or a graphic designed by a user and second graphic pattern data representing the user designed character or graphic corresponding to each user defined second character code data, comprising the steps of:

entering a first character file name of the first character file, storing position data of the first character file, and storing position data of the second character file;

determining a second character file name of said second character file on the basis of said first character file name;

opening the first character file on the basis of said first character file name and said storing position data of the first character file;

opening the second character file on the basis of said second character file name and said storing position data of the second character file at the same time of opening the first character file;

generating first character file access information for use in accessing the first character file, and second character file access information for use in accessing the second character file in order to create a second character file management table for storing said second character file access information and a first character file management table for storing said first character file access information, a number of second character files being opened, and address data of said second character file management table;

retrieving the first character file or the second character file to read the first or second graphic pattern data corresponding to the first or second character code data entered by the user;

wherein said step of retrieving, as applied to the second character file, further includes writing, replacing or deleting the second graphic pattern data corresponding to the second character code data entered by the user; and

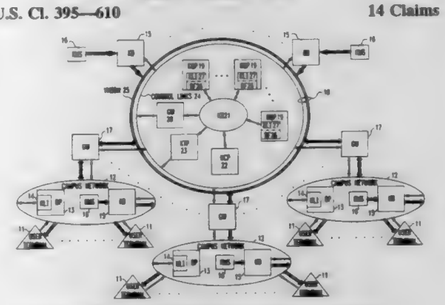
closing simultaneously the first character file and the second character file.

5,628,011

NETWORK-BASED INTELLIGENT INFORMATION-SOURCING ARRANGEMENT

Syed V. Ahamed, Somerset, and Victor B. Lawrence, Holmdel, both of N.J., assignors to AT&T, Middletown, N.J.

Filed Jan. 4, 1993, Ser. No. 421
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—610 **14 Claims**



14. An intelligent communications network comprising:

a plurality of localized networks;

a second network interconnecting the plurality of localized networks;

means in an individual localized network responsive to receipt of a query from a requester, for parsing the query to identify a subject of the query and to identify an operation in the query to be performed with respect to the subject;

a subject dictionary in the individual localized network that lists subjects that are available in the individual localized network and operations permitted to be performed in the individual localized network with respect to the available subjects;

means in the individual localized network cooperative with the parsing means and the subject dictionary, for determining whether the identified subject is available in the individual localized network and whether the identified operation is permitted to be performed in the individual localized network with respect to the identified subject;

means in the individual localized network cooperative with the determining means and responsive to a determination that the identified subject is available in the individual localized network and the identified operation is permitted in the individual localized network, for compiling the query into a locally-executable program;

means in the individual localized network cooperative with the determining means and responsive to a determination that the identified subject is not available in the individual localized network, for transmitting the query to a second network;

a knowledge database in the individual localized network, including

means cooperative with the compiling means in the individual localized network, for executing the program to obtain a

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response to the query from the knowledge database in the individual localized network:

means in the individual localized network cooperative with the executing means for transmitting the response obtained at the knowledge database in the individual localized network to the requester;

means in the second network responsive to receipt of the query from the individual localized network, for parsing the query to identify a subject of the query and an operation to be performed with respect to the subject;

a subject dictionary in the second network that lists subjects that are available in the localized networks and in the second network, their logical addresses, and operations permitted in the networks with respect to the available subjects;

means in the second network cooperative with the parsing means and the subject dictionary in the second network, for determining whether the identified subject is available in one of the localized networks or the second network and whether the identified operation is permitted with respect to the identified subject;

means in the second network cooperative with the determining means in the second network and responsive to a determination that the identified subject is available in one of the localized networks or the second network and the identified operation is permitted with respect to the identified subject, for compiling the query into an executable program including the logical address of the identified subject;

means in the second network cooperative with the compiling means in the second network, for translating the logical address in the program into a physical address of the identified subject;

a plurality of subject repositories in the second network;

means in the second network cooperative with the translating means, for selecting, on the basis of the physical address in the program, a repository that contains the identified subjects;

means in the second network cooperative with the selecting means and repositories, for transporting the programs to the selected repository for execution;

means in the selected repository cooperative with the transporting means, for executing the program to obtain a response to the query from the selected repository; and

means cooperative with the executing means, for transmitting the obtained response to the requester; wherein the intelligent communications network further comprises:

a knowledge tree in the second network that defines relationships between the available subjects;

means in the second network cooperative with the compiling means and the knowledge tree, for finding, on the basis of the logical address of the identified subject, a subject related in the knowledge tree to the identified subject and for supplementing the program with the related and its logical address; wherein

the translating means in the second network comprise

means for translating the logical addresses of the identified and the related subjects in the program into physical addresses of the identified and the related subjects;

the means in the second network for selecting a repository comprise

means for selecting, on the basis of the physical addresses in the program, at least one repository that contains the identified and the related subjects;

the means in the second network for transporting the program comprise

means for transporting the program to the selected at least one repository for execution;

the executing means in the second network comprise

an individual means in each repository of the at least one repository for executing the program to obtain at least one response to the query; and

the response transmitting means in the second network comprise

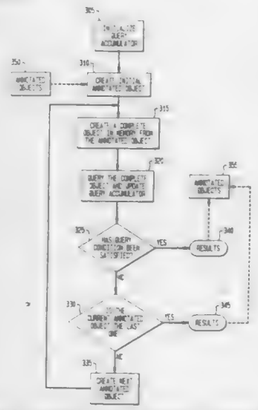
means for transmitting the at least one response to the requester.

5,628,012

METHOD AND APPARATUS FOR QUERYING A DATABASE CONTAINING DISJUNCTIVE INFORMATION

Leonid Libkin, Basking Ridge, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 16, 1995, Ser. No. 441,903
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—613 **25 Claims**



1. A method for operation of a computer system for querying a database containing disjunctive information comprising the steps in the sequence set forth of:

producing a first element of the normal form of the database;

applying a query against the first element of the normal form;

producing a second element of the normal form of the database; and

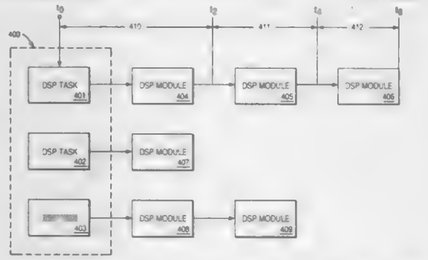
applying the query against the second element of the normal form.

5,628,013

APPARATUS AND METHOD FOR ALLOCATING PROCESSING TIME IN A FRAME-BASED COMPUTER SYSTEM

Eric C. Anderson, San Jose; A. Phillip Sohn, Campbell, both of Calif., and Hugh B. Svendsen, Atlanta, Ga., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1992, Ser. No. 954,338
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—677 **36 Claims**



1. In a computer system having a processor for processing data in real-time by executing at least one task during each of a series of predetermined duration processing frames, a computer implemented method for determining whether a first task is executable within a particular predetermined duration processing frame such that a total processing duration corresponding to said particular predetermined duration processing frame is not exceeded if said task is processed within said particular predetermined duration processing frame, comprising the steps of:

determining a required processing duration for said first task;

calculating a required processing duration for a set of tasks in a task list, said set of tasks including at least one second task designated for execution during said particular predetermined duration processing frame, said at least one second task included in said task list for said particular predetermined duration processing frame, said task list specifying at least said second task to be executed in said particular predetermined duration processing frame;

calculating an amount of processing time available in said particular predetermined duration processing frame by subtracting said required processing duration for said set of tasks from said total processing duration; and

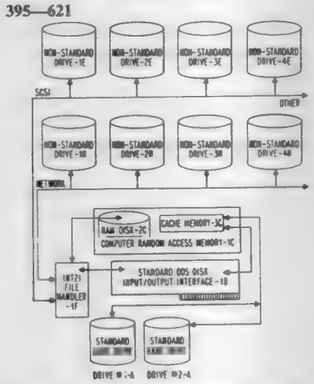
installing said first task in said task list if said amount of processing time available is at least as great as said required processing duration for said first task, otherwise generating a signal indicating said first task cannot be installed.

5,628,014

METHODS AND APPARATUS FOR NODE CACHING AT THE FILE LEVEL

Albert B. P. Cecchini, Jamestown, N.Y., and David Kessler, Lexington, Mass., assignors to ParaNode, Inc., Jamestown, N.Y.

Continuation of Ser. No. 853,975, Mar. 20, 1992, abandoned. This application Feb. 3, 1995, Ser. No. 383,665
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—621 **19 Claims**



1. A DOS based computer system having node caching at a file level, said system comprising:

a CPU for generating instructions, wherein said instructions include those for accessing, retrieving or writing to portions of files or entire files, wherein the instructions for accessing, retrieving or writing contain those instructions directed through DOS interrupt **21**;

a non-standard DOS drive in which desired files or nodes have been stored and from which said desired files or nodes can be accessed, retrieved or written, said desired files or nodes containing stored information;

a standard DOS drive, recognized by said CPU as a standard DOS drive, adapted for storage of file information and access, retrieval or writing of files, wherein the access, retrieval or writing of files from said standard DOS drive can be achieved faster than access, retrieval or writing of files from said non-standard DOE drive; and

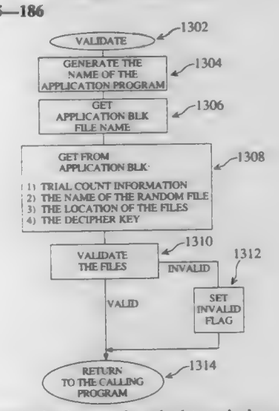
a file handler, connected to said non-standard DOS drive, said standard DOS drive, and to said CPU, wherein said file handler monitors said CPU generated instructions directed through DOS interrupt **21** and caches portions of said desired files or nodes from said non-standard DOS drive in said standard DOS drive in response to instructions directed through DOS interrupt **21** for accessing, retrieving or writing said portions of said desired files or nodes from said non-standard DOS drive.

5,628,015

METHOD FOR UNLOCKING SOFTWARE FILES LOCKED TO A SPECIFIC STORAGE DEVICE

Jitendra K. Singh, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 210,828, Mar. 18, 1994, abandoned, which is a division of Ser. No. 976,176, Nov. 13, 1992, Pat. No. 5,327,563. This application Oct. 24, 1995, Ser. No. 547,969
Int. Cl.[6] G06F *12/14*
U.S. Cl. 395—186 **3 Claims**



1. A computer implemented method to unlock a software program, the software program having a known original sector location and a current sector location on a hard disk having sectors, comprising the steps of:

causing the software program to execute if a verification process determines that all of the following conditions are true:

1. the current sector location of the software program on the hard disk is the same as the known original sector location on the hard disk where the computer retrieves the known original sector location on the hard disk; and
2. the computer determines that the software program has been executed less than a trial count number by retrieving from either a first file or a second randomly-generated and randomly-stored file the number of times the program has been executed and determining that the number of times the program has been executed does not exceed the trial count number; and
3. the computer determines that the current sector location on the hard disk of the first file, is the same location as the sector location on the hard disk at which said first file was originally stored by retrieving from said first file or a third randomly-generated and randomly-stored file the original sector location on the hard disk of the first file and comparing the original sector location on the hard disk to the current sector location on the hard disk.

5,628,016

SYSTEMS AND METHODS AND IMPLEMENTING EXCEPTION HANDLING USING EXCEPTION REGISTRATION RECORDS STORED IN STACK MEMORY

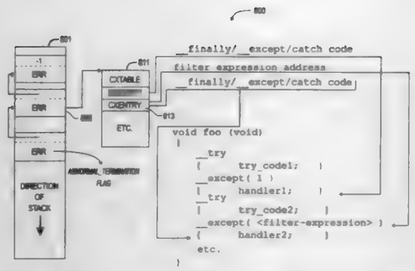
Peter Kukol, Aptos, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Filed Jun. 15, 1994, Ser. No. 262,072
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—704 **40 Claims**

23. A system for developing compiled computer code, the system comprising:

a computer having a microprocessor and a memory, said memory including a stack memory for storing function arguments and local data;

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a compiler for generating computer code from source listings, said source listings including definitions of functions some of which include exception handling constructs;

means, operably coupled to said compiler, for identifying by the system a function having an exception handling construct, said exception handling construct specifying that a particular exception handler is to be invoked upon occurrence of an exception which arises during operation of said function; and

means for storing on said stack memory at a location after function arguments and local data for the function an exception registration record describing said particular exception handler, said exception registration record storing a pointer to a previous exception registration record registered for another function whose execution has begun but has yet to complete, wherein said exception registration record describing said particular exception handler resides at one end of said stack memory during execution of the function.

5,628,017

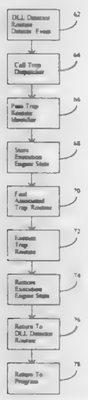
METHOD AND SYSTEM FOR PROVIDING EVENT-RESPONSE CAPABILITIES TO PSEUDOCODE

Randy S. Kimmerly, and Robert E. Saile, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 31,566, Mar. 15, 1993, abandoned. This application Jan. 29, 1996, Ser. No. 593,544

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—704 **21 Claims**



1. A method of responding to an event by using a pseudocode program executed by an execution engine comprising:

passing identification information identifying an event-response routine to an event detector routine, the event-response routine being a pseudocode routine included in the pseudocode program and including pseudocode instructions for responding to the event;

detecting the event using the event detector routine;

in response to detecting the event, performing the following substeps:

interrupting execution of the pseudocode program by the execution engine;

saving a state of the execution engine, including saving contents of an instruction counter indicating a location in the pseudocode program at which the execution of the pseudocode program was interrupted;

accessing the event-response routine using the identification information;

executing the event-response routine using the execution engine; and

restoring the saved state of the execution engine, including the contents of the instruction counter, after the execution engine executes the event-response routine.

5,628,018

DATA PROCESSING APPARATUS HANDLING PLURAL DIVIDED INTERRUPTION

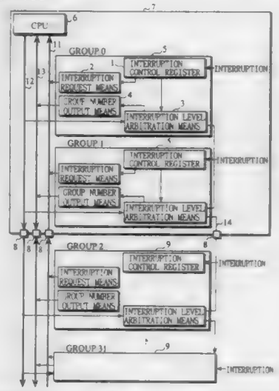
Toshimichi Matsuzaki, Mino, and Nobuo Higaki, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 3, 1994, Ser. No. 333,747

Claims priority, application Japan, Nov. 5, 1993, 5-276756

Int. Cl.[6] G06F *13/26*

U.S. Cl. 395—733 **40 Claims**



1. An interruption processing apparatus for controlling interruptions, installed in a microcomputer which contains a central processing unit (CPU) which receives a number of interruption signals, comprising:

mask level output means for outputting a mask level which shows an interruption level which can be received by the CPU;

a plurality of interruption group control means, each receiving interruptions from an input/output device (I/O) at its own predetermined level and outputting to the CPU; and

interruption handler initiation means for initiating a single program starting from a fixed address which processes a transfer to an interruption signal, no matter from what interruption group control means the interruption is received,

wherein every interruption group control means comprises:

an interruption control register means for storing the predetermined interruption level for a group including interruption request flags showing when each of the interruption requests in a group occurs;

interruption request means for outputting to the CPU an interruption signal corresponding to the interruption level in the interruption control register means, based on the interruption request flags;

interruption arbitration means for adjusting conflict with other interruption group control means, based on the interruption

level stored in the interruption control register means and on the mask level inputted from the mask level output means; and

group number output means for outputting a group number predetermined for a group responding to an access from the CPU, in accordance with an arbitration result; and

wherein the program is a processing program which determines an interruption factor in a group for a interruption group control means which has outputted an interruption request.

5,628,019

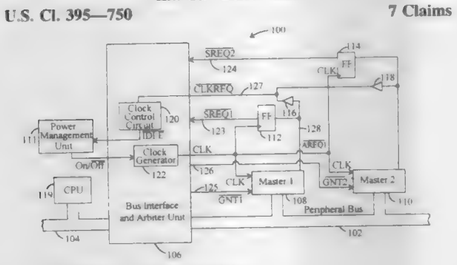
SYSTEM AND METHOD FOR CONTROLLING A PERIPHERAL BUS CLOCK SIGNAL DURING A REDUCED POWER MODE

Rita M. O'Brien, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 234,819, Apr. 28, 1994, abandoned. This application Jun. 4, 1996, Ser. No. 656,840

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750 **7 Claims**



6. A computer system comprising:

a microprocessor;

a local bus coupled to said microprocessor;

a peripheral bus;

means coupled to said local bus and to said peripheral bus for controlling the transfer of data and address signals between said local bus and said peripheral bus, said controlling means including means for arbitrating mastership of said peripheral bus;

means for selectively generating a peripheral bus clock signal on said peripheral bus, said selectively generating means including means for selecting the clock rate of said peripheral bus clock signal, said clock rate including at least a normal mode and a power reduction mode of operation;

a bus master coupled to said peripheral bus, said bus master requiring a clock signal in order to request access to said peripheral bus; and

means for providing a minimal clock rate during said power reduction mode on said peripheral bus such that said bus master can request bus access.

5,628,020

SYSTEM OSCILLATOR GATING TECHNIQUE FOR POWER MANAGEMENT WITHIN A COMPUTER SYSTEM

Rita M. O'Brien, Austin, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Continuation of Ser. No. 160,931, Dec. 1, 1993, abandoned. This application Jul. 9, 1996, Ser. No. 680,556

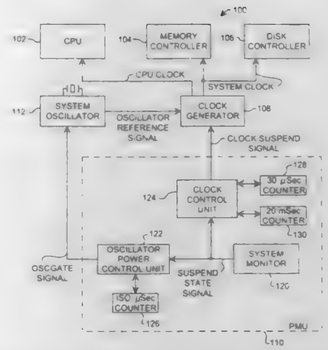
Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **8 Claims**

1. A computer system comprising:

an oscillator configured to generate a reference timing signal;

a clock generator coupled to said oscillator and configured to generate a clock signal responsive to said reference timing signal;



a system monitor configured to monitor a circuit portion of said computer system and configured to generate a suspend state signal indicative of whether said circuit portion is inactive;

a clock control unit coupled to said clock generator and to said system monitor, wherein said clock control unit is configured to stop said clock signal in response to an assertion of said suspend state signal and is configured to restart said clock signal in response to a deassertion of said suspend state signal;

a first counter coupled to said clock control unit configured to count a first predetermined time after said deassertion of said suspend state signal;

a second counter coupled to said clock control unit configured to count a second predetermined time after said assertion of said suspend state signal, wherein said clock control unit is configured to stop said clock signal said second predetermined time after said assertion of said suspend state signal;

an oscillator power control unit coupled to said oscillator and to said system monitor, wherein said oscillator power control unit is configured to remove power supplied to said oscillator in response to an assertion of said suspend state signal and is configured to restore power supplied to said oscillator in response to a deassertion of said suspend state signal, wherein said clock control unit is configured to restart said clock signal said first predetermined time after said deassertion of said suspend state signal and restoration of power to said oscillator; and

a third counter coupled to said oscillator power control unit configured to count a third predetermined time after said assertion of said suspend state signal, wherein said oscillator power control unit is configured to remove power supplied to said oscillator said third predetermined time after said assertion of said suspend state signal, said third predetermined time being longer than said second predetermined time.

5,628,021

SYSTEM AND METHOD FOR ASSIGNING TAGS TO CONTROL INSTRUCTION PROCESSING IN A SUPERSCALAR PROCESSOR

Kevin R. Iadonato, San Jose; Trevor A. Deosaran, Sunnyvale, and Sanjiv Garg, Fremont, all of Calif., assignors to Seiko Epson Corporation, Japan

Continuation-in-part of Ser. No. 999,648, Dec. 31, 1992. This application Apr. 4, 1994, Ser. No. 224,328

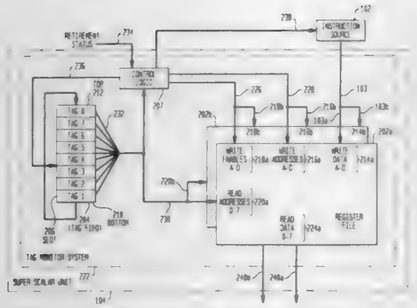
Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—800 **62 Claims**

1. A superscalar processor, comprising:

control logic that identifies an increment of advancement in the variable advance instruction window, requests an instruction source to send, to each of a plurality of register files, a portion of instruction information for a set of instructions equal in number to said increment of advancement, and assigns a tag to each new instruction that enters the variable advance

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instruction window, wherein said tag comprises a unique address in each of said plurality of register files where said portions of instruction information are to be stored; and

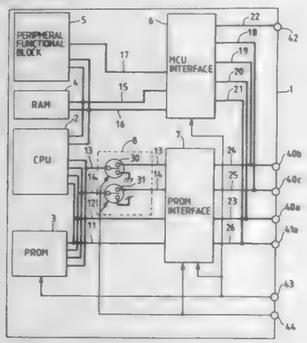
a recycling queue comprising a plurality of slots equal in number to the predetermined size of the instruction window, each of said plurality of slots containing one of said tags, wherein an order defined by a position of said assigned tags in said recycling queue corresponds to the order of instructions in the variable advance instruction window.

5,628,022

MICROCOMPUTER WITH PROGRAMMABLE ROM

Masahiro Ueno; Kenichi Ono, and Toshitaka Yamamoto, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1994, Ser. No. 252,358
Claims priority, application Japan, Jun. 4, 1993, 5-134291
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—800 **9 Claims**



1. A microcomputer having a programmable ROM, said microcomputer comprising:

a programmable ROM;

an external pin, connected to said programmable ROM, to which a mode select signal is supplied; and

control means, connected to said external pin, responsive to said mode select signal for controlling said microcomputer to operate in one of three modes, including an MCU mode in which an application system is controlled by an application program which is stored in said programmable ROM, a PROM mode in which said application program is written to said programmable ROM, and an inline mode in which predetermined data is written to a part of said programmable ROM while said microcomputer is mounted on a user system including all components of an application system,

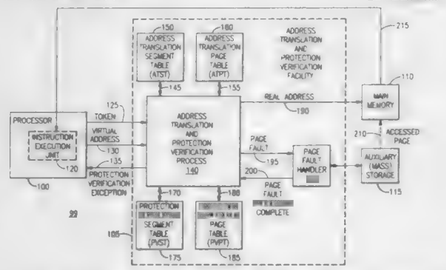
wherein said control means comprises at least an inline mode interface which includes a multiplexer for setting a part of a PROM address bus to a high level and another part of said PROM address bus to a low level in said inline mode.

5,628,023

VIRTUAL STORAGE COMPUTER SYSTEM HAVING METHODS AND APPARATUS FOR PROVIDING TOKEN-CONTROLLED ACCESS TO PROTECTED PAGES OF MEMORY VIA A TOKEN-ACCESSIBLE VIEW

Barbara J. Bryant, Clinton Corners; Glen E. Garrison, Wallkill; Danny R. Sutherland, and Kenneth G. Rubsam, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 50,694, Apr. 19, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,200
Int. Cl.[6] G06F *12/08;12/10;12/14;12/16*
U.S. Cl. 395—800 **25 Claims**



1. A virtual storage computer system having token controlled storage protection comprising:

a data processor;

a real storage means for providing a real storage area with a real address;

a virtual storage means for providing a first virtual storage area with a first virtual address;

a user program means for execution by said data processor, said user program means having a protection request means for requesting that said token controlled storage protection be provided for said real storage area via said first virtual address and that a corresponding user token be returned by said processor, a store means for storing said user token corresponding to said first virtual address, and access request means for requesting access to said real storage area and wherein said access request means includes a token-request means for requesting access to said real storage area via a token-accessible view of said real storage area;

an address translation means responsive to said access request means for translating a virtual address into a corresponding real address; and

token protect means, responsive to said protection request means, for generating said user token and a corresponding system token, and area protection means for establishing a protected view and said token-accessible view via said address translation means.

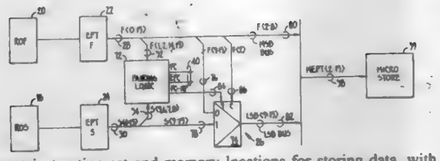
5,628,024

COMPUTER ARCHITECTURE CAPABLE OF CONCURRENT ISSUANCE AND EXECUTION OF GENERAL PURPOSE MULTIPLE INSTRUCTIONS

Robert W. Horst, Champaign, Ill., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Division of Ser. No. 300,815, Sep. 2, 1994, abandoned, which is a continuation of Ser. No. 890,299, May 27, 1992, Pat. No. 5,390,355, which is a continuation of Ser. No. 356,170, May 24, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 483,661
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—800 **6 Claims**

5. A system for concurrently issuing and executing included pairs of instructions in parallel, with an included pair of instructions comprising first and second instructions included in a first subset of instructions forming a part of a target instruction set of an existing processor having an architecture that executes the existing



target instruction set and memory locations for storing data, with the target instruction set including complicated instructions executed in multiple cycles by microcode routines stored in a micro-store included in the existing processor, said system comprising:

a micro-store holding a set of modified microcode routines for controlling the parallel data paths of a modified architecture to execute pairs of instructions in said subset or said complex instructions;

a fetch unit for fetching ordered instructions included in a program and providing a pair of adjacent instructions in the program as a first pair of instructions;

a decoder for decoding said first pair of instructions to generate a first pair of decoded results;

a pairing unit for processing said first pair of decoded results to indicate if said first pair is an included pair that is included in said subset of pairs instructions which can be concurrently issued and executed;

means for concurrently issuing said first pair of instructions to be concurrently executed by said modified architecture only if said first pair is an included pair or issuing only a first instruction in said first pair if said first pair is not an included pair; and

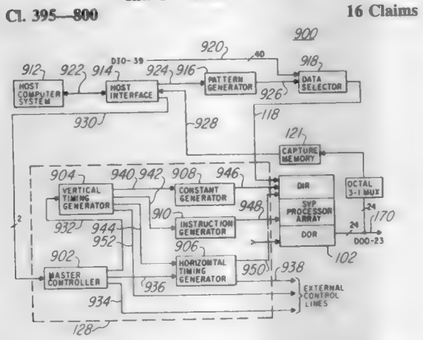
a modified architecture which provides resources, including parallel data paths, for concurrently issuing and executing pairs of instructions included in said subset that utilizes said first pair of decoded results to execute said first pair of instructions if said first pair is concurrently issued or a microcode routine to execute said first instruction if said first instruction is a complex instruction and only said first instruction is issued.

5,628,025

TIMING AND CONTROL CIRCUIT AND METHOD FOR A SYNCHRONOUS VECTOR PROCESSOR

Moo-Taek Chung, Seoul, Rep. of Korea; Jim Childers, Fort Bend, Tex.; Hiroshi Miyaguchi, Tokyo, Japan, and Manfred Becker, Ergolding, Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 421,471, Oct. 13, 1989. This application Jun. 7, 1995, Ser. No. 483,778
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—800 **16 Claims**



1. A timing controller for generating output signals including control and timing signals for a video or image processing device responsive to input signals including clock, horizontal synchronization, and vertical synchronization signals extracted from incoming video signals, said timing controller comprising:

a master controller generating a multibit vertical control signal responsive to said input signals, and generating a multibit horizontal control signal responsive to said input signals, said master controller including

a set of registers;

first multiplexer;

mask enable logic;

second multiplexer;

program address counter; and

program memory;

said set of registers storing data and clock information obtained from horizontal synchronization, vertical synchronization and clock signals and loading said information into said first multiplexer;

said first multiplexer providing said information from said set of registers to said second multiplexer and mask enable logic;

said second multiplexer providing said information to said address counter;

said address counter addressing locations in said program memory sequentially or by jump responsive to said information and said mask enable logic;

a vertical timing generator generating a multibit horizontal timing generator mode signal responsive to said vertical control signal, said horizontal timing generator mode signal including a part of said horizontal control signal;

a horizontal timing generator generating at least one pixel clock signal responsive to said horizontal control signal and said horizontal timing generator mode signal, said at least one pixel clock signal being synchronized with said horizontal and vertical synchronization signals; and

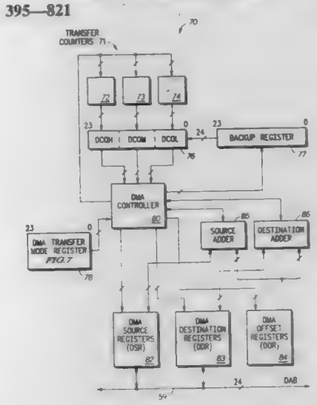
said program memory of said master controller connected to said vertical timing generator and said horizontal timing generator for outputting program signals containing address and operational mode instructions for said vertical timing generator and said horizontal timing generator.

5,628,026

MULTI-DIMENSIONAL DATA TRANSFER IN A DATA PROCESSING SYSTEM AND METHOD THEREFOR

Natan Baron, Oranit; Eliezer Zand, Bat-Yam; Oded Norman, Rosh-Hayin; Zvika Rozenshein, Cfar-Saba, and Elchanan Rushinek, Petah-Tikva, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1994, Ser. No. 349,218
Int. Cl.[6] G06F *13/28;12/00*
U.S. Cl. 395—821 **18 Claims**



VOL 1198 ISS 1 MY 6 1997 UMI

1. A method for transferring data in a data processing system, the method comprising the steps of:

storing a first address of a location in a memory;

storing a counter value;

storing an offset value;

transferring a first block of data in the memory at consecutive generated addresses for a first predetermined number of times, as determined by the counter value, starting at the first address;

adding the offset value to a last generated address; and transferring a second block of data in the memory at consecutive

generated addresses starting at a second address equal to the last generated address plus the offset value and transferring data in the memory at consecutive generated addresses for the first predetermined number of times.

5,628,027

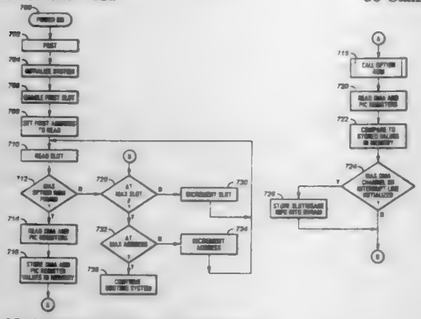
METHOD OF DETERMINING THE CONFIGURATION OF DEVICES INSTALLED ON A COMPUTER BUS

Brian V. Belmont, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 145,338, Oct. 29, 1993, Pat. No. 5,537,663. This application Dec. 30, 1994, Ser. No. 367,453

Int. Cl.[6] H01J *3/00*

U.S. Cl. 395—821 36 Claims



25. A computer system, comprising:

a system bus;

a processor coupled to said system bus for executing computer system initialization software;

a hard disk system coupled to said system bus and being initialized by said processor;

an expansion board installed in said computer system and coupled to said system bus, said expansion board containing expansion board initialization software;

resources coupled to said system bus for utilization by expansion boards installed in said system bus, said resources having registers for holding values, said resources including:

a direct memory access (DMA) controller; and

an interrupt controller;

wherein when said processor executes said computer system initialization software the following steps are performed:

(a) saving the register values of the resources as original values;

(b) executing the expansion board initialization software;

(c) reading the register values of the resources as new values after step (b);

(d) comparing the new values to the corresponding original values to determine resource utilization; and

(e) saving resource utilization information if step (d) indicates resource utilization.

5,628,028

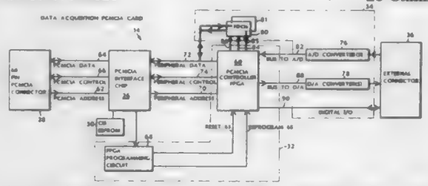
REPROGRAMMABLE PCMCIA CARD AND METHOD AND APPARATUS EMPLOYING SAME

Henry S. Michelson, North Andover, Mass., assignor to Data Translation, Inc., Mass.

Filed Mar. 2, 1995, Ser. No. 397,390

Int. Cl.[6] G06F *13/10;15/177*

U.S. Cl. 395—828 26 Claims



1. A method of configuring the specific operating functionality for a PCMCIA card connected to a host computer via a standard PCMCIA card connector on said PCMCIA card and a standard PCMCIA host socket on said host computer comprising:

storing at least one FPGA programming data file for configuring a PCMCIA card controller FPGA in a host memory of said host computer,

sending data from said FPGA programming data file to the PCMCIA interface circuit on the PCMCIA card through a standard PCMCIA bus, and

programming the PCMCIA card controller FPGA to have said specific functionality by loading the FPGA with the data from said stored FPGA programming data file,

whereby said PCMCIA card is not limited to a dedicated specific operating functionality provided on said card and can be programmed and reprogrammed with any one of a variety of FPGA programming data files provided by said host.

5,628,029

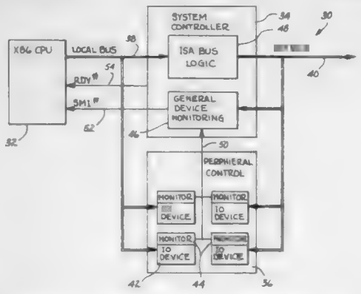
APPARATUS FOR MONITORING DISTRIBUTED I/O DEVICE BY PROVIDING A MONITOR IN EACH I/O DEVICE CONTROL FOR GENERATING SIGNALS BASED UPON THE DEVICE STATUS

David R. Evoy, Tempe, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 3, 1995, Ser. No. 383,385

Int. Cl.[6] G06F *11/30;13/00*

U.S. Cl. 395—838 16 Claims



1. A distributed input/output (I/O) device monitoring logic system for power management control comprising, in combination:

peripheral control means for monitoring I/O address ranges of a plurality of I/O devices being controlled by said peripheral control means and for detecting access to any one of said plurality of I/O devices comprising:

a plurality of I/O device control means equal in number to said plurality of I/O devices wherein an individual one of said plurality of I/O device control means is coupled to an individual one of said plurality of I/O devices for controlling said individual one of said plurality of I/O devices; and

a plurality of monitoring means equal in number to said plurality of I/O device control means wherein an individual one of said plurality of monitoring means is coupled to an individual one of said plurality of I/O device control means for monitoring an I/O address range of said individual one of said plurality of I/O devices, for generating I/O breaks when detecting access to said individual one of said plurality of I/O devices, for generating an SMI # signal after a period of inactivity to signal said system that said individual one of said plurality of I/O devices is not in use;

system controller means coupled to each of said plurality of monitoring means for monitoring activity of all of said plurality of I/O devices being controlled by said peripheral control means, for providing a ready (RDY #) signal when access to any one of said plurality of I/O devices is complete, and for transferring said SMI # signal sent from said peripheral control means; and

central processing unit (CPU) means coupled to said peripheral control means and said system controller means for receiving said RDY # signal and said SMI # signal from said system controller means and for sending information to both said system controller means and said peripheral control means.

5,628,030

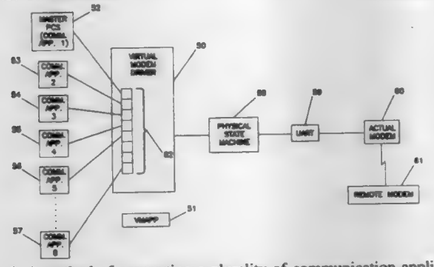
VIRTUAL MODEM DRIVER APPARATUS AND METHOD

Steven A. Tuckner, Minneapolis, Minn., assignor to Multi-Tech Systems, Inc., Moundsview, Minn.

Continuation of Ser. No. 217,797, Mar. 24, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 597,682

Int. Cl.[6] G06F *13/14;9/455;* H04M *11/00*

U.S. Cl. 395—884 34 Claims



1. A method of connecting a plurality of communication applications with an actual communication port connected to a single modem, wherein each communication application communicates with the actual communication port using an AT command set protocol, the method comprising the steps of:

(a) emulating a plurality of virtual modems in a computer memory location, each of said plurality of virtual modems for communicating with one of the plurality of communication applications;

(b) controlling said plurality of virtual modems to connect only one of the plurality of communication applications to the actual communication port at any given time;

(c) receiving and retransmitting to the actual modem AT command set-compatible initialization signals received at each of said plurality of virtual modems in order to establish proper transmission and receipt of information through each of said plurality of virtual modems to the actual modem; and

(d) responding to AT command set-compatible communication signals received from each of the communication applications which are not connected to the actual communication port with appropriate modem responses to the communication signals to maintain communication with each of the non-connected communication applications such that each non-connected communication application operates as if the non-connected communication application is connected to the actual communication port.

5,628,031

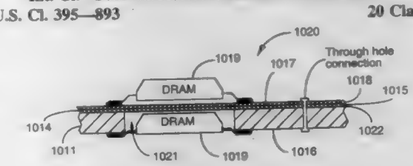
PERSONAL DIGITAL ASSISTANT MODULE IMPLEMENTED AS A LOW-PROFILE PRINTED CIRCUIT ASSEMBLY HAVING A RIGID SUBSTRATE WHEREIN IC DEVICES ARE MOUNTED WITHIN OPENINGS WHOLLY BETWEEN OPPOSITE PLANE SURFACES OF THE RIGID SUBSTRATE

Dan Kikinis, Saratoga; Pascal Dornier, Sunnyvale, and William J. Seiler, Scotts Valley, all of Calif., assignors to Elonex IP Holdings Ltd., London, England

Continuation-in-part of Ser. No. 144,231, Oct. 28, 1993, and Ser. No. 93,774, Jul. 19, 1993, Pat. No. 5,412,538. This application Nov. 7, 1994, Ser. No. 335,325

Int. Cl.[6] G06F *13/00;19/00;* H04M *11/00;* H05K *1/14*

U.S. Cl. 395—893 20 Claims



1. A digital assistant module, comprising:

an enclosure for enclosing and supporting internal elements;

a plurality of integrated circuit (IC) chips within the enclosure, including a CPU chip, interconnected by electrically conductive traces, the IC chips for performing management, calculation, display, and storage functions for the digital assistant module;

a substantially rigid substrate within the enclosure forming a support structure for the IC chips mounted wholly within cavities opening to one or both opposite parallel surfaces of the substantially rigid substrate, providing thereby a low-profile assembly; and

a touchscreen combination display and input device implemented on a surface of the enclosure.

5,628,032

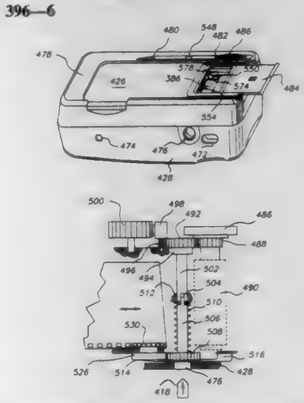
PHOTOGRAPHIC CAMERA WITH EXTERNALLY ACCESSIBLE DRIVE COUPLING HAVING RELEASABLE ANTI-BACKUP FEATURE

Dennis R. Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,387

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—6 7 Claims



1. A photographic camera of a type including an external housing having a movable closure giving access to a film guide track within the camera, the guide track extending between an unexposed film chamber and an exposed film chamber, a rotatable

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sprocket for driving film along said guide track, and a driven gear operatively connected to rotate said sprocket, characterized by:

a coupling accessible externally of said housing and operatively connected to said driven gear, said driven gear and said coupling being mounted for axial movement in said housing;

an anti-backup gear mounted for rotation and axial movement with said driven gear; and

means for preventing reverse rotation of said anti-backup gear in a first axial position of said coupling and for allowing rotation of said driven gear in either direction in a second axial position of said coupling.

5,628,033

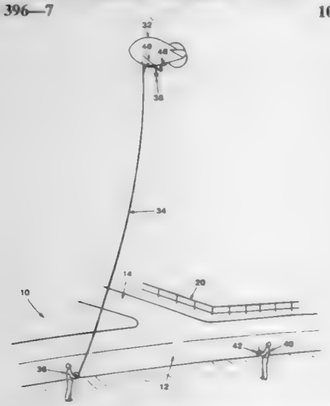
ACCIDENT INVESTIGATION AND RECONSTRUCTION MAPPING WITH AERIAL PHOTOGRAPHY

Michael A. Dilich, Evanston, and John M. Goebelbecker, Chicago, both of Ill., assignors to Triodyne, Inc., Niles, Ill.

Filed Sep. 28, 1995, Ser. No. 536,502

Int. Cl.[6] G03B *39/00; H04N 7/18; 9/47*

U.S. Cl. 396—7 **10 Claims**



1. A method of creating a photographic map of a site to be mapped, comprising the steps of

a. marking a selected portion of the site to be mapped with visible indicia of scale of that portion,

b. suspending a camera in a stationary manner over the site,

c. using the camera to create a vertically overhead photographic image of the site,

d. scaling the portion of the photographic image utilizing the indicia, and

e. creating a pictorial illustration by applying scaled symbols to the photographic image.

5,628,034

IMAGE RECORDING APPARATUS WITH MOVEMENT DETECTOR AND LASER EMITTER

Dale F. McIntyre, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1996, Ser. No. 606,717

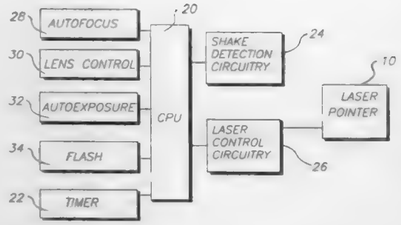
Int. Cl.[6] G03B *5/00; 7/08; 13/18*

U.S. Cl. 396—52 **7 Claims**

1. An image recording apparatus comprising a laser emitter which emits a beam of laser radiation towards a scene to be recorded, is characterized by:

a movement detector for detecting when the image recording apparatus is being moved at or above a predetermined magnitude such that blurred images may be recorded; and

a controller which controls an output level of laser radiation from the laser emitter, the controller enabling the laser emitter to emit laser radiation when the movement detector detects movement of the image recording apparatus at or above the predetermined magnitude and disabling the laser emitter from



emitting laser radiation when the movement detector detects movement of the image recording apparatus below the predetermined magnitude.

5,628,035

MOVING BODY POSITION DETECTING DEVICE

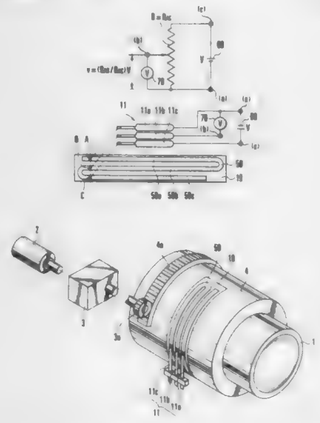
Isao Nakazawa, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1995, Ser. No. 533,319

Claims priority, application Japan, Sep. 28, 1994, 6-233087

Int. Cl.[6] G03B *1/18*

U.S. Cl. 396—87 **35 Claims**



1. A moving body position detecting device for detecting a position of a moving body, comprising:

a) three contacts;

b) a conductive member defining three conductive paths being respectively in contact with said three contacts, for detecting the position of said moving body according to relative positional relationships of said three conductive paths with respect to said three contacts, said three conductive paths being connected electrically in series with one another and disposed spatially in parallel with one another.

5,628,036

FOCUS ADJUSTMENT DEVICE AND METHOD

Masamitsu Ozawa, Kawasaki; Shigeyuki Uchiyama, Tokyo, and Toshimi Watanabe, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

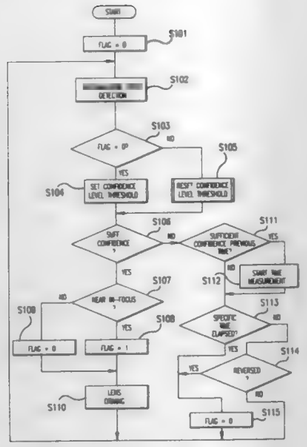
Filed Jun. 29, 1995, Ser. No. 496,662

Claims priority, application Japan, Sep. 7, 1994, 6-214065

Int. Cl.[6] G03B *3/00; 3/10*

U.S. Cl. 396—102 **20 Claims**

1. A focus adjustment device operating in a continuous focus mode comprising:



a shooting lens;

a pair of photo-electric conversion element arrays;

a focus detection optical system disposed between the shooting lens and the photoelectric conversion element arrays that guides light rays passing through the shooting lens to the photoelectric conversion element arrays;

a focus detection section in connection with the photoelectric conversion element arrays to detect information related to a defocus amount of the shooting lens based on output signals corresponding to a light intensity distribution of an object image from the pair of photo-electric conversion element arrays;

a confidence level determination section in connection with the focus detection section to determine a confidence level of detected information from the focus detection device based on predetermined determination criteria;

a lens driving section in connection with the confidence level determination section to drive the shooting lens based on the detected information when the detected information from the focus detection section is determined by the confidence level determination section to have a sufficient confidence level;

an in-focus determination section in connection with the focus detection section to determine whether or not the shooting lens is driven within permissible parameters signifying an at or near in-focus position; and

a determination criteria altering section in connection with the confidence level determination section and the in-focus determination section to alter the predetermined determination criteria so that a probability of rejecting the information from the focus detection section by the confidence level determination section for an insufficient confidence level increases when the focus detection section detects information indicating an occurrence of a defocus amount exceeding a predetermined tolerance range following a determination that the shooting lens is in a state falling within permissible in-focus parameters.

5,628,037

PARALLAX CORRECTING MECHANISM FOR REAL IMAGE TYPE VIEWFINDERS

Kazuhiro Tsuyuki, and Kazuhiko Onda, both of Saitama-ken, Japan, assignors to Fuji Photo Optical Co., Ltd., Japan

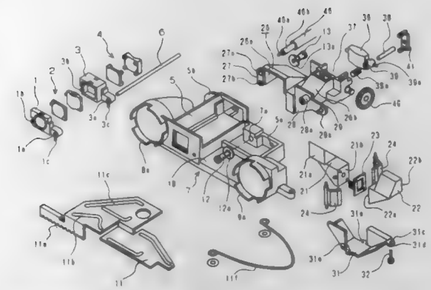
Filed Oct. 17, 1995, Ser. No. 544,298

Claims priority, application Japan, Oct. 19, 1994, 6-278552

Int. Cl.[6] G03B *13/20; 13/14*

U.S. Cl. 396—140 **26 Claims**

1. A parallax correcting mechanism for a real image type viewfinder including an objective side optical system, an erecting



optical system and an ocular side optical system, said parallax correcting mechanism comprising:

a first housing for holding and containing said objective side optical system; and

a second housing for containing at least said erecting optical system, said second housing having a support pin and supported by said first housing pivotally about said support pin,

wherein said support pin is spaced from an optical axis of said objective side optical system, and

wherein parallax correction is carried out by swinging said second housing about said support pin and thereby pivoting an optical axis of the erecting optical system at its incidence side about said support pin.

5,628,038

CAMERA HAVING A SUB-MIRROR UNIT

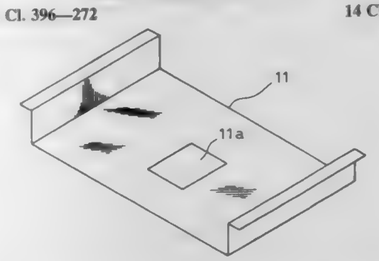
Masaki Higashihara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1994, Ser. No. 227,349

Claims priority, application Japan, Apr. 16, 1993, 5-089894; Dec. 20, 1993, 5-319992

Int. Cl.[6] G03B *7/099; 17/00*

U.S. Cl. 396—272 **14 Claims**



1. A camera having a mirror assembly, said camera comprising:

(a) a first mirror device for reflecting a first portion of object light and transmitting a second portion of the object light; and

(b) a second mirror device for reflecting the second portion of the object light transmitted through said first mirror device, said second mirror device including a base member having a protruding portion extending from a surface of said base member and a reflecting layer formed solely on said protruding portion of said base member.

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LENS-FITTED PHOTOGRAPHIC FILM UNIT

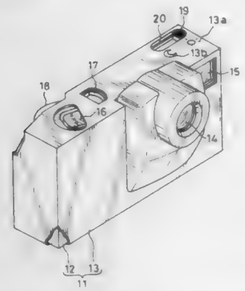
Katsuji Muramatsu; Fuminori Kawamura; Hirofumi Katsura, all of Kanagawa, and Hideo Sasajima, Ibaragi, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1994, Ser. No. 251,426

Claims priority, application Japan, May 28, 1993, 5-127021; May 28, 1993, 5-127022; Apr. 15, 1994, 6-077571

Int. Cl.[6] G03B *17/17;17/20*

U.S. Cl. 396—296 **23 Claims**



1. In a lens-fitted photographic film unit previously loaded with unexposed photographic film and having a viewfinder, a taking lens and exposure mechanism for exposing said photographic film, the improvement comprising:

a movable aperture-stop member having at least one lens aperture;

a switching member movably disposed on an upper wall portion of the film unit and operable to move said aperture-stop member so as to place or displace said lens aperture into or out of the exposure light path of said taking lens; and

an indication member movable with said stop member and inserted in the field of view of said viewfinder when said lens aperture is placed in said exposure light path.

5,628,040

FILM TRANSFER DEVICE USED IN A CAMERA

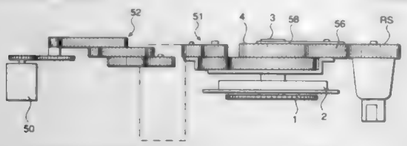
Sang-geol Lee, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 579,482

Claims priority, application Rep. of Korea, Dec. 27, 1994, 94-37466

Int. Cl.[6] G03B *1/24;1/40*

U.S. Cl. 396—396 **6 Claims**



1. A film transfer device for a camera, comprising:

a winding part;

a rewinding spindle;

a sprocket, rotatably coupled to said winding part and said rewinding spindle;

charging means, rotatably coupled to said winding part and said rewinding spindle, for controlling one frame advance of a film; and

first clutch means, coupled to said sprocket and said charging means, for equating the speed of rotation between said sprocket and said winding part when the film is being wound and for equating the speed of rotation between said sprocket and said rewinding spindle when the film is rewound.

5,628,041

FILM SUPPLYING DEVICE AND METHOD

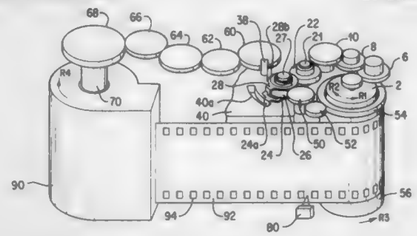
Akira Ezawa, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,829

Claims priority, application Japan, Dec. 2, 1994, 6-299674

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—418 **20 Claims**



1. A film supply device comprising:

a motor;

a transfer mechanism having an input gear rotated by the motor that rotates a winding shaft for film;

a planetary clutch mechanism including a sun gear rotated by the motor and a planetary gear revolving about the sun gear and rotated by the sun gear, the planetary gear enmeshing with the input gear and revolving in a connection direction when the sun gear rotates in a first direction, the planetary gear revolving in a release direction and being separate from the input gear when the sun gear rotates in a second direction; and

a revolution preventing mechanism, which moves between a first position in which the planetary gear is prevented from revolving in the release direction and a second position in which the planetary gear is allowed to revolve in the release direction, wherein the revolution preventing mechanism moves under force from the motor.

5,628,042

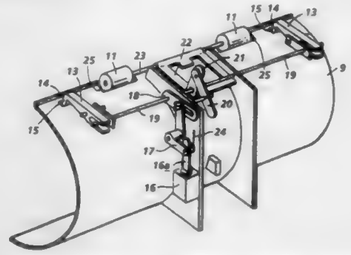
SOLENOID CONTROLLED SHEET REGISTRATION MECHANISM

Krzysztof J. Less, London, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 19, 1995, Ser. No. 375,441

Int. Cl.[6] G03G *21/14;15/00*

U.S. Cl. 399—78 **14 Claims**



1. A printing machine having a solenoid actuated mechanism for registering sheets in a sheet feeding path, the registration mechanism comprising:

a sheet registration member connected to the solenoid;

a signal generator to generate an electrical signal to energize the solenoid; and

a pulse signal generator to generate a predetermined pulsed signal to the solenoid in response to said signal generator generating an electrical signal to de-energize the solenoid as said registration member moves from a registration position in the sheet feeding path to arrest the lead edge of a sheet moving along the sheet feeding path to a nonregistration position spaced from the sheet feeding path wherein the pulsed signal minimizes noise and abrupt contact by damping the solenoid as said registration member is moved out of the sheet feeding path.

5,628,043

IMAGE FORMING APPARATUS

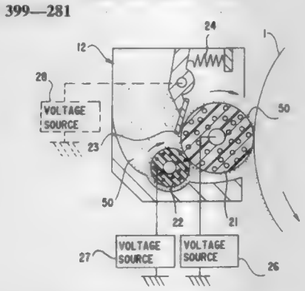
Masae Ikeda; Kunihiko Sato; Hiroyasu Ishijima, and Yoshimi Takizawa, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 306,416, Sep. 15, 1994, abandoned. This application Feb. 16, 1996, Ser. No. 602,692

Claims priority, application Japan, Sep. 20, 1993, 5-232121

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—281 **14 Claims**



1. An image forming apparatus, comprising:

image transport means driven to rotate with a latent image formed on a surface thereof;

toner transport means driven to rotate with toner attached thereto for developing said latent image and in contact with said image transport means to transport said toner to said image transport means;

toner layer thickness regulating means disposed in pressure contact with the surface of said toner transport means to regulate a thickness of a layer of toner transported in a state of being attached to the surface of said toner transport means;

means, operably coupled to said toner transport means, for regulating a thickness of a toner layer on the surface of said toner transport means; and

means for cleaning said image transport means after said latent image has been developed,

wherein the amount of charge of the toner on the surface of said toner transport means being within the range of between −16 μC/g and −19 μC/g by which the thickness of the toner layer of said toner transport means is regulated within a range of between 11 μm and 18 μm and by which said toner transport means is driven to rotate in the same direction as a direction of rotation of said image transport means at an area of contact therebetween at a peripheral velocity which is between 1.2 and 2.5 times a peripheral velocity of said image transport means.

5,628,044

PURE IRON-ZINC INTERMETALLIC GALVANNEAL CALIBRATION STANDARDS

Desmond C. Cook, Virginia Beach; Richard G. Grant, Blacksburg, and Patricia S. Cook, Virginia Beach, all of Va., assignors to Old Dominion University, Norfolk, Va.

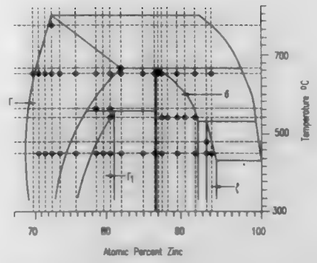
Filed Jun. 2, 1995, Ser. No. 459,167

Int. Cl.[6] C22C *1/04;* **B22F** *3/24*

U.S. Cl. 419—3 **14 Claims**

1. A method of forming an iron-zinc ahoy useful as a calibration standard, comprising the steps of:

mixing a known quantity of an iron powder together with a known quantity of a zinc powder to form a homogenous blend, wherein iron particles in said iron powder have a size of no larger than 20 μm, and wherein said iron powder has a purity of at least 97 wt % with no more than 0.5 wt % of any impurities in said iron powder being carbon or oxygen, and wherein said zinc powder has a purity of at least 97 wt % and zinc particles in said zinc powder have a size no larger than 100 μm;



compressing said homogenous blend to form a dense article including iron and zinc;

sintering said dense article for a first time and at a first temperature sufficient to cause interdiffusion of said zinc into said iron, but at a temperature less than 1000° C.;

powderizing a sintered material produced during said sintering step to produce an iron-zinc powder;

annealing said iron-zinc powder for a second time and at a second temperature sufficient to produce an annealed iron-zinc alloy;

determining the micro structure of said iron-zinc alloy; and

determining a percentage of iron and a percentage of zinc in said iron-zinc alloy from said known quantity of iron powder and said known quantity of zinc powder used in said mixing step.

10. An iron-zinc alloy calibration standard having an iron concentration between 4 and 27 wt %, made by the process of

mixing a known quantity of an iron powder together with a known quantity of a zinc powder to form a homogenous blend, wherein iron particles in said iron powder have a size of no larger than 20 μm, and wherein said iron powder has a purity of at least 97 wt % with no more than 0.5 wt % of any impurities in said iron powder being carbon or oxygen, and wherein said zinc powder has a purity of at least 97 wt % and zinc particles in said zinc powder have a size no larger than 100 μm;

compressing said homogenous blend to form a dense article including iron and zinc;

sintering said dense article for a first time and at a first temperature sufficient to cause interdiffusion of said zinc into said iron, but at a temperature less than 1000° C.;

powderizing a sintered material produced during said sintering step to produce an iron-zinc powder;

annealing said iron-zinc powder for a second time and at a second temperature sufficient to produce an annealed iron-zinc alloy.

5,628,045

PROCESS AND DEVICE FOR PRODUCING SINTERED PARTS

Karl-Heinz Lindner, Mülheim, and Rudolf Schneider, Fröndenberg, both of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, and BT Magnet-Technologie GmbH, Herne, both of Germany

Filed Jun. 7, 1996, Ser. No. 659,948

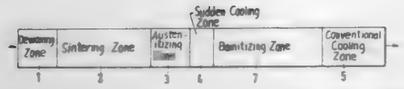
Claims priority, application Germany, Jun. 7, 1995, 195 21 941.4

Int. Cl.[6] B22F *3/24*

U.S. Cl. 419—25 **12 Claims**

1. A process for producing a sintered part with high wear resistance and good dynamic strength properties from a formed body which has been pressed as a green part from a completely-

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alloyed air-hardened heat-treatment steel powder with a carbon content of at least 0.3% added as graphite, the process comprising the steps of:

sintering the part under protective gas at a sintering temperature of at least 1000° C.;

immediately cooling, the sintered part from the sintered temperature to a first holding temperature in a range of Ar_3 to a maximum of 150° C. above Ar_3 and holding the part at the first holding temperature for a first holding period of 5–25 minutes;

cooling the sintered part in an accelerated manner by convective gas cooling to a second holding temperature and holding the cooled part at this temperature for a second holding period, the second holding temperature lying in a temperature range in which a bainitic structure forms, the second holding period having a length so that the part has a bainite structure portion of at least 50%; and

subsequently cooling the part to room temperature.

9. A device for producing a sintered part with high wear resistance and good dynamic strength properties from a formed body which has been pressed as a green part from a completely-alloyed air-hardened heat-treatment steel powder with a carbon content of at least 0.3% added as graphite, comprising:

an electronically controlled sintering furnace having a sintering zone, a sudden cooling zone located behind the sintering zone and having gas cooling, and a conventional cooling zone located behind the sudden cooling zone;

an austenitizing zone arranged between the sintering zone and the sudden cooling zone; and

a bainitizing zone arranged between the sudden cooling zone and the conventional cooling zone.

5,628,046

PROCESS FOR PREPARING A POWDER MIXTURE AND ITS USE

Norbert Dautzenberg, Wegberg; Karl-Heinz Lindner, Mülheim, and Klaus Vossen, Meerbusch, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

PCT No. PCT/DE94/01087, § 371 Date Oct. 31, 1995, § 102(e) Date Oct. 31, 1995, PCT Pub. No. WO95/08006, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 9, 1994, Ser. No. 537,878

Claims priority, application Germany, Sep. 16, 1993, 43 31 938.6; Jun. 9, 1994, 9409832 U

Int. Cl.[6] B22F *3/12;9/08;* **C22C** *38/12*

U.S. Cl. 419—38 **23 Claims**

1. A process for producing a compression-ready powder mixture of steel powder for fabricating sintered articles with high toughness and density, the process comprising the steps of:

atomizing a carbon and phosphorous containing molybdenum steel melt having conventional impurities, molybdenum content of the melt being determined as a function of a sintering temperature T_s lying in a range of approximately 1050°–1350° C. and amounting to at least

$$\text{Mo (percent by weight)} = 16.1\,\frac{T_s}{100°} - 0.7\left(\frac{T_s}{100°}\right)^2 - 88.7,$$

limiting carbon content of the powder mixture to a maximum 0.05% by weight;

reduction annealing the melt in a temperature range of 850°–950° C.;

soft-annealing; and

adding conventional lubricants.

14. A process for fabricating sintered articles with high toughness and density, comprising the steps of:

preparing a compression-ready powder mixture of steel powder by atomizing a carbon and phosphorous containing molybdenum steel melt with conventional impurities, which melt has a molybdenum content determined as a function of sintering temperature T_s lying in a range of approximately 1050°–1350° C., which amounts to at least

$$\text{Mo (percent by weight)} = 16.1\,\frac{T_s}{100°} - 0.7\left(\frac{T_s}{100°}\right)^2 - 88.7;$$

limiting the carbon content of the powder mixture to a maximum of 0.05% by weight, reduction annealing the melt in a temperature range of 850°–950° C., soft annealing and adding conventional lubricants;

forming the powder mixture into green compacts;

compressing the green compacts by simple compression techniques at a pressing pressure of 6.0 to 8.0 t/cm^2; and

subsequently sintering the compressed green compacts at a temperature in a range of 1050°–1350° C. under an atmosphere containing at least 10% by volume hydrogen, so that articles having a ferrite structure are produced.

23. A sintered article with high toughness and density produced from a compression-ready powder mixture of steel powder prepared by atomizing a carbon and phosphorous containing molybdenum steel melt with conventional impurities and having a molybdenum content determined as a function of sintering temperature T_s lying in a range of approximately 1050°–1350° C. which amounts to at least

$$\text{Mo (percent by weight)} = 16.1\,\frac{T_s}{100°} - 0.7\left(\frac{T_s}{100°}\right)^2 - 88.7,$$

limiting carbon content of the powder mixture to a maximum of 0.50% by weight, reduction annealing the melt in a temperature range of 850°–950° C., soft annealing and adding conventional lubricants, forming the powder mixture into green compacts, compressing the green compacts by simple compression techniques at a pressing pressure 6.0 to 8.0 t/cm^2, and subsequently sintering the compressed compacts at a temperature in a range of 1050°–1350° C. under an atmosphere containing at least 10% by volume hydrogen.

5,628,047

METHOD OF MANUFACTURING A RADIALLY ORIENTED MAGNET

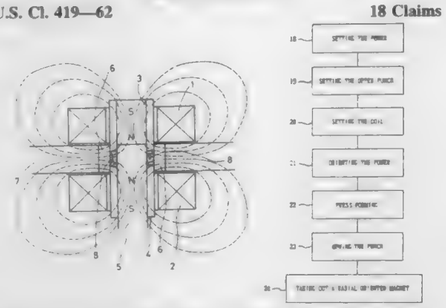
Hidetoshi Hiroyoshi, Sendai, Japan, assignor to Seiko Instruments Inc., Japan

Filed Mar. 10, 1994, Ser. No. 209,637

Claims priority, application Japan, Mar. 12, 1993, 5-052473

Int. Cl.[6] B22F *3/02*

U.S. Cl. 419—62 **18 Claims**



1. A method of manufacturing a radially oriented magnet, comprising the steps of: disposing magnetic particles in a mold comprised of an insulating material; applying a pulsed magnetic field to the magnetic particles using a pair of pulse coils and without using a yoke member so as to impart a radial direction of magnetization to the magnetic particles; and press-forming the magnetic particles.

5,628,048

PROCESS FOR OBTAINING URANIUM TRIOXIDE BY DIRECT THERMAL DENITRATION OF URANYL NITRATE

Gilbert Schaal, Narbonne, and Robert Faron, Courbevoie, both of France, assignors to Comurhex Societe Pour La Conversion De l'Uranium En Metal Et Hexafluorure, Velizy-Villacoublay, France

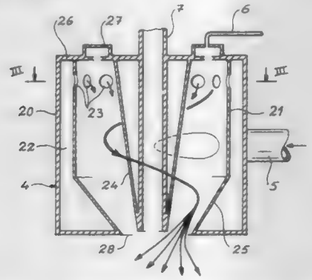
PCT No. PCT/FR95/00765, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO95/34508, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 12, 1995, Ser. No. 586,879

Claims priority, application France, Jun. 13, 1994, 94 07189

Int. Cl.[6] C01G *43/01*

U.S. Cl. 423—260 **9 Claims**



1. Process for obtaining uranium trioxide from a uranyl nitrate solution, the trioxide obtained having to have a specific surface between 12 and 15 m^2/g, consisting of performing in a zone of a reaction chamber (**1**), called the contact zone, a thermomechanical contact between the uranyl nitrate solution, atomized into fine droplets along a given axis in the contact zone, and a gaseous fluid introduced into the contact zone, the gaseous fluid being at a sufficiently high temperature and having a sufficiently high mechanical energy to carry out, in the contact zone, the dehydration and calcination of the uranyl nitrate.

5,628,049

MOBILE SATELLITE TERMINAL EQUIPMENT

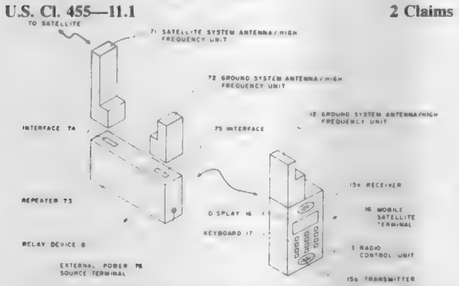
Goro Suemitsu, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 519,541, Aug. 25, 1995. This application Aug. 12, 1996, Ser. No. 694,443

Claims priority, application Japan, Aug. 29, 1994, 6-203170; Aug. 29, 1994, 6-203181

Int. Cl.[6] H04B *7/15*

U.S. Cl. 455—11.1 **2 Claims**



1. A mobile satellite equipment comprising a relay device for relaying between a mobile satellite communication system and a mobile ground communication system, said relay device comprising:

a first antenna/high frequency unit including a first mobile communication system antenna and a high frequency circuit connected to said first mobile communication system antenna for converting a receiving signal into an intermediate frequency signal, outputting it to a first interface and converting an intermediate frequency signal input from said first interface into a high frequency signal, said first interface being provided externally of a casing of said first antenna/high frequency unit;

a second antenna/high frequency unit including a second mobile communication system antenna and a high frequency circuit connected to said second mobile communication system antenna and adapted to convert a receiving signal into an intermediate frequency signal and outputting it to a second interface and to convert an intermediate frequency signal input from said second interface into a high frequency signal, said second interface being provided externally of a casing of said second antenna/high frequency unit; and

a repeater including a first radio control interface and a second radio control interface for performing a bi-directional signal transmission between said first radio control interface connected to said first interface of said first antenna/high frequency unit and a second radio control interface connected to said second interface of said second antenna/high frequency unit.

5,628,050

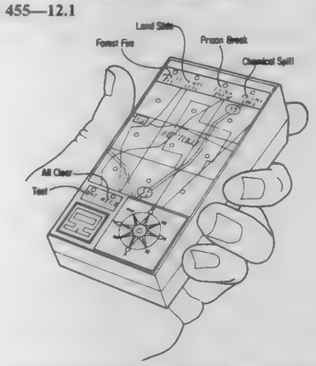
DISASTER WARNING COMMUNICATIONS SYSTEM

Thomas F. McGraw, Fairfax; Jeffrey A. Mitulla, Burke, both of Va., and Richard S. Woll, Glen Burnie, Md., assignors to Scientific and Commercial Systems Corporation, Alexandria, Va.

Filed Dec. 9, 1994, Ser. No. 352,595

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—12.1 **21 Claims**



1. An early warning personal communication system comprising:

an uplink means which communicates with a satellite;

a satellite;

a plurality of downlink means which are capable of receiving communications from said satellite; and

a plurality of receivers, wherein said receivers comprise a portable unit with a visual display subsystem.

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5,628,051

METHOD FOR STARTING A MESSAGE TRANSMISSION IN A MOBILE TELEPHONE NETWORK

Hannu-Pekka Salin, Vantaa, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

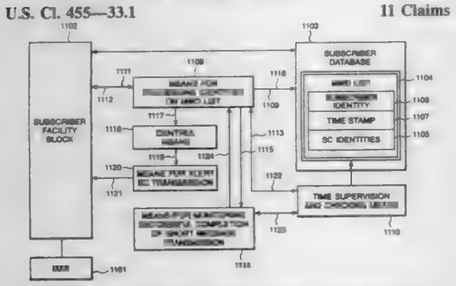
PCT No. PCT/FI94/00009, § 371 Date Sep. 15, 1994, § 102(e) Date Sep. 15, 1994, PCT Pub. No. WO94/16532, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 10, 1994, Ser. No. 302,805

Claims priority, application Finland, Jan. 15, 1993, 930172

Int. Cl.[6] H04Q 7/22

U.S. Cl. 455—33.1 11 Claims



1. A method for starting a short message transmission in a mobile telephone network comprising at least one short message service centre having an identity and transmitting short messages; at least one gateway mobile exchange for forwarding short messages to another network or to a short message service center; at least one mobile exchange forwarding short messages; a subscriber capable of receiving short messages; and a home location register having a subscriber-specific list of the identity of each said short message service centre that has transmitted a rejected short message, a subscriber-specific short message transmission starting message from the home location register activating a respective said short message service centre to transmit a respective short message to the gateway mobile exchange in order for each respective short message to be forwarded to the subscriber, and the rejected short messages being stored in a respective said short message service centre, the method comprising:

starting a time supervision when the identity of the respective said short message service centre is included in said subscriber-specific list;

transmitting a subscriber-specific short message transmission starting message to each said short message service centre having its identity on said subscriber-specific list when a time preset in said time supervision expires;

deleting the identity of a respective said short message service centre to which said short message transmission starting message has been transmitted from said subscriber-specific list of said home location register, of the respective identity of each respective said short message service centre that has transmitted a rejected short message; and

transmitting by the respective said short message service centre transmits, in response to said short message transmission starting message, a short message to said gateway mobile exchange for forwarding to said subscriber.

5,628,052

WIRELESS COMMUNICATION SYSTEM USING DISTRIBUTED SWITCHED ANTENNAS

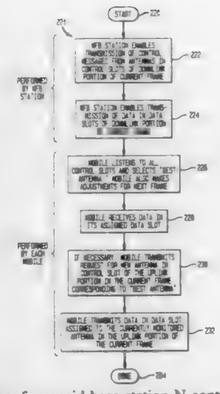
Charles M. DeSantis, Neptune; David J. Helmkamp, Jersey City, and Raymond A. Sackett, Rumson, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 12, 1994, Ser. No. 304,319

Int. Cl.[6] H04Q 7/38

U.S. Cl. 455—33.3 15 Claims

1. A method of achieving increased coverage and macro diversity from a single base station in a wireless communication system having a base station coupled to N antennas, said method comprising the steps of:



(1) transmitting from said base station N control messages in N downlink control slots of a frame each via one of said antennas;

(2) transmitting a data message addressed to a mobile unit in one of N downlink data slots of said frame via a particular one of said antennas previously assigned to said mobile unit for the duration of an active call;

(3) receiving in said mobile unit said control messages and said data message;

(4) analyzing in said mobile unit said control messages to identify from said antennas a best antenna;

(5) transmitting from said mobile unit to said base station a new antenna request identifying said best antenna in one of N uplink control slots of said frame, said one of N uplink control slots being associated with said particular one of said antennas; and

(6) using in response to said new antenna request said best antenna to transmit from said base station one or more subsequent data messages addressed to said mobile unit.

5,628,053

INTEGRATED MULTILAYERED MICROWAVE CIRCUIT AND A METHOD OF FABRICATING IT

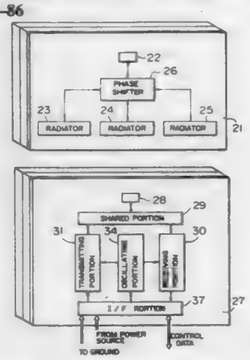
Hiroshi Araki, Katsuta, and Akira Endo, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Ibaraki-ken, both of Japan

Continuation of Ser. No. 278,519, Jul. 21, 1994, abandoned, which is a division of Ser. No. 992,108, Dec. 17, 1992, Pat. No. 5,400,039. This application Dec. 11, 1995, Ser. No. 570,245

Claims priority, application Japan, Dec. 27, 1991, 3-3347189

Int. Cl.[6] H04B 1/40; H01Q 1/38

U.S. Cl. 455—86 3 Claims



1. A transmitting receiving apparatus formed on a surface of a substrate of an integrated multi-layered microwave circuit for use in a radio communication terminal for a mobile station of a mobile radio communication system, comprising:

an oscillating portion for transmission and reception formed on said surface of said substrate in a central portion thereof;

a transmitting portion and a receiving portion formed by being separated on both sides of said oscillating portion;

an interface portion formed on another side of said oscillating portion;

an electric line for connecting said interface portion to said oscillating portion;

further electric lines for connecting said oscillating portion to said transmitting portion, and for connecting said oscillating portion to said receiving portion, respectively;

at least one radiator for transmitting and/or receiving a radio wave; and

a phase shifter connected between said radiator and said transmitting portion, as well as between said radiator and said receiving portion, for changing a phase of said radio wave transmitted and/or received by said radiator.

5,628,054

PORTABLE RADIO APPARATUS HAVING BATTERIES FOR SUPPLYING A PLURALITY OF VOLTAGES

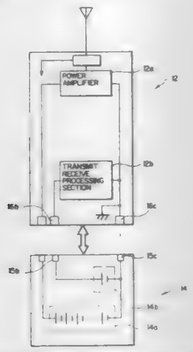
Masahiko Osaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 31, 1994, Ser. No. 298,424

Claims priority, application Japan, Aug. 31, 1993, 5-239082

Int. Cl.[6] H04B 1/40

U.S. Cl. 455—89 6 Claims



1. A portable radio communication apparatus comprising:

a main body having a large current consuming circuit and a small current consuming circuit, and

a battery pack for supplying said main body with voltages it requires, said battery pack including a first battery, which is low in internal resistance and which outputs a high voltage, for supplying said large current consuming circuit with power for its optimal operation, and a second battery, which is high in internal resistance and which outputs a low voltage, for supplying said small current consuming circuit with power for its optimal operation.

5,628,055

MODULAR RADIO COMMUNICATIONS SYSTEM

Per Stein, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson publ, Stockholm, Sweden

Continuation of Ser. No. 26,478, Mar. 4, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 353,966

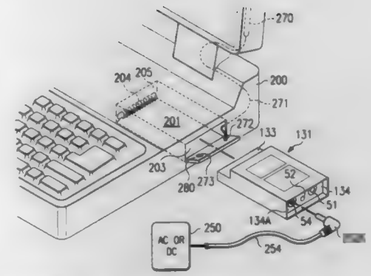
Int. Cl.[6] H04B 1/38

U.S. Cl. 455—89 5 Claims

1. A system comprising:

an electronic equipment having a module mating connector;

a modular telecommunications unit comprising:



a housing having a first end and a second end;

a module coupling connector disposed on the first end of said housing, said module coupling connector being adapted for engagement with the module coupling connector being of said electronic equipment;

an antenna coupling connector disposed on the second end of said housing; and

a radio transceiver being mounted within said housing and being in communication with said module coupling connector and said antenna coupling connector;

wherein said electronic equipment further includes an antenna and an antenna mating connector, said antenna mating connector being in communication with said antenna and adapted for engagement with said antenna coupling connector for enabling communication between said antenna and said radio transceiver;

wherein said electronic equipment is constructed with a slotted portion having a first slot end and a second end, said module mating connector being disposed on the first slot end of said slotted portion, and said slotted portion being adapted for receipt of said housing therein; and

wherein said slotted portion of said electronic equipment includes a closure member disposed adjacent to said second end of said slotted portion for securing said housing of said modular telecommunications unit within the slotted portion of said electronic equipment, wherein said antenna mating connector is disposed on said closure member, and wherein said antenna of said electronic equipment is connected to said antenna coupling connector through said antenna mating connector on said closure member.

5,628,056

APPARATUS FOR CONVERTING TV AUDIO SIGNALS FOR RECEPTION ON A NEARBY AM AND/OR FM RECEIVER

Edward S. Grysiewicz, Menlo Park, and Alexander C. Pummer, Pleasanton, both of Calif., assignors to Econologic Technologies, Menlo Park, Calif.

Continuation-in-part of Ser. No. 249,895, May 26, 1994, abandoned. This application Jan. 4, 1995, Ser. No. 368,553

Int. Cl.[6] H04B 1/38

U.S. Cl. 455—89 21 Claims

1. Apparatus for receiving via the airwaves and transmitting via the airwaves the audio component of a TV channel comprising:

a housing;

antenna means in the housing for receiving two bands of VHF TV signals and a band of UHF TV signals;

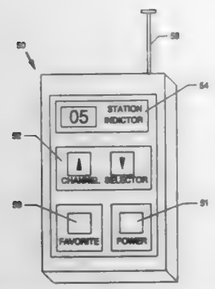
means for selecting one of said VHF and UHF bands at a time;

antenna matching means coupled to the antenna means within the housing for matching the impedance of the antenna means to the impedance of the circuits to which the antenna means is connected;

selectable bandpass filtering means for filtering the output of the antenna matching network means in a selected one of the VHF and UHF bands;

means coupled to the bandpass filtering means for providing a signal having an intermediate frequency comprising said

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audio component, wherein said means for providing a signal having an intermediate frequency comprises:

a mixer;

a local oscillator; and

means for digitally selecting the frequency of the local oscillator;

means coupled so said intermediate frequency providing means for providing a baseband signal comprising said audio component; and

means in said housing which is coupled to said baseband signal providing means for transmitting a radio frequency carrier comprising said audio component.

5,628,057

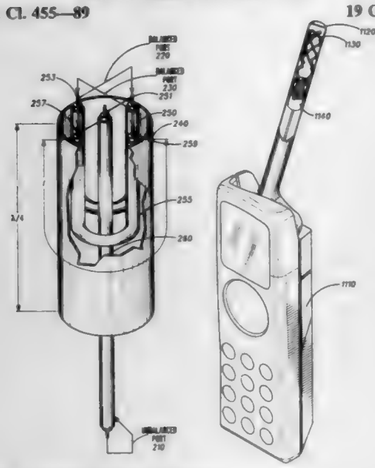
MULTI-PORT RADIO FREQUENCY SIGNAL TRANSFORMATION NETWORK

James P. Phillips, Lake in the Hills, and Eric L. Krenz, Crystal Lake, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1996, Ser. No. 611,268

Int. Cl.[6] H04B *1/38;* **H01P** *5/10*

U.S. Cl. 455—89 **19 Claims**



19. A portable radio, comprising:

radio transceiver circuitry for providing an unbalanced output;

a balun comprising a first pair of nodes connected to the unbalanced output of the radio transceiver circuitry and comprising a balanced second pair of nodes and an additional node, and wherein the second pair of nodes of the balun form a first of a plurality of differently phased balanced ports;

first and second unbalanced phase shift transmission lines, each of the first and second unbalanced phase shift transmission lines defined by a signal conductor and a ground conductor, wherein the signal conductor of the first unbalanced phase shift transmission line is operatively connected at a first end to one of the second pair of nodes of the balun, wherein the signal conductor of the second unbalanced phase shift transmission line is operatively connected at a first end to another of the second pair of nodes of the balun, wherein the ground conductors of the first and second unbalanced phase shift transmission lines are operatively connected to the additional node of the balun, and wherein second ends of the signal conductors of the first and second unbalanced phase shift transmission lines form a second of the plurality of differently phased balanced ports; and

an antenna element having at least two balanced antenna ports, one of the balanced antenna ports of the antenna element connected to the first of the plurality of differently phased balanced ports of the first and second unbalanced phase shift transmission lines and wherein the other of the balanced ports of the antenna element is connected to the second of the plurality of differently phased balanced antenna ports of the first and second unbalanced phase shift transmission lines.

5,628,058

TRANSCEIVER CIRCUIT MODULE HAVING ELECTROMAGNETICALLY-ISOLATED TRANSMITTING AND RECEIVING CIRCUIT SECTIONS

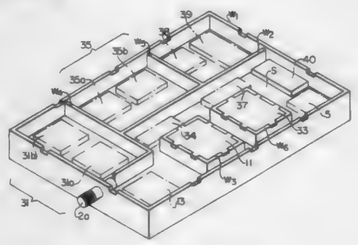
Tetsuro Hiraki, Shiga, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 15, 1994, Ser. No. 275,356

Claims priority, application Japan, Jul. 16, 1993, 5-199279

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—90 **17 Claims**



1. A transceiver circuit module, comprising:

a) a board having a front face and a back face and having a transmitting circuit section and a receiving circuit section, wherein said transmitting circuit section includes:

1) a transmitting oscillation circuit located on said front face for receiving a transmitting signal and for modulating a transmitting oscillation signal with the transmitting signal to generate a high frequency transmitting signal; and

2) a first band pass filter located on said front face, connected between said transmitting oscillation circuit and an antenna plug element, for selectively passing the high frequency transmitting signal;

b) a first electromagnetic shield wall, located on a surface of said board, for electromagnetically, isolating said transmitting circuit section from said receiving circuit section;

c) an electromagnetic shield case located at an outer circumference of said board;

d) the antenna plug terminal, located at said electromagnetic shield case around one end of said first electromagnetic shield wall; and

e) a synthesizer circuit, located on said back face of said board and connected to said transmitting oscillation circuit, for generating the transmitting oscillation signal.

5,628,059

DC OFFSET CIRCUIT FOR CARTESIAN LOOP

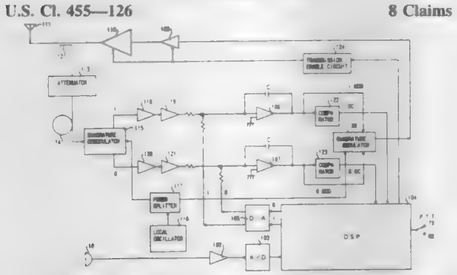
Yoshikazu Kurisu, Ichikawa, Japan, assignor to Uniden Corporation, Chiba, Japan

Filed Dec. 9, 1994, Ser. No. 352,655

Claims priority, application Japan, Jul. 15, 1994, 6-164425

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—126 **8 Claims**



1. DC offset circuit for a Cartesian loop in a tone-in-band transmitter with a distortion reducing circuit based on a direct modulation system having a digital signal processor outputting a first digital signal based on data to be transmitted when transmission is started, a D/A convertor converting the first digital signal to a first analog signal, a first amplifier amplifying a signal obtained through subtraction between the first analog signal and a second analog signal and outputting the signal as a third analog signal, a modulation circuit modulating the third analog signal into a modulated wave, a second amplifier amplifying the modulated wave and supplying the wave to antenna, a demodulation circuit demodulating a portion of the amplified modulated wave according to an output from a local oscillator, and a supply circuit supplying an output from said demodulation circuit as the second analog signal to said first amplifier, said DC offset circuit for a Cartesian loop comprising:

a modulated wave transmission inhibiting circuit inhibiting transmission of a modulated wave from said second amplifier;

a slope voltage supply circuit supplying, step by step, a first digital signal corresponding to a slope voltage from a minimum DC output voltage up to a maximum DC output voltage to said D/A convertor in a state where transmission of a modulated wave from said second amplifier is inhibited and a carrier wave from said local oscillator is demodulated and outputted from said demodulation circuit;

a detecting circuit detecting that output from said first amplifier has reached a specified value; and

an offset voltage deciding circuit deciding a value of the first digital value corresponding to a slope voltage in said slope voltage supply circuit at a time when a specified value is detected in said detecting circuit as being a DC offset voltage value.

5,628,060

APPARATUS AND METHOD FOR SELECTING STATION USING D/A CONVERTER TO CONTROL THE LOCAL OSCILLATOR

Sang H. Yoon, Taegu, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 21, 1994, Ser. No. 310,059

Claims priority, application Rep. of Korea, Sep. 21, 1993, 1993-19161

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—183.2 **24 Claims**

1. A method for selecting a station, comprising the steps of:

initiating a control of digital/analog conversion means to carry out an oscillation operation near a selected channel when a channel selection command is received by control means and generating an oscillator signal according to the channel selection command, said initiating step including determining a resolution of the digital/analog conversion means to satisfy the following condition:

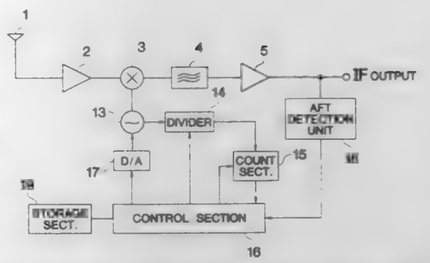
$$2^x=(fmax-fmin)/fres,$$

where (fmax−fmin) represents a control range of a local oscillation frequency, fres represents a number of control steps, and x represents a bit number of the digital/analog conversion means;

dividing the oscillator signal generated from said initiating step;

counting the divided oscillator signal during a predetermined period, converting the count value into a frequency value, and outputting correction data based on the count value to said digital/analog conversion means; and

controlling increase/decrease of an oscillation frequency of local oscillator means based on an output of said digital/analog conversion means.



5,628,061

SYNTHESIZER RECEIVER

Hiroshi Shirakawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1995, Ser. No. 373,668

Claims priority, application Japan, Jan. 24, 1994, PO-023323

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—186.1 **11 Claims**

AREA NUMBER AREA	TIME DIFFERENCE DATA "HOF"	PLACE NAME DATA PLCDT	AREA	FREQUENCY INTERVAL
0	± 0	LONDON	LONDON, LISBON	
1	± 1	C.EURO	CENTRAL EUROPE	
2	+ 2	CAIRO	CAIRO, ATHERS	
3	+ 3	JEDDA	JEDDA, NAIROBI	
				9kHz
9	+ 9	TOKYO	TOKYO, SEOUL	
12	+12	AUKLND	AUKLAND, FIJI	
13	−11	SAMOA	SAMOA	
14	−10	HAWAII	HAWAII, TAHITI	
15	− 9	ANCHRG	ANCHORAGE	
⋮				10kHz
21	− 3	RIO	RIO DE JANEIRO	
22	− 2	FR.ISL	FERNAND DE NORONHA	
23	− 1	AZORES	THE AZORES	9kHz

TOTBL
TIME DIFFERENCE TABLE

1. A synthesizer receiver having a clock circuit for keeping a reference time, a display for displaying a local time for a local area having a predetermined time difference relationship to the reference time kept by the clock circuit, and a PLL in which a receiving signal is frequency-converted based on an output signal of the PLL, and a receiving frequency is changed by changing a frequency dividing ratio of a variable frequency dividing circuit of the PLL, comprising:

a table for storing data of names of areas, data of respective time differences between respective local times of the areas and the

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reference time, and data of respective frequency intervals, each area having a corresponding frequency interval to be added/subtracted from a first receiving frequency to effect a change to a second receiving frequency adjacent to the first receiving frequency.

wherein the local time displayed on the display is determined by adding a time difference of the local area which is stored in the table to the reference time, and a variation amount of the frequency dividing ratio is set in accordance with a frequency interval corresponding to the local area.

DESIGNS

MAY 6, 1997

379,027

NECK AND EAR WARMER

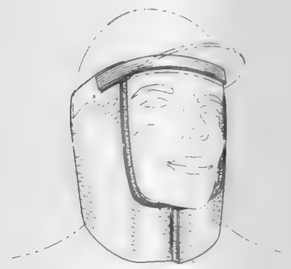
Betty G. Johanson, and Gene Johanson, both of Rte. 1 Box 665V, Aransas Pass, Tex. 78336

Filed Apr. 5, 1996, Ser. No. 52,587

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—600



379,028

HEAD BAND

Nancy T. Young, 5031 Kilauea Ave., Honolulu, Hi. 96816

Filed Jan. 19, 1995, Ser. No. 33,733

Term of patent 14 years

LOC (6) Cl. 02 - *07*

U.S. Cl. D2—894



379,029

EASY FIT TENNIS SHOE WITH PILE-TYPE FASTENER

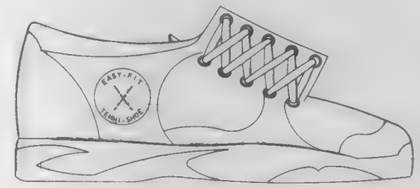
Rebecca Ruiz, 750 Regateo Dr., Hemet, Calif. 92543

Filed May 28, 1996, Ser. No. 55,026

Term of patent 14 years

LOC (6) Cl. 02 - *04*

U.S. Cl. D2—907



379,030

UPPER PORTION FOR A FOOTWEAR

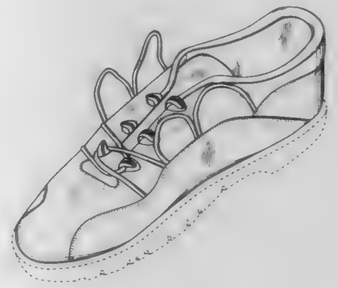
Sinisa Egelja, Oceanside, Calif., assignor to Items International, Inc., Altoona, Pa.

Filed Dec. 1, 1994, Ser. No. 31,636

Term of patent 14 years

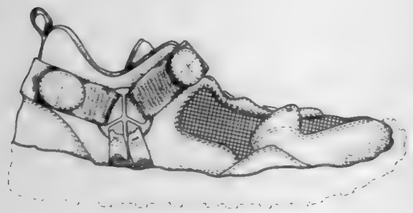
LOC (6) Cl. 02 - *04*

U.S. Cl. D2—969

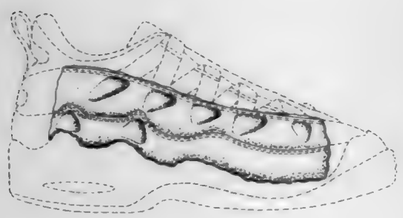


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379,031
SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Dec. 20, 1995, Ser. No. 48,097
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—969



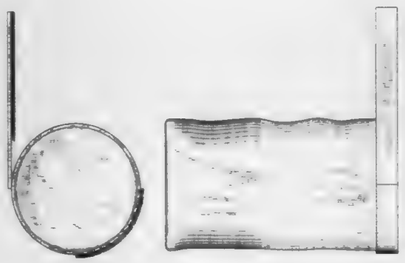
379,032
PORTION OF A SHOE UPPER
M. Coleman Horn, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 7, 1996, Ser. No. 51,880
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—972



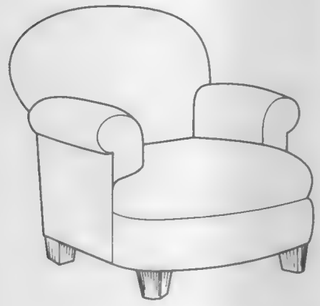
379,033
ARROW LUBRICANT HOLDER
B. Howard Coffey, LaGrange, and Gary L. Coffey, Glendale, both of Ky., assignors to Coffey Marketing Corporation, Crestwood, Ky.
Filed Jan. 16, 1996, Ser. No. 48,937
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D3—221



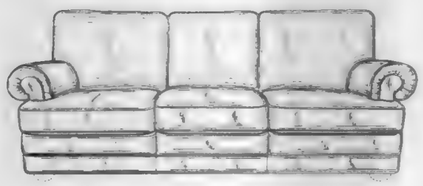
379,034
PROTECTIVE COVER FOR A MIRROR
Steve DeSatnick, 18720 White Sands Dr., Germantown, Md. 20874
Filed May 15, 1995, Ser. No. 38,822
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—299



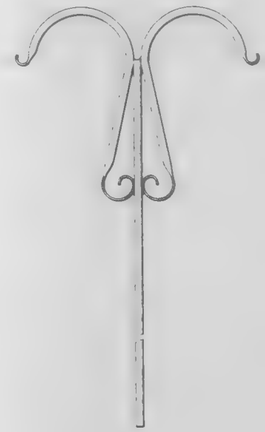
379,035
CHAIR
Erela M. Gleason, Atherton, Calif., assignor to Summer Hill Ltd., Redwood City, Calif.
Filed Jan. 29, 1996, Ser. No. 49,707
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



379,036
SEAT
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarati, Talsano, both of Italy, assignors to Industrie Natuzzi, Spa, Bari, Italy
Filed Mar. 13, 1996, Ser. No. 51,648
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



379,037
YARD STAND FOR HANGING BASKETS
Joseph P. Moran, III, 1133 E. 21st St., Tuisa, Okla. 74114
Filed Jun. 5, 1995, Ser. No. 39,767
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D6—405



379,038
NIGHT TABLE
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Nov. 24, 1995, Ser. No. 47,001
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—487



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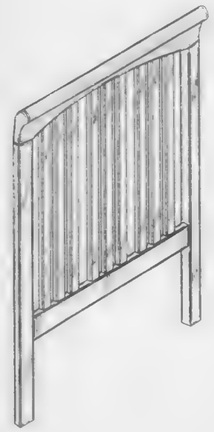
379,039
NIGHT TABLE
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Feb. 2, 1996, Ser. No. 49,885
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—487



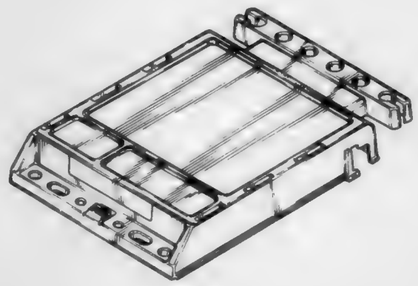
379,040
HEADBOARD FOR BEDS
Ching L. Chen, No. 885-1, Chung-Shan Road, Shen-Kang Hsiang, Taichung County, Taiwan
Filed Jan. 29, 1996, Ser. No. 49,566
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—506



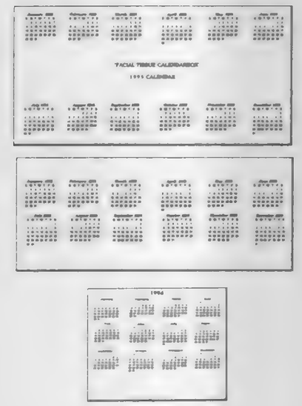
379,041
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Apr. 3, 1995, Ser. No. 37,031
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—508



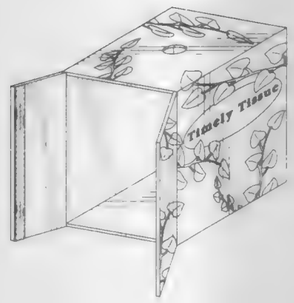
379,042
WORKBENCH UNIVERSAL DRAWER ACCESSORY
Edward H. Meisner, Short Hills, N.J.; Keith C. Kristiansen, Stratford, Conn.; John E. Kiely, Morristown, N.J., and Murray Hunter, Smiths Falls, Canada, assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 11, 1995, Ser. No. 42,527
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—510



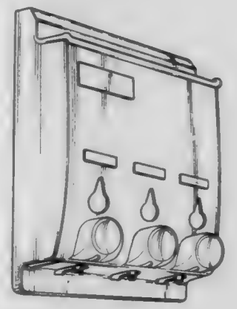
379,043
FACIAL TISSUE CALENDARBOX
Judy Malley, 2541 W. Georgia #38, Phoenix, Ariz. 85017
Filed Jun. 7, 1996, Ser. No. 55,576
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—515



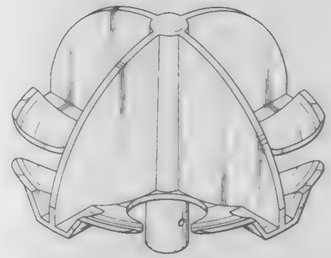
379,044
TOILET TISSUE HOLDER
Cora M. Collins, 924 Middlebury Dr., Worthington, Ohio 43085
Filed Nov. 16, 1995, Ser. No. 46,839
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—523



379,045
LIQUID SOAP DISPENSER
Leonard C. Andrus, Plymouth, and Larry G. Turner, Fenton, both of Mich., assignors to Brass-Craft Manufacturing Company, Novi, Mich.
Continuation-in-part of Ser. No. 26,758, Aug. 4, 1994, Pat. No. Des. 363,848. This application Jun. 14, 1995, Ser. No. 40,290
The portion of the term of this patent subsequent to Nov. 7, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—544

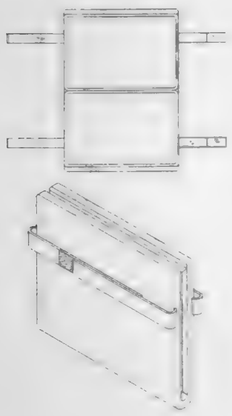


379,046
GOLF CLUB HEAD HANGER TOP
Jimmy A. LaPlante, Sr., 732 - 18th Ave., Clarkston, Wash. 99403
Filed Dec. 29, 1995, Ser. No. 48,461
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D6—552

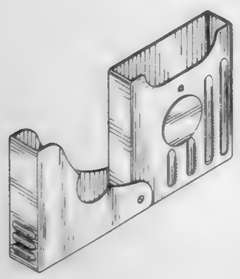


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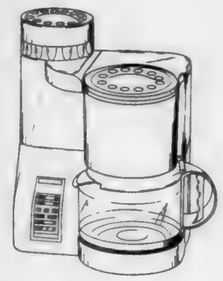
379,047
FOLDABLE BLEACHER SEAT WITH SECUREMENT STRAPS
Stephanie E. Richard, 3689 N. Appell Dr., Port Clinton, Ohio 43452
Filed Jan. 29, 1996, Ser. No. 49,529
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



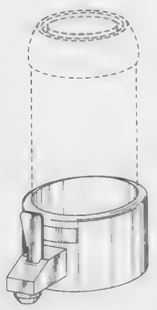
379,048
CASSETTE FOR STORING FLAT ARTICLES, PARTICULARLY DATA CARRIERS
Johannes F. Ros, Huizen, and Willem de Koning, Papendrecht, both of Netherlands, assignors to Office Data Europe (ODE) B.V., Almere-Haven, and Kunststoffenfabriek l'Insigne B.V., Oud Ablas, both of Netherlands
Filed Oct. 3, 1995, Ser. No. 44,910
Claims priority, application Hague Agreement, Apr. 5, 1995, DM/032667
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—634



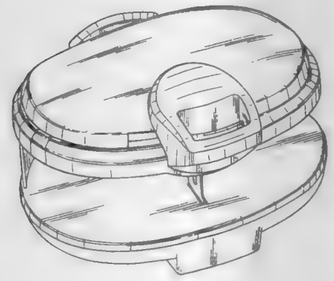
379,049
COFFEE MACHINE WITH COFFEE GRINDER
Richard Amiel, Oberaach, Switzerland, assignor to Eugster/Frismag AG, Romanshorn, Switzerland
Filed Oct. 18, 1995, Ser. No. 46,623
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—305



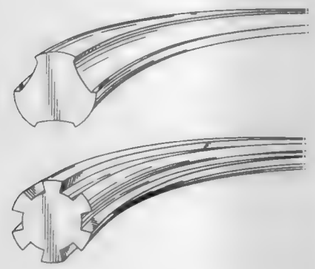
379,050
BOTTLED BEVERAGE DISPENSER
David Kohanski, P.O. Box 1879, Yuba City, Calif. 95992
Filed Dec. 12, 1995, Ser. No. 47,741
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—313



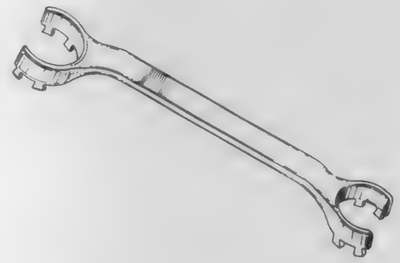
379,051
APPARATUS FOR COOKING HAMBURGERS
Sandra Jacquemin, Thusy, France, assignor to Tefal S.A., Rumilly, France
Filed Jul. 20, 1995, Ser. No. 41,636
Claims priority, application France, Jan. 20, 1995, 950356
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—352



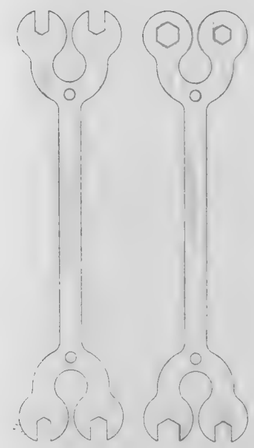
379,052
CUTTING LINE FOR A ROTATING LINE TRIMMER
David B. Skinner, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.
Division of Ser. No. 29,442, Oct. 6, 1994, Pat. No. Des. 365,734, which is a continuation-in-part of Ser. No. 834,520, Feb. 12, 1992, Pat. No. Des. 364,079. This application May 25, 1995, Ser. No. 39,803
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—8



379,053
LOCK-NUT WRENCH
James B. Howard, 10531 Main Cross St., Whitesville, Ky. 42378
Filed Nov. 20, 1995, Ser. No. 46,903
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—21

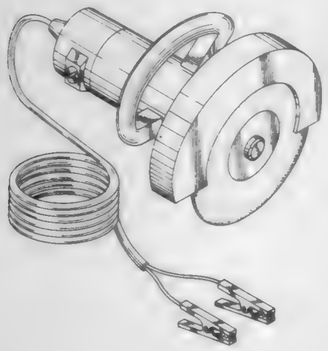


379,054
MULTIPLE HEADED WRENCH
Hassan Y. Asaad, P.O. Box 5542, Cary, N.C. 27512
Filed Aug. 7, 1995, Ser. No. 42,330
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—28



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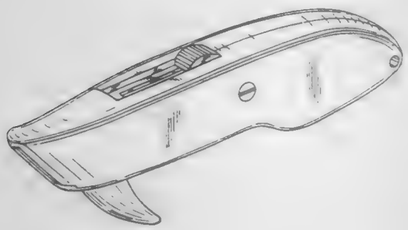
379,055
SAW
William L. Bowen, 121 Kingwood Ave. NW. #3, and Guadalupe Palomino, 1126 2nd St. NW., both of Salem, Oreg. 97304
Filed Apr. 3, 1995, Ser. No. 37,081
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—66



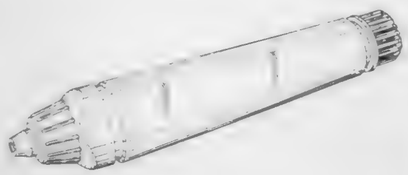
379,057
INLAID LETTER OPENER
Steven Lin, Arcadia, Calif., assignor to Concord Manufacturing Systems, San Dimas, Calif.
Filed Jan. 3, 1996, Ser. No. 48,553
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—102



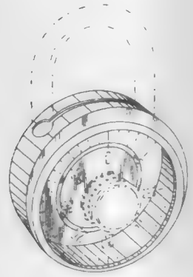
379,056
UTILITY KNIFE WITH FRONT GRIP
Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570
Filed Jul. 26, 1995, Ser. No. 41,883
The portion of the term of this patent subsequent to Oct. 1, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—99



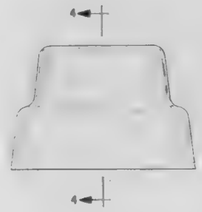
379,058
BURRING TOOL HANDLE
Hans E. Neumann, Rellingen, Germany, assignor to Vargus Ltd., Nahariya, Israel
Filed Sep. 5, 1995, Ser. No. 43,571
Claims priority, application Germany, Mar. 2, 1995, M 95 01 840.9
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—107



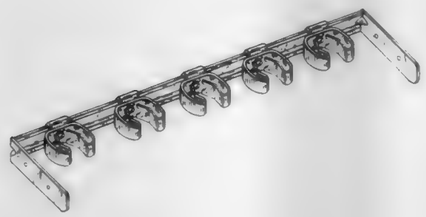
379,059
PROTECTIVE COVER FOR A PADLOCK
Lance Turner, 123 Anchorage, Unit 2, Marina Del Rey, Calif. 90292
Filed Aug. 10, 1995, Ser. No. 42,437
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—346



379,061
SUPPORT FOR A BED FRAME
Susan R. Williams, 28649 S. Western Ave. #6757, Rancho Palos Verdes, Calif. 90734
Filed Feb. 16, 1995, Ser. No. 34,967
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—374



379,060
BETWEEN THE STUDS GRIP CLIPS
Kenneth Laga, Franklin, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.
Filed Mar. 6, 1996, Ser. No. 51,222
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—373



379,062
PACKAGE FOR CANDY
Nancy J. Kinyon-Samec, 108 Mark Dr., Pottstown, Pa. 19465
Filed Feb. 22, 1996, Ser. No. 50,515
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—307



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379,063
DOSAGE BOTTLE
James E. Sill, Jr., Winfield, Ill., assignor to Gold Eagle Co., Chicago, Ill.
Filed Jul. 25, 1996, Ser. No. 57,488
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—347



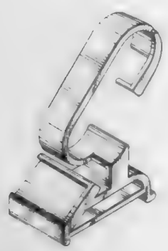
379,065
BEVERAGE CAN LID
Don Dotson, Colorado Springs, Colo., assignor to Technology Concepts Products Trading Ltd., Colorado Springs, Colo.
Filed Oct. 6, 1993, Ser. No. 13,913
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—451



379,066
Patent Not Issued For This Number

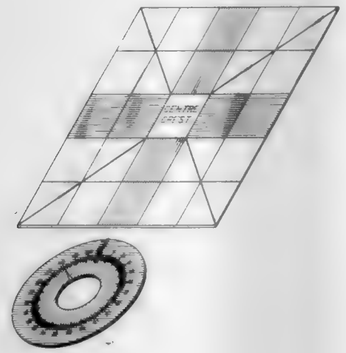
379,067
WATCH WITH MEANS FOR DISPLAYING VITAL INFORMATION ABOUT A WEARER
Andre Greene, and Sharon Greene, both of 790 Eldert La. Apt. 5J, Brooklyn, N.Y. 11208
Filed Mar. 14, 1996, Ser. No. 51,642
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32

379,064
WATCH CUFF
Bennie L. C. Lee, Brooklyn, N.Y., assignor to M. Z. Berger & Company, Long Island City, N.Y.
Filed Jul. 14, 1995, Ser. No. 41,455
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415

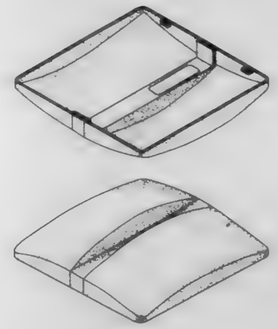




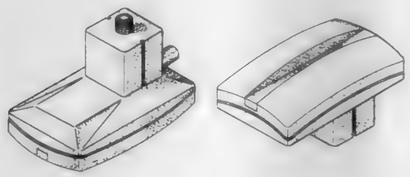
379,068
CRIBBAGE GAME BOARD AND POINT COUNTER
Roger E. Cleroux, Sr.; Roger R. Cleroux, Jr.; Denis J. Cleroux, and Joanne M. Cleroux, all of 2520 Barton Street E., Hamilton, Ontario, Canada
Filed May 2, 1996, Ser. No. 53,937
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D10—46.1



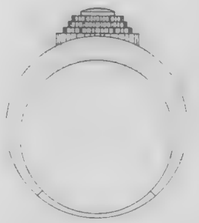
379,070
INFRARED CONTROL PANEL FOR ACTUATING A FLUSH MECHANISM
Ulrich Witzig, Wolfhausen, Switzerland, assignor to Geberit Technik AG, Jona, Switzerland
Filed Oct. 4, 1995, Ser. No. 44,947
Claims priority, application WIPO, Apr. 6, 1995, DMA/002 854
Term of patent 14 years
LOC (6) Cl. 10 - *06*
U.S. Cl. D10—106



379,069
CONTROL PANEL FOR ACTUATING A FLUSH MECHANISM
Ulrich Witzig, Wolfhausen, Switzerland, assignor to Geberit Technik AG, Jona, Switzerland
Filed Oct. 4, 1995, Ser. No. 44,946
Claims priority, application Hague Agreement, Apr. 6, 1995, The Hague
Term of patent 14 years
LOC (6) Cl. 10 - *06*
U.S. Cl. D10—106

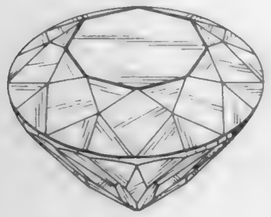


379,071
TRANSPARENT SOFT RUBBER RING DEVICE TO BE WORN ON THE SECOND KNUCKLE OF A WEARER FOR OPERATING PUSH BUTTONS
Dixie L. Miceli, 157 S. Pueblo Pl., Anaheim, Calif. 92807
Filed Jan. 29, 1996, Ser. No. 49,533
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—26

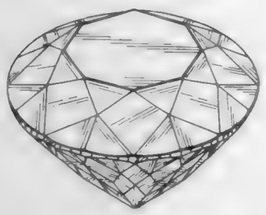


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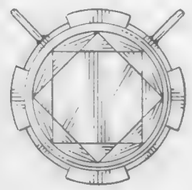
379,072
DIAMOND
Joe C. Yuan, No. 63, 7F-2, Fu-Hsing S. Rd., Sec. 1, Taipei, Taiwan
Filed May 22, 1996, Ser. No. 54,804
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—90



379,073
DIAMOND
Joe C. Yuan, No. 63, 7F-2, Fu-Hsing S. Rd., Sec. 1, Taipei, Taiwan
Filed May 22, 1996, Ser. No. 54,809
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—90



379,074
NECKLACE PENDANT
Richard W. Udko, Beverly Hills, Calif., assignor to Unigem International, Beverly Hills, Calif.
Filed Mar. 19, 1996, Ser. No. 51,836
Term of patent 14 years
LOC (6) Cl. 11 - *03*
U.S. Cl. D11—91



379,075
CHRISTMAS CARD STAND
Beatrice Edler, 7400 SW. 136th St., Miami, Fla. 33156
Filed Jan. 31, 1996, Ser. No. 49,736
Term of patent 14 years
LOC (6) Cl. 11 - *05*
U.S. Cl. D11—121



379,076
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Okla. City, Okla.
Division of Ser. No. 670, Oct. 20, 1992, Pat. No. Des. 364,362, which is a continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Nov. 7, 1995, Ser. No. 46,113
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



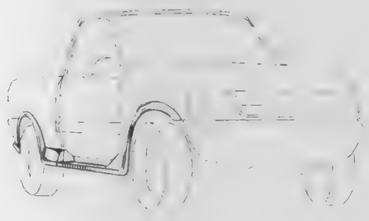
379,077
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Aug. 28, 1995, Ser. No. 43,167
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



379,078
AUTOMOBILE TIRE
Yasuo Himuro, and Yoshihiro Hosoya, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 19, 1995, Ser. No. 40,463
Claims priority, application Japan, Dec. 20, 1994, 6-38660
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151



379,079
RUNNING BOARD
Paul Thomas, Jr., Daleville, Ala., assignor to Tri-Glas Corporation, Daleville, Ala.
Continuation-in-part of Ser. No. 4,316, Feb. 1, 1993. This application Mar. 18, 1994, Ser. No. 20,077
The portion of the term of this patent subsequent to Oct. 8, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—203

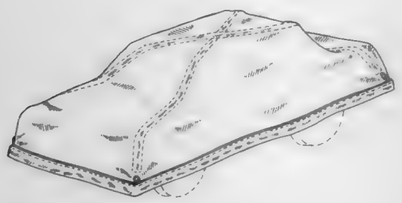


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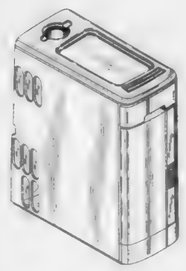
379,080
THREE-SPOKED, FLUTED VEHICLE WHEEL SPINNER
James H. Choi, 2157 E. Del Amo Blvd., Rancho Dominguez, Calif. 90220
Filed Aug. 1, 1995, Ser. No. 42,102
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—213



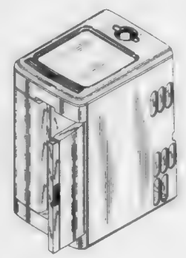
379,081
CHAIN-WEIGHTED TARP
George P. Wilson, Rte. 1, Box 109A, Cunningham, Kans. 67035
Filed Mar. 28, 1994, Ser. No. 20,791
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—401



379,082
VEHICLE CABINET
Ferdinand F. Hellhake, Beaverton; Mark S. Hurayt, Aloha, and Joachim Paschke, Portland, all of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Filed Apr. 16, 1996, Ser. No. 53,078
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—424



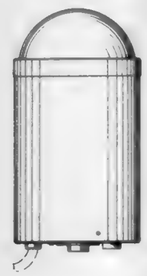
379,083
VEHICLE CABINET
Ferdinand F. Hellhake, Beaverton; Mark S. Hurayt, Aloha, and Joachim Paschke, Portland, all of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Filed Apr. 16, 1996, Ser. No. 53,264
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—424



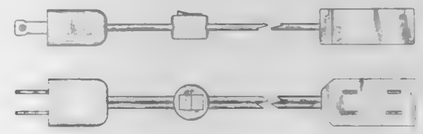
379,084
VEHICLE CABINET
Ferdinand F. Hellhake, Beaverton; Mark S. Hurayt, Aloha, and Joachim Paschke, Portland, all of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Filed Apr. 16, 1996, Ser. No. 53,271
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—424



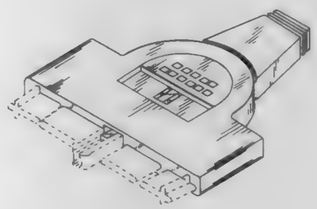
379,085
TRANSFORMER HOUSING
Iain N. B. Mackay, R.R.#2, Beeton, Ontario, Canada
Filed Dec. 20, 1995, Ser. No. 48,105
Claims priority, application Canada, Jun. 21, 1995, 1995-1375
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



379,086
ELECTRICAL EXTENSION CORD WITH ON/OFF SWITCH
Clyde L. Sipes, 6138 Carriage House Way, Reno, Nev. 89509
Filed Dec. 26, 1995, Ser. No. 48,332
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—142

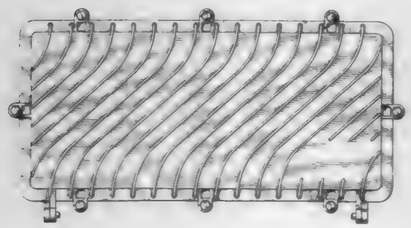


379,087
REAR PORTION OF A PERSONAL COMPUTER MEMORY CARD INDUSTRY ASSOCIATION (PCMCIA) CABLE CONNECTOR
Robert E. Steinbugler, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1993, Ser. No. 16,773
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147

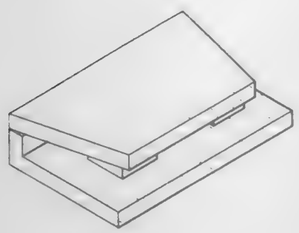


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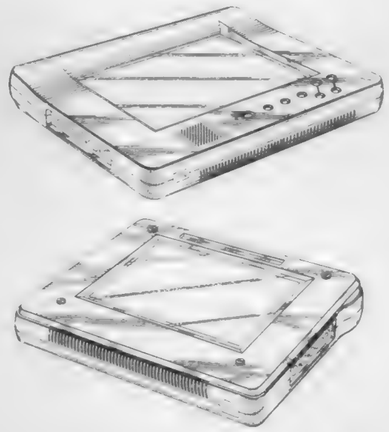
379,088
CATV HOUSING WITH HEAT SINK FINS
Scott R. Hopper, Kent, Wash., assignor to Augat Communication Products Inc., Kent, Wash.
Filed Feb. 8, 1996, Ser. No. 50,093
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—152



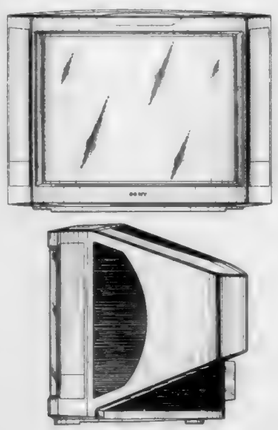
379,089
TRANSFORMER MAGNETIC CORE
Philip M. Harris, San Diego, and Robert M. Martinelli, Temecula, both of Calif., assignors to Powercube A Natel Engineering Co. Inc., Chatsworth, Calif.
Filed Jan. 16, 1996, Ser. No. 49,070
Term of patent 14 years
LOC (6) Cl. 13 - *99*
U.S. Cl. D13—183



379,090
VIDEO MONITOR
Emiko Maekawa, Kyoto; Kuniyuki Kawamoto, Osaka, and Atsushi Sawada, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 28, 1996, Ser. No. 52,363
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



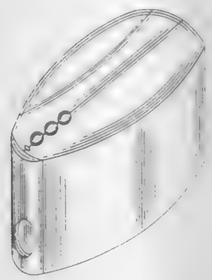
379,091
TABLE TOP TELEVISION RECEIVER
Edward L. Boyd, Montvale, N.J., assignor to Sony Corporation of America, Park Ridge, N.J.
Filed Feb. 28, 1995, Ser. No. 35,486
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—126



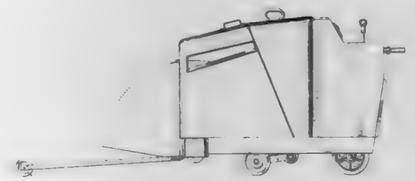
379,092
FRONT SECTION OF A PORTABLE RADIO COMMUNICATION DEVICE
Scott H. Richards, Plantation; Frank M. Tyneski, Fort Lauderdale; Robert M. Fuerstenberg, Jr., Lauderdale by the Sea, and David H. Karl, Fort Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 5, 1995, Ser. No. 43,458
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—137



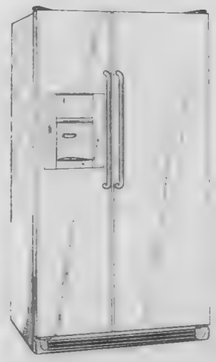
379,093
SPEAKER
Larry Vollum, Portland, Oreg., and Paul Wang, Laguna Niguel, Calif., assignors to MAG InnoVision Co., Inc., Santa Ana, Calif.
Filed May 8, 1996, Ser. No. 53,506
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—216



379,094
SELF PROPELLED SAW
Michael G. Kingsley, Independence, Mo., and Donald L. Rohrs, Overland Park, Kans., assignors to Diamant Boart, Inc., Kansas City, Mo.
Filed Sep. 28, 1995, Ser. No. 44,694
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—22



379,095
REFRIGERATOR
Walton E. Sparks, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 6, 1995, Ser. No. 46,020
Term of patent 14 years
LOC (6) Cl. 15 - *07*
U.S. Cl. D15—85

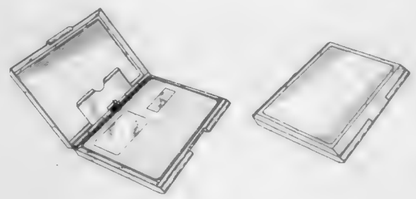


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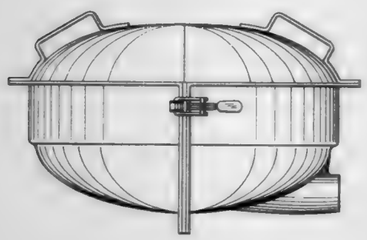
379,096
TOWER PACKING ELEMENT
Frank D. Moore, Tallmadge, Ohio, assignor to Norton Chemical Process Products Corporation, Worcester, Mass.
Continuation-in-part of Ser. No. 280,688, Jul. 26, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 47,996
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D15—144.1



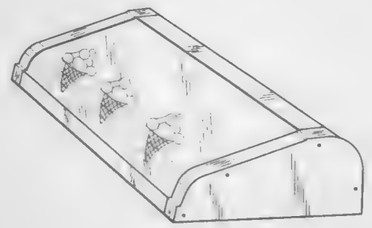
379,098
INLAID COMBINATION CALCULATOR AND CARD HOLDER
Steven Lin, Arcadia, Calif., assignor to Concord Manufacturing Systems, San Dimas, Calif.
Filed Jan. 3, 1996, Ser. No. 48,552
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—2



379,097
CONTAINER FOR AN OIL WELL STUFFING BOX
Jack G. Brewer, 99 Maple La., Chickasha, Okla. 73018
Filed Mar. 8, 1996, Ser. No. 51,867
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D15—150



379,099
COMBINED ILLUMINATED SIGN AND ILLUMINATION BOX FOR A REFRIGERATOR OR FREEZER GONDOLA
Christer Strandberg, and Lars-Åke Wickman, both of Arvika, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Aug. 31, 1995, Ser. No. 43,322
Claims priority, application Sweden, Mar. 24, 1995, 950635
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D10—10



379,100
FINGER RING TAG
William A. McAuley, Lincoln, and Paul R. Stubblefield, Pawtucket, both of R.I., assignors to K & M Associates, Providence, and Display Creations, Inc., Pawtucket, both of R.I.
Continuation-in-part of Ser. No. 32,208, Dec. 14, 1994, Pat. No. Des. 363,087. This application Sep. 7, 1995, Ser. No. 43,608
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—22



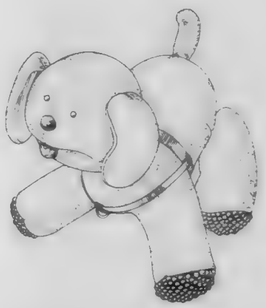
379,102
DINOSAUR DESIGN
Daryl J. Brummer, 1704 W. Shore Dr., Delafield, Wis. 53018
Filed Oct. 6, 1994, Ser. No. 29,448
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—148



379,101
GAME TABLE
Deloris A. Griffin, and Marc K. Griffin, both of 22315 Maplewood Dr., Southfield, Mich. 48034
Filed May 7, 1992, Ser. No. 911,811
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D21—7



379,103
WALKING TOY ANIMAL
Laurie S. Gallagher, 2338 W. Argyle, Chicago, Ill. 60625
Filed Nov. 20, 1995, Ser. No. 46,910
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—161



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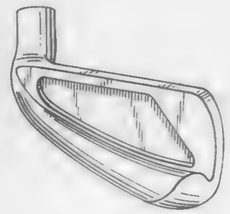
379,104
HAND GRIP EXERCISER
Byron E. Beard, and William E. Beard, both of 110 California Ave., Oakmont, Pa. 15139-2106
Filed Aug. 8, 1995, Ser. No. 42,342
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—198



379,105
RUBBER BAND BALL
Daniel Wilk, Deerfield, Ill., assignor to The Bandyball Corporation, Deerfield, Ill.
Continuation of Ser. No. 359,569, Dec. 20, 1994, abandoned.
This application Oct. 31, 1995, Ser. No. 45,856
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—204



379,106
GOLF CLUB HEAD
Ralph D. Maltby, Granville, Ohio, assignor to Ralph Maltby Enterprises, Inc., Newark, Ohio
Filed Nov. 15, 1995, Ser. No. 46,453
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



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NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.E. Staley Manufacturing Co.: *See—*
Moore, Carl O.; and Dial, James R., 5,626,896, Cl. 426-103.000.
A-Line Products Corporation: *See—*
Laura, Alger E.; Easton, Ronald J.; Frisch, Kurt C.; and Xiao, Han X., 5,626,915, Cl. 427-385.500.
A.T. Cross Company: *See—*
Berkson, Mitchell; and Arthur, David, 5,627,348, Cl. 178-18.000.
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Abasari, Emoke: *See—*
Balazs, Laszlo; Abasari, Emoke; Lantos, Ferenc; Cserteg, Istvanne; and Bobayne, Veronika V., 5,627,432, Cl. 313-635.000.
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ABB Air Preheater, Inc.: *See—*
Campbell, Barry E.; and Finnemore, Harlan E., 5,626,184, Cl. 165-8.000.
ABB Industrial Systems, Inc.: *See—*
Sturm, Steven P., 5,627,372, Cl. 250-308.000.
ABB Management AG: *See—*
Aebischer, Hanspeter; and Mathys, Roger, 5,627,454, Cl. 323-210.000.
ABB Research Ltd.: *See—*
Sattelmayer, Thomas, 5,626,017, Cl. 60-723.000.
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Walker, Donny R.; Vaught, James A.; and Hills, David B., 5,627,522, Cl. 340-618.000.
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Carlsmith, Lawrence A.; Vote, A. Sean; Luthi, Oscar; and Abdulmassih, Anthony G., 5,626,297, Cl. 241-57.000.
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Okamoto, Katsuya; Abe, Koichi; and Nakajima, Shoji, 5,626,942, Cl. 428-141.000.
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Inoue, Tadaaki; Kodaira, Hideto; Nawa, Yoshihito; Murashima, Ryoichiro; Abe, Shunichi; and Yokoyama, Kazumasa, 5,626,880, Cl. 424-489.000.
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Åberg, K. A. Mikael: *See—*
Lidgard, Anne I. B.; Stensland, Leif G.; and Åberg, K. A. Mikael, 5,627,921, Cl. 385-12.000.
Able Corporation: *See—*
Ishikawa, Yoichi; Yokoo, Shuji; and Mizoguchi, Akira, 5,626,824, Cl. 422-307.000.
Abraham's Tea House GmbH: *See—*
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Edwards, Russell J.; Abrams, Richard W.; Holley, William E.; Gundersen, Borge P.; and Ravn, Thomas C., 5,626,000, Cl. 53-281.000.
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Mizushima, Shigeaki; Aburazaki, Kazuyuki; Watanabe, Noriko; Hirata, Mitsuaki; Iwagoe, Hiroko; and Okamura, Tomoko, 5,627,667, Cl. 349-124.000.
Accolla, William R.: *See—*
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Landis, Robert M.; and Ackerman, Bernard, 5,626,565, Cl. 604-174.000.
Ackley, Donald E.; and Stafford, John W., to Motorola. Optoelectronic transducer. 5,627,931, Cl. 385-88.000.
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Activator Methods, Inc.: *See—*
Keller, Tony S.; and Fuhr, Arlan W., 5,626,615, Cl. 606-238.000.
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Rault, Sylvain; Robba, Max; Lancelot, Jean-Charles; Prunier, Hervé; Renard, Pierre; Pfeiffer, Bruno; Guardiola-Lemaitre, Béatrice; and Rettori, Marie-Claire, 5,627,203, Cl. 514-411.000.
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Faltys, Michael A.; Wolfe, James H.; McMeel, Kitti; and Hetlinger, Chris J., 5,626,629, Cl. 607-57.000.
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Markowitz, Raymond S.; Roy, Robert E.; and Sun, Xiaoguang G., 5,626,630, Cl. 607-60.000.
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Flament, Patrick; Perdu, Michel; Portier, Jean; and Brunet, Pierre, 5,626,315, Cl. 244-168.000.
AFA Products, Inc.: *See—*
Maas, Wilhelmus J. J.; and Hurkmans, Petrus W. L., 5,626,259, Cl. 222-136.000.
Afanasiev, Boris N.; Carlson, Jonathan O.; Beaty, Barry; Higgins, David R.; and Thibault, Kelly J., to Research Corporation Technologies, Inc. *Aedes aegypti* densovirus expression system. 5,627,048, Cl. 435-69.100.
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Maerz, Karin; Gramm, Inc; Hilger, Manfred; Mohr, Dieter; and Platzer, Stephan J. W., 5,627,009, Cl. 430-257.000.
Schneider, Rudolf; Lechner, Georg; Zehetmaier, Thomas; Reichart, Michael; Feytens, Frans; and Herschens, Gilbert, 5,627,354, Cl. 235-375.000.

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Defieuw, Geert; Janssens, Wilhelmus; and Dewanckele, Jean-Marie, 5,627,008, Cl. 430-200.000.
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Aikawa, Yoshihiko, 5,626,235, Cl. 209-395.000

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Aikawa, Yoshihiko, to Aikawa Iron Works Co., Ltd. Papermaking screen. 5,626,235, Cl. 209-395.000.

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Roberts, David A.; Vrtis, Raymond N.; Hochberg, Arthur K.; Bryant, Robert G.; and Langan, John G., 5,626,775, Cl. 216-67.000.

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Maki, Naoyuki; and Takashi, Yukihisa, 5,626,518, Cl. 464-64.000.

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Sakamoto, Yasuhiro; Akimoto, Masami; Tateyama, Kiyohisa; and Kitamura, Shinzi, 5,626,675, Cl. 118-663.000.

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Morad, Fred I., to Worldwide Integrated Resources, Inc. Attachment apparatus for forming a handle. 5,625,922, Cl. 16-114.00R.

Morancais, Jean-Luc; Lety, Alain; and Vanlerberghe, Guy, to L'Oreal. Cosmetic and/or pharmaceutical composition containing a dispersion of lipid vesicles, process for the preparation of the said dispersion and dispersion of lipid vesicles. 5,626,868, Cl. 424-450.000.

Morbitzer, Hans-Peter; and Sekira, Peter, to Electrovac, Fabrikation elektronischer Spezialartikel Gesellschaft m.b.H. Temperature control device with a spring-biased stem and a switch spring of bridge-like configuration. 5,627,507, Cl. 337-394.000.

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Morella, Roger J., Jr.: *See—*
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Morgan, Arthur C. Collar attachments for a creel adapter. 5,626,309, Cl. 242-571.400.

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Mori, Haruki: *See—*
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Mori, Toshiki: *See—*
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Morikawa, Sumio; and Kondoh, Masahiro, to Ohyodo Diesel Co., Ltd. Steel material shearing machine. 5,626,301, Cl. 241-266.000.

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Morimoto, Osamu: *See—*
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Morita, Toshikazu, to Nohmi Bosai Ltd. Fire detector and fire receiver. 5,627,514, Cl. 340-507.000.

Morita, Tsutomu; Onda, Hiroyuki; Tanaka, Masasi; and Aoyama, Katsumi, to TEAC Corporation. Constant linear velocity optical disk apparatus having improved circuitry for speed data access. 5,627,811, Cl. 369-50.000.

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Guillou, Bernard, to ETS Guillou Freres. Geranium plant named 'Guirac'. 9,887, Cl. Plt.-87.120.

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Appleman, William M. Cylindrical keyed coupling for composite propulsion shafting. H1,647, Cl. 403-355.000.

Barrish, Joel C.; Colonno, Richard J.; and Lin, Pin-Fang M. HIV protease inhibitor combinations. H1,649, Cl. 514-210.000.

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Kim, Hongzoon. Method for storing and regenerating photographic processing solutions. H1,648, Cl. 430-398.000

Lewis, Michael L. Underwater multi-mode night vision apparatus. H1,645, Cl. 250-330.000.

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Muehl, Wallace W., Sr., to United States of America, Navy. Method and apparatus for providing continuous cathodic protection by solar power. H1,644, Cl. 204-196.000.

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793.11 5,625,999

CLASS 53
281 5,626,000
284.3 5,626,001
398 5,626,002
412 5,626,003
459 5,626,004
540 5,626,005

CLASS 56
12.7 5,626,006
13.5 5,626,007
17.5 5,626,008
400.06 5,626,009

CLASS 57
294 5,626,010
409 5,626,011

CLASS 59
35.1 5,626,012
78 5,626,013

CLASS 60
274 5,626,014
450 5,626,015
532 5,626,016
723 5,626,017
726 5,626,018
728 5,626,019

CLASS 62
3.1 5,626,020
3.5 5,626,021
4 5,626,022
51.1 5,626,024
117 5,626,025
129 5,626,026
175 5,626,027
252 5,626,028
256 5,626,029
324.6 5,626,030
502 5,626,031
513 5,626,032
617 5,626,033
623 5,626,034
625 5,626,023
637 5,626,035
646 5,626,036

CLASS 65
29.12 5,626,641
106 5,626,642
442 5,626,643

CLASS 66
170 5,626,037

CLASS 68
3 R 5,626,038

CLASS 70
279 5,626,039
290 5,626,040
370 5,626,041

CLASS 71
9 5,626,644

CLASS 72
39 5,626,042
133 5,626,043
203 5,626,044
219 5,626,045
273 5,626,046
5,626,047
336 5,626,048
347 5,626,049
370 5,626,050
379.6 5,626,051

CLASS 73
1.73 5,627,304
23.2 5,627,305
5,627,306
23.34 5,627,307
28.01 5,627,308
61.43 5,627,309
64.53 5,627,310
147 5,627,311
5,627,312
261 5,627,313
304 C 5,626,052
304 R 5,626,053
504.04 5,627,314
514.31 5,627,315
514.32 5,627,316
5,627,317
5,627,318
605 5,627,319
606 5,627,320
715 5,627,321
861.22 5,627,322
861.28 5,627,323
861.357 5,627,326
861.53 5,627,324
861.56 5,627,325
862.042 5,627,327
863.83 5,627,328
866 5,627,329
866.5 5,627,330

CLASS 74
104 5,626,054
116 5,626,055
333 5,626,056
473 P 5,626,057
489 5,626,058
493 5,626,059
594.1 5,626,060

CLASS 75
366 5,626,645
500 5,626,646
711 5,626,647
712 5,626,648

CLASS 81
63 5,626,061
63.2 5,626,062
488 5,626,063

CLASS 82
110 5,626,064

CLASS 83
174 5,626,065
451 5,626,066
761 5,626,067

CLASS 84
304 5,627,331
422.1 5,627,332
462 5,627,333
623 5,627,334
635 5,627,335
746 5,627,336

CLASS 91
235 5,626,068
369.3 5,626,069
521 5,626,070

CLASS 92
13.8 5,626,071
256 5,626,072

CLASS 95
12 5,626,649
116 5,626,650
214 5,626,651

CLASS 96
45 5,626,652

CLASS 99
337 5,626,073

CLASS 101
115 5,626,074
232 5,626,075
401.1 5,626,076
484 5,626,077

CLASS 102
290 5,627,337
361 5,627,338

CLASS 104
28 5,626,078
44 5,626,079
118 5,626,080
197 5,626,081
252 5,626,082

CLASS 105
355 5,626,083

CLASS 106
14.41 5,626,653
31.27 5,626,655
31.33 5,626,654
38.24 5,626,656
122 5,626,657
144.1 5,626,658
284.04 5,626,659
287.11 5,626,660
497 5,626,662
696 5,626,663
697 5,626,664
706 5,626,665
728 5,626,666
745 5,626,667
781 5,626,668

CLASS 108
23 5,626,084

CLASS 110
188 5,626,085
190 5,626,086
196 5,626,087
243 5,626,088
281 5,626,089

CLASS 111
200 5,626,090

CLASS 112
470.07 5,626,091

CLASS 114
67 A 5,626,669
74 R 5,626,092

CLASS 116
28.1 5,626,093
205 5,626,094

CLASS 117
7 5,626,670

CLASS 118
126 5,626,671
258 5,626,672
315 5,626,673
317 5,626,674
663 5,626,675
712 5,626,676
719 5,626,677
723 E 5,626,678
723 MR 5,626,679
725 5,626,680

CLASS 119
57.2 5,626,095
61 5,626,096
339 5,626,097
474 5,626,098
625 5,626,099
734 5,626,100
845 5,626,101

CLASS 122
7 R 5,626,102
235.14 5,626,103
367.1 5,626,104

CLASS 123
3 5,626,105
42 5,626,106
81 B 5,626,107
90.15 5,626,108
5,626,109
90.22 5,626,110
179.24 5,626,111
184.21 5,626,112
193.4 5,626,113
198 D 5,626,114
305 5,626,115
321 5,626,116
406 5,626,117
439 5,626,118
467 5,626,119
479 5,626,120
514 5,626,121
685 5,626,122

CLASS 124
69 5,626,123

CLASS 125
23.02 5,626,124

CLASS 126
91 A 5,626,125
276 5,626,126
523 5,626,127

CLASS 128
200.26 5,626,128
202.22 5,626,129
203.12 5,626,130
204.23 5,626,131
207.14 5,626,132
630 5,626,133
633 5,626,134
640 5,626,135
642 5,626,136
653.2 5,626,137
662.06 5,626,138
664 5,626,139
671 5,626,140
672 5,626,141
686 5,626,142
700 5,626,143
725 5,626,144
731 5,626,145
734 5,626,146
736 5,626,147
830 5,626,148
842 5,626,149
870 5,626,150
897 5,626,151

CLASS 131
84.1 5,626,152

CLASS 132
126 5,626,153
200 5,626,154
5,626,155
229 5,626,156

CLASS 134
3 5,626,681
8 5,626,682
5,626,683
22.12 5,626,684
115 R 5,626,157
138 5,626,158
147 5,626,159

CLASS 135
22 5,626,160
24 5,626,161

CLASS 136
244 5,626,686
259 5,626,687
265 5,626,688

CLASS 137
78.2 5,626,162
181 5,626,163
375 5,626,164
556 5,626,165
828 5,626,166

CLASS 138
118.1 5,626,167

CLASS 139
59 5,626,168

CLASS 140
105 5,626,169

CLASS 141
98 5,626,170
152 5,626,171
236 5,626,172
329 5,626,173
386 5,626,174

CLASS 148
304 5,626,690
421 5,626,691
538 5,626,692
594 5,626,693
606 5,626,689
609 5,626,694

CLASS 149
19.3 5,627,339

CLASS 152
454 5,626,695
520 5,626,696
525 5,626,697
541 5,626,698

CLASS 156
■ 5,626,699
■ 5,626,700
227 5,626,701
233 5,626,702
244.11 5,626,703
245 5,626,704
304.5 5,626,705
324 5,626,706

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446 5,626,707
468 5,626,708
472 5,626,709
477.1 5,626,710
496 5,626,711
497 5,626,712
537 5,626,713

CLASS 160

168.1 5,626,175
5,626,177
201 5,626,176

CLASS 162

30.11 5,626,717
60 5,626,718
158 5,626,719
161 5,626,720
181.6 5,626,721
272 5,626,178
343 5,626,722
358.4 5,626,723

CLASS 164

66.1 5,626,179
136 5,626,180
263 5,626,181
340 5,626,182
428 5,626,183

CLASS 165

5 5,626,184
41 5,626,185
43 5,626,186
134.1 5,626,187
166 5,626,188

CLASS 166

55.6 5,626,189
65.1 5,626,190
245 5,626,191
255.1 5,626,192
303 5,626,193

CLASS 169

24 5,626,194

CLASS 172

19 5,626,195
558 5,626,196
815 5,626,197

CLASS 173

93 5,626,198
211 5,626,199

CLASS 174

48 5,627,340
49 5,627,341
65 G 5,627,342
153 R 5,627,343
257 5,627,344
265 5,627,345

CLASS 175

40 5,626,200
365 5,626,201

CLASS 177

64 5,627,346

CLASS 178

18 5,627,347
5,627,348
5,627,349

CLASS 180

68.1 5,626,202
274 5,626,203
305 5,626,204

CLASS 181

199 5,627,350
231 5,627,351

CLASS 182

153 5,626,205

CLASS 187

244 5,626,206
263 5,626,207
267 5,626,208

CLASS 188

24.14 5,626,209
79.55 5,626,210
218 5,626,211

CLASS 192

4 A 5,626,212
53.34 5,626,214
53.4 5,626,213
58.42 5,626,215
150 5,626,216

CLASS 194

40 5,626,685

CLASS 198

468.2 5,626,217
518 5,626,218
626.5 5,626,219
712 5,626,220
836.3 5,626,221

CLASS 200

61.54 5,627,352
305 5,626,222
529 5,626,223

CLASS 203

76 5,626,724
91 5,626,725

CLASS 204

157.15 5,627,353
172 5,626,726
192.12 5,626,727
192.18 5,626,728
252 5,626,729
290 R 5,626,730
296 5,626,731
453 5,626,732
529 5,626,733
547 5,626,734
606 5,626,735

CLASS 205

125 5,626,736
316 5,626,737
444 5,626,738
767 5,626,739
789 5,626,740

CLASS 206

5 5,626,224
308.1 5,626,225
349 5,626,226
369 5,626,227
511 5,626,228
522 5,626,229
571 5,626,230
600 5,626,231
768 5,626,232

CLASS 208

113 5,626,741
235 5,626,742
391 5,626,743

CLASS 209

219 5,626,233
315 5,626,234
395 5,626,235
538 5,626,236
580 5,626,237
646 5,626,238
667 5,626,239
702 5,626,240

CLASS 210

97 5,626,744
101 5,626,745
109 5,626,746
169 5,626,747
241 5,626,748
257.1 5,626,749
275 5,626,750
321.75 5,626,751
5,626,752
445 5,626,753
605 5,626,754
614 5,626,755
634 5,626,756
635 5,626,757
636 5,626,758
645 5,626,759
5,626,760
651 5,626,761
659 5,626,762
660 5,626,763
661 5,626,764
670 5,626,765
709 5,626,766
748 5,626,767
5,626,768
760 5,626,769
799 5,626,770

CLASS 211

23 5,626,241
41.8 5,626,242
59.1 5,626,243
60.1 5,626,244
90 5,626,245
186 5,626,246

CLASS 212

325 5,626,247

CLASS 215

383 5,626,248

CLASS 216

13 5,626,771
24 5,626,772
47 5,626,773
5,626,774
60 5,626,714
67 5,626,775

CLASS 219

121.59 5,626,249
121.64 5,626,776
121.72 5,626,777
121.74 5,626,778
201 5,626,779
204 5,626,780
270 5,626,781
449 5,626,782
497 5,626,783
521 5,626,784
541 5,626,785

CLASS 220

4.26 5,626,250
276 5,626,251
401 5,626,253
403 5,626,254
411 5,626,255
574 5,626,256
578 5,626,257
695 5,626,258
789 5,626,252

CLASS 222

136 5,626,259
144 5,626,260
181.2 5,626,261
184 5,626,262
192 5,626,263
321.2 5,626,264
327 5,626,265
386 5,626,266

CLASS 223

84 5,626,267
85 5,626,268
112 5,626,269

CLASS 224

148.7 5,626,270
161 5,626,271
674 5,626,272

CLASS 226

194 5,626,273

CLASS 227

109 5,626,274
110 5,626,275

CLASS 228

4.5 5,626,276
41 5,626,277
56.3 5,626,278
123.1 5,626,279
175 5,627,108
180.21 5,626,280

CLASS 229

75 5,626,281
80 5,626,282
120.13 5,626,283
120.36 5,626,284
132 5,626,285
300 5,626,286

CLASS 235

375 5,627,354
380 5,627,355
381 5,627,356
449 5,627,357
462 5,627,358
5,627,359
5,627,360
472 5,627,361

CLASS 236

20 R 5,626,287
49.3 5,626,288

CLASS 238

8 5,626,289

CLASS 239

2.1 5,626,290
310 5,626,291
408 5,626,292
530 5,626,293
533.3 5,626,294
596 5,626,295
655 5,626,296

CLASS 241

55 B1 5,340,035
57 5,626,297
101 761 5,626,298
169.1 5,626,299
247 5,626,300
266 5,626,301

CLASS 242

130 5,626,302
265 5,626,303
334.6 5,626,304
347 5,626,305
379.1 5,626,306
403.1 5,626,307
435.2 5,626,308
571.4 5,626,309

CLASS 244

2 5,626,310
3.16 5,626,311
75 R 5,626,312
135 B 5,626,313
158 A 5,626,314
168 5,626,315

CLASS 248

68.1 5,626,316
121 5,626,317
205.2 5,626,318
213.2 5,626,319
230.6 5,626,320
231.41 5,626,321
282.1 5,626,322
286.1 5,626,323

CLASS 250

205 5,627,362
208.1 5,627,363
5,627,364
234 5,627,365
5,627,366
252.1 5,627,367
269.3 5,627,368
287 5,627,369
306 5,627,371
308 5,627,372
310 5,627,373
325 5,627,376
334 5,627,374
338.3 5,627,375
370 13 5,627,377
455.11 5,627,378
551 5,627,379
577 5,627,380
588 5,627,381

CLASS 251

58 5,626,324
129 14 5,626,325
129.15 5,626,326
5,626,327

CLASS 252

2 5,626,786
4 5,626,787
62.6 5,626,788
62.62 5,626,789
67 5,626,790
299 01 5,626,791
5,626,792
299 63 5,626,793
373 5,626,794
500 5,626,795
582 5,626,796
5,626,797

CLASS 254

98 5,626,328
200 5,626,329

CLASS 256

19 5,626,330
59 5,626,331

CLASS 257

3 5,627,382
17 5,627,383
57 5,627,384
77 5,627,385
79 5,627,386
173 5,627,387
223 5,627,388
275 5,627,389
302 5,627,390
310 5,627,391
315 5,627,392
331 5,627,393
335 5,627,394
350 5,627,395
415 5,627,396
417 5,627,397
427 5,627,398
501 5,627,399
529 5,627,400
557 5,627,401
596 5,627,402
639 5,627,403
642 5,627,404
668 5,627,405
700 5,627,406
701 5,627,407
784 5,627,408
796 B1 4,712,127

CLASS 260

665 R 5,626,798

CLASS 261

79.2 5,626,799

CLASS 264

1.21 5,627,116
1.38 5,626,800
28 5,626,801
36 5,626,802
40.5 5,626,803
5,626,804
41 5,626,805
122 5,627,542
140 5,626,806
148 5,626,807
161 5,626,808
167 5,626,809
187 5,626,810
210.7 5,626,811
248 5,626,812
272.17 5,627,107
469 5,626,813
511 5,626,814
572 5,626,815

CLASS 266

170 5,626,816

CLASS 267

140.14 5,626,332

CLASS 270

58 16 5,626,333

CLASS 271

121 5,626,334
159 5,626,335
182 5,626,336
198 5,626,337
274 5,626,338

CLASS 273

241 5,626,340
292 5,626,341
348.4 5,626,342
349 5,626,343
376 5,626,344

CLASS 277

1 5,626,345
9.5 5,626,346
96.1 5,626,347
180 5,626,348
207 A 5,626,349
235 B 5,626,350

CLASS 280

40 5,626,351
47.29 5,626,352
47.35 5,626,353
236 5,626,354
276 5,626,355
405.1 5,626,356
728.3 5,626,357
731 5,626,358
735 5,626,359
741 5,626,360
756 5,626,361
767 5,626,362
775 5,626,363
777 5,626,364

CLASS 281

15.1 5,626,365
20 5,626,366
21.1 5,626,367
29 5,626,368

CLASS 283

116 5,626,370

CLASS 285

38 5,626,369
319 5,626,371

CLASS 292

87 5,626,372
113 5,626,373
170 5,626,374
238 5,626,375

CLASS 293

102 5,626,376

CLASS 294

19.1 5,626,377
64.1 5,626,378
143 5,626,379

CLASS 296

39.1 5,626,380
97.8 5,626,381
146.7 5,626,382
146.9 5,626,383
155 5,626,384

CLASS 297

18 5,626,385
180.13 5,626,386
180.14 5,626,387
228.11 5,626,388
250.1 5,626,389
284.1 5,626,390
331 5,626,391
341 5,626,392
423.46 5,626,393
448.2 5,626,394
452.18 5,626,395
452.2 5,626,396
467 5,626,397
488 5,626,398

CLASS 299

41.1 5,626,399

CLASS 300

21 5,626,400

CLASS 301

59 5,626,401

CLASS 303

7 5,626,402
117.1 5,626,403

CLASS 307

10.1 5,627,409
5,627,410
5,627,411
82 5,627,412
86 5,627,413
95 5,627,414
116 5,627,415
119 5,627,416
141 5,627,417

CLASS 310

12 5,627,418
74 5,627,419
87 5,627,420
90.5 5,627,421
105 5,627,422
156 5,627,423
258 5,627,424
321 5,627,425

CLASS 312

198 5,626,404
334.28 5,626,406
334.8 5,626,405
408 5,626,407

CLASS 313

116 5,627,426
308 5,627,427
318.01 5,627,428
474 5,627,429
570 5,627,430
584 5,627,431
635 5,627,432

CLASS 315

56 5,627,433
94 5,627,434
111.21 5,627,435
169.1 5,627,436
399 5,627,437

CLASS 318

139 5,627,438
480 5,627,439
568.21 5,627,440
599 5,627,441
640 5,627,442
696 5,627,443
701 5,627,444
5,627,445
799 5,627,446

801 5,627,447

CLASS 320

2 5,627,448
5 5,627,449
15 5,627,450
21 5,627,451
5,627,452
30 5,627,453

CLASS 323

210 5,627,454
222 5,627,455
267 5,627,458
283 5,627,459
288 5,627,460
312 5,627,461
315 5,627,456
318 5,627,457

CLASS 324

103 R 5,627,462
158.1 5,627,463
207.2 5,627,464
5,627,465
207.21 5,627,466
207.22 5,627,467
307 5,627,468
309 5,627,469
318 5,627,470
319 5,627,471
435 5,627,472
538 5,627,473
539 5,627,474
546 5,627,475
704 5,627,476
760 5,627,477
763 5,627,478
765 5,627,479

CLASS 326

17 5,627,480
30 5,627,481
93 5,627,482
110 5,627,483

CLASS 327

56 5,627,484
77 5,627,485
108 5,627,486
112 5,627,487
261 5,627,488
333 5,627,489
510 5,627,490
530 5,627,491
544 5,627,492
546 5,627,493

CLASS 330

257 5,627,494
307 5,627,495

CLASS 331

25 5,627,496
94.1 5,627,497
117 R 5,627,498

CLASS 332

101 5,627,499
112 5,627,500

CLASS 333

17.1 5,627,501
134 5,627,502

CLASS 335

78 5,627,503
230 5,627,504
302 5,627,505

CLASS 337

298 5,627,506
394 5,627,507

CLASS 340

425.5 5,627,508
426 5,627,509
435 5,627,510
5,627,511
457.1 5,627,512
473 5,627,513
507 5,627,514
517 5,627,515
567 5,627,518
568 5,627,519
572 5,627,516
5,627,517
5,627,520
600 5,627,521
618 5,627,522
623 5,627,523
825.06 5,627,527
825.07 5,627,524
825.44 5,627,525
5,627,528
825.54 5,627,526
825.69 5,627,529

CLASS 341

21 5,627,530
22 5,627,531
23 5,627,532
51 5,627,533
87 5,627,534
131 5,627,535
141 5,627,536
144 5,627,537
5,627,538
155 5,627,539
176 5,627,540

CLASS 342

1 5,627,541
25 5,627,543
42 5,627,544
162 5,627,545
352 5,627,546
357 5,627,547
5,627,548
5,627,549

CLASS 343

700 MS 5,627,550
5,627,551
718 5,627,552
754 5,627,553

CLASS 345

5 5,627,554
12 5,627,555
76 5,627,556
90 5,627,557
94 5,627,558
97 5,627,559
5,627,560
107 5,627,561
111 5,627,562
5,627,563
146 5,627,564
158 5,627,565
168 5,627,566
173 5,627,567
185 5,627,568
214 5,627,569

CLASS 347

19 5,627,570
5,627,571
23 5,627,572
32 5,627,573
33 5,627,574
40 5,627,575
48 5,627,576
50 5,627,577
101 5,627,578
225 5,627,579
239 5,627,580

CLASS 348

17 5,627,581
43 5,627,582
72 5,627,583
5,627,584
142 5,627,585
169 5,627,586
207 5,627,587
222 5,627,588
340 5,627,589
402 5,627,590
416 5,627,591
429 5,627,592
466 5,627,593
468 5,627,594
478 5,627,595
536 5,627,596
550 5,627,597
567 5,627,598
643 5,627,599
668 5,627,600
699 5,627,601
705 5,627,602
708 5,627,603
726 5,627,604
745 5,627,605
818 5,627,606

CLASS 349

74 5,627,666
124 5,627,667
156 5,627,665

CLASS 351

52 5,627,607
113 5,627,608
123 5,627,609
141 5,627,610
158 5,627,611
200 5,627,612
221 5,627,613

CLASS 352

46 5,627,614

CLASS 353

20 5,626,408
31 5,626,409
94 5,626,410
5,626,411

CLASS 354

81 5,627,616

CLASS 355

53 5,627,624
5,627,625
67 5,627,626
68 5,627,627
260 5,627,631

CLASS 356

3.06 5,627,635
5.05 5,627,636
32 5,627,637
124 5,627,638
310 5,627,639
316 5,627,640
318 5,627,641
336 5,627,642
344 5,627,643
350 5,627,644
364 5,627,645
371 5,627,646
372 5,627,647
416 5,627,648

CLASS 358

296 5,627,649
5,627,650
298 5,627,651
5,627,652
300 5,627,653
407 5,627,658
443 5,627,659
449 5,627,660
470 5,627,661
474 5,627,662

CLASS 359

2 5,627,663
11 5,627,664
124 5,627,668
156 5,627,669
212 5,627,670
232 5,627,671
248 5,627,672
290 5,627,673
355 5,627,674
362 5,627,690
366 5,627,675
494 5,627,676
557 5,627,677
561 5,627,678
565 5,627,679
645 5,627,680
686 5,627,681
688 5,627,682
700 5,627,683
717 5,627,684
745 5,627,685
5,627,686
823 5,627,687
843 5,627,688
858 5,627,689

CLASS 360

32 5,627,692
49 5,627,693
51 5,627,694
5,627,695
71 5,627,696
73.14 5,627,697
75 5,627,698
77.08 5,627,946
97.02 5,627,699
103 5,627,700
106 5,627,701
5,627,702
113 5,627,703
5,627,704
130.24 5,627,705
132 5,627,706
133 5,627,707

CLASS 361

18 5,627,708
19 5,627,709
23 5,627,710
56 5,627,711
63 5,627,712
67 5,627,713
85 5,627,714
93 5,627,715
5,627,716
95 5,627,717
97 5,627,718
103 5,627,719
118 5,627,720
119 5,627,721
170 5,627,722
602 5,627,723
663 5,627,724
681 5,627,725
684 5,627,726
686 5,627,727
5,627,728
737 5,627,729
784 5,627,730
796 5,627,731

CLASS 362

32 5,626,412
61 5,626,413
119 5,626,414
226 5,626,415
264 5,626,416
276 5,626,417
390 5,626,418
391 5,626,419

CLASS 363

16 5,627,732
21 5,627,733
35 5,627,734
5,627,735
39 5,627,736
40 5,627,737
49 5,627,738
60 5,627,739
78 5,627,740
89 5,627,741
98 5,627,742
124 5,627,743
165 5,627,744

CLASS 364

131 5,627,745
148 5,627,746
LRI 5,627,747
422 5,627,749
424.034 5,627,751
424.04 5,627,752
5,627,753
424 051 5,627,754
424 096 5,627,750
426 01 5,627,756
426.018 5,627,755
431.051 5,627,757
481 5,627,758
483 5,627,759
492 5,627,760
506 5,627,761
508 5,627,762
512 5,627,763
514 R 5,627,764
5,627,765
551.01 5,627,766
552 5,627,767
553 5,627,768
558 5,627,769
5,627,770
560 5,627,771
578 5,627,772
715.03 5,627,773
715.04 5,627,774
717 5,627,775
724.01 5,627,776

CLASS 365

122 5,627,777
149 5,627,778
185.01 5,627,779
185.09 5,627,780
185.2 5,627,781
185.22 5,627,782
185.33 5,627,783
189.01 5,627,784
5,627,785
200 5,627,786
201 5,627,787
204 5,627,788
205 5,627,789
210 5,627,790
221 5,627,797
222 5,627,791
230.03 5,627,792
233 5,627,793
5,627,794
5,627,795
233.5 5,627,796

CLASS 366

76.6 5,626,420
147 5,626,421
173.1 5,626,422
270 5,626,423

CLASS 367

76 5,627,798
121 5,627,799
127 5,627,800
139 5,627,801
188 5,627,802

CLASS 369

13 5,627,803
5,627,804
32 5,627,805
44.23 5,627,806
44.29 5,627,807
44.32 5,627,808
47 5,627,809
5,627,810
50 5,627,811
58 5,627,817
112 5,627,812
116 5,627,813
5,627,814
126 5,627,815
275.1 5,627,816
275.4 5,627,818

CLASS 370

218 5,627,822
230 5,627,829
241 5,627,834
242 5,627,821
250 5,627,819
252 5,627,820
260 5,627,825
280 5,627,823
320 5,627,835
332 5,627,831
336 5,627,830
359 5,627,827
371 5,627,826
396 5,627,824
397 5,627,836
445 5,627,828
464 5,627,833
508 5,627,832

CLASS 371

5.5 5,627,837
21.1 5,627,838
22.3 5,627,839
5,627,840
5,627,841
5,627,842
37.1 5,627,843
40.1 5,627,844
43 5,627,845
65 5,627,846

CLASS 372

9 5,627,847
18 5,627,848
31 5,627,849
43 5,627,850
44 5,627,851
50 5,627,852
92 5,627,853
99 5,627,854

CLASS 374

121 5,626,424
163 5,626,425

CLASS 375

207 5,627,855
209 5,627,856
219 5,627,857
225 5,627,858
229 5,627,859
317 5,627,860
324 5,627,861
329 5,627,862
357 5,627,863
362 5,627,864

CLASS 376

434 5,627,865
446 5,627,866

CLASS 377

16 5,627,867

CLASS 378

19 5,627,868
37 5,627,869
65 5,627,870
121 5,627,871
161 5,627,872
197 5,627,873
208 5,627,874

CLASS 379

57 5,627,875
58 5,627,876
5,627,877
5,627,878
59 5,627,879
5,627,880
60 5,627,881
61 5,627,882
5,627,883
88 5,627,884
93 5,627,885
111 5,627,886
144 5,627,887
201 5,627,888
221 5,627,889
399 5,627,890
455 5,627,891

CLASS 380

21 5,627,892
30 5,627,893
46 5,627,894
54 5,627,895

CLASS 381

71 5,627,896
5,627,897
77 5,627,898
98 5,627,899
118 5,627,900
155 5,627,901
187 5,627,902
202 5,627,903
205 5,627,904

CLASS 382

107 5,627,905
128 5,627,906
132 5,627,907
133 5,627,908
139 5,627,909
141 5,627,911
144 5,627,910
146 5,627,912
151 5,627,913
189 5,627,914
219 5,627,915
239 5,627,916
246 5,627,917
254 5,627,918
5,627,919

CLASS 384

568 5,626,426

CLASS 385

2 5,627,920
12 5,627,921
5,627,922
14 5,627,923
16 5,627,924
17 5,627,925
36 5,627,926
37 5,627,927
45 5,627,928
5,627,929
51 5,627,930
88 5,627,931
102 5,627,932
123 5,627,933
127 5,627,934

CLASS 386

54 5,627,691
70 5,627,657
81 5,627,935
94 5,627,655
96 5,627,656
5,627,936

CLASS 395

2.38 5,627,937
2.39 5,627,938
2.65 5,627,939
12 5,627,940
22 5,627,941
23 5,627,942
24 5,627,943
27 5,627,944
77 5,627,945
105 5,627,947
111 5,627,948
120 5,627,949
131 5,627,950
5,627,951
135 5,627,952
139 5,627,953
5,627,954
141 5,627,955
143 5,627,956
5,627,957
182.04 5,627,961

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182.11 5,627,962
183.18 5,627,963
183.22 5,627,964
185.01 5,627,965
185.02 5,627,966
186 5,628,015
188.01 5,627,967
200.07 5,627,968
200.1 5,627,969
200.13 5,627,970
200.15 5,627,971
200.18 5,627,972
210 5,627,973
281 5,627,974
307 5,627,975
308 5,627,976
329 5,627,977
330 5,627,978
335 5,627,979
336 5,627,958
352 5,627,960
353 5,627,980
356 5,627,959
382 5,627,982
392 5,627,984
393 5,627,983
5,627,985
402 5,627,986
410 5,627,987
428 5,627,988
430 5,627,989
449 5,627,990
456 5,627,991
460 5,627,992
470 5,627,993
477 5,627,994
497.02 5,627,995
500 5,627,996
5,627,997
5,627,998
5,627,999
556 5,628,001
558 5,628,000
582 5,627,981
601 5,628,010
603 5,628,008
607 5,628,002
608 5,628,005
610 5,628,009
5,628,011
612 5,628,007
613 5,628,012
615 5,628,003
5,628,004
618 5,628,006
621 5,628,014
677 5,628,013
704 5,628,016
5,628,017
733 5,628,018
750 5,628,019
5,628,020
792 5,627,748
800 5,628,021
5,628,022
5,628,023
5,628,024
5,628,025
821 5,628,026
5,628,027
828 5,628,028
838 5,628,029
884 5,628,030
893 5,628,031

CLASS 396

6 5,628,032
7 5,628,033
25 5,627,615
52 5,628,034
87 5,628,035
102 5,628,036
140 5,628,037
233 5,627,620
242 5,627,622
272 5,628,038
296 5,628,039
299 5,627,623
373 5,627,621
379 5,627,618
395 5,627,617
396 5,628,040
418 5,628,041
620 5,627,619

CLASS 399

46 5,627,628
69 5,627,634
78 5,628,042
231 5,627,629
267 5,627,630
281 5,628,043
296 5,627,632
322 5,627,633

CLASS 400

486 5,626,427
5,626,428
487 5,626,429

CLASS 401

6 5,626,430
119 5,626,431

CLASS 402

8 5,626,432

CLASS 403

76 5,626,433
176 5,626,434
348 5,626,435
400 5,626,436

CLASS 405

128 5,626,437
154 5,626,438
186 5,626,439
218 5,626,440
293 5,626,441
303 5,626,442

CLASS 406

415 5,626,661

CLASS 407

26 5,626,443
54 5,626,444

CLASS 408

1 R 5,626,445
5,626,446

CLASS 409

139 5,626,447
233 5,626,448

CLASS 411

149 5,626,449
510 5,626,450
533 5,626,451

CLASS 412

4 5,626,452

CLASS 414

280 5,626,453
5,626,454
288 5,626,455
404 5,626,456
739 5,626,457
751 5,626,458

CLASS 415

143 5,626,459
177 5,626,460
206 5,626,461

CLASS 416

97 R 5,626,462

CLASS 417

269 5,626,463
5,626,464
273 5,626,465
5,626,466
312 5,626,467
360 5,626,468

CLASS 418

6 5,626,469
84 5,626,470

CLASS 419

3 5,628,044
25 5,628,045
38 5,628,046
62 5,628,047

CLASS 420

49 5,626,817

CLASS 422

14 5,626,818
45 5,626,819
122 5,626,820
307 5,626,821
5,626,822
5,626,823
5,626,824

CLASS 423

155 5,626,825
213.2 5,626,826
260 5,628,048
412 5,626,827
702 5,626,828

CLASS 424

1 11 5,626,829
1 49 Re 35,500
5,626,830
9.2 5,626,831
9.4 5,626,832
45 5,626,834
47 5,626,835
5,626,836
49 5,626,837
54 5,626,838
59 5,626,839
70.11 5,626,840
94.63 5,626,841
140.1 5,626,843
141.1 5,626,844
145.1 5,626,845
184.1 5,626,846
195.1 5,626,847
5,626,848
5,626,849
199.1 5,626,850
205.1 5,626,851
401 5,626,852
5,626,853
5,626,854
5,626,855
5,626,856
5,626,857
405 5,626,858
409 5,626,859
423 5,626,860
426 5,626,861
5,626,862
5,626,863
5,626,864
427 5,626,865
447 5,626,866
450 5,626,867
5,626,868
5,626,869
5,626,870
451 5,626,871
5,626,872
455 5,626,873
464 5,626,874
5,626,875
484 5,626,876
489 5,626,877
5,626,878
5,626,879
5,626,880
520 5,626,881
522 5,626,882
605 5,626,883
639 5,626,884
952 5,626,833

CLASS 425

110 5,626,885
116 5,626,886
129.1 5,626,887
141 5,626,888
186 5,626,889
556 5,626,890

CLASS 426

2 5,626,891
3 5,626,892
36 5,626,893
62 5,626,894
82 5,626,895
103 5,626,896
139 5,626,897
502 5,626,898
574 5,626,899
580 5,626,900
589 5,626,901
607 5,626,902
611 5,626,903
649 5,626,904

CLASS 427

122 5,626,905
126.3 5,626,906
202 5,626,907
249 5,626,908
250 5,626,909
255.1 5,626,910
271 5,626,911
288 5,626,912
299 5,626,913
377 5,626,914
385.5 5,626,915
386 5,626,916
407.1 5,626,917
430.1 5,626,918
510 5,626,919
530 5,626,920
533 5,626,921
535 5,626,922
5,626,923
579 5,626,924

CLASS 428

1 5,626,925
14 5,626,926
23 5,626,927
35.8 5,626,979
36.9 5,626,930
40.1 5,626,931
5,626,932
41.8 5,626,928
52 5,626,933
63 5,626,934
64.1 5,626,935
68 5,626,936
76 5,626,937
92 5,626,938
97 5,626,939
102 5,626,940
141 5,626,941
5,626,942
5,626,943
172 5,626,944
174 5,626,945
195 5,626,946
5,626,947
5,626,948
5,626,949
196 5,626,954
294.7 5,626,953
296.4 5,626,954
315.7 5,626,955
323 5,626,956
5,626,957
327 5,626,958
331 5,626,959
332 5,626,965
372 5,626,960
397 5,626,961
403 5,626,962
408 5,626,963
412 5,626,964
423.1 5,626,966
446 5,626,967
447 5,626,968
474.4 5,626,969
611 5,626,970
620 5,626,971
627 5,626,972
694 ML 5,626,973
698 5,626,974
701 5,626,975

CLASS 429

9 5,626,976
43 5,626,978
44 5,626,977
97 5,626,979
100 5,626,980
105 5,626,981
120 5,626,982
166 5,626,983
178 5,626,984
197 5,626,985
210 5,626,986
218 5,626,987
229 5,626,988
233 5,626,989
247 5,626,990

CLASS 430

1 5,626,991
7 5,626,994
20 5,626,995
46 5,626,996
55 5,626,997
67 5,626,998
78 5,626,999
99 5,627,000
108 5,627,001
115 5,627,002
125 5,627,003
137 5,627,004
138 5,627,005
192 5,627,006
200 5,627,007
5,627,008
257 5,627,009
270.1 5,627,010
5,627,011
270.13 5,627,012
325 5,627,013
332 5,627,014
393 5,627,015
434 5,627,016
546 5,627,017
567 5,627,018
569 5,627,019
5,627,020

CLASS 431

251 5,626,471

CLASS 433

80 5,626,472
89 5,626,473
141 5,626,474
155 5,626,475
226 5,626,476

CLASS 434

128 5,626,477
247 5,626,478

CLASS 435

1.1 5,627,021
2 5,627,066
4 5,627,022
5 5,627,023
5,627,024
5,627,025
5,627,026
6 5,627,027
5,627,028
5,627,029
5,627,030
5,627,032
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5,627,034
5,627,035
7.21 5,627,036
5,627,037
5,627,038
7.23 5,627,039
7.24 5,627,040
5,627,041
8 5,627,042
23 5,627,043
29 5,627,044
34 5,627,045
69.1 5,627,046
5,627,047
5,627,048
5,627,049
5,627,050
5,627,051
69.6 5,627,052
91.1 5,627,053
91.2 5,627,054
91.31 5,627,055
134 5,627,056
135 5,627,057
172.3 5,627,058
5,627,059
5,627,060
178 5,627,062
5,627,063
194 5,627,064
228 5,627,065
254.1 5,627,068
267 5,627,069
307.1 5,627,071
320.1 5,627,072
331 5,627,073
340 5,627,067
786.5 5,627,070

CLASS 436

8 5,627,075
30 5,627,076
106 5,627,077
512 5,627,078
518 5,627,074
525 5,627,079
534 5,627,080

CLASS 437

21 5,627,084
192 5,627,102

CLASS 438

4 5,626,715
18 5,627,083
5,627,101
20 5,627,111
32 5,627,100
55 5,627,082
57 5,627,081
113 5,627,112
144 5,627,096
152 5,627,092
155 5,627,088
158 5,627,089
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162 5,627,085
5,627,086
167 5,627,090
172.3 5,627,061
217 5,627,097
253 5,627,094
276 5,627,091
302 5,627,087
438 5,627,099
459 5,627,106
460 5,627,109
600 5,627,098
627 5,627,105
631 5,627,104
649 5,627,093
672 5,627,095
692 5,627,110
723 5,626,716

CLASS 439

35 5,626,479
64 5,626,480
73 5,626,481
74 5,626,482
5,626,483
179 5,626,484
188 5,626,485
281 5,626,486
326 5,626,487
395 5,626,488
402 5,626,489
404 5,626,490
459 5,626,491
512 5,626,492
555 5,626,493
620 5,626,494
651 5,626,495
668 5,626,496
676 5,626,497
703 5,626,498
752.5 5,626,499
862 5,626,500

CLASS 440

30 5,626,501
60 5,626,502

CLASS 442

76 5,626,950
154 5,626,952
262 5,626,951

CLASS 446

73 5,626,503
229 5,626,504
278 5,626,505
465 5,626,506

CLASS 450

86 5,626,507

CLASS 451

102 5,626,508
285 5,626,509
357 5,626,510
461 5,626,511
536 5,626,512

CLASS 452

125 5,626,513
128 5,626,514
187 5,626,515

CLASS 454

69 5,626,516
315 5,626,517

CLASS 455

11.1 5,628,049
12.1 5,628,050
33.1 5,628,051
33.3 5,628,052
86 5,628,053
89 5,628,054
5,628,055
5,628,056
5,628,057
90 5,628,058
126 5,628,059
183.2 5,628,060
186.1 5,628,061

CLASS 464

64 5,626,518
128 5,626,519
131 5,626,520

CLASS 470

25 5,626,521
141 5,626,522

CLASS 473

58 5,626,523
113 5,626,524
150 5,626,525
156 5,626,526
203 5,626,527
248 5,626,528
319 5,626,529
324 5,626,530
353 5,626,531
481 5,626,339

CLASS 474

168 5,626,532

CLASS 475

129 5,626,533

CLASS 477

79 5,626,534
169 5,626,535
181 5,626,536

CLASS 482

8 5,626,537
54 5,626,538
5,626,539
69 5,626,540
72 5,626,541
96 5,626,542
112 5,626,543
124 5,626,544
127 5,626,545
129 5,626,546
131 5,626,547
137 5,626,548
142 5,626,549

CLASS 493

204 5,626,550
231 5,626,551

CLASS 501

54 5,627,113
56 5,627,114
65 5,627,115

CLASS 502

113 5,627,117
117 5,627,118
152 5,627,119
156 5,627,120
170 5,627,121
175 5,627,122
303 5,627,123
304 5,627,124
331 5,627,125

CLASS 503

226 5,627,126
227 5,627,127
5,627,128
5,627,129
5,627,130

CLASS 504

105 5,627,131
114 5,627,132
116 5,627,133
130 5,627,134
159 5,627,135
242 5,627,136
243 5,627,137
5,627,138

CLASS 505

238 5,627,139
401 5,627,140
433 5,627,141
451 5,627,142

CLASS 507

103 5,627,143
211 5,627,144
224 5,627,145

CLASS 508

363 5,627,146
501 5,627,147

CLASS 510

122 5,627,148
125 5,627,149
439 5,627,150
475 5,627,151

CLASS 514

2 5,627,152
12 5,627,153
5,627,154
5,627,155
13 5,627,156
25 5,627,157
44 5,627,158
5,627,159
49 5,627,160
51 5,627,161
54 5,627,162
61 5,627,163
64 5,627,164
75 5,627,165
78 5,627,166
5,627,167
85 5,627,168
89 5,627,169
91 5,627,170
114 5,627,171
120 5,627,172
5,627,173
134 5,627,174
150 5,627,175
210 5,627,176
212 5,627,177
220 5,627,178
222.8 5,627,179
228.8 5,627,180
236.8 5,627,181
237.8 5,627,182
255 5,627,183
256 5,627,184
269 5,627,185
274 5,627,186
5,627,187
275 5,627,188
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311 5,627,192
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365 5,627,199
367 5,627,200
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397 5,627,202
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520 5,627,207
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535 5,627,210
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547 5,627,212
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57 5,627,218
99 5,627,219
108 5,627,220
173 5,627,221

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91 5,627,227
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270 5,627,229
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523 5,627,231
590 5,627,232

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98 5,627,235
173 5,627,236
236 5,627,237
330.3 5,627,238
330.6 5,627,239
384 5,627,240
474 5,627,241

CLASS 526

60 5,627,242
68 5,627,243
92 5,627,244
127 5,627,245
128 5,627,246
160 5,627,247
217 5,627,248
303.1 5,627,249
338 5,627,250

CLASS 528

15 5,627,251
26 5,627,252
31 5,627,253
76 5,627,254
196 5,627,255
198 5,627,256
335 5,627,257
338 5,627,258
342 5,627,259
486 5,627,260
492 5,627,261

CLASS 530

324 5,627,262
327 5,627,263
350 5,627,264
5,627,265
5,627,266
351 5,627,267
385 5,627,268

CLASS 536

2 5,627,269
5 5,627,270
18.5 5,627,271
18.6 5,627,272
18.7 5,627,273
23.1 5,627,274
23.7 5,627,275
25.3 5,627,276
25.4 5,627,277

CLASS 544

47 5,627,278

CLASS 546

65 5,627,280
112 5,627,281
147 5,627,282
205 5,627,283
300 5,627,284

CLASS 548

314.7 5,627,285
341.1 5,627,286
463 5,627,287

CLASS 549

326 5,627,288
413 5,627,289
419 5,627,290
507 5,627,291
555 5,627,292

CLASS 556

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270 5,627,301

CLASS 560

158 5,627,302

CLASS 568

388 5,627,303

CLASS 588

256 5,626,552

CLASS [illegible]

146 5,626,553

CLASS 601

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151 5,626,556

CLASS 602

26 5,626,557

CLASS 604

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9 5,626,559
22 5,626,560
49 5,626,561
53 5,626,562
141 Re 35,501
153 5,626,563
164 5,626,564
174 5,626,565
208 5,626,566
236 5,626,567
315 5,626,568
333 5,626,569
345 5,626,570
370 5,626,571
385.1 5,626,572
5,626,573
385.2 5,626,574

CLASS 606

34 5,626,575
41 5,626,576
45 5,626,577
48 5,626,578
60 5,626,579
63 5,626,580
5,626,581
72 5,626,583
[illegible] 5,626,584
143 5,626,585
5,626,586
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144 5,626,588
148 5,626,590
153 5,626,591
157 5,626,592
159 5,626,593
166 5,626,594
170 5,626,595
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185 5,626,598
194 5,626,599
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198 5,626,602
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200 5,626,605
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208 5,626,609
212 5,626,610
230 5,626,611
232 5,626,612
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5,626,614
238 5,626,615
240 5,626,616

CLASS 607

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5 5,626,618
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9 5,626,620
10 5,626,621
18 5,626,622
23 5,626,623
24 5,626,624
32 5,626,625
36 5,626,626
45 5,626,627
47 5,626,628
57 5,626,629
60 5,626,630
88 5,626,631

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D2— 600 379,027
894 379,028
907 379,029
969 379,030
379,031
972 379,032
D3— 221 379,033
299 379,034
D6— 334 379,035
381 379,036
405 379,037
487 379,038
379,039
506 379,040
508 379,041
510 379,042
515 379,043
523 379,044
544 379,045
552 379,046
601 379,047
634 379,048
D7— 305 379,049
313 379,050
352 379,051
D8— 8 379,052
21 379,053
28 379,054
66 379,055
99 379,056
102 379,057
107 379,058
346 379,059
373 379,060
374 379,061
D9— 307 379,062
347 379,063
415 379,064
451 379,065
D10— 10 379,099
32 379,067
46.1 379,068
106 379,069
379,070
D11— 26 379,071
90 379,072
379,073
91 379,074
121 379,075
164 379,076
D12— 146 379,077
151 379,078
203 379,079
213 379,080
401 379,081
424 379,082
379,083
379,084
D13— 110 379,085
142 379,086
147 379,087
152 379,088
183 379,089
D14— 100 379,090
126 379,091
137 379,092
216 379,093
D15— 22 379,094
85 379,095
144.1 379,096
D18— 2 379,098
D20— 22 379,100
D21— 7 379,101
148 379,102
161 379,103
198 379,104
204 379,105
220 379,106
150 379,097

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P— 35.1 9,881
42.1 9,882
68.1 9,883
9,884
86.2 9,885
9,886
87.12 9,887
90 9,888

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PATENTS

01	5,625,999	5,626,170	5,626,598	5,627,137	5,627,674	5,628,015
	5,626,007	5,626,183	5,626,600	5,627,138	5,627,675	5,628,016
	5,626,457	5,626,188	5,626,601	5,627,139	5,627,695	5,628,021
04	5,626,009	5,626,194	5,626,607	5,627,153	5,627,698	5,628,031
	5,626,156	5,626,211	5,626,614	5,627,155	5,627,702	5,628,056
	5,626,250	5,626,217	5,626,626	5,627,162	5,627,703	08	5,625,907
	5,626,312	5,626,221	5,626,629	5,627,169	5,627,704		5,625,913
	5,626,347	5,626,236	5,626,647	5,627,172	5,627,749		5,625,920
	5,626,434	5,626,244	5,626,659	5,627,216	5,627,753		5,625,976
	5,626,485	5,626,251	5,626,678	5,627,222	5,627,784		5,626,177
	5,626,561	5,626,252	5,626,680	5,627,239	5,627,786		5,626,261
	5,627,385	5,626,255	5,626,684	5,627,263	5,627,788		5,626,437
	5,627,394	5,626,264	5,626,702	5,627,319	5,627,805		5,626,575
	5,627,492	5,626,266	5,626,707	5,627,328	5,627,817		5,626,576
	5,627,494	5,626,278	5,626,715	5,627,332	5,627,829		5,626,622
	5,627,495	5,626,280	5,626,716	5,627,333	5,627,833		5,626,759
	5,627,644	5,626,287	5,626,735	5,627,355	5,627,838		5,626,792
	5,627,789	5,626,310	5,626,775	5,627,358	5,627,846		5,626,893
	5,627,818	5,626,314	5,626,786	5,627,377	5,627,849		5,626,914
	5,627,990	5,626,330	5,626,795	5,627,378	5,627,852		5,627,043
	5,628,029	5,626,342	5,626,814	5,627,392	5,627,857		5,627,048
05	5,625,953	5,626,343	5,626,833	5,627,396	5,627,858		5,627,053
	5,626,006	5,626,354	5,626,839	5,627,405	5,627,859		5,627,081
	5,626,286	5,626,366	5,626,847	5,627,412	5,627,863		5,627,325
	5,626,370	5,626,372	5,626,865	5,627,435	5,627,867		5,627,337
06	Re.35,501	5,626,379	5,626,882	5,627,458	5,627,874		5,627,379
	5,625,906	5,626,405	5,626,883	5,627,476	5,627,878		5,627,531
	5,625,922	5,626,410	5,626,897	5,627,480	5,627,900		5,627,546
	5,625,944	5,626,416	5,626,898	5,627,486	5,627,901		5,627,666
	5,625,986	5,626,424	5,626,920	5,627,497	5,627,902		5,627,763
	5,625,993	5,626,449	5,626,951	5,627,498	5,627,903		5,627,820
	5,626,020	5,626,464	5,626,954	5,627,499	5,627,909		5,627,856
	5,626,021	5,626,478	5,626,967	5,627,508	5,627,914		5,627,995
	5,626,022	5,626,487	5,626,970	5,627,513	5,627,946	09	5,625,958
	5,626,028	5,626,496	5,626,971	5,627,517	5,627,950		5,625,974
	5,626,046	5,626,498	5,626,977	5,627,519	5,627,951		5,625,994
	5,626,058	5,626,502	5,626,990	5,627,523	5,627,953		5,626,001
	5,626,072	5,626,506	5,627,024	5,627,539	5,627,954		5,626,043
	5,626,087	5,626,513	5,627,037	5,627,542	5,627,958		5,626,085
	5,626,094	5,626,524	5,627,040	5,627,548	5,627,959		5,626,258
	5,626,131	5,626,526	5,627,041	5,627,550	5,627,960		5,626,290
	5,626,132	5,626,527	5,627,045	5,627,554	5,627,966		5,626,346
	5,626,135	5,626,528	5,627,073	5,627,558	5,627,976		5,626,362
	5,626,136	5,626,529	5,627,080	5,627,562	5,627,979		5,626,394
	5,626,138	5,626,530	5,627,098	5,627,579	5,627,980		5,626,592
	5,626,144	5,626,540	5,627,105	5,627,601	5,627,983		5,626,608
	5,626,147	5,626,550	5,627,110	5,627,624	5,627,986		5,626,611
	5,626,155	5,626,562	5,627,112	5,627,639	5,627,999		5,626,768
	5,626,162	5,626,593	5,627,131	5,627,652	5,628,013		5,626,811

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12 H1644 H1645 24 H1647 34 H1648 42 H1649

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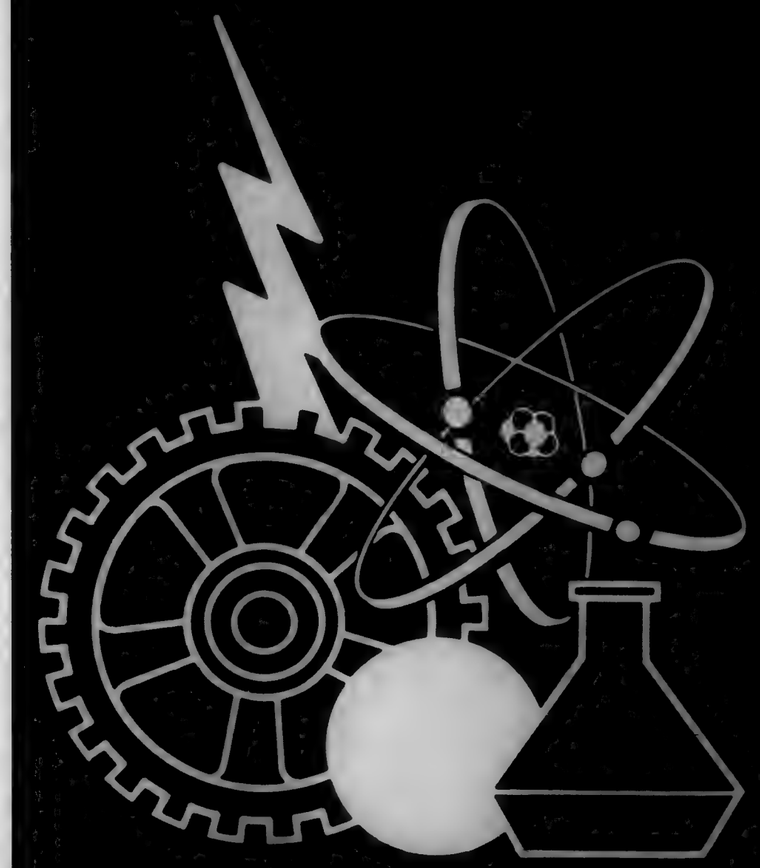
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May 13, 1997



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 10, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,309,570 through 5,311,616
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 8, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,922,550 through 4,924,524
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 6, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,586,196 through 4,587,670
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED March 5, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,465	06/848,457	11/27/90
(4,503,070)	(06/378,479)	(03/05/85)
Re. 33,712	07/016,194	10/08/91
(4,502,372)	(06/608,929)	(03/05/85)
Re. 33,828	07/495,657	02/25/92
(4,807,448)	(07/168,383)	(02/28/89)
Re. 34,463	07/662,663	11/30/93
(4,809,230)	(06/938,065)	(02/28/89)
Re. 34,464	07/992,518	11/30/93
(4,808,694)	(07/168,111)	(02/28/89)
4,502,157	06/267,505	03/05/85
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4,502,208	06/526,515	03/05/85
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4,502,382	06/540,213	03/05/85
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4,502,404	06/539,390	03/05/85
4,502,410	06/548,986	03/05/85
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4,808,139	06/914,251	02/28/89
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5,190,118	07/786,587	03/02/93
5,190,120	07/709,325	03/02/93
5,190,121	07/786,312	03/02/93
5,190,127	07/814,816	03/02/93
5,190,135	07/836,341	03/02/93
5,190,137	07/690,784	03/02/93
5,190,139	07/911,573	03/02/93
5,190,140	07/842,535	03/02/93
5,190,141	07/821,029	03/02/93
5,190,149	07/858,651	03/02/93
5,190,152	07/899,704	03/02/93
5,190,153	07/822,693	03/02/93
5,190,155	07/642,229	03/02/93
5,190,156	07/817,285	03/02/93
5,190,157	07/698,640	03/02/93
5,190,162	07/737,869	03/02/93
5,190,164	07/802,132	03/02/93
5,190,170	07/789,978	03/02/93
5,190,172	07/828,185	03/02/93
5,190,173	07/826,627	03/02/93
5,190,181	07/769,295	03/02/93
5,190,190	07/656,229	03/02/93
5,190,193	07/800,081	03/02/93
5,190,194	07/836,696	03/02/93
5,190,197	07/753,319	03/02/93
5,190,200	07/813,199	03/02/93
5,190,202	07/616,929	03/02/93
5,190,206	07/911,190	03/02/93
5,190,209	07/525,010	03/02/93
5,190,212	07/855,714	03/02/93
5,190,213	07/828,109	03/02/93
5,190,214	07/858,041	03/02/93
5,190,219	07/770,251	03/02/93
5,190,221	07/828,897	03/02/93
5,190,225	07/731,898	03/02/93
5,190,226	07/692,550	03/02/93
5,190,229	07/740,104	03/02/93
5,190,230	07/764,223	03/02/93
5,190,232	07/610,440	03/02/93
5,190,234	07/826,124	03/02/93
5,190,235	07/895,175	03/02/93
5,190,236	07/751,537	03/02/93
5,190,240	07/849,516	03/02/93
5,190,242	07/451,645	03/02/93
5,190,246	07/743,469	03/02/93
5,190,254	07/820,294	03/02/93
5,190,255	07/806,649	03/02/93
5,190,256	07/640,637	03/02/93
5,190,258	07/887,881	03/02/93
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5,190,265	07/822,923	03/02/93
5,190,266	07/872,040	03/02/93
5,190,270	07/730,494	03/02/93
5,190,271	07/830,782	03/02/93
5,190,282	07/731,513	03/02/93
5,190,283	07/822,040	03/02/93
5,190,287	07/799,337	03/02/93
5,190,292	07/836,783	03/02/93
5,190,293	07/858,044	03/02/93
5,190,295	07/778,085	03/02/93
5,190,300	07/863,862	03/02/93
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5,190,312	07/753,469	03/02/93
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5,190,326	07/756,592	03/02/93
5,190,330	07/863,407	03/02/93
5,190,334	07/667,445	03/02/93
5,190,336	07/805,854	03/02/93
5,190,337	07/765,153	03/02/93
5,190,340	07/887,893	03/02/93
5,190,347	07/788,280	03/02/93
5,190,350	07/567,369	03/02/93
5,190,351	07/825,881	03/02/93
5,190,354	07/791,315	03/02/93
5,190,357	07/705,082	03/02/93
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5,190,369	07/825,060	03/02/93
5,190,372	07/653,344	03/02/93
5,190,374	07/693,995	03/02/93
5,190,377	07/877,764	03/02/93
5,190,379	07/891,209	03/02/93
5,190,386	07/826,820	03/02/93
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5,190,432	07/764,522	03/02/93
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5,190,462	07/754,484	03/02/93
5,190,465	07/762,141	03/02/93
5,190,466	07/727,461	03/02/93
5,190,468	07/712,535	03/02/93
5,190,471	07/654,794	03/02/93
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5,190,501	07/773,104	03/02/93
5,190,503	07/808,447	03/02/93
5,190,508	07/845,015	03/02/93
5,190,509	07/758,791	03/02/93
5,190,524	07/652,937	03/02/93
5,190,530	07/599,871	03/02/93
5,190,532	07/880,696	03/02/93
5,190,533	07/817,159	03/02/93
5,190,534	07/624,142	03/02/93
5,190,538	07/689,455	03/02/93
5,190,556	07/672,535	03/02/93
5,190,557	07/771,396	03/02/93
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5,190,584	07/627,944	03/02/93
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5,190,593	07/658,731	03/02/93
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5,190,602	07/808,819	03/02/93
5,190,604	07/819,270	03/02/93
5,190,607	07/927,444	03/02/93
5,190,612	07/638,089	03/02/93
5,190,619	07/860,418	03/02/93
5,190,625	07/879,114	03/02/93
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5,190,647	07/929,017	03/02/93
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5,190,652	07/761,291	03/02/93
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5,190,673	07/714,430	03/02/93
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5,190,797	07/720,042	03/02/93
5,190,802	07/293,995	03/02/93
5,190,808	07/751,640	03/02/93
5,190,809	07/575,475	03/02/93
5,190,810	07/809,768	03/02/93
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5,190,875	07/694,981	03/02/93
5,190,882	07/817,217	03/02/93
5,190,894	07/689,706	03/02/93
5,190,898	07/747,572	03/02/93
5,190,907	07/676,705	03/02/93
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5,190,937	07/640,069	03/02/93
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5,190,939	07/665,812	03/02/93
5,190,945	07/794,537	03/02/93
5,190,946	07/654,154	03/02/93
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5,190,958	07/631,681	03/02/93
5,190,959	07/925,017	03/02/93
5,190,960	07/791,261	03/02/93
5,190,968	07/768,124	03/02/93
5,190,973	07/599,916	03/02/93
5,190,975	07/897,412	03/02/93
5,190,987	07/927,852	03/02/93
5,190,994	07/661,712	03/02/93
5,191,004	07/674,824	03/02/93
5,191,013	07/700,839	03/02/93
5,191,014	07/831,096	03/02/93
5,191,015	07/476,393	03/02/93
5,191,016	07/554,338	03/02/93
5,191,022	07/491,140	03/02/93
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5,191,042	07/767,523	03/02/93
5,191,047	07/780,254	03/02/93
5,191,051	07/590,531	03/02/93
5,191,054	07/820,586	03/02/93
5,191,056	07/745,664	03/02/93
5,191,070	07/901,490	03/02/93
5,191,072	07/689,770	03/02/93
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5,191,085	07/675,623	03/02/93
5,191,088	07/791,863	03/02/93
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5,191,130	07/807,342	03/02/93
5,191,131	07/444,980	03/02/93
5,191,134	07/732,264	03/02/93
5,191,138	07/794,560	03/02/93
5,191,139	07/787,164	03/02/93
5,191,142	07/812,640	03/02/93
5,191,144	07/772,184	03/02/93
5,191,147	07/785,398	03/02/93
5,191,148	07/696,484	03/02/93
5,191,149	07/729,285	03/02/93
5,191,150	07/833,684	03/02/93
5,191,158	07/848,704	03/02/93
5,191,160	07/791,775	03/02/93
5,191,177	07/721,948	03/02/93
5,191,183	07/658,694	03/02/93
5,191,190	07/720,914	03/02/93
5,191,207	07/751,131	03/02/93
5,191,226	07/582,297	03/02/93
5,191,231	07/693,813	03/02/93
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5,191,291	07/693,397	03/02/93
5,191,317	07/756,526	03/02/93
5,191,330	07/806,723	03/02/93
5,191,339	07/847,155	03/02/93
5,191,342	06/292,767	03/02/93
5,191,348	07/845,588	03/02/93
5,191,359	07/597,342	03/02/93
5,191,368	07/836,260	03/02/93
5,191,381	07/743,675	03/02/93
5,191,388	07/809,348	03/02/93
5,191,400	07/747,819	03/02/93
5,191,409	07/532,791	03/02/93
5,191,412	07/782,307	03/02/93
5,191,415	07/687,509	03/02/93
5,191,445	07/563,923	03/02/93
5,191,448	07/780,595	03/02/93
5,191,457	07/643,259	03/02/93
5,191,460	07/629,886	03/02/93
5,191,479	07/765,442	03/02/93
5,191,480	07/436,197	03/02/93
5,191,488	07/588,984	03/02/93
5,191,496	07/675,166	03/02/93
5,191,499	07/699,956	03/02/93
5,191,505	07/536,394	03/02/93
5,191,511	07/830,892	03/02/93
5,191,512	07/794,149	03/02/93
5,191,537	07/330,507	03/02/93
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5,191,553	07/621,978	03/02/93
5,191,558	07/903,708	03/02/93
5,191,559	07/622,658	03/02/93
5,191,585	07/318,124	03/02/93
5,191,587	07/814,027	03/02/93
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5,191,595	07/685,182	03/02/93
5,191,602	07/639,430	03/02/93
5,191,603	07/642,081	03/02/93
5,191,607	07/898,357	03/02/93
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Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 3/14/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,371,306	06/237,441	02/23/81	02/01/83	03/17/97
4,419,894	06/289,434	08/03/81	12/13/83	03/18/97
4,428,943	06/283,376	07/15/81	01/31/84	03/20/97
4,469,736	06/496,663	05/20/83	09/04/84	03/14/97
4,475,551	06/414,353	09/02/82	10/09/84	03/20/97
4,612,735	06/659,146	10/09/84	09/23/86	03/14/97
4,637,736	06/725,127	04/19/85	01/20/87	03/17/97
4,727,064	06/738,749	05/29/85	02/23/88	03/17/97
4,727,863	06/868,937	05/30/86	03/01/88	03/17/97
4,729,914	07/056,338	05/22/87	03/08/88	03/17/97
4,777,762	06/946,062	12/24/86	10/18/88	03/14/97
4,779,411	06/946,751	12/29/86	10/25/88	03/21/97
4,783,818	06/788,411	10/17/85	11/08/88	03/17/97
4,785,488	07/128,683	12/04/87	11/22/88	03/14/97
4,942,865	07/208,962	06/20/88	07/24/90	03/18/97
4,972,953	07/366,172	06/14/89	11/27/90	03/14/97
4,976,053	07/404,268	09/07/89	12/11/90	03/20/97
5,013,578	07/448,379	12/11/89	05/07/91	03/20/97
5,088,123	07/698,265	05/10/91	02/18/92	03/20/97
5,103,658	07/646,821	01/28/91	04/14/92	03/19/97
5,116,508	07/483,870	02/23/90	05/26/92	03/20/97
5,122,165	07/715,992	06/11/91	06/16/92	03/19/97
5,134,979	07/580,630	09/10/90	08/04/92	03/17/97
5,145,095	07/397,393	08/23/89	09/08/92	03/14/97
5,150,171	07/559,039	07/30/90	09/22/92	03/17/97
5,152,608	07/793,139	11/18/91	10/06/92	03/17/97
5,155,924	07/636,758	01/02/91	10/20/92	03/20/97
5,160,133	07/568,971	08/17/90	11/03/92	03/17/97
5,161,799	07/837,950	02/20/92	11/10/92	03/18/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,902,179, Re. S.N. 08/743,102, Nov. 4, 1996, Cl. 411/21, DRYWALL FASTENER, Brian G. Harker, Owner of Record: *Hilti Aktiengesellschaft FL, Furstentum, Liechtenstein,* Attorney or Agent: Ako Toren, Ex. Gp.: 3508

5,123,001, Re. S.N. 08/760,706, Dec. 5, 1996, Cl. 369/36, DISK PLAYBACK DEVICE, Niro Nakamichi, et. al., Owner of Record: *Hec Home Electronics Ltd., Kanagawa, Japan,* Attorney or Agent: Mark A. Catan, Ex. Gp.: 2512

5,212,698, Re. S.N. 08/771,574, Dec. 20, 1996, Cl. 372/18, DISPERSION COMPENSATION FOR ULTRASHORT PULSE GENERATION TUNABLE LASERS, James D. Kafka, et. al., Owner of Record: *Spectra-Physics Lasers, Inc., Mountain View, Calif.,* Attorney or Agent: Paul Davis, Ex. Gp.: 2561

5,249,361, Re. S.N. 08/768,800, Dec. 18, 1996, Cl. 30/77, GUARD FOR RAZOR BLADE ASSEMBLY, Domenic V. Apprille, et. al., Owner of Record: *The Gillette Co., Boston, Mass.,* Attorney or Agent: Charles P. Bokus, Jr., Ex. Gp.: 3204

5,337,097, Re. S.N. 08/687,029, July 25, 1996, Cl. 353/101, PROJECTION OPTICAL APPARATUS, Kazuaki Suzuki, et. al., Owner of Record: *Nippon Kogaku K.K., Tokyo, Japan,* Attorney or Agent: James A. Oliff, Ex. Gp.: 3108

5,350,106, Re. S.N. 08/721,505, Sept. 26, 1996, Cl. 228/103, SEMICONDUCTOR WIRE BONDING METHOD, Rich Fogal, Owner of Record: *Micron Semiconductor, Inc., Boise, Idaho,* Attorney or Agent: Joseph A. Walkowski, Ex. Gp.: 3205

5,372,605, Re. S.N. 08/766,634, Dec. 13, 1996, Cl. 607, DUAL BATTERY POWER SYSTEM FOR AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR, Theodore P. Adams, et. al., Owner of Record: *Angeion Corp., Plymoth, Minn.,* Attorney or Agent: Brad Pedersen, Ex. Gp.: 3305

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,399,407, Reexam. No. 90/004,588, March 21, 1997, Cl. 324/379, ENGINE ANALYZER WITH CONSTANT WIDTH DIGITAL WAVEFORM DISPLAY, Michael J. Kling, et. al., Owner of Record: *SPX Corp., Muskegon, Mich.,* Attorney or Agent: R. Bruce Bower, Finnegan, Henderson, Garrett & Dunner, Wash., D.C., Ex. Gp.: 2213, Requester: Snap-On, Inc., c/o Harold V. Stotland & J. Terry Stratman, Emrich & Dithmar, Chicago, Ill.

5,327,328, Reexam. No. 90/004,591, March 28, 1997, Cl. 362/026, LIGHTPIPE AND LIGHTPIPE ARRAY FOR REDIRECTING LIGHT FROM A SURFACE MOUNT LED, Norman Simms, et. al., Owner of Record: *Dialight Corp., Manasquan, N.J.,* Attorney or Agent: Oblon Spivak McClelland Maier & Noustadt, Arlington, Va., Ex. Gp.: 3406, Requester: Owner

5,447,851, Reexam. No. 90/004,589, March 25, 1997, Cl. 435/069.7, DNA ENCODING A CHIMERIC POLYPEPTIDE COMPRISING THE EXTRACELLULAR DOMAIN OF TNF RECEPTOR FUSED TO IGG, VECTORS AND HOST CELLS, Bruce A. Beutler, et. al., Owner of Record: *Board of Regents of Univ. of Texas System, Austin, Tex.,* Attorney or Agent: Arnold, White & Durkee, Houston, Tex., Ex. Gp.: 1819, Requester: Owner

5,507,832, Reexam. No. 90/004,587, March 17, 1997, Cl. 623/023, PROSTHESIS WITH INTEGRAL PROXIMAL SPACER, Michael Michielli, et. al., Owner of Record: *Howmedica, Inc., Rutherford, N.J.,* Attorney or Agent: Pennie & Edmonds, New York, N.Y., Ex. Gp.: 3308, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
February 3, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
110,014	71/090,199	05/02/1916
110,036	71/091,186	05/02/1916
110,037	71/091,538	05/02/1916
110,047	71/091,080	05/02/1916
110,048	71/091,081	05/02/1916
110,049	71/091,258	05/02/1916
110,079	71/091,356	05/02/1916
110,094	71/090,674	05/02/1916
334,276	71/372,950	04/28/1936
334,302	71/372,497	04/28/1936
334,308	71/371,779	04/28/1936
334,332	71/371,073	04/28/1936
334,345	71/372,145	04/28/1936
334,346	71/372,146	04/28/1936
334,351	71/372,217	04/28/1936
334,380	71/375,079	04/28/1936
626,030	71/674,217	05/01/1956
626,034	71/688,701	05/01/1956
626,040	71/640,504	05/01/1956
626,043	71/661,250	05/01/1956
626,047	71/676,834	05/01/1956
626,048	71/677,596	05/01/1956
626,050	71/680,064	05/01/1956
626,054	71/688,483	05/01/1956
626,057	71/683,983	05/01/1956
626,067	71/685,295	05/01/1956
626,068	71/689,161	05/01/1956
626,071	71/677,377	05/01/1956
626,073	71/694,070	05/01/1956
626,080	71/687,774	05/01/1956
626,082	71/688,668	05/01/1956
626,107	71/689,850	05/01/1956
626,109	71/689,897	05/01/1956
626,110	71/689,898	05/01/1956
626,114	71/690,323	05/01/1956
626,126	71/681,231	05/01/1956
626,130	71/691,326	05/01/1956
626,141	71/680,739	05/01/1956
626,142	71/680,909	05/01/1956
626,160	71/674,466	05/01/1956
626,165	71/691,580	05/01/1956
626,173	71/694,869	05/01/1956
626,176	71/695,215	05/01/1956
626,177	71/661,621	05/01/1956
626,181	71/681,234	05/01/1956
626,196	71/688,601	05/01/1956
626,207	71/642,184	05/01/1956
626,208	71/649,906	05/01/1956
626,210	71/682,200	05/01/1956
626,213	71/683,622	05/01/1956
626,220	71/686,303	05/01/1956
626,221	71/686,304	05/01/1956
626,235	71/689,038	05/01/1956
626,238	71/668,715	05/01/1956
626,251	71/686,114	05/01/1956
626,257	71/687,789	05/01/1956
626,284	71/688,828	05/01/1956
626,295	71/694,204	05/01/1956
626,298	71/685,546	05/01/1956
626,304	71/676,702	05/01/1956
626,307	71/694,370	05/01/1956
626,314	71/654,962	05/01/1956
626,327	71/683,216	05/01/1956
626,328	71/683,866	05/01/1956
626,329	71/684,135	05/01/1956
626,335	71/686,358	05/01/1956
626,339	71/687,929	05/01/1956
626,342	71/688,507	05/01/1956
626,343	71/688,743	05/01/1956
626,346	71/689,031	05/01/1956
626,347	71/689,265	05/01/1956
626,348	71/689,320	05/01/1956
626,351	71/689,639	05/01/1956

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Reg. Number	Serial Number	Reg. Date
626,352	71/689,640	05/01/1956
626,354	71/689,642	05/01/1956
626,358	71/690,388	05/01/1956
626,360	71/670,808	05/01/1956
626,371	71/686,346	05/01/1956
626,379	71/675,431	05/01/1956
626,381	71/677,612	05/01/1956
626,386	71/684,000	05/01/1956
626,391	71/658,852	05/01/1956
626,392	71/682,402	05/01/1956
626,401	71/696,014	05/01/1956
632,862	71/686,083	08/14/1956
1,026,636	73/039,681	12/09/1975
1,035,057	73/038,943	03/02/1976
1,035,172	73/057,626	03/09/1976
1,035,286	73/051,995	03/09/1976
1,038,064	73/022,090	04/20/1976
1,038,343	73/038,078	04/27/1976
1,038,355	73/053,628	04/27/1976
1,038,357	73/049,489	04/27/1976
1,038,359	73/056,895	04/27/1976
1,038,361	73/016,162	04/27/1976
1,038,362	73/017,323	04/27/1976
1,038,366	73/045,906	04/27/1976
1,038,368	73/056,070	04/27/1976
1,038,376	73/063,775	04/27/1976
1,038,377	73/064,246	04/27/1976
1,038,382	73/059,891	04/27/1976
1,038,383	73/061,907	04/27/1976
1,038,384	73/063,733	04/27/1976
1,038,387	73/032,453	04/27/1976
1,038,388	73/039,974	04/27/1976
1,038,391	73/060,497	04/27/1976
1,038,392	73/063,035	04/27/1976
1,038,395	73/064,963	04/27/1976
1,038,396	73/064,970	04/27/1976
1,038,397	73/065,440	04/27/1976
1,038,403	73/041,880	04/27/1976
1,038,405	73/044,140	04/27/1976
1,038,406	73/049,720	04/27/1976
1,038,407	73/055,488	04/27/1976
1,038,408	73/056,634	04/27/1976
1,038,410	73/057,393	04/27/1976
1,038,414	73/032,589	04/27/1976
1,038,419	73/042,217	04/27/1976
1,038,421	73/043,303	04/27/1976
1,038,431	73/022,231	04/27/1976
1,038,432	73/024,874	04/27/1976
1,038,434	73/027,936	04/27/1976
1,038,435	73/031,551	04/27/1976
1,038,436	73/035,713	04/27/1976
1,038,443	73/048,489	04/27/1976
1,038,444	73/048,523	04/27/1976
1,038,447	73/054,784	04/27/1976
1,038,449	73/055,114	04/27/1976
1,038,450	73/055,549	04/27/1976
1,038,455	73/062,397	04/27/1976
1,038,458	73/017,262	04/27/1976
1,038,459	73/035,152	04/27/1976
1,038,460	73/046,718	04/27/1976
1,038,461	73/050,552	04/27/1976
1,038,465	73/064,052	04/27/1976
1,038,467	73/064,239	04/27/1976
1,038,468	73/009,282	04/27/1976
1,038,470	73/033,597	04/27/1976
1,038,473	73/063,588	04/27/1976
1,038,475	73/039,786	04/27/1976
1,038,476	73/057,347	04/27/1976
1,038,477	73/027,068	04/27/1976
1,038,478	73/031,350	04/27/1976
1,038,480	73/034,498	04/27/1976
1,038,482	73/054,476	04/27/1976
1,038,483	73/054,477	04/27/1976
1,038,486	73/022,528	04/27/1976
1,038,489	73/038,423	04/27/1976
1,038,490	73/038,529	04/27/1976
1,038,493	73/044,990	04/27/1976
1,038,497	73/049,323	04/27/1976
1,038,499	73/053,651	04/27/1976
1,038,501	73/057,299	04/27/1976
1,038,502	73/049,941	04/27/1976
1,038,506	73/036,533	04/27/1976
1,038,508	73/045,765	04/27/1976
1,038,509	73/046,020	04/27/1976
1,038,511	73/052,038	04/27/1976
1,038,515	73/053,340	04/27/1976
1,038,517	73/053,584	04/27/1976
1,038,520	73/001,383	04/27/1976
1,038,524	73/052,551	04/27/1976
1,038,525	73/040,922	04/27/1976
1,038,529	73/003,193	04/27/1976
1,038,530	73/045,423	04/27/1976
1,038,533	73/052,947	04/27/1976
1,038,534	73/054,017	04/27/1976
1,038,535	73/057,144	04/27/1976
1,038,536	73/058,228	04/27/1976
1,038,537	73/058,229	04/27/1976
1,038,540	73/034,047	04/27/1976
1,038,541	73/041,898	04/27/1976
1,038,542	73/044,184	04/27/1976
1,038,543	73/046,814	04/27/1976
1,038,546	73/049,438	04/27/1976
1,038,550	73/054,904	04/27/1976
1,038,551	73/055,410	04/27/1976
1,038,552	73/055,639	04/27/1976
1,038,558	73/051,737	04/27/1976
1,038,559	73/060,646	04/27/1976
1,038,560	73/060,792	04/27/1976
1,038,564	73/044,863	04/27/1976
1,038,566	73/041,243	04/27/1976
1,038,572	73/015,586	04/27/1976
1,038,575	73/029,962	04/27/1976
1,038,576	73/040,529	04/27/1976
1,038,577	73/059,019	04/27/1976
1,038,579	72/378,877	04/27/1976
1,038,583	72/440,435	04/27/1976
1,038,590	72/465,101	04/27/1976
1,038,593	72/445,100	04/27/1976
1,038,595	72/462,980	04/27/1976
1,038,596	72/435,032	04/27/1976
1,038,597	73/054,684	04/27/1976
1,038,599	73/064,646	04/27/1976
1,038,600	73/031,834	04/27/1976

Errata

"All reference to Patent No. 5,586,142 to Larry Fullerton of Alabama for FAST LOCKING MECHANISM FOR CHANNELIZED ULTRAWIDE-BAND COMMUNICATIONS appearing in the Official Gazette of December 17, 1996 should be deleted since no patent was granted."

"All reference to Patent No. 5,618,797 to Jeffrey M. Leiden, et. al. of Michigan, for EXPRESSION OF A PROTEIN MYOCARDIUM BY INJECTION OF A GENE appearing in the Official Gazette of April 8, 1997 should be deleted since no patent was granted."

"All reference to Patent No. 5,620,653 to Roop C. Jain, et. al. of California, for ODOR CONTROL SYSTEM appearing in the Official Gazette of April 15, 1997 should be deleted since no patent was granted."

"All reference to Patent No. 5,622,134 to Kevin Kelsey, of Washington, for LIFTING FIN appearing in the Official Gazette of April 22, 1997 should be deleted since no patent was granted."

"All reference to Patent No. 5,622,609 to David L. Reichert, et. al. of Delaware, for ELECTROCHEMICAL CELL HAVING AN OXIDE GROWTH RESISTANT CURRENT DISTRIBUTOR appearing in the Official Gazette of April 22, 1997 should be deleted since no patent was granted."

"All reference to Patent No. 5,622,614 to Kenneth B. Keating, et. al. of Delaware, for ELECTROCHEMICAL CELL AND PROCESS FOR SPLITTING A SULFATE SOLUTION AND PRODUCING A HYDROXIDE SOLUTION, SULFURIC ACID AND A HALOGAN GAS appearing in the Official Gazette of April 22, 1997 should be deleted since no patent was granted."

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding unable to be sent by certified mail to registrant due to insufficient address, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Murray Industries, Inc., Sarasota, Fla., Reg. No. 692,329, for the mark "VIKING", Canc. No. 26,088.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Auto-Caddy Inc., Los Altos, Calif., Reg. No. 1,725,424, for the mark "CONDOR", Canc. No. 25,156.

Mahinder A. Advani, DBA Good Fellows Clothing Co., San Diego, Calif., Reg. No. 1,720,402, for the mark "IJEANIOUS", Canc. No. 25,958.

Demert & Dougherty, Inc., Oak Brook, Ill., Reg. No. 914,256, for the mark "JUST-CURLS", Canc. No. 25,897.

Gemini Marketing Associates, Inc., New York, N.Y., Reg. No. 1,123,357, for the mark "STUNTS", Canc. No. 25,898.

Pathway Financial, Chicago, Ill., Reg. No. 1,370,516, for the mark "PATHWAY", Canc. No. 25,731.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Patents Available For License or Sale

5,577,789 INTERIOR LIGHT DEFLECTOR

Contact: Mark F. Alexander
8315 W. Long Lake Drive
Kalamazoo, Mich. 49001
(voice) : (616) 327-3105

37 CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 1.47 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
07/668,365	Mar. 13, 1991	Kranti Anand	Modification of Interfacial Fields Between Dielectrics and Semiconductors
08/357,940	Dec. 16, 1994	James A. Lepinski	Method and Apparatus for Rapid Reduction of Iron Oxide in a Rotary Hearth Furnace
08/415,434	April 3, 1995	Albert Montseny Banajes	Process and Devices for Welding, Flaring and Inserting Elbows in Batteries
08/465,024	June 5, 1995	Joseph Kustanovich	Aluminum and Magnesium Alloys With Controlled Oxidation
08/465,026	June 5, 1995	Joseph Kustanovich	Aluminum and Magnesium Alloys With Controlled Oxidation
08/489,815	June 13, 1995	Gunther Weyermanns	Process and Device to Pelletize Substances Which Can Be Dispensed in the Form of Drops

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Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/535,876	Sept. 28, 1995	Curtis Dicke	Off-Chip Driver Circuit
08/535,947	Sept. 28, 1995	Frank J. Pergal	Methodology for Received Signal Enhancement Utilizing Delay Diversity Processing
08/555,642	Nov. 8, 1995	Yu Chiu Kwok	Blind Tilt Controller
08/564,568	Nov. 28, 1995	Jeffrey W. Gold	Cylinder Rupture Vessel
08/583,678	Jan. 5, 1996	Sandra Birchler	Portable Multi-Level Garden Cart
08/585,200	Jan. 11, 1996	Cheryl G. Neuberger James D. McCampbell	Storage and Display System for Cremated Remains
08/670,677	June 26, 1996	Andrew John Hudson	Disc Drive Actuator Arm with Arm Compliance Compensation
08/678,845	July 12, 1996	Seo-Hong Yoo	Process for Manufacturing Form 1 Ranitidine Hydrochloride
08/679/621	July 12, 1996	Dr. Binnur Gunesin	Polymer Particles and Their Preparation
08/685,202	July 23, 1996	Patrick O'Shea	Sprayable Composition and Method for Forming a Formed Outdoor Protective Cover Layer
08/686,057	July 24, 1996	Walter Brolin	Modular Storage System for Stacking Cylindrical Loads
08/694,780	Aug. 9, 1996	Rosemary Halleck	Method for Treatment and Disposal of Propellant/Explosive Contaminated Waste
08/696,650	Aug. 14, 1996	Torsten Herrmann	Gear Throttle as a Nucleation Device in a Continuous Microcellular Extrusion System
08/703,677	Aug. 27, 1996	Brian N. Fall	Method and Apparatus for Maintaining Coherency in CPU and Bus Device Transactions
08/704,392	Aug. 27, 1996	Dennis G. Middleton	Permanent Berm Device
07/706,273	Sept. 4, 1996	Jonathan D. Emigh	Envelope Flap Opener Apparatus
08/706,852	Sept. 3, 1996	Howard L. McCollister	Method of Processing "BPS" Glass Ceramic and Seals Made Therewith
08/719,478	Sept. 25, 1996	Lucas Goreta	Method and System for the Transfer of Information Between Two Populations of Persons, One Nomadic and the Other Sedentary
08/720,096	Sept. 27, 1996	Nicholas F. Scodari	Non-Alcoholic Antimicrobial Mouthwash for Removal of Dental Plaque
08/766,819	Dec. 13, 1996	Lloyd Moore	Pole Climbing Apparatus
08/772,700	Dec. 23, 1996	Keith Deutch	Reversible Ramp and Method For Fabricating Same
08/785,852	Jan. 21, 1997	Panos Hadjikomninos	Dynamically Associating Service Script Logics to Provide a Subscriber Feature Within an Advanced Intelligent Network

Certificates of Correction
For the Week of May 13, 1997

B1 4,996,766	5,427,940	5,511,183	5,550,369
D. 342,567	5,438,970	5,513,235	5,551,989
D. 371,198	5,454,504	5,514,806	5,553,221
D. 371,279	5,454,795	5,516,180	5,553,966
D. 374,659	5,455,234	5,518,642	5,554,399
D. 375,483	5,455,724	5,518,894	5,554,425
D. 375,535	5,462,776	5,521,575	5,554,712
D. 375,674	5,468,438	5,521,806	5,555,480
D. 375,701	5,472,947	5,522,433	5,555,926
D. 376,305	5,473,271	5,523,602	5,557,122
Re. 35,196	5,473,463	5,523,858	5,557,566
4,524,421	5,475,022	5,524,067	5,557,734
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4,928,952	5,475,253	5,529,789	5,560,034
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5,105,599	5,481,361	5,533,391	5,561,462
5,131,026	5,486,356	5,533,659	5,561,945
5,132,571	5,486,776	5,533,868	5,561,988
5,149,603	5,487,846	5,535,018	5,562,355
5,162,445	5,489,801	5,536,569	5,562,907
5,191,241	5,491,186	5,536,802	5,563,068
5,218,313	5,494,663	5,538,783	5,563,671
5,287,232	5,495,039	5,538,796	5,563,800
5,334,289	5,496,781	5,539,490	5,564,558
5,353,089	5,498,673	5,540,672	5,565,139
5,360,884	5,499,570	5,542,388	5,565,425
5,364,010	5,499,915	5,542,808	5,565,512
5,371,876	5,500,398	5,543,419	5,565,896
5,373,468	5,500,457	5,543,524	5,566,220
5,377,232	5,501,873	5,545,470	5,566,878
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5,572,528	5,582,192	5,593,249	5,601,368
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5,572,893	5,582,546	5,593,388	5,601,570
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5,573,834	5,582,847	5,593,740	5,601,886
5,573,885	5,583,115	5,594,247	5,602,030
5,573,911	5,583,170	5,594,267	5,602,648
5,574,109	5,583,205	5,594,360	5,602,916
5,574,911	5,583,232	5,594,890	5,602,936
5,576,025	5,583,680	5,595,022	5,603,343
5,576,176	5,583,696	5,595,048	5,603,643
5,576,555	5,583,791	5,595,253	5,603,668
5,576,751	5,583,866	5,595,574	5,603,990
5,576,756	5,583,906	5,595,748	5,604,246
5,576,810	5,584,002	5,596,461	5,604,366
5,577,173	5,584,624	5,596,709	5,604,581
5,577,217	5,585,055	5,596,734	5,604,638
5,577,224	5,585,186	5,596,945	5,605,556
5,577,727	5,585,473	5,597,006	5,605,769
5,577,852	5,585,554	5,597,169	5,605,812
5,577,951	5,585,830	5,597,441	5,605,976
5,578,251	5,586,143	5,597,470	5,606,260
5,578,292	5,586,218	5,597,808	5,606,270
5,578,408	5,586,265	5,597,819	5,606,646
5,578,536	5,586,270	5,597,923	5,608,014
5,578,574	5,587,400	5,598,114	5,608,592
5,579,048	5,588,074	5,598,199	5,608,675
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Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
March 17-21, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Mark and Goods Cited by Examining Attorney	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	Recommended for Publication
3-18	OPP	92,144	La Galvanina, S.P.A. v. Societe Des Eaux Azula, S. A.	2(d)	Opposition Sustained		"SOURCE GALVAN" [carbonated and non-carbonated drinking water, natural spring water, carbonated and non-carbonated drinking water with natural flavors, and tonic water]	"GALVANINA" [drinking water, namely, mineral water and water charged with gas; soft drinks; orangeades; lemonades; tonic water; and non-alcoholic soft aperitifs]	No
3-18	EX	74/492,827	Recorded Books, Inc.	genericness; distinctiveness under Sec. 2(f)	Refusal Affirmed		"RECORDED BOOKS" [pre-recorded audio tape cassettes featuring literary works]		Yes
3-19	EX	74/330,908	Reilor Holdings Ltd.	de jure functionality; distinctiveness under Sec. 2(f)	Refusal Affirmed (but only on basis of lack of 2(f) distinctiveness; configuration found not de jure functional)		configuration of an automatic door closer [surface-mount spring-loaded automatic door closer]		No
3-19	EX	74/163,353	Kung Hsue She, Inc.	genericness (doctrine of foreign equivalents); Sec. 2(f) distinctiveness	Refusal Affirmed		"MONTANA" [bicycles]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
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Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box Designations	Explanation
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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
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	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
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Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
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	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
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Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/08/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/15/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/29/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/27/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/15/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/13/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/20/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/26/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	07/04/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/28/95
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MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/06/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/10/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/06/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

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Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of April 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	01/30/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	11/13/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/04/96	03/17/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/20/96	12/27/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/02/96	12/12/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/16/96	10/28/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	01/13/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/96	01/22/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	02/03/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	02/21/97	—0—
Renewals (All Classes)	02/10/97	—0—
Section 12(c) Publications (All Classes)	12/05/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

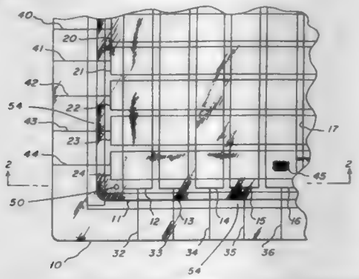
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

MAY 13, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,066,854 (3184th)
MEMBRANE-TYPE TOUCH PANEL EMPLOYING INSULATING GRID ANTI-SHORT MEANS
George E. Zenk, Richfield, and Richard J. Ditzik, St. Paul, both of Minn., assignors to St. Clair Intellectual Property Consultants, Inc., Grosse Pointe, Mich.
Reexamination Request Nos. 90/003,967, Sep. 12, 1995 and 90/004,332, May 23, 1996.
Reexamination Certificate for Patent 4,066,854, issued Jan. 3, 1978, Ser. No. 744,207, Nov. 22, 1976.
Int. Cl.[6] H01H *13/52;1/50*
U.S. Cl. 200—5 A



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

1. A transparent switch matrix to be carried on the face of a rigid insulator substrate, having a predetermined radius of curvature, and comprising:

a. a plurality of spaced apart conductive first strips firmly adhering to the face of the substrate;

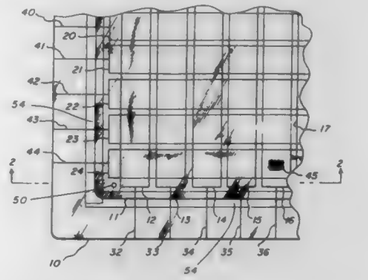
b. a transparent resilient insulating membrane having an undistorted contour substantially alike the predetermined contour, and attached about its periphery to the face of the substrate in a position matching the membrane contour to the substrate contour and spaced apart from the first strips thereon in a predetermined area of the membrane;

c. a plurality of transparent, flexible, spaced apart conductive second strips firmly adhering to the resilient membrane surface facing the substrate, each of said second strips located in the area spaced apart from the first strips and thinner than the spacing therefrom, and each of said second strips crossing at least two first strips; and

d. a thin insulating grip interposed between the first and second strips having within each crossover area between the first and second strips, a plurality of gaps permitting electrical contact between the first and second strips responsive to manual pressure at each crossover area.

B1 4,066,855 (3185th)
VENTED MEMBRANE-TYPE TOUCH PANEL
George E. Zenk, Richfield, Minn., assignor to St. Clair Intellectual Property Consultants, Inc., Grosse Pointe, Mich.
Reexamination Request Nos. 90/003,952, Sep. 12, 1995 and 90/004,333, May 23, 1996.
Reexamination Certificate for Patent 4,066,855, issued Jan. 3, 1978, Ser. No. 744,209, Nov. 22, 1976.
Int. Cl.[6] H01H *13/12;1/50;9/00*
U.S. Cl. 200—5 A

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



The patentability of claim **1** is confirmed.

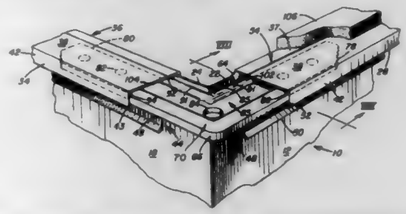
1. A transparent switch matrix to be carried on the face of a rigid insulator substrate having a predetermined radius of curvature, and comprising:

a. a plurality of spaced apart transparent conductive first strips firmly adhering to the face of the substrate;

b. a transparent resilient membrane having an undistorted contour substantially alike the predetermined contour, and attached about its periphery to the face of the substrate in a position matching the membrane contour to the substrate contour and spaced apart from the first strips thereon in a predetermined area of the membrane, and having a vent permitting air flow into the space between the membrane and the substrate; and

c. a plurality of transparent, flexible, spaced apart conductive second strips firmly adhering to the resilient membrane surface facing the substrate, each of said second strips located in the area spaced apart from the first strips and thinner than the spacing therefrom, and each of said second strips crossing at least two first strips.

B1 4,508,376 (3186th)
FLANGE TYPE DUCT JOINT ASSEMBLY AND SEAL ARRANGEMENT THEREFOR
Peter J. Arnoldt, Puce, Canada, assignor to Ductmate Industries, Inc., Pittsburgh, Pa.
Reexamination Request No. 90/004,368, Sep. 16, 1996.
Reexamination Certificate for Patent 4,508,376, issued Apr. 2, 1985, Ser. No. 327,934, Dec. 7, 1981.
Continuation of Ser. No. 933,179, Aug. 14, 1978, which is a continuation-in-part of Ser. No. 872,644, Jan. 26, 1978, Pat. No. 4,218,079.
Int. Cl.[6] F16L *23/00;23/04*
U.S. Cl. 285—363



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7** is confirmed.

1. A flange type duct joint assembly to connect end portions of generally rectangular duct sections comprising,

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duct sections having a generally rectangular configuration with end portions,

said duct section end portions having corner portions with corner edge portions,

a plurality of duct connecting flanges,

said duct connecting flanges each having an upstanding corner piece receiving portion with a front wall, a rear wall and a corner piece receiving opening therebetween,

said duct connecting flanges each having a duct receiving portion with a top wall and a bottom wall,

said duct connecting flange upstanding corner piece receiving portion front wall intersecting said duct receiving portion bottom wall,

a plurality of corner pieces for connecting adjacent duct connecting flanges,

said corner pieces each having a corner section and a pair of legs extending angularly from said corner section, said corner piece corner section and said legs having a common front planar surface portion and a common rear planar surface portion,

said corner piece legs arranged to extend into said duct connecting flange upstanding corner piece receiving opening to connect adjacent duct connecting flanges and form a generally rectangular frame,

said duct section end portions arranged to extend into said duct connecting flange duct receiving portions between said top wall and said bottom wall and into substantially abutting relation with said duct connecting flange upstanding corner piece receiving portion front wall,

external gasket means postioned in overlying relation with said duct connecting flange front wall and a portion of said corner piece corner section,

said corner piece corner section having an offset corner portion displaced rearwardly from said front planar surface,

said corner piece offset corner portion positioned externally of said corner piece receiving openings in said adjacent duct connecting flange upstanding corner piece receiving portions, and

said corner piece corner section offset corner portion displaced rearwardly relative to said corner piece front planar surface and above said duct connecting flange duct receiving portion bottom wall so that said duct section corner edge portion, between adjacent duct connecting flange portions, projects beyond said corner piece offset portion into abutting relation with said external gasket means positioned on said corner piece corner section to provide a seal for said duct corner edge portion between adjacent duct connecting flange portions.

B1 4,634,913 (3187th)

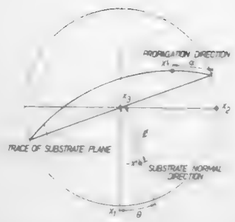
APPLICATION OF LITHIUM TETRABORATE TO ELECTRONIC DEVICES

Roger W. Whatmore, Bletchley, and Iain M. Young, Malvern, both of England, assignors to The Plessey Company Limited, Ilford, England

Reexamination Request No. 90/003,650, Dec. 1, 1994.
Reexamination Certificate for Patent 4,634,913, issued Jan. 6, 1987, Ser. No. 703,653, Feb. 21, 1985.
Continuation of Ser. No. 625,590, Jun. 29, 1984, Pat. No. 4,523,119, which is a continuation of Ser. No. 271,112, Jun. 8, 1981, abandoned.
Claims priority, application United Kingdom, Jun. 11, 1980, 8019062; Dec. 23, 1980, 8041183
The portion of the term of this patent subsequent to Jun. 29, 2004, has been disclaimed.
Int. Cl.[6] **H01L** *41/08*
U.S. Cl. 310—313 A

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.



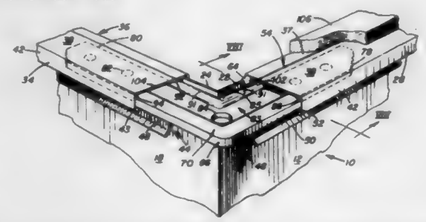
1. A piezo-electro device comprising a body of piezoelectric active material and electrodes adjacent to and in contact with said body, wherein said body is of single crystal lithium tetraborate material.

B1 4,662,661 (3188th)

FLANGE TYPE DUCT JOINT ASSEMBLY AND SEAL ARRANGEMENT THEREFOR

Peter J. Arnoldt, Puce, Canada, assignor to Ductmate Industries, Inc., Pittsburgh, Pa.

Reexamination Request No. 90/004,370, Sep. 16, 1996.
Reexamination Certificate for Patent 4,662,661, issued May 5, 1987, Ser. No. 682,091, Dec. 17, 1984.
Continuation of Ser. No. 327,934, Dec. 7, 1981, Pat. No. 4,508,376, which is a continuation of Ser. No. 933,179, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,644, Jan. 26, 1978, Pat. No. 4,218,079.
Int. Cl.[6] **F16L** *23/00*
U.S. Cl. 285—363



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. A corner piece for connecting a pair of duct connecting flange members comprising,

a corner section with a pair of legs extending angularly therefrom,

said corner section and said legs having a common front planar surface portion and a common rear planar surface portion,

said legs arranged to extend into said duct connecting flange members to form a generally rectangular duct frame for connection to a duct end portion,

said corner section having an offset corner portion displaced rearwardly from said common front planar surface portion, and

said corner section offset corner portion and said corner section front planar surface being operable to permit a corner edge portion of the duct end portion positioned between the end portions of adjacent duct connecting flange members to project beyond said offset corner portion into abutting relation with an external gasket means and said corner section front planar surface in abutting relation with said gasket to seal the corner edge portion of the duct.

B1 4,690,663 (3189th)

REAR DERAILLEUR FOR A BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Sakai, Japan

Reexamination Request No. 90/004,038, Dec. 8, 1995.
Reexamination Certificate for Patent 4,690,663, issued Sep. 1, 1987, Ser. No. 869,610, Jun. 2, 1986.
Claims priority, application Japan, Jun. 17, 1985, 60-91403 U
Int. Cl.[6] **F16H** *59/00*
U.S. Cl. 474—80



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

New claims **6–41** are added and determined to be patentable.

1. A rear derailleur for a bicycle, said derailleur being adapted to be mounted on a fixing member which is fixed to a frame of the bicycle and which has an abutting projection, said derailleur comprising:

a derailleur body including (i) a base member having a first stopper and (ii) a movable member;

a chain guide having a guide sprocket and a tension sprocket;

a first horizontal shaft to be fixed to said fixing member, for pivotably mounting said derailleur body on said fixing member;

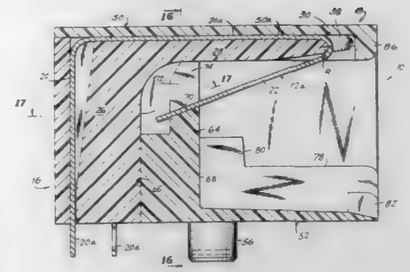
a second horizontal shaft through which said chain guide is pivotably mounted on said movable member;

a stopper plate having a positioning nose adapted to be positioned opposite to said abutting projection and a second stopper to abut against said first stopper;

a first spring interposed between said base member and said stopper plate; and

a second spring interposed between said movable member and said chain guide;

said stopper plate including an adjusting means for changing the position of said positioning nose with respect to said abutting projection to thereby adjust a twist angle of said first spring.



Claims **4–7**, dependent on an amended claim, are determined to be patentable.

New claim **18** is added and determined to be patentable.

3. The combination of claim **1** wherein a plurality of bores are formed through said back portion for receiving said pin portions of said contacts, and a plurality of guide channels are formed *solely* in a top surface of said guide portion, each guide channel opening at a rearward end thereof into a top end of a respective one of said bores for receiving said bridging portion of a respective one of said contacts.

B1 4,703,991 (3190th)

LOW PROFILE JACK

Walter M. Philippson, Woodside, N.Y., assignor to Stewart Connector Systems, Inc., Glen Rock, Pa.

Reexamination Request No. 90/004,139, Feb. 14, 1996.
Reexamination Certificate for Patent 4,703,991, issued Nov. 3, 1987, Ser. No. 817,816, Jan. 10, 1986.
Int. Cl.[6] **H01R** *23/02*
U.S. Cl. 439—676

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9** and **10** is confirmed.

Claims **1**, **2**, **8** and **11–17** are cancelled.

Claim **3** is determined to be patentable as amended.

B1 4,753,754 (3191st)

CONCENTRATED AQUEOUS SURFACTANT COMPOSITIONS

Edward T. Messenger; Douglas E. Mather, both of Cumbria, and Brinley M. Phillips, Cumberland, all of United Kingdom, assignors to Albright & Wilson Limited, Warley, England

Reexamination Request No. 90/004,199, Mar. 29, 1996.
Reexamination Certificate for Patent 4,753,754, issued Jun. 28, 1988, Ser. No. 48,016, May 8, 1987.
Continuation of Ser. No. 171,998, Jul. 24, 1980, Pat. No. 4,692,271, which is a continuation of Ser. No. 967,576, Dec. 8, 1978, abandoned.
Claims priority, application United Kingdom, Dec. 9, 1977, 51293/77; May 26, 1978, 51293/77
The portion of the term of this patent subsequent to Sep. 8, 2004, has been disclaimed.
Int. Cl.[6] **B01F** *17/02;17/10;17/12*
U.S. Cl. 252—354

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2** and **15** are determined to be patentable as amended.

Claims **3–14**, dependent on an amended claim, are determined to be patentable.

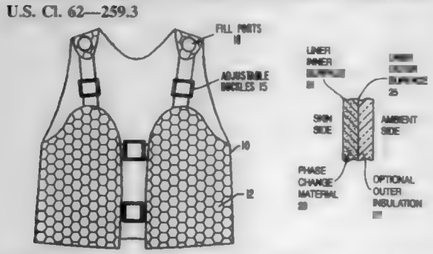
New claims **16–24** are added and determined to be patentable.

1. A pumpable aqueous surfactant composition consisting essentially of up to 50% by weight of water, up to 80% by weight of surfactant, up to 5% by weight of non-surfactant organic matter and up to 6% by weight of non-surfactant electrolyte, wherein said surfactant consists essentially of at least 5% each by weight of the composition, of different surfactant products selected respectively from at least 2 of the classes consisting of alkyl sulphates; alkyl ether [sulphates] *sulfate products produced by alkoxylating an 8 to 22 carbon atom fatty alcohol with 1 to 20 moles of ethylene or propylene oxides, reacting the resulting product with a sulphating agent and neutralizing the alkyl sulphuric acid so formed*; olefin sulphonates; alkyl benzene sulphonates; alkyl sulphosuccinates;

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alkanolamide sulphosuccinates; paraffin sulphonates[,]: fatty carboxylates; alkyl ether carboxylates; alkyl phosphates; alkyl ether phosphates; alkyl phenol sulphates; alkyl phenol ether sulphonates; fatty ester sulphonates; fatty acid sulphonates; acyl sarcosinates; and acyl taurides; wherein, in each case, there are alkyl, alkenyl or acyl groups which have an average total of from 8 to 22 carbon atoms and any [other] *ether* groups comprise glyceryl groups and/or polyoxyalkylene groups, which polyoxyalkylene groups comprise from 1 to 20 ethylene oxide and/or propylene oxide units; said mixture in the presence of water exhibiting a "G" phase at a temperature below 23° C., and the active concentration of said mixture corresponding to that at which the composition can exist, at least predominantly in the "G" phase.

B1 4,856,294 (3192nd)
MICRO-CLIMATE CONTROL VEST
Robert P. Scaringe, Rockledge; Jay A. Buckman, Melbourne, and Lawrence R. Grzyll, Merritt Island, all of Fla., assignors to Mainstream Engineering Corporation, Melbourne, Fla.
Reexamination Request No. 90/003,993, Oct. 6, 1995.
Reexamination Certificate for Patent 4,856,294, issued Aug. 15, 1989, Ser. No. 152,648, Feb. 4, 1988.
Int. Cl.[6] F25D *23/12;* **A41D** *1/04;* **A61F** *7/00;* **F28F** *7/00*
U.S. Cl. 62—259.3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **4**, **6**, **7**, **13** and **16** are cancelled.

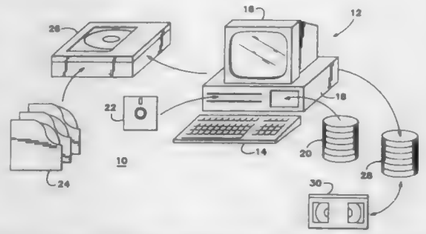
Claims **1**, **9**, **18** and **21** are determined to be patentable as amended.

Claims **2**, **3**, **5**, **8**, **10–12**, **14**, **15**, **17**, **19**, **20**, **22** and **23**, dependent on an amended claim, are determined to be patentable.

New claims **24–28** are added and determined to be patentable.

1. [A device] *An article worn on a living body* for controlling the transfer of heat with respect to [a] *the living* body, comprising heat exchange material that changes between solid and liquid phases at its melting/freezing temperature *solely from thermal communication with skin of the body and from ambient environment*, and means for supporting said heat exchange material in *the* thermal communication with the skin of the body in both its solid and liquid phases and thereby causing the temperature of said heat exchange material in each of its phases to be applied to the skin of the body, and wherein the melting/freezing temperature of said heat exchange material lies in a temperature range on the order of 60°–90° F., so as to be comfortable during prolonged thermal communication with the skin *at skin temperature above as well as below the melting/freezing temperature wherein the solid phase of the heat exchange material selectively permits cooling of the living body and the liquid phase selectively permits heating of the living body.*

B1 5,012,334 (3193rd)
VIDEO IMAGE BANK FOR STORING AND RETRIEVING VIDEO IMAGE SEQUENCES
William Etra, Fort Lee, N.J., assignor to The Grass Valley Group, Inc., Nevada City, Calif.
Reexamination Request No. 90/004,009, Oct. 27, 1995.
Reexamination Certificate for Patent 5,012,334, issued Apr. 30, 1991, Ser. No. 471,335, Jan. 29, 1990.
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—96



AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. A video image bank for storing a plurality of video motion picture image sequences and automatically accessing one of the stored image sequences, said video image bank comprising:

video storage means containing a library of video motion picture image sequences;

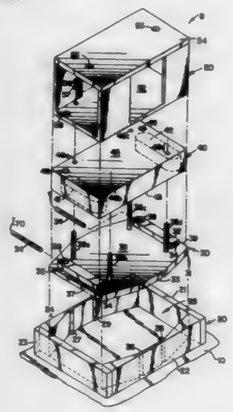
library index means containing an index of the video storage means;

means for accessing the library index to automatically identify an initial set of image sequences;

display means for displaying a still frame for each video motion picture image sequence of the initial set; and

means for selecting one of the image sequences from the initial set.

B1 5,249,950 (3194th)
HEATED STRIPPER SHOE ASSEMBLY
Michael E. Woolford, Lake Elmo, Minn., assignor to Anchor Wall Systems, Inc., Minneapolis, Minn.
Reexamination Request No. 90/004,058, Dec. 15, 1995.
Reexamination Certificate for Patent 5,249,950, issued Oct. 5, 1993, Ser. No. 828,031, Jan. 30, 1992.
Int. Cl.[6] B28B *13/06*
U.S. Cl. 425—412



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–18** are cancelled.

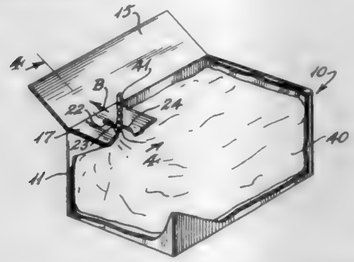
[**1**. A heated stripper shoe assembly comprising means for forming structural features on composite masonry blocks, said forming means comprising:

(a) a stripper shoe plate having a top side and a bottom side, said stripper shoe plate bottom side comprising at least one indentation;

(b) means for applying heat to selected areas of the plate, said heating applying means comprising a heating element affixed to the top side of said plate, and

(c) means for fastening said heating element to said stripper shoe plate top side, said fastening means positioned on said stripper shoe plate top side adjacent the indentation in said plate bottom side, said heating element positioned within said fastening means.]

B1 5,427,267 (3195th)
CONTAINER WITH INNER BAG SEALING FEATURE
Samuel A. Willman, R.D. 1, Box 450A, Red Line, Pa. 17356
Reexamination Request No. 90/004,309, Jul. 17, 1996.
Reexamination Certificate for Patent 5,427,267, issued Jun. 27, 1995, Ser. No. 272,756, Jul. 11, 1994.
Int. Cl.[6] B65D *5/06;5/60*
U.S. Cl. 220—403



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

1. A container comprising:

a plurality of side walls;

an outer flap; and

an inner flap including a removable tab disposed adjacent to one of said side walls, said tab being defined by a weakened line which is adapted to be broken to form an opening through said inner flap, said tab having a first portion, a second portion and an intermediate portion connecting said first and second portions and having a lesser width than said first and second portions.

B1 5,443,747 (3196th)
CLEANING COMPOSITIONS
Minoru Inada, Yokohama; Kimiaki Kabuki, Tokyo; Yasutaka Imajo, Hachioji; Takayuki Oguni; Noriaki Yagi, both of Yokohama; Nobuhiro Saitoh, Ota; Akitsugu Kurita, Ota, and Yoshiaki Takezawa, Ota, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Reexamination Request No. 90/004,202, Apr. 2, 1996.
Reexamination Certificate for Patent 5,443,747, issued Aug. 22, 1995, Ser. No. 651,370, Feb. 28, 1991.
PCT No. PCT/JP90/01372, § 371 Date Feb. 28, 1991, § 102(e) Date Feb. 28, 1991, PCT Pub. No. WO91/06621, PCT Pub. Date May 16, 1991
Claims priority, application Japan, Oct. 26, 1989, 1-280860; Nov. 21, 1989, 1-302580; Mar. 16, 1990, 2-065841; Mar. 16, 1990, 2-065842
Int. Cl.[6] B08B *3/12;7/04*
U.S. Cl. 134—1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

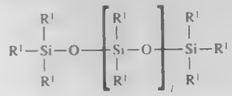
The patentability of claims **1–21**, **23**, **25** is confirmed.

Claims **22** and **24** are determined to be patentable as amended.

New claims **26–45** are added and determined to be patentable.

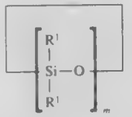
22. A continuous method for cleaning and removing water from an [object] *industrial part* comprising the steps of:

(a) cleaning the [object] *part* and removing water from the [object] *part* by use of a cleaning composition consisting essentially of at least one polyorganosiloxane not-compatible with water selected from the group consisting of a straight chain polyorganosiloxane represented by the formula:



wherein l is an integer from 0 to 5, and

a cyclic polyorganosiloxane represented by the formula:



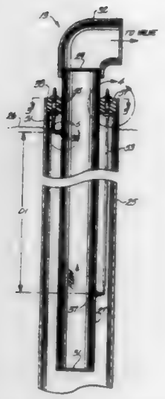
wherein R^1 in each of the above formulas is independently selected from the group consisting of methyl, ethyl, propyl, butyl, phenyl, trifluoromethyl, amino, amide, acrylic acid ester and mercaptan; l is an integer from 0 to 5; and m is an integer from 3 to 7, wherein the cleaning composition is substantially free of water, and

(b) recovering the polyorganosiloxane of the cleaning composition and recycling it back into the method, and completely drying the part to remove the cleaning composition.

B1 5,458,006 (3197th)
GAS-METERING DEVICE
Alexander Roqueta, Laguna Niguel, Calif., assignor to Pacific Energy, Commerce, Calif.
Reexamination Request No. 90/004,291, Jun. 28, 1996.
Reexamination Certificate for Patent 5,458,006, issued Oct. 17, 1995, Ser. No. 807,764, Dec. 6, 1991.
Continuation of Ser. No. 575,275, Aug. 30, 1990, abandoned.
Int. Cl.[6] G01F *1/34*
U.S. Cl. 73—861.42

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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The patentability of claims **1–4** and **5** is confirmed.

5. Apparatus for collecting gas from the ground comprising:

blower means above ground for generating a negative pressure gradient;

a plurality of wellheads for drawing gas from a plurality of localized areas in the ground to the surface;

a network of lateral pipes on the surface for connecting the wellheads to the blower means, thereby collecting gas from the wellheads using the negative pressure gradient of the blower means; and

means for monitoring the flow rate in each of the wellheads comprising for each wellhead,

a metering pipe extending along part of its length within said wellhead such that the end of the metering pipe protrudes from the wellhead and the remainder of the metering pipe lies within the wellhead,

means for causing all gas that flows within said wellhead to also flow through said metering pipe to the pipe network, the causing means comprising, for each wellhead, a bushing through which the end of the metering pipe protrudes from the wellhead and an elbow that couples the end of the metering pipe to the lateral pipe network, and

means for sensing gas flow rate within said metering pipe.

REISSUES

MAY 13, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,502

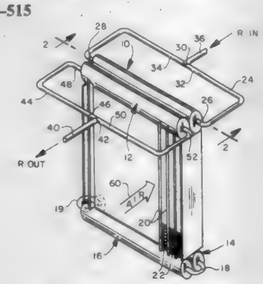
EVAPORATOR

Gregory G. Hughes, Milwaukee; Rodney A. Struss, and Michael J. Boero, both of Racine, all of Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Original No. 5,157,944, dated Oct. 27, 1992, Ser. No. 662,747, Mar. 1, 1991. Application for reissue Oct. 21, 1994, Ser. No. 327,024

Int. Cl.[6] **F25B** *39/02*

U.S. Cl. 62—515 **26 Claims**



23. An evaporator for use in a refrigeration system comprising:

a plurality of tubes in hydraulic parallel and in spaced relation to one another;

fins extending between and mounted to said tubes;

an elongated header having ends facing each other spaced lengthwise of the header and a center equally spaced between said ends, with the elongated header extending between said tubes and in fluid communication with the interior of each said tube; and

two spaced ports in said header wherein said ports are each closer to an end of said header than to the center of said header to provide a more uniform distribution of fluid through said tubes.

Re. 35,503

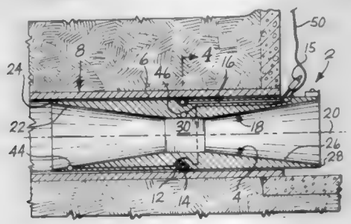
APPARATUS AND TECHNIQUE FOR METERING LIQUID FLOW

Robert M. Hunter, 320 S. Willson Ave., Bozeman, Mont. 59715

Original No. 4,799,388, dated Jan. 24, 1989, Ser. No. 51,325, May 19, 1987. Continuation-in-part of Ser. No. 846,516, Mar. 31, 1986, Pat. No. 4,799,388, which is a continuation of Ser. No. 364,192, Mar. 31, 1982, abandoned. Application for reissue Jan. 24, 1991, Ser. No. 645,212

Int. Cl.[6] **G01F** *1/44*

U.S. Cl. 73—861.63 **44 Claims**



24. An apparatus for measuring flow in a closed conduit, comprising:

a venturi metering member for disposition in said closed conduit in a manner as to accept the flowing material in a flowpath therethrough and otherwise substantially block the conduit;

said venturi metering member formed having an axially inward tapered constricting inlet section in the direction of flow, terminating within said member in a throat section, said throat section defined as a passage continuing from said constricting inlet section;

access means to permit sensing of the pressure in the region of said constricting inlet section and in said throat in less than full and in full closed conduit flow conditions;

said throat dimensioned relative to said constricting inlet section transverse the respective longitudinal axes thereof so that said throat will fill with liquid substantially simultaneously with said constricting inlet section upon increasing flow in the closed conduit.

Re. 35,504

Patent Not Issued For This Number

Re. 35,505

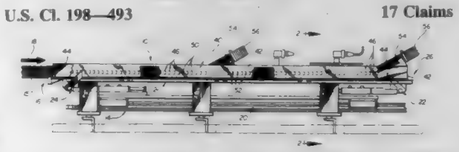
AIR HOLD UP ASSEMBLY FOR A STICK OF CAN ENDS

Andrew E. Mojden, Hinsdale, and Richard P. Hoinacki, Oak Lawn, both of Ill., assignors to Fleetwood Systems, Inc., Romeoville, Ill.

Original No. 5,318,166, dated Jun. 7, 1994, Ser. No. 56,317, Apr. 21, 1993. Application for reissue Aug. 3, 1995, Ser. No. 511,096

Int. Cl.[6] **B65G** *47/22*

U.S. Cl. 198—493 **17 Claims**



12. An article hold up apparatus, for use with a elongate lane defining a central axis in which a plurality of articles are transported in a stacked condition from a first location at one end of said lane along said lane until a leading end of said articles reaches an opposite end of said lane for retaining a leading one of said articles in a substantially coaxial stacked orientation with respect to the others of said articles for thereby retaining said articles being transported along said lane substantially in said stacked condition, said article hold up apparatus comprising:

an air directing structure extending substantially the length of said elongate lane for directing air in a selected direction to hold up an end of said plurality of articles without impeding the transport of said articles along said lane;

said air directing structure comprising at least one elongate tubular duct spaced from said lane and extending longitudinally along a substantial portion of the length of said lane; and

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air directing apertures formed in said air directing structure, said apertures being formed in said air directing structure in positions offset from said central axis of said lane for directing air in said direction opposite said selected direction of travel of said articles.

Re. 35,506

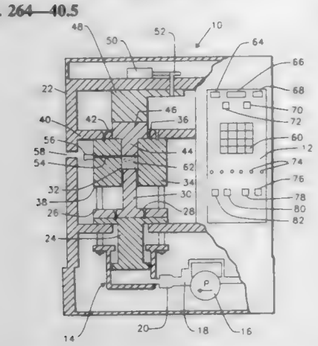
POWDER COMPACTING PRESS APPARATUS AND METHODS

Michael C. Solazzi, Hillsdale, N.J., and Monte J. Solazzi, Jupiter, Fla., assignors to Chemplex Industries, Inc., Tuckahoe, N.Y.

Original No. 5,202,067, dated Apr. 13, 1993, Ser. No. 790,344, Nov. 12, 1991. Continuation of Ser. No. 103,859, Aug. 9, 1993, abandoned. Application for reissue May 10, 1995, Ser. No. 452,601

Int. Cl.[6] B29C *43/02*

U.S. Cl. 264—40.5 **18 Claims**



1. A briquette press apparatus having a compression stroke wherein a ram advances against, and compacts, a sample of powdered material and a decompression stroke wherein said ram is withdrawn from said sample, said apparatus comprising:

an input device for selecting a predetermined ram size, pressure, dwell time and decompression rate, wherein said predetermined ram size corresponds to the size of the ram selected for the briquette press for use on the sample;

sensor means for sensing the pressure being applied to said ram;

a variably programmable control means for controlling said compression stroke and said decompression stroke, **[**such that**]** *wherein said control means reads said ram size from said input device and the pressure from the pressure sensing means and determines an actual pressure being applied to said ram; and said control means* during said compression stroke **[**the**]** , *compares said actual* pressure *to said predetermined pressure and regulates* said ram **[**applies**]** to **[**said sample is maintained at a programmed**]** *maintain said actual* pressure **[**for a programmed**]** *at said predetermined pressure for said* dwell time, and during said decompression stroke**[**,**]** *said control means determines the rate of decompression from said actual pressure, compares* the rate of decompression **[**is maintained at a programmed**]** *with said predetermined decompression rate and regulates said ram to maintain the rate of decompression at said* decompression rate.

Re. 35,507

REPULSION TYPE CIRCUIT BREAKER CONTROL DEVICE

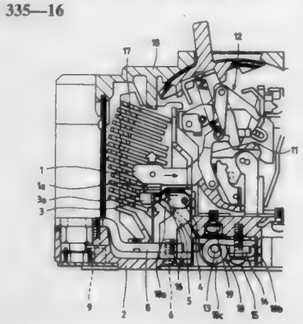
Naoshi Uchida; Kouji Asakawa, and Jun Oyama, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Original No. 5,164,560, dated Nov. 17, 1992, Ser. No. 778,364, Oct. 17, 1991. Application for reissue Nov. 17, 1994, Ser. No. 343,857

Claims priority, application Japan, Nov. 22, 1990, 2-318867

Int. Cl.[6] H01H *75/00*

U.S. Cl. 335—16 **30 Claims**



1. A repulsion type circuit breaker movable contact device comprising:

a first movable contact;

an opening/closing mechanism operably attached to said first movable contact for driving said first movable contact between an open and a closed position;

a second movable contact for contacting said first movable contact when said first movable contact is in said closed position, said second movable contact being freely pivotable and adapted to receive an electromagnetic repulsion force from said first movable contact; and

a twisted torsional coil contact spring disposed with its **[**twisting fulcrum**]** *point of application for twisting* displaced from the rotational pivot of said second movable contact, said contact spring urging said second movable contact into contact with said first movable contact, whereby upon flow of a predetermined amount of electric current through said first and second movable contacts, the electromagnetic repulsion force moves said second movable contact apart from said first movable contact.

Re. 35,508

PLUG TERMINATOR HAVING A GROUNDING MEMBER

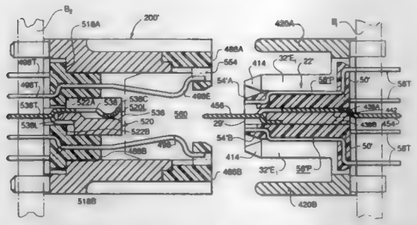
Timothy A. Lemke, Carlisle; Richard A. Elco, Mechanicsburg, and Timothy W. Houtz, Etters, all of Pa., assignors to Berg Technology, Inc., Reno, Nev.

Original No. 5,169,324, dated Dec. 8, 1992, Ser. No. 774,991, Oct. 11, 1991. Division of Ser. No. 609,941, Nov. 7, 1990, Pat. No. 5,057,028, which is a continuation-in-part of Ser. No. 460,856, Mar. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 285,533, Dec. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 193,611, May 13, 1988, Pat. No. 4,824,383, which is a continuation-in-part of Ser. No. 91,002, Sep. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 932,921, Nov. 18, 1986, abandoned. Application for reissue Dec. 8, 1994, Ser. No. 352,380

Int. Cl.[6] H01R *13/652*

U.S. Cl. 439—101 **24 Claims**

8. An electrical connector system, comprising:



a first connector having two arrays of contact elements and a first conductive plate separating said two arrays of contact elements;

a second connector having two arrays of contact elements and a second conductive plate separating said two arrays of contact elements; and

said second connector adapted to mate with said first connector so that said contact elements of said first and second connectors form electrical connections therebetween and so that said first and second conductive plates are brought to within a predetermined distance from each other thereby reducing crosstalk between adjacent contact elements.

Re. 35,509

POLYPHENYLENE ETHER/POLYAMIDE BLENDS HAVING IMPROVED PHYSICAL PROPERTIES

Susumi Fujii, Ibaragi; Hiromi Ishida; Masataka Morioka, both of Tochigi; Akihiro Saito, Utsunomiya, all of Japan, and Roelof van der Meer, Halsteren, Netherlands, assignors to General Electrical Company, Pittsfield, Mass.

Original No. 4,873,276, dated Oct. 10, 1989, Ser. No. 22,836, Mar. 6, 1987. Application for reissue Jul. 15, 1994, Ser. No. 273,347

Claims priority, application Japan, Mar. 7, 1986, 61-48504; Apr. 7, 1986, 61-78383; Apr. 11, 1986, 61-82277; Apr. 22, 1986, 61-91371

Int. Cl.[6] C08L *71/12;77/00*

U.S. Cl. 525—397 **27 Claims**

1. A resin composition comprising:

(a) a polyphenylene ether resin;

(b) a polyamide resin in which the amount of terminal amino group is greater than the amount of terminal carboxyl group; and

(c) a compatibilizer compound for (a) and (b).

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PLANT PATENTS

GRANTED MAY 13, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,889

BLACK CURRANT PLANT NAMED 'BEN ALDER'

Malcolm M. Anderson, Angus, Scotland, assignor to Scottish Crop Rsearch Institute, Dundee, Scotland

Filed Feb. 12, 1996, Ser. No. 600,222
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—33.1 **1 Claim**

1. A new and distinct variety of black currant plant having the following combination of characteristics:

(a) forms flower buds that exhibit good tolerance to freezing during spring frosts and which flower very late in the season,

(b) a vigorous and upright growth habit is amenable to mechanical ruit harvest,

(c) the ability to bear glossy purple-black fruit of good quality in high yields that matures medium to late in the season and is particularly well suited for juice production, and

(d) exhibits good resistance to mildew and leaf spot;

substantially as herein shown and described.

9,890

APRICOT CV. ROBADA

Craig A. Ledbetter, Clovis, and David W. Ramming, Fresno, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 14, 1995, Ser. No. 502,516
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as illustrated and described, characterized by fruit with an unusually large amount of red skin color in the form of a bright red blush, fruit with good flavor and high eating quality, self-compatible flowers which require no cross-pollination, and fruit with firm flesh giving good handling and shipping qualities.

9,891

CHRYSANTHEMUM PLANT NAMED 'BOLD CHRISTINE'

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 22, 1996, Ser. No. 605,820
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct Chrysanthemum plant named Bold Christine, as described and illustrated.

9,892

CHRYSANTHEMUM PLANT NAMED 'FOXY VALERIE'

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 22, 1996, Ser. No. 606,036
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct Chrysanthemum plant named Foxy Valerie, as described and illustrated.

9,893

VARIETY OF GERANIUM NAMED 'JANE'

Ernest Walters, deceased, late of Hucknall, England, assignor to Oglevee, Ltd., Connellsville, Pa.

Filed Oct. 19, 1995, Ser. No. 545,378
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant substantially as shown and described.

9,894

SYNGONIUM PLANT NAMED 'BOB WHITE'

Dan H. Vanderlaan, Lake Worth, Fla., assignor to Vanderlaan Brothers, Lake Worth, Fla.

Filed Dec. 29, 1995, Ser. No. 581,484
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct variety of *Syngonium podophyllum* named 'Bob White', as illustrated and described.

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PATENTS

GRANTED May 13, 1997

ERRATA

For CLASS	See PATENT NO.
473–486	5,628,506
473–479	5,628,507
473–562	5,628,509
463–047	5,628,510
473–446	5,628,515
417–044	5,628,619
264–614	5,628,849
264–614	5,628,849
264–694	5,628,869
438–729	5,628,870
438–514	5,628,871
438–016	5,628,954
429–218	5,629,000
429–218	5,629,000
442–038	5,629,077
442–374	5,629,078
442–060	5,629,079
442–096	5,629,081
216–013	5,629,245
239–379	5,629,507
395–515	5,629,749
396–538	5,629,749
396–538	5,629,750
396–538	5,629,750
396–622	5,629,751
399–176	5,629,755
399–263	5,629,758
399–262	5,629,759
399–312	5,629,760
399–307	5,629,761
399–364	5,629,762
399–371	5,629,763
356–372	5,629,772
356–376	5,629,773
356–445	5,629,774
386–045	5,629,776

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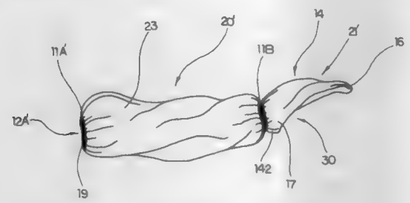
349–070 5,629,783
349–112 5,629,784
349–086 5,629,785
349–123 5,629,786
349–153 5,629,787
349–172 5,629,788
395–200 5,630,184

PATENTS

GRANTED MAY 13, 1997

GENERAL AND MECHANICAL

5,628,062
ARM AND HAND UV PROTECTION SLEEVE FOR DRIVING
Li Ming Tseng, 2206 S. 8th Ave., Arcadia, Calif. 91006
Filed Dec. 11, 1995, Ser. No. 570,356
Int. Cl.[6] A41D *13/08*
U.S. Cl. 2—16 **19 Claims**



1. An ultra violet protection sleeve, comprising

an elongated tubular air ventilating fabric arm piece which defines a chamber like cavity therein and has two openings at a rear end and a front end of said arm piece respectively, said arm piece adapted to extend from a driver's upper arm down to the wrist area; said arm piece is constructed with at least two fastening elements to both said rear and front opening ends so as to fasten said rear and front opening ends of said arm piece to the upper arm portion and the wrist area of the driver for holding said arm piece in position;

a hand piece which comprises a prolonged tubular arm segment, a third fastening element and a hood and arch like cuff segment which has a top side, a bottom side and an open mouth defined therebetween; wherein said top side of said cuff segment is extended gently from said prolonged arm segment to a predetermined length that overlaps the entire back surface of the hand and fingers of the driver with its fringe ending over the tip of the driver's fingers for prohibiting the intrusion of ultra violet radiation; said bottom side of said cuff segment being extended from said arm segment to cover the driver's wrist and palm area, wherein the driver's hand is able to expose through said open mouth formed under said top side; said third fastening element being constructed between said arm segment and said cuff segment for holding said hand piece to the driver's wrist area and overlapping said arm segment upon said front end of said arm piece; and

a holding means for connecting said cuff segment to the driver's hand by mounting on the driver's fingers.

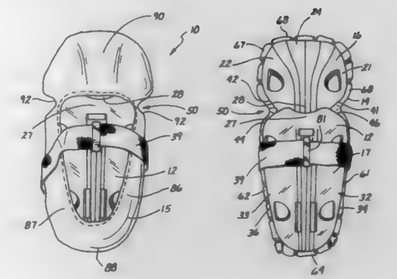
5,628,063
KNEE PAD ASSEMBLY
Wendal T. Reed, 3734 W. K-15 Ave., Lancaster, Calif. 93536
Filed Dec. 15, 1995, Ser. No. 573,330
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—22 **10 Claims**

1. A pad assembly for use as a protective device to protect from certain types of injury comprising:

an outer shell member comprised of an upper and lower shell member.

said upper shell being configured to fit over a specified portion of a person's body and said lower shell being configured to fit over another portion of a person's body adjacent to said specified portion, said outer shell member having an inner surface which faces a person's body and an outer surface which faces away from a person's body,

means to secure said shells together for relative hinged movement whereby the other portion of a person's body may be flexed while the upper shell remains over the specified portion of a person's body,



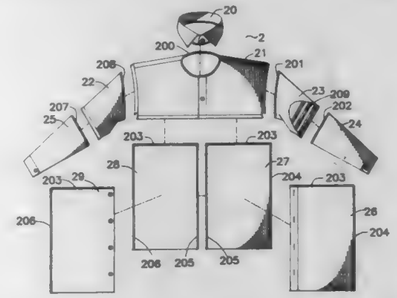
foam padding received on the inner surface of said outer shell member adapted to face the person's body and including a peripheral portion extending beyond a periphery of said outer shell member,

cloth means overlying said foam padding on the surface thereof facing the person's skin and spaced from said shell member by said foam padding,

said cloth means including a portion adapted to fit over an outer surface of said foam padding and a peripheral portion thereof which extends over a portion of the outer surface of said outer shell member, and

means to releasably secure the shell member and assembled foam padding and cloth means to a portion of a person's body to be protected from abrasions and the like.

5,628,064
SEPARTABLE CLOTHES INCLUDING SHIRTS
Chin-Fu Chung, No. 898, Min-Sheng St., Kuei-Jen Hsiang, Tainan Hsien, Taiwan
Filed Sep. 22, 1995, Ser. No. 532,151
Int. Cl.[6] A41B *1/08*
U.S. Cl. 2—70 **2 Claims**



1. A separatable clothing comprising a base panel for covering at least a portion of a trunk of a human body and at least first and second auxiliary panels for respectively covering a single extremity of the human body, said base and auxiliary panels having zippers for fastening to one another, said first auxiliary panel fastening to said base panel and said second auxiliary panel fastening to said first auxiliary panel, wherein said separatable clothing is a shirt, said base panel is a shoulder part, said first and second panels are respectively upper and lower sleeves, said shirt further includes a front left panel, a from right panel, a rear left panel, and a rear right panel; said front left and right panels and said rear left and right panels having zippers for fastening; wherein

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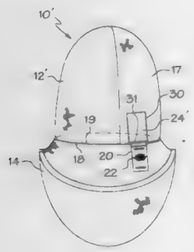
said lower sleeves are fastened to said upper sleeves, said upper sleeves are fastened to said shoulder part, said from right and left panels and said rear left and fight panels are fastened to said shoulder part, said front left panel is fastened to said front fight panel, said front left panel is fastened to said rear left panel, and said rear fight panel is fastened to said rear left panel.

5,628,065

FIREFIGHTER HOOD WITH LABEL POCKET

Richard A. Austin, Shawnee, Okla., assignor to Tayco, Shawnee, Okla.

Filed Dec. 28, 1995, Ser. No. 579,966
Int. Cl.[6] A42B *1/00*
U.S. Cl. 2—81 **12 Claims**



1. A protective firefighter hood comprising:
a head portion shaped to cover a wearer's head;
a label attached to the firefighter hood, the label made of fire-resistant material;
the hood including a pocket shaped to receive the label such that the label may be alternately placed inside the pocket away from contacting the wearer, or removed from the pocket to be viewed.

5,628,066

METHOD OF RESCUING A PERSON FROM A FIRE EMERGENCY

Baruch Gottlieb, 80 Pdtah Tikva Road, Tel Aviv, Israel; Jack Trilling, 15A Basswood Plz., Cranbury, N.J. 08512, and Meir Brenner, 80 Pdtah Tikva Road, Tel Aviv, Israel

Continuation of Ser. No. 23,469, Feb. 25, 1993, abandoned, which is a continuation of Ser. No. 915,034, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 543,011, Jun. 25, 1990, abandoned. This application Aug. 4, 1995, Ser. No. 511,120
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—84 **7 Claims**

1. A method for rescuing a person from a fire emergency comprising:
providing a fire protection garment in a container means, the fire protection garment comprising
a hood portion shaped to overlie the head of at least one user;
a body portion depending from the hood portion and formed with an essentially downwardly extending entrance opening in the front thereof and an open bottom, the interior of said fire protection garment being large enough to protect two adult persons from being exposed to heat and flames;
internal hand receiving pockets connected to said body portion, said hand receiving pockets being inaccessible from the exterior of the garment; wherein at least said hood and body portions and said hand receiving pockets are formed of a fabric adapted to retain a fire retarding fluid during use and wherein the container contains a sufficient quantity of said fire retarding fluid to render the fire protection garment resistant to fire;



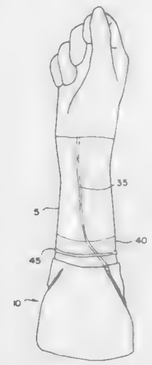
donning the fire protection garment so as to enclose said user within the fire protection garment;
entering a fire emergency area wherein a person is endangered by the fire emergency;
opening the fire protection garment;
enclosing said person together with said user within the fire protection garment; and
escaping from the fire emergency area with said person and said user both enclosed within the fire protection garment.

5,628,067

LIQUID IMPERVIOUS SLEEVE-GLOVE INTERFACE FOR PROTECTIVE GARMENTS AND METHOD OF PRODUCING SAME

Kenneth K. Meyer, Sayre, Pa., and William C. Beck, deceased, late of Catawissa, Pa., assignors to Donald Guthrie Foundation for Education and Research, Sayre, Pa.

Filed Jul. 3, 1995, Ser. No. 497,949
Int. Cl.[6] A41D *13/10;13/12*
U.S. Cl. 2—125 **14 Claims**



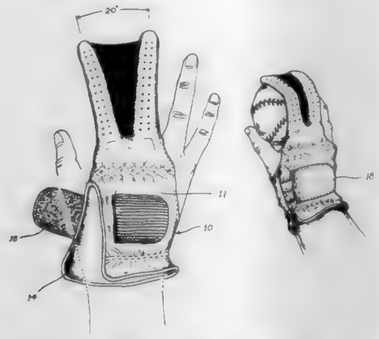
1. A liquid impervious sleeve and glove assembly for a protective fabric garment, comprising: a protective garment having a sleeve with a terminal sleeve forearm portion, the terminal sleeve portion having folds of material, a glove wherein the glove covers at least part of the terminal sleeve forearm portion, a liquid impervious seal which seals the folds in the terminal sleeve portion to the terminal sleeve portion and a liquid impervious seal which seals the glove to the sleeve at the interface wherein each liquid impervious seal is selected from the group consisting of an adhesive, a cohesive-adhesive, and a heat seal.

5,628,068

PITCHING GLOVE HAVING WEBBED FINGERS

Harold DeLong, 1145 Barham Dr. #209, San Marcos, Calif. 92069

Filed Mar. 20, 1995, Ser. No. 406,570
Int. Cl.[6] A41D *19/00; A63B 71/00*
U.S. Cl. 2—161.1 **1 Claim**



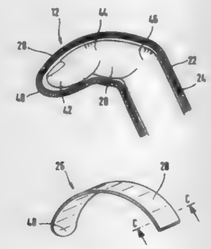
1. A method of pitching a ball with a pitching hand in a controlled fashion comprising the following steps:
(a) engaging a glove having sleeves covering only the index and middle fingers on said pitching hand with a web restraint spanning between said sleeves for limiting the angle of divergence of said sleeves; and,
(b) while said fingers are restrained, pitching a ball by letting it roll off the middle and index fingers in the pitching direction while said fingers are maintained spread apart to substantially said maximum angle permitted by said web restraint, such that the ball being pitched rolls off of the web just prior to leaving the hand to extend a duration of frictional control over the ball during the pitch.

5,628,069

GLOVE WITH BISTABLE SPRING ELEMENT

Gerd Ebert, Amundsenstr. 26, 90453 Nürnberg, Germany

PCT No. PCT/DE94/00957, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/05758, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 22, 1994, Ser. No. 591,680
Claims priority, application Germany, Aug. 20, 1993, 43 28 116.8; Apr. 22, 1994, 44 14 126.2
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.1 **22 Claims**



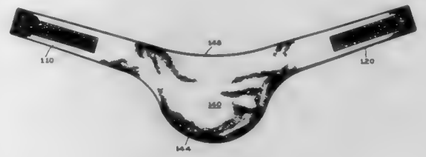
1. A glove which comprises at least one dorsal portion (**4**), at least one finger portion (**6**), at least one palm portion (**8**) and a thumb portion (**10**), with the at least one finger portion (**6**) being biasable by at least one spring element (**26**) toward the closed position of said finger positions (**6**), wherein said spring element (**26**) has the form of a bistable spring element (**28**) which has two stable end portions, said finger portion (**6**) being kept deflected toward its closed position in the one end position, and said finger portion (**6**) being held in a comparatively open position such as the extended position in the other end position.

5,628,070

BURN PROTECTOR COVERING

Agnes R. Kefelian, 19513 Sedgefield Ter., Boca Raton, Fla. 33498

Continuation-in-part of Ser. No. 353,698, Dec. 12, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 582,049
Int. Cl.[6] A41D *13/00;23/00*
U.S. Cl. 2—174 **1 Claim**



1. A protective covering for the back of the neck, ears and forehead of a head of a person comprising:
a central band shaped to be positioned along the back of the neck of the person, said central band having a semi-rounded shape with a bottom curved edge and a top curved edge with said top curved edge being adapted to fit the top of the back of the neck and said bottom curved edge being adapted to extend to the base of the back of the neck;
said central band having a first side and a second side, both merging into said top curved edge and projecting angularly out of said central band;
a first band attached to said first side of said central band and projecting angularly outward and upward therefrom, a second band attached to said second side of said central band and extending angularly outward and upward therefrom opposite to said first band;
said first and second bands being adapted to cover the sides of the head and the ears of a user when fastened around the forehead of the user, but being narrower than said central band; and
fastening means for allowing said first band and said second band to attach and detach together over said forehead;
said bands having an internal lining throughout of aramid material providing high heat resistance; and
said bands having outer layers of oxford cloth shirting.

5,628,071

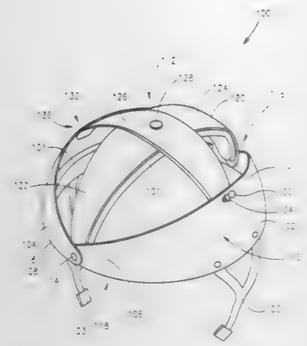
COLLAPSIBLE HELMET

Shlomo Nezer, Karmiel, Israel, assignor to Motorika Ltd., Nazeret Ilit, Israel

Continuation-in-part of Ser. No. 372,743, Jan. 13, 1995. This application Jun. 15, 1995, Ser. No. 491,197
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—410 **21 Claims**

1. A collapsible helmet comprising:
(a) a left arched member and a right arched member, each of said left and right arched members having a front portion and a rear portion, said front portions of said left and right arched members being hingedly attached at a front attachment point and said rear portions of said left and right arched members being hingedly attached at a rear attachment point, thereby forming a substantially elliptic headcover, said headcover surrounding the left and the right head hemispheres of a wearer when the helmet is deployed in its operative position;

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(b) a middle arched member, said middle arched member having a front portion and a rear portion, said front portion of said middle arched member being hingedly attached at said front attachment point to said left and right arched members, said rear portion of said middle arched member being hingedly attached at said rear attachment point to said left and right arched members, said middle arched member extending longitudinally across the crown of a wearer when the helmet is deployed in its said operative position so as to define a head protecting shell; and

(c) at least one flexible strap connecting said middle arched member with said left and right arched members, said at least one flexible strap being stretched when the helmet being deployed in said operative position,

wherein said middle, said left and said right arched members assume a folded inoperative position in which they overlap form a compact, layered, arch-shaped package, with said at least one flexible strap folded amongst any of said arched members.

5,628,072

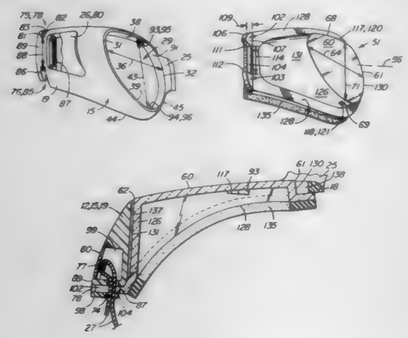
EYE GOGGLES WITH LATERALLY ADJUSTABLE EYEPIECES WITHIN GOGGLES FRAME

Joseph Haslbeck, West Vancouver, and Peter Huopalainen, Surrey, both of Canada, assignors to Sharp Plastics Manufacturing Ltd., Delta, Canada

Filed Jun. 20, 1994, Ser. No. 262,609

Int. Cl.[6] A61F *9/02*

U.S. Cl. 2—428 **23 Claims**



1. A pair of goggles comprising:

(a) a goggles frame having a pair of eyepiece holders and a nosepiece extending between the eyepiece holders, each eyepiece holder defining respective eyepiece openings therein having opposite inner and outer end portions spaced apart along an interocular axis to define a length of the respective eyepiece opening, each eyepiece holder having opposite side portions spaced apart transversely of the interocular axis to define a width of the eyepiece opening, the eyepiece holders having inner end portions interconnected to the nosepiece and outer end portions connectable with a head strap,

(b) a pair of eyepiece units fitted within the respective eyepiece openings of the eyepiece holder, each eyepiece unit having a lens with a respective ocular axis, the ocular axes of the lenses being spaced apart at an interocular spacing along the interocular axis, each eyepiece unit having opposite inner and outer end portions spaced apart along the interocular axis to define a length of the eyepiece unit which is smaller than the length of the eyepiece opening to permit relative movement between each eyepiece unit and the respective eyepiece holder along the interocular axis to permit adjustment of the interocular spacing, each eyepiece unit having opposite side portions spaced apart transversely of the interocular axis to define a width of the eyepiece unit which is approximately equal to the width of the respective eyepiece opening, and

(c) position adjusters to permit adjustment of the position of each eyepiece unit within the respective eyepiece opening, each position adjuster comprising end and intermediate guides provided adjacent at least one end portion and one side portion of each respective eyepiece unit and associated eyepiece holder so as to be spaced apart at three locations for each eyepiece unit and associated eyepiece holder to provide stability for guiding axial movement of the eyepiece units along the interocular axis, and for preventing rotation of each eyepiece unit relative to the respective eyepiece holder.

5,628,073

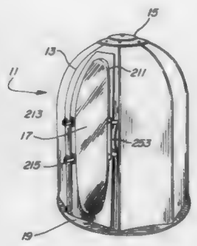
SAUNA

John Popovich, Del Mar, Calif., assignor to Watkins Manufacturing Corp., Vista, Calif.

Filed Jul. 27, 1995, Ser. No. 508,041

Int. Cl.[6] A61H *33/06*

U.S. Cl. 4—524 **18 Claims**



1. A sauna comprising:

a space frame comprised of a plurality of arched tube members joined at the top to a dome comprising a plurality of domical elements;

a flexible skin installed over said tube members;

a seat means for seating occupants located within said skin and attached to said space frame;

a floor removably attached to said skin; and

infrared heating means attached to one of said domical elements for heating said sauna.

5,628,074

BATHTUB ASSEMBLY ACCOMMODATED UNDER BED AND BATHING AID SYSTEM USING IT

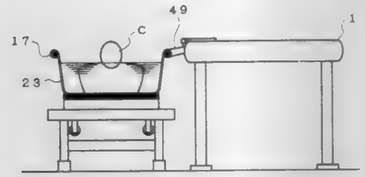
Kimimasa Sugihara, and Kazuhiko Uchida, both of Kyoto, Japan, assignors to K.K. Seiken, Kyoto, Japan

Filed Jun. 9, 1995, Ser. No. 489,278

Claims priority, application Japan, Jun. 15, 1994, 6-200039; Sep. 21, 1994, 6-254711

Int. Cl.[6] A47K *3/06*

U.S. Cl. 4—547 **5 Claims**



1. A bathtub assembly foldable to be accommodated in a space under a bed equipped with a lifting mechanism, said bathtub assembly comprising:

a base movable on a floor between a first place under the bed and a second place at a side of the bed;

a bathtub supporting frame mounted on said base to be movable between an upper position and a lower position; and

a bathtub made of watertight flexible sheet and fixed at its upper periphery to said bathtub supporting frame,

said bathtub supporting frame including a coupler element connectable to the bed such that the bathtub supporting frame can be raised to the upper position in connection with the bed by the lifting mechanism.

5,628,075

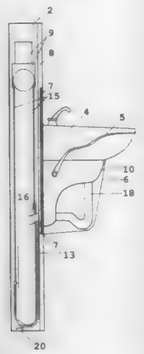
PORTABLE VERTICALLY ADJUSTABLE LAVATORY ASSEMBLY

George Dudnik, 41 Byron Dr., Pleasant Hill, Calif. 94523, and Yana Doppelt, 1895 Jackson St., No. 706, San Francisco, Calif. 94109

Filed Feb. 24, 1995, Ser. No. 393,854

Int. Cl.[6] E03C *1/324*

U.S. Cl. 4—645 **8 Claims**



1. An adjustable lavatory assembly comprising:

a box adapted to be attached to a wall, said box having an interior and a front panel window;

a drive mechanism locate inside the box member;

a platform member mounted on said box member and coupled directly to the drive mechanism via a chain, the platform member movable in a vertical direction along said box member, a movable screen member coupled at one end to and said chain and at the other end to said platform member;

a sink member coupled to the platform member;

wherein upon movement of said platform member and sink member along said box member in a vertical direction said screen member will cover said front panel window.

5,628,076

SELF LOCKING FUTON FRAME

John H. Newton, White River Junction, Vt., assignor to Nordic Engineering, Inc., White River Junction, Vt.

Continuation-in-part of Ser. No. 248,884, May 25, 1994, Pat. No. 5,485,638. This application Nov. 29, 1995, Ser. No. 564,909

Int. Cl.[6] A47C *17/17*

U.S. Cl. 5—37.1 **22 Claims**



1. A futon frame for supporting a futon forming a chair or sofa when the futon frame is in a closed position and forming a bed when the futon frame is in an open position, the futon frame comprising:

a base having a first base end spaced apart from a second base end,

said first base end having a first base end lower serpentine slot with a first lower slot forward end and a first base end upper serpentine slot with a first horizontal upper slot forward segment which is aligned with said first lower slot forward end, and

said second base end having a second base end lower serpentine slot with a second lower slot forward end and a second base end upper serpentine slot with a second horizontal upper slot forward segment which is aligned with said second lower slot forward end;

a back having a first back side member and a second back side member;

a lower first back pivot pin and an upper first back pivot pin, each of said lower first back pivot pin and said upper first back pivot pin attaching to said first back side member and respectively engaging said first base end lower serpentine slot and said first base end upper serpentine slot;

a lower second back pivot pin and an upper second back pivot pin, each of said lower second back pivot pin and said upper second back pivot pin attaching to said second back side member and respectively engaging said second base end lower serpentine slot and said second base end upper serpentine slot;

a seat having a first seat side member and a second seat side member, said seat pivotably connecting to said back;

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a first seat support pivotably connecting to said first seat side member and to said base; and

a second seat support pivotably connecting to said second seat side member and to said base.

5,628,077

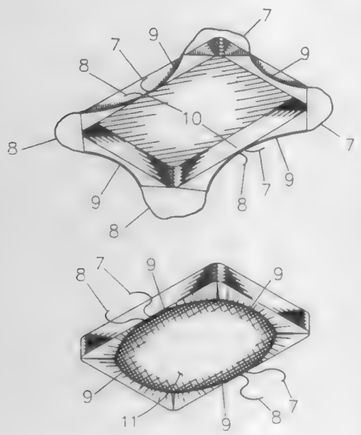
DRAW STRING FITTED SHEET WITH CURVED HEM FOR EVEN TENSION

Robert A. Briganti, 2040 Noche Buena St., Seaside, Calif. 93955

Continuation of Ser. No. 280,778, Jul. 26, 1994, abandoned. This application Aug. 13, 1996, Ser. No. 696,318

Int. Cl.° A47G *9/02*

U.S. Cl. 5—496 **20 Claims**



1. A fitted sheet for a mattress; said mattress having a set of sides, a top, and a bottom; said bottom and said sides intersecting to form a set of lower edges; each of said lower edges having a midpoint; said lower edges intersecting to form a set of lower corners; said sheet having a peripheral edge with a hem thereon; at least one part of or all said hem forming a hollow cavity substantially parallel to said sheet edge; at least one part or all of said hem containing at least one drawstring therein; said drawstring restrained within said hem and under a first tension force generates a second tension force in said sheet wherever said drawstring is caused by said sheet to make a deviation from a substantially straight path; said second tension force holds said sheet in a position substantially enveloping said mattress in such a way as to substantially cover said mattress top and said sides with all or part of said sheet edge, said hem, and said at least one drawstring in a position adjacent to and substantially within said mattress lower edges; a set of portions of said sheet edge supporting said hem containing said drawstring and adjacent to said mattress lower edges having a substantially concave curve fashioned to substantially direct said drawstring deviation toward and distribute said drawstring deviation along said portions of said sheet edge adjacent to said mattress lower edges whereby the generation of said second tension force in said sheet is substantially diverted toward and along said portions of said sheet edge adjacent to said mattress lower edges.

5,628,078

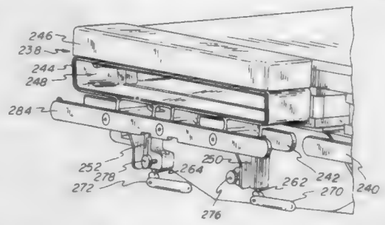
SURGICAL TABLE SIDE EXTENDER ASSEMBLY

Donald R. Pennington, New Paris, and Keith A. Stickley, Greenville, both of Ohio, assignors to Midmark Corporation, Versailles, Ohio

Continuation of Ser. No. 290,384, Aug. 15, 1994. This application Jan. 5, 1995, Ser. No. 368,296

Int. Cl.° A47B *7/02*

U.S. Cl. 5—618 **5 Claims**



1. A side extender assembly for attachment to a surgical table having a table frame and at least one side rail secured to the table frame, said side extender assembly comprising:

an extender frame;

means defining an x-ray passage through said extender frame for permitting an x-ray panel to be positioned within the table frame;

at least one support leg integral with said extender frame, said support leg having a recess for receiving the side rail and a tang defining an upper portion of said recess which extends over and behind the side rail in a mounted position;

a stud threadably engaged with said support leg for engaging a lower edge of the side rail to wedge said support leg into firm engagement with the side rail; and

a thumb screw threadably engaged with said support leg for contacting the table frame to counteract a moment force applied against the side extender assembly by a patient.

5,628,079

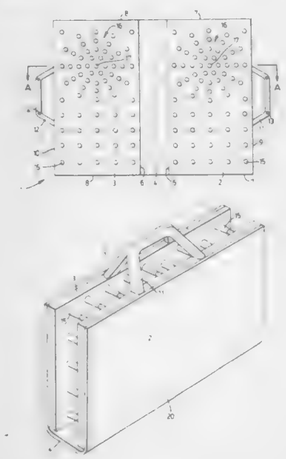
SEAT CUSHION WITH PROJECTIONS

Hanya Kizemchuk, and Herold Fensterer, both of 60 Montclair Avenue #701, Toronto, Ontario, Canada

Filed Jan. 16, 1996, Ser. No. 585,663

Int. Cl.° A47C *7/18*

U.S. Cl. 5—653 **9 Claims**



1. A seat cushion adapted to support the buttocks and thighs of a seated user comprising:

a flexible substrate having a first pad and a second pad thereon, said first and second pad being in a spaced-apart generally parallel relationship, forming a hinge of said substrate therebetween such that the flexible substrate may be moved from an open lay-flat position to a closed position in which said pads are in a face-to-face relationship; said pads being formed of a compressible rubber composition and having a pattern of projections thereon in a spaced-apart relationship, said pattern including a concentric array of such projections extending substantially across the width of each of such pads, the height of the projections of the concentric arrays increasing from the center of the arrays toward the peripheries of the arrays, the concentric arrays adapted to support the buttocks of a user.

5,628,080

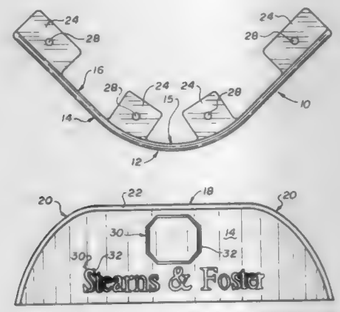
CURVE FORMED PROTECTIVE AND DECORATIVE BEDDING FOUNDATION CORNER GUARD

Mark J. Quintile, Brunswick, Ohio, assignor to Ohio Mattress Company Licensing and Components Group, Cleveland, Ohio

Filed Aug. 10, 1994, Ser. No. 288,126

Int. Cl.° A47C *23/00*

U.S. Cl. 5—663 **15 Claims**



1. A protective and decorative corner guard constructed in a fixed curved configuration for attachment over an upholstered exterior bottom surface and over an upholstered exterior side surface of a rounded corner of a mattress foundation to protect and decorate the exterior of a corner of an upholstered mattress foundation, the corner guard comprising,

(i) a side wall having:

a height which extends from an exterior bottom surface a distance up an exterior side surface of a rounded corner of a mattress foundation,

a length sufficient to extend from a first exterior side of a mattress foundation and around an exterior rounded corner of the foundation to an adjoining exterior second side of the foundation generally perpendicular to the first side,

a radiused curve fixedly formed in the side wall with a mid-point of the curve positionable at an approximate mid-point of the length of the side wall, the curvature in the side wall having a radius approximately equal to a radius of a rounded corner of a mattress foundation, and

(ii) tabs extending generally perpendicular from a bottom edge of the side wall and positionable against an exterior bottom surface of a foundation frame adjacent a rounded corner of the frame when the side wall is positioned against a side surface of a rounded corner a foundation, the tabs being attachable against the bottom exterior surface of the frame.

5,628,081

BRUSH HEAD FOR LARGE MANIPULATORS

Martin Wanner, Stuttgart; Dieter Maier, Pliezhausen, and Gerhard Birk, Stuttgart, all of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Germany

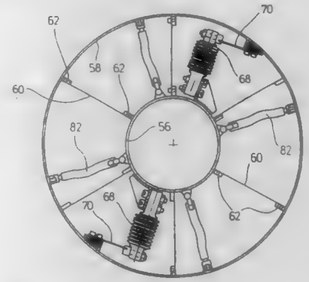
PCT No. PCT/EP93/02468, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO94/07390, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 13, 1993, Ser. No. 411,775

Claims priority, application Germany, Oct. 2, 1992, 42 33 161.7

Int. Cl.° A47L *15/00*; **B60S** *3/00*

U.S. Cl. 15—53.2 **19 Claims**



1. A brush head for a large manipulator, comprising: a multi-directional joint on said large manipulator, a carrier coupled to said multi-directional joint; a brush shaft rotatably supported on said carrier, said brush shaft being motor-driven in a predefined direction of rotation, and said brush shaft being divided into plural shaft sections; a brush roller relatively rotatably supported on said brush shaft and being rotatably driven by and with said brush shaft, said brush roller being divided into at least two axially separate roller sections each having centrifugally responsive, flexurally limp bristles thereon adapted to contact against a surface to be cleaned, said bristles on each said brush roller defining a brush section, a number of said plural shaft sections corresponding to the number of said roller sections; each said brush section being defined by a concentric arrangement of a single said shaft section and a single said roller section, said brush sections including bracing means for axially bracing one said brush section against the other, said bracing means being positioned adjacent said shaft sections; at least one torque pickup means being disposed between respective radially spaced said shaft sections and said roller sections, said torque pickup means including a weighing cell protruding radially outwardly from said shaft sections toward said roller sections, and a tensioning member extending between said weighing cell and an inner side of one associated said roller section; and radial spacers arranged spaced apart in a circumferential direction between said shaft sections and said roller sections, said radial spacers being rigid in an axial and a radial direction and are yielding in the circumferential direction.

5,628,082

TOOTHBRUSH WITH IMPROVED EFFICACY

Robert Moskovich, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

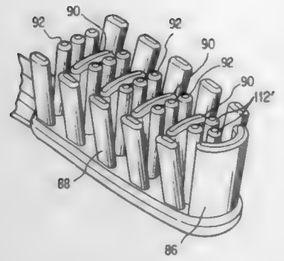
Filed Mar. 22, 1995, Ser. No. 406,333

Int. Cl.° A46B *9/04*

U.S. Cl. 15—110 **38 Claims**

1. A toothbrush comprising a head portion and a handle portion connected thereto along a longitudinal axis, the head portion having brushing means thereon, wherein the handle portion is formed from a thermoplastic material, and wherein the head portion has a first region distal to the handle portion, a second region proximal to the handle portion and a perimeter surrounding the head portion, wherein the brushing means comprises:

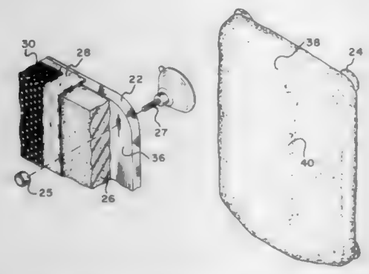
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(a) a first brush area on said first region distal to said handle portion, said first brush area including an outer brush perimeter region at the free end of said head portion, said outer brush perimeter region being arranged in an arcuate pattern on said free end and further defining an inner area thereon in which an inner densely packed brush area is located; and

(b) a second brush area on said second region proximal to said handle portion, said second brush area containing alternating bars and rows of interproximal tufts which are oriented substantially transverse to the longitudinal axis, wherein said rows of interproximal tufts end in one selected from the group consisting of laterally outwardly extending gumline bristles and laterally outwardly extending gumline bars.

5,628,083
BACK CLEANSER AND BALM APPLICATOR
Cecil Hayes, 357 S. Mannheim Ave., Egg Harbor, N.J. 08215
Filed Aug. 4, 1995, Ser. No. 511,555
Int. Cl.[6] A47K *7/02*
U.S. Cl. 15—244.3 **12 Claims**



1. A device to aid in cleansing of or application of a balm to a person's back, the device comprising:

(a) a rigid base panel comprising a front face, a rear face and peripheral edge,

(b) fastening means on the rear face to detachably fasten the base panel to a wall,

(c) a resilient polymeric foam panel essentially coterminous with the base panel,

(d) a water impervious covering sheet enclosing the foam panel holding the foam panel to the base panel defining a main body,

(e) a water pervious fabric cover sheet covering a front surface of the impervious covering sheet and extending proximate to the peripheral edge of the base panel, the fabric cover sheet comprising an inside surface facing the main body,

(f) attachment means to detachably hold the fabric cover sheet on the main body, and

(g) friction means to reduce the sliding of the inside surface of the fabric cover sheet over the front surface of the impervious covering sheet.

5,628,084
SPACER FOR A WINDSHIELD WIPER
Ing-Chau Chen, No. 615, Hsiao-Tung Rd., Yung-Kang City, Tainan Hsien, Taiwan
Filed Sep. 6, 1996, Ser. No. 708,222
Int. Cl.[6] B60S *1/54*
U.S. Cl. 15—250.19 **9 Claims**



1. A spacer used for positioning a windshield wiper so as to space the windshield wiper from a windshield when the windshield wiper is not in use, the windshield wiper being mounted and urged by a wiper arm to abut against the windshield for wiping rain water therefrom, and including a wiper blade seat mounted pivotally on the wiper arm, and an elongated wiper blade disposed on and attached to the wiper blade seat, the wiper blade including an elongated wiper blade rubber element to abut against the windshield, the spacer being characterized by:

an anchoring member adapted to be mounted on the wiper blade seat, the anchoring member having a shaft accommodation hole substantially extending toward the wiper blade seat and parallel to the windshield;

an elongated cylindrical shaft inserted into the shaft accommodation hole so as to be rotatable relative thereto about an axis but not movable in an axial direction thereof, the cylindrical shaft having an enlarged head portion exposed outwardly of the accommodation hole, the head portion having a pivot pin defined by first and second pivot pin portions that each project radially and outwardly therefrom in opposite directions with respect to said axis such that the pin is transverse to the shaft;

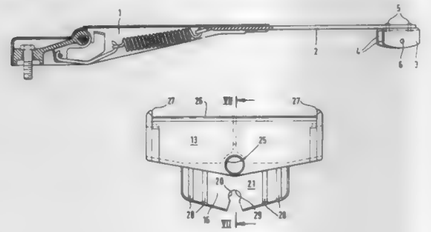
a biasing device for biasing the shaft to rotate in a clockwise direction;

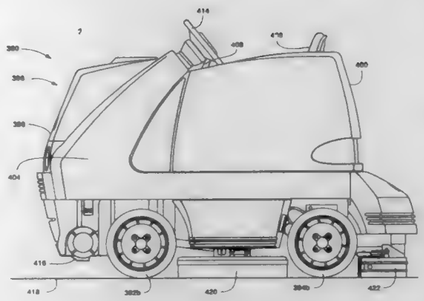
a bracing stand with a lower portion and an elongated upper portion mounted pivotably on the pivot pin so as to turn the lower portion to move toward and away from the windshield wiper; and

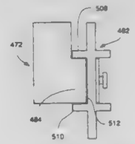
a retaining device for retaining the bracing stand against rotation by the biasing action of the biasing device once the lower portion of the bracing stand is moved toward the windshield wiper so as to abut against the windshield in order to space the windshield wiper from the windshield against an urging action of the wiper arm,

whereby, when the windshield wiper is actuated to commence a sweeping action, traction force generated between the windshield and the lower portion of the bracing stand will cause the lower portion to pivot outwardly away from the windshield wiper so as to relieve the bracing stand from the blocking action of the retaining device in order to permit the biasing device to bias the lower portion of the bracing stand to rotate in the clockwise direction to a normal retracted position so as to restore the windshield blade to abut against the windshield to effect a wiping action.

5,628,085
CONNECTION PIECE FOR A WINDSHIELD WIPER SYSTEM OF A VEHICLE
Reinhard Edele; Oldrich Krizek, both of Bietigheim-Bissingen, and Eckhardt Schmid, Brackenheim, all of Germany, assignors to ITT Automotive Europe GmbH, Germany
Filed Dec. 20, 1995, Ser. No. 575,319
Claims priority, application Germany, Dec. 20, 1994, 44 45 414.7
Int. Cl.[6] B60S *1/40*
U.S. Cl. 15—250.32 **10 Claims**







1. A windshield wiper system for wiping a windshield, said system comprising:

a wiper arm, said wiper arm including an elongated wiper rod which has an end section defining a free end thereof, an elongated link cap fastened to said end section, said link cap has a U-shaped transverse cross-section defining two parallel side walls with a back therebetween, each side wall with a bore therethrough, said bores being in axial alignment;

a wiper blade, said wiper blade including an elongated carrier yoke with an intermediate fastening section, said fastening section of said yoke includes a pair of spaced parallel side cheeks with a fastening bolt transversely extending between and to said cheeks;

an elongated connection piece for connecting the end section with the carrier yoke, said connection piece includes an upper connection part defining a top and a bottom connection part defining a bottom, said upper connection part has a transverse hole therethrough and is received between the parallel side walls of the link cap and attached thereto by a fastening bolt passing through the bores and the hole, said bottom connection part has two parallel side walls, between which a transversely extending stop notch is formed, said notch is open at the bottom, said parallel walls of said bottom connection part are received between the parallel side cheeks of the carrier yoke with the stop notch receiving the fastening bolt of the carrier yoke therein for pivotal movement.

5,628,086
FLOOR CLEANING APPARATUS WITH SQUEEGEE MOUNTING SYSTEM
Christopher M. Knowlton, Pinehurst, N.C., and Robert J. O'Hara, Castle Rock, Colo., assignors to Windsor Industries, Inc., Englewood, Colo.
Continuation of Ser. No. 233,014, Apr. 25, 1994, Pat. No. 5,485,653. This application May 31, 1995, Ser. No. 455,308
Int. Cl.[6] A47L *11/30*
U.S. Cl. 15—340.1 **22 Claims**

1. An apparatus for cleaning a surface comprising: a frame;

means, operatively attached to said frame, for cleaning a surface;

at least three wheels for moving said frame and said means for cleaning over a surface; and

means for steering at least one of said at least three wheels;

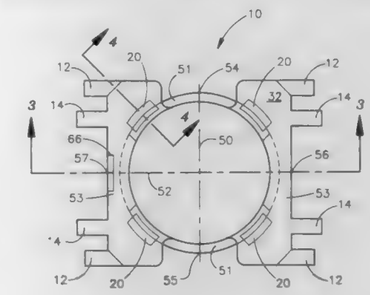
wherein said means for cleaning includes a squeegee mount that has a first squeegee mount end, a second squeegee mount end, a squeegee mount top edge, a squeegee mount bottom edge, a squeegee mount side surface that extends from said first squeegee mount end to said second squeegee mount end and from said squeegee mount top edge to said squeegee mount bottom edge;

a squeegee rubber that includes a first squeegee rubber end, a second squeegee rubber end, a squeegee rubber top edge, a squeegee rubber bottom edge, a first squeegee rubber side surface that extends from said first squeegee rubber end to said second squeegee rubber end and from said squeegee rubber top edge to said squeegee rubber bottom edge, and a second squeegee rubber side surface that extends from said first squeegee rubber end to said second squeegee rubber end and from said squeegee rubber top edge to said squeegee rubber bottom edge;

wherein one of said squeegee mount side surface and said first squeegee rubber side surface includes a crown and the other of said squeegee mount side surface and said first squeegee rubber side surface includes a first longitudinally extending slot dimensioned to fit over said crown and thereby prevent vertical displacement between said squeegee mount and said squeegee rubber

wherein said first longitudinally extending slot is capable of being entirely placed into contact with said squeegee mount at the same time.

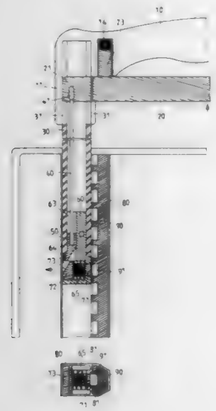
5,628,087
FOLDABLE STUD BUSHING
Thomas J. Gretz, Clarks Summit, Pa., assignor to Arlington Industries Inc., Scranton, Pa.
Filed Jul. 3, 1995, Ser. No. 498,668
Int. Cl.[6] B65D *55/00*
U.S. Cl. 16—2.1 **6 Claims**



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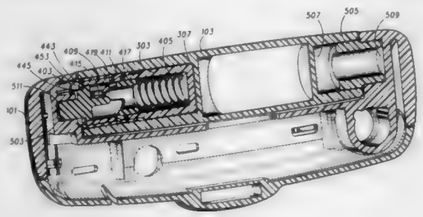
1. A foldable stud bushing comprising:
a base portion having a forward edge and an outer edge, an inner periphery and an outer periphery, and a central axis:
integral fingers extending from said outer periphery of said base portion, said fingers including outer fingers adjacent said outer edge and inner fingers away from said outer edge and situated toward said forward edge;
a plurality of seats defined by the spaces .between said inner and outer fingers around said outer periphery of said base portion;
said base portion having two relatively thick walls opposite and parallel to one another with said fingers extending from said relatively thick walls; and
said relatively thick walls being connected to each other by relatively thin walls with said thin walls being without fingers, said thin walls defining a fold area midway along each of said relatively thin walls with said bushing being able to flex around said fold areas when pressure is applied to said outer periphery of said bushing.

5,628,088
MULTISTAGE ADJUSTABLE DEVICE FOR TRUNK BRACKET
Chang-Wen Chen, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jul. 24, 1995, Ser. No. 508,948
Int. Cl.[6] B25G *1/04*
U.S. Cl. 16—115 **1 Claim**



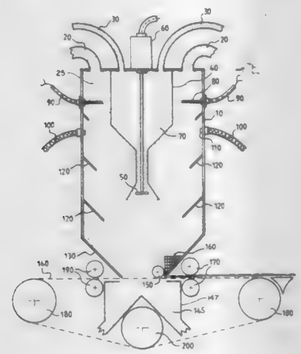
1. A multistage adjustable device for trunk bracket comprising:
a fixed handle having two terminal ends extending downwardly;
two sockets disposed in said corresponding terminal ends of said fixed handle, respectively;
a driving handle;
a pair of inner sleeves;
a pair of drawbars;
a pair of brakes;
a pair of seats;
a pair of checking bodies;
a pair of outer sleeves;
a pair of positioning plates;
a front end of each of said inner sleeves being inserted in each of said corresponding sockets, respectively;
a slot formed on each of said sockets and a corresponding slot formed on a front end of each of said inner sleeves;
two recess holes formed in two end portions of said fixed handle, respectively;
two springs being inserted into said recess holes, respectively;
each end of said driving handle having a fin extending transversely therein;
a hole formed at a center of each of said fins;
two cylindrical posts protruding upwardly on said two corresponding end portions of said driving handle;
two posts being inserted in said corresponding recess holes, respectively;
a lower end of each of said drawbars being inserted in each of said brakes, respectively;
each of said brakes having a stop portion and a shaft sleeve extending upwardly from said stop portion;
said stop portion and said corresponding checking body blocking each other;
each of said shaft sleeve receiving each of said lower end of said drawbars;
each of said seats having a movable portion with a transverse hole therein and an inserting portion extending upwardly from said movable portion;
a longitudinal recess formed on each of said inserting portion;
each of said checking bodies having a truncated cone shaped cap thereon and a positioning rod extending from said cap;
a compressing spring and a positioning rod being inserted into each of said transverse holes;
each of said hollow outer sleeves having two inner plates to separate an interior of each of said outer sleeves into a first and a second compartments, said first compartment receiving a positioning plate which has a plurality of positioning holes to receive said corresponding positioning rod and said second compartment receiving said corresponding seat, respectively;
wherein said driving handle is pressed upwardly to move said drawbars and said corresponding brakes upwardly, said brakes disengage from said corresponding checking bodies, each of said compressing springs rebound to force each of said corresponding positioning rods disengaging from each of said corresponding positioning holes; and
wherein said driving handle is released, said springs force the driving handle, the corresponding drawbars and the corresponding brakes to move downwardly, said brakes block said corresponding checking bodies and force said corresponding checking bodies to move toward said corresponding positioning holes, and each of said positioning rods is inserted in each of said corresponding positioning holes.

5,628,089
RADIOTELEPHONE HAVING A SELF CONTAINED HINGE
Scott R. Wilcox, Palatine; Brian J. Hassemer, Gurnee, and Stephen J. Gaynes, Wonder Lake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 18, 1995, Ser. No. 444,356
Int. Cl.[6] E05F *1/10;* **H04M** *1/00*
U.S. Cl. 16—303 **8 Claims**



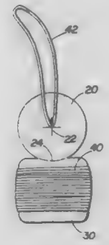
1. A hinge comprising:
a can having an exterior surface, an open end, and an at least partially closed end, wherein the exterior surface with at least one hole formed therein:
a cam follower including a first end within the can and a second end protruding through the at least partially closed end;
a cam within the can, the cam including a first end in contact with the cam follower's first end, the cam further including a second end;
means for rotatably fixing the cam to the can;
a spring within the can, a first end of the spring in contact with the cam's second end; and
a cap covering the open end and in contact with the second end of the spring, the cap including at least one arm and being detachably affixed to the exterior surface of the can by the at least one arm being latched into the at least one hole, thereby securing the cam follower, cam, and the spring within the can under compressive force of the spring.

5,628,090
APPARATUS FOR THE PRODUCTION OF ABSORBENT MATERIALS
Peter M. Lock, 2209 Glenalden East, Germantown, Memphis, Tenn. 38139
Division of Ser. No. 316,941, Oct. 3, 1994, Pat. No. 5,596,031, and Ser. No. 903,904, Jun. 25, 1992, Pat. No. 5,382,609. This application Jun. 1, 1995, Ser. No. 465,517
Claims priority, application United Kingdom, Jun. 26, 1991, 0/911361
Int. Cl.[6] D01G *25/00;27/00;* **B06B** *1/02;* **B28B** *17/00*
U.S. Cl. 19—304 **1 Claim**



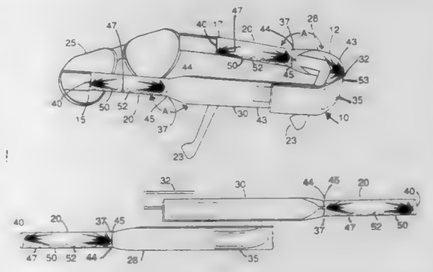
1. Apparatus for the production of absorbent materials from an essentially dry preparation of fibers and an essentially dry preparation of a powdered, heat activatable compound for said fibers, said apparatus comprising a drum having a top, a bottom and walls defining a cavity of said drum;
said top of said drum having a first at least one opening through which said fibers can be introduced;
said top of said drum having a second at least one opening through which said heat activatable compound can be introduced;
dividing means being located between said first and said second openings, said dividing means extending toward said bottom of said drum;
electrical charging means being provided on said wall of said drum at a position below said first at least one opening and above the lowest extent of said dividing means;
means for introducing gas under pressure being provided on said wall of said drum at a position below said first at least one opening and above the lowest extent of said dividing means;
means to disperse said heat activatable compound and said fibers to form a dispersion when said heat activatable compound falls below the lowest extent of said dividing means;
said bottom of said drum defining an opening through which said dispersion can pass;
a fine mesh conveyor being located beneath said bottom of said drum to collect said dispersion;
collecting means being disposed beneath said conveyor to collect any excess heat activatable compound falling through said conveyor;
means to heat said dispersion after collection on said conveyor; and
means to compress said dispersion after collection on said conveyor.

5,628,091
BALLOON CLOSURE DEVICE
Herbert Mueller, Uekerstrasse 18, CH-5027 Herznach, Switzerland
Filed Jan. 11, 1996, Ser. No. 585,270
Claims priority, application Switzerland, Jan. 8, 1996, 32/96
Int. Cl.[6] A47B *96/06;* **A63B** *41/04*
U.S. Cl. 24—3.2 **15 Claims**



1. A balloon closure device made entirely of biodegradable materials for sealing a balloon, which balloon comprises a body portion with an interior connected to a throat portion defining an inflation opening that connects the interior to the atmosphere outside the balloon, comprising:
a. a seal portion with a center comprising:
i. a seal opening and
ii. a seal surface;
b. a loop of material that is threaded through and adapted to draw the throat portion of the balloon into the seal opening such that the seal portion tightly seals the inflation opening;
c. a tab portion that is:
i. connected to the seal portion,
ii. adapted to act as a reel for the loop of material, and
iii. adapted to be removed from the seal portion.

5,628,092
EYEWEAR RETAINER
Tina Harris, 1149 S. Keniston Ave., Los Angeles, Calif. 90019, and Lisa Quon, 11225 La Maida St. #3, No. Hollywood, Calif. 90601
Filed May 23, 1995, Ser. No. 447,624
Int. Cl.[6] G02C *3/00*
U.S. Cl. 24—3.3 **11 Claims**



1. An improved eyewear retainer of the type including a strap for affixation to the eyewear, the strap adapted to retain the eyewear in

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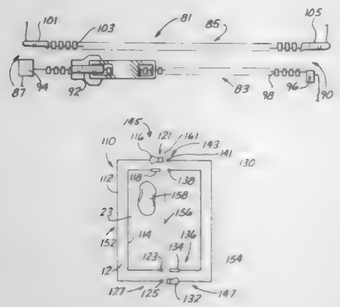
place on a wearer's head and having first and second ends, wherein the improvement comprises at least one hinge between the first and second ends of the strap, said hinge comprising a region of the strap in which one end of the strap passes through an aperture defined in the strap between its first and second ends.

5,628,093

REVERSIBLE ZIPPER ASSEMBLY

Clarke W. Goodale, Rte. 1, Box 158A, Murraysville, W. Va. 26153

Filed Jun. 7, 1995, Ser. No. 486,025
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—381 **6 Claims**



1. An elongate zipper extending between a first end and a second end, comprising:
a first side of the zipper extending between the first end and a second and having a multiplicity of discrete first elements;
a second side of the zipper extending between the first end and the second end and having a multiplicity of discrete second elements interlockable with the first elements of the first side to removably attach the first side of the zipper to the second side of the zipper;
a stop included in the first side of the zipper at the second end of the zipper;
a starting lug included in the second side of the zipper at each of the first end and the second end of the zipper; and
wherein the second side is attached by an edge without elements to a closure edge of a reversible material and the first side is attached by an edge without elements to a closure edge of other materials, whereby the reversible material is adapted to be reversed with respect to the other materials such that the second end of the second side is in engaging relationship with the first end of the first side.

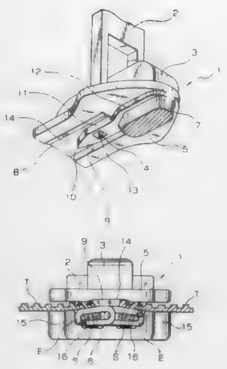
5,628,094

LOCK SLIDER FOR SLIDE FASTENER

Hiroshi Mizuno, Toyama-ken, Japan, assignor to YKK corporation, Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 686,585
Claims priority, application Japan, Jul. 31, 1995, 7-194519
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—423 **17 Claims**

1. A lock slider for a slide fastener having a pair of rows of fastener elements attached to one surface of a pair of fastener tapes along their respective inner longitudinal edges, comprising:
(a) a slider body having a pair of parallel spaced upper and lower wings joined at their front end by a guide post so as to define a Y-shaped guide channel between said wings for the passage of the rows of the fastener elements of the slide fastener, one of said wings having an interior surface adapted to be in contact with the other surface of the fastener tapes;



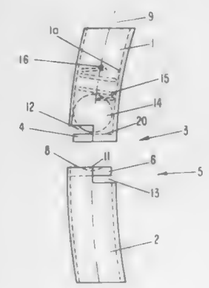
(b) a locking pawl movable into and out of said guide channel through an aperture for interlocking engagement with the fastener elements to lock said slider in position on the slide fastener;
(c) a wedge-like ridge projecting from said interior surface of said upper or lower wing and extends from said guide post toward a rear end of said upper or lower wing for spreading open the inner longitudinal edges of the fastener tapes; and
(d) said aperture for the passage of said locking pawl being located in said wedge-like ridge.

5,628,095

CLASP FOR JEWELRY

Richard Appel, and Eginhard Wichelhaus, both of Kempten, Germany, assignors to Galileo Vision AG, Herzogenbuchsee, Switzerland

Filed Mar. 28, 1995, Ser. No. 411,524
Claims priority, application Germany, Mar. 29, 1994, 44 10 891.5
Int. Cl.[6] A44B *11/25;* **A44C** *13/00*
U.S. Cl. 24—575 **8 Claims**



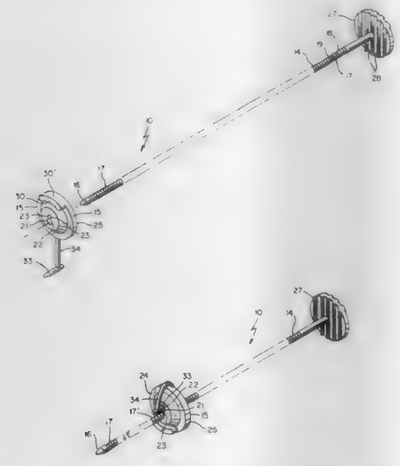
1. A jewelry clasp comprising:
a first and a second clasp member connected to one another for closing said clasp;
at least said first clasp member comprising a spring-weighed element for achieving a fixation of a closed position of said clasp;
said first clasp member having a center axis and a first end portion with a first end face and further having a first receiving opening extending transverse to a longitudinal extension of said first clasp member and extending to the center axis;
said second clasp member having a center axis and a second end portion with a second end face and further having a second receiving opening extending transverse to a longitudinal extension of said second clasp member and extending to the center axis;
said first receiving opening oriented oppositely to said second receiving opening;
said first and said second end portions insertable into one another, wherein in a closed position of said clasp said spring-weighed element is forced in an axial direction of said jewelry clasp against said second end face of said second clasp member; and
wherein said second end face has a depression for receiving said spring-weighed element.

5,628,096

BUTTON TYPE STRAP FASTENER AND METHODS OF MAKING AND USING SAME

Charles H. Watters, Godley; Richard G. Voth, Euless, and James A. Jennings, Azle, all of Tex., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Nov. 1, 1995, Ser. No. 551,605
Int. Cl.[6] A41F *1/00;* **A44B** *1/00*
U.S. Cl. 24—580 **17 Claims**



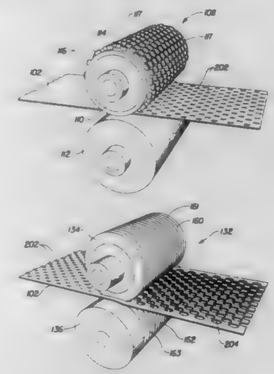
1. In a button type strap fastener including a mounting strap that is provided with cog means, and also including a locking button that is adapted to be held in place on said cog means of said mounting strap, the improvement wherein said locking button comprises central opening means having a keyhole-shaped configuration, including a first opening portion that corresponds approximately to the greatest diameter of said cog means to receive same such that said mounting strap is displaceable in opposite directions in said first opening portion, and a second opening portion that communicates with said first opening portion and at least in part corresponds approximately to the smallest diameter of said cog means to receive same from said first opening portion in a locking manner, said locking button further including a locking pin that is connected to a periphery of said locking button by means of a thin flexible strip, said locking pin being adapted to be received in a wedging manner in said first opening portion when said cog means of said mounting strap is disposed in said second opening portion.

5,628,097

METHOD FOR SELECTIVELY APERTURING A NONWOVEN WEB

Douglas H. Benson, West Harrison, Ind., and John J. Curro, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 29, 1995, Ser. No. 536,228
Int. Cl.[6] D06C *3/04;27/00*
U.S. Cl. 28—165 **18 Claims**



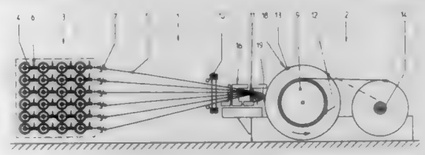
1. A method for selectively aperturing a nonwoven web comprising the steps of:
a) providing a nonwoven web;
b) weakening said nonwoven web at a plurality of locations to create a plurality of weakened, melt-stabilized locations;
c) providing an incremental stretching means; and
d) subjecting said nonwoven web to incremental stretching by said incremental stretching means causing said nonwoven web to rupture at said plurality of weakened, melt-stabilized locations creating a plurality of apertures in said nonwoven web coincident with said plurality of weakened, melt-stabilized locations.

5,628,098

METHOD AND DEVICE FOR THE WINDING OF WARP STRIPS

Markus Beerli, Gossau, and Hans-Peter Steg, Wil, both of Switzerland, assignors to Benninger AG, Uzwil, Switzerland

Filed Dec. 2, 1994, Ser. No. 352,838
Claims priority, application Switzerland, Dec. 22, 1993, 3820/93
Int. Cl.[6] D02H *5/02;9/02;* **B65H** *75/28;65/00*
U.S. Cl. 28—191 **13 Claims**



1. A method of securing the ends of warp yarns as they are drawn from a creel and wound onto successive adjacent sections of a drum, the method comprising steps of, as the winding of one section is completed,
closing the yarns to form a flat strip of yarns,
fixing the yarns with respect to one another at each of two places, one nearer the creel and one nearer the drum, by applying to the yarn strip at least one flat body extending transverse to the length of the yarns and having means for securing the yarn to the strip,

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cutting the yarns between said two places, where they are secured by the flat body, so as to form a trailing end on the yarn strip nearer the drum and a leading end on the yarn strip nearer the creel, and then

securing the respective secured strip ends to the drum.

5,628,099

METHOD OF PRODUCING SERIES-RESONANT DEVICE USING CONDUCTIVE ADHESIVE RESIN

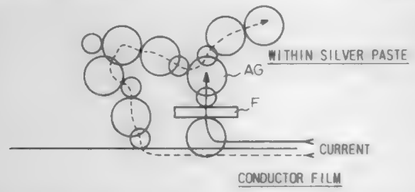
Noboru Wakatsuki; Masaaki Ono; Kenji Fukayama, and Masanori Yachi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1995, Ser. No. 405,982

Claims priority, application Japan, Mar. 18, 1994, 6-048389

Int. Cl.[6] **H01L** *41/00*; **H05K** *13/00*

U.S. Cl. 29—25.35 **10 Claims**



8. A method of producing a piezoelectric device provided with a chip vibrator composed of piezoelectric material, the method comprising:

a step of fixing and electrically connecting driving electrodes of said chip vibrator to corresponding electrodes formed on a substrate, using conductive adhesive resin,

said step of fixing and electrically connecting driving electrodes including a sub-step of applying an alternating current signal to external electrodes connected to the electrodes formed on said substrate, said alternating current signal having a frequency lying in close vicinity of a resonant frequency of said chip vibrator, and having an amplitude sufficient to destroy an insulation film parasitically formed in said conductive adhesive resin.

5,628,100

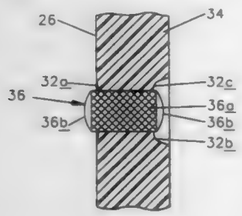
METHOD OF MAKING AN ACCELERATION SENSOR

Larry K. Johnson, North Attleboro; Eric P. Reidemeister, Norton, both of Mass.; Robert O. Southworth, Pawtucket; Michael D. Gouin, North Smithfield, both of R.I.; William Silva, Taunton, and Andrew A. Amatruda, Jr., Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 148,042, Nov. 4, 1993, Pat. No. 5,555,766. This application May 9, 1995, Ser. No. 437,687

Int. Cl.[6] **H01G** *5/16*

U.S. Cl. 29—25.41 **17 Claims**



1. A method for making an acceleration sensor comprising the steps of:

forming a substrate having an electrically insulative top surface and a bottom surface and with a bore extending into the substrate through the top surface at a mounting portion formed on the top surface,

placing an electrically conductive detect plate on the top surface and providing electrical circuit paths on the substrate in connection with the detect plate and the mounting portion,

forming a movable blade assembly comprising an electrically conductive, flexible metal blade member having an attachment portion, a source plate portion and integral, resilient beams connecting the attachment portion to the source plate portion, and an electrically conductive mounting element having first and second ends,

inserting the electrically conductive mounting element into the bore in electrical engagement with a respective circuit path and with the first end extending above the top surface a selected distance and with the source plate portion overlying the detect plate in selected spaced relation to form a capacitor.

5,628,101

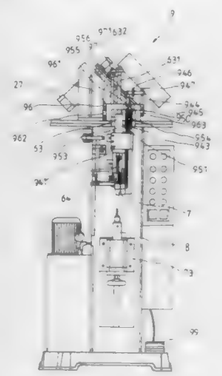
ASSEMBLY MACHINE FOR IMPLANTING PINS

Bi-Hu Liao, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jan. 2, 1996, Ser. No. 581,987

Int. Cl.[6] **B23P** *19/02*; **H05K** *13/04*

U.S. Cl. 29—33 K **3 Claims**



1. An assembly machine for implanting pins comprising:

a protective casing **98** which covers a retarder **27**, a charging hopper **1** connecting a connecting seat **2** and a guide pipe **3** under the connecting seat **2**, a guide recess **31** under the guide pipe **3**, a pin-separating seat **4** under the guide recess **31**, a chuck device **5** which is controlled by the oil cylinder **62** connecting the pin-separating seat **4**, a link **61** connecting the chuck device **5** and the oil cylinder **62**, and wherein the improvement comprises:

the hollow charging hopper **1** having a plurality of spaced driving bolts **11** on the inner rim of the charging hopper **1**, a plurality of spaced chutes **13** on the inner surface of a cone-shaped portion **12** below the rim, a connecting seat **2** connecting the cone-shaped portion **12**, a positioning block **251** disposed on the connecting seat **2**, a movable shaft **252** adjacent to the positioning block **251**, a driving rod **253** connecting the movable shaft **252**, the distal end of the driving rod **253** connecting a bearing **257**, a stretch spring **255** connecting a positioning cylinder **256** which is adjacent to the positioning block **251** and a positioning bolt **254** which is disposed on the driving rod **253**, a pin-setting rod **258** which connects the movable shaft **252** adjacent to a guide notch **22** of a guide plate **21** disposed on the connecting seat **2**;

the pin-separating seat **4** having a slot **41** communicating with the guide recess **31**, a plurality of ball recess holes **42** at two walls adjacent to the slot **41** in order to receive each ball **43**, each ball **43** , entrapped by a coiled spring **44**, a gap **48** formed at the bottom of the slot **41**, a movable plate **49** disposed at the bottom of the pin-separating seat **4**, a tension spring **495** positioned at the bottom of the movable plate **49**;

the chuck device **5** having a bottom plate **51**, an L-shaped chuck **52** extending from the front of the bottom plate **51**, an extensible plate **521** disposed between the L-shaped chuck **52** and the bottom plate **51**, a chuck notch **522** formed at the front end of the extensible plate **521**, a rear board **54** connecting the rear end of the extensible plate **521**, an upper board **56** and a lower board **55** which are disposed in front of the rear board **54** overlapped on the bottom plate **51**;

a pin-clamping funnel **7** which clamps a pin **10** matching a pin-guiding device **8**;

the pin-clamping funnel **7** receiving a plunger **64** which connects an oil cylinder **63**, the oil cylinder **63** connecting a rectangular block **641** which is enclosed by an outer casing **642**; and

the pin-guiding device **8** supported by a pin-guiding seat **73**.

5,628,102

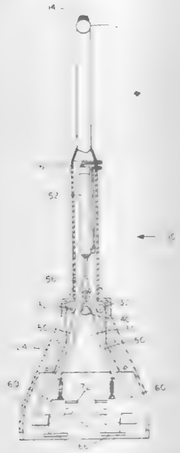
DEVICE FOR REMOVING RAILROAD RAIL RETAINER CLIPS

Wade T. Johnson, 1711 N. 11th St., Nebraska City, Nebr. 68410

Filed Feb. 28, 1996, Ser. No. 607,906

Int. Cl.[6] **B23P** *19/04*

U.S. Cl. 29—225 **6 Claims**



1. A device for removing a railroad rail retainer clip from a rail retainer chair, comprising:

a base housing enclosing a compression arm passageway having first and second compression rollers and a compression arm guide extending therethrough;

first and second compression arms, each having an upper end and a lower end, said compression arms pivotally secured together at their upper ends, said first compression arm extending downwardly through said compression arm passageway between said first compression roller and said compression arm guide, and said second compression arm extending downwardly through said compression arm passageway between said second compression roller and said compression arm guide;

first and second pivot blocks pivotally and slidably affixed to said lower end of said first and second compression arms, each of said pivot blocks including a clip retraction pin extending therefrom for engagement with the rail retainer clip, and further including a compression plate for compression of the rail retainer clip; and

hydraulic actuation means secured to said upper ends of said compression arms.

5,628,103

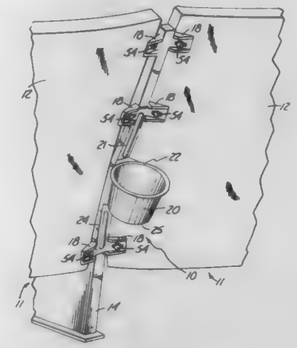
METHOD FOR MOUNTING A SEAT ATTACHMENT

John Ayotte, Eagan, and Peter W. A. Bergin, Hopkins, both of Minn., assignors to MTS Northwest Sound, Inc., Minneapolis, Minn.

Continuation of Ser. No. 370,725, Jan. 10, 1995, which is a division of Ser. No. 25,374, Feb. 26, 1993, Pat. No. 5,421,638. This application Aug. 14, 1996, Ser. No. 698,230

Int. Cl.[6] **A47C** *7/62*

U.S. Cl. 29—525.01 **4 Claims**



1. A method for mounting an open top container holder to a seat having a standard which does not require the use of any bolts other than the bolts used to attach the seat to the standard, the method comprising the steps of:

providing a container holder having at least one mounting member extending upward along a generally upright container holder axis from an open top end of the container holder component which is perpendicular to a plane of the and having a plurality of mounting holes through the mounting member positioned laterally of an upright center plane of the container holder;

removing the bolts used to attach the seat to the standard from a plurality of holes in the standard and a plurality of corresponding holes in the seat;

positioning the container holder so that each of a plurality of mounting holes located in the mounting member aligns with one of the holes in the standard and a corresponding one of the holes in the seat; and

inserting the previously removed bolts used to attack the seat to the standard through the mounting holes located in the mounting member, the holes in the standard and the holes in the seat.

5,628,104

MACHINE TOOL WITH TURNTABLE

Eugen Rütschle, Mühlheim/Donau, and Hans-Henning Winkler, Tuttlingen, both of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Germany

Filed Mar. 15, 1993, Ser. No. 31,531

Claims priority, application Germany, Apr. 4, 1992, 42 11 348.2

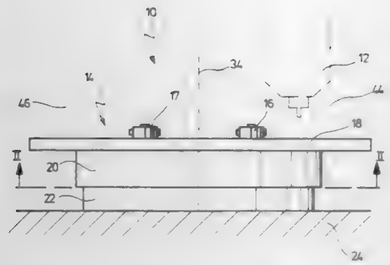
Int. Cl.[6] **B23Q** *3/00*

U.S. Cl. 29—563 **11 Claims**

1. A machine tool, comprising:

a turntable having a stationary lower part and an upper part with a mounting plate which is arranged so as to pivot about a

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pivot axis with respect to said stationary lower part, said turntable for supporting a workpiece to be machined;

means for lifting and pivoting and subsequently lowering the upper part onto the lower part;

a plurality of individual lines to deliver energy to said upper part;

at least one coupling means provided between said upper and lower parts for guiding said lines, said coupling means including an upper and a lower coupling module which are separated from or connected to one another in the course of the lifting or lowering movements, respectively, wherein at least one upper and lower coupling module are connected together during the lowering movement to thereby couple said plurality of individual lines simultaneously; and

wherein said coupling means is opened and closed by the lifting and lowering movements, respectively, that occur in connection with each pivoting operation, such that said coupling means is opened prior to pivoting said upper part about said pivot axis and closed when pivoting of said upper part has finished.

5,628,105

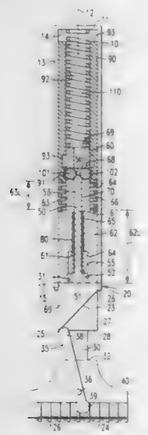
IMPACT TOOL WITH MULTI-WIRE CUTTING HEAD

Michael M. Fallandy, Ventura, and Edward J. Zoiss, Moorpark, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 27, 1995, Ser. No. 411,575

Int. Cl.[6] H01R *43/00*

U.S. Cl. 29—566.4 **53 Claims**



1. An impact tool for use with a utility device, comprising a generally hollow handle having a first end that is provided with an axial bore therethrough sized to accommodate the translation of a shaft element along a longitudinal axis of said handle, said shaft element having a first, head portion which is engaged by a moveable plunger that is disposed within said handle and is translatable along a longitudinal axis of said handle, and a second, end portion to which said utility device is mounted, said plunger passing through a bore of hammer, that is axially translatable within said handle, said hammer having a transverse bore which is sized to receive a plurality of balls, such that said balls are urged against and retain said plunger with said hammer, a main spring supported within said handle and urging said hammer axially toward said shaft element, said hammer passing through a ball-collar, which is axially translatable within said handle, said ball collar having an interior groove that is sized to receive said balls when said transverse bore of said hammer is axially translated adjacent to said interior groove of said ball collar, thereby removing retention between said hammer and said plunger provided by said balls and allowing said plunger to pass through said bore of said hammer, so that said hammer may be rapidly axially translated by said main spring to strike said head portion of said moveable plunger and thereby impart a striking force to said shaft element, which is coupled to said utility device mounted to said second, end portion of said shaft element.

5,628,106

METHOD OF MANUFACTURING MAGNETIC HEAD

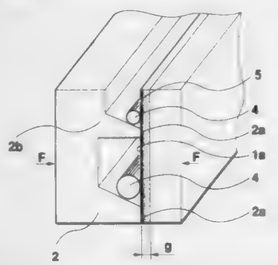
Makoto Wakasugi, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1994, Ser. No. 261,963

Claims priority, application Japan, Jun. 22, 1993, 5-174784

Int. Cl.[6] G11B *5/127;5/235;* **C03C** *29/00*

U.S. Cl. 29—603.11 **12 Claims**



1. A method of manufacturing a magnetic head having a predetermined gap kept between first and second magnetic materials, comprising the steps of:

(a) forming on the first magnetic material a uniformly consistent silicon dioxide layer as thick as a width of the gap;

(b) diffusing alkali metal on the surface of said silicon dioxide layer;

(c) bonding the first and second magnetic materials with the silicon dioxide layer sandwiched therebetween; and

(d) processing said bonded first and second magnetic materials with the silicon dioxide layer to obtain said magnetic head.

5,628,107

ELECTRONIC PARTS-MOUNTING APPARATUS

Shuji Nushiyama; Yoshinori Kano, and Shigeru Kageyama, all of Gunma-ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

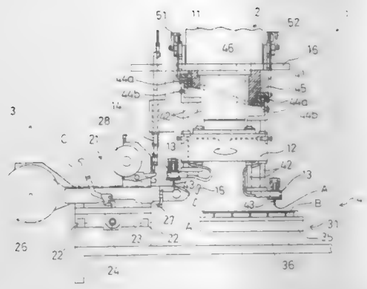
Filed Jan. 16, 1996, Ser. No. 586,601

Claims priority, application Japan, Jan. 17, 1995, 7-004808

Int. Cl.[6] H05K *3/30;13/04*

U.S. Cl. 29—740 **5 Claims**

1. An electronic parts-mounting apparatus including an index unit which has an output shaft and is connected to a reduction gear for being driven thereby, a rotatable table connected to said index



unit for intermittent rotation, at least one camshaft connected to said output shaft of said index unit for uniform rotation, at least one cam rigidly mounted on said at least one camshaft, and at least one cam follower in contact with said at least one cam associated therewith, said output shaft of said index unit being caused to rotate at a uniform rotational speed in which one rotation thereof corresponds to a plurality of repetition periods of intermittent rotation of said rotatable table,

the improvement wherein said at least one cam has a cam profile formed such that one rotation of said at least one cam causes a plurality of repetition periods of operation of said at least one cam follower in contact therewith, and at the same time each of said plurality of repetition periods of said operation of said at least one cam follower is identical to each of said plurality of repetition periods of said intermittent rotation of said rotatable table.

5,628,108

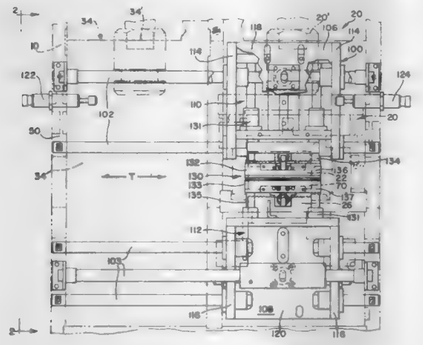
WIRE TRANSFER AND CUTTING ASSEMBLY SUITABLE FOR USE WITH MULTIPLE WIRE TERMINATION APPARATUS

Peter Ingwersen, Gilberts; Lawrence M. Kurek, Elgin, and Thomas P. Pellegrino, Lisle, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 17, 1994, Ser. No. 324,817

Int. Cl.[6] H01R *43/01;43/28*

U.S. Cl. 29—749 **17 Claims**



1. A wire harness assembly apparatus which produces wire harnesses of the type having a plurality of wires extending longitudinally between a first connector element and a second connector element and in which the wires are driven from a wire supply source to a first work location for insertion of first ends of said wires into the first connector element to form a partial wire harness assembly which is subsequently transferred to a second work location whereat second ends of the wires are inserted into the second connector element, comprising, in combination:

first means disposed at said first work location for maintaining the first ends of said wires in a first preselected orientation adjacent said first connector element;

means for urging said first ends of said wires into engagement with conductive portions of said first connector element to establish electrical connection therebetween;

means for moving said engaged first connector element away from said first means in a direction generally parallel to axes of portions of said wires located at said first work location and for establishing preselected lengths of said wires extending from said first connector element;

means at said first work location for cutting said wires at a position spaced from said first connector element to define said second ends of said wires;

means for transferring said second ends of said wires from the first work location to the second work location without altering a second preselected orientation of said second ends, said transferring means including second means for maintaining said Second ends of said wires in said second preselected orientation, said transferring means further including clamping means for applying a clamping force to said second ends of said wires to hold said second ends during transfer of same from said first work location to said second work location, said clamping means including two opposing clamping members, said clamping members being vertically moveable within said transferring means, each of said clamping members including a wire protection member extending outwardly therefrom, one of said wire protection members including a wire support bar having an elongated wire support surface thereon for supporting bottom portions of said wires and the other of said wire protection members including an elongated wire guide bar having a plurality of grooves formed therein along a surface which opposes said wire support surface of said wire support bar, said wire guide bar being spaced apart from said wire support bar to define a plurality of wire-receiving openings therein which receive Said wires therein in said preselected orientation and which partially enclose said second ends of said wires during transfer of said second ends of said wires from said first work location to said second work location; and,

means for urging said second ends of said wires into engagement with conductive portions of said second connector element to establish electrical connection therebetween.

5,628,109

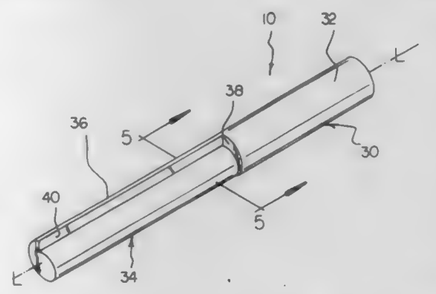
LOCK CYLINDER MAINTENANCE TOOL

Martin Neuman, 236 W. Portal Ave. #806, San Francisco, Calif. 94127

Filed Apr. 14, 1995, Ser. No. 422,709

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—804 **5 Claims**



1. A lock cylinder maintenance tool comprising:

a non-cylindrical portion including a reducing exterior side wall; said non-cylindrical portion having a centerline,

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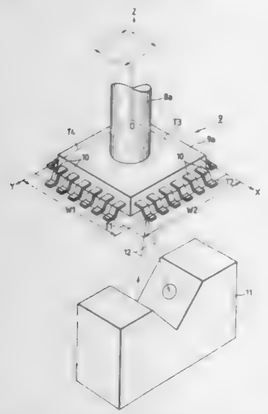
said reducing exterior side wall comprising a longitudinal side wall, an exterior semi-cylindrical side wall, a curvilinear side wall, an interior semi-cylindrical side wall, and a resting wall;
said exterior semi-cylindrical side wall continuing from said longitudinal wall,
said exterior semi-cylindrical side wall having a constant radius of curvature from said centerline,
said exterior semi-cylindrical side wall continuing into said curvilinear side wall,
said curvilinear side wall characterized as having a decreasing radius of curvature from said centerline,
said curvilinear side wall continuing into said interior semi-cylindrical side wall,
said interior semi-cylindrical side wall having a constant radius of curvature from said centerline substantially less than the radius of curvature of the exterior semi-cylindrical side wall,
said interior semi-cylindrical side wall continuing into said resting wall,
said resting wall being of substantially planar configuration and orthogonally intersecting said longitudinal wall.

5,628,110

INSPECTING METHOD OF AN ELECTRONIC COMPONENT DURING A MOUNTING OPERATION OF THE SAME ONTO A SUBSTRATE

Hiroyuki Sakaguchi, Fukuoka, and Yoshiaki Awata, Kurume, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 14, 1995, Ser. No. 502,230
Claims priority, application Japan, Jul. 15, 1994, 6-164028
Int. Cl.° H05K *3/34*
U.S. Cl. 29—840 **12 Claims**



1. A method for inspecting an electronic component having a plurality of lead rows, each lead row including plural leads arrayed in a line along and protruding from a side face of a main body thereof, said method comprising steps of:
measuring positional data of said plural leads, said positional data including altitudinal values representing heights of respective leads;
obtaining a plurality of approximate lines on the basis of said positional data, each approximate line approximating each lead row of said plural leads on a side face of the main body of said electric component; and
obtaining a mutual positional relationship between said approximate lines, and judging whether said mutual positional relationship is within a predetermined range.

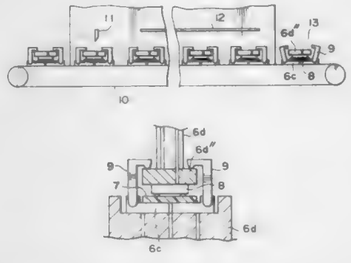
7. A method for mounting an electronic component onto a substrate, said electronic component having a plurality of lead rows, each lead row including plural leads arrayed in a line along and protruding from a side face of a main body of said electronic component, said method comprising steps of:
measuring positional data of said plural leads, said positional data including altitudinal values representing heights of respective leads;
obtaining a plurality of approximate lines on the basis of said positional data, each approximate line approximating each lead row of said plural leads on a side face of the main body of said electric component;
obtaining a mutual positional relationship between said approximate lines, and judging whether said mutual positional relationship is within a predetermined range;
positioning the leads of the electronic component onto electrodes of said substrate only when said mutual positional relationship is within said predetermined range, said electrodes being applied solder beforehand; and
heating said substrate mounting said electronic component and melting said solder to provide a rigid connection between said leads and said electrodes.

5,628,111

METHODS OF FABRICATING OF SEMICONDUCTOR PACKAGE AND MOUNTING OF SEMICONDUCTOR DEVICE

Hiroshi Iwasaki, and Hideo Aoki, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Mar. 1, 1995, Ser. No. 396,236
Claims priority, application Japan, Mar. 2, 1994, 6-032294
Int. Cl.° H05K *3/30*
U.S. Cl. 29—841 **12 Claims**



1. A method of fabricating a semiconductor package comprising the steps of:
setting a semiconductor chip having a pad with protruding electrodes on an insulation board having a main surface on which a wiring circuit and connection terminals are formed and an other main surface on which flat-type external connecting terminals are formed, to align the protruding electrodes of the semiconductor chip with the connection terminals of the insulating board, wherein the insulating board is installed on a pressing stage;
pressing the semiconductor chip onto the insulation board to connect the protruding electrodes to the connection terminals;
clamping the semiconductor chip and the insulation board by clamping means to form a clamped unit which keeps the pressure on the semiconductor chip and the insulation board;
transferring the clamped unit from the pressing stage to a resin supplying stage;
supplying a sealing resin in a space formed between an upper surface of the circuit board and a lower surface of the semiconductor chip in the clamped unit;
transferring the resin supplied unit from the resin supplying stage to a resin curing stage;
curing the sealing resin filled in the space formed between the upper surface of the insulation board and the lower surface of the semiconductor chip in the clamped unit; and

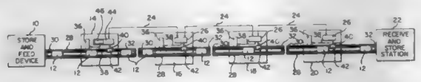
removing the clamping means from the clamped unit after the curing of the sealing resin is completed.

5,628,112

CIRCUIT BOARD ASSEMBLY SYSTEM AND METHOD

Francis J. Maslar, Newtown; Robert J. Cantando, Drexel Hill; Hugh V. Wilson, Willow Grove, and Virender Sandhu, Chalfont, all of Pa., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1995, Ser. No. 398,267
Int. Cl.° H05K *3/02*
U.S. Cl. 29—846 **14 Claims**



1. A circuit board production line comprising:
a) a series of operatively interconnected circuit board processing stations, each comprising:
operating means for performing an operation on circuit boards;
conveyer means comprising a circuit board conveyor track extending longitudinally from a board receiving end to a board discharging end, and having a lateral width adjustable to accommodate a range of circuit board widths, for receiving a series of said circuit boards, conveying each of the circuit boards in turn from the receiving end to the operating means and then to the discharging end, and then discharging the circuit boards from the discharging end;
conveyor width adjustment means for changing the lateral width of the circuit board conveyor track; and
conveyor control means for (i) receiving a board width data signal from an adjacent upstream station, said board width data signal corresponding to a new width for the circuit board conveyor track to accommodate a circuit board to be passed from said adjacent upstream, station, (ii) actuating the conveyor width adjustment means to change the lateral width of the circuit board conveyor track to said new width, and (iii) passing said board width data signal to a conveyor controller of an adjacent downstream station; and
b) a data signal communication network directly connecting the control means of each of said circuit board processing stations to the conveyor controller of said adjacent downstream station.

12. A method of producing circuit boards on a production line comprising: a series of circuit board processing stations, each comprising:
operating means for performing an operation on circuit boards;
conveyer means comprising a circuit board conveyor track extending longitudinally from a board receiving end to a board discharging end and having a lateral width adjustable to accommodate a range of circuit board widths, for receiving a series of said circuit boards, conveying each of the circuit boards in turn from the receiving end to the operating means and then to the discharging end, and then discharging the circuit boards from the discharging end;
conveyor width adjustment means for changing the lateral width of the circuit board conveyor track;
conveyor control means for (i) receiving a board width data signal from an adjacent upstream station, said board width data signal corresponding to a new width for the circuit board conveyor track to accommodate a circuit board to be passed from said adjacent upstream station, (ii) actuating the conveyor width adjustment means to change the lateral width of the circuit board conveyor track to said new width, and (iii) passing said board width data signal to a conveyor controller of an adjacent downstream station;
b) a lead station comprising:
a lead station board conveyor track extending longitudinally from a board receiving end to a board discharging end and having a lateral width adjustable to accommodate a range of circuit board widths, for receiving a series of circuit boards, conveying each of the circuit boards in turn from the receiving end to the discharging end, and then discharging the circuit boards from the discharging end to an adjacent downstream station;
lead station conveyor width adjustment means for changing the lateral width of the lead station conveyor track; and
lead station control means for actuating the lead station conveyor width adjustment means to change the lateral width of the lead station board conveyor track to said new width, and for passing said board width data signal to a conveyor controller of an adjacent downstream station, the lead station control means comprising data input means for receiving board width information and generating said board width data signal in response to said board width information; and
c) a data signal communication network directly connecting the control means of each of said circuit board processing stations to the conveyor controller of said adjacent downstream circuit station;
said method comprising the steps of:
1) board width information being entered to the data input means of the lead station control means corresponding to said new width;
2) the lateral width of the lead station conveyor track, when the lead station conveyor track is empty, then being adjusted to said new width and a circuit board of said new width then being fed to the receiving end of the lead station conveyor track;
3) the lead station control means then sending said board width data signal directly via the data signal communication network to the conveyor control means of an adjacent downstream circuit board processing station;
4) the control means of the adjacent downstream circuit board processing station, if the lateral width of its circuit board conveyor track is not equal to the new width, then (i) signaling to the lead station control means to prevent circuit boards being passed from the lead station, (ii) waiting until its circuit boards conveyor track is empty of circuit boards, (vii) actuating its conveyor width adjustment means to change the lateral width of its board conveyor track to that new width, and (iv) signalling to the lead station control means to pass circuit board's;
5) the conveyor control means of the adjacent downstream circuit board processing station after step **4**(i) sending said board width data signal directly via the data signal communication network to the conveyor control means of a next adjacent downstream circuit board processing station, (ii) signalling that a circuit board is available to be passed to the board conveyor track of the next adjacent downstream circuit board processing station, and (iii) thereafter actuating the circuit board conveyor track of the downstream adjacent circuit board processing station to pass a circuit board to the conveyor track of the next adjacent downstream circuit board processing station in response to the conveyor control means of the next adjacent downstream circuit board processing station signaling to pass circuit boards; and
6) the control means of said next adjacent downstream circuit board processing station then performing, with another circuit board processing station which is downstream adjacent to it, steps corresponding to steps (**3**) through (**5**).

5,628,113

METAL GASKET ASSEMBLY

Akira Tanaka, Ohmiya, and Masamichi Hoshi, Urawa, both of Japan, assignors to Nippon Leakless Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 270,316, Jul. 5, 1994, abandoned. This application Jul. 24, 1995, Ser. No. 506,120
Claims priority, application Japan, Jul. 7, 1993, 5-167929
Int. Cl.° H01R *43/00*
U.S. Cl. 29—888.3 **5 Claims**

1. A method for producing a metal gasket assembly comprising the steps of:

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perforating a substrate metal sheet so that said substrate metal sheet has at least one aperture larger than a desired opening;

fitting a metal plate member having a thickness larger than that of said substrate metal sheet into said at least one aperture along the periphery thereof and welding them together; and

perforating the welded metal plate member to form said desired opening thereon.

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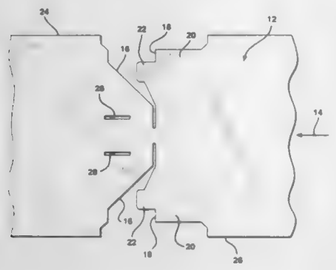
SCREEN FRAME AND METHOD OF MANUFACTURE THEREOF

Mel Stern, 14400 S. San Pedro St., Gardena, Calif. 90248

Filed Jun. 26, 1995, Ser. No. 494,810

Int. Cl.[6] B21D *35/00*

U.S. Cl. 29—897.312 **13 Claims**



1. A method of forming a hollow metal screen frame comprising the steps of:

(a) cutting an elongated, flat sheet metal strip;

(b) continuously feeding said flat sheet metal strip on a conveyor moving continuously at a predetermined speed and in a predetermined direction while providing support to said flat sheet metal strip from beneath;

(c) mounting a cutting die at a predetermined location above said conveyor, said cutting die being operable for actuation to strike said flat sheet metal strip and thereby punch openings therein, and for deactuation to withdrawl said cutting die from contact with said metal strip;

(d) actuating said cutting die while concurrently advancing said cutting die from said predetermined location in said predetermined direction and at said predetermined speed;

(e) deactuating said cutting die while concurrently retracting it to said predetermined location;

(f) cutting said strip into separate sections, each section being of a length equal to the perimeter of a single frame;

(g) rolling each of said sections to form an essentially rectangular frame stock;

(h) crimping said longitudinal edges of each section together between said openings to from a pair of jamb members and a pair of members transverse thereto including a head member and a sill member in which said members of each pair alternate with the members of each other pair;

(i) longitudinally bending each section at said openings therein to bring said jamb members into perpendicular alignment relative to said head and sill members to form corners; and

(j) joining each member of a section to each adjacent member thereof at all of said corners.

5,628,115

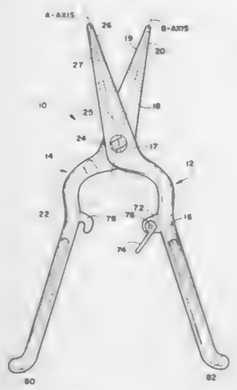
CUTTING TOOL

Paul W. Hebert, 6450 Lakeshore Dr., San Diego, Calif. 92119

Filed Dec. 29, 1995, Ser. No. 580,895

Int. Cl.[6] B26B *13/25;13/06*

U.S. Cl. 30—262 **1 Claim**



1. A cutting tool comprising:

a first elongated member having a first handle portion and a first head portion; a second elongated member having a second handle portion and a second head portion; said elongated members being pivotally secured together at a locus axis passing perpendicularly through said first and second head portions;

said first head portion having a top surface, a bottom surface and a first bore hole extending from said top surface to said bottom surface; said first bore hole having two opposed flat sections and two opposed arcuate portions; said first head portion having a first blade section having a front end, a rear edge and a front cutting edge; a first annular groove having a peripheral edge surrounds said first bore hole and said first annular groove is formed in the bottom surface of said first head portion and a first axial groove extends outwardly from its peripheral edge;

said second head portion having a top surface, a bottom surface and a second bore hole extending from said top surface to said bottom surface; said second bore hole being circular and having a circular countersunk recess in said bottom surface; said second head portion having a second blade section having a front end, a rear edge and a front cutting edge; a second annular groove having a peripheral edge surrounds said second bore hole and said second annular groove is formed in the top surface of said second head portion and a second axial groove extends outwardly from its periphery;

said blade sections each having a longitudinal axis and said blade sections curve upwardly along their respective axes from their respective head portions to their front ends;

a coiled spring having a first end, a second end and a loop portion;

the bottom surface of said first head portion is positioned on the top surface of said second head portion with their respective first and second bore holes in alignment; said coiled spring being positioned between said respective first and second head portions and removably received in said mating first and second annular grooves with said first end captured in said first axial groove and said second end being captured in said second axial groove; said coiled spring functions to keep the respective blade sections separated when there isn't any hand pressure squeezing said handle portions toward each other to perform a cutting operation;

a bolt inserted through said aligned first and second bore holes; said bolt having a head, a shank and an externally threaded tip; a portion of said shank adjacent said head has a circular cross section and it mates with the circular bore hole of said second head portion; a portion of said shank adjacent said externally threaded tip has two opposed flat surfaces and two opposed arcuate surfaces and they mate with the respective two opposed flat surfaces and two opposed arcuate surfaces of said bore hole in said first head portion; a brass washer is mounted in the circular countersunk recess in the bottom surface of said second head portion and it is self lubricating and thus allows for smooth movement in wet conditions such as dew, rain, etc.

outwardly bent foot portions are formed on the rear ends of said respective handle portions for preventing a person's hand from slipping off from said handle portions when they are performing a cutting function; and

means for locking said handle portions together so that said blade sections are in an open position comprising: said second handle having an inwardly extending hook-shaped protrusion and said first handle having an inwardly extending flange with a closed loop latch pivotally mounted thereon; said respective first and second blade sections can be locked together by squeezing said first and second handle portions together and passing said closed loop latch around said hook-shaped protrusion.

5,628,116

BEARING USABLE FOR SCISSORS AND SCISSORS USING THE SAME

Yoshifusa Kohno, Takarazuka, Japan, assignor to Kabushiki Kaisha Naruto, Hyogo, Japan

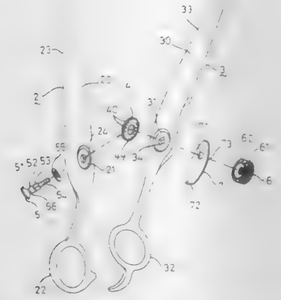
PCT No. PCT/JP94/01116, § 371 Date Apr. 4, 1995, § 102(e) Date Apr. 4, 1995, PCT Pub. No. WO95/35189, PCT Pub. Date Dec. 28, 1995

PCT Filed Jul. 7, 1994, Ser. No. 411,647

Claims priority, application Japan, Jun. 17, 1994, 6-135285

Int. Cl.[6] B26B *13/28*

U.S. Cl. 30—267 **9 Claims**



1. A pair of scissors, wherein groove parts are respectively formed on contacting surfaces of a moving blade and a stationary blade to mate with each other; the groove parts are pivotally connected to each other by using a spindle pin and a set screw under a condition where a bearing is sandwiched therebetween; the bearing includes a disk-shaped holding plate and a plurality of steel balls, the holding plate having front and rear sides, and an aperture at a central portion thereof, through which a spindle pin of the scissors pierces; a plurality of steel ball holding apertures are annularly arranged around the aperture on the holding plate, for rotatably holding the steel balls under a condition where the spherical surface of each steel ball is projected beyond either side of the holding plate; the steel balls are held in the steel ball holding apertures one by one; and, at a peripheral edge portion of each steel ball holding aperture on either side of the holding plate, and at an outer peripheral edge portion of the holding plate, a foreign material blocking barrier is formed taken along the respective entire peripheral edge portions so as to have a height lower than the height of the projecting surface of each steel ball.

5,628,117

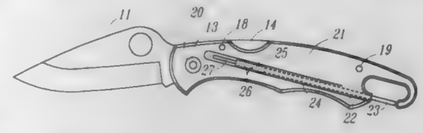
KNIFE WITH REMOTE RELEASE SHACKLE

Louis S. Glesser, Box 800, Golden, Colo. 80401-0800

Continuation of Ser. No. 246,145, May 19, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 517,129

Int. Cl.[6] B26B *29/02*

U.S. Cl. 30—298.4 **18 Claims**



1. A knife comprising

an elongated handle having at least one elongated cavity for containing a portion of at least one folded blade;

at least one blade pivotably attached to the handle to remain in either of an open position or a folded position at least partially within the handle;

a shackle, with a retractable closure means, which includes a spring means for biasing the retractable closure means in a normally closed position;

a shackle closure retraction means spaced apart from the shackle for moving the retractable closure means into an open position.

5,628,118

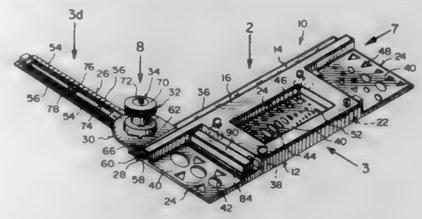
MINI-DRAFTING MACHINE

Teodorico M. Rivera, Dumez Co. JSWD, P.O. Box 33166, Jeddah 21448, Saudi Arabia

Filed Aug. 24, 1995, Ser. No. 518,665

Int. Cl.[6] B43L *13/02*

U.S. Cl. 33—449 **11 Claims**



1. A mini-drafting machine which comprises:

a) a body member having a horizontal straight blade along a top side edge for drawing a horizontal line on a flat surface;

b) means for guiding said body member vertically along the flat surface comprising two pair of spaced independently mounted and rotatable wheel assemblies on the underside of said body member normally oriented to permit paid body member to roll vertically to permit the drawing of parallel horizontal lines by said horizontal straight edge, each wheel assembly having a wheel with a pinion gear mounted thereon for rotating each wheel assembly with respect to said body, a pair of spaced apart racks carried in said body member engaging the pinion gear in each pair of wheel assemblies, spring biased push bar means mounted on the upper side of said body member for engaging said racks so that when said push bar is pressed against the spring biasing said racks will rotate said pinion gears to ninety degrees causing said wheels to also pivot the ninety degrees to change direction of movement of the body member from a vertical direction to a horizontal direction along the flat surface without rotating said body on said flat surface;

c) means in said body member for making different sized geometric shapes on the flat surface.

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5,628,119

ADJUSTABLE FRAMING JIG

Grady A. Bingham, Eden, N.C., and Victor C. Stone, Cascade, Va., assignors to Old Stone Corporation, Eden, N.C.

Filed Jul. 31, 1995, Ser. No. 509,440
Int. Cl.° G01D 21/00
U.S. Cl. 33—613 11 Claims



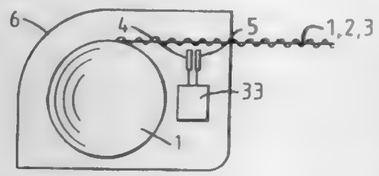
1. A framing jig comprising: a left section, a right section, said left section adjustably affixed to said right section, said left section comprising a left planar member, an outside left leg, an inside left leg, said outside left leg parallel to said inside left leg, said inside and said outside left legs attached to said left planar member, said right section comprising a right planar member, an outside right leg, an inside right leg, said right inside leg parallel to said right outside leg, said inside and said outside right legs attached to said right planar member, said left planar member and said right planar members each defining three circular openings whereby said circular openings of said left planar member and said right planar member can be selectively coincidentally aligned and fastened for adjusting said framing jig.

5,628,120

METHOD FOR THE MEASUREMENT OF LENGTHS AND ANGLES AND AN EQUIPMENT THEREFOR

Jan G. Sergenius, Bergsundsgatan 15, S-117 37, Stockholm, Sweden

PCT No. PCT/SE94/00121, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/19663, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 15, 1994, Ser. No. 500,921
Claims priority, application Sweden, Feb. 16, 1993, 9300508
Int. Cl.° G01B 3/10;7/14
U.S. Cl. 33—763 7 Claims



1. In a method for measuring length which utilizes a measuring tape, at least one sensor, and an electronic unit housed in a casing, from which the tape can be pulled out of and pushed into or be displaced relatively to it, comprising the steps of:

a) forming the measuring tape from a ferromagnetic, but not magnetized, material, and

b) forming on the tape a ribbon-shaped zone with corrugations comprised of a repeated pattern of embossings, including depressions and elevations, wherein the embossings depth is at least 0.05 mm, and wherein the repeated pattern of embossings form a continuous wave shape in the longitudinal direction of the tape,

c) passing the tape by said at least one sensor, the sensor being a magnetoresistive sensor adapted to magnetoresistive measurement, and

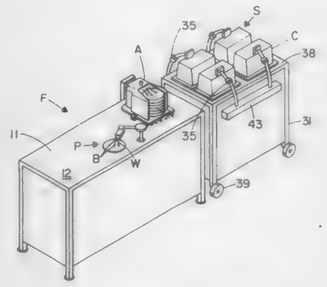
d) providing the magnetoresistive measurements to the electronic unit to convert signals from the sensor into length measurements, whereby the sensor registers the numbers of depressions and elevations in the ribbon-shaped corrugated zone.

5,628,121

METHOD AND APPARATUS FOR MAINTAINING SENSITIVE ARTICLES IN A CONTAMINANT-FREE ENVIRONMENT

Ray G. Brooks, and Timothy W. Brooks, both of Irving, Tex., assignors to Convey, Inc., Euless, Tex.

Filed Dec. 1, 1995, Ser. No. 566,075
Int. Cl.° F26B 19/00
U.S. Cl. 34—61 12 Claims



8. A container for treating sensitive articles such as semiconductor wafers comprising:

a base member for containing substrate wafers in a vertically stacked, spaced-apart relationship,

a cover adapted to fit over said base member,

an inlet on said cover for continuously passing a particle-free, ionized gas through said base member and said cover,

an outlet on said cover for continuously passing a particle-free, ionized gas from said base member and said cover,

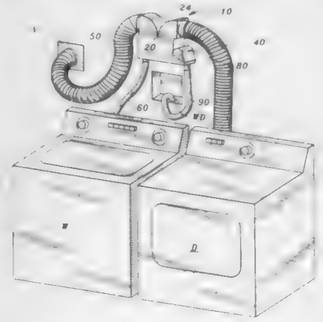
a catch on top of said base member for receiving a releasably engageable latch through a manually actuated rod from the top of said cover such that the catch and the latch provide a sealing engagement for said base member and said cover.

5,628,122

LINT REMOVER FOR A CLOTHES DRYING MACHINE

Theodore J. Spinardi, Shingle Springs, Calif., assignor to Peter and Theordore Spinardi Investments, Shingle Springs, Calif.

Filed Oct. 5, 1994, Ser. No. 318,067
Int. Cl.° F26B 21/06
U.S. Cl. 34—79 22 Claims



1. An apparatus for washing lint from a clothes drying machine air exhaust, comprising in combination:

an enclosure,

a liquid inflow tube having coupling means for receiving liquid from a waste water line of a washing machine and coupled to said enclosure such that waste water from the washing machine passes through said apparatus en route to a drain,

an air inlet duct including means to connect to a lint laden clothes drying machine air exhaust and coupled to said enclosure,

said enclosure also including an air outlet duct and a liquid outflow drain tube having means coupled directly to a waste water drain,

said liquid outflow drain tube having siphon means oriented in fluid communication with said liquid inflow tube and a pool interposed between said siphon means and said liquid inflow tube such that a pool of liquid is provided within said enclosure,

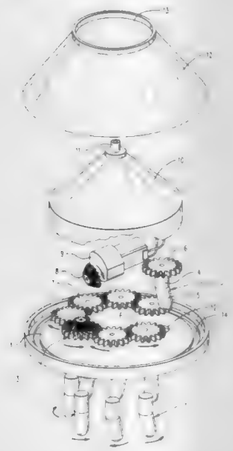
said pool of liquid oriented proximate to said air inlet duct, such that lint entrained within air from said air inlet duct and into said enclosure is brought into contact with said pool of liquid, removing lint therefrom prior to said air outlet duct.

5,628,123

ATTACHMENT FOR A HAIR DRYER

Wing-Kin Chan, Hong Kong, Hong Kong, assignor to China Pacific Trade Ltd., Virgin Islands (Br.)

Filed May 23, 1994, Ser. No. 247,251
Int. Cl.° F26B 19/00
U.S. Cl. 34—90 15 Claims



1. An electrically-powered attachment for a hair dryer comprising, means for removably attaching the attachment to a hot air outlet of a barrel of the hair dryer, and means for electrically connecting the attachment to a power supply circuit of the hair dryer.

5,628,124

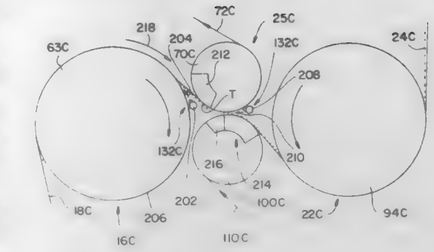
APPARATUS FOR DRYING A WEB

Borgeir Skaugen; Gregory L. Wedel, both of Beloit; Dale A. Brown, Milton, all of Wis., and David J. Archer, Durand, Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 64,840, May 19, 1993, Pat. No. 5,404,653, which is a continuation-in-part of Ser. No. 867,722, Apr. 9, 1992, Pat. No. 5,249,372, which is a continuation of Ser. No. 167,672, Feb. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 14,569, Feb. 13, 1987, Pat. No. 4,934,067. This application Apr. 5, 1995, Ser. No. 418,145
Int. Cl.° F26B 11/02
U.S. Cl. 34—117 1 Claim

1. A drying section apparatus for drying a web of paper, said apparatus comprising:

a single tier group of dryers for drying a first side of the web;



said group including:

at least two dryers:

a roll;

a felt extending around said roll and guided thereby, the arrangement being such that said felt is disposed between the web and said roll;

a further single tier group of dryers disposed downstream relative to said group for drying a second side of the web;

said further single group including:

at least two further dryers;

a further roll;

a further felt extending around said further roll and guided thereby, the arrangement being such that said further felt is disposed between the web and said further roll;

said group and said further group being positioned and arranged relative to each other to define therebetween a transfer section, the arrangement being such that the web extending between said group and further group is supported by, and in physical contact with, less than both of said felts; and

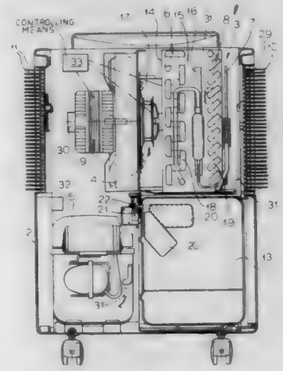
said roll and said further roll being vacuum rolls, the arrangement being such that the web is disposed in close conformity with said felt during movement of the web around said roll, the web being disposed in close conformity with said further felt during movement of the web around said further roll.

5,628,125

DEVICE FOR ELIMINATING HUMIDITY PARTICULARLY FROM LAUNDRY

Giuseppe De' Longhi, Treviso, Italy, assignor to De' Longhi S.p.A., Treviso, Italy

Filed Jul. 6, 1994, Ser. No. 271,015
Claims priority, application Italy, Jul. 30, 1993, MI93A1725
Int. Cl.° F26B 21/06;3/00; F25D 17/06
U.S. Cl. 34—469 16 Claims



1. A heating and dehumidifying assembly comprising:

a housing;

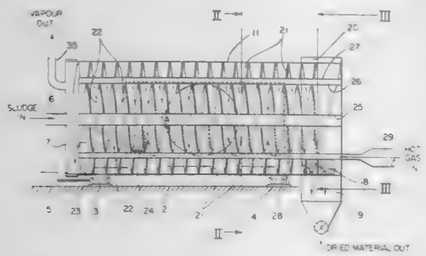
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dehumidifying means in said housing for drying the room air entering said housing along a path and comprising:
compressor means for compressing a gas, and
condensing means along said path and including a first plurality of finned tubes traversed by the gas for transforming said gas received from said compressor means into a liquid phase upon releasing part of the heat,
expansion valve means for retransforming the liquid phase into a gaseous phase of said gas,
evaporating means along said path receiving the gas from the valve means and including a second plurality of finned tubes traversed by the gas for heating said gas to form a condensate, and
reservoir means operatively connected with said evaporating means for collecting said condensate;
a casing in said housing and along said path housing said condensing and evaporating means, said first and second plurality of finned tubes being spaced apart at a predetermined distance and being rigidly connected with one another to allow simultaneous expanding and welding of said tubes of first and second plurality in said casing; and
heating means in said housing along said path for heating the air in said housing.

5,628,126
REVOLVING DRUM DRYING APPARATUS AND METHOD

Roger D. North, Exeter, Great Britain, assignor to Stephen Manton North, Great Britain

PCT No. PCT/GB91/00896, § 371 Date Jan. 13, 1994, § 102(e) Date Jan. 13, 1994, PCT Pub. No. WO91/19145, PCT Pub. Date Dec. 12, 1991
PCT Filed Jan. 5, 1991, Ser. No. 956,006
Claims priority, application United Kingdom, Jun. 5, 1990, 9012463
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—599 **11 Claims**

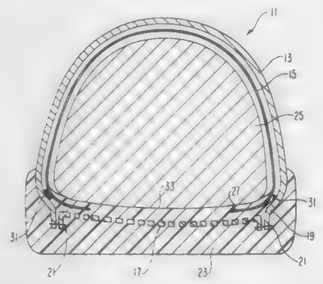


1. Apparatus for drying wet materials, the apparatus comprising:
a drum mounted for revolution about a substantially horizontal axis, said drum including
inlet means for material to be dried,
outlet means for dried material,
inner deflecting wall means for defining concentric inner and outer oppositely-handed spiral pathways, wherein said inlet and outlet means are at respective ends of said drum and said spiral pathways are interconnected at each said end; and
transfer means adjacent one of said ends of said drum for mechanically transferring matter from said outer pathway to said inner pathway;
a charge of a solid heat exchange and pulverizing medium in particulate form located in said pathways, said outlet means being constructed to prevent passage of said medium therethrough, whereby, when in use upon rotation of said drum, said medium charge can continuously circulate within said drum along said inner and outer spiral pathways; and
heating means.

5,628,127
WATERPROOF SHOE

Günter Nötzold, Landshut, Germany, assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Apr. 11, 1995, Ser. No. 422,195
Claims priority, application Germany, Apr. 25, 1994, 9406905 U
Int. Cl.[6] A43B *13/28*
U.S. Cl. 36—14 **7 Claims**

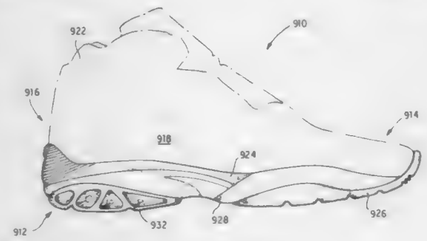


1. A waterproof shoe comprising a water permeable and water vapor permeable upper material having an inside and a lower edge, an insole sewn to the upper material thus providing a seam and a functional material layer having a lower edge, the functional material layer being arranged on the inside of the upper material and which comprises a waterproof, water vapor permeable layer wherein the insole, the lower edge of the upper material facing the insole, and the lower edge of the functional material layer facing the insole are located on the inside of an injection molded plastic outsole, wherein the lower edge of the upper material and the lower edge of the functional material layer are cut to unequal lengths such that one of these two edges projects over the other edge without any participation of the lower edge of the functional material layer in the seam; and wherein the insole, at least in its area adjacent to the seam, comprises a material which is permeable to the outsole plastic in its liquid state during the injection process of the outsole, and wherein the lower edge of the functional material layer is embedded in the outsole plastic.

5,628,128
SOLE CONSTRUCTION FOR FOOTWEAR

Todd Miller, West Linn; David Gasparovic, Beaverton, both of Oreg.; Craig Feller, Duxbury, Mass.; Daniel Wickemeyer; David Potter, both of Venice, Calif.; Erik Purdom, Battle Ground, Wash., and Tuan Le, Portland, Oreg., assignors to American Sporting Goods Corp., Irvine, Calif.

Continuation-in-part of Ser. No. 332,041, Nov. 1, 1994. This application Jun. 7, 1995, Ser. No. 484,388
The portion of the term of this patent subsequent to Nov. 1, 2014, has been disclaimed.
Int. Cl.[6] A43B *3/18;21/26*
U.S. Cl. 36—28 **18 Claims**



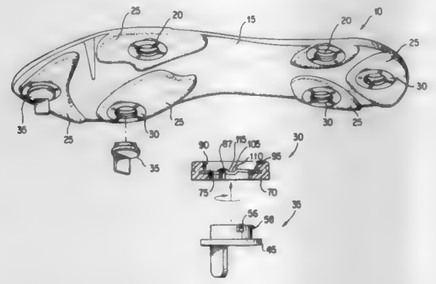
16. A sole element for a shoe, comprising:

a first pod for being disposed on a lateral side of the shoe, said first pod having a lower surface for contacting a contact surface, at least a portion of said lower surface being substantially abrasive resistant, wherein at least one first cavity extends through said first pod, and wherein said first cavity has an open first end and an open second end, and said open first end and said open second end of said first cavity are in tapered communication with one another extending transversely across the midsole;
a second pod for being disposed on a medial side of the shoe, said second pod having a lower surface for contacting a contact surface, at least a portion of said lower surface being substantially abrasive resistant, wherein at least one second cavity extends through said second pod, and wherein said second cavity has an open first end and an open second end, and said open first end and said open second end of said second cavity are in tapered communication with one another extending transversely across the midsole; and
a web extending between said first and second pods and having an upper side for being disposed on said shoe, wherein said first pod, said second pod and said web are disposed on the shoe such that said first and second pods provide shock absorption and stability upon contact with the contact surface.

5,628,129
SHOE SOLE HAVING DETACHABLE TRACTION MEMBERS

Bruce J. Kilgore, Lake Oswego, and William M. Dieter, Portland, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Jun. 6, 1995, Ser. No. 466,742
Int. Cl.[6] A43B *5/00;* **A43C** *15/00*
U.S. Cl. 36—134 **15 Claims**

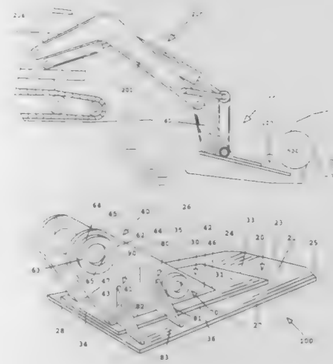


1. A sole for an athletic shoe comprising:
a sole plate having an exterior surface and a plurality of openings through said sole plate;
a receptacle insert embedded within said sole plate at each said opening location, an inner sidewall of each said receptacle insert defining a receiving opening having a plurality of engagement notches around the periphery thereof; and
a plurality of detachable cleat elements including a base member and a traction member extending from said base member, said base member having a plurality of engagement projections extending outward from a periphery thereof;
wherein each said cleat element is positioned in one of said receiving openings in a first position such that said engagement projections are aligned with said engagement notches and rotation of said cleat element to a second position detachably secures said cleat element within said receiving opening of said sole plate in a proper orientation.
wherein said receptacle insert further includes a depression adjacent to at least two of said engagement notches and a continuosly increasing engagement surface between said engagement notches and said depressions such that said engagement projections of said cleat element are subjected to a continuously increasing frictional resistance as said cleat element is rotated and said cleat element is securely locked into said second position.

5,628,130
TOOL FOR EXCAVATING BENEATH BURIED UTILITY LINES

Roland Desrochers, Calgary, Canada, assignor to RFJ Industries Ltd., Calgary, Canada

Filed Dec. 19, 1995, Ser. No. 574,937
Int. Cl.[6] E02F *03/40*
U.S. Cl. 37—444 **6 Claims**



1. A tool for attachment directly to an articulated arm of a power shovel, said tool comprising:
(a) a substantially planar forwardly directed blade; and
(b) planar connection means, attached in a perpendicular manner to the blade, for connection to the articulated arm of the power shovel, the planar connection means comprising:
(a) parallel planar mirror image left and right ears, each ear having an upper pin hole and a lower pin hole, each ear attached at right angles to the forwardly directed blade; and
(c) brace means, attached in a perpendicular manner to the forwardly directed blade and attached in a perpendicular manner to the connection means, for strengthening the connection between the forwardly directed blade and the connection means.

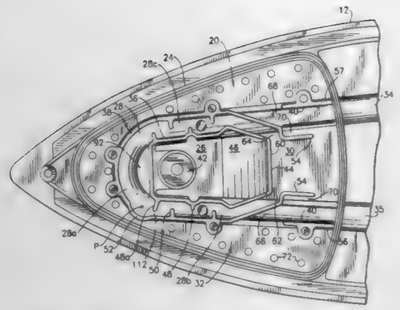
5,628,131
STEAM SURGE SYSTEM FOR AN ELECTRIC STEAM IRON

James E. Chasen, West Haven, Conn., assignor to Black & Decker Inc., Newark, Del.

Filed Dec. 18, 1995, Ser. No. 573,985
Int. Cl.[6] D06F *75/18*
U.S. Cl. 38—77.83 **22 Claims**

1. In an electric steam iron having a soleplate with a heating element, a water reservoir, and means for depositing water from the reservoir onto the soleplate at a first location for ordinary steam generation and at a second location for surge steam generation, wherein the improvement comprises:
the soleplate having a first primary steam generating area with the first location thereat and a substantially separate second surge steam generating area, said second surge generating area including a relatively narrow cross-sectional area channel, the second location being located in the channel of said second surge steam generating area above the heating element, the second surge steam generating area including a recessed pocket next to the second location for dampening pressure from steam generation at the second location, said

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recessed pocket comprising a relatively wide cross-sectional area portion having an inlet in fluid flow communication with a first length of said channel and an outlet in fluid flow communication with a second length of said channel.

5,628,132

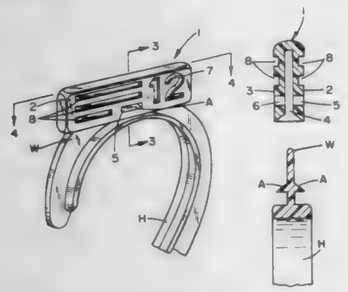
INDICATOR AND GARMENT HANGER

David J. Marshall, Victoria, and Joseph C. Hollis, East Bentleigh, both of Australia, assignors to Spotless Plastics Pty. Ltd., Victoria, Australia

Continuation-in-part of Ser. No. 176,087, Dec. 30, 1993, Pat. No. 5,388,354, and Ser. No. 173,905, Dec. 27, 1993, Pat. No. 5,507,086, which is a division of Ser. No. 670,963, May 2, 1991, Pat. No. 5,272,806, which is a continuation-in-part of Ser. No. 287,985, Dec. 20, 1988, abandoned, said Ser. No. 176,087is a continuation of Ser. No. 985,342, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 741,462, Sep. 17, 1991, abandoned. This application Feb. 3, 1995, Ser. No. 382,842

Int. Cl.[6] G09F *3/00*

U.S. Cl. 40—322 **17 Claims**



16. In combination, a hanger for garments and other articles and a separately formed indicator secured to said hanger for indicating information associated with the articles and releasable therefrom without the use of a tool;

said hanger defining a hook adapted to engage a supporting means, said hook defining support means for receiving and engaging said indicator; and

said indicator being received and engaged by said support means, said indicator including a hollow body having at least four sides and defining an open bottom, a generally parallel pair of opposed sides and a generally parallel pair of opposed ends connecting said sides, each said side having a generally planar outer side surface and each said end having a generally planar outer end surface, said indicator body defining a slot intermediate said top, bottom, sides and ends, said slot having a pair of generally parallel sides and a pair of acutely angled lower edges for facilitating placement of said indicator on said support means, said indicator disengageable and removable from said support means by bending said sides outwardly relative to said support means.

5,628,133

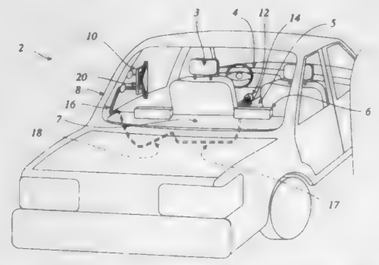
RAPID ACTIVATION CAR WINDOW SIGN

Glenn M. Cooper, Box 21, Mansfield, Ontario, Canada

Filed Jun. 7, 1995, Ser. No. 472,286

Int. Cl.[6] G09F *21/04*

U.S. Cl. 40—591 **13 Claims**



1. An externally viewable car sign for installation within an automobile, said sign comprising

a first staff wing having a first message surface with at least a first portion of the message arranged thereon;

a second distaff wing having a second message surface with at least a second portion of a message arranged thereon;

a display standard;

a first hinge intermediate said display standard and said first wing for mounting said first staff wing hingedly thereto for pivotal motion relative to said display standard;

a second hinge intermediate a distal portion of said first staff wing and said second distaff wing for mounting said second distaff wing hingedly thereto for pivotal motion of said second distaff wing relative to first staff wing;

an actuator assembly for activation by a driver of said automobile to cause motion of said sign from said first position to said second position, comprising;

a grip adjacent to and for operation by said driver for generating a signal;

a transducer for converting signals from said grip to motion of said first staff wing and said second distaff wing; and

a communication means intermediate said grip and said transducer for receiving signals from said grip and transmitting those signals to said transducer, whereby said driver can use said grip to move said sign from a first hidden position to a said second viewable position in which said message surface is externally viewable;

wherein said grip is a squeezable bladder, said communication means is a flexible tube, and said transducer means comprises an expansible bulb, whereby compression of said squeezable bladder causes expansion of said expansible bulb.

5,628,134

MAGAZINE RETAINER FOR A HAND FIREARM

Horst Wesp, and Peter Dallhammer, both of Ulm, Germany, assignors to Carl Walther GmbH, Ulm, Germany

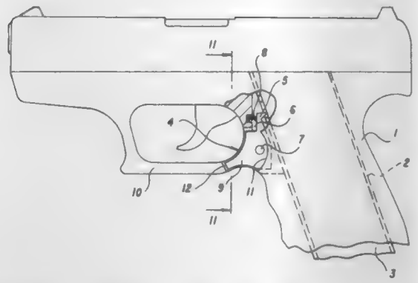
Filed Feb. 21, 1996, Ser. No. 604,338

Claims priority, application Germany, Mar. 1, 1995, 195 07 012.7

Int. Cl.[6] F41A *9/65*

U.S. Cl. 42—7 **4 Claims**

1. A magazine retainer for a hand firearm having a pistol stock, a trigger guard having a rear portion merging into the pistol stock and there being a magazine chamber in the stock to receive a magazine, said magazine retainer comprising an integral double-arm lever disposed in a first recess in said pistol stock and pivotally mounted around an axis disposed transversely to the firing direction of the firearm, said magazine retainer having upper and lower portions and comprising a nose on said upper portion engageable with a magazine within said chamber, said double-arm lever defining actuation members on said lower portion of said magazine retainer, said actuation members comprising a pair of spaced actuation plates disposed at the merging of said trigger guard and said pistol stock and each having an outer surface flush with the surface of said firearm such that the direction of motion of said actuation plates for unlocking the magazine is aligned obliquely downward and to the rear.



5,628,135

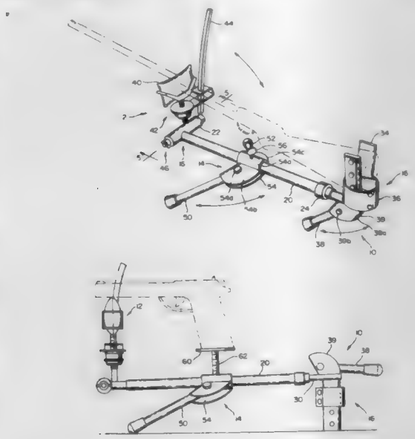
SHOOTING SUPPORT FOR RIFLES AND HANDGUNS

Richard C. Cady, P.O. Box 130184, Coram, Mont. 59913

Filed Dec. 21, 1995, Ser. No. 576,828

Int. Cl.[6] F41A *23/00*

U.S. Cl. 42—94 **6 Claims**



1. A gun support comprising a base having a front end and a rear end, a front leg support assembly longitudinally movable between the front end and the rear end and having a pair of front support legs, and a rear leg support assembly at the rear end having a rear support leg; a gun forearm rest assembly mounted to the front end of the base; and a gun butt support assembly mounted to the rear end of the base;

said front leg support assembly being so constructed that the front legs are longitudinally movable relative to the rear leg support assembly and the gun forearm rest assembly, and so that the front legs are pivotable between downward and outward support positions and inward collapsed positions; and said base being so contructed that the rear leg support assembly is longitudinally movable so that the rear leg is longitudinally movable relative to the gun forearm rest assembly, and so that the rear leg is pivotable between a downward and outward support position and an inward collapsed position.

5,628,136

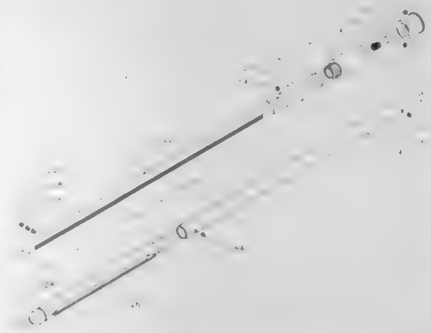
FIREARM CLEANING DEVICE

Robert L. Wickser, Jr., 1340 Leavenworth St., San Francisco, Calif. 94109

Filed Apr. 1, 1996, Ser. No. 625,951

Int. Cl.[6] F41A *29/00;31/00*

U.S. Cl. 42—95 **2 Claims**



1. A convenient and economical cleaning and safety device that is stored inside a firearm barrel comprising:

(a) a striker cartridge, comprising a base that conforms to a firearm chamber and a non-deforming surface with spring energy absorption means,

(b) a chemical holding container that conforms to a firearm chamber and barrel, in shape,

(c) a rod capable of being secured at variable lengths by a twisting and locking method capable of force transmission in compression and rotation,

(d) a cleaning element holding tip, capable of holding large disposable cleaning elements,

(e) an interconnecting means between the above-listed elements.

5,628,137

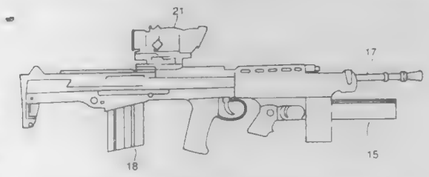
ADVANCED INDIVIDUAL COMBAT WEAPON

Robert A. Cortese, Philadelphia, Pa., assignor to Cortese Armaments Consulting, Columbus, Ga.

Filed Jun. 13, 1995, Ser. No. 489,741

Int. Cl.[6] F41C *27/06*

U.S. Cl. 42—105 **14 Claims**



1. An advanced individual combat weapon comprising:

a combat rifle having a frame with a barrel and a combination scope-rangefinder and laser illuminator mounted thereon;

a supplemental frame mounted under said rifle barrel;

a trigger means, a launch tube, and a booster cartridge chamber mounted to said supplemental frame such that said trigger

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means controls the firing of a booster cartridge disposed within the chamber; and

a fin-stabilized, laser-guided rocket having an onboard flight control system disposed within said launch tube such that firing of a booster cartridge from said chamber launches said rocket.

5,628,138

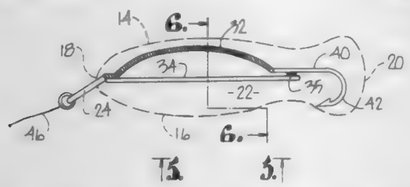
WEEDLESS FISHING LURE

John H. Murray, Jr., 2709 Inverness Blvd., Rawlins, Wyo. 82301

Continuation-in-part of Ser. No. 406,468, Mar. 20, 1995, abandoned. This application Apr. 10, 1996, Ser. No. 630,728

Int. Cl.[6] A01K *85/02*

U.S. Cl. 43—35 **4 Claims**



1. A weedless fishing lure for protecting a hook within a fishing lure until a fish strikes comprising, in combination:

an artificial lure having a top portion, a bottom portion, a head portion, a tail portion, and an intermediate portion therebetween, the head portion having a mouth portion for securement of a fishing line thereto, the bottom portion having a slot therein extending to the tail portion;

a spring member having an upper curvilinear portion and a lower spring portion, the upper curvilinear portion being within the top portion of the artificial lure; the lower spring portion positioned beneath the upper curvilinear portion within the slot in the artificial lure in the intermediate portion thereof in a normal orientation, the lower spring portion having a flexed orientation whereby the lower spring portion has an arc shape generally conforming to the upper curvilinear portion; and

a hook member secured to the lower spring portion of the spring member within the slot in the artificial lure, the hook member being positioned within the slot in the artificial lure in the tail portion thereof when the lower spring portion is in the normal orientation, the hook member extending outwardly of the slot in the artificial lure when the lower spring portion is in the flexed orientation for engagement of a fish.

5,628,139

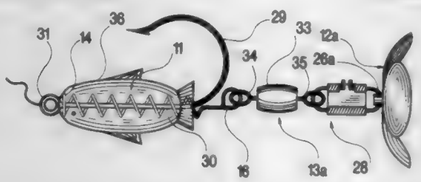
ATTACHMENT FOR A FISHING LURE

Gregory D. Rhoten, 226 N. Linden Ave., Highland Springs, Va. 23075

Filed Aug. 24, 1995, Ser. No. 518,647

Int. Cl.[6] A01K *85/10*

U.S. Cl. 43—42.15 **10 Claims**



1. A device for attachment to a shank portion of a fish hook comprising:

a) a spiraled wire having a forward extremity, and a rearward extremity having a securement loop, said spiraled wire being a helix having a constant diameter of between 2 and 7 millimeters, a uniform winding frequency, a length between 10 and 60 millimeters, and between 5 and 20 windings,

b) a swivel mechanism having an upstream extremity provided with a first aperture engaged by said loop, and a downstream extremity having a second aperture,

c) a trailing spinner having front and rear extremities, and

d) connector means for releasibly joining the front extremity of said spinner to the second aperture of said swivel mechanism.

5,628,140

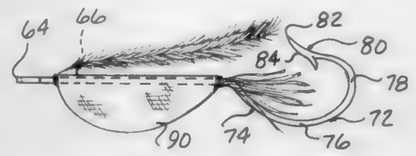
KEELING BEND FLY HOOK

Thomas A. Hnizdor, 9164 Brady, Redford, Mich. 48239

Filed Apr. 12, 1995, Ser. No. 420,479

Int. Cl.[6] A01K *83/00;85/08*

U.S. Cl. 43—43.16 **13 Claims**



5. A fly hook comprising:

a shank having first and second ends;

a keel bend formed as an extension of the shank and having first and second end portions and an intermediate portion, the first end portion having an arcuate shape and disposed to one side of a longitudinal axis of the shank to position the intermediate portion of the bend from the longitudinal axis of the shank;

a point formed on an end of the second end portion of the bend, the point rolled-out from the shank and terminating in a tip, a point edge extending from the tip to the second end portion of the bend having an arcuate shape, the second end portion of the bend positioning the point such that the point edge is co-radially disposed with respect to the first end portion of the bend;

a hollow tubular body formed of a flexible material mounted on the shank and having opposed ends closingly attachable to the shank;

a rigid member disposed within the body and having a shape to form the body to a predetermined bait fish shape, the rigid member formed as a V-shaped member having two angularly outward extending side legs connected at a common edge, the common edge disposed over the shank of the fly hook.

5,628,141

LINE STRIPPING BASKET

Robert J. Crawford, 441 Range Rd., Cumberland Center, Me. 04021

Filed Aug. 21, 1995, Ser. No. 517,350

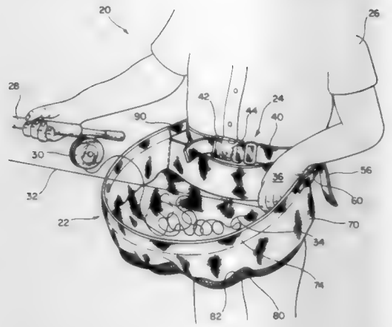
Int. Cl.[6] A01K *97/00*

U.S. Cl. 43—54.1 **19 Claims**

1. A line stripping basket usable to receive and support line stripped from a reel of a fishing rod, said line stripping basket comprising:

a wading belt securable about a person, said wading belt including a waist encircling belt and an outer belt webbing overlying a portion of said waist encircling belt, said waist encircling belt and said overlying belt webbing defining a pocket;

a flexible line receiving basket releasably connectable to said wading belt, said flexible line receiving basket having a flexible sidewall and a flexible open mesh bottom, said flexible side wall including a sleeve; and



a flexible band supported in said sleeve in said flexible sidewall, said flexible band having band ends, said band ends being removably receivable in said pocket of said wading belt, said flexible line receiving basket being releasably connectable to said wading belt by insertion of said flexible band ends in said pocket.

5,628,142

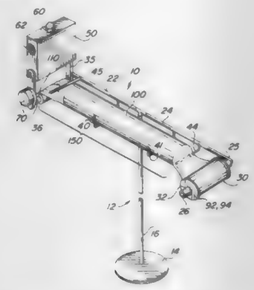
APPARATUS AND METHOD FOR ATTRACTING AND TRAPPING INSECTS

Roger Kitterman, 31012 E. Manrum Rd., Marana, Ariz. 85653; Lawrence D. Hardesty, and David R. Hardesty, both of 26101 W. Hwy. 85, Buckeye, Ariz. 85326

Continuation-in-part of Ser. No. 145,415, Oct. 29, 1993. This application Sep. 28, 1994, Ser. No. 314,197

Int. Cl.[6] A01M *1/14*

U.S. Cl. 43—114 **24 Claims**



1. An apparatus for attracting and trapping insects comprising:

(a) a frame having spaced-apart supply and take-up supports having a trapping area therebetween;

(b) an elongated section of flexible trapping material extending between said supply and take-up supports in said trapping area, said trapping material having a coating of a sticky substance thereon, said trapping material having a generally tubular cross-section and being in a rolled condition when on said supports;

(c) expander means within the cross-section of said trapping material in said trapping area maintaining said material in a generally tubular condition substantially throughout the length of said trapping area; and

(d) drive means for advancing material between said supports such that flattened previously-unexposed lengths of trapping material are advanced from said supply support to said trapping area and expanded and previously-expanded lengths of trapping material are drawn onto said take-up support in a rolled condition.

5,628,143

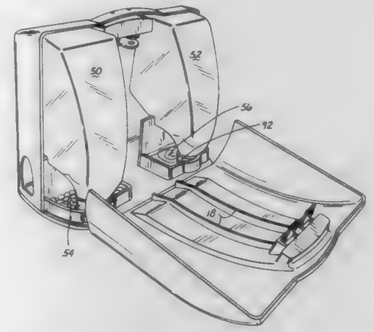
RODENT POISON DISPENSER

Carl Doucette, 515 Eucalyptus Dr., El Segundo, Calif. 90245

Filed Jun. 14, 1995, Ser. No. 490,329

Int. Cl.[6] A01M *25/00*

U.S. Cl. 43—124 **4 Claims**



2. A rodent poison bait dispenser, said dispenser comprising:

a housing to enclose an area, said housing having a front wall, a back wall, a bottom wall, a top wall and a pair of opposed side walls, all of said walls being integrated to define an enclosed upper portion and a lower portion of said area, one of said front and back walls, together with at least a portion of said top and side walls constituting a first portion of the housing removably separable along a plane of separation from the remaining portion of the housing, said plane of separation extending through upper and lower edges of said two portions; the lower portion of the enclosed area defined by said housing being divided by a pair of partial walls extending upwardly from the bottom wall to provide a pair of forwardly facing troughs spaced from each other; a bait dispenser for each trough, one of said bait dispensers having a lower end adapted to pass poison bait in pellet form into the trough to maintain the trough in filled condition and the other of said pair of dispensers also having a lower end adapted to pass liquid poison bait into the trough and to maintain said liquid bait at a predetermined level in the trough; the partial walls on said bottom wall defining the back of the troughs being spaced from the back wall of said housing and each said partial wall being configured to support one of said bait dispensers above one of said troughs, each said trough having a forwardly facing access adjacent the lower end of said bait dispensers.

the partial walls defining the backs of the troughs and the back wall of the housing defining a first transverse passageway along the bottom wall, said passageway extending behind the troughs and having a first end and an opposite second end; and a further second passageway extending between the forwardly facing accesses and said front wall; and a third passageway connecting the first and second passageways between the troughs;

an opening in a first of said walls of the housing, said opening being adjacent to and in communication with, the first end of said first passageway,

whereby a rodent may enter the enclosed area in the housing through said opening in the side wall and proceed along the bottom wall through the first passageway and the third passageway into the second passageway to the forwardly facing access of the troughs to consume some of either or both the solid and liquid poison baits.

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5,628,144

SOLID MATRIX PRIMING OF SEEDS WITH MICROORGANISMS AND SELECTED CHEMICAL TREATMENT

John A. Eastin, Lincoln, Nebr., assignor to Kamterter Products, Inc., Lincoln, Nebr.

Continuation of Ser. No. 975,410, Nov. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 503,826, Apr. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 440,470, Nov. 20, 1989, abandoned, which is a continuation of Ser. No. 175,934, Mar. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 34,812, Apr. 3, 1987, Pat. No. 4,912,874. This application Jan. 6, 1995, Ser. No. 369,308

Int. Cl.[6] A01G *7/00*

U.S. Cl. 47—58 25 Claims

1. A method of inoculating seeds during priming which comprises the steps of:

admixing with continuous aeration of seeds, a particulate solid matrix material and a seed priming amount of water, for a time and at a temperature sufficient to cause the seeds to imbibe sufficient water to enhance resultant plant vigor but insufficient to cause seed sprouting; wherein said mixture has a water potential between about −0.5 to about −2.0 megapascals at equilibrium with said seeds; said particulate solid matrix material being nonpathogenic to the seeds; and

adding beneficial microorganisms.

5,628,145

PROCESS FOR PRODUCING SEEDS CAPABLE OF FORMING F_1 HYBRID PLANTS UTILIZING SELF-INCOMPATIBILITY

Wallace D. Beversdorf, Greensboro, N.C.; Laima S. Kott, Guelph, Canada; Van L. Ripley, Saskatoon, Canada; Jeff P. Parker, Calgary, Canada, and Paul R. Banks, Guelph, Canada, assignors to University of Guelph, Guelph, Canada

Filed Feb. 3, 1995, Ser. No. 383,566

Int. Cl.[6] A01H *1/00;3/00*

U.S. Cl. 47—58 13 Claims

1. An improved process for producing seeds to make a predetermined F_1 hybrid comprising:

(a) growing in a planting area a randomly mixed population of parent plants which exhibit sporophytic self-incompatibility that are incapable of undergoing self-fertilization wherein the inability to undergo self-fertilization is attributable in each parent to at least two heterozygous dominant genetic determinants for sporophytic self-incompatibility that are different in each parent wherein said plants present in said planting area are capable of serving (1) as seed parents which following cross-pollination with pollen from the other parent plants bear seeds capable of forming predetermined F_1 hybrid plants of a predetermined cultivar and (2) as pollen parents for the parent plants growing in said planting area,

(b) cross-pollinating said plants growing in said planting area with pollen derived from the other parent plants growing in said planting area and forming seeds capable of producing a predetermined cultivar of F_1 hybrid on said plants growing in said planting area as a result of said cross-pollination, and

(c) harvesting in bulk said seeds that are capable of forming a predetermined cultivar of F_1 hybrid plants that form on both parent plants of said planting area.

5,628,146

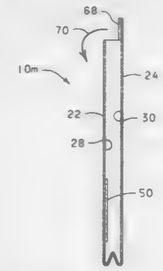
SLEEVE HAVING A DETACHABLE PORTION FOR FORMING A POT COVER

Donald E. Weder; Joseph G. Straeter, both of Highland, and William F. Straeter, Breese, all of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 457,186, Jun. 1, 1995, which is a continuation of Ser. No. 386,859, Feb. 10, 1995, Pat. No. 5,493,809, which is a continuation-in-part of Ser. No. 237,078, May 3, 1994, which is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, said Ser. No. 237,078is a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, said Ser. No. 386,859is a continuation-in-part of Ser. No. 218,952, Mar. 25, 1994, which is a continuation-in-part of Ser. No. 95,331, Jul. 7, 1993, Pat. No. 5,428,939. This application Feb. 28, 1996, Ser. No. 608,390

Int. Cl.[6] A01G *9/02*

U.S. Cl. 47—72 38 Claims



1. A flexible sleeve for containing a pot having a floral grouping disposed therein, the flexible sleeve comprising: a flattened body having a lower end, an upper end, an outer peripheral surface, and an inner peripheral surface surrounding an inner retaining space, the sleeve further comprising:

a lower portion having an inner retaining space for enclosing the pot,

an upper portion connected to the lower portion and sized to substantially surround and encompass the floral grouping when the pot and floral grouping are disposed within the sleeve, the upper portion detachable from the lower portion via perforations positioned in a predetermined pattern, and

holding means comprising an adhesive bonding material for holding a portion of the sleeve adjacent the pot when the sleeve is opened and the pot is disposed within the inner retaining space thereby holding the lower portion of the sleeve in a position about the pot and the upper portion of the sleeve in a position about the floral grouping.

5,628,147

DEVICE FOR KEEPING A FLOWER POT OR THE LIKE RAISED FROM THE BOTTOM OF A FLOWER POT CONCEALER OR THE LIKE

Siegfried Joswig, Kirkerudbakken 10, 1800 Askim, Norway

PCT No. PCT/NO94/00133, § 371 Date Apr. 18, 1995, § 102(e) Date Apr. 18, 1995, PCT Pub. No. WO95/05069, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 11, 1994, Ser. No. 411,615

Claims priority, application Norway, Aug. 18, 1993, 932932

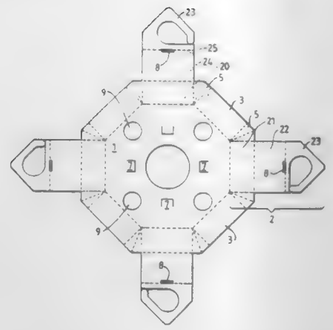
Int. Cl.[6] A01G *31/02*

U.S. Cl. 47—79 7 Claims

1. A plant watering system comprising a water retaining flower pot concealer having a bottom and upwardly extending sidewalls, in combination with a device for keeping a flower pot or the like raised from a bottom of said concealer, said device comprising:

a central portion adapted to support a flower pot or the like thereon;

a plurality of first rim portions hingedly connected, at circumferentially spaced locations, to said central portion;



a plurality of second rim portions hingedly connected, at circumferentially spaced locations, to said central portion, said plurality of first rim portions and said plurality of second rim portions constituting a unitary piece; and

means for interconnecting said plurality of second rim portions to respective ones of said plurality of first rim portions, wherein said device is adapted to be placed in a water retaining concealer with said central portion being stiffened by said plurality of second rim portions and supported above a bottom of the concealer by said plurality of first rim portions such that a flower pot placed on said central portion can be spaced above water placed in the concealer but moisture can be supplied to the flower pot through a wick extending from the water to the flower pot.

5,628,148

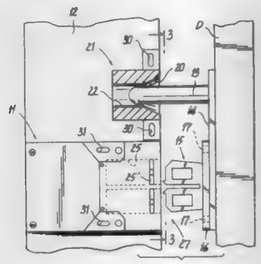
PIN ALIGNING SYSTEM FOR DOORS AND DOOR MOUNTED DEVICES

Bruce Beutler, 8 Lakeshore Dr. S., Patterson, N.Y. 12563

Filed Jul. 8, 1994, Ser. No. 272,698

Int. Cl.[6] E05B *65/06*

U.S. Cl. 49—394 9 Claims



1. Aligning apparatus aligning a door having flat outer and inner surfaces extending between side edge surfaces relative to a door frame having a vertical surface with a horizontal width extending normal to the outer and inner surfaces of the door said door being movable from and to an open position with respect to the door frame and from and to a closed position with respect to the door frame,

said aligning apparatus comprising a guide pin having a round cylindrical body extending along a center axis and having a free distal leading end hemispherical in all radial directions from said guide pin center axis,

a guide pin bracket extending along a center axis,

said guide pin having a proximal end secured on said guide pin bracket with said center axis of said guide pin extending normal to said center axis of said guide pin bracket,

a guide pin receptor having a truncated cone shaped entry end surface and a round cylindrical pin receptor channel communicating with and extending along a center axis from the apex of said truncated cone shaped entry end surface,

means for mounting said guide pin bracket and said guide pin receptor on the door and the door frame in juxtaposed position with said guide pin in said guide pin receptor channel when the door is in the closed position, said pin distal end and said truncated cone shaped entry end surface of said receptor constituting guiding means when the door is moved from the open position to the closed position for guiding the door from misalignment in all radial directions to alignment with the axes of said pin and channel in substantial superimposed alignment.

5,628,149

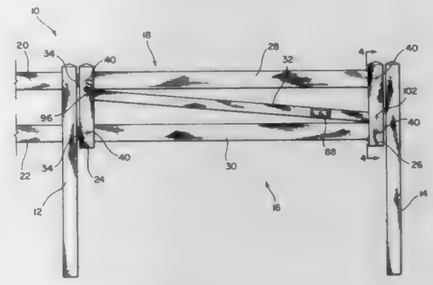
GATE TENSIONING SYSTEM

John Kraczek, McDonough, Ga., assignor to The Tensar Corporation, Atlanta, Ga.

Filed Mar. 28, 1996, Ser. No. 623,295

Int. Cl.[6] E05F *7/06*

U.S. Cl. 49—396 16 Claims



1. A gate comprising:

a pair of generally vertically extending members;

a pair of generally horizontally extending members, said vertical and horizontal members being interconnected adjacent their ends to form a quadrilateral frame,

a cross-brace diagonally interconnecting two opposed members of said frame, said cross-brace being hollow, and

a tensioning device located within said cross-brace for adjusting the orientation of said vertical and horizontal members with respect to each other,

said tensioning device including a pair of sleeves anchored, respectively, to said two opposed members, and a turnbuckle connected to said two sleeves by rigid elements for movement of said sleeve with respect to each other upon rotation of said turnbuckle to thereby change length of said tensioning device movement of said sleeves device.

5,628,150

GLASS RUN CHANNEL WITH A COMPOSITE REINFORCEMENT

Gerard Mesnel, Dearborn, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Filed Mar. 26, 1996, Ser. No. 622,105

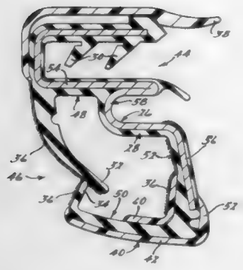
Int. Cl.[6] E06B *7/16*

U.S. Cl. 49—440 7 Claims

1. A glass run channel assembly for a translationally movable pane in a vehicle window aperture, the glass run channel assembly having:

an elastomeric extrusion having a generally U-shaped cross section defining a glass run channel and having a pair of legs having edges joined by a base web; and

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a reinforcement comprising:

a metal core extending substantially within one of said legs and said base web; and

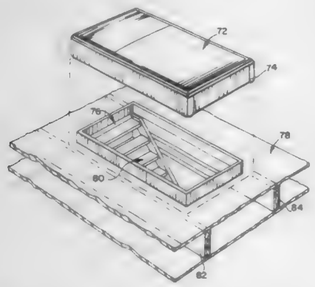
a thermoplastic polymeric structural member bonded to said elastomeric extrusion and providing structural support for the other of said legs.

5,628,151

MULTIPOCKET MEANS FOR HOLDING INSULATION TO PREVENT HEAT LOSS THROUGH AN ATTIC STAIRWELL

Alan N. Monat, 528 Starr Ridge Dr., Lake Wales, Fla. 33853

Filed Nov. 15, 1994, Ser. No. 339,754
Int. Cl.[6] E04F *19/08;11/04*
U.S. Cl. 52—19 **3 Claims**



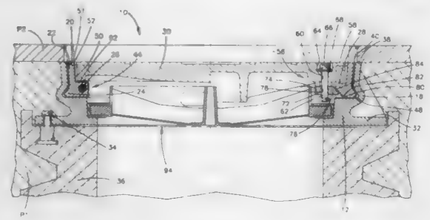
1. Multipocket member for holding insulation for preventing heat loss through the opening in an attic staircase comprising a rectangular-shaped body member of predetermined length and width defined by a planar top member and a planar bottom member, said body member terminating in parallel, spaced-apart end edges and parallel, spaced-apart side edges, a top pocket being provided by the top and bottom members for the holding of insulation, an opening being provided in the top member providing access to the top pocket whereby preformed insulation of predetermined size and shape can be inserted in the top pocket, said opening in the top member of the body member being located between the end edges of the body member and extending from one side edge of the body member to the other, side pocket members each comprising a top and bottom panel having a rectangular shape being defined by inner and outer side edges parallel to one another, the inner side edges of each said top panel of a side member being pivotably connected to the body member at respective side edges, the inner side edge of the bottom panel of each said side pocket member being free thereby defining an elongated pocket for the holding of insulation, and rectangular-shaped end members comprising a top panel and a bottom panel each defined by inner and outer end edges in parallel disposition to one another, the inner end edges of the top panels of the said end pocket members being pivotably connected to the body member at respective end edges, the inner end edges of the bottom panels of said end pocket members each being free thereby defining an elongated pocket for the holding of insulation.

5,628,152

ADJUSTABLE MANHOLE COVER SUPPORT WITH SHIELD

Harold M. Bowman, 18867 N. Valley Dr., Fairview Park, Ohio 44126

Filed Aug. 16, 1995, Ser. No. 515,986
Int. Cl.[6] E02D *29/14*
U.S. Cl. 52—20 **21 Claims**



1. A manhole frame assembly comprising

an outer frame member and an inner frame member that can be received by said outer frame member, said outer frame member having a support surface and a side wall that extends upwardly from the support surface, said side wall having a recessed portion that is at least partially defined by an abutment surface that prevents upward movement of said inner frame member,

said inner frame member being supportable on said support surface and including

(a) at least one protrusion extending from an outer peripheral surface of said inner frame member,

(b) at least one adjustable joint adapted to adjust said inner frame member in its peripheral dimensions to expand to move said protrusion into said recessed portion, whereby said protrusion contacts said abutment surface to prevent upward movement of said inner frame member, and to contract to remove said protrusion from said recessed portion, and

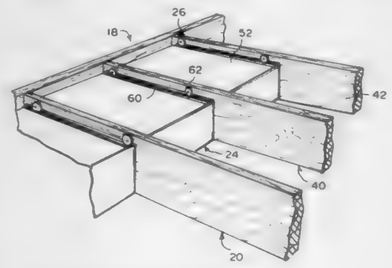
(c) a cover support surface for supporting a manhole cover.

5,628,153

STORAGE BIN SYSTEM

Donna V. Fontanez, 1754 Heckscher Ave., Bay Shore, N.Y. 11706-2121

Filed May 26, 1995, Ser. No. 450,865
Int. Cl.[6] G09F *7/18*
U.S. Cl. 52—39 **5 Claims**



1. An improved storage bin system comprising:

a) a plurality of spaced apart parallel pieces of timber used in construction of a building, each said piece of timber being: a rafter that is a sloping beam which supports a pitched roof in an attic of the building; a joist that is a horizontal beam set from wall to wall, to support boards of a floor and ceiling in an attic and a basement of the building; or a stud that is an upright post in a framework of a wall in a garage of the building;

b) a plurality of storing receptacles, each said storing receptacle being a box-shaped container having a compartment to hold articles therein, said box-shaped container including at least one movable cover to gain access into the compartment;

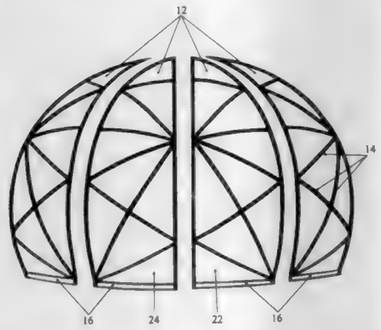
c) means for mounting each of said storing receptacles between two adjacent pieces of said timber, so that said storing receptacles can hold articles therein, instead of on a floor in the building, said mounting means including either i) a plurality of fasteners, maintaining each said storing receptacle in a stationary position between two of said adjacent pieces of timber, or ii) a plurality of tracks and engaging wheels maintaining each said storing receptacle in an adjustable position between two of said adjacent pieces of timber, each said storing receptacle being fabricated out of either a fiberglass material or a light, resilient polystyrene plastic with a reinforcement wire therethrough, each said storing receptacle including, when said mounting means includes a plurality of tracks and engaging wheels, a tow line, and means for securing one end of said tow line to one side of said storing receptacle, so that a person can pull said tow line to move said storing receptacle between said tracks and engaging wheels.

5,628,154

MODULAR CONSTRUCTION FOR A GEODESIC DOME

James A. Gavette, 104 2nd Ave., Santa Cruz, Calif. 95062

Filed Aug. 11, 1995, Ser. No. 514,158
Int. Cl.[6] E04B *1/32*
U.S. Cl. 52—81.4 **4 Claims**



1. A dome structure comprising:

a plurality of panels joined together to form a dome-shaped enclosure, each said panel includes an integral ribbing structure in an interior portion thereof to increase the rigidity of the panel, and interlocking means along its sides, said interlocking means being integral to said panels;

wherein

each of said panels includes a female interlocking means that extends the length of a first side of said panel, said female interlocking means is curved to form a receiving aperture, said female interlocking means includes protruding angular projections that extend into an opening of said receiving aperture to form receiving grooves, and

each of said panels includes a male interlocking means that extends the length of a second side of said panel, said male interlocking means is curved to conform to the shape of said receiving aperture of said female interlocking means, said male interlocking means includes ridges corresponding to said grooves of said female interlocking means, such that

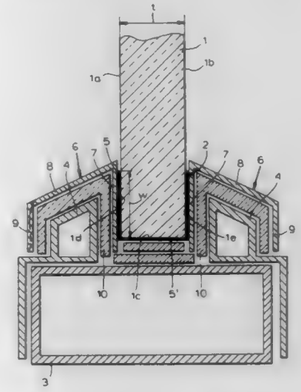
a sealed joint between two of said panels is formed by aligning said first side of a first one of said panels with said second side of a second one of said panels, said male interlocking means being received in said female interlocking means in an interference fit fashion.

5,628,155

FIRE-RESISTANT STRUCTURAL COMPONENT WITH GLASS PANE

Hans-Henning Nolte, Gelsenkirchen; Hans-Jürgen Ollech, Herten, both of Germany; Arthur J. Pettit, Wigan Lancashire, and David R. Goodall, Merseyside, both of England, assignors to Flachglas Aktiengesellschaft, Furth, Germany, and Pilkington Glass Limited, St. Helens, England

Filed Nov. 17, 1994, Ser. No. 340,838
Claims priority, application Germany, Nov. 19, 1993, 43 39 331.4; United Kingdom, Nov. 19, 1993, 9323831
Int. Cl.[6] E06B *3/30*
U.S. Cl. 52—204.54 **11 Claims**



1. A fire-resistant structural component, comprising:

a glass pane having opposite broad faces, a narrow edge face bridging said broad faces, and a glazing verge extending all around a periphery of the glass pane and including said narrow edge face and margins of said broad faces adjoining said edge face;

respective heat-conductive layers extending along said glazing verge and in contact with the respective broad faces of the glass pane along said margins and configured to conduct away from said pane elevated thermal fluxes developed in said glazing verge and resulting from a fire to which said component is exposed; a support frame for said pane including means forming a groove receiving said glazing verge and said layers; and

respective metal bridge strips disposed on opposite sides of said pane and each including:

a glazing flange extending into said groove and juxtaposed with a respective one of said layers,

a cover section extending away from said pane and angularly adjoining said glazing flange, and

a radiating flange angularly adjoining said cover section outwardly thereof, and generally parallel to the respective glazing flange

whereby the bridge strip on a fire side of said component takes up thermal energy and the bridge strip on an opposite side of the component dissipates thermal energy from a respective one of said layers to the surroundings.

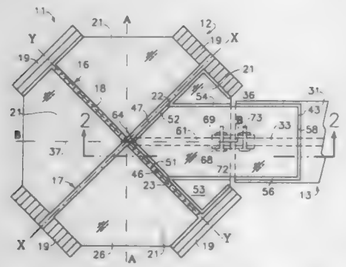
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5,628,156

MOMENT RESISTING FRAME HAVING CRUCIFORM COLUMNS AND BEAM CONNECTIONS AND METHOD FOR USE THEREWITH

Alexander G. Tarics, 29 Windward Rd., Belvedere, Calif. 94920

Filed Oct. 24, 1995, Ser. No. 547,256
Int. Cl.° E04B *1/38*
U.S. Cl. 52—236.3 10 Claims



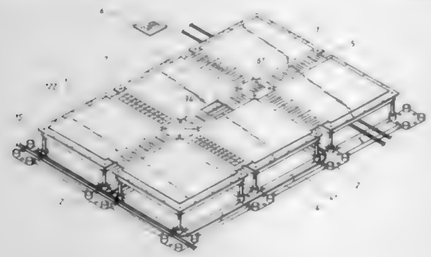
1. A moment resisting frame comprising a vertical column having a cruciform shape in cross section and having first and second vertically extending surfaces extending at an angle being disposed at an angle with respect to each other and extending along X and Y axes and defining a space therebetween, upper and lower spaced apart horizontally disposed gusset plates, securing means securing said upper and lower spaced apart horizontally disposed gusset plates to said first and second surfaces, a beam having first and second ends and a longitudinal axis, said beam having upper and lower flanges and a vertically extending web extending between the flanges, said first end of the beam extending into a position adjacent said space and in a direction which is disposed between said X and Y axes and means disposed in said space for securing said first end of the beam to said surfaces and to said upper and lower gussets, said connecting means including a connecting plate overlying the upper gusset plate and a connecting plate underlying the lower gusset plate and extending over the flanges of the beam and fillet welds securing the connecting plates to the gusset plates and to the flanges of the beam.

5,628,157

ELEVATED METAL FLOOR WITH WIRE DUCT

Yao-Tzung Chen, 7F, No. 214, Sec. 3, Ta-Tung Rd., Hsi-Chieh Chen, Taipei Hsien, Taiwan

Filed Jan. 29, 1996, Ser. No. 593,435
Int. Cl.° E04F *15/024*
U.S. Cl. 52—263 8 Claims



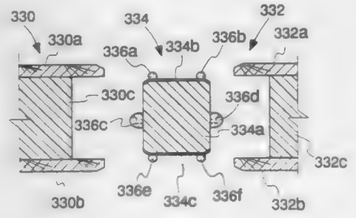
1. An elevated metal floor with wire duct, comprising an elevated square metal floorboard, a connecting seat, a connecting cap, a wire duct, a multiple duct cover and multiple leg members, the metal floorboard being formed with a dent portion on an upper surface along a periphery thereof, the dent portion including four corners and an opening formed at each corner, a threaded tube being upwardly inserted into each opening, a leg member being upwardly screwed into each threaded tube.

5,628,158

STRUCTURAL INSULATED PANELS JOINED BY INSULATED METAL FACED SPLINES

William H. Porter, P.O. Box 249, Saugatuck, Mich. 49453

Continuation-in-part of Ser. No. 273,981, Jul. 12, 1994, Pat. No. 5,497,589. This application Aug. 24, 1994, Ser. No. 295,248
Int. Cl.° E04B *2/08*
U.S. Cl. 52—309.9 3 Claims



1. A building structure comprising:

a first generally planar panel having inner and outer opposed facings and a first insulating core disposed therebetween;

a second generally planar panel having inner and outer opposed facings and a second insulating core, wherein each of said panels includes a recessed groove in an edge thereof formed from an edge of the insulating core and adjacent edges of the facings of each of said panels, wherein the opposed facings of each of said panels extend beyond the insulating core of said panel and wherein said first and second insulating cores are comprised of plastic foam;

a plastic foam insulating insert disposed intermediate the insulating cores of said first and second panels and intermediate adjacent edges of said inner and outer facings of said first and second panels, wherein said insert is generally rectangular in cross-section, completely fills the adjacent recessed grooves of said first and second panels, and extends substantially the length of said first and second panels;

first and second thin, generally flat metal strips attached to opposed outer walls of said insulating insert and disposed in contact with the outer facings and the inner facings, respectively, of said panels, wherein opposed edges of said metal strips are tapered inwardly to facilitate positioning said insert within the grooves of said first and second panels and wherein said plastic foam insulating insert has a thickness between said first and second metal strips essentially equal to the thickness of said first and second insulating cores for improved thermal insulating between said inner and outer facings; and

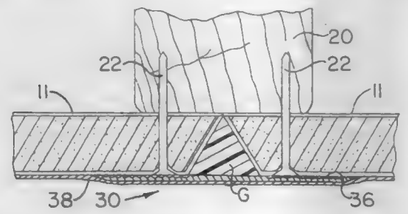
coupling means including a structural adhesive for attaching said first and second metal strips of said insulating insert to the outer facings and inner facings, respectively, of said first and second panels and for further attaching said first and second insulating cores of said first and second panels to the plastic foam of said insulating insert.

5,628,159

JOINT STRIP, METHOD OF FORMING A WALL USING THE JOINT STRIP AND WALL MADE THEREFROM

Patty L. Younts, 10 Eastview Dr., Lexington, N.C. 27292

Continuation-in-part of Ser. No. 199,565, Feb. 22, 1994, Pat. No. 5,487,250, which is a continuation of Ser. No. 859,472, Jun. 12, 1992, Pat. No. 5,311,717, which is a continuation-in-part of Ser. No. 452,763, Dec. 14, 1989, abandoned. This application Oct. 11, 1994, Ser. No. 321,215
Int. Cl.° E04B *2/10*
U.S. Cl. 52—417 5 Claims



1. A joint strip for concealing a joint formed between two panels of adjacent wallboards secured to studs to form a wall comprising:

a flexible support strip formed of a blend of cellulose fibers and from 10 to 50% by weight polyester fibers, said support rib capable of withstanding movement and vibration associated with day-to-day usage without breaking; and

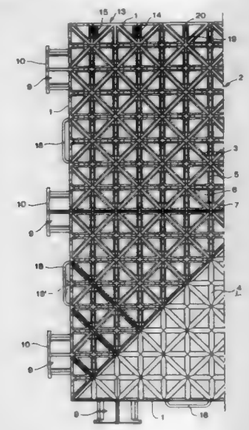
having a rib adhered on one side of said support strip such that said rib extends the length of said support strip and is shaped to be matingly received by a groove formed between said panels.

5,628,160

ELASTIC FLOORING ELEMENTS

Peter Küng, Jona, Switzerland, assignor to Sportförderung Peter Küng AG, Jona, Switzerland

Filed Dec. 15, 1995, Ser. No. 573,275
Claims priority, application Switzerland, Dec. 19, 1994, 03824/94
Int. Cl.° E04F *11/16;15/00*
U.S. Cl. 52—591.1 9 Claims



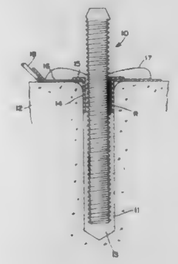
1. An elastic, one-piece flooring element which comprises a rectangular frame, strut means forming a lattice within said frame, said frame and said strut means defining upper and lower surfaces of said flooring element, male coupling means in the form of elongated bars extending outwardly from at least one side of said rectangular frame, each said elongated bar including a stop means at an end thereof remote from said frame, female coupling means in the form of spaced apart latches located within said frame on a side thereof having no male coupling means, said latches being cooperable with a male coupling means of an adjacent said flooring element to connect said elements together, and spring means extending outwardly of said frame to contact an adjacent said flooring element to maintain a predetermined spacing therebetween.

5,628,161

CENTERING SLEEVE AND OVERFLOW RING ASSEMBLY

Louis N. Giannuzzi, and Anthony C. Giannuzzi, both of 59 Dingletown Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 431,507, Apr. 28, 1995, Pat. No. 5,562,377. This application Sep. 11, 1995, Ser. No. 526,203
Int. Cl.° F16B *13/00*
U.S. Cl. 52—698 14 Claims



1. A sleeve and overflow member assembly adapted to facilitate installation in a hole drilled in masonry of a stud for fastening an object to the masonry, said hole having a diameter greater than that of the stud and having deposited therein a charge of a flowable uncured bonding agent; said assembly comprising:

A. a removable overflow member adapted to seat on the masonry and having an opening for registration with the hole; and

B. a sleeve adapted to snugly nest in the upper end of the drilled hole to receive the stud inserted therein, said sleeve being provided with an inner flow passage, whereby when the stud is inserted through the sleeve into the hole and plunges into the flowable agent, the agent is caused to rise into the space between the stud and the bank of the hole and to pass through the flow passage in the sleeve to overflow onto the member, which overflow after the agent is cured can then be discarded by removing the member.

5,628,162

PLANT FOR MAKING AND PACKAGING CIGARETTES

Christian Kreusch; Peter Riedelbauch, both of Berlin; Peter Kauffmann, Dogern, and Carsten Becker, Hamburg, all of Germany, assignors to British-American Tobacco (Germany) GmbH, Hamburg, Germany

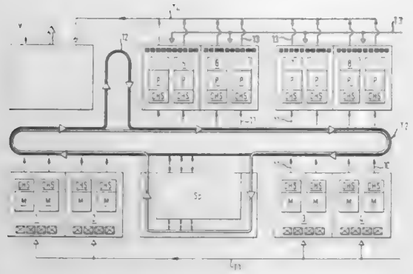
Filed Feb. 13, 1995, Ser. No. 387,467
Claims priority, application Germany, Feb. 16, 1994, 44 04 929.3
Int. Cl.° B65B *19/02*
U.S. Cl. 53—168 17 Claims

1. A plant for making and packaging cigarettes, comprising:

a plurality of cigarette-making machines;

a plurality of packaging machines for packaging cigarettes in at least one of packs, cartons and boxes;

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a first transport means for transporting manufacturing materials to the cigarette-making machines and packaging machines;

a second transport means for transporting cigarettes in containers from one of: (i) the cigarette-making machines to the packaging machines, and (ii) the cigarette-making machines through an intermediate store to the packaging machines;

a container-filling and container-handling station located downstream of each of the cigarette-making machines,

wherein the cigarette-making machines with the downstream stations are combined to form at least one side-by side module with identical direction of materials flow with the downstream stations situated at the second transport system; and

a container-handling and container-emptying station arranged upstream from each of the packaging machines, wherein the packaging machines with the upstream stations are combined to form at least one side-by-side module with identical direction of materials flow with the upstream stations situated at the second transport system, wherein at least one intermediate store for the containers is situated at the second transport system,

wherein the second transport system comprises driverless, floor-bound vehicles for transporting containers which are circulated in one direction on at least two tracks arranged in side-by-side relationship, and

wherein the first transport system extends on all modules' side far from the second transport system.

5,628,163

MODULAR CUTTING HEAD APPARATUS FOR HIGH SPEED WRAPPING MACHINE

Norbert P. Keopple, and Stanley D. Denker, both of New Richmond, Wis., assignors to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Continuation of Ser. No. 509,855, Aug. 1, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 668,320

Int. Cl.[6] B65B *7/00*

U.S. Cl. 53—374.4 **13 Claims**

1. A cut/seal head apparatus for use in high speed wrapping and packaging machines comprising:

(a) a frame having first and second parallel, spaced-apart channels;

(b) first and second pairs of bearing blocks slidingly received in said first and second channels;

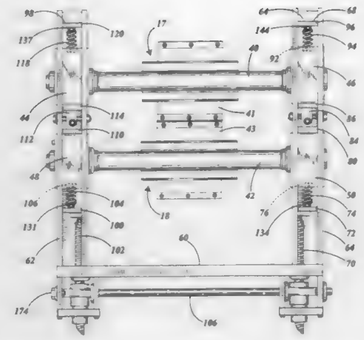
(c) a first cut/seal head shaft supporting a cut/seal head and having opposed ends journaled for rotation in the first pair of bearing blocks;

(d) a second cut/seal head shaft supporting a cut/seal head and having opposed ends journaled for rotation in the second pair of bearing blocks;

(e) biasing means cooperating between said frame and said first and second pairs of bearing blocks for normally biasing the first and second cut/seal head shafts toward one another; and

(f) drive means for imparting rotational motion to the first and second cut/seal head shafts, the drive means including

(i) a motor having an output shaft with a first belt pulley affixed to the output shaft:



(ii) subframe member having a pair of jack shafts journaled for rotation therein on parallel axis perpendicular to the motor output shaft at vertically offset locations said first and second jack shafts having second and third belt pulleys of equal size affixed individually to the first and second jack shafts:

(iii) a further jack shaft journaled for rotation on the subframe member on an axis parallel to the motor's output shaft, the further jack shaft having a fourth belt pulley equal in size to the first belt pulley:

(iv) an endless belt deployed about the first, second, third and fourth belt pulleys to drive the pair of jack shafts in opposite directions: and

(v) U-joint coupling means extending between the pair of jack shafts and the first and second cut/seal shafts, the U-joint coupling means permitting both the first and second cut/seal head shafts to be displaced away from one another against a force imparted by the biasing means while continuing to be rotated.

5,628,164

FLORAL CONTAINER HAVING A WATER-IMPERMEABLE EXTERNAL LAYER

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 415,263, Apr. 3, 1995, Pat. No. 5,515,644, which is a division of Ser. No. 53,062, Apr. 26, 1993, Pat. No. 5,402,599, which is a continuation-in-part of Ser. No. 941,992, Sep. 8, 1992, Pat. No. 5,410,856, Ser. No. 949,175, Sep. 22, 1992, Pat. No. 5,339,601, Ser. No. 934,832, Aug. 24, 1992, Pat. No. 5,426,914, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, which is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 934,832is a continuation of Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned. This application May 10, 1995, Ser. No. 438,676

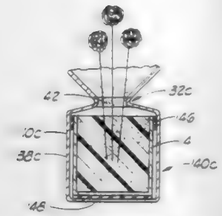
Int. Cl.[6] B65B *25/02*

U.S. Cl. 53—397 **50 Claims**

1. A method for providing a decorative assembly, comprising the steps of:

providing a container comprising:

a porous self-supporting holding material having an upper end, a lower end, and an outer peripheral surface extending



between the upper end and the lower end, the holding material constructed of a material for receiving a portion of a floral grouping and supporting the floral grouping without a pot means, and

an external surface layer covering the lower end and outer peripheral surface of the holding material and integral thereto, the external surface layer having the property of being substantially impermeable to an irrigant introduced into the porous self-supporting holding material, the external surface layer serving to retain the irrigant within the holding material;

providing a floral grouping having a bloom end and a stem end;

providing a sheet of material having an upper surface, a lower surface and an outer periphery;

disposing the stem end of the floral grouping in the holding material and the holding material supporting the floral grouping with a portion of the floral grouping near the bloom end thereof extending a distance upwardly beyond the upper end of the holding material; and

forming the sheet of material about the external surface layer of the container to conform to at least a portion of the external surface layer of the container to form a decorative cover about the container, the upper surface of the sheet of material being disposed adjacent a portion of the external surface layer of the container and the sheet of material extending about a portion of the external surface layer of the container and leaving uncovered a portion of the holding material near the upper end thereof, the floral grouping extending upwardly beyond the upper end of the holding material.

providing a first and second source of first and second flexible webs, respectively, capable of delivering said first and second webs to said through opening in said surface;

providing means for sequentially supplying the first and second flexible webs into the through opening from said first and second source;

providing means for dispensing said article into said through opening;

supplying said first flexible web into said through opening, said first flexible web being supplied so as to generally cover said through opening to form a first packaging layer;

dispensing said article onto said first packaging layer, said first packaging layer supporting said article in said through opening, and wherein said article and said first packaging layer defining a partially packaged article;

supplying said second flexible web onto said partially packaged article in an overlapping relations with said first flexible web, said second flexible web forming a second packaging layer about said article, and wherein portions of said first and second flexible webs overhang said article;

sealing while under constant pressure said portions of said first flexible web overhanging said article to said portions of said second flexible web overhanging said article to form a sealed packaged article; and,

removing said sealed package article from said through opening.

5,628,165

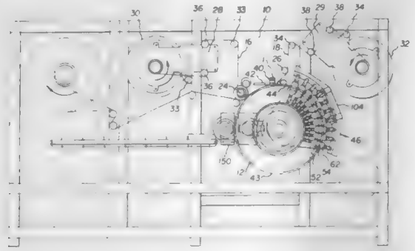
METHOD OF PACKAGING AN ARTICLE

Michael Long, Rochester, and James A. White, Conesus, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1996, Ser. No. 623,472

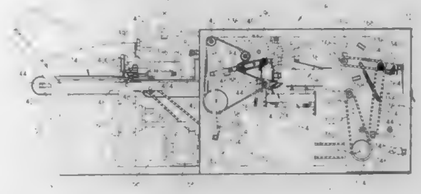
Int. Cl.[6] B65B *47/00*

U.S. Cl. 53—453 **5 Claims**



1. Method of packaging an article, comprising the steps of:

providing a rotary drum with a surface having at least one through opening, said through opening having open opposite ends and being generally somewhat larger than said article;



1. In a machine for inserting a supply of articles one-at-a-time into a quantity of flimsy bags, the improvement comprising:

an inserting station;

a conveyor for feeding said articles in succession toward said inserting station;

mechanism for successively presenting said bags to the inserting station in an open condition for receiving a corresponding article from the conveyor;

an accelerator between the inserting station and the conveyor for receiving articles in succession from the conveyor and propelling each successive article at an increased velocity into its open bag;

an ejector at the inserting station for receiving each bagged article as it is completed at the inserting station and sending it downstream in a delivery condition,

said mechanism including structure for holding bags in a stack at the inserting station and an air nozzle disposed to inflate the top bag of the stack just prior to arrival of the next article from the accelerator,

said structure including a shuttle having at least a pair of stack holding zones thereon.

said shuttle being shiftable relative to said inserting station to place a selected one of said holding zones at the station and to place a second holding zone in a location which permits access to the second holding zone for replenishing the stack of bags at the second holding zone while the supply of bags at said one holding zone is being depleted;

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a low supply detector at said inserting station for determining when the number of bags in the stack at the inserting station diminishes to a predetermined level; and

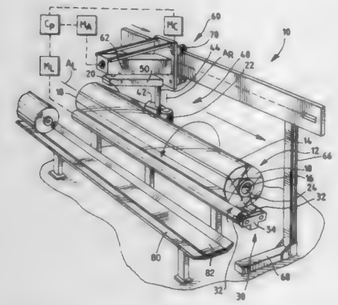
a diverter upstream from said accelerator for temporarily diverting articles from their normal path of travel to the inserting station and causing them to bypass the inserting station until an adequate supply of bags has been placed at the inserting station.

5,628,167

METHOD AND APPARATUS FOR WRAPPING ELONGATE LOAD HAVING GENERALLY CIRCULAR OR GENERALLY ANNULAR ENDS

Gale W. Huson, Glenview, Ill., and Werner K. Diehl, Parkland, Fla., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jul. 13, 1995, Ser. No. 502,130
Int. Cl.[6] B65B *11/04;53/00*
U.S. Cl. 53—465 **17 Claims**



1. A method of wrapping an elongate load, having a longitudinal axis, with wrapping film, comprising the steps of:

supporting an elongate load having a longitudinal axis, oppositely disposed longitudinally extending sides, and oppositely disposed transversely extending ends;

mounting a carriage at a position adjacent to one of said oppositely disposed longitudinally extending sides of said elongate load such that said carriage is able to undergo reciprocating movement along said one of said oppositely disposed longitudinally extending sides of said elongate load;

mounting a roll of wrapping film upon a support arm;

mounting said support arm upon said carriage such that said support arm is pivotable with respect to said carriage whereby said roll of wrapping film can be disposed adjacent to either one of said oppositely disposed longitudinally extending sides and either one of said oppositely disposed transversely extending ends of said elongate load so as to be able to wrap said wrapping film about said oppositely disposed longitudinally extending sides and said oppositely disposed transversely extending ends of said elongate load; and

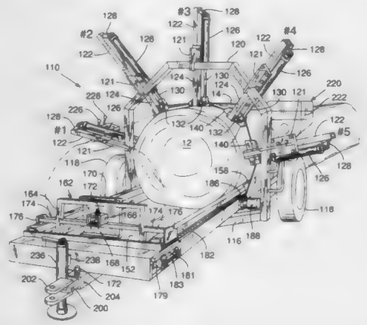
reciprocating said carriage while pivoting said support arm with respect to said carriage at predetermined times so as to permit said roll of wrapping film to traverse an oblong path about said elongate load comprising movement along each one of said oppositely disposed longitudinally extending sides and along each one of said oppositely disposed transversely extending ends of said elongate load so as to wrap said wrapping film about said oppositely disposed longitudinally extending sides and said oppositely disposed transversely extending ends of said elongate load.

5,628,168

BALE BAGGING MACHINE

Larry R. Inman, and Michael H. Koskela, both of Astoria, Oreg., assignors to Ag-Bag International Limited, Warrenton, Oreg.

Continuation-in-part of Ser. No. 157,404, Nov. 26, 1993, Pat. No. 5,398,487, and Ser. No. 212,244, Mar. 14, 1994, abandoned. This application Jan. 11, 1995, Ser. No. 371,806
Int. Cl.[6] B65B *9/10*
U.S. Cl. 53—567 **7 Claims**



3. A hale bagging machine comprising:

a mobile chassis having a front end and rear end and movable in a forward direction;

a ring-like support defining an opening and an axis through the opening projected along the forward direction;

a feed cradle on the chassis extending from a bale receiving position adjacent the front end of the chassis and projected rearwardly to a rear end portion positioned through the bottom of the ring-like support, said feed cradle having a bottom support pan configured to have a flat bottom and bale restricting sides and as configured supporting and guiding both rectangular and round bales, and a bale pusher movably mounted on the cradle for pushing both round and square bales along the cradle; and

multiple bag holding fingers mounted onto said frame for radial movement of the fingers relative to said frame, said bag holding fingers having independent movement and a control for providing said independent movement, and the end of said cradle extended through the frame and a pair of said fingers positioned on said support and movable by said control to a position whereby said cradle sides and said pair of fingers define corners of a rectangle to cooperatively hold a bag open for receiving a rectangular bale pushed by said bale pusher and guided by the sides of said cradle, said pair of fingers selectively movable by said control to an alternate position in cooperation with other of the fingers and the cradle configuration for holding a bag open to receive round shaped bale.

5,628,169

METHOD AND APPARATUS FOR SUPPORTING A TURF MOWER CUTTING UNIT

Daniel G. Stiller, 14955 Monterey Ave. S., Savage, Minn. 55378, and Jack R. Gust, 874 Haralson Dr., Apple Valley, Minn. 55124

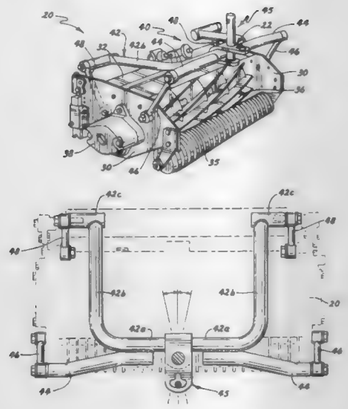
Continuation-in-part of Ser. No. 376,335, Jan. 20, 1995, abandoned. This application Feb. 22, 1995, Ser. No. 395,398
Int. Cl.[6] A01D *34/44*
U.S. Cl. 56—7 **10 Claims**

6. A turf maintenance machine comprising:

(a) a traction vehicle;

(b) a reel-type cutting unit; and

(c) a cutting unit support system connecting the cutting unit to the traction vehicle, the support system comprising a four-bar linkage, wherein:



i. a first bar of the four-bar linkage is rigidly connected to the cutting unit;

ii. the cutting unit support system comprises a lift arm, and a second bar of the four-bar linkage is rigidly connected to the lift arm;

iii. the lift arm carries a cutting unit carrier frame and attached to the carrier frame is a forward link and a rearward link;

iv. the links are pivotally connected to the carrier frame and the cutting unit; and

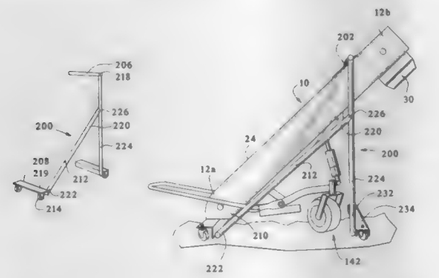
v. the forward link forms a third bar of the four-bar linkage, and the rearward link forms a fourth bar of the four-bar linkage.

5,628,170

SUPPORT STAND FOR A CORE HARVESTER

Daniel R. Vargas, 9095 Cumberland Ave., Niles, Ill. 60714, assignor to Daniel R. Vargas, Des Plaines, Ill.

Filed Oct. 23, 1995, Ser. No. 546,987
Int. Cl.[6] B65G *65/02;* **B62H** *1/00*
U.S. Cl. 56—16.4 R **19 Claims**



1. An improved stand assembly for a core harvester apparatus having a lower end core input end and an elevated core discharge end, and a conveyor belt supported by a conveyor belt frame and disposed in selectable inclined angled positions therebetween, said conveyor belt supported by a core harvester transportation wheel, means for mounting the core harvester apparatus upon an accompanying transportation vehicle for transportation by such vehicle along a selected path of turf including material to be harvested, and angle variation means for changing the inclined angle of said core harvester apparatus from at least a first operative angled position to a second inoperative angled position for removal of said core harvester apparatus from said accompanying transportation vehicle, said improved stand assembly comprising;

an upper end bracket attached to said core harvester apparatus proximate said elevated core discharge and thereof;

an upper support arm for removable engagement with said upper end bracket when in the first operative angled position and to support substantially the full weight of said core harvester apparatus when disposed into said second inoperative position;

a lower end support arm for removable engagement with said lower end of said core harvester apparatus when in the first operative angled position and to support substantially the full weight of said core harvester apparatus when disposed into said second inoperative angled position; and

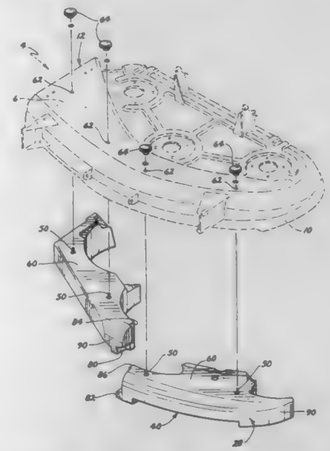
a frame connecting said upper support arm and said lower end support arm.

5,628,171

MULCHING MOWER CONVERTIBLE TO DISCHARGE/COLLECTION MODE

Bradley G. Stewart, Eden Prairie, and David J. Hunt, Brooklyn Park, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jul. 24, 1995, Ser. No. 505,948
Int. Cl.[6] A01D *34/66*
U.S. Cl. 56—320.2 **32 Claims**



1. A multi-bladed mower which is convertible between a discharge/collection mode of operation and a mulching mode of operation, which comprises:

(a) a cutting deck which is movable over the ground, wherein the cutting deck includes a peripheral skirt with such skirt having a laterally opening side discharge outlet for grass clippings;

(b) shroud means having a predetermined transverse width relative to the deck with the shroud means extending downwardly from the deck and substantially defining a plurality of generally cylindrical cutting chambers extending laterally across the deck with one cutting chamber being located nearest the side discharge outlet, wherein adjacent cutting chambers have interior openings connecting one another to allow at least some grass clippings to travel between cutting chambers;

(c) a rotatably driven, substantially horizontal cutting blade mounted in each of the cutting chambers; and

(d) means for removably attaching a portion of the shroud means to the deck to convert the deck between the mulching mode of operation in which the shroud portion is installed in the deck and the cutting chambers are closed to the side discharge outlet and the discharge/collection mode of operation in which the shroud portion is removed from the deck and the

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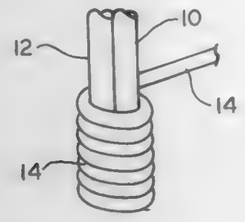
cutting chambers are open to the side discharge outlet, wherein the removable shroud portion forms part of at least the one cutting chamber nearest the side discharge outlet and extends laterally relative to the deck over substantially less than the entire transverse width of the shroud means, wherein the removable shroud portion is sufficiently unobstructed relative to the deck to permit sliding of the shroud portion beneath the deck such that the removable shroud portion can be easily installed or removed from the deck by sliding it in or out of the side discharge outlet.

5,628,172

COMPOSITE YARNS FOR PROTECTIVE GARMENTS

Nathaniel H. Kolmes, 1740 5th St. Dr. NW., Hickory, N.C. 28601, assignor to Nathaniel H. Kolmes, Hickory, N.C., and Harold F. Plemmons, Naples, Fla.

Filed Aug. 31, 1994, Ser. No. 299,206
Int. Cl.[6] D02G *3/02;3/36*
U.S. Cl. 57—210 **7 Claims**



1. A composite, cut-resistant yarn comprising:
(a) a first core strand being formed of fibers or filaments selected from the group consisting of an extended-chain polyethylene formed into a 70–200 denier yarn, an aramid formed into 70–200 denier yarn, a liquid crystal polymer formed into a 70–200 denier yarn, nylon formed into a 40–70 denier yarn, polyester formed into a 40–70 denier yarn, and polycotton formed into a 40–70 denier yarn;
(b) a second core strand of fiberglass having a denier of from about 75 to about 125;
(c) at least one covering strand having a denier of from about 40 to about 100, said covering strand being formed of fibers or filaments selected from the group consisting of extended-chain polyethylene, aramid, liquid crystal polymer, nylon, polyester, and polycotton; and
(d) the diameter of said composite yarn not exceeding 0.013 inch.

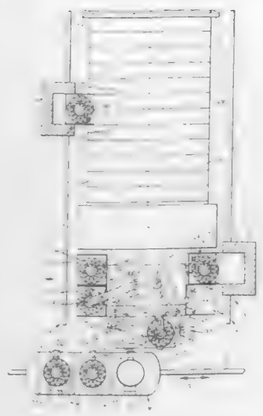
5,628,173

METHOD AND APPARATUS FOR FEEDING SLIVER TO A SPINNING MACHINE WITHOUT SLIVER CANS AT SPINNING STATIONS

Paul Landmesser, Erkelenz, Germany; Dirk Koltze, Charlotte, N.C., and Dieter Jinkertz, Willich, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Sep. 5, 1995, Ser. No. 523,276
Claims priority, application Germany, Sep. 14, 1994, 44 32 634.3
Int. Cl.[6] D01H *9/10;9/14*
U.S. Cl. 57—281 **17 Claims**

1. A method for supplying sliver taken from sliver containing cans produced at a sliver drawing frame to a plurality of aligned spinning stations of an open-end spinning frame which are serviced by a servicing device which travels in a path along the spinning stations to perform servicing operations thereat, the method comprising the steps of:



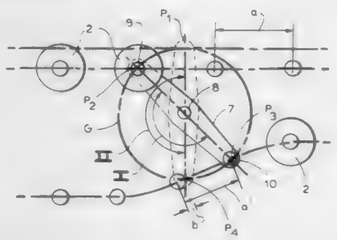
transporting a sliver containing can to a transfer location at the open-end spinning frame located along the travel path of the servicing device,
removing a partial lot of the sliver from the can at the transfer location,
transferring the partial sliver lot to the servicing device,
during subsequent servicing travel of the servicing device along its travel path, transferring the partial lot of sliver from the servicing device to a storage location at a spinning station whereat sliver is lacking and introducing the leading end of the partial lot of sliver by means of the servicing device into the spinning station, and
then causing the servicing device to resume servicing travel along the spinning stations following the successful introduction of the sliver to the spinning station.

5,628,174

BOBBIN-CHANGING APPARATUS

Karl-Heinz Mack, Weilheim, and Hermann Güttler, Uhingen, both of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Germany

Filed Dec. 18, 1995, Ser. No. 574,267
Claims priority, application Germany, Dec. 21, 1994, 44 45 809.6
Int. Cl.[6] D01H *9/10;9/14*
U.S. Cl. 57—281 **16 Claims**



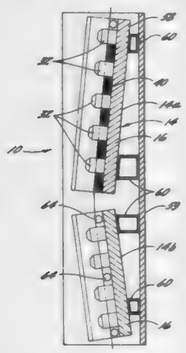
1. A bobbin and empty sleeve transfer system for a textile machine installation, said system comprising:
at least one endless conveyor forming separate first and second endless paths each extending on one side of a given location past said location and provided with moving trains of downwardly hanging full bobbins and empty sleeves for displacing said trains past said location;
a third endless conveyor forming a third endless path on an opposite side of said given location and provided with a moving train of downwardly hanging full bobbins and empty sleeves for displacing said train of said third endless conveyor past said given location;
an axle centered on and pivotal about an upright axis at said given location;
a horizontal beam mounted on said axle and having a pair of beam ends diametrically opposite one another and spaced equidistantly from said axis;
respective holders on the beam ends adapted to hold and to carry full bobbins and empty sleeves; and
means for rotating said beam about said axis and thereby moving said holders through an orbit intersected by said paths at a first transfer point individual to said first path, at a second transfer point individual to said second path and at third and fourth transfer points individual to said third path, said first and third transfer points and said second and fourth transfer points being respectively diametrically opposite one another across said axis, whereby said holders of said beam are simultaneously engageable with full bobbins and empty sleeves at said first and third points and are simultaneously engageable with full bobbins and empty sleeves at said second and fourth points in two angularly offset positions of said beam about said axis to effect bobbin exchange of said first and second paths with said third path.

5,628,175

HEATING APPARATUS FOR HEATING AN ADVANCING SYNTHETIC FILAMENT YARN

Martin Fischer, Solingen, Germany, assignor to Barmag AG, Remscheid, Germany

Filed Jun. 22, 1995, Ser. No. 493,655
Claims priority, application Germany, Jun. 22, 1994, 44 21 841.9; Nov. 12, 1994, 44 40 516.2
Int. Cl.[6] D01H *7/46;7/92*
U.S. Cl. 57—290 **20 Claims**



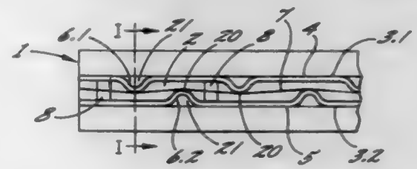
1. An apparatus for heating an advancing yarn, comprising
an elongate rail which extends in a longitudinal direction and which includes a generally flat yarn contact surface, and
yarn guide means comprising a plurality of guide members mounted in a longitudinally spaced apart and interdigitally disposed arrangement along the length of said rail for engaging opposite sides of an advancing yarn and guiding the advancing yarn along and in contact with the yarn contact surface in a laterally zigzagged path of travel.

5,628,176

HEATING APPARATUS FOR HEATING AN ADVANCING YARN

Siegried Morhenne, Breckerfeld, Germany, and Peter Berger, Cornelius, N.C., assignors to Barmag AG, Remscheid, Germany

Filed Mar. 8, 1996, Ser. No. 612,668
Claims priority, application Germany, Mar. 10, 1995, 195 08 519.1; Aug. 18, 1995, 195 30 360.1
Int. Cl.[6] D01H *7/92;7/46*
U.S. Cl. 57—290 **20 Claims**



1. An apparatus for heating an advancing yarn comprising
an elongate heater body having a channel therein which extends in an axial direction along the length thereof, with the channel being of generally rectangular cross section and defining parallel opposite side walls and a central plane which is parallel to and equally spaced between said opposite side walls,
means for heating the heater body, and
yarn guide means disposed in the channel for guiding the advancing yarn axially along the channel in a laterally zigzagged path of travel, said yarn guide means comprising a pair of metal strips disposed in the channel so as to overlie and contact respective ones of the opposite side walls, with each of the metal strips including axially spaced apart protuberances which extend laterally into said channel and beyond said central plane, and with the protuberances of each of said metal strips being axially offset from the protuberances of the other of said metal strips.

5,628,177

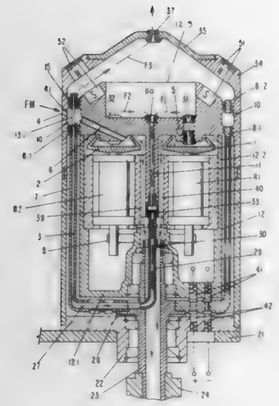
METHOD AND DEVICE FOR MANUFACTURING A TWISTED YARN IN AN INTEGRATED SPIN-TWISTING PROCESS ACCORDING TO THE TWO-FOR-ONE TWISTING METHOD FROM DISSOLVED FIBER MATERIAL

Ulrich Ballhausen, Krefeld; Guido Spix, Kaarst, and Wilfried Rütten, Wegberg, all of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Germany

Filed Aug. 4, 1995, Ser. No. 511,710
Claims priority, application Germany, Aug. 6, 1994, 44 27 875.6
Int. Cl.[6] D01H *4/00;1/00*
U.S. Cl. 57—406 **12 Claims**

1. A method for manufacturing a twisted yarn by an integrated spinning-twisting process; said method comprising the steps of:
generating a vacuum within a rotating spindle rotor;
dissolving fiber material to produce individual staple fibers;
feeding the individual staple fibers by means of said vacuum to at least two rotor spinning devices positioned within the spindle rotor;
spinning in the rotor spinning devices individual spun yarns from the individual staple fibers;
gathering the individual spun yarns from the rotor spinning devices and guiding the individual spun yarn in a first direction through the spindle rotor in order to subject the individual spun yarns to a first twist to form a twisted yarn;
guiding the twisted yarn in a second direction counter to said first direction to a centering element positioned above the rotor spinning devices whereby the twisted yarn forms a rotating yarn balloon about the spindle rotor;

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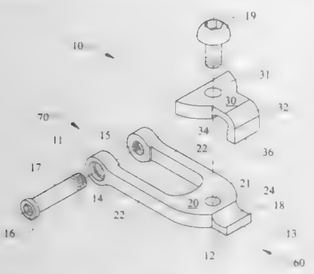


winding the twisted yarn onto a bobbin;

wherein said step of feeding the individual staple fibers includes the steps of supplying essentially in a radially inward direction relative to the axis of rotation of said spindle rotor the individual staple fibers through a fiber material feed tube to an annular space, positioned at the spindle rotor coaxially to a central axis of the yarn balloon, and from the annular space through respective fiber material supply channels to the at least two rotor spinning devices, wherein the envelope of the yarn balloon extends through the annular space and wherein the individual staple fibers pass through the yarn balloon; and

wherein said step of guiding the twisted yarn in a second direction counter to said first direction includes the step of routing the twisted yarn through a yarn guide element rotating with the yarn balloon.

5,628,178
SPROCKET CHAIN MASTER LINK
Russell K. Beckham, 2888 Old Gilliard Rd., Holly Hill, S.C. 29059
Filed Jul. 9, 1996, Ser. No. 678,520
Int. Cl.[6] F16G *15/04*
U.S. Cl. 59—86 **5 Claims**



1. A sprocket chain master link used for coupling opposing ends of a handwheel sprocket chain, comprising in combination:

a. a detachable grasping end secured to a link end portion of a standard handwheel sprocket chain link providing pivoting mobility to said link end portion whereby a linkage axis created by said detachable grasping end of said sprocket chain master link and said link end portion of said standard handwheel sprocket chain link easily conforms to an arced perimeter of a sprocket handwheel, said detachable grasping end comprising:

i. a press member removably attached to said shackle head member;

ii. a forward cowl member extending from said press member over said shackle extension member of said shackle body member, said forward cowl member having a bottom lip contacting said front contact edge of said shackle extension member when said press member is attached to said shackle head member, said forward cowl member having an interior surface;

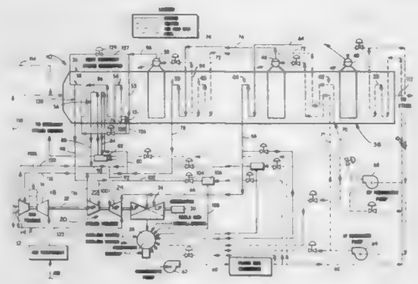
iii. a means for grasping said link end portion of said standard handwheel sprocket chain link; and

iv. a means for removably attaching said press member to said shackle head member;

b. a shackle body member having a shackle head member and a first and second shackle arm, said first and second shackle arm being joined together at said shackle head member near said detachable grasping end of said sprocket chain master link, said shackle body member having an open gap through which a sprocket tooth of said sprocket handwheel inserts during rotation of said standard handwheel sprocket chain around said sprocket handwheel; and

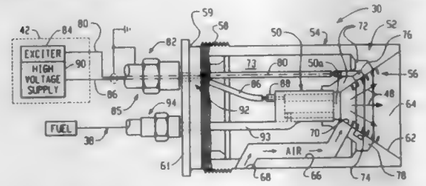
c. a detachable bit end of said sprocket chain master link connecting said first and second shackle arms opposite said grasping end of said sprocket chain master link, said detachable bit end comprising a shackle pin around which a loop end of said handwheel sprocket chain link circumvents.

5,628,179
STEAM ATTEMPERATION CIRCUIT FOR A COMBINED CYCLE STEAM COOLED GAS TURBINE
Leroy O. Tomlinson, Schenectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.
Continuation-in-part of Ser. No. 161,070, Dec. 3, 1993, Pat. No. 5,428,950, which is a continuation-in-part of Ser. No. 145,633, Nov. 4, 1993, Pat. No. 5,412,937. This application Apr. 5, 1995, Ser. No. 417,426
Int. Cl.[6] F02C *6/18*
U.S. Cl. 60—39.02 **10 Claims**



1. In a combined cycle system including a gas turbine, a steam turbine and a heat recovery steam generator, wherein gas turbine exhaust gas is used in the heat recovery steam generator for heating steam for the steam turbine, said gas turbine exhaust gas flowing from an entry end to an exit end of the heat recovery steam generator, and wherein said heat recovery steam generator includes at least one high pressure evaporator arranged to supply steam to a superheater including multiple passes including a first pass at one end thereof adjacent the evaporator, and a final pass adjacent an opposite end thereof and adjacent the entry end of the heat recovery steam generator, and one or more intermediate passes between the first and final passes, the improvement comprising an attemperating conduit not exposed to the gas turbine exhaust gas, connecting said one end of said superheater and said finish pass of said superheater, bypassing the intermediate passes to thereby introduce cooler superheated steam from said one end into said superheater at said opposite end to thereby allow a greater reduction in gas turbine exhaust temperature by reason of enhanced absorption of heat into the superheated steam in said opposite end of said superheater.

5,628,180
IGNITION METHODS AND APPARATUS FOR COMBUSTORS
Dennis M. DeFreitas, Oxford, N.Y., assignor to Simmonds Precision Engine Systems, Akron, Ohio
Continuation of Ser. No. 67,652, May 26, 1993, Pat. No. 5,515,681. This application Jun. 6, 1995, Ser. No. 469,335
Int. Cl.[6] F02C *7/26*
U.S. Cl. 60—39.06 **16 Claims**



14. A method for igniting fuel in a combustor comprising the steps of:

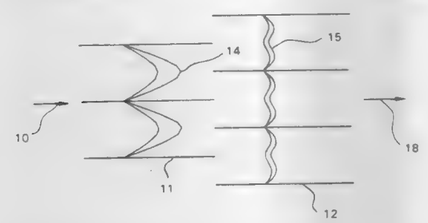
a. using a nozzle to atomize fuel provided from a fuel supply to produce an atomized fuel spray within a housing that is open to the combustor;

b. using a laser igniter to focus laser energy to a focal point in said atomized fuel spray within the housing to ignite the atomized fuel spray to produce a plasma;

c. extending the plasma beyond the housing into the combustor; and

d. using the plasma to ignite in the combustor fuel from a main fuel.

5,628,181
FLASHBACK SYSTEM
Gilbert O. Kraemer, New Haven, Conn., assignor to Precision Combustion, Inc., New Haven, Conn.
Filed Jun. 7, 1995, Ser. No. 485,853
Int. Cl.[6] F02G *3/00*
U.S. Cl. 60—39.11 **7 Claims**



1. An assembly to prevent propagation of combustion, which comprises;

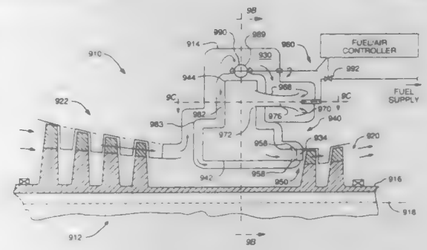
a multiplicity of close coupled multi-channel monoliths including at least one having walls less than about two millimeters apart;

said monoliths being arranged spatially upstream and downstream in respect to each other;

said downstream monolith being mounted such that its channel walls intercept a flow from the channels of said upstream monolith;

the channels of the upstream monolith being nonaligned with the channels of the downstream monolith.

5,628,182
STAR COMBUSTOR WITH DILUTION PORTS IN CAN PORTIONS
R. Jan Mowill, OPRA B.V. Opaalstraat 60, P.O. Box 838, 7550 AV Hengelo, Netherlands
Continuation-in-part of Ser. No. 394,037, Feb. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 376,360, Jan. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 348,829, Nov. 29, 1994, Pat. No. 5,572,862, which is a continuation-in-part of Ser. No. 264,844, Jul. 5, 1994, which is a continuation-in-part of Ser. No. 261,256, Jun. 14, 1994, Pat. No. 5,481,866, which is a continuation of Ser. No. 86,833, Jul. 7, 1993, abandoned. This application May 23, 1995, Ser. No. 450,948
Int. Cl.[6] F02C *3/14*
U.S. Cl. 60—39.36 **15 Claims**

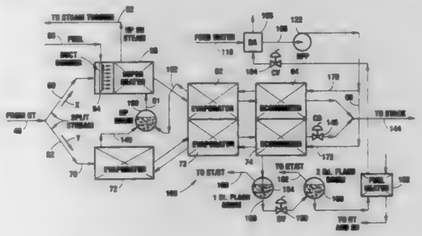


1. A combustor for combusting fuel and compressed air to produce combustion gases, for use in a gas turbine having a compressor and a turbine mounted spaced apart on a common shaft, the combustor comprising:

a chamber having an annular chamber portion with an axis, a radially outer surface, and an exit for delivery of combustion gases, and at least one can chamber portion protruding from said radially outer surface and flow connected to said annual chamber portion, and a fuel/air inlet for admitting the fuel and the compressed air for combustion into said can chamber portion, and

a fuel/air premixer cooperating with said fuel/air inlet, wherein said premixer delivers the fuel/air mixture along a direction substantially tangential to said can chamber portion axis, wherein said annual chamber portion is configured radially to surround the shaft and axially to nest between the compressor and the turbine.

5,628,183
SPLIT STREAM BOILER FOR COMBINED CYCLE POWER PLANTS
Ivan G. Rice, P.O. Box 233, Spring, Tex. 77383
Filed Oct. 12, 1994, Ser. No. 320,956
Int. Cl.[6] F02C *6/00*
U.S. Cl. 60—39.182 **25 Claims**



1. A gas stream heat recovery boiler for recovering heat exhaust from at least one combustion gas turbine to drive a load, comprising:

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at least one air compressor;

at least one combustor receiving air provided by said at least one compressor;

at least one gas expansion turbine for expanding gas provided by said at least one combustor and for providing first and second separate exhaust gas streams flowing downstream through first and second steam generators, each steam generator having at least one economizer for heating water provided by a water source and at least one evaporator for converting water to steam;

a supplementary fired superheater upstream of the first steam generator, the first exhaust gas stream passing through the supplementary fired superheater, then through the first steam generator; and

the second exhaust gas stream bypassing the supplementary fired superheater, then passing through the second steam generator, the first and second steam generators configured such that steam flow generated by the first steam generator is combined with steam flow generated by the second steam generator, such that the temperature of the steam produced by the first and second steam generators is increased by heat from the supplementary fired superheater.

16. A process for generating superheated steam from exhaust heat from at least one combustion gas turbine to drive a load, the process comprising:

providing first and second separate exhaust gas streams from said at least one combustion gas turbine;

positioning a supplementary fired superheater and s first steam generator having a first economizer for heating a source of water and generating steam along the first exhaust gas stream;

positioning a second steam generator having a second economizer for heating a source of water and generating steam along the second exhaust gas stream;

while generating steam in said first steam generator and in said second steam generator, increasing the temperature of said first gas stream by supplementary firing fuel upstream of said supplementary fired superheater;

superheating the steam generated by said first steam generator and said second steam generator in said supplementary fired superheater by extracting heat from supplementary fired fuel burned in said first gas stream wherein said steam generated by said first steam generator and said second steam generator is combined and said steam is heated by the supplementary fired superheater; and

discharging superheated steam from said supplementary fired superheater.

5,628,184

APPARATUS FOR REDUCING THE PRODUCTION OF NO_x IN A GAS TURBINE

Rolando R. Santos, 15012 SW. 146th St., Miami, Fla. 33196

Continuation-in-part of Ser. No. 12,923, Feb. 3, 1993, abandoned. This application Oct. 26, 1994, Ser. No. 329,193

Int. Cl.[6] F02C *9/28*

U.S. Cl. 60—39.281 **20 Claims**

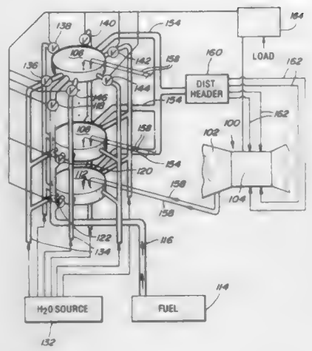
1. Apparatus for forming a mixture of air and fuel to be supplied to a gas turbine, the apparatus comprising:

a pair of mixing cans remote from a combustion zone of the turbine, each mixing can including:

a housing in communication with the air, and

means for conducting a flow of the fuel into the housing to create a region of relatively low pressure to facilitate the introduction of air into the housing to form the mixture:

means for transmitting the mixture of air and fuel formed by one of the mixing cans through a conduit to the turbine at a rate which increases with the load on the turbine; and



means for transmitting the mixture of air and fuel formed by the other of the mixing cans through a conduit to the turbine after the one mixing can reaches a predetermined rate.

5,628,185

GAS TURBINE ENGINE FUEL CONTROL SYSTEM

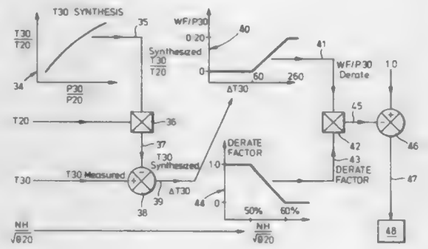
Arthur L. Rowe, Derby, England, assignor to Rolls-Royce plc, London, England

Filed May 11, 1995, Ser. No. 439,172

Claims priority, application United Kingdom, May 27, 1994, 9410760

Int. Cl.[6] F02C *9/28*

U.S. Cl. 60—243 **7 Claims**



1. A gas turbine engine including air compression equipment, an air temperature monitor positioned and arranged to provide an output signal representative of the actual temperature of air exhausted from said air compression equipment, means adapted to compute from suitable operating parameters of said engine the theoretical temperature of said air exhausted from said air compression equipment and to provide an output signal representative of said computed theoretical temperature, means to provide an output signal representative of the difference between said output signals representative of said actual and computed air temperature, and fuel control means acting in accordance with said temperature difference signal during engine starting to modulate the fuel flow to said engine in a manner consistent with the effective starting of said engine, wherein means are provided to monitor the air pressure and air temperature adjacent the air intake of said engine and the air pressure adjacent said air temperature monitor providing an output signal representative of the actual temperature of air exhausted from said air compression equipment, to provide said suitable operating parameters of said engine, and to compute therefrom said theoretical temperature of said air exhausted from said air compression equipment.

5,628,186

METHOD AND APPARATUS FOR CONTROLLED INTRODUCTION OF A REDUCING AGENT INTO A NITROGEN OXIDE-CONTAINING EXHAUST GAS

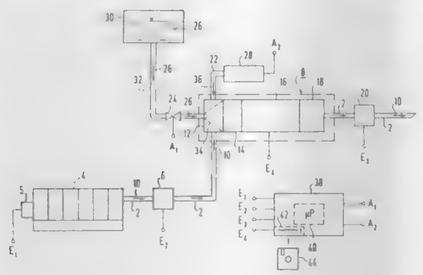
Helmut Schmelz, Prien, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 7, 1995, Ser. No. 551,791

Claims priority, application Germany, May 7, 1993, 43 15 278.3

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **28 Claims**



1. In a method for the controlled introduction of a reducing agent into a nitrogen oxide-containing exhaust gas leaving an internal combustion engine through an exhaust line having a catalytic converter built into the exhaust line for reducing nitrogen oxide, the improvement which comprises:

detecting at least one operation-relevant parameter of the exhaust gas and at least one operation-relevant parameter of the catalytic converter, to determine a nitrogen oxide rate;

determining an intermediate value for a reducing agent rate as a function of the nitrogen oxide rate; and

if reducing agent is desorbed by the catalytic converter, reducing the intermediate value by a rate of the reducing agent desorbed by the catalytic converter and, if reducing agent is adsorbed by the catalytic converter, raising the intermediate value by a rate of the reducing agent adsorbed by the catalytic converter.

5,628,187

METHOD TO CALIBRATE A HYDROSTATIC TRANSMISSION WITH ELECTRONIC CONTROLS

Wilhelm Göllner, Neumünster, Germany, assignor to Sauer Inc., Ames, Iowa

Filed Jun. 19, 1996, Ser. No. 666,141

Claims priority, application Germany, Jul. 6, 1995, 195 24 669.1

Int. Cl.[6] F16D *31/02*

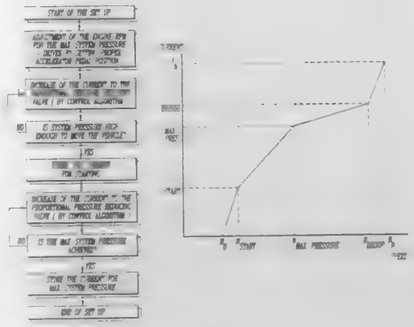
U.S. Cl. 60—327 **14 Claims**

1. A method for putting into operation a vehicle having an electronically controlled automotive hydrostatic transmission comprising a variable displacement pump (**2**) driven by an internal combustion engine (**1**), having a servo system (**9**), a hydraulic motor (**11**) and an electronic control (**14**), wherein an output current of the electronic control (**14**) is used by means of at least one proportional pressure-reducing valve (**7**, **8**) for generating a control pressure acting upon the servo system (**9**) of said variable displacement pump (**2**), characterized by

a) defining a limit value of a driving regime of the vehicle;

b) detecting, digitizing and reading-in at least one current operational parameter of the transmission into the electronic control (**14**);

c) detecting and storing at least one characteristic value of the output current of the electronic control (**14**) corresponding to a value of the driving regime of the transmission for at least one proportional pressure-reducing valve (**7**, **8**); and



d) calculating a current characteristic on the basis of said value of the output current for achieving reproducible driving properties.

5,628,188

TORQUE CONTROL OF HYDROSTATIC MACHINES VIA THE PIVOT ANGLE OR THE ECCENTRICITY OF SAID MACHINES

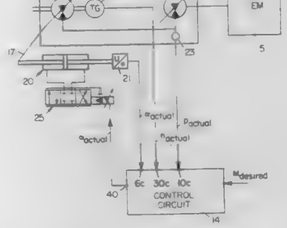
Rolf Kordak, Lohr, Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Germany

Filed Mar. 15, 1994, Ser. No. 212,804

Claims priority, application Germany, Mar. 15, 1993, 4308198.3

Int. Cl.[6] F04B *1/08*; **G05D** *17/00*; **G01D** *1/16*

U.S. Cl. 60—449 **16 Claims**



1. A circuit arrangement for the control of the output torque of a hydrostatic machine connected to a hydraulic system having an impressed operating pressure, said circuit arrangement comprising:

a control element for changing the displacement volume which in turn determines the output torque of the machine, the change of the displacement volume being based upon operating parameters corresponding to pressure, speed and temperature;

control means supplied with a desired torque value for generating a control signal for actuating said control element;

pick-up means connected to said control means and to said control element for picking up a pivotal angle α representing an actual displacement volume of said hydrostatic machine,

wherein the pivotal angle α is measured in at least one of an analog and a digital manner, and

wherein, when measured in an analog manner, the desired value of the pivotal angle α=M/P, wherein M is the torque and P is the pressure and

wherein, when measured in a digital manner, the outputted voltage for the pivotal angle is determined from previously determined measured values, and

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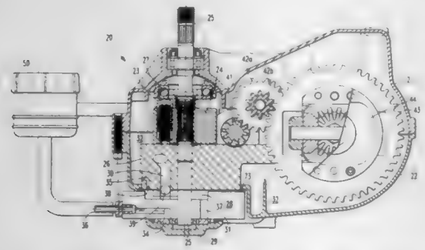
wherein the desired value of the pivot angle which is applied to the control member is a corrected desired value, corrected with respect to an internal speed of the machine unit.

5,628,189

CHARGE PUMP FOR AXLE DRIVING APPARATUS INCLUDING HYDROSTATIC TRANSMISSION

Ray Hauser, Decatur; Daryl Smothers, Sullivan, and John Schreier, Ville Grove, all of Ill., assignors to Hydro-Gear Limited Partnership, Sullivan, Ill.

Filed Feb. 24, 1995, Ser. No. 393,845
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—454 **17 Claims**



1. An apparatus for transmitting power from a vehicle engine to an output shaft, comprising:

a housing;

a hydrostatic transmission disposed substantially within said housing, said hydrostatic transmission comprising a center section having hydraulic porting formed therein; a pump mounted on said center section and drivingly linked to said vehicle engine; and a motor mounted on said center section and hydraulically connected through said hydraulic porting to said pump, said motor being drivingly connected to said output shaft;

a sump containing hydraulic fluid in flow communication with said hydrostatic transmission for supplying hydraulic fluid thereto;

a charge pump mounted on an external surface of said housing and spaced from said hydrostatic transmission for creating high pressure hydraulic fluid;

a gallery, in hydraulic fluid flow communication with said charge pump and said hydraulic porting, formed in the space between said charge pump and said hydrostatic transmission for providing a storage location for a quantity of said high pressure hydraulic fluid;

at least one check valve associated with said hydraulic porting for controlling the flow of said high pressure hydraulic fluid from said gallery to said hydraulic porting; and

at least on relief valve associated with said gallery for diverting said high pressure hydraulic fluid from said gallery to said sump.

2. An apparatus for transmitting power from a vehicle engine to an output shaft, comprising:

a housing;

a hydrostatic transmission disposed substantially within said housing, said hydrostatic transmission comprising a center section having hydraulic porting formed therein; a pump mounted on said center section and drivingly linked to said vehicle engine; and a motor mounted on said center section and hydraulically connected through said hydraulic porting to said pump, said motor being drivingly connected to said output shaft;

a sump containing hydraulic fluid in flow communication with said hydrostatic transmission for supplying hydraulic fluid thereto;

a porting plate disposed substantially adjacent to the external surface of said housing having internal porting formed therein, said internal porting being in flow communication with said hydraulic porting;

a charge cover mounted over said porting plate; and

a charge pump in flow communication with said internal porting mounted between said porting plate and said charge cover.

5,628,190

GEOTHERMAL POWER PLANT AND CONDENSER THEREFOR

Lucien Y. Bronicki, Yavne, Israel, assignor to Ormat Industries Ltd., Yavne, Israel

Filed Oct. 3, 1994, Ser. No. 317,637
Int. Cl.[6] F03G *7/00*
U.S. Cl. 60—641.2 **16 Claims**

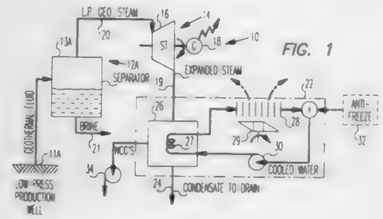


FIG. 1

1. A geothermal power plant operating on geothermal fluid comprising:

(a) a source of low pressure geothermal steam derived from said fluid;

(b) a turbo-generator including a low pressure steam turbine coupled to a generator;

(c) means for applying steam from said source to said turbine wherein expansion of the steam takes place driving the generator which produces electricity, and producing expanded steam;

(d) a condenser for condensing said expanded steam; and

(e) said condenser including a steam heat exchanger for receiving said expanded steam, a coolant in the form of water, an indirect-contact air-cooled heat exchanger, and a pump operable to effect the exchange of coolant between said steam heat exchanger and said air cooled heat exchanger in a closed coolant loop.

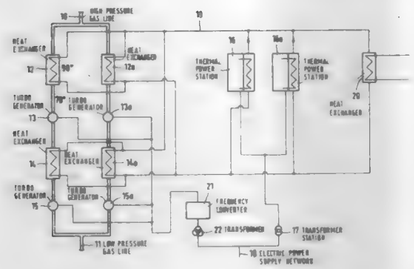
5,628,191

NATURAL GAS EXPANSION PLANT

Elmar Kueck, Bedburg; Heinz Siefen, Leverkusen, and Wolf-Ruediger Canders, Osterode, all of Germany, assignors to Energieversorgung Leverkusen GmbH, and Piller GmbH, both of Germany

PCT No. PCT/EP93/03223, § 371 Date May 16, 1995, § 102(e) Date May 16, 1995, PCT Pub. No. WO94/11626, PCT Pub. Date May 26, 1994
PCT Filed Nov. 17, 1993, Ser. No. 436,278
Claims priority, application Germany, Nov. 18, 1992, 9215695 U
Int. Cl.[6] F01K *23/04*
U.S. Cl. 60—655 **5 Claims**

1. A natural gas expansion plant comprising at least one heat exchanger (**12**) for preheating highly pressurized natural gas, at least one turbo generator (**13**) for expanding the natural gas to reach a lower pressure and for generating power from the energy released during said expansions, a means for conducting natural gas from a first heat exchanger (**12**) to a first turbo generator (**13**), a power station (**16**, **16***a*) having a portion of its waste heat supplied to the first heat exchanger via a waste heat circuit (**12**), the power station (**16**, **16***a*) includes a plurality of block-type thermal power stations (**16**, **16***a*) each having a gas-fired



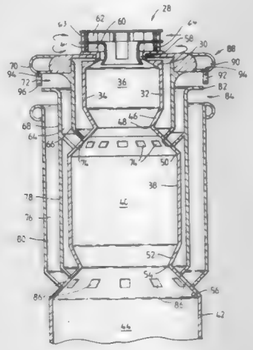
internal combustion engine and a generator adapted to be individually selectively switched off or run under full-load conditions in digital operation, and said waste heat circuit (**19**) from the block-type thermal power stations which (**16**, **16***a*) is thermally coupled to an external energy consumer or energy generator to discharge a portion of residual heat which is generated in digital operation of the block-type thermal power stations (**16**, **16***a*) without external cooling measures.

5,628,192

GAS TURBINE ENGINE COMBUSTION CHAMBER

Samantha Hayes-Bradley, Buckinghamshire; Ian J. Toon, Leicestershire, and Jeffrey D. Willis, Coventry, all of England, assignors to Rolls-Royce, plc, London, England

Filed Dec. 2, 1994, Ser. No. 352,847
Claims priority, application United Kingdom, Dec. 16, 1993, 9325707
Int. Cl.[6] F23R *3/14;3/34*
U.S. Cl. 60—733 **18 Claims**



1. A gas turbine engine combustion chamber having an interior defined by at least one peripheral wall,

means to define at least one first fuel and air mixing duct, said first fuel and air mixing duct having an upstream and a downstream end, each first fuel and air mixing duct being in fluid flow communication at its downstream end with said interior of the combustion chamber, each first fuel and air mixing duct having air intake means at its upstream end to supply air into the first fuel and air mixing duct,

means to define at least one second fuel and air mixing duct, said second fuel and air mixing duct having an upstream and a downstream end, each second fuel and air mixing duct being in fluid flow communication at its downstream end with said interior of the combustion chamber, each second fuel and air mixing duct having air intake means at its upstream end to supply air into the second fuel and air mixing duct,

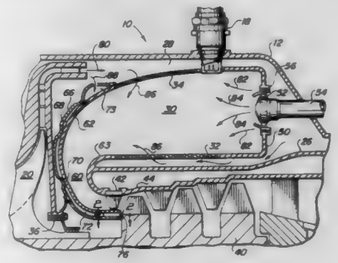
fuel injector means to supply fuel to the first and second fuel and air mixing ducts, the fuel injector means comprising a fuel manifold having at least one aperture arranged to direct fuel towards the second air intake means across the first air intake means, means to vary the pressure of the fuel supplied to the fuel injector means such that in operation at pressures greater than a predetermined pressure the fuel is supplied into the at least one second fuel and air mixing duct and at pressures lower than the predetermined pressure the fuel is supplied into the at least one first fuel and air mixing duct.

5,628,193

COMBUSTOR-TO-TURBINE TRANSITION ASSEMBLY

Harry L. Kington, Scottsdale, and Craig W. Irwin, Tempe, both of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Sep. 16, 1994, Ser. No. 307,961
Int. Cl.[6] F23R *3/06*
U.S. Cl. 60—752 **5 Claims**



1. A gas turbine engine comprising:

a compressor;

an axial turbine having a first stage stator and a first stage rotor;

a combustion chamber receiving compressed air from said compressor, said chamber defined by an outer cylindrical wall circumscribing and spaced apart from an inner cylindrical wall, said walls being connected by an annular wall at the upstream end of said chamber; and

a transition assembly for directing the gas flow generated in said combustion chamber to said turbine, said transition assembly having a first wall extending from said inner cylindrical wall to said first stage stator, and having a transition liner spaced from said first wall, said liner having a shroud disposed about its outer surface and abutting thereto at a plurality of points to define a plurality of cooling air passages between said outer surface and said shroud, said liner with said cooling air passages extending from said outer cylindrical wall to a downstream end portion disposed downstream of said first stage turbine stator.

5,628,194

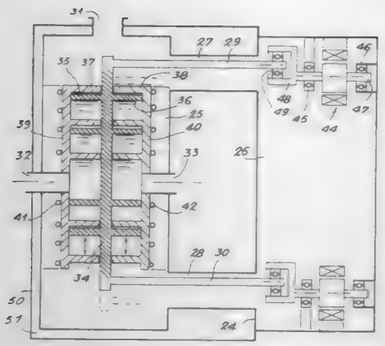
PROCESS FOR PUMPING GASEOUS HELIUM AT CRYOGENIC TEMPERATURES BY A POSITIVE DISPLACEMENT PUMP

Gérard Claudet, La Tronche, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 22, 1995, Ser. No. 526,817
Claims priority, application France, Aug. 23, 1994, 94 10217
Int. Cl.[6] F17C *13/00*
U.S. Cl. 62—50.6 **13 Claims**

1. Process for pumping evaporated gaseous helium at cryogenic temperatures, characterized by the steps of selecting a positive displacement pump comprising a spiral fixed part (**37**, **38**, **39**, **40**) and a spiral mobile part (**35**, **36**), the fixed part and the mobile part being constructed with intermediate clearances avoiding any friction and provided with a pump cooling device (**41**, **42**); cooling the spiral parts with the cooling device; rotating the spiral mobile part

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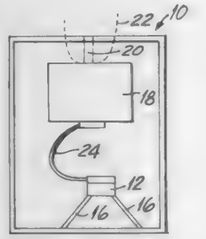
with respect to the fixed part in order to define therewith a delivery volume; attracting the helium into the delivery volume; compressing the helium by a decrease of said volume; and subsequently passing the helium out of the pump.

5,628,195

VIBRATIONALLY ISOLATED THERMAL SYSTEM FOR A CRYOGENICALLY COOLED DEVICE

Dennis Hill, Pottstown, and Ralph C. Longsworth, Allentown, both of Pa., assignors to APD Cryogenics, Inc., Allentown, Pa.

Filed Mar. 1, 1995, Ser. No. 396,528
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 **24 Claims**



1. A vibrationally isolated thermal system for a cryogenically cooled device, said system comprising:

a cold head, said cold head being maintainable at a selected cryogenic temperature by connecting refrigeration means thereto, said cold head having a longitudinal axis, and first and second axial ends, a portion of said cold head proximate said first axial end being adapted for connecting to said refrigeration means;

isolation mass means spaced from said cold head and having an interface surface for one of connection directly to said cooled device and connection indirectly to said cooled device;

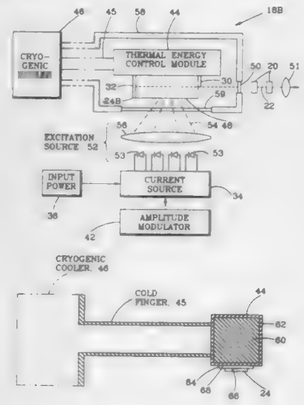
at least one flexible and thermally conductive strap having a first end and a second end, said first end being connected to said cold head, said second end being connected to said isolation mass, said isolation mass being suspended from said cold head by said at least one strap.

5,628,196

CRYOGENIC COOLING APPARATUS EMPLOYING HEAT SINK AND DIFFUSER PLATE FOR COOLING SMALL OBJECTS

Roger C. Farmer, Arcadia, Calif., assignor to Loral Electro-Optical Systems, Inc., Pasadena, Calif.

Filed Nov. 22, 1995, Ser. No. 563,281
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 **8 Claims**



1. Cooling apparatus for withdrawal of heat from a relatively hot object to a relatively cool element, said apparatus including a cold finger, a heat sink thermally connected via said cold finger to said cool element, and a thermal diffuser thermally interconnecting said heat sink with said hot object;

wherein said hot object is a semiconductor laser being operated in a pulsed mode and emitting pulses of thermal energy, the pulses being spaced apart in time;

said heat sink extends beyond a side of said hot object, and said diffuser extends along an interface between said hot object and said heat sink to an extent greater than said side of said hot object to diffuse heat of said hot object over a relatively large region of said heat sink; and

said heat sink is constructed of a material having a thermal energy storage capacity greater than a thermal energy storage capacity of material of said cold finger for extraction of heat produced by said laser during generation of a radiation pulse before an occurrence of a following radiation pulse, extracted heat of one radiation pulse being stored in said heat sink during a withdrawal of heat energy from said heat sink via said cold finger to said cool element.

5,628,197

TISSUE FREEZING APPARATUS

David C. Rada, 248 Lake Shore West, Lake Quivira, Kans. 66106

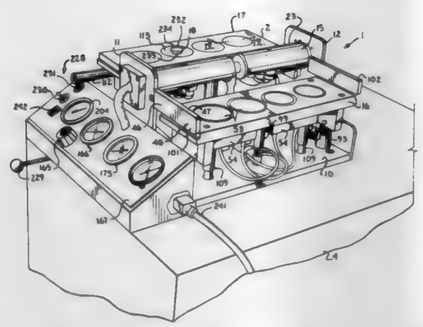
Filed Sep. 21, 1995, Ser. No. 531,719
Int. Cl.[6] F25D *25/00*; **B25B** *11/00*
U.S. Cl. 62—62 **52 Claims**

1. An apparatus for quick freezing tissue specimens for medical study comprising:

a) a first platform having a first surface for receiving a specimen;

b) a second platform having a second surface for operably engaging the specimen; said first and second platforms being rotatable relative to one another about a substantially horizontal axis between a first open position wherein the first and second platforms are sufficiently spaced to allow positioning of the specimen on said first platform surface such that said first and second platforms are facing substantially upwards and a second covering position wherein the second platform is positioned directly over said first platform and in spaced relationship thereto such that said first and second platforms are facing each other; and

c) linear movement mechanism cooperating with said first and second platforms; said linear movement mechanism including a latch device to prevent linear movement until said second platform is in the covering position thereof and a linear biasing device for urging said first and second platform toward one another into a position wherein both of said first and second platforms are in facing relationship and engage the specimen with said respective first and second surfaces from opposite sides of the specimen.

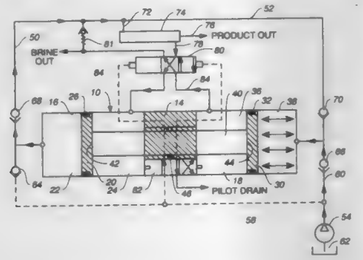


5,628,198

LIQUID TREATMENT APPARATUS FOR FILTERING LIQUID UNDER PRESSURE

Clark Permar, P.O. Box 701, Bolinas, Calif. 94924

Filed May 13, 1996, Ser. No. 647,588
Int. Cl.[6] B01D *9/04*
U.S. Cl. 62—123 **9 Claims**



1. Liquid filtering apparatus for providing a flow of pressurized liquid and filtering the pressurized liquid, said apparatus comprising, in combination:

a hydraulic cylinder defining a cylinder interior;

a divider dividing said cylinder interior into first and second compartments;

a first piston head within said cylinder interior, said first piston head being movably mounted in said first compartment and forming a liquid-tight seal with said hydraulic cylinder to subdivide said first compartment into a first set of two subcompartments, said subcompartments of said first set of two subcompartments located at opposed sides of said first piston head;

a second piston head within said cylinder interior spaced from said first piston head, said second piston head being movably mounted in said second compartment and forming a liquid-tight seal with said hydraulic cylinder to divide said second compartment into a second set of two subcompartments, said subcompartments of said second set of two subcompartments located at opposed sides of said second piston head;

a double-ended ram member movably mounted within said cylinder interior and extending between said first piston head and said second piston head, with a first end of said ram member connected to said first piston head within a single subcompartment of said first set of two subcompartments and a second end of said ram member connected to said second piston head within a single subcompartment of said second set of two subcompartments, said ram member extending through said divider, movable relative to said divider, and forming a fluid-tight seal with said divider;

first liquid flow path defining means defining a first liquid flow path extending between the two subcompartments of said first set of two subcompartments;

second liquid flow path defining means defining a second liquid flow path extending between the two subcompartments of said second set of two subcompartments;

pressurized liquid delivery means having an outlet for pressurized liquid;

control means for alternately introducing pressurized liquid from said pressurized liquid delivery means outlet into said first and second compartments to cause reciprocal movement of said piston heads and ram member within said cylinder interior and pressurization and flow of liquid through said liquid flow paths from the subcompartments of the sets of two subcompartments not accommodating a ram member end to their respective subcompartments accommodating a ram member end;

liquid exit path defining means defining a liquid exit path communicating with said liquid flow paths for discharging excess pressurized liquid from the subcompartments not accommodating a ram member end and not entering the subcompartments accommodating a ram member end; and

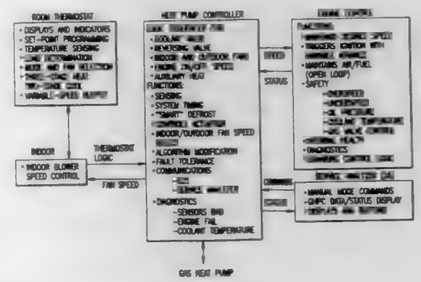
filter means operatively associated with said first and second liquid flow path defining means for receiving pressurized liquid from said first and second liquid flow paths and filtering said pressurized liquid.

5,628,199

MICROPROCESSOR-BASED CONTROLLER

Steven R. Hoglund, Edina; Kerry E. Ober, Minnetonka; Philip J. Zumsteg, Shorewood, all of Minn.; James M. Tuten, III, Columbus, Ohio; James R. Harnish, York, Pa., and Jay R. Goetz, Minnetonka, Minn., assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 909,527, Jul. 1, 1992, Pat. No. 5,438,844. This application Jun. 17, 1994, Ser. No. 261,806
Int. Cl.[6] F25B *49/00*
U.S. Cl. 62—155 **27 Claims**



1. In a heat pump system having a variable speed compressor, a controller comprising:

variable capacity control means for responding to at least one thermostat output signal and based upon each thermostat

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output signal computing in real-time performance parameters at variable capacity heating/cooling load conditions of the heat pump system;

defrost control means for calculating an optimum heat pump operating time between successive defrost cycles during a heating mode of a heat pump as a function of an outdoor temperature and variable capacity operating conditions calculated by said variable capacity control means; and

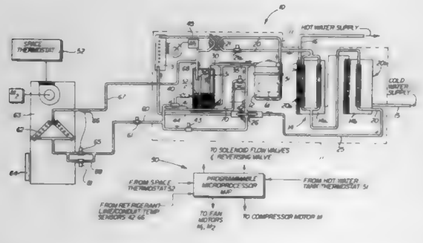
said controller communicating with at least one component of the heat pump system for overall control of the heat pump system.

5,628,200

HEAT PUMP SYSTEM WITH SELECTIVE SPACE COOLING

Joseph C. Pendergrass, Gainesville, Ga., assignor to Wallace Heating & Air Conditioning, Inc., Gainesville, Ga.

Filed Jan. 12, 1995, Ser. No. 372,732
Int. Cl.[6] F25B *41/00;27/00*
U.S. Cl. 62—197 **20 Claims**



1. A combined heat pump/air conditioning system having multiple heating and cooling modes of operation comprising in combination:

a reversible heat pump means including a compressor, an evaporator means and heat exchange means interconnected and charged with refrigerant fluid to produce heating and/or cooling upon demand;

said heat exchange means effecting heat transfer between the refrigerant fluid and a first working fluid to condense said refrigerant fluid;

an accumulator and suction line for feeding refrigerant fluid to said compressor;

sub-cool transfer means for refrigerant fluid for reclaim of heat from said heat exchange means and provided by the refrigerant fluid in at least one of said accumulator and suction line prior to entry into said compressor;

reversing valve means for switching said system between said heating/cooling modes;

first bypass means for said refrigerant fluid from said heat exchange means with respect to at least a portion of said sub-cool transfer means when said reversing valve means is set for the cooling only mode of a second working fluid;

pressure reducing means for feeding said bypassed refrigerant fluid to said evaporator during said cooling only mode of said second working fluid;

second bypass means for directing said refrigerant fluid around said pressure reducing means; and

control means for activating said first bypass means for bypassing said sub-cool transfer means and delivering refrigerant fluid to said pressure reducing means for said cooling only mode, and for deactivating said first bypass means and activating said second bypass means in the multiple heating modes for said heat exchange means,

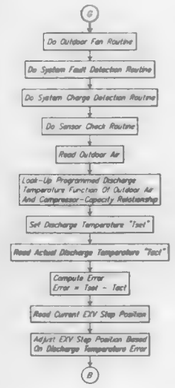
whereby maximum efficiency for said working fluids for both cooling and heating effect is obtained in the respective heating/cooling modes of operation.

5,628,201

HEATING AND COOLING SYSTEM WITH VARIABLE CAPACITY COMPRESSOR

Vijay Bahel, Sydney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton; Gregory P. Herroon, Piqua, and Gerald L. Greschl, Dayton, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Apr. 3, 1995, Ser. No. 415,640
Int. Cl.[6] F25B *41/04*
U.S. Cl. 62—211 **9 Claims**



1. A control system for a heat pump system of the type having a compressor for discharging refrigerant through an electrically controlled valve into a heat exchanger, comprising:

a first sensor for sensing a first parameter indicative of the temperature of the refrigerant discharged from said compressor;

a second sensor for sensing a second parameter indicative of the ambient air temperature;

a third sensor for sensing a third parameter indicative of the thermal load on said heat pump system;

at least one control system processor coupled for communication with said first, second and third sensors and with said valve for controlling the quantity of refrigerant discharged into said heat exchanger based on said first, second and third parameters.

5,628,202

COOLING POWER CONTROLLER FOR COMPRESSOR

Hyeong-Kook Lee, and Kyeong-Bae Park, both of Seoul, Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

Filed Oct. 18, 1995, Ser. No. 544,936
Claims priority, application Rep. of Korea, Jun. 2, 1994, 94.12782
Int. Cl.[6] F25B *1/00;* **G05B** *5/00*
U.S. Cl. 62—228.5 **3 Claims**

1. A cooling power controlling apparatus for a compressor for adjusting a cooling power such that a piston integrally formed with an oscillator according to the oscillation of said oscillator adjusts the amount of refrigerant absorbed into a cylinder, said apparatus comprising:

a heat exchanger connected to said compressor;

a transforming means for varying input A.C. power to output the same through a plurality of secondary taps;

applied voltage controlling means connected to said compressor for selecting the secondary tap voltage of said transforming means to adjust the cooling power of said compressor; and

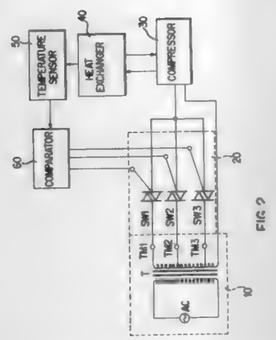


FIG. 2

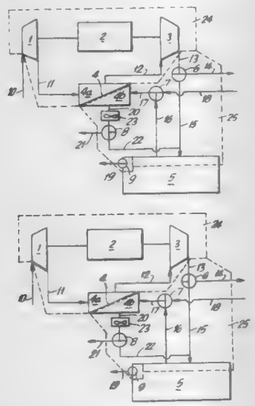
comparing means for comparing a predetermined temperature with the actual temperature of a heat exchanger to control said applied voltage controlling means.

5,628,203

COMBINED COOLING AND HEATING PROCESS AND DEVICE FOR CONDITIONING A ROOM

Ulrich Adolph, Leipzig; Stefan Eichholz, Kiel, both of Germany; George R. Giles, Rydon Farmhouse, and Donald J. Richards, Yeovil, both of Great Britain, assignors to Hagenuk Fahrzeugklima GmbH, Schkeuditz, Germany, and Normalair Garrett Ltd., Somerset, England

Filed Mar. 18, 1994, Ser. No. 210,688
Claims priority, application Germany, Mar. 18, 1993, 43 08 630.6
Int. Cl.[6] F25B *29/00;* **F24F** *5/00;* **B60H** *1/32;* **B61D** *27/00*
U.S. Cl. 62—402 **3 Claims**



1. A system for heating and cooling air in an area, comprising:

compressor means for compressing air to a point at which the air is above a temperature of the air in the area to be heated;

expander means for expanding ambient outside air to a point at which the air is below ambient temperature;

heat exchanger means for receiving air cooled by said expander means and for supplying heated air to the compressor means;

first valve means for selectively establishing fluid communication between said heat exchanger and said area in a cooling mode of operation to direct cooled air from said heat exchanger to said area, and between said heat exchanger and outside air in a heating mode of operation; and

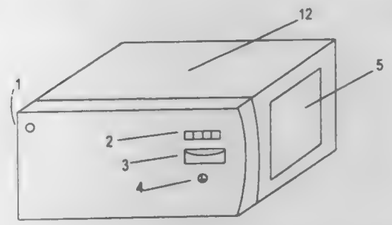
second valve means for selectively establishing fluid communication between said compressor means and outside air in a cooling mode of operation, and between said compressor means and said area in a heating mode of operation to direct heated air from said compressor means to said area.

5,628,204

IN-HOME PERSONAL BLOOD STORAGE UNIT

Carrie L. Shanaberger, 5123 Amos Reeder Rd., Boonsboro, Md. 21713

Filed Aug. 8, 1994, Ser. No. 342,125
Int. Cl.[6] F25D *11/00;* **A61B** *19/00*
U.S. Cl. 62—440 **23 Claims**



1. A method of storing an individual's own blood for later reuse for medicinal transfusion purposes comprising drawing a sufficient amount of blood from the individual to satisfy a medicinal transfusion purpose; storing the drawn blood in a frozen state at a temperature at which the blood can be reused, after thawing; the drawn blood being stored in a freezer at a residence accessible to the individual.

5,628,205

REFRIGERATORS/FREEZERS INCORPORATING SOLID-VAPOR SORPTION REACTORS CAPABLE OF HIGH REACTION RATES

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

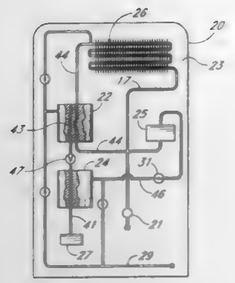
Continuation-in-part of Ser. No. 104,427, Aug. 9, 1993, Pat. No. 5,441,716, Ser. No. 327,150, Oct. 21, 1994, Pat. No. 5,477,706, and Ser. No. 149,453, Nov. 9, 1993, Pat. No. 5,396,775, which is a division of Ser. No. 794,501, Nov. 19, 1991, Pat. No. 5,271,239, which is a continuation-in-part of Ser. No. 732,652, Jul. 19, 1991, Pat. No. 5,186,020, which is a continuation-in-part of Ser. No. 644,833, Jan. 23, 1991, abandoned, said Ser. No. 104,427is a continuation-in-part of Ser. No. 931,036, Aug. 14, 1992, Pat. No. 5,328,671, and Ser. No. 975,973, Nov. 13, 1992, Pat. No. 5,298,231, which is a continuation of Ser. No. 320,562, Mar. 8, 1989, abandoned, said Ser. No. 327,150is a continuation of Ser. No. 59,548, May 11, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 390,678
Int. Cl.[6] F25B *17/08*
U.S. Cl. 62—480 **229 Claims**

1. A cooling apparatus comprising:

(a) a cabinet, case or container having a cooling chamber therein;

(b) one or more reactors each containing a complex compound formed by adsorbing a polar gas on a metal salt, and in which said reactors said polar gas is alternately adsorbed and desorbed on said complex compound, said metal salt comprising a halide, nitrate, nitrite, oxalate, perchlorate, sulfate or sulfite of an alkali metal, alkaline earth metal, transition metal, zinc, cadmium, tin or aluminum, or sodium borofluoride or a double metal chloride or bromide, and wherein said complex compound is formed by restricting the volumetric expansion and controlling the density thereof during said adsorption of said polar gas on said metal salt, whereby said complex

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compound is capable of increased reaction rates in the number of moles of said polar gas adsorbed and/or desorbed per mole of said complex compound per hour at adsorption or desorption times of less than 60 minutes, respectively, as compared to a complex compound formed without restricting the volumetric expansion and controlling the density thereof, wherein said one or more reactors comprise one or more reaction chambers having a maximum mean mass diffusion path length of less than about 15 mm;

(c) condenser means for condensing said polar gas and evaporator means thermally exposed to said cooling chamber for providing cooling therein and conduits for directing said polar gas from said one or more reactors to said condenser means, and from said evaporator means to said one or more reactors, and

(d) heating means cooperating with said one or more reactors for heating said complex compound therein.

5,628,206

REFRIGERANT CONDENSER

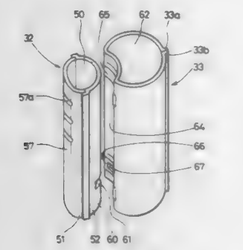
Norimasa Baba, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

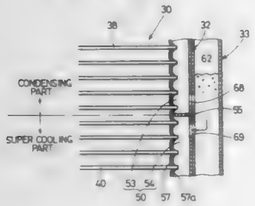
Filed Mar. 31, 1995, Ser. No. 414,384

Claims priority, application Japan, Apr. 1, 1994, 6-065056

Int. Cl.[6] F25B *39/04;* **F25D** *19/00;* **F28F** *7/00*

U.S. Cl. 62—507 **18 Claims**





1. A refrigerant condenser comprising:

a first pipe body having a first refrigerant passage therein and including a joining part formed partially on an outer peripheral surface thereof and a first through hole penetrating said joining part and in fluid communication with said first refrigerant passage; and

a second pipe body having a second refrigerant passage therein, and including a joined part formed partially on an outer surface thereof and a second through hole penetrating said joined part and in fluid communication with said second refrigerant passage, said second through hole communicating with said first communicating hole, wherein,

at least one of said first pipe body and said second pipe body is provided with a protruding surface protruding outwardly around a periphery of an associated through hole,

said protruding surface protrudes towards the other of said pipe body so as to contact the other pipe body, said protruding surface being constructed and arranged to provide a sealed joint when said joining part of said first pipe body is joined with said joined part of said second pipe body.

5,628,207

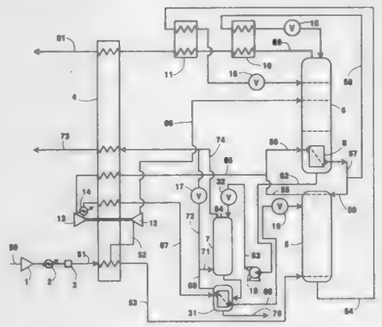
CRYOGENIC RECTIFICATION SYSTEM FOR PRODUCING LOWER PURITY GASEOUS OXYGEN AND HIGH PURITY OXYGEN

Henry E. Howard, and Dante P. Bonaquist, both of Grand Island, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Apr. 5, 1996, Ser. No. 628,370

Int. Cl.[6] F25J *3/00*

U.S. Cl. 62—646 **15 Claims**



1. A cryogenic rectification method for the production of lower purity gaseous oxygen and high purity oxygen comprising:

(A) passing feed air into a higher pressure column and separating the feed air within the higher pressure column by cryogenic rectification into oxygen-enriched liquid and into nitrogen-enriched fluid;

(B) passing oxygen-enriched liquid and a first portion of the nitrogen-enriched fluid into a lower pressure column and producing oxygen-richer liquid within the lower pressure column;

(C) passing oxygen-richer liquid from the lower pressure column into an auxiliary column and producing further oxygen-richer liquid within the auxiliary column;

(D) at least partially vaporizing the further oxygen-richer liquid by indirect heat exchange with a second portion of the nitrogen-enriched fluid and producing lower purity gaseous oxygen and high purity oxygen within the auxiliary column; and

(E) recovering lower purity gaseous oxygen and high purity oxygen from the auxiliary column.

5,628,208

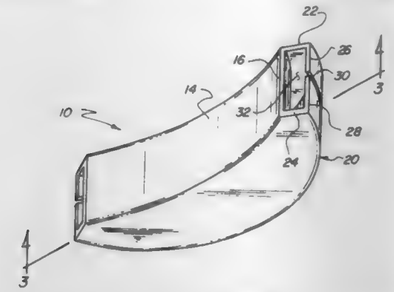
UNITARY RING REDUCER

Brenda Rood, 3513 Webster Subd., Valley City, N. Dak. 58072

Continuation-in-part of Ser. No. 224,530, Apr. 7, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 521,128

Int. Cl.[6] A44C *9/02*

U.S. Cl. 63—15.6 **7 Claims**



1. A new unitary ring reducer comprising:

a reducing web having a substantially arcuate web face of a first radius of curvature, and a substantially arcuate web inner wall of a second radius of curvature, wherein said first radius of curvature is greater than said second radius of curvature, said reducing web being positionable against a lower inner surface portion of a ring such that said reducing web projects radially inward to reduce a through-cross-section of said ring;

a ring conduit means coextensive with said reducing web for retaining said reducing web to said ring; said ring conduit means comprising a first side wall spaced from a second side wall, said side walls being integrally formed with and coextensive with said reducing web, said side walls having outer radial edges of substantially arcuate shape so as to follow a circular contour of said ring, said ring conduit means further comprising a first outer wall and a second outer wall, with said outer walls extending laterally inward from respective first and second side walls to define a thin arcuate slot coextensive of said ring conduit means and oriented between said outer walls, whereby said inner web wall, said side walls, and said outer walls cooperate to define a ring passage within which said portion of said ring is captured to mount said reducing web to said ring; and,

wherein said web and said walls are integrally formed of a substantially resilient shape retentive material such that lateral deformation of said side walls in conjunction with radial deformation of said outer walls permits said portion of said ring to be positioned within said passage, whereby a resiliency of said polymeric material will cause said walls to return to an original shape to encapsulate and capture said portion of said ring within said passage.

5,628,209

METHOD OF FORMING A KNOT ON A FLAT KNITTING MACHINE

Takashi Ikegami, Nakanoshima, Japan, assignor to Shima Seiki Manufacturing Ltd., Wakayama, Japan

Filed Aug. 30, 1995, Ser. No. 521,476

Claims priority, application Japan, Sep. 1, 1994, 6-208521

Int. Cl.[6] D04B *7/00*

U.S. Cl. 66—60 R **4 Claims**

1. A method of forming a knot on a flat knitting machine having at least a yarn feeder and at least a pair of needle beds, each having a plurality of needles and abutting to each other and configured to transfer a yarn between needle beds, said flat knitting machine also being configured to rack needle beds relative to each other, said method comprising the steps of

a) feeding a yarn from the yarn feeder to an empty first needle of a first needle bed of said pair of needle beds by moving the yarn feeder past said first needle in a first direction to a first position and hooking the yarn by said needle;

b) reversing the yarn feeder by moving the yarn feeder in a second, opposite direction and shifting the yarn feeder past said needle to a second position;

c) transferring the yarn being hooked by said needle to an empty second needle of a second needle bed of said pair of needle beds to form a first loop;

d) feeding the yarn from the yarn feeder to said second needle to which transfer was made to form a second loop, and knocking over said first loop to form a knot out of said first and second loops;

e) overlapping said knot with a loop of the knitted fabric to form a double loop; and

f) forming another loop on said double loop to fix said knot onto the knitted fabric.

5,628,210

WARP KNITTING METHOD, MACHINE, AND FABRIC MADE THEREFROM

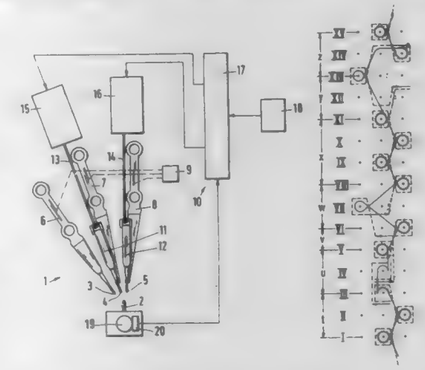
Kresimir Mista, Heusenstamm, and Hans-Jurgen Hohne, Hainburg, both of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Germany

Filed Apr. 24, 1995, Ser. No. 426,887

Claims priority, application Germany, Apr. 28, 1994, 44 14 876.3

Int. Cl.[6] D04B *23/00;21/00*

U.S. Cl. 66—203 **7 Claims**



1. Method for manufacturing a warp knitted fabric on a warp knitting machine having on at least one guide bar a plurality of

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guides displaceable by one needle space additional to an overlap and underlap shog of the guide bar, comprising the steps of:

shogging the guide bar during an overlap and underlap interval in each operational cycle;

displacing during the underlap interval in each operational cycle a first group of the guides selected in dependence upon a predetermined pattern; and

displacing during the overlap interval in each operational cycle a second group of the guides in dependence upon the predetermined pattern.

5,628,211

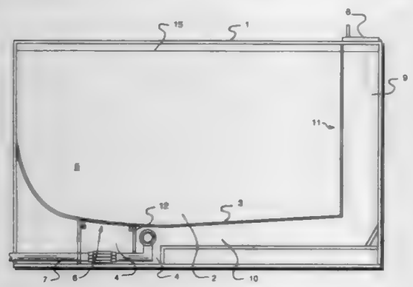
APPARATUS FOR IMPROVING ATMOSPHERIC DYE MACHINES

Donald P. Soucie, 55 Walnut Hill Rd., Pascoag, R.I. 02859

Filed Aug. 21, 1995, Ser. No. 517,292

Int. Cl.[6] D06B *23/22*

U.S. Cl. 68—15 **8 Claims**



1. An apparatus for maintaining near boiling temperatures of a textile dye liquor in an atmospheric dye machine comprising:

a well, said well adapted to be placed at a low point of a tank of said liquor;

a well cover, said well cover capable of allowing said liquor in said tank to pass through said well cover and collect in said well;

a sparge tube, said sparge tube capable of directing an external supply of steam into said well, said steam heating said liquor in said well;

a chamber, said chamber capable of collecting the heated liquor from said well;

a spout, said spout connecting said chamber to said well, said spout providing a path for said heated liquor to follow from said well to said chamber;

a baffle; said baffle separating said chamber from said tank, said baffle capable of permitting said liquor to flow from said chamber to said tank; and

a chamber cover, said chamber cover adapted to be placed over said chamber, said chamber cover capable of sealing the top of said chamber to atmosphere around said chamber.

5,628,212

ANTI-THEFT DEVICE FOR IMMOBILIZING A WHEEL OF A MOTOR VEHICLE

Ulrich Fritzler, 65-15 Booth St., Rego Park, N.Y. 11374-4155

Filed Jan. 30, 1995, Ser. No. 380,288

Int. Cl.[6] B60R *25/00*

U.S. Cl. 70—19 **30 Claims**

1. An anti-theft device for a tire on a driven wheel of a motor vehicle, comprising:

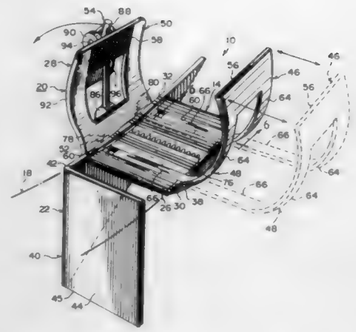
a base adapted for resting longitudinally upon a thread of a tire;

a rear jaw disposed for engaging a rear side wall of the tire;

a front jaw spaced from, and juxtaposed to, said rear jaw and disposed for engaging a front side wall of the tire, said base extending between said rear jaw and said front jaw, substantially in a plane extending substantially perpendicularly to both said rear jaw and said front jaw;

a pulling shaft lying substantially in said plane of said base and penetrating through at least one of said rear jaw and said front jaw; and,

means for tightening said pulling shaft so that said rear jaw and said front jaw move closer to one another for tightly gripping said tire said pulling shaft having a lever and a pivot cam pivoted thereto along a pivot axis which is perpendicularly connected to the pulling shaft and off center relative to an outer periphery of the cam, which periphery of the cam abuts against an outer surface of the front jaw when the lever and cam are pivoted to move the jaws closer to one another.



5,628,213

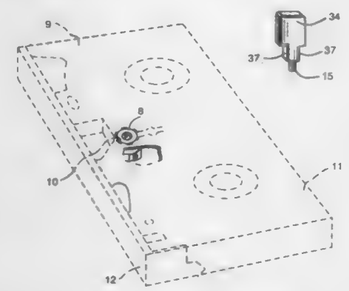
VHS VIDEOCASSETTE SECURITY DEVICE

James M. Broadbent, 14 Westwood Dr., Wilbraham, Mass. 01095

Filed Apr. 17, 1995, Ser. No. 422,896

Int. Cl.[6] E05B *73/00*

U.S. Cl. 70—58 **4 Claims**



1. A VHS tape security device comprising:

a cylindrical body having an inside surface and an outside surface and further having a hole wherein the circumference of said hole is greater at the top than at the bottom of said hole, said inside surface of said body further defining an opening contiguous with said hole wherein said opening extends radially through said body;

a pawl moveably disposed within said opening and moveably attached to the inside surface of said body by a cross pin, said pawl further having a notch and primary and secondary locking surfaces;

a spring having two ends wherein one end of said spring engages the inside surface of said body and the second end engages said notch whereby said spring causes said secondary locking surface to rest against said inside surface and further

causes said primary locking surface to partially protrude outside of said cylindrical body.

5,628,214

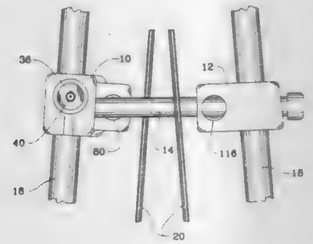
BICYCLE LOCK

Ridgely C. Evers, Healdsburg, Calif., assignor to Bolt Security Products, Inc., Healdsburg, Calif.

Filed Jan. 6, 1995, Ser. No. 369,755

Int. Cl.[6] B62H *5/16*

U.S. Cl. 70—227 **23 Claims**



1. A bicycle lock for installation on a bicycle comprising:

an elongated pin;

a first bracket;

first securing means for securing the first bracket to one of two outwardly splayed frame tubes of a bicycle at a point spaced from a rear axle of the bicycle and adjacent spokes of a rear wheel of the bicycle;

a second bracket;

second securing means for securing the second bracket to the other of the two frame tubes of the bicycle at substantially the same spacing from the rear axle as the first bracket;

the first bracket having a first aperture for being positioned parallel to the rear axle of the bicycle when the lock is installed on a bicycle, the first aperture being sized to receive the elongated pin with said pin spanning between the two brackets and having an end received in a second aperture positioned in the second bracket;

locking means in the second bracket for lockably engaging the pin to prevent removal of the pin from the second aperture, said locking means comprising a key-actuated rotatable lock with the key inserted perpendicular to said elongated pin;

the second aperture being blinded on an outer end to prevent access to the end of the pin which is secured in the second aperture when the pin is in locked engagement with the second bracket; and

the elongated pin blocking access to the first securing means and the second securing means when the pin is in locked engagement with the second bracket with the first and second brackets including metal inserts surrounded by reinforced plastic, said metal inserts partially surrounding the first and second apertures.

5,628,215

FRONT SEAT LOCKING DEVICE

Hugh Brown, 137-11 155th St., Jamaica, N.Y. 11434

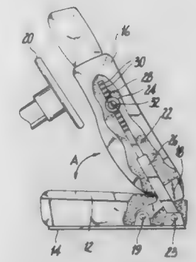
Filed Nov. 13, 1995, Ser. No. 556,717

Int. Cl.[6] A47C *31/00*

U.S. Cl. 70—261 **4 Claims**

1. Apparatus for preventing the unauthorized use of a vehicle having a chassis, said apparatus comprising at least a front seat provided with a tiltable seat back, said apparatus further comprising:

an elongated bar having a lower end and an upper end located along a side edge of the tiltable seat back;



means for pivotally fixing said bar at said lower end to the vehicle chassis such that said bar will freely swing conjointly with said seat back;

a hasp mechanism secured fixedly to the side edge of the seat back through which said upper end of said bar passes;

said bar and said hasp mechanism having cooperating engaging means to incrementally latch said hasp mechanism and said pivoted bar as said seat back is moved;

said hasp mechanism having a key lock for securing said bar in a selected fixed position, as said seat back is titled.

5,628,216

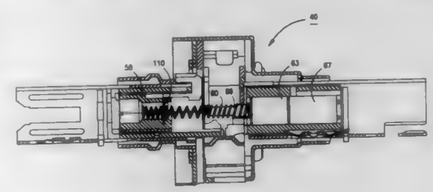
LOCKING DEVICE

Khurshid A. Qureshi; Ilia Petkov, and Nasir Uddin, all of Colorado Springs, Colo., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Jan. 13, 1995, Ser. No. 372,790

Int. Cl.[6] E05B *47/00*

U.S. Cl. 70—279 **12 Claims**



1. A locking device, comprising:

a locking mechanism having a locked position and an unlocked position;

a hollow plunger member having a central axis, the hollow plunger member being engaged with the locking mechanism to move the locking mechanism alternatively into the locked and unlocked positions upon reciprocating linear motion of the hollow plunger member in first and second directions along its central axis;

a motor having a shaft disposed coaxial with the central axis of the hollow plunger member;

a spring having first and second ends, the first end being fixed to the motor shaft; and

a pin fixed to the hollow plunger member for engaging the second end of the spring such that when the motor shaft rotates in a third direction the hollow plunger member moves in the first direction and when the motor shaft rotates in a fourth direction the hollow plunger member moves in the second direction; and

control electronics for controlling the direction of rotation of the motor shaft by providing a pulse in response to an input signal produced by an input signal generator; wherein the pin extends radially from an interior surface of the hollow plunger member.

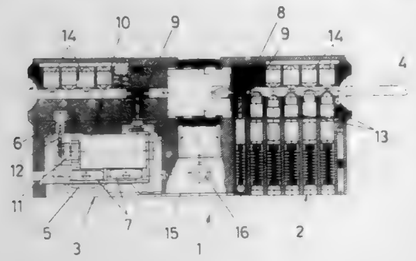
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5,628,217

ELECTRONIC-MECHANICAL LOCKING CYLINDERS

Luis Z. Herrera, Arechavaleta, Spain, assignor to Azbe B. Zubia S.A., Spain

Filed May 9, 1995, Ser. No. 437,720
Claims priority, application Spain, Nov. 18, 1994, 9402369
Int. Cl.° E05B *47/00*
U.S. Cl. 70—279 15 Claims



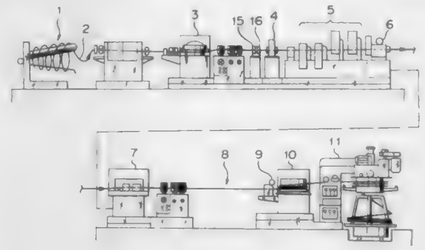
1. An electronic-mechanical lock cylinder set, comprising:
(a) a plurality of keys, each key comprising:
a memory;
a first code electronically stored in said memory;
a second code embodied mechanically in said key;
an information transmission circuitry for transmitting said first code; and
a contact for receiving energy and for transmitting said first code;
(b) an operating key; and
(c) a lock cylinder comprising:
electronic circuitry;
a memory for electronically storing one or more codes;
a contact for transmitting energy to one of said plurality of keys when the key is inserted into the lock cylinder and for receiving said first code from the inserted key;
a first blocking element capable of preventing rotation of the cylinder while in an undisplaced position;
one or more second blocking elements capable of preventing rotation of the cylinder while in an undisplaced position;
at least one battery for providing energy for operation of the electronic circuitry;
a pre-established mechanical code;
means for reading said first code from the inserted key;
means for providing the inserted key with energy from said battery through the contact of the lock cylinder and the contact of the key;
means for comparing said first code read from the inserted key with the one or more codes stored in the memory of the lock cylinder;
means for displacing the first blocking element when said first code read from the inserted key corresponds to one of said codes stored in the memory of the lock cylinder;
means for reading said second code;
means for displacing said second blocking elements when said second code corresponds to the pre-established mechanical code;
means for detecting insertion of the operating key;
means for detecting the energy level of the battery;
means for determining when the battery energy level is below a first threshold; and
means for issuing a warning that said battery level is low by preventing displacement of said first blocking element when said battery energy level is below the first threshold until one of said plurality of keys is inserted at least two consecutive times, and the first code of the twice inserted key corresponds to the one or more codes stored in the lock cylinder;
whereby said lock cylinder will be rotatable when the first and second blocking elements are displaced.

5,628,218

FLAW TREATMENT METHOD AND APPARATUS FOR A WIRE-SHAPED METAL

Akinobu Yamada; Toshiyuki Furutani, and Norihiro Oda, all of Shin Minato, Japan, assignors to Nippon Koshuha Steel Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 306,819
Claims priority, application Japan, Mar. 4, 1994, 6-059886
Int. Cl.° B21C *1/02*
U.S. Cl. 72—16.2 5 Claims



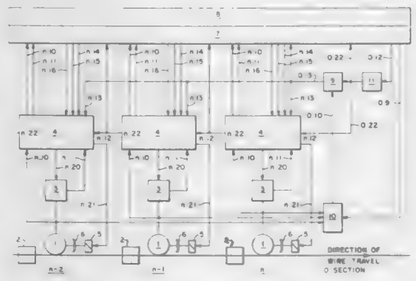
1. A flaw-treatment method for wire-shaped metal with a flaw-treating apparatus provided with a flaw-cutting device and a drawing device installed on the same work line after the flaw-cutting device, which comprises the steps of:
grinding a wire-shaped metal at a flaw-cut portion to make the portion rough with a grinding device being installed after said flaw-cutting device; and
drawing said metal at the flaw-cut portion.

5,628,219

DRAWING PROCESS CONTROL METHOD

Wolf-Dieter Fink, Preussisch Oldendorf, and Gustav Matthies, Barntrup, both of Germany, assignors to Herborn & Breitenbach GmbH & Co. KG, Unna, Germany

Filed Apr. 7, 1995, Ser. No. 418,615
Claims priority, application Germany, Apr. 9, 1994, 44 12 268.3
Int. Cl.° B21C *1/12*
U.S. Cl. 72—17.2 19 Claims



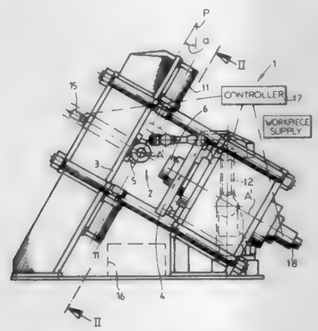
1. A method for controlling a direct, non-slip wire drawing process, the process including subjecting elongated stock material to the action of a plurality n of serially arranged stationary drawing dies, each die being associated with a separate drawing means, said control method comprising the steps of:
determining the linear speed of the stock material in the vicinity of each die and generating a rotational speed signal (n.**10**) commensurate therewith, said speed signals being derived from an operating parameter of an associated means for drawing the stock material through the die;
determining the force applied to the stock material to pull it through each die and generating a force signal (n.**11**) commensurate therewith, said force signals being a function of an operating parameter of the associated means for drawing the stock material through each die;
generating a desired speed signal (n.**12**) commensurate with the desired stock material linear speed upon exit from the last die;
generating a desired force signal (n.**13**) commensurate with the desired force to be applied to the stock material; and
independently controlling the operation of the drawing means as a function of the actual speed signal (n.**10**) and desired speed signal (n.**12**) and actual force signal (n.**11**) and desired force signal (n.**13**) wherein the operation of the drawing means for the most downstream die which is operating on the stock material is controlled as a function of the actual speed of the stock material exiting that die and the desired speed signal (n.**12**) and wherein the desired stock material linear speed signal for the next operative die in the upstream direction comprises the desired adjusted system speed signal (n.**22**) modified by a factor commensurate with any correction in linear speed implemented at the most downstream die and by a factor commensurate with any correction in force implemented at the most downstream die.

5,628,220

HIGH-PRESSURE BULGE-FORMING SYSTEM FOR TUBULAR WORKPIECES

August W. Schäfer, Drolshagen, Germany, assignor to Wilhelm Schafer Maschinenbau GmbH & Co., Wilnsdorf, Germany

Filed Apr. 14, 1995, Ser. No. 422,588
Claims priority, application Germany, Apr. 15, 1994, 44 14 706.6
Int. Cl.° B21D *26/02*; B21J *13/10*
U.S. Cl. 72—61 8 Claims



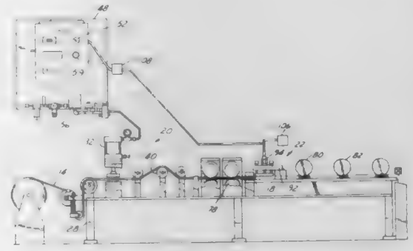
1. An apparatus for high-pressure bulge forming of tubular workpieces, the apparatus comprising:
an upper die plate facing generally downward and extending at an acute angle to a vertical plane;
a lower die plate generally parallel to and confronting the upper die plate, one of the plates being movable along an axis generally perpendicular to the plates toward and away from the other die plate;
respective upper and lower die halves carried on the die plates and matable together to form a die cavity having open ends and adapted to receive a one of the workpieces with ends of the workpiece exposed at the open ends of the die cavity, the upper die half opening downward;
means for displacing the one die plate and the respective die half toward and away from the other die plate;
respective actuators on the upper die plate having heads engageable with the ends of the workpiece in the die cavity;
pressurizing means including a passage extending through one of the actuator heads for internally pressurizing the workpiece in the die cavity for bulge-deforming the workpiece;
a supply of the tubular workpieces;
means including a robot for fitting a workpiece from the supply and fitting it to the upper die half; and
means below the upper die half for catching workpieces dropped therefrom.

5,628,221

FIN MILL MACHINE

Ronald L. Pardi, Canton; Alfred J. Michelini, Redford, and Rodger A. Lisk, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 27, 1995, Ser. No. 563,254
Int. Cl.° B21D *13/04*
U.S. Cl. 72—187 12 Claims



1. A fin mill machine for forming strip stock into corrugated fin material comprising:
a pneumatic cylinder and friction material for receiving the strip stock and applying pressure thereto;
tension measurement means for measuring the tension in the strip stock after it passes through the pneumatic cylinder;
tension feedback means for adjusting the pressure in the pneumatic cylinder based on the tension as measured by the tension measurement means;
forming means for forming corrugations in the strip stock;
a first packing station adjacent to the forming means for causing the corrugations to become packed together between the forming means and the first packing station; and
height measurement means for measuring the height of the corrugations between the forming means and the packing station.

5,628,222

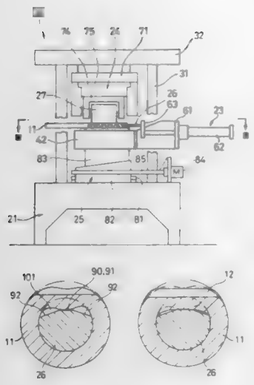
METHOD OF MANUFACTURING A RACK

Tsutomu Yasuda, and Jun Minamoto, both of Saitama, Japan, assignors to Showa Corporation, Gyoda, Japan

Filed Nov. 17, 1995, Ser. No. 560,445
Claims priority, application Japan, Nov. 30, 1994, 6-319402
Int. Cl.[6] B21B *21/00;17/02*
U.S. Cl. 72—192 3 Claims

1. A method of forming rack teeth by rolling a side surface of a rack material composed of a hollow pipe, comprising the steps of:
holding a hollow pipe-like rack material provided with a core bar inserted therein;
holding a forming roll having a peripheral rack teeth form rotatably along the rack material; and
pushing out and forming the rack teeth on the side surface of the rack material by contacting the rack material and the forming roll with each other and by moving the rack material relative to the forming roll a plurality of times in a tangential direction of an orientation of the forming roll;
wherein a cross sectional profile of the core bar has a material support surface, said surface spaced apart from said rack teeth

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formation portion on the rack material in an initial stage of the rolling process, the material support surface being a raised surface.

5,628,223

ARRANGEMENT FOR SEALING WITHOUT CONTACT A GAP IN THE RUNOUT OF A ROLL

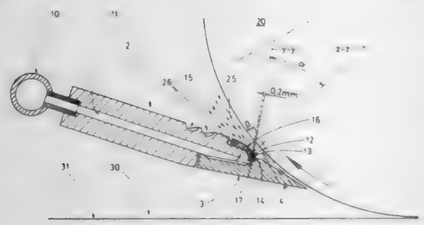
Wolfgang Denker, Freudenberg, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Jan. 6, 1995, Ser. No. 369,788

Claims priority, application Germany, Jan. 8, 1994, 44 00 423.0

Int. Cl.[6] **B21B** *28/00*

U.S. Cl. 72—236 **10 Claims**



1. An arrangement for sealing without contact a gap between a separating means and a work roll in a runout of a roll stand for rolling rolled material, the work roll having an axis and a surface, the rolled material having a width and a surface, the arrangement comprising a separating element mounted at an end of the separating means, the separating element being arranged so as to extend approximately tangentially relative to the surface of the work roll and at a relatively small distance from the surface of the work roll and from the surface of the rolled material, the separating element having at least one supply duct for compressed air connected to a compressed air source, wherein the supply duct has at an end thereof a slot-shaped nozzle for blowing air in a blowing-out direction, the slot-shaped nozzle having an opening and being located at a small distance from the roll surface and extending along the rolled surface in the direction of the roll axis, the blowing-out direction of the slot-shaped nozzle and a line extending from the nozzle opening perpendicularly relative to the axis of the work roll including an angle of between 0° and 45° in a direction of rotation of the roll, the separating element having at a front side thereof an end portion with a tip and a thickness, the end portion extending approximately tangentially relative to and at a small distance from the roll surface, wherein the thickness of the end portion decreases toward the tip, such that a flow channel is formed between the end portion and the roll surface, wherein a width of the flow channel increases steadily away from the tip in the manner of an injector, and wherein the flow channel extends at least over the width of the rolled material parallel to the axis of the work roll.

5,628,224

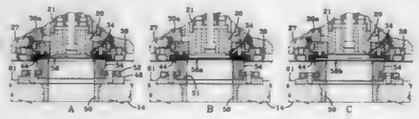
METHOD FOR SEQUENTIALLY FORMING CAN BODIES

James A. McClung, North Canton, and Paul L. Ripple, Canton, both of Ohio, assignors to Can Industry Products, Inc., Canton, Ohio

Filed May 5, 1995, Ser. No. 435,204

Int. Cl.[6] **B21D** *28/02*

U.S. Cl. 72—336 **4 Claims**



1. A method of forming a plurality of cup-shaped members from a metal sheet in a single continuous stroke of a double-acting press having inner and outer rams, including the steps of:

feeding the metal sheet between a plurality of lower blank and draw dies and a plurality of vertically aligned upper draw horns, draw pads and cut edges;

simultaneously advancing a plurality of cut edges and draw pads toward the metal sheet and the blank and draw dies by movement of the outer ram;

sequentially blanking a a plurality of disks from the metal sheet by advancing the cut edges in a continuous stroke of the outer ram beyond the blank and draw dies;

sequentially clamping peripheries of the disks against the blank and draw dies only after completion of the blanking of all disks from the metal sheets upon further advancement of the draw pads by the continuous stroke of the outer ram;

simultaneously advancing the draw horns toward the disks by movement of the inner ram; and

drawing a plurality of cup-shaped members from the disks, by the advancement of the draw horns in a continuous single stroke of the inner ram.

5,628,225

LEAF SPRING CAMBERING APPARATUS

Motoo Morita, Nagoya, Japan, assignor to Morita and Company Co., Ltd., Aichi, Japan

Filed Mar. 22, 1995, Ser. No. 408,917

Claims priority, application Japan, Jul. 13, 1994, 6-185444

Int. Cl.[6] **B21D** *7/00;53/88*

U.S. Cl. 72—413 **3 Claims**

1. A cambering apparatus for imparting a predetermined camber to a leaf spring blank loaded between a pair of dies opposing vertically to each other by bringing said dies closer relative to each other; said apparatus essentially comprising an upper variable die and a lower variable die; said upper variable die consisting of:

a pair of upper guide members secured on a movable frame descendably disposed on a main body frame, and extended in the longitudinal direction of said leaf spring blank;

a multiplicity of upper supporting members disposed on said upper guide members to be slidable in the longitudinal direction thereof;

an upper shaping finger fitted descendably in a U-shaped groove defined on that side of each upper supporting member which opposes to one of adjacent two upper supporting members, at least two upper shaping fingers provided thereby defining a group of upper shaping fingers;

a regulating member disposed on each of said upper supporting members, which is normally abutted against a corresponding upper shaping finger provided in said U-shaped groove and which can be shifted by a releasing means to a position where it allows descending of said upper shaping finger; and

a pair of releasable upper immobilizing means disposed on said movable frame, which brings said multiplicity of upper supporting members into press contact with one another so as to unmovably position said group of upper shaping fingers;

whereas said lower variable die consisting of:

a pair of lower guide members secured on a fixed frame disposed on said main body frame and under said movable frame so as to oppose vertically thereto and extended in the longitudinal direction of said leaf spring blank;

a multiplicity of lower supporting members disposed on said lower guide members to be slidable in the longitudinal direction thereof;

a lower shaping finger fitted ascendably in a U-shaped groove defined on that side of each lower supporting member which opposes to one of adjacent two lower supporting member, at least two lower shaping fingers provided thereby defining a group of lower shaping fingers;

a regulating member disposed in each of said lower supporting members, which is normally abutted against a corresponding lower shaping finger provided in said U-shaped groove and which can be shifted by a releasing means to a position where it allows descending of said lower shaping finger; and

a pair of releasable lower immobilizing means disposed on said fixed frame, which bring said multiplicity of lower supporting members into press contact with one another so as to unmovably position said group of lower shaping fingers; and

wherein a die shaping device is disposed in said main body frame, said die shaping device for ascending or descending said shaping fingers in said upper and lower variable dies onto said supporting members respectively so as to form a predetermined die profile by each of said upper and lower groups of shaping fingers along an opposing ends of said upper and lower groups of shaping fingers.

5,628,226

AMPLIFIED TOGGLE PRESS FOR RULE BENDING AND NOTCHING

Andrew J. Weissman, Glenview, Ill., assignor to J. F. Helmold & Bros., Inc., Elk Grove, Ill.

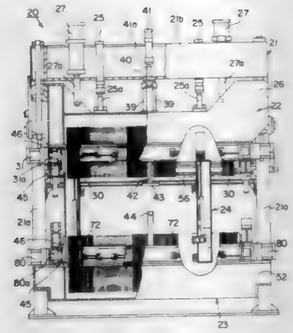
Filed Apr. 28, 1995, Ser. No. 430,561

Int. Cl.[6] **B21J** *9/18;* **B21D** *7/06*

U.S. Cl. 72—451 **6 Claims**

1. A manually operated press comprising:

a base;



least two upper shaping fingers provided thereby defining a group of upper shaping fingers;

a regulating member disposed on each of said upper supporting members, which is normally abutted against a corresponding upper shaping finger provided in said U-shaped groove and which can be shifted by a releasing means to a position where it allows descending of said upper shaping finger; and

a pair of releasable upper immobilizing means disposed on said movable frame, which brings said multiplicity of upper supporting members into press contact with one another so as to unmovably position said group of upper shaping fingers;

whereas said lower variable die consisting of:

a pair of lower guide members secured on a fixed frame disposed on said main body frame and under said movable frame so as to oppose vertically thereto and extended in the longitudinal direction of said leaf spring blank;

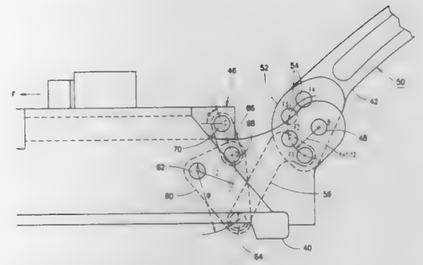
a multiplicity of lower supporting members disposed on said lower guide members to be slidable in the longitudinal direction thereof;

a lower shaping finger fitted ascendably in a U-shaped groove defined on that side of each lower supporting member which opposes to one of adjacent two lower supporting member, at least two lower shaping fingers provided thereby defining a group of lower shaping fingers;

a regulating member disposed in each of said lower supporting members, which is normally abutted against a corresponding lower shaping finger provided in said U-shaped groove and which can be shifted by a releasing means to a position where it allows descending of said lower shaping finger; and

a pair of releasable lower immobilizing means disposed on said fixed frame, which bring said multiplicity of lower supporting members into press contact with one another so as to unmovably position said group of lower shaping fingers; and

wherein a die shaping device is disposed in said main body frame, said die shaping device for ascending or descending said shaping fingers in said upper and lower variable dies onto said supporting members respectively so as to form a predetermined die profile by each of said upper and lower groups of shaping fingers along an opposing ends of said upper and lower groups of shaping fingers.



a platen fixed to said base;

a ram attached to said base, said ram being movable toward and away from said platen;

a handle having an elongate grip end and a link-pivot end, said link-pivot end attached to said base through a first rotatable pivot, said link-pivot end further including an input link pivot, said input link pivot being offset radially from said rotatable pivot;

a toggle-and-crank linkage responsive to movement of said handle for extending and retracting said ram relative to said platen, said toggle-and-crank linkage comprising a toggle input link, a rotary member, and an output link, said rotary member having first and second crank pivots and a fixed rotatable fulcrum, said output link having a first and second end, said first end of said output link pivotally attached to said ram and said second end of said output link pivotally attached to said second crank pivot, said toggle input link having first and second ends, said first end of said toggle input link being pivotally attached to said input link pivot, said second end of said toggle input link being pivotally attached to said first crank pivot, said toggle-and-crank linkage being dimensioned such that said toggle input link is substantially at top dead center when said ram is fully retracted from said platen and is substantially at bottom dead center when said ram is fully extended toward said platen.

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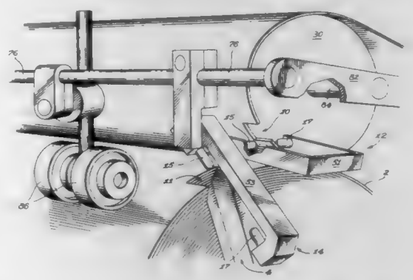
METHOD AND APPARATUS FOR DETERMINING AT LEAST ONE SHEET STRETCH VALUE OF A ROLL OF MATERIAL

Benoit LaPlante, Sherbrooke, Canada, assignor to HTRC Automation Inc., Bromptonville, Canada

Filed Oct. 6, 1994, Ser. No. 319,286

Int. Cl.[6] **G01L** *5/04*

U.S. Cl. 73—159 **16 Claims**



1. Method for determining at least one sheet stretch value of a roll of material, comprising the steps of:

(a) radially marking one side end of said roll from periphery thereof to produce a series of aligned marks along a radius thereof;

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(b) supporting said roll in such a manner that said roll is free to rotate, thus allowing relaxation of peripheral layers thereof; and

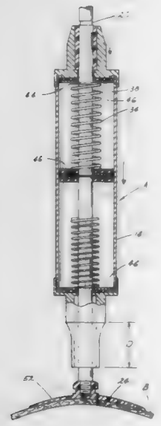
(c) after said steps (a) and (b), measuring a lateral shifting value GAP of one of said marks, which is the outermost in periphery of said roll, with respect to an adjacent mark of said marks, said value GAP being representative of said sheet stretch value of the roll.

5,628,228

DEVICE FOR APPLYING PRESSURE TO A SWATCH FOR DETECTING DEBRIS ON ROLLS OF PAPER

Robert A. Emerson, 880 Poplar St., Bangor, Me. 04401

Filed Sep. 21, 1995, Ser. No. 531,385
Int. Cl.[6] G01L *5/04*
U.S. Cl. 73—159 **20 Claims**



1. A portable pressure applicator for applying a predetermined amount of pressure to a sheet for contacting a roll of paper or paperboard while said roll is rotating on a roller for testing the debris on said roll, said applicator comprising:

a hand-held housing having a gripping surface, an interior and a plunger channel;

a plunger carried axially within said housing interior extending through said plunger channel;

said housing being moveable relative to said plunger from a first position to a second position for exerting said predetermined pressure on said roll;

a force exerting element carried by said housing for exerting said predetermined pressure when said housing is moved to said second position;

an indicator communicating with said force exerting element for indicating when said force exerting element is exerting said predetermined pressure;

a pressure application surface carried by said plunger for transferring said force to said roll;

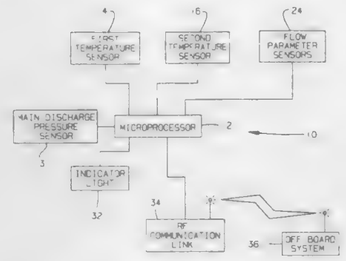
whereby a predetermined pressure may be applied to a roll by sliding said housing a sufficient distance for manipulating said force exerting element to generate a predetermined amount of pressure for application to said roll.

5,628,229

METHOD AND APPARATUS FOR INDICATING PUMP EFFICIENCY

John J. Krone, Dunlap, and Dean E. Miller, East Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 31, 1994, Ser. No. 221,135
Int. Cl.[6] G01L *3/26;* **G01M** *19/00*
U.S. Cl. 73—168 **18 Claims**



5. An apparatus for determining the energy loss in a pump, comprising:

means for measuring a temperature indicative of the input temperature of a pumped fluid and producing a first temperature signal;

means for measuring the fluid temperature at a second location and producing a second temperature signal;

means for producing a flow signal indicative of the amount of fluid flow at said second location;

processing means for calculating a difference between said first and second temperature signals

when the pump is in a predefined operating state, said processing

means quantifying efficiency losses of the pump from said difference and said flow signal and

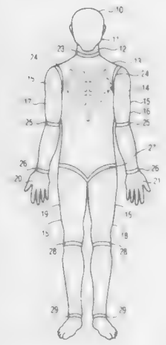
indicating a fault in response to said efficiency losses exceeding a predetermined level.

5,628,230

METHOD AND APPARATUS FOR TESTING THE EFFICACY OF PATIENT SUPPORT SYSTEMS

Eric Flam, 29 Ainsworth Ave., East Brunswick, N.J. 08816

Filed Nov. 1, 1994, Ser. No. 332,663
Int. Cl.[6] G02M *19/00*
U.S. Cl. 73—172 **36 Claims**



20. A method for measuring the efficacy parameters of support structures to be used in the prevention and treatment of decubitus or pressure ulcer formation comprising:

resting an anthropomorphic model simulating the major dynamic characteristics of a human and having flexible human skin and subcutaneous tissue simulating materials including a cutaneous region and a subcutaneous region;

placing sensing means at specific locations on and within said cutaneous and subcutaneous regions of said model on a support structure to be tested for efficacy, said sensing means capable of measuring physical parameters comprising at least one of temperature, moisture accumulation, pressure, shear and friction; and

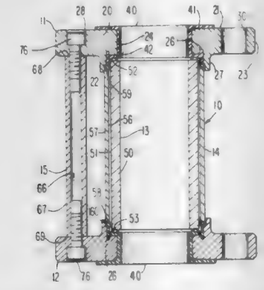
means for collecting and interpreting data obtained from said sensing means to determine loading at sensing locations to thereby determine likelihood of injury to a human resting on such support.

5,628,231

SIGHT GLASS CONSTRUCTION

Michael R. Sheridan, Morgan, N.J., assignor to Ethylene Corp., Murray Hill, N.J.

Filed May 11, 1995, Ser. No. 439,177
Int. Cl.[6] G01F *23/02*
U.S. Cl. 73—323 **7 Claims**



1. An improved sight glass construction comprising: first and second radially extending flange elements, each defining a central opening, and a plurality of radially arranged openings for reception of interconnecting bolts; said flange elements each defining an annular recess and a stepped recess; a transparent inner tube member engaging the annular recesses at each end thereof in sealed relation; an outer tube member surrounding said inner tube member and positioned within the stepped recesses at each end thereof in sealed relation to said first and second flange elements to define a cylindrical sealed interstice between said inner and outer tube members; and a plurality of tie rods interconnecting, said first and second flange elements in predetermined spaced relation, externally of said outer tube member.

5,628,232

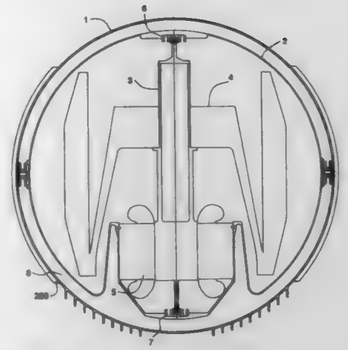
FLYWHEEL ROTOR WITH CONICAL HUB AND METHODS OF MANUFACTURE THEREFOR

Daniel Bakholdin, 14929 Sylvan St., Van Nuys, Calif. 91411; Robert W. Bosley, 18104 Hoffman Ave., Cerritos, Calif. 90701; Harold A. Rosen, 14629 Hilltree Rd., Santa Monica, Calif. 90402, and William Grayer, 15720 Ventura Blvd. #411, Encino, Calif. 91436

Continuation-in-part of Ser. No. 181,038, Jan. 14, 1994. This application May 13, 1994, Ser. No. 242,647
Int. Cl.[6] G05G *1/00*
U.S. Cl. 74—572 **10 Claims**

1. A flywheel rotor for a flywheel energy storage system, comprising:

an outer, primarily cylindrical portion including first fibers having a predetermined first tensile strength for storing the majority of total system energy; and



a hub portion including:

a conical member formed from second fibers of a second predetermined second tensile strength; and

a inner cylindrical member operatively connected to a rotatable shaft, said inner cylindrical member comprising:

a hexagonal aluminum cylinder;

a spring surrounding said hexagonal cylinder; and

a plastic annular member operatively connected to said hexagonal aluminum cylinder by said spring,

wherein said conical member operatively connects a first end of said outer cylindrical portion with said inner cylindrical member, and

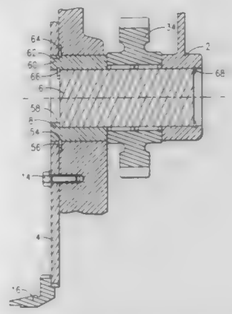
wherein said first tensile strength is greater than said second tensile strength.

5,628,233

TRANSMISSION WITH INTERMEDIATE PLATE CONNECTED TO TRANSMISSION CASING BY GEAR SUPPORTS

Gerhard Burl, Markdorf, and Josef Bader, Friedrichshafen, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP94/01204, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO94/25780, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 9, 1994, Ser. No. 535,145
Claims priority, application Germany, Apr. 23, 1993, 43 13 345.2
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **14 Claims**



1. An arrangement for a range-change transmission of a multi-ratio transmission, said multi-ratio transmission including a main transmission casing (**2**) and said range-change transmission having a clutch (**16**, **18**, **28**, **32**) which is at least partially separated from a remainder rest of said main transmission casing (**2**) by an

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intermediate plate (**4**), and at least one component (**16**) of said clutch (**16**, **18**, **28**, **32**) being supported by said intermediate plate (**4**);

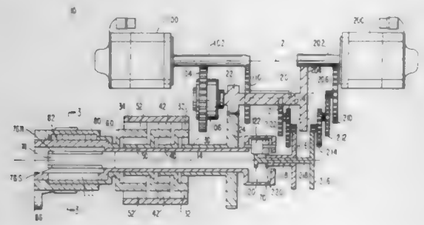
wherein said intermediate plate (**4**) is interconnected with said main transmission casing (**2**) by at least one stud (**6**), and said at least one stud (**6**) also supports a gear of said multi-ratio transmission.

5,628,234

FAIL-FREE ACTUATOR ASSEMBLY

David J. C. Crook, Randolph, N.J., and Eugene E. Shube, Elmont, N.Y., assignors to GEC-Marconi Aerospace Inc., Parsippany, N.J.

Filed Oct. 30, 1995, Ser. No. 544,968
Int. Cl.[6] F16M *37/08*
U.S. Cl. 74—665 B **10 Claims**



1. An actuator assembly for selectively moving a load comprising:

first and second drive motors for normally respectively producing first and second rotary outputs;

first and second transmissions for normally respectively applying said first and second rotary outputs in parallel to a first rotary member in order to normally rotate said first rotary member at a speed proportional to a normally common speed of said first and second rotary outputs;

third and fourth transmissions for respectively applying said first and second rotary outputs in parallel to a differential mechanism which rotates a second rotary member at a speed proportional to an average of the speeds of said first and second rotary outputs, said speed of said second rotary member being normally the same as the speed of said first rotary member;

a rotary actuator output member operatively coupled to said load; and

a coupling mechanism responsive to the speeds of said first and second rotary members for transmitting rotary motion of said first rotary member to said rotary actuator output member as long as the speeds of said first and second rotary members are substantially the same, and for freeing said rotary actuator output member for rotation relative to said first rotary member when the speeds of said first and second rotary members begin to deviate from one another.

5,628,235

DRIVING ATTACHMENT FOR EYE-BOLT HANGERS AND THE LIKE

Goro Kambara, 13730 Via Encantado, Valley Center, Calif. 92082

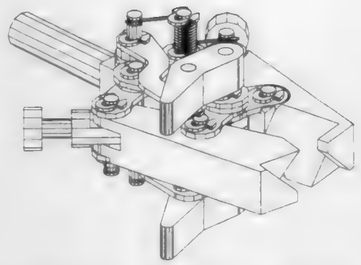
Filed Sep. 12, 1995, Ser. No. 526,835
Int. Cl.[6] B25B *13/28*
U.S. Cl. 81—90.2 **6 Claims**

1. An apparatus for installing hangers comprising:

a body;

a 1st jaw;

a 1st parallel linkage assembly connecting said 1st jaw to said body; a 2nd jaw;



a 2nd parallel linkage assembly connecting said 2nd jaw to said body;

means for adjusting the position of said 1st and 2nd parallel linkage assemblies so as to cause said 1st and 2nd jaws to move parallel, each to the other, when either of said parallel linkage assemblies is adjusted;

a drive shaft connected to said body, said drive shaft being adapted to permit its insertion into a portable drill chuck;

toggle means for dosing said 1st and 2nd jaws so as to secure a hanger shaft in coaxial alignment with the rotational axis of said drive shaft;

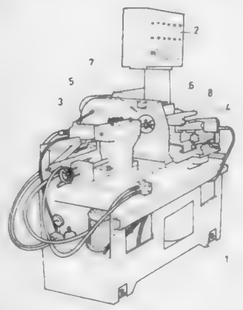
and wherein said 1st and 2nd jaws each comprises a pair of mirror image mutually perpendicular surfaces, and wherein the corresponding mutually perpendicular surfaces on said 1st jaw are parallel to the corresponding mutually perpendicular surfaces on said 2nd jaw, and wherein each surface of said 1st jaw functions in cooperation with a corresponding surface of said 2nd jaw as a means for retaining a hanger shank when said 1st and 2nd jaws are adjusted to bring said mutually perpendicular surfaces into contact with a hanger shank.

5,628,236

CUTTING METAL-WORKING MACHINE FOR PROCESSING HOOKE'S JOINTS

Yi L. Liao, P.O. Box 82-144, Taipei, Taiwan

Filed Sep. 20, 1995, Ser. No. 531,296
Int. Cl.[6] B23B *3/00*
U.S. Cl. 82—133 **1 Claim**



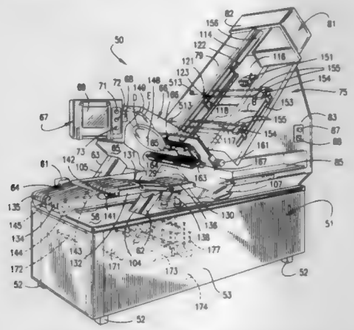
1. A cutting metal-working machine for processing hooke's joints, comprising a machine base, a control panel for controlling the operation of the machine, a left tool carrier and a right tool carrier mounted on said machine base at two opposite locations and having a respective cutting tool controlled to synchronously cut two opposite ends of the workpiece, a first tailstock and a second tailstock respectively mounted on said machine base at two opposite ends and having a respective center pin moved by a hydraulic cylinder to hold the workpiece in place, and a workpiece rotating mechanism mounted between said tool carriers and the center pins of said tailstocks, and controlled to turn the workpiece relative to the cutting tools of said tool carriers, wherein said workpiece rotating mechanism comprises a motor having a motor shaft, a driving belt wheel fixedly mounted around said motor shaft, a race, a ball bearing mounted within said race, a driven belt wheel supported on said ball bearing, and two transmission belts coupled between said driving belt wheel and said driven belt wheel, said driven belt wheel comprises an annular chamber, which receives said ball bearing and said race, a center through hole, two nuts fixedly fastened to the periphery of said center through hole at two opposite sides, and two screw rods respectively threaded into said nuts to hold the workpiece between, each screw rod having a beveled surface for stopping against the workpiece.

5,628,237

SLICING MACHINE FOR TWO OR MORE FOOD LOAVES

Scott A. Lindee, New Lenox; Glenn A. Sandberg, Lockport, and Wilbur A. Janssen, New Lenox, all of Ill., assignors to Formax, Inc., Mokena, Ill.

Filed Oct. 11, 1994, Ser. No. 320,759
Int. Cl.[6] B26D *7/06*
U.S. Cl. 83—403.1 **22 Claims**



13. An improved high speed food loaf slicing machine comprising a slicing station including at least one knife blade and a knife blade drive driving the knife blade along a predetermined cutting path, and loaf support means for supporting a first food loaf and a second food loaf for movement along parallel first and second loaf paths, respectively, into the slicing station for repetitive slicing of both loaves,

the improvement comprising:

a first loaf feed drive for advancing the first food loaf along the first loaf path at a first preselected loaf feed rate;

a second loaf feed drive for advancing the second food loaf along the second loaf path at a second preselected loaf feed rate;

each loaf feed drive including a pair of short conveyors engaging opposite sides of a food loaf immediately ahead of the slicing station and means for biasing the pair of short conveyors toward each other;

means for varying one load feed rate independently of the other so that slices cut from one loaf can differ in thickness from slices cut from the other;

two grippers, one on each food path, each gripper releasably gripping a food loaf at the end of that food loaf remote from the slicing station;

means for driving each gripper along its loaf path at the same speed as the two short feed conveyers associated with that food path;

means for driving each gripper to a home position at the end of its loaf path remote from the slicing station prior to the aforesaid movement of the gripper along its loaf path toward the slicing station;

an elongated barrier aligned between and parallel to the first and second loaf paths; and

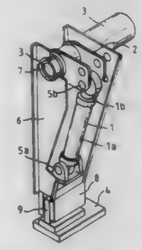
barrier displacement means for displacing the barrier between a first position between food loaves on the food paths and a second position clear of food loaves on the food paths.

5,628,238

HYDRAULIC ACTUATOR FOR ISOLATORS

Leslie W. Elsworth, Sheffield, United Kingdom, assignor to WES Technology Inc., Santa Ana, Calif.

PCT No. PCT/GB93/02628, § 371 Date Aug. 18, 1995, § 102(e) Date Aug. 18, 1995, PCT Pub. No. WO94/15104, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 22, 1993, Ser. No. 481,444
Claims priority, application United Kingdom, Dec. 23, 1992, 9226773
Int. Cl.[6] F01B *29/00*
U.S. Cl. 92—161 **6 Claims**



1. An isolator, comprising an isolator frame, an isolator shaft having an axis and journaled in said isolator frame for rotational movement relative thereto about said axis, and an isolator closure member carried by said isolator shaft for movement therewith; a hydraulic actuator for said isolator shaft, said hydraulic actuator comprising an actuator frame having first and second ends, with a part of said isolator shaft extending into said first end of said actuator frame, a lever connected to said part of said isolator shaft in the region of said first end of said actuator frame, and a hydraulic ram arranged in said actuator frame, said ram having one end connected to said lever adjacent said first end of said actuator frame proximate to said isolator shaft, and another end connected to said actuator frame in the region of said second end of said actuator frame remote from said isolator shaft; and a torque arm reaction anchor operatively interconnected between said other end of said actuator frame remote from said isolator shaft and said isolator frame for enabling said torque arm reaction anchor to prevent said actuator from rotating with said isolator shaft.

5,628,239

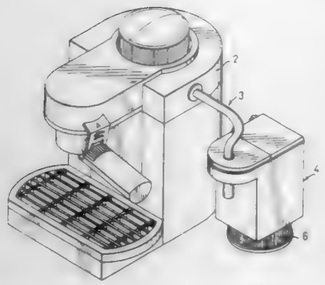
INFUSING UNIT FOR A VENTURI-TYPE BUBBLE-FORMING APPARATUS

Tsann-Kuen Wu, No. 3, Ka Fa 2nd Rd., Pao An Ind. District, Ren Teh Hsiang, Tainan Hsien, Taiwan

Filed Mar. 29, 1996, Ser. No. 625,169
Int. Cl.[6] A47J *31/40*
U.S. Cl. 99—190 **6 Claims**

1. A bubble-forming apparatus including a beverage container, a venturi-tube type inlet pipe unit having a main pipe section with a truncated conical lower end portion which decreases downward in diameter and which is adapted to permit passage of a high-pressured gas therethrough, a discharge pipe unit, a fixed infusing casing disposed in said container between said inlet pipe unit and said discharge pipe unit and having an interior chamber defined within said casing in communication with said inlet pipe unit and said discharge pipe unit, and a branch pipe which is communicated with the interior chamber of said infusing casing at a position

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between said inlet pipe unit and said discharge pipe unit and which is adapted to draw a liquid from the beverage container into said chamber so as to mix said liquid with said gas in said infusing casing, thereby forming a combined fluid which is discharged from said casing through said discharge pipe unit, wherein the improvement comprises:

said infusing casing being generally tubular and having a large-diameter upper section within which said main pipe section of said inlet pipe unit is press-fitted in such a manner that a fluid-tight seal is established between said large-diameter upper section and said main pipe section, and a small-diameter lower section located coaxially within said discharge pipe unit, said truncated conical lower end portion of said inlet pipe unit being located within said large-diameter upper section and ranging from 1.0 mm to 1.7 mm in inner diameter, said casing further having an integral tubular section which extends radially and outwardly from said lower section of said casing and which is press-fitted into said branch pipe so as to draw said liquid into said casing, said integral tubular section ranging from 2.5 mm to 3.5 mm in inner diameter, said lower section of said casing having a tapered upper portion which decreases gradually downward in inner diameter, and a straight lower portion which extends integrally and downwardly from said tapered upper portion and which has an axial length ranging from 2.0 mm to 4.0 mm and an inner diameter ranging from 2.0 mm to 3.0 mm.

5,628,240

BREAD MAKING APPARATUS

Shinji Yoshida, Daito, Japan, assignor to Funai Electric Co., Ltd., Japan

Division of Ser. No. 413,481, Mar. 30, 1995, which is a division of Ser. No. 160,388, Dec. 1, 1993, Pat. No. 5,415,081. This application Aug. 9, 1996, Ser. No. 694,626

Claims priority, application Japan, Oct. 8, 1993, 5-277694

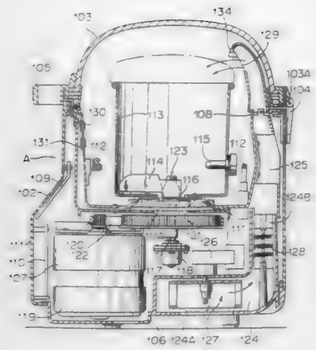
Int. Cl.[6] A21B *1/00;* **A21D** *8/00;* **A47J** *27/00;37/01*

U.S. Cl. 99—326 **8 Claims**

1. A bread making apparatus including means for performing a bread making process comprising at least a final proofing process for fermenting formed bread dough over a preset final proofing time period, and a baking process for baking the formed and fermented bread dough following said final proofing time period, said bread making apparatus comprising:

operation key means;

control means responsive to activation of said operation key means for extending the preset final proofing time period by a predetermined extended time period upon activation of said operation key means during an activation time period starting



at the earliest at the beginning of the final proofing process and ending at the latest at the beginning of the baking process.

5,628,241

INDUCTION HEATING DEVICE FOR MEAL TRAYS

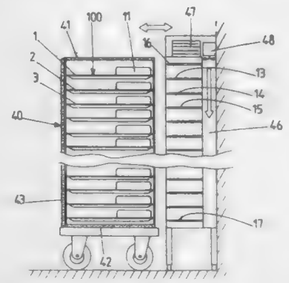
Jean-Pierre Chavanaz, Doussard, and Laurent Losserand, Ugine, both of France, assignors to Societe Cooperative de Production Bourgeois, Faverges, France

Filed Aug. 5, 1996, Ser. No. 692,137

Claims priority, application France, Aug. 3, 1995, 95 09702

Int. Cl.[6] A47J *39/02;* **A47B** *31/02;* **H05B** *6/12;6/02*

U.S. Cl. 99—331 **10 Claims**



1. A device for heating foods placed on meal trays, comprising:

means for supporting a series of trays one above the other with an appropriate distance between them, foods to be heated being placed on a tray heating area on a respective tray,

a plurality of induction generators each containing at least one group of induction coils connected to a high-frequency electrical current generator and disposed near said tray heating area of successive trays to produce a high-frequency alternating magnetic field heating members of material that can be heated by magnetic induction placed near said foods, said groups of induction coils of each induction generator being energized with high-frequency electrical power separately from said groups of induction coils of the other induction generators,

detector means associated with at least some groups of controlled induction coils of induction generators to detect the presence or the absence of a corresponding adjacent member of material that can be heated by magnetic induction, and

control and switching means that automatically disable the energization of groups of induction coils for which said detector means have detected the absence of a corresponding adjacent member of material that can be heated by magnetic induction.

5,628,242

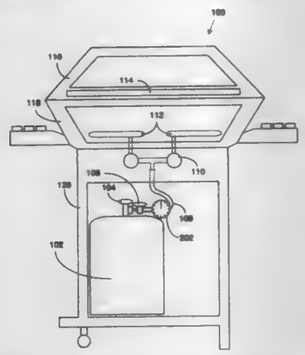
GAS GRILL WITH AUTOMATIC SHUT OFF CONTROLLED BY DYNAMIC ACTIVITY SENSOR

John E. Higley, 14092 Harbor La., Palm Beach Gardens, Fla. 33410

Filed Sep. 5, 1996, Ser. No. 708,502

Int. Cl.[6] A47J *37/00;* **F24C** *3/00*

U.S. Cl. 99—332 **20 Claims**



1. A dynamic activity monitor and gas supply shut off for a gas grill, comprising:

timer means;

a gas supply shutoff valve, further comprising:

a gas input for inputting gas from a gas grill gas supply;

a gas output for outputting gas to a gas grill;

a gas shut off valve having an open position and a closed position and located between the gas input and gas output, the gas shut off valve controlled by the timer means such that the gas shut off valve is closed when the timer means times out;

an activity sensor having an output which indicates when cooking activity is detected, the output of the activity sensor is input to the timer means; and

the timer means further having an input for inputting the output of the activity sensor, the timer means further having means to re-initialize when the output of the activity sensor indicates that activity is detected;

whereby the gas supply remains on for a predetermined period of time after activity is sensed and is automatically shut off when activity is not sensed for a predetermined period of time.

5,628,243

Patent Not Issued For This Number

5,628,244

FOOD ROASTING DEVICE

Sydney Holliday, 4217 Fleet, Deer Park, Tex. 77536

Filed Jan. 16, 1996, Ser. No. 585,491

Int. Cl.[6] A47J *43/18*

U.S. Cl. 99—421 A **16 Claims**



1. A device for roasting a food item comprising:

a shaft;

a hook member formed at one end of said shaft; and

a plurality of spirals formed adjacent to said hook member on said shaft, said hook member extending inwardly toward said plurality of spirals, said plurality of spirals having two spirals of lesser inner diameter than a remainder of said plurality of spirals, said two spirals being adjacent said hook member, said two spirals having narrowing inner diameters tapering toward said hook member, said hook member extending through said two spirals.

5,628,245

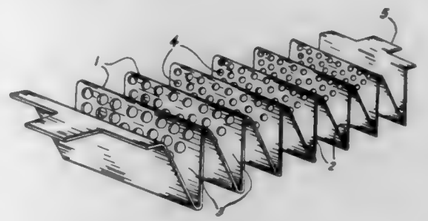
UTENSIL FOR FORMING TORTILLAS INTO BAKED TACO SHELLS

Mark E. Baze, 1070 Noriega Ave. #9, Sunnyvale, Calif. 94086

Filed Oct. 11, 1994, Ser. No. 320,700

Int. Cl.[6] A47J *37/01*

U.S. Cl. 99—426 **2 Claims**



1. A utensil of unitary construction for forming tortillas into baked taco shells and for supporting taco shells for filling and for reheating commercially prepared pre-formed fried taco shells, comprising:

a plurality of perforated crests, each said perforated crest having a radius of curvature as does substantially correspond to the bending radius of a commercially available fried taco shell;

at least one valley, each said valley being interposed between each said perforated crest and running in parallel relation thereto; and

a plurality of perforated walls, each said perforated wall connecting a said perforated crest and a said valley in continuous integral fashion, any two adjacent said perforated walls further defining an included angle as does substantially correspond to the included angle of a commercially available fried taco shell, said perforated walls further being uniformly spaced to supportably hold an upright taco shell.

5,628,246

EGG PROCESSING MACHINE

Jens K. S. Kristensen, Odense, Denmark, assignor to Sanovo Engineering A/S, Odense NV, Denmark

Filed Mar. 1, 1996, Ser. No. 609,387

Int. Cl.[6] A23J *1/00;1/09;* **A47J** *43/14;* **A01K** *43/00*

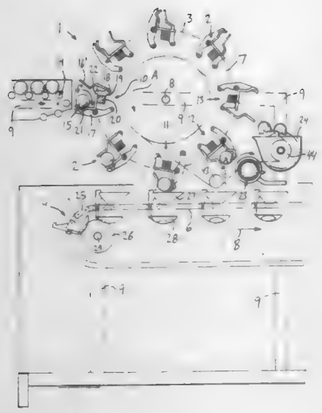
U.S. Cl. 99—500 **22 Claims**

1. An egg processing machine comprising egg breaking units moving along at least one endless upper travel path, and egg collecting units moving along at least one endless lower travel path which along at least part of its length is positioned below said upper travel path, and an albumen recovery device, the egg breaking units being synchronized with the egg collecting units so that the units are moved in pairs with a vertical distance between the two units through an egg breaking section where the egg breaking unit breaks the egg shell and albumen and yolk fall down in the egg collecting unit, wherein

the egg breaking section is followed by a recovering section in which the vertical distance between the egg breaking units and the egg collecting units is increased, and

the albumen recovery device is positioned in said recovering section and comprises a body rotating about a body axis

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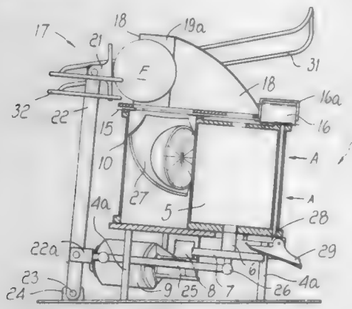
extending transversely past said upper and said lower travel paths, said rotating body catching albumen drippings with possible stringers before the egg shell is discharged during the continued movement of the egg breaking unit away from the associated egg collecting unit.

5,628,247

AUTOMATIC CITRUS FRUIT JUICER

Cesare Palumbo, and Salvatore Torrisi, both of Catania, Italy, assignors to A.I.D. Agriculture Industrial Developments S.p.A., Catania, Italy

Filed Feb. 14, 1996, Ser. No. 601,660
Claims priority, application Italy, Feb. 24, 1995, BO95A0066
Int. Cl.[6] A23N *1/00*; **B30B** *3/04;9/20;9/32*
U.S. Cl. 99—509 **9 Claims**



1. Automatic citrus juicer for preparing fruit juice by squashing fruits, the juicer comprising:

a fixed frame including an upper platform and a lower platform, said upper platform including a through opening, and said lower platform including a through hole and an opening; a first drum being mounted for rotation about a vertical axis thereof between said upper and lower platforms, said drum having a perforated outer surface for allowing through passage of said juice;

a second drum extending along a vertical axis thereof, said second drum being supported for eccentric rotation outside said first drum and including an inner surface thereof, said inner surface of said second drum facing said outer surface of said first drum for defining a squashing region therebetween; lateral pressing means for pressing said inner surface of said second drum toward said outer surface of said first drum at a said squashing region;

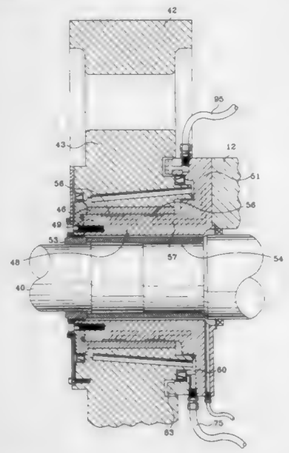
a cutting unit for cutting the fruits into fruit halves, said cutting unit being mounted above said first and second drums at said opening of the upper platform, the fruit halves being allowed to drop through said opening in said squashing region for resting with cut surfaces thereof against said outer surface of the first drum, wherein squashing occurs between said inner and respectively outer surfaces of said drums, with the juice prepared passing through said hole and remaining fruit peels being removed thorough said opening of said lower platform.

5,628,248

FLUID CONTROL SYSTEM FOR ROTATING SHAFT OR FLYWHEEL

Richard J. Oen, Wapakoneta, and Edward A. Daniel, Fort Loramie, both of Ohio, assignors to The Minster Machine Co., Minster, Ohio

Filed Jan. 11, 1996, Ser. No. 583,756
Int. Cl.[6] B30B *15/00*
U.S. Cl. 100—282 **21 Claims**



1. A mechanical press comprising:

a frame structure with a crown and a bed;

a slide guided by the frame structure for reciprocating movement in opposed relation to said bed;

a drive mechanism attached to said frame structure;

a flywheel assembly rotatably driven by said drive mechanism, said flywheel assembly including a flywheel rotatable relative to said frame structure about an axis of rotation on at least one bearing;

a crankshaft rotatably disposed within said crown and in driving connection with said slide;

a clutch assembly for selectively connecting said flywheel to said crankshaft for driving rotation thereof; and

a fluid control system for controlling fluid associated with said at least one bearing, said fluid control system comprising:

a housing defining a clearance space with said flywheel assembly, said clearance space arranged in flow communication with said at least one bearing to collect fluid therefrom;

a first seal positioned to limit leakage of fluid from said clearance space; and

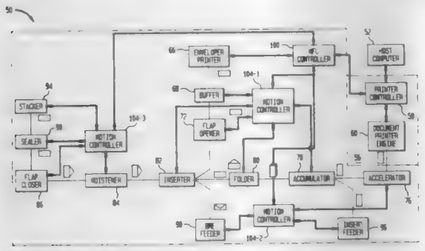
vacuum means including at least one vacuum drain port arranged for removing fluid leaking past said seal, said vacuum means including an air duct structured and arranged to draw a flow of air suitable to provide a vacuum induced air flow through said vacuum drain port during vacuum operation sufficient to vacuum away fluid leaking past said seal.

5,628,249

APPARATUS AND METHOD FOR PREPARING A MAIL PIECE

Robert A. Cordery, Danbury, and James L. Harman, Southport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 27, 1994, Ser. No. 364,365
Int. Cl.[6] B41L *47/46*
U.S. Cl. 101—91 **14 Claims**



1. An apparatus for producing a mail piece, said apparatus comprising:

a) a first printer for printing a document;

b) mail finishing means for receiving said document from said first printer and for inserting said document into an envelope to form said mail piece, said mail finishing means including a second printer for printing an address on said envelope prior to insertion of said document into said envelope;

c) control means responsive to mail piece data for controlling said apparatus to produce said mail piece in accordance with said mail piece data; said mail piece data including first data defining said document, and second data defining said address;

d) a buffer station for buffering said envelope to allow said address to dry after printing; and

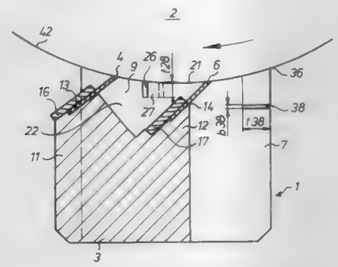
e) data storage buffer means for storing sufficient mail piece data to allow said envelope printer to continue printing envelopes for input to said buffer station while said first printer completes a sequence of documents if the input of mail piece data is interrupted; whereby gaps in the sequence in said buffer station are prevented.

5,628,250

CHAMBER DOCTOR BLADE ASSEMBLY

Norbert G. Weisbrod, Hessheim, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft

Filed Dec. 22, 1995, Ser. No. 577,880
Claims priority, application Germany, Dec. 29, 1994, 44 47 123.8
Int. Cl.[6] B41F *1/46*
U.S. Cl. 101—363 **4 Claims**



1. A chamber doctor blade assembly of an inking unit of a rotary printing press provided with a screen roller comprising:

a base body having upper faces and first and second end faces;

first and second doctor blades secured to said upper faces of said base body and having free ends engageable with a surface of the screen roller;

first and second lateral cheeks secured to said first and second end faces of said base body, said base body, first and second doctor blades and first and second lateral cheeks defining an ink reservoir extending in an axial direction of the screen roller;

a sealing face on each of said first and second lateral cheeks, each said sealing face having a shape adapted to a curvature of the screen roller; and

a depression acting as a lubricant pocket in each sealing face of each said lateral cheek, said depression being in fluid communication with said ink reservoir, said depression being formed by a slit-shaped cut extending across said sealing face.

5,628,251

PRINTING PRESS BLANKET UNDERLINER

William N. O'Bannion, 2939 Oxfordshire, Dallas, Tex. 75234

Continuation of Ser. No. 902,908, Jul. 23, 1992, abandoned. This application Oct. 24, 1994, Ser. No. 328,409
Int. Cl.[6] F42B *27/08*
U.S. Cl. 101—486 **2 Claims**

1. A method of printing on stock with a printing press, comprising:

placing a cushioning underliner on a blanket cylinder, the underliner comprising a layer of surgical quality rubber having a thickness substantially in the range of 0.008 inches to 0.010 inches;

placing a printing press blanket over the underliner, the printing press blanket being separate from the underliner and operable to provide a resilient cushion for said printing press blanket during printing;

loading a stock into the printing press; and

printing on the stock.

5,628,252

METHOD AND APPARATUS FOR COMBINED LEVITATION AND GUIDANCE ALONG GUIDEWAY CURVATURE IN ELECTRODYNAMIC MAGNETICALLY LEVITATED HIGH SPEED VEHICLE

Stephen B. Kuznetsov, Pittsburgh, Pa., assignor to Power Superconductor Applications Co., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 78,619, Jun. 17, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 382,427
Int. Cl.[6] B60L *13/00*
U.S. Cl. 104—284 **25 Claims**

1. An electrodynamic magnetic levitation and guidance system, said system including the combination of:

a guideway;

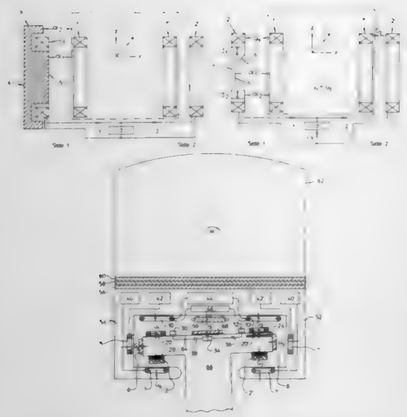
a vehicle which travels along the guideway;

an array of secondary conductors arranged along said guideway, said conductors each having a spatially dependent inductance to resistance electrical time constant and a spatially variable coil internal impedance;

an array of uniformly constructed primary field electromagnetic coils on said vehicle which produce a vertically orientated magnetic field to interact with said secondary conductors and developing a levitation force capable of suspending said vehicle in regard to the secondary conductors, said vehicle experiencing two or greater bidirectional electrodynamic forces from the array of secondary conductors and array of primary field coils for creating a differential in levitation force across the width of the vehicle to offset centrifugal forces acting on the vehicle;

a controllable electrical power supply for regulating said primary field coils, said power supply connected to the primary field coils;

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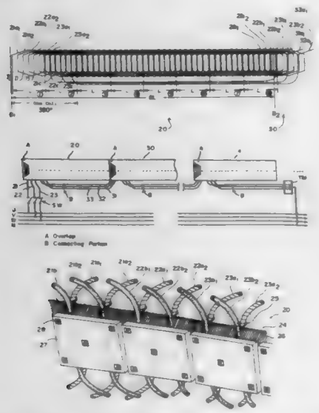
null-flux electrical loop control means located on the guideway operative to regulate the magnetic field linking the secondary conductors to the primary field coils, such that the magnetic field produces a differential levitation force across the width of the guideway for offsetting the centrifugal force acting on said vehicle, said control means in communication with said array of field coils.

5,628,253

GROUND-PROPULSION SPECIAL-PURPOSE ELECTROMAGNETIC CIRCUIT FOR MAGNETICALLY LEVITATED RAILWAY, AND METHOD OF LAYING SAID CIRCUIT

Masanori Ozeki, Tokyo, and Kazuo Sawada, Niiza, both of Japan, assignors to Railway Technical Research Institute, Japan

Continuation-in-part of Ser. No. 214,150, Mar. 16, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 616,050
Claims priority, application Japan, Sep. 4, 1993, 5-082263
Int. Cl.[6] B60L *13/00*
U.S. Cl. 104—292 **4 Claims**



1. A ground-propulsion special-purpose electromagnetic circuit for magnetically levitated railway in which a vehicle is propelled by acting upon superconducting magnets mounted on the vehicle, comprising:

beam panels placed on both side walls of a guideway;

vertically extending grooves formed in each of said beam panels at a prescribed pitch;

each of said beam panels comprising a concrete panel having a surface in which said vertically extending grooves are formed through the intermediary of a spacer comprising FRP;

said FRP being FRP containing a magnetic powder;

plural-phase cables fitted in said grooves; and

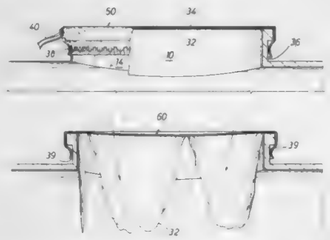
a levitation-guidance coil molded body covering the plural-phase cables fitted in said grooves.

5,628,254

MOISTURE BARRIER, FILTER SEAL FOR HOPPER RAIL CAR HATCHES

Michael A. Ott, Spring; Alfred W. Hendee, Houston, and Charles C. Hendee, Sugar Land, all of Tex., assignors to Hendee Enterprises, Inc., Houston, Tex., and Salco Products, Inc., Romeoville, Ill.

Filed Aug. 18, 1995, Ser. No. 516,799
Int. Cl.[6] B61D *49/00*
U.S. Cl. 105—377.08 **12 Claims**



1. A seal for covering a hatch opening of a bulk particulate materials container and providing moisture and particulate contamination protection of the container contents comprising:

a moisture barrier material and a filter material joined at their margins, said moisture barrier material having a film thickness and a grain structure such that when subjected to as little as a quarter pound per square inch of pressure differential across said moisture barrier material said moisture barrier material will rupture along its grain lines; and

means for gathering the joined materials to form a bonnet sized to fit over the hatch opening.

5,628,255

COMPUTER CORNER DESK ASSEMBLY

Frank Neuner, 5521 Pershing Ave., Downers Grove, Ill. 60515

Filed Feb. 6, 1996, Ser. No. 597,098
Int. Cl.[6] A47B *47/04*
U.S. Cl. 108—42 **18 Claims**

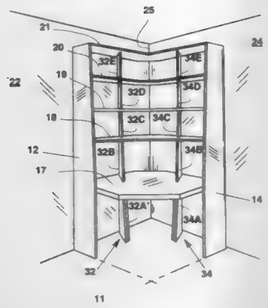
1. A freestanding desk assembly having a front portion and a rear portion, including:

a pair of side support panels extending generally vertically and spaced apart in mutually orthogonal relationship and defining a front opening;

said pair of side support panels disposed in respective first and second planes, said first and second planes converging to intersect adjacent to the front opening of said freestanding desk assembly

a plurality of shelf panels disposed in vertically stacked, spaced apart relationship, all of said shelf panels including a first pair of laterally opposed side edges disposed to impinge on said side support panels in flush relationship, said shelf panels spanning the distance between said side support panels;

means for securing said plurality of shelf panels to said side support panels; and,



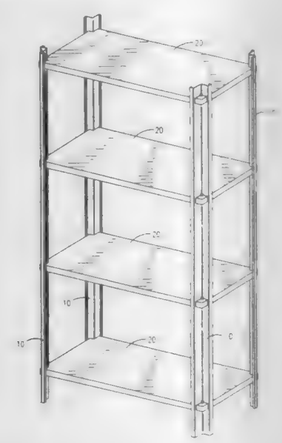
said plurality of shelf panels including a desktop, comprising the lowermost shelf panel.

5,628,256

SHELVING ASSEMBLIES

Abraham Lazarus, Herzlia, Israel, assignor to Hoff Development Ltd., Herzlia Pituah, Israel

Continuation-in-part of Ser. No. 212,198, Mar. 11, 1994. This application Nov. 15, 1994, Ser. No. 339,788
Int. Cl.[6] A47B *9/00*
U.S. Cl. 108—110 **20 Claims**



1. A shelving assembly, comprising:

a plurality of posts each including at least two longitudinally-extending sections joined together at an angle to each other along a juncture section having inner and outer faces;

each of said posts being formed with at least one transverse slot extending through said juncture section and partly through said two longitudinally-extending sections;

each of said posts being further formed on the inner face of said juncture section with a pair of coaxial eyelets on opposite sides of said slot;

a panel having an edge received within said slot of each of said plurality of posts;

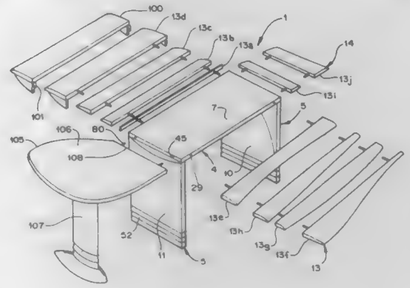
and a pin passing through each pair of said eyelets and through said panel for securing the panel to said posts.

5,628,257

FURNITURE WORKSURFACE UNIT AND METHOD

John P. Conner, Grandville, Mich.; Paul Haigh, Greenwich, Conn.; James W. Ross, Grand Rapids, Mich.; William C. Small, Greenville, Mich., and Bradley D. Youngs, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Division of Ser. No. 331,010, Oct. 28, 1994, Pat. No. 5,546,873. This application Apr. 8, 1996, Ser. No. 629,270
Int. Cl.[6] A47B *3/06*
U.S. Cl. 108—153 **8 Claims**



1. A worksurface unit, comprising:

a top having at least one side edge;

a support connected with said top and having a lower end thereof shaped for abutting support on a floor surface;

a removable edge shaped to mate with the side edge of said top, and including a normally upwardly facing surface having a first shape, and a normally downwardly facing surface having a second shape that is different from said first shape;

a fastener detachably connecting said edge to said top, and being symmetrically arranged to permit said edge to be connected to said top in an upside down orientation, with said second shape facing upwardly, to facilitate forming various top configuration; and wherein

said top includes a marginal frame on which said edge is mounted;

said marginal frame includes horizontally oriented mounting apertures; and

said fastener includes at least two pins shaded for close reception in said mounting apertures, and being mounted in said edge for axial rotation to facilitate mounting said edge in both orientations.

5,628,258

CASH VAULT WITH A VAULT CONTROL UNIT TO BE OPERATED SELECTIVELY BY TWO TELLERS

Fritz Zwahlen, Ammerzwil, and Robert Brügger, Bern, both of Switzerland, assignors to Ascom Autelca AG., Gumligen, Switzerland

Filed Sep. 7, 1994, Ser. No. 301,492
Claims priority, application Germany, Sep. 23, 1993, 93 14 341 U
Int. Cl.[6] G06F *17/60;* **E05G** *1/00*
U.S. Cl. 109—45 **8 Claims**

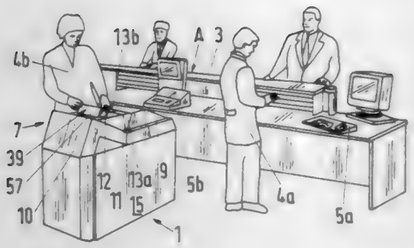
1. A cash vault system for use by two tellers (*4a*. *4b*), comprising:

a vault base unit (**15**) with a banknote repository (**35**);

a vault control unit (**7**) disposed upon said vault base unit (**15**) and having a first side and a second side, said second side being opposite said first side;

a first and a second terminal (*5a*, *5b*), each for use by one teller and the other teller, respectively, for retrieving banknotes from said banknote repository (**35**) and for operating said vault control unit (**7**);

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said vault control unit (**7**) having only a single banknote disbursement unit (**11**) and only a single banknote input unit (**39**) for use by the two tellers (**4***a*, **4***b*),

said disbursement unit (**11**) including

only a single deposition compartment for the banknotes to be dispensed by the tellers (**4***a*, **4***b*)

one disbursement opening for the disbursement of the banknotes, and

a two-part cover (**13***a*, **13***b*) having a right-side part and a left-side part;

means for conveying (**36**) the banknotes between said banknote repository (**35**) and said deposition compartment;

said disbursement opening being accessible by each of the tellers (**4***a*, **4***b*) from said opposite sides of said cash vault (**1**),

said two-part cover covering said disbursement opening;

only said first cover-part being openable via said first terminal by the one teller for retrieving the banknotes; and

only said second cover-part being openable via said second terminal by the other teller for retrieving the banknotes.

5,628,259

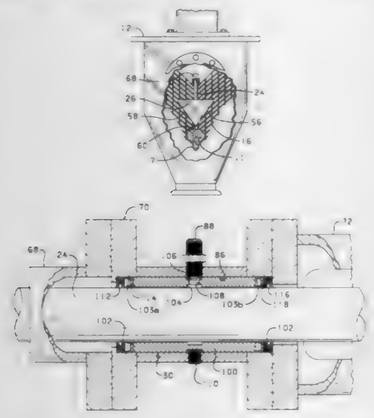
ECONOMIZER LUMP BREAKER

Larry E. Kuennen, Cleveland; Ronald G. Madron, Pawnee; Gary M. Crisp, and Randy A. Dailey, both of Ponca City, all of Okla., assignors to Oklahoma Gas and Electric Company, Oklahoma City, Okla.

Filed Mar. 15, 1995, Ser. No. 403,970

Int. Cl.[6] **F23J** *1/06*

U.S. Cl. 110—170 **23 Claims**



1. An apparatus for breaking up ash clinkers accumulated on a grating disposed in an airlock, the apparatus comprising:

a cylinder having a first end, a second end and a piston, the piston slidably disposed within the cylinder and having a rod extending therefrom and into the airlock;

seal means for providing a fluid-tight seal between the rod and the airlock;

a ramming plate connected to the rod; and

actuating means for selectively actuating the piston so that the ramming plate is reciprocally movable from a retracted position to an extended position such that the ramming plate impacts the ash clinkers on the grating of the airlock in the extended position at a force sufficient to fragment such ash clinkers and permit the passage of same through the grating.

5,628,260

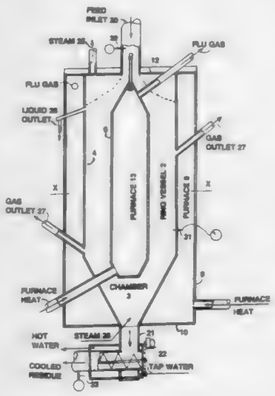
VERTICAL RING PROCESSOR

Paul I. Rongved, 5701 Blvd. East Apt. 12H, West New York, N.J. 07093

Filed Feb. 21, 1995, Ser. No. 391,199

Int. Cl.[6] **F23G** *5/00;7/00*

U.S. Cl. 110—245 **7 Claims**



1. A processing vessel for thermally processing an feed having vertically-aligned, narrowly-spaced and heated walls for thermal treatments of conveyable feed being moved by gravity at selected process temperatures comprising: a ring-shaped cylindrical vessel having an outer ring wall between 2–3 feet larger than the diameter of an inner ring wall, the inner and outer ring walls comprising a narrow ring-shaped and tall processing chamber space; heating means for heating the inner and outer ring walls and control means for controlling the processing temperature along the height of the walls; a feed inlet at the top of the vessel and a residue outlet at the bottom of the vessel including a flow control means for keeping said vessel and a portion of said inlet means filled during processing; sampling means located at various heights of the vessel for sampling feed during processing; heat exchange means located at said residue outlet for cooling the residue and recovering heat from said residue prior to discharging the residue; at least one second outlet means located at an upper part of the vessel for removing boiling hot water and steam from the vessel; at least one third outlet means located along the height of said vessel for removing fluidized and gasified material; mean for preventing air from entering the vessel at all inlets, outlets, and the heat exchange means; wherein the heating means heats the wall surfaces thereby forcing boiling and gasified material upward along the walls while gravity simultaneously forces material along the inner portion of the ring-shaped chamber resulting in a downward spiralling and mixing movement of the feed material causing rapid heating, feed volume reduction, and steady downward gravity flow of the feed during processing.

5,628,261

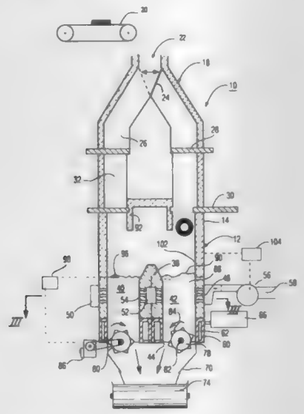
METHOD AND FURNACE FOR DECOMPOSING SOLID WASTE MATERIALS

Richard D. Beckstead; Ascencion G. Vera; Russell S. Curtis, all of Grantsville; George J. Brown, Jr., Tooele; Kirk L. Matthews, Grantsville, all of Utah, and C. Steven Lekowski, Scottsdale, Ariz., assignors to Chemical Lime Company, Fort Worth, Tex.

Filed Mar. 20, 1995, Ser. No. 406,558

Int. Cl.[6] **F23D** *21/00*

U.S. Cl. 110—346 **8 Claims**



1. A high temperature furnace for thermally decomposing solid combustible fuel into products used to provide a source of heat to a selected area, the furnace comprising in combination:

a reaction vessel defined by an outer wall, the reaction vessel having an upper portion and a lower portion, the lower portion of the vessel having a central partition which divides the lower portion into at least two compartments, each of said compartments being configured to containerize a fuel bed having a selected height, wherein the solid fuel being introduced into the reaction vessel within at least a selected compartment rests and accumulates as the fuel is being decomposed, each compartment also having a bottom opening;

a fuel entry port located in the upper portion of the vessel for introducing solid combustible fuel into the interior of the reaction vessel onto the fuel bed of each compartment, the fuel entry port having spaced apart first and second closures which can be alternately opened and closed to maintain closure of the entry port when introducing the fuel into the interior of the reaction vessel;

gaseous ducts located along the outer wall of the reaction vessel and the central partition for introducing pressurized gas into the interior of the reaction vessel so that at least partial combustion takes place within the interior of the reaction vessel to produce the products used to provide a source of heat;

a pressurized gas supply means connected to the gaseous ducts for supplying the pressurized gas;

an exhaust duct which communicates with the upper portion of the reaction vessel for venting off products from the reaction vessel to the selected area;

a rotatably driven feeder which extends substantially across the bottom opening of each compartment so that the feeder acts as a bottom support for supporting the fuel bed of each compartment, the feeder causing generally undecomposed material from the bottom of each fuel bed to pass out of the reaction vessel through the bottom opening of each compartment as the feeder is rotated;

drive means for driving the feeder;

a conveyor positioned adjacent to the reaction vessel for receiving the undecomposed material which is passed through the bottom opening of the reaction vessel and from the feeder and for conveying the undecomposed material away from the reaction vessel;

wherein the drive means is a variable speed driver coupled to the feeder so that the feeder can be rotated at different rates; and, further comprising:

control means for controlling the variable speed driver so that the amount of undecomposed material removed from the reaction vessel is varied in response to the height of the fuel bed being other than the selected height.

5,628,262

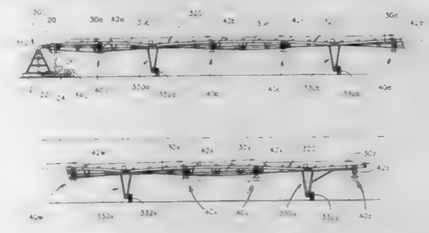
INTERSEEDING APPARATUS AND METHOD

John A. Nelson, 3229 S. 130th Cir., Omaha, Nebr. 68144

Filed Jun. 3, 1996, Ser. No. 657,308

Int. Cl.[6] **B05B** *3/18*

U.S. Cl. 111—130 **12 Claims**



1. An interseeder apparatus for dry broadcast distribution of seeds in conjunction with a center-pivot irrigation system, the center-pivot irrigation system having a center tower, a main water pipe extending radially therefrom and adapted for circular rotation about the center tower, the interseeder apparatus comprising:

a storage container for storing a quantity of dry seed to be interseeded, said storage container adapted to be mounted on a center-pivot irrigation system;

seed conveying means for conveying the seed in a dry condition from said storage container outwardly from said storage container;

a plurality of dispensing stations adapted to be positioned along the main water pipe, each of said dispensing stations having, a seed box for containing a quantity of dry seed and having a discharge opening, seed delivery means in communication with said seed conveyer means for delivering a quantity of dry seed from said seed conveyer means into said seed box from said seed conveying means; seed metering means for regulating the discharge of seed from said discharge opening of said seed box; and distribution means in communication with said seed box for receiving seed discharged through said discharge opening by said metering means and broadcasting said seed therefrom; and

means for activating said seed metering means and said distribution means, such that upon activation, a quantity of dry seed is discharged from said seed box and delivered to said distribution means for broadcast distribution.

5,628,263

CHAIN STITCH SEWING MACHINE WITH LOOPER DRIVE AND LOCK ARRANGEMENT

Ikuo Tajima; Satoru Suzuki, and Yoichi Mizuguchi, all of Kasugai, Japan, assignors to Tokai Industrial Sewing Machine Co., Ltd., Aichi, Japan

Filed Nov. 28, 1995, Ser. No. 563,608

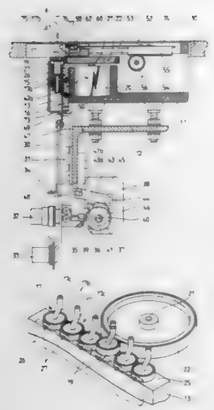
Claims priority, application Japan, Dec. 6, 1994, 6-330553

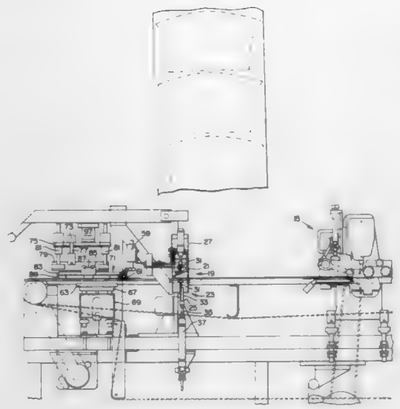
Int. Cl.[6] **D05C** *15/22;* **D05B** *57/04*

U.S. Cl. 112—98 **4 Claims**

1. A chain stitch sewing machine which performs a required chain stitch sewing with respect to a cloth to be processed, by

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cooperation of a needle reciprocable up and down and a looper arranged under a needle plate, the chain stitch sewing machine comprising:

a large diameter drive gear rotatably provided in a base;

a looper support slidably supported by said base so that it is slidable in a lateral direction;

two or more loopers arranged on said looper support at intervals of a predetermined pitch along a lateral direction and freely rotatable on their own axes;

small diameter driven gears respectively provided in said two or more loopers and each engageable with said drive gear; and

a lock mechanism for non-rotatably locking said two or more loopers at a required timing; and wherein, with the state where said driven gears has been aligned on the said looper support and all of said two or more loopers have been non-rotatably locked, said drive gear is rotated so that said two or more loopers engage with said drive gear in sequence and also said looper support is slid in said lateral direction with respect to said base, thereby selecting a desired one of said two or more loopers.

5,628,264

SLEEVE MAKING METHOD AND APPARATUS

Maximilian Adamski, Jr., Tega Cay, S.C., and Stephen S. Ruderman, Matthews, N.C., assignors to Union Special Corporation, Huntley, Ill.

Filed Mar. 16, 1995, Ser. No. 405,741

Int. Cl.[6] D05B *19/12;35/02;37/04;35/10*

U.S. Cl. 112—470.05 **21 Claims**

1. A device including a trimming and hemming machine, and a mechanism for folding a hemmed sleeve blank and turning it inside out, a continuous conveyor for transporting a sleeve blank thereallong to said trimming and hemming machine and then to said mechanism for folding the hemmed sleeve blank and turning it inside out, and a sleeve blank stopping device that brings the sleeve blank to a stop at a stop location at which the sleeve blank is aligned with the sewing head of a seaming sewing machine wherein the improvement comprises:

said continuous conveyor including a support table having a smooth upper surface over which a plurality of spaced apart conveyor belts extend;

a sensor for recognizing an edge of the folded sleeve blank as it is conveyed past a point on the smooth upper surface;

openings formed in said smooth upper surface between said plurality of spaced apart conveyor belts in the area of said stop location;

elongated lift bars mounted on said support table, and aligned with said elongated openings; and

a lifting mechanism connected to said elongated lift bars and operative to raise the lift bars above said smooth upper surface in response to a signal from said sensor and to elevate the sleeve blank above said continuous conveyor.

5,628,265

SAIL BOATS

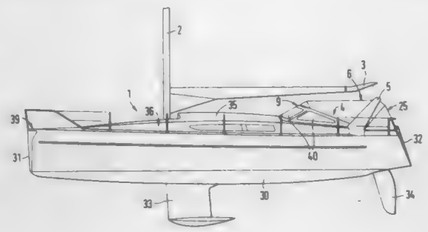
Farad Azima, Marlow, and Kieron Dunk, Fenstanton, both of Great Britain, assignors to Mission Yachts PLC, London, United Kingdom

Filed Oct. 30, 1995, Ser. No. 550,471

Claims priority, application United Kingdom, Nov. 1, 1994, 9421910; Aug. 7, 1995, 9516131

Int. Cl.[6] B63B *29/00*

U.S. Cl. 114—39.1 **8 Claims**



1. In a sail boat comprising a hull, an upstanding mast in the hull, a boom articulated on the mast, a crew cockpit disposed below the boom, the cockpit having a front, sides and a rear, and a hoop-like structure straddling the cockpit transversely of the boat in the vicinity of and below the boom to define a safe area within the cockpit into which the boom is positively prevented from encroaching, the improvement comprising a screen structure having a front portion arranged to shield the cockpit front, and side portions to shield the cockpit sides, and comprising track means along which the screen structure is slidable longitudinally of the boat the arrangement being such that in its rearward position the side portions of the screen structure seal against the hoop-like structure.

5,628,266

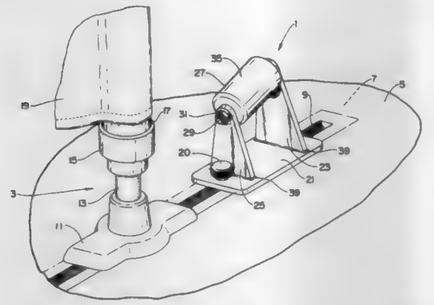
WINDSURFER MAST DEFLECTOR

Roger Jurriëns, L.G. Smith Boulevard 472-P.O. Box 461, Malmok, Aruba, and John M. Parton, 13623 Northumberland Cir., Wellington, Fla. 33414

Filed Oct. 10, 1995, Ser. No. 541,741

Int. Cl.[6] B63B *35/79*

U.S. Cl. 114—39.2 **16 Claims**



1. An apparatus for preventing damage to the bow of a sailboard by a mast of the sailboard, said sailboard having an upper surface, the apparatus comprising:

a deflecting surface for deflecting said mast to one side or the other of said deflecting surface, and for permitting movement of said mast to a position which is substantially parallel and adjacent to said upper surface of the sailboard at either side of said deflecting surface;

a base; and,

support structure for supporting the deflecting surface over the base and said upper surface of the sailboard.

5,628,267

OSCILLATION SUPPRESSION DEVICE AND SHIP PROVIDED WITH THE SAME

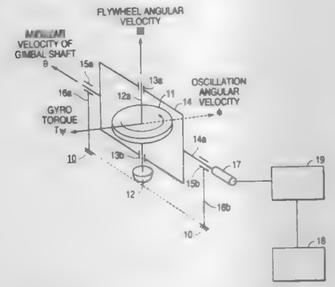
Akinori Hoshio; Katsuya Umemura, and Hiroshi Takeuchi, all of Komaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1994, Ser. No. 329,517

Claims priority, application Japan, Nov. 1, 1993, 5-273735; Feb. 2, 1994, 6-010874

Int. Cl.[6] B63B *39/00*

U.S. Cl. 114—122 **10 Claims**



1. An oscillation suppression device comprising:

a support frame having rotary bearings;

a gimbal having a gimbal shaft and being rotatably supported by said bearings on said support frame;

a flywheel rotatably supported in said gimbal;

a motor operably coupled to said flywheel;

means for supplying a constant voltage to said motor including a current limiter and a battery;

an angular velocity detector adapted to detect an angular velocity of an object in which oscillation is to be suppressed and emitting a signal corresponding to the detected angular velocity of the object; and

control means provided on said gimbal shaft for controlling the angular velocity of said gimbal in response to the signal from said angular velocity detector.

5,628,268

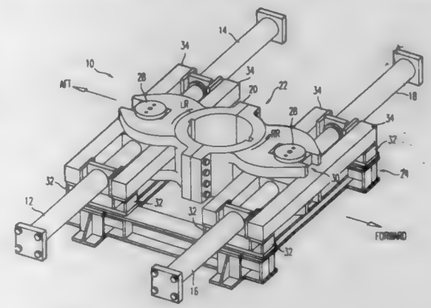
RAPSON-SLIDE STEERING MECHANISM

Paul S. Brydel, H. H. Is, S.C., and Eugenio Millevoi, Fort Lee, N.J., assignors to Jered Brown Brothers, Inc., Brunswick, Ga.

Filed Jul. 3, 1995, Ser. No. 498,689

Int. Cl.[6] B63H *25/22*

U.S. Cl. 114—150 **23 Claims**



1. An improved ship's steering mechanism of the type having at least two oppositely disposed hydraulic cylinders interconnected by at least two transversely disposed piston rods connected to form a common operating rod having a continuous line of action, for converting complementary linear cylinder motion via a crosshead fork/arm member into rotary motion of a vertically pivoted rudder stock, said mechanism comprising:

(a) a slider element fixed at a central position along said common rod, said slider carrying at least one vertical crosshead pin for transmitting transverse linear motion to said crosshead fork/arm member;

(b) a pair of transverse beams forming a travel channel extending parallel to a direction of said continuous line of action for said slider element with said slider element contacting at least one of said transverse beams during a steering operation and being supported by said at least one of said beams; and

(c) whereby longitudinal components of dynamic forces within said steering mechanism in a horizontal plane are absorbed by said beams and thus are prevented from being transmitted back into said hydraulic cylinders.

5,628,269

JUMP PUMP ARRANGEMENT FOR JET BOAT

Yasuhiko Henmi; Makoto Nagafusa, and Susumu Yamazaki, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 29, 1995, Ser. No. 564,655

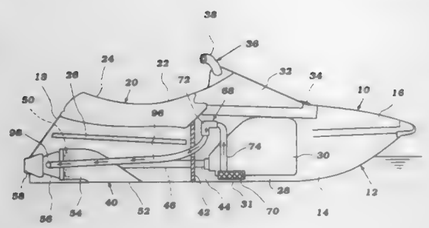
Claims priority, application Japan, Dec. 1, 1994, 6-298340

Int. Cl.[6] B63B *13/00*

U.S. Cl. 114—183 R **6 Claims**

1. A water-removal assembly for removing water from a bilge of a watercraft that includes a removable seat, said water-removal assembly comprising a pumping device, at least one conduit communicating said bilge with said pumping device so as to remove

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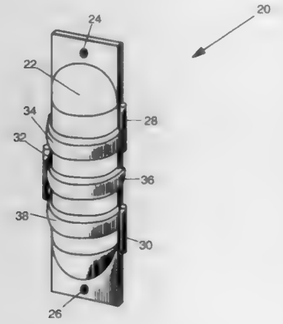
water from said bilge, an inverted substantially U-shaped portion formed by said at least one conduit, a backflow prevention device provided in said U-shaped portion, an access opening provided below said removable seat, said backflow prevention device including a check valve that is easily accessible through said access opening and allows water to be removed from said bilge but substantially prevents water from entering said bilge.

5,628,270

CONTINUOUSLY MODULAR FLEXIBLY HINGED MARINE FENDER SYSTEM

David L. Ryll, 7670 S. Olive Cir., Englewood, Colo. 80112, and Gregory R. Klaes, 55 Hunters Ridge, Orchard Park, N.Y. 14127

Filed May 26, 1995, Ser. No. 453,068
Int. Cl.[6] B63B *59/02*
U.S. Cl. 114—219 **3 Claims**



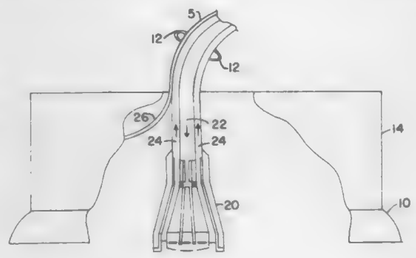
1. A modular bumper system comprising:
a planar backboard member;
a bumper mounted to a front surface of the planar backboard member;
a hinge means functioning to join two planar backboard members together;
said planar backboard member further comprising a hole means functioning to receive a rope and a snap and a bolt, thereby providing a means to mount the planar backboard member on a post and a dock and a boat and a snap mounted on a boat;
a pair of cleats mounted one on each side of a boat;
a plurality of hinged planar backboard members; and
a cord means functioning to connect the plurality of hinged planar members to an underside of a boat.

5,628,271

APPARATUS AND METHOD FOR REMOVING COATINGS FROM THE HULLS OF VESSELS USING ULTRA-HIGH PRESSURE WATER

Dennis McGuire, Stuart, Fla., assignor to Amclean, Inc., Stuart, Fla.

Filed Mar. 22, 1995, Ser. No. 408,382
Int. Cl.[6] B63B *59/08*
U.S. Cl. 114—222 **10 Claims**



1. An apparatus for removing coatings from the ferro-magnetic hulls of ships, comprising:
body means having a frame means and a cowling means;
seal means on said cowling means for providing sealing contact between said apparatus and said hull;
motor means;
steering means;
a plurality of magnetically tractive, steerable motive means connected to said motor means, wherein said motor means drives said plurality of magnetically tractive steerable motive means;
ultra-high pressure water jet means attached to said body means, said ultra-high pressure water means directed toward said ship hull;
conduit means passing through said cowling means and communicating with
a) said ultra-high pressure water means for the passage of ultra-high pressure water, and
b) with said motor means;
a water collection means for collecting the water after impingement on said hull along with the coating particles removed from said hull;
particle separating means for separating said water from said coating particles;
transferring means to transfer said water and said coating particles to said particle separating means from said water collection means;
particulate collecting means for collecting said coating particles;
water storage means for holding water for reuse as an abrasive after separating said coating particles; and
pumping means to pump the water to said water storage means.

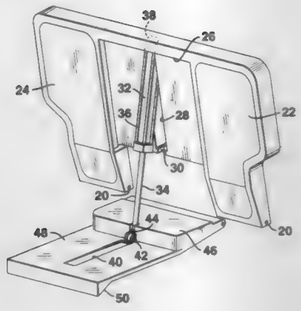
5,628,272

PIVOTABLE THRUST VECTORING TRANSOM PANEL

Mark A. Thomas, San Jose, Calif., assignor to United Defense, L.P., Arlington, Va.

Continuation of Ser. No. 595,943, Feb. 6, 1996, Pat. No. 5,579,711. This application Aug. 29, 1996, Ser. No. 705,028
Int. Cl.[6] B63B *1/22*
U.S. Cl. 114—285 **8 Claims**

1. A transom flap for use on an amphibious vessel comprising:
a transom having at least a single port through said transom;
said transom flap pivotally attached to said transom capable of substantially closing said port, said transom flap further being capable of deployment to a position extending outwardly from said hull structure to open said port;



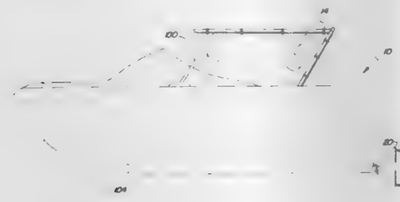
waterjet propulsion system carried by said vessel, said system having at least a single waterjet propulsion outlet directed to deliver water through said port of said transom;
means to position said transom flap to impinge said waterjet and deflect said waterjet from its normal path, whereby said impingement of said waterjet on said transom flap will cause an attitude change in said vessel controllable by the degree of incidence said transom flap presents to said waterjet.

5,628,273

MISTING APPARATUS FOR A BOAT

Dale E. Crouse, II, 17030 N. 15 St. Apt. 1136, Phoenix, Ariz. 85022

Filed Aug. 28, 1995, Ser. No. 519,726
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—343 **3 Claims**



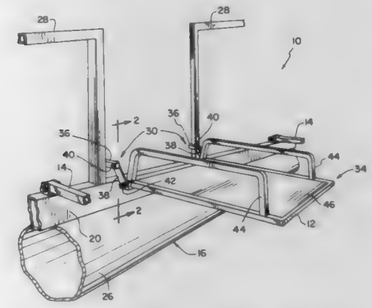
1. A misting apparatus for an attachment to a boat for creating a fine mist to be sprayed into a boat comprising, in combination:
a length of tubing secured to a frame supporting a canopy on a boat, the length of tubing being secured to the frame by a plurality of hose ties spaced equally therealong, the length of tubing being secured to the canopy by a plurality of clips spaced equally therealong;
a pick up tube comprising an elbow shaped tube having an open first end and an open second end, the open first end having a screened pick up mechanism secured thereto, the open second end having a rigid threaded tube secured thereto, the rigid threaded tube extending inwardly of a hull portion of a boat, an opposing end of the threaded tube having a hose nipple secured thereto, the hose nipple being removably secured to a distal end of the length of tubing;
a plurality of sprayers secured to the length of tubing in a position beneath the canopy;
a pump adapted to receive the length of tubing therethrough, the pump being positioned whereby the pump will draw sea water through the pick up tube to be sprayed out of the plurality of sprayers;
an activation switch secured within the boat positioned accessibly for a user whereby the activation switch activates or deactivates the pump.

5,628,274

BOAT INGRESS/EGRESS SYSTEM AND RAMP

Baron Biedenweg; Mike Neher, and Brad Davis, all of Fort Wayne, Ind., assignors to Harris Kayot, Inc., Fort Wayne, Ind.

Filed Jul. 24, 1995, Ser. No. 505,870
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—362 **7 Claims**



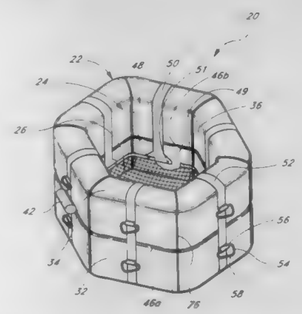
1. An ingress/egress system for allowing ingress/egress to and from a boat and a fixed structure, the boat including a superstructure having a deck with an upper surface, said ingress/egress system comprising:
a ramp connected to the superstructure, said ramp movable between an upright, transport position, and a down, loading position, said ramp having an end with an upper surface which is disposed adjacent to and substantially coplanar with said deck upper surface when said ramp is in said down, loading position; and
at least two rigid extension arms pivotally connected to the superstructure, each said extension arm including means for connecting to the fixed structure, said extension arms together defining a means for controlling movement of the boat in directions toward and away from the fixed structure.

5,628,275

MARINE WILDLIFE RESCUE DEVICES AND METHODS FOR RESCUING MARINE WILDLIFE

Michael W. Casey, 1111 Barrow St., Unit B, Anchorage, Ak. 99501

Filed Jun. 7, 1995, Ser. No. 483,508
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—28.5 **14 Claims**



1. A flotation device for rescuing oil-soaked birds, comprising:
a generally hexagonal, inflatable outer wall structure defining a cavity therein of at least one foot in width and of a size that can be handled by a single person;

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a fluid-impermeable lower floor covering the bottom of the cavity and sealingly attached around the lower periphery of the outer inflatable wall structure;

an upper floor constructed of fluid-permeable material stretched across the cavity and attached to the inner sides of the inflatable outer wall structure a specified distance above the lower floor;

a band secured to the inner surface of the inflatable outer wall structure on each of the six hexagonal sides, the band extending over an upper rim of the inflatable wall structure and down an outer surface of the inflatable wall structure;

at least one attachment member secured to the flotation device by said bands on each of said six sides of the hexagonal inflatable wall structure; and

a pressurized gas cartridge secured to one of said bands and adapted to inflate said device.

5,628,276

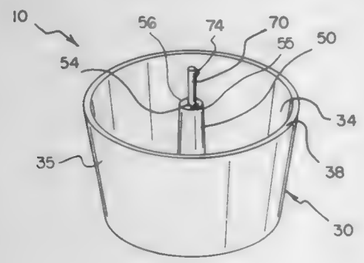
TIP-RESISTANT OUTDOOR PET FEEDING OR WATERING DISH

John P. Raposa, 7 Rego Way, North Darmouth, Mass. 02747

Filed Aug. 2, 1996, Ser. No. 691,239

Int. Cl.[6] A01K *39/00*

U.S. Cl. 119—61 **3 Claims**



1. A new and improved tip-resistant outdoor pet feeding or watering dish for providing an outdoor pet food or water dish that is secured upright whereby preventing loss of food or water due to the pet tipping over the dish, the tip-resistant outdoor pet feeding or watering dish comprising:

a round canister of hard rigid non-porous break-resistant non-toxic material such as plastic having a closed planar bottom and a open top wherein all types of solid, moist, or liquid pet food may be placed, the canister also having an integral central post member therein projecting vertically upwardly from the bottom, the post member extending slightly above the top edge of the canister, the post member also having a longitudinal bore therethrough with a radially extending recess along the length of the bore; and

a spike of impact-resistant non-toxic material such a plastic having a diameter essentially the same as the diameter of the bore through the post member, the spike also having a length substantially greater than the length of the post member, the spike having a radially extending projection adjacent to the upper end of the spike, the spike additionally having a point formed on the lower end whereby insertion into the ground is facilitated, the spike extending downwardly through the bore of the post member, the spike also being removedly inserted into the ground under the canister whereby the canister may not be easily tipped by an average pet animal.

5,628,277

HUMMINGBIRD FEEDER

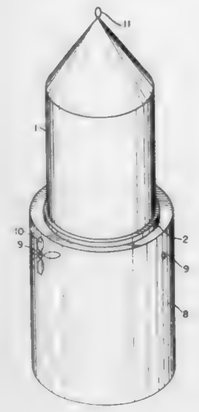
José A. M. Machado, Rua da Invernada, 26, Carapicuíba - SP, Brazil

Filed Sep. 19, 1995, Ser. No. 530,512

Claims priority, application Brazil, Sep. 20, 1994, 7401485 U

Int. Cl.[6] A01K *39/00*

U.S. Cl. 119—72 **19 Claims**



13. A hummingbird feeder for retaining a solution, comprising:

a reservoir for receiving the solution, said reservoir having at least one internal orifice which permits access to the solution; and

an overflow collector having an open end and a closed end for receiving an overflow of the solution within said reservoir, said open end of said collector partially concentrically engages said reservoir, said collector having at least one external orifice which coincides with said at least one internal orifice, said at least one internal orifice and said at least one external orifice having a diameter which allows the passage of hummingbird beaks, but not the heads of bees.

5,628,278

DRINKING WATER DISPENSER PARTICULARLY FOR POULTRY

Ehud Uri, Doar Na Menashe, Israel, assignor to Plasson Maagan Michael Industries Ltd., Doar Na Menashe, Israel

Continuation-in-part of Ser. No. 961,810, Oct. 15, 1992, abandoned. This application Feb. 16, 1995, Ser. No. 389,478

Int. Cl.[6] A01K *7/00*

U.S. Cl. 119—72.5 **18 Claims**

1. A drinking water dispenser for animals for use in suspension-type water supply systems, comprising:

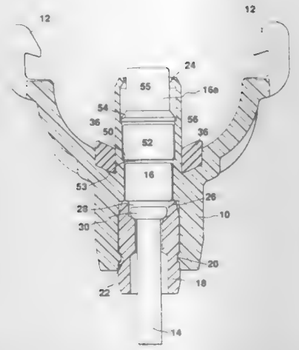
a housing formed with a vertically-extending bore through a part thereof;

a pin received within said bore and having a lower portion projecting downwardly through said bore, and an upper portion formed with an enlarged head;

and a weight located above, and engageable with, an upper portion of said pin;

said enlarged head of the pin having a surface engageable with a surface of the housing around said bore to define a valve therewith;

both of said surfaces being of rounded,outwardly-bulged configuration such that the two surfaces define between them a valve which may be opened either by raising the pin to lift its head off said housing surface, or by tilting the pin to lift a part of its head off said housing surface;



said weight being spaced from the upper portion of said enlarged head of the pin so as to be separated therefrom by a gap when the pin is not tilted or raised.

5,628,279

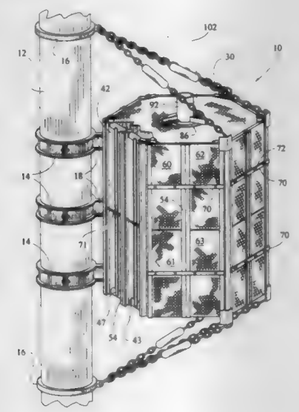
FISH CAGE

John W. Bones, IV, 1115 Hwy. 146 N. #501, Texas City, Tex. 77590

Filed May 1, 1995, Ser. No. 431,548

Int. Cl.[6] A01K *63/00*

U.S. Cl. 119—215 **7 Claims**



1. A fish cage, comprising:

a substantially rigid frame;

a grating skin affixed to and enclosing said frame; and

a feed tube extending through said grating skin for providing feed to the interior of the cage:

wherein said skin comprises a plurality of removable panels that are slidably mounted on said frame.

5,628,280

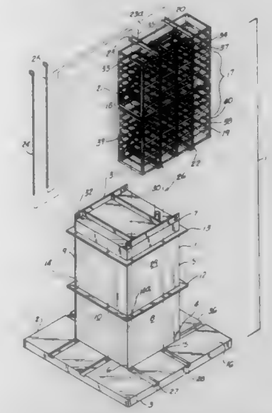
OYSTER CLEANSING/PURIFICATION ARRAY

John D. Ericsson, P.O. Box 6211, Gulf Breeze, Fla. 32561

Continuation-in-part of Ser. No. 189,335, May 18, 1994, Pat. No. 5,438,958, which is a continuation-in-part of Ser. No. 15,484, Nov. 18, 1993, Pat. No. Des. 362,508. This application Mar. 29, 1995, Ser. No. 413,166

Int. Cl.[6] A01K *61/00*

U.S. Cl. 119—239 **20 Claims**



1. An molluscan sustaining system for supporting a plurality of molluscans on trays in a clean body of water, comprising:

first and second tray rack components, each of said tray rack components each comprising a plurality of generally vertically and horizontally-aligned tray supports, each of said tray rack components having an open face, wherein there is formed open access to a tray placed upon said tray supports, said tray rack components further comprising first and second side wails, and a rear wall, said first and second side walls and rear wall configured to block the passage of trays therethrough;

a platform support structure, comprising a generally horizontally-disposed support pad having an upper side having a medial area and a support area, said platform support structure further comprising:

a generally vertically-situated support column anchored to said support pad, said support column having first and second side walls each having at least one engagement member configured to removeably engage said open face of said first and second tray rack components, respectfully, retaining said open face of said first and second tray rack components in generally closed relationship against said respective side walls of said support column.

5,628,281

AQUARIUM FILTERING AND HEATING SYSTEM

Scott A. Kelley, P.O. Box 420446, Houston, Tex. 77242-0446

Continuation-in-part of Ser. No. 225,645, Apr. 11, 1994, abandoned. This application Jan. 26, 1995, Ser. No. 378,628

Int. Cl.[6] A01K *63/04;63/06*

U.S. Cl. 119—262 **8 Claims**

1. An aquarium filtering system for filtering debris suspended in liquid contained within an aquarium, the filtering system comprising:

a. a fluid reservoir defined by

(1) a first side containment bulkhead;

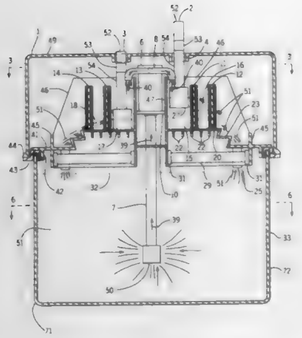
(2) a second side containment bulkhead;

(3) a upper containment bulkhead;

(4) a filter reservoir bottom;

b. a filter support frame;

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c. a filter supported by said filter support frame to form a substantially vertical filter wall, wherein said filter wall partitions said reservoir to form at least one filter pond such that liquid contained within said pond can flow through said filter wall;

d. a pump for pumping liquid from said aquarium and discharging said liquid into said filter pond;

e. a float having an upper end and a lower end, said float disposed within said filter pond for suspension by liquid contained within said filter pond; and

f. a filter condition indicator having a first end and a second end, wherein said first end is attached to said upper end of said float;

wherein the surface level of the liquid contained within the pond rises as debris is trapped by said filter wall as liquid passes therethrough, the rising surface level causing the float to likewise rise such that the filter condition indicator indicates the condition of the filter.

5,628,282

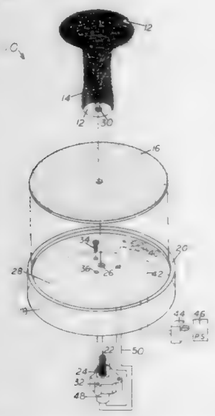
MECHANICALLY ASSISTED ANIMAL SELF-GROOMING DEVICE

Steven D. Udelle, 26414 Barranquilla Ave., Punta Gorda, Fla. 33983-5724

Continuation-in-part of Ser. No. 348,728, Dec. 2, 1994, Pat. No. 5,540,186. This application Apr. 1, 1996, Ser. No. 626,034

Int. Cl.° A01K *13/00*

U.S. Cl. 119—609 **6 Claims**



1. A mechanically assisted animal self-grooming device comprising:

a) a housing forming a base and having a vertically oriented peripheral sidewall and an upper surface supported by said peripheral sidewall;

b) a shaft extending through said upper surface of said housing;

c) means for rotating said shaft disposed within said housing, said rotating means causing said shaft to rotate at a preselected rate of revolution;

d) rubbing means directly coupled to said shaft and disposed above said upper surface of said housing, said rubbing means being of a substantially upstanding mushroom shape of grooming the back and side of an animal simultaneously.

5,628,283

COLLAR FOR ANIMALS

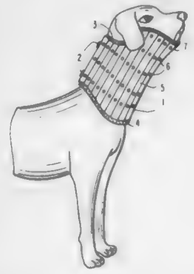
Bernhard Huegelmeyer, Wilhelmstrasse 97, 49078, Osnabrueck, Germany

Filed Jul. 31, 1995, Ser. No. 509,680

Claims priority, application Germany, Aug. 1, 1994, 9412369 U

Int. Cl.° A01K *27/00;13/00*

U.S. Cl. 119—815 **8 Claims**



1. A neck collar for preventing animals from licking parts of their body, said collar comprising a collar structure having a closed position and an open position, fastener means on said collar structure for fastening said collar structure in said closed position in which said collar structure is disposed about an animal's neck, said fastener means being operable to unfasten said collar structure to said open position to enable placement and removal of the collar structure from around an animal's neck, said collar structure when in said closed position being in the form of an elongated tube which is disposed about the animal's neck, said tube having a forward edge and a rear edge, said forward edge extending up to and under the animal's head such that the head of the animal prevents the tube from being moved further up along the animal's neck, said rear edge extending to the chest and shoulders of said animal such that the chest and shoulders of the animal prevent the tube from being moved further down along the animal's neck, whereby said collar structure prevents the animal from licking parts of his body, said collar structure comprising an outer layer of non-foam plastic material, an inner layer of foam plastic material and means adhering said outer layer of non-foam plastic material to said inner layer of foam plastic material, said tube having a forward edge portion extending from said forward edge to a demarcation line, said outer layer of non-foam plastic material and said inner layer of foam plastic material together extending up to said demarcation line, said outer layer of non-foam plastic material having a forward terminating edge terminating at said demarcation line, said inner layer of foam plastic material continuing to extend from said demarcation line to said forward edge of said tube such that said foam plastic material forms said forward edge portion.

5,628,284

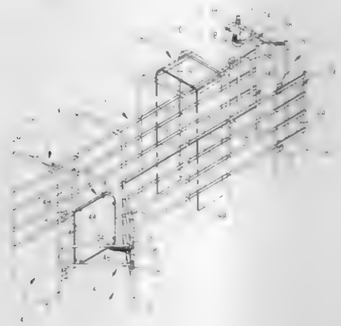
LIVESTOCK CUTTER GATE APPARATUS

Joe S. Sheen, Olathe, Kans., and William E. Spencer, Parkville, Mo., assignors to Alfa Laval Agri, Inc., Kansas City, Mo.

Filed Jun. 6, 1995, Ser. No. 466,211

Int. Cl.° A01K *29/00;1/00*

U.S. Cl. 119—840 **16 Claims**



1. A livestock cutter gate apparatus comprising:

an elongated alley including a first end presenting an entrance and a second end presenting a main exit and a sort exit;

a first gate positioned in the alley between the main exit and the sort exit, the first gate being shiftable between a sorting position in which the first gate blocks the main exit and opens the sort exit, and a non-sorting position in which the first gate blocks the sort exit and opens the main exit;

a first air cylinder assembly for shifting the first gate between the sorting and non-sorting positions;

a pair of saloon gates positioned on opposite sides of the alley from one another at the entrance and being shiftable between a closed position in which the saloon gates block the entrance from incoming livestock and an open position in which the saloon gates open the entrance to incoming livestock;

a second air cylinder assembly for shifting the saloon gates between the closed and open positions;

a sensor means for identifying livestock entering the alley and providing a signal indicative of the presence in the alley of an animal that is to be sorted;

a control means responsive to the sensor means for actuating the first and second cylinder assemblies to shift the first gate to the sorting position and the saloon gates to the closed position upon receipt of the signal from the sensor means that an animal to be sorted is in the alley;

an exit gate positioned in the sort exit and being shiftable between a first position in which the gate in disposed in the path of movement of livestock through the sort exit and a second position in which the gate is removed from the path of movement, the exit gate including a biasing means for biasing the exit gate toward the first position, and being movable to the second position by livestock passing through the sort exit; and

a limit switch associated with the exit gate for providing a signal indicative of movement of the exit gate to the second position, the control means actuating the first and second cylinder assemblies in response to the signal from the switch to shift the first gate to the non-sorting position and the saloon gates to the open position.

5,628,285

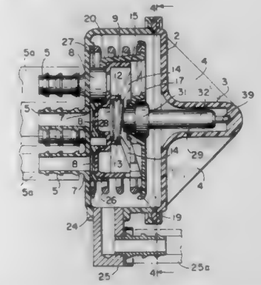
DRAIN VALVE FOR A MARINE ENGINE

Andrew K. Logan, Stillwater, Okla.; Matthew W. Jaeger, Fond du Lac., Wis.; Terry D. Axton; William E. Hughes, both of Stillwater, Okla.; David J. Gruenwald, Butle des Monts, Wis., and James E. Erickson, Stillwater, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Aug. 31, 1995, Ser. No. 521,746

Int. Cl.° F01P *11/02*

U.S. Cl. 123—41.14 **16 Claims**



1. A drain valve assembly for automatically draining water from the cooling system of a marine engine, comprising, a body having at least one inlet connected to a portion of a cooling system of a marine engine to be drained, said body also having an outlet, valve means disposed in the body and disposed to open and close said inlet, a portion of said body bordering said inlet defining a valve seat and said valve means comprises a resilient valve member disposed to engage said seat, biasing means connected to the valve means for biasing said valve member to an open position whereby water from the cooling system can enter the body through said inlet and will be discharged through said outlet; and a temperature responsive element disposed in the body and operably connected to said valve member, said temperature responsive element being characterized by the ability to exert a force on said valve member in excess of the force of said biasing means when the ambient temperature is above a preselected temperature to maintain said valve member in a closed condition, and to exert a force on said valve member less than the force of said biasing means when the ambient temperature falls below said preselected temperature to thereby permit said valve member to open under the influence of said biasing means.

5,628,286

VALVE TIMING CONTROL APPARATUS FOR ENGINE

Seuji Kato, Aichi-ken; Nobuhisa Ohkawa, Toyota; Shigeru Sone, Toyota; Tadahisa Naganawa, Toyota; Yoshihito Moriya, Nagoya; Yoshiya Yamashita, Toyota; Hitoshi Uda, Toyota, and Yuji Yoshihara, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 26, 1996, Ser. No. 622,715

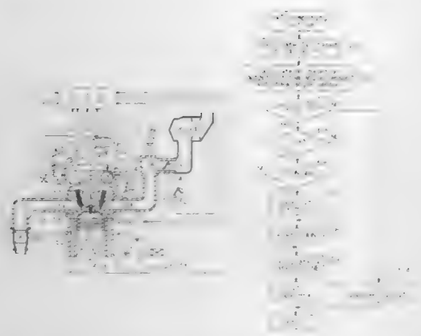
Claims priority, application Japan, Mar. 27, 1995, 7-68322; Aug. 3, 1995, 7-198830

Int. Cl.° F01L *1/34;13/00*

U.S. Cl. 123—90.15 **18 Claims**

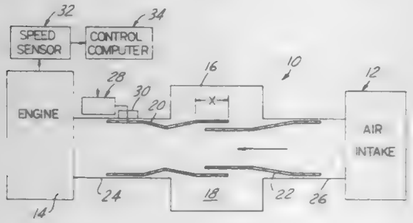
1. A valve timing control apparatus for an engine having an intake valve and an exhaust valve alternately opened and closed in a valve timing sequence according to a rotation of a cam shaft coupled to a crank shaft by way of a rotatable member securely mounted on the cam shaft, wherein said cam shaft is rotatable in synchronism with the crank shaft of the engine, wherein said cam shaft is arranged to be selectively advanced and retarded between two opposite limits with respect to the crank shaft so as to converge the valve timing sequence to a target value computed based on a running condition of the engine detected by detecting means which includes a sensor for detecting a rotational speed of the engine, said apparatus comprising:

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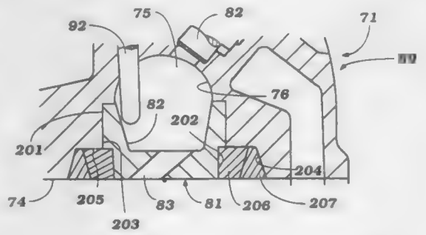
a sleeve secured to the cam shaft within the rotatable member;
a first pressure chamber and a second pressure chamber sealed with respect to each other in the rotatable member;
a hollow plunger movable between the first pressure chamber and the second pressure chamber, said plunger having an inner surface and an outer surface respectively in mesh with the sleeve and the rotatable member, said plunger being arranged to move in an axial direction between a first extreme position in the first pressure chamber and a second extreme position in the second pressure chamber to selectively advance and retard the cam shaft based on differential pressure between the first pressure chamber and the second pressure chamber, wherein said cam shaft is advanced to one of said limits when said plunger is in the first extreme position and retarded to the other one of said limits when the cam shaft is in the second extreme position;
supplying means for supplying fluid pressure to the first pressure chamber and the second pressure chamber to move the plunger;
a controller for controlling the supplying means, said controller computing a specific control value to adjust the fluid pressure to be supplied to the first pressure chamber and the second pressure chamber so as to keep the valve timing sequence converged to the target value, said controller correcting said specific value based on the detected rotational speed of the engine when the plunger is in one of the extreme positions, wherein said controller adjusts the fluid pressures based on the corrected specific value.

5,628,287
ADJUSTABLE CONFIGURATION NOISE ATTENUATION DEVICE FOR AN AIR INDUCTION SYSTEM
Stephen E. Brackett, Blenheim, and David C. Doddy, Charing Cross, both of Canada, assignors to Siemens Electric Limited, Chatham, Canada
Filed Sep. 30, 1994, Ser. No. 315,459
Int. Cl.[6] F02B *75/18*
U.S. Cl. 123—184.55 **19 Claims**



1. A selectively tunable air induction system for an internal combustion engine comprising:
an air flow path having an air inlet via which induction air enters the system and an air outlet via which air passes to the engine, said air flow path further comprising a walled chamber defining an expansion chamber space, which space is disposed between said air inlet and said air outlet;
a tuning tube which forms a portion of said air flow path and through which induction air flow that has entered said air inlet passes independent of engine speed;
and an actuator for selectively positioning said tuning tube relative to said chamber space over a tuning range comprising means for bodily axially positioning said tuning tube relative to said cheer space, wherein said tuning tube comprises opposite axial ends, one of which is disposed within said chamber space and the other of which is disposed without said chamber space over such tuning range.

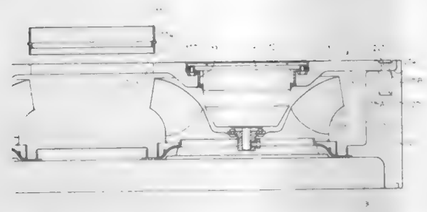
5,628,288
PRECOMBUSTION CHAMBER FOR DIESEL ENGINE
Tatsuyuki Masuda, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Division of Ser. No. 205,940, Mar. 3, 1994. This application Jan. 17, 1996, Ser. No. 587,647
Claims priority, application Japan, Mar. 4, 1993, 5-440057
Int. Cl.[6] F02B *3/00*
U.S. Cl. 123—273 **5 Claims**



1. An internal combustion engine comprised of a cylinder head member having a first surface adapted for sealing relation around a cylinder bore of an associated cylinder block, said first surface surrounding a second surface forming in part a main combustion chamber, said cylinder head member defining a cavity in said second surface forming at least in part a precombustion chamber, a counter bore formed in said cylinder head member at the combustion chamber end of said cavity, an insert piece extending at least in part into said cavity for enclosing said cavity and forming in further part said precombustion chamber, an opening in said insert piece communicating said precombustion chamber with said combustion chamber, and interlocking means carried by said insert piece and said cylinder head member comprised of a locking ring received in said counter bore and wedging means cooperating with said locking ring, said cylinder head member, and said insert piece for affixing said insert piece to said cylinder head member, and wherein the wedging means comprises a second ring received within the counter bore.

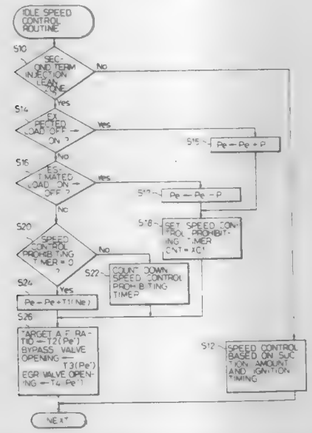
5,628,289
SMOKE EXHAUSTER
Hsing-Wen Chang, 7F-2, No. 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan
Filed Dec. 11, 1995, Ser. No. 570,493
Int. Cl.[6] F24C *15/20*
U.S. Cl. 123—299 **6 Claims**

1. A smoke exhauster comprising:
an enclosure composed of a housing including a top plate, a pair of lateral plates and a front panel, a vent member communicating to an exit at a top of said housing, at least one motor



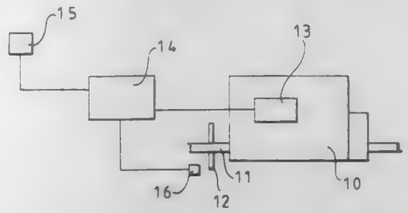
with a suction fan rotatably coupled thereunder and secured under the top plate of said housing;
a fan housing disposed within said enclosure surrounding said suction fan and said vent member;
at least one spiral coupling recess on the top plate of said housing made in registry with one circular hole of equal diameter on said fan housing which is releasably secured to the top plate of said housing by fastener means;
a concave hood plate releasably attached under said enclosure by at least one sliding catch member means;
at least one locking hole on an inner wall of the lateral plates of said housing positioned in registry with said at least one sliding catch member means;
whereby, said fan housing and said hood plate are readily attached to or removed from said enclosure.

5,628,290
IDLE SPEED CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE
Kazumasa Iida, Kyoto, and Katsuhiko Miyamoto, Funai-gun, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1996, Ser. No. 648,672
Claims priority, application Japan, May 16, 1995, 7-141230
Int. Cl.[6] F02D *41/16*
U.S. Cl. 123—305 **35 Claims**



1. An idle speed control apparatus for an internal combustion engine, comprising:
operation state detecting means for detecting an operation state of the internal combustion engine;
air-fuel ratio setting means for setting a target air-fuel ratio in accordance with the engine operation state detected by said operation state detecting means;
air-fuel ratio adjusting means for adjusting an air-fuel ratio of an air-fuel mixture supplied to the internal combustion engine to the target air-fuel ratio set by said air-fuel ratio setting means;
suction air amount adjusting means for adjusting a amount of suction air into the internal combustion engine;
exhaust gas recirculation rate adjusting means for adjusting a rate of exhaust gas recirculation to a suction system of the internal combustion engine;
load detecting means for detecting an engine load; and
control parameter selecting means for selecting at least one control parameter among the air-fuel ratio, the suction rate, and the exhaust gas recirculation rate in accordance with the engine load detected by said load detecting means during idle operation of the internal combustion engine,
said idle speed control apparatus adjusting a value of said at least one control parameter, selected by said control parameter selecting means, by using a corresponding one or ones of said air-fuel ratio adjusting means, said suction air amount adjusting means, and said exhaust gas recirculation rate adjusting means, thereby controlling an idle speed of the internal combustion engine.

5,628,291
METHOD FOR ERROR CORRECTION IN MEASUREMENT OF ENGINE SPEED
Jeremy S. Wrobel, and Robert E. Gravestock, both of Middlesex, England, assignors to Lucas Industries, Public Limited Company, England
PCT No. PCT/GB94/01711, § 371 Date Jan. 29, 1996, § 102(e) Date Jan. 29, 1996, PCT Pub. No. WO95/04879, PCT Pub. Date Feb. 16, 1995
PCT Filed Aug. 4, 1994, Ser. No. 586,752
Claims priority, application United Kingdom, Aug. 6, 1993, 9316367
Int. Cl.[6] F02D *41/34;* **G01P** *11/00*
U.S. Cl. 123—357 **2 Claims**



1. A fuel system for a compression ignition internal combustion engine (**10**) comprising a fuel pump (**13**), a controller (**14**) for controlling the operation of the fuel pump so that fuel is delivered to the engine at the required time and in the desired quantity, means (**15**) for supplying a demand signal to the controller, a wheel (**12**) driven by the engine, a plurality of indicia on the wheel and positioned about the axis of rotation thereof, transducer means (**16**) responsive to the passage of said indicia as the wheel rotates, means responsive to the signals generated by said transducer means for measuring the time intervals between the passage of the indicia past said transducer means, characterized by means for determining indicia spacing errors from the signals provided by the transducer means, said means using matrix techniques to solve the equations

$$T[2].ER[1]-T[1].ER[2]=6(T[1]-T[2])$$

$$T[3].ER[2]-T[2].ER[3]=6([2]-T[3])$$

$$T[n].ER[n-1]-T[n-1].ER[n]=6(T[n-1]-T[n])$$

where
T[i] is the time taken for an ith indicium cycle and
ER[i] is the spacing error between indicium i and indicium i+1 for T[**1**] to T[n] and ER[**1**] to ER[n] and further means responsive to the generally sinusoidal fluctuation of engine speed for correcting the determined indicia spacing errors, the corrected

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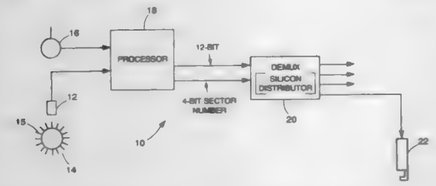
determined indicia spacing errors being utilized with the measured time intervals to provide an engine speed signal to the controller.

5,628,292

METHOD AND SYSTEM FOR GENERATING AN ENGINE POSITION DEPENDENT OUTPUT CONTROL SIGNAL

Samuel J. Guido, Dearborn; Rollie M. Fisher, Trenton; Mark S. Ramseyer, Livonia, all of Mich.; Rudolf Bettelheim, Buda, Tex., and Micah C. Knapp, New Haven, Conn., assignors to Ford Motor Company, Dearborn, Mich., and Motorola, Inc., Schaumburg, Ill.

Filed Apr. 1, 1996, Ser. No. 625,378
Int. Cl.[6] F02P *7/07;5/15*
U.S. Cl. 123—414 **15 Claims**



1. A method for generating a position dependent output control signal for a rotating machine having a plurality of sectors, comprising:

sensing a position of the rotating machine and generating a corresponding position signal; and

processing the position signal to obtain the position dependent output control signal including a first control signal and a second control signal, the first control signal representing a sector of the rotating machine, and the second control signal representing the absolute position within the sector.

5,628,293

ELECTRONICALLY-CONTROLLED FLUID INJECTOR SYSTEM HAVING PRE-INJECTION PRESSURIZABLE FLUID STORAGE CHAMBER AND DIRECT-OPERATED CHECK

Dennis H. Gibson, Chillicothe; Gregory W. Hefler, Dunlap; Ronald D. Shinogle, Peoria; Mark F. Sommars, Sparland, and Howard N. Cannon, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 242,501, May 13, 1994, abandoned. This application Aug. 31, 1995, Ser. No. 524,144
Int. Cl.[6] F02M *37/04;47/02*
U.S. Cl. 123—446 **57 Claims**

1. An electronically-controlled unit fluid pump injector comprising:

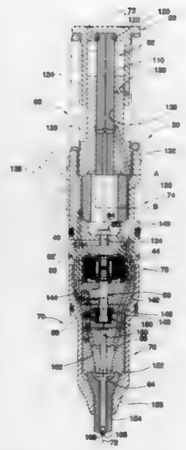
a housing portion defining a fluid control passage and a fluid storage chamber;

a first pressure control valve operable to selectively open and close fluid communication between the storage chamber and the control passage;

a nozzle portion defining a pressure control chamber and at least one fluid injection orifice;

a fluid pressurization member selectively movable between a first position and a second position, when the first valve is opened said member operable during movement from its first to second positions for displacing fluid from the storage chamber to the control passage, when the first valve is closed said member operable during movement from its first to second positions for displacing fluid in the storage chamber thereby pressurizing such fluid to a selected pressure;

a movable direct-operated check operable to selectively close and open fluid communication between the storage chamber



and the fluid injection orifice, said check having a first end portion and a second end portion, said first end portion defining a first effective area arranged in partial fluid communication with the storage chamber when the check is closed, said first effective area arranged in complete fluid communication with the storage chamber when the check is opened, said second end portion defining a second effective area arranged in fluid communication with the pressure control chamber; and

a second pressure control valve selectively movable between a first position and a second position, said second valve at its first position closing fluid communication between the pressure control chamber and the control passage and opening fluid communication between the pressure control chamber and the storage chamber, said second valve at its second position opening fluid communication between the pressure control chamber and the control passage and closing fluid communication between the pressure control chamber and the storage chamber, when the check is closed and the second valve is at its second position said first and second effective areas are operable for hydraulically opening the check, when the check is opened and the second valve is at its first position said first and second effective areas are operable for balancing opposing hydraulic forces acting on such effective areas.

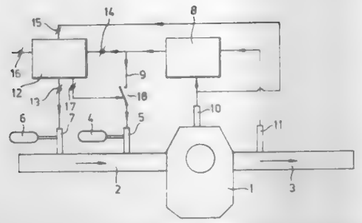
5,628,294

SYSTEM AND METHOD FOR METERING THE FUEL SUPPLY TO A COMBUSTION INSTALLATION OPERATING ON MORE THAN ONE TYPE OF FUEL

Paul E. C. Krieckaert, Heeze; Johannes G. W. M. Oerlemans, Son, and Petronella C. De Laat-De Haas, Schijndel, all of Netherlands, assignors to Gentec b.v., Son, Netherlands

PCT No. PCT/NL94/00229, § 371 Date Apr. 12, 1996, § 102(e) Date Apr. 12, 1996, PCT Pub. No. WO95/08706, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 21, 1994, Ser. No. 617,926
Claims priority, application Netherlands, Sep. 21, 1993, 9301635
Int. Cl.[6] F02M *21/02;* **F02D** *19/06;* **F02C** *9/40;* **F23N** *5/00*
U.S. Cl. 123—525 **19 Claims**

1. System for the metered supply of at least a first and a second type of fuel, in particular petrol and LPG (Liquid Petroleum Gas), to a combustion installation, such as an internal combustion engine (**1**), comprising a first electronic control unit (**8**) for metering, via fuel supply means (**4**, **6**), the supply of the first and second fuel, and detection means (**10**) for the detection of process and operating parameter values of the combustion installation, and a second



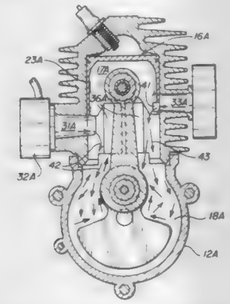
electronic control unit (**12**), coupled to the first control unit (**8**) and the fuel supply means (**4**, **6**), for metering the supply of the second fuel under the control of the first control unit (**8**), characterized in that said first electronic control unit (**8**) has adaptive control characteristics and said second electronic control unit (**12**) is provided with recording means (**20**) for, during operation on the first fuel, recording, in dependence of respective detected process and operating parameter values, first control signal values emitted by the first control unit (**8**) and with control and comparison means (**19**) for, during operation on the second fuel, comparing, in dependence o the process and operating parameters concerned, the momentarily emitted first control signal values with the first control signal values recorded by the recording means (**20**), in order so to adjust second control signal values emitted by the second control unit (**12**) that the momentarily emitted first control signal values are kept within a predetermined range with respect to the recorded first control signal values.

5,628.295

TWO-STROKE INTERNAL COMBUSTION ENGINE

Giuseppe Todero, Mandello del Lario, and Roberto Sommariva, Pavia, both of Italy, assignors to McCulloch Italiana Srl, Valmadrera, Italy

Filed Apr. 15, 1996, Ser. No. 631,962
Int. Cl.[6] F02M *25/07*
U.S. Cl. 123—568 **10 Claims**



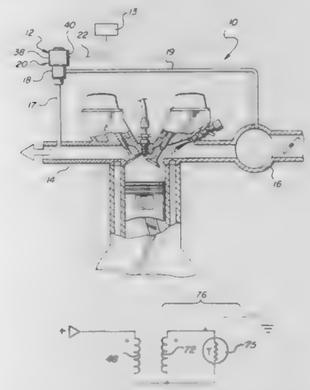
1. A two-stroke engine comprising an engine frame including a cylinder wall forming a combustion chamber, said frame further including a crankcase chamber and an inlet flow passage for introducing fresh mixture into said crankcase chamber, a piston mounted for reciprocating movement between a TDC position and a BDC position in said combustion chamber, said cylinder wall having an intake port and an outlet duct formed therein, said piston moving past said intake port and said outlet duct during said reciprocating movement, said intake port being open and in flow communication with said crankcase chamber and said combustion chamber when said piston is adjacent said BDC position, and said exhaust duct being open and in flow communication with said combustion chamber when said piston is adjacent said BDC position, and a return passage for connecting said exhaust duct with said crankcase chamber when said piston is adjacent said TDC position.

5,628,296

TEMPERATURE-COMPENSATED EXHAUST GAS RECIRCULATION SYSTEM

Thomas Herrington, and Michael J. Covey, both of Dixon, Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jan. 16, 1996, Ser. No. 586,584
Int. Cl.[6] F02M *25/07;* **F16K** *31/02*
U.S. Cl. 123—571 **9 Claims**



1. An exhaust gas recirculation (EGR) valve (**12**) of the type that is connected between an engine exhaust manifold (**14**) and an engine air intake manifold (**16**) and is electrically actuable to control exhaust gas flow from the exhaust manifold (**14**) to the air intake manifold (**16**), said EGR valve (**12**) characterized by:

a first inductive coil (**48**) including a number of turns of an electrical conductor (**52**), whereby said first coil (**48**) produces a magnetic field when energized, said electrical conductor (**52**) having a positive temperature coefficient of resistance;

a ferromagnetic armature (**62**) disposed adjacent said first coil (**48**), said ferromagnetic armature (**62**) being movable under the influence of the magnetic field to regulate the flow rate of the exhaust gas through said EGR valve (**12**);

a resistive combination of circuit elements (**76**) connected in series with said first coil (**48**), said resistive combination of circuit elements (**76**) including a first resistive element (**75**) and a second resistive element (**72**) connected across said first resistive element (**75**), said first resistive element (**75**) having a temperature-dependent range of resistance values and a negative temperature coefficient of resistance and said second resistive element (**72**) having a resistance value,

wherein said resistive combination of circuit elements (**76**) has a resistance that exhibits a preselected negative temperature characteristic whereby the variation in resistance seen across the series connection of said first coil (**48**) and said resistive combination (**76**) due to temperature changes is less than the variation in resistance of said first coil (**48**) alone due to the temperature changes.

5,628,297

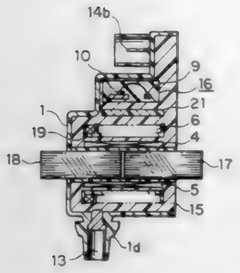
IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Masaaki Taruya, and Mitsuru Koiwa, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1996, Ser. No. 626,328
Claims priority, application Japan, Apr. 24, 1995, 7-098811
Int. Cl.[6] F02P *3/02*
U.S. Cl. 123—634 **3 Claims**

1. An ignition apparatus for an internal combustion engine comprising: an ignition coil; a power switch for intermittently

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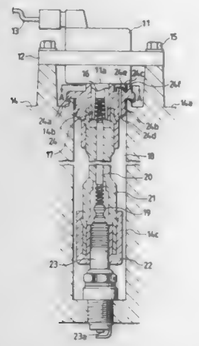
feeding a primary current to said ignition coil; an insulating case filled with an insulating resin material and containing therein said ignition coil and said power switch; and a thermal interference suppression means disposed between said ignition coil and said power switch to suppress thermal interference between said ignition coil and said power switch, wherein said thermal interference suppression means is composed of a heat insulating member.

5,628,298

WATERPROOF SPARK PLUG HOLE CAP OF INTERNAL COMBUSTION ENGINE

Shigemi Murata, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1996, Ser. No. 651,877
Claims priority, application Japan, Oct. 13, 1995, 7-291779
Int. Cl.[6] H01T *13/06*
U.S. Cl. 123—635 8 Claims



1. An ignition apparatus of an internal combustion engine comprising:

a cylinder head cover for fixing an ignition coil;

an ignition plug stored in a plug hole formed in the cylinder head cover;

a plug hole cap for closing an upper portion of the plug hole;

an air bleeding hole penetrating said plug hole cap, for communicating the plug hole with the atmosphere; and

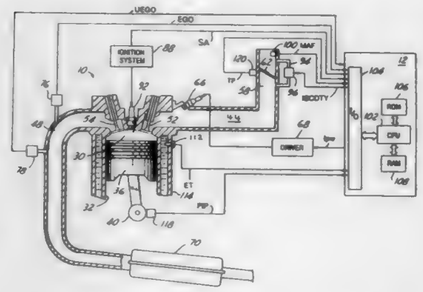
a water resistant wall for covering at least an outside of a peripheral portion of an air bleeding hole outlet of said plug hole cap.

5,628,299

AIR/FUEL CONTROL SYSTEM WITH LOST FUEL COMPENSATION

Robert M. Marzonia; Michael J. Cullen, both of Northville, Mich., and Jon Dixon, Great Totham Maldon, England, assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1996, Ser. No. 625,828
Int. Cl.[6] F02D *41/14;41/04;17/00*
U.S. Cl. 123—672 14 Claims



1. A method for controlling an internal combustion engine having a plurality of combustion chambers coupled to an engine exhaust and thermally communicating with a coolant jacket, each of the combustion chambers including a cylinder having an inner wall with a piston positioned therein, comprising the steps of:

delivering fuel to the engine;

calculating a quantity of said delivered fuel which is lost between the piston and the cylinder inner wall during a predetermined engine operating condition; and

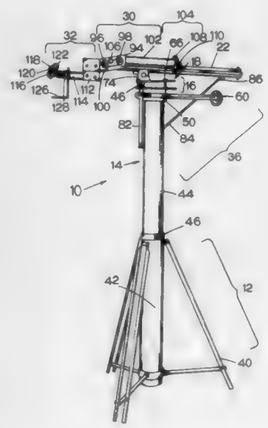
adjusting said delivered fuel for said calculated lost quantity to achieve a desired engine air/fuel ratio.

5,628,300

ARCHERY BOW SIGHTING AND TUNING APPARATUS

Joseph L. Wallendorff, 7066 County Rd. 133, Steedman, Mo. 65077

Filed Nov. 30, 1994, Ser. No. 346,619
Int. Cl.[6] F41B *5/14;5/18*
U.S. Cl. 124—1 20 Claims



20. A archery bow sighting and tuning apparatus comprising:

a telescoping base assembly held in a vertical position by a base having a standard slidable within a tube member, said standard being lockable in a fixed position within said tube member;

a base plate rotatably attached to said top end of said standard with a means to lock said base plate in a selected position on said standard assembly;

an elevation plate member pivotally attached to said base plate with a means of pivoting and securing said plate member in a fixed position in regard to said base plate;

a transition mounting bracket rotatably attached to said elevation plate member;

a transition enclosure attached to said transition mounting bracket;

an elevation adjusting rod to control rotation of said transition mounting bracket and horizontal positioning of said transition enclosure;

a transition piece slidable within said transition enclosure, said transition piece having a release mount bracket extending outward through an elongated opening along a side of said transition enclosure;

a transition shaft rotatably contained within said transition enclosure to slide said transition piece within said transition enclosure and to hold said transition piece in a fixed and known position within said transition enclosure;

a means of rotating said transition shaft;

a bow mounting assembly attached to a front end of said transition enclosure for holding an archery bow; and

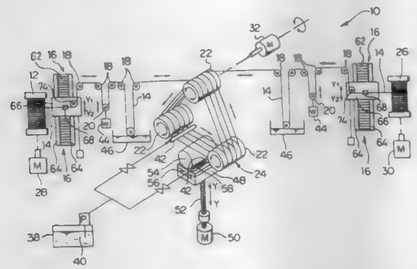
a trigger release attached to said release mounting bracket, said trigger release engaging a bow string on a bow mounted in said bow mounting assembly, said trigger release holding said string as said transition piece is drawn back to a position corresponding to a bow draw length, and said trigger release operated to release said string to shoot an arrow from said bow.

5,628,301

WIRE TRAVERSE APPARATUS OF WIRE SAW

Shozo Katamachi, Mitaka, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1996, Ser. No. 680,235
Claims priority, application Japan, Jul. 14, 1995, 7-178765
Int. Cl.[6] B28D *1/08*
U.S. Cl. 125—21 3 Claims



1. A wire traverse apparatus of a wire saw which moves following a wire supplied from or wound up by a wire reel of the wire saw and guides the wire so that a wire supply or windup angle is substantially a right angle to a longitudinal direction of the wire reel; said wire transfer apparatus comprising:

a guide roller for guiding the wire onto or from the wire reel, the guide roller moving axially, parallel to the longitudinal axis of the wire reel;

detecting means for detecting a displacement of the supply or windup angle of the wire on the guide roller; and

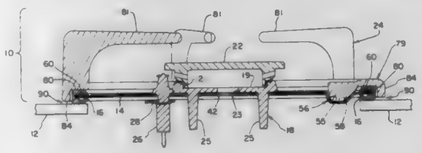
control means for controlling the speed of movement of the guide roller based on the detected displacement of the wire supply or windup angle so that the wire supply or windup angle is substantially a right angle.

5,628,302

BURNER ASSEMBLY AND PAN SEAL

Steven M. Schatz, New Palestine, and Stanley H. Beach, Indianapolis, both of Ind., assignors to Maytag Corporation, Newton, Iowa

Filed Jun. 21, 1995, Ser. No. 493,163
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—39 R 15 Claims



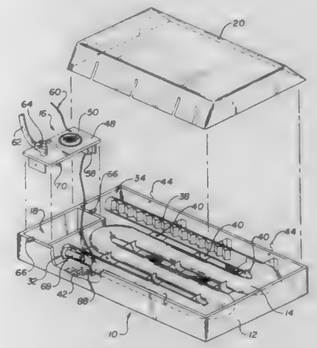
1. In a gas range including a range top with at least one burner opening; at least one removable burner assembly, including a burner pan having a peripheral portion adapted to engage the range top at the periphery of the burner opening and a sealed burner in its central portion; and a seal between the peripheral portion of the burner pan and the range top, the improvement comprising a resilient elastic seal formed to engage the peripheral portion of the burner pan and having sufficient peripheral length and elasticity that it may be stretched over the peripheral portion of the burner pan and through its resilience engage and be retained on the peripheral portion of the burner pan.

5,628,303

RADIANT SPACE HEATER FOR RESIDENTIAL USE

Farshid Ahmady, Rochester Hills, and Srinivas C. Duvvuri, Sterling Heights, both of Mich., assignors to Solaronics, Inc., Rochester, Mich.

Filed Feb. 20, 1996, Ser. No. 603,717
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—91 A 6 Claims

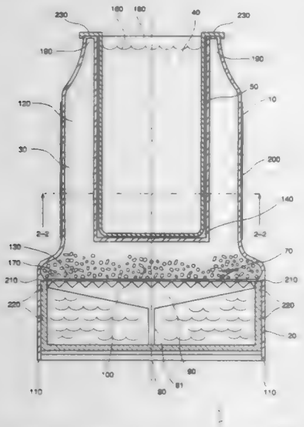


1. A gas-fired radiant space heater comprising a radiator tube having an inlet end, a plenum chamber in communication with the inlet end of the tube, and combustion control means comprising a plurality of operatively interconnected components for supplying a combustible mixture of air and fuel gas to a burner adjacent the tube inlet end, the radiator tube, plenum chamber and combustion control means disposed essentially in a plane, the radiant heater characterized in that:

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substantially all of the components making up the combustion control means are located within the plenum chamber and secured to a chassis, the chassis being detachable and removable from the heater in a direction substantially perpendicular to the plane of the heater in order to remove the combustion control means as a unit from the plenum chamber.

5,628,304
SELF-HEATING CONTAINER
Robert Freiman, Thornhill, Canada, assignor to G & S Regal Trading Corporation, Concord, Canada
Filed Jun. 22, 1995, Ser. No. 493,585
Int. Cl.[6] F24J *1/00;3/00*
U.S. Cl. 126—263.09 **46 Claims**



1. A self-heating container for heating a comestible item; said container being substantially recyclable and comprising a first chamber configured of a material with a predetermined effective thermal conductivity and substantially recyclable having at least one frangible wall, a second chamber having a first end and a second end, said second chamber configured of a material with a predetermined effective thermal conductivity and being substantially recyclable, said first and second chambers being matingly attached to each other adjacent the frangible wall of the first chamber and the first end of the second chamber, said first chamber having a first reactant contained therein and said second chamber having a second reactant contained therein; a cutting device proximate said at least one frangible wall of the first chamber; to cut said at least one frangible wall to allow contacting of the first reactant with the second reactant resulting in an exothermic reaction;

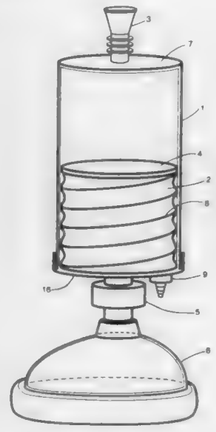
said second chamber further comprising at least one comestible receptacle receiving area proximate said second end to matingly and removably receive at least one comestible receptacle, said at least one comestible receptacle receiving area having a substantially optimal heat transfer configuration to allow substantial optimal heat transfer from said first and second chambers to said comestible receptacle;

a substantially insulative seal to seal the comestible receptacle;

an insulative portion attached to said self heating container to substantially optimize the heat transference from said first and second chambers to said comestible receptacle, and substantially increase the comfort level of a user holding said self heating container;

said first chamber and said second chamber being totally sealed from contact with said comestible receptacle, whereupon after use of said self heating container, said first and second chambers and said comestible receptacle are detachable and available for recycling.

5,628,305
UNIVERSAL VENTILATION DEVICE
Richard Melker, Gainesville, Fla., assignor to Richard J. Melker, Gainesville, Fla.
Filed Sep. 27, 1995, Ser. No. 534,606
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—202.29 **11 Claims**



1. A universal ventilation device comprising:

a) a rigid cylinder having a top, bottom and having an adjustable volume chamber therein for containing gas or air to be delivered to a patient whose normal inspiration rate is interrupted or has ceased; said rigid cylinder further including means for connecting said top and bottom and a means for adjusting the volume of the adjustable volume chamber; wherein at least one of said means for connecting or said means for adjusting is employed to adjust a volume of gas or air delivered to a patient to be roughly equivalent to such a patient's lung tidal volume;

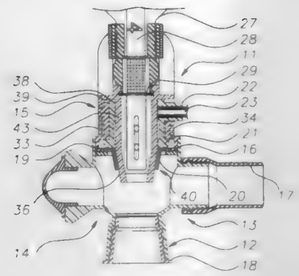
b) a rescuer-controlled expelling means for urging the gas or air from said adjustable volume chamber and into a patient's lungs via a face-mask or endotracheal tube, wherein said rescuer-controlled expelling means urges said gas or air from said adjustable volume chamber to enter a patient's lungs at a flow rate that is at least roughly matched to the normal inspiratory flow rate of a patient;

c) a double one-way patient valve located between said adjustable volume chamber and said face-mask or said endotracheal tube which only allows the air or gas expelled from the adjustable volume chamber to enter a patient's lungs and which allows gas exhaled by a patient to vent to the atmosphere, but does not allow air or gas exhaled by a patient to enter said adjustable volume chamber; and

d) a one-way gas or air intake valve connected to said adjustable volume chamber which allows compressed gas or fresh air to enter said adjustable volume chamber when said rescuer-controlled expelling means is not urging air or gas into a patient's lungs.

5,628,306
RESPIRATORY MANIFOLD WITH ACCESSORY ACCESS PORT
Kok-Hiong Kee, 2507 Barrett Place Dr., St. Louis, Mo. 63021
Continuation-in-part of Ser. No. 962,755, Oct. 19, 1992. This application Apr. 21, 1994, Ser. No. 230,983
Int. Cl.[6] A61M *25/01*
U.S. Cl. 128—203.12 **5 Claims**

1. A respiratory support system comprising:



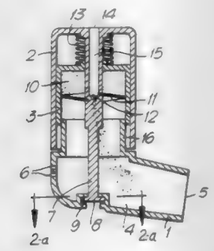
an adaptor formed as part of a respiratory system accessory device,

a catheter housed within said adaptor,

a manifold adapted to be connected for fluid flow attachment between a patient and a ventilator circuit, said manifold having an accessory access port for allowing attachment of said adaptor to said manifold, said accessory access port including a normally closed valve therein and a normally open redundant sealing member, and

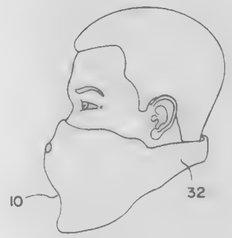
said adaptor including means for opening said normally closed valve in response to attachment of said adaptor to said accessory access port to allow fluid flow access between said manifold and said respiratory system accessory device, said adaptor further including means for abutting against said normally open redundant sealing member to seal thereagainst, whereby said catheter maybe introduced into said manifold without contact with possible contamination by said normally closed valve.

5,628,307
MEDICAMENT INHALATION DEVICE AND FORMULATION
Andrew R. Clark, Loughborough, and John L. Hart, Bramcote, both of England, assignors to Fisons plc, Ipswich, England
Continuation of Ser. No. 447,949, May 23, 1995, Pat. No. 5,538,999, which is a continuation of Ser. No. 294,138, Aug. 22, 1994, Pat. No. 5,482,946, which is a division of Ser. No. 897,246, Jun. 11, 1992, Pat. No. 5,341,800, which is a division of Ser. No. 759,711, Sep. 12, 1991, Pat. No. 5,176,132, which is a continuation of Ser. No. 531,254, May 31, 1990, abandoned. This application Jan. 11, 1996, Ser. No. 584,247
Claims priority, application United Kingdom, May 31, 1989, 89/12503; Jun. 10, 1989, 89/13392
Int. Cl.[6] A61M *11/08*
U.S. Cl. 128—203.15 **17 Claims**



1. A device for administration by inhalation of a medicament in powdered form, adapted to contain a compacted body of powdered medicament and metering means for dispensing medicament from a medicament reservoir, the metering means including means for abrading the compacted body; wherein a biassing means or screw means is provided for moving the compacted medicament body and the abrading means towards one another to permit a correct amount of medicament to be abraded from the compacted medicament body for one dose.

5,628,308
HEAT AND FIRE RESISTANT RESPIRATORY FILTRATION MASK
Cordell F. Harges, Jr., 12629 Loma Verde Dr., Victorville, Calif. 92392, and Bert Rivera, 1135 Wilcox Ave., Monterey Park, Calif. 91755
Continuation-in-part of Ser. No. 183,417, Jan. 19, 1994, abandoned. This application Aug. 31, 1994, Ser. No. 297,937
Int. Cl.[6] A62B *18/02;* **A42B** *1/00;* **A61F** *9/00;11/00*
U.S. Cl. 128—206.21 **11 Claims**



1. A heat and fire resistant protective mask, comprising:

a main portion adapted to cover at least the nose, mouth, neck and cheekbone areas of a wearer, and first and second flap portions extending from either side of said main portion and adapted to be fastened around the neck of the wearer;

said main portion and said flap portions each comprising an outer shell made of a heat and fire resistant material and an inner liner made of heat and fire resistant material coextensive with and attached to said outer shell;

means for supporting in a removable manner a respiratory air filter between said inner liner and said outer shell; and

a respiratory air filter.

5,628,309
METER FOR ELECTRICALLY MEASURING AND RECORDING INJECTION SYRINGE DOSES
Stephen J. Brown, Mountain View, Calif., assignor to Raya Systems, Inc., Mountain View, Calif.
Filed Jan. 25, 1996, Ser. No. 591,308
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—632 **17 Claims**

1. A device for electrically measuring and recording a dose contained in a syringe, said syringe having an input terminal, said device comprising:

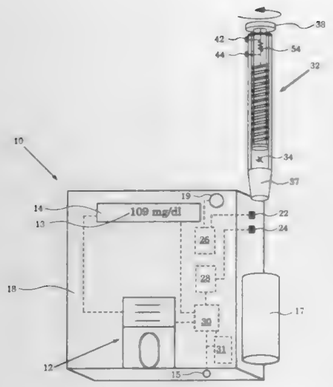
a) an input contact for contacting said input terminal;

b) a holder for holding said syringe, said holder and said input contact being positioned such that when said syringe is inserted in said holder, said input contact contacts said input terminal;

c) a voltage generator connected to said input contact for applying a voltage to said input terminal when said input contact contacts said input terminal;

d) a measuring means for measuring an electrical response from said syringe, said electrical response resulting from said voltage and indicating a size of said dose; and

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e) an electronic recording means for recording the measurement of said electrical response.

5,628,310

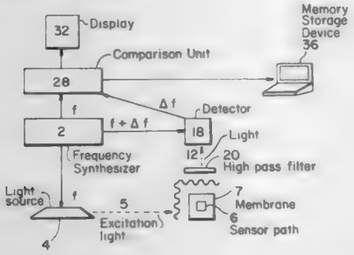
METHOD AND APPARATUS TO PERFORM TRANSCUTANEOUS ANALYTE MONITORING

Govind Rao; Henryk Szmacinski, both of Baltimore, Md., and Joseph R. Lakowicz, 10037 Fox Den Rd., Ellicott City, Md. 21042, assignors to Joseph R. Lakowicz, Baltimore, Md.

Filed May 19, 1995, Ser. No. 444,927

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **33 Claims**



1. A trans-cutaneous analyte monitor, comprising:

a light emitting means for emitting an excitation light having predetermined wavelength and temporal characteristics;

a bio-compatible implant, said bio-compatible implant emitting fluorescence having predetermined wavelength and temporal characteristics upon absorption of said excitation light emitted from said light emitting means;

a detector means to detect said fluorescence from said bio-compatible implant, said detector means producing an electrical signal proportional to said fluorescence;

a comparison means to compare by means of lifetime-based sensing said wavelength and temporal characteristics of said light emitted from said light emitting means and said wavelength and temporal characteristics of said fluorescence from said bio-compatible implant said comparison means receiving input from said light emitting means and said detector means and having an output; and

a computing means to receive said output of said comparison means and relating said comparison of said wavelength and temporal characteristics of said light emitted from said light emitting means and said wavelength and temporal characteristics of said fluorescence from said bio-compatible implant to a quantity of a selected substance present.

5,628,311

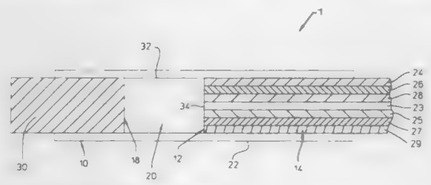
CHEMICAL SENSOR WITH VARIABLE VOLUME SENSOR CELL AND METHOD

Ganapati R. Mauze, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 29, 1995, Ser. No. 520,428

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—634 **12 Claims**



1. A chemical sensor, comprising:

(a) a sheath, having at least a portion permeable to a fluid suspected of containing a target chemical, for surrounding a sample of said fluid;

(b) an optical fiber means having a portion disposed in the sheath for emitting light to cause light interaction with the target chemical in the sample of said fluid surrounded by the sheath;

(c) a mirror disposed in the sheath for reflecting light emitted by the optical fiber means; and

(d) means associated with the optical fiber means for detecting the light interaction;

wherein the sheath, optical fiber means, and mirror define a chamber for including the fluid and wherein at least one of the optical fiber means and the mirror is slidably disposed in the sheath to force the fluid through the sheath.

5,628,312

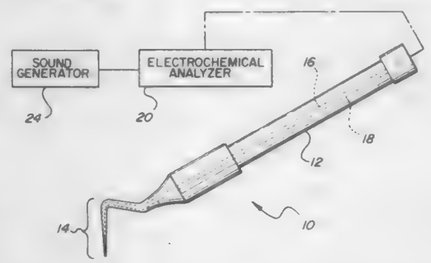
APPARATUS FOR MEASURING SULFIDES WITHIN A PERIODONTAL POCKET

Donald L. Musinski, Seline, Mich., assignor to Diamond General Development Corporation, Ann Arbor, Mich.

Filed Jun. 12, 1995, Ser. No. 489,657

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—635 **15 Claims**



1. A probe for diagnosing the presence and extent of disease in a periodontal pocket containing sulcal fluid, by measuring the concentration of sulfides in said fluid, said probe comprising:

a housing having a first end defining a tip configured to probe the periodontal pocket;

a sulfide-responsive, measuring electrode supported by said housing with a surface portion thereof disposed in said tip so as to establish fluid communication with said sulcal fluid when said tip is disposed in said pocket;

a reference electrode supported by said housing at a location which will not contact said sulcal fluid when the tip is disposed in the pocket, said reference electrode having a surface portion thereof disposed in a body of a salt;

a salt bridge material which is disposed so as to establish a conductive path between said body of salt and said measuring electrode when the tip is disposed in the sulcal fluid;

a first electrical lead in electrical communication with the measuring electrode;

a second electrical lead in electrical communication with the reference electrode;

said probe being operative, when immersed in said sulcal fluid, to generate an electrical potential between said measuring electrode and said reference electrode which is proportional to the concentration of sulfide in said sulcal fluid.

5,628,313

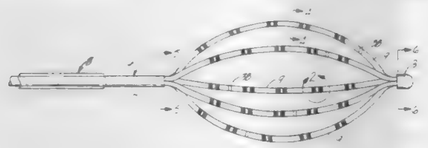
CARDIOVASCULAR CATHETER WITH LATERALLY STABLE BASKET-SHAPED ELECTRODE ARRAY

Wilton W. Webster, Jr., Altadena, Calif., assignor to Cordis Webster, Inc., Baldwin Park, Calif.

Continuation-in-part of Ser. No. 906,546, Jun. 30, 1992, Pat. No. 5,411,025. This application May 1, 1995, Ser. No. 432,011

Int. Cl.[6] A61B *5/0402*

U.S. Cl. 128—642 **18 Claims**



1. A catheter for cardiac mapping comprising:

a tubular catheter shaft having a proximal end, a distal end and a central lumen;

a plurality of flexible arms bowing outwardly to form a basket shape, the arms having distal and proximal ends, the arms being connected at their proximal ends to the distal end of the catheter shaft, each arm carrying at least one electrode and wherein each arm comprises a reinforcing spine, an electrode lead wire electrically connected to each electrode carried on the arm and a tubular sheath surrounding the reinforcing spine and lead wires;

a proximal fitting rigidly fixing the proximal ends of the arms together, the proximal fitting being fixed to the distal end of the catheter shaft and comprising a central aperture through which the lead wires extend; and

a distal fitting fixing the distal ends of the arms together.

5,628,314

MULTI-LASER BEAM-SCANNING THROUGH LIVING BODY PENETRATION DIAGNOSIS AND TREATMENT APPARATUS

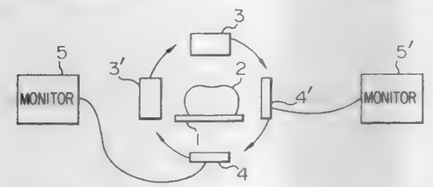
Hiroaki Kumagai, 7-10, Minamitsukushino-4-chome, Machida-shi, Japan

Filed Oct. 27, 1994, Ser. No. 329,996

Claims priority, application Japan, Nov. 12, 1993, 5-282981

Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—653.1 **13 Claims**



1. A laser beam-scanning living body penetration diagnosis apparatus comprising:

a bed;

at least one set of laser beam parallel-scanning light-receiving detection mechanisms comprising (i) a device disposed above said bed for radiating a bundle of parallel laser beams in a direction perpendicular to the axis of said bed, (ii) a device for moving said bundle of laser beams in a parallel direction to a longitudinal axis of the bed, (iii) a device for moving said bundle of laser beams in a direction perpendicular to the longitudinal axis of the bed, and (iv) a detection plate disposed below said bed for receiving said bundle of laser beams; and

a device supporting said laser beam parallel-scanning light-receiving detection mechanisms in such a manner that said mechanisms are rotable about a fixed axis parallel to and upwardly spaced apart by a predetermined distance from the longitudinal axis of the bed.

5,628,315

DEVICE FOR DETECTING THE POSITION OF RADIATION TARGET POINTS

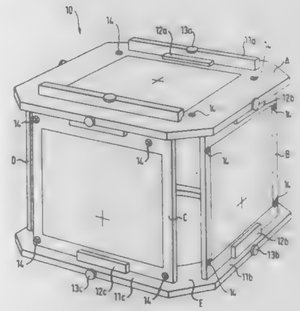
Stefan Vilsmeier, Poing; Stefan Lippstreu, Markt Schwaben, and Michael Bertram, Heimstetten, all of Germany, assignors to BrainLAB Med. Computersysteme GmbH, Poing, Germany

Filed Sep. 11, 1995, Ser. No. 526,772

Claims priority, application Germany, Sep. 15, 1994, 44 32 890.7

Int. Cl.[6] A61R *17/00*

U.S. Cl. 128—653.1 **7 Claims**



1. Device for detecting the position of radiation target points in a body to be radiated while in a patient reference system, said target points having defined coordinates relative to said system, said device comprising

an anchoring means for attachment to the patient reference system, and

a labeling means, arranged on the anchoring means, for said defined coordinates of at least one target point in various three-dimensional projections,

said labeling means comprising several computer-printed surface materials, which plot the defined coordinates of said target point in a three-dimensional manner.

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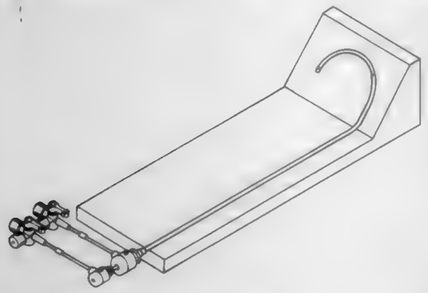
GUIDING INTRODUCER SYSTEM FOR USE IN THE RIGHT ATRIUM

John F. Swartz, 2935 E. 75th, Tulsa, Okla. 74136; John D. Ockuh; John J. Fleischhacker, both of 14901 DeVeau Pl., Minnetonka, Minn. 55345-2126, and James A. Hassett, 11327 Louisiana Cir., Bloomington, Minn. 55438

Continuation-in-part of Ser. No. 146,744, Nov. 3, 1993, Pat. No. 5,427,119. This application Nov. 3, 1994, Ser. No. 333,759

Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—657 **8 Claims**



1. A method for the mapping and ablation of anomalous conduction pathways within the right side of the heart comprising

(a) introducing into the right side of the heart a precurved, guiding introducer system comprised of a precurved, inner guiding introducer and a precurved, outer guiding introducer, wherein each of the precurved, inner and outer guiding introducers contains a lumen passing therethrough, a proximal end and a distal end, and

wherein the precurved, inner guiding introducer is contained within the lumen of the precurved, outer guiding introducer as they are simultaneously inserted into the body;

(b) introducing into the lumen of the precurved, inner guiding introducer a catheter for mapping and ablation of anomalous conduction pathways, wherein said catheter contains a distal tip and one or more electrodes; and

(c) extending said distal tip of the catheter through the lumen of the precurved, inner guiding introducer and beyond the distal end of the precurved, inner and outer guiding introducers to allow the electrodes of the catheter to map and ablate one or more anomalous conduction pathways within the right side of the heart.

5,628,317

ULTRASONIC TECHNIQUES FOR NEUROSTIMULATOR CONTROL

Warren Starkebaum, Plymouth, and Mark T. Rise, Monticello, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 4, 1996, Ser. No. 627,574

Int. Cl.[6] A61B *8/12*

U.S. Cl. 128—660.03 **12 Claims**

1. Apparatus for stimulation of a spinal cord or tissue adjacent a spinal cord located within the spinal column of a vertebrate comprising in combination:

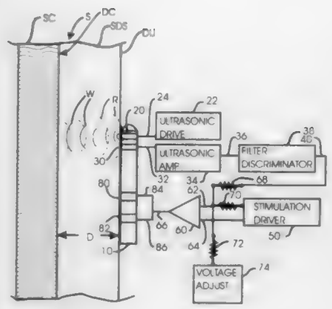
ultrasonic transducer means adapted to be implanted adjacent said spinal cord for producing ultrasonic sound waves that create ultrasonic echo waves reflected from a predetermined portion of said spinal cord and for generating a distance signal in response to said ultrasonic echo waves, a value of said distance signal being related to a distance between said transducer means and said predetermined portion of said spinal cord:

a stimulation driver for generating a stimulation signal;

a drive amplifier responsive to said stimulation signal and said distance signal for generating a drive signal that increases in value as the distance between said transducer means and said predetermined portion increases, and decreases in value as the distance between said transducer means and said predetermined portion decreases;

at least one stimulation electrode adapted to be implanted adjacent said spinal cord; and

means for transmitting said drive signal to said at least one electrode, whereby the uniformity of stimulation received by said spinal cord or adjacent tissue is increased in spite of changes in the relative distance between said transducer means and said predetermined portion of said spinal cord.



5,628,318

Patent Not Issued For This Number

5,628,319

METHOD AND DEVICE FOR THE NON-DESTRUCTIVE TESTING OF OBJECTS USING ULTRASONICS

Roman Koch, Hösbach, and Thomas Kreutter, Goldbach, both of Germany, assignors to Nukem GmbH, Alzenau, Germany

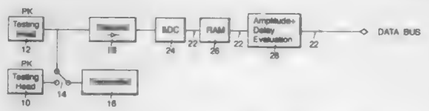
PCT No. PCT/EP94/01437, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/27165, PCT Pub. Date Nov. 24, 1994

PCT Filed May 6, 1994, Ser. No. 545,839

Claims priority, application Germany, May 13, 1993, 43 15 794.7

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.01 **7 Claims**



1. A method for use in non-destructive testing of objects using ultrasonics, comprising the steps of:

introducing ultrasonic pulses by an ultrasonic testing head into an object;

receiving by an ultrasonic testing head ultrasonic waves emitted by the object in response to the ultrasonic pulses and converting the ultrasonic waves into electrical signals having a signal sequence;

obtaining measurement values from said signals of said signal responses by time-equidistant sampling;

digitizing and storing said measurement values;

replacing a function represented by the digitized and stored measurement values by a Grade N polynomial according to the following equation:

$$P_N(t_i) = \sum_{n=0}^{N} a_n \cdot t_i^n, t_i = i\Delta t$$

wherein t_i is the sampling time, for i=0, 1 . . . N, and a_n the coefficients of the polynomial; and

using said polynomial, determining with high resolution an amplitude extreme of the received ultrasonic waves and/or a delay of said ultrasonic wave with an amplitude extreme.

5,628,320

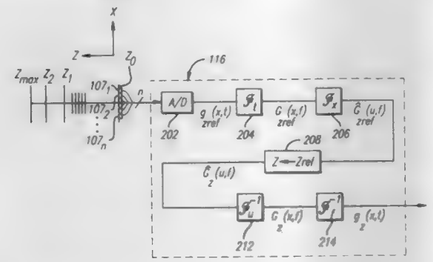
ULTRASOUND IMAGE RECONSTRUCTION USING BACK-PROPAGATION

Tat-Jin Teo, Redmond, Wash., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Mar. 29, 1996, Ser. No. 625,187

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.07 **10 Claims**



1. A method for imaging an interrogation region of a patient's body using ultrasound comprising the following steps:

generating a single pulse of ultrasound by activating a plurality of transducer elements in an ultrasound transducer and directing the pulse into the interrogation region;

at a reference plane, sensing a time-domain reference return signal that includes back-scattered ultrasound from the interrogation region;

generating a temporal and a spatial decomposition of the reference return signal;

generating an image of the entire interrogation region of as a predetermined function of the temporal and spatial decompositions of the reference return signal; and

displaying the image.

5,628,321

PROCESSING VELOCITY INFORMATION IN AN ULTRASONIC SYSTEM

John P. Scheib, Santa Clara, and Sheng-Tz Lin, Cupertino, both of Calif., assignors to Diasonics Ultrasound, Inc., Santa Clara, Calif.

Filed Dec. 18, 1995, Ser. No. 573,698

Int. Cl.[6] A61B *8/00*

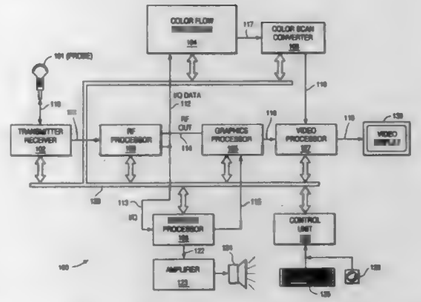
U.S. Cl. 128—661.08 **76 Claims**

1. A method of making vascular measurements within a living subject in an ultrasonic system comprising the following steps:

a. determining peak velocities of a spectra of echoes over a period of time due to pulses emitted into a subject under examination, determining said peak velocities includes dividing said spectra into a plurality of regions to determine a threshold magnitude of said peak velocities and identifying a first velocity that exceeds said threshold magnitude;

b. based upon said peak velocities of said spectra over said period of time, determining a time series of said peak velocities representing an optimum cardiac cycle for said subject under examination; and

c. based upon said time series of said peak velocities representing said optimum cardiac cycle, performing vascular measurements of said peak velocities for said optimum cardiac cycle.



5,628,322

METHOD OF ULTRASOUND IMAGING AND DIAGNOSTIC ULTRASOUND SYSTEM

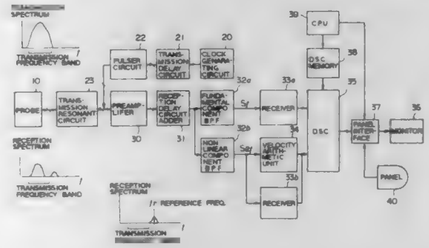
Yoshitaka Mine, Nishinasuno-Machi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 14, 1996, Ser. No. 645,751

Claims priority, application Japan, May 15, 1995, 7-116120

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.08 **24 Claims**



1. A diagnostic ultrasound system whereby an object including a moving constituent therein is scanned by an ultrasound beam signal in a contrast echo technique, based on a Doppler technique, in which an ultrasound contrast medium is injected into the object to be placed in the moving constituent, the system comprising:

an ultrasound probe for transmitting the ultrasound beam signal to the object and receiving an ultrasound signal echoed from the object in response to the transmitted ultrasound beam signal;

means for driving the ultrasound probe to transmit the ultrasound beam signal to the object;

means for processing an echoed output of the ultrasound probe into a beam-formed echo signal;

means for extracting from the echo signal a Doppler shift frequency of a nonlinear echo component resulting from the ultrasound beam signal reflected from the ultrasound contrast medium; and

means for converting the Doppler shift frequency f_d extracted by the extracting means into a velocity component v according to the following conversion expression:

$$V=V\cos\theta=C_{fd}/(2f_{set}+f_d)$$

where C denotes a sound velocity, V denotes a moving velocity of the moving constituent in the object, v denotes a component of a moving velocity V in a direction of the ultrasound beam signal, θ denotes an angle of the ultrasound beam signal with respect to a

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moving direction of the moving constituent, f_{ac} denotes a set frequency used for velocity conversion, and f_d denotes the Doppler shift frequency.

5,628,323

EAR THERMOMETER RADIATION DETECTOR

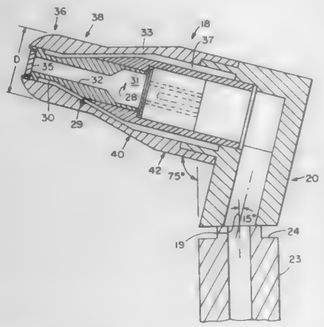
Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Watertown, Mass.

Continuation of Ser. No. 889,052, May 22, 1992, Pat. No. 5,381,796. This application Sep. 27, 1994, Ser. No. 313,744

The portion of the term of this patent subsequent to May 22, 2012, has been disclaimed.

Int. Cl.[6] A61B *6/00*

U.S. Cl. 128—664 **15 Claims**



1. A temperature detector comprising:

an extension increasing non-linearly in diameter along a portion of its length from a distal end of the extension to form a rounded distal tip, the extension being adapted to be inserted into an outer ear such that the rounded distal tip is disposed adjacent to an ear canal opening, the rounded tip having a diameter of at least 10 mm adjacent a distal end of the extension such that the extension is substantially incapable of being inserted into an ear canal;

an infrared radiation sensor positioned in the detector for receiving radiation from the ear canal which passes through the distal end of the extension; and

an electronics unit for converting radiation received by the sensor to temperature.

5,628,324

AUTONOMOUS SYSTEM FOR MEASURING, PROCESSING AND TRANSMITTING ESSENTIALLY PHYSIOLOGICAL PARAMETERS

Pierre Sarbach, Echallens, Switzerland, assignor to Baumann & Haldi S.A., Fleurier, Switzerland

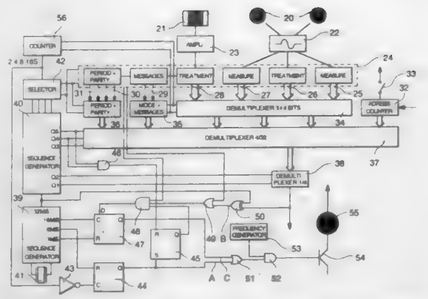
Filed Jan. 31, 1996, Ser. No. 594,804

Claims priority, application Switzerland, Feb. 4, 1995, 00 295/95-0

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—670 **13 Claims**

1. A system for measuring and displaying at least one physiological parameter by means of at least one sensor worn by an individual and providing signals representative of said parameter, said system comprising: on the one hand an autonomous processing apparatus which is attached to said sensor and provided with a plurality of means for measuring, for storing, for identifying and for binary coding said signals, said binary coding means being arranged so as to generate pulse trains of binary sequences of radio signals at terminals of a transmitting coil for transmitting the radio signals, one of said sequences constituting an address enabling a transmitting processing device to be identified, others of said



sequences being representative of data constituted by a measurement and its result; and, on the other hand, a separate display device connected to the processing apparatus by wireless communicating means, said separate display device comprising a radio signal-receiving coil, signal amplifying and shaping means at terminals of said receiving coil, and means for decoding the signals, characterized in that the decoding means comprises a sequence generator arranged so as to open detecting windows synchronous with the pulse trains transmitted by the processing device, and to restore the binary sequence representative of the transmitted data as a function of distribution of said pulses in said detecting windows, in that the signal amplifying means at the terminals of the receiving coil are set into operation only during occurrence of said detecting windows, so as to reduce energy consumption, and in that the data transmitted by said processing device are restored and displayed only if a determined address had previously been identified.

5,628,325

Patent Not Issued For This Number

5,628,326

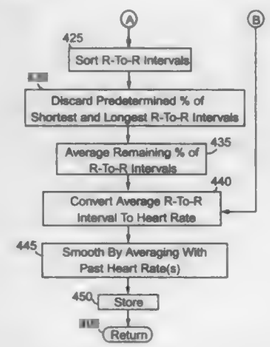
CALCULATING A HEART RATE FROM AN ECG WAVEFORM BY DISCARDING A PERCENTAGE OF R-R INTERVALS PRIOR TO AVERAGING

Patricia A. Arand; William L. Post, both of McMinnville, Oreg., and Alfred D. Forbes, Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 29, 1995, Ser. No. 564,749

Int. Cl.[6] A61B *5/0456;5/0452*

U.S. Cl. 128—706 **16 Claims**



1. A method of calculating a heart rate in the EGG waveform, comprising the steps of:

detecting a plurality of heartbeats in said ECG waveform;

determining a plurality of intervals between each of said plurality of heartbeats;

sorting said plurality of intervals from shortest interval to longest interval, thereby creating sorted intervals;

first discarding a first percentage of the shortest intervals;

second discarding a second percentage of the longest intervals, wherein said intervals remaining after said first discarding step and said second discarding step are remaining intervals;

first averaging said remaining intervals to obtain a first average interval;

converting said first average interval to a heart rate;

storing said heart rate;

waiting a period of time;

repeating said determining, sorting, first discarding, and second discarding steps;

second averaging said remaining intervals to obtain a second average interval;

third averaging said first average interval with said second average interval to obtain a third average interval;

converting said third average interval to a second heart rate; and

storing said second heart rate.

5,628,327

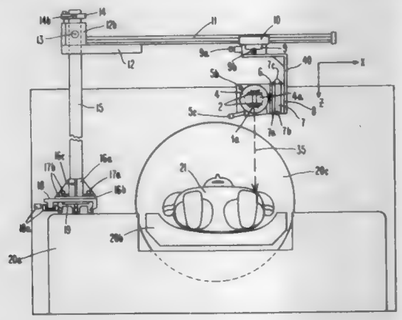
APPARATUS FOR PERFORMING BIOPSIES AND THE LIKE

Evan Unger, and Frederick S. Pereles, both of Tucson, Ariz., assignors to ImaRx Pharmaceutical Corp., Tucson, Ariz.

Filed Dec. 15, 1994, Ser. No. 356,150

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—749 **18 Claims**



1. An apparatus for performing light beam guided penetrations of a patient's body, comprising:

a) a vertically extending post;

b) a rail projecting from said post in a first horizontally extending direction;

c) a support structure slidably mounted on said rail for movement therealong in said first horizontal direction, a first rotatable mount coupled to said support structure, a second rotatable mount, means for coupling said first rotatable mount to said second rotable mount so as to prevent translational motion therebetween, said first and second rotatable mounts oriented so as to provide rotation within first and second perpendicularly oriented planes, respectively, said first plane being substantially vertically oriented; and

d) a light source coupled to said second rotatable mount for projecting a beam of light onto said patient.

5,628,328

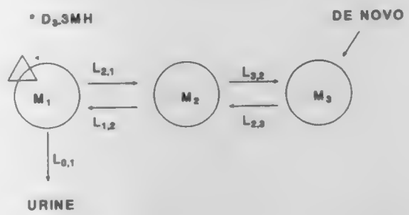
METHOD FOR MEASURING MUSCLE MASS

Steven L. Nissen, Ames; John A. Rathmacher, Nevada, both of Iowa, and Paul J. Flakoll, Old Hickory, Tenn., assignors to Iowa State University Research Foundation, Ames, Iowa, and Vanderbilt University, Nashville, Tenn.

Filed Apr. 25, 1995, Ser. No. 428,052

Int. Cl.[6] A61B *5/103*

U.S. Cl. 128—774 **20 Claims**



1. A method for determining muscle mass in a human subject comprising:

(a) administering to said subject a known amount of a metabolic marker for 3-methylhistidine;

(b) periodically removing blood or urine samples from said subject;

(c) measuring the amount of said marker and of 3-methylhistidine in each such sample;

(d) generating a three-compartment mathematical model from said measurements comprising numerical values for the fractional transfer rates in and out of said compartments, numerical values for the mass of 3-methylhistidine in each compartment, and numerical values for the mass transfer rates in and out of said compartments;

(e) calculating muscle mass as a function of the numerical value of at least one of said values and the total body weight of the subject.

5,628,329

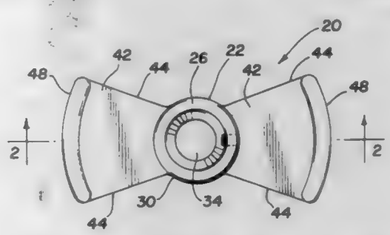
METHODS AND APPARATUS FOR OBTAINING AND MAINTAINING PENILE ERECTION

Boyd B. Bennett, 3717 Hilldale Rd., Louisville, Ky. 40222, and Moseley C. Collins, West Plam Beach, Fla., assignors to Boyd B. Bennett, Louisville, Ky.

Filed Jul. 26, 1995, Ser. No. 507,147

Int. Cl.[6] A61F *6/02*

U.S. Cl. 128—842 **20 Claims**



1. A unitary device for maintaining penile erection comprising:

(a) an elastic annular band having a substantially cylindrical outer surface extending a predetermined distance from a bottom end to a top end and having an inside surface defined by a central bore extending through said band; and

(b) a first pair of flanges extending from the outer surface of said band generally diametrically opposite each other for imparting a radially outward stretching force to said band to enlarge said bore sufficiently for said band to be positioned on the

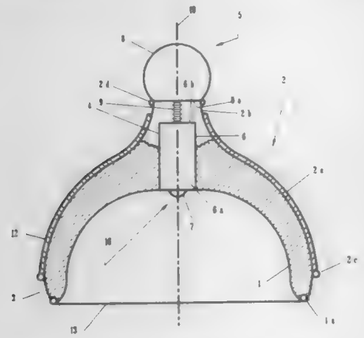
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base of a penis such that when the stretching force is relieved a residual elastic force in said band restricts the outflow of blood from the penis and urges blood in the base thereof into the unconstricted length of the penis.

5,628,330
APPARATUS FOR TREATING PEOPLE AFFLICTED WITH TINNITUS

George W. Upham, 2 Williams Rd., Lynnfield, Mass. 01940

Filed Mar. 15, 1995, Ser. No. 404,596
Int. Cl.[6] A61F *11/00*
U.S. Cl. 128—864 **18 Claims**



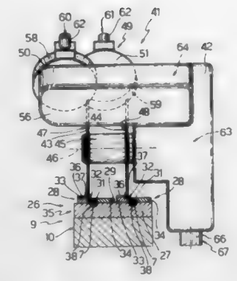
1. Apparatus used for relieving a person's discomfort and aggravation of tinnitus comprising,
(a) a metal shell of generally hemispherical shape and diameter about the same as said person's head,
(b) a similarly shaped larger shell around said metal shell, defining a space between said shells
(c) said space between said shells being filled with several layers of cloth made of natural, soft, flexible, thermally insulating material and
(d) a handle attached to said apparatus,
(e) whereby said apparatus may be grasped by the user and held against the user's ear to relieve the discomfort and aggravation of tinnitus.

5,628,331
METHOD AND MACHINE FOR SIMULTANEOUSLY PRODUCING A NUMBER OF CIGARETTE RODS

Fausto Mengoli, Sasso Marconi; Massimo Sartoni, Bologna, and Fiorenzo Draghetti, Medicina, all of Italy, assignors to G.D Societá Per Azioni, Bologna, Italy

Filed Jul. 26, 1996, Ser. No. 686,525
Claims priority, application Italy, Jul. 27, 1995, BO95A0370
Int. Cl.[6] A24C *5/24*
U.S. Cl. 131—67 **30 Claims**

1. A method of simultaneously producing a number of cigarette rods (**2**), the method comprising the steps of feeding at least two strips (**5**) of paper, by means of respective conveyor belts (**11**), along a given path (P) extending in a given traveling direction (**17**) through a loading station (**18**), each conveyor belt (**11**) coming into contact with an outer surface (**15**) of the relative strip (**5**); transferring a respective continuous layer (**20**) of tobacco (**7**) on to an inner surface (**19**) of each said strip (**5**) at the loading station (**18**); feeding the strips (**5**) and respective layers (**20**), by means of said conveyor belts (**11**), along a forming beam (**26**); gradually deforming the conveyor belts (**11**) transversely, by means of the forming beam (**26**), to gradually wind the respective strips (**5**) about the respective layers (**20**) and so form respective tubular wrappings

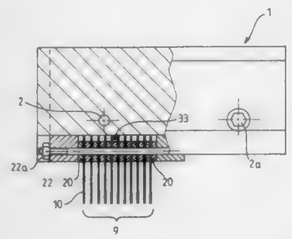


(**38**) presenting respective longitudinal lateral appendixes (**39**) projecting outwards and presenting respective longitudinal lateral inner surface portions (**40**); gumming, on each strip (**5**), the relative said lateral inner surface portion (**40**) by means of a gumming device (**41**); and turning said appendixes (**39**) over on to the respective tubular wrappings (**38**) to form respective continuous cigarette rods (**2**); characterized in that said lateral inner surface portions (**40**) are gummed at an intermediate point (**35**) of the forming beam (**26**) by means of said gumming device (**41**); said gumming device (**41**) being located on one side only of said forming beam (**26**).

5,628,332
HAIR CARE DEVICE

Jean-Pierre Debourg, Lyons, and Daniel Bontoux, Saint-Genis Laval, both of France, assignors to SEB S.A., Selongey, France

Filed Jun. 29, 1995, Ser. No. 496,911
Claims priority, application France, Jun. 30, 1994, 94 08578
Int. Cl.[6] A45D *24/10*
U.S. Cl. 132—118 **22 Claims**

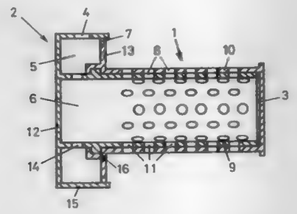


1. Device for destroying parasites present in a mass of hair or fur growing from a skin surface, said device comprising: a handling body adapted to be gripped by a user; a comb fixed to said body and composed of a plurality of teeth, said teeth having portions adapted to be displaced through the mass of hair or fur when said device is in use; and energy supply means for at least locally raising the temperature of the hair or fur when the teeth are displaced through the mass of hair or fur, wherein at least part of said portions of said teeth are thermally conductive and are operatively associated with said energy supply means for supplying sufficient heat energy to destroy parasites on the hair or fur which is in contact with said portions.

5,628,333
HAIR CURLER

Jürgen E. Sahm, Baumgarten 21, Arni CH-8905, Switzerland

PCT No. PCT/CH95/00031, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO95/21553, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 9, 1995, Ser. No. 532,686
Claims priority, application Switzerland, Feb. 11, 1994, 00419/94
Int. Cl.[6] A45D *1/02;2/22*
U.S. Cl. 132—227 **4 Claims**



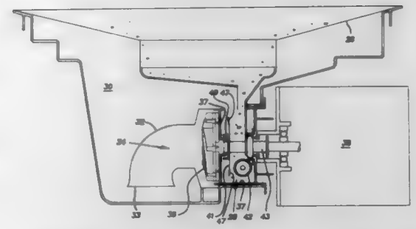
1. A hair curler having a hollow cylinder-shaped portion for the receipt of hair to be wound thereon, which cylinder-shaped portion has an inner space and ends at both ends at a respective flange portion, of which flange portions one flange portion is structured as a hollow body having a further inner space which communicates with the inner space of the cylinder-shaped portion, which cylinder-shaped portion has a circumferential wall structure and a longitudinal center axis, which one flange portion includes further an air inlet opening which is adapted to be mounted to a hose for feeding hot air into said further inner space of said one flange portion and into said inner space of said cylinder-shaped portion, which one flange portion includes air exit openings directed towards said cylinder-shaped portion and in a direction substantially parallel to its longitudinal axis and which cylinder-shaped portion includes in its circumferential wall structure radially thereto directed air exit openings,
in which said cylinder-shaped portion is structured as a rotary valve with a valve body which is rotatable between a valve open position and a valve closed position, which valve body in the open position allows a communication between the inner space of the cylinder-shaped portion and the environment and in the closed position blocks the communication between the inner space of the cylinder-shaped portion and the environment, whereby the air exit openings of said one flange portion remain open in both positions of said valve body, in which said cylinder-shaped portion comprises an outer sleeve having a plurality of air passage openings and said valve body is designed as an inner sleeve supported for rotation in said outer sleeve and includes at least one air passage opening in its circumferential wall.

5,628,334
DISHWASHER WITH FOOD PARTICLE MACERATOR AND MINCER

James M. Edwards, and John E. Dries, both of Kinston, N.C., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Apr. 25, 1995, Ser. No. 428,556
Int. Cl.[6] A47L *15/42*
U.S. Cl. 134—104.1 **14 Claims**

1. A washer comprising:
a sump having a wall defining first and second sump chambers adapted to hold liquid from a wash chamber of the washer;
a pump having a shaft and adapted to move liquid from the second sump chamber to the wash chamber; and

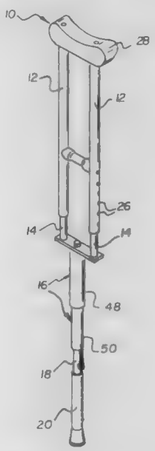


a movable blade disposed on the shaft, in the first sump chamber, and adapted to mince particles in the first chamber wherein the wall collects minced particles in the first chamber.

5,628,335
SHOCK ABSORBING CRUTCH

Michael A. Free, 105 Groveville Rd., Trenton, N.J. 08620

Filed Aug. 8, 1996, Ser. No. 695,132
Int. Cl.[6] A61H *3/02*
U.S. Cl. 135—68 **5 Claims**



1. A new and improved shock absorbing crutch comprising, in combination:
two support shafts fabricated of metal and formed in a generally cylindrical configuration, each shaft having a closed upper end, an open lower end, a hollow interior and a plurality of diametrically opposing apertures;
an arm rest fabricated of elastomeric material, the arm rest having an indented upper surface and a linear lower surface, the arm rest including two small upper bores and two large lower bores, the lower bores of the arm rest being positioned on the upper ends of each support rod, two screws being positioned through the upper and lower bores to secure the arm rest in place;
a hand grip fabricated of elastomeric material and including an axial aperture extending therethrough, the hand grip being positioned between the support bars, a bolt being positioned through diametrically opposing apertures in the support bars and the axial aperture of the hand grip, a nut securing the bolt in place;
two upper stabilizing shafts each fabricated of metal and formed in a generally cylindrical configuration with an upper end, a closed lower end and a hollow interior, the upper end of each stabilizing shaft being positioned within the lower end of the

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support shaft, an extension tab being affixed to the upper end of the stabilizing shaft and positioned within an aperture of the support shaft;

a shock absorber formed as hollow, generally cylindrical shaped upper and lower sections, the upper section having an open bottom, a top including a bolt and two pegs and a spring positioned within its hollow interior, the lower section having a closed top and a closed bottom including a projection bolt, the lower section being positioned within the open bottom of the upper section;

a mounting plate being fabricated of metal and formed in a generally rectangular configuration, the mounting plate having a central aperture, two side bores and two mounting bolts, the mounting bolts being coupled to the lower ends of each upper stabilizing shaft, the bolt and two pegs of the shock absorber being positioned within the central aperture and side bores of the mounting plate;

a lower stabilizing shaft being fabricated of metal and formed in a hollow, generally cylindrical configuration with an upper end including a screw hole and an aperture, and a lower end including an extension tab, the projection bolt of the shock absorber being coupled within the screw hole of the upper end;

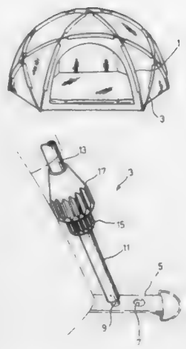
a safety clip formed in a generally J-shaped configuration with a straight upper end, a hooked lower end and a central screw hole, the lower end being positioned within the aperture in the lower stabilizing shaft and coupled thereto, the safety clip securing the shock absorber to the lower stabilizing bar;

a base shaft fabricated of metal and formed in a generally hollow, cylindrical configuration with an open top and bottom, the lower stabilizing shaft being positioned within the open top of the base shaft and secured in place by the extension tab; and

a foot fabricated of elastomeric material and formed in a generally cylindrical configuration with an open top, a closed bottom and a central hole, the foot being affixed to the base shaft, in an operative orientation a user positioning the hand grip and shafts at an appropriate height and securing the shafts with the extension tabs and safety clip, a user then placing the foot of the apparatus on the ground and leaning on the arm rest to facilitate walking, the apparatus absorbing the impact which occurs with each step.

5,628,336
POLE ASSEMBLY OF TENT
Youn-jae Lee, Seoul, Rep. of Korea, assignor to Jinwoong Ltd., Rep. of Korea
Filed Jan. 11, 1996, Ser. No. 585,110
Claims priority, application Rep. of Korea, Sep. 18, 1995, 95-25120 U
Int. Cl.[6] F16B *7/10*
U.S. Cl. 135—114 **6 Claims**

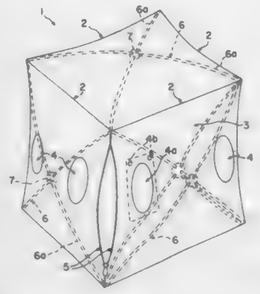
1. A pole assembly of a tent having tent pole rings comprising:
a plurality of poles,
joining means formed on each end of said poles to join said poles together, and
elastic members inserted inside said poles to easily joint and disjoint the tent,
wherein each of said poles includes fixed poles having connecting members on lower ends, said connecting members being inserted in pole holes formed in tent joint rings, thereby forming both ends of the pole assembly, and moving poles joined with the fixed poles to be able to be drawn both into and out of an inner circumference of the fixed poles, and
wherein said joining means includes an inner joint fixed to the upper ends of the fixed poles, having an inner circumference with an imaginary center line which allows the moving poles to be moveably inserted through the inner joint and the fixed poles, and an outer joint rotatably connected to the inner joint, also having an inner circumference with an imaginary, center line which allows the moving poles to be moveably inserted through the outer joint and the fixed poles when the center



line of the outer joint is in alignment with the center line of the inner joint, and whereby rotating the outer joint with respect to the inner joint causes the center line of the outer joint to intersect the center line of the inner joint which causes the moving poles to become fixed against the inside of the fixed poles such that the moving poles are no longer moveable inside the fixed poles.

5,628,337
Patent Not Issued For This Number

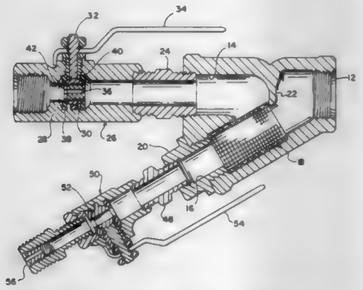
5,628,338
COLLAPSIBLE BLIND
Steven W. Stumbo, P.O. Box 1270, LaPorte, Colo. 80535
Filed Apr. 19, 1996, Ser. No. 639,848
Int. Cl.[6] E04H *15/48*
U.S. Cl. 135—147 **9 Claims**



1. A portable and collapsible blind or shelter structure comprising:
(a) a flexible fabric cover having four side walls and a top; wherein each side wall includes at least one window opening; wherein each said side wall includes opposite side edges and a top edge; wherein side edges of adjacent side walls are integral with each other; and further including a closable vertical opening along one of said side edges; wherein the perimeter of each side wall and the top is non-stretchable; and
(b) a framework comprising five support members; wherein each said support member comprises four resilient leg members hingedly connected at one end to a central hub; wherein one said support member engages and supports a respective side wall in a taut condition; wherein one said support member engages and supports said top; and wherein said leg members

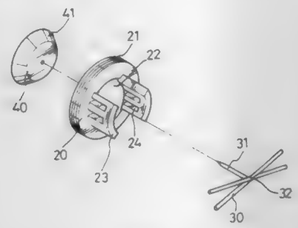
connected to each said hub can be pivoted towards each other to collapse said structure.

5,628,339
STEAM TRAP
C. Loren Isringhausen, Midlothian, Va., assignor to Steamsphere, Inc., Jerseyville, Ill.
Continuation-in-part of Ser. No. 107,982, Aug. 18, 1993, Pat. No. 5,335,686. This application Dec. 23, 1994, Ser. No. 363,059
Int. Cl.[6] F16K *1/00*
U.S. Cl. 137—269 **1 Claim**



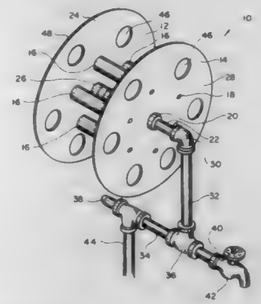
1. An offset steam trap for removing condensed water from a horizontal steam pipe having an interior and an end to which the trap is connected, said trap comprising
a hollow body having an inlet adapted to be joined to said pipe end,
a primary outlet offset downwardly from said inlet and parallel thereto, and
an orifice installed in said primary outlet for permitting limited water flow out of said pipe through the orifice,
said orifice having an axis below the bottom of the pipe interior, so that water may escape from the bottom of the pipe interior.

5,628,340
AUTOMATIC VALVE
Chun-de Huang, No. 308, Taimao 10th Tsun, Chungli City, Taoyuan Hsien, Taiwan
Filed Oct. 7, 1996, Ser. No. 729,732
Int. Cl.[6] F16K *43/00*
U.S. Cl. 137—329.2 **2 Claims**



1. An automatic valve comprising:
a collar shaped valve seat threadedly mounted to an outlet of a pipe, said collar defining a central hole and a male threaded portion at an outer periphery thereof to engage with a female threaded portion at the outlet of the pipe, said collar further comprising two opposed protrusions extending from a side face thereof, each of the protrusions axially defining a pair of slots;
a disc shaped valve head for being exactly received within said central hole of said collar; and
an "X" shaped member having four ends each radially and respectively received within said slots and a stem integrally and perpendicularly extending from a crossover point of said member to said disc through said central hole of said collar, distal tips of said four ends of said member extending beyond the slots.

5,628,341
MOUNTING ASSEMBLY FOR FLEXIBLE TUBING
Roland L. Bodden, 2417 Pointmere Dr., Harvey, La. 70058
Filed Aug. 10, 1995, Ser. No. 513,499
Int. Cl.[6] B65H *75/34*
U.S. Cl. 137—355.26 **22 Claims**

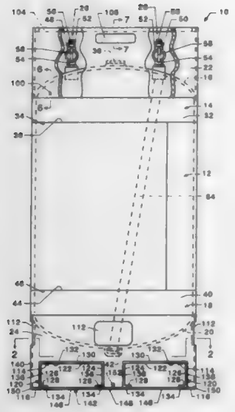


1. A mounting assembly for flexible tubing, comprising:
A reel portion comprising a pair of substantially parallel plates defining a circular space therebetween, said plates being retained in a spaced-apart relationship by a plurality of removable spacer bars adapted for retaining a discreet length of said flexible tubing wrapped about said spacer bars; and
means for fluidly connecting said flexible tubing to a source of liquid, comprising a first conduit extending transversely between said plates, a second conduit extending below said plates in a parallel relationship to said first conduit, a connecting member extending transversely between the first conduit and the second conduit along an exterior of one of said plates, and an elongated support member secured to the second conduit below said circular space in parallel relationship to the connecting member, said support member being adapted for detachable rotational connection to a source of fluid.

5,628,342
PROPELLANT TRANSPORTING DEVICE
Richard C. McNealy, McKinney, Tex.; Stuart R. Grossberg, and Ralph Minore, both of Guilford, Conn., assignors to Olin Corporation, Cheshire; Profile Machine Products, Madison, both of Conn., and Anderson Columbiana Trading, McKinney, Tex.
Filed Jan. 17, 1995, Ser. No. 373,728
Int. Cl.[6] F16K *24/00*; **B65D** *6/28*
U.S. Cl. 137—587 **3 Claims**

1. A cylinder for transporting a hazardous liquid under pressure comprising:
a. a cylindrical shell having upper and lower ends,
b. an upper head attached to the upper end of the shell,
c. a lower head attached to the lower end of the shell, said shell and upper and lower heads defining a pressure vessel,
d. a lower skirt attached to said lower head and extending downwardly therefrom,
e. a pocket assembly in said lower skirt, said pocket assembly including a pair of spaced parallel elongated channel members

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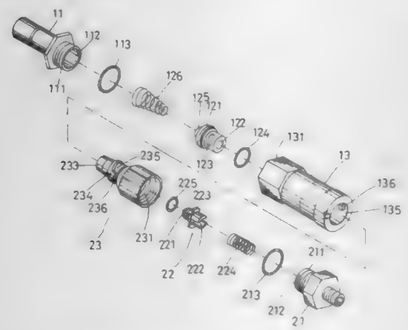


mounted in slots in said skirt, wherein said channel members are generally C-shaped with the opening facing downwardly, and

f. a bottom plate attached to the bottom of said skirt, wherein said bottom plate has cutouts therein forming a cross-shaped configuration,

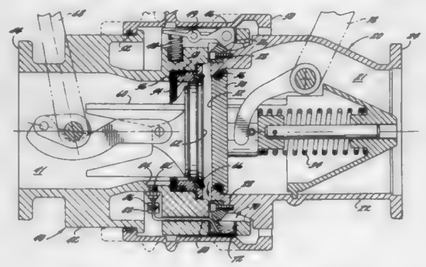
wherein said channel members include an upper flat portion and opposing side walls extending downwardly therefrom, said bottom plate including a first portion extending across said channel members and having a width at least as large as the length of the smaller side wall of said channel members, and two second portions extending perpendicular to said first portion in opposite direction and having a width to overlap at least a portion of the bottom of the inside side walls of the channel members.

5,628,343
RAPID COUPLER
Wu-Zhen Lan, 58, Ma Yuan West St., Taichung, Taiwan
Filed Mar. 13, 1996, Ser. No. 615,722
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.05 **1 Claim**



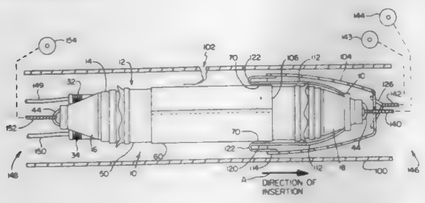
1. A rapid coupler comprising:
a main body having a main tube and a coupling tube at a rear of said main tube;
an auxiliary coupler having a retaining pipe and a coupling pipe in a front of said retaining pipe;
said coupling tube having a front portion with a first interior therein;
said front portion of said coupling tube having an outer thread;
said main tube having a base portion with an inner thread therein;
a second interior and an inner protrusion formed in a front portion of said main tube;
a narrow hole formed in a middle portion of said main tube;
a first O-ring enclosing said front portion of said coupling tube;
a first compression spring and an elastic plug inserted in said first interior;
said elastic plug having a rear protruded post, a circular plug in a front of said rear protruded post, a lateral oval hole adjacent to said circular plug, and a central hole therein;
a second O-ring disposed around said circular plug;
said outer thread of said front portion of said coupling tube coupling with said inner thread of said base portion;
said auxiliary coupler having a retaining pipe and a coupling pipe in a front of said retaining pipe;
said retaining pipe having an inner thread in an inner periphery of said retaining pipe, two block flanges on an outer periphery of said retaining pipe, a notch formed between said block flanges, and a groove adjacent to said block flanges;
a tapered cone hole formed in a middle portion of said retaining pipe;
said coupling pipe having a third interior therein and a rear portion with an outer thread on an outer periphery of said rear portion;
a fourth O-ring enclosing said rear portion of said coupling pipe;
a second compression spring and an elastic block inserted in said third interior;
said elastic block having a rear tapered block, two lateral fins, and a slot formed in a front of said elastic block;
a fifth O-ring receiving said rear tapered block;
said outer thread of said rear portion of said coupling pipe coupling with said inner thread of said retaining pipe; and
a rear portion of said retaining pipe inserted in said second interior, said inner protrusions passing through said corresponding notches to engage with said corresponding block flanges, and said retaining pipe rotated ninety degrees.

5,628,344
DRY DISCONNECT COUPLING INCLUDING MEANS FOR RETURNING FLUID RESIDUE TO FLOW PATH
Robert D. Roberts, Cary, N.C., assignor to Emco Wheaton, Inc., Morrisville, N.C.
Filed May 17, 1995, Ser. No. 443,256
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.06 **28 Claims**



1. A coupling for connecting a first fluid conduit to a second fluid conduit to form a continuous flow path, said coupling comprising
an adapter comprising
a generally cylindrical adapter body having opposed ends and defining an adapter flow passageway therethrough, one of the opposed ends of said adapter body attached to the first fluid conduit; and
adapter valve means positioned within the adapter flow passageway for controlling flow of fluid through said adapter body, said adapter valve means comprising an outwardly facing end face adjacent the other opposed end of said adapter body;
a coupler comprising
a generally cylindrical coupler body having opposed ends and defining a coupler flow passageway therethrough, one of the opposed ends of said coupler body attached to the second fluid conduit; and
coupler valve means positioned within the coupler flow passageway for controlling flow of fluid through said coupler body, said coupler valve means comprising an outwardly facing end face adjacent the other opposed end of said coupler body;
means releasably connecting the other opposed end of said adapter body to the other opposed end of said coupler body such that the end face of the adapter valve means opposes the end face of the coupler valve means; and
venturi vacuum means for returning fluid residue that accumulates on the end faces of said adapter valve means and said coupler valve means to the flow path.

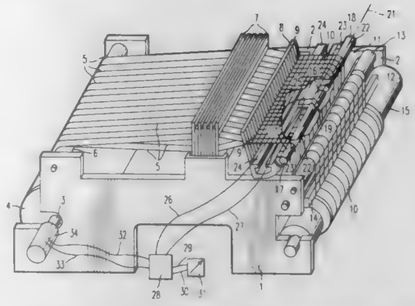
5,628,345
POINT REPAIR SYSTEM FOR CONDUITS
Benjámin T. Fisco, Harpswell, Me., assignor to American Pipeline Supply, Corp., South Harpswell, Me.
Filed Jun. 22, 1994, Ser. No. 263,877
Int. Cl.[6] F16L *55/18*
U.S. Cl. 138—98 **8 Claims**



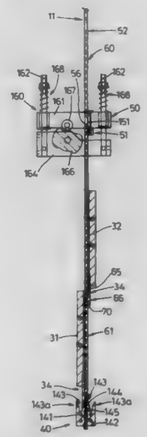
1. An apparatus for repairing a fault in a conduit, comprising:
an inflatable mandrel insertable into said conduit proximate said fault;
a repair sleeve positioned about said mandrel and sufficiently large to cover said fault; and
a fastener which fixes said repair sleeve in position relative to said mandrel during the insertion of said mandrel into said conduit, said fastener being remotely releasable prior to inflation of said mandrel.

5,628,346
DEVICE FOR MEASURING THE WARP YARN TENSION IN A LOOM BY USE OF A DEVIATION BAR
Luciano Corain, Vicenza; Marco Novella, Valdagno, and Roberto Spanevello, Schio, all of Italy, assignors to Nuovo Pignone S.p.A., Florence, Italy
Filed Feb. 9, 1995, Ser. No. 385,875
Claims priority, application Italy, Feb. 18, 1994, MI94A0287
Int. Cl.[6] D03D *49/18;49/04*
U.S. Cl. 139—110 **2 Claims**

1. A device for measuring the warp yarn tension in a loom by measuring tension of a woven fabric before being wound up on a winding beam, which comprises:
a warp yarn feed beam,
an electric motor operating said beam,
a single fixed deviation bar for the fabric, said deviation bar being adapted to extend across a width of the loom,
a device associated with said deviation bar, said device measuring said tension of said woven fabric wherein said device measures tension as a function of said warp yarn tension which is due to a difference between a collection speed of said winding beam and a releasing speed of the warp yarn feed beam,
a fixed frame which supports and cooperates with said device;
an adjustable set valve unit,
a comparator electrically connected to said measuring device and to said adjustable set-value unit wherein an output signal of said comparator controls said motor based on signals received from said measuring device by said comparator,
said fixed deviation bar having an interchangeable fixed structure located at at least an intermediate portion of said fixed deviation bar, said intermediate portion being of a length less than a minimum formable fabric width and said portion being separated from the remaining sections of the bar and said fixed frame supporting said intermediate portion.



5,628,347
HEALD CONTROL SELECTION MECHANISM
John B. D. Rush, Tyne & Wear, England, assignor to Bonas Machine Company Limited, Tyne & Wear, England
Filed Mar. 3, 1995, Ser. No. 398,368
Claims priority, application United Kingdom, Nov. 8, 1994, 9422519
Int. Cl.[6] D03C *3/20*
U.S. Cl. 139—455 **12 Claims**



1. A heald control mechanism including at least one elongate heald rod movable longitudinally between first and second limits of reciprocal motion;
a heald rod motive means continuously reciprocating along a path parallel to the longitudinal axis of the heald rod;

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means biasing the heald rod to normally reside at the first limit of reciprocal motion;

the heald rod and motive means including co-operating latch means which automatically engage when the motive means moves relative to the heald rod along said path in a direction toward the second limit of reciprocal motion and which automatically disengage when the motive means moves relative to the heald rod along said path in the opposite direction; and

heald rod selection control means operable to selectively isolate the co-operating latch means when the heald rod resides at said first limit of reciprocal motion and which on actuation renders active the co-operating latch means to enable the motive means to move the heald rod toward said second limit of reciprocal motion.

5,628,348

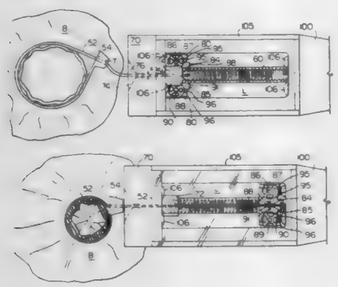
TENSIONING APPARATUS

Ernest D. Scott, Delray Beach, Fla.; Donald L. Tedder, Carrollton, Ga., and Gregory Scott, Jacksonville Beach, Fla., assignors to Edge Technology Corporation

Continuation-in-part of Ser. No. 66,945, May 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 621,215, Nov. 30, 1990, Pat. No. 5,212,928, which is a continuation-in-part of Ser. No. 503,281, Apr. 2, 1990, abandoned. This application Mar. 3, 1995, Ser. No. 400,289

Int. Cl.[6] B21F *9/02*

U.S. Cl. 140—123.5 **22 Claims**



1. An apparatus for tensioning an elongated bundling strap, comprising:

means for releasably holding opposed facing surfaces of said strap in frictional engagement;

motorized means for carrying said means for holding between a first, pre-tensioned, position and a second, tensioned, position and then back to said first, pre-tensioned, position;

said strap being frictionally engaged in said holding means between said first, pre-tensioned, position, through said second, tensioned, position and back to said first, pre-tensioned, position; and

electronic means for driving said motorized means for carrying in a direction parallel to said strap between said first and second positions, said electronic means for driving providing a variable tensioning force which is communicated to said means for holding through said means for carrying;

wherein said apparatus can tension said bundling strap to a variable predetermined tension without severing said strap.

5,628,349

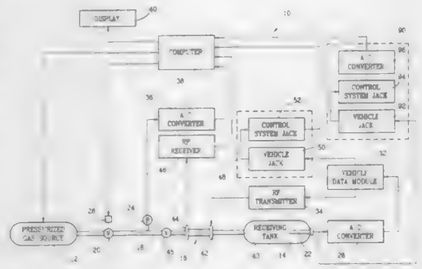
SYSTEM AND METHOD FOR DISPENSING PRESSURIZED GAS

David A. Diggins, and Jack E. Brown, both of Midland, Tex., assignors to Pinnacle CNG Systems, LLC, Midland, Tex.

Filed Jan. 25, 1995, Ser. No. 377,975

Int. Cl.[6] B65B *1/04;3/04*

U.S. Cl. 141—3 **37 Claims**



28. A system for determining the amount of a predetermined pressurized gas dispensed from a pressurized gas source into a receiving tank having a tank wall and a known water volume, the system comprising:

means for determining the initial temperature and pressure inside the receiving tank;

means for calculating and storing a value for the initial volume of gas inside the receiving tank at standard conditions;

means for determining the final temperature and pressure inside the receiving tank;

means for calculating a value for the final gas volume inside the receiving tank at standard conditions; and

means for determining the difference between the initial and final gas volumes inside the receiving tank.

5,628,350

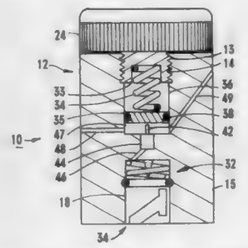
INFLATING DEVICE

Robert F. Gibb, San Diego, Calif., assignor to Raptor, Inc., San Diego, Calif.

Filed Jul. 13, 1995, Ser. No. 502,310

Int. Cl.[6] B65B *1/04*

U.S. Cl. 141—38 **9 Claims**



1. In an apparatus for delivering fluid under pressure to a fluid retaining vessel, the apparatus being of the type which utilizes a cartridge containing a fluid under pressure and the cartridge includes a neck having an opening formed therein for dispensing fluid therethrough, the neck having a seal to retain the fluid within the cartridge, the combination comprising:

a first cylinder for housing the cartridge, said first cylinder including means for piercing the cartridge neck seal for dispensing fluid from said cartridge and further including means for receiving the dispensed fluid;

means for regulating the pressure of the dispensed fluid, said regulating means including a second cylinder in axial alignment with said first cylinder, said second cylinder having a piston disposed for axial movement therewithin whereby a fluid pressure chamber is formed between said piston and the bottom of said second cylinder, the volume of said chamber being defined by the location of said piston within said second cylinder, said regulating means further including fluid coupled port means extending from a location inside said fluid pressure chamber externally of said regulating means to connect fluidly to the fluid retaining vessel to equalize fluid pressure in said vessel with fluid pressure in said chamber;

valve means disposed between said first cylinder fluid receiving means and said fluid pressure chamber for controlling fluid flow therebetween;

means for adjusting pressure in said fluid pressure chamber, said means for adjusting pressure including valve opening means disposed between said piston and said valve means; and

spring means, abutting said piston opposite said valve opening means, whereby said spring means controls movement of said piston within said second cylinder to alter the volume of said fluid pressure chamber, thereby adjusting the fluid pressure therewithin, wherein said second cylinder includes an interior threaded wall portion and spring compressing means including an exterior threaded wall portion for engaging said interior threaded wall portion, said compressing means being in contact with said spring means at an end thereof, opposite said piston, whereby movement of said compressing means changes the compression of said spring means.

5,628,351

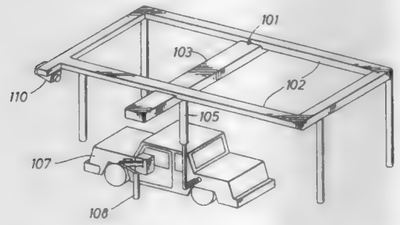
METHOD FOR AUTOMATED REFUELLING

William D. Ramsey, Jr., Kingwood, Tex.; David I. Musil, Port Coquitlam, Canada; Owen R. Williams, New Westminster, Canada; Andrew E. Loen, Port Alberni, Canada, and Al West, Burnaby, Canada, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1995, Ser. No. 461,280

Int. Cl.[6] B65B *1/04*

U.S. Cl. 141—98 **12 Claims**



1. A method for automatic refuelling of a vehicle comprising the steps of:

providing the vehicle with a radio frequency transponder effective to communicate information sufficient to establish a position of a fuel inlet on the vehicle;

receiving said information at the location where the vehicle is to be refuelled when the vehicle is located at the location where the vehicle is to be refuelled;

when the vehicle is located at the location where the vehicle is to be refuelled, determining the position and orientation of the vehicle within the location;

determining from the determined position and orientation of the vehicle and the communicated information, an expected location of the fuel inlet;

moving a fuel dispenser to adjacent the determined expected location of the fuel inlet;

providing a sensor on the fuel dispenser to determine the location of the fuel inlet relative to the fuel dispenser;

repositioning the fuel dispenser based on a signal from the sensor on the fuel dispensing head to a position from which the vehicle can be refuelled from the fuel dispenser; and

refuelling the vehicle from the repositioned fuel dispenser.

5,628,352

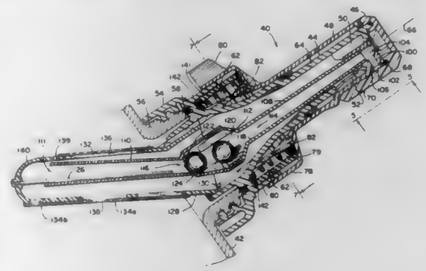
CLOSABLE POUR SPOUT FOR FLUID DISPENSING CONTAINER

Gary J. Gracyalny, Milwaukee, and John H. Thiermann, Greenfield, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation-in-part of Ser. No. 288,436, Aug. 10, 1994, Pat. No. 5,406,994, which is a continuation of Ser. No. 918,978, Jul. 24, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 424,725

Int. Cl.[6] B65B *1/04;3/04*

U.S. Cl. 141—198 **53 Claims**



1. A pour spout for conducting fluid from a container to a receptacle, said pour spout comprising:

a conduit member including a first end directly interconnectable with the container and a second end having a discharge opening and a vent opening; and

a closure member positioned adjacent to said discharge opening, said closure member being movable relative to said conduit member between a first position where said discharge and vent openings are closed, a second position where said discharge opening is closed and said vent opening is open, and a third position where said discharge opening is open.

5,628,353

METHOD AND DEVICE FOR WITHDRAWING A LIQUID FROM A SEALED GLASS AMPOULE

Horst Rüther, Hart/Graz, Austria, assignor to AVL Medical Instruments AG, Schaffhausen, Switzerland

Filed Jun. 13, 1995, Ser. No. 490,007

Claims priority, application Austria, Jul. 28, 1994, 1497/94

Int. Cl.[6] B67C *9/00*

U.S. Cl. 141—330 **11 Claims**

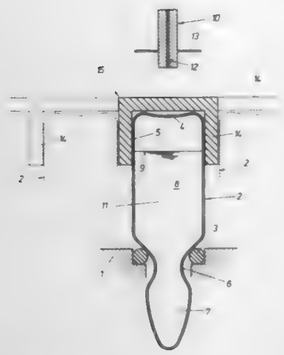
1. A method for withdrawing a liquid from within a sealed glass ampoule, comprising the following steps:

a) providing a sealed glass ampoule containing a liquid,

b) holding said glass ampoule in an upright position, with a glass bottom of said glass ampoule facing upwards,

c) passing a withdrawing element through said glass bottom of said glass ampoule to mechanically destroy said glass bottom and create glass splinters,

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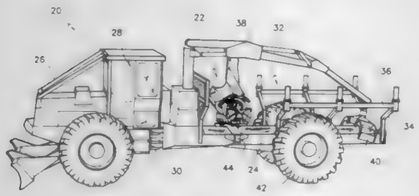
d) sucking said liquid from a splinter-free zone of said glass ampoule with said withdrawing element.

5,628,354

TREE PROCESSOR ATTACHMENT FOR LOG PORTERS

Aloysius Kingston, Newcastle, Canada, assignor to Sunny Corner Enterprises Inc, Miramichi, Canada

Filed Nov. 7, 1995, Ser. No. 554,701
Int. Cl.[6] A01G *23/02*; **B27C** *9/00*; **B27B** *1/00*
U.S. Cl. 144—338 **20 Claims**



18. A method for harvesting felled trees with a log porter and a tree processor attachment mounted on a log carrying portion of said log porter, comprising the steps of;

grabbing a first felled tree from a first stump site with a log grapple of an articulated boom of said log porter,

loading said first felled tree into said tree processor attachment,

delimbing and severing logs from said first felled tree,

resetting a configuration of said tree processor attachment for receiving a second or subsequent felled tree therein,

delimbing and severing said second or subsequent felled tree,

loading said logs severed from said first, second and subsequent felled trees into a log carrying portion of said porter,

moving said porter to a second stump site for delimbing and severing other felled trees, or near a forest road for unloading said logs from said log carrying portion.

5,628,355

WINDOW SAFETY SYSTEM FOR A CHILD OR THE LIKE AND A METHOD OF MANUFACTURING THEREOF

Lanny Gist, 96 Friendship La. Lot 17, Beaufort, S.C. 29902

Continuation-in-part of Ser. No. 264,665, Jun. 23, 1994, Pat. No. 5,492,164. This application Mar. 9, 1995, Ser. No. 401,001
Int. Cl.[6] E06B *3/32*
U.S. Cl. 160—102 **25 Claims**

1. A window safety system for use in a window having a frame, upper and lower sash, and a sill, said window safety system being operable to prevent a child, mentally impaired adult, pet or the like from accidentally falling through an open window, said window safety system comprising:

a first vertical track for securing to an inner portion and on one side of the window frame and extending upwardly from the window sill;

a second vertical track for securing to an inner portion and on an opposing side of the window frame and comprising a substantial mirror image of said first vertical track and extending upwardly from the window sill;

at least a first pair of means for guiding wherein at least one of said at least first pair of means for guiding is operably received to translate within said first vertical track and at least the other of said at least first pair of means for guiding is operably received to translate within said second vertical track;

at least one elongated means for blocking egress through the open window having first and second ends operably engaged with said at least first pair of means for guiding such that said first end of said elongate means for blocking is operably connected to a means for guiding received within said first vertical track and said second end of said elongate means for blocking is operably connected to a means for guiding received within said second vertical track;

a second pair of means for guiding wherein one of said second pair of means for guiding is operably received to translate within said first vertical track and the other of said pair of means for guiding is operably received to translate within said second vertical track;

an elongate cover having first and second ends such that said first end is removably secured to one of said second pair of guiding means which translates in said first vertical track and said second end of said cover is removable secured to the other of said second pair of means for guiding which translates in said second vertical track;

first and second connecting means positioned within said first and second vertical tracks such that said first connecting means operably connects said at least one of said at least pair of means for guiding and said one of said second pair of means for guiding which translate within the first vertical track and said second connecting means operably connects said at least the other of said at least pair of means for guiding and said other of said second pair of means for guiding which translate within said second vertical track,

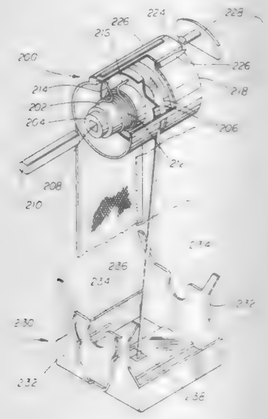
whereby when the safety system is installed in a window frame, said elongate cover operably engages the lower window sash such that when said lower window sash in moved from a closed position to an open position, said elongate cover, said second pair of means for guiding, and said at least one pair of first means for guiding are caused to travel upward with said lower window sash which in turn causes said at least one elongate means for blocking to occupy a position laterally across the opening in the window to prevent egress of a child or the like.

5,628,356

COMBINED TILT AND LIFT CONTROL FOR WINDOW COVERINGS

Norbert Marocco, 46 Pennycross Crt., Woodbridge Ontario, Canada

Continuation-in-part of Ser. No. 398,819, Mar. 6, 1995, abandoned. This application Mar. 6, 1996, Ser. No. 611,856
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—170 **22 Claims**



1. A combined tilt and lift control, for use with a window covering having a head rail, slats suspended from said head rail by ladder tapes extending from said head rail and connected to said slats, and slat lift elements extending from said head rail for raising and lowering said slats, and a tilt and lift control rod in said head rail for operating said combined tilt and lift control and means for operating said tilt and lift control rod, said tilt and lift control comprising;

drum means for securing and operating said ladder tapes and defining a hollow interior;

sleeve means within said drum means and formed integrally therewith;

a lift element opening defined by said drum means;

a lift control reel means rotatably mounted within said drum means;

body means formed as part of said control reel means and rotatably received in said sleeve means;

bearing means defined by said body means for rotatably supporting said body means, said reel means and said drum means

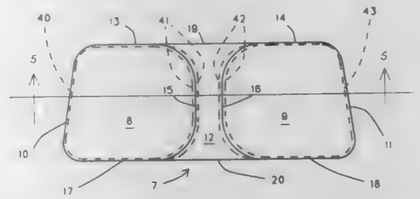
two way rotation control means located within the hollow interior of said drum means and connecting between said lift element reel means and said drum means, whereby operation of said tilt and lift control rod between predetermined limits will be transmitted to said drum means to cause movement of said ladder tapes and tilting of said slats, and wherein movement of said tilt and lift control rod beyond said limits, will release said lift control reel means from said drum means and cause operation of said reel means independently of said drum means.

5,628,357

SUNSHIELD

Charles Hwang, 1714 Stoner Ave. Unit #9, Los Angeles, Calif. 90025

Filed Apr. 7, 1995, Ser. No. 418,956
Int. Cl.[6] B60J *3/00*
U.S. Cl. 160—370.21 **10 Claims**



1. A folding sunshield comprised of a sunshield material having left and right edges and wherein is included first and second spring loops attached to said sunshield material on respective approximate left and right halves of said material, said spring loops being unattached to each other, an intermediate portion of said material between said spring loops acting as a hinge for folding said two loops on top of each other for further folding, or twisting, said sunshield comprised of;

said left and right edges of said sunshield material being cut to the approximate shape of the left and right edges of a window, but having rounded corners;

said first and second spring loops being shaped to fit along said left and right edges of said sunshield material;

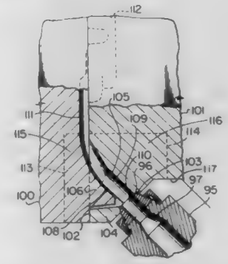
said first and second spring loops being attached to said sunshield material by first and second tapes attached along said left and right edges of said sunshield material and across said intermediate portion of said sunshield material.

5,628,358

DIE HALVES FOR A DIE CASTING MACHINE

Guido Perrella, Westmount, and Nicolas Bigler, Morin Heights, both of Canada, assignors to DBM Industries Limited, Quebec, Canada

Division of Ser. No. 330,186, Oct. 27, 1994, which is a division of Ser. No. 857,463, Mar. 25, 1992, Pat. No. 5,379,827. This application Apr. 25, 1995, Ser. No. 428,448
Claims priority, application Canada, Jun. 27, 1991, 2045879-8
Int. Cl.[6] B22D *17/22*
U.S. Cl. 164—312 **4 Claims**



1. A die for use with a die casting machine comprised of a left hand die half, a right hand die half, in which the die halves close on a part line, an injection nozzle seat, an injection fluid inlet, a runner and a cavity, the invention comprising a left hand die half having a protrusion extending over the part line when the die halves are closed, the top of the protrusion forming the base of the injection fluid inlet when the die halves are closed, the bottom of

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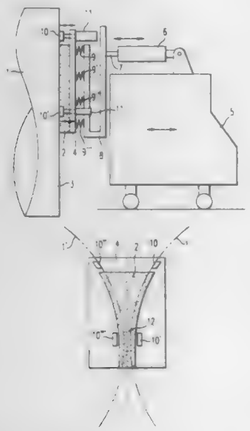
the protrusion is spaced from the upper surface of the nozzle seat which is part of the right hand die half.

5,628,359

DEVICE FOR SUPPORTING A SIDEWALL OF A PLANT FOR THE CONTINUOUS TWIN-ROLL CASTING OF METAL STRIP

Hugues Legrand, Molinghem, and Pierre Delassus, Bethune, both of France, assignors to Usinor Sacilor, Puteaux, France, and Thyssen Stahl Aktiengesellschaft, Duisburg, Germany

Filed Nov. 30, 1995, Ser. No. 565,279
Claims priority, application France, Nov. 30, 1994, 94 14348
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—428 **9 Claims**



1. A casting device comprising:
first and second cooled rolls having horizontal axes;
a sidewall applied against ends of the rolls;
a carriage which can be controllably moved in a direction parallel to the axes of the rolls;
a thrust device carried by said carriage;
a mounting plate connected to said thrust device and solidly fastened to the sidewall; and
at least two pads, each connected to a moving device, on said mounting plate which can be controllably moved in a direction parallel to the axes of the rolls by respective moving device which are adapted to apply each of said pads against an end of one of said rolls.

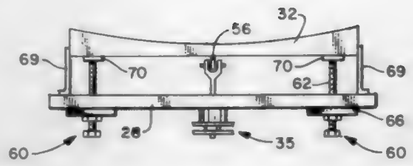
5,628,360

ADJUSTABLE AXIAL SEAL PLATES FOR ROTARY REGENERATIVE AIR PREHEATERS

Mark E. Brophy, and Glenn D. Mattison, both of Wellsville, N.Y., assignors to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Feb. 21, 1996, Ser. No. 604,646
Int. Cl.[6] F23L *15/02*
U.S. Cl. 165—9 **4 Claims**

1. In a rotary regenerative air preheater including a rotor, a plurality of housing panels surrounding said rotor and at least one axial seal plate having an axial centerline mounted on one of said housing panels between said one housing panel and said rotor, means adjustably mounting said axial seal plate on said one housing panel comprising:
a. a pair of threaded mounting rods spaced apart along said centerline and extending through said one housing panel toward said axial seal plate and threaded through threaded adjusting means rotatably attached to said one housing panel whereby said rod may be moved toward and away from said rotor by rotating said threaded adjusting means;
b. means attaching said rod to said axial seal plate along said centerline whereby said centerline of said axial seal plate moves toward or away from said rotor when said rod is moved;
c. adjustable stop means located on either side of said centerline engaging said axial seal plate, said adjustable stop means being rotatably threaded to said housing panel whereby said adjustable stop means may be moved toward and away from said rotor thereby providing adjustable stops for said axial seal plate on both sides of said centerline.

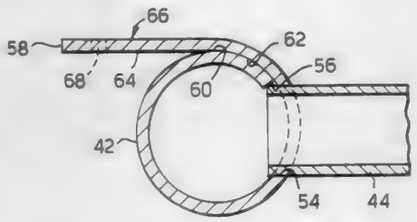


5,628,361

HEAT EXCHANGE MANIFOLD

Christophe R. Getto, Villerupt, France, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1996, Ser. No. 620,198
Claims priority, application United Kingdom, Aug. 25, 1995, 9517449
Int. Cl.[6] F28F *9/02*
U.S. Cl. 165—67 **5 Claims**



1. A heat exchanger comprising a pair of manifolds which are spaced apart and substantially parallel; a plurality of tubes interconnecting the manifolds, the tubes being spaced apart, substantially parallel, and inserted through slots in the manifolds; an inlet tube connected to one of the manifolds; an outlet tube connected to one of the manifolds; a mounting bracket attached to each manifold; and a stop member positioned inside each manifold adjacent the slots which acts as an abutment for the inserted tubes; wherein each manifold with associated bracket and stop member is formed in one piece; and wherein each manifold with associated bracket and stop member is formed by rolling of a sheet of material to form the manifold with a longitudinal edge of the sheet positioned inside the manifold to define the stop member, and with a portion of the sheet directed away from the manifold substantially at a tangent thereto to define the mounting bracket.

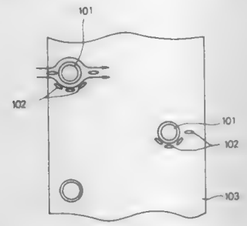
2. A method of forming a heat exchanger as claimed in claim 1, comprising the steps of forming each manifold with associated bracket and stop member in one-piece; cutting the slots in each manifold; inserting each tube into its associated slot in each manifold until the tube abuts the stop member; and brazing the assembly together; wherein the forming step comprises rolling a sheet of material such that surface portions of the sheet overlap and abut to form the manifold, such that one longitudinal edge of the sheet is positioned inside the manifold to define the stop member, and such that a portion of the sheet is directed away from the manifold to define the bracket; the brazing step brazing together the surface portions.

5,628,362

FIN-TUBE TYPE HEAT EXCHANGER

Ho S. Rew, Seoul, and Seok-Whan Han, Bucho, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 14, 1994, Ser. No. 355,995
Claims priority, application Rep. of Korea, Dec. 22, 1993, 29 066/1993; Feb. 23, 1994, 3311/1994
Int. Cl.[6] F28D *1/04*
U.S. Cl. 165—151 **10 Claims**



1. A fin-tube type heat exchanger comprising:
a fin body of the thin plate type;
a plurality of tubes perpendicularly penetrating said fin body, said tubes being spaced out at regular intervals;
a plurality of projecting dimples provided on predetermined positions of opposed side surfaces of said fin body; and
a separation bubble control means tangentially formed about each of said tubes, said bubble control means being provided on the opposed side surfaces of said fin body about each of said tubes for reducing the size of a separation air bubble at each of said tubes.

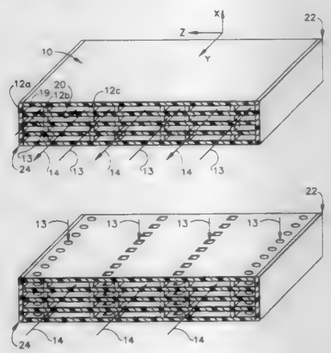
16. A heat exchanger comprising:
an assembly of a plurality of substantially planar anisotropic composite plates each comprised of a high strength carbon fiber polymeric resin matrix including thermally conductive fibers oriented for providing anisotropic thermal conductivity in said composite plates, said plates being having a plurality of unequally spaced ribs applied to at least one surface of each of said plates, said plates being disposed in substantially parallel spaced relation, and first and second ribs on a first plate being spaced from each other to define a first fluid flow passageway therebetween and second and third ribs on a said first plate being separated to define a second fluid flow passageway therebetween wherein said first and second passageways are separated by the second rib and the fluid flows in the first and second passageways are substantially parallel to said first plate.

5,628,363

COMPOSITE CONTINUOUS SHEET FIN HEAT EXCHANGER

Douglas M. Dewar; Alexander F. Anderson, both of Rolling Hills Estates, and Christopher K. Duncan, Long Beach, all of Calif., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Apr. 13, 1995, Ser. No. 422,208
Int. Cl.[6] F28D *9/00*
U.S. Cl. 165—164 **16 Claims**



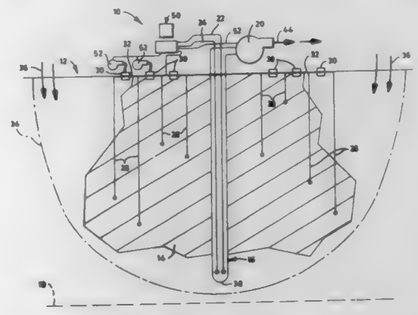
1. A heat exchanger comprising:

5,628,364

CONTROL SYSTEM FOR GOVERNING IN-SITU REMOVAL OF SUBTERRANEAN HYDROCARBON-BASED FLUIDS

James W. Trenz, Norwell, Mass., assignor to Terrane Remediation, Inc., Situate, Mass.

Filed Dec. 4, 1995, Ser. No. 566,710
Int. Cl.[6] E21B *43/12;44/00;47/10;49/00*
U.S. Cl. 166—53 **16 Claims**



1. A bio-remediation system for removing of hydrocarbon-based fluid from a subterranean location having a water table defined therein, the hydrocarbon-based fluid being biologically remediable by microbes which consume the hydrocarbon-based fluid when in

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the presence of a nutrient-rich medium, the bio-remediation system ensuring that the nutrient-rich medium does not extend below the water table, the bio-remediation system comprising

a shaft bored from a land surface into the subterranean location and having a base disposed at a distal end of the shaft;

a plurality of moisture sensors adapted to sense moisture in the subterranean location where the plurality of moisture sensors are placed at varying depths relative to the land surface and the plurality of moisture sensors are adapted to produce a moisture signal indicative of a quantity of the moisture;

gas sensing means disposed at the base of the shaft for measuring one or more respiratory gases from environmental gases, the gas sensing means being adapted to produce a gas signal indicative of a quantity of the one or more respiratory gases;

an air pump disposed at the land surface and extending into the shaft to create a vacuum therein such that the environmental gases and the moisture are drawn from the base of the shaft, the air pump having an inoperative mode and an operative mode where the inoperative mode allows the microbes and nutrient-rich medium to migrate deeper into the subterranean location and the operative position draws the environmental gases and moisture into the shaft to create a moisture barrier substantially free of the microbes and nutrient-rich medium; and

processing means in electrical communication with the plurality of moisture sensors, the gas sensing means and the air pump to switch the air pump between the operative position and the inoperative position in response to the plurality of the moisture signal and the gas signal.

5,628,365

METHOD OF PRODUCING GAS FROM FLUID CONTAINING BEDS

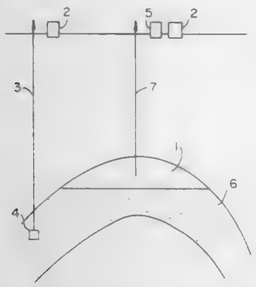
Vladimir N. Belonenko, Moskovskaya, Russian Federation, assignor to Aktsionernoe Obschestvo Zakrytogo Tipa "Biotekhinvest", Moscow, Russian Federation

Filed Jun. 28, 1995, Ser. No. 495,888

Claims priority, application Russian Federation, Dec. 28, 1992, 92014732/03

Int. Cl.[6] E21B *43/14;43/25*

U.S. Cl. 166—249 **25 Claims**



1. A method of producing gas from fluid-containing formations having at least one gas trap, comprising the steps of:

generating elastic vibrations by a main generator and stimulating a fluid-containing formation with the elastic vibrations;

extracting gas from said gas trap through a well;

wherein said generating step comprises increasing the frequency of elastic vibrations within a frequency range from 0.1 Hz to 350.0 Hz,

said increasing the frequency of elastic vibrations being followed by reducing the frequency thereof within said frequency range.

5,628,366

PROTECTIVE ARRANGEMENTS FOR DOWNHOLE TOOLS

George Telfer, East Tullos, Great Britain, assignor to Nodeco Limited of International Base, East Tullos, United Kingdom

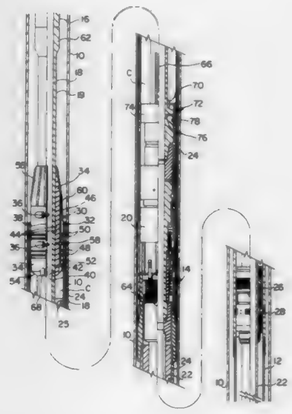
PCT No. PCT/GB93/01755, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/04790, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 18, 1993, Ser. No. 387,796

Claims priority, application United Kingdom, Aug. 18, 1992, 9217537

Int. Cl.[6] E21B *19/16;31/08*

U.S. Cl. 166—380 **20 Claims**



1. A downhole tool assembly comprising a sleeve member (**24**), a tube member (**18**) axially movable with respect to and at least partially located within said sleeve member (**24**), a seal member (**26**) mounted within a lower end of said sleeve member (**24**) providing a sliding fluid seal to the exterior of said tube member (**18**) or to the exterior of a tubular extension member (**22**) thereof and having an external diameter substantially equal thereto, a downhole tool sub-assembly (**20**) and a protective arrangement comprising an annular seal means (**30**) characterised in that said annular seal means (**30**) has an inner surface (**40**) dimensioned to fit around said tube member (**18**) and an outer surface (**46**) dimensioned to fit within at least art upper end of said sleeve member (**24**), said inner surface (**40**) being provided with an inner fluid seal means (**42**,**44**) for forming a sliding fluid seal to the exterior (**19**) of said tube member (**18**), said outer surface (**46**) being provided with an outer fluid seal means (**48**,**50**) for forming a sliding fluid seal to the interior of said sleeve member (**24**) and the downhole tool sub-assembly (**20**) being located within an annular Volume (C) between the seal member (**26**) and said annular seal means (**30**), the Volume (C) being constant nothwithstanding movement of the tube member (**18**) relative to the sleeve member (**24**).

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TEMPERATURE SENSITIVE SPRINKLER HEAD WITH IMPROVED SPRING

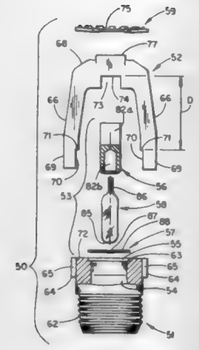
Perin E. Truax, Caledonia, and James G. Retzloff, Lansing, both of Mich., assignors to The Viking Corporation, Hastings, Mich.

Filed Nov. 8, 1994, Ser. No. 335,645

Int. Cl.[6] A62C *37/14*

U.S. Cl. 169—37 **30 Claims**

1. A sprinkler head for a fire extinguisher system, said sprinkler head comprising:



a base adapted for connection to a source of water, said base defining a passageway and an opening to said passageway, said base including opposite sides having a corrosion-resistant finish thereon;

a substantially flat plate spring sealing and covering said opening;

a U-shaped frame including arms configured to slidably engage said opposite sides of said base, said arms also including a corrosion-resistant finish thereon, said arms of said U-shaped frame being secured to said base by a capacitor discharge weld, the corrosion-resistant finish of said opposite sides and said arms being substantially undisturbed by said capacitor discharge weld; and

a temperature-sensitive member contacting said substantially flat plate spring and being captured between said frame and said substantially flat plate spring to hold said substantially flat plate spring over said opening, said temperature-sensitive member being configured to yield upon sensing a predetermined temperature such that, when said predetermined temperature is sensed, said temperature-sensitive member yields and thus releases said substantially flat plate spring from said base to uncover said opening.

5,628,368

FIRE FIGHTING INSTALLATION

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

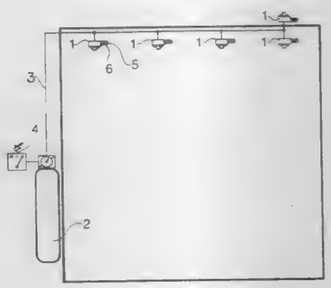
PCT No. PCT/FI94/00026, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/16773, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 21, 1994, Ser. No. 492,033

Claims priority, application Finland, Jan. 21, 1993, 930234

Int. Cl.[6] A62C *35/62*

U.S. Cl. 169—61 **5 Claims**



1. Equipment for fighting fire in a space, comprising: a plurality of automatically releasable spray heads; at least one hydraulic accumulator with a high charge pressure for delivering extinguishing liquid to said spray heads; a pressure guard connected to said hydraulic accumulator for producing a first signal when the pressure in said hydraulic accumulator has decreased to a predetermined value following the release of at least one of said spray heads; and means responsive to said first signal to release the other spray heads in the space.

5,628,369

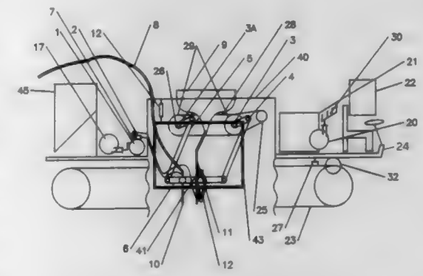
MACHINE FOR REVITALIZING GOLF COURSE GREENS

Curtis W. Brown, 2600 Gracy Farms #934, Austin, Tex. 78727

Filed Oct. 28, 1994, Ser. No. 330,562

Int. Cl.[6] A01B *45/02*

U.S. Cl. 172—22 **4 Claims**



1. A machine for revitalizing golf course greens comprising:

a) a body;

b) an air compressor, a body propelling means, a sand fill tank, a hydraulic system, a drivers seat, an instrument system and an instrument panel mounted on said body;

c) flexible tracks mounted to each side of said body; said propelling means comprising separate motor drives to drive each of said flexible tracks;

d) a vertically movable mounting assembly mounted to said body driven by said hydraulic system;

e) dual crankshafts, each with a minimum of four approximately five inch throws mounted in said mounting assembly;

f) raceways in a modified diamond shape rigidly mounted to said mounting assembly below said throws;

g) connecting rods connected on a first end to each of said throws;

h) tine drive blocks with a guide roller and a guide pin in said roller, and bearings on each of said tine drive blocks; said connecting rods being connected on a second end to said bearings; and with said guide roller running in said raceway, movement of said tine block is guided to put pressure directly downward and directly upward as said tine block is moved upward and downward by rotation of said throws while said raceway and said throws on said crankshafts in said mounting assembly are being moved forward by forward movement of said machine;

i) a hollow coring tine mounted to each of said tine drive blocks;

j) an air powered core ejection means connected from said air compressor to near a tip end of each of said hollow coring tines with air flow controlled to eject core material from said hollow coring tines as said tines are moving downward; said airflow fracturing the surrounding soil as said hollow coring tines reach a maximum depth;

k) a sand fill tube means mounted in said mounting assembly to blow sand into each hole formed by said hollow coring tines;

l) a crimp and tamping means mounted in said movable mounting assembly to crimp and tamp said sand in each of said holes while said machine is moving;

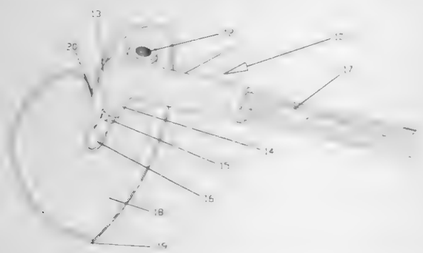
m) a first speed sensor means to sense forward speed of said machine;

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n) a speed sensing means to sense rotational speed of said crankshaft and an automatic means to control ratio of said forward speed to said crankshaft rotational speed;

o) sensing and display means to indicate malfunction of said coring tines, said sand fill tube, said crankshaft, said air compressor or said propelling means, and further to indicate forward speed, operating time, said fill tank level, and hydraulic oil pressure in said hydraulic system.

5,628,370
LAWN AND GARDEN TOOL
R. William Chrysler, 1999 Buford St., Alva, Fla. 33920
Filed Jun. 12, 1996, Ser. No. 662,078
Int. Cl.° A01B *27/00; 1/10*
U.S. Cl. 172—372 **4 Claims**



1. A heart shaped garden tool configured to perform various garden tasks, said tool comprising:

an elongated handle sufficiently long to permit a user to stand upright while working,

a tool connector formed with a handle mounting hole beginning at a first end and running to a point near a second end, a threaded set screw mounting hole formed in said connector, a first threaded connector boss formed in said connector, a second threaded connector boss formed in said connector at said second end, parallel to a center line of said connector, and a third threaded connector boss formed in said connector, and

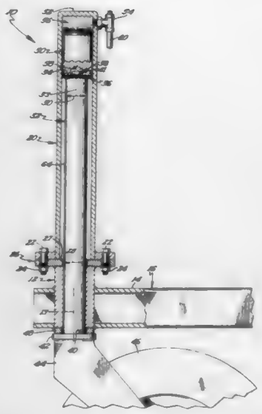
a heart shaped blade head having a top side, a bottom side, and an outer edge, and having a threadrod attached on said top side near a center point at an angle of 36° said heart shape formed by a pointed snout at a first end and a "V" shaped notch at a second end opposite said snout, a half round shoulder on each side of said notch and each of said shoulders running along said outer edge to said snout, said outer edge being sharpened along said top side,

said tool connector being assembled on said handle, and fastened thereto, and said threadrod being assembled with said first connector boss to form a backward angle for digging, to said second connector boss to form an angle for edging, weeding, digging holes, and removing ice from walks, and to said third connector boss to form an angled, pointed hoe for weeding, chopping, hoeing and planting.

5,628,371
ELEVATING SYSTEM FOR FARM IMPLEMENTS
Harry Behrens, R.R. 1, Box 36, Surrey, N. Dak. 58785
Filed Nov. 6, 1995, Ser. No. 554,290
Int. Cl.° B60S *9/12*
U.S. Cl. 172—395 **11 Claims**

1. A lift apparatus for a farm implement having a frame carrying a tool, to raise the frame relative to the ground, comprising:

an elongated sleeve having upper and lower ends and a longitudinal axis, said sleeve mountable to the frame, said axis being substantially upright;

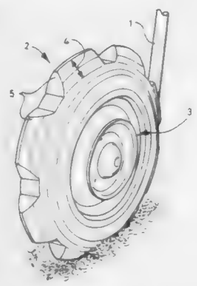


a fluidically actuated cylinder having an inner surfaces a cylinder piston and a longitudinal axis, said cylinder mounted coaxially to said upper end of said sleeve so as to form a sleeve and cylinder combination;

a caster wheel having a shaft, said caster shaft being rotatably and freely, slidably received within said sleeve and cylinder combination for unobstructed sliding movement relative to said sleeve, between an operating position where said wheel is adjacent said sleeve lower end and the farm implement tool is carried below ground, and an elevated position wherein said wheel is spaced apart from said sleeve lower end and the farm implement tool is raised to clear the ground; and

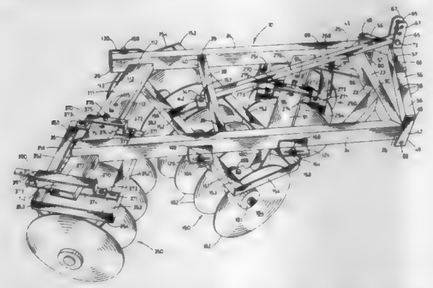
said cylinder piston positioned above said shaft, whereby when said cylinder is actuated, said cylinder piston pushes said caster shaft downwardly along said sleeve axis to raise the frame relative to the ground.

5,628,372
LAND MANAGEMENT APPARATUS FOR CREATING IRRIGATION POOLS
Charles H. Creyke, Baldersby Park, Topcliffe, Thirsk, North Yorkshire, United Kingdom
PCT No. PCT/GB93/02411, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO94/12010, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 23, 1993, Ser. No. 256,757
Claims priority, application United Kingdom, Nov. 24, 1992, 9224555
Int. Cl.[6] A01B *35/28*
U.S. Cl. 172—534 **14 Claims**



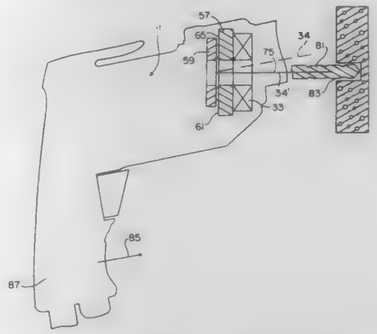
1. A land and road worthy apparatus used in land management comprising: driving means for moving the apparatus over land; and at least one generally annular wheel member on which said apparatus, at least in part, travels, said member adapted to be self cleaning when traveling on said land and which further includes a generally annular notched peripheral rim including a plurality of spaced-apart peripheral ridge members transversely-extending across substantially the entire width of said peripheral rim separated by relatively deep trough-like valleys transversely-extending across substantially the entire width of said peripheral rim, said ridge members being sized and shaped so as to compact the land and provide for the creation of a series of spaced-apart relatively deep irrigation pools when the apparatus moves over land whose size and shape and position correspond to the size and shape and directions of travel of said ridge members on the periphery of said wheel member.

5,628,373
EARTH WORKING IMPLEMENT
Bernard O. Domries, 12277 Road 29, Madera, Calif. 93638
Filed Sep. 12, 1995, Ser. No. 527,255
Int. Cl.° A01B *7/00*
U.S. Cl. 172—574 **10 Claims**



1. An earth working implement comprising a frame adapted to be transported in earth traversing movement along a predetermined path of travel and having a longitudinal axis of reference substantially aligned with said path of travel, said frame having a pair of substantially parallel longitudinal frame members disposed in spaced relation to each other substantially equal distances on opposite sides of said longitudinal axis of reference of the frame interconnected in fixed relation by a pair of transverse beams; a first earth working tool mounted on the frame disposed for engagement with the earth during said earth traversing movement and operable to move earth laterally of said path of travel and wherein the first earth working tool has a primary operative position in which the first earth working tool extends substantially equal distances on opposite sides of said longitudinal axis of reference; a second earth working tool mounted on the frame forwardly of the first earth working tool relative to said path of travel disposed for engagement with the earth during said earth traversing movement and operable to move earth laterally of said path of travel and wherein the second earth working tool has a primary operative position having a longitudinal axis of reference extending a predetermined distance to one side of said longitudinal axis of reference that is substantially aligned with said path of travel; a third earth working tool mounted on the frame rearwardly of the first earth working tool relative to said path of travel and disposed for engagement with the earth during said earth traversing movement and operable to move earth laterally of said path of travel and wherein the third earth working tool has a primary operative position having a longitudinal axis of reference extending a predetermined distance to a side of said longitudinal axis of reference opposite to that of said primary operative position of the second earth working tool and a distance unequal thereto whereby said pair of transverse beams of said frame are disposed at oblique angles substantially aligned with said longitudinal axes of reference of the respective primary operative positions of the second and third earth working tools; means mounting said second and third earth working tools in individually supported relation on their respective transverse beams; and a plurality of axially aligned plow blades, each of which has opposite concave and convex surfaces, mounted on the first, second and third earth working tools and adapted during said earth traversing movement to engage the earth and to turn the earth, so engaged, generally to the side of said longitudinal axis of reference of the frame to which said concave surfaces face and wherein the directions of movement of the earth laterally of said path of travel by the first, second and third earth working tools is such as to work the earth substantially evenly and to return the earth thereafter to a substantially ambient distribution.

5,628,374
HAMMER DRILL WITH INCLINED CLUTCH PLATE
John E. Dibbern, Jr., Street, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Sep. 26, 1994, Ser. No. 312,337
Int. Cl.° B23B *45/16;* **B25D** *16/00*
U.S. Cl. 173—48 **11 Claims**



1. A hammer drill for operation in a hammer mode and in a drill mode comprising:

a housing having a front and a back;

a motor in the housing;

an output spindle extending fore and aft in the housing, rotatably driven by the motor and axially slidably mounted in the housing about a spindle axis to define a no-load axis when the hammer drill is not in use;

a spring for forwardly biasing the spindle;

a mode selector engageable with the spindle for locking the spindle against axial movement in a drill mode setting and disengageable with the spindle for permitting the spindle to be axially slidable in a hammer mode setting;

a first clutch plate fixed to and rotatable with the spindle and having a rear face transverse to the spindle axis and a first tooth array extending outwardly on the rear face and terminating in spaced tips;

the tips of the first tooth array of the first clutch plate being in a plane transverse to the no-load axis when the hammer drill is not in use and when the hammer drill is used in the drill mode;

a second clutch plate fixed in the housing having a front face opposed to the rear face of the first clutch plate and having a second tooth array of teeth extending outwardly on the second clutch front face and terminating in spaced tips;

the tips of the second array of the second clutch plate fixedly mounted in the housing as originally assembled therein and being in a plane forming a small positive angle with respect to the transverse plane; and

the tips of the first tooth array of the first clutch plate shiftable from the position in the transverse plane, when the hammer drill is in the hammer mode and a predetermined rearward bias is applied to the spindle, to a position parallel to the tips of the second tooth array.

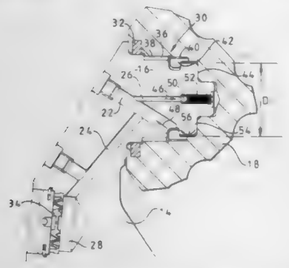
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5,628,375

THRUST FACE LUBRICATION SYSTEM FOR A ROLLING CUTTER DRILL BIT

Jeffery E. Daly, Cypress, Tex., assignor to Camco International Inc., Houston, Tex.

Filed Aug. 29, 1995, Ser. No. 520,431
Int. Cl.[6] E21B *10/22*
U.S. Cl. 175—227 10 Claims



1. A rolling cutter drill bit comprising a body and a plurality of legs, at least one of said legs having a cantilevered bearing spindle, a rolling cutter rotatably mounted on the bearing spindle, bearing means located between the cutter and the spindle and including a thrust bearing configured to carry onward thrust loads from the cutter onto the spindle, bearing seal means defining an enclosed region between the cutter and the spindle in which said bearing means are located, and lubricant delivery means within the spindle to deliver lubricant to the bearing means, said lubricant delivery means including flow control means to allow lubricant to flow into an area of said enclosed region containing the thrust bearing and to restrict the flow of lubricant out of said thrust bearing area and into another area of said enclosed region, said flow control means including an inlet flowpath leading to said thrust bearing area and a single non-return valve arranged to permit flow of lubricant along said inlet flowpath and into said thrust bearing area and substantially to prevent flow of lubricant back along said flowpath away from the thrust bearing area, the flow control means further including a restricted outlet flowpath between an outer surface of the bearing spindle and an inner surface of the rolling cutter, leading away from said thrust bearing area, which is separate from said inlet flowpath, whereby lubricant is recirculated within said enclosed region, through said single non-return valve and said restricted outlet flowpath, to generate a differential pressure in the thrust bearing area without applying differential pressure to said bearing seal means.

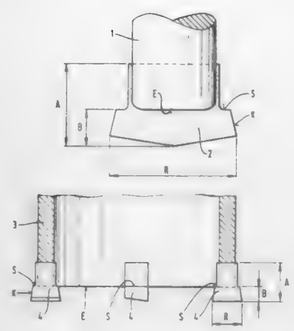
5,628,376

DRILLING TOOL BIT WITH A CARRIER MEMBER AND CUTTER MEMBERS

Werner Kleine, Achim, Germany, assignor to Hilti Aktiengesellschaft, Schaan Furstentum, Liechtenstein

Filed Sep. 27, 1995, Ser. No. 534,536
Claims priority, application Germany, Oct. 15, 1994, 44 36 916.6
Int. Cl.[6] E21B *10/48;10/58*
U.S. Cl. 175—403 6 Claims

1. A drilling bit having a drilling direction and comprising an axially extending carrier member (1, 3) having a leading end facing in the drilling direction and at least one cutter member (2, 4) located at the leading end of said carrier member and having a leading end with a dimension (R) extending transversely of the drilling direction of said carrier member and an axially extending region (K) extending from the leading end with a continuously diminishing transverse dimension in the direction opposite to the drilling direction to a trailing end thereof, said cutter member having an axially extending trailing end region embedded in said carrier member and an axial length (A) between the leading and trailing ends thereof, said at least one cutter member projects in the drilling direction and in the radial direction from the leading end of said carrier member, said at least one cutter member has a radially inwardly directed step (S) at the trailing end of said region (K), said cutter member between said step and the trailing end thereof having a dimension transverse of the drilling direction at least equal to the corresponding transverse dimension of said carrier member in which said cutter member is embedded.

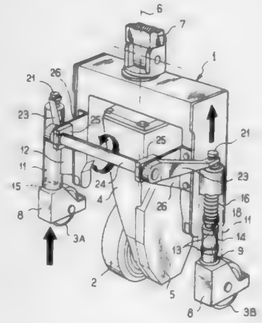


5,628,377

GOODS-HANDLING CART WITH STABILIZING WHEELS

André Le Gloan, Argentan Cedex, France, assignor to M I C, Societe Anonyme, France

Filed Jun. 16, 1995, Ser. No. 491,125
Int. Cl.[6] B62D *61/00*
U.S. Cl. 180—21 7 Claims



1. A goods-handling cart comprising; a chassis having a longitudinal midplane and provided with a plurality of wheels enabling it to run on the ground, one of the wheels being a drive and steer wheel and being situated in the longitudinal midplane, two other wheels being swivelling stabilizing wheels situated on respective opposite sides of the drive and steer wheel, stabilizing wheel mounting elements for mounting each stabilizing wheel to pivot about a vertical axis and to move vertically relative to the chassis, a mechanism including two levers and an anti-roll bar interconnecting said levers and at least one spring-effect element acting on both stabilizing wheels via said mechanism for transmitting a downwardly-directed vertical force to said stabilizing wheels,

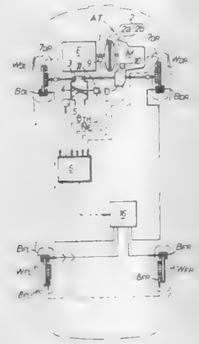
wherein said stabilizing wheels are free from said mechanism and said mechanism bears via contact surfaces against said stabilizing wheel mounting elements such that said mechanism is free to move away from said corresponding stabilizing wheel mounting elements in a direction opposite to the thrust direction of said spring-effect element, and wherein retaining means are associated with each stabilizing wheel to restrict downwards displacement thereof relative to the chassis.

5,628,378

TRACTION CONTROL DEVICE FOR VEHICLE

Wataru Saito; Kenji Akuzawa, and Hiromi Inagaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 402,478
Int. Cl.[6] B60K *28/16*
U.S. Cl. 180—197 1 Claim



1. A traction control device for a vehicle, which decreases a driving torque for a driving wheel connected to a power source through an automatic transmission in response to the detection of an excessively slipping tendency of the driving wheel at the time of acceleration of the vehicle, said traction control device comprising:

a gear shift position detecting means for detecting the shift stage of said automatic transmission;

a shifting predicting means for predicting the shifting motion of said automatic transmission based on an operational parameter of said power source and a shifting characteristic of said automatic transmission;

a foreseeing means for foreseeing the operational parameter of said power source after shifting, based on values before shifting of the operational parameter of said power source and operational parameter of the vehicle and the gear shift positions of said automatic transmission before and after shifting;

a driving torque control section for determining a control quantity of the driving torque for the driving wheel, based on detection values before shifting and a foreseen value after shifting of the operational parameter of said power source; and

an actuator operated in accordance with the control quantity determined in said driving torque control section to change the driving torque for the driving wheel.

5,628,379

SINGLE TRACK VEHICLE

Jonathan Watkins, 3740 Blue Bird Canyon Rd., Vista, Calif. 92084-7432

Continuation-in-part of Ser. No. 619,014, Nov. 28, 1990, Pat. No. 5,257,671. This application Aug. 11, 1993, Ser. No. 105,973
Int. Cl.[6] B62D *61/04*
U.S. Cl. 180—209 44 Claims

1. A vehicle for use upon a road surface, said road surface defining a tire traction loss lean angle, said tire traction loss lean angle being that angle from the vertical at which the vehicle can lean in optimum tire traction conditions on the road surface of intended use without loss of tire traction, comprising:

a frame having front and rear portions;

an operator seat mounted on said frame and adapted to receive said operator in a substantially sitting position;

a single front wheel mounted on said front portion of said frame and a single rear wheel mounted on said rear portion of said frame, said front and rear wheels being substantially aligned along the longitudinal axis of said frame for providing dynamic balance for said vehicle when traveling;

means including a pair of side wheels mounted on said frame for permitting tilting of said frame without touchdown of said side wheels on the road surface in turns while said vehicle is in dynamic balance at road speeds at an angle of from 0 degrees to the tire traction loss lean angle such that premature contact of the side wheels with the road surface does not limit vehicle turn radius or cause loss of vehicle control, and for facilitating catching of said vehicle at the tire traction loss lean angle, so that said vehicle may travel in a three-wheeled mode, said side wheels being selectively positionable, at least in part, through operator-applied force to (i) a first extended position in which said side wheels extend away from said vehicle and may touch the road surface in order to assist said front and rear wheels in holding the vehicle upright when said vehicle is moving slowly or stopped, and (ii) a second retracted position fixed adjacent said vehicle when said vehicle is in dynamic balance, said second retracted position allowing said vehicle to lean in a dynamically-balanced condition up to said tire traction loss lean angle; and

further including a side wheel linkage for first and second side wheels, comprising:

a rotatably mounted lateral torque tube having a hanging foot pedal extending therefrom;

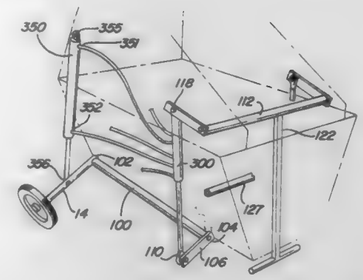
respective first and second push-pull tubes;

respective first and second rotatably mounted longitudinal torque tubes;

first and second upper crank arms, each rigidly connected at their first ends to said lateral torque tube and pivotally connected at their second ends to a respective one of said first and second push-pull tubes;

first and second lower crank arms, each rigidly connected at their first ends to a respective one of said longitudinal torque tubes and pivotally connected at their second ends to a respective one of said push-pull tubes; and

first and second mounting arms for the respective side wheels, respectively connected to one of said first and second longitudinal torque tubes.



5,628,380

PORTABLE FIRE ESCAPE

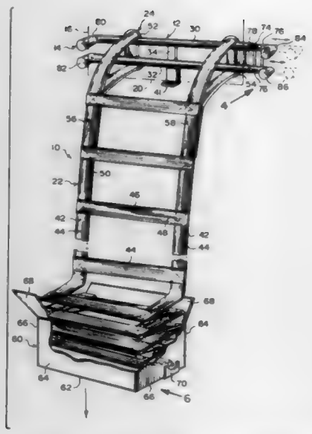
Steve Matisi, 68-33 79th St., Middle Village, N.Y. 11379

Filed May 26, 1995, Ser. No. 450,912
Int. Cl.[6] A62B *1/06;* E06C *1/52;5/26*
U.S. Cl. 182—70 8 Claims

1. A portable fire escape comprising:

a) a framework forming a top portion of said fire escape;

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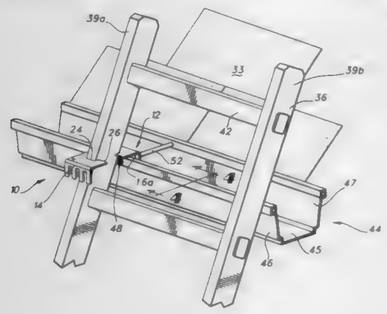
b) said framework including means for mounting said framework across an opened window completely within a building comprising substantially horizontal upper and lower retainer rods extending past both sides of said window, each retainer rod having opposite ends bent at right angle to form a foot bearing against and unattached to an internal wall of the building adjacent an opposite sides of the opened window;

c) an elongated extendable flexible ladder with rungs substantially parallel to said retainer rods;

d) means for attaching one end of said flexible ladder to said framework permitting said flexible ladder when deployed to hang down externally against the building to the ground to allow a person to exit through the opened window of the building during a fire;

e) box means for storing said flexible ladder in a folded condition and incorporating bracket means to attach the second end of said flexible ladder to said box means permitting said box means containing said flexible ladder to be stored within said building and thrown out of said window during a fire and allowing said flexible ladder to deploy while said box means falls to the ground.

5,628,381
LADDER SAFETY APPARATUS AND METHOD
David H. Markovich, 4979 Simcoe Cir., Marietta, Ga. 30062, and William M. Foster, Sandy Springs, Ga., assignors to David H. Markovich, Marietta, Ga.
Continuation-in-part of Ser. No. 508,264, Jul. 27, 1995, abandoned. This application Jan. 16, 1996, Ser. No. 587,370
Int. Cl.[6] E04G *5/02*
U.S. Cl. 182—107 **10 Claims**



1. A ladder arrangement for stabilizing ladders disposed against structures, the ladder arrangement comprising:

a ladder;

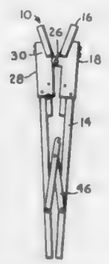
a gutter having a rod-like member extending between an outer upright side member of said gutter to an inner upright side member of said gutter; and

a safety apparatus securing said ladder to said gutter, said safety apparatus comprising:

a ladder engagement side member comprising a substantially planar panel having an opening extending from a distal edge of said panel to an internal area of said panel, said opening having a ladder rail of said ladder extending therethrough; and

a structure engagement side member connecting to and extending at a transverse angle from said ladder engagement side member, said structure engagement side member being substantially planar, and comprising an aperture extending from a distal edge of said structure engagement side member to an internal area of said structure engagement side member said aperture having said rod-like member extending therethrough.

5,628,382
COLLAPSIBLE SAWHORSE
Dennis R. Hill, 40 E. Hyde Park Ave., St. Joseph, Mo. 64504
Filed Sep. 29, 1995, Ser. No. 536,976
Int. Cl.[6] F16M *11/00*
U.S. Cl. 182—153 **5 Claims**



1. A collapsible sawhorse comprising:

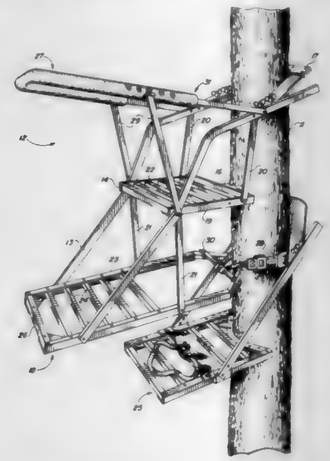
a plurality of brackets, each bracket comprising a pair of bracket members and each member having a jaw region and a base region, the members being interconnected between their respective jaw regions and base regions for pivotal movement between a deployed position, wherein the jaw regions are held in close spatial proximity and the base regions are relatively spaced apart, and a collapsed position, wherein the base regions are held in relatively close spatial proximity and the jaw regions are relatively spaced apart;

a plurality of legs, at least one leg being mounted to each base region of each bracket member for supporting the brackets above a surface;

locking means coupled with the legs for maintaining the legs in position when the bracket members are in the deployed position, said means being moveable contemporaneously with the legs when the bracket members are moved between the deployed position and the collapsed position: and

a pair of crossbars, each crossbar being constructed of a conventional 1 inch wooden plank rigidly mounted only to the front surface of a jaw region of each bracket member so as to be completely independent of the other crossbar and supported by a respective bracket in generally parallel disposition to the other crossbar and whereby, when the brackets are in the deployed position, the crossbars firmly abut one another so that forces applied to one crossbar are also applied to the other crossbar when an object is supported on the sawhorse, and when the brackets are in the collapsed position, the crossbars move away from one another and are each independently supported by said brackets, there being no direct connection between said crossbars.

5,628,383
CLIMBING TREE STAND
Ray G. McIntyre, Grand Island, Fla., assignor to Warren & Sweat Manufacturing Company, Grand Island, Fla.
Filed Sep. 10, 1993, Ser. No. 119,959
Int. Cl.[6] A47C *9/10*
U.S. Cl. 182—187 **4 Claims**



1. A tree stand for climbing a tree and the like, having a seating unit and climbing aid wherein said seating unit comprises:

(a) a main frame, extending outward from the tree;

(b) a seat pivotally mounted to said main frame;

(c) a first engagement means, mounted to said seat, for engagement with the tree;

(d) a second engagement means, mounted to said main frame above said seat, to surround and engage the rear of the tree above the first engagement means, whereby said first and second engagement means, contact with the tree facilitates the climbing of said tree;

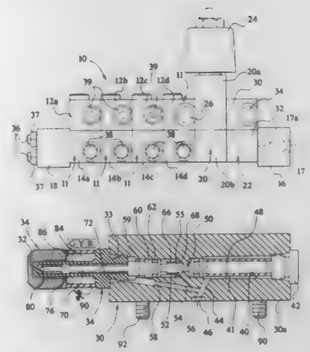
(e) a platform mounted to said main frame distal said second engagement means in spaced relation to said tree, said platform having a pair of parallel members mounted to the bottom of the main frame and a platform section mounted intermediate said parallel members adjustable along the longitudinal axis of said parallel member; and

(f) means, mounted to said platform, to secure the platform against the tree.

5,628,384
MODULAR FILTER SECTION FOR PROGRESSIVE DIVIDER VALVE
James R. Mismas, Concord Township, Ohio, assignor to Lubriquip, Inc., Cleveland, Ohio
Filed Apr. 24, 1996, Ser. No. 637,216
Int. Cl.[6] F16N *27/00*
U.S. Cl. 184—7.4 **18 Claims**

1. A distributor valve for distributing lubrication to multiple lubrication users, comprising:

a plurality of feeder blocks, each having a reciprocating piston for reciprocation to deliver a quantity of lubricating oil to a lubrication user, said feeder blocks arranged in a stacked arrangement attached together; and

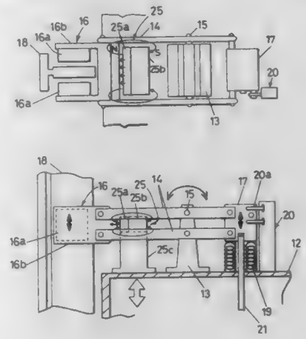


a filter block attached to said plurality of feeder blocks at a position in the stacked arrangement, said filter block comprising a bore therein closed by an external plug, and a filter element fit within said bore and contained therein by said plug, said filter block having an inlet for receiving lubricating oil and an outlet for communication of that lubricating oil into a next adjacent one of said plurality of feeder blocks, and said filter element arranged between said inlet and outlet.

9. A filter for use in a modular lubrication distributor valve, the distribution valve having a plurality of stacked feeder blocks, each flow connected to a lubrication user and having means for directing a preselected amount of lubrication to the user, comprising:

a filter block mounted to said plurality of filter blocks at a position along said stack of feeder blocks, said filter block comprising a bore therein closed by an external plug, and a filter element fit within said bore and held therein by said plug, said filter block having an inlet for receiving lubricating oil and an outlet for communication of that lubricating oil into said plurality of feeder blocks, and said filter element arranged between said inlet and outlet.

5,628,385
ELEVATOR OVERSPEED PROTECTION APPARATUS
Takashi Yumura, and Kazumasa Ito, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 18, 1995, Ser. No. 544,842
Claims priority, application Japan, Jul. 26, 1995, 7-190922
Int. Cl.[6] B66B *5/04*
U.S. Cl. 187—373 **15 Claims**



1. An elevator overspeed protection apparatus comprising:

a conductor arranged and fixed along a running direction of a car in an elevator path;

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a first magnetic circuit being movable in the proximity of said conductor and having a magnetic path passing through said conductor;

a conversion apparatus for converting a force which functions to said first magnetic circuit by eddy currents generated in said conductor when said car runs into a displacement of said first magnetic circuit in the running direction of said car; and

a brake apparatus for stopping said car in response to the displacement of said first magnetic circuit in the running direction of said car obtained by conversion by said conversion apparatus,

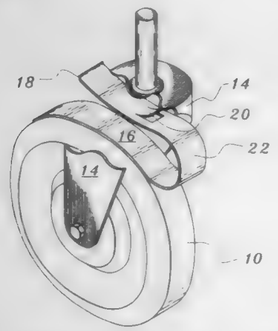
wherein said conversion apparatus displaces said first magnetic circuit in a small distance or does not displace said first magnetic circuit when the speed of said car is low and displaces said first magnetic circuit in a large distance when the speed of said car rises higher than a predetermined speed.

5,628,386

WHEEL RESTRAINER FOR SHOPPING CARTS

Robert W. England, Rt. 1, Box 6-C, Ravenna, Tex. 75476

Filed May 20, 1996, Ser. No. 650,239
Int. Cl.[6] B60B *33/00*
U.S. Cl. 188—1.12 **7 Claims**



1. A combination of a restrainer and a shopping cart frame having a wheel, comprising:

a compressible curved strip of resilient metal having a first end, a second end, and a curved midsection,

a straight portion adjacent said first end,

said straight portion adjacent said first end having means for locking said restrainer into engagement with a frame supported by an axle of said shopping cart wheel,

a curved portion adjacent said second end to resiliently press against a perimeter of said wheel to retard the rotation of said wheel, and

said strip of metal being compressed between said frame supported by an axle of said wheel and a surface of said wheel so that said curved portion exerts a force against said surface of said wheel.

5,628,387

INFINITELY SELF-ADJUSTING MECHANICAL BRAKE

Wayne G. Schantzen, Thief River Falls, Minn., assignor to Arctco, Inc., Thief River Falls, Minn.

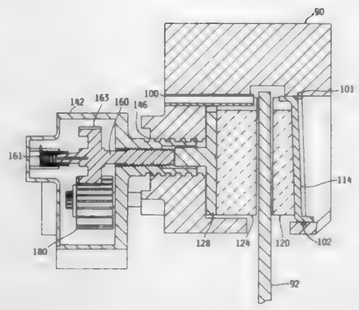
Continuation of Ser. No. 269,563, Jul. 1, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,735
Int. Cl.[6] F16D *55/02*
U.S. Cl. 188—71.9 **6 Claims**

1. A method of adjusting a mechanical brake system, comprising the steps of:

a) providing a brake disk;

b) providing a brake pad adjacent to a portion of said brake disk;

c) providing a brake pad piston adjacent to said brake pad;



d) providing a brake actuator adjacent to said brake pad piston for initiating and regulating the amount of braking by said brake pad on said brake disk;

e) providing a brake adjuster rotatably connected to said brake actuator for automatically and infinitely adjusting the relationship between said brake actuator and said brake pad piston through use of a torsion spring;

f) holding a brake idler gear with an idler gear stop when the brake actuator is not engaged;

g) activating said brake lever so as to rotate the actuator housing;

h) urging the actuator housing toward the brake pad piston;

i) pushing the brake pad piston toward said brake pad and said brake pad toward said brake disk with an actuator housing thread;

j) limiting the actuator housing movement toward the brake disk;

k) releasing said brake idler gear held by said idler gear stop when said brake actuator is engaged;

l) urging the actuator housing away from the brake pad piston by action of a return spring when the brake lever is disengaged; and

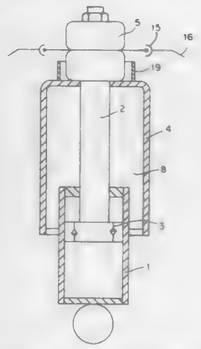
m) limiting the actuator housing movement away from the brake pad piston.

5,628,388

HYDRAULIC SHOCK ABSORBER OR SPRING LEG FOR MOTOR VEHICLES

Rolf Angermann, Ennepetal, Germany, assignor to Fried. Krupp AG Hoesch-Krupp, Essen, Germany

Filed Jul. 11, 1995, Ser. No. 500,696
Int. Cl.[6] F16F *9/54*
U.S. Cl. 188—321.11 **21 Claims**



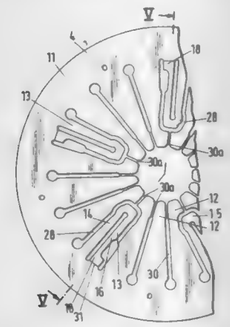
1. A hydraulic shock absorber for motor vehicles, comprising a cylinder and a piston with a piston rod; said cylinder containing fluid, said piston traveling back and forth inside said cylinder on an end of said piston rod; said piston rod extending through a package of gaskets maintaining said piston rod aligned and sealing said cylinder; a projecting-bolt joint, said piston rod being attached to a vehicle body by said projecting-bolt joint; said joint including an automatic snap-together attachment to said vehicle body and resiliently yielding components suppressing impact and vibration by said automatic snap-together attachment; said joint having at least one spring snapping into a matching rigid part of said vehicle body; spacer means associated with said resiliently yielding components and restricting deformation of said resiliently yielding components after installing said components in place, said spacer means maintaining a distance from abutting surfaces of said spacer means for absorbing shocks and vibrations during operation and preventing premature fatigue of predamaged materials due to loads applied during installation.

5,628,389

FRICTION CLUTCH

Christoph Wittmann, Bühl-Eisental, and Wolfgang Reik, Bühl, both of Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Bühl, Germany

Filed Jun. 7, 1995, Ser. No. 480,646
Claims priority, application Germany, Jul. 20, 1994, 44 25 589.6
Int. Cl.[6] F16D *13/75;13/71;13/50*
U.S. Cl. 192—70.25 **30 Claims**



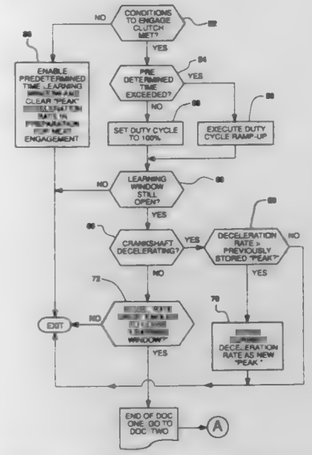
28. A diaphragm spring, comprising an annular main portion; a plurality of prongs extending substantially radially inwardly from said main portion and together forming a plurality of groups spaced apart from each other in a circumferential direction of said main portion; and resilient means including sections alternating with said groups in said circumferential direction and each including a first portion extending substantially radially inwardly from said main portion, a second portion extending substantially radially outward toward but being devoid of a connection with said main portion, and an intermediate portion connecting a radially inner end portion of the first portion with a radially inner end portion of the second portion.

5,628,390

METHOD FOR ADAPTIVELY ENGAGING A CLUTCH FOR A MOTOR

Roland Richardson, Detroit, and Howard W. Krausman, Dexter, both of Mich., assignors to Chrysler Corporation, Auburn Hill, Mich.

Filed Aug. 14, 1995, Ser. No. 515,074
Int. Cl.[6] F16D *27/00*
U.S. Cl. 192—84.1 **8 Claims**



1. A method for controlling a clutch of load receiving power from a power source, the clutch having a rotor and an armature separated by an air gap width, the method comprising the steps of:

receiving a signal to engage the clutch;

moving the armature to the rotor over a predetermined time to reduce the air gap width to zero;

measuring a change in rotational acceleration in the power source; and

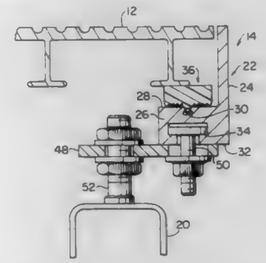
changing the predetermined time such that the chance in rotational acceleration in the power source is reduced.

5,628,391

FLOORPLATE FRAME FOR A PEOPLE MOVING DEVICE

Heinz Völkening, Hespe, and Thomas Lis, Hanover, both of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 23, 1993, Ser. No. 173,744
Int. Cl.[6] B66B *29/08*
U.S. Cl. 198—325 **6 Claims**



1. A floorplate frame for supporting the floorplate of a people moving device, comprising:

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a sill, having an extruded cross-section comprising,

a back;

a body, having a top surface and a bottom surface, said top surface having a first slot, and said bottom surface having a second slot; and means for attaching said sill to a structural member of the people moving device;

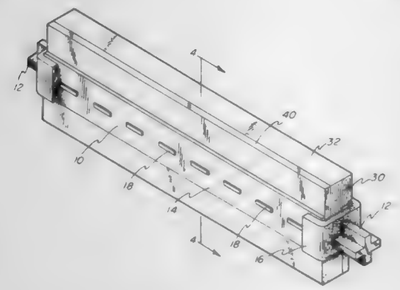
wherein the floorplate lies on said top surface of said sill and is received between said back of said sill.

5,628,392

REVERSIBLE BELT SCRAPER BLADE FOR CLEANING HIGH SPEED CONVEYOR BELTS

Lewis D. Stoll, Port Byron, Ill.; Richard D. Stoll, Huntington, and Jerry A. Roseberry, Onn, both of W. Va., assignors to Richwood Industries, Inc., Huntington, W. Va.

Filed Apr. 17, 1995, Ser. No. 422,802
Int. Cl.[6] B65G *45/00*
U.S. Cl. 198—497 **11 Claims**



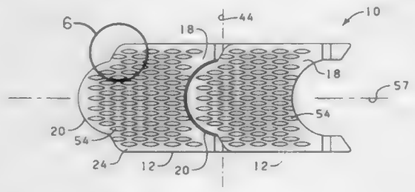
1. A two-sided longitudinally extending belt scraper blade for a conveyor belt scraper which blade is reversible by rotating the blade about its longitudinal axis, particularly adapted for the cleaning of high speed bulk material conveyor belts when positioned in underlying relation adjacent to a surface of a belt to be scraped and extending in a longitudinal direction which is transverse to the direction of belt movement, comprising a body in the form of an elongated rubber block having a first transversely extending belt scraper surface on an upper side of said body and a second transversely extending reserve belt scraper surface on an opposite lower side of said body, said body having a pair of spaced generally parallel side walls extending between said surfaces, said body at each side wall having a longitudinally extending recess formed therein, each of said recesses being generally rectangular in shape and each said recess opening into one of said belt scraper surfaces, a pair of fiberboard backing plates, one each received in each of said recesses, each of said fiberboard backing plates having an outer edge positioned substantially in co-terminus relation with the associated said belt scraper surface, a pair of flat spaced-apart metal frames, one for each of said side walls, extending along said side walls in abutting relation to an associated one of said backing plates, connector means extending transversely of said blade through said body and said backing plates and having opposite ends joined at said metal frames, and support ends connected to longitudinal ends of said metal frames by which said blade may be mounted on a belt scraper in scraping relation to the belt.

5,628,393

CONVEYOR APPARATUS HAVING A NODULAR CONVEYING SURFACE

Dorian F. Steeber, 14 Mountain Vista Rd., Taylors, S.C. 29687, and Robert E. Reaser, 203 Sugar Creek La., Greer, S.C. 29650

Filed Jun. 8, 1995, Ser. No. 488,645
Int. Cl.[6] B65G *15/42*
U.S. Cl. 198—699.1 **12 Claims**



1. A conveyor apparatus, comprising:

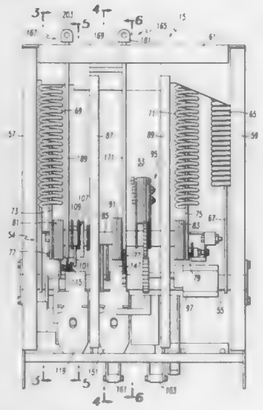
a plurality of link members interconnected in an end-to-end relationship to form a closed loop, each link member having a forward end, a rearward end, a lower side, and an upper side, each of the link members having a plurality of nodules extending from the upper side thereof so as to define a low friction conveying surface whereby the link member freely slides relative to an object disposed on the low friction conveying surface when the link member is caused to move relative to the object.

5,628,394

SWITCHGEAR WITH TOP MOUNTED VERTICAL TAKEOFF TRIPPING AND SPRING RELEASE INTERLOCK

James J. Benke; Francois Marchand, both of Pittsburgh, and John J. Hoegle, Beaver, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 25, 1996, Ser. No. 621,570
Int. Cl.[6] H01H *5/00*
U.S. Cl. 200—400 **11 Claims**



1. Switchgear comprising:

a housing having a front face and an upper face;

separable contacts mounted within said housing; and

an operating mechanism for opening and closing said separable contacts and comprising:

a pole shaft mounted in said housing for rotation;

connecting means connecting to said pole shaft to said separable contacts for opening and closing said separable contacts in response to rotation of said pole shaft;

opening spring means in said housing coupled to said pole shaft to rotate said pole shaft to open said separable contacts when released;

closing spring means in said housing coupled to said pole shaft to rotate said pole shaft to close said separable contacts and to charge said opening spring means when released;

means for charging said closing spring means;

first spring release means accessible from said front face of said housing for releasing said closing spring means;

second spring release means accessible from said front face of said housing for releasing said opening spring means;

first top mounted spring release means accessible at said upper face of said housing for releasing said closing spring means from said upper face; and

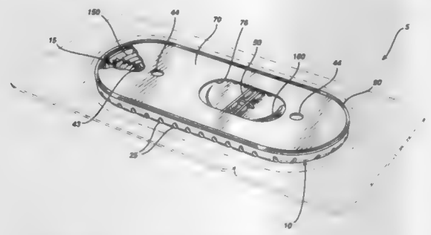
second top mounted spring release means accessible at said upper face of said housing for releasing said opening spring means from said upper face.

5,628,395

SUTURE TRAY PACKAGE HAVING GROOVED WINDING SURFACE

Robert A. Daniele, Flemington; Anthony Esteves, Somerville; Martin Sobel, Flemington, all of N.J.; Robert J. Cerwin, Pipersville, Pa.; Marvin Alpern, Glen Ridge, and Joseph S. Siernos, Whitehouse Station, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jun. 23, 1995, Ser. No. 494,647
Int. Cl.[6] A61B *17/06*
U.S. Cl. 206—63.3 **14 Claims**



1. A package for a suture, comprising:

a flat base member having an outer periphery, a top and a bottom;

first and second hub members extending from the top of the base member;

an outer wall extending from the base member about the periphery of said base member, said outer wall having an inner surface, an outer surface and a top;

a plurality of suture spoke members extending from the top of the base member, the suture spoke members connecting each hub member with the outer wall;

at least one rib member extending from the base member, each rib member connecting opposed sections of the outer wall;

a plurality of grooves in each spoke member and in each rib member, the grooves forming a suture channel;

a flat lid member having a periphery; and,

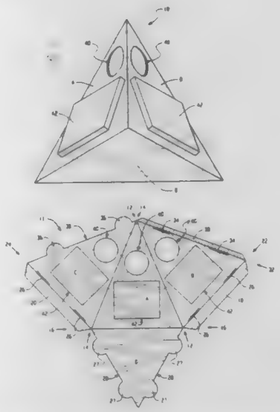
a closure means for securing the lid member to the top of the outer wall.

5,628,396

FOLDABLE COMBINED RECEPTACLE AND ADVERTISEMENT DISPLAY

Douglas S. Weiner, Twinsburg, Ohio, assignor to Pyram-Ad Corporation, Twinsburg, Ohio

Filed Mar. 9, 1995, Ser. No. 401,415
Int. Cl.[6] B65D *5/00*
U.S. Cl. 206—216 **3 Claims**



1. A foldable advertising display stand and receptacle in the shape of a pyramid, comprising,

a first triangular pyramid wall,

a second triangular pyramid wall attached along a fold line to a first edge of the first pyramid wall,

a third triangular pyramid wall attached along a fold line to a second edge of the first pyramid wall, and

a triangular pyramid base attached along a fold line to a third edge of the first pyramid wall,

each of said triangular walls foldable along respective fold lines and relative to an attached wall to form a pyramid, each of said triangular walls and base having three linear edges,

edges of walls abutting and not connected by a fold line lockingly engageable in a pyramidal configuration,

peripheral flaps which extend from linear edges of the second and third triangular walls,

locking tabs which extend from a linear edge of the third triangular wall and from two linear edges of the triangular pyramid base,

locking tab insertion slots in the second and third triangular walls adjacent peripheral flaps which extend from linear edges of the second and third triangular walls,

the locking tabs dimensioned for insertion into and locking engagement with corresponding locking tab insertion slots in the second and third triangular pyramid walls,

an unobstructed opening in at least one of the pyramid walls, the opening having boundaries which are within the linear edges of the wall, and

an article attached to at least one of the pyramid walls, the article being in the form of a tablet of adhesively attached papers.

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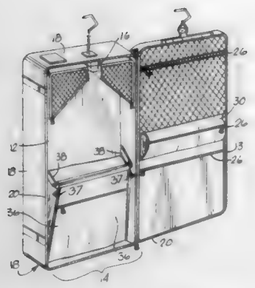
GARMENT BAG WITH CYLINDER-SHAPED PACKING COMPARTMENTS

Soojung Ham, Providence, R.I., assignor to Samsonite Corporation, Denver, Colo.

Filed Mar. 2, 1995, Ser. No. 397,524
Int. Cl.[6] A45C *3/00;5/12*
U.S. Cl. 206—287.1 **4 Claims**

1. In a flexible garment bag comprising an access panel hingeably connected to a main packing compartment for receiving

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hanging garments, said garment bag foldable from an open to a folded position and having an overall width dimension adequate to accommodate the width of the hanging garments and having a height dimension adequate to accommodate the height of the hanging garments, said access panel foldable medially at a fold line at the midpoint of the height dimension and said garment bag having a carrying device such as a handle grip attached across a central portion of said packing compartment at said midpoint of the height dimension, the main packing compartment including a means for holding hangers, and the access panel releasably fastened to the main packing compartment to permit garments on hangers to be inserted into the main packing compartment for transport, the improvement comprising at least one cylindrical shaped packing compartment disposed upon the interior of the access panel and comprising a smoothly curving front surface protruding into said main packing compartment and positioned to engage said smoothly curving surface against at least some of the hanging garments, the cylindrical compartment having an axis extending across the width dimension of the garment bag, and having a circumference dimension large enough to accommodate small pieces of clothing, and having an opening through which such small pieces of clothing may be inserted for transport, wherein the axis of the cylindrical shaped packing compartment extends across said midpoint of the height dimension at the fold line so that the cylindrical shaped packing compartment is positioned substantially symmetrically about the fold line and between the hanging garments and the access panel, with the operable opening being positioned in a side of the cylindrical shaped packing compartment opposite from the access panel, and the hanging garments drape over the cylindrically shaped packing compartment and across the smoothly curving surface when the cylindrical shaped packing compartment is full of small pieces of clothing and the garment bag is in the folded position.

5,628,398

ANTHROPOMORPHIC TRAVEL SYSTEM

W. Shaun Jackson, 301 Golfview La., Ann Arbor, Mich. 48103

Filed Jun. 30, 1995, Ser. No. 496,951

Int. Cl.[6] A45C *5/12;13/28;* **B65D** *85/18*

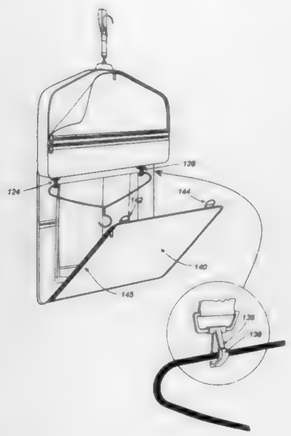
U.S. Cl. 206—287.1 **9 Claims**

1. A travel system, comprising:

a fillable module constructed of a flexible sheet material, the module having a back surface, a front surface and a surrounding edge defining a fillable volume, the front surface including means for gaining access to the interior of the volume,

the module further including an upper portion with a centralized upper apex area with carrying means pivotably attached thereto, the edges on either side of the apex area sloping gradually downwardly, resulting in an outer module volume which, when sufficiently filled, approximates the upper chest and shoulder areas of a human form, the bottom edge of the module defining a horizontal fold region immediately therebelow;

a flexible organizer panel extending downwardly from the back surface of the fillable module, the organizer panel including a plurality of user-accessible pockets;



an outer covering having upper and lower portions and a length sized to enclose the fillable module and flexible organizer panel; and

means for releasably attaching the upper and lower portions of the covering when brought proximate to one another upon folding along the horizontal fold region, thus enabling a coat or like garment to be placed over the resulting human form and folded in a manner which minimizes wrinkling of the garment during travel.

5,628,399

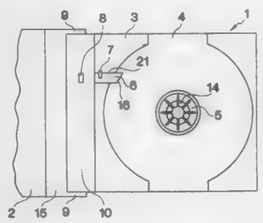
INDICATING CD CASE INSERT

John R. Engen, 3721 Faulkner Dr., Apt. 309, Lincoln, Nebr. 68516

Filed Nov. 27, 1995, Ser. No. 562,748

Int. Cl.[6] B65D *85/30;85/00*

U.S. Cl. 206—308.1 **11 Claims**



1. An insert for an information recording disc case, said case having a base in which said insert is mounted, and a cover for protecting an information recording disc placed in said case, said insert comprising:

a base member having a central circular aperture for receiving an information recording disc,

a locking means for securing said information recording disc mounted in said central circular aperture,

indicating means mounted adjacent said central circular aperture for indicating the presence of an information recording disc in said disc case when said cover for said disc case is closed.

5,628,400

HOLDING DEVICE FOR RECEIVING TOOLS

Emil Feder, Seewjinenstr. 2, CH-3930 Visp, Switzerland

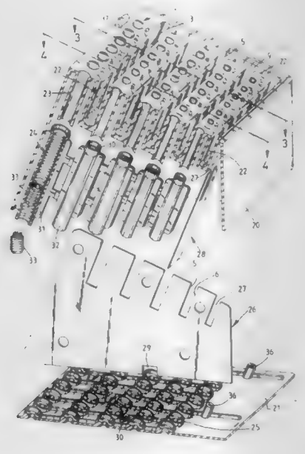
PCT No. PCT/DE94/00424, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/23909, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 15, 1994, Ser. No. 360,835

Claims priority, application Germany, Apr. 21, 1993, 43 13 247.2

Int. Cl.[6] B65D *85/24*

U.S. Cl. 206—379 **20 Claims**



1. An article holder, for tools which have cylindrical or polygonal shafts of different dimensions, said article holder comprising:

a housing having an upper section and a base member,

at least one pair of rows of article receiving bores of different cross-sectional area in said housing upper section for accommodating respective articles, said article receiving bores extending from said upper section towards said base member;

at least one pair of first channels in said upper section, said at least one pair of first channels associated with and extending generally parallel to said at least one pair of rows of receiving bores;

gauge means including a plurality of gauging elements respectively associated with the bores of said at least one pair of rows, said gauging elements being disposed along said at least one pair of first channels in proximity to the respective bores of the said at least one pair of rows, each of said gauging-elements representing a cross-sectional area which at least approximates the cross-sectional area of the respective bore;

at least one second channel in said upper section, said at least one second channel extending transversely with respect to said at least one pair of first channels, and opening to said at least one pair of first channels, said second channel including gauging means adjacent at least one of said pair of rows of article receiving bores, for defining a cross-sectional area which at least approximates the cross-sectional area of the largest article receiving bore in said at least one row; and

at least one receiving tube having a threaded bore aligned with at least one of the article receiving bores of said at least one pair of rows as an extension thereof.

10. An article holder, for tools which have cylindrical or polygonal shafts of different dimensions, said article holder comprising:

a housing having an upper section and a base member,

at least one pair of rows of article receiving bores of different cross-sectional area in said housing upper section for accommodating respective articles, said article receiving bores extending from said upper section towards said base member;

at least one pair of first channels in said upper section, said at least one pair of first channels associated with and extending generally parallel to said at least one pair of rows of receiving bores;

gauge means including a plurality of gauging elements respectively associated with the article receiving bores of said at least one pair of rows, each of said gauging elements representing a cross-sectional area which at least approximates the cross-sectional area of the respective bore, each of said gauging elements being disposed in a pair of gauging element slots, said pairs of slots being disposed along at least one of said at least one pair of first channels, each slot of said pair of slots being disposed on an opposite side of said at least one of said at least one pair of first channels, said slots being located in proximity to the respective bores of the said at least one pair of rows;

at least one second channel in said upper section, said at least one second channel extending transversely with respect to said at least one pair of first channels, and opening to said at least one pair of first channels, said second channel including gauging means adjacent at least one of said pair of rows of article receiving bores, for defining a cross-sectional area which at least approximates the cross-sectional area of the largest article receiving bore in said at least one row; and

at least one receiving tube having a threaded bore aligned with at least one of the article receiving bores of said at least one pair of rows as an extension thereof.

5,628,401

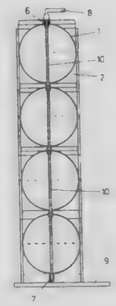
STACKABLE BEER CONTAINER WITH FLUID COUPLING

Franciscus Broeders, Dongen, Netherlands, assignor to Allied Breweries Nederland B.V., CA Breda, Netherlands

Continuation of Ser. No. 495,887, Jun. 28, 1995, abandoned. This application Jul. 24, 1996, Ser. No. 685,878

Int. Cl.[6] B65D *21/032*

U.S. Cl. 206—509 **11 Claims**



1. A beer container comprising a metal, pressure-resistant barrel for beer and a block-shaped housing surrounding the barrel, characterized in that the housing has a bottom surface whose dimensions correspond to those of a conventional crate for beer bottles, that the housing, at the top and bottom sides thereof, comprises means for enabling it to be stacked with housings of corresponding beer containers and that each barrel comprises connecting means for enabling the interior thereof to be coupled with the interior of the barrel of a superjacent and/or subjacent container.

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5,628,402

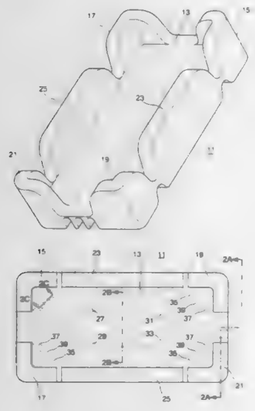
GAS-CONTAINING PRODUCT SUPPORTING STRUCTURE

Robert G. Dickie, and Michael D. Clee, both of Newmarket, Canada, assignors to Intepac Technologies Inc., Toronto, Canada

Continuation of Ser. No. 196,792, Feb. 15, 1994, which is a continuation of Ser. No. 128,265, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 851,333, Mar. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 612,239, Nov. 5, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 471,962

Int. Cl.[6] B65D *81/02;85/30*

U.S. Cl. 206—521 **19 Claims**



13. A supporting structure for positioning and supporting a product during storage and shipping, wherein the product to be supported has predetermined external dimensions; and wherein said supporting structure comprises:

a semi-rigid and self-supporting polymer resin gas-containing bladder incorporating a plurality of discrete inflatable chambers and at least one means for fluid communication between each of said chambers, wherein at least one of said plurality of discrete chambers is unsealed and is open to the ambient atmosphere;

wherein said bladder has a preformed product receiving cavity with a predetermined configuration which is independent of pressure within said bladder, and where said predetermined configuration is such as to fit at least a portion of said predetermined external dimensions of the product to be supported;

wherein said ass-containing bladder is deformable and substantially retains its preformed configuration under static load-bearing conditions; and

wherein said gas-containing bladder is deformable and sufficiently resilient, so as to substantially retain its preformed configuration under dynamic load-bearing conditions, so as to minimize accelerative or decelerative forces from forces applied to said gas-containing bladder and thereby so as to minimize transmission of kinetic energy to said product while under dynamic load-bearing conditions.

5,628,403

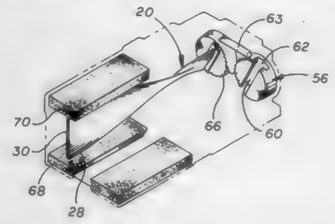
UNIVERSAL TURBINE BLADE PACKAGING CONTAINER

William A. Thomas, Palm Springs, and José L. Ordonez, Van Nuys, both of Calif., assignors to Bill Thomas Associates, Inc., Van Nuys, Calif.

Filed Jan. 16, 1996, Ser. No. 586,250

Int. Cl.[6] B65D *1/107*

U.S. Cl. 206—523 **18 Claims**



1. A universal turbine blade pair case assembly for turbine blades, each turbine blade having a root for mounting the turbine blade on a turbine engine, and an outwardly extending blade area having a leading blade edge and an opposite trailing blade edge, the opposite edges defining a transverse chord at an angle relative to the root, said assembly comprising:

a housing including a base portion and a lid portion for securing to said base portion, said housing having first and second longitudinally extending spaces for holding first and second turbine blades, each longitudinally extending space having a first end and an opposite end;

a pair of rotatable turbine blade root retainers, rotatably mounted within said housing, with one of said retainers being mounted at the first end of the first longitudinally extending space and the other retainer being mounted at the first end of the second longitudinally extending space;

each said retainer having a transverse slot for receiving the root of a turbine blade; and

a cushioned support disposed at the end of each of said longitudinally extending spaces opposite from the end where the retainer is mounted;

whereby pairs of turbine blades may be mounted together in said case assembly and protected against damage during storage or transport of said turbine blades.

5,628,404

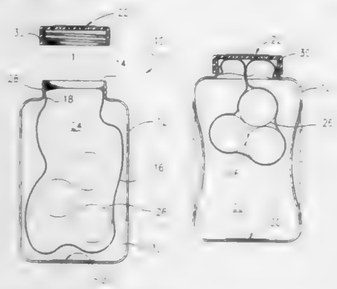
PORTABLE SELF-CONTAINED VACUUM PACKING DEVICE

Glen Hendrix, 1503 Auline La., Houston, Tex. 77055

Filed Aug. 19, 1996, Ser. No. 699,541

Int. Cl.[6] B65B *31/02*

U.S. Cl. 206—524.8 **20 Claims**



1. A packing device comprising:

an outer flexible container having an opening formed therein;

an inner flexible container having an opening formed therein, said inner flexible container being affixed to an interior of said outer flexible container;

a first one-way valve means affixed to said outer flexible container for allowing air to pass into the interior of said outer flexible container and exterior of said inner flexible container; and

a second one-way valve means interactive with said inner flexible container for allowing air to pass outwardly of an interior of said inner flexible container.

5,628,405

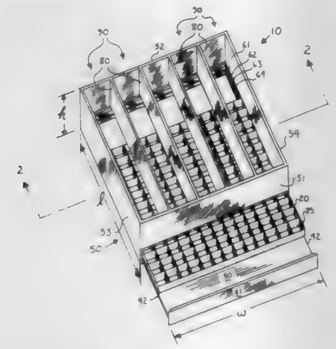
CONTAINMENT APPARATUS WITH PERFORATED SUPPORT PLATFORM

Therese Price, 855 Christiansen Rd., Toledo, Oreg. 97391, and Doc Holliday, Toledo, Oreg., assignors to Therese Price, Toledo, Oreg.

Filed Dec. 8, 1995, Ser. No. 569,791

Int. Cl.[6] B65D *25/04*

U.S. Cl. 206—561 **13 Claims**



1. An apparatus for holding kitchen utensils apart from associated debris, comprising:

a frame having a front wall and back wall connected by opposing side walls, each wall being configured in a planar fashion with a top of each wall being located within a common plane substantially perpendicular to the planes of each wall, and further wherein the planar area of said back wall is greater than that of said front wall such that an opening into said frame is defined at said front wall;

support platform receiving means disposed linearly along the inside of each of said side walls and within a plane parallel to said common perpendicular plane;

a planar perforated support platform translatable by a user along said support platform receiving means from an inserted position where said support platform is contained within the frame and a removed position where said support platform is removed from the frame, said support platform receiving means being positioned such that said support platform is removed and inserted through said opening defined at said front face;

debris tray receiving means disposed linearly along the inside of each of said side walls and within a plane parallel to said common perpendicular plane yet below that of said support platform receiving means and above a bottom portion of said side walls;

debris tray translatable by a user along said debris tray receiving means from an inserted position where said debris tray is contained within the frame and a removed position where said debris tray is removed from the frame, said debris tray receiving means being positioned such that said debris tray is removed and inserted through said opening defined at said front face;

a front plate formed on a front end of said debris tray, said front plate being configured such that when said debris tray is in an inserted position, the front plate is generally flush with said front wall and substantially fills said opening so as to prevent movement of the perforated support platform through the opening; and

a plurality of divider arranged between said front and back walls generally in parallel with said side walls.

5,628,406

SEPARATING APPARATUS AND IMAGE FORMING APPARATUS

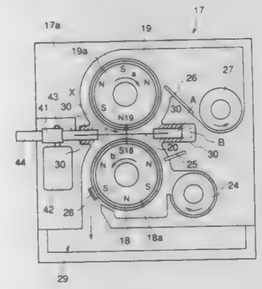
Yasumi Yoshida, Yokohama; Masanari Shirai, Chigasaki; Makoto Tanaka, Tokyo, and Takeshi Aoyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 355,687

Claims priority, application Japan, Dec. 17, 1993, 5-343263; Dec. 5, 1994, 6-300938

Int. Cl.[6] B03C *1/30;* **G03G** *21/00*

U.S. Cl. 209—38 **44 Claims**



1. A separating apparatus for separating a foreign matter from magnetic toner, comprising:

a filter having openings allowing a magnetic toner to pass therethrough;

a vibration generating means for vibrating said filter in a substantially horizontal direction relative to a filter surface of said filter such that the magnetic toner moves in the substantially horizontal direction with the filter; and

a magnetic field generating means for generating a magnetic field for attracting the magnetic toner through said filter in a direction in opposition to the pull of gravity when said filter is vibrating in the substantially horizontal direction.

5,628,407

METHOD AND APPARATUS FOR SEPARATION OF MAGNETICALLY RESPONSIVE SPHERES

Douglas C. Gilbert, Ledyard, and Peter G. Cable, Old Lyme, both of Conn., assignors to Bolt Beranek and Newman, Inc., Cambridge, Mass.

Filed Dec. 5, 1994, Ser. No. 349,627

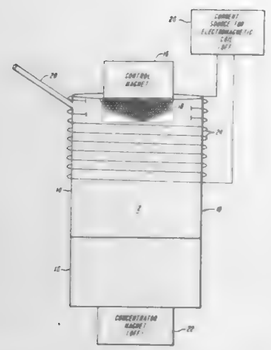
Int. Cl.[6] B03C *1/00;* **B01D** *35/06*

U.S. Cl. 209—214 **17 Claims**

1. A method of separating at least one homogeneous population of magnetically responsive bead aggregations from a non-homogeneous population of magnetically responsive beads including said at least one homogeneous population of magnetically responsive bead aggregations and other magnetically responsive beads admixed in a fluid in a container having a first portion and a second portion, said method comprising the steps of:

controlling said non-homogeneous population of magnetically responsive beads admixed in said fluid using a control mag-

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netic field to retain said non-homogeneous population of magnetically responsive beads in said first portion of said container;

removing said control magnetic field;

generating an electromagnetic impulse to excite and de-cluster said non-homogeneous population of magnetically responsive beads admixed in said fluid to effect an initial separation of said non-homogeneous population of magnetically responsive beads and to effect a first rate of motion of said non-homogeneous population of magnetically responsive beads in a first direction away from said first portion of said container and toward said second portion of said container;

applying a magnetic field to said non-homogeneous population of magnetically responsive beads to effect a second rate of motion of said other magnetically responsive beads and a third rate of motion of said at least one homogeneous population of magnetically responsive bead aggregations; and

concentrating said at least one homogeneous population of magnetically responsive bead aggregations at at least a first concentrator magnet.

5,628,408

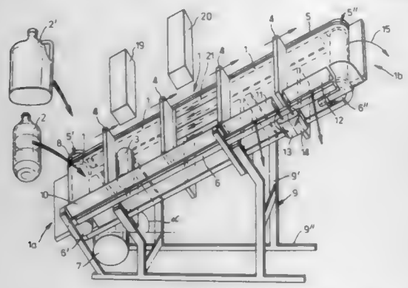
DEVICE FOR HANDLING EMPTY BEVERAGE CONTAINERS

Tore Planke; Tor Sjøwall, both of Oslo, and Asbjørn Bendiksen, Asker, all of Norway, assignors to Tomra Systems A/S, Asker, Norway

Filed May 19, 1995, Ser. No. 446,014

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—522 **7 Claims**



1. A device for handling empty beverage containers comprising, a longitudinally extending supporting path having a first end, a second end and a longitudinal edge between said first and second ends, pushing means provided at said supporting path for moving along said supporting path empty beverage containers having a longitudinal axis, said pushing means including a plurality of interlinked, parallel, spaced apart, pushing members positioned to extend transversely of said supporting path to accommodate said containers with their longitudinal axis disposed substantially parallel to said supporting path and substantially parallel to said pushing members, drive means for moving said pushing members along said supporting path, said supporting path in its longitudinal direction and at least over part of its longitudinal length forming a first inclination with the horizontal, said supporting path in its transverse direction and at least over part of a longitudinal distance of said supporting path forming a second inclination with the horizontal, said supporting path having container bottom supporting wall means along at least part of the longitudinal edge of said supporting path, and exit means for discharging a specific container from said supporting path at a specific location along said supporting path, said exit means being selected from at least one of the group of, exit means located in said supporting path, exit means located in said container bottom supporting wall means, and exit means located at the second end of said supporting path.

5,628,409

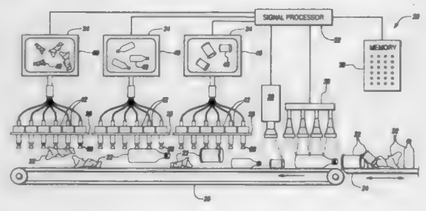
THERMAL IMAGING REFUSE SEPARATOR

Daniel W. Thomas, Washougal, Wash., assignor to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 382,351, Feb. 1, 1995, abandoned. This application Jun. 20, 1996, Ser. No. 667,288

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—577 **14 Claims**



1. A method for separating a stream of municipal waste into its constituent components, the method comprising the steps of:

distributing and spacing apart a stream of municipal waste items on a conveyor;

irradiating with infrared radiation the stream of municipal waste items with a source of infrared radiation positioned above the conveyor as the stream of municipal waste passes under said infrared source;

imaging with an infrared camera the stream of municipal waste downstream of the infrared source and generating an infrared video signal corresponding to said waste;

processing the signal from the video camera to produce at least one image corresponding to that portion of the video signal which corresponds to locations on the conveyor of waste items having temperatures within a particular temperature range;

controlling grippers in an array of grippers positioned over the conveyor downstream of the camera, to cause actuation and extension toward the conveyor of those grippers in the array corresponding in position to the location of waste items having imaged temperatures within a particular temperature range and griping said waste items; and

reciprocating the array of grippers in at least a direction transverse to the direction of the conveyor and releasing the gripped items, so as to selectively remove items of municipal waste from the conveyor having temperatures imaged within a particular temperature range.

5,628,410

CLASSIFYING OR SORTING

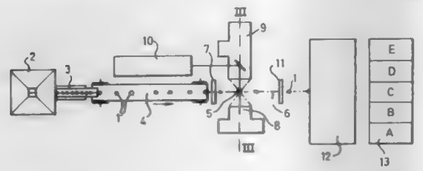
Martin P. Smith, Berkshire, and Robin W. Smith, Surrey, both of England, assignors to Gersan Establishment, Vaduz, Liechtenstein

Division of Ser. No. 107,813, Nov. 5, 1993, Pat. No. 5,505,313. This application Oct. 24, 1995, Ser. No. 547,896

Claims priority, application United Kingdom, Feb. 20, 1991, 9103552

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—579 **27 Claims**



1. A method of classifying an object comprising:

feeding the object in a free trajectory which is not substantially vertical and which lies in a substantially vertical plane;

irradiating the object with radiation in an irradiation zone which lies substantially in said substantially vertical plane, the trajectory passing through the irradiation zone, the irradiation zone having a length in said substantially vertical plane substantially greater than its width in said substantially vertical plane; wherein the ratio of the length of the irradiation zone in said substantially vertical plane to its width in said substantially vertical plane is greater than about 5:1; and

examining the radiation emitted by the object, and thus deriving the class of the object.

5,628,411

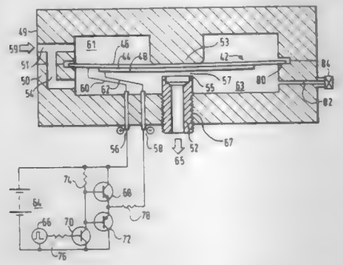
VALVE DEVICES FOR USE IN SORTING APPARATUS EJECTORS

Stewart J. Mills, Essex, and Kenneth C. Henderson, London, both of England, assignors to Sortex Limited, London, England

Filed Dec. 1, 1994, Ser. No. 347,957

Int. Cl.[6] B07C *5/00:* **F16K** *31/02*

U.S. Cl. 209—644 **20 Claims**



1. A pneumatic ejector for sorting apparatus in which material to be sorted is directed in a stream following an aerial path, and rejected material is removed from the stream by air pulses from such ejectors, which ejector has a housing defining a pressure chamber; a diaphragm mounted in the housing and comprising a piezoelectric element; an input for connection to a source of pressurised gas, which input communicates with the chamber on both sides of the diaphragm; and an output port connecting the chamber on one side of the diaphragm to a delivery duct terminating in an ejector nozzle, an area of the diaphragm being disposed in juxtaposition with the output port and the diaphragm being elastically deformable by differential input gas pressure over said area thereof such that said area closes the output port with said differential pressure balanced by elastic forces in the diaphragm such that the exerting pressure between the diaphragm and the periphery of the output port is substantially zero, the ejector including an electric circuit selectively operable to activate the piezoelectric element to withdraw said area of the diaphragm from the output port to the admit gas from the pressure chamber to the output port, and thence to the ejector nozzle.

5,628,412

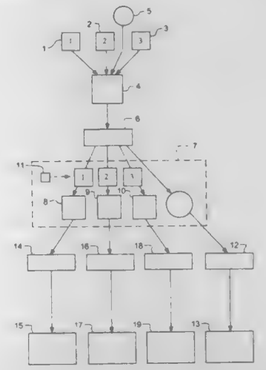
METHOD OF WASTE RECYCLING

John R. Hulls, Point Reyes, Calif., assignor to Altamont, Inc., Key Biscayne, Fla.

Filed Nov. 23, 1994, Ser. No. 344,814

Int. Cl.[6] B07C *7/04*

U.S. Cl. 209—702 **25 Claims**



1. A waste handling method comprising the steps of:

(a) separating recyclables into a plurality of bags with recyclables of a particular classification being placed in each bag, each said bag having coding means so that the contents of said bags can be identified;

(b) placing said bags in a container;

(c) transferring the bags to a compactor vehicle having compacting means thereon;

(d) compacting said bags into compacted bags within said compactor vehicle so that they take up less space;

(e) transporting said compacted bags to a transfer station in said compactor vehicle;

(f) unloading said compacted bags from said compactor vehicle;

(g) separating said bags into groups, each of the groups containing like classifications of recyclables, by using the coding means;

(h) placing bags from a group into a transfer trailer;

(i) transporting said bags from a group to a disposal site away from said transfer station in said transfer trailer;

(j) unloading said bags from a group into an area; and

(k) repeating the steps (a) through (j) until a desired quantity of bags from a group have been accumulated.

5,628,413

MODULAR DISPLAY STAND

Hong-lin Lu, Fullerton; Hsing-min Keng, Palos Verde Estate, both of Calif., and Louis B. Kremer, Newport, R.I., assignors to Jimway, Inc., Bell, Calif.

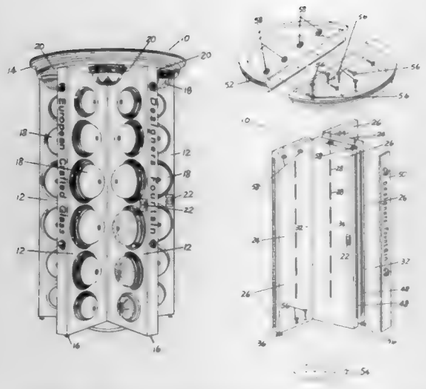
Filed Sep. 20, 1995, Ser. No. 531,102

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—13.1 **21 Claims**

1. A modular display stand for holding a plurality of lighting products comprising:

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a first modular unit having at least two panels joined by a hinge to form a V shape;

a second modular unit having at least two panels joined by a hinge to form a V shape, wherein at least one of the panels of the first modular unit overlaps one of the panels of the second modular unit to form a compartment;

an aperture formed in one of the panels for mounting the lighting products;

a fastener joining the overlapping panels; and

a power source disposed on the first modular unit, connected to the lighting products.

5,628,414

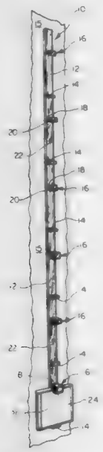
VISUAL DISPLAY RACK APPARATUS

Donald I. Heathcote, 720 E. 750 North, Ogden, Utah 84404

Filed Apr. 17, 1995, Ser. No. 422,477

Int. Cl.[6] A47G *29/00*

U.S. Cl. 211—40 **19 Claims**



1. A visual display rack apparatus in combination with a music container for displaying a front side of said music container adapted to hold a medium on which music is recorded, comprising:

a music container;

said main support member having a length, a width, and a longitudinal axis, the length of the main support member extending along the longitudinal axis;

at least one lower support shelf extending outwardly from the main support member to engage and support a bottom edge of the music container;

at least one upper retention member extending from the main support member, the upper retention member holding a top end of the music container;

a retaining space formed between the lower support shelf and the upper retention member to create an interference fit of the music container between the lower support shelf and the upper retention member to hold the music container firmly in place.

5,628,415

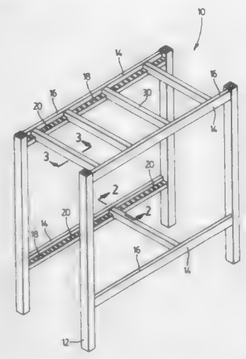
STORAGE RACK AND SAFETY BARS FOR USE THEREIN

Anthony G. Mulholland, Mississauga, Canada, assignor to Econo-Rack Storage Equipment Limited, Mississauga, Canada

Filed Jun. 7, 1995, Ser. No. 475,601

Int. Cl.[6] A47B *43/00*

U.S. Cl. 211—189 **20 Claims**



1. A storage rack to support pallets comprising:

an upright frame structure including at least one pair of generally parallel, laterally spaced support beams;

at least one transverse support member spanning said support beams; and

retaining means acting between said support beams and opposed ends of said at least one transverse support member, said retaining means being in the form of complementary formations on said support beams and said at least one transverse support member including co-operating slots and projections, the projections of said complementary formations extending in different directions such that said at least one transverse support member must undergo torsional deformation to align and engage the formations at its opposed ends with the formations on said support beams.

5,628,416

TRAVELING CRANE WITH TELESCOPING BOOM

Uwe Frommelt, Ehingen, and Hans-Dieter Willim, Unterweiler, both of Germany, assignors to Liebherr-Werk Ehingen, Ehingen, Germany

Filed Dec. 28, 1994, Ser. No. 365,469

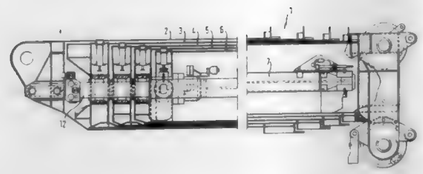
Claims priority, application Germany, Dec. 28, 1993, 43 44 795.3

Int. Cl.[6] B66C *23/70*

U.S. Cl. 212—292 **8 Claims**

5. A traveling crane comprising:

a boom including a plurality of individual telescoping members,



locking bolts biased to hold said telescoping members in locked positions,

a first piston and cylinder unit pivotally mounted on a boom joint member for extending and retracting said telescoping members by coupling bolts provided with the first piston and cylinder unit, the coupling bolts being couplable with receiving means provided with the respective telescoping members,

each of said plurality of individual telescoping members having a single one of said locking bolts at an inner end with a spring of each of said locking bolts being biased in a direction of radial extension of said locking bolts extending from said first piston and cylinder unit into a locking hole located at an inner end or adjacent to an outer end of one of said plurality of individual boom members surrounding another one of said plurality of individual boom members,

a release device arranged on a piston rod of said first piston and cylinder unit, said release device including a second piston and cylinder unit for engaging said locking bolts and releasing said locking bolts from said locked positions to allow said telescoping members to move relative to each other by said first piston and cylinder unit and to release said locking bolts to relock said telescoping members, and

a corresponding locking hole for said single locking bolt of each telescoping member being located in a top side of a surrounding boom member

said coupling bolts provided with the first piston and cylinder unit being arranged perpendicularly to the single locking bolt and the corresponding locking hole of the respective individual telescoping members.

5,628,417

MULTI-START BLOW MOLDED LOCKING BOTTLES

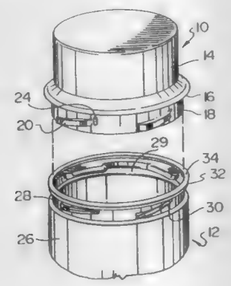
Jacob Van Halteren, 90 Center Street East, Richmond Hill, Ontario, Canada

Filed Apr. 25, 1995, Ser. No. 428,303

Claims priority, application Canada, May 3, 1994, 2122802

Int. Cl.[6] B65D *41/04*

U.S. Cl. 215—44 **17 Claims**



1. A container, comprising:

a multi-start screw cap, including a cap body having an annular side wall, said annular side wall having first inclined screw threads, and a cap top wall disposed above said annular side wall having a sealing surface extending at an angle around its periphery substantially radially outwardly of said annular side wall; and

a threaded neck container, including a neck portion having second inclined screw threads, a flange extending from said neck portion, wherein said flange has a bottom edge extending radially outwardly from said neck portion and a top edge, connected to a distal end of said bottom edge, and extending radially inwardly therefrom, wherein said sealing surface of said cap top wall is compressibly engageable with said top edge of said flange causing said flange to compress, providing a seal therewith,

wherein said first screw threads are cooperatively engageable with said second screw threads thereby providing engagement and effecting a simultaneous seal therewith, whereby said screw cap and said threaded neck container lock into position providing for a liquid tight seal.

5,628,418

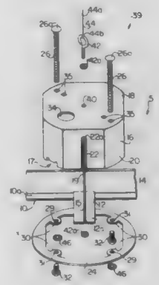
SUSPENDED CEILING FIXTURE MOUNT

Bernard F. Deschamps, and Henry J. Macuga, both of Ware, Mass., assignors to Eclipse Manufacturing, Inc., Ware, Mass.

Continuation of Ser. No. 215,024, Mar. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 995,876, Dec. 23, 1992, abandoned. This application Jun. 28, 1996, Ser. No. 673,367

Int. Cl.[6] H02G *3/08*

U.S. Cl. 220—3.2 **6 Claims**



1. An electric fixture hanging device for hanging an electric fixture from a suspended ceiling supported by an overhead structure, said electric fixture hanging device comprising:

a box having a closed top, an open bottom, and a continuous side wall having a first height;

said side wall having four slots formed therein at 90 degree intervals for engagement with the suspended ceiling and said slots extending inwardly from said open bottom such that said slots extend inwardly from said open bottom by a second height that is less than said first height and wherein said slots have closed upper portions extending upwardly toward said box top, with breakable tongues removably attached to said upper portions of said slots for varying said slot height; and

fixture fasteners for connecting the electric fixture to said box, wherein said fixture fasteners extend from said box top in the direction of said box bottom and are of sufficiently greater length than said first height such that distal ends of said fixture fasteners form connecting means for connecting the fixture to said box.

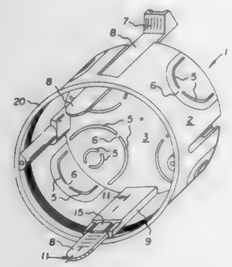
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5,628,419

ELECTRICAL BOX WITH QUICK-MOUNT CLAWS AND PULL STRAPS

Georg Putz, Waldhof 24, A-5441 Abtenau, Austria

Filed Apr. 8, 1996, Ser. No. 642,565
Claims priority, application Australia, Nov. 4, 1994, A2052/94
Int. Cl.[6] H02G 3/00
U.S. Cl. 220—3.3 13 Claims



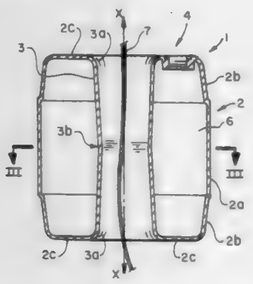
1. An electrical box assembly for mounting in walls, comprising:
a box defining an interior for receiving an electrical appliance and defining an axial direction thereof, said box having sidewalls and guides extending along said sidewalls in the axial direction;
a plurality of pull straps each shiftably guided in a respective one of said guides along the axial direction of the box, each of said pull straps carrying a claw for clamping said box in the wall; and
each of said pull straps being formed with toothing and each of said guides being formed with counter toothing cooperating with said toothing of said pull straps, and each of said guides including a springy tongue carrying said counter toothing.

5,628,420

ROLLABLE CONTAINER

Pieter J. Hendrikse, 93 Johnson Street, Moregloed, Pietersburg, 0699, Transvaal, South Africa

Continuation of Ser. No. 96,163, Jul. 22, 1993, abandoned.
This application Jun. 3, 1996, Ser. No. 656,695
Claims priority, application South Africa, Jul. 22, 1992, 92/5506
Int. Cl.[6] B65D 6/02
U.S. Cl. 220—4.04 6 Claims



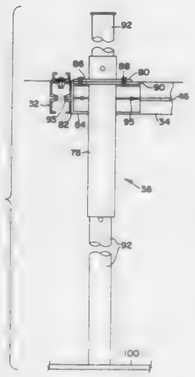
1. A rollable container for storing and transporting a filler material, comprising: a hollow enclosed substantially rigid body, the body being substantially cylindrical with a cylindrical axis, having an elongate passageway extending substantially vertically through the body with the body in the upright position to define an annular-like enclosure substantially around and evenly about the passageway, the enclosure adapted to contain a filler material, the passageway extending substantially along the cylindrical axis to define a tubular inner wall for the annular-like enclosure, the enclosure having an outer wall comprising a hollow cylindrical middle section having a flat cross-section integral with two hollow frustoconical end sections, each end section having flat ends transverse to said cylindrical axis, the two end sections diametrically converging away from the middle section to define a substantially barrel-shaped, annular-like enclosure providing the container with a holding formation as well as a vertical support structure, the holding formation adapted for retaining the filler material and the cylindrical middle section permits rolling and maneuvering the rollable container about the cylindrical axis using an elongated member and the flat ends adapted to permit stackability of adjacent rollable containers thereon, the body being provided with a filler opening for receipt of a filler material and suitable for receiving a closure means.

5,628,421

FLOATING ROOF

Ronald P. Jolly, Magnolia, Tex., assignor to HMT, Inc., Houston, Tex.

Continuation of Ser. No. 360,246, Dec. 20, 1994, abandoned, which is a division of Ser. No. 62,006, May 14, 1993, Pat. No. 5,533,640. This application May 16, 1996, Ser. No. 650,065
Int. Cl.[6] B65D 88/34
U.S. Cl. 220—216 17 Claims



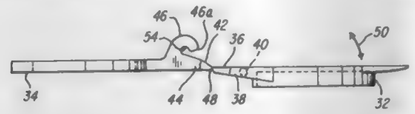
1. A floating roof for use in a storage tank for a liquid product, comprising the combination of:
a roof frame having a plurality of girders;
a plurality of buoyant pontoons coupled to an underside of the roof frame; and
a plurality of support legs capable of supporting the floating roof on a bottom of a storage tank in which the floating roof is used, each of the plurality of support legs being uncoupled from the plurality of buoyant pontoons and being coupled to a different pair of the plurality of girders, jointed at a generally right angle junction, by a support housing assembly, the support housing assembly having vertically spaced-apart upper and lower portions thereof coupled to and extending outwardly from the support leg to upper and lower portions of a pair of vertical outer wall portions intersecting at a generally right angle and each coupled to a different one of the pair of girders.

5,628,422

WINDSHIELD WIPER RESERVOIR SEALING SYSTEM AND METHOD

Robert Garbacik, Jr., Cincinnati, and Richard L. Ponziani, Centerville, both of Ohio, assignors to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed Jul. 1, 1996, Ser. No. 672,948
Int. Cl.[6] B65D 41/32
U.S. Cl. 220—266 21 Claims



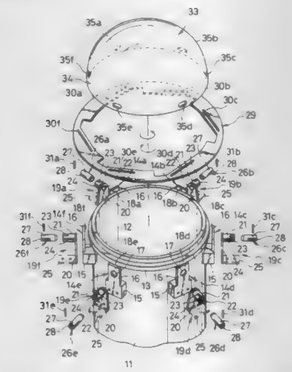
1. A windshield washer cap comprising:
a retention strap for coupling to a washer fluid reservoir, said retention strap comprising a hinge member integrally molded therein;
a cap for mounting to a neck of said reservoir, said cap comprising a second hinge member integrally molded to said cap for hingeably connecting said hinge member to said cap to permit said cap to hinge between an open and a closed position where said cap becomes mounted on said neck;
said retention strap and said cap being a one piece molded construction and comprising a break line therebetween such that, when a predetermined pressure is applied to said retention strap and said cap, said hinge member may be detachably coupled to said second hinge member.

5,628,423

CONTAINER/CLOSURE LOCK DEVICE

Hidezo Yoshino, Tokyo, Japan, assignor to Hirayama Manufacturing Corporation, Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 540,829
Int. Cl.[6] B65D 45/32
U.S. Cl. 220—319 11 Claims



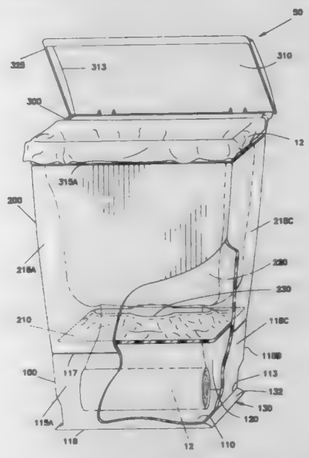
1. A container/closure lock device for locking a cap-type closure fitted to an opening of a container characterized in that the container is provided on an outer surface of a peripheral wall and close to the opening thereof with a bracket having an arm for receiving a wall of the closure in a gap between the arm and the outer surface of the peripheral wall of the container and a through bore formed through the arm of the bracket in order to removably receive a lock pin, that a pin holder having a channel for holding the lock pin is secured to an outer surface of the arm of the bracket, said through bore for removably receiving the lock pin being aligned with the channel for holding a lock pin, that the lock pin is passed through the channel and the corresponding through bore to move into and out of the gap between an inner surface of the arm of the bracket and the outer surface of the peripheral wall of the container, that a rotary ring having a slot for guiding a guide pin is provided and fitted to an outer periphery of the opening of the container with the slot located in alignment with the lock pin, said slot being arranged obliquely so as to intersect a radial line and a circle coaxial with the ring, that the guide pin is made to pass through the slot in the ring and the corresponding lock pin in order to securely link the ring and the lock pin and that the closure is provided on the wall thereof with a lock hole for receiving the lock pin.

5,628,424

TRASH RECEPTACLE WITH BAG HOLDER

Stephen G. Gola, R.R. 3 Box 212A, Coudersport, Pa. 16915

Filed Jan. 11, 1996, Ser. No. 585,118
Int. Cl.[6] B65F 1/06
U.S. Cl. 220—407 15 Claims



1. A trash receptacle with bag holder for storing a plurality of trash bags, trash bag ties and trash, the receptacle comprising:
a base portion having a horizontally oriented bottom panel, the bottom panel is rectangular in shape having four bottom edges, the base portion having a front, a rear and two opposing side walls which extend vertically upwardly from the bottom edges, the side walls attached to each other at right angles and providing an upfacing edge, the walls and the bottom panel together defining a storage space for storing the trash bags;
a body portion having a horizontally oriented bottom panel, said bottom panel of the body portion is rectangular in shape having four bottom edges, the bottom panel of the body portion further having a front, a rear and two opposing side walls which extend vertically upwardly from the bottom edges of the body portion, the side walls of the body portion attached to each other at right angles and each providing an upfacing edge and a downfacing edge, the walls and the bottom panel together defining a storage space for storing trash; and
a lid portion having a front, a rear and two opposing vertically oriented side walls, the walls attached to each other at right angles and providing an upfacing and a downfacing edge, the lid portion having an upfacing lip extending outwardly from the upfacing edge of the side walls, the lid further including a top panel having four top edges with a downfacing lip extending downwardly therefrom, the downfacing lip of the top panel hingeably mounted to the upfacing lip along the rear wall of the lid portion, the top panel pivotable between a vertical, open position for allowing access to the storage space

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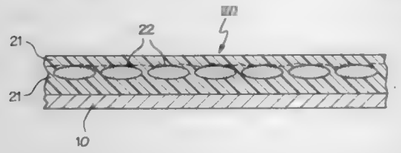
of the body, and a horizontal, closed position for sealing the storage space of the body portion.

5,628,425

COMPOSITE STORAGE TANK HAVING DOUBLE WALL CHARACTERISTICS

Bruce R. Sharp, 321 Ski Way Box 5867, Incline Village, Nev. [illegible]

Filed May 10, 1996, Ser. No. 644,258
Int. Cl.[6] B65D *90/02*
U.S. Cl. 220—414 **7 Claims**



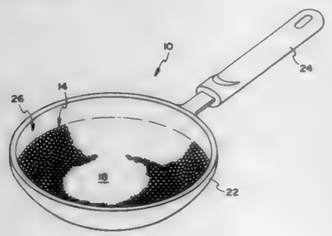
1. A composite storage tank having double wall characteristics, comprising:
(a) a cylindrical-shaped tank wall of a resinous core material and discrete filament bundles extending continuously within the tank wall, wherein the resinous core material encapsulates the filament bundles, yet does not significantly penetrate into the filament bundles so that interiors of the filament bundles are substantially resin-free; and
(b) end caps at each end of the cylindrical-shaped tank wall to form the storage tank.

5,628,426

COOKING DEVICE HAVING HEATABLE WORK SURFACE OF RAISED DOTS

Terence O. Doyle, Perrysburg, and Paul A. LoGiudice, Toledo, both of Ohio, assignors to Commercial Aluminum Cookware Company, Toledo, Ohio

Filed Aug. 16, 1995, Ser. No. 515,802
Int. Cl.[6] A47J *37/00*
U.S. Cl. 220—608 **29 Claims**



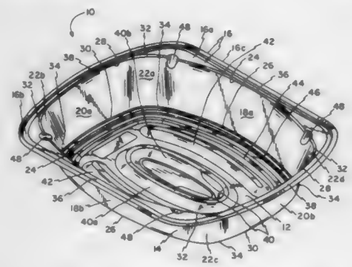
1. A cooking device, comprising:
a) a base;
b) said base including a heat-receiving surface and a heat-conductive surface;
c) said heat-conductive surface being thermally connected to said heat-receiving surface;
d) a plurality of raised dots provided on said heat-conductive surface; and
e) a valley disposed between at least some of said plurality of raised dots;
f) said plurality of raised dots defining a cooking region on said heat-conductive surface;
g) a substantially dot-free supplemental region provided adjacent said cooking region;
h) a transition region disposed between said cooking region and said supplemental region; and
i) ones of said raised dots in said transition region having heights relative to said valley that are highest adjacent to said cooking region and lowest adjacent to said supplemental region.

5,628,427

DISPOSABLE COOKING PAN

Thomas J. Hayes, Wauconda, Ill., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Jun. 7, 1995, Ser. No. 472,491
Int. Cl.[6] B65D *90/00*
U.S. Cl. 220—669 **21 Claims**



1. A disposable cooking pan formed from a single sheet of metal, comprising:
a bottom panel;
a continuous wall panel encompassing said bottom panel and extending upwardly and outwardly from said bottom panel, said continuous wall panel forming a first pair of opposing side walls, a second pair of opposing side walls, and four corners bridging said first and second pairs of side walls, each of said first pair of side walls including curvilinear upper and lower first edges having respective radii of curvature, each of said second pair of side walls including curvilinear upper and lower second edges having respective radii of curvature, each of said four corners including curvilinear upper and lower corner edges having respective radii of curvature, said four corners defining sections of curved surfaces of respective imaginary cylinders such that the radius of curvature of said upper corner edges is substantially equal to the radius of curvature of said lower corner edges; and
a continuous rim encompassing an upper edge of said continuous wall panel and projecting laterally outwardly therefrom.

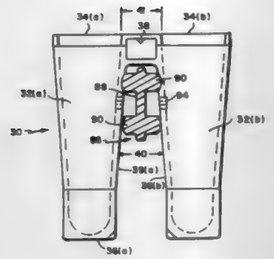
5,628,428

AUTOMATED FEEDER SYSTEM AND APPARATUS

Jeffrey E. Calhoun, 150 Overlook Ave., Apt. 2V, Peekskill, N.Y. 10566; Daniel A. Peragine, Jr., 136 Park Ave., Mount Vernon, N.Y. 10550; Emil Scordato, 18 Lake Shore Dr., Eastchester, N.Y. 10709, and Gary C. Helstern, 28 Peacable St., West Redding, Conn. 06896

Division of Ser. No. 64,853, May 20, 1993, Pat. No. 5,511,690.
This application Jun. 6, 1995, Ser. No. 467,458
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—197 **2 Claims**

1. A stick for holding a plurality of stacked dual cuvettes for loading into a cassette, each cuvette having a pair of adjacent vials attached to each other at one end by a bridge, there being a selected space between adjacent walls of said vials, the stick comprising:
an elongated substantially flat shaft;
means, extending from said shaft along at least the length thereof to which cuvettes are to be mounted, for frictionally engaging the adjacent walls of each cuvette mounted on the stick, said means for frictionally engaging including at least one projection extending from each side of said shaft toward one of said adjacent walls;
a handle at one end of said shaft; and
a temporary restraining tip at the opposite end of said shaft.

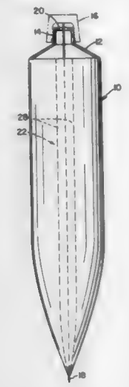


5,628,429

PLURAL CHAMBERED SQUEEZABLE DISPENSING TUBE

Norman Usen, Marlboro, and Anthony E. Winston, East Brunswick, both of N.J., assignors to Enamelon, Inc., East Brunswick, N.J.

Filed Nov. 22, 1995, Ser. No. 562,363
Int. Cl.[6] B65D *35/22*
U.S. Cl. 222—1 **38 Claims**



1. A substantially planar partition-forming member suitable for insertion into a dispensing tube to form a partition and two separate and discrete compartments within the tube; said tube having a dispensing end with affixed thereto a shoulder and a neck terminating as a dispensing orifice and adapted to receive a closing cap and an open filling end into which the partition-forming member is inserted prior to filling;
said partition-forming member having a configuration such that when inserted into the tube;
(i) the end of the partition-forming member corresponding to the dispensing end of the tube is substantially equal to the inner diameter of the neck and extends into said neck,
(ii) the adjacent portion thereto conforms to the shape of the tube shoulder,
(iii) the mid-portion extends within the tube and has a width corresponding to at least one half the inner-circumference of the tube; and
(iv) the terminal end of the partition-forming member corresponding to the filling end of the tube has a width substantially equal to one half the inner-circumference of said tube, said partition-forming member being scored along each longitudinal side at a distance from the edge thereof such that when fully inserted into the tube the partition-forming member folds along the scoring thereby providing a spine between the scoring and two flaps adjacent thereto; and
said partition-forming member being comprised of a material sufficiently resillient that such member tends to revert to its original planar configuration thereby causing pressure of the flaps against the inner surface of the tube and providing a seal along the longitudinal edge with said inner surface of the tube.

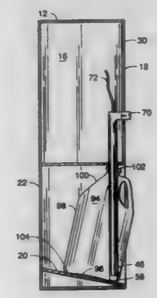
25. A method for assembling a dual compartment dispensing tube assembly, said assembly comprising:
a tubular container body having a dispensing end and a filling end, and a shoulder and a neck terminating as a dispensing orifice and adapted to receive a closing cap affixed to the dispensing end of the tube;
a substantially planar partition forming insert member having a configuration generally conforming to that of the tube if flattened and comprising:
an end portion which is substantially equal to the inner diameter of the neck;
an adjacent portion thereto conforming to the inside shape of the tube shoulder;
an elongated mid-portion having a width of at least one half the inner circumference of the tube; and
a terminal end having a width sub-stantially equal to one half the inner-circumference of the tube;
scoring along each longitudinal side of the insert to provide a spine between the scoring and an elongated flap at either side of the scoring said insert comprised of a material sufficiently resilient such that the insert tends to maintain its planar configuration;
said method comprising:
(i) placing the tube in a position suitable for filling;
(ii) directing the planar insert into and through the filling end of the tube until the end portion of the insert extends into the orifice formed by the neck, the adjacent portion abuts the inside of the shoulder, and the spine and flaps are folded into a generally "Z" shape and provide a partition which divides the tube into two compartments;
(iii) filling each of the compartments; and
(iv) sealing the filling end of the tube to form a straight line seal with the planar insert.

5,628,430

LIQUID DISPENSING SYSTEM

David J. Barbe, Winterville, N.C., assignor to U.N.X., Incorporated, Greenville, N.C.

Filed Jun. 30, 1995, Ser. No. 497,604
Int. Cl.[6] B67D *5/64*
U.S. Cl. 222—132 **10 Claims**

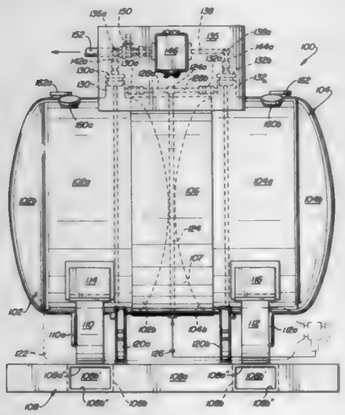


1. A liquid dispenser adapted to withdraw liquid from a container having a mouth and a bottom wall joined at a curved juncture to a side wall comprising:

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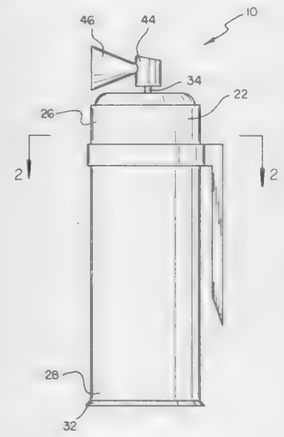
a) a floor adapted to support said container in a tilted position with said mouth vertically aligned above the lowermost part of said juncture;
b) a probe support spaced above said floor;
c) a probe vertically supported on said probe support, said probe having a distal end with a convex face corresponding to the curvature of said juncture, said probe being adapted to move between a raised position above the mouth of said container, and a lowered position extending through the mouth of said container and into contact with the interior of said container at the lowermost part of said juncture; and
d) a pump fluidly connected to said probe to draw liquid from said container upwardly through said probe, whereby said probe may be directed to withdraw substantially all of the liquid from said container.

5,628,431
PORTABLE MULTI-COMPARTMENT CHEMICAL STORAGE AND MIXING TANK
Matthew N. Roach, Apex; Neil Stapensea, Raleigh, and Jon Webster, Cary, all of N.C., assignors to BASF Corporation, Mount Olive, N.J.
Continuation-in-part of Ser. No. 153,052, Nov. 17, 1993, Pat. No. 5,465,874. This application Apr. 20, 1995, Ser. No. 426,530
Int. Cl.[6] B65D *83/14*
U.S. Cl. 222—145.5 **24 Claims**



1. A portable holding and mixing tank system for at least two dissimilar liquids comprising:
at least two fluid-isolated holding compartments for holding a respective one of said dissimilar liquids;
a source of pressurizing fluid;
a manifold assembly defining respective channels for said dissimilar liquids and said pressurizing fluid which are fluid-connected to each of said holding compartments;
a pressurizing supply conduit which fluid-connects said source of pressurizing fluid to said pressurizing fluid channel;
liquid supply risers each of which fluid-connects a respective one of said dissimilar liquids contained in said holding compartments to said liquid channel defined by said manifold assembly; and
a liquid discharge port fluid-connected to said liquid channel defined by said manifold assembly; wherein
said at least two dissimilar liquids within each said holding compartment are forcibly introduced by means of said pressurizing fluid therewithin into said liquid channel defined by said manifold assembly and are mixed with one another within said liquid channel prior to discharge through said discharge port, and wherein
said at least two fluid-isolated holding compartments are provided by a pair of tank units located in side-by-side relationship so as to establish a space therebetween, and wherein
said pressurizing supply conduit is positioned within said established space between said pair of tank units and fluid-connects said source of pressurizing fluid to said pressurizing fluid channel. and wherein
said system further comprises a cylindrical sleeve member defining circumferential edges which are rigidly joined to respective ones of said pair of tank units so as to circumferentially bound said space established therebetween.

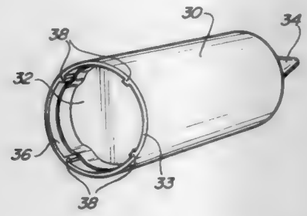
5,628,432
PERSONAL COOLING SYSTEM
Julius Mosley, 2200 17th Ave. South, St. Petersburg, Fla. 33712
Filed Apr. 3, 1996, Ser. No. 627,086
Int. Cl.[6] B65D *83/14*
U.S. Cl. 222—175 **9 Claims**



1. A portable belt worn personal cooling system comprising in combination:
a metallic thin walled cylindrical canister having a diameter, an interior, an upper end, a lower end and an intermediate exterior surface therebetween, a lower base coupled to the lower end of the canister and having a diameter larger than the diameter of the canister, the metallic thin wall effecting heat transfer from the interior to the exterior of the canister;
a compressed gas consisting essentially of Nitrogen and Oxygen positioned within the interior of the canister;
a stem having a lower and upper end, the stem secured within the upper end of the canister and interconnected to the interior of the canister, a filter positioned within the lower end of the stem, the filter having openings which remove particles unfit for human consumption, and the filter being constructed from a material which absorbs any chemicals unfit for human consumption;
button having an upper surface, a forward portion, a rearward portion and a cylindrical surface interconnecting the forward and rearward portions, a lower end with opening therein, an opening formed within the forward portion, a passage interconnecting the opening of the lower end and the opening of the forward portion, the upper surface sloping from the forward toward the rearward portion;
a plastic insulating cone having a proximal end and a distal end, the proximal end interconnected to the opening formed within the forward portion, the insulating cone functioning to prevent thermal contact between the air exiting the canister and the ambient air

a resilient plastic belt clip having two semicircular canister engaging portions and a belt securing portion interconnecting the two canister engaging portions, the two semicircular engaging portions together defining a diameter, the belt securing portion being intermediate of and perpendicular to the two semicircular canister engaging portions, the belt clip constructed from a resilient thermoplastic material which affords a degree of flexibility, the diameter of the two engaging portions being substantially the same diameter as the canister and being deformable to a diameter substantially larger than the diameter of the canister.

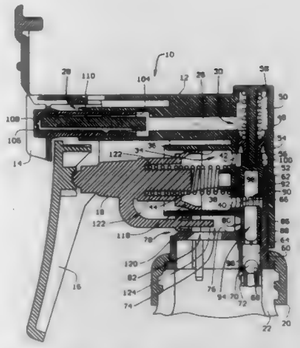
5,628,433
CAULKING TUBE AIR ESCAPE STRUCTURE
Frederick Binder, Windsor, Canada, assignor to Research Plastics Inc., Windsor, Canada
Filed May 2, 1996, Ser. No. 641,821
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—327 **14 Claims**



1. A tube for receiving a fluent material comprising:
a tube body being elongated and extending from a rear end to a forward nozzle end;
a plunger member received within said tube body adjacent said rear end; and
said plunger body having an outer peripheral surface closely matched to an inner peripheral surface of said hollow tube body, air spaces being formed between said outer peripheral surface of said plunger and said inner peripheral surface of said tube body, said air spaces defined adjacent said rear end of said tube body by air space defining members extending to said rear end, said tube body having a diameter, said air space defining members having a radial distance that is less than 1.0% of said diameter of said tube, and each of said air space defining members occupying an area that is less than 0.5% of the area of the interior of said tube.

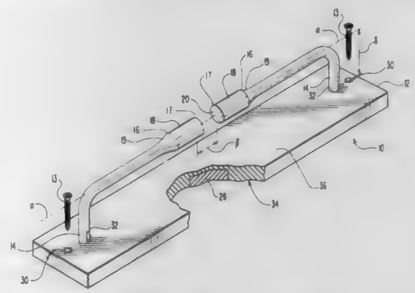
5,628,434
TRIGGER SPRAYER HAVING A PRESSURE BUILDUP VALVE
Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Lous, Mo.
Continuation-in-part of Ser. No. 363,512, Dec. 12, 1994. This application Jun. 2, 1995, Ser. No. 459,308
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—383.1 **22 Claims**

1. A sprayer for dispensing liquid from a liquid container at a minimum pressure, the sprayer comprising:
a sprayer housing;
a connector on the sprayer housing for attaching the sprayer housing to a liquid container;
a manually operated pump on the sprayer housing for drawing liquid from the container to the pump, and for pumping the liquid from the pump and discharging the liquid from the sprayer housing;



a supply passage in the sprayer housing for conveying the liquid drawn from the container to the pump;
a discharge passage in the sprayer housing for conveying the liquid pumped from the pump and discharged from the sprayer housing; and
a pressure buildup valve received in the discharge passage for reciprocating movement between a closed position of the valve in the discharge passage and an open position of the valve in the discharge passage, the movement of the valve between the closed and open positions including movement of the valve through a first portion of the discharge passage while the valve blocks liquid flow through the discharge passage and movement of the valve through a second portion of the discharge passage while the valve permits liquid flow through the discharge passage, the second portion of the discharge passage having a surface with a groove formed in the surface, the valve being in sliding engagement with the second portion surface as it moves through the second portion of the discharge passage while permitting liquid flow through the groove bypassing the valve.

5,628,435
DEVICE FOR INVERTING TUBULAR FABRICS
Dennis W. Rees, 934 S. Hoytsville Rd., Coalville, Utah 84017
Continuation of Ser. No. 281,913, Jul. 28, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,407
Int. Cl.[6] A41H *43/00*
U.S. Cl. 223—39 **15 Claims**



1. A device for inverting tubular fabrics comprising:
(a) a base having a back and a front; and
(b) a first and a second turning arm, each said turning arm having a centerline, a distal end, and a proximal end, said proximal ends of said turning arms being non-movable and fixedly attached to said base so that said distal ends are non-movable, substantially axially aligned along said centerline, and opposingly separated by a distance greater than ¼

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inch, said first and second turning arms also being configured so that the tubular fabric can be received over said first turning arm and then inverted so as to be received over said second turning arm; and

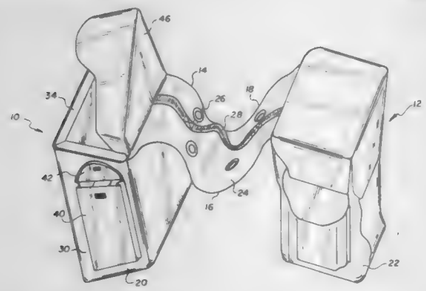
(c) a turning end attached at said distal end of each of said turning arms, each of said turning end having a concave face being opposingly separated by a distance greater than ¼ inch.

5,628,436

SADDLEBAG WITH REMOVABLE INSULATED LINER

Cary Jones; Carolyn Kemp, both of Acworth, and Doug Ackerman, Calhoun, all of Ga., assignors to Trails End Western Apparel, Inc., Acworth, Ga.

Filed Jun. 28, 1995, Ser. No. 496,057
Int. Cl.[6] B62J *9/00*
U.S. Cl. 224—148.3 **19 Claims**



1. A saddlebag, comprising:

an elongated base panel having front and rear edge portions, left and right end portions, and a middle portion intermediate said left and right end portions;

a front edge panel having a bottom portion attached to said front edge portion and said left end portion of said base panel, and a top portion free of connection to said base panel;

a rear edge panel having a bottom portion attached to said rear edge portion and said left end portion of said base panel, and a top portion free of connection to said base panel, said base panel, front edge panel and rear edge panel forming a left bag with sidewalls and a bottom; and

a liner removably attached in said left bag along said sidewalls and said bottom, said liner having pockets along said sidewalls and said bottom for receiving rigid insulation.

5,628,437

COMBINATION BACKPACK AND SEAT

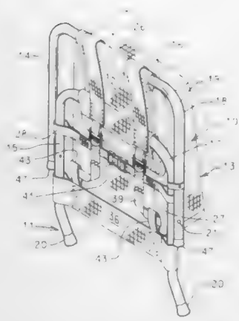
Edward F. Kober, 12003 Church Rd., Richmond, Va. 23233

Filed Jun. 14, 1996, Ser. No. 663,930
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—155 **13 Claims**

1. A backpacking device which combines the features of a backpack with a tree-supportable seat, said device comprising:

a) first and second U-shaped frame members of monolithic construction, each comprised of a transverse portion and parallel side portions having lower extremities and upper extremities that merge with said transverse portion, said second frame member being disposed partially within said first frame member in a manner disposing said respective side and transverse portions in parallel relationship, and joined to said first frame member by pivot means interactive with the side portions of said first and second frame members,

b) a fabric seating panel extending in joinder between the transverse portions of said frame members, and serving to limit the extent of separation of said transverse portions in movement about said pivot means,



c) tree-engaging strap means of adjustable length extending in joinder between the side portions of said second frame member above said pivot means,

d) an anchoring strap extending in joinder between the side portions of said second frame member below said pivot means,

e) a pouch-like enclosure attached to the transverse portion of said first frame member, and having an openable top extremity and closed bottom extremity, and

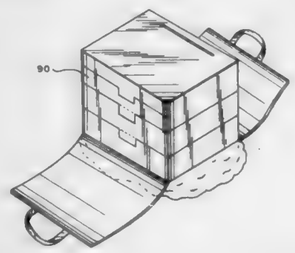
f) a pair of shoulder straps of adjustable length extending between the top and bottom extremities of said enclosure, thereby forming closed loops in parallel disposition to said side portions and encompassing the transverse portions of said first and second frame members.

5,628,438

PORTABLE STORAGE UNIT FOR VEHICLE SEAT

Mary K. Legrow, 305 Jefferson St., Emporia, Va. 23847

Continuation-in-part of Ser. No. 201,007, Feb. 24, 1994, abandoned. This application Sep. 15, 1995, Ser. No. 529,240
Int. Cl.[6] B60R *7/04*
U.S. Cl. 224—275 **8 Claims**



1. A portable storage unit for a vehicle seat comprising:

a plurality of separable trays stackable one on top of another to provide a stack of superposed trays, each of said trays having elements for interfitting with elements of another tray to maintain said trays in stacked relation to one another and preventing lateral movement thereof relative to one another while enabling each superposed tray to be lifted from an underlying tray;

each said tray having a bottom, upstanding side walls, and an end wall and an opening opposite said end wall, and a drawer disposed within one of said trays between said side walls thereof and movable through said opening;

a flexible container underlying said trays and containing weighted material movable within said flexible container to enable said flexible container to conform to contours of the vehicle seat and to maintain the overlying stacked trays in a substantially stable, upright position on the vehicle seat; and

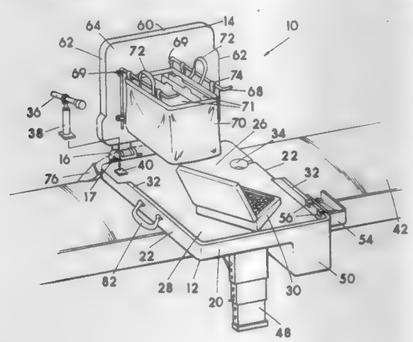
a base carried by said flexible container and cooperable with portions of the interfitting elements of a lowermost tray of said stacked trays to maintain said lowermost tray against lateral movement relative to said container.

5,628,439

PORTABLE DESK AND FILE HOLDER FOR USE IN A SEAT

Timothy P. O'Hara, 640 A. Reeds Ave., Red Bluff, Calif. 96080

Filed Dec. 4, 1995, Ser. No. 566,720
Int. Cl.[6] B60R *7/04;* **A47B** *37/00*
U.S. Cl. 224—275 **4 Claims**



1. A portable desk and portable file holder combination for use in a seat, comprising:

a desk having a base member including a bottom surface for resting on a seat and at least in part stabilizing said desk on a seat; an oppositely disposed surface from said bottom surface of said base member being a surface for serving as a desk work surface;

a file holder

a back member attached to said base member by hinge means rendering said back member selectively positionable between a first position vertically raised and extending generally perpendicular relative to said base member for stabilizing said file holder, and a second position vertically lowered and extending generally parallel relative to said base member for storage and transportation of said desk;

handle means attached to said desk for allowing the desk to be transported by hand;

file holder support means attached to said desk for stabilizing said file holder relative to said desk and over said desk work surface;

said file holder including a generally rectangular container sized in length for containing file folders lengthwise parallel to the file holder length, said file holder sized in width for containing a plurality of the file folders stacked against one another;

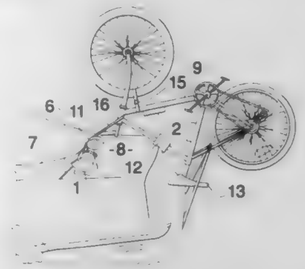
said file holder including connecting means attached thereto for connecting the file holder to said file holder support means whereby said file holder can be engaged with said desk and stabilized; said connecting means being disconnectable from said file holder support means for allowing removal of said file holder and transportation of said file holder by file holder handle means attached to said file holder for allowing the file holder to be carried separate from said desk; said file holder including an open top for revealing file identification tabs of file folders within the file holder so that file folders within the file holder can be visually identified and accessed with said file holder engaged with said desk.

5,628,440

BICYCLE CARRIER

Silvio Gallazzini, 25 Mann Ave., Staten Island, N.Y. 10314

Filed Sep. 15, 1994, Ser. No. 306,838
Int. Cl.[6] B60R *9/10*
U.S. Cl. 224—329 **10 Claims**



1. A bicycle carrier for aerodynamically securing a bicycle having an anterior and a posterior portion, to an exterior of a vehicle having a hinged rear panel with one end facing a direction of travel for said vehicle and a rearward vehicle attachment element, said bicycle carrier comprising:

a removable anchoring element for engaging the end of the hinged rear panel facing the direction of travel for the vehicle;

a pair of straps, each of said straps having an anchoring engagement end for attachment to the anchoring element and a bicycle engagement end for securely engaging the anterior portion of the bicycle in proximity to the end of the hinged rear panel facing the direction of travel for the vehicle;

posterior bicycle attachment means for attaching the posterior of the bicycle to the rearward attachment element of said vehicle housing; and

at least one buffering element for placement between the bicycle and the vehicle,

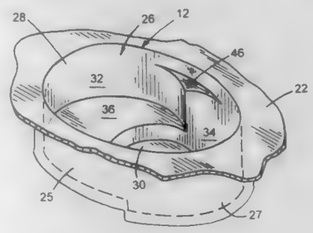
whereby said bicycle carrier secures said bicycle to the vehicle such that the longitudinal axis of the bicycle is aligned with the longitodinal axis of the vehicle when said pair of straps and said posterior bicycle attachment means are secured.

5,628,441

CONTAINER HOLDER

Ronald A. Dykstra, Grandville, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jan. 26, 1995, Ser. No. 378,470
Int. Cl.[6] B60R *7/00*
U.S. Cl. 224—483 **11 Claims**



1. A container holder for a vehicle comprising:

a support including an upper surface and side surfaces defining a recess in said upper surface, and further including a floor surface defining a bottom of the recess; said side surfaces including a first side surface defining a first container holder aperture and a second side surface defining a second container holder aperture having a diameter different than the first container holder aperture, said first and second container

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holder apertures offset and overlapping so that one of said container holder apertures provides space for receiving a handle on a container placed in the other of said container holder apertures, said support further including at least one protrusion extending into said recess between said first and second container holder apertures for partially subdividing the recess and stably supporting a container placed in either one of the first or second container holder apertures.

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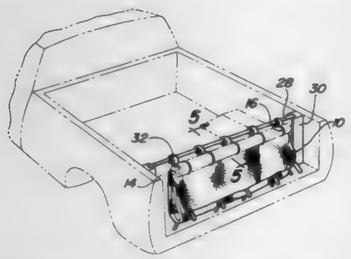
PACKAGE-RETAINING ACCESSORY FOR VEHICLE CARGO AREA

Mark Wayne, 29436 Briarbank Ct., Southfield, Mich. 48034

Continuation of Ser. No. 845,696, Mar. 4, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 290,005

Int. Cl.[6] B60R *7/00*

U.S. Cl. 224—543 **21 Claims**



1. In combination with a pick up truck having a truck bed, a package-retaining accessory, said accessory comprising:

a package-retaining body, said body comprising a base, a top, a front wall, a back wall, and a pair of side walls, said walls defining a package-retaining area, said top being movable from a first rolled up, position to a second, extended and covering position, said body further including a first set of fasteners to maintain said top in said rolled up position and a second set of fasteners to maintain said top in said extended and covering position; and

means for attaching said body to the truck bed.

5,628,443

MODULAR PACK SYSTEM AND APPARATUS

William J. Deutsch, 1429 Zepol Rd., Apt. 210, Santa Fe, N.M. 87501

Filed Aug. 30, 1993, Ser. No. 113,208

Int. Cl.[6] A45F *3/04*

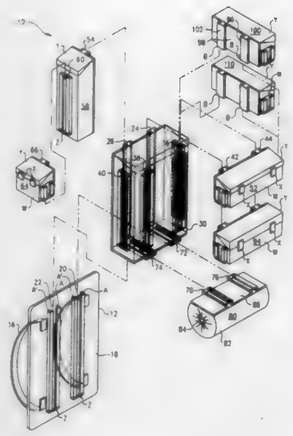
U.S. Cl. 224—583 **2 Claims**

1. An apparatus for storage and transport of goods, said apparatus, comprising:

(a) a first container for holding goods, said container further comprising front, back, and bottom surfaces and a first cooperating engagement means, said first cooperating engagement means being integrally formed with said container, said first cooperating engagement means having a bottom portion;

(b) a base, said base further comprising a second cooperating engagement means integrally and seamlessly formed with said base and shaped to provide complementary meshing engagement of said second cooperating engagement means with said first cooperating engagement means when said first and said second cooperating engagement means are brought together to detachably connect said first container to said base, said second engagement means having a bottom portion;

(c) wherein at least one of said first and said second cooperating engagement means further comprises a stop, wherein said stop cooperates with said bottom portion of the engagement means complimentary thereto, so as to limit the downward travel of said first container relative to said base when said base is in a substantially vertical position;



(d) a second container, said second container including a third cooperating engagement means, and wherein said first container further includes a fourth cooperating engagement means for cooperating with said third engagement means to affix said second container to said first container;

(e) wherein said fourth cooperative engagement means on said first container is mounted substantially horizontally on said bottom surface of said first container, so that said third engagement means on said second container can detachably affix said second container to the bottom surface of said first container;

(f) wherein said second container comprises an expansible tubular member, and wherein said substantially cylindrical tubular member is adapted to carry a sleeping bag.

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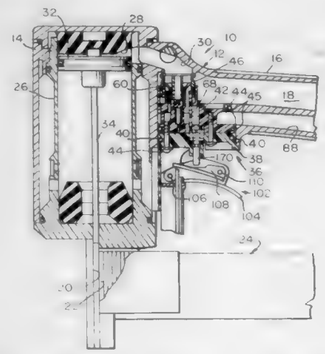
FASTENER DRIVING DEVICE WITH MAIN VALVE/FRAME VALVE ARRANGEMENT

Brian M. White, Riverside, R.I., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Nov. 16, 1995, Ser. No. 559,240

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—130 **12 Claims**



9. A control module for a pneumatically operated fastener driving device, the device including a housing having a cylindrical

housing portion and a main frame portion extending laterally from the cylindrical housing portion, the cylindrical housing portion defining a fastener drive track; a fastener magazine for feeding successive fasteners laterally into the drive track; a fastener driving element slidably mounted in the drive track for movement through an operative cycle including a drive stroke during which a fastener within the drive track is engaged and moved longitudinally outwardly of the drive track into a workpiece and a return stroke; a drive piston connected with the fastener driving element; a cylinder, defined in the cylindrical housing portion, within which the piston is reciprocally mounted; an air pressure reservoir communicating with the one end of the cylinder through a passageway, the control module being constructed and arranged to be mounted with respect to the main frame portion of the housing so as to open the passageway and communicate reservoir pressure with the cylinder at the one end thereof to move the piston in a direction to effect the drive stroke of the fastener driving element and to close the passageway and communicate the one end of the cylinder with atmosphere for permitting the piston to move in a direction to effect the return stroke of the fastener driving element, said control module comprising:

a control module housing assembly constructed and arranged to be mounted in said main frame portion of the housing, the control module housing assembly providing an exhaust passage;

a cylindrical main valve mounted with respect to said control module housing assembly for movement between opened and closed positions for opening and closing the passageway, said main valve having a first pressure area defining with a portion of said control module housing assembly a control pressure chamber, said main valve including a second pressure area in opposing relation to said first pressure area,

spring structure biasing said main valve towards its closed position,

exhaust seal structure fixed to said control module housing assembly and having an annular valve element operatively associated with said main valve for closing the exhaust passage when said main valve is disposed in its opened position,

an actuating member constructed and arranged for movement from a normal, sealed position into an operative, unsealed position for initialing movement of said main valve to its opened position, and

a trigger assembly mounted for manual movement from a normal, inoperative position into an operating position, such that movement of said trigger assembly from its inoperative position to its operating position moves said actuating member from its normal position to its operative position,

said control module being construed and arranged so as to be mounted to and removable from the main frame portion of the housing as a unit.

5,628,445

SHINGLE GAUGE FOR USE WITH NAIL DRIVING TOOL

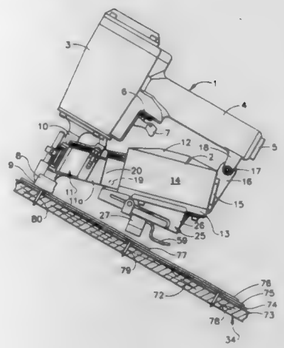
C. Kerwin Braddock, Cincinnati, and Dennis E. Stivers, Sardinia, both of Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Jun. 5, 1995, Ser. No. 465,535

Int. Cl.[6] B25C *1/04;7/00*

U.S. Cl. 227—151 **12 Claims**

1. A shingle gauge for use with a nail driving tool of the type having a guide body containing a drive track and terminating in a nose portion, together with a magazine for nails operatively connected to said drive track, a shingle locating surface on said tool adjacent said nose portion, said gauge comprising a mounting bracket fixed beneath said magazine and containing a plurality of predetermined slots therealong, a gauge element slidably supported on said mounting bracket and shiftable therealong toward and away from said locating surface, a latch attached to said gauge element and capable of a releasable locking engagement with said mounting bracket at any selected one of said plurality of predetermined locking slots therealong, whereby to positively locate and lock said gauge element at a selected position establishing a desired distance between said locating surface and said gauge element.



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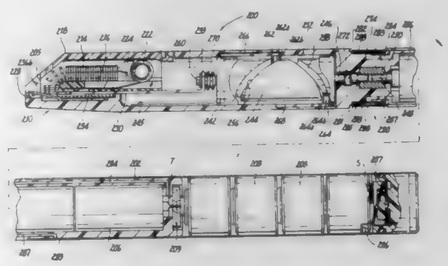
SELF-CONTAINED POWERED SURGICAL APPARATUS

Robert J. Geiste, Milford; Stephan A. DeFonzo; Dominick L. Mastri, both of Bridgeport, all of Conn.; Wayne P. Young, Brewster, N.Y., and Carlo A. Mililli, Huntington, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 320,143, Oct. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 238,770, May 5, 1994, abandoned. This application May 6, 1996, Ser. No. 643,396

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.1 **20 Claims**



1. A self-contained powered surgical apparatus for applying surgical fasteners to body tissue comprising:

a) an elongate body defining a longitudinal axis and configured to house a plurality of surgical fasteners;

b) a stationary anvil positioned adjacent a distal end of the elongate body for forming surgical fasteners;

c) a fastener pusher mounted for longitudinal movement within the elongate body to individually urge surgical fasteners in a longitudinal direction toward the anvil;

d) a barrel cam assembly disposed within the elongate body and configured to effect continuous uniform reciprocatory longitudinal movement of the fastener pusher;

e) a motor assembly disposed within the elongate body for driving the barrel cam assembly; and

f) a power source disposed within the elongate body for energizing the motor assembly.

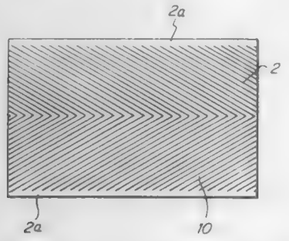
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5,628,447

METHOD OF MANUFACTURING INTERNALLY GROOVED TUBES FOR HEAT EXCHANGERS

Gerhard Ziemek, Langenhagen, Germany, assignor to Alcatel Kabel AG & Co, Germany

Filed Mar. 20, 1996, Ser. No. 619,108
Claims priority, application Germany, Apr. 26, 1995, 195 15 336.7
Int. Cl.[6] B21C *37/15*
U.S. Cl. 228—147 3 Claims



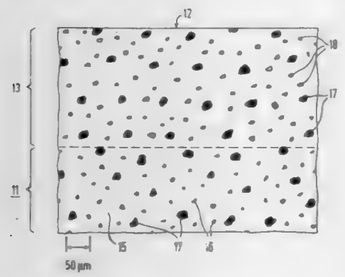
1. A method for producing internally grooved tubes for heat exchangers, the method comprising the steps of:
(a) drawing a smooth metal tape from a circular supply;
(b) forming at least two groups of parallel running grooves into the metal tape so that the grooves extend in the form of a herringbone pattern, the grooves in each group of grooves in the tape are parallel to each other and run at an angle of 15° to 45° with respect to a lengthwise center line of the tape;
(c) forming the metal tape continuously into a tube with a lengthwise slot; and
(d) welding the slot.

5,628,448

PROCESS FOR BONDING A CONTACT LAYER OF SILVER-METAL OXIDE MATERIAL AND METAL CONTACT BASE, AND SUITABLE CONTACT LAYER

Franz Hauner, Röttenbach, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/DE94/01090, § 371 Date Mar. 19, 1996, § 102(e) Date Mar. 19, 1996, PCT Pub. No. WO95/08833, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 20, 1994, Ser. No. 617,768
Claims priority, application Germany, Sep. 20, 1993, 43 31 913.0
Int. Cl.[6] H01H *11/06*
U.S. Cl. 228—198 14 Claims



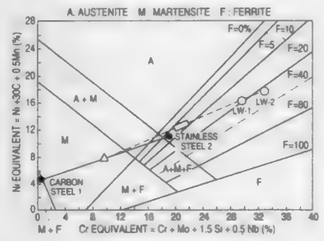
1. A method for bonding a contact layer composed of a cadmium-free silver/metal oxide material which contains at least tin oxide or iron oxide as an essential metal oxide to a metallic contact base, comprising the steps of:
subjecting the contact layer to a heat treatment under a reducing atmosphere and without fusing taking place,
reducing the metal oxide at least partially to metal on a bonding side of the contact layer without an alloy formation, and in a subsurface region of a switching side of the contact layer; and
subsequently bonding the contact layer to a metallic contact base.

5,628,449

METHOD OF WELDING A CARBON STEEL AND AN AUSTENITIC STAINLESS STEEL TOGETHER AND RESULTANT STRUCTURE

Tsutomu Onuma, Hitachi; Toshimi Matsumoto, Hitachinaka; Masami Yada; Koji Goto, both of Hitachi; Osamu Matsushima, Hitachioota; Hideo Suzuki, Takahagi; Tatsuo Yonezawa, and Masaki Murashita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 480,396
Claims priority, application Japan, Jun. 15, 1994, 6-132770
Int. Cl.[6] B23K *15/00;26/00*
U.S. Cl. 228—262.41 8 Claims



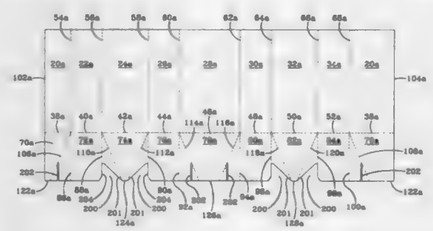
1. A method of welding a base metal comprising a carbon steel to a base metal comprising an austenitic stainless steel by using a high density energy beam, which comprises employing a welding material comprising an austenitic stainless steel to provide a weld wherein at least a part of the metallographic structure of a weld portion is a mixed structure comprising an austenitic structure and not greater than 20% by weight of a ferritic structure.

5,628,450

OCTAGONAL BOX STRUCTURE AND SETTING UP APPARATUS

Arthur H. Cromwell, Columbus, and Max K. Kacksetter, Alexandria, both of Ohio, assignors to Willamette Industries, Portland, Oreg.

Continuation-in-part of Ser. No. 489,433, Jun. 12, 1995, Pat. No. 5,533,666. This application Jun. 4, 1996, Ser. No. 657,998
Int. Cl.[6] B65D *5/08*
U.S. Cl. 229—109 4 Claims



1. An octagonal box structure formed from a planar blank of material comprising, in combination;

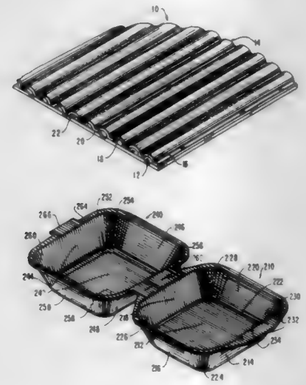
a) four pair of upstanding side wall panels integrally connected together along horizontally spaced, vertical score hinge lines defining the width of each of said side wall panels to form an enclosed box structure, two pairs of said side wall panels having a substantially equal width relative to one another which is smaller than the width dimension of either of the remaining two pair of side wall panels;
b) eight closure flaps integrally connected to one another and each depending from one of said side panels along a common horizontal score hinge line for folding inwardly about said common horizontal score hinge line, each of said closure flaps including a free edge and a width dimension co-extensive with the width dimension of a corresponding side panel as defined by an extension of said vertical score hinge lines, four of said eight closure flaps being provided with a pair of score hinge lines extending diagonally from an adjacent corner of said box toward a free edge of a respective one of said four closure flaps, each of said diagonal score lines defining an angle between about 20 to 25 degrees relative to an adjacent one of said extensions of said vertical score hinge lines; wherein each of said four closure flaps carrying said diagonally extending score hinge lines fold inwardly in partially overlapping relationship upon itself and with each immediately adjacent closure flap to close an end of said box structure.

5,628,451

CORRUGATED PAPER CONTAINER

Robin P. Neary, Warren, N.J., assignor to Newark Group Industries, Inc., Cranford, N.J.

Division of Ser. No. 262,165, Jun. 20, 1994. This application Jun. 6, 1995, Ser. No. 469,395
Int. Cl.[6] B65D *1/34;1/44*
U.S. Cl. 229—114 12 Claims



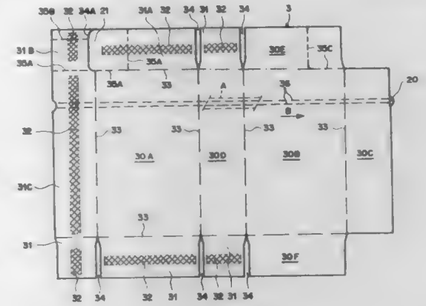
1. A container formed as a unitary construction by stamping corrugated paper, said container comprising:
a first compartment having a base and sidewalls integrally formed therewith;
a second compartment having a top and sidewalls integrally formed therewith;
hinge means integrally joining said first compartment and said second compartment to allow said upper and lower compartments to move relative to each other about said hinge means;
said first compartment, second compartment and hinge means being formed of a single, uncut sheet of paperboard, said paperboard having a flat layer and a contoured layer, said contoured layer consisting of a plurality of flutes spaced regularly from each other, each said flute including an upper curved surface having an upper flute tip and a lower curved surface having a lower flute tip forming a contoured layer and having a midpoint therebetween, a flute rise being formed between said upper and lower surfaces, the flute rise between each of said upper flute tips and said lower flute tips being substantially vertical at the midpoint between said flute tips, said upper and lower curved surfaces of said contoured layer providing increased strength and rigidity using less paperboard, said contoured layer having 6 to 12 ridges per inch.

5,628,452

PACKAGE AND BLANK FOR PACKAGING CIGARETTES

Albert Sigrist, Colombier, and Roberto Rizzolo, Champ du Moulin, both of Switzerland, assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jul. 6, 1994, Ser. No. 271,396
Claims priority, application European Pat. Off., Jul. 6, 1993, 93810477
Int. Cl.[6] B65D *5/54*
U.S. Cl. 229—235 35 Claims



1. A package for cigarettes comprising:
a front wall, a rear wall, first and second side walls, a bottom wall and a top wall, said walls joined to form a box which defines a receptacle for cigarettes; and
a tear strip defined in said front, rear, and first and second side walls, said tear strip comprising an opening line having a first depression relative to a wall outer surface and at least one adjacent depression deeper than said first depression,
a tongue extending from said tear strip,
said tear strip completely separating the defined box into an upper portion comprising said top wall and an upper part of said front wall, rear wall, and first and second walls and into a lower portion comprising said bottom wall and a lower part of said front wall, rear wall, and first and second side walls, said lower portion defining a receptacle for cigarettes.

5,628,453

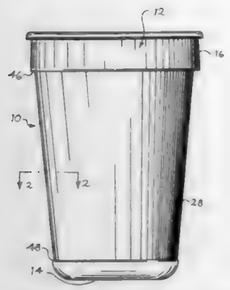
CUP WITH THERMALLY INSULATED SIDE WALL

Donald N. MacLaughlin, Midland, Mich., assignor to Packaging Resources, Inc., Coleman, Mich.

Filed Jan. 16, 1996, Ser. No. 586,988
Int. Cl.[6] B65D *3/22*
U.S. Cl. 229—403 13 Claims

1. An insulated cup comprising:
a cup body comprising a bottom portion and an upstanding side wall portion surrounding and continuing the bottom portion to form a beverage-receiving cavity, said cup body comprising a plastic material;
said side wall portion forming an array of protruding elements extending outwardly from the side wall portion;
a sheet secured in place on an exterior portion of the side wall portion in contact with at least some of the protruding elements, said sheet comprising an annular lower edge posi-

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tioned radially outwardly from at least a part of the bottom portion such that said part of the bottom portion is uncovered by the sheet;

said sheet spaced away from a substantial portion of the side wall portion by the protruding elements to form at least one air gap between the sheet and the side wall portion, said air gap effective to provide thermal insulation tending to reduce heat flow between the sheet and the beverage-receiving cavity, and thereby to facilitate handling of the cup.

5,628,454

FOOT SUPPORT MODIFICATION FOR RAILROAD RAILS

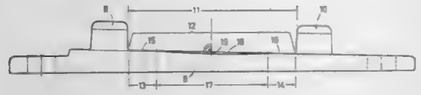
Armin Heim, Kreuzlingen, Switzerland, and Otto Morgenschweis, Mering, Germany, assignors to Schwihag GmbH, Taegerwilen, Switzerland

Continuation of Ser. No. 333,352, Nov. 2, 1994, abandoned, which is a continuation of Ser. No. 87,522, Aug. 31, 1993, abandoned. This application Apr. 3, 1996, Ser. No. 626,978

Claims priority, application Germany, Jul. 8, 1992, 42 22 381.4; Oct. 9, 1992, 42 34 007.1

Int. Cl.[6] E01B *5/02;9/38*

U.S. Cl. 238—306 **11 Claims**



1. A foot support comprising a plate having a surface which receives a bottom of said rail foot, said surface defining two spaced flat surfaces in a common plane between which said two spaced flat surfaces in a common plane is a concave arc surface extending only transversely to the longitudinal direction of the rail and which said spaced flat surfaces in a common plane contact said foot and upon which rests two spaced longitudinal edge bottom surfaces of said foot, the bottom surfaces of said foot having a convex bottom surface between said two spaced longitudinal edge bottom surfaces of said foot, said convex bottom surface of said loot fitting within the concave surface of said plate without said concave and convex surfaces touching.

5,628,455

METHOD AND APPARATUS FOR MODIFICATION OF SUPERCOOLED FOG

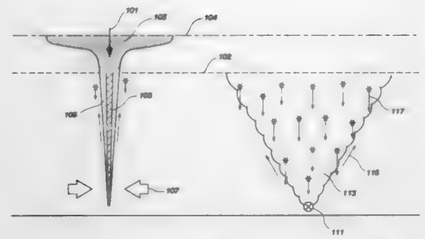
Norihiko Fukuta, Salt Lake City, Utah, assignor to The University of Utah, Salt Lake City, Utah

Continuation of Ser. No. 999,310, Dec. 31, 1992, abandoned. This application May 31, 1994, Ser. No. 251,631

Int. Cl.[6] E01H *13/00*

U.S. Cl. 239—2.1 **4 Claims**

1. A method for the reduction of supercooled fog that is restrained below an inversion layer, said method comprising



(1) introducing liquid carbon dioxide through a nozzle into a supercooled fog from the ground while moving the nozzle along a line along the ground, the amount of liquid carbon dioxide introduced into the supercooled fog being sufficient to form ice crystals due to evaporation of supercooled fog droplets and subsequent formation of ice crystals;

(2) generating sufficient heat from the formation of ice crystals to cause a slowly rising updraft that carries the ice crystals in a slowly rising plume from the bottom to the top of the supercooled fog;

(3) diffusing and spreading the ice crystals horizontally near the top of the supercooled fog as a result of turbulent diffusion and buoyancy of the ice crystal plume at the bottom of the inversion layer;

(4) gradually increasing the size of the ice crystals as they rise and diffuse into the supercooled fog such that the ice crystals fall through the underlying fog in a lateral extension of the plume formed in step (1);

(5) inducing evaporation of supercooled fog droplets and crystallization of the evaporated fog droplets onto the ice crystals falling through the supercooled fog in the lateral extension, wherein additional heat is generated and causes a slowly rising updraft that is sufficient to carry the smaller ice crystals upwardly to the top of the supercooled fog;

(6) spreading the smaller ice crystals horizontally near the top of the supercooled fog as a result of the buoyancy of the smaller ice crystals;

(7) gradually increasing the size of the smaller ice crystals as they spread horizontally such that resulting ice crystals of increased size fall through the underlying supercooled fog in an ever expanding lateral extension of the plume formed in step (1).

5,628,456

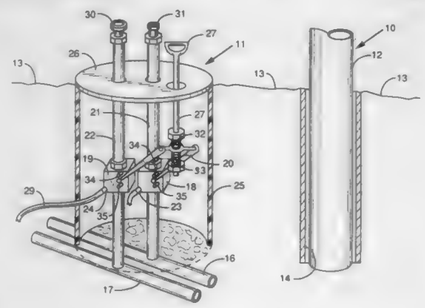
BELOW SURFACE CONTROL SYSTEM FOR SNOW MAKING DEVICES

Herman K. Dupre, c/o Seven Springs, Champion, Pa. 15622

Filed Sep. 27, 1995, Ser. No. 534,837

Int. Cl.[6] F25C *3/04*

U.S. Cl. 239—14.2 **17 Claims**



1. In a snow making system including a snow making device adapted to produce a spray of artificial snow from a combination of

compressed air and water supplied thereto from remote compressed air and water supplies, valve means operatively connected between said snow making device and the supplies of compressed air and water for controlling the supply of air and water to the snow making device, and control pit enclosure means adapted for enclosing said valve means below a ground surface with a removable access lid and bottom water drain means for draining off water, said valve means including air and water valves ganged for simultaneous valving of the air and water supply and said valves adapted for draining water from the connected snow making device when said valves are in their off position, the improvement comprising: a single handle connected to simultaneously operate said valves and exposed through and above said lid for manual manipulation, and drain conduit means connected to said water valve for draining off the water from the snow making device to a location outside said enclosure when said valves are in their off position.

5,628,457

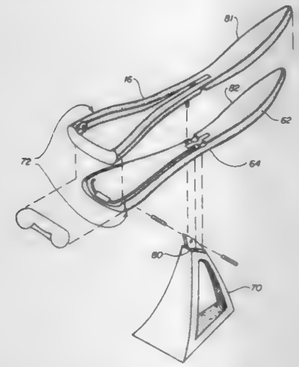
DRINKING FOUNTAIN

Abir Mullick, Buffalo; William Cheung, Bronx, and Jason C. Billig, Yonkers, all of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Filed Mar. 20, 1995, Ser. No. 406,135

Int. Cl.[6] E03B *9/20*

U.S. Cl. 239—28 **4 Claims**



1. A drinking fountain comprising:

a basin having a drain line in communication therewith for conducting waste water from said basin;

an outlet associated in a fixed relationship with said basin for providing a stream of water to said basin;

a feed line for conducting water to said outlet;

an arm supporting said basin at a first end of said arm;

means for providing a vertically pivotal coupling between a second end of said arm and a supporting structure;

means for providing fluid communication between said feed line and a feed line external to said fountain through a range of motion of said arm; and

means for providing fluid communication between said drain line and a drain line external to said fountain through a range of motion of said arm.

5,628,458

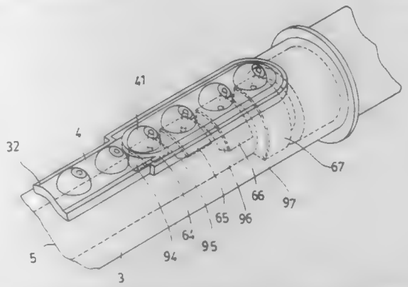
SPRAY TUBE ASSEMBLY FOR OSCILLATING SPRINKLERS

Yu-Neng Kuo, No. 10, Fang-Tung Rd., Wen-Lu Town, Fang-Yuan Hsiang, Chang-Hwa Hsien, Taiwan

Filed Apr. 12, 1995, Ser. No. 420,781

Int. Cl.[6] B05B *3/16*

U.S. Cl. 239—242 **2 Claims**



1. A spray tube assembly mounted on the base of an oscillating sprinkler and turned by an oscillating control device on said base to sprinkling water on a lawn, the spray tube assembly comprising:

a spray tube having a longitudinal hook at one end, an endless flange raised from the periphery, and a longitudinal series of water outlets surrounded by said endless flange;

an elongated nozzle plate mounted within said endless flange, having a longitudinal series of jet nozzles respectively communicating with said water outlets of said spray tube; and

an inner tube inserted into said spray tube, said inner tube comprising and end cup at one end, a knob fixed to said end cup and turned to rotate said inner tube within said spray tube, a first stop plate at an opposite end, a second stop plate radially raised from the periphery and disposed at about one fourth of the length of said inner tube measuring from said first stop plate, a third stop plate radially raised from the periphery and disposed at about three fourth of the length of said inner tube measuring from said first stop plate, two symmetrical sets of sector holder blocks fixedly secured to the periphery and respectively disposed within the area between said first stop plate and said second stop plate and the area between said third stop plate and said end cup, and a plurality of sector water stoppers respectively fastened to said sets of sector holder blocks, said sector holder blocks being moved relative to said water outlets when said inner tube is turned within said spray tube by said knob, the sector water stoppers in each set of sector holder blocks covering different angles;

wherein said inner tube can be turned within said spray tube by said knob to move said sector water stoppers relative to said water outlets, causing said water outlets to be alternatively closed or opened.

5,628,459

FIRE BREAK DEVICE

Oliver Bennett, Jr., 161 Prarie View Ct., Westwego, La. 70094

Filed Feb. 21, 1995, Ser. No. 391,928

Int. Cl.[6] B05B *15/06*

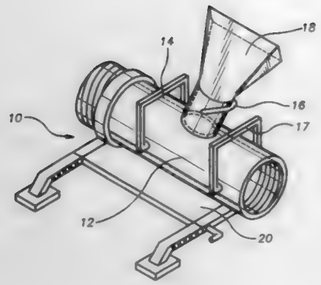
U.S. Cl. 239—280.5 **7 Claims**

1. A fire break device connectable to a source of pressurized water and suitable for use adjacent the exterior of structures, said fire break device comprising:

a) a rigid conduit member having a fluid passageway therein in connection between a first and second end opening, and at least one discharge orifice in fluid communication with said fluid passageway, said first end opening including means for connection with a source of pressurized fluid;

b) a first blocking valve installed within said fluid passageway in a manner to block the passage of fluid through said second

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end opening when said first blocking valve is in a closed position and to allow the passage of fluid through said second end opening when said blocking valve is in an open position;

c) a base member including a planar member and a connecting member, said planar member having a first and second surface, said second surface being substantially planar and adapted for contact with a substantially flat surface, said connecting member being substantially rectangular shaped and having a first and second end, said first end being connected to said first surface, said second end being connected to said rigid conduit member at a location and in a manner such that said discharge orifice is oriented away; and

d) a diffuser connected to said rigid conduit member and positioned in relationship with said discharge orifice in a manner such that said diffuser contacts and diffuses a portion of a fluid stream discharged from said discharge orifice, said diffuser being hollow and frustrum shaped and including a first substantially rectangular shaped opening and a second opening having a smaller area than said first opening and a substantially circular perimeter, said second opening being positioned over and surrounding said discharge orifice.

5,628,460

DEVICE FOR LINEAR SPRAYING OF A LIQUID PARTICULARLY A COOLING LIQUID

Georges Chastang, Maurepas, and Michel M. J. Chiron, Mareil-Marly, both of France, assignors to Bertin & Cie, Des Gatines Plaisir, France

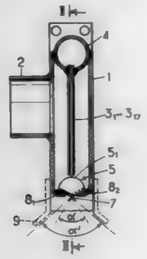
PCT No. PCT/FR93/00891, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/06569, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 16, 1993, Ser. No. 397,255

Claims priority, application France, Sep. 18, 1992, 92 11164

Int. Cl.[6] B05B *7/04;1/14*

U.S. Cl. 239—433 **11 Claims**



1. Device for linear spraying of a liquid comprising a chamber, means for supplying the liquid to an elongate spray nozzle formed. in a wall of the chamber and means for injecting gas into this chamber in order to spray the liquid supplied to the nozzle and to carry it away out of the chamber, wherein an elongate component is arranged in the chamber so as to be sprayed by the liquid leaving the supply means and which then spreads out over a convex surface of this component in order to be carried away by said gas and to flow out towards two elongate slits adjacent to the nozzle and converging on the latter, these slits having a length and a width which varies periodically and complementarily along said length so as to delimit two sheets of the liquid/gas mixture which interpenetrate in the region of the nozzle, forming, at the outlet of the latter, a liquid mist confined within a dihedron opening out from the nozzle.

5,628,461

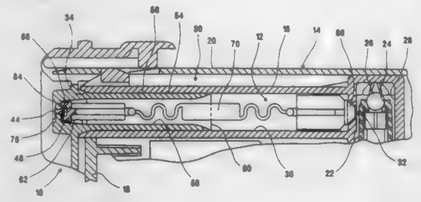
TWO PIECE FLUID SPINNER AND CONTROL VALVE FOR TRIGGER SPRAYER

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Continuation of Ser. No. 230,494, Apr. 20, 1994, Pat. No. 5,549,249, which is a continuation-in-part of Ser. No. 808,168, Dec. 13, 1991, Pat. No. 5,368,234. This application Jun. 2, 1995, Ser. No. 459,697

Int. Cl.[6] B05B *9/043*

U.S. Cl. 239—464 **17 Claims**



1. A sprayer apparatus comprising:

a sprayer housing having a longitudinal fluid channel extending therethrough, the channel having longitudinally opposite first and second ends with a fluid outlet opening at the first end and a fluid inlet opening at the second end;

a control valve positioned in the fluid channel adjacent the fluid inlet opening, the control valve being connected to an incompressible stem that extends through the fluid channel and engages against circumferentially spaced sections of an interior surface of the fluid channel to hold the control valve adjacent the fluid inlet opening by friction engagement of the stem with the sections of the interior surface; and

a fluid spinner positioned in the fluid channel adjacent the fluid outlet opening, the control valve and the fluid spinner are separate, unconnected component parts of the sprayer apparatus.

5,628,462

DRIP IRRIGATION EMITTER

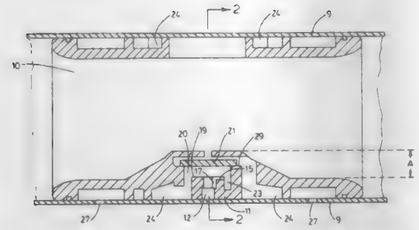
David B. Miller, 6477 N. Maroa, Fresno, Calif. 93704

Filed Aug. 15, 1995, Ser. No. 515,125

Int. Cl.[6] B05B *15/00*

U.S. Cl. 239—542 **17 Claims**

1. A drip irrigation emitter comprising a housing for attachment to a conduit line, said housing including a flat interior surface at the bottom of a cavity, a flat flexible membrane bendably suspended at its perimeter on a platform above said cavity the top side of which is exposed to the pressure of fluid flowing inside said conduit line, a central opening in said surface perpendicular thereto and leading to the exterior, a groove on said surface extending radially outward from said opening to an edge of said surface, a second opening at the edge of said surface leading through a plurality of pressure-reducing labyrinths back to the flow of fluid inside said conduit line, and a slot in said central opening where it



connects to said groove, whereby as pressurized fluid is introduced from said conduit line into said emitter, said membrane presses into said cavity and against said surface, groove, slot and central opening thereby restricting the flow from the emitter to a constant rate across a range of very low to very high pressure.

5,628,463

VAPOR IONIZING DISCHARGER APPARATUS

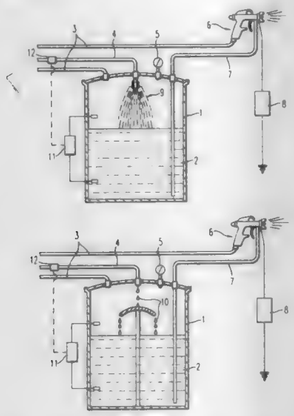
Yasunori Nakamura, Tokyo, Japan, assignor to Colcoat Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,381

Claims priority, application Japan, Apr. 27, 1994, 6-110146

Int. Cl.[6] B05B *5/00*

U.S. Cl. 239—690 **9 Claims**



1. A vapor ionizing apparatus for ionizing water, comprising:

an electrically insulating vessel containing a reservoir of water;

means for atomizing water from said reservoir; and

means for applying an AC voltage of 2 to 20 Kv to the water in said atomizing means such that the water is simutaneously ionized and atomized.

5,628,464

FLUIDIZED BED JET MILL NOZZLE AND PROCESSES THEREWITH

Lewis S. Smith, Fairport, and Gerardo Leute, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

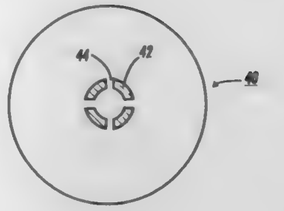
Filed Dec. 13, 1995, Ser. No. 571,664

Int. Cl.[6] B02C *19/06*

U.S. Cl. 241—5 **17 Claims**

1. A fluidized bed jet mill for grinding particulate material including a jetting nozzle comprising:

a grinding chamber;



at least one hollow cylindrical body traversing the wall of the grinding chamber;

an integral face plate member attached to the end of the cylindrical body directed towards the center of the jet mill grinding chamber; and

an articulated annular slotted aperture in the face plate for communicating a gas stream from the hollow body to the grinding chamber to form a particulate gas stream in the jet mill.

5,628,465

GRANULATING DEVICE FOR STRAND MATERIALS

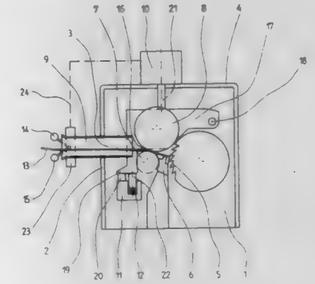
Peter Locker, and Walter Pirrung, both of Grossostheim, Germany, assignors to Rieter Automatik GmbH, Germany

Filed Mar. 21, 1995, Ser. No. 407,706

Claims priority, application Germany, Mar. 30, 1994, 44 11 165.7; Dec. 28, 1994, 44 46 989.6

Int. Cl.[6] B02C *18/06;23/04*

U.S. Cl. 241—34 **12 Claims**



1. A granulating device for strand materials (**13**) comprising a pull-in device for feeding said strand material (**13**) conducted through an inlet shaft (**9**) and transporting it to a knife roll (**5**) for cutting up said strand material (**13**) into granulate, said pull-in device having a pull-in roll (**8**) and a counter-roll (**7**), of which rolls (**8**, **7**) at least one is driveable and both form an inter-roll gap (**16**) for pulling in said strand material (**13**), characterized in that a proximity-type switching element actuatable in response to approach of a human body part (**14**, **15**; **25**) is disposed in the region of the inlet shaft, particularly in front of the entrance (**29**) thereof, said proximity-type switching element (**14**, **15**; **25**) being operable to cancel, when actuated, the setting of the inter-roll gap (**16**) and increase the inner-roll gap (**16**) to such a width that the further pulling-in of said strand material (**13**) is abruptly stopped.

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5,628,466

PRESSURE BARREL FOR A MEAT GRINDER

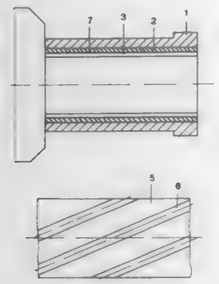
Eberhard Haack, Halle, and Michael Mössmer, Belzweilerwälde, both of Germany, assignors to Maschinenfabrik Dornhan GmbH, Dornhan, Germany

Filed Feb. 22, 1995, Ser. No. 392,050

Claims priority, application Germany, Feb. 28, 1994, 44 06 432.2

Int. Cl.[6] B02C *18/30*

U.S. Cl. 241—82.6 **26 Claims**



1. A pressure barrel for use in a meat grinder of the kind comprising a housing defining a cavity of predetermined cross-sectional configuration and length, comprising:

support means defining a passage and adapted to be removably mounted within said cavity substantially coaxially therewith, said support means comprising body means formed by at least one substantially flat web means bent into a configuration having an outer cross-sectional contour and an overall length substantially corresponding to said configuration and length, respectively, of said cavity and being provided with a plurality of elongate members radially spaced from the axis of said passage and forming between them grooves extending over the entire length of said passage.

5,628,467

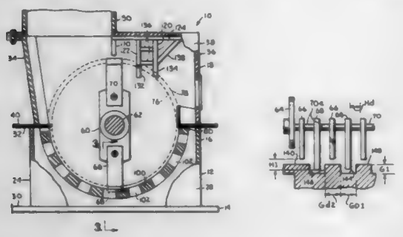
HAMMERMILL WITH INTERSTICED MULTILENGTH HAMMERS

Donald F. Graveman, St. Charles, Mo., assignor to Magnatech Engineering, Inc., Tonganoxie, Kans.

Filed Jul. 19, 1994, Ser. No. 277,327

Int. Cl.[6] B02C *13/04*

U.S. Cl. 241—88.4 **18 Claims**



1. A hammermill apparatus for shredding and reducing materials, said hammermill apparatus comprising:

a housing having a front side, a rear side and connecting sides therebetween defining an interior, and a top surface defining an aperture, said housing further having an upper portion and a lower portion;

an infeed conduit for feeding materials into said housing interior;

a rotor assembly having a first relatively shorter hammer element and a second relatively longer hammer element adjacent said first hammer element;

a grate assembly having a plurality of grate bars; each grate bar being spaced from adjacent grate bars by spaces so as to provide apertures therebetween to allow shredded material of a preselected size to pass during operation between adjacent grate bars and through said grate so thereafter be located on a side of said grate opposite said hammer elements; each of said grate bars having a first cutting surface and a second cutting surface parallel to and spaced away from said first cutting surface; and

said first hammer element has an outer end that describes a first circle and said second hammer element has an outer end that describes a second rotor circle when said rotor assembly rotates; said second rotor circle having a relatively larger radius than said first rotor circle; said grate bars first cutting surface being located in close proximity to said shorter hammer first rotor circle and said grate bars second cutting surface being located in close proximity to said longer hammer second rotor circle.

5,628,468

OPTICAL TAPE CASSETTE

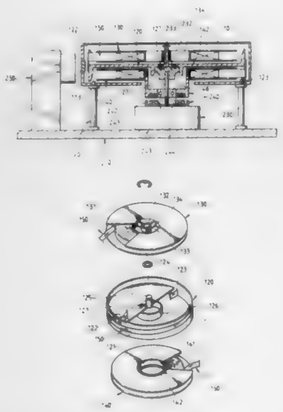
Seung-tae Jung; Jung-hoe Kim, both of Seoul; Dong-heon Kang, Suwon, and Hyeon-yong Jang, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Company, Ltd., Suwon, Rep. of Korea

Division of Ser. No. 998,920, Dec. 30, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,865

Claims priority, application Rep. of Korea, May 30, 1992, 92-9470

Int. Cl.[6] G11B *23/00;25/00*

U.S. Cl. 242—345.1 **9 Claims**



1. An optical tape cassette comprising:

a cassette housing having a front and a bottom, a light-passing window on the front thereof and a center hole in a bottom for providing access into an interior of the cassette housing;

a drum having an upper portion and a lower portion said drum rotatably mounted within the interior of said cassette housing, said drum having a generally cylindrical periphery about which optical tape is slantingly wound between an optical tape outgoing hole and an optical tape incoming hole which are formed on said cylindrical periphery, said drum having a center boss on said lower portion of said drum which is substantially concentric with and accessible through said center hole, said center boss having an inner and outer diameter;

a tape supply reel having one end of said tape supported thereby rotatably mounted in said upper portion of said drum for supplying said optical tape through said outgoing hole; and

a tape take-up reel having the other end of said tape supported thereby rotatably mounted in said lower portion of said drum for receiving said optical tape through said incoming hole, said take-up reel having a hub which is substantially concentric with and accessible through said center hole, said hub having an inner diameter greater than said inner diameter of said center boss,

whereby said boss and said hub are connectable to first and second external rotating members respectively through said center hole.

5,628,469

BELT RETRACTOR WITH AN INTEGRATED BELT PRETENSIONER AND AN ENERGY CONVERTER

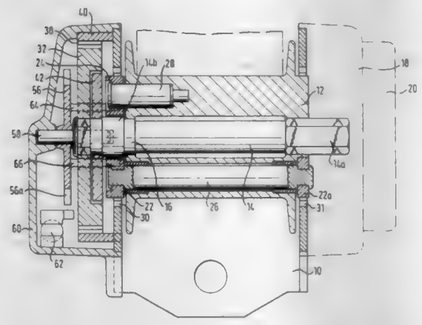
Artur Föhl, Schorndorf, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed Oct. 24, 1995, Ser. No. 547,898

Claims priority, application Germany, Oct. 25, 1994, 44 38 097.6

Int. Cl.[6] B60R *22/28;22/46*

U.S. Cl. 242—374 **11 Claims**



1. A belt retractor comprising a frame with a locking toothing, a belt reel rotatably mounted in said frame, a rotary pretensioning drive associated with said belt reel, a torsion bar mounted coaxially in said reel, the torsion bar having a first end connected to the belt reel and a second end connected to a coupling disc, an internally toothed ring surrounding said coupling disc and fixed with the frame, at least one locking pawl pivotally mounted on a face of said belt reel for selective engagement in said locking toothing, and a control disc is mounted for limited rotation on said second end of the torsion bar, and said control disc engaging said locking pawl at least during a phase of energy conversion, thus preventing it from engaging with said locking toothing, said phase of energy conversion following forced rotation of said belt reel by said rotary pretensioning drive and being achieved by twisting of said torsion bar while said second torsion bar end is blocked with respect to said frame by means for blocking on said coupling disc.

5,628,470

SEAT BELT WEBBING RETRACTOR

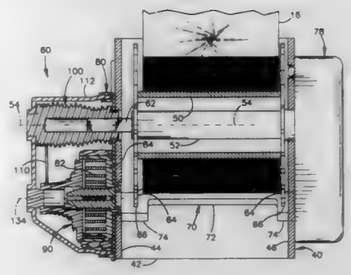
Gary M. Ray, Royal Oak, and Robert F. Rogers, Orion Township, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Mar. 29, 1995, Ser. No. 412,725

Int. Cl.[6] B60R *22/34;* **B65H** *75/48*

U.S. Cl. 242—375.3 **11 Claims**

1. A vehicle occupant safety apparatus comprising:



a belt webbing spool supported for rotation about a belt webbing spool axis in a belt retraction direction and an opposite belt withdrawal direction;

a length of belt webbing wound on said belt webbing spool, said belt webbing being extensible about a vehicle occupant to restrain the occupant;

a shaft spool fixed for rotation with said belt webbing spool in the belt retraction direction and in the belt withdrawal direction, said shaft spool having an outer peripheral surface, said outer peripheral surface of said shaft spool having a non-conical configuration;

a spring spool supported for rotation about a spring spool axis in first and second opposite directions, said spring spool axis being spaced apart from said belt webbing spool axis, said spring spool having an outer peripheral surface, said outer peripheral surface of said spring spool having a non-conical configuration;

a rewind spring connected with said spring spool for biasing said spring spool for rotation in the first direction to apply retraction force to said spring spool; and

an elongate flexible member extending between said outer peripheral surface of said spring spool and said outer peripheral surface of said shaft spool for transmitting retraction force from said spring spool to said shaft spool to bias said belt webbing spool for rotation in the belt retraction direction;

said rewind spring being enclosed within a first portion of said spring spool;

said first portion of said spring spool having a minimum radius as determined by the diameter of said rewind spring and having a minimum axial length as determined by the axial height of said rewind spring, the radius of said spring spool being substantially constant over the axial extent of said first portion of said spring spool.

5,628,471

SAFETY BELT REELING DEVICE WITH SAFETY BELT GUIDE DESIGNED FOR AUTOMATIC ASSEMBLY

Ronald Jabusch, Elsmhorn, Germany, assignor to Autoliv Development AB, Vargarda, Sweden

Filed Feb. 13, 1996, Ser. No. 600,420

Claims priority, application Germany, Feb. 13, 1995, 195 04 506.8

Int. Cl.[6] B60R *22/00*

U.S. Cl. 242—377 **5 Claims**

1. A safety belt reeling device comprising:

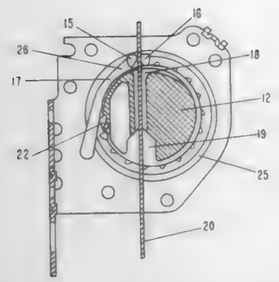
a housing;

a belt reeling shaft rotatably supported in said housing;

a safety belt connected with one end thereof to said belt reeling shaft so as to be reeled onto and withdrawn from said belt reeling shaft;

a safety belt guide movably connected in said housing between an assembly position and an operational position, said safety belt guide having a guide slot through which said safety belt is threaded during assembly of said safety belt reeling device and in which said safety belt is guided during operation of said safety belt reeling device;

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said belt reeling shaft having a belt slot, wherein said safety belt is guided through said belt slot and is secured thereat; and

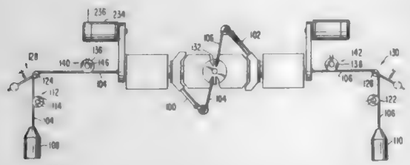
wherein said safety belt guide during assembly is moved into said assembly position at the periphery of said belt reeling shaft and secured in said assembly position such that said guide slot is aligned with said belt slot and such that said guide slot and said belt slot are directly adjacent to one another.

5,628,472

METHODS AND APPARATUS FOR BALANCING ARMATURES DURING COIL WINDING

Federico Sbalchiero; Massimo Lombardi, and Mauro Tarchi, all of Florence, Italy, assignors to Axis USA, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 42,607, Apr. 2, 1993, Pat. No. 5,383,619. This application Sep. 23, 1994, Ser. No. 311,637
Int. Cl.[6] H02K *15/09*
U.S. Cl. 242—433.3 **29 Claims**



1. Apparatus for simultaneously winding two coils of wire onto a rotor for use in a dynamo-electric machine comprising:

first and second wire supplies for respectively supplying first and second wires;

first and second winders for respectively winding said first and second wires onto said rotor;

first and second means for respectively monitoring the lengths of said first and second wires that are wound onto said rotor during a predetermined period of time;

first and second means for respectively applying tension to said first and second wires; and

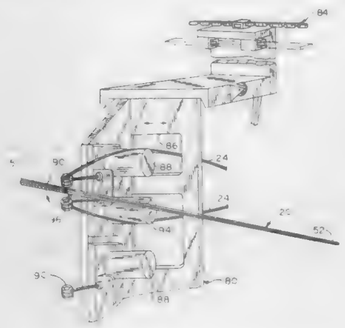
means responsive to said first and second means for monitoring for adjusting the tension applied by at least one of said first and second means for applying tension in order to substantially equalize the lengths of said first and second wires wound onto said rotor during a subsequent one of said predetermined periods of time, wherein said first and second means for monitoring are respectively downstream along said first and second wires from said first and second means for applying tension.

5,628,473

METHODS OF AND APPARATUS FOR APPLYING STRANDS TO A SUPPORT

Jerome S. Berg, Memphis; Jeffrey A. Wessell, Cordova, both of Tenn., and John P. Slocum, Taylors, S.C., assignors to Emhart Inc., Newark, Del.

Filed Dec. 3, 1993, Ser. No. 161,947
Int. Cl.[6] B65H *54/02*
U.S. Cl. 242—444 **18 Claims**



1. An apparatus for applying a pair of strands to a support having a normally linear axis extending between opposite ends thereof and mountable in the apparatus, which comprises:

a first guide structure for guiding a first strand of the pair of strands onto the support from a first direction;

a second guide structure for guiding a second strand of the pair of strands onto the support from a second direction;

enclosure structure for confining the first strand and the second strand at precise respective locations relative to the axis of the support to preclude movement of each of the first and second strands in a direction parallel to the axis of the support independent of the movement thereof associated with applying the strands to the support;

a first tension developing facility located for coupling to the first strand to develop a pulling force through the first strand when coupled thereto which tends to pull the support laterally of its axis in a direction opposite the first direction;

a second tension developing facility located for coupling to the second strand to develop a pulling force through the second strand when coupled thereto which tends to pull the support laterally of its axis in a direction opposite the second direction; and

a frame structure for supporting the first guide structure and the second guide structure at locations relative to each other which allow the pulling forces of each of the first and second tension developing facilities to effectively cancel each other so that the support is precluded from movement lateral of its axis.

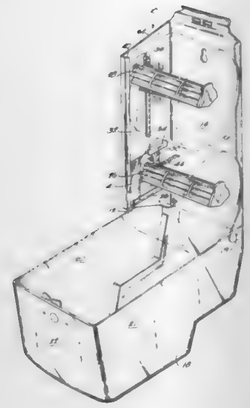
5,628,474

SPRING BIASED AUTOMATIC MULTI ROLL PAPER DISPENSER

Donald G. Krueger, Green Bay, and Kenneth H. LaCount, Pulaski, both of Wis., assignors to Alwin Manufacturing Co., Green Bay, Wis.

Filed Aug. 2, 1995, Ser. No. 510,142
Int. Cl.[6] B65H *19/00*
U.S. Cl. 242—559.4 **7 Claims**

1. A dispenser for paper wound into rolls comprising walls defining an enclosure for confining first and second rolls of paper and defining an access opening opposite a rear wall to enable removal of sheets from said rolls. first and second mandrels, slide blocks for supporting said mandrels in a cantilevered position, a guide path formed on a wall of said enclosure, said guide path



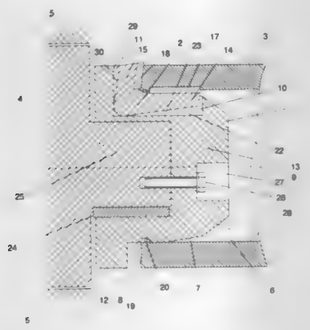
having first and second portions, with said second portion being transverse to said first portion and said slide blocks being mounted for movement in said guide path from a first position wherein said first mandrel slide block is located at a juncture of said first path portion and said second path portion and said second mandrel slide block is located above said first mandrel slide block in said first path portion and wherein said first mandrel slide block is moved from said juncture along said second path portion when sufficient paper is consumed from the roll carried thereon to open the juncture so that said slide block of said second mandrel is moved into said juncture to expose said second roll to said access opening, the improvement which comprises a spring engaging said first mandrel slide block wherein, as the diameter of the first roll on said first mandrel decreases, said spring pulls said first mandrel slide block along said first path away from said juncture.

5,628,475

CLAMPING ARRANGEMENT FOR HOLLOW OBJECTS WITH AN END FACE

Dirk B. Warnaar, 115 Windswept La., Cary, N.C. 27511

Filed Feb. 1, 1996, Ser. No. 593,168
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—571.4 **14 Claims**



1. A clamping arrangement for a hollow object, the hollow object having an end face and an inner circumference accommodating said clamping arrangement, the clamping arrangement comprising:

a center body, including:

a) a first end having a taper;

b) a second end having a collar, wherein the collar has at least one radially extending slot; and

c) a sleeve-shaped portion disposed between the first and second ends and having a peripheral contact surface for engaging and centering the hollow object, the sleeve-shaped portion having at least one longitudinally extending slot, wherein each of the at least one longitudinally extending slot corresponds to each of the at least one radially extending slot; and

at least one clamping body, wherein the at least one clamping body corresponds to the at least one longitudinally extending slot and the at least one radially extending slot, each clamping body further including:

a) a first jaw disposed in the longitudinally extending slot and having a

bottom face and a contact face; and

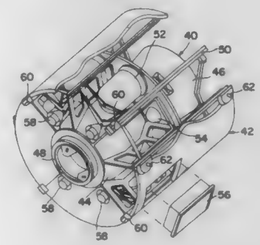
b) a second jaw disposed in the radially extending slot of the collar, the second jaw having a predetermined angle of inclination, a contact face and a back face, wherein the clamping body has a curved outer surface disposed between the bottom face of the first jaw and the back face of the second jaw, and the clamping body is movable longitudinally and radially by impingement of the end face of the hollow object on the contact face of the second jaw, the first jaw being rotatable to move beyond the peripheral contact surface of the sleeve-shaped portion of the center body such that the contact surface of the first jaw contacts the inner circumference of the hollow object by the run-on action of the end face of the hollow object with the second jaw.

5,628,476

ENCAPSULATING SERVICE MODULE FOR EMERGENCY DESCENT VEHICLES

Kevin A. Soranno, Redondo Beach, and David L. Younkin, Los Alamitos, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 110,470, Aug. 20, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 505,922
Int. Cl.[6] B64G *1/22*
U.S. Cl. 244—158 R **9 Claims**



1. An encapsulating service module for constructing a short, compact descent vehicle having a heat shield used to protect the vehicle from overheating during descent through a planetary atmosphere, the encapsulating service module comprising:

an annular-shaped support structure for attachment around a spacecraft module that is used primarily to carry a payload during a descent from orbit; and

one or more service module components mounted to the support structure, to provide services to the spacecraft module prior to a reentry maneuver;

wherein the support structure is constructed to surround a spacecraft module selected from a variety of such modules, and wherein the support structure and the one or more service components are separated from the descent vehicle prior to descent from orbit, and wherein the service module compo-

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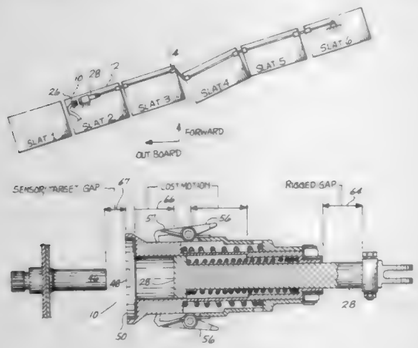
nents include one or more environmental control and life support system tanks and one or more avionics and battery units.

5,628,477

AUXILIARY AIRFOIL LOST MOTION DETECTOR AND ACTUATOR

Joseph S. Caferro, Seattle, and Hector V. Tomassi, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 13, 1995, Ser. No. 387,648
Int. Cl.[6] B64C *13/14;3/50;13/30*
U.S. Cl. 244—214 **5 Claims**



1. Apparatus for detecting and signaling a misalignment of adjacent auxiliary airfoil elements comprising:

a cable;

an actuator having a compression spring system attached to said cable;

a proximity sensor system attached to the housing of said spring system; and

a latch means for locking said spring system with respect to said housing;

wherein said spring system responds to loadings in said cable, and said spring system controls movement of said cable toward and away from said housing until a predetermined cable loading is reached, at which time said actuator moves away from said sensor system and said latch means locks said spring system against movement.

5,628,478

CAB SIGNAL PICKUP SYSTEM WITH MOTOR NOISE REDUCTION

Lee A. McConnel, Parkville, and John H. Johnson, Blue Springs, both of Mo., assignors to Harmon Industries, Inc., Blue Springs, Mo.

Filed Jan. 31, 1995, Ser. No. 381,438
Int. Cl.[6] B61L *15/00*
U.S. Cl. 246—194 **11 Claims**

1. In a cab signal system having a receiver on board a locomotive and in which control information transmitted through the rails of a railroad track to the locomotive utilizes a carrier having a frequency in a range from 40 Hz or less to approximately 250 Hz, wherein the locomotive employs an alternating current drive motor connected to a pair of rail-engaging wheels and the drive motor emits high level noise in said frequency range, the improvement comprising:

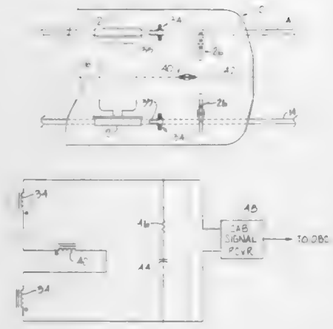
a pair of pickup coils for sensing magnetic fields around the rails produced by said control information, each of said coils having a core of sufficiently short length to cause the sensitivity of the coil to have a pronounced roll-off characteristic with increasing distance from a current-carrying conductor,

means for mounting said pickup coils on said locomotive in an environment in which said noise is present but in operative positions closely spaced from corresponding underlying rails, whereby said roll-off characteristic and the proximity of the coils to the rails increases the signal strength of the sensed information relative to said noise,

a cancelling coil responsive to said noise,

means for mounting said cancelling coil on said locomotive in said environment and in a position intermediate the respective vertical planes of the rails rendering the cancelling coil substantially insensitive to the control information flowing in the rails, and

input circuit means for said receiver interconnecting said pickup coils and said cancelling coil with said pickup coils in phase and said cancelling coil out of phase therewith, whereby to enhance the signal-to-noise ratio and deliver the sensed information to the receiver with reduced interference from the drive motor.

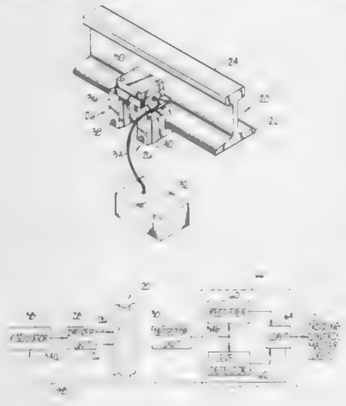


5,628,479

VITAL WHEEL DETECTOR

Forrest H. Ballinger, Grain Valley, Mo., assignor to Harmon Industries, Inc., Blue Springs, Mo.

Filed Dec. 12, 1995, Ser. No. 571,065
Int. Cl.[6] B61L *1/00*
U.S. Cl. 246—249 **10 Claims**



10. A vital wheel detector apparatus for railways comprising:

a longitudinally extending rail,

a pair of relatively closely spaced, electrically conductive mounting members,

means securing said members to said rail in longitudinally spaced relationship thereto and in electrical contact therewith, whereby a short segment of the rail extends between the two members,

a driver unit for delivering an oscillating electrical current to said members for injection into the rail, whereby to cause the current to flow in said segment between said members,

fastener means mounting said driver unit on said members and providing the exclusive electrical interconnection of said driver unit and said members, whereby release of said fastener means breaks said interconnection and prevents said current flow,

a detector unit attached to said driver unit and mounted in an operative position proximate to said segment for producing a monitor signal in response to a field produced by said current flowing in said segment, and further responsive to changes in said field resulting from the presence of a wheel of a train on said segment for modifying said monitor signal in a manner indicative of the presence of said wheel,

output means connecting said detector unit to a signal processing means which determines from said monitor signal whether a wheel of a train is present on said segment, and

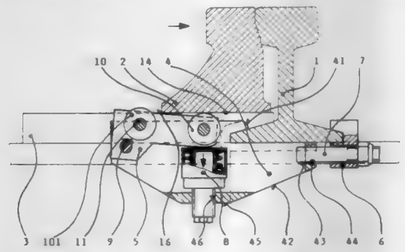
said output means including a normally closed connection through said driver unit which, if the detector and driver units should become detached from each other, assumes an open condition interrupting continuity to said signal processing means, whereby securement of the members to the rail and integrity of the apparatus are required in order for the monitor signal to be produced by the detector unit and received by the signal processing means.

5,628,480

SWITCH BLADE ROLLING DEVICE

Pavel Vrsecky, Chodov, and Jiri Walter, Prague, both of Czech Rep., assignors to Eco Production Vresova, SPOL. S.R.O., Vresovà, Czech Rep.

PCT No. PCT/CZ93/00026, § 371 Date Nov. 27, 1995, § 102(e) Date Nov. 27, 1995, PCT Pub. No. WO94/28246, PCT Pub. Date Dec. 8, 1994
PCT Filed Nov. 15, 1993, Ser. No. 553,568
Claims priority, application Czech Rep., May 25, 1993, 991-93
Int. Cl.[6] E01B *7/00*
U.S. Cl. 246—453 **5 Claims**



1. A switch blade rolling device having a spring supported rolling transport unit for moving a switch blade having a switch blade foot and a switch blade foot inner edge between a first position adjacent a stock rail and a second position apart from the stock rail, the rolling device comprising:

a body comprising a pair of side parts, a transverse end wall having an end wall opening therethrough, a bottom transverse wall having a bottom opening therethrough, and a hook for engaging the stock rail;

a clamping claw anchored to the end wall at the end wall opening, the claw being provided for securing the body to the stock rail;

an elastic support fastened to the bottom transverse wall at the bottom opening, the support having a top surface;

an oscillating lever bolt connected between the pair of side parts;

an oscillating lever oriented longitudinally and pivotally mounted on the oscillating lever bolt between the pair of side parts, the lever having an upper surface and a free end supported by the elastic support;

a first roller rotatably connected to the oscillating lever at the free end and positioned above the elastic support;

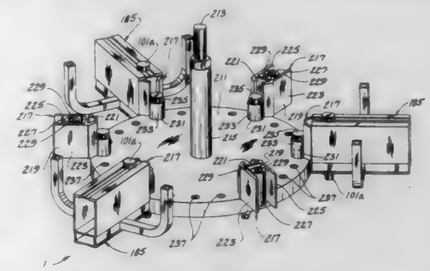
a second roller rotatably connected to the oscillating lever between the oscillating lever bolt and the first roller, such that when the switch blade is in the first position, a distance between a surface of the second roller and the inner edge of the switch blade foot is between 0 and 50 mm.

5,628,481

SUPPORT SYSTEM FOR DATA TRANSMISSION LINES

Eric R. Rinderer, Highland, Ill., assignor to B-Line Systems, Inc., Highland, Ill.

Division of Ser. No. 175,591, Dec. 29, 1993. This application Jun. 2, 1995, Ser. No. 460,468
Int. Cl.[6] E21F *17/02*
U.S. Cl. 248—58 **18 Claims**



1. A support system for data transmission lines, comprising

a plurality of rail sections,

a hub adapted to be supported at a fixed elevation and having a flat planar upper surface for supporting said data transmission lines;

a plurality of vertical holes in the hub at intervals spaced around the hub,

connector means cooperable with said vertical holes in the hub for connecting the rail sections to the hub in positions in which the rail sections radiate out from the hub, and

a series of rungs extending laterally out from the rail sections, said rungs having upper line supporting surfaces which are substantially coplanar with the upper surface of the hub.

5,628,482

KEYBOARD STORAGE DEVICE ASSEMBLY

Sam Iravantchi, Rossmoor, and Douglas Walker, Long Beach, both of Calif., assignors to Rubbermaid Office Products Inc., Maryville, Tenn.

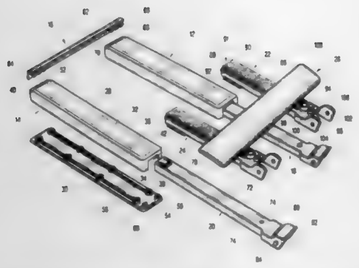
Filed Aug. 10, 1995, Ser. No. 512,843
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 **23 Claims**

1. A keyboard storage device assembly for computer keyboards, comprising:

at least one elongate extension arm having a rearward end and a forward end;

at least one platform housing having an elongate channel that receives the rearward extension arm end therein and the extension arm moves within the channel from a storage position substantially within the channel to an extended position forward of the channel;

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at least one keyboard support plate having a forward end pivotally coupled to the forward end of the extension arm, and the keyboard support plate has a top surface for supporting and positioning a keyboard thereon between the extension arm forward end and the platform housing; and the top surface pivots with the support plate from a substantially horizontal orientation into a substantially more vertical storage orientation in which the top surface and the keyboard thereon face forwardly.

5,628,483

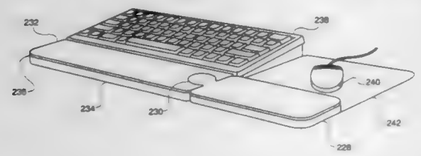
WRIST REST

Mark R. Smith, Palo Alto, and Philip G. Wessells, Menlo Park, both of Calif., assignors to ACCO USA, Inc., Wheeling, Ill.

Continuation of Ser. No. 255,581, Jun. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 6,225, Jan. 19, 1993, Pat. No. 5,358,203, which is a continuation of Ser. No. 690,742, Apr. 24, 1991, Pat. No. 5,197,699. This application Sep. 10, 1996, Ser. No. 710,045

Int. Cl.[6] B68G *5/00*

U.S. Cl. 248—118 **20 Claims**



1. A wrist rest having a length, a depth, and a height, comprising:

a substantially rectangular base layer having a planar bottom surface and a top surface;

a substantially rectangular low friction surface layer comprising a bottom surface and planar top surface;

a substantially rectangular support layer between said base layer and said low friction surface layer, said support layer having a top surface and a bottom surface, wherein said top surface of said support layer is attached to said bottom surface of said low friction layer and said bottom surface of said support layer is attached to said top surface of said base layer, and wherein said planar top surface of said low friction surface layer is substantially parallel with said planar bottom surface of said support layer; and

wherein the thickness of the wrist rest is in the range from about ½ to 1 inches.

5,628,484

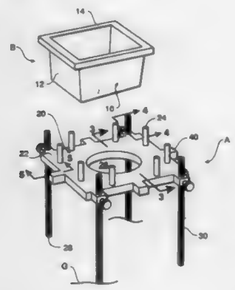
FLOOR MOUNTED WATER BASIN SUPPORT

Gabriel Lechuga, 67365 Verona Rd., Cathedral City, Calif. 92234

Filed Feb. 26, 1996, Ser. No. 607,132

Int. Cl.[6] A47G *23/02*

U.S. Cl. 248—149 **23 Claims**



1. A floor mounted water basin support which holds and stabilizes a relatively heavy conventional water basin of the type having an enclosing side wall and a bottom wall and a peripheral rim during fabrication of a floor in which the basin is to be mounted so that the basin is mounted in the floor when completed, said water basin support comprising:

a) a support plate;

b) means forming an opening in said support plate to receive a drain portion of the basin while operatively supporting a bottom wall of a basin on the support plate with the rim thereof located above the support plate and to allow for room to connect conventional plumbing pipes or fittings to that basin;

c) leg means for holding said support plate in a desired position and at a desired elevation above a ground surface so that a floor can be fabricated above the plate and around a basin and mount this basin in the floor when fabricated; and

d) said support plate being formed of a non-electrically conductive material to preclude a soil from being in electrically conductive communication with the water basin or any plumbing pipes or fittings associated therewith to thereby present corrosive action.

5,628,485

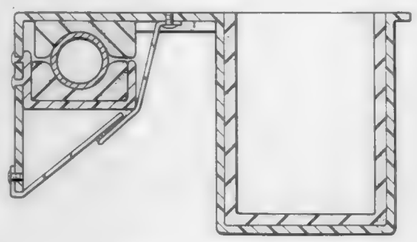
DRINK HOLDER

Cheryl G. Ray, 461 Green Glade Rd., Birmingham, Ala. 35244

Filed Dec. 13, 1994, Ser. No. 357,198

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—231.61 **3 Claims**



1. A drink holder comprising:

a receptacle for holding a beverage container, said receptacle including a liner fabricated from insulating material;

a laterally extending support arm projecting from said receptacle, said laterally extending support arm including a vertical extension; and

encircling means for grasping an environmental object, said encircling means having a clamp member fastened to said vertical extension, said clamp member including opposed resilient cushions for enabling said means for grasping to conform to the shape of the environmental object, said clamp member including protuberances having enlarged heads, and said vertical extension including means defining a plurality of adjustment slots for receiving said protuberances, said protuberances slidably movable within said slots and interlocked therein, whereby said clamp member is adjusted by inserting said protuberances selectively into said adjustment slots.

5,628,486

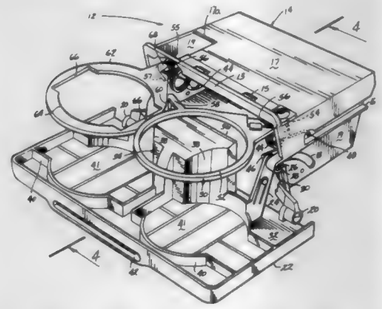
CONCEALABLE BEVERAGE CONTAINER HOLDER

Christopher A. Rossman, Comstock Park, and Larry Porter, Galesburg, both of Mich., assignors to Summit Polymers, Kalamazoo, Mich.

Filed May 30, 1995, Ser. No. 453,692

Int. Cl.[6] A47K *1/08*

U.S. Cl. 248—311.2 **15 Claims**



1. A container holder assembly for holding beverage containers in a vehicle comprising:

a housing having an open front;

at least one container retaining arm pivotably mounted in the housing for movement between a retracted position within the housing and an extended position outside of the housing and forming at least a portion of the container holder, the retaining arm lying in a substantially horizontal plane when said retaining arm is in the extended position;

a door pivotably mounted to the housing for movement between a substantially vertical closed position covering the opening in the housing and an open substantially horizontal position forming a supporting shelf for a container, whereby the plane of the at least one container retaining arm lies substantially parallel to the door when the door is in the open position; and

an actuator between the door and the arm to pivot the arm from the extended position to the retracted position as the door moves between the open position and the closed position, the actuator comprising a cam on one of the door and the arm and a follower on the other of the door and the arm.

5,628,487

FIXTURE FOR CAMOUFLAGE

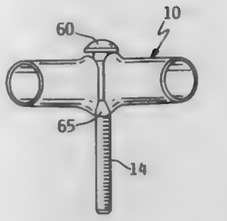
John S. Huber, P.O. Box 835, Lakeville, Minn. 55044

Filed Oct. 3, 1995, Ser. No. 538,459

Int. Cl.[6] A47F *7/00*

U.S. Cl. 248—314 **7 Claims**

1. An apparatus for building a camouflage structure for holding limbs and the like, comprising a tubular member having a bend of



less than 90 degrees to form an apex, said apex comprising an outer curved surface and an inner channel; wherein said inner channel further comprises a lower curved surface and spaced apart walls; a fastener in said inner channel, said fastener having an enlarged head abutting said tubular member and a fastener shank extending outwardly from said channel; and a weldment affixing said fastener to said tubular member; said inner channel walls being formed in substantially parallel alignment and subsequently being crimped together about said fastener.

5,628,488

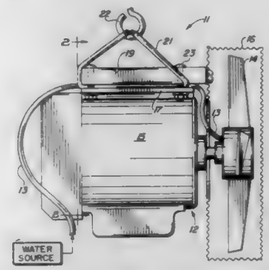
FLEXIBLE ISOLATION MOUNT

James A. Mann, 9045 Ron-Den La., Windermere, Fla. 34786

Filed Nov. 28, 1994, Ser. No. 345,858

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—610 **17 Claims**



1. A flexible isolation mount suspending a motor unit from a support frame with said motor unit having a housing, said isolation mount comprising:

(a) a flexible belt attached to said motor housing;

(b) first means, attached to said motor housing, for engagement with said belt whereby said belt forms a flexible handle, said first engagement means includes a support mounting base affixed to the motor housing such that said belt is secured intermediate the support mounting base and the motor housing having a first and second loop in the belt extending beyond the periphery of the support mounting base and folded over said support mounting base; and,

(c) second means, fixed to said support frame, for engagement with the handle to suspend the motor unit from the support.

5,628,489

UNIBODY MASTER-SLAVE DISCHARGE VALVE ASSEMBLY FOR CO_2 SYSTEMS

Stuart D. Woodman, 2 Major Button's Drive, Markham, Ontario, Canada

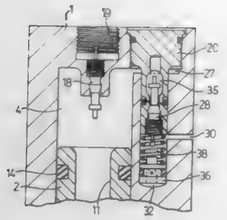
Filed Jun. 12, 1995, Ser. No. 489,665

Int. Cl.[6] F16K *31/12*

U.S. Cl. 251—29 **8 Claims**

1. A discharge valve assembly for a pressurized fluid containment system, said discharge valve assembly comprising:

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an elongate valve body having a first longitudinally extending bore defining a primary valve chamber adapted to be connected to a fluid pressure source, the bore being eccentrically disposed thereby providing a thickened wall portion to one side of said valve chamber;

a discharge port traversing said thickened wall portion and communicating with said primary valve chamber;

a second longitudinally extending bore defining a secondary valve chamber generally parallel to the primary chamber and communicating at one end with the primary valve chamber and at the other end with the discharge port;

a primary valve member displaceable within the primary valve chamber from a closed position to an open position by fluid pressure acting on a first end of the valve member, and having a pressure equalization opening admitting a holding portion of the pressurized fluid to a second end of the valve member for normally holding the valve in the closed position;

a slave valve member disposed within said secondary valve chamber, one end of said slave valve member being in communication with the holding portion and the other end venting to atmosphere; and

an actuating piston displaceable within said secondary valve chamber, a first end of said piston being in communication with said discharge port and a second end being in communication with the atmosphere, wherein a predetermined pressure in said discharge port displaces said actuating piston to displace said slave valve member to an open position and allow the holding portion of the pressurized fluid on the second end of said primary valve member to vent to atmosphere thereby permitting the pressurized fluid acting on the first end to displace said first valve member to the open position and permit the pressurized fluid to flow through said discharge port.

5,628,490

CONTROL VALVE WITH PNEUMATIC ACTUATION

Daniel H. Roberts, Topeka; Vincent J. Boreas, Leawood, and Charles A. Palmer, Overland Park, all of Kans., assignors to Metcraft, Inc., Grandview, Mo.

Filed Oct. 18, 1995, Ser. No. 544,658

Int. Cl.° F16K *31/12*

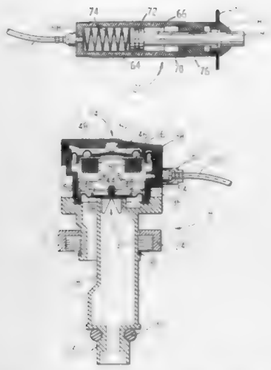
U.S. Cl. 251—57 **8 Claims**

1. A manually actuated control valve apparatus for use in controlling the flow of water from a lavatory tap, the apparatus comprising:

a valve assembly including a valve movable between flow-blocking and flow-permitting positions, a biasing means for biasing the valve toward the flow-blocking position, a valve opening means for opening the valve against the force of the biasing means in the presence of a predetermined pneumatic pressure in the opening means, and a means for relieving the predetermined pressure in the opening means to release the valve for movement to the flow-blocking position;

an actuator assembly for supplying pneumatic pressure to the opening means of the valve assembly, the actuator assembly including

a tubular actuator body including a cylindrical inner surface and presenting opposed first and second axial ends, the first end being closed except for an orifice,



an elongated plunger including a first end provided with a piston head sized for receipt in the body in sealing engagement with the inner surface and a second end protruding beyond the second end of the body and accessible for manual operation, the plunger being movable in a first direction to create a positive pressure at the orifice, and in a second direction to create a negative pressure at the orifice; and

a hose connecting the orifice of the actuator assembly with the valve opening means for conveying pneumatic pressure to the valve assembly so that manual actuation of the plunger creates a pneumatic pressure within the body that is conveyed to the valve assembly to open the valve.

5,628,491

PILOT VALVE

Otto Krone, Beesten, Germany, assignor to Westfalia Separator Aktiengesellschaft, Oelde, Germany

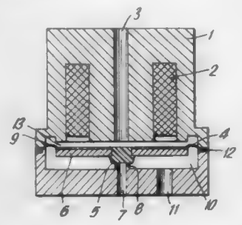
PCT No. PCT/EP94/00528, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/23563, PCT Pub. Date Oct. 27, 1994

PCT Filed Feb. 24, 1994, Ser. No. 530,348

Claims priority, application Germany, Apr. 15, 1993, 43 12 276.0

Int. Cl.° F16K *31/06*

U.S. Cl. 251—129.21 **5 Claims**



1. A pilot valve for controlling a pneumatically actuated main valve of a milking-system pulsator, with an electromagnet that is alternately energized and de-energized, displacing an armature back and forth between each end of a stroke, air-supply line and is sealed by the armature at one end of the stroke and a vacuumizing line is sealed at the other end of the stroke and the lines are accordingly alternately connected to a valve chamber, the valve chamber communicates with the main valve through a control channel, a diaphragm of resilient material is connected to the armature such as to provide axial guidance for the armature without friction and is interposed between the armature and the electromagnet such that, when the armature is at one end of its stroke, it seals off the air-supply line.

5,628,492

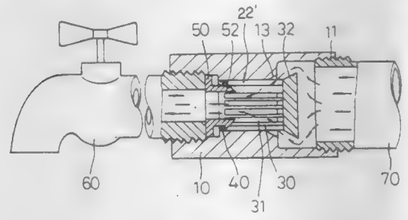
FAUCET CONNECTOR DEVICE

Chung H. Lee, 30 Chang Ho Rd., Sec. 1, Chang Hua, Taiwan

Filed Feb. 2, 1996, Ser. No. 597,500

Int. Cl.° F16L *29/02*

U.S. Cl. 251—149.1 **6 Claims**



1. A faucet connector device, comprising

a connector body which is a hollow cylinder having an inlet end and an outlet end, each of said inlet end and said outlet end having an inner threaded opening, between said openings of said inlet and outlet ends of said connector body defining an axial long circular channel which has an inner diameter smaller than said openings, wherein one end of said channel which is adjacent to said opening of said inlet end has a countersink opening which is a conical water stopping hole having a first inclined conical surface;

a water stopper, which has a solid conical stopper head having a second inclined conical surface and a driving shaft extending coaxially from a smaller end of said stopper head, wherein said stopper head and said countersink opening have the same conical slant gradient, said driving shaft having an free end and being disposed in said channel with said stopper head abutting against said countersink opening; at least a water passage being formed along said length of said driving shaft for enabling water flowing from said inlet end of said connector body to said outlet end of said connector body via said passage, wherein said driving shaft has a length longer than said channel so that said free end of said driving shaft is extended to a bottom of said opening of said outlet end of said connector body, said driving shaft comprising at least two parallel and elongated base rods protruding symmetrically from the smaller end of said stopper head, wherein each said base rod has a free end and a groove positioned at an outer surface near said free end of said base rods; and

a retaining washer having an outer diameter larger than said inner diameter of said channel and being mounted to an free end of said driving shaft so as to hold said water stopper in position.

5,628,493

OILFIELD VALVE

Devereux J. McKnight, 1471 Old Spanish Trail, Broussard, La. 70518; Brent H. McKnight, Nueces County, Tex., and James A. Cunningham, Patterson, La., assignors to Devereux J. McKnight, and Brent McKnight

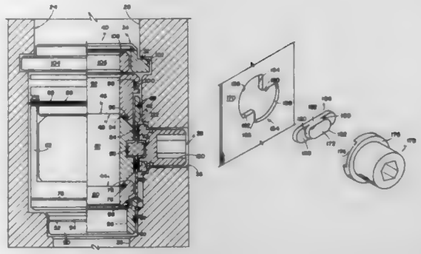
Division of Ser. No. 328,831, Oct. 24, 1994, Pat. No. 5,529,285, which is a division of Ser. No. 906,055, Jun. 29, 1992, Pat. No. 5,246,203. This application Mar. 14, 1996, Ser. No. 615,108

Int. Cl.° F16K *5/06*

U.S. Cl. 251—288 **5 Claims**

1. A valve comprising

a housing having an axial passage therethrough and a lateral passage opening into the axial passage;



a valve mechanism including a cage having an opening aligned with the lateral passage, shoulder means on the cage, a lower valve seat carried by the cage, a valve ball carried by the cage and abutting the lower valve seat, an upper valve seat carried by the cage and abutting the valve ball, and means connecting the cage, lower valve seat, valve ball and upper valve seat together;

a connector engaging the valve ball for rotating the valve ball including

a base providing, with the valve ball, a torque transmitting connection.

the base being mounted in the cage opening for rotation between the valve open position abutting the shoulder means and the valve closed position abutting the shoulder means;

means for securing the cage in the axial passage; and

an actuator extending through the lateral housing passage and attached to the connector for rotating the valve ball.

5,628,494

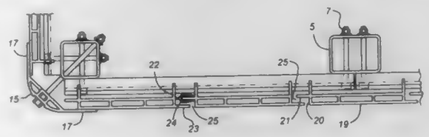
FENCE PANEL ASSEMBLY AND FENCE

James L. Arnold, 6223 Greenway Forest, Houston, Tex. 77088

Continuation of Ser. No. 36,149, Mar. 24, 1993, Pat. No. 5,441,240. This application Jun. 1, 1995, Ser. No. 458,466

Int. Cl.° E04H *17/16*

U.S. Cl. 256—24 **16 Claims**



1. A fence for mounting on a fence post, comprising:

a) two panel stringers in a substantially parallel arrangement, each of said stringers comprising an upper lobed wing, a lower lobed wing, and a mounting assembly capable of securing said stringer to a fence post; and

b) a plurality of fence panels slidably mounted on said stringers in a substantially parallel arrangement, each of said panels mounted in a substantially perpendicular configuration to said stringers, said fence panels comprising angulated channels capable of permitting air flow between said fence panels, said panels being capable of being spaced apart with respect to each other so as not to permit a line of vision from any distance from one side of said panels between said panels to the other side of said panels while permitting air flow from the front side of the panels through said angulated channels to the rear side of the panels.

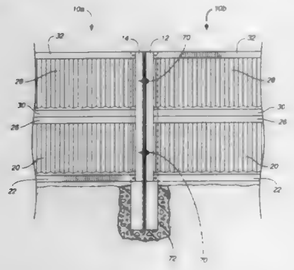
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5,628,495

METAL FENCE STRUCTURE

Enrique P. Gandara, Garland, Tex., assignor to Gandara System, Garland, Tex.

Filed Jul. 31, 1996, Ser. No. 690,728
Int. Cl.[6] E04H *17/14;17/20*
U.S. Cl. 256—24 20 Claims



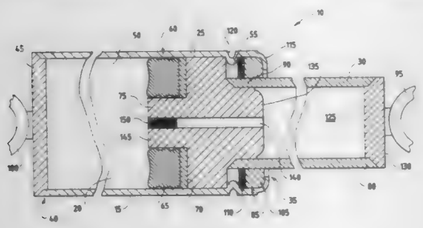
1. A fence structure, comprising:
a pair of post members, each having at least a portion thereof that is cross-sectionally channel shaped;
a first panel assembly comprising a corrugated panel and a pair of lateral stiffeners, each lateral stiffener having a channel receptacle for receiving therein an opposing corrugated edge of the corrugated panel, each end of said pair of lateral stiffeners being insertable within a respective channel of the post members; and
a second panel assembly constructed substantially identical to said first panel assembly, whereby when said first and second panel assemblies are inserted one over the other within the respective channels of said post members, a rigid fence structure is formed.

5,628,496

PNEUMATIC SPRING

James Chamberlin, Charlotte, N.C., assignor to AVM, Inc., Marion, S.C.

Filed Jun. 7, 1995, Ser. No. 472,501
Int. Cl.[6] F16F *5/00*
U.S. Cl. 267—64.11 21 Claims



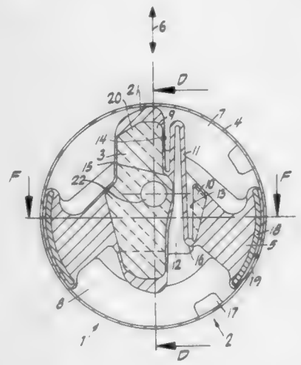
1. A pneumatic spring, comprising:
a hollow cylinder having an open end and a closed end, and defining a first internal chamber;
a piston rod slidable mounted in the open end of the cylinder, the piston rod defining a second internal chamber and having a first end extending into the first internal chamber and a second end projecting from the open end of the cylinder;
a piston slidable positioned in the cylinder and dividing the first internal chamber into a compression compartment adjacent the closed end of the cylinder and an extension compartment adjacent the open end of the cylinder, the volumes of the compression and extension compartments varying in accordance with the position of the piston, the piston being connected to the first end of the piston rod for movement away from the cylinder closed end during an extension stroke and toward the cylinder closed end during a compression stroke;
a predetermined quantity of gas in the compression compartment under a pressure in excess of atmospheric pressure;
a seal assembly mounted on the piston and adapted to prevent gas flow between the compression and extension compartments;
a flow passage extending through the piston between the compression compartment and the second internal chamber and permitting gas flow therebetween; and
a gas permeable insert of a predetermined porosity positioned in the flow passage and adapted to provide restricted flow rate of gas through the flow passage.

5,628,497

LIQUID-FILLED SUPPORT BEARING WITH FLEXIBLE PARTITION WALL

Axel Rudolph, Bensheim/Auerbach, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Continuation of Ser. No. 166,590, Dec. 14, 1993, abandoned. This application May 1, 1995, Ser. No. 537,339
Claims priority, application Germany, Dec. 14, 1992, 42 42 080.6
Int. Cl.[6] F16F *13/00*
U.S. Cl. 267—140.12 19 Claims



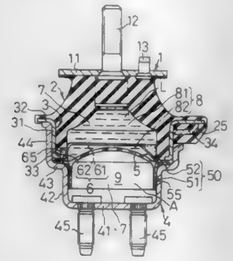
1. A liquid-filled bearing for damping vibrations caused by movement in a moving direction, said liquid-filled bearing comprising:
an inner fitting;
an outer fitting surrounding said inner fitting and spaced apart from said inner fitting;
an elastic spring element of elastomer material connecting said inner fitting and said outer fitting and dividing an area between said inner fitting and said outer fitting so as to form at least two chambers, said chambers being filled with liquid;
a gap extending within at least one of said inner and outer fittings, said gap extending between said chambers in a gap extension direction substantially parallel to the moving direction; and
at least one partition wall disposed in said gap in a rolling diaphragm-type profile, said partition wall being movable in a partition wall displacement direction;
wherein said partition wall displacement direction is substantially perpendicular to said gap extension direction.

5,628,498

FLUID-FILLED ELASTIC MOUNT

Takanobu Nanno, Aichi, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Dec. 18, 1995, Ser. No. 573,635
Claims priority, application Japan, Dec. 19, 1994, 6-315332
Int. Cl.[6] F16F *13/00;* F16M *7/00*
U.S. Cl. 267—140.13 2 Claims



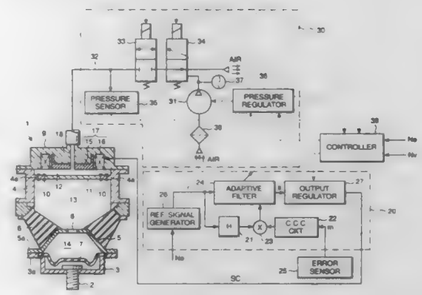
1. A fluid-filled elastic mount comprising:
a first mounting metal member;
a rubber elastic block having two end sides, said rubber elastic block being secured on one end side of said two end sides to said first mounting metal member and having a cavity on the other end side of said two end sides;
a cylindrical metal member which is secured to an outer periphery of said other end side of said rubber elastic block;
a bottomed cylindrical second mounting metal member which is secured to an outer periphery of said cylindrical metal member to define with said cavity of said rubber elastic block a closed space;
a diaphragm, a peripheral end portion of which is retained by one of said second mounting metal member and a cylindrical retaining metal member fitted to said rubber elastic block to divide said closed space into a fluid-filled chamber filled with a fluid, and an air chamber filled with air; and
a partition member which partitions said fluid-filled chamber into a main chamber and an auxiliary chamber, and defines with said rubber elastic block an orifice passage interconnected with said main chamber and said auxiliary chamber, said fluid inside said fluid-filled chamber being pressurized through the increase of the internal pressure of said air chamber and the deformation of said diaphragm due to the forcibly fitting of said second mounting metal member on said cylindrical metal member.

5,628,499

COUNTER VIBRATION GENERATING POWER UNIT MOUNTING DEVICE

Naoki Ikeda, and Shin Takehara, both of Higashihiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Jan. 25, 1994, Ser. No. 188,337
Claims priority, application Japan, Jan. 25, 1993, 5-010155; Mar. 10, 1993, 5-049184; Nov. 5, 1993, 5-276383
Int. Cl.[6] F16F *9/10*
U.S. Cl. 267—140.14 18 Claims



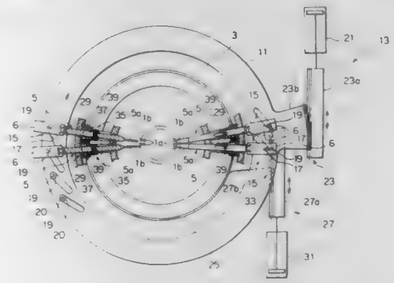
1. A power unit mounting device for mounting a power unit to a vehicle body and canceling vibrations applied thereto from the power unit, comprising:
vibratory means, flexibly supported by a portion of said power unit mounting device, for generating vibrations in the power unit mounting device;
exciting means for causing said vibratory means to generate said vibrations in the power unit mounting device so as to reduce vibrations transmitted to said power unit mounting device from said power unit; and
frequency regulating means for adjusting a natural resonance frequency of said vibratory means to a predetermined frequency within a frequency band of vibrations which may be transmitted to the power unit mounting device.

5,628,500

CLAMPING APPARATUS FOR A COIL

Mikio Iguchi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,107
Int. Cl.[6] B25B *1/20*
U.S. Cl. 269—37 19 Claims



1. A clamping apparatus for a coil having a plurality of generally U-shaped winding wires comprising:
a support disk having a central axis;
a plurality of clamp pins disposed on said support disk for rotation relative thereto and spaced from each other with predetermined circumferential intervals, each of said clamp pins being movable in a radial direction of said support disk and having a tapered tip end directed toward the central axis of said support disk, each of said tip ends having two pairs of engagement grooves formed therein;
first drive means for driving said clamp pins to move in a direction radially of said support disk by a predetermined radial distance whereby the tapered tip end of each clamp pin is adapted to move into or out of adjacent ones of said U-shaped winding wires; and
second drive means for driving said clamp pins to rotate around their longitudinal axis by a predetermined rotational angle whereby the engagement grooves in each clamp pin are adapted to engage corresponding U-shaped winding wires to fixedly clamp them.

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5,628,501

APPARATUS FOR PRODUCING PRINTED PRODUCTS

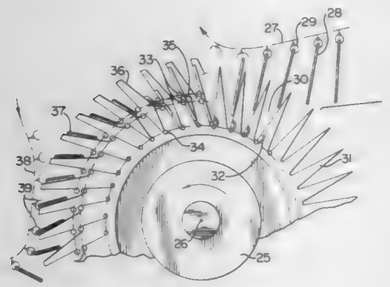
Jacques Meier, Bäretswil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 7, 1995, Ser. No. 477,286

Claims priority, application Switzerland, Jun. 7, 1994, 01 783/94

Int. Cl.[6] B31F *1/00;7/00*

U.S. Cl. 270—45 15 Claims



1. An apparatus for producing printed products composed of one or more individual sub-products, said apparatus comprising a plurality of successive receiving positions arranged between at least one sub-product feeding station and at least one product removal station, wherein at least one of the receiving positions is each provided with at least one folding device, each folding device comprising a pair of folding rollers and a folding tongue mounted for movement so as to move the sub-product which is to be folded between the folding rollers.

5,628,502

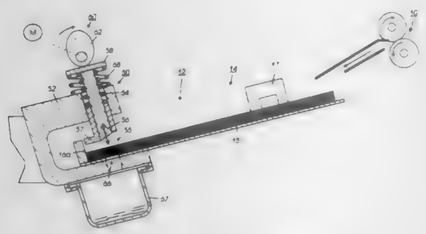
LOW FORCE SHEET HOLE PUNCHING SYSTEM IN OUTPUT COMPILER OF REPRODUCTION APPARATUS

Kiri B. Amarakoon, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1996, Ser. No. 689,297

Int. Cl.[6] B65H *39/05*

U.S. Cl. 270—58.07 5 Claims



1. In a sheet output registering and stacking system with an output stacking tray for accumulating, registering, and stacking on top of preceding sheets in a superposed set stack the printed sheets sequentially individually outputted by a reproduction system, the improvement comprising:

a low force on-line sheet hole punching system integral said output stacking tray for punching holes through only one said individual sheet at a time on top of said superposed set stack of printed sheets as each said individual sheet is so registered and stacked, and before the next sequential sheet is so registered and stacked, so that all of the preceding sheets of said set stack have underlying commonly superposed holes.

5,628,503

PAPER FEEDER

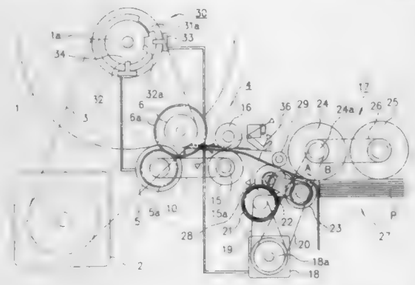
Makoto Ishikawa, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 352,065

Claims priority, application Japan, Dec. 6, 1993, 5-305436

Int. Cl.[6] B65H *5/22*

U.S. Cl. 271—4.1 9 Claims



1. A paper feeder for use in an image forming apparatus for supplying printing sheets to a printing portion of the image forming apparatus to form images on the printing sheets, comprising:

a primary paper feeding mechanism for picking up printing sheets one by one, said primary paper feeding mechanism rotating at a constant speed at intermittent intervals while picking up each of the printing sheets; and

a secondary paper feeding mechanism situated adjacent to the primary paper feeding mechanism for receiving each of the printing sheets fed from said primary paper feeding mechanism and supplying to the printing portion of the image forming apparatus at a speed corresponding to a printing speed of said printing portion, said printing portion being rotated at a desired speed selected from plural stages of rotational speeds.

5,628,504

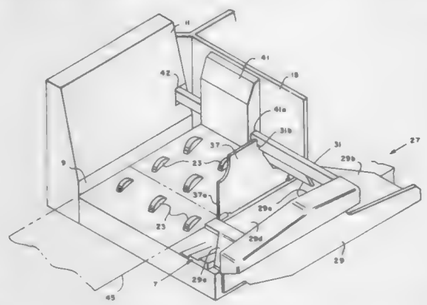
SIDE GUIDE FOR A MAIL HANDLING MACHINE

Thomas M. Lyga, Torrington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 15, 1994, Ser. No. 356,817

Int. Cl.[6] B65H *9/04*

U.S. Cl. 271—171 4 Claims



1. A side guide for a mail handling machine, the side guide comprising:

a main wall;

a secondary wall spaced from said main wall and moveable between an operative position and an inoperative position;

means for allowing movement of said main and secondary walls in a direction transverse to movement of mailpieces passing through the mailing machine, said allowing means including 1) a slide bar connected to one of said main and secondary walls and 2) a mounting unit attached to the mailing machine, said slide bar slidably mounted within said mounting unit; and

a third wall having a recess therein and being connected to said main wall at approximately a right angle, said secondary wall pivotably connected to said third wall to pivot between said operative position and said inoperative position, and said secondary wall being substantially parallel to said main wall in said operative position and being received in said recess and substantially parallel to said third wall in said inoperative position.

5,628,505

APPARATUS FOR STACKING CONTINUOUSLY ARRIVING SHEETS

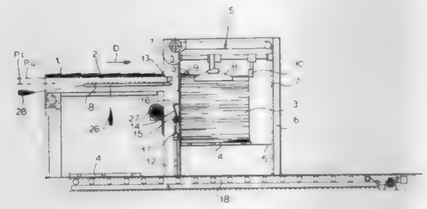
Peter Voss, Jüchen, Germany, assignor to Jagenberg Papiertechnik GmbH, Neuss, Germany

Filed Dec. 8, 1995, Ser. No. 569,879

Claims priority, application Germany, Dec. 22, 1994, 44 45 994.7

Int. Cl.[6] B65H *31/12*

U.S. Cl. 271—218 5 Claims



1. An apparatus for stacking sheets, the apparatus comprising:

conveyor means having a downstream end spaced upstream in a horizontal transport direction from a stacking station for delivering the sheets continuously one after the other at a predetermined upper level in the direction to the station;

a main platform vertically displaceable in the stacking station between an upper position below the upper level and a lower position;

an auxiliary platform below the upper level and formed by a plurality of transversely spaced and parallel rods horizontally displaceable in the direction between an extended position in the station above the main platform, a retracted position upstream of the main platform, and between an upper position just below the upper level and a lower position therebelow;

a plurality of vertically extending separator elements between the conveyor means downstream end and the stacking station and having bent-over upper ends projecting downstream between the rods in the transport direction and displaceable between

a separating extended position projecting into the station between the auxiliary platform and the upper level and engaged between trailing edges of the sheets in the station,

a withdrawn position out of the station between the station and the conveyor means downstream end,

an upper position with the upper ends just below the upper level, and

a lower position with the upper ends level with the upper position of the auxiliary platform, each element having a vertical length greater than the vertical distance between the auxiliary platform and the upper level; and

control means connected to the auxiliary platform and separator elements for, when a sufficiently tall stack is formed in the station, sequentially

raising the elements into their upper positions and advancing the elements into their extended positions,

lowering the elements into their lower positions while maintaining them in their extended positions to form in the stack a gap level with the auxiliary platform,

advancing the auxiliary platform into its extended position so as to support the stack above the gap and retracting the elements to their withdrawn positions,

lowering the main platform, removing the stack therefrom, and raising the main platform to its upper position, and

withdrawing the auxiliary platform to its retracted position to deposit the stack on it onto the main platform.

5,628,506

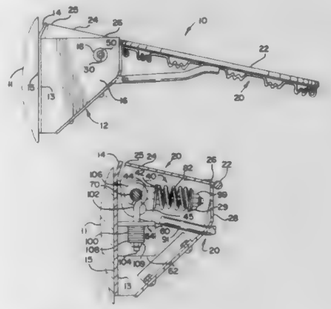
BREAKAWAY BASKETBALL RIM

Russell L. Vaught, Dorchester, Ill., assignor to Schutt Manufacturing Co., Inc., Litchfield, Ill.

Continuation of Ser. No. 836,120, Feb. 14, 1992, abandoned, which is a continuation of Ser. No. 472,323, Jan. 30, 1990, Pat. No. 5,106,084. This application Apr. 19, 1995, Ser. No. 425,115

Int. Cl.[6] A63B *63/08*

U.S. Cl. 473—486 22 Claims



1. A basketball goal comprising:

support structure adapted to be mounted to a backboard;

a rim structure, including a rim, mounted to said support structure;

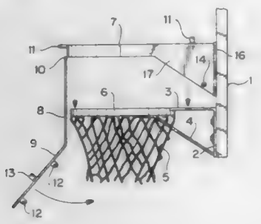
a rim support assembly including a locking element and a mating receiving element provided on a clamp, said locking element and said mating receiving element having a clamped position wherein said locking element and said mating receiving element are engaged for maintaining said rim in a horizontal position, and an unclamped position wherein said locking element and said mating receiving element are disengaged, enabling said rim to swing downwardly in an arcuate path; and

a coiled spring, mounted to provide a bias between said locking element and said mating receiving element for maintaining said locking element and said mating receiving element in said clamped position, wherein said locking element in said clamped position only receives a bias from said coiled spring along a single direction, and wherein said coiled spring permits said locking element and said mating receiving element to disengage upon application of a predetermined force to said rim; and

wherein said clamp further comprises a resting portion which said locking element engages when said locking element and said mating receiving element disengage.

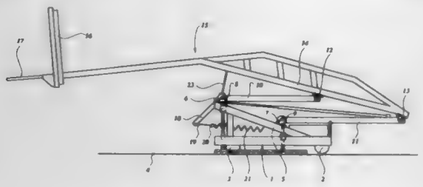
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5,628,507
GOAL PROTECTOR
Ealuard J. Johnson, 45 County Rd. 116, Tishominge, Miss. 38873
Filed Apr. 16, 1996, Ser. No. 633,161
Int. Cl.° A63B *71/02*
U.S. Cl. 473—479 **9 Claims**



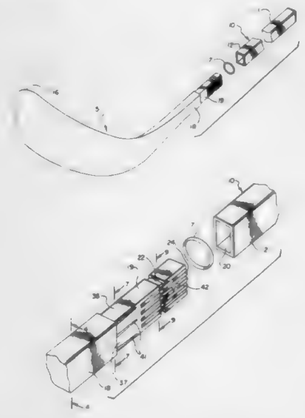
1. A protector for a basketball goal attached to a backboard comprising:
a first portion adapted to be positioned on top of a basketball goal,
a second portion having means for movingly connecting said second portion to said first portion,
said first portion has a substantially closed top, an open bottom and sides, and
said second portion engages said open bottom to form an enclosure for said basketball goal
said second portion being movable from a first position in which said basketball goal is not covered to a second position in which said basketball goal is encased by said first and second portions,
lock means for securing said first and second portions to said basketball goal.

5,628,508
BASKETBALL-STAND
Peter M. Koole, Kloetinge, Netherlands, assignor to Schelde International B.V., Netherlands
Filed May 21, 1996, Ser. No. 664,295
Int. Cl.° A63B *63/08*
U.S. Cl. 273—1.5 R **8 Claims**



1. A basketball-stand, comprising a base which carries at least one support system which in turn carries a beam provided with means for attachment of a back-board and dunk ring, said beam—and thereby the stand—being capable of being moved between a lower or storage position and a higher or playing position,
power storage means being provided, acting between a point connected to said base and a point connected to said at least one support system, and accumulating power when the stand is brought into its storage position, which power is relieved and the accumulated energy allowed to be freed when the stand is brought into its playing position,
said base frame carrying means, capable of being driven by said power storage means for lifting at least part of the weight of the stand from the floor.

5,628,509
HOCKEY STICK REPLACEMENT BLADE AND METHOD OF CONNECTING A REPLACEMENT BLADE TO A HOCKEY STICK SHAFT
William D. Christian, Warroad, Minn., assignor to Christian Brothers, Inc., Warroad, Minn.
Filed Sep. 25, 1995, Ser. No. 533,602
Int. Cl.° A63B *59/12*
U.S. Cl. 473—562 **9 Claims**



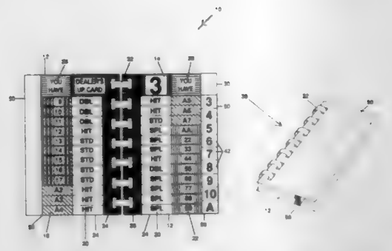
1. A hockey stick comprising:
an elongated shaft having a blade connection end;
a blade having a shaft connection end, one of said blade connection end and said shaft connection end having a hollow tenon receiving interior with an interior surface and the other connection end having a connection tenon with an exterior surface for insertion into said hollow tenon receiving interior;
at least one friction member carried by said tenon and having a portion extending outwardly from said exterior surface, whereby said friction member engages said interior surface when said tenon is inserted into said hollow interior to retain said blade in operative engagement with said shaft and wherein said tenon includes a circumferential groove for seating said friction member.

5,628,510

Patent Not Issued For This Number

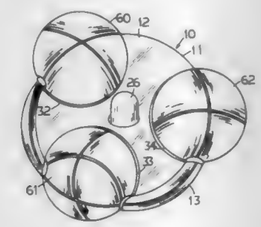
5,628,511
TABULAR REFERENCE BOOK FOR PLAYING BLACKJACK
Albert A. Jacoby, 6568 Via Regina, Boca Raton, Fla. 33433
Filed May 26, 1995, Ser. No. 452,348
Int. Cl.° A63C *1/06*; **G09B** *19/22*
U.S. Cl. 273—148 R **6 Claims**

1. A compact handheld book apparatus for recommending plays fast and accurately during the game of blackjack, comprising:
a plurality of sheets each sheet having a sheet first face and a sheet second face,
an enlarged dealer up card symbol printed on top of said sheet identifying a possible dealer up card,
a vertical player hand column of player hand symbols printed on said sheet first face corresponding to possible player card hands,
a recommended vertical play column printed on said sheet first face beside said player hand column and containing symbols



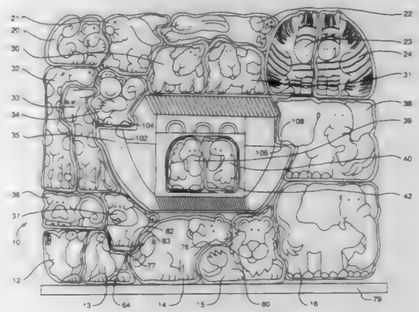
indicating recommended plays for a player to make corresponding to each said player hand symbol in said player hand column for the particular dealer up card printed on said sheet, each of said sheets are arranged in sequential order of dealer up card values indicated by said dealer up card symbols,
a tab extending sideways from each said sheet, each said tab displaying the given dealer up card symbol marked on the particular said sheet from which the given said tab extends, each of the tabs being readable and accessible when the sheets are in a closed position,
a sheet binding edge having perforations and a sheet opposing free edge for each sheet, and
a spiral binder means which engages said sheet binding edges to thereby retain said sheets together in the form of a book, wherein a player can select plays from the tab and the sheet corresponding to the dealer up card symbol fast and accurately during the game of blackjack.

5,628,512
SIMULATED SPACE STATION PUZZLE GAME
Wai K. Chan, 3 B, Mom Tat Wan, Lamma Island, Hong Kong
Filed Apr. 15, 1996, Ser. No. 633,911
Int. Cl.° A63F *9/08*
U.S. Cl. 273—153 S **19 Claims**



1. A puzzle game comprising
an upper inverted saucer and a lower saucer rotatably mounted together with respect to a central axis,
at least two semi-circular bays formed in even intervals in the periphery of said upper inverted saucer and lower saucer, said bays having a front opening distal from the centre of said upper inverted saucer and lower saucer,
a shaft member disposed at the diameter of each of said semi-circular bays and positioned across said front opening of each of skid bays,
spherical members rotatably mounted on said linear shaft member in said semi-circular bays, said spherical members having eight equal sectors with four upper sectors located in said upper inverted saucer, and four lower sectors located in said lower saucer, said upper inverted saucer and said lower saucer being rotatable to align selective four upper sectors with selective four lower sectors to form said spherical members, and said spherical members being rotatable to move a selective first pair of upper sectors in said four upper sectors into said lower saucer while a second pair of lower sectors in said lower saucer located diametrically opposite to said first pair of upper sectors is being moved into said upper inverted saucer.

5,628,513
PUZZLE/PLAY SET TOY PRODUCT
Rene Soriano, 152 Dodge St., Beverly, Mass. 01915
Filed Jan. 11, 1996, Ser. No. 583,850
Int. Cl.° A63F *9/10*
U.S. Cl. 273—157 R **5 Claims**

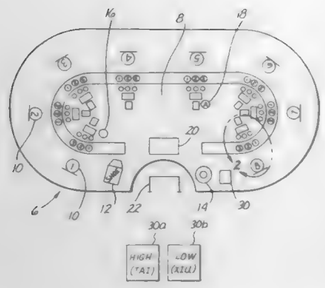


1. A puzzle/play set toy product for assembly into a scene having a predefined perimeter shape, comprising a plurality of separate, unitary, puzzle/play set pieces, each said piece representing an entire object or figure and having edges including a top, a bottom, and sides, with a thickness and a bottom shape that together allow each said piece to be free-standing on its bottom, so that each said piece can be separately played with, in which at least some of said pieces also have a top shape and thickness that allow them to support one or more other pieces above them, and in which said pieces closely interfit with other said pieces along their adjacent edges, at least a portion of the adjacent edges of adjacent pieces following the same contour line so that the pieces fit closely together and fill substantially all of the space defined within the product's predefined perimeter shape, the pieces together forming a multiple-layer scene made up of said plurality of objects or figures represented by said plurality of separate pieces, the entire scene being capable of standing vertically unsupported.

5,628,514
METHOD OF PLAYING ASIAN HIGH-LOW CARD GAME
Son H. Nguyen, 11052 Stonecress, Fountain Valley, Calif. 92708, and Hai Q. Huynh, 2695 Norcross Dr., San Jose, Calif. 95148
Filed Dec. 19, 1995, Ser. No. 574,645
Int. Cl.° A63F *1/00*
U.S. Cl. 273—292 **22 Claims**

18. A method of playing a card game among a plurality of players arranged in a circular fashion, a dealer being positioned between two of the players, the method comprising the following steps:
providing a composite deck of cards, the composite deck of cards corresponding at least in part to at least one conventional deck of cards;
placing a wager by each of the players;
a first player among the plurality of players being assigned the title of banker;
determining whether a first winning scheme is to be commonly used by all the players and banker or a second winning scheme is to be commonly used by all the players and banker;
providing at least one decision piece to the banker, the banker using the decision piece to determine an assignment of an action button;

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assigning to a second player among the plurality of players the action button, the assignment of the action button to the second player being based upon a number generated by the use of the decision piece;

dealing by the dealer a first round of at least one card to each of the plurality of players in rotation;

determining by each of the players whether zero or at least one additional card is desired;

dealing by the dealer a second round of cards to any player in rotation who wants a card, seated to the immediate left of the first player; and

comparing the hands of the banker to each of the players' hands and declaring as winners players having hands that meet the determined winning scheme.

5,628,515

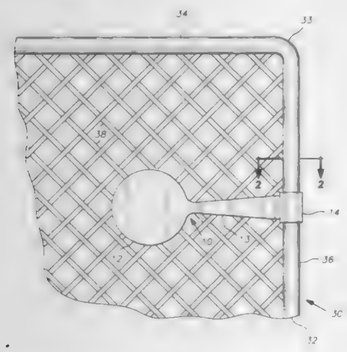
SOCCER TRAINING SYSTEM

Carey Levy, 28062 Hastings, Mission Viejo, Calif. 92692

Filed Feb. 5, 1996, Ser. No. 596,948

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—446 **5 Claims**



1. A soccer training device, for attaching to a soccer goal post comprising:

a visual target;

a clamp attached to the visual target, the clamp having a pair of jaws for attaching onto the goal post; and

a tapered stem attached to and extending between the visual target and the clamp.

5,628,516

SEALING ASSEMBLY FOR ROTARY OIL PUMPS HAVING MEANS FOR LEAKS DETECTION AND METHOD OF USING SAME

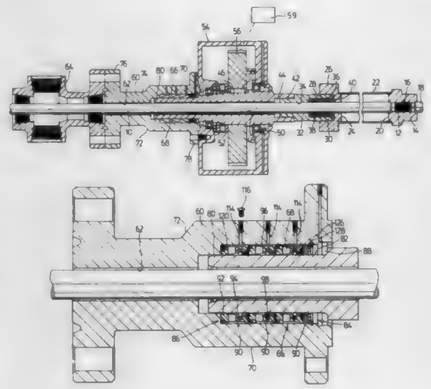
Edward Grenke, 86 Country Club Estates, 52328 Hwy. 21, Sherwood Park, Alberta, Canada

Continuation of Ser. No. 294,828, Aug. 29, 1994, abandoned.

This application Jul. 12, 1996, Ser. No. 678,951

Int. Cl.[6] F16J *15/18;* **F01D** *11/00*

U.S. Cl. 277—1 **19 Claims**



1. For use with an oil well having a top end and a bottom end, the combination of:

a) a downhole pump which includes a rotor and a stator, and which is adapted for positioning within and adjacent said bottom end of the well, an elongate rod adapted to extend down the well and support the rotor for rotation, the rod being adapted to transmit rational motion to the rotor from a means for generating rational torque, and

b) an assembling for restraining oil leakage, comprising:

a stationary first member defining a through-bore for the rod, and a substantially cylindrical recess coaxial with said bore, the cylindrical recess being defined by a cylindrical wall, the first member having an external wall,

a rotary second member also defining a through-bore, the rod extending through the through-bore of the second member and rotating therewith, the second member having a substantially cylindrical portion received coaxially in said recess, the cylindrical portion being defined by an outer cylindrical surface which has a smaller diameter than the recess so as to leave an annular space between the recess and the cylindrical surface, the annular space having an upstream end where oil under pressure seeks to enter the space, and a downstream end opposite the upstream end,

a plurality of annular seal cartridges stacked within said annular space, each seal cartridge having, in axial section; a knife-edge corner slidably contacting said cylindrical portion, a first open space downstream of the knife-edge corner and adjacent the cylindrical portion, a second open space adjacent the cylindrical wall, a passageway means through which the two spaces are in communication, and means defining a leak passage through the first member, the leak passage communicating the respective open spaces with said external wall, and

plug means for closing at least one of the passages.

5,628,517

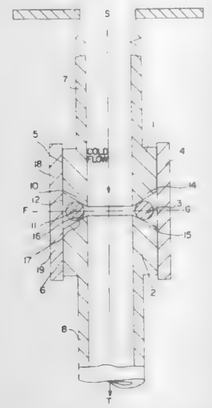
CONTRACTING/EXPANDING SELF-SEALING CRYOGENIC TUBE SEALS

Lin X. Jia, Upton, N.Y., assignor to Florida Atlantic University, Boca Raton, Fla.

Filed Jun. 1, 1993, Ser. No. 71,418

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—26 **15 Claims**



1. A method of creating a seal that is effective across a range of temperatures, including cryogenic temperatures, comprising the steps of:

a) selecting a sealing spacer having a desired coefficient of thermal expansion and tube ends having different coefficients of thermal expansion therefrom, said spacer and said tube ends also having shapes complementary to each other such that when said tube ends are brought into contact with said spacer, a sealed sloped engagement results yielding sloped-surface sealing; and

b) placing said spacer in contact with said tube ends such that a sealed sloped engagement yielding sloped-surface sealing is accomplished that maintains the seal across a range of various temperatures, including cryogenic temperatures.

5,628,518

METAL GASKET ASSEMBLY

Hideaki Ushio; Kazuo Shibata, both of Wako; Masamichi Hoshi, Ohmiya; Naomichi Mitsuyama, Iwatsuki, and Akira Tanaka, Ohmiya, all of Japan, assignors to Honda Giken Koyo Kabushiki Kaisha, and Nippon Leakless Industry Co. Ltd., both of Tokyo, Japan

Continuation of Ser. No. 399,000, Mar. 6, 1995, abandoned.

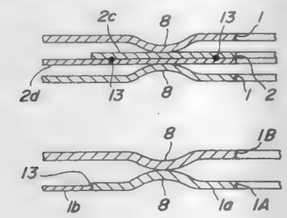
This application Sep. 6, 1996, Ser. No. 711,472

Claims priority, application Japan, Mar. 9, 1994, 6-038503

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—180 **7 Claims**

1. A metal gasket assembly for a cylinder head with at least one cylinder, comprising a first and a second substrate, each substrate being formed of an elastic metal and having an outer shape which conforms with the outer shape of the gasket assembly, each substrate having at least one cylinder opening corresponding to said cylinder in the cylinder head, each substrate having a peripheral region surrounding said cylinder opening, and a bead in said peripheral region of each said substrate, all of the bead of at least one said substrate being greater in thickness than the remainder of the same substrate, said first and second substrates being superimposed with each other with top portions of the beads of the first and second substrates extending toward each other.



5,628,519

OIL SEAL RING OF SYNTHETIC RESIN HAVING ANGULARLY DISPLACED INJECTION POINT

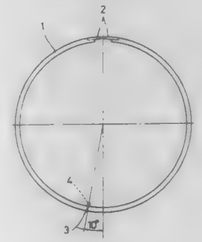
Kozo Kakehi, Kuwana-gun, Japan, assignor to NTN Corporation, Osaka, Japan

Filed Dec. 28, 1995, Ser. No. 580,308

Claims priority, application Japan, Dec. 28, 1994, 6-327735

Int. Cl.[6] F16J *9/00*

U.S. Cl. 277—216 **3 Claims**



1. An oil seal ring of a synthetic resin having two separate, opposite ends and formed by injection-molding a synthetic resin, said seal ring having an injection point for injecting a material located at a position angularly displaced by ±1° to ±30° from the center of the entire length of said seal ring.

5,628,520

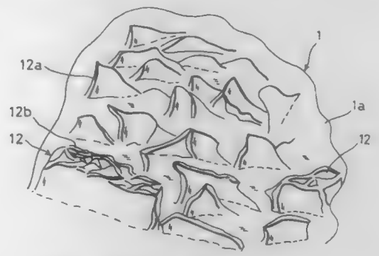
SEALING MATERIAL MADE OF EXPANDED GRAPHITE HAVING OPENED THIN-LEAF SURFACE STRUCTURE

Takahisa Ueda, Sanda; Masaru Fujiwara, Hyogo-ken, and Terumasa Yamamoto, Osaka, all of Japan, assignors to Nippon Pillar Packing Co., Ltd., Japan

Filed Jun. 6, 1995, Ser. No. 470,441

Int. Cl.[6] F16J *15/10*

U.S. Cl. 277—235 A **9 Claims**



1. An expanded graphite sealing material provided with an expanded graphite base member which defines a principal face and in which expanded graphite particles are pressurized and integrated together, wherein raised and opened thin-leaf graphite portions are

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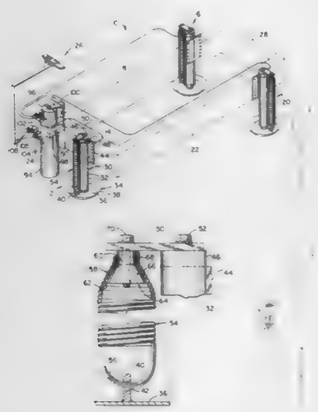
formed by using micro blasting in at least a portion of the principal face of said expanded graphite base member.

5,628,521

MANUALLY OPERATED VEHICLE LEVELING SYSTEM

Robert H. Schneider, and Jon D. Jacobs, both of Beaver Dam, Wis., assignors to Versa Technologies, Inc., Racine, Wis.

Filed Jul. 26, 1993, Ser. No. 97,107
Int. Cl.[6] B60S *9/00*
U.S. Cl. 280—6.1 5 Claims



1. A vehicle leveling system for a vehicle having an interior, comprising:

a series of extendible and retractable jacks mounted to the frame of the vehicle, including first and second jacks located toward one end of the vehicle and a third jack located toward the opposite end of the vehicle;

a manually operated actuator mechanism located within the vehicle interior, including a plurality of switches; and

a power system interposed between the actuator mechanism and the jacks for selectively extending and retracting the jacks in response to operation of the manually-operated actuator mechanism to adjust the attitude of the vehicle relative to level;

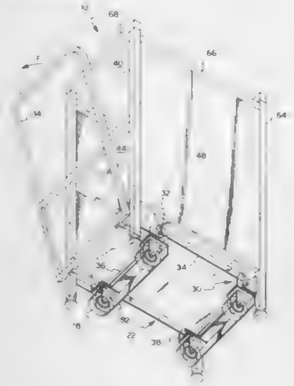
wherein each jack comprises a hydraulic cylinder assembly including a cylinder having an extendible and retractable piston; a spring interposed between the cylinder and the piston, wherein introduction of pressurized fluid into the cylinder causes extension of the piston against the force of the spring, and wherein the spring causes retraction of the piston when fluid pressure within the cylinder is relieved; a shoe connected to the piston; and a plate mounted toward the upper end of the cylinder, wherein the plate extends unidirectionally outwardly from the cylinder; wherein the upper end of the spring is mounted to the cylinder via interconnection of the plate with the upper end of the spring; wherein the plate is mounted to the upper end of the cylinder via pivotable connection structure providing selective pivoting movement of the plate relative to the cylinder; and wherein the cylinder is mounted to the vehicle via a connection arrangement separate from the pivotable connection structure, wherein the pivotable connection structure provides pivoting movement of the plate relative to the vehicle during or after mounting of the cylinder to the vehicle via the separate cylinder connection arrangement to position the spring in various locations relative to the vehicle frame in order to avoid obstructions adjacent the vehicle frame.

5,628,522

FOOTED CART HAVING NORMALLY DISENGAGED WHEELS

Donald M. Hall, P.O. Box 1247, 19 Progress St., Kingston, N.Y. 12401-0119

Continuation of Ser. No. 194,083, Feb. 3, 1994, abandoned.
This application Mar. 11, 1996, Ser. No. 613,978
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—43.17 12 Claims



1. A cart comprising:

a) a frame having a front and a rear;

b) at least one leg attached to said frame and extending away from said frame for normally engaging a support surface;

c) at least two wheels movably attached to said frame, said at least two wheels including a front wheel and a rear wheel movable between respective operative and inoperative positions;

d) said at least two wheels extending away from said frame, and said at least two wheels normally being in said inoperative position substantially free of contact with the support surface;

e) a handle attached to said at least two wheels;

f) said handle being normally disposed in an inoperative position in which said at least two wheels are substantially free of contact with the support surface;

g) said handle being movable relative to said frame to an operative position in which said at least two wheels are moved to said operative position of said at least two wheels, said operative position of said at least two wheels being a support-surface engaging position in which said at least two wheels support said cart for movement relative to the support surface;

h) a linkage attached to said handle and to said at least two wheels, said linkage being configured for causing said at least two wheels to return from said operative position of said at least two wheels under the force of gravity, and for causing said handle to move from said operative position of said handle to said inoperative position of said handle under the force of gravity; and

i) said linkage including:

1) front and rear pivot elements disposed on said at least one leg on said frame at said front and rear thereof, respectively;

2) front and rear pivot plates pivotably attached to said front and rear pivot elements, respectively;

3) said front and rear wheels being attached to said front and rear pivot plates, respectively;

4) front and rear pivot points disposed on said front and rear pivot plates, respectively;

5) said front and rear pivot points being laterally offset from said front and rear pivot elements, respectively;

6) a tie rod disposed between said front and rear pivot plates, and being pivotably attached to said front and rear pivot points, respectively; and

7) a connecting member disposed between and substantially rigidly connecting said rear pivot plate to said handle.

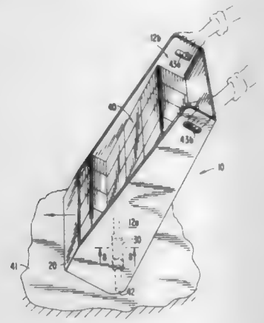
5,628,523

TRANSPORTABLE DISPLAY STAND

Michael J. Smith, Orangeburg, N.Y., assignor to Arrow Art Finishers, Inc., Bronx, N.Y.

Filed Jan. 30, 1995, Ser. No. 380,595
Int. Cl.[6] B62B *1/12;1/16*
U.S. Cl. 280—47.26 14 Claims

1. A transportable display stand comprising:



a) a stand structure including a front wall, a rear wall, two side walls, and a bottom wall, said walls being hingedly connected to one another for movement between their collapsed and erected positions in which they lie substantially flat against one another and extend substantially normal to each other, respectively, said stand structure having a lower portion and an upper portion as considered in an erected condition of use of the stand on a horizontal support surface for displaying a plurality of items on display, said bottom wall having looped journal bearings spaced apart along, and integral with, said bottom wall; and

b) a roller assembly built into said stand structure and mounted on said bottom wall for joint movement therewith, said roller assembly including a shaft and at least one roller mounted on said shaft at said lower portion of said stand at said rear wall for rotation about an axis parallel to said rear wall, said shaft having mounting portions respectively mounted in said journal bearings, said roller being supported by said shaft and by said journal bearings at an elevated position spaced from the support surface in said condition of use of the stand and in engagement with the support surface in a rearwardly tilted position of the stand.

5,628,524

BICYCLE WHEEL TRAVEL PATH FOR SELECTIVELY APPLYING CHAINSTAY LENGTHENING EFFECT AND APPARATUS FOR PROVIDING SAME

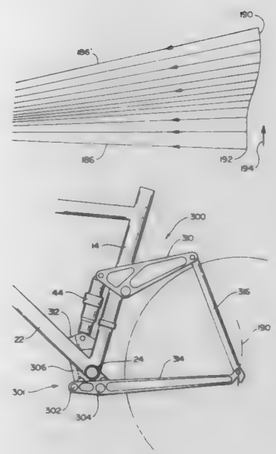
James B. Klassen, and Jamie W. Calon, both of Calgary, Canada, assignors to Outland Design Techologies, Inc., Lynden, Wash.

Continuation-in-part of Ser. No. 377,931, Jan. 25, 1995, Pat. No. 5,553,881. This application Nov. 15, 1995, Ser. No. 558,162
Int. Cl.[6] B62K *25/00*
U.S. Cl. 280—284 22 Claims

1. A compressible rear suspension for a bicycle, comprising

a chain drive in which a chainstay length is the distance in the rearward direction from the axis of a pedal-operated drive sprocket to the axis of a rear wheel hub, which is represented by a variable value CSL; and

means for moving said rear wheel in a generally upward direction along a controlled wheel travel path in response to compression of said suspension, in which the position of said hub along said path from a predetermined starting point at which said suspension is extended is represented by a variable value D which increases with increasing compression of said suspension, said controlled wheel travel path comprising:



a preferred pedaling position at a predetermined position Dp which is located along said wheel travel path;

a lower curve segment extending generally below said position Dp in which there is an increasing rate of chainstay lengthening with increasing compression of said suspension system, such that the first derivative relationship

$$\frac{d[CSL]}{d(D)}$$

is a curve having a generally positive slope, so that the second derivative relationship

$$\frac{d[CSL]}{(d(D))^2}$$

is generally positive; and

an upwardly and forwardly curved upper curve segment extending generally above said position Dp in which there is a decreasing rate of chainstay lengthening with increasing compression of said suspension system, such that the first derivative relationship

$$\frac{d[CSL]}{d(D)}$$

is a curve having a generally negative slope, so that the second derivative relationship

$$\frac{d^2[CSL]}{(d(D))^2}$$

is generally negative.

5,628,525

ANTI-SWAY FRICTION PADS FOR TRAILER HITCH

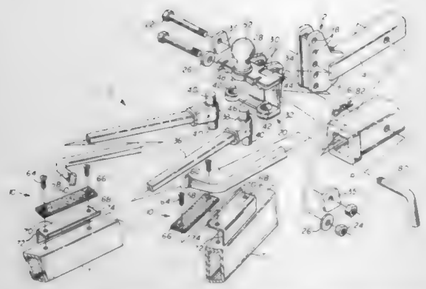
John J. Kass, and Richard McCoy, both of Granger, Ind., assignors to Reese Products, Inc., Elkhart, Ind.

Continuation of Ser. No. 546,385, Oct. 20, 1995. This application Dec. 7, 1995, Ser. No. 568,870
Int. Cl.[6] B60D *1/42*
U.S. Cl. 280—406.2 2 Claims

1. A friction pad assembly for supporting a spring bar of a weight distributing hitch on a trailer, comprising:

a pad of high friction material for engaging and supporting said spring bar;

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a substantially L-shaped mounting bracket for holding said pad, said mounting bracket including a projecting flange for protecting an edge of said pad held on said bracket; and

fastening means for fastening said bracket to said trailer.

5,628,526

HEEL PART FOR A SKI BINDING

Johann Zotter, Vienna, and Friedrich Leichtfried, Traiskirchen, both of Austria, assignors to HTM Sport- und Freizeitgeraete Aktiengeselischaft, Schwechat, Austria

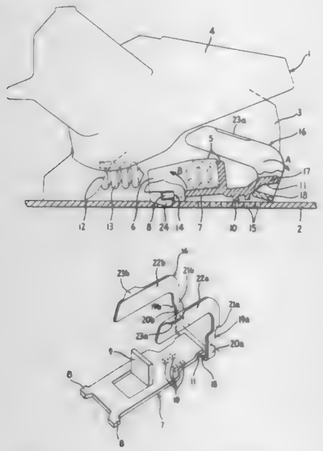
PCT No. PCT/EP93/02904, § 371 Date Sep. 2, 1994, § 102(e) Date Sep. 2, 1994, PCT Pub. No. WO94/09870, PCT Pub. Date May 11, 1994

PCT Filed Oct. 20, 1993, Ser. No. 256,225

Claims priority, application Austria, Oct. 23, 1992, 2107/92

Int. Cl.[6] A63C *9/084*

U.S. Cl. 280—633 **5 Claims**



1. In a heel part for use on a ski binding, the ski binding including a housing being movable in a longitudinal direction relative to a ski-fixed guide and selectively secured in different positions, said housing including a locking piece being supported in said housing and movably urged in a longitudinal direction against a housing-fixed stop by a spring means and is limitedly pivotal about said stop, said locking piece having locking means engageable with a counterlocking means on said ski-fixed guide, said locking piece and said locking means being pivoted in a direction of said counterlocking means by said spring means engaging said locking piece above said stop, and a two-arm opening lever supported on said housing, one lever arm of said opening lever having handles and the other lever arm of said opening lever engaging a rear end of said locking piece, said locking piece being pivoted away from said guide during a pivoting of said opening lever to release said locking piece, the improvement wherein said lever arm of said opening lever is generally U-shaped as viewed from the rear and has a connecting bight bar extending between a first and a second leg thereof, said bight bar engaging the rear end of said locking piece from below, said first and second legs of said opening lever extending from said connecting bight bar upwardly to a bearing point on said housing, and wherein at least one of said first and second legs of said opening lever forms a forwardly extending bent leg section on a side of said housing, said leg section carrying on a free end section thereof an outwardly projecting handle set.

5,628,527

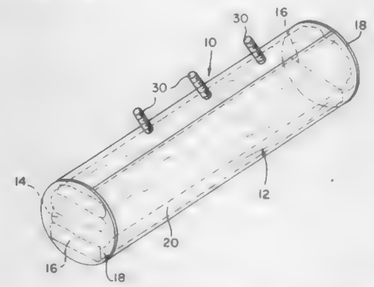
COVER/DIRECTOR FOR AIR BAG

Brent K. Olson, Clearfield, and J. Kirk Storey, Farmington, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jan. 25, 1996, Ser. No. 591,054

Int. Cl.[6] B60R *21/22*

U.S. Cl. 280—730.2 **4 Claims**



1. A soft air bag package mounted in a vehicle seat back comprising:

a folded air bag cushion,

a soft wrapping of cloth or Tyvek paper enclosing said air bag cushion,

and a weakened seam in said wrapping, said wrapping including a cover portion which encloses said air bag cushion and which overlaps a portion of said wrapping and which extends tangentially to said wrapping when said weakened seam opens for deployment of said air bag cushion whereby said cushion is caused to deploy forwardly in a vehicle along an interior surface of said cover portion.

5,628,528

DUAL CHAMBER NONAZIDE GAS GENERATOR

James J. DeSautelle, Rochester Hills, and Janie M. Vitek, Commerce, both of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Jul. 6, 1995, Ser. No. 498,852

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—736 **3 Claims**

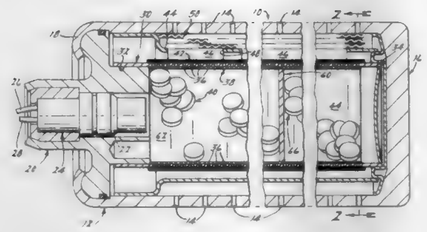
1. A gas generator having a variable output gas generation rate comprising:

a housing having a plurality of apertures spaced therein;

a first propellant chamber located within said housing and arranged to be in fluid communication with said plurality of apertures;

a second propellant chamber located within said housing and arranged to be in fluid communication with said plurality of apertures;

a first nonazide propellant charge positioned within said first chamber having a predetermined burn temperature;



a second nonazide propellant charge positioned within said second chamber; and

an igniter positioned within said housing for supplying a flame front to only said first propellant chamber, wherein the ignition of said first charge by said flame front produces heat energy which subsequently conductively ignites said second nonazide propellant charge, wherein said first and second propellant chambers are respectively separated by a solid barrier which impedes, the igniter flame front from passing from said first chamber to said second chamber.

5,628,529

ADJUSTER DEVICE FOR A DEFLECTOR FITTING

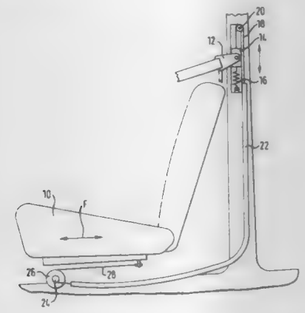
Ulrich Gölz, Schechingen; Tanja Maier, Leinzell, and Erwin Bühr, Schwäbisch Gmünd, all of Germany, assignors to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed Oct. 4, 1995, Ser. No. 538,908

Claims priority, application Germany, Oct. 7, 1994, 44 35 910.1

Int. Cl.[6] B60R *22/20*

U.S. Cl. 280—801.2 **12 Claims**



1. An adjuster device for a deflector fitting in a vehicular seat belt system, comprising a first pulley, a first cable section connected to said deflector fitting and circumferentially engaging said first pulley, a second pulley mounted rotatably with respect to said first pulley and having an outer diameter greater than that of said first pulley, a second cable section circumferentially engaging said second pulley and connected to a longitudinally adjustable vehicle seat, and coupling means drivingly interconnecting said first and second pulleys for joint rotation, said coupling means yielding under a predetermined torque transmitted between said first and second pulleys allowing relative rotation therebetween.

5,628,530

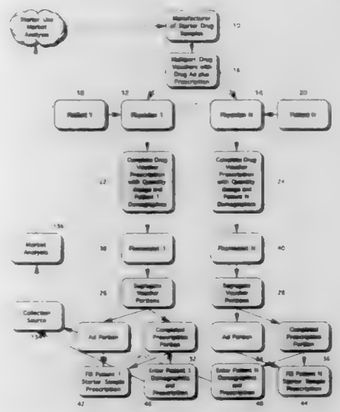
METHOD AND SYSTEM FOR COLLECTIVELY TRACKING DEMOGRAPHICS OF STARTER DRUG SAMPLES

Gary B. Thornton, Raleigh, N.C., assignor to Info Tec LLC, Raleigh, N.C.

Filed Dec. 12, 1995, Ser. No. 571,122

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—67 **12 Claims**



1. A method for collectively tracking demographics of starter drug samples dispensed to a plurality of patients from a plurality of different dispensing locations, said dispensed starter drug samples being prescribed by a plurality of physicians at a plurality of different prescription locations, said method comprising the steps of:

(a) providing a multipart product specific sample drug voucher for use by each of said plurality of physicians at said prescription locations for prescribing said starter drug sample for a given patient in said plurality of patients at one of said prescription locations, said multipart drug voucher comprising a first portion containing marketing information for advertising a starter drug sample to be prescribed to said given patient by the physician at said one prescription location and a second portion comprising a variable drug prescription for said advertised starter drug sample to be completed by the physician for prescribing a variable starter drug sample quantity and dosage for said advertised starter drug sample for said given patient, said variable drug prescription second portion being separable from said marketing information first portion for enabling said prescribed starter drug sample to be dispensed in accordance therewith by a pharmacist at one of said plurality of dispensing locations in accordance with said completed drug prescription second portion;

(b) completing said drug prescription second portion at said one prescription location, said prescription locations being remote from said dispensing locations, said completed drug prescription second portion comprising said variable starter drug sample quantity and dosage and patient demographic information for said given patient;

(c) separating said completed drug prescription second portion from said marketing information first portion for providing said completed drug prescription second portion to the pharmacist at said one location for dispensing of said prescribed drug sample at said one dispensing location in accordance with said variable starter drug sample quantity and dosage contained on said separated completed drug prescription second portion;

(d) electronically retrieving and storing the patient demographic and sample quantity and dosage information at each of said plurality of dispensing locations from each of said separated

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completed drug prescription second portions for providing tracking information for said dispensed prescribed starter drug samples; and

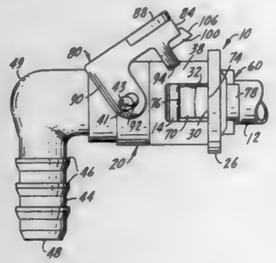
(e) electronically transmitting said tracking information from each of said plurality of dispensing locations to a common remote collection location for collective market analysis of said transmitted tracking information; whereby the dispensing of advertised starter drug samples provided to said plurality of patients at diverse locations under the direction of the physician for each of said patients may be rapidly tracked and analyzed.

5,628,531

QUICK CONNECTOR WITH SECONDARY LATCH

Andrew Rosenberg, Almont, and Richard Pepe, Macomb, both of Mich., assignors to Bundy Corporation, Warren, Mich.

Filed Apr. 26, 1995, Ser. No. 429,317
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—81 **14 Claims**



1. A quick connector coupling comprising:

a hollow female connector body having a plurality of slots formed therethrough to define a plurality of radial ledges, and hinge means formed on an exterior surface of said connector body;

a male member received in said connector body and having an enlarged annular upset;

a retainer disposed in said connector body and including locking beams extending between said upset and said radial ledges to secure said male member in said connector body; and

a latch attached to said hinge means and including latching means, said latch being movable to a latched position wherein said latching means extends through one of said slots and is positioned between one of said ledges and said upset to further secure said male member in said connector body, said latch further including at least one catch beam extending through another of said slots, said catch beams defining catch edges which engage catch surfaces defined by said another of said slots to secure said latch in said latched position.

5,628,532

LAMINATED FUEL LINE AND CONNECTOR

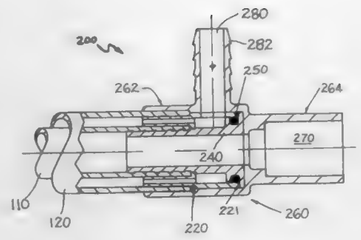
Timothy A. Ashcraft, Dover, Ohio, assignor to Handy & Harman Automotive Group, Inc., Dover, Ohio

Division of Ser. No. 430,038, Apr. 27, 1995. This application Nov. 8, 1995, Ser. No. 554,650
Int. Cl.[6] F16L *41/08*
U.S. Cl. 285—133.1 **6 Claims**

1. A connector comprising:

a tubular inner connecting element for connecting to a first line;

a tubular end connecting element being coaxial and radially outwardly spaced with said inner connecting element, to define an axial passageway therebetween for communicating with a second line; and



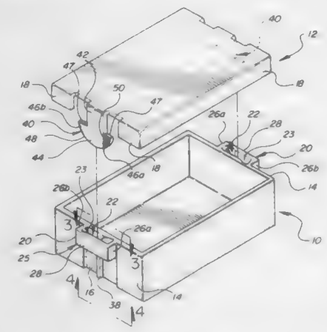
an integral tubular outer connecting element connecting over both said end connecting element and said inner connecting element, said outer connecting element having a first passageway for communicating with said second line and a second passageway for communicating with said first line.

5,628,533

TORSIONAL SNAP-FIT LATCH

Mark G. Hill, Novi, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 546,822
Int. Cl.[6] E05C *19/06*
U.S. Cl. 292—80 **9 Claims**



1. First and second components in combination with a latch mechanism for releasably and repeatably securing the first component to the second component, the latch mechanism comprising:

a male latch member having a neck portion extending from the first component along a longitudinal axis and a distal head portion comprising two wings projecting laterally from the longitudinal axis, the male latch member having a substantially planar undeformed configuration and being resiliently urgable to a twisted configuration wherein the head portion is rotated to twist the latch member about its longitudinal axis;

a female latch frame disposed on the second component for receiving the male latch member, the latch frame defining a passageway for receiving the male latch member therethrough and having an insertion end of a first width and an opposite latching end of a second width smaller than the first width, the female latch frame having internally disposed cam means for rotating the head portion to move the male latch member to its twisted configuration as the head portion passes from the insertion end to the latching end of the passageway and for releasing the head portion to allow the male latch member to return to its undeformed configuration wherein the male latch member is in latched engagement with the female latch frame; and

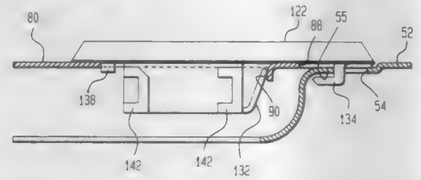
a fulcrum disposed on the second component in a position to be adjacent to the longitudinal centerline of the latch member when the latch member is in latched engagement with the latch frame whereby forcing one of the wings toward the second component brings the longitudinal centerline of the latch member into contact with the fulcrum, rotates the head portion about the fulcrum, and moves the latch member to the twisted configuration.

5,628,534

DOOR AND DOOR LATCH FOR AN ELECTRIC LOAD CENTER

Janerio N. Morgan, Atlanta, Ga., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Mar. 27, 1996, Ser. No. 622,798
Int. Cl.[6] E05C *19/10*
U.S. Cl. 292—128 **8 Claims**



1. An improved door latch for an electric load center having a door with a first edge hingedly connected to a trim panel of the load center, the door having a second edge opposite the first edge, the door latch comprising:

a one-piece molded member for being disposed in an opening in the door, the one-piece member having;

a planar top with an indent for opening the latch;

a body portion extending from an underside of the planar top which is for being slideably received in the opening in the door, the body portion having a flexible tongue extending in an upwardly direction at an angle away from the body portion and for extending towards the second edge of the door,

a hook disposed from the underside of the top, the hook having a free end extending toward the tongue of the body for engaging an underside edge of a portion of the trim panel adapted to form an aperture adjacent the opening in the door,

wherein the tongue is for urging the door latch towards the first edge of the door, for keeping the hook biasedly engaged with the underside edge of the portion of the trim panel adapted to form the aperture.

5,628,535

MOTOR ACTUATOR FOR CENTRALLY OPERATED VEHICULAR DOOR LATCH

Hans-Joachim Büscher, Düsseldorf, Germany, and Dennis D. Schwaiger, Whitmore Lake, Mich., assignors to Kiekert AG, Heiligenhaus, Germany

Filed Mar. 14, 1996, Ser. No. 615,742
Claims priority, application Germany, May 3, 1995, 19516162
Int. Cl.[6] E05C *3/06*
U.S. Cl. 292—201 **7 Claims**

1. In combination with a door latch having

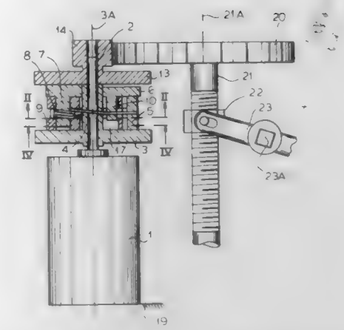
a threaded spindle;

a nut threaded on the spindle and axially displaceable thereby on rotation of the spindle;

an input gear carried on and rotatable with the threaded spindle; and

a coupling element connected to the nut and displaceable thereby to lock and unlock the latch, a power actuator comprising:

a reversible electric motor having an output shaft defining a main axis and rotatable by the motor in either direction thereabout;



an input wheel fixed on the output shaft and provided with an eccentric coupling pin;

an intermediate wheel juxtaposed with the input wheel, rotatable relative thereto about the main axis, and provided with an eccentric pivot;

an output wheel rotatable about the main axis, having a gear continuously meshing with the input gear of the threaded spindle, and provided with a pair of angularly offset abutments defining an orbit on rotation of the output wheel about the main axis;

a coupling element mounted on the intermediate-wheel pivot, provided with respective angularly offset coupling formations engageable with the output-wheel abutments, and having a formation angularly engaging the input-wheel coupling pin; and

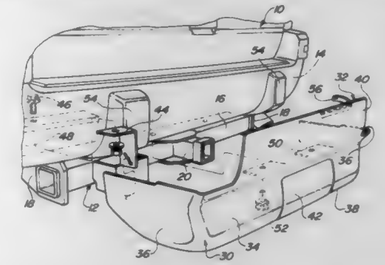
means including a spring for urging the coupling element into a rest position with the coupling formations inside the orbit and the input wheel decoupled from the output wheel, the coupling element being movable angularly against a force of the spring about the eccentric pivot on rotation of the input wheel relative to the intermediate wheel to end coupling positions in each of which a respective one of the coupling formations engages the respective abutment and couples the input wheel to the output wheel for joint rotation about the axis.

5,628,536

FASCIA FOR VEHICLE HITCHES

Gary E. Fulkerson, Auburn Hills, Mich., assignor to Mascotech Automotive Systems Group, Inc., Auburn Hills, Mich.

Filed May 26, 1995, Ser. No. 451,867
Int. Cl.[6] B60D *1/00*
U.S. Cl. 293—117 **18 Claims**



1. A fascia for concealing a hitch assembly on a vehicle, the hitch assembly mounted beneath a rear bumper of the vehicle for selective connection to a trailer, said fascia comprising:

a cover having a rear wall and laterally spaced ends, said cover having a width greater than the hitch assembly to conceal the hitch assembly upon mounting said cover to the vehicle; and

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fastening means for mounting said cover proximate the rear bumper of the vehicle such that the hitch assembly is concealed.

5,628,537

PET WASTE PICKUP AND DISPOSAL APPARATUS

Ralph F. Kiemer, 4645 NW. 41 St., Lauderdale Lakes, Fla. 33319

Filed Feb. 29, 1996, Ser. No. 608,769
Int. Cl.° A01K 29/00; E01H 1/12
U.S. Cl. 294—1.4 5 Claims



1. An animal waste packaging and pick up device comprising:
an elongate handle having a long axis, an outer surface, a first end and a second end;
a jaw assembly attached to the first end;
a bag clip attached to the jaw assembly, the bag clip adapted for removably engaging a closed end of a thin film plastic bag;
a first jaw and a second jaw, each jaw having a proximal end pivotally attached to the jaw assembly and a distal end terminating in a wide edge extending transverse to the long axis, the distal ends adapted to removably retain thereon the everted open end of said plastic bag, while the closed end is engaged by the bag clip;
a jaw operator slidably mounted on the handle for motion along the long axis, the jaw operator operatively connected to the jaws for moving the jaws between a first, open position in which the distal ends are spaced apart such that said bag may be positioned wide open over the animal waste, and a second, closed position by a downward motion of the operator relative to the handle in which the distal ends are drawn together, thereby closing the bag and enclosing the waste therein, whereupon the everted, unsoiled outer edges of said bag may be removed from the jaws and sealed before the jaws are opened and the bag clip disengaged; and
locking means for preventing slidable movement between the handle and the operator, the locking means operatively connected between the handle and the operator.

5,628,538

EXTENSIBLE WADING STAFF WITH RETRACTABLE HOOK

Marc W. Ericksen, 38 Don Gabriel Way, Orinda, Calif. 94563

Continuation-in-part of Ser. No. 238,270, May 4, 1994, abandoned. This application Oct. 27, 1994, Ser. No. 330,255
Int. Cl.° A01K 97/00; A47F 13/06
U.S. Cl. 294—19.1 15 Claims

1. A wading staff for use by a person wading in water as a stabilizing support and as a tool to retrieve snagged fishing devices, the staff comprising:



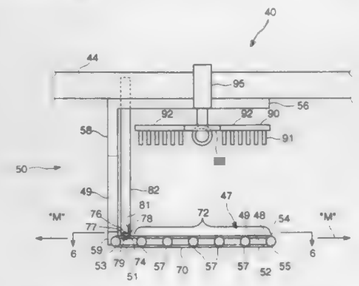
an elongate shaft having a length, a first end, and a second end, wherein the shaft is extensible so that the length of the shaft is adjustable and wherein the second end may contact a surface under the water to support the person using the staff when wading in the water;
a handle on the first end so that a person wading in water may hold onto the shaft, where the handle wraps around the shaft's first end and extends longitudinally on the shaft a distance sufficient to provide a surface to accommodate the person's hand;
a friction-causing structure on the second end to provide a base for the shaft when the staff is used during wading; and
a retractable hook attached to the shaft adjacent the shaft's first end.

5,628,539

ROBOTIC GRIPPING DEVICE

Ivan Muchalov, Erin, and Thanh Pham, North York, both of Canada, assignors to IM Engineered Product Ltd., Brampton, Canada

Filed Aug. 3, 1995, Ser. No. 510,692
Int. Cl.° B25J 15/00
U.S. Cl. 294—86.4 21 Claims



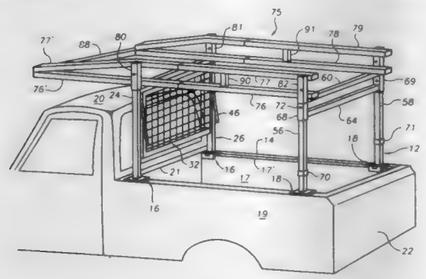
1. A robotic gripping device for gripping, manipulating, placing, and releasing packages of various shapes and sizes, said gripping device comprising:
a fixed frame;
a hold down plate operatively retained by said fixed frame in vertically displaceable relation thereto between a first raised release position and a second lowered hold down position;
a moveable support platform having a first end and a second end, and being retained in load bearing relation by said fixed frame so as to be moveable in opposed first and second directions along an axis of movement between a first extended position where said moveable support platform is opposed to said hold down plate in spaced apart relation thereto so as to thereby permit the retention of packages therebetween, and a second retracted position where said moveable support platform is no longer opposed to said hold down plate so as to thereby no longer permit the retention of packages therebetween;
at least one first roller member disposed at said first end of said platform for rotation about a first axis of rotation oriented generally transversely to said axis of movement of said support platform;
at least one second roller member disposed at said second end of said platform for rotation about a second axis of rotation oriented generally transversely to said axis of movement of said support platform;
a belt member operatively retained on said first and second roller members in looped relation therearound, said belt member having a package receiving portion that generally faces said hold down plate when said support platform is in its first extended position; and
a securing member secured at one end thereof to said fixed frame and secured at its opposite other end thereof to a fixed end portion of said package receiving portion of said belt member, so as to thereby secure said fixed end portion of said package receiving portion of said belt member in horizontally stationary relation with respect to said hold down plate;
whereby the segment of said package receiving portion of said belt member that is facing said hold down plate, remains horizontally stationary during horizontal movement of said support platform.

5,628,540

PICKUP TRUCK UTILITY RACK

William L. James, 2817 E. 39th, Tulsa, Okla. 74105

Filed Oct. 23, 1995, Ser. No. 546,882
Int. Cl.° B60D 3/00
U.S. Cl. 296—3 9 Claims



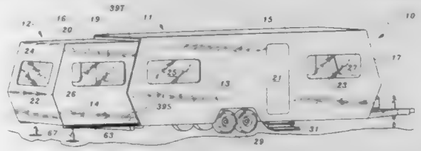
1. A utility rack for a pickup truck having a cab and a longitudinal rearwardly projecting cargo bed, the cargo bed having longitudinally extending parallel side walls terminating upwardly in an inverted U-shape, a forward wall and a tailgate, said rack comprising:
forward and rearward pairs of clamp bracket means secured in aligned relation transversely of said cargo bed to the forward and rearward end portions, respectively, of said side walls;
forward and rearward upright substantially H-shaped stanchion units including pairs of posts with each pair of posts of said pairs of posts connected by a top rail and connected respectively with the forward and rearward pairs of said clamp bracket means;
panel means hingedly connected between said forward stanchion posts for vertical pivoting movement about a horizontal hinge axis toward and away from the vertical plane formed by said forward stanchion;
strand means connecting said panel with said forward stanchion for limiting movement of said panel from said vertical plane to substantially 90°;
a guide tube vertically slidably surrounding each post of said rearward stanchion pair of posts;
a bottom rail extending between and secured to said guide tubes; and,
a stop secured to the periphery of each post of said rearward stanchion pair of posts for limiting downward sliding movement of said bottom rail to the horizontal plane of said panel hinge axis.

5,628,541

EXPANDABLE COACH HAVING AT LEAST ONE EXPANSION CHAMBER

Stewart Gardner, Bristol, Ind., assignor to R-N-R International, Inc., Bristol, Ind.

Filed Jan. 19, 1995, Ser. No. 375,594
Int. Cl.° B60P 3/34
U.S. Cl. 296—26 42 Claims



1. A coach, having an interior living space, which coach, when having a cab for controls for the operation of a propulsion system includes one expansion chamber and which coach when not having a cab and a propulsion system, has at least one and no more than two expansion chambers,
which coach includes a main body having a top wall, and spaced left and right outer sidewalls, attached normal thereto; said main body also having spaced parallel fixed inner sidewalls each of which is spaced from its respective outer sidewall; and a fixed base, which fixed base is connected to said fixed inner sidewalls,
each of said expansion chambers comprising a box open at one end and having a top wall, fixed to two side walls, a bottom wall and one closure wall fixedly connecting the top wall and the bottom wall, the location of the closure wall being dependent on the disposition of the expansion chamber relative to the main body,
which expansion chamber if located in front of the main body has a front closure wall and if located to the rear of the main body has a rear closure wall,
said expansion chamber being disposed intermediate the main body's outer and inner sidewalls, and beneath both of said top wall and said fixed base,
said expansion chamber being movable in and out with respect to said main body in a telescopic manner, from between the main body's outer and inner sidewalls, and from beneath both of the top wall and fixed base;
the interior living space being defined as the volume of the interior of the main body added to the volume of each of said expansion chambers when moved to its in use position.

5,628,542

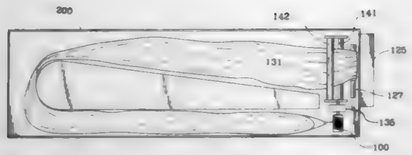
MOTOR VEHICLE COVER WITH LOW PROFILE HOUSING

Tom Hindson, 7810 NW. 40th St., Coral Spring, Fla. 33065

Continuation-in-part of Ser. No. 40,513, Mar. 31, 1993, Pat. No. 5,511,845. This application Oct. 23, 1995, Ser. No. 547,046
Int. Cl.° B60J 11/00
U.S. Cl. 296—136 5 Claims

1. A vehicle cover storage and deployment apparatus comprising:
a generally low profile hollow housing adapted to receive a vehicle cover in an essentially flat, non-spooled orientation; and

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a drive means connected to said vehicle cover for assisting an operator in moving said vehicle cover between a stored position within said housing and an extended position at least partially covering a vehicle;

said housing being connected to an underside of said vehicle;

said vehicle cover having a front end and a rear end;

said drive means comprising a motor connected to an active roller frictionally cooperating with said vehicle cover;

said motor being operationally connected to a trace spool;

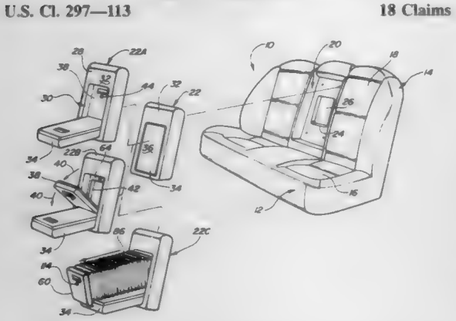
said trace spool being connected to said rear end of said vehicle cover and cooperating with said active roller thereby assuring positive transport of said vehicle cover during extension and retraction.

5,628,543

VEHICLE SEAT BACK HAVING SKI TOTE BAG AND TRUNK PASS THROUGH

Michael Filipovich, Farmington Hills; Terry L. Long, South Lyon, and Dennis R. Baker, Novi, all of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Sep. 27, 1995, Ser. No. 534,873
Int. Cl.[6] B60R *5/00*
U.S. Cl. 297—113 **18 Claims**



1. A seat back adapted to be installed in a motor vehicle body having a passenger compartment and a trunk behind the passenger compartment with said seat back being disposed between and separating the passenger compartment from the trunk, said seat back comprising:

at least one foam body forming a cushion having a front seating surface against which a vehicle occupant can rest his or her torso;

a generally upright support structure immediately behind said cushion for supporting said cushion, said support structure being adapted to be attached to the vehicle body;

an opening extending through said support structure and an opening extending through said cushion forward of said support structure opening forming a passageway between the passenger compartment and the trunk of the vehicle in which said seat back is installed, said passageway having a perimeter;

enclosure means for enclosing an object inserted through said passageway from the vehicle trunk into the vehicle passenger compartment, said enclosure means including a flexible and extendable bag having an open end mounted at said perimeter of said passageway and a closed end extendable forward of said cushion; and

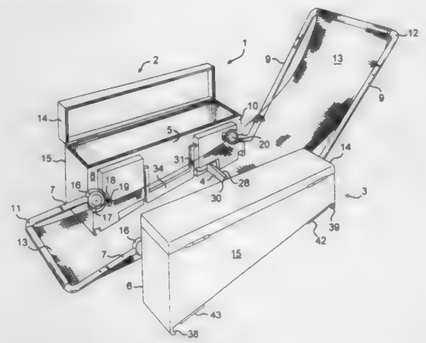
mounting means for removably mounting said bag about said perimeter of said passageway said mounting means including a drawstring in said bag at said open end thereof, means extending about said perimeter of said passageway forming a groove for receiving said drawstring in which said drawstring can be drawn tight to mount said bag and means on said drawstring for retaining said drawstring in the tightened position whereby said bag can be selectively removed from said seat back to enable an object to extend though said passageway which is larger than said bag.

5,628,544

BEACHCHAIR AND COOLER COMBINATION

Rome A. Goodman, and Michael S. Mundy, both of San Diego County, Calif., assignors to Riptide Productions, Inc., San Diego, Calif.

Filed Mar. 4, 1996, Ser. No. 609,960
Int. Cl.[6] A47C *7/62*
U.S. Cl. 297—188.14 **12 Claims**



1. A lounge chair which comprises:

a first oblong container having a substantially flat vertical, lateral first wall;

a second oblong container substantially symmetrical with, and movable in relation to said first container and having a substantially flat, vertical, lateral second wall;

collapsible means for, in a deployed state, maintaining said containers in a stable, parallel, spaced-apart position in relation to each other wherein said first wall distantly faces said second wall and for, in a folded state, hold said containers in a joint position wherein said first wall abuts said second wall;

each of said containers having a collapsible first arm extending forwardly and a collapsible second arm extending rearwardly astride one of said lateral walls;

a body-supporting web; and

means for suspending said web between said collapsible arms.

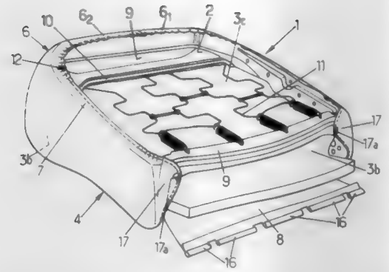
5,628,545

METHOD AND A COVER FOR COVERING A CUSHION OF A MOTOR VEHICLE SEAT

Jean M. Perthuis, Beuille le Comte; Pascal Lhuissier, Beaugency, and Alain Y. Le-Breton, Ville D'Avray, all of France, assignors to Bertrand Faure Automobile "BFA" , France

Continuation of Ser. No. 148,436, Nov. 8, 1993, abandoned. This application Dec. 7, 1995, Ser. No. 568,795
Claims priority, application France, Nov. 6, 1992, 92 13404
Int. Cl.[6] A47C *31/00*
U.S. Cl. 297—228.11 **11 Claims**

1. A cover for covering a cushion of a motor vehicle seat, the cushion comprising a top, flanks and a bottom, said cover comprising:



a panel having an outer edge for covering the top of the cushion;

a skirt for covering the flanks of the cushion, said skirt having a top edge joined to said outer edge of said panel and having a bottom edge;

a margin having pleats therein, formed along the bottom edge of said skirt; and

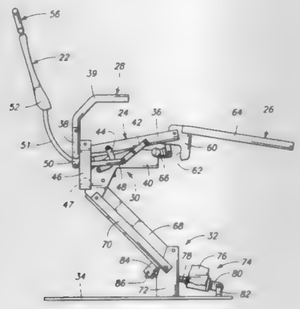
a non-stretch cord positioned on one side of said pleated margin at an edge thereof and fastened to said previously pleated margin by stitching for holding the margin against the bottom of the cushion.

5,628,546

DENTAL PATIENT'S CHAIR

Peter C. Boetzkes, North Vancouver, Canada, assignor to Dentech Products, Inc., Clearbrook, Canada

Filed Sep. 30, 1994, Ser. No. 315,950
Int. Cl.[6] A47C *1/032*
U.S. Cl. 297—316 **23 Claims**



1. A chair for a patient undergoing treatment, comprising:

a seat frame assembly;

a main frame assembly;

a backrest assembly pivotally coupled to the main frame assembly, the seat frame assembly being located at a spaced distance from the backrest assembly when the backrest assembly is in an upright position;

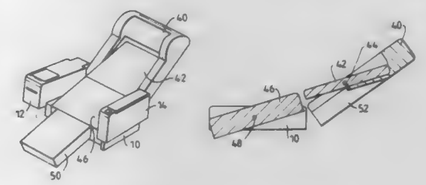
a linkage assembly interconnecting the seat frame assembly, the main frame assembly, and the backrest assembly, the linkage assembly being positioned exclusively beneath the seat frame assembly, the linkage assembly causing the backrest assembly to move greater than one-half of the spaced distance toward the seat rest assembly upon downward articulation of the backrest assembly, the seat frame assembly moving upwardly and rearwardly to compensate for and to simulate movement of a patient's pelvic bone, upper legs, and lower backbone such that a patient's body remains in a similar position relative to the backrest assembly and seat frame assembly.

5,628,547

PASSENGER SEAT

James A. Matsumiya, Gerrards Cross, England, assignor to Britax Rumbold Limited, Warwick, England

Filed Aug. 11, 1994, Ser. No. 289,308
Claims priority, application United Kingdom, Aug. 20, 1993, 9317433; Nov. 4, 1993, 9322760; Apr. 6, 1994, 9406766
Int. Cl.[6] B60N *2/24;2/20;2/34;* **A47C** *1/022*
U.S. Cl. 297—354.11 **14 Claims**



1. A vehicle seat comprising:

a base frame;

a seat pan having an upper surface with a front edge and a rear edge;

seat pan mounting means for supporting the seat pan on the base frame and for permitting change of the orientation of the upper surface of the seat pan between a normal substantially horizontal position and a tilted position in which the front edge of the seat pan is lower than the rear edge of the seat pan;

a seat back having a first portion and a second portion, the first portion being mounted on the base frame for angular movement between a substantially upright position and a reclined position without changing the orientation of the seat pan, the second portion having an outer surface supported on the first portion by second portion mounting means which permits change of the orientation of the outer surface between:

i) an erect position, in which the outer surface of the second portion is substantially parallel to the first portion, and

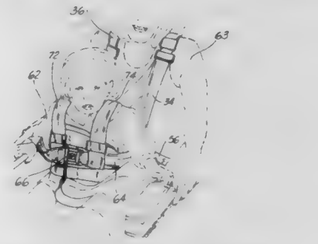
ii) a reclined position, in which the outer surface of the second portion is substantially coplanar with the upper surface of the seat pan, when the first portion is in the reclined position and the seat pan is in the tilted position.

5,628,548

VEHICULAR PASSENGER RESTRAINT SYSTEMS

Marvin Lacoste, P.O. Box 292, Kiln, Miss. 39556

Filed Feb. 28, 1996, Ser. No. 608,501
Int. Cl.[6] A62B *35/00;* **B60R** *21/00;22/12*
U.S. Cl. 297—484 **20 Claims**



1. A safety restraint system for airplanes, comprising:

a) a primary support harness, comprising:

i) an upper support portion for securing to an upper portion of an airline seat;

ii) a lower support portion secured to the upper support portion, so that the lower portion extends across a torso of an adult person seated in the airline seat;

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iii) first loops on ends of the lower support portion for accepting an airline safety seat belt, so that securing of the airline seat belt secures the primary support harness against the torso of the person on the seat;

b) a secondary support harness comprising at least:

i) shoulder straps and a waist belt for positioning upon a child seated on the adult's lap;

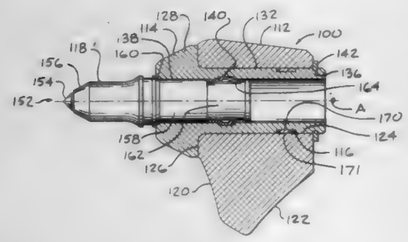
ii) second loops on ends of the lower support portion for threading the waist belt therethrough and engaging upon itself around the child, so that the waist belt secures the child in place on the adult's lap.

5,628,549

CUTTING TOOL SLEEVE ROTATION LIMITATION SYSTEM

Cary D. Ritchey, Curryville, and Robert H. Montgomery, Jr., Everett, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Dec. 13, 1995, Ser. No. 573,220
Int. Cl.[6] E21C *35/197*
U.S. Cl. 299—104 **45 Claims**



1. A tool sleeve rotation limitation system for reducing the rotation of a tool sleeve within a support block bore, the tool sleeve having a sleeve engagement surface and the block bore having a block engagement surface, the tool sleeve rotation limitation system comprising:

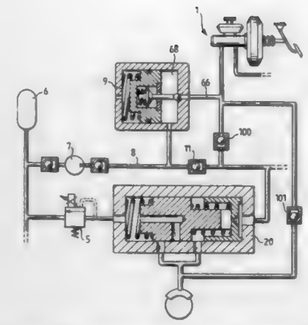
a rotation limitation member located completely between the tool sleeve and the block bore so as to engage the block engagement surface and the sleeve engagement surface and reduce rotation of the tool sleeve within the block bore, the rotation limitation member having a member perimeter which conforms to at least one of the sleeve engagement surface and the block engagement surface.

5,628,550

ANTI-LOCK HYDRAULIC BRAKE SYSTEM

Dalibor Zaviska, Frankfurt am Main, and Peter Volz, Darmstadt, both of Germany, assignors to Itt Automotive Europe GmbH, Germany

Continuation of Ser. No. 211,861, Apr. 18, 1994, abandoned. This application Jun. 22, 1995, Ser. No. 493,514
Claims priority, application Germany, Oct. 18, 1991, 41 34 459.6
Int. Cl.[6] B60T *8/36;8/48;8/50*
U.S. Cl. 303—115.4 **1 Claim**



1. An anti-lock hydraulic brake system, comprising:

a master cylinder;

a wheel brake;

a flow control valve directly fluidly connected to the wheel brake, said flow control valve having an inlet chamber and an outlet chamber and having a piston operably connecting the inlet chamber with the wheel brake in a first piston position and operably connecting the output chamber with said wheel brake in a second piston position;

a first brake line connecting said master cylinder to the inlet chamber of said flow control valve;

a first non return valve disposed in said first brake line and adapted to close toward said master cylinder;

a low pressure accumulator;

a pump having a suction side connected to said low pressure accumulator and a pressure side;

a first return line defined between said suction side of said pump and the outlet chamber of said flow control valve and including said low pressure accumulator;

a proportional pressure limiting valve being electrically operated disposed in said first return line between said flow control valve and said low pressure accumulator wherein the wheel brake pressure is operably regulated to a pressure proportional to an electrical current through the proportional pressure limiting valve, said proportional pressure limiting valve being exclusive of other electrically operated valves with respect to the wheel brake;

a pressure line connected between said pressure side of said pump and a portion of said first brake line between said first non return valve and said flow control valve;

a high pressure accumulator connected to said pressure line, said high pressure accumulator having a shut off valve;

a direct line connected between said high pressure accumulator and a portion of said first brake line between said first non return valve and said master cylinder with flow therethrough controlled by the shut-off valve; and

a second non return valve disposed in a second return line directly connecting said wheel brake and the portion of said first brake line between said first non return valve and said master cylinder, said second non return valve adapted to open toward said first brake line.

5,628,551

VALET WITH STORAGE COMPARTMENT FOR STORING ITEMS

Adee Block, 5807 Yecker Ave., Kansas City, Kans. 66104

Filed Mar. 5, 1996, Ser. No. 611,254
Int. Cl.[6] A47B *83/00*
U.S. Cl. 312—235.7 **19 Claims**

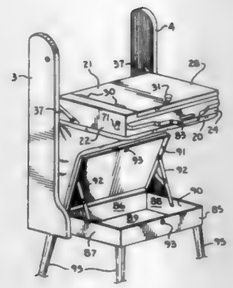
1. A valet comprising:

a. a frame;

b. a storage box having a front panel and a rear panel, an internal chamber formed therein and a lid for providing access to said internal chamber; said storage box pivotally secured to said frame such that said storage box is pivotal between an upright alignment wherein said front and rear panels are substantially vertically aligned and a horizontal alignment wherein said front and rear panels are generally horizontally aligned;

c. a storage box locking assembly at least a portion of which is mounted on said frame for locking said storage box in said upright alignment; and

d. a lid locking assembly mounted on said storage box for locking said lid in a closed alignment; said lid locking assembly positioned on said storage box such that access to said lid locking assembly is obstructed when said storage box is positioned in said vertical alignment.

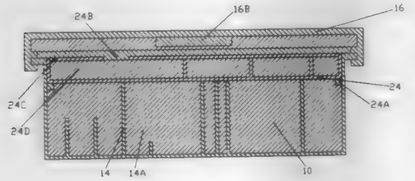


5,628,552

PORTABLE MULTI-COMPARTMENT DRAWER

Terry O'Barr, 4495 Madison SE., Grand Rapids, Mich. 49548-4367

Filed Nov. 20, 1995, Ser. No. 559,621
Int. Cl.[6] A47B *88/20*
U.S. Cl. 312—330.1 **16 Claims**



1. A portable desk drawer comprising:

a) a handle pivotally attached to a front of the portable desk drawer, the portable desk drawer further comprises a drawer insert which is preferably a plurality of drawer inserts, the plurality of drawer inserts forming a drawer insert compartment, the drawer insert compartment is preferably a plurality of drawer insert compartments situated in a back portion of the portable desk drawer, the portable desk drawer is further comprised of a front compartment located in the front of said portable desk drawer, a lid covering a top of the portable desk drawer, the lid further having a lid lock secured on a front of the lid and a lid clip attached to a middle of said lid;

b) a tray slidably housed underneath the lid, the tray is compromised of tray compartments, the tray further having a tray lid retractably affixed to a top of the tray, the tray further having tray glides attached under the tray and a tray stop extending downwardly from a bottom of the tray; and

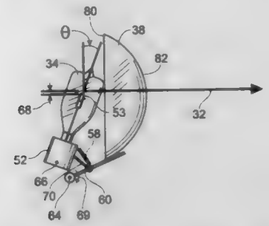
c) a frame extending outwardly from the top of the portable desk drawer, the frame being slidably housed in between glides on either side of the portable desk drawer, the glides are each attached to a bracket, the bracket further being mounted to a desk.

5,628,553

PROJECTOR ILLUMINATION SYSTEM

David K. Booth, Tigard, and Arlie R. Conner, Tualatin, both of Oreg., assignors to Lightware, Inc., Beaverton, Oreg.

Filed Oct. 10, 1995, Ser. No. 541,325
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—122 **14 Claims**



1. In a display projector having a condenser lens that receives light from an illumination source and directs the light toward an image source to form a projection display image, the improvement comprising:

an illumination source support that supports the illumination source under compression against the condenser lens surface.

5,628,554

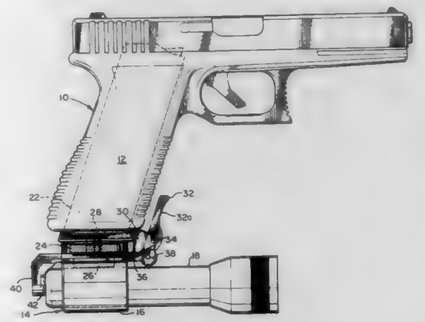
Patent Not Issued For This Number

5,628,555

SWITCH ACTUATION MECHANISM FOR A FIREARM-MOUNTED FLASHLIGHT

Raymond L. Sharrah, Collegeville, and Charles W. Craft, Lansdale, both of Pa., assignors to Streamlight, Inc., Norristown, Pa.

Filed Apr. 22, 1996, Ser. No. 636,020
Int. Cl.[6] F41G *1/34*
U.S. Cl. 362—114 **10 Claims**



1. An apparatus for operating a switch mechanism on a flashlight, the apparatus being mounted to a firearm having a grip area for being held by a hand, the apparatus comprising:

a support base adapted to be mounted from the grip area;

a slide movably supported by the support base for causing actuation of the switch mechanism of the flashlight for operating the flashlight; the flashlight being supported by one of the support base or slide; and

an actuating member coupled to the slide for movement relative to the support base and having an operating surface accessible

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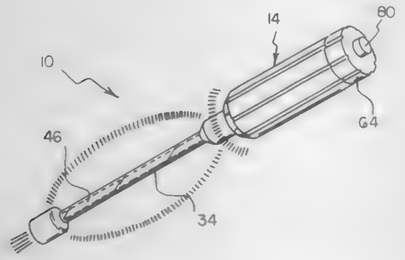
to at least a finger of a hand holding the grip area for moving the slide to operate the flashlight, whereby the flashlight is operable by a hand holding the grip area of the firearm.

5,628,556

ILLUMINATING NUT DRIVER

Kristin Hrabar, and Frank Hrabar, Jr., both of 127A Aberdeen Rd., Aberdeen, N.J. 07747

Filed Dec. 22, 1995, Ser. No. 577,689
Int. Cl.[6] B25B *23/18*
U.S. Cl. 362—119 **4 Claims**



1. A new and improved illuminating nut driver for lighting the area of nut placement comprising in combination:

a hollow torque handle having a distal end, a proximal end and a middle portion, the distal end having a threaded interior, the proximal end having an opening with a key way therein, the torque handle having a circular cross section, the handle having a plurality of linearly extending grooves for enhancing the gripping capabilities of the handle;

a hollow driver shaft having a cylindrical nut driver at a first end and a key member at a second end, the nut driver and the key member being integral with the shaft, the key member of the driver shaft configured for coupling with the key way of the torque handle for being locked therein, the driver shaft having been locked within the torque handle and being axially relative to the handle for use;

a lamp receptacle being positioned within the torque handle near the proximal end, the lamp receptacle having a lamp detachably mounted therein, the lamp receptacle having a conductive strip positioned therein and in contact with the lamp, the conductive strip extending along an interior of the torque handle with a contact end at the distal end of the handle;

a generally cylindrical end cap having a switch contained therein, the end cap configured for threadably engaging with the threaded interior of the distal end of the handle, the switch having a contact tip projecting from a top portion of the cap, the switch having a contact strip extending therefrom and into the end cap, the contact strip of the switch having a contact end along a shelf of the end cap, the cap being threadably coupled with the handle allowing the contact tip to be in contact with a battery being positioned within the torque handle; and

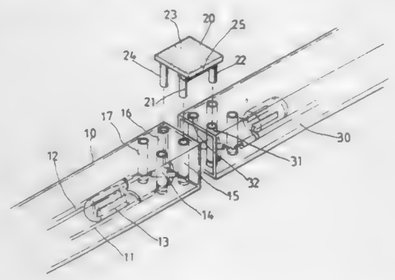
the contact strip of the cap being flush with the contact end of the conductive strip of the handle, the contact strip of the cap being in contact with the conductive strip of the handle for the passage of a current through to the lamp, the current being passed when the switch being turned on by pushing a switch button on the cap, the switch button being pushed allows the battery and the lamp to be in electrical contact for illumination of the lamp, whereby light passes from the handle down the driver shaft and through the nut driver.

5,628,557

ASSEMBLY TUBE LIGHT FOR WINDOW DISPLAY

Peter K. L. Huang, Taipei, Taiwan, assignor to Shining Blick Enterprises Co., Ltd., Taipei, Taiwan

Filed Jun. 16, 1995, Ser. No. 491,591
Int. Cl.[6] F21P *1/02*; **F21V** *21/00*
U.S. Cl. 362—252 **1 Claim**



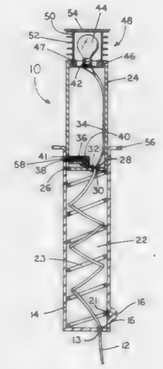
1. An assembly tube light comprising at least two tube lights and at least one connector for connecting a first and second tube light, each said first and second tube light comprising a first conductor, a second conductor, a plurality of bulbs respectively connected between said first conductor and said second conductor, and two coupling units at two opposite ends of each said tube light, each coupling unit comprising two diagonal pairs of plug holes arranged in a square and respectively connected to said first conductor and said second conductor, each said connector comprising two pairs of parallel contact pins arranged in a square corresponding to the plug holes of each coupling unit for inserting into two of said plug holes on said first tube light and two of said plug holes on said second tube light for permitting them to be fastened together and electrically connected in series, two of said contact pins of a same pair being electrically connected together.

5,628,558

PNEUMATIC LANDSCAPE LIGHT

James L. Iacono, 65 Pinehill Rd., and Nils L. Reed, 379 Summer St., both of Lynnfield, Mass. 01940

Filed Jan. 30, 1996, Ser. No. 593,826
Int. Cl.[6] F21V *19/02*
U.S. Cl. 362—288 **13 Claims**



1. An in-ground, pneumatically-operated, extensible and retractable landscape light comprising:

a) an elongated outer housing adapted to be at least partially buried in a surrounding volume of ground, the outer housing having an upper end with an opening therein, a lower end, an inner surface, and an outer surface;

b) an elongated inner housing having an upper end a lower end, and an outer surface the inner housing being received into the opening in the upper end of the outer housing in a telescoping, mating relationship and being at least partially within the outer housing when in a retracted position and projecting at least partially outside the outer housing when in an extended position;

c) an inlet in the outer housing for allowing air to be injected into the outer housing for pneumatically forcing the inner housing to an extended position; and

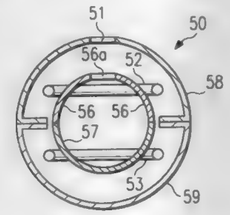
d) a light source operably connected to the elongated inner housing for illuminating an area of landscape surrounding the light.

5,628,559

SPHERICAL ILLUMINATOR

Charles H. Anderson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 337,588, Nov. 10, 1994. This application Jun. 7, 1995, Ser. No. 482,055
Int. Cl.[6] F21S *1/00*
U.S. Cl. 362—363 **9 Claims**



1. A spherical illuminator for shadowless illumination of an object under inspection, comprising:

an upper diffuser having a substantially hemispherical surface that is concave such that said surface forms an inner viewing area, said upper diffuser providing transmitted illumination from substantially all of said inner viewing area, and said diffuser having an aperture permitting said object under said diffuser to be viewed from outside said diffuser;

a lower diffuser associated with said upper diffuser having a substantially hemispherical surface that is concave and that opposes the concave surface of said upper diffuser, said lower diffuser providing transmitted illumination from substantially all of said lower diffuser concave surface; and

a housing surrounding said upper diffuser and said lower diffuser.

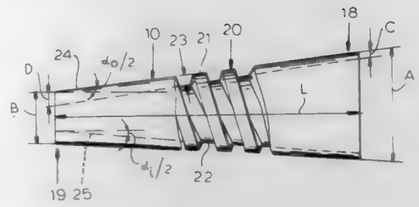
5,628,560

DOUBLE-SCREW EXTRUDER

Horst Eigruber, McPherson, Kans., assignor to American Maplan Corporation, McPherson, Kans.

Continuation-in-part of Ser. No. 628,501, Apr. 5, 1996, and a continuation of Ser. No. 449,571, May 24, 1995, abandoned. This application Jun. 3, 1996, Ser. No. 659,038
Int. Cl.[6] B29B *7/48*
U.S. Cl. 366—83 **11 Claims**

1. A screw for a screw extruder for plastifying thermoplastic compositions, comprising a conical body formed with a helical screw flight extending from an inlet end to an outlet end for advancing a thermoplastic composition therealong, said flight having an outer periphery lying along a first conical surface and defining an apex angle, said flight having a root surface defining a core of said body, said root surface lying along a second conical surface with a greater apex angle than said apex angle of said first conical surface, said screw having an outside diameter A at said inlet end, an outside diameter B at said outlet end, a screw flight depth C at said inlet end, and a screw flight depth D at said outlet end, wherein $1 \geq (A-B)/B = (C-D)/D$ and $0 > m \geq -0.75$, said conical body having a length L from said inlet end to said outlet end of at least 15B.

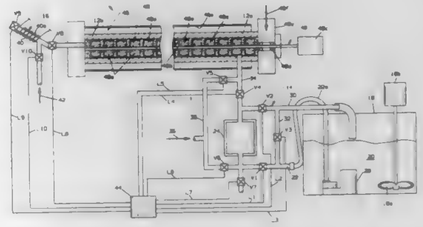


5,628,561

SYSTEM AND METHOD FOR CONTINUOUSLY TREATING PARTICULATE MATERIAL IN A SLURRY IN A HIGH TEMPERATURE AND HIGH PRESSURE CHAMBER EMPLOYING INTERMITTENT FEED

Raymond E. Lambert, Sr., 7 Heron Ln., P.O. Box 334, Catamumet, Mass. 02534

Filed Apr. 2, 1996, Ser. No. 627,689
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—136 **14 Claims**



1. A system for treating particulate material in a slurry to selected high pressure and high temperature conditions comprising an elongated generally tubular treatment chamber having an inlet end and an opposite outlet end, a slurry supply network connected to the inlet end and an outlet network connected to the outlet end, the slurry supply network having a loading chamber, a container defining a slurry reservoir, means to stir slurry disposed in the container, pump means for pumping slurry from the reservoir through a slurry circulation conduit to the loading chamber through a first, normally open valve, a slurry return conduit extending from the loading chamber to the container through a second, normally open valve, the loading chamber, slurry circulation conduit, slurry return conduit and container forming a main circulation loop, a by-pass conduit connected through a third, normally closed valve between the slurry circulation conduit and the slurry return conduit to form a by-pass circulation loop, the loading chamber connected to the inlet end of the treatment chamber through a fourth, normally closed slurry valve and a high pressure fluid conduit connected to the inlet end of the treatment chamber and to the loading chamber through respective normally open, fifth and normally closed, sixth valves.

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MULTI-COMPONENT MIXER WITH EXCHANGEABLE CARTRIDGE

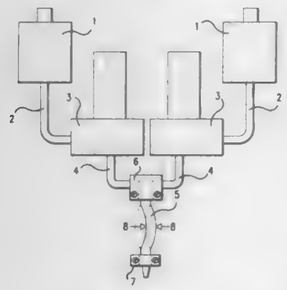
Christian Krumm, Bienne, Switzerland, assignor to Octal Technologies Ch. Krumm, Bienne, Switzerland

Filed Feb. 28, 1996, Ser. No. 608,312

Claims priority, application European Pat. Off., Mar. 22, 1995, 95810195

Int. Cl.[6] B01F *11/00*

U.S. Cl. 366—240 9 Claims



1. A mixer, the active part of which comprises a flexible or semi-rigid tube fixed at both ends and agitated in a middle portion between the ends by mechanical movement from an external mechanical device to mix components through transverse displacement of the tube at the middle portion.

5,628,563

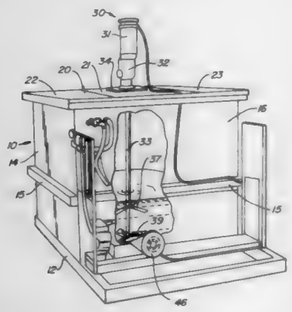
METHOD AND SYSTEM FOR SLURRY PREPARATION AND DISTRIBUTION

Donald S. Fisher, Visalia, Calif., assignor to Montague/Fisher, Inc., Visalia, Calif.

Filed Nov. 3, 1995, Ser. No. 552,892

Int. Cl.[6] B01F *5/12*

U.S. Cl. 366—270 17 Claims



1. A method of preparing a substantially uniform slurry mixture for distribution to a utilization site, said method comprising the steps of:

(a) providing a vessel having a plurality of substantially planar vertically oriented flow surfaces;

(b) filling the vessel with a desired amount of water;

(c) placing a desired amount of particulate material in the vessel;

(d) mixing the particulate material and water by (i) drawing the ingredients substantially exclusively downwardly in the central region of the vessel, (ii) pushing the ingredients outwardly from the central region along the bottom of the vessel to the inner periphery thereof, and (iii) permitting the ingredients to flow upwardly along the substantially planar vertically oriented flow surfaces of the vessel and inwardly to the central region; and

(e) continuing the mixing step (d) until the substantially uniform slurry is obtained and during subsequent distribution.

5,628,564

METHOD AND APPARATUS FOR WAVEVECTOR SELECTIVE PYROMETRY IN RAPID THERMAL PROCESSING SYSTEMS

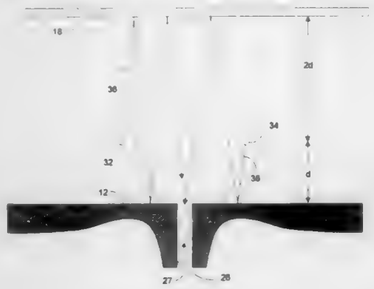
Zsolt Nenyei, Blaustein; Andreas Tillmann, Neu Ulm Pfuhl, and Heinrich Walk, Allmendingen, all of Germany, assignors to AST Elekronik GmbH, Kirchheim, Germany

Filed Mar. 28, 1995, Ser. No. 412,278

Claims priority, application Germany, Apr. 26, 1994, 44 14 391.5

Int. Cl.[6] G01J *5/08*

U.S. Cl. 374—121 21 Claims



1. A method for optical temperature measurement of an object to be processed in a rapid thermal processing system comprising: a. irradiating a specularly reflecting area of a surface of the object with incident radiation having a particular angular distribution, the incident radiation arising in part from one or more reflections of radiation from at least one radiation source, the reflections of radiation being substantially specular; and b. measuring radiation emitted and reflected from the specularly reflecting area of the surface of the object at angles different from an angle where the incident radiation reflected from the specularly reflecting area of the surface of the object has maximum intensity.

5,628,565

MULTIFUNCTIONAL AIR DATA SENSING PROBES

Floyd W. Hagen, Eden Prairie; Gregg A. Hohenstein, Bloomington; John A. Severson, Eagan, and Pennelle J. Trongard, Savage, all of Minn., assignors to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 122,222, Sep. 17, 1993, Pat. No. 5,466,067. This application Jun. 2, 1995, Ser. No. 460,103

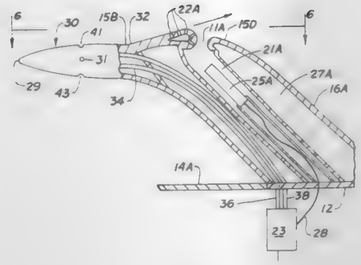
Int. Cl.[6] G01K *13/02;1/14;* G01C *21/00;* G01P *5/165*

U.S. Cl. 374—143 4 Claims

1. An air data probe for sensing a parameter of a fluid flow moving relative to the probe, wherein the probe has an inlet aperture open to the atmosphere comprising:

a strut having a leading edge, a distal portion and a base portion adapted for mounting to an air vehicle, and having the inlet aperture formed through the distal portion and facing generally transverse to the fluid flow, away from the base portion, the strut having an internal cavity fluidly coupled to the inlet aperture and an exhaust port fluidly coupled to the internal cavity;

temperature sensing means mounted in the internal cavity for sensing and providing an output related to the temperature of the fluid:



a perforated wall portion located upstream from the inlet aperture and having openings passing through the wall portion from a first surface on the distal portion and in contact with the fluid flow to an area maintained at a lower pressure than the fluid pressure present over the first surface to bleed off boundary layer fluid from the fluid flow prior to a portion of the fluid flow entering the inlet aperture; and

a probe head member joined to the leading edge of the strut so that a continuous smooth transition surface leads from the probe head member to the perforated wall portion, and at least one pressure sensing port on the probe head member.

5,628,566

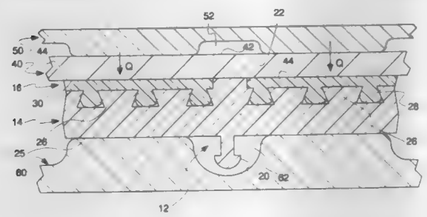
PROFILE SEALING FLANGE

Michael E. Schreiter, Appleton, Wis., assignor to Reynolds Consumer Products, Inc., Appleton, Wis.

Filed Jan. 29, 1996, Ser. No. 593,200

Int. Cl.[6] B65D *33/25*

U.S. Cl. 383—63 25 Claims



1. A profile sealing strip to be affixed to a package and thereby provide said package with a resealable closure, comprising:

a lateral flange having first and second sections, said first and second sections each having a length, an outer surface, an inner surface and a plurality of ribs extending along said length of said outer surface, adjacent ones of said plurality of ribs forming a channel therebetween adjacent said outer surfaces;

a closure portion having a closure means and a base, said base having a bottom and being disposed between and connected to said first and second sections of said lateral flange, said closure means protruding beyond said inner surfaces of said first and second sections of said lateral flange; and

a sealant layer having a first portion and a second portion, said first portion of said sealant layer being affixed to an outer segment of said plurality of ribs on said first section of said lateral flange, said second portion of said sealant layer being affixed to an outer segment of said plurality of ribs on said second section of said lateral flange.

5,628,567

DYNAMIC PRESSURE GAS BEARING STRUCTURE

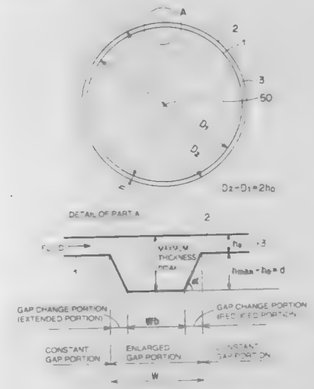
Kaoru Murabe, and Osamu Komura, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 11, 1996, Ser. No. 613,282

Claims priority, application Japan, Mar. 13, 1995, 7-053007; Feb. 27, 1996, 8-039623

Int. Cl.[6] F16C *32/06*

U.S. Cl. 384—100 9 Claims



1. A dynamic pressure gas bearing structure comprising a columnar shaft body and a hollow cylindrical bearing body being opposed to said shaft body with a clearance in the radial direction, wherein

a substantially cylindrical gap is defined by the outer peripheral surface of said shaft body and the inner peripheral surface of said bearing body when said shaft body and said bearing body are so arranged that central axes thereof are aligned with each other.

the thickness (h) of said gap is defined by the distance between points where a radial straight line passing through said central axes intersects with outlines corresponding to the outer peripheral surface of said shaft body and the inner peripheral surface of said bearing body respectively,

said gap has at least one gap change portion where its thickness is changed with respect to a central angle corresponding to the circumference along the outer periphery of said shaft body,

a gap change rate α is expressed as follows, assuming that D_1 represents the diameter of said shaft body, $_{\Delta}h$ represents the amount of change of the thickness of said gap, and $_{\Delta}\theta$ represents the amount of change of said central angle, and

$$\alpha=(_{\Delta}h/D_1)/_{\Delta}\theta[/^{\circ}]$$

said gap change portion has a gap change rate in the following range:

$$1.0\times10^{-4}\leq\alpha<10.0\times10^{-4}.$$

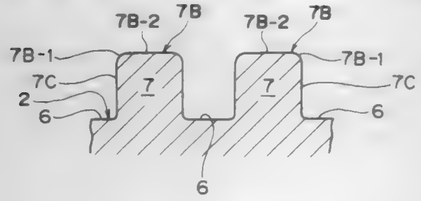
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5,628,568

DYNAMIC PRESSURE BEARING HAVING LARGE LOAD-CARRYING CAPACITY AND PREVENTING DAMAGE OF OPPOSITE SURFACE AND METHOD OF MANUFACTURING THE SAME

Takeshi Takahashi, Yamatotakada, and Yasuo Takamura, Yamatokooriyama, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jan. 16, 1996, Ser. No. 586,402
Claims priority, application Japan, Feb. 10, 1995, 7-022622
Int. Cl.[6] F16C *17/04*
U.S. Cl. 384—123 2 Claims



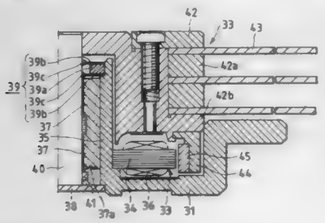
1. A dynamic pressure bearing comprising:
dynamic pressure generating grooves formed on an axial bearing surface by plastic working;
ridge portions respectively defined between the adjacent dynamic pressure generating grooves, wherein
a top end of each ridge portion has rounded edge portions and a flat bearing surface defined between the rounded edge portions.

5,628,569

FLUID BEARING UNIT AND MANUFACTURED METHOD THEREOF

Masamichi Hayakawa; Masato Gomyo; Toshihiko Miyakoshi, and Arihiro Yonezawa, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Oct. 18, 1994, Ser. No. 324,985
Claims priority, application Japan, Oct. 18, 1993, 5-283990; Jun. 16, 1994, 6-158120; Aug. 9, 1994, 6-208007; Aug. 31, 1994, 6-230794
Int. Cl.[6] F16C *32/06;33/82*
U.S. Cl. 384—278 13 Claims



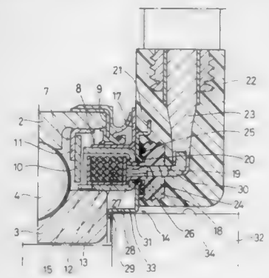
1. A fluid bearing unit comprising:
a shaft;
a bearing which circumscribes said shaft with a space therebetween in which a bearing fluid is provided so that said shaft and bearing can be relatively rotated so as to generate dynamic pressure in the bearing fluid; and
a bearing fixing member at least partially circumscribing said bearing for fixing the bearing relative to said shaft;
a magnetic seal for sealing said bearing fluid within said space so as to magnetize said bearing fluid,
wherein at least one of the bearing and the bearing fixing member is made of an iron alloy having a volumetric magnetostriction which acts to cancel thermal expansion thereof; and
a stress dispersion means for maintaining the bearing surface in a uniform temperature changing condition, the stress dispersion means being provided in at least one of the bearing and the bearing fixing member.

5,628,570

WHEEL-SUPPORTING BEARING

Koji Sahashi, Mie, and Keizo Kobayashi, Iwata, both of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Oct. 26, 1995, Ser. No. 548,518
Claims priority, application Japan, Oct. 27, 1994, 6-263769
Int. Cl.[6] F16C *19/08*; G01P *3/44*
U.S. Cl. 384—448 16 Claims



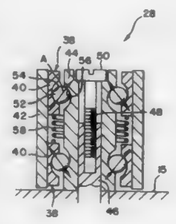
1. A wheel-supporting bearing comprising a rotatable bearing ring, a stationary bearing ring, a sensor rotor mounted on said rotatable bearing ring, a rotation sensor mounted on said stationary bearing ring so as to be opposite to said sensor rotor for detecting the rotating speed of said rotatable bearing ring, an annular case having a ⊐-shaped section for mounting said rotation sensor therein, an annular plate fixed to an outer end of said annular case, a resin molding mounted on said annular plate with said annular plate partially embedded in said resin molding, a lead wire extending from said rotation sensor, said annular case and said annular plate having holes through which said lead wire extends, and a harness to which said lead wire is connected in said molding.

5,628,571

BEARING STRUCTURE

Mutsuro Ohta, Kanagawa-ken; Kohji Takahashi, Sagamihara, and Shingo Tsuda, Kanagawa-ken, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1995, Ser. No. 528,976
Claims priority, application Japan, Sep. 20, 1994, 6-225115
Int. Cl.[6] F16C *33/58;17/22*
U.S. Cl. 384—518 13 Claims



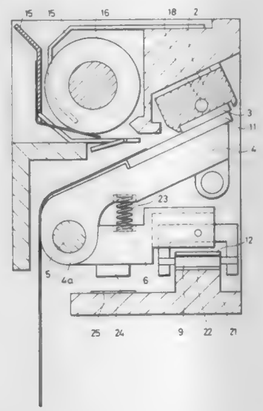
1. A bearing structure comprising:
an inner shaft;
an outer sleeve;
a pair of roller bearings axially spaced and interposed between the inner shaft and the outer sleeve; and
a preload means for exerting a preload on the roller bearings;
wherein coefficients of linear expansion of the inner shaft and the outer sleeve being made different in an axial direction, and the rotational torque resulting from a temperature change because of the lubricant enclosed in the roller bearings has been canceled with the change in the preload resulting from the temperature change because of the different coefficients of linear expansion.

5,628,572

PRINTER APPARATUS HAVING A VIBRATOR MOTOR

Katsuari Sato; Minoru Hoshino; Shinji Nureki; Shinichi Hayashizaki; Ko Yamazaki, and Akihiro Iino, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed May 9, 1994, Ser. No. 239,605
Claims priority, application Japan, May 11, 1993, 5-109611
Int. Cl.[6] B41J *19/00*
U.S. Cl. 400—322 21 Claims



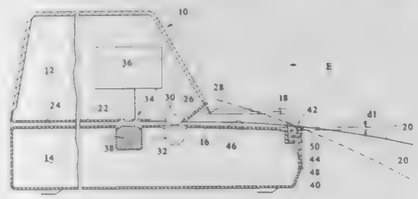
1. A printer apparatus comprising: a base; a guide shaft mounted on the base; a platen body disposed on the base; printing means having a printing head unit for printing on a paper medium, the printing head unit having a head holder having a first end supporting a thermal head and a second end slidably supported by the guide shaft, and a head carrier slidably supported by the guide shaft for carrying the printing head unit; position detecting means for detecting a moving position of the printing head unit; paper feeding means for feeding the paper medium in synchronization with a printing timing of the printing head unit; control means for controlling the printing means and the paper feeding means; a vibrator disposed in the head carrier for generating a progressive wave, the carrier having a first end supporting a motor holder supporting the vibrator and a second end slidably supported by the guide shaft; a motor guide member provided on the base in opposed relation to the vibrator such that the motor guide member and the vibrator integrally constitute a motor to drive the head carrier; first means for pivotally supporting the motor holder to the head carrier; and second means for pivotally supporting the vibrator to the motor holder.

5,628,573

DOCUMENT BRAKE FOR DOCUMENT PROCESSING DEVICES

Reimund Selke, Paderborn, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

PCT No. PCT/DE94/00099, § 371 Date Sep. 6, 1995, § 102(e) Date Sep. 6, 1995, PCT Pub. No. WO94/20934, PCT Pub. Date Sep. 15, 1994
PCT Filed Feb. 2, 1994, Ser. No. 522,240
Claims priority, application Germany, Mar. 11, 1993, 9303582 U
Int. Cl.[6] B41J *13/00*
U.S. Cl. 400—578 15 Claims



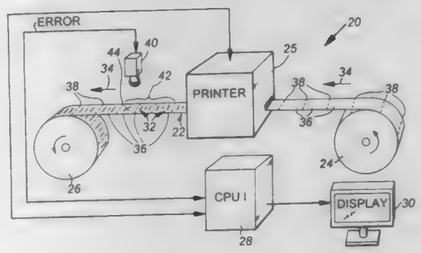
1. A document processing device, comprising:
a document issuing section having a slot-like document issuing aperture out of which a document is ejected in a document issuing direction;
a document support section arranged downstream of the document issuing section in the document issuing direction;
the document support section having a slide inhibiting region which inhibits sliding of the document, said slide inhibiting region being parallel to said document issuing aperture;
a lower housing part having a front wall with an upper border, said slide inhibiting region attached to said upper border and projecting beyond said upper border;
a document support surface on at least a portion of a top of said lower housing part, at least said document support surface and said upper border forming said document support section;
said upper border being offset from and lower than said document support surface by a predetermined offset distance.

5,628,574

WEB ERROR RECOVERY DIVERT SYSTEM

H. W. Crowley, Eliot, Me., assignor to Roll Systems, Inc., Burlington, Mass.

Filed Mar. 19, 1996, Ser. No. 616,513
Int. Cl.[6] B41J *11/26*
U.S. Cl. 400—621 11 Claims



1. An error recovery divert system comprising:
a source of web having processing thereon, the web being divided into groupings of sections;
a scanner that identifies errors in each of the groupings of sections;

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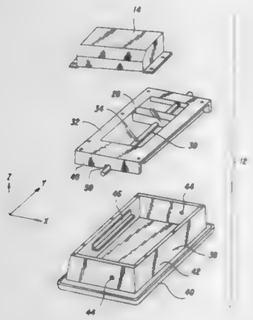
a controller, responsive to the scanner, that instructs reprocessing of a grouping of the web having the error thereon;
an identifier that locates a reprocessed grouping;
a cutter and gate mechanism constructed and arranged to operate in response to the identifier that cuts and diverts the grouping of the web having the error; and
a drive mechanism that directs each of the web and the reprocessed grouping to a post-processing location.

5,628,575

AUTOMATIC PAPER FEEDER AND FRAME STRUCTURE OF DOCUMENT INPUT DEVICE

Shuichi Morikawa; Masahiko Futatsuka; Satoshi Ishida; Yasunori Miyauchi, and Minoru Masuda, all of Kahoku-gun, Japan, assignors to Fujitsu Ltd., Kanagawa, and PFU Ltd., Ishikawa, both of Japan

Division of Ser. No. 507,292, Aug. 24, 1995, Pat. No. 5,573,338. This application Apr. 15, 1996, Ser. No. 631,939
Claims priority, application Japan, Dec. 27, 1993, 5-330267; Dec. 28, 1993, 5-336651; Mar. 17, 1994, 6-73839; Apr. 8, 1994, 6-95775; May 11, 1994, 6-123009; May 13, 1994, 6-124234
Int. Cl.[6] B41J *29/02*
U.S. Cl. 400—693 **12 Claims**



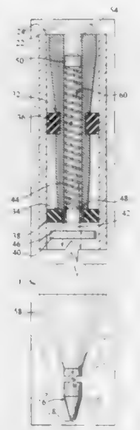
1. A frame structure of a document input device comprising:
a base frame member formed as a resin molded article, and having a base and an annular frame extending integrally with and substantially upwardly from said base as side walls;
a top frame member made of a metal and having a top plate with an opening and side walls extending integrally with and downwardly from said top plate, said top frame member forming an outer frame of the device in combination with said base frame member;
a glass plate covering the opening of said top plate;
a carrier shaft arranged in said base frame member;
an optical reading unit capable of moving along said carrier shaft;
a positioning and engaging unit arranged in said top frame member for engagement with at least one of said carrier shaft and said optical reading unit to determine the position of said optical reading unit in a direction in parallel with said glass plate passing through said carrier shaft and perpendicular to said glass plate passing through said carrier shaft; and
an automatic paper feeding unit mounted on said top frame member.

5,628,576

PRESSURIZED REFILL WITH DOUBLE SEAL VALVE CORE PLUG AND A METHOD FOR PRESSURIZING A REFILL

Paul A. Smith, Glenview, Ill., assignor to Eversharp Pen Company, Franklin Park, Ill.

Filed May 8, 1995, Ser. No. 437,017
Int. Cl.[6] B43K *7/03*
U.S. Cl. 401—190 **14 Claims**



1. A refill pressurized with a gas, the refill comprising:
a barrel having a wall defining an interior defined by the wall extending between a first end and a second end, the first end terminating in a writing tip wherein the interior contains ink therein;
a plug having an interior insertable into the second end of the barrel having at least one seal around the periphery of the plug to seal the plug against the wall in the interior of the barrel;
a cap removably secured to the second end of the barrel wherein removal of the cap does not affect the ink sealed in the barrel by the plug; and
valve means constructed and arranged to selectively permit the gas to enter the interior of the barrel through the interior of the plug wherein the valve means has a stem extending into the interior of the plug and further wherein the stem includes a spring associated with the valve means and biased to maintain the valve means in a closed position wherein the spring extends into the interior of the plug.

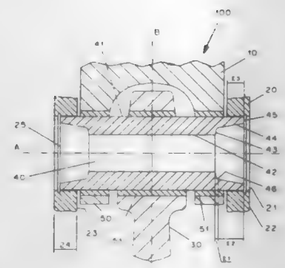
5,628,577

WRIST PIN FOR A TWO-PIECE PISTON

José Do Ribeiro, Ann Arbor, Mich.; Luis M. Lopes, and José M. Leites, both of São Paulo - SP, Brazil, assignors to Metal Leve S.A. Industria E Comercio, Sao Paulo-SP, Brazil

Filed Jun. 16, 1994, Ser. No. 260,556
Claims priority, application Brazil, Mar. 8, 1994, 94007179
Int. Cl.[6] F16C *9/00*
U.S. Cl. 403—150 **13 Claims**

1. A two-piece piston having a head portion with at least one hollow pin boss, a skirt portion with holes, a connecting rod, and a tubular wrist pin inserted through said at least one boss of the piston head portion, said holes of the skirt portion for being supported on a wall surrounding the holes of said skirt portion, and said connecting rod, wherein said wrist pin resists shearing forces applied to said wrist pin during piston operation by said at least one pin boss of the piston head portion, wherein an internal surface of the tubular wrist pin having a surface of revolution defined by:



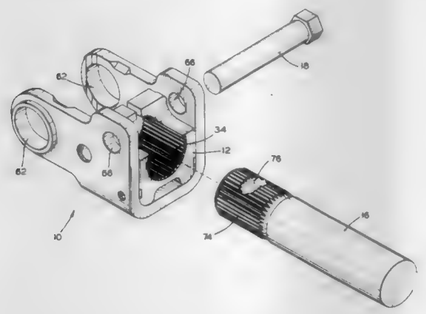
a median section having a constant internal diameter throughout the length thereof; and
end portions disposed at each end of said median section and terminating at respective free ends of said wrist pin, each of said end portions being defined by an end section extending from said free end and a transition section between said end section and said median section, said end section being defined by a tapered portion having an angle of inclination with respect to an axis transverse to a longitudinal axis of said wrist pin, and said transition section being defined by a tapered portion having an angle of inclination with respect to said transverse axis which is less than the angle of inclination of said end section.

5,628,578

ALTERNATE PINCH BOLT YOKE CONSTRUCTION

Virginia L. McClanahan, Monclova, and Michael R. Ott, Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Jul. 28, 1995, Ser. No. 508,465
Int. Cl.[6] F16B *7/04*
U.S. Cl. 403—290 **24 Claims**



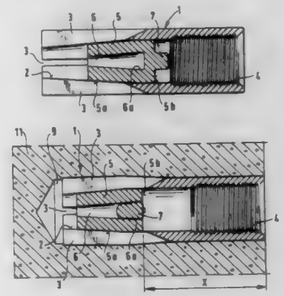
1. A block for a pinch bolt yoke comprising:
a generally rectangular body including front and rear surfaces, upper and lower surfaces, and first and second side surfaces, said body having a splined bore formed therethrough which extends from said front surface to said rear surface along an axis, said body further having a cutout formed in said upper surface which extends generally perpendicular to said axis and which intersects said bore, said cutout extending from said first side surface to said second side surface.

5,628,579

EXPANSION DOWEL WITH SLEEVE AND EXPANSION MEMBER

Hubert Forster, Moorenweis, Germany, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

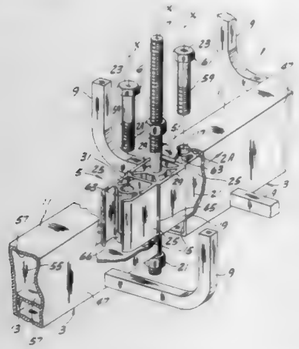
Continuation of Ser. No. 199,379, Feb. 18, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 580,784
Claims priority, application Germany, Feb. 22, 1993, 43 05 381.5
Int. Cl.[6] F16B *13/04*
U.S. Cl. 403—297 **5 Claims**

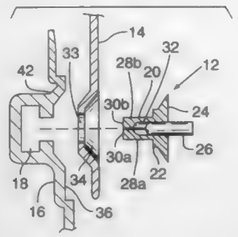


1. Expansion dowel with an axially extending expansion sleeve (**1**) having a leading end and trailing end with axially extending slots (**3**) open at the leading end and a bore (**2**) extending between the leading and trailing ends and tapering inwardly at least for an axial part thereof to the leading end, an expanding member (**5**) for expanding said expansion sleeve and having a leading end and a trailing end (*5b*) and insertable into said bore (**2**), said expanding member (**5**) has an exterior surface tapering inwardly at least partially towards the leading end of said expanding member, said expanding member (**5**) has a recess open at the leading end thereof for purposes of partial radial deformation, wherein the improvement comprises that said expanding member having an initial position before expansion of said sleeve is commenced located within said bore spaced between and from the leading and trailing ends thereof and a final position after expansion of said sleeve spaced towards the leading end from the initial position and spaced by a uniform dimension (X) from the trailing end of said sleeve the recess of said expanding member (**5**) is an axially extending blind bore (**6**) having a leading end at the leading end of said expanding member and a trailing end with said trailing end of said blind bore located closely spaced from said trailing end of said expanding member and forming a closed said trailing end of said expanding member, said expanding member (**5**) has a lug (**7**) centered on and formed integrally with said closed trailing end (*5b*) thereof and projecting axially from the trailing end of said expanding member (**5**), and an axial projection of a transverse cross section of said lug lies within an axial projection of a transverse cross section of a region (*6a*) of the blind bore (**6**) adjacent the closed trailing end thereof, and said closed trailing end of said expanding member and said axially projecting lug affording an axially extending rated annular failure point, and said axially projecting lug and said closed trailing end of said expanding member adapted to be driven into said blind bore (**6**) towards the leading end of said expanding member after breakage of said rated annular failure point following advancement of said expanding member within said bore (**2**) towards said leading end of said expansion sleeve.

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5,628,580
SPLICE SYSTEM
Eric R. Rinderer, Highland, Ill., assignor to B-Line Systems, Inc., Highland, Ill.
Filed Apr. 19, 1995, Ser. No. 425,187
Int. Cl.[6] F16B *7/00*
U.S. Cl. 403—314 **13 Claims**





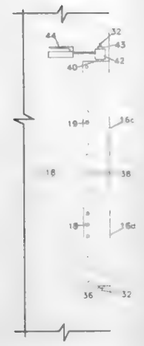
1. A splice system comprising
two tubular rails to be connected end to end, each rail having first and second opposing walls, an open end, and a hole in the first wall of the rail generally adjacent its open end,
a splice member having a center part and a pair of end parts sized for insertion in respective open ends of the two rails to be connected,
the end parts of the splice member having threaded openings adapted to register with the holes in the rails when the end parts are inserted in the rails, and
a pair of bolts having heads larger than the holes in the rails and threaded shanks sized for passage through the holes into threaded engagement with the threaded openings in respective end parts of the splice member, the arrangement being such that, when the bolts are tightened, the heads of the bolts outside the rails are drawn toward said first walls of respective rails and the end parts of the splice member inside the rails are pulled away from said second walls of the rails and tightened against said first walls of respective rails thereby splicing the rails together,
said center part of the splice member having an opening for receiving a support rod along an axis generally parallel to the axes of the threaded openings in the end parts of the splice member, and wherein the center part of the splice member is sized for abutting against the ends of the rails when the end parts of the splice member are inserted in the rails so that the ends of the rails are held spaced apart by the center part and the opening in the center part is exposed for receiving the support rod.

5,628,581
SHEET METAL CONSTRUCTION SYSTEM
Michael D. Hintz, Canby, Oreg.; Craig S. Ludwig, White Salmon, Wash., and Laird I. Richardson, Colton, Oreg., assignors to PACE Company, Portland, Oreg.
Filed Feb. 17, 1995, Ser. No. 391,697
Int. Cl.[6] F16B *5/04*
U.S. Cl. 403—408.1 **9 Claims**

1. A system of sheet metal construction for a clean room plenum comprising:
a plurality of upper perimeter struts defining an upper frame of the plenum, each upper perimeter strut having:
an upper sheet metal receiving surface;
a first elongated channel defined in the upper sheet metal receiving surface, the first elongated channel having a mouth and a chamber that is wider than the mouth, the mouth being defined by two opposing generally parallel surfaces;
a side sheet metal receiving surface, the side sheet metal receiving surface being generally perpendicular to the upper sheet metal receiving surface;
a second elongated channel defined in the side sheet metal receiving surface, the second elongated channel having a mouth and a chamber that is wider than the mouth, the mouth being defined by two opposing generally parallel surfaces;
a plurality of rivets, each rivet having a head, a body, a base having two symmetrical legs, and a pin, the pin being movable from a first position to a second position in which the pin deforms the legs outward to expand the legs;
a first piece of sheet metal received on the upper sheet metal receiving surface, the first piece of sheet metal defining a first plurality of apertures, the first plurality of apertures positioned over the first elongated channel, wherein one of the plurality of rivets is received within each of the first plurality of apertures with the head positioned on one side of the first piece of sheet metal opposite the upper perimeter strut, the body extending through the aperture, and the base being received in the first elongated channel, the pin being in the second position such that the legs are deformed outward to engage the mouth of the first elongated channel to attach the first piece of sheet metal to the upper perimeter strut to form at least a portion of a top of the clean room plenum, the first elongated channel allowing the placement of one of said plurality of rivets at various positions along its length; and
a second piece of sheet metal received on the side sheet metal receiving surface, the second piece of sheet metal defining a second plurality of apertures, the second plurality of apertures positioned over the second elongated channel, wherein one of the plurality of rivets is received within each of the second plurality of apertures with the head positioned on one side of the second piece of sheet metal opposite the upper perimeter strut, the body extending through the aperture, and the base being received in the second elongated channel, the pin being in the second position such that the legs are deformed outward to engage the mouth of the second elongated channel to attach the second piece of sheet metal to the upper perimeter strut to form at least a portion of a side wall of the clean room plenum, the second elongated channel allowing the placement of one of said plurality of rivets at various positions along its length.

5,628,582
CONCRETE BARRIER ERECTION AND ALIGNMENT SYSTEM
Gordon A. Nagle, West Brunswick Township, Schuylkill County, Pa., assignor to Schuylkill Products, Inc., Cressona, Pa.
Filed Apr. 24, 1995, Ser. No. 427,156
Int. Cl.[6] E01F *13/02*
U.S. Cl. 404—6 **24 Claims**

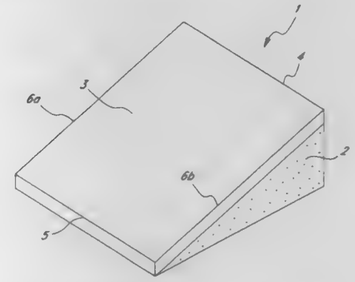
14. A method for emplacing barriers, comprising the steps of stringing the barriers on a cable, placing between the barriers a joint material which is more pliable than that of the barriers, and tensioning to prestress the cable, the step of tensioning compacting the joint material to a desired expansion joint thickness.



5,628,583
SMALL WATER VEHICLE LIFT
Randolph P. Gibson, 2668 Waxwood Ct., Clearwater, Fla. 34621
Filed Jul. 26, 1995, Ser. No. 507,705
Int. Cl.[6] B63C *1/00*
U.S. Cl. 405—3 **16 Claims**

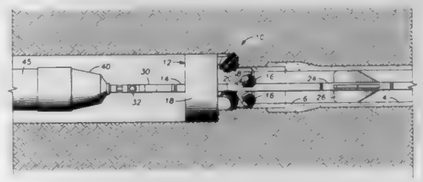
1. In combination with a vertically disposed support structure having a top portion and an outer surface, a water vehicle lift comprising:
a) a winch mounted on the top portion of the support structure and being operable to extend and retract a flexible cable;
b) said cable having a proximal end attached to said winch and a distal end fastened to a lift platform;
c) said lift platform having a horizontally disposed support surface for supporting a water vehicle;
d) an elongated first guide means fixed to said vertically disposed support structure above a surface of the water, second guide means fixed to said lift platform and engaging said vertically disposed support structure and slidable means attached to the lift platform for engaging the first guide means whereby movements of said cable guidingly moves said lift platform vertically adjacent said vertically disposed support structure.

5,628,584
METHOD AND APPARATUS FOR CONTAINERLESS SHEET FLOW WATER RIDES
Thomas J. Lochtefeld, 5508 Pacifica Dr., La Jolla, Calif. 92037-7251
Division of Ser. No. 866,073, Apr. 1, 1992, Pat. No. 5,401,117, which is a continuation of Ser. No. 722,980, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 577,741, Sep. 4, 1990, Pat. No. 5,236,280. This application Mar. 3, 1995, Ser. No. 398,158
Int. Cl.[6] A63B *69/00*
U.S. Cl. 405—79 **22 Claims**



1. A water sculpture comprising:
a contoured surface sized and configured to support a flow of water thereon and having a substantially horizontal upstream portion, a downstream inclined portion adjoining said horizontal portion, said contoured surface being substantially unbounded by lateral side walls such that water on said contoured surface is allowed to ventilate laterally; and
a nozzle for providing said flow of water onto said contoured surface, wherein said flow of water initially flows over said horizontal portion and then flows up said inclined portion, wherein various aesthetic effects can be achieved as the water rolls off the inclined portion of said contoured surface or curls back upon itself.

5,628,585
METHOD AND APPARATUS FOR REMOVAL OF UTILITY LINE AND REPLACEMENT WITH POLYOLEFIN PIPE
Robert O. Parish, II, Cleveland, and Cleve C. Reber, Pasadena, both of Tex., assignors to TTI Trenchless Technologies, Inc., Conroe, Tex.
Filed Apr. 28, 1995, Ser. No. 433,259
Int. Cl.[6] F16L *1/00*; **E21D** *1/06*
U.S. Cl. 405—154 **9 Claims**



1. A method for removing an existing utility main and replacing said main with a polyolefin pipe which comprises:
exposing two ends of a section of said main;
attaching to a drilling unit a drill string of pipe joints:
extending said drill string inside said main, from one exposed end of the section of the main to the other exposed end of the section of the main:

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imparting linear pulling motion and rotation from said drilling unit to said drill string;

rotating inside said main a plurality of roller bits supported by a head attached to said drill string, said roller bits engaging, scoring, cutting, and chipping said main into pieces, said pieces then passing through said head, leaving an empty hole;

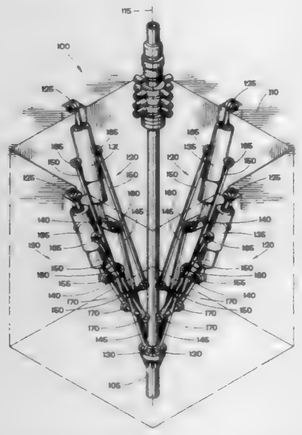
packing said pieces into said hole.

5,628,586

ELASTOMERIC RISER TENSIONER SYSTEM

Edward J. Arlt, III, Arlington, Tex., assignor to Continental Emsco Company, Houston, Tex.

Filed Jun. 23, 1995, Ser. No. 494,187
Int. Cl.[6] E02D *23/00*
U.S. Cl. 405—195.1 **92 Claims**



1. A riser tensioner system for applying a tensioning force to a riser and allowing a floating platform to move within a given range along a longitudinal axis of said riser, said system comprising:

a plurality of tensioner assemblies, wherein each of said tensioner assemblies are coupled to said riser and to said platform, and wherein each of said tensioner assemblies comprises:

an upper member including a first end and a second end, said first end of said upper member coupled to said floating platform;

a lower member including a first end and a second end, said second end of said lower member coupled to said riser;

a connecting member coupled to said second end of said upper member and said first end of said lower member; and

an intermediate member coupled to said upper member at a point intermediate said first and second ends of said upper member and to said lower member at a point intermediate said first and second ends of said lower member;

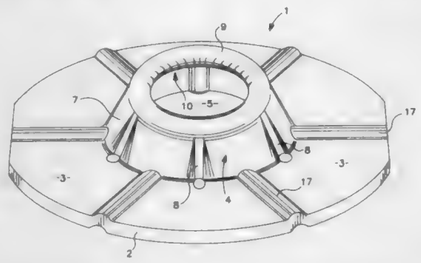
wherein at least one of said upper member, said lower member, and said intermediate member are adapted to provide a tensioning force.

5,628,587

BEARER PLATE

John G. Lesslie, St. Marys, Australia, assignor to Tru-Di Tool Manufacturing Co., Pty. Ltd., New South Wales, Australia

Filed Aug. 2, 1995, Ser. No. 510,408
Claims priority, application Australia, Aug. 2, 1994, PM7221
Int. Cl.[6] E02D *3/12*; **E21D** *19/00*; **E21F** *17/00*
U.S. Cl. 405—302.1 **26 Claims**



1. A bearer plate for use with a rock bolt or the like, said bearer plate comprising:

a plate formed of rigid sheet material, said plate having a first outer peripheral substantially uni-planar earth engaging portion, and a second inner substantially centrally located portion including an aperture therein having an axis extending substantially transverse to the planar extent of the first portion;

said second portion including a wall that circumscribes said aperture and extends generally outwardly away from the plane of the first portion,

said wall including a plurality of spaced apart rib formations indented towards an axis of the aperture that each extend in a generally radial direction from the aperture.

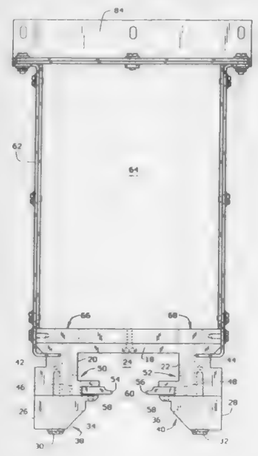
5,628,588

AIR CONVEYOR HAVING AN ELONGATED CHANNEL AND A PLURALITY OF AIR DUCTS

Joseph F. Ouellette, Glendale, Mo., assignor to Ouellette Machinery Systems, Inc., Fenton, Mo.

Division of Ser. No. 292,079, Aug. 17, 1994. This application Mar. 22, 1996, Ser. No. 623,890
Int. Cl.[6] B65G *51/02*
U.S. Cl. 406—88 **20 Claims**

12. An air conveyor for conveying containers, each container



having a neck ring with a neck positioned above the neck ring, a shoulder below the neck ring, and a body below the shoulder, each neck ring having an outer diameter dimension, the conveyor comprising:

a pair of flanges spaced by a distance smaller than the container neck ring outer diameter dimension to support the containers by the neck rings between the flanges, thereby permitting the container neck rings to pass along the flanges with the container neck rings sliding in a friction engagement on the flanges as the containers are conveyed along the conveyor; and

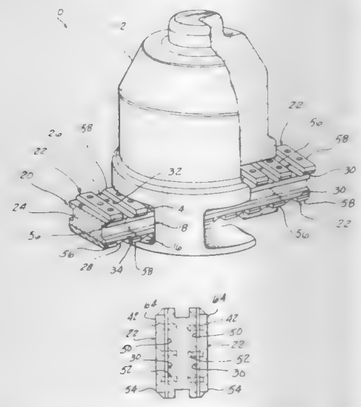
a plurality of air ducts spaced along the pair of flanges, each air duct having an inlet opening configured to receive pressurized air from an air supply source, a port opening above the flanges, an outlet opening below the flanges configured to direct the pressurized air below the flanges in a substantially horizontal direction toward the containers supported between the flanges, and a curved conducting passage which connects the inlet opening to the outlet opening.

5,628,589

INTERNAL PULL BROACH WITH INDEXABLE INSERTS

Bruce G. Peuterbaugh, Mt. Clemens, Mich., assignor to J. P. Tool, Inc., Macomb, Mich.

Filed May 24, 1994, Ser. No. 248,398
Int. Cl.[6] B23D *43/04*
U.S. Cl. 407—15 **18 Claims**



1. An internal pull broach for working opposing walls of an aperture through a workpiece during a single stroke machining operation comprising:

an elongated cutting tool holder engageable through said aperture of said workpiece, said tool holder having a longitudinal axis and a lateral width, a plurality of laterally extending, longitudinally spaced pockets on opposite longitudinally extending sides, each pocket extending laterally across substantially the entire width of the tool holder; and

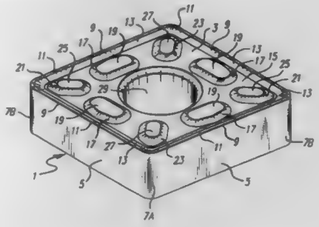
indexable cutter insert means engageable in each of said pockets and defining a plurality of sequentially acting, longitudinally spaced protuberances, each protuberance having a plurality of linear cutting edges and indexable within said respective pocket to orientate one cutting edge at a time in an operable position providing a single, linear, leading, cutting edge extending laterally with respect to said longitudinal axis substantially across an entire width of said tool holder for progressively cutting into said opposing walls of said aperture extending through said workpiece sequentially as said tool holder moves during said single stroke along a fixed linear path coaxial with said longitudinal axis of said tool holder extending through said aperture of said workpiece, said indexable cutter insert means for roughing, semi-finishing and finishing said opposing walls of said aperture through said workpiece simultaneously during said single stroke machining operation to form two opposing substantially planar surfaces.

5,628,590

CERAMIC CUTTING TOOL WITH CHIP CONTROL

Craig W. Beeghly, Raleigh, N.C.; Deepak P. Ahuja; Pankaj K. Mehrotra, both of Greensburg, Pa., and Kenneth L. Niebauer, Raleigh, N.C., assignors to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 275,467, Jul. 14, 1994, Pat. No. 5,476,025, which is a continuation of Ser. No. 897,226, Jun. 11, 1992, Pat. No. 5,350,258, which is a continuation-in-part of Ser. No. 629,760, Dec. 18, 1990, Pat. No. 5,141,367. This application Dec. 1, 1994, Ser. No. 347,749
Int. Cl.[6] B23B *27/14*
U.S. Cl. 407—114 **65 Claims**



1. A ceramic cutting insert comprising:

a rake face having an integral as molded means for providing chip control;

a flank face;

a cutting edge at the junction of said rake face and said flank face;

wherein the included angle respectively formed by said rake face and said flank surface at the cutting edge is less than 90 degrees;

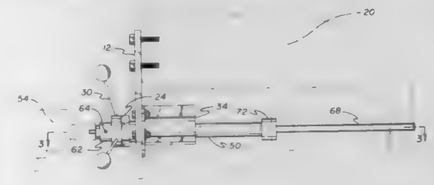
and wherein said ceramic has a room temperature, fracture toughness (K_{IC}) of at least 4 MPam$^{1/2}$ to less than 5 MPam$^{1/2}$.

5,628,591

AXLE PIVOT BORING TOOL

Bruce H. Gamble, Rte. 1, Box 173, La Feria, Tex. 78559-9738

Filed Dec. 11, 1995, Ser. No. 570,578
Int. Cl.[6] B23B *41/12*
U.S. Cl. 408—75 **4 Claims**



1. A new and improved axle pivot boring tool comprising, in combination:

a plate having an interior surface and an exterior surface with an enlarged circular aperture in a central extent thereof and with a plurality of small apertures symmetrically located thereabout and with a plurality of peripheral holes for mounting the plate on the upper extent of a tractor, the large aperture

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being located in axial alignment with the bearings of the axle pivot mount of a tractor to be bored;

a cylindrical nut with an enlarged head and a cylindrical section positionable in the large aperture for alignment purposes, the nut having handle means extending generally radially therefrom;

a housing with a central bore and a radial flange adapted to be bolted to the interior surface of the plate through the small apertures with bolts and nuts coupled therebetween, the central bore adapted to receive the cylindrical section of the nut with a bearing sleeve therebetween, the housing also having stability plates extending radially outward therefrom;

a primary shaft positionable through the nut with an external end adapted to be coupled to a half-inch drill and an internal end with an axial recess and radial set screws, the lower end of the shaft also having a removable cutting element extending radially outward therefrom and held in place by one of the set screws, and a collar with a set screw wherein the collar acts as a movable flange on the shaft with the collar riding against a bearing which is press fit into the outer end of the nut and with a bearing in the end of the housing;

a secondary shaft positionable in the recess and held in place by another of the set screws;

an alignment bushing in the form of an annular collar positioned over the internal end of the primary shaft and the external end of the secondary shaft; and

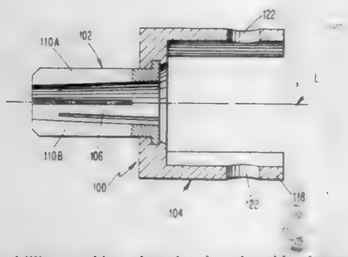
a half-inch drill coupled to the external end of the primary shaft to effect the rotation thereof and, consequently, the rotation of the cutting element to bore a front axle pivot mount.

5,628,592

TWO-PIECE CONCENTRIC COLLET

Cecil D. Ringer, White Rock, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 31, 1995, Ser. No. 521,761
Int. Cl.[6] B23B *45/14*
U.S. Cl. 408—97 **23 Claims**



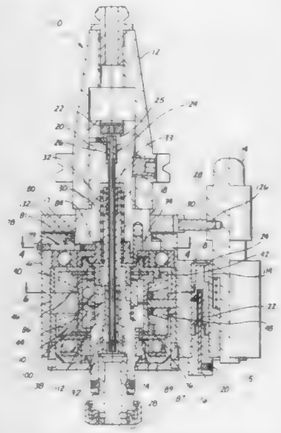
1. In a drilling machine adapted to be releasably clamped in a hole of a fixture for drilling a hole in a workpiece disposed behind said fixture; the drilling machine comprising a hollow nosepiece having a tapered outer surface; a hollow collet mounted on said outer surface and including a front elastic clamping portion and a rear displacement portion; and a displacement mechanism connected to the displacement portion for displacing the collet rearwardly along the nosepiece such that the clamping portion is elastically expanded outwardly into clamping contact with said wall of said fixture hole, and forwardly along the nosepiece to enable the clamping portion to spring back to a rest state; the improvement wherein said displacement portion and clamping portion constitute separate parts interconnected to one another and together forming a contact interface extending substantially 360 degrees about a longitudinal center axis of said clamping part for transmitting a rearward force from said displacement part to said clamping part.

5,628,593

READILY DISASSEMBLEABLE TAPPING ATTACHMENT WITH QUICK CHANGE REPLACEABLE AND MAINTAINABLE PARTS AND METHOD

Allan S. Johnson, Newport Beach, Calif., assignor to Tapmatic Corporation, Post Falls

Filed Mar. 28, 1994, Ser. No. 218,257
Int. Cl.[6] B23G *3/02;5/14;* **B23B** *47/14*
U.S. Cl. 408—139 **29 Claims**



1. A self-reversing tapping attachment comprising:

(a) tap spindle means for holding a tap and rotatable for accomplishing tapping;

(b) forward drive means engageable with said tap spindle means to impart rotation to said tap spindle means for accomplishing tapping;

(c) reverse drive means engageable with said tap spindle means to impart rotation to said tap spindle means in an opposite direction to rotation imparted by said forward drive means;

(d) gear means for transmitting drive to said forward drive means and said reverse drive means, said tap spindle means being moveable back and forth along the direction of tapping relative to said forward drive means and said reverse drive means; and

(e) dampener means engageable with at least one of said forward drive means and said reverse drive means.

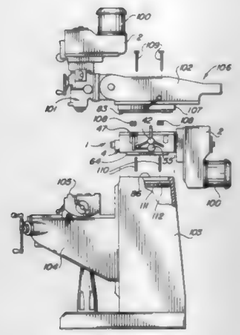
5,628,594

HORIZONTAL INSERT FOR UNIVERSAL TURRET MILLING MACHINES

James R. Fetty, 2425 Highland, Shreveport, La. 71104

Filed Aug. 14, 1995, Ser. No. 514,672
Int. Cl.[6] B23C *1/10*
U.S. Cl. 409—144 **20 Claims**

1. A horizontal insert for a turret milling machine, comprising an insert housing substantially horizontally mounted in the turret milling machine; spindle means journalled for horizontal rotation in said insert housing or receiving and mounting a machining tool; quill means horizontally slidably disposed in said insert housing for rotatably receiving said spindle means; a drive train operably connected to said spindle means and said quill means; quill control means provided in said insert housing, said quill control means operably connected to said drive train for selectively extending and retracting said quill means and said spindle means in concert with respect to said insert housing; and clutch means provided in said drive train for selectively engaging and disengaging said drive train, whereby said quill means and said spindle means in are automatically extended and retracted in concert with respect to said insert housing when said clutch means engages said drive train and



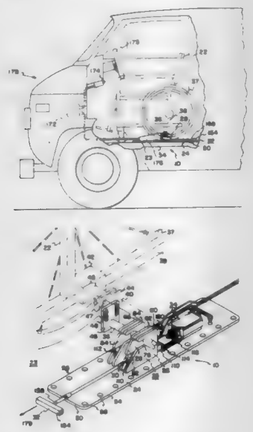
said quill means and said spindle means may be manually extended and retracted in concert with respect to said insert housing when said clutch means disengages said drive train.

5,628,595

WHEELCHAIR LOCK-DOWN DEVICE

DuWade N. Harris, Prior Lake, Minn., assignor to Associated Partnership Ltd. Inc., Burnsville, Minn.

Filed Mar. 22, 1995, Ser. No. 407,967
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—7 **10 Claims**



1. A wheelchair lock-down device comprising:

a) a base plate being attachable to a floor;

b) a stationary locking structure mounted on the base plate and defining a slot aligned and sized to receive a bar connected to a wheelchair and oriented in a generally parallel plane relative to the floor, wherein the stationary locking structure comprises two pair of locking plates attached in parallel arrangement to the base plate, each locking plate including a notch, the notches aligned to cooperatively form the slot;

c) an arm member pivotally connected to the stationary locking structure and pivotally moveable between a first and a second position upon engagement with said wheelchair bar; wherein the arm member is generally hook-shaped with an arcuate portion for receiving and confining the bar within the slot, and a basal portion for engagement with the locking mechanism; and when the arm member is in the first position, the slot is open and operable to receive the bar, and when the arm member is in the second position, the slot is closed and operable to confine the bar therein;

d) a slidable locking mechanism adapted for maintaining the arm member in the second position; and

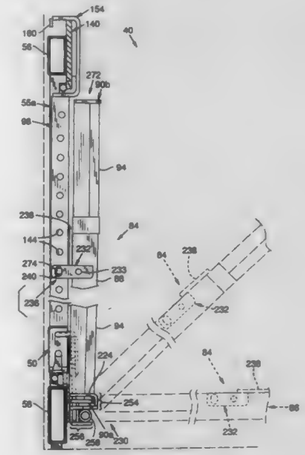
e) a release mechanism adapted for disengaging the locking mechanism whereupon the arm member is pivotally moveable from the second position to the first position, and the bar is removable from the slot.

5,628,596

VEHICLE-CARRYING FRAME

Terence Halpin, West Linn, Oreg., and Donald Kiive, Brush Prairie, Wash., assignors to G & G Intellectual Properties, Inc., Portland, Oreg.

Division of Ser. No. 784,902, Oct. 30, 1991, Pat. No. 5,415,505.
This application Mar. 20, 1995, Ser. No. 407,219
Int. Cl.[6] B60P *3/08*
U.S. Cl. 410—29 **10 Claims**



1. A vehicle-carrying elongate frame having transversely-spaced upright sides and an elongate wheel support affixable between said upright sides to support at least a transversely-spaced pair of wheels of a vehicle, said frame comprising:

(a) transversely-spaced first and second upright post members on respective different ones of said sides;

(b) first means for securing said wheel support to said frame in a vehicle supporting position extending between and generally perpendicular to said upright sides of said frame, said first means including first and second devices for securing first and second end portions of said wheel support to said first and second upright post members, respectively, so that said first and second upright post members jointly support said wheel support;

(c) second means for securing said elongate wheel support to said frame in a storage position wherein said wheel support extends vertically along its length upward from said first device adjacent and generally parallel to a respective one of said upright sides of said frame; and

(d) said first device being vertically adjustable relative to said first upright post member.

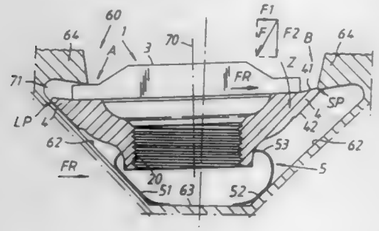
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5,628,597

SPRING URGED FASTENER FOR LOCATION IN AN OPEN RAIL SECTION

Josef Chudoba, Järnlundsvägen 2, S-121 72 Johanneshov, Sweden, and Sven-Erik Kaufeldt, Vällingby, Sweden, assignors to Josef Chudoba, Johanneshov, Sweden

PCT No. PCT/SE93/00918, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/10466, PCT Pub. Date May 11, 1994
PCT Filed Nov. 3, 1993, Ser. No. 428,182
Claims priority, application Sweden, Nov. 4, 1992, 9203294
Int. Cl.[6] F16B *37/04*
U.S. Cl. 411—85 20 Claims



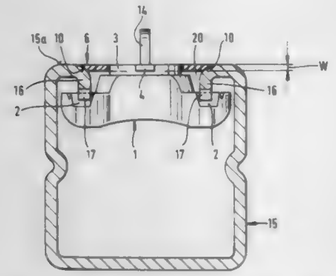
1. A fastening apparatus comprising:
a body member having a pair of opposing substantially parallel side members, each of said side members including an outwardly extending flange;
an annular conically tapering member attached to said body member and extending therefrom, said annular conically tapering member being located approximately equidistant between said side members; and
a leaf spring attached to said annular conically tapering member, said leaf spring having a pair of spaced-apart substantially mirror-image spring members extending substantially parallel to said side members.

5,628,598

ATTACHMENT NUT FOR PROFILED RAILS

Siegfried Höße, Götzis, Austria, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Sep. 14, 1995, Ser. No. 527,906
Claims priority, application Germany, Sep. 16, 1994, 44 32 996.2
Int. Cl.[6] F16B *27/00;37/00*
U.S. Cl. 411—85 6 Claims



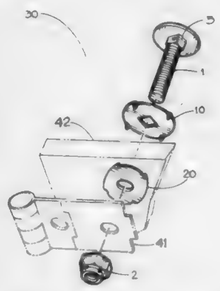
1. An attachment nut includes a base member (**1**) and an elastic retaining insert (**6**) connected to said base member, said base member (**1**) comprises means for engaging a force applying member, said base member having a first dimension and a second dimension extending generally perpendicularly of and being smaller than said first dimension, said means having an axis extending transversely of the said first and second dimensions, said retaining insert (**6**) extends transversely of the axis of said means and is connected to a first end of said base member, said retaining insert comprises locking tabs (**13**) located diametrically opposite one another and each being pivotally displaceable about a pivot axis (**12**) extending parallel to said first dimension, and said tabs having a first dimension extending parallel to the first dimension of the said base member and the first dimension of the said retaining insert (**6**) being approximately equal to the second dimension of said base member (**1**), and the surfaces of said locking tabs (**13**) facing away from said base member (**1**) each comprise an outwardly projecting lug (**14**).

5,628,599

ANCHORED FASTENER

Karl F. Eakin, 5021 Francis Ave., Chino, Calif. 91710

Filed Jul. 17, 1995, Ser. No. 503,278
Int. Cl.[6] F16B *39/24;43/02*
U.S. Cl. 411—163 3 Claims



1. A fastener anchored in a workpiece for receipt of fastening bolt means, comprising:
a body portion having first and second opposite surfaces thereon, each said surface having outside edges thereon, and inside edges therein defining a keyed aperture therethrough for passage of said fastening bolt means, wherein said inside edges defining the keyed aperture in said body portion are shaped so as to conform to the shape of mating neck protrusions attached to and extending below the head of a fastening bolt, whereby said bolt is rotationally restrained from rotation relative to said anchored fastener, and
a plurality of pointed anchoring leg means protruding approximately orthogonally from said first surface of said body portion, for engagement with said work piece, said pointed anchoring leg means having at least one sharpened side edge disposed normal to the surface of said workpiece, whereby said sharpened side edge cuts into the workpiece, so that relative rotation is prevented between said anchored fastener and said workpiece.

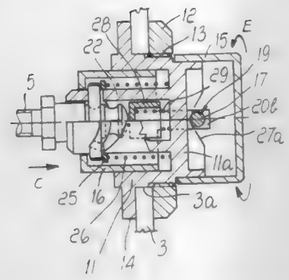
5,628,600

KNOB-TYPE CLOSURE DEVICE

Paolo Pasquini, Via Rialto 25/B, 40124 Bologna, Italy

Filed Nov. 20, 1995, Ser. No. 560,873
Claims priority, application Italy, Nov. 28, 1994, B094A0528
Int. Cl.[6] F16B *19/00*
U.S. Cl. 411—354 6 Claims

1. A knob closure device for operating and locking two surfaces which are axially movable with respect to each other, comprising:
a pin provided with means for fixing in a hole of the first surface and with two annular end grooves;
a hollow body provided with means for fixing in a hole defined in said second surface, said hollow body supporting, on one side thereof, an actuation knob, and on the other side thereof,



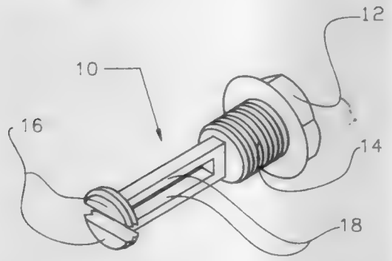
a disengagement cylinder so that said knob and said cylinder can move axially and rotate, said knob and said cylinder being coupled;
a central bushing, which is rigidly coupled to said hollow body and in which two oppositely arranged inclined slots are formed; said slots converging towards each other and towards the free end of the bushing;
two transverse shafts that are slidingly mounted in said slots and are pushed by a compression spring arranged between the bottom of the bushing and a washer which rests on the shafts, in a configuration for tangential engagement in said annular grooves to couple the pin to the bushing;
a cam profile rigidly coupled to the inlet of the hollow body, against which a diametrical stem of the knob engages, said stem being adapted to cause, by virtue of the rotation of the knob and the sliding against the cam profile, the axial sliding of the end of the cylinder move said shafts into positions spaced from said stem and cause the disengagements of said shafts;
a cap mounted, in contrast with elastic means, on the bottom of said hollow body and adapted to push, in the direction for expulsion, the end of said pin that is inserted in said body.

5,628,601

OIL PAN BOLT WITH RETAINING MEANS

Robert Pope, 1177 Branham La., Ste. 279, San Jose, Calif. 95118

Filed Jan. 11, 1996, Ser. No. 583,885
Int. Cl.[6] F16B *35/02;* F16L *55/10*
U.S. Cl. 411—383 6 Claims



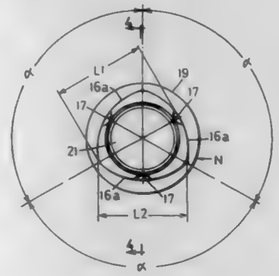
1. An oil pan bolt comprising:
a standard bolt head with a sealing flange,
a threaded portion extending from said bolt head,
an extension piece extending from said threaded portion, and
a disk shaped retaining means including threads at a distal end of said extension piece; wherein
said retaining means has an effective diameter at least as large as that of an oil pan drain hole such that when said retaining means is inserted through said drain hole, said retaining means prevents said bolt from falling out of said drain hole, in spite of pressure applied from draining oil, and
said extension piece allows sufficient leeway when said bolt is supported by said retaining means for oil to flow through said drain hole.

5,628,602

ANTI-THEFT HUB NUT FOR VEHICLE WHEELS

Tsuguyoshi Ohsawa, Sagamihara, Japan, assignor to KYO-EI Sangyo Kabushiki Kaisha, Osaka-fu, Japan

Filed Jan. 18, 1996, Ser. No. 588,415
Int. Cl.[6] F16B *23/00;35/06*
U.S. Cl. 411—405 4 Claims



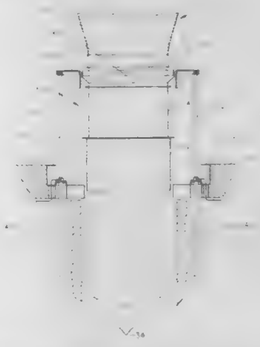
1. An anti-theft hub nut, comprising a barrel portion comprising a turning operative engaging surface having a quasi-equilateral triangular cross-sectional shape wherein each side of the quasi-equilateral triangle has a convex shape.
wherein the turning operative engaging surface defines at least one keyway formed in at least one side of the quasi-equilateral triangle, the at least one keyway extending parallel with the axis of rotation of the hub nut.

5,628,603

AUTOMATED CHUTE SYSTEM

Leslie P. Antaffy, Houston; Robert Benoit, Richmond; Michael B. Knowles; David W. Malek, both of Houston, and Samuel A. Martin, Sugarland, all of Tex., assignors to Fluor Corporation, Irvine, Calif.

Filed Nov. 30, 1994, Ser. No. 347,646
Int. Cl.[6] C10B *33/14*
U.S. Cl. 414—216 14 Claims



1. An apparatus for channeling the flow of coke from a bottom outlet of a coking vessel, comprising:

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a coke chute having an upper portion sized and dimensioned to circumferentially encompass the bottom outlet of the vessel; and

a plurality of actuators positioned to push the upper portion of the chute into a proximate relationship with the bottom outlet such that essentially all of the coke flowing through the bottom outlet is channeled through the chute.

5,628,604

CONVEYING SYSTEM

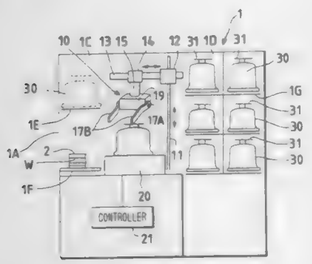
Masanao Murata; Teppei Yamashita; Tsuyoshi Tanaka; Teruya Morita, and Hiroyuki Oyobe, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 443,016, May 17, 1995, abandoned. This application Aug. 26, 1996, Ser. No. 702,800

Claims priority, application Japan, May 17, 1994, 6-126828

Int. Cl.[6] B65G *65/00*

U.S. Cl. 414—225 **6 Claims**



1. In a conveying system comprising:

a cassette arranged to accommodate a workpiece;

a container arranged to contain said cassette;

container transferring means for transferring a container to a position in a sealed area where a cassette can be loaded or unloaded into or from the container and for transferring the container away from said position; and

cassette transferring means for transferring said cassette to or from said position, the improvement comprising:

said cassette transferring means and said container transferring means including a single supporting means for supporting not only said cassette but also said container, said supporting means including a hand having a pair of fingers which are movable to and from each other; and

a handle provided on an upper surface of said container in such a manner that said handle can be supported by said supporting means, wherein a distance between side portions of said handle which are held by said fingers when the container is supported by the supporting means is substantially equal to a distance between side surfaces of said cassette which are held by said fingers when the cassette is supported by said supporting means.

5,628,605

SUBSTRATE TRANSPORT APPARATUS AND SUBSTRATE TRANSPORT PATH ADJUSTMENT METHOD

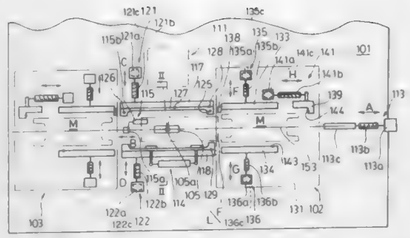
Hideaki Miyoshi, Tokyo, Japan, assignor to Kaijo Corporation, Tokyo, Japan

Division of Ser. No. 277,427, Jul. 18, 1994, Pat. No. 5,562,382. This application Jun. 7, 1995, Ser. No. 485,178

Int. Cl.[6] B65G *49/07*

U.S. Cl. 414—331 **4 Claims**

1. A substrate transport apparatus, comprising:



guide members which are able to approach and move away from each other, and which are arranged to support first and second sides of a substrate so as to guide said substrate along a prescribed path;

guide member driving devices which move each of said guide members;

a first detection device which detects that said guide members are in contact with said substrate and are positioned to guide said substrate;

a substrate containment device proximate one end of said guide members, said substrate containment device containing said substrate when said substrate is not being guided by said guide members;

regulating members which regulate the position of the substrate containment device by mutually approaching and moving away;

regulating member driving devices which move each of said regulating members; and

a second detection device which detects that said regulating members have regulated the position of said substrate containment device, wherein said guide member driving devices position said guide members, and said regulating member driving devices position said regulating members based on the position of said guide members.

5,628,606

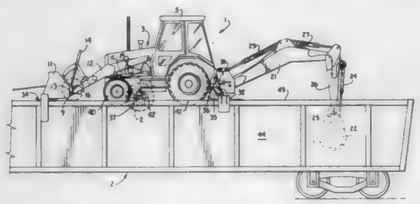
LOADING/UNLOADING APPARATUS FOR RAILROAD CARS

William E. Herzog; Stanley M. Herzog, and Randy L. Poggemiller, all of St. Joseph, Mo., assignors to Herzog Contracting Corporation, St. Joseph, Mo.

Continuation-in-part of Ser. No. 339,752, Nov. 15, 1994, Pat. No. 5,527,144. This application Feb. 20, 1996, Ser. No. 603,285

Int. Cl.[6] B65G *67/24*

U.S. Cl. 414—339 **13 Claims**



1. A mobile apparatus for loading and unloading an open top railroad car having spaced, parallel sidewalls with upper surfaces, said apparatus comprising:

(a) a mobile, powered apparatus having front and rear ends and front and rear wheels attached to a chassis such that said apparatus is movable over a ground surface;

(b) a power actuated front boom structure pivotally mounted at said apparatus front end, said front boom structure being of a length to reach below ground surface when said apparatus is positioned on the ground surface for elevating said front wheels above said ground surface and including a front support foot member having surfaces engageable with said side wall upper surfaces for supporting said apparatus front end thereon and including lateral movement limiting vertical plate members extending therefrom and engageable with side surfaces of said sidewalls;

(c) power actuated, outwardly swingable outrigger arms pivotally connected adjacent to said apparatus rear end and movable toward said side wall upper surfaces, said outrigger arms including free ends having rear support foot members engageable with said side wall upper surfaces for supporting said apparatus rear end thereon;

(d) a center support beam extending transversely across and attached beneath said powered apparatus between said front and rear wheels;

(e) a pair of center support feet, with one of said center support feet attached near each respective end of said center support beam at a pivot point centered with respect to the width of said center support beam, each of said center support feet being pivotably movable in a horizontal plane relative to said center support beam between a retracted position in which the support foot is oriented at approximately 90 degrees to said center support beam, and an extended position in which the support foot is oriented approximately in line with said center support beam, said center support feet having surfaces engageable with said side wall upper surfaces when in said extended position;

(f) a pair of power extension mechanisms for selectively moving respective ones of said center support feet between said extended and said retracted positions; and

(g) a power actuated rear boom structure pivotally mounted at said apparatus rear end and being of a combined length to reach the ground surface when said apparatus is positioned on the upper surfaces of said sidewalls, said rear boom structure having respective arm lengths with a material engaging device connected thereto and operable to handle materials for loading and unloading operations relative to said railroad car when said apparatus is positioned upon the upper surfaces of the railroad car sidewalls.

5,628,607

ADAPTABLE TRAILER AND TRAILER SYSTEM

Daniel P. Kyzer, Lexington; Michael P. Higgins, Charleston; Jeffrey M. Shealy, Gilbert, all of S.C., and Joseph C. Morris, Jr., Palm Beach Garden, Fla., assignors to Integrated Cargo Systems, L.L.C., Gilbert, S.C.

Filed Nov. 20, 1995, Ser. No. 561,483

Int. Cl.[6] B60P *1/02*

U.S. Cl. 414—495 **10 Claims**

10. A trailer system capable of transporting a cargo along a ground surface, said trailer system comprising:



a cradle adapted to carry said cargo, said cradle having a front end and a back end;

a carriage having a pair of base supports supporting a plurality of wheels, at least one shaft extending between said base supports, and at least one pivot mount carried by said at least one shaft;

an outer frame pivotally carried by a pivot bar connected to said at least one pivot mount of said carriage, said outer frame having a top surface, a front end, a rear end, and sides, said rear end having corners with an alignment roller positioned on each of said corners, each of said alignment rollers extending over said rear end of said outer frame and over said side of said outer frame;

said front end of said cradle and said back end of said cradle having wedge-shaped means for receiving said outer frame; said wedge-shaped means comprising a first connector and a second connector, said first connector and said second connector attached to tracks to form said wedge-shaped means, said first and second connectors positioned on said cradle so that said outer frame fits therebetween when said cradle is positioned over said outer frame;

an inner frame pivotally carried by said outer frame, said inner frame having a top surface, a first position and a second position;

means pivotally connected to said outer frame and said inner frame for supporting said inner frame between said first position and said second position; and

at least one hydraulic cylinder operatively connected to said pivot mount and said outer frame, so that when said at least one cylinder actuates, said rear end of said outer frame raises with respect to the ground surface and said pivot mount on said at least one shaft increase in distance from said outer frame.

5,628,608

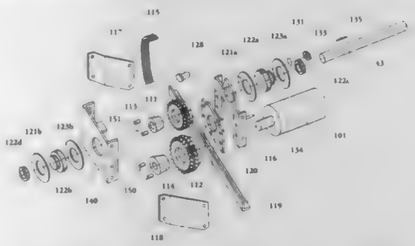
GRAIN CART

Craig W. Linscheid, and Daniel Dold, both of Claremore, Okla., assignors to Parham Industries

Division of Ser. No. 370,014, Jan. 9, 1995, Pat. No. 5,516,253. This application Dec. 28, 1995, Ser. No. 580,138

Int. Cl.[6] B60P *1/40*

U.S. Cl. 414—526 **12 Claims**



1. An improved harvesting cart having a drive assembly for providing easy transition between PTO drive and hydraulic drive, said harvesting cart having a drive shaft for engaging an auger flighting, a forward end of said drive shaft being adapted to receive a complementary PTO coupling from a pulling vehicle, said drive assembly comprising:

(a) a first sprocket positioned upon said drive shaft at a generally forward location;

(b) a hydraulic motor mounted adjacent to said drive shaft and having an output shaft extending parallel to said drive shaft; and

(c) a second sprocket positioned upon said output shaft of said hydraulic motor so as to be aligned in a working relationship to said first sprocket, such that said drive shaft may be either hydraulically-driven by said hydraulic motor via a chain operatively connecting said first sprocket with said second

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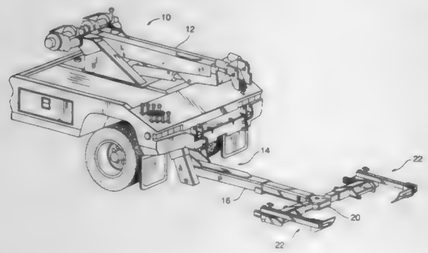
sprocket or PTO-driven by said pulling vehicle via said PTO coupling, said chain being easily installed and removed from about said first sprocket and said second sprocket by slightly adjusting the mounted position of said hydraulic motor so as to give slack to said chain.

5,628,609

WHEEL LIFT VEHICLE LIFTING AND TOWING DEVICE

Ronald B. Nespor, Mercer, Pa., assignor to Chevron, Inc., Mercer, Pa.

Filed Apr. 5, 1996, Ser. No. 628,510
Int. Cl.[6] B60P *3/12*
U.S. Cl. 414—563 **11 Claims**



1. A wheel lift vehicle lifting and towing device for attachment to a towing vehicle comprising:

a boom for mounting to a towing vehicle;

a cross bar connected to a rear end of said boom;

a wheel retainer assembly mounted adjacent each end of said cross bar;

each said wheel retainer assembly comprising:

a wheel grid mounted on an end of said cross bar and including a wheel chock transversely adjustable with respect to said wheel grid;

a wheel retainer arm rotatably mounted adjacent a first end thereof to an outer end of said wheel grid and positioned above said wheel grid, said wheel retainer arm being non removable and having a length which is fixed with respect to said wheel grid, said wheel retainer arm being horizontally rotatable from a position outside a vehicle wheel to a wheel retaining position adjacent the outside of the vehicle wheel; and

a wheel retaining member mounted transversely to and adjacent a second end of said wheel retainer arm and cooperating with said wheel chock to retain a wheel therebetween.

5,628,610

COMBINATION OF LIFTING APPARATUS AND BRACKET

Daniel R. Stratman, and Cletus J. Stratman, both of 3706 Union Rd., St. Louis, Mo. 63125

Continuation-in-part of Ser. No. 41,934, Apr. 2, 1993, Pat. No. 5,490,757. This application Nov. 17, 1994, Ser. No. 341,407
Int. Cl.[6] B66C *1/00*
U.S. Cl. 414—680 **21 Claims**

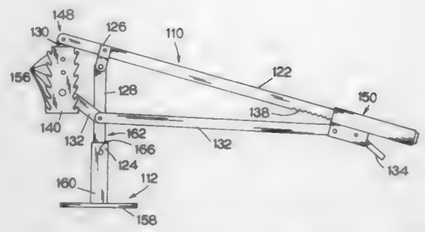
1. A lifting apparatus for raising furnishings, particularly suitable for use during removal and installation of floor covering, comprising:

a support member for supporting the lifting apparatus at a distance from a work area, the support member including a generally vertical link member supported on a supporting foot member;

a leveraging assembly for a controlled raising and lowering of an item of furnishing, the leveraging assembly including one four-bar linkage including pivoting link members and another four-bar linkage including pivoting and sliding link members, the one and the other four-bar linkages having at least one common link member including a common stationary link member further including the generally vertical link member;

a furnishing engaging member carried by the one pivoting four-bar linkage;

the other four-bar linkage including an upper link member and a lower control arm link member connected for relative sliding movement by a sliding locking link member, the sliding locking link member comprising a spring-biased stop member, an associated spring for biasing the spring-biased stop member, and one or the other of the upper link member and the lower control arm link member having at least one serration for receiving the spring-biased stop member when the spring-biased stop member is in a biased position, thereby substantially locking the lifting apparatus in a locked position until the stop member is removed from the receiving serration.

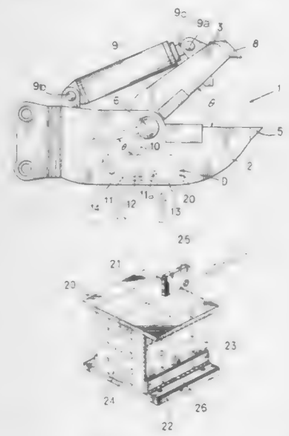


5,628,611

METALLIC WASTE DISPOSAL DEVICE FOR INDUSTRIAL MACHINERY

Yoshiyuki Ito, Sakado, and Hiroshi Aoki, Kasukabe, both of Japan, assignors to Maruyama Corporation, Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,541
Claims priority, application Japan, Jul. 4, 1994, 6-151915
Int. Cl.[6] B02C *1/04*
U.S. Cl. 414—737 **5 Claims**



1. A metallic waste disposal device for industrial machinery for disposing of metallic waste produced during tear-down of a building, including a working unit attachable to a distal end of a movable arm of a construction machine, said working unit comprising,

a first frame having a bottom surface and a fixed blade,

a crushing arm pivotally attached to said first frame for movement away from and toward said fixed blade,

a hydraulic cylinder connected to said crushing arm for moving said crushing arm relative to the first frame,

a second frame composed of a nonmagnetic assembly frame and a magnetic assembly frame joined together and installed on the bottom surface of said first frame,

a permanent magnet assembly movably housed in said second frame, and

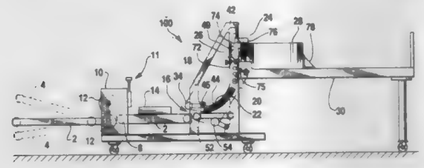
connecting means joined to said crushing arm and said permanent magnet assembly for moving said permanent magnet assembly between said nonmagnetic assembly frame and said magnetic assembly frame of said second frame, as said crushing arm moves away from and toward said fixed blade.

5,628,612

STACKING MACHINE WITH QUICK RELEASE MOUNTS

Jerry L. Bates, Redlands, and Everardo Garza, Highland, both of Calif., assignors to Baldwin Technology Corporation, Rosemont, Ill.

Division of Ser. No. 9,774, Jan. 27, 1993, Pat. No. 5,380,148.
This application Oct. 14, 1994, Ser. No. 323,144
Int. Cl.[6] B65H *29/14*
U.S. Cl. 414—786 **9 Claims**



9. A method for replacing a broken endless conveyor belt with an intact endless conveyor belt in a conveyor apparatus, which apparatus has a plurality of rollers mounted for rotation therein, the method comprising mounting said rollers for rotation within an inner framework, mounting said inner framework to an outer framework by quick release mounting means; releasing said inner framework from said outer framework via said quick release mounting means to form a space between said inner framework and said outer framework; removing said broken conveyor belt; winding said intact endless conveyor belt through said space and juxtapositioning said intact endless conveyor belt with said rollers; and re-mounting said inner framework to said outer framework with said quick release mounting means.

5,628,613

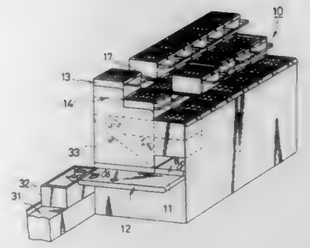
GOODS DROP OUT METHOD

Hirotoshi Tawara, Kasukabe, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 30,352, Mar. 18, 1993, Pat. No. 5,482,423.
This application Sep. 26, 1995, Ser. No. 534,125
Claims priority, application Japan, Aug. 1, 1991, 3-214228; Aug. 1, 1991, 3-214229; Aug. 1, 1991, 3-214230
Int. Cl.[6] B65G *1/04*
U.S. Cl. 414—786 **6 Claims**

1. A method of dropping out goods, in which goods are stored in a plurality of goods receptacle portions defined by partitioning walls inserted into a drop-out box defined at least by side walls, and an opening and closing device provided on bottoms of the goods receptacle portions are operated to open to enable dropping out of the goods from respective goods receptacle portions, the method comprising the steps of:

selecting insertion positions of said partitioning walls in said drop-out box to selectively modify an arrangement pattern of said goods receptacle portions in said drop-out box;



providing said opening and closing device with a plurality of smaller opening and closing members corresponding to a minimum interval of said partitioning walls to be inserted into said drop out box in parallel relationship to each other;

determining the insertion position of the partitioning walls in said drop-out box such that in at least one selected arrangement a single one of the smaller opening and closing members corresponds to the bottoms of both of adjacent goods receptacle portions defined in said arrangement pattern; and

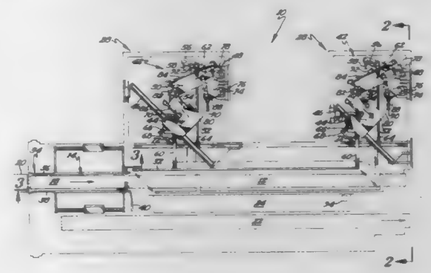
operating all of said smaller opening and closing members at least partly corresponding to the bottom of respective goods receptacle portions upon dropping out of the goods from the respective goods receptacle portions.

5,628,614

CONTINUOUS MOTION STACKING APPARATUS AND METHODS

Irvan L. Pazdernik, Alexandria, and Jeffery L. Lenarz, Garfield, both of Minn., assignors to Douglas Machine Limited Liability Company, Alexandria, Minn.

Filed Mar. 16, 1995, Ser. No. 405,360
Int. Cl.[6] B65G *25/00*
U.S. Cl. 414—790.3 **17 Claims**



1. Apparatus for handling a multiplicity of products comprising, in combination: means for conveying the products in a single, straight path in an abutting relation, with the products being conveyed including a leading series of products and a remaining series of products, with the leading series of products including at least one product; and means for removing the leading series of products from the single, straight path of products being conveyed while the products remaining in the single, straight path continue to move in the single, straight path including means for sensing the leading series of products when reaching a predetermined position on the single, straight path without physical contact with the products, with the removing means moving the leading series of products in a first movement component parallel to the single straight path and a second movement component perpendicular to the single straight path from a first position to a second position.

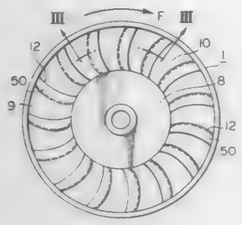
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5,628,615

VORTEX FLOW BLOWER AND VANE WHEEL THEREFOR

Hiroshi Asabuki; Masayuki Fujio, both of Sakura; Takashi Watanabe, Narita; Susumu Yamazaki, Tsuchiura, and Fumiaki Ishida, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 200,109, Feb. 22, 1994, Pat. No. 5,487,639. This application Jun. 6, 1995, Ser. No. 470,457
Claims priority, application Japan, Feb. 23, 1993, 5-033516; Mar. 17, 1993, 5-056718
Int. Cl.[6] F01D *1//12*
U.S. Cl. 415—55.1 7 Claims



1. A vane wheel driven by a shaft for transferring a gas, comprising,

vortex flow chambers opening in a direction substantially parallel to the shaft to receive the gas, to urge the gas in a substantially circumferential direction of the vane wheel, and to generate and accelerate a vortex flow of the gas,

a vane member has a hub through which the vane member is connected to the shaft, a plurality of vanes each of which extends integrally from the hub in a substantially radial direction of the vane wheel and includes a front surface for urging the gas in the substantially circumferential direction of the vane wheel, and a vortex flow chamber wall extending integrally from both of the hub and each of the vanes, and

a cover means contacting with the vortex flow chamber wall to form the vortex flow chambers together with the vortex flow chamber wall and the vanes.

5,628,616

DOWNHOLE PUMPING SYSTEM FOR RECOVERING LIQUIDS AND GAS

Woon Y. Lee, Bartlesville, Okla., assignor to Camco International Inc., Houston, Tex.

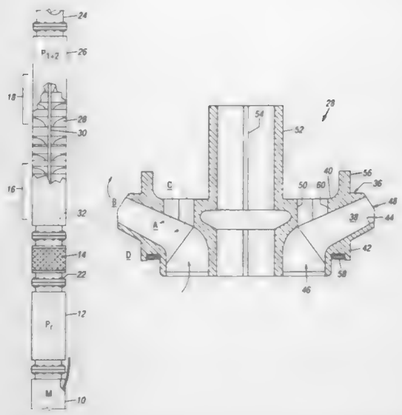
Continuation-in-part of Ser. No. 358,871, Dec. 19, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 582,836
Int. Cl.[6] F04D *29/22*
U.S. Cl. 415—58.2 4 Claims

1. A downhole dual pumping system for recovering a mixture of liquids and gas from a wellbore, comprising:

a first centrifugal pump, comprising a plurality of impellers having an impeller body with an upper surface spaced from a lower surface with a plurality of angled vanes therebetween to define a plurality of flow chambers, a first passage extending through the upper surface into each of a pluralitiy of the flow chambers, and recirculation openings within a plurality of the flow chambers, separate from the first passages, the upper surface of each impeller body includes an annular skirt, with the recirculation openings located radially inwardly from and adjacent the annular skirt;

a second centrifugal pump connected to the first centrifugal pump, and having an intake in fluid communication with a discharge of the first centrifugal pump and a discharge in fluid communication with means to convey the mixture to the earth's surface; and

a motor connected to the first centrifugal pump for powering the first centrifugal pump and the second centrifugal pump;



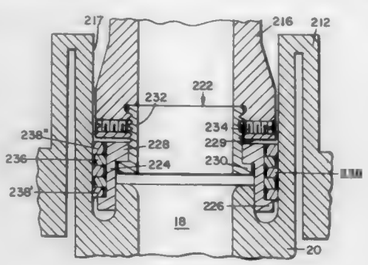
whereby the recirculation openings in the first centrifugal pump cause the liquids and gas to become sufficiently blended to prevent gas lock in the second centrifugal pump.

5,628,617

EXPANDING BELL SEAL

William S. Dalton, Chesterfield; James J. Kosiba, South Hadley, and K. Scott Trunkett, Springfield, all of Mass., assignors to Demag Delavel Turbomachinery Corp. TurboCare Division, Chicopee, Mass.

Filed Aug. 12, 1996, Ser. No. 694,444
Int. Cl.[6] F01D *25/26*
U.S. Cl. 415—134 5 Claims



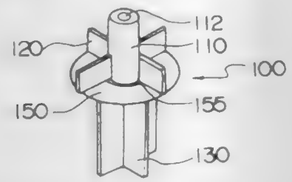
1. In a steam turbine having a main inlet pipe which introduces steam to a nozzle chamber through the turbine casings and a bell seal assembly for sealing the inlet pipe relative to the casings and the nozzle chamber, the bell seal assembly including a bell seal disposed in the nozzle chamber, and a retaining nut sleeved by the bell seal and threadedly engaged in the inlet pipe, the improvement which comprises a ring carrier replacing the bell seal, a stack of inner and outer sealing rings loosely sleeved on the ring carrier, with a lowermost ring resting on a lower flange of the ring carrier and with an uppermost ring being disposed in close proximity to the lower end of the inlet pipe, the inner diameter of the inner rings being slightly larger than the outer diameter of the ring carrier and the outer diameter of the outer rings being slightly smaller than the inner diameter of the nozzle chamber, the inner rings being made from a high strength super alloy which resists oxidation having a lower coefficient of thermal expansion than the material of the ring carrier, and the outer rings being made from a high strength super alloy which resists oxidation having a higher coefficient of thermal expansion than the material of the nozzle chamber wherefore, as the temperature increases during turbine start up the ring carrier expands into contact with the inner rings forming a tight seal therebetween at operating temperature and the outer rings expand into contact with the nozzle chamber forming a tight seal therebetween at operating temperature.

5,628,618

DRAINAGE PUMP WITH INTERPOSED DISK

Masayuki Imai, Yokohama; Takashi Endo, Tokyo, and Tatsushi Ninomiya, Yokohama, all of Japan, assignors to Fujikoki Mfg. Co., Ltd., Tokyo, Japan

Filed May 19, 1995, Ser. No. 446,074
Claims priority, application Japan, Nov. 25, 1994, 6-290984; Feb. 6, 1995, 7-017922
Int. Cl.[6] F04D *29/28*
U.S. Cl. 415—198.1 9 Claims



1. A drainage pump, comprising:

a pump body having an inlet at its lower end and an outlet at its upper lateral portion;

a rotary member supported for rotation in said pump body; and

a motor for rotating said rotary member,

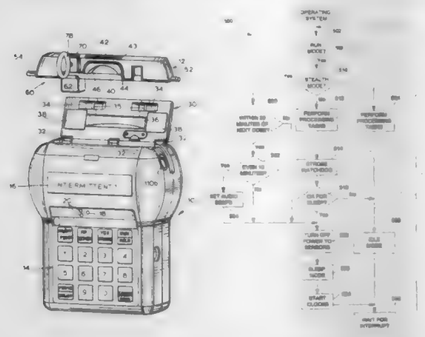
said rotary member comprising a shaft portion coupled to an output shaft to said motor; larger-radial blades extending radially outwardly from said shaft portion, said large-radial blades having an outer surface extending in a substantially straight line throughout their radial extent; small-radial blades extending under said large-radial blades in a direction parallel to said output shaft; and a disk interposed between said large-radial blades and said small-radial blades and having an opening at its center.

5,628,619

INFUSION PUMP HAVING POWER-SAVING MODES

Larry Wilson, Poway, Calif., assignor to Sabratek Corporation, Niles, Ill.

Filed Mar. 6, 1995, Ser. No. 399,184
Int. Cl.[6] F04B *49/06*
U.S. Cl. 417—44.2 15 Claims



1. An infusion apparatus for infusing liquid into a patient, said infusion apparatus comprising:

a source of battery power;

a pump powered by said source of battery power and adapted to pump liquid through a conduit;

a controller that performs a plurality of processing tasks related to the pumping of liquid through said conduit, said controller being operable in a normal mode of operation utilizing a first rate of power consumption from said source of battery power; and

control means for causing said controller to operate in a first power-saving mode of operation utilizing a second rate of power consumption from said source of battery power, said second rate of power consumption being lower than said first rate of power consumption, said control means causing said controller to periodically operate in said first power-saving mode of operation at a first frequency,

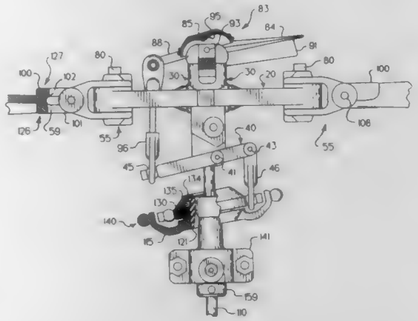
said control means including means for causing said controller to operate in a second power-saving mode of operation utilizing a third rate of power consumption from said source of battery power, said third rate of power consumption being lower than said first rate of power consumption, said control means causing said controller to periodically operate in said second power-saving mode of operation at a second frequency, said second frequency being different than said first frequency.

5,628,620

MAIN ROTOR SYSTEM FOR HELICOPTERS

Paul E. Arlton, 1132 Anthrop Dr., West Lafayette, Ind. 47906

Continuation-in-part of Ser. No. 770,013, Sep. 30, 1991, Pat. No. 5,305,968. This application Apr. 25, 1994, Ser. No. 233,159
Int. Cl.[6] B64C *27/00*
U.S. Cl. 416—114 36 Claims



1. A main rotor for use in a rotary winged model aircraft having a body, the main rotor comprising a rotor hub being formed to include a flapping limit tab, a plurality of main rotor blades extending radially from the rotor hub and supported for rotation about a substantially vertical axis and driven by drive means located within the body of the rotary winged model aircraft, and means for mounting the main rotor blades to said rotor hub to flap about a substantially horizontal flapping axis within a flapping limit range relative to the rotor hub yieldably constrained by engagement of the flapping limit tab and the main rotor blade and fold upward about a folding axis through a folding angle outside of the flapping limit range upon disengagement of the flapping limit tab and the main rotor blade so that forces transmitted to the rotor hub by the rotor blades during a crash landing of a rotary winged model aircraft including the main rotor are minimized due to movement of the rotor blades through said folding angle.

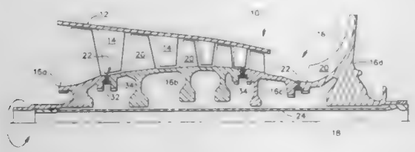
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5,628,621

REINFORCED COMPRESSOR ROTOR COUPLING

Steven M. Toborg, Lynn, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 26, 1996, Ser. No. 686,882
Int. Cl.[6] F01D 5/02
U.S. Cl. 416—198 A 10 Claims



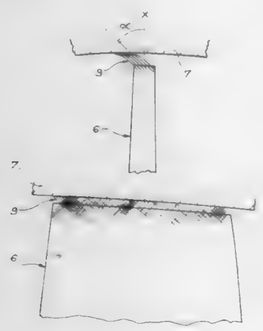
1. A gas turbine engine compressor rotor comprising:
a rim having a plurality of circumferentially spaced apart airfoils extending radially outwardly therefrom;
a web extending radially inwardly from said rim below said airfoils;
a hub extending radially inwardly from said web below said rim;
a row of curvic coupling teeth extending axially away from one end of said rim;
an imperforate support ring extending radially inwardly from said rim end for carrying hoop loads; and
a balance ring extending radially inwardly from said support ring, and having a balance notch circumferentially splitting said balance ring and eliminating hoop strength thereat.

5,628,622

COMPOSITE MATERIAL TURBINE ENGINE BLADE EQUIPPED WITH A SEAL AND ITS PRODUCTION PROCESS

Monique A. Thore, Crosne, and Pascal C. M. A. Vasseur, Vaux le Penil, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Aug. 23, 1995, Ser. No. 518,175
Claims priority, application France, Sep. 14, 1994, 94 10949
Int. Cl.[6] F03B 3/12
U.S. Cl. 416—241 R 8 Claims



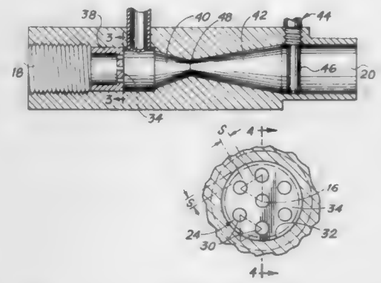
1. A molded composite machine turbine engine blade, which comprises:
a multidirectional fibrous fabric blade impregnated with a resin and having a blade body wherein at a free end of the blade body, a seal is integrated into the resin and forms a brush joint between the blade body and a casing.

5,628,623

FLUID JET EJECTOR AND EJECTION METHOD

Bill D. Skaggs, 428 W. Ghent St., Glendora, Calif. 91740

Continuation-in-part of Ser. No. 17,651, Feb. 12, 1993, abandoned. This application Mar. 25, 1994, Ser. No. 217,981
Int. Cl.[6] F04F 5/46
U.S. Cl. 417—151 32 Claims



1. A fluid jet ejector comprising:
a body containing a fluid passage including a primary fluid inlet for receiving a pressurized liquid, a fluid outlet, a vacuum chamber between said inlet and outlet, at least one group of jets communicating said inlet to said chamber, a convergent-divergent diffuser consisting of an upstream convergent compression chamber and a downstream divergent expansion chamber associated with each jet group and communicating said chamber to said outlet, and a secondary fluid inlet opening to said chamber for receiving a gas,
each of the jets consisting essentially of a circular opening in a wall oriented transverse to the fluid passage and located between said primary fluid inlet and said vacuum chamber,
the wall forming part of a cup-shaped insert having a cylindrical body closed at one end by the wall,
the jets of each jet group being aligned with the associated diffuser to discharge a plurality of relatively high velocity jet streams of said liquid through said chamber into the associated diffuser, and
the jets of each jet group being arranged in a two dimensional array when viewed along their axes, such that the several jet streams which issue from the jets of each jet group are laterally spaced to form between the adjacent jet streams within the vacuum chamber flow spaces in which gas entering the chamber through said secondary fluid inlet is entrained, whereby the entrained gas is carried from the chamber by the jet streams.

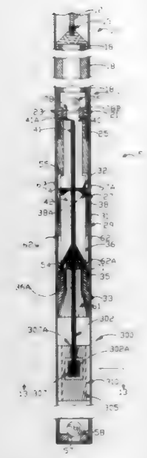
5,628,624

PUMP BARREL VALVE ASSEMBLY INCLUDING SEAL/ACTUATOR ELEMENT

Joe A. Nelson, II, 6111 Allentown, Spring, Tex. 77389

Continuation-in-part of Ser. No. 416,627, Apr. 5, 1995, Pat. No. 5,533,876. This application Apr. 1, 1996, Ser. No. 625,205
Int. Cl.[6] F04B 53/12
U.S. Cl. 417—456 32 Claims

1. A ball and valve seat assembly comprising:
(a) a hollow tubular member having an internal cross-sectional area;
(b) a valve seat mounted within the tubular member, having a seating passage with a seating cross-sectional area;
(c) a ball positioned within the tubular member above the valve seat;
(d) a piston movably mounted within the tubular member below the valve seat, comprising an actuator for engaging the ball through the passage while the ball is seated on the seat, and comprising a first sealing member with a first sealing area for sealing the tubular member below the valve seat across the entire internal cross-sectional area of the tubular member, wherein the sealing area is greater than the seating cross-sectional area; and
(e) a weight connected to and positioned below the piston; wherein the ball and valve seat is closed by the ball being seated on the valve seat, and opened by an increase in fluid pressure below the piston acting upon the sealing area causing the piston to rise and engage the ball with the actuator and thereby unseat the ball.

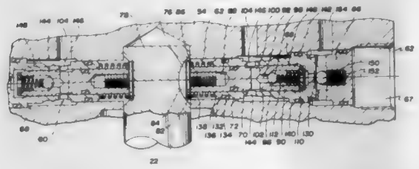


5,628,625

HIGH PRESSURE FLUID PUMP FOR USE IN VEHICULAR BRAKING SYSTEM HAVING ANTI-LOCK AND TRACTION ASSIST FEATURE

David M. Dokas, Redford, Mich., assignor to Kelsey-Hayes Company, Ann Arbor, Mich.

Continuation of Ser. No. 311,554, Sep. 23, 1994, abandoned. This application Oct. 2, 1995, Ser. No. 537,542
Int. Cl.[6] F04B 53/00
U.S. Cl. 417—523 19 Claims



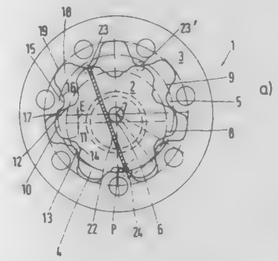
1. A hydraulic reciprocating piston type pump comprising:
a sleeve having a sleeve counterbore open at one end, closed at the opposite end, a radially extending low pressure inlet port provided intermediate said open and closed ends, an axially extending outlet port provided a ball valve seat provided at the junction of said outlet port and the external surface of said closed end, and a piston support land provided along the internal surface of said sleeve counterbore;
an axially extending cylindrical piston received in said sleeve counterbore, said piston having a pilot section at one end extending in part outside said sleeve and at the opposite end a piston section disposed entirely within said sleeve, said piston section having an opposing land disposed on its external surface, said opposing land slidably engaging said piston support land, and having a diameter selected to form a fluid tight seal with said piston support land and having a plurality of equally spaced annular grooves therealong to provide a radial fluid film between said piston support and said opposing lands with the reciprocation of said piston in said sleeve;
a pump chamber provided within said piston section;
an axially disposed low pressure fluid inlet passage provided in said piston connecting said pump chamber to said low pressure inlet port of said sleeve;
a valve seat provided at the junction between the low pressure inlet passage and the pump chamber;
a check valve disposed in said pump chamber resiliently biased to engage said valve seat, said check valve displaced from said valve seat in response to said piston being displaced away from said closed end; and
means for reciprocating said piston relative to said sleeve.

5,628,626

HYDRAULIC MACHINE

Gunnar L. Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

PCT No. PCT/DK94/00124, § 371 Date Oct. 3, 1995, § 102(e) Date Oct. 3, 1995, PCT Pub. No. WO94/23206, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 24, 1994, Ser. No. 532,705
Claims priority, application Germany, Apr. 5, 1993, 43 11 165.3
Int. Cl.[6] F04C 18/10
U.S. Cl. 418—61.3 16 Claims



1. In a hydraulic machine with a gearwheel having a midpoint and a predetermined number of external teeth with tooth tips and tooth flanks separated by tooth spaces, and an annular gear having a midpoint offset by an eccentricity with respect to the midpoint of the gearwheel and having a number of internal teeth with tooth tips and tooth flanks separated by tooth spaces which exceed by one the number of said external teeth, the gearwheel and annular gear orbiting or rotating relative to one another and at least the external teeth being created from a form using a set of circles lying with their midpoints on a trochoid, the improvement comprising at least two trochoids, displaced relative to one another in a circumferential direction, for generating a tooth profile, each trochoid being formed by a rolling circle and a base circle, the rolling circles of the trochoids and the base circles of the trochoids differing from one another.

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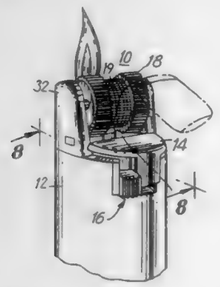
SELECTIVELY ACTUATABLE LIGHTER

Floyd B. Fairbanks, Naugatuck; Thomas G. Snell, Madison, and James M. McDonough, Guilford, all of Conn., assignors to Bic Corporation, Milford, Conn.

Continuation of Ser. No. 71,863, Jun. 3, 1993, Pat. No. 5,487,657, which is a continuation of Ser. No. 912,421, Jul. 10, 1992, abandoned, which is a continuation of Ser. No. 609,668, Nov. 6, 1990, abandoned, which is a continuation of Ser. No. 239,734, Sep. 2, 1988, Pat. No. 5,002,482. This application Jun. 6, 1995, Ser. No. 472,061

Int. Cl.[6] F23D *11/36*; F23Q *2/16*

U.S. Cl. 431—153 13 Claims



1. A lighter, comprising:
a housing defining a longitudinal axis;
a fuel supply contained within the housing;
a valve assembly mounted on the housing with a valve nozzle arranged along the longitudinal axis and communicating with the fuel supply to selectively permit release of fuel from said supply;
a depressible valve actuator pivotably mounted on the housing and cooperating with the valve assembly to actuate said valve assembly to permit release of fuel;
a latch mounted for movement in the housing below the valve actuator with a finger actuatable portion extending outside the housing, said latch cooperating with the valve actuator to permit release of fuel, wherein the finger actuatable portion is moveable by a user from a first position which prevents release of fuel to a second position which permits release of fuel, said movement being along a defined path comprising a first movement cross-wise and perpendicular to the longitudinal axis followed by a second movement in a direction along the longitudinal axis.

5,628,628

COMBUSTION DEVICE OF FAN HEATER

In K. Kim; Young S. Kim; Seock J. Kim, and Sung H. Shim, all of Kyungsangnam-do, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

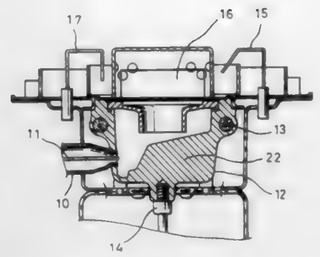
Filed Jan. 30, 1995, Ser. No. 380,709

Claims priority, application Rep. of Korea, Sep. 3, 1994, 22149/1994

Int. Cl.[6] F23D *11/44*

U.S. Cl. 431—208 5 Claims

1. A carbulator device for a combustion fan heater comprising:
a spraying means including a nozzle for spraying a flammable substance;
a vaporizing means including a carbulation chamber having walls for vaporizing a flammable substance sprayed from said nozzle for burning the flammable substance, wherein said nozzle is positioned adjacent a wall of said carbulation chamber, said nozzle having a spraying direction facing a center part of said carburation chamber; and,
a dividing means, including a dividing piece with a sharp edge facing said nozzle and having sides in a generally triangular shape connected with said walls of said carburation chamber and forming a generally triangular shaped cross section in plan view with said sharp edge extending radially towards said center part of said carburation chamber with said sides merging smoothly with said walls of said carburation chamber on each side of said sharp edge for dividing a flammable substance sprayed from said nozzle into two parts and making the two parts of the divided flammable substance mix with air and swirl in opposite directions to each other.



5,628,629

INDUSTRIAL FURNACE AND A BURNER FOR CONDUCTING REGENERATIVE COMBUSTION AND A COMBUSTION METHOD THEREFOR

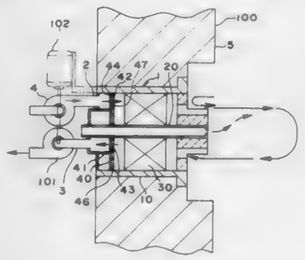
Kazuhisa Mitani; Tomohiko Nishiyama, both of Toyota, and Ryoichi Tanaka, Tokyo-to, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Nippon Furnace Kogyo Kaisha, Ltd., Yokohama, both of Japan

Filed Oct. 11, 1995, Ser. No. 540,832

Claims priority, application Japan, Oct. 14, 1994, 6-249356; Oct. 14, 1994, 6-249357; Sep. 11, 1995, 7-232136; Sep. 11, 1995, 7-232143

Int. Cl.[6] F23C *5/08*

U.S. Cl. 432—180 80 Claims



1. An industrial furnace comprising:
a heat storage member having an axis and comprising a plurality of independent sections which are separated from each other along a circumferential direction of said heat storage member;
a burner tile provided on one side of said heat storage member, said burner tile including a fuel injection nozzle insertion hole, and an air supply and gas exhaust surface including a plurality of gas flow holes constructed and arranged to selectively permit supply air and exhaust gas to pass therethrough; and
a switching mechanism disposed on a side of said heat storage member opposite from said burner tile, said switching mechanism including a stationary disk, a rotatable disk slidably contacting said stationary disk, and a partitioning wall separating a supply air flow area and an exhaust gas flow area, wherein said stationary disk includes a plurality of apertures, said rotatable disk including a plurality of openings for gas flow which are openable and closable in accordance with rotation of said rotatable disk, said plurality of openings including at least one supply air flow opening communicating with said supply air flow area located on one side of said partitioning wall and at least one exhaust gas flow opening communicating with said exhaust gas flow area located on a side of said partitioning wall opposite said supply air flow area, and wherein said heat storage member, said burner tile, and said switching mechanism are independent from each other.

5,628,630

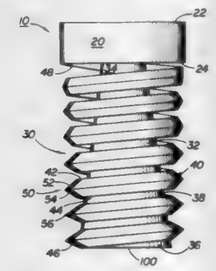
DESIGN PROCESS FOR SKELETAL IMPLANTS TO OPTIMIZE CELLULAR RESPONSE

Carl F. Misch, Dearborn, Mich.; Martha W. Bidez, and J. Todd Strong, both of Birmingham, Ala., assignors to Univ. of Alabama at Birmingham, Birmingham, Ala.

Filed Dec. 15, 1994, Ser. No. 356,597

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—174 32 Claims



30. A screw-type root form dental implant having a crestal end, an apical end, and a threaded surface, the thread having an upper face edge, a lower face edge and a preselected number of turns per unit height,
wherein the angle between the upper face edge and the lower face edge increases as the thread nears the crestal end; and
wherein the depth of the thread increases as the thread nears the crestal end.

5,628,631

RADIO CONTROL TRANSMITTER

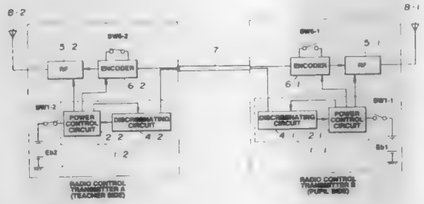
Akira Aneha, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Jul. 22, 1994, Ser. No. 278,966

Claims priority, application Japan, Jul. 23, 1993, 5-202117

Int. Cl.[6] A63H *30/04*

U.S. Cl. 434—29 3 Claims



1. A radio control transmitter comprising:
an encoder circuit for encoding a stick operation signal;
a radio-frequency circuit for modulating the signal encoded and outputting said signal in the form of a radio wave;
a power supply and a power line connected to said power supply;
a switch arranged between said radio-frequency circuit and said power line;
a connector for external output to which a first line connected to an external power supply, a second line fed with an external signal and a third line connected to an output of said encoder circuit are connected; and
a power control section including a power control circuit and a discriminating circuit for judging which of said first line and said power line is serving for power feed by comparing a voltage between said first line and said power line,
whereby connection between said radio frequency circuit and said power line is interrupted by said switch when said discriminating circuit judges that said first line is serving for power feed to prevent the radio frequency circuit from outputting a radio wave.

5,628,632

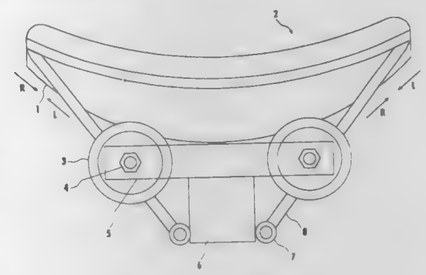
PIVOTABLE TORSO EXERCISE SUPPORT

Michael P. Doane, 1434 Cola Dr., McLean, Va. 22101

Continuation-in-part of Ser. No. 326,901, Oct. 21, 1994, Pat. No. 5,540,591, which is a continuation-in-part of Ser. No. 145,544, Nov. 4, 1993, Pat. No. 5,429,564, which is a continuation-in-part of Ser. No. 998,195, Dec. 29, 1992, abandoned. This application Mar. 2, 1995, Ser. No. 397,334

Int. Cl.[6] A63B *69/10*

U.S. Cl. 434—254 13 Claims



1. An exercising apparatus comprising:
a) a first support member;
b) a second body support member for a user's lower body portion mounted on said first support member; and
c) a third, inclined body support member for a user's upper body portion, said third body support member being independent of said second body support member and mounted on said first support member for limited rotation about a center axis above said third body support member.

5,628,633

TRAINING MANIKIN

Joseph M. Lehman, Columbus, Ohio, assignor to Zevco Inc., Northbrook, Ill.

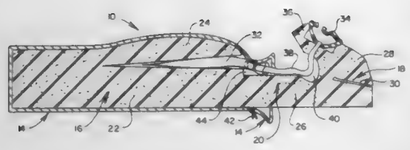
Filed Jul. 25, 1996, Ser. No. 685,928

Int. Cl.[6] G09B *23/32*;*23/34*

U.S. Cl. 434—265 4 Claims

1. In a training manikin for use in cardio-pulmonary resuscitation procedure training, in combination:
a manikin body molded of a resilient material and comprised of integrally joined torso, neck, and head sections;
a torso back sub-section and a joined torso chest sub-section comprising said manikin body torso section;
a head face and chin sub-section and a joined head back sub-section comprising said manikin body head section;

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and interconnected lung bag element, airway tube element, and mouth/nose element inserts co-operating with said manikin body torso, neck, and head sections,

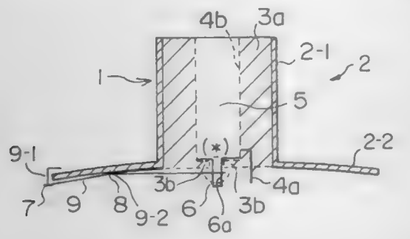
said head face and chin sub-section being pivotally connected to said head back sub-section by the resiliency of said manikin body resilient material, and said airway tube element insert being folded and restricting the flow of air from said mouth/nose element insert to said lung bag element insert when said head face and chin sub-section is in a non-pivoted condition and being un-folded and permitting the flow of air from said mouth/nose element insert to said lung bag insert when said head face and chin sub-section is in a fully-pivoted condition.

5,628,634

ROTARY PROBE, PRINTED CIRCUIT BOARD ON WHICH THE ROTARY PROBE IS MOUNTED, AND CONNECTING DEVICE INCORPORATING THE ROTARY PROBE

Haruyoshi Omata, Toyota, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 25, 1994, Ser. No. 279,360
Claims priority, application Japan, Sep. 2, 1993, 5-218743
Int. Cl.[6] H01R *39/00*
U.S. Cl. 439—13 **28 Claims**



1. A rotary probe mounted on a circuit board and used to connect a selected circuit, of plural circuits of the circuit board, to an external device, said rotary probe comprising:

an outer frame having a flange portion facing the circuit board;

a first lead extending along the flange portion and having a signal input terminal at a first end thereof and being supported at a second end thereof so as to be rotatable with respect to the circuit board, the signal input terminal being selectively connectable to a selected, individual circuit of the plural circuits of the circuit board by selectively rotating the first lead;

a probing jack electrically connected to said first lead, and connectable to a corresponding terminal formed on the circuit board; and

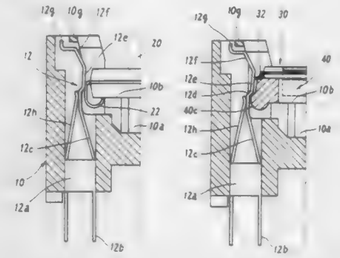
a ground supply terminal mounted to the rotary probe and projecting in electrically insulated relationship from the outer frame of the rotary probe toward, and being connectable to a corresponding ground terminal formed on, the circuit board.

5,628,635

TEST SOCKET FOR AN INTEGRATED CIRCUIT

Kiyokazu Ikeya, Suntoh-gun, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 7, 1995, Ser. No. 400,208
Claims priority, application Japan, Mar. 16, 1994, 6-071675
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—70 **8 Claims**



1. A socket for use in removably loading and making contact with an electrical part, both of the SOJ type with a plurality of connection terminals that extend in the shape of a "J" adapted for use in said socket without a carrier member and of the SOP type with a plurality of connection terminals that extend in a gull-wing shape adapted for use in said socket with a carrier member comprising a main socket body for receiving said electrical part, and a contact means contained within said main socket body including a plurality of contact members arranged at prescribed locations within said main socket body so that each of the plurality of connection terminals of said electrical part can be electrically connected in a one-to-one relationship with one of the plurality of contact members characterized in that each of said contact members has a base portion fixed in said main socket body, an upper and a lower guide portion for guiding said electrical part during loading, a contacting portion positioned between said upper and lower guide portions for making pressure contact with one of the plurality of connective terminals of said electrical part while being elastically displaced, a connective portion that integrally connects one end of said base portion and said upper guide, lower guide and contact portions and an auxiliary laterally movable connective portion that extends from another end of said base portion and is connectable with said contacting portion and upon deflection increases the spring force of said contact member.

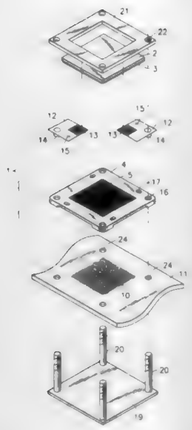
5,628,636

CONNECTOR FOR A SUBSTRATE WITH AN ELECTRONIC CIRCUIT

Jean-Francois Ollivier, Merdrignac, France, assignor to Framatome Connectors International, Paris, France

Filed Oct. 5, 1995, Ser. No. 539,485
Claims priority, application Netherlands, Oct. 7, 1994, 9401657
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—70 **8 Claims**

1. Connector for connecting a substrate with an electronic circuit to a printed circuit board, said substrate having a main surface provided with contact balls arranged in a given grid pattern with a predetermined pitch in column and row directions, wherein the printed circuit board is provided with contact pads arranged in the grid pattern, said connector comprising a housing of insulating material with a zone for receiving said substrate, wherein through-holes are provided in said zone in the grid pattern and contact members are provided in at least a part of said through-holes, and positioning means for locating the substrate with respect to the housing in such a manner that the through-holes of the housing are aligned with the contact balls of the substrate, wherein said positioning means comprises at least one reference plate which can be positioned on the housing, said reference plate comprising



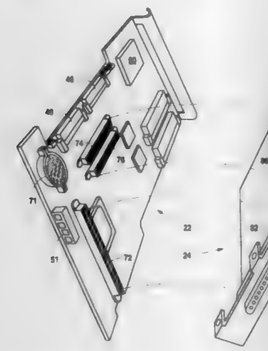
through-holes arranged in said grid pattern for at least a part of the contact balls of the substrate, wherein each reference plate and the housing are provided with cooperating coupling means for accurately positioning the reference plate with respect to the housing.

5,628,637

COMPUTER SYSTEM SCSI ADAPTER CARD INCLUDING AN ADD-IN DAUGHTER BOARD PROVIDING AN EXTERNAL SCSI CONNECTOR FOR MODULAR AND UPGRADABLE SCSI BUS ROUTING OPTIONS

Victor Pecone, and Jay Lory, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Dec. 8, 1994, Ser. No. 351,848
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—74 **14 Claims**



1. A SCSI expansion device for use in a computer system which provides modular and upgradable SCSI bus routing options, comprising:

a SCSI adapter card adapted for insertion into an expansion slot of a computer system, including:

one or more SCSI controllers providing signals for one or more SCSI channels;

one or more internal SCSI connectors coupled to said one or more SCSI controllers, wherein said one or more internal SCSI connectors are each adapted for coupling to one or more SCSI devices in the computer system;

one or more daughter board connectors for receiving a daughter board, and;

termination logic coupled to said one or more SCSI controllers; and

a daughter board including connectors for coupling to said one or more daughter board connectors on said SCSI adapter card, wherein said daughter board includes an SCSI connector, wherein said external SCSI connector is adapted to be externally accessible from the computer system when said daughter board is connected to said SCSI adapter card and said SCSI adapter card is inserted into the expansion slot of the computer system, wherein said external SCSI connector is adapted for coupling to one or more external SCSI devices;

wherein at least one of said one or more SCSI controllers are connected to at least one of said one or more daughter board connectors on said adapter card to provide signals corresponding to at least one of said one or more SCSI channels to said daughter board; and wherein said daughter board routes signals corresponding to said at least one of said one or more SCSI channels from said at least one of said one or more SCSI controllers to said external SCSI connector; and,

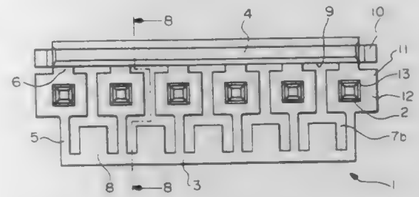
wherein said SCSI adapter card disables said termination logic to said at least one of said one or more SCSI controllers when said daughter board routes signals corresponding to said at least one of said one or more SCSI channels from said at least one of said one or more SCSI controllers to said external SCSI connector.

5,628,638

ELECTRIC CONNECTOR

Katsutoshi Tojo; Shigetoshi Yamaguchi, both of Machida, and Michio Shimizu, Sagamihara, all of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 7, 1995, Ser. No. 570,176
Claims priority, application Japan, Jan. 20, 1995, 7-026309
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—78 **6 Claims**



1. A header mounted to a surface of a printed circuit board, the header having a plurality of terminal pins adapted to be soldered to holes in the printed circuit board comprising:

the plurality of terminal pins in a parallel side by side array; and

a housing made of a dielectric material and having,

a holding sleeve for each one of the plurality of terminal pins,

first and second generally rigid longitudinal support beams parallel to each other and located on opposite sides of the side by side pin array, and

first and second flexible joints extending from each holding sleeve, the first flexible joint joining the holding sleeve to the first longitudinal support beam and the second flexible joint joining the holding sleeve to the second longitudinal support beam, the flexible joints adapted to allow movement of each holding sleeve independent from one another in a plane parallel to the plane of the printed circuit board so that the terminal pins can move independently toward and away from each other wherein each holding sleeve has a given width and at least one of the first and second flexible joints from each holding sleeve has a width less than the width of the holding sleeve from which it extends.

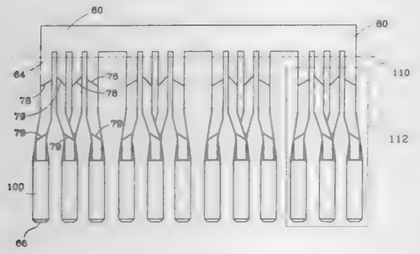
VOL 1198 ISS 2 MY 13 1997 UMI

5,628,639

ELECTRICAL CONNECTOR WITH DIFFERENT LEAD ARRANGEMENTS AT ITS OPPOSITE ENDS

Kenneth L. Eichholz, Jr.; Mark F. Johnston; William D. Lanyi, and Bradley T. Woods, all of Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 17, 1995, Ser. No. 544,220
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—79 16 Claims



1. A method for making an electrical connector, comprising:

providing a strip of electrically conductive material having a length and a width, said strip having a planar surface, a first axis extending along said length and a second axis extending along said width, said first and second axes being disposed within the plane of said strip and being generally perpendicular to each other, said strip having a plurality of electrically conductive fingers extending in a direction generally perpendicular to said length, each of said plurality of electrically conductive fingers having a connective end attached to said strip and a distal end extending away from said strip, a preselected one of said plurality of conductive fingers being shaped to offset its distal end from its connective end in a first direction along said first axis, said preselected one of said plurality of conductive fingers being shaped to offset said distal end in a direction which is generally perpendicular to said plane of said strip;

molding said plurality of electrically conductive fingers within an electrically nonconductive material with said distal ends protruding from said nonconductive material in a first direction and said connective ends protruding from said nonconductive material in a second direction, said first and second directions being generally parallel to each other; and

severing said connective ends from said strip.

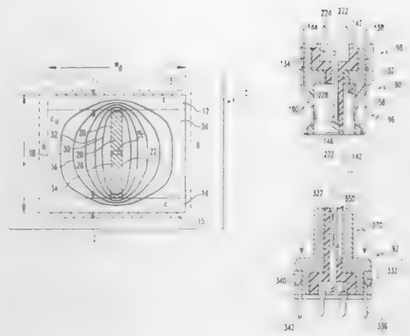
5,628,640

LOW CROSS TALK AND IMPEDANCE CONTROLLED ELECTRICAL CONNECTOR

Richard A. Elco, Mechanicsburg, and David F. Fusselman, Middletown, both of Pa., assignors to Berg Technology, Inc., Reno, Nev.

Filed Jun. 12, 1995, Ser. No. 452,020
Int. Cl.[6] H01R 13/648
U.S. Cl. 439—101 24 Claims

1. An electrical connector comprising a first member comprising a first plurality of a metallic contacts and a dielectric base having a grounding means wherein the metallic contacts project generally perpendicularly from the dielectric base and a second member comprising a second plurality of metallic contacts and a second dielectric base wherein the second plurality of metallic contacts projects generally perpendicularly from the second dielectric base so that each of said plurality of metallic contacts projecting from



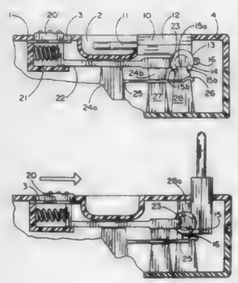
the first member is in electrical contact which one of said second plurality of metallic contacts projecting from the second member.

5,628,641

COLLAPSIBLE PLUG DEVICE FOR BATTERY CHARGER

Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.

Continuation of Ser. No. 201,474, Feb. 24, 1994, abandoned.
This application Nov. 3, 1995, Ser. No. 553,085
Int. Cl.[6] H01R 13/44
U.S. Cl. 439—131 10 Claims



1. A collapsible plug device comprising

a casing,

an electrical plug rotatably mounted in said casing, said electrical plug including a plurality of prongs, said electrical plug rotatable between a collapsed and an extended position, relative to said casing, and

a releasable locking means mechanically connected to said casing to engage said electrical plug and to prevent said electrical plug from moving from said extended position,

whereby the electrical plug is locked into the extended position until and unless a user releases the releasable locking means.

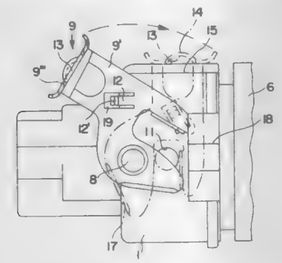
5,628,642

ELECTRICAL CONNECTOR

Anton Bieringer, Schwabach, and Peter Nützel, Nürnberg, both of Germany, assignors to Framatome Connectors International, Courbevoie, France

PCT No. PCT/EP93/03448, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO94/14212, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 8, 1993, Ser. No. 433,462
Claims priority, application Germany, Dec. 8, 1992, 42 41 256.0
Int. Cl.[6] H01R 13/62
U.S. Cl. 439—157 10 Claims

1. An electrical connector with a first housing part receiving



socket contacts, and a second housing part receiving knife contacts, pins attached to said housing parts for locking together and releasing said housing parts, and a single U-shaped clamp mounted on one of said housing parts for pivoting motion about an axis between a release and a locking position, said clamp comprising legs and a cross piece, said legs having board-shaped expansions containing linking grooves which have boundary surfaces and can be swung onto pins of the other housing part, the legs being provided with springy chamfers which, in a release position, are braced as stop elements against that housing part which carries said clamp, said cross piece having a recess or hole releasably engaged by a locking hook mounted resiliently on a housing part when said clamp is in a locking position, at least said boundary surfaces reaching behind said pins having bends extending at right angles to a swivel plane defined by said legs.

5,628,643

CONTACT CONNECTOR

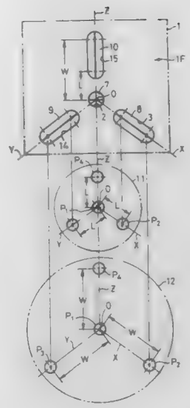
Noboru Yoshida, Sawa-gun, Japan, assignor to Hosiden Corporation, Osaka, Japan

Division of Ser. No. 93,644, Jul. 20, 1993, Pat. No. 5,409,390.
This application Feb. 3, 1995, Ser. No. 383,367
Claims priority, application Japan, Aug. 5, 1992, 4-208967
Int. Cl.[6] H01R 27/00
U.S. Cl. 439—218 3 Claims

1. An electrical connector electrically and mechanically detachably connected to one of a plurality of pin connectors respectively having pins of different pitches, said electrical connector comprising:

an insulating body having means defining a contact chamber therein and a front surface having at least three elongated pin holes formed therein in communication with said contact chamber, said elongated pin holes extending radially along lines that extend from nearly a center of said front surface at equal angle intervals, each of said pin holes having a width substantially parallel in a direction along a corresponding one of said lines and a height in a direction perpendicular to said corresponding one of said lines, said width being at least twice as large as said height; and

at least three electrically conductive contacts disposed in said contact chamber, each of said contacts having at least one elastic contact piece having a width substantially equal to said width of a corresponding one of said pin holes and a height in



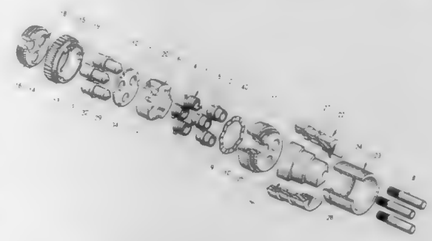
a direction perpendicular to said corresponding one of said lines, wherein said at least one elastic contact piece extends along said corresponding one of said lines to traverse said corresponding one of said pin holes for resilient contact with at least one of said corresponding pins of one of said pin connectors to be connected to said electrical connector.

5,628,644

NEGLIGIBLE INSERT FORCE POWER CONNECTOR

John S. Szalay, Corona Del Mar, and Edward Rudoy, Woodland Hills, both of Calif., assignors to Packard Hughes Interconnect Company, Irvine, Calif.

Filed Sep. 8, 1995, Ser. No. 525,470
Int. Cl.[6] H01R 13/15
U.S. Cl. 439—263 4 Claims



1. A negligible insert force power connector comprising:

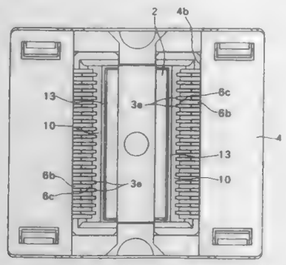
a socket connector block having a plurality of holes formed therein and a torsion spring carried in each of said holes, said torsion spring having a first tang at one end for engaging the first socket connector block and a second tang at the other end of the torsion spring;

a socket contact having one end secured to a wire and a second end inserted into the hollow of the torsion spring;

a plug connector block having a plurality of pin contacts received therein, each pin contact having a contact area in the shape of a cylinder with the front end having an extended surface, said plug connector having a boss positioned to engage the second tang of the torsion spring when the pin contact is inserted into the hollow portion of the torsion spring, and so that upon rotation of the plug connector the boss picks up the second tang of the torsion spring compressing the torsion spring and causing the pin contact and socket contact to engage each other and provide electrical connection between respective wires.

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5,628,645
IC SOCKET
Noriyuki Matsuoka, Yokohama, and Kazumi Uratsuji, Tokyo, both of Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed May 18, 1995, Ser. No. 445,225
Claims priority, application Japan, May 18, 1994, 6-128294
Int. Cl.° H01R *13/62*
U.S. Cl. 439—331 **20 Claims**



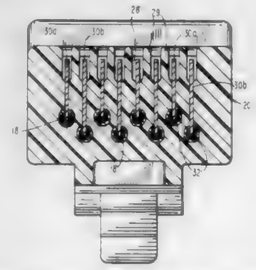
1. An IC socket for use with an IC package having an IC body and IC leads, said IC socket comprising:
a socket body having an IC package receiving portion;
a plurality of contacts mounted to said socket body and arranged in array along said IC package receiving portion of said socket body, each of said contacts including a spring portion and a projecting contacting portion supported by said spring portion so as to be movable between an IC lead contacting position and an IC lead non-contacting position, said IC lead non-contacting position being spaced outwardly of said IC lead contacting position from said IC package receiving portion;
a contact opening/closing cover, mounted over said socket body for movement between a raised position and a lowered position relative thereto, for causing movement of said contacting portions of said contacts from said IC contacting positions to said IC non-contacting positions;
a positioning member movably mounted to said socket body for movement between a first position and a second position spaced outwardly of said first position from said IC package receiving portion, said positioning member comprising a plurality of spaced apart regulating pieces, each of which is interposed between respective contacting portions of an adjacent pair of said contacts when said positioning member is in said first position;
wherein said positioning member further includes a plurality of spaced apart fins extending outwardly from said positioning member, said regulating pieces being respectively mounted at distal ends of said fins; and
wherein each of said fins is interposed between an adjacent pair of said contacts.

5,628,646
ELECTRICAL CORD PLUG RETAINING DEVICE
James H. Voss, 26807 N. Woodland Rd., Cleveland, Ohio 44122
Filed Jun. 7, 1995, Ser. No. 488,545
Int. Cl.° H01R *13/62*
U.S. Cl. 439—369 **14 Claims**

1. A device for retaining two mating electrical plugs together,

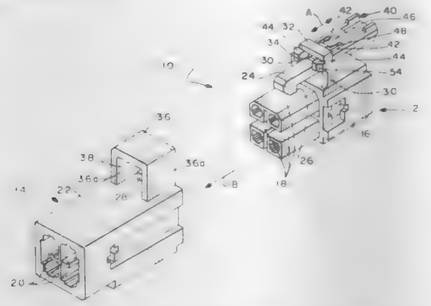
the device comprising:
a) a one piece member including a flat part having a generally flat top surface and a generally flat bottom surface;
b) the flat part having a thickness between the top and bottom surfaces which is less than a length and less than a width of the flat part;
c) two key hole shaped apertures in the flat part, each of the apertures having a large portion and a webbing with a narrow slot extending from the large portion;
d) said webbing of the flat part bounding each of the slots being resilient and flexible;
e) each slot extending from its respective large portion in a direction toward the other slot, the slots being spaced apart; and
f) the flat part being comprised of two generally oval shaped, spaced portions connected by a waist and wherein each oval portion includes one of said two apertures.

5,628,647
HIGH FREQUENCY MODULAR PLUG AND CABLE ASSEMBLY
Brian Rohrbaugh, Glen Rock; Justin S. Wagner, York; Merv Fair, Glen Rock; Don McClune, York, and David Hatch, Glen Rock, all of Pa., assignors to Stewart Connector Systems, Inc., Glen Rock, Pa.
Filed Feb. 22, 1995, Ser. No. 392,060
Int. Cl.° H01R *4/24*
U.S. Cl. 439—404 **21 Claims**



1. An assembly including a multi-conductor cable terminated by a modular plug, comprising:
a multi-conductor cable including at least first, second, third and fourth wires, said first and second wires operatively forming part of a first circuit during use and said third and fourth wires operatively forming part of a second circuit during use;
a modular plug including a dielectric housing having a plurality of wire-receiving passages disposed in first and second substantially parallel planar arrays spaced one above the other, said passages of said first planar array being staggered in position with respect to said passages of said second planar array, and a plurality of parallel contact-receiving slots, each contact-receiving slot communicating with a respective one of said wire-receiving passages;
said cable wires having ends received in respective wire-receiving passages and said modular plug including a plurality of flat contacts, each contact situated in a respective contact-receiving slot and electrically engaging a respective one of said wire ends received in a communicating wire-receiving passage; and wherein
an end of said first and third wires being received in a respective wire-receiving passage of said first planar array and an end of said second and fourth wires being received in a respective wire-receiving passage in said second planar array, said wire ends of said first and second wires being situated in a first pair plane and said wire ends of said third and fourth wires being situated in a second pair plane, and wherein said wire ends of said first, second, third and fourth wires are positioned in said wire-receiving passages such that said first and second pair planes intersect each other in order to minimize crosstalk between said first and second wires forming in part said first circuit and said third and fourth wires forming in part said second circuit.

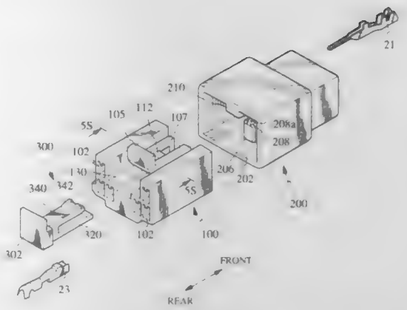
5,628,648
ELECTRICAL CONNECTOR POSITION ASSURANCE SYSTEM
John O. Higgins, Jr., Berwyn, and Scott P. Marceau, Naperville, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Mar. 17, 1995, Ser. No. 407,130
Int. Cl.° H01R *3/00;13/62*
U.S. Cl. 439—489 **14 Claims**



1. A connector position assurance system for an electrical connector adapted to mate with another mateable connecting device, comprising:
said connector including a housing;
a primary locking arm on the housing for movement between a first position when the connector is fully mated with the mateable connecting device and a second position of incomplete mating of the connector with the device, the primary locking arm including a latch for mechanically interlocking with a cooperating latch of the mateable connecting device;
a locking slider mounted directly on the primary locking arm with said locking arm interposed between said locking slider and said housing, said locking slider being slidable on said locking arm between a first position allowing movement of said locking arm and mating of the connector and the device and a second position blocking movement of the locking arm away from its first position with the connector and the device fully mated; and
said primary locking arm in its second position of incomplete mating of the connector with the device said arm blocking movement of the locking slider from its first position to its second position and thereby indicating that the connector and the device are not fully mated.

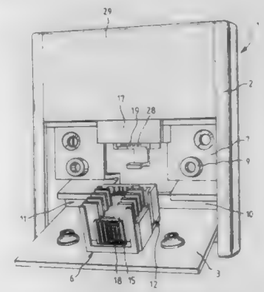
5,628,649
LOCK DETECTING STRUCTURE OF CONNECTOR
Sakai Yagi; Masanori Tsuji, and Keishi Jinno, all of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed May 18, 1995, Ser. No. 443,752
Claims priority, application Japan, Jun. 3, 1994, 6-122483
Int. Cl.° H01R *3/00*
U.S. Cl. 439—489 **7 Claims**

1. A lock detecting structure of connector, comprising:
a first connector housing formed with a deformable lock arm having a lock projection, and with at least one slider stopper inside said first connector housing;
a second connector housing mated with said first connector housing and formed with a lock claw engaged with the lock projection of said first connector housing, and a slider release projection inside said second connector housing;



a slider slidably inserted into said first connector housing and stopped at a temporary engage position due to engagement of said slider with the lock projection and the slider stopper of said first connector housing, said slider including a first deformable slider arm formed with a first slider lock projection engaged with the lock projection of said first connector housing when said slider is inserted into said first connector housing, and deformed inward by the lock claw of said second connector housing when said first and second connector housings are perfectly mated with each other, and said slider including a second deformable slider arm formed with a second slider lock projection engaged with the slider stopper of said first connector housing when said slider is inserted into said second connector housing, and deformed inward by the slider release projection of said second connector housing when said first and second connector housings are perfectly mated with each other; and
when said second connector housing is perfectly mated with said first connector housing and thereby said slider is deformed inward away from the lock projection and the slider stopper of said first connector housing, respectively by the lock claw and the slider release projection of said second connector housing, said slider being further inserted deep into said second connector housing to a lock confirmation position.

5,628,650
TERMINATION UNIT FOR TELECOMMUNICATION AND DATA LINES
Simon Jackson, and Christopher Taylor, both of Cheltenham, England, assignors to Krone AG, Berlin-Zehlendorf, Germany
Filed Dec. 8, 1994, Ser. No. 351,829
Claims priority, application Germany, Dec. 9, 1993, 43 42 517.8
Int. Cl.° H01R *13/74*
U.S. Cl. 439—536 **13 Claims**

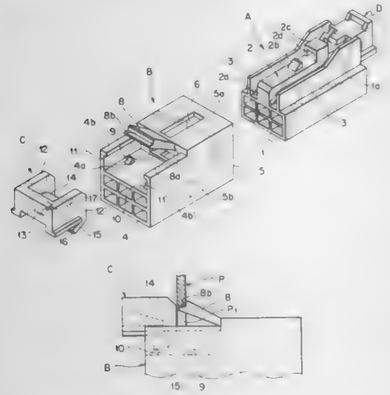


1. A termination unit for telecommunication and data lines, comprising: a front portion; a frame, said front portion being

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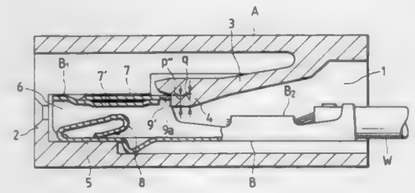
provided formed as one piece together with said frame, said front portion being provided with a removable access cover, said removable access cover having an insertion opening; an electrical plug connector with contact elements for the lines; a plug socket connected to said plug connector, said electrical plug connector and said plug socket being disposed on a rear side of the removable access cover behind said insertion opening; and a component unit disposed on a rear side of said front portion, said component unit being connected to the plug connector and said plug socket.

5,628,651
FIXING MECHANISM FOR CONNECTOR TO STRUCTURAL OBJECT
Makoto Yamanashi, Haibara-gun, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jul. 11, 1996, Ser. No. 682,070
Claims priority, application Japan, Jul. 13, 1995, 7-177177
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—557 **2 Claims**



1. In a fixing mechanism for a connector to a structural object by which a pair of connectors are combined with an opening portion of the structural object through a panel combining arm, in which a locking arm for locking connector housings together is provided at one connector housing of said pair of connectors, and a locking part for said locking arm and a panel combining arm for said structural object are provided at the other connector housing of said pair of connectors, said fixing mechanism for the connector to the structural object comprising:
an engagement securing member having a resilient locking piece mounted on the one connector housing in such a manner as moving freely toward engaging direction thereof;
a combination securing member having both an elastic locking arm with an activating projection activated by said resilient locking piece and an engagement locking projection for said panel combining arm mounted on the other connector housing in such a manner as moving freely toward the engaging position;
an engagement-release driving rod for said resilient locking piece; and
a front locking projection and a rear locking projection for said elastic locking arm, wherein when said connector housings are not in engagement with each other, causing said elastic locking arm of said engagement securing member to engage with said front locking projection, said engagement stopping projection inhibits the displacement of said panel combining arm so as to avoid the combination toward said structural object, while when said connector housings are in engagement with each other, said engagement-release driving rod causes said resilient locking piece to displace so as to release a temporal lock of said resilient locking piece caused by the entering of said resilient locking piece toward the other connector housing, and it causes said elastic locking arm to displace upward by contact between said resilient locking arm and said activating projection activated thereby, said engagement securing member is capable of being retreated by releasing the engagement between said resilient locking piece and said activating projection, whereby said opening portion of said structural object is capable of combining with said panel combining arm with said displacement-inhibition of said panel combining arm released.

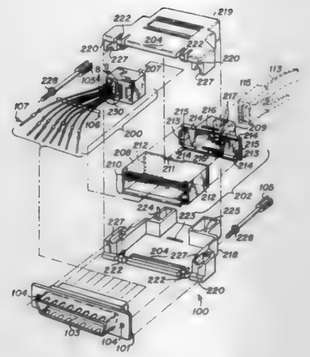
5,628,652
TERMINAL RETAINING STRUCTURE FOR CONNECTOR
Hideki Ohsumi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Mar. 22, 1995, Ser. No. 408,291
Claims priority, application Japan, Mar. 22, 1994, 6-050208
Int. Cl.[6] H01R *13/422*
U.S. Cl. 439—595 **5 Claims**



1. A connector comprising:
a connector housing;
a terminal receiving chamber provided in the connector housing;
a flexible holding strip provided in the terminal receiving chamber, the flexible holding strip having a retaining projection;
a metal terminal retainable in the terminal receiving chamber by the flexible holding strip, the metal terminal comprising a top plate portion, said top plate portion having a laminated plate portion, said laminated plate portion extending away from the metal terminal in a direction opposite an insertion direction of the metal terminal;
said laminated plate portion consisting of a thin rolled plate folded onto itself with its folded edge abutting against the retaining projection when the metal terminal is retained in the terminal receiving chamber.

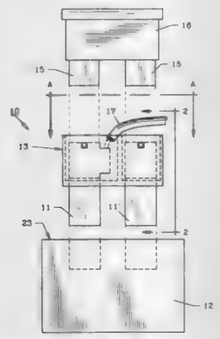
5,628,653
SHIELDED MODULAR ADAPTER
Orville A. Haas, Pocahontas, Ark., and Edward A. Karale, Fremont, Calif., assignors to Regal Electronics, Inc., Santa Clara, Calif.
Filed Mar. 12, 1996, Ser. No. 614,092
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—607 **20 Claims**

1. A shielded modular adapter (**100**) for reducing electromagnetic interference and coupling a modular cable (**113**) having a first modular connector (**115**) to another connector, the shielded modular adapter comprising:
a second modular connector (**207**) for coupling to the first modular connector (**115**) of the modular cable (**113**);
a plurality of insulated wire cables (**106**) coupled at a first end to the second modular connector (**207**);
a plurality of pins (**107** or **707**) coupled to a second end of the plurality of insulated wire cables (**106**);



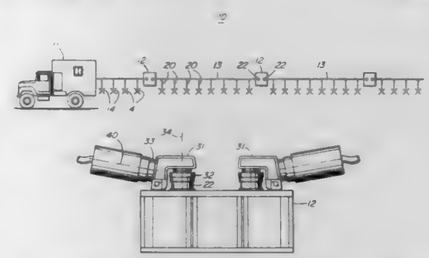
an electromagnetic shield (**202** or **708**) substantially surrounding the second modular connector (**207**) and the plurality of insulated wire cables (**106**) for reducing electromagnetic interference;
a third connector (**101** or **701**) with a plurality of pin holes (**103** or **703**) to receive the plurality of pins (**107** or **707**) and for electrically coupling to the electromagnetic shield (**202** or **708**); and
a housing (**204** or **709**) coupled to the electromagnetic shield (**202** or **708**) and the third connector (**101** or **701**), the housing having a first and second opening, the first opening for exposing the electromagnetic shield (**202** or **708**) and the second modular connector (**207**) and the second opening including top and bottom edges having hooks (**222**) for accepting and coupling the third connector (**101** or **701**) to the housing (**204** or **709**).

5,628,654
VEHICLE ACCESSORY CONNECTOR
Dewey R. Lineberry, Jr., 3214 Alder Way, Greensboro, N.C. 27407-6748
Filed Jun. 12, 1995, Ser. No. 489,442
Int. Cl.[6] H01R *13/68*
U.S. Cl. 439—622 **11 Claims**



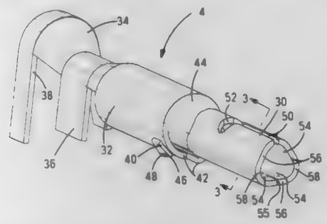
1. A connector comprising: a housing, a first connector blade extending from said housing, said first connector blade comprising a side tab, said side tab being substantially coplanar with said first connector wire blade, an accessory conductor, said accessory conductor wire directly connected to said side tab and in electrical communication with said first connector blade, said accessory conductor wire extending from said housing, said housing defining a first fuse blade receptacle, said first fuse blade receptacle for providing electrical communication between said first connector blade and a fuse positioned in said first fuse blade receptacle.

5,628,655
FIELD REPLACEABLE CONNECTOR FOR SEISMIC INSTRUMENT
Donald G. Chamberlain, Site 36, Box 43, RR 4, Calgary, Alberta, Canada
Filed Jun. 7, 1995, Ser. No. 480,277
Int. Cl.[6] H01R *11/00*
U.S. Cl. 439—651 **4 Claims**



1. A removable connector operable to be inserted between the end of a cable connector of a main cable carrying data from a remotely located transducer and a box connector located on a remote acquisition module, said removable connector comprising first and second sub-connectors, said first sub-connector being operable to be connected to said cable connector of said main cable and said second sub-connector being operable to be connected to said box connector of said remote acquisition module, one of said first and second sub-connectors being a male connector and the other of said first and second sub-connectors being a female connector, and means for securing said connector to said remote acquisition module, said securing means being a hole in said connector and means extending from said hole to said remote acquisition module thereby to maintain said connector substantially fixed relative to said module.

5,628,656
HIGH DENSITY PIN AND SOCKET ELECTRICAL CONNECTOR
Lawrence Macioce, Kernersville, and Peter G. Nielsen, King, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.
Division of Ser. No. 327,258, Oct. 21, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 599,468
Int. Cl.[6] H01R *13/11*
U.S. Cl. 439—851 **4 Claims**



1. A stamped and formed socket terminal having a generally triangular shaped socket section for engaging a pin inserted into the socket section, the socket section having three sides, a seam formed by opposed edges of the stamped and formed terminal

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being located on a first side and extending the full length of the contact section, a slot located at an apex formed by second and third sides of the triangular socket section, the slot extending longitudinally for only a portion of the length of the socket section, inwardly formed dimples on each of the three sides of the socket section, the dimples defining contact points.

5,628,657

LOADING/UNLOADING BUOY

Kare Breivik, Tau; Arne Smedal, Farvik, and Kare Syvertsen, Arendal, all of Norway, assignors to Den Norske Stats Oljeselskap A.S., Stavanger, Norway

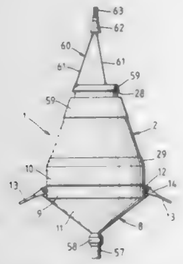
PCT No. PCT/NO93/00070, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO93/22190, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 29, 1993, Ser. No. 331,528

Claims priority, application Norway, Apr. 30, 1992, 921704

Int. Cl.[6] B63B *21/00*

U.S. Cl. 441—5 **10 Claims**



1. A buoy for use in loading or unloading of a flowable medium, especially oil, comprising an outer buoyancy member arranged to be introduced and secured in a submerged downwardly open receiving space in a floating vessel, said outer buoyancy member having an at least partly upwardly tapering shape for mating with the receiving space, and an upwardly tapering lower surface, a central member rotatably mounted in said outer member, which central member is intended for anchoring to the sea bed and is arranged for passage of medium between a transfer line which, in operation, is coupled to the lower end of said central member and a tube system on the vessel, wherein said central member is provided with a lower extension body having an outer peripheral portion with an upwardly tapering upper surface abutting on and essentially corresponding to the upwardly tapering lower surface, of said outer buoyancy member, and having a lower portion which is downwardly tapering from said outer peripheral portion, said lower extension body comprising at least one buoyancy chamber for receiving buoyancy or ballast material.

5,628,658

FLOTATION DEVICE UTILIZING CYLINDRICAL FOAM TUBES

Pater A. Clifford, 640 Unity Rd., Benton, Me. 04927

Filed Dec. 7, 1995, Ser. No. 568,963

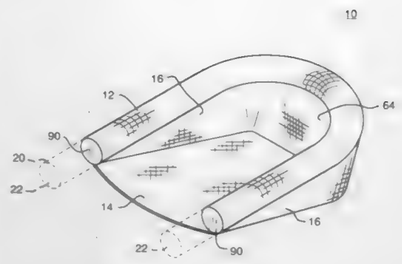
Int. Cl.[6] B63C *9/08*

U.S. Cl. 441—130 **10 Claims**

1. A flotation device used to form a chair-shaped flotation aid for supporting a user, said flotation device using a cylindrical foam tube having a length much greater than its diameter, said device comprising:

a flexible fabric comprising a first section of sleeve and a second section of sleeve, wherein said first section and said second section have a predetermined alignment with respect to one another;

said flexible fabric further comprising:



a seat section having a front end and a back end, and two side ends, wherein the back end and the two side ends of said seat section are attached to said first and second sections of sleeve, such that inserting said cylindrical foam tube into said sections of sleeve of said flexible fabric causes said cylindrical foam tube to be curved forming said seat section into a chair-shaped flotation aid which provides support for a portion of the user's body.

5,628,659

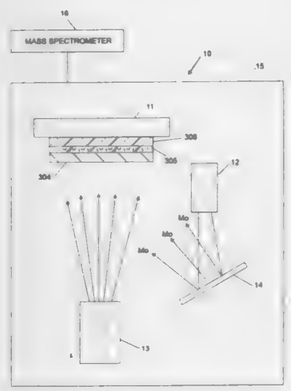
METHOD OF MAKING A FIELD EMISSION ELECTRON SOURCE WITH RANDOM MICRO-TIP STRUCTURES

Chenggang Xie, Cedar Park; Nalin Kumar, Canyon Lake, and Howard K. Schmidt, Houston, all of Tex., assignors to Microelectronics and Computer Corporation, and SI Diamond Technology, Incorporated, both of Austin, Tex.

Filed Apr. 24, 1995, Ser. No. 427,464

Int. Cl.[6] H01J *1/30;9/42;9/02*

U.S. Cl. 445—3 **18 Claims**



1. A method of fabricating a field emitter device, said method comprising the steps of:

providing a substrate;

depositing an emitter material on said substrate;

sputtering a seed material onto a surface of said emitter material by bombarding a target material with a first ion beam; and

etching said emitter material, which has been sputtered with said seed material, with a second ion beam, wherein said substrate includes a layer of a second material on which said emitter material has been deposited by said depositing step, further comprising the step of:

stopping said etching step upon detection of a predetermined amount of said second material.

5,628,660

BONDING APPARATUS AND BONDING METHOD OF DEVICES

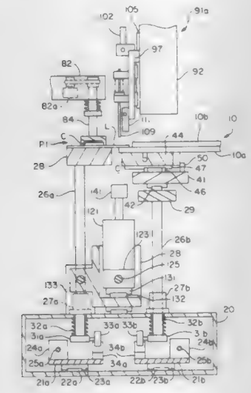
Yasuto Onitsuka, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 27, 1995, Ser. No. 429,871

Claims priority, application Japan, Apr. 28, 1994, 6-091401

Int. Cl.[6] H05K *3/30*

U.S. Cl. 445—24 **24 Claims**



1. A device bonding apparatus, being a bonding apparatus for bonding a second electrode formed on a device by positioning on first electrodes formed on plural bonding positions in a marginal area of a display panel, comprising:

(a) a first support section for supporting the middle of the display panel from beneath,

(b) a second support section for supporting the plural bonding positions in a marginal area of the display panel from beneath, the second support section being separated from the first support section,

(c) positioning means for positioning the second electrode of the device on the first electrode formed in one of the plural bonding positions in the marginal area of the display panel,

(d) bonding means for bonding the positioned device by pressing on the display panel, and

(e) distance changing means for changing the distance between the first support section and second support section in the horizontal direction.

5,628,661

METHOD FOR FABRICATING A FIELD EMISSION DISPLAY

Jong-min Kim, Seoul, and Nam-sin Park, Suwon, both of Rep. of Korea, assignors to Samsung Display Devices, Co., Ltd., Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 473,206

Claims priority, application Rep. of Korea, Jan. 27, 1995, 95-1582

Int. Cl.[6] H01J *1/30;9/02*

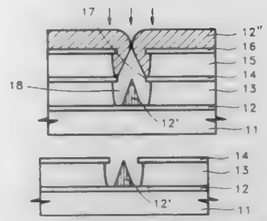
U.S. Cl. 445—24 **13 Claims**

3. A method for fabricating field emission device, said method comprising the steps of:

forming a cathode pattern comprising a layer of conductive material on an insulation substrate;

forming an insulation layer pattern comprising insulating material of a predetermined thickness over said cathode layer pattern;

forming a gate electrode layer pattern, comprising a layer of conductive material on said insulation layer;



forming a release layer pattern comprising a polymer with high temperature stability, over said gate electrode layer pattern; and

forming micro-tips by depositing field emitting material over said release layer pattern; and

etching said release layer pattern.

5,628,662

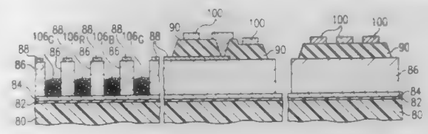
METHOD OF FABRICATING A COLOR FIELD EMISSION FLAT PANEL DISPLAY TETRODE

Kenneth G. Vickers, Whitesboro; Henry S. Yan, and Kurt P. Wachtler, both of Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1995, Ser. No. 521,510

Int. Cl.[6] H01J *9/227*

U.S. Cl. 445—24 **34 Claims**



34. A method of fabricating an anode plate suitable for use in a field emission tetrode, said method comprising the steps of:

(a) providing a substrate having a layer of an electrically conductive material on a surface thereof;

(b) depositing an insulating layer over said layer of electrically conductive material;

(c) forming a plurality of conductive stripes on said insulating layer; and

(d) etching said insulating layer between said conductive stripes, so as to create substantially vertical sidewalls, down to said layer of electrically conductive material.

5,628,663

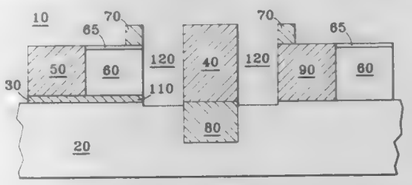
FABRICATION PROCESS FOR HIGH-FREQUENCY FIELD-EMISSION DEVICE

Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.

Filed Sep. 6, 1995, Ser. No. 524,171

Int. Cl.[6] H01J *9/02*

U.S. Cl. 445—49 **19 Claims**

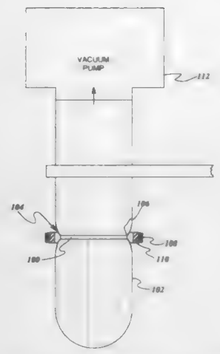


1. A method of fabricating a high frequency field emission device, comprising the steps of:

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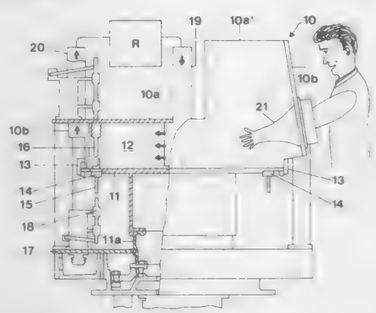
(a) providing an insulating substrate;
(b) disposing and patterning a conductive anode contact on said substrate;
(c) disposing and patterning a thin conductive emitter film on said substrate, said emitter film being spaced apart from said anode contact;
(d) disposing an insulating film over said anode contact and said emitter film;
(e) patterning and etching said insulating film to provide openings at least partially aligned to said anode contact and to said emitter film, filling said openings with a conductive material to form contacts, and planarizing the resulting surface to form a planarized surface;
(f) depositing a first sacrificial material, covering said planarized surface;
(g) providing an opening through at least said first sacrificial material, said insulating film, and said emitter film, thereby forming an edge on at least said emitter film, said opening having side walls;
(h) disposing a second sacrificial material to a first predetermined thickness only on said side walls of said opening;
(i) filling said opening at least partially with conductive material to form an anode and planarizing the resulting surface;
(j) removing said first sacrificial material, thereby exposing an outer wall surface of said second sacrificial material;
(k) disposing a conformal conductive material to a second predetermined thickness over said anode, said contacts, and said insulating film, while controlling said second predetermined thickness to be a minor fractional part of said first predetermined thickness;
(l) directionally etching said conformal conductive material while leaving conformal conductive material in contact with said outer wall surface of said second sacrificial material to form a control electrode;
(m) removing said second sacrificial material;
(n) providing means for applying an electrical bias voltage to said emitter layer and to said anode contact layer, said bias voltage to be applied being sufficient to cause cold cathode emission current of electrons from said edge of said emitter layer to said anode; and
(o) providing means for applying an electrical control signal to said control electrode sufficient to control said current of electrons.

5,628,664
SYSTEM FOR MANUFACTURING X-RAY TUBES
Thomas R. Raber, East Berne; Robert J. Zabala, Schenectady; Mark G. Benz, Burnt Hills, and William J. Jones, Altamont, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 2, 1995, Ser. No. 538,145
Int. Cl.[6] H01J *9/385*
U.S. Cl. 445—70 **22 Claims**



1. A system for sealing a large diameter tube under vacuum comprising:
a tube;
a disk operatively positioned inside the tube and having a smaller diameter than the tube;
a vacuum operatively connected to the tube;
heating means, operatively positioned on the outside of the tube, for heating the tube to a temperature sufficient to collapse the tube into the disk;
means for positioning the disk inside the tube proximate the position of the heating means on the outside of the tube; and
means for cooling the tube proximate the disk sufficiently to formulate a seal between the tube and the disk where the tube collapsed into the disk.

5,628,665
GLOVE BOX
Dieter Lang, Holzkirchen; Anton Schloegl, Langweid, and Dieter Deckardt, Augsburg, all of Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Germany
Filed May 24, 1995, Ser. No. 449,428
Claims priority, application Germany, Jun. 29, 1994, 44 22 419.2
Int. Cl.[6] H01J *9/38*
U.S. Cl. 445—73 **15 Claims**



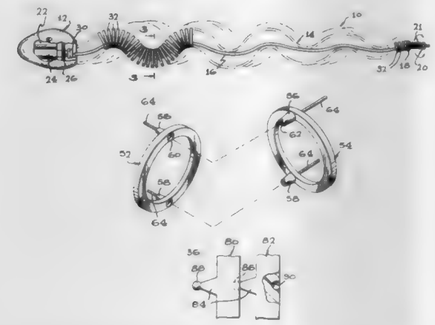
1. A glove box having a bottom (**2**, **11**, **51**), side parts (**1***b*, **10***b*, **52***a*) and hood parts (**1***a*, **10***a*, **10***a'*), said bottom, said sides and said hood part defining a gas-tight interior space (**12**),
wherein, in accordance with the invention,
said bottom (**2**, **11**, **51**) is rotatable;
product holders (**3**, **14**) are provided, gas-tightly secured to said bottom, and formed with a through-duct (**23**) for gas-tightly receiving products (**4**, **15**) extending in part into the interior space (**12** of the glove box and, in part, outside thereof,
said product holders being located on said bottom (**2**, **11**, **51**) along a circle or arc concentric with the axis of rotation of said bottom;
internal processing devices (**16**) or work-stations are provided, located within the interior space (**12**) of the glove box for working on the portions of the products within the interior space; and
external processing devices or work-stations (**18**) are provided, located outside of the glove box and positioned for operating on the portions of the products (**4**, **15**) extending outside of said product holders (**3**, **14**).

5,628,666
TOY BUILDING CHIP
John Tomczyk, Grand Prairie; Russell LaCoste, Collyville, and Mark A. Celeste, Lake Dallas, all of Tex., assignors to Pinnacle Brands, Inc., Grand Prairie, Tex.
Filed Feb. 2, 1995, Ser. No. 382,734
Int. Cl.[6] A63H *33/08*
U.S. Cl. 446—125 **11 Claims**



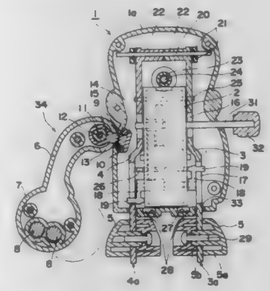
1. A toy for creating a unique arrangement of cooperating pictorial and spatial elements, the toy comprising:
a first circular disc having a predetermined thickness, the first circular disc having at least one slot extending radially inward from the perimeter of the first circular disc,
said first circular disc including first and second faces, wherein the first face comprises a lenticular surface alternatively displaying at least two images, depending upon the angle at which the first face is viewed;
a second circular disc having substantially the same predetermined thickness as the first circular disc, the second circular disc having at least one slot extending radially inward from the perimeter of the second circular disc; and
the first circular disc and second circular disc secured together in any one of a plurality of arrangements by engaging a slot of the first circular disc with the second circular disc, the first and second circular discs are operable by the user to collectively form any one of a plurality of images when so engaged where each one of the plurality of images comprises a unique arrangement of cooperating pictorial and spatial elements.

5,628,667
SINUOUS TOY
Shimon Levi, 6542 Tony Ave., West Hills, Calif. 91307
Filed Feb. 26, 1996, Ser. No. 606,926
Int. Cl.[6] A63H *11/12*
U.S. Cl. 446—278 **17 Claims**



1. A sinuous toy comprising:
a plurality of body elements arranged together in a generally longitudinal orientation, each said body element being substantially configured as a ring having a substantially circular interior opening and a substantially circular external surface, each of said body elements having two posts thereon, said posts being configured to engage against the adjacent body element, said posts being substantially diametrically opposite each other on said body element and said posts defining an axis of rotation of said body element with respect to said adjacent body element, said axis of rotation extending generally upright with respect to a surface on which the sinuous toy is resting so that sinuosity is substantially limited to a lateral direction with respect to said axis and with respect to the longitudinal direction of said sinuous toy; and
a helical actuator positioned generally longitudinally of said sinuous toy and extending through said openings in said body elements, said helical actuator being rotatable in said body elements and having a helical diameter at least as large as the opening in each said body element at that body element position along the length of said sinuous toy.

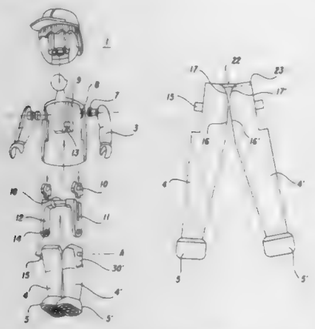
5,628,668
WALKING DOLL
Kunitaka Takemae, Tokyo, Japan, assignor to Seikoken Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 20, 1995, Ser. No. 492,485
Claims priority, application Japan, Jun. 22, 1994, 6-163223
Int. Cl.[6] A63H *7/00;13/00*
U.S. Cl. 446—355 **20 Claims**



1. A walking doll comprising:
a body;
a power crank mechanism in the body;
a pair of feet having the same length as each other, the feet each having upper ends extending into the body and connected to and driven by the power crank mechanism, the feet being driven in an oscillating direction in a forward and rearward manner with respect to the body, for alternately oscillating the feet back and forth by force, the feet having lower ends extending outside the body on which the body stands erect on a floor, the lower ends being fixed to and only movable with the upper ends of the feet, the lower ends of the feet each having a narrow surface in contact with the floor, each narrow surface having a curvature in said oscillating direction and being narrow transverse to said oscillating direction, both of the feet being constantly in contact with the floor when the doll is walking; and
a member for adjusting a position of a gravitational center of the walking doll, the member being movably connected to the body and free of the power crank mechanism for movement, in a first plane which is parallel to the oscillating direction and also for movement in another plane which is orthogonal to the first plane, so that the member is movable for a three-dimensional shifting of position of the gravitational center, forwardly, backwardly and outwardly with respect to the body.

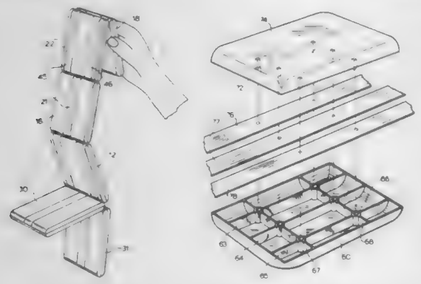
VOL 1198 ISS 2 MY 13 1997 UMI

5,628,669
TOY FIGURE WITH SPREADING LEGS
Kurt Hesse, Waldstrasse 36, W-8510 Fürth/Bayern, Germany
Filed Sep. 9, 1993, Ser. No. 118,892
Claims priority, application Germany, Sep. 9, 1992, 42 29 798.2
Int. Cl.° A63H *3/46;3/16*
U.S. Cl. 446—382 1 Claim



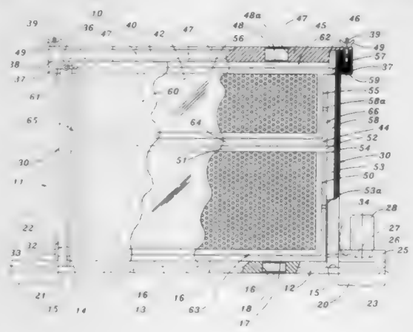
1. A toy figure, comprising a downwardly open body shell, arms attached to said body shell, a support member inserted into and attached to said body shell, legs attached to said support member, means operatively associated with said support member and said legs for allowing said legs to assume a spread-apart position by spreading said legs outwardly from a defined basic, substantially closed position; and force means for providing a restoring force for biasing said legs toward said substantially closed position and for automatically returning said outwardly spread-apart legs into said substantially closed position, said force means including a transverse extension attached to one of said legs and a corresponding opening formed in the other of said legs receiving said extension.

5,628,670
TOY CONSISTING OF INTERCONNECTED HINGED BLOCKS
Allan F. Hill, 117 Brulo Trail, Kettleby, Ontario, Canada
Filed Sep. 21, 1995, Ser. No. 531,592
Int. Cl.° A63H *33/00*
U.S. Cl. 446—487 1 Claim



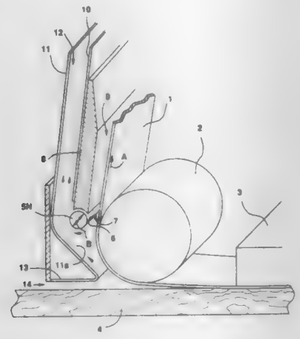
1. A Jacob's Ladder type toy comprising in combination; a set of substantially square blocks hingedly interconnected in a linear series by three ribbons fixed at both ends of each said substantially square blocks to both ends of each adjacent said substantially square blocks running from the ends of said substantially square blocks over the surfaces of said substantially square blocks to the ends of each adjacent said substantially square blocks wherein each of said substantially square blocks consists of two mating plates made of a dimensionally stable plastic, one half of said mating plates having a first hollow cavity with first ribs with round sockets formed at each crossing of said first ribs and the other half of said mating plates having a second hollow cavity with second ribs lining up and matching said first ribs with square pointed pins formed at each crossing of said second ribs, which when said mating plates are fixed together said square pointed pins pierce said ribbons, where each said ribbons consist of one continuous piece running from the first of said substantially square blocks in said series to the last of said substantially square blocks in said series and each of which passes between said mating plates of each said substantially square blocks, and said square pointed pins are seated in said round sockets thereby holding said mating plates together while holding said ribbons firmly in the interior of said substantially square blocks by both said first ribs and said second ribs and said square pointed pins.

5,628,671
OBSERVATION HIVE
John A. Stevens, 238 Kennedy Ave., Schererville, Ind. 46375
Filed Apr. 6, 1995, Ser. No. 417,789
Int. Cl.° A01K *47/06*
U.S. Cl. 449—6 19 Claims



1. An observation hive for honey bees and the like comprising: a main frame including a bottom frame member and two opposed side frame members spaced apart a predetermined lateral distance and spaced-apart front and rear top frame members, spaced-apart front and rear walls disposed within said main frame respectively against said front and rear top frame members and cooperating with said bottom and side frame members to define an open-top chamber, at least one of said walls being transparent, a removable cover overlying said side and top frame members for closing Said chamber, a honeycomb frame removably mounted in said chamber and spaced from said bottom frame member and from said cover and from said walls, each of said bottom frame member and said cover having at least one ventilation opening formed vertically therethrough and communicating with said chamber to accommodate air flow vertically through the entire vertical extent of said chamber, each of the openings having a lateral dimension substantially less than the predetermined lateral distance and being spaced from said side frame members and from said front and rear walls, support pedestals connected to said bottom frame member for establishing a clearance space therebeneath, and screens respectively covering said ventilation openings to permit passage of air and prevent passage of bees, said openings being dimensioned to afford adequate air flow to remove moisture from said chamber.

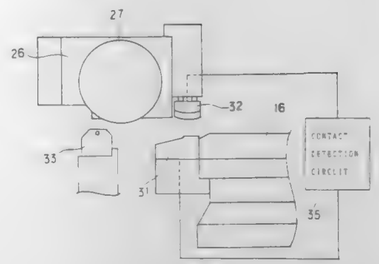
5,628,672
BLOWING DEVICE FOR A BELT GRINDING MACHINE
Jürgen Heesemann, Bessinger Strasse 27, 32547 Bad Oeynhausen, Germany
Filed Jan. 11, 1996, Ser. No. 584,344
Claims priority, application Germany, Jan. 11, 1995, 195 00 611.9
Int. Cl.° B24B *21/18;21/00*
U.S. Cl. 451—5 20 Claims



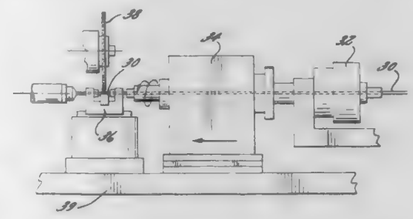
1. A blowing device for a belt grinding machine, comprising:
a nozzle arrangement adapted to be positioned relative to a grinding belt of the grinding machine, wherein the nozzle arrangement is adapted to provide cleaning air jets onto the grinding belt; and
a driver for oscillating the nozzle arrangement along a longitudinal direction of the nozzle arrangement, the driver comprising:
a mount for holding and guiding the nozzle arrangement in the longitudinal direction; and
a ferromagnetic member connected to the nozzle arrangement;
a magnetic field generator for generating a magnetic field, wherein the ferromagnetic member is positioned adjacent the magnetic field generator and is moved by varying the magnetic field, the nozzle arrangement being moved along the longitudinal direction by moving the ferromagnetic member.

5,628,673
DICING MACHINE WITH NON-CONTACT SETUP FUNCTION
Masaya Morooka, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan
Filed Nov. 17, 1994, Ser. No. 341,514
Claims priority, application Japan, Nov. 26, 1993, 5-321202; Nov. 26, 1993, 5-321204
Int. Cl.° B24B *49/10*
U.S. Cl. 451—9 25 Claims

1. A dicing machine with non-contact setup function comprising:
a machining table for holding a semiconductor wafer;
a cutting blade for cutting the semiconductor wafer held by the machining table;
gap detection means for detecting a gap between the cutting blade and an upper surface of the machining table to be in a predetermined value;
position controlling means for moving the cutting blade and the gap detection means in a vertical direction, and for recognizing their positions;
non-contact detection means for detecting the gap detection means and a cutting edge of the cutting blade in a condition of non-contact, the non-contact detection means being placed at a standard position for determining the cutting blade position at a cutting position of the semiconductor wafer; and
arithmetic operation means for calculating the cutting position of the semiconductor wafer in accordance with a position recognized by the position controlling means when a predetermined gap between the cutting blade and the upper surface of the machining table is detected by the gap detection means, and also from positions recognized by the position controlling means when the gap detection means and the cutting edge of the cutting blade are detected by the non-contact detection means.



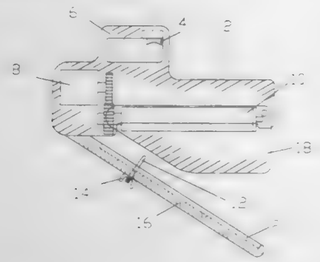
5,628,674
ENDODONTIC INSTRUMENT
Derek E. Heath, and Jerry A. Mooneyhan, both of Johnson City, Tenn., assignors to Tulsa Dental Products, L.L.C., Tulsa, Okla.
Continuation of Ser. No. 76,367, Jun. 14, 1993, Pat. No. 5,527,205, which is a continuation of Ser. No. 787,945, Nov. 5, 1991, abandoned. This application May 7, 1996, Ser. No. 646,030
Int. Cl.° A61C *3/00*
U.S. Cl. 451—48 7 Claims



1. An endodontic instrument that is flexible and resistant to torsional breakage and that is adapted for use in performing root canal therapy on a tooth, comprising:
a cylindrical elongate shank composed of an alloy comprising at least about 40% titanium and having a diameter not greater than about 0.07 inches, said elongate shank further having a proximate end and an opposite pilot end so as to define a working length adjacent said pilot end; and
at least one ground flute extending helically around said shank working length, said one flute defining at least one cutting edge, and with the cutting edge being formed by moving the shank past a grinding wheel only once and which defines an as-ground condition of said cutting edge which is sharp and substantially free of rolled deformed metal.

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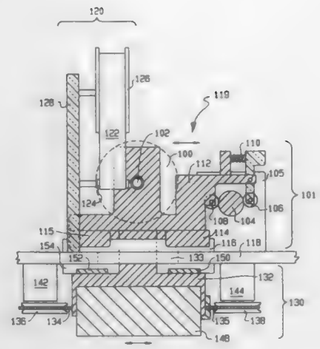
5,628,675
PIPE END BEVELING APPARATUS
Terry S. Brown, 1216 Cedar Tree La., Seffner, Fla. 33584, and Donald A. Nicholson, 1216 Cedar Tree La., Tarpon Springs, Fla. 34689
Filed Oct. 23, 1995, Ser. No. 546,784
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—49 **7 Claims**



6. A method for beveling the outer surface of the end of a pipe comprising the steps of providing an end of a pipe and a pipe end beveling device having a wing nut, a locking bolt, an adjustable alignment edge, two slots, an aligning arm, an on/off switch, a handle, a motor, a plurality of abrasive cylinders, and a plurality of safety shields; unscrewing said wing nut from said locking bolt to unlock said alignment edge; positioning said alignment edge along said slots in said aligning arm into a preferred position for removal of a desired amount of material from said end of the pipe; securing said alignment edge with said locking bolt and said wing nut against said aligning arm in said preferred position; using said on/off to start said motor which causes each of said abrasive cylinders to rotate about its axis; picking up said pipe end beveling device and positioning said end of said pipe between said abrasive cylinders and said aligning arm; while holding said pipe against said abrasive cylinders and said aligning arm, using said handle to manually rotate said pipe end beveling device around said end of said pipe to safely, quickly and uniformly bevel said end of said pipe while debris removed from said end of said pipe is channeled between said safety shields and said aligning arm away from an operator, said desired amount of said material being removed from said pipe when forward movement of said end of said pipe between said aligning arm and said abrasive cylinders is prevented by said aligmnent edge.

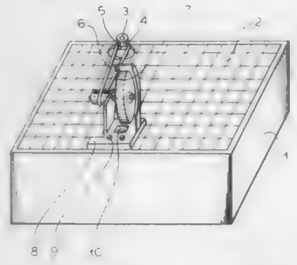
5,628,676
COUNTER-BALANCE FOR DISK TEXTURIZING APPARATUS
Jon A. Hoshizaki, Cupertino, Calif., assignor to Exclusive Design Company, Fremont, Calif.
Filed Mar. 2, 1995, Ser. No. 397,622
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—168 **7 Claims**

1. An apparatus for texturizing a disk, comprising:
a frame;
a spindle assembly including a rotatable spindle adapted to hold a disk for rotation, said spindle assembly mounted on the frame;
a texturizing assembly mounted on the frame, said assembly configured and dimensioned to position a texturizing medium in contact with a disk held on and rotated by the spindle;
means for creating relative translatory oscillation as between the spindle assembly and the texturizing assembly, wherein one of said assemblies is stationary with respect to the frame and the other of said assemblies translates in first and second opposite directions with respect to the frame;
a counter-balance mounted on the frame for translational movement with respect to the frame, said counter-balance cooperating with said translating assembly to move in response to



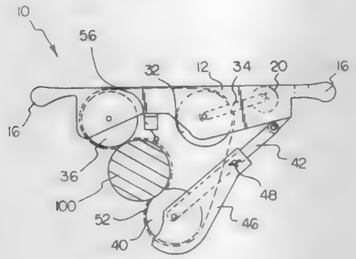
movement of said translating assembly in the direction opposite the direction of movement of the translating assembly; and
a mechanical linkage adapted to impart translational movement to the counter-balance in response to the translational movement of the translating assembly wherein the mechanical linkage comprises two support elements mounted on the frame on opposite sides of the counter-balance and a flexible force transmitting element passing around each support element and attached at one end to said spindle assembly and at another end to said counter-balance, and wherein at least one end of one of said flexible force transmitting elements is secured to the counter-balance by a spring biased connection.

5,628,677
APPARATUS FOR MACHINING GLASS
Heinz Herrmann, Leipziger Strasse 105, D-47918 Tönisvorst, Germany
Filed Jul. 18, 1996, Ser. No. 683,229
Claims priority, application Germany, Jul. 20, 1995, 295 11 748.6
Int. Cl.[6] B24B *7/00;9/00*
U.S. Cl. 451—231 **9 Claims**



1. An apparatus for machining glass, the apparatus comprising:
a housing forming an upwardly open water-holding reservoir;
a horizontal screen forming a support surface and covering the housing;
a drive motor in the housing having an output shaft extending upward through the screen;
a drive wheel on the output shaft above the screen;
a mount on the housing at the screen;
a machine base;
means releasably securing the base on the screen at the mount; and
a glass-machining tool mounted on the base and releasably connected to the wheel.

5,628,678
SHAFT SANDING DEVICE
Frank Tridico, 555 West 28th Street Unit 903, North Vancouver, British Columbia, Canada
Filed May 3, 1996, Ser. No. 642,456
Int. Cl.[6] B24B *21/00*
U.S. Cl. 451—296 **3 Claims**



1. A shaft sanding device for engaging a circular object to be sanded comprising, in combination:
a main housing comprised of a receiving chamber, the main housing having opposed end portions with a handle portion disposed thereon;
a motor secured within the receiving chamber of the main housing, the motor having a pair of power switches electrically coupled therewith, the pair of power switches disposed within the handle portions in the opposed portions of the main housing, the motor having means for coupling with a power source;
a drive roller secured within the receiving chamber of the main housing, the drive roller having a drive arm extending outwardly therefrom to couple with the motor;
a first idle roller secured within the receiving chamber of the main housing opposed from the drive roller, the first idle roller having a diameter equal to a diameter of the drive roller;
a second idle roller having a resilient arm rotatably coupled therewith, the second idle roller having a diameter equal to the diameter of the first idle roller and the drive roller, the resilient arm pivotally coupled to the receiving chamber of the main housing adjacent to the motor secured therein, the resilient arm biasing the second idle roller away from the main housing;
a dust guard removably secured to the resilient arm disposed over the second idle roller;
a sand paper belt disposed around the drive roller, the first idle roller, and the second idle roller; and
a limit switch secured within the receiving chamber of the main housing intermediate the drive roller and the first idle roller, the limit switch cooperating with either of the pair of power switches for activation of the motor, the limit switch having a switch portion extending downwardly therefrom corresponding with a distal arc of the drive roller and the first idle roller.

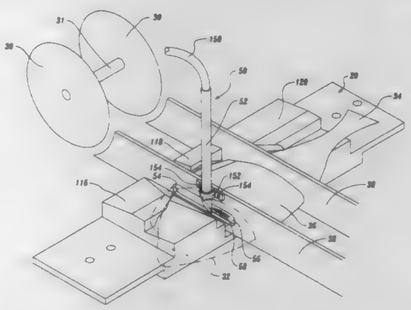
5,628,679
HOLDER FOR AN ABRADING DISK TOOL
Chujiro Shiga, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 27, 1995, Ser. No. 495,342
Int. Cl.[6] B24D *17/00;9/04*
U.S. Cl. 451—508 **16 Claims**

1. A holder for an abrading disk tool, the holder comprising:
first and second compatible holder halves;
wherein each of said first and second holder halves comprises a base having a central axis and includes a pole axially extending from the base;



wherein each of the poles includes a snap detent means, the detent means in the first holder half being engaged in a male-female relation with a corresponding detent means in the second holder half;
whereby the detent means axially inter-lock the first and second holder halves together with the bases facing one another and with the poles extending therebetween.

5,628,680
WATER JET FISH CLEANING APPARATUS FOR KIRIMI PROCESSOR
Jens Hjorth, Seattle, Wash., assignor to Royal Seafoods, Inc., Seattle, Wash.
Filed Sep. 8, 1995, Ser. No. 525,489
Int. Cl.[6] A22C *25/14*
U.S. Cl. 452—106 **12 Claims**

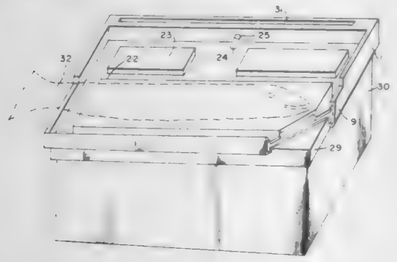


1. An apparatus for processing flat fish into kirimi, the apparatus comprising:
(a) a tray for holding and locating the flat fish on a processing conveyor;
(b) at least one head and tail cutter for removing the head and tail of the flat fish to form a center portion of kirimi as the flat fish is moved along a processing path; and
(c) a water jet cleaning system for removing a blood spot and remaining internal organs in the center portion, the water jet cleaning system including a water jet nozzle located downstream from the head and tail cutters along the processing path, the water jet nozzle having an outlet water passage directed into a cavity in the center portion of the flat fish, the

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water jet cleaning system producing a high pressure stream of water that flows through the outlet passage into the cavity to remove the blood spot of the flat fish.

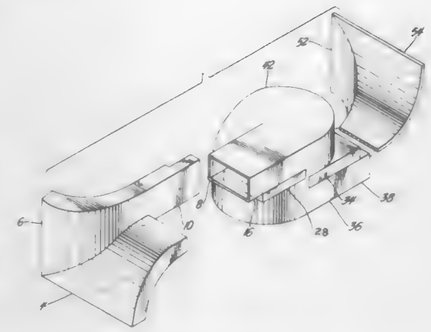
5,628,681
FISH CLEANING BOARD
Robert J. White, 1205 N. L St., Lake Worth, Fla. 33460, and Richard W. White, 3006 French Ave., Lake Worth, Fla. 33461
Filed Jun. 17, 1996, Ser. No. 664,736
Int. Cl.[6] A22C *25/06*
U.S. Cl. 452—194 **16 Claims**



1. A fish cleaning board for mounting on the top of a cooler and for also mounting on a flat surface, the board comprising:
a rigid, substantially rectangular panel having a top surface, a bottom surface and a perimeter comprising a front edge, side edges and a back edge;
a flange extending downward from the perimeter and having a lowermost portion adapted to snugly encircle and engage a cooler top on the sides thereof;
an upper portion of the flange attached to the lowermost portion and having a lesser perimetral dimension than the lowermost portion for resting upon the cooler top on the upper surface thereof when the lowermost portion encircles the sides for secure mounting thereon;
the perimeter provided with an upwardly directed fence extending along the back edge and part way along the side edges at a first elevation and extending along the balance of the side edges at a second elevation and along the front edge at a third elevation, the first elevation being greater than the second elevation and the second elevation being greater than the third elevation;
the top surface of the panel having a lower surface that slopes downward from the front edge to the back edge when the board is mounted on a cooler top or when mounted on a flat horizontal support surface;
a large flat horizontal first platform attached to and elevated above the sloping lower surface for cleaning fish thereon; and
at least one additional flat horizontal platform attached to and elevated above the sloping lower surface and positioned closer to the back edge than the first platform for holding cleaned fish.

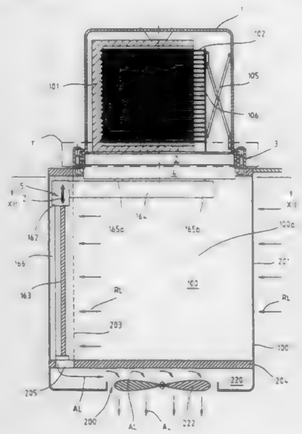
5,628,682
BALLISTICALLY PROTECTIVE AIR PASSAGE
Rene G. Gonzalez, Oakland County, Mich., assignor to The U.S. Government as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 77,759, Jun. 17, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,133
Int. Cl.[6] B60H *1/30*
U.S. Cl. 454—143 **12 Claims**

2. A ballistically protective air passage module for an armored structure, comprising:



a duct having one end and another end;
a spiral axis;
a spiral portion of the duct wound about the spiral axis;
the duct having a first opening at the one end and a second opening at the other end, the first opening displaced relative to the second opening in at least one direction, the one direction being parallel to the spiral axis;
a continuous girdler of armor surrounding the duct at the one end;
an armor bell section extending from the girdler and flaring from the duct;
means at the other end of the duct for catching projectiles;
wherein the spiral portion is between the bell sector and the catching means.

5,628,683
SYSTEM FOR TRANSFERRING SUBSTRATES INTO CLEAN ROOMS
Josef Gentischer, Weinbergweg 31, 73630 Remshalden, Germany, assignor to Josef Gentischer, Remshalden, Germany
PCT No. PCT/EP92/02931, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/18543, PCT Pub. Date Sep. 16, 1993
PCT Filed Dec. 17, 1992, Ser. No. 295,678
Claims priority, application Germany, Mar. 9, 1992, 42 07 341.3
Int. Cl.[6] F24F *3/16*
U.S. Cl. 454—187 **26 Claims**

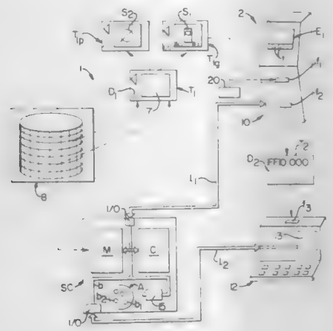


1. A system for transferring substrates into a clean room, comprising:

a box for receiving a cassette containing substrates, said box including a plurality of locking slots;
a box bottom which hermetically seals the box and which can be locked into and unlocked from said box;
a receiving frame for receiving said box adjacent said box bottom and orienting said box relative to the clean room;
a locking mechanism for locking said box bottom to said box, said locking mechanism including a pivot disk rotatably mounted in said box bottom, said pivot disk having a plurality of engagement bores, a plurality of push rods and an equal plurality of locking elements displaced by said pivot disk via respective ones of said push rods to engage a respective one of said locking slots;
a lock gate connected to said receiving frame, said lock gate having a turntable mounted therein, said turntable having a plurality of locking pins which engage respective ones of said engagement bores of said pivot disk thereby connecting said turntable to said pivot disk; and
a detent mechanism for fixing in place said box in said receiving frame, wherein driving of said turntable by an operating device of the system causes pivotal movement of said turntable which triggers locking of said box bottom in said box causing termination of said fixing in place of said box in said receiving frame, and which triggers unlocking of said box bottom in said box causing fixing in place of said box in said receiving frame.

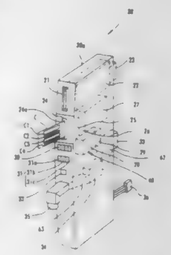
9. The system as defined in claim **1**, further comprising:
a ventilating device for the clean room, said ventilating device supplying a clean air flow to the clean room which flows around the substrates, and including means for removing the air flow from the clean room after it flows around the substrates.

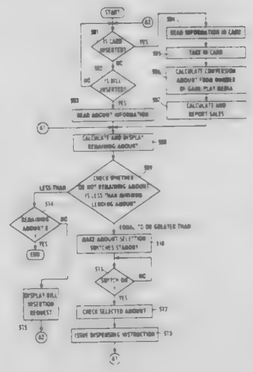
5,628,684
GAME SYSTEM INCLUDING AN INSTANT WIN GAME AND A SECOND GAME INITIALIZED BY A WINNING INSTANT WIN GAME TICKET
Jean-Etienne Bouedec, Charenton, France, assignor to La Francaise des Jeux, Neuilly-sur-Seine, France
Filed Jan. 19, 1995, Ser. No. 375,808
Claims priority, application France, Jan. 28, 1994, 94 00945
Int. Cl.[6] A63F *3/06;9/22*
U.S. Cl. 463—17 **18 Claims**



1. A game system comprising an instant win first game based on the purchase of a game medium which carries a result which is a win or a lose and at least one game console initialized by a win game medium from the first game to participate in at least one second game different from said first game and displayed on the game console.

5,628,685
GAME PLAY MEDIA LENDING MACHINE AND GAMING MACHINE SYSTEM EACH HAVING A CHARGE COLLECTION FUNCTION, AND CHARGE COLLECTION METHOD IN A GAMING HOUSE
Takatoshi Takemoto, and Hiroshi Saito, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan
PCT No. PCT/JP93/01013, § 371 Date Jan. 23, 1995, § 102(e) Date Jan. 23, 1995, PCT Pub. No. WO94/02221, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 21, 1993, Ser. No. 374,610
Claims priority, application Japan, Jul. 23, 1992, 4-197234
Int. Cl.[6] A63F *7/02*
U.S. Cl. 463—25 **18 Claims**





18. A charge collection method in a gaming house containing a gaming machine into which game play media are loaded for game execution, a game play media lending machine for lending game play media used at the gaming machine, and a game play media counter for counting game play media dispensed at the gaming machine and issuing a recording medium on which the number of the game play media is recorded, said method comprising the steps of:
counting game play media won by a player at the gaming machine and recording information indicating the number of the game play media on a recording medium;
when the player again plays a game, reading the number of game play media recorded on the recording medium and multiplying the number by a lending unit price of game play media to find a lending equivalent amount which is an amount of money required to receive dispensing of as many game play media as the number read from the recording medium from said game play media lending machine;
calculating a conversion amount that can be used for the player to borrow game play media based on the found lending equivalent amount and an exchange rate preset to collect a game play charge in proportion to the number of game play media won by the player, and using the conversion amount as a part of the input amount when game play media are lent; and
calculating a difference between the lending equivalent amount and the conversion amount for outputting the difference as information representing the collected charge.

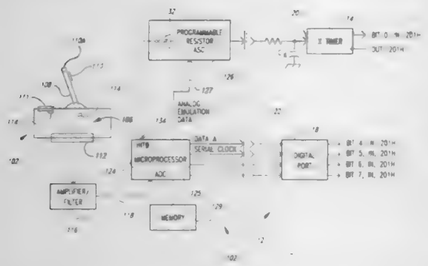
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5,628,686

APPARATUS AND METHOD FOR BIDIRECTIONAL DATA COMMUNICATION IN A GAME PORT

Mark K. Svancarek, Redmond; Manolito E. Adan, Woodinville; Michael W. Van Flandern, Redmond, all of Wash., and Hajime Suzuki, Kanagawa-ken, Japan, assignors to Microsoft Corporation, Redmond, Wash.

Filed Jul. 31, 1995, Ser. No. 509,081
Int. Cl.° A63F *9/24*
U.S. Cl. 463—36 **29 Claims**



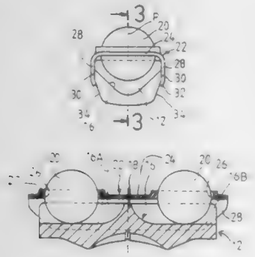
1. An apparatus for bidirectional communication between a game port on a computer and a peripheral device coupled to the game port, the game port having a first timer circuit with a timer input and analog circuitry to form a portion of a charging circuit coupled to the timer input, the timer being responsive to an output instruction from the computer to activate the charging circuit in response to the output instruction, the apparatus comprising:
a peripheral analog circuit coupled to the timer input to complete the charging circuit;
a detector within the peripheral device and coupled to the timer input to detect a predetermined charging level and generate a first interrupt signal in response to detecting said predetermined charging level; and
an interface within the peripheral device to process data in response to said first interrupt signal.

5,628,687

INTERMEDIATE ROLLER ELEMENT FOR UNIVERSAL JOINT

Robert Genestre, Arnouville les Mantes par Septeuil; Claude Neviani, Meulan, and François Verbrugge, Cergy Pontoise Cedex, all of France, assignors to GKN Automotive AG, Siegburg, Germany

Filed Mar. 29, 1994, Ser. No. 219,376
Claims priority, application France, Mar. 29, 1993, 93 03608
Int. Cl.° F16D *3/20*
U.S. Cl. 464—111 **19 Claims**



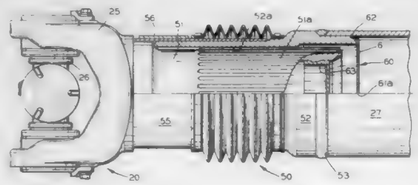
1. An intermediate roller assembly, comprising:
a strip having one face which includes at least one roller track that extends longitudinally of said strip;
a plurality of roller elements in rolling contact with said at least one track; and
a cage comprising a plate that generally extends in a plane that is substantially parallel to said at least one roller, track and a plurality of cells in which said roller elements are respectively received, said cage comprising means cooperating with said strip for maintaining said roller elements on said at least one track such that said strip, said roller elements and said cage form a unitary assembly.

5,628,688

SLIP YOKE ASSEMBLY FOR VEHICLE DRIVESHAFT

Ronald D. Eversole, Findlay, and Charles E. Layman, Delphos, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 27, 1995, Ser. No. 579,380
Int. Cl.° F16C *3/03*
U.S. Cl. 464—162 **8 Claims**



1. A slip yoke assembly for a vehicle drive train assembly comprising:
a yoke shaft having an eternally splined shaft portion;
a hollow transition member having an open end and an internally splined portion disposed co-axially about said shaft portion of said yoke shaft for rotational driving movement therewith and for axial movement relative thereto;
a driveshaft section connected to said hollow transition member: and
a sleeve cup including a body portion having an axially extending flange portion, said body portion of said sleeve cup extending over said open end of said transition member, said flange portion of said sleeve cup being frictionally engaged by both said driveshaft section and said transition member to retain it in position during use.

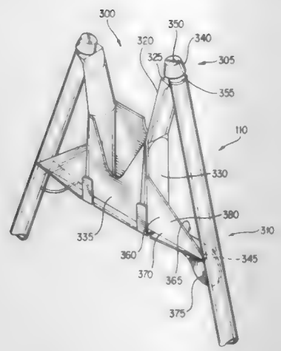
5,628,689

LEG SUPPORT STRUCTURE FOR CHILD'S SWING

David Saint, and James A. Sack, both of Elverson, Pa., assignors to Graco Children's Products, Elverson, Pa.

Filed Nov. 9, 1995, Ser. No. 556,055
Int. Cl.° A63G *9/00*
U.S. Cl. 472—118 **17 Claims**

1. A leg brace for stabilizing a leg within a housing, comprising:
an upper support for pivotally anchoring the leg such that the leg can move between a folded position and an open position;
a lower support having a sliding surface for guiding the leg between the folded position and the open position and having



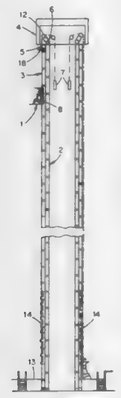
a securing portion for maintaining the leg in the open position; and
a main portion linking the lower support and the upper support.

5,628,690

AMUSEMENT RIDE WITH AT LEAST ONE LONGITUDINAL GUIDE WITH A PASSENGER VEHICLE CAPABLE OF CHANGES IN HEIGHT

Robert Spieldiener, J.-Rheinberger-Str. 18 / Principality of Liechtenstein, FL-9490 Vaduz; Reinhold Spieldiener, Aussichtsstrasse 23, CH-8704 Herriberg; Patrick Spieldiener, Erlenstrasse 134, CH-8832 Wollerau, and Alfons Saiko, Speerstrasse 26, CH-8942 Oberrieden, all of Switzerland

Filed Aug. 23, 1995, Ser. No. 518,550
Claims priority, application Germany, Sep. 8, 1994, 9414609 U
Int. Cl.° A63G *31/00*
U.S. Cl. 472—131 **25 Claims**



1. An amusement ride, comprising:
a generally vertically extending support structure;
at least one vehicle movably supported on the structure for carrying one or more passengers from an initial lower elevation to a final higher elevation;
a lifting arrangement operatively associated with said support structure for elevating said at least one vehicle to the final elevation;
a guide arrangement projecting from an outside surface of the support structure for generally vertically guiding the vehicle along said outside surface;
detachment mechanism operatively mounted for disconnecting the vehicle from the lifting arrangement when the vehicle reaches the final elevation, said vehicle falling freely until it reaches a predetermined elevation; and
a braking means including a braking section, located at said predetermined elevation, for applying a braking force in s direction perpendicular to the free fall direction for reducing the speed of the vehicle.

5,628,691

ADJUSTABLE LENGTH POOL CUE

David Shaner, 1540 Dylan Dr., Virginia Beach, Va. 23464

Filed Aug. 10, 1995, Ser. No. 513,218
Int. Cl.° A63D *15/08*
U.S. Cl. 473—48 **4 Claims**



1. An adjustable length pool cue for use in playing billiards, pool, and snooker, said adjustable length pool cue comprising:
a cue rod having a cue-tip end and a generally cylindrical butt end;
a generally tubular cue rod handle having an open end in which said butt end of said cue rod is slideably and telescopically received for adjusting the effective length of said pool cue; and
cam means for releasably locking said butt end of said cue rod in said cue rod handle in a friction-fit manner to fix the effective length of said pool cue, said cam means including a generally circular disc-shaped cam eccentrically mounted on said butt end of said cue rod for rotatable movement between an unlocking position, in which said cam is axially and peripherally aligned with said butt end of said cue rod to facilitate sliding telescopic movement thereof within said cue rod handle, and a locking position, in which said cam is axially and peripherally offset relative to said butt end of said cue rod so as to frictionally grip and cammingly engage said cue rod handle thereby locking said cue rod in a length-desired fixed position relative to said cue rod handle, said cam means, said cue rod and said cue rod handle being suitably configured and dimensioned such that axial rotation of said cue rod handle relative to said cue rod will effect movement of said cam means into either said locking or unlocking position thereof, depending on the direction of axial rotation, and wherein said cue rod has a circumferentially recessed portion extending from said butt end which is positioned and dimensioned to axially and peripherally align with said cam when in said unlocked position thereof, whereby the non-recessed portion of said cue rod will create a second area of frictional locking engagement between said cue rod handle and said cue rod when said cam is axially rotated and cammingly engaged in said locked position.

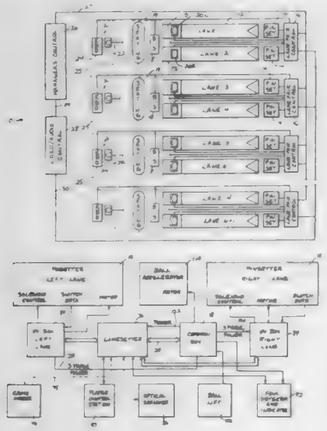
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5,628,692

AUTOMATIC BOWLING CENTER SYSTEM

David L. Mowers, Muskegon, Mich.; Santo A. Lamantia, Woodridge; Bruce N. Alleshouse, Wilmette, both of Ill.; Victor S. Barczyk, Upland, Calif.; Gerald A. Pierce, Redwood City, Calif., and David C. Wyland, San Jose, Calif., assignors to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

Continuation of Ser. No. 177,610, Jan. 5, 1994, Pat. No. 5,446,894, which is a continuation of Ser. No. 962,492, Nov. 23, 1992, Pat. No. 5,450,318, which is a continuation of Ser. No. 724,793, Jul. 2, 1991, Pat. No. 5,255,185, which is a division of Ser. No. 182,977, Apr. 18, 1988, Pat. No. 5,101,354.
This application May 24, 1995, Ser. No. 448,834
Int. Cl.[6] A63D *5/08*
U.S. Cl. 473—73 23 Claims



1. In a bowling center system having a plurality of bowling lanes and an electrically controlled pinsetting device for each lane, a game control system comprising:

a plurality of game control units, each electrically connected to one or more of said pinsetting devices, each said game control unit including a central processing unit, an operator input device and a memory means for storing a game control program to operate said pinsetting devices;

a manager's control system including a programmed central processing unit connected to a display device, an operator input device and a memory means for storing one or more game control programs;

communication means for electrically connecting the processing unit of said manager's control system with the processing units of each of said game control units; and

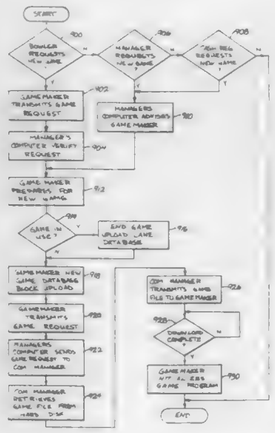
means operatively associated with one of said operator input devices for requesting said manager's control system processing unit to transfer one of said game control programs stored in the memory means connected thereto over said communication means to the memory means coupled to one of said game control units so that said one game control unit operates the pinsetting device connected thereto to play a game according to the requested game control program.

5,628,693

AUTOMATIC BOWLING CENTER SYSTEM

David L. Mowers, Muskegon, Mich.; Santo A. LaMantia, Woodridge; David J. Mueller, Naperville, both of Ill.; Victor S. Barczyk, Upland, Calif.; Gerald A. Pierce, Redwood City, Calif., and David C. Wyland, San Jose, Calif., assignors to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

Continuation of Ser. No. 177,610, Jan. 5, 1994, Pat. No. 5,446,894, which is a continuation of Ser. No. 962,492, Nov. 23, 1992, Pat. No. 5,450,318, which is a continuation of Ser. No. 724,793, Jul. 2, 1991, Pat. No. 5,255,185, which is a division of Ser. No. 182,977, Apr. 18, 1988, Pat. No. 5,101,354.
This application May 24, 1995, Ser. No. 449,122
Int. Cl.[6] A63D *5/08*
U.S. Cl. 473—86 14 Claims



1. A bowling lane system operable to automatically implement a bowling game in accordance with a game control program, comprising:

a pinsetting apparatus operable to set up to a predetermined number of bowling pins on a bowling lane;

pinsetter control means coupled to said pinsetting apparatus for operating said pinsetting apparatus to set a preselected array of bowling pins, which said preselected array comprises either the predetermined number of bowling pins or less than the predetermined number of bowling pins;

a game control means coupled to and controlling the operation of said pinsetter control means by executing said game control program to implement said bowling game, said game control means including pin array selecting means for automatically periodically preselecting an array of pins to be set by said pinsetting apparatus in response to instructions of said game control program, wherein, in response to an instruction of said game control program, said pin array selecting means preselects an array of pins to be set by said pinsetting apparatus for a first ball of at least one bowler's turn that includes less than the predetermined number of bowling pins; and

scoring means for maintaining a game score according to instructions of said game control program.

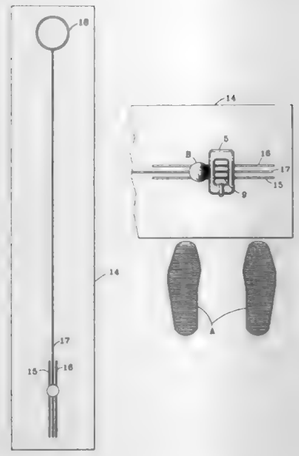
5,628,694

TRAINING PUTTER AND RUG

Frederick J. O'Connor, Jr., Box 638, Cuttingsville, Vt. 05738

Filed Jun. 21, 1996, Ser. No. 667,625
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—157 7 Claims

1. A training putter and rug component comprising:



a. a rectangular shaped piece of rugging greater in depth than in width;

b. three parallel guidelines commencing at nearly one end of said piece of rugging and drawn on the top surface of said piece of rugging;

c. the two lateralmost of said guide fines being each equidistant from the center one of said guidelines with said two lateralmost of said guidelines being separated from one another by a distance approximating the diameter of a regulation size golf ball;

d. the center one of said guidelines being co-extensive with the long central axis of symmetry of said piece of rugging;

e. the said center one of said guidelines terminating at a point, the locus of which is on a circle drawn at nearly a second end of said piece of rugging;

f. a putter head to which there is affixed a shaft amenable to being handheld for purposes of stroking a golf ball with said putter head;

g. said putter head being rectangularly shaped with a solid front side, a solid posterior side, a solid first lateral side and a solid second lateral side;

h. said putter head having a rectangularly shaped hollowed out center hole;

i. said putter head having three parallelwise positioned, co-planar basebars extending from the base of said first lateral side to the base of said second lateral side at the bottom of said center hole;

j. the two lateralmost of said basebars being each equidistant from the center one of said basebars with said two lateralmost of said basebars being separated from one another by a distance equal to said distance between said two lateralmost guidelines.

5,628,695

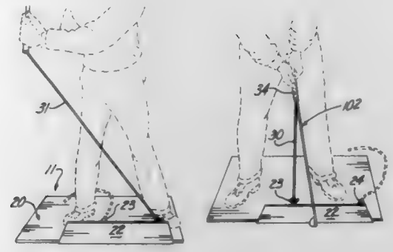
GOLF SWING AND PUTTING TRAINER DEVICE

Bradley Worthington, 500 Algonquin Rd., Fairfield, Conn. 06432, and Benedict Y. Park, 6100 Post Rd., North Kingstown, R.I. 02852

Filed Jun. 25, 1996, Ser. No. 671,047
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—229 11 Claims

7. A golf swing and putting trainer device for use in combination with a plurality of golf clubs including but not limited to woods, irons, practice clubs and putters wherein the training device comprises:

an enlarged generally flat base member;



a pair of anchor elements disposed at spaced locations on said base member;

a first generally elongated resistance member having an upper end adapted to be attached to the upper end of selected ones of said plurality of golf clubs; and

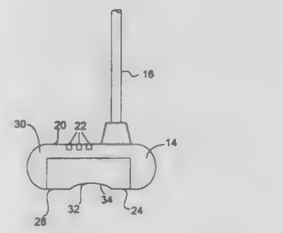
a second relatively short resistance member having an upper end adapted to be attached to an intermediate portion of selected ones of said plurality of golf clubs.

5,628,696

GOLF PUTTER WITH BALL RETRIEVAL DEVICE

James E. Frye, 3640 W. Dublin St., Chandler, Ariz. 85226

Filed Sep. 8, 1995, Ser. No. 526,058
Int. Cl.[6] A63B *53/00*
U.S. Cl. 473—286 3 Claims



1. A golf putter with a ball retrieval element comprising

A shaft;

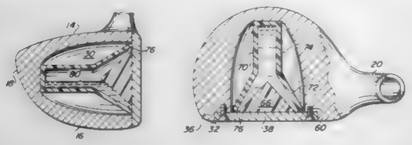
A putter head attached to said shaft, said head having a front ball striking surface, a back side opposite the front surface, a top surface and a bottom surface, a heel side where the shaft attaches and a toe side opposite said heel;

A receptacle within the putter head, said receptacle having an opening in said bottom surface whereby said receptacle is adapted to partially receive a golf ball, said opening having an outer circumference of predetermined dimensions; and

An arch in said bottom surface said arch spanning from about one side of the receptacle which is toward the heel to about the other side of the receptacle which is toward the toe, such that the portions of the bottom toward the heel and toe extend beyond the portions of the bottom about the receptacle and said arch is open to said ball striking face and back side.

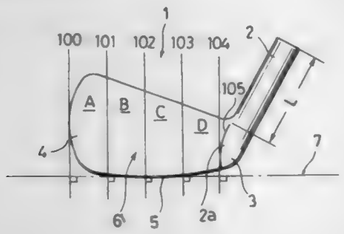
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5,628,697
GOLF CLUB
Christopher L. Gamble, P.O. Box 9154, Canoga Park, Calif. 91309
Filed Nov. 17, 1995, Ser. No. 560,528
Int. Cl.[6] A63B 53/04
U.S. Cl. 473—326 10 Claims



1. In a golf club having a club head and an attached shaft, the club head having a rear and a face, a sole and a top, the improvement comprising:
(a) a projection extending rearwardly from the club face within a recess in the club head;
(b) a cap extending about said projection and defining an annular chamber area with said projection rearwardly of the face; and
(c) a fluid in said annular chamber, said fluid is a fluid having a high specific gravity.

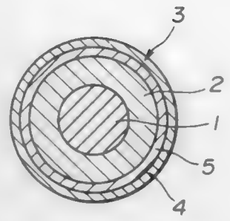
5,628,698
IRON CLUB HEAD
Norio Sumitomo, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jul. 11, 1995, Ser. No. 500,661
Claims priority, application Japan, Jul. 14, 1994, 6-186230
Int. Cl.[6] A63B 53/04
U.S. Cl. 473—341 3 Claims



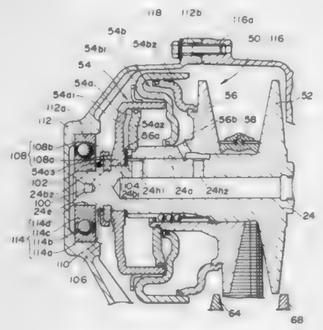
1. An iron club head having an inner most neck portion, an outermost toe portion and a face portion therebetween wherein the weight of the outermost toe portion among four sections obtained by equally dividing the toe portion and face portion at right angles to the longitudinal direction of said club head is 35%–60% of the overall weight of the head.

5,628,699
WOUND GOLF BALL
Takashi Maruko; Shinichi Kakiuchi, and Junji Hayashi, all of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1995, Ser. No. 508,690
Claims priority, application Japan, Aug. 3, 1994, 6-201389; Dec. 20, 1994, 6-334564
Int. Cl.[6] A63B 37/12
U.S. Cl. 473—363 3 Claims

1. A wound golf ball comprising a solid center, thread rubber wound thereon, and a cover enclosing the wound center, wherein said cover has a multi-layer structure including an outer layer having a first hardness and a thickness of at least 0.4 mm and an inner layer having a second hardness higher than the first hardness, said outer layer of said cover being formed of a first ionomer resin having a Shore D hardness of 40 to 55, and the inner layer being formed of a second ionomer resin having a Shore D hardness of 55 to 68, the difference in hardness between the first and second ionomer resins being at least 5 in Shore D hardness.

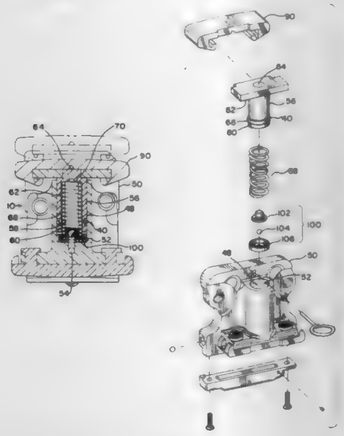


5,628,700
PULLEY DEVICE FOR CONTINUOUSLY VARIABLE TRANSMISSION
Masahiko Yamada, Nagoya; Toshio Yamaguchi, Hadano, and Kiyofumi Tanaka, Machida, all of Japan, assignors to Nissan Moter Co, Ltd., Yokohama, and Aichi Machine Industry Co., Ltd., Aichi, both of Japan
Filed Jun. 26, 1995, Ser. No. 494,815
Claims priority, application Japan, Jun. 27, 1994, 6-144889; Jun. 27, 1994, 6-144890
Int. Cl.[6] F16H 59/00
U.S. Cl. 474—18 12 Claims



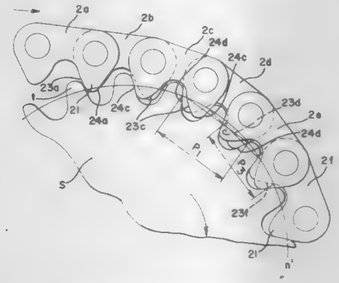
4. A pulley device for a continuously variable transmission, comprising:
a casing;
a shaft rotatably supported to said casing, said shaft having first and second ends, said second end having a ring groove formed on an outer periphery thereof;
a first conical plate fixed to said first end of said shaft;
a second conical plate axially movably engaged with said second end of said shaft, said second conical plate cooperating with said first conical plate to form a V-shaped groove;
a hydraulic pressure cylinder chamber engaged with said shaft and adjacent to said second conical plate, said hydraulic pressure cylinder chamber receiving hydraulic pressure to axially move said second conical plate;
a ring engaged with said ring groove of said shaft, said ring restraining axial movement of said chamber; and
a retainer arranged adjacent to said ring, said retainer restraining radial movement of said ring.

5,628,701
HYDRAULIC TENSIONER WITH SEALING ELEMENT
Stanley K. Dembosky, and Roger T. Simpson, both of Ithaca, N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Dec. 8, 1995, Ser. No. 569,934
Int. Cl.[6] F16H 7/22
U.S. Cl. 474—103 7 Claims



1. A hydraulic tensioner, comprising:
a housing having a generally cylindrical bore,
a hollow piston slidably received within said bore to define a fluid chamber with said bore, said piston having an upper and a lower end.
a spring biasing said piston in the protruding direction from said housing,
a check valve to permit the flow of fluid from an external source through the valve and into said fluid chamber, and
a sealing element positioned between said piston and the inner lateral wall of said bore, said sealing element being constructed to permit the passage of fluid past said sealing element along the outer surface of said piston from said lower end to said upper end of said piston.

5,628,702
POWER TRANSMISSION CHAIN
Tetsuji Kotera, Nabari, Japan, assignor to Borg-Warner Automotive, K.K., Nabari, Japan
Filed Aug. 30, 1995, Ser. No. 521,168
Claims priority, application Japan, Sep. 1, 1994, 6-234074
Int. Cl.[6] F16G 13/04
U.S. Cl. 474—213 2 Claims



1. A power transmission chain comprising:
a plurality of links, each link having a pair of teeth and a pair of apertures, said links being interleaved and connected by pins inserted into the apertures, the shape of the inside and outside flanks of each tooth of the links is constructed having the relationship

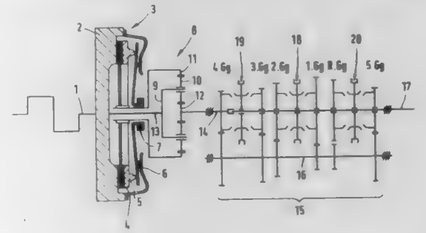
$$P_2 \geq P_1 \geq P_3$$

where P_1 is the pitch between the outside flanks on the pitch line of the link, P_2 is the pitch between the inside flanks of the teeth of the two adjacent links and the teeth of the links when the chain is stretched nearly straight, and P_3 is the pitch between the inside flanks when the chain is placed on a sprocket, the shape of the inside flank having an arc shape of a finite radius of curvature R so that

$$R \geq 2 \times P$$

where R is the radius of curvature of the inside flank and P is the chain pitch.

5,628,703
FLYWHEEL/CLUTCH ARRANGEMENT FOR MANUAL-SHIFT SYNCHRONIZED CHANGE-SPEED GEARBOXES
Hartmut Roeper, Monheim, Germany, assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 18, 1996, Ser. No. 588,491
Claims priority, application Germany, Jan. 20, 1995, 195 01 590.8
Int. Cl.[6] F16H 57/04;1/36;3/12
U.S. Cl. 475—159 6 Claims

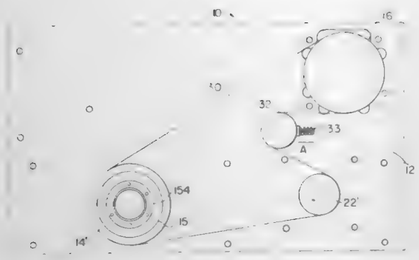


1. A flywheel/clutch arrangement for a synchronized manual-shift change-speed gearbox for a motor vehicle having a flywheel drivably connected to an engine, the gearbox drivably connected to a planetary gear unit having a sun gear, a ring gear, and a plurality of planet gears in meshing engagement with the sun gear and ring gear, the planet gears supported by a planet carrier comprising:
the planet carrier drivably engaged with the engine;
the clutch drivably engaging and releasing the ring gear and the flywheel; and
the sun gear being drivably connected to an input shaft of the change-speed gearbox.

5,628,704
DRIVE SYSTEM HAVING MULTI-DRIVE PLATE
Richard Fischler, 168-01 12th Ave., Apt. 7A, Whitestone, N.Y. 11357, and James D. McCusker, 176 Williamson Rd., Bergenfield, N.J. 07621
Continuation of Ser. No. 340,281, Nov. 15, 1994, abandoned. This application Aug. 12, 1996, Ser. No. 695,708
Int. Cl.[6] F16H 7/12;7/20
U.S. Cl. 477—5 19 Claims

1. A drive system comprising:
at least one driving device including a first drive shaft and a first drive pulley mounted on the first drive shaft;

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at least one driven component driven by the least one driving device, the at least one driven component including a second drive shaft and a second drive pulley mounted on the second drive shaft;

a single belt operatively connected to the at least one driving device and the at least one driven member via the first and second drive pulley so that the belt is driven by the at least one driving device to drive the at least one driven component; and

a single support member supporting the at least one driving device and the at least one driven component, the single support member being arranged such that single belt, the first drive pulley and the second drive pulley are located on a first side of the single support member; and the at least one driving device and the at least one driven component are located on a second side of the single support member and the first and second drive shafts extend through the single support member from the first side to the second side of the single support member, wherein the at least one driving device and the at least one driven component are supported only at single support member.

5,628,705

APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION AND METHOD THEREOF

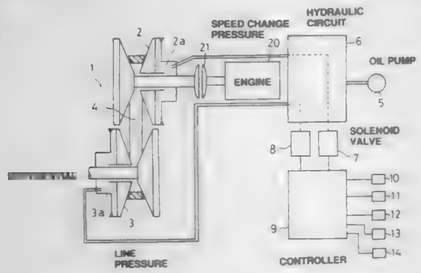
Masuo Kashiwabara, Atsugi, Japan, assignor to Unisia Jecs Corporation, Kanagawa-ken, Japan

Filed Feb. 12, 1996, Ser. No. 572,902

Claims priority, application Japan, Feb. 14, 1995, 7-025098

Int. Cl.[6] B60K *41/12*

U.S. Cl. 477—46 **18 Claims**



1. An apparatus for controlling a continuously variable transmission comprising:

basic speed change ratio setting means for setting a basic speed change ratio depending upon operation conditions inclusive of, at least, the opening degree of an accelerator;

speed change ratio control means for controlling a speed change ratio of the continuously variable transmission in a manner that an actual speed change ratio approaches said basic speed change ratio at a predetermined rate of changing the speed; and

means for changing the speed following the accelerator operation which, when said basic speed change ratio is changed accompanying a change in the opening degree of the accelerator, temporarily blocks the actual speed change ratio from changing in a direction opposite to the direction in which said basic speed change ratio changes.

5,628,706

METHOD AND ARRANGEMENT FOR CONTROLLING THE OUTPUT POWER OF A DRIVE UNIT OF A MOTOR VEHICLE

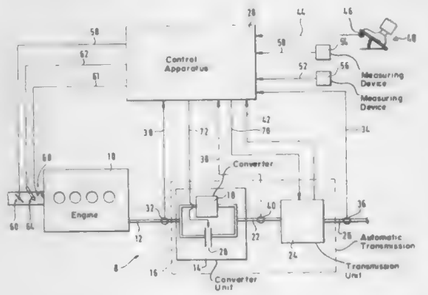
Hong Zhang, Bietigheim-Bissingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 140,463, Oct. 25, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 560,485

Claims priority, application Germany, Oct. 23, 1992, 42 35 827.2

Int. Cl.[6] B60K *41/02*

U.S. Cl. 477—166 **11 Claims**



1. A method for controlling the output power of a drive unit of a vehicle, the drive unit including a motor and a power transmitting assembly connected to the output of the motor, the power transmitting assembly including a converter, a clutch bridging the converter and a transmission unit, the clutch being controllable so as to be in an open state, in a closed state and in an intermediate state between said open and closed states, the method comprising the steps of:

determining a desired output torque (mabdes) of said power transmitting assembly;

converting said desired output torque (mabdes) into a motor torque (mmot);

determining whether said clutch is in said intermediate state between said open and closed states;

while said clutch is in said intermediate state, computing said motor torque in accordance with the transmission gear ratio (G), said desired output torque (mabdes) and the torque transmitted by said converter and said clutch; and,

adjusting said desired output torque (mabdes) of said power transmitting assembly by setting said computed torque.

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Patent Not Issued For This Number

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5,628,709

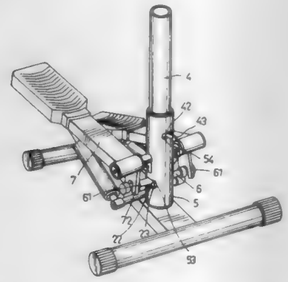
EXERCISER WITH COMBINED STEPPING AND TWISTING FUNCTIONS

Tsung-Yu Chen, No. 1-9, Ting-Liao, San-Ho Tsuen, Shiu-Shang Hsiang, Chia-Yi Hsien, Taiwan

Filed Jun. 4, 1996, Ser. No. 657,276

Int. Cl.[6] A63B *22/14*

U.S. Cl. 482—53 **11 Claims**



1. An exerciser with combined stepping and twisting functions, comprising:

a base having an upright cylindrical body fixed thereto, said cylindrical body being provided with a pair of radially extending and diametrically opposite branches;

a tubular sleeve sleeved rotatably on said cylindrical body and formed with a circumferentially extending opening to permit passage of said branches on said cylindrical body therethrough; and

a stepper including: a pair of spaced pedal arms, each of which has a front end pivoted to said tubular sleeve, and a rear end; a pair of resistance cylinders, each of which interconnects said rear end of one of said pedal arms and said tubular sleeve; and a pair of transmitting members provided respectively on said front ends of said pedal arms, each of said transmitting members engaging a respective one of said branches on said cylindrical body;

whereby, when pressure is applied on one of said pedal arms, said one of said pedal arms causes said tubular sleeve to rotate about said cylindrical body, thereby resulting in the combined stepping and twisting functions.

5,628,710

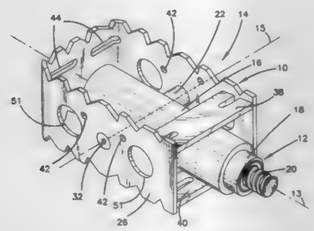
PEDAL AND EXERCISE EQUIPMENT

Dana P. Hervig, 1450 102nd St. E., Inver Grove Heights, Minn. 55077

Continuation-in-part of Ser. No. 311,563, Sep. 23, 1994, Pat. No. 5,449,332. This application Aug. 7, 1995, Ser. No. 511,677

Int. Cl.[6] A63B *22/06*; **F16H** *7/22*

U.S. Cl. 482—57 **12 Claims**



1. A pedal comprising:

(a) housing having first and second oppositely disposed ends, and support arms extending orthogonally therefrom between the first and second oppositely disposed ends;

(b) rotatable shaft positioned coaxially within said housing and having a first end connectable to a crank;

(c) pedal frame pivotally attached to the support arms of said housing to provide rotation about the support arms.

5,628,711

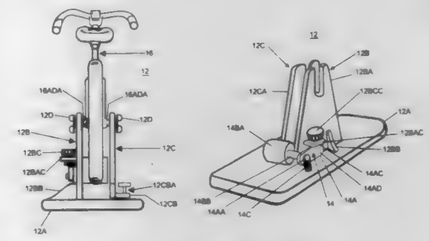
BICYCLE AND EXERCISE STAND

Leonard Boucher, 15 Willowbrook Ct. South West, Cartersville, Ga. 30120

Filed May 13, 1996, Ser. No. 645,141

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—61 **1 Claim**



1. A bicycle and exercise stand (**10**) comprising:

A) a stand (**12**) functioning to support a bicycle (**16**) in an upright position and provide adjustable peddling resistance for an user, the stand (**12**) comprises a stand base (**12**A) which comprises:

B) a left bike support upright (**12**BA) securely attached perpendicular to the stand base (**12**A), the left bike support upright (**12**BA) functions to support a left distal end of a bicycle rear wheel axle (**16**ADA), the left bike support upright (**12**BA) comprises:

I) a friction means (**14**) rotationally attached to the left bike support upright (**12**BA), the friction means (**14**) comprises a friction means arm (**14**A) pivotly attached to the left bike support upright (**12**BA) by a friction means pivot (**14**AD), one distal end of a friction means arm (**14**A) securely fastened to a friction means resistance wheel (**14**B), the friction means resistance wheel (**14**B) comprises a friction means resistance wheel shaft (**14**BB) which is securely fastened on a proximal distal end to the friction means arm (**14**A) at a friction means arm aperture (**14**AA), the friction means resistance wheel shaft (**14**BB) is rotationally attached to a friction means resistance wheel roller (**14**BA), the friction means resistance wheel spring (**14**C) is securely attached at one distal end to a friction means arm spring attachment means (**14**AB), an opposite distal end of the friction means resistance wheel spring (**14**C) is attached to a stand base spring attachment (**12**AC) which is securely attached to the stand base (**12**A), the friction means resistance wheel spring (**14**C) functions as a return means for the friction means arm (**14**A), a friction means arm flange (**14**AC) is perpendicularly and securely attached to the friction means arm (**14**A), the friction means am flange (**14**AC) functions as beating surface for a lower distal end of an adjusting means shaft (**12**BCB), the upper distal end of the adjusting means shaft (**12**BCB) is securely attached to an adjusting means knob (**12**BCC), the adjusting means shaft (**12**BCB) is rotationally attached to an adjusting means screw bracket (**12**BCA), the adjusting means screw bracket (**12**BCA) is securely attached to the left bike support upright (**12**BA), the friction means (**14**) functions to change the rolling resistance of a bicycle rear wheel (**16**A).

ii) a left bike support upright slot (**12**BAA) is positioned at a top distal end of the left bike support upright (**12**BA), the

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left bike support upright slot (12BAA) is complimentary sized to fit a left distal end of a bicycle rear wheel axle (16ADA), the left bike support upright (12BA) further comprises a left bike support upright counter bore (12BAB) surrounding the left bike support upright slot (12BAA), the left bike support upright slot (12BAA) and left bike support upright counter bore (12BAB) cooperating to accept a wing nut (12D), the wing nut (12D) functions to secure the bicycle rear wheel axle (16ADA) to the left bike support upright slot (12BAA).

B) a right bike support (12C) is slidably, and adjustably attached perpendicular to the stand base (12A), the right bike support (12C) functions to support a right distal end of the bicycle rear wheel axle (16ADA), the right bike support (12C) comprises a right bike support upright (12CA) having a right bike support horizontal support (12CB), the right bike support horizontal support (12CB) functions to add rigidity to the right bike support upright (12CA), a right bike support fastening means (12CBA) having a fastening means shaft (12CBAB) which is rotationally attached, at a mid-point, to the right bike support horizontal support (12CB), the fastening means shaft (12CBAB) comprises a fastening means knob (12CBAA) which is securely fastened to an upper distal end of the fastening means shaft (12CBAB), the fastening means shaft (12CBAB) is rotationally attached at a lower distal end to a fastening means nut (12CBAC), the fastening means shaft (12CBAB) slides in a stand base adjustment slot (12AA), the fastening means nut (12CBAC) is slidably constrained by a stand base adjustment slot counter bore (12AB), tightening the fastening means knob (12CBAA) functions to pull the fastening means nut (12CBAC) against the upper side of the stand base adjustment slot counter bore (12AB) which functions to secure the right bike support (12C) to the stand base (12A), loosening the fastening means knob (12CBAA) functions to release the fastening means nut (12CBAC) with respect to the upper side of the stand base adjustment slot counter bore (12AB) allowing the right bike support (12C) to be adjusted to accommodate different widths of bicycle rear wheels.

5,628,712

Patent Not Issued For This Number

5,628,713

MULTI PURPOSE EXERCISE POLES WITH MANY OPTIONAL ATTACHMENTS

Willian T. Wilkinson, P.O. Box 73, Salem, N.J. 08079

Continuation-in-part of Ser. No. 846,053, Mar. 5, 1992, Pat. No. 5,443,435, and a continuation-in-part of Ser. No. 941,304, Sep. 4, 1992. This application Nov. 17, 1994, Ser. No. 341,013

Int. Cl.[6] A63B *71/00*

U.S. Cl. 482—74 **30 Claims**

1. A pole device for the aiding of forward movement comprising

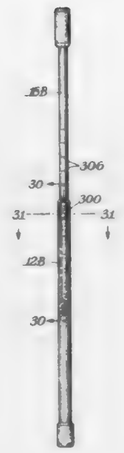
(a) a hollow outer tubular shaft having a plurality of aligned holes,

(b) an inner tubular shaft having a plurality of aligned holes wherein said inner tubular shaft has a smaller diameter then said outer tubular shaft and said inner tubular shaft fits inside said outer tubular shaft to form a pole said pole has a top end and a bottom end,

(c) an adjustment and locking means which fits inside said holes of said outer shaft and inner shaft,

(d) a handle attached to said shaft at the top end of the pole,

(e) means for exercising a user's arms during the course of forward movement of the user's legs, during relative movement of the user's arms with respect to the user's body while said handle is gripped by the user's hand during the course of forward movement of the user's legs,



(f) a weight attached to one of said shafts either on the inside or the outside of said shaft below said handle or attached as said handle,

(g) said handle is attached to a top end of said device and said handle is capable of bring gripped by user's hand, said device having a bottom end, said device being of sufficient length for the user to grip said handle during the course of forward movement while said bottom end of said device touches a ground surface, and

(h) the touching of said bottom end with the surface comprising a push-off means to assist the user in moving forward.

5,628,714

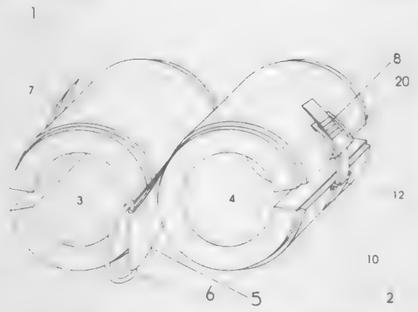
TWIN CUFF WEIGHT TRAINING APPARATUS

Alan S. Philipson, 8355 SW. 89th St., Miami, Fla. 33156

Filed May 26, 1995, Ser. No. 452,266

Int. Cl.[6] A63B *23/035*

U.S. Cl. 482—92 **6 Claims**



1. An exercise component for developing anatomical balance between first and second limbs using a source of opposition, said exercise component comprising:

first cylindrical cuff means for circumscribing the first limb, said first cylindrical cuff means is split in a longitudinal direction;

first latch means for securing said first cylindrical cuff means with respect to the first limb;

second cylindrical cuff means for circumscribing the second limb, said second cylindrical cuff means is also split in the longitudinal direction;

second latch means for securing said second cylindrical cuff means with respect to the second limb;

attachment means for securing said first and second cylindrical cuff means to the source of opposition; and,

connection means for connecting said first and said second cylindrical cuff means to each other along their lengths.

5,628,715

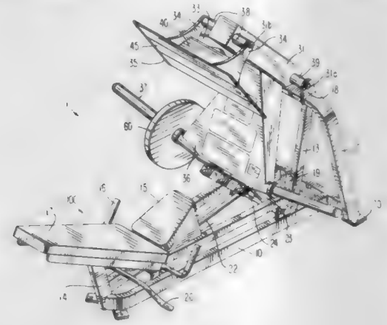
SQUAT PRESS EXERCISE MACHINE

Roy Simonson, Colorado Springs, Colo., assignor to CYBEX International, Inc., Ronkonkoma, N.Y.

Filed Feb. 14, 1995, Ser. No. 388,347

Int. Cl.[6] A63B *21/08;23/04*

U.S. Cl. 482—97 **33 Claims**



1. A squat press apparatus comprising:

a frame;

a user support mounted to the frame;

a four-bar linkage having first, second, third and fourth consecutive links, the first link being mounted directly to the frame;

a footplate mounted directly to the third link;

a lever rotatably mounted to the frame and operably engaged to the four-bar linkage such that the lever rotates with the four-bar linkage; and

at least one post mounted to the lever adapted to support a removable weight, wherein said removable weight biases said footplate towards said user support when disposed on said at least one post.

5,628,716

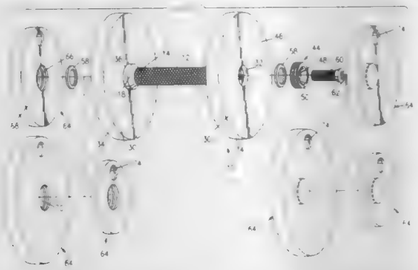
ADJUSTABLE WEIGHT EXERCISE DEVICE

John P. Brice, 14229 Ivy St., Adelanto, Calif. 92301

Filed Dec. 22, 1995, Ser. No. 577,818

Int. Cl.[6] A63B *21/072*

U.S. Cl. 482—106 **11 Claims**



1. In an adjustable weight exercise device for body building and therapy for use in strengthening hands, arms, chest and the neck of a person using the same, said device including a central annular bar having a pair of ends and each end including weight stop means and projecting outwardly beyond said stop means each end having weight receiving shank portions, and a pair of annular disk weight members having exterior and interior surfaces and each mounted on one of said shank portions all on a common central horizontal axis and with said interior surface abutting said stop means, the improvement including:

weight locking-holding means affixed to the exterior surface of each of said weights to hold said weights to said central annular bar, and a pair of auxiliary disk weight extensions projecting outward from said exterior surface of each of said weights and on said common central horizontal axis;

a pair of auxiliary annular disk weights each having an exterior and interior surface and a diameter and each adapted to be releasably secured to each of said weight extensions, each of said auxiliary annular disk weights including a recess in said interior surface adapted to fit on said weight extensions and be maintained on said common central horizontal axis thereon until manually removed, whereby the total weights of said exercise device may be varied.

5,628,717

ROLL, HAVING CONTROLLED BENDING, FOR A CALENDER OR SIMILAR DEVICE

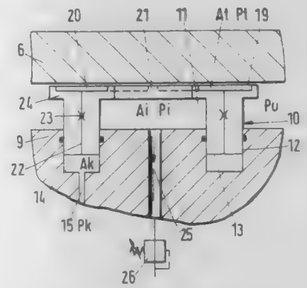
Rolf Van Haag, Kerken, Germany, assignor to Voith Sulzer Finishing GmbH, Krefeld, Germany

Filed Aug. 10, 1995, Ser. No. 513,426

Claims priority, application Germany, Aug. 19, 1994, 44 29 499.9

Int. Cl.[6] B29C *43/46*

U.S. Cl. 492—7 **13 Claims**



1. A roll for a calender having controlled bending, comprising:

a non-rotatably mounted carrier;

a plurality of hydrostatic support elements each having a ring-shaped support surface with at least one ring-shaped pocket in said support surface;

a roll sleeve supported by said hydrostatic support elements against said non-rotatably mounted carrier, said support elements being disposed within said roll sleeve, said at least one pocket of each hydrostatic support element faces an inside surface of said roll sleeve, each of said plurality of hydrostatic supports elements having a pressure surface which faces said carrier to delimit a pressure chamber therebetween, each of said pressure chambers being in fluid communication with a pressure feed line, each of said pressure chambers also being in fluid communication, through a throttle, with said respective at least one pocket;

an interior space being enclosed by each of said plurality of hydrostatic support elements, each of said interior spaces being in fluid communication with an outlet line; and

an adjustable throttle element being disposed in each of said respective outlet lines.

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5,628,718

METHOD OF OPERATING A FOLDER

Bodo Huober, Ludwigsburg, Germany, assignor to Stahl GmbH & Co. Maschinenfabrik, Neckarweihingn, Germany

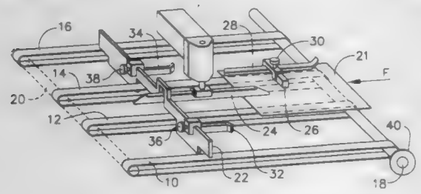
PCT No. PCT/EP94/01462, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO94/26644, PCT Pub. Date Nov. 24, 1994

PCT Filed May 6, 1994, Ser. No. 362,535

Claims priority, application Germany, May 6, 1993, 43 15 095.0

Int. Cl.[6] **B31B** *1/02;* **B65H** *45/12;45/18*

U.S. Cl. 493—29 **24 Claims**



1. A method of operating a folder comprising a plurality of sequentially arranged folding units, of which at least one folding unit is provided with a sheet detector arranged upstream of a sheet abutment and at least one substantially lateral guide, wherein automatic and single stroke modes of operation are provided, characterized by the provision of a further mode of operation for make-ready of the folder, wherein:

a drive of the folder is run at a reduced speed within a predetermined speed range;

upon detecting a supplied sheet the sheet detector supplies a switch off signal for the drive so that the sheet is retarded short of the guide of the respective folding unit and comes to rest;

the sheet is then moved at a further-reduced speed toward the sheet abutment of the respective folding unit; and

in a phase between a stationary state of the sheet and the sheet's arrival at the sheet abutment, the guide is set to suit the supplied sheet's requirements.

5,628,719

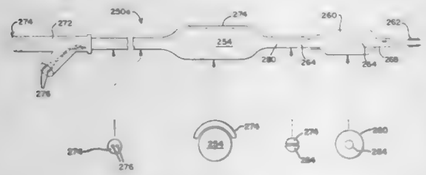
IN VIVO MECHANICAL ENERGY SOURCE AND PERFUSION PUMP

Roger Hastings; Kenneth Larson, both of Maple Grove; Michael Berman, Golden Valley, and Daniel M. Lafontaine, Plymouth, all of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 981,612, Nov. 25, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 343,045

Int. Cl.[6] **A61M** *1/12*

U.S. Cl. 600—16 **17 Claims**



1. An intravascular apparatus comprising:

an elongated catheter for insertion into and movement through a vascular system of a patient, said catheter having a distal end and a proximal end;

a chamber coupled to said catheter at said distal end;

a first inlet port in communication with said chamber;

an exit port in communication with said chamber;

a motor located at a distal portion of said catheter;

an electrical lead means connected to said motor and extending to the proximal end of said catheter to supply electrical energy to said motor;

an in vivo pump located at said distal portion of said catheter and coupled to an output of said motor; said pump also operatively coupled to said chamber to draw fluid into said chamber through said first inlet port and push fluid from said chamber through said exit port.

5,628,720

Patent Not Issued For This Number

5,628,721

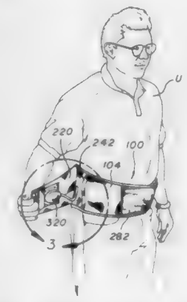
BACK SUPPORT ASSEMBLY HAVING AN INFLATABLE AIR CUSHION

William K. Arnold, Pasadena, Calif., and Tracy E. Grim, Scottsdale, Ariz., assignors to Royce Medical Company, Camarillo, Calif.

Filed Mar. 29, 1996, Ser. No. 624,300

Int. Cl.[6] **A61F** *5/00*

U.S. Cl. 602—19 **20 Claims**



1. An inflatable back support assembly, comprising:

a back support belt having belt ends releasably securable together when wrapped around a user's waist;

an air cushion attached to said back support belt;

first and second opposing adjustment pull straps attached to said back support belt;

a manually-operable bulb pump mounted to and carried by said first strap; and

tubing providing fluid communication between said bulb pump and said air cushion such that when said bulb pump is manually pumped, with said back support belt in place around the user, the inflation of said air cushion is adjusted.

5,628,722

METHOD FOR MAINTAINING KNEE STABILITY OF A USER SUFFERING FROM DAMAGE OF A KNEE LIGAMENT

Moshe Solomonow, 4916 Green Acres Ct., Metairie, La. 70003, and Robert D'Ambrosia, 2 Lakewood Estates Dr., New Orleans, La. 70131

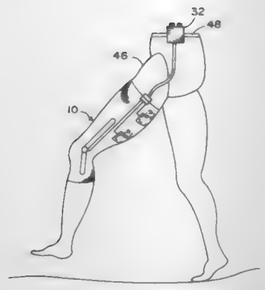
Filed Mar. 3, 1995, Ser. No. 398,681

Int. Cl.[6] **A61F** *5/00*

U.S. Cl. 602—26 **9 Claims**

1. A method for maintaining knee stability of a user suffering from damage of a knee ligament, comprising the steps of:

a) providing a sensor feedback system, an electrical stimulator connected to said sensor feedback system, and a plurality of electrodes connected to said electrical stimulator;



b) mounting said plurality of electrodes on selected portions of the user's hamstring muscles;

c) utilizing said sensor feedback system for:

i) measuring abnormal physical relationships between the tibia and femur.

ii) determining whether selected conditions have been met warranting the application of electrical stimulation, and

iii) providing information regarding said determinations to an electronic stimulator; and

d) applying electrical stimulation to said electrodes in response to said information for causing contraction of said hamstring muscles at selected levels, thus providing a posterially directed force to the user's upper tibial bone and preventing its instability.

5,628,723

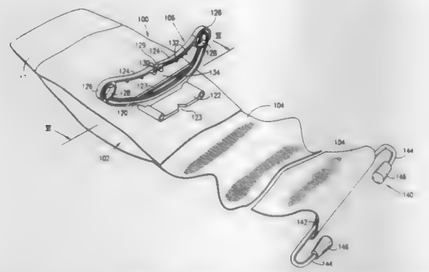
EMERGENCY BANDAGE

Bernard Grau, 3/45 Kibbutz Galuyot Street, Jerusalem, Israel

Continuation-in-part of Ser. No. 336,011, Nov. 8, 1994, abandoned, which is a continuation of Ser. No. 974,377, Nov. 10, 1992, abandoned, which is a continuation of Ser. No. 753,120, Aug. 30, 1991, abandoned. This application Feb. 14, 1996, Ser. No. 601,224

Int. Cl.[6] **A61F** *13/00;* **A61B** *17/00*

U.S. Cl. 602—53 **20 Claims**



1. For use in a bandage comprising a sterile dressing and a web portion attached to and extending from said sterile dressing, a pressure enhancement member comprising:

a base; and

at least one wrapping element generally perpendicular to said base, said at least one wrapping element having a gap,

wherein said pressure enhancement member is attached to a non-wound-side surface of said sterile dressing, and said at least one wrapping element is arranged for wrapping thereabout by said web portion;

wherein when said web portion is wrapped in a first direction around a limb having thereon a wound, and forced through said gap, and said web portion is then wrapped around said at least one wrapping element in a second direction, said pressure enhancement member applies a pressure on said dressing, thereby causing said dressing to apply a local pressure on said wound, and subsequent wrappings of said web portion on said pressure enhancement member, on previous wrappings of said web portion and on said limb, increase said local pressure on said wound.

5,628,724

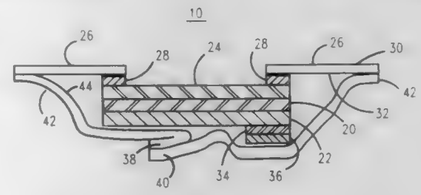
WOUND DRESSING AND DELIVERY SYSTEM THEREFOR

Janet S. DeBusk, and Randel B. Holmes, both of Knoxville, Tenn., assignors to DeRoyal Industries, Inc., Powell, Tenn.

Filed Dec. 29, 1994, Ser. No. 365,747

Int. Cl.[6] **A61F** *13/00*

U.S. Cl. 602—58 **25 Claims**



1. A wound dressing composite which comprises:

a breathable membrane film wound dressing having an upper surface, a lower adhesive surface and opposed side edges for application in a spread out disposition to a wound site with the lower surface adhered thereto, said film dressing substantially unable to support itself in a planar configuration;

a relatively stiff substantially transparent integral film carrier sheet having an upper surface, a lower surface, and opposed side edges, the carrier sheet being releasably adhered on its lower surface to substantially the entire upper surface of the film dressing in supporting relation for supporting the entire film dressing in a planar configuration, with the side edges of the film dressing and carrier sheet generally aligned in close adjacency;

at least one tab substantially fixedly attached to the carrier sheet adjacent at least one of the opposed side edges thereof, the tab extending out beyond the side edge of the carrier sheet and adjacent a side edge of the film dressing for removing the carrier sheet from the film dressing after application thereof to the wound site;

a cover releasably adhered to the lower adhesive surface of the film dressing in covering relationship therewith for protecting the lower adhesive surface prior to application of the film dressing to the wound site; and

a rigidity strip having a width which is relatively narrow compared to the width of the film dressing and having a length substantially equal to the length of the film dressing said strip being made of substantially the same material and having substantially the same thickness as said film dressing and being adjacent an edge of the film dressing along the side edge of the film dressing which is adjacent the tab for promoting adhesion between the film dressing and the wound site when the carrier sheet is removed from the film dressing, said rigidity strip and said film dressing each having a MVTR greater than about 20 grams/100 in^2/24 hours at 100° F. and 90% relative humidity as measured by ASTM E96 Method E.

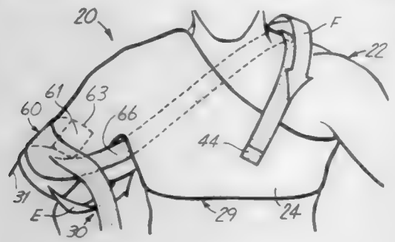
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5,628,725

SHOULDER STABILIZER METHODS

Doak Ostergard, Lincoln, Nebr., assignor to The Saunders Group, Inc., Chaska, Minn.

Filed Mar. 21, 1995, Ser. No. 407,701
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—62 11 Claims



1. A method for stabilizing an anterior instability in an injured shoulder of an athlete, comprising the steps of:

applying a garment to an athlete, the garment having a chest portion adapted to extend around the chest of the athlete, a shoulder portion and an arm portion proximate the shoulder portion adapted to substantially cover the axilla and the upper arm of the injured shoulder, a portion of an outer surface of the garment being constructed of a loop material for engagement with a hook portion of a hook and loop fastener;

attaching an upper and a lower elastic strap to the posterior and lateral aspect of the arm portion proximate the injured shoulder so that distal ends of the straps extend over the top of the arm toward the anterior portion of the athlete;

pulling the lower elastic strap under the axilla of the injured shoulder, diagonally across the back of the athlete, and over the opposite shoulder;

attaching the distal end of the lower elastic strap to the chest portion of the garment;

pulling the upper elastic strap under the axilla and generally horizontally across the back of the athlete; and

attaching the distal end of the upper elastic strap to the chest portion of the garment to maintain a generally constant posterior tension on a humeral head within a shoulder socket of the injured shoulder.

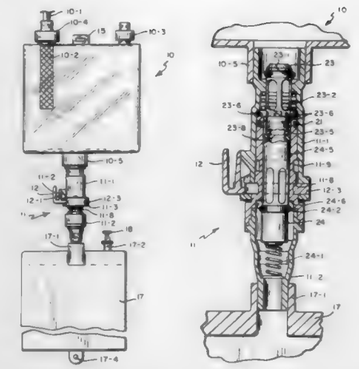
5,628,726

BLOOD COLLECTION SYSTEM

Robert F. Cotter, Duxbury, Mass., assignor to Duxbury Scientific, Inc., Hingham, Mass.

Filed Feb. 16, 1995, Ser. No. 389,928
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—4 7 Claims

1. A blood collection system comprising a first container for collecting blood, a second container for receiving blood from said first container, a coupling having a female coupling portion containing a first valve and a male coupling portion containing a second valve, said coupling connected to said first and second containers respectively, said coupling holding said first and second containers together in a first locked position with the valves thereof closed preventing flow of blood between one container and another while preventing contamination of the blood passageway between the containers and when the containers are moved relatively closer together to a second locked position and held in place causing the opening of the valves for the both containers to permit the flow of blood between the containers,



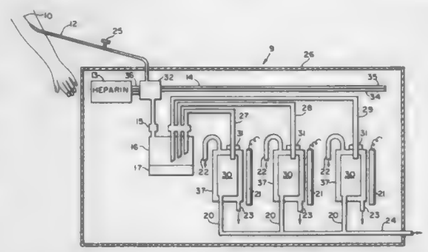
wherein relative rotation between the female coupling portion and the male coupling portion does not provide relative axial movement therebetween.

5,628,727

EXTRACORPOREAL VIRIONCIDAL APPARATUS

Said I. Hakky; A-Hamid Hakki, both of 8547 Merrimoor Blvd., E., Largo, Fla. 34647-3145, and Perry B. Hudson, 2225 Park St., North, St. Petersburg, Fla. 33710

Filed Aug. 15, 1995, Ser. No. 515,135
Int. Cl.[6] A61M *37/00;1/30*
U.S. Cl. 604—6 16 Claims



1. An extracorporeal radiation-therapy apparatus for use in treating the blood of a donor for diseased cells or organisms capable of division comprising:

a. means for removing a flow of blood from donor;

b. a housing comprising;

a first fluid communication means for receiving said blood and subjecting said blood to a density gradient device whereby blood fractions selected from plasma, white blood cells and platelets are separated;

a second, third and fourth fluid condition means for transferring each separated blood fraction to individual treatment chambers;

each said treatment chambers having side walls impenetrable to high energy electromagnetic radiation so as to inactivate said diseased cells or organisms, a high energy electromagnetic radiation source and at least one module treating chamber having side walls substantially transparent to said radiation and containing a semi-permeable membrane;

said at least one module includes a fifth fluid communication means to supply a continuous flow of a complexing agent for viral particles into said module and returning said unreacted complexing agent to a complexing agent reservoir;

said high energy electromagnetic radiation source being of an effective wavelength and intensity to inactive said diseased

cells or organisms capable of division and being directed to impinge upon said at least one module to provide an irradiated filtrate;

a third fluid communication means for receiving said irradiated filtrate substantially free of diseased cells from each of said modules and combining the irradiated filtrates of each fraction to produce recombined blood; and

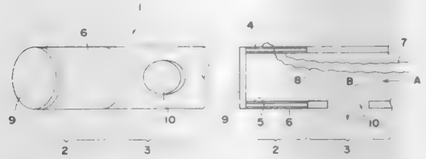
c. means for returning said recombined blood to the donor.

5,628,728

MEDICINE APPLYING TOOL

Katsuro Tachibana, and Shunro Tachibana, both of Fukuoka, Japan, assignors to Ekos Corporation, Everett, Wash.

Filed May 31, 1995, Ser. No. 455,444
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—19 1 Claim



1. A medicine applying tool, comprising:

a catheter including a distal portion and an injection port configured to deliver a medicine introduced through the catheter to the injection port;

a piezoelectric element that includes an exterior surface and an interior surface formed in an interior of the piezoelectric element;

an electrode portion coupled to the distal portion of the catheter, the electrode portion having a first electrode positioned at the exterior surface of the piezoelectric element and a second electrode positioned at the interior surface of the piezoelectric element, wherein the first and second electrodes are configured to receive an electric signal of an ultrasonic frequency applied to the first and second electrodes; and

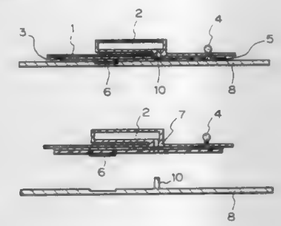
a third electrode, electrically connected to the patient, wherein a DC voltage is applied to the third electrode and not to the first and second electrodes.

5,628,729

INTERFACE FOR IONTOPHORESIS WITH HYDRATING MECHANISM

Keiichiro Okabe, Tokyo, Japan, assignor to Hisamitsu Pharmaceuticals Co., Inc., Tosu, Japan

Continuation of Ser. No. 13,093, Feb. 3, 1993, abandoned.
This application Dec. 21, 1994, Ser. No. 361,459
Claims priority, application Japan, May 27, 1992, 4-158939
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 6 Claims



1. An interface for iontophoresis, comprising:

an electrode having a first side and a second side opposite the first side, the electrode having a first opening;

a reservoir of an aqueous solution laminated to the first side of the electrode, the reservoir having a second opening aligned with the first opening in the electrode;

a water-supplying film laminated to the second side of the electrode and having a third opening aligned with the first and second openings;

a medication in dry-form positioned on the water-supplying film; and

a removable shield covering over the water-supplying film and sandwiching the medication between the shield and the water-supplying film, wherein the shield has a projection blocking at least the second opening to contain the solution in the reservoir,

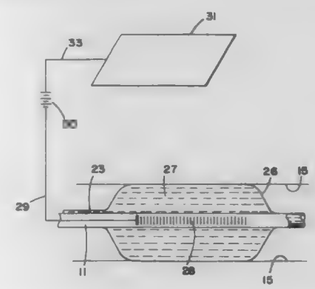
wherein the aqueous solution in the reservoir is supplied to the water-supplying film by a capillary action, which solution dissolves the medication upon removal of the shield from the water-supplying film.

5,628,730

PHORETIC BALLOON CATHETER WITH HYDROGEL COATING

James E. Shapland; Mark B. Knudson, both of Shoreview, and Jin Shimada, Falcon Heights, all of Minn., assignors to Cortrak Medical, Inc., Minneapolis, Minn.

Continuation of Ser. No. 705,731, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 637,299, Jan. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,961, Jun. 15, 1990, abandoned. This application Jul. 18, 1994, Ser. No. 276,540
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—21 8 Claims



1. A drug delivery device for local delivery of a drug to an internal body tissue target area comprising:

(a) a catheter having a distal end and a proximal end;

(b) an inflatable balloon positioned on the catheter distal end, the balloon being formed from a permeable membrane and defining a drug receiving and dispensing chamber bounded by the catheter distal end and the membrane;

(c) a drug delivery lumen on said catheter and having a distal end in fluid flow communication with said chamber, said lumen extending from the distal end to the proximal end of the catheter for the delivery of a drug therethrough;

(d) a hydrogel coating on said permeable membrane and in fluid flow communication with said chamber; and

(e) phoresis means positioned within the chamber in immediate proximity to the distal end of the catheter to generate a force for transporting a drug from the chamber outwardly through the permeable membrane.

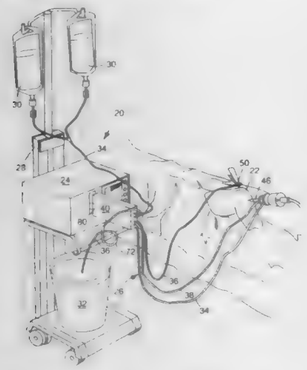
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5,628,731

IRRIGATION SYSTEM WITH TUBING CASSETTE

Larry H. Dodge, River Falls, Wis.; H. Aaron Christmann, Afton, Minn.; Ulf B. Dunberger, Portsmouth, N.H.; Thomas D. Egan, Marblehead, Mass., and James R. Watts, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 3,475, Jan. 12, 1993, Pat. No. 5,403,277.
This application Dec. 12, 1994, Ser. No. 354,500
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—153 42 Claims



1. A tubing set for use in an irrigation system of the type comprising an irrigation pump housing having a cassette-receiving passageway for releaseably receiving a cassette, a race mounted in the housing on one side of the cassette-receiving passageway, pumping means, mounted in the irrigation housing on the other side of the cassette-receiving passageway from the race, for pumping irrigation fluid to an internal body irrigation site, and means for moving the race and the pumping means relative to one another between a release position, wherein both of the race and pumping means are positioned outside the cassette-receiving passageway, and an operating position, more closely spaced together than in the release position, wherein one of the race and pumping means is positioned within the cassette-receiving passageway, the tubing set comprising:

an inflow line for providing irrigation fluid to the internal body irrigation site, the inflow line having inlet and outlet ends; and

a cassette holding a held portion of the inflow line between the ends of the inflow line, the cassette having opposed through openings exposing an exposed segment of the held portion of the inflow line and centering means, engaging the inflow line, for holding the exposed segment approximately across the center of the opposed through openings for direct pumping engagement of the exposed segment of the inflow line between the race and pumping means of an irrigation system when the race and pumping means are in their operating position.

5,628,732

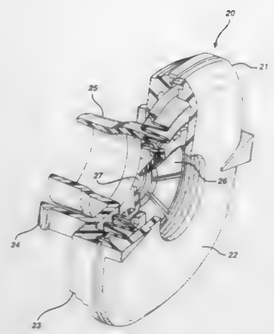
TROCAR WITH IMPROVED UNIVERSAL SEAL

Mitchell K. Antoon, Jr., Cincinnati, Ohio; Michael A. Murray, Bellevue, Ky., and Robert T. Alvarez, Carlsbad, Calif., assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Jan. 19, 1996, Ser. No. 588,850
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—167 11 Claims

1. A trocar for providing access for insertion and withdrawal of surgical instruments to and from a surgical site within a body cavity, said trocar comprising:

a) a trocar cannula, said cannula having a cannula housing and a tubular sleeve extending therefrom, said cannula housing having a passageway communicating with said sleeve so as to create a path through said cannula for providing access for insertion and withdrawal of said surgical instruments; and



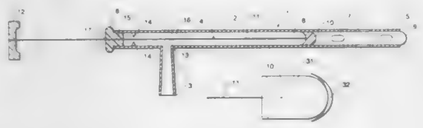
b) a seal assembly affixed to said cannula housing in said path of said passageway, said seal assembly including a seal composed of an elastomeric material for sealing against said surgical instruments of varying diameter, said seal having a centrally located interior region containing an aperture therethrough, and a concentrically located sealing region, wherein said sealing region comprises an integral laminate co-molded from said elastomeric material, said laminate having a first underlying layer and a second overlaying layer, said first underlying layer having a hardness between about 5 Shore A Durometer Scale and about 40 Shore A Durometer Scale, and said second overlaying layer having a hardness between about 40 Shore A Durometer Scale and about 80 Shore D Durometer Scale.

5,628,733

SURGICAL DRAIN

S. James Zinreich; Eva S. Zinreich, both of Owings Mills, and Douglas E. Mattox, Ruxton, all of Md., assignors to IZI Corporation, Owings Mills, Md.

Filed Mar. 3, 1994, Ser. No. 205,517
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—267 7 Claims



1. A surgical drain for draining wounds comprising:

an elongated tube-like body forming a lumen and having proximal and distal ends, said body having a plurality of perforations therein, and

at least one plunger comprising a scraper, a line, and a handle,

said scraper originally positioned in the distal end and movable longitudinally from the distal end to the proximal end within said lumen, constructed of a core material with a disk attached thereto, said scraper being sufficiently rigid to withstand the force necessary to loosen any material or debris collected within said lumen, and sized to be just smaller than the diameter of said lumen.

said line extending through said lumen and having a first end attached to said scraper and a second end attached to said handle, and

said handle positioned near the proximal end of the body.

5,628,734

SPINAL NEEDLE WITH CURVED DISTAL END AND METHOD OF USING SAID NEEDLE IN A SPINAL INJECTION TO PREVENT POST DURAL PUNCTURE HEADACHE

Bela I. Hatfalvi, 15 Middlesex Dr., St. Louis, Mo. 63144

Filed Mar. 23, 1995, Ser. No. 409,503
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—272 6 Claims



1. In a spinal injection needle of the type employed in administering spinal anesthetics, the needle being comprised of a cannula having a longitudinal length with opposite proximal and distal ends and an opening at its distal end, the improvement comprising:

the needle cannula having a continuous curvature along at least one quarter of its longitudinal length;

the opening is positioned on one side of the cannula and the curvature of the cannula gives the cannula opposite concave and convex sides, the opening faces toward the convex side of the cannula and away from the concave side; and,

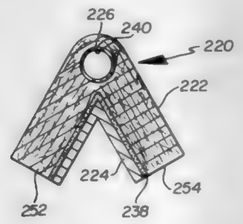
the cannula has a beveled edge surrounding the opening at the cannula distal end, the beveled edge of the cannula is positioned in a plane, and a stylet having the same curvature of the cannula is inserted through the cannula from the cannula proximal end, the stylet has a distal end surface positioned in the same plane as the needle opening beveled edge.

5,628,735

SURGICAL DEVICE FOR WICKING AND REMOVING FLUID

Joseph I. Skow, 16005 87th St. South, Hastings, Minn. 55033

Filed Jan. 11, 1996, Ser. No. 584,336
Int. Cl.[6] A61M *25/00;1/00*
U.S. Cl. 604—317 6 Claims



1. A device for removing excess fluid during surgical procedures, comprising:

(a) a flexible mat having a high wicking property: and

(b) a flexible tube having a substantially straight end section embedded in said mat, said tube having at least one hole in said embedded end section, and

(c) a flexible, nonporous sheet attached to one side of said mat, said sheet rendering the device elastic, whereby the device is used according to the following methodology:

(i) said device is folded along said substantially straight embedded end section of said tube with said sheet on the inside;

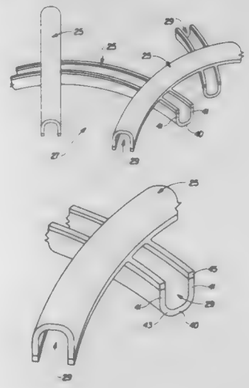
(ii) said folded device is inserted into a nasal cavity of a patient and positioned behind the base of nose; and (iii) said device unfolds into an inverted V shape that lodges in said nasal cavity and seals the nose from the throat, thereby preventing fluid from surgical procedure in the nose from draining down the throat.

5,628,736

RESILIENT FLUID TRANSPORTING NETWORK FOR USE IN ABSORBENT ARTICLES

Hugh A. Thompson, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 235,580, Apr. 29, 1994, abandoned.
This application Sep. 28, 1995, Ser. No. 670,282
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—366 20 Claims



1. A resilient fluid transporting network comprised of a plurality of bicomponent capillary channel fibers capable of intra-fiber fluid transport, said fibers having a base portion and at least two capillary channel walls extending from said base portion forming an open capillary channel, said capillary channel walls having a base end and a distal end, said capillary channel walls and said base portion being comprised of a first polymeric material having a first melting point temperature, said distal ends of said capillary channel walls being comprised of a second polymeric material having a second melting point temperature which is lower than said first melting point temperature, such that when heat is applied to said fibers, at a temperature below said first melting point temperature and above said second melting point temperature, distal ends of said fibers bond together at channel-to-channel fiber intersections to form an interconnected network of capillary channel fibers capable of inter-fiber fluid transfer between the capillary channels of bonded capillary channel fibers, wherein said capillary channel walls are substantially parallel to each other.

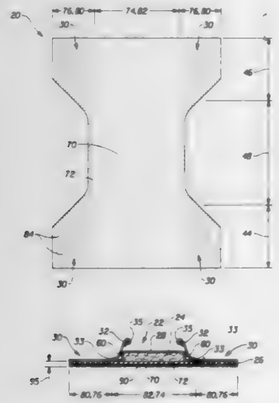
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5,628,737

ABSORBENT ARTICLE HAVING BREATHABLE SIDE PANELS

George C. Dobrin, and Karen M. Davis, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 530,036, Sep. 19, 1995, Pat. No. 5,571,096. This application Jul. 30, 1996, Ser. No. 688,348
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—383 20 Claims



1. A disposable absorbent article having a front waist region, a rear waist region, a crotch region located between said front waist region and said rear waist region, a pair of opposed side edges, a first end edge located in said front waist region and a second end edge located in said rear waist region, the absorbent article comprising:

a containment assembly comprising an absorbent core having a pair of opposing longitudinal edges, an inner surface and an outer surface; and

a laminate comprising a backsheet and an air pervious outer cover, said backsheet being positioned between said absorbent core and said air pervious outer cover, said backsheet having a garment-facing surface, a body-facing surface, a central region, two apertured zones and a non-apertured zone; said non-apertured zone comprising said central region and being juxtaposed at least a portion of said outer surface of said absorbent core; said apertured zones comprising apertures disposed outboard of said longitudinal edges of said absorbent core and extending through at least a portion of said crotch region; at least a portion of said garment-facing surface of said backsheet being joined with at least a portion of said outer cover juxtaposed said apertured zones.

5,628,738

WELDED DISPOSABLE DIAPERS

Makoto Suekane, Kawanoe, Japan, assignor to UNI-Charm Corporation, Ehime-ken, Japan

Filed May 16, 1994, Ser. No. 242,975
Claims priority, application Japan, May 19, 1993, 5-117345
Int. Cl.[6] A61F *13/15;* A41B *9/12*
U.S. Cl. 604—385.1 6 Claims

1. A disposable diaper comprising:

a liquid-permeable topsheet;

a liquid-impermeable backsheet;

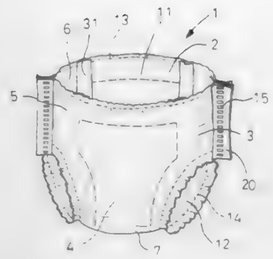
a liquid-absorbent core sandwiched between the topsheet and the backsheet;

wing-like portions of front and rear bodies outwardly extending from laterally opposite side edges of said core placed one upon another and welded together to form opposite side portions at waist levels of said front and rear bodies;

backsheet members associated with said backsheet so as to form extensions thereof assembled with said topsheet to form said wing-like portions, said backsheet members being made of material having a melting point lower than a melting point of said topsheet, said wing-like portions being disposed face to face inside said diaper; and

covering sheets having a melting point higher than the melting point of said backsheet members placed on an outer surface of said backsheet members;

wherein said wing-like portions are welded along laterally opposite edges thereof together with said covering sheets to form said opposite side portions.

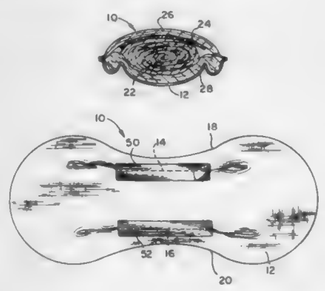


5,628,739

PREBENT ANATOMICALLY SHAPED SELF-ALIGNING SANITARY NAPKIN

Tong-Ho J. Hsieh, East Brunswick, and John T. Ulman, Woodbridge, both of N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.

Continuation of Ser. No. 8,016, Jan. 22, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 410,550
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 17 Claims



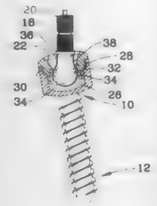
1. An absorbent pad comprising longitudinal and transverse edges, a center portion located between and approximately equidistant from each longitudinal edge and between and approximately equidistant from each transverse edge, a fluid permeable body facing cover having a body facing side and a garment facing side, an absorbent element, a central, partially longitudinally disposed core, and a flexible, moisture barrier having a garment facing side and a body facing side and having partially longitudinally disposed permanent creases proximate to the longitudinal edges of the garment facing side of said moisture barrier, wherein said absorbent pad has a convex shape in the center portion of the body facing cover.

5,628,740

ARTICULATING TOGGLE BOLT BONE SCREW

Thomas S. Mullane, 2308 SW. 4th Ave., Ft. Lauderdale, Fla. 33315

Continuation of Ser. No. 173,619, Dec. 23, 1995, abandoned. This application Jun. 30, 1995, Ser. No. 497,178
Int. Cl.[6] A61F *5/00;* A61B *17/56*
U.S. Cl. 606—61 13 Claims



1. An articulating toggle bolt bone screw for surgical implantation comprising:

an anchoring base having a rigid shank with a self-taping threaded first end for securing into human bone and a cylindrical shaped second end having an enlarged sidewall forming a socket;

a bolt constructed of rigid material having a first spherically shaped end insertable into said socket and a threaded second end receptive to a locking nut;

and an attachment cap frictionally engaging an inner surface of said enlarged sidewall of said anchoring base forming a receptacle for holding said first end of said bold in a fixed position relative to said anchoring base, said attachment cap having a rounded upper inner surface and a centrally disposed sized aperture allowing said second end of said bolt to articulate over a predetermined range of motion;

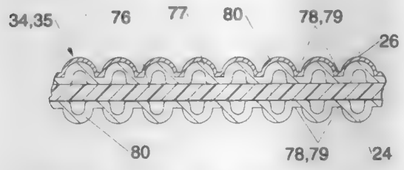
whereby said anchoring base is threaded into human bone wherein said second end of said bolt is available for attachment to conventional implant component devices, wherein tightening of a locking nut to said second end of said bolt frictionally engages said first spherically shaped end against said inner surface of said attachment cap securing said bolt in position.

5,628,741

ABSORBENT ARTICLE WITH ELASTIC FEATURE HAVING A PRESTRAINED WEB PORTION AND METHOD FOR FORMING SAME

Kenneth B. Buell; James W. Richardson, both of Cincinnati, Ohio, and Douglas H. Benson, West Harrison, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 937,619, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 750,775, Aug. 22, 1991, Pat. No. 5,151,092, which is a continuation-in-part of Ser. No. 715,152, Jun. 13, 1991, abandoned, and Ser. No. 662,543, Feb. 28, 1991, Pat. No. 5,143,679. This application Mar. 8, 1994, Ser. No. 207,907
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 15 Claims



1. A disposable absorbent article comprising:

liquid pervious topsheet;

a liquid impervious backsheet joined with said topsheet;

an absorbent core having side edges and waist edges, said absorbent core being positioned between said topsheet and said backsheet; and

an elastic feature extending outwardly from one of said edges of said absorbent core, said elastic feature comprising a nonelastic web and an elastomeric member joined with said nonelastic web such that a portion of said nonelastic web coincides with at least a portion of said elastomeric member, said portion of said nonelastic web coinciding with said elastomeric member being mechanically prestrained such that said nonelastic web assumes a pattern of strained ribs and unstrained gaps.

5,628,742

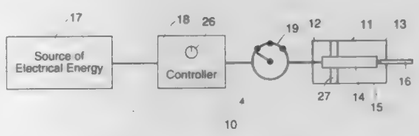
Patent Not Issued For This Number

5,628,743

DUAL MODE ULTRASONIC SURGICAL APPARATUS

William W. Cimino, Louisville, Colo., assignor to Valleylab Inc., Boulder, Colo.

Filed Dec. 21, 1994, Ser. No. 360,538
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—1 9 Claims



1. An ultrasonic surgical apparatus used by a surgeon for operating on tissue of a patient, the ultrasonic surgical apparatus including a source of electrical energy, the ultrasonic surgical apparatus comprising:

a handpiece having a easing to be held and controlled by the surgeon;

a distal end on the handpiece for positioning near the tissue of the patient;

a transducer supported within the handpiece, the transducer arranged for producing ultrasonic mechanical vibrations substantially at a first frequency and substantially at a second frequency, the second frequency approximately three times higher in frequency than the first frequency, the vibrations substantially at the first frequency having a first amplitude, the vibrations substantially at the second frequency having a second amplitude;

a controller connected to the source of electrical energy and connected to the transducer, the controller designed to stably control the first amplitude and the second amplitude;

a surgical tool supported on the transducer and extending generally beyond the distal end, the surgical tool having a substantial curing effect on the tissue when operated selectively at the first frequency, the surgical tool having a substantial coagulation effect on the tissue when operated selectively at the second frequency, the surgical tool having substantial curing and coagulating effects on the tissue when operated concurrently at the first and second frequencies.

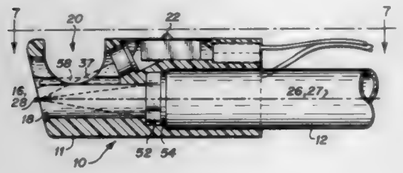
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5,628,744

TREATMENT BEAM HANDPIECE

Tony D. Coleman, San Jose, and Scott A. Davenport, Half Moon Bay, both of Calif., assignors to Laserscope, San Jose, Calif.

Filed Dec. 21, 1993, Ser. No. 171,593
Int. Cl.° A61B 17/36
U.S. Cl. 606—12 9 Claims



1. A dermatological treatment system for delivering a treatment beam to a dermatological treatment site, comprising in operative combination:

a) a handpiece having a housing;

b) a first substantially monochromatic optical energy source to provide a treatment beam having a first wavelength and intensity sufficient to treat dermatologic lesions and other abnormalities;

c) a second substantially monochromatic optical energy source to generate a probe beam having a second wavelength appropriate to detect dermatologic lesions and other abnormalities as characterized by differences in reflected light intensity when said probe beam is reflected from such lesions and other abnormalities as compared to normal skin tissue, said probe beam and treatment beam able to operate simultaneously;

e) an optical delivery device having an output end positioned in the housing, the optical delivery device optically connected to said first optical energy source for receiving the treatment beam from said first optical energy source and conducting said treatment beam toward said treatment site;

f) said optical delivery device is optically connected to said second optical energy source for receiving said probe beam from said second optical energy source and conducting said probe beam toward said treatment site, said probe beam impinging on an area substantially coincident with said treatment beam; and

g) a treatment beam selectivity means in cooperative electrical connection with said first optical energy source for identifying dermatological abnormalities by directly detecting variations in intensity of reflected light from said probe beam, comparing the intensity of the reflected light with the predetermined threshold level and enabling or disabling said treatment beam in accordance with a predetermined reflected light threshold level.

5,628,745

EXIT SPARK CONTROL FOR AN ELECTROSURGICAL GENERATOR

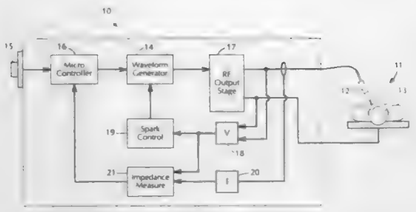
Robin B. Bek, 4524 Starboard Ct., Boulder, Colo. 80301

Filed Jun. 6, 1995, Ser. No. 479,424
Int. Cl.° A61B 17/39
U.S. Cl. 606—38 8 Claims

1. An electrosurgical generator with an exit spark control system that suppresses exit sparking in a patient circuit, the electrosurgical generator comprising:

an adjustable waveform generator in the electrosurgical generator for producing radio frequency waveforms, and capable of adjusting the frequency of the waveforms;

a radio frequency output stage electrically connected to the adjustable waveform generator for receiving the radio frequency waveforms and for generating an output voltage and an output current for transmission to the patient circuit;



a voltage sensor connected to the radio frequency output stage for receiving the output voltage, and capable of producing a first signal that is proportional to the output voltage;

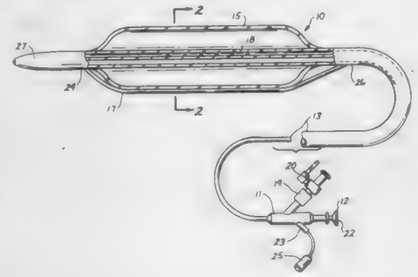
a spark control circuit electrically connected to the voltage sensor for receiving the first signal, and the spark control circuit electrically connected to the adjustable waveform generator to cause the waveform generator to temporarily stop and then to temporarily adjust the frequency of the waveforms partly in response to the first signal, wherein the adjusted frequency causes a drop in gain across the radio frequency output stage.

5,628,746

DILATATION CATHETER ASSEMBLY WITH CUTTING ELEMENT AND METHOD OF USING THE SAME

Ralph V. Clayman, St. Louis, Mo., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 873,712, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 522,148, May 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 298,477, Jan. 18, 1989, abandoned. This application Nov. 30, 1994, Ser. No. 347,838
Int. Cl.° A61B 17/39
U.S. Cl. 606—45 13 Claims



4. A dilation catheter assembly adapted for insertion into the urethra of a patient, comprising in combination:

an elongate tubular body having an axis and a distal end carrying a generally cylindrical radially dilatable member adapted to be positioned longitudinally in a body conduit and having properties for dilating generally radially of the tubular body;

means for dilating the dilatable member to exert dilation forces on the urethra;

cutting means carried by the tubular body exteriorly of the dilatable member, for creating an incision in the urethra thereby reducing damage to the urethra from the dilation forces; and

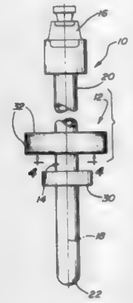
the cutting means being limited to a single cutting element in the form of a thin cylindrical wire disposed longitudinally of the tubular body and movable radially in a plane including the axis of the tubular body to create the incision in the urethra, at least a portion of said wire being disposed radially outwardly of said tubular body at all times.

5,628,747

DEVICE FOR REMOVING CANCELLOUS BONE

Marc E. Richelsoph, Cordova, Tenn., assignor to Wright medical Technology, Inc., Arlington, Tenn.

Filed Jan. 22, 1993, Ser. No. 7,702
Int. Cl.° A61F 2/30
U.S. Cl. 606—79 16 Claims



1. A device (10) for removing cancellous bone during machining of a long bone canal, the device comprising:

brush means (12) for scraping cancellous bone from cortical bone while deflecting off of cortical bone;

guide means (14) operatively connected to the brush means (12) for centering the brush means (12) relative to the long bone canal; and

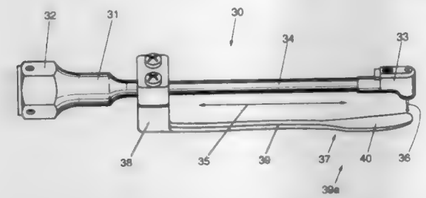
adapter means (16) connected to the guide means (14) for connecting the guide means (14) to a motion actuator to move the brush means (12) relative to the long bone canal and scrape off cancellous bone therefrom.

5,628,748

SURGICAL INSTRUMENT

Frank A. Vicari, 1303 Hawthorne La., Glenview, Ill. 60025

Filed Sep. 8, 1995, Ser. No. 525,255
Int. Cl.° A61B 17/00
U.S. Cl. 606—79 22 Claims



1. A surgical instrument for cutting cranial and/or facial bone from a mammal, said mammal having cranial bone at least partially covering a brain, said mammal having a dura substantially separating said brain from said cranial bone, said mammal having a scalp covering at least a portion of said cranial bone, the surgical instrument comprising:

an elongated handle having an operator gripping portion, said handle having an axis, said handle including a grinding burr rotatably mounted to said handle opposite said operator gripping portion and extending therefrom in a direction generally perpendicular to the axis of said handle; and

an elongated guard connected to said handle, said guard extending along said handle substantially parallel to the axis of said handle, said guard terminating in a plate,

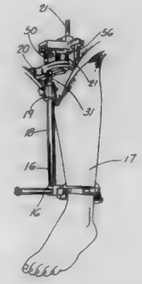
wherein said surgical instrument is adjustable to an operating position wherein said grinding burr is below said scalp but above said skull of said mammal and wherein said guard is below said skull of said mammal but above said dura of said mammal.

5,628,749

TIBIAL RESECTION INSTRUMENTATION AND SURGICAL METHOD

Tim Vendrely, Memphis, Tenn.; Leo A. Whiteside, Bridgeton, Mo.; Thomas A. T. Carls, Memphis, Tenn.; John Steele, Aurora, Colo., and Chris E. Johnson, Memphis, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Continuation of Ser. No. 388,983, Feb. 15, 1995. This application Jun. 7, 1995, Ser. No. 480,845
Int. Cl.° A61B 17/00
U.S. Cl. 606—80 38 Claims



1. A tibial stylus apparatus comprising:

a) an instrument body;

b) a reference member that can track the patient's intramedullary canal so that the reference member enables the surgeon to reference surgical cuts with respect to the patient's intramedullary canal;

c) the body having cutting guide surfaces for guiding a surgeon's cutting blade during a cutting of the patient's proximal tibia;

d) adjustable stylus carried by the instrument body for setting a depth of cut at either of the patient's medial and lateral condylar surfaces; and

e) the stylus including a pair of adjustable stylus probe members each independently adjustable relative to the instrument body.

5,628,750

TIBIAL RESECTION GUIDE ALIGNMENT APPARATUS AND METHOD

Steven I. Whitlock, Austin, and Mark L. Rehmann, Pflugerville, both of Tex., assignors to U.S. Medical Products, Inc., Austin, Tex.

Filed Jun. 30, 1995, Ser. No. 496,980
Int. Cl.° A61B 17/56
U.S. Cl. 606—88 13 Claims

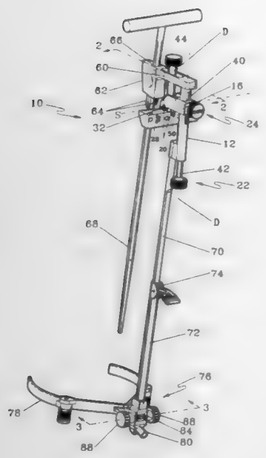
1. An apparatus for aligning a tibial resection guide during knee arthroplasty, the apparatus comprising:

(a) an elongated base member;

(b) a carriage member slidably mounted on the elongated base member so as to slide along a depth adjustment axis of the elongated base member;

(c) depth adjustment means associated with the base member and carriage member for adjusting the position of the carriage member along the depth adjustment axis of the base member and fixing the carriage member in a desired position along the depth adjustment axis of the base member;

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(d) a guide block mount pivotally connected to the carriage member so as to pivot about a slope adjustment axis that extends substantially perpendicular to the depth adjustment axis;

(e) slope adjustment means mounted on the carriage member for adjusting the orientation of the guide block mount about the slope adjustment axis and fixing the guide block mount in a desired orientation about the slope adjustment axis;

(f) guide connecting means associated with the guide block mount for releasably securing the tibial resection guide to the guide block mount;

(g) a connecting arm connected to an upper end of the base member so as to extend over the center of the tibial plateau when the base member is in an operating position adjacent to the anterior side of the surgically exposed tibial plateau, in which operating position the depth adjustment axis extends substantially parallel to the longitudinal axis of the patient's tibia;

(h) at least one engagement member extending from a lower surface of the connecting arm for engaging the proximal end of the tibia;

(i) an intramedullary shaft;

(j) an intramedullary shaft opening extending through the connecting arm for receiving the intramedullary shaft extending into the tibial canal when the base member is in the operating position;

(k) an elongated extramedullary mounting member;

(l) extramedullary mount connecting means associated with the base member and the elongated extramedullary mounting member for rigidly connecting the elongated extramedullary mounting member to a lower end of the base member such that the extramedullary mounting member extends along the anterior side of the patient's tibia when the base member is in the operating position; and

(m) a bottom assembly connected to a lower end of the extramedullary mounting member opposite the end of the extramedullary mounting member connected to the base member, the bottom assembly for attaching around a lower portion of the patient's tibia and fixing the lower end of the extramedullary mounting member relative to the patient's tibia.

5,628,751

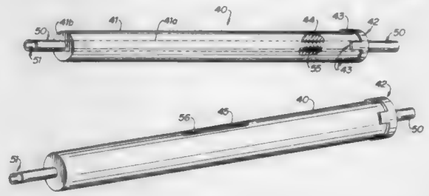
ORTHOPEDIC FASTENER APPLICATOR WITH ROTATIONAL OR LONGITUDINAL DRIVER

Thomas W. Sander, Winona Lake, Ind.; Robert Gangnath, Monroe, and Daniel R. Lee, New Haven, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 80,383, Jun. 21, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 395,277

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—104 **14 Claims**



1. An endoscopic apparatus for applying a surgical fastener activated by a proximally moving setting pin, which comprises:

a) fastener abutting means for abutting a surgical fastener, said fastener abutting means comprising an elongated tube having an axial bore and a distal fastener abutting surface;

b) grasping means for engaging a proximal portion of the setting pin, said grasping means being movable with respect to said fastener abutting means; and

c) drive means for proximally moving said grasping means relative to said fastener abutting means, said drive means comprising an elongated cylindrical member movably disposed within the axial bore of the fastener abutting means, and further including a threaded portion for engaging a tipped portion of the axial bore of the fastener abutting means whereby said drive means is moved relative to the fastener abutting means by a screw motion.

5,628,752

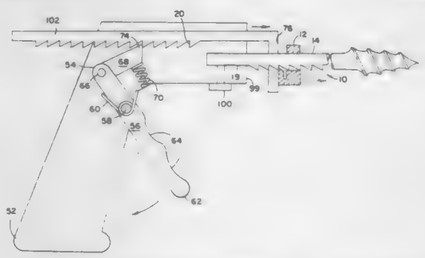
RATCHETING COMPRESSION DEVICE

Stanley E. Asnis, Port Washington, N.Y., and John S. Crombie, Newark, N.J., assignors to Howmedica Inc., New York, N.Y.

Division of Ser. No. 101,601, Aug. 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,067

Int. Cl.[6] A61F *2/00*

U.S. Cl. 606—104 **1 Claim**



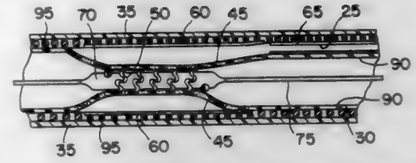
1. A ratcheting gun for linear translation of one part with respect to another part of a two-part bone compression implant wherein the implant has a first part having asymmetric teeth and a second part comprising a movable hex nut, said ratcheting gun comprising:

(a) a main body portion having a proximal end and a distal end, wherein said proximal end has an aperture therein adapted to accept a distal end of said bone compression implant having asymmetric teeth and a holder for fixing said bone compression implant within said main body portion;

(b) a spring-loaded trigger having a first end pivotally attached to said main body portion and a second end extending outside said main body portion; and

(c) an L-shaped ratcheting pusher rod with a distal rod end and proximal rod end, and wherein the L shape of the rod consists of an elongated extension positioned within the main body portion of the ratcheting gun and extending proximally outside of the aperture of the main body portion to a substantially perpendicular downward extension, and wherein said pusher rod has asymmetric teeth which extend along the length of the elongated extension; and

(d) a springloaded prong attached to said spring-loaded trigger which operates in cooperation with the asymmetric teeth of said ratcheting pusher rod so as to advance the pusher rod toward the proximal end of the ratcheting gun such that said downward extension of the L-shaped pusher rod is adapted to contact and force said movable hex nut of said second part of said two part bone compression member in the proximal direction for one way engagement of the teeth of a bone compression implant.



a membrane with non-stick properties disposed between and coaxial with the inner wall and outer wall, the membrane forming an inflatable bladder having an inner diameter; a tube disposed between the coaxially bonded inner wall and the outer wall, the tube defining an inflation lumen and providing fluid communication between the inflatable bladder and an inflation port, and

a radially non-self expandable and compressibly crimpable stent having an inner and outer diameter, the outer diameter being frictionally engaged with the inner diameter of the inflatable bladder.

5,628,753

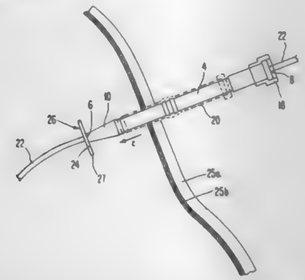
GASTROSTOMY TUBE REMOVAL TOOL

Raymond F. Cracauer, Plymouth, and Lester D. Michels, Eden Prairie, both of Minn., assignors to Sandoz Nutrition Ltd.

Filed Jun. 1, 1995, Ser. No. 457,641

Int. Cl.[6] A61F *11/00;* **A61M** *5/178;5/00*

U.S. Cl. 606—108 **8 Claims**



1. A gastrostomy tube removal device comprising, combination with a gastrostomy tube having a retention means;

a. a hollow, rigid, substantially cylindrical body portion with a first proximal open end and a second distal open end,

b. a tapered, substantially conical portion of said body formed at said proximal end that is adapted to receive gastrostomy tube exiting a patient's body; and

c. a moveable semi-rigid sheath that is flush with and covers a substantial portion of the remainder of said cylindrical body.

5,628,754

STENT DELIVERY GUIDE CATHETER

Michael R. Shevlin, La Mesa; James M. Shy, Chula Vista; William J. Boyle, Carlsbad; Paul W. Krejci, Poway, all of Calif., and Peter A. Lunn, Beverly, Mass., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 1, 1995, Ser. No. 510,117

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 **25 Claims**

9. A stent delivery guide catheter comprising:

a guide catheter body having proximal and distal ends with a cylindrical outer wall and a coaxially bonded inner wall, the inner wall defining and inner lumen;

5,628,755

BALLOON CATHETER AND STENT DELIVERY SYSTEM

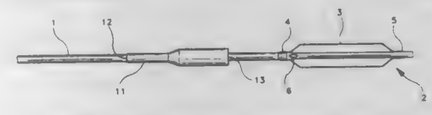
Mathias Heller, Winterthur, Switzerland; Alfonso M. Fernandez-Aceytuno, E-Las Palmas de Gran Canaria, Spain; Rainer Amann, Riedern am Sand, Germany; Roland Hirt, Schaffhausen, and Jakob Willi, Hori, both of Switzerland, assignors to Schneider (Europe) A.G., Bulach, Switzerland

Filed Oct. 24, 1995, Ser. No. 547,186

Claims priority, application Spain, Feb. 20, 1995, 9500456; European Pat. Off., Apr. 24, 1995, 95106125

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 **14 Claims**



1. A balloon catheter comprising a tubular shaft having a proximal end and a distal end; an elongated dilatation balloon with proximal and distal ends, the balloon being mounted on the tubular shaft in the vicinity of the distal end thereof; means secured on the tubular shaft for preventing expansion of balloon segments, the means for preventing expansion of balloon segments comprising armature means surrounding the shaft proximally of the balloon, the armature means adapted for longitudinal motion over a proximal portion of the balloon; sleeve means enclosing the armature means; and means for locking the armature and sleeve means on the shaft in a position either proximal of the balloon or over the proximal portion of the balloon.

5,628,756

KNOTTED CABLE ATTACHMENT APPARATUS FORMED OF BRAIDED POLYMERIC FIBERS

Boyd T. Barker, Jr., Memphis, and Eric Lange, Cordova, both of Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

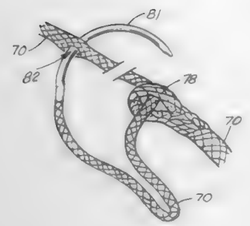
Continuation of Ser. No. 346,852, Nov. 30, 1994, Pat. No. 5,540,703, which is a continuation-in-part of Ser. No. 100,458, Jul. 30, 1993, Pat. No. 5,456,722, which is a continuation of Ser. No. 1,065, Jan. 6, 1993, abandoned. This application Jul. 29, 1996, Ser. No. 681,697

Int. Cl.[6] A61B *17/10*

U.S. Cl. 606—139 **22 Claims**

1. A surgical cable apparatus for surgically securing and fusing vertebral bone segments together, wherein each of the vertebral bone segments having an irregular outer surface, comprising:

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a) a flexible surgical cable member having first and second free end portions;
b) a needle attached to the first of one of said free end portions, the flexible cable being formed of a plurality of polymeric fibers;
c) the flexible cable being of a diameter of between one and three (1–3) millimeters along the entire length thereof including said first and second free end portions;
d) said cable having sufficient inherent flexibility for enabling the cable to be wrapped around the irregular outer surface of the vertebral bone segments and in close conformity with the irregular outer surfaces of the vertebral segments;
e) a splice connection for joining the cable end portions together after the cable has been wrapped around the bone segments to be fused, said splice connection including a woven interconnection of the cable end portions wherein the first end portions weaves between individual fiber strands of the second end portion; and
f) wherein the flexible cable can transfer sufficient compressive force to the bone segments to hold them in position while the bone heals and fuses together over time.

5,628,757

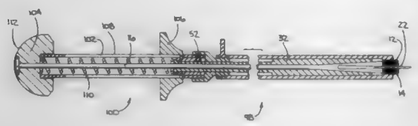
SURGICAL INSTRUMENT FOR HOLDING A NEEDLE

Harrith M. Hasson, 2043 N. Sedgwick, Chicago, Ill. 60614

Continuation-in-part of Ser. No. 879,604, May 7, 1992, Pat. No. 5,250,056, and a continuation of Ser. No. 61,324, May 13, 1993, abandoned, which is a continuation of Ser. No. 830,681, Feb. 4, 1992, abandoned, said Ser. No. 879,604is a continuation-in-part of Ser. No. 830,681. This application Dec. 1, 1994, Ser. No. 348,775

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 **19 Claims**



1. A surgical instrument for holding a needle, said instrument comprising:
a body;
first and second jaws integrally formed with said body and movable between a) an open position in which a needle can be directed between the jaws and b) a closed position in which a needle can be held in an operative position by the needle holding instrument; and
means for selectively moving the jaws from said open position into said closed position,
wherein said jaw moving means comprises a sleeve that is movable relative to and against at least one of said first and second jaws between first and second positions for moving the jaws between their open and closed positions,
there being cooperating ribs on the sleeve and the at least one jaw to releasably maintain the jaws in their closed position.

5,628,758

MEDICAL INSTRUMENT FOR DIRECTED PLACEMENT OF A KNOT

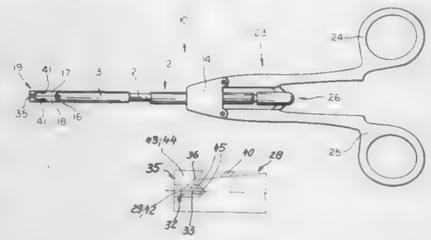
Gert Otten, Schiffdorf, and Carsten Lindeke, Berlin, both of Germany, assignors to Aerztliche Mechanik Udo Lindeke & Sohn, Berlin, Germany

Filed Mar. 30, 1995, Ser. No. 413,357

Claims priority, application Germany, Mar. 31, 1994, 44 11 827.9

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 **20 Claims**



1. A medical instrument for directed placement of a knot formed by two free ends of a surgical thread or the like suture material accompanied by formation of a continuous loop, comprising:
an instrument head for holding, guiding and/or manipulating the surgical thread at least on one side of the knot and adjacent thereto in such a way that the knot can be pushed into the vicinity of a target point and placed exactly in the target point by spreading at least one free end of the thread, said instrument head having a profile for separately holding, guiding and/or handling at least one of the free ends of the thread and the knot and the adjacent portions of the loop and wherein the profile has at least one peripheral region for the free ends and a central region for the knot and their adjacent loop portions and wherein the peripheral and central regions are connected via a recess, said peripheral region having a bevel, for supporting the knot and the free ends, which extends from the outer circumference of the instrument head in the direction of a front part of the instrument head and toward the center line of the instrument head, said bevel ending in the recess.

5,628,759

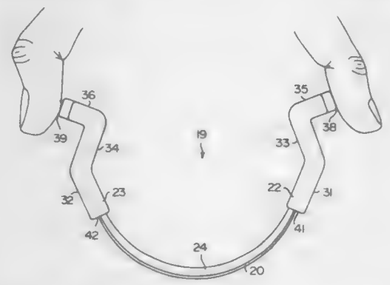
FLEXIBLE SURGICAL RAZOR

Gregory F. McCool, Staunton, and Jeffrey W. Wonderley, Fort Defiance, both of Va., assignors to American Safety Razor Company, Verona, Va.

Filed Sep. 29, 1994, Ser. No. 313,597

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **26 Claims**



1. A razor comprising:
a flexible blade having a front edge, left and right side edges, and a rear edge; and

a pair of gripping extensions each having a planar inner segment attached to a side edge of said blade, an at least partially planar middle segment extending at an upward angle away from the plane of the blade, and an outer segment having an exterior gripping edge and extending at an intersecting angle with said middle segment, said flexible blade flexing upon application of finger pressure to said gripping extensions.

5,628,760

SURGICAL HOOK KNIFE

Dennis J. Knoepfler, Amelia, Ohio, assignor to NuSurg Medical, Inc., Cincinnati, Ohio

Division of Ser. No. 126,511, Sep. 24, 1993, Pat. No. 5,176,695. This application Feb. 28, 1995, Ser. No. 395,428

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **1 Claim**



1. A blade member for use with a surgical cutting instrument, said blade member including two side edges extending between proximal and distal ends of said blade member, a curved cutting edge extending inwardly from one of said side edges intermediate said proximal and distal ends, said curved cutting edge generally facing in a proximal direction and an outer, generally straight cutting edge disposed on said distal end and facing in a direction generally opposite to said curved cutting edge.

5,628,761

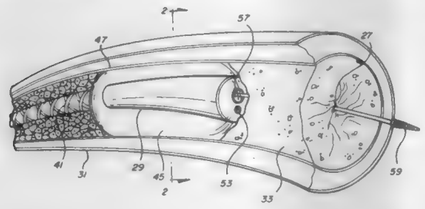
GUIDE WIRE PASSAGE CREATION DEVICE

David G. Rizik, 10480 E. Larkspur Dr., Scottsdale, Ariz. 85259

Continuation-in-part of Ser. No. 272,889, Jul. 8, 1994, abandoned. This application Jun. 28, 1995, Ser. No. 495,366

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **6 Claims**



1. A guide wire passage creation device for use in a blood vessel impassably occluded by atheromatic material, the device being adapted to enable a subsequent revascularization process requiring traversal of the occlusion by a guide wire, the device comprising:
a catheter having proximal and distal ends, the distal end culminating in a tip;
means for creating a passage through the atheromatic material for subsequent guide wire traversal, the guide wire passage creation means being adapted to create a passage whose diameter is no larger than necessary to permit subsequent traversal by a guide wire;
the catheter having at least three lumens, comprising:
a first lumen having a diameter no greater than about 0.02 inches, for insertion of a guide wire and for injection of a contrast dye,
a second lumen including the guide wire passage creation means, and
a third lumen communicating with an annular balloon disposed circumferentially at the distal end of the catheter adjacent the tip, the annular balloon having proximal and distal ends, and further comprising a plurality of smaller balloons disposed around the distal end of the annular balloon and spaced at approximately equal angular positions around the circumference of the annular balloon, the smaller balloons being selectively inflatable and deflatable to make intimate contact with the wall of the blood vessel to refine the position of the guide wire passage creation means in the vessel the annular balloon performing the following functions:
centering the distal end of the device when the distal tip of the device is positioned immediately proximal to the atheromatic material in the occluded blood vessel,
stabilizing the distal end of the device when the distal tip of the device is positioned immediately proximal to the atheromatic material in the occluded blood vessel, and
preventing blood flow in the event of a rupture in the blood vessel wall; and
operator controlled means at the proximal end of the device for deploying the multipurpose means and for deploying the guide wire passage creation means;
wherein the distal end of the catheter is substantially rigid from the tip to a distance beginning no less than about 10 millimeters and no more than about 20 millimeters from the tip, and wherein the multipurpose means is coaxial with the rigid portion of the catheter, so that the rigid portion and multipurpose means cooperatively act to center and stabilize the guide wire passage creation means in the blood vessel.

5,628,762

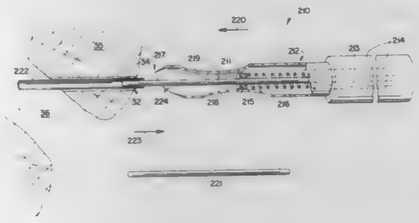
METHOD OF USING A DEVICE FOR EXCISION OF A FISTULA

Moshin Al-Tameem, King Saud University and King Khalid University Hospital, P.O. Box 7805, Riyhadh, Saudi Arabia

Division of Ser. No. 341,187, Nov. 18, 1994. This application Jan. 17, 1996, Ser. No. 583,740

Int. Cl.[6] A61B *17/32*

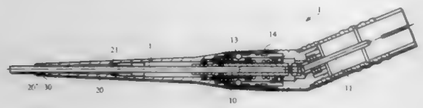
U.S. Cl. 606—170 **3 Claims**



1. A method for excision of a fistula, which includes a fistulous tract, comprising the steps of:
providing an excision device having a guide bar and a cutting tool fixed to said guide bar such that there is no relative movement between said guide bar and said cutting tool, a distal end of said guide bar extending beyond a distal end of said cutting tool;
inserting said distal end of said guide bar into a proximal end of the fistulous tract; and
moving said excision device including said guide bar and said cutting tool as a unitary device relative to the fistulous tract such that said cutting tool separates tissue surrounding the fistulous tract from the fistulous tract.

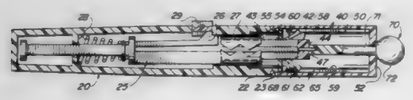
VOL
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5,628,763
SURGICAL HANDPIECE
Chikao Yazawa, and Takasuke Nakanishi, both of Kanuma, Japan, assignors to Nakanishi, Inc., Tochigi-ken, Japan
Filed May 24, 1996, Ser. No. 653,543
Claims priority, application Japan, May 25, 1995, 7-126332
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—170 5 Claims



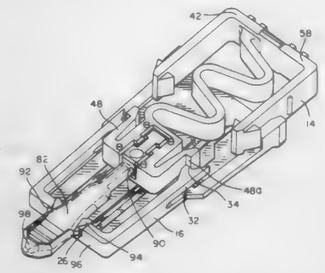
1. A surgical handpiece comprising
a spindle detachably holding an elongate bar for surgical operation and transmitting rotation to said bar,
an elongate sheath covering said bar except for a distal end portion thereof, and
a plurality of balls provided in a proximity of a distal end of said sheath, said balls being arranged in one cross-sectional plane,
wherein said balls have a diameter approximately equal to a thickness of said sheath in the proximity of the distal end thereof, and said balls are projected slightly radially inwardly from an inner surface of said sheath with a peripheral surface of said ball being spaced from the bar.

5,628,764
COLLAR LANCET DEVICE
Steven Schraga, 9433 Byron Ave., Surfside, Fla. 33181
Filed Mar. 21, 1995, Ser. No. 407,758
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—182 20 Claims



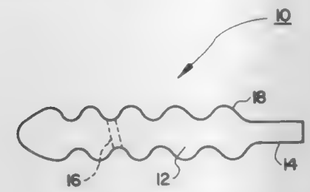
1. An improved collar lancet device comprising:
(a) a lancet housing, said lancet housing including a generally open first end,
(b) a plunger element slidably disposed in said lancet housing, said plunger element including a receiving end structured and disposed to move towards said generally open end of said lancet housing,
(c) firing means structured and disposed to rapidly and momentarily urge said plunger element into a piercing orientation wherein said receiving end of said plunger element moves a maximum amount through said generally open end of said lancet housing,
(d) triggering means structured and disposed to initiate the action of said firing means, and
(e) a disposable cap element structured to be removably secured on said generally open end of said lancet housing, said disposable cap element comprising:
a lancet, said lancet including a generally elongate body with a distal end and a proximal end,
said lancet further including a piercing member extending from said distal end of said generally elongate body,
a cap body disposed in sheathing relation over said lancet, said cap body including a top end, a substantially open bottom end and surrounding side wall structure,
said open bottom end of said cap body being structured for secure, yet removable fitted engagement on said generally open first end of said lancet housing such that said cap body substantially encloses said plunger element,
said top end of said cap body including an aperture disposed therein which is structured and disposed to permit passage of a tip of said piercing member of said lancet therethrough,
said proximal end of said elongate body of said lancet being structured for secure, fitted engagement in said receiving end of said plunger element such that upon said receiving end of said plunger element being momentarily urged into said piercing orientation said tip of said piercing member of said lancet extends momentarily through said aperture in said top end of the said cap body before retracting to a concealed orientation within said cap body,
engagement means disposed between said generally elongate body of said lancet and an interior of said surrounding side wall structure of said cap so as to maintain said lancet slidably secured to said cap body,
said engagement means including at least one guide element having first fixedly secured end and a second slidable guide end, and
lock means structured and disposed to immovably captivate said second slidable guide end of said guide element upon pulled removal of said cap body from said secure, yet removable fitted engagement on said generally open first end of said lancet housing, thereby preventing further slided movement of said lancet relative to said cap body and retaining said lancet in a sheathed orientation in said cap body.

5,628,765
LANCET ASSEMBLY
Susumu Morita, Nishinomiya, Japan, assignor to APLS Co., Ltd., Okayama-ken, Japan
Filed Jun. 5, 1995, Ser. No. 463,696
Claims priority, application Japan, Nov. 29, 1994, 6-294793
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—182 12 Claims



1. A lancet assembly comprising a holder and a lancet structure, the lancet structure being at least partially disposed within the holder, the lancet structure comprising a lancet member having a pricking member and a molded resin shield encasing the pricking member to prevent exposure and maintain sterility, and an ejector for ejecting the lancet member, the holder comprising an aperture through which the pricking member may be ejected during use, and the molded resin shield comprising two pairs of stops on its outside surface, one pair of stops being substantially adjacent the aperture, and the other pair of stops being positioned subjacent the aperture prior to use of the lancet assembly.

5,628,766
METHOD OF USING A MINI-SCREW TO ANCHOR A SUTURE
Lanny L. Johnson, 4528 Hagadorn, East Lansing, Mich. 48823
Filed Jun. 29, 1995, Ser. No. 496,407
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—232 1 Claim

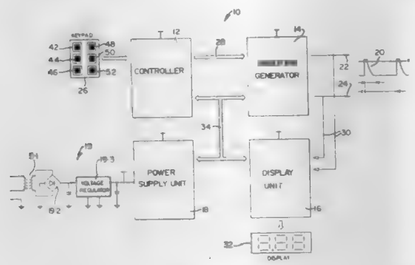


1. A process for anchoring suture into bone, comprising:
forming a cavity within the bone having a compacted sidewall;
threading the sidewall of the cavity; and
inserting a threaded portion of a suture anchor within the cavity, said portion including threads with rounded exterior edges and having an exterior diameter less than that of the threaded sidewall, said anchor further including an aperture passing through the anchor in a substantially transverse direction to a longitudinal axis of the anchor and at a location intermediate the ends of the threaded portion, said aperture receiving a length of suture having ends projecting from the aperture which are compressed between the threads of the anchor and the sidewall when said anchor is inserted within the cavity.

5,628,767

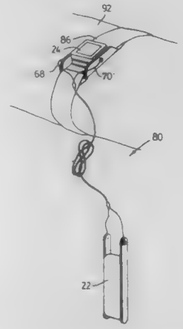
Patent Not Issued For This Number

5,628,768
NERVE STIMULATOR WITH EXPONENTIAL DECAY OUTPUT FEATURE
Anton Lubbe, Pretoria, South Africa, assignor to Tech Pulse (Proprietary) Limited, Pretoria, South Africa
Filed Sep. 28, 1994, Ser. No. 314,159
Claims priority, application South Africa, Sep. 29, 1993, 93/7235
Int. Cl.[6] A61N *1/32;1/36*
U.S. Cl. 607—46 7 Claims



1. A nerve stimulator apparatus which includes a waveform generator for generating a waveform comprising a sequence of pulses which are operatively fed to a first output terminal and a second output terminal of the apparatus, the waveform generator comprising:
current regulating means connected to the first output terminal and operable to regulate an output current of the waveform generator;
a voltage source connected to the second output terminal so that a load connectable to the first and second output terminals provides a series connection between the current regulating means and the voltage source; and
a passive component connected across the first and the second output terminals to provide an exponential decay of each pulse; and
a controller connected to the current regulating means and to the voltage source, said controller being operable to control the current regulating means and the voltage source so that the pulses generated by the waveform generator have a repetition rate of 150 to 200 Hz, a pulse width of 0.8 to 1.2 ms, an amplitude of between 40 and 60 Volts, and an average output current of 0.01 to 10 mA.

5,628,769
METHOD AND DEVICES FOR PRODUCING SOMATOSENSORY STIMULATION USING TEMPERATURE
John H. Saringer, Markham, Canada, assignor to Saringer Research, Inc., Markham, Canada
Filed Sep. 30, 1994, Ser. No. 316,352
Int. Cl.[6] A61F *7/02*
U.S. Cl. 607—98 7 Claims



1. A device for simultaneously heating and cooling adjacent skin areas, comprising:
a) a member adapted to be applied to the skin, said member including at least a first thermally conducting section and at least a second thermally conducting section, said first and second thermally conducting sections being located adjacent to each other for heating and cooling adjacent skin areas; and
b) means for heating one of said first and second thermally conducting sections to not greater than approximately 45° C. and means for simultaneously cooling the other thermally conducting section to 0° C. or higher, wherein said means for heating and cooling is a thermoelectric unit having first and second surfaces, means for passing a current through said thermoelectric unit to heat one of said first and second surfaces and cool the other.

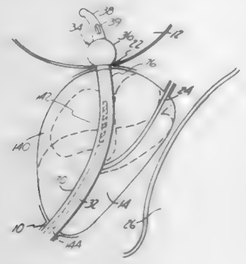
VOL 1198 ISS 2 MY 13 1997 UMI

5,628,770

DEVICES FOR TRANSURETHRAL THERMAL THERAPY

Scott P. Thome, Waite Park, and Jonathan L. Flachman, Minneapolis, both of Minn., assignors to Urologix, Inc., Minneapolis, Minn.

Filed Jun. 6, 1995, Ser. No. 469,201
Int. Cl.[6] A61N 5/02
U.S. Cl. 607—101 20 Claims



1. An intraurethral catheter comprising:
an elongate shaft having a first end, a second end, a first outer surface, and a second outer surface, the shaft further comprising:
a plurality of lumens which extend between the first end and the second end of the shaft including:
an antenna lumen having a generally circular transverse cross section and being positioned nearer the first outer surface than the second outer surface;
a first pair and a second pair of cooling lumens having a generally arc shaped transverse cross section and being configured and arranged to substantially surround the antenna lumen and to maximize exposure between the cooling lumens and the antenna lumen; and
an urine drainage lumen positioned between the second pair of cooling lumens adjacent the antenna lumen, the urine drainage lumen having a generally circular transverse cross-section and being arranged relative to the antenna lumen to minimize exposure between the urine drainage lumen and the antenna lumen.

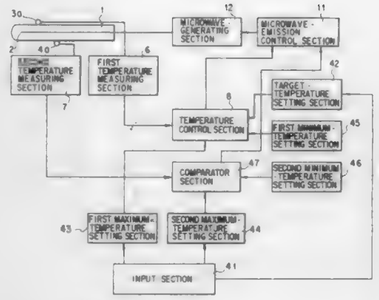
5,628,771

ELECTROMAGNETIC-WAVE THERMATOLOGICAL DEVICE

Satoshi Mizukawa; Shinji Hatta; Nobuyuki Furukawa, and Toru Nagase, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 241,298, May 11, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,556
Claims priority, application Japan, May 12, 1993, 5-110294; May 12, 1993, 5-110653
Int. Cl.[6] A61B 17/36
U.S. Cl. 607—102 9 Claims

1. An electromagnetic thermatological device comprising a main body coupled to an applicator, the applicator being insertable into a urethra of a body, and wherein:
said applicator comprises:
a distal end and a proximal end;
a wave-applying section provided at the distal end, for applying electromagnetic waves to an affected body part;
a first temperature sensor mounted on a surface of the distal end of the applicator, for detecting a first temperature of the affected body part;
a second temperature sensor provided at the distal end of the applicator and spaced apart from said first temperature sensor along an axis of the applicator, for detecting a second temperature of a body part other than the affected body part;



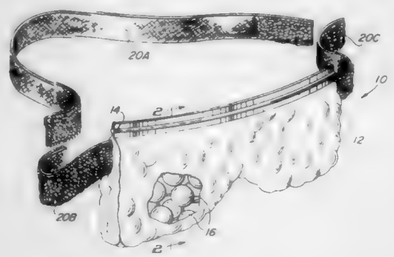
a power supply line mounted on the proximal end of the applicator and connected at one end to said wave-applying section; and
a signal line mounted on the proximal end of the applicator, for transmitting signals representing the first and second temperature, and
said main body comprises:
means for setting a target temperature for achieving a thermatological treatment;
means for setting a protect temperature for protecting an unaffected body part from the thermatological treatment;
a wave-generating section for generating electromagnetic waves and for supplying electromagnetic waves to the wave-applying section of the applicator;
means for comparing the first temperature with the target temperature and controlling emission of waves from said wave-generating section in accordance with a difference between the compared first temperature and target temperature; and
means for comparing the second temperature with the protect temperature and stopping or reducing the emission of waves of said wave-generating section when the second temperature falls below the protect temperature.

5,628,772

THERAPEUTIC MASSAGE MASK

Robin Russell, Scottsdale, Ariz., assignor to R-Jayco Ltd., Inc., Scottsdale, Ariz.

Filed Dec. 14, 1995, Ser. No. 572,534
Int. Cl.[6] A61F 7/00
U.S. Cl. 607—109 12 Claims



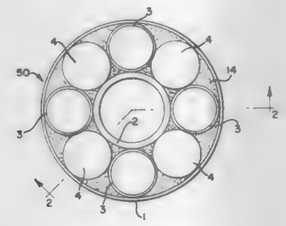
1. A therapeutic massage mask including in combination:
a flexible hollow pouch shaped to overlie a portion of a human body; and
a plurality of individual, generally spherically-shaped balls made of thermal transfer material, which remains solid at ambient room temperature carried inside said pouch to permit a massage effect to be obtained by applying moving pressure through said pouch to said balls; said balls retaining said substantially spherical shape at room temperature and having a diameter substantially in the range of ⅛" to ⅛".

5,628,773

MICROSLEEVES AND ELECTRIC SUPPLY LEADS

Ingolf Jasch, Leichlingen, Germany, assignor to Schwarz Pharma AG, Monheim, Germany

Division of Ser. No. 177,924, Jan. 6, 1994, Pat. No. 5,398,405, which is a division of Ser. No. 973,704, Nov. 9, 1992, Pat. No. 5,325,584. This application Jan. 20, 1995, Ser. No. 375,980
Claims priority, application Germany, Jul. 14, 1992, 42 23 152.3
Int. Cl.[6] A61N 1/02
U.S. Cl. 607—116 5 Claims



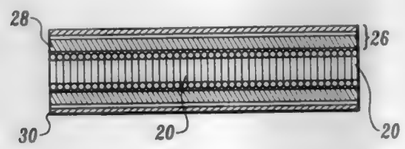
1. A microplug comprising a plurality of spaced apart microplug elements and a single adhesive, wherein the microplug elements are monolithically bonded together by the single adhesive, and wherein the single adhesive is in intimate contact with the microplug elements.

5,628,774

CARDIAC LEAD WITH COMPOSITE INSULATING STRUCTURE

John R. Helland, and Diane M. Muff, both of Redmond, Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Apr. 27, 1995, Ser. No. 429,886
Int. Cl.[6] A61N 1/05
U.S. Cl. 607—116 7 Claims



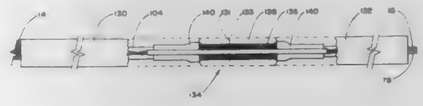
1. A lead for implantation in a human body, said lead comprising:
at least one electrode;
a connector;
at least one conductor contacting the at least one electrode with the connector; and,
an outer insulator including a silicone insulation encircling and immediately adjacent to the at least one conductor, and a polyurethane insulation encircling the silicone insulation and spaced from the at least one conductor by the silicone insulation.

5,628,775

FLEXIBLE BOND FOR SLEEVES ENCLOSING A BENDABLE ELECTRODE TIP ASSEMBLY

Jerome Jackson, Sunnyvale, and Alan L. Kaganov, Palo Alto, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 515,473, Aug. 15, 1995, abandoned, which is a continuation of Ser. No. 402,732, Mar. 13, 1995, abandoned, which is a continuation of Ser. No. 260,484, Jun. 15, 1994, abandoned, which is a continuation of Ser. No. 143,985, Oct. 27, 1993, abandoned, which is a continuation of Ser. No. 823,204, Jan. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 790,206, Nov. 8, 1991, Pat. No. 5,257,451. This application Feb. 20, 1996, Ser. No. 603,503
Int. Cl.[6] A61N 1/02
U.S. Cl. 607—116 14 Claims



1. An electrode tip assembly including at least one electrode, the assembly comprising
a center support wire that is bendable in response to external forces,
a guide tube joined to an end of the center support wire for positioning the center support wire and for holding the center support wire while it bends in response to external forces,
an interior sleeve attached to a portion of the center support wire near its junction with the guide tube,
a first exterior sleeve enclosing the center support wire and having an end portion overlying the interior sleeve, the first exterior sleeve being sufficiently flexible to conform to the shape of the center support wire while it bends,
a second exterior sleeve enclosing the guide tube and having an end portion that extends beyond the end of the guide tube and overlies the interior sleeve, the end portions of the first and second exterior sleeves abutting about the interior sleeve, the second exterior sleeve being operative for transmitting twisting forces along the guide tube toward the center support wire,
the interior sleeve having a tensile strength greater than the tensile strength of the first and second exterior sleeves, and
means forming a flexible adhesive bond between the interior sleeve and the abutting overlying end portions of the first and second exterior sleeves to hold the end portions in abutment during twisting of the guide tube and bending of the central support wire.

5,628,776

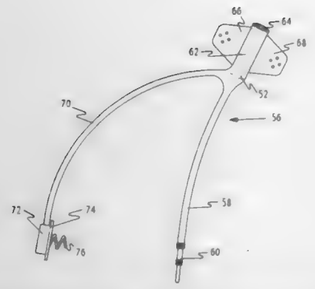
IMPLANTABLE LEAD WITH WARNING SYSTEM

Patrick J. Paul, and David Prutchi, both of Lake Jackson, Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Apr. 21, 1995, Ser. No. 426,949
Int. Cl.[6] A61N 1/04
U.S. Cl. 607—119 18 Claims

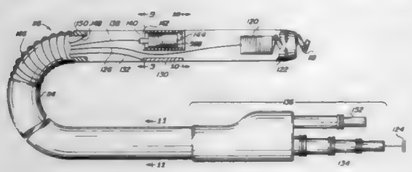
1. An auxiliary lead for use with a cardiac stimulation device, comprising
a plug for electrically connecting said auxiliary lead to said cardiac stimulation device,
a socket for electrically connecting a cardiac stimulation lead to said auxiliary lead,
a conductor electrically connecting said plug with said socket,
at least one electrode for implantation near an excitable tissue of a patient, and
means responsive to a predetermined voltage on said conductor for directing at least part of said output pulse into said

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excitable tissue electrode, producing a physiologic reaction in said excitable tissue of said patient.

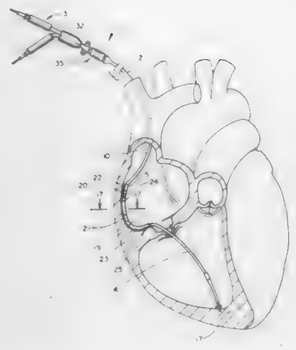
5,628,777
IMPLANTABLE LEADS INCORPORATING CARDIAC WALL ACCELERATION SENSORS AND METHOD OF FABRICATION
Sheldon B. Moberg, Kagel Canyon, and James D. Causey, III, Simi Valley, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.
Filed Jul. 14, 1993, Ser. No. 91,636
Int. Cl.[6] A61B *5/02*
U.S. Cl. 607—122 **30 Claims**



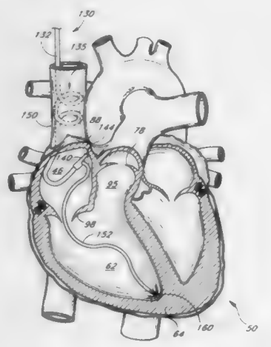
1. An implantable lead for use with an implantable cardiac stimulation device, said implantable lead comprising:
cardiac wall acceleration sensing means for providing a signal indicative of acceleration of a cardiac wall;
endocardial carrier means for transvenously positioning said cardiac wall acceleration sensing means with respect to said cardiac wall so that said cardiac wall acceleration sensing means is responsive to said acceleration of said cardiac wall, said endocardial carrier means having a substantially elongated lead body with a distal end for contacting said cardiac wall and a proximal end;
conductor means, within said lead body, for conducting said signal indicative of acceleration of a cardiac wall from said cardiac wall acceleration sensing means to said implantable cardiac stimulation device; and
connector means for electrically interfacing said conductor means at said proximal end of said lead body to said implantable cardiac stimulation device.

5,628,778
SINGLE PASS MEDICAL ELECTRICAL LEAD
Ib M. Kruse, Arvika, Sweden; Nicolaas Lokhoff, Kerkrade, and Paulus van Venrooij, Hoensbroek, both of Netherlands, assignors to Medtronic Inc., Minneapolis, Minn.
Filed Nov. 21, 1994, Ser. No. 342,976
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—123 **9 Claims**

1. A body-implantable medical electrical lead comprising:
a lead body having a straight distal section, an intermediate section and a straight proximal section, said proximal section more flexible than said distal section, said distal section being more flexible than said intermediate section, the lead body having a first conductor and a second conductor section;
a first electrode positioned on said proximal section and coupled to the first conductor, and
a second electrode positioned on said distal section and coupled to the second conductor.

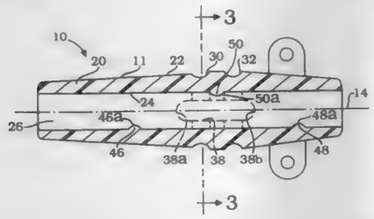


5,628,779
SINGLE-PASS A-V PACING LEAD
Gene A. Bornzin; Kevin L. Morgan, both of Simi Valley; Joseph J. Florio, Sunland, and Wendy K. Wolsleger, Cherry Valley, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.
Filed Apr. 3, 1996, Ser. No. 629,960
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—123 **24 Claims**



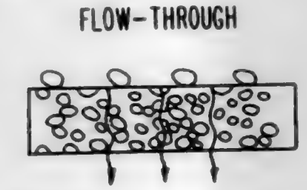
1. A single-pass A-V pacing lead, comprising:
an elongated main lead body having a proximal end and a distal end, and having an atrial electrode at a distal tip thereof and a conductor attached to the atrial electrode and extending to the proximal end of the main lead body, the main lead body including a preformed J-shaped portion at the distal end, the J-shaped portion configured so as to bias a tip of the atrial electrode against a wall of the atrial appendage of a human heart when the lead is properly implanted; and
an elongated ventricular branch having a ventricular electrode at a distal tip thereof and a conductor attached to the ventricular electrode and extending to the proximal end of the main lead body, the ventricular branch departing from the main lead body proximal to the tip of the atrial electrode but distal to a curve of the J-shaped portion, at least a portion of the ventricular branch being prebent to maintain the ventricular branch away from the wall of the atrial appendage.

5,628,780
PROTECTIVE, VISIBLE SUTURE SLEEVE FOR ANCHORING TRANSVENOUS LEAD BODIES
John R. Helland, Santa Clarita, and Hong Li, Canyon Country, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.
Continuation of Ser. No. 78,521, Jun. 17, 1993, Pat. No. 5,423,763. This application Feb. 13, 1995, Ser. No. 387,525
Int. Cl.[6] A61N *1/00;1/04*
U.S. Cl. 607—126 **11 Claims**



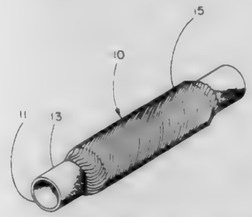
1. A suture sleeve for anchoring a lead body of an implantable stimulation lead, the implantable stimulation lead have at least one conductor insulated within the lead body, comprising:
a tubular body having an interior and an exterior surface, the interior surface defining a longitudinal bore dimensioned to receive the lead body of the implantable stimulation lead, the exterior surface having at least one annular, suture-receiving groove, the tubular body being formed of biocompatible polymeric material with a predetermined amount of radiologically dense powder dispersed therein so as to present a clear fluoroscopic image, whereby the sleeve can be fluoroscopically located on the lead body.

5,628,781
IMPLANT MATERIALS, METHODS OF TREATING THE SURFACE OF IMPLANTS WITH MICROVASCULAR ENDOTHELIAL CELLS, AND THE TREATED IMPLANTS THEMSELVES
Stuart K. Williams, and Bruce E. Jarrell, both of Tucson, Ariz., assignors to Thomas Jefferson University, Philadelphia, Pa.
Continuation-in-part of Ser. No. 880,559, May 8, 1992, abandoned, and Ser. No. 725,950, Jun. 27, 1991, Pat. No. 5,230,693, which is a continuation of Ser. No. 244,496, Sep. 12, 1988, abandoned, which is a division of Ser. No. 742,086, Jun. 6, 1985, Pat. No. 4,820,626, said Ser. No. 880,559is a division of Ser. No. 666,475, Mar. 6, 1991, Pat. No. 5,131,907, which is a continuation of Ser. No. 848,453, Apr. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 742,086. This application Sep. 29, 1992, Ser. No. 953,474
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **6 Claims**



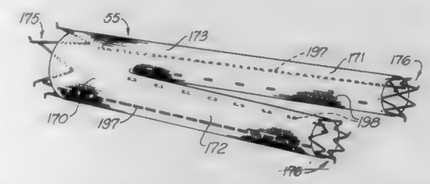
1. An implant having a lumen, the implant consisting essentially of implant material having a surface porosity of from about 1 to about 20 microns and a permeability of about 10 ml/min/cm^2 to about 40 ml/min/cm^2 wherein endothelial cells are deposited in pores of about 10 to about 20 microns of the implant material by forced deposition.

5,628,782
METHOD OF MAKING A PROSTHETIC VASCULAR GRAFT
David J. Myers, Camp Verde; James D. Lewis, and Carey V. Campbell, both of Flagstaff, all of Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Continuation-in-part of Ser. No. 989,442, Dec. 11, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 88,599
Int. Cl.[6] A61F *2/06;2/04*
U.S. Cl. 623—1 **2 Claims**



1. A process of making a vascular graft comprising:
a) selecting a base substrate of biocompatible material having inner and outer surfaces;
b) covering the outer surface of the base substrate with a covering of deflectably secured material wherein said deflectably secured material comprises at least two different types of fibers; and
c) securing the deflectably secured material to the base substrate in such a manner that a substantial portion of the deflectably secured material is not directly secured to the base substrate and a substantial portion of adjacent surfaces of the deflectably secured material are not directly secured to each other wherein said fibers are free to move with respect to each other within a length of the graft.

5,628,783
BIFURCATED MULTICAPSULE INTRALUMINAL GRAFTING SYSTEM AND METHOD
Dinah B. Quiachon, San Jose; Alec A. Piplani, Mountain View; Richard S. Williams; Steve G. Baker, both of Sunnyvale, and Peter K. Johansson, San Jose, all of Calif., assignors to EndoVascular Technologies, Inc., Menlo Park, Calif.
Continuation-in-part of Ser. No. 66,414, May 21, 1993, Pat. No. 5,489,295, which is a continuation of Ser. No. 684,018, Apr. 11, 1991, abandoned. This application May 12, 1994, Ser. No. 241,476
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **24 Claims**



1. A prosthesis having a bifurcation for repairing an aortic aneurysm close to or involving the aortic bifurcation having an

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arterial wall and comprising the aorta and the first and second iliac arteries extending therefrom and in fluid communication therewith in a patient, the prosthesis comprising:

a main tubular body;

first and second tubular legs joined to said main tubular body in a bifurcation, said main tubular body and said first and second tubular legs being formed of a flexible surgically implantable material, said main tubular body and said first and second tubular legs having respectively first, second and third openings therein in fluid communication with each other;

first expandable attachment means for anchoring said main tubular body, said first attachment means being secured to said main tubular body adjacent the first opening;

second expandable attachment means for anchoring said first tubular leg, said second attachment means being secured to said first tubular leg adjacent the second opening; and

third expandable attachment means for anchoring said second tubular leg, said third attachment means being secured to said second tubular leg adjacent the third opening,

wherein said prosthesis is configured with said first, second, and third attachment means prior to insertion into the patient's vasculature and is capable of intraluminal implantation by a catheter into the aortic bifurcation through the first iliac artery such that said main tubular body can be anchored by said first attachment means in the aorta, said first tubular leg can be anchored by said second attachment means in the first iliac artery, and said second tubular leg can be anchored by said third attachment means in the second iliac artery.

5,628,784

ENDOPROSTHESIS THAT CAN BE PERCUTANEOUSLY IMPLANTED IN THE BODY OF A PATIENT

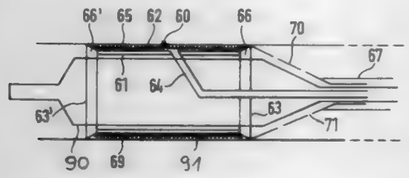
Ernst P. Strecker, Vierordstrasse 7a, D-76228, Karlsruhe, Germany

Filed Jan. 17, 1995, Ser. No. 373,385

Claims priority, application Germany, Jan. 18, 1994, 44 01 227.6

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **31 Claims**



1. An endoprosthesis that can be percutaneously implanted by a catheter in a patient's body inside a blood vessel or other body cavity, comprising:

a sleeve and a skeleton with an outside, said sleeve surrounding at least the outside of said skeleton, said endoprosthesis being oblong and hollow and being expandable when implanted to fit a lumen of the vessel or cavity;

said sleeve and said skeleton being initially narrow enough to be implanted and being expandable once they have been implanted;

said sleeve and said skeleton being configured such that when implanted, a space is left between the outer surface of said sleeve of the implanted endoprosthesis and an inner surface of the vessel or cavity said endoprosthesis is implanted in; and

at least one length of flexible tubing extend through said sleeve for delivering medication to said space.

5,628,785

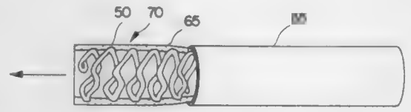
BIOELASTOMERIC STENT

Robert S. Schwartz, Rochester, and Rodney G. Wolff, Minnetonka Beach, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 306,803, Sep. 15, 1994, which is a continuation-in-part of Ser. No. 79,222, Jun. 17, 1993, which is a continuation of Ser. No. 854,118, Mar. 19, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 430,028

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **8 Claims**



1. A method for making an intraluminal stent comprising the steps of:

(a) providing a stent comprising a plurality of spaced-apart elements;

(b) polymerizing a mixture of fibrin and elastin on the stent elements at an expanded stent diameter such that the polymer of fibrin and elastin extends between the spaced-apart stent elements; and

(c) radially compressing the stent and polymerized fibrin and elastin to a delivery diameter.

5,628,786

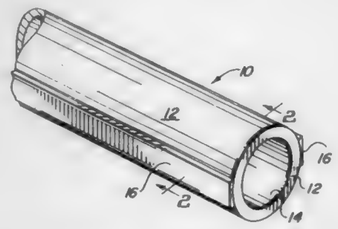
RADIALLY EXPANDABLE VASCULAR GRAFT WITH RESISTANCE TO LONGITUDINAL COMPRESSION AND METHOD OF MAKING SAME

Christopher E. Banas; Scott Randall, both of Mesa; Tarun J. Edwin, Chandler, and Fariba Hurry, Tempe, all of Ariz., assignors to Impra, Inc., Tempe, Ariz.

Filed May 12, 1995, Ser. No. 439,853

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **19 Claims**



1. A polytetrafluoroethylene graft, comprising:

a tubular graft member formed of expanded polytetrafluoroethylene having a plurality of nodes and fibrils interconnecting the nodes, and forming a microporous material matrix; and

structural support means for imparting resistance to longitudinal compression or axial shrinkage of the tubular graft member **12**. reinforcing the microporous material matrix along a longitudinal axis of the tubular graft member, the structural support means being integrated into at least a portion of the microporous material matrix of the tubular graft member and extending axially along a substantial longitudinal section of the tubular graft member.

5,628,787

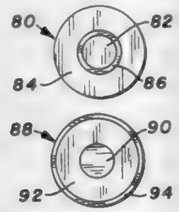
CLAD COMPOSITE STENT

David W. Mayer, Bloomington, Minn., assignor to Schneider (USA) Inc., Plynouth, Minn.

Division of Ser. No. 6,216, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 469,810, Jun. 6, 1995. This application Jun. 7, 1995, Ser. No. 480,121

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **15 Claims**



1. A body compatible device comprising:

an elongate filament substantially uniform in lateral cross-section over a length of the filament and including an elongate cylindrical core and an elongate tubular case surrounding the core substantially over said length and concentric with the core; and

a further layer surrounding the core and concentric with the core and the case;

wherein one of said core and case is constructed of a first material having a yield strength of at least 150,000 psi at 0.2 percent offset, and the other of said core and case is constructed of a second material being more radiopaque and at least as ductile as the first material, and having a linear attenuation coefficient at 100 KeV of at least 25 cm^{-1}.

5,628,788

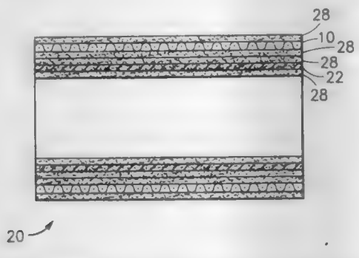
SELF-EXPANDING ENDOLUMINAL STENT-GRAFT

Leonard Pinchuk, Miami, Fla., assignor to Corvita Corporation, Miami, Fla.

Filed Nov. 7, 1995, Ser. No. 554,694

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **20 Claims**



1. A self-expanding endoluminal stent-graft, comprising:

a) a self-expanding wire stent having a geometry such that when ends of said self-expanding wire stent are pulled apart, the diameter of said self-expanding wire stent decreases to between approximately one half to approximately one tenth of the original diameter of said wire stent; and

b) a tubular deformable textile material constructed of filaments and having a density and geometry such that when ends of said tubular deformable textile material are pulled apart, the diameter of said tubular deformable material decreases to between approximately one half to approximately one tenth of the original diameter of said tubular deformable material, wherein said tubular deformable material is arranged substantially coaxially with said self-expanding wire stent and is affixed to said self-expanding wire stent.

5,628,789

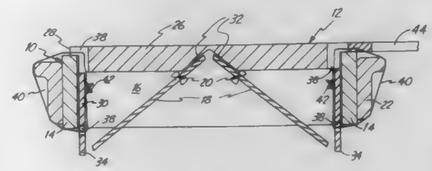
APPARATUS FOR ATTACHMENT OF HEART VALVE HOLDER TO HEART VALVE PROSTHESIS

Guy P. Vanney, Blaine, and Kurt D. Krueger, Stacy, both of Minn., assignors to St. Jude Medical, Inc., St. Paul, Minn.

Filed Sep. 11, 1995, Ser. No. 526,528

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **4 Claims**



1. An apparatus for holding a heart valve prosthesis during implantation, the heart valve prosthesis including a heart valve prosthesis body forming an annulus carrying a movable occluder therein, the apparatus comprising:

a low profile holder body having an engaging side including a lip portion for abutting the heart valve prosthesis body and a top substantially flat side opposite the engaging side, the holder body sized to extend above the heart valve prosthesis body a distance which is less than a thickness of the heart valve prosthesis body;

an interior surface of the holder body substantially conforming to the moveable occluder when the moveable occluder is in a closed position, thereby maintaining the moveable occluder in a substantially closed position such that the prosthesis body protects the moveable occluder during implantation;

an elongated portion coupled to the holder body sized to extend into the annulus of the prosthesis body and generally conform to the annulus thereby positioning the holder adjacent the prosthesis body; and

at least one suture opening in the holder body for receiving a suture therethrough with the suture extending around the prosthesis body to thereby secure the heart valve prosthesis to the holder body.

5,628,790

ZIRCONIUM OXIDE ZIRCONIUM NITRIDE COATED VALVULAR ANNULOPLASTY RINGS

James A. Davidson, Collierville, Tenn., and Kenneth P. Daigle, Olive Branch, Miss., assignors to Smith & Nephew, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 112,587, Aug. 26, 1993, Pat. No. 5,496,359, which is a continuation-in-part of Ser. No. 919,932, Jul. 27, 1992, Pat. No. 5,282,850, which is a continuation-in-part of Ser. No. 830,720, Feb. 4, 1992, Pat. No. 5,258,022, which is a continuation-in-part of Ser. No. 557,173, Jul. 23, 1990, Pat. No. 5,152,794, which is a continuation-in-part of Ser. No. 385,285, Jul. 25, 1989, Pat. No. 5,037,438. This application Oct. 24, 1995, Ser. No. 547,127

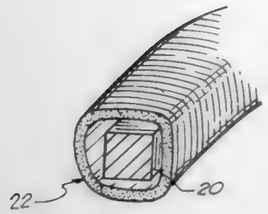
Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **13 Claims**

1. An annuloplasty ring for implantation in living body tissue of a patient, the annuloplasty ring having enhanced resistance to wear, comprising:

(a) at least one component fabricated from a low elastic modulus metallic composition, the elastic modulus being less than about 130 GPa and the component having outer surfaces; and

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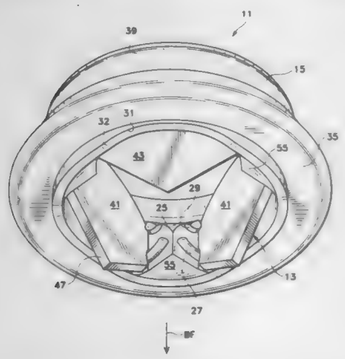
(b) a corrosion-resistant, biocompatible, hemocompatible, hard, durable, stable coating at least partially covering the outer surfaces of said component, said coating selected from the group consisting essentially of zirconium oxides, ranging in color from blue to black, and zirconium nitrides, ranging in color from yellow to orange.

5,628,791

PROSTHETIC TRILEAFLET HEART VALVE

Jack C. Bokros, and Jonathan C. Stupka, both of Austin, Tex., assignors to Medical Carbon Research Institute, LLC, Austin, Tex.

Filed May 9, 1996, Ser. No. 647,000
Int. Cl.[6] A61F *2/24*
U.S. Cl. 623—2 **16 Claims**



1. A trileaflet prosthetic heart valve including

a generally annular valve body having an interior wall of generally circular cross-section, which wall defines a central passageway for blood flow therethrough having a central longitudinal axis extending in an upstream-downstream direction, and having three projections which extend radially into said central passageway at 120° intervals and which projections each have a pair of flat surfaces that are aligned at about 120° to each other,

three cooperating leaflets, each having an arcuate upstream edge surface, a pair of downstream edge surfaces arranged at an angle of about 120° to each other, and a pair of parallel lateral edge surfaces,

said leaflets being mounted in said valve body to alternate between an open position where flow of blood in a downstream direction is permitted and a closed position where flow of blood in an upstream direction is blocked, said leaflets each having opposite inflow and outflow surfaces with said inflow surface facing upstream and said outflow surface facing downstream in the closed position, and

a pivot arrangement by which said leaflets are guided in moving between said open position and said closed position, which pivot arrangement permits each of said leaflets to assume an orientation substantially parallel to said central longitudinal axis in the open position during downstream blood flow and to close by pivoting therefrom upon reverse flow of blood in an upstream direction in such a manner that said downstream edges of said leaflets swing upstream toward said central longitudinal axis in moving to the closed position,

said pivot arrangement comprising (a) six ridges having upstream and downstream ends and six associated upstream posts protruding from respective of said flat surfaces of each of said projections and (b) six notches formed in respective of said parallel lateral edge surfaces of said leaflets, which notches are shaped to straddle said ridges and to translate therealong,

said ridges each being generally curved to define a path which extends radially inward and upstream from the downstream end thereof and said ridges being proportioned so that the downstream ends thereof are enlarged in cross-section relative to said upstream ends,

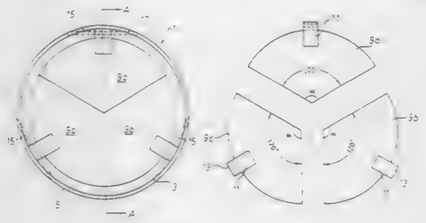
said notches being proportioned so as to be oversize with respect to the cross-section of upstream ends of said ridges so that said leaflets are readily displaceable along said ridges so as to swing generally upstream along a path defined by said ridges upon the reversal of normal downstream flow of blood through the valve, and said notches also being proportioned to engage said enlarged downstream ends in a manner so as to stop each said leaflet in said substantially parallel open position orientation with said inflow surfaces in contact with said upstream posts.

5,628,792

CARDIAC VALVE WITH RECESSED VALVE FLAP HINGES

Jan Lentell, Stockholm, Sweden, assignor to JCL Technic AB, Stockholm, Sweden

Continuation of Ser. No. 302,697, Sep. 9, 1994, abandoned. This application Jun. 7, 1996, Ser. No. 660,726
Claims priority, application Sweden, Mar. 13, 1992, 9200779
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—2 **21 Claims**



1. A cardiac valve, comprising:

a ring shaped member having an inlet end and an outlet end and defining a central passage;

a plurality of flaps to allow flow of blood through the central passage in one direction, the flaps being formed as segments of a circle with a curved outer edge and straight side edges, where a sector angle defined by the side edges of each segment has a value 360°/n, where n is the number of flaps and is selected as one of 3, 4, 5, or 6,; and,

a plurality of hinges to connect the flaps to the ring shaped member, each flap having a hinge fastened at a center of the outer edge of the flap, each hinge being pivotably attached in a recess in an inner surface of said ring shaped member radially outward of the central passage, and each hinge including a pin or stud which is attached to the ring shaped member in a tangentially extending aperture in the recess;,

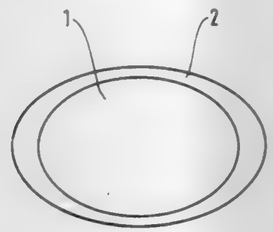
wherein said flaps in a closed position cooperate to form a sealing body closing said central passage and in an open position allow a free passage of blood through said central passage.

5,628,793

ARTIFICIAL LENS

Mathias Zirm, Fallmerayerstrasse 13, A-6020, Innsbruck, Austria

Filed May 10, 1994, Ser. No. 241,221
Claims priority, application Germany, Mar. 18, 1994, 44 09 217.2
Int. Cl.[6] A61F *2/14;2/16*
U.S. Cl. 623—4 **22 Claims**



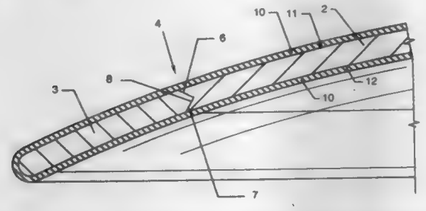
1. An artificial lens comprising at least two layers, the first layer defining a lens core, the second layer defining a lens cortex, said two layers being comprised of purified peptide mixtures.

5,628,794

MULTIFOCAL CORNEAL IMPLANT LENS HAVING A HYDROGELO COATING

Richard L. Lindstrom, 2811 Westwood Rd., Wayzata, Minn. 55391

Filed Mar. 8, 1996, Ser. No. 613,958
Int. Cl.[6] A61F *2/14*
U.S. Cl. 623—5 **18 Claims**



1. A small corneal implant lens of rigid material having an outer diameter less than 2.5 mm and having an outer edge;

a. said lens having a coating of hydrogel material in the range from 0.001 to 100 microns thick over an active area of said lens;

b. said lens including a ring of hydrogel material extending outwardly from said outer edge of said lens at least 0.5 mm;

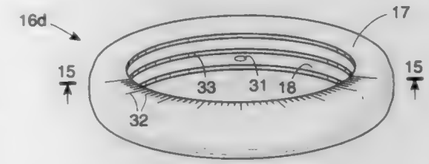
c. wherein the outer edge of said lens has a geometric shape selected for the minimization of the diffracted image from said edge.

5,628,795

SPARE PARTS FOR USE IN OPHTHALMIC SURGICAL PROCEDURES

David W. Langerman, 99 Dutch Hill Plz., Orangeburg, N.Y. 10962

Filed Mar. 15, 1995, Ser. No. 405,255
Int. Cl.[6] A61F *2/14;2/16*
U.S. Cl. 623—6 **49 Claims**



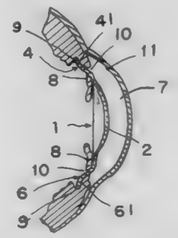
1. A "spare part" designed for use by a surgeon for surgical implantation into either the residual natural capsular bag or the ciliary sulcus of a patient's eye following an extracapsular or intracapsular cataract extraction, said "spare part" comprising a body made of a biocompatible sheet material preformed into the shape of an artificial either anteriorly incomplete and posteriorly complete or both anteriorly and posteriorly incomplete capsular bag-like structure, said artificial capsular bag-like structure having a peripheral generally toroidally ring-shaped equatorial region and including an annular anterior wall and an either annular or circular posterior wall connected to each other at their radially outwardmost peripheries and jointly defining between said walls a channel-shaped compartment for receiving an optical, mechanical or combined optical and mechanical device, and at least one of said anterior and posterior walls being provided on its respective anterior surface with a relatively compact series of degree markings which are distributed uniformly over at least one half of the circumference of said artificial capsular bag-like structure between two diametrically opposite locations on said anterior surface and at respective angular spacings of between about 3° and about 20° from each other and are visually perceptible by the surgeon within the patient's eye, after said artificial capsular bag-like structure has been inserted into the patient's eye, for facilitating achievement of a desired orientation of the axis of a cylinder lens component of an astigmatism-correcting intraocular lens when such intraocular lens is received in said compartment of said artificial capsular bag-like structure.

5,628,796

INTRAOCULAR LENS

Taketoshi Suzuki, 16, Kichikoji, Mizusawa-shi, Iwate-ken, Japan

Filed Jun. 27, 1995, Ser. No. 495,225
Claims priority, application Japan, Jul. 4, 1994, 6-174799
Int. Cl.[6] A61F *2/16*
U.S. Cl. 623—6 **2 Claims**

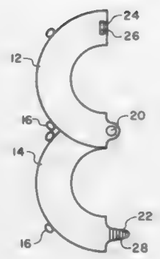


1. An intraocular lens to be implanted in an anterior chamber, comprising:

a lens body having an anterior side and a posterior side; and

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elongated extensions extending from said lens body, which are long enough for their distal ends to engagingly sit in ciliary sulci and are curved concavely in a posterior direction with a curvature large enough for said lens body and part of said elongated extensions lying in the anterior chamber to be held offset from a plane of movement of an iris when said elongated extensions are inserted in and through fine apertures made in radially outer circumferential portions of the iris, each of said elongated extensions being bent radially outwardly at a distal end portion thereof and being bent rapidly inwardly immediately adjacent said distal end portion.



5,628,797

COSMETIC ANTERIOR CHAMBER, INTRAOCULAR LENS AND IMPLANTATION METHOD

Homer E. Richer, 2955 Central Blvd., Brownsville, Tex. 78520

Filed Feb. 23, 1996, Ser. No. 604,802

Int. Cl.[6] A61F *2/16*

U.S. Cl. 623—6 **7 Claims**

1. An intraocular implant for placement in the anterior chamber of the eye comprising:

a) first and second semicircular members;

b) movable connection means for connecting said first and second semicircular members to each other for pivoting from a first, open position for facilitating implantation into the anterior chamber of an eye to a second, closed position forming a substantially circular optic;

c) a plurality of haptics formed integrally with said first and second semicircular members; and

d) a retaining means for retaining said first and second semicircular members in said second, closed position after implantation in the anterior chamber.

5,628,798

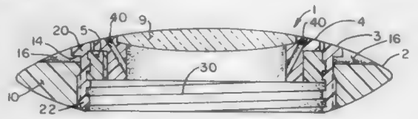
ADJUSTABLE AND REMOVABLE INTRAOCULAR LENS IMPLANT

Harry C. Eggleston, 499 Rosslare Dr., St. Charles, Mo. 63304, and Thom Day, Cole County, Mo., assignors to Harry C. Eggleston, St. Charles, Mo.

Filed Mar. 18, 1996, Ser. No. 617,183

Int. Cl.[6] A61F *2/16*

U.S. Cl. 623—6 **5 Claims**



1. An adjustable intraocular lens assembly comprising;

a base annulus;

a second annulus secured within said base annulus;

a lens holder threadedly engaged in said second annulus, said lens holder bearing a corrective intraocular lens wherein rotation of said lens holder within said second annulus changes the refractive power of said corrective intraocular lens.

5,628,799

HAIR DYING METHODS AND KITS WHICH CONTAIN A *DOPA* SPECIES, REACTIVE DIRECT DYE, AND A FERRICYANIDE OXIDANT

Gottfried Wenke, Woodbridge, Conn., and Giuseppe Prota, Naples, Italy, assignors to Clairol Incorporated, Stamford, Conn.

Continuation of Ser. No. 159,988, Nov. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 766,606, Sep. 26, 1991, Pat. No. 5,273,550, Ser. No. 909,371, Jul. 13, 1992, Pat. No. 5,279,617, and Ser. No. 923,078, Jul. 31, 1992, Pat. No. 5,279,618. This application Jun. 7, 1995, Ser. No. 484,041

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—407 **25 Claims**

8. A hair dyeing kit for permanently dyeing hair with melanin formed from a melanin precursor which includes in a single package a plurality of containers, the kit comprising (a) a first container containing a dopa species selected from the group consisting of dopa, alpha alkyl dopa having 1 to 4 carbon atoms in the alkyl group, epinephrine and dopa alkyl esters having 1 to 6 carbon atoms in the alkyl group and a reactive direct dye that is a nitrobenzene direct dye substituted with at least one nucleophilic amino group; (b) a second container containing as an oxidant component a water-soluble ammonium, alkali metal or alkaline earth metal ferricyanide salt, and in one of said containers or a separate container a buffering agent selected from the group consisting of aminic buffers and ammonium and alkali metal salts of phosphates, carbonates, bicarbonates and borates, the amount of buffering agent contained in the kit being sufficient to provide a pH of from about 6 to about 10 when the contents of the container are mixed, the dopa species and oxidant component in the kit being present in a stoichiometric equivalent ratio of from about 0.95:1 to about 2:1 dopa to oxidant, and wherein each of the dopa species, reactive direct dye and oxidant are present in amounts effective to produce a reaction between the dopa species, the oxidant, and the reactive direct dye.

5,628,800

PROCESS FOR THE PREPARATION OF WATER-DISPERSIBLE GRANULES

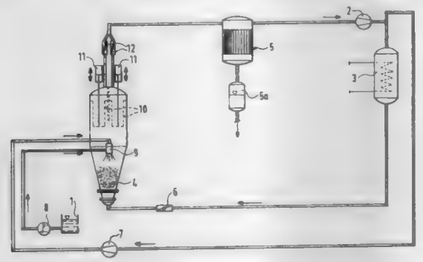
Rainer Schlicht, Bad Camberg; Hans Röchling, Bad Soden am Taunus, and Konrad Albrecht, Kelkheim/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 20, 1990, Ser. No. 496,273

Claims priority, application Germany, Mar. 22, 1989, 39 09 455.3

Int. Cl.[6] C22B *1/14;* **A01N** *25/00*

U.S. Cl. 23—313 FB **19 Claims**



1. A process for the preparation of water-dispersible granules from an aqueous dispersion or solution of solids, which comprises spraying the aqueous dispersion or solution by the counter-current principle into the gas stream of a fluidizing chamber and causing it to fluidize, starting the formation of granules in a start-up phase at 10 to 60% of the maximum gas flow and at only up to 30% of the maximum feed rate of dispersion or solution, and subsequently increasing the feed rate and the gas flow up to the maximum values for the feed rate and the gas flow, and, in the main phase, continuing the formation of granules at maximum gas flow and maximum feed rate.

5,628,801

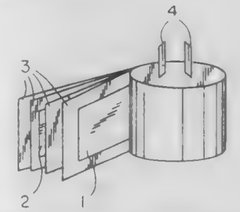
ELECTROLYTE CAPACITOR AND METHOD OF MAKING THE SAME

Douglas R. MacFarlane, Elsternwick, and Paul D. Lunsmann, Birchgrove, both of Australia, assignors to Specialized Conductives Pty. Limited, South Victoria, Australia

Filed May 2, 1994, Ser. No. 235,179

Int. Cl.[6] H01G *9/02*

U.S. Cl. 29—25.03 **4 Claims**



1. A method for construction of a substantially flat, low volume, high capacity storage device suitable for use in a cardiac defibrillator or pacemaker comprising an electrolytic capacitor having a gel or solid electrolyte, without a separate adhesive to maintain the spatial relation between the capacitor anode and cathode comprising

preparing an etched anode by shaping a deeply etched anode foil to a planar configuration,

de-oxygenating the anode and cathode,

impregnating said etched anode with a polymerizable liquid electrolyte adapted to form an adhesive when polymerized,

employing press means to maintain a planar cathode layer in contact with said liquid electrolyte, passing an electric current through said anode and cathode to form an oxide dielectric layer on said anode,

polymerizing said liquid electrolyte, and removing said press means, wherein said capacitor anode and cathode are adhered by the polymerized electrolyte.

5,628,802

FUEL COMPOSITIONS CONTAINING ORGANIC MOLYBDENUM COMPLEXES

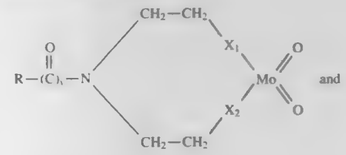
Thomas J. Karol, Norwalk, and Steven G. Donnelly, New Fairfield, both of Conn., assignors to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed May 26, 1995, Ser. No. 451,291

Int. Cl.[6] C10L *1/30*

U.S. Cl. 44—367 **8 Claims**

1. A stabilized motor fuel composition comprising a major portion of a petroleum fuel selected from gasoline and diesel fuel and a minor amount effective to inhibit oxidative gum formation, of a heterocyclic molybdenum complex prepared by reacting (a) diol, diamino, or amino-alcohol compound and (b) a molybdenum source sufficient to yield about 2.0 to 20.0 percent of molybdenum based on the weight of the complex and having a major component of the formula (I) and (V)

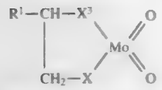


(I)

and

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-continued



(V)

wherein X, X^1, X^2 and X^3 are independently selected from O and HN groups, y= 1 and R and R^1 are independently selected from alkyl, alkyl with pendant oxygen substituent group, alkyl having internal oxygen substituent, or fatty acid residue having a total of 8 to 22 carbon atoms.

5,628,803

POLYALKYLPHENYL AND POLYALKYLOXYCARBONYLPHENYL AMINO AND NITRO BENZOATES AND FUEL COMPOSITIONS CONTAINING THE SAME

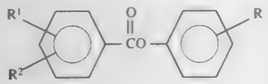
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed Dec. 29, 1995, Ser. No. 581,289

Int. Cl.[6] C10L *1//18*

U.S. Cl. 44—391 **42 Claims**

15. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range and an amount effective to control engine deposits of a compound of the formula:



or a fuel soluble salt thereof, wherein R^1 is nitro or $—(CH_2)_x—NR^4R^5$ wherein R^4 and R^5 are independently hydrogen or lower alkyl having 1 through 6 carbon atoms and x is 0 or 1;

R^2 is hydrogen, hydroxy, nitro or $—NR^6R^7$ wherein R^6 and R^7 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms; and

R is R^3 or $—C(O)OR^3$ wherein R^3 is a polyalkyl group having an average molecular weight in the range of about 450 to 5,000.

5,628,804

POLYETHER ESTERAMIDE CONTAINING ADDITIVES AND METHODS OF MAKING AND USING SAME

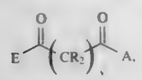
John T. Loper, Richmond, Va., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 21, 1995, Ser. No. 576,800

Int. Cl.[6] C10L *1/22;* **C10M** *149/12*

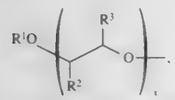
U.S. Cl. 44—399 **52 Claims**

1. A compound of a Formula I:



I

wherein each R is independently selected from the group consisting of H and an alkyl having from 1 to 5 carbon atoms, y is an integer from 0 to 5, and E represents a moiety of a Formula II:



II

wherein R^2 and R^3 are independently selected from at least one member of the group consisting of H and alkyl, wherein R^2 and R^3 have a total of 0 to 10 carbon atoms, wherein optionally, R^2 and R^3 are bonded to each other to form a cycloaliphatic ring of 5 to 10 carbon atoms,

x is an integer from 5 to 30, and

R^1 is selected from the group consisting of H, alkyl having from 1 to 18 carbon atoms, and alkylaryl of Formula III:



III

wherein R^4 and R^5 are selected from the group consisting of H and C_1–C_{60} alkyl, and

A is a polyamine moiety having from 2 to 10 nitrogen atoms, wherein the polyamine moiety comprises at least one member of the group consisting of a primary amino group and a secondary amino group.

5,628,805

ETHANOL FUEL AND THE USE OF AN IGNITION IMPROVER

Anna Lif, Skärhamn, and Stig Svennberg, Stenungsungd, both of Sweden, assignors to Akzo Nobel nv, Arnhem, Netherlands

PCT No. PCT/EP94/02347, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO95/05437, PCT Pub. Date Feb. 23, 1995

PCT Filed Jul. 15, 1994, Ser. No. 600,971

Claims priority, application Sweden, Aug. 19, 1993, 9302680

Int. Cl.[6] C10L *1//18*

U.S. Cl. 44—443 **8 Claims**

1. An aqueous ethanol fuel in the form of a solution which comprises 70–96% by weight of ethanol, 2–10% by weight of water and 0.5–20% by weight of an water soluble adduct of a polyol having 3–10hydroxyl groups and ethylene oxide and/or propylene oxide, wherein the molecular weight of the adduct is 350 to 10,000 .

5,628,806

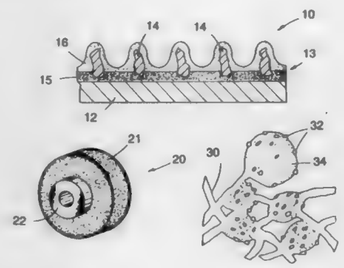
METHOD OF MAKING ALUMINA ABRASIVE GRAIN HAVING A METAL CARBIDE COATING THEREON

Ahmet Celikkaya, and Gregory D. Allen, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 22, 1995, Ser. No. 563,621

Int. Cl.[6] C09C *1/68*

U.S. Cl. 51—309 **21 Claims**



1. A method for making an alpha alumina-based abrasive grain, said method comprising heating a plurality of alpha alumina-based abrasive particles each having an outer surface including metal oxide, in the presence of a carbon source, for a time, at a temperature, and under a non-oxidizing atmosphere, sufficient to convert at least a portion of said metal oxide to metal carbide.

5,628,807

METHOD FOR FORMING A GLASS PRODUCT FOR A CATHODE RAY TUBE

Masaru Yoshitake; Eiji Yanagisawa; Naoki Yoshida; Masuo Sugisaki; Atsuyoshi Takenaka, all of Yokohama; Yutaka Segawa, Funabashi; Toshihiro Ohashi, Funabashi, and Hiroshi Wakatsuki, Funabashi, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,660

Claims priority, application Japan, Aug. 15, 1994, 6-191477; Oct. 27, 1994, 6-264124; Jan. 13, 1995, 7-004411

Int. Cl.[6] C03B *40/00*

U.S. Cl. 65—26 **4 Claims**

1. A method for forming a glass product for a cathode ray tube which contains silicon oxide, sodium oxide, potassium oxide and lead oxide, by means of a glass forming mold which comprises a substrate made of stainless steel and a coating comprising the following components A, B and C formed as the outermost surface coating on the substrate:

(1) from 40 to 94 wt % one nickel and/or cobalt as component A;

(2) from 5 to 59 wt % of tungsten as component B;

(3) from 0.5 to 40 wt % of at least one transition 5, element having a melting point of at least 2,200° C. as component C, and

(4) from 0.1 to 20 wt % of phosphorus and/or boron as component D.

5,628,808

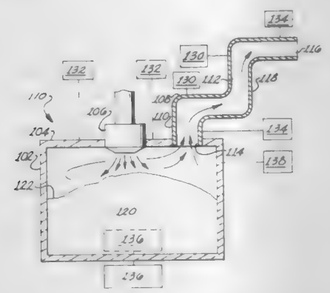
GLASS MELTER OFF-GAS SYSTEM

Carol M. Jantzen, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 264,277, Jun. 23, 1994, abandoned, which is a division of Ser. No. 841,170, Feb. 25, 1992, abandoned. This application Sep. 7, 1995, Ser. No. 524,890

Int. Cl.[6] C03B *5/167*

U.S. Cl. 65—27 **15 Claims**



1. A method of operating a glass melter off-gas duct, a glass melter producing glass-containing particulate that enters said duct, said duct further having an exit, said glass melter melting glass having a softening temperature, said method comprising the steps of:

maintaining a flow of off-gas in said duct of at least approximately 15 meters per second; and simultaneously

maintaining a temperature of the off-gas within said duct between approximately 300° C. and said softening temperature so that a temperature of said particulate in said duct is below said glass softening temperature.

5,628,809

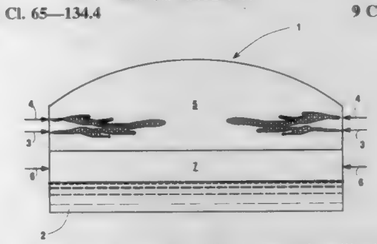
GLASSMELTING METHOD WITH REDUCED VOLATILIZATION OF ALKALI SPECIES

Hisashi Kobayashi, Putnam Valley, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 13, 1995, Ser. No. 489,911

Int. Cl.[6] C03B *5/225*

U.S. Cl. 65—134.4 **9 Claims**



1. A glassmelting method enabling reduced volatilization of alkali species comprising:

A) providing glassmaking materials including alkali species into a glassmelting furnace;

B) providing fuel and oxidant into the furnace, combusting them therein to generate heat and combustion reaction products including water vapor in a combustion zone within the furnace, and radiating heat from the combustion reaction products to the glassmaking materials to form molten glass;

C) providing shield oxygen into the furnace at a velocity not exceeding 50 feet per second at a point between the combustion zone and the molten glass, and forming a shield oxygen layer between the combustion zone and the molten glass to shield the molten glass from the water vapor of the combustion reaction products; and

D) reacting some shield oxygen with molten glass to make the molten glass more oxidizing.

5,628,810

METHOD AND COMPOSITION FOR INCREASING THE PROTEIN CONTENT OF GRAINS

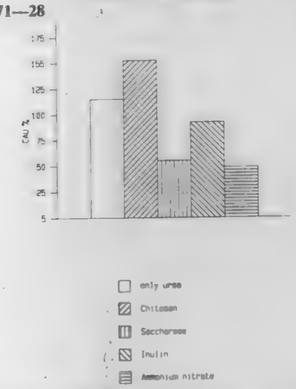
Philippe Dugast, Verneuil S/ Seine, and Jacques Decroux, Ramonville St. Agne, both of France, assignors to Grande-Paroisse S.A., Puteaux, France

Filed Jul. 19, 1995, Ser. No. 504,270

Claims priority, application France, Jul. 21, 1994, 94 09022

Int. Cl.[6] C05C *9/00*

U.S. Cl. 71—28 **8 Claims**



4. A process for improving the protein content of a cereal crop, which process comprises spraying onto the foliage a protein guarantor composition consisting of a neutral aqueous mixture comprising urea in the proportion of 150 to 220 grams of nitrogen per liter and chitosan in the proportion of 0.2 to 10 grams per liter.

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wherein said spraying is conducted at a period in the growth cycle of said cereal selected from the periods ranging from the end of swelling of the ear stage to the flowering stage.

5,628,811

METHOD OF AMELIORATING ACID SOIL TO ENHANCE PLANT GROWTH

John W. College, Pittsburgh; Joel H. Beeghly, Bessemer, both of Pa.; K. Dale Ritchey; Virupax C. Baligar, both of Beckley, W. Va., and Ralph B. Clark, Charleston, W. Va., assignors to Dravo Lime Company, Pittsburgh, Pa., and U.S. Department of Agriculture, Beltsville, Md.

Filed Aug. 23, 1994, Ser. No. 294,555

Int. Cl.[6] C07D *3/02*

U.S. Cl. 71—62 **11 Claims**

1. A method for ameliorating acid soil to enhance plant growth therein comprising:

adding to said acid soil an amount of between 0.05 to 20 percent by weight of a flue gas desulfurization by-product consisting essentially of 80 to 99 percent by weight gypsum and 1–20 percent by weight magnesium hydroxide.

5,628,812

METHOD AND INSTALLATION FOR VENTILATING AND CONTROLLING A BIOLOGICAL DEHYDRATION AND STABILIZATION TREATMENT OF A MOIST FERMENTABLE ORGANIC PRODUCT

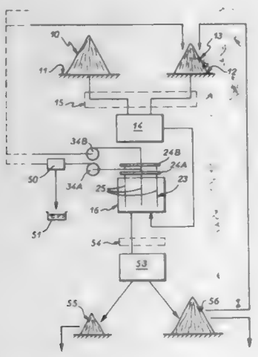
Maurice Tempe, 11 Rue des Bijoutiers, 30300 Beaucaire, France

Filed Feb. 8, 1990, Ser. No. 476,784

Claims priority, application France, Feb. 8, 1989, 89 01609

Int. Cl.[6] C05F *9/04;9/02*

U.S. Cl. 71—9 **23 Claims**



1. Method for ventilating and controlling biological dehydration and stabilization treatment of a moist fermentable organic product or products comprising the steps of:

loading a reactor with a heap of the product or products to be treated;

applying suction or aspiration from beneath the heap to cause a flow of air through the heap at a desired flow rate;

measuring the temperature of air exhausted from the heap by expansion and contraction of a liquid having a high coefficient of thermal expansion;

programming a theoretical exhaust air temperature as a function of airflow rate;

comparing the theoretical value of the exhaust air temperature with a monitored exhaust air temperature and determining the deviation;

adjusting the exhaust airflow rate in response to the expansion or contraction of the liquid in such a manner that the monitored exhaust air temperature tends to reduce the magnitude of the deviation; and

thereby allowing fermentation while progressively reducing moisture from the product or products.

5,628,813

ABRASION RESISTANT TOPCOATS FOR CONTROL RELEASE COATINGS

Frank Shi-Chow Chen, Edmonton, and Albert J. Geiger, Fort Saskatchewan, both of Canada, assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Filed Dec. 21, 1992, Ser. No. 993,686

Int. Cl.[6] C05G *3/00*

U.S. Cl. 71—64.02 **5 Claims**

1. A method for preparing a controlled release chemical composition having improved release properties comprising:

(a) providing particles of a water soluble chemical compound encapsulated in a controlled release coating layer which is slowly permeable to water;

(b) mixing said particles with an aqueous solution containing a metal or ammonium lignosulfonate to uniformly coat said particles with said solution;

(c) contacting said coated particles under mixing conditions with a finely divided mineral filler such that said filler uniformly adheres to the surface of said coated particles; and

(d) drying said coated particles.

5,628,814

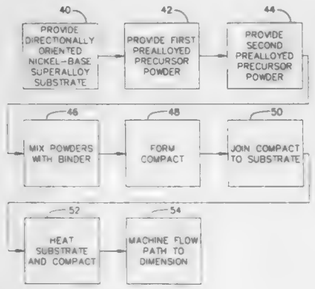
COATED NICKEL-BASE SUPERALLOY ARTICLE AND POWDER AND METHOD USEFUL IN ITS PREPARATION

Jim D. Reeves, Cincinnati; David E. Budinger, Milford, and Robert A. Anderson, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 365,631, Dec. 28, 1994, Pat. No. 5,561,827. This application Nov. 22, 1995, Ser. No. 561,671

Int. Cl.[6] C22C *19/05;19/07*

U.S. Cl. 75—255 **2 Claims**



1. A powder mixture, comprising:

a first prealloyed precursor powder comprising, in weight percent, from about 10 to about 20 percent cobalt, from about 14 to about 25 percent chromium, from about 2 to about 12 percent aluminum, from about 0.02 to about 0.2 percent yttrium, balance nickel and incidental impurities; and

a second prealloyed precursor powder comprising, in weight percent, from about 10 to about 20 percent cobalt, from about 14 to about 25 percent chromium, from about 2 to about 12 percent aluminum, from about 0.001 to about 3 percent boron, from about 2 to about 12 percent silicon, balance nickel and incidental impurities.

5,628,815

Patent Not Issued For This Number

5,628,816

Patent Not Issued For This Number

5,628,817

METHOD FOR LEACHING NICKEL-COPPER MATTE EMPLOYING SUBSTANTIALLY NEUTRAL LEACHING SOLUTIONS

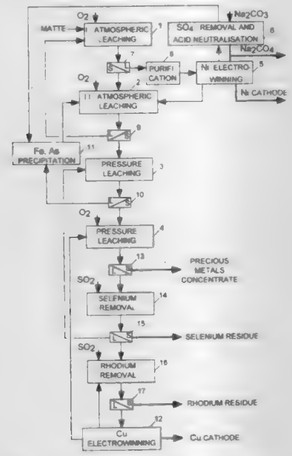
Sigmund Fugleberg, Turku; Stig-Erik Hultholm, Pori, both of Finland, and Terry Holohan, Harare, Zimbabwe, assignors to Outokumpu Engineering Contractors OY, Espoo, Finland

Filed Nov. 13, 1995, Ser. No. 554,972

Claims priority, application Finland, Nov. 15, 1994, 945379

Int. Cl.[6] C22B *3/06*

U.S. Cl. 75—743 **17 Claims**



15. A method for recovering metals by leaching from finely ground nickel-copper matte containing primary nickel and copper sulfides, said method comprising:

(a) leaching the nickel-copper matte at atmospheric pressure in oxidizing conditions at a temperature in the range from about 80°–100° C. using a substantially neutral leaching solution containing nickel sulfate and copper sulfate, whereby step (a) produces a nickel sulfate solution and a precipitate containing primary nickel and copper sulfides,

(b) purifying the nickel sulfate solution from step (a),

(c) nickel electrowinning the purified nickel sulfate solution from step (b) and producing an anolyte that contains sulfuric acid and nickel sulfate,

(d) selecting a first portion of the anolyte from step (c) and neutralizing free acid present in said first portion, and supplying the neutralized first portion to step (a) for use as at least a portion of the leaching solution,

(e) selecting a second portion of the anolyte from step (c),

(f) leaching the precipitate from step (a) at atmospheric pressure in oxidizing conditions at a temperature in the range from about 80°–100° C. using the second portion of the anolyte from step (c) as leaching solution, whereby step (f) produces a solution of nickel and copper sulfates and a precipitate of secondary nickel and copper sulfides,

(g) supplying the solution produced in step (f) to step (a) for use as at least a portion of the leaching solution,

(h) pressure leaching the precipitate from step (f) in non-oxidizing or mildly oxidizing conditions at a temperature of at least 110° C. using substantially neutral copper sulfate as leaching solution, whereby step (h) produces a solution of nickel sulfate and a copper-rich precipitate, step (h) being continued for sufficiently long to ensure that any selenium or precious metals present in the leaching solution are precipitated.

(i) supplying the solution produced by step (h) to step (f) as leaching solution,

(j) pressure leaching the precipitate from step (h) in oxidizing conditions at a temperature in the range from about 80°–150° C. using an acidic leaching solution, whereby step (j) produces a solution that contains copper sulfate,

(k) precipitating selenium from the solution from step (j), whereby step (k) produces a solution containing copper sulfate,

(l) supplying a first part of the solution from step (k) to step (h) as leaching solution and precipitating rhodium from a second part of the solution from step (k), whereby step (l) produces a solution containing copper sulfate,

(m) copper electrowinning the solution from step (l) and producing an anolyte containing sulfuric acid, and

(n) employing the anolyte from step (m) as the leaching solution employed in step (j).

5,628,818

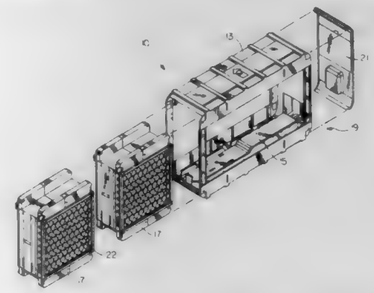
ELECTRONIC AIR CLEANER CELL CONTAINMENT STRUCTURE

Ronald R. Smith, Indianapolis, Ind., and Joseph C. Summa, Tyler, Tex., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 26, 1995, Ser. No. 578,262

Int. Cl.[6] B03C *3/08;3/12*

U.S. Cl. 96—30 **11 Claims**



1. An improved casing structure for receiving one or more electronic air cleaner cells having longitudinally spaced ionizer and collector sections comprising:

upper and lower transversely spaced end walls, each end wall having on each longitudinal side thereof a sidewall extending transversely toward the other end wall, and each sidewall having a slot formed near each of its lateral ends thereof;

four corner posts extending transversely between said side walls, each post having on each of its ends, a tongue which is received in one of said sidewall slots, thereby defining a rigid structure with an opening for receiving an air cleaner cell to be inserted laterally into the casing.

8. An improved electronic air cleaner containment assembly for removably receiving one or more air cleaner cells, each cell having adjacent ionizer and collector sections arranged in serial flow relationship along a longitudinal axis, wherein the improvement comprises:

a pair of laterally extending, transversely spaced end walls defining an opening therebetween for receiving the cells and for conducting the longitudinal flow of air therethrough;

a plurality of support members extending transversely between and interconnecting said end walls, said support members

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being selectively extendible in length to accommodate cells of various transverse dimensions.

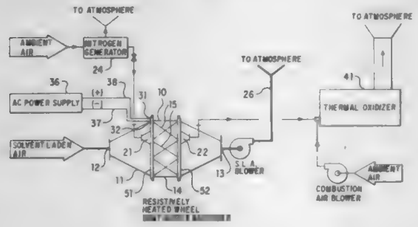
5,628,819

METHOD AND APPARATUS FOR CONTINUOUS ADSORPTION OF ADSORBABLE CONTAMINATES AND ADSORBER REGENERATION

Jerald L. Mestemaker; Russell C. Wooten; B. R. Thakker; Paul E. Vargas; Andrew N. Andrascik; Randel W. Gulley; Richard F. Smith; Roderick O. Koehler, all of Vero Beach, Fla.; Timothy V. Johnson, Corning, and David L. Hickman, Big Flats, both of N.Y., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Sep. 28, 1995, Ser. No. 534,931
Int. Cl.° B01D *53/06*

U.S. Cl. 96—122 **15 Claims**



1. A regeneratable adsorber for adsorbing adsorbable contaminates from a fluid stream containing same, said regeneratable adsorber comprising:

A. an adsorber housing having:

(i) a fluid stream inlet in communication with a source of such contaminated stream;

(ii) a fluid stream outlet connected to an exhaust means;

(iii) a plurality of adsorber chambers, each of said chambers including:

(a) an electrically conductive adsorbent,

(b) at least one set of electrical conductors in contact with said adsorbent,

(c) a chamber inlet for communication with said fluid stream inlet, and

(d) a chamber outlet in communication with said adsorbent and for communication with said fluid stream outlet when said chamber inlet and fluid stream inlet are in communication;

(iv) a desorbent fluid inlet in selective communication with said chamber inlet and a source of desorbent fluid; and

(v) a desorbent fluid outlet in communication with a desorbent gas exhaust means and with said chamber outlet when said desorbent fluid inlet and chamber inlet are in communication;

B. means for selectively positioning at least one of said adsorber chamber inlets in communication with said fluid stream inlet;

C. control means for electrically connecting at least one of said adsorber housing chambers to a source of electrical energy; and

D. desorbent fluid control means for selectively controlling the flow of desorbent fluid from a source thereof through a desorber inlet in communication with a chamber inlet.

5,628,820

INK COMPOSITION FOR FORMING THIN FILM

Katsuto Tanaka, and Kensuke Makita, both of Matsusaka, Japan, assignors to Central Glass Company, Ltd., Ube, Japan

Filed Jun. 20, 1995, Ser. No. 492,920
Int. Cl.° C09D *11/02;11/14*

U.S. Cl. 106—31.39 **7 Claims**

1. An ink composition for forming a thin film metal oxide film, comprising:

a glass-forming component which comprises a member selected from the group consisting of a halogen-containing metal alkoxide, a mixture of said halogen-containing metal alkoxide and another metal alkoxide, and a mixture of said halogen-containing metal alkoxide and a metal oxide sol;

10–25 wt % of nitrocellulose viscosity-increasing agent which comprises at least one member selected from the group consisting of nitrocellulose H7, nitrocellulose H20, nitrocellulose H60, nitrocellulose H80 and nitrocellulose H120, each of which is numbered according to Japanese Industrial Standard K 6703; and

a solvent which comprises at least one member selected from the group consisting of ethylcarbitol and butylcarbitol,

wherein the ink composition has a viscosity within a range from 200 to 300 poises.

5,628,821

MODELING COMPOSITION

Patricia H. Bowling, and David N. L. Bowling, both of 4741 Guerley Rd., Cincinnati, Ohio 45238

Filed Feb. 23, 1996, Ser. No. 606,310
Int. Cl.° C09D *103/02;189/00*

U.S. Cl. 106—126.1 **14 Claims**

1. A modeling composition capable of being shaped to sharp detail and holding said detail independently of a mold or support, said composition comprising: an earth component; flour; water; a bonding member consisting of one of a shortening and a food grade oil; emulsifiers; and preservatives;

wherein said earth component is a substantially inorganic particulate material selected from sands, silts, and clays.

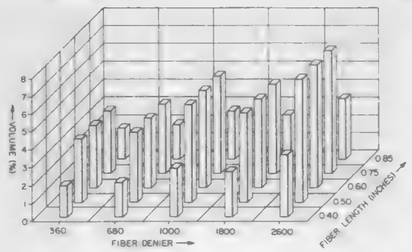
5,628,822

GRADED FIBER DESIGN AND CONCRETE REINFORCED THEREWITH

Dennis J. Hogan, Austin, Tex., assignor to Synthetic Industries, Inc., Chickamauga, Ga.

Continuation-in-part of Ser. No. 136,395, Oct. 13, 1993, Pat. No. 5,456,752, which is a continuation-in-part of Ser. No. 679,752, Apr. 3, 1991, abandoned. This application Oct. 6, 1995, Ser. No. 540,181
Int. Cl.° C04B *16/06*

U.S. Cl. 106—802 **37 Claims**



1. Concrete having improved crack resistance consisting essentially of:

concrete; and

from about 0.025 to 1 percent by volume of a graded, synthetic fiber mixture, having deniers ranging from about 3 to about 5000 and lengths ranging from about 0.0625 to 3 inches (0.16 to 7.6 cm), graded to provide pluralities of different fiber designs comprising variations in at least three of lengths, widths, thicknesses, deniers, fibrillations, cross-sections or aspect ratios, prior to their addition to concrete, or at least two of lengths, widths, thicknesses, deniers, fibrillations or aspect ratios, prior to their addition to concrete, or at least two of widths, thicknesses, deniers, fibrillations, cross-sections or aspect ratios, prior to their addition to the concrete, so as to accommodate the mortar factions within said concrete and provide a continuous distribution of fibers therein;

whereby initiation of cracking of the concrete is inhibited as compared to concrete reinforced by the addition of single length fibers.

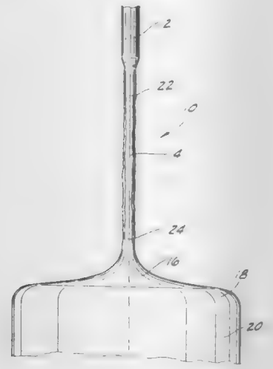
5,628,823

PROCESS FOR ELIMINATING DISLOCATIONS IN THE NECK OF A SILICON SINGLE CRYSTAL

Sadasivam Chandrasekhar, Chesterfield, and Kyong-Min Kim, St. Charles, both of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Division of Ser. No. 483,304, Jun. 7, 1995, Pat. No. 5,578,284. This application Jul. 3, 1996, Ser. No. 675,550
Int. Cl.° C30B *15/20*

U.S. Cl. 117—15 **23 Claims**



1. A process for eliminating dislocations in the neck of a silicon single crystal grown by the Czochralski method, the process comprising:

contacting a seed crystal with a silicon melt until the seed crystal begins to melt and dislocations form in the seed crystal;

withdrawing the seed crystal from the melt to form a neck comprising an upper portion and an intermediate portion, the upper portion being between the seed crystal and the intermediate portion and containing dislocations, a majority of the intermediate portion having a diameter greater than 10 millimeters; and

growing the neck at a rate less than about 4.0 mm/min until the dislocations within the intermediate portion of the neck are eliminated.

5,628,824

HIGH GROWTH RATE HOMOEPITAXIAL DIAMOND FILM DEPOSITION AT HIGH TEMPERATURES BY MICROWAVE PLASMA-ASSISTED CHEMICAL VAPOR DEPOSITION

Yogesh K. Vohra, and Thomas S. McCauley, both of Birmingham, Ala., assignors to The University of Alabama at Birmingham Research Foundation, Birmingham, Ala.

Filed Mar. 16, 1995, Ser. No. 406,196
Int. Cl.° C30B *29/04*

U.S. Cl. 117—101 **33 Claims**



1. A method for the deposition of diamond films onto a substrate comprising:

providing a diamond forming gas adjacent to a substrate in a sealed chamber.

exposing the gas to microwave radiation to generate a plasma from the diamond forming gas that encompasses the substrate under conditions such that the diamond film forms on the substrate, wherein the temperature of the substrate is greater than about 1600° C.

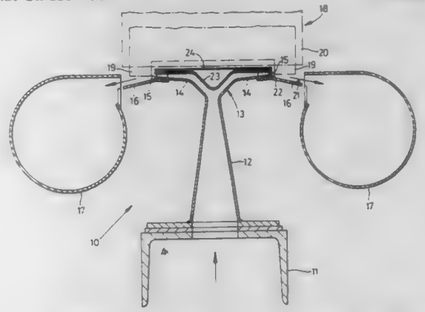
5,628,825

BATTERY LUG HEATING APPARATUS

Robert T. Hopwood, Cheltenham, United Kingdom, assignor to TBS Engineering Limited, Cheltenham, United Kingdom

PCT No. PCT/GB95/00323, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995, PCT Pub. No. WO95/22845, PCT Pub. Date Aug. 24, 1995
PCT Filed Feb. 16, 1995, Ser. No. 525,523
Claims priority, application United Kingdom, Feb. 18, 1994, 9403164
Int. Cl.° B05C *11/00;13/00;13/02*

U.S. Cl. 118—58 **9 Claims**



1. An apparatus for heating a lug of a battery plate, said apparatus comprising:

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means for defining a treatment position for said plate with said lug projecting into a lug position,

a nozzle connectable to a source of hot gas and having an outlet directed at said lug position, and

means for defining a surface extending from said outlet and diverging from a direction of said outlet away from said treatment position, whereby hot gas passing through said nozzle will be entrained into a gas stream passing through said lug position and along said surface.

5,628,826

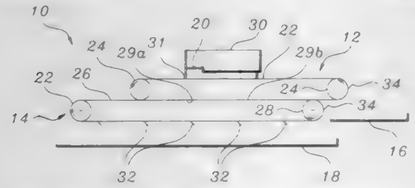
METHOD AND APPARATUS FOR APPLYING COATING TO SURGICAL NEEDLES

Janniah S. Prasad, Norwalk, Conn., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 298,266, Aug. 31, 1994, Pat. No. 5,536,527. This application Jun. 7, 1995, Ser. No. 485,535

Int. Cl.[6] B05C *1/08*

U.S. Cl. 118—232 **9 Claims**



1. An apparatus for coating surgical needles, comprising:

an upper endless belt;

a lower endless belt disposed to have a common running side in direct contact with said upper endless belt;

means for applying a solution to an outer surface of said endless belts; and

means for rotating said upper and lower endless belts in opposite directions, whereby surgical needles may be fed between the rotating belts to be coated with the solution.

5,628,827

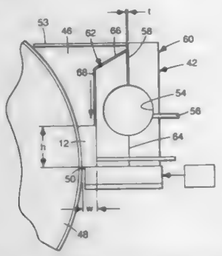
NON-RECIRCULATING, DIE SUPPLIED DOCTORED ROLL COATER WITH SOLVENT ADDITION

Robert P. McCollam, Roseville; Norman E. Gehrke, Browton, both of Minn.; Karl J. Warren, Hudson, Wis.; Mark D. Larson, Maplewood, Minn.; George D. Kostuch, and Thomas W. Braid, both of White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 951,462, Sep. 25, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,352

Int. Cl.[6] B05C *11/00*

U.S. Cl. 118—695 **29 Claims**



1. An apparatus for coating an amount of fluid onto a substrate, wherein the fluid uses a solvent, and wherein the apparatus comprises:

a coating die having a coating slot, a supply manifold from which the fluid enters the coating slot, feed openings into the supply manifold, and an external wall along which the fluid flows after exiting through the slot;

a rotatable receiving roller located adjacent the coating die which applies the fluid onto the substrate;

a controlled fluid depth reservoir located between the coating die and the receiving roller which receives the fluid flowing along the coating die which is applied onto the receiving roller;

means for varying the depth of the fluid in the reservoir to compensate for variations in flow rate of coating to the substrate while coating;

a doctor blade for regulating the amount of fluid applied to the receiving roller from the reservoir; and

means for compensating for solvent evaporation during idling of the apparatus by removing the fluid from the reservoir and replacing it with a suitable replacement solvent.

5,628,828

PROCESSING METHOD AND EQUIPMENT FOR PROCESSING A SEMICONDUCTOR DEVICE HAVING HOLDER/CARRIER WITH FLATTENED SURFACE

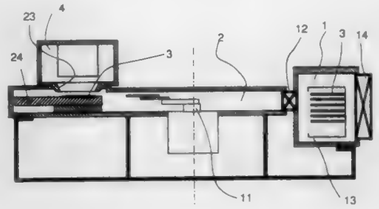
Yoshio Kawamura, Kokubunji; Shigeo Moriyama, Tama; Tatuharu Yamamoto, Higashi-Murayama, and Fumihiko Uchida, Hachioji, all of Japan, assignors to Hitachi , Ltd., Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 397,991

Claims priority, application Japan, Mar. 4, 1994, 6-034406

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **17 Claims**



1. Process equipment for processing a semiconductor device comprising:

a buffer chamber;

at least one process chamber connected to said buffer chamber through an opening portion;

a holding/carrying means disposed in said buffer chamber at a position facing said opening portion for holding and carrying a member to be processed, said holding/carrying means including a flattened surface closely facing said opening portion; and

carrying means disposed in said buffer chamber for transferring said member to be processed to and from said holding/carrying means.

5,628,829

METHOD AND APPARATUS FOR LOW TEMPERATURE DEPOSITION OF CVD AND PECVD FILMS

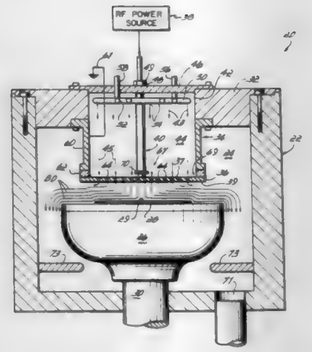
Robert F. Foster, Phoenix; Joseph T. Hillman, Scottsdale, and Rikhit Arora, Mesa, all of Ariz., assignors to Materials Research Corporation, Gilbert, Ariz.

Filed Jun. 3, 1994, Ser. No. 253,714

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 E **20 Claims**

1. An apparatus for deposition of a film on a substrate inside a chemical vapor deposition chamber comprising:



a rotating susceptor to support and rotate said substrate inside said chamber, the rotating susceptor creating a pumping action toward the substrate;

a gas-dispersing showerhead opposite the susceptor and spaced about one inch or less from said susceptor and substrate and having holes to disperse reactant gases close to the rotating susceptor and said substrate so that the gases are drawn to said substrate by the susceptor pumping action;

a reactant gas supply element spaced from said gas-dispersing showerhead to supply reactant gas to be dispersed from the showerhead, the supply element being located at a position sufficiently spaced from the showerhead to create a generally linear reactant gas flow between the supply element and showerhead before the reactant gases are dispersed through the showerhead;

whereby to yield improved reactant gas flow over said substrate and a more efficient chemical vapor deposition of a film on said substrate.

5,628,830

ENZYMATIC HYDROLYSIS OF BIOMASS MATERIAL

David L. Brink, Berkeley, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 254,168, Jun. 6, 1994, Pat. No. 5,536,325, which is a continuation of Ser. No. 73,780, Jun. 8, 1993, Pat. No. 5,366,358, which is a division of Ser. No. 676,836, Mar. 28, 1991, Pat. No. 5,221,357, which is a continuation of Ser. No. 58,814, Jun. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 681,435, Dec. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 653,065, Sep. 21, 1984, Pat. No. 4,706,903, which is a continuation-in-part of Ser. No. 324,032, Nov. 23, 1981, Pat. No. 4,384,897, which is a continuation-in-part of Ser. No. 23,328, Mar. 23, 1979, abandoned. This application Jun. 6, 1995, Ser. No. 465,840

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[6] C13K *1/02;* **C13D** *1/00;* **D21B** *1/16;* **D21C** *3/16*

U.S. Cl. 127—36 **5 Claims**

1. A method of hydrolysis of biomass material containing hemicellulosic, cellulosic and ligneous components which comprises subjecting the biomass material to hydrolysis under conditions to hydrolyze the hemicellulose content without substantial hydrolysis of the cellulosic content, then subjecting residual solid biomass in finely divided particulate form to enzymatic hydrolysis to convert the cellulose to glucose.

5,628,831

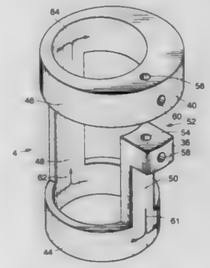
METHOD FOR CLEANING CONTAMINANTS FROM A BODY IN SPACE USING A SPACE CHARGE NEUTRAL PLASMA

Weldon S. Williamson, Malibu; Barret Lippey, Gardena, and John D. Williams, Agoura Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 113,144, Aug. 27, 1993, Pat. No. 5,418,431. This application Feb. 3, 1995, Ser. No. 383,290

Int. Cl.[6] B08B *7/04*

U.S. Cl. 134—1.1 **10 Claims**



1. A method of cleaning a contaminant from a surface of a body in space that is characterized by a surface sputtering energy, comprising:

generating a space-charge neutral plasma that reacts with said contaminant,

directing said plasma onto said contaminated surface, at an energy below the surface sputtering energy of said body, and

reacting said plasma with said contaminant to remove the contaminant from said surface,

wherein said plasma is generated within a plasma tube by:

establishing an axial magnetic field through said tube,

directing a plasma source gas through the tube,

initiating a plasma within the tube from said source gas, and

establishing a helicon wave through said tube to sustain said plasma by applying an rf electrical signal to an antenna which comprises a pair of axially spaced conductive rings extending around said tube, conductive base and rf feed bars extending between said rings on opposite sides of said tube, and an interruption in said feed bar for receiving said rf signal, and wherein said rf signal establishes a current in said antenna that divides symmetrically through said rings from said feed bar.

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5,628,832

REMOVAL OF ADHESIVE FROM POLYESTER FILM

William E. Graham, and Richard R. M. Jones, both of Hendersonville, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 24, 1995, Ser. No. 410,171
Int. Cl.[6] B08B *3/08;* C08J *11/04*
U.S. Cl. 134—10 3 Claims

1. A process for removal of an adhesive coating layer from polyester film comprising the steps of:
(a) forming a section of film into a series of flakes,
(b) contacting the flakes with an aqueous alkaline stripping solution comprising a surfactant selected from the group consisting of (i) an anionic surfactant and a nonionic surfactant and (ii) a surfactant having both anionic and nonionic functionality whereby the adhesive coating is removed from the polyester,
(c) separating undissolved solids from step (b) to recover separately polyester flake and a slurry comprising stripping solution, surfactant and a solid residue resulting from the adhesive coating layer,
(d) rinsing the polyester flake with a rinse stream,
(e) separating the slurry into a clarified liquid and a concentrate,
(f) repeating step (a) through step (d) on additional flake with at least a portion of the clarified liquid from step (e) recycled into step (b).

5,628,833

TWO-STEP CLEANING OR DEWATERING WITH SILOXANE AZEOTROPES

Cheryl A. McCormack, Bay City, and Dwight E. Williams, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 13, 1994, Ser. No. 322,643
Int. Cl.[6] B08B *3/04;3/08*
U.S. Cl. 134—26 22 Claims

1. A process for cleaning or dewatering a surface which comprises (A) applying to the surface a washing composition comprising a volatile methyl siloxane selected from the group consisting of hexamethyldisiloxane and octamethyltrisiloxane, and an agent for enhancing cleaning or dewatering selected from the group consisting of a non-volatile organic compound bearing at least one hydroxyl, ether, or carbonyl group, and a surface active agent; (B) while the surface is still wet with the washing composition, rinsing the surface with a rinsing composition comprising an azeotrope or an azeotrope-like composition containing as components a volatile methyl siloxane selected from the group consisting of hexamethyldisiloxane and octamethyltrisiloxane, and a compound selected from the group consisting of 2-pentanol, 2-methyl-1-pentanol, 3-methyl-3-pentanol, 1-methoxy-2-propanol, 1-butoxy-2-propanol, 1-hexanol, n-propoxypropanol, and ethyl lactate; and then (C) drying or permitting the surface to dry; the azeotrope being a composition that is azeotropic at a temperature within a range selected from the group consisting of 0°–148° C., 0°–162° C., and 12°–108° C., and including a minimum boiling point at 760 Torr; the azeotrope-like composition being a composition that includes all ratios of components that boil within one Centigrade degree of the minimum boiling point of the azeotrope at 760 Torr.

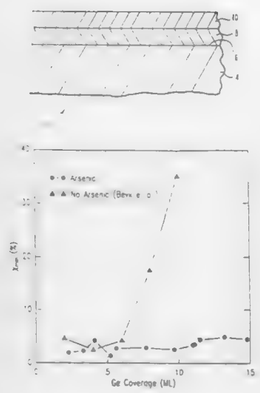
5,628,834

SURFACTANT-ENHANCED EPITAXY

Matthew W. Copel, Katonah, and Rudolf M. Tromp, Mount Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 156,657, Nov. 22, 1993, abandoned, which is a continuation of Ser. No. 626,082, Dec. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 498,236, Mar. 23, 1990, abandoned. This application May 9, 1995, Ser. No. 438,004
Int. Cl.[6] H01L *21/203;29/165*
U.S. Cl. 148—33.4 10 Claims

1. A layered structure including:



(a) a substrate comprising substantially-single-crystalline silicon, the substrate having an oriented crystal face;
(b) a layer comprising substantially-single-crystalline germanium extending on the oriented crystal face of the silicon substrate, the crystal lattice of the germanium being essentially epitaxial to the crystal lattice of the silicon substrate, the germanium layer having a thickness of greater than six monolayers and having a minimum yield α_{min} for substantially-channeled incidence to essentially-random incidence Rutherford ion backscattering of about 5 percent or less measured with an approximately 100 keV beam of He^+ ions; and
(c) a layer of a multivalent surfactant element on a surface of the germanium layer opposing the silicon substrate, the layer of surfactant element being approximately a single monolayer thick.

5,628,835

NB_3AL GROUP SUPERCONDUCTOR CONTAINING ULTRAFINE NB_2AL PARTICLES

Naofumi Tada, Ube; Fumio Iida, Hitachi; Ryukichi Takahashi, Hitachioota, and Takaaki Suzuki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 155,788
Claims priority, application Japan, Nov. 30, 1992, 4-320279
Int. Cl.[6] H01B *13/00*
U.S. Cl. 148—98 2 Claims



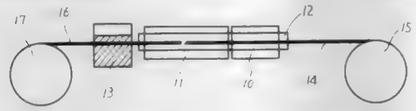
1. A superconductor generated by a diffusion reaction between Nb_2Al and Nb, said superconductor comprising a Nb_2Al phase dispersed in a Nb_3Al phase, said Nb_2Al phase having an average diameter of utmost 0.1 μm and the interval between each grain of said Nb_2Al phase being in a range of 0.01–0.1 μm, said superconductor being produced by a method comprising the steps of:
mixing niobium powder and Nb_2Al powder in a weight ratio of about 1:1 to form a precursor composition for the superconductor,
deforming said precursor composition with a deformation ratio of at least 1,000 and
subsequently performing a diffusion reaction with the deformed precursor composition at 1,000°–1,800° C.

5,628,836

METHOD OF PREPARING NB_3AL SUPERCONDUCTING WIRE

Naoki Ayai, and Yuichi Yamada, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Nov. 18, 1994, Ser. No. 342,276
Claims priority, application Japan, Nov. 19, 1993, 5-290714
Int. Cl.[6] H01L *39/24;* H01B *12/00*
U.S. Cl. 148—98 15 Claims



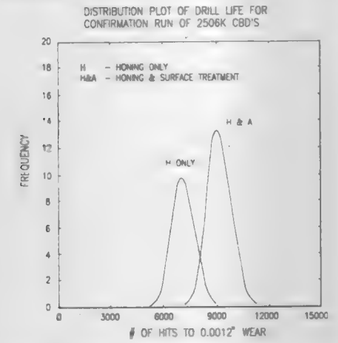
1. A method of preparing an Nb_3Al superconducting wire, comprising the steps in the following order:
passing an Nb/Al composite wire consisting of an Nb metal or an Nb alloy and an Al metal or an Al alloy through a furnace for heating the same from the room temperature to a prescribed temperature;
passing said heated Nb/Al composite wire through said furnace for holding the same at said prescribed temperature, wherein said steps of heating and holding said Nb/Al composite wire is to form Nb_3Al superconductivity; and
passing said Nb/Al composite wire, being held at said prescribed temperature, further through a cooling part for cooling the same from said prescribed temperature to the room temperature in a short time to maintain the Nb_3Al superconductivity,
said step of heating said Nb/Al composite wire, said step of holding the same at said prescribed temperature and said step of passing the same through said cooling part being continuously carried out by continuously moving said Nb/Al composite wire.

5,628,837

SURFACE DECARBURIZATION OF A DRILL BIT HAVING A REFINED PRIMARY CUTTING EDGE

Robert W. Britzke; Jimmy Eason, both of Rogers, Ark., and Zhigang Fang, The Woodlands, Tex., assignors to Rogers Tool Works, Inc., Rogers, Ark.

Continuation-in-part of Ser. No. 151,801, Nov. 15, 1993, abandoned. This application Sep. 28, 1994, Ser. No. 314,511
Int. Cl.[6] C23C *8/06*
U.S. Cl. 148—208 7 Claims



7. A method of surface decarburizing a cemented carbide microdrill, wherein said microdrill includes:
a drill body having a cutting tip, an axis of symmetry, and a plurality of flutes, wherein said flutes have a rake surface at said cutting tip, and
said cutting tip includes a plurality of side blades between said flutes and joined at a web, a plurality of flank surfaces extending from an outer diameter of said cutting tip to said axis of symmetry and a plurality of primary cutting edges at the intersection of said flank surfaces with said rake surfaces,
the method comprising the steps of:
refining said primary cutting edges to form an angular surface on the forward end of said rake surface, and a radius surface that extends from said angular surface to said flank surface;
placing the microdrill in a protective environment;
heating the microdrill to an elevated temperature of between 600° C. and 1100° C. while the microdrill is in the protective environment; and
maintaining the microdrill at said elevated temperature for a time of between 15 and 120 minutes.

5,628,838

CONCENTRATE FOR ACTIVATING AND DEFINING BATH AND BATH OBTAINED FROM THIS CONCENTRATE

Joseph Schapira, Paris; Patrick Droniou, Colombes; Michel Sudour, Luzarches, and Véronique LeRouge née Bouaffre, Bois Colombes, all of France, assignors to C.F.P.I societe anonyme, Gennevilliers, France

Continuation of Ser. No. 328,569, Oct. 24, 1994, abandoned, which is a continuation of Ser. No. 9,745, Jan. 27, 1993, abandoned. This application Aug. 4, 1995, Ser. No. 511,298
Claims priority, application France, Jan. 29, 1992, 92 00945
Int. Cl.[6] C23C *22/80*
U.S. Cl. 148—250 6 Claims

1. Aqueous concentrate having a pH from 7 to 10 for preparing an activating and refining bath employed in processes of zinc phosphatization, based on an aqueous dispersion of Jernstedt salts, said concentrate containing
from 2 to 20% by weight of said Jernstedt salts,
from 0.2 to 8% by weight of at least one dispersing or sequestering agent selected from the group consisting of alkali and ammonium phosphonates of
hydroxymethylphosphonic acid,
hydroxypropylphosphonic acid,
1-hydroxyethylidene-1,1-diphosphonic acid,
amino-tri(methylene-phosphonic) acid,
ethylene-diamino-tetra(methylene-phosphonic) acid, and
2-phosphono-butane-1,2,4-tricarboxylic acid,
from 0.05 to 7% by weight of at least one thickener based on a polysaccharide obtained by fermentation, under the action of a microorganism selected from the group consisting of the classes of Xanthomonas and Sclerotia, using a nutrient medium based on at least one constituent selected from the group consisting of glucose, sucrose, fructose, maltose, lactose and galactose, and a member selected from the group consisting of alkali nitrate and inorganic ammonium salt and mixtures thereof, the caseinate of sodium and the soluble extract of corn.

5,628,839

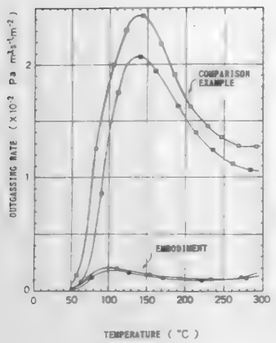
COMPONENTS OF APPARATUS FOR FILM MAKING AND METHOD FOR MANUFACTURING THE SAME

Nobuyuki Saso; Tsutomu Hasegawa, both of Hiratsuka; Kano Kosaki, and Hidenori Suwa, both of Zushi, all of Japan, assignors to Nihon Sinku Gijutsu Kabusiki Kaisha, Kanagawa-ken, Japan

Filed Apr. 2, 1996, Ser. No. 626,421
Claims priority, application Japan, Apr. 6, 1995, 7-108165
Int. Cl.[6] C23C *22/07*
U.S. Cl. 148—252 8 Claims

1. A method for manufacturing components of apparatus for film making comprising the steps of (A) forming an uneven surface having grooves of a size of up to several mm on base metal made from aluminum alloy or aluminum; and, (B) immersing said base

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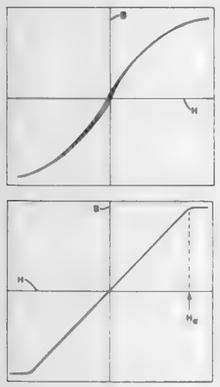
metal in any one of sulfuric acid, phosphoric acid, oxalic acid, and chromic acid to treat the surface of said base metal, and then washing and drying thereby producing a surface such that the deposits on the surface made during the film making do not peel during film making.

5,628,840

METALLIC GLASS ALLOYS FOR MECHANICALLY RESONANT MARKER SURVEILLANCE SYSTEMS

Ryusuke Hasegawa, Morristown, N.J., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Apr. 13, 1995, Ser. No. 421,094
Int. Cl.[6] H01F *1/153*
U.S. Cl. 148—304 **18 Claims**



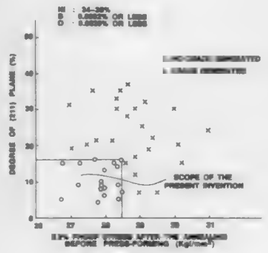
1. A magnetic metallic glass alloy that is at least about 70% glassy, having a composition consisting essentially of the formula $Fe_aCo_bNi_cM_dB_eSi_fC_g$, where M is at least one member selected from the group consisting of molybdenum, chromium and manganese, "a", "b", "c", "d", "e", "f" and "g" are in atom percent, "a" ranges from about 30 to about 45, "b" ranges from about 4 to about 40 and "c" ranges from about 5 to about 45, "d" ranges from about 0 to about 3, "e" ranges from about 10 to about 25, "f" ranges from about 0 to about 15 and "g" ranges from about 0 to about 2, said alloy having the form of a strip that exhibits mechanical resonance and has a linear magnetization behavior up to a minimum applied field of about 8 Oe.

5,628,841

THIN FE-NI ALLOY SHEET FOR SHADOW MASK

Tadashi Inoue; Kiyoshi Tsuru; Tomoyoshi Okita, and Michihito Hiasa, all of Kawasaki-ku, Japan, assignors to NKK Corporation, Tokyo, Japan

Division of Ser. No. 7,755, Jan. 22, 1993, Pat. No. 5,456,771.
This application Jan. 21, 1994, Ser. No. 184,840
Claims priority, application Japan, Jan. 24, 1992, 4-032941; Feb. 28, 1992, 4-078506; Sep. 24, 1992, 4-279542
Int. Cl.[6] H01F *1/04*
U.S. Cl. 148—310 **9 Claims**



1. An annealed thin Fe—Ni alloy sheet for forming a shadow mask by press-forming the annealed thin Fe—Ni alloy sheet, the annealed thin Fe—Ni alloy sheet being of an alloy consisting essentially of Ni in an amount of 34 to 38 wt. % Si in an amount of 0.05 wt % or less, B in an amount of 0.00005 to 0.0005 wt. %, O in an amount of 0.002 wt. % or less and N in an amount of 0.0015 wt. % or less, and optionally C, Mn and Cr, with the balance being Fe and inevitable impurities; the annealed thin Fe—Ni alloy sheet having the following properties:

(i) an average austenite grain size D of 15 to 45 μm;

(ii) the degree of mixed grain for austenite grains being 50% or less, said degree of mixed grain for austenite grains being represented by the following equation:

$$(|0.5\times Dmax-D|/D)\times 100\ (\%),$$

wherein Dmax is the maximum austenite crystal grain size;

(iii) the degree of the {331} plane being 7% to 35%,

(iv) the degree of the {210} plane being 1% to 16% and

(v) the degree of the {211} plane being 2% to 20%.

5,628,842

METHOD AND APPARATUS FOR CONTINUOUS TREATMENT OF A STRIP OF HOT DIP GALVANIZED STEEL

Stephan Wilmotte, Chaudfontaine; Michel Dubois, Boncelles, both of Belgium; Erik Van Peristein, Beverwijk, Netherlands; Simon Vandenbruaene, Gent, and Michel Beguin, Nandrin, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie, Brussels; Cockerill Sambre S.A., Seraing, both of Belgium; Hoogovens Groep BV, Ijmuiden, Netherlands, and N.V. Sidmar, Ghent, Belgium

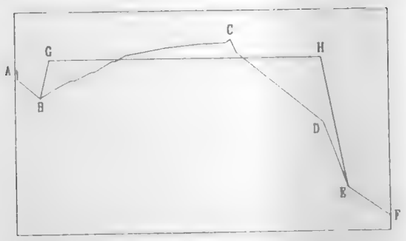
Filed Aug. 21, 1995, Ser. No. 517,262
Claims priority, application Belgium, Dec. 24, 1993, 0930153
Int. Cl.[6] C21D *1/42*
U.S. Cl. 148—526 **10 Claims**

1. A method for continuously treating a strip of hot dip-galvanized steel to galvanneal said strip, said method comprising the steps of:

removing a galvanized steel strip from a molten zinc bath;

rapidly reheating the strip to a temperature between 460° and 600° C., with a heating flux greater than 180 kilowatts per meter squared for each side of said strip;

maintaining the strip at a substantially constant temperature for a period of time lasting between 10 and 30 seconds; and



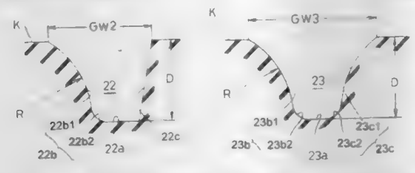
rapidly cooling the strip to a temperature below 420° C. with a cooling flux greater than 100 kilowatts per meter squared for each side of the strip.

5,628,843

PNEUMATIC TIRE WITH GROOVE HAVING THREE DIFFERENT CROSS-SECTIONAL SHAPES

Masahiro Hanya, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Dec. 2, 1994, Ser. No. 341,225
Claims priority, application Japan, Dec. 29, 1993, 5-350691
Int. Cl.[6] B60C *113/00*
U.S. Cl. 152—209 R **7 Claims**



1. A pneumatic tire comprising a tread face, at least one main groove extending in the circumferential direction of the tire and lateral grooves extending in the axial direction of the tire,

the lateral grooves intersecting the main groove to divide the main groove into a plurality of main groove parts, each of the main groove parts being defined between the circumferentially adjacent intersections of the lateral grooves with the main groove,

the main groove parts having at least three different circumferential pitch lengths: a short pitch length, a middle pitch length, and a long pitch length,

the main groove parts having the short pitch length being provided with a first cross-sectional shape,

the main groove parts having the middle pitch length being provided with a second cross-sectional shape,

the main groove parts having the long pitch length being provided with a third cross-sectional shape,

the first cross-sectional shape comprising, in a meridian section including the tire axis, a pair of opposite groove sidewalls, each of which extends straight from the tread face to the groove bottom at a predetermined inclination angle so that the groove width increases towards the radial outside of the tire,

the second cross-sectional shape comprising, in a meridian section including the tire axis, a pair of opposite groove sidewalls, one of which extends straight from the tread face to the groove bottom at a predetermined inclination angle, and the other consists of a main portion which is convexly curved and extends from the tread face towards the groove bottom and a lower portion which extends from the radially inner end of the main portion to one of the edges of the groove bottom, so that the groove width increases towards the radial outside of the tire,

the third cross-sectional shape comprising, in a meridian section including the tire axis, a pair of opposite groove sidewalls, each of which consists of a main portion which is convexly curved and extends from the tread face towards the groove bottom and a lower portion which extends from the radially inner end of the main portion to one of the edges of the groove bottom, so that the groove width increases towards the radial outside of the tire, and

the groove width at the tread face in the second and third cross-sectional shapes is in the range of from 1.05 to 2.5 times that in the first cross-sectional shape

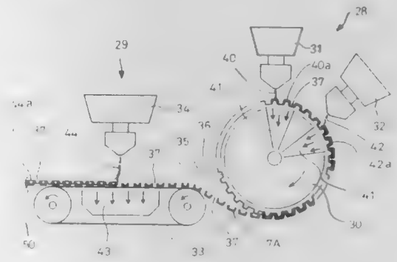
wherein each of convexly curved main portions intersect the tread face so as to define an edge and form an obtuse angle at the intersection.

5,628,844

METHOD FOR MAKING A TOPSHEET FOR USE IN DISPOSABLE BODY FLUID ABSORPTIVE ARTICLES

Kazunari Nishino, Ohtake; Shigeyuki Motomura, Yamaguchi-ken; Shizuo Shimizu, Tokyo; Takamitsu Igaue, Kawanoe; Tsutomu Kido, Kawanoe, and Hisashi Takai, Kawanoe, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, and Uni-Charm Corporation, Ehime-ken, both of Japan

Division of Ser. No. 210,997, Mar. 21, 1994, Pat. No. 5,449,352. This application Nov. 30, 1994, Ser. No. 351,19[illegible]
Claims priority, application Japan, Mar. 24, 1993, 5-89101
Int. Cl.[6] B32B *31/00;* **A61F** *13/15*
U.S. Cl. 156—62.4 **1 Claim**



1. A method for making a topsheet for use in body fluid absorptive articles, said topsheet being provided with a plurality of liquid passages each extending through the topsheet from an upper opening to a lower opening thereof and a skin-contacting area continuously formed around the upper openings of the respective liquid passages, said method comprising the steps of:

forming a first sheet provided with said liquid passages and said skin-contacting area from a thermoplastic sheet and blowing molten fibres onto a lower side of said first sheet to form a second sheet made of melt-blown nonwoven fabric, wherein said second sheet has a skin-non-contact area spaced from a lower surface of the skin-contacting area defined by said first sheet and an area welded to said liquid passages around their lower openings, said second sheet also having an exposed area within said liquid passages, each exposed area having a side wall and an apex rising up into each of said liquid passages a height of approximately equal to a distance between the upper opening and the lower opening without extending above an upper surface of the skin-contacting area and wherein inner walls of said liquid passages and said second sheet cooperate to define cavities extending in the direction of the topsheet's thickness.

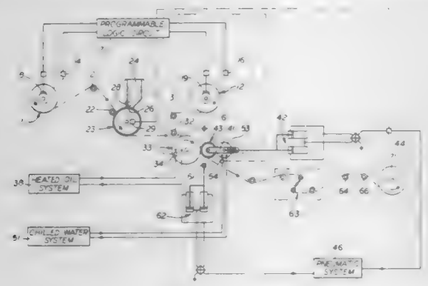
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5,628,845

PROCESS FOR FORMING HYDRATABLE, FLEXIBLE REFRIGEMENT MEDIA

Joseph C. J. Murray, and Jonathan S. Browne, both of Mobile, Ala., assignors to Thermal Products, Inc., Northridge, Calif.

Filed Sep. 28, 1995, Ser. No. 535,543
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—64 19 Claims



13. A method of manufacturing a refrigerant media from a thermo-formable layer of sheet media and a semi-permeable layer of sheet media to form discrete cells containing a measured quantity of superabsorbent polymer, comprising the steps of:

(a) supplying each of said layers from a sheet of such media formed in a roll such that the supplied sheet is maintained under tension to prevent significant vibration;

(b) metering a measured quantity of a selected polymer onto a plurality of discrete locations on an upper surface of said impermeable layer as it is supplied;

(c) measuring the speed at which said thermo-formable layer is supplied;

(d) aligning said semi-permeable layer atop said thermo-formable layer and said polymer as said layers are supplied;

(e) entraining said aligned layers partially about a large diameter heated roller having a pattern of intersecting lands thereon such that a plurality of recesses are defined in alignment with each discrete location of said polymer;

(f) controlling the temperature of said heated roller to within a sealing tolerance of said layers by circulating a heated fluid through said heated roller;

(g) applying a controlled pressure to said aligned layers while in contact with said heated roller by a pressure roller such that said layers are bonded to one another along said lands;

(h) maintaining the temperature of said pressure roller at a constant temperature; and

(i) collecting said bonded layers.

5,628,846

METHOD AND APPARATUS FOR FORMING PREFABRICATED SELF-FORMING SELF-ADHERING PULL BOW AND PULL BOW FORMED THEREBY

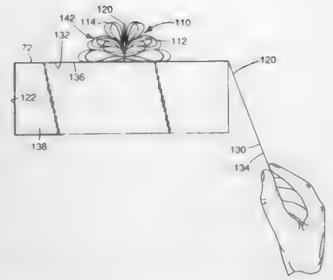
Charles P. Huss, Stillwater; Arthur L. Fry, Maplewood, and Steven R. Leseman, Lexington, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 31,560, Mar. 15, 1993, Pat. No. 5,468,523. This application May 17, 1995, Ser. No. 442,811
Int. Cl.[6] D04D *7/10*
U.S. Cl. 156—70 10 Claims

1. A method for constructing a self-forming self-adhering pull bow for application to an object, comprising the steps of:

(a) providing a pair of ribbon band segments, each having a first width, a major surface, a first end and a second end;

(b) providing a pair of drawstrings, each having a second width less than the first width, a major surface, a first end and a second end, with at least a portion of the major surfaces of the drawstrings being coated with a pressure sensitive adhesive;



(c) aligning the pressure sensitive adhesive coated major surfaces of the drawstrings;

(d) adhering the drawstrings to each other by placing the pressure sensitive adhesive layers in contact with each other;

(e) aligning the major surfaces of the ribbon bands;

(f) interposing the reciprocally adhered drawstrings between the aligned ribbon bands;

(g) bonding the first ends of the drawstrings and the ribbon bands together; and

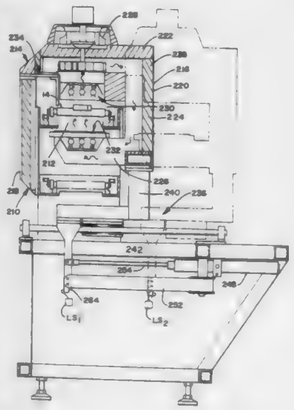
(h) bonding the ribbon bands together in paired locations on opposite sides of the drawstrings to form fold lines.

5,628,847

SYSTEM FOR APPLYING A HEAT-SHRINKABLE SLEEVE TO A CONTAINER

Harry Sowden, Philadelphia, Pa., assignor to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 96,087, Jul. 23, 1993, Pat. No. 5,475,969, which is a continuation-in-part of Ser. No. 794,558, Nov. 19, 1991, Pat. No. 5,390,477. This application Apr. 11, 1995, Ser. No. 419,782
Int. Cl.[6] B32B *31/24*
U.S. Cl. 156—86 3 Claims



1. A method of applying a heat-shrinkable label to a container, comprising:

(a) fitting a heat-shrinkable label about a container;

(b) conveying the container with the label along a path;

(c) positioning a heat tunnel assembly along the path whereby the label will be shrink-fitted onto the container, said heat tunnel assembly comprising:

(i) an insulated heating chamber defined by a first stationary portion and a second removable portion, said second portion having a substantially C-shaped cross-section;

(ii) a heater positioned within said insulated heating chamber;

(iii) movable mounting means for mounting said second removable portion of said insulated heating chamber for movement in a substantially horizontal plane between a first position engaged with said first stationary portion, and a second retracted position remote from said first portion;

(iv) actuator means for moving said second removable portion of said insulated heating chamber into its engaged position; and

(v) biasing means for resiliently biasing said second removable portion of said chamber toward said retracted position; and

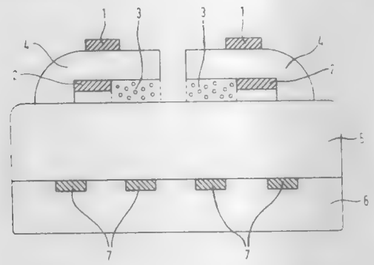
(d) deactivating the actuator means in the event of an emergency, whereby said heating tunnel assembly will be opened to prevent said container and label from overheating or burning.

5,628,848

PROCESS FOR THE PRODUCTION OF COMPOSITE SYSTEMS HAVING AT LEAST TWO INORGANIC CERAMIC LAYERS

Karl-Hermann Friese, Leonberg; Werner Gruenwald, Gerlingen, and Ulrich Elsele, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00520, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO94/27819, PCT Pub. Date Dec. 8, 1994
PCT Filed May 6, 1994, Ser. No. 367,141
Claims priority, application Germany, May 22, 1993, 43 17 174.5
Int. Cl.[6] B32B *31/26*
U.S. Cl. 156—89 4 Claims



1. A cosintering process for producing a ceramic composite structure having at least two ceramic layers which are durably bonded to one another and which are substantially free of macropores, comprising:

a. providing a first layer which is comprised of a powder of a first ceramic material;

b. providing on the first layer a second layer which is comprised of a powder of a second ceramic material, the first and second ceramic materials having respective mean particle diameters in which the powder of the first ceramic material has a mean particle diameter in the nanometer range and the powder of the second ceramic material has a mean particle diameter in the micron range; and

c. cosintering at least the first and second layers together at a sintering temperature which is the lowest sintering temperature effective to provide a predetermined density after sintering for the layers,

wherein the first layer comprises aluminum oxide and the second layer comprises zirconium(IV) oxide,

wherein the first and second ceramic materials are such that, if the mean particle diameters of the first and second ceramic materials were identical, the first and second layers would require different sintering temperatures to attain an essentially identical density after sintering, and the first layer would require a higher sintering temperature compared to that of the second layer, and

wherein the respective particle sizes of the first and second ceramic materials are matched to enable cosintering by the second ceramic material having a mean particle diameter which is larger than that of the first ceramic material.

5,628,849

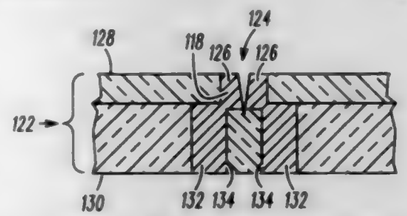
Patent Not Issued For This Number

5,628,850

METHOD FOR PRODUCING INPUT/OUTPUT CONNECTIONS IN A CERAMIC DEVICE

Carlos A. Sanchez, Belen; Rong-Fong Huang, Albuquerque, and Michael W. Murphy, Placitas, all of N.M., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1995, Ser. No. 504,973
Int. Cl.[6] B32B *31/18;31/20*
U.S. Cl. 156—89 7 Claims



1. A method of making input/output connector pads for a ceramic device, comprising the steps of:

providing a first ceramic layer in a green state and having a predetermined thickness defined by an upper and a lower surface and a second ceramic layer in a green state and having a predetermined height defined by a top and bottom surface;

forming at least one first via through the first ceramic layer and at least one second via through the second ceramic layer, the at least one second via being offset from and connecting to the first via;

substantially filling the first and the at least one second via with metalization;

laminating the lower surface of the first ceramic layer to the top surface of the second ceramic layer to form a laminate;

scoring the laminate along at least one line, the line extending downwardly through the first via of the first ceramic layer and into a portion of the second ceramic layer such that the line does not intersect the at least one second via;

cofiring the ceramic layers and the metalization; and

cleaving the laminate along the line, whereby a fracture propagates through the second ceramic layer separating the laminate such that the fracture does not propagate into the at least one second via.

5,628,851

METHOD OF MAKING AND INSTALLING A TUB CAP

Bruce L. Lawler, 37 Wayfaring La., Rochester, N.Y. 14612

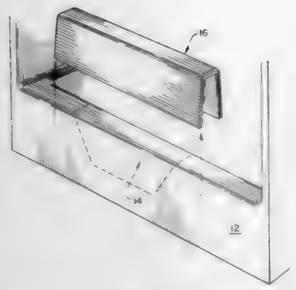
Filed Aug. 25, 1995, Ser. No. 519,676
Int. Cl.[6] A47K *3/00*; B32B *35/00*
U.S. Cl. 156—98 16 Claims

1. A method for modifying a tub to form a recessed opening in a partially cut out tub apron, comprising the steps of:

(a.) forming a plug on the tub apron at the area to be removed and an adjacent area;

(b.) making a mold from the plug, the mold having an inside surface conforming to the surface of the apron with a cut out section removed;

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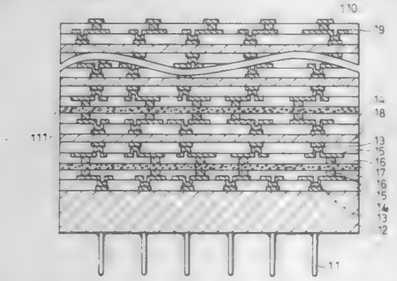
(c.) forming a cap in the mold, the cap conforming to the apron with the cut out section removed;
(d.) removing the cut out section from the apron; and
(e.) installing the cap on the partially cut out tub apron.

5,628,852

METHOD FOR MANUFACTURING A POLYIMIDE MULTILAYER WIRING SUBSTRATE

Hisashi Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 918,594, Jul. 24, 1992, abandoned. This application Oct. 25, 1994, Ser. No. 328,950
Claims priority, application Japan, Jul. 26, 1991, 3-208793; Oct. 2, 1991, 3-255517
Int. Cl.[6] H05K *3/34;3/36;* **B32B** *31/04;31/20*
U.S. Cl. 156—182 **8 Claims**



1. A method for manufacturing a polyimide multilayer wiring substrate comprising the steps of:

a) forming a plurality of first wiring layer blocks, each of said first wiring layer blocks being formed by forming a layered structure of conductive wiring layers and polyimide layers on two surfaces of one of a ceramic board and a hard organic resin board having an internal conductive layer, each of said polyimide layers of said first wiring layer blocks being formed between two successive layers of said conductive wiring layers of said first wiring layer blocks, and by forming metal bumps in electrical contact with said conductive wiring layers on top and bottom surfaces of each of said first wiring layer blocks, said conductive wiring layers of said first wiring layer blocks being connected between said polyimide layers of said first wiring layer blocks through viaholes;

b) forming a second wiring layer block, by forming a layered structure of conductive wiring layers and polyimide layers on one of a ceramic board and a hard organic resin board, each of said polyimide layers of said second wiring layer block being formed between two successive layers of said conductive wiring layers of said second wiring layer block, and by forming metal bumps in electrical contact with said conductive wiring layers in said second wiring layer block on a top surface of said second wiring layer block, said conductive wiring layers of said second wiring layer block being connected between said polyimide layers of said second wiring layer block through viaholes;

c) interposing a first anisotropically conductive film, having conductive particles therein, between a bottom surface of one of said first wiring layer blocks and said top surface of said second wiring layer block;

d) superposing said bottom surface of said one of said first wiring layer blocks onto said top surface of said second wiring layer block with said first anisotropically conductive film therebetween, said metal bumps on said bottom surface of said one of said first wiring layer blocks being aligned with said metal bumps on said top surface of said second wiring layer block;

e) bonding and electrically connecting said one of said first wiring layer blocks and said second wiring layer block by subjecting said one of said first wiring layer blocks and said second wiring layer block to pressure and heat, said bonding being achieved by adhesive force of said first anisotropically conductive film under conditions of pressure and heating, said electrical connection being formed in regions where said metal bumps of said one of said first wiring layer blocks and said metal bumps of said second wiring layer block press against said first anisotropically conductive film, crushing said conductive particles in said first anisotropically conductive film only between said metal bumps;

f) interposing a second anisotropically conductive film, having conductive particles therein, between a bottom surface of another of said first wiring layer blocks and a top surface of said one of said first wiring layer blocks;

g) superposing said bottom surface of said another of said first wiring layer blocks onto said top surface of said one of said first wiring layer blocks with said second anisotropically conductive film therebetween, said metal bumps on said bottom surface of said another of said first wiring layer blocks being aligned with said metal bumps on said top surface of said one of said first wiring layer blocks;

h) bonding and electrically connecting said one of said first wiring layer blocks and said another of said first wiring layer blocks in a manner as recited in the step e;

i) repeating the steps f, g and h a number of times to form multiple wiring layer blocks stacked on said one of said ceramic and hard organic resin board; and

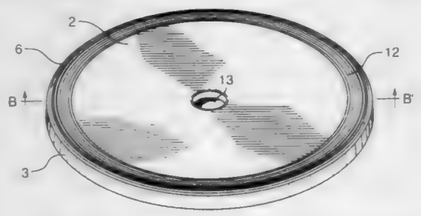
j) forming electrode pads for connecting a large scale integrated (LSI) circuit on a top surface of an uppermost one of said plurality of first wiring layer blocks.

5,628,853

METHOD FOR MANUFACTURING FOIL LAMINATED TABLETOPS

John R. Edwards, Nobleton, Canada, assignor to Hollanding Inc., Newmarket, Canada

Division of Ser. No. 234,118, Apr. 28, 1994, Pat. No. 5,455,095. This application Jun. 19, 1995, Ser. No. 492,190
Claims priority, application Canada, Mar. 23, 1994, 2119925
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—212 **22 Claims**



1. A method for manufacturing a foil laminated tabletop, comprising:

forming a tabletop from a solid substrate, said substrate comprising an upper surface, a lower surface and a side surface;

the side surface extending downwardly from the upper surface to the lower surface to join the upper and lower surfaces;

the lower surface lying in a flat lower plane, the upper surface being substantially parallel to the lower plane;

the side surface and the lower surface intersecting at an angular lower edge;

an included angle measured about the lower edge through the substrate from the lower plane to a tangent to the side surface at the lower edge being at least about 120 degrees;

laying a sheet of thin plastic foil over the upper surface of the tabletop, the plastic foil having an inner surface and an outer surface opposite the inner surface;

loading the substrate covered with the plastic foil into a membrane form press, the press having a pressure chamber in which pressure is applied to the substrate and the plastic foil;

applying pressure to the substrate and the foil in the pressure chamber of the membrane form press, the inner surface of the plastic foil becoming directly adhered to the substrate, the plastic foil extending as a smooth, free of joints, continuous sheet over the entirety of the upper surface and down over the side surface to the lower edge to closely adopt profiles of the upper and side surfaces with excess foil extending from the side surface of the tabletop at the lower edge and said excess foil not adhered to the substrate;

removing the foil laminated tabletop from the membrane form press; and

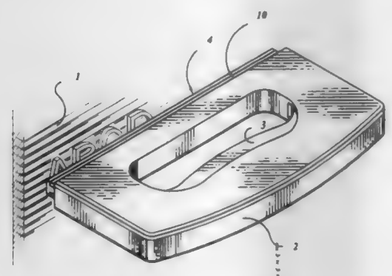
trimming the excess plastic foil from the tabletop along the lower edge to form an end surface of the foil joining the inner and outer surfaces of the foil and lying substantially in the lower plane.

5,628,854

LETTER MOVER

Benton C. Ball, 401 N. Antler St., Gladwin, Mich. 48624

Filed Apr. 6, 1995, Ser. No. 417,812
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—230 **6 Claims**



1. A device to move letters on a changeable letterboard by adhesively gripping and mechanically stripping said letters, said device comprising:

an outer case, with a front stripper face, and appropriate openings to accommodate the exposure of portions of a principally internal slide,

said slide having an exposed front face, and a hole aligned with one of said openings in said case for hand gripping and compression of a spring to effect retraction of said slide into said case, said slide cooperating slidably close with said case to maintain alignment,

said spring to maintain the relationship between said case and said slide in a normally extended position,

and a tacky adhesive applied to said exposed front face of said slide;

whereby said device will facilitate movement of said letters by adhesively gripping and mechanically stripping letters to be moved on said changeable letterboard.

5,628,855

METHOD OF PICKING UP AN ELECTRIC DEVICE

Juergen Hartmann; Guenter Boeer, and Walter Weinstock, all of Reutlingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 24, 1995, Ser. No. 410,192
Claims priority, application Germany, Mar. 24, 1994, 44 10 179.1
Int. Cl.[6] B44C *1/165*
U.S. Cl. 156—235 **12 Claims**



1. A method for picking up an electric device having an upper side and an underside, the electric device being detachably fastened, by its underside, on a first mount, the method comprising steps of:

a) dividing a semiconductor wafer into individual chips, a single chip being used as the electric device;

b) detachably fastening a second mount on the upper side of the electric device such that a holding force between the second mount and the electric device is greater than a holding force between the first mount and the electric device;

c) separating the first mount from the electric device; and

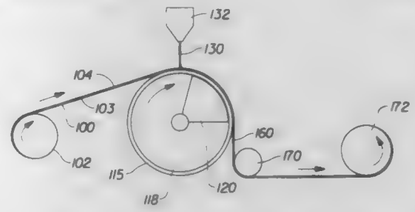
d) picking up the electric device, by its underside, from the second mount by means of a holding tool, the upper side of the electric device attachable to a substrate when the electric device is separated from the second mount.

5,628,856

METHOD FOR FORMING A COMPOSITE ELASTIC MATERIAL

George C. Dobrin, and Karen M. Davis, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 29, 1996, Ser. No. 639,821
Int. Cl.[6] A61F *13/00;* **B32B** *31/16*
U.S. Cl. 156—244.18 **20 Claims**



1. A method for forming a composite elastic material, said method comprising the steps of:

a) feeding an elastic member comprising at least one elastic strand onto a rotating forming structure exhibiting a multiplicity of apertures therein, said elastic member having a surface facing said forming structure and a surface facing away from said forming structure;

b) extruding a thermoplastic film onto the surface of the elastic member facing away from the forming structure; and

c) applying a pneumatic vacuum to the thermoplastic film and the elastic member so that the thermoplastic film is simultaneously apertured and bonded to the elastic member while still on said forming structure.

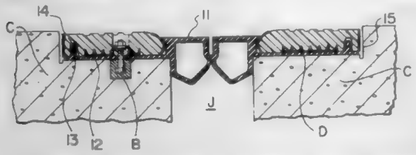
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5,628,857

JOINT SEAL RETAINING ELEMENT

Konrad Baerveldt, 5 Rosea Ct., Thornhill, Ontario, Canada

Division of Ser. No. 213,856, Mar. 16, 1994. This application Jun. 6, 1995, Ser. No. 468,020
Claims priority, application Canada, Mar. 18, 1993, 2091948
Int. Cl.[6] E01D *19/06*
U.S. Cl. 156—244.25 **7 Claims**



1. A method of manufacturing an expansion joint seal retaining element comprising coextruding a thermoplastic rubber body with high density plastic reinforcing plate on the lower surface thereof, wherein at least the reinforcing plate is provided with extra thickness relative to a desired final thickness of said reinforcing plate, said reinforcing plate including a bottom surface and at least one rib extending into said thermoplastic rubber body, wherein said at least one rib is of a sufficient size to cause the bottom surface of the reinforcing plate to deform upon cooling and hardening;

permitting said coextended body and reinforcing plate to cool and harden; and

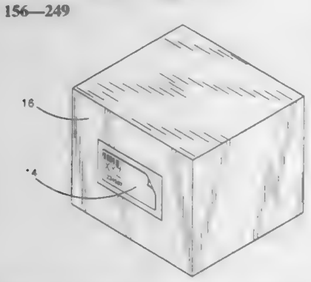
mechanically planing the lower surface of said co-extruded body and reinforcing plate to remove said extra thickness, whereby a retaining element with a flat lower surface is obtained.

5,628,858

LABEL SYSTEM FOR REUSABLE CONTAINERS AND THE LIKE

Robert J. Petrou, Hudson, Ohio, assignor to MPT, Inc., Eastlake, Ohio

Continuation of Ser. No. 292,882, Aug. 19, 1994, Pat. No. 5,417,790, which is a continuation-in-part of Ser. No. 955,119, Oct. 1, 1992, abandoned. This application May 18, 1995, Ser. No. 443,202
Int. Cl.[6] C09J *7/00*
U.S. Cl. 156—249 **5 Claims**



4. A method of labeling and relabeling an object with replaceable pressure-sensitive adhesive-backed labels comprising:

a) providing a plurality of pressure sensitive adhesive coated labels having indicia printed thereon;

b) providing a placard having an adhesive coated surface and a release coated surface;

c) substantially permanently affixing the placard to the object by applying the adhesive coated surface of said placard to a surface of the object with the release coated surface oriented outward;

d) applying a first label to the placard by securing the pressure sensitive adhesive coating of the first label to the placard release coated surface;

e) at a selected one of a time prior to and subsequent to the first label applying step, positioning a first contents set in the object;

f) removing the first contents set from the object and replacing it with a second contents set; and

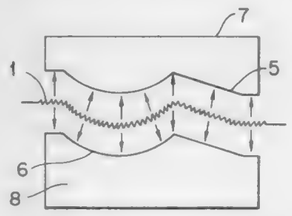
g) at a selected one of a time prior to and subsequent to the first set removal step, removing the first label by separating the pressure sensitive adhesive coating of the first label from the release coated surface of the placard while leaving the placard fully attached to the object and applying to the release coated surface of the placard a pressure sensitive adhesive coating of a second label having indicia related to the contents of the second set.

5,628,859

METHOD OF HEATING BY EMISSION OF ELECTROMAGNETIC RADIATION, ESPECIALLY INFRARED RADIATION

Jean-Louis Janin, Fillinges, and Michel Gorguet, Lucinges, both of France, assignors to Mecasonic S.A., Annemasse Cedex, France

Filed Jun. 3, 1994, Ser. No. 253,343
Claims priority, application France, Jun. 17, 1993, 93 07333
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—273.3 **4 Claims**



1. A method of joining non-sheet thermoplastic parts having joint lines of non-planar complex profile, comprising the steps:

locating a resistive element to form a three-dimensional profile in proximate conforming relation to the joint lines;

forming a conforming three-dimensional channel of concave surface in spaced proximity along the length of the element;

coating the concave conforming surface with a reflective material;

providing the element with current to generate radiation reflected from the reflective material toward at least one of the joint lines;

subjecting the joint line to the radiation to cause its melting;

removing the element from the channel;

fusing the parts together along the melted joint lines.

5,628,860

DIELECTRIC-HEATED, CONTINUOUS LAYUP LAMINATED VENEER LUMBER PRESS

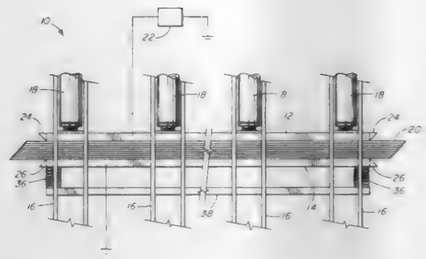
Gordon G. Shofner, Louisville, Ky., and William N. Perry, Sonora, Calif., assignors to Durand-Raute Industries Ltd., British Columbia, Canada, and Thermex-Thermatron, Inc., Bay Shore, N.Y.

Division of Ser. No. 322,102, Oct. 12, 1994, abandoned. This application Jun. 20, 1995, Ser. No. 493,210
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—274.4 **7 Claims**

1. A method of making laminated veneer lumber in a continuous layup press having opposed press platens coupled to an RF energy source, said method comprising the steps of:

(a) shaping said platen ends in a cross-sectional plane of said press, such that said ends project outwardly away from respective inner edges of said platens;

(b) advancing part of a glued laminate billet to position said part between said platens;



(c) for a pre-determined time interval, activating said RF energy source while compressing said billet part between said platens;

(d) after said interval, releasing said platens;

(e) advancing said billet to eject said billet part from said platens and position a next adjacent part of said billet between said platens; and,

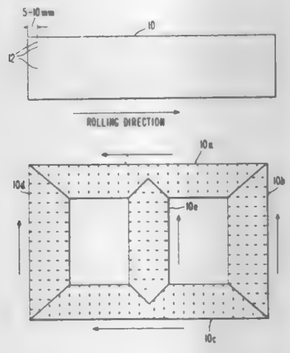
(f) sequentially repeating steps (c), (d) and (e) until said billet has advanced completely through said press.

5,628,861

METHOD FOR ADHESIVELY BONDED LAMINATE FOR USE IN AN ELECTRICAL APPARATUS SUCH AS A TRANSFORMER, GENERATOR, OR MOTOR

Vladimir M. Segal, Cary, N.C., assignor to ABB Power T&D Company Inc., Raleigh, N.C.

Filed Jan. 25, 1995, Ser. No. 377,841
Int. Cl.[6] B05D *5/02;5/10;* **B32B** *31/12;* **H01F** *41/02*
U.S. Cl. 156—291 **15 Claims**



1. A method for manufacturing a laminate for electrical applications comprising the steps of:

(a) applying hot melt adhesive in a pattern of thin beads onto one side of a first lamina or sheet of magnetic material, said pattern comprising a plurality of lines, said lines being substantially parallel to each other and substantially perpendicular to a direction of grain orientation or rolling direction of said lamina, wherein the spacing between the respective lines of adhesive is 1–20 millimeters and, for an approximate diameter (D) of each bead, the spacing (S) between the beads of each line is between D and 2D; and

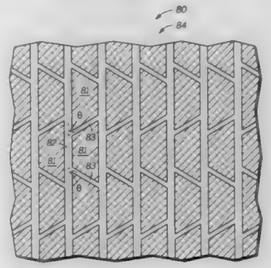
(b) stacking and bonding a second lamina or sheet onto said one side of said first lamina to form the laminate.

5,628,862

POLISHING PAD FOR CHEMICAL-MECHANICAL POLISHING OF A SEMICONDUCTOR SUBSTRATE

Tat-Kwan Yu, and Chris C. Yu, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 167,008, Dec. 16, 1993, Pat. No. 5,441,598. This application May 18, 1995, Ser. No. 444,172
Int. Cl.[6] H01L *21/461*
U.S. Cl. 156—345 **20 Claims**



1. A polishing pad for chemical-mechanical polishing of a semiconductor substrate, wherein:

the polishing pad has a polishing side for polishing the semiconductor substrate;

the polishing side has a plurality of features that each have a height; and

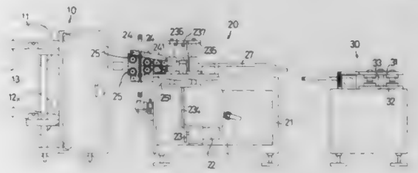
a standard deviation of the heights is less than 20 microns.

5,628,863

POUCH PRODUCING MACHINE

Shu-ken Lee, 2nd Fl., No. 3, Chenglung Lane, Sec. 2, Sanmin Rd., Panchiao City, Taipei Hsien, Taiwan

Filed Jun. 12, 1996, Ser. No. 661,992
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—353 **2 Claims**


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a third motor mounted on both sides of said case and provided with a shaft to control a group of gears and lower pressing wheels;

a group of upper pressing wheels mounted on top of said lower pressing wheels to allow said side bar to be transported to a center of said gluing device and pressed between said lower pressing wheels and said upper pressing wheels;

an opening member having an inclined surface for opening said upper sheet and said lower sheet;

a glue applicator provided between said latter group of said transporting wheel and said front group of said pressing wheel; and

a cutting-forming device comprising:

a cutting seat driven by a powered shaft;

a base;

a subtantially "Z" shaped knife mounted under said cutting seat; and

a recess permitting said side bar to be transported therethrough.

5,628,864

CUTTING UNIT IN AUTOMATIC ENCLOSING AND SEALING APPARATUS

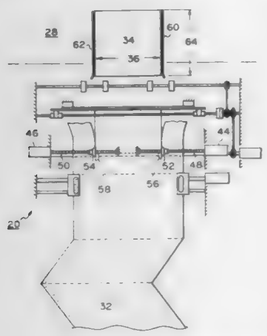
Tsutomu Kataigi, and Masayoshi Ochi, both of Tokyo, Japan, assignors to Juki Corporation, Tokyo, Japan

PCT No. PCT/JP92/01410, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/09953, PCT Pub. Date May 11, 1994

PCT Filed Oct. 30, 1992, Ser. No. 433,376

Int. Cl.[6] B26D *5/02;7/26;* **B43M** *5/04;* **B65H** *35/02*

U.S. Cl. 156—441.5 **4 Claims**



1. An automatic enclosing and sealing apparatus including:

a control unit for inputting control information including width information relating to the width of a single sheet being cut from a continuous sheet:

a cutter unit for displacing and adjusting slitters in a widthwise direction for cutting the width of the single sheet so as to have a widthwise dimension, and

a plurality of subsequent units including at least a supply unit for supplying the single sheet and an enclosure overlapping the single sheet, and a unit for enclosing the single sheet and the enclosure into an envelope,

said control unit, said cutter unit and said subsequent units are arranged serially, wherein the cutter unit comprises:

a control circuit for calculating and setting the position information for setting the position of the slitter in response to the width information,

drive means for driving the slitters, in response to the width information, to the response position, and

said control circuit for supplying the position information to said subsequent units.

5,628,865

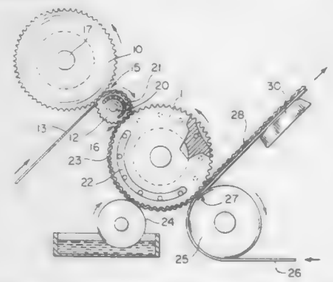
SINGLE FACER WITH SMALL INTERMEDIATE CORRUGATING ROLL

Carl R. Marschke, Phillips, Wis., assignor to Marquip, Inc., Phillips, Wis.

Filed Mar. 26, 1996, Ser. No. 621,998

Int. Cl.[6] B31F *1/26;1/28*

U.S. Cl. 156—473 **7 Claims**



1. In a single facer apparatus for producing a single face corrugated web, including a pair of fluted main corrugating rolls rotatable on parallel spaced roll axes with flutes of the same shape and pitch adapted to inter-engage to form a corrugating nip for a paper machine web, means rotatably mounting said main corrugating rolls to impose a corrugating nip force normal to the roll axes generally in the plane common thereto, the improvement comprising:

an intermediate fluted corrugating roll mounted between and in rotatable engagement with said main corrugating rolls and with the axis of said intermediate roll lying generally in said common plane; and,

said intermediate roll forming with one main corrugating roll the corrugating nip and having a diameter sufficiently smaller than the diameter of said one main corrugating roll to provide a reduction in the labyrinth paper path sufficient to prevent rupture of the medium web.

5,628,866

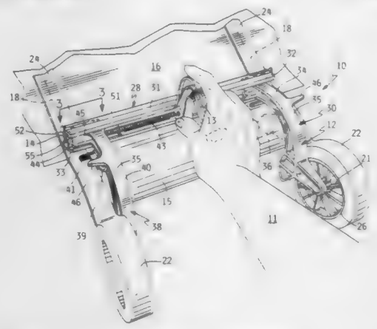
MASKING MACHINE

Daniel L. Pool, Phoenix, Ariz., assignor to 3M, St. Paul, Minn.

Continuation of Ser. No. 175,317, Dec. 29, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,031

Int. Cl.[6] B32B *31/08;31/18*

U.S. Cl. 156—527 **14 Claims**



1. A hand held masking machine comprising:

a frame having a front edge;

a handle attached to said frame and adapted to be grasped by a person using the masking machine;

masking material mounting means on said frame adapted for mounting a roll of masking material having an axis, axially spaced end surfaces defined by spaced lateral edges of the masking material, and central openings through said end surfaces, said mounting means mounting the roll of masking material for generally coaxial rotation about a masking material axis defined by the mounting means so that masking material from the roll can be conducted past the front edge of the frame;

first and second tape roll mounting means on said frame adapted for mounting first and second rolls of pressure sensitive adhesive coated tape having axes and axially spaced opposite edges for coaxial rotation about tape roll axes generally parallel to said masking material axis with each of said rolls of tape adjacent a different lateral edge of the masking material and positioned on the side of said masking material mounting means opposite the front edge of said frame, said tape roll mounting means being adapted to position the rolls of tape along said tape roll axes with a portion of each roll of tape along the adjacent edges of the rolls of tape aligned with portions of the roll of masking material along the adjacent edge of the roll of masking material, and with a portion of each roll of tape projecting past the adjacent edge of the roll of masking material, and so that tapes conducted from the rolls of tape past said front edge will contact and become adhered to masking material being conducted from said roll of masking material with portions of the tapes projecting past the opposite lateral edges of the masking material; and

cutting means along the front edge of said frame adapted for cutting the adhered together masking material and tapes,

wherein said frame includes:

a main frame portion including a longitudinal transversely extending part having said front edge and first and second opposite ends, and a first flange part attached to and projecting generally normal to said transversely extending part adjacent said first end, said first tape roll mounting means and a portion of said masking material mounting means adapted to be positioned in the central opening through one end surface of the roll of masking material being mounted on said first flange part;

a moveable frame portion;

means mounting said moveable frame portion on said main frame portion for movement in a direction parallel with said transversely extending part of said main frame portion;

said moveable frame portion including a second flange part projecting generally normal to said transversely extending part adjacent the end of said transversely extending part opposite said first flange part, said second tape roll mounting means and a portion of said masking material mounting means adapted to be positioned in the central opening through the end surface of the roll of masking material opposite the central opening engaged by the portion of said masking material mounting means on said first flange part being mounted on said second flange part; and

biasing means between said movable frame portion and said main frame portion for pressing said flange pads against the opposite end surfaces of a roll of masking material engaged by the masking material mounting means.

5,628,867

AUTOMATIC PASTER FOR WALLPAPER BORDERS

Frederic T. Renaud, 1031 Sunset Dr., Basking Ridge, N.J. 07920

Filed May 19, 1995, Ser. No. 445,426

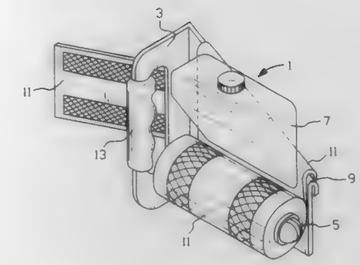
Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—574 **20 Claims**

1. A handheld paper border pasting and dispensing device, which comprises;

a) a container for holding a quantity of paste, said container having a front surface, a back surface, an outlet on said back surface, two side arms, and two harness plates;

b) a paper holder attached to said two side arms for holding a paper border;



c) a flow regulator attached to and over said outlet on said container for dispensing a paste from said container onto a paper border; and,

d) a contact guide attached to said container over and against said flow regulator for sealing portion of said flow regulator not in contact with a paper border; and,

e) a paper guide attached to said harness plates from said back surface side of said container for redirecting a paper border in a transverse direction.

5,628,868

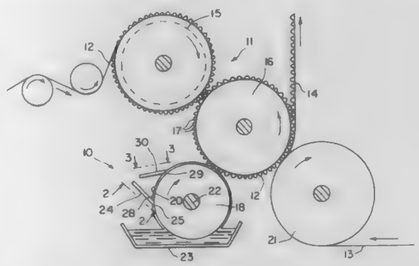
APPARATUS AND METHOD FOR APPLYING A VISCOUS LIQUID TO A MATERIAL SURFACE

Carl R. Marschke, and James A. Cummings, both of Phillips, Wis., assignors to Marquip, Inc., Phillips, Wis.

Filed Oct. 13, 1995, Ser. No. 543,203

Int. Cl.[6] B05C *1/00*

U.S. Cl. 156—578 **20 Claims**



1. An adhesive applicator apparatus for applying a viscous liquid to a moving material surface comprising:

a liquid supply;

a cylindrical applicator roll rotatably mounted with an outer surface portion in operative communication with the supply to pick up liquid therefrom;

a metering doctor blade positioned to engage the outer surface of the applicator roll downstream of the liquid supply with respect to the direction of roll rotation, said metering blade having a roll-engaging edge defined by a series of spaced notches separated by straight edge portions;

means for mounting said metering blade to orient the edge in the upstream direction to provide a reverse angle of attack;

said notches adapted to form a series of spaced parallel beads of liquid along the roll outer surface and said edge portions adapted to substantially wipe the liquid from the roll surface between the beads; and,

means downstream of said metering blade for spreading said liquid beads laterally across the roll surface and for moving the surface of the material generally tangentially along and in contact with the roll surface in the direction of rotation to transfer the liquid to the surface.

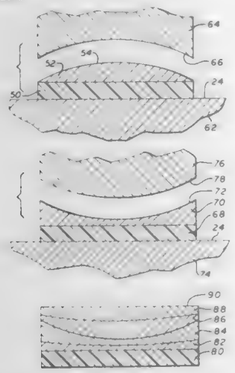
VOL 1198 ISS 2 MY 13 1997 UMI

5,628,869

PLASMA ENHANCED CHEMICAL VAPOR REACTOR WITH SHAPED ELECTRODES

Thomas G. Mallon, Santa Clara, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed May 9, 1994, Ser. No. 239,987
Int. Cl.[6] C23F *1/02*
U.S. Cl. 438—694 5 Claims



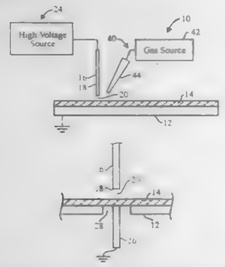
1. A method of plasma processing a semiconductor integrated circuit processing wafer, comprising the steps of:
providing a semiconductor integrated circuit processing wafer with a surface carrying a layer of material to be plasma etched;
providing a passive electrode;
providing a feed electrode which defines with the passive electrode a gap;
disposing the processing wafer in the gap;
determining an anticipated material etching profile of non-uniformity of the layer of material to be plasma etched;
reconfiguring an active surface of the feed electrode to be non-complementary to the passive electrode and at the active surface to define a profile complementary to or like the anticipated material etching profile of non-uniformity; and
using the reconfigured feed electrode, etching the material layer more uniformly.

5,628,870

METHOD FOR MARKING A SUBSTRATE USING IONIZED GAS

Yan Ye, Cupertino; Anand Gupta, San Jose, and Yuri S. Uritsky, Foster City, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 94,653, Jul. 19, 1993, Pat. No. 5,474,640.
This application Jun. 5, 1995, Ser. No. 458,961
Int. Cl.[6] B44C *1/22*
U.S. Cl. 438—729 21 Claims



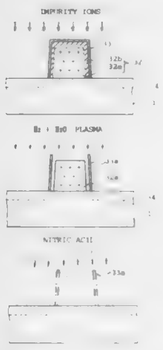
1. A method for marking a semiconductor substrate, the method comprising the steps of:
(a) electrically grounding the substrate;
(b) placing at least one needle electrode tip proximate to the substrate to form a gap between the electrode tip and the substrate, the gap having a gas therein; and
(c) electrically biasing the needle electrode tip with respect to the electrically grounded substrate by applying a sufficiently high voltage to the electrode tip to ionize the gas in the gap so that the ionized gas impinges upon and marks the substrate.

5,628,871

METHOD OF REMOVING RESIST MASK AND A METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Keisuke Shinagawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 24, 1994, Ser. No. 264,915
Claims priority, application Japan, Sep. 17, 1993, 5-232018
Int. Cl.[6] H01L *21/312*
U.S. Cl. 438—514 18 Claims



1. A method of removing a resist mask on a substrate comprising the steps of:
(a) forming a mask comprising organic material on a surface layer of a substrate;
(b) implanting impurity ions into the surface layer through openings in the mask as well as into a surface layer of said mask thereby reacting said impurity ions with a surface portion of said mask and thereby forming a hard layer on a surface of said mask while leaving a substantially unreacted layer of said mask under said hard layer; and
(c) removing the mask by sequentially:
(1) exposing the mask to a plasma activated gas containing hydrogen under conditions sufficient to vaporize said hard layer and thereby initiate removal of said mask,
(2) after removal of said hard layer, exposing the mask to a plasma activated gas containing oxygen under conditions sufficient to remove said unreacted layer; and
wherein, after said unreacted layer has been removed by said plasma activated gas containing oxygen to thereby completely remove said mask, aluminum oxide residues are left,
(3) after removal of said mask by said oxygen, exposing said remaining aluminum oxide residues to a wet solution comprising an etchant consisting essentially of nitric acid under conditions sufficient to cause said nitric acid to remove said aluminum oxide residues.

5,628,872

METHOD FOR BLEACHING PULP WITH HYDROGEN PEROXIDE RECOVERED FROM CELLULOSIC SPENT LIQUOR

Ake Backlund, Karlstad; Lars Stigsson, Hammaro, and Ove Wallergard, Hjalteby, all of Sweden, assignors to Kanyr AB, Karlstad, Sweden

Continuation of Ser. No. 139,706, Oct. 22, 1993, abandoned.
This application Apr. 10, 1995, Ser. No. 419,770
Int. Cl.[6] D21C *11/06;11/12*
U.S. Cl. 162—16 22 Claims

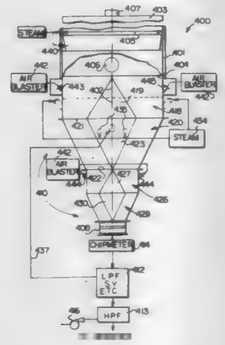
1. A method of bleaching pulp comprising the steps of:
bleaching pulp with hydrogen peroxide;
partially combusting a spent liquor comprising lignin compounds to form a combustion gas comprising hydrogen gas;
purifying and concentrating the combustion gas to increase hydrogen gas purity and concentration;
reacting the hydrogen gas with an alkylanthraquinone in the presence of a catalyst to form hydroquinone which is oxidized with oxygen to thereby form hydrogen peroxide; and
using at least a portion of the formed hydrogen peroxide in the hydrogen peroxide bleaching step.

5,628,873

CHIP BIN ASSEMBLY INCLUDING A HOLLOW TRANSITION WITH ONE DIMENSIONAL CONVERGENCE AND SIDE RELIEF

Jerry R. Johanson, San Luis Obispo, Calif., and John W. Baldwin, Saratoga Springs, N.Y., assignors to Ahlstrom Machinery Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 189,546, Feb. 1, 1994, Pat. No. 5,500,083. This application Dec. 30, 1994, Ser. No. 366,581
Int. Cl.[6] D21C *7/06*
U.S. Cl. 162—17 20 Claims



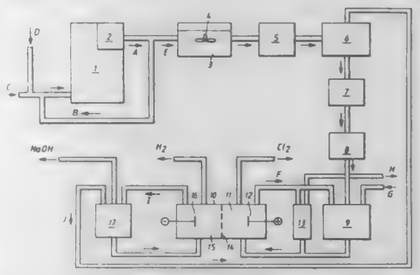
1. A chip bin assembly comprising:
a hollow substantially right circular cylindrical main body portion having a substantially vertical central axis, a top and a bottom, and having a first diameter;
a top wall closing off said top of said main body portion, and having means for introducing wood chips into said hollow main body portion mounted thereon;
a hollow substantially right rectangular parallelepiped discharge which is not vibrated, and has a second diameter which is less than one half of said first diameter;
a hollow transition portion disposed between said main body portion and said discharge having one dimensional convergence and side relief;
means for introducing steam into at least one of said hollow transition portion, said hollow main body, and said hollow discharge; and
means for operatively connecting said discharge to a digester.

5,628,874

REDUCTION OF CHLORIDE IN PULPING CHEMICAL RECOVERY SYSTEMS

Hans Lindberg, Stockholm, and Birgitta Sundblad, Göteborg, both of Sweden, assignors to Eka Nobel AB, Bohus, Sweden

PCT No. PCT/SE93/00688, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO94/04747, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 18, 1993, Ser. No. 392,761
Claims priority, application Sweden, Aug. 24, 1992, 9202419-9
Int. Cl.[6] D21C *11/05;11/12*
U.S. Cl. 162—30.1 10 Claims



1. A process for reducing the content of chloride in a recovery system for pulping chemicals containing sulphur and an alkali metal, comprising the steps of:
(a) bringing a spent liquor generated from a pulping step to a recovery boiler,
(b) burning said spent liquor optionally together with make-up chemicals,
(c) collecting precipitator dust formed and withdrawing said precipitator dust from the precipitator of the recovery boiler,
(d) dissolving at least a portion of the precipitator dust in water to produce an aqueous solution of precipitator dust,
(e) adjusting the pH of said aqueous solution of precipitator dust to a pH about 10 or above to precipitate inorganic substances, wherein flocculated or undissolved inorganic and organic substances are separated from said aqueous solution, and
(f) electrolyzing said pH-adjusted aqueous solution of precipitator dust in a membrane electrochemical cell containing at least two compartments for production of chlorine or hydrochloric acid in the anode compartment and alkali metal hydroxide in the cathode compartment.

5,628,875

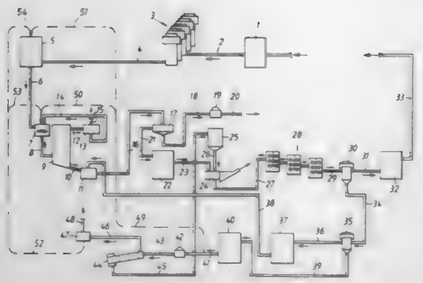
METHOD FOR CLARIFYING GREEN LIQUOR BY MONITORING THE CALCIUM CONCENTRATION IN THE SPENT LIQUOR PRIOR TO OR AT COMBUSTIONS

Jan G. Lidén, Domsjö, and Leif I. Andersson, Iggesund, both of Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

PCT No. PCT/SE93/01028, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/12723, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 29, 1993, Ser. No. 446,852
Claims priority, application Sweden, Dec. 3, 1992, 9203634
Int. Cl.[6] D21C *11/02;11/04*
U.S. Cl. 162—30.1 9 Claims

1. A method of producing green liquor having good clarifying and/or filtering properties in chemical recovery in sulfate and sulfite pulp mills, comprising:
(a) collecting waste liquor separated from a cellulose pulp, derived from a cooking stage, or derived from a cooking stage and a bleaching stage, the waste liquor comprising calcium, magnesium, sodium and sulfur;
(b) treating the waste liquor by
(i) elevating solid content to form a concentrated waste liquor,

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(ii) combusting the concentrated waste liquor to form a smelt comprising carbon,

(iii) adding a calcium containing chemical to the waste liquor before or during the combusting of the waste liquor wherein,

the amount of the calcium containing chemical is adjusted so that the amount of calcium added plus the amount of calcium already present in the waste liquor equals at least ¾ of the amount of magnesium present in the waste liquor calculated in mol and is at most 10% by weight of the sodium plus the sulphur present in the waste liquor; and

(iv) dissolving the smelt to form a green liquor

wherein the carbon formed from the smelt is at most 0.03 percent by weight, calculated on the smelt after combustion, when and after dissolving the smelt in liquid.

5,628,876

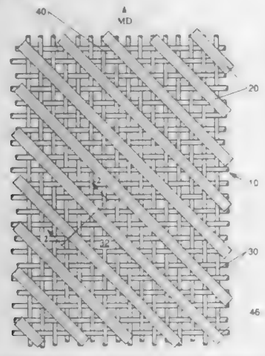
PAPERMAKING BELT HAVING SEMICONTINUOUS PATTERN AND PAPER MADE THEREON

Peter G. Ayers, Middletown; Thomas A. Hensler, Cincinnati, and Paul D. Trokhan, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 936,954, Aug. 26, 1992, abandoned. This application Feb. 6, 1995, Ser. No. 384,199

Int. Cl.[6] D21F *3/00*

U.S. Cl. 162—358.2 **7 Claims**



1. A macroscopically monoplanar secondary belt for manufacturing a cellulosic fibrous structure, and having two mutually orthogonal principal directions, a machine direction and a cross machine direction, said belt comprising:

a reinforcing structure; and

a framework of protuberances joined to said reinforcing structure and extending outwardly therefrom to define deflection conduits between said protuberances, said framework of protuberances comprising a semicontinuous pattern, said protuberances having a vector component extending substantially throughout one principal direction of said belt, each said protuberance of said pattern being spaced apart from an adjacent protuberance in said pattern.

5,628,877

METHOD AND DEVICE FOR PRODUCING A SOLID FUEL FROM COMBUSTIBLE WASTE

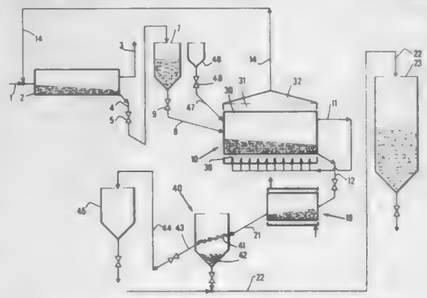
Gérard Martin, Rueil Malmaison, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Continuation of Ser. No. 789,013, Nov. 7, 1991. This application Jun. 2, 1995, Ser. No. 458,774

Claims priority, application France, Nov. 7, 1990, 90 13844

Int. Cl.[6] C10B *53/08*

U.S. Cl. 201—7 **7 Claims**



1. A method for producing a solid fuel from combustible solid waste containing pollutants, which comprises the steps of treating the combustible solid waste in an apparatus including a first pyrolysis reactor by heating the waste in the absence of oxygen in the first pyrolysis reactor to generate pyrolysis gases containing the pollutants, removing the pollutants while hot at temperatures between 200° and 1500° from at least a part of the pyrolysis gases generated during pyrolysis by contacting the pyrolysis gases with an absorbent during migration of the absorbent during travel along a length of the first pyrolysis reactor so that the pollutants are extracted by the absorbent as soon as the pyrolysis gases are generated from the solid waste, employing the pyrolysis gases free of pollutants to heat said first pyrolysis reactor and in order to produce a solid fuel free of the pollutants initially contained in the waste, the step of removing the pollutants is effected in a single specific zone of the apparatus for contacting the pyrolysis gases with the absorbent, and discharging a mixture of the absorbent containing the pollutants and the decontaminated waste as solid fuel from the first pyrolysis reactor separately from the pyrolysis gases, said solid waste and said absorbent being admixed within said single specific zone located in the first pyrolysis reactor.

5,628,878

METHOD OF REDUCING AIRBURNING IN PETROLEUM COKE

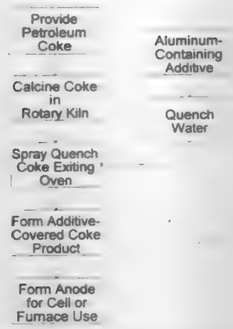
Euel R. Cutshall, Tuscumbia, and Nolan E. Richards, Florence, both of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed May 12, 1994, Ser. No. 241,542

Int. Cl.[6] C10B *39/04;57/06*

U.S. Cl. 201—39 **7 Claims**

1. In a method of making petroleum coke for use in manufacturing anodes wherein coke is calcined to provide a calcined coke and quenched in water, the improvement comprising the steps of quenching said calcined coke by applying water on the calcine coke to provide a quenched coke, said water containing an mount of aluminum fluoride ranging between 0.1 and 8.0 g/l as an additive in a water soluble form, depositing said additive on the surface of said quenched coke prior to said quenched coke being formed into an anode to reduce airburning of said quenched coke and anode subsequently manufactured from said quenched coke



and forming said quenched coke into an anode for use in a high temperature environment wherein said anode has a coating of said additive.

5,628,879

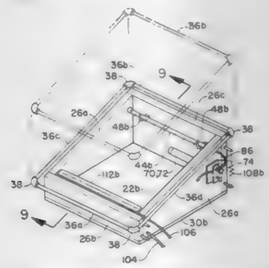
SUN ACTUATED AUTOMATED DISTILLATION APPARATUS

Seth D. Woodruff, 4411 Via Amable, San Diego, Calif. 92122-1520

Filed Aug. 1, 1994, Ser. No. 284,040

Int. Cl.[6] B01D *3/00;* **C02F** *1/14*

U.S. Cl. 202—234 **3 Claims**



1. A solar distillation apparatus comprising an evaporation chamber comprised of panels of rigid plastic foam thermal insulation stiffened by means of tubular metal reinforcement members incorporated internally in the panels for maintaining perimeter wall panels as flat, planar, members, and for creating rigid structural panel units which can be incorporated into the evaporation chamber without requiring external support or containing walls wherein the perimeter wall panels enclose a floor of thermal insulation material which completely covers a floor area within the perimeter walls of the evaporation chamber and wherein the floor and walls of the evaporation chamber are supported on a substantially rigid, flat, support base,

an impervious flexible sheet for lining the interior of the floor and walls of the evaporation chamber comprises alternate layers of plastic film or sheet, and metal foil, to which adhesive is applied so that the layers bond together and form a single composite sheet which is impervious to saline water and water vapor,

a sloping transparent evaporation chamber cover comprises a sheet of transparent flexible plastic film which is attached to, and stretched across, an open rectangular frame comprised of tubular metallic members held in rectangular configuration by sockets in rigid corner elbows, said tubular metallic members individually rotate about their long axes to adjust tension in the plastic cover film to compensate for temperature or wind effects, wherein the cover is held down and in position on top of the evaporation chamber by a tensional pull of elastic members attached at each corner of the cover frame, and wherein a sealed linear join surface is created where the undersurface of the plastic cover film contacts and compresses strips of flexible plastic foam gasket material bonded to planar top surfaces of the walls enclosing the evaporation chamber,

a black, absorbent, wick matting disposed on the evaporation chamber floor, comprises a layered mat of fine, randomly arrayed, glass fibers derived from inorganic, amorphous, mineral silicates, said wick matting is impregnated with a hydrophylic mixture comprising a clay mineral activated with acid, and water and lampblack, rendering said wick matting an efficient absorber of water, and of solar energy, and

an adjustable, sun actuated, mechanical valve for controlling the flow of saline water into the evaporation chamber, comprises a thermally responsive actuating element fully exposed to radiant solar energy, said actuating element is coupled, by contact with an adjusting screw, to a spring tensioned pivoted lever means, which maintains pressure on a resilient tube saline water conduit, wherein temperature induced dimensional changes in the thermally responsive actuating element are transmitted, as movement, to said pivoted lever means, varying the pressure on the resilient tube saline water conduit, changing its internal dimensions, and controlling the flow of saline water into the evaporation chamber to a desired rate.

5,628,880

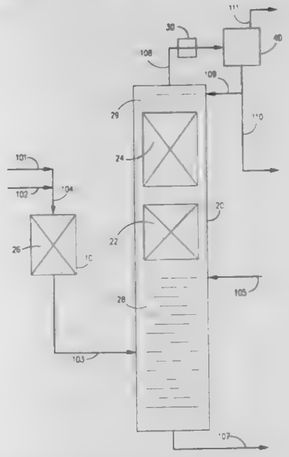
ETHERIFICATION—HYDROGENATION PROCESS

Dennis Hearn; Gary R. Gildert, both of Houston, and Willibrord A. Groten, Pasadena, all of Tex., assignors to Chemical Research & Licensing Company, Pasadena, Tex.

Filed Feb. 12, 1996, Ser. No. 600,251

Int. Cl.[6] B01D *3/34;* **B01J** *8/00*

U.S. Cl. 203—29 **17 Claims**



1. A process for the production of alkyl tertiary alkyl ether and hydrogenation of the dienes contained in an isoalkene containing stream used for the etherification, comprising the steps of:

(a) feeding a first stream containing isoalkene and diene, a second stream containing alcohol and a third stream containing hydrogen to a distillation column reactor into a feed zone;

(b) contacting the streams in an etherification reaction distillation zone containing an etherification catalyst to:

(i) selectively react at least a portion of the isoalkene with a portion of the alcohol to form alkyl tertiary alkyl ether,

(ii) distill the alkyl tertiary alkyl ether downward out of the etherification reaction distillation zone and

(iii) distill the unreacted isoalkene, alcohol, diene and hydrogen upward out of the etherification reaction distillation zone;

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(c) contacting the unreacted isoalkene, alcohol, diene and hydrogen in a hydrogenation reaction distillation zone containing a hydrogenation catalyst to selectively hydrogenate a portion of the dienes to alkenes;
(d) withdrawing ether product from the distillation column reactor as bottoms; and
(e) withdrawing an overheads stream from the distillation column reactor having a reduced diene content as compared to the diene content of the first stream.

5,628,881

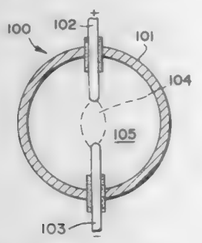
HIGH TEMPERATURE REACTION METHOD

Jerome H. Lemelson, 868 Tyner Way, Incline Village, Nev. 89450

Continuation of Ser. No. 849,297, Mar. 10, 1992, Pat. No. 5,552,675, which is a continuation-in-part of Ser. No. 696,747, May 7, 1991, Pat. No. 5,131,941, Ser. No. 376,378, Jul. 7, 1989, Pat. No. 5,039,836, and Ser. No. 921,268, Oct. 21, 1986, Pat. No. 4,853,514, and a continuation of Ser. No. 643,883, Aug. 24, 1984, abandoned, which is a continuation of Ser. No. 571,188, Apr. 24, 1975, abandoned, and Ser. No. 163,203, Jul. 16, 1971, abandoned, which is a continuation of Ser. No. 849,013, Aug. 11, 1969, abandoned, and Ser. No. 422,875, Nov. 25, 1964, Pat. No. 3,461,347, which is a continuation-in-part of Ser. No. 710,517, Mar. 5, 1964, abandoned. This application Jun. 7, 1995, Ser. No. 472,680

Int. Cl.[6] C01B *3/00*

U.S. Cl. 204—164 **6 Claims**



1. A method for effecting a reaction in a reaction chamber comprising:
(a) feeding a plurality of reaction materials into a reaction chamber, including water;
(b) generating a high temperature plasma within said reaction chamber, said plasma causing a reaction of dissociating said water into products comprising hydrogen and oxygen atoms; and
(c) removing the products of the reaction from said reaction chamber;
wherein said feeding and generating of said temperature are effected under computer control.

5,628,882

METHOD FOR SPUTTER DEPOSITION OF A CHROMIUM, CARBON AND FLUORINE CRYSTALLINE FILMS

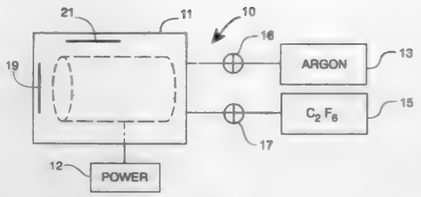
Matthew J. O'Keefe, Kettering, Ohio, and J. Michael Rigsbee, Hoover, Ala., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 17, 1995, Ser. No. 391,430

Int. Cl.[6] C23C *14/10*

U.S. Cl. 204—192.15 **4 Claims**

1. A method for sputter deposition of a crystalline film of chromium, carbon and fluorine, comprising the steps of:
(a) providing a sputtering chamber and a chromium sputter target and substrate disposed therein;



(b) providing a source of argon;
(c) providing a source of hexafluoroethane;
(d) flowing argon from said source of argon at a flow rate of 100 to 200 sccm and flowing hexaflouroethane at a flow rate of 0.2 to 1.0 sccm whereby the ratio of the argon flow rate to the hexafluoroethane flow is the range of 100:1 to 1000:1; and
(e) sputtering said chromium from said target to said substrate under said flow rates of said argon and said hexafluoroethane.

5,628,883

METHOD FOR GENERATING AND ACTIVATING PLASMA PROCESS OF TREATMENT USING SAME, AND APPARATUS THEREFOR

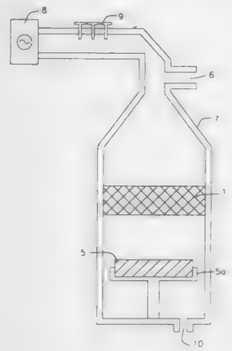
Kazuo Sugiyama, Tokyo; Hiroaki Yamazaki, and Yasuhiro Hirose, both of Ibaraki, all of Japan, assignors to Japan Vilene Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 898,441, Jun. 15, 1992, abandoned. This application Feb. 10, 1994, Ser. No. 194,401

Claims priority, application Japan, Jun. 18, 1991, 3-173113; Sep. 5, 1991, 3-255700; Nov. 20, 1991, 3-331392; Jun. 15, 1992, 4-180308

Int. Cl.[6] B44C *1/22;* **C03C** *15/00*

U.S. Cl. 204—192.32 **32 Claims**



1. A method for generating plasma which comprises:
irradiating with electromagnetic waves an energy converter capable of converting electromagnetic waves to electric energy and discharging said electric energy, under atmospheric pressure, in the presence of a rare gas in a plasma generating zone; and supplying a composition comprising the rare gas to the same side of the converter to which the electromagnetic waves are irradiated; wherein said energy converter comprises a material selected from the group consisting of
(1) a carbonaceous material selected from the group consisting of amorphous carbon, graphite and activated carbon and
(2) a perovskite oxide complex of the formula ABO_3 wherein A is selected from the group consisting of Na^+, K^+, Sr^{2+}, La^{3+}, and La^{3+} a part of which is substituted by $Sr^{2+}$and B is selected from the group consisting of Nb^{5+}, Ti^{4+}, Mn^{3+}, Cr^{3+}, Ni^{3+} and Co^{3+}.

5,628,884

DEVICE AND PROCESS FOR THE ELECTROLYTIC SEPARATION OF METALS WITH THE AID OF A ROTATING CATHODE SYSTEM

Jurgen Leudolph, Niederbipp, and Frank Roselt, Kestenholz, both of Switzerland, assignors to Ingenieuburo und Labor Fur Galvanotechnik, Niederbipp, Switzerland

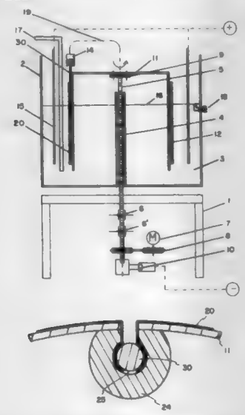
PCT No. PCT/CH94/00217, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO95/13408, PCT Pub. Date May 18, 1995

PCT Filed Nov. 8, 1994, Ser. No. 495,423

Claims priority, application Switzerland, Nov. 8, 1993, 3348-93

Int. Cl.[6] C25B *11/02;* **C25C** *7/02;* **C25D** *17/12*

U.S. Cl. 204—212 **12 Claims**



1. Device for the electrolytic deposition of metals in a metal recovery cell, where the metal recovery cell essentially consists of a vessel, an electrolyte, an anode arrangement, a rotating cathode system, means for controlled drive of the rotating cathode, and of means for current supply, characterized in that the rotating cathode system in the metal recovery cell comprises:
a support cylinder rotatably mounted on a drive shaft, said support cylinder having at least one slot and at least one contact chamber situated behind said slot, said driving shaft being connected with said means for current supply and means for rotating said driving shaft together with said support cylinder mounted thereon,
at least one mantle cathode removably mounted on said support cylinder, and
a contact rod enclosed by said contact chamber and in contact with a portion of said mantle cathode extending through said slot into said contact chamber.

5,628,885

EXTRACTION INSTALLATION FOR HYDROGEN AND OXYGEN

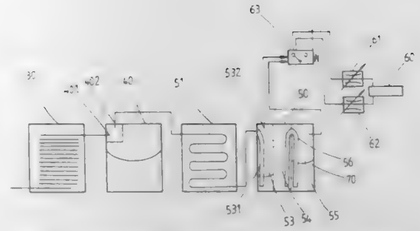
Yang C. Lin, No. 3, Lane 13, Alley 473, Nanta Road, Hsinchu, Taiwan

Filed Nov. 13, 1995, Ser. No. 555,020

Int. Cl.[6] C25B *9/00;15/08*

U.S. Cl. 204—228 **21 Claims**

19. An electrolytic apparatus, comprising:
an electrolytic cell for producing a first gas from an electrolytic solution;
a storage chamber in fluid communication with said electrolytic cell for receiving said first gas;
a mixing tank including a water erasing chamber and a mixing chamber, said water erasing chamber being in fluid communication with said storage chamber for receiving said first gas from said storage chamber and said mixing chamber being in fluid communication with said water erasing chamber for receiving a portion of said first gas in said water erasing chamber, said mixing chamber having a gas altering medium disposed therein for contacting and transforming said portion of said first gas into a second gas;
a first exhaust outlet located on said mixing tank for an amount of said first gas to exit therethrough;
a second exhaust outlet located on said mixing tank for an amount of said second gas to exit therethrough;
wherein, a fuel is formed from said first gas and said second gas.



20. An electrolytic apparatus as defined in claim **19**, further comprising:
a valve assembly in fluid communication with said fuel and said valve assembly being adjustable such that said fuel characteristics is variable.

5,628,886

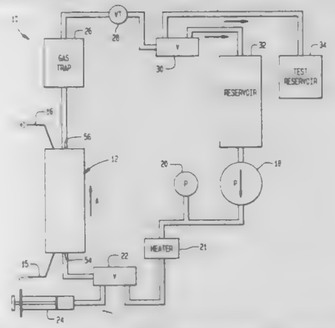
ELECTROLYTIC SYSTEM FOR HEATING A LIQUID ELECTROLYTE

James A. Patterson, 2074 20th St., Sarasota, Fla. 34234

Filed Feb. 9, 1996, Ser. No. 599,140

Int. Cl.[6] C25B *9/00;11/03;11/08;15/08*

U.S. Cl. 204—241 **14 Claims**



1. A system for heating of a liquid electrolyte comprising:
an electrolytic cell including a non-conductive housing and an inlet and an outlet;
a first conductive foraminous grid positioned within said housing adjacent to said inlet;
a second conductive foraminous grid positioned within said housing spaced from said first conductive grid and adjacent to said outlet;
a plurality of conductive particles each including a conductive metal which will combine with hydrogen or an isotope of hydrogen to form a metallic hydride or deuteride, said plurality of conductive particles positioned between said first and second grids in electrical communication with said first grid and electrically isolated from said second grid;
means for pumping said liquid electrolyte into said electolytic cell through said inlet said electrolyte having a conductive salt in solution with water;
means external to said cell for heating said electrolyte prior to entry into said electrolytic cell.

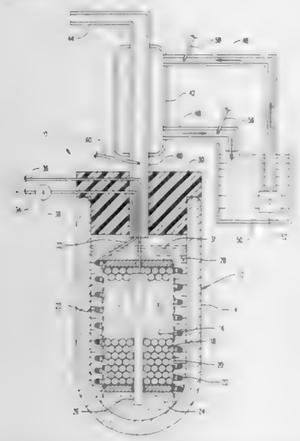
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5,628,887

ELECTROLYTIC SYSTEM AND CELL

James A. Patterson, 2074 20th St., Sarasota, Fla. 34234, and Dennis Cravens, P.O. Box 1317, Cloudcroft, N.M. 88317-1317

Filed Apr. 15, 1996, Ser. No. 631,151
Int. Cl.[6] C25B 9/00;15/08
U.S. Cl. 204—241 17 Claims



8. An electrolytic cell for producing excess heat in a liquid electrolyte comprising:

a substantially non-conductive housing defining a substantially closed interior volume;

a bed of closely packed conductive particles within said housing, each of said conductive particles including a conductive metal which will combine with hydrogen or an isotope of hydrogen to form a metallic hydride or deuteride;

a first conductive member in electrical communication with said conductive particles;

a second conductive member electrically spaced from said conductive particles, said conductive particles being positioned generally between said first and second conductive members;

means operably connected to said first and second conductive members for applying a selected electrical current flow between said first and second conductive members when said bed is immersed in said liquid electrolyte;

heat exchange means for removing excess heat from said housing for use separate from said cell.

5,628,888

APPARATUS FOR ELECTROCHEMICAL TREATMENT OF WATER AND/OR WATER SOLUTIONS

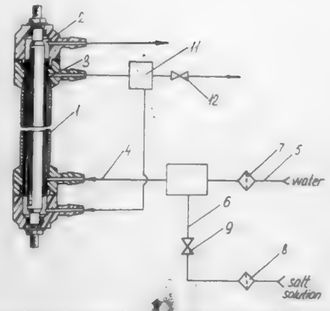
Vitold M. Bakhir; Jury G. Zadorozhny, and Taras Barabash, all of Moscow, Russian Federation, assignors to RSCECAT, USA, Inc., Las Vegas, Nev.

Filed Mar. 28, 1996, Ser. No. 624,720
Int. Cl.[6] C25B 9/00;13/04
U.S. Cl. 204—260 5 Claims

1. An apparatus for obtaining washing and disinfecting solutions by means of electrolysis of a sodium chloride water solution, the apparatus comprising:

a) at least one electrochemical cell which contains vertical coaxial cylindrical and rod electrodes and a diaphragm, each of which are made from material which is nonsoluble during electrolysis; each of the electrodes mounted in dielectric bushings and connected to the poles of a power supply;

b) the diaphragm comprising an ultrafiltration ceramic diaphragm made from a base material of zirconium oxide and installed between the electrodes; the diaphragm separating an inter-electrode space into a negative electrode chamber and a positive electrode chamber;



c) the dielectric bushings comprising a lower bushing and an upper bushing, each having a channel for the treated solution supply into and discharge from the electrode chambers; the channels being connected to a feeding line and a discharge line;

d) a feeding line connected to an inlet of the negative electrode chamber, the feeding line comprising a water line and a sodium chloride dosing line, the feeding line further including a metering pump on the water line for dosing the sodium chloride into the water to be treated;

e) the water line further containing a flow regulator connected to the feeding and discharging adjustments; and

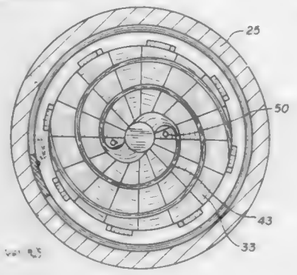
f) an outlet of the negative electrode chamber being connected to an inlet of the positive electrode chamber by a special line, the special line having an adjustment for discharging a part of a degasified processed solution from the negative electrode chamber.

5,628,889

HIGH POWER CAPACITY MAGNETRON CATHODE

David L. Gardell, Fairfax, and David C. Strippe, Westford, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1994, Ser. No. 301,203
Int. Cl.[6] C23C 14/34
U.S. Cl. 204—298.09 18 Claims



1. A fluid cooled magnetron cathode and pumping assembly for use in combination with a sputtering device comprising:

a magnet array positioned in a magnet array housing in a vacuum chamber of the sputtering device, the magnet array connected to a power driven drive shaft for rotating the magnet array within the housing,

the magnet array housing including cathode material,

the magnet array housing having a coolant inlet port connected to a fluid coolant supply and a coolant outlet port whereby coolant can be circulated through the magnet array housing,

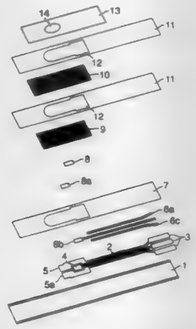
a fluid control surface in the form of vanes attached to and extending from a planar surface of the magnet array, said vanes operative to control flow of coolant introduced into the magnet array housing.

5,628,890

ELECTROCHEMICAL SENSOR

Nigel F. Carter, Oxon; Geoffrey R. Chambers, Northwood Middlesex; Graham J. Hughes, Oxford; Steven Scott, Oxon; Gurdial S. Sanghera, Oxford, and Jared L. Watkin, Oxon, all of England, assignors to MediSense, Inc., Waltham, Mass.

Filed Sep. 27, 1995, Ser. No. 534,876
Int. Cl.[6] G01N 27/26
U.S. Cl. 204—403 21 Claims



1. An electrode strip for use in an electrochemical sensor for measuring a compound in a sample, comprising:

an electrode support;

a reference or counter electrode disposed on the electrode support;

a working electrode spaced from the reference or counter electrode on the electrode support and comprising an enzyme which catalyzes a reaction involving a substrate for said enzyme or a substrate catalytically reactive with an enzyme and a mediator which transfers electrons between said enzyme-catalyzed reaction and said working electrode to create a current representative of the activity of said enzyme and representative of the compound;

a covering layer defining an enclosed space over the reference and working electrodes, said covering layer having an aperture for receiving a sample into said enclosed space; and

a plurality of mesh layers interposed in said enclosed space between said covering layer and said electrodes.

5,628,891

ELECTROPHORESIS DEVICE

Richard K. Lee, Chunghua, Taiwan, assignor to AAT Laboratories, Inc., Upland, Calif.

Filed Dec. 6, 1995, Ser. No. 568,190
Int. Cl.[6] G01N 27/26;27/447
U.S. Cl. 204—612 13 Claims

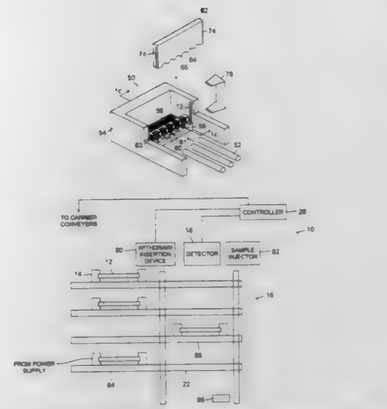
1. An apparatus for performing a plurality of electrophoresis processes, comprising:

a plurality of electrophoresis gel carriers, each carrier supporting an electrophoresis gel and including:

first and second end mounts, said first end mount for receiving a first end of the electrophoresis medium gel, said second end mount for receiving a second opposite end of the electrophoresis medium gel, wherein at least one of said end mounts includes:

a base plate defining a lower retainer, and

an upper retainer aligned and configured to couple with said lower retainer, said lower and upper retainers defining discrete sample well cells, each of said sample well cells receiving one or the other of the first and second ends of the gel,



a detector configured to acquire information from the electrophoresis gel carriers and transmit the information to a data collector, and

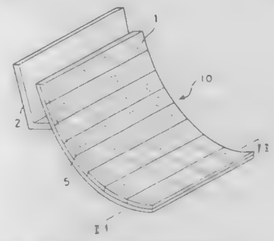
a conveyor which moves at least one of said detector and said gel carriers with respect to each other to allow said detector to acquire said information from each of said gel carriers in a predetermined sequence, said predetermined sequence selected such that said detector acquires information from each of the electrophoresis gels at known time intervals.

5,628,892

ELECTROPLATING METHOD AND APPARATUS FOR THE PREPARATION OF METAL FOIL AND SPLIT INSOLUBLE ELECTRODE USED THEREIN

Yukio Kawashima, Tokyo; Kazuhide Ohe, Chiba, and Hiroyuki Nakada, Tokyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 9,953, Jan. 27, 1993, abandoned.
This application May 17, 1994, Ser. No. 245,076
Claims priority, application Japan, Feb. 7, 1992, 4-056815
Int. Cl.[6] C25D 1/20;1/04;7/06;17/00
U.S. Cl. 205—77 16 Claims



1. An electroplating apparatus comprising:

a cathode drum adapted to rotate about an axis;

a split insoluble electrode which forms a stationary anode disposed concentrically around the cathode drum to define a channel therebetween, said electrode having a radius of curvature of 500 to 2,000 mm, said anode including a plurality of circumferentially arranged adjacently disposed arcuate electrode segments which define a substantially continuous smooth curvilinear surface, said curvilinear surface having a arc component of a cylinder and extending parallel to said axis, said electrode segments are made of a valve metal material coated with a platinum group metal or an oxide

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thereof, said anode further including a single conductive back plate of corrosion resistant conductive metal and conductive fixtures for removably attaching said electrode segments to said back plate, each of said electrode segments are positioned adjacent to said back plate and have a first surface which face said cathode drum and a second surface opposed to said first surface which face said back plate, a spacing between said anode and the cathode drum being 5 mm or less, said back plate comprising apertures through which said conductive fixtures extend such that a first end of each of said conductive fixtures are fixed to said second surface of said electrode segments;

attachment means removably positioned on a second end of each of said conductive fixtures for removably attaching each of said electrode segments to said back plate;

means for supplying an electroplating solution containing a metal to the channel between the cathode drum and the anode;

means for conducting electricity between the cathode drum and the anode for depositing the metal on the cathode drum;

means for separating the metal deposit from the cathode drum to obtain a length of electrolytic metal foil having a thickness of up to 70 μm; and

an insulating rubber sheet interposed between said electrode segments and the back plate;

wherein the electrode segments on their arcuate surface are separated from each other by a distance of 0.1 to 5 mm.

5,628,893

HALOGEN TIN COMPOSITION AND ELECTROLYTIC PLATING PROCESS

Vincent C. Opaskar, Chagrin Falls, Ohio, assignor to Atotech USA, Inc., Cleveland, Ohio

Filed Nov. 24, 1995, Ser. No. 562,393

Int. Cl.[6] C25D *3/30;7/06;3/60*

U.S. Cl. 205—300 **26 Claims**

1. A composition of matter for electrolytically depositing a tin layer on an iron-containing substrate comprising an acidic aqueous mixture of:

(1) a stannous tin halide; and

(2) a salt having

(a) an alkaline cation, and

(b) an oxygen-containing inorganic nitrogen or sulfur acid anion reducible to a lower oxidation state.

5,628,894

NITROGEN TRIFLUORIDE PROCESS

Gregorio Tarancon, High Springs, Fla., assignor to Florida Scientific Laboratories, Inc., High Springs, Fla.

Filed Oct. 17, 1995, Ser. No. 544,073

Int. Cl.[6] C25B *1/24;15/08;* **C01B** *21/16*

U.S. Cl. 205—359 **23 Claims**

1. A method for the production of nitrogen trifluoride (NF_3) and hydrogen (H_2) gas, starting with a molten flux including at least ammonia (NH_3), a metal fluoride, and hydrogen fluoride (HF), comprising the steps of:

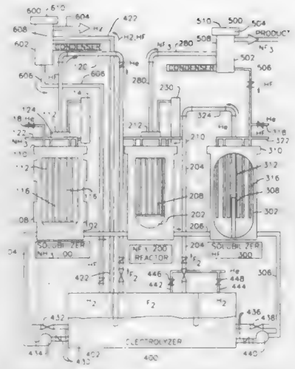
a) circulating said molten flux from an electrolyzer, to an ammonia solubilizer, to a nitrogen trifluoride reactor, to a hydrogen fluoride solubilizer, and back to said electrolyzer;

b) maintaining the quantity of said molten flux substantially constant by adding ammonia (NH_3) and a carrier gas to said ammonia solubilizer and by adding hydrogen fluoride (HF) and a carrier gas to said hydrogen fluoride solubilizer;

c) producing fluorine (F_2) gas and hydrogen (H_2) gas in said electrolyzer;

d) transferring said carrier gas from at least one of said solubilizers to said nitrogen trifluoride reactor;

e) mixing said fluorine gas and said carrier gas and supplying said mixed gases to said nitrogen trifluoride reactor;



f) reacting said fluorine gas with said molten flux in said nitrogen trifluoride reactor to produce nitrogen trifluoride (NF_3); and

g) collecting said nitrogen trifluoride (NF_3) produced at a nitrogen trifluoride condenser and collecting said hydrogen (H_2) produced at a hydrogen condenser.

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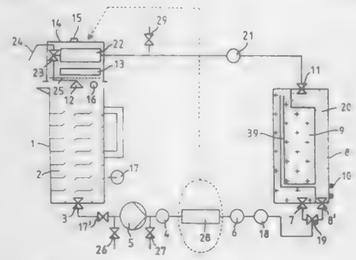
CLOSED CIRCUIT FOR TREATING DRINKING WATER WITH UV TREATMENT AND FILTERING

Klaus Zucholl, Sentastrasse 31, 68199 Mannheim, Germany

Filed Mar. 8, 1995, Ser. No. 400,250

Int. Cl.[6] B01D *17/12;36/00*

U.S. Cl. 210—85 **11 Claims**



1. A portable water treatment machine, comprising: a closed circuit water circulation system including pipes and a water container, a water pump, and a filter cartridge connected in series by the pipes, the pipes including pipe ends connected to the water container and the filter cartridge; a UV radiation lamp disposed for irradiating water in the circulation system; and an electronic control device for controlling the pump and the UV radiation lamp; the improvement wherein:

the water container comprises a removable water jug having a top with an opening;

the filter cartridge comprises a replaceable filter cartridge selectable from a plurality of filter cartridges each having respectively different internal designs and filter materials and being replaceably connectable to the pipes;

nonreturn valves are connected at pipe ends connected to the water container and the replaceable filter cartridge for automatically opening the pipe ends when the water jug and the replaceable filter cartridge, respectively, are inserted into the machine and which close the pipe ends when the water jug and the replaceable filter cartridge, respectively, are removed from the machine;

a water meter is connected to the pipes;

a UV sensor is arranged in a radiation region of the UV radiation lamp; and

the electronic control device includes means for regulating at least one of circulation of the water in the closed circuit system and the UV radiation lamp, the regulating being a function of at least one of (a) an amount of water circulated from a time the replaceable filter cartridge is inserted into the machine, (b) characteristic data of the replaceable filter cartridge, and (c) a measured value of the UV sensor, for obtaining an optimum utilization of the replaceable filter cartridge and of the UV radiation lamp, and for attaining a desired water quality.

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APPARATUS FOR OPERATING A FILTER ARRANGEMENT

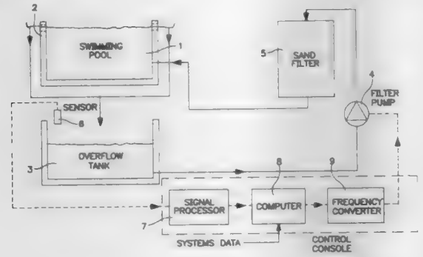
Bodo Klingenberger, Wernigerode, Germany, assignor to Klingenberger GmbH, Wernigerode, Germany

Filed Oct. 23, 1995, Ser. No. 551,906

Claims priority, application Germany, Oct. 21, 1994, 44 37 708.8

Int. Cl.[6] B01D *35/00*

U.S. Cl. 210—86 **6 Claims**



1. An apparatus for operating a filter system of a swimming pool in proportion to the degree of water contamination, said apparatus comprising:

overflow tank means for receiving water from the swimming pool as a function of the number of persons entering into the swimming pool;

filter means;

variable output pump means;

pipe means for interconnecting the swimming pool, the overflow tank means, the variable output pump means and the filter means in a substantially closed loop;

sensor means for detecting changes in the level of water within the overflow tank means in response to the number of persons in the swimming pool and for generating a first value representative thereof;

computer means comprising memory means for storing values representative of at least one parameter selected from the group consisting of: natural loss per unit of time, fresh water added, and water loss due to spillage

means for processing the first value and the memory stored values to derive a second value representative of the degree of water contamination; and

means for controlling the output of the variable output pump means in response to the second signal.

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HEATED FILTER CHAMBER WITH SUPPORTING COLLECTION CHAMBER

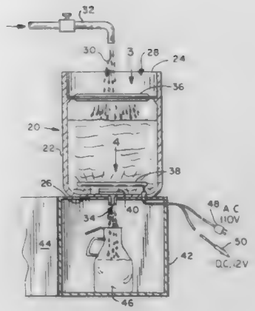
John J. Phelan, 109 Jeanette Ave., Inwood, N.Y. 11696

Filed Jul. 21, 1995, Ser. No. 505,676

Int. Cl.[6] B01D *35/18*

U.S. Cl. 210—94 **6 Claims**

1. A water purifier, comprising:



a) a hollow and rectangular parallelpipedly collection chamber for collecting purified water having a temperature; said hollow collection chamber having a flat and horizontally-oriented top with a centrally-disposed throughbore extending vertically therethrough having a diameter; said hollow collection chamber further having a flat, closed, and horizontally-oriented bottom, so that said hollow collection chamber can rest stably on a surface;

b) a hollow, vertically-oriented, and cylindrically-shaped purifying chamber for purifying water to be collected in said hollow collection chamber and having a cylindrically-shaped inner surface and an open top; said hollow, vertically-oriented, and cylindrically-shaped purifying chamber further having a circumferential ledge extending circumferentially around said cylindrically-shaped inner surface of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber in proximity to said open top of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber; said hollow, vertically-oriented, and cylindrically-shaped purifying chamber further having a flat and horizontally-oriented bottom with a diameter, an inner surface, and a centrally disposed throughbore extending vertically therethrough having a perimeter; said hollow, vertically-oriented, and cylindrically-shaped purifying chamber further having a hollow and cylindrically-shaped collar for directing the purified water purified in said hollow, vertically-oriented, and cylindrically-shaped purifying chamber to said hollow and collection chamber and extending vertically downwardly from said perimeter of said centrally disposed throughbore in said flat and horizontally-oriented bottom of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber; said hollow and cylindrically-shaped collar of said hollow and collection chamber having an outer diameter which is small compared to said diameter of said flat and horizontally-oriented bottom of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber and being substantially equal to said diameter of said centrally disposed throughbore in said flat and horizontally-oriented top of said hollow collection chamber; said flat and horizontally-oriented bottom of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber abutting replaceably and completely against said flat and horizontally-oriented top of said hollow collection chamber with said hollow and cylindrically-shaped collar of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber extending vertically downwardly into said centrally-disposed throughbore in said flat and horizontally-oriented top of said hollow collection chamber, so that said hollow, vertically-oriented, and cylindrically-shaped purifying chamber rests stably on said flat and horizontally-oriented top of said hollow collection chamber;

c) a circular-shaped filter for filtering the water being purified in said hollow, vertically-oriented, and cylindrically-shaped purifying chamber and being removably mounted on said circumferential ledge of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber, so that said circular-shaped filter can be readily removed and replaced through said open top of said hollow, vertically-oriented, and

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cylindrically-shaped purifying chamber when its filtering effects have been exhausted;

d) an electric heater coil for boiling the water filtered by said circular-shaped filter and being mounted in said hollow, vertically-oriented, and cylindrically-shaped purifying chamber, below and separate from said circular-shaped filter, and slightly above said flat and horizontally-oriented bottom of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber; said electric heater coil being powered by one of 110 volts A.C. or 12 volts D.C., so that said heating coil can be powered by one of household current and vehicle current; and

e) a bimetallic strip attached to said inner surface of said flat and horizontally-oriented bottom of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber and selectively opening and closing said centrally-disposed throughbore in said flat and horizontally-oriented bottom of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber in response to the temperature of the purified water it is in contact with and having the characteristic of bending at 210 degrees F., so that when the water boiled by said circular-shaped heater coil reaches 210 degrees F., said bimetallic strip bends away from and opens said centrally-disposed throughbore said flat in and horizontally-oriented bottom of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber allowing the purified water to enter said cylindrically-shaped collar of said hollow, vertically-oriented, and cylindrically-shaped purifying chamber and be directed thereby into said hollow collection chamber.

3. The purifier as defined in claim 1, wherein said hollow, vertically-oriented, and cylindrically-shaped purifying chamber is transparent, so that the water therein can be viewed and maintained below the circular-shaped filter.

5,628,898

BACKWASHABLE FILTER HAVING ELEMENTS WITH ELASTICALLY DEFLECTABLE LIPS

Klaus Eimer, Ratingen; Hans-Werner Schildmann, Heiligenhaus; Dieter Patzig, Ratingen, and Dirk Trostmann, Witten, all of Germany, assignors to Taprogge GmbH, Germany

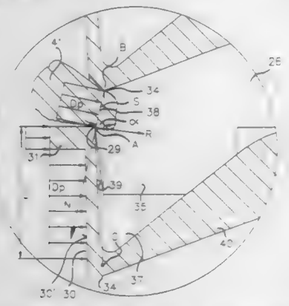
PCT No. PCT/EP94/01206, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO94/23820, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 19, 1994, Ser. No. 356,206

Claims priority, application Germany, Apr. 20, 1993, 43 12 731.2

Int. Cl.[6] B01D *29/23;29/46;29/52;29/64*

U.S. Cl. 210—108 **24 Claims**



1. An improved backwashable filter in which backwashing is accomplished by reversing a flow direction, having a layer of superimposed and axially aligned elements made of an elastically deformable material, where each two adjacent of said elements form a gap through which a flow takes place, the elements having a connecting body, an inflow side located on one side of the elements and forming an accumulation point for contamination by particles, and an outflow side formed on the other side of the elements, the improvements comprising:

spacing members located on said elements adapted to space apart said elements from one another in a generally fixed manner;

a lip, on said inflow side of each said element, said lip being elastically deflectable in the flow direction and facing the flow direction, said lip having a wide front face;

wherein, for each element, a support is positioned alongside said lip, said support having a facing side spaced from said lip such that said lip, when being elastically deflected in the flow direction, is allowed to move until said lip strikes against said facing side; and

the gap being formed between a first opening edge of one element and a second opening edge of an adjacent element;

wherein, for each element, said first opening edge comprises said deflectable lip and said second opening edge comprises a fixed portion of said adjacent element, such that said lip is elastically deflected in the flow direction from its position exhibited without being subjected to flow forces to a position wherein the lip strikes the facing side of the support

arranged alongside the lip so that the gap opening is narrowed and a particle is jammed into the narrowed flap opening.

2. A filter according to claim 1, wherein, for each element, said lip is elastically deflectable even by a small differential pressure of flow until said lip strikes against the facing side of the support arranged alongside said lip.

5,628,899

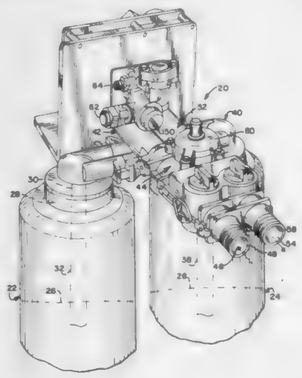
CONTROL MECHANISM FOR CONTROLLING REGENERATION OF TWO WATER TREATMENT TANKS

Don Vaughan, Brookfield, Wis., assignor to Fleck Controls, Inc., Brookfield, Wis.

Filed Mar. 10, 1995, Ser. No. 401,961

Int. Cl.[6] B01D *24/46*

U.S. Cl. 210—142 **19 Claims**



1. A control mechanism for a liquid treatment system which has a first tank with an inlet and an outlet and a second tank with an inlet and an outlet, said control mechanism including:

a housing defining an inlet passage for receiving liquid to be treated and an outlet passage for dispensing treated liquid;

a tank selector valve including a rotor, said rotor having a first chamber in fluid communication with said inlet passage and a second chamber in fluid communication with said outlet passage;

a first fluid path adapted to provide selective fluid communication between said first chamber and the inlet of the first tank;

a second fluid path adapted to provide selective fluid communication between said first chamber and the inlet of the second tank;

a third fluid path adapted to provide selective fluid communication between said second chamber and the outlet of the first tank;

a fourth fluid path adapted to provide selective fluid communication between said second chamber and the outlet of the second tank,

said rotor being rotatable between a first position wherein said rotor provides fluid communication between said first chamber and said first fluid path and fluid communication between said second chamber and said third fluid path, and a second position wherein said rotor provides fluid communication between said first chamber and said second fluid path and fluid communication between said second chamber and said fourth fluid path;

means for selectively moving said rotor between said first position and said second position;

a regeneration valve in fluid communication with said second chamber of said rotor, a fifth fluid path adapted to provide selective fluid communication between said second chamber of said rotor and the first tank and a sixth fluid path adapted to provide selective fluid communication between said second chamber of said rotor and the second tank, said regeneration valve adapted to selectively open and close said fifth and sixth fluid paths; and

means for selectively moving said regeneration valve to selectively open and close said fifth and sixth fluid paths.

5,628,900

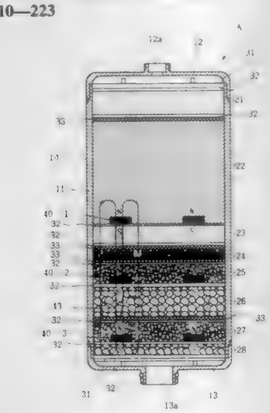
WATER PURIFIER HAVING A MAGNETIC FIELD GENERATION DEVICE

Harusuke Naito, 17-5, Haraojima 2-chome, Okayama-shi, Okayama-ken, Japan

Filed Oct. 18, 1995, Ser. No. 544,651

Int. Cl.[6] C02F *1/48*

U.S. Cl. 210—223 **1 Claim**



1. A water purifier comprising:

a cylindrical housing defining a cylindrical chamber and having a central longitudinal axis and a pair of opposite ends spaced along said axis, said housing being formed with a water inlet at said one end and a water outlet at said other end to allow a flow of water through said chamber in a direction parallel to said longitudinal axis;

a filter disposed in said chamber adjacent said inlet;

a ceramic layer disposed in said chamber between said filter and said outlet, said ceramic layer consisting of granular ceramic heaped up in a layer and extending perpendicularly across said chamber relative to said axis;

a pair of magnetite layers disposed in said chamber, each said magnetite layer consisting of a layer of broken pieces of magnetite extending perpendicularly across said chamber relative to said axis, wherein one of said magnetite layers is disposed between said filter and said ceramic layer and the other of said magnetite layers is disposed between said ceramic layer and said outlet; and,

a pair of annular-magnets disposed in said chamber and coaxially surrounding said axis, wherein one of said magnets is located between said ceramic layer and said inlet and the other of said magnets is located between said ceramic layer and said outlet such that said annular magnets generate magnetic lines of force which are parallel to said central longitudinal axis and the direction of said flow of water, said annular magnets being located in relation to said magnetite layers in such a manner that said magnetic lines of force pass through said magnetite layers and thereby magnetize said magnetite layers.

5,628,901

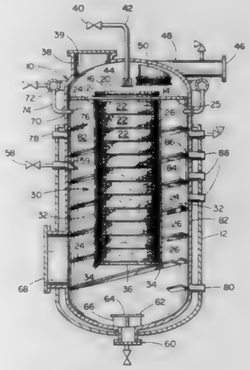
VESSEL FOR TREATING LIQUIDS

William L. Lawrence, and Robert D. Coyle, both of Louisville, Ky., assignors to Castrol Industrial North America Inc., Downers Grove, Ill.

Filed Apr. 30, 1993, Ser. No. 55,851

Int. Cl.[6] B01D *1/22;3/28;36/00;39/20*

U.S. Cl. 210—251 **8 Claims**



1. A device for separating a liquid into its parts, comprising:

an enclosed, hollow vessel including a wall;

a stationary, porous medium suspended in the vessel;

a port part-way up the vessel;

a spiral baffle along the wall of said vessel with a small gap between said spiral baffle and the wall to keep fluid in a thin film along the wall;

a top opening near the top of the vessel, said top opening being in fluid communication with said porous medium, such that any liquid entering the vessel through the part-way up port must pass through said porous medium in order to leave the vessel through said top opening;

a bottom opening near the bottom of the vessel; and

an injection system for injecting fluid near the top of said vessel at point along the wall of said vessel in a substantially horizontal direction tangent to the wall of said vessel;

said device alternately functioning as a continuous coalescer, such that a liquid-liquid mixture entering through the part-way up port will be separated by the porous medium, with the light liquid leaving through the top opening and the heavy liquid leaving through the bottom opening; and as a continuous evaporator.

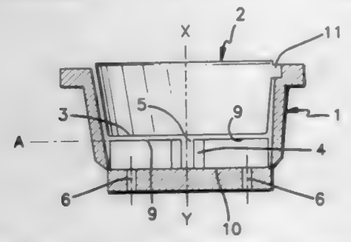
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5,628,902

FILTER HOLDER

Dorothea Pytlik, and Michael Borgmann, both of Solingen, Germany, assignors to Robert Krups GmbH & Co. KG, Solingen, Germany

Filed Nov. 30, 1994, Ser. No. 352,674
Claims priority, application France, Nov. 30, 1993, 93 14308
Int. Cl.[6] B01D *29/085*
U.S. Cl. 210—474 2 Claims



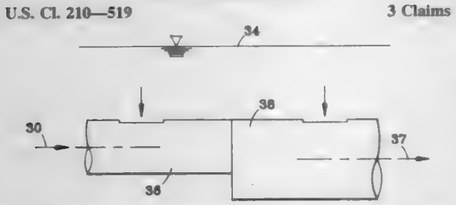
1. Filter holder having a dish (1) designed to be mounted on an "espresso" coffee machine capable of producing infusion by liquid under pressure and having a cup (2) whose bottom wall forms a filtering surface (3) and which is designed to receive a quantity of coffee, the fineness of whose grounds may vary, said dish also having a collection chamber for froth (4) provided between its bottom (10) and said filtering surface (3), and communicating via an exit passage (5) with distribution funnels (6) enabling the infusion to flow out of said dish (1), said cup (2) further comprising means for partially blocking the filtering surface (3) of the bottom wall of the cup (2), wherein the filtering surface (3) of the bottom wall of the cup (2) has perforated zones (7) and non-perforated zones (8), and the blocking means are formed by blocking areas (9) carried by bosses arranged in the bottom (10) of the dish (1) and situated at a distance from the bottom (10) at a certain level (A), said cup (2) having its bottom wall adjacent to the level (A) of said blocking areas and being mounted for rotation about a vertical axis (X-Y) so as to occupy different positions in the dish (1) corresponding to different degrees of covering of the perforated zones (7) by the blocking areas (9).

5,628,903

APPARATUS FOR THE REMOVAL OF CLARIFIED WASTE WATER FROM CIRCULAR TANKS

Franz Valentin, Munich, Germany, assignor to Hans Huber GmbH & Co. KG, Berching, Germany

Continuation of Ser. No. 150,089, Nov. 15, 1993, Pat. No. 5,423,986. This application Jun. 13, 1995, Ser. No. 489,723
Claims priority, application Germany, Apr. 9, 1992, 9204960 U
Int. Cl.[6] B01D *21/24*
U.S. Cl. 210—519 3 Claims



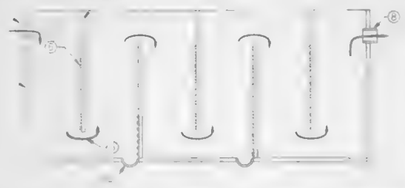
1. An apparatus for removing water from a circular tank having a central waste water inlet, said apparatus comprising: a submerged pipe constructed as a closed ring conduit concentric with the vertical axis of said circular tank and uniformly distributed around the circumference of said circular tank, said submerged pipe located underneath a water surface when water is contained within said circular tank; means for connecting said submerged pipe, at an outlet of said submerged pipe, in flow communication to an efflux conduit; and a plurality of inlet perforations formed in said submerged pipe located at about an equal distance from one another forming means for creating a flow in the closed ring conduit, wherein the submerged pipe is designed for a maximum outlet velocity of 0.3 m/sec. and for substantially the same outlet flow velocity throughout said closed ring conduit resulting from a combination of number of perforations which become smaller in area toward the outlet and a pipe diameter which widens toward the outlet, thereby forming means to improve the uniformity of the inflow of water through each of said plurality of input perforations of the submerged pipe.

5,628,904

PROCESS FOR TREATMENT OF WASTEWATER UTILIZING ZEBRA MUSSELS (*DREISSENA POLYMORPHA*)

Ronnie A. Bean, 18869 Fabacher Dr., Prairieville, La. 70769

Filed Dec. 18, 1995, Ser. No. 574,344
Int. Cl.[6] C02F *3/32*
U.S. Cl. 210—602 1 Claim



1. A process for removing organic or inorganic contaminants from a wastewater stream in a wastewater treatment system, the process comprising the steps of:

a) introducing zebra mussels into said wastewater stream and allowing said zebra mussels to attach themselves to a submerged fixed media in said wastewater stream, said submerged fixed media defining a serpentine flowpath;

b) flowing wastewater to be treated past said attached zebra mussels along said serpentine flowpath;

c) allowing said attached zebra mussels to filter out organic and/or inorganic contaminants present in the wastewater stream, and excrete them as feces and psuedofeces; and

d) collecting and removing said excretions.

5,628,905

BIOLOGICAL AQUARIUM FILTER WITH MEANS TO KEEP THE SIPHON TUBES PRIMED

Gregory Montalbano, 86 Harrisburg St., Bayshore, N.Y. 11706

Filed Apr. 4, 1995, Ser. No. 416,132
Int. Cl.[6] A01K *63/04*
U.S. Cl. 210—615 14 Claims

1. A filtration apparatus for filtering water in an aquarium comprising:

a pre-filter comprising:

an intake chamber;

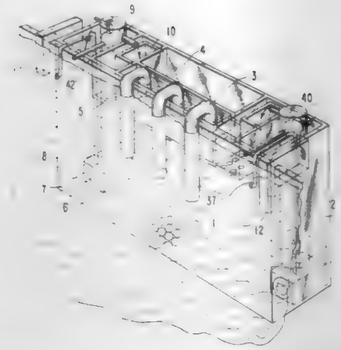
an intermediate chamber; and

an outlet chamber having a filter therein;

a biological filter located below said pre-filter having a biological chamber containing biological media that supports bacteria growth;

a bottom wall separating the pre-filter from the biological filter, said bottom wall having an aperture between the outlet chamber and the biological chamber;

a first partition wall located between the intake and intermediate chambers, and extending from an elevation higher than that of an additional partition wall located between the intermediate and outlet chambers, said first partition wall being spaced from said bottom wall;



an intake tube extending from outside the pre-filter to inside the intake chamber for flowing water from said aquarium to said intake chamber, the intake tube having an inlet and an outlet, the inlet being at an elevation lower than that of the intake chamber;

a water return tube; and

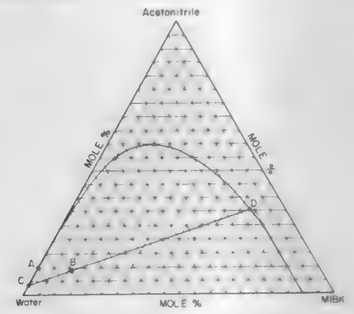
pump means for pumping water from a lower region of said biological chamber through said water return tube into said aquarium, forcing a water level in said aquarium to become higher than a water level in said intake chamber, forcing water to flow through said intake tube into said intake chamber, below said first partition wall into said intermediate chamber, over said additional partition wall into said outlet chamber through said outlet chamber filter, through said aperture and back into said biological filter chamber, with the structure of the partition walls maintaining siphonability in said intake tube, both when the pump is operating, and when the pump is not operating.

5,628,906

EXTRACTION PROCESS

Reuel Shinnar, Great Neck, and Roberto Mauri, New York, both of N.Y., assignors to The Research Foundation of the City University of New York, New York, N.Y.

Filed Jul. 13, 1994, Ser. No. 274,546
Int. Cl.[6] B01D *11/04*
U.S. Cl. 210—634 15 Claims



1. A liquid-liquid extraction process wherein a solute is transferred at a high mass transfer rate from a native solvent to a primary solvent which comprises:

adding a primary solvent to a first solution containing (a) a solute dissolved in a native solvent and (b) impurities which reduce the coalescence rate of at least one of said solvents, said primary solvent being added in amounts sufficient to form a single-phase mixture comprising said primary solvent, said native solvent end said solute;

adding a modifier to said single-phase solution in the presence of said impurities while said solution is subject to not more than gentle mixing, said modifier being miscible with either the primary solvent or the native solvent and serving to reduce the miscibility of the primary solvent with the native solvent so as to form an immiscible mixture which coalesces near instantaneously, to form two phases, one phase being rich in the native solvent end the second phase being rich in the primary solvent and solute; and

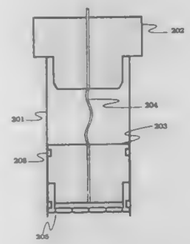
thereafter separating said solute from the primary solvent-rich phase.

5,628,907

PROCESS FOR SEPARATING ACID-SUGAR MIXTURES USING ION EXCLUSION CHROMATOGRAPHY

Roger D. Hester, Hattiesburg, Miss., and George E. Farina, Killen, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Division of Ser. No. 128,174, Sep. 29, 1993, Pat. No. 5,407,580. This application Feb. 9, 1995, Ser. No. 385,941
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 4 Claims



1. In an improved process for effecting separation of components in a solution comprising an ionic component and a nonionic component, the concentration of said ionic component ranging from about 1 weight percent to about 20 weight percent, and the concentration of said nonionic component ranging from about 1 weight percent to about 25 weight percent, said improved process comprising the steps of:

(1) introducing a stream of said solution into the upper portion of a vessel containing a bed of ion exchange resin, said vessel having an open end at said upper portion thereof, said resin being in its hydrogen form to thereby effect its ion exclusion state and washed in aqueous media to thereby effect its swollen state and said bed being initially inundated in aqueous media;

(2) introducing a stream of aqueous media into the upper portion of said vessel;

(3) removing from said vessel and introducing into means for disposal a stream of fluid juxtaposed the bottommost portion of said vessel at a flow rate substantially equal to the rate of flow of stream introduction in step (1) supra, to thereby effect moving said solution through a vertical length of said bed, said vertical length and said flow rate predetermined to be sufficient to thereby effect a change in the concentration of said components relative one to another, wherein results, in fluid juxtaposed the bottommost portion of said vessel, an enriched fraction of said ionic component;

(4) removing from said vessel a stream of fluid juxtaposed the bottommost portion of said vessel to first means for collection of said resulting enriched fraction of said ionic component until said withdrawn fluid is substantially depleted of said ionic component; and

(5) removing from said vessel a stream of fluid juxtaposed the bottommost portion of said vessel to second means for collection of a resulting enriched fraction of said nonionic component;

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said improved process, for substantially eliminating the deleterious effects normally attributed to the phenomenon known as dispersion and generally attributed to shrinkage of such resin, comprising the additional steps of:

(a) initially filling said separation vessel with a bed of said ion exclusion resin in its hydrogen form and shrunken state;

(b) contacting the top of said bed with a physical barrier adapted to be removably secured to the opening of said vessel and further adapted for pressure engagement therewith;

(c) introducing hydrogen ion-free aqueous media onto said bed in a manner to thereby effect substantial conversion of said resin from its shrunken state to its swollen state;

(d) maintaining said physical barrier in pressure engagement with said bed at pressures ranging from about 1 to about 100 atmospheres gage, said pressures effected by the resulting conversion of said resin from its shrunken state to its swollen state in step (c) supra, to thereby prevent, in the operation of later mentioned step (e), the establishment over said bed of any substantial zone of said solution; and

(e) introducing said solution onto said bed.

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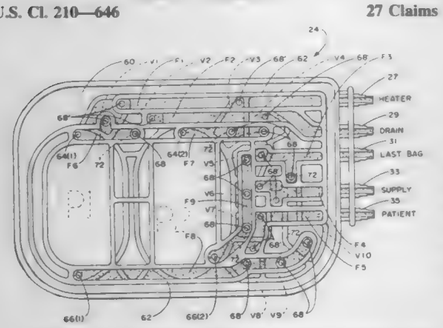
PERITONEAL DIALYSIS SYSTEMS AND METHODS EMPLOYING A LIQUID DISTRIBUTION AND PUMP CASSETTE WITH SELF-CONTAINED AIR ISOLATION AND REMOVAL

Dean Kamen, Bedford; Richard Lanigan, Concord, and Douglas E. Vincent, Manchester, all of N.H., assignors to Deka Products Limited Partnership, Manchester, N.H.

Continuation of Ser. No. 27,484, Mar. 3, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 401,352

Int. Cl.° A61M *1/28*

U.S. Cl. 210—646 **27 Claims**



1. A method for performing peritoneal dialysis comprising steps of

establishing flow communication with a patient's peritoneal cavity through a pump chamber having spaced ends, the pump chamber being oriented for use in a generally vertical plane so that one end which comprises a non-critical gas-liquid extracorporeal circuit end is spaced generally above the other end which comprises a critical liquid patient circuit end to form within the pump chamber an upper noncritical gas-liquid extracorporeal circuit region for pumping fluid and a lower critical liquid patient circuit region for pumping liquid and a diaphragm on the pump chamber,

operating the pump chamber with the upper noncritical gas-liquid extracorporeal circuit region and the lower critical liquid patient circuit region oriented generally vertically, by applying fluid pressure to the diaphragm,

pumping liquid to the patient's peritoneal cavity only from the lower critical liquid patient circuit region of the pump chamber in an infusion direction through the pump chamber to deliver liquid dialysate to the patient, and

directing dialysate in a direction reverse to the infusion direction through the pump chamber and from the upper non-critical gas-liquid extracorporeal circuit region of the pump chamber in an outgoing flow to a destination outside the patient's peritoneal cavity so that the outgoing flow of dialysate carries gas from the upper circuit region of the pump chamber.

5,628,909

MEMBRANE FILTERS WITH CORKSCREW VORTEX GENERATING MEANS

Brian J. Bellhouse, Oxford, United Kingdom, assignor to ISIS Innovation Limited, Oxford, United Kingdom

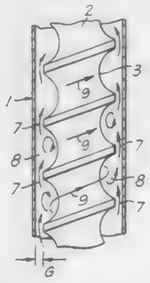
PCT No. PCT/GB94/00561, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO94/21362, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 18, 1994, Ser. No. 530,136

Claims priority, application United Kingdom, Mar. 19, 1993, 9305788

Int. Cl.° B01D *61/00;63/00*

U.S. Cl. 210—650 **17 Claims**



11. A method of filtering a fluid comprising: constraining the fluid being filtered to flow along a helical path bounded at least in part by a porous filter membrane and an opposing profiled surface; inducing or enhancing a corkscrew vortex flow in the helical flow; and selectively configuring the shape of the profiled surface and the location of the profiled surface relative to the filter membrane such that the helical flow is subject to a single corkscrew vortex flow which is dominant in terms of size and strength and acts on substantially the whole helical flow.

5,628,910

POLYAMIDE COMPOSITIONS FOR REMOVAL OF POLYPHENOLS FROM LIQUIDS

Demetrius Michos, Columbia, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 28, 1996, Ser. No. 672,860

Int. Cl.° C02F *1/28*

U.S. Cl. 210—691 **23 Claims**

1. A method of treating a liquid containing polyphenolic compounds to remove some or all of said polyphenolic compounds from said liquid, said method comprising:

(a) contacting said liquid with a polymer wherein at least a portion of the polymer comprises piperazine amide or substituted piperazine amide whereby at least a portion of said polyphenolic compounds is adsorbed by said amide-containing polymer, and

(b) separating said amide-containing polymer with said adsorbed polyphenolic compounds from said liquid.

5,628,911

FILTRATION OF SOOT/ASH WATER SLURRIES AND IMPROVED PARTIAL OXIDATION PROCESS FOR HYDROCARBON FEEDSTOCKS

Wolfgang Kowallik, Itzehoe; Hans J. Maaz, Brunsbüttel, and Thomas Schmitz, Wilster, all of Germany, assignors to Norsk Hydro a.s, Oslo, Norway

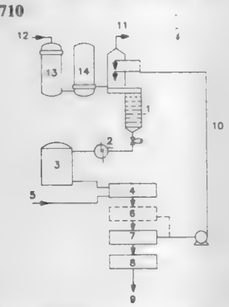
PCT No. PCT/NO93/00165, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/11085, PCT Pub. Date May 26, 1994

PCT Filed Nov. 9, 1993, Ser. No. 432,212

Claims priority, application Norway, Nov. 11, 1992, 924338

Int. Cl.° C02F *1/54;1/56*

U.S. Cl. 210—710 **4 Claims**



1. A method for treatment of an aqueous soot/ash slurry, containing 0.5–3% unburned carbon and 0.1–2% ash having appreciable amounts of Fe, Ni and V, said method comprising:

cooling the slurry to a temperature of from 20°–60° C.;

adding flocculants comprising one cationic flocculant and one anionic flocculant to the cooled slurry, where the total amount of flocculants is 60–100 ppm; and

filtering the resultant slurry until the moisture content of the slurry is reduced to below 80% by weight, to obtain a flaky or granular filtercake.

5,628,912

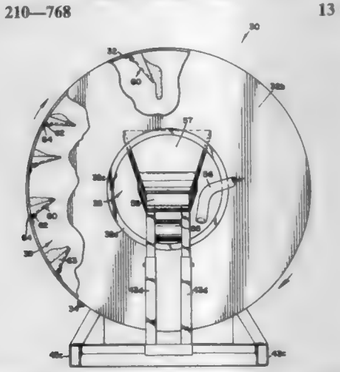
ROTARY SEPARATOR METHOD FOR MANURE SLURRIES

Clinton A. Nesseth, Cameron, Wis., assignor to NTH, Inc., Barron, Wis.

Filed Dec. 14, 1994, Ser. No. 355,522

Int. Cl.° B01D *37/00*

U.S. Cl. 210—768 **13 Claims**



1. A method of continuously separating solids from a solid/liquid manure slurry, comprising the steps of:

(a) introducing and containing a volume of solid/liquid manure slurry into a rotatable cylindrical container having solid walls and at least one porous paddle affixed to an internal wall of the container, said contained slurry forming a pool of slurry material held in the container and having an upper surface;

(b) rotating the container and said paddle about an axis;

(c) causing said paddle to lift a portion of the contained manure slurry volume out of said slurry pool and above said upper surface thereof as the container rotates;

(d) allowing liquids from said lifted portion of said slurry to directly fall by gravity through and over said paddle back into said slurry pool; and

(e) dropping solids from said lifted portion of said slurry by gravity, from said paddle and into a solids collector.

5,628,913

METHOD AND AN APPARATUS FOR PRODUCING PLANT NUTRITIVE PELLETS FROM WASTEWATER SLUDGE

Torsten Modig, Brogatan 2, S-903 25 Umeá , Sweden

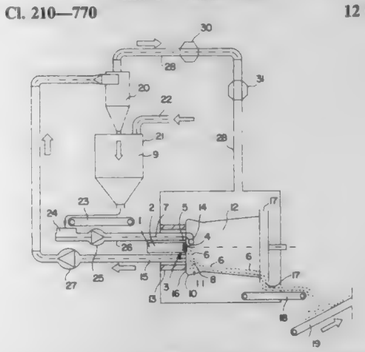
PCT No. PCT/SE93/01112, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/14730, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 29, 1993, Ser. No. 448,381

Claims priority, application Sweden, Dec. 29, 1992, 9203930

Int. Cl.° C02F *11/12*

U.S. Cl. 210—770 **12 Claims**



1. A method of producing plant nutritive pellets from raw sludge produced by wastewater treatment plants, the raw sludge having a water content in the region of 70–80%, where pelletization takes place without further dewatering of the sludge and where a powder is used to stabilize the pellets and prevent their sticking together, the powder being added in connection with the sludge being formed into at least one pellet string and after formation of the pellet string when the string is eventually cut into pellets, the method comprising the steps of:

forming the sludge into a pellet string;

cutting the pellet string into pellets;

supplying an air stream in which the powder has become entrained to douse the pellet string and/or the cut-off pellets so as to give the pellet string and/or the cut-off pellets strength, and to prevent the formation of aggregates during subsequent collection of the pellet string and/or cut-off pellets; and

drying the pellet string and/or cut-off pellets to provide a moisture content of about 10–15% adequate for storage of the pellets.

5,628,914

METHOD FOR RECYCLING LITHOGRAPHIC INK

Frank Prasil, 3021 Old Maryville Pike, Knoxville, Tenn. 37920

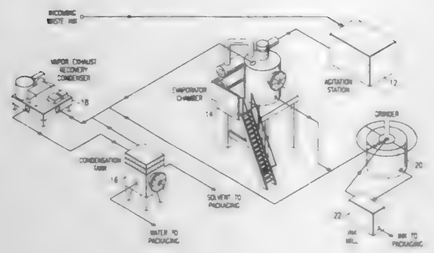
Filed Oct. 5, 1995, Ser. No. 539,546

Int. Cl.° B01D *17/032*

U.S. Cl. 210—770 **37 Claims**

1. A method of reclaiming waste ink contaminated with water, solvents, and solid impurities, comprising the steps of:

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mixing the waste ink to create a slurry mixture containing the waste ink, the water, the solvents, and the solid impurities; and

grinding the slurry mixture under a vacuum to produce an ink emulsion such that the waste ink and the solid impurities are ground to a particle size that is less than or equal in size to a particle size of virgin ink from which the waste ink is derived, wherein the step of grinding the slurry mixture generates heat sufficient to evaporate the water and the solvents from the slurry mixture without evaporating the waste ink.

5,628,915

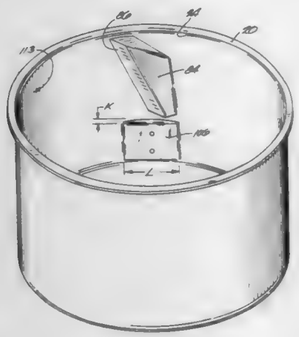
ENHANCED YIELD BLOOD PROCESSING SYSTEMS AND METHODS ESTABLISHING CONTROLLED VORTEX FLOW CONDITIONS

Richard I. Brown, Northbrook, and Michael R. Prisco, Aurora, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 814,403, Dec. 23, 1991, abandoned, and Ser. No. 748,244, Aug. 21, 1991, Pat. No. 5,322,620, which is a continuation of Ser. No. 514,995, May 26, 1989, Pat. No. 5,104,526, which is a continuation of Ser. No. 9,179, Jan. 30, 1987, Pat. No. 4,834,890. This application Jun. 7, 1995, Ser. No. 472,513

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—782 **8 Claims**



6. A method for separating blood components comprising the steps of

rotating first and second spaced apart side walls forming a separation zone about a rotational axis, the first wall being closer to the rotational axis than the second wall, the separation zone defining a separation path extending generally circumferentially about the axis of rotation, the separation path including an entry region having a first radial width and a second region circumferentially spaced from the entry region and having a second radial width,

conveying blood into the entry region along an entry path having an entry axis that extends generally parallel to the axis of rotation to establish a vortex flow pattern in the entry path about the entry axis that perfuses blood from the entry region into the second region for separation in the second region into component parts,

confining the vortex flow pattern within the entry region by providing a stepped-up ridge radially extending into the entry region along the entry path, which makes the first radial width less than the second radial width.

5,628,916

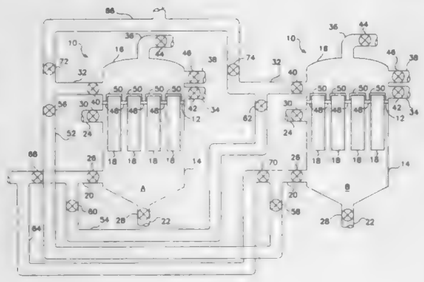
METHOD FOR FILTERING EDIBLE OILS

Donald B. Stevens, Port Washington; Leonard R. Castellano, Great Neck; Thomas C. Gsell, Glen Head; Jeffrey M. Seibert, Cortland, and Barry J. Weissman, Bayville, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 291,453, Aug. 17, 1994, abandoned. This application Nov. 9, 1995, Ser. No. 555,803

Int. Cl.[6] B01D *37/00;25/32*

U.S. Cl. 210—798 **25 Claims**



1. A method of filtering edible oils comprising:

(a) passing edible oil containing solid particulate matter into a backwashable filter assembly;

(b) removing the solid particulate matter from the edible oil by directing the edible oil through a fibrous filter medium having a graded pore structure, including passing the edible oil through a coarser pore upstream region and then a finer pore downstream region of at least one substantially cylindrical filter element contained within the backwashable filter assembly and accumulating the solid particulate matter directly on the at least one substantially cylindrical filter element;

(c) backwashing the at least one substantially cylindrical filter element after the cake of solid particulate matter accumulates on the at least one substantially cylindrical filter element by directing a backwash fluid through the fibrous filter medium having a graded pore structure, including passing the backwash fluid through the finer pore downstream region and then the coarser pore upstream region, to clean the at least one substantially cylindrical filter element having the solid particulate matter removed from the edible oil accumulated thereon; and

(d) cyclically alternating between removing the solid particulate matter from the edible oil by passing the edible oil through the at least one substantially cylindrical filter element and backwashing the at least one substantially cylindrical filter element to clean the at least one substantially cylindrical filter element having solid particulate accumulated thereon.

5,628,917

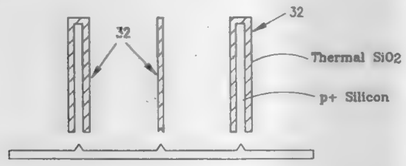
MASKING PROCESS FOR FABRICATING ULTRA-HIGH ASPECT RATIO, WAFER-FREE MICRO-OPTO-ELECTROMECHANICAL STRUCTURES

Noel C. MacDonald, and Ali Jazairy, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 3, 1995, Ser. No. 383,524

Int. Cl.[6] B44C *1/22;* **H01L** *21/00*

U.S. Cl. 216—2 **17 Claims**



1. A masking process for the fabrication of submicron, single-crystal released structures, comprising:

oxidizing an exposed top surface of a wafer from which a single-crystal structure is to be fabricated;

forming a first mask on said wafer by depositing a mask material on said oxidized top surface of said wafer, forming a pattern in resist on said mask material to define said structure to be formed in said wafer and transferring said pattern to said mask material;

forming an intermediate structure in said wafer by transferring said pattern into said wafer by etching into said wafer to a first depth, oxidizing exposed wafer surfaces and then etching to remove oxidized surfaces;

transforming said intermediate structure into a second mask by oxidizing exposed wafer surfaces, and then removing said oxidation from a top surface of said wafer;

forming said single crystal structure by transferring said pattern into said wafer by etching into said wafer to a second depth deeper than said first depth, oxidizing exposed wafer surfaces and then removing said oxidation from a top surface of said wafer; and,

releasing said single crystal structure from said wafer using an etching process to completely undercut said single crystal structure.

5,628,918

METHOD FOR SUPPORTING A PHOTORECEPTOR DURING LASER ABLATION

Henry T. Mastalski, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 1, 1995, Ser. No. 432,564

Int. Cl.[6] G03G *5/00*

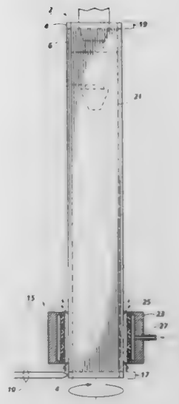
U.S. Cl. 216—8 **12 Claims**

1. A method comprising:

(a) rotating a hollow cylindrical substrate having a coating thereon;

(b) employing a gas bearing around the circumference of the rotating substrate along a portion of the length of the substrate to provide support to the substrate during its rotation; and

(c) removing a portion of the coating while directing a fluid stream at the coating.



5,628,919

METHODS FOR PRODUCING A CHIP CARRIER AND TERMINAL ELECTRODE FOR A CIRCUIT SUBSTRATE

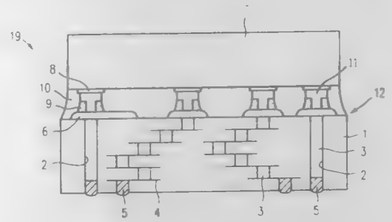
Yoshihiro Tomura, Hirakata; Yoshihiro Bessho, Higashiosaka, and Yasuhiko Hakotani, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 353,438, Dec. 9, 1994. This application May 12, 1995, Ser. No. 439,980

Claims priority, application Japan, Dec. 13, 1993, 5-311980; Dec. 15, 1993, 5-314966; Dec. 20, 1993, 5-320117; Dec. 20, 1993, 5-320126

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—18 **12 Claims**



1. A method for producing a chip carrier comprising the steps of:

forming via holes in a plurality of unsintered green sheets;

burying a portion of an internal conductor in the via holes of a group of the plurality of green sheets and forming an internal conductor on the group of the plurality of green sheets by printing;

obtaining a multilayer structure by layering one of the plurality of green sheets in which a portion of the internal conductor is not buried in the via holes thereof on the group of green sheets in which the portion of the internal conductor is buried in the via holes and subjecting the multilayer structure to a pressing process; and

sintering the plurality of green sheets so as to form a carrier body, a plurality of concave portions being formed on a lower face of the carrier body.

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5,628,920

ORGANIC LAYER FOR SUBSEQUENT COATING WITH A COVER LAYER WHICH IS HARDER THAN THE ORGANIC LAYER AND PROCESS FOR SURFACE TREATMENT OF AN ORGANIC LAYER

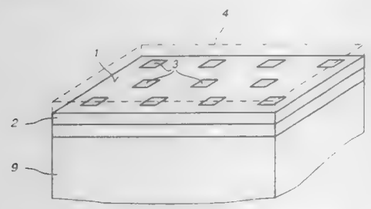
Hans-Juergen Fuesser, Gerstetten; Karl Holdik, Beimerstetten; Klaus Rohwer, Ulm, and Martin Hartweg, Erbach, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed Jul. 7, 1995, Ser. No. 499,323

Claims priority, application Germany, Jul. 7, 1994, 44 23 833.9

Int. Cl.[6] B05D *3/00*

U.S. Cl. 216—58 **6 Claims**



1. A process for surface treatment of an organic layer to prepare the organic layer for subsequent coating with a cover layer which is harder than the organic layer, said process comprising providing growth nuclei for the cover layer which are initially contained in the organic layer and are exposed on the surface of the organic layer by removing a portion of the organic layer, said growth nuclei being formed of material which exhibits sp^2 or sp^3 bonding orbital hybridization for elements of the cover layer.

5,628,921

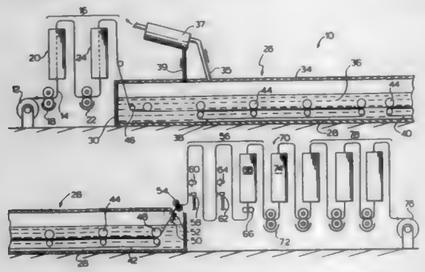
DEMETALLIZING PROCEDURE

D. Gregory Beckett, Oakville, Canada, assignor to Beckett Technologies Corp., Mississauga, Canada

Continuation of Ser. No. 226,077, Apr. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 655,022, Feb. 14, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 470,016

Int. Cl.° B05D *5/00*

U.S. Cl. 216—91 **23 Claims**



1. A continuous method of effecting selective demetallization of a layer of aluminum having a thickness of about 1 to about 15 microns supported on a microwave transparent web of flexible polymeric material, which comprises:

providing said microwave transparent web as a continuous web and conveying said continuous web from a reel thereof successively through an etchant solution-applying zone, a washing zone and a drying zone,

providing said microwave transparent web with a pattern of etchant-resistant material on said aluminum layer corresponding to a desired pattern of non-etched aluminum prior to said continuous web entering said etchant solution-applying zone,

continuously driving said microwave transparent web with said pattern of etchant-resistant material thereon in an immersed condition through a bath of aqueous etchant material which is aqueous sodium hydroxide having a temperature of about 10° to about 90° C. and a strength of about 0.1 to about 10 normal and conveying said microwave transparent web through said etchant solution-applying zone for a period of time of at least about 0.5 seconds per micron thickness of said aluminum layer and at least sufficient to effect complete removal of said aluminum layer not covered and protected by said pattern of etchant-resistant material,

wiping said aqueous etchant solution from the surfaces of said web before said web leaves said etchant solution-applying zone,

contacting said web with wash water in said washing zone to remove residual etchant solution therefrom,

wiping wash water from the surfaces of said web before said web leaves said washing zone, and

drying said web in said drying zone.

5,628,922

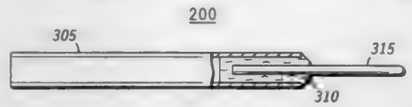
ELECTRICAL FLAME-OFF WAND

Jeng-Cheng A. Chen, Chung-Li, Taiwan, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 14, 1995, Ser. No. 502,794

Int. Cl.° B23K *9/00*

U.S. Cl. 219—56.21 **5 Claims**



1. An apparatus coupled to an electrical discharge circuit for forming a predetermined length of bonding wire into a ball having predetermined dimensions at a first position, and for bonding the ball to a pad on a semiconductor die at a second position, the apparatus comprising:

a tube composed of a first electrically conductive rigid material having a first length and a first diameter for mounting;

a rod composed of a second electrically conductive rigid material having a second length and a second diameter, wherein the second electrically conductive material is different from the first, and wherein the second length is less than the first, and wherein the second diameter is less than the first, the rod inserted partially into the tube for emitting an electrical discharge; and

epoxy composed of a third electrically conductive material for securing the partially inserted portion of the rod to the tube, and for electrically coupling the rod and the tube.

5,628,923

ROBOT WELDING GUN UNIT

Toshihiro Nishiwaki, Tokyo, Japan, assignor to Obara Corporation, Tokyo, Japan

Continuation of Ser. No. 257,808, Jun. 10, 1994. This application Sep. 21, 1995, Ser. No. 531,916

Claims priority, application Japan, Oct. 20, 1993, 5-284243

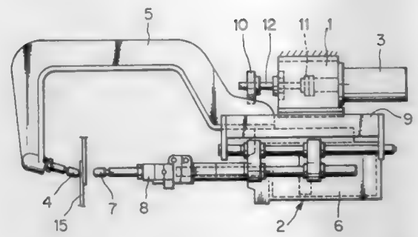
Int. Cl.° B23K *11/11*

U.S. Cl. 219—86.25 **9 Claims**

1. A robot welding gun which is a robot equipped with a welding gun comprising:

a welding gun mounting bracket provided at the tip end of a robot arm;

a gun body which includes mounting means for slidably mounting said gun body on said mounting bracket, said gun body including a fixed arm, which extends in a forward direction and has a tip end with a first welding electrode thereon for contacting an object to be welded, and a slidable rod having a



second welding electrode on a distal end thereof, which extends forwardly toward said tip end to contact the object to be welded:

a cylinder unit attached to said mounting bracket for adjusting the position of said fixed arm relative to said mounting bracket;

a rod extending forwardly from said cylinder unit which is rotated or is moved forward or backward by said cylinder unit, said rod drivingly interconnected to said fixed arm at all times such that said fixed arm is reversibly driven both forwardly and rearwardly by said rod along a predetermined path to a selected position therealong upon rotation or movement of said rod and said fixed arm is forwardly and rearwardly restrained by said rod in said selected position when rotation or movement of said rod is stopped; and

adjusting means for detecting wear on said first welding electrode when said welding gun is in a deactivated state so that said first welding electrode is maintained in said selected position regardless of wear to said first welding electrode.

5,628,924

PLASMA ARC TORCH

Toshio Yoshimitsu, Oyama; Hitoshi Sato, Hiratsuka; Noriyuki Sekizawa, Hiratsuka; Yoshihiro Yamaguchi, Hiratsuka; Yoshitaka Niigaki, Hiratsuka, and Yuuichi Takabayashi, Hiratsuka, all of Japan, assignors to Komatsu, Ltd., Tokyo, Japan

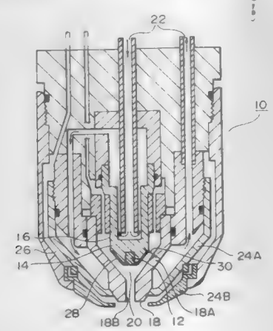
PCT No. PCT/JP94/00270, § 371 Date Aug. 24, 1995, § 102(e) Date Aug. 24, 1995, PCT Pub. No. WO94/19137, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 23, 1994, Ser. No. 507,461

Claims priority, application Japan, Feb. 24, 1993, 5-012325 U

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.5 **24 Claims**



1. A plasma arc torch, comprising:

an electrode comprising an electrode holder and an electrode element, said electrode holder having a tip portion, said tip portion having an outer side surface and an end surface, said electrode element having a high melting point and being embedded in said end surface of said tip portion of said electrode holder;

a nozzle which is electrically insulated from the electrode, said nozzle being positioned coaxially with and exteriorly of said electrode, said nozzle being provided with a nozzle orifice so that said electrode element faces said nozzle orifice, and

a working gas passage between said outer side surface of said tip portion of said electrode holder and said nozzle for supplying a working gas, wherein, upon application of a high frequency voltage, insulation breakdown occurs in a section of said working gas passage between said outer side surface of said tip portion of said electrode holder and said nozzle so that a pilot arc can be generated and the thus generated pilot arc moves, with flow of working gas through said working gas passage, downstream along said outer side surface of said tip portion of said electrode holder to said electrode element,

wherein said outer side surface of said tip portion of said electrode holder has an electrode surface which faces said nozzle across said section of said working gas passage,

wherein said nozzle has a nozzle surface which faces said electrode surface across said section of said working gas passage, and

wherein at least one of said electrode surface and said nozzle surface comprises at least one metal selected from the group consisting of gold and silver.

5,628,925

PROCESS FOR MANUFACTURING A COATED, MONOLITHIC METAL SUPPORT

Rainer Domesle, Alzenau, Germany; Bernd Engler, White Plains, N.Y., and Egbert Lox, Hanau, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 30, 1995, Ser. No. 413,943

Claims priority, application Germany, Mar. 31, 1994, 44 11 302.1

Int. Cl.° B23K *26/00*

U.S. Cl. 219—121.64 **12 Claims**



1. A process for manufacturing a coated, monolithic metal support consisting of a generally cylindrical, shaped body which is gas-permeable in the axial direction and which is formed of at least one metal foil strip which may be smooth, corrugated or a combination of smooth and corrupted metal foil strip, said strip having been previously coated with a dispersion coating, the longitudinal extension lying transverse to the cylinder axis, and being stacked or folded and optionally intertwined or wound in a spiral manner in order to form the shaped body, comprising, during or after formation of said shaped body, welding or soldering said metal foil strip to at least one adjacent metal foil strip or to at least one adjacent layer of the same metal foil strip.

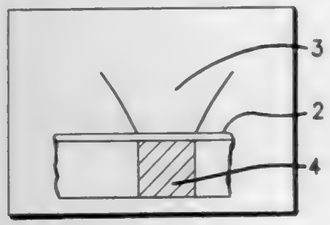
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METHOD OF FORMING VIA HOLES IN A INSULATION FILM AND METHOD OF CUTTING THE INSULATION FILM

Haba Belgacem, and Yukio Morishige, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,451
Claims priority, application Japan, Dec. 28, 1993, 5-337939; Mar. 22, 1994, 6-050837; Jul. 26, 1994, 6-174413
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.71 38 Claims



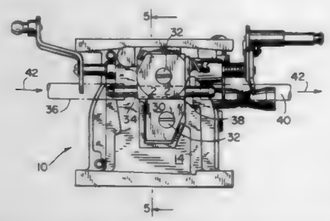
1. A method of forming via holes in an organic insulation film comprising the steps of:
exposing predetermined parts of said film to a laser beam to raise a temperature of said exposed parts of said film until said exposed parts are transformed or decomposed;
subjecting said film to an ultra sonic wave so that said transformed or decomposed parts are dispersed to form via holes.; and
forming a layer having a high absorptivity to a laser beam by subjecting said film to a liquid including sodium naphthalene.

5,628,927

MARINE CARBURETOR ANTI-ICING APPARATUS

Mark E. Sweeney, Oshkosh, and Paul H. Jennerjahn, Greenville, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Sep. 8, 1994, Ser. No. 302,500
Int. Cl.[6] B60L *1/02*; F02M *31/12*
U.S. Cl. 219—207 4 Claims



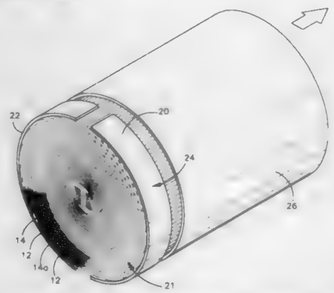
1. A carburetor anti-icing apparatus for a marine drive carburetor having an idle circuit and a progression circuit, the apparatus comprising a means for heating idle and progression circuits of a marine drive carburetor to a temperature above that at which ice forms, wherein the heating means is mounted to a side of the marine drive carburetor adjacent a set of multiple small fuel orifices that comprise the idle and progression circuits,
wherein the means for heating is further defined to comprise a heater housing having an inlet and an outlet to convey heating medium through the heater housing such that at least a portion of heat in the heating medium is transferred to the heater housing which is mounted to a carburetor such that the transfer heat is further transferred to the carburetor body and wherein the heating medium does not come into direct contact with the orifices.

5,628,928

METHOD FOR REDUCING THE POTENTIAL DIFFERENCE IN AN ELECTRICALLY HEATABLE CONVERTER BY CONNECTING THE STRIP HEATER TO CORRUGATED STRIP WITH AN ELECTRICAL CONDUCTOR

Stanley C. Rolf, Mantua, Ohio, assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 224,763, Apr. 8, 1994, Pat. No. 5,431,886.
This application Jun. 1, 1995, Ser. No. 457,066
Int. Cl.[6] H05B *3/02*; F01N *3/10*
U.S. Cl. 219—488 1 Claim



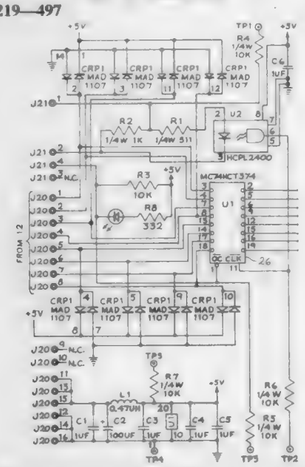
1. A method for reducing the potential difference between a point along a thin metal heater strip in a housing and connected in an electrical circuit for purposes of heating said heater strip, and a contiguous coated corrugated thin metal strip which is insulated from said housing which comprises the step of anchoring the thin metal heater strip to said corrugated thin metal strip by connecting one strip to the other with an electrical conductor.

5,628,929

THERMAL CONTROL APPARATUS AND METHOD

Kurt Klosterman, Gurnee, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 13, 1994, Ser. No. 322,666
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—497 6 Claims



1. A method of thermally controlling an instrument including a heater while the heater is in continuous operation, the method comprising the steps of:
(a) electrically connecting a heater with a relatively reduced thermal energy reference resistor;

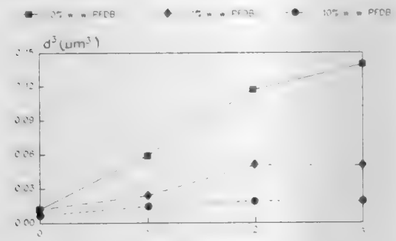
(b) allowing an amplifier operatively associated with the heater to slew to a relatively reduced thermal energy value;
(c) recording the relatively reduced thermal energy value in memory;
(d) updating an algorithm controlling the heater based on the relatively reduced thermal energy value;
(e) electrically connecting the heater with a detector for sensing thermal energy produced by the heater;
(f) allowing the amplifier to slew to a value associated with the detector;
(g) updating an algorithm controlling the heater based on the value associated with the detector; and
(h) applying electrical energy to the heater based on the relatively reduced thermal energy value and the value associated with the detector.

5,628,930

STABILIZATION OF FLUOROCARBON EMULSIONS

Jeffry G. Weers, San Diego; David H. Klein, Carlsbad, and Cindy S. Johnson, Oceanside, all of Calif., assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Filed Oct. 27, 1992, Ser. No. 967,700
Int. Cl.[6] B01J *13/00*; A61K *31/02*
U.S. Cl. 252—312 34 Claims



1. A storage stable fluorocarbon emulsion, comprising:
a continuous aqueous phase;
an effective emulsifying amount of an emulsifying agent; and
a discontinuous fluorocarbon phase, comprising from about 60% to about 99.9% of one or more first fluorocarbons having a molecular weight from about 448 to about 550 daltons, and from about 0.1% to about 40% of one or more second fluorocarbons having a molecular weight greater than or equal to about 540 daltons, the molecular weight of each second fluorocarbon being greater than each said first fluorocarbon, wherein each said second fluorocarbon is an aliphatic fluorocarbon substituted with at least one lipophilic moiety selected from the group consisting of Br, Cl and I and H.

5,628,931

PROCESS FOR THE PREPARATION OF HYDROGEN AND CARBON MONOXIDE CONTAINING MIXTURES

Peter W. Lednor, Amsterdam; Mathijs M. G. Senden, The Hague, and Gerardus P. Van Der Zwet, Amsterdam, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 7, 1995, Ser. No. 499,153
Claims priority, application European Pat. Off., Jul. 7, 1994, 94201970
Int. Cl.[6] C01B *3/26*
U.S. Cl. 252—373 12 Claims

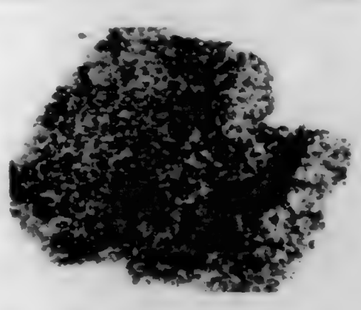
1. A process for the preparation of a gaseous mixture containing hydrogen and carbon monoxide by autothermal reforming, comprising
(i) partial oxidation of a gaseous hydrocarbon feed in a partial oxidation zone;
(ii) passing the effluent of the partial oxidation zone to a reforming zone; and
(iii) reforming in the presence of a reforming catalyst in the reforming zone to form a reformed product stream, such that the reformed product stream has a temperature in the range from 1100° to 1300° C.

5,628,932

ELECTROCONDUCTIVE COMPOSITION AND PROCESS OF PREPARATION

Howard R. Linton, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 386,765, Aug. 2, 1989. This application Jun. 15, 1994, Ser. No. 260,137
Int. Cl.[6] H01B *1/00*; *1/08*
U.S. Cl. 252—518 16 Claims



1. A conductive member comprising a carrier matrix and an electroconductive network wherein said network comprises interconnecting shaped particles, said particles comprising a core and an amorphous silica or a silica-containing material which is surface-coated with a coating comprising antimony-containing tin oxide in which the antimony content ranges from 1 to about 30% by weight of the tin oxide.

5,628,933

TRANSPARENT CONDUCTORS COMPRISING ZINC-INDIUM-OXIDE AND METHODS FOR MAKING FILMS

Sue A. Carter, Basking Ridge; Robert J. Cava, Bridgewater; Jueinai R. Kwo, Watchung; Julia M. Phillips, Mountainside, and Gordon A. Thomas, Princeton, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 335,615, Nov. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 322,902, Oct. 13, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 622,324
Int. Cl.[6] H01B *1/08*; C01G *15/00*; *9/02*
U.S. Cl. 252—518 11 Claims

1. A transparent conductive material comprising zinc-indium-oxide wherein indium is 40–75 atomic % of the metal elements, said material having an absorption which is less than that of indium tin oxide over a spectral range that includes the range from 500 nm to 900 nm.

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5,628,934

PHOTOCHROMIC COLOR RENDERING REGULATORY COMPOSITION AND COSMETICS

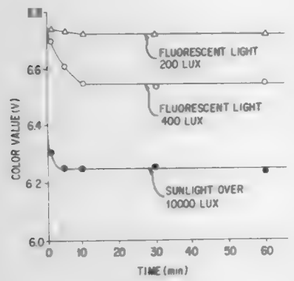
Kazuhisa Ohno, Tokyo-to; Shigenori Kumagai, Machida; Fukuji Suzuki, Atugi, and Nobuhisa Tsujita, Machida, all of Japan, assignors to Shiseido Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 979,234, Nov. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 455,320, Feb. 28, 1990, abandoned. This application Nov. 28, 1994, Ser. No. 351,050

Claims priority, application Japan, Jun. 1, 1988, 63-132619

Int. Cl.[6] G02B 5/23; A61K 7/021

U.S. Cl. 252—586 23 Claims



1. A photochromic color rendering regulatory cosmetic foundation consisting essentially of:

a cosmetic; and

a photochromic color rendering composition in said cosmetic, said color rendering composition containing from 1% to 60% by weight titanium oxide which possesses photochromic properties which composition is able to achieve color rendering constant with respect to the intensity of irradiated light.

5,628,935

PHOTOCHROMIC SPIRONAPHTHOPYRAN COMPOUNDS

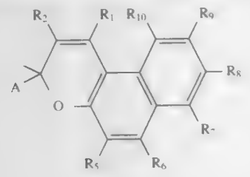
Frank J. Hughes, Edina, Minn., and Edward A. Travnicek, Coral Springs, Fla., assignors to Vision-Ease Lens, Inc., Brooklyn Center, Minn.

Filed Oct. 28, 1994, Ser. No. 331,281

Int. Cl.[6] C07D 311/92;413/00

U.S. Cl. 252—589 25 Claims

1. A naphthopyran compound represented by the formula:



wherein,

R_1, R_2, R_5, R_6, R_7, R_8, R_9, and R_{10} are each selected from the group consisting essentially of hydrogen, a stable organic radical, a heterocyclic group, a halogen, a nitrogen-substituted group, and a nitrogen-substituted ring compound; and

A is a substituted divalent aromatic radical, the substituents of the divalent aromatic radical selected from the group consisting essentially of hydrogen and the stable organic radical.

5,628,936

HYBRID PAUCILAMELLAR LIPID VESICLES

Donald F. H. Wallach, Brookline, Mass., assignor to Micro-Pak, Inc., Wilmington, Del.

Continuation of Ser. No. 5,940, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 683,835, Apr. 11, 1991, abandoned, which is a continuation of Ser. No. 410,647, Sep. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 157,571, Mar. 3, 1988, Pat. No. 4,911,928, which is a continuation-in-part of Ser. No. 25,525, Mar. 13, 1987, abandoned, and a continuation-in-part of Ser. No. 78,658, Jul. 28, 1987, Pat. No. 4,855,090, and a continuation-in-part of Ser. No. 124,824, Nov. 24, 1987, Pat. No. 4,917,951. This application May 31, 1995, Ser. No. 456,283

The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.

Int. Cl.[6] A61K 9/127; B01J 13/02

U.S. Cl. 264—4.1 8 Claims

1. A method of making paucilamellar lipid vesicles with phospholipids or glycolipids as the primary structural material of the lipid bilayers, said vesicles having 2–10 lipid bilayers surrounding a substantially amorphous central cavity containing a water-immiscible oily material, said method consisting essentially of the steps of:

forming a lipid phase by blending a lipid selected from the group consisting of phospholipids, glycolipids, and mixtures thereof with any sterol or charge producing agent to be incorporated into the lipid bilayer;

forming an oil phase by blending a water-immiscible oily material with any materials soluble therein which are to be incorporated into the vesicle;

forming an aqueous phase by blending an aqueous-based solution with any aqueous soluble materials to be incorporated into said vesicles;

blending said lipid phase and said oil phase to form a lipophilic phase; and

shear mixing said lipophilic phase and said aqueous phase to form said vesicles without the formation of a separable lamellar phase.

5,628,937

PRODUCTION OF PARTICULATE MATERIALS

Raymond Oliver; Anthony R. N. Fairclough, both of Cleveland; Alejandro M. Antonini, Lancashire; Robert J. Munro, Cleveland, and Lynn W. Lipscombe, Hampshire, all of United Kingdom, assignors to Imperial Chemical Industries PLC, United Kingdom

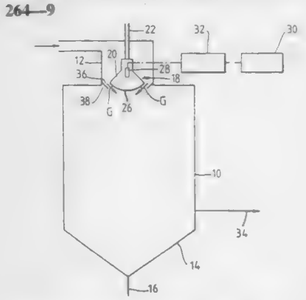
PCT No. PCT/GB93/02554, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/20204, PCT Pub. Date Sep. 15, 1994

PCT Filed Dec. 15, 1993, Ser. No. 454,234

Claims priority, application United Kingdom, Dec. 18, 1992, 9226474

Int. Cl.[6] B29B 9/10; B01D 1/18;1/20

U.S. Cl. 264—9 22 Claims



1. A process for the production of solid particles, comprising: projecting from a body of liquid an array of mutually divergent jets; disturbing the jets to cause break up thereof into streams of droplets of narrow size distribution; contacting the array of resulting droplet streams with a gas flow which has a magnitude exceeding the magnitude of the velocity at which the jets are projected to reduce coalescence of the droplets in each stream; and causing or allowing the droplets to solidify at least partially while in flight.

5. Apparatus for producing solid particles, comprising: means for discharging liquid formulation from a body of the liquid as an array of jets; means for disturbing the jets to cause break up thereof into an array of droplet streams comprising droplets having a narrow size distribution; means for contacting the droplet streams with a gas flow which has a magnitude exceeding the magnitude of the velocity at which the jets are projected so that, prior to the onset of coalescence, the droplets in each stream are dispersed to reduce coalescence thereof; and means for effecting at least partial solidification of the droplets while in flight.

5,628,938

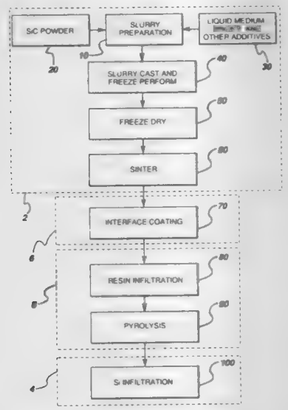
METHOD OF MAKING A CERAMIC COMPOSITE BY INFILTRATION OF A CERAMIC PREFORM

D. Sangeeta, Niskayuna; Svante Prochazka, Ballston Lake, and Krishan L. Luthra, Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 18, 1994, Ser. No. 342,483

Int. Cl.[6] B05B 3/00

U.S. Cl. 264—28 20 Claims



1. A method for making a composite ceramic article having a ceramic preform and an infiltrate phase, comprising the steps of:

directionally solidifying by freezing a liquid medium containing a dispersion of ceramic particles to produce a green, porous ceramic preform wherein the dispersion is cooled to a temperature below a freezing point of the liquid medium for a time sufficient to cause directional solidification within the liquid medium and progressive segregation of the liquid medium from the dispersion, wherein the directional solidification and segregation of the liquid medium causes a morphological ordering of a plurality of the ceramic particles into a plurality of interconnected lamelli or fibrils or mixtures thereof that are partially separated from one another by complementary interlamellar regions that form a green freeze dried ceramic preform;

removing the solidified liquid medium from said preform;

sintering the green freeze dried ceramic preform at a temperature and for a time sufficient to cause the plurality of ceramic particles to become bonded to one another; and

infiltrating the interlamellar regions of the sintered ceramic preform with an infiltrate phase.

5,628,939

PROCESS FOR PREPARING CARBON-CONTAINING REFRACTORY CERAMIC MASSES AND MOLDINGS

Franz Reiterer, and Klaus Dösinger, both of Leoben, Austria, assignors to Veitsch-Radex Aktiengesellschaft fur Feuerfeste Erzeugnisse, Vienna, Austria

PCT No. PCT/EP93/00511, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO93/17979, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 6, 1993, Ser. No. 302,720

Claims priority, application Japan, Mar. 8, 1992, 42 07 249.2

Int. Cl.[6] C01B 31/00

U.S. Cl. 264—29.1 23 Claims

1. Process for preparing carbon-containing refractory ceramic masses, in which a refractory ceramic matrix material is mixed homogeneously with elementary carbon, together with a non-aromatic polymer compound with a carbon residue (according to Conradson) of less than 0.5 wt. %.

5,628,940

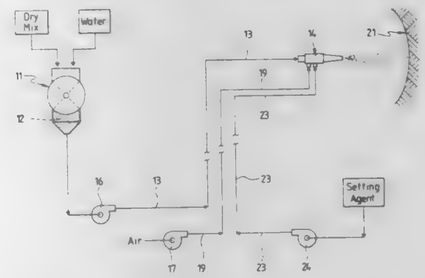
PROCESS FOR APPLYING LOW-CEMENT CASTABLE REFRACTORY MATERIAL

Eric L. Allison, Portsmouth, Ohio, assignor to Reno & Son, Inc., and Oak Mountain Industries, Inc., both of Morris, Ala.

Filed Jul. 11, 1994, Ser. No. 273,457

Int. Cl.[6] B05D 1/02; B32B 35/00; C21B 7/06; F27D 1/16

U.S. Cl. 264—30 12 Claims



1. A method for placing low-cement castable refractory material on a surface without the use of forms, comprising the steps of:

(a) mixing dry low-cement castable refractory material with water until it forms a thoroughly and uniformly wet, thixotropic, low-cement castable mix of a hydraulically pumpable consistency;

(b) hydraulically pumping said wet, thixotropic, low-cement castable mix through a hose to a nozzle;

(c) metering an amount of a cement-setting agent to be added to said wet, thixotropic, low-cement castable mix to induce substantially instantaneous setting of said wet, thixotropic, low-cement castable mix upon contact on a surface;

(d) introducing air and said metered amount of said cement-setting agent into said wet, thixotropic, low-cement castable mix at said nozzle, forming a low-cement castable end mix having diminished thixotropic properties; and

(e) spraying said low-cement castable end mix having diminished thixotropic properties onto said surface without the use of forms until a desired thickness of said low-cement castable end mix is reached, wherein said low-cement castable end mix substantially instantaneously sets upon contact with said surface.

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5,628,941

PROCESS FOR THE PRODUCTION OF CELLULOSE MOULDED BODIES

Wolfram Kalt, Lenzing; Heinrich Firgo, Vöcklabruck; Johann Männer, Weyregg; Eduard Mülleder, Linz; Bruno Mangeng, Linz; Arnold Nigsch, Vöcklabruck; Franz Schwenninger, Lenzing, and Christoph Schrempf, Bad Schallerbach, all of Austria, assignors to Lenzing Aktiengesellschaft, Austria

PCT No. PCT/AT95/00021, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO95/23827, PCT Pub. Date Sep. 8, 1995

PCT Filed Feb. 1, 1995, Ser. No. 454,320

Claims priority, application Austria, Mar. 1, 1994, 430/94

Int. Cl.° C07C 291/00; D01F 2/24;13/02

U.S. Cl. 264—38 23 Claims

1. A process for preparing cellulose molded bodies comprising the steps of:

(a) dissolving cellulose in an aqueous solution of a tertiary amine-oxide to produce a moldable cellulose solution,

(b) molding said cellulose solution,

(c) conducting said molded cellulose solution into an aqueous precipitation bath, thereby precipitating a cellulose molded body and producing a contaminated precipitation bath,

(d) purifying said contaminated precipitation bath, thereby producing a regenerated aqueous amine-oxide solution, wherein the regenerated aqueous amine-oxide solution has a pH value in a range defined by the equation:

$$pH=-0.0015\times A^2+0.2816\times A+f$$

wherein

A=the concentration of tertiary aqueous amine-oxide in said aqueous solution,

$40\% \leq A \leq 86\%$,

f=1.00 for an upper limit of the pH range

f=−1.80 for a lower limit of the pH range, and

(e) re-using said regenerated aqueous amine-oxide solution as the aqueous solution of a tertiary amine-oxide in step (a).

5,628,942

PROCESS FOR THE PREPARATION OF ASYMMETRIC TPX POROUS MEMBRANES FOR GAS SEPARATION

Juin-Yih Lai, Taoyuan Hsien, and Fung-Ching Lin, Kaohsiung, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed May 10, 1995, Ser. No. 438,390

Int. Cl.° B29C 67/20

U.S. Cl. 264—41 19 Claims

1. A process for preparing an asymmetric poly(4-methyl-pentene-1) porous membrane for separation, comprising:

(a) preparing a casting polymer solution comprising poly(4-methyl-pentene-1) and a solvent selected from the group consisting of cyclohexane, cyclohexene, trichloromethane, tetrachloromethane and mixtures thereof;

(b) casting said casting polymer solution on a support;

(c) immersing within 100 seconds after the casting of step (b) the casted polymer together with the support in a nonsolvent coagulant comprising an alcohol to form a membrane;

(d) extracting the membrane; and

(e) drying the membrane.

5,628,943

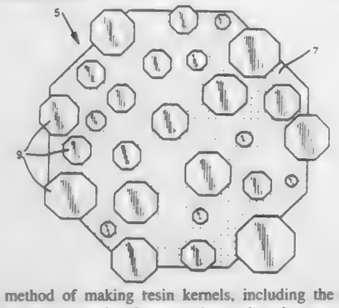
METHOD OF MAKING RESIN KERNELS AND FOAM-LIKE MATERIAL CONTAINING REACTIVE MEDIA

Manfred J. Woog, 1040 Pershing St., Craig, Colo. 81625

Continuation-in-part of Ser. No. 19,966, Feb. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 733,759, Jul. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 675,594, Mar. 27, 1991, abandoned. This application Feb. 23, 1995, Ser. No. 394,322

Int. Cl.° B29C 44/12

U.S. Cl. 264—45.3 11 Claims



1. A method of making resin kernels, including the steps of establishing in a vessel a thermosetting resin substance which is porous to liquids;

impregnating said resin substance with a reactive material by mixing said reactive material with said resin substance to create a mixture;

curing said resin substance with said reactive material contained therein to form kernels having a sponge-like configuration;

foaming and curing said resin substance by adding a catalyst substance thereto; and

adding as said catalyst a material selected from the group consisting of toluenesulfonic acid, benzenesulfonic acid and sulfuric acid.

5,628,944

METHOD AND APPARATUS FOR MOLDING TWO-COLOR POLYURETHANE PARTS BY RIM

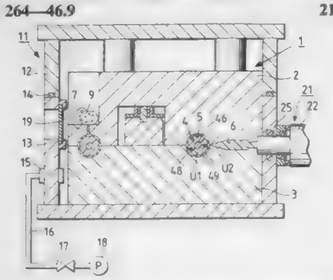
Naohisa Nagasaka; Masayuki Goto; Shogo Sugiyama; Yukio Kawakita, and Masanao Ishikake, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, Japan

Continuation-in-part of Ser. No. 117,678, Sep. 8, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,445

Claims priority, application Japan, Oct. 30, 1992, 4-315845; Dec. 27, 1993, 5-352752

Int. Cl.° B29C 44/06;67/20

U.S. Cl. 264—46.9 21 Claims



1. A method of molding a part comprising a surface layer and an interior layer, the method comprising the steps of:

reducing the pressure in a cavity of a mold;

mixing surface-forming material components in a first head to form a surface-forming material;

injecting the surface-forming material into the evacuated cavity through a gate, thereby forming the surface layer;

mixing interior-forming material components in a second head to form an interior-forming material; and

injecting the interior-forming material into the evacuated cavity through the gate, thereby forming the interior layer,

wherein the reduced pressure in the cavity degasses the surface-forming material and foams the interior-forming material.

5,628,945

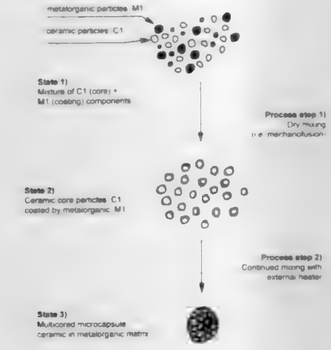
MULTICOMPONENT POWDER MIXING PROCESS AND COMPOSITIONS PRODUCED THEREBY

Richard E. Riman, 13 Whitehall Rd., and Paul R. Mort, III, 275 Hatfield La., both of East Brunswick, N.J. 08816

Filed Aug. 3, 1992, Ser. No. 925,719

Int. Cl.° B01J 2/12; C03C 6/08

U.S. Cl. 264—117 35 Claims



1. A method for controlling chemical distribution of dry substances, the method comprising the steps of:

(a) dry mixing particles of a first powder and a triggerable granule facilitator to form first microcapsules, the first microcapsules each having a core of one of the particles and a coating of the facilitator;

(b) further dry mixing at a speed sufficient to cause increased frictional interaction between the microcapsules, thereby triggering the facilitator while dry mixing the microcapsules to form granules of the microcapsules by an aggregation process; and

(c) ceasing the dry mixing while maintaining the granules of the microcapsules in a dry phase.

5,628,946

PROCESS FOR PRODUCING POLYMERIC MATERIALS

Ian M. Ward; Peter J. Hine, both of Leeds, and Keith Norris, Silsden, all of England, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 934,500, Oct. 21, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 315,680

Claims priority, application United Kingdom, Mar. 7, 1991, 9104781

Int. Cl.° B29C 43/00

U.S. Cl. 264—120 33 Claims

1. A process for the production of a homogeneous polymeric monolith from thermoplastic polymer fibers, the monolith having improved mechanical properties in a direction transverse to said fibers, said process comprising the steps of:

forming an assembly of oriented thermoplastic polymer fibers;

applying a contact pressure to said assembly of oriented thermoplastic polymer fibers sufficient to ensure intimate contact of the polymer fibers with each other, heating said assembly of polymer fibers to an elevated temperature sufficient to selectively melt a proportion of the polymer fibers while in intimate contact with each other, the molten polymer on cooling recrystallizing to form a melt phase which has a melting point less than the melting point of the fibers and which binds said fibers together; and

subsequently compressing said bound fibers at a compaction pressure higher than said contact pressure while still maintaining said assembly at an elevated temperature to produce said monolith.

5,628,947

PROCESS FOR THE SIMULTANEOUS DRYING AND CRYSTALLIZATION OF CRYSTALLIZABLE THERMOPLASTIC

Jurgen Keilert, Kleinwallstadt, Germany, assignor to Rieter Automatik GmbH, Germany

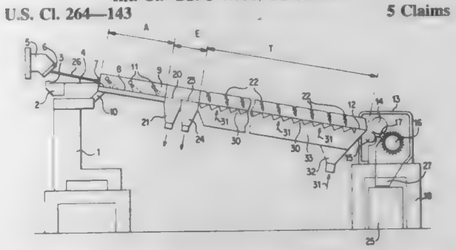
PCT No. PCT/EP94/01007, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/25239, PCT Pub. Date Nov. 10, 1994

PCT Filed Mar. 3, 1994, Ser. No. 362,432

Claims priority, application Germany, Apr. 29, 1993, 4314162.5

Int. Cl.° B29C 47/88; B29B 9/06

U.S. Cl. 264—143 5 Claims



1. Process for simultaneous drying and crystallization of crystallizable thermoplastic in which the plastic is extruded from the melt via dies as strands, solidified at the surface by quenching in water, and crystallized and dried by treatment with gas, using a mechanism for cooling and drying the strands (**26**) after being extruded, having a discharge chute (**8**) with its entrance below the dies and a mechanism producing a flow of coolant liquid in a quenching section (A) within the discharge chute (**8**), having a following dewatering section (E) in which the discharge chute (**8**) is provided with openings (**20**) for the free passage of the coolant liquid, having a connected drying section (T) in which the discharge chute (**8**) is provided with closely spaced nozzles (**30**) for the passage of gas, and with a granulator (**13**) following the drying section (T), wherein the lengths of the quenching section (A), the dewatering section (E) and the drying section (T) are selected, considering the speed of the strands (**26**) through the discharge chute (**8**), so as to give a processing time of not more than about 1.5 seconds in the quenching section (A) to attain a surface temperature for the strands (**26**) of at least 100° C., a processing time of not more than about 0.1 second in the dewatering section (E), and a processing time of not more than about 20 seconds in the drying section (T) with the surface temperature at the end of the quenching section (A) being generally maintained through the drying section.

5,628,948

AUTOMOBILE WINDSHIELD MOLDING METHOD

Yukihiko Yada, Nagoya, and Toshio Hirose, Handa, both of Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Division of Ser. No. 219,421, Mar. 29, 1994, Pat. No. 5,492,387, which is a continuation of Ser. No. 850,831, Mar. 13, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 488,366

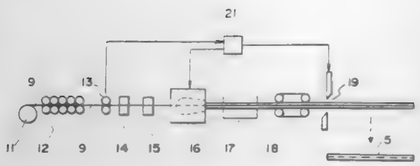
Claims priority, application Japan, Mar. 15, 1991, 3-76858; Apr. 30, 1991, 3-126895; Jan. 10, 1992, 4-22079

Int. Cl.° B29C 47/02;47/16

U.S. Cl. 264—146 5 Claims

1. A method of producing an elongate automobile windshield molding by extrusion molding the windshield molding using a first

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die having a decorative molding section for extrusion molding of a decorative section, a second die having an installation molding section for extrusion molding of an installation section which supports the decorative section, and a third die for dividing an extrusion molding section, formed by superposing the first die and the second die with each other, into a different form after having entered from a prescribed direction into the extrusion molding section, the method comprising the steps of:

performing extrusion molding while selectively changing an opening form of the extrusion molding section by moving said first die and second die relative to one another in a direction crossing at right angles to an extruding direction and at the same time entering the third die into an extrusion area of an extensible area of the extrusion molding section when the first die and second die have separated from each other;

employing a first extrusion process to perform extrusion molding on the molding having the decorative section and the installation section of predetermined cross-sectional shape after forming a predetermined form of the extrusion molding section and at the same time supplying metallic lacy body to said predetermined form of the extrusion molding section by maintaining the decorative molding section and the installation molding section of said first die and second die in an adjacent condition;

employing a second extrusion process to perform extrusion molding on the molding while extending the extrusion molding section form, maintaining the cross-sectional shape of the decorative section and changing the cross-sectional shape of the installation section which includes the metallic lacy body by separating the decorative molding section from the installation molding section of said first die and second die;

employing a third extrusion process which includes a divided extrusion molding on the molding to form a different form of extrusion molding section formed in the first extruding process and maintaining the decorative section in said predetermined cross-sectional shape, and also separating the installation section extruded from the installation molding section of said second die together with the metallic lacy body by entering said third die into an extensible area of the extrusion molding section formed after having separated the decorative molding section and the installation molding section of said first die and second die by a prescribed interval; and

using a cutting process to remove the installation section containing the metallic lacy body separated by means of said third die as an unnecessary part.

5,628,949

MOLD PROCESS FOR PRODUCING A FINISHED SOLID SURFACE COUNTERTOP

Robert Bordener, 2888 Colonial Way, Bloomfield Hills, Mich. 48304

Filed Apr. 4, 1995, Ser. No. 416,133
Int. Cl.[6] B29C *41/08;71/02*
U.S. Cl. 264—161 **11 Claims**

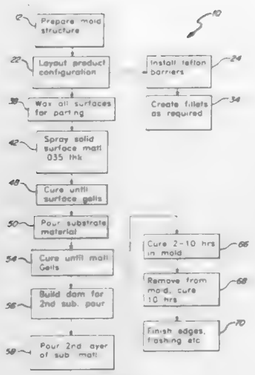
1. A mold process for producing a finished solid surface countertop, said mold process comprising the steps of:

placing in a level position a mold;

creating atop said mold an enclosure having a negative shape of a countertop part to be produced, said enclosure including a top surface and elevated side surfaces;

said step of creating said negative shape of said mold further comprising the step of constructing a plurality of barriers onto a flat polished surface of said mold;

spraying a continuous layer of a high quality resin coating material evenly across said top and side surfaces of said negative shape enclosure;



allowing said resin coating material to set and to gel for a predetermined period of time to form a gelled resin coating;

pouring a layer of a substrate material in a liquid state into said mold and over said gelled resin coating to form a substrate layer, said substrate layer including a catalyst which increases a temperature of said substrate layer and facilitates hardening;

building a dam atop a gelled surface of said substrate layer for receiving a subsequent layer of substrate material atop said gelled surface of said substrate layer to produce a built-up edge;

cooling and hardening said layers of substrate material causing said continuous layer of a high quality resin coating material to cure and harden and to bond to said substrate layer; and

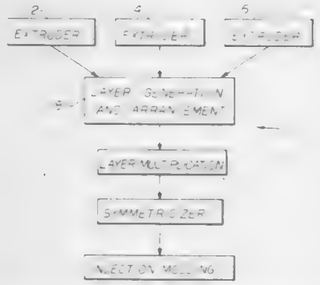
removing the finished countertop from within the mold.

5,628,950

METHOD AND APPARATUS FOR PRODUCING MULTILAYER PLASTIC ARTICLES

Walter J. Schrenk; Ranganath K. Shastri, both of Midland; Herbert C. Roehrs, Beaverton; Ralph E. Ayres, Midland; Mark A. Barger, Midland, and Jeffrey N. Bremmer, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 973,962, Nov. 9, 1992, Pat. No. 5,380,479, which is a continuation-in-part of Ser. No. 956,798, Oct. 5, 1992, abandoned, which is a division of Ser. No. 684,467, Apr. 11, 1991, Pat. No. 5,202,074, which is a continuation of Ser. No. 456,718, Dec. 26, 1989, abandoned. This application Sep. 30, 1994, Ser. No. 315,374
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[6] B29C *45/16*
U.S. Cl. 264—241 **1 Claim**



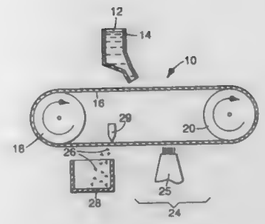
1. A method of making a multilayer plastic article comprising the steps of:

providing first and second diverse thermoplastic materials;

coextruding via a coextrusion feedblock device a first composite stream comprised of discrete, generally planar and parallel layers of said first and second diverse thermoplastic materials;

manipulating via one or more interfacial surface generators said first composite stream to form a second composite stream having an increased number of layers of substantially uniform thickness; and

directly injection molding said second composite stream into an article having a desired configuration so as to form said multilayer plastic article.

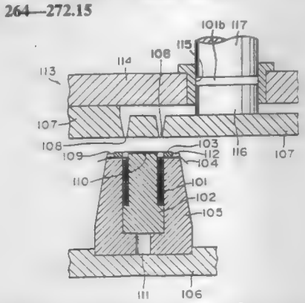


5,628,951

METHOD OF PRODUCING A CORELESS ARMATURE

Goro Kitajima; Naohiro Hanaoka, both of Hachiohji, and Mitsuo Nasu, Tachikawa, all of Japan, assignors to Olympus Optical Company Limited, Japan

Division of Ser. No. 183,952, Jan. 19, 1994, Pat. No. 5,460,503. This application May 31, 1995, Ser. No. 455,180
Claims priority, application Japan, Jan. 19, 1988, 63-9244
Int. Cl.[6] B29C *45/02;45/14*
U.S. Cl. 264—272.15 **4 Claims**



1. A method of producing an armature for a revolving electric device, comprising the steps of:

positioning a plurality of armature windings which are prewound into a mold to form a desired shape, leading respective terminals of said armature windings through an upper surface of said mold so that they extend outside the mold, fixing parts over the upper surface of the mold where said terminals are led out by pressing them through an elastic ring member having an internal wall extending to a runner plate, charging a molding synthetic resin material through a gate of said runner plate into a void formed by said runner plate, the internal wall of said elastic ring member, said mold and said armature windings, curing said molding synthetic resin material to obtain a molded item, and withdrawing the molded item from the mold while removing said elastic ring member, wherein said elastic ring member comprises an elastic resin ring plate and is fixed to a runner plate.

5,628,952

PRECISELY SHAPED PARTICLES AND METHOD OF MAKING THE SAME

Gary L. Holmes, Vadnais Heights; Scott R. Culler, Burnsville, both of Minn.; David H. Hardy, New Richmond; William A. Hendrickson, St. Joseph, both of Wis.; Thomas P. Klun, Lakeland, Minn.; Kimberly K. Harmon; Robert V. Heiti, both of Hudson, Wis.; Kathryn M. Spurgeon, River Falls, Wis., and Charles J. Studiner, III, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 444,073, May 19, 1995, abandoned, which is a division of Ser. No. 85,638, Jun. 30, 1993, Pat. No. 5,549,962. This application Jun. 24, 1996, Ser. No. 668,786
Int. Cl.[6] C08J *5/00*
U.S. Cl. 264—331.11 **40 Claims**

1. A method of making a plurality of discrete precisely shaped composites comprising the steps of:

(a) providing a production tool which has at least one continuous surface, said production tool comprising a plurality of cavities;

(b) providing a dispensing means capable of introducing a binder precursor comprising a thermosetting resin into said cavities;

(c) providing a means within a curing zone for at least partially curing said binder precursor;

(d) introducing said binder precursor onto said production tool so as to fill at least a portion of at least two of said cavities;

(e) continously moving said production tool through said curing zone wherein radiation energy is transmitted through said production tool to at least partially cure said binder precursor to provide a solidified binder having a shape corresponding to that portion of the production tool into which the binder precursor has been introduced;

(f) removing said solidified binder from said production tool; and

(g) converting said solidified binder into a plurality of discrete, precisely shaped composites.

5,628,953

PROCESS FOR PRODUCING PERPENDICULAR MAGNETIC FILM

Kousaku Tamari, Hiroshima, Japan, assignor to Toda Kogyo Corporation, Japan

Division of Ser. No. 158,854, Nov. 29, 1993, Pat. No. 5,496,631. This application Dec. 7, 1995, Ser. No. 568,825
Claims priority, application Japan, Nov. 30, 1992, 4-345241
Int. Cl.[6] B29C *71/02*
U.S. Cl. 264—346 **2 Claims**

1. A process of preparing a perpendicular magnetic film comprising annealing at a temperature of 280° to 450° C. a Co- and Ni-containing multilayered film comprising a multiplicity of multilayered units formed on a substrate, each unit composed of:

(1) a magnetite $FeOx.Fe_2O_3(0<x\leqq 1)$layer or a magnetite $FeOx.Fe_2O_3$ $(0<x\leqq 1)$ layer which also contains Co, Ni or a mixture of Co and Ni diffused into the magnetite, and

(2) an oxide layer comprising Co, Ni or a mixture of Co and Ni, provided that the magnetite layer (1) and the oxide layer (2) are multilayered so as to contain both Co and Ni in each of the units (1)+(2),

the plane (400) of each magnetite layer (1) in the units being oriented substantially parallel to said substrate, each unit having a thickness of not more than 300 Å, the molar ratio of Co to Fe in the multilayered film being 0.005 to 0.32, and the molar ratio of Ni to Co in the multilayered film being not less than 0.6.

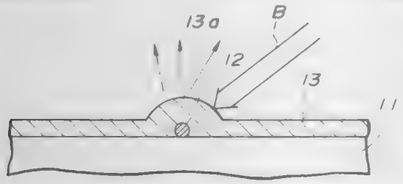
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5,628,954

PROCESS FOR DETECTING FINE PARTICLES

Junichi Sato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 121,366, Sep. 15, 1993, Pat. No. 5,496,506. This application Jun. 1, 1995, Ser. No. 457,494
Claims priority, application Japan, Sep. 21, 1992, 4-250306
Int. Cl.[6] H01L *21/304*
U.S. Cl. 438—16 **10 Claims**



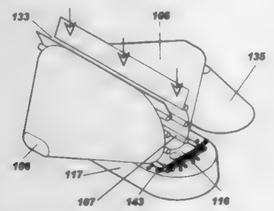
1. A process for detecting fine particles comprising the steps of:
forming a sublimable thin film on an essential surface of a wafer on which fine particles are present,
irradiating said surface of the wafer with a laser beam,
receiving a reflected beam from said surface which reflected beam is scattered by the presence of said fine particles, and
detecting said particles from said received scattered beam.

5,628,955

METHOD OF MANUFACTURE OF STRUCTURAL PRODUCTS

Edward E. Houk, 6106 Townhill, San Antonio, Tex. 78238-5033

Filed Apr. 26, 1995, Ser. No. 429,531
Int. Cl.[6] B28B *1/52;5/02*
U.S. Cl. 264—426 **13 Claims**



1. A method of fabricating a product by setting of a cementitious mixture consisting of fibers, setting agents, and cement, comprising the steps of:
(a) coating said fibers with setting agents and cement in optimum amounts to effect setting of said cementitious mixture at a selected time to produce a strong product without shrinkage after setting thereof;
(b) forcing said fibers coated with setting agents and cement into a downwardly directed sheet flow;
(c) applying opposing, repelling magnetic fields to said sheet flow of said fibers coated with setting agents and cement;
(d) providing grids of electrically conductive and magnetizable rods in proximity of said sheet flow of said fibers coated with setting agents and cement;
(e) aligning fibers by passing said sheet flow of said fibers coated with setting agents and cement between said grids of electrically conductive and magnetizable rods and said magnetic fields to effect alignments of said fibers coated with setting agents and cement conforming with said grids of electrically conductive and magnetizable rods;
(f) providing a shaping device having attracting magnetized surfaces corresponding to said product;
(g) moving said shaping device horizontally through said sheet flow of said fibers coated with setting agents and cement while depositing layers of said fibers coated with setting agents and cement upon said attracting magnetized surfaces in continuous layers while maintaining alignments of said fibers as provided here before in step (e) of aligning fibers;
(h) and permitting said cementitious mixture to set into solid form.

5,628,956

METHOD FOR MANUFACTURING A RUBBER ARTICLE

Martin Theusner, Gehrden, and Hans-Hinrich Rickert, Korbach-Eppe, both of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

Filed Feb. 24, 1995, Ser. No. 399,100
Claims priority, application Germany, Mar. 15, 1994, 44 08 793.4; European Pat. Off., Feb. 9, 1995, 95101775
Int. Cl.[6] B29C *35/00*
U.S. Cl. 264—438 **21 Claims**



1. A method of manufacturing a rubber article, said method comprising the steps of:
a) shaping a green article;
b) producing a vulcanized rubber powder from rubber mixtures containing anti-aging compounds but being free of fibers and butyl rubber;
c) preparing a first solvent-free powdery release agent comprised of powder particles, the first release agent comprising
1) at least 10% of said vulcanized rubber powder and
2) a compound preventing rubber adhesion of the rubber powder particles within the first release agent;
d) blowing the solvent-free powdery release agent onto the green article in order to coat the green article with the first release agent;
e) providing during blowing an electrostatic potential difference between the green article and the first release agent for driving the powder particles of the first release agent onto the green article;
f) placing the green article coated with the first release agent into a vulcanization mold; and
g) vulcanizing the green article.

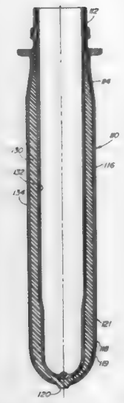
5,628,957

METHOD OF FORMING MULTILAYER CONTAINER WITH POLYETHYLENE NAPHTHALALTE (PEN)

Wayne N. Collette; Steven L. Schmidt, both of Merrimack, and Suppayan M. Krishnakumar, Nasua, all of N.H., assignors to Continental PET Technologies, Inc., Florence, Ky.

Continuation-in-part of Ser. No. 165,571, Dec. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 82,171, Jun. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 909,961, Jul. 7, 1992, abandoned. This application Dec. 5, 1994, Ser. No. 349,173
Int. Cl.[6] B29C *49/22*
U.S. Cl. 264—512 **40 Claims**

1. A method of forming a container having a substantially transparent multilayer sidewall comprising;
forming at an elevated temperature a preform having a substantially amorphous and transparent multilayer sidewall-forming



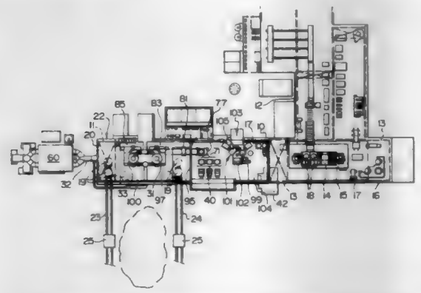
portion including first and third layers of a first polymeric material and a second core layer between the first and third layers of a second polymeric material;
wherein the first polymeric material comprises on the order of 80–100% PEN and 0–20% PET by total weight of the layer, and the second polymeric material is a substantially nonstrain-crystallizable polyester which remains substantially transparent when stretched-within an orientation temperature range of the first polymeric material;
cooling below the glass transition temperature of the first polymeric material and then reheating the preform within the orientation temperature range of the first polymeric material, wherein the preform is reheated from the exterior such that heat is transferred across the core layer; and
expanding the sidewall-forming portion within the orientation temperature range of the first polymeric material to form a container having a substantially transparent multilayer sidewall with strain-crysttallized layers of the first polymeric material.

5,628,958

MELT SHOP LAYOUT

William R. Frank, Bettendorf, Iowa, assignor to IPSCO Enterprises Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 351,693, Dec. 8, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 465,396
Int. Cl.[6] C21B *7/00*
U.S. Cl. 266—143 **11 Claims**



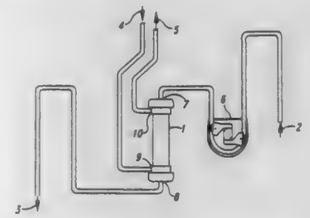
1. In combination, a melting facility for a steel mill that accepts scrap iron and steel as an input and produces a molten steel output and a caster taking as an input the molten steel output of the melting facility and producing a cast slab output, wherein the melting facility is arranged in a longitudinally extending and spaced array in a single-aisle layout comprising the following components in spaced sequence:
a) at least a pair of longitudinally aligned and spaced electric arc primary melting furnaces;
b) a ladle metallurgical refining facility having at least a pair of longitudinally aligned and spaced operating stations; and
c) at least one overhead crane transversely bracketing said furnaces and said refining facility and capable of longitudinal movement along the single-aisle layout of the melting facility;
wherein the caster is located in the vicinity of the downstream end of the ladle metallurgical refining facility and in longitudinal alignment with the components of the melting facility; and wherein the cast slab output of the caster extends at a selected angle to said longitudinally extending and spaced array.

5,628,959

COMPOSITION AND METHODS FOR STERILIZING DIALYZERS

Robert D. Kross, Bellmore, N.Y., assignor to Alcide Corporation, Redmond, Wash.

Filed Apr. 3, 1995, Ser. No. 417,061
Int. Cl.[6] A01N *25/02;59/08;* **A61L** *2/18;* **B08B** *3/08*
U.S. Cl. 422—37 **26 Claims**



1. A method for disinfecting a dual-chamber hemodialyzer having a blood side and a dialysate side separated by a dialysis membrane, wherein the membrane has a blood contact surface and a dialysate contact surface, comprising:
(a) contacting a blood contact surface and a dialysate contact surface of a dialysis membrane with an effective amount of an aqueous sterilant comprising a protic acid and a metal chlorite, and wherein the sterilant has a pH ranging from about 2.3 to 4.2;
(b) replacing the sterilant in contact with the dialysate contact surface of the dialysis membrane with an aqueous solution such that the pH of the sterilant in contact with the blood contact surface of the dialysis membrane increases to at least about 5.0 to yield a pH-adjusted sterilant; and
(c) subsequently replacing the pH-adjusted sterilant in contact with the blood contact surface of the dialysis membrane with an isotonic saline solution.

5,628,960

COMPOSITE CELLULOSE NITRATE MEMBRANE ON POLYESTER SUPPORT

Hans Beer, Bösinghausen, and Klaus Froese, Hardegsen, both of Germany, assignors to Sartorius AG, Goettingen, Germany

Filed Sep. 13, 1995, Ser. No. 527,378
Claims priority, application Germany, Oct. 27, 1994, 44 38 381.9
Int. Cl.[6] B01D *39/14*
U.S. Cl. 422—56 **6 Claims**

1. A composite microporous cellulose nitrate membrane comprising a polymeric blend of cellulose nitrate and cellulose acetate cast from a casting solution onto a polyester support which, after casting, exhibits an isotropic structure wherein said casting solution comprises 6 to 13 wt % water added to a polymeric blend

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solution comprising the following components in the approximate weight percentage noted:

cellulose nitrate	5–15 wt %
cellulose acetate	0.075–0.5 wt %
ethanol	20–40 wt %
butanol	5–15 wt %
methyl acetate	balance.

5,628,961

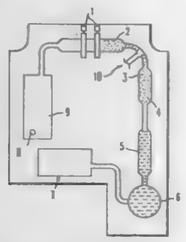
APPARATUS FOR ASSAYING VISCOSITY CHANGES IN FLUID SAMPLES AND METHOD OF CONDUCTING SAME

Graham Davis, Plainsboro, N.J.; Imants R. Lauks, Rockcliff Park, Canada, and Michael P. Zelin, Brooklyn, N.Y., assignors to i-Stat Corporation, Princeton, N.J.

Division of Ser. No. 142,130, Oct. 28, 1993, Pat. No. 5,447,440. This application Mar. 30, 1995, Ser. No. 413,836

Int. Cl.[6] G01N *21/00*

U.S. Cl. 422—63 **70 Claims**



1. A cartridge for measuring a change in the viscosity of a fluid sample comprising:

(a) a housing capable of being charged with a fluid sample and equipped with a sample displacement means for applying a force against said fluid sample effective to displace at least a portion of said fluid sample within said housing;

(b) at least one reagent, contained within said housing, capable after contact with said fluid sample of promoting a change in the viscosity of said fluid sample;

(c) at least one sensing means, contained within said housing, capable of detecting the displacement of said fluid sample.

5,628,962

APPARATUS FOR OPENING AND CLOSING REAGENT CONTAINERS

Katsuhiro Kanbara, and Hiroyasu Uchida, both of Hitachinaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan, and Boehringer Mannheim GmbH, Mannheim, Germany

Filed Sep. 20, 1995, Ser. No. 530,602

Claims priority, application Japan, Sep. 21, 1994, 6-226225

Int. Cl.[6] G01N *35/10*

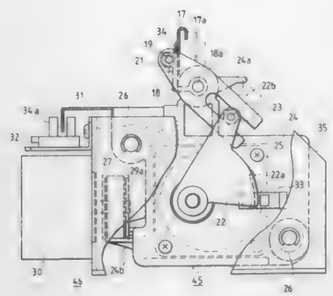
U.S. Cl. 422—63 **21 Claims**

1. An apparatus for transferring a liquid from a liquid container to a liquid receiving container, comprising:

a movable container holding table for holding a plurality of liquid containers, each of the liquid containers having a container body accommodating a liquid, an opening portion, and a cap attached to the container body so as to be capable of opening and closing the opening portion;

a cap manipulator for manipulating the cap so as to open the opening portion;

a pipetter for aspirating the liquid in the liquid container whose opening portion is opened therethrough and delivering the aspirated liquid to a liquid receiving container; and



means for moving the cap manipulator between first and second positions spaced apart from each other, the cap manipulator manipulating the cap so as to open the opening portion at the first position;

wherein the cap is hinged to the liquid container body so as to be rotatable around a fist rotating axis;

wherein each cap has a projecting portion and the cap manipulator comprises a hook, the cap manipulator engaging the hook with the projecting portion and moving the hook so as to open the opening portion of the liquid container having the protecting portion with which the hook is engaged;

wherein the hook has a second rotating axis positioned in the proximity of the first rotating axis so as to be rotated around the second rotating axis; and

wherein the cap manipulator rotates the hook around the second rotating axis in a first rotating direction so that the hook is directed to the cap, moves the hook in a horizontal direction so that the hook is located at a position at which the hook is capable of being engaged with the projecting portion and then rotates the hook around the second rotating axis in a second rotating direction reverse to the first rotating direction with the hook being engaged with the projecting portion so as to open the opening portion.

5,628,963

APPARATUS FOR QUANITATIVE EVALUATION OF AGGLUTINATION REACTIONS

Paul Meller, Langen; Susanne Scheuermann, Bad Homburg, and Matthias Zimmermann, Sulzbach, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 44,474, Apr. 9, 1993, which is a division of Ser. No. 796,247, Nov. 21, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 477,632

Claims priority, application Germany, Nov. 23, 1990, 40 37 245.6

Int. Cl.[6] G01N *21/49*

U.S. Cl. 422—73 **7 Claims**

1. A quantitative evaluation apparatus comprising:

a condenser;

means for holding a transparent specimen slide, the holding means including a movable plate having a cutout defining a measuring field;

an objective;

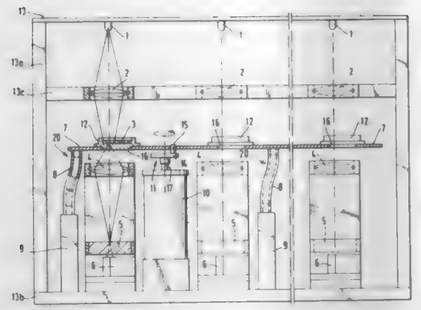
a transparent plate;

an optoelectric evaluation device;

a frame;

a support connected to the movable plate via a connecting element, the support including a support plate that is connected to the frame, the movable plate being supported on the support plate via pins guided through thrust bearings;

a light source constructed and positioned so as to emanate a beam of light along a path sequentially through the condenser, the measuring field, the objective, the transparent plate and to the optoelectric evaluation device; and



means for orbitally agitating in a single plane the holding means while the measuring field is in the path, the agitating means including a drive motor having a shaft, and a coupling connecting the drive motor to the movable plate, the coupling being arranged offset from and parallel to the motor shaft.

5,628,964

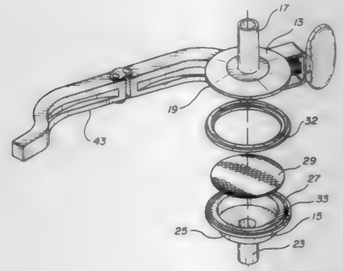
MASTITIS DETECTING DEVICE

Henry Tassitano, R.D. 2 Box 213, Dunk Hill Rd., Walton, N.Y. 13856

Filed Sep. 18, 1995, Ser. No. 529,595

Int. Cl.[6] A01S *5/013;5/04*

U.S. Cl. 422—101 **9 Claims**



1. A mastitis detecting device for use with a milking machine having a milk line feeding milk from a milk producing animal to a bulk milk line and further having claws for attachment to the udders of a milk producing animal for the purpose of milking same, said mastitis detecting device including:

a filter container located in the milk line of a milking machine between the claws of the milking machine and the bulk milk line; and

a filter mounted within the filter container, said filter being made from polyester with a Frazier Air Permeability in the range of 450 cfm to 600 cfm and being disposable and having a cross-sectional area larger than the cross-sectional area of the milk line wherein mastitis is detected by mastitic clots clogging the filter causing the claw to drop from the animal.

5,628,965

Patent Not Issued For This Number

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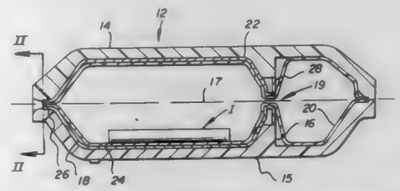
MEDICAL INSTRUMENT SHIELD AND POUCH FOR MICROWAVE STERILIZATION

Kenneth D. Corby, Rochester; Francisco Chiarilli, Spencerport; David E. Foeller, Batavia; Fugui He, Penfield; Jacob M. Shmois, Rochester; Peter J. Harissis, Rush; Mary Beth M. Allen, and Mary-Irene E. Condo, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 482,719, Jun. 7, 1995, abandoned, which is a division of Ser. No. 222,211, Apr. 4, 1994, Pat. No. 5,505,905. This application Jun. 12, 1996, Ser. No. 662,302

Int. Cl.[6] A61L *9/12*

U.S. Cl. 422—102 **5 Claims**



1. A sealable pouch for sterilizing instruments comprising a first sheet of pouch material sealed to a second sheet of pouch material along first, second parallel side edges, and a third perpendicular end edge, and a central seal located between said first and second sealed side edges further sealing said first and second sheets and spaced from said third end edge, said central seal defining a fluid retaining portion and an instrument retaining portion separated at least in part from said fluid retaining portion, said central seal defining at least one steam/condensate slot providing a passage between said fluid retaining portion and said instrument retaining portion, each said steam/condensate slot being located between said first and second sealed sheets and beside said central seal, said central seal having a shield-fitting slot sealed from said fluid retaining and instrument retaining portions and said slot permitting said pouch to be oriented in a container.

5,628,967

METHOD AND A DEVICE FOR MONITORING THE INTERNAL CIRCULATION IN A FLUIDIZED BED REACTOR, AND A REACTOR PROVIDED WITH SUCH A DEVICE

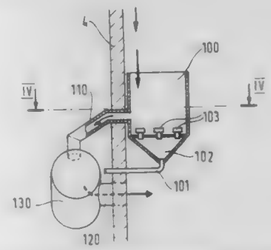
Silvestre Suraniti, Paris, and Jean-Xavier Morin, Neuville Aux Bois, both of France, assignors to GEC Alsthom Stein Industrie, Velizy-Villacoublay, France

Filed Jul. 11, 1995, Ser. No. 499,912

Claims priority, application France, Jul. 28, 1994, 94 09365

Int. Cl.[6] B01J *8/18*

U.S. Cl. 422—139 **15 Claims**



1. In combination with a circulating fluidized bed reactor including a bottom zone into which a fluidization gas is injected, and a top zone surrounded by walls; a monitoring device for continuously monitoring the internal circulation flow-rate of solid particles in the circulating fluidized bed reactor by continuously and locally

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measuring the flow-rate of solids running down along said walls, said monitoring device comprising:

a sampling tank for sampling internal circulation solids, which tank is fixed against one of said walls of said reactor and is provided with fluidization means;

a measuring device which measures the flow-rate of said solids;

a removal pipe for removing said solids from said tank and conveying them to said measuring device for measuring the flow-rate of said solids; and

a return pipe for returning said solids from said measuring device to an inside of said reactor.

5,628,968

APPARATUS FOR PURIFYING POLLUTANT-CONTAINING WASTE AIR FROM INDUSTRIAL PLANTS BY REGENERATIVE AFTERBURNING

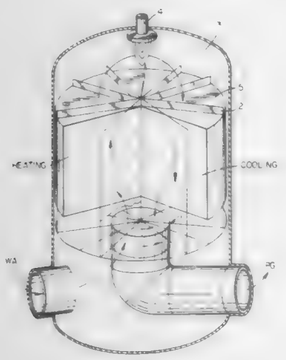
Joachim Hug, Sindelfingen, and Apostolus Katefidis, Gärtringen, both of Germany, assignors to Eisenmann Maschinenbau KG, Böblingen, Germany

Filed May 18, 1994, Ser. No. 245,750

Claims priority, application Germany, Dec. 27, 1993, 43 44 700.7

Int. Cl.[6] F01N *3/10;* **B01J** *23/90;* **F23B** *5/00*

U.S. Cl. 422—173 **8 Claims**



1. An apparatus for purifying pollutant-containing waste air from industrial plants by regenerative afterburning, the apparatus comprising a reactor with a waste air inlet and a purified gas outlet, a rotary valve for controlling flow of the waste air through the waste air inlet into the reactor and for controlling flow of the purified gas through the purified gas outlet from the reactor, the reactor further comprising a reaction chamber and a heat exchanger arranged between the rotary valve and the reaction chamber, a burner mounted in the reaction chamber for heating the heat exchanger, means for conducting the waste air from the waste air inlet through the heat exchanger to the reaction chamber and for conducting purified gas from the reaction chamber through the heat exchanger to the purified gas outlet, wherein the heat exchanger is of a foamed ceramic material having open pores, and wherein the pores of the ceramic material have pore sizes, wherein the pore sizes are larger adjacent the waste air inlet.

5,628,969

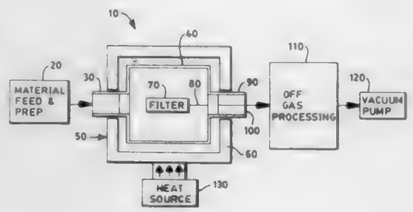
CHEMICAL SEPARATION AND REACTION APPARATUS

Randy Aulbaugh, Irving, and Gregory G. Hawk, Coppell, both of Tex., assignors to Mercury Treatment Alternatives, Inc., Carrollton, Tex.

Filed Oct. 18, 1995, Ser. No. 544,602

Int. Cl.[6] B01J *8/04;* **B01D** *11/02*

U.S. Cl. 422—190 **20 Claims**



1. A chemical processing and reaction apparatus for the separation of volatile from non-volatile substances and volatile substances, one from the other, comprising:

an outer shell;

a vacuum thermal treatment vessel rotatably disposed within the outer shell;

a rotatable sleeve and seal arrangement connected to at least one end of the vessel;

means for transporting material to be processed into the vessel;

an internal filter disposed within the vessel;

means for transporting volatile substances out of the vessel attached to the internal filter;

means for rotating the vessel;

means for cooling the rotatable sleeve and seal arrangement;

means for establishing and maintaining a vacuum pressure within the vessel between 1 and 29 inches of mercury, thereby lowering the boiling point of volatile substances during operation of the apparatus; and

means for heating the vessel to a temperature sufficient to vaporize volatile substances.

5,628,970

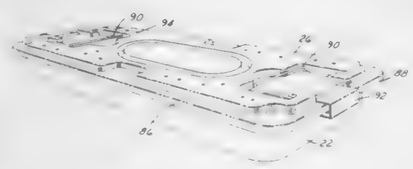
STERILIZATION TRAY ASSEMBLY COMPOSED OF A MINERAL FILLED POLYPROPYLENE

Mark Basile, Grosse Pointe, and Steven Basile, Grosse Pointe Woods, both of Mich., assignors to Healthmark Industries, Co., St. Clair Shores, Mich.

Filed Sep. 26, 1995, Ser. No. 534,194

Int. Cl.[6] A61L *2/06;2/20*

U.S. Cl. 422—297 **17 Claims**



1. A sterilization tray assembly comprising:

a base tray having a floor and a peripherally extending wall, one of the floor and the wall having ventilation apertures therein;

wherein the base tray is made of polypropylene containing from 20% to 50% of a filler based on the weight of the filled polypropylene, said filler consisting essentially of a mineral filler.

5,628,971

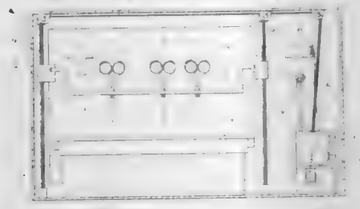
APPARATUS FOR STORING AND STERILIZING OBJECTS

Geraldine U. Norman, 4018-D Bannockburn Pl., Charlotte, N.C. 28211

Filed Jan. 17, 1995, Ser. No. 373,630

Int. Cl.[6] A61L *9/00*

U.S. Cl. 422—301 **5 Claims**



1. An apparatus for storing and sterilizing a plurality of hair-cutting shears each having a handle for being gripped by a user and blades for cutting, said apparatus comprising:

(a) a housing;

(b) a sterilizing solution contained in a pan in said housing;

(c) a tray supported within said housing on first and second spaced support shelves and being vertically movable between a shear storing position where the shears reside entirely above the sterilizing solution and shear sterilizing position where the blades are immersed in the sterilizing solution, said tray having a plurality of holes therein for receiving respective blades of said shears therethrough, and supporting the shears in a substantially upright condition with the blades extending vertically downwardly through the holes on a bottom side of said tray, and the handles engaging said tray at respective holes and extending vertically upwardly from the holes on a top side of said tray;

(d) elevator means for lowering said tray downwardly from the shear storing position to the shear sterilizing position, and for returning said tray from the shear sterilizing position to the shear storing position, said elevator means comprising a pair of lift cables and an actuating arm, the lift cables interconnecting the first and second support shelves and the actuating arm, and the actuating arm being movable in a lifting direction and a lowering direction for lifting and lowering the support shelves to move the shears out of and into the sterilizing solution; and

(e) first and second return springs connected under tension at respective opposing ends thereof to a base of the housing and to the first and second support shelves for urging the first and second support shelves downwardly and supplying tension to the lift cables.

5,628,972

PROCESS FOR REMOVING IRON IN SODIUM ALUMINATE LIQUORS OBTAINED FROM ALKALINE ATTACK OF BAUXITE CONTAINING ALUMINA MONOHYDRATE

Jean Deville, Aix-en-Provence, and Jean-Michel Lamerant, Bouc Bel Air, both of France, assignors to Aluminium Pechiney, Courbevoie, France

Filed Dec. 13, 1995, Ser. No. 571,470

Claims priority, application France, Dec. 22, 1994, 94 15727

Int. Cl.[6] C01F *1/00*

U.S. Cl. 423—121 **17 Claims**

1. A process for reducing iron content of Bayer process liquors, comprising the following steps in the order shown:

a) grinding monohydrate bauxite;

b) desilicating the ground bauxite with an aliquot of decomposed liquor;

c) digesting with remaining alkaline decomposed liquor the desilicated and ground bauxite at a temperature higher than 200° C. in a reactor, to form a suspension comprising insoluble residue or red mud in a supersaturated sodium aluminate liquor;

d) cooling the suspension by decreasing pressure in the reactor;

e) cooling, diluting, and decanting the suspension to separate the insoluble residue or red mud from the supersaturated sodium aluminate liquor; and

f) filtering the separated supersaturated sodium aluminate liquor and then decomposing the liquor in the presence of seeds to form decomposed liquor,

wherein during cooling of the suspension by decreasing pressure in the reactor, a calcium containing compound selected from the group consisting of lime and calcium salts is injected into the suspension while the suspension is at a temperature higher than 140° C., to remove iron from the suspension.

5,628,973

LITHIUM CELL TREATING METHOD AND LITHIUM CELL TREATING APPARATUS

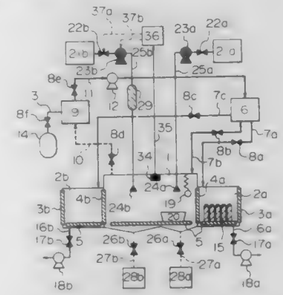
Katsunori Nishimura; Hidetoshi Honbo; Akihiro Gotoh, all of Hitachi; Mamoru Mizumoto, Katsuta, and Tatsuo Horiba, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,220

Claims priority, application Japan, Apr. 1, 1993, 5-075443; Sep. 20, 1993, 5-232778

Int. Cl.[6] C01D *15/02;15/00;* **H01M** *6/50*

U.S. Cl. 423—179.5 **16 Claims**



1. A method for treating a plurality of cells each cell comprising an electrode containing lithium and an electrolyte solution, said method comprising:

a first step of exposing the electrodes containing lithium in the cells;

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a second step of treating the exposed electrodes and the cells with a cleaning solution for removing the electrolyte solution from the electrodes and from said cells;
a third step of treating the exposed and cleaned electrodes with a first treating liquid reactive with the lithium in said electrodes to form reaction products on surfaces of said electrodes;
a fourth step of treating said electrodes having reaction products formed thereon with a second treating liquid more reactive with the lithium in said electrodes than said first treating liquid to remove the reaction products from said electrodes;
a fifth step of recovering the cleaning solution, the first treating liquid and the second treating liquid after each of the second, third and fourth steps, separately from each other; and
a sixth step of separating the electrodes treated with the second treating liquid from said cells.

5,628,974

PROCESS FOR TREATING BY-PRODUCTS OF LITHIUM/SULFUR HEXAFLUORIDE

Luis E. Lema, North Attleboro, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 7, 1995, Ser. No. 499,244
Int. Cl.[6] C01D *15/00*
U.S. Cl. 423—179.5 **2 Claims**



1. The process for treating a solid reaction by-product of a reaction of lithium and sulfur hexafluoride wherein said by-product comprises primarily lithium sulfide, lithium fluoride, aluminum oxide and lithium said process comprises:
converting said lithium to lithium hydroxide by reaction with water:
converting said lithium sulfide and lithium hydroxide to a water soluble lithium salt by reaction with hydrochloric acid to produce hydrogen sulfide gas;
converting said hydrogen sulfide gas to a sodium or potassium sulfate: and
recovering a mixture of lithium fluoride and aluminum oxide and converting remaining lithium in solution to lithium carbonate.

5,628,975

METHOD FOR PURIFYING EXHAUST GAS FROM A DIESEL ENGINE

Makoto Horiuchi, Himeji; Noboru Miyake, Hyogo; Toshimasa Kushihara, and Koichi Saito, both of Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 79,843, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 826,663, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 475,929, Feb. 6, 1990, abandoned. This application Jan. 24, 1994, Ser. No. 185,159
Claims priority, application Japan, Feb. 6, 1989, 1-25821
Int. Cl.[6] B01D *53/94*
U.S. Cl. 423—213.2 **5 Claims**

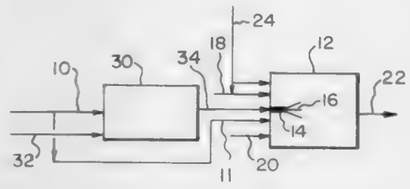
1. A method for treating exhaust gases from a diesel engine, said gases comprising, at 200° C. or less, 100 mg or less of fine particulate substances per m^3 of exhaust gas, and said fine particulate substances comprising at least 20% by weight of soluble organic fraction, to reduce the amount of soluble organic fraction-containing particulate substances contained therein, said method comprising passing the particulate substance-containing diesel engine exhaust gases through a catalyst which comprises a flow-through metal or ceramic honeycomb carrier having 250 through cells per square inch parallel to the direction of flow of the exhaust gases and at least one catalytically active component deposited thereon selected from the group consisting of platinum, palladium, rhodium, iridium, vanadium, molybdenum, copper, silver, gold, rare earth elements and partially substituted perovskite composite oxides having an oxygen vacancy, and optionally, at least one refractory inorganic oxide selected from the group consisting of alumina, silica, titania, zirconia, and zeolite, said catalyst having a cross-sectional area, at the inlet part of the exhaust gases cut by a plane perpendicular to the direction of flow of the exhaust gases of 20 to 80 cm^2 per liter of the displacement of the engine, a hydraulic diameter of the through cells of 1.10 to 1.40 mm, and a percentage of open frontal area at the inlet part of the catalyst of from 50 to 85%.

5,628,976

COFIRING BIOSOLIDS IN A SPENT SULFURIC ACID REGENERATION FACILITY

Goutam H. Shahani, Allentown; Harold H. Gunardson, Kempton, and John M. Fernbacher, Allentown, all of Pa., assignors to Air Products and Chemicals, Allentown, Pa.

Filed Oct. 17, 1995, Ser. No. 544,046
Int. Cl.[6] C01B *17/90;17/50*
U.S. Cl. 423—531 **9 Claims**



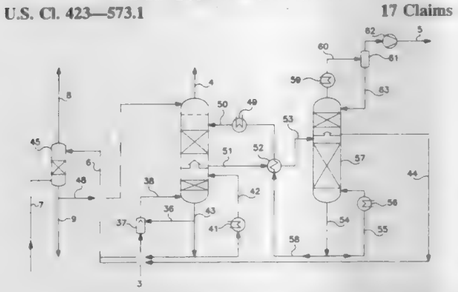
1. In a process for regenerating spent sulfuric acid by dissociation of the spent acid in a furnace into its constituents—sulfur dioxide, water and oxygen, followed by recovery of sulfur dioxide, oxidation of sulfur dioxide to sulfur trioxide and hydration of sulfur trioxide to form sulfuric acid a process for improving the dissociation step comprising:
conditioning dewatered biosolids from municipal or industrial wastewater treatment containing from about 70% to about 85% water by mixing together in a reaction zone the dewatered biosolids and at least a portion of the spent sulfuric acid for a period of time of from about 0.5 to about 5 hours thereby enhancing breakdown and combustion of said biosolids at the temperature of the furnace;
introducing the spent sulfuric acid and conditioned dewatered biosolids mixture, air enriched to contain greater than 21% oxygen, and a fuel into said furnace maintained at a temperature of from about 1800° to about 2000° F; and
controlling the quantity of spent sulfuric acid, the quantity of conditioned biosolids, the quantity of fuel and the degree of oxygen enrichment of said air to effect complete dissociation of said spent sulfuric acid and incineration of said biosolids.

5,628,977

PROCESS FOR THE DESULFURIZATION OF A CRUDE GAS CONTAINING H_2S

Michael Heisel, Pullach, and Freimut Marold, Ottobrunn, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

PCT No. PCT/EP93/03300, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/12430, PCT Pub. Date Jul. 9, 1994
PCT Filed Nov. 24, 1993, Ser. No. 436,471
Claims priority, application Germany, Nov. 26, 1992, 42 39 811.8
Int. Cl.[6] B01D *53/48;53/50;53/52*
U.S. Cl. 423—573.1 **17 Claims**



1. In a process for the desulfurization of a crude gas stream containing at least hydrogen sulfide comprising the steps:
passing said crude gas stream to a Claus plant to produce elemental sulfur and a waste gas;
subjecting the Claus waste gas to a combustion zone to form sulfur dioxide;
scrubbing the waste gas from the combustion zone to recover sulfur dioxide, and
recycling the sulfur dioxide recovered from the scrubbing, wherein the improvement comprises:
splitting the crude gas stream into two portions;
directly supplying the first portion of the crude gas stream into either a Claus furnace or a direct oxidation Claus plant and separating the sulfur from the Claus off-gas;
supplying the residual Claus off-gas and the second portion of the crude gas stream to a combustion zone to oxidize the sulfur and sulfur compounds within the gases into sulfur dioxide;
supplying the combustion zone off-gas to a scrubbing zone where a physical sorbent separates the sulfur dioxide out of the combustion zone off-gas;
venting the sulfur dioxide-depleted gas from the scrubbing zone;
separating the sulfur dioxide from the physical sorbent, and
mixing the separated sulfur dioxide with the first portion of the crude gas stream.

5,628,978

MTW ZEOLITE FOR CRACKING FEEDSTOCK INTO OLEFINS AND ISOPARAFFINS

Jorge Tejada, San Antonio de los Altos; Juan Lujano, Caracas, and Yilda Romero, Edo Aragua, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Dec. 23, 1994, Ser. No. 363,413
Int. Cl.[6] C01B *39/42*
U.S. Cl. 423—705 **10 Claims**

1. A process for preparing a crystalline aluminosilicate characterized by an x-ray diffraction pattern as follows:

Interplanar Spacing D(Å)	Relative Intensity (I/I_o)
12.09	M
11.26	W
10.15	W
9.81	W
7.48	W
6.09	W
4.77	W
4.73	W
4.30	VS
3.99	W
3.87	VS
3.73	M
3.66	W
3.50	VS
3.38	M
3.21	W
3.06	W

the process comprising the steps of:
forming a reaction mixture comprising a source of silica, a source of alumina, water, a source of alkali metal, and a source of tetraethylammonium cation, wherein said mixture exhibits a composition in terms of mole ratios as follows:

SiO_2/Al_2O_3	>120
TEA^+/SiO_2	0.2–0.95
H_2O/SiO_2	20–300
OH^-/SiO_2	0.55–0.65

wherein TEA^+ is said tetraethylammonium cation; and
maintaining said mixture at an elevated temperature so as to provide a crystalline aluminosilicate.

5,628,979

REAGENT FOR TUMOR IMAGING AND THERAPY

Alan W. J. Stuttle, Banstead, Great Britain, assignor to Antisoma Limited, London, England

PCT No. PCT/GB92/01458, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO93/02708, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 6, 1992, Ser. No. 190,130
Claims priority, application United Kingdom, Aug. 6, 1991, 9116925
Int. Cl.[6] A61K *51/00;* **A61M** *36/14*
U.S. Cl. 424—1.11 **31 Claims**

1. An oligopeptide consisting of from 4 to 50 peptide units containing as a triplet therein the amino acid sequence leu-asp-val

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(LDV) and as a result of which the oligopeptide is capable of binding in vivo with pathological tissues containing an LDV binding site, that oligopeptide having attached thereto or conjugated therewith a radioactive label or cytotoxin.

5,628,980

NONIONIC RADIOGRAPHIC CONTRAST AGENTS

Ramachandran S. Ranganathan, Princeton; Thangavel Arunchalam, Plainsboro; Edmund R. Marinelli, Lawrenceville, and Radhakrishna K. Pillai, Kendall Park, all of N.J., assignors to Bracco International B.V., Amsterdam, Netherlands

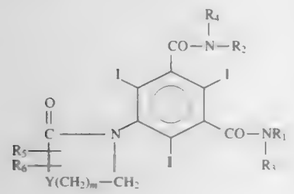
Division of Ser. No. 143,684, Oct. 27, 1993, which is a division of Ser. No. 894,691, Jun. 5, 1992, which is a continuation-in-part of Ser. No. 710,884, Jun. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 617,716, Nov. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 442,869, Nov. 29, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 471,441

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—5 **22 Claims**

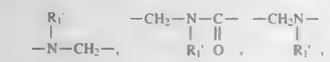
1. A method of imaging a mammalian host comprising the steps of:

administering an effective amount of a contrast medium to the host, the contrast medium comprising a compound of the following formula:



wherein

Y is a single bond, $—CH_2CH_2—$, $—CH_2O—$, $—OCH_2—$,



$—CH_2—$, $—CH_2—CH_2—CH_2—$, —O— or



R_1, R_1' and R_2 are the same or different and are hydrogen, alkyl or hydroxyalkyl;

R_3 and R_4 are the same or different and are hydrogen, alkyl or $—CH_2CH_2OH$; R_5 is hydrogen, alkyl, $—CH_2CH_2OH$, CH_2OH or OH: R_6 is alkyl, $—CH_2CH_2OH$, CH_2OH, OH or hydrogen and may be the same or different than R_5 and m is zero or one, with the proviso that no methylene or methine carbon atom of the heterocyclic ring is attached to both a nitrogen and an oxygen atom and with the additional proviso that when Y is a single bond, m is not zero; and

obtaining an image of all or part of the host.

5,628,981

FORMULATIONS OF ORAL GASTROINTESTINAL DIAGNOSTIC X-RAY CONTRAST AGENTS AND ORAL GASTROINTESTINAL THERAPEUTIC AGENTS

Gary Liversidge, West Chester; W. Mark Eickhoff, Downingtown; Kathleen J. Illig, Phoenixville; Pramod Sarpotdar, Malvern, and Stephen B. Ruddy, Schwenksville, all of Pa., assignors to Nano Systems L.L.C., Collegeville, Pa.

Filed Dec. 30, 1994, Ser. No. 366,841

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—94 **10 Claims**

1. An orally/rectally administrable gastrointestinal diagnostic x-ray contrast formulation comprising:

a—of from about 4 to about 45% w/v of an essentially water-insoluble particulate radiopaque crystalline material having an effective average particle size of less than about 2,000 nm;

b—of from about 0.1 to about 10% w/v of a bioadhesive surfactant stabilizer selected form the group consisting of:

(i) polyethylene-polypropylene glycol block polymers of the formula

$$(\text{polyethylene oxide})_a\text{–}(\text{polypropylene oxide})_b\text{–}(\text{polyethylene oxide})_c$$

wherein

a is 46 to 128;

b is 16 to 67; and

c is 46 to 128; and

c—water to make 100% w/v.

5,628,982

HYDROXY-ARYL METAL CHELATES FOR DIAGNOSTIC NMR IMAGING

Randall B. Lauffer, and Scott K. Larsen, both of Boston, Mass., assignors to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 397,892, Mar. 3, 1995, Pat. No. 5,527,522, which is a division of Ser. No. 254,963, Jun. 7, 1994, Pat. No. 5,422,096, which is a division of Ser. No. 101,903, Aug. 4, 1993, Pat. No. 5,318,771, which is a division of Ser. No. 840,652, Feb. 20, 1992, Pat. No. 5,250,285, which is a continuation of Ser. No. 399,737, Aug. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 860,540, May 7, 1986, Pat. No. 4,880,008, which is a continuation-in-part of Ser. No. 731,841, May 8, 1985, Pat. No. 4,899,755. This application Jun. 6, 1995, Ser. No. 466,471

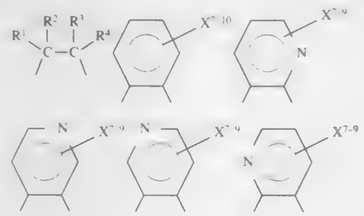
Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.363 **6 Claims**

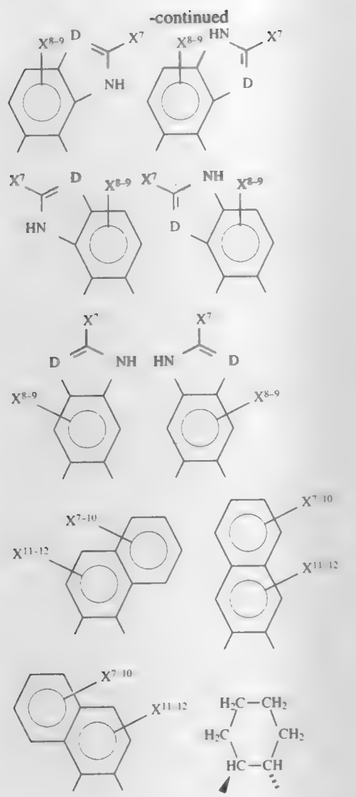
1. A compound comprising

a metal ion selected from the group consisting of gadolinium (III), iron (III), manganese (II), manganese (III), chromium (III), copper (II), dysprosium (III), terbium (III), holmium (III), erbium (III), europium (II), and europium (III), and

Z^1 is selected from the group consisting of:



-continued



wherein

D is one of:

—CH= or —N=;

each X^{1-12} is independently selected from the group consisting of:

H, C_{1-10} alkyl, C_{1-15} arylalkyl, halogen, $—(CH_2)_mCOO^-$, $—(CH_2)_mCONHR^8$, $—(CH_2)_mCOOR^8$, $—(CH_2)_mCOH$, and $—SO_3^-$,

where m is an integer from 0–5;

and each R^{1-8} is independently selected from the group consisting of:

H, C_{1-10} alkyl and C_{1-15} arylalkyl.

5,628,983

SQUID MAGNETOMETRY USING PARAMAGNETIC METAL CHELATES

Jo Klaveness; Thorfinn Ege, both of Oslo, Norway, and Scott M. Rocklage, Los Gatos, Calif., assignors to Nycomed Imaging, Oslo, Norway

Division of Ser. No. 339,740, Nov. 14, 1994, which is a division of Ser. No. 930,521, Nov. 6, 1992, Pat. No. 5,384,109. This application Jun. 6, 1995, Ser. No. 467,272

Claims priority, application United Kingdom, Apr. 2, 1990, 9007408

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9.364 **34 Claims**

1. A method of generating a magnetometric image of a human or non-human animal body comprising administering to said body a physiologically tolerable paramagnetic metal chelate and generating a magnetometric signal of at least part of said body into which said chelate distributes.

5,628,984

METHOD OF DETECTING LUNG DISEASE

Richard C. Boucher, Jr., Chapel Hill, N.C., assignor to University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Jul. 31, 1995, Ser. No. 509,052

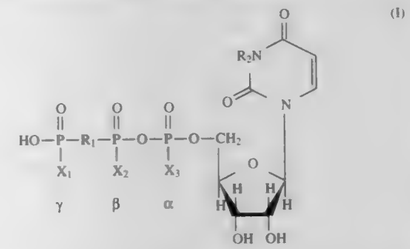
Int. Cl.[6] A61K *31/495*; **C08K** *5/3462*

U.S. Cl. 424—45 **14 Claims**

1. A method of facilitating the obtaining of a mucus sample from at least one lung of a subject, comprising:

administering by inhalation a physiologically acceptable salt to at least one lung of said subject in an amount effective to hydrate lung mucus secretions therein, wherein said physiologically acceptable salt facilitates the removal of said lung mucus from said lung, and

concurrently administering by inhalation to said at least one lung of said subject, in an amount effective to stimulate the secretion of lung mucus therein, a compound of Formula (I) below, or a pharmaceutically acceptable salt thereof:



(I)

wherein:

X_1, X_2, and X_3 are each independently selected from the group consisting of OH and SH;

R_1 is selected from the group consisting of O, imido, methylene, and dihalomethylene; and

R_2 is selected from the group consisting of H and Br.

5,628,985

COMPOSITIONS

Sigrid Stiller, Dormagen, and Gertrud Kawa, Monheim, both of Germany, assignors to Lingner & Fischer GmbH, Germany

Filed May 26, 1995, Ser. No. 452,201

Claims priority, application United Kingdom, Feb. 24, 1994, 9403581; May 27, 1994, 9410654; Dec. 2, 1994, 9424346

Int. Cl.[6] A61K *7/16*; *7/18*

U.S. Cl. 424—49 **16 Claims**

1. A transparent liquid dentifrice which consists essentially of water as an aqueous liquid vehicle in from 15 to 40% by weight of the composition, a particulate silica abrasive material having an average particle size between 1 and 20 μm present in from 10 to 15% by weight of the composition, stably suspended in the liquid vehicle with the aid of a suspending agent; and a humectant system which consists essentially of sorbitol, present in from 50 to 55% by weight of the composition (measured as the 100% active), and polyethylene glycol with average molecular weight in the range 200 to 600, present in from 0.5 to 3% by weight of the composition, wherein the overall viscosity of the dentifrice is sufficient to enable the dentifrice to be squeezed out of a dispenser as a

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continuous strand and not to sink into a toothbrush containing such strand, said dentifrice being free of thickening silicas or pyrogenic silicas.

5,628,986

ORAL COMPOSITIONS

Lowell A. Sanker, Montgomery, and James G. Upson, Springdale, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

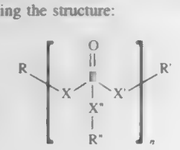
Continuation of Ser. No. 341,716, Nov. 18, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 632,936

Int. Cl.[6] A61K *33/34;7/16;* **A23L** *1/22;1/226*

U.S. Cl. 424—49 **11 Claims**

1. An oral composition, comprising:

a) from about 0.001% to about 25% of at least one phosphate derivative having the structure:



wherein R is a flavorant component selected from the group consisting of hexanol, octanol, decanol, geranolol, ethyl maltol, para-hydroxy phenylbutanone, phenyl ethyl alcohol, thymol, eugenol, eucalyptol, methyl salicylate, ethyl vanillin, vanillin, cinnamaldehyde glycerol acetal ("CGA"), or linalool;

wherein R' and R" are independently selected from the group consisting of R, an adherent component, M^+, M^{++}, C^+, and hydrogen;

wherein X, X', X" are independently selected from the group consisting of oxygen, nitrogen, and sulfur;

wherein n is an integer from 1 to 3;

b) a safe and effective amount of a copper ion source; and

c) an pharmaceutically acceptable oral carrier.

5,628,987

PIGMENTATION ENHANCER AND METHOD

Bryan B. Fuller, Edmond, Okla., assignor to The Board of Regents of the University of Oklahoma, Norman, Okla.

Continuation of Ser. No. 943,998, Sep. 11, 1992, and Ser. No. 451,420, Dec. 15, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,126

Int. Cl.[6] A61K *7/42;7/40;31/35*

U.S. Cl. 424—59 **10 Claims**

1. A method of promoting the tanning of subject's skin, comprising:

treating the skin with a composition of matter for stimulating melanogenesis in melanocytes of human epidermis, the composition disposed in a pharmaceutical carrier capable of delivering the composition to the melanocytes under in vivo conditions, the composition comprising:

an effective amount of a methylxanthine effective in increasing tyrosinase activity in the melanocytes to an amount sufficient to result in increasing levels of melanin in the melanocytes resulting in tanning of the epidermis; and

an effective amount of tyrosine for serving as a tyrosinase substrate.

5,628,988

KETOTRICYCLO[5.2.1.0]DECANE DERIVATIVES

Michael Schwarz, Gross-Gerau; Ingeborg Stein, Erzhausen; Ulrich Heywang, Darmstadt, and Jürgen Eckstein, Rossdorf, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

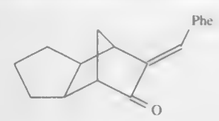
Continuation of Ser. No. 133,192, Oct. 19, 1993. This application Jan. 26, 1996, Ser. No. 592,661

Claims priority, application Germany, Feb. 19, 1992, 42 04 922.9

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **7 Claims**

1. A ketotricyclo[5.2.1.0]decane derivative of the formula I



I

wherein

Phe is a phenyl group which is unsubstituted or substituted by 1 to 5 alkyl or alkoxy groups having 1 to 10 C atoms.

5. A cosmetic formulation, comprising an effective UV radiation-protective amount of a ketotricyclo[5:2.1.0]decane derivative of claim 1 in a cosmetically compatible carrier.

5,628,989

ANTIPERSPIRANT AND DEODORANT

Asao Harashima, Tokyo; Yoshitsugu Morita, and Ryuji Tachibana, both of Chiba Prefecture, all of Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,474

Claims priority, application Japan, Jun. 30, 1994, 6-173618

Int. Cl.[6] A61K *7/32;7/34;7/38*

U.S. Cl. 424—65 **5 Claims**

1. A composition for application to the underarm comprising 5–90% by weight based on the weight of the composition of a silicone rubber powder which is free of silicone oil, the silicone rubber powder having an average particle size of 0.1–200 microns and a JIS A hardness of 35–80; the remainder of the composition comprising an oil, a cyclic diorganosiloxane, an astringent selected from the group consisting of aluminum chlorohydroxide, aluminum hydroxybromide, aluminum chloride, aluminum/zirconium/glycine complexes, mixtures of aluminum chloride with aluminum hydroxychloride, and mixtures of aluminum chloride with aluminum chlorohydroxide, and an antimicrobial agent selected from the group consisting of quaternary ammonium salts, alkyldiaminoethyl glycine chloride solutions, isopropylmethylphenol, and trichlorohydroxydiphenyl ether.

5,628,990

ANHYDROUS COSMETIC PRODUCT CONTAINING DEODORANT AND DESICCANT INGREDIENTS

Richard T. Murphy, Belle Mead, and Wolfgang R. Bergmann, Princeton, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Oct. 25, 1995, Ser. No. 548,150

Int. Cl.[6] A61K *7/32;* **C01B** *35/00*

U.S. Cl. 424—65 **28 Claims**

1. A cosmetic deodorant product comprising an organic matrix which contains a homogeneously dispersed particulate phase which comprises (1) between about 0.5–20 weight percent of discrete crystallites of at least one ingredient selected from alkali metal and ammonium bicarbonates, and (2) between about 0.01–5 weight percent of particulate boron oxide desiccant ingredient, based on product weight.

5,628,991

COSMETIC COMPOSITION CONTAINING A DIAMINOALKANE AS AN ODORLESS ALKALIFYING AGENT

Henri Samain, Bievres; Claude Dubief, Le Chesnay, and Jean Cotteret, Verneuil S/Seine, all of France, assignors to L'Oreal, Paris, France

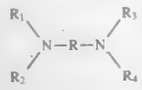
Continuation of Ser. No. 286,169, Aug. 5, 1994, abandoned, which is a continuation of Ser. No. 878,493, May 5, 1992, abandoned. This application May 10, 1995, Ser. No. 437,970

Claims priority, application France, May 6, 1991, 91 05503

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—70.1 **7 Claims**

1. A cosmetic composition for treatment of human keratinous organs comprising, in an aqueous medium having a pH ranging from 5 to 12.5 and being suitable for application to said human keratinous organs, (a) an active agent selected from the group consisting of a reducing agent, a dyeing agent and an oxidizing agent, and (b) at least one diaminoalkane having the formula



(I)

wherein

R represents propylene optionally substituted by hydroxyl or C_1–C_4 alkyl,

R_1, R_2, R_3 and R_4, each independently, represent hydrogen, C_1–C_4 alkyl or C_1–C_4 hydroxyalkyl, said diaminoalkane being present in an amount ranging from 3.7 to 12%, based on the weight of the total composition.

5,628,992

Patent Not Issued For This Number

5,628,993

SUSTAINED RELEASABLE PARENTERAL PHARMACEUTICAL PREPARATIONS AND METHOD OF PRODUCING THE SAME

Yutaka Yamagata, Kobe; Katsumi Iga, and Hiroaki Okada, both of Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 24, 1994, Ser. No. 294,972

Claims priority, application Japan, Aug. 26, 1993, 5-235823

Int. Cl.[6] A61K *38/02;38/21;47/14*

U.S. Cl. 424—85.7 **5 Claims**

1. A sustained releasable parenteral pharmaceutical preparation in cylindrical or columnar form which comprises a matrix containing an interferon-α and a polyglycerol diester of stearic acid or palmitic acid, wherein said polyglycerol has an average polymerization degree of 4.

5,628,994

VIBRIO CHOLERAE STRAIN CVD103HG^R, METHOD OF MAKING SAME, AND VACCINES DERIVED THEREFROM

James B. Kaper, and Myron M. Levine, both of Columbia, Md., assignors to The University of Maryland, Baltimore, Md.

Continuation of Ser. No. 936,829, Aug. 28, 1992, Pat. No. 5,399,494, which is a continuation-in-part of Ser. No. 757,930, Sep. 12, 1991, abandoned, which is a continuation of Ser. No. 581,406, Feb. 17, 1984, Pat. No. 5,135,862, which is a continuation-in-part of Ser. No. 472,276, Mar. 4, 1983, abandoned. This application Dec. 1, 1994, Ser. No. 352,773

Int. Cl.[6] A61K *35/66;35/74;* **C12N** *15/00*

U.S. Cl. 424—93.2 **28 Claims**

1. A vaccine for protecting against cholera comprising *Vibrio cholerae* having the identifying characteristics of *Vibrio cholerae* CVD103Hg^r (ATCC No. 55,456).

5,628,995

CONTROL OF OSTRINIA

Marnix Peferoen; Stefan Jansens, both of Ghent, and Peter Denolf, Gentbrugge, all of Belgium, assignors to Plant Genetic Systems N.V., Belgium

Continuation of Ser. No. 164,781, Dec. 10, 1993, abandoned, which is a continuation of Ser. No. 938,362, Aug. 31, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 377,690

Claims priority, application European Pat. Off., Aug. 19, 1992, 92402307

Int. Cl.[6] A01N *63/00;* **A01H** *4/00;* **A61K** *48/00*

U.S. Cl. 424—93.21 **24 Claims**

1. A method to combat or control *Ostrinia nubilalis*, comprising contacting said *Ostrinia nubilalis* with

a CryIB protein, wherein said CryIB protein comprises the amino acid sequence of SEQ ID NO. 1;

an insecticidal fragment of a CryIB protein, wherein said insecticidal fragment of a CryIB protein comprises the amino acid sequence of SEQ ID NO. 1 from amino acid position 1 to amino acid position 636; or

variants thereof wherein His at position 150 is replaced by Tyr.

2. The method according to claim 1, wherein said *Ostrinia nubilalis* is further contacted with a protein selected from the group consisting of:

an insecticidal fragment of a CryIAb protein comprising the amino acid sequence of SEQ ID NO. 2 from amino acid position 29 to amino acid position 607 or a variant thereof having at least onc mutation, wherein said at least one mutation comprises Asp at position 542 being replaced by His; Thr at position 568 being replaced by His; Val at position 569 being replaced by Leu; Gly at position 282 being replaced by Ala; Ser at position 283 being replaced by Leu; Ala at position 450 being replaced by Pro; Phe at position 537 being replaced by Leu; and Pro at position 545 being replaced by Ile; and

an insecticidal fragment of a CryIAc protein comprising the amino acid sequence of SEQ ID No. 3 from amino acid position 1 to amino acid position 609 or a variant thereof having at least one mutation, wherein said at least one mutation comprises Phe at position 148 being replaced by Leu; Leu at position 366 being replaced by Phe; Phe at position 440 being deleted; and Asn at position 442 being replaced by Ser.

5,628,996

METHOD FOR INHIBITING THE VIABILITY OF *PSEUDOMONAS AERUGINOSA* WITH CROSS-REACTIVE AND CROSS-PROTECTIVE MONOCLONAL ANTIBODIES

Anthony W. Siadak, and Mae J. Rosok, both of Seattle, Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 366,204, Dec. 29, 1994, which is a continuation of Ser. No. 66,604, May 24, 1993, Pat. No. 5,378,812, which is a continuation of Ser. No. 931,179, Nov. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 807,394, Dec. 10, 1985, abandoned. This application Jun. 5, 1995, Ser. No. 463,910

Int. Cl.[6] A61K *39/395;* **G01N** *33/53;* **C07K** *16/18;16/12*

U.S. Cl. 424—150.1 **10 Claims**

1. A method for inhibiting the viability of *Pseudomonas aeruginosa* organisms, comprising:

exposing said *P. aeruginosa*, in the presence of complement and neutrophils, to a viability inhibiting amount of a human monoclonal antibody or binding fragment thereof which specifically binds to an accessible determinant of outer membrane of *P. aeruginosa* lipopolysaccharide IATS serotype 2 and 5 and Fisher immunotype 3, wherein said monoclonal antibody inhibits the viability of organisms of at least two of said IATS serotypes and immunotype in the presence of the complement and neutrophils.

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5,628,997

Patent Not Issued For This Number

5,628,998

METHOD FOR IMPROVING AMOXICILLIN ABSORPTION IN MAMMALS BY ADMINISTERING THE AMOXICILLIN TO THE MAMMAL IN COMBINATION WITH *ROSA ROXBURGHII, ARTEMISIAE ARGYI FOLIUM* AND/OR *BRASSICA OLERACEA* VAR. CAPITATA L.

Seiichi Araki; Mamoru Suzuki; Masatoshi Fujimoto, all of Ibaraki, and Tadashi Ueki, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 390,243, Feb. 17, 1995, which is a division of Ser. No. 333,079, Nov. 1, 1994, Pat. No. 5,556,624, which is a division of Ser. No. 285,980, Aug. 4, 1994, abandoned, which is a division of Ser. No. 133,708, Oct. 7, 1993, abandoned. This application May 10, 1995, Ser. No. 438,503

Claims priority, application Japan, Oct. 7, 1992, 4-291995; Oct. 7, 1992, 4-291996; May 25, 1993, 5-144345; Jul. 30, 1993, 5-206808

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **15 Claims**

1. A method for improving the absorption of amoxicillin in a mammal, which comprises administering amoxicillin together with a pharmaceutically effective amount of a plant substance selected from the group consisting of *Rosa roxburghii, Artemisiae argyi folium* and *Brassica oleracea* var. capitata L. to said mammal.

5,628,999

HYPOGLYCEMIC AGENT FROM CRYPTOLEPIS

Jian Luo, Brisbane; Diana M. Fort, Pacifica; Donald E. Bierer, Daly City; Reimar C. Bruening, San Carlos; Steven R. King, Moss Beach, and Thomas J. Carlson, Oakland, all of Calif., assignors to Shaman Pharmaceuticals, Inc., South San Francisco, Calif.

Division of Ser. No. 314,188, Sep. 28, 1994. This application Jun. 6, 1995, Ser. No. 470,876

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **2 Claims**

1. A method for reducing the blood glucose of a mammal, comprising administering to a mammal in need of such blood glucose reduction an effective amount of an extract from a Cryptolepis sp., in which said extract was obtained by a process which comprises: steeping crushed root of a Cryptolepis sp. in water or an aqueous solution at about 25°–100° C., removing the residual solid root material, and drying the remaining aqueous solution to obtain said extract.

5,629,000

HYDROGEN-ABSORBING ALLOY ELECTRODE FOR METAL HYDRIDE ALKALINE BATTERIES AND PROCESS FOR PRODUCING THE SAME

Yoshinori Matsuura; Mitsuzo Nogami; Mamoru Kimoto; Nobuyuki Higashiyama; Yasushi Kuroda; Ikuo Yonezu; Koji Nishio, all of Osaka, and Toshihiko Saito, Mihara-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

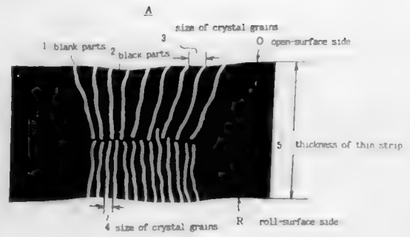
Filed Nov. 22, 1995, Ser. No. 562,150

Claims priority, application Japan, Nov. 25, 1994, 6-315555; Sep. 13, 1995, 7-262096; Sep. 13, 1995, 7-262097; Oct. 2, 1995, 7-279685

Int. Cl.[6] H01M *4/02*

U.S. Cl. 429—218 **26 Claims**

1. A hydrogen-absorbing alloy electrode for metal hydride alkaline batteries, comprising a powder of a rare earth element-nickel hydrogen-absorbing alloy obtained by pulverizing strips of said alloy prepared by a single roll process and having a laminar



structure of alternating layers of high concentration of rare earth elements and low concentration of rare earth elements, and having an average thickness of 0.08 to 0.35 mm and a minimum size of crystal grains present in the roll-surface side of at least 0.2 μm and a maximum size of crystal grains in the open-surface side of not more than 20 μm, wherein the size of crystal grains is the sum of the thicknesses of two neighboring layers of high concentration of rare earth elements and low concentration of rare earth elements.

5,629,001

ORAL ADMINISTRATION OF THERAPEUTIC PROTEINS FOR TREATMENT OF INFECTIOUS DISEASE

J. Gabriel Michael, and Allen Litwin, both of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Division of Ser. No. 329,685, Oct. 26, 1994, which is a continuation of Ser. No. 178,503, Jan. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 994,932, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 719,160, Jun. 21, 1991, abandoned. This application Jan. 30, 1995, Ser. No. 380,031

Int. Cl.[6] A61K *39/00;9/32;9/16;* **A61F** *13/00*

U.S. Cl. 424—234.1 **20 Claims**

1. An orally administrable immunogenic composition for activating the immune system of a warm-blooded animal comprising:

at least one immunogen of a microbial organism infectious for said warm-blooded animal microencapsulated in the complete absence of organic solvents with a water based enteric coating.

5,629,002

COSMETIC OR PHARMACEUTIC PREPARATIONS FOR IMPROVING HAIR QUAILITY AND STIMULATING GROWTH OF THE HAIR

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PCT No. PCT/EP92/00048, § 371 Date Jul. 14, 1993, § 102(e) Date Oct. 26, 1993, PCT Pub. No. WO92/12699, PCT Pub. Date Aug. 6, 1992

PCT Filed Jan. 11, 1992, Ser. No. 94,043

Claims priority, application Germany, Jan. 15, 1991, 41 00 975.4

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—401 **30 Claims**

1. A preparation for hair, comprising A) at least one of alkali metal, alkaline earth metal, and ammonium salts of thiocyanic acid and B) at least one of estrogens, sulfur, sulfide ions, vasodilators, skin-active vitamins, inorganic selenium compounds, amino acids, and carboxylic acids physiologically occurring in the skin or

mixtures thereof, wherein thiocyanate ions are present in a concentration of from 0.001 to 1% by weight based on the total weight of the preparation.

5,629,003

RAPIDLY DISINTEGRATING SHEET-LIKE PRESENTATIONS OF MULTIPLE DOSAGE UNITS

Michael Horstmann, Neuwied; Wolfgang Laux, Dietz, and Stefan Hungerbach, Nörtershausen, all of Germany, assignors to LTS Lohmann Therapie-Systeme GmbH & Co. KG, Neuwied, Germany

Continuation of Ser. No. 988,372, Dec. 4, 1992, abandoned, which is a continuation of Ser. No. 709,941, Jun. 4, 1991, abandoned. This application Sep. 2, 1994, Ser. No. 300,115

Claims priority, application Germany, Jun. 7, 1990, 40 18 247.9

Int. Cl.[6] A61K *7/00;9/42;9/70*

U.S. Cl. 424—401 **7 Claims**

1. A sheet comprising multiple dosage units which disintegrate in water and which contain as active substance, a cosmetic, perfrming or flavoring application, and comprising a mass of

(a) 20–60%-wt. of at least one film-forming agent,

(b) 2–40%-wt. of at least one gel-forming agent,

(c) 0.1–35%-wt. of at least one active substance and

(d) up to 40%-wt. of at least one inert filling agent,

the percentage relating to the solvent-free mass of these four components and the dosage units being supported on a carrier,

wherein the film former comprises a compound selected from the group consisting of monomeric and oligomeric sugars, sugar alcohols, organic acids having up to 6 carbon atoms and polyethylene glycol,

wherein the gel former is water swellable and consists of at least one component selected from the group consisting of polymeric carbohydrates, esters thereof, gelatin, albumin, collagen, egg white, carboxyvinyl copolymers, polyacryl amide, polyvinyl pyrrolidone and polyvinyl alcohol,

wherein the filler comprises at least one physiologically acceptable compound selected from the group consisting of carbonates, phosphates, silicates, sulfates and oxides of an alkaline earth metal, silicas, slightly soluble sugars, cellulose, cyclodextrin as a starch derivative, talc, titanium dioxide, zinc oxide and magnesium stearate, undissolved or crystalline partial amounts of active substances simultaneously acting as filling agents, and

wherein the layer thickness of the dosage units is from 0.003 to 4 mm.

5,629,004

EMULSION CONTAINING STABILIZED ASCORBIC ACID, COSMETIC TREATMENT PROCESS USING IT AND USES THEREOF

Didier Candau, Bievres, and Nathalie Collin, Sceaux, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 383,431, Feb. 3, 1995. This application Feb. 27, 1996, Ser. No. 607,494

Claims priority, application France, Feb. 4, 1994, 94 01282

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **26 Claims**

1. An emulsion comprising an aqueous phase dispersed in an oily phase using an emulsifying agent, wherein said aqueous phase comprises ascorbic acid and has an acidic pH≦3.5, and wherein said emulsifying agent is a dimethiconecopolyol, an alkyldimethiconecopolyol or a mixture thereof, said emulsion comprising ascorbic acid, which is stable for at least two months at room temperature.

5,629,005

ABSORBENT MATERIAL AND A METHOD OF MAKING SAME

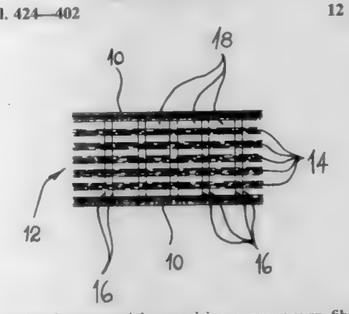
Nigel J. Brassington, Les Spa, and Jean Welburn, Saltburn-by-the-Sea, both of England, assignors to British United Shoe Machinery Limited, England

Continuation-in-part of Ser. No. 318,788, Oct. 17, 1994. This application Mar. 14, 1996, Ser. No. 615,150

Claims priority, application United Kingdom, May 1, 1992, 9209463

Int. Cl.[6] A61L *15/22*

U.S. Cl. 424—402 **12 Claims**



1. An absorbent material comprising a non-woven fibre sheet having a plurality of relatively distinct layers, said non-woven sheet being arranged to have at each face a surface layer and have a region of lower density absorbent material therebetween, each surface layer having a higher compactness of fibres compared to the region of said lower density material of said absorbent material therebetween, and thus each said surface layer being of a higher density than the region of said absorbent material therebetween, said higher compactness of fibres in each said surface layer being maintained by higher tack entanglement between fibres as compared to said region of said absorbent material therebetween where the substantial majority of fibres remain in a plane parallel of the sheet, said lower density region including areas or pillars of enhanced fibre entanglement to create structures comprising channels, edge sealing or discreet zones within said material to control flow or movement of any absorbed liquid,

said absorbent material being formed from a blend of fibres including a proportion of hydrophobic fibres and a proportion of activated fibrous bonding agent, said hydrophobic fibres and said activated fibrous bonding agent adhering together in a resilient voluminous structure resistant to percussive pressure, said voluminous structure having air spaces between said fibres arranged to hold liquid despite such percussive pressure.

5,629,006

SKIN DISINFECTING FORMULATIONS

Minh Q. Hoang, Taylorsville; Mohammed A. Khan, Sandy; Anne M. Pazos, Salt Lake City, and Scott D. Miles, Sandy, all of Utah, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 266,823, Jun. 27, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,592

Int. Cl.[6] A01N *25/00;25/02*

U.S. Cl. 424—405 **7 Claims**

1. A skin disinfecting formulation comprising:

(a) an alcohol in an amount from about 50 to about 80 weight percent of the total composition;

(b) a polyalkylaneoxide dimethylsiloxane copolymer in an amount from about 0.02 to about 5 weight percent of the total composition;

(c) a lauramidorpropyl betaine, a fatty acid alkanolamide, an ammonium lauryl sulfosuccinate, or an amphoteric surfactant in an amount from about 5 to about 25 weight percent of the total composition;

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(d) ethoxylated lanolin in an amount from about 1 to about 5 weight percent;
(e) nonylphenoxy polyethylenoxy alcohol or ethoxylated linear fatty alcohols in an amount from about 1 to about 10 weight percent;
(f) a polyalkylene glycol in an amount from about 0.5 to about 5.0 weight percent of the total composition;
(g) a moisturizer and/or emollient selected from the group consisting of polyols and cetylethers in an amount from about 0.05 to about 5.0 weight percent of the total composition; and
(h) water in an amount from about 6 to about 30 weight percent of the total composition.

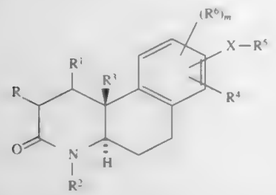
5,629,007

METHOD OF PREVENTING PROSTATIC CANCER DEVELOPMENT

James E. Audia, and Blake L. Neubauer, both of Indianapolis, Ind., assignors to ELi Lilly and Company, Indianapolis, Ind.

Filed Mar. 21, 1995, Ser. No. 408,745
Int. Cl.[6] A61K *9/20;9/48*
U.S. Cl. 424—423 **15 Claims**

1. A method of preventing the development of prostatic cancer in a patient at risk of developing such cancer, comprising administering to such patient an effective amount of a compound of the formula



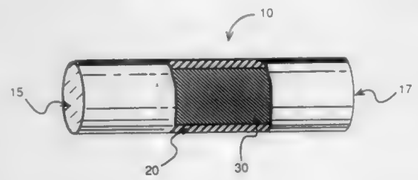
wherein
R and R^1 both represent hydrogen or combine to form a bond;
R^2 represents hydrogen or C_1–C_3 alkyl;
R^3 represents hydrogen, methyl or ethyl; either R^4 and X-R^5 have the following definitions, $(R^6)_m$ is absent, and R^3 does not represent hydrogen; or $(R^6)_m$ has the following definition, R^4 and X-R^5 are absent, and R^3 does not represent ethyl;
R^4 and —X—R^5 each occupies one of the 7-, 8- and 9-positions;
R^4 represents hydrogen, halo, methyl or ethyl;
X represents C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, a bond, —SO—, —SO_2—, —CO—Y—$(CH_2)_n$—, —Y—CO—$(CH_2)_n$—, —CO—, —Z—$(CH_2)_n$—, or —SO_3—; wherein X groups which are not symmetrical may be in either orientation;
Y represents —S—, —O—, or —NH—;
Z represents —O— or —S—;
n represents 0–3;
R^5 represents phenyl, naphthalenyl, pyridinyl, pyrazinyl, pyridazinyl, pyrimidinyl, anthracenyl, acenaphthalenyl, thiazolyl, benzimidazolyl, indazolyl, thiophenyl, phenanthrenyl, quinolinyl, fluorenyl, isoquinolinyl, indanyl, benzopyranyl, indolyl, benzisoquinolinyl, benzindolyl, benzothiazolyl, benzothiophenyl, quinoxalinyl, benzoxazolyl, tetrazolyl, naphthothiazolyl, quinazolinyl, thiazolopyridinyl, pyridazinoquinazolinyl, benzisothiazolyl, benzodioxolyl, benzodioxinyl, diphenylmethyl or triphenylmethyl;
the above R^5 groups are unsubstituted or substituted with 1–3 groups chosen from the group consisting of halo, trifluoromethyl, trifluoroethoxy, C_1–C_4 alkyl, trifluoromethoxy, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkylthio, C_1–C_6 alkanoyl, phenyl, oxo, phenoxy, phenylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, amino, C_1–C_3 alkylamino, diphenylmethylamino, triphenylmethylamino, benzyloxy, benzylthio, (mono-halo, nitro or CF_3)benzyl(oxy or thio), di(C_1–C_3 alkyl, C_3–C_6 cycloalkyl, or C_4–C_8 cycloalkylalkyl)amino, (mono-C_1–C_3 alkyl, C_1–C_3 alkoxy or halo)-(phenyl, phenoxy, phenylthio, phenylsulfonyl or phenoxysulfonyl) , C_2–C_6 alkanoylamino, benzoylamino, diphenylmethylamino (C_1–C_3 alkyl) , aminocarbonyl, C_1–C_3 alkylaminocarbonyl, di(C_1–C_3 alkyl) aminocarbonyl, halo-C_1–C_6 alkanoyl, aminosulfonyl, C_1–C_3 alkylaminosulfonyl, di(C_1–C_3 alkyl)aminosulfonyl, phenyl(oxy or thio)(C_1–C_3 alkyl), (halo, C_1–C_3 alkyl or C_1–C_3 alkoxy)phenyl(oxy or thio)(C_1–C_3 alkyl), benzoyl, or (amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino)(C_1–C_3 alkyl);
or an above R^5 group is substituted with a morpholino (C_1–C_3 alkyl) group, a phenyl(C_1–C_3 alkyl)piperidinyl group, a phenyl(C_1– C_3 alkyl)-piperidinylaminocarbonyl group, a C_2–C_6 alkanoylaminothiophenyl group, or a (amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino) naphthalenylsulfonylamino group;
or R^5 is a perhalophenyl group;
m represents 1–2;
R^6 represents hydrogen, halogen, NO_2, cyano, CF_3, C_1–C_6 alkyl, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1–C_4 dialkylamido, mercapto, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, or a group —A—R^7 where A is C_1–C_6 alkylene C_2–C_6 alkenylene or C_2–C_6 alkynylene; and R^7 represents halogen, hydroxy, CF_3, C_1–C_6 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, amino, C_1–C_4 alkylamino, C_1–C_4 dialkylamino, amido, C_1–C_4 alkylamido, C_1– C_4 dialkylamido, C_1–C_4 alkylsulfonylamino, aminosulfonyl or C_1–C_4 alkylaminosulfonyl;
or a pharmaceutically acceptable salt thereof.

5,629,008

METHOD AND DEVICE FOR LONG-TERM DELIVERY OF DRUGS

Clarence C. Lee, Lilburn, Ga., assignor to C.R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 892,204, Jun. 2, 1992, abandoned. This application Jun. 7, 1994, Ser. No. 255,343
Int. Cl.[6] A61F *2/02*: **A61K** *9/22*
U.S. Cl. 424—426 **24 Claims**



1. An implant device for the long term delivery of a therapeutic agent to a tissue or organ, comprising:
a container for implantation within the tissue or organ; and
a therapeutic agent immobilized in a biodegradable matrix wherein said matrix is biodegradable by enzymatic or acid/base hydrolysis and contained within the container such that the therapeutic agent is released at a rate of at least approximately 0.1 μg/day over a period of at least approximately one month, said device having a diameter of between approximately 20 microns and approximately 3 cm.

5,629,009

DELIVERY SYSTEM FOR CONTROLLED RELEASE OF BIOACTIVE FACTORS

Cato T. Laurencin, Somerville, Mass.; Paul A. Lucas, Macon, Ga.; Glenn T. Syftestad, Sacramento, Calif.; Abraham Domb, Baltimore, Md.; Julie Glowacki, Jamaica Plan, and Robert S. Langer, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 222,880, Apr. 5, 1994, Pat. No. 5,545,409, which is a continuation of Ser. No. 59,516, May 7, 1993, Pat. No. 5,356,630, which is a continuation of Ser. No. 742,264, Aug. 7, 1991, abandoned, which is a continuation of Ser. No. 313,953, Feb. 22, 1989, abandoned. This application Aug. 7, 1996, Ser. No. 693,466
Int. Cl.[6] A61F *2/28*; **A61K** *38/39*; **C07K** *14/485;14/51*
U.S. Cl. 424—426 **9 Claims**

1. A method of inducing chondrogenesis and osteogenesis in an animal comprising implanting in the animal a delivery device comprising:
a. a shaped matrix sized and adapted for administration of the bioactive substance to an animal and formed of a polymer selected from the group consisting of polyanhydride and polyorthoester; and
b. a therapeutically effective amount of a bioactive substance selected from the group consisting of water soluble chondrogenic or osteogenic proteins derived from demineralized bone matrix, TGF-beta, EGF, FGF and PDGF, wherein the bioactive substance is present in an amount of between about 10 and 90 percent by weight of matrix;
wherein the composition erodes at a controlled rate over a period of time, thereby administering the bioactive substance to the animal in an amount effective to induce formation of cartilage and bone or wound healing.

5,629,010

Patent Not Issued For This Number

5,629,011

COMPOSITION FOR NASAL ADMINISTRATION

. Lisbeth Illum, Nottingham, United Kingdom, assignor to Danbiosyst UK Limited, Nottingham, United Kingdom

PCT No. PCT/GB93/00228, § 371 Date Jul. 12, 1994, § 102(e) Date Jul. 12, 1994, PCT Pub. No. WO93/15737, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 4, 1993, Ser. No. 256,431
Claims priority, application United Kingdom, Feb. 5, 1992, 92024 64
Int. Cl.[6] A61K *9/50*
U.S. Cl. 424—434 **22 Claims**

1. A composition for nasal administration comprising a polar metabolite of an opioid analgesic selected from the group consisting of glucuronides and ethereal sulphates of an opioid analgesic, wherein the opioid analgesic is selected from the group consisting of morphine, codeine, levorphanol, hydromorphone, oxymorphone, nalbuphine, buprenophine, nalorphine, hydrocodone, oxycodone and butorphanol, and an effective amount of an absorption promoting agent to allow nasal absorption of a pharmacologically effective amount of the metabolite after nasal administration of the composition;
wherein the absorption promoting agent is selected from the group consisting of a cationic polymer, a surface active agent, a chelating agent, a mucolytic agent, a cyclodextrin, and combinations thereof.

9. A method of delivery of a polar metabolite of an opioid analgesic comprising administering a composition for nasal administration to the nasal mucosa wherein the composition comprises a polar metabolite of an opioid analgesic selected from the group consisting of glucuronide and ethereal sulphates of an opioid analgesic, wherein the opioid analgesic is selected from the group consisting of morphine, codeine, levorphanol, hydromorphone, oxymorphone, nalbuphine, buprenorphine, nalorphine, hydrocodone, oxycodone and butorphanol, and an effective amount of an absorption promoting agent selected from the group consisting of a cationic polymer, a surface active agent, a chelating agent, a mucolytic agent, a cyclodextrin, and combinations thereof to allow nasal absorption of a pharmacologically effective amount of the metabolite.

10. A method of delivery of morphine-6-glucuronide comprising administering morphine-6-glucuronide and an effective amount of an absorption promoting agent to allow nasal absorption of the morphine-6-glucuronide after nasal administration of the composition, wherein the absorption promoting agent is selected from the group consisting of a cationic polymer, a surface active agent, a chelating agent, a mucolytic agent, a cyclodextrin, and combinations thereof.

11. A method of delivery of morphine-6-sulphate comprising administering a composition for nasal administration to the nasal mucosa wherein the composition comprises morphine-6-sulphate and an effective amount of an absorption promoting agent selected from the group consisting of a cationic polymer, a surface active agent, a chelating agent, a mucolytic agent, a cyclodextrin, and combinations thereof to allow nasal absorption of a pharmacologically effective amount of the morphine-6-sulphate.

5,629,012

PROCESS FOR PRODUCING SUPPOSITORIES BY COMPRESSION AND SUPPOSITORIES OBTAINED BY THE PROCESS

Søren Halskov, Virum, Denmark, assignor to Farmaceutisk Laboratorium Ferring A/S, Vanlose, Denmark

Continuation of Ser. No. 167,818, Dec. 17, 1993, abandoned. This application May 26, 1995, Ser. No. 450,884
Claims priority, application Denmark, Jun. 17, 1991, 1165/91
Int. Cl.[6] A61K *9/02*
U.S. Cl. 424—436 **3 Claims**

1. A suppository produced by a process comprising forming a granulate consisting essentially of (a) 50–75% of 5-aminosalicylic acid as an active ingredient, (b) 2–5% talc, magnesium stearate and polyvinyl pyrrolidone and (c) 20 4–48% by weight of a polyethylene glycol having an average molecular weight of at least 4000, and compressing the granulate to the suppository in a tabletting machine.

5,629,013

CHEWABLE CALCIUM CARBONATE ANTACID TABLET COMPOSITIONS

James G. Upson, Springdale, and Carmelita M. Russell, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 104,282, Aug. 11, 1993, abandoned, which is a continuation of Ser. No. 874,663, Apr. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 680,459, Apr. 4, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 234,510
Int. Cl.[6] A61K *9/28*
U.S. Cl. 424—441 **5 Claims**

1. A chewable calcium carbonate-containing antacid tablet composition consisting essentially of:
(a) from about 1% to about 99% of calcium carbonate useful for treating upper gastrointestinal tract distress;
(b) from about 0.05% to about 1% of aspartame;
(c) from about 0.01% to about 1% of saccharin; and
(d) from about 1% to about 99% of at least one excipient comprising 3-1-methoxypropane 1,2-diol;
and wherein further said composition is in a solid unit dose form to be ingested by chewing.

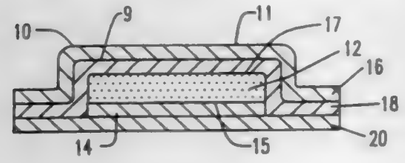
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,014

FOAM LAMINATE TRANSDERMAL PATCH

Alfred Kwiatek, Bal Harbour, Fla.; Ludwig J. Weimann, Burlington, Vt.; Wayne C. Pollock, Riverton, N.J., and Sharad K. Govil, Essex, Vt., assignors to Bertek, Inc., St. Albans, Vt.

Division of Ser. No. 63,515, May 18, 1993, Pat. No. 5,503,844.
This application Jun. 7, 1995, Ser. No. 476,418
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—449 38 Claims



1. A device for the controlled release of an active agent to the skin or mucosa of a host, said device comprising a laminate of:

(a) an internally blown fully reticulated microcellular polyester or polyether cellular urethane foam layer having a first surface and a second surface, and a pore size of about 50 to about 100 pores per linear inch, said foam layer comprising an active agent incorporated therein;

(b) a backing layer having an inner surface and an outer surface, said inner surface being affixed to said second surface of said foam layer so that said active agent cannot permeate from said second surface of said foam layer through said outer surface of said backing layer; and

(c) means for affixing said laminate to said skin or mucosa of said host so that said active agent is capable of being continuously released from said first surface of said foam layer thereto.

5,629,015

COMPOSITION FOR COMBATING AGEING ACTING SIMULTANEOUSLY ON THE SURFACE LAYERS AND DEEP LAYERS OF THE SKIN AND USE THEREOF

Alain Ribier; Jean-Thierry Simonnet; Florence Girerd, all of Paris, and Francoise Gagnebien-Cabanne, Chatillon, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 30, 1994, Ser. No. 366,740
Claims priority, application France, Dec. 30, 1993, 93 15867
Int. Cl.[6] A61K *9/127;7/00*
U.S. Cl. 424—450 17 Claims

1. A composition for combating ageing of the skin, which acts simultaneously on the layers of the stratum corneum and deep layers of the skin, comprising a dispersion mixture of:

(a) a first dispersion of lipid vesicles which are capable of penetrating into said deep layers of the skin and which contain at least one skin antiageing agent having activity in the deep layers of the skin for treating said deep layers; and

(b) a second dispersion of lipid vesicles which are capable of penetrating into said layers of the stratum corneum of the skin and which contain at least one skin antiageing agent having activity in the layers of the stratum corneum of the skin for treating said layers of the stratum corneum,

and wherein said vesicles of said first dispersion ensure a distribution of N-(1-oxyl-2,2,6,6-tetramethyl-4-piperidyl)-N-dimethyl-N-hydroxyethylammonium iodide (ASL) in the stratum corneum $>1\times10^{-7}$ cm^2/s and in that said vesicles of said second dispersion ensure a distribution of ASL in the stratum corneum $<1\times10^{-7}$ cm^2/s.

5,629,016

WATER-DISPERSIBLE TABLETS

Krystyna E. Fielden, Cheshunt, and Michael J. D. Gamlen, Dartford, both of England, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 41,126, Mar. 30, 1993, abandoned, which is a continuation of Ser. No. 827,655, Jan. 29, 1992, abandoned. This application Jul. 29, 1993, Ser. No. 99,099
Claims priority, application United Kingdom, Jan. 30, 1991, 9102019
The portion of the term of this patent subsequent to Oct. 3, 2014, has been disclaimed.
Int. Cl.[6] A61K *9/20*
U.S. Cl. 424—464 22 Claims

1. A water dispersible tablet having 200 to 800 mg of acyclovir, said tablet consisting essentially of: within the granules of the tablet, 65 to 95% w/w acyclovir; 0.25 to 5% w/w povidone; 0.5 to 30% w/w swellable clay; an additional excipient selected from the group consisting of 5 to 25% w/w hydroxyalkyl cellulostic disintegrating agent,1 to 8% w/w sodium starch glycollate and a mixture of the two; and within the tablet but not in the granules 0.25 to 2% w/w lubricant, to provide a tablet which is capable: (a) of dispersing in water to provide a dispersion which passes through a sieve screen with a mesh aperture of 710μ; (b) of disintegrating within three minutes when tested by the following apparatus and method in accordance with the test instructions for dispersible tablets of the British Pharmacopoeia, 1988,volume II, page 895; said apparatus consisting of: (i) a means for supporting six cylindrical glass tubes 75.0 to 80.0 long, 21.5 mm in internal diameter and with a wall thickness of about 2 mm; (ii) a cylindrical disc for each tube, each 20.55 to 20.85 mm in diameter and 9.35 to 9.65 thick, made of transparent plastic with a relative density of 1.18 to 1.20, pierced with five holes, each 2 mm in diameter, one in the center and the other four spaced equally on a circle of radius 6 mm from the center of the disc, there being four equally spaced grooves cut in the lateral surface of the disk in such a way that at the upper surface of the disc they are 9.5 mm wide and 2.55 mm deep and at the lower surface 1.6 mm square; (iii) two superimposed transparent plastic plates 90 mm in diameter and 6 mm thick, perforated by six holes having the same diameter as the tubes and holding the tubes vertically, the holes being equidistant from the center of the plate and equally spaced from one another, and a piece of woven gauze made from stainless steel wire 0.635 mm in diameter and having nominal mesh apertures of 2.00 mm attached to the underside of the lower plate, (iv) said plates being held rigidly in position and 77.5 mm apart by vertical metal rods at the periphery and a metal rod fixed to the center of the upper plate to enable the assembly to be attached to a mechanical device capable of raising and lowering it smoothly through a distance of 50 to 60 mm at a constant frequency of between 28 and 32 cycles per minute; (v) said assembly suspended in water at 19° to 21° C. held in a 1000-ml beaker, the volume of water being such that when the assembly is in the highest position the wire mesh is at least 15 mm below the surface of the water and when the assembly is in the lowest position the wire mesh is at least 25 mm above the bottom of the beaker and the upper open ends of the tubes remain above the surface of the water, said method consisting of introducing one tablet into each of the six tubes, suspending said assembly in the beaker containing the water and operating the apparatus for a maximum period of three minutes so that all six of the tablets disperse.

5,629,017

PROGRAMMED RELEASE ORAL SOLID PHARMACEUTICAL DOSAGE FORM

Franco Pozzi, Como, and Pia Furlani, Milan, both of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Continuation of Ser. No. 179,227, Jan. 10, 1994, Pat. No. 5,445,828, which is a division of Ser. No. 15,669, Feb. 9, 1993, Pat. No. 5,310,558, which is a continuation of Ser. No. 724,930, Jul. 2, 1991, abandoned. This application Apr. 17, 1995, Ser. No. 422,945
Claims priority, application Italy, Jul. 4, 1990, 20849A/90; Dec. 19, 1990, 22442A/90
Int. Cl.[6] A61K *9/30;9/42;9/56*
U.S. Cl. 424—476 15 Claims

1. A programmed release oral solid pharmaceutical dosage form comprising a core, containing an active ingredient, coated by a layer comprising a mixture of a hydrophobic material selected from the group consisting of esters of higher fatty acids with higher alcohols, higher alcohols, higher fatty acids, salts of higher fatty acids, esters of glycerine with higher fatty acids, esters of higher fatty acids with polyethyleneglycol, wax, paraffin oil and mixtures thereof having a melting point between 50° C. and 90° C. and a non-ionic surfactant having a HLB value between 10 and 16, the amount of the surfactant being from 5 to 20% by weight with respect to the hydrophobic material, and optionally a pharmaceutically acceptable water-soluble film forming material in an amount of from 5 to 30% by weight with respect to the hydrophobic material.

5,629,018

COMPOSITION FOR CONTROLLED RELEASE OF AN ACTIVE SUBSTANCE AND METHOD FOR THE PREPARATION OF SUCH A COMPOSITION

Arie C. Besemer, Amerongen, and Jan P. Van Der Lugt, Amersfoort, both of Netherlands, assignors to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek TNO, Delft, Netherlands

PCT No. PCT/NL93/00138, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/01091, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 2, 1993, Ser. No. 362,442
Claims priority, application Netherlands, Jul. 3, 1992, 9201196
Int. Cl.[6] A61K *9/16*
U.S. Cl. 424—488 16 Claims

1. A composition for the delayed release of an active substance, the active substance being present in an amount of 0.01–80% by weight of the composition and being incorporated in a polysaccharide matrix, the matrix comprising at least 35% by weight of a crystalline straight-chain α-glucan having a helix structure, and a glucan-degrading agent present in the amount of 0.05–15% by weight of the composition.

5,629,019

FORMULATIONS WITH HYDROPHOBIC PERMEATION ENHANCERS

Eun Soo Lee, Redwood City; Su Il Yum, Los Altos, and Michel J. N. Cormier, Mountain View, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 842,816, Feb. 27, 1992, abandoned. This application May 20, 1993, Ser. No. 64,689
Int. Cl.[6] A61K *9/06*
U.S. Cl. 424—489 7 Claims

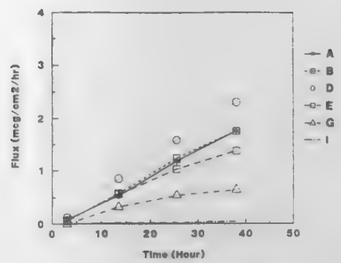
1. A formulation for the transdermal delivery of corticosteroid at a therapeutically effective rate to the skin of a host and with little or no irritation to the host, which formulation comprises:

(a) corticosteroid:

(b) 0.1–50 wt % of a hydrophobic permeation enhancer selected from the group consisting of glycerol monolaurate, glycerol monooleate, glycerol monolinoleate, sorbitan monolaurate, sorbitan dilaurate, sorbitan trilaurate, sorbitan monooleate, sorbitan dioleate, and sorbitan trioleate, the permeation enhancer being in microparticles of from about 0.01 to about 1000 microns in diameter:

(c) 0.1–5 wt % of a micronization stabilizer selected from the group consisting of sodium deoxycholate, sodium cholate, sodium dodecylsulfate, and sodium benzoate; and

(d) an inert carrier.

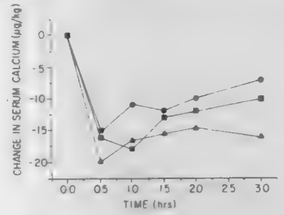


5,629,020

MODIFIED AMINO ACIDS FOR DRUG DELIVERY

Andrea Leone-Bay, Ridgefield, Conn., and Nai F. Wang, Long Island City, N.Y., assignors to Emisphere Technologies, Inc., Hawthorne, N.Y.

Filed Apr. 22, 1994, Ser. No. 231,622
Int. Cl.[6] A61K *9/14;9/48;9/20*
U.S. Cl. 424—489 29 Claims



1. A composition comprising:

(A) at least one biologically active agent selected from the group consisting of a peptide, a mucopoly-saccharide, a carbohydrate, a lipid, a pesticide, or any combination thereof, and

(B)

(a) at least one acylated amino acid;

(b) at least one peptide comprising at least one acylated amino acid; or

(c) a combination of (a) and (b);

wherein said acylated amino acid is acylated by a C_1–C_{10} cycloalkyl acylating agent.

5,629,021

MICELLAR NANOPARTICLES

D. Craig Wright, Gaithersburg, Md., assignor to Novavax, Inc., Rockville, Md.

Filed Jan. 31, 1995, Ser. No. 380,942
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 12 Claims

1. A micellar nanoparticle having a diameter of between about 25 and 1000 nm, said micellar nanoparticle comprising a lipophilic

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phase which includes an oil, a stabilizer and an alcohol-based initiator, hydrated with a suitable aqueous solution

wherein said stabilizer is selected from the group consisting of Tween 60, Tween 80, nonylphenol polyethylene glycol ethers, and mixtures thereof.

5,629,022

METHOD FOR GALENICALLY PREPARING A THERAPEUTIC COMPOSITION BASED ON ASPIRIN

Philippe Perovitch, 251 Avenue de la Marne, 33700 Merignac, and Marc Maury, 17, rue des Augustins, 33000 Bordeaux, both of France

Continuation of Ser. No. 856,976, May 22, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,372

Claims priority, application European Pat. Off., Jul. 26, 1990, 90402150

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 **10 Claims**



1. A method for preparing a therapeutical composition for internal use, in galenic presentation, and containing at least one active principle of slightly or non-hydrosoluble nature in solid form within a substrate of cross linked structure, especially an edible carbohydrate, the active product being distributed therein in the state of finely dispersed microcrystals, and the method comprising the steps of:

(a) preparing an organic solvent of the said active principle and an adjuvant constituted by a hydrocolloidal organic polymer having hydrophilic properties, said polymer being soluble in said solvent and in a solid state at ambient temperature;

(b) incorporating and dissolving said adjuvant in said solvent within a percentage ranging from 10 percent to 60 percent of the total weight of the solvent, at a temperature ranging from 30° C. at the beginning of the dissolution to 18° C. at the end of the dissolution;

(c) dissolving the said active principle in said solvent to obtain a solution of both adjuvant and active principle within said solvent, on the basis of substantially one part of active product for between 6 and 8 parts of the solution formed by the solvent and the adjuvant in solution therein;

(d) impregnating the thus obtained solution on a substrate of cross linked structure constituted by an edible carbohydrate until the solution is homogeneously absorbed within the substrate, said impregnation being conducted at a temperature of the edible carbohydrate ranging from 25° C. to 35° C. and under reduced pressure of substantially 700 mbar;

(e) evaporating by drying in vacuo at ambient temperature the solvent from the solution within the substrate in order to obtain simultaneous deposition of microcrystals of active principle and of the adjuvant in solid state, within the cross linked structure of the substrate, the solidification of the adjuvant forming a protective coating for said individual microcrystals, and thus limiting the crystalline spread and the size of the microcrystals, which size is limited to 10 μ or less, while binding and cementing them and thus avoiding their entrainment by eluation during evaporation;

(f) repeating a cycle including steps (d) and (e) until a predetermined proportion of the microcrystals of active principle with hydrocolloidal coating is absorbed and finely dispersed within the substrate; and

(g) submitting the said substrate to compression in an ambiance of controlled hygrometry of substantially 20 percent to form tablets, granules or pills, within which each individual microcrystal is coated by hydrocolloidal polymer forming an hydrophilic matrix ensuring during compression and after administration, especially per os, physical and chemical protection of each individual microcrystal of said active agent, thus avoiding direct aggressive and stagnant contact of the microcrystals of active agent with the mucous membrane and an unpleasant taste, the said hydrocolloidal polymer furthermore ensuring regular dissolution of the microcrystals within the hydrophilic matrix impregnated by biologic liquid such as saliva and subsequent absorption in soluted state within the body.

5,629,023

MEDICAL FOOD COMPOSITION FOR METABOLIC DETOXIFICATION

Jeffrey S. Bland, 957 11th La., Fox Island, Wash. 98333

Continuation of Ser. No. 815,290, Dec. 31, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 156,090

Int. Cl.[6] A61K *31/19;31/195;31/23;31/28;33/06;33/24;38/00;38/02*

U.S. Cl. 424—655 **5 Claims**

1. A composition designed for nutrition and metabolic detoxification of the human consumer of the product, the product comprising:

approximately 45 to 65 per cent by weight of a protein concentrate selected from a group consisting of grain protein concentrate and vegetable protein concentrate;

approximately 2.5 to 17.5 per cent by weight of grain syrup solids which contain at least approximately 50 per cent by weight of dextran;

approximately 2.5 to 17.5 per cent by weight of grain syrup solids which contain at least 50 per cent by weight of maltose;

approximately 3 to 12 per cent by weight of an oil containing at least approximately 20 per cent by weight of oleic acid, the oil being selected from a group consisting of olive oil, canola oil, sunflower oil, safflower oil and peanut oil;

approximately 1 to 11 per cent by weight of medium chain triglycerides which contain in their fatty acid portion fatty acids having approximately 8 to 14 carbon atoms;

a nutritionally acceptable soluble magnesium salt which is substantially equivalent in magnesium content to 0.01 to 0.06 per cent by weight of magnesium citrate;

a nutritionally acceptable buffering agent which is substantially equivalent in its buffering capacity to approximately 0.5 to 2.5 per cent by weight of dipotassium phosphate;

a nutritionally acceptable soluble calcium salt which is substantially equivalent in calcium content to approximately 0.01 to 0.065 per cent by weight of calcium citrate;

a nutritionally acceptable ascorbic acid derivative which is substantially equivalent to approximately 0.05 to 0.25 per cent by weight of calcium ascorbate;

approximately 0.40 to 0.65 per cent by weight of β carotene or a carotinoid mixture which is substantially equivalent in vitamin A activity to said quantity of β carotene;

approximately 0.1 to 0.4 per cent by weight of D-α -tocopherol or a nutritionally acceptable tocopherol derivative which is substantially equivalent in vitamin E activity to said quantity of D-α-tocopherol;

a nutritionally acceptable source of chromium containing chromium ions in the trivalent or hexavalent form, and which is substantially equivalent to approximately 0.04 to 0.12 per cent by weight of chromium polynicotinate;.

approximately 0.008 to 0.022 per cent by weight of glutathione;

approximately 0.08 to 0.22 per cent by weight of N-acetylcysteine;

approximately 0.08 to 0.22 per cent by weight of L-lysine hydrochloride, L-lysine or a nutritionally acceptable salt of L-lysine in a quantity substantially equivalent to said quantity of L-lysine hydrochloride;

approximately 0.08 to 0.22 per cent by weight of L-threonine; and

approximately 0.08 to 0.22 per cent by weight of L-cysteine.

5,629,024

METHOD OF FORMING AN IODINE BASED GERMICIDE COMPOSITION

Jack H. Kessler, Southborough; Rick Panicucci, Lexington, and John J. Hickey, Weymouth, all of Mass., assignors to Symbollon Corporation, Sndbury, Mass.

Filed Aug. 22, 1994, Ser. No. 293,283

Int. Cl.[6] A61K *31/74;38/43;33/36*

U.S. Cl. 424—667 **9 Claims**

1. A method of forming an iodine based germicide in situ in an aqueous based medium having a stabilized concentration of available iodine comprising the steps of combining a source of peroxide, a source of iodine ions, a peroxidase that falls within the class of peroxidase in the Enzyme Commission identification No. E.C. 1.11.1.7. and an iodine sequestrant selected from the group consisting of: polyvinylpyrrolidone, block copolymers of ethylene oxide and propylene oxide, alkylphenol ethoxylates, tetrafunctional block copolymers derived from the sequential addition of propylene oxide and ethylene oxide to ethylenediamine, copolymers of ethylene oxide and propylene oxide, and ethoxylated alcohols that range from 8 to 18 carbon atoms in length so as to form a non-reactive enzymatic composition, admixing said composition with an aqueous based medium to cause an enzymatic catalyzed reaction with said iodine sequestrant being added to said composition at a time prior to the equilibration of the enzymatic reaction such that the concentration of available iodine in said composition increases as compared to an identical composition without an iodine sequestrant.

5,629,025

LOW SODIUM PERITONEAL DIALYSIS SOLUTION

Ty R. Shockley, Highland Park; Leo Martis, Long Grove; Lee W. Henderson, Lake Forest; John Moran, Evanston, all of Ill., and Masaaki Nakayama, Tokyo, Japan, assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 205,304, Mar. 3, 1994, which is a continuation-in-part of Ser. No. 130,968, Oct. 4, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 423,176

Int. Cl.[6] A61K *31/195;31/70;33/10;33/14*

U.S. Cl. 424—680 **9 Claims**

1. A peritoneal dialysis solution for providing a sustained osmotic gradient comprising:

an osmotic agent having at least one amino acid; and

sodium in a concentration that is less than a sodium plasma concentration in a renal patient who is to receive the solution.

5,629,026

COMPOSITIONS CONTAINING HISTAMINE-H2-RECEPTOR ANTAGONISTS AT LOW DOSAGE

Adrian F. Davis, Surrey, England, assignor to SmithKline Beecham plc, England

Continuation of Ser. No. 244,847, Jun. 15, 1994. This application May 17, 1995, Ser. No. 443,290

Claims priority, application United Kingdom, Dec. 20, 1991, 9127150

Int. Cl.[6] A61K *33/10;31/425*

U.S. Cl. 424—686 **10 Claims**

1. A pharmaceutical composition for treating gastric disorders, said composition comprising a histamine H_2-receptor antagonist and an antacid, wherein the composition is optimally buffered to confer a pH substantially equal to that of the pKa of the histamine H_2-receptor antagonist and promote local absorption of the H_2-receptor antagonist, characterized in that the dose of histamine H_2-receptor antagonist per unit dosage form is less than 25 mg, provided that the composition does not contain sodium polyacrylate.

5,629,027

FROTH SYSTEM FOR CONTINUOUS MANUFACTURE OF POLYURETHANE FOAM SLAB-STOCKS

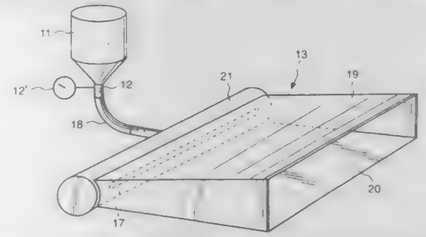
Carlo Fiorentini, Saronno, Italy, and Anthony C. M. Griffiths, Paphos, Cyprus, assignors to Foaming Technologies Cardio BV, Netherlands

Division of Ser. No. 271,918, Jul. 8, 1994. This application Jun. 7, 1995, Ser. No. 480,241

Claims priority, application Italy, Jul. 14, 1993, M193A1546; Sep. 30, 1993, M193A2090

Int. Cl.[6] B29C *44/28;44/50*

U.S. Cl. 425—4 C **1 Claim**



1. A frothing device for use with a mixture of reactive polymeric polyurethane chemicals and liquid CO_2 blowing agent, comprising a pressure equalizing chamber having a pressurized inlet and a pressure drop outlet elongated in the direction of flow, said pressure drop outlet being dimensioned to maintain back pressure oil the upstream mixture to keep the blowing agent in a liquid state and to initiate frothing under pressure controlled conditions to avoid turbulent evaporation of the blowing agent upon discharge of the mixture from the pressure drop outlet, a walled frothing cavity extending from said pressure drop outlet and positioned so as to intercept the flow from said pressure drop outlet and control the gradual release of gaseous blowing agent into, and to distribute energy within frothing material flowing within said frothing cavity.

5,629,028

UNDERWATER PELLETIZER HAVING SEALED HEAT TRANSFER TUBES EMBEDDED IN EXTRUSION DIE

Walter Trumbull, Midland, Mich., assignor to The Conair Group, Inc., Pittsburgh, Pa.

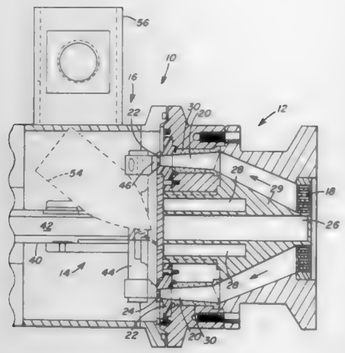
Filed Nov. 7, 1995, Ser. No. 551,863

Int. Cl.[6] B29B *9/00;* **B29C** *47/12*

U.S. Cl. 425—67 **22 Claims**

1. In an underwater pelletizer with a die face having a plurality of die orifices extending therethrough through which continuous

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strands of molten polymer are extruded, a cutter blade assembly abutting the die face and including blades for cutting said strands of molten polymer into pellets and a water housing enclosing the said die face and said cutter blade assembly to entrain said pellets in a flow of water, the improvement comprising:

a transition piece for receiving molten polymer at one end and for supporting a die plate at said die face at its other end; said transition piece having longitudinal passages therethrough to permit movement of molten polymer to said die plate;

a plurality of heat transfer tubes secured longitudinally within said transition piece, said heat transfer tubes each formed as an enclosed body with heat transfer fluid entrapped within said enclosed body so that heat is transferred efficiently from one end of said heat transfer tube to the other end whereby heat from the molten plastic entering said transition piece aids in heating said die plate at said die face on the other end of said transition piece;

a plurality of annular insulating inserts fixed within said transition piece and forming the ends of said longitudinal passages closest to said die face whereby said insulating inserts inhibit cooling of said molten plastic as it progresses through said transition piece;

said cutter blade assembly having a hollow shaft through which water is introduced to a cutter blade holder holding said cutter blades against said die plate; and

water exit nozzles formed in said cutter blade holder ahead of each cutter blade whereby water from said hollow shaft is directed into said water housing ahead of each cutter blade to prevent cavitation of the water in said water housing as said cuter blade holder turns.

5,629,029

MOLD DESIGN FOR IN-MOLD DECORATION OF INJECTION MOLDED ARTICLES

Blair V. Souder, Willington, Conn., and Crispin M. Belmont, Reading, Pa., assignors to United Technologies Automotive Systems, Inc., Detroit, Mich.

Filed Apr. 20, 1995, Ser. No. 425,392

Int. Cl.[6] B29C *45/14*

U.S. Cl. 425—112 **16 Claims**

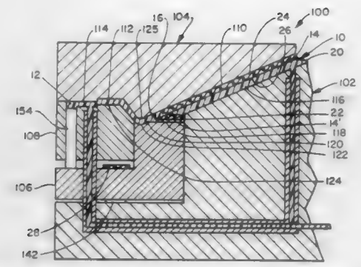
1. A closed mold adapted for in-mold decoration of an injection molded part, comprising:

a mold cavity having a first active surface;

a mold core mated with said mold cavity and having a second active surface, spaced in fixed juxtaposition to one portion of said first active surface;

a sheet of decorative material situated between the first and second active surfaces of the mold cavity and mold core, respectively;

a plate member supported in said mold core and displaceable away from said mold cavity, said plate member having,



a third active surface, laterally adjacent to said second active surface and in spaced juxtaposition to another portion of said first active surface,

a fourth active surface, laterally adjacent to said third active surface and in spaced juxtaposition to an additional portion of said first active surface,

seal means situated between said third and fourth active surfaces and contacting the sheet to provide a fluid seal bearing against said another portion of the first active surface;

first means for injecting plastic, through said second surface while said seal bears against said another portion of the first active surface, to deposit plastic on said second and third active surfaces;

means for displacing said plate member away from said mold cavity, thereby retracting said seal means away from said first active surface while the mold cavity and mold core are mated;

second means for injecting plastic, through said fourth active surface, thereby depositing plastic sequentially on said fourth and third active surfaces, such that the plastic deposited on said third active surface by the second means for injecting plastic, contacts the plastic deposited on the third active surface by the first means for injecting plastic.

5,629,030

EXTRUSION DEVICE HAVING POSITION CONTROL

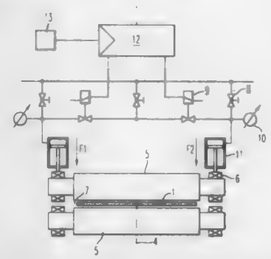
Andreas Beringer, Darmstadt; Karl Funk, and Erhard Haun, both of Griesheim, all of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

Filed Mar. 15, 1996, Ser. No. 616,463

Claims priority, application Germany, Mar. 18, 1995, 29 50 4694.5

Int. Cl.[6] B65H *23/02*; **B29C** *47/34*

U.S. Cl. 425—135 **9 Claims**



1. An apparatus for regulating a running direction of an extruded plastic plate being conveyed on an extrusion device after the plate leaves a calendar of the extrusion device, comprising:

two parallel haul-off rolls positioned to form an elongate roller slit through which the conveyed plastic plate passes, the ends of the haul-off rolls being supported by bearings;

a sensor unit for sensing a position of a plastic plate being conveyed in a running direction;

position regulators mounted for independently adjusting the positions of the ends of at least one of said haul-off rolls such that a plug force of the haul-off rolls on opposite sides of the conveyed plastic plate may be adjusted; and

a controller responsive to the sensed position of the conveyed plastic plate and operatively connected to the regulators for adjusting the plug force.

5,629,031

REMOVER FOR INJECTION-MOLDED ARTICLE

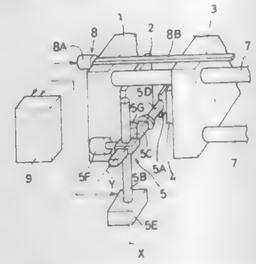
Sosuke Ishikawa; Toshihiko Ohhashi, both of Tokyo, and Tetsuro Shiozaki, Kyoto, all of Japan, assignors to Yushin Precision Equiptment Co., Ltd., Kyoto, and Sumitomo Heavy Industries, Ltd., Tokyo, both of Japan

Filed Jun. 2, 1995, Ser. No. 458,281

Claims priority, application Japan, Jun. 15, 1994, 6-158050

Int. Cl.[6] B29C *45/80*

U.S. Cl. 425—139 **3 Claims**



1. A remover for an injection-molded article comprising:

a front mold half;

a movable mold half movable in a forward and backward direction and being adapted to define an injection-molding cavity by associating with the front mold half;

a detecting means continuously detecting a start time, a finish time, and a quantity of travel of the movable mold half;

an ejector which forces out a molded article at a mold-open finish position carried thereto by the movable mold half molded in the cavity;

a removing mechanism having a grasping member for grasping the molded article forced out by the ejector; and

a control means for performing numerical control of the removing mechanism, so that when the detecting means detects the finish time of the mold-open operation of the movable mold half, the control means makes numerical control of the removing mechanism to move the grasping member from a predetermined waiting position for removing the molded article, a mold-close operation is started after the molded article held by the grasping member is moved out of the mold area, and the grasping member is controlled, through numerical control by the control means, to move and withdraw from the mold area and the control means supplies a mold-close signal to an open-close mechanism for the movable mold half,so that the movable mold half is moved in the direction corresponding to the mold-close operation at a predetermined time start of withdrawal of the grasping member from the mold area, whereby the mold-close operation finishes when withdrawal of the grasping member from the mold area finishes.

5,629,032

BLOW-MOLDING APPARATUS

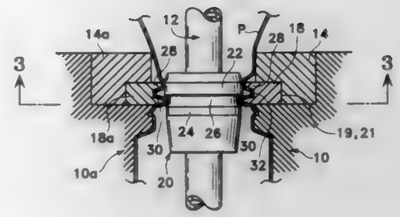
Frank Pennino, Farmingdale, N.Y., assignor to Pari Industries, Inc., Jamaica, N.Y.

Continuation-in-part of Ser. No. 497,222, Aug. 25, 1995, abandoned. This application May 28, 1996, Ser. No. 653,884

Int. Cl.[6] B29C *49/50*

U.S. Cl. 425—168 **13 Claims**

1. A pair of shear steels for use in blow-molding apparatus,



said blow molding apparatus including a blow pin operable along an axis and bearing a shearing ring providing a circular shearing edge whose center is on said axis, and said apparatus having a pair of mold members adapted to close against each other with said blow pin disposed between them and to carry said shear steels into cooperation with said blow pin,

said pair of shear steels including (a) respective semicircular shearing edges which constitute a full-circle shearing edge when the shear steels are disposed opposite to each other so that the centers of their semicircular shearing edges are disposed on a common axis, said shear steels having (b) respective sealing rims adapted to cooperate with the blow pin for forming a seal in the neck of a container being blow-molded, and each of said shear steels having (c) locating means cooperable with said blow pin when carried against the blow pin by said mold members for shifting each shear steel so as to align said common axis of each shear steel with the axis of the blow pin's circular shearing edge.

5,629,033

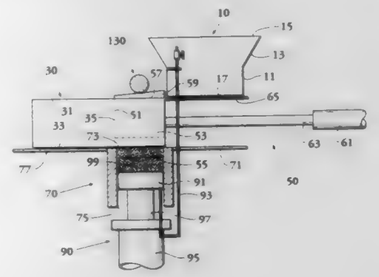
PRESSED EARTH BLOCK MACHINE

David Lienau, 469 Camino Hermosa, Corrales, N.M. 87048

Filed Oct. 16, 1995, Ser. No. 543,406

Int. Cl.[6] B28B *3/04*

U.S. Cl. 425—353 **22 Claims**



1. A machine for pressing earth into blocks comprising:

a rectangular breech having open upper and lower ends;

a press foot vertically reciprocally drivable in said breech;

a bucking block horizontally reciprocally drivable into and out of registration with said open upper end of said breech and having portions of an upper surface thereof tapered upwardly from forward to rearward portions thereof; and

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a horizontal bucking bar extending across said breech and bearing downwardly against said tapered upper portions of said block when said block is in registration with said breech.

5,629,034

APPARATUS FOR MOLDING FIBROUS MATERIAL MAINLY CONTAINING WASTE PAPER AND AGRICULTURAL MATERIAL

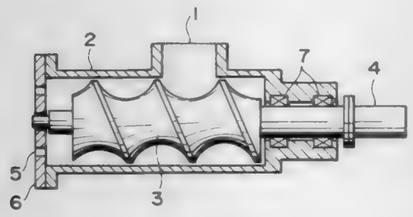
Mitsuo Terada, Takasago; Tetsuro Matsumoto, and Kiyofumi Hashimoto, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 14, 1994, Ser. No. 355,961

Claims priority, application Japan, Dec. 14, 1993, 5-313826; Dec. 14, 1993, 5-313827; Dec. 28, 1993, 5-338699; Dec. 28, 1993, 5-338700; Dec. 28, 1993, 5-338701; Feb. 28, 1994, 6-030358

Int. Cl.° B29C *47/00*

U.S. Cl. 425—382 R **10 Claims**



1. An apparatus for molding a fibrous material mainly containing waste paper, comprising:

a cylindrical casing having an inner surface, a raw material throwing port and a leading edge;

a rotary screw provided on a rotational shaft in said cylindrical casing for feeding fibrous raw material to be discharged from said leading edge;

a molding/discharging member provided at the leading edge of said cylindrical casing for compressing said fibrous material fed to the leading edge of said casing into a specified shape and discharging said compressed fibrous material, said molding/discharging member comprising a molding die having at least one discharge hole,

wherein the diameter of said at least one discharge hole is from 10 to 40% of the diameter of said rotary screw.

5,629,035

CHEWING GUM PRODUCT WITH ENCAPSULATED BICARBONATE AND FLAVORANT INGREDIENTS

Regina Miskewitz, Somerville, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Dec. 18, 1995, Ser. No. 574,313

Int. Cl.° A23G *3/30*

U.S. Cl. 426—5 **51 Claims**

1. A chewing gum product comprising between about 15–80 weight percent of a gum base, between about 5–70 weight percent of a water-soluble bulking ingredient, and between about 1–30 weight percent of dispersed particles of an organic-encapsulated alkali metal bicarbonate ingredient; wherein the encapsulated particles comprise a metal bicarbonate crystallite core matrix having between about 0.1–25 weight percent of a flavorant ingredient adsorbed on the crystallite surface, based on the core matrix weight, and the core matrix of crystallite and adsorbed flavorant is surface-coated with a film-forming organic encapsulant.

5,629,036

METHOD FOR PREPARING BAKERY FOOD CONTAINING DIETARY FIBERS

Yoshifumi Yanetani, Nara; Naoko Yamashita, Osaka, and Kazuyuki Inada, Takarazuka, all of Japan, assignors to Matsutani Chemical Industries Co., Ltd., Hyogo-ken, Japan

Continuation of Ser. No. 713,370, Jun. 12, 1991, abandoned. This application Apr. 13, 1992, Ser. No. 866,270

Claims priority, application Japan, Jun. 18, 1990, 2-160840

Int. Cl.° A21D *2/36*

U.S. Cl. 426—19 **2 Claims**

1. A method for producing a yeast-leavened bakery food, wherein the bakery food is produced by a sponge and dough method in which there is a sponge stage and a dough stage, comprising the steps of

(a) kneading a wheat flour;

(b) adding indigestible dextrin during the kneading, wherein the indigestible dextrin added to the wheat flour is in an amount of 3 to 15% by weight,

wherein the adding of the indigestible dextrin is carried out in a dough kneading step of the dough stage, and

further provided that the indigestible dextrin is added at a point of time when dough formation is about 50 to 80%; and

(c) baking the kneaded wheat flour after fermentation thereof.

5,629,037

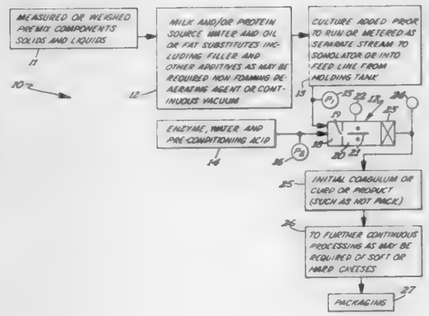
PROCESS FOR MAKING CHEESES FROM ENZYME CURDS

Bernard J. Gaffney, 9989 Arcola Ct. N., Stillwater, Minn. 55082

Filed Feb. 9, 1995, Ser. No. 386,168

Int. Cl.° A23C *19/024*

U.S. Cl. 426—36 **29 Claims**



1. A steady flow process for first converting a fluid proteinaceous mix to a cuttable interstage enzymatic curd and thereafter converting the enzymatic curd to a desired end cheese product, comprising the steps of initially combining an accurately metered and proportioned, well mixed pumpable stream containing proteins, fats or oils, and an accurately metered proportioned well mixed pumpable acidified water stream containing an enzyme and non-enzymatic components by directing the streams through an orifice into an acoustic resonating chamber to immediately admix the streams and thereby form a turbulent jet stream having such kinetic energy that the turbulent stream entering the acoustic chamber produces cavitational and high sonic and ultrasonic waves and shearing forces all contributing to immediate homogenization and reaction of the stream components to thereby produce within one minute an enzymatic curd at a predetermined optimum pH above the isoelectric point.

5,629,038

GRANULAR FEED NUTRIENT SUPPLEMENTS

Paul Kalmbach, 7785 Court Rd. 29, Upper Sandusky, Ohio 43351

Continuation of Ser. No. 77,018, Jun. 15, 1993, abandoned, which is a division of Ser. No. 936,942, Aug. 28, 1992. This application May 18, 1995, Ser. No. 444,834

Int. Cl.° A23K *1/175;* **A23L** *1/30*

U.S. Cl. 426—72 **6 Claims**

1. In combination, nutrient granules and bulk feed, the combination comprising 0.25–7.5% by weight nutrient granules, the nutrient granules comprising a carrier and nutrients in the range of from about 1% to about 70% by total weight of the nutrient granules, the nutrients including minerals and vitamins, wherein the nutrient granules have a size approximately equal to or greater than the average size of the bulk feed and a density controlled by modifying the carrier concentration such that said density is within 30% of a density of the bulk feed such that separation of the nutrient granules from the bulk feed is substantially reduced.

5,629,039

COOKING OIL EXTENDING PROCESS

B. Kelly Brintle, La Habra Heights, Calif., assignor to Ventura Foods, LLC, City of Industry, Calif.

Filed Jun. 8, 1995, Ser. No. 488,831

Int. Cl.° A23L *1/00;* **C11B** *3/00*

U.S. Cl. 426—417 **13 Claims**

1. A process for extending the life of cooking oil in a fry pot of a deep fat fryer used for cooking breaded food products including the steps of:

(a) placing a fine mesh screen in the fry pot of the deep fat fryer;

(b) placing breaded food product retained by a frying basket in the fry pot of hot oil to fry the food product;

(c) removing the breaded food product from contact with the hot oil; and

(d) removing the fine mesh screen with particles of breading that have separated from the breaded food product that will not pass through the fine mesh screen and therefore are retained thereby, before the particles of breading can burn.

5,629,040

LOW CALORIE CHOCOLATE

Toshio Takemori, Tokyo; Toshinobu Tsurumi, Saitama; Masanori Ito, Saitama, and Tatsuya Kamiwaki, Saitama, all of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 339,270

Claims priority, application Japan, Nov. 10, 1993, 5-281433

Int. Cl.° A23G *1/00*

U.S. Cl. 426—548 **20 Claims**

1. A chocolate including:

a glucide that comprises a hydrogenated isomaltulose and a hygroscopic second sugar selected from the group consisting of sugar alcohols, oligosaccharides and dietary fibers, wherein a weight ratio of said isomaltulose to said sugar is in the range of from 1:0.3 to 1:3; and

an emulsifying agent in an amount of not more than about 0.6% by weight, wherein said emulsifying agent comprises a lecithin in an amount of 0.2 to 0.4% by weight and a lipophilic emulsifying agent other than lecithin in an amount of 0.05 to 0.3% by weight, said lipophilic emulsifying agent being selected from the group consisting of sugar ester, glycerine fatty acid ester, and polyglycerin condensed ricinoleic ester;

wherein said chocolate is resistant to increase in hardness over time, due to presence of said hygroscopic sugar and said lipophilic emulsifying agent.

5,629,041

LOW CALORIE SANDWICH COOKIES

Thomas R. Laaman, Bordentown, and Christopher J. Sewall, Princeton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 8, 1994, Ser. No. 272,891

Int. Cl.° A23L *1/0534;1/09;1/308*

U.S. Cl. 426—659 **30 Claims**

1. In a sandwich cookie filler comprising approximately 35 wt % fat/oil and 65 wt % sugar, with up to 5 wt % additional flavoring and/or coloring ingredients, the improvement comprising lowering the calorie content thereof by reducing the total filler fat/oil content to less than 25 wt % and replacing the reduced portion of fat/oil with a sugar syrup having not less than 70% solids and a non-caloric or low-calorie bulking agent having a water absorptivity of 200% or less, while maintaining a water activity for the entire filler of between 0.2 and 0.7.

5,629,042

SUGAR-FREE HARD BOILED CANDY AND PROCESS FOR ITS MANUFACTURE

Michel Serpelloni, Beuvry les Bethune, and Guillaume Ribadeau-Dumas, Lambersart, both of France, assignors to Roquette Freres, Lestrem, France

Filed Jun. 6, 1995, Ser. No. 470,462

Claims priority, application France, Dec. 26, 1994, 94 15648

Int. Cl.° A23G *3/00*

U.S. Cl. 426—660 **28 Claims**

1. Sugar-free hard boiled candy containing:

more than 3% of water.

on a dry matter basis, from 5 to 100% of at least one crystallizable polyol, the balance to 100% being essentially a composition of slightly digestible or hydrogenated carbohydrates which are suitable for conferring on the sugar-free hard boiled candy a glass transition temperature at least equal to 38° C., this temperature being measured for a water content of about 3.2%.

5,629,043

SILICON NITRIDE FILM FORMATION METHOD

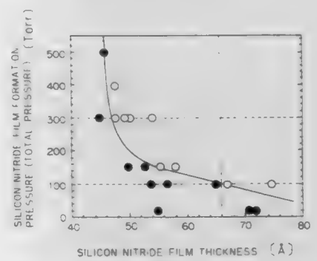
Yutaka Inaba, and Kiyoteru Kobayashi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 526,900

Claims priority, application Japan, Dec. 15, 1994, 6-311478

Int. Cl.° C23C *16/34*

U.S. Cl. 427—79 **13 Claims**



13. A method of forming a stacked capacitor, comprising the steps of:

(a) preparing a substrate of a silicon film having a silicon oxide film surrounding said silicon film in an upper portion of said substrate;

(b) coating a silicon nitride film on the silicon oxide film on said silicon film by low pressure chemical vapor deposition;

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(c) oxidizing a surface of said silicon nitride film to form an oxide film; and

(d) providing an electrode on said film,

wherein said step (b) comprises the steps of:

(b-1) introducing said substrate into a reaction container;

(b-2) evacuating said reaction container; and

(b-3) introducing a source gas comprising dichlorosilane and ammonia and a carrier gas into said reaction container while maintaining the pressure of gas within the reaction container to within the range of 2.00×10^{4} to 4.00×10^{4} Pa at which said silicon nitride film is prepared at a thickness ranging from about 58 Å to about 48 Å.

5,629,044

COMPACT DISC COATING AND HANDLING SYSTEM

Yuri Rubenchik, Newton, Mass., assignor to Nobler Technologies, Inc., Stoughton, Mass.

Division of Ser. No. 381,195, Jan. 31, 1995. This application Jul. 28, 1995, Ser. No. 508,832

Int. Cl.[6] B05D *3/12*

U.S. Cl. 427—240 **3 Claims**

1. A method for coating a disc having a center opening, comprising the steps of:

placing a disc in a first station;

dispensing a quantity of lacquer on a surface of the disc at the first station;

clamping the disc to the first station with a gripper having a rotatable disc gripping mechanism;

spinning the disc at the first station to distribute a coating of said lacquer over the disc surface;

maintaining said gripper in contact with the disc during the step of spinning the disc so that said gripper rotates with said disc, wherein the disc may be lifted from said first station by said gripper as soon as the disc stops spinning; and

transferring the disc from the first station to a second station with said gripper.

5,629,045

BIODEGRADABLE NOSIOGENIC AGENTS FOR CONTROL OF NON-VERTEBRATE PESTS

Richard L. Veech, 712 Brent Rd., Rockville, Md. 20850, assignor to Richard L. Veech, Rockville, Md.

Continuation of Ser. No. 945,887, Sep. 17, 1992, abandoned. This application Oct. 7, 1993, Ser. No. 133,753

Int. Cl.[6] B05D *7/06;* **A01N** *31/00;33/00;43/00*

U.S. Cl. 427—297 **13 Claims**

2. A method for preserving wood with capsaicin and resiniferatoxin, comprising the steps of:

extracting capsaicin and resiniferatoxin from organic materials to provide extracts containing wood preserving amounts of capsaicin and resiniferatoxin, respectively;

mixing the extracts with a detergent to provide a mixture; and

thereafter applying the mixture to a wood sample under vacuum pressure.

5,629,046

AQUEOUS COATING COMPOSITION

Alger E. Laura, New Boston; Ronald J. Easton, Clio; Kurt C. Frisch, Grosse Ile, and Han X. Xiao, Farmington Hills, all of Mich., assignors to A-Line Products Corporation, Detroit, Mich.

Continuation of Ser. No. 220,729, Mar. 31, 1994, Pat. No. 5,427,856, which is a continuation of Ser. No. 20,654, Feb. 22, 1993, Pat. No. 5,300,363, which is a continuation of Ser. No. 599,664, Oct. 18, 1990, Pat. No. 5,227,198, which is a continuation-in-part of Ser. No. 340,845, Apr. 20, 1989, abandoned. This application Feb. 7, 1995, Ser. No. 384,782

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—385.5 **21 Claims**



1. An aqueous coating composition, comprising effective film forming amounts of:

(a) up to about 40 parts by weight of a polyol;

(b) a surfactant in an amount of about 0.05 parts by weight to about 15 parts by weight;

(c) an amine selected from primary, secondary and tertiary aliphatic amines having an amine functionality of 1 to 3, and mixtures thereof;

(d) a thermoplastic polyolefinic resin having a softening point up to about 350° F.; and

(e) the balance water,

wherein said composition is substantially free of aromatic organic solvents.

5,629,047

METHOD OF MAKING FUNCTIONALIZED STYRENE BUTADIENE TYPE LATEX BINDERS

Satish C. Sharma, Stow; Amiya K. Chatterjee, Hudson; Ronald D. Mohan, Akron, and Friedhold Schon, N. Canton, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Aug. 6, 1990, Ser. No. 563,362

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—389.9 **8 Claims**

1. The method of making copolymers useful as binders for paper, nonwoven and textile substrates comprising; copolymerizing in aqueous emulsion using a redox initiator at 5° C. a:

a. mixture of 35 to 60% by weight of at least one conjugated diene monomer having from 4 to 8 carbon atoms and from about 30 to 65% by weight of at least one vinyl aromatic monomer having from 8 to 12 carbon atoms, or

b. mixture according to a. containing additionally from about 1 to 3% by weight of at least one copolymerizable monomer selected from the group consisting of acrylic acid and methacrylic acid, or

c. mixture according to a. containing additionally from about 0.5 to 3.5% by weight of itaconic acid, or

d. mixture according to a. containing additionally from about 1 to 15% by weight of at least one functional monomer having an activatable methyl, ethyl, propyl or butyl ester group and a vinyl group, or

e. mixture according to a. containing additionally from about 1 to 15% by weight of at least one functional monomer having an activatable methyl, ethyl, propyl or butyl ester group and a vinyl group and from about 0.5 to 3.5% by weight of itaconic acid,

forming a latex, and subsequently curing said latex to produce a cured latex imparting improved tensile strength to the substrate.

5,629,048

RAPID SETTING CEMENTITIOUS COMPOSITIONS AND METHOD

Frederick D. Kinney, Broadview Heights, Ohio, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 471,589, Jun. 6, 1995, abandoned, which is a division of Ser. No. 309,371, Sep. 20, 1994, abandoned. This application May 17, 1996, Ser. No. 650,085

Int. Cl.[6] C04B *24/04*

U.S. Cl. 427—403 **9 Claims**

1. The method of rapidly forming in place a cementitious structure comprising mixing a cement composition with an amount of a water-soluble citrate effective to accelerate the set of the cement in the presence of sufficient water for hydraulic setting of the cement, and delivering the resulting composition while fluid to the place for forming the cementitious structure, said amount of water-soluble citrate being at least 4% by weight based on the weight of cement.

5,629,049

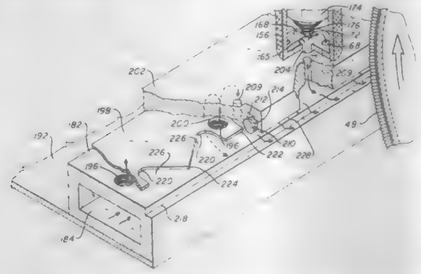
APPARATUS FOR SELECTIVELY METERING DRESSING ONTO A BOWLING LANE SURFACE

Stephen F. Caffrey, Arvada; Ronald L. Smith, Boulder, and Leonid Feldman, Broomfield, all of Colo., assignors to AMF Bowling, Inc., Golden, Colo.

Division of Ser. No. 337,945, Nov. 10, 1994, Pat. No. 5,517,709. This application Mar. 18, 1996, Ser. No. 618,255

Int. Cl.[6] B05D *1/28;* **A47L** *1/02*

U.S. Cl. 427—429 **7 Claims**



1. A method of applying lane dressing to the boards of a bowling alley, said method comprising the steps of:

determining an amount of bowling lane dressing to be applied on the bowling alley;

placing an applicator across the bowling alley for applying the lane dressing directly to the bowling alley;

locating a plurality of dispersion chambers, each having a corresponding slit opening across the applicator;

providing at least one reservoir for storing lane dressing;

supplying a predetermined discrete amount of lane dressing into each dispersion chamber from the at least one reservoir; and

discharging the lane dressing from said slits directly onto the applicator; and

applying the lane dressing from the applicator to the boards of the bowling alley.

5,629,050

PROCESS FOR PREPARING COATED ARTICLES

H. Craig Silvis; Susan J. Babinec, and Robert A. Cipriano, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1995, Ser. No. 521,482

Int. Cl.[6] B05D *1/04*

U.S. Cl. 427—475 **21 Claims**

20. A process for preparing a coated article which includes the step of electrostatically coating an article molded or extruded from a composition having a conductivity of at least about 10^{-14} S/cm, which comprises (a) a thermoplastic or thermoset polymer, and (b) an electronically conductive charge transfer complex or inherently semiconducting polymer different from (a), provided that if component (a) is a thermoplastic polymer the composition is molded or extruded at a temperature above the glass transition temperature of the polymer.

5,629,051

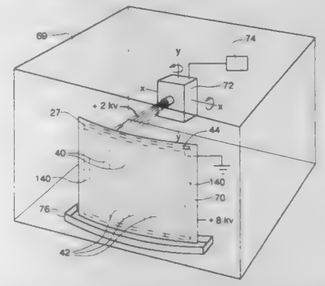
METHOD AND APPARATUS FOR FORMING AN INSULATOR ON A UNIAXIAL TENSION FOCUS MASK OF A COLOR SELECTION ELECTRODE

Eugene S. Poliniak, Willingboro, N.J., assignor to Thomson Multimedia. S. A., Courbevoie, France

Filed Sep. 18, 1995, Ser. No. 529,892

Int. Cl.[6] B05D *1/06;* **B05B** *5/025;5/047*

U.S. Cl. 427—475 **11 Claims**



1. A method for forming an insulator on one major surface of a uniaxial tension focus mask of a color selection electrode for a color cathode-ray tube, comprising the steps of

a) positioning a mask sheet at a distance from a charging gun having a source of a dry-powdered insulative material, said mask sheet having a main body portion with a first major surface and an oppositely disposed second major surface, said mask sheet further including a plurality of first metal strands separated by openings extending through said main body portion thereof, from said first major surface to said second major surface,

b) charging the dry-powdered insulative material and directing the charged, dry-powdered insulative material toward said first major surface of said mask sheet to provide a continuous coating on a least a portion thereof, and

c) providing means for preventing the charged, dry-powdered insulative material from extending into said openings and being deposited onto said main body portion of said mask sheet surrounding each of said openings and said second major surface.

5,629,052

METHOD OF APPLYING A CURABLE RESIN TO A SUBSTRATE FOR USE IN PAPERMAKING

Paul D. Trokhan, Hamilton; John R. Powers, Fairfield; James D. Miller, II, and Glenn D. Boutilier, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 15, 1995, Ser. No. 391,372

Int. Cl.[6] B05D *3/06*

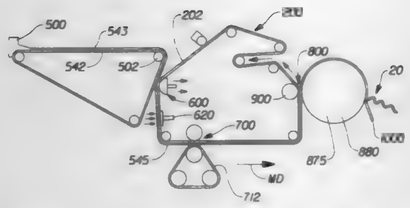
U.S. Cl. 427—508 **28 Claims**

1. A method of applying a curable resin to a substrate, the method comprising the steps of:

providing a substrate having a first surface, a second surface, and a thickness, the substrate having voids intermediate the first and second surfaces;

providing a curable liquid resin;

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providing a second material different from the curable liquid resin;

applying the second material to the substrate to occupy at least some of the voids in the substrate intermediate the first and second surfaces of the substrate;

changing the phase of at least some of the second material applied to the substrate

applying the curable resin to the substrate;

curing at least some of the resin after changing the phase of the second material applied to the substrate to provide a resin layer on the substrate; and

removing at least some of the second material from the substrate, wherein at least some of the second material is removed from the substrate after applying the curable resin to the substrate.

5,629,053

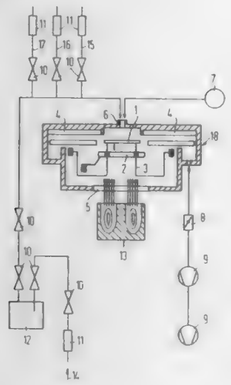
METHOD FOR MANUFACTURING MICROCRYSTALLINE CUBIC BORON-NITRIDE-LAYERS

Helmuth Treichel, Augsburg; Oswald Spindler, Vaterstetten; Rainer Braun, Munich, all of Germany; Bernhard Neureither, Fishkill, N.Y., and Thomas Kruck, Erfstadt, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 5, 1991, Ser. No. 681,131

Int. Cl.[6] C23C *16/34*

U.S. Cl. 427—571 **11 Claims**



1. A method for manufacturing microcrystalline cubic boron nitride layers, comprising the steps of:

providing a starting substance which contains a boron-nitrogen molecule; adding a process gas to the starting substance, the process gas being selected from the group consisting of ammonia and nitrogen; and

exciting the starting substance and process gas in a hollow cathode such that the starting substance does not disintegrate; and

disintegrating the starting substance and process gas by chemical vapor deposition in an electromagnetic alternating field at a temperature of from approximately 200° C. to about 450° C.

5,629,054

METHOD FOR CONTINUOUSLY FORMING A FUNCTIONAL DEPOSIT FILM OF LARGE AREA BY MICRO-WAVE PLASMA CVD METHOD

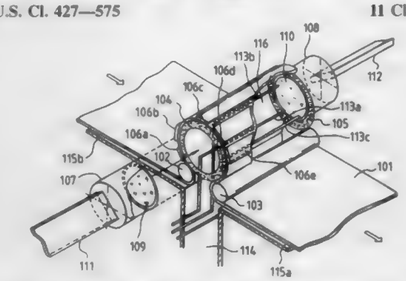
Masahiro Kanai, Hikone, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 255,815, Jun. 7, 1994, abandoned, which is a division of Ser. No. 91,729, Jul. 15, 1993, abandoned, which is a continuation of Ser. No. 794,051, Nov. 19, 1991, abandoned. This application Sep. 14, 1995, Ser. No. 528,330

Claims priority, application Japan, Nov. 20, 1990, 2-316247; Nov. 29, 1990, 2-332678; Jan. 23, 1991, 3-6391

Int. Cl.[6] H05H *1/30*

U.S. Cl. 427—575 **11 Claims**



1. A method for forming a functional deposited film by continuously moving a strip member in a longitudinal direction, by a microwave plasma CVD process and forming a film formation space at one side of said strip member, said method, said method comprising the steps of:

independently introducing each of at least two kinds of deposited film formation raw material gases, having different compositions through separate gas supply means into said film formation space;

introducing a microwave into said film formation space through an opening portion having a regulated opening area so as to introduce the microwave substantially uniformly into said film formation space at a side of said film formation space opposed to said strip member so that the microwave energy is irradiated in a direction parallel to a travelling direction of the microwave and generating a plasma in said film formation space.

5,629,055

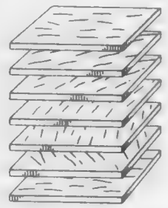
SOLIDIFIED LIQUID CRYSTALS OF CELLULOSE WITH OPTICALLY VARIABLE PROPERTIES

Jean-François Revol, Montreal; Donat L. Godbout, Outremont, and Derek G. Gray, Montreal West, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe-Claire, Canada

Filed Feb. 14, 1994, Ser. No. 201,450

Int. Cl.[6] C08L *1/00*; **C09K** *19/00*

U.S. Cl. 428—1 **35 Claims**



1. A solidified liquid crystal cellulose film comprising crystal particles of colloidal dimensions, of native cellulose I, in a helicoidal arrangement exhibiting a chiral nematic pitch of about 0.1 μm to 1 μm; said film reflecting left-circular polarized light over a spectrum from ultraviolet to near-infrared.

5,629,056

LIQUID CRYSTAL DISPLAY PANEL AND PROCESS FOR PRODUCING THE SAME

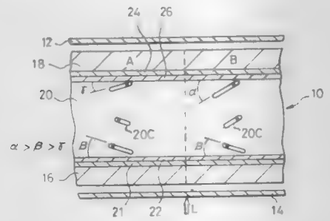
Yoshio Koike; Tsuyoshi Kamada; Syun Tsuyuki; Noriaki Furukawa; Shigeru Masuda; Satoshi Murata; Tadashi Hasegawa; Takashi Sasabayashi; Seiji Tanuma; Takatoshi Mayama; Katsufumi Ohmuro, and Minoru Ohtani, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 358,753, Dec. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 115,129, Sep. 1, 1993, abandoned. This application Jun. 21, 1996, Ser. No. 667,365

Claims priority, application Japan, Sep. 1, 1992, 4-233689; Sep. 2, 1992, 4-234798; Dec. 4, 1992, 4-324559; Aug. 27, 1993, 5-212722; Mar. 8, 1994, 6-037079

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 428—1 **13 Claims**



1. A liquid crystal display panel comprising a pair of substrates and a liquid crystalline substance sandwiched between said substrates, in which said substrates respectively at their inner walls are provided with an alignment film, at least one of said alignment films comprising a layer of a member selected from the group consisting of the following polyimide film materials:

1.) a polyimide which does not have in its molecule an ether bond but has at least one moiety selected from the group consisting of a peroxide, a ketone, an ester, an amine, an amide and derivatives of said moieties; and

2.) a polyimide which has in its molecule a carbon-carbon double bond or a carbon-carbon triple bond;

said alignment film comprising an assembly of two adjacent minute domains, said two minute domains being different from each other in pretilt angle which is defined as an angle at which liquid crystalline molecules rise from the surface of the substrate.

5,629,057

COLLAPSIBLE LIGHTED SKELETAL STRUCTURE

Jessica Wang, and Dennis Wang, both of Taipei, Taiwan, assignors to Toyo Electric Manufacturing Co. Ltd., Taipei, Taiwan

Filed May 20, 1996, Ser. No. 650,290

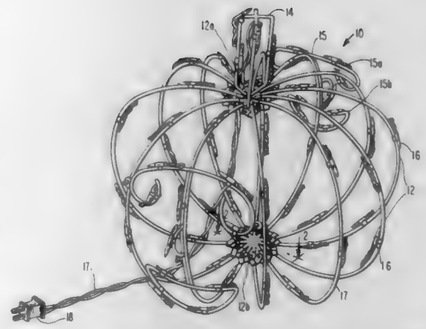
Int. Cl.[6] A47G *33/00*

U.S. Cl. 428—9 **6 Claims**

1. A collapsible skeletal structure, comprising:

at least four curved members including a primary curved member which can be each positioned about a common central axis, each said curved member having an upper and a lower end;

two hub members one being rigidly attached to the upper end and the other attached to the lower end of said primary curved member, each said hub member having multiple radial spokes each having in alignment with one of said curved members;



each said curved member having two spur elements rigidly attached at its upper end and two spur elements, attached to its lower end, the spur elements at each said end being pivotably attached to the spur elements of the adjacent curved member;

two adjacent secondary curved members each having connection means for connecting the secondary curved members together, whereby the curved members can all be pivoted into a expanded symmetrical shape and then collapsed into a compact shape in which all the curved members are generally parallel to each other.

5,629,058

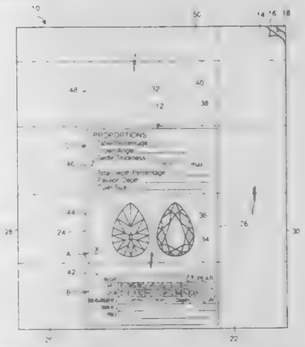
PREPRINTED SHAPE-SPECIFIC LABELLING FOR DIAMOND PAPERS

William M. Jones, III, Pine Bluff, Ark., assignor to Sissy's Log Cabin Inc., Pine Bluff, Ark.

Filed May 8, 1995, Ser. No. 436,826

Int. Cl.[6] B32B *1/08*; **B29D** *22/00*

U.S. Cl. 428—34.2 **9 Claims**



1. A structure for providing a diamond package having a standardized format so as to indicate iconically and verbally information specific to particular enclosed cut, gem-quality diamond having one of a number of given styles of cut, using a multiple panel, foldable sheet package foldable about two sets of mutually orthogonal axes so as to create an inner compartment and leave two rectangular panels outermost on opposite sides, said structure providing:

means providing an outer face of said foldable sheet package with a preprinted set of identifying information-receiver fields arranged in at least two panels which correspond in location to said two rectangular panels, one of which contains at least one iconic representation of a respective style of cut, and another of which contains in tabular form verbal indications of information-receiver fields for weight, clarity, color, measurements, comments and price, for use by:

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examining a cut diamond so as to determine its imperfections, weight, clarity, color and measurements, and decide on its price and comments to make in regard thereto;

entering markings spatially analogous to the imperfections on at least one said ionic representation;

entering or selecting verbal indicia corresponding to said weight, clarity, color, measurements, price and comments in respective said fields of said set; and

folding said foldable sheet package along said axes so as to enclose said cut diamond.

5,629,059

MULTI-LAYER PACKAGING FILM AND RECEPTACLES MADE THEREFROM

Bankim B. Desai; David H. Thomson, and William A. Moir, all of Mississauga, Canada, assignors to W.R. Grace & Co.-Conn., Duncan, S.C.

Filed Dec. 7, 1993, Ser. No. 163,451

Int. Cl.[6] B65B *53/00;* **B27M** *3/00;* **B32B** *27/08*

U.S. Cl. 428—34.9 **29 Claims**

1. A multi-layer, oriented, heat shrinkable thermoplastic film comprising:

(i) a first layer comprising an ethylene-vinyl acetate copolymer or a linear ethylene-alpha-olefin copolymer or a blend of an ethylene-vinyl acetate copolymer and a linear ethylene-alpha-olefin copolymer; and

(ii) a second layer comprising a blend of (a) a linear ethylene-alpha olefin copolymer; (b) a material selected from the group consisting of ethylene-vinyl acetate copolymers, ethylene-butyl acrylate copolymers, ethylene-methyl acrylate copolymers, ethylene-methyl methacrylate copolymers, ethylene-acrylic acid copolymers, ethylene-methacrylic acid copolymer and ethylene-carbon monoxide copolymers; and (c) homogeneous linear ethylene-alpha-olefin copolymer having a density of less than 0.900 g/cc.

5,629,060

PACKAGING WITH PEELABLE LID

Anthony J. M. Garwood, Zionsville, Ind., assignor to Seawell North America, Inc., Wilmington, Del.

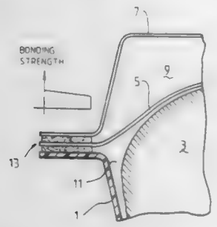
PCT No. PCT/AU92/00309, § 371 Date Mar. 3, 1994, § 102(e) Date Mar. 3, 1994, PCT Pub. No. WO93/01104, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 24, 1992, Ser. No. 170,254

Claims priority, application Australia, Jul. 1, 1991, PK6951

Int. Cl.[6] B32B *7/14;* **B30B** *15/34;* **B65D** *85/00*

U.S. Cl. 428—35.2 **42 Claims**



1. A method of sealing a peelable lid to a package which contains a base and a flexible web of plastics material covering and held to the base at the perimeter thereof which together define a space therebetween, said method comprising the steps of:

placing said lid over said flexible web;

sealing said lid by a thermosealing process to said flexible web over said base with a strip seal which extends around the perimeter of said base, said seal having an inner portion and an outer portion, said thermosealing process providing a temperature gradient across the width of the striplike seal from the inner portion to the outer portion thereof,

said seal further having a peelable adhesion gradient across the width of said strip seal, the inner portion of the seal which is adjacent the space having an adhesion which is lower than the adhesion of the outer portion of said seal so that when said lid is stripped from said package, said flexible web is unlikely to rupture.

5,629,061

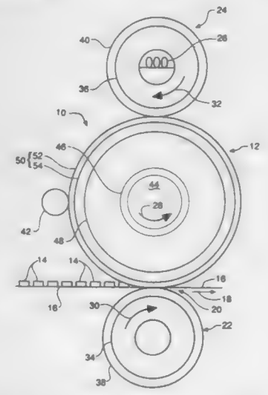
FUSING MEMBER FOR ELECTROSTATOGRAPHIC REPRODUCING APPARATUS AND METHOD FOR PREPARING FUSING MEMBER

Allen Kass, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 140,644, Oct. 21, 1993, Pat. No. 5,474,821. This application May 30, 1995, Ser. No. 453,553

Int. Cl.[6] B32B *7/00;* **B05D** *3/00*

U.S. Cl. 428—35.8 **20 Claims**



1. A method for preparing a fusing member comprising the steps of:

conversion coating a metallic support member;

applying a primer coat over said conversion coating;

applying a layer of silicone elastomer over said primer coat;

vulcanizing said silicone elastomer; and

baking said support member and said silicone elastomer at a temperature from about 250° F. to 550° for at least 30 minutes.

5,629,062

FIBER REINFORCED PLASTIC PIPE AND PROCESS FOR PRODUCING THE SAME

Hiroshi Ejiri, and Hideyuki Nakajima, both of Kamisu-machi, Japan, assignors to Petoca, Ltd., Tokyo, Japan

Continuation of Ser. No. 302,952, Sep. 12, 1994, abandoned. This application Jan. 3, 1996, Ser. No. 582,223

Claims priority, application Japan, Sep. 13, 1993, 5-249748

Int. Cl.[6] B32B *1/08;31/26*

U.S. Cl. 428—36.9 **3 Claims**

1. A fiber reinforced plastic pipe consisting essentially of:

a cylindrical inner layer formed by winding a prepreg sheet made of a reinforced fibrous sheet impregnated with a thermosetting resin;

an outer layer formed by winding a thermoplastic resin sheet or tape bondable to metal around the inner layer, said inner and outer layers being heat cured and thermocompression bonded in one united body; and

an outermost electroless metal-plated layer formed on and bonded to the outer surface of said outer layer.

5,629,063

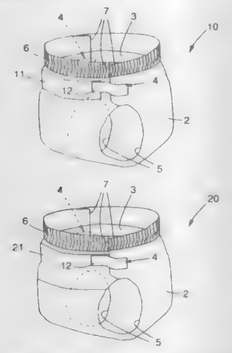
REPOSITIONABLE TAPE CLOSURE SYSTEM FOR A THIN FILM ARTICLE

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 333,499, Nov. 2, 1994. This application May 24, 1995, Ser. No. 449,031

Int. Cl.[6] A61F *13/60*

U.S. Cl. 428—40.1 **9 Claims**



1. A roll of nonblocking thermoplastic film consisting essentially of a film having two faces each of said two faces having a surface energy of greater than about 33 dynes/cm^2, one of said two faces printed with a low-adhesion material by coating a curable 100 percent solids, polar solvent or aqueous based low-adhesion material over from 10 to 75 percent of said one film face, the remaining portion of said one film face not printed with low-adhesion material, the film thickness being less than about 50 microns wherein the film can be unwound without blocking.

5,629,064

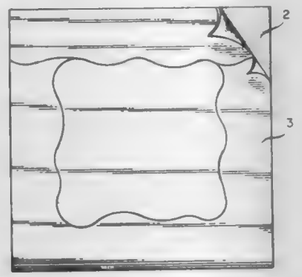
MASK USED FOR GROUTING TILE

Paul L. Sherman, and Kay Sherman, both of 380 Rte. #18, East Brunswick, N.J. 08816

Filed May 10, 1996, Ser. No. 644,365

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—42.3 **11 Claims**



1. A mask comprised of a layered impervious sheet of plastic or enameled high gloss coated paper with adhesive backing which has been scored to a sine wave configuration, the center insert which allows for quick easy application and removal remains intact as the mask is positioned to the tile body, which when applied to the surface of any tile that requires grouting will cover the entire surface protecting it from the grout which is intended to be installed into the space surrounding the tile itself.

5,629,065

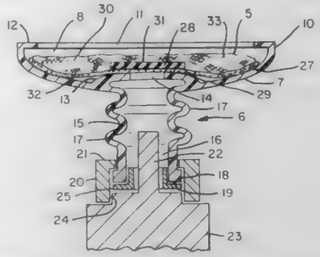
METHOD AND APPARATUS FOR SEALING LEAKS

Rainer Schinabeck, Scituate, Mass., assignor to American Velodur Metal, Inc., Scituate, Mass.

Division of Ser. No. 158,695, Dec. 2, 1993, Pat. No. 5,423,932. This application Jun. 5, 1995, Ser. No. 461,978

Int. Cl.[6] B32B *3/26;7/12*

U.S. Cl. 428—63 **3 Claims**



1. A patch for sealing a leak in a fluid containing body having a fluid under pressure therein, said patch comprising a piece of fluid-permeable, flexible fabric having a flexible, fluid-impervious pressure resistant center portion, a quick-curing adhesive substantially covering and adhering to one side of said fabric and said center portion, said center portion being constructed and arranged to be held tightly against a surface of said body adjacent said leak by force applied from an opposite side of said center portion, and said center portion being effective to stop pressurized fluid from flowing out of said leak prior to the curing of said adhesive, whereby said patch is capable of sealing pressurized leaks.

5,629,066

RESIN ARTICLE HAVING ANTI-STATIC PROPERTY

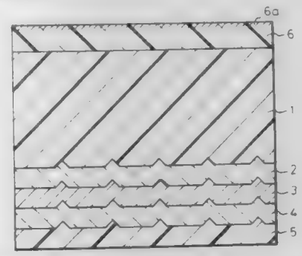
Utami Yonemura, and Tsuneo Hagiwara, both of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 900,447, Jun. 18, 1992, abandoned. This application Jan. 23, 1995, Ser. No. 377,032

Claims priority, application Japan, Jun. 19, 1991, 3-173323; Jul. 1, 1991, 3-185905; Jul. 1, 1991, 3-185906; Jul. 29, 1991, 3-210412

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—64.3 **12 Claims**



1. A resin article comprising

a shaped body of a synthetic resin having a surface, and

a single coated resin layer covering the surface of the shaped body, said single coated resin layer being made of an amino group-containing polymer and/or a polymer containing (meth-)acrylate of (iso)cyanuric acid as-a constituent unit and having an exposed top surface, wherein said exposed top surface of

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the single coated resin layer is chemically converted to have an anti-static property by chemical reaction with a quaternary compound-forming reagent, but the single coated resin layer has an unreacted part adjacent to the surface of the shaped body.

5,629,067

CERAMIC HONEYCOMB STRUCTURE WITH GROOVES AND OUTER COATING, PROCESS OF PRODUCING THE SAME, AND COATING MATERIAL USED IN THE HONEYCOMB STRUCTURE

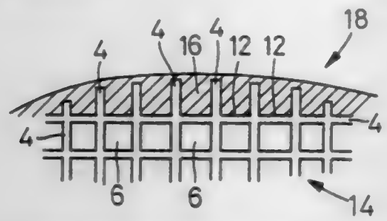
Wataru Kotani, Nagoya; Kunikazu Hamaguchi, Kasugai, and Yoshiyuki Kasai, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jan. 25, 1993, Ser. No. 8,313

Claims priority, application Japan, Jan. 30, 1992, 4-40103; Dec. 9, 1992, 4-351934

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—116 13 Claims



1. A ceramic honeycomb structure comprising:

a ceramic honeycomb body having a matrix of partition walls forming a multiplicity of cells extending in an axial direction of the honeycomb body, a radially outermost array of said multiplicity of cells being open to an outside of the honeycomb body in radial directions thereof, to provide a plurality of grooves formed in an outer periphery of the honeycomb body so as to extend in said axial direction; and

an outer coating which fills at least said grooves to cover said outer periphery of said ceramic honeycomb body, so as to provide an outer surface of the honeycomb structure, said outer coating comprising at least one material selected from the group consisting of: (i) cordierite particles and a matrix of an amorphous oxide for bonding the cordierite particles together, said cordierite particles having an average particle size not larger than 50 μm; and (ii) ceramic fibers and a matrix of an amorphous oxide for bonding the ceramic fibers together, said ceramic fibers having a fiber length of 10–15 μm and a fiber diameter of 2–3 μm, wherein said matrix of an amorphous oxide is formed from one of colloidal silica and colloidal alumina, and wherein said coating contains 3–35 parts by weight of said matrix of an amorphous oxide per 100 parts by weight of said cordierite particles and/or said ceramic fibers.

5,629,068

METHOD OF ENHANCING THE VISIBILITY OF DIFFRACTION PATTERN SURFACE EMBOSSMENT

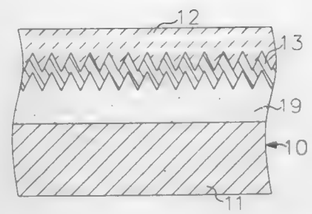
Richard G. Miekka, Sudbury; Richard A. Fotland, Holliston; Frederick N. Miekka, Billerica; John J. Fitch, Natick, all of Mass., and Karl Josephy, Los Angeles, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Division of Ser. No. 882,187, May 11, 1992, Pat. No. 5,549,774. This application Jun. 7, 1995, Ser. No. 474,510

Int. Cl.[6] B32B *3/00*; G02B *5/18*; A47G *35/00*

U.S. Cl. 428—148 49 Claims

1. A decorative sheet comprising a sheet of base material having a first surface and a second surface, in which the first surface is



embossed with an optical diffraction pattern or a holographic image; and a metallic effect ink bonded to the first surface of the sheet and forming, with the first surface, an interface which approximates the light reflective properties of an interface formed by vacuum metallization, wherein the metallic effect ink is formed of a binder containing metallic flakes, and in which the metallic flakes are embossed by metallizing an embossed carrier sheet, removing the metallized layer from the embossed sheet, and producing finely divided embossed metallic particles used as the metallic pigment for the metallic effect ink, the metallic effect ink printed on at least a portion of the embossed first surface of the sheet for enhancing the visibility of the embossed surface.

5,629,069

ABSORBENT PAPER AND ABSORBENT ARTICLE PROVIDED THEREWITH

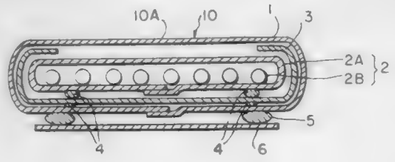
Mitsugu Hamajima, and Minoru Nakanishi, both of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 221,777, Apr. 1, 1994, Pat. No. 5,496,626. This application Nov. 21, 1995, Ser. No. 561,441

Claims priority, application Japan, Apr. 1, 1993, 5-75690

Int. Cl.[6] D06N *7/04*

U.S. Cl. 428—154 7 Claims



1. An absorbent paper comprising a base layer, which is obtained by paper-sheeting a material containing a highly bulky cellulose fiber, and a surface layer being located on said base layer, which is obtained by paper-sheeting a material containing a highly bulky cellulose fiber, wherein said highly bulky cellulose fiber has a fiber cross section area (W) of 3.0×10^{-6} cm^2 or above.

5,629,070

AUTHENTICATION LABEL AND AUTHENTICATING PATTERN INCORPORATING DIFFRACTING STRUCTURE AND METHOD OF FABRICATING THEM

Hans E. Korth, Stuttgart, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

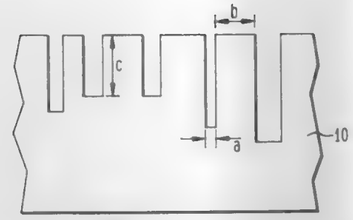
Filed May 19, 1995, Ser. No. 445,148

Claims priority, application European Pat. Off., Nov. 9, 1994, 94117660

Int. Cl.[6] B32B *1/00;3/00*

U.S. Cl. 428—174 16 Claims

1. A light diffracting structure having parameters generating a visibly distinguishable colored pattern that is used to validate the authenticity of an object attached to the structure wherein said



parameters are randomly defined by anisotropic process steps during the manufacturing of said diffracting structure.

5,629,071

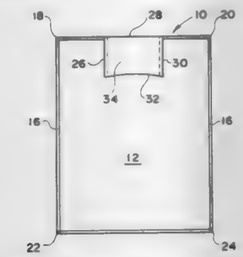
CONVERTABLE BEACH TOWEL

Yair Feldman, Metairie, La., assignor to Big E-Z Investments, Metairie, La.

Filed Feb. 24, 1995, Ser. No. 394,398

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—192 8 Claims



1. A beach towel, comprising:

an elongated sheet formed from a flexible material, said sheet having a front surface and a back surface;

a pillow assembly carried by an upper part of the front surface, said pillow assembly having one side unsecured to the front surface to allow turning of the sheet inside out and forming a bag for carrying accessories; and

a means carried by the back surface for securely engaging an upper part of said sheet on a back of a chair to prevent slipping of the towel positioned on the chair, said means comprising a transverse strip of flexible material attached to the back surface, said strip forming at least one pocket which is adapted for positioning over the back of the chair.

5,629,072

PRESSURE-SENSITIVE TRANSFER DELIVERY STICKER SLIP

Masaaki Yamanaka, and Akira Iwai, both of Ibaraki, Japan, assignors to Oji-Yuka Synthetic Paper Co., Ltd., Tokyo, Japan

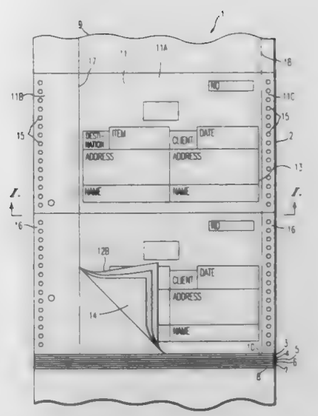
Filed Apr. 19, 1996, Ser. No. 634,726

Claims priority, application Japan, May 23, 1995, 7-146919

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 10 Claims

1. A pressure-sensitive transfer delivery sticker slip comprising (1) a monoaxially-stretched multi-layer film having an opacity of not less than 80% as determined according to JIS P-8138 and a tensile modulus of not less than 2×10^4 kgf/cm^2 in the stretching direction as determined according to JIS K-7127 obtained by monoaxially stretching a laminated film having a surface layer (B) comprising a resin composition comprising from 60 to 80% by weight of a finely divided inorganic powder (B_2) incorporated in from 20 to 40% by weight of a crystalline polyolefin (B_1) laminated on at least one side of a core layer (A) comprising as a base a resin composition comprising from 1 to 30% by weight of a finely divided inorganic powder (A_2) incorporated in from 70 to 99% by weight of a crystalline polyolefin (A_1) at a temperature of not higher than the melting point of said crystalline polyolefins (A_1, B_1) by a stretch ratio of from 3 to 10 in such a manner that fine isolated voids are formed in the various layers, (2) printing information on the surface of said surface layer (B) and (3) providing a carbon or non-carbon pressure-sensitive layer on the back layer of said monoaxially-stretched multi-layer film.



5,629,073

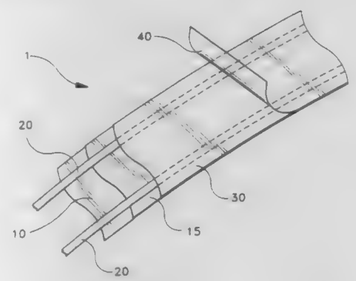
MEDIUM TEMPERATURE CONDUCTIVE-RESISTANT ARTICLES AND METHOD OF MAKING

Walter C. Lovell, Wilbraham, Mass., assignor to Tapeswitch Corporation, Farmingdale, N.Y.

Division of Ser. No. 117,916, Sep. 7, 1993, Pat. No. 5,494,610, which is a continuation-in-part of Ser. No. 905,764, Jun. 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,340

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—206 21 Claims



1. An electrical resistant temperature adjustable article, which comprises:

a first substrate; and

a medium temperature conductive-resistive coating applied to said substrate, said medium temperature conductive-resistive coating comprising 10–30 weight percent graphite having a particle size from about 150 to about 325 mesh, 20–65 weight percent polymer latex and 6 to 60 weight percent total water based on 100 weight percent total composition;

wherein said article is capable of having its temperature adjusted between ambient temperature and 400° F.

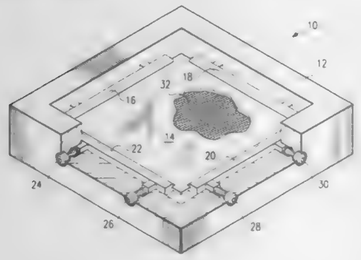
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5,629,074

DURABLE POLYMERIC OPTICAL SYSTEMS

Paul Klocek, Dallas, and Patrick A. Trotta, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 12, 1994, Ser. No. 289,404
Int. Cl.[6] B32B 7/02;17/00; G02B 13/14
U.S. Cl. 428—212 34 Claims



1. An infrared optical device comprising:

an infrared optical window, wherein said window comprises a sheet of polymeric material comprising a fabric of polymeric fibers and a matrix of polymeric material disposed in the interstices between the fibers, the matrix of polymeric material having a lower melting temperature than the polymeric fibers; and

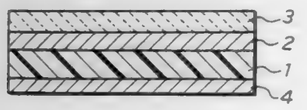
a frame coupled to the sheet of polymeric material and defining an opening through the frame spanned by the sheet of polymeric material, the frame operable to maintain the sheet of polymeric material in a taut state across the opening, the sheet of polymeric material substantially transmissive to infrared radiation passing through the opening.

5,629,075

MAGNETIC RECORDING MEDIUM HAVING A SUBSTRATE CONTAINING MAGNETIC POWDER

Akira Ishikawa; Hidehiko Nakayama, and Kazutaka Yamashita, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 427,870
Claims priority, application Japan, Apr. 28, 1994, 6-091246; Jun. 29, 1994, 6-148357
Int. Cl.[6] G11B 5/704
U.S. Cl. 428—216 6 Claims



1. A magnetic recording medium comprising a magnetic support containing a magnetic powder, and at least a nonmagnetic layer provided on the magnetic support and a magnetic layer provided on the nonmagnetic layer, which is characterized in that the magnetic layer has a thickness of from 0.05 to 1.5 μm, the nonmagnetic layer has a thickness of from 0.5 to 4 μm and the magnetic layer has a coercive force of from 1300 to 2500 Oe.

5,629,076

EXTRUDED PROPYLENE POLYMER RESIN FOAM

Yoshihito Fukasawa, Seattle, Wash., and Satoshi Hashimoto, Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/00126, § 371 Date Jun. 24, 1996, § 102(e) Date Jun. 24, 1996, PCT Pub. No. WO95/20622, PCT Pub. Date Aug. 3, 1995
PCT Filed Jan. 31, 1995, Ser. No. 624,531
Claims priority, application Japan, Jan. 31, 1994, 6-009394
Int. Cl.[6] C08J 9/00; B32B 3/26
U.S. Cl. 428—220 11 Claims

1. An extruded propylene polymer resin foam comprising a plurality of closed cells defined by cell walls which constitute a matrix of said foam,

said matrix comprising a propylene polymer resin exhibiting a biaxial extensional viscosity of at least 3.0×10^6 poise at a biaxial extensional strain of 0.2, and a biaxial strain hardening rate α of at least 0.25, said biaxial strain hardening rate α being defined by the following formula:

$$\alpha = 0.77\times(\log \eta_2 - \log \eta_1)$$

wherein η_1 represents the biaxial extensional viscosity at a biaxial extensional strain of 0.01, and η_2 represents the biaxial extensional viscosity at a biaxial extensional strain of 0.2,

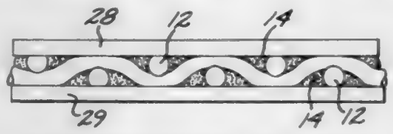
wherein said foam has a thickness of at least 20 mm, a density of from 0.005 to 0.03 g/cm^3, an average cell diameter of from 0.4 to 2.0 mm, and a closed cell ratio of at least 80%, in which said closed cell ratio is defined as the percentage of the volume of closed cells, based on the total volume of the closed cells and open cells in the foam.

5,629,077

BIODEGRADABLE MESH AND FILM STENT

Todd H. Turnlund, Mountain View, and Robert P. Eury, Cupertino, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Jun. 27, 1994, Ser. No. 266,964
Int. Cl.[6] B32B 7/00
U.S. Cl. 442—38 13 Claims



1. A biodegradable laminated fibrous mesh, comprising:

a woven mesh layer having first and second sides, said woven mesh layer being formed from a plurality of fibers of a first biodegradable polymer, said plurality of fibers of said first biodegradable polymer being heat bonded together with a second biodegradable polymer, said second biodegradable polymer melting at a temperature lower than said first biodegradable polymer; and

at least one layer of a film of a biodegradable polymer bonded to said woven mesh layer on at least one side of said mesh layer to form a sheet of biodegradable oven mesh and film material.

5,629,078

BACK-COATED ADHESIVE TAPE BASED ON A STITCH-BONDED WEB

Frank Ganschow, Elmshorn, Germany, assignor to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Nov. 17, 1995, Ser. No. 559,229
Claims priority, application Germany, Nov. 25, 1994, 44 42 092.7
Int. Cl.[6] B32B 7/12
U.S. Cl. 442—374 8 Claims

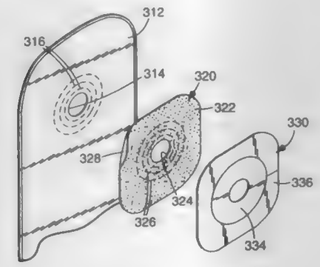
1. In an adhesive tape comprising a stitch-bonded web carrier having upper and lower surfaces, whose lower surface has been provided with an adhesive coating, the improvement which comprises coating the upper surface of a carrier with a coating selected from the group consisting of foam and then with a release coating or only with a release coating, wherein the release coating is produced by applying a halogen-free acrylate.

5,629,079

ELASTIC AND HEAT SEALABLE MEDICAL TAPES

Donald R. Battles, Arden Hills; Eugene G. Joseph, Vadnais Heights; Audrey S. Huang, Arden Hills; John F. Reed, North Oaks, and Scott M. Purrington, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 219,216, Mar. 29, 1994, Pat. No. 5,423,783, which is a continuation-in-part of Ser. No. 37,902, Mar. 26, 1993, Pat. No. 5,316,838, which is a continuation-in-part of Ser. No. 768,173, Sep. 30, 1991, Pat. No. 5,238,733.
This application Jan. 18, 1995, Ser. No. 374,133
Int. Cl.[6] B32B 7/12;27/00
U.S. Cl. 442—60 19 Claims



1. An elastomeric medical tape, comprising:

an extensible nonwoven web comprising meltblown multilayered microfibers having at least one first layer of an elastomeric material and at least one second layer of a heat bondable material; and

a layer of pressure sensitive adhesive on at least one face of said web, wherein said medical tape has an extensibility of at least 100%.

5,629,080

THERMALLY BONDABLE FIBER FOR HIGH STRENGTH NON-WOVEN FABRICS

Rakesh K. Gupta; James E. Mallory, and Kunihiko Takeuchi, all of Conyers, Ga., assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 943,190, Sep. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 818,772, Jan. 13, 1992, abandoned. This application Jan. 13, 1993, Ser. No. 3,696
Int. Cl.[6] D04H 1/58; D02G 3/00; C08L 23/04; C08F 255/02
U.S. Cl. 428—373 117 Claims

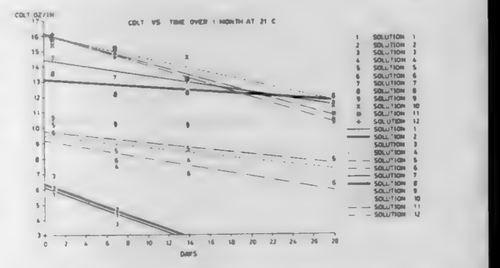
1. A fiber comprising at least one substantially linear polypropylene having a melt flow rate of about 0.5–30, and at least one substantially linear polypropylene having a melt flow rate of about 60–1000.

5,629,081

PREMOISTENED, FLUSHABLE, DISPOSABLE AND BIODEGRADABLE WET WIPES

Marc F. Richards, Dover, Del., and Kenneth Y. Wang, West Chester, Pa., assignors to Kimberly-Clark Tissue Corporation, Neenah, Wis.

Filed Mar. 31, 1995, Ser. No. 414,540
Int. Cl.[6] D04H 1/58
U.S. Cl. 442—96 10 Claims



1. A pre-moistened, dispersible, biodegradable wet wipe comprising:

a) a web of non-woven fibers and a binder selected from the group consisting of a polyvinyl alcohol, a polymer emulsion stabilized with an aqueous polyvinyl alcohol, a blend of a polyvinyl alcohol and an aqueous polymer emulsion, and a combination thereof;

b) an aqueous lotion comprising: from about 0.1 to about 0.9 percent by weight of the lotion of boric acid; from about 5 to about 8 percent by weight of the lotion of an alkali metal bicarbonate; and a preservative effective for inhibiting microbial activity in said lotion; and

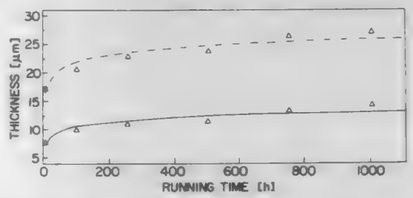
c) said wet wipe having a pH between 7 and about 9 and a wet strength between about 8 and about 20 oz/in.

5,629,082

MULTILAYER MATERIAL FOR SLIDING SURFACE BEARINGS

Hans-Paul Baureis, Horrenberg; Werner Schubert, Wiesloch, and Manfred Müller, Untereisesheim, all of Germany, assignors to Kolbenschmidt Aktiengesellschaft, Neckarsulm, Germany

Filed Jun. 14, 1994, Ser. No. 259,703
Claims priority, application Germany, Jun. 16, 1993, 43 19 867.8
Int. Cl.[6] B32B 5/22
U.S. Cl. 428—306.6 4 Claims



1. A multilayer material for sliding surface bearings, which comprises a metal backing layer; a porous bearing layer, which consists of a metal for sliding surface bearings and has been sinter-bonded to the backing layer; and a low-friction layer, which completely also fills the pores of the bearing layer and consists essentially of a mixture of at least about 70% by volume of polytetrafluoroethylene (PTFE), about 5 to 25% by volume metal filler, and about 5 to 25% by volume polyvinylidene fluoride (PVDF).

VOL 1198 ISS 2 MY 13 1997 UMI

5,629,083

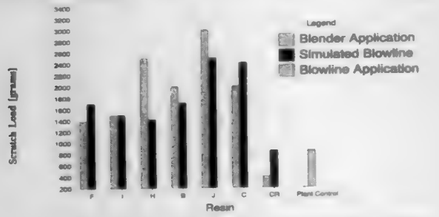
METHOD OF MANUFACTURING CELLULOSIC COMPOSITE AND PRODUCT THEREOF

Zygmunt Teodorczyk, Batavia, Ill., assignor to Masonite Corporation, Chicago, Ill.

Division of Ser. No. 342,778, Nov. 21, 1994. This application Jun. 7, 1995, Ser. No. 483,690

Int. Cl.[6] B32B *5/14;* C08F *283/00;* C08G *8/28;* C08L *61/00*

U.S. Cl. 428—308.8 20 Claims



1. A method for the production of a wood composite, comprising:

(a) reacting a phenolic component comprising a phenol and/or a phenol derivative and an aldehyde at an equivalent molar ratio of aldehyde to phenolic component of about 0.55:1 to about 0.8:1 in the presence of an alkaline catalyst;

(b) reacting a modifier with the product of step (a) to form a modified phenol-aldehyde resin, said modifier comprising melamine and/or urea;

(c) providing a cellulosic filler;

(d) combining said resin with said cellulosic filler under heat and with air turbulence;

(e) forming the product of step (d) into a mat; and

(f) consolidating said mat under heat and pressure to form a wood composite.

5,629,084

POROUS COMPOSITE MEMBRANE AND PROCESS

Wilson Moya, Derry, N.H., assignor to Millipore Investment Holdings Ltd., Wilmington, Del.

Continuation of Ser. No. 281,882, Jul. 28, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 545,230

Int. Cl.[6] B32B *3/26;5/14*

U.S. Cl. 428—315.7 37 Claims

1. A composite porous membrane which comprises a porous membrane substrate having an average pore size of between about 0.01 and 10 microns formed of a first polymer, said substrate having directly deposited over its entire surface a self-crosslinked second polymer free of a crosslinking agent and being formed from at least one uncrosslinked, self-crosslinkable polymer and a free radical initiator free of a crosslinking agent, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate.

5,629,085

RESIN LAMINATE

Keizou Ito; Takashi Kato; Syoji Sakaida, and Hikaru Ando, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, Japan

Division of Ser. No. 104,596, Aug. 10, 1993, Pat. No. 5,476,618. This application Mar. 17, 1995, Ser. No. 405,994

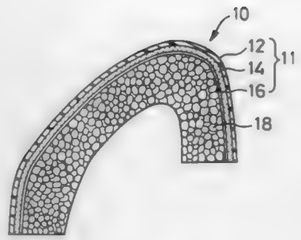
Claims priority, application Japan, Aug. 11, 1992, 4-236577; Jan. 13, 1993, 5-22142

Int. Cl.[6] B32B *3/26*

U.S. Cl. 428—318.6 6 Claims

1. A resin laminate comprising, in order, a resin member, a thermoplastic resin sheet, a foam layer and a solid base,

said resin member which comprises a skin bearing an ornamental surface and is made of a first resin material;



said thermoplastic resin sheet being a foam sheet made of a second resin material which is meltable to said first resin material and has a thickness ranging from 0.05 to 1.0 millimeters in a non-foamed state and 0.1 to 3 millimeters in a foamed state and an expansion ratio ranging from 1.5 through 10, and a glass transition point which is 5 to 60 degrees centigrade lower than that of said first resin material, said thermoplastic resin sheet being adhered to said resin member and said foam layer by being melted and resolidified; and

said foam layer being made of said first resin material and adhered to said thermoplastic resin sheet by expansion of a plurality of resin foaming beads to form said foam layer.

5,629,086

HARD-CARBON-FILM-COATED SUBSTRATE AND APPARATUS FOR FORMING THE SAME

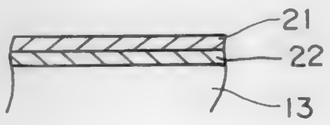
Hitoshi Hirano; Keiichi Kuramoto; Yoichi Domoto, and Seiichi Kiyama, all of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Division of Ser. No. 259,480, Jun. 14, 1994. This application Jun. 5, 1995, Ser. No. 464,544

Claims priority, application Japan, Jul. 7, 1993, 5-167866; Jul. 29, 1993, 5-188084; Aug. 23, 1993, 5-207912

Int. Cl.[6] C04B *41/85*

U.S. Cl. 428—336 29 Claims



1. A hard-carbon-film coated substrate comprising:

a substrate that consists of stainless steel or of a metal or alloy at least mainly composed of Ni or Al;

an intermediate layer arranged on said substrate that comprises Ru and at least one element selected from carbon, nitrogen and oxygen and that has a compositional gradient across its thickness; and

a predominantly amorphous hard carbon film arranged on said intermediate layer;

wherein said compositional gradient comprises a predominant proportion of Ru at a side of said intermediate layer adjacent said substrate and a predominant proportion of said at least one element selected from carbon, nitrogen and oxygen at a side of said intermediate layer adjacent said hard carbon film.

5,629,087

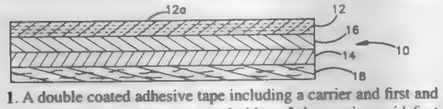
WATER ACTIVATED GOLF GRIP TAPE

William G. Hartman, Seven Hills; Herbert E. Bowling, Jr., Perry Village, and Mary K. Senary-Deley, Chardon, all of Ohio, assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 110,865, Aug. 24, 1993, Pat. No. 5,429,703. This application Apr. 24, 1995, Ser. No. 427,122

Int. Cl.[6] B32B *7/12;* B29C *63/18*

U.S. Cl. 428—355 AC 19 Claims



1. A double coated adhesive tape including a carrier and first and second adhesive layers on opposed sides of the carrier, said first adhesive layer comprising a pressure-sensitive adhesive including an acrylic adhesive base resin and a hydrophilic colloidal material dispersed in said adhesive base resin, said first adhesive layer having a normally tacky surface, said hydrophilic colloidal material cooperating with an applied aqueous liquid to temporarily suppress the tackiness and increase the lubricity of the normally tacky surface to enable sliding contact with a substrate without adherence and subsequently causing the surface to become sufficiently tacky and adhesive to adhere said tape to said substrate.

5,629,088

HYDROPHILIC SUBSTRATE AND METHOD OF MANUFACTURING THE SAME

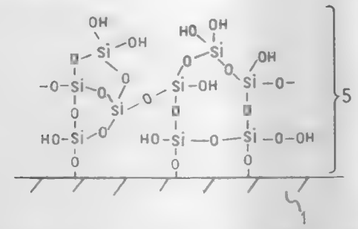
Kazufumi Ogawa, Hirakata; Mamoru Soga, Osaka, and Norihisa Mino, Settu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 914,535, Jul. 17, 1992, abandoned. This application Apr. 20, 1995, Ser. No. 426,477

Claims priority, application Japan, Jul. 23, 1991, 3-182147; Jul. 23, 1991, 3-182148; Jul. 23, 1991, 3-182149

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—391 4 Claims



1. A hydrophilic film on a substrate comprising a chemically adsorbed film covalently bonded to the substrate through —Si— atoms, wherein said chemically adsorbed film comprises polysiloxane groups, and silanol groups are present at the outermost surface of said chemically adsorbed film.

5,629,089

GLASS FIBER INSULATION PRODUCT

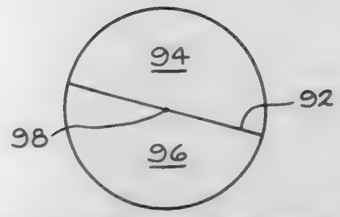
Clarke Berdan, II, Granville; Ronald A. Houpt, Newark; Russell M. Potter, Hebron, and David P. Aschenbeck, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Continuation of Ser. No. 148,746, Nov. 5, 1993, abandoned. This application Oct. 26, 1994, Ser. No. 329,804

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—392 15 Claims

1. An insulation product comprising irregularly-shaped glass fibers having a substantially uniform volume filling nature, the



insulation product having a recovered density within the range of 0.3 to 0.6 pcf (4.8 to 9.6 Kg/m^3) after compression of the insulation product to a compressed density within the range of 6 to 18 pcf (96 to 288 Kg/m^3).

5,629,090

STARCH HYDROLYSATES AS SEQUESTERERS

James E. Eastman, 6545 W. Iles Ave., New Berlin, Ill. 62670

Continuation of Ser. No. 14,770, Feb. 8, 1993, Pat. No. 5,474,718. This application Jun. 7, 1995, Ser. No. 476,730

Int. Cl.[6] B01J *13/02;* A61K *9/62;* C08B *37/16;* C13K *1/06*

U.S. Cl. 428—402.2 11 Claims

1. A starch hydrolysate composition particularly suited for use as a sequesterer, the composition characterized in that the composition comprises starch granules which do not exhibit the characteristic Maltese Cross pattern of birefringence and at least about 20% of the starch comprises starch molecules having a D.P. of about 10 to about 200 and a weight-average D.P. of about 10 to 50 in the form of inclusion complexes with an organic non-starch-solvent.

10. A starch/hydrophobic compound sequestrate prepared by contacting a hydrophobic compound with a starch hydrolysate sequesterer prepared by heating a slurry of granular starch comprising at least 30% amylopectin in a liquid medium comprising about 10–40% water and about 90–60% of a water miscible non-starch solvent to form a slurry of starch granules which when viewed under polarized light do not exhibit the characteristic Maltese Cross pattern of birefringence, and heating the slurry of starch granules in the presence of an acid until at least 20% of the starch in the granules has a D.P of about 10 to about 200.

5,629,091

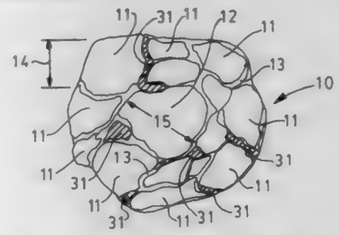
AGGLOMERATED ANTI-FRICTION GRANULES FOR PLASMA DEPOSITION

V. Durga N. Rao, Bloomfield Township; Robert A. Rose, Grosse Pointe Park; David A. Yeager, Plymouth, and Carlo A. Fucinari, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 9, 1994, Ser. No. 352,484

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 5 Claims



1. Granules of agglomerated powder particles, consisting essentially of:

(a) water atomizod stainless steel particles, said stainless steel particles consisting essentially of, by weight, 0.1–0.4% car-

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bon, 1–8% manganese, 1–5% nickel, 1–15% chromium and the remainder essentially iron;

(b) solid lubricant particles consisting of one of boron nitride or a eutectic of calcium fluoride and lithium fluoride, said solid lubricant particles having a particle size of 10–40 microns; and

(c) a binder holding said stainless steel and solid lubricant particles together in a granule, said binder being present in the amount of 0.5–4% by weight of the granules and vaporizable at the temperature of plasma deposition.

5,629,092

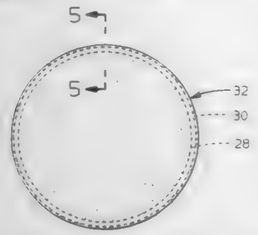
LUBRICOUS ENCAPSULATED FERROMAGNETIC PARTICLES

David E. Gay, Noblesville, Ind., and Howard H.-D. Lee, Bloomfield Hills, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 16, 1994, Ser. No. 357,890

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—407 **25 Claims**



1. A mass of moldable particles for compression molding into a magnetizable product which comprises a plurality of ferromagnetic particles dispersed uniformly throughout a polymeric matrix, said moldable particles each comprising a ferromagnetic particle having a lubricous shell thereabout encapsulating said ferromagnetic particle, said shell comprising a minority amount of a plurality of organic lubricant particles which are smaller than said ferromagnetic particles and are bonded to said ferromagnetic particle by a film of thermoplastic binder embedding said lubricant particles and deposited onto said ferromagnetic particles from a solution of said binder in a suitable solvent which is substantially a nonsolvent for said lubricant.

5,629,093

TRANSPARENT MULTILAYER FILM AND ITS USE FOR PROTECTION OF DATA ON DOCUMENTS AS WELL AS A TAMPER-PROOF LABEL

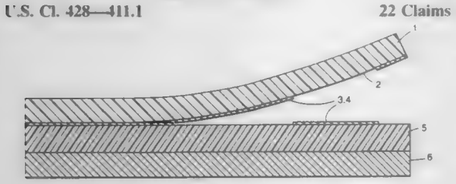
Katharina J. Bischof, Duesseldorf; Luigi Pastore, Grevenbroich; Wilhelm Kuester, Kaarst, all of Germany, and Lynn E. Faykish, Minnepolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 6, 1995, Ser. No. 499,110

Claims priority, application Germany, Jul. 8, 1994, 44 24 148.8

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—411.1 **22 Claims**



1. Transparent multilayer film, comprising a cover layer, a damagable layer, a pattern of adhesion-regulating material between said layers, and a first adhesive layer on the side of the film opposite that of the cover layer, for bonding with a substrate, characterized in that damagable layer (**3**) has a thickness of at least 10 μm and that the cohesive strength of the damagable layer (**3**) and the adhesive strength between the layers obeys the following relationship:

a and d>c>b

whereby

a is the adhesive strength between cover layer (**1**) and damagable layer (**3**) in the areas where no adhesion-regulating material (**2**) is present,

b is the adhesive strength between cover layer (**1**) and damagable layer (**3**), in the areas where adhesion-regulating material (**2**) is present,

c is the cohesive strength of damagable layer (**3**), and

d is the adhesive strength between layer (**3**) and first adhesive layer (**5**).

5,629,094

IMAGE TRANSFER MEDIUM CARRIER MEMBER AND IMAGE FORMING APPARATUS INCORPORATING THE SAME

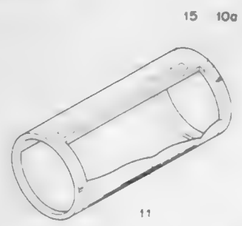
Teigo Sakakibara, Yokohama; Kiyoshi Sakai, Hachiouji; Yuichi Hashimoto, Tokyo, and Katsumi Aoki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 378,951

Claims priority, application Japan, Jan. 31, 1994, 6-027447

Int. Cl.[6] B32B *27/36;* **G03G** *5/06;15/14*

U.S. Cl. 428—447 **8 Claims**



1. An image transfer medium carrier member, comprising a substrate and a surface layer, said surface layer containing a polyester resin, a cured resin, and a silicone graft polymer.

5,629,095

RADIATION CURABLE COMPOSITIONS CONTAINING VINYL ETHER FUNCTIONAL POLYSILOXANES AND METHODS FOR THE PREPARATION

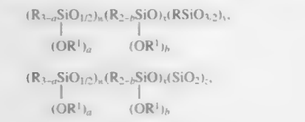
Valerie J. Bujanowski; Shedric O. Glover, both of Midland; Susan V. Perz, Essexville; Maris J. Ziemelis, Midland; Gary R. Homan, Midland, and Michael W. Skinner, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 63,206, May 18, 1993. This application May 18, 1995, Ser. No. 443,521

Int. Cl.[6] C08L *83/02;83/07;* **C08G** *77/20;77/08*

U.S. Cl. 428—447 **20 Claims**

1. A random siloxane polymer having its general formula selected from the group consisting of:



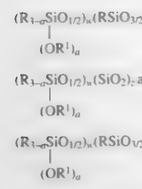
$$(R_{3-a}SiO_{1/2})_x(R_{2-b}SiO)_y(RSiO_{3/2})_z,$$

$$(OR^1)_a \qquad (OR^1)_b$$

$$(R_{3-a}SiO_{1/2})_x(R_{2-b}SiO)_y(SiO_{2})_z,$$

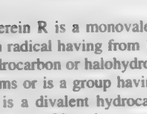
$$(OR^1)_a \qquad (OR^1)_b$$

-continued



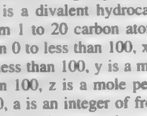
$$(R_{3-a}SiO_{1/2})_x(RSiO_{3/2})_z(SiO_2)_y,$$

$$(OR^1)_a$$



$$(R_{3-a}SiO_{1/2})_x(SiO_2)_y \text{ and}$$

$$(OR^1)_a$$



$$(R_{3-a}SiO_{1/2})_x(RSiO_{3/2})_z,$$

$$(OR^1)_a$$

wherein R is a monovalent hydrocarbon radical or halohydrocarbon radical having from 1 to 20 carbon atoms, R^1 is a monovalent hydrocarbon or halohydrocarbon radical having from 1 to 8 carbon atoms or is a group having the formula $—R^2OCH=CH_2$ wherein R^2 is a divalent hydrocarbon or halohydrocarbon radical having from 1 to 20 carbon atoms, w is a mole percent of from greater than 0 to less than 100, x is a mole percent of from greater than 0 to less than 100, y is a mole percent of from greater than 0 to less than 100, z is a mole percent of from greater than 0 to less than 100, a is an integer of from 0 to 3, b is an integer of from 0 to 2, the sum of w+x+y, the sum of w+x+z, the sum of w+y+z, the sum of w+z, and the sum of w+y being equal to 100 mole percent, with the proviso that at least one $—R^2OCH=CH_2$ group exists in each molecule.

5,629,096

Patent Not Issued For This Number

5,629,097

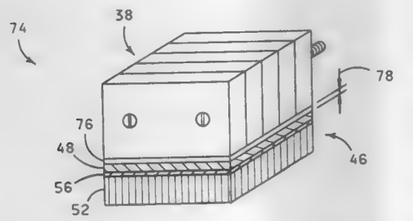
APPARATUS FOR FABRICATING SEMICONDUCTOR LASERS

Patrick J. McCann, Norman, Okla., assignor to The Board of Regents of the University of Oklahoma, Norman, Okla.

Division of Ser. No. 234,775, Apr. 28, 1994, Pat. No. 5,454,002. This application Nov. 30, 1994, Ser. No. 346,702

Int. Cl.[6] B28D *5/00;* **B26F** *3/00;* **H01L** *21/78;21/304*

U.S. Cl. 428—594 **17 Claims**



1. A cleaving assembly for producing a semiconductor laser, comprising:

a plurality of plates, each plate having a first facing surface, a second facing surface, a first side surface, a second side surface, an upper end surface and a lower end surface; and

connecting means for detachably connecting the plates into a plate assembly having a first end and a second end, and

wherein when the plates are detachably connected into the plate assembly, the plates are positioned against each other such that each plate has at least one facing surface disposed against a facing surface of an adjacent plate and wherein the lower end surfaces of the plates are all oriented in the same plane and cooperate to form a bonding surface, the bonding surface having a semiconductor epitaxial layer bonded thereto.

5,629,098

EPOXY ADHESIVES AND COPPER FOILS AND COPPER CLAD LAMINATES USING SAME

Charles A. Poutasse, Beachwood; Katherine V. Sack, No. Olmsted; Andrea M. Kovacs, Bay Village, and James R. Winchester, East Cleveland, all of Ohio, assignors to Gould Electronics Inc., Eastlake, Ohio

Continuation of Ser. No. 220,725, Mar. 30, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,197

Int. Cl.[6] B32B *17/06;15/20*

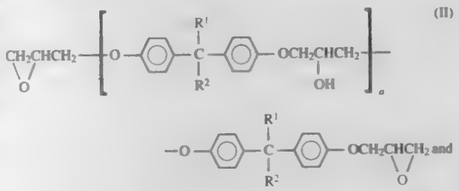
U.S. Cl. 428—626 **8 Claims**

1. A copper foil with an adhesion-promoting layer overlying at least one side of said foil, said adhesion-promoting layer, comprising:

(A) at least one multifunctional epoxy; and

(B) the composition prepared by combining

(B-1) at least one aromatic, difunctional epoxy represented by Formula (II)



(II)

and

(B-2) at least one amino-functional compound represented by the formula

$$R—(G)_n \qquad (I)$$

wherein in Formula (I):

R is an aromatic group;

G is a functional group selected from the group consisting of NH_2 and R^2NH_2, R^2 is an alkylene or alkylidene group and m is a number in the range of 1 to about 4; and

n is 1 or 2,

wherein the ratio of equivalents of (B-1) to (B-2) is from abut 1:2 to about 1:4.

5,629,099

ALLOYING-TREATED IRON-ZINC ALLOY DIP-PLATED STEEL SHEET EXCELLENT IN PRESS-FORMABILITY AND METHOD FOR MANUFACTURING SAME

Michitaka Sakurai; Kenji Tahara; Junichi Inagaki, and Toyofumi Watanabe, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP94/01052, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO95/01462, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 29, 1994, Ser. No. 356,341

Claims priority, application Japan, Jun. 30, 1993, 5-186705; Jun. 30, 1993, 5-186706; Dec. 20, 1993, 5-344828; Dec. 24, 1993, 5-347747

Int. Cl.[6] B32B *15/18;* **C23C** *2/06;2/28*

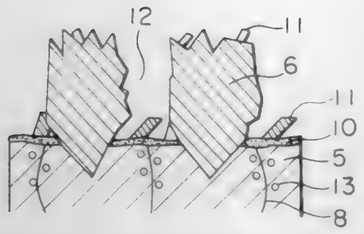
U.S. Cl. 428—659 **11 Claims**

6. A method for manufacturing an alloying-treated iron-zinc alloy dip-plated steel sheet excellent in press-formability, which comprises the steps of:

subjecting a hot-rolled steel sheet to a cold-rolling treatment to prepare a cold-rolled steel sheet;

passing said cold-rolled steel sheet through a zinc dip-plating bath having a chemical composition comprising zinc, aluminum and incidental impurities to apply a zinc dip-plating treatment to said cold-rolled steel sheet, thereby forming a zinc dip-plating layer on at least one surface of said cold-rolled steel sheet;

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subjecting said cold-rolled steel sheet having said zinc dip-plating layer thus formed on the surface thereof to an alloying treatment at a prescribed temperature, thereby forming an alloying-treated iron-zinc alloy dip-plating layer on said at least one surface of said cold-rolled steel sheet, said alloying-treated iron-zinc alloy dip-plating layer having numerous fine concavities; and then

subjecting said cold-rolled steel sheet having said alloying-treated iron-zinc alloy dip-plating layer having said numerous fine concavities thus formed on the surface thereof to a temper-rolling, thereby manufacturing an alloying-treated iron-zinc alloy dip-plated steel sheet excellent in press-formability;

characterized by:

limiting the content of said aluminum in said zinc dip-plating bath within a range of from 0.05 to 0.30 wt. %;

limiting the temperature region causing an initial reaction for forming an iron-aluminum alloy layer in said zinc dip-plating treatment within a range of from 500° to 600° C.; and

limiting said prescribed temperature in said alloying treatment within a range of from 480° to 600° C.

5,629,100

NON-MAGNETIC SINGLE CRYSTAL MN—ZN FERRITE FOR FLOATING TYPE MAGNETIC HEADS

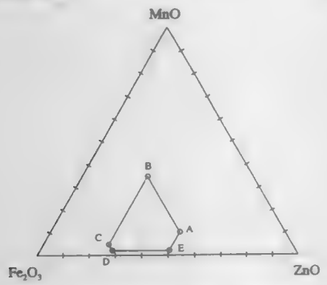
Masato Naganawa, and Hiroyasu Tsuji, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 149,231, Nov. 9, 1993, abandoned. This application Dec. 29, 1995, Ser. No. 580,495

Claims priority, application Japan, Nov. 20, 1992, 4-311996

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—700 **2 Claims**



1. A non-magnetic single crystal of Mn—Zn ferrite obtained by a solid phase reaction process including the steps of contacting a seed single crystal ferrite with a polycrystal crystal ferrite and producing the non-magnetic single crystal by growing the single crystal in a direction from the seed single crystal toward the polycrystal crystal under heating, said single crystal of Mn—Zn ferrite having a porosity of not more than 0.005%, a Curie point not higher than −50° C. and a composition defined by points A, B, C and D in a three-phase diagram of Fe_2O_3— MnO—ZnO, in which:

A: Fe_2O_3 40 mol %, MnO 10 mol%, ZnO 50 mol %;
B: Fe_2O_3 40 mol %, MnO 22 mol %, ZnO 38 mol %;
C: Fe_2O_3 60 mol %, MnO 2 mol%, ZnO 38 mol %; and
D: Fe_2O_3 48 mol %, MnO 2 mol %, ZnO 50 mol %.

5,629,101

MULTIMATERIAL DISK FOR HIGH-ENERGY BRAKING

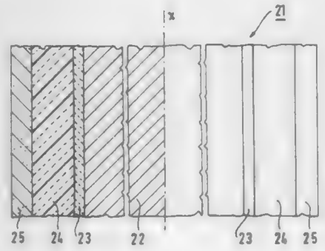
Michel Watremez, Marly, France, assignor to GEC Alsthom Transport SA, Paris, France

Filed Mar. 24, 1995, Ser. No. 409,590

Claims priority, application France, Mar. 25, 1994, 94 03536

Int. Cl.[6] F16D *13/60*

U.S. Cl. 428—701 **8 Claims**



1. A high-energy braking device, comprising:

a multimaterial disk including at least one facing formed of one of ceramic and a ceramic-metal composite material; and

an associated ceramic brake lining operative to engage with said multimaterial disk, said brake lining including studs formed of a ceramic material comprising aluminum titanate, wherein said studs of said brake lining have a composition by weight of approximately 54% alumina, approximately 33% titanium oxide, approximately 3% silica and approximately 2.5% magnesium oxide.

5,629,102

ELECTRICAL AUTOMOBILE HAVING A FUEL CELL, AND METHOD OF POWERING AN ELECTRICAL AUTOMOBILE WITH A FUEL CELL SYSTEM

John Werth, Princeton, N.J., assignor to H Power Corporation, Belleville, N.J.

Continuation-in-part of Ser. No. 52,561, Apr. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 874,113, Apr. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,524

Int. Cl.[6] H01M *8/06*

U.S. Cl. 429—17 **20 Claims**

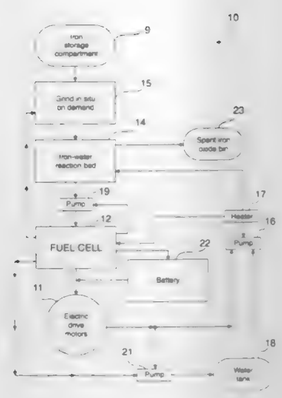
1. An electrical vehicle system comprising:

first storage means carried by the electrical vehicle for storing iron material;

second storage means carried by said electrical vehicle for storing a quantity of H_2O;

reactor means connected to said first and second storage means for passing H_2O in contact with said iron material for converting said iron material into iron oxide with the generation of hydrogen; and

a hydrogen-air fuel cell for generating electricity to power the electrical vehicle, with a by-product being H_2O, said



hydrogen-air fuel cell connected to said reactor means for receiving said hydrogen generated by said iron material.

5,629,103

HIGH-TEMPERATURE FUEL CELL WITH IMPROVED SOLID-ELECTROLYTE/ELECTRODE INTERFACE AND METHOD OF PRODUCING THE INTERFACE

Wolfram Wersing, Kirchheim; Ellen Ivers-Tiffee, München; Harald Landes, Rückersdorf; Ruth Männer, Oberpframmern; Christoph Nölscher, Nürnberg; Harald Schmidt, München, and Manfred Schnöller, Haimhausen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE94/00425, § 371 Date Oct. 27, 1995, § 102(e) Date Oct. 27, 1995, PCT Pub. No. WO94/25994, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 18, 1994, Ser. No. 535,240

Claims priority, application Germany, Apr. 30, 1993, 43 14 323.7

Int. Cl.[6] H01M *8/10*

U.S. Cl. 429—33 **14 Claims**



1. A high-temperature solid-electrolyte fuel cell of planar multilayer design having ceramic films formed as gas-transport, electrode and electrolyte layers, comprising:

an electrolyte layer embedded between first and second electrode layers and having an anode side and a cathode side;

first and second electronically and ionically conducting interlayers having increased surface located between the electrolyte layer and first and second interlayers, respectively;

the first interlayer on the anode side being selected from titanium-doped or niobium-doped zirconium oxide and niobium-doped or gadolinium-doped cerium oxide; and

the second interlayer on the cathode side being approximately 1 to 3 μm thick and composed of an ionically and electronically conducting cathode material.

5,629,104

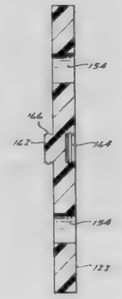
MODULAR ELECTRICAL ENERGY DEVICE

Michael D. Crawford, Sr., Rochester Hills; Curt L. Wilson, Detroit; Michael H. Crawford, Jr., Rochester Hills, and Matthew Gostek, Sterling Heights, all of Mich., assignors to Detroit Center Tool, Detroit, Mich.

Filed Nov. 23, 1994, Ser. No. 343,850

Int. Cl.[6] H01M *2/00*

U.S. Cl. 429—34 **10 Claims**



1. A modular energy device for combining fuel cells for use in a fuel system, said modular energy device comprising:

a pair of end plates each having a plurality of integral fuel and oxidant channels and a fuel and oxidant inlet orifice in communication with said fuel and oxidant channels, at least one recessed area on the interior faces of said end plates, said fuel and oxidant channels communicating with said recessed areas;

a plurality of plastic biplates having at least one recessed area on each face of said biplate, located to correspond with said recessed area of an end plate or other biplate abutting said face, and a fuel and oxidant inlet orifice in communication with said integral fuel and oxidant channels, and fuel and oxidant channels communicating with said recessed areas, said biplates and said end plates are made of electrically insulative material;

at least one fuel cell located within a recessed area of each biplate, said fuel cell includes an anode, a membrane which is made of a plastic material connected to said anode, and a cathode on the opposite side of said membrane;

a current collector having an electrical lead extending from a corner of said current collector, said current collector having a plurality of oblong orifices;

a sealing gasket inserted between said biplates and said end plates; and

a plurality of mating protrusions and indentations located on abutting end plates and biplates for aligning said end plates and said biplates, said protrusions are generally circular in cross section and have an annular ring located circumferentially there upon, and said indentations have a corresponding circular cross section for receiving said protrusions and a circular groove located therewithin for receiving said annular ring, said protrusions and said indentations mate in a snap and lock engagement.

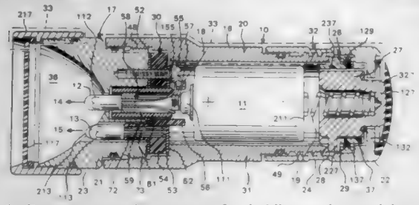
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,105

FLASHLIGHTS AND OTHER BATTERY-POWERED APPARATUS FOR HOLDING AND ENERGIZING TRANSDUCERS

John W. Matthews, Corona del Mar, Calif., assignor to Laser Products Corporation, Fountain Valley, Calif.

PCT No. PCT/US92/10209, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO94/13022, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1992, Ser. No. 367,170
Int. Cl.[6] H01M 2/10; F21L 7/00; H01R 19/00
U.S. Cl. 429—97 78 Claims



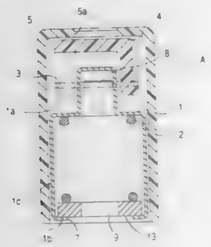
1. Battery-powered apparatus for holding and energizing an electric transducer producing an output from a battery current, comprising in combination:
a transducer mount;
a hand-held battery housing carrying the transducer mount;
a first internal battery terminal contact at the transducer mount;
a second internal battery terminal contact remote from the transducer mount;
a first external battery charge terminal on the transducer mount;
a second external battery charge terminal on a part of the battery housing;
a double-throw switch having a common element electrically connected to one of the first and second internal battery terminal contacts, having a first switched contact leading to a first terminal of the electric transducer, and having an opposite second switched contact electrically connected to one of the first and second external battery charge terminals;
an actuator for said switch including one of said transducer mount and said part of the battery housing movable relatively to each other; and
current-conducting paths between the other of the first and second internal battery terminal contacts and the other of the first and second external battery charge terminals and a second terminal of the electric transducer.

5,629,106

CONNECTION STRUCTURE AND CONNECTION FITTING FOR AN ELECTRODE POST OF A BATTERY

Satoshi Yamada, and Hidehiko Kuboshima, both of Haibara-gun, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 1, 1996, Ser. No. 672,966
Claims priority, application Japan, Jul. 3, 1995, 7-167588
Int. Cl.[6] H01M 2/20
U.S. Cl. 429—121 9 Claims



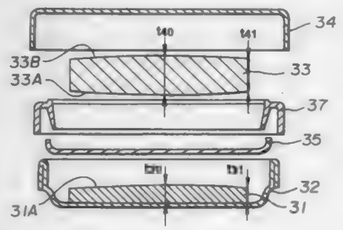
1. An electrode post connection structure for connecting a connection conductor to an electrode post of a battery through a connection fitting, comprising:
a lock stage portion formed on a circumference of said electrode post;
a tapered portion formed at a top portion of said electrode post;
a lock spring inserted in said connection fitting so as to engage with said lock stage portion to lock said electrode post and said connection fitting with each other; and
a hollow elastic body accommodated in said connection fitting so as to press said connection conductor to connect said electrode post and said connection conductor to each other.

5,629,107

COIN-SHAPED LITHIUM BATTERY

Masatsugu Shioda, and Koichi Miyoda, both of Fukushima, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 361,662, Dec. 22, 1994, abandoned.
This application Jan. 23, 1996, Ser. No. 591,954
Claims priority, application Japan, Dec. 29, 1993, 5-355375
Int. Cl.[6] H01M 4/04; 10/38
U.S. Cl. 429—128 7 Claims



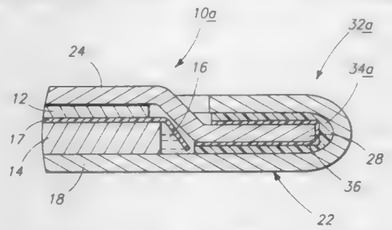
1. A coin-shaped lithium battery comprising:
a battery can containing therein an anode pellet composed of lithium or lithium alloy and a cathode pellet which are arranged to face each other with a separator provided between the pellets, said separator having a substantially planar configuration prior to assembly;
at least one of the anode pellet and the cathode pellet having its central part swollen to form a curved surface, each said curved surface being spherical or paraboloidal; and
the battery can being deformed to be aligned with the curved surface, whereby a lithium battery whose internal resistance as measured after 80% discharge of nominal capacity of about 220 mAh is less than or equal to 28 Ω is provided.

5,629,108

METHOD OF FORMING A BATTERY AND BATTERY

Rickie C. Lake, Eagle, Id., assignor to Micron Communications, Inc., Boise, Id.

Filed Sep. 28, 1995, Ser. No. 535,653
Int. Cl.[6] H01M 6/12; 6/46; 2/08; 6/00
U.S. Cl. 429—174 2 Claims



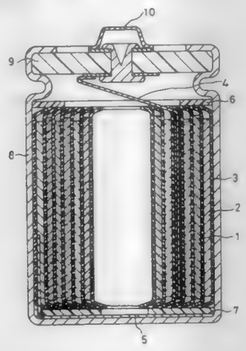
1. A method of forming a thin profile battery defined by a thickness which is less than a maximum linear dimension of its anode, the method comprising the following steps:
providing an electrically conductive first terminal housing member material;
depositing an electrically insulative unpolymerized chemical precursor material to formation of butyl rubber relative to a sealing region of the first terminal housing member material, the deposited precursor material being void of any polymerizing or curative agents;
after the depositing step, providing the first terminal housing member material into a shape of a desired first terminal housing member;
providing an electrically conductive second terminal housing member in facing juxtaposition to the first terminal housing member having the deposited butyl rubber precursor material, the second terminal housing member having a sealing region;
providing an anode and a cathode having an electrolyte positioned therebetween; the anode, the cathode, and the electrolyte being positioned intermediate the juxtaposed first and second terminal housing members; the anode being positioned to electrically connect with one of the first or second terminal housing members and the cathode being positioned to electrically connect with the other of the first or second terminal housing members;
providing a preformed gasket, the gasket consisting essentially of butyl rubber, the depositing step comprising applying the chemical precursor material onto the pre-formed butyl rubber gasket; and
joining the sealing regions of the first and second terminal housing members together to form an enclosed battery housing retaining the anode, the cathode and the electrolyte; the electrically insulative butyl rubber precursor material void of any polymerizing and curative agents being interposed between the joined first and second terminal housing members; the precursor material between the joined first and second terminal housing members comprising an electrically insulative fluid-tight seal therebetween; the insulative seal comprising the pre-form butyl rubber gasket and the unpolymerized butyl rubber precursor material.

5,629,109

NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY AND METHOD FOR PRODUCING ANODE THEREFOR

Shuji Ito, Akashi; Toshihide Murata, Izumiotsu; Masaki Hasegawa, Hirakata; Yasuhiko Bito, Osaka Pref., and Yoshinori Toyoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 20, 1995, Ser. No. 492,681
Claims priority, application Japan, Jun. 24, 1994, 6-142936; May 10, 1995, 7-112164
Int. Cl.[6] H01M 4/02
U.S. Cl. 429—218 29 Claims



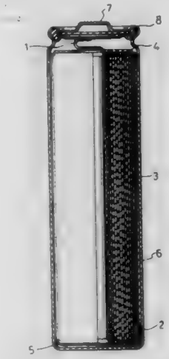
1. A non-aqueous electrolyte secondary battery comprising a cathode capable of being charged and discharged, a non-aqueous electrolyte, and an anode capable of being charged and discharged, wherein said anode comprises a carbon material containing at least one of 7–35 wt % sulfur and 10.5–18.3 wt % nitrogen, provided that if said carbon material contains two of these elements, the total amount of the elements does not exceed 35 wt %.

5,629,110

METHOD FOR PRODUCING CATHODE ACTIVE MATERIAL FOR NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY

Shigeo Kobayashi, Yawata; Junichi Yamaura, Kobe; Kazuhiro Okamura, Kadoma, and Hiromi Okuno, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 7, 1995, Ser. No. 499,670
Claims priority, application Japan, Jul. 13, 1994, 6-161189
Int. Cl.[6] H01M 4/06
U.S. Cl. 429—223 7 Claims



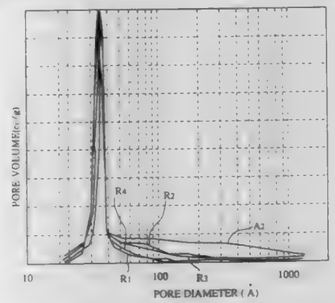
1. A method for producing a cathode active material for a non-aqueous electrolyte secondary battery, comprising the step of heating a mixture of β-$Ni(OH)_2$ and a lithium salt in the presence of oxygen at a temperature ranging from 600° C. to 800° C. to obtain $LiNiO_2$.

5,629,111

NICKEL ELECTRODE ACTIVE MATERIAL; A NICKEL ELECTRODE AND A NICKEL ALKALI STORAGE CELL USING SUCH NICKEL ELECTRODE ACTIVE MATERIAL; AND PRODUCTION METHODS OF SUCH MATERIAL, ELECTRODE, AND CELL

Akifumi Yamawaki, Itano-gun; Shinsuke Nakahori, Naruto; Motoo Tadokoro; Takeo Hamamatsu, both of Itano-gun, and Yoshitaka Baba, Naruto, all of Japan, assignors to Sanyo Electric Co. Ltd., Osaka, Japan

Filed Sep. 19, 1995, Ser. No. 529,980
Claims priority, application Japan, Sep. 20, 1994, 6-225104; May 22, 1995, 7-122329
Int. Cl.[6] H01M 4/32; 4/52; 4/58
U.S. Cl. 429—223 14 Claims



1. A fine-grained, nickel electrode active material comprising nickel hydroxide having pores wherein 20 vol % or more of the total volume of the pores comprises pores having a diameter of 60

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Å or greater, and having cobalt or a cobalt compound formed on external surfaces of the nickel hydroxide.

5,629,112

STABLE FORM OF $LiMnO_2$ AS CATHODE IN LITHIUM CELL

Isobel J. Davidson, Orleans; Roderick S. McMillan, and John J. Murray, both of Gloucester, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Division of Ser. No. 429,001, Apr. 26, 1995, Pat. No. 5,506,078, which is a continuation of Ser. No. 104,639, Aug. 11, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 559,603

Int. Cl.[6] H01M *4/50*

U.S. Cl. 429—224 **1 Claim**

1. A secondary lithium ion electrochemical cell, comprising a lithium intercalation anode comprising petroleum coke, a non-aqueous electrolyte comprising IM $LiN(CF_3SO_2)_2$ in a 50/50 mixture by volume of propylene carbonate and dimethoxyethane, a cathode and a separator between the anode and cathode, wherein the initial cathode material comprises a dried slurry of orthorhombic $LiMnO_2$ characterized by the specific orthorhombic crystal structure described by the space group Pmnm and the unit cell dimensions a=4.572 Å, b=5.757 Åand c=2.805 Å, and by the X-ray diffraction pattern shown in FIGS. **1** and **2** as active material, two weight percent of ethylenepropylenediene monomer and ten weight percent of carbon black, in cyclohexane.

5,629,113

PHOTOMASK USED BY PHOTOLITHOGRAPHY AND A PROCESS OF PRODUCING SAME

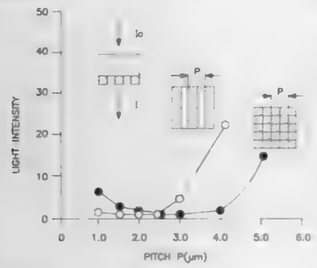
Hisashi Watanabe, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Kadoma, Japan

Continuation of Ser. No. 81,835, Jun. 24, 1993, which is a continuation of Ser. No. 718,337, Jun. 19, 1991, abandoned. This application May 23, 1995, Ser. No. 447,781

Claims priority, application Japan, Jun. 21, 1990, 2-163343

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **4 Claims**



1. A photomask comprising:

a transparent substrate;

a transparent electroconductive layer formed substantially on the entire surface of the substrate; and

a pattern of a transparent layer,

wherein the photomask does not include a light shielding layer, and

wherein the transparent layer has a thickness t defined by the following formula,

$$t=(2i-1)\lambda/[2(n-1)]$$

where t is a thickness of the transparent layer, n is a refractive index of the transparent layer, i is an integer and λ is a wavelength of an incident light to the photomask, thereby

providing a phase difference of π or π multiplied by an odd number between the light transmitting the transparent substrate and the light transmitting the transparent layer;

interfering with said two lights to reduce the intensity of the incident light; and

forming resist patterns in the doubled number of that of the transparent layer pattern.

said resist patterns having a width equal to the resolution limit R defined by the following formula.

$$R=K_1\lambda/NA$$

where K_1 is an optical constant of the photomask, λ is a wavelength of incident light and NA is a numerical aperture of the optical system.

5,629,114

PHASE SHIFT MASK AND MANUFACTURING METHOD THEREOF AND EXPOSURE METHOD USING PHASE SHIFT MASK COMPRISING A SEMITRANSPARENT REGION

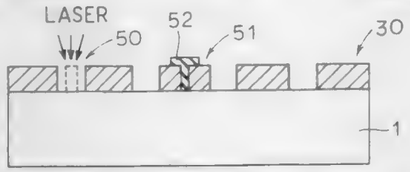
Akihiko Isao; Ryoichi Kobayashi, both of Saitama; Nobuyuki Yoshioka, Hyogo; Yaichiro Watakabe, Hyogo, and Junji Miyazaki, Hyogo, all of Japan, assignors to Ulvac Coating Corporation, Saitama, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Division of Ser. No. 155,370, Nov. 22, 1993, Pat. No. 5,474,864. This application Jun. 7, 1995, Ser. No. 480,371

Claims priority, application Japan, Nov. 21, 1992, 4-335523(P); Apr. 19, 1993, 5-91445(P); Nov. 15, 1993, 5-285327(P)

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **19 Claims**



1. A method of manufacturing a phase shift mask, which method comprises:

sputtering a phase shifter film of a prescribed thickness on a substrate, said phase shifter film consisting of a single material having a phase of transmitted exposure light converted by 180° and having transmittance of 5% to 40%;

forming a resist film having a prescribed pattern on the phase shifter film; and

dry etching said phase shifter film using the resist film as a mask to form a first light transmit portion having said substrate exposed and a second light transmit portion made of said phase shifter film;

wherein said single material is selected from the group consisting of an oxide of a metal, a nitride oxide of a metal, an oxide of a metal silicide and a nitride oxide of a metal silicide.

5,629,115

EXPOSURE MASK AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Kenji Kawano, Tokyo; Shinichi Ito, Yokohama; Iwao Higashikawa, Tokyo; Masamitsu Itoh, Yokohama; Takashi Kamo, Tokyo; Hiroaki Hazama, Yokohama, and Takayuki Iwamatsu, Abiko, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

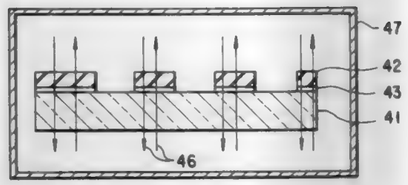
Continuation of Ser. No. 235,690, Apr. 29, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 583,857

Claims priority, application Japan, Apr. 30, 1993, 5-103416; Aug. 13, 1993, 5-201558; Dec. 3, 1993, 5-304185; Dec. 3, 1993, 5-304186; Feb. 25, 1994, 6-028592

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **60 Claims**

1. An exposure mask comprising:



a translucent film formed on a light-transmitting substrate, having a specific transmittance, and producing a phase difference of (2n+1)π, in which n stands for an integer, against an exposure light through the light-transmitting substrate, and

said translucent film including a stabilized region formed by executing at least one treatment selected from the group consisting of irradiation, heating, and oxidation, thereby preventing variations in physical properties of said translucent film.

5,629,116

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, PROCESS CARTRIDGE AND ELECTROPHOTOGRAPHIC APPARATUS HAVING THE ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Yoshio Kashizaki, Yokohama; Akihiro Senoo, Tokyo, and Masato Tanaka, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

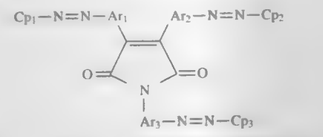
Filed Mar. 6, 1995, Ser. No. 399,044

Claims priority, application Japan, Mar. 7, 1994, 6-059820; Mar. 7, 1994, 6-059821

Int. Cl.[6] G03G *5/047;5/06;15/00*

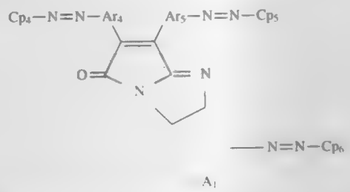
U.S. Cl. 430—58 **39 Claims**

34. An electrophotographic photosensitive member comprising a conductive substrate and a photosensitive layer on said conductive substrate, said photosensitive layer comprising a charge transport layer and a charge generation layer, said charge generation layer comprising an azo pigment represented by at least one formula selected from the group consisting of formulas (1), (2), (3), (4) and (5) below:



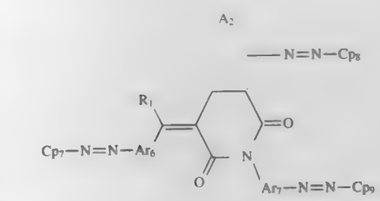
(1)

wherein Ar_1, Ar_2 and Ar_3 are the same or different and are each a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring, and Cp_1, Cp_2 and Cp_3 are the same or different and are each a coupler residual group having a phenolic hydroxyl group:



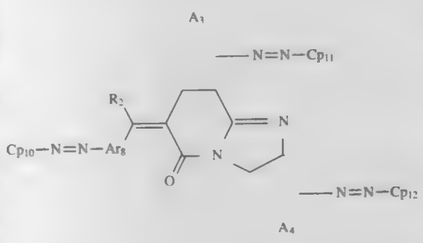
(2)

wherein Ar_4 and Ar_5 are the same or different and are each a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring, A_1 is a residual group required to form a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring with the carbon atoms in the formula above, and Cp_4, Cp_5 and Cp_6 are the same or different and are each a coupler residual group having a phenolic hydroxyl group:



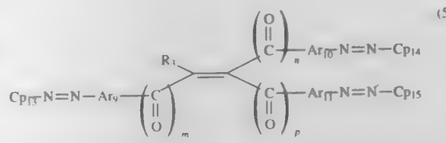
(3)

wherein R_1 is a hydrogen atom, a substituted or unsubstituted alkyl group or a cyano group, Ar_6 and Ar_7 are the same or different and are each a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring, A_2 is a residual group required to form a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring with the carbon atoms in the formula above, and Cp_7, Cp_8 and Cp_9 are the same or different and are each a coupler residual group having a phenolic hydroxyl group:



(4)

wherein R_2 is a hydrogen atom, a substituted or unsubstituted alkyl group or a cyano group, Ar_8 is the same or different and is a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring, A_3 and A_4 are the same or different and are each a residual group required to form a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring with the carbon atoms in the formula above, and Cp_{10}, Cp_{11} and Cp_{12} are the same or different and are each a coupler residual group having a phenolic hydroxyl group:



(5)

wherein R_3 is a hydrogen atom, a substituted or unsubstituted alkyl group or a cyano group, Ar_9, Ar_{10} and Ar_{11} are the same or different and are each a substituted or unsubstituted aromatic hydrocarbon ring or a substituted or unsubstituted aromatic heterocyclic ring, Cp_{13}, Cp_{14} and Cp_{15} are the same or different and are each a coupler residual group having a phenolic hydroxyl group, and m, n and p are the same or different and are each zero or a positive integer wherein m, n and p are not simultaneously zero.

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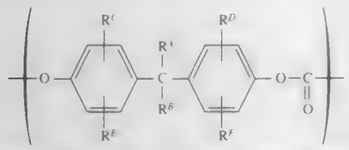
ELECTROPHOTOSENSITIVE MATERIAL

Masato Katsukawa; Masashi Tanaka; Ichiro Yamazato, and Yuka Nakamura, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 12, 1995, Ser. No. 542,460
Claims priority, application Japan, Oct. 21, 1994, 6-282670
Int. Cl.[6] G03G 5/04
U.S. Cl. 430—83 9 Claims

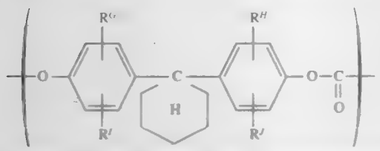
1. A single layer photosensitive material comprising a conductive substrate and an organic photosensitive layer provided on the conductive substrate, the organic photosensitive layer comprising a binding resin, an electron transferring material, an electric charge generating material and a hole transferring material.

wherein the binding resin comprises at least one member selected from the group consisting of a polycarbonate of a repeating unit represented by the formula (1):



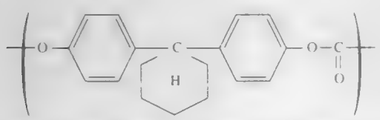
(1)

wherein R^A and R^B are the same or different and indicate a hydrogen atom or an alkyl group having 1 to 3 carbon atoms; R^C and R^D are the same or different and indicate an alkyl group having 1 to 3 carbon atoms; and R^E and R^F are the same or different and indicate a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, or a halogen atom, a polycarbonate of a repeating unit represented by the formula (2):



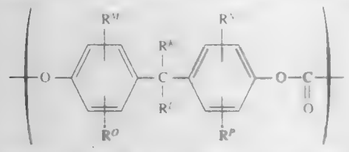
(2)

wherein R^G and R^H are the same or different and indicate an alkyl group having 1 to 3 carbon atoms; and R^I and R^J are the same or different and indicate a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, or a halogen atom, a polycarbonate of a repeating unit represented by the formula (3):



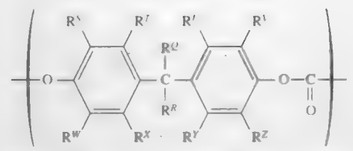
(3)

and a polycarbonate as a random copolymer or a block copolymer of a repeating unit represented by the formula (4):



(4)

wherein R^A and R^L are the same or different and indicate a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and R^K and R^L may bond each other to form a ring; R^M and R^N are the same or different and indicate an alkyl group having 1 to 3 carbon atoms; and R^O and R^P are the same or different and indicate a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, or a halogen atom and formula (5):



(5)

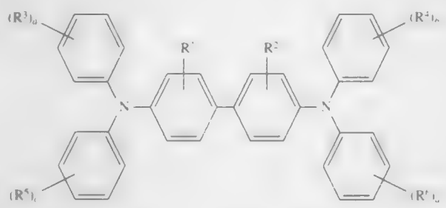
wherein R^Q and R^R are the same or different and indicate a hydrogen atom, an alkyl group having 1 to 3 carbon atoms or an aryl group which may have a substituent, and R^Q and R^R may bond each other to form a ring; and R^S, R^T, R^U, R^V, R^W, R^X, R^Y and R^Z are the same or different and indicate a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, or a halogen atom, the electron transferring material is selected from the group consisting of the diphenoquinone derivative represented by the formula (6):



(6)

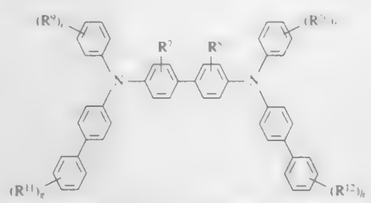
wherein R^{37}, R^{38}, R^{39} and R^{40} are the same or different and indicate a hydrogen atom, an alkyl group, an alkoxy group, an aryl group or an aralkyl group.

the hole transferring material is at least one member selected from the group consisting of a benzidine derivative represented by the formula (7):



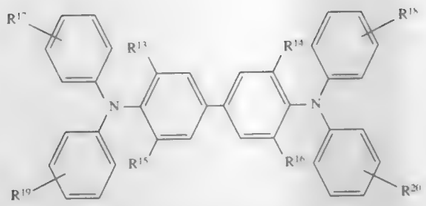
(7)

wherein R^1 and R^2 are the same or different and indicate a hydrogen atom or an alkyl group; R^3, R^4, R^5 and R^6 are the same or different and indicate an alkyl group, an alkoxy group or a halogen atom; and a, b, c and d are the same or different and indicate an integer of 0 to 5; provided that at least one of a, b, c and d indicates an integer of 2 or more, and c and d indicate an integer other than 0 when a and b indicate 0, simultaneously, a benzidine derivative represented by the formula (8):



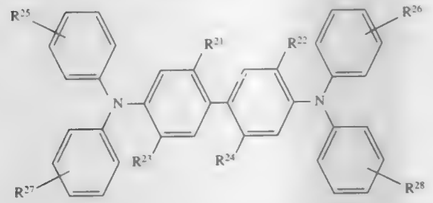
(8)

wherein R^7 and R^8 are the same or different and indicate a hydrogen atom or an alkyl group; R^9 and R^{10} are the same or different and indicate an alkyl group, an alkoxy group, an aryl group which may contain a substituent, or a halogen atom; R^{11} and R^{12} are the same or different and indicate an alkyl group, an alkoxy group or a halogen atom; and e, f, g and h are the same or different and indicate an integer of 0 to 5, a benzidine derivative represented by the formula (9):



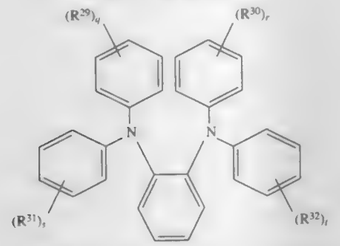
(9)

wherein R^{13}, R^{14}, R^{15} and R^{16} are the same or different and indicate an alkyl group; and R^{17}, R^{18}, R^{19} and R^{20} are the same or different and indicate a hydrogen atom, an alkyl group, an alkoxy group, an aryl group which may contain a substituent, or a halogen atom, a benzidine derivative represented by the formula (10):



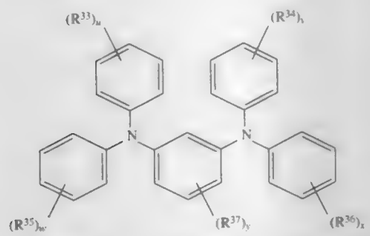
(10)

wherein R^{21} R^{22} R^{23} and R^{24} are the same or different and indicate an alkyl group, and R^{25}, R^{26}, R^{27} and R^{28} are the same or different and indicate a hydrogen atom, an alkyl group, an alkoxy group, an aryl group which may contain a substituent, or a halogen atom, an o-phenylenediamine derivative represented by the formula (11):



(11)

wherein R^{29}, R^{30}, R^{31} and R^{32} are the same or different and indicate an alkyl group, an alkoxy group, an aryl group which may contain a substituent, or a halogen atom; and q, r, s and t are the same or different and indicate an integer of 1 to 2, and a m-phenylenediamine derivative represented by the formula (12):



(12)

wherein R^{33}, R^{34}, R^{35} and R^{36} are the same or different and indicate an alkyl group, an alkoxy group, an aryl group which may contain a substituent, a halogen atom, an amino group or a N-substituted amino group; and u, v, w and x are the same or different and indicate an integer of 0 to 5.

5,629,118

TONER FOR USE IN DEVELOPING ELECTROSTATIC IMAGES

Makoto Tomono, Hino; Noriyoshi Tarumi, Tama, and Masayuki Sato, Ohtsuki, all of Japan, assignors to Konica Corporation, Japan

Division of Ser. No. 274,109, Jul. 12, 1994, abandoned, which is a continuation of Ser. No. 195,905, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 927,548, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 646,709, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 476,142, Feb. 26, 1990, Pat. No. 4,997,739, which is a continuation of Ser. No. 147,024, Jan. 19, 1988, Pat. No. 4,921,771, which is a continuation of Ser. No. 65,093, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 801,376, Nov. 22, 1985, abandoned, which is a continuation of Ser. No. 550,992, Nov. 14, 1983, abandoned, which is a continuation of Ser. No. 279,673, Jul. 1, 1981, abandoned, which is a continuation of Ser. No. 50,475, Jun. 20, 1979, abandoned, which is a continuation of Ser. No. 741,408, Nov. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 408,008, Oct. 19, 1973, abandoned. This application Jun. 6, 1995, Ser. No. 466,247
Claims priority, application Japan, Oct. 21, 1972, 47-104865; Oct. 23, 1972, 47-105289
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[6] G03G 13/20
U.S. Cl. 430—99 14 Claims

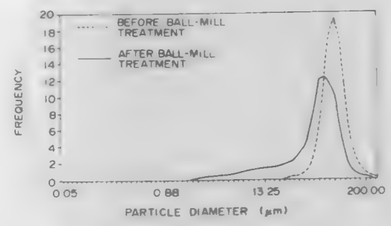
1. A method of electrophotography comprising developing an electrostatic latent image with a toner composition to form a toner image, transferring said toner image to a paper, then fixing said toner image by passing said paper between rollers, at least one of which is heated to a temperature of about 155° C. to about 210° C., said toner composition including a binder resin comprising a homopolymer of styrene or a copolymer of styrene with at least one vinyl comonomer, and about 1 to 10 parts by weight of low number average molecular weight polypropylene per 100 parts by weight of said homopolymer and/or said copolymer.

5,629,119

MAGNETIC CARRIER FOR ELECTROPHOTOGRAPHIC DEVELOPING AGENT

Toyotsune Inoue; Naruo Yabe; Hiroshi Shimoyama; Takuya Kadota, and Toshiro Okae, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 27, 1995, Ser. No. 534,881
Claims priority, application Japan, Sep. 28, 1994, 6-233668
Int. Cl.[6] G03G 9/107
U.S. Cl. 430—106.6 6 Claims



1. A magnetic carrier for a magnetic developing agent comprising:

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binder resin particles in which a magnetic powder is dispersed in an amount of 200 to 1000 parts by weight per 100 parts by weight of the binder resin,

wherein in said resin particles is dispersed a metal salt of a higher fatty acid, said higher fatty acid having 12 to 30 carbon atoms, said metal salt being present in an amount of 2 to 5 parts by weight per 100 parts by weight of the binder resin, and said resin particles having abrasive surfaces.

member selected from the group consisting of (i) a synthetic hydrocarbon synthesized from a synthetic gas comprised of carbon monoxide and hydrogen, and (ii) a synthetic hydrocarbon obtained by hydrogenation thereof; said wax having a number average molecular weight (Mn) from 300 to 1,500 and a molecular weight distribution value of weight average molecular weight/number average molecular weight (Mw/Mn) of not more than 1.45 as measured by gel permeation chromatography.

5,629,120

ELECTROSTATIC IMAGE DEVELOPING CARRIER AND ELECTROSTATIC IMAGE DEVELOPER

Manabu Serizawa; Ikutaroh Nagatsuka; Haruhide Ishida, and Sakon Takahashi, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 543,343

Claims priority, application Japan, Oct. 31, 1994, 6-266770

Int. Cl.[6] G03G *9/107*

U.S. Cl. 430—106.6 **10 Claims**

1. An electrostatic image developing carrier comprising ferrite, which has a copper content of from 0.1 ppm to 2,500 ppm, a zinc content of from 0.1 ppm to 5,000 ppm and a nickel content of from 0.1 ppm to 2,000 ppm.

5,629,121

TONER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PRODUCING THE SAME

Koji Nakayama, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 560,370

Claims priority, application Japan, Nov. 25, 1994, 6-315539

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—109 **12 Claims**

1. A toner for electrophotography which comprises a polyester resin and a colorant, the polyester resin comprising a saturated polyester resin having a melting initiation temperature of from 50° C. to less than 100° C., and a crosslinked polyester resin formulated from an unsaturated polyester crosslinked at the ethylenic unsaturation of the unsaturated polyester.

5,629,122

TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND IMAGE FORMING METHOD

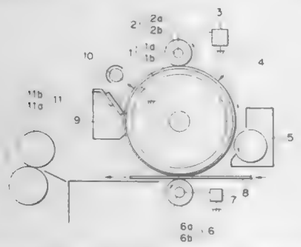
Hirohide Tanikawa, Yokohama; Shinji Doi, Kawasaki, and Masaki Uchiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 110,974, Aug. 24, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 465,912

Claims priority, application Japan, Aug. 25, 1992, 4-247179

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—110 **18 Claims**



1. A heat-fixable toner for developing an electrostatic image comprising a binder resin and a wax, wherein said wax is a

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5,629,123

TONERS FOR USE IN DEVELOPING ELECTROSTATIC IMAGES

Makoto Tomono, Hino; Noriyoshi Tarumi, Tama, and Masayuki Sato, Ohtsuki, all of Japan, assignors to Konica Corporation, Japan

Continuation of Ser. No. 273,638, Jul. 12, 1994, abandoned, which is a continuation of Ser. No. 195,905, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 927,548, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 646,709, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 476,142, Feb. 26, 1990, Pat. No. 4,997,739, which is a continuation of Ser. No. 147,024, Jan. 19, 1988, Pat. No. 4,921,771, which is a continuation of Ser. No. 65,093, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 801,376, Nov. 22, 1985, abandoned, which is a continuation of Ser. No. 550,992, Nov. 14, 1983, abandoned, which is a continuation of Ser. No. 279,673, Jul. 1, 1981, abandoned, which is a continuation of Ser. No. 50,475, Jun. 20, 1979, abandoned, which is a continuation of Ser. No. 741,408, Nov. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 408,008, Oct. 19, 1973, abandoned. This application Jun. 6, 1995, Ser. No. 467,055

Claims priority, application Japan, Oct. 21, 1972, 47-104865; Oct. 23, 1972, 47-105289

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—110 **13 Claims**

1. A toner for developing electrostatic images including a binder resin comprising a homopolymer of styrene or a copolymer of styrene and at least one vinyl comonomer, and low number average molecular weight polypropylene, in an amount of about 1 to 10 parts by weight per 100 parts by weight of said styrene homopolymer or copolymer.

5,629,124

CHARGE CONTROLLING AGENT FOR ELECTROSTATIC IMAGE DEVELOPMENT, AND TONER AND CHARGE-IMPARTING MATERIAL EMPLOYING IT

Hitoshi Ono; Noriaki Takahashi; Osamu Ando, and Masako Takeuchi, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jan. 29, 1996, Ser. No. 593,705

Claims priority, application Japan, Jan. 31, 1995, 7-014157; Jul. 26, 1995, 7-190653; Nov. 10, 1995, 7-292565

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **34 Claims**

1. An electrostatic image-developing toner comprising a resin, a colorant and a charge controlling agent for electrostatic image development, which is a compound of the formula (I):

$$Ar_1—(X—Ar_2)_n \quad (I)$$

wherein each of Ar_1 and Ar_2 is substituted or unsubstituted aromatic ring residue, X is a member selected from the group consisting of —CONH—, —NHCO—, —SO_2NH— and —NHSO_2—, and n is an integer of at least 2, provided that a plurality of Ar_2, or a plurality of X, are the same or different groups from one another, wherein said charge controlling agent is internally incorporated in said electrostatic image-developing toner and imparts negative charge to said electrostatic image-developing toner.

5,629,125

PHOTOSTIMULABLE PHOSPHOR AND RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Paul Leblans, Kontich; Albert D. Adriaensens, Mortsel, both of Belgium, and Melvin Tecotzky, Mendham, N.J., assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 243,094, May 16, 1994, abandoned, which is a continuation of Ser. No. 940,985, Sep. 4, 1992, abandoned. This application May 10, 1995, Ser. No. 438,308

Claims priority, application European Pat. Off., Sep. 17, 1991, 91202378

Int. Cl.[6] G03C *5/17*; **C09K** *11/08*

U.S. Cl. 430—139 **18 Claims**

10. A radiation image recording and reproducing method comprising the steps of:

(i) causing a visible radiation stimulable phosphor to absorb penetrating radiation having passed through an object or emitted by an object and to store energy of said penetrating radiation in said phosphor, which is within the scope of the following empirical formula (A):

$$Ba_{1-x-y-p-z}Sr_xM_y^{II}Cs_{2a}F_{2-a-b}Br_aX_b:zEu$$

wherein:

X is at least one halogen selected from the group consisting of Cl and I,

M^{II} is at least one alkaline earth metal selected from the group consisting of Ca and Mg;

x is in the range $0.10 \leq x \leq 0.55$;

a is in the range $0.70 \leq a \leq 0.96$;

y is in the range $0 \leq y \leq 0.10$;

b is in the range $0 \leq b < 0.15$;

p is in the range $10^{-4} \leq p \leq 10^{-1}$; and

z is in the range $10^{-6} \leq z \leq 10^{-2}$,

(ii) stimulating said phosphor with visible radiation in the wavelength range from 480 nm to 550 nm to release energy stored in said phosphor as fluorescent light differing in wavelength range from the stimulating light, and

(iii) detecting said fluorescent light.

5,629,126

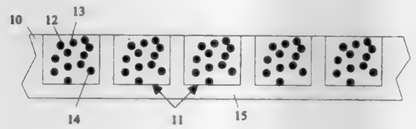
PHOSPHOR FILM COMPOSITION HAVING SENSITIVITY IN THE RED FOR USE IN IMAGE CAPTURE

William R. Trutna, Jr., Atherton, and Rene P. Helbing, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 17, 1996, Ser. No. 665,334

Int. Cl.[6] G03C *1/725*

U.S. Cl. 430—139 **4 Claims**



1. A composition for use in constructing a photosensitive film for recording an image, said composition comprising first, second, and third particle types, each of said particle types comprising a crystalline base material having a trap dopant and a color dopant deposited therein, each of said color dopants having a different spectral sensitivity, wherein one of said particle types is sensitive to light in the red portion of the visible spectrum and comprises a crystalline base material comprising an alkaline earth sulfide or selenide doped with Yb^{+2}.

5,629,127

POSITIVE ELECTRON BEAM RESIST COMPOSITION CONTAINING CRESOLNOVOLAK RESIN, SELECT ADDITIVE AND METHYL GALLATE/1,2-NAPHTHOQUINONEDIAZIDO-4-SULFONYL CHLORIDE REACTION PRODUCT

Hiroki Oosedo, Ehime; Mutsuo Kataoka, deceased, late of Shiga; Mayumi Kataoka, legal representative, Otsu; Shigeyoshi Kanetsuki, Shiga; Kazutaka Tamura, Shiga, and Masaya Asano, Shiga, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP94/00720, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/25904, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 28, 1994, Ser. No. 360,806

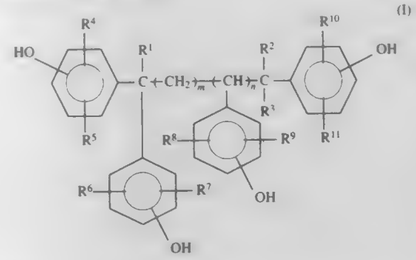
Claims priority, application Japan, Apr. 28, 1993, 5-102428

Int. Cl.[6] G03F *7/023*; **G03C** *1/61*

U.S. Cl. 430—191 **9 Claims**

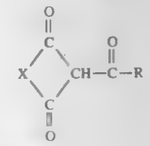
1. A positive electron beam resist composition, comprising (1) a cresolnovolak resin, (2) at least one additive selected from the group consisting of compounds represented by the following general formulae (I) and (II):

(I)

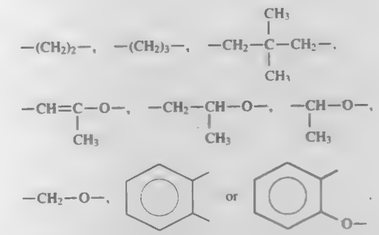


wherein R^1, R^2 and R^3 are each selected from the group consisting of hydrogen, an alkyl group, an aralkyl group and an aryl group; R^4, R^5, R^6, R^7, R^8, R^9, R^{10} and R^{11} are each selected from the group consisting of hydrogen, a halogen, a hydroxyl group and an alkyl group; m is an integer from 0 to 3; and n is an integer from 0 to 1

(II)



wherein X is



and R is an alkyl group or aralkyl group

and (3) an electron beam sensitive quinonediazide compound obtained by reacting methyl gallate and 1,2-naphthoquinonediazido-4-sulfonyl chloride with each other, as main ingredients, where the amount of the additive (2) is 5 to 20 wt % based on the weight of the resist solid; the amount of the quinonediazide compound (3) is 10 to 20 wt % based on the weight of the resist solid; and the triester content in

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said electron beam sensitive quinonediazide compound (3) is 30 to less than 55 wt % based on the weight of said electron beam sensitive quinonediazide compound.

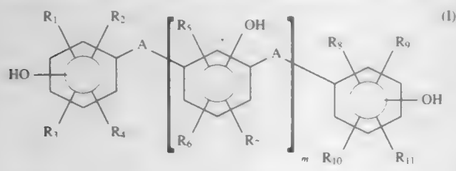
5,629,128

POSITIVE PHOTORESIST COMPOSITION

Koji Shirakawa; Kenichiro Sato; Kunihiko Kodama; Yasumasa Kawabe, and Shinji Sakaguchi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 20, 1995, Ser. No. 531,081
Claims priority, application Japan, Oct. 31, 1994, 6-267491
Int. Cl.[6] G03F *7/023*
U.S. Cl. 430—192 **10 Claims**

1. A positive photoresist composition comprising, in admixture, an alkali-soluble resin and [1,2 -naphthoquinonediazido-5-(and/or-4-)sulfonate of a polyhydroxy compound represented by the following formula (I)] at least one of a 1,2-naphthoquinonediazido-5-sulfonate of polyhydroxy compound represented by the following formula (I) and a 1,2 -naphthoquinonediazido-4-sulfonate of a polyhydroxy compound represented by the following formula (I):



(I)

wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9, R_{10} and R_{11} are the same or different and each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an acyl group or a cycloalkyl group, provided that at least one of R_1 to R_{11} is a cycloalkyl group;

A represents



in which R_{12} represents a hydrogen atom or an alkyl group; and m represents 2 or 3.

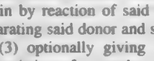
5,629,129

HEAT SENSITIVE INK SHEET AND IMAGE FORMING METHOD

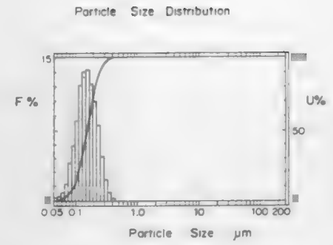
Mitsuru Yamamoto; Akihiko Takeda; Akihiro Shimomura, and Yasutomo Goto, all of Shizouka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 11, 1995, Ser. No. 514,083
Claims priority, application Japan, Aug. 11, 1994, 6-189328; Oct. 17, 1994, 6-250457; Apr. 25, 1995, 7-124450
Int. Cl.[6] G03F *7/34;* **G03C** *1/73;5/56*
U.S. Cl. 430—201 **11 Claims**

1. A heat sensitive ink sheet having a support sheet and a heat sensitive ink layer having a thickness of 0.2 to 0.6 μm which is formed of a heat sensitive ink material comprising 30 to 70 weight % of colored pigment, 25 to 65 weight % of amorphous organic polymer having a softening point of 40° to 150° C., and 0.1 to 20 weight % of a nitrogen-containing compound which comprises at least one compound selected from the group consisting of an amide compound having the formula (I):



(I)



in which R^1 represents an alkyl group of 8 to 24 carbon atoms, an alkoxyalkyl group of 8 to 24 carbon atoms, an alkyl group of 8 to 24 carbon atoms having a hydroxyl group, or an alkoxyalkyl group of 8 to 24 carbon atoms having a hydroxyl group, and each of R^2 and R^3 independently represents a hydrogen atom, an alkyl group of 1 to 12 carbon atoms, an alkoxyalkyl group of 1 to 12 carbon atoms, an alkyl group of 1 to 12 carbon atoms having a hydroxyl group, or an alkoxyalkyl group of 1 to 12 carbon atoms having a hydroxyl group, provided that R^1 is not the alkyl group in the case that R^2 and R^3 both represent a hydrogen atom;

a quaternary ammonium salt having the formula (II):



(II)

in which R^4 represents an alkyl group having 1 to 18 carbon atoms or an aryl group of 6 to 18 carbon atoms, each of R^5, R^6 and R^7 independently represents a hydrogen atom, a hydroxyl group, an alkyl group of 1 to 18 carbon atoms, or an aryl group of 6 to 18 carbon atoms, and X_1 represents a monovalent anion; and

a quaternary ammonium salt having the formula (III):

(III)

in which each of R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13} independently represents a hydrogen atom, a hydroxyl group, an alkyl group of 1 to 18 carbon atoms or an aryl group of 6 to 18 carbon atoms, R^{14} represents an alkylene group of 1 to 12 carbon atoms, and X_2 represents a monovalent anion.

5,629,130

METHOD FOR THE FORMATION OF A HEAT MODE IMAGE

Luc Leenders, Herentals, and Rita Torfs, Herenthout, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Jun. 19, 1996, Ser. No. 667,972
Claims priority, application European Pat. Off., Jun. 30, 1995, 95201741
Int. Cl.[6] G03C *8/10;8/08*
U.S. Cl. 430—201 **14 Claims**

1. Method for the formation of a heat mode image comprising the steps of (1) exposing to an information-wise distributed heat pattern a donor element comprising a support and at least one layer comprising a reactant (A) while in contact with an acceptor element comprising a support and at least one layer comprising a reactant (B), the said reactant (A) being transferred by said exposure from said donor element to said acceptor element to form an image therein by reaction of said reactant (A) with said reactant (B), (2) separating said donor and said acceptor element from each other, and (3) optionally giving said acceptor element a post-treatment consisting of a supply of extra energy, characterized in that the said acceptor element comprises spacing particles also containing a said reactant (B), and/or the said donor element comprises spacing particles also containing a said reactant (A), or a said reactant (B), or a density providing compound, or combinations thereof.

5,629,131

IMAGE RECEIVING LAYER FOR USE IN A SILVER SALT DIFFUSION TRANSFER PROCESS

René De Keyzer, Waasmunster, and Yves Van Meenen, Berchem, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 29, 1996, Ser. No. 639,442
Claims priority, application European Pat. Off., May 2, 1995, 95201134
Int. Cl.[6] G03C *8/28;* **G03F** *7/07*
U.S. Cl. 430—204 **11 Claims**

1. An image receiving material comprising a receiving layer containing physical development nuclei characterized in that said physical development nuclei are grown on a colloidal smectic clay.

5,629,132

METHOD FOR ENGRAVING AND/OR ETCHING WITH IMAGE-CARRYING MASK AND PHOTO-SENSITIVE LAMINATE FILM FOR USE IN MAKING THE MASK

Tsutomu Suzuki, and Ikuo Suzuki, both of Toyohashi, Japan, assignors to Aicello Chemical Co., Ltd., Japan

Division of Ser. No. 380,665, Jan. 30, 1995, Pat. No. 5,518,857, which is a division of Ser. No. 116,277, Sep. 3, 1992, Pat. No. 5,427,890, which is a continuation of Ser. No. 668,520, Mar. 28, 1991, abandoned. This application Feb. 28, 1996, Ser. No. 608,510
Int. Cl.[6] G03F *7/30;7/42*
U.S. Cl. 430—258 **6 Claims**



1. A method for engraving and/or etching a material comprising the following steps:

(a) exposing to light a water-soluble resin composition layer of a photo-sensitive laminate film comprising a supporting sheet, an image mask-protection layer peelably adhered to the supporting sheet, and a layer of a water-soluble resin composition having photocrosslinkability, said water-soluble resin composition selected from the group consisting of an acetal-modified polyvinyl alcohol having stilbazolium groups introduced therein, polyvinyl alcohol and a sulfate, hydrochloride, nitrate or phosphate of a condensate of 1-diazophenylamine with paraformaldehyde, to thus cause crosslinking of the exposed area of the resin layer to thereby form a predetermined pattern on the resin layer;

(b) dissolving out the non-crosslinked portion on the layer of the water-soluble photo-sensitive resin composition by developing the layer with water to thus form an image-carrying mask constituted from the crosslinked area of the photo-sensitive resin composition remaining on the image mask-protection layer;

(c) adhering the photo-sensitive laminate film on which the images are formed to the surface of the material to be processed;

(d) peeling off the supporting sheet from the photo-sensitive laminate film, and

(e) engraving and/or etching the material to be processed through the image-carrying mask adhered to the material.

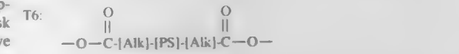
5,629,133

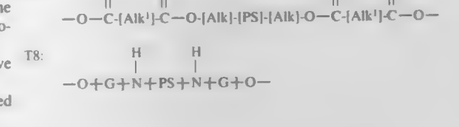
LIQUID RADIATION-CURABLE FORMULATION, IN PARTICULAR FOR USE IN STEREOLITHOGRAPHY

Jean-Pierre Wolf, Courtaman; Adrian Schulthess, Tentlingen; Bettina Steinmann, Praroman, and Max Hunziker, Düdingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 292,654, Aug. 18, 1994, Pat. No. 5,461,088. This application May 24, 1995, Ser. No. 449,172
Claims priority, application Switzerland, Aug. 26, 1993, 2541/93
Int. Cl.[6] G03C *5/00;* **C08F** *2/50;* **C08L** *83/10*
U.S. Cl. 430—269 **8 Claims**

2. A process for the production of three-dimensional objects from a formulation comprising at least one compound that contains free radically polymerisable groups, and at least one photoinitiator suitable for the polymerisation, which formulation additionally comprises a polyoxyalkylene-polysiloxane block copolymer which is selected from copolymers of the chemical formulae

(I): 

(II): 

and

(III) 

in which formulae the individual symbols have the following meanings:

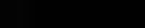
R^1 is a member selected from hydrogen and C_1–C_8alkyl;

c is a number from 1 to 8 corresponding to the average number of carbon atoms of an alkylene unit in a polyoxyalkylene group $(C_cH_{2c}O)_d$;

d is an integer from 1 to 100;

g is an integer from 1 to 4;

[T] is a group selected from the groups of formulae T1 to T12:

T1: 

T2:

T3:

T4:

T5:

T6:

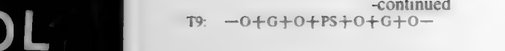
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T9: —O+G+O+PS+O+G+O—

T10:


T11: —O+G+O-[Alk]-[PS]-[Alk]-O+G+O—

T12: —O+G+O+$C_mH_{2m}O)_n$-[Alk]-[PS]-[Alk]-$(OC_mH_{2m})_{\overline{n}}$O+G+O—

[PS] is a polysiloxane of formula



R^2 is a group selected from methyl and phenyl;
b is an integer from 1 to 100;
[Alk] is an alkylene group of 3 to 10 carbon atoms;
[Alk^1] is an alkylene group of 1 to 20 carbon atoms;
m is a number from 1 to 8 corresponding to the average number of carbon atoms of an alkylene unit in a polyoxyalkylene group $(C_mH_{2m}O)_n$;
n is an integer from 1 to 50;
[G] is a group of formula



X is an atom selected from oxygen and sulfur;
[D] is a divalent hydrocarbon radical containing at least 2 carbon atoms;
e is an integer from 1 to 100, and
f is an integer from 1 to 50

by stereolithography, which comprises irradiating a layer of said formulation over the entire surface or in a predetermined pattern with actinic light from an ultraviolet/visible light source, such that within the irradiated areas a layer solidifies in a desired layer thickness, then a new layer of the formulation is formed on the solidified layer, which layer is likewise irradiated over the entire surface or in a predetermined pattern, and such that three-dimensional objects are formed from a plurality of solidified layers which adhere to one another by repeated coating and irradiation.

5,629,134

CHEMICALLY AMPLIFIED POSITIVE RESIST COMPOSITION

Katsuyuki Oikawa; Toshinobu Ishihara, both of Nakakubiki-gun; Fujio Yagihashi, Kawasaki; Akinobu Tanaka, Fujisawa; Yoshio Kawai, and Jiro Nakamura, both of Isehara, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan

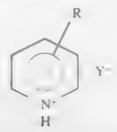
Filed Oct. 6, 1995, Ser. No. 539,759

Claims priority, application Japan, Oct. 7, 1994, 6-270579

Int. Cl.[6] G03C *1/492;1/494;1/76*

U.S. Cl. 430—270.1 **19 Claims**

1. A composition comprising
(A) an organic solvent,
(B) an alkali soluble resin having an acid unstable group,
(C) optionally a dissolution inhibitor having an acid unstable group,
(D) an acid generator other than a pyridine salt, and
(E) a pyridine salt of formula (1):



(1)

wherein R is a hydrogen atom, an alkyl, an alkoxy, an amino, or a dialkyl amino group and Y is an alkylsulfonic acid, an arylsulfonic acid, or a halogen atom,
wherein said composition is a chemically amplified positive resist composition.

5,629,135

CHEMICALLY AMPLIFIED RESIST COMPOSITION

Eiichi Kobayashi, Yokkaichi, Japan; Makoto Murata, Brussels, Belgium; Toshiyuki Ota, and Akira Tsuji, both of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 274,813, Jul. 14, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 590,677

Claims priority, application Japan, Jul. 15, 1993, 5-197813; Sep. 16, 1993, 5-253740; Sep. 24, 1993, 5-261875

Int. Cl.[6] G03F *7/004*

U.S. Cl. 430—270.1 **5 Claims**

1. A chemically amplified resist composition comprising,
(A') an alkali-soluble resin,
(E) a compound which can crosslink the alkali-soluble resin in the presence of an acid,
(B) a photoacid generator which is a compound generating an acid by irradiation, and
(C) a solvent selected from the group consisting of,
(I) a mixture of an ester of a saturated carboxylic acid having 1–4 carbon atoms with no substituent and an alcohol having 1–6 carbon atoms and an alkyl lactate, and
(II) a mixture of an alkyl lactate with a propylene glycol alkyl ether, a propylene glycol alkyl ether acetate or both.

5,629,136

PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE REQUIRING NO FOUNTAIN SOLUTION

Tatsuji Higashi; Koji Sonokawa, and Tsumoru Hirano, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 6, 1995, Ser. No. 568,372

Claims priority, application Japan, Dec. 9, 1994, 6-306568

Int. Cl.[6] G03F *7/11*

U.S. Cl. 430—272.1 **1 Claim**

1. A presensitized plate for use in making a lithographic printing plate requiring no fountain solution, which comprises a support and, formed thereon in the order from the support, a photosensitive layer and a silicone rubber layer, wherein said silicone rubber layer is a crosslinked and cured product obtained by addition reaction consisting essentially of (a) polysiloxane having alkenyl groups with (b) hydrogen polysiloxane having ≡Si—H groups so that the ratio of the total number of ≡Si—H groups in the total amount of (b) relative to the total number of alkenyl groups in the total amount of (a) is from 11 to 30,
wherein said polysiloxane (a) has at least two alkenyl groups directly bonded to silicon atoms per molecule, average repeating number x of an $—[Si(R^1)(R^2)—O]_x—$ group of $100 \leqq x \leqq 600$ (wherein R^1 and R^2 each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted polydimethylsiloxane group or a substituted or unsubstituted halogenated hydrocarbon group, provided that 70% or more of R^1 and R^2 are methyl groups), and substituted or unsubstituted alkyl groups or substituted or unsubstituted alkenyl groups directly bonded to the terminal silicon atoms, and
wherein said hydrogen polysiloxane (b) is represented by formula (I):

$$R^3—Si(R^4)_2—O—[SiH(R^4)—O]_y—[Si(R^4)_2—O]_z—Si(R^4)_2—R^3 \quad (I)$$

wherein R^3 represents a hydrogen atom or a methyl group; R^4 represents and alkyl group, an aryl group, or an aralkyl group, and R^4's may be the same or different, provided that 70% or more of R^4 is a methyl group; y is from 4 to 100, and z is from 0 to 100.

5,629,137

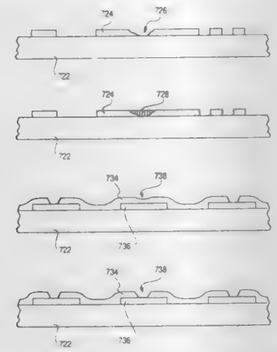
METHOD OF REPAIRING AN INTEGRATED CIRCUIT STRUCTURE

Glenn J. Leedy, Santa Barbara, Calif., assignor to ELM Technology Corporation, Jackson, Wyo.

Continuation of Ser. No. 55,439, Apr. 30, 1993, Pat. No. 5,451,489, which is a division of Ser. No. 775,324, Oct. 11, 1991, Pat. No. 5,225,771, which is a division of Ser. No. 482,135, Feb. 16, 1990, Pat. No. 5,103,557, which is a continuation-in-part of Ser. No. 194,596, May 16, 1988, Pat. No. 4,924,589. This application Jun. 7, 1995, Ser. No. 486,526

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—313 **14 Claims**



1. A method of repairing incomplete vias in a dielectric layer of an integrated circuit structure comprising the steps of:
using a plurality of probe points to probe a via location to test electrical continuity between said via location and a test location;
determining that an incomplete via is formed in the dielectric layer of the structure at said via location; and
etching away the dielectric layer at the via location.

5,629,138

PHOTOGRAPHIC FIXER COMPOSITION AND METHOD

Filippo Faranda, Savona; Elda Moizo, Carcare, and Carlo Marchesano, Savona, all of Italy, assignors to Imation Corp, Saint Paul, Minn.

Filed Dec. 29, 1995, Ser. No. 581,450

Claims priority, application European Pat. Off., Feb. 10, 1995, 95101822

Int. Cl.[6] G03C *5/38*

U.S. Cl. 430—455 **19 Claims**

1. Photographic fixer compositions comprising a silver halide solvent, a sulfite ion source, an aluminum salt hardening agent, a sequestering agent and an α-ketocarboxylic acid compound in an amount from 2.5 grams per liter.

5,629,139

PHOTOGRAPHIC PROCESSING SOLUTION COMPOSITION

Peter J. Twist, Gt. Missenden, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1995, Ser. No. 538,760

Claims priority, application United Kingdom, Oct. 4, 1994, 9419978

Int. Cl.[6] G03C *5/42;5/44;5/18;5/26*

U.S. Cl. 430—461 **18 Claims**

1. A photographic processing solution comprising a redox amplification oxidant or a compound which provides a redox amplification oxidant, and dissolved in said solution, a water-insoluble compound having a hydrophobic hydrocarbon group and an additional group which adsorbs to silver or stainless steel, said solution further comprising a nonionic surfactant to solubilize said water-insoluble compound.

5,629,140

PHOTOGRAPHIC ELEMENTS CONTAINING SCAVENGERS FOR OXIDIZED DEVELOPING AGENT

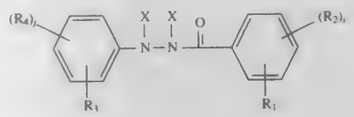
John W. Harder, Rochester; John V. Nelson, Penfield, and Stephen P. Singer, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,131

Int. Cl.[6] G03C *1/34;1/43;7/392*

U.S. Cl. 430—489 **24 Claims**

1. A photographic element comprising a support bearing at least one silver halide emulsion layer having associated therewith a hydrazide compound that functions as a scavenger for oxidized developing agent; said hydrazide compound having the formula:



wherein
each X is, independently, a hydrogen atom or a process-cleavable group;
R_1 is an electron-withdrawing and aqueous-solubilizing group;
each R_2 is, independently, a hydrogen atom or a monovalent organic substituent;
R_3 is a ballasting group;
each R_4 is, independently, a hydrogen atom or a monovalent organic substituent;
i is an integer with a value of 1 to 4; and
j is an integer with a value of 1 to 4.

5,629,141

PROCESS FOR HEAT TREATMENT OF A PHOTOGRAPHIC SUPPORT

Fumio Kawamoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 16, 1995, Ser. No. 558,539

Claims priority, application Japan, Nov. 22, 1994, 6-287757

Int. Cl.[6] G03C *1/795*

U.S. Cl. 430—495.1 **13 Claims**

1. A process for heat treatment of a photographic polyester film support, comprising steps of winding a biaxially oriented polyester film into a roll so that the thickness of a gas layer lying between the film layers continually becomes 1.5 μm to 10 μm, and then subjecting the roll of the polyester film to heat treatment at a temperature between 50° C. and the glass transition temperature of the polyester, wherein the width of the polyester film support is 1100 mm or longer and the polyester film support is subjected to knurling.

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5,629,142

DUAL COATING RADIOGRAPHIC ELEMENTS CONTAINING TABULAR GRAIN EMULSIONS WITH IMPROVED PHOTOGRAPHIC VEHICLES

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1995, Ser. No. 574,884
Int. Cl.[6] G03C *5/17;5/16*
U.S. Cl. 430—502 **19 Claims**

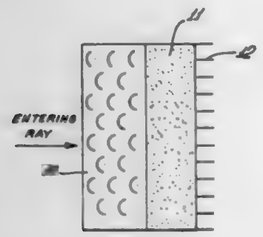
1. A radiographic element comprised of
a transparent film support having first and second major surfaces and
a first emulsion layer unit coated on the first major surface of the support,
a second emulsion layer unit coated on the second major surface of the support,
each of said first and second emulsion layer units including at least one radiation-sensitive emulsion comprised of
silver halide grains containing greater than 50 mole percent bromide and less than 4 mole percent iodide, based on silver, with greater than 50 percent of total grain projected area being accounted for by tabular grains having {111} major faces,
a spectral sensitizing dye adsorbed to the surfaces of the silver halide grains, and
hydrophilic colloid vehicle acting as a peptizer and a binder for the silver halide grains,
wherein at least a portion of the vehicle acting as a peptizer is a hydrophilic colloid derived from a water dispersible cationic starch.

5,629,143

PHOTOSENSITIVE ELEMENT COMPRISING A PHOTOSENSITIVE LAYER AND A REFLECTING LAYER COMPRISING INDIUM OR GALLIUM

George M. Sawyer, 3435 W. 110th St., Inglewood, Calif. 90303

Continuation of Ser. No. 103,347, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 39,508, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 784,612, Oct. 29, 1991, abandoned, which is a continuation of Ser. No. 436,378, Nov. 14, 1989, abandoned, Division of Ser. No. 924,156, Oct. 27, 1986, abandoned, which is a continuation of Ser. No. 699,504, Feb. 8, 1985, abandoned, which is a continuation of Ser. No. 539,640, Oct. 5, 1983, abandoned, which is a continuation of Ser. No. 348,610, Feb. 12, 1982, abandoned, which is a continuation of Ser. No. 72,209, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 72,197, Sep. 14, 1970, Pat. No. 4,178,181, which is a continuation of Ser. No. 544,275, Apr. 21, 1966, abandoned. This application Dec. 30, 1994, Ser. No. 368,391
Int. Cl.[6] G03C *1/77;7/00;5/10*
U.S. Cl. 430—524 **4 Claims**



1. A photosensitive element comprising:
a photosensitive layer and
a reflecting layer comprising indium or gallium.

5,629,144

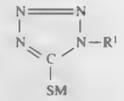
EPITAXIALLY SENSITIZED TABULAR GRAIN EMULSIONS CONTAINING SPEED/FOG MERCAPTOTETRAZOLE ENHANCING ADDENDA

Richard L. Daubendiek, Rochester; Donald L. Black, Webster; Joseph C. Deaton, Rochester; Timothy R. Gersey, Rochester; Joseph G. Lighthouse, Rochester; Myra T. Olm, Webster; Xin Wen, and Robert D. Wilson, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1994, Ser. No. 363,480
Int. Cl.[6] G03C *1/34;1/035*
U.S. Cl. 430—567 **14 Claims**

1. A radiation-sensitive silver halide emulsion comprising
silver halide tabular grains
(a) having {111} major faces,
(b) containing greater than 70 mole percent bromide, based on silver,
(c) accounting for greater than 90 percent of total grain projected area,
(d) exhibiting an average equivalent circular diameter of at least 0.7 μm,
(e) exhibiting an average thickness of less than 0.07 μm, and
(f) having latent image forming chemical sensitization sites on the surfaces of the tabular grains, and
a spectral sensitizing dye adsorbed to the surfaces of the tabular grains,
wherein the surface chemical sensitization sites include at least one chemically sensitized silver salt epitaxially located on less than 50 percent of the surface of said tabular grains and wherein said emulsion further comprises a mercapto compound represented by Formula III

Formula III



where M is H or Na and R^1 is an aliphatic or aromatic radical containing up to 20 carbon atoms, and wherein said silver salt is predominantly located adjacent at least one of the edges and corners of the tabular grains.

5,629,145

CRYOPRESERVATION OF CELL SUSPENSIONS

Harold T. Meryman, Ashton, Md., assignor to Organ, Inc., Chicago, Ill.

Filed Mar. 24, 1995, Ser. No. 409,525
Int. Cl.[6] A01N *1/00*
U.S. Cl. 435—1.3 **20 Claims**

1. A method for cryopreservation of a cell suspension comprising the steps of:
(a) mixing said cell suspension with a storage solution containing at least one non-penetrating polymer to produce a storage mixture wherein cells in said suspension contain an intracellular solution having a spontaneous intracellular freezing temperature of T_{hom} and said storage solution has a glass transition temperature of T_g, and
(b) maintaining said storage mixture at a temperature above T_{hom} and not more than T_g, thereby avoiding ice nucleation and maintaining the intracellular solution in a supercooled state.

5,629,146

METHOD FOR DETECTION OF HUMAN PAPILLOMAVIRUS (HPV) FOR DIAGNOSTIC PURPOSES

Joakim Dillner, and Lena Dillner, both of Stockholm, Sweden, assignors to Ferring AB, Malmo, Sweden

PCT No. PCT/SE89/00612, § 371 Date Jun. 25, 1991, § 102(e) Date Jun. 25, 1991, PCT Pub. No. WO90/04790, PCT Pub. Date May 3, 1990
PCT Filed Oct. 30, 1990, Ser. No. 678,974
Claims priority, application Sweden, Oct. 28, 1988, 8803870
Int. Cl.[6] C12Q *1/70*
U.S. Cl. 435—5 **41 Claims**

1. A diagnostic method for detecting infection with papillomavirus (PV) in a body fluid or tissue which is useful for diagnosing PV-associated neoplasia, which comprises:
a) reacting serum or other body fluid with papillomavirus protein selected from a group consisting of the L2-encoded approximately 64 kDa papillomavirus protein, the L1-encoded approximately 54 kDa papillomavirus protein, an approximately 28 kDa papillomavirus virion protein and an approximately 14 kDa papillomavirus virion protein; said papillomavirus protein having a sequence which is immunologically reactive with the antibody of said virus;
b) forming a complex of said papillomavirus protein and human IgA antibodies; wherein the formation of human IgA antibody/protein complex is a confirmation for the presence of an infection with papillomavirus; and
c) detecting said human IgA antibody-protein complex, wherein each protein is an isolated and purified protein.

2. A diagnostic method for detecting infection with papillomavirus (PV) in a body fluid or tissue which is useful for diagnosing PV-associated neoplasia, which comprises:
a) forming an antibody-antigen complex by reacting serum or other body fluid with a late protein peptide which has the same epitope as a peptide having an amino acid sequence represented by a formula selected from the group consisting of:

QVTFIYILVITCYENDVNVY	(SEQ ID NO 1).
PSEATVYLPPVPVSKVVSTD	(SEQ ID NO 3).
VVSTDEYVARTNIYYHAGTS	(SEQ ID NO 4).
HAGTSRLLAVGHPYFPIKKP	(SEQ ID NO 5).
PIKKPNNNKILVPKVSGLQY	(SEQ ID NO 6).
SGLQYRVFRIHLPDPNKFGF	(SEQ ID NO 7).
NKFGFPDTSFYNPDTQRLVW	(SEQ ID NO 8).
QRLVWACVGVEVGRGQPLGV	(SEQ ID NO 9).
VDNRECISMDYKQTQLCLIG	(SEQ ID NO 12).
LCLIGCKPPIGEHWGKGSPC	(SEQ ID NO 13).
KGSPCTNVAVNPGDCPPLEL	(SEQ ID NO 14).
PPLELINTVIQDGDMVHTGF	(SEQ ID NO 15).
VHTGFGAMDFTTLQANKSEV	(SEQ ID NO 16).
NKSEVPLDICTSICKYPDYI	(SEQ ID NO 17).
YPDYIKMVSEPYGDSLFFYL	(SEQ ID NO 18).
YIKGSGSTANLASSNYFPTP	(SEQ ID NO 21).
YFPTPSGSMVTSDAQIFNKP	(SEQ ID NO 22).
IFNKPYWLQRAQGHNNGICW	(SEQ ID NO 23).
NGICWGNQLFVTVVDTTRST	(SEQ ID NO 24).
TTRSTNMSLCAAISTSETTY	(SEQ ID NO 25).
SETTYKNTNFKEYLRHGEEV	(SEQ ID NO 26).
ITLTADVMTYIHSMNSTILE	(SEQ ID NO 28).
GGTLEDTYRFVTQAIACQKH	(SEQ ID NO 30).
ACQKHTPPAPKEDDPLKKYT	(SEQ ID NO 31).
LKKYTFWEVNLKEKFSADLD	(SEQ ID NO 32).
SADLDQFPLGRKFLLQAGLK	(SEQ ID NO 33).
QAGLKAKPKFTLGKRKATPT	(SEQ ID NO 34).
QLYKTCKQAGTCPPDIIPKV	(SEQ ID NO 37).
IIPKVEGKTIAEQILQYGSM	(SEQ ID NO 38).
PMDTFIVSTNPNTVTSSTPI	(SEQ ID NO 49).
GKSIGAKVHYYYDLSTIDPA	(SEQ ID NO 57).

and

NNGLYDIYADDFITDTSTTP	(SEQ ID NO 60).

and which is immunoreactive with antibodies to the late protein peptide, as determined by competitive immunoassay, in an animal or human infected with papillomavirus, and
b) detecting said antibody antigen complex, wherein the formation of mammalian antibody/antigen complex is a confirmation for the presence of an infection with papillomavirus.

5,629,147

ENRICHING AND IDENTIFYING FETAL CELLS IN MATERNAL BLOOD FOR IN SITU HYBRIDIZATION

Morteza Asgari; Mark Blick, both of Houston; Joel Bresser, Bellaire; Michael L. Cubbage, and Nagindra Prashad, both of Houston, all of Tex., assignors to Aprogenex, Inc., Houston, Tex.

Continuation of Ser. No. 94,710, Jul. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 915,965, Jul. 17, 1992, abandoned. This application Jan. 17, 1995, Ser. No. 374,144
Int. Cl.[6] C12Q *1/68;1/70;* **C07H** *21/04*
U.S. Cl. 435—5 **17 Claims**



1. A method for distinguishing individual fetal cells from adult cells in a blood specimen, said method comprising:
(i) treating a blood specimen from a pregnant female to yield a suspension of cells comprising fetal cells and adult cells;
(ii) performing in situ hybridization on said suspension of cells under hybridizing conditions suitable to maintain cell membranes in a substantially intact state and with a hybridization medium comprising a fluorescent-labeled oligonucleotide probe complementary to a messenger ribonucleic acid that is selectively expressed in the fetal cells to be detected but not in adult blood cells;
(iii) separating cells from said hybridization medium and unhybridized oligonucleotide probe; and
(iv) detecting said fluorescent-labeled oligonucleotide probe remaining in said cells;

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whereby the cells in which said fluorescent-labeled oligonucleotide probe is detected are identified as fetal cells and the cells in which said fluorescent-labeled oligonucleotide probe is not detected are identified as adult cells.

5,629,148

Patent Not Issued For This Number

5,629,149

DNA SEQUENCE-BASED HLA TYPING METHOD

Pedro Santamaria, Minneapolis; Michael T. Boyce-Jacino, Saint Paul; Jose J. Barbosa, Roseville; Stephen S. Rich, Saint Paul, and Anthony J. Faras, Long Lake, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 833,668, Feb. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,960, Mar. 6, 1991. This application Aug. 16, 1993, Ser. No. 106,802

The portion of the term of this patent subsequent to Mar. 6, 2011, has been disclaimed.

Int. Cl.[6] **C12Q** *1/68;1/48;* **C12N** *15/11*

U.S. Cl. 435—6 **36 Claims**

1. A method for determining the genotype of one or more HLA Class H polymorphic gene loci of interest selected from the group consisting of HLA-DRB 1/3/4/5, —DQB1, —DQA1, —DPB1 and —DPA1, of n subject in a sample containing subject RNA using a combination of conserved and non-conserved oligonucleotide primers, said method comprising:

(a) synthesizing in separate reactions, from RNA isolated from said sample, a cDNA molecule for each allele of each gene locus of interest, using a conserved oligonucleotide antisense primer that anneals to a nucleotide region conserved between each allele of each gene loci to be genotyped;

(b) amplifying said cDNA by at least one amplifying reaction to generate sufficient first and second double stranded amplifying reaction products for sequencing, using in a separate first amplifying reaction for each of said gene loci of interest encoded by the 3'-end of the alpha 1 domain exon, an oligonucleotide primer pair comprising a first conserved primer and a second conserved primer or, when said gene locus is HLA-DQB or HLA-DRB, optionally a first nonconserved primer for each of said gene loci of interest, wherein one of said first and second conserved oligonucleotide primers anneals to at least one allele of each of said loci of interest;

(c) sequencing directly at least one strand of said amplifying reaction product of each of said gene loci of interest to produce at least one sequencing ladder for each of said gene loci of interest, using in each sequencing reaction a third conserved oligonucleotide primer for each of said gene loci of interest;

(d) comparing the nucleotide sequence obtained from each sequencing ladder to known sequences for each such gene locus; and, optionally when said gene locus is HLA-DQB or HLA-DRB,

(e) comparing the nucleotide sequence of each sequencing ladder optionally obtained with a conserved oligonucleotide primer pair to the nucleotide sequence of each allele of such gene locus amplified with a conserved/nonconserved oligonucleotide primer pair, wherein said gene loci of interest are one or more gene loci whereby the Zenotype of said HLA Class II gene locus is obtained,

wherein when said gene locus is HLA-DQA1 (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 3; (b) said first and second conserved primers are depicted in SEQ. ID. NO: 3 and SEQ. ID. NO: 7: and (c) said third conserved primer is depicted in SEQ. ID. NO: 14 or SEQ. ID. NO: 15;

wherein when said gene locus is HLA:DOB1 said combination of conserved and non-conserved oligonucleotide primers is selected from the group consisting of

(1) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 1: (b) said first and second conserved primers are depicted in SEQ. ID. NO: 1 and SEQ. ID. NO: 4; and (c) said third conserved primer is depicted in SEQ. ID. NO: 10 or SEQ. ID. NO: 12;

(2) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 1: (b) said tint conserved primer is depicted in SEQ. ID. NO: 1 and said first nonconserved primer is depicted SEQ. ID. NO: 47 and wherein annealing of said conserved/nonconserved primer pair occurs at about 37° C.; and (c) said third conserved primer is depicted in SEQ. ID. NO: 4;

(3) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 1: (b) said first conserved primer is depicted in SEQ. ID. NO: 1 and said first nonconserved primer is depicted SEQ. ID. NO: 47 and wherein annealing of said conserved/nonconserved primer pair occurs at about 55° C.–60° C.; and (c) said third conserved primer is depicted in SEQ. ID. NO: 10or SEQ. ID. NO: 12;

(4) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 1: (b) said first conserved primer is depicted in SEQ. ID. NO: 1 and said first nonconserved primer is depicted SEQ. ID. NO: 48; and (c) said third conserved primer is depicted in SEQ. ID. NO: 10 or SEQ. ID. NO: 12; and

(5) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 1: (b) said first conserved primer is depicted in SEQ. ID. NO: 1 and said first nonconserved primer is depicted SEQ. ID. NO: 49: and (c) said third conserved primer is depicted in SEQ. ID. NO: 10 or SEQ. ID. NO: 12;

wherein when said gene locus is HLA-DPB1, said combination of conserved and non-conserved oligonucleotide primers is selected from the group consisting of

(1) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 24; (b) said first and second conserved primers are depicted in SEQ. ID. NO: 24 and SEQ. ID. NO: 23: and (c) said third conserved primer is depicted in SEQ. ID. NO: 25 or SEQ. ID. NO: 26: and

(2) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 25; (b) said first and second conserved primers are depicted in SEQ. ID. NO: 25 and SEQ. ID. NO: 23: and (c) said third conserved primer is depicted in SEQ. ID. NO: 26;

wherein when said gene locus is HLA-DPA1, said combination of conserved and non-conserved oligonucleotide primers is selected from the group consisting of

(1) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 31; (b) said first and second conserved primers are depicted in SEQ. ID. NO: 31 and SEQ. ID. NO: 32; and (c) said third conserved primer is depicted in SEQ. ID. NO: 33 or SEQ. ID. NO: 34;

(2) (a) said conserved oligonucleotide and sense primer is depicted in SEQ. ID. NO: 39; (b) said first and second conserved primers are depicted in SEQ. ID. NO: 39 and SEQ. ID. NO: 38: and (c) said third conserved primer is depicted in SEQ. ID. NO: 40 or SEQ. ID. NO: 41;

(3) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 33; (b) said first and second conserved primers are depicted in SEQ. ID. NO: 33 and SEQ. ID. NO: 32; and (c) said third conserved primer is depicted in SEQ. ID. NO: 34;

wherein when said gene locus is HLA-DRB, said combination of conserved and non-conserved oligonucleotide primers is selected from the group consisting of

(1) (a) said conserved oligonucleotide and sense primer is depicted in SEQ. ID. NO: 2: (b) said first and second conserved primers are depicted in SEQ. ID. NO: 2 and SEQ. ID. NO: 6: and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13;

(2) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 2; (b) said first conserved primer is depicted in SEQ. ID. NO: 2 and said first nonconserved primer is depicted in SEQ. ID. NO: 42 and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13;

(3) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 2; (b) said first conserved primer is depicted in SEQ. ID. NO: 2 and said first nonconserved primer is depicted in SEQ. ID. NO: 43; and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13;

(4) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 2; (b) said first conserved primer is depicted in SEQ. ID. NO: 2 and said first nonconserved primer is depicted in SEQ. ID. NO: 44: and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13;

(5) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 2; (b) said amplifying has four discrete amplifying steps, and wherein in first discrete amplifying step said first conserved primer is depicted in SEQ. ID. NO: 2 and said second conserved primer is depicted in SEQ. ID. NO: 6: and in a second discrete amplifying step said first conserved primer is depicted in SEQ. ID. NO: 2 and said first nonconserved primer is depicted in SEQ. ID. NO: 42), and in a third discrete amplifying step said first conserved primer is depicted in SEQ. ID. NO: 2 and said second nonconserved primer is depicted in SEQ. ID. NO: 43 and in a fourth discrete amplifying step said first conserved primer is depicted in SEQ. ID. NO: 2 and said third nonconserved primer is depicted in SEQ. ID. NO: 44; and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13 or SEQ. ID. NO: 5;

(6) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 2; (b) said first conserved primer is depicted in SEQ. ID. NO: 2 and said first nonconserved primer is depicted in SEQ. ID. NO: 45; and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13;

(7) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 2; (b) said first conserved primer is depicted in SEQ. ID. NO: 2 and said first nonconserved primer is depicted in SEQ. ID. NO: 46: and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13; and

(8) (a) said conserved oligonucleotide antisense primer is depicted in SEQ. ID. NO: 2; (b) said first and second conserved primers are depicted in SEQ. ID. NO: 2 and SEQ. ID. NO: 5; and (c) said third conserved primer is depicted in SEQ. ID. NO: 11 or SEQ. ID. NO: 13.

5,629,150

METHODS FOR CHARACTERIZING PHOSPHOROTHIOATE OLIGONUCLEOTIDES

Tadeusz K. Wyrzykiewicz, Carlsbad, Calif., assignor to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Filed Aug. 30, 1993, Ser. No. 113,993

Int. Cl.[6] **C07H** *21/00;21/04*

U.S. Cl. 435—6 **24 Claims**

1. A method for desulfurizing a phosphate protected phosphorothioate oligonucleotide synthesized on a solid phase support comprising the steps of:

a) removing the phosphate protecting groups before removal of said oligonucleotide from said solid phase support; and

b) treating said deprotected oligonucleotide with an iodine solution comprising at least about 15 equivalents of iodine per sulfur atom of the oligonucleotide.

5,629,151

Patent Not Issued For This Number

5,629,152

TRISUBSTITUTED β-LACTAMS AND OLIGO β-LACTAMAMIDES

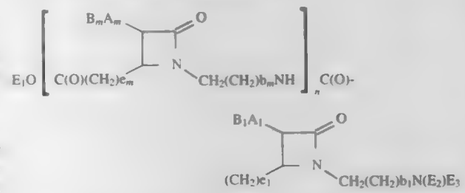
Vasulinga Ravikumar, Carlsbad, Calif., assignor to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

Filed Aug. 1, 1994, Ser. No. 283,591

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04;* **A61K** *48/00*

U.S. Cl. 435—6 **20 Claims**

1. A compound having the structure:



wherein

B_1 and each B_m, independently, are a naturally occurring nucleobase, a non-naturally occurring nucleobase, a DNA intercalator, a nucleobase-binding group, hydrogen, hydroxyl, a $(C_1–C_4)$alkanoyl, an aromatic moiety, or a heterocyclic moiety, which for groups other than hydrogen and hydroxyl may be optionally substituted with one or more additional functional groups selected from hydrogen, hydroxyl, alkyl, substituted alkyl, alkaryl or aralkyl, F, Cl, Br, CN, CF_3, OCF_3, OCN, O-alkyl, S-alkyl, N-alkyl, O-alkenyl, S-alkenyl, N-alkenyl, $SOCH_3$, SO_2CH_3, ONO_2, NO_2, N_3, NH_2, heterocycloalkyl, heterocycloalkaryl, aminoalkylamino, polyalkylamino or substituted silyl, an RNA cleaving group, or a reporter ligand;

A_1 and each A_m, independently are $(CR_6R_7)_x$ where R_6 and R_7 are independently selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, heteroaryl, hydroxy, alkoxy, alkylthio, NR_3R_4 and SR_5, where each of R_3 and R_4 is independently selected from the group consisting of hydrogen, alkyl, alkoxy, or alkylthio-substituted alkyl, alkoxy, alkylthio and amino; and R_5 is hydrogen, alkyl, hydroxy-, alkoxy-, or alkylthio- substituted alkyl, or R_6 and R_7 taken together complete an alicyclic system, wherein said alkyl groups have from 1 to 6 carbons and said aryl groups have from 6 to 14 carbons;

$_x$ is 0 to 10, provided that when B_1 or B_m are hydrogen or hydroxyl, $_x$ is not 0;

E_1 is a carboxyl protecting group or hydrogen;

E_2 and E_3, independently, are hydrogen, an amine protecting group, or taken together with N form a cyclic structure;

n is an integer from 1 to 60;

e_1 and each e_m, independently, are 0 or an integer from 1 to 6; and

b_1 and each b_m, independently, are 0 or an integer from 1 to 6.

5,629,153

USE OF DNA-DEPENDENT RNA POLYMERASE TRANSCRIPTS AS REPORTER MOLECULES FOR SIGNAL AMPLIFICATION IN NUCLEIC ACID HYBRIDIZATION ASSAYS

Michael S. Urdea, Alamo, Calif., assignor to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 639,560, Jan. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 463,022, Jan. 10, 1990, abandoned. This application Mar. 8, 1994, Ser. No. 207,901

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **43 Claims**

1. An isolated polydeoxynucleotide construct for use as a signal amplifier in hybridization assays to detect a target, the construct comprising three domains:

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(a) a first domain (A) which is single-stranded and has a nucleotide sequence complementary to a target sequence;
(b) a second domain (B) which is double-stranded and capable of functioning as a promoter for a DNA-dependent RNA polymerase enzyme activity; and
(c) a third domain (C) which is either single- or double-stranded and adjacent to said second domain, such that said third domain is capable of functioning as a template for the promoter activity of said second domain,
wherein the domains of the construct are oriented A-B-C or B-C-A, and further wherein the third domain capable of functioning as a template consists of a nucleotide sequence not found in the target.

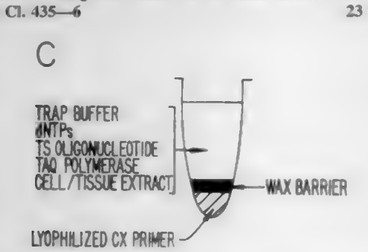
21. A method to detect and quantify an oligonucleotide analyte by amplifying a biological signal in a nucleic acid hybridization assay comprising:
(i) immobilizing said analyte, directly or indirectly, on a solid substrate; and hybridizing the polydeoxynucleotide construct of claim **1**, directly or indirectly to the analyte;
(ii) removing unhybridized polydeoxynucleotide constructs;
(iii) transcribing multiple copies of RNA oligomers which are complementary to the template sequence, c', of said third domain, C, of said polydeoxynucleotide construct via a DNA-dependent RNA polymerase activity; and
(iv) detecting the amount of RNA transcripts formed in step (iii).

5,629,154

TELOMERASE ACTIVITY ASSAYS

Nam W. Kim, Santa Clara; Calvin B. Harley, Palo Alto, and Scott L. Weinrich, San Francisco, all of Calif., assignors to Geron Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 255,774, Jun. 7, 1994, which is a continuation-in-part of Ser. No. 151,477, Nov. 12, 1993, which is a continuation-in-part of Ser. No. 153,051, Nov. 12, 1993. This application Sep. 28, 1994, Ser. No. 315,214
Int. Cl.[6] C12Q *1/68; C12P 19/34; C07H 21/04;* **C12N** *11/00*
U.S. Cl. 435—6 **23 Claims**



1. A method for determining whether a cell sample contains telomerase activity, said method comprising the steps of:
(a) preparing a cell extract from said cell sample;
(b) placing an aliquot of said cell extract in a reaction mixture comprising a telomerase substrate lacking a telomeric repeat sequence and a buffer in which telomerase can catalyze extension of said telomerase substrate by addition of telomeric repeat sequences;
(c) adding to said reaction mixture a primer comprising a sequence sufficiently complementary to a telomeric repeat to hybridize specifically thereto under conditions such that if an extended telomerase substrate is present in said reaction mixture, said primer will hybridize to said extended telomerase substrate and extend to form a complementary copy of said extended telomerase substrate, thereby forming duplex DNA molecules comprising an extended telomerase substrate bound to an extended primer; and
(d) correlating presence of telomerase activity in said cell sample with presence of duplex DNA molecules comprising an extended telomerase substrate bound to an extended primer and absence of telomerase activity in said cell sample with absence of said duplex DNA molecules.

5,629,155

HIGH-AFFINITY OLIGONUCLEOTIDE LIGANDS TO IMMUNOGLOBULIN E (IGE)

Torsten W. Wiegand; Diane Tasset, and Larry Gold, all of Boulder, Colo., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, which is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned, and a continuation-in-part of Ser. No. 964,624, Oct. 21, 1992, Pat. No. 5,496,938. This application Oct. 3, 1994, Ser. No. 317,403
Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*
U.S. Cl. 455—6 **5 Claims**

1. A method for identifying nucleic acid ligands to Immunoglobulin E (IgE), comprising:
a) preparing a candidate mixture of nucleic acids;
b) contacting said candidate mixture of nucleic acids with IgE, wherein nucleic acids having an increased affinity to the IgE relative to the candidate mixture may be partitioned from the remainder of the candidate mixture;
c) partitioning the increased affinity nucleic acids from the remainder of the candidate mixture; and
d) amplifying the increased affinity nucleic acids to yield a mixture of nucleic acids enriched for nucleic acid sequences with relatively higher affinity and specificity for binding to IgE, whereby nucleic acid ligands of IgE may be identified.

5,629,156

MULTIPLE CAPTURE PROBE SANDWICH ASSAYS

Jyotsna Shah, Nashua, N.H.; Walter King, Andover, Mass.; Jing Liu, Waltham, Mass.; James Smith, Shrewsbury, Mass.; Eugene Serpe, Winston-Salem, N.C., and Sonya Popoff, Wayland, Mass., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 959,939, Oct. 9, 1992, abandoned. This application Dec. 29, 1994, Ser. No. 366,422
Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*
U.S. Cl. 435—6 **9 Claims**

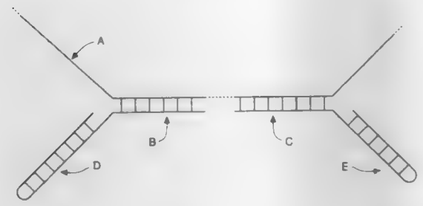
1. A method for assaying a sample for target nucleic acid comprising the steps of:
(a) contacting the sample with a first capture probe and detector probe which first capture probe and detector probe each comprise a nucleic acid segment which in the presence of target nucleic acid bind to the target nucleic acid to form a first capture probe: target nucleic acid: detector probe ternary complex and wherein the detector probe is amplifiable by the enzyme Qβ replicase;
(b) separating the first capture probe: target nucleic acid: detector probe ternary complex from the sample and introducing the ternary complex to a second medium;
(c) separating the target nucleic acid: detector probe segment of the ternary complex from the first capture probe;
(d) contacting the second medium with a second capture probe which comprises a nucleic acid which in the presence of target nucleic acid binds to the target nucleic acid to form a second capture probe: target nucleic acid; detector probe ternary complex;
(e) separating the second capture probe: target nucleic acid: detector probe ternary complex from the second medium;
(f) amplifying such detector probe as is present in the separated second capture probe: target nucleic acid: detector probe ternary complex with Qβ replicase; and
(g) monitoring for the presence or absence of amplification of detector probe.

5,629,157

DOUBLE RECEPTOR POLYNUCLEOTIDE ASSAY METHOD

Thomas C. Goodman, Mountain View, and Edwin F. Ullman, Atherton, both of Calif., assignors to Behringwerke AG, Marburg, Germany

Division of Ser. No. 51,512, Apr. 22, 1993, which is a continuation of Ser. No. 511,651, Apr. 20, 1990, abandoned. This application May 2, 1995, Ser. No. 432,616
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **4 Claims**



1. A method for detecting a bonded pair of polynucleotide sequences hybridized to the same target polynucleotide sequence, said method comprising the detection of simultaneous binding of nucleotide sequence specific binding proteins (NSSBP) to two specific nucleotide sequences that comprise separate portions of the bonded pair of polynucleotide sequences hybridized to the same target polynucleotide sequence, wherein one of the NSSBPs is bound to or becomes bound to a surface and a second of the NSSBPs is bound to or becomes bound to a detectable label.

5,629,158

SOLID PHASE DIAGNOSIS OF MEDICAL CONDITIONS

Mathias Uhlen, Uppsala, Sweden, assignor to CEMU Bitecknik AB, Uppsala, Sweden

Continuation of Ser. No. 261,010, Jun. 14, 1994, abandoned, which is a continuation of Ser. No. 781,157, Nov. 7, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 477,270
Claims priority, application United Kingdom, Mar. 22, 1989, 8906641; Mar. 22, 1989, 8906642
Int. Cl.[6] C12P *19/34;* **C12Q** *1/68*
U.S. Cl. 435—6 **21 Claims**

1. A method for detecting a target polynucleotide that is characteristic of a pathological condition, comprising the steps of:
(a) producing a first amplified DNA by a first polymerass chain reaction using a first set of primers to amplify a target polynucleotide characteristic of a pathological condition;
(b) producing from said first amplified DNA a second amplified DNA by a second polymerass chain reaction using a second set of primers, wherein:
(i) said second primers differ from said first primers,
(ii) a 5' region of said second primers is not complementary to said first amplified DNA,
(iii) one of said second primers is biotinylated, and
(iv) another of said second primers comprises means for binding a detectable label;
(c) binding said biotinylated second primer to a solid support before, during or after said second polymerase chain reaction, whereby said second amplified DNA is bound to said support;
(d) binding a detectable label to said means for binding a detectable label after said second polymerase chain reaction, whereby said detectable label is bound to said second amplified DNA, wherein said second amplified DNA is double-stranded; and
(e) detecting said target polynucleotide by determining the detectable label bound to said double-stranded second amplified DNA.

5,629,159

IMMORTALIZATION AND DISIMMORTALIZATION OF CELLS

David J. Anderson, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jun. 7, 1995, Ser. No. 481,127
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **39 Claims**

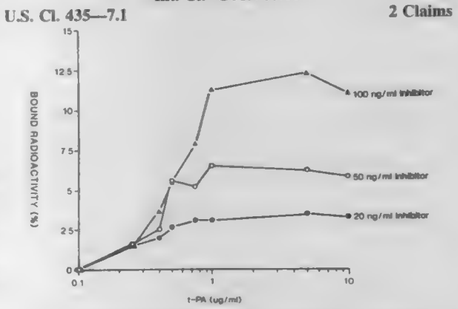
1. An immortalized mammalian cell that contains in the genome of said cell exogenous nucleic acid comprising at least a first and a second recombinase target site flanking an immortalization gene, wherein said first and second target sites mediate excision of said immortalization gene when said first and second target sites are contacted with a recombinase.

5,629,160

DIAGNOSTIC ASSAY FOR INHIBITOR OF TISSUE-TYPE AND UROKINASE-TYPE PLASMINOGEN ACTIVATORS, AND GENE CODING FOR THE INHIBITOR

David J. Loskutoff, Solana Beach, Calif.; Tor Ny, Umea, Sweden, and Michael Sawdey, La Jolla, Calif., assignors to The Scripps Clinic and Research Foundation, LaJolla, Calif.

Division of Ser. No. 877,271, Apr. 29, 1992, Pat. No. 5,314,994, which is a continuation of Ser. No. 573,485, Aug. 27, 1990, abandoned, which is a division of Ser. No. 897,990, Aug. 19, 1986, Pat. No. 4,952,512, which is a continuation-in-part of Ser. No. 623,357, Jun. 22, 1984, Pat. No. 4,791,068. This application May 24, 1994, Ser. No. 248,348
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.1 **2 Claims**



1. A solid phase assay method for detecting the presence of endothelial plasminogen activator inhibitor in a liquid sample to be assayed comprising the steps of:
(a) providing a solid phase support comprising a solid matrix to which is affixed substantially pure, recombinant human endothelial plasminogen activator inhibitor, said recombinant inhibitor being substantially free of glycosylation, inhibiting the activities of both t-PA and u-PA, being immunologically different from protease nexin and placental plasminogen activator inhibitor, having the amino acid residue sequence of FIG. **22** from amino acid residue position 1 through position 379 and exhibiting an apparent relative molecular mass of about 40 kilodaltons in SDS-PAGE analysis;
(b) admixing an aliquot of said liquid sample to be assayed with a predetermined amount of antibodies that specifically bind to both said recombinant inhibitor of said solid support and the inhibitor to be assayed to form an admixture;
(c) maintaining said admixture under biological assay conditions for a predetermined period of time sufficient for the antibodies to bind to inhibitor present in the sample;
(d) admixing said maintained admixture with said solid support to form a solid-liquid phase admixture;
(e) maintaining said solid-liquid phase admixture under biological assay conditions for a predetermined time period sufficient for antibodies of the admixture not bound to inhibitor of the sample to bind the recombinant inhibitor of the solid support;
(f) separating the solid and liquid phases;

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(g) determining the amount of antibodies bound to the recombinant inhibitor bound to the solid support, and thereby the amount of inhibitor in the sample assayed.

5,629,161

USE OF HVP-16 E6 AND E7-GENE DERIVED PEPTIDES TO DIAGNOSE HPV-16-ASSOCIATED INVASIVE CERVICAL CANCER

Martin Müller, Heidelberg, and Lutz Gissmann, Wiesloch, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 109,469, Aug. 20, 1993, abandoned, which is a continuation of Ser. No. 909,296, Jul. 9, 1992, abandoned. This application Dec. 23, 1994, Ser. No. 363,586

Claims priority, application European Pat. Off., Jul. 13, 1991, 91111720

Int. Cl.[6] G01N *33/53*; **C07K** *16/44*;*16/08*

U.S. Cl. 435—7.1 **8 Claims**

1. A method of screening for HPV-16 associated invasive cervical carcinoma comprising the steps of:

a) contacting at least one peptide spanning at least one epitope on HPV-16 E7 and E6 polypeptides, said peptide having a sequence selected from the group consisting of

HPV-16 E7 aa6–35 characterized by the amino acid sequence PTLHEYMLDLQPETTDLYCYEQLNDSSEEE (SEQ ID NO: 1),

HPV-16 E7 aa29–52 characterized by the amino acid sequence NDSSEEEDEIDGPAGQAEPDRAHYN (SEQ ID NO: 2),

HPV-16 E6 aa1–23 characterized by the amino acid sequence MHQKRTAMFQDPQERPRKLPQLC (SEQ ID NO: 3), and

HPV-16 E6 aa8–37 characterized by the amino acid sequence MFQDPQERPRKLPQLCTELQTTIHDIILEC (SEQ ID NO: 4)

or a peptide derived therefrom, with a serum specimen from an individual; and

b) detecting the reaction product formed by the contacting step with a labeled second antibody.

5,629,162

METHOD OF IDENTIFYING AGENTS WHICH MODULATE ICAM-3 BINDING TO LFA-1

Antonin R. deFougerolles, Cambridge, United Kingdom, and Timothy A. Springer, Chestnut Hill, Mass., assignors to The Center for Blood Research, Boston, Mass.

Continuation of Ser. No. 38,990, Dec. 23, 1992, which is a continuation-in-part of Ser. No. 712,879, Jun. 11, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,981

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.1 **17 Claims**

1. A method of identifying agents capable of antagonizing ICAM-3 binding to LFA-1, comprising the steps of:

contacting ICAM-3 with LFA-1 in the presence of a compound;

measuring ICAM-3/LFA-1 binding in the presence of said compound;

wherein decreased binding compared to binding in the absence of said compound identifies said compound as an antagonist of ICAM-3 binding to LFA-1.

5,629,163

CALCINEURIN INHIBITORY COMPOUNDS AND ANCHORING PROTEIN

John D. Scott; Vincent M. Coghlan, both of Portland, Oreg.; Monique L. Howard, Seattle, and William M. Gallatin, Mercer Island, both of Wash., assignors to ICOS Corporation, Bothell, Wash., and The State of Oregon acting by and through the Oregon State Board of Higher Education and on behalf of Oregon Health Sciences University, Portland, Oreg.

Division of Ser. No. 344,227, Nov. 23, 1994. This application May 30, 1995, Ser. No. 452,722

Int. Cl.[6] G01N *33/53*;*33/567*; **C12Q** *1/02*;*1/04*

U.S. Cl. 435—7.2 **1 Claim**

1. A method for determining if a cell contains a calcineurin-binding and PKA-binding anchoring protein, the method comprising the steps of:

lysing the cell to form a lysate;

incubating the lysate with a solid support, the solid support having calcineurin molecules immobilized thereon;

washing the solid support;

contacting the solid support with a labeled PKA regulatory subunit that can bind an anchoring protein;

washing from the solid support regulatory subunit that did not bind;

detecting regulatory subunit remaining bound on the solid support; and

determining therefrom the presence of a calcineurin-binding and PKA-binding protein in the cell.

5,629,164

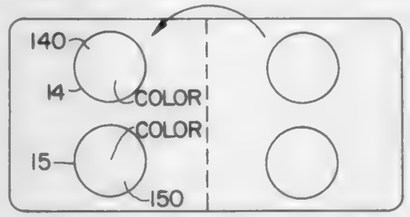
ENZYME IMMUNOASSAY DEVICE

Douglas B. Rivers, Birmingham, Ala., assignor to Southern Research Institute, Birmingham, Ala.

Continuation of Ser. No. 612,794, Nov. 14, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 981,243

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.9 **22 Claims**



1. An enzyme immunoassay device for use in determining the presence of an analyte in a sample which comprises:

i) a planar support comprising an upper surface and a lower surface and further comprising a fold means defining a first and a second support half by which the upper surface of the device may be folded together along said means;

ii) a first opening in the first support half (a) spaced a defined distance from the fold means, (b) extending through the support, and (c) defining a sample well comprising an interior being opened at the lower surface of the support and closed at the upper surface of the support with a closure comprising a conjugate pad of negligible liquid absorptive qualities facing the interior of the sample well, said conjugate pad containing a mobilizable immunoreactant comprising said analyte conjugated to an enzyme; and an antibody pad having greater liquid absorptivity than said conjugate pad, comprising an immobilized antibody that specifically binds to said analyte, and located axial to the conjugate pad and at the upper surface of the support: and

iii) a second opening located at the upper surface of the second support half (a) spaced an equal distance to the first opening from the fold means, (b) extending partially through the support, and (c) containing a readout pad comprising a chromophoric indicator means that reacts with said enzyme to produce a color change, and wherein the antibody and readout pads will be in contact with each other when the support is folded along the fold means.

9. A method for utilizing an enzyme immunoassay device for determining the presence of an analyte in a liquid sample which comprises:

i) providing said sample;

ii) providing a device according to claim 1 wherein the conjugate pad is a disk of fibers with negligible absorptive properties, the immunoreactant comprises the analyte conjugated to a first enzyme, the antibody pad is a disk containing the immobilized antibody, and the readout pad is a disk containing the chromophoric indicator;

iii) adding the sample to the conjugate disk;

iv) allowing said sample to flow through the conjugate disk to mobilize and to transport the immunoreactant into the antibody disk wherein both said immunoreactant and the analyte in said liquid sample are competitively bound by said immobilized antibody;

v) folding said device along said fold means;

vi) expressing said sample from the antibody disk into the readout disk wherein said chromophoric indicator, comprising a substrate for said first enzyme and second enzyme that reacts with a product produced by said first enzyme to yield a change in color, reacts with said first enzyme in any immunoreactant not bound by said immobilized antibody; and

vii) noting the presence of any change in the color of the indicator which change indicates the presence of said analyte in said sample.

5,629,165

NEURAL CALCIUM-ACTIVATED NEUTRAL PROTEINASE INHIBITORS

Ralph A. Nixon, Arlington, and Kiyoshi H. Takeuchi, Newton, both of Mass., assignors to The McLean Hospital Corporation, Belmont, Mass.

Division of Ser. No. 735,611, Jul. 25, 1991, Pat. No. 5,340,922, which is a continuation-in-part of Ser. No. 356,458, May 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 200,141, May 31, 1988, abandoned. This application Feb. 25, 1994, Ser. No. 202,023

Int. Cl.[6] G01N *33/567*

U.S. Cl. 435—7.21 **2 Claims**

1. An antibody specifically immunoreactive with an immunogen, wherein said immunogen consists essentially of a substantially purified, low molecular weight calpastatin with a molecular weight of about 60 kilodaltons, as determined by gel filtration, and consisting of a dimer of about 31 kilodalton subunits, as determined by SDS PAGE under reducing conditions, and wherein said calpastatin has a pI range of 4.2–4.7 on an isoelectric focusing gel and an N-terminal amino acid sequence as follows:

NH_2-X-Glu-Lys-Glu-Thr-Lys-Glu-Glu-Gly-Lys-Pro-Lys-Gln-Gln-Gln-X-X-Lys-Glu-Lys (SEQ ID NO: 2)

wherein X represents an unknown amino acid residue; wherein said calpastatin has the following amino acid composition:

	Mole %
Asx	8.4
Thr	3.6
Ser	10.3
Glx	17.1
Pro	5
Gly	16.4
Ala	6.4
Cys/2	0
Val	4.3
Met	0.9
Ile	3.3
Leu	3.1
Tyr	2.7

-continued

	Mole %
Phe	7
Lys	1.3
His	4

wherein:

Asx=sum of aspartic acid (D) and asparagine (N), and

Glx=sum of glutamic acid (E) and glutamine (Q);

and wherein said calpastatin is capable of inhibiting calcium-activated neutral proteinase activity.

5,629,166

METHOD FOR IDENTIFYING INDIVIDUALS SUFFERING FROM A CELLULAR ABNORMALITY SOME OF WHOSE ABNORMAL CELLS PRESENT COMPLEXES OF HLA-C-CLONE 10/MAGE-1 DERIVED PEPTIDES, AND METHODS FOR TREATING SAID INDIVIDUALS

Pierre van der Bruggen, and Thierry Boon-Falleur, both of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 8,446, Jan. 22, 1993, abandoned. This application Aug. 11, 1994, Ser. No. 288,977

Int. Cl.[6] G01N *33/574*

U.S. Cl. 435—7.23 **7 Claims**

1. Method for determining cancer in a subject having malignant cells which present complexes of HLA-C clone 10 and MAGE-1 derived peptides on their surfaces, comprising contacting a CTL containing sample taken from a subject suspected of having cancer with cells which express both (i) molecules of HLA-C clone 10 and (ii) molecules of MAGE-1, and determining at least one of proliferation of cytolytic T cells in said CTL containing sample or lysis of said cells which express both (i) molecules of HLA-C clone 10 and (ii) molecules of a MAGE-1 gene to determine presence of cytolytic T cells which specifically bind complexes of HLA-C clone 10 and a MAGE-1 derived peptide as a determination that said subject has cancer.

5,629,167

DETECTION OF ANTIBODIES AGAINST *CHLAMYDIA TRACHOMATIS* PGP3 ANTIGEN IN PATIENT SERA BY ENZYME-LINKED IMMUNOSORBENT ASSAY

Giulio Ratti, Siena, Italy, assignor to Biocine S.p.A., Italy

Filed Apr. 19, 1994, Ser. No. 229,980

Int. Cl.[6] G01N *38/53*

U.S. Cl. 435—736 **2 Claims**

1. An enzyme-linked immunosorbent assay for the detection of anti-*Chlamydia trachomatis* pgp3 antibody in a patient sample comprising the following steps:

(a) contacting the patient sample with a recombinant *Chlamydia trachomatis* pgp3 protein consisting of the amino acid sequence of native pgp3 protein bound to a solid support for a time sufficient to effect the binding of antibody to said bound protein;

(b) detecting the binding of said antibody to said bound protein;

(c) comparing the amount of antibody bound in step (b) to a control, wherein an increase over the control indicates the presence of anti-*Chlamydia trachomatis* pgp3 antibody.

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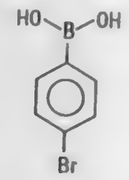
CHEMILUMINESCENT ENHANCERS

Larry J. Kricka, Berwyn, Pa., assignor to British Technology Group Limited, London, England

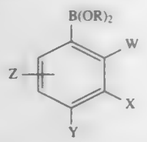
Continuation of Ser. No. 157,504, Nov. 26, 1993, abandoned, which is a continuation of Ser. No. 925,689, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 833,153, Feb. 10, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 478,336

Int. Cl.[6] **C12Q** *1/28;1/26;1/00;* **G01N** *33/566*

U.S. Cl. 435—28 **20 Claims**



1. A method of increasing the light output and/or signal:background ratio of light output from a chemiluminescent reaction of a dihydrophthalazinedione (DPD), a peroxidase enzyme catalyst and an oxidant, said method comprising the step of carrying out said chemiluminescent reaction in the presence of an enhancer comprising a compound selected from the group consisting of compounds of formula (I)



(I)

in which the R groups are the same and each is selected from the group consisting of hydrogen, n-butyl, 4'-chlorophenyl and 3',5'-dichlorophenyl; or the Rs together are O,O-propylene (thereby forming with the boron atom, a cyclic ether);

W is selected from the group consisting of hydrogen, methyl, methoxy, hydroxy and chloro;

X is selected from the group consisting of hydrogen, chloro, amino and nitro;

Y is selected from the group consisting of hydrogen, methyl, carboxy, chloro, bromo, iodo, phenyl, phenoxy, 4'-chloroanilino, 4'-boronylphenyl, 4'-bromophenyl, 2'-carboxyethenyl and trimethylsilyl;

Z is selected from the group consisting of hydrogen, 5-chloro, 5-bromo, 5-(3'-trifluororrmethyl)phenylazo and 6-chloro; or

W and X together may represent a fused benzene ring and X and Y together may represent a fused benzene ring substituted by hydroxy in the 6-position of the naphthalene ring numbering, provided that

(1) when each R is hydrogen:

(a) W, X, Y, Z are each hydrogen; or

(b) W, X and Z are each hydrogen and Y is selected from the group consisting of iodo, bromo, chloro, trimethylsilyl, phenoxy, phenyl, 4'-chloroanilino, methyl, 4'-boronylphenyl and 2'-carboxyethenyl; or

(c) W and Z are each hydrogen and:

(i) X and Y together represent a fused benzene ring substituted by hydroxy in the 6-position of the naphthalene ring numbering; or

(ii) X is either nitro or chloro and Y is chloro; or

(iii) X is nitro and Y is carboxy; or

(d) W, Y and Z are each hydrogen and X is amino, chloro or nitro; or

(e) W and X together represent a fused benzene ring and Y and Z are each hydrogen; or

(f) X and Y are each hydrogen and:

(i) W is methoxy and Z is 5-bromo; or

(ii) W is hydroxy and Z is 5-(3'-trifluoromethyl)phenylazo; or

(iii) W is methyl and Z is hydrogen; or

(g) W is chloro, X is chloro and Y and Z are each hydrogen; or

(h) W and Y are each chloro, X is amino and Z is 6-chloro;

(2) when each R is n-butyl, W, X and Z are each hydrogen and Y is bromo or 4'-bromophenyl;

(3) when each R is 4'-chlorophenyl, W, X and Z are each hydrogen and Y is chloro;

(4) when each R is 3',5'-dichlorophenyl, W and Y are each hydrogen, X is chloro and Z is 5-chloro; and

(5) when the Rs together represent O,O-propylene, X, Y and Z are each hydrogen;

and the compounds bis(catechol) borate, boroglycine, pentaerythritol borate, 4-(3'-borono-4'-hydroxyphenylazo) benzoic acid, diphenylisobutoxyborane, diphenylboronic anhydride and dimethylphenylboronic acid.

5,629,169

AUTOMATED SYSTEM AND METHOD FOR ESTIMATING ANTIBIOTIC EFFECTIVENESS FROM DRUG DIFFUSION TESTS

David Izraelevitz, Chelmsford, and Karen S. Cochand, Manchester, both of Mass., assignors to The Analytic Sciences Corporation, Reading, Mass.

Filed Oct. 17, 1994, Ser. No. 323,906

Int. Cl.[6] **C12Q** *1/18;* **C12M** *1/22;1/16*

U.S. Cl. 435—32 **14 Claims**

1. A method for estimating antibiotic effectiveness from an antibiotic diffusion sample comprising a plate having a medium containing a population of a test organism and a plurality of antibiotic disks positioned on said plate in said medium, each of said antibiotic disks being impregnated with an antibiotic whose effectiveness is to be estimated, an inhibition zone surrounding each of said antibiotic disks after a prescribed incubation period, said method comprising the steps of:

illuminating said antibiotic diffusion sample;

acquiring an image of said illuminated antibiotic diffusion sample; and

analyzing said image with an electronic digital computer, comprising the steps of:

determining locations of said antibiotic disks in said image;

determining an average brightness and a brightness variance of said image in a region surrounding each of said antibiotic disks; and

estimating a radius of an inhibition zone surrounding each of said antibiotic disks from said average brightness and said brightness variance, thereby providing an estimated radius of said inhibition zone which is indicative of antibiotic effectiveness.

5,629,170

METHOD FOR DETECTING DEHALOGENATION OF HALOGENATED AROMATIC COMPOUNDS

Frank J. Mondello, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 217,814, Mar. 25, 1994, abandoned. This application Sep. 11, 1995, Ser. No. 526,793

Int. Cl.[6] **C12Q** *1/04;1/02;1/00;* **C12P** *1/00*

U.S. Cl. 435—34 **6 Claims**

1. A method for screening a test composition for the presence of microorganisms capable of anaerobically dechlorinating polychlorinated aromatic compounds, which comprises:

selecting, as a substrate, a polychlorinated aromatic compound which is not susceptible to degradation by the 2,3-dioxygenase pathway but which, when anaerobically dechlorinated, affords products which are susceptible to such dechlorination;

anaerobically contacting said substrate with said test composition in a first contact step;

aerobically contacting the product of said first contact step with an indicator microorganism selected from the group consisting of *E. coli* strain FM4560 and Pseudomonas sp. strain FM206 which encodes the first three steps but not the hydrase enzyme step of the 2,3-dioxygenase route, in a second contact step; and

screening the product of said second step for the presence of colored metabolite compounds indicative of the presence in the product of said first contact step of polychlorinated aromatic compounds susceptible to the 2,3-dioxygenase pathway.

5,629,171

RECOMBINANT BIOPROCESS FOR THE PREPARATION OF 7-AMINO CEPHALOSPORANIC ACID (7-ACA)

Michael J. Conder, Harrisonburg, Va.; John A. Rambosek, Seattle, Wash.; Phyllis C. McAda, and Christopher D. Reeves, both of Woodinville, Wash., assignors to Gist-Brocades B.V., Netherlands

Division of Ser. No. 250,310, May 27, 1994, Pat. No. 5,559,005, which is a continuation of Ser. No. 953,492, Oct. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 777,833, Oct. 15, 1991, abandoned. This application May 11, 1995, Ser. No. 439,404

Int. Cl.[6] **C12P** *35/00;35/06;35/02;* **C12N** *1/16*

U.S. Cl. 435—47 **4 Claims**

1. A bioprocess for preparing 7-aminocephalosporanic acid (7-ACA) comprising the steps of

1) maintaining in a culture medium capable of sustaining its growth, a strain of *Penicillium chrysogenum* which produces isopenicillin N and adding to said culture medium an adipate feedstock comprising any one or more of adipic acid, or its salts and esters which are capable of being assimilated and utilized by said strain of *Penicillium chrysogenum* to produce adipoyl-6-aminopenicillanic acid (adipoyl-6-APA), whereby said adipoyl-6-APA is produced;

2) carrying out the following enzymatic conversions by in situ expression of the corresponding gene:

a) adipoyl-6-APA is in situ ring-expanded to form adipoyl-7-aminodesacetoxycephalosporanic acid (adipoyl-7-ADCA) by expandase enzyme wherein said strain of *P. chrysogenum* has been transformed by DNA encoding the expandase enzyme capable of accepting said adipoyl-6-APA as a substrate, whereupon as a result of its expression, said adipoyl-6-APA produced by said strain is also thereafter in situ ring-expanded to form adipoyl-7-ADCA;

b) the 3-methyl side chain of adipoyl-7-ADCA is in situ hydroxylated to yield adipoyl-7-aminodeacetylcephalosporanic acid (adipoyl-7-ADAC) by hydroxylase enzyme, wherein said strain of *P. chrysogenum* has been transformed by DNA encoding the hydroxylase enzyme capable of accepting said adipoyl-7-ADCA as a substrate, whereupon as a result of its expression, said adipoyl-7-ADCA produced by said strain is also thereafter in situ hydroxylated to form adipoyl-7-ADAC; and

c) adipoyl-7-ADAC is in situ acetylated to yield adipoyl-7-aminocephalosporanic acid (adipoyl-7-ACA), by acetyltransferase enzyme, wherein said strain of *P. chrysogenum* has been transformed by DNA encoding the acetyltransferase enzyme capable of accepting said adipoyl-7-ADAC as a substrate, whereupon as a result of its expression, said adipoyl-7-ADAC produced by said strain is also thereafter in situ acetylated to form adipoyl-7-ACA; and

3) contacting said adipoyl-7-ACA with an adipoyl amidase whereby the adipoyl side chain is removed and the 7-ACA product is formed; and said product is then isolated.

5,629,172

EXPRESSION OF FUSION POLYPEPTIDES TRANSPORTED OUT OF THE CYTOPLASM WITHOUT LEADER SEQUENCES

Desmond Mascarenhas; Yang Zhang, both of Sunnyvale; Pamela S. Olson, Cupertino; David R. Olsen, Menlo Park, and Pedro A. Cohen, San Francisco, all of Calif., assignors to Celtrix Pharmaceuticals, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 100,744, Aug. 2, 1993. This application Aug. 2, 1994, Ser. No. 284,784

Int. Cl.[6] **C12N** *1/19;15/62;* **C07K** *14/00*

U.S. Cl. 435—64.7 **23 Claims**

1. A nucleic acid encoding a fusion polypeptide, said fusion polypeptide comprising:

a) a fusion partner capable of directing extracytoplasmic transport, comprising at least one fragment of a mature polypeptide, wherein the mature polypeptide is selected from the group consisting of a mutant mature DsbA lacking a double cysteine active site loop domain, mature DsbC and a mutant mature DsbC lacking a double cysteine active site loop domain, said fusion partner lacking a signal sequence and comprising a carboxy terminus; and

b) a polypeptide of interest, wherein said polypeptide of interest is positioned distal to the carboxy terminus of said fusion partner.

5,629,173

METHODS OF USE OF SERINE PROTEASE VARIANTS HAVING PEPTIDE LIGASE ACTIVITY

Lars Abrahmsen, Stockholm, Sweden; John Burnier, Pacifica, Calif.; James A. Wells, Burlingame, Calif., and David Y. Jackson, San Mateo, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 218,873, Mar. 28, 1994, abandoned, which is a continuation of Ser. No. 13,445, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 566,026, Aug. 9, 1990, abandoned. This application Feb. 9, 1995, Ser. No. 386,000

Int. Cl.[6] **C12P** *21/06;7/62;* **C12N** *9/54;9/56*

U.S. Cl. 435—68.1 **27 Claims**

1. A method for making a ligation product comprising the step of contacting a subtilisin-type serine protease variant having peptide ligase activity with a first and a second ligation substrate, wherein said first ligation substrate comprises at least an R1 residue where the carboxy-terminus of said R1 residue is esterified with an organic alcohol or thiol, said second ligation substrate comprises at least an R1' residue and said serine protease variant has an amino acid sequence not found in nature which is derived from a precursor subtilisin-type serine protease having an α-helix containing proline at a residue equivalent to proline 225 in *Bacillus amyloliquefaciens* subtilisin and a catalytic serine at or near the amino terminus of said α-helix equivalent to serine 221 in *Bacillus amyloliquefaciens* subtilisin, said derivation comprising:

a) replacing said catalytic serine with a first amino acid having a different nucleophilic side chain or modifying the side chain of said catalytic serine, to substitute the nucleophilic oxygen of said side chain with a nucleophilic sulfur, thereby converting said catalytic serine to cysteine, and

b) replacing said proline with a second different amino acid comprising a helix-forming amino acid, or replacing said proline with a second different amino acid having a side chain volume less than the side chain volume of proline;

said serine protease variant being characterized by having peptide ligase activity in aqueous solution which is greater than that of said precursor serine protease variant containing only said substitution or modification of said nucleophilic oxygen.

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5,629,174

RECOMBINANT C140 RECEPTOR

Johan Sundelin, Furulund, Sweden, and Robert M. Scarborough, Belmont, Calif., assignors to COR Therapeutics, Inc., South San Francisco, Calif.

Filed Jul. 26, 1993, Ser. No. 97,938
Int. Cl.[6] C12P *21/02;* **C12N** *5/10;15/63*
U.S. Cl. 435—69.1 **7 Claims**

1. A DNA molecule comprising an expression system which, when introduced into a recombinant host, produces the C140 receptor at the cell surface of the host, which expression system comprises a DNA sequence encoding the C140 receptor operably linked to a control sequence heterologous to said encoding DNA and operable in said host cell.

5,629,175

MOLECULAR FARMING

Robert M. Goodman; Vic C. Knauf, both of Davis; Catherine M. Houck, Vacaville, and Luca Comai, Davis, all of Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation of Ser. No. 164,346, Dec. 8, 1993, Pat. No. 5,550,038, which is a continuation of Ser. No. 507,380, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 760,236, Jul. 29, 1985, Pat. No. 4,956,282. This application Jun. 5, 1995, Ser. No. 463,182
Int. Cl.[6] C12N *15/12;15/20;15/82;5/04*
U.S. Cl. 435—69.1 **8 Claims**

1. A method for producing a mammalian peptide which comprises:

growing tobacco plant cells containing an integrated sequence comprising,

a first expression cassette having in the direction of transcription (1) a transcriptional and translational initiation region functional in said plant cells, (2) a structural gene coding for said mammalian peptide, and (3) a termination region,

whereby said structural gene is expressed to produce said mammalian peptide.

5,629,176

HUMAN KUNITZ-TYPE PROTEASE INHIBITOR VARIANTS

Søren E. Bjørn, Lyngby; Kjeld Norris; Fanny Norris, both of Hellerup; Lars C. Petersen, Hørsholm, and Ole H. Olsen, Brønshøj, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 26,135, Feb. 24, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,773
Int. Cl.[6] C12P *21/06;* **C12N** *1/20;* **A61K** *38/00;* **C07K** *1/00*
U.S. Cl. 435—69.2 **9 Claims**

1. A variant of the C-terminal Kunitz-type protease inhibitor domain of the α3 chain of human type VI collagen, the variant comprising the following amino acid sequence

X^1 X^{16} Asp Ile Cys Lys Leu Pro Lys Asp X^2 Gly X^3 Cys X^4 X^5 X^6 X^7 X^8 X^9 Trp Tyr Tyr Asp Pro Asn Thr Lys Ser Cys Ala Arg Phe X^{10} Tyr Gly Gly Cys X^{11} X^{12} X^{13} Glu Asn Lys Phe X^{14} Ser Gln Lys Glu Cys Glu Lys Val Cys Ala Pro X^{15} (SEQ ID NO. 1)

wherein

X^1 represents Glu;

X^{16} is Thr;

X^2 is Glu or Asp;

X^3 is Thr;

X^4 is Leu or Ile;

X^5 is Ala, Gly or Asp;

X^6 is Phe;

X^7 is Ile;

X^8 is Leu;

X^9 is Lys;

X^{10} is Val, Leu, Ile or Trp;

X^{11} is Gly;

X^{12} is Ala or Gly;

X^{13} is Asn;

X^{14} is Gly or Ala;

X^{15} is Val;

wherein the variant has protease cathepsin G inhibitory activity.

5,629,177

METHOD FOR THE ENZYMATIC SYNTHESIS OF OLIGONUCLEOTIDES USING THERMOSTABLE 3'-PHOSPHATASE

Edward D. Hyman, 2100 Sawmill Rd., River Ridge, La. 70123

Continuation-in-part of Ser. No. 161,224, Dec. 2, 1993, which is a continuation-in-part of Ser. No. 100,671, Jul. 30, 1993, which is a continuation-in-part of Ser. No. 995,791, Dec. 23, 1992, Pat. No. 5,436,143. This application Jun. 13, 1994, Ser. No. 259,308
The portion of the term of this patent subsequent to Dec. 23, 2012, has been disclaimed.
Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04;21/00*
U.S. Cl. 435—91.2 **24 Claims**

1. A method for synthesizing a portion of an oligonucleotide of defined sequence, comprising the steps of:

(a) combining an oligonucleotide primer and a blocked nucleotide, or a blocked nucleotide precursor that forms a blocked nucleotide substrate in situ, in a reaction mixture in the presence of RNA Ligase, such that a primer-blocked nucleotide product is formed, wherein the blocked substrate comprises a nucleotide to be added to form part of the defined sequence and a 3'-phosphate blocking group attached to the nucleotide effective to prevent the addition of more than one blocked substrate to the oligonucleotide primer;

(b) removing the blocking group from the 3' end of the primer-blocked nucleotide product using a thermostable 3'-Phosphatase to form a primer-nucleotide product; and

(c) repeating a cycle of steps (a) and (b) using the primer-nucleotide product from step (b) as the oligonucleotide primer of step (a) of the next cycle, without prior purification of the primer-nucleotide product from the reaction mixture.

5,629,178

METHOD FOR ENHANCING AMPLIFICATION IN THE POLYMERASE CHAIN REACTION EMPLOYING PEPTIDE NUCLEIC ACID (PNA)

Daniel B. Demers, Broad Run, Va., assignor to Genetics & IVF Institute, Fairfax, Va.

Filed Oct. 28, 1994, Ser. No. 330,790
Int. Cl.[6] C12P *19/34;* **C12Q** *1/70;1/68;* **C07H** *21/04*
U.S. Cl. 435—91.2 **118 Claims**

1. A process for amplifying a nucleic acid sequence of interest which is in a sample containing at least one nucleic acid molecule, comprising the steps of:

treating the sample by including at least one PNA oligomer which binds within the nucleic acid sequence to be amplified and a polymerase; and

amplifying a nucleic acid sequence which is complementary to the nucleic acid sequence of interest.

5,629,179

METHOD AND KIT FOR MAKING CDNA LIBRARY

Robert C. Mierendorf, and Barbara B. Morris, both of Madison, Wis., assignors to Novagen, Inc., Madison, Wis.

Filed Mar. 17, 1995, Ser. No. 406,089
Int. Cl.[6] C12P *19/34;* **C07H** *21/04*
U.S. Cl. 435—91.2 **6 Claims**

1. A method for making a cDNA library, the method comprising the steps of:

annealing a set of primers to a mixed population of template RNA strands under suitable annealing conditions, the set of primers having a sequence of 5'-XXNNNNNN-3', each X end each N being a deoxyribonucleotide selected from the group consisting of A, G, C and T, every primer comprising an identical 5' terminal dinucleotide portion XX selected so as to define a 3' portion of a first endonuclease recognition sequence cleavable by a first endonuclease, each primer further comprising a single random hexanucleotide portion NNNNNN, the set of primers comprising every random hexanucleotide;

reverse transcribing the primed template RNA strands to form a mixed population of cDNA first strands hybridized to the template RNA strands, each cDNA first strand having at its 5' terminus the 5'-XXNNNNNN-3' sequence of a single primer;

adding a DNA dependent DNA polymerase and synthesizing a cDNA second strand complementary to the cDNA first strands, displacing the template RNA strands, and creating a mixed population of fully double-stranded cDNA molecules, each cDNA second strand having at its 3'-terminus a dinucleotide sequence complementary to the selected 5' terminal dinucleotide portion XX of the cDNA first strands;

ligating together under suitable ligation conditions the mixed population of cDNA molecules and a double-stranded palindromic linker that comprises an internal second endonuclease recognition sequence, different from the first recognition sequence and cleavable by a second endonuclease, and a 5' portion of the first endonuclease recognition sequence, the 5' portion comprising at least two complementary nucleotide pairs at each 3' terminus of the palindromic linker, whereupon the second recognition sequence is formed;

cleaving the products of the preceding ligation step using the first endonuclease and the second endonuclease to form a mixed population of directional cDNA fragments each having two ends, the two ends of each fragment being distinct and incompatible with each other;

ligating the population of directional cDNA fragments in a desired orientation into a vector capable of propagating a cDNA library, the vector having been prepared with termini that are ligation-compatible with the ends of the directional cDNA fragments;

introducing the vector-ligated fragments into a bacterial host cell that supports transcription of introduced sequences.

5,629,180

PROCESS FOR PRODUCING L-AMINO ACID

Tetsuo Nakano, Machida; Motokazu Nakayama, Ami-machi; Mariko Shitashige, Tokuyama; Masato Ikeda, Hofu, all of Japan, and Satoru Furukawa, Chesterfield, Mo., assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,098
Claims priority, application Japan, Jun. 30, 1994, 6-149680
Int. Cl.[6] C12P *13/04;13/06;13/08;* **C12N** *1/20*
U.S. Cl. 435—106 **2 Claims**

1. A process for producing an L-amino acid which comprises culturing a microorganism selected from the group consisting of *Escherichia coli* H-9069, H-9071 and H-9073, having resistance to 2-ketobutyric acid and having ability to produce the L-amino acid in a medium until the L-amino acid is accumulated in the medium, and recovering the L-amino acid therefrom, wherein said L-amino acid is an aliphatic amino acid selected from the group consisting of L-valine, L-leucine and L-isoleucine.

5,629,181

SYNTHESIS OF CATECHOL FROM BIOMASS-DERIVED CARBON SOURCES

John W. Frost, and Karen M. Draths, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 16, 1993, Ser. No. 122,919
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[6] C12P *7/22;1/04;* **C12N** *15/09*
U.S. Cl. 435—156 **9 Claims**

1. A method for producing catechol, said method comprising the step of culturing a prokaryotic host cell belonging to the genera Escherichia or Klebsiella, which converts a carbon source to 3-dehydroshikimate by enzymes in the common pathway of aromatic amino acid biosynthesis endogenous to said host cell and further characterized by the expression of heterologous genes encoding 3-dehydroshikimate dehydratase and protocatechuate decarboxylase, in a medium containing said carbon source wherein the carbon source is converted biocatalytically to catechol at a rate greater than 0.21 millimoles/liter/hour.

5,629,182

DNA FRAGMENTS CODING FOR A BACTERIOPHAGE-RESISTANT MECHANISM

Marie-Christine Chopin, Paris, France, and Pierre-Jean Cluzel, deceased, late of Lyon, France, assignors to Institut National de la Recherche Agronamique (INRA), Paris, France

Continuation-in-part of Ser. No. 988,959, Mar. 15, 1993, abandoned. This application May 24, 1994, Ser. No. 248,466
Claims priority, application France, Sep. 14, 1990, 90 11381
Int. Cl.[6] C12N *15/31;1/21;15/74;* **C07H** *21/04*
U.S. Cl. 435—172.3 **18 Claims**

1. An isolated and purified DNA encoding a polypeptide having a sequence selected from the group consisting of SEQ ID NOS: 7, 12, 14 and 15.

5,629,183

PLANT TRANSFORMATION BY GENE TRANSFER INTO POLLEN

James A. Saunders, Dayton, and Benjamin F. Matthews, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 530,485, Jun. 1, 1990, abandoned, which is a continuation of Ser. No. 350,356, May 8, 1989, abandoned. This application Nov. 28, 1994, Ser. No. 345,869
Int. Cl.[6] C12N *15/09*
U.S. Cl. 435—172.3 **12 Claims**

1. A method for transforming a plant with a foreign DNA comprising:

a. introducing said foreign DNA into pre-germinated pollen by electroporation, wherein said foreign DNA is in an expression vector and is capable of participating in a recombination event with the native DNA in said pollen and wherein said pollen is capable of fertilizing ova of the plant;

b. fertilizing ova of the plant; and

c. selecting for germplasm which is transformed with said foreign DNA.

5,629,184

CATIONIC COPOLYMERS OF VINYLAMINE AND VINYL ALCOHOL FOR THE DELIVERY OF OLIGONUCLEOTIDES

Merrill S. Goldenberg, and Alice C. Beekman, both of Thousand Oaks, Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Filed Jan. 25, 1995, Ser. No. 378,301
Int. Cl.[6] C12N *15/00*
U.S. Cl. 435—172.3 **13 Claims**

1. A composition comprising a copolymer of the general formula I,

$$—(CH_2—HCOH—)x—(CH_2—HCNR1R2R3—)y—(A)z— \quad \text{I.}$$

where

R1, R2 and R3 are independently hydrogen, lower alkyl or 2-hydroxyalkyl; or R1=R2=hydrogen, lower alkyl or 2-hydroxyalkyl and R3 is a lone pair electron

A is a residual unit of a vinylic monomer

x, y, and z are integers, representing the number of incorporated monomer and where x+y+z=100

wherein x=25–99.5 mole %, y=0.5–75 mole %, and z<50 mole %, combined with a polynucleotide, wherein the molar ratio of y to

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anion units is 0.1–100, optionally in a pharmaceutically acceptable carrier, and wherein said composition allows for the cellular uptake of the polynucleotide.

5,629,185

PROCESS FOR DISINTEGRATING CELL DISPERSIONS OR CELL SUSPENSIONS BY MEANS OF ULTRASONICATION FOR THE PURPOSE OF ISOLATING CELL CONSTITUENTS

Klaus Stanzl, Am Eschbach 9d, D-56323 Waldesch; Leonhard Zastrow, Grabenweg 13, D-Wiesbaden-Nordenstadt; Joachim Röding, Trompeterstrasse 19, D-65207 Wiesbaden, and Karin Golz, Florastrasse 39, D-13187 Berlin, all of Germany

PCT No. PCT/EP93/03406, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO94/13783, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 3, 1993, Ser. No. 256,973

Claims priority, application Germany, Dec. 7, 1992, 42 41 154.8

Int. Cl.[6] **C12N** *1/06;* **C12M** *1/42*

U.S. Cl. 435—173.7 **4 Claims**

1. Process for disintegrating a cell dispersion or a cell suspension by means of ultrasonication treatment in an ultrasonication flow-through cell having an acoustic irradiation vessel for the purpose of obtaining cell constituents, said process comprising the steps of

projecting a sonotrode into the flow-through cell wherein ½ to ⅔ of a length of the sonotrode is projected into the flow through cell and acoustic irradiation vessel and immersed in a medium to be sonicated, said vessel having a surface therein directly opposite the sonotrode, wherein an angle of the sonotrode in the acoustic irradiation vessel, relative to said surface, is within the range of from 80.5° to 88.5°, wherein the ratio of the extent of immersion of the sonotrode (in mm) to an acoustic irradiation volume (in ml) in the vessel is set to a value within the range from 1:1.1 to 1:20 and wherein the ratio of the extent of immersion of the sonotrode (in mm) to the proportion of solid matter in the medium to be sonicated (in percent by weight) is within the range from 1:0.02 to 1:2.2; and

flowing a cell dispersion or cell suspension through the irradiation vessel and sonicating the cell dispersion or cell suspension.

5,629,186

POROUS MATRIX AND METHOD OF ITS PRODUCTION

Robert D. Yasukawa, San Jose, and Loretta J. Cordrey, Livermore, both of Calif., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Apr. 28, 1994, Ser. No. 234,304

Int. Cl.[6] **C12N** *11/02*

U.S. Cl. 435—177 **10 Claims**

1. A porous matrix composed of fused fibers of silica, alumina, or silica and alumina and characterized by:

(a) a rigid, three-dimensionally continuous network of open, intercommunicating voids formed randomly in all directions,

(b) a density of between about 3.5 and 5.5 pounds/ft3; and

(c) a volume occupied by the matrix fibers of between about 2–10 volume percent.

5,629,187

PROCESS AND APPARATUS FOR FORMING SOLID PARTICLES BY CROSS-LINKING DROPS OF A CROSS-LINKABLE MATERIAL WITH A CASCADING STREAM OF CROSS-LINKING AGENT

Patrick Ors; Dominique Hennequin, both of Epernay, and Alain Meybeck, Courbevoie, all of France, assignors to LVMH Recherche, Colombes, France

Continuation of Ser. No. 39,286, Apr. 19, 1993, Pat. No. 5,484,721. This application Jun. 7, 1995, Ser. No. 479,182

Claims priority, application France, Oct. 19, 1990, 90 13002

Int. Cl.[6] **C12N** *11/00;11/10;* **C12M** *1/00;1/40*

U.S. Cl. 435—178 **46 Claims**

1. A process for manufacturing solid, unagglomerated particles of materials hardened by cross-linking, which comprises:

(a) providing an ionically cross-linkable material initially in liquid form;

(b) providing an ionic cross-linking agent capable of continuous flow;

(c) producing a freely flowing stream of the ionic cross-linking agent in an essentially vertical, downward direction over a predetermined length until said stream reaches a terminal downstream end, and said flowing stream having an essentially vertical exposed outer surface along substantially the full length of said flowing stream including said terminal downstream end;

(d) generating drops of the ionically cross-linkable material;

(e) directing the drops of the ionically cross-linkable material into contact with the outer surface of the flowing stream of the ionic cross-linking agent such that said drops flow essentially vertically downward in contact with said flowing stream for a period of time effective to cross-link and harden the outer layers of said drops to form said particles; and

(f) after forming said particles, immediately separating said particles from the flowing stream of the ionic cross-linking agent at no lower than the terminal downstream end of said flowing stream.

5,629,188

HUMAN ALANYL-TRNA SYNTHETASE PROTEINS, NUCLEIC ACIDS AND TESTER STRAINS COMPRISING SAME

Kiyotaka Shiba, Tokyo, Japan; Paul R. Schimmel, Cambridge, and Tracy L. Ripmaster, Charlestown, both of Mass., assignors to Cubist Pharmaceuticals, Inc., Cambridge, Mass.; Cancer Institute, Japanese Foundation for Cancer Research, Tokyo, Japan, and Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 21, 1995, Ser. No. 426,236

Int. Cl.[6] **C12N** *9/00;1/20;1/14;* **C07H** *21/04*

U.S. Cl. 435—183 **33 Claims**

1. An essentially pure nucleic acid which encodes a human alanyl-tRNA synthetase.

5,629,189

DNA ENCODING HUMAN CYTOPLASMIC CU/ZN SUPEROXIDE DISMUTASE

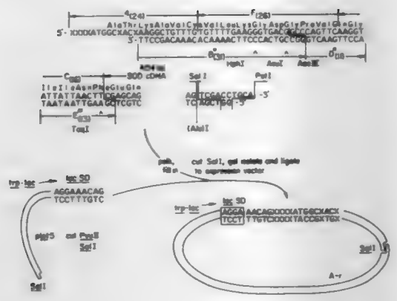
Robert A. Hallewell, San Francisco, and Guy T. Mullenbach, Oakland, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 186,579, Jan. 26, 1994, abandoned, which is a division of Ser. No. 57,496, May 6, 1993, abandoned, which is a division of Ser. No. 222,352, Jul. 20, 1988, Pat. No. 5,252,476, which is a continuation of Ser. No. 931,920, Nov. 14, 1986, abandoned, which is a continuation of Ser. No. 609,412, May 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 538,607, Oct. 3, 1983, abandoned. This application Mar. 16, 1994, Ser. No. 213,573

Int. Cl.[6] **C12N** *9/02;15/53;15/66;* **C07H** *21/04*

U.S. Cl. 435—189 **28 Claims**

1. An intron-free DNA molecule which comprises a coding sequence for human cytoplasmic Cu/Zn superoxide dismutase, said



intron-free DNA molecule comprising a synthetic linker sequence that (a) encodes at least amino acids 1–9 of the amino acid sequence of human Cu/Zn superoxide dismutase and (b) comprises a DNA spacer sequence in a region between the ribosomal binding site and the first codon for said superoxide dismutase coding sequence, wherein said linker sequence is in reading frame with a cDNA fragment that encodes the remainder of the amino acid sequence of human cytoplasmic Cu/Zn superoxide dismutase, wherein the coding sequence of the DNA molecule comprises the following nucleotide sequence: 5'-ATG GCX ACX AAG GCT GTT TGT GTT TTG AAG GGT GAC GGC CCA GTT CAA GGT ATT ATT AAC TTC GAG CAG AAG GAA AGT AAT GGA CCA GTG AAG GTG TGG GGA AGC ATT AAA GGA CTG ACT GAA GGC CTG CAT GGA TTC CAT GTT CAT GAG TTT GGA GAT AAT ACA GCA GGC TGT ACC AGT GCA GGT CCT CAC TTT AAT CCT CTA TCC AGA AAA CAC GGT GGG CCA AAG GAT GAA GAG AGG CAT GTT GGA GAC TTG GGC AAT GTG ACT GCT GAC AAA GAT GGT GTG GCC GAT GTG TCT ATT GAA GAT TCT GTG ATC TCA CTC TCA GGA GAC CAT TGC ATC ATT GGC CGC ACA CTG GTG GTC CAT GAA AAA GCA GAT GAC TTG GGC AAA GGT GGAAAT GAA GAAAGT ACA AAG ACA GGA AAC GCT GGC AGT CGT TTG GCT TGT GGT GTA ATT GGG ATC GCC CAA TAA-3';

wherein GCX represents GCA or GCT; and ACX represents ACG.

5,629,190

POLYPEPTIDES POSSESSING A NITRILASE ACTIVITY AND METHOD OF CONVERTING NITRILES TO CARBOXYLATES BY MEANS OF SAID POLYPEPTIDES

Dominique Petre, Lyons; Edith Cerbelaud, La Mulatiere; Sophie Levy-Schil, and Joël Crouzet, both of Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 194,588, Feb. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 102,747, Aug. 6, 1993, abandoned. This application May 23, 1995, Ser. No. 447,702

Claims priority, application France, Aug. 10, 1992, 92 09882

Int. Cl.[6] **C12N** *9/78*

U.S. Cl. 435—227 **14 Claims**

1. Polypeptides having nitrilase activity and resulting from the expression of a DNA segment selected from the group consisting of:

1) the DNA sequence shown in SEQ ID No. 4;

2) a degenerate of said DNA sequence resulting from the degeneracy of the genetic code; and,

3) a DNA molecule that hybridizes with the complement of said DNA sequence or analog thereof under the following conditions:

a) hybridization buffer: 5×SSC, 5×Denhardt, 0.1% SDS, 50 mM Na_3PO_4, pH 6.5, 250 μg/ml of ssDNA;

b) hybridization temperature: 50° C.; and,

c) washing conditions: 1 h, 6×SSC, room temperature, and 5 min. 2×SSC, 0.1% SDS, 50° C.;

and wherein said DNA molecule encodes a polypeptide having nitrilase activity.

5,629,191

METHOD OF MAKING A POROUS MATRIX PARTICLE

Frederick Cahn, Belmont, Mass., assignor to Integra Life-Sciences Corporation, Plainsboro, N.J.

Continuation-in-part of Ser. No. 682,645, Apr. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 203,580, May 27, 1988, abandoned, which is a continuation of Ser. No. 688,630, Jan. 3, 1985, abandoned. This application Jun. 10, 1993, Ser. No. 74,922

Int. Cl.[6] **C12N** *5/06;* **C12P** *21/02*

U.S. Cl. 435—395 **11 Claims**

1. A method of making a mass of generally spherical porous matrix particles having a generally isopycnic density with liquid growth medium, a sponge-like character and diameters of less than about 2 millimeters, each particle consisting essentially of a generally homogeneous biologically compatible matrix having a multiplicity of voids therein, the voids representing at least 10 percent of the total volume of the particle, the voids being connected to pores of less than 100 micrometers in diameter which connect the voids to the exterior of the particle, the method comprising the steps of:

(a) dispersing a collagen in an acidic aqueous medium to form an aqueous collagen dispersion;

(b) combining a collagen-precipitating agent with the aqueous collagen dispersion to form an aqueous suspension of a collagenous precipitate;

(c) forming droplets from the aqueous suspension of the collagenous precipitate in a temperature-controlled droplet-formation thermal environment in thermal contact with the aqueous suspension as the droplets are formed, the temperature of the droplet-formation thermal environment being maintained at approximately 0° C.;

(d) immersing the droplets in a temperature-controlled droplet-freezer bath to freeze the droplets, the droplet-freezer bath containing a water-immiscible liquid comprising a mixture of a hydrocarbon and 1,1,2, trichlorotrifluoroethane, the liquid being maintained at a droplet-freezing temperature significantly below 0° C.;

(e) removing the frozen droplets from the droplet-freezer bath;

(f) drying the frozen droplets by sublimation to form porous particles of a collagenous material; and

(g) crosslinking the collagenous material in the particles to form porous particles of a biologically compatible crosslinked collagenous material.

5,629,192

ETS1 GENE: A HUMAN TUMOR SUPPRESSOR GENE

Hiroaki Suzuki, Sapporo, Japan; Narayan K. Bhat, North Potomac, Md., and Takis S. Papas, Charleston, S.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 4, 1994, Ser. No. 191,889

Int. Cl.[6] **C12N** *5/00*

U.S. Cl. 435—172.3 **6 Claims**

1. A method of reducing the tumorigenicity of a cell in vitro, said cell not endogenously expressing an ETS1 gene, said method comprising: transfecting said cell with an ETS1 gene so that the transfected ETS1 gene is expressed, whereby the tumorigenicity of said cell is reduced.

5,629,193

PARAOXONASE

Peter L. Hudson, Germantown; Wei W. He, Columbia, and Steven M. Ruben, Olney, all of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Filed Jul. 5, 1994, Ser. No. 270,583

Int. Cl.[6] **C12N** *15/55;15/63;9/16*

U.S. Cl. 435—325 **30 Claims**

1. An isolated polynucleotide comprising a polynucleotide having at least a 95% identity to a member selected from the group consisting of:

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(a) a polynucleotide encoding a polypeptide comprising an amino acid sequence as set forth in SEQ ID NO:2;
(b) a polynucleotide encoding a polypeptide comprising amino acid 25 to amino acid 356 as set forth in SEQ ID NO:2;
(c) a polynucleotide which is complementary to the polynucleotide of (a); and
(d) a polynucleotide which is complementary to the polynucleotide of (b).

5,629,194

ISOLATED PORCINE PANCREATIC CELLS FOR USE IN TREATMENT OF DISEASES CHARACTERIZED BY INSUFFICIENT INSULIN ACTIVITY

Jonathan Dinsmore, Brookline, Mass., assignor to Diacrin, Inc., Charlestown, Mass.

Filed Oct. 21, 1994, Ser. No. 327,506
Int. Cl.[6] C12N *5/00;* **G01N** *33/53;* **A61K** *39/395*
U.S. Cl. 435—325 **14 Claims**

1. An embryonic porcine pancreatic cell, which, in unmodified form, has at least one antigen on the cell surface which is capable of stimulating an immune response against the cell in a xenogeneic subject, wherein the antigen on the cell surface is altered to inhibit rejection of the cell when introduced into the xenogeneic subject.

5,629,195

Patent Not Issued For This Number

5,629,196

DNA ENCODING PEPTIDE HORMONE THAT INHIBITS DIGESTION IN INSECTS

Dov Borovsky, Vero Beach, and David A. Carlson, Gainesville, both of Fla., assignors to University of Florida Research Foundation, Gainesville, Fla., and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 271,698, Jul. 7, 1994, Pat. No. 5,439,821, which is a division of Ser. No. 989,290, Dec. 11, 1992, Pat. No. 5,358,934. This application Jun. 6, 1995, Ser. No. 468,596
Int. Cl.[6] A61K *38/04;* **C12N** *15/11*
U.S. Cl. 435—418 **13 Claims**

1. An isolated DNA molecule encoding a peptide having the following formula:

H_2N—*YDPAP*$_n$—COOH

where n=2 through 4.

5,629,197

MONOCLONAL ANTI-HUMAN BREAST CANCER ANTIBODIES

David B. Ring, Redwood City, Calif.; Arthur E. Frankel, Chaple, N.C., and Michael J. Bjorn, Millcreek, Wash., assignors to Cetus Oncology Corporation, Emeryville, Calif.

Continuation of Ser. No. 842,476, Mar. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 690,750, Jan. 11, 1985, Pat. No. 4,753,894, which is a continuation-in-part of Ser. No. 577,976, Feb. 8, 1984, abandoned. This application Aug. 11, 1994, Ser. No. 288,981
Int. Cl.[6] C12N *5/12;* **C07K** *16/18;16/30*
U.S. Cl. 435—344 **6 Claims**

1. Hybridoma
(a) 2G3 having ATCC Accession No. HB8491;
(b) 245E7 having ATCC Accession No. HB8489; and
(c) 369F10 having ATCC Accession No. HB8682.

5,629,198

ANTI-HIV AGENT

Kenji Mizumoto; Hiroshi Tsuboi; Hideki Miyajima; Hiroshi Fujimoto; Katsumi Ajisaka; Yukio Fujiki, and Hajime Tsunoo, all of Odawara, Japan, assignors to Meiji Milk Products Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00977, § 371 Date Jan. 12, 1994, § 102(e) Date Jan. 12, 1994, PCT Pub. No. WO93/03035, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 31, 1992, Ser. No. 175,438
Claims priority, application Japan, Aug. 2, 1991, 3-194452; Mar. 19, 1992, 4-063492
Int. Cl.[6] A61K *39/00;* **G01N** *33/564;33/53;* **C07K** *1/00*
U.S. Cl. 435—262 **26 Claims**

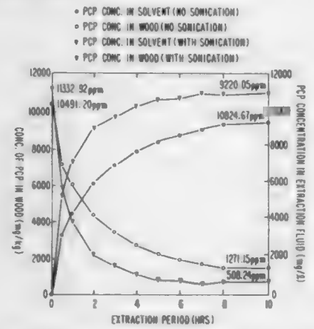
1. A method of killing HIV-infected cells in vitro which comprises administering an effective amount of a porphyrin derivative to HIV-infected cells in vitro, wherein said porphyrin derivative is the reaction product of a porphyrin compound and a carbodiimide compound; said porphyrin compound having a carboxyl terminated side chain at the 13 or 17 positions of said porphyrin compound, said carboxyl group including a carbonyl carbon atom; and said carbodiimide compound having a carbon atom double bonded to two nitrogen atoms which are reactable with said carboxyl group whereby said nitrogen atom of said carbodiimide compound is chemically bonded to said porphyrin compound via a chemical bond between said nitrogen atom and carbonyl carbon atom.

5,629,199

SONICALLY ENHANCED METHOD FOR REMOVING CHEMICAL PRESERVATIVES FROM CHEMICALLY TREATED WOOD PRODUCTS

George Korfiatis, Basking Ridge, and Nirupam Pal, Kearny, both of N.J., assignors to Trustees of Stevens Institute of Technology, Hoboken, N.J.

Continuation of Ser. No. 340,194, Nov. 15, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 617,982
Int. Cl.[6] B09B *3/00*
U.S. Cl. 435—262.5 **2 Claims**



1. A method for removing approximately 99.5% of pentachlorophenol, creosote or a mixture of pentachlorophenol and creosote from wood treated with pentachlorophenol, creosote or a mixture of pentachlorophenol and creosote in about 10 hours comprising:
(a) contacting wood chips from wood treated with pentachlorophenol, creosote or a mixture of pentachlorophenol and creosote with a solvent selected from the group consisting of ethanol, acetonitrile and methanol; and
(b) sonicating the wood chips and solvent to extract approximately 99.5% of the pentachlorophenol, creosote or a mixture of pentachlorophenol and creosote from the wood in about 10 hours.

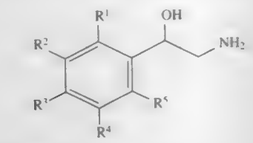
5,629,200

PRODUCTION OF OPTICALLY ACTIVE 2-AMINO-1-PHENYLETHANOL DERIVATIVES BY ASYMETRICAL ASSIMILATION

Kazuaki Furukawa; Takayuki Abe; Hidekazu Akamatsu; Akinobu Matsuyama, all of Arai; Michio Ito, Joetsu; Noritsugu Yamasaki, Tsukuba; Katsuya Miki, Arai; Kiyoshi Ikura, Tsukuba, and Takeshi Ishiguro, Nakakubiki-gun, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Nov. 17, 1994, Ser. No. 343,952
Claims priority, application Japan, Nov. 18, 1993, 5-289419; Nov. 24, 1993, 5-319046; Mar. 10, 1994, 6-040172; Apr. 21, 1994, 6-083014; Aug. 4, 1994, 6-183217
Int. Cl.[6] C12P *41/00*
U.S. Cl. 435—280 **4 Claims**

1. A process for separating an optically active 2-amino-1-phenylethanol derivative from a mixture of enantiomers of said derivative which comprises:
(1) treating a mixture of enantiomers of 2-amino-1-phenylethanol compound shown by the general formula (I)



(I)

or a salt thereof,
wherein R^1, R^2, R^3, R^4 and R^5 are, the same or different, and are selected from the group consisting of:
(1) a hydrogen atom;
(2) a halogen atom;
(3) a C_{1-4} alkyl group or a C_{1-4} alkyl group substituted with a substituent selected from the group consisting of a hydroxyl group, a C_{1-4} alkoxy group, benzoyl group, a C_{6-12} aryl group or a C_{6-12} aryl group substituted with a C1–4 alkoxy group, a C_{1-4} alkylthio group and a halogen atom;
(4) a hydroxyl group, or a hydroxyl group protected with a protective group;
(5) a C_{1-4} alkoxy group, or a C_{1-4} alkoxy group substituted with a substituent selected from the group consisting of a halogen atom, a hydroxyl group and a C_{1-4} alkoxy group;
(6) a C_{3-10} cycloalkyloxy group, or a C_{3-10} cycloalkyloxy group substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group a hydroxyl group and a halogen atom;
(7) a C_{7-20} aralkyloxy group, or a C_{7-20} aralkyloxy group substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group, a C_{6-12} aryl group, a hydroxyl group, a C_{1-4} alkoxy group, a nitro group and a halogen atom;
(8) a C_{6-16} aryloxy group, or a C_{6-16} aryloxy group substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group, a hydroxyl group, a C_{1-4} alkoxy group, a nitro group and a halogen atom;
(9) a C_{1-4} alkylthio group, or a C_{1-4} alkylthio group substituted with a substituent selected from the group consisting of a halogen atom, a hydroxyl group and a C_{1-4} alkoxy group;
(10) an acyl group selected from the group consisting of (a) a C_{1-16} acyl group, or a C_{1-6} acyl group substituted with a substituent selected from the group consisting of a hydroxyl group, a C_{1-4} alkoxy group, a C_{1-4} alkylthio group and a halogen atom, (b) a C_{7-20} acyl group having an aromatic ring or a C_{7-20} acyl group having an aromatic ring substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group, a hydroxyl group, a C_{1-4} alkoxy group, a nitro group and a halogen atom, and (c) an acyl group having a heterocyclic ring, or an acyl group having a heterocyclic ring substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group, a hydroxyl group, a C_{1-4} alkoxy group, a nitro group and a halogen atom;
(11) a carboxyl group, or a carboxyl group protected with a protective group;
(12) a C_{2-3} alkoxycarbonyl group, or a C_{2-5} alkoxycarbonyl group substituted with a substituent selected from the group consisting of a hydroxyl group, a C_{1-4} alkoxy group and a halogen atom;
(13) a nitro group; and
(14) an amino group, or an amino group substituted with a substituent selected from the group consisting of (a) a C_{1-4} alkyl group, or a C_{1-4} alkyl group substituted with a substituent selected from the group consisting of a hydroxyl group, a C_{1-4} alkoxy group, a benzoyl group, a C_{1-4} alkylthio group and a halogen atom, (b) a C_{7-20} aralkyl group, or a C_{7-20} aralkyl group substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group, a hydroxyl group, a C_{1-4} alkoxy group, a nitro group and a halogen atom, (c) a C_{1-6} acyl group, or a C_{1-6} acyl group substituted with a substituent selected from the group consisting of a hydroxyl group, a C_{1-4} alkoxy group, a C_{1-4} alkylthio group and a halogen atom, (d) a C_{7-20} acyl group having an aromatic ring, or a C_{7-20} acyl group having an aromatic ring substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group, a hydroxyl group, a C_{1-4} alkoxy group, a nitro group and a halogen atom, (e) an acyl group having a heterocyclic ring, or an acyl group having a heterocyclic ring substituted with a substituent selected from the group consisting of a C_{1-4} alkyl group, a hydroxyl group, a C_{1-4} alkoxy group, a nitro group and a halogen atom, and (f) a carboxyl group, or a carboxyl group protected with a protective group, wherein R^1, R^2, R^3, R^4 and R^5 are not concurrently hydrogen atoms.

with a microorganism, or a preparation derived therefrom, which is capable of selectively utilizing a corresponding (S)-form of said compound or a salt thereof, and allowing said microorganism or a preparation thereof to selectively utilize the (S)-form of said compound or a salt thereof, wherein said microorganism is a strain of microorganism selected from the group consisting of *Hansenula anomala, Geotrichum candidum, Candida albicans, Candida parapsilosis, Candida gropengiesseri, Candida aaseri, Candida beechii, Candida atmospherica, Candida natalensis, Candida paludigena, Candida sake, Candida pintolopesii* var. *pintolopesii, Cryptococcus neoformans, Rhodosporidium sphaerocarpum, Rhodosporidium diobovatum, Rhodotorula rubra, Rhodotorula glutinis* var. *dairenensis, Saccharomyces montanus, Sporobolomyces roseus, Kluyveromyces marxianus* var. *bulgaricus, Kluyveromyces lactis, Issatchenkia scutulata* var. *scutulata, Pichia thermotolerans, Pichia farinosa, Botryoascus synnaedendrus, Debaryomyces hansendi* var. *hansendi, Lipomyces starkeyi, Metschnikowia bicuspidata, Saccharomycodes ludwigdi, Schizoblastosporion kobayashii, Stephanoascus ciferrii, Sterigmatomyces halophilus, Zygosaccharomyces rouxii,* Zygosaccharomyces fermentati, Sporidiobolus salmonicolor, Sporidisbolus pararoseus, Malassezia furfur, Torulaspora delbrueckii, Corynebacterium aquaticum, Corynebacterium mediolanum, Gluconobacter asaii, Gluconobacter oxydans, Gluconobacter frateurii, Promicromonospora citrea, Pseudomonas aeruginosa, Pseudomonas riboflavina, Pseudomonas fluorescens, Pseudomonas putida, Pseudomonas syncyanea, Pseudomonas diminuta, Pseudomonas chlororaphis, Pseudomonas fragi,* Pseudomonas sp. ATCC 14676, *Bordetella bronchiseptica,* Acetobacter sp. IFO 3248, Acetobacter sp. IFO 3297, *Acetobacter pasteurianus, Agrobacterium radiobacter, Arthrobacter ureafaciens, Amauroascus reticulatus, Brevibacterium linens, Micrococcus roseus, Aureobacterium testaceum, Azotobacter vinelandii, Xanthomonas campestris pv oryzae, Klebsiella pneumoniae, Comamonas testosteroni, Mycobacterium diernhoferi, Terrabacter tumescens, Agrocybe cylindracea, Trichoderma viride, Alternaria kikuchiana, Hamigera avellanea, Moniliella acetoabutans, Pholiota nameko, Podospola carbonaria, Aegerita candida, Streptomyces cinereoruber, Saccharomycopsis capsularis* and *Leucosporidium scottii* to yield the corresponding (R) form of said compound; and
recovering the (R)-form of said compound or a salt thereof.

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5,629,201

APPARATUS FOR APPLYING A LIQUID SAMPLE ONTO A CULTURE MEDIUM

Robert J. Nugteren, Nieuw Vennep; Arie H. Rodenburgh, Hoofddorp, and Erik A. Aurik, Haarlem, all of Netherlands, assignors to Priolion Development B.V., Vijfhuizen, Netherlands

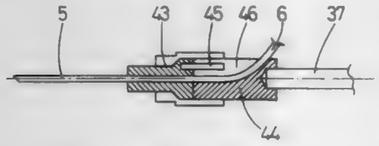
PCT No. PCT/NL93/00110, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO93/24609, PCT Pub. Date Dec. 9, 1993

PCT Filed May 24, 1993, Ser. No. 343,425

Claims priority, application Netherlands, May 22, 1992, 9200909

Int. Cl.[6] C12M *1/26*

U.S. Cl. 435—283.1 2 Claims



1. An apparatus for applying a liquid sample onto a culture medium with a prescribed quantity and distribution, the apparatus comprising a syringe and a line connected thereto and having at one end a nozzle with an oblique cut tip for delivering sample liquid and at its other end being exchangeably connected to the syringe with a nipple, wherein for positioning said nozzle the line is connected to a movable carrier with a mounting means for unambiguously and exchangeably mounting the nozzle in a fixed position relative to a holder of the carrier.

5,629,202

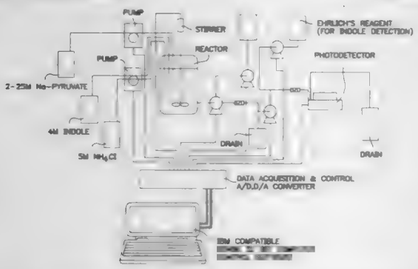
COMPUTER-CONTROLLED BIOREACTOR SYSTEM FOR ENZYMATIC SYNTHESIS OF L-TRYPTOPHAN

Chein-Shyong Su; Zen-Jen Chan; Wuen-Hsian Huang, and Hsin Tsai, all of Taipei, Taiwan, assignors to Development Center for Biotechnology, Taipei, Taiwan

Division of Ser. No. 277,481, Jul. 19, 1994. This application Jun. 6, 1995, Ser. No. 467,523

Int. Cl.[6] C12M *1/36*

U.S. Cl. 435—286.5 13 Claims



1. An computer-controlled bioreactor system for use in an enzymatic synthesis of L-tryptophan comprising:

a bioreactor;

a stirring means;

an indole storing means;

an ammonium salt storing means;

a pyruvic acid and/or pyruvate salt storing means;

an indole and ammonium salt feeding pump with an output means from said indole and ammonium salt storing means and input means to said bioreactor;

a pyruvic acid and/or pyruvate salt feeding pump with an output means from said pyruvic acid and/or pyruvate storing means and input means to said bioreactor;

a computer with data communication means to said stirring means, said pyruvic acid and/or pyruvate salt feeding pump and said indole and said ammonium salt feeding pump;

wherein said indole and ammonium salt feeding pump and pyruvic acid and/or pyruvate salt feeding pump are operatively linked with said computer;

wherein said indole and ammonium salt feeding pump and pyruvic acid and/or pyruvate salt feeding pump and said input means are capable of inputting said indole, said pyruvic acid or pyruvic salt and said ammonium salt into a reaction solution in said computer-controlled bioreactor;

wherein said computer and data communication means controls the input of said pyruvic acid or said pyruvic salt and said ammonium salt into said bioreactor by controlling said feeding pump and input means;

wherein said bioreactor stirring means mixes said indole with either the pyruvic acid or pyruvic salt and the ammonium salt in the presence of a tryptophanase;

wherein said computer controls the feeding rate of said indole to optimize said tryptophanase's activity over time by calculating the input of said pyruvic acid or said pyruvic salt and said ammonium salt and the feeding rate of said indole according to a feeding rate of indole equation comprising:

$$F=5.51-5.44*10^{-2}T+2.79*10^{-4}T^2-7.05*10^{-7}T^3+7.0*10^{-10}T^4,$$

wherein:

F is the feeding rate of indole (mmole/min/L),

T is the reaction time of enzymatic synthesis (min); and

wherein said computer controls the addition of pyruvic acid or pyruvic salt at a predetermined time.

5,629,203

METHOD FOR INTEGRATIVE TRANSFORMATION OF YEAST USING DISPERSED REPETITIVE ELEMENTS

Jeffrey R. Shuster, Fairfield, Calif., assignor to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 990,352, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 556,221, Jul. 20, 1990, abandoned. This application Nov. 30, 1994, Ser. No. 346,836

Int. Cl.[6] C12N *15/00;15/09;15/63;15/81*

U.S. Cl. 435—320.1 20 Claims

1. A vector for introducing multiple copies of heterologous DNA into a yeast host cell genome, wherein said yeast host cell genome comprises a plurality of DELTA sequences, each of said DELTA sequences being homologous to the DELTA sequence occurring in plasmid pJS176 (ATCC Accession Number 68368), and wherein said vector comprises:

a linear DNA molecule comprising first and second DNA sequences, wherein the first and second DNA sequences are homologous to the 5' end and 3' end, respectively, of each of the DELTA sequences in the host cell genome, whereby said vector is capable of homologous recombination with the host; and

heterologous DNA flanked by said first and second DNA sequences.

5,629,204

PEPTIDE RELATED TO HUMAN PROGRAMMED CELL DEATH AND DNA ENCODING IT

Tasuku Honjo, Kyoto, Japan; Yasumasa Ishida, Newton, Mass., and Takashi Shinohara, Kyoto, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, and Tasuku Honjo, Kyoto, both of Japan

Filed Mar. 1, 1995, Ser. No. 396,650

Claims priority, application Japan, Mar. 1, 1994, 6-055224

Int. Cl.[6] C12N *15/12;15/63*

U.S. Cl. 435—320.1 4 Claims

1. An isolated DNA molecule encoding a polypeptide having the amino acid sequence shown in SEQ ID NO:1.

5,629,205

PROMOTERS FOR GENE EXPRESSION

Peter A. Lagosky, Toronto, Canada, assignor to Allelix Biopharmaceuticals Inc., Ontario, Canada

Filed May 19, 1995, Ser. No. 445,133

Int. Cl.[6] C12N *15/11;15/16;15/63*

U.S. Cl. 435—320.1 20 Claims

1. A recombinant DNA construct which expresses a protein in a bacterial host cell, the construct comprising a coding region for the protein operably linked with a control region comprising a promoter which promotes expression of said protein in the host cell, wherein the promoter comprises a DNA sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2.

5,629,206

METHOD OF CONTROLLING INSERTION SEQUENCE OF FILMS IN BIO-CHEMICAL ANALYSIS

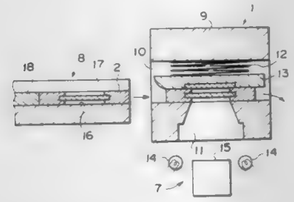
Takaki Arai, and Osamu Seshimoto, both of Saitama-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Continuation of Ser. No. 298,121, Aug. 30, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 582,046

Claims priority, application Japan, Sep. 14, 1993, 5-228413

Int. Cl.[6] G01N *33/52*

U.S. Cl. 436—46 2 Claims



1. In a method for biochemical analysis wherein each one of a plurality of dry chemical analysis films having a liquid sample for analysis of different analytes thereon is sequentially inserted into an incubator, sequentially incubated at a predetermined temperature to cause a coloring reaction to take place, and an extent of the coloring reaction is measured after the incubation and the sequence of such incubation is carried out so that each preceding chemical analysis film is discharged from the incubator prior to insertion of the next chemical analysis film to be analyzed, the improvement which comprises controlling the sequence of the insertion and discharge of each of said plurality of chemical analysis films so that the accuracy of measurement for the second through last of the plurality of chemical analysis films is not adversely affected by the analysis of the next preceding chemical analysis film,

wherein a first chemical analysis film having a first analyte for analysis thereon is used which generates a gas which can adversely affect the accuracy of the analysis of other different analytes and a second chemical analysis film having a second analyte thereon for analysis is used, the accuracy of measurement of which is adversely affected by the gas generated by the first analyte, and wherein after discharge of the first chemical analysis film, a third chemical analysis film having a third analyte thereon for analysis and having adsorbability to adsorb said gas, the accuracy of the analysis of which is not adversely affected by the gas generated by the first analyte is inserted and analyzed prior to insertion of the second chemical analysis film.

5,629,207

METHOD OF CONTROLLING TEST FILMS IN BIOCHEMICAL ANALYSIS APPARATUS

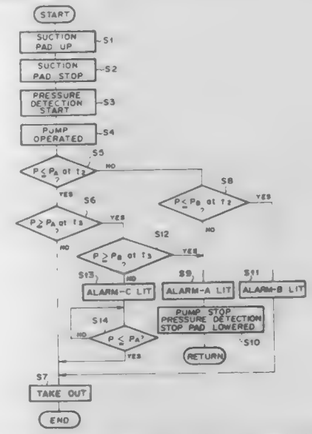
Yoshihiro Seto, and Toshimi Furuya, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1994, Ser. No. 364,271

Claims priority, application Japan, Dec. 27, 1993, 5-331123

Int. Cl.[6] G01N *35/10*

U.S. Cl. 436—50 8 Claims



1. A method of controlling a biochemical analysis apparatus comprising the steps of:

moving an analysis film between a plurality of processing stations, and temporarily holding said analysis film at said processing stations,

wherein at least two of said moving and holding steps are performed using at least two of a plurality of independent suction means,

measuring a pressure in said independent suction means at least two predetermined times after said independent suction means begins attracting said film under a suction force,

judging an attracting state of said independent suction means on the basis of the result of the measurements and a predetermined set of attracting state parameters wherein said attracting state parameters are used to indicate at least two different abnormal states,

and controlling said moving and holding steps on the basis of the judgment.

5,629,208

METHOD FOR CONTROLLING IMPURITIES IN AN INSTALLATION FOR THE SEPARATION OF AIR

Bernard Darredeau, Sartrouville, and Amélie Jacomet, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Jun. 5, 1995, Ser. No. 463,741

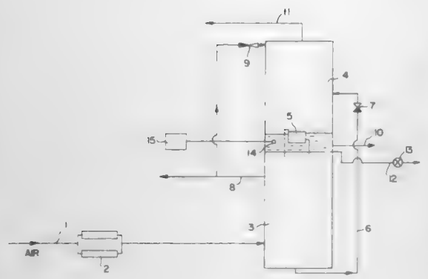
Claims priority, application France, Feb. 7, 1995, 95 01388

Int. Cl.[6] F25J *3/00*

U.S. Cl. 436—55 6 Claims

1. In a method for controlling operation of an installation for separation of air by cryogenic distillation comprising a double distillation column wherein a top of a medium pressure column and a base of a low pressure column are thermally interconnected by a vaporizer-condenser supplied with liquid oxygen from a bath of liquid oxygen in the base of the low pressure column; the improvement comprising continuously measuring nitrous oxide in said bath, and upon detection of a fall in nitrous oxide content of the bath when the installation is operating under equilibrium con-

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ditions, increasing a flow of liquid oxygen to said vaporizer-condenser to raise the measured nitrous oxide content of the bath.

5,629,209

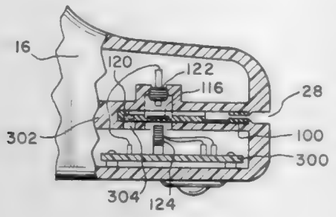
METHOD AND APPARATUS FOR DETECTING VISCOSITY CHANGES IN FLUIDS

Walter J. Braun, Sr., 7884 S. Argonne Ct., Aurora, Colo. 80016; Anthony A. Boiarski, 2615 Henthorn Rd., Upper Arlington, Ohio 43221; Walter J. Braun, Jr., 7884 S. Argonne Ct., Aurora, Colo. 80016, and Steven P. Braun, 18824 N. 95th Ave., Peoria, Ariz. 85382

Filed Oct. 19, 1995, Ser. No. 545,523

Int. Cl.[6] G01N *11/12*

U.S. Cl. 436—69 **31 Claims**



24. A method for detecting changes in viscosity of a fluid, said method comprising the steps of:

(a) heating to an optimal temperature a cartridge having a fluid receiving/dispensing reservoir, one or more fluid-receiving chambers, and a plurality of conduits, each of which permits fluid communication between said fluid receiving/dispensing reservoir and each of said fluid-receiving chambers;

(b) introducing the fluid into the fluid receiving/dispensing reservoir via an injection port in the cartridge;

(c) venting the air displaced from the fluid receiving/dispensing reservoir, conduit, and fluid-receiving chamber via an air vent/fluid plug device that is in fluid communication with each fluid-receiving chamber;

(d) inducing motion in a freely movable ferromagnetic material residing in each fluid-receiving chamber, said ferromagnetic material to detect changes in viscosity of the fluid;

(e) allowing the ferromagnetic material to come to rest for a period; and (f) detecting a position of the ferromagnetic material in the fluid-receiving chamber.

5,629,210

RAPID SCREENING TEST FOR SMITH-LEMLI-OPITZ SYNDROME

David M. Hercules, Nashville, Tenn.; Edwin W. Naylor, Pittsburgh, Pa., and Paul A. Zimmerman, Beaverton, Oreg., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Filed Jun. 2, 1995, Ser. No. 458,199

Int. Cl.[6] B01D *59/44*

U.S. Cl. 436—71 **9 Claims**

1. A method of of analyzing cholesterol containing organic samples for Smith-Lemli-Opitz Syndrome using, Time-of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS) without derivation and chemical steps, comprising the steps of:

a. vaporizing said sample to convert it into a vaporized sample;

b. ionizing said vaporized sample;

c. detecting fragment ions of said vaporized, ionized sample;

d. determining a ratio of said fragment ions for cholesterol/7-dehydrocholesterol in said sample: and

e. determining whether said Smith-Lemli-Opitz Syndrome is present by comparing said ratios of fragment ions for cholesterol/7-dehydrocholesterol in said sample with ratios that define Smith-Lemli-Opitz Syndrome.

5,629,211

VETERINARY DIAGNOSTIC TEST

Kazuhiro Tsutsumi, Sakata-gun, Japan, assignor to Hiroshi Maeda, Hyogo, Japan

Continuation of Ser. No. 284,261, Aug. 2, 1994, abandoned. This application May 3, 1996, Ser. No. 642,409

Claims priority, application Japan, Aug. 2, 1993, 5-191201

Int. Cl.[6] G01N *33/20*

U.S. Cl. 436—74 **3 Claims**

1. A diagnostic process to detect animal urinary tract disorders due to urinary calculus and diseases of the urinary tract characterized by presence of at least one of magnesium and calcium ions in urine the process comprising:

contacting a sample of animal urine with a solution of a composite reagent of (i) xylylazo violet-1 as a color reagent, (ii) a polyoxyethylene alkylphenylether as a surfactant, and (iii) a masking agent of a mixture of triethanolamine (TEA), and ethylene glycolbis (2-aminoethyl ether) N,N'-tetraacetyl acid (EGTA), in a 1:1.5 to 1:4 weight ratio;

observing a color change caused by the reaction of at least one of calcium and magnesium ions with said composite reagent; and

relating said color change to animal urinary tract disorders.

5,629,212

CHLORIDE MONITORING APPARATUS

Patrick Herman, Droue sur Drouette; Jean M. Faure, Cornas; Philippe Engelberg, Carrieres sur Seine, all of France, and Michel Mercusot, Antwerp (Hoboken), Belgium, assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 6, 1995, Ser. No. 466,486

Claims priority, application United Kingdom, Jan. 30, 1995, 9501732

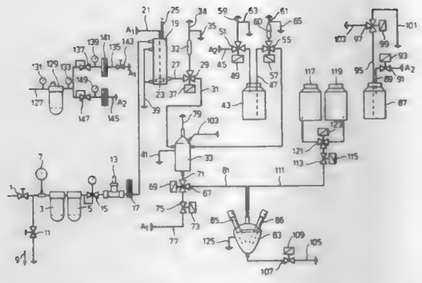
Int. Cl.[6] G01N *27/26*

U.S. Cl. 436—125 **10 Claims**

1. Apparatus for analyzing the chloride content of liquid, comprising: stripper means to receive said liquid to be analyzed and to strip compounds from the liquid by passing stripping air through the liquid;

a batch reactor vessel connected to said stripper to receive the stripped liquid and also connected to a supply of a chloride detecting reagent for reaction with said liquid;

an ionometry measuring cell for measuring the chloride content connected to receive the reaction product from said reaction vessel;



air propulsion means for propelling the liquid and reagent through the apparatus, thereby avoiding the need for pumps in contact with the liquid being analyzed;

control means for controlling the charging and discharging of successive batches of liquid in said stripper, the reaction in said reactor vessel, and the ionometry operation in said ionometry cell; and including an air supply source adapted to energize pneumatically-driven control valves of the apparatus, and to supply a pressure reduction system to ensure the availability of reduced pressure air for said air propulsion through the apparatus; wherein said pressure reduction means includes first and second separate pressure reducers, said first pressure reducer generating a flow of stripping air to be passed through the liquid being prepared for analysis, and said second pressure reducer generating said propulsion air at a pressure above that of the stripping sir but lower than that of the system air used for controlling the valves.

5,629,213

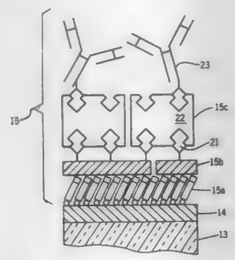
ANALYTICAL BIOSENSOR

Steven E. Kornguth, 1114 Shorewood Blvd., Madison, Wis. 53705; Robert M. Corn, 4018 Manitou Way, Madison, Wis. 53711; Claire E. Jordan, 707 W. Main St., Madison, Wis. 53715, and Brian L. Frey, 526 Spruce St., Madison, Wis. 53715

Filed Mar. 3, 1995, Ser. No. 398,470

Int. Cl.[6] G01N *33/543;33/545;33/547*

U.S. Cl. 436—518 **10 Claims**



1. An improved surface plasmon resonance (SPR) biosensor for use in a system for detecting an analyte, which system comprises a biosensor, a prism, a source of light for directing a beam of light through the prism upon said biosensor and a light detector, said biosensor comprising a transparent substrate, a metallic film on said substrate, an ultrathin organic layer comprised of a polyanionic material having terminal functional groups adsorbed upon said metallic film, a layer of polycationic polylysine bound to said polyanionic layer and an outer layer bound to the polylysine layer, said outer layer having the ability to specifically bind to the polylysine and the analyte to be detected.

5,629,214

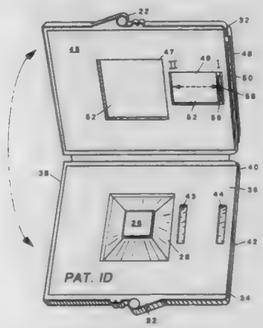
METHODS FOR FORMING AN OPTICAL DEVICE FOR DETECTING THE PRESENCE OR AMOUNT OF AN ANALYTE

Mark Crosby, Niwot, Colo., assignor to Biostar, Inc., Boulder, Colo.

Division of Ser. No. 75,952, Jun. 10, 1993, Pat. No. 5,541,057, which is a continuation-in-part of Ser. No. 924,343, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 873,097, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 408,291, Sep. 18, 1989, abandoned. This application May 31, 1995, Ser. No. 456,040

Int. Cl.[6] G01N *33/543;33/545;33/547*

U.S. Cl. 436—518 **30 Claims**



1. A method for forming an optical device for detecting the presence or amount of an analyte of interest comprising:

a substrate which supports an optically active layer, comprising an optical thin film,

an attachment layer provided on said optically active layer, wherein said attachment layer comprises a material selected from the group consisting of dendrimers, star polymers, molecular self-assembling polymers, polymeric siloxanes, and film forming latexes, and

a receptive layer specific for said analyte provided on said attachment layer, said method comprising the steps of:

forming said optical thin film with a chosen refractive index on said substrate by curing the optical thin film on the substrate at a controlled temperature or for a controlled length of time such that said optically active layer in conjunction with said attachment and receptive layers exhibits a first color in response to light impinging thereon, and exhibits a second color comprising a combination of wavelengths of light different from said first color or comprising an intensity of at least one said wavelength different from said first color. in response to said light when said analyte is present on said receptive layer; and subsequently providing said attachment and receptive layers on said optically active layer.

5,629,215

METHOD OF FABRICATING AND CONTACTING ULTRA-SMALL THREE TERMINAL SEMICONDUCTOR DEVICES

Herbert Goronkin, Tempe, Ariz.; Martin Walther, Crailsheim, Germany, and Raymond K. Tsui, Phoenix, Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Mar. 1, 1996, Ser. No. 609,706

Int. Cl.[6] H01L *49/00*

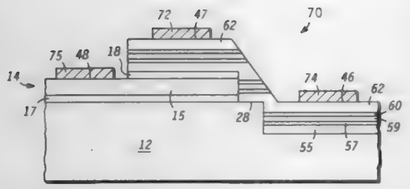
U.S. Cl. 438—492 **8 Claims**

1. A method of fabricating three terminal semiconductor devices comprising the steps of:

providing a supporting substrate having a planar surface;

forming a control layer on the planar surface of the supporting substrate, the control layer having a planar surface opposite the supporting substrate;

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patterning the planar surface of the control layer at least down to the planar surface of the substrate to form a first pattern edge with a side wall;

conformably forming a layer of material over the planar surface of the control layer and the planar surface of the supporting substrate, including the side wall of the first pattern edge;

anisotropically removing the layer of material so as to leave a selected thickness of the layer of material covering the side wall;

etching the planar surface of the supporting substrate to form a second pattern edge laterally spaced the selected thickness from the first pattern edge by using the selected thickness of the layer of material covering the side wall as a mask;

removing the selected thickness of the layer of material covering the side wall; and

consecutively forming a plurality of overlying layers of material, at least partially defining a semiconductor device, in overlying relationship to first and second opposite sides of each of the first and second pattern edges so that discontinuities are produced in the layers at each of the first and second pattern edges and a first layer of the plurality of layers on the first opposite side of the first pattern edge is aligned with and in electrical contact with a second layer of the plurality of layers on the second opposite side of the first pattern edge, a third layer of the plurality of layers on the second opposite side of the first pattern edge is aligned with and in electrical contact with the control layer, and a fourth layer of the plurality of layers on the first opposite side of the second pattern edge is aligned with and in electrical contact with a fifth layer of the plurality of layers on the second opposite side of the second pattern edge.

5,629,216

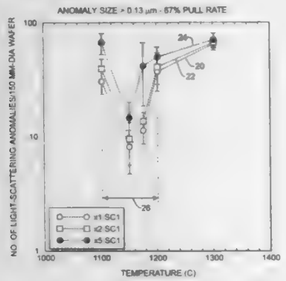
METHOD FOR PRODUCING SEMICONDUCTOR WAFERS WITH LOW LIGHT SCATTERING ANOMALIES

Witawat Wijaranakula, Vancouver, Wash.; Sandra A. Archer, Portland, Oreg., and Dinesh C. Gupta, Vancouver, Wash., assignors to Seh America, Inc., Vancouver, Wash.

Continuation of Ser. No. 385,735, Feb. 8, 1995, abandoned, which is a continuation of Ser. No. 269,062, Jun. 30, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,626

Int. Cl.[6] H01L *21/324*

U.S. Cl. 438—502 **12 Claims**



1. A method of producing a semiconductor wafer having a reduced quantity of light-scattering anomalies, the quantity of light scattering anomalies being characterized at a particular crystal-pulling rate by a graph of quantity of light scattering anomalies versus annealing temperature, the graph for a particular crystal-pulling rate having a local minimum corresponding to a preferred annealing temperature, the method comprising:

selecting a reduced crystal-pulling rate to grow a semiconductor crystal, the reduced crystal-pulling rate corresponding to semiconductor wafers having a first quantity of light scattering anomalies that is significantly less than a nominal quantity of light scattering anomalies corresponding to a nominal crystal-pulling rate;

producing a graph of the quantity of light scattering anomalies versus annealing temperature for the selected reduced crystal-pulling rate the graph having a local minimum;

growing from a melt a semiconductor crystal using the selected reduced crystal-pulling rate;

slicing the crystal into at least one wafer;

shaping the wafer;

determining an annealing temperature within a neighborhood of the local minimum of the graph of the quantity of light scattering anomalies versus annealing temperature for the selected reduced crystal-pulling rate;

annealing the wafer at the determined annealing temperature in an oxidizing environment to reduce the number of light-scattering anomalies on the surface of the wafer after polishing and cleaning;

polishing the wafer; and

cleaning the wafer.

5,629,217

METHOD AND APPARATUS FOR SOI TRANSISTOR

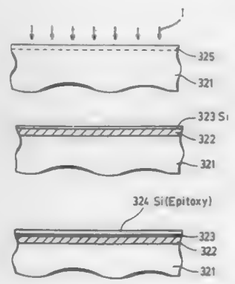
Hiroyuki Miwa; Takayuki Gomi, and Katsuyuki Kato, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 245,767, May 18, 1994, which is a division of Ser. No. 51,765, Apr. 26, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 319,150

Claims priority, application Japan, May 1, 1992, 4-112714; May 27, 1992, 4-160263; May 27, 1992, 4-160264; May 27, 1992, 4-160265; May 28, 1992, 4-162306

Int. Cl.[6] H01L *21/26;21/265;21/306;21/479*

U.S. Cl. 438—480 **13 Claims**



1. A method of manufacturing an SOI substrate having a crystalline silicon layer comprising:

providing a semiconductor substrate; and

ion implanting oxygen in a portion of said semiconductor substrate; and

subsequent to said step of ion implanting, annealing said portion by irradiating said portion with an excimer laser beam;

whereby an oxide layer and said crystalline silicon layer are formed on a surface of said semiconductor substrate.

5,629,218

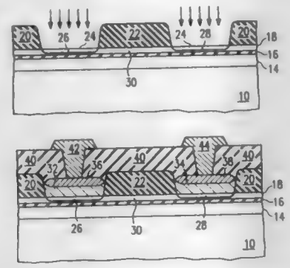
METHOD FOR FORMING A FIELD-EFFECT TRANSISTOR INCLUDING A MASK BODY AND SOURCE/DRAIN CONTACTS

Mark S. Rodder, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 36,587, Mar. 24, 1993, abandoned, which is a division of Ser. No. 788,973, Nov. 7, 1991, Pat. No. 5,231,296, which is a continuation of Ser. No. 618,015, Nov. 26, 1990, abandoned, which is a continuation of Ser. No. 452,854, Dec. 19, 1989, abandoned. This application Jul. 21, 1994, Ser. No. 278,681

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—158 **35 Claims**



1. A method for constructing a transistor, comprising the steps of:

forming a gate conductor;

forming a channel layer insulatively disposed adjacent the gate conductor and including a channel region;

forming an insulative mask body over said channel layer so as to expose a first source/drain region and a second source/drain region, said insulative mask body being formed to a selected thickness;

doping said first source/drain region and said second source/drain region within the channel layer, and said first and second source/drain regions spaced apart so as to define the channel region, the gate conductor being operable to electrically actuate the channel region;

forming a first conductive body above and electrically coupled to the first source/drain region, said first conductive body having a thickness less than said selected thickness;

forming an insulating layer above said first conductive body; and

forming a first electric contact within an opening in said insulating layer and above and electrically coupled to the first conductive body.

5,629,219

METHOD FOR MAKING A COMPLEMENTARY BIPOLAR TRANSISTOR

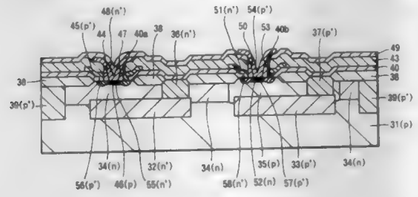
Hiroyuki Miwa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 29, 1995, Ser. No. 520,704

Claims priority, application Japan, Aug. 29, 1994, 6-227248

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—322 **5 Claims**



1. A method for making a semiconductor device, comprising the steps of:

preparing a semiconductor substrate including a first semiconductor region of a first conductivity type and a second semiconductor region of a second conductivity type;

forming a first insulating layer on the semiconductor substrate;

selectively removing portions of the first insulating layer down to the first semiconductor region and down to the second semiconductor region to provide first and second contact holes therein;

depositing a first polysilicon layer over the first insulating layer to fill the first and second contact holes therewith;

subjecting a first portion of the first polysilicon layer including the first contact hole to ion implantation to provide a conductivity of a second conductivity type to the first portion of the first polysilicon layer and subjecting a second portion of the first polysilicon layer including the second contact hole to ion implantation to provide a conductivity of the first conductivity type to the second portion of the first polysilicon layer;

selectively removing remaining portions of the first polysilicon layer other than said first and second regions to define first and second shaped electrode layers of the second conductivity type and the first conductivity type, respectively;

forming a second insulating layer on the semiconductor substrate;

selectively removing a portion of the second insulating layer and said first electrode layer down to the first semiconductor region to define a third contact hole therein;

forming a third insulating layer on the substrate;

implanting impurities of the second conductivity type into the first semiconductor region through the third contact hole to make a base region having a second conductivity type;

forming a fourth insulating layer on the substrate;

selectively removing the fourth insulating layer such that a sidewall is formed in the third contact hole;

depositing a doped polysilicon film of the first conductivity type on the substrate to fill the third contact hole;

selectively removing a portion of the doped polysilicon film to define an emitter electrode of the first conductivity type in the third contact hole;

forming a fifth insulating film on the substrate;

selectively removing portions of the fifth insulating film, the second electrode layer and the first insulating layer down to the second semiconductor region to provide a fourth contact hole therein;

forming a sixth layer on the substrate;

implanting impurities of the first conductivity type into the second semiconductor region through the fourth contact hole to make a base region having a first conductivity type;

forming a seventh layer on the substrate;

selectively removing the seventh insulating layer such that a sidewall is formed in the fourth contact hole;

depositing a second doped polysilicon film of the second conductivity type on the substrate to fill the fourth contact hole;

selectively removing a portion of the second doped polysilicon film to define an emitter electrode of the second conductivity type in the fourth contact hole; and

thereafter, annealing the substrate to provide a complementary bipolar transistor thereon.

5,629,220

METHOD OF MANUFACTURE OF PULL DOWN TRANSISTOR WITH DRAIN OFF-SET FOR LOW LEAKAGE SRAM'S

Ming-Tzong Yang, Hsin Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

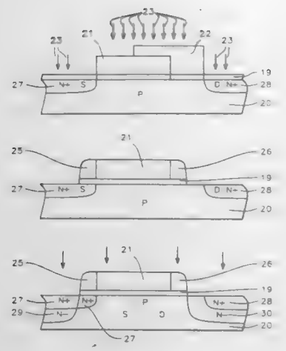
Division of Ser. No. 97,037, Jul. 27, 1993, abandoned. This application Jul. 17, 1995, Ser. No. 503,420

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—286 **10 Claims**

1. A process of forming an asymmetric pull-down transistor within an SRAM, the process comprising

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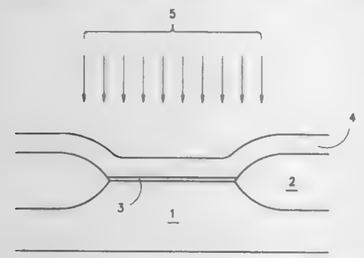
a) forming a polysilicon gate structure on a semiconductor substrate of a first conductivity type;
b) forming a mask in an area on the drain side of said polysilicon gate structure, leaving the remainder of said gate structure as well as a portion of said substrate unmasked,
c) implanting a first N-type dopant into the unmasked areas of said substrate to form source and drain regions with an N+ doped region of said drain offset away from said gate structure by said mask and with an N+ doped region of said source aligned to the edge of said gate structure,
d) forming insulating spacers proximate said gate structure,
e) implanting a second dopant into the outer portion of said source region beyond said spacer and below said source region beyond said spacer and into and extending below said N+ doped region of said drain and between said N+ doped region of said drain and said spacer proximate thereto said second dopant being an N– dopant, thereby forming a pull down transistor coupled to other devices within an SRAM, whereby said SRAM is a low leakage SRAM device.

5,629,221

PROCESS FOR SUPPRESSING BORON PENETRATION IN BF_2^+-IMPLANTED P^+-POLY-SI GATE USING INDUCTIVELY-COUPLED NITROGEN PLASMA

Tien S. Chao, and Chih-Hsun Chu, both of Hsinchu, Taiwan, assignors to National Science Council of Republic of China, Taipei, Taiwan

Filed Nov. 24, 1995, Ser. No. 562,465
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—591 **2 Claims**



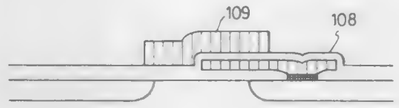
1. A process for suppressing boron penetration through a BF_2+ implanted p+ type polycrystalline Si gate region using an inductively coupled nitrogen plasma, said process comprising
(a) growing a gate oxide layer on a silicon wafer substrate by steps of washing said silicon wafer, placing said substrate in a high temperature furnace, and introducing oxygen at temperatures of 900°–1000° C. to grow said oxide layer of 50–120 Å thickness;
(b) carrying out an inductively coupled plasma treatment of said silicon wafer in nitrogen at a power of 100–300 W for 1–30 minutes to form a nitrided layer on said oxide layer providing an energy barrier substantially impenetrable by boron ions;
(c) forming at least one layer of polycrystalline silicon of approximately 1000–3000 Å thickness on said nitrided layer and said oxide layer;
(d) implanting BF_2+ ions at an energy of 30–70 keV in an amount of 1×10^{15} to 1×10^{16} atoms/cm^2 into said at least one layer of polycrystalline silicon to form a p+ type gate region;
(e) washing said silicon wafer again; and
(f) again placing said silicon wafer into said high temperature furnace, introducing one of nitrogen or oxygen at 800° to 1000° C., and annealing for 10–60 minutes.

5,629,222

METHOD OF FORMING SEMICONDUCTOR MEMORY DEVICE BY SELECTIVELY FORMING AN INSULATING FILM ON THE DRAIN REGION

Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Division of Ser. No. 966,857, Oct. 27, 1992, Pat. No. 5,449,941. This application Apr. 28, 1995, Ser. No. 430,833
Claims priority, application Japan, Oct. 29, 1991, 3-309914
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 438—259 **10 Claims**



1. A method for forming a semiconductor memory device comprising the steps of:
selectively forming a drain region within a semiconductor substrate having a protrusion;
selectively forming an insulating film comprising a material selected from the group consisting of silicon nitride, silicon oxinitride, silicon carbide and aluminum oxide on said drain region;
forming a gate oxide film on a channel region of said substrate adjacent to said drain region;
forming a floating gate over to said drain region with said insulating film interposed therebetween; and
forming a control gate over at least said channel region with said gate oxide film interposed therebetween;
wherein said drain region is formed in an upper portion of the protrusion of said semiconductor substrate.

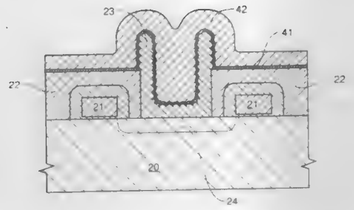
5,629,223

METHOD TO PREPARE HEMI-SPHERICAL GRAIN (HSG) SILICON USING A FLUORINE BASED GAS MIXTURE AND HIGH VACUUM ANNEAL

Randhir P. S. Thakur, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 166,058, Dec. 10, 1993, Pat. No. 5,407,534. This application Nov. 15, 1994, Ser. No. 340,103
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—398 **39 Claims**

1. A process for forming hemi-spherical grained silicon comprising the steps of:
forming an amorphous silicon layer; and
exposing an amorphous silicon layer to a fluorine based gas mixture during an annealing period, thereby transforming said amorphous silicon layer into said hemi-spherical grained silicon, said fluorine based gas mixture is a gas selected from the group consisting of NF_3, CF_4, and $C_2F_4Cl_2$.

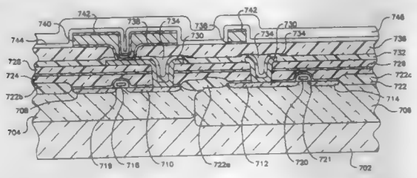


5,629,224

RESIST/ETCHBACK PLANARIZING TECHNIQUES FOR FABRICATING SEMICONDUCTOR DEVICES BASED ON CMOS STRUCTURES

Michael D. Rostoker, San Jose, and Nicholas F. Pasch, Pacifica, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 278,573, Jul. 21, 1994, Pat. No. 5,514,616, which is a continuation of Ser. No. 33,213, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 750,196, Aug. 26, 1991, Pat. No. 5,217,566. This application Dec. 12, 1994, Ser. No. 354,360
The portion of the term of this patent subsequent to Aug. 26, 2011, has been disclaimed.
Int. Cl.[6] H01L *21/00*
U.S. Cl. 438—14 **3 Claims**



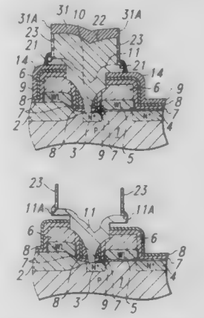
1. A method of fabricating a CMOS microelectronic circuit on a surface of a semiconductor substrate having first and second well regions, comprising:
forming a silicon nitride layer over the surface;
patterning the silicon nitride layer to have an opening over the first well region and a nitride segment over the second well region;
implanting a first dopant of a first conductivity type into the substrate through the opening into the first well region, the nitride segment substantially shielding implantation of the first dopant into the second well region;
growing a first silicon dioxide layer over the surface in the opening over the first well region, the nitride segment substantially inhibiting growth of silicon dioxide in the second well region;
removing the silicon nitride layer;
implanting a second dopant of a second conductivity type into the substrate, the first silicon dioxide layer substantially shielding implantation of the second dopant into the first well region;
removing the first silicon dioxide layer;
forming gate oxide layers over channel regions in the first and second well regions respectively;
forming gates over the gate oxide layers respectively;
forming source and drain regions in each of the first and second well regions on opposite sides of the channel regions respectively;
forming a second silicon dioxide layer over the surface and the gates which is relatively thick between the first and second well regions and is relatively thin in remaining areas over the surface, a surface of the second layer of silicon dioxide having irregular topology;
forming a third silicon dioxide layer over the second silicon dioxide layer, a top surface of the third silicon dioxide layer having irregular topology;
applying a sacrificial layer of a material over said top surface of the third silicon dioxide layer such that the sacrificial layer has a substantially planar top surface, the sacrificial layer having substantially a same etch rate in an etchant as the third silicon dioxide layer;
etching the sacrificial layer and portions of said top surface of the third silicon dioxide layer that become exposed through the sacrificial layer using said etchant;
sensing for absence of said material of the sacrificial layer in said etchant that has been used in said etching;
terminating said etching when said material of the sacrificial layer is substantially absent from said used etchant;
forming a fourth silicon dioxide layer over the third silicon dioxide layer;
forming first vias through the fourth, third and second silicon dioxide layers;
forming metal plugs in the first vias to contact the source and drain regions respectively;
forming a fifth silicon dioxide layer over the fourth silicon dioxide layer and over the metal plugs, a surface of the fifth silicon dioxide layer having troughs and irregularities;
forming a filler glass layer over the fifth silicon dioxide layer to smooth the troughs and irregularities;
forming a sixth silicon dioxide layer over the filler glass layer silicon dioxide layer and portions of the fifth silicon dioxide layer that are exposed through the filler glass layer;
forming second vias through the sixth and fifth silicon dioxide layers;
applying a barrier metal layer that fills the second vias over the sixth silicon dioxide layer;
applying a metal filler over the barrier metal layer;
applying a metal cap over the metal filler; and
applying a passivation layer over the metal cap and the sixth silicon dioxide layer.

5,629,225

METHOD OF MAKING A CYLINDRICAL ELECTRODE

Takashi Iwakiri, Ono; Kiyomi Hirose, Tsukuba; Hiroto Shinozuka, Omigawamachi; Osaomi Enomoto, and Yasuhiro Okumoto, both of Ibaraki, all of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 7, 1995, Ser. No. 478,635
Claims priority, application Japan, Jun. 30, 1994, 6-201271
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—397 **4 Claims**



1. A semiconductor manufacturing method for a cylindrical electrode, comprising the steps of:
providing a base layer;
depositing a preform layer of SiO_2 of depth h on the base layer;
depositing a working layer of Si_3N_4 on the preform layer;

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etching the working and preform layers into an island so the working and preform layers each have a respective peripheral surface;

using the working layer as a mask, acid etching the peripheral surface of the preform layer so that a projecting portion of the working layer projects over the preform layer a distance w;

CVD depositing a first electrode layer of amorphous silicon to cover the working and preform layers, including the projecting portion of the working layer, and the base layer, and heating the first electrode layer to convert its amorphous silicon to conducting polysilicon;

direct dry etching away the first electrode layer so that only a remainder portion of height h and thickness w remains on the peripheral surface of the preform layer beneath the projecting portion of the working layer; and

successively acid etching away the working and preform layers to expose the remainder portion of the first electrode layer.

5,629,226

METHOD OF MANUFACTURING A BURIED PLATE TYPE DRAM HAVING A WIDENED TRENCH STRUCTURE

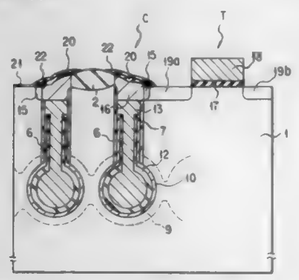
Sumito Ohtsuki, Matsudo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 249,029, May 25, 1994, abandoned, which is a division of Ser. No. 90,261, Jul. 13, 1993, Pat. No. 5,336,912. This application Jul. 24, 1995, Ser. No. 506,430

Claims priority, application Japan, Jul. 13, 1992, 4-208477

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—389 **8 Claims**



1. A method of manufacturing memory cells of a buried plate type semiconductor memory device, comprising the steps of:

forming a mask for etching on a main surface of a semiconductor substrate;

forming a plurality of trenches in the main surface of said semiconductor substrate by performing an anisotropic etch on said semiconductor substrate using said mask;

covering a side wall of each of said plurality of trenches with a first insulating layer;

forming a first impurity diffusion region below a bottom portion of each of said plurality of trenches by doping a first impurity into said bottom portion of each of said plurality of trenches;

widening said bottom portion of each of said plurality of trenches by performing an isotropic etch on said first impurity diffusion region formed below said bottom portion of each of said plurality of trenches to remove said first impurity diffusion region, such that said bottom portion of each of said plurality of trenches is wider than an opening portion of each of said plurality of trenches;

connecting said widened bottom portions of said plurality of trenches by diffusing the doped second impurity into said semiconductor substrate between said widened bottom portions by heat treatment, thereby forming a plate diffusion region;

forming a first conductive layer on said first insulating layer in each of said plurality of trenches and on said plate diffusion region;

forming a second insulating layer covering said first conductive layer; and

forming a second conductive layer covering said second insulating layer and buried into each of said plurality of trenches.

5,629,227

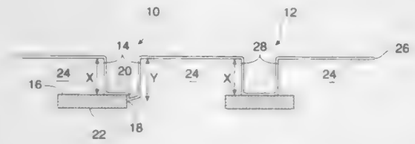
PROCESS OF MAKING ESD PROTECTION DEVICES FOR USE WITH ANTIFUSES

Wenn-Jei Chen, Sunnyvale, Calif., assignor to Actel Corporation, Sunnyvale, Calif.

Division of Ser. No. 290,029, Aug. 12, 1994, Pat. No. 5,498,895, which is a continuation-in-part of Ser. No. 277,673, Jul. 19, 1994, Pat. No. 5,519,248, which is a continuation of Ser. No. 87,942, Jul. 7, 1993, Pat. No. 5,369,054. This application Apr. 18, 1995, Ser. No. 425,094

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—600 **1 Claim**



1. A process for fabricating an integrated circuit including at least one antifuse and an ESD protection cell for protecting said at least one antifuse from ESD damage during fabrication of said integrated circuit, said process comprising the steps of:

a. forming an ESD protection cell lower electrode;

b. forming a lower electrode for said at least one antifuse;

c. depositing an interlayer dielectric layer over said ESD protection cell lower electrode and said lower electrode for said at least one antifuse;

d. opening (i) an ESD protection cell opening having a first areal size and (ii) an antifuse cell opening having substantially said first areal size through said interlayer dielectric layer so as to expose, respectively, (i) a portion of a top surface, a portion of a side surface, and a corner therebetween of said ESD protection cell lower electrode and (ii) said lower electrode of said at least one antifuse;

e. depositing an antifuse material layer over said interlayer dielectric layer, into said ESD protection cell opening and into said antifuse cell opening so as to overlie said ESD protection cell lower electrode and said lower electrode of said at least one antifuse.

5,629,228

METHOD OF MAKING STACKED DRAM CAPACITOR STRUCTURE BY USING A CONFORMAL CONDUCTOR

Sudhir K. Madan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 188,630, Jan. 27, 1994, which is a continuation of Ser. No. 919,345, Jul. 23, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 482,136

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 438—397 **15 Claims**

1. A method of forming a microelectronic device, said method comprising the steps of:

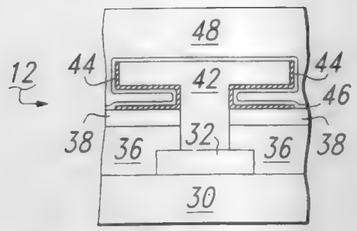
a) providing a substrate;

b) forming a conductive region at said substrate;

c) forming an insulating layer on said conductive region and said substrate;

d) forming a spacer layer on said insulating layer;

e) removing selective portions of said spacer layer and said insulating layer to expose a selective area of said conductive region thereby forming a storage node contact window;



f) forming a first conductive layer on said spacer layer and within said storage node contact window wherein said first conductive layer is in electrical communication with said conductive region;

g) removing selective portions of the said first conductive layer;

h) removing said spacer layer thereby exposing a bottom surface area of said first conductive layer;

i) conformably depositing a second conductive layer encompassing and in electrical communication with said first conductive layer and overlying said insulating layer;

j) etching a portion of said second conductive layer thereby isolating a remaining portion of said second conductive layer from surrounding circuit elements and forming a storage electrode;

k) forming a dielectric layer over said storage electrode; and

l) forming a third conductive layer over said dielectric layer forming a plate electrode capacitively-coupled to said storage electrode through said dielectric layer.

5,629,229

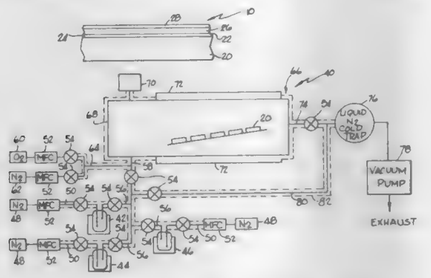
METALORGANIC CHEMICAL VAPOR DEPOSITION OF $(BA_{1-X}SR_X)RUO_3/(BA_{1-X}SR_X)TIO_3/(BA_{1-X}SR_X)TIO_3/(BA_{1-X}SR_X)RUO_3$ CAPACITORS FOR HIGH DIELECTRIC MATERIALS

Jie Si; Seshu B. Desu, and Chien-Hsiung Peng, all of Blacksburg, Va., assignors to Sharp Kabushiki Kaisha, Osaka, Japan, and Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed Jul. 12, 1995, Ser. No. 501,352

Int. Cl.[6] H01L *21/70*

U.S. Cl. 438—3 **8 Claims**



1. A method of making a high capacitance capacitor for a memory device comprising the steps of:

a) providing a semiconductor substrate;

b) heating the substrate;

c) exposing the semiconductor substrate to precursors including at least $Ru(C_5H_5)_2$ for depositing a layer of $(Ba_{1-x}Sr_x)RuO_3$ on the substrate forming a bottom electrode;

d) following step c), exposing the semiconductor substrate to precursors including at least $Ti(OC_2H_5)_4$ for depositing a layer of $(Ba_{1-x}Sr_x)TiO_3$ on the bottom electrode forming a ferroelectric; and

e) following step d), exposing the semiconductor substrate in a vacuum to precursors including at least $Ru(C_5H_5)_2$ for depositing a layer of $(Ba_{1-x}Sr_x)RuO_3$ on the ferroelectric forming a top electrode.

5,629,230

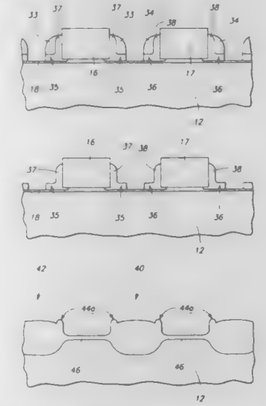
SEMICONDUCTOR PROCESSING METHOD OF FORMING FIELD OXIDE REGIONS ON A SEMICONDUCTOR SUBSTRATE UTILIZING A LATERALLY OUTWARD PROJECTING FOOT PORTION

Pierre C. Fazan; Nanseng Jeng, and David L. Dickerson, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 1, 1995, Ser. No. 509,782

Int. Cl.[6] H01L *21/76*

U.S. Cl. 438—446 **20 Claims**



1. A semiconductor processing method of forming at least one pair of field oxide regions on a semiconductor substrate comprising the following steps:

forming a first sacrificial oxide layer over a semiconductor substrate;

forming a patterned first masking layer over the first sacrificial oxide layer and over a desired active area region of the substrate, the first masking layer comprising a nitride;

removing exposed portions of the first sacrificial oxide layer;

after removing the exposed portions of the first sacrificial oxide layer, providing a second sacrificial oxide layer over the exposed substrate;

forming a layer of silicon over the patterned first masking layer of nitride and over the second sacrificial oxide layer;

forming a second masking layer over the silicon layer;

removing a portion of the second masking layer to define at least one pair of second masking layer sidewall spacers over the silicon layer and to outwardly expose portions of the silicon layer, the pair of second masking layer sidewall spacers defining an interconnected pair of masked laterally opposed and laterally outward projecting foot portions of the silicon layer;

after removing a portion of the second masking layer, removing the exposed portions of the silicon layer to form a pair of silicon sidewall spacers, the pair of silicon sidewall spacers having the pair of laterally opposed and laterally outward projecting foot portions;

oxidizing the substrate and the silicon sidewall spacers to form at least one pair of field oxide regions on the substrate;

after the oxidizing step, removing the first masking layer from the substrate;

after removing the first masking layer from the substrate, removing the second sacrificial oxide layer and any remnants of the first sacrificial oxide layer from the substrate;

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after removing the second sacrificial oxide layer and any remnants of the first sacrificial oxide layer from the substrate, forming a third sacrificial oxide layer over the substrate;

removing the third sacrificial oxide layer from the substrate; and

after removing the third sacrificial oxide layer from the substrate, forming a gate oxide layer over the substrate.

5,629,231

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WITH METALLIC PRECIPITATE

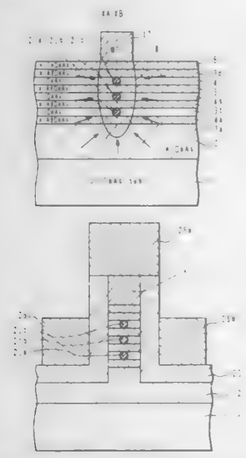
Richard A. Kiehl, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 388,408, Feb. 14, 1995, Pat. No. 5,559,343. This application Jun. 11, 1996, Ser. No. 661,714

Claims priority, application Japan, Feb. 15, 1994, 6-017977

Int. Cl.[6] H01L *21/20*

U.S. Cl. 438—509 **20 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

growing a compound semiconductor laminate on a semiconductor substrate, the laminate including a layer of first kind having non-stoichiometric composition and a property of producing metallic precipitates upon annealing at a sufficiently high temperature, and a pair of layers of second kind sandwiching the first kind;

selectively affording at least one region having imperfectness of crystallinity in said first kind layer; and

annealing said laminate at a sufficiently high temperature to produce a metallic precipitate in said first kind layer at a position defined by said at least one region having said imperfectness.

5,629,232

METHOD OF FABRICATING SEMICONDUCTOR LIGHT EMITTING DEVICES

Ching-Long Jiang, Somerville, N.J., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 14, 1994, Ser. No. 338,991

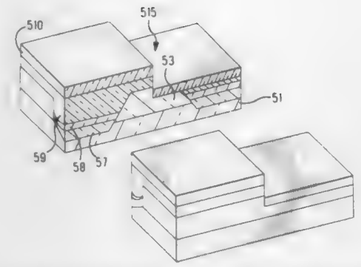
Int. Cl.[6] H01L *21/20*

U.S. Cl. 438—40 **12 Claims**

1. A process for fabricating a semiconductor light emitting device, comprising the steps of:

(a) Depositing a substrate of InP;

(b) Growing a layer of semi-insulating InP on said substrate;



(c) Selectively masking said semi-insulating layer with an first etchant resistant mask;

(d) Etching said semi-insulating layer and said substrate to reveal a grooves about an unetched portion of said semi-insulating layer and removing said first mask thereafter;

(e) Depositing successive layers of a first InP cladding layer, InGaAsP active layer, a second InP cladding layer and a conductive cap layer;

(f) Masking said cap layer selectively with a second etchant resistant mask;

(g) Etching said cap layer, said second cladding layer, and said active layer to reveal a channel in a selected first region of said device and to remove a selected portions of said cap layer and said second cladding layer in a selected second region of said device and removing said second mask; and

(h) Depositing a layer of thermally conducting material in said channel and on said cap layer in said selected first region of said device.

5,629,233

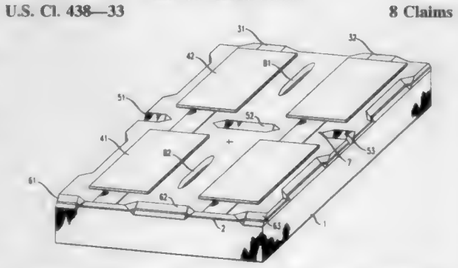
METHOD OF MAKING III/V SEMICONDUCTOR LASERS

Naresh Chand, Berkeley Heights; Sung-Nee G. Chu, Murray Hill, both of N.J., and Alexei V. Syrbu, Chisinau, Rep. of Moldova, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 4, 1996, Ser. No. 627,562

Int. Cl.[6] H01L *21/784*

U.S. Cl. 438—33 **8 Claims**



1. Method of making a III/V semiconductor laser comprising

a) providing a III/V semiconductor substrate body having a major surface, and forming on the major surface a III/V semiconductor multilayer structure having a top surface including a multiplicity of parallel contact regions, the semiconductor multilayer structure including an active layer, with the contact regions substantially defining active regions of the active layer;

b) forming a patterned metal layer on the top surface of the semiconductor multilayer structure, said patterned metal layer comprising a multiplicity of spaced apart metal contact pads, a given of said metal contact pads being disposed on a contact region; and

c) separating a body made by steps a) and b) into a multiplicity of laser chips by a process that comprises cleaving said body such that a bar-shaped intermediate body is formed, said intermediate body having a laser cavity-defining cleavage surface, and separating said intermediate body into said laser chips;

CHARACTERIZED IN THAT step c) comprises forming the intermediate body a process that comprises

d) forming elongate, spaced-apart depressions in the top surface of the semiconductor multilayer structure, said depressions disposed such that

i) a first multiplicity of said depressions is essentially aligned along a first predetermined line in the top surface of the semiconductor multilayer structure, said first predetermined line being essentially at right angle to said contact regions and defining the cleavage surface of the intermediate body;

ii) the depressions of the first multiplicity of depressions are spaced from said contact regions; and step c) further comprises

e) providing at least one surface feature adapted for facilitating cleavage along the first predetermined line; and

f) applying a force to the body such that the body cleaves along said first predetermined line, and the intermediate body is formed.

5,629,234

HIGH TEMPERATURE PHOSPHOROUS OXIDE DIFFUSION SOURCE

Gary R. Pickrell, Blacksburg, Va., and James E. Rapp, Oregon, Ohio, assignors to Techneglas, Inc., Columbus, Ohio

Continuation of Ser. No. 267,663, Jun. 29, 1994, abandoned, which is a division of Ser. No. 986,656, Dec. 8, 1992, Pat. No. 5,350,460. This application Oct. 19, 1995, Ser. No. 545,220

Int. Cl.[6] H01L *21/223*

U.S. Cl. 438—563 **7 Claims**

1. A method of making a doped silicon wafer using a solid diffusion source composition, the method comprising the steps of:

A. heating R_2O_3 oxide, ZrO_2 and H_3PO_4 to provide a R_2O_3 oxide/ZrO_2/P_2O_5 solid diffusion source composition consisting essentially of a $R_2O_3/ZrO_2/P_2O_5$ compound in which the ratio of R_2O_3 to P_2O_5 is 1:3 and R is La, Y, Ce, Nd, Eu, Pr, Sm, Ho, Tb, Er, Tm, Yb or Dy,

B. firing the composition to evolve P_2O_5 to deposit a phosphorus containing coating on the silicon wafer at a temperature of about 950° C. to 1175° C. to form a glassy layer having a thickness of about 500–2500 Å on the silicon wafer.

5,629,235

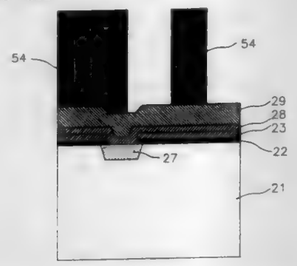
METHOD FOR FORMING DAMAGE-FREE BURIED CONTACT

Min-Sea Liu, Hsin-Chu, Taiwan, assignor to Winbond Electronics Corporation, Hsin-Chu, Taiwan

Filed Jul. 5, 1995, Ser. No. 498,153

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—533 **38 Claims**



1. A method for forming a damage-free buried contact, comprising the steps of:

a) providing a silicon substrate;

b) forming an oxide layer on said silicon substrate;

c) forming a first conductive layer on said oxide layer;

d) defining a buried contact region on said first conductive layer;

e) removing a portion of said first conductive layer according to a shape of said buried contact region;

f) implanting ions in said buried contact region to form an ion implantation region under said oxide layer;

g) removing a portion of said oxide layer to obtain said buried contact;

h) forming a second conductive layer on said buried contact and said first conductive layer;

i) forming a polysilicon layer on said second conductive layer;

j) defining a drain/source reserve region; and

k) removing portions of said polysilicon layer and said first and second conductive layers selectively against said silicon substrate according to a shape of said drain/source reserve region to form a source/drain region.

5,629,236

METHOD OF MANUFACTURE OF SEMICONDUCTOR DEVICE

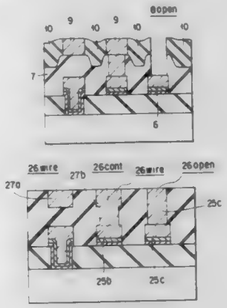
Jun-ichi Wada, Yokohama; Hisashi Kaneko, Fujisawa, and Nobuo Hayasaka, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1995, Ser. No. 506,483

Claims priority, application Japan, Jul. 26, 1994, 6-174233; Jul. 12, 1995, 7-176036

Int. Cl.[6] H01L *21/205*

U.S. Cl. 438—607 **11 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first wiring layer made of a material of a crystal phase, on a surface of a substrate;

forming a first insulation film for covering said first wiring layer, on said first wiring layer;

forming a connection hole which reaches said first wiring layer in said first insulation film;

forming a conductive film made of a material of a polycrystal phase, on said first insulation film;

forming a second wiring layer on said first insulation film, by processing said conductive film;

forming a second insulation layer for covering said second wiring layer, on said second wiring layers;

removing a surface of said second insulation film until a surface of said second wiring layer is exposed;

forming an opening which reaches said first wiring layer without interfering with said second wiring layer, by etching said first and second insulation films; and

converting said first and second wiring layers into first and second single-crystal wiring layers which are connected to each other in said connection hole and are disconnected in said opening, by increasing a temperature of said substrate so that the material of said first wiring layer is converted from a crystal phase to an amorphous phase and the material of said second wiring layer is converted from a polycrystal phase to an amorphous phase, and then decreasing the temperature of said substrate so that these materials are set in a supercooling state.

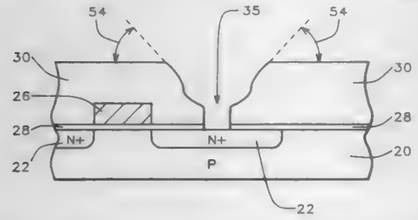
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,237

TAPER ETCHING WITHOUT RE-ENTRANCE PROFILE

Pei-Jan Wang; Kuei-Lung Chou; Jiunn-Jyi Lin, and Hsien-Wen Chang, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-chu, Taiwan

Continuation of Ser. No. 327,588, Oct. 24, 1994, abandoned.
This application Oct. 19, 1995, Ser. No. 545,380
Int. Cl.[6] H01L *21/311*
U.S. Cl. 438—701 14 Claims



1. A method of forming tapered contact via holes, comprising the steps of:

providing an integrated circuit structure having device elements within a semiconductor substrate, contact areas in said semiconductor substrate, and an insulating layer over said semiconductor substrate;

forming a photoresist masking layer over said insulating layer;

forming openings in said photoresist masking layer directly over said contact areas;

wet etching into said insulating layer through a first thickness, thereby forming a first via hole opening, using said photoresist masking layer as a mask;

vertically anisotropically etching, by means of a first dry anisotropic etch, into said insulating layer through a second thickness, thereby forming a second via hole opening, using said photoresist masking layer as a mask;

isotropically etching, by means of a dry isotropic etch, into said insulating layer through a third thickness, thereby forming a third via hole opening, using said photoresist masking layer as a mask;

vertically anisotropically etching, by means of a second dry anisotropic etch, through the remainder of said insulating layer, thereby forming said tapered contact via hole opening, using said photoresist masking layer as a mask; and

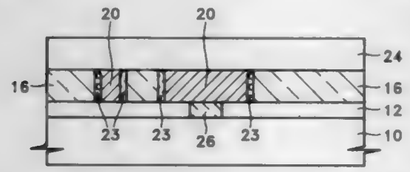
removing said photoresist masking layer.

5,629,238

METHOD FOR FORMING CONDUCTIVE LINE OF SEMICONDUCTOR DEVICE

Ji-hyun Choi; Hong-jae Shin, both of Seoul; Byung-keun Hwang, and U-in Chung, both of Kyungki, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 14, 1995, Ser. No. 557,534
Claims priority, application Rep. of Korea, Nov. 30, 1994, 94-32131
Int. Cl.[6] H01L *21/283;21/316*
U.S. Cl. 438—645 14 Claims



11. A method for forming a conductive line of semiconductor device, comprising the steps of:

(a) providing a lower structure, the lower structure being one of a semiconductor substrate on which a lower conductive line is formed and a semiconductor substrate in which an impurity layer is formed;

(b) forming an insulating material layer on the lower structure;

(c) forming a contact hole for exposing one of said lower conductive line and said impurity layer;

(d) depositing a first conductive material on a surface of said insulating material layer and in said contact hole;

(e) etching said first conductive material to form a plug layer which fills said contact hole;

(f) forming a fluoride doped oxide layer on surfaces of said insulating material layer and said plug layer;

(g) etching said fluoride doped oxide layer to form a trench and to expose said plug layer;

(h) forming an insulating layer on a surface of said fluoride doped oxide layer and on a surface of said trench;

(i) anisotropically etching said insulating layer to form a spacer on a side wall of said trench;

(j) depositing a second conductive material on said fluoride doped oxide layer and in said trench; and

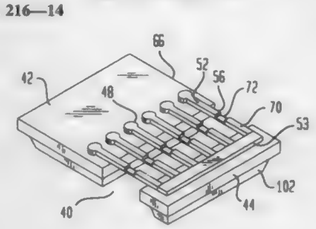
(k) etching said second conductive material so that said second conductive material is left only in said trench to form a conductive line.

5,629,239

MANUFACTURE OF SEMICONDUCTOR CONNECTION COMPONENTS WITH FRANGIBLE LEAD SECTIONS

Thomas H. DiStefano, Monte Sereno; John W. Smith, Palo Alto; Konstantine Karavakis, Cupertino, and Joseph Fjelstad, Sunnyvale, all of Calif., assignors to Tessera, Inc., San Jose, Calif.

Filed Mar. 21, 1995, Ser. No. 408,262
Int. Cl.[6] H01L *21/60*
U.S. Cl. 216—14 23 Claims



1. A method of making a semiconductor connection component comprising the steps of forming a plurality of elongated leads extending over a gap in a support structure, each said lead including lead-forming material in an elongated, strip-like lead region extending in a lead direction and having longitudinal edge boundaries extending in the lead direction, and forming frangible sections in said leads by applying a weakening treatment to lead-forming material throughout an elongated treatment zone extending across a plurality of said lead regions transverse to said lead directions, whereby said weakening treatment is applied across the longitudinal edge boundaries of said leads.

5,629,240

METHOD FOR DIRECT ATTACHMENT OF AN ON-CHIP BYPASS CAPACITOR IN AN INTEGRATED CIRCUIT

Deviprasad Malladi, Campbell; Shahid S. Ansari, Milpitas, and Eric Bogatin, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Division of Ser. No. 353,439, Dec. 9, 1994. This application Jun. 5, 1995, Ser. No. 462,400
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—106 20 Claims

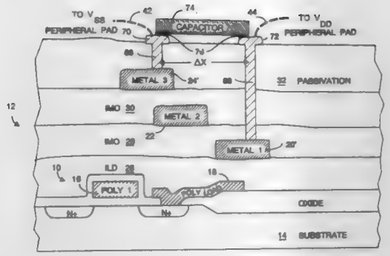
1. In an integrated circuit that includes a V_{DD} peripheral pad and a first conductive trace coupled thereto, and a V_{SS} peripheral pad and a second conductive trace coupled thereto a retrofittable method of directly attaching a capacitor on said integrated circuit to bypass noise between a trace carrying V_{SS} and a trace carrying V_{DD}, the method comprising the following steps:

(a) forming in said integrated circuit a first column-shaped opening and a second column-shaped opening spaced-apart a distance ΔX from each other, wherein said ΔX approximates a lateral distance separating first and second connecting pads on said capacitor:

said first column-shaped opening extending from an upper surface of said integrated circuit downward to at least expose an upper surface region of said first conductive trace, and said second opening extending from an upper surface of said integrated circuit downward to at least expose an upper surface region of said second conductive trace;

(b) converting the first and second column-shaped openings into first and second columnar electrically conductive elements; and

(c) mounting said capacitor on said upper surface directly over said integrated circuit such that said first and second connecting pads on said capacitor directly overlie respective uppermost regions of said first and second columnar electrically conductive elements, and electrically coupling said first and second connecting pads respectively to said first and second columnar electrically conductive elements.

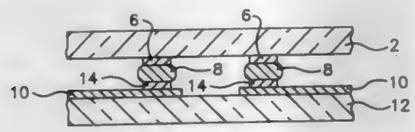


5,629,241

MICROWAVE/MILLIMETER WAVE CIRCUIT STRUCTURE WITH DISCRETE FLIP-CHIP MOUNTED ELEMENTS, AND METHOD OF FABRICATING THE SAME

Mehran Matloubian, Encino; Perry A. Macdonald, Culver City; David B. Rensch, Thousand Oaks, all of Calif., and Lawrence E. Larson, Bethesda, Md., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 7, 1995, Ser. No. 499,800
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—125 6 Claims



1. A method of fabricating a microwave/millimeter wave circuit structure, comprising:

providing a non-ceramic and non-semiconductor dielectric substrate with an oxidizable electrical interconnection network and an array of conductive wettable contact pads at respective locations on said network, with pad dimensions and spacings between said pads that are compatible with signal wavelengths in at least part of the microwave/millimeter wave range, said pads being substantially non-oxidizable in a threshold environment for oxidizing said interconnection network,

providing a plurality of discrete microwave/millimeter wave circuit elements with contact locations on said elements that correspond to respective contact pad locations on said substrate,

oxidizing the surface of said interconnection network to a non-wettable surface in an environment that leaves said contact pads substantially wettable and non-oxidized, and

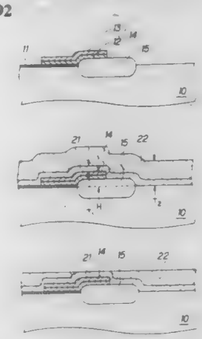
flip chip mounting said circuit elements to said substrate with solder contact bumps that mechanically and electrically connect said circuit element contact locations with respective contact pads on said substrate, said mounting being accomplished by flowing said bumps onto said contact pads so that said contact pads self-align to their respective bumps during the mounting of said circuit elements, the oxidized surface of said interconnection network inhibiting a flow of said solder bumps onto said surface and thereby assisting said bumps and their associated circuit elements to self-align on said pads.

5,629,242

PROCESS FOR PLANARIZING SURFACE OF A SEMICONDUCTOR DEVICE

Naoki Nagashima, and Hiroshi Takahashi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1995, Ser. No. 372,942
Claims priority, application Japan, Jan. 7, 1994, 6-017940; Oct. 27, 1994, 6-287341
Int. Cl.[6] H01L *21/304*
U.S. Cl. 438—692 2 Claims



1. A process for planarizing a surface of a semiconductor device, comprising the sequential steps of:

providing a semiconductor body having at least one stepped portion formed thereon, said stepped portion having a bottom surface and a top portion;

depositing a first layer over said body and said stepped portion, said stepped portion comprising at least one of an interconnection layer and an isolation region, said top portion comprising said interconnection layer, said bottom surface comprising said isolation region, said first layer comprising a laminate of at least one selected from the group consisting of silicon oxide and silicon nitride;

covering said body, including said stepped portion covered with said first layer, with a second layer having a higher polishing rate than that of said first layer, a height from said bottom surface of said stepped portion to a surface of said second layer being at least substantially equal to a sum of a height of said stepped portion and a thickness of said first layer formed on said top portion of said stepped portion, said second layer comprising a laminate of at least one selected from the group consisting of silicon oxide containing impurities and polycrystalline silicon;

polishing said second layer until said first layer deposited on the top portion of said stepped portion is exposed;

stopping said polishing and

removing said first layer on the top portion of said stepped portion after stopping said polishing.

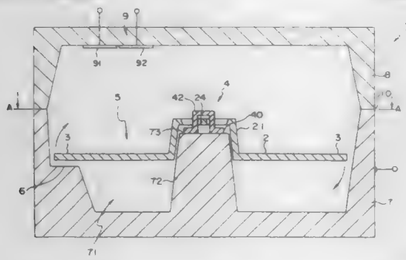
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5,629,243

PRELOADED LINEAR BEAM VIBRATION SENSOR AND ITS MANUFACTURING METHOD

Sean S. Cahill, Palo Alto, Calif.; Walter Shoeys, Perly, Switzerland, and Kenichi Nakamura, Tokyo, Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Division of Ser. No. 346,261, Nov. 23, 1994. This application Sep. 14, 1995, Ser. No. 528,043
Int. Cl.[6] H01G 5/18
U.S. Cl. 438—50 2 Claims



1. A method for manufacturing a preloaded linear beam vibration sensor including an unbalanced see-saw type see-saw beam having its suspension at an intermediate portion thereof and a mass at each end thereof, comprising the steps of:

providing a substrate;

depositing on said substrate an oxide film;

integrally making on said substrate, via a polysilcon film deposited on said oxide film, a see-saw beam comprising two parallel beams, two masses connecting said beams at respective ends and hinge posts extending from said beams at a location spaced different distances from said masses;

depositing an oxide film on said see-saw beam;

forming on said oxide film covering said hinge posts, via a polysilcon film, hinges which cover said hinge posts;

etching part of said substrate underlying said see-saw beam to form a space permitting pivotal movement of said see-saw beam; and

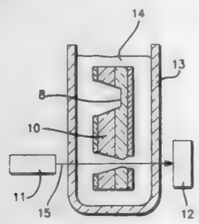
removing said oxide film covering said see-saw beam and said hinge posts to allow said beam to move freely within said hinges.

5,629,244

FABRICATION METHOD OF SEMICONDUCTOR ACCELEROMETER

Tadahiro Matsuzaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 428,483
Claims priority, application Japan, Apr. 28, 1994, 6-090885
Int. Cl.[6] C23F 1/00; C03C 15/00;25/06; H01L 21/306
U.S. Cl. 438—52 5 Claims



2. A method of fabricating a semiconductor acceleration sensor comprising the steps of:

providing a silicon wafer having laminated structure of a first substrate of a first conductivity type silicon and a second substrate of a second conductivity type silicon, said second substrate being provided on a front surface of said first substrate and having a thickness of two or more times a desired thickness of a beam part;

forming a first mask for forming a supporting part, a weight part and etching end detector region on a rear surface of said first substrate, said beam part being connected to said supporting part and said weight part;

removing a portion of said first substrate between said supporting part and said weight part and a portion of said first substrate corresponding to said detector region by applying an electrochemical etching to said rear surface of said first substrate via said first mask;

stopping the removing step at the interface of said first substrate and said second substrate;

providing openings in said first mask for etching a gap part and a V-shaped groove;

forming a second mask for etching said V-shaped groove and said gap part away from said beam part on a front surface of said second substrate in a region between said supporting part and said weight part;

opening said gap part and said V-shaped groove by carrying out a second etching from a rear surface and said front surface of said wafer via said first and second masks, respectively; and

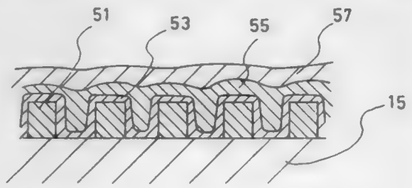
stopping said second etching by detecting that said V-shaped groove is opened through.

5,629,245

METHOD FOR FORMING A MULTI-LAYER PLANARIZATION STRUCTURE

Takashi Inushima; Shigenori Hayashi; Toru Takayama, all of Kanagawa; Masakazu Odaka, Akita, and Naoki Hirose, Yamaguchi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 971,242, Sep. 8, 1992, Pat. No. 5,427,824, which is a continuation of Ser. No. 702,492, May 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 497,794, Mar. 22, 1990, abandoned, which is a continuation of Ser. No. 91,770, Sep. 1, 1987, abandoned. This application Jan. 23, 1995, Ser. No. 376,736
Claims priority, application Japan, Sep. 9, 1986, 61-213323; Sep. 9, 1986, 61-213324; Sep. 9, 1986, 61-213325; May 6, 1987, 61-141050
Int. Cl.[6] H01L 21/20
U.S. Cl. 216—13 11 Claims



1. A method for forming a film comprising the steps of:

preparing a substrate having an uneven upper surface;

forming a first layer comprising a material selected from the group consisting of silicon oxide and silicon nitride on said uneven upper surface by CVD using a first reactive gas comprising a carbon free silicon containing material; and

forming a second layer comprising silicon oxide on said first layer by plasma CVD using a second reactive gas comprising at least organic silane.

5,629,246

METHOD FOR FORMING FLUORINE-DOPED GLASS HAVING LOW CONCENTRATIONS OF FREE FLUORINE

Ravi Iyer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 27, 1995, Ser. No. 534,721
Int. Cl.[6] H01L 21/473;21/4757
U.S. Cl. 438—763 23 Claims

10. A method for reducing concentrations of free fluorine atoms in a fluorine-doped glass layer, said method comprising the steps of:

(a) depositing a capping layer on top of the fluorine-doped glass layer; and

(b) annealing the glass layer while it is covered with the capping layer.

5,629,247

HIGH BISMUTH OXIDE BASED FLUX AND PAINT COMPOSITIONS FOR GLASS SUBSTRATES

Robert Prunchak, Beaver Falls, Pa., assignor to The O'Hommel Company, Carnegie, Pa.

Filed May 8, 1996, Ser. No. 643,281
Int. Cl.[6] C03C 3/066;8/04
U.S. Cl. 501—26 11 Claims

7. A paint composition, comprising a flux composition, a pigment and a liquid medium, said flux composition comprising a first component comprising;

from about 50 to 75% by weight Bi_2O_3;

from about 15 to 25% by weight SiO_2;

from about 4 to 10% by weight B_2O_3;

from about 2 to 10% by weight ZnO; and

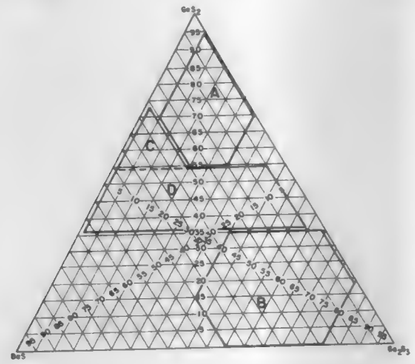
from about 1 to 4% by weight alkali oxide, wherein all weight percents are based on the total weight of the flux composition.

5,629,248

MODIFIED GERMANIUM SULFIDE GLASS

Ishwar D. Aggarwal, Fairfax Station; Celia I. Merzbacher, Alexandria, both of Va.; Barry B. Harbison, Dinkirk, Md., and John M. Jewell, Taunton, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 10, 1995, Ser. No. 541,391
Int. Cl.[6] C03C 3/32;4/10;13/04
U.S. Cl. 501—40 8 Claims



1. A glass substantially free of crystallites defined by a polygon having x, y, and z coordinates for points l, m, n, o and p on a ternary graph wherein 100% germanium sulfide is at the apex x, 100% gallium sulfide/indium sulfide is at the bottom right corner y, and 100% sulfide modifier selected from the group consisting of: alkaline earth sulfides, yttrium sulfide, tin sulfide, lanthanum sulfide, zirconium sulfide, hafnium sulfide, and mixtures thereof is at the left bottom right z, wherein the points are defined as follows:

l=(54, 41, 5)
m=(36, 59, 5)
n=(36, 1, 63)
o=(73, 1, 26)
p=(54, 20, 26).

5,629,249

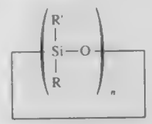
SILICON CARBOXIDE FIBERS FROM GEL SPINNING CYCLOSILOXANE POLYMER PRECURSORS

Roger Y. Leung, Schaumburg, Ill., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Apr. 25, 1988, Ser. No. 185,620
Int. Cl.[6] C04B 35/52
U.S. Cl. 501—87 16 Claims

1. A process for preparing a black glass fiber comprising:

a) forming a soluble cyclosiloxane polymer by reacting in solution and in the presence of a catalytically effective amount of a hydrosilylation catalyst a silicon hydride group with a silicon olefinic group wherein 1) said silicon hydride and silicon olefinic group are present in the same cyclosiloxane monomer having the formula



where n is an integer from 3 to about 20, R is hydrogen, and R' is an alkene having from 2 to about 20 carbon atoms and an olefinic carbon bonded directly to silicon, or 2) said silicon hydride and silicon olefinic groups are present on two or more, different cyclosiloxane monomers, at least one monomer having a silicon-hydride group and having said formula in which n is an integer from 3 to about 20, R is hydrogen and R' is an alkyl group having from 1 to about 20 carbon atoms and at least one monomer having a silicon olefinic group and having said formula in which R is an alkene having from 2 to about 20 carbon atoms and which has an olefinic carbon directly bonded to silicon and R' is an alkyl group having from 1 to about 20 carbon atoms;

b) forming a spinning solution from the solution containing a soluble cyclosiloxane polymer;

c) spinning the spinning solution to give a polymeric cyclosiloxane fiber;

d) heating the polymeric cyclosiloxane fiber at a temperature of about 50°–200° C. and for a time sufficient to form a hardened polymeric cyclosiloxane fiber; and

e) heating the hardened polymeric cyclosiloxane fiber at a temperature of about 700° C. to about 1400° C. in a non-oxidizing atmosphere for a time sufficient to pyrolyze the polymeric fiber into a black glass fiber.

5,629,250

SILICON NITRIDE JIG FOR HOT ROLLING

Keiji Kawasaki, Chiryu, and Shinichi Miwa, Tajimi, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jan. 31, 1996, Ser. No. 594,702
Claims priority, application Japan, Feb. 9, 1995, 7-022030
Int. Cl.[6] C04B 35/587
U.S. Cl. 501—97 6 Claims

1. A ceramic jig for hot rolling which comprises a sintered body consisting essentially of Si_3N_4, a sintering aid and trace amounts of impurities, said body including a crystalline grain boundary phase among Si_3N_4 grains, said grain boundary phase comprising 80% or more of a J phase, 0.1 to 10% of an H phase, and 0.1 to 5% of a K phase.

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5,629,251

CERAMIC COATING-FORMING AGENT AND PROCESS FOR THE PRODUCTION THEREOF

Shigeo Miyata, Fukuoka-ken, Japan, assignor to Kabushiki Kaisha Kaisui Kagaku Kankyujo, Fukuoka-ken, Japan

Filed May 23, 1995, Ser. No. 447,931
Claims priority, application Japan, May 23, 1994, 6-132642
Int. Cl.[6] C04B *35/03;35/04;* B23K *35/24*
U.S. Cl. 501—112 10 Claims

1. A ceramic coating-forming agent for a metal material, which contains, as a main ingredient, an Mg-M^{3+}-O based two-component oxide solid solution of the formula (1),

$$(Mg_{1-x}M^{2+}_x)_{1-y}M^{3+}_yO \quad (1)$$

wherein M^{2+} is at least one divalent metal selected from the group consisting of Ca^{2+}, Mn^{2+}, Fe^{2+}, Co^{2+}, Ni^{2+}, Cu^{2+} and Zn^{2+}, M^{3+} is at least one trivalent metal selected from the group consisting of Al^{3+}, Mn^{3+}, Fe^{3+}, Co^{3+}, Ni^{3+}, Ti^{3+}, Bi^{3+} and Cr^{3+}, x is a number in the range of $0 \leq x < 0.5$ and y is a number in the range of $0.005 < y < 0.5$, or an anionic oxide-dispersed Mg-M^{3+}-O based two-component oxide solid solution of the formula (2),

$$(Mg_{1-x}M^{2+}_x)_{1-y}M^{3+}_yO.A_z \quad (2)$$

wherein M^{2+} is at least one divalent metal selected from the group consisting of Ca^{+}, Mn^{2+}, Fe^{2+}, $Co^{2=}$, Ni^{2+}, Cu^{2+} and Zn^{2+}, M^{3+} is at least one trivalent metal selected from the group consisting of Al^{3+}, Mn^{3+}, Fe^{3+}, Co^{3+}, Ni^{3+}, Ti^{3+}, Bi^{3+} and Cr^{3+}, A is an anionic oxide, x is a number in the range of $0 \leq x < 0.5$, y is a number in the range of $0.005 < y < 0.5$, and z is a number in the range of $0 \leq z < 0.5$,

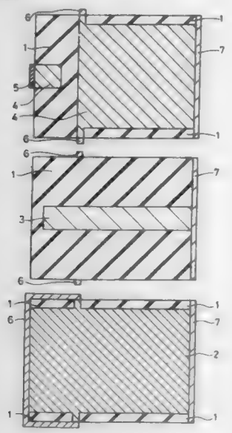
wherein the two-component oxide solid solution of formula (1) or (2) has the same crystal structure as that of MgO but with an X-ray diffraction pattern shifted toward a higher angle side than MgO.

5,629,252

METHOD FOR MANUFACTURING A DIELECTRIC CERAMIC COMPOSITION DIELECTRIC CERAMIC AND MULTILAYER HIGH FREQUENCY DEVICE

Keiji Nishimoto; Hiroshi Kagata; Junichi Kato, and Tatsuya Inoue, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 13, 1996, Ser. No. 662,700
Claims priority, application Japan, Jun. 15, 1995, 7-148494
Int. Cl.[6] C04B *35/46;* H01G *4/12*
U.S. Cl. 501—136 6 Claims



1. A dielectric ceramic composition comprising a main component of calcium oxide, magnesium oxide, niobium oxide and titanium oxide represented by the formula:

$$Ca\{(Mg_{(1-x)}Nb_{2/3})_{1-x}Ti_x\}O_3$$

wherein $0 < x < 0.50$, said main component being present within a range of 40 to 98 parts by weight; an accessory component comprising at least one element selected from the group consisting of SiO_2 and $B2O_3$, said accessory component being present within a range of 2 to 60 parts by weight; and an additive comprising at least one oxide selected from the group consisting of MgO, NiO, CuO, MnO_2 and WO_3, said additive being present within a range of 0.1 to 10 parts by weight.

5,629,253

POLYMERIZATION CATALYST SYSTEMS, THEIR PRODUCTION AND USE

Main Chang, Houston, Tex., assignor to Exxon Chemical Patents, Inc., Wilmington, Del.

Continuation of Ser. No. 417,484, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 233,668, Apr. 26, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 586,362
Int. Cl.[6] C08F *4/64*
U.S. Cl. 502—111 13 Claims

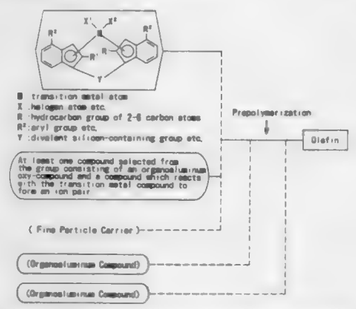
1. A method for producing a supported catalyst system, said method comprising the steps of: reacting a water containing support material with a solution of an alkyl aluminum compound which is at a temperature in the range of from about 10° C. to about −20° C. and maintaining a constant temperature that is in the range of from 30° C. to about −20° C. during the reaction wherein the mole ratio of the metal of the alkyl aluminum compound to the water content of the support material is greater than 0.7; and adding at least one metallocene catalyst component.

5,629,254

SUBSTITUTED INDENYL RING CONTAINING METALLOCENE CATALYST FOR PROPYLENE POLYMERIZATION PROCESS

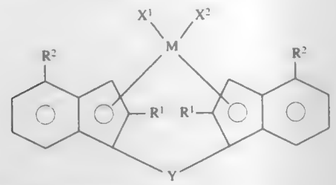
Daisuke Fukuoka; Takashi Tashiro; Koji Kawaai; Junji Saito; Takashi Ueda; Yoshihisa Kiso; Junichi Imuta; Terunori Fujita; Masatoshi Nitabaru, and Masayasu Yoshida, all of Kuga-gun, Japan, assignors to Mitsui Petrochemical Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 255,706, Jun. 7, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,642
Claims priority, application Japan, Jun. 7, 1993, 5-136253; Sep. 24, 1993, 5-238561; Oct. 6, 1993, 5-250742; Nov. 29, 1993, 5-298744; Nov. 29, 1993, 5-298745; Feb. 23, 1994, 6-25548
Int. Cl.[6] C08F *4/64*
U.S. Cl. 502—117 2 Claims



1. A propylene homo- or copolymerization transition metal compound catalyst component comprising a transition metal compound

represented by the following formula (I):



(I)

wherein M is zirconium;
R^1 is an alkyl group of 2 to 4 carbon atoms;
R^2 is a member selected from the group consisting of phenyl, naphthyl, anthracenyl and phenanthryl;
X^1 and X^2 are each a chlorine atom; and
Y is a dimethyl silyl group.

5,629,255

HIGHLY ACTIVE CATALYSTS FOR OLEFIN POLYMERIZATION AND A POLYMERIZATION PROCESS USING THESE CATALYSTS

Norbert Hafner, Linz; Wilfried Töltsch, Marchtrenk; Hans Ledwinka, St. Ulrich, and Wolfgang Neissl, Lichtenberg, all of Austria, assignors to PCD Polymere Gesellschaft m.b.H., Schwechat-Mannswörth, Austria

Continuation-in-part of Ser. No. 246,078, May 19, 1994, abandoned. This application Sep. 21, 1995, Ser. No. 531,382
Claims priority, application Australia, May 21, 1993, 993/93
Int. Cl.[6] C08F *4/64*
U.S. Cl. 502—120 5 Claims

1. Highly active catalyst comprising the reaction product of:
a) tetraneophylzirconium with
b) metal oxides selected from the group consisting of IIa, IIIa, IVa and IVb metal oxides having a partly hydroxylated surface, or mixtures thereof,
in a hydrocarbon as the reaction medium, the resulting catalyst optionally being hydrogenated, wherein the resulting catalyst contains the by-products formed during the reaction in an amount not exceeding 1.1% by weight, said by-products comprising tert-butylbenzene.

5,629,256

CATALYST SYSTEM FOR THE SYNTHESIS OF RUBBERY POLYMERS

Adel F. Halasa, Bath; Laurie E. Austin, Hartville, and Susan A. Weakland, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 505,441, Jul. 21, 1995. This application Jul. 29, 1996, Ser. No. 688,126
Int. Cl.[6] C08F *4/50*
U.S. Cl. 502—154 20 Claims

1. A catalyst system which is particularly useful in the polymerization of conjugated diolefin monomers into rubbery polymers, said catalyst system being comprised of (a) a dialkyl magnesium compound of the formula MgR_2, wherein R represents an alkyl group which contains from 1 to about 12 carbon atoms; (b) an alkali metal alkoxide containing from about 2 to about 12 carbon atoms, wherein the alkali metal in the alkali metal alkoxide is cesium; and (c) a polar modifier; wherein the molar ratio of the alkali metal alkoxide to the dialkyl magnesium compound is within the range of about 4:1 to about 1:2, and wherein the molar ratio of the polar modifier to the dialkyl magnesium compound is within the range of about 6:1 to about 1:1.

3. A catalyst system which is particularly useful in the polymerization of conjugated diolefin monomers into rubbery polymers, said catalyst system being comprised of (a) a dialkyl magnesium compound of the formula MgR_2, wherein R represents an alkyl group which contains from 1 to about 12 carbon atoms; (b) an alkali metal alkoxide containing from about 2 to about 12 carbon atoms, wherein the alkali metal in the alkali metal alkoxide is rubidium; and (c) a polar modifier; wherein the molar ratio of the alkali metal alkoxide to the dialkyl magnesium compound is within the range of about 4:1 to about 1:2, and wherein the molar ratio of the polar modifier to the dialkyl magnesium compound is within the range of about 6:1 to about 1:1.

5,629,257

SOLID SUPERACID CATALYSTS COMPRISING PLATINUM METAL

Benjamin S. Umansky, Wilmington, Del.; Manoj V. Bhinde, Boothwyn; Chao-Yang Hsu, Media, both of Pa., and Chen-Shi Huang, Claymont, Del., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Filed Jan. 21, 1994, Ser. No. 184,425
Int. Cl.[6] B01J *27/053;27/02*
U.S. Cl. 502—217 36 Claims

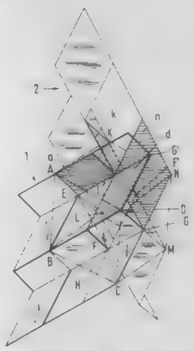
1. A catalyst composition comprising a mixture of:
(a) a sulfated support comprising oxide or hydroxide of Group III or Group IV elements; and
(b) a first metal comprising a metal or mixture of metals selected from the group consisting of platinum; palladium; nickel; platinum and rhenium; and platinum and tin, and combinations thereof;
wherein said catalyst is prepared by the steps comprising:
(1) calcining said sulfated support in a first calcination step;
(2) introducing said first metal into said sulfated support; and
(3) calcining said sulfated support and said first metal in a second calcination step;
wherein the conditions of said second calcination step comprise a lower temperature than said first calcination step.

5,629,258

FLAT STRUCTURAL ELEMENTS AND A PACKING COMPOSED OF SUCH STRUCTURAL ELEMENTS

Philipp Süess, Neftenbach, and Raymond Plüss, Kleinandelfingen, both of Switzerland, assignors to Sulzer Chemtech AG, Winterthur, Switzerland

Filed Feb. 3, 1995, Ser. No. 383,140
Claims priority, application European Pat. Off., Mar. 9, 1994, 94810149
Int. Cl.[6] B01J *19/32;35/04;* B01F *5/06;* F28F *25/08*
U.S. Cl. 502—439 24 Claims



1. A flat, structural element comprising a plurality of separate, adjoining strips of a sheet material, each strip having first and second, spaced-apart longitudinal edges, the longitudinal edges of adjoining strips being placed opposite each other, the adjoining strips being in contact with and secured to each other where they contact each other to provide the flat structural element with structural stability, the longitudinal edges of the strips including a plurality of repetitively spaced-apart recesses of a predetermined shape, and the recesses in longitudinal edges being opposite each

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other to define a multiplicity of repetitively arranged openings distributed over the structural element.

5,629,259

IMAGE FORMATION ON OBJECTIVE BODIES

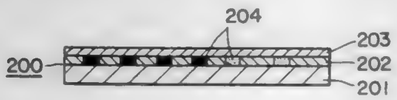
Masanori Akada; Yoshikazu Ito; Jumpei Kanto, all of Tokyo-To; Mitsuru Takeda, Yokohama; Masaki Kutsukake, Tokyo-To; Noritaka Egashira, Ichikawa; Shunsuke Mukasa, Tokyo-To; Takao Suzuki, Kawagoe; Hideo Hosoi, Tokyo-To, and Yasuo Otatsume, Chiba, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 34,186, Mar. 18, 1993, Pat. No. 5,451,560, which is a continuation of Ser. No. 467,415, Jan. 19, 1990, abandoned, which is a division of Ser. No. 138,384, Dec. 8, 1987, Pat. No. 4,923,848. This application Feb. 28, 1995, Ser. No. 395,850

Claims priority, application Japan, Apr. 11, 1986, 61-81988; Apr. 11, 1986, 61-81989; Sep. 24, 1986, 61-223896; Sep. 24, 1986, 61-225473; Oct. 1, 1986, 61-231224; Jan. 14, 1987, 62-5066

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 6 Claims



1. A sublimatingly image transferred product comprising:
a plastic card; and
an image-reception layer containing a releasing agent provided on said plastic card,
said image-reception layer being directly formed on said plastic card by thermal fusion, and said image-reception layer having a transferred image formed by sublimation transfer, said transferred image being formed on the plastic card surface side.

5,629,260

HETERIC EO/PO BLOCK COPOLYMERS AS ADJUVANTS FOR HERBICIDAL FORMULATIONS

Christopher G. Utz, Wyandotte, Mich., and Donald A. Poucher, Sparta, N.J., assignors to BASF Corporation, Mount Olive, N.J.

Filed Jul. 26, 1995, Ser. No. 507,099

Int. Cl.[6] A01N *25/30*

U.S. Cl. 504—116 7 Claims

1. A method of enhancing the weed controlling activity of a broad spectrum herbicide comprising the administration of said broad-spectrum herbicide wherein a heteric EO/PO copolymer is used in conjunction with said broad-spectrum herbicide and said heteric EO/PO co-polymer has surface active properties, and the formula:

$$Y[(EO,PO)_m(PO)_n(EO,PO)_{m'}H]_x$$

wherein Y is the nucleus of an organic reactive hydrogen compound having x reactive hydrogen atoms and up to 6 carbon atoms, x is an integer, EO is ethylene oxide, PO is a propylene oxide hydrophobe having an oxygen/carbon ratio of not more than 0.40, (EO,PO) represents a hydrophilic heteric block having an oxygen/carbon ratio of more than 0.40, m,m' and n are numbers such that the total molecular weight of said hydrophilic heteric block is from about 660 to 11,400, the total molecular weight of said PO hydrophobe is from about 1500 to 3600 and the total molecular weight of said copolymer ranges from about 2,200 to 15,000 said copolymer being at least 30 weight percent hydrophilic with said hydrophilic heteric block comprising from about 5 to 40 weight percent of PO.

5,629,261

FREE-FLOWING, NON-DUSTING WATER DISPERSIBLE GRANULES OF A WATER-INSOLUBLE, HYDROPHOBIC AGRICULTURALLY ACTIVE CHEMICAL HAVING LOW FRIABILITY AND SUPERIOR CRUSH STRENGTH

Kolazi S. Narayanan, Wayne, and Edward Fu, Kinnelon, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Aug. 8, 1995, Ser. No. 512,742

Int. Cl.[6] A01N *25/14*

U.S. Cl. 504—116 8 Claims

1. A wet paste composition for making a free-flowing, non-dusting water dispersible granule having low friability and superior crush strength of a water, insoluble, hydrophobic agriculturally active chemical capable of forming a stable, and active rainfast suspension of said chemical in water, without foaming, for delivery to a desired site by effective disintegration of the granules, comprising, by weight:
(a) as active component, a water-insoluble, hydrophobic, agriculturally active chemical, 10–90%, optionally, with a filler at the lower end of said range,
(b) as disintegrant, cross-linked polyvinylpyrrolidone, 1–6%,
(c) as film-former, a rainfast, water-insoluble polymer, 1–5%,
(d) as penetrant, a C_8–C_{18} alkyl pyrrolidone, 0.5–10%,
(e) as suspending agent, an anionic oil soluble surfactant, 0.2–4%,
(f) as fluidizer for a hydrophilic medium, an aromatic petroleum oil, 1–20%,
(g) a wetting agent, 1–10%,
(h) a dispersant, 1–20%, and, optionally
(i) water, 1–10.

5,629,262

METHOD FOR CONTROLLING GRASS WEEDS COMPRISING ADMINISTERING SYNERGISTIC AMOUNTS OF TWO CYCLOHEXENONE HERBICIDES

Barbara G. Auxier, Fuquay-Varina, N.C.; Wade W. Stewart, Brandon, Miss., and Neil P. Stapensea, Raleigh, N.C., assignors to BASF Corporation, Mount Olive, N.J.

Filed Oct. 27, 1995, Ser. No. 548,992

Int. Cl.[6] A01N *33/24*

U.S. Cl. 504—148 18 Claims

1. A method for controlling grass weeds in growing crops comprising administering two cyclohexanedione herbicides at synergistically effective amounts.

5,629,263

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS CONTAINING POLY (HEXAMETHYLAMMONIUM) CHLORIDE

James J. Miller, Norcross; Geoffrey A. Brown, Lithonia, and E. LeRoy Lines, Atlanta, all of Ga., assignors to Bio-Lab, Inc., Decatur, Ga.

Division of Ser. No. 163,118, Dec. 7, 1993, Pat. No. 5,508,250. This application Apr. 15, 1996, Ser. No. 632,003

Int. Cl.[6] A01N *33/00;33/12;35/00;37/52*

U.S. Cl. 504—158 2 Claims

1. A synergistic composition for inhibiting microbial growth comprising synergistic amounts of between about 88.6% and about 98.5% poly(hexamethylammonium) chloride and between about 1.5% and about 11.4% of poly(oxyethylene (dimethylimino) ethylene-(dimethylimino) ethylene dichloride) ("PDED").

5,629,264

2-ARYL-5,6-DIHYDROPYRIMIDINONES AND HERBICIDAL USE THEREOF

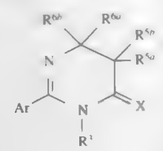
Colin M. Tice, Elkins Park; Lois M. Bryman, North Wales, and Renee C. Roemmele, Maple Glen, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 23, 1995, Ser. No. 409,293

Int. Cl.[6] A01N *43/54;* C07D *239/06*

U.S. Cl. 504—240 22 Claims

1. A compound of the formula



wherein
Ar is a substituted or unsubstituted aryl or heteroaryl;
R^3 is a haloalkyl, polyhaloalkyl, alkenyl, haloalkenyl, polyhaloalkenyl, alkynyl, haloalkynyl, polyhaloalkynyl, alkenynyl, alkoxyalkyl, haloalkoxyalkyl, oxoalkyl, trimethylsilylalkynyl or cyanoalkyl;
R^{5a} and R^{5b} are each independently a hydrogen atom, halo, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkoxycarbonyl, alkoxycarbonylalkyl, haloalkyl, haloalkenyl, haloalkynyl, haloalkoxy, polyhaloalkyl, polyhaloalkenyl, polyhaloalkynyl, polyhaloalkoxy, trimethylsilylalkynyl or cyano;
R^{6a} and R^{6b} are each independently a hydrogen atom, halo, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, haloalkylthio, alkoxyalkyl, alkoxycarbonyl, alkoxycarbonylalkyl, haloalkyl, haloalkoxy, haloalkenyl, haloalkynyl, polyhaloalkyl, polyhaloalkoxy, polyhaloalkylthio, polyhaloalkenyl, polyhaloalkynyl, cycloalkyl, aryl, aryloxy, heterocyclyl, aralkyl, alkylamino, dialkylamino, dialkylaminocarbonyl, or cyano;
R^{5a} and R^{6a} taken together with the carbon atoms to which they are attached may form a fused 4–7 member ring containing 2–5 methylenes; and
X is an oxygen or a sulfur atom.

5,629,265

CYANOKETONE DERIVATIVE AND HERBICIDE CONTAINING IT AS AN ACTIVE COMPONENT

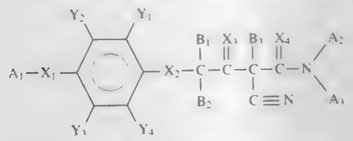
Masahiko Ishizaki, Tsukuba; Seiji Nagata, Tokuyama, and Junji Takenaka, Tsukuba, all of Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Filed Jun. 22, 1994, Ser. No. 264,151

Int. Cl.[6] C07C *255/17;255/27;* A01N *37/34;43/08;43/10;43/12;43/16;43/18;43/38;43/40, 43/50;43/52;43/54;43/60;43/647;43/707*

U.S. Cl. 504—249 23 Claims

1. A cyanoketone derivative of the following formula (1)



(1)

wherein A_1 is a substituted or unsubstituted phenyl or naphthyl group, or a substituted or unsubstituted heterocyclic group selected from the group consisting of a 5-membered ring, a 6-membered ring, a 5- and 6-membered fused ring group and a 6- and 6-membered fused ring group, wherein said heterocyclic group contains from 1 to 3 hetero atoms selected from the group consisting of oxygen, nitrogen and sulfur or mixtures thereof, substituents of said substituted phenyl, naphthyl and heterocyclic groups being selected from the group consisting of a halogen atom, an alkyl group having 1 to 4 carbon atoms, a halogenoalkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, an alkoxycarbonyl group having 2 to 6 carbon atoms, a nitro group and a cyano group; each of X_1, X_2, X_3 and X_4 is independently an oxygen or sulfur atom; each of B_1, B_2 and B_3 is independently a hydrogen atom or alkyl group having 1 to 6 carbon atoms; each of Y_1, Y_2, Y_3 and Y_4 is independently a hydrogen atom, a halogen atom or alkyl group having 1 to 6 carbon atoms; and each of A_2 and A_3 is independently selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group having 2 to 6 carbon atoms, an alkenyl group having 2 to 6 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, an alkoxycarbonyl group having 1 to 6 carbon atoms, a cyano group and a group as defined in A_1; substituents of said substituted alkyl group being selected from the group consisting of a halogen atom, an alkoxy group having 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, a cyano group, a phenyl group and a heterocyclic group of a 5- or 6-membered ring; provided that both A_2 and A_3 can form a saturated or unsaturated ring of from 2 to 8 carbon atoms which may contain at least one additional nitrogen atom or oxygen atom, and that when B_1 is a hydrogen atom and B_2 is said alkyl group, the compound of the formula (1) is an R- or S-enantiomer with regard to the asymmetric carbon to which B_1 and B_2 are bonded or a mixture of these enantiomers.

5,629,266

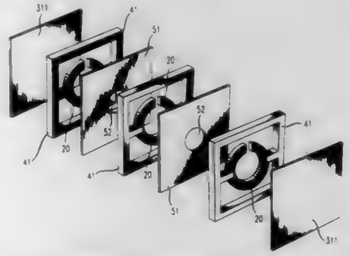
ELECTROMAGNETIC RESONATOR COMPRISED OF ANNULAR RESONANT BODIES DISPOSED BETWEEN CONFINEMENT PLATES

Robert D. Lithgow, Schaumburg, Ill.; Eva Koh, Singapore, Singapore; Malcolm E. Lines, Millington, and George E. Peterson, Warren, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J., and Illinois Superconductor Corporation, Mt. Prospect, Ill.

Filed Dec. 2, 1994, Ser. No. 348,636

Int. Cl.[6] H01P *1/201;7/00;* H01B *12/06*

U.S. Cl. 505—210 11 Claims



1. An article comprising a resonator for electromagnetic energy comprising
a) two or more essentially identical annular bodies, a given one of the annular bodies having a thickness t and radial dimension R relative to an axis of the body, said body comprising conductive material and having an outer surface and an inner surface, with a slit extending between said outer and inner surfaces, each of said outer and inner surfaces being substantially parallel with the axis of the given body, said thickness t is aligned along the axial direction and is less than the radial dimension R, said two or more annular bodies being coaxially disposed;
b) substantially planar end confinement plates for electromagnetic energy, said two or more annular bodies disposed between and spaced from said, end confinement plates;
c) at least one substantially planar intermediate confinement plate disposed between, and spaced from, two of said two or more annular bodies, said intermediate confinement plate having an opening that facilitates coupling electromagnetic

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energy between said two adjacent ones of the two or more of the annular bodies, wherein each of said end confinement plates and intermediate confinement plate is disposed such that the axis of the given one of the annular bodies is substantially perpendicular to any of the confinement plates; and

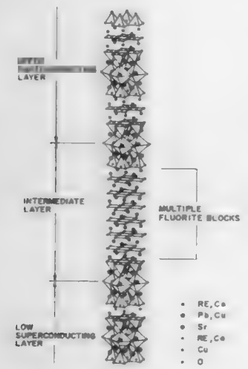
d) means for coupling electromagnetic energy to the resonator, and means for coupling electromagnetic energy from the resonator.

5,629,267

SUPERCONDUCTING ELEMENT HAVING AN INTERMEDIATE LAYER WITH MULTIPLE FLUORITE BLOCKS

Sumio Ikegawa, Musashino, and Tadao Miura, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 76,892, Jun. 15, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 409,966
Claims priority, application Japan, Jun. 16, 1992, 4-156854
Int. Cl.[6] B32B *9/00*
U.S. Cl. 505—238 **16 Claims**



1. A superconducting element, comprising:

a lower superconducting layer comprising a first layered copper oxide compound, said first layered copper oxide compound being superconducting;

an intermediate layer superposed on said lower superconducting layer and comprising second layered copper oxide compound, said second layered copper oxide compound comprising:

CuO_2 planes,

a multiple block layer interposed between the CuO_2 planes and having a composition represented by the chemical formula of $\{(RE1_{1-x}RE2_x)O_2\}_{m+1}$ and a crystal structure of fluorite in which a layer of cations of RE1 or RE2 and a layer of O^{2-} anions are alternatively stacked, and

second block layers superposed on the CuO_2 planes, the second block layers consisting of at least one member selected from the group consisting of $\{Bi_2O_2\}^{2+}$, $\{Tl_2O_2\}^{2+}$, $\{TlO\}^{1+}$, $\{PbO\text{-}Cu\text{-}PbO\}^{1+}$, $\{(Pb, Cu)O\}^{1+}$, and CuO_δ chain, and alkali earth elements, wherein δ stands for an oxygen amount; and

an upper superconducting layer superposed on said intermediate layer and comprising a third layered copper oxide compound, said third layered copper oxide compound being superconducting,

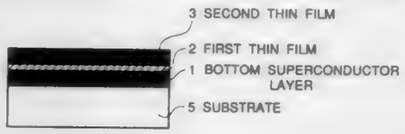
wherein RE1 is at least one element selected from the group consisting of lanthanide elements and actinoid elements which form ions of valency of more than 3, RE2 is at least one element selected from the group consisting of yttrium and lanthanide elements, which form ions of valency of 3, y is a number satisfying $0 \leqq y < 1$, and m is a number satisfying $2 \leqq m \leqq 100$.

5,629,268

PROCESS FOR PREPARING A LAYERED SUPERCONDUCTING STRUCTURE

So Tanaka; Takao Nakamura, and Michitomo Iiyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 261,309, Jun. 16, 1994, abandoned, which is a continuation of Ser. No. 858,420, Mar. 27, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,313
Claims priority, application Japan, Mar. 28, 1991, 3-089620; Mar. 28, 1991, 3-089621
Int. Cl.[6] H01L *39/24;* **B05D** *5/12*
U.S. Cl. 505—329 **18 Claims**



1. A process for depositing successively a plurality of films on a bottom superconductor layer made of a YBa_2Cu_3 oxide superconductor deposited on a substrate, wherein the deposition of said films is carried out in a single chamber successively, and wherein the deposition of a first film to be deposited directly on said bottom YBa_2Cu_3oxide superconductor layer is carried out under a condition wherein:

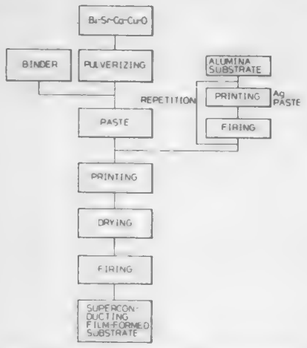
said bottom superconductor layer is heated in an ultra-high vacuum of lower than 1×10^{-9} Torr, at a temperature which is lower than an oxygen-trap temperature (T_{trap}), but higher than a temperature which is lower by 100° C. than said oxygen-trap temperature (T_{trap}−100° C.), said ultra-high vacuum being maintained prior to the deposition of said first film.

5,629,269

PROCESS FOR FORMING OXIDE SUPERCONDUCTING FILMS WITH A PLURALITY OF METAL BUFFER LAYERS

Kazunori Yamanaka, Sagamihara; Takuya Uzumaki, Kawasaki; Nobuo Kamehara, Isehara, and Koichi Niwa, Tama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 972,714, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 734,095, Jul. 23, 1991, abandoned, which is a continuation of Ser. No. 469,789, Jan. 24, 1990, abandoned. This application Oct. 31, 1994, Ser. No. 332,479
Claims priority, application Japan, Jan. 24, 1989, 1-013117
Int. Cl.[6] B05D *5/12;1/32*
U.S. Cl. 505—471 **20 Claims**



1. A process of forming an oxide superconducting film on a multi-layer metal film which comprises:

providing an alumina substrate having a main surface;

forming a multi-layer metal film of at least two metal layers on the main surface of the alumina substrate and comprising at least two Ag layers, each said metal layer being formed of one or more metals selected from the group consisting of Cu, Ag, Au, Ni, Pd, Pt, Rh and Ir, each of said one or more selected metals for each respective metal layer being provided as one or more corresponding metal powders in a paste composed only of said one or more selected and corresponding metal powders and an organic substance and said metal layers being formed in individual succession, each thereof by printing and drying the paste and then firing the paste at a first temperature within a first temperature range of from 900° C. to 950° C., said at least two metal layers of said multi-layer metal film including at least a bottom metal layer formed on and fixedly adhered to the main surface of the alumina substrate and at least a top metal layer having an uppermost exposed surface, each successive metal layer being formed on and fixedly adhered to the respectively underlying metal layer and the total thickness of the multi-layer film being more than 20 μm; and

forming an oxide superconducting film, the material thereof consisting of a Bi—Pb—Sr—Ca—Cu—O system, on the uppermost, exposed surface of the top metal layer of the multi-layer metal film by printing a paste of the oxide superconducting film material thereon and firing same at a second temperature, within a second temperature range of from 830° C. to 860° C. and at which a crystal of the material of the oxide superconducting film is grown, the oxide superconducting film having a superconducting critical temperature of 90° K. or higher.

5,629,270

THERMALLY STABLE OIL-BASE DRILLING FLUID

Donald C. Van Slyke, Brea, Calif., assignor to Union Oil Company of California, El Segundo, Calif.

Filed Jun. 30, 1994, Ser. No. 268,801
Int. Cl.[6] C09K *7/06*
U.S. Cl. 507—125 **8 Claims**

1. An oil-base drilling fluid having a density of about 0.9 kg/l (7.5 pounds per gallon (ppg)) to about 2.4 kg/l (20 ppg) and comprising:

(a) an oil,

(b) a weighting agent,

(c) a surfactant,

(d) a non-organophilic clay,

(e) a non-sulfonated polystyrene; and

(f) less than about 0.143 g/m^3 (0.05 pounds per barrel (ppb)) sulfonated polymer.

5,629,271

METHODS OF REDUCING FLUID LOSS AND POLYMER CONCENTRATION OF WELL DRILLING AND SERVICING FLUIDS

James W. Dobson, Jr.; Paul D. Kayga, and Jesse C. Harrison, III, all of Houston, Tex., assignors to Texas United Chemical Corporation, Houston, Tex.

Filed Mar. 25, 1994, Ser. No. 217,726
Int. Cl.[6] C09K *7/00;* **E21B** *43/04*
U.S. Cl. 507—269 **21 Claims**

1. A method of reducing the fluid loss of well drilling and servicing fluids which contain at least one polymeric viscosifier, at least one polymeric fluid loss control additive, and a water soluble salt bridging agent suspended in a saturated salt solution in which the bridging agent is not soluble, which comprises adding to the fluid a particulate, water soluble, ultra fine salt filtrate reducing agent having a particle size distribution such that at least 90% of the particles thereof are less than 10 micrometers and the average particle size is from about 3 to about 5 micrometers, wherein the concentration of the ultra fine filtrate reducing agent is sufficient to reduce the fluid loss of the fluid.

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LOW PHOSPHOROUS ENGINE OIL COMPOSITIONS AND ADDITIVE COMPOSITIONS

Morikuni Nakazato, Shizuoka Prefecture; Jiro Magarifuchi, Yokohama, and Yoshifumi Isozaki, Shizuoka Prefecture, all of Japan, assignors to Oronite Japan Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 927,906, Aug. 10, 1992, abandoned. This application Dec. 3, 1993, Ser. No. 162,681
Claims priority, application Japan, Aug. 9, 1991, 3-223664; United Kingdom, Dec. 21, 1992, 4-356302
Int. Cl.[6] C10M *141/00;141/06;141/10;141/12*
U.S. Cl. 508—185 **9 Claims**

1. A low-phosphorous lubricating oil composition for internal combustion engines comprising:

(a) a major amount of a base oil of lubricating viscosity,

(b) from 0.5 to 20 wt. % of metal-containing detergent,

(c) from 0.1 to 3 wt. % of a secondary zinc dithiophosphate,

(d) from 0.5 to 15 wt. % of boron-containing ashless dispersant, and

(e) from 0.05 to 2 wt. % of an antiwear agent comprising:

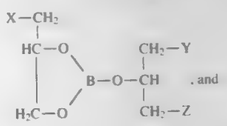
(i) an oleic amide, and

(ii) a compound selected from the group consisting of:

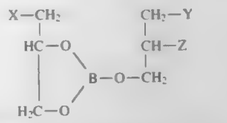
(1) a molybdenum dithiocarbamate, and

(2) an ester derived from glycerol, boric acid, and a fatty acid having 8–24 carbon atoms, wherein the ester is selected from the group consisting of:

(a) an ester having the formula:


(I)

(b) an ester having the formula:


(II)

wherein X, Y, and Z are the same or different and each represents a group selected from the group consisting of a hydroxyl group and an alkylcarboxyl group.

5,629,273

SILICONE-POLYBUTYLENE BLENDS

Dale E. Hauenstein, Midland, Mich., assignor to Dow Corning Incorporated, Midland, Mich.

Continuation-in-part of Ser. No. 317,945, Oct. 4, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,291
Int. Cl.[6] C10M *155/02*
U.S. Cl. 508—208 **19 Claims**

1. A composition comprising a compatible blend of (A) a polydimethylsiloxane having an absolute viscosity V of no greater than 10,000 cP at 25° C.; and (B) a polybutylene having a number average molecular weight of about 100 to about 3,000 and an absolute viscosity substantially identical with V, wherein the ratio of said polydimethylsiloxane (A) to said polybutylene (B) is such that the absolute viscosity of said blend is less than the absolute viscosity of either component (A) or (B), all of the viscosities being measured at the same operating temperature and pressure.

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LUBRICATING FLUID COMPOSITION FOR DYNAMIC PRESSURE BEARING

Masamichi Hayakawa; Toshihiro Kobayashi, both of Shimosuwa-machi; Kazuya Shimizu, Fujisawa; Yuusuke Matsumura, Tokyo; Masuhiro Onoyama, Isehara, and Katsumi Nagano, Chita, all of Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano, and Taiho Industries Co., Ltd., Tokyo, both of Japan

Filed Mar. 25, 1996, Ser. No. 622,246

Claims priority, application Japan, Mar. 25, 1995, 7-091548; Mar. 25, 1995, 7-091550

Int. Cl.[6] C10H *105/38*

U.S. Cl. 508—485 **17 Claims**

1. A lubricating fluid composition for dynamic pressure bearings which supports a shaft by dynamic pressure, said lubricating fluid composition comprising:

fine magnetic particles dispersed in a base oil solvent selected from the group consisting of a dialkylcarbonate (ROCOOR), wherein R is a C_{5-20} alkyl group, a hydrogenated poly-α-olefin (PAO) and a polyol ester, to which is added an amine anti-gelling agent.

5,629,275

PROCESS FOR THE PRODUCTION OF SURFACTANT-CONTAINING GRANULES

Volker Bauer, Ziegeleiweg 34, 40591 Duesseldorf, and Jochen Jacobs, Teschensudberg 50, 42349 Wuppertal, both of Germany

PCT No. PCT/EP94/00300, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/18302, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 2, 1994, Ser. No. 501,013

Claims priority, application Germany, Feb. 11, 1993, 43 04 015.2

Int. Cl.[6] C11D *11/00*

U.S. Cl. 510—108 **14 Claims**

1. A process for producing surfactant-containing granules having reduced tackiness consisting of forming said granules in a fluidized bed apparatus, and adding 0.1% to 10% by weight of a granule stabilizer based on the weight of said granules, to the discharge air stream of said apparatus after said granules have emerged from said fluidized bed apparatus.

5,629,276

COMPOSITION OF ALKYL PYRROLIDONE FOR SOLUBILIZING ANTIBACTERIALS

Ravi Subramanyam, North Brunswick, and Ben Gu, East Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 239,810, May 9, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,701

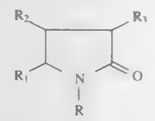
Int. Cl.[6] C11D *3/20;3/26;3/48*

U.S. Cl. 510—133 **15 Claims**

1. A composition comprising

a. an antibacterial agent selected from the group consisting of trichlorocarbanilide and 2,4,4,'-trichloro-2'-hydroxy diphenyl ether, and

b. a solubilizing effective amount for the purposes of solubilizing said antibacterial agent of a compound of the formula



wherein R is alkyl of four to twenty carbon atoms inclusive and R_1, R_2, and R_3 are the same or different and are hydrogen or alkyl of one to twelve carbon atoms, inclusive.

5,629,277

PAINT REMOVING COMPOSITION

Martin J. Plishka, Carefree, Ariz., assignor to William L. Brown, Miami, Fla.

Filed Oct. 4, 1995, Ser. No. 539,171

Int. Cl.[6] C11D *3/10;3/43*

U.S. Cl. 510—202 **3 Claims**

1. A surfactant-free composition for removing paint consisting essentially of:

from about 15 to about 90 volume percent of an alkylene carbonate selected from the group consisting of propylene carbonate, butylene carbonate and mixtures thereof;

from about 3 to about 50 volume percent of propylene glycol; and

from about 2 to about 30 volume percent of a polypropylene glycol having a molecular weight of at least 200

wherein the total amount of said alkylene carbonate, propylene glycol, and polypropylene glycol in said composition is essentially 100% by volume.

5,629,278

DETERGENT COMPOSITIONS

Andre Baeck, Bonheiden, Belgium; Lynda A. Jones, Newcastle Upon Tyne, United Kingdom; Chandrika Kasturi, Fairfield, Ohio; Michael S. Showell, and Ann M. Wolff, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Sep. 18, 1995, Ser. No. 529,816

Int. Cl.[6] C11D *3/386*

U.S. Cl. 510—236 **6 Claims**

1. A manual liquid dishwashing detergent composition comprising:

(a) from about 5% to about 60% by weight of the composition of one or more suffactants;

(b) one or more detergent components selected from the group consisting of from about 0.01% to about 3% by weight of the composition of group II metal ions, from about 0.001% to about 6% by weight of the composition of additional enzymes, from about 0.5% to about 25% by weight of the composition of hydrotrope, from about 0.1% to about 30% by weight of the composition of organic solvent, and mixtures thereof;

(c) less than 1.5% builder;

(d) from about 35% to about 94% by weight of the composition of water; and

(e) from about 0.0001% to about 2% by weight of the composition of polygalacturanase enzyme comprising less than about 25%, by weight of the polygalacturanase enzyme, of other pectic enzymes.

5,629,279

HIGH FOAMING NONIONIC SURFACTANT BASED LIQUID DETERGENT

Rita Erilli, Liege, Belgium; Stephen Repinec, Jr., Flemington, and Gilbert Gomes, Somerset, both of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 193,929, Feb. 9, 1994. This application Jul. 28, 1995, Ser. No. 539,972

Int. Cl.[6] C11D *1/74;1/94;3/30;3/32*

U.S. Cl. 510—237 **9 Claims**

1. A high foaming, nonionic surfactant based, light duty, liquid detergent comprising approximately, by weight,

(a) 10% to 30% of a water soluble nonionic surfactant selected from the group consisting of primary and secondary C_8–C_{18} alkanol condensates with about 5 to 30 moles of ethylene oxide, condensates of C_8–C_{18} alkylphenol with about 5 to 30 moles of ethylene oxide, condensates of C_8–C_{20} alkanol with a heteric mixture of ethylene oxide and propylene oxide having a weight ratio of ethylene oxide to propylene oxide from 2.5:1 to 4:1 and a total alkylene oxide content of 60% to 85% by weight and condensates of 2 to 30 moles of ethylene oxide with sorbitan mono and tri- C_{10}–C_{20} alkanoic acid esters having an HLB of 8 to 15;

(b) 1% to 10% of a water-soluble anionic detergent selected from the group consisting of C_8–C_{18} alkyl sulfates, C_8–C_{16} alkylbenzene sulfonates, C_{10}–C_{20} paraffin sulfonates, C_{10}–C_{24} alpha olefin sulfonates, C_8–C_{18} alkyl sulfosuccinate esters, C_8–C_{18} acyl isethionates and C_8–C_{18} acyl taurates; and

(c) 0.5% to 10% of a water-soluble betaine;

(d) 1 to 3 wt. % of a C_{12-14} alkyl monoalkanol amide;

(e) 1 to 3 wt. % of a C_{12-14} alkyl dialkanol amide;

(f) 1% to 5% of a water soluble amine oxide; and

(g) the balance being water as an aqueous medium in which said nonionic surfactant, said anionic detergent, said betaine, said C_{12-14} alkyl monoalkanol amide, said C_{12-14} alkyl dialkanol amide and said amine oxide are solubilized in said water, wherein the sum of B, C, D, E and F being from 15% to 48% by weight of the composition of the total surfactant content, said nonionic surfactant being in excess of 50% by weight of the total surfactant content, said composition does not contain any ethoxylated alkyl ether sulfate and said composition does not contain any polyoxyalkylene glycol fatty ester.

5,629,280

GERMICIDAL PINE OIL CLEANING COMPOSITIONS

Alan F. Richter, Branchburg, and Frederic A. Taraschi, River Vale, both of N.J., assignors to Reckitt & Colman Inc., Montvale, N.J.

Filed Sep. 5, 1995, Ser. No. 523,412

Claims priority, application United Kingdom, Aug. 4, 1995, 9516081

Int. Cl.[6] C11D *1/08;1/62;3/20;3/48*

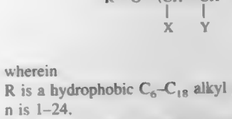
U.S. Cl. 510—463 **10 Claims**

1. A pine oil type cleaning concentrate comprising:

Constituent A): 0.01–3.0% by weight of a pine oil comprising at least 60% alpha-terpineol;

Constituent B): 0.01–15% by weight of a pine oil solubilizing agents selected from the group consisting of a nonionic alkoxylated fatty linear alcohol, and, C_1–C_8 alcohols;

Constituent C): 0.1–5% by weight of a cationic surfactant exhibiting germicidal activity selected from the group consisting of (I) structures having the formula:

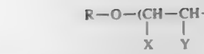


wherein:

(a) at least one of R_1, R_2, R_3 and R_4 is selected from the group consisting of aliphatic, aryl aliphatic or aliphatic aryl radical of from 6 to 26 carbon atoms, and any remaining R_1, R_2, R_3 and R_4 are hydrocarbons of from 1 to 12 carbon atoms, wherein any of R_1, R_2, R_3 and R_4 may be linear or branched, and X is a salt-forming anionic radical; or (b) wherein R_1, and R_4 are methyl, R_3 is benzyl and R_2 is selected from the group consisting of C_{12-16} alkyl, C_{8-18} alkylethoxy or C_{8-18} alkylphenolethoxy and X is a salt-forming anionic radical; or (II) N-alkyl pyridinium halides, N-(laurylcocoaminoformylmethyl)-pyridinium chloride, lauryloxyphenyltrimethyl ammonium chloride and cetylaminophenyltrimethyl ammonium methosulfate,

X is a salt-forming anionic radical;

Constituent D): 0.1–5 % by weight of a carboxylated alcohol alkoxylate surfactant compound according to the following general formula:



wherein

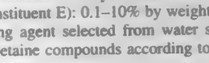
R is a hydrophobic C_6–C_{18} alkyl group.

n is 1–24.

X and Y are independently selected from the group consisting of hydrogen, CH_3, succinic acid radical, hydroxysuccinic acid radical, citric acid radical, and mixtures thereof, wherein at least X or Y is a succinic acid radical, hydroxy succinic acid radical, citric acid radical or radical, and

Z is H or —CH_2COOH.

Constituent E): 0.1–10% by weight of a surfactant compatibilizing agent selected from water soluble salts, and amphoteric betaine compounds according to the formula:



wherein

R is a hydrophobic group selected from alkyl groups containing from about 10 to about 22 carbon atoms, alkyl aryl and aryl alkyl groups containing about 10 to about 22 carbon atoms, where a benzene ring is treated as equivalent to about 2 carbon atoms;

R_1 is an alkyl group containing from 1 to about 3 carbon atoms and,

R_2 is an alkylene group containing from 1 to about 6 carbon atoms;

Constituent F): the remaining balance of up to 100%, water.

5,629,281

HERBEL MEDICATION FOR EXTERNAL APPLICATION

Edward R. Butler, 213 Huguenot St., New Paltz, N.Y. 12561

Continuation of Ser. No. 325,534, Oct. 18, 1994, abandoned, which is a continuation of Ser. No. 944,346, Sep. 14, 1992, abandoned. This application Apr. 2, 1996, Ser. No. 630,036

Int. Cl.[6] A01N *61/02;* **A61K** *9/70*

U.S. Cl. 514—1 **18 Claims**

1. A preparation for external application consisting essentially of amounts of lemon oil, sweet almond oil, cajuput oil, clove oil, eucalyptus oil, peppermint oil and thyme oil effective to reduce pain of headaches.

5,629,282

ANTIBACTERIAL COMPOSITIONS

Manmohan Bhakoo, Merseyside, Great Britain, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Oct. 4, 1994, Ser. No. 317,275

Claims priority, application United Kingdom, Oct. 5, 1993, 9320443; Dec. 17, 1993, 9325839

Int. Cl.[6] A23L *3/349;3/3499;* **A61K** *38/16;* **A61L** *2/18*

U.S. Cl. 514—2 **7 Claims**

1. A method for disinfecting matter infected with bacteria, comprising: the step of

treating said matter with an antibacterial composition comprising at least 1% by wt. of a surfactant and a pseudo-random synthetic peptide, having an α-amino bonding group, said peptide having a molecular weight of at least 5 kD and comprising at least 15% by number of residues of arginine, lysine, ornithine or a mixture thereof and at least 15% by number of residues of arginine, lysine, ornithine or a mixture thereof and a least 15% by number of residues of arginine, lysine, ornithine, phenylalanine, tyrosine, tryptophan or a mixture thereof, said peptide comprising no more than three different amino acid residues.

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5,629,283

GRANULOCYTE-MACROPHAGE COLONY-STIMULATING FACTOR RECEPTOR AND DERIVATIVES THEREOF

Nicos A. Nicola; Nicholas M. Gough, both of Victoria, Australia; David P. Gearing, Seattle, Wash.; Donald Metcalf, Victoria, Australia, and Julie A. King, Seattle, Wash., assignors to Amrad Corporation Limited, Victoria, Australia

Continuation of Ser. No. 834,534, Apr. 10, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 351,149

Claims priority, application Australia, Aug. 11, 1989, PJ 5743; May 8, 1990, PK 0014

Int. Cl.[6] C07K *14/705;* **C12N** *15/12*

U.S. Cl. 514—2 **12 Claims**

1. An isolated low affinity granulocyte-macrophage colony stimulating factor (GM-CSF) receptor, comprising a protein having an amino acid sequence corresponding to the amino acid sequence as set out in SEQ ID NO: 6, wherein said isolated low affinity GM-CSF receptor binds GM-CSF.

5,629,284

METHOD FOR TREATING RETINAL DISEASES

Kazuhiko Unoki; Hitoshi Arimura; Akiko Okubo; Norio Ohba, all of Kagoshima; Takashi Muramatsu, and Hisako Muramatsu, both of Nagoya, all of Japan, assignors to Meiji Milk Products Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1995, Ser. No. 505,907

Int. Cl.[6] A61K *38/00;31/725*

U.S. Cl. 514—2 **3 Claims**

1. A method of treating a retinal disease comprising administering an effective amount of midkine to a patient suffering from a retinal disease.

5,629,285

INHIBITORS OF TNF-α SECRETION

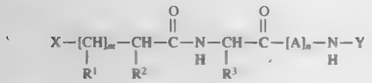
Roy A. Black; Jeffrey N. Fitzner, and Paul R. Sleath, all of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 292,547, Aug. 18, 1994, which is a continuation-in-part of Ser. No. 110,601, Aug. 23, 1993, abandoned. This application May 22, 1996, Ser. No. 651,363

Int. Cl.[6] A61K *38/00;38/16;31/66;31/215*

U.S. Cl. 514—2 **19 Claims**

1. A method for treating a mammal having a disease characterized by an overproduction or an unregulated production of TNF-α, comprising administering to the mammal a composition comprising an effective amount of a biologically active compound of the formula:



(II)

wherein:

X is hydroxamic acid, phosphoryl or carboxyl;

m is 0, 1 or 2;

R^1, R^2 and R^3 each independent of the other is hydrogen, alkylene(cycloalkyl), OR^4, SR^4, $N(R^4)(R^5)$, halogen, substituted or unsubstituted C_1 to C_8 alkyl, C_1 to C_8 alkylenearyl, aryl, a protected or unprotected side chain of a naturally occurring α-amino acid; or the group $—R^6R^7$, wherein R^6 is C_1 to C_8 alkyl and R^7 is OR^4, SR^4, $N(R^4)(R^5)$ or halogen, wherein R^4 and R^5 are each, independent of the other, hydrogen or substituted or unsubstituted C_1 to C_8 alkyl;

n is 1 or 2;

Y is hydrogen, unsubstituted or substituted C_1 to C_8 alkyl, alkylene(cycloalkyl), the group $—R^8—COOR^9$ or the group $—R^{10}N(R^{11})(R^{12})$; wherein R^8 is C_1 to C_8 alkylene; R^9 is hydrogen or C_1 to C_8 alkyl; R^{10} is C_1 to C_8 alkylene; and R^{11} and R^{12} are each, independent of the other, hydrogen or unsubstituted or substituted C_1 to C_8 alkyl; provided that when n is 1, A is a protected or an unprotected α-amino acid radical; and when n is 2, A is the same or different protected or unprotected α-amino acid radical; and when n is 2, A is the same or different protected or unprotected α-amino acid radical; and the pharmaceutically acceptable salts thereof;

wherein the compound is capable of reducing serum TNF-α levels by at least 80% when administered at 25 mg/kg in a murine model of LPS-induced sepsis syndrome;

and a pharmaceutically acceptable carrier.

5,629,286

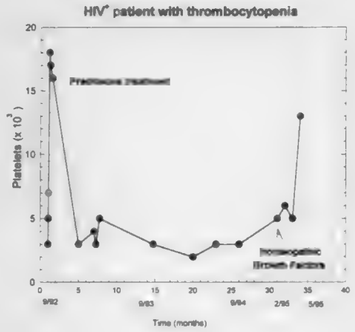
HOMEOPATHIC DILUTIONS OF GROWTH FACTORS

Barbara Brewitt, 5557 - 36th Ave. NE., Seattle, Wash. 98105-2313

Continuation of Ser. No. 488,722, Jun. 8, 1995, abandoned, which is a continuation-in-part of Ser. No. 221,365, Mar. 31, 1994, abandoned. This application Sep. 10, 1996, Ser. No. 710,040

Int. Cl.[6] A01N *37/18*

U.S. Cl. 514—2 **13 Claims**



1. A composition comprising a homeopathic dilution of one or more purified growth factors, said factors comprising cell signalling polyeptides.

5,629,287

DEPOT FORMULATIONS

Robert Brown, and Gordon Blun, both of Middlesex, United Kingdom, assignors to University College London, London, England

Continuation of Ser. No. 90,079, Jul. 16, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 424,582

Claims priority, application United Kingdom, Jan. 18, 1991, 9101183

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—8 **14 Claims**

1. A formulation comprising fibronectin or a fragment thereof, which comprises a gelatin-binding domain or a heparin-binding domain of fibronectin, the fibronectin or fragment thereof having a growth factor binding agent immobilized thereon and a growth factor releasably bound to the binding agent, and wherein the fibrils of the fibronectin or fragment thereof are in the form of a porous macroscopically oriented material.

5,629,288

LIPOPEPTIDE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Rudolf Lattrell, Königstein; Theodor Wollmann, Hofheim; Holger Wallmeier, Sulzbach; Peter Hammann, Babenhausen, and Dieter Isert, Eschborn, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

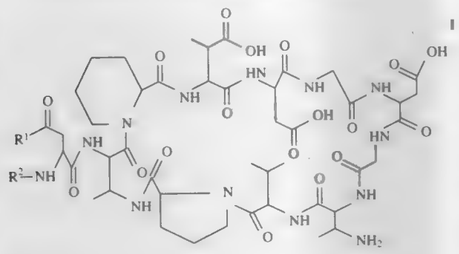
Filed Mar. 28, 1995, Ser. No. 411,931

Claims priority, application Germany, Mar. 30, 1994, 44 11 025.1

Int. Cl.[6] A61K *38/08*

U.S. Cl. 514—9 **19 Claims**

1. A lipopeptide A 1437 derivative of the formula I



I

in which

R^1 is OH or NH_2.

R^2 is a straight-chain or branched, saturated or unsaturated aliphatic C_8–C_{22}-acyl radical which may be interrupted by phenyl or cycloalkyl groups or by oxygen.

and pharmaceutically acceptable salts thereof.

5,629,289

CYCLIC PEPTIDE ANTIFUNGAL AGENTS

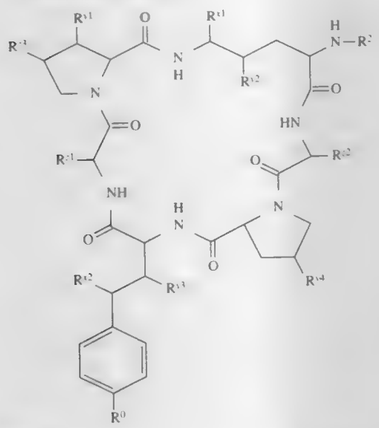
Michael J. Rodriguez, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 25, 1995, Ser. No. 506,790

Int. Cl.[6] A61K *38/12*

U.S. Cl. 514—11 **24 Claims**

1. A compound of formula I:



I

wherein:

R^{z1} is hydrogen, $—CH_2OH$, $—CHOHCH_3$ or $—CHOHCH_2C(O)NH2$;

R^{z2} is hydrogen, $—CH_2OH$ or $—CHOHCH_3$;

R^{z3} is hydrogen or methyl;

R^{z1} is hydrogen, hydroxy or $O—R^{z1'}$;

$R^{z1'}$ is C_1–C_6 alkyl, benzyl, $—(CH_2)_2Si(CH_3)_3$, $—CH_2CH═CH_2$, $—CH_2CHOHCH_2OH$, $—(CH_2)_aCOOH$, $—(CH_2)_aNR^{w1}R^{w2}$, $—(CH_2)_cPOR^{w3}R^{w4}$ or $—[(CH_2)_2O]_d—(C_1–C_6)$alkyl;

a, b and c are independently 1, 2, 3, 4, 5 or 6;

R^{w1} and R^{w2} are independently hydrogen, C_1–C_6 alkyl, or R^{w1} and R^{w2} combine to form $—CH_2(CH_2)_eCH_2—$;

R^{w3} and R^{w4} are independently hydroxy, or C_1–C_6 alkoxy;

d is 1 or 2;

e is 1, 2 or 3;

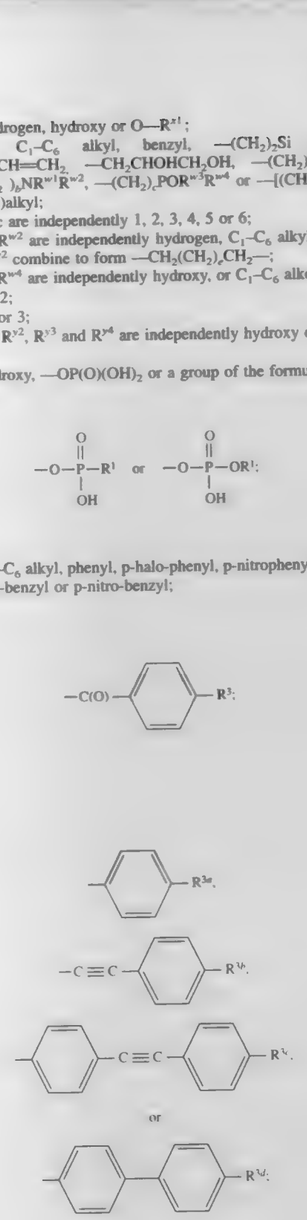
R^{x2}, R^{y1}, R^{y2}, R^{y3} and R^{y4} are independently hydroxy or hydrogen

R^0 is hydroxy, $—OP(O)(OH)_2$ or a group of the formulae:

R^1 is C_1–C_6 alkyl, phenyl, p-halo-phenyl, p-nitrophenyl, benzyl, p-halo-benzyl or p-nitro-benzyl;

R^2 is

R^3 is



R^{3a}, R^{3b}, R^{3c} and R^{3d} are independently hydrogen, C_1–C_{12} alkyl, C_2–C_{12} alkynyl, C_1–C_{12} alkoxy, C_1–C_{12} alkylthio, halo, $—O—(CH_2)_m—[O—(CH_2)_n]_p—O—(C_1–C_{12}$ alkyl) or $—O—(CH_2)_q—X—R^4$;

m is 2, 3 or 4;

n is 2, 3 or 4;

p is 0 or 1;

q is 2, 3 or 4;

X is pyrrolidino, piperidino or piperazino; and

R^4 is hydrogen, C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, benzyl or C_3–C_{12} cycloalkylmethyl;

with the proviso that at least one of R^{z1} and R^{z2} must be hydrogen;

or a pharmaceutically acceptable salt thereof.

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5,629,290

CYCLIC PEPTIDE ANTIFUNGAL AGENTS

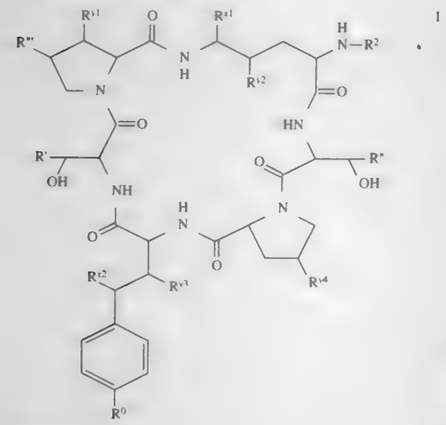
Lisa M. H. LaGrandeur, Tucson, Ariz.; Michael J. Rodriguez, and Mark J. Zweifel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 451,705, May 26, 1995. This application Mar. 8, 1996, Ser. No. 611,611

Int. Cl.[6] A61K *38/12;* **C07K** *5/12*

U.S. Cl. 514—11 **36 Claims**

1. A compound of the formula:



I

wherein:

R' is hydrogen, methyl or $NH_2C(O)CH_2$—;

R" and R'" are independently methyl or hydrogen;

R^{z1} is hydrogen, hydroxy or —O—R;

R is C_1–C_6 alkyl, benzyl, —$(CH_2)_2Si(CH_3)_3$, —$CH_2CHOHCH_2OH$, —$CH_2CH{=}CH_2$, —$(CH_2)_aCOOH$, —$(CH_2)_b$ $NR^{z1}R^{z2}$, —$(CH_2)_cPOR^{z3}R^{z4}$ or —$[(CH_2)_2O]_d$—$(C_1$–$C_6)$alkyl;

a, b and c are independently 1, 2, 3, 4, 5 or 6;

R^{z1} and R^{z2} are independently hydrogen, C_1–C_6 alkyl, or R^{z1} and R^{z2} combine to form-$CH_2(CH_2)eCH_2$—;

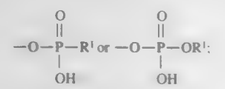
R^{z3} and R^{z4} are independently hydroxy or C_1–C_6 alkoxy;

d is 1 or 2;

e is 1, 2 or3;

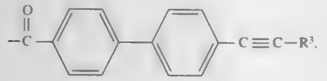
R^{z2}, Ryl, R^{y2}, R^{y3} and R^{y4} are independently hydrogen or hydroxy;

R^0 is hydroxy, —$OP(O)(OH)_2$ or a group of the formulae:



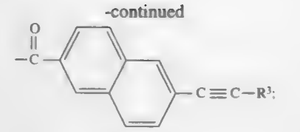
R^1 is C_1–C_6 alkyl, phenyl, p-halo-phenyl, p-nitrophenyl, benzyl, p-halo-benzyl or p-nitro-benzyl;

R^2 is

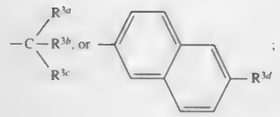


or

-continued



R^3 is



R^{3a} is C_1–C_6 alkoxy;

R^{3b} and R^{3c} are independently phenyl or naphthyl;

R^{3d} is C_1–C_{12} alkyl, C_1–C_{12} alkoxy or —O—$(CH_2)_m$—[O—(CH_2) n]p—O—(C_1–C_{12} alkyl);

m is 2, 3 or 4;

n is 2, 3 or 4; and

p is 0 or 1;

or a pharmaceutically acceptable salt thereof.

5,629,291

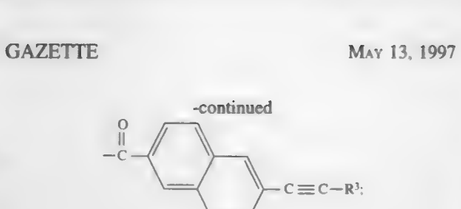
METHODS OF MODULATING FIBRONECTIN EXTRACELLULAR MATRIX ASSEMBLY

Erkki I. Ruoslahti, Rancho Santa Fe, and Alex Morla, Carlsbad, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation of Ser. No. 21,626, Feb. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 829,462, Jan. 31, 1992, Pat. No. 5,453,489. This application Nov. 17, 1994, Ser. No. 340,812

Int. Cl.[6] A61K *38/17;* **C07K** *14/78;* **C12N** *5/02*

U.S. Cl. 514—12 **7 Claims**



1. A method of promoting extracellular fibronectin matrix formation in a cellular system in the presence of fibronectin, comprising the step of contacting the system with an effective amount of one or more polypeptides selected from the group consisting of P1 (SEQ ID NO: 2), P4 (SEQ ID NO: 5), III_1-C (SEQ ID NO: 11), III_1-E (SEQ ID NO: 12), and QE-C (SEQ ID NO: 13).

5,629,292

USE OF ANGIOTENSIN III AND ANALOGS THEREOF IN TISSUE REPAIR

Kathleen E. Rodgers, Long Beach, and Gere S. DiZerega, Pasadena, both of Calif., assignors to The University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 126,368, Sep. 24, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 337,781

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—16 **16 Claims**

1. A method of accelerating wound healing in mammals, comprising applying to a wound an amount effective to accelerate wound healing of at least one compound of general formula I

R^1-R^2-R^3-R^4-R^5-R^6-R^7

in which R^1 is selected from the group consisting of H, Arg, Lys, Ala, Orn, Ser(Ac), Sar, D-Arg and D-Lys;

R^2 is selected from the group consisting of Val, Ala, Leu, Ile, Gly, Pro, Aib, Acpc and Tyr;

R^3 is selected from the group consisting of Tyr, Thr, Ser and azaTyr;

R^4 is selected from the group consisting of Ile, Ala, Leu, Val and Gly;

R^5 is His or Arg;

R^6 is Pro or Ala; and

R^7 is selected from the group consisting of lie, Phe, Phe(Br) and Tyr.

5,629,293

SINGLE CHAIN PEPTIDE COMPOUNDS HAVING HEMOREGULATORY ACTIVITY

Kjell Undheim, Sandvika, Norway; Peter Kremminger, Linz, and Michael Hartmann, Pettenbach, both of Austria, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/GB93/01172, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO93/24524, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 2, 1993, Ser. No. 343,602

Claims priority, application United Kingdom, Jun. 2, 1992, 9211668

Int. Cl.[6] A61K *38/08;* **C07D** *241/08;* **C07K** *1/02;7/06*

U.S. Cl. 514—17 **14 Claims**

1. A peptide compound derivative comprising a single chain hemoregulatory peptide of formula:

wherein

R^a represents

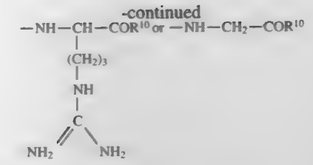
R^b represents —NH—CH—CO— or —NH—CH—CO—;
(CH_2)$_r$ CH_2OH
COR^6

R^c represents —NH—CH—CO— or —NH—CH—CO—;
(CH_2)$_q$ CH_2OH
COR^7

R^r represents —NH—CH—CO—;
R^9

R^f represents —NH—CH—COR^{10} or

-continued



and A is a group —$CR^AR^{A'}$—Z,

wherein n and m independently represent 0 or 1;

q and r independently represent 1 or 2;

s represents 3 or 4;

R^1 and R^2 are both hydrogen atoms or, when m=0, R^1 and R^2 together represent an oxo group;

R^3 and R^4 are both hydrogen atoms or together represent a carbon-carbon bond;

each R^6 and R^7 independently represents a hydroxy group or an amino group;

R^9 represents hydrogen or a methyl group; and

R^{10} represents a hydroxy or amino group, the residue of the amino acid glutamine or a peptide having an N-terminal glutamine unit,

each R^A is independently a hydrogen atom or a group —R^{A*}, —OR^{A*}, —SR^{A*}, —$NR^{A*}R^{A*}$, $CONR^{A*}R^{A*}$ or —$COOR^{A*}$;

$R^{A'}$ is a hydrogen atom or a group R^{A*};

R^{A*} is an alkyl, cycloalkyl, alkanoyl, hydroxyalkyl, amidine group or a carbocyclic or heterocyclic group;

Z is a group —OR^B, —NR^CR^C, —$CR^DR^ER^F$ or a substituted or unsubstituted, aromatic or non-aromatic, carbocyclic or heterocyclic ring other than unsubstituted phenyl;

each R^B is a straight chained or branched, saturated or unsaturated hydrocarbon group optionally substituted by hydroxyl, amino or azide groups or by one or more R^A groups, where R^A is as defined above, and optionally interrupted by one or more —N—, —O— or —S— heteroatoms;

R^C is a hydrogen atom or a group R^B;

R^D is a hydrogen atom or a group R^F;

R^E is a hydrogen atom or a group R^F, or together with the carbon atom of the $CR^DR^ER^F$ group, R^E and R^D form a>C=O group; and

R^F is a group —R^B, —OR^B, —NR^CR^C or —SR^B, or a hydroxy, carboxy, aminocarbonyl or alkoxy group, or is a methylene group linked to the nitrogen atom of the —NH—CH (A)—CO—group, or together with R^D forms an alkylidene group, or is a hydrogen atom where one of R^A, $R^{A'}$, R^D and R^E is other than hydrogen.

5,629,294

COMPOSITIONS AND METHODS FOR PREVENTING ADHESION FORMATION

Gere S. diZerega, Pasadena, and Kathleen E. Rodgers, Long Beach, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation of Ser. No. 789,231, Nov. 7, 1991, abandoned. This application Jan. 6, 1994, Ser. No. 178,482

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—18 **15 Claims**

1. A method for preventing adhesion formation, comprising:

Administering an effective amount of at least one RGD-containing peptide characterized by the sequence Arg-Gly-Asp-R, in which R is selected from the group consisting of Ser, Cys, Thr, Asn and d-Ser.

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5,629,295

STEROIDAL GLYCOSIDES FOR TREATING HYPERCHOLESTEROLEMIA

Michael P. Deninno, Gales Ferry, and Peter A. McCarthy, Pawcatuck, both of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/04092, § 371 Date Dec. 20, 1994, § 102(e) Date Dec. 20, 1994, PCT Pub. No. WO94/00480, PCT Pub. Date Jan. 6, 1994

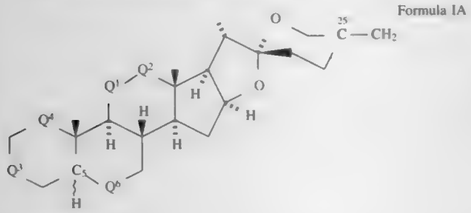
Continuation-in-part of Ser. No. 904,914, Jun. 26, 1992, abandoned. This PCT application May 6, 1993, Ser. No. 351,470

Int. Cl.[6] A61K *31/705;31/56*

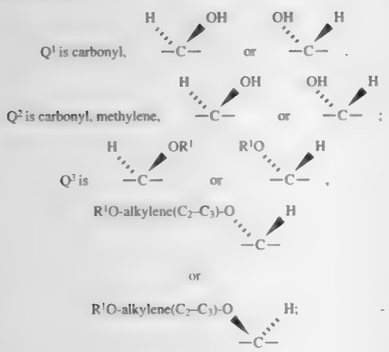
U.S. Cl. 514—26 **36 Claims**

1. A spirostanyl glycoside of Formula IA

Formula IA



wherein either (A):



Q^1 is carbonyl,

Q^2 is carbonyl, methylene,

Q^3 is

R^1O-alkylene(C_2–C_3)-O

or

R^1O-alkylene(C_2–C_3)-O

Q^4 and Q^3 are both methylene;

C_{25} is (R);

and wherein

R^1 is

β-D-glucopyranosyl,

β-D-glucopyranuronosyl,

β-D-2-acetamido-2-deoxy-glucopyranosyl,

β-D-galactopyranosyl,

β-D-fucopyranosyl,

β-L-fucopyranosyl,

β-D-xylopyranosyl,

β-L-xylopyranosyl,

α-D-arabanopyranosyl,

α-L-arabanopyranosyl,

α-D-cellobiosyl,

β-D-cellobiosyl,

β-D-lactosyl,

β-D-maltosyl,

β-D-gentiobiosyl,

3-O-β-D-galactopyrasnosyl-α-D-arabanopyranosyl or

β-D-maltotriosyl.

5,629,296

9A-N-(N'-CARBAMOYL)AND 9A-N-(N'-THIOCARBAMOYL) DERIVATIVES OF 9-DEOXO-9A-AZA-9A-HOMOERYTHROMYCIN A

Nedjeliko Kujundžić ; Gabrijela Kobrehel, and Željko Kelnerić , all of Zagreb, Croatia, assignors to Pliva farmaceutiska, kemijska, prehrambena i kozmeticka industrija, dionicko drustvo Zagreb, Zagreb, Croatia

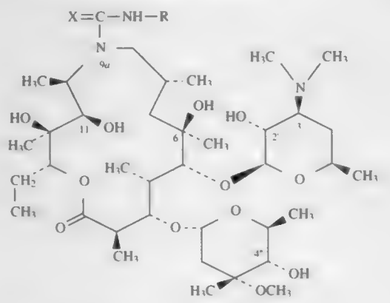
Filed Nov. 29, 1994, Ser. No. 350,990

Claims priority, application Croatia, Dec. 8, 1993, P931480A

Int. Cl.[6] A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—29 **17 Claims**

1. A compound of the general formula (I)



wherein

R is a C_1–C_3 alkyl, or

R is a mono- or bicyclic aryl group of up to 10 carbon atoms, or

R is an aralkyl wherein aryl group of said aralkyl is a mono- or bicyclic aromatic hydrocarbon of up to 10 carbon atoms and the alkyl group of said aralkyl contains 1 carbon atom, or

R is unsubstituted or substituted 5- to 6-membered heterocyclic group containing one or two hetero atoms wherein said hetero atom is N or O, or both

and X is O or S,

and a pharmaceutically acceptable addition salt with an acid selected from the group consisting of inorganic acid and organic acid.

17. A method for treating bacterial infections in humans and animals which comprises administering to a human or animals in need thereof an antibacterially effective amount of the compound of the formula (I) or a pharmaceutically acceptable acid addition salt thereof as claimed in claim 1, in combination with a pharmaceutically acceptable carrier.

5,629,297

MEDICAMENT FOR TREATING GASTROINTESTINAL DISORDERS

Andrew A. McColm, Greenford, United Kingdom, assignor to Glaxo Group Limited, United Kingdom

Continuation of Ser. No. 357,223, Dec. 12, 1994, which is a continuation of Ser. No. 54,085, Apr. 30, 1993, abandoned, which is a continuation of Ser. No. 946,576, Sep. 18, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,584

Claims priority, application United Kingdom, Sep. 20, 1991, 9120131

Int. Cl.[6] A61K *31/70;31/555;31/29*

U.S. Cl. 514—29 **14 Claims**

1. A method for treating gastrointestinal disorders caused or mediated by *H. pylori* infections in humans or animals which comprises administering to a human or animal in need thereof an amount of ranitidine bismuth citrate effective against *H. pylori* in combination with a pharmaceutically acceptable carrier and an amount of clarithromycin effective against *H. pylori* in combination with a pharmaceutically acceptable carrier, said ranitidine bismuth citrate and said clarithromycin being administered in relative amounts such that the combination provides a greater than additive effect, said administration being concurrent or nonconcurrent.

5,629,298

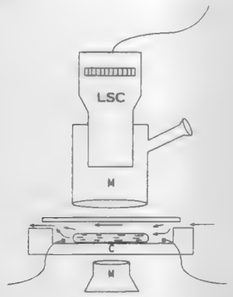
ADENOSINE AS A POSITIVE INOTROP IN THE COMPROMISED HEART

James G. Dobson, Jr., Shrewsbury, Mass., assignor to University of Massachusetts Medical Center, Worcester, Mass.

Filed Mar. 13, 1995, Ser. No. 402,884

Int. Cl.[6] C07H *19/16;19/167*

U.S. Cl. 514—45 **21 Claims**



1. A method for increasing the contractile performance of a compromised myocardium in a mammal, comprising administering a therapeutically effective amount of an adenosine A_2 receptor agonist other than adenosine to said mammal.

5,629,299

HYDROLYTIC STABILIZER FOR UNSTABLE ORGANIC IONS

Nesbitt D. Brown, 5139 Celestial Way, Columbia, Md. 21044; Bhupendra P. Doctor, 10613 Great Arbor Dr., Potomac, Md. 20854, and Joseph M. Marasco, 479 Brookside La., Somerville, N.J. 08876

Continuation of Ser. No. 912,569, Jul. 13, 1992, Pat. No. 5,238,927, which is a continuation of Ser. No. 621,654, Nov. 30, 1990, abandoned. This application Aug. 19, 1993, Ser. No. 108,290

Int. Cl.[6] A61K *31/70;31/44;* **A01N** *43/40*

U.S. Cl. 514—58 **37 Claims**

1. A storage-stable aqueous solution comprising an inclusion complex consisting essentially of a hydrolytically unstable water-soluble bis-quaternary pyridinium oxime with a cyclodextrin selected from the group consisting of alpha-cyclodextrins, beta-cyclodextrins and gamma-cyclodextrins, which cyclodextrin is capable of forming a hydrolytically stable inclusion complex with said bis-quaternary pyridinium oxime.

5,629,300

DRUG CONTAINING (−)-METRIPHONATE

Michael Boberg; Wolfgang Kanhai; Armin Kern; Volker Muschalek, all of Wuppertal, and Ulrich Pleiss, Wülfrath, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP93/01228, § 371 Date Nov. 10, 1994, § 102(e) Date Nov. 10, 1994, PCT Pub. No. WO93/24130, PCT Pub. Date Dec. 9, 1993

PCT Filed Dec. 9, 1993, Ser. No. 331,643

Claims priority, application Germany, May 26, 1992, 42 17 396.5

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—129 **10 Claims**

1. A composition consisting of:

(i) 0.1 to 99.5% by weight of (−)-metriphonate; and

(ii) 99.9 to 0.5% by weight of a pharmaceutically acceptable auxiliary, a pharmaceutically acceptable excipient or a combination thereof;

the total of (i)+(ii) being 100% by weight.

5,629,301

USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy L. Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 465,027, Jun. 5, 1995, Pat. No. 5,573,759, which is a division of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 796,750, Nov. 25, 1991, abandoned. This application Aug. 6, 1996, Ser. No. 693,385

Int. Cl.[6] A61K *31/60;7/40;7/42*

U.S. Cl. 514—159 **4 Claims**

1. A method for regulating reversing wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

(a) a safe and effective amount of salicylic acid,

(b) a surfactant, and

(c) a pharmaceutically-acceptable carrier.

5,629,302

BIOTENSIDE ESTERS AND PHOSPHATIDES WITH VITAMIN-D AND VITAMIN-E COMPOUNDS; PROCESSES FOR THEIR PREPARATION; SPONTANEOUSLY DISPERSIBLE AGENTS CONTAINING THESE COMPOUNDS, AND THEIR USE FOR THE TREATMENT OF TUMORS

Carl Eugster, Riehen; Conrad Hans Eugster, Wallisellen; Walter Haldemann, Binningen, all of Switzerland, and Giorgio Rivara, Turin, Italy, assignors to Marigen S.A., Riehen, Switzerland

Division of Ser. No. 312,980, Sep. 30, 1994, Pat. No. 5,502,224, which is a continuation of Ser. No. 42,251, Apr. 2, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,633

Claims priority, application Switzerland, Jun. 4, 1991, 01662191

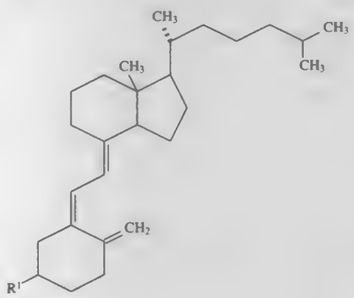
Int. Cl.[6] C07C *401/00;* **A61K** *31/59*

U.S. Cl. 514—167 **11 Claims**

1. A spontaneously dispersible concentrate which forms a micro-emulsion in water comprising:

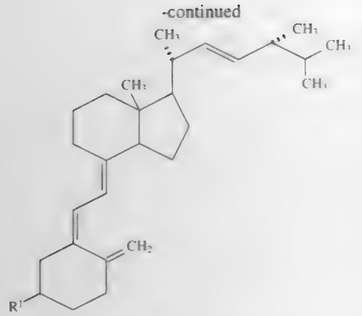
0.001 to 15% by weight of an ester or a combination of esters of a vitamin-D compound according to one of formulae (I) to (IV):

(I)

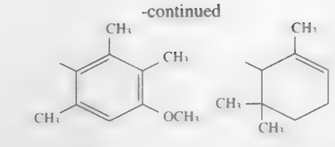


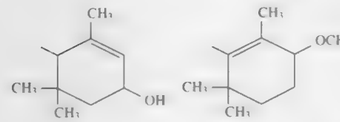
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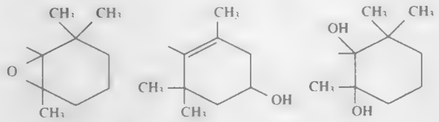


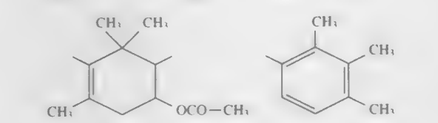
(II)



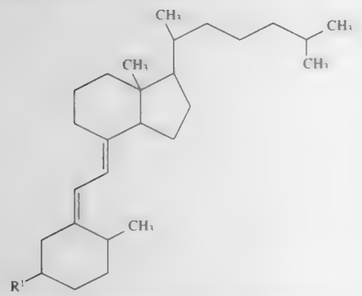


(III)

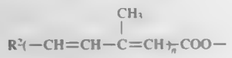




(IV)

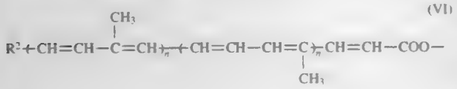


wherein R^1 is selected from the group consisting of a C_{1-32} alkyl carbonyloxy, a C_{2-32} alkenyl carbonyloxy, a C_{2-32} alkapolyene carbonyloxy, a group of formula (V):



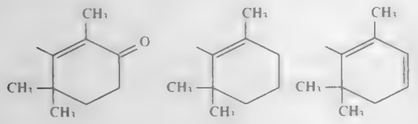
(V)

a group of formula (VI):



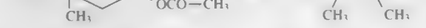
(VI)

wherein n is 1. 2. 3. 4 or 5 and R^2 is a radical selected from the group consisting of



-continued

and



0 to 40% by weight of a solvent or solvent mixture which is pharmaceutically acceptable and is a hydrotropic or coemulsifier;

0.001 to 90% by weight of a pharmaceutically acceptable surfactant or surfactant mixture; and

optionally up to 10% by weight of a vitamin or provitamin; and optionally up to 10% by weight of a free acid.

5,629,303

CONTROLLED RELEASE SYSTEMS AND LOW DOSE ANDROGENS

Fernand Labrie, and Martin Lepage, both of Quebec, Canada, assignors to Endorecherche Inc., Quebec, Canada

Division of Ser. No. 900,817, Jun. 24, 1992, Pat. No. 5,434,146, which is a continuation-in-part of Ser. No. 724,532, Jun. 28, 1991, abandoned. This application Mar. 3, 1995, Ser. No. 398,096

Int. Cl.[6] A01N *45/00;* **A61K** *31/56*

U.S. Cl. 514—169 **16 Claims**

1. A method of treating or preventing endometrial cancer comprising administering to a patient in need of such treatment or prevention, an effective amount of sustained release particles, with or without additional pharmaceutical carriers or diluents, said particles comprising an androgenic steroid selected from the group consisting of medroxyprogesterone acetate or megestrol acetate, wherein said androgenic steroid is dispersed within a sustained-release binder which is biocompatible with human tissue and which undergoes biodegradation in the body into biocompatible metabolic products, wherein said particles are capable, under standard conditions, of releasing said androgenic steroid during and as result of said biodegradation of said binder at a rate and duration which maintains circulating serum levels of said androgenic steroid between 1.0 and 50.0 nanomoles per liter during a time period beginning 48 hours after administration and ending at least 28 days after administration.

5,629,304

THERAPEUTIC AGENT FOR THROMBOCYTOPENIA AND INDOLOCARBAZOLE DERIVATIVES

Chikara Murakata, Hachioji; Fumihiko Kanai; Yutaka Saitoh, both of Machida; Yukimasa Shiotsu, Tokyo; Takako Shiraki; Tatsuya Tamaoki, both of Machida; Shiro Akinaga, Suntogun, and Masami Okabe, Mishima, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

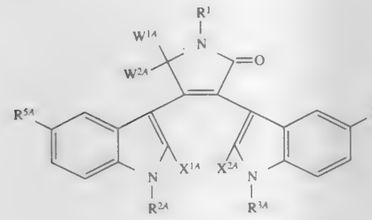
Continuation of Ser. No. 404,962, Mar. 16, 1995, abandoned. This application Apr. 25, 1996, Ser. No. 637,590

Claims priority, application Japan, Mar. 18, 1994, 6-049579

Int. Cl.[6] A61K *31/40;* **C07D** *487/12*

U.S. Cl. 514—183 **7 Claims**

1. A method of treating thrombocytopenia comprising administering, to a patient suffering from thrombocytopenia, an effective amount of an indolocarbazole derivative represented by the formula (I):



(I)

wherein R^1 represents a hydrogen atom; a substituted or unsubstituted lower alkyl group, a substituted or unsubstituted aralkyl group or a tetrahydropyranyl group; R^{2A} and R^{3A}, which may be the same or different, each represent a hydrogen atom, a substituted or unsubstituted lower alkyl group, a lower alkenyl group, or a substituted or unsubstituted aralkyl group; R^{4A} and R^{5A}, which may be the same or different, each represent a hydrogen atom, a formyl group, a hydroxyl group or a halogen atom; W^{1A} and W^{2A} represent hydrogen atom or combine together to represent oxygen atom; and X^{1A} and X^{2A} represent hydrogen atom or combine together to represent a single bond, or a pharmaceutically acceptable salt thereof, provided that when X^A forms a single bond, then R^1, R^{2A}, R^{3A}, R^{4A}, R^{5A}, and W^{1A} and W^{2A} do not simultaneously represent a hydrogen atom.

5,629,305

SYNERGISTIC COMBINATION OF A SUBSTANCE WITH GASTRIC ACID SECRETION INHIBITING EFFECT AND AN ACID DEGRADABLE ANTIBIOTIC

Arne T. Eek, Trosa, and Sven Erik Sjöstrand, Södertälje, both of Sweden, assignors to ASTRA Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 51,722, Apr. 22, 1993. This application May 16, 1995, Ser. No. 441,766

Claims priority, application Sweden, Apr. 24, 1992, 9201297; Jan. 8, 1993, 9300029

Int. Cl.[6] A61K *31/43;31/44;31/335*

U.S. Cl. 514—199 **19 Claims**

1. A pharmaceutical composition for the treatment of gastritis and peptic ulcer comprising a therapeutically effective amount of a proton pump inhibitor which increases intragastric pH; and a therapeutically effective amount of an acid degradable antibacterial compound.

5,629,306

7-ALKYLIDENE CEPHALOSPORANIC ACID DERIVATIVES AND METHODS OF USING THE SAME

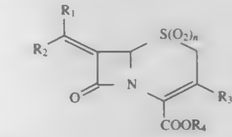
John D. Buynak, and Brian Bachmann, both of Dallas, Tex., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Dec. 9, 1994, Ser. No. 354,850

Int. Cl.[6] C07D *501/22;501/58;* **A61K** *31/545*

U.S. Cl. 514—206 **19 Claims**

1. A compound of formula (1)



(1)

wherein n is 1;

R_1 and R_2 are the same or different and are selected from the group consisting of

a) hydrogen;

b) linear or branched C_{1-10}-alkyl;

c) halogen;

d) hydroxy-C_{1-10}-alkyl;

e) C_{1-10}-alkoxy;

f) C_{2-10}-alkanoyloxy;

g) C_{2-10}-alkene;

h) C_{2-10}-alkene substituted with one or more groups selected from the group consisting of chlorine, fluorine, bromine or phenyl;

i) C_{1-10}-alkoxycarbonyl;

j) C_{1-10}-alkoxycarbamido;

k) N-C_{1-10}-alkoxy-N-C_{1-10}-alkylaminocarbonyl;

l) halo-C_{1-10}-alkyl;

m) C_{6-10}-aryl;

n) C_{6-10}-aryl substituted with one or more groups selected from the group consisting of ethyl, n-propyl, isopropyl, amino, methylamino and dimethylamino;

o) a heterocycle selected from the group consisting of triazolyl, triazinyl, oxazoyl, isoxazolyl, oxazolidinoyl, isoxazolidinoyl, thiazolyl, isothiazoyl, pyrazolyl, imidazolyl, pyrrolyl, pyrazinyl, pyridinyl, morpholinyl, quinolinyl, isoquinolinyl, indolyl, and pyrimidinyl; and,

p) —COOH or —COOY, wherein Y is pharmaceutically acceptable cation;

R_3 is selected from the group consisting of

1) —COOH;

2) chlorine or fluorine;

3) trifluoromethyl;

4) —CHO; and,

5) —CH_2M where M is selected from the group consisting of

a) hydrogen;

b) halogen;

c) hydroxy;

d) C_{1-10}-alkoxy;

e) C_{6-10}-aryloxy;

f) C_{6-10}aryl-C_{1-10}-alkoxy;

g) mercapto;

h) mercapto substituted with one or more groups selected from the group consisting of methyl, ethyl or phenyl;

i) C_{2-10}-acylthio;

j) C_{2-10}-carbamoyloxy;

k) C_{2-10}-carbamoyloxy substituted with one or more groups selected from the group consisting of —COOH, aminophenyl, phenyl, C_{1-6}-alkyl, chlorine, bromine or fluorine;

l) a quaternary ammonium salt;

m) amino or amido; and,

n) amino or amido substituted with one or more groups selected from the group consisting of C_{1-10}-alkyl groups;

R_4 is selected from the group consisting of

a) hydrogen; and,

b) pharmaceutically acceptable cations.

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5,629,307

USE OF IBOGAINE IN REDUCING EXCITOTOXIC BRAIN DAMAGE

John W. Olney, 1 Lorenzo La., St. Louis, Mo. 63124

Continuation-in-part of Ser. No. 877,839, May 1, 1992, which is a continuation-in-part of Ser. No. 467,139, Jan. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 424,548, Oct. 20, 1989, Pat. No. 5,034,400. This application Mar. 6, 1995, Ser. No. 398,731

Int. Cl.[6] **A61K** *31/55;31/54;31/44;31/135*

U.S. Cl. 514—214 **5 Claims**

1. A method for treating patients to reduce excitotoxic neuronal damage, comprising the step of administering, to a mammalian patient suffering or at risk of excitotoxic neuronal damage, a pharmacologically acceptable formulation containing at least one neuroprotective drug selected from the group consisting of ibogaine, ibogamine, tabernanthin, and pharmaceutically acceptable isomers, analogs, and salts thereof which penetrate mammalian blood-brain barriers, at a dosage which is therapeutically effective in suppressing glutamate-mediated excitatory activity at NMDA receptors without causing pathologic side effects in cerebrocortical neurons.

5,629,308

IMIDAZO [1,2-A] (PYRROLO, THIENO OR FURANO) [2,3-D] AZEPINE DERIVATIVES

Frans E. Janssens, Bonheiden; Gaston S. M. Diels, Ravels, and Joseph E. Leenaerts, Rijkevorsel, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

PCT No. PCT/EP93/03321, § 371 Date May 8, 1995, § 102(e) Date May 8, 1995, PCT Pub. No. WO94/13680, PCT Pub. Date Jun. 23, 1994

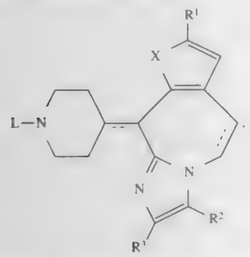
PCT Filed Nov. 25, 1993, Ser. No. 433,386

Claims priority, application European Pat. Off., Dec. 4, 1992, 92203778

Int. Cl.[6] **A61K** *31/55;* **C07D** *487/14;491/147;495/14*

U.S. Cl. 514—214 **14 Claims**

1. A compound having the formula



(I),

a pharmaceutically acceptable addition salt or a stereochemically isomeric form thereof, wherein

each of the dotted lines independently represents an optional bond;

R^1 represents hydrogen, C_{1-4}alkyl, halo, ethenyl substituted with hydroxycarbonyl or C_{1-4}alkyloxycarbonyl, hydroxyC_{1-4}alkyl, formyl, hydroxycarbonyl or hydroxycarbonylC_{1-4}alkyl;

R^2 represents hydrogen, C_{1-4}alkyl, ethenyl substituted with hydroxycarbonyl or C_{1-4}alkyloxycarbonyl, C_{1-4}alkyl substituted with hydroxycarbonyl or C_{1-4}alkyloxycarbonyl, hydroxyC_{1-4}alkyl, formyl or hydroxycarbonyl;

R^3 represents hydrogen, C_{1-4}alkyl, hydroxyC_{1-4}alkyl, phenyl or halo;

X represents O, S or NR_4;

R^4 represents hydrogen, C_{1-6}alkyl or C_{1-4}alkylcarbonyl;

L represents hydrogen; C_{1-6}alkyl; C_{1-6}alkyl substituted with one substituent selected from the group consisting of hydroxy, C_{1-4}alkyloxy, hydroxycarbonyl, C_{1-4}alkyloxycarbonyl, C_{1-4}alkylaminocarbonyl, C_{1-4}alkyloxycarbonylamino, C_{1-4}alkyloxycarbonylC_{1-4}alkyloxy, hydroxycarbonylC_{1-4}alkyloxy, C_{1-4}alkylaminocarbonylamino, C_{1-4}alkylaminothiocarbonylamino, aryl and aryloxy; C_{1-6}alkyl substituted with both hydroxy and aryloxy; C_{3-6}alkenyl; C_{3-6}alkenyl substituted with aryl;

wherein each aryl is phenyl or phenyl substituted with halo, cyano, hydroxy, C_{1-4}alkyl, C_{1-4}alkyloxy or aminocarbonyl or,

L represents a radical of formula

—Alk-y-Het^1 (a-1),

—Alk-NH-CO-Het^2 (a-2) or

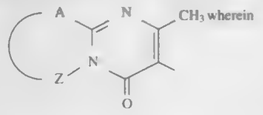
—Alk-Het^3 (a-3); wherein

Alk represents C_{1-4}alkanediyl;

Y represents O, S or NH;

Het^1, Het^2 and Her^3 each represent furanyl, thienyl, oxazolyl, thiazolyl or imidazolyl each optionally substituted with one or two C_{1-4}alkyl substituents; pyrrolyl or pyrazolyl optionallly substituted with formyl, hydroxyC_{1-4}alkyl, hydroxycarbonyl, C_{1-4}alkyloxycarbonyl or with one or two C_{1-4}alkyl substituents; thiadiazolyl or oxadiazolyl optionally substituted with amino or C_{1-4}alkyl; pyridinyl, pyrimidinyl, pyrazinyl or pyridazinyl each optionally substituted with C_{1-4}alkyl, C_{1-4}alkyloxy, amino, hydroxy or halo; and

Het^3 may also represent 4,5-dihydro-5-oxo-1H-tetrazolyl substituted with C_{1-4}alkyl, 2-oxo-3-oxazolidinyl, 2,3-dihydro-2-oxo-1H-benzimidazol-1-yl or a radical of formula



A-Z represents S-CH=CH, S-CH_2-CH_2, S-CH_2-CH_2-CH_2, CH=CH-CH=CH, or CH_2-CH_2-CH_2-CH_2.

5,629,309

2-SUBSTITUTED INDANE-2-MERCAPTOACETYLAMIDE DISULFIDE DERIVATIVES USEFUL AS INHIBITORS OF ENKEPHALINASE AND ACE

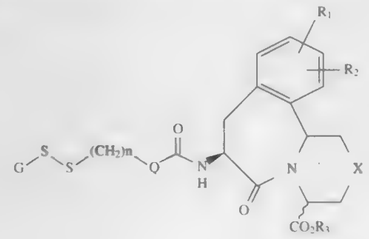
Gary A. Flynn; Douglas W. Beight; Alan M. Warshawsky; Shujaath Mehdi; John F. French, and John H. Kehne, all of Cincinnati, Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 397,304, Mar. 2, 1995, Pat. No. 5,567,814, which is a division of Ser. No. 195,526, Feb. 14, 1994, abandoned. This application Dec. 14, 1995, Ser. No. 572,326

Int. Cl.[6] **A61K** *31/33;* **C07D** *223/10*

U.S. Cl. 514—214 **13 Claims**

1. A method of inhibiting enkephalinase in a patient in need thereof comprising administering to said patient an effective enkephalinase inhibitory amount of a compound of formula



Formula (I)

wherein

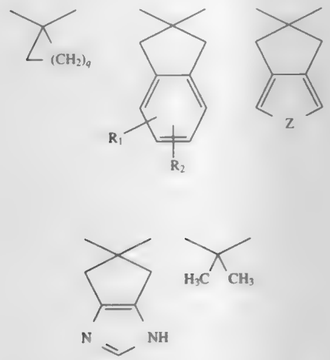
n is an integer from 0 to 3;

R_1 and R_2 are each time taken independently chosen from the group consisting of; hydrogen, hydroxy, —OR_4 wherein R_4 is a C_1–C_4 alkyl or an Ar—Y— group wherein Ar is a phenyl or naphthyl group unsubstituted or substituted with from one to three substituents selected from the group consisting of methylenedioxy, hydroxy, C_1–C_4 alkoxy, fluoro and chloro; and Y is a C_0–C_4 alkyl; or, where R_1 and R_2 are attached to adjacent carbon atoms, R_1 and R_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

R_3 is hydrogen, C_1–C_4 alkyl, —CH_2O—C(O)$C(CH_3)_3$;

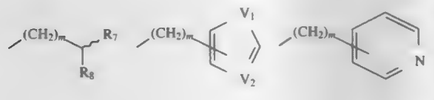
X is —$(CH_2)_p$—, O, S, NR_5, or NC(O)R_6 wherein p is an integer 0 or 1, R_5 is hydrogen, a C_1–C_4 alkyl, or an Ar—Y— group, and R_6 is —CF_3, C_1–C_{10} alkyl, or an Ar—Y— group;

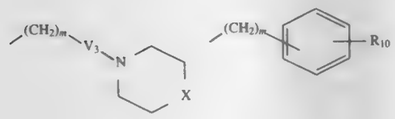
Q is a alkylene radical chosen from the group

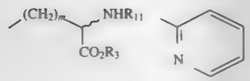


wherein q is an integer from 1 to 5 and Z is O, S, NH;

G is a radical chosen from the group;







wherein

m is an integer from 1 to 3;

R_7 is hydrogen, C_1–C_6 alkyl, —$CH_2CH_2S(O)_kCH_3$, or Ar—Y— wherein k is an integer form 0 to 2;

R_8 is hydrogen, hydroxy, amino, C_1–C_6 alkyl, N-methylamino, N,N-dimethylamino, —CO_2R_3 —OC(O)R_9 wherein R_9 is hydrogen, C_1–C_6 alkyl, or phenyl;

R_{10} is 1 or 2 substituents independently chosen from the group consisting of; hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, or halogen;

R_{11} is hydrogen, C_1–C_6 alkyl, or Ar—Y— group;

V_1 is O, S, or NH;

V_2 is N or CH;

V_3 is a direct bond or —C(O)—;

or stereoisomers or pharmaceutically acceptable salts thereof.

5,629,310

LOW DOSE TEMAZEPAM

William R. Sterling, 138 Konner Ave., Pine Brook, N.J. 07058

Continuation of Ser. No. 260,584, Jun. 16, 1994, abandoned, which is a division of Ser. No. 32,216, Mar. 17, 1993, Pat. No. 5,326,758, which is a division of Ser. No. 876,269, Apr. 30, 1992, Pat. No. 5,211,954, which is a continuation of Ser. No. 709,866, Jun. 3, 1991, abandoned, which is a division of Ser. No. 569,787, Aug. 17, 1990, Pat. No. 5,030,632, which is a continuation of Ser. No. 434,142, Nov. 9, 1989, abandoned, which is a continuation of Ser. No. 295,332, Jan. 10, 1989, abandoned, which is a continuation of Ser. No. 910,571, Sep. 23, 1986, abandoned. This application Apr. 17, 1995, Ser. No. 424,135

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

Int. Cl.[6] **A61K** *31/55;9/48;9/14*

U.S. Cl. 514—221 **2 Claims**

1. A method of treating insomnia in a human in need of said treatment which comprises administering orally to said human a temazepam formulation consisting essentially of 6 to 8 milligrams of crystalline temazepam having a surface area of from 0.65 to 1.1 m^2/g and 95% of the temazepam having a particle size of less than 65 microns.

5,629,311

SUBSTITUTED CYCLOHEXANOL ESTERS THEIR USE FOR TREATING DISEASES AND PHARMACEUTICAL PREPARATIONS

Horst Hemmerle, Lorsch; Gerrit Schubert, Kelkheim; Peter Below, Frankfurt; Andreas Herling, Bad Camberg, and Hans-Jörg Burger, Frankfurt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

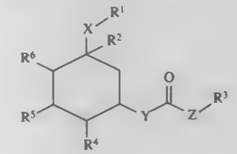
Division of Ser. No. 388,511, Feb. 14, 1995, Pat. No. 5,567,725. This application Jul. 19, 1996, Ser. No. 684,240

Claims priority, application Germany, Feb. 16, 1994, 44 04 848.3

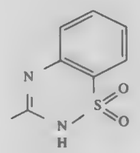
Int. Cl.[6] **A61K** *31/54;* **C07D** *285/24*

U.S. Cl. 514—223.2 **5 Claims**

1. A cyclohexanol ester of the formula I:



in which R^1 is



in which aromatic rings may be substituted at least once by F, Cl, Br, I, OH, O—C_1–C_4-alkyl, C_1–C_4-alkyl, CF_3, NO_2 or CN,

R^2 is C_1–C_{10}-alkyl(R^{11})$_m$, O—C_1–C_{10}-alkyl(R^{11})$_m$, C_2–C_{10}-alkenyl (R^{11})$_m$, O—C_3–C_{10}-alkenyl (R^{11})$_m$, C_2–C_{10}-alkynyl (R^{11})$_m$, O—C_3–C_{10}-alkynyl (R^{11})$_m$, S— C_1–C_{10}-alkyl (R^{11})$_m$, S—C_3–C_{10}-alkenyl (R^{11})$_m$, S— C_3–C_{10}-alkynyl (R^{11})$_m$, NH—C_3–C_{10}-alkyl (R^{11})$_m$, NH—C_3–C_{10}-alkenyl (R^{11})$_m$ or NH—C_3–C_{10}-alkynyl (R^{11})$_m$, where R^{11} is optionally substituted by R^{12},

R^3, R^{11} and R^{13} are alkyl having from 1 to 10 carbon atoms, cycloalkyl having from 3 to 8 ring carbon atoms, phenyl,

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naphthyl, phenanthryl, pyridyl, thienyl, furyl, pyrimidyl, indolyl, imidazolyl, coumadnyl, phthaliminyl, quinolyl, piperazinyl, -tetrazolyl, triazolyl, oxazolyl or their thieno-fused, pyridino-fused, pyrimidino-fused or benzo-fused derivatives, where the aromatic radical or heteroaromatic radical maybe substituted at least once, identically or differently, by F, Cl, Br, I, OH, $—NO_2$, CN, C_1–C_4-alkoxy, C_1–C_4-alkyl, NR^8R^9, phenyl, benzyl, thienyl, furyl, imidazolyl, pyridyl, O-phenyl or O-benzyl, and R^3, R^{11} and R^{13} are identical or different:

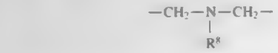
R^4, R^5 and R^6 are H, OH, an OH group protected by customary alcohol protective groups, F, Cl or Br, or have the meanings given for R^2, where R^4, R^5 and R^6 are identical or different:

R^7 is C_1–C_4-alkyl, phenyl or benzyl;

R^8 and R^9 are H, C_1–C_4-alkyl, C_1–C_4-alkanoyl or phenyl which is optionally substituted by F, Cl, Br, I, OH, O—C_1–C_4-alkyl, CF_3, $—NO_2$ or CN, where R^8 and R^9 are identical or different, or R^8 and R^9 form, together with the nitrogen atom, a 4- to 10-membered, saturated heterocyclic ring in which a CH_2 group may be optionally replaced by O, S or NR^{10} R^{10} is H, C_1–C_4-alkyl, phenyl or benzyl;

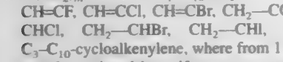
R^{12} is phenyl, naphthyl, phenanthryl, pyridyl, thienyl, furyl, thiazolyl, pyrimidyl, indolyl, imidazolyl, coumarinyl, phthaliminyl, quinolyl, piperazinyl, tetrazolyl, triazolyl, oxazolyl or their thieno-fused or benzo-fused derivatives, where the aromatic radical or heteroaromatic radical may be substituted at least once, identically or differently, by F, Cl, Br, I, OH, CF_3, $—NO_2$, CN, C_1–C_4-alkoxy, C_1–C_4-alkyl, NR^8R^9, phenyl, benzyl, thienyl, furyl, imidazolyl, pyridyl, O-phenyl or O-benzyl;

X is $(CH_2)_m$, —CH=CH—, —C≡C—, $—CH_2—O—CH_2—$, $—CH_2—S—CH_2—$ or



Y is $(CH_2)_m$, O, S or NR^8.

Z is $(CH_2)_m$, S, O, S—C_1–C_{10}-alkyl, O—C_1–C_{10}-alkyl, CH=CH, CH=CF, CH=CCl, CH=CBr, CH_2—CO, CH_2—CHF, CH_2—CHCl, CH_2—CHBr, CH_2—CHI, C_3–C_{10}-cycloalkylene, C_3–C_{10}-cycloalkenylene, where from 1 to 3 ring carbon atoms may be replaced by sulfur atoms, oxygen atoms or nitrogen atoms, $COOR^7$, C≡C, CH=C(C_1–C_4-alkyl), CH=C(CN), CH=C(NR^8R^9), CH=C(C_1–C_4-alkanoyl), or CH=C(R^{13}) or NR^8, and, if Y is oxygen,



may together be an amino acid residue, selected from the group consisting of Ala, Arg, Ash, Asp, Cys, Gin, Glu, Gly, His, Ile, Leu, Lys, Phe, Pro, Set, Thr, Trp, Tyr and their derivatives protected by customary protective groups.

n is zero, 1 or 2.

m is zero, 1, 2, 3 or 4, or a physiologically tolerated salt of a compound of the formula I.

5,629,312

USE OF LAMOTRIGINE FOR TREATING AIDS-RELATED NEURAL DISORDERS

Anne Bousseau; Adam Doble, and Erik Louvel, all of Paris, France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR94/00210, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO94/20108, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 25, 1994, Ser. No. 530,253

Claims priority, application France, Mar. 5, 1993, 93 02568

Int. Cl.[6] A61K *31/53*

U.S. Cl. 514—242 **4 Claims**

1. A method for increasing neuronal survival in the presence of GP-120 protein in a host infected with the HIV-1 virus, comprising administering to a host in need thereof an effective amount of lamotrigine or a pharmaceutically acceptable salt thereof.

5,629,313

3-HETEROARYL-1-PYRROLIDINEALKYLAMINES AND DERIVATIVES THEREOF AND THEIR THERAPEUTIC UTILITY

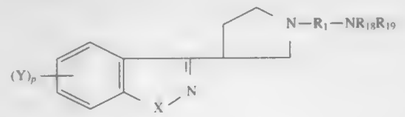
Joseph T. Strupczewski, Flemington; Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somverville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 467,401

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/00;403/00;417/00;419/00, 221/04;275/04;239/02*

U.S. Cl. 514—249 **14 Claims**

1. A compound of the formula:



wherein

X is —O—, —S—, —NH—, or $—N(R_2)$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3-C_{10}) cycloalkyl, aroyl, (C_2-C_{18}) alkanoyl, (C_1-C_{18}) alkoxycarbonyl and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{27})_n—$, where n is 0, 1, 2 or 3; or

$—CHR_{24}CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CHR_{24}—$,

$—CHR_{24}—CH═CH—CR_{23}R_{24}—CHR_{24}—$,

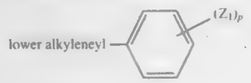
$—CHR_{24}—CR_{23}R_{24}—CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C≡C—CHR_{24}$,

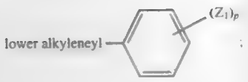
the —CH═CH— bond being cis or trans;

R_{23} is hydrogen, (C_1-C_{18}) linear alkyl, phenyl, hydroxy, (C_1-C_{18}) alkoxy, aryloxy, aryl (C_1-C_{18}) alkyloxy, (C_1-C_{18}) alkanoyloxy hydroxy (C_1-C_6) alkyl, (C_1-C_{18}) alkoxy (C_1-C_6) alkyl, phenyl (C_1-C_6) alkyloxy, aryl (C_1-C_{18}) alkyloxy (C_1-C_6) alkyl, (C_1-C_{18}) alkanoyloxy (C_1-C_6) alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1-C_{18}) linear alkyl, phenyl, hydroxy (C_1-C_6)alkyl, (C_1-C_{18})alkoxy (C_1-C_6)alkyl, phenyl(C_1-C_6)alkyloxy, aryl(C_1-C_{18})alkyoxy (C_1-C_6)alkyl, (C_1-C_{18})alkanoyloxy(C_1-C_6)alkyl or



where Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S;

where R_{18} and R_{19} are independently selected from the group consisting of:

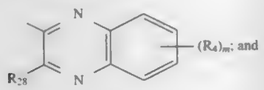
hydrogen,

(C_1-C_{18} straight or branched chain) alkyl,

—C(═O)—O—(C_1-C_{18})alkyl,

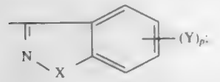
—C(═O)—(C_1-C_{18})alkyl,

—C(—O)—pyridyl,



where $NR_{18}R_{19}$ taken together form a ring structure selected from the group consisting of piperidinyl, morpholinyl, and piperazinyl;

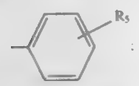
where the piperidinyl or piperazinyl ring is optionally substituted by



where X, y, p, and R_1 are as previously defined;

where R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1-C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1-C_{18}) acyl amino, (C_1-C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(═O)—(C_1-C_{18}straight or branched chain) alkyl or —C(═O)—aryl;

where aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

R_{28} is hydrogen, (C_1-C_6)alkyl, aryl(C_1-C_6)alkyl, phenyl or substituted phenyl;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4-C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4-C_{18})alkoxycarbonyl group;

where aryl is as defined above;

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,629,314

METHODS AND COMPOSITIONS FOR REDUCING PYRIMIDINE PHOTOPRODUCTS

Frances C. Gaskin, 298 State St., Albany, N.Y. 12210

Filed May 15, 1995, Ser. No. 440,626

Int. Cl.[6] A61K *31/505;7/42*

U.S. Cl. 514—256 **8 Claims**

1. A method for reducing pyrimidine dimer formation in human skin comprising the step of:

a) applying an effective amount of melanin to human skin, wherein said melanin is in an amount effective to reduce pyrimidine dimer formation, and wherein said melanin is in a vehicle suitable for topical application.

5,629,315

TREATMENT OF DISEASES USING ENANTIOMERICALLY PURE HYDROXYLATED XANTHINE COMPOUNDS

James A. Bianco, Seattle; Paul Woodson, Bothell; David Porubek, Edmonds, and Jack Singer, Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

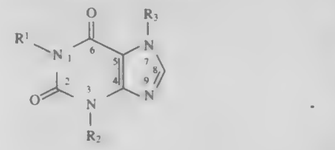
Division of Ser. No. 343,810, Nov. 22, 1994, abandoned, which is a division of Ser. No. 307,554, Sep. 16, 1994, abandoned, which is a continuation of Ser. No. 13,977, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,665, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,354, Mar. 4, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,900

The portion of the term of this patent subsequent to Jun. 1, 2015, has been disclaimed.

Int. Cl.[6] A61K *31/52*

U.S. Cl. 514—263 **5 Claims**

1. A method for treating a disease mediated by abnormal IL-1 signaling activity, comprising administering an effective amount of a compound wherein the compound has a formula:



wherein:

R_1 is a substantially pure resolved R enantiomer ω-1, secondary alcohol-substituted alkyl (C_{5-8}) group; and

R_2 and R_3 are independently hydrogen atom or an alkyl (C_{1-12}) or alkoxyl (C_{1-12}), or a pharmaceutical composition thereof.

5,629,316

STABILIZED SOLID PHARMACEUTICAL PREPARATION AND METHOD OF PRODUCING THE SAME

Masahiko Kurihara, Ikeda; Shunichi Itoh, Suita; Kou Moriyama, Tokyo; Mitsutaka Isobe, and Kenichiro Kiyoshima, both of Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 28, 1994, Ser. No. 266,641

Claims priority, application Japan, Jun. 30, 1993, 5-161158

Int. Cl.[6] A01N *43/90;* **A61K** *31/33*

U.S. Cl. 514—264 **13 Claims**

1. A stabilized solid pharmaceutical preparation which comprises a dextromethorphan and a phenylpropanolamine as active ingredients and a caffeine as stabilizer, the content of the caffeine being 10 to 300 parts by weight relative to 100 parts by weight of each of said active ingredients.

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5,629,317

TETRAHYDRO-BETA-CARBOLINES

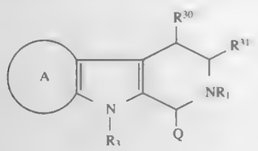
James E. Audia, Indianapolis, Ind.; Stephen R. Baker, Camberley, England; Jesus E. Carrera, Madrid, Spain; Carlos L. Peteira, Madrid, Spain, and Concepcion P. Tercero, Madrid, Spain, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 380,565, Feb. 6, 1995, abandoned. This application May 19, 1995, Ser. No. 444,450

Int. Cl.[6] A61K *31/44;* **C07D** *471/10;487/04;487/10*

U.S. Cl. 514—278 **18 Claims**

1. A compound of the Formula I



I

wherein

Q is R_{34};

R_{34} is spirobicyclic, substituted spirobicyclic, bicyclic or substituted bicyclic having an unsaturated or saturated stable 7 to 12 member bridged or fused bicyclic carbon ring system;

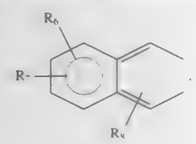
R_1 is hydrogen or C_1–C_3 alkyl;

R_2 is hydrogen or C_1–C_6 alkyl;

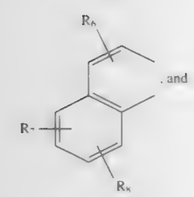
R_3 is hydrogen or C_1–C_3 alkyl;

R_4 is C_5–C_8 cycloalkyl, substituted C_5–C_8 cycloalkyl, C_5–C_8 cycloalkenyl, substituted C_5–C_8 cycloalkenyl, bicyclic or substituted bicyclic;

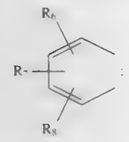
A is selected from the group consisting of



(IIa)



(IIIa)



(IVa)

wherein

R_6 and R_7 are, independently, hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, COR_5, C_1–C_{10} alkanoyl, CO_2R_5, (C_1–C_6 alkyl)$_m$amino, NO_2, —SR_5, or OR_5;

m is 1 or 2;

R_5 is independently hydrogen or C_1–C_4 alkyl;

R_5 is C_1–C_4 alkyl;

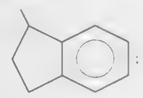
R_8 is independently selected from the group consisting of an R_6 group, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl, substituted C_5–C_8 cycloalkenyl, C_5–C_8 cycloalkenyl-(C_1–C_3)alkyl, C_7–C_{16} arylalkyl; or

R_6 and R_7 together with the carbon atoms of group A form a 5- to 8-member carbon ring;

R^{30} and R^{31} join to form a 3 to 8 member carbon ring; or

R^{30} and R^{31} are independently selected from the group consisting of C_1–C_6 alkyl and C_2–C_6 alkenyl;

substituted cycloalkyl is substituted with from one to four substituents independently selected from the group consisting of C_1–C_6 alkyl, NO_2, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, C_2–C_6 alkenyl, CO_2R_5, (C_1–C_6 alkyl)$_m$ amino, —SR_5, and OR_5 or; substituted cycloalkyl, substituted spirobicyclic and substituted bicyclic are each independently substituted with from one to four substituents independently selected from the group consisting of C_1–C_6 alkyl, NO_2, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, C_2–C_6 alkenyl, COR_5, C_1–C_{10} alkanoyl, C_7–C_{16} arylalkyl, CO_2R_5, (C_1–C_6 alkyl)$_m$ amino, —SR_5, and OR_5; wherein R_5 is independently hydrogen or C_1–C_4 alkyl; bicyclic is selected from the group consisting of naphthyl, dicyclohexyl and dicyclohexenyl; spirobicyclic is selected from the group consisting of naphthyl, dicyclohexyl, dicyclonhexenyl, 1,2,3,4-tetrahydronaphthol and



a pharmaceutically acceptable salt or solvate thereof.

5,629,318

METHOD OF TREATMENT OF CHRONIC PROSTATITIS WITH 17β-N-MONOSUBSTITUTED-CARBAMOYL-4-AZA-5α-ANDROST-1-EN-3-ONES

Glenn J. Gormley, and Elizabeth Stoner, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

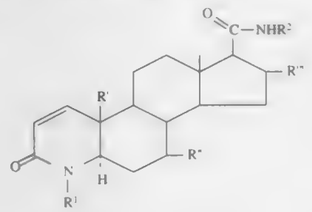
PCT No. PCT/US93/11155, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/14452, PCT Pub. Date Jul. 7, 1994

PCT Filed Nov. 18, 1993, Ser. No. 448,451

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—284 **8 Claims**

1. A method of treating chronic prostatitis in human males, which comprises: daily administering a therapeutically effective amount of a compound of the formula:



wherein:

R^1 is hydrogen, methyl or ethyl;

R^2 is a hydrocarbon radical selected from straight or branched chain alkyl, cycloalkyl, or aralkyl of from 1–12 carbons or monocyclic aryl optionally containing 1 or more lower alkyl substituents of from 1–2 carbon atoms and/or 1 or more halogen substituents;

R' is hydrogen or methyl;

R" is hydrogen or β-methyl; and

R'" is hydrogen, α-methyl or β-methyl.

5,629,319

HYPOGLYCEMIC AGENT FROM CRYPTOLEPIS

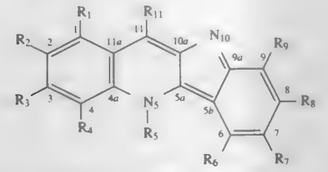
Jian Luo, Brisbane; Diana M. Fort, Pacifica; Donald E. Bierer, Daly City, and Reimar C. Bruening, San Carlos, all of Calif., assignors to Shaman Pharmaceuticals, Inc., South San Francisco, Calif.

Division of Ser. No. 314,188, Sep. 28, 1994. This application Jun. 6, 1995, Ser. No. 472,036

Int. Cl.[6] A61K *31/44;31/40*

U.S. Cl. 514—284 **11 Claims**

1. A method for reducing the blood glucose of a mammal, comprising administering to said mammal a hypoglycemically effective amount of a composition comprising a compound having the following structure or a pharmaceutically acceptable salt thereof



I

said compound selected from group consisting of:

(a) where R_1–R_4 and R_6–R_9 and R_{11}=H, and R_5=CH_3;

(b) where R_1–R_4 and R_6–R_9 and R_{11}=H, and R_5 is selected from the group of ethyl, isopropyl, benzyl, 4-hydroxybenzyl, 4-dimethylaminobenzyl, 4-chlorobenzyl, phenyl, 2-chlorophenyl, 3-chlorophenyl, 2-bromophenyl, 3-bromophenyl, 2-fluorophenyl, 3-fluorophenyl, 2-iodophenyl, 3-iodophenyl, 4-iodophenyl, 2-hydroxyphenyl, 3-hydroxyphenyl, 2-dimethylaminophenyl, 3-dimethylaminophenyl, 2-methoxyphenyl, 3-methoxyphenyl, 4-methoxyphenyl, 4-hydroxyphenyl, 4-dimethylaminophenyl, 4-chlorophenyl, 2-pyridino, 3-pyridino, 4-pyridino, 2-imidazol, 4-imidazol, 2-hydroxybenzyl, 3-hydroxybenzyl, 2-dimethylaminobenzyl, 3-dimethylaminobenzyl, 2-methoxybenzyl, 3-methoxybenzyl, 4-methoxybenzyl, 2-chlorobenzyl, 3-chlorobenzyl, 2-bromobenzyl, 3-bromobenzyl, 4-bromobenzyl, 2-fluorobenzyl, 3-fluorobenzyl, 4-fluorobenzyl, 2-iodobenzyl, 3-iodobenzyl, 4-iodobenzyl, 2-pyridylmethyl, 3-pyridylmethyl, 4-pyridylmethyl, 2-imidazolylmethyl, 4-imidazolymethyl, 4-bromophenyl, 4-fluorophenyl, cyclopropyl, and isobutyl;

(c) where R_1, R_4, R_6–R_9 and R_{11}=H, R_2=R_3=— CH_2—O—CH_2—, and R_5 is selected from the group consisting of ethyl, isopropyl, benzyl, 4-hydroxybenzyl, 4-dimethylaminobenzyl, 4-chlorobenzyl, phenyl, 2-chlorophenyl, 3-chlorophenyl, 2-bromophenyl, 3-bromophenyl, 2-fluorophenyl, 3-fluorophenyl, 2-iodophenyl, 3-iodophenyl, 4-iodophenyl, 2-hydroxyphenyl, 3-hydroxyphenyl, 2-dimethylaminophenyl, 3-dimethylaminophenyl, 2-methoxyphenyl, 3-methoxyphenyl, 4-methoxyphenyl, 4-hydroxyphenyl, 4-dimethylaminophenyl, 4-chlorophenyl, 2-pyridino, 3-pyridino, 4-pyridino, 2-imidazol, 4-imidazol, 2-hydroxybenzyl, 3-hydroxybenzyl, 2-dimethylaminobenzyl, 3-dimethylaminobenzyl, 2-methoxybenzyl, 3-methoxybenzyl, 4-methoxybenzyl, 2-chlorobenzyl, 3-chlorobenzyl, 2-bromobenzyl, 3-bromobenzyl, 4-bromobenzyl, 2-fluorobenzyl, 3-fluorobenzyl, 4-fluorobenzyl, 2-iodobenzyl, 3-iodobenzyl, 4-iodobenzyl, 2-pyridylmethyl, 3-pyridylmethyl, 4-pyridylmethyl, 2-imidazolylmethyl, 4-imidazolymethyl, 4-bromophenyl, 4-fluorophenyl, cyclopropyl, and isobutyl;

(d) where R_1–R_4, R_6–R_7 and R_{11}=H, R_8=R_9=—CH_2—O—CH_2—, and R_5 is selected from the group consisting of ethyl, isopropyl, benzyl, 4-hydroxybenzyl, 4-dimethylaminobenzyl, 4-chlorobenzyl, phenyl, 2-chlorophenyl, 3-chlorophenyl, 2-bromophenyl, 3-bromophenyl, 2-fluorophenyl, 3-fluorophenyl, 2-iodophenyl, 3-iodophenyl, 4-iodophenyl, 2-hydroxyphenyl, 3-hydroxyphenyl, 2-dimethylaminophenyl, 3-dimethylaminophenyl, 2-methoxyphenyl, 3-methoxyphenyl, 4-methoxyphenyl, 4-hydroxyphenyl, 4-dimethylaminophenyl, 4-chlorophenyl, 2-pyridino, 3-pyridino, 4-pyridino, 2-imidazol, 4-imidazol, 2-hydroxybenzyl, 3-hydroxybenzyl, 2-dimethylaminobenzyl, 3-dimethylaminobenzyl, 2-methoxybenzyl, 3-methoxybenzyl, 4-methoxybenzyl, 2-chlorobenzyl, 3-chlorobenzyl, 2-bromobenzyl, 3-bromobenzyl, 4-bromobenzyl, 2-fluorobenzyl, 3-fluorobenzyl, 4-fluorobenzyl, 2-iodobenzyl, 3-iodobenzyl, 4-iodobenzyl, 2-pyridylmethyl, 3-pyridylmethyl, 4-pyridylmethyl, 2-imidazolylmethyl, 4-imidazolymethyl, 4-bromophenyl, 4-fluorophenyl, cyclopropyl, and isobutyl;

(e) where R_1–R_3, R_6–R_9 and R_{11}=H, and R_4–R_5=—CH_2CH_2—;

(f) where R_1–R_3, R_6–R_9 and R_{11}=H, and R_4–R_5=—$CH_2CH_2CH_2$—;

(g) where R_1–R_4 and R_6–R_9 and R_{11}=H, R_5=CH_3, and 10a, 11=dihydro;

(h) where R_1–R_4 and R_6–R_9 and R_{11}=H, R_5=CH_3, and 5a, 5b=dihydro;

(i) where R_1–R_4 and R_6–R_9 and R_{11}=H, R_5= CH_3, and 5a, 5b. 10a, 11=tetrahydro;

(j) where R_1–R_9 and R_{11}=H, and 9a,10=dihydro; and

(k) where R_1–R_9 and R_{11}=H, and 10-methyl.

5,629,320

3-QUINOLYL-SUBSTITUTED DIHYDROPYRIDINES, AND THEIR USE IN MEDICAMENTS

Jürgen Stoltefuss, Haan; Siegfried Goldmann, Wuppertal; Alexander Straub, Wuppertal; Martin Bechem, Wuppertal; Rainer Gross, Wuppertal; Siegbert Hebisch, Bottrop; Joachim Hütter, Wuppertal, and Howard-Paul Rounding, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

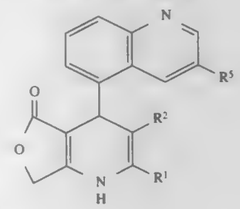
Division of Ser. No. 230,286, Apr. 20, 1994, Pat. No. 5,504,210. This application May 25, 1995, Ser. No. 448,930

Claims priority, application Germany, Apr. 27, 1993, 43 13 692.3

Int. Cl.[6] C07D *491/048;* **A61K** *31/395*

U.S. Cl. 514—302 **8 Claims**

1. A 3-quinoline dihydropyridine of the formula



in which

R^1 represents hydrogen, amino, cyano, formyl or trifluoromethyl, or represents a straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by hydroxyl or by a group of the formula —NR^6R^7, —O—CO—R^8, —O—$(CH_2)_a$—OR^8 or —O— $(CH_2)_b$—NR^9R^{10}, wherein

R^6, R^7, R^9 and R^{10} are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,

R^8 and $R^{8'}$ are identical or different and denote straight-chain or branched alkyl having up to 6 carbon atoms, and

a and b are identical or different and denote the number 2, 3, 4 or 5,

R^2 represents a group of the formula —CO—$NR^{11}R^{12}$ or —CO—A—R^{13}, wherein

R^{11} and R^{12} are identical or different and denote hydrogen or a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical having up to 6 carbon atoms, which is optionally substituted by fluorine, chlorine, hydroxyl, phenyl or pyridyl, or

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denote phenyl or pyridyl, which are optionally substituted by fluorine or chlorine or by alkyl, alkoxy, alkylthio or alkoxycarbonyl having in each case up to 2 carbon atoms, trifluoromethyl or trifluoromethoxy,

A denotes a direct bond or an oxygen atom,

R^{13} denotes hydrogen, phenyl or pyridyl, which are optionally substituted by fluorine, chlorine, methyl, methoxy, methylthio, trifluoromethyl or trifluoromethoxy, or

denotes a straight-chain or branched, saturated or unsaturated hydrocarbon radical having up to 8 carbon atoms, which is optionally interrupted up to twice in an identical or different manner by oxygen or by —CO—, —CO—NH—, —O—CO—, —CO—O—, —NH—CO—, —SO_2—NH—, —NH—SO_2—, —S(O)$_e$— or —NR^{16}—, wherein

e denotes the number 0, 1 or 2,

R^{16} denotes hydrogen or phenyl, which is optionally substituted by fluorine, chlorine, methyl, ethyl, methoxy, ethoxy, trifluoromethyl or trifluoromethoxy, or denotes a cyclic, straight-chain or branched, saturated or unsaturated hydrocarbon radical having up to 4 carbon atoms, which is optionally substituted by chlorine, fluorine or phenyl,

and the hydrocarbon radical is optionally substituted up to twice in an identical or different manner by cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, fluorine, chlorine, nitro, cyano, hydroxyl, —O—NO_2, or straight-chain or branched alkylthio, alkoxy or acyloxy having in each case up to 4 carbon atoms or by phenyl, phenoxy, phenylthio or pyridyl, fluorine, chlorine, cyano, methyl, methoxy, methylthio, trifluoromethyl or trifluoromethoxy, or

the hydrocarbon radical is optionally substituted by a group of the formula —CO_2—R^{17}, —CONR^{18}R^{19}, —$NR^{20}R^{21}$, —NH—SO_2—X and/or —NR^{22}—CO_2R^{23}, wherein

R^{17} has the abovementioned meaning of R^{16} and is identical to or different from this and

R^{18}, R^{19}, R^{20}, R^{21}, R^{22} and R^{23} have the abovementioned meaning of R^{11} and R^{12} and are identical to or different from these, and

X denotes phenyl, which is optionally substituted by methyl,

R^5 represents a straight-chain or branched, saturated or unsaturated hydrocarbon radical having up to 10 carbon atoms, which is optionally interrupted by oxygen or sulphur, or a saturated or unsaturated cyclic hydrocarbon radical and wherein said hydrocarbon radicals are optionally substituted up to twice in an identical or different manner by cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine, acyloxy having up to 2 carbon atoms, cyano or hydroxyl or by phenyl, phenyloxy or phenylthio, wherein said phenyl rings are optionally substituted up to twice in an identical or different manner by fluorine, chlorine, bromine, hydroxyl, methyl, ethyl, methoxy, ethoxy, trifluoromethyl, trifluoromethoxy or trifluoromethylthio or by a group of the formula —$NR^{24}R^{25}$, wherein

R^{24} have the abovementioned meaning of R^{11} and R^{12} and are identical to or different from these,

or the hydrocarbon radical is optionally substituted by a group of the formula —CO_2—R^{26}, —CONR^{27}R^{28}, —$NR^{29}R^{30}$, —NR^{31}—CO_2R^{32} or —NR^{33}—SO_2R^{34} wherein

R^{26} has the abovementioned meaning of R^{16} and is identical to or different from this and

R^{27}, R^{28}, R^{29}, R^{30}, R^{31}, R^{32}, R^{33} and R^{34} have the abovementioned meaning of R^{11} and R^{12} and are identical to or different from these, or

R^5 represents a group of the formula D—R^{35}, wherein

D denotes the CO or —S(O)$_h$ group or an oxygen atom, wherein

h denotes the number 0, 1 or 2, and

R^{35} denotes phenyl which is optionally substituted up to twice in an identical or different manner by fluorine, chlorine, bromine, cyano or nitro or by straight-chain or branched alkyl, alkoxy, alkylthio, alkoxycarbonyl, halogenoalkyl, halogenoalkoxy or halogenoalkylthio having in each case up to 4 carbon atoms or amino or by C_1–C_4 -mono- or -dialkylamino, or

R^{35} denotes hydrogen or a straight-chain or branched, saturated or unsaturated hydrocarbon radical having up to 8 carbon atoms, which is optionally interrupted by oxygen or sulphur, and which is optionally substituted by fluorine, chlorine, phenyl, phenoxy or phenylthio, or

is substituted by a group of the formula —$NR^{36}R^{37}$, wherein

R^{36} and R^{37} have the abovementioned meaning of R^{11} and R^{12} and are identical to or different from these,

or a pharmaceutically acceptable salt thereof.

5,629,321

BICYCLIC COMPOUND AND PLATELET AGGREGATION INHIBITOR CONTAINING THE SAME

Kunio Okumura, Chiba-ken; Isao Yokoyama, Osaka-fu; Toshiyuki Shimazaki, Chiba-ken; Michihiko Miyamoto, Fukuoka-ken; Hiroyuki Yamashita, Chiba-ken; Kenji Kibayashi, Chiba-ken; Takanori Yutaka, Chiba-ken, and Kouhei Yazawa, Chiba-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

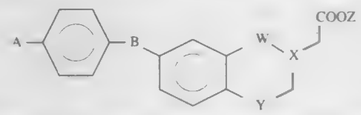
Filed Oct. 18, 1995, Ser. No. 544,583

Claims priority, application Japan, Oct. 27, 1994, 6-264188

Int. Cl.^{6} A61K *31/19;31/35;31/47;* **C07D** *217/16;309/22;* **C07C** *63/36*

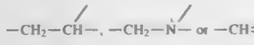
U.S. Cl. 514—307 **27 Claims**

1. A compound or a pharmaceutically acceptable salt thereof represented by the formula (1):



(1)

wherein A is an amidino group, guanidino group or aminomethyl group, B is -CH_2O-, -OCH_2-, -$CH_2N(R^1)$-, -$N(R^1)CH_2$-, -$CON(R^1)$- or -$N(R^1)$ CO-, wherein R^1 is a hydrogen atom or an alkyl group having 1–4 carbon atoms: W-X [-CH_2-CH=, -CH_2-N= or -CH=C=]



Y is -CH_2- or -O-, with the proviso that when W-X is



Y is not -O-; and Z is a hydrogen atom or an alkyl group having 1–4 carbon atoms.

5,629,322

CYCLIC AMIDINE ANALOGS AS INHIBITORS OF NITRIC OXIDE SYNTHASE

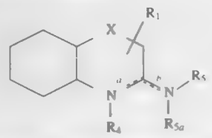
Ravindra N. Guthikonda, Edison; Stephan K. Grant, Robbinsville; Malcolm Maccoss, Freehold; Shrenik K. Shah, Metuchen; Kothandaraman Shankaran, Kendall Park; Charles G. Caldwell, Scotch Plains, and Philippe L. Durette, New Providence, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 339,607, Nov. 15, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 468,120

Int. Cl.^{6} A61K *31/47;* **C07D** *215/38*

U.S. Cl. 514—313 **16 Claims**

1. A compound of Formula Ia



Ia

or a pharmaceutically acceptable salt thereof wherein:

side a or side b has a double bond:

X is selected from $C_{12}R_{13}$, O, S(O)$_m$, NH, and —N(C_{1-6}alkyl)—;

m is 0, 1 or 2;

R_1, R_{12}, and R_{13} are each independently selected from the group consisting of

(a) hydrogen,

(b) C_{1-12}alkoxy,

(c) C_{1-12}alkylS(O)$_k$ wherein k is 0, 1 or 2,

(d) mono C_{1-12}alkylamino,

(e) (di-C_{1-12}alkyl)amino,

(f) C_{1-12}alkylcarbonyl,

(g) C_{1-12}alkyl,

(h) C_{2-12}alkenyl,

(i) C_{2-12}alkynyl,

(j) C_{5-10}cycloalkyl,

(k) hetero C_{5-10}cycloalkyl, wherein the hetero C_{5-10}cycloalkyl optionally contains 1 or 2 heteroatoms selected from S, O and N,

(l) aryl, selected from phenyl or naphthyl,

(m) heteroaryl, wherein heteroaryl is selected from the group consisting of:

(1) benzimidazolyl,

(2) benzofuranyl,

(3) benzooxazolyl,

(4) furanyl,

(5) imidazolyl,

(6) indolyl,

(7) isooxazolyl,

(8) isothiazolyl,

(9) oxadiazolyl,

(10) oxazolyl,

(11) pyrazinyl,

(12) pyrazolyl,

(13) pyridyl,

(14) pyrimidyl,

(15) pyrrolyl,

(17) isoquinolyl,

(18) tetrazolyl,

(19) thiadiazolyl,

(20) thiazolyl,

(21) thienyl, and

(22) triazolyl,

(n) amino,

(o) oxo,

(p) C(O)OH,

(q) C(O)OR$_6$, R_6 is selected from hydrogen, phenyl, cyclohexyl or C_{1-6} alkyl,

each of (b) to (m) being optionally mono or di-substituted the substituents being independently selected from

(1) hydroxy,

(2) carboxy,

(3) —NR$_6$R$_7$, where R_7 is selected from hydrogen, phenyl, cyclohexyl or C_{1-6}alkyl,

(4) —OR$_6$,

(5) —C(O)OR$_6$,

(6) —S(O)$_k$R$_6$,

(7) halo selected from F, Cl, Br and I,

(8) —C(=NR$_6$)—NHR$_7$,

(9) —S—C(=NR$_6$)—NHR$_7$,

(r) hydroxy;

R_4, R_5 and R_{5a} are each independently selected from the group consisting of

(a) hydrogen,

(b) linear and branched C_{1-12}alkyl, optionally mono or di-substituted, the substituents being independently selected from

(1) hydroxy,

(2) carboxy,

(3) —NR$_6$R$_7$,

(4) —OR$_6$,

(5) —C(O)OR$_6$,

(6) —S(O)$_k$R$_6$,

(7) halo selected from F, Cl, Br and I,

(8) phenyl, optionally mono or di-substituted with hydroxy, halo, C_{1-4}alkyl, or C_{1-4}alkoxy,

(c) —C(O)NR$_8$R$_9$, where R_8 and R_9 are each independently hydrogen, phenyl, cyclohexyl or C_{1-6}alkyl, said C_{1-6}alkyl optionally substituted by

(1) hydroxy,

(2) amino,

(3) carboxy,

(4) —NR$_{10}$R$_{11}$, wherein R_{10} and R_{11} are each independently H, Cl_{1-6} alkyl, phenyl or benzyl,

(5) —OR$_{10}$,

(6) —C(O)OR$_{10}$,

(7) —S(O)$_m$R$_{10}$, where m is 0, 1 or 2,

(8) halo selected from F, Cl, Br and I,

(9) optionally substituted aryl wherein aryl and aryl substituents are as defined above,

(10) optionally substituted heteroaryl wherein heteroaryl and heteroaryl substituents are as defined above,

(11) optionally substituted C5-10cycloalkyl wherein cycloalkyl and cycloalkyl substituents are as defined above,

(12) optionally substituted hetero C_{5-10}cycloalkyl wherein hetero cycloalkyl and hetero cycloalkyl substituents are as defined above,

(d) —C(S)NR$_8$R$_9$,

(e) —C(O)R$_9$,

(f) —C(O)OR$_9$,

(g) —C(S)R$_9$,

(h) phenyl,

(i) cyclohexyl,

provided that R_4 is present only when side a is a single bond and R_{5a} is present only when side b is a single bond.

5,629,323

AMIDE DERIVATIVES AS 5-HT$_{1A}$ LIGANDS

Ian A. Cliffe, Slough, and Anderson D. Ifill, Oxford, both of England, assignors to John Wyeth & Brother, Ltd., United Kingdom

PCT No. PCT/GB94/00455, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/21611, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 9, 1994, Ser. No. 446,651

Claims priority, application United Kingdom, Mar. 19, 1993, 9305672

Int. Cl.^{6} C07D *401/12;213/75;407/12;* **A61K** *31/47;31/44*

U.S. Cl. 514—314 **18 Claims**

1. A compound of the general formula



or a pharmaceutically acceptable salt thereof

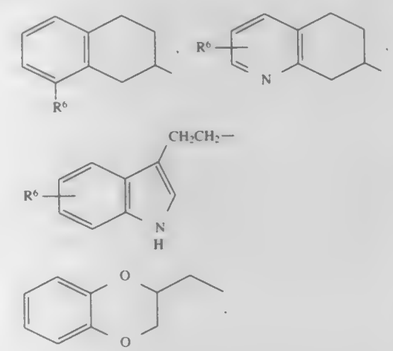
wherein

R^1 is pyridinyl,

R^2 is C_3–C_8 cycloalkyl,

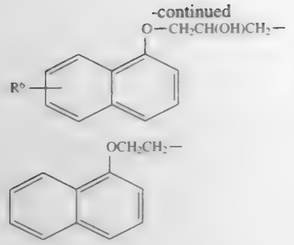
R^3,$R^{3'}$ and R^4 each represent hydrogen or C_1–C_6 alkyl,

R^5 is



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-continued



R^6 is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, halogen trifluoromethyl, C_1–C_6 alkoxycarbonyl, carboxamido, nitro, cyano, amino, C_1–C_6 alkylamino, di-C_1–C_6 alkylamino or C_1–C_6 alkylcarbonyl.

5,629,324

THROMBIN INHIBITORS

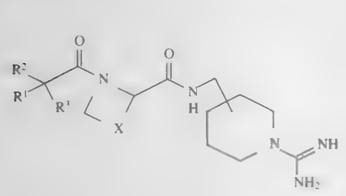
Joseph P. Vacca, Telford; William C. Lumma, Pennsburg; Stephen F. Brady, Philadelphia, and Thomas J. Tucker, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 10, 1995, Ser. No. 419,683

Int. Cl.[6] **A61K** *31/445;* **C07D** *401/06*

U.S. Cl. 514—316 **9 Claims**

1. A compound having the formula:



wherein

R^1 and R^2 are independently

hydrogen,

phenyl unsubstituted, mono- or di-substituted with OH, C_{1-4} alkyl, oxo, or halo,

naphthyl,

biphenyl,

a 5-to 7-membered mono- or bicyclic heterocyclic ring or bicyclic heterocyclic ring system any ring of which may be saturated or unsaturated, and which consists of carbon atoms and from one to three heteroatoms selected from the group consisting of N, O and S. C_{1-4} alkyl,

branched C_{1-4} alkyl,

C_{3-7} cycloalkyl,

C_{5-12} bicyclic alkyl,

C_{11-16} tricyclic alkyl,

$R^4(CH_2)_n$,

$(R^4)_2CH$, wherein R^4 is the same or different,

$(R^4)(R^4O)CH$, wherein R^4 is the same or different,

$R^4O(CH_2)_n$, or

R^2 may be joined with R^1 to form a four- to seven membered carbon ring in which zero to two carbon atoms may be substituted with heteroatoms independently selected from the list N, O, and S,

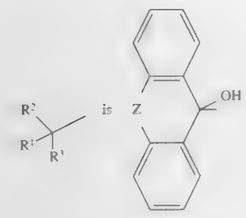
where n is 1, 2, 3 or 4; and

R^3 is

H,

$HO(CH_2)_p$, where p is 0, 1, 2, 3 or 4;

or



wherein Z is C, O or a bond;

provided that when R^3 is hydrogen and either one of R^1 or R^2 is hydrogen, the other of R^1 and R^2 is not

phenyl,

mono-hydroxy substituted phenyl

a 5-to 7-membered mono- or bicyclic heterocyclic ring or bicyclic heterocyclic ring system any ring of which may be saturated or unsaturated, and which consists of carbon atoms and from one to three heteroatoms selected from the group consisting of N,O and S.

C_{3-7} cycloalkyl,

C_{5-12} bicyclic heterocyclic, or

$R^4(CH_2)_n$, where n is 1, 2, 3, or 4, and R^4 is

phenyl,

mono-hydroxy substituted phenyl,

a 5-to 7-membered mono or bicyclic heterocyclic ring or bicyclic heterocyclic ring system any ring of which may he saturated or unsaturated, and which consists of carbon atoms and from one to three heteroatoms selected from the group consisting of N, O and S,

C_{3-7} cycloalkyl, or

C_{5-12} bicyclic alkyl;

R^4 is

phenyl unsubstituted, mono- or di-substituted with OH, OMe, C_{1-4} alkyl, oxo, or halo,

naphthyl,

biphenyl,

1-dibenzocycloheptene,

a 5-to 7-membered mono- or bicyclic heterocyclic ring or bicyclic heterocyclic ring system any ring of which may be saturated or unsaturated, and which consists of carbon atoms and from one to three heteroatoms selected from the group consisting of N, O and S,

C_{1-4} alkyl,

branched C_{1-4} alkyl,

C_{3-7} cycloalkyl,

C_{5-12} bicyclic alkyl, or

C_{11-16} tricyclic alkyl; and,

X is

$(CH_2)q$ where q is 1 or 2,

NR^1CH_2, or

SCH_2,

or a pharmaceutically acceptable salt thereof.

5,629,325

3-PYRIDYLOXYMETHYL HETEROCYCLIC ETHER COMPOUNDS USEFUL IN CONTROLLING CHEMICAL SYNAPTIC TRANSMISSION

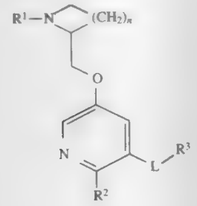
Nan-Horng Lin, Mundelein, Ill.; Yun He, San Diego, Calif.; Mark W. Holladay, Libertyville, Ill.; Keith Ryther, Round Lake Park, Ill., and Yihong Li, Grayslake, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 6, 1996, Ser. No. 660,044

Int. Cl.[6] **C07D** *401/02;* **A61K** *31/44*

U.S. Cl. 514—318 **9 Claims**

1. A compound having the structure



or a pharmaceutically acceptable salt thereof wherein

n is selected from 1, 2 or 3;

R^1 is selected from the group consisting of

hydrogen,

allyl, and

alkyl or one to six carbon atoms;

R^2 is selected from the group consisting of

hydrogen,

fluorine,

chlorine,

vinyl, and

phenyl;

L is absent or is selected from the group consisting of

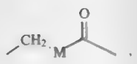
alkylene of one to six carbon atoms,

—C≡C—,

$-(CH{=}CH)_p-$ where p is one or two,



and



where M is selected from —CH_2—, and —NH—; and

R^3 is selected from the group consisting of

a) hydrogen,

b) alkyl of one to six carbon atoms,

c) haloalkyl of one to six carbon atoms,

d) hydroxyalkyl of one to six carbon atoms,

e) alkoxy of one to six carbon atoms,

f) amino,

g) alkylamino of one to six carbon atoms,

h) dialkylamino in which the two alkyl groups are independently of one to six carbon atoms,

i) phenyl,

j) naphthyl,

k) biphenyl

l) furyl,

m) thienyl,

n) pyrazinyl,

o) pyridazinyl,

p) pyrimidinyl,

q) pyrrolyl,

r) pyrazolyl,

s) imidazolyl,

t) indolyl,

u) thiazolyl,

v) oxazolyl,

w) isoxazolyl,

x) thiadiazolyl,

y) oxadiazolyl,

z) quinolinyl,

aa) isoquinolinyl, and

cc) any of i) through bb) above substituted with one or two substituents independently selected from the group consisting of

alkyl of one to six carbon atoms,

haloalkyl of one to six carbon atoms,

alkoxy of one to six carbon atoms,

alkoxyalkyl in which the alkoxy and alkyl portions are independently of one to six carbon atoms,

alkoxyalkoxyl in which the alkoxy portions are independently of one to six carbon atoms,

halogen,

cyano,

hydroxy,

amino,

alkylamino of one to six carbon atoms,

carboxyl, and

alkoxycarbonyl of two to six carbon atoms;

with the provisos that

i) when L is absent, R^3 may not be hydrogen, alkyl of one to six carbon atoms, amino, alkylamino or dialkylamino;

ii) when L is absent and R^3 is hydrogen, R^2 is selected from vinyl, unsubstituted phenyl, and phenyl substituted as defined in bb) above; and

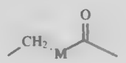
iii) when L is alkylene, R^3 may not be hydrogen of alkyl;

iv) when L is



then R^3 is selected from alkyl of one to six carbon atoms, i), j), l), m), n), q), r), and bb) as defined above, and any of i), j), l), m), n), q), r) and bb) as substituted as defined in cc) above;

v) when L is



and M is —CH_2—, then R^3 may not be hydrogen; and

vi) f) through y) above may be substituted as defined in z) above by no more than one alkylamino, carboxyl, or alkoxycarbonyl substituent.

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5,629,326

4-(HETEROARYL)-1-[(2,3-DIHYDRO-1H-INDOL-1-YL)ALKYL]PIPERIDINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

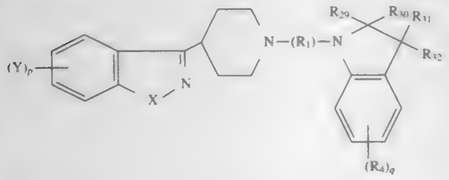
Joseph T. Strupczewski, Flemington; Grover C. Helsley, Stockton; Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Marion-Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 465,707

Int. Cl.[6] **A61K** *31/44;31/55;31/495;31/505;* **C07D** *221/04;239/02;275/04;401/00;403/00;417/00;419/00*

U.S. Cl. 514—321 **18 Claims**

1. A compound of the formula:



wherein, X is —O—, —S—, —NH—, or —N(R_2)—;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenysulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is —$CR_{24}R_{27}$—$(CR_{23}R_{24})_n$—$CR_{24}R_{27}$— where n is 0, 1, 2, or 3; or

—CHR_{24}—CH=CH—CHR_{24}—,

—CHR_{24}—C≡C—CHR_{24}—,

—CHR_{24}—CH=CH—$CR_{23}R_{24}$—CHR_{24}—,

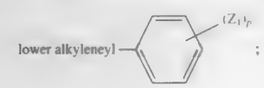
—CHR_{24}—$CR_{23}R_{24}$—CH=CH—CHR_{24}—,

CHR_{24}—C≡C—$CR_{23}R_{24}$—CHR_{24}—, or

—CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24}—,

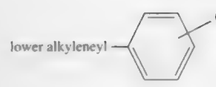
the —CH=CH— bond being cis or trans;

R23 is hydrogen, (C_1–C_{18}) linear alkyl phenyl, hydroxy, (C_1–C_{18}) alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkoxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_6)alkyl, (C_1–C_{18}) alkanoyloxy(C_1–C_6) alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2, or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy(C_1-C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or



where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{24} taken together with the carbon to which they are attached form C=O or C=S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(=O)—(C_1–C_{18} straight or branched chain-)alkyl or —C(=O)-aryl;

aryl is phenyl or



where R_5 is hydrogen, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

q is 1, 2, 3, or 4;

R_{29} and R_{30} are hydrogen, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, or aryl, wherein aryl is as defined above

R_{31} and R_{32} are hydrogen, hydroxy, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, aryl, hydroxymethyl, or $CHOR_{33}$ where R_{33} is (C_1–C_{18})alkanoyl, wherein aryl is as defined above; or

either R_{29} and R_{30} taken together or R_{31} and R_{32} taken together with the carbon group to which they are attached form a C=O or C=S group; and aryl is as defined above;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18})alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof;

or a pharmaceutically acceptable acid addition salt thereof.

5,629,327

METHODS AND COMPOSITIONS FOR INHIBITION OF ANGIOGENESIS

Robert D'Amato, Lancaster, Pa., assignor to Childrens Hospital Medical Center Corp., Boston, Mass.

Continuation-in-part of Ser. No. 25,046, Mar. 1, 1993, abandoned. This application Dec. 15, 1993, Ser. No. 168,817

Int. Cl.[6] **A61K** *31/445;31/16;31/19*

U.S. Cl. 514—323 **3 Claims**

1. A method of treating undesired angiogenesis in a human or animal comprising, administering to the human or animal with the undesired angiogenesis a composition comprising an angiogenesis-inhibiting amount of thalidomide.

5,629,328

METHODS FOR TREATING GASTRO-ESOPHAGEAL REFLUX DISEASE AND OTHER DISORDERS ASSOCIATED WITH THE DIGESTIVE TRACT USING OPTICALLY PURE (+) CISAPRIDE

Nancy M. Gray, Marlborough, Mass., and James W. Young, Palo Alto, Calif., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 909,841, Jul. 7, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,769

Int. Cl.[6] **A61K** *31/445*

U.S. Cl. 514—327 **10 Claims**

1. A method of eliciting an antiemetic effect in a human, comprising administering to said human a therapeutically effective amount of (+) cisapride, or a pharmaceutically acceptable salt thereof, substantially free of its (−) stereoisomer.

5,629,329

METHODS FOR TREATING DISORDERS ASSOCIATED WITH THE CENTRAL NERVOUS SYSTEM USING OPTICALLLY PURE (+) CISAPRIDE

Nancy M. Gray, Marlborough, Mass., and James W. Young, Palo Alto, Calif., assignors to Sepracor Inc., Marlborough, Mass.

Division of Ser. No. 135,769, Oct. 12, 1993, which is a continuation-in-part of Ser. No. 909,841, Jul. 7, 1992, abandoned. This application Jul. 19, 1996, Ser. No. 690,242

Int. Cl.[6] **A61K** *31/395;* **C07D** *409/06*

U.S. Cl. 514—327 **8 Claims**

1. A method of treating a disorder of the central nervous system, selected from the group consisting of cognitive disorders, behavioral disorders, mood disorders, and disorders of control of autonomic function, in a human, comprising administering to said human a therapetically effective amount of (+) cisapride or a pharmaceutically acceptable salt thereof, substantially free of its (−) stereoisomer.

5,629,330

FUNGICIDAL COMPOSITION FOR SEED DRESSING

Alfred Greiner, St Cyr au Mont d'or; Jean Hutt, Lyons; Jacques Mugnier, La Balme, de Sillingy, and Regis Pepin, Rilleux la Pape, all of France, assignors to Rhone Poulenc Secteur Agrochimie, Lyons, France

Division of Ser. No. 714,726, Jun. 13, 1991, Pat. No. 5,290,791. This application Dec. 3, 1993, Ser. No. 162,494

Claims priority, application France, Mar. 5, 1991, 9007607

Int. Cl.[6] **A01N** *43/76;43/653;43/50;43/38*

U.S. Cl. 514—376 **4 Claims**

1. A method for protecting multiplication products of cultivated plants against fungal diseases, comprising coating the multiplication products with a fungicidal and non-phytotoxic amount of a composition comprising a component (a) 2-(4-chlorobenzylidene)-5,5-dimethyl-1-(1H-1,2,4-triazol-1-ylmethyl)-1-cyclopentanol, a component (b) at least one fungicide effective for the protection of multiplication products of cultivated plants selected from the group consisting of iprodione, procymidone and vinclozolin, and an agriculturally acceptable inert vehicle, wherein the weight ratio of component (a) to component (b) is from 1:400 to 400:1.

5,629,331

PROCESS FOR THE PREPARATION OF A TETRAZOLE DERIVATIVE IN TWO CRYSTALLINE FORMS AND NOVEL THE CRYSTALLINE FORMS THEREOF

Antoine Caron, Montbazin; Dominique Chantreux, and Colette Bouloumie, both of Montpellier, all of France, assignors to Sanofi, Paris, France

Filed Oct. 17, 1995, Ser. No. 544,027

Claims priority, application France, Oct. 19, 1994, 94 12459

Int. Cl.[6] **A61K** *31/415;* **C07D** *403/10*

U.S. Cl. 514—381 **13 Claims**

1. Process for the preparation of 2-n.butyl-3-[[2'-(tetrazol-5-yl)biphenyl-4-yl]methyl]- 1,3-diazaspiro[4.4]non-1-en-4-one which comprises the steps of:

(a) treating 2-n.butyl-3-[(2'-cyanobiphenyl-4-yl)methyl]-1,3-diazaspiro-[4.4]non-1-en-4-one with an alkaline azide and triethylamine hydrochloride in an inert polar aprotic solvent and recovering the resulting 2-n.butyl-3-[[2'-(tetrazol-5-yl)biphenyl-4-yl]methyl]- 1,3-diaza-spiro[4.4]non-1-en-4-one in the form of one of its alkaline salts in aqueous solution;

(b) neutralizing the alkaline salt of the resulting 2-n.butyl-3-[[2'-(tetrazol- 5-yl)biphenyl-4-yl]methyl]-1,3-diazaspiro[4.4]non-1-en-4-one in aqueous medium until the pH is of from 4.7 to 5.3; and

(c) crystallizing the product thus precipitated:

either in a solvent containing less than about 10% in volume of water to isolate the 2-n.butyl-3-[[2'-(tetrazol-5-yl)biphenyl-4-yl]methyl]-1,3-diazaspiro[4.4]non- 1-en-4-one in its Form A, having the following X-ray powder diffraction pattern:

d	I/I_o
18.98	100.00
10.89	5.81
9.49	7.43
8.48	6.60
7.13	46.23
6.68	11.25
6.30	7.45
5.45	8.85
5.22	16.82
5.03	11.81
4.71	15.91
4.58	45.40
4.44	26.13
4.32	25.44
4.22	25.86
4.11	21.72
3.93	25.46
3.85	33.89
3.77	27.76
3.38	9.09
3.33	11.75
3.23	13.68
3.14	11.99
2.80	8.97
2.71	9.50

or, in a water-miscible solvent containing more than about 10% in volume of water to isolate the2-n.butyl-3-[[2'-(tetrazol-5-yl)biphenyl-4-yl]methyl]-1,3-diazaspiro[4.4]non-1-en-4-one in its Form B, having the following X-ray powder diffraction pattern:

d	I/I_o
11.22	100.00
7.90	12.02
7.52	13.79
7.23	18.60
6.27	20.14
6.09	6.47
5.86	7.42
5.60	98.76
5.41	19.45
5.05	24.67
4.97	20.36
4.91	12.92
4.80	27.33
4.61	15.90
4.49	14.73
4.36	9.86
4.17	62.84
4.07	15.39
3.97	30.34
3.88	14.32
3.83	13.56
3.75	37.28
3.53	26.48
3.46	12.42
3.40	27.88
3.27	11.03
3.18	10.42
3.15	7.28
3.12	6.11
3.05	15.50
3.01	9.49
2.81	7.11
2.78	9.40

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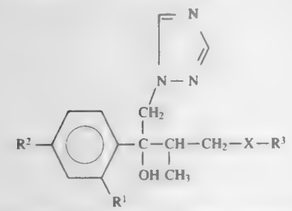
5,629,332

TRIAZOLE COMPOUND AND USE THEREOF

Hiroki Kodama; Michihiko Kawaguchi; Yoshiyuki Kato; Yoshimi Niwano, all of Osaka, and Masanori Yoshida, Wakayama, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

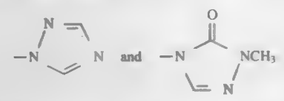
Filed Mar. 27, 1995, Ser. No. 411,210
Claims priority, application Japan, Mar. 28, 1994, 6-080889
Int. Cl.[6] A61K *31/41*; C07D *249/08*
U.S. Cl. 514—383 3 Claims

1. A triazole compound or a pharmacologically acceptable salt thereof represented by the following formula (I)



(I)

wherein R^1 and R^2 are the same or different from each other and each represents a hydrogen atom, a halogen atom, or a C_1–C_6 trihaloalkyl group, R^3 represents a phenyl group substituted with 1 to 2 substituting groups selected from the group consisting of a cyano group, a nitro group,



and X represents —$(CH_2)_n$— where n is 0 or an integer of 1 to 2.

5,629,333

METHOD TREATING COGNITIVE DISORDERS USING OPTICALLY PURE R(+) ONDANSETRON

James W. Young, Still River, Mass., assignor to Sepracor Inc., Marlborough, Mass.

Continuation of Ser. No. 896,077, Jun. 2, 1992, abandoned, which is a division of Ser. No. 750,387, Aug. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 721,868, Jun. 26, 1991, abandoned. This application Mar. 2, 1995, Ser. No. 398,221
Int. Cl.[6] A61K *31/415*
U.S. Cl. 514—397 12 Claims

1. A method of treating cognitive disorders while avoiding the concomitant liability of adverse effects, which comprises administering to a human in need of such therapy an amount sufficient to alleviate said condition but insufficient to cause said adverse effects, of R(+) ondansetron, or a pharmaceutically acceptable salt thereof, substantially free of its S(−) stereoisomer.

5,629,334

INSECTICIDAL/ACARICIDAL COMPOSITION

Yoji Takada, Toyonaka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 358,941, Dec. 19, 1994, Pat. No. 5,516,787. This application Dec. 12, 1995, Ser. No. 571,181
Claims priority, application Japan, Dec. 20, 1903, 5-319599
Int. Cl.[6] A01N *43/56*; *53/00*
U.S. Cl. 514—407 5 Claims

1. An insecticidal and acaricidal composition comprising, as active ingredients, synergistic effective amounts of: (a) 3-phenoxybenzyl (1R) -cis, trans-chrysanthemate and (b) 5-amino-3-cyano-1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfinylpyrazole, wherein the weight ratio of the compound (a) to the compound (b) is within a range of from 99:1 to 5:95.

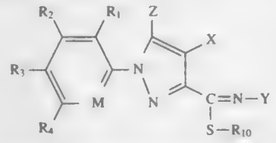
5,629,335

PESTICIDAL 1-ARYLPYRAZOLE-3-CARBOXIMIDOTHIOIC ACID ESTERS

David T. Manning, Cary; Tai-Teh Wu, Chapel Hill, and Michael T. Pilato, Cary, all of N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 418,681, Apr. 7, 1995, abandoned. This application Jan. 30, 1996, Ser. No. 593,904
Int. Cl.[6] A01N *43/56*; C07D *231/28*;*231/44*
U.S. Cl. 514—407 35 Claims

1. A compound having the formula:



(I)

or an agriculturally acceptable salt thereof, wherein:
R_1 is H or halogen;
R_2 is H, halogen or lower alkyl;
R_3 is halogen, haloalkyl, haloalkoxy, $R_{16}S(O)_n$ or SF_5;
R_4 is H, halogen or lower alkyl;
X is R_6 or —$S(O)_n$—R_5;
n is 0, 1 or 2;
R_5 is a lower hydrocarbyl or halohydrocarbyl radical which is saturated or is ethylenically or acetylenically unsaturated, or a C_3–C_5 cycloalkyl radical;
R_6 is one of the meanings given for R_5, or R_6 is thiocyanato, nitro, cyano or halogen;
Z is hydrogen; halogen; a lower alkyl radical which is unsubstituted or is substituted by one or more substituents selected from the group consisting of halogen, hydroxy, alkoxy, alkenyl and cyano; $R_{14}S(O)_n$; $R_{16}S(O)_n$alkyl; amino; $R_{15}CO$— in which R_{15} is H or an alkyl radical which is unsubstituted or is substituted by one or more halogen, hydroxy or alkoxy; cyano; nitro; trialkylsilyl; trialkylsilymethyl; alkoxycarbonyl; alkylthiocarbonyl; hydrazino; —CH=NOH; —CH=NO-alkyl; C_2–C_4 alkenyl; C_2–C_4 alkynyl; alkoxy; alkylcarbonylthio; alkoxycarbonylthio; aroylthio; aryl-$S(O)_n$; azido; arylalkyl-$S(O)_n$; 1H-pyrrol-1-yl; 1H-pyrazol-1-yl; R_7NH—; or R_8R_9N—;
each of R_7, R_8 and R_9, which are identical or different, is lower alkyl, lower alkyl-$S(O)_n$, $P(=O)(R_5)(OR_5)$, aroyl, aryloxycarbonyl, formyl, alkenyl, alkynyl, alkoxycarbonyl, alkylthiocarbonyl or alkylcarbonyl, the alkyl portion of which radicals is unsubstituted or is substituted by one or more R_{17};
or R_8 and R_9 are joined so as together to form a divalent radical having 4 to 6 atoms in the chain, said divalent radical being alkylene, alkyleneoxyalkylene or alkyleneaminoalkylene;
Y is hydrogen or C_3–C_7 cycloalkyl; or Y is an alkyl, alkenyl, alkynyl, arylalkyl, aroyl, alkoxycarbonyl, alkylcarbonyl or arylalkylcarbonyl radical, each of which is unsubstituted or is substituted by one or more R_{18};
R_{10} is alkenyl, haloalkenyl, alkynyl or haloalkynyl, or R_{10} is alkyl optionally substituted by one or more R_{19}, or R_{10} is aralkyl, aryl, pyridinyl, pyrimidinyl, trialkylsilyl or C_3–C_7 cycloalkyl;
R_{14} is lower alkyl, lower alkenyl or lower alkynyl, optionally substituted with halogen;
R_{16} is lower alkyl or lower haloalkyl;
R_{17} is hydrogen, nitro, cyano, alkoxy, haloalkoxy, $R_{16}S(O)_n$, alkylcarbonyl, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, hydroxycarbonyl, halogen, hydroxy, aminosulfonyl, alkylaminosulfonyl or dialkylaminosulfonyl;

R_{18} is halogen, alkoxy, cyano, alkyl-$S(O)_n$ or arylthio;
R_{19} is alkoxy, alkoxycarbonyl, cyano, aminocarbonyl, hydroxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylamino, dialkylamino, amino, halogen, alkyl-$S(O)_n$, NO_2, alkylcarbonyl, hydroxy, acylamino or acyloxy; and
M is C-halo, C—CN, C—CH_3, C—CH_2F, C—NO_2, C—CH_2Cl or N, provided that when R_1 is halogen, then M can also be CH.

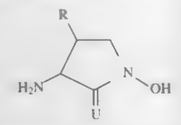
5,629,336

USE OF GLYCINE/NMDA RECEPTOR LIGANDS FOR THE TREATMENT OF DRUG DEPENDENCE AND WITHDRAWAL

Peter H. Hutson, Saffron Walden, England, assignor to Merck, Sharp & Dohme Ltd., Hoddesdon, England

Division of Ser. No. 817,175, Apr. 20, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,901
Claims priority, application United Kingdom, Apr. 26, 1991, 9109007
Int. Cl.[6] A61K *31/40*;*31/47*
U.S. Cl. 514—425 6 Claims

1. A method for the treatment of dependence on an opiate dependence-inducing agent, which method comprises administering to a patient in need thereof an effective amount of a compound, or a pharmaceutically acceptable salt thereof, said compound selected from the group consisting of (a), (b), (c), (d) and (e), being:
(a) R-(+)-3-amino-1-hydroxypyrrolidin-2-one;
(b) a compound of formula II:



(II)

wherein the substituents R and —NH_2 are in a cis-configuration;
wherein R represents a hydrocarbon group, selected from the group consisting of: C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl(C_{1-6})alkyl, aryl, aryl(C_{1-6})alkyl, C_{3-7}heterocycloalkyl, C_{3-7}heterocycloalkyl(C_{1-6})alkyl, heteroaryl and heteroaryl(C_{1-6})alkyl;
wherein: aryl is phenyl or naphthyl; heterocycloalkyl is piperidyl, piperazinyl or morpholinyl; heteroaryl is pyridyl, quinolyl, isoquinolyl, pyridazinyl, pyrimidinyl, pyrazinyl, pyranyl, furyl, benzofuryl, thienyl, benzthienyl, imidazolyl, oxadiazolyl or thiadiazolyl;
and wherein said hydrocarbon group can be optionally substituted by one or more groups selected from C_{1-6}alkyl, adamantyl, phenyl, halogen, C_{1-6}haloalkyl, trifluoromethyl, hydroxy, C_{1-6}alkoxy, aryloxy, keto, C_{1-3}alkylenedioxy, nitro, cyano, carboxy, C_{1-6}alkoxycarbonyl, C_{1-6}alkoxycarbonyl(C_{1-6})alkyl, C_{1-6}alkylcarbonyloxy, arylcarbonyloxy, C_{1-6}alkylcarbonyl, arylcarbonyl, C_{1-6}alkylthio, C_{1-6}alkylsulphinyl, C_{1-6}alkylsulphonyl, amino, mono- or di(C_{1-6})alkylamino, C_{1-6}alkylcarbonylamino and C_{1-6}alkoxycarbonylamino;
and U represents oxygen or sulphur;
(c) cis-3-amino-1-hydroxy-4-methylpyrrolidin-2-one;
(d) 4-oxo-1,4-dihydroquinoline having a 2-acidic group or a group convertible thereto in vivo; and
(e) 7-chloro-5-iodo-4-oxo-1,4-dihydroquinoline-2-carboxylic acid.

5,629,337

METHODS FOR TREATING ASTHMA USING OPTICALLY PURE (−)-ZILEUTON

Nancy M. Gray, Marlboro, Mass., assignor to Sepracor, Inc., Marlborough, Mass.

Continuation of Ser. No. 59,632, May 10, 1993, abandoned. This application Jan. 5, 1995, Ser. No. 369,254
Int. Cl.[6] A61K *31/38*
U.S. Cl. 514—443 8 Claims

1. A method of treating asthma in a human which comprises administering to said human an amount of (−)-zileuton, or a pharmaceutically acceptable salt thereof, substantially free of its (+) stereoisomer, said amount being sufficient to alleviate said asthma.

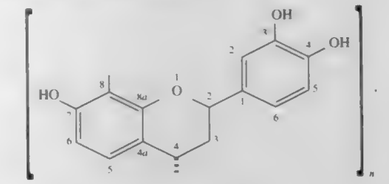
5,629,338

TANNINS AND LIPASE INHIBITORS CONTAINING THE SAME AS ACTIVE INGREDIENTS

Takuo Okuda; Takashi Yoshida; Tsutomu Hatano; Toshitaka Hashimoto; Akiko Yamashita, all of Okayama; Susumu Shimura, Saitama, and Yoshio Itoh, Tokyo, all of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Filed Feb. 29, 1996, Ser. No. 608,815
Claims priority, application Japan, Mar. 24, 1995, 7-66612
Int. Cl.[6] A61K *31/35*; C07D *311/60*
U.S. Cl. 514—451 3 Claims

1. Tannins having the formula:



wherein n is 2 or an integer more than 2.

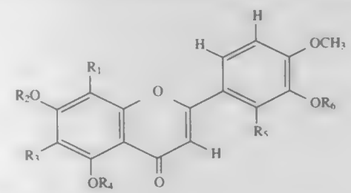
5,629,339

DIOSMETIN COMPOUNDS

Michel Wierzbicki, L'Etang la Ville; Marie-Françoise Boussard, Mareil sur Mauldre; Tony Verbeuren, Vernouillet; Marie-Odile Vallez, Champs sur Marne; Emmanuel Canet, Paris, and Yves Rolland, Vanves, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Oct. 24, 1995, Ser. No. 547,650
Claims priority, application France, Oct. 26, 1994, 94 12783
Int. Cl.[6] A61K *31/35*; C07D *311/30*
U.S. Cl. 514—456 22 Claims

1. Diosmetin compounds selected from those of formula I:



(I)

wherein:
R_1 represents hydrogen, allyl, or 1,2-dideuteroallyl;
R_2 represents hydrogen, allyl, propargyl, 2,3-dihydroxypropyl, (2,2-dimethyl-1,3-dioxol-4-yl)methyl, or 3-acetoxy-2-hydroxypropyl;
R_3 represents hydrogen, propyl, allyl or 1,2-dideuteroallyl;

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R_4 represents hydrogen, allyl, propargyl, 2,3-dihydroxypropyl, (2,2-dimethyl-1,3-dioxol-4-yl)methyl, or —COR'_4, wherein R'_4 represents alkyl having 1 to 5 carbon atoms inclusive in straight or branched chain or phenyl;

R_5 represents hydrogen, propyl, allyl, 1,2-dideuteroallyl, and

R_6 represents hydrogen, allyl, or propargyl, 2,3-dihydroxypropyl, (2,2- dimethyl-1,3-dioxol-4-yl)methyl, or —COR'_6 wherein R'_6 represents alkyl having 1 to 5 carbon atoms inclusive in straight or branched chain, or phenyl,

with the proviso that:

at least one of R_1, R_2, R_3, R_4, R_5 and R_6 has a meaning other than hydrogen,

if R_1, R_2 and R_3 each simultaneously represent hydrogen, then R_4 also represents hydrogen;

and, when R_4 is COR'_4 and/or R_6 is COR'_6 (R'_4 and R'_6 being as above-defined), then at least one of R_1, R_2, R_3, and R_5 is other than hydrogen or propyl;

and also their diastereoisomers and/or enantiomers.

5,629,340

ANGIOGENESIS INHIBITOR AND NOVEL COMPOUND

Michihiko Kuwano; Mayumi Ono, both of Fukuoka; Mika Kusano, Chiyoda-ku; Junko Watanabe, and Masakazu Takeda, both of Ami-machi, all of Japan, assignors to Tsumura & Co., Japan

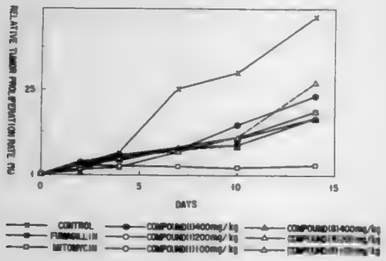
PCT No. PCT/JP93/01893, § 371 Date Jul. 10, 1995, § 102(e) Date Jul. 10, 1995, PCT Pub. No. WO94/15594, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 27, 1993, Ser. No. 481,465

Claims priority, application Japan, Jan. 11, 1993, 5-002821

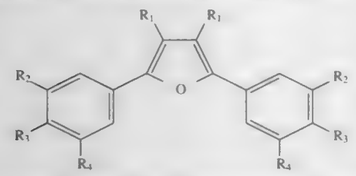
Int. Cl.[6] A61K *31/34;31/05;31/075*

U.S. Cl. 514—461 **4 Claims**



1. An angiogenesis inhibitor comprising, as an active ingredient, a mixture of

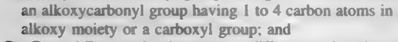
Compound I represented by general formula (I) below:



(I)

where R_1 is a lower alkyl group having 1 to 4 carbon atoms, an alkoxycarbonyl group having 1 to 4 carbon atoms in the alkoxy moiety or a carboxyl group; and

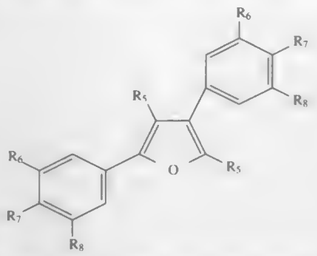
R_2, R_3 and R_4 may be the same or different and each represents a hydrogen atom, a hydroxyl group, a methoxy group or an acetoxy group, wherein R_2 and R_3 may bind together to close a ring, as shown in general formula (II) below:



(II)

where m is an integer from 1 to 6;

Compound III represented by general formula (III) below:

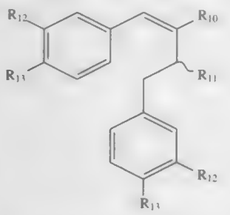


(III)

where R_5 is a lower alkyl group having 1 to 4 carbon atoms; and

R_6, R_7 and R_8 may be the same or different and each represents a hydrogen atom, a hydroxyl group, a methoxy group or an acetoxy group; and

Compound IV represented by general formula (IV) below:



(IV)

where R_{10} and R_{11} may be the same or different and each represents a lower alkyl group having to 4 carbon atoms; and R_{12} and R_{13} may be the same or different and each represents a hydroxyl group or a methoxy group.

5,629,341

PHARMACEUTICAL COMPOSITION FOR INHIBITING THE GROWTH OF VIRUSES AND CANCERS

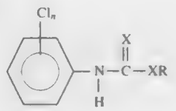
James B. Camden, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 12, 1995, Ser. No. 420,913

Int. Cl.[6] A61K *31/325;* **C07C** *269/00*

U.S. Cl. 514—485 **35 Claims**

1. A method of treating breast, lung and colon cancer in warm blooded mammals comprising administering a safe and effective amount of a pharmaceutical composition comprising a compound of the formula:



wherein n is from 1 to 3, X is selected from the group consisting of oxygen and sulfur and R is selected from the group consisting of hydrogen, lower alkyl and lower alkenyl, cyclohexyl, phenalkyl of up to 8 carbon atoms, phenyl, or pharmaceutically acceptable organic or inorganic acid salts of these compounds.

5,629,342

ANTIMICROBIAL COMPOSITIONS

Willy Roth, Strengelbach, Switzerland, assignor to Akzo Nobel Chemicals Inc., Chicago, Ill.

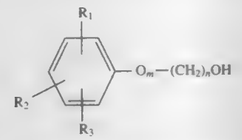
Continuation of Ser. No. 859,189, Apr. 28, 1986, Pat. No. 5,488,065, which is a continuation of Ser. No. 670,246, Nov. 13, 1984, abandoned. This application Jan. 25, 1996, Ser. No. 591,326

Claims priority, application Switzerland, Nov. 17, 1983, 6184/83

Int. Cl.[6] A61K *31/285*

U.S. Cl. 514—504 **10 Claims**

1. An antimicrobial composition which is suitable for the antimicrobial finishing of synthetic materials, comprising a phenoxyarsine as the antimicrobial agent and a solvent, wherein said solvent is a compound of the formula



I

wherein R_1, R_2 and R_3 are hydrogen or lower alkyl, m is 0 or 1 and n is 1 2.

5,629,343

N-(MERCAPTOACYL) PEPTIDYL DERIVATIVES AS ANTIDEGENERATIVE AGENTS

William Hagmann, Westfield, and Ihor Kopka, Millburn, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

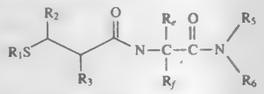
PCT No. PCT/US93/09137, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO94/07481, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 27, 1993, Ser. No. 392,730

Int. Cl.[6] A61K *31/21*

U.S. Cl. 514—513 **13 Claims**

1. A compound of formula I

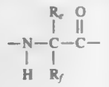


I

wherein R_1 is hydrogen, acetyl or benzoyl,

R_2 is hydrogen or methyl,

R_3 is 2-phenylethyl or 2-[4-(C_{1-3}alkyl)phenyl]ethyl,



is an L-amino acid,



is a residue of β-alanine, L-alanine, glycine and aniline.

5,629,344

UREA OPTHALMIC OINTMENT AND SOLUTION

Judie P. Charlton, Morgantown, W. Va., and Ivan R. Schwab, Sacramento, Calif., assignors to West Virginia University Research Corporation, Morgantown, W. Va.

Continuation of Ser. No. 118,265, Sep. 9, 1993, Pat. No. 5,470,881. This application May 30, 1995, Ser. No. 453,201

Int. Cl.[6] A61K *31/17*

U.S. Cl. 514—588 **9 Claims**

1. A method for promoting epithelialization, promoting hydration, decreasing fibroblast action and softening keratin, the method comprising the steps of:

applying to the ocular surface of a mammalian eye an ophthalmic ointment comprising urea and/or urea derivatives or mixtures thereof.

5,629,345

METHODS AND COMPOSITIONS FOR ATP-SENSITIVE K+CHANNEL INHIBITION FOR LOWERING INTRAOCULAR PRESSURE

Nino Sorgente, Los Angeles, and Charles Bakhit, La Verne, both of Calif., assignors to Vide Pharmaceuticals, Los Angeles, Calif.

Filed Jul. 23, 1993, Ser. No. 96,799

Int. Cl.[6] A61K *31/175*

U.S. Cl. 514—592 **14 Claims**

1. A method for reducing intraocular pressure in an eye of a patient, said method comprising administering to the eye a sulfonylurea compound having ATP-sensitive K+ channel inhibitory activity present in an ophthalmically acceptable carrier in an amount effective to lower said intraocular pressure.

5,629,346

USE OF CERTAIN N-ACETONYLBENZAMIDES AS FUNGICIDES

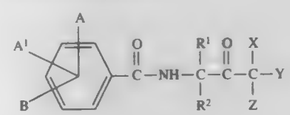
H. Edwin Carley, Chalfont; Ashok K. Sharma, Horsham, and Colin Swithenbank, Perkasie, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 333,362, Apr. 4, 1989, which is a division of Ser. No. 634,916, Jul. 26, 1984, Pat. No. 4,822,902. This application Jun. 6, 1995, Ser. No. 467,680

Int. Cl.[6] A01N *37/18;* **C07C** *233/76*

U.S. Cl. 514—617 **3 Claims**

1. A compound of the formula:



I

wherein:

A is a chloro, bromo, fluoro, iodo, trifluoromethyl, trifluoromethoxy, fluorosulfonyl, methyl, ethyl, phenyl, methoxy, chloromethyl, (C_1–C_2)alkoxycarbonyl, cyano or hydroxy group;

A^1 and B are each independently selected from the group consisting of hydrogen, chloro, bromo, fluoro and methyl group;

X is bromo, iodo, fluoro, cyano, thiocyano, isothiocyano, methylsulfonyloxy, thio(C_1–C_2)alkyl, (C_1–C_2)alkoxy, carbamoyloxy of the formula —$OC(O)N(R^3)_2$, thiocarbamoylthio of the formula -$SC(S)N(R^3)_2$, hydroxy, azide, (C_1–C_4)alkylcarbonyloxy, phenylcarbonyloxy, phenoxy, phenylthio, trifluoromethylcarboxy, (C_1–C_3)alkylthioacetyl, imidazolyl or triazolyl group; and when X is a phenylcarbonyloxy, phenoxy or phenylthio substituent, the phenyl moiety

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may be substituted with one substituent selected from the group consisting of chloro, fluoro, bromo, iodo or methyl group;

Y and Z are each independently a hydrogen, bromo, chloro, iodo, fluoro, cyano, thiocyano, isothiocyano, methylsulfonyloxy, thio(C_1–C_2)alkyl, (C_1–C_2)alkoxy, carbamoyloxy of the formula —OC(O)N(R^3)$_2$, azide or (C_1–C_4)alkylcarbonyloxy group and either, but not both, Y or Z may be an imidazolyl or triazolyl group; provided that:

(i) when X and Y are halogens and Z is hydrogen or X, Y and Z are all halogens, then the halogens are all the same halogen;

(ii) when X is cyano, thiocyano, isothiocyano, methylsulfonyloxy, thio (C_1–C_2)alkyl, (C_1–C_2)alkoxy, carbamoyloxy of the formula —OC(O)N(R^3)$_2$, thiocarbamoylthio of the formula -SC(S)N(R^3)$_2$, azide, (C_1–C_4)alkylcarbonyloxy, phenylcarbonyloxy, phenoxy, phenylthio, trifluoromethylcarboxy, imidazolyl or triazolyl group; and when X is a phenylcarbonyloxy, phenoxy or phenylthio substituent, the phenyl moiety may be substituted with one substituent selected from the group consisting of chloro, fluoro, bromo, iodo or methyl group, then neither Y nor Z is a hydrogen, cyano, thiocyano, isothiocyano, methylsulfonyloxy, thio(C_1–C_2)alkyl, (C_1–C_2)alkoxy, carbamoyloxy of the formula —OC(O)N(R^3)$_2$, azide, (C_1–C_4)alkylcarbonyloxy, imidazolyl, or triazolyl group; and

(iii) when X is bromo, iodo, fluoro or cyano and A is chloro, bromo, fluoro, or iodo, then at least one of Y and Z is not hydrogen, bromo, chloro, iodo, or fluoro; and

R^1 and R^2 are each independently a hydrogen atom or a (C_1–C_6)alkyl group; and each R^3 is independently a hydrogen or a (C_1–C_4)alkyl group.

5,629,347

AROMATIC COMPOUNDS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND THEIR USE IN THERAPY

Christopher J. Swain, Cambridge; Martin R. Teall, Stansted, and Brian J. Williams, Great Dunmow, all of United Kingdom, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB92/01213, § 371 Date Oct. 20, 1994, § 102(e) Date Oct. 20, 1994, PCT Pub. No. WO93/01160, PCT Pub. Date Jan. 21, 1993

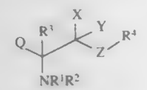
PCT Filed Jul. 3, 1992, Ser. No. 170,190

Claims priority, application United Kingdom, Jul. 5, 1991, 9114554; Jul. 10, 1991, 9114886; Mar. 11, 1992, 9205294

Int. Cl.[6] **A61K** *31/165;* **C07C** *233/05*

U.S. Cl. 514—620 **12 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt or prodrug thereof:



(I)

wherein

Q represents $R^9CR^{10}R^{11}$ where R^9 is H or hydroxy and R^{10} and R^{11} each independently represent optionally substituted phenyl, optionally substituted benzyl, C_{5-7}cycloalkyl or (C_{5-7}cycloalkyl)methyl;

R^1 represents H or R^2;

R^2 independently represents C_{1-6} alkyl substituted by $CONR^aR^b$, $CONR^{12}C_{1-6}$alkylOR^a or $CONR^{12}C_{1-6}$alkyl$CONR^aR^b$ (where R^a and R^b each independently represent H, C_{1-6} alkyl, phenyl (optionally substituted by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl), phenyl(C_{1-4}alkyl) (optionally substituted in the phenyl ring by one or more of C_{1-6} alkyl, C_{1-6} alkoxy, halo and trifluoromethyl), and R^{12} represents H, C_{1-6}alkyl, phenyl (optionally substituted by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl) or phenyl(C_{1-4}alkyl) (optionally substituted in the phenyl ring by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl);

R^3 represents H, C_{1-6} alkyl or C_{2-6}alkenyl;

R^4 represents C_{1-3} alkyl substituted by a phenyl group which may itself optionally be substituted by one or more of C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, halo, cyano, nitro, trifluoromethyl, SR^c, SOR^c, OR^c, NR^cR^d, NR^cCOR^d, and $CONR^cR^d$, where R^c and R^d independently represent H, C_{1-6} alkyl, phenyl or trifluoromethyl;

X and Y each represent H, or X and Y together represent a group =O; and

Z represents O, S, or NR^7, where R^7 represents H or C_{1-6} alkyl;

with the exception of DL-diphenylalanine benzyl ester, or the hydrochloride salt thereof; 2-benzamido-3,3-diphenylpropanoyl benzamide; and 2-benzamido-3,4-diphenyl-butanoyl benzamide.

5,629,348

METHODS AND COMPOSITIONS FOR TREATING SEPTORIA INFECTIONS

Joel Bolonick, Albany; Terrance J. Leighton, Lafayette, and Ida K. Yu, San Leandro, all of Calif., assignors to NZYM, Inc., San Leandro, Calif.

Filed Nov. 14, 1994, Ser. No. 339,322

Int. Cl.[6] **C07C** *257/12;277/08;* **A61K** *31/155*

U.S. Cl. 514—631 **4 Claims**

1. A method of treating or preventing fungal infections caused by Septoria, said method comprising the step of applying to a plant an effective amount of a compound having the formula:

$$X_1\text{-}A_1\text{-}B_1\text{-}C\text{-}B_2\text{-}A_2\text{-}X_2 \qquad (I)$$

wherein X_1 is amidine or guanidine;

A_1 is a five-membered aromatic ring, a six-membered aromatic ring, a fusion of two five-membered aromatic rings, a fusion of two six-membered aromatic rings or a fusion of a five-membered aromatic ring and a six-membered aromatic ring;

B_1 is oxygen or absent;

C is a straight-chain alkyl comprising 1–8 carbons;

B_2 is oxygen or absent;

A_2 is a five-membered aromatic ring, a six-membered aromatic ring, a fusion of two five-membered aromatic rings, a fusion of two six-membered aromatic rings or a fusion of a five-membered aromatic ring and a six-membered aromatic ring; and

X_2 is amidine or guanidine.

5,629,349

COMPOUNDS FOR MODULATING GROWTH OF INFECTIOUS AGENTS

Mark Lyte, Mankato, Minn., assignor to Minnesota State University System Through Its Mankato State University Agency, Mankato, Minn.

Continuation of Ser. No. 847,196, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 753,709, Sep. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 730,485, Jul. 16, 1991, abandoned. This application Jun. 27, 1994, Ser. No. 266,805

Int. Cl.[6] **A61K** *31/135;* **A01N** *33/10*

U.S. Cl. 514—653 **2 Claims**

1. A method of suppressing the growth of Gram-positive bacteria in a host medium, said host medium being selected from the group consisting of in vitro and cell cultures, said method comprising the introduction of an effective amount of a catecholamine to the host medium to act directly on the growth of Gram-positive bacteria.

5,629,350

SUSPENSION FORMULATIONS OF ORTHO-PHENYLPHENOL

Charles D. Gartner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 20, 1996, Ser. No. 618,883

Int. Cl.[6] **A01N** *25/00;25/08;25/30;31/08*

U.S. Cl. 514—736 **12 Claims**

7. A formulation which consists essentially of from about 3 to about 70 weight percent of ortho-phenylphenol suspended in about 30 to about 97 weight percent water in the presence of a suspending amount of a thixotrope that exhibits Ellis-Plastic behavior.

5,629,351

BOSWELLIC ACID COMPOSITIONS AND PREPARATION THEREOF

Subhash C. Taneja; Vijay K. Sethi; Kanaya L. Dhar, and Randhir S. Kapil, all of Jammu, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

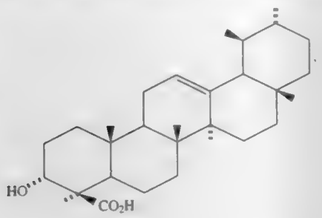
Filed Apr. 13, 1995, Ser. No. 421,500

Int. Cl.[6] **A61K** *31/015*

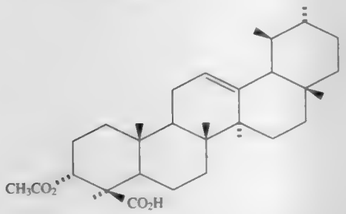
U.S. Cl. 514—765 **9 Claims**

1. A novel composition exhibiting anti-inflammatory and antiulcerogenic activities, said composition comprising a mixture of boswellic acids of the formulae I through VI identified as follows:

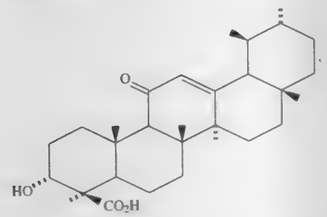
Formula I



Formula II

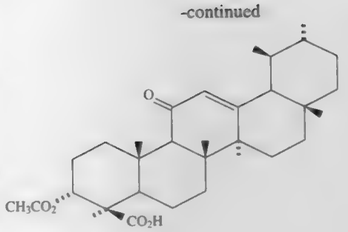


Formula III

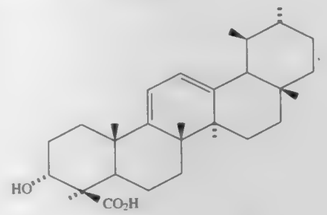


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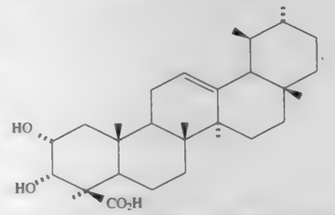
Formula IV



Formula V



Formula VI



said composition comprising 35% to 55% by weight of a compound of Formula I, 25% to 45% by weight of a compound of Formula II, 4% to 14% by weight of a compound of Formula III, 3% to 13% by weight of a compound of Formula IV, 1% to 3% by weight of a compound of Formula V, and 1% to 3% by weight of a compound of Formula VI.

5,629,352

SOLVENT FOR POLYSTYRENE, METHOD FOR REDUCING VOLUME OF POLYSTYRENE FOAM AND METHOD FOR RECYCLING POLYSTYRENE FOAM

Toru Shiino, Moriguchi; Kenichi Nobuta, Ikoma, and Hiroshi Onishi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 16, 1996, Ser. No. 632,820

Claims priority, application Japan, Apr. 24, 1995, 7-098838; May 10, 1995, 7-112165

Int. Cl.[6] **C08J** *11/04*

U.S. Cl. 521—40.5 **8 Claims**

1. A method for recycling polystyrene foam comprising the steps of:

dissolving the polystyrene foam in a solvent which comprises at its main ingredient at least one member selected from the group consisting of a glycol ether compound represented by the general formula (1)

$$C_mH_{2m+1}\text{—O—(CH}_2\text{—CHO)}_2\text{—}C_nH_{2n+1} \qquad (1)$$
$$\quad\quad\quad

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wherein R_1 and R_2 each represents an alkyl group having 1–3 carbon atoms, and n represents an integer of 0–4,

and distilling the obtained solution at a temperature at which polystyrene does not decompose, thereby to separate said solvent from polystyrene.

5,629,353

HIGHLY CROSS-LINKED NANOPOROUS POLYMERS

Warren P. Steckle, Jr.; Paul G. Apen, and Michael A. Mitchell, all of Los Alamos, N.M., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 22, 1995, Ser. No. 447,139

Int. Cl.[6] C08J *9/00;9/28*

U.S. Cl. 521—64 **5 Claims**

1. A process for preparing a cross-linked nanoporous polymer comprising:

(a) combining under polymerization conditions at least one aromatic monomer and a cross-linking agent chosen from the group of multifunctional acyl halides and benzylic halides.

(b) allowing polymerization to occur until a copolymer gel is formed;

(c) removing catalysts and unreacted monomers from said copolymer gel;

(d) adding liquid carbon dioxide to said copolymer gel;

(e) removing said liquid carbon dioxide under supercritical conditions.

5,629,354

PHOTOPOLYMERIZATION INITIATOR SYSTEM COMPRISING A SPECTRAL SENSITIZER AND A POLYCARBOXYLIC ACID CO-INITIATOR

Paul R. West, Fort Collins, and Jeffery A. Gurney, Greeley, both of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1995, Ser. No. 395,352

Int. Cl.[6] C08F *2/50*

U.S. Cl. 522—25 **18 Claims**

1. A photopolymerization initiator system comprising:

(A) a spectral sensitizer that sensitizes in the ultraviolet or visible regions of the spectrum and

(B) an N-aryl, S-aryl or O-aryl polycarboxylic acid co-initiator, said co-initiator including within its structure at least two carboxyl groups at least one of which is linked to the nitrogen, oxygen or sulfur atom of the N-aryl, S-aryl or O-aryl moiety.

5,629,355

POLYMERIC SULFONIUM SALT PHOTOINITIATORS

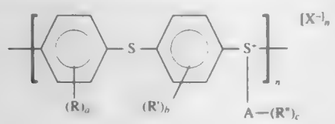
Joseph P. Kuczynski, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 455,218, May 31, 1995, Pat. No. 5,550,171. This application May 29, 1996, Ser. No. 654,564

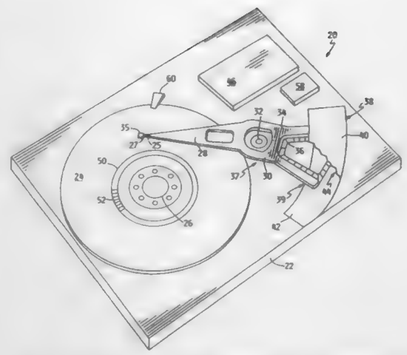
Int. Cl.[6] C08F *2/46;* **G11B** *5/012*

U.S. Cl. 522—31 **7 Claims**

1. A data storage system comprising a hard disk drive, and a polymeric photoinitiator cured adhesive, wherein prior to curing said polymeric photoinitiator has the formula:



wherein n=10 to 150; each of a and b are 0–4 and c is 0–5; A is an alkyl or aryl group; X is an anion; and each of R, R', and R" is independently H or one or more groups substituted onto



the respective phenyl, said substituted group selected from the group consisting of a halogen atom, a nitro group, an alkoxy group, a branched or unbranched C_1–C_{18} aliphatic group, a cyclic hydrocarbon group, an alkyl or aryl group containing one or more heteroatoms, a C_{1-18} aliphatic group having at least one hydroxyl group; and a C_{3-19} group having a group of $—OCH_2CH_2O—$.

5,629,356

A-AMINOACETOPHENONES AS PHOTOINITIATORS

Vincent Desobry, Marly; Kurt Dietliker, Fribourg; Rinaldo Hüsler, Marly; Werner Rutsch, Fribourg; Manfred Rembold, Aesch, and Franciszek Sitek, Therwil, all of Switzerland, assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 432,035, May 1, 1995, Pat. No. 5,534,629, which is a continuation of Ser. No. 222,764, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 14,055, Feb. 5, 1993, abandoned, which is a continuation of Ser. No. 758,928, Sep. 11, 1991, abandoned, which is a division of Ser. No. 501,409, Mar. 28, 1990, Pat. No. 5,077,402, which is a continuation of Ser. No. 403,004, Sep. 5, 1989, abandoned, which is a continuation of Ser. No. 172,618, Mar. 24, 1988, abandoned. This application Mar. 12, 1996, Ser. No. 614,121

Claims priority, application Switzerland, Mar. 26, 1987, 1152/87

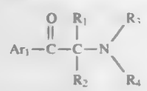
Int. Cl.[6] C08F *2/46;* **C07D** *265/30*

U.S. Cl. 522—34 **4 Claims**

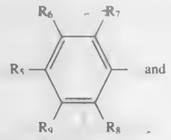
1. A photocurable composition containing

(A) at least one ethylenically unsaturated photopolymerizable compound,

(B) at least one compound of the formula I

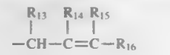


in which Ar_1 is an aromatic radical of the formula IV



R_5 is a group $—N(R_{20})(R_{21})$ or $—OR_{18}$,

R_1 is either (a) a radical of the formula



or

(b) a radical of the formula $—CH(R_{13})Ar_2$, in which, if R_5 is $—OR_{18}$, Ar_2 is a phenyl radical which is unsubstituted or substituted by halogen, C_1–C_{12}alkyl, C_1–C_4alkoxy, C_1–C_8alkylthio or $—(OCH_2CH_2)_nOCH_3$, or benzoyl, or in which, if R_5 is $—N(R_{20})(R_{21})$, Ar_2 is a phenyl radical which is unsubstituted or substituted by halogen, C_1–C_{12}alkyl, C_1– C_4alkoxy, or $—(OCH_2CH_2)_nOCH_3$, n being 1–10 R_2, if R_5 is $—N(R_{20})(R_{21})$, has one of the meanings of R_1 or is C_1–C_8alkyl, or,

R_2, if R_5 is $—OR_{18}$, is C_1–C_{18}alkyl or phenyl,

R_3 and R_4 independently of one another are C_1–C_{12}alkyl, C_1–C_4alkyl, which is substituted by C_1–C_4alkoxy, —CN or $—COO(C_1$–C_4alkyl), or are allyl, cyclohexyl, or benzyl, or R_3 and R_4 together are C_4–C_6alkylene, which can be interrupted by —O— or $—N(R_{17})—$,

R_6 is hydrogen, halogen, C_1–C_4alkyl, or has one of the meanings of R_5,

R_7 and R_8 are hydrogen or halogen,

R_9 is hydrogen or C_1–C_4alkyl,

R_{13}, R_{14}, R_{15} and R_{16} independently of one another are hydrogen or methyl,

R_{17} is hydrogen, C_1–C_4alkyl, benzyl, 2-hydroxyethyl or acetyl,

R_{18} is hydrogen, C_1–C_4alkyl, benzyl, 2-hydroxyethyl, 2-methoxyethyl, 2 -allyloxyethyl, allyl, cyclohexyl, phenyl, $Si(CH_3)_3$ or C_1–C_6alkyl, which is substituted by $—COO(C_1$–C_4alkyl),

R_{20} and R_{21} independently of one another are hydrogen, C_1–C_{12}alkyl, C_2–C_6alkoxyalkyl, acetyl, allyl or benzyl, or R_{20} and R_{21} together are C_4–C_6alkylene, which can be interrupted by —O— or — $N(R_{17})—$,

in the case where R_1 is allyl and R_2 is methyl, R_5 is not $—OCH_3$, and in the case where R_1 is benzyl and R_2 is methyl or benzyl, R_5 is not OCH_3.

5,629,357

Patent Not Issued For This Number

5,629,358

PHOTOCURABLE RESIN COMPOSITION CONTAINING ACRYLATE SILANE AND EPOXY SILANE AND/OR THEIR HYDROLYSIS PRODUCTS

Masaji Nagahata, Ami, and Hiroshi Masaoka, Tsukuba, both of Japan, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 22, 1992, Ser. No. 995,744

Claims priority, application Japan, Dec. 27, 1991, 3-346740

Int. Cl.[6] C08L *75/16;83/07;* **C08F** *2/48*

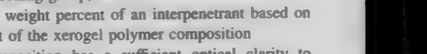
U.S. Cl. 522—84 **9 Claims**

1. A photocurable resin composition consisting essentially of the components (a), (b), (c) and (d) or the components (a), (b) and (e) of the following components:

(a) at least one polymerisable compound having at least one ethylenically unsaturated group per molecule that is a mixture of a urethane acrylate and a (meth)acrylate wherein the mixture contains no silane groups;

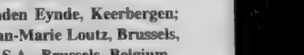
(b) a photopolymerisation initiator;

(c) a hydrolysis product of at least one silane group-containing compound of the general formula:



wherein R^1 represents a hydrogen atom or lower alkyl. group, A represents —O— or —NH—, R^2 represents a C_{1-6} alkylene group, R^3 represents a lower alkyl group, X represents a lower alkoxy group or halogen atom and m represents 0, 1 or 2;

(d) at least one compound of the general formula:



wherein R^4 represents a glycidoxy or C_{5-6} epoxycycloalkyl group, R^5 represents a C_{1-6} alkylene group, R^6 represents a lower alkyl group, Y represents a lower alkoxy group or halogen atom and n represents 0, 1 or 2, or at least one silane group-containing hydrolysis product thereof;

(e) a silane group-containing hydrolysis product of a mixture of at least one compound of Formula (I) and at least one compound of Formula (II), and wherein said composition, after application to a substrate, is curable to form a coating on the substrate that is characterized by having improved adhesion and heat and humidity resistance.

5,629,359

RADIATION CURABLE COMPOSITIONS

Stephan Peeters, Heverlee; Ivan Vanden Eynde, Keerbergen; August Van Gysel, Dilbeek, and Jean-Marie Loutz, Brussels, all of Belgium, assignors to U C B S.A., Brussels, Belgium

Filed May 26, 1995, Ser. No. 452,293

Claims priority, application United Kingdom, May 31, 1994, 9410867

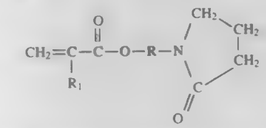
Int. Cl.[6] C08F *2/46*

U.S. Cl. 522—96 **20 Claims**

1. A radiation curable composition comprising, per 100 parts by weight,

(a) at least 20 parts by weight of at least one radiation polymerizable compound containing at least two groups selected from CH_2=CH—COO— and CH_2=C(CH_3)—COO—; and

(b) at least one (2-oxo-1-pyrrolidinyl)alkyl acrylate of the general formula:



wherein R represents an alkylene radical containing 2 to 4 carbon atoms and R_1 represents a hydrogen atom or a methyl radical.

5,629,360

OPTICALLY CLEAR POLYMER COMPOSITIONS CONTAINING AN INTERPENETRANT

Syed H. Askari, Santa Clara, and Hermann H. Neidlinger, San Jose, both of Calif., assignors to Pilkington Barnes Hind, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 338,744, Nov. 9, 1994, Pat. No. 5,482,981. This application Sep. 22, 1995, Ser. No. 532,358

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *27/12;83/00*

U.S. Cl. 523—106 **16 Claims**

1. An optically clear xerogel polymer composition comprising:

a polymer comprising hydroxyl functional groups blocked with a removable blocking group, and

at least about 1.5 weight percent of an interpenetrant based on the total weight of the xerogel polymer composition

wherein said composition has a sufficient optical clarity to permit the passage of at least 80% of visible light through a 0.1 millimeter (mm) thick sample of the composition.

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5,629,361

EMULSION OF POLYMER HAVING (METH)ACRYLATE UNIT AND ADHESIVE COMPOSITIONS CONTAINING THE EMULSION FOR DENTINE

Nobuo Nakabayashi, 5-6-20, Koganehara, Matsudo-shi, Chiba-ken; Kazuhiko Ishihara, Kodaira, and Yasukazu Saimi, Moriyama, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, and Nobuo Nakabayashi, Matsudo, both of Japan

Division of Ser. No. 327,414, Oct. 21, 1994, Pat. No. 5,554,669, which is a continuation-in-part of Ser. No. 66,211, May 25, 1993, abandoned. This application May 31, 1995, Ser. No. 455,205

Claims priority, application Japan, May 27, 1992, 4-158945

Int. Cl.[6] C08K *5/09;5/17*

U.S. Cl. 523—118 **2 Claims**

1. An anti-hypersensitive film formed on dentin from an emulsion containing the emulsion of a polymer obtained by emulsion-polymerizing (meth)acrylate in the presence of the emulsion of a polymer as an emulsifying agent, said polymer of the latter emulsion as the emulsifying agent being obtained by emulsion-polymerizing (a) a (meth)acrylate and (1) a vinyl compound having a group $—SO_3R$ in which R is a hydrogen atom in the absence of a soap in an (a):(1) molar ratio of 99.1 to 50:50, and at least one low molecular weight acid selected from the group consisting of citric acid, oxalic acid, maleic acid and EDTA.

5,629,362

PHOTON DIFFUSIVE COATING

Paul R. Arena, Pompano Beach, Fla., assignor to Heatshield Technologies Inc., Popano Beach, Fla.

Filed May 31, 1995, Ser. No. 455,553

Int. Cl.[6] B22C *1/00;* **C04B** *14/04*

U.S. Cl. 523—139 **18 Claims**

1. A radiant energy reflective coating composition comprising (a) a naturally-occurring mineral containing alumina and at least about 65% silica, wherein at least about 60% of the silica is in the polymorphic crystalline form of cristobalite, reacted with sodium hydroxide, wherein the weight ratio of mineral to sodium hydroxide is between 4:1 and 5:1, and (b) a binder.

7. A photon-diffusive coating composition comprising:

(a) a product formed by the reaction between a ground mineral containing both about 85% to 90% silica in the polymorphic crystalline form of cristobalite in the amount of about 75% to 85%, and about 10% alumina, and sodium hydroxide in weight ratios of between 4:1 and 5:1 reacted in an aqueous slurry at elevated temperatures just under the boiling point until the pH of the slurry falls below about 12;

(b) a polysaccharide resin; and

(c) a latex binder.

5,629,363

AQUEOUS-BASED, SHEAR-THINNING, ERASABLE INK AND ROLLER-BALL PEN CONTAINING SAME

Herman Abber, 60 Brian Dr., Brockton, Mass. 02401; Takao Machida, 2-11-13 Daita, Abiko-shi, Chiba-ken, 270-11, Japan, and Mark T. Smith, 2A Prospect St., South Dartmouth, Mass. 02748

Continuation-in-part of Ser. No. 483,208, Jun. 7, 1995, and Ser. No. 194,466, Feb. 10, 1994. This application Nov. 1, 1995, Ser. No. 551,545

Int. Cl.[6] C09D *11/18;* **C08K** *3/34;* **C08L** *25/10;9/08*

U.S. Cl. 523—161 **36 Claims**

1. An ink that is erasable from both porous and non-porous marking substrates by substantially non-abrasive mechanical means, said ink comprising:

(a) a latex emulsion blend comprising a first non-carboxylated styrene-butadiene latex emulsion and a second non-carboxylated styrene-butadiene latex emulsion, said latex emulsion blend being characterized by its ability to be transformed, upon being contacted with the surface of a porous marking substrate, from a first state in which said latex emulsion blend is stable to a second state in which said latex emulsion blend is unstable and the styrene-butadiene phase rapidly agglomerates to form a cohesive film deposited directly on the surface of the porous marking substrate and erasable therefrom by substantially non-abrasive mechanical means;

(b) a colorant dispersed in the latex emulsion blend, the colorant being characterized by its association with the cohesive rubber phase film when said latex emulsion blend is transformed into said second state; and

(c) a shear-thinning, viscosity-adjustment agent.

5,629,364

COATING COMPOSITION

Lars Malmbom, and Lennart Lysell, both of Sundsvall, Sweden, assignors to Casco Nobel AB, Stockholm, Sweden

Filed Nov. 6, 1995, Ser. No. 553,982

Claims priority, application Sweden, Nov. 14, 1994, 9403893

Int. Cl.[6] C08J *9/16;9/22*

U.S. Cl. 523—219 **10 Claims**

1. A coating composition which is based on polyvinylchloride plastisol containing thermoplastic microspheres and which is suitable for use as an undercoating for vehicles, wherein it comprises a mixture of expandable and expanded microspheres, and in that said expandable microspheres expand at a temperature in the vicinity of the temperature at which the expanded microspheres begin to collapse.

5,629,365

UV-ABSORBING POLYMER LATEX

Homaune A. Razavi, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

PCT No. PCT/US93/05938, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/00524, PCT Pub. Date Jan. 6, 1994

Continuation-in-part of Ser. No. 902,629, Jun. 23, 1992. This PCT application Jun. 22, 1993, Ser. No. 360,828

Int. Cl.[6] C08L *1/10*

U.S. Cl. 524—37 **27 Claims**

1. An aqueous latex comprising colloidal particles of a UV-absorbing polymer dispersed in a substantially aqueous medium, wherein said particles are less than 5 micrometers in diameter, and wherein said polymer is selected from the group consisting of:

(i) homopolymers of vinyl-functionalized monomer of benzotriazole or benzophenone,

(ii) copolymers of vinyl-functionalized monomer of benzotriazole or benzophenone and at least one other vinyl monomer,

(iii) mixtures of said homopolymers or copolymers, and plasticizer therefor,

(iv) mixtures of said homopolymers or copolymers, and coalescing agent therefor, and

(v) mixtures of said homopolymers or copolymers, and plasticizer and coalescing agent therefor; wherein said coalescing agent comprises a volatile solvent for said polymer added in an amount to swell the polymer and thereby reduce the glass transition temperature of the polymer in the latex to less than 50° C.; and wherein said latex contains a cross linking agent added to the latex after formation of the polymer and one or more of the following additives:

(a) a wetting agent in an amount sufficient to provide said latex with a surface tension of less than 45 dynes/cm^2, wherein said wetting agent is selected from the group consisting of (i) volatile C_2 to C_6 alkyl alcohols, and (ii) non-volatile nonionic and anionic surfactant;

(b) a thickening agent in an amount sufficient to provide the latex with a viscosity greater than 40 centipoises when measured at 25° C. with a Brookfield No. 1 spindle at 5 rpm:

(c) an anti-oxidant; and

(d) radical scavenger; such that the latex forms, upon curing, visible light transparent, crosslinked, coherent polymeric films.

5,629,366

GLUCOSIDE AND ACRYLIC COPOLYMER DISPERSANT COMPOSITION

Lodewijk M. Rogiers, Haacht, Belgium, assignor to Imperial Chemical Industries PLC, United Kingdom

Continuation of Ser. No. 781,636, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 449,031, Dec. 11, 1989, abandoned. This application Feb. 23, 1994, Ser. No. 200,380

Claims priority, application United Kingdom, Dec. 22, 1988, 8829925

Int. Cl.[6] C08K *5/06;5/15*

U.S. Cl. 524—56 **19 Claims**

1. A composition comprising:

(A) a glycoside of the formula

$$R(OG)_a$$

wherein:

R is a hydrophobic moiety;

G is a saccharide group; and

a has a value of 1.3 to not more than 2; and

(B) an acrylic copolymer selected from the group consisting of (i) acrylic copolymers containing water soluble side chains having 10–40 oxyethylene groups and not more than 5% by weight of units containing acid groups; and (ii) acrylic copolymers containing no water soluble side chains and comprising from 2 to 10% by weight of units derived from acid monomers; wherein the weight ratio of (A) to (B) is from 5:1 to 1:5, said composition being suitable to form a suspension of a particulate solid in an aqueous medium.

5,629,367

METHOD OF MAKING PIGMENT CONCENTRATE PARTICLES AND PRODUCT OF SAME

Kevin D. Lofftus, Rochester, and Alexandra D. Bermel, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 888,064, May 26, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 381,385

Int. Cl.[6] C08J *3/00;* **C08K** *5/34*

U.S. Cl. 524—88 **23 Claims**

1. A method of making pigment concentrate particles comprising a pigment uniformly dispersed in a polymer and having a controlled morphology and narrow particle size distribution, comprising the steps of:

dispersing sub-micron sized pigment particles in a pigment dispersant liquid to form a first dispersion phase;

blending said first dispersion phase with a binder to produce a second dispersion phase;

mixing said second dispersion phase under sufficient shear to produce a suspension of small dispersion phase droplets in an immiscible suspending liquid, wherein said suspending liquid and said second dispersion phase are sufficiently immiscible to form two phases and said suspension contains a stabilizer which limits said dispersion phase droplets' coalescence;

allowing said small dispersion phase droplets in said suspension to coalesce to a larger size at which substantially no further coalescence can occur;

mixing said suspension of coalesced droplets with an amount of an extracting liquid sufficient to remove said pigment dispersant liquid from said coalesced droplets, wherein said extracting liquid is sufficiently miscible with said second dispersion phase to promote diffusion of said pigment dispersant liquid from said coalesced droplets, but immiscible enough with said second dispersion phase as to not disrupt the stability of said coalesced droplets;

whereby said droplets form substantially solidified pigment concentrate particles having a controlled morphology and narrow particle size distribution; and

isolating said pigment concentrate particles.

5,629,368

LIQUID SLURRY OF BENTONITE

Daniel K. Chung, Burlington, Canada, assignor to Nalco Canada, Inc., Burlington, Canada

Division of Ser. No. 148,069, Nov. 4, 1993, Pat. No. 5,484,834. This application May 17, 1995, Ser. No. 443,043

Int. Cl.[6] C08K *3/34;* **C04B** *33/04;41/68*

U.S. Cl. 524—446 **9 Claims**

1. A process for preparing a liquid slurry of bentonite which comprises the steps of:

charging a reactor vessel with between about 25 to about 75% by weight of water;

heating said water to a temperature in the range between about 50° C. to about 95° C.;

charging said reactor vessel with between about 0.1 about 10% by weight of sodium salt of silicic acid;

charging said reactor vessel with between about 15 to about 35% by weight of bentonite; and

charging said reactor vessel with between about 10 to about 30% by weight of a polyacrylate.

5,629,369

FAST PROCESSING WATER BASED BINDER SYSTEM

Manuel Guerra, Jr., 11 Limekiln Rd., Whitesboro, N.Y. 13492

Division of Ser. No. 105,921, Aug. 13, 1993. This application Jun. 7, 1995, Ser. No. 472,652

Int. Cl.[6] C08J *7/06;* **C08K** *3/36;* **C08L** *21/02;* **B28B** *1/38*

U.S. Cl. 524—493 **3 Claims**

1. A method of making a shell mold, comprising:

(a) making a binder including a mixture of a colloidal silica sol and at least one latex polymer, wherein the latex polymer present in the binder reduces the processing time between dips during the shell mold making process, wherein the latex polymer is selected from the group consisting of acrylic latex polymers, styrene butadiene latex polymers, and mixtures thereof;

(b) adding a refractory powder to the binder to make a slurry;

(c) mixing the slurry to wet-out said refractory powder;

(d) dipping a disposable pattern into the slurry;

(e) draining off excess slurry and stuccoing the pattern while it is still wet;

(f) drying the pattern and slurry to set bonds in the binder;

(g) repeating steps (d)–(f) to build up a shell mold to a predetermined thickness; and

(h) eliminating the disposable pattern and firing the shell mold.

5,629,370

HIGH SOLIDS VINYL ACETATE-ETHYLENE EMULSIONS

Yakov S. Freidzon, Durham, N.C., assignor to Reichhold Chemicals, Inc., Durham, N.C.

Filed Apr. 29, 1996, Ser. No. 638,782

Int. Cl.[6] C08F *2/16*

U.S. Cl. 524—503 **8 Claims**

1. A vinyl acetate-ethylene copolymer emulsion having a solids content of at least about 65 percent by weight, said copolymer comprising:

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about 5 to 40 percent by weight ethylene;
about 60 to 95 percent by weight vinyl acetate;
about 0.8 to 2.0 percent by weight of a fully or partially hydrolyzed polyvinyl alcohol having a degree of polymerization of from about 100 to 500; and
a mixture of nonionic surfactants comprising about 0.5 to 1.9 percent by weight of an ethyoxylated alkyl phenol having less than about 20 ethylene oxide units and about 0.1 to 0.5 percent by weight of an ethoxylated alkyl phenol having greater than about 50 ethylene oxide units, the mixture having a HLB of from about 16.0 to 16.5.

5,629,371

RESIN MOLDING

Sadao Kitagawa, and Yuta Kumano, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 828,460, Jan. 31, 1992, Pat. No. 5,276,093, which is a continuation-in-part of Ser. No. 612,488, Nov. 14, 1990, Pat. No. 5,196,270. This application Oct. 19, 1993, Ser. No. 137,970

Claims priority, application Japan, Nov. 14, 1989, 1-295746; Mar. 27, 1990, 2-077450; Mar. 27, 1990, 2-077451

Int. Cl.[6] C08L *53/00*

U.S. Cl. 524—505 **5 Claims**

1. An automotive part comprising a molding composed of a resin composition, said resin composition comprising (a) 40 to 80 parts by weight of a propylene/ethylene block copolymer having an ethylene content of 3 to 25% by weight and containing 3 to 35% by weight of a fraction soluble in xylene at normal temperature, which has an ethylene content of 20 to 70% by weight, a melt flow rate of the entire copolymer being 5 to 120 g/10 min, (b) 60 to 20 parts by weight of at least one elastomer selected from the group consisting of ethylene copolymer elastomers, hydrogenated styrene/butadiene block copolymers and hydrogenated styrene/isoprene block copolymers, (c) 0.01 to 10 parts by weight per 100 parts by weight of the sum of components (a) and (b), of a hydrogenated product of a diene polymer having a terminal hydroxyl group and an iodine value of from about 0 to about 5 g/100 g, and (d) 1 to 40 parts by weight per 100 parts by weight of the sum of components (a) and (b), of at least one filler selected from the group consisting of (i) a plate filler having particles of a specific surface area of at least 30,000 cm^2/gm, and a size smaller than 15μm, and an average aspect ratio of at least 4 and (ii) a fibrous filler having fibers of an average diameter smaller than 2 μm and an average aspect ratio of at least 5.

5,629,372

ACRYLIC FLUOROCARBON POLYMER CONTAINING COATING

Douglas R. Anton, Wilmington, Del.; Michael J. Darmon, Aston; William F. Graham, Wayne, both of Pa., and Richard R. Thomas, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 345,723, Nov. 22, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,770

Int. Cl.[6] C08L *27/12*

U.S. Cl. 524—507 **7 Claims**

1. A clear coating compositions containing about 45–80% by weight of a binder and 20–55% by weight of an organic liquid; wherein the binder comprises

(A) about 40–90% by weight, based on the weight of the binder, of an acrylic polymer consisting essentially of about 20–45% by weight, based on the weight of the acrylic polymer, of polymerized hydroxyl containing monomers selected from the group consisting of hydroxy alkyl acrylate and hydroxy alkyl methacrylates having 1–4 carbon atoms in the alkyl groups, 50–79.9% by weight, based on the weight of the acrylic polymer, of polymerized monomers selected from the group consisting of alkyl acrylates and alkyl methacrylates having 1–18 carbon atoms in the alkyl groups, styrene or any mixtures of the above and 0.1–5.0% by weight, based on the weight of the acrylic polymer, of polymerized fluoroalkyl containing monomer represented by the formula

$$CH_2=CR-\overset{O}{\overset{\|}{C}}-O-(CH_2)_n-R_f$$

where R is selected from the group consisting of hydrogen or an alkyl group having 1–2 carbon atoms, n is an integer of 1–11 and R_f is a fluoroalkyl containing group having at least 4 carbon atoms and the acrylic polymer having a weight average molecular weight of about 2,000–20,000 determined by gel permeation chromatography;

wherein the acrylic polymer is formed by polymerizing said monomers and the fluoroalkyl containing monomer is added in the entire amount at any time during the polymerization in about 0.01–10% of the total time of polymerization;

(B) about 10–60% by weight, based on the weight of the binder, of an organic polyisocyanate crosslinking agent; and where a cured layer of the coating of the composition has a combination of advancing water contact angle of at least 100° and a hexadecane advancing contact angle of at least 40°.

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WATER BASED COATING COMPOSITION CONTAINING AN AMINOPLAST-ETHER COPOLYMER

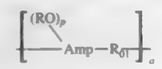
Charles W. Glancy, and Alan L. Steinmetz, both of Louisville, Ky., assignors to United Catalysts, Inc., Louisville, Ky.

Filed Jun. 7, 1995, Ser. No. 476,216

Int. Cl.[6] C08L *61/00;61/32;* **C08G** *12/26;12/32*

U.S. Cl. 524—512 **118 Claims**

1. A water-containing coating composition comprising a major amount of a coating vehicle and a minor amount of a linear aminoplast-ether copolymer of the formula:



where the divalent R_{01} contains a divalent alkyleneoxy containing moiety, Amp is the skeletal residue of an aminoplast, R is hydrogen, alkyl containing 1 to about 4 carbon atoms, or acyl containing 1 to about 4 carbon atoms, p is a positive number that is equal to the free valence of Amp minus 2, RO is bonded to alkylene units of Amp, and a is a number greater than 1.

5,629,374

POST-EXTENDED ANIONIC ACRYLIC DISPERSION

Anna M. Budde, Livonia, and Timothy D. Salatin, Farmington Hills, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Division of Ser. No. 676,045, Mar. 27, 1991, abandoned. This application May 3, 1995, Ser. No. 434,260

Int. Cl.[6] C08L *37/00*

U.S. Cl. 524—549 **13 Claims**

1. A process for producing a basecoat, comprising the steps of:

a) dispersing an acrylic resin having functional groups consisting of carboxylic acid groups, anhydride groups, and mixtures thereof in water in the presence of a tertiary amine to form a dispersion of an acrylic resin having carboxylic acid groups;

b) subsequently reacting the carboxylic acid groups on the acrylic resin with an organic compound with at least two oxirane groups to from about 30% to about 100% of the theoretical completion to form an aqueous anionic acrylic dispersion; and

c) adding a crosslinker selected from the group consisting of acrylics, polyesters, alkyds, epoxy resins, aminoplast resins, blocked polyisocyanates, and mixtures thereof.

5,629,375

PROCESSES FOR PREPARING AQUEOUS POLYMER EMULSIONS

Richard D. Jenkins, Apex; David R. Bassett, Cary; Ralph A. Sterlen, Jr., Apex, and Wendy B. Daniels, Durham, all of N.C., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 521,420, Aug. 30, 1995, Pat. No. 5,561,189, which is a division of Ser. No. 414,005, Mar. 17, 1995, Pat. No. 5,476,900, which is a division of Ser. No. 342,147, Nov. 18, 1994, Pat. No. 5,436,292, which is a division of Ser. No. 83,896, Jun. 28, 1993, Pat. No. 5,399,618. This application Jun. 14, 1996, Ser. No. 663,892

Int. Cl.[6] C08L *31/00*

U.S. Cl. 524—556 **4 Claims**

1. An aqueous polymer emulsion useful as a thickening agent in aqueous compositions when the polymer is dissolved therein, which comprises water and emulsified polymer particles prepared from monomers comprising:

(a) about 1–99.8 weight percent of one or more alpha, beta-monoethylenically unsaturated carboxylic acids;

(b) about 0–98.8 weight percent of one or more monoethylenically unsaturated monomers different from component (a);

(c) about 0.1–98.9 weight percent of one or more monoethylenically unsaturated macromonomers different from components (a) and (b);

(d) about 0–20 weight percent or greater of one or more polyethylenically unsaturated monomers different from components (a), (b) and (c); and

(e) about 0.1–25 weight percent of one or more acrylates and/or methacrylates derived from a strong acid or a salt of a strong add different from components (a), (b), (c) and (d), said strong acid comprising an acid fully dissociated at a pH of 2.

5,629,376

POLYACRYLIC ACID COMPOSITIONS FOR TEXTILE PROCESSING

R. Richard Sargent; Michael S. Williams; Thomas H. Moss, III, all of Rome, and Jeffrey R. Alender, Marietta, all of Ga., assignors to Peach State Labs, Inc., Rome, Ga.

Continuation-in-part of Ser. No. 606,467, Oct. 31, 1990, Pat. No. 5,212,272. This application May 17, 1993, Ser. No. 63,211

Int. Cl.[6] C08K *5/42;* **C11D** *1/22;* **C08F** *2/00;122/18;130/02;128/02;120/54*

U.S. Cl. 524—745 **23 Claims**

1. A water soluble polymeric composition prepared by polymerizing a monomer selected from the group consisting of $H_2C=CHCO_2X$, $H_2C=CHR^1CO_2X$, $HR^2C=CHCO_2X$, $HR^2C=CR^1CO_2X$, $HR^2C=CHCOX$, $H_2C=CHCOX$, $H_2C=CR^1COX$, $HR^2C=CR^1COX$, $H_2C=CHCON(R^3)_2$, $HR^2C=CHCON(R^3)_2$, $H_2C=CR^1CON(R^3)_2$, or $HR^2C=CR^1CON(R^3)_2$, or a combination thereof, in the presence of at least 10% by weight of reaction components, of an aromatic sulfonic acid or its salt, wherein:

R^1 and R^2 are independently an alkyl, alkenyl, aromatic, aralkyl or alkaryl moiety of C_1 to C_{20} that is optionally substituted with one or more halogen; hydroxyl, sulfate, sulfonic acid, phosphoric acid, or carboxylic acid moieties (or the corresponding sulfonic, phosphoric or carboxylic acid esters), or a combination thereof;

R^3 is independently hydrogen or an alkyl, alkenyl, aromatic, aralkyl or alkaryl moiety of C_1 to C_{20} that is optionally substituted with one or more halogen, hydroxyl, sulfate, sulfonic acid, phosphoric acid, or carboxylic acid moieties (or the corresponding sulfonic, phosphoric or carboxylic acid esters), or a combination thereof; and

X is hydrogen, alkyl, alkenyl, aromatic, aralkyl or alkaryl moiety of C_1 to C_{20} that is optionally substituted with one or more halogen, hydroxyl, carboxylic acid, phophoric acid, or sulfonic acid moieties (or the alkyl ester thereof); $—CH_2CH_2(CF_2CF_2)_nCF_2CF_3$, wherein n is 1–7; polyoxyalkylene; $—C(R^2)_2R^3Y$, wherein R^3 is alkylene or polyoxyalkylene (or a combination thereof), and Y is $—OSO_3H$, $—SO_3H$, $—CO_2H$, $—PO_3H$, $—OPO_3H$, or a salt therof, $CF_3(CF_2)_q$-, wherein q is 1–11, and specifically including hexafluorobutyl and tetrafluoropropyl; sodium, potassiu, lithium, ammonium, or quaternary amine; and

v is 0, 1, or 2.

5,629,377

WATER ABSORBENT RESIN PARTICLES OF CROSSLINKED CARBOXYL CONTAINING POLYMERS AND METHOD OF PREPARATION

Josef H. Burgert, Achern, Germany; Stephen B. Christensen, Midland, Mich.; Herbert A. Gartner, Baden-Baden, Germany; Fredric L. Buchholz, Midland, Mich.; Thomas C. Johnson, Midland, Mich., and Andrew T. Graham, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US94/02445, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/20547, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 8, 1994, Ser. No. 505,181

Claims priority, application United Kingdom, Mar. 10, 1993, 9304857

Int. Cl.[6] C08L *31/02*

U.S. Cl. 524—832 **20 Claims**

1. A water-absorbent resin particle comprising: from 80 to 99.9 weight percent of a crosslinked carboxyl-containing polymer prepared by polymerizing a polymerization mixture which comprises:

(a) from 70 to 99.9 weight percent of one or more ethylenically unsaturated carboxyl containing monomers,

(b) from 0.1 to 5 weight percent of one or more crosslinking agents, and

(c) from 0 to 25 weight percent of one or more comonomers copolymerizable with the carboxyl containing monomer,

(d) from 10 to 2000 ppm by weight of a chlorine or bromine containing oxidizing agent,

wherein the weight percentages and ppm of the polymerization mixture are based on the total weight of (a), (b) and (c), wherein the oxidizing agent has been substantially uniformly distributed within the resin particle prior to heat-treatment, and wherein the resin particle has been heated at a temperature of from 170° C. to 250° C. for from 1 to 60 minutes.

5,629,378

SUSPENDING AGENT FOR SUSPENSION POLYMERIZATION OF VINYL COMPOUND

Shigeki Takada, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

Filed Sep. 15, 1995, Ser. No. 529,064

Claims priority, application Japan, Oct. 7, 1994, 6-243782

Int. Cl.[6] C08G *63/48*

U.S. Cl. 525—57 **1 Claim**

1. A suspending agent for suspension polymerization of a vinyl compound which comprises a polyvinyl alcohol polymer (A) having a degree of hydrolysis ranging from 60 to 95 mol % and a mercapto group at an end thereof and a polyvinyl ester polymer (B) having a degree of hydrolysis of less than 60 mol %, weight ratio of component (A)/component (B) being 40/60 to 95/5.

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5,629,379

ANHYDRIDE-HARDENED EPOXY RESIN WITH POLYBUTADIENE-MALEIC ANHYDRIDE ADDUCT

John D. Harper, 6475-B Pacific Coast Hwy., Long Beach, Calif. 90803

Continuation-in-part of Ser. No. 312,827, Sep. 27, 1994. This application Oct. 6, 1995, Ser. No. 540,132

Int. Cl.[6] C08L *63/00*

U.S. Cl. 525—65 **8 Claims**

1. A toughened epoxy resin system having a glass transition temperature of from about 250° C. to 350° C., said resin system being prepared from a blend comprising the following ingredients:

(1) An epoxy resin component selected from the group consisting of

(a) a single epoxy resin having an epoxy functionality greater than two epoxy groups per molecule; and

(b) a mixture of epoxy resins so chosen that all epoxy resins in said mixture have epoxy functionality of at least two epoxy groups per molecule, and that the average epoxy functionality of said mixture is greater than two epoxy groups per molecule;

(2) An anhydride hardener component consisting essentially of

(a) a bicyclo alkene dicarboxylic acid anhydride; and

(b) a 1,2-polybutadiene-maleic anhydride adduct containing from about 15 to 25% combined maleic anhydride and having an equivalent weight in the range of from about 400 to 700;

the stoichiometric ratio of anhydride hardener (2)(*a*) to (2)(*b*) being from 75 to 1 equivalents to 2 to 1 equivalents; and the stoichiometric ratio of said anhydrides (2)(*a*) and (2)(*b*) combined to said epoxy resin component (1) being from about 0.7 to 1 equivalent to 1 to 1 equivalent;

(3) A supplemental hardener component selected from the group consisting of

(a) an aromatic tetracarboxylic acid dianhydride in an amount of from 1% to 100% by weight of said bicyclo alkene dicarboxylic acid anhydride component (2)(*a*); and

(b) an aromatic diamine bis(maleimide) in an amount of from 1% to 25% of the total mixture;

(4) An epoxy/anhydride accelerator selected from the group consisting of dialkyl imidazole-2-thiones, dialkylimidazoles, tertiary amines, dicyandiamide, Lewis bases, and mixtures thereof, and alternately Lewis acids,

said blend being subjected to preliminary curing at from about 80° C. to 120° C. till said blend has gelled, and then to further curing at temperatures of from 200° C. to 300° C. till curing is complete, thereby obtaining final toughened solid epoxy resin.

5,629,380

EPOXY ADHESIVE COMPOSITION COMPRISING A CALCIUM SALT AND MANNICH BASE

John M. Baldwin, Hugo, and Janis Robins, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 459,293, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 308,390, Sep. 19, 1994, abandoned. This application Sep. 19, 1995, Ser. No. 529,983

Int. Cl.[6] C08L *63/00*

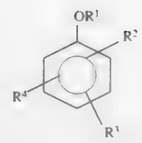
U.S. Cl. 525—113 **14 Claims**

1. A method of adhering to an oily metal substrate comprising applying a curable, structural epoxy adhesive composition to an oily metal substrate, wherein said curable, structural epoxy adhesive composition comprises two parts, the first part comprising:

(a) an epoxy catalyst comprising:

(i) a Ca^{+2} salt; and

(ii) an epoxy polymerization catalyst having the structure of formula (I):



(I)

wherein

R^1 is H or $—CH_3$

R^2 is $—CHNR^5R^6$ and R^5 and R^6 are independently selected from $—CH_3$ or $—CH_2CH_3$;

R^3 and R^4 independently may be present or absent, when present R^3 and R^4 are $—CHNR^5R^6$ and R^5 and R^6 are independently selected from $—CH_3$ or $—CH_2CH_3$; and

(b) an amine curing agent; and

the second part comprising an epoxy resin having an average epoxide functionality of greater than one and wherein the stoichometric amine to epoxy ratio of the amine curing agent to the epoxy resin is from 0.2 to 0.9 to 1 and wherein the adhesive composition has an overlap shear strength of at least 9 MPa and exhibits cohesive failure when said composition is applied to oily metal coupons having an emulsified draw lubricated coating weight of 1,500 mg/ft^2, cured at room temperature for 24 hours, oven cured for 20 minutes at 163° C., and then equilibrated to room temperature prior to measuring overlap shear strength as measured by the test method LAP SHEAR STRENGTH.

5,629,381

METHOD FOR CURING RESIN

Osamu Isozaki, Yokohama, Japan, assignor to Kansai Paint Co., Ltd., Hyogo-ken, Japan

Continuation of Ser. No. 297,517, Aug. 29, 1994, abandoned, which is a continuation of Ser. No. 645,253, Jan. 24, 1991, abandoned. This application May 24, 1996, Ser. No. 653,110

Claims priority, application Japan, Jan. 25, 1990, 2-13539

Int. Cl.[6] C08L *37/00;63/00;67/00;75/04*

U.S. Cl. 525—131 **7 Claims**

1. In a method for curing a resin by utilizing an intermolecular cross-linking reaction, the improvement wherein the cross-linking reaction is initiated by the ring opening of a lactone ring and addition reaction with an active hydrogen-containing functional group involving

a mixture of (A-1) a resin containing at least two 4- to 9-membered lactone rings per molecule and (A-2) a second resin containing at least two active hydrogen-containing functional groups selected from the group consisting of a hydroxyl group, a carboxyl group and an amino group and having a number average molecular weight of 1,000 to 50,000;

said lactone rings each being bound to a main chain of the resin as pendant and/or terminal groups.

5,629,382

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Roberto Cipolli, Novara; Roberto Oriani, Milan; Enrico Masarati, Castelnuovo Valtidone, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero Dell'Universita'e Della Ricerca Scientifica e Tecnologica, Rome, Italy

Continuation of Ser. No. 976,454, Nov. 13, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,103

Claims priority, application Italy, Nov. 14, 1991, MI91A3043

Int. Cl.[6] C08L *61/20;61/28;61/37;23/06*

U.S. Cl. 525—158 **36 Claims**

1. A self-extinguishing polymeric composition comprising:

(a) from 90 to 40 parts by weight of a thermoplastic polymer, or of a polymer endowed with elastomeric properties;

(b) from 10 to 60 parts by weight of one or more composites constituted by ammonium polyphosphate of general formula (I):

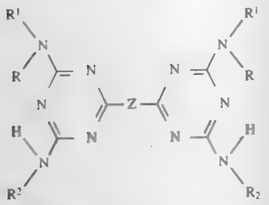
$$(NH_4)_{n+2}P_nO_{3n+1} \quad \text{(I)}$$

wherein n stands for an integer comprised within the range of from 2 to 800, microencapsulated with 10–80% by weight of a resin obtained by:

(A) reacting with aldehydes a mixture comprising:

(1) from 0 to 50 parts by weight of one or more polyaminic derivatives selected from the group consisting of urea, ethyleneurea, thiourea, ethylenethiourea, propyleneurea, melamine, acetoguanamine, propionoguanamine, butyroguanamine, isobutyroguanamine, caprinoguanamine, succinoguanamine, benzoguanamine, meta methylbenzoguanamine, benzylguanamine, hydantoin, piperazine-2,5-dione and barbituric acid;

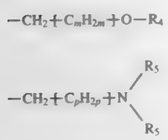
(2) from 50 to 100 parts by weight of one or more derivatives of 2,4,6-triamino-1,3,5-triazine having the general formula (II):



(II)

wherein:

the radicals from R to R_2, which may be the same, or different from each other, and which may have different meanings on each triazinic ring, are: H; C_1–C_{18} alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl or alkylcycloalkyl, possibly substituted with a hydroxy or C_1–C_4 hydroxyalkyl function;



wherein:

m=an integer comprised within the range of from 1 to 7;

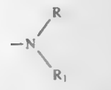
p=an integer comprised within the range of from 1 to 5;

R_4=H; C_1–C_4 alkyl; C_2–C_6 alkenyl; $—O—R_6$ wherein q is an integer comprised within the range of from 1 to 4 and R_6 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl;

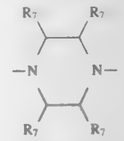
the radicals R_5, which may be the same, or different from each other, are: H, C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl; C_1–C_4 hydroxyalkyl; or the moiety:



is replaced by a heterocyclic radical linked to the alkyl chain through the nitrogen atom, and possibly containing another heteroatom; or in the general formula (II) the moiety:

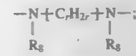


is replaced by a heterocyclic radical linked to the triazinic ring through the nitrogen atom, and possibly containing another heteroatom; Z is a divalent radical falling within the scope of one of the following formulas:

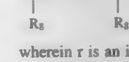


(III)

wherein the radicals R_7, which may be the same or different from each other, are hydrogen or C_1–C_4 alkyl;

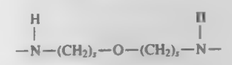


(IV)

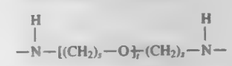


(V)

wherein r is an integer comprised within the range of from 2 to 14; R_8 is hydrogen; C_1–C_4 alkyl; C_2–C_6 alkenyl; C_1–C_4 hydroxyalkyl;

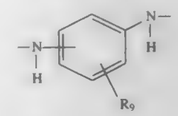


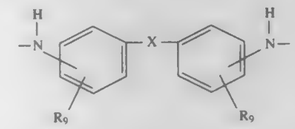
(VI)



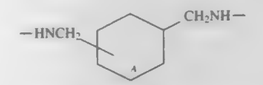
(VII)

wherein s is an integer comprised within the range of from 2 to 5 and t is an integer comprised within the range of from 1 to 3;



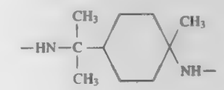


wherein; X is a direct C—C bond; O; S; S—S; SO; SO_2; NH; $NHSO_2$; NHCO; N=N; CH_2; R_9 is hydrogen; hydroxy; C_1–C_4 alkyl; C_1–C_4 alkoxy;



(X)

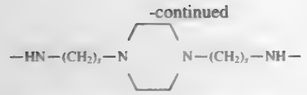
wherein A may be a saturated or unsaturated ring;



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(XII)

wherein s has the above defined meaning; and

(B) causing the resulting reaction product to turn into a resin by acidifying at a pH of from 1 to 5.

5,629,383

DEPARTICULATION

Thomas R. Doyle, Leominster, Mass., assignor to Novacor Chemicals (Internatioanal) SA, Villars-Sur-Glane, Switzerland

Filed May 10, 1996, Ser. No. 644,457
Int. Cl.[6] C08F *279/02*
U.S. Cl. 525—316 10 Claims

1. A process comprising subjecting at least a portion of a stable syrup comprising from 99 to 80 weight % of a continuous resin phase comprising one or more monomers selected from the group consisting of C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical; C_{1-8} alkyl esters of acrylic acid or methacrylic acid, maleic anhydride, acrylonitrile and methacrylonitrile; and from 1 to 20 weight % of an uncrosslinked discontinuous rubber-like composite phase wherein the rubber is selected from the group consisting of:

(i) co- or homopolymers of C_{4-6} conjugated diolefins;

(ii) random, block and tapered copolymers comprising from 10 to 80 weight % of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical and from 20 to 90 weight % of one or more C_{4-6} conjugated diolefins; and

(iii) copolymers comprising from 20 to 50 weight % of one or more of acrylonitrile and methacrylonitrile and from 50 to 80 weight % of one or more C_{4-6} conjugated diolefins,

to a pressure of greater than 200 psi and a high shear rate to cause said discontinuous rubber-like phase in said portion of said stable syrup to become a co-continuous phase.

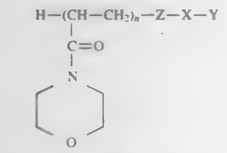
5,629,384

POLYMERS OF N-ACRYLOYLMORPHOLINE ACTIVATED AT ONE END AND CONJUGATES WITH BIOACTIVE MATERIALS AND SURFACES

Francesco M. Veronese; Oddone Schiavon; Paolo Caliceti, all of Padua; Luciana Sartore, Marano Vic.; Elisabetta Ranucci, Brescia, and Paolo Ferruti, Milan, all of Italy, assignors to Consiglio Nazionale delle Ricerche, Italy

Filed May 17, 1994, Ser. No. 243,869
Int. Cl.[6] C08F *8/00;20/58;20/60*
U.S. Cl. 525—326.8 19 Claims

1. Polymeric N-acryloylmorpholine homopolyer having the structure:



wherein -Z-X-Y is a polymer capping moiety, and in the polymer capping moiety, Y is a reactive moiety, X represents a saturated residue of a linear or branched aliphatic series of the general structure $—C_rH_{2r}—$ in which r is an integer from 1 to about 12. Z is a moiety that readily reacts to cap a polymer free radical, and n is an integer from about 6 to 280, which yields a number average molecular weight ("M_n") of from about 1,000 to 40,000.

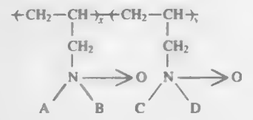
5,629,385

ALLYLAMINE COPOLYMERS HAVING PHOSPHONIC, CARBOXYLIC OR SULFONIC GROUPS AND N-OXIDE DERIVATIVES THEREOF

Lawrence L. Kuo, Columbia, Md., assignor to BetzDearborn Inc., Trevose, Pa.

Filed Nov. 23, 1994, Ser. No. 344,191
Int. Cl.[6] C08L *23/32*
U.S. Cl. 525—328.2 6 Claims

1. A water-soluble, N-functionalized polyallylamine N-oxide having recurring units represented by the formula:



wherein A, B, C and D are independently selected from the group consisting of hydrogen, $CH_2PO_3H_2$, $(CH_2)_n$ COOH, $(CH_2)_mSO_3H$ and water-soluble salts thereof, wherein n=1 to 4, m=1 to 4, x is 1 to 99 mol %, y is 1 to 99 mol % and x+y=100.

5,629,386

HALOMETHYLATION OF POLYMER

Akhtar Osman, Sarnia, Canada, assignor to Bayer Rubber Inc., Sarnia, Canada

Filed May 25, 1995, Ser. No. 450,439
Int. Cl.[6] C08F *8/20;8/24*
U.S. Cl. 525—354 12 Claims

1. A process for the preparation of a halogen-containing polymer without the substantial formation of gel by reacting a polymer containing a C_4 to C_7 isomonoolefin and a vinylidene substituted aromatic monomer selected from styrene and alpha-methylstyrene with a halomethylating agent generated in situ which comprise the step of:

(i) providing in a suitable reaction vessel (a) a solution in an organic solvent of the polymer wherein said polymer contains from about 80 to about 98 weight percent of the C_4 to C_7 isomonoolefin and from about 20 to about 2 weight percent of the vinylidene substituted aromatic monomer for a total of 100 weight percent and (b) from about 1×10^{-2} to about 2×10^{-2} mols per gram of polymer of a methoxy alkoxy methane of the general formula $ROCH_2OCH_3$ wherein R is an alkyl group having from 1 to 8 carbon atoms and cooling said solution to about 0° to 20° C.,

(ii) adding to the solution of step (i) from about 2×10^{-3} to about 2×10^{-2} mols per gram of polymer of a thionyl halide,

(iii) cooling said solution of step (ii) to about 0° to about 20° C. and adding from about 5×10^{-4} to about 5×10^{-3} mols per gram of polymer of Lewis acid optionally dissolved in an organic solvent,

(iv) heating the solution from step (iii) to a temperature of from about 45° C. to about 80° C. for a period of from about 3 hours to about 10 hours whereby a portion of the aromatic rings in the vinylidene substituted aromatic monomer in the polymer are halomethylated, and,

(v) recovering the halogen-containing polymer.

5,629,387

SILICONE COMPOSITIONS COMPRISING LONG CHAIN α-ACETYLENIC ALCOHOL HYDROSILYLATION INHIBITORS

Jean-Marc Frances, Villeurbanne, France; Robert S. Dordick, Matthews, N.C., and Andre Soldat, Lyon, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 235,526, Apr. 29, 1994, abandoned. This application Sep. 11, 1995, Ser. No. 526,780
Claims priority, application France, Apr. 30, 1993, 93 05130
Int. Cl.[6] C08F *283/00*
U.S. Cl. 525—478 30 Claims

1. A stable curable silicone composition, comprising a hydrosilylation-curable polyorganosiloxane and a crosslinking agent therefor, a hydrosilylation-inhibiting amount of a long chain acetylenic alcohol, and a catalytically effective amount of it hydrosilylation catalyst, said long chain acetylenic alcohol having the formula:

$$R—(R')C(OH)—C\equiv CH \quad (I)$$

in which R is a linear or branched alkyl radical or a phenyl radical, R' is H or a linear or branched alkyl radical or a phenyl radical, and further wherein the total number of carbon atoms contained in R and R' is at least 9 and at most 20.

5,629,388

PROCESS FOR PRODUCING POLYDIORGANOSILOXANE BASED GRAFT COPOLYMERS

Kenneth G. Himelrick; Kevin R. Kidder; Vijaya K. Kuruganti, all of Parkersburg, W. Va., and Hrong-Roang Sheu, Somerville, all of N.J., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 837,838, Feb. 18, 1992, abandoned. This application Mar. 2, 1995, Ser. No. 397,316
Int. Cl.[6] C08G *77/20*
U.S. Cl. 525—479 20 Claims

1. A process for producing a polyorganosiloxane-based graft copolymer with controlled particle size distributions, said process comprising:

(a) homogenizing an admixture comprising:

(i) dihydroxy functional polydiorganosiloxane, having a viscosity selected from between 0.005 Pa.S and 0.15 Pa.S as measured at 25° C.,

(ii) a vinyl functional organosiloxane grafting agent,

(iii) an emulsifying agent,

(iv) water, and

(v) a polyalkoxysilane crosslinking agent, to form an emulsion of polydiorganosiloxane particles,

(b) maintaining the emulsion in the presence of an acid catalyst at a temperature of from 15° to 30° C. at a pH of less than 5 until the desired molecular weight and level of crosslinking of the polydiorganosiloxane is obtained to form vinyl functional silicone rubber particles;

(c) adjusting the pH of the emulsion to between 6 and 8;

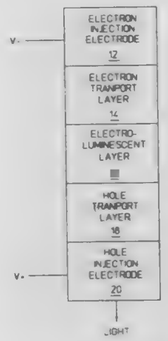
(d) graft-polymer/zing at least one vinyl monomer onto the resulting silicone rubber particles to form a graft polymer, whereby the polyorganosiloxane-based graft copolymer has particle sizes ranging from 350 Angstroms to 9000 Angstroms.

5,629,389

POLYMER-BASED ELECTROLUMINESCENT DEVICE WITH IMPROVED STABILITY

Daniel B. Roitman, Menlo Park; James R. Sheats, and Mark R. Hueschen, both of Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 6, 1995, Ser. No. 463,141
Int. Cl.[6] C08F *283/00*; H01B *1/00*; H01L *27/15;31/12*
U.S. Cl. 525—534 5 Claims



1. An electroluminescent device comprising:

a hole injection electrode;

an electron injection electrode; and

an electroluminescent layer comprising an organic polymer between said hole and electron injection electrodes, said electroluminescent layer further comprising a hindered phenolic additive in a concentration greater than 4% by weight, wherein said hindered phenolic additive is chosen from the group consisting of 2,6 di-tert-butyl-methylphenol, 2-(2H-benzotriazol-2-yl)- 4,6-bis(1-methyl-1-phenylethyl)phenol, or 2,4,6 tri-butyl phenol.

5,629,390

METHOD FOR PRODUCING A POLYOLEFIN

Sadaki Nishimura, Yokkaichi; Yutaka Naito; Toshikazu Chikusa, both of Mie-ken; Mitsuhiro Mori, Aichi-ken, and Yozo Kondo, Yokkaichi, all of Japan, assignors to Tosoh Corporation, Sinnanyo, Japan

Continuation of Ser. No. 502,855, Jul. 14, 1995, abandoned, which is a continuation of Ser. No. 100,186, Aug. 2, 1993, abandoned, which is a continuation of Ser. No. 673,077, Mar. 21, 1991, abandoned. This application May 16, 1996, Ser. No. 648,866
Claims priority, application Japan, Mar. 23, 1990, 2-072140; Apr. 2, 1990, 2-084823; Aug. 1, 1990, 2-202474; Jan. 30, 1991, 3-027660
Int. Cl.[6] C08F *4/654;4/655*
U.S. Cl. 526—114 11 Claims

1. A method for producing a polyolefin in the presence of a catalyst comprising a transition metal compound and an organometallic compound, which comprises: polymerizing an olefin in the presence of a catalyst which comprises:

(A) a solid catalyst component prepared by reacting a homogeneous solution containing

(I) (i) a combination of magnesium metal and at least one hydroxylated organic compound, (ii) at least one oxygen-containing organic compound of magnesium, or (iii) a combination of (i) and (ii),

(II) an electron donating compound selected from the group consisting of an ether, an ester, a ketone, a phenol, an amine, an amide, an imine, a nitrile, a phosphine and an arsine, and

(III) an oxygen-containing organic compound of titanium, with

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(IV) at least one aluminum halide compound, thereby obtaining a solid product which is freed from unreacted substances and by-products by filtration or decantation, and which has a magnesium atom (component I) to titanium atom (component III) atomic ratio ranging from 1:0.01 to 1:20, and adding to this solid product

(V) at least one compound selected from the group consisting of oxygen-containing organic compounds of at least one transition metal of group IVb of the Periodic Table, and then treating the mixture with

(VI) an aluminum halide compound, and

(B) at least one catalyst component selected from the group consisting of organoaluminum compounds.

5,629,391

PROCESS FOR THE PREPARATION OF CRYSTALLINE VINYLAROMATIC POLYMERS WITH A PREDOMINANTLY SYNDIOTACTIC STRUCTURE

Nicoletta Cardi, Novara; Riccardo Po' , Leghorn; Roberto Santi, Rosignano Marittmo, and Giuseppe Cometti, Verbania Pallanza, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed May 28, 1996, Ser. No. 654,202

Claims priority, application Italy, Jun. 30, 1995, 00139995/A

Int. Cl.[6] C08F *4/643;4/642;12/08*

U.S. Cl. 526—133 **8 Claims**

1. Process for the preparation of crystalline vinylaromatic polymers with a predominantly syndiotactic structure which comprises polymerizing a vinyl-aromatic monomer, either alone or mixed with at least one other copolymenizable ethylenically unsaturated monomer, in the presence of a catalytic system consisting essentially of:

a) a complex of titanium having the formula (I)

$$Ti\,(OCONRR')_n \qquad (I)$$

wherein R and R', being the same or different, represent a C_1–C_{12} aliphatic radical or C_6–C_{20} aromatic radical; and wherein n is an integer equal to 3 or 4;

b) a cocatalyst selected from aluminoxane and a compound of boron having formula (II):

$$BX_1X_2X_3 \qquad (II)$$

or one of its salts, wherein X_1, X_2 and X_3, being the same or different, represent a C_1–C_{20} perfluorinated hydrocarbon radical.

5,629,392

PROCESS FOR THE PREPARATION OF (CO)POLYMERS OF α-OLEFINS

Roberto Santi, Novara; Giuseppe Cometti, Verbania Pallanza; Liliana Gila, Cameriano, and Antonio Proto, Novara, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed May 23, 1996, Ser. No. 652,821

Claims priority, application Italy, Jun. 30, 1995, MI95A1398

Int. Cl.[6] C08F *4/64*

U.S. Cl. 526—160 **6 Claims**

1. Process for the preparation of (co) polymers of α-olefins which comprises polymerizing at least one α-olefin in the presence of a catalytic system consisting essentially of:

a) a complex of a metal of groups VIB or VB having the formula (I):

$$M(OCONRR')_n \qquad (I)$$

wherein M represents a transition metal selected from the group consisting of Ti, Zr, H& and V; R and R', the same or different, represent a C_1–C_{12} aliphatic or C_{18} aromatic radical whereas n represents the oxidation state of the metal;

b) a cocatalyst consisting of aluminoxane.

5,629,393

INITIATING PROCESS AND SYSTEM FOR THE ANIONIC POLYMERIZATION OF ACRYLIC MONOMERS

Sunil K. Varshney, Liege; Roger Fayt, Neupre, and Philippe Teyssie, Neuville En Condroz, all of Belgium, assignors to Elf Atochem S.A., Paris la Defense, France

Continuation of Ser. No. 776,231, Nov. 12, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,403

Claims priority, application France, Jun. 5, 1989, 89 07374; May 22, 1990, 90 06351

Int. Cl.[6] C08F *4/56;226/06;220/10;212/06;210/00;293/00;* **B01T** *31/00*

U.S. Cl. 526—175 **35 Claims**

1. An initiating system for the anionic polymerization of (meth) acrylic monomers or the anionic copolymerization of (meth) acrylic monomers and vinyl comonomers, comprising at least one initiator of the formula $(C_6H_5)_2CHM$ in which M is chosen from lithium, sodium and potassium; and at least one alkali metal alcoholate of the formula R_1OLi, in which R_1 is a straight- or branched-chain alkyl radical containing from 1 to 6 carbon atoms, an aryl radical or an arylalkyl radical.

5,629,394

DIRECT SYNTHESIS BY LIVING CATIONIC POLYMERIZATION OF NITROGEN-CONTAINING POLYMERS

Herve M. Cheradame, Grignan, France; Frank J. Chen, Edison; Jon E. R. Stanat, Westfield, both of N.J.; Hung A. Nguyen, La Kremlin Bicetre, and Behrooz R. Tabar, Paris, both of France, assignors to Exxon Chemical Patents Inc, Linden, N.J.

Division of Ser. No. 992,511, Dec. 17, 1992, Pat. No. 5,444,135. This application Jun. 7, 1995, Ser. No. 474,043

Int. Cl.[6] C08F *4/00;120/06;130/08;112/08;110/10*

U.S. Cl. 526—219.2 **20 Claims**

1. A method for the direct synthesis of polymeric materials functionalized with nitrogen-containing functional groups, comprising the steps of providing a cationically polymerizable monomer, and initiating living polymerization by the addition of a cationic polymerization catalyst, in the presence of a nitrogen-containing initiator compound having said nitrogen-containing functional group chemically bound to a release moiety, wherein the ratio of moles of catalyst to nitrogen-containing functional groups is greater than about 3.95:1 and wherein said nitrogen-containing functional group is at least one species selected from the group consisting of —NCO—, —OC≡N, —SC≡N, —CN and —NCS.

5,629,395

PROCESS FOR PRODUCING CROSS-LINKED POLYMER CONTAINING CARBOXYL GROUP

Masato Fujikake; Shinji Kobayashi; Shigeki Hamamoto; Mitsutaka Tabata, and Morio Nakamura, all of Himeji, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 444,726, May 19, 1995, abandoned, which is a continuation of Ser. No. 125,817, Sep. 24, 1993, abandoned. This application Mar. 25, 1996, Ser. No. 621,513

Claims priority, application Japan, Oct. 1, 1992, 4-263466

Int. Cl.[6] C08F *2/06*

U.S. Cl. 526—238.23 **5 Claims**

1. A process for producing a water-soluble crosslinked polymer containing carboxyl groups which comprises (a) polymerizing an α,β-unsaturated carboxylic acid and a crosslinking agent copolymerizable with it in the presence of a radical polymerization catalyst in an aliphatic hydrocarbon solvent to form a slurry, and (b) removing aliphatic hydrocarbon solvent by drying under heating at 50° C. to 160° C. while bubbling oxygen gas diluted with nitrogen gas as a radical scavenger into the resulting slurry.

5,629,396

LATEX CONTAINING OXAZOLINE FOR INDUSTRIAL COATINGS

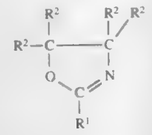
Daniel B. Rice, Shepherd; James G. Galloway, and William H. Keskey, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 127,982, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 629,938, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 297,507, Jan. 17, 1989, abandoned. This application Jan. 5, 1995, Ser. No. 368,826

Int. Cl.[6] C08F *226/06;220/10;* **B05D** *3/00*

U.S. Cl. 526—260 **7 Claims**

1. A process for coating cold rolled steel by applying thereto a composition comprising an aqueous dispersion of latex copolymers prepared from ethylenically unsaturated monomers, wherein from 0.25 to 5.0 percent by weight of such monomers are of the formula:



wherein R^1 is $H_2C{=}C(R^3)$—, wherein R^3 is hydrogen or an alkyl group; each R^2 is independently hydrogen, halogen, alkyl, or alkylene group of two to four carbons.

5,629,397

2,6-DIMETHYLPHENYLMALEIMIDE AS A COMONOMER FOR STYRENE COPOLYMERS AND VINYL CHLORIDE COPOLYMERS

Gerhard Steinbauer, Enns, Austria; Jan Bartus, New York, N.Y.; Heinrich Horacek, Puchenau, Austria; Otto Vogl, New York, N.Y., and Gerhard Stern, Sonnberg, Austria, assignors to DSM Chemie Linz GmbH, Linz, Austria

Continuation of Ser. No. 258,470, Jun. 10, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,475

Claims priority, application Austria, Jun. 11, 1993, 1131/93

Int. Cl.[6] C08F *222/40;220/10;236/04;220/48;212/08*

U.S. Cl. 526—262 **5 Claims**

1. Styrene copolymers comprising 10–70% by weight of 2,6-dimethylphenylmaleimide and show, in regard to styrene copolymers without 2,6-dimethylphenylmaleimide, increased glass transition temperature and low intrinsic coloration.

5,629,398

PROCESS FOR PRODUCING CYCLIC OLEFIN BASED POLYMERS, CYCLIC OLEFIN COPOLYMERS, COMPOSITIONS AND MOLDED ARTICLES COMPRISING THE COPOLYMERS

Takuji Okamoto; Junichi Matsumoto; Masami Watanabe, and Hiroshi Maezawa, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01338, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO92/06123, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 3, 1991, Ser. No. 867,227

Claims priority, application Japan, Oct. 5, 1990, 2-267815; Oct. 12, 1990, 2-274609; Feb. 6, 1991, 3-35050; Mar. 14, 1991, 3-73606; Apr. 5, 1991, 3-99839

Int. Cl.[6] C08F *232/04;4/64*

U.S. Cl. 526—281 **19 Claims**

1. A process for producing a cyclic olefin based polymer wherein homopolymerization of a cyclic olefin or copolymerization of a cyclic olefin and an alpha-olefin is carried out in the presence of a catalyst comprising as main components the following compounds (A) and (B):

(A) a transition metal compound; and

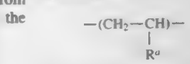
(B) a compound capable of forming an ionic complex when reacted with said transition metal compound,

wherein Compound (A) is a transition metal compound represented by the following formula:

$$M^1R^1R^2R^3R^4$$

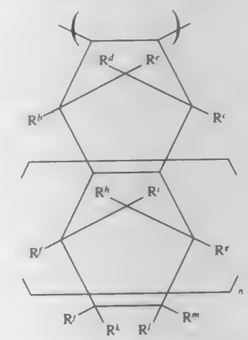
wherein M^1 is a transition metal selected from the IVB Group of the Periodic Table; R^1, R^2, R^3, and R^4 may be the same as or different from each other, and are independently a ligand having a sigma bond, chelate ligand or Lewis base.

7. A cyclic olefin copolymer having (1) 80 to 99.9 mol % of the repeating unit [X]



[X]

wherein R^a is hydrogen or a C_{1-20} hydrocarbon group and 0.1 to 20 mol % of the repeating unit [Y]:



[Y]

wherein R^b to R^m, which may be the same or different from each other, are each independently hydrogen, a C_{1-20} hydrocarbon group or a substituent having a halogen atom, oxygen atom or nitrogen atom; R^j or R^k and R^l or R^m may form a ring together, and n is 0 or an integer value; (2) an intrinsic viscosity of 0.005 to 20 dl/g; (3) a glass transition temperature of less than 20° C.; (4) a tensile modulus ranging from 300 to 2,000 kg/cm^2, determined by measurement at room temperature, and (5) a molecular weight distribution M_w/M_n of about 1.3 to 3.

5,629,399

FAST CURING ORGANOSILOXANE COMPOSITIONS WITH LONG WORKING TIMES

Donnie R. Juen, Sanford; Kent R. Larson, Midland; Myron T. Maxson, Sanford, and Lawrence J. Rapson, Bay City, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 5, 1996, Ser. No. 610,944

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **11 Claims**

1. A room temperature curable organosiloxane composition, comprising:

(A) a curable polyorganosiloxane containing at least two alkenyl radicals per molecule;

(B) an amount sufficient to cure said composition of an organohydrogensiloxane containing at least two silicon-bonded hydrogen atoms per molecule, wherein the sum of the alkenyl radical per molecule of (A) and the silicon-bonded hydrogen atoms per molecule of (B) is greater than 4;

(C) an amount sufficient to promote curing of said composition of a platinum catalyst;

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(D) 0.03 to 0.6 weight percent, based on the combined weights of components (A) and (B), of a methylvinylcyclosiloxane; and

(E) 0.002 to 0.03 weight percent, based on the combined weights of components (A) and (B) of an acetylenic alcohol;

wherein the amounts of components (D) and (E) are selected such that the resulting composition has a working time of at least 15 minutes and a demold time of less than 5.5 hours.

5,629,400

WATER-BASED ORGANOPOLYSILOXANE-CONTAINING COMPOSITIONS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Burkhard Standke, Lörrach; Albert Frings, Rheinfelden; Michael Horn, Rheinfelden; Hans-Joachim Kötzsch, Rheinfelden; Frank Kropfgans, Rheinfelden; Jaroslaw Monkiewicz, Rheinfelden; Claus-Dietrich Seiler, Rheinfelden, all of Germany, and Jim Steinmetz, Princeton, N.J., assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Dec. 6, 1995, Ser. No. 568,384

Claims priority, application Germany, Dec. 9, 1994, 44 43 824.9

Int. Cl.[6] C08G *77/26*

U.S. Cl. 528—38 **17 Claims**

1. A water-soluble organopolysiloxane-containing composition comprising a water-soluble organopolysiloxane wherein said composition is essentially free from organic solvents selected from aliphatic or aromatic hydrocarbons, halogenated hydrocarbons, glycols, glycol ethers, ethers, ketones, esters, amides or other nitrogen compounds or sulfur or nitro compounds or proton-free solvents, and wherein said composition has a flash point of more than 70° C. and essentially liberates no alcohol by hydrolysis on dilution with water.

5,629,401

PREPARATION OF POLYORGANOSILOXANES BY INTERFACIAL POLYMERIZATION

Daniel Graiver, Midland, and Arnold W. Lomas, Rhodes, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 1, 1996, Ser. No. 626,711

Int. Cl.[6] C08G *77/00*

U.S. Cl. 528—43 **7 Claims**

1. A method of making a copolymer comprising (A) reacting (i) a nonaqueous, organic solvent solution of a dihalo organosilicon compound or a diacyloxy organosilicon compound at or near an interface formed by the nonaqueous organic solvent solution and (ii) an immiscible nonaqueous organic solvent solution of a silanolate or organosilanolate of formula $R"_xSi(OM)_{4-x}$ or $MO(R"_2SiO)_nM$ where R" is an alkyl radical of 1–6 carbon atoms, an aryl radical, an alkenyl radical, an alkylamino radical, or an epoxy radical; x is 0–2; n is at least one; and M is an alkali metal; and (B) recovering the copolymer at or near the interface of the solvent solutions.

5,629,402

COATING COMPOSITIONS AND THEIR USE FOR THE PREPARATION OF COATINGS PERMEABLE TO WATER VAPOR

Josef Pedain; Detlef-Ingo Schütze, both of Cologne; Wilhelm Thoma, Leverkusen, and Klaus Nachtkamp, Duesseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 914,716, Jul. 16, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 221,214

Claims priority, application Germany, Aug. 1, 1991, 41 25 454.6

Int. Cl.[6] C08G *18/48;18/80;18/38*

U.S. Cl. 528—45 **21 Claims**

1. A coating composition for the preparation of water-vapor permeable coatings comprising (A) a polyurethane system containing either

(a) a polyurethane having an elongation at break (according to DIN 53,504) of from 200 to 1000% and containing ionic groups in a quantity of from 0.5 to 40 milliequivalents per 100 g of polyurethane (a) and from 10 to 45% by weight, based on polyurethane (a), of polyethylene oxide units $—(CH_2CH_2O)_n—$ in which the sequence length n is from 3 to 55, prepared from

(1) one or more polyisocyanates,

(2) one or more hydroxyl-terminated polyethers having number average molecular weights of from 350 to 5000 selected from the group consisting of

(i) a homopolyethylene glycol or an ethylene oxide/propylene oxide copolymer containing 2 or 3 hydroxyl end groups and having polyethylene oxide units distributed in blocks or at random,

(ii) a polycarbonate or polyether ester based on said homopolyethylene glycol or ethylene oxide/propylene oxide copolymer, and

(iii) mixtures thereof,

(3) an ionic-group-containing diol and/or diamine, and

(4) one or more chain lengthening agents having molecular weights of from 32 to 349,

wherein said polyurethane (a) is prepared by the one-shot reaction of components (1), (2), (3), and (4) or by reaction of components (1), (2), and (3) to form a prepolymer that is then reacted with component (4), or

(b) a precursor that is reactive at elevated temperatures of about 70° to about 100° C. and capable of forming said polyurethane (a) prepared from

(i) a blocked isocyanate prepolymer corresponding to said polyurethane (a), and

(ii) a cross-linking agent; and (B) optionally, one or more organic solvents in a quantity of up to 80% by weight, based on the sum of components (A) and (B),

wherein said coating composition contains less than 5% by weight of water, based on the sum of components (A) and (B).

5,629,403

COATING COMPOSITIONS CONTAINING POLYISOCYANATES AND ALDIMINES WHICH HAVE IMPROVED STORAGE STABILITY

Sharon D. Hicks, Pittsburgh; Douglas A. Wicks, Mt. Lebanon, and Philip E. Yeske, Pittsburgh, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 171,304, Dec. 21, 1993, abandoned. This application Dec. 20, 1994, Ser. No. 359,961

Int. Cl.[6] C08G *18/08*

U.S. Cl. 528—48 **18 Claims**

1. A coating composition which has an improved pot life without a corresponding increase in dry time when cured under ambient conditions comprising

a) a polyisocyanate component,

b) an aldimine based on the reaction product of a polyamine having 2 or more primary amino groups with an aldehyde corresponding to the formula:

$O=CHCH(R_1)(R_2)$

wherein R_1 and R_2 may be the same or different and represent optionally substituted hydrocarbon radicals, or R_1 and R_2 together with the β-carbon atom form a cycloaliphatic or heterocyclic ring and

c) 0.001 to 5 weight percent, based on the weight of components a) and b), of a tin(IV) compound which is a catalyst for the reaction between isocyanate groups and hydroxyl groups,

wherein components a) and b) are present in an amount sufficient to provide an equivalent ratio of isocyanate groups to aldimine groups of 0.5:1 to 20:1.

5,629,404

IMPACT RESISTANT POLYMERS BASED ON BISPHENOL-A-POLYCARBONATE

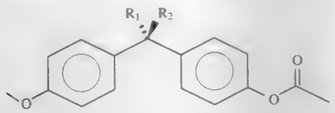
Douglas A. Smith, 325 Beaver Ct., Johnstown, Pa. 15905, and Charles W. Ulmer, II, 706 Belmont, Johnstown, Pa. 15904

Filed Jun. 7, 1995, Ser. No. 479,031

Int. Cl.[6] C08G *64/00*

U.S. Cl. 528—196 **8 Claims**

1. A high impact bisphenol-A-polycarbonate polymer comprising repeating monomer units of the formula:



wherein at least one of R_1 and $R_{226\ 2}$ is a group promoting hydrogen bonding with a hydrogen atom of a phenyl ring, selected from the group consisting of;

a) carboxylic acid derivatives selected from the group consisting of esters $—COOR_3$, lactones, amides $—CONH_2$, $—CONHR_3$ or $—CON(R_3)_2$ and carbonates O-C(=O)-O, where R_3 is a C_1–C_6 alkyl, alkenyl, alkynyl or allyl straight or branched chain group or a phenyl or substituted phenyl group;

b) sulfoxide R_3-S(=O)-R_3, sulfone R-S(=O)$_2$-R_3 or sufonamide S(=O)-N(R_3)$_2$, where R_3 is as defined above;

c) a functional group with P=O and R_3 as defined above;

d) ketones and aldehydes with R_3 as defined above;

e) primary, secondary and tertiary amines including R_3 as defined above;

f) halogens X and organic halides R_4X, where R_4 is a C_1–C_6 alkyl, alkenyl, alkynyl or allyl straight or branched chain group;

g) ethers and thioethers including R_4 as defined above; and

h) primary and secondary C_1–C_{18} aliphatic and aliphatic cyclic alcohols.

5,629,405

METHOD FOR MAKING POLYARYLENE ETHERS WITH PYRIDINE CATALYSTS

Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 20, 1995, Ser. No. 560,603

Int. Cl.[6] C08G *65/38*

U.S. Cl. 528—215 **20 Claims**

1. A method for making branched polyarylene ethers, said method comprising the step of melt polymerizing at least one first member selected from the group consisting of hydroxyaromatic monomers and oligomers prepared therefrom, in the presence of:

(a) a catalyst composition comprising at least one second member selected from the group consisting of pyridine and substituted pyridine, in the amount of about 1–50 mole percent based on total moles of said hydroxyaromatic or structural units in said oligomer monomers; and

(b) oxygen, wherein the method is conducted at a temperature of greater than about 100° C. to about 220° C.

5,629,406

INHIBITORS OF HIV PROTEASE

Susumu Higashida; Mitsuya Sakurai; Yuichiro Yabe; Takashi Nishigaki; Tomoaki Komai, and Hiroshi Handa, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

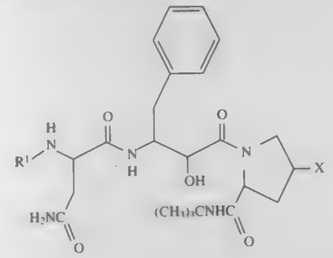
Continuation of Ser. No. 102,467, Aug. 5, 1993, abandoned. This application Apr. 14, 1994, Ser. No. 227,588

Claims priority, application Japan, Aug. 7, 1992, 4-211746

Int. Cl.[6] A61K *38/06*

U.S. Cl. 530—331 **6 Claims**

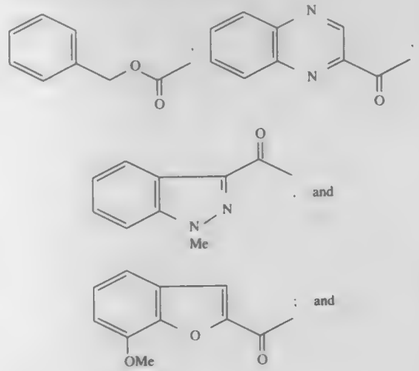
1. A compound of the formula



wherein

X is a chlorine atom, and

R^1 is selected from the group consisting of



pharmaceutically acceptable salts and esters thereof.

5,629,407

DNA ENCODING AN 18 KD CDK6 INHIBITING PROTEIN AND ANTIBODIES THERETO

Yue Xiong, Chapel Hill, N.C., and Kunliang Guan, Ann Arbor, Mich., assignors to The University of Michigan, Ann Arbor, Mich., and The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 263,935, Jun. 21, 1994. This application Jun. 7, 1995, Ser. No. 486,410

Int. Cl.[6] C07K *16/00*

U.S. Cl. 530—387.1 **6 Claims**

4. An antibody which specifically binds to a protein having the amino acid sequence given herein as SEQ ID NO:2.

VOL 1198 ISS 2 MY 13 1997 UMI

5,629,408

IMMUNOCHEMICAL ISOLATION OF IN VIVO ADVANCED GLYCOSYLATION ENDPRODUCTS

Richard J. Bucala, New York, N.Y., assignor to The Rockefeller University, New York, N.Y.

Continuation of Ser. No. 956,849, Oct. 1, 1992, which is a continuation-in-part of Ser. No. 811,579, Dec. 20, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 476,381

Int. Cl.[6] **C07K** *1/22;16/18;* **G01N** *33/577*

U.S. Cl. 530—413 **6 Claims**

1. A method of isolating AGEs from blood, serum, or plasma of a patient comprising exposing the patient blood, serum, or plasma to an anti-AGE antibody to form anti-AGE antibody:AGE complexes, and removing the complexes from the serum;

wherein said anti-AGE antibody is reactive with in vivo-produced advanced glycosylation endproducts and have the following characteristics;

i. it reacts with an immunological epitope common to said in vivo-formed advanced glycosylation endproducts;

ii. it is cross reactive with advanced glycosylation endproducts formed in vitro; and

iii. it is not cross reactive with the following model advanced glycosylation endproducts however formed: 2-(2-furoyl)-4(5)-(2-furanyl)-1H-imidazole (FFI), 1-alkyl-2 -formyl-3,4 -diglycosyl pyrrole (AFGP), 5-hydroxymethyl-1-alkylpyrrole-2-carbaldehyde (pyrraline), carboxymethyllysine, and pentosidine, wherein reactivity is detected in a competitive immunosorbent assay format, wherein bovine serum albumin (BSA)-AGE obtained by incubation of BSA with glucose is adsorbed to said solid phase, and said model AGE is tested as the inhibitor of binding of said antibody to said BSA-AGE.

5,629,409

REACTIVE DISAZO DYES HAVING TWO CYANURIC CHLORIDE MECHANISMS

Hermann Löffler, Speyer, and Manfred Patsch, Wachenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

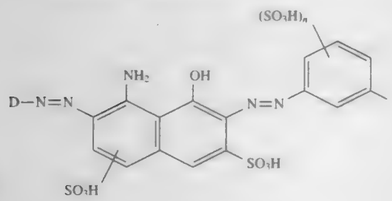
Filed Mar. 10, 1995, Ser. No. 401,991

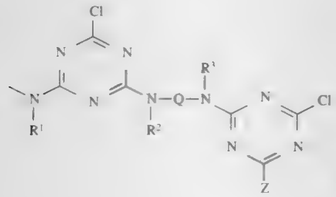
Claims priority, application Germany, Mar. 11, 1994, 44 08 197.9

Int. Cl.[6] **C09B** *62/09*

U.S. Cl. 534—631 **9 Claims**

1. A disazo dye of the formula I





where

n is 0, 1 or 2.

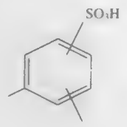
D is unsubstituted or substituted phenyl or unsubstituted or substituted naphthyl.

R^1 and R^2 independently of one another, are each hydrogen or unsubstituted or substituted C_1–C_4-alkyl,

R^3 is hydrogen,

Z is a radical of the formula NR^4R^5, where R^4 is hydrogen or unsubstituted or substituted C_1–C_4-alkyl and R^5 is hydrogen, unsubstituted or substituted C_1–C_4-alkyl or unsubstituted or substituted phenyl, and

Q is a radical of the formula



with the proviso that

a) from five to seven groups which impart water solubility are present in the molecule wherein the substituents on the substituted phenyl or substituted naphthyl are selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, amino, halogen, hydroxysulfonyl, carboxyl, sulfamoyl, C_1–C_4-mono- or dialkylsulfamoyl, whose alkyl radicals are unsubstituted or substituted by hydroxyl, and C_1–C_4-alkylsulfonyl, which is unsubstituted or substituted by hydroxyl; and wherein the substituents on said substituted C_1–C_4-alkyl are selected from the group consisting of hydroxyl, C_1–C_4-alkoxy, hydroxy-C_1–C_4-alkoxy, sulfato, halogen, C_1–C_4-alkoxycarbonyl, cyano, carboxyl and hydroxysulfonyl; and wherein the groups which impart water solubility are selected from the group consisting of carboxyl and hydroxysulfonyl.

5,629,410

REACTIVE AZO DYES CONTAINING AN AMINOCARBONYL OR AMINOSULFONYL BRIDGE MEMBER

Rolf Deitz, Kandern; Bernhard Müller, Efringen-Kirchen, both of Germany, and Athanassios Tzikas, Pratteln, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

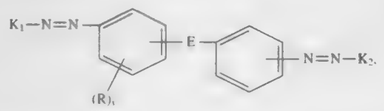
Filed Oct. 11, 1995, Ser. No. 541,010

Claims priority, application Switzerland, Oct. 13, 1994, 3081/94

Int. Cl.[6] **C09B** *62/513;67/22;* **D06P** *1/38*

U.S. Cl. 534—642 **11 Claims**

1. A compound of the formula

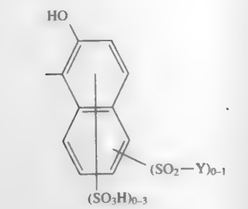


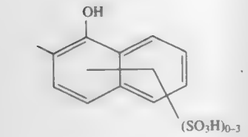
(1')

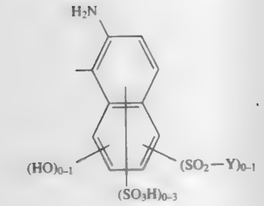
wherein E is the —NH—CO—, —NH—SO_2— or —SO_2—NH—SO_2— group,

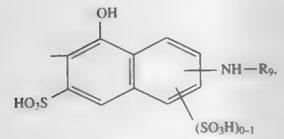
(R)$_s$ denotes s identical or different substituents selected from the group consisting of sulfo, hydroxy, C_1–C_4alkyl, C_1–C_4alkoxy, halogen and cyano, and s is 0, 1 or 2,

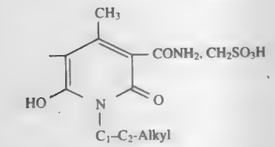
K_1 and K_2 are each independently of the other a radical of the formula

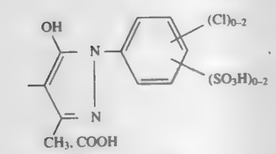


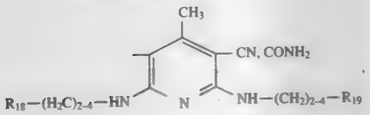


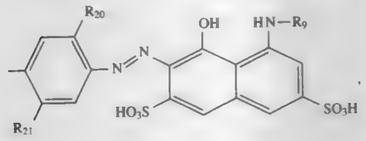






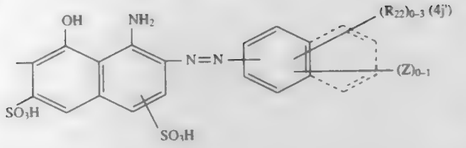






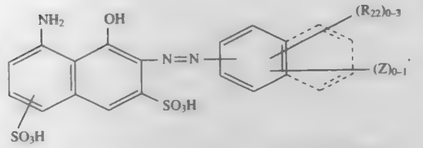
-continued

(4c')



or

(4k')

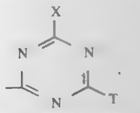


(4c'')

wherein R_9 is acetyl, benzoyl or a radical of the formula

(2c')

(4d')

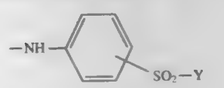


wherein X is halogen, and

T is C_1–C_4alkoxy; C_1–C_4alkylthio; hydroxy; amino; N-C_1–C_4alkylamino which is unsubstituted or substituted in the alkyl moiety by hydroxy, sulfato or sulfo; morpholino; phenylamino or N-C_1–C_4alkyl-N-phenylamino, wherein alkyl is unsubstituted or substituted by hydroxy, sulfo or sulfato, and phenyl is unsubstituted or substituted by sulfo, carboxy, acetylamino, methyl or methoxy; or T is a fibre-reactive radical of the formula

(4e')

(3c')



or

(4f')

(3d)

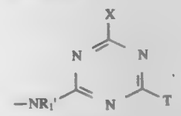


R_{18} is hydrogen, hydroxy or sulfato,

R_{19} independently has the meaning of R_{18}, or R_{19} is a radical of the formula

(2c)

(4h')



wherein R_1' is hydrogen or C_1–C_4alkyl and X and T are as defined above,

(4g')

R_{20} and R_{21} are each independently of the other hydrogen, methyl, methoxy, 2-hydroxyethoxy, 2-sulfatoethoxy, acetylamino, propionylamino, ureido or sulfo,

$(R_{22})_{0-3}$ is 0 to 3 identical or different radicals R_{22} selected from the group consisting of sulfo, chloro, C_1–C_4alkyl and C_1–C_4alkoxy,

(4i')

Y is vinyl, β-bromoethyl, β-chloroethyl, β-acetoxyethyl, β-benzoyloxyethyl, β-phosphatoethyl, β-sulfatoethyl or β-thiosulfatoethyl,

Z is a radical of the formula

—SO_2—Y (2a)

or

—CONR$_2$—$(CH_2)_n$—SO_2—Y (2b).

VOL 1198 ISS 2 MAY 13 1997 UMI

wherein R_2 is hydrogen or C_1–C_4-alkyl,

n is an integer from 1 to 6, and

Y is as defined above, with the proviso that at least one of K_1 and K_2 carries a fibre-reactive group, and the proviso that the compound of formula (1') contains at least one sulfo or sulfato group.

5,629,411

SACCHARIDE CARBOXYLIC ACIDS OF GLYCOSIDES

Toshihiro Ishiguro, Toyono-cho; Masahide Oka, Kawanishi; Takamasa Yamaguchi, Kobe, and Ikuo Nogami, Nagaoka-kyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 152,122, Nov. 15, 1993, Pat. No. 5,434,061. This application Apr. 10, 1995, Ser. No. 419,393

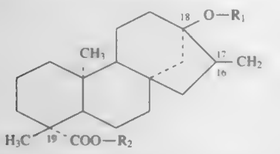
Claims priority, application Japan, Nov. 27, 1992, 4-318807; Mar. 11, 1993, 5-050652; Jul. 13, 1993, 5-173121

Int. Cl.[6] **C07H** *15/24*

U.S. Cl. 536—18.1 **3 Claims**

1. A saccharide carboxylic acid such that at least one hydroxymethyl group of a steviol glycoside of formula (II)

(II)



wherein R_1 = -β-Glc-2-β-Glc, -β-Glc-2-β-Glc (3-β-Glc)

-β-Glc-2-α-Rha, -β-Glc-2-α-Rha (3-β-Glc) or

-β-Glc; and R_2 = -β-Glc or -β-Glc-2-β-Glc

has been oxidized to carboxyl group or a salt thereof.

5,629,412

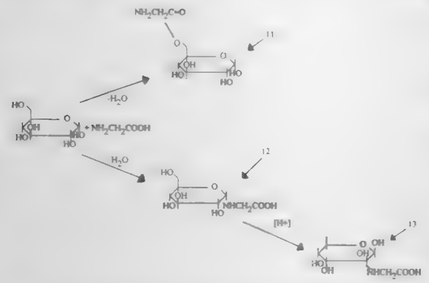
SYNTHETIC GLYCOAMINES THAT PROMOTE OR INHIBIT CELL ADHESION

Guennadi V. Glinskii, 1315 English Dr., Columbus, Mo. 65203

Filed Jul. 11, 1994, Ser. No. 273,506

Int. Cl.[6] **A61K** *38/14;* **C07K** *9/00;* **C07H** *13/02*

U.S. Cl. 536—22.1 **8 Claims**



1. A method of inhibiting the adhesion of cells to one another, said method comprising the step of bringing said cells into contact with a compound comprising of a polypeptide having one or more amino acids, one of said amino acids being linked to a carbohydrate to form a compound chosen from the group consisting of Schiff bases, N-glycosides, esters, and Amadori products, said compound being present in sufficient concentration to inhibit the adhesion of said cells to one another.

5,629,413

OLIGONUCLEOTIDES WITH ACTIVITY AGAINST HUMAN IMMUNODEFICIENCY VIRUS

Todd C. Peterson, Chula Vista, and Jorge Velarde, Jr., San Diego, both of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 94,390, Jul. 19, 1993, abandoned. This application Jul. 19, 1994, Ser. No. 279,751

Int. Cl.[6] **C07H** *21/02;21/04;* **A61K** *31/70*

U.S. Cl. 536—23.1 **4 Claims**

1. An oligonucleotide which inhibits HIV replication consisting of the sequence

SEQ ID NO: 18: CTTCGGGCCT GTCGGGTCCC CTCGGG.

5,629,414

DIAGNOSTIC GENES FOR TOXOPLASMOSIS

John C. Boothroyd, Palo Alto; James L. Burg, Foster City, both of Calif., and Lloyd H. Kasper, Norwich, Vt., assignors to The Board of Trustees of the Leeland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 1,215, Jan. 6, 1993, abandoned, which is a continuation of Ser. No. 616,693, Nov. 20, 1990, abandoned, which is a continuation of Ser. No. 166,384, Mar. 9, 1988, abandoned. This application Jan. 14, 1994, Ser. No. 182,673

Int. Cl.[6] **C07H** *21/00;* **C12N** *1/20;15/00*

U.S. Cl. 536—23.7 **33 Claims**

1. An isolated DNA molecule comprising a nucleotide sequence encoding a p30 protein of *Toxoplasma gondii* with the amino acid sequence of FIG. 2*a*.

5,629,415

DNA ENCODING CANINE IMMUNOGLOBULIN E

Gregory F. Hollis, Westfield, and Mayur D. Patel, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 9, 1994, Ser. No. 336,583

Int. Cl.[6] **C07H** *21/00*

U.S. Cl. 536—23.53 **4 Claims**

1. A DNA molecule having the nucleotide sequence of SEQ. ID. NO.: 1.

5,629,416

METHOD OF PREPARING CROSSLINKED STARCH ESTERS

Dennis Neigel, Salisbury; Lawrence J. Scotchie, Charlotte, both of N.C., and Martin M. Tessler, Edison, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Mar. 31, 1995, Ser. No. 414,556

Int. Cl.[6] **C08B** *31/00;33/00;35/00*

U.S. Cl. 536—106 **19 Claims**

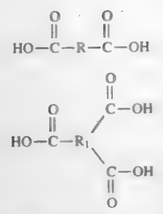
1. A process for preparing crosslinked starch esters having a degree of substitution (DS) of about 1.3 to 2.7 comprising:

a) slurrying starch in a monocarboxylic acid anhydride selected from anhydrides having carboxylic groups of 2 to 4 carbon atoms;

b) adding a polyfunctional acid or anhydride to the above formed slurry, wherein said polyfunctional acid is selected from the group consisting of polycarboxylic acids having one of the following formulas:

(I)

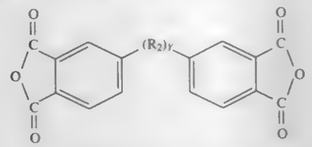
(II)



wherein R is selected from the group consisting of alkylene, unsaturated alkylene, bis alkylene ether, cycloalkylene and arylene containing from 1 to 42 carbon atoms; and R_1 is selected from the group consisting of trivalent paraffin radicals, and trivalent aromatic hydrocarbon radicals containing from 6 to 20 carbon atoms.

and said polyfunctional anhydride is selected from the group of anhydrides having the following general formula:

(III)



wherein R_2 is a divalent organic group, —O—, —S—, SO_2, or



and y is O or 1;

c) activating the slurry by the addition of aqueous caustic solution;

d) heating the slurry to its boiling point and holding until greater than about 95% conversion of the monoanhydride is reached and a crosslinked starch paste is formed; and

e) isolating and recovering the crosslinked starch ester product.

5,629,417

PHTHALOCYANINES

James S. Campbell, Whitefield; Peter Gregory, Bolton, and Dean Thetford, Rochdale, all of United Kingdom, assignors to Zeneca Limited, London, England

Division of Ser. No. 277,760, Jul. 20, 1994, Pat. No. 5,516,899. This application Jan. 31, 1996, Ser. No. 594,412

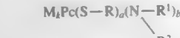
Claims priority, application United Kingdom, Jul. 29, 1993, 9315692

Int. Cl.[6] **C07D** *487/22*

U.S. Cl. 540—122 **1 Claim**

1. A process for the preparation of a phthalocyanine of Formula (1):

Formula (1)



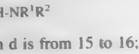
by reaction of a phthalocyanine of Formula (4):

Formula (4)



with a compound of Formula (5):

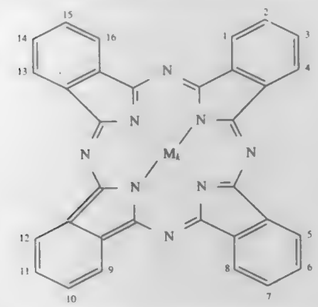
Formula (5)



in which d is from 15 to 16;

M_4Pc is a phthalocyanine nucleus of Formula (2):

Formula (2)



M is a metal atom, a chloro-metal group, and oxy-metal group or hydrogen;

k is inverse of ½ valency of M; R and R^1 each independently is an organic radical;

R^2 is H or optionally substituted alkyl;

a is an average value from 15 to 8;

b is an average value from 1 to 8; and

a+b is from 15 to 16 and sulphonated derivatives thereof.

5,629,418

PREPARATION OF TITANYL FLUOROPHTHALOCYANINES

Michel F. Molaire; Jeanne E. Kaeding, and William T. Gruenbaum, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1994, Ser. No. 330,396

Int. Cl.[6] **C09B** *67/50*

U.S. Cl. 540—141 **20 Claims**

1. A method for preparing a high crystallinity titanyl fluorophthalocyanine, said method comprising the steps of

dissolving titanyl fluorophthalocyanine in acid to form a solution;

admixing said solution and water, said admixing resulting in precipitation of amorphous titanyl fluorophthalocyanine;

washing said amorphous titanyl fluorophthalocyanine until substantially all of said acid is removed;

contacting said amorphous titanyl fluorophthalocyanine with an organic solvent, said contacting resulting in conversion of said amorphous titanyl fluorophthalocyanine to high crystallinity titanyl fluorophthalocyanine; and

retaining said amorphous titanyl fluorophthalocyanine in contact with water, continuously from said precipitation to said conversion.

5,629,419

PROCESS FOR PREPARING 4-MERCAPTOPYRROLIDINE INTERMEDIATE COMPOUNDS AND A PROCESS FOR THEIR USE IN PREPARING CARBAPENEM -2-EM-3 CARBOXYLIC ACIDS

Hiroshi Ohmizu, Kyoto; Masahiko Seki, Nagaokakyo, and Takeshi Yamanaka, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Nov. 8, 1995, Ser. No. 555,204

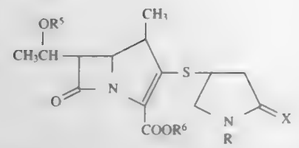
Claims priority, application Japan, Nov. 24, 1994, 6-288517

Int. Cl.[6] **C07D** *207/24;487/04*

U.S. Cl. 540—350 **8 Claims**

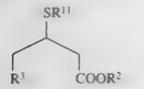
7. A process for preparing a 2-(pyrrolidin-4-ylthio)-6-(1-hydroxyethyl)-1-methylcarbapen-2-em-3-carboxylic acid derivative of the formula [VIII]:

VOL 1198 ISS 2 MY 13 1997 UMI



[VIII]

wherein R^5 is a hydrogen atom or a protecting group for hydroxy group, R^6 is a hydrogen atom or an ester residue, R is a hydrogen atom, a lower alkyl group or a lower alkanoyl group and X is an oxygen atom or a sulfur atom, or a salt thereof, which comprises reacting a halogenobutyric acid compound of the formula [VI]:

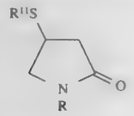


[VI]

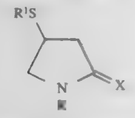
wherein R^{11} is a protecting group for thiol group, R^2 is a hydrogen atom or a protecting group for carboxyl group, and R^3 is a halogen atom, or a salt thereof, with an amine compound of the formula [VII]:

[VII]

wherein R is the same as defined above, or a salt thereof, to obtain a compound of the formula



wherein R^{11} and R are the same as defined above, and if necessary, thiocarbonylating the product and/or removing the protecting group for thiol group from the product, to give a 4-mercaptopyrrolidine compound of the formula [I]:



[I]

wherein R^1 is a hydrogen atom or a protecting group for thiol group, R and X are the same as defined above, followed by converting the compound [I] by a conventional method into the 1-methylcarbapenem derivative of the formula [VIII].

5,629,420

SUBSTITUTED ACETOXYAZETIDINONE DERIVATIVES AND PROCESS FOR PREPARING 4-ACYLOXYAZETIDINONE DERIVATIVES

Takao Saito; Hidenori Kumobayashi, both of Tokyo, and Shunichi Murahashi, Osaka, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

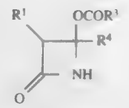
Division of Ser. No. 167,201, Dec. 16, 1993, Pat. No. 5,440,030, which is a division of Ser. No. 869,171, Apr. 16, 1992, Pat. No. 5,288,862. This application May 8, 1995, Ser. No. 436,810

Claims priority, application Japan, Apr. 18, 1991, 3-86588

Int. Cl.[6] **C07B** *41/12;* **C07D** *205/08*

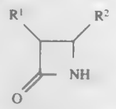
U.S. Cl. 540—357 **4 Claims**

1. A process for preparing a 4-acyloxyazetidinone represented by formula (IV):



(IV)

wherein R^1 represents a hydrogen atom, a lower alkyl group, a hydroxyethyl group, or a protected hydroxyethyl group; R^3 represents an alkyl group having from 1 to 10 carbon atoms which may be substituted with a halogen atom, a cyano group, a lower alkoxy group or a phenyl group, or a substituted or unsubstituted phenyl group, wherein said substituted phenyl group is substituted with a halogen atom, a lower alkoxy group or a nitro group, provided that the α-positioned carbon atom of said alkyl group should not have more than two halogen atoms; and R^4 represents a hydrogen atom, a lower alkyl group or a lower alkoxycarbonyl group, which comprises reacting an azetidinone represented by formula (II):



(II)

wherein R^1 is as defined above, and R^2 represents a hydrogen atom, a lower alkyl group, a lower alkoxycarbonyl group, or a carboxyl group, with a carboxylic acid represented by formula (III):



(III)

wherein R^3 is as defined above, in the presence of (1) metallic ruthenium or ruthenium-on-carrier, (2) an aldehyde having 2 or more carbon atoms, which is selected from the group consisting of an alkyl aldehyde and acetaldehyde substituted with a halogen atom, a phenyl group, a lower alkoxy-substituted phenyl group or a halogen-substituted phenyl group, provided that the carbon atom at the α-position thereof should not have two or more halogen atoms, and (3) oxygen.

5,629,421

HYDRAZONE COMPOUNDS

Atsushi Takesue; Yasuo Murakami; Takanobu Watanabe, and Mitsutoshi Anzai, all of Ibaraki, Japan, assignors to Hodagaya Chemical Co., Ltd., Tokyo, Japan

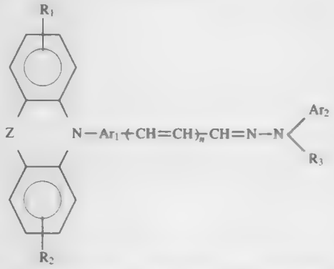
Division of Ser. No. 356,126, Dec. 15, 1994, Pat. No. 5,512,400. This application Jan. 18, 1996, Ser. No. 588,331

Claims priority, application Japan, Dec. 15, 1993, 5-342273; Oct. 12, 1994, 6-271845

Int. Cl.[6] **C07D** *223/26;223/28*

U.S. Cl. 540—591 **1 Claim**

1. A hydrazone compound represented by formula (I):



(I)

wherein Ar_2 represents a substituted or unsubstituted phenylene group, a substituted or unsubstituted naphthylene group, a substituted or unsubstituted biphenylene group, or a substituted or unsubstituted anthrylene group, Ar_2 represents a substituted or unsubstituted aryl group, R_1 and R_2 each independently represents a hydrogen atom, a halogen atom, an unsubstituted alkyl group, or an unsubstituted alkoxy group, R_3 represents an unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryl group, Z represents an ethylene group or a vinylene group, and n is 0 or 1.

5,629,422

(DI)ARYLAMINOALKYL 4-HYDROXYPHENYLALKANECARBOXYLATES

Hugo Camenzind, Bern, Switzerland, assignor to Ciba Geigy Corporation, Tarrytown, N.Y.

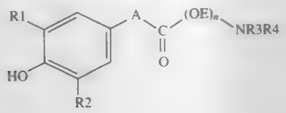
Filed Nov. 22, 1994, Ser. No. 343,393

Claims priority, application Switzerland, Nov. 29, 1993, 3558/93

Int. Cl.[6] **C07D** *279/22;221/02;* **C07C** *69/76*

U.S. Cl. 544—38 **4 Claims**

1. A compound of the formula I



(I)

in which

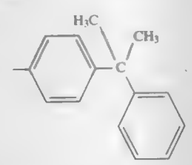
R_1 and R_2 are independently of one another C_1–C_{20}alkyl, allyl, methallyl, unsubstituted or C_1–C_8alkyl-substituted C_5–C_{12}cycloalkyl, C_5–C_8cycloalkenyl, phenyl, or C_7–C_9phenylalkyl,

A is a direct bond, —CH_2—, —$(CH_2)_2$— or —CH_2—$CH(CH_3)$—,

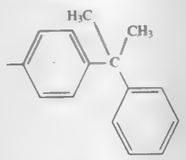
E is —$(CH_2)_2$—, —CHR_6—CH_2 or —CH_2CHR_6—,

n is 1, 2 or 3

R_3 is phenyl, naphthyl, C_7–C_9phenylalkyl, C_7–C_{18}alkylphenyl or is of the formula

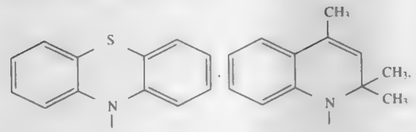


R_4 is phenyl, naphthyl, C_7–C_9phenylalkyl, C_7–C_{18}alkylphenyl or is a radical of the formula



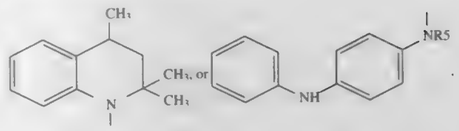
or

NR_3R_4 is a group of the formula



-continued

NR_3R_4 is a group of the formula



R_5 is hydrogen, C_1–C_{18}alkyl, allyl, methallyl, unsubstituted or C_1–C_8alkyl-substituted C_5–C_{12}cycloalkyl, phenyl or naphthyl,

R_6 is hydrogen, C_1–C_{20}alkyl or C_2–C_{20}alkyl which is interrupted by —O—, —S—, —NR_7— or —C(O)O—, and

R_7 is hydrogen or C_1–C_6alkyl.

5,629,423

ASYMMETRIC SYNTHESIS OF CHIRAL SECONDARY ALCOHOLS

J. Peter Klein, Vashon; Alistair J. Leigh, Brier; John Michnick; Anil M. Kumar, both of Seattle, and Gail E. Underiner, Brier, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 242,944, May 16, 1994, abandoned. This application May 23, 1995, Ser. No. 449,400

Int. Cl.[6] **C07D** *513/04;301/00*

U.S. Cl. 544—48 **30 Claims**

1. A process for asymmetric synthesis of chiral secondary alcohol products, comprising the steps of:

(1) providing a chiral α-hydroxy ester starting material of variable chain length, wherein a starting material stereochemistry is opposite a secondary alcohol product stereochemistry;

(2) activating the starting material hydroxyl group with a leaving group;

(3) converting the starting material ester group to a first intermediate alcohol,

(4) reducing the first intermediate alcohol with a base in an intermolecular reaction between the first intermediate alcohol and the leaving group, forming a chiral oxirane and inverting the starting material stereochemistry,

(5) providing a terminal, C_{3-10} alkynyl primary alcohol, having a first primary hydroxyl group;

(6) converting the first primary hydroxyl group to an alkali-stable group to form an alkynyl intermediate,

(7) treating the alkynyl intermediate with a strong base and forming an acetylide anion salt having a mono- or di-valent cation,

(8) coupling the acetylide anion salt and chiral oxirane from step (4), forming a second intermediate alcohol, having alkynyl and alkali-stable groups,

(9) converting the hydroxyl group of the second intermediate alcohol to an intermediate ester, having the alkynyl and alkali-stable groups,

(10) hydrogenating the unsaturated alkynyl bond to a saturated bond,

(11) converting the alkali-stable group to a second primary hydroxyl group,

(12) replacing the second primary hydroxyl group with a terminal leaving group to form an ester presursor,

(13) replacing the terminal leaving group of the ester precursor with a nucleophilic moiety that displaces the terminal leaving group in a substitution reaction, and

(14) reducing the ester precursor to obtain the secondary alcohol product.

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5,629,424

STEREOSELECTIVE ADSORPTIVE BUBBLE PROCESS

Daniel W. Armstrong, Rolla, and Yubing Tang, Ballwin, both of Mo., assignors to The Curators of the University of Missouri, Rolla, Mo.

Filed Nov. 29, 1995, Ser. No. 563,961
Int. Cl.[6] C07D 211/84;239/10
U.S. Cl. 544—316 17 Claims

1. A process for enriching the concentration of an enantiomer or a diastereomer in a mixture of optically active isomers, the process comprising:

preparing a solution containing the mixture of the optically active isomers and a chiral collector in which the chiral collector and the enantiomer or diastereomer are associated with each other,

bubbling a gas through a pool of the solution to form a foam, the surfaces of the bubbles in the foam having the chiral collector and the enantiomer or diastereomer preferentially adsorbed thereto so that the concentration ratio of the optically active isomers at said bubble surfaces differs from that in the bulk of the pool,

moving said foam vertically through a column above the pool such that during said movement at least a portion of the bubbles comprising the foam break thereby allowing liquid to drain toward the pool to provide an internal reflux within the column.

5,629,425

HALOALKYL HEMISOLVATES OF 6-HYDROXY-2-(4-HYDROXYPHENYL)-3-[4-PIPERIDINOETHOXY)-BENZOYL]BENZO[B]THIOPHENE

Elizabeth S. LaBell; John M. McGill, and Randal S. Miller, all of Lafayette, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 19, 1994, Ser. No. 308,325
Int. Cl.[6] C07D 409/10
U.S. Cl. 546—202 5 Claims

1. The compound being the 1,2-dichloroethane hemisolvate of 6-hydroxy-2-(4-hydroxyphenyl)-3-[4-(piperidinoethoxy)benzoyl]benzo[b]thiophene hydrochloride.

5,629,426

CARBONATE-MEDIATED HYDROGEN PEROXIDE OXIDATIONS OF 4-HYDROXY-2,2,6,6-TETRAMETHYLPIPERIDINE

Stephen D. Pastor, Danbury, Conn.; Andrea R. Smith, Wingdale, N.Y., and Kurt M. Bessonen, Mobile, Ala., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Nov. 9, 1995, Ser. No. 555,823
Int. Cl.[6] C07D 211/46
U.S. Cl. 546—216 11 Claims

1. An environmentally friendly process for the preparation of 4-hydroxy-2,2,6,6-tetramethylpiperidine-N-oxyl which comprises oxidizing 4-hydroxy-2,2,6,6tetramethylpiperidine with an aqueous hydrogen peroxide solution in the presence of an effective catalytic amount of an ammonium or alkali metal carbonate or bicarbonate at a temperature range of 60°–99° C. and in the presence of a metal passivator.

5,629,427

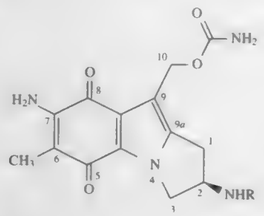
2,7-DIAMINOMITOSENE ANALOGUES

Dwight M. Peterson, 354 Compton Rd., Wyoming, Ohio 45215

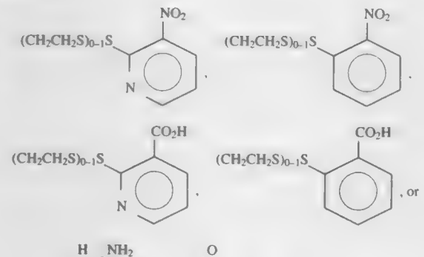
Filed Aug. 26, 1993, Ser. No. 111,771
Int. Cl.[6] C07D 487/14
U.S. Cl. 546—276.7 1 Claim

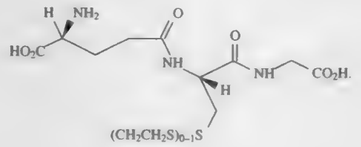
1. A composition of matter of the general structure I

General Structure I



where R is:





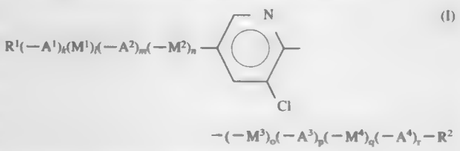
5,629,428

3-CHLOROPYRIDINES, AND THEIR USE IN LIQUID-CRYSTAL MIXTURES

Hubert Schlosser, Glashütten; Dietmar Jungbauer, Weiterstadt, and Javier Manero, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed May 10, 1994, Ser. No. 240,240
Claims priority, application Germany, May 12, 1993, 43 15 867.6
Int. Cl.[6] C07F 5/02;7/04; C07D 405/12;403/10
U.S. Cl. 546—303 5 Claims

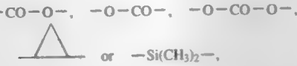
1. A 3-chloropyridine compound of the formula (I)



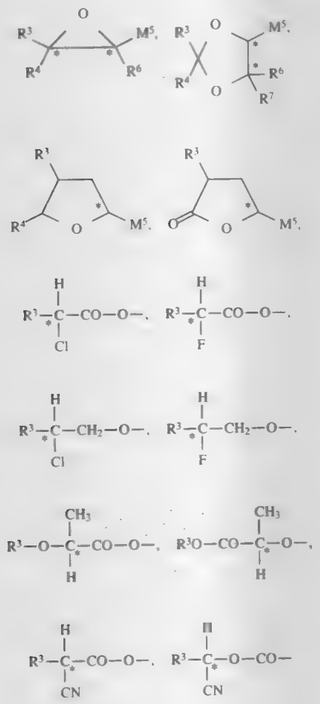
(I)

in which the symbols have the following meanings:

R^1 and R^2 are identical or different and are —H, or straight-chain or branched (with or without an asymmetric carbon atom) alkyl having 1 to 16 carbon atoms, it also being possible for one or two non-adjacent —CH_2—groups to be replaced by



and optionally wherein one or more hydrogen atoms in the alkyl radical is substituted by —F, or are one of the following chiral groups:



A^1, A^2, A^3 and A^4 are identical or different and are 1,4-phenylene, pyrimidine-2,5-diyl, where one or two hydrogen atoms may in each case be replaced by F, trans-1,4-cyclohexylene, in which one or two hydrogen atoms optionally are replaced by CN, 1,3,4-thiadiazole-2,5-diyl;

M^1, M^2, M^3 and M^4 are identical or different and are —O—, —CO—O—, —O—CO—, —O—CO—O—, —CH_2—O—, or —O—CH_2—;

R^3, R^4, R^6 and R^7 are identical or different and are H or straight-chain or branched alkyl having 1 to 16 carbon atoms,

M^5 is —CH_2—O—, —CO—O—, —O—CH_2—, —O—CO— or a single bond;

k, l, m, n, o, p, q and r are zero or one, with the proviso that the sum k+m+p+r is less than 4 and greater than zero.

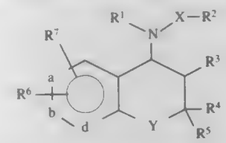
5,629,429

PROCESS FOR PREPARING 4-ARYLAMINO-BENZOPYRAN AND RELATED COMPOUNDS

David R. Kronenthal, Yardley, Pa.; Richard H. Mueller, Ringoes, and Jollie D. Godfrey, Jr., Trenton, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 486,111
Int. Cl.[6] C07D 233/02;233/04;233/54
U.S. Cl. 548—311.4 15 Claims

1. A process for preparing compounds of formula



I

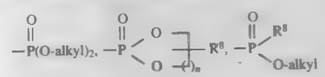
or pharmaceutically acceptable salts thereof wherein

a, b and d are all carbon atoms or one of a, b and d is a nitrogen atom or —N(O)— and the others are carbon atoms;

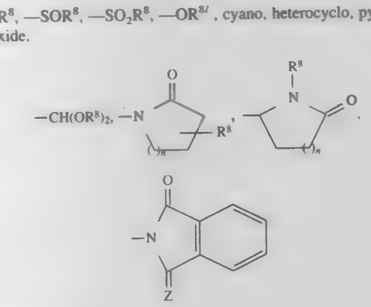
Y is a single bond, —CH_2—, —C(O)—, —O—, —S— or —N(R^8)—;

R^1 is aryl or heterocyclo;

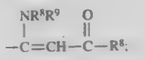
R^2 is —$COOR^8$, —CO-amino, —CO-substituted amino, amino, substituted amino, —NR^8CO-amino, —NR^8CO-substituted amino, —NR^8COR^9, —$NR^8SO_2R^9$, —NR^8(C═NCN)-amino, —NR^8(C═NCN)-substituted amino,



—SR^8, —SOR^8, —SO_2R^8, —$OR^{8/}$, cyano, heterocyclo, pyridine-N-oxide.



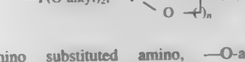
(where Z is O or H_2) or



R^2 is hydroxy;

R^4 and R^5 are each independently hydrogen, alkyl or arylalkyl, or R^4 and R^5 taken together with the carbon atom to which they are attached form a 5- to 7-membered carbocyclic ring;

R^6 is hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, cycloalkyl, arylalkyl, (cycloalkyl)alkyl, —CN, —NO_2, —COR^8, —$COOR^8$, —$CONHR^8$, —$CONR^8R^9$, —CF_3, —S-alkyl, —SOalkyl, —SO_2alkyl,



halogen, amino substituted amino, —O-alkyl, —OCF_3, —OCH_2CF_3, —OCOalkyl, —OCONR^8alkyl, —NR^8COalkyl, —NR^8COOalkyl or —NR^8CONR^9, tetrazolyl, imidazole, oxazole, triazole or —$S(O)_2NR^{10}R^{11}$;

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R^7 is hydrogen, alkyl, hydroxy, —O-alkyl, amino, substituted amino, —$NHCOR^8$, —CN or —NO_2; or when R^6 is —$S(O)_2NR^{10}R^{11}$, then R^7 in addition to the above is halogen, heterocyclo, haloalkyl or aryl;

R^8 and R^9 are independently hydrogen, alkyl, haloalkyl, aryl, arylalkyl, cycloalkyl or (cycloalkyl)alkyl;

R^{10} and R^{11} are independently hydrogen, alkyl, cycloalkyl, aryl, arylalkyl, haloalkyl, hydroxyalkyl, hydroxyalkyl substituted with a carboxylic ester or carboxylic acid, alkoxyalkyl, thioalkyl (cycloalkyl)alkyl, morpholinylalkyl, heterocyclo or (heterocyclo)alkyl;

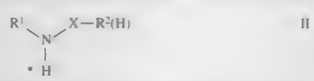
or R^{10} and R^{11} taken together with the nitrogen atom to which they are attached form a 5- to 7-membered mono or bicyclic ring, or 1-pyrrolidinyl, 1-piperidinyl, 1-azepinyl, 4-morpholinyl, 4-thiamorpholinyl, 4-thiamorpholine dioxide, 1-piperazinyl, 4-alkyl-1-piperazinyl, 4-arylalkyl-1-piperazinyl, 4-diarylalkyl-1-piperazinyl; or 1-piperazinyl, 1-pyrrolidinyl, 1-piperidinyl or 1-azepinyl substituted with one or more alkyl, alkoxy, alkylthio, halo, trifluoromethyl, hydroxy, aryl, arylalkyl, —COOR^8 or —CO-substituted amino;

or R^{10} and R^7 taken together with the atoms to which they are attached form an unsubstituted 5- to 7-membered ring or a 5- to 7-membered ring substituted with aryl;

X is alkyl; or X—R^2 together are hydrogen, aryl or heterocyclo when R^1 is heterocyclo; and

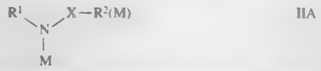
n is an integer of 1 to 3;

which comprises the steps of treating a compound of the formula



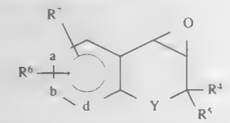
II

(where the R^2 substituent contains a hydrogen atom which is more acidic than the starred (*) hydrogen atom in formula II); with two equivalents of a base in an inert solvent, to form the corresponding dianion of formula



IIA

where M is a counterion, then reacting the compounds of formula IIA with an epoxide of formula



III

to produce the compounds of formula I.

5,629,430

TRIFLUOROMETHYLPYRROLOINDOLECARBOXYLIC ACID ESTER AND PROCESS FOR PRODUCTION THEREOF

Shiro Terashima, Tokyo; Yasumichi Fukuda, and Yasuo Oomori, both of Tochigi-ken, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., and Sagami Chemical Research Center, both of Tokyo, Japan

PCT No. PCT/JP93/01159, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/04535, PCT Pub. Date Mar. 3, 1994

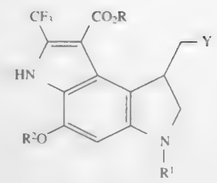
PCT Filed Aug. 19, 1993, Ser. No. 381,981

Claims priority, application Japan, Aug. 21, 1992, 4-222862; Aug. 18, 1993, 5-204255

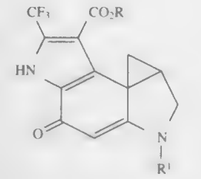
Int. Cl.^{6} C07D *487/04*

U.S. Cl. 548—421 **7 Claims**

1. Trifluoromethylpyrroloindolecarboxylic acid ester derivatives represented by the general formula (1) and (2) below, optical isomers thereof, and pharmaceutically acceptable salts thereof:



(1)

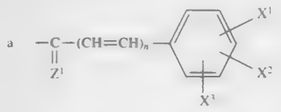


(2)

wherein

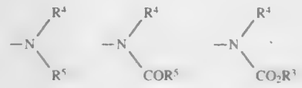
R is a lower alkyl group of C_1–C_4;

R^1 is selected from the group consisting of α-amino acid residue,

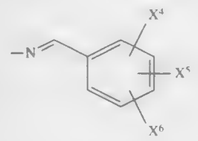


a

(X^1, X^2, and X^3 are independently a hydrogen atom, OH, OR^3 (R^3 is a linear or branched lower alkyl group of C_1–C_6, or an aryl group), $OCOR^3$(R^3 is the same as above), CHO, NO_2,



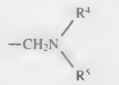
(R^4 and R^5 are independently a hydrogen atom, a linear or branched lower alkyl group of C_1–C_6, or an aryl group (R^3 is the same as above)



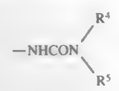
(X^4, X^5, and X^6 are independently a hydrogen atom, OR^3, or



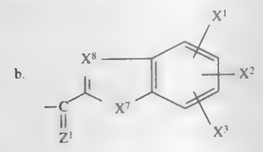
(R^3, R^4, and R^5 are the same as above)),



(R^4, and R^5 are the same as above),

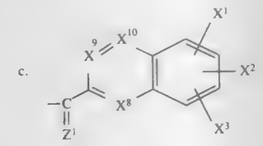


(R^4, and R^5 are the same as above), Z^1 is O, S, or NR^4(R^4 is the same as above), n is 0–2),



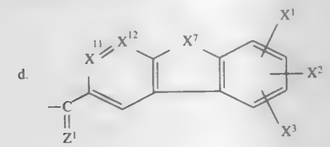
b.

(X^7 is O, S, or NH, X^8 is CH or N (X^1, X^2, X^3, and Z^1 are the same as above)),



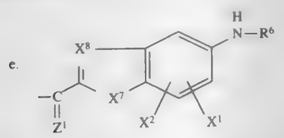
c.

(X^9, and X^{10} are independently CH or N (X^1, X^2, X^3, X^8, and Z^1 are the same as above)),



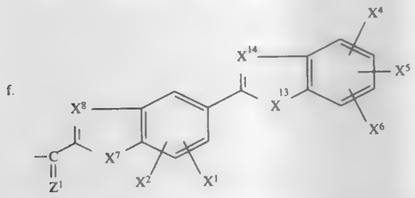
d.

(X^{11}, and X^{12} are independently CH or N (X^1, X^2, X^3, X^7, and Z^1 are the same as above)),



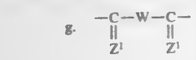
e.

(R^6 is represented by the above formula a, b, c, or d (X^1, X^2, X^7, X^8, and Z^1 are the same as above)),



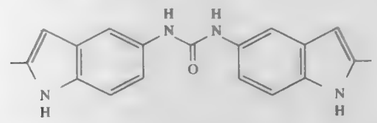
f.

(X^{13} is O, S, or NH; X^{14} is CH or N (X^1, X^2, X^4, X^5, X^6, X^7, X^3, and Z^1 are the same as above)), and



g.

(W is —$(CH_2)_m$—, —$(CH_2)_m$—Z^2—$(CH_2)_n$—, or



(Z^1 is the same as above), Z^2 is S, O, or NH, and m and n are independently 0–16);

R^2 is a hydrogen atom, a protecting group for the hydroxyl group or a biologically decomposable substituent selected from the group consisting of N,N-di(lower alkyl) carbamoyl group, piperidinocarbonyl group which may be substituted with piperidino group, or (4-alkyl-1-piperazinyl) carbonyl group which alkyl may be substituted with hydroxyl group, di(lower alkyl)amino group and hydroxy alkoxy group and Y is a halogen atom, an arylsulfonyloxy group, a lower alkylsulfonyloxy groups, a haloalkylsulfonyloxy group, or an azide.

5,629,431

INHIBITORS OF RETROVIRAL PROTEASES

Karl-Heinz Budt, and Anuschirwan Peyman, both of Kelkheim(Taunus), Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

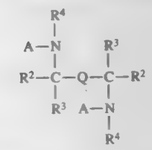
Continuation of Ser. No. 293,112, Aug. 19, 1994, abandoned, which is a continuation of Ser. No. 167,613, Dec. 16, 1993, abandoned, which is a continuation of Ser. No. 627,818, Dec. 14, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 479,562

Claims priority, application Germany, Dec. 16, 1989, 39 41 607.0; Jun. 13, 1990, 40 18 942.2

Int. Cl.^{6} C07D *209/04;* **C07F** *9/28*

U.S. Cl. 548—491 **2 Claims**

1. A compound of the formula I



(I)

wherein:

Q is a radical of the formula IIa;



(IIa)

in which:

Y is oxygen;

R^5 is hydrogen, (C_1–C_6)-alkyl, (C_6–C_{10})-aryl, (C_7–C_{20})-arylalkyl, which may be substituted by alkoxy, or glyceryl or is a residue of a phosphate prodrug, or acyl-oxyalkyl;

A is a radical of the formula (IV):

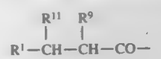


(IV)

in which:

E, F or G is Gly, Ala, Val, Leu, Ile, Nva, Nle, Phe, Tyr, Asp or Glu;

D is R^1 or a radical of the formula (VI):



(VI)

and n+o+p is 1;

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R^1 is hydrogen, $(C_1–C_6)$-alkylsulfonyl, $(C_8–C_{10})$-aryl-$(C_1–C_2)$-alkyl, triphenylmethyl, $(C_1–C_6)$-alkoxycarbonyl or $(C_6–C_{10})$-aryl-$(C_1–C_2)$-alkoxycarbonyl;

R^2 is hydrogen, phenyl or benzyl;

R^3, R^4 and R^{11} are hydrogen and

R^9 is hydrogen, n-propyl, isopropyl, n-butyl, sec.-butyl, isobutyl, benzyl, carboxymethyl, carboxyethyl, 1-naphthylmethyl, 2-napthylmethyl, 2-(methylthio)ethyl, 2-(methylsulfinyl)ethyl, 2-(methylsulfonyl)ethyl, indol-2-yl-methyl or indol-3-yl-methyl;

or a physiologically tolerated salt thereof.

5,629,432

PREPARATION OF α-ARYL γ-BUTYROLACTONES

Robin G. Shepherd, Windsor, England, assignor to John Wyeth & Brother, Ltd., Maidenhead, England

PCT No. PCT/GB93/02427, § 371 Date May 16, 1995, § 102(e) Date May 16, 1995, PCT Pub. No. WO94/12487, PCT Pub. Date Jun. 9, 1994

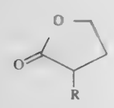
PCT Filed Nov. 25, 1993, Ser. No. 436,186

Claims priority, application United Kingdom, Dec. 3, 1992, 9225257

Int. Cl.[6] C07D *307/26*

U.S. Cl. 549—326 **5 Claims**

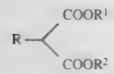
1. A process for preparing a lactone of the general formula



(I)

where R is an optionally substituted phenyl group or an optionally substituted mono- or bicyclic heteroaryl radical containing as the hereto atom or atoms one or more sulphur oxygen or nitrogen atoms, the substituents in the phenyl group or the heteroaryl radical being selected from the group consisting of $C_{1–6}$ alkyl, $C_{1–6}$ alkoxy, halogen, halogen halo$(C_{1–6})$alkyl, amino, $(C_{1–6})$alkylamino and di$(C_{1–6}$ alkyl)amino

which process comprises reacting an anion of a malonate of formula (II)



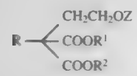
(II)

(where R is as defined above and R^1 and R^2 are each $C_{1–6}$ alkyl) with an ethylene compound of formula (III)



(III)

(where Y is a leaving group and Z is a protecting group that is removable under aqueous acidic or basic conditions but is stable in the presence of the malonate anion) to give a compound of formula (IV)



(IV)

(where R, R^1, R^2 and Z are as defined above) and hydrolysing the compound of formula (IV) to give a lactone of formula (I).

5,629,433

SELECTIVE PROCESS FOR THE DEACYLATION AND DEACETYLATION OF TAXOL AND TAXANES

Qun Y. Zheng, Superior; Lynn G. Darbie, and Christopher K. Murray, both of Boulder, all of Colo., assignors to Hauser, Inc., Boulder, Colo.

Filed Jul. 18, 1994, Ser. No. 276,254

Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **28 Claims**

1. A process for selectively removing acyl group(s) located at the C-2', C-7, and/or C-10 position(s) of a taxane compound comprising the steps of:

dissolving the taxane compound in a quantity of solvent whereby a taxane solution is produced;

adding a peroxide to said taxane solution;

adding a base to said taxane solution containing said peroxide whereby a reaction mixture is produced; and

stirring said reaction mixture.

5,629,434

FUNCTIONALIZATION OF POLYMERS BASED ON KOCH CHEMISTRY AND DERIVATIVES THEREOF

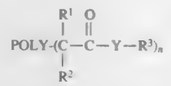
Joseph V. Cusumano, Watchung; William D. Diana, Belle Mead, both of N.J.; Jacob Emert, Brooklyn, N.Y.; Keith R. Gorda, Little York; Richard H. Schlosberg, Bridgewater, both of N.J.; David A. Young, Seattle, Wash.; William B. Eckstrom, Fanwood, N.J.; Edris E. Manry, Prairieville, and Michael J. Kennan, Baton Rouge, both of La., assignors to Exxon Chemical Patents Inc, Linden, N.J.

Continuation of Ser. No. 992,403, Dec. 17, 1992, abandoned. This application Sep. 25, 1995, Ser. No. 534,891

Int. Cl.[6] C07C *59/255*

U.S. Cl. 554—219 **63 Claims**

1. A composition comprising functionalized polymer of the formula:



(1)

wherein POLY- is derived from unsaturated polymer other than gem-structured polyolefin, the unsaturated polymer having a number average molecular weight prior to functionalization of at least about 500, n is a number greater than 0 and represents the functionality of the functionalized polymer, R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, hydrocarbyl, and polymeric hydrocarbyl, with the proviso that R^1 and R^2 are selected such that at least 50 mole percent of the



groups have both R^1 and R^2 not hydrogen, Y is selected from the group consisting of O and S, and R^3 is selected from H and hydrocarbyl.

5,629,435

HYDROGEN SULFIDE GAS SENSOR AND PRECURSOR COMPOUNDS FOR MANUFACTURE OF SAME

Tommie L. Royster, Jr.; Gustavo R. Paz-Pujalt; Dilip K. Chatterjee, and Carl A. Marrese, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

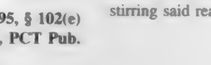
Division of Ser. No. 200,479, Feb. 23, 1994, Pat. No. 5,433,971, which is a division of Ser. No. 934,920, Aug. 25, 1992, Pat. No. 5,321,146, which is a continuation-in-part of Ser. No. 677,729, Mar. 29, 1991, abandoned. This application Mar. 10, 1995, Ser. No. 401,540

Int. Cl.[6] C07F *11/00*

U.S. Cl. 556—1 **7 Claims**

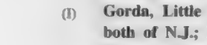
1. A tungsten salt, soluble in aprotic solvents, prepared by the process consisting essentially of combining tungsten (VI) oxychloride with four equivalents of sodium 2-ethylhexanoate in the presence of a large excess of 2-ethylhexanoic acid in toluene and refluxing for 16 hours.

2. A compound of formula



wherein n is from zero to three.

7. A method of preparing a compound of formula



wherein R is alkyl, alkenyl or aralkyl of 2 to 19 carbons, which comprises:

reacting an alkali metal with an excess of a C_3 to C_{20} acid to form an acid-salt solution in said acid;

reacting said acid-salt solution with a solution containing tungsten (VI) oxychloride in an aromatic solvent to form a sodium tungsten carboxylate.

5,629,436

USE OF N-ARYLMETHYLENE ETHYLENEDIAMINETRIACETATES N-ARYLMETHYLENE IMINODIACETATES OR N,N'-DIARYLMETHYLENE ETHYLENEDIAMINEACETATES AGAINST OXIDATIVE STRESS

Jean-Baptiste Galey, Paris, and Jacqueline Dumats, Villepinte, both of France, assignors to L'Oreal, Paris, France

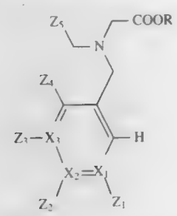
Division of Ser. No. 436,203, Jun. 27, 1995. This application Jun. 6, 1995, Ser. No. 469,751

Claims priority, application France, Nov. 13, 1992, 92 13707; Jun. 23, 1993, 93 07641

Int. Cl.[6] C07F *15/02;* **C07C** *229/24*

U.S. Cl. 556—148 **2 Claims**

1. Compound of formula (I):



(I)

in which

Z_1, Z_2 and Z_3, independently of one another, represent NO_2, COOH, CF_3, a halogen atom or an R_1, OR_1, SR_1 or NR_1R_2 group.

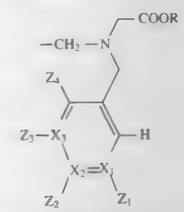
Z_4 represents an R_1 group;

where R, R_1 and R_2, independently of one another, represent H or a linear or branched C_1 to C_8 alkyl group.

X_1, X_2 and X_3 represent:



Z_5 represents:
the group:



(c)

in which Z_1, Z_2, Z_3, Z_4, X_1, X_2, X_3, R, R_1 and R_2 have the same meanings as above; with the proviso that, when Z_5 denotes the group (c) in which Z_4 denotes H, at least one of Z_1 and Z_3 is other than H when Z_2 denotes H, Cl, NO_2 or CH_3 and Z_3 is not H when Z_1 denotes OH and Z_2 denotes OCH_3; or its salts or metal complexes.

5,629,437

PREPARATION AND USE OF ALKYLENEOXYSILANE COMPOSITIONS

Loren Linder, Warminster, and Joel Zazyczny, Collegeville, both of Pa., assignors to Huls America Inc., Somerset, N.J.

Filed Jan. 30, 1996, Ser. No. 593,611

Int. Cl.[6] C07F *7/08;7/18*

U.S. Cl. 556—444 **23 Claims**

1. Hydrolyzed essentially alcohol-free alkyleneoxysilanes selected from the group consisting of $(RO)_{3-x}(HO)_xSi(CH_2)_3(OCH_2CH_2)_bOH$ and $[(RO)_{2-y}(HO)_ySi(CH_2)_3(OCH_2CH_2)_bO]_z$,

wherein R is an aryl or alkyl group having from 1 to 10 carbon atoms, x ranges from 1 to 3, y is 0 or 1, z ranges from 1 to 3 and b ranges from 1 to 30.

5,629,438

HYDROCHLORINATION PROCESS FOR CONVERTING HIGH-BOILING RESIDUE FROM DIRECT PROCESS TO MONOSILANES

Steven K. Freeburne, Edgewood, and Robert F. Jarvis, Jr., Union, both of Ky., assignors to Dow Corning Corporation, Midland, Mich.

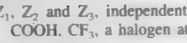
Filed Sep. 11, 1996, Ser. No. 712,226

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—466 **19 Claims**

1. A process for converting a high-boiling residue resulting from the reaction of an organochloride with silicon metalloid to monosilanes, the process comprising:

(A) forming a mixture comprising a high-boiling residue resulting from the reaction of an organochloride with silicon metalloid and an organosilane described by formula



where each R is independently selected from a group consisting of alkyls comprising one to six carbon atoms, aryls, alkoxys comprising one to six carbon atoms, trimethylsilyl, and trifluoropropyl, m=1 to 4, n=0 to 2, and m+n=2 to 4; and

(B) contacting the mixture with hydrogen chloride in the presence of a catalytic amount of a catalyst composition effective in promoting the formation of monosilanes from the high-

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boiling residue at a temperature within a range of about 150° C. to 500° C. and a total reactor pressure within a range of about 100 psig to 5,000 psig.

5,629,439

METHOD FOR PREPARATION OF ALLYLSILANES

Howard M. Bank, Freeland; Sean P. Davern, Auburn, and Binh T. Nguyen, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 28, 1996, Ser. No. 624,860

Int. Cl.[6] C07F 7/08

U.S. Cl. 556—480 **14 Claims**

1. A method for preparation of allylsilanes, the method comprising contacting magnesium metal with a mixture comprising diethylene glycol dibutyl ether, allyl halide, and a halosilane described by formula

$$Me_aH_bSiX_{4-a-b},$$

where Me is methyl, X is a halogen selected from a group consisting of chlorine and bromine, a=0 to 3, b=0 or 1, and a+b=1 to 3, at a temperature within a range of about 5° C. to 200° C.

5,629,440

LUBRICANT COMPOSITION

Hugo Camenzind, Fribourg, and Peter Nesvadba, Marly, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

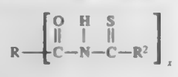
Division of Ser. No. 179,790, Nov. 11, 1994, abandoned, which is a division of Ser. No. 24,926, Feb. 26, 1993, Pat. No. 5,300,243, which is a continuation of Ser. No. 781,790, Oct. 23, 1991, abandoned, which is a division of Ser. No. 454,323, Dec. 21, 1989, Pat. No. 5,084,195. This application Jun. 7, 1995, Ser. No. 475,133

Claims priority, application Switzerland, Dec. 28, 1988, 4828/88

Int. Cl.[6] C07C 67/00

U.S. Cl. 558—238 **5 Claims**

1. A compound of the general formula II



(II)

in which

x=1 or 2,

R^2 is as defined for —OR^6 or —SR^7 and,

if x=1,

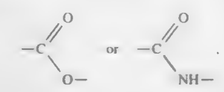
R is as defined for R^1 or R^3—O—,

and R^1 is alkyl having 1 to 25 C atoms, an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 5 to 12 ring C atoms, an unsubstituted or C_1–C_8alkyl-substituted C_5–C_{12}cycloalkyl-C_1–C_4alkyl group, alkenyl having 2 to 18 C atoms, phenyl, naphthyl, C_7–C_{18}aralkyl or C_7–C_{18}alkaryl, or

R^3 is alkyl having 9 to 25 C atoms, an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 5 to 12 ring C atoms, an unsubstituted or C_1–C_8alkyl-substituted C_5–C_{12}cycloalkyl-C_1–C_4alkyl group, alkenyl having 5 to 18 C atoms, C_7–C_{18}aralkyl or C_7–C_{18}alkaryl, or

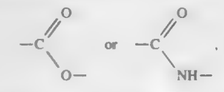
R^1 and R^3 are alkyl having 1 to 25 C atoms, an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 5 to 12 ring C atoms, an unsubstituted or C_1–C_8alkyl-substituted C_5–C_{12}cycloalkyl-C_1–C_4alkyl group, alkenyl having 2 to 18 C atoms, phenyl, naphthyl, C_7–C_{18}aralkyl or C_7–C_{18}alkaryl, each of which are monosubstituted or polysubstituted by groups from the series comprising halogen, cyano, nitro, —OR^a or —$COOR^b$, or

R^1 and R^3 are alkyl having 2 to 25 C atoms, an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 3 to 10 ring C atoms, an unsubstituted or C_1–C_8alkyl-substituted C_3–C_{12}cycloalkyl-C_1–C_4alkyl group, alkenyl having 3 to 18 C atoms, C_7–C_{18}aralkyl or C_7–C_{18}alkaryl, each of which are interrupted by one or more groups from the series comprising —O—, —S—, —NH—,



C_7–C_{18}aralkyl or C_7–C_{18}alkaryl being interrupted only in the alkyl radicals, or

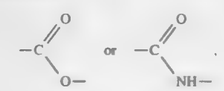
R^1 and R^3 are alkyl having 2 to 25 C atoms, an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 3 to 10 C atoms, an unsubstituted or C_1–C_8alkyl-substituted C_3–C_{12}cycloalkyl-C_1–C_4alkyl group, alkenyl having 3 to 18 C atoms, C_7–C_{18}aralkyl or C_7–C_{18}alkaryl, each of which are monosubstituted or polysubstituted by groups from the series comprising halogen, cyano, nitro, —OR^a or —$COOR^b$ and interrupted by one or more groups from the series comprising —O—, —S—, —NH—,



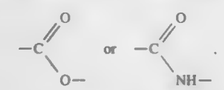
C_7–C_{18}aralkyl or C_7–C_{18}alkaryl being interrupted only in the alkyl radicals,

R^a being as defined for R^3 with the exception of —OR^a and

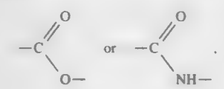
R^b being alkyl having 1 to 18 C atoms or alkyl having 2 to 20 C atoms and interrupted by one or more groups from the series comprising —O—, —S—, —NH—,



or an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 5 to 12 ring C atoms or phenyl, naphthyl, C_7–C_{18}alkaryl or C_7–C_{18}aralkyl, and R^6 and R^7 are alkyl having 11 to 18 C atoms or alkyl having 2 to 20 C atoms and interrupted by one or more groups from the series comprising —O—, —S—, —NH—,



or an unsubstituted or C_1–C_8alkyl-substituted cycloalkyl group having 5 to 12 ring C atoms, an unsubstituted or C_1–C_8alkyl-substituted C_5–C_{12}cycloalkyl-C_1–C_4alkyl group, an unsubstituted or C_1–C_8alkyl-substituted C_3–C_{12}cycloalkyl-C_1–C_4alkyl group interrupted by one or more groups from the series comprising —O—, —S—, —NH—,



C_7–C_{18}alkaryl or C_7–C_{18}aralkyl, or,

if x=2,

R is as defined for R^8 and

R^8 is alkylene having 1 to 18 C atoms alkylene having 2 to 18 C atoms and interrupted by at least one —O— group, alkylidene having 2 to 20 C atoms or alkylidene having 3 to 20 C atoms and interrupted by at least one —O— group.

5,629,441

2-(ARYLIMINO-METHYL)-3-DIALKYLAMINOACRYLONITRILES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Helmut Kraus; Horst Behre, both of Odenthal, and Helmut Fiege, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

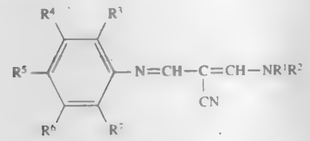
Filed Aug. 11, 1995, Ser. No. 514,277

Claims priority, application Germany, Aug. 19, 1994, 44 29 464.6

Int. Cl.[6] C07C 255/00

U.S. Cl. 558—357 **7 Claims**

1. A process for the preparation of a compound of the formula



(I)

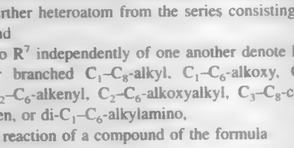
wherein

R^1 and R^2 independently of one another denote linear or branched C_1–C_8-alkyl, C_2–C_8-alkenyl, C_2–C_8-alkoxyalkyl, C_3–C_8-alkoxyalkenyl, C_3–C_8-cycloalkyl, C_7–C_{10}-aralkyl, C_6–C_{12}-aryl or a 5- to 8-membered saturated or unsaturated heterocyclic ring having 1 to 2 heteroatoms from the series consisting of N, O and S, or

R^1 and R^2, together with the nitrogen atom on which they are located, denote a 5- to 8-membered ring which may contain a further heteroatom from the series consisting of N, O and S and

R^3 to R^7 independently of one another denote hydrogen, linear or branched C_1–C_8-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_2–C_6-alkenyl, C_2–C_6-alkoxyalkyl, C_3–C_8-cycloalkyl, halogen, or di-C_1–C_6-alkylamino,

by the reaction of a compound of the formula



(II)

wherein

R^3 and R^7 have the above meaning,

with a compound of the formula



(III)

wherein

R^1 and R^2 have the above meaning and

A and B independently of one another denote OR^8, OR^9, $NR^{10}R^{11}$ or $NR^{12}R^{13}$, wherein the substituents R^8 to R^{13} independently of one another have the meaning defined above for R^1 and R^2,

in a molar ratio of II/III of 0.5 to 20, at a temperature of 0° to 200° C.

5,629,442

PROCESS FOR PRODUCING α-HYDROXYIMINOPHENYLACETONITRILES

Akira Takase, Otsu; Hiroyuki Kai, Yamatokoriyama; Moriyasu Masui, Yokkaichi; Katuhisa Masumoto, Ibaraki; Akihiko Nakamura, Takatsuki; Yujiro Kiyoshima, Oita, and Mikio Sasaki, Ibaraki, all of Japan, assignors to Shionogi & Co., Ltd., and Sumitomo Chemical Company, Ltd., Osaka, Japan

PCT No. PCT/JP94/01076, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO95/01329, PCT Pub. Date Jan. 12, 1995

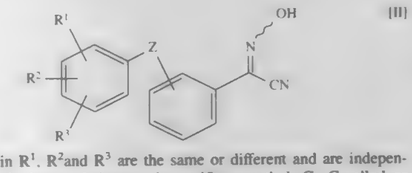
PCT Filed Jul. 2, 1993, Ser. No. 392,860

Claims priority, application Japan, Jul. 2, 1993, 5-164710; Jul. 2, 1993, 5-164711

Int. Cl.[6] C07C 255/01

U.S. Cl. 558—408 **9 Claims**

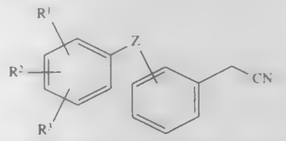
1. A process for producing an α-hydroxyiminophenylacetonitrile of the formula [II]:



[II]

wherein R^1, $R^2$and R^3 are the same or different and are independently hydrogen, halogen, nitro, trifluoromethyl, C_1–C_5 alkyl or C_1–C_5 alkoxy and Z is —O—, —OCH_2—, —S— or —SCH_2—, comprising the steps of:

reacting a crude nitrile containing a phenylacetonitrile of the formula [I]:

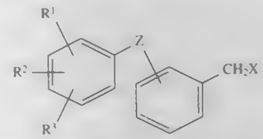


[I]

wherein R^1, R^2, R^3 and Z are as defined above, with an alkyl nitrite;

extracting the reaction mixture with water to obtain an aqueous layer; and

neutralizing the separated aqueous layer with an acid, wherein the crude nitrile containing the phenylacetonitrile of the formula [I] is produced by reacting a benzyl halide derivative of the formula [IV]:



[IV]

wherein X is halogen, with a cyano compound.

5,629,443

HIGHLY PURIFIED ACETONITRILE AND PROCESS FOR PURIFYING CRUDE ACETONITRILE

Shigeo Nakamura, Yokohama; Shigeru Kurihara, Kawasaki; Minoru Saitoh, Yokohama, and Hideo Midorikawa, Kurashiki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 11, 1995, Ser. No. 371,180

Int. Cl.[6] C07C 253/34

U.S. Cl. 558—435 **29 Claims**

1. A process for purifying crude acetonitrile having a UV absorbance at 200 nm of from 0.1 to 5 comprising:

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(1) a step of contacting crude acetonitrile with an ozone-containing gas in an amount from 1 to 10,000 times the volume of the crude acetonitrile,

(2) a step of contacting the acetonitrile from step (1) with an anion exchange resin, wherein the contact temperature of the acetonitrile and the anion exchange resin is from −40° to 80° C.,

(3) a step of removing low-boiling compounds and high-boiling compounds from the acetonitrile.

5,629,444

ACRYLONITRILE RECOVERY PROCESS

James S. Gibson, Lima; Jeffrey E. Rinker, Elida; Paul T. Wachtendorf, Wapakoneta, and Sanjay P. Godbole, Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 6, 1996, Ser. No. 659,480
Int. Cl.[6] C07C *253/18*
U.S. Cl. 558—466 **7 Claims**

1. A process for the manufacture of acrylonitrile or methacrylonitrile comprising transporting the reactor effluent obtained during the ammoxidation of propylene or isobutylene to a quench column wherein the hot effluent gases are cooled by contact with an aqueous spray, passing the cooled reactor effluent overhead to an absorber column wherein the crude acrylonitrile or methacrylonitrile is absorbed in water, passing the aqueous solution containing the crude acrylonitrile or methacrylonitrile to a first decanter where a first aqueous layer and a first organic layer containing acrylonitrile and methacrylonitrile are formed, transferring the first organic layer to a second decanter where a second water layer and second organic layer are formed, and recovering the acrylonitrile or methacrylonitrile from the second organic layer wherein the improvement comprises maintaining the first and second decanter at an inside temperature of about 32° F. to about 75° F.

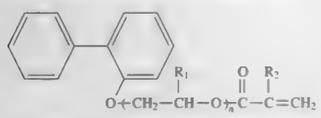
5,629,445

(METH)ACRYLATES, RESIN COMPOSITION USING THE SAME AND ULTRAVIOLET-CURING RESIN COMPOSITE FOR TRANSMISSION TYPE SCREENS

Kenji Nakayama, Omiya; Katsunori Shimura, Yono; Minoru Yokoshima, Toride, and Nobuo Taniguchi, Urawa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 168,674, Dec. 16, 1993, Pat. No. 5,453,452, which is a division of Ser. No. 897,436, Jun. 12, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,941
Claims priority, application Japan, Jun. 21, 1991, 3-175730; Jan. 10, 1992, 4-020726
Int. Cl.[6] C07C *67/26;69/52;* **C08L** *63/10;75/16*
U.S. Cl. 560—209 **2 Claims**

1. A (meth)acrylate represented by formula (2):



(2)

wherein, R_1 and R_2 are each independently H or CH_3 and the average value of n is 1–5.

5,629,446

PROCESS FOR PREPARING PURIFIED 2,6-NAPHTHALENEDICARBOXYLIC ACID

Juergen K. Holzhauer; Rusins Albertins, both of Naperville; Stephen V. Hoover, Aurora, and David L. Sikkenga, Wheaton, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 206,517, Mar. 4, 1994, Pat. No. 5,563,294, which is a continuation of Ser. No. 65,486, May 19, 1993, abandoned, which is a continuation of Ser. No. 900,637, Jun. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 810,481, Dec. 19, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 467,176
Int. Cl.[6] C07C *51/09;51/21;* **C08G** *63/18*
U.S. Cl. 562—483 **13 Claims**

1. 2,6-naphthalenedicarboxylic acid having an average particle size of at least about 100 microns, less than about 5 percent of the particles having a particle size under 11 microns, and a purity of at least about 95 weight percent.

5,629,447

METHODS OF MAKING (S)-3-(AMINOMETHYL)-5-METHYLHEXANOIC ACID

Brian K. Huckabee, and Denis M. Sobieray, both of Holland, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 458,950, Jun. 2, 1995. This application Jun. 28, 1996, Ser. No. 672,783
Int. Cl.[6] C07C *205/00*
U.S. Cl. 562—553 **5 Claims**

1. The compound (±)-3-(carbamoylmethyl)-5-methylhexanoic acid.

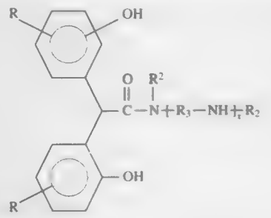
5,629,448

ALCOHOL MODIFIED PROCESS FOR PREPARING BIS-SUBSTITUTED PHENOLIC AMIDES

Richard M. Lange, Euclid; Mark R. Baker, Lyndhurst, and Stephen H. Stoldt, Concord Township, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Sep. 27, 1996, Ser. No. 721,810
Int. Cl.° C07C *231/02*
U.S. Cl. 564—134 **13 Claims**

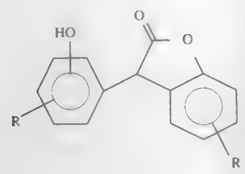
1. A process for preparing a compound of the formula:



wherein R is a hydrocarbyl group containing 4 to 120 carbon atoms each R_2 is independently a hydrogen or an alkyl group containing 1 to 28 carbon atoms, R_3 is an alkylene group containing 2 to 10 carbon atoms, and x is 1 to 5, which comprise the steps of:

I) mixing

(A) a lactone of formula:



wherein R is a hydrocarbyl group containing 4 to 120 carbon atoms, with

(B) a polyamine of the formula:

$$R_2\text{+NH—}R_3\text{+}_x\text{NH—}R_2$$

wherein R_2 is hydrogen or an alkyl group containing 1 to 28 carbon atoms, R_3 is an alkylene group containing 2 to 10 carbon atoms, and x is 1 to 5, and

(C) an alcohol selected from the group consisting of saturated aliphatic alcohols containing 2 to 10 carbon atoms; and polyether alcohols of the following formula:

$$R_4\text{+O—}R_5\text{+}_y\text{OH}$$

where R_4 is a hydrocarbyl group containing from 1 to 30 carbon atoms and R_5 is a 2 to 8 carbon alkylene group, and y is between 1 and 30;

II) heating the mixture to a temperature between 60° and 180° C. to form the compound.

5,629,449

CONTROLLED FEED PROCESS FOR MAKING 3,5-DIAMINOBENZOTRIFLUORIDE

David E. Albright, Jr., Niagara Falls, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 685,106, Apr. 15, 1991, Pat. No. 5,347,052. This application Aug. 17, 1992, Ser. No. 930,942
Int. Cl.[6] C07C *209/32*
U.S. Cl. 564—417 **17 Claims**

1. A method of making 3,5-diaminobenzotrifluoride comprising:

(1) preparing a solution of 4-chloro-3,5-dinitrobenzotrifluoride in a 1-alkanol;

(2) preparing a slurry which comprises

(a) a palladium catalyst on a suitable substrate;

(b) at least one equivalent of magnesium oxide per equivalent of said 4-chloro-3,5-dinitrobenzotrifluoride;

(c) sufficient hydrogen-donating reducing agent to reduce said 4-chloro-3,5-dinitrobenzotrifluoride to said 3,5-diaminobenzotrifluoride; and

(d) an amount of said alkanol sufficient to make said slurry stirrable;

(3) adding said solution to said slurry with stirring at a rate that does not exceed the reaction rate of said 4-chloro-3,5-dinitrobenzotrifluoride.

5,629,450

ADDITION SALT OF ACYL-AMINO ACID AND α-ARYL AMINE AND PROCESS FOR OPTICAL RESOLUTION OF α-ARYLAMINE

Toyoto Hijiya; Teruo Yonekawa, and Tadashi Takemoto, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,844
Claims priority, application Japan, Jun. 21, 1994, 6-139112
Int. Cl.[6] C07C *209/00*
U.S. Cl. 564—425 **2 Claims**

1. A process for optical resolution, comprising:

i) mixing an optically active N-acyl-aspartic acid or an optically active N-acyl-glutamic acid and an optically impure α-arylalkylamine in a solvent to form the corresponding diastereomeric salts; and

ii) separating the two diastereomeric salts utilizing differences in solubility,

wherein the aryl in said α-arylalkylamine is selected from the group consisting of phenyl, C_{1-6} alkyl-substituted phenyl and naphthyl, and wherein the acyl group of said N-acyl-aspartic acid or N-acyl-glutamic acid is selected from the group consisting of benzyloxycarbonyl, benzoyl, benzenesulfonyl or p-toluenesulfonyl.

5,629,451

REDUCTION OF NITRILE CONTAMINANTS BY SELECTIVE HYDROGENATION

Dennis Hearn, and Kyte H. Terhune, both of Houston, Tex., assignors to Chemical Research & Licensing Company, Pasadena, Tex.

Filed Jun. 30, 1994, Ser. No. 268,811
Int. Cl.[6] C07C *209/48*
U.S. Cl. 564—490 **16 Claims**

1. A process for the treatment of olefin containing hydrocarbon streams comprises feeding a hydrocarbon stream consisting essentially of a light naphtha cut containing mono olefins and minor amounts of contaminants comprising nitriles, in the presence of hydrogen and a cobalt catalyst at a temperature in the range of 30° to 200 ° C. and a pressure in the range of 50 to 300 psig to reduce the contaminants without substantial reduction of the mono olefins.

5,629,452

PROCESS FOR THE PREPARATION OF POLYOXYALKYLATED AMINES

Martin Mosquet, Pithiviers; Jean-Pierre Guicquero, Santeny; Pierre Le Perchec, Lyons, and Yves Chevalier, Irigny, all of France, assignors to Chryso, Chilly-Mazarin, France

PCT No. PCT/FR93/00364, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/21254, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 9, 1993, Ser. No. 307,710
Claims priority, application France, Apr. 10, 1992, 92 04673
Int. Cl.[6] C07C *211/03*
U.S. Cl. 564—505 **29 Claims**

1. Process for the preparation of compounds containing at least one primary or secondary amine function and at least one polyoxyalkylated chain, comprising:

replacing a fraction or all of the OH groups of an amino-alcohol (A) having at least one OH group and at least one primary amine or secondary function, by OM groups, M being an atom selected from the group consisting of sodium, potassium, rubidium and cesium, in order to obtain an amino-alcoholate (B), said amino-alcohol (A) and amino-alcoholate (B) being free of groups reactive with each other or with a function carried by amino-alcohol (A) or amino-alcoholate (B) under the reaction conditions of the process;

reacting said amino-alcoholate (B) with an oxirane, a mixture of oxiranes or a sequence of oxiranes, in an aprotic and anhy-

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drous solvent, under an anhydrous atmosphere and at a temperature between about 0° and 200° C., thereby affixing onto each oxygen atom originating either from an OH group or an OM group, at least one unit conforming to the formula:

$$-[C(R_1)(R_2)-C(R_3)(R_4)-O]-_m$$

wherein m is a whole number greater than or equal to 1, and in which R_1, R_2, R_3 and R_4 are similar or different and are selected from the group consisting of a hydrogen atom, a monovalent radical, saturated or unsaturated, alkyl, cycloalkyl and aryl radicals, said radicals containing substituents unreactive with regard to an amine function and an alcoholate function.

5,629,453

PROCESS FOR THE MANUFACTURE OF HYDROXYALKOXYBENZOPHENONES

Jean-Pierre Beau, Montsoult, France, assignor to Great Lakes Chemical France, Cergy St. Christophe, France

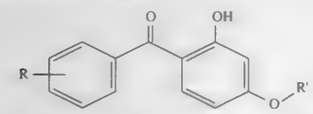
Filed Jun. 7, 1995, Ser. No. 478,902

Claims priority, application France, Jan. 13, 1995, 95 00359

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—322 **17 Claims**

1. A process for the manufacture of hydroxyalkoxybenzophenones of general formula:



(I)

in which R represents a hydrogen atom, a hydroxyl radical or a C_1 to C_{20} alkyl or aralkyl group, and R' represents a hydrogen atom or a C_1 to C_{20} alkyl or aralkyl group, by reaction of an α,α,α-trihalotoluene with a polyhydroxyphenol or a hydroxyalkoxyphenol, characterized in that the reaction is carried out in the presence of a sulphur-containing or selenium-containing catalyst consisting of a compound of the mercaptan or seleno-mercaptan type.

5,629,454

CONFORMATIONALLY LOCKED NUCLEOSIDE ANALOGUES

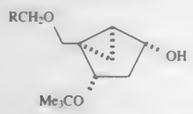
Victor E. Marquez, Gaithersburg, Md.; Juan B. Rodriguez, Buenos Aires, Argentina; Marc C. Nicklaus, Elkridge, Md.; Joseph J. Barchi, Jr., Bethesda, Md., and Maqbool A. Siddiqui, Rockville, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 126,796, Sep. 24, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,425

Int. Cl.[6] C07C *49/172;43/196;41/06;* **C07D** *473/18*

U.S. Cl. 568—327 **12 Claims**

1. A compound having the formula



wherein R is selected from the group consisting of alkyl, aryl, alkylaryl and aroyl.

5,629,455

PROCESS FOR PREPARING CYCLOPROPYL ALKYL KETONES AND 4,5-DIHYDROALKYLFURANS

Manfred Kaufhold, Marl, and Marcel Feld, Köln, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

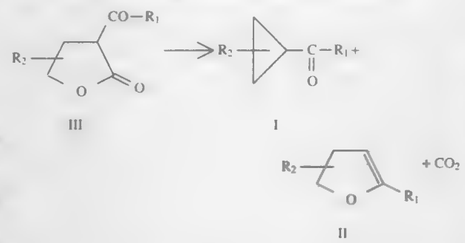
Filed Jan. 23, 1996, Ser. No. 589,952

Claims priority, application Germany, Feb. 2, 1995, 195 03 241.1

Int. Cl.[6] C07C *45/54;* **C07D** *307/28*

U.S. Cl. 568—343 **7 Claims**

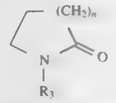
1. A process for the simultaneous preparation of cyclopropyl alkyl ketones of formula I and 4,5-dihydro-2-alkylfurans of formula II from 3-acyltetrahydrofuran-2-ones of formula III



III I

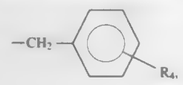
II

where R_1 is alkyl having 1 to 4 carbon atoms, cyclohexyl or phenyl and R_2 is H, alkyl having 1 to 4 carbon atoms or phenyl, which comprises reacting a 3-acyltetrahydrofuran-2-one of formula III with a metal salt in a high-boiling solvent at 160 to 220° C., wherein the solvent is at least one of an N-alkyllactam of formula IV

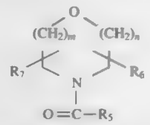


IV

where R_3 is alkyl having 4 to 12 carbon atoms, cycloalkyl, benzyl or substituted benzyl according to

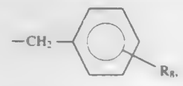


R_4 is alkyl having 1 to 4 carbon atoms, and n=1 to 6, and or an N-acylmorpholine of formula V



V

where R_5 is alkyl having 4 to 12 carbon atoms, cycloalkyl, benzyl or substituted benzyl according to



R_8 alkyl having 1 to 4 carbon atoms, R_6 and R_7 are independently H or alkyl having 1 to 4 carbon atoms and

$n+m$=1 to 10,

and wherein the reaction is initially carried out by combining a molar excess of 3-acyltetrahydrofuran-2-one of formula III with respect to the metal salt, with the metal salt and solvent, heating to

160° to 220° C., then adding additional 3-acyltetrahydrofuran-2-one of formula III, while at the same time distilling off cyclopropyl alkyl ketone of formula I and 4,5-dihydro-2-alkylfuran of formula II.

5,629,456

METHOD OF PREPARING A FLUORENE DERIVATIVE AND THE METHOD OF PURIFYING THEREOF

Mitsuaki Yamada, Ibaraki; Katsuhide Okimi, Sakai; Katsuyuki Takahashi, and Norio Nagano, both of Osaka, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Dec. 7, 1994, Ser. No. 350,459

Claims priority, application Japan, Dec. 10, 1993, 5-310089

Int. Cl.[6] C07C *39/12*

U.S. Cl. 568—633 **12 Claims**

1. A method of preparing a fluorene derivative which comprises reacting fluorenone with phenoxyethanol to synthesize 9,9-bis(4-(2-hydroxyethoxy)phenyl)fluorene at 30°–150° C. using as a catalyst, per mol of fluorenone, 80–200 ml of sulfuric acid of not less than 75% concentration and 0.1–10 ml of at least one thiol compound selected from the group consisting of ethylmercaptan, n-butylmercaptan, 1-octylmercaptan, t-dodecylmercaptan, mercaptoethanol, mercaptoacetic acid and β-mercaptopropionic acid.

5,629,457

DEPHENOLIZING PROCESS FOR PRODUCTION OF HIGH-QUALITY POLYCARBONATE GRADE BISPHENOL A

Minhua Zhang; Zongzhang Liu; Shenbo Yu; Shenghua Qian, and Chuanzhao Li, all of Tianjin, China, assignors to Tianjin University, Tianjin, and China Petro-Chemical Corporation, Beijing, both of China

PCT No. PCT/CN94/00014, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/19303, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 16, 1994, Ser. No. 501,138

Claims priority, application China, Feb. 16, 1993, 93101414.X

Int. Cl.[6] C07C *37/68*

U.S. Cl. 568—724 **11 Claims**

1. A process for the production of high-quality polycarbonate grade bisphenol A by removing phenol from an adduct crystal of phenol with bisphenol A comprising the steps of directly feeding the adduct crystal of phenol with bisphenol A into a vacuum or pneumatic dephenolizing device under a vacuum or in an inert gas stream, controlling the temperature of the adduct crystal below its melting point, and decomposing the adduct crystal to a gas phase and a solid phase, wherein phenol which is removed from the dephenolizing device by the vacuum or inert gas stream is condensed for recovery and is reused, and wherein solid phase high-quality polycarbonate grade bisphenol A is obtained directly from the dephenolizing device.

5,629,458

PROCESS FOR THE PREPARATION OF 2 2 2 TRIFLUOROETHANOL

Alagappan Thenappan, Cheektowaga; Michael Van Der Puy, Amherst, and Richard Eibeck, Orchard Park, all of N.Y., assignors to AlliedSignal Inc., Morris County, N.J.

Filed Jul. 26, 1996, Ser. No. 686,742

Int. Cl.[6] C07C *29/70*

U.S. Cl. 568—842 **19 Claims**

1. A process for producing a fluorinated alcohol, comprising:

(a) reacting an hydrofluorocarbon with an oxidizing agent and fluorine to produce said fluorinated alcohol.

5,629,459

OLEFIN HYDRATION PROCESS

Martin P. Atkins, Middlesex, United Kingdom, assignor to BP Chemicals Limited, London, England

Filed Nov. 13, 1995, Ser. No. 556,409

Claims priority, application United Kingdom, Nov. 23, 1994, 9423648

Int. Cl.[6] C07C *29/04;31/08;31/10*

U.S. Cl. 568—896 **20 Claims**

1. A process for hydrating olefins to the corresponding alcohols in the vapour phase in the presence of a catalyst system comprising a heteropolyacid catalyst supported on a clay support characterised in that the clay support is a hot acid treated clay.

5,629,460

PROCESS FOR THE PREPARATION OF 1,1,1,3,3,3-HEXAFLUORO-2-PROPANONE

Alagappan Thenappan, Cheektowaga; Michael Van Der Puy, Amherst, and Richard Eibeck, Orchard Park, all of N.Y., assignors to AlliedSignal Inc., Morris County, N.J.

Filed Jul. 26, 1996, Ser. No. 686,682

Int. Cl.[6] C07C *21/18*

U.S. Cl. 570—134 **16 Claims**

1. A process for preparation of fluorinated ketones comprising: contacting an hydrofluorocarbon with an oxidizing agent and fluorine to produce said fluorinated ketones.

5,629,461

METHOD OF PRODUCING 1,1,2,2,3-PENTAFLUOROPROPANE

Takashi Yasuhara; Akinori Yamamoto; Hirokazu Aoyama, and Eiji Seki, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/01888, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO94/14737, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 24, 1993, Ser. No. 464,833

Claims priority, application Japan, Dec. 29, 1992, 4-360963

Int. Cl.[6] C07C *17/20;19/08*

U.S. Cl. 570—168 **4 Claims**

1. A method of producing 1,1,2,2,3-pentafluoropropane which comprises: reacting 2,2,3,3-tetrafluoropropanol with thionyl chloride to obtain 1-chloro-2,2,3,3-tetrafluoropropane; and then reacting the 1-chloro-2,2,3,3-tetrafluoropropane with hydrogen fluoride in the presence of a fluorinated catalyst.

5,629,462

HYDRODEHALOGENATION CATALYSTS AND THEIR PREPARATION AND USE

V. N. Mallikarjuna Rao, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 152,937, Nov. 15, 1993, Pat. No. 5,447,896, which is a continuation of Ser. No. 903,030, Jun. 23, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 459,593

Int. Cl.[6] C07C *19/08*

U.S. Cl. 570—176 **12 Claims**

1. A process for the catalytic hydrogenolysis of a cyclic or acyclic compound having the formula $C_nH_mF_pX_q$ wherein n is an integer from 1 to 6, m is an integer from 0 to 12, p is an integer from 1 to 13, q is an integer from 1 to 13 and each X is independently selected from Cl and Br, provided that m+p+q equals 2n+2 when the compound is saturated and acyclic, equals 2n when the compound is saturated and cyclic or is olefinic and acyclic, and equals 2n−2 when the compound is olefinic and cyclic which is characterized by:

(a) employing a carbon-supported metal hydrodehalogenation catalyst prepared by impregnating a carbon support having an

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ash content of less than about 0.2% by weight, with a combination of metals consisting essentially of from 5 to 95 weight percent gold and from 95 to 5 weight percent total of at least one metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, and platinum at a temperature of about 350° C. or less: and treating said impregnated carbon composition at a temperature of about 350° C. or less to dry the composition and to provide metal of said combination in a reduced state: and

(b) operating at a temperature of from about 125° C. to 350° C.

5,629,463

NAPHTHALENE ALKYLATION WITH RE AND MIXED H/NH3 FORM CATALYST

Susan C. Ardito, Spring Lake Hts; Henry Ashjian, E. Brunswick; Thomas F. Degnan, Moorestown, all of N.J.; Terry E. Helton, Glen Mills, Pa.; Quang N. Le, Singapore, Singapore, and Augusto R. Quinones, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 172,300, Dec. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 173,006, Dec. 27, 1993, Pat. No. 5,457,254. This application Aug. 25, 1995, Ser. No. 519,381

Int. Cl.[6] **C07C** *2/64;2/66;15/107*

U.S. Cl. 585—455 **19 Claims**

1. A process for preparing long chain alkyl substituted naphthalenes which comprises:

alkylating a naphthalene with an alkylating agent possessing an alkylating aliphatic group having at least six carbon atoms under alkylation reaction conditions in the presence of an alkylation catalyst comprising a porous crystalline zeolite;

said zeolite containing exchangeable sites, and ammonium and protonic species and rare earths associated with said exchangeable sites;

wherein the ratio of ammonium:protonic species is within the range of 95:5 to 5:95, molar basis, and at least some but less than 50% of the total number of exchangeable sites contain Rare Earths; and

forming an alkylated naphthalene possessing at least one alkyl group derived from the alkylating agent.

5,629,464

METHOD FOR FORMING UNSATURATED ORGANICS FROM ORGANIC-CONTAINING FEED BY EMPLOYING A BRONSTED ACID

Robert D. Bach, Gross Pointe, Mich., and Christopher J. Nagel, Wayland, Mass., assignors to Molten Metal Technology, Inc., Waltham, Mass.

Filed Dec. 23, 1993, Ser. No. 172,582

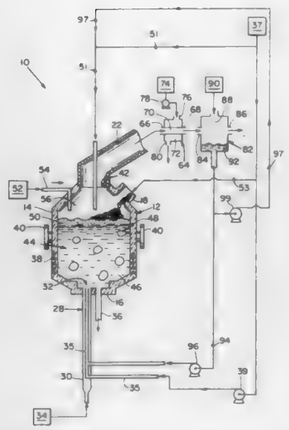
Int. Cl.[6] **C07C** *4/02*

U.S. Cl. 585—634 **24 Claims**

1. A method for producing an unsaturated organic compound from an alkane component of an organic-containing feed, comprising the steps of:

a) providing a reactor containing a bath, said bath comprising a Bronsted acid which can protonate an alkane component of the organic-containing feed;

b) directing the feed into contact with the bath at a rate which causes the Bronsted acid to protonate said alkane component; and



c) establishing and maintaining conditions in the reactor which cause the protonated alkane component to fragment and form a carbenium ion and an unsaturated organic component.

5,629,465

MANUFACTURING OLEFINS FROM GAS OIL

Mohamed W. M. Hisham, and Mohan S. Saran, both of Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed May 15, 1995, Ser. No. 440,612

Int. Cl.[6] **C07C** *4/04;* **C10G** *55/04*

U.S. Cl. 585—648 **13 Claims**

1. A method of manufacturing olefins from gas oil feedstocks comprising:

(A) determining the concentration of benzothiophenes that are unsubstituted in the 3-position in a gas oil feedstock;

(B) if a feedstock contains more than 50 ppm (as S) of said benzothiophenes, reducing the concentration of said benzothiophenes to less than 50 ppm (as S); and

(C) pyrolyzing said feedstock.

7. A method of making olefins from a gas oil feedstock that initially contains more than 10 ppm (as S) of benzothiophenes that are unsubstituted in the 3-position comprising:

(A) reducing the concentration of said benzothiophenes in said gas oil feedstock, where the final concentration of said benzothiophenes is less than 50 ppm; and

(B) pyrolyzing said gas oil feedstock.

5,629,466

METHOD FOR REMOVING AMYLENES FROM GASOLINE AND ALKYLATING SUCH AMYLENE AND OTHER OLEFINS WHILE MINIMIZING SYNTHETIC ISOPENTANE PRODUCTION

Bruce B. Randolph, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1995, Ser. No. 409,226

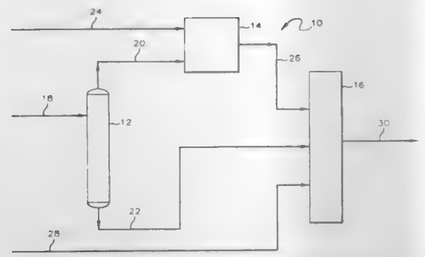
Int. Cl.[6] **C07C** *2/58*

U.S. Cl. 585—724 **19 Claims**

1. A method of producing gasoline including

passing a cracked hydrocarbon stream to a fractionator for providing a bottoms stream containing hydrocarbons having at least 5 carbon atoms and an overhead stream containing hydrocarbons having less than 5 carbon atoms;

passing said overhead stream to an alkylation process system for alkylating olefins with isoparaffins in the presence of a hydrogen fluoride alkylation catalyst to form an alkylate product; and



passing said alkylate product and said bottoms stream to a gasoline pool;

wherein the improvement comprises:

operating said fractionator so as to reduce an amount of amylene in said bottoms stream and shift said amount of amylene into said overhead stream; and

adding sulfone to said hydrogen fluoride alkylation catalyst in an amount such that synthetic isopentane production is suppressed below such production when no sulfone is added to said hydrogen fluoride alkylation catalyst, thereby reducing the amount of amylene in said gasoline pool with a minimum of production of synthetic isopentane.

15. A method for controlling the amount of synthetic isopentane produced during a catalytic alkylation of olefins selected from the group consisting of propylene, 2-butene, amylenes and mixtures of two or more thereof by utilizing an alkylation catalyst containing hydrogen fluoride and sulfolane in an alkylation process to produce an alkylate product containing a desired amount of synthetic isopentane produced by said catalytic alkylation of olefins, said method comprises the steps of:

specifying said desired amount of synthetic isopentane produced by said catalytic alkylation of olefins;

measuring the amount of synthetic isopentane produced by said catalytic alkylation of olefins to define a measured amount;

determining a difference between said desired amount of synthetic isopentane production and said measured amount of synthetic isopentane production; and

adjusting the weight ratio of hydrogen fluoride to sulfolane in said alkylation catalyst in response to said difference so as to narrow said difference and to provide a synthetic isopentane production that approaches said desired synthetic isopentane production.

5,629,467

PROCESS AND APPARATUS FOR THE SEPARATION OF P-XYLENE IN C_8 AROMATIC HYDROCARBONS WITH A SIMULATED MOVING BED ADSORPTION AND A CRYSTALLIZATION

Gerard Hotier, Rueil Malmaison; Claude Roux Guerraz, and Than Nguyen Thanh, both of Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 141,750, Oct. 27, 1993, Pat. No. 5,401,476, which is a division of Ser. No. 941,296, Sep. 4, 1992, Pat. No. 5,284,992. This application Mar. 27, 1995, Ser. No. 410,790

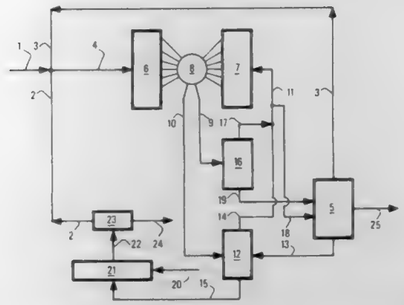
Claims priority, application France, Sep. 5, 1991, 91 11004; Jul. 6, 1992, 92 008497; Jul. 6, 1992, 92 08498

Int. Cl.[6] **C07C** *7/12*

U.S. Cl. 585—805 **14 Claims**

1. A process for the separation and recovery of p-xylene contained in a hydrocarbon charge containing C_8 aromatic hydrocarbons, comprising:

a) continuously contacting in at least one simulated moving bed adsorption zone, a charge containing m-xylene, p-xylene, ethyl benzene and optionally o-xylene with a zeolitic adsorbent bed in the presence of a desorption solvent, under adsorption conditions such that a first fraction is obtained containing the solvent, m-xylene, ethyl benzene and optionally o-xylene and a second fraction is obtained containing the solvent and essentially p-xylene with a purity between 75 and 98% and with an improved productivity;



b) distilling the first fraction to separate the desorption solvent from a mixture of m-xylene, ethyl benzene and optionally o-xylene;

c) isomerizing the mixture in an isomerization zone to provide an isomerate, and recycling said isomerate to stage a);

d) distilling the second fraction and recovering the solvent and p-xylene with a purity of 75 to 98%;

e) crystallizing the p-xylene of stage d) in a crystallization zone at a temperature between +10° C. and −25° C. to obtain a mother liquor, which is recycled to stage a), and mother liquor-impregnated p-xylene crystals;

f) washing the p-xylene crystals in a washing zone with a washing solvent and recovering p-xylene crystals with a very high purity level.

5,629,468

ROOT STIMULATING BACTERIA

Otto J. Schwarz, Knoxville, Tenn.; John A. Burns, Stillwater, Okla., and Beth C. Mullin, Knoxville, Tenn., assignors to Universtiy of Tennessee Research Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 249,901, May 26, 1994. This application Dec. 13, 1994, Ser. No. 354,656

Int. Cl.[6] **A01H** *5/00;* **A01N** *63/00;* **C12N** *1/00*

U.S. Cl. 800—200 **34 Claims**

1. An isolated bacteria which has its 16S rRNA transcribed from a nucleotide sequence which comprises the DNA sequence shown in Sequence ID No. 6. and which is capable of inducing adventitious root formation in plants without pathogenicity to the plants.

14. A living cutting of a plant in which adventitious roots have been induced by exposure to the bacteria of claim **1**, or by exposure to a growth medium in which the isolated bacteria had previously grown.

5,629,469

THIOL PROTEASE INHIBITOR

Camille Deluca-Flaherty, Palo Alto; Victor J. Chan, Oakland; Liliann E. C. Scarafia, Mountain View, and Karen J. Brunke, Belmont, all of Calif., assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 208,571, Mar. 10, 1994. This application Feb. 10, 1995, Ser. No. 384,367

Int. Cl.[6] **C12N** *15/09;15/15;15/63;* **C12P** *1/04;* **A01H** *1/00;5/00*

U.S. Cl. 800—205 **22 Claims**

1. An isolated thiol protease inhibitor peptide designated Virgiferin having the amino acid sequence extending from amino acid position 1 to 83 of SEQ ID NO.: 1 and a modified virgiferin peptide wherein said modified peptide comprises a peptide having at least 50% amino acid identity to virgiferin; truncations of virgiferin; or a peptide having at least 50% amino acid identity to the truncations of virgiferin wherein said modified virgiferin is functionally equivalent to said virgiferin protease inhibitor.

9. A transgenic plant comprising a foreign gene which encodes a peptide according to claim **1**.

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5,629,470

TRANSGENIC PLANTS AND PLANT CELLS WITH ENHANCED PATHOGEN RESISTANCE AND RELATED METHODS

Eric Lam, East Brunswick, and Ron Mittler, Piscataway, both of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Filed Jan. 20, 1995, Ser. No. 375,778
Int. Cl.[6] A01H *5/00*; **C12N** *5/04*;*15/82*
U.S. Cl. 800—205 **20 Claims**

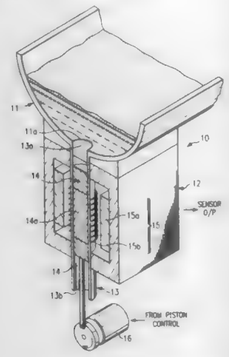
4. A transgenic plant, the cells of which express a gene encoding bacterio-opsin, or the progeny of said plant.

5,629,471

SAMPLING AND MEASURING DEVICE WITH CALIBRATING PISTON

James D. King, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Continuation of Ser. No. 310,863, Sep. 22, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 621,768
Int. Cl.[6] G01N *1/14*
U.S. Cl. 73—1.01 **19 Claims**



1. An apparatus for obtaining a sample of a product from a container having a sampling aperture, and for measuring a physical characteristic of the sample, comprising:

a sampling tube for attachment to said container, such that it receives said sample via said sampling aperture, said sampling tube having a port end in communication with said sampling aperture and having a stopper end opposite said port end;

a piston moveable within said sampling tube, having a substantially sealed relationship with the inner walls of said sampling tube such that said piston may be moved upwardly within said sampling tube to provide an upward force at the bottom surface of said sample to return said sample to said container via said sampling aperture; and

a sensor for sensing said physical characteristic of said sample while said sample is within said sample tube;

wherein at least a layer of said piston is made from a calibrating material such that said layer provides a known expected output of said sensor when said layer is positioned within said sample tube within the sensory area of said sensor, and wherein said layer forms an integral body with the rest of said piston;

whereby no piston structure is positioned between the side surface of the layer and sampling tube.

5,629,472

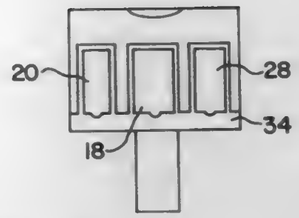
METHOD OF MINIMIZING BIAS AND ACHIEVING MODE ALIGNMENT BY TRIMMING A VIBRATING RATE SENSOR

Malcolm P. Varnham, and James McInnes, both of Plymouth, Great Britain, assignors to British Aerospace Public Limited Company, Hampshire, Great Britain

Division of Ser. No. 51,388, Apr. 23, 1993, Pat. No. 5,445,007. This application Jun. 2, 1995, Ser. No. 458,186
Claims priority, application United Kingdom, Apr. 24, 1992, 9208953
Int. Cl.[6] G01P *15/125*
U.S. Cl. 73—1.37 **4 Claims**

1. A method of minimizing bias and achieving mode alignment by trimming an effective transducer position of a vibrating rate sensor made of piezoelectric material of a type having a vibrating portion, a primary drive transducer, a secondary drive transducer, a primary pick-off transducer, and a secondary pick-off transducer, said method including steps of:

(a) applying a sinusoidal signal to said primary drive transducer;



(b) adjusting a frequency of said sinusoidal signal applied to said primary drive transducer until a desired first vibration mode is excited in said vibrating portion and a phase of a signal from said primary pick-off transducer is at 90 degrees with respect to a phase of said sinusoidal signal applied to said primary drive transducer;

(c) measuring said signal from said primary pick-off transducer as a primary vibratory mode frequency (f_{mp});

(d) applying a sinusoidal signal to said secondary drive transducer;

(e) adjusting a frequency of said sinusoidal signal applied to said secondary drive transducer until a desired second vibration mode is excited in said vibrating portion and a phase of a signal from said secondary pick-off transducer is at 90 degrees with respect to a phase of said sinusoidal signal applied to said secondary drive transducer;

(f) measuring said signal from said secondary pick-off transducer as a secondary vibratory mode frequency (f_{ms});

(g) ensuring that a modal frequency split between said primary vibratory mode frequency and said secondary vibratory mode frequency is less than a given value which is less than said primary vibratory mode divided by 2Q;

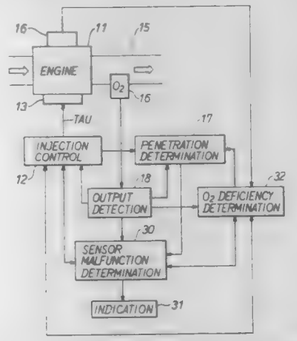
(i) removing material from said vibrating portion at a position between said primary drive transducer and said secondary drive transducer until a component of said signal from said secondary pick-off transducer is in quadrature with respect to said signal from said primary pick-off transducer is zero.

5,629,473

OXYGEN CONCENTRATION DETECTION DEVICE

Toshifumi Hayami, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 30, 1995, Ser. No. 550,465
Claims priority, application Japan, Oct. 31, 1994, 6-265901
Int. Cl.[6] F02D *41/14*
U.S. Cl. 73—23.31 **11 Claims**



1. An oxygen concentration detection device comprising:

an oxygen sensor equipped with an exhaust gas electrode which makes contact with exhaust gases and an air electrode which makes contact with air in order to detect oxygen concentration;

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malfunctioning detecting means for detecting whether the oxygen sensor is malfunctioning or not based on an oxygen sensor output;

means for determining whether oxygen deficiency at a side of the air electrode of the oxygen sensor is eliminated or not; and

means for canceling a malfunction detection made by the malfunction detecting means, when the oxygen deficiency at the side of the air electrode of the oxygen sensor determined by the determining means is not eliminated, until the oxygen deficiency is eliminated.

5,629,474

PRODUCTION OF A SENSOR FOR CARBON MONOXIDE OR WATER VAPOR INCLUDING A SEMI CONDUCTOR METALLIC OXIDE, CATALYST, AND RHEOLOGICAL AGENT

Edward W. Williams, Keele, Great Britain, assignor to Keele University, Staffordshire, England

PCT No. PCT/GB94/00658, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/23289, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 29, 1994, Ser. No. 530,246

Claims priority, application United Kingdom, Mar. 30, 1993, 9306594

Int. Cl.[6] G01N *27/12*

U.S. Cl. 73—23.2 **20 Claims**

1. A sensor to detect emissions of gas or vapor, which comprises a substrate having a layer of a composition comprising a semiconductor metallic oxide, a catalyst and a rheological agent to induce porosity into the surface of the layer, the semiconductor metallic oxide being indium oxide or stannic oxide and the catalyst is present in the composition in an amount of from 3 to 30% by weight.

5,629,475

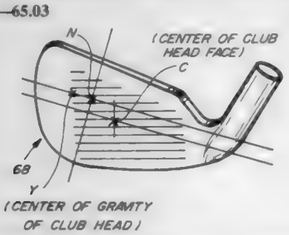
METHOD OF RELOCATING THE CENTER OF PERCUSSION ON AN ASSEMBLED GOLF CLUB TO EITHER THE CENTER OF THE CLUB HEAD FACE OR SOME OTHER CLUB HEAD FACE LOCATION

Herman A. Chastonay, 6455 Potomac, St. Louis, Mo. 63139

Filed Jun. 1, 1995, Ser. No. 457,411

Int. Cl.[6] A63B *53/00;* **G01M** *1/38;* **G01N** *1/12*

U.S. Cl. 73—65.03 **8 Claims**



1. A method for relocating the center of percussion of an assembled golf club to a location on the club head face where a golfer consistently makes contact with a golf ball, said assembled golf club including a club head, a club shaft and a grip, said method comprising the following steps:

(a) determining the center of percussion location on the club head face of the assembled club;

(b) determining where on the club head face a golfer consistently makes contact with a golf ball during that golfer's swinging motion;

(c) comparing the center of percussion location determined in step (a) above with the location on the club head face determined in step (b) above;

(d) determining the swing weight scale designation for said assembled golf club;

(e) determining the center of gravity length of said assembled golf club;

(f) weighting the club head so as to move the center of percussion location of the assembled club from the location determined in step (a) above to the location on the club head face determined in step (b) above; and

(g) adding weight to the grip end of said assembled golf club so as to return said assembled club to substantially the same swing weight scale designation determined in step (d) above without changing the center of percussion location obtained in step (f) above while at the same time reducing the center of gravity length of said assembled club determined in step (e) above.

5,629,476

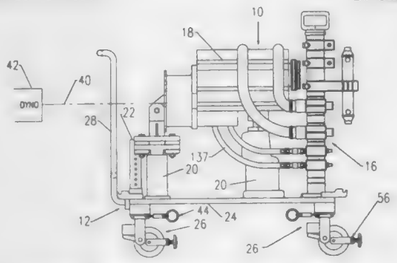
MODULAR FLUID MANIFOLD SYSTEM

Thomas F. Sondey, 9068 Lone Pine, Shelby Township, Mich. 48317

Division of Ser. No. 426,240, Apr. 21, 1995. This application Aug. 15, 1995, Ser. No. 515,138

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 **20 Claims**



1. A modular fluid manifold assembly comprising:

a centrally positioned elongated main channel having a plurality of axially extending slots located within the channel and extending substantially a length of the main channel;

a fluid module movably connected to the main channel and operable to be positioned at a plurality of locations on the main channel;

a spring biased locking assembly located at least partially within the fluid module for securing the fluid module to the main channel; and

a guide assembly integral with the fluid module and engaging the slots of the main channel.

5,629,477

TESTING APPARATUS FOR FUEL VAPOR TREATING DEVICE

Tokiji Ito, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

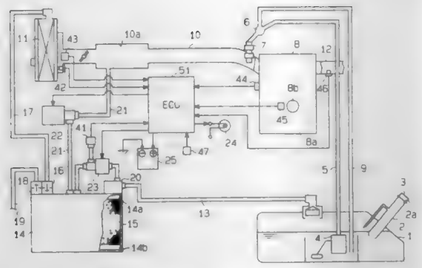
Filed Jul. 30, 1996, Ser. No. 688,460

Claims priority, application Japan, Jul. 31, 1995, 7-195161

Int. Cl.[6] F02M *25/08;* **F02D** *41/22;* **G01M** *15/00*

U.S. Cl. 73—118.1 **19 Claims**

1. A testing apparatus for a fuel vapor treating device, the treating device including a canister for collecting fuel vapor generated in a fuel tank through a vapor line, wherein the fuel in the tank is supplied to an engine, a purge line for purging the collected fuel in the canister into an air intake passage of the engine by a negative intake pressure generated in the intake passage during operation of the engine, a vapor control valve for adjusting a flow of the fuel vapor passing therethrough from the tank to the canister,



wherein the vapor control valve opens in accordance with a difference between the pressure of the tank and the pressure of the canister, a purge control valve for adjusting a flow rate of fuel vapor passing through the purge line, wherein the opening of the purge control valve is duty controlled in accordance with a duty signal, and control means for controlling said purge control valve during operation of the engine, wherein the control means supplies the duty signal to the purge control valve, and wherein the duty control of the purge control valve causes pulsation of a negative intake pressure applied to the purge line from the air intake passage, the apparatus comprising:

pressure detecting means for detecting the pressure at a canister side of the vapor control valve;

first testing means for testing a malfunction related to a sealing of the canister side based on the detected pressure;

first deciding means for deciding whether said control means is supplying the duty signal to the purge control valve;

second deciding means for deciding whether the detected pressure is higher than a predetermined reference value;

third deciding means for deciding whether a pressure pulsation is absent in the detected pressure caused by the duty control of the purge control valve; and

second testing means for determining that there is a malfunction hindering selective opening of the purge control valve, when the first deciding means decides that the control means is supplying the duty signal to the purge control valve and the second deciding means decides that the detected pressure is higher than a predetermined reference value and the third deciding means decides that the pressure pulsation is absent in the detected pressure caused by the duty control of the purge control valve.

5,629,478

METHOD OF AND DEVICE FOR DETECTING TIRE PRESSURE DROP BASED ON ANGULAR VELOCITY

Mikao Nakajima, and Isao Isshiki, both of Osaka, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, and Sumitomo Rubber Industries, Ltd., Hyogo, both of Japan

Filed Dec. 8, 1995, Ser. No. 570,004

Claims priority, application Japan, Dec. 15, 1994, 6-312123

Int. Cl.[6] B60C *23/02*

U.S. Cl. 73—146.2 **22 Claims**

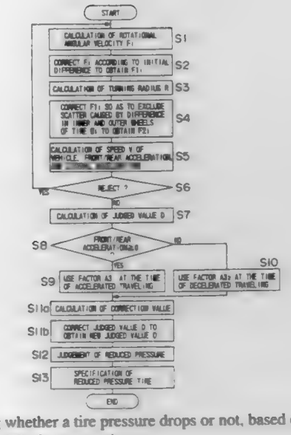
1. A method of determining a pneumatic pressure drop of a tire provided for a vehicle, comprising the steps of:

determining a rotational angular velocity of a tire,

determining a judged value D based on the determined rotational angular velocity;

substituting a velocity V of the vehicle, a front/rear acceleration FRA of the vehicle, a lateral acceleration LA of the vehicle and a turning radius R of the vehicle into a predetermined polynominal expression to determine a correction value, the predetermined polynominal expression being defined so that an influence of the turning radius R is exerted on all terms;

determining a judged value D' after correction by correcting the judged value D using the correction value; and



judging whether a tire pressure drops or not, based on the judged value D' after correction.

5,629,479

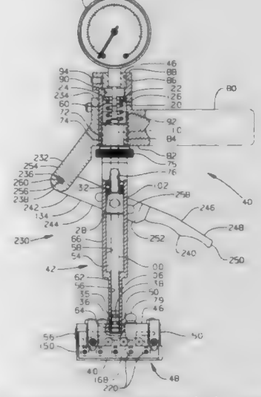
VOLUME DISPLACEMENT MONITORING DEVICE

Mark S. Paulson, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Dec. 4, 1995, Ser. No. 566,795

Int. Cl.[6] G01F *17/00;* **G01B** *7/14*

U.S. Cl. 73—149 **9 Claims**



1. A volume displacement monitoring device comprising:

a cylindrical portion having a first bore defined therein and having a piston assembly slidably position within the first bore;

a readout gage operatively attached to the cylindrical portion and being actuated by the piston assembly;

a measuring device including a block having an axial bore defined therein and being in communication with the first bore in the cylindrical portion, a plurality of displacement bores being axially spaced therebetween and communicating with the axial bore, and a plunger being slidably positioned within each of the plurality of displacement bores, each of said plungers having an end portion extending beyond the block; and

a fluid substantially filling said axial bore, said plurality of displacement bores and said first bore, and movement of said

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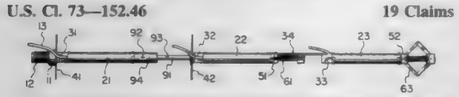
plungers being fluidly communicated to said piston assembly and said movement being recorded on said readout gage.

5,629,480

ROCK EXTENSOMETER

Gerhard Herget, Kanata, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Natural Resources, Ottawa, Canada

Filed Jul. 10, 1995, Ser. No. 500,156
Claims priority, application Canada, Jan. 25, 1995, 2141086
Int. Cl.[6] E21B *47/04;47/08*
U.S. Cl. 73—152.46 **19 Claims**



1. A test borehole extensometer, adapted to measure rock deformation caused by rock failure under tension, or under compression, or under both tension and compression, comprising in combination:

at least one first length measuring device, including a first linear motion position transducer, constructed and arranged to provide a first electrical value indicative of an axial measurement of the borehole;

at least one second length measuring device, including a second linear motion position transducer, constructed and arranged to provide a second electrical value indicative of a radial measurement of the borehole;

a plurality of daisy wheel anchoring devices, constructed and arranged to anchor the ends of the length measuring devices at chosen locations along the axis of the borehole;

at least one linkage means attaching the first and second length measurement devices together;

at least two electrical circuit means whereby the electrical values indicative of distances measured within the borehole can be retrieved; and

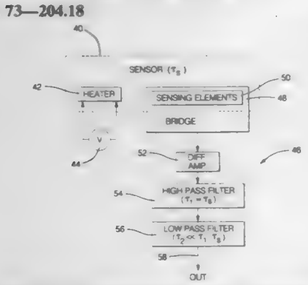
an insertion and retrieval pin at one end of the extensometer whereby the extensometer is inserted into and retrieved from the borehole.

5,629,481

MASS AIR FLOW MEASUREMENT SYSTEM AND METHOD

Michel F. Sultan, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 6, 1995, Ser. No. 523,985
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—204.18 **8 Claims**



1. A mass air flow measurement system comprising:

a sensing device located in an air flow duct providing an output signal relational to an amount of mass air flow past the device, wherein the sensing device has an inherent sensor response time constant and acts to low pass filter the output signal; and

a first filter stage coupled to the output of the sensing device receiving the output signal, wherein the first filter stage comprises a high pass filter with a first filter time constant substantially equal to the sensor response time constant and provides, at a first filter output, a high pass filter output signal, wherein

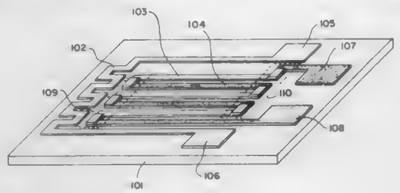
the first filter stage compensates for inaccuracies in the output signal caused by the inherent sensor response time constant when the mass air flow past the device pulses cyclically at time periods on an order of or less than the inherent sensor response time constant.

5,629,482

MEASURING DEVICE UTILIZING A THERMO-ELECTROMOTIVE ELEMENT

Rimantas Vaitkus, Vilnius, Lithuania; Shigenori Hayashi, and Masaya Kadono, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Apr. 26, 1995, Ser. No. 429,137
Claims priority, application Japan, Apr. 28, 1994, 6-113680
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—204.24 **13 Claims**



1. A measuring device comprising:

a diamond thin film;

a thermo-electromotive element formed on the surface of said diamond thin film;

means for applying a pulsewise heating on said diamond thin film; and

means for processing an output of said thermo-electromotive element,

wherein a change in the temperature of said diamond thin film following a heating from said means for applying a pulsewise heating is converted into an electric signal by using said thermo-electromotive element.

5,629,483

PIEZOELECTRIC VIBRATOR AND ACCELERATION SENSOR USING THE SAME

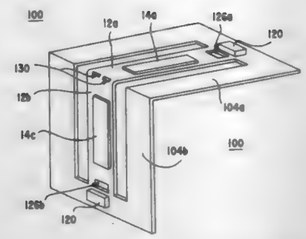
Takeshi Nakamura, and Takayuki Kaneko, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Kyoto-fu, Japan

Division of Ser. No. 202,017, Feb. 25, 1994. This application Aug. 30, 1995, Ser. No. 521,421
Claims priority, application Japan, Mar. 1, 1993, 5-066231; Mar. 1, 1993, 5-066233; Mar. 19, 1993, 5-085712; Apr. 26, 1993, 5-123421; Apr. 26, 1993, 5-123422; Apr. 28, 1993, 5-125485
Int. Cl.[6] G01P *15/09*
U.S. Cl. 73—514.34 **7 Claims**

1. An acceleration sensor comprising:

a plurality of plate-shaped vibrating bodies made of piezoelectric material connected in a folded manner; and

electrodes formed on surfaces of said vibrating bodies, wherein said vibrating bodies vibrate in such a manner that longitudinal expansion and contraction take place inversely at both sides a



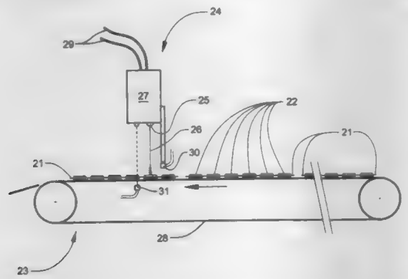
folding portion of said vibrating bodies by applying a driving signal to said electrodes.

5,629,484

METHOD AND APPARATUS FOR MONITORING A LASER ABLATION OPERATION INVOLVING MULTIPLE ABLATION SITES ON A WORKPIECE

Miroslav Liska, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed May 19, 1995, Ser. No. 444,594
Int. Cl.[6] B23K *26/02*
U.S. Cl. 73—587 **12 Claims**



1. A method for monitoring a laser ablation operation involving multiple ablation sites on a workpiece, the operation being performed by a computer-controlled laser beam which generates acoustic energy while ablating each site, said method comprising the steps of:

(a) converting the acoustic energy associated with the ablating of each site to an analog electrical signal;

(b) converting each analog electrical signal to a digital pulse;

(c) counting the digital pulses associated with the operation; and

(d) determining whether or not a counted number of digital pulses corresponds to an expected number of digital pulses.

5,629,485

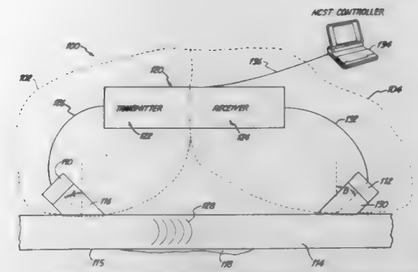
CONTAMINANT DETECTION SYTEM

Joseph L. Rose, State College, Pa.; Aleksander B. Pilarski, deceased, late of State College, Pa.; Jeffrey M. Hammer, Wayzata, Minn.; Michael T. Peterson, Lakeville, Minn., and Philip O. Readio, Savage, Minn., assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Dec. 13, 1994, Ser. No. 355,357
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—599 **25 Claims**

1. A method of detecting contaminants on a skin exposed to the environment comprising the steps of:

disposing a contaminant detection sheet on the skin, wherein the sheet is exposed to the environment and acoustically isolated from the skin;



transmitting a guided wave through the sheet at a phase velocity corresponding to multiple resonances as indicated on a dispersion curve for the sheet;

receiving the wave transmitted through the sheet and providing a received signal indicative thereof, wherein the received signal has a frequency signature; and

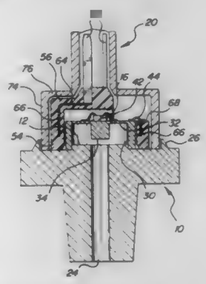
extracting features from the frequency signature of said received signal for classifying contaminants on the skin.

5,629,486

PRESSURE SENSOR APPARATUS WITH INTEGRATED CIRCUIT MOUNTED THEREON

Andres D. Viduya, Carmel, and Lewis H. Little, Peru, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 25, 1996, Ser. No. 591,876
Int. Cl.[6] G01L *9/06*
U.S. Cl. 73—727 **13 Claims**



1. A pressure sensor apparatus, comprising:

a diaphragm element subject to pressure to be sensed and supported on a base, the diaphragm being stressed by fluctuations in the pressure;

sensor means including a plurality of sensor elements formed on a surface of the diaphragm;

an IC directly mounted on and attached to the surface of the diaphragm and having a plurality of bond sites on a surface which faces away from the diaphragm;

conductor traces formed on the surface of the diaphragm defining conductive bond sites and at least one bond pad on the diaphragm, at least some of the traces being electrically connected to the sensor elements;

wirebond electrical connections between the bond sites on the IC and the bond sites on the diaphragm;

a connector assembly mounted on the base including at least one terminal bond pad in proximity to said at least one bond pad on the diaphragm; and

a wirebond electrical connection between the bond pad on the diaphragm and the terminal bond pad.

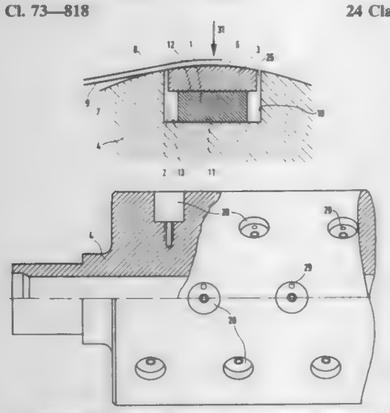
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5,629,487

DEFLECTING ROLLER FOR SENSING THE DISTRIBUTION OF STRESS ALONG THE ROLLER

Gert Mücke, Hilden; Helmut Thies, Kaarst, and Ebernhard Neuschütz, Ratingen, all of Germany, assignors to Betriebsforschungsinstitut VDEh Institut Für angewandte Forschung GmbH, Dusseldorf, Germany

Continuation of Ser. No. 118,736, Sep. 10, 1993, abandoned.
This application Mar. 19, 1996, Ser. No. 616,490
Claims priority, application Germany, Oct. 30, 1992, 42 36 657.7
Int. Cl.° G01L 5/04
U.S. Cl. 73—818 24 Claims



1. An apparatus for sensing distribution of stress along a deflecting roller while said roller deflects a strip of sheet material, including a substantially cylindrical roller body having a circumferential surface, said apparatus comprising:

a radially extending recess in said cylindrical roller body, having a top portion which opens to the circumferential surface of said cylindrical roller body, a bottom defined at the radially innermost point of the recess, and a side wall defined therebetween;

a stress-responsive sensor disposed completely within said radially extending recess, the stress-responsive sensor being circumferentially surrounded by the side wall of said recess and spaced apart from said side wall;

a sensor cover having a cross sectional shape corresponding to that of the radially extending recess, said sensor cover being arranged in the top portion of said recess, for only radial movement with respect to the circumferential surface of the cylindrical roller body, wherein said sensor cover is separated from the side wall of the recess by a gap which circumferentially surrounds the sensor cover and prevents interfering forces from being imparted against the sensor by the sensor cover.

5,629,488

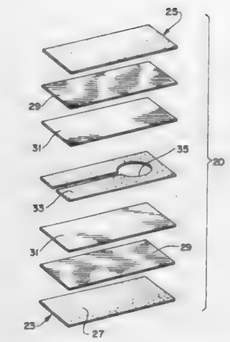
FORCE SENSOR AND METHOD OF MAKING SAME

Harry C. Kropp, Barrington, Ill., assignor to Breed Automotive Technology, Inc., Lakeland, Fla.

Filed Dec. 22, 1995, Ser. No. 577,427
Int. Cl.° G01L 1/00
U.S. Cl. 73—862.68 21 Claims

1. A laminated force sensor comprising:

two backing sheets substantially overlying each other, each having a substantially non-patterned, conductive confronting surface deposited thereon;



a substantially non-patterned semiconductive layer deposited on at least one of the conductive surfaces; and

a pattern of non-conductive material interposed between the confronting surfaces of the backing sheets and contacting the semiconductive layer, the pattern defining at least one sensing area devoid of non-conductive material, said sensing area confronting said semiconductive layer;

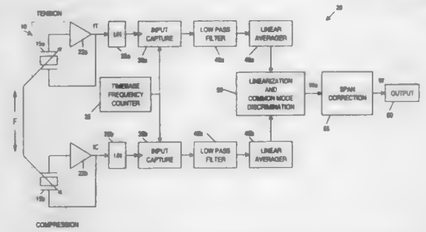
whereby electric current will flow between the conductive layers only when a force component is exerted orthogonally to the backing sheets at a location corresponding to the sensing area devoid of non-conductive material.

5,629,489

LOAD CELL ASSEMBLY WITH LINEARIZATION AND COMMON MODE DISCRIMINATION OF COMPLEMENTARY FORCE-RESPONSIVE SIGNALS

Victor E. Hipkiss, Sonoma, and Miles O. Strom, Windsor, both of Calif., assignors to Weigh-Tronix, Inc., Fairmont, Minn.

Filed Feb. 6, 1995, Ser. No. 383,967
Int. Cl.° G01L 1/00
U.S. Cl. 73—862.622 33 Claims



1. A load cell assembly for generating a force value indicative of an applied force, the load cell assembly comprising:

a load cell body adapted to receive the applied force;

first and second sensing means, coupled to the load cell body, for respectively providing first and second sensed signals which react in a complementary manner in response to the applied force on the load cell body;

means for sampling the first and second sensed signals at predetermined intervals of time to produce first and second change values representative of changes in the values of the first and second sensed signals over such predetermined time interval, each of said first and second change values having a magnitude value and a direction of change;

means for determining when the directions of change in the first and second change values are different; and

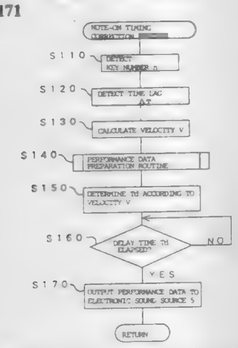
force calculating means, responsive to the determining means, for calculating the force value of the applied force from the magnitudes of the first and second change values.

5,629,490

PIANO

Tatsuya Inaba, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Continuation of Ser. No. 406,842, Mar. 22, 1995, abandoned.
This application Aug. 14, 1996, Ser. No. 699,681
Claims priority, application Japan, Sep. 27, 1993, 5-240034
Int. Cl.° G10D 15/00
U.S. Cl. 84—171 8 Claims



1. A composite acoustic/electronic piano having hammers, strings, a keyboard having a plurality of keys, a string striking mechanism operably connecting each of the hammers to a corresponding one of said keys to cause the hammers to strike the strings and generate string striking sound in response to operation of the keys, an electronic sound source, and a control means operably connected to said keys and said electronic sound source to control the electronic sound source to generate electronic sound in response to operation of the keys, wherein said control means comprises:

a mode selection means for selecting either one of a) an acoustic mode in which the string striking mechanism causes the hammers to strike the strings and generate string striking sound, and b) an electronic mode in which the control means controls the electronic sound source to generate electronic sound;

interception means for intercepting action of the hammers when the electronic mode is selected, to prevent the hammers from striking the strings and generating string striking sound;

the control means being operably connected to the keys via detection means for detecting depression and release of each of said keys and transmitting corresponding information to said control means, whereby the control means controls the electronic sound source according to the information sent from said detection means; and

delay time determination means for determining a delay time by which sound emission at the electronic sound source is delayed after detection of key depression by the detection means;

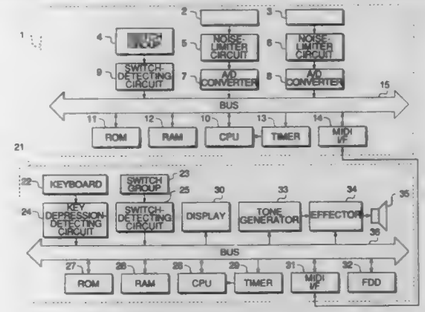
wherein the delay time determination means includes a delay time determination table associated with each key, each delay time determination table containing predetermined delay times for the associated key that correspond to a delay time between key depression and string striking sound of the associated key in the acoustic mode, such that delay time variations between the keys, caused by variant hammer weights and different sting striking mechanisms, are incorporated into the predetermined delay times.

5,629,491

TEMPO CONTROL APPARATUS

Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Mar. 28, 1996, Ser. No. 623,810
Claims priority, application Japan, Mar. 29, 1995, 7-096252; Mar. 29, 1995, 7-096253
Int. Cl.° G10H 7/00
U.S. Cl. 84—636 19 Claims



1. A tempo control apparatus comprising:

tempo control signal-generating means for generating a tempo control signal in response to operation of an operator;

automatic performance data-storing means for storing automatic performance data;

tempo control data-storing means for storing a plurality of kinds of tempo control data for controlling tempo of automatic performance of a musical piece as said automatic performance of said musical piece proceeds, when said automatic performance data is reproduced;

selecting means for selecting one of said plurality of kinds of tempo control data stored in said tempo control data-storing means; and

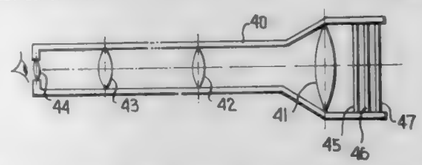
tempo control means for controlling said tempo of said automatic performance of said musical piece based on the selected one of said plurality of kinds of tempo control data and said tempo control signal generated by said tempo control signal-generating means.

5,629,492

TECHNIQUE FOR ELIMINATING UNDESIRABLE REFLECTIONS FROM OPTICAL SYSTEMS

Thomas J. Gleason, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 20, 1975, Ser. No. 634,710
Int. Cl.° F41G 1/38
U.S. Cl. 89—41.19 6 Claims



1. In a military optical viewing system, an apparatus which eliminates the detection of retroreflected light energy by a nonuser, the apparatus comprising:

a weapon sight including a hollow housing and an eyepiece in which a plurality of lens members are mounted in spaced relation along an optical path, the elements aligned such that the light energy enters the forward end of the housing and is impinged on the eyepiece at the rearward end of the housing;

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a polarizing means, located forward of the eyepiece, along the optical path, operative over a known range of wavelengths for polarizing light entering the system before the light reaches the eyepiece; and

a shifting means, located between the polarizing means and the eyepiece and along the optical path, operative over a predetermined range of wavelengths for changing the polarization state of light passed by the polarizing means before the polarized light reaches the eyepiece and such that two passes through said shifting means results in a 90° rotation of the plane of polarization of the light;

whereby light energy which is retroflected off the eyepiece is prevented vented from leaving the optical viewing system and being detected by the nonuser.

5,629,493

LOW ENERGY FUSE HAVING IMPROVED PROPERTIES IN BOTH AXIAL AND RADIAL DIRECTIONS

Lars Andersson; Karl-Erik Danertz, and Göran Jidestig, all of Nora, Sweden, assignors to Nitro Nobel AB, Nora, Sweden

PCT No. PCT/SE93/00954, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/11324, PCT Pub. Date May 26, 1994

PCT Filed Nov. 10, 1993, Ser. No. 436,277

Claims priority, application Sweden, Nov. 17, 1992, 9203459

Int. Cl.[6] C06C *5/04;7/00*

U.S. Cl. 102—275.8 **36 Claims**



1. A low energy fuse comprising a plastic tube with a channel, the channel containing a reactive material able upon ignition to sustain a shock wave within the channel, the tube comprising at least two layers of plastic materials, a first plastic layer closer to the channel and a second plastic layer outside the first layer, at least the second layer containing a major amount of draw orientable polymer resin wherein the polymer in the second layer is axially oriented to an orientation degree of more than 20% and less than 90% and that the polymer of the first layer is axially oriented to an orientation degree not exceeding 10% orientation degree units more than that of the second layer with said orientation degrees being expressed as percentages of the maximum possible orientation in the axial direction for each of said layers.

5,629,494

HYDROGEN-LESS, NON-AZIDE GAS GENERANTS

Michael W. Barnes, Brigham City, and Robert D. Taylor, Hyrum, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Feb. 29, 1996, Ser. No. 609,270

Int. Cl.[6] C06B *47/08*

U.S. Cl. 149—36 **6 Claims**

1. A hydrogen-less gas generant composition consisting essentially of

A) between about 20 and about 40 wt % of a fuel and B) between about 60 and about 80 wt % of B) an oxidizer, said weight percentages of A) and B) being calculated on the total weight of A) plus B),

between about 60 and 95 wt % of said fuel A) comprising a fuel component i) selected from the group consisting of cupric bitetrazole, zinc bitetrazole and mixtures thereof, and

between about 5 wt % and about 40 wt % of said fuel A) comprising a fuel component ii) selected from the group consisting of cupric dicyanamide, zinc dicyanamide and mixtures thereof,

between about 70 and 100 wt % of said oxidizer B) comprising an oxidizer component iii) selected from the group consisting of CuO, Fe_2O_3, and mixtures thereof, and

up to about 30 wt % of said oxidizer B) comprising an oxidizer component iv) selected from the group consisting of alkali and alkaline metal salts of nitrate, chlorate, perchlorate, and mixtures thereof.

5,629,495

WATERPROOF BOX-LIKE CASING

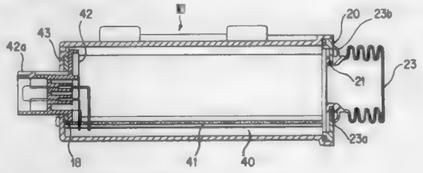
Tatsuya Sumida; Yasuo Matsushita, both of Yokkaichi, and Yuichi Akiyama, Aki-gun, all of Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Feb. 16, 1994, Ser. No. 197,342

Claims priority, application Japan, Feb. 22, 1993, 5-011979 U

Int. Cl.[6] H05K *5/06*

U.S. Cl. 174—12 R **4 Claims**



1. A waterproof box-like casing comprising:

a box-like body having an opening;

a lid for closing said opening and having a communication hole;

a bulkhead member for covering said communication hole, the bulkhead member including a groove and a skirt portion, said groove containing adhesive and being formed in an outer surface of said bulkhead member for mating with an edge portion of said communication hole to hermetically connect said bulkhead member to said communication hole, said skirt portion being extended from an outer periphery of said bulkhead member for preventing water from flowing into said groove;

said communication hole providing communication between the inside of said box-like body and the inside of said bulkhead member; and

wherein said bulkhead member expands volume when air inside of the waterproof box-like casing expands because of thermal expansion and contracts volume when the air inside of the waterproof box-like casing contracts because of thermal contraction.

5,629,496

DEVICE FOR ADAPTING AN ELECTRICAL MECHANISM TO A RACEWAY MEANS FOR ELECTRICAL CONDUCTORS

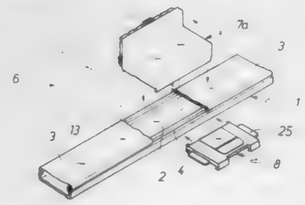
Juan M. B. Navazo, Barcelona, Spain, assignor to Aparellaje Electrico, S.A., Barcelona, Spain

Filed Jul. 1, 1994, Ser. No. 269,781

Claims priority, application Spain, Jul. 5, 1993, 9301500

Int. Cl.[6] H02G *3/04*

U.S. Cl. 174—48 **7 Claims**



1. A device for adapting an electrical mechanism to a raceway means for electrical conductors, particularly to a raceway means formed by a base section having a bottom wall and side walls having respective longitudinal grooves, and by a lid section having two inwardly directed lips for engagement in said longitudinal grooves, the device comprising:

a support member;

a casing;

a closing and covering member; and

a guide member,

wherein said support member is adapted to be attached to a support surface; is provided with a base for receiving an electrical mechanism; includes side surfaces, one of which is a recessed surface, for the access of conductors from said raceway means to said base; and is provided with first means for coupling said support member to said casing;

wherein said casing is of substantially prismatic shape defining side surfaces; is adapted to be disposed around said support member and said electrical mechanism; and (iii) has, on one of said side surfaces, a bight defining first edges and which is adapted to be opposite said recessed surface;

wherein said closing and covering member has a wall portion defining second edges and which is adapted to be attached to said first edges, closing said bight; and a hood portion adapted to cover a portion of said raceway means,

wherein said guide member includes a rectangular base provided with removable sheet-like portions and adapted to cover a portion of said base section, said guide member also includes retaining teeth that may be inserted in said longitudinal grooves of the side walls of the raceway means, longitudinal fins that may be located below portions of said lid section that are adjacent said portion of said base section, and end plates attached to said longitudinal fins with weakened joints.

5,629,497

PRINTED WIRING BOARD AND METHOD OF MANUFACTURING IN WHICH A BASEFILM INCLUDING CONDUCTIVE CIRCUITS IS COVERED BY A CURED POLYIMIDE RESIN LAY

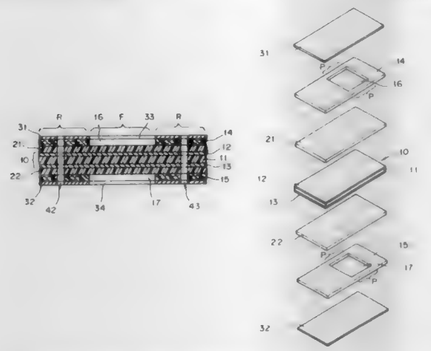
Hiromoto Sato, and Junzaburo Shirai, both of Iruma-gun, Japan, assignors to CMK Corporation, Saitama, Japan

Filed Oct. 4, 1995, Ser. No. 538,853

Claims priority, application Japan, Oct. 4, 1994, 6-264655; Oct. 4, 1994, 6-264656

Int. Cl.[6] H05K *1/02*

U.S. Cl. 174—255 **14 Claims**



1. A printed wiring board comprising:

a basefilm having at least one conductive circuit on both surfaces;

at least two cover lays, which completely cover both surfaces of said basefilm, and which are made by curing a semirigid bonding sheet made from polyimide-containing resin material

at least two prepregs having opening portions which are laminated onto said at least two cover lays; and

at least one conductive circuit formed by etching at least two copper foil sheets which completely covers said at least two prepregs.

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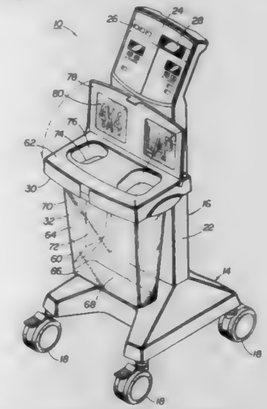
INTRAOPERATIVE TRACKING DEVICES AND PROCESSES

Richard A. Pollock, 5805 State Bridge Rd., Suite G-182, Duluth, Ga. 30136, and Mahmood S. Kassam, Richmond Hill, Canada, assignors to Richard A. Pollock, Duluth, Ga.

Filed Jan. 18, 1995, Ser. No. 374,186

Int. Cl.[6] G01G *19/40;19/22;* **A61B** *5/00;* **B65D** *51/16*

U.S. Cl. 177—15 **46 Claims**



1. Apparatus for tracking articles, comprising:

a. at least one disposable container which contains at least one retention section for retaining articles which have been placed in the container, and at least one port through which the articles may be introduced;

b. at least one load cell adapted to determine the weight of the articles;

c. structure adapted to suspend the container from the load cell in a manner that places the load imposed by the container and the articles on the load cell;

d. a plurality of optical sensors corresponding to each port, adapted to sense passage of articles through the port;

e. processor means and memory means adapted to receive input signals from the load cell and the optical sensors in order to calculate weight and counts of the articles; and

f. a display for displaying cumulative weights and cumulative counts of the articles.

5,629,499

ELECTRONIC BOARD TO STORE AND TRANSFER INFORMATION

Daniel Flickinger, San Francisco, and Bo U. Curry, Redwood City, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

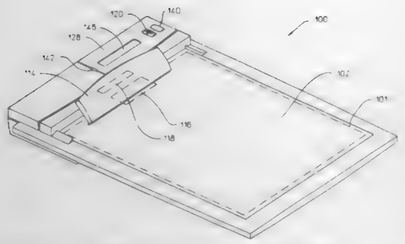
Continuation of Ser. No. 333,925, Nov. 3, 1994, abandoned, which is a continuation of Ser. No. 159,279, Nov. 30, 1993, abandoned. This application Dec. 14, 1995, Ser. No. 572,356

Int. Cl.[6] G08C *21/00*

U.S. Cl. 178—18 **19 Claims**

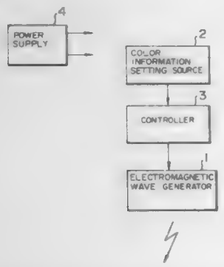
1. An apparatus both permitting a user to write on multiple pages or forms and also digitizing the information entered by the user onto the pages or forms, such that the user may retain both copies of completed documents and electronic file data representing information entered onto the pages or forms, the apparatus not itself including a visual display device for displaying the information entered onto the pages or forms, comprising:

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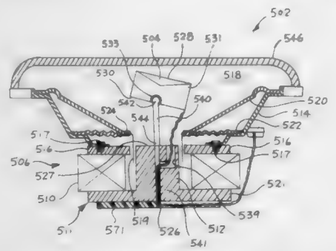
a board for mounting the pages or forms thereon;
a stylus for imprinting symbols on the pages or forms without concurrently displaying the symbols electronically;
a sensing mechanism coupled to the board for sensing the symbols and for converting the symbols into information for storage in memory inside the board while the symbols are imprinted, such sensing and conversion of information on the symbols being completed independently of any image information of the pages or forms;
a memory device inside the board for storing the information about the sensed symbols as electronic file data, such storing being completed without reference to any image information of the pages or forms;
a mechanism for identifying at least one of the pages or forms as being current, the memory effective to store information on sensed symbols in association with the current page or form; and
an output device of said apparatus coupled to the memory device for providing a data file of the sensed and stored information on the symbols without a concomitant file of image information of the pages or forms with which to duplicate the pages or forms.

5,629,500
POSITION POINTING DEVICE, SYSTEM AND METHOD EMPLOYING AC FIELD
Yasuhiro Fukuzaki, and Yuji Katsurahira, both of Saitama-ken, Japan, assignors to Wacom Co., Ltd., Saitama, Japan
Filed Feb. 3, 1995, Ser. No. 384,557
Claims priority, application Japan, Feb. 10, 1994, 6-016800
Int. Cl.[6] G09G *3/02*
U.S. Cl. 178—19 **30 Claims**



1. A position pointing device for deriving a coordinate value of a pointed position and information concerning a color by exchanging an AC field with a position detecting device, said position pointing device comprising:
means for generating an AC field having a spatial distribution corresponding to the coordinate value of the pointed position relative to the position detecting device and an amplitude or frequency responsive to an external control;
color information setting means for setting detailed information related to plural factors defining a particular color;
control means for controlling said AC field generating means in accordance with said detailed information; and
power supplying means for supplying power to component units of the position pointing device.

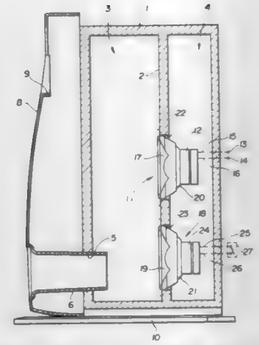
5,629,501
COMPOSITE SPEAKER SYSTEM HAVING A DIRECTIONAL ADJUSTABLE TRANSDUCER
Robert Fenton, 28003 W. Via Amistosa, Agoura Hills, Calif. 91301
Continuation-in-part of Ser. No. 264,739, Jun. 23, 1994, Pat. No. 5,512,714. This application Sep. 25, 1995, Ser. No. 533,015
Int. Cl.[6] H04R *15/00*
U.S. Cl. 181—144 **14 Claims**



1. A speaker system for vehicles, comprising:
a. a larger transducer for reproducing low frequency sounds and having a bottom plate, a top plate, a diaphragm, a damper, a pole piece extending from the bottom plate and a frame fixedly secured to the top plate, the damper having an outer edge mounted to the frame and an inner edge coupled to an inner edge of the diaphragm, the damper and the diaphragm mounted within an open space of the frame such that their inner edges form a central opening;
b. said pole piece having an aperture therein;
c. a smaller transducer for reproducing high frequency sounds and having a back side with a socket joint connection;
d. an elongated adjustable rod having a bottom end attached to top of said pole piece and a top ball joint end adjustably attached to said socket joint connection on said back side of said smaller transducer, where the elongated adjustable rod extends through said central opening formed by said diaphragm and said damper of said larger transducer and said smaller transducer is located within said open space such that said smaller transducer is adjusted in any direction; and
e. a grill member detachably mounted on the periphery of said frame for covering said smaller transducer and said open space of said frame of said larger transducer;
f. whereby said smaller transducer is adjusted in any direction for providing an aiming capability.

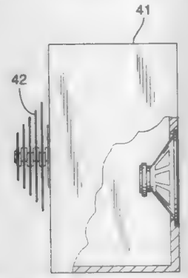
5,629,502
SPEAKER APPARATUS
Yasuhide Nakano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 24, 1995, Ser. No. 393,627
Claims priority, application Japan, Mar. 2, 1994, 6-032154; Jul. 29, 1994, 6-178480
Int. Cl.[6] H05K *5/00*
U.S. Cl. 181—156 **10 Claims**

1. A speaker apparatus comprising
a cabinet including a partition plate and having an internal volume divided by the partition plate into a front compartment and a rear compartment,



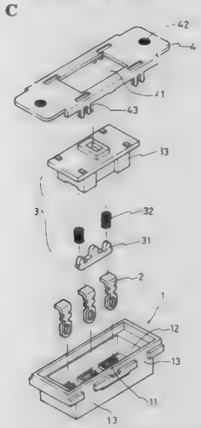
a speaker unit mounted on the partition plate so that a sound radiating direction of the speaker unit is towards said front compartment,
an internal passive radiator mounted on the partition plate and having a diaphragm area not smaller than a diaphragm area of the speaker unit; and
a duct formed in the cabinet on an outer wall section of the front compartment extending in the same direction as the sound radiating direction of the speaker unit and being at a position facing the internal passive radiator.

5,629,503
VIBRATION DAMPING DEVICE
Leonard Thomasen, Cotati, Calif., assignor to Tekna Sonic, Inc., Cotati, Calif.
Filed Feb. 8, 1994, Ser. No. 193,299
Int. Cl.[6] A47B *81/06;* **F16F** *15/00*
U.S. Cl. 181—199 **8 Claims**



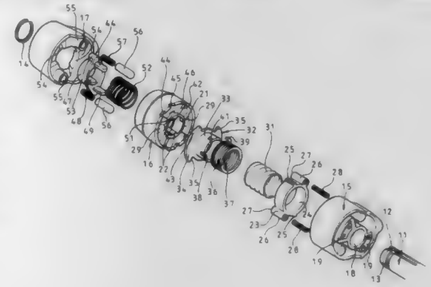
1. In combination, a speaker driver, a speaker enclosure and a vibration attenuating device for attenuating vibrations through a broad band of frequencies of vibration occurring in the speaker enclosure as induced by the speaker driver, said enclosure having at least one panel, comprising:
a mounting plate connecting the vibration attenuating device to a panel of the speaker enclosure,
a plurality of damping plates, each having a perimeter, connected to the mounting plate, in a generally spaced apart, stacked formation, and including plate mounting means for securing the damping plates to the mounting plate in spaced apart relationship and in such a way as to leave edges of each damping plate around the entire perimeter of each damping plate suspended freely in space, each damping plate being formed of a viscoelastic material,
and the damping plates each being tuned to a different band of frequencies.

5,629,504
VOLTAGE SWITCH
Chun-Yun Chang, I-Lan Hsien, Taiwan, assignor to Solteam Electronics Co., Ltd., I-Lan Hsien, Taiwan
Filed Nov. 14, 1995, Ser. No. 557,237
Int. Cl.[6] H01H *15/02*
U.S. Cl. 200—16 C **2 Claims**



1. A voltage switch comprising a casing, a plurality of terminals fastened to said casing, a bottom board covered on said casing and having a center opening, a contact slide mounted in said casing and moved within the center opening of said bottom board to alternatively connect said terminals together, wherein said casing has a plurality of mounting grooves symmetrical disposed on opposite sides each of the mounting grooves having an opening dimension; said bottom board is stamped from a metal plate and then bent into shape, having two screw holes longitudinally aligned at two opposite ends for mounting, and a plurality of hooks extending symmetrically and transversely aligned from opposite sides of the bottom board, each hook having a maximum dimension greater than the opening dimension of the mounting grooves such that engagement of the hooks with a portion of the casing adjacent to the mounting grooves secures the bottom board to said casing.

5,629,505
ROTARY SWITCH ASSEMBLY
Edward Cryer, Burnley, United Kingdom, assignor to Lucas Industries, Public Limited Company, England
Filed Nov. 22, 1994, Ser. No. 343,675
Claims priority, application United Kingdom, Nov. 23, 1993, 9324039
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—61.54 **8 Claims**



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1. A switch assembly including a first, relative fixed component, a first switch operating member rotatable relative to said first component between first and second stable positions, electrical switch contacts operable by said first operating member, a second switch operating member rotatable relative to said first component between first and second positions, further switch contacts operable by said second operating member and a resilient device arranged to be stressed from a rest condition by movement of said second operating member from said first position to said second position, a releasable latch mechanism for retaining said resilient device stressed, and, a release mechanism responsive to said first operating member occupying said first stable position for releasing said latch mechanism, whereby said resilient device restores to said rest condition carrying said second operating member from said second position to said first position.

5,629,506

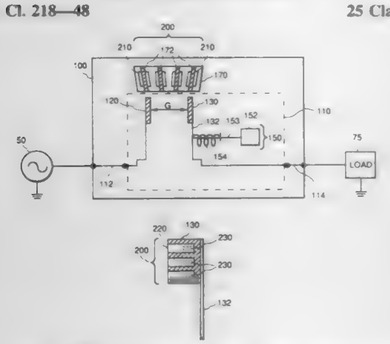
LOW VOLTAGE AC CONTACTOR INCLUDING HIGH RECOVERY VOLTAGE GAS SYSTEM

Lawson P. Harris, Scotia; Herman L. Finkbeiner, Rexford, and Minyoung Lee, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1994, Ser. No. 260,431

Int. Cl.[6] H01H *33/04;9/30*

U.S. Cl. 218—48 **25 Claims**



1. A low voltage AC contactor having a high voltage recovery capability and comprising:

at least one contact assembly comprising a plurality of contact pads and a contact pad positioning device, at least one of said contact pads being attached to said positioning device, said positioning device being moveably mounted so as to selectively dispose the positionable contact pad attached to said device between a closed circuit position wherein said positionable electrical contact is disposed in electrical contact with another of said plurality of contacts and an open circuit position wherein said positionable contact pad is disposed away from said another of said plurality of contacts such that a gap exists therebetween; and

a high recovery voltage strength gas system coupled to said contact assembly, said gas system comprising means for introducing a high recovery voltage strength gas into said gap between said positionable contact and said another one of said plurality of contact pads;

said high recovery voltage strength gas having a high glow discharge cathode voltage fall value as determined for silver-based contacts not less than about 300 volts.

5,629,507

Patent Not Issued For This Number

5,629,508

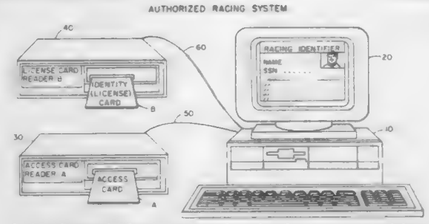
DUAL SMART CARD ACCESS CONTROL ELECTRONIC DATA STORAGE AND RETRIEVAL SYSTEM AND METHODS

Raymond Findley, Jr., and Robert Dixon, both of Marietta, Ga., assignors to American Card Technology, Inc., Marietta, Ga.

Continuation of Ser. No. 352,837, Dec. 2, 1994, abandoned. This application Feb. 6, 1995, Ser. No. 383,937

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—38 R **5 Claims**



1. An electronic data access and retrieval system comprising:

at least first and second smart cards, a first card being encoded with digital data fields representative of predetermined information and a second card including authorization codes for enabling access to and authorized retrieval of selected information from said digital data fields of said first card;

computer means including display means for displaying the accessed data and having at least first and second smart card read/write means operatively connected to said computer means for reading data fields from and writing data fields to said first and second smart cards;

whereby when the said first smart card is placed into said first read/write means and the said second smart card is placed into said second read/write means, access to and authorized retrieval of at least some of the data fields contained in the said first card is enabled and displayed.

5,629,509

AXLE COUNTER WITH VARIABLE THRESHOLD SETTING

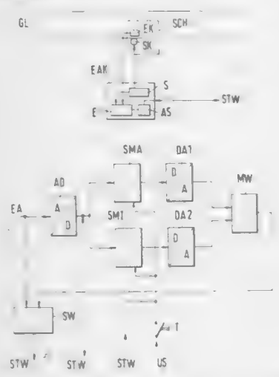
Helmut Uebel, Leonberg, Germany, assignor to Alcatel Sel Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 17, 1995, Ser. No. 390,558

Claims priority, application Germany, Feb. 17, 1994, 44 05 039.9

Int. Cl.[6] G06M *7/00*

U.S. Cl. 235—98 C **5 Claims**



1. An axle counter comprising at least one electromagnetic rail contact (SCH), which is attached to the rail of a track (GL) and comprises a transmitter (S, SK) generating an alternating electromagnetic field and at least one receiver (E, EK) detecting the alternating electromagnetic field, and an evaluating circuit (AS) which senses in the output of the receiver (E) a change in the alternating electromagnetic field caused by a wheel passing on the rail, compares said change with a predetermined threshold value, and, when it exceeds the threshold value, interprets it as an axle passage and feeds a count pulse to presence-of-trains indicating equipment, characterized in that an overwritable memory (SMA, SMI) is provided for storing the predetermined threshold value or values from which the predetermined threshold value can be calculated at any time, that enabling means are provided which permit the contents of the memory to be overwritten in response to a special setup command, and that further means (AD) are provided which determine a new predetermined threshold value, or values required to calculate a new predetermined threshold value, from a receiver output signal obtained under standard conditions or from changes in receiver output signals obtained over a prolonged period of time, and feed said value or values to the memory.

5,629,510

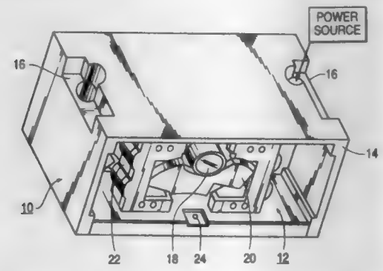
BAR CODE SCANNING AND READING APPARATUS WITH AN OSCILLATING SCANNING ENGINE

Anna M. Quinn, Rochester, and Jay M. Eastman, Pittsford, both of N.Y., assignors to PSC Inc., Webster, N.Y.

Continuation-in-part of Ser. No. 320,888, Oct. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 138,313, Oct. 18, 1993, Pat. No. 5,422,472, which is a continuation-in-part of Ser. No. 985,371, Dec. 4, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,205

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **23 Claims**



1. A scan engine for scanning an optical beam over a field of view which contains a data-representing symbol, collecting return light from said symbol, and translating said collected returning light into data-representing electrical signals, said scan engine comprising:

a stator having controlling means for electrically controlling said scan engine, a pair of magnets for producing a fixed magnetic field, a plurality of electrically-conductive flexures, and a photodetector disposed on said stator; and

a rotor having a light source to provide said optical beam, an optical collector for collecting light returning from said field of view and for directing said collected returning light to said photodetector, and a coil having opposite sides and mounted on a support so that at least one side of said coil cuts said fixed magnetic field, each of said pair of magnets being disposed on said stator in magnetically coupled relationship with a different one of said opposite sides of said coil, said rotor being a molded interconnect device having conductors thereon to conduct electrical current from said flexures to said light source and to said coil whereby current in said coil is made to alternate, said light source and said optical collector being mounted on said rotor in fixed relationship, said rotor being supported by said flexures and adapted to oscillate in response to said controlling means about an axis which passes through said photodetector and said light source, said rotor being rotatable to provide said optical beam which scans said field of view.

5,629,511

BAR CODE SCANNER AND SCANNING SYSTEM FOR VARIOUS TYPES OF OPERATIONS

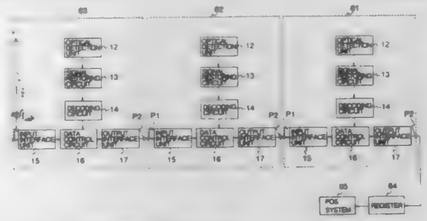
Isao Iwaguchi; Shinichi Sato, and Ichiro Shinoda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 22, 1995, Ser. No. 392,117

Claims priority, application Japan, Mar. 4, 1994, 6-035079

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **18 Claims**



1. A bar code scanner comprising:

detection means for detecting light reflected from a bar code and generating a detection signal;

conversion means for generating detected bar code data based on said detection signal;

an input interface unit receiving external bar code data from another bar code scanner connected thereto;

data control means for combining said detected bar code data and said external bar code data to generate combined bar code data and for providing one of said detected bar code data, said external bar code data, and said combined bar code data as output bar code data; and

an output interface unit for sending out said output bar code data.

5,629,512

INVISIBLE INFORMATION RECORDING MEDIUM AND APPARATUS FOR READING INFORMATION FROM THE SAME

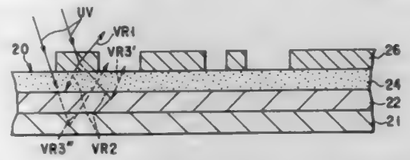
Yasunobu Haga, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 291,624, Aug. 17, 1994, Pat. No. 5,532,104. This application May 19, 1995, Ser. No. 446,044

Claims priority, application Japan, Aug. 19, 1993, 6-205360; Sep. 6, 1993, 5-221243; Dec. 27, 1993, 50331801

Int. Cl.[6] G06K *9/10;* **B42D** *15/00*

U.S. Cl. 235—468 **5 Claims**



1. An information reading apparatus for reading information from an invisible information recording medium including: an underlying layer; an invisible information recording layer which is provided above said underlying layer, is invisible under visible light, and fluoresces upon being applied with light having a particular wavelength excepting that of the visible light, thus becoming visible; and an optical modulation layer provided between said

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underlying layer and said invisible information recording layer and including a photochromic layer,

said information reading apparatus comprising:

preliminary coloring means for coloring said photochromic layer of said optical modulation layer of said invisible information recording medium in advance; and

an information reading optical system for applying the light having the particular wavelength excepting that of the visible light to said invisible information recording layer of said invisible information recording medium to cause said invisible information recording layer to fluoresce immediately after said photochromic layer of said optical modulation layer is colored in advance by said preliminary coloring means, thereby making said invisible information recording medium visible, and reading information from said invisible information recording layer which has become visible.

5,629,513

METHOD FOR THE FUNCTIONING OF A CHIP CARD, AND CHIP CARD IN ACCORDANCE THEREWITH

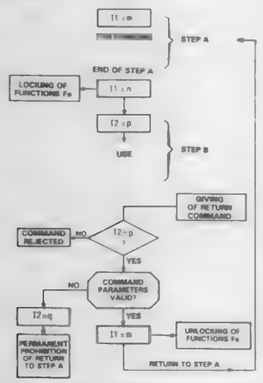
Francois Geronimi, Aix En Provence, and Edouard Gordons, Aubagne, both of France, assignors to Gemplus Card International, Gemenos, France

Filed Mar. 3, 1995, Ser. No. 400,237

Claims priority, application France, Mar. 4, 1994, 94 02529

Int. Cl.[6] G06K *19/06*

U.S. Cl. 235—492 **17 Claims**



1. A method of functioning of a chip card comprising the use of first and second state indicators internal to the chip card to define two states of the card, the method comprising the steps of:

permitting, during a first state of the chip card, certain functions of the chip card to be performed;

changing the first indicator from a first state value to a second state value during the passage of the chip card from the first state to a second state;

prohibiting, during the second state of the card, the certain functions of the chip card which were permitted during the first state of the card;

resetting the first indicator to the first state value, and subsequently permitting the certain functions to be performed after the first indicator is reset to the first state value;

wherein the resetting of the first indicator is permitted when the second indicator is set at a first value and is prohibited when the second indicator is set at a second value;

wherein the first indicator is reset to the first state value under the control of a rerun instruction received at the card;

and wherein the reception of a return instruction which is erroneous places the second indicator at the second value which prohibits the resetting of the first indicator to the first state value.

5,629,514

CRITICAL ANGLE FOCUS ERROR DETECTOR

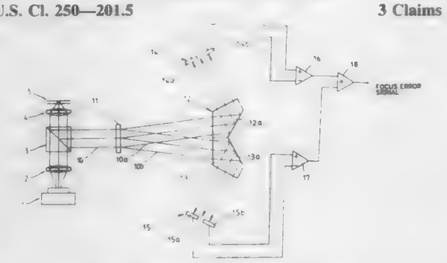
Chul-woo Lee, Seoul; Chong-sam Chung, Sungnam; Jang-hoon Yoo, and Kyung-hwa Rim, both of Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 2, 1995, Ser. No. 458,165

Claims priority, application Rep. of Korea, Nov. 29, 1994, 94-31841

Int. Cl.[6] G01J *1/20;* **G11B** *7/00*

U.S. Cl. 250—201.5 **3 Claims**



1. A focus error detector for detecting a focus error of an objective lens which focuses incident collimated light onto an optical disk, said focus error detector comprising:

a diffraction device for diffracting reflected light reflected from said optical disk and passed through said objective lens into first and second diffracted light rays;

critical angle reflecting means for reflecting said first and second diffracted light rays at first and second critical angles, respectively;

first and second bi-segmented photo-detectors for receiving said first and second diffracted light rays reflected from said critical angle reflecting means, respectively, and for detecting signals depending on an amount of light received; and

circuit means including first and second differential amplifiers for differentiating the signals detected by said first and second bi-segmented photodetectors and for generating respective output signals, said circuit means further including a summing amplifier connected to the first and second differential amplifiers for summing the output signals of the differential amplifiers so as to offset a light amount difference due to tilt or shift of the reflected light rays and for outputting a signal representing a degree of focus error.

5,629,515

RADIATION MEASURING SYSTEM HAVING SCINTILLATION DETECTORS COUPLED BY OPTICAL FIBERS FOR MULTIPOINT MEASUREMENT

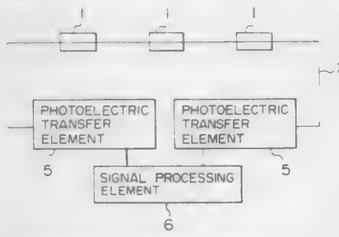
Tatsuyuki Maekawa, Tokyo-To, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1995, Ser. No. 405,997

Claims priority, application Japan, Mar. 23, 1994, 6-051876

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—207 **25 Claims**



1. A radiation measuring apparatus, comprising:

a plurality of scintillation detectors, each having two light outlet ports through which lights are simultaneously emitted in accordance with radiation received thereby;

optical fibers for connecting the scintillation detectors in series at the outlet ports and for transmitting the lights emitted from the scintillation detectors through the outlet ports;

photoelectric transfer means for converting the lights transmitted through the optical fibers into electrical signals; and

Signal processing means for processing the electrical signals, thereby measuring the radiation,

wherein each of said scintillation detectors has a plurality of pairs of light outlet ports, and which further comprises a plurality of sets of optical fibers for connecting the scintillation detectors in series at the pairs of light outlet ports and individually transmitting the lights emitted from the scintillation detectors through the light outlet ports.

5,629,516

OPTICAL SCANNING APPARATUS WITH THE ROTATION OF ARRAY INTO TWO DIRECTIONS

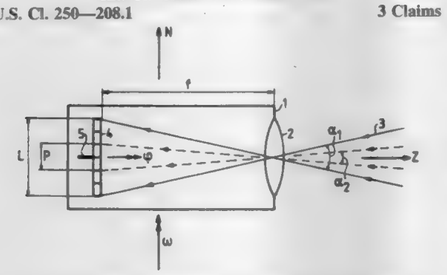
Antonius H. M. Olbertz, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Jan. 28, 1994, Ser. No. 187,487

Claims priority, application Netherlands, Feb. 19, 1993, 9300312

Int. Cl.[6] H04N *1/14;* **G01B** *11/26*

U.S. Cl. 250—208.1 **3 Claims**



1. Optical scanning apparatus having first and second modes of operation, said optical scanning apparatus comprising:

a camera housing;

a linear detector array comprising a plurality of detector elements;

at least one lens for focusing a beam of light from a direction of sight Z onto the linear detector array; first rotation means for rotating the camera housing around an axis N which is not parallel to the direction of sight Z; wherein, in order to change the angle of aperture of the optical scanning apparatus, the detector array is provided with second rotation means for rotating the detector array from a first position relating to the first mode of operation to a second position relating to the second mode of operation, around an axis which is at least substantially parallel to the direction of sight Z.

5,629,517

SENSOR ELEMENT ARRAY HAVING OVERLAPPING DETECTION ZONES

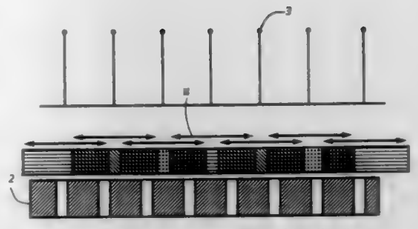
Warren B. Jackson, San Francisco; David K. Biegelsen, Portola Valley; Robert A. Street, Palo Alto, and Richard L. Weisfield, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 17, 1995, Ser. No. 423,906

Int. Cl.[6] H01L *27/00;31/00*

U.S. Cl. 250—208.1 **7 Claims**

1. An image sensor array having overlapping responsive zones for detecting incident radiation, the image sensor array comprising



a plurality of collection electrodes, each collection electrode having a termination impedance selected to define overlapping responsive zones,

a charge distribution layer in contact with the collection electrodes for distributing charge generated from incident radiation to more than one collection electrode, and

a radiation sensor for creating charge in response to incident radiation in electrical contact with the charge distribution layer, the radiation sensor having an n-type layer and a p-type layer.

5,629,518

PROCESS AND APPARATUS FOR DETECTING SAMPLE MOLECULES IN A CARRIER GAS

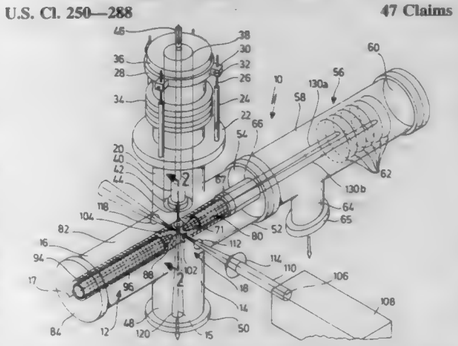
Horst-Henning Grotheer, Stuttgart; Harald Oser, Ostfildern, and Reinhold Thanner, Stuttgart, all of Germany, assignors to Deutsche Forschungsanstalt fuer Luft-und Raumfahrt e.V., Bonn, Germany

Filed Nov. 22, 1995, Ser. No. 562,265

Claims priority, application Germany, Nov. 25, 1994, 44 41 972.4

Int. Cl.[6] H01J *49/10;49/40*

U.S. Cl. 250—288 **47 Claims**



1. Process for detecting sample molecules in a carrier gas, wherein a divergent stream of carrier gas is generated by means of expansion of the carrier gas through a nozzle into a vacuum, the sample molecules are ionized selectively to form sample molecule ions in an ionization zone of the stream of carrier gas by absorption of photons and the sample molecule ions are drawn by an electrical pulling field into a mass spectrometer and detected in the mass spectrometer, characterized in that a continuum zone of the stream of carrier gas where the temperature of the carrier gas decreases with increasing distance (x) from an outlet aperture of the nozzle, a molecular beam zone of the stream of carrier gas where the temperature of the carrier gas essentially decreases no further with increasing distance (x) from the exit aperture of the nozzle, and a boundary between the continuum zone and the molecular beam zone are determined and that the sample molecules are ionized in an ionization zone near to the boundary between the continuum zone and the molecular beam zone.

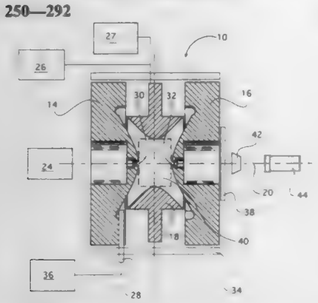
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,519

THREE DIMENSIONAL QUADRUPOLE ION TRAP

Stephen Palermo, Livermore, Calif., assignor to Hitachi Instruments, San Jose, Calif.

Filed Jan. 16, 1996, Ser. No. 597,677
Int. Cl.[6] H01J *49/42*
U.S. Cl. 250—292 **5 Claims**



1. A three dimensional quadrupole ion trap for analyzing samples, comprising

an ion trap including at least two spaced apart end cap electrodes, the end caps being generally opposed to one another and defining a first axis between them;

the ion trap including a ring electrode between the end cap electrodes and surrounding the first axis;

each of the end caps and ring electrodes being made from Molybdenum;

the ion trap having a cavity defined by the end caps and ring electrodes:

a sample injector for injecting the sample into the cavity;

an rf source for filtering the ions of the sample; and

a DC source for selectively accelerating the filtered ions into an analyzer a cavity,

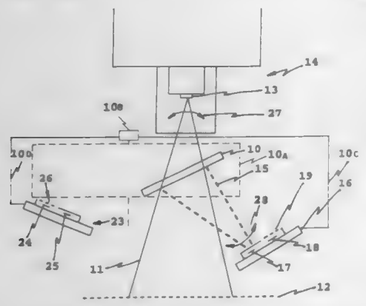
whereby, the sample is injected into a cavity of electrodes made from Molybdenum for analysis of the sample.

5,629,520

LASER THREAT STATUS DETECTION

Jaime Sonstroem, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 20, 1995, Ser. No. 559,857
Int. Cl.[6] G01J *5/06*
U.S. Cl. 250—330 **5 Claims**



1. A system for laser threat status detection and protection from incoming radiation received within an optical train of a forward looking infrared (FLIR) system comprising:

a focal plane array detector within the FLIR system for the detection of incoming infrared radiation, as incoming radiation;

a means, positioned within the optical train, for reflecting at least a portion of the incoming radiation as reflected radiation;

at least two alternative means, selectively positioned within the optical train, for filtering wavelength bands of incoming radiation and reflecting a portion thereof, as reflected radiation, with each alternative filtering means functioning to filter a different wavelength band;

a means for moving each of said alternative filtering means, and said means for reflecting, in accordance with the wavelength of the reflected radiation, into and out of the optical train;

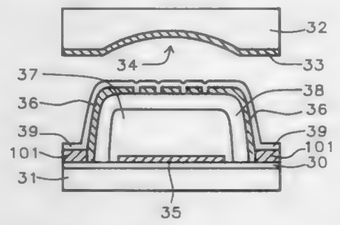
at least two alternative means, positioned outside the optical train, for detecting the reflected radiation, each alternative means for detecting, detects a wavelength band that which is filtered by the alternative filtering means, whereby when the reflected radiation is detected as below a pre-defined threshold, the means for moving each of said alternative filtering means, and means for reflecting, in accordance with the wavelength of the reflected radiation, into and out of the optical train would move the means for reflecting at least a portion of the incoming IR radiation as reflected IR radiation into the optical train, and when the reflected IR radiation is detected as above a pre-defined threshold, the means for moving each of said alternative filtering means, and means for reflecting, in accordance with the wavelength of the reflected radiation, into and out of the optical train would move the alternative means for filtering wavelength bands of incoming radiation and reflecting a portion thereof into the optical path thereby filtering the detected wavelength band.

5,629,521

INTERFEROMETER-BASED BOLOMETER

Shih-ping Lee, and Chi-Nan Chen, both of Hsin-Chu, Taiwan, assignors to Industrial Technology Research Institute, Hsin-Chu, Taiwan

Division of Ser. No. 570,061, Dec. 11, 1995, Pat. No. 5,584,117.
This application Sep. 9, 1996, Ser. No. 709,894
Int. Cl.[6] G01J *3/45;5/20*
U.S. Cl. 250—338.1 **15 Claims**



1. An infrared radiation detection comprising:

a first plate of silicon, said first plate having a planar upper surface and a lower surface that includes a concavity with a reflectance of unity;

a second plate of silicon, said second plate having a toughened lower surface and a planar upper surface, said upper surface having a reflectance close to, and less than, unity and a small finite transmittance;

means for permanently supporting said first plate above said second plate, said means further comprising spacers that encompass said concavity, thereby forming a cavity between the plates; and

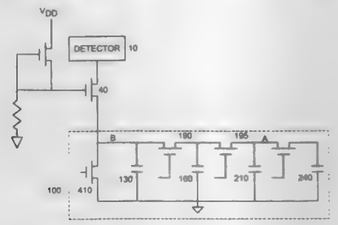
a temperature sensitive element, located inside said cavity, and thermally isolated from both of said silicon plates.

5,629,522

APPARATUS FOR AND METHOD OF PROVIDING LONG INTEGRATION TIMES IN AN IR DETECTOR

Robert J. Martin, Orlando; Kirk Reiff, Titusville; Mark West, Oviedo; Gregory L. Milne, Casselberry, and Kevin Brown, Orlando, all of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 7, 1995, Ser. No. 487,682
Int. Cl.[6] H01L *27/14;* **G01J** *5/20*
U.S. Cl. 250—338.4 **10 Claims**



1. A device comprising:

first means, arranged to receive a flux of photons, for generating a first current signal in response to said flux of photons;

second means, responsive to said first current signal, for generating a first voltage signal in response to said first current signal, said second means including a switched capacitor low pass filter.

8. A device comprising:

first means, including a quantum well infrared photoconducting detector arranged to receive a photon flux, for generating a current signal having a magnitude indicative of an intensity of said photon flux, said first means also including buffering means connected to said quantum well infrared photoconducting detector for maintaining a substantially constant voltage across said quantum well infrared photoconducting detector;

a first charge well transistor having a gate connected to said buffering means, said gate forming a first capacitive structure which is charged by said current signal;

a second charge well transistor;

a first transistor switch having a first conduction interval, said first transistor switch being arranged between said gate of said first charge well transistor and a gate of said second charge well transistor to transfer a charge accumulated by said first capacitive structure to a second capacitive structure formed by said second charge well transistor;

a third charge well transistor; and

a second transistor switch having a second conduction interval having no substantial overlap with said first conduction interval, said second transistor switch being arranged between said gate of said second charge well transistor and a gate of said third charge well transistor to transfer a charge accumulated by said second capacitive structure to a third capacitive structure formed by said third charge well transistor.

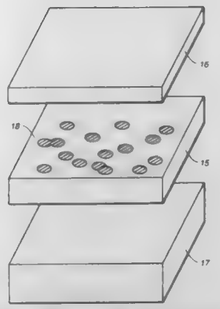
5,629,523

APPARATUS FOR THE MICROCOLLIMATION OF PARTICLES, DETECTOR AND PARTICLE DETECTION PROCESS, PROCESS FOR THE MANUFACTURE AND USE OF SAID MICROCOLLIMATING APPARATUS

Christian Ngo, Saint Remy les Chevreuse, and Thierry Pochet, Bonnelles, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Feb. 26, 1996, Ser. No. 605,848
Claims priority, application France, Mar. 14, 1995, 95 02911
Int. Cl.[6] G01T *1/16*
U.S. Cl. 250—370.05 **22 Claims**

1. Apparatus for microcollimating incident particles, constituted by an array of microholes with a size of approximately 1 micrometer, drilled in a random manner, but oriented in parallel, in an insulating sheet with a thickness between a few micrometers and several millimeters.

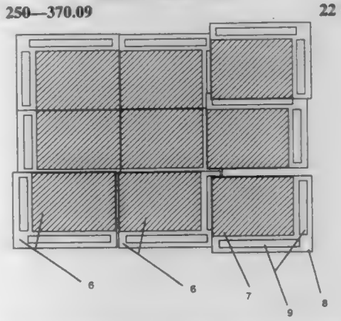


5,629,524

HIGH SPEED CRYSTALLOGRAPHY DETECTOR

Roger Stettner, and Howard Bailey, both of Santa Barbara, Calif., assignors to Advanced Scientific Concepts, Inc., Santa Barbara, Calif.

Filed Feb. 21, 1995, Ser. No. 391,232
Int. Cl.[6] G01T *1/24*
U.S. Cl. 250—370.09 **22 Claims**



1. A device for analysis of x-ray data from an x-ray source, said device comprising

one or more hybrid area sensor means for detecting x-rays, each of said hybrid area sensor means comprising

detector array chip means for conversion of said x-rays to electron-hole pairs, said detector array chip means comprising a plurality of detectors,

readout array chip means electrically connected to said detector array chip means, said readout array chip means comprising a plurality of unit cells each unit cell comprising two or more storage means, including a last storage means, for receiving electrical signals from a corresponding one of said detectors during a sequence of time intervals,

said unit cell comprising readout circuitry means for continuous integration of the signals received by said storage means and for read out after integration of the last storage means,

drive electronics means on said readout array chip means for providing timing pulses and biases for signals from said storage means to output electronics means, said drive electronics means providing an integration cycle for each unit cell readout circuitry means,

wherein the integration cycle of each unit cell readout circuitry means is offset in time so that integration proceeds on all unit cells except one being read out,

said output electronics means comprising means for converting analog signals stored on said storage means to digital signals and for storing said digital signals, and

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data processor means for accessing said digital signals from the output electronics.

5,629,525

PLUTONIUM ASSAYING

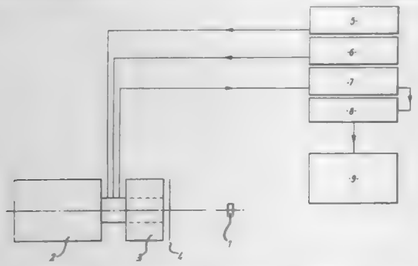
David J. Thornley; Christopher H. Orr, and Christine A. Burnett, all of Cumbria, United Kingdom, assignors to British Nuclear Fuels PLC, United Kingdom

Filed Aug. 2, 1994, Ser. No. 283,849

Claims priority, application United Kingdom, Aug. 12, 1993, 9316811

Int. Cl.[6] G01T *1/167*

U.S. Cl. 250—395 8 Claims



1. A method of determining the plutonium content of a material which also contains fluorine, wherein said method comprises the steps of:

(a) obtaining by high resolution gamma ray spectrometry a count rate in a pair of gamma ray photopeaks; and thereafter,

(b) determining the mass ratio of plutonium in a compound comprising plutonium and fluorine to the total plutonium content of the material utilizing said count rate.

5,629,526

ELECTRO-MAGNETIC LENS, CHARGED PARTICLE BEAM TRANSFERRING APPARATUS, AND METHOD FOR MANUFACTURING ELECTRO-MAGNETIC LENS

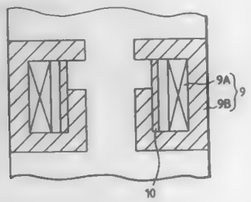
Mamoru Nakasuji, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 310,985, Sep. 23, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,265

Claims priority, application Japan, Sep. 28, 1993, 5-240867; Oct. 27, 1994, 6-263609

Int. Cl.[6] H01J *37/141*

U.S. Cl. 250—396 ML 25 Claims



1. An electro-magnetic lens comprising:

a coil;

a core made of ferrite and having two magnetic poles, said coil being received by said core;

and an electrically insulating support member disposed between said coil and an optical axis of the lens to support said magnetic poles.

5,629,527

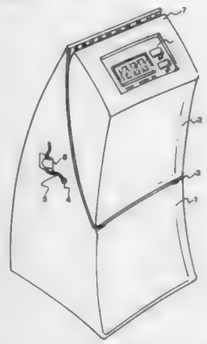
DENTAL HYGIENE SYSTEM

Gary H. Levitt, 1585 Sorrento Valley Rd. Ste. 103, San Diego, Calif. 92121, and Kaley A. Levitt, 12555 High Bluff Dr. te 380, San Diego, Calif. 92130

Filed May 1, 1995, Ser. No. 432,607

Int. Cl.[6] A61L *2/10;* A45D *44/18*

U.S. Cl. 250—455.11 20 Claims



1. A storage container for dental hygiene implements comprising:

A shaped box having an internal volume shaped to closely contain said implements,

A door opening in said box and a door fitted to said opening to fully enclose the internal volume,

And latching means to lockably secure said door to said box, said latching means being operable by one of the contained dental implements.

5,629,528

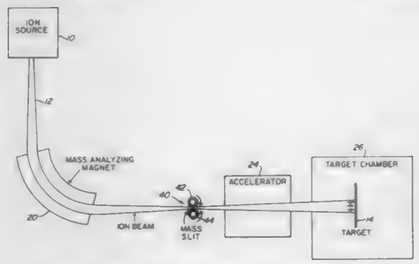
CHARGED PARTICLE BEAM SYSTEM HAVING BEAM-DEFINING SLIT FORMED BY ROTATING CYCLINDERS

Jonathan A. Jost, Kensington, N.H.; Leo V. Klos, Newburyport, and Michael E. Mack, Manchester, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jan. 16, 1996, Ser. No. 585,626

Int. Cl.[6] H01J *37/09*

U.S. Cl. 250—492.21 36 Claims



1. Charged particle beam apparatus comprising:

a charged particle beam source for directing a charged particle beam along a beam path toward a target; and

a slit assembly disposed along said beam path, said slit assembly comprising:

first and second cylinders positioned on opposite sides of said beam path and spaced apart from each other, opposing surfaces of said first and second cylinders adjacent to said beam path defining a slit for passing at least a portion of said charged particle beam, said first and second cylinders having first and second central axes, respectively, and

a drive system for rotating said first cylinder about said first central axis and for rotating said second cylinder about said second central axis.

5,629,529

RECORDING MEDIUM TRANSPORTING APPARATUS AND IMAGE FORMING SYSTEM CAPABLE OF DISTINGUISHING BETWEEN TYPES OF RECORDING MEDIA

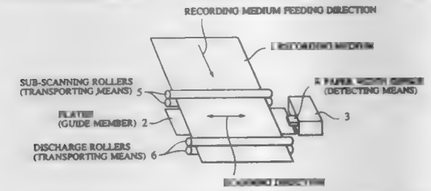
Eiichi Motoyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,954

Claims priority, application Japan, Apr. 5, 1994, 6-089210

Int. Cl.[6] G03G *15/00;* H04N *1/04;* B65H *7/14*

U.S. Cl. 250—559.24 7 Claims



1. A recording medium transporting apparatus including transporting means for transporting recording medium, a guide member for assisting the transportation, and detecting means for detecting the recording medium when the recording medium is disposed against said guide member, wherein said detecting means includes:

(i) state detecting means for detecting a state of each of said guide member and the recording medium and for producing data based on the state of each of said guide member and the recording medium, the state of the recording medium including reflectivity;

(ii) storage means for storing the data of said state detecting means; and

(iii) control means for controlling said state detecting means and said storage means.

5,629,530

SEMICONDUCTOR DEVICE HAVING AN ORGANIC SEMICONDUCTOR MATERIAL

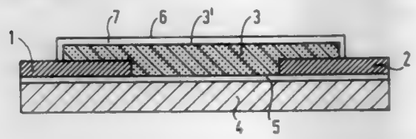
Adam R. Brown; Dagobert M. De Leeuw; Erik J. Lous, and Edsko E. Havinga, all of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed May 15, 1995, Ser. No. 442,247

Claims priority, application European Pat. Off., May 16, 1994, 94201368

Int. Cl.[6] H01L *51/00;35/24*

U.S. Cl. 257—40 9 Claims



1. A semiconductor device provided with an organic material which is formed by a solid-state mixture of organic donor and organic acceptor molecules, characterized in that the material comprises an n- or p-type semiconductor material, wherein the n-type semiconductor material has a molar ratio between the donor and acceptor molecules below 0.05, and wherein the p-type semiconductor material has this ratio greater than 20.

5,629,531

METHOD OF OBTAINING HIGH QUALITY SILICON DIOXIDE PASSIVATION ON SILICON CARBIDE AND RESULTING PASSIVATED STRUCTURES

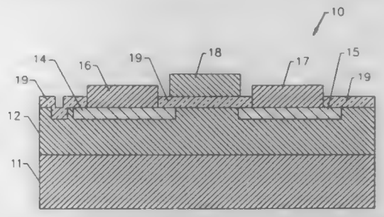
John W. Palmour, Cary, N.C., assignor to Cree Research, Inc., Durham, N.C.

Division of Ser. No. 893,642, Jun. 5, 1992, Pat. No. 5,459,107.

This application Dec. 9, 1994, Ser. No. 352,887

Int. Cl.[6] H01L *31/0312*

U.S. Cl. 257—77 3 Claims



1. A silicon carbide-based device structure having passivation areas that have substantially fewer impurities than the amounts normally associated with oxides grown on doped silicon carbide, said structure comprising:

a silicon carbide portion; and

a thermally-grown oxidation layer upon said silicon carbide portion, said oxidation layer having an aluminum dopant concentration of 3E17 ($3\times10^{l}cm^{-3}$) or less.

5,629,532

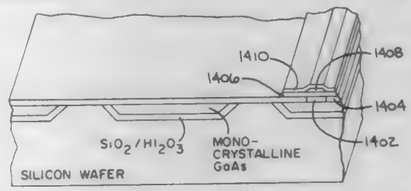
DIAMOND-LIKE CARBON OPTICAL WAVEGUIDE

James J. Myrick, 748 Greenwood, Glencoe, Ill. 60022

Division of Ser. No. 372,864, Jan. 13, 1995, Pat. No. 5,514,885, which is a continuation of Ser. No. 232,869, Apr. 25, 1994, abandoned, which is a continuation of Ser. No. 141,896, Oct. 22, 1993, abandoned, which is a continuation of Ser. No. 33,057, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 939,952, Sep. 3, 1992, abandoned, which is a continuation of Ser. No. 697,941, May 9, 1991, abandoned, which is a continuation of Ser. No. 566,879, Aug. 14, 1990, abandoned, which is a continuation of Ser. No. 206,483, Jun. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 916,817, Oct. 9, 1986, Pat. No. 4,751,193. This application Jun. 7, 1995, Ser. No. 473,245

Int. Cl.[6] H01L *31/0312;31/0232*

U.S. Cl. 257—77 1 Claim



1. An integrated optical circuit device having a diamond-like carbon optical waveguide structure, comprising a substrate, a first diamond-like carbon layer atop the substrate and having a first refractive index, a diamond-like carbon optical waveguide core atop the first layer having a second refractive index greater than the first refractive index of the first layer, and a cladding layer of diamond-like carbon atop the first layer and the waveguide core having a third refractive index lower than the waveguide core.

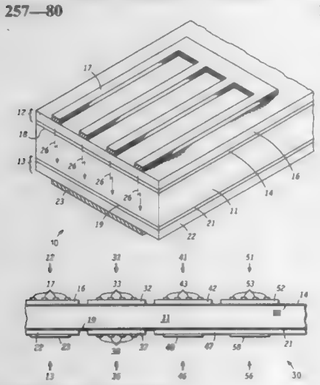
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5,629,533

OPTICAL SENSOR AND METHOD

Donald E. Ackley, Lambertville, N.J., and Thomas B. Harvey, III, Scottsdale, Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Feb. 6, 1995, Ser. No. 384,095
Int. Cl.[6] H01L *27/15;33/00*
U.S. Cl. 257—80 10 Claims



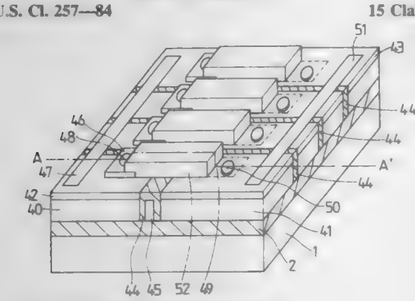
1. An optical sensor comprising:
an optical substrate having a first surface and a second surface;
a first polymer light emitting diode having a first portion and a second portion with an underlying polymer positioned therebetween, the first portion being patterned to expose a portion of the underlying polymer, the underlying polymer includes an indicator that reacts with an analyte, the second portion of the first polymer light emitting diode being positioned on the first surface of the substrate so that the first polymer light emitting diode is positioned to emit light at a wavelength through the substrate; and
a first polymer photodetector positioned on the second surface of the substrate to receive the light at the wavelength emitted through the substrate from the first polymer light emitting diode.

5,629,534

SEMICONDUCTOR DEVICE

Hajime Inuzuka, Nishio; Naomi Awano, Nagoya; Takeshi Hasegawa, Nagoya, and Masahito Mizukoshi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 408,725, Mar. 22, 1995, abandoned.
This application Aug. 2, 1996, Ser. No. 691,416
Claims priority, application Japan, Mar. 23, 1994, 6-079858; Oct. 12, 1994, 6-274475
Int. Cl.[6] H01L *31/12*
U.S. Cl. 257—84 15 Claims



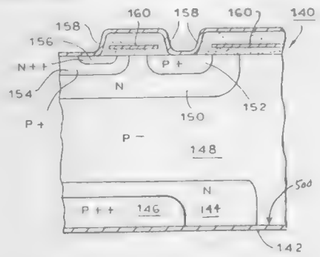
1. A semiconductor device comprising:
a substrate;
a semiconductor single crystal region constituted by a single crystal semiconductor formed on said substrate;
a plurality of channels formed on said semiconductor single crystal region, each of said plurality of channels comprising:
a light emitting element for emitting light in response to an input electrical signal,
a light receiving element for receiving light emitted by said light emitting element and for outputting an output electrical signal, and
an optical waveguide formed across said light emitting element and said light receiving element for optically coupling said light emitting element and said light receiving element: and
a crosstalk preventing structure disposed to prevent crosstalk between said plurality of channels by reflecting and absorbing light emitted by said light emitting element constituting a particular one of said plurality of channels that is directed to another one of said plurality of channels adjacent to said particular one of said plurality of channels, said crosstalk preventing structure comprising:
a first portion of at least one of an insulator and a dielectric disposed in said semiconductor single crystal region between said plurality of channels,
a second portion of at least one of an insulator and a dielectric disposed in said semiconductor single crystal region between said plurality of channels, and
a third portion of a semiconductor substance disposed between said first portion and second portion,
said first portion and said second portion reflecting light,
said third portion absorbing light which passes at least one of said first portion and said second portion.

5,629,535

BIDIRECTIONAL THYRISTOR WITH MOS TURN-ON AND TURN-OFF CAPABILITY

Janardhanan S. Ajit, Redondo Beach, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 272,769, Jul. 8, 1994, Pat. No. 5,483,087. This application Jan. 11, 1996, Ser. No. 586,007
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—120 13 Claims



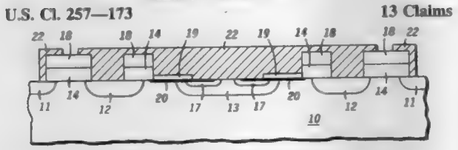
1. A MOS gate controlled bidirectional thyristor, comprising:
a wafer of semiconductor material having first and second spaced, parallel planar surfaces, at least a portion of the thickness of said wafer which extends from said first planar surface comprising a relatively lightly doped substrate of a first conductivity type for receiving junctions, at least a portion of the thickness of said wafer which extends from said second surface comprising a base region of a second conductivity type which is opposite to said first conductivity type;
at least one well region of said second conductivity type formed in said relatively lightly doped substrate and extending from said first semiconductor surface to a first depth beneath said first semiconductor surface;
at least one body region of said first conductivity type formed in said well region and extending from said first semiconductor surface to a second depth beneath said semiconductor surface which is shallower than said first depth, said body region being radially inwardly spaced along said first semiconductor surface from said well region thereby to define a first channel region along said first semiconductor surface between said body region and said relatively lightly doped substrate;
at least one source region of said second conductivity type formed in said body region and extending from said first semiconductor surface to a third depth beneath said semiconductor surface which is shallower than said second depth, said source region being radially inwardly spaced along said first semiconductor surface from said well region thereby to define a second channel region along said first semiconductor surface between said source region and said well region;
first electrode means disposed on said first semiconductor surface and connected to said body region and said source region;
gate insulation layer means on said first surface disposed at least on said channel regions;
gate electrode means on said gate insulation layer means and overlying said channel regions;
at least one relatively highly doped region of said first conductivity type formed in said base region of second conductivity type and extending from said second semiconductor surface; and
second electrode means disposed on said second semiconductor surface and connected to said relatively highly doped region of said first conductivity type, to said base region, and to said relatively lightly doped substrate of said first conductivity type.

5,629,536

HIGH VOLTAGE CURRENT LIMITER AND METHOD FOR MAKING

David M. Heminger, Mesa, and Joseph H. Slaughter, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1995, Ser. No. 560,774
Int. Cl.[6] H01L *29/41*
U.S. Cl. 257—173 13 Claims



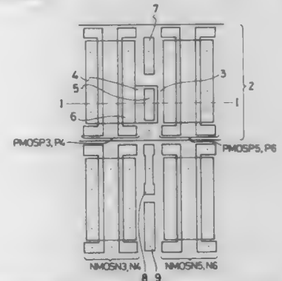
1. A high voltage current limiter comprising:
an n-type body of semiconductor material having a surface, the n-type body of semiconductor material having a backside acting as a drain terminal;
a first n-type doped region formed in the n-type body of semiconductor material and contiguous with the surface, wherein the first n-type doped region is a source region for a current flow;
a p-type doped region formed in the n-type body of semiconductor material forming a channel region between the drain terminal and the source region;
a second n-type doped region formed in the n-type body of semiconductor material such that the second n-type doped region provides an ever-present path for the current flow from the source region through the channel region;
a p-type pinch-off structure formed in the n-type body of semiconductor material so that when a voltage potential is applied to the drain terminal, a depletion region is formed and the current flow is directed from the drain terminal, through the depletion region, and through the second n-type doped region; and
a metallized layer formed contiguous with the surface of the n-type body of semiconductor material such that the source region, the channel region, and the p-type pinch-off structure are electrically connected.

5,629,537

SEMICONDUCTOR DEVICE

Tetsu Nagamatsu, Kawasaki, and Hiroshi Momose, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 989,905, Dec. 11, 1992, abandoned, which is a continuation of Ser. No. 729,559, Jul. 15, 1991, abandoned. This application Nov. 30, 1994, Ser. No. 346,829
Claims priority, application Japan, Jul. 19, 1990, 2-189462
Int. Cl.[6] H01L *27/10*
U.S. Cl. 257—205 14 Claims



1. A semiconductor device having a plurality of basic cells, a semiconductor substrate of a first conductivity type, and a well region of a second conductivity type, each of said basic cells comprising:
a first pair of first conductivity-type field effect transistors, having one of a source and a drain region of said first conductivity type in said well region of said second conductivity type, said first pair of first conductivity-type field effect transistors being formed adjacent to each other;
a second pair of first conductivity-type field effect transistors, having one of a source and a drain region of said first conductivity type in said well region of said second conductivity type, said second pair of first conductivity-type field effect transistors being formed adjacent to each other and formed next to said first pair of first conductivity-type field effect transistors in a first direction;
a first pair of second conductivity-type field effect transistors, having one of a source and a drain region of said second conductivity type in said semiconductor substrate of said first conductivity type, said first pair of second conductivity-type field effect transistors being formed adjacent to each other, and aligned next to said first pair of first conductivity-type field effect transistors in a second direction perpendicular to said first direction;
a second pair of second conductivity-type field effect transistors, having one of a source and a drain region of said second conductivity type in said semiconductor substrate of said first conductivity type, said second pair of second conductivity-type field effect transistors being formed adjacent to each other, and formed next to said first pair of second conductivity-type field effect transistors in said first direction;
a third pair of second conductivity-type field effect transistors, having one of a source and a drain region of said second conductivity type in said semiconductor substrate of said first conductivity type, said third pair of second conductivity-type field effect transistors being formed adjacent to each other, and formed aligned next to said first pair of first conductivity-type field effect transistors and to said first pair of second conductivity-type field effect transistors in a second direction perpendicular to said first direction;
a bipolar transistor formed between said first pair of first conductivity-type field effect transistors and said second pair of first conductivity-type field effect transistors and having a base region of said first conductivity type formed in said well region, a portion of said well region of said second conductivity type as a collector region, and an emitter region of said second conductivity type formed in said base region;
a well contact region formed between said first pair of first conductivity-type field effect transistors and said second pair of first conductivity-type field effect transistors and located adjacent to said bipolar transistor in said second direction

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such that a first region between said first pair of first conductivity-type field effect transistors and said second pair of first conductivity-type field effect transistors is shared by said well contact region and said bipolar transistor;

a resistance formed between said first pair of second conductivity-type field effect transistors and said second pair of second conductivity-type field effect transistors;

a sub-contact region formed between said first pair of second conductivity-type field effect transistors and said second pair of second conductivity-type field effect transistors and located adjacent to said resistance in said second direction such that a second region between said first pair of second conductivity-type field effect transistors and said second pair of second conductivity-type field effect transistors is shared by said resistance and said sub-contact region;

element insulation means disposed between the one of the source and the drain region of said first pair of first conductivity-type field effect transistors and the one of the source and the drain region of said second pair of first conductivity-type field effect transistors, for isolating electrically said first pair of first conductivity-type field effect transistors from said second pair of first conductivity-type field effect transistors,

wherein the one of the source and the drain region of one of said first pair of first conductivity-type field effect transistors is connected to said base region of said bipolar transistor,

wherein said bipolar transistor is formed adjacent to said element insulation means, said element isolation means being located between said bipolar transistor and said second pair of first conductivity-type field effect transistors,

wherein the base region of said bipolar transistor has a lower impurity concentration than the one of the source and the drain region of one of said first pair of first conductivity-type field effect transistors, and

wherein said well contact region also serves as a collector electrode of said bipolar transistor.

5,629,538

SEMICONDUCTOR SENSOR HAVING A PROTECTIVE LAYER

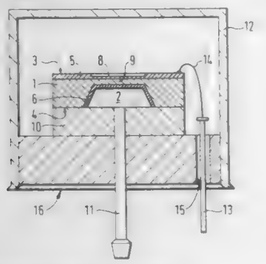
Uwe Lipphardt, Reutlingen; Guenther Findler, Pliezhausen; Horst Muenzel, Reutlingen, and Helmut Baumann, Gomaringen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 3, 1995, Ser. No. 433,576

Claims priority, application Germany, May 6, 1994, 44 15 984.6

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—254 **10 Claims**



1. A semiconductor chip comprising:

a rear side with at least one depression;

an upper wall including an elastically deformable diaphragm;

a piezosensitive circuit arrangement, fixed to the diaphragm, for detecting a displacement of the diaphragm; and

a silicon carbide protective layer covering the at least one depression and the rear side of the semiconductor chip, wherein rear side of the semiconductor chip is bonded to a substrate via the silicon carbide protective layer.

5,629,539

SEMICONDUCTOR MEMORY DEVICE HAVING CYLINDRICAL CAPACITORS

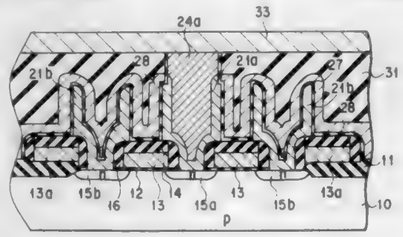
Masami Aoki, Yokohama; Tohru Ozaki, Tokyo; Takashi Yamada, Ebina, and Hitomi Kawaguchiya, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 8, 1995, Ser. No. 400,887

Claims priority, application Japan, Mar. 9, 1994, 6-038190; Mar. 15, 1994, 6-043626; Nov. 30, 1994, 6-297260

Int. Cl.[6] H01L *27/108;29/94;31/119*

U.S. Cl. 257—306 **25 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate;

a plurality of memory cells including a plurality of MOS transistors, each having a source, a drain and a gate, and a plurality of capacitors formed on said semiconductor substrate in a matrix manner, said capacitors each comprising: a storage node electrode having a cylindrical portion layered on another one of said source and said drain of each of said MOS transistors; a capacitor dielectric film formed on at least said storage node electrode; and a plate electrode formed to be opposed to at least said storage node electrode interposing said capacitor dielectric film therebetween;

an interlayer insulating film formed on said memory cells and having a plurality of openings selectively formed;

a plurality of plug electrodes respectively formed in said openings of said interlayer insulating film;

a plurality of bit lines, each bit line being connected to one of said source and said drain of each of said MOS transistors through a corresponding one of said plug electrodes; and

a plurality of word lines, each word line being said gate of each of said MOS transistors,

said bit lines being formed on said interlayer insulating film and connected to upper surfaces of said plug electrodes through said openings so as to bury upper portions thereof respectively,

said plug electrodes each having a pad electrode comprised of a lower side conductive member formed with a same layer as said storage node electrode and a cylindrical side wall conductive member, and an upper side conductive member formed on said pad electrode.

5,629,540

SEMICONDUCTOR DEVICE HAVING OVERLAPPED STORAGE ELECTRODES

Jae-sung Roh, Kyunggi-do, and Hyeung-Tae Kim, Seoul, both of Rep. of Korea, assignors to Goldstar Electron Co. Ltd., Cheongju, Rep. of Korea

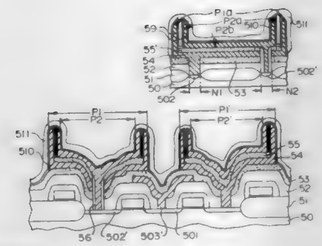
Division of Ser. No. 195,234, Feb. 14, 1994, Pat. No. 5,476,806. This application Jun. 7, 1995, Ser. No. 482,534

Claims priority, application Rep. of Korea, Feb. 12, 1993, 93-1898

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—306 **20 Claims**

1. A semiconductor device having adjacently positioned cells, each cell having a storage electrode, comprising:



a substrate;

a word line on the substrate;

impurity regions at opposite sides of the word line in the substrate, including odd and even impurity regions for adjacently positioned first and second cells;

a first capacitor storage electrode having a bottom portion connected to the odd impurity region of the first cell and formed over the odd and even impurity regions, a second capacitor storage electrode overlapping the first capacitor storage electrode, the second storage capacitor electrode having a bottom portion connected to the even impurity region of the adjacent second cell through a contact hole formed in the first capacitor storage electrode.

5,629,541

SEMICONDUCTOR MEMORY DEVICE CONSTITUTED BY SINGLE TRANSISTOR TYPE NON-VOLATILE CELLS AND FACILITATED FOR BOTH ELECTRICAL ERASING AND WRITING OF DATA

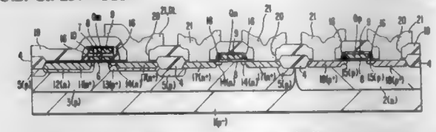
Kazuhiro Komori, Higashikurume; Toshiaki Nishimoto, Tama; Satoshi Meguro, Hinode-machi; Hitoshi Kume, Musashino, and Yoshiaki Kamigaki, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 179,960, Jan. 11, 1994, Pat. No. 5,407,853, which is a division of Ser. No. 704,739, May 20, 1991, Pat. No. 5,300,802, which is a continuation of Ser. No. 33,983, Nov. 9, 1989, abandoned. This application Apr. 17, 1995, Ser. No. 422,940

Claims priority, application Japan, Nov. 9, 1988, 63-284587

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **20 Claims**



1. A semiconductor memory device including a memory cell comprised of a single transistor, said memory cell comprising:

a floating gate electrode formed over a main surface of a semiconductor substrate;

a control gate electrode formed over said floating gate electrode;

a first gate insulating film formed between said main surface and said floating gate electrode;

a second gate insulating film formed between said floating gate electrode and said control gate electrode;

a channel forming region formed in said semiconductor substrate and formed under said floating gate electrode; and

a first semiconductor region and a second semiconductor region both of which are formed in said semiconductor substrate and are of n-type conductivity,

wherein said channel forming region is formed between said first semiconductor region and said second semiconductor region and is of p-type conductivity,

wherein said first and said second semiconductor regions are extended under said floating gate electrode,

wherein electrons stored in said floating gate electrode are transferred from said floating gate electrode to said first semiconductor region by tunneling through said first gate insulating film in a data erasing operation,

wherein hot electrons which are generated in said semiconductor substrate are injected into said floating gate electrode in a data writing operation,

wherein said first semiconductor region has an impurity concentration higher than that of said second semiconductor region such that a surface depletion of said first semiconductor region is decreased when a first positive voltage and a first voltage lower than said first positive voltage are applied to said first semiconductor region and said control gate electrode, respectively, in said data erasing operation, and

wherein said second semiconductor region has an impurity concentration such that said hot electrons are generated when a second positive voltage and a third positive voltage are applied to said control gate electrode and said second semiconductor region, respectively, indicating selection of said memory cell in said data writing operation, and tunneling of said electrons from said floating gate electrode to said second semiconductor region through said first gate insulating film is decreased by the forming of a surface depletion of said second semiconductor region when a second voltage, lower than said second positive voltage, and said third positive voltage are applied to said control gate electrode and said second semiconductor region, respectively, indicating that said memory cell is to remain unselected in said data writing operation.

5,629,542

COMPOUNDED POWER MOSFET

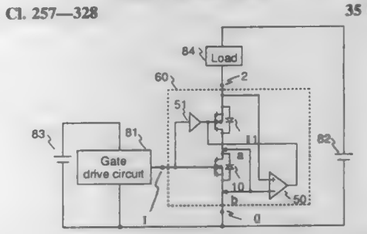
Kozo Sakamoto, Hachioji; Shigeo Otaka, Takasaki, and Kyouichi Takagawa, Isesaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,766

Claims priority, application Japan, Dec. 14, 1994, 6-310152

Int. Cl.[6] H01L *27/02*

U.S. Cl. 257—328 **35 Claims**



1. A compounded power MOSFET comprising a first MOSFET and a second MOSFET, with the drains of the MOSFETs being connected together, with the source of the first MOSFET being used for the source terminal, with the source of the second MOSFET being used for the drain terminal, and with the gate of the first MOSFET being used for the gate terminal of the compounded power MOSFET, characterized in that said compounded power MOSFET includes means of negative voltage drive which turns off the second MOSFET during the period when the voltage of the drain terminal is negative relative to the voltage of the source terminal, and means of input voltage transmission which blocks a current flowing from the drain terminal to the gate terminal by way of said negative voltage drive means and turns on the second MOSFET in response to the input voltage signal applied to the gate terminal.

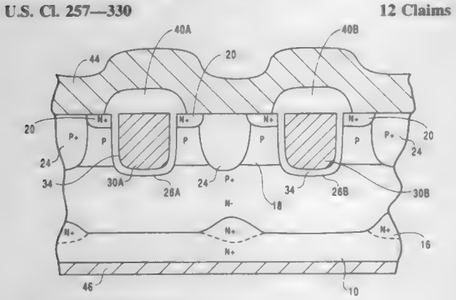
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,543

TRENCHED DMOS TRANSISTOR WITH BURIED LAYER FOR REDUCED ON-RESISTANCE AND RUGGEDNESS

Fwu-Iuan Hshieh, Saratoga; Mike F. Chang; Lih-Ying Ching, both of Cupertino; Sze H. Ng, Sunnyvale, and William Cook, Fremont, all of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Filed Aug. 21, 1995, Ser. No. 537,157
Int. Cl.[6] H01L *29/10*
U.S. Cl. 257—330 **12 Claims**



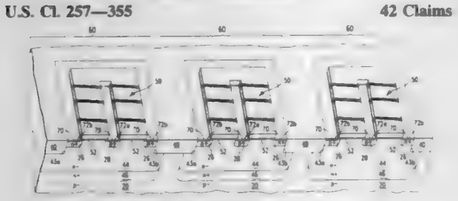
1. A transistor comprising:
a substrate region doped a first conductivity type;
a drift region overlying the substrate region and doped the first conductivity type to a lower concentration than the substrate;
a body region overlying the drift region and doped a second conductivity type;
a conductive gate electrode extending from a principal surface of the body region through the body region;
a source region doped the first conductivity type and formed in the body region, and extending to the principal surface thereof; and
a buried layer region doped the first conductivity type to a concentration greater than that of the substrate region, and extending at least in part into the drift region and adjacent the substrate region.

5,629,544

SEMICONDUCTOR DIODE WITH SILICIDE FILMS AND TRENCH ISOLATION

Steven H. Voldman, Burlington; Minh H. Tong, Essex; Edward J. Nowak, Essex Junction, and Stephen F. Geissler, Underhill, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1995, Ser. No. 428,738
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—355 **42 Claims**



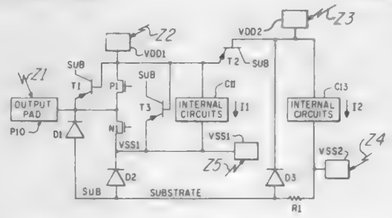
1. A semiconductor diode structure comprising:
a semiconductor substrate having a surface;
a semiconductor region extending along said surface, said region having a first doping type;
a trench isolation having an edge in said region; and
a diode in said region, said diode comprising a first heavily doped region of said first doping type, said diode further comprising a rectifying contact region, said rectifying contact region having a metal silicide therein, said metal silicide spaced from said trench isolation edge.

5,629,545

ELECTROSTATIC DISCHARGE PROTECTION IN INTEGRATED CIRCUITS, SYSTEMS AND METHODS

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 948,074, Sep. 21, 1992, Pat. No. 5,290,724, which is a continuation of Ser. No. 677,028, Mar. 28, 1991, abandoned. This application Jan. 10, 1994, Ser. No. 178,722
Int. Cl.[6] A01L *23/62*
U.S. Cl. 257—362 **27 Claims**



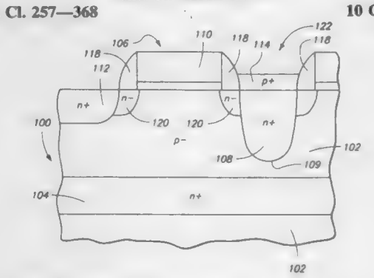
1. An integrated circuit comprising:
a semiconductor die having a substrate and at least first and second bond pads;
an internal circuit fabricated on said semiconductor die and connected to said first bond pad;
an electrostatic discharge protection circuit connected between said first and second bond pads including cascaded bipolar transistors wherein a first of said cascaded transistors has an emitter connected to a base of a second of said cascaded transistors, and a field effect transistor connected to a base of said first cascaded transistor such that a current flowing through said field effect transistor in response to a voltage breakdown in said field effect transistor is amplified by said first of said cascaded transistors and an amplified current flowing through said first cascaded transistor is amplified by at least said second of said cascaded transistors, whereby the internal circuit is protected from voltage breakdown; and
wherein said field effect transistor is conductive only when a voltage exceeding a breakdown voltage of said field effect transistor is applied to said field effect transistor.

5,629,546

STATIC MEMORY CELL AND METHOD OF MANUFACTURING A STATIC MEMORY CELL

Jeff Z. Wu, Meridian, and Joseph Karniewicz, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 21, 1995, Ser. No. 492,774
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—368 **10 Claims**



1. A static memory cell comprising:
a semiconductor substrate of a first conductivity type;
a buried layer in the substrate, the buried layer having a second conductivity type opposite to the first conductivity type, and the buried layer having an average dopant concentration of at least 1×10^{19} ions/cm^3;
a transistor formed relative to the substrate over the buried layer, the transistor having a channel of the second conductivity type, the transistor having a gate, the transistor having a

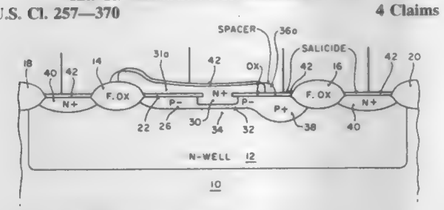
memory node including an average dopant concentration of at least 1×10^{19} ions/cm^3, the memory node including a lowermost portion which is ≦0.1 micron above the buried layer, and the transistor having a digit line node having an average dopant concentration of at least 1×10^{19} ions/cm^3; and
a region in junction relation with the memory node and defining a tunnel diode between the region and the memory node, the region having an average dopant concentration of at least 1×10^{19} ions/cm^3.

5,629,547

BICMOS PROCESS FOR COUNTER DOPED COLLECTOR

Stephen T. Chambers, and Richard G. Taylor, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 66,618, May 24, 1993, which is a continuation of Ser. No. 881,309, May 7, 1992, abandoned, which is a continuation of Ser. No. 690,103, Apr. 23, 1991, abandoned. This application Nov. 16, 1995, Ser. No. 558,874
Int. Cl.[6] H01L *29/76;23/58;27/082;27/102*
U.S. Cl. 257—370 **4 Claims**



1. A BiCMOS integrated circuit comprising:
a bipolar transistor comprising:
a collector region formed in a first substrate region having a first doping level of a first conductivity type;
a lightly doped collector region formed in said first substrate region, said lightly doped collector region having a second doping level of said first conductivity type wherein said second doping level is less than said first doping level;
a base region of a first doping level of a second conductivity type formed in said first substrate region over said lightly doped collector region; and
an emitter region of a third doping level of said first conductivity type formed in said base region over said lightly doped collector region; and
a field effect transistor comprising:
a source region and a drain region formed in a second substrate region wherein said second substrate region has said first conductivity type and said first doping level.

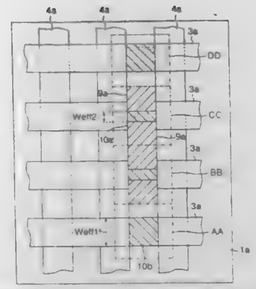
5,629,548

SEMICONDUCTOR DEVICE WITH ADJUSTABLE CHANNEL WIDTH

Tutomu Tamaki, Yokohama, and Kiyomi Naruke, Ebina, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1995, Ser. No. 386,477
Claims priority, application Japan, Feb. 12, 1994, 6-037687
Int. Cl.[6] H01L *29/94;31/062;31/113;31/119*
U.S. Cl. 257—400 **3 Claims**

1. A semiconductor device comprising:
a semiconductor substrate;
a plurality of first conductivity type source regions substantially in parallel to each other in a surface of said semiconductor substrate and including two end source regions separated by plural intermediate source regions;
a plurality of first conductivity type drain regions substantially in parallel to each other in the surface of said semiconductor substrate and including two end drain regions separated by plural intermediate drain regions, said substrate being of second conductivity type opposite to said first conductivity type;



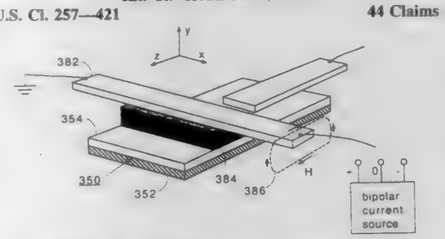
a gate insulating film on a portion of the surface of said semiconductor substrate between said plurality of source regions and said plurality of drain regions;
a plurality of gate electrodes on said gate insulating film between said plurality of source and said plurality of drain regions and respectively covering a plurality of channel regions beneath said gate insulating film;
at least one second conductivity type impurity diffusion region in the surface of the semiconductor substrate at least on one side of at least a first one of said channel regions of a first effective channel width extending between one of said intermediate source regions and one of said intermediate drain regions, the impurity concentration of said at least one second conductivity type impurity diffusion region being higher than the impurity concentration of said semiconductor substrate; and
at least a second one of said channel regions between one of said end source regions and one of said end drain regions having a second effective channel width sufficiently wider than said first effective channel width such that the effective threshold for a semiconductor component including said one end source region and said one end drain region is measurably higher than the effective threshold for a semiconductor component including said one intermediate source region and said one intermediate drain region.

5,629,549

MAGNETIC SPIN TRANSISTOR DEVICE, LOGIC GATE & METHOD OF OPERATION

Mark B. Johnson, 9702 Tree Hollow Ct., Fairfax Station, Va. 22039

Filed Apr. 21, 1995, Ser. No. 425,884
Int. Cl.[6] H01L *29/82;43/00*
U.S. Cl. 257—421 **44 Claims**



1. A magnetic spin transistor device comprising:
a first ferromagnetic layer having a first coercivity;
a second ferromagnetic layer having a second coercivity smaller than said first coercivity;
a paramagnetic layer situated between said first and second ferromagnetic layers, said paramagnetic layer having a thickness less than an electron spin diffusion length;
an insulating layer situated over a portion of said second ferromagnetic layer; and
a conductive write layer situated over a portion of said insulating layer for carrying a write electric current and inductively coupling a write magnetic field associated with said write current to said second ferromagnetic layer.

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5,629,550

PHOTODIODE BUILT-IN SEMICONDUCTOR DEVICE WITH DUMMY PHOTODIODE

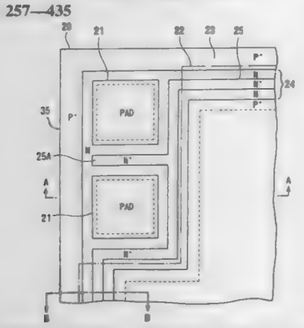
Keiji Mita, Ora-gun, and Osamu Shiroma, Ota, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 29, 1995, Ser. No. 521,066

Claims priority, application Japan, Aug. 31, 1994, 6-207588

Int. Cl.[6] H01L *31/00*

U.S. Cl. 257—435 **6 Claims**



1. A photodiode built-in semiconductor device, comprising:

a photodiode formed on a semiconductor chip for light signal reception,

peripheral circuits formed on said semiconductor chip for processing said light signal received by said photodiode, and

a dummy photodiode arranged on an outermost circumference of said semiconductor chip surrounding said photodiode and said peripheral circuits.

5,629,551

SEMICONDUCTOR DEVICE COMPRISING AN OVER-TEMPERATURE DETECTION ELEMENT FOR DETECTING EXCESSIVE TEMPERATURES AMPLIFIERS

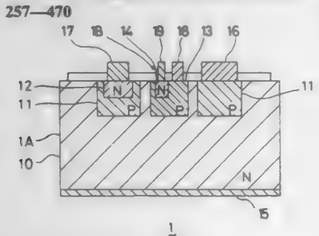
Hideaki Nakura, Osaka; Masami Yokozawa, Kyoto; Kazuhiko Tsubaki, Hyogo, and Masasuke Yoshimura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 391,833, Feb. 17, 1995, Pat. No. 5,461,252, which is a continuation of Ser. No. 119,575, Sep. 13, 1993, abandoned. This application Jul. 18, 1995, Ser. No. 503,688

Claims priority, application Japan, Oct. 6, 1992, 4-267307; Oct. 6, 1992, 4-267310; Oct. 6, 1992, 4-267311; Apr. 9, 1993, 5-82909

Int. Cl.[6] H01L *29/47;29/812;27/095*

U.S. Cl. 257—470 **7 Claims**



7. A semiconductor device, comprising:

a semiconductor substrate;

an amplifying transistor element for amplifying current or voltage formed on said semiconductor substrate;

a temperature detection diode for detecting the temperature of said amplifying transistor element, which is formed on said semiconductor substrate,

wherein said temperature detection diode is surrounded by the collector of said amplifying transistor element, and the base of said amplifying transistor element and said temperature detection diode are equal in depth to each other.

5,629,552

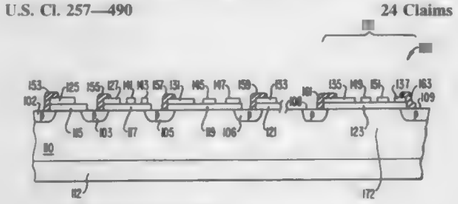
STABLE HIGH VOLTAGE SEMICONDUCTOR DEVICE STRUCTURE

Nathan Zommer, Los Altos, Calif., assignor to IXYS Corporation, Santa Clara, Calif.

Filed Jan. 17, 1995, Ser. No. 332,526

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—490 **24 Claims**



1. A power device comprising:

a semiconductor substrate comprising a top surface with an active region, a guard ring region, and a peripheral region, said active region including a junction region;

a plurality of guard rings formed into said semiconductor substrate in said guard ring region, said guard ring region being between said active region and said peripheral region, said plurality of guard rings comprising a first guard ring nearest to said junction region and a last guard ring nearest to said peripheral region;

a dielectric layer overlying said top surface and having portions between each of said plurality of guard rings, said dielectric layer having a portion between said junction region and said first guard ring, said dielectric layer having a portion between said last guard ring and said peripheral region; and

a field plate layer, said field plate layer comprising portions each overlying each of said dielectric layer portions between each of said plurality of guard rings, said field plate layer having a portion overlying said dielectric layer portion between said junction region and said first guard ring, and said field plate layer having a portion overlying said dielectric layer portion between said last guard ring and said peripheral region;

wherein at least one of said portions of said field plates being a floating plate structure to provide a more uniform distribution of an electric field underlying said floating plate structure.

5,629,553

VARIABLE INDUCTANCE ELEMENT USING AN INDUCTOR CONDUCTOR

Takeshi Ikeda, 2-5-6-213, Sanno, Ohta-ku, Tokyo; Susumu Okamura, 4-1-12-1305, Hiroo, Shibuya-ku, Tokyo, and Akira Okamoto, Ageo, all of Japan, assignors to Takeshi Ikeda, and Susumu Okamura, Tokyo, both of Japan

Filed Nov. 14, 1994, Ser. No. 338,847

Claims priority, application Japan, Nov. 17, 1993, 5-311276; Jul. 29, 1994, 6-197210

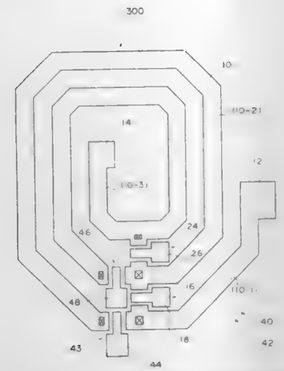
Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—531 **42 Claims**

1. A variable inductance element comprising:

at least one inductor conductor having a predetermined shape,

at least one switch functioning to separate and connect portions of said at least one inductor conductor, said at least one inductor conductor used one of independently and in combination with other inductor conductors, and



a separate switch than the at least one switch for cutting off an unnecessary closed loop produced by said at least one inductor conductor according to a switch operating state.

5,629,554

SEMICONDUCTOR DEVICE WITH A BIPOLAR TRANSISTOR FORMED IN A LAYER OF SEMICONDUCTOR MATERIAL PROVIDED ON AN INSULATING SUBSTRATE

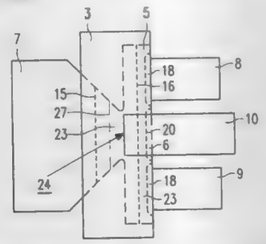
Henricus G. R. Maas; Ronald Dekker, and Armand Pruijmboom, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 402,401, Mar. 9, 1995, abandoned, which is a continuation of Ser. No. 221,125, Mar. 31, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 637,012

Claims priority, application European Pat. Off., Apr. 8, 1993, 93201045

Int. Cl.[6] H01L *27/082;27/102;29/70;31/11*

U.S. Cl. 257—586 **10 Claims**



1. In a semiconductor device having a bipolar transistor formed in a layer of semiconductor material on an insulating substrate, said bipolar transistor having a collector zone, a base zone and an emitter zone disposed in said layer of semiconductor material, said semiconductor device also having a strip of insulating material disposed on said layer above said collector zone, said base zone and said emitter zone, and contact regions adjacent to one another at one side of said strip, two of said contact regions being connected to said base zone and a third of said contact regions being disposed between said two contact regions and being connected to said emitter zone, the improvement comprising:

a further layer of semiconductor material different from said layer of semiconductor material, said further layer of semiconductor material being disposed on said insulative substrate, butting said layer of semiconductor material at said one side of said strip of insulating material, and further extending over a portion of said strip of insulating material at said one side, (i) one of either said third contact region or said two contact regions being disposed in said layer of semiconductor material and (ii) the other one of either said contact region or said two contact regions being disposed in said further layer of semiconductor material and being comprised of either a strip-shaped region or strip-shaped regions, respectively.

5,629,555

INTEGRATED STRUCTURE BIPOLAR TRANSISTORS WITH CONTROLLED STORAGE TIME

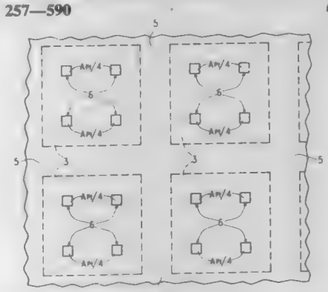
Ferruccio Frisina, S. Agata Li Battiati, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Division of Ser. No. 407,714, Mar. 21, 1995. This application Jun. 5, 1995, Ser. No. 462,975

Claims priority, application European Pat. Off., Mar. 30, 1994, 94830150

Int. Cl.[6] H01L *27/082;27/102;29/70;31/11;29/227*

U.S. Cl. 257—590 **6 Claims**



1. A semiconductor wafer to be subjected to a dose of ions, the dose being diffused throughout a portion of the semiconductor wafer, the semiconductor wafer comprising:

a) a transistor that occupies a first portion of the semiconductor wafer, the first portion defining a first area of a first surface of the semiconductor wafer; and

b) a layer of protective material on the first surface of the semiconductor wafer, the layer including at least one window that exposes only a second area of the first surface of the semiconductor wafer to receive the dose of ions, a ratio between the second area and the first area being approximately $1/1000$.

5,629,556

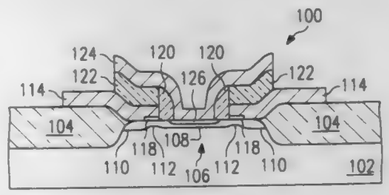
HIGH SPEED BIPOLAR TRANSISTOR USING A PATTERNED ETCH STOP AND DIFFUSION SOURCE

F. Scott Johnson, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 370,137, Jan. 9, 1995. This application Jun. 7, 1995, Ser. No. 486,431

Int. Cl.[6] H01L *27/082*

U.S. Cl. 257—592 **6 Claims**



1. A bipolar transistor comprising:

a collector region;

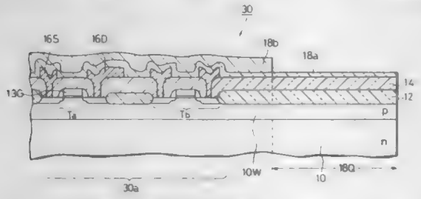
an intrinsic base region within said collector region;

an extrinsic base region within said collector region;

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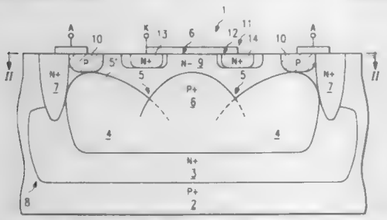
a base link-up region within said collector region between said intrinsic base region and said extrinsic base region;
a base-link diffusion source layer above and substantially coextensive with said base link-up region;
a base electrode above said extrinsic base layer, said base electrode and said base-link diffusion source layer made of different materials; and
an emitter region within said intrinsic base region.

5,629,557
SEMICONDUCTOR DEVICE CAPABLE OF PREVENTING HUMIDITY INVASION
Takahisa Yamaha, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Division of Ser. No. 279,338, Jul. 22, 1994. This application Mar. 25, 1996, Ser. No. 621,398
Claims priority, application Japan, Jul. 24, 1993, 5-202702
Int. Cl.[6] H01L *23/544;27/10*
U.S. Cl. 257—620 **11 Claims**



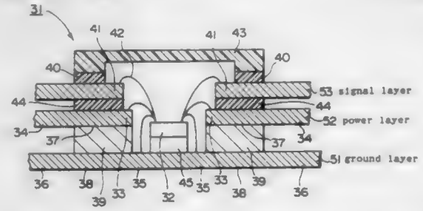
1. A semiconductor wafer, comprising:
a) a plurality of semiconductor chip regions, comprising:
(1) device regions to form a device structure thereon, the device structure having electrodes electrically connected to active regions provided therein; and
(2) a buffer region provided on a periphery of the device region; and
b) an insulating layer having moisture permeability for electrically insulating the electrodes therebetween, the insulating layer being formed over the device regions while being removed from a buffer region of the semiconductor chip regions.

5,629,558
SEMICONDUCTOR DIODE INTEGRATED WITH BIPOLAR/CMOS/DMOS TECHNOLOGY
Paola Galbiati, Monza, and Ubaldo Mastromatteo, Cornaredo, both of Italy, assignors to SGS-Thomson Microelectronics, S.rl, Agrate Brianza, Italy
Filed May 31, 1995, Ser. No. 454,647
Claims priority, application European Pat. Off., May 31, 1994, 94830266
Int. Cl.[6] H01L *27/06;31/0352;29/00*
U.S. Cl. 257—653 **28 Claims**



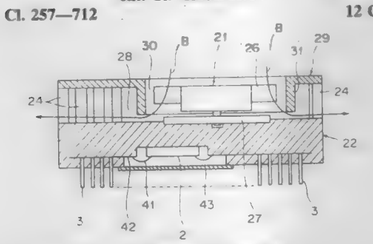
1. An integrated circuit diode structure having monolithic semiconductor surface portions at a first surface thereof;
first diffusions of a first conductivity type at said first surface; second diffusions
which have a second conductivity type,
which are removed from said first surface, and
which have a profile characteristic of updiffusion from multiple laterally separated diffusion sources;
said first and second diffusions being laterally misaligned; and
said first and second diffusions being separated by a portion of said monolithic semiconductor surface portion which is more lightly doped than both said first and second diffusions.

5,629,559
PACKAGE FOR SEMICONDUCTOR DEVICE
Kenichiro Miyahara, Tokuyama, Japan, assignor to Tokuyama Corporation, Yamaguchi-ken, Japan
PCT No. PCT/JP94/00571, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO94/23448, PCT Pub. Date Oct. 13, 1994
PCT Filed Apr. 6, 1994, Ser. No. 347,484
Claims priority, application Japan, Apr. 6, 1993, 5-079675; Dec. 15, 1993, 5-315382
Int. Cl.[6] H01L *23/52*
U.S. Cl. 257—666 **21 Claims**



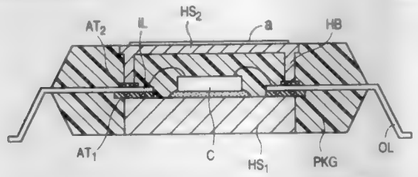
1. A packaging for mounting of a semiconductor device, which comprises a power layer, a ground layer and a signal layer, wherein:
(a) the power layer, the ground layer and the signal layer are laminated via an intermediate layer including an insulating layer,
(b) the power layer and the ground layer are each constituted by an inner lead area, an outer lead area and an electro-conductive area, the inner lead area and the outer lead area are not covered with the intermediate layer to be exposed and the electro-conductive area is interposed between the inner lead area and the outer lead area and covered with the intermediate layer,
(c) substantially all of the electro-conductive area of each of the power layer and the ground layer is constituted by a planar electro-conductive member, and the electro-conductive area has substantially no throughhole,
(d) the intermediate layer between the power layer and the ground layer comprises one of the following (1), (2), (3) and (4),
(1) a ceramic insulating layer and an inorganic adhesive layer,
(2) an organic adhesive layer and an insulating layer present therein,
(3) an inorganic adhesive layer or an organic adhesive layer alone,
(4) an inorganic adhesive layer or an organic adhesive layer and an insulating layer formed on the surface of at least either of the electro-conductive members present in the electro-conductive areas of the power layer and the ground layer,
with a proviso that said inorganic adhesive layer consists essentially of a noble metal brazing alloy or a Cu—O_2 type eutectic crystal,
(e) the power layer and the ground layer are laminated adjacently via the intermediate layer and adhesive strengths between the power layer and the intermediate layer and between the ground layer and the intermediate layer are each 1 kg/cm or more in terms of 90° peeling strength, and
(f) the package is used substantially without being subjected to resin sealing after mounting of the semiconductor device.

5,629,560
INTEGRATED CIRCUIT PACKAGE
Tadashi Katsui; Katsuhiko Nakata, both of Kawasaki, and Takashi Kitahara, Kahoku-gun, all of Japan, assignors to Fujitsu Ltd, Kawasaki, and PFU Limited, Ishikawa, both of Japan
Continuation of Ser. No. 120,358, Sep. 14, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,187
Claims priority, application Japan, Mar. 19, 1993, 5-060005
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—712 **12 Claims**



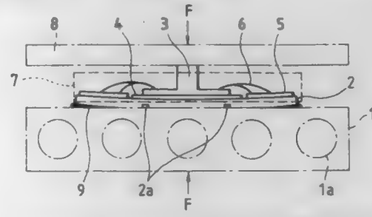
1. An integrated circuit package comprising:
a package body having a cover secured to it so as to close up the upper portion of said package body;
an integrated circuit chip enclosed airtight in said package body;
air blasting means for cooling said package body by forced air cooling, said air blasting means comprising a fan assembly secured to said cover of said package body;
said package body further having, at an upper portion thereof, a heat radiation region provided with a plurality of fins projecting from an upper surface of said package body, and an air blasting region in which said air blasting means is disposed, said upper surface being divided by said heat radiation region and said air blasting region; and
a ventilation flue formed between said heat radiation region and said air blasting region of said package body.

5,629,561
SEMICONDUCTOR PACKAGE WITH INTEGRAL HEAT DISSIPATOR
Won S. Shin, Seoul, and Byung T. Do, Inchang-Dong Guri, both of Rep. of Korea, assignors to Anam Industrial Co., Ltd., Seoul, Rep. of Korea, and Amkor Electronics, Inc., Chandler, Ariz.
Filed Dec. 12, 1995, Ser. No. 570,794
Claims priority, application Rep. of Korea, Dec. 16, 1994, 94-34663
Int. Cl.[6] H01L *23/28;23/34*
U.S. Cl. 257—712 **7 Claims**



1. A semiconductor package comprising a first heat sink for dissipating heat generated from a semiconductor chip, said chip being connected to a plurality of inner leads within said package further comprising:
an integral heat dissipator extending across multiple ones of said plurality of inner leads and being attached to a first surface of said plurality of inner leads;
a second surface of said plurality of inner leads being attached to a first surface of said first heat sink; and
an electrically insulating, thermally conductive tape attached to said first surface of said plurality of inner leads, said integral heat dissipator being attached to a first surface of said tape and, by said tape, being attached to said first surface of said plurality of inner leads, and wherein said plurality of inner leads comprises spaced sets of said plurality of inner leads; and said integral heat dissipator comprises a series of spaced heat bars, each heat bar overlying one of said sets of said plurality of inner leads.

5,629,562
CONDUCTIVE CONTACT STRUCTURE FOR TWO CONDUCTORS
Toshihiro Nomura, and Masaaki Hisamoto, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 224,843, Apr. 7, 1994, abandoned. This application May 17, 1996, Ser. No. 649,473
Claims priority, application Japan, Apr. 8, 1993, 5-081000
Int. Cl.[6] H01L *23/16;23/34;23/10*
U.S. Cl. 257—717 **11 Claims**

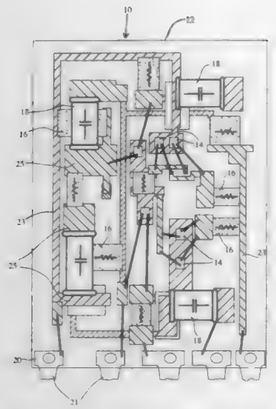


1. A conductive contact structure for two conductors, comprising:
a first conductor having at least one planar portion;
a second conductor having at least one planar portion, said planar portions of said first and second conductors being conductively brought into contact with each other under pressure; and
a grease-like insulating material which is high in thermal conductivity and applied to one of said planar portions of said first and second conductors;
wherein one of said planar portions of said first and said second conductors is divided into a pair of first planar regions and a second planar region by at least two grooves, the second planar region being placed between the pair of first planar regions and being uninterrupted by grooves, said grease-like insulating material being applied only to said pair of first planar regions and no grease-like insulating material being applied to said second planar region.

5,629,563
COMPONENT STACKING IN MULTI-CHIP SEMICONDUCTOR PACKAGES
Hem P. Takiar, Fremont; Uli H. Hegel, Novato; Peter H. Spalding, Cupertino; James L. Crozier, San Jose; Michelle M. Hou-Chang, and Martin A. Delateur, both of Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 295,982, Aug. 25, 1994, abandoned. This application Nov. 7, 1995, Ser. No. 554,797
Int. Cl.[6] H07L *49/02*
U.S. Cl. 257—723 **20 Claims**

1. A multi-chip package comprising:
a substrate,
a multiplicity of components including,
a film based component formed on the substrate,
a discrete component mounted on the substrate and stacked over the film based component such that the film based component is electrically insulated from the stacked discrete component and the discrete component and the film based component do not electrically interfere with each

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others function, the discrete components not being formed from a film applied to the substrate, and

a die component mounted on the substrate;

a plurality of leads for electrically connecting the multi-chip package to external circuitry, the leads being electrically coupled to associated ones of said multiplicity of components;

a plurality of wiring traces formed on the substrate, the wiring traces being arranged to electrically connect various ones of said multiplicity of components; and

a packaging material that encapsulates said multiplicity of components and the wiring traces and leaves a portion of the leads exposed to facilitate electrically connecting the multi-chip package to external circuitry.

5,629,564

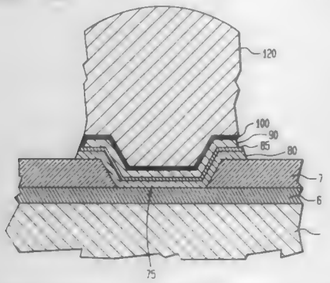
ELECTROPLATED SOLDER TERMINAL

Henry A. Nye, III, Bedford, N.Y.; Jeffrey F. Roeder, Brookfield, Conn.; Ho-Ming Tong, Yorktown Heights, and Paul A. Totta, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 267,339, Jun. 28, 1994, abandoned. This application Feb. 23, 1995, Ser. No. 392,718

Int. Cl.[6] **H01L** *23/48*

U.S. Cl. 257—762 **21 Claims**



1. A solder terminal on a substrate containing at least one electrically conducting member and having a plurality of electrical contact regions separated by an insulator, comprising:

a metallic adhesion layer, etchable using a process selective to said electrically conducting member, overlying said insulator and in contact with one of said plurality of electrical contact regions;

a CrCu alloy layer overlying and in contact with said adhesion layer;

said process for etching the metallic adhesion layer further being selective to said CrCu adhesion layer;

a solder bonding metallic layer overlying and in contact with said CrCu layer; and,

a layer of solder overlying and in contact with said solder bonding layer.

5,629,565

MICROMECHANICAL ELECTROSTATIC RELAY WITH GEOMETRIC DISCONTINUITY

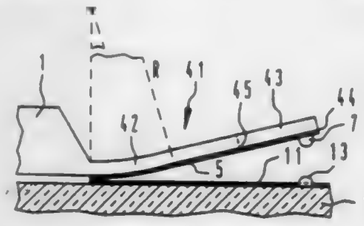
Helmut Schlaak; Hans-Juergen Gevattter; Lothar Kiesewetter, and Joachim Schimkat, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 3, 1995, Ser. No. 538,440

Claims priority, application Germany, Oct. 18, 1994, 44 37 261.2

Int. Cl.[6] **H01L** *23/48;23/52;29/40*

U.S. Cl. 257—780 **10 Claims**



1. A micromechanical electrostatic relay, comprising:

a base substrate having a base electrode layer and a base contact piece thereon;

an armature substrate overlying the: base substrate and having an armature spring tongue worked free from and integrally attached at one end to the armature substrate and which is free to move at its opposite free end, said armature spring tongue having an armature electrode layer thereon and also an armature contact piece at said free end;

said armature spring tongue being bent away from the base substrate by a steady curvature in a quiescent condition so that a wedge-shaped air gap is formed between the base electrode layer and the armature electrode layer, and wherein the spring tongue conforms to the base substrate and the base contact piece and armature contact piece lie against one another in a working condition when a voltage is present between the base electrode layer and the armature electrode layer; and

said wedge-shaped air gap between the electrodes having at least one geometric discontinuity.

5,629,566

FLIP-CHIP SEMICONDUCTOR DEVICES HAVING TWO ENCAPSULANTS

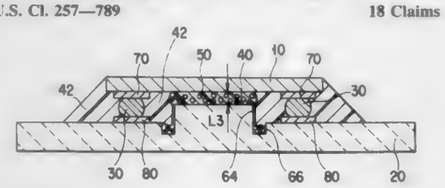
Kazuhide Doi; Masayuki Miura; Takashi Okada; Naohiko Hirano, all of Kawasaki, and Yoichi Hiruta, Kashiwa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 7, 1995, Ser. No. 512,165

Claims priority, application Japan, Aug. 15, 1994, 6-211711

Int. Cl.[6] **H01L** *23/12;23/48;23/28;23/29*

U.S. Cl. 257—789 **18 Claims**



1. A semiconductor device comprising:

at least one semiconductor chip mounted on a circuit substrate and electrically connected to a metallization layer of said circuit substrate, a row of solder bumps being between a peripheral portion of said semiconductor chip and said metallization layer of said circuit substrate;

a first encapsulant filling a first space between said semiconductor chip and said circuit substrate in the central portion of said semiconductor chip; and

a second encapsulant filling a second space, exclusive of said first space, between said semiconductor chip and said circuit substrate in the peripheral portion of said semiconductor chip, said second space including said row of solder bumps totally within it,

wherein said first encapsulant has a larger Young's modulus than said second encapsulant.

5,629,567

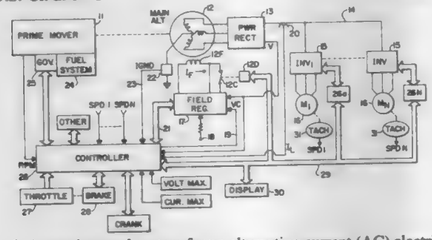
SPEED CONTROL SYSTEM FOR AN AC LOCOMOTIVE

Ajith K. Kumar, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jun. 26, 1995, Ser. No. 494,873

Int. Cl.[6] **B61C** *3/00;* **B60L** *3/10;* **H02P** *5/46*

U.S. Cl. 290—3 **14 Claims**



1. A speed control system for an alternating current (AC) electric locomotive, the locomotive including a plurality of wheel-axle sets with each wheel-axle set being coupled to an independently controllable AC electric traction motor, each traction motor having a corresponding speed sensor and each speed sensor providing a pair of signals which are resolvable to determine the speed and direction of rotation of the associated motor rotor, the speed sensor signals being coupled to process control means which controls power to the motors, said system comprising:

means for detecting the presence of each of the pair of signals from each speed sensor;

means responsive to detection of only one of the pair of signals from one of the speed sensors for setting motor speed in response to the detected one of the signals; and

means for using signals from another of the speed sensors for establishing motor rotational direction for the motor coupled to said one of the speed sensors.

5,629,568

CONTROLLABLE DRIVE UNIT WITH COMBUSTION ENGINE AND GENERATOR

Jurgen Mertens, Paderborn, Germany, assignor to Icemaster GmbH, Paderborn, Germany

PCT No. PCT/EP93/02778, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/09327, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 11, 1993, Ser. No. 416,736

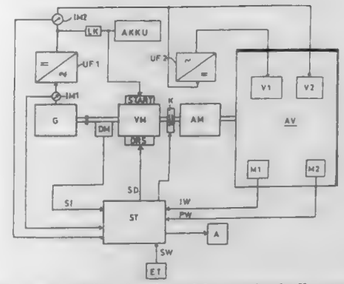
Claims priority, application Germany, Oct. 12, 1992, 42 34 340.2; May 8, 1993, 43 15 362.3

Int. Cl.[6] **F02D** *45/00*

U.S. Cl. 290—40 R **21 Claims**

1. In a controllable drive unit operating device including

an internal combustion engine (VM) able to rotate at an rpm and including an rpm actuator (DR, DRS) for controlling the rpm of the engine,



a refrigerator (AM) and a direct drive mechanically coupling the engine to the refrigerator,

a control unit including

thermostat means for maintaining an internal temperature of the refrigerator at a predetermined set point value (SW),

the improvement comprising:

(a) refrigerator internal temperature setting input means coupled to the control unit;

(b) a sensor of a refrigerator external temperature, the sensor being coupled to the control unit;

(c) a tachometer (DM) disposed on the engine for measuring an engine speed, the tachometer being coupled to the control unit;

(d) the control unit including means for accepting

the refrigerator internal temperature setting,

the external temperature, and

the engine speed measured by the tachometer,

and for determining therefrom an optimal value of the engine rpm according to values of an output characteristic function stored in a memory device (ST) of the control unit; and

(e) means for causing the rpm actuator to adjust the rpm toward the optimal value determined by the control unit.

5,629,569

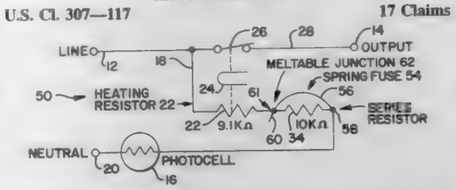
THERMAL PHOTOCONTROL SWITCH CIRCUIT

Rudy Janda, Spring Grove, Ill., assignor to Intermatic, Inc., Spring Grove, Ill.

Filed May 15, 1995, Ser. No. 440,745

Int. Cl.[6] **H01H** *71/10*

U.S. Cl. 307—117 **17 Claims**



1. A self-configuring photoelectric control circuit for controlling operation of a load based on ambient light, comprising:

a photocell responsive to ambient light;

a heating resistor connected to said photocell;

a bimetallic element in proximity to said heating resistor and movable in response to generation of heat from said heating resistor;

a switch connected between an input connected to a source and an output connected to said load, said switch operated by said bimetallic element;

a series resistor connected to said heating resistor; and

a resilient shunt connected across said series resistor to provide a current bypass around said series resistor;

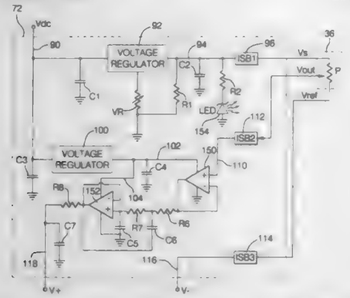
wherein said shunt is maintained in a flexed condition to form said bypass; and

wherein a connection of said shunt across said series resistor is formed of a meltable material such that connection to a high

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voltage source for a duration of time generates heat sufficient to cause melting of said meltable material thereby permitting relaxation of said resilient shunt to open said bypass.

5,629,570
PAINT FLOW CONTROL INTERFACE
Norman J. Weigert, Whitby, Canada, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 19, 1995, Ser. No. 574,974
Int. Cl.[6] G05B *13/02*
U.S. Cl. 307—118 **11 Claims**



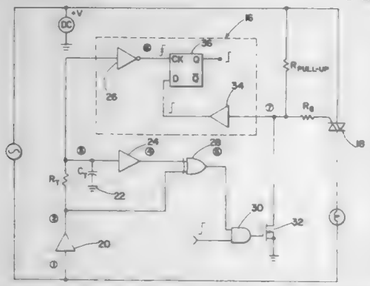
1. In a paint flow control system including a controller outside a paint booth and an applicator and transducer within the paint booth, the controller for issuing a paint flow control command for controlling paint flow to the applicator in response to a transducer output signal indicating a predetermined paint flow parameter, an interface circuit for passing electrical signals into and out of the paint booth, comprising:

a passive resistive intrinsically safe barrier element (ISB) having an input terminal electrically connected to a transducer output terminal for receiving the transducer output signal and having an output terminal; and

a buffer having an input terminal electrically connected to the ISB output terminal and having an output terminal, the buffer for minimizing voltage drop of the transducer output signal across the interface circuit;

the buffer output terminal providing an output signal for application to the controller for paint flow control.

5,629,571
THYRISTOR LOAD DETECTOR
Charles A. Roudeski, Springfield, Ohio, assignor to Grimes Aerospace Company, Urbana, Ohio
Filed Oct. 8, 1993, Ser. No. 133,969
Int. Cl.[6] H01H *83/20*
U.S. Cl. 307—130 **8 Claims**

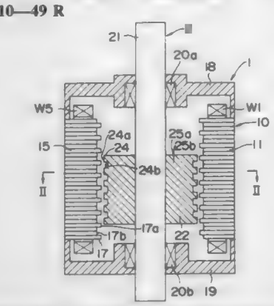


1. A method of detecting the presence of load current in a circuit, comprising the steps of:

connecting a thyristor in series with a supply voltage and a load; and

monitoring a voltage found on a gate of said thyristor.

5,629,572
LINEAR PULSE MOTOR
Hirobumi Satomi, and Takao Iwasa, both of Kashiwa, Japan, assignors to Oriental Motor Co., Ltd., Tokyo, Japan
Filed Sep. 22, 1994, Ser. No. 309,456
Claims priority, application Japan, Sep. 24, 1993, 5-238362
Int. Cl.[6] H02K *37/00*
U.S. Cl. 310—49 R **2 Claims**



1. A linear pulse motor including a stator provided with a stator core having a plurality of salient poles disposed at an equal pitch angle radially inward and a plurality of stator teeth formed on inner peripheral surfaces of said salient poles in a shaft direction and a mover provided with a mover core disposed within said stator to be supported movably in the shaft direction and having a plurality of mover teeth disposed opposite to said stator teeth on an outer peripheral surface of said mover core at an equal pitch in the shaft direction, characterized in that

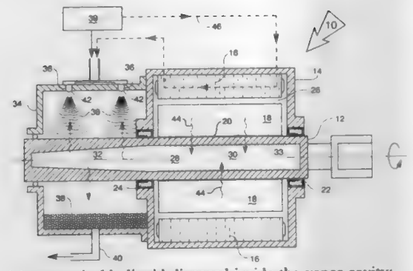
said stator core is formed by laminating stator iron plates of said stator core with said stator iron plates being rotated sequentially by a predetermined angle and when m is the number of phases, said stator iron plate includes 2m salient poles, said stator core being constituted by two salient poles having a smaller inner radius at the tip thereof and (2m–2) salient poles having a larger inner radius at the tip thereof opposite to said mover as viewed from said mover disposed side by side in order of the description, said predetermined angle for said lamination and rotation being (360/m) or (180/m) degrees.

5,629,573
SPRAY COOLED CONDENSER FOR AN INTEGRAL HEAT PIPE SHAFT IN HIGH POWER MOTORS AND GENERATORS
Rengasamy Ponnappan, Centerville; Jerry E. Beam, Beavercreek, and John E. Leland, Kettering, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 3, 1995, Ser. No. 540,603
Int. Cl.[6] H02K *9/00*
U.S. Cl. 310—64 **3 Claims**

1. A cooling apparatus for a rotating electrical machine having a housing comprising:

(a) a rotor and at least one stator inside the housing;

(b) a rotor shaft extending through the rotor, wherein the rotor shaft includes an integral rotating heat pipe having a generally cylindrically shaped internal vapor cavity, an evaporator section inside the rotor and a condenser section extending outside the rotor and housing;



(c) a vaporizable liquid disposed inside the vapor cavity;

(d) a sealed chamber surrounding the condenser section;

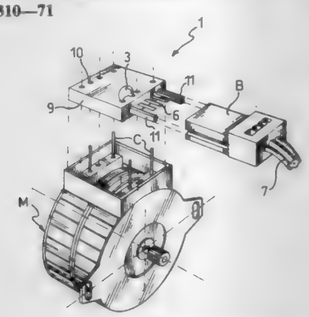
(e) an inlet to the sealed chamber for receiving liquid coolant;

(f) attached to the inlet on the inside of the sealed chamber, at least one spray nozzle for spraying liquid coolant onto the condenser end;

(g) an outlet from the sealed chamber for removing liquid coolant from the sealed chamber;

(h) a preheater for preheating liquid coolant before it enters the inlet to the sealed chamber, wherein the preheater includes a coolant path through a stator.

5,629,574
CONTROL INTERFACE DEVICE FOR AN ELECTRIC MOTOR
Carlo Cognetti, and Giuseppe Marchisi, both of Milan, Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy
Filed Jun. 30, 1993, Ser. No. 86,170
Claims priority, application Italy, Jun. 30, 1992, MI92A1587
Int. Cl.[6] H02K *11/00;1/04;15/00;* **H01L** *23/28*
U.S. Cl. 310—71 **21 Claims**



1. A control interface device for an electronic motor, comprising:

a plurality of leads formed of a common conductive material, and sharing a substantially common plane;

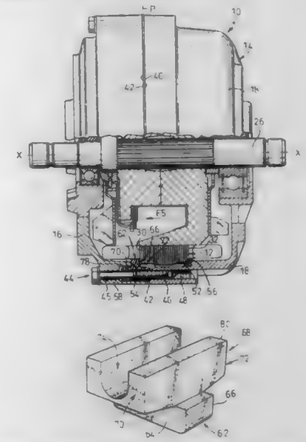
an integrated circuit mounted on at least one of said leads, and electrically connected to others of said leads;

an enclosing body of an electrically insulative material which surrounds said integrated circuit and at least a portion of each said lead;

said body including through-holes therein which pass through said body, in a direction substantially normal to said plane, and which abut one of said leads therein;

some ones of said leads extending out of said body to provide a plurality of parallel electromechanical connectors.

5,629,575
ROTARY ELECTRICAL MACHINE, ESPECIALLY A MOTOR VEHICLE ALTERNATOR, HAVING IMPROVED ELASTIC MOUNTING MEANS FOR ITS STATOR
Christian Cazal, St. Perre du Perray, and Michel Gruson, Sucy en Brie, both of France, assignors to Valeo Equipements Electriques Moteur, Creteil, France
Filed Dec. 1, 1995, Ser. No. 565,814
Claims priority, application France, Dec. 2, 1994, 94 14617
Int. Cl.[6] H02K *1/18;5/24*
U.S. Cl. 310—91 **7 Claims**

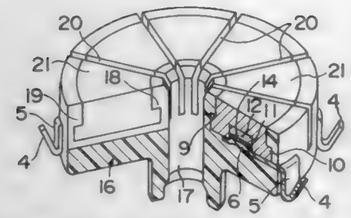


1. A rotary electrical machine comprising: a casing defining an axis of rotation and a rotor chamber within the casing; the casing having two casing parts and further defining a common junction plane perpendicular to the axis of rotation, with the casing parts being brought together at the common junction plane; fastening means for securing the casing parts together; and a generally cylindrical and annular stator, disposed within the casing and defining opposed radial and annular end surfaces of the stator, each casing part defining a radial support surface, the radial support surfaces being spaced apart axially in facing relationship to each other with the stator lying between the support surfaces, the machine further having a plurality of elastically deformable elements having a cushion block portion thereof interposed in axial compression between one of the support surfaces and the end surface of the stator facing towards that support surface, whereby means are provided for clamping the stator between the support surfaces, wherein one of the casing parts defines a pitch circle, and the elastically deformable elements in the form of cushion members spaced apart along the pitch circle each having an aperture formed therein for receiving the respective means for clamping the stator, with each cushion member cushion block portion being in axial compression between the corresponding end surface of the stator and a portion of the support surface of that casing part, wherein each cushion member block is formed of elastically deformable material, the cushion member having two opposed and parallel engagement surfaces, one of which engages against the stator end face, with the other one engaging against the support surface portion of the casing.

5,629,576
COMMUTATOR
Syuji Shimoyama, Kasakakemachi, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan
Filed Apr. 12, 1995, Ser. No. 421,677
Claims priority, application Japan, Apr. 25, 1994, 6-109002
Int. Cl.[6] H02K *13/06*
U.S. Cl. 310—237 **4 Claims**

1. A commutator, comprising:

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a boss made from resin, which is unitarily formed into a disk-shape and has an end surface in the axial direction of the boss;

a plurality of carbon segments arranged on said end surface of the boss with an equal spacing in the circumferential direction of the boss, which are insulated from each other and are fixed to the boss; and

a plurality of conductive base materials, each of which conductive base materials is associated with a respective one of the carbon segments; wherein:

a recess is formed in each of the carbon segments;

a conductive member having conductivity and solderability is fixedly provided in the recess;

a solder material is provided in the recess;

each conductive base material is touched to the associated one of said carbon segments so as to block the recess of the segment by a blockading part of said conductive base material; and

each of the conductive base materials is electrically connected to the associated carbon segment by said blockading part being soldered to the conductive member by said solder material.

5,629,577

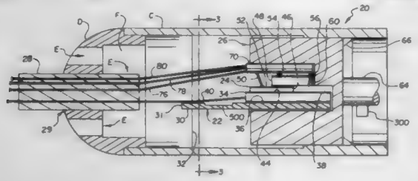
MINIATURE LINEAR MOTION ACTUATOR

Dennis L. Polla, Brooklyn Park; David J. Peichel, Roseville; Arthur G. Erdman, New Brighton, all of Minn., and John A. Costin, Vermilion, Ohio, assignors to Micro Medical Devices, Cleveland, Ohio

Filed Jul. 15, 1994, Ser. No. 275,835

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—328 **29 Claims**



1. A linear actuator comprising:

first and second wafer elements having first and second wafer surfaces in slidable, abuttable engagement;

a native oxide thin film electrically insulating layer formed on one of said first and second wafer surfaces between said first and second wafer surfaces and said first and second wafer elements, said insulating layer being between 50Å and 2 μm in thickness;

means for selectively electrostatically clamping said first wafer surface relative to said second wafer surface; and

inertia generating means, operably coupled to said second wafer element, for moving said second wafer element relative to said first wafer element.

5,629,578

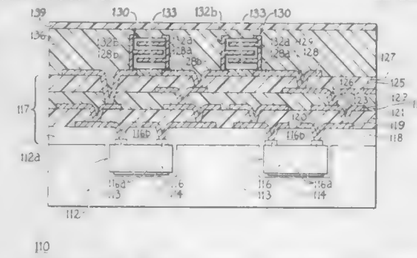
INTEGRATED COMPOSITE ACOUSTIC TRANSDUCER ARRAY

Stephen R. Winzer, Ellicott City; Paul J. Caldwell, Baltimore; Natarajan Shankar, Columbia; Tushar K. Shah, Sykesville, all of Md.; Keith Bridger, Washington, D.C., and Andrew P. Ritter, Surf Side Beach, S.C., assignors to Martin Marietta Corp., Bethesda, Md., and AVX Corporation, Myrtle Beach, S.C.

Filed Mar. 20, 1995, Ser. No. 406,601

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—334 **22 Claims**



1. An integrated, tunable, impedance-controllable and electronically addressable composite transducer assembly, comprising:

(a) a base;

(b) a plurality of multilayer actuators disposed on said base and forming a transducer array, each of said plurality of actuators having a plurality of alternating and juxtaposed layers of active material layers and internal conductive material layers which are electrically connected in parallel and mechanically connected in series and having a top surface and a bottom surface, where said plurality of actuators convert electrical energy to mechanical motion and reciprocally convert mechanical motion to electrical energy;

(c) a protective material encasing said plurality of actuators; and

(d) electronic means, being integrally connected to said base, and electrically connected to said plurality of actuators, for electrically measuring said electrical energy produced by said plurality of actuators and for producing electrical input to cause said plurality of actuators to move; and

wherein each actuator is individually fabricated to have a particular, selectable height, length, width, configuration, and a particular, selectable layer thickness; and

wherein each actuator is disposed on said base at a particular, selectable location; and

wherein each actuator has a particular, selectable direct current bias applied by said electronic means and a particular, selectable addressing applied by said electronic means;

so that the transducer array is tunable and impedance-controllable and electronically-addressable for selected operating frequencies and spatial configurations and directions of waveform beams of acoustic energy.

5,629,579

PROCESS AND STRUCTURE OF AN INTEGRATED VACUUM MICROELECTRONIC DEVICE

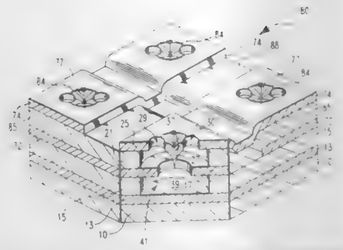
Steven M. Zimmerman, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 310,686, Sep. 22, 1994, abandoned, which is a continuation of Ser. No. 974,392, Nov. 10, 1992, Pat. No. 5,397,957, which is a division of Ser. No. 847,153, Mar. 5, 1992, Pat. No. 5,203,731, which is a division of Ser. No. 555,214, Jul. 18, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 486,631

Int. Cl.[6] H01J *9/02*

U.S. Cl. 313—309 **14 Claims**

1. An integrated vacuum microelectronic product made by the process comprising the steps of:



a) providing at least one hole in a substrate comprising at least one electrically conductive material,

b) depositing at least one insulative material over at least a portion of said at least one electrically conductive material and filling said hole to form a cusp,

c) depositing at least one layer of a material which is capable of emitting electrons under the influence of an electrical field over at least a portion of said at least one insulative material and filling at least a portion of said cusp to form a tip of said electron emitting material,

d) providing at least one access hole in said at least one electron-emitting material to help facilitate the removal of a portion of said insulative material underneath the cusp, and

e) through said at least one access hole removing at least a portion of said insulative material in said at least one hole to expose at least a portion of said tip of said electron-emitting material and at least a portion of said electrically conductive material in said substrate, such that at least a portion of said substrate forms an anode and wherein at least a portion of said at least one access hole in said electron-emitting material faces said anode, and thereby forming said integrated vacuum microelectronic product.

5,629,580

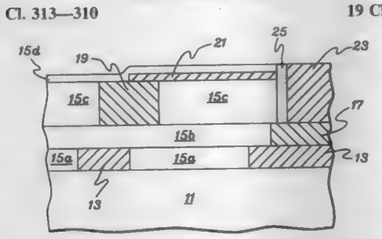
LATERAL FIELD EMISSION DEVICES FOR DISPLAY ELEMENTS AND METHODS OF FABRICATION

Jack A. Mandelman, Stormville, N.Y., and Michael D. Potter, Grand Isle, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1994, Ser. No. 331,307

Int. Cl.[6] H01J *1/16*

U.S. Cl. 313—310 **19 Claims**



1. A field emission device ("FED") for emitting electromagnetic energy comprising:

a substrate having a main surface;

an anode disposed above said main surface of said substrate, said anode having a first surface;

a phosphor layer disposed adjacent to said first surface of said anode, said phosphor layer comprising an insulating-type phosphor layer;

an emitter in spaced opposing relation to said first surface of said anode such that said emitter has a tip physically contacting said phosphor layer, wherein a voltage potential applied between said anode and said emitter causes electrons to be directly injected into said insulating-type phosphor layer.

5,629,581

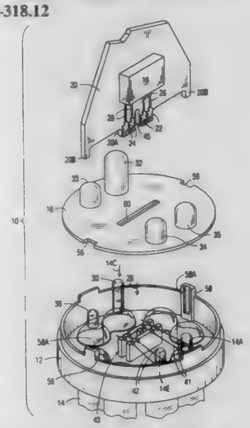
LAMP CATHODE-TO-BALLAST INTERCONNECT AND METHOD

Kelvin B. Belle, Willoughby Hills, Ohio; Jozsef Fulop, Budapest, Hungary; David J. Kachmarik, North Olmsted; Robert S. McFeely, Valley View, both of Ohio; Ferenc Papp, Budapest, Hungary; Brian M. Ronald, New Philadelphia, Ohio, and Istvan Wursching, Budapest, Hungary, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 7, 1995, Ser. No. 569,018

Int. Cl.[6] H01J *5/48;5/50;7/44*

U.S. Cl. 313—318.12 **12 Claims**



1. In combination with a lamp having elongated cathodes and ballast circuitry for supplying power to said cathodes, a lamp cathode-to-ballast interconnect, comprising:

(a) a plurality of conductive clips connected to said ballast circuitry, each clip having a generally flat portion connected at a first end to ballast circuitry and having a pinching groove formed through said flat portion and extending to a cathode-in-leads receiving opening at a second end;

(b) a loom for holding said lamp cathode-in-leads comprising, for each cathode-in-lead:

(i) a pair of cathode-in-lead-receiving support grooves separated by a space in which a second end of an associated conductive clip is to be received; and

(ii) walls of each of said pair of cathode-in-lead-receiving support grooves gripping therein-received portions of said cathode in-leads with sufficient force to enable a gas-tight contact to be made with its associated conductive clip when said cathode in-lead is received within the pinching groove of said clip.

5,629,582

THERMALLY STABLE ELECTRON GUN ARRANGEMENT WITH ELECTRICALLY NON-CONDUCTIVE SPACER MEMBERS

Richard J. Dobbs, Broomfield, United Kingdom, assignor to EEV Limited, Chelmsford, United Kingdom

Filed Mar. 2, 1995, Ser. No. 397,867

Claims priority, application United Kingdom, Mar. 16, 1994, 9405139

Int. Cl.[6] H01J *29/46*

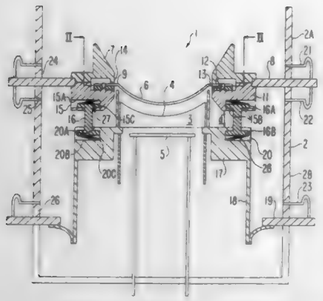
U.S. Cl. 313—456 **19 Claims**

1. An electron gun arrangement comprising:

an electron gun having a longitudinal axis and including first and second electrodes spaced apart from one another along the longitudinal axis for generating an electron beam in a direction of the longitudinal axis;

a first electrode support means for supporting the first electrode and including first slot means presenting a first pair of surfaces spaced apart from one another in the direction of the longitudinal axis;

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a second electrode support means spaced apart from the first electrode support means in the direction of the longitudinal axis for supporting the second electrode and including second slot means presenting a second pair of surfaces spaced apart from one another in the direction of the longitudinal axis, the surface of the first pair of surfaces that is closer to the second electrode support means constituting a first clamping surface and the surface of the second pair of surfaces that is closer to the first electrode support means constituting a second clamping surface;

a plurality of spacer members made of electrically non-conductive material, each spacer member including a first portion disposed in the first slot means and abutting the first clamping surface and a second portion disposed in the second slot means and abutting the second clamping surface for maintaining a distance in the direction of the longitudinal axis between the first and second clamping surfaces substantially constant and allowing movement between the respective support means in a direction transverse to the longitudinal axis due to differential thermal expansion.

5,629,583

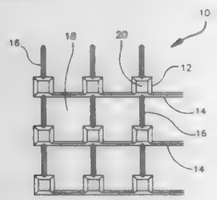
FLAT PANEL DISPLAY ASSEMBLY COMPRISING PHOTOFORMED SPACER STRUCTURE, AND METHOD OF MAKING THE SAME

Gary W. Jones, Raleigh, N.C., and Steven M. Zimmerman, Pleasant Valley, N.Y., assignors to Fed Corporation, Hopewell Junction, N.Y.

Continuation of Ser. No. 280,355, Jul. 25, 1994, abandoned. This application Mar. 28, 1996, Ser. No. 623,124

Int. Cl.[6] H01J *1/66*

U.S. Cl. 313—495 **10 Claims**



1. A display panel comprising:

an anode plate;

an electron source plate comprising an array of field emitter elements; and

spacing means for maintaining said anode plate and electron source plate in spaced relationship to one another, said spacing means comprising a planar matrix support structure of intersecting elongate members, which define a plurality of individual cells therebetween, said matrix support structure being formed as a unitary spacer structure having photoformed spacer elements integrally joined perpendicularly to the planar support structure at points of intersection of the intersecting elongate members and interposed in bearing and supporting relationship between said anode and electron source plates, said individual cells defining pixel regions of the display screen.

5,629,584

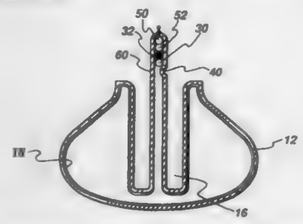
ACCURATE PLACEMENT AND RETENTION OF AN AMALGAM IN A ELECTRODELESS FLUORESCENT LAMP

Joseph C. Borowiec, Schenectady, N.Y.; Kenneth J. Downton, Leicester, United Kingdom, and Sayed-Amr El-Hamamsy, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 131,221, Oct. 4, 1993, abandoned. This application May 23, 1995, Ser. No. 448,080

Int. Cl.[6] H01J *17/26*

U.S. Cl. 313—565 **14 Claims**



1. An electrodeless fluorescent discharge lamp, comprising:

a light-transmissive envelope containing an ionizable, gaseous fill for sustaining an arc discharge when subjected to a radio frequency magnetic field and for emitting ultraviolet radiation as a result thereof, said envelope having an interior phosphor coating for emitting visible radiation when excited by said ultraviolet radiation, said envelope having a re-entrant cavity formed therein;

an excitation coil contained within said re-entrant cavity for providing said radio frequency magnetic field when excited by a radio frequency power supply;

an exhaust tube extending through said re-entrant cavity and into said envelope for evacuating and filling said lamp, said exhaust tube having a base portion for extension into a base of said lamp;

a dimple configuration formed in said base portion of said exhaust tube at a predetermined distance from said re-entrant cavity;

a dose locating member for retaining an amalgam in a location in said exhaust tube between said dose locating member and the tip of said exhaust tube, mercury vapor pressure within said envelope is maintained within the range from approximately four to seven millitorr during lamp operation; and

an additional dose locating member situated between said amalgam and the tip of said exhaust tube.

5,629,585

HIGH-PRESSURE DISCHARGE LAMP, PARTICULARLY LOW-RATED POWER DISCHARGE LAMP, WITH ENHANCED QUALITY OF LIGHT OUTPUT

Bernhard Altmann, Langerringen; Juergen Begemann, Munich; Juergen Maier, Berlin; Andreas Ponnier, Berlin, and Ralf Seedorf, Berlin, all of Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Germany

Filed Aug. 2, 1995, Ser. No. 510,185

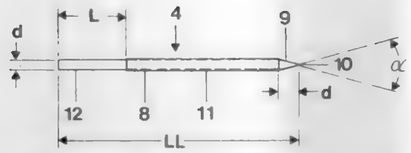
Claims priority, application Germany, Sep. 21, 1994, 9415217 U

Int. Cl.[6] H01J *17/20;61/12;17/04;61/04*

U.S. Cl. 313—570 **20 Claims**

1. High-pressure discharge lamp having

a discharge vessel (**2**) defining an axis;



an ionizable fill within the discharge vessel;

an anode (**3**) located axially within the discharge vessel;

a cathode (**4**) located axially within the discharge vessel and spaced internally from the anode (**3**) by an arc gap,

said cathode (**4**) having an essentially cylindrical base body portion (**8**) and a tapering end portion (**9**) terminating, at the arc gap, in a tip end (**10**).

and comprising, in accordance with the invention

a carbide coating (**11**) which, at least in part, covers the base body portion (**8**) only while leaving the entire tapered end portion (**9**) between the tip end (**10**) and the base body portion (**8**) of the cathode (**4**) devoid of carbide coating.

5,629,586

COMPACT FLUORESCENT LAMP UNIT HAVING FIRST AND SECOND SEALED END PORTIONS SEPARATED BY A SUPPORT MEMBER

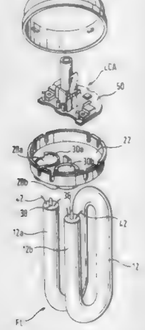
Takeo Yasuda, and Kenichi Asami, both of Kanagawa-ken, Japan, assignors to Toshiba Lighting and Technology Corporation, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,697

Claims priority, application Japan, Jun. 30, 1994, 6-150281; Mar. 31, 1995, 7-076531

Int. Cl.[6] H05B *37/00;* **H01J** *1/00*

U.S. Cl. 315—46 **8 Claims**



1. A compact type fluorescent lamp unit comprising:

a phosphor coated bulb including:

first and second sealed end portions,

a pair of filament coils disposed in the first and second sealed end portions for producing an arc therebetween, the filament coils being substantially composed of a tungsten wire having a diameter corresponding to 8 MG through 12 MG and being normally operated with a lamp current ranging from 250 mA to 350 mA, and

a fill containing mercury and a rare gas, wherein the filament coils have two ends and contain an emitter for enhancing thermionic emission of electrons therefrom, said filament coils being cut off by self-generated heat when the emitter is substantially dissipated.

a lighting circuit arrangement for supplying electrical energy to the filament coils, the lighting circuit arrangement including an inverter circuit containing a resonant capacitor connected between each end of the filament coils, a resonant current being passed through the resonant capacitor during the operation of the lamp unit,

a housing providing an inner space within which the bulb and the lighting circuit arrangement are disposed; and

a support member disposed in the inner space for supporting the bulb, wherein the support member supports the first and second sealed end portions of the bulb.

5,629,587

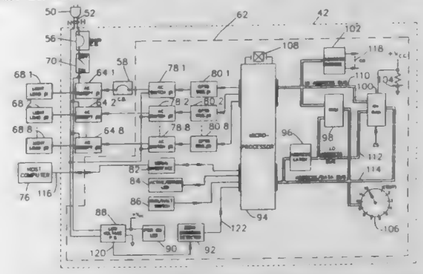
PROGRAMMABLE LIGHTING CONTROL SYSTEM FOR CONTROLLING ILLUMINATION DURATION AND INTENSITY LEVELS OF LAMPS IN MULTIPLE LIGHTING STRINGS

Roger M. Gray, and Barry C. Kockler, both of Lewisville, Tex., assignors to Devtek Development Corporation, Lewisville, Tex.

Filed Sep. 26, 1995, Ser. No. 533,921

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—292 **23 Claims**



1. A lighting control device programmable by a user for the control of a plurality of lighting strings, each lighting string including a plurality of lamps, the device providing selection of individual lighting conditions of illumination duration and intensity level for each of the lamps, the device comprising:

energizing means connected to the plurality of lighting strings for energizing each of the lighting strings independent of each other for selectively controlling the illumination duration and intensity level of the plurality of lamps of each of the lighting strings;

control means for selectively controlling said energizing means to control the illumination duration and intensity level of each of the plurality of lamps in each of the lighting strings, said control means including a single controller for generating control signals which independently determine, for each of the plurality of lighting strings, illumination duration and intensity levels for each of the plurality of lamps in each of the plurality of lighting strings and simultaneously control the lighting conditions of all of the plurality of lighting strings; and

user input means for generating programmable control signals applied to said control means for activating said control means, said programmable control signals determining illumination duration and intensity levels of each of the plurality of lamps in each of the lighting strings and being programmable by the user.

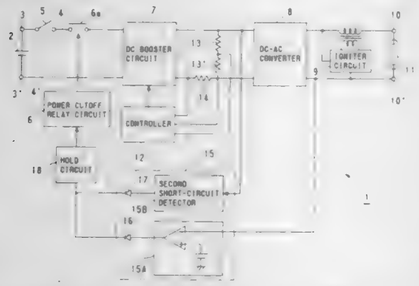
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,588

LIGHTING CIRCUIT UTILIZING DC POWER FOR A DISCHARGE LAMP UTILIZING AC POWER

Goichi Oda; Atsushi Toda, and Masayasu Yamashita, all of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,176
Claims priority, application Japan, Sep. 8, 1994, 6-239665
Int. Cl.° G05F 1/00
U.S. Cl. 315—308 19 Claims



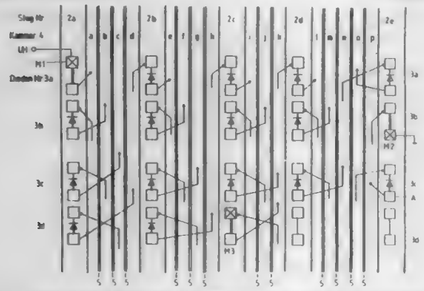
1. A lighting circuit for a discharge lamp comprising:
- a DC power supply circuit for boosting and/or decreasing a DC voltage;
- a DC-AC converter for converting an output voltage of said DC power supply circuit into a square-wave AC voltage and supplying said AC voltage to a discharge lamp;
- an abnormality detector for monitoring an output voltage of a DC booster circuit in said DC power supply circuit and an output voltage of said DC-AC converter to thereby detect an abnormality of said lighting circuit; and
- a protection circuit for inhibiting an operation of said lighting circuit or cutting off power supply to said discharge lamp when an abnormality is detected by said abnormality detector.

5,629,589

SPLIT-CONFIGURATION HIGH-VOLTAGE DIODE TRANSFORMER FOR A TV RECEIVER

Walter Goseberg, Hanover; Wolfgang Reichow, Garbsen; Hans-Werner Sander, and Rolf Heidrich, both of Hanover, all of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Feb. 23, 1994, Ser. No. 200,603
Claims priority, application Germany, Aug. 22, 1991, 41 27 836.4; Sep. 9, 1991, 41 29 678.8
Int. Cl.° H01J 29/70
U.S. Cl. 315—411 11 Claims



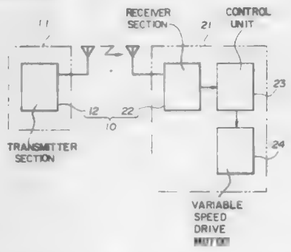
1. Diode-split high voltage transformer for a television receiver with a plurality of partial windings each located in a cell of a coil form, said cells being axially spaced along said coil form, and a plurality of diodes connected between different partial windings, said diodes being evenly distributed over a cell wall and arranged without any mutual offset in the axial direction.

5,629,590

ROTATIONAL DRIVE CONTROL DEVICE FOR VARIABLE SPEED DRIVE MOTOR

Michio Yamamoto, Foothill Ranch, Calif., assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Oct. 19, 1993, Ser. No. 137,912
Int. Cl.° H02P 5/34
U.S. Cl. 318—16 7 Claims



1. A rotational drive control system for a variable speed drive motor, comprising:
- a control side including a transmitter section for transmitting a rotational drive control signal for the drive motor by radio transmission; and
- a controlled side including (a) a receiver section for receiving the rotational drive control signal from said control side by radio receiving, (b) means for converting AC power into DC power and then converting the DC power into AC power of a predetermined frequency in accordance with a desired drive control to be imposed on said motor thereby to obtain an AC rotational drive control signal of the predetermined frequency, and (c) a variable speed drive motor to be controlled;

wherein
- radio transmission of the rotational drive control signal from said transmitter section of said control side to said receiver section on said controlled side is carried out according to a spectrum spread communication system;
- a plurality of said controlled sides are controlled by said control side:
- a specified one of said controlled sides, including a receiver section for receiving the rotational drive control signal from said control side by radio receiving and a relay transmission section for relaying a received control signal to an other of said controlled sides:
- the other controlled side including a relay receiver section for receiving the rotational, drive control signal through said relax transmitter section said specified controlled side;
- said transmitter section on said control, side carrying out radio transmission of the rotational drive control signal to said receiver section on said specified controlled side; and
- said specified controlled side carrying out relay radio transmission of the rotational drive control signal receiver from said control side through said relay transmission section to said relay receiver section on the other controlled side.

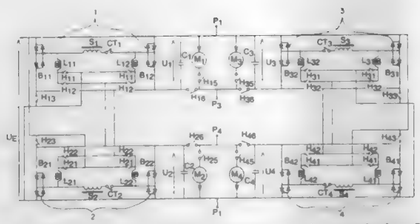
5,629,591

HIGH-AVAILABILITY MULTICURRENT POWER SUPPLY SYSTEM FOR THE TRACTION UNIT OF A RAILWAY LOCOMOTIVE

Alain Thevenon, Caluire, France, assignor to GEC Alsthom Transport SA, Paris, France

Filed Dec. 12, 1994, Ser. No. 355,337
Claims priority, application France, Dec. 13, 1993, 93 14923
Int. Cl.° H02P 1/54
U.S. Cl. 318—107 8 Claims

1. A multicurrent power supply system for a locomotive having 2N (meaning N multiplied by 2) motors M_1 through M_{2N} and a plurality of capacitors, where N is an integer greater than or equal to 2, the system comprising 2N pairs of voltage converters respectively associated with the 2N motors and identified sequentially as pair 1 through pair 2N of voltage converters, each of said motors



being powered by an inverter connected to the terminals of a respective one of said capacitors which is connected in parallel therewith, and each of said pairs of converters comprises a first voltage converter and a second voltage converter which are connected in parallel with the terminals of one of said capacitors; when the locomotive is to be powered with AC, the midpoint of the first voltage converter in each pair of converters is connected to the midpoint of the second converter of the same pair in such a manner as to enable each of the pairs of converters to form a 4-quadrant converter, said connection being implemented via the secondary winding of a transformer whose primary winding is connected directly to the terminals of an AC power supply and a section switch in the closed position;
- wherein, when the locomotive is to be powered with DC, and for i where i is an integer having all values between 1 and N, inclusive
- the motors M_{2i} (meaning i multiplied by 2) are all connected in parallel and the motors M_{2i-1} (meaning i multiplied by 2, the result minus 1) are likewise all connected in parallel;
- the midpoints of the first and second converters in each pair 2i–1 of voltage converters are connected to a respective one of said pairs 2i of voltage converters via respective inductors, and the midpoints of the first and second converters of each pair 2i of voltage converters are connected to a respective one of said pairs 2i–1 of voltage converters via respective inductors; and
- a switch associated with each of said pairs of voltage converters makes the following possible:
- a) when the DC power supply voltage of the locomotive is greater than the voltage required across the terminals of each of said motors, said switch of each said respective one of said pairs 2i of voltage converters connects, in a first position, its respective voltage converter as a voltage-lowering chopper for a respective said motor M_{2i-1}, and said switch of each said respective one of said pairs 2i–1 of voltage converters connects, in said first position, its respective voltage converter as a voltage-lowering chopper for a respective said motor M_{2i}; and
- b) when the DC power supply voltage feeding the locomotive is less than the voltage required across the terminals of each of said motors, said switch of each said respective one of said pairs 2i of voltage converters connects, in a second position, its respective voltage converter as a voltage-raising chopper for a respective said motor M_{2i-1}, and said switch of each said respective one of said pairs 2i–1 of voltage converters connects, in said second position, its respective voltage converter as a voltage-raising chopper for a respective said motor M_{2i}.

5,629,592

ELECTRIC VEHICLE CONTROL DEVICE IN BOTH AN ALTERNATING CURRENT SECTION AND A DIRECT CURRENT SECTION

Takuma Henmi, Kanagawaken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 24, 1995, Ser. No. 518,978
Claims priority, application Japan, Aug. 25, 1994, 6-200355
Int. Cl.° H02P 5/40; B60L 9/30
U.S. Cl. 318—107 9 Claims

1. An electric vehicle control device in both an alternating current (AC) section and a direct current (DC) section comprising a current collector for taking in an electric power from a power supply line;
- alternating current-direct current (AC-DC) switching means for switching between an AC power supply and a DC power supply supplied from the power supply line through the current collector according to the AC section or the DC section in which the electric vehicle is traveling;
- a main transformer, a primary side of which is connected to an AC output side of the AC-DC switching means, for transforming the AC power supply;
- a power converter connected to a secondary side of the main transformer for converting an AC output power from the main transformer to a DC power;
- a filter capacitor connected to both a DC output terminal of the AC-DC switching means and a DC output terminal of the power converter;
- an inverter, a DC input terminal of which is connected to the filter capacitor;
- an induction drive motor connected to an AC output terminal of the inverter; and
- a control circuit for carrying out a pulse width modulation (PWM) gate control for the inverter;
- wherein the control circuit is further comprising a speed detector of the induction drive motor;
- a motor current detector for detecting an effective current to be supplied to the induction drive motor from the inverter;
- slip frequency reference operating means for calculating a slip frequency based on a speed reference given from outside, a motor speed detected by the speed detector and the effective motor current detected by the motor current detector;
- ripple component detecting means for detecting a ripple component from a filter capacitor voltage as a ripple component of the output power of the power converter while the electric vehicle is traveling in the AC section;
- damping- control component detecting means for detecting a magnitude of a voltage fluctuation of the filter capacitor as a damping control component while the electric vehicle is traveling in the DC section;
- an adder for adding the ripple component from the ripple component detecting means or the damping control component from the damping control component detecting means onto the slip frequency reference from the slip frequency reference operating means and for outputting for the inverter as an inverter frequency reference; and
- other switching means correlating with the AC-DC switching means for switching between the ripple component from the ripple component detecting means and the damping control component from the damping control component detecting means and supplying to the adder.

5,629,593

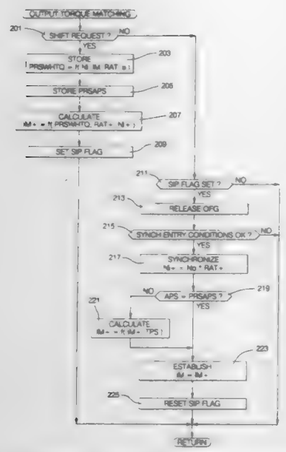
OUTPUT TORQUE MATCHING IN A MULTI-SPEED ELECTRIC VEHICLE

Frederick J. Pollock, Royal Oak, and Douglas E. Trombley, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1995, Ser. No. 574,568
Int. Cl.° B60K 23/00; H02P 7/36
U.S. Cl. 318—432 8 Claims

1. A method of operating an electric vehicle, said vehicle comprising a drivetrain including an electric motor coupled to an automatic multiple speed ratio transmission through an input member thereof to provide output torque at an output member thereof for propelling the vehicle, the output torque being controlled in

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response to an operator controlled accelerator pedal position, the method comprising the steps:

calculating a pre-shift output torque preceding a ratio change from a first speed ratio to a second speed ratio from a set of predetermined drivetrain operating parameters;

determining a post-shift operating value for a predetermined electric motor operating parameter effective to establish the output torque at the output member following the ratio change at the pre-shift output torque;

establishing the predetermined electric motor operating parameter at the post-shift operating value such that the output torque at the output member subsequent the ratio change is substantially equivalent to the pre-shift output torque.

5,629,594

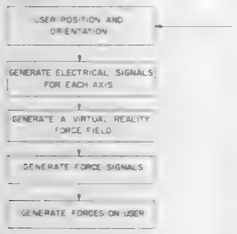
FORCE FEEDBACK SYSTEM

Charles J. Jacobus; Alan J. Riggs, and Mark J. Taylor, all of Ann Arbor, Mich., assignors to Cybernet Systems Corporation, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 257,070, Jun. 9, 1994, Pat. No. 5,459,382, which is a division of Ser. No. 984,324, Dec. 2, 1992, Pat. No. 5,389,865. This application Oct. 16, 1995, Ser. No. 543,606

Int. Cl.[6] F16D *31/02*; **G05G** *9/02*

U.S. Cl. 318—568.11 **18 Claims**



30

1. A method for providing tactile force feedback in response to a user position and orientation, the method comprising the steps of:

storing data representative of a computer model, including one or more objects having surfaces;

generating an electrical signal for each of a plurality of degrees of freedom of the user as a function of the user position and orientation;

synthesizing user velocity and acceleration from the electrical signals to determine user-applied force;

mapping the user position, orientation and applied force with respect to computer model to determine interactions between the user and any objects included in the model;

generating at least one force field in response to the interactions;

generating a force signal for each degree of freedom as a function of the force field; and

directing a tactile force on the user for each force signal, the generated tactile forces providing the tactile feedback.

5,629,595

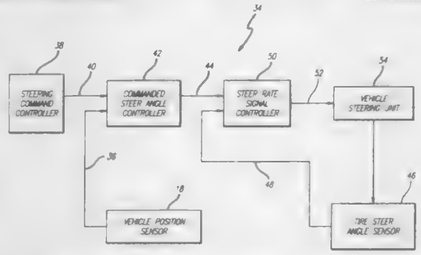
METHOD AND APPARATUS FOR AN AMUSEMENT RIDE HAVING AN INTERACTIVE GUIDED VEHICLE

Kenneth D. Salter, Glendale; Daniel A. Armstrong, Simi Valley; John D. Charlesworth, Anaheim, all of Calif., and Robert S. Bollinger, Thomasville, Pa., assignors to The Walt Disney Company, Burbank, Calif.

Filed Jun. 19, 1995, Ser. No. 492,196

Int. Cl.[6] B62D *1/00*; **G05D** *1/03*; **A63G** *25/00*

U.S. Cl. 318—587 **13 Claims**



7. A vehicle control system for guiding a vehicle along a path defined by a centerline and left and right boundaries parallel to and spaced laterally on opposite sides thereof and in which a passenger in the vehicle can steer the vehicle for lateral movement between the boundaries, the control system comprising:

(a) an electrical conductor carrying an electrical current creating a magnetic field, said conductor extending along the centerline of the path;

(b) a vehicle position sensor mounted on the vehicle, said vehicle position sensor providing a vehicle position signal that is proportional to the lateral spacing of a reference point on said vehicle relative to said electrical conductor;

(c) a steering control that allows a passenger to steer the vehicle laterally of the path; and

(d) a vehicle position controller operatively coupled to said vehicle position sensor and to said steering control for confining the lateral movement of the vehicle to within the boundaries.

10. An amusement ride of the type in which a vehicle is guided along a path defined by a centerline and left and right boundaries parallel to and spaced laterally on opposite sides thereof and in which a passenger in the vehicle can steer it for lateral movement between the boundaries, the ride comprising:

(a) an electrical conductor carrying an electrical current creating a magnetic field, said conductor extending along the centerline of the path;

(b) steering control means permitting the passenger of the vehicle to steer the vehicle;

(c) sensing means mounted on the vehicle for sensing the relative lateral distance between a reference point on the vehicle and said electrical conductor; and

(d) vehicle steering means connected to said steering control means and to said sensing means, said vehicle steering means steering the vehicle along the path and confining the lateral movement of the vehicle to a predetermined distance on either side of the electrical conductor.

5,629,596

METHOD OF CONTROLLING ELECTRIC VEHICLE DRIVEN BY AN INTERNAL COMBUSTION ENGINE

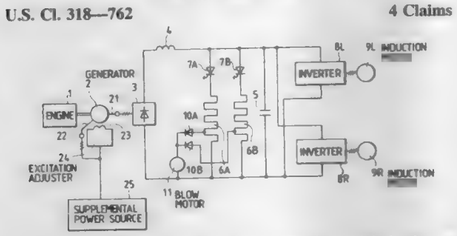
Katsuhiko Iijima, and Shigenori Kinoshita, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, and Mitsubishi Heavy Industries, Ltd., Tokyo, both of Japan

Division of Ser. No. 957,179, Oct. 7, 1992. This application Aug. 12, 1994, Ser. No. 289,559

Claims priority, application Japan, Oct. 8, 1991, 3-289133

Int. Cl.[6] H02P *3/18*

U.S. Cl. 318—762 **4 Claims**



1. A method of controlling the operation of a vehicle having an AC generator driven by an internal combustion engine, a first power convertor for converting the AC generator output to a DC voltage, an intermediate DC circuit having an input connected to an output of the first power converter, a second power converter for converting the DC output of the intermediate circuit to an AC voltage, AC induction motors connected to the output of the second power connector for driving the vehicle wheels, and braking resistors in the intermediate DC circuit for consuming power during vehicle braking, said braking resistors being divided into two groups, connected in parallel, with semiconductor switches connected in series with each groups, said method including the step of:

operating said semiconductor switches in a chopping operation during the braking of the vehicle to vary the resistance value of the braking resistors; and

using voltage drops across the braking resistors to run a motor for a cooling blower, said cooling blower being used to cool the braking resistors of the vehicle.

5,629,597

CONTROL UNIT FOR INDUCTION MOTOR AND CONTROL METHOD THEREFOR

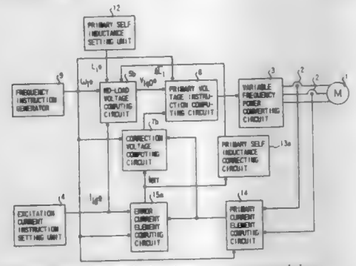
Akira Imanaka, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,107

Claims priority, application Japan, Jun. 30, 1994, 6-182729; Mar. 24, 1995, 7-066351

Int. Cl.[6] H02P *5/408*

U.S. Cl. 318—805 **12 Claims**



1. A control unit for an induction motor comprising:

a current detecting unit for detecting a primary current in an induction motor;

a primary current element computing unit for computing primary current elements each having phases differing by 90 degrees from each other from the primary current detected by said current detecting unit and from a primary frequency instruction value;

an error current computing unit into which said primary frequency element instruction value, excitation current instruction value, and output from said primary current element computing unit are inputted and which computes an error current in such a manner that an actual value of the primary magnetic flux generated in said induction motor will become zero when the actual value coincides with the set value thereof;

a primary self-inductance correcting unit into which an output from said error current computing unit is inputted and which computes a correction value for a primary self-inductance set value, which is a circuit constant for said induction motor;

a correction voltage computing unit into which said primary frequency instruction value, an output from said primary current element computing unit, and an output from said error current computing unit are inputted and which computes a correction voltage to make a value of said error current closer to zero;

a no-load voltage correcting unit into which said primary frequency instruction value, said excitation current instruction value, and an output from said primary self-inductance correcting unit are inputted and which outputs a no-load voltage instruction value for said induction motor; and

a primary voltage instruction computing unit into which said primary frequency instruction value, said no-load voltage instruction value, and said correction voltage are inputted and which computes a primary voltage instruction value for said induction motor and outputs the computed value to a variable frequency power converting unit.

5,629,598

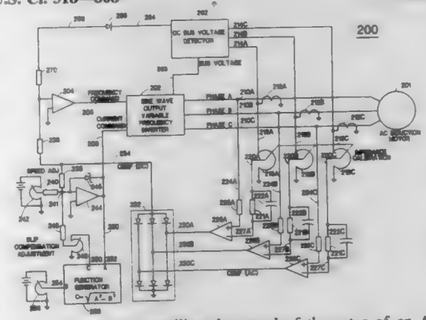
SPEED CONTROL FOR INDUCTION MOTOR HAVING IMPROVED SENSING OF MOTOR OPERATIVE CONDITIONS

Alan W. Wilkerson, c/o The Gemini Company, W61 N14280 Taunton Ave., P.O. Box 380, Cedarburg, Wis. 53012

Continuation-in-part of Ser. No. 65,604, May 21, 1993, Pat. No. 5,440,219. This application Jun. 13, 1995, Ser. No. 489,944

Int. Cl.[6] H02P *5/41*

U.S. Cl. 318—808 **39 Claims**



1. A control for controlling the speed of the rotor of an AC induction motor and avoiding regenerative operation of the motor; said motor having a stator winding electromagnetically coupled to the rotor, the stator winding having input terminals couplable to an AC power means having a DC bus means along which power for the motor is provided, the polarity of the voltage on said DC bus means remaining the same during motoring or regenerative operation; the operating frequency and the current magnitude of the AC power means being determinable by frequency command and current command signals, respectively, there being a synchronous speed of the motor corresponding to the operating frequency of the AC power means, said control comprising:

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means for providing a signal corresponding to the desired speed of said motor;

means for providing a signal corresponding to the magnitude of the CEMF developed in the stator winding as a result of the flow of the magnetizing current component of the stator current through the stator winding, said CEMF signal being appliable to the AC power means as the frequency command signal to vary the frequency of the AC power means in accordance with the magnitude of the CEMF signal, so that the magnetizing current component of the stator current may be maintained at a constant value at all operating frequencies;

regulating means having input means receiving said desired speed signal as a reference signal and said CEMF signal as a feedback signal, said regulating means having an output providing a signal appliable to the AC power means as the current command signal for establishing the magnitude of the stator winding current;

means for ascertaining the load current component of the stator winding current and for providing a signal proportional to the magnitude of the load current component of the stator winding current, said load current component signal being applied to said input means of said regulating means in a manner additive to said desired speed signal;

means for comparing the magnitude of the unipolarity voltage of the DC bus means of the AC power means with the magnitude of a reference signal to determine whether the motor is motoring or regenerating; and

means for allowing the frequency of the AC power means to be determined by the magnitude of the CEMF signal when the magnitude of the unipolarity voltage of the DC bus means is less than the magnitude of the reference signal and for increasing the frequency command signal to the AC power means when the magnitude of the unipolarity voltage of the DC bus means is greater than the magnitude of the reference signal, thereby increasing the operating frequency of the stator winding current and avoiding regenerative operation of the motor.

5,629,599

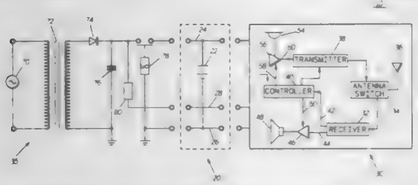
RECHARGEABLE BATTERY-POWERED COMMUNICATION DEVICE HAVING INTEGRAL VIBRATING MEANS

Francis P. Malaspina, and George Thomas, both of Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 251,413, May 31, 1994, abandoned. This application Jul. 30, 1996, Ser. No. 690,377

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—2 **7 Claims**



1. An electronic communication device comprising:

a rechargeable electrochemical cell for powering said communication device;

a speaker for transmitting received audio frequency information and further adapted to ultrasonically vibrate said electrochemical cell during charging thereof; and

wherein said speaker further includes switching means for switching between audio and ultrasonic frequencies.

6. A method of charging a battery in an electronic device, comprising the steps of:

providing a speaker capable of generating both audible and ultrasonic vibrations in contact with said battery;

applying a charging current to said battery; and

vibrating said battery with ultrasonic vibrations from said speaker while performing said step of applying.

5,629,600

CHARGER FOR USE WITH A NICKEL-CADMIUM BATTERY THAT USES CHARGE AND DISCHARGE CYCLES DEPENDENT ON VOLTAGE AND CURRENT

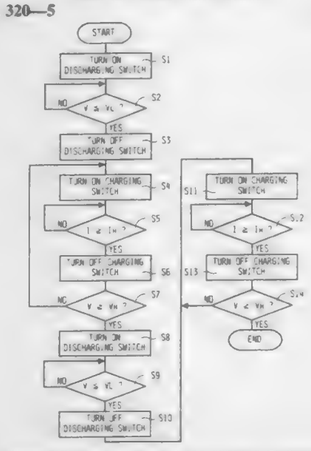
Yoshimasa Hara, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 20, 1994, Ser. No. 262,494

Claims priority, application Japan, Jul. 26, 1993, 5-183681

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—5 **22 Claims**



19. A charger for use with a Ni-Cd (Nickel-Cadmium) battery, comprising:

charging means for causing a charging current to flow in the Ni-Cd battery and for increasing an internal voltage of the Ni-Cd battery to a predetermined first voltage to thereby charge the Ni-Cd battery;

discharging means for discharging an electric charge from the Ni-Cd battery charged by said charging means by a predetermined voltage quantity to thereby reduce the first voltage of the Ni-Cd battery to a predetermined second voltage;

controlling means coupled to said charging means and said discharging means for controlling the charging means to charge the Ni-Cd battery for at least initial and final charging periods and for controlling said discharging means to effect discharging during a period between the initial and final charging periods;

voltage detecting means coupled to said controlling means for detecting the internal voltage of the Ni-Cd battery; and

current detecting means coupled to said controlling means for detecting the charging current flowing in the Ni-Cd battery;

wherein said controlling means controls said charging means to stop charging the Ni-Cd battery when the charging current detected by said current detecting means reaches a predetermined current value.

5,629,601

COMPOUND BATTERY CHARGING SYSTEM

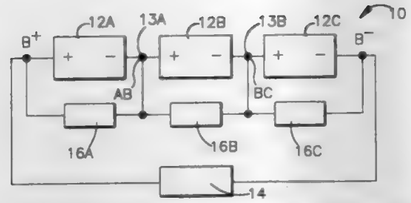
Robert S. Feldstein, 4 Clinton Ave., Dobbs Ferry, N.Y. 10522

Filed Apr. 18, 1994, Ser. No. 228,874

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—6 **32 Claims**

1. A compound charging system for charging a plurality of batteries serially connected to each other, comprising:



a system charger connected across said plurality of batteries for charging said plurality of batteries in response to the overall voltage across said plurality of batteries; and

a plurality of individual battery chargers each connected across a corresponding one of said plurality of batteries for independently charging said corresponding one of said plurality of batteries in response to the voltage across said corresponding one of said plurality of batteries.

19. A method of charging a plurality of batteries serially connected to each other, comprising the steps of:

charging said serially connected plurality of batteries with full charging current from a system charger when the overall voltage across said serially connected plurality of batteries is between a first reference voltage and a second reference voltage higher than said first reference voltage; and

independently charging one of said plurality of batteries with individual fall charging current from a corresponding one of a plurality of individual battery chargers each connected across a corresponding one of said plurality of batteries when the voltage across said corresponding one of said plurality of batteries is between a third reference voltage and a higher fourth reference voltage corresponding to about 100% of the full charge voltage of said corresponding one of said plurality of batteries.

5,629,602

PORTABLE ELECTRONIC EQUIPMENT WITH ATTACHMENT FOR SUPPLYING POWER AND CHARGING BATTERY

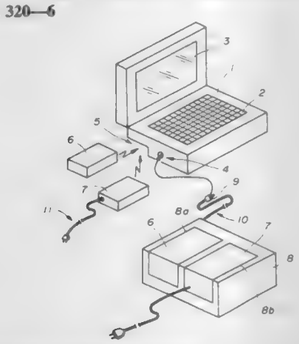
Toshihiko Makino, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,257

Claims priority, application Japan, Oct. 6, 1993, 5-274943

Int. Cl.[6] H02J *7/00;* **H01M** *10/44*

U.S. Cl. 320—6 **14 Claims**



1. Electronic equipment comprising:

a main device configured to receive power from one of a battery and an AC adaptor stored in a container of said main device;

attachment means for supplying power to said main device when one of said battery and said AC adaptor is stored in said attachment means, said attachment means comprising:

a battery container for storing said battery;

an AC-adaptor container for storing said AC-adaptor;

battery detecting means for detecting said battery in said battery container; and

switch means, responsive to said battery detecting means, for supplying power of said AC adaptor to said battery through electrodes of said battery container when both said battery and said AC-adaptor are stored in said attachment means, and for preventing said power of said AC adaptor from being exposed at said electrodes when said battery is not stored in said battery container.

5,629,603

ELECTRIC SYSTEM OF ELECTRIC VEHICLE

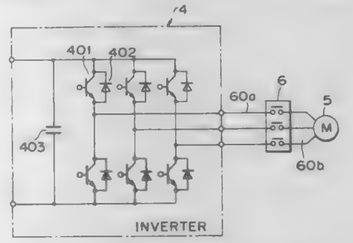
Shigenori Kinoshita, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 21, 1993, Ser. No. 170,906

Claims priority, application Japan, Dec. 25, 1992, 4-359576; Feb. 2, 1993, 5-037386

Int. Cl.[6] B60L *11/18*

U.S. Cl. 320—11 **20 Claims**



1. An electric system of an electric vehicle comprising:

a main secondary battery;

a power converter converting DC power of the main secondary battery into AC power, the power converter having a regenerative function enabling AC to DC conversion;

an AC motor driving wheels of the electric vehicle, the AC motor including windings whose first terminals are connected to the AC side output of the power converter;

a switch including a plurality of switching circuits, first terminals of the switching circuits being each connected to second terminals of the windings, second terminals of the switching circuits being shortcircuited; and

a charging connector to be connected to an external AC power source while charging the main secondary battery, the charging connector being connected to the first terminals of the switching circuits of the switch.

5,629,604

COMPUTER POWER SUPPLY SYSTEM

Upal Sengupta, St. Joseph; Robert R. Turnbull, Buchanan; Rajesh A. Shah, and Brian C. Fritz, both of St. Joseph, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Filed Nov. 13, 1992, Ser. No. 975,879

Int. Cl.[6] H02J *7/10*

U.S. Cl. 320—31 **12 Claims**

1. A smart battery pack for providing a source of portable electrical power, comprising:

one or more predetermined battery cells;

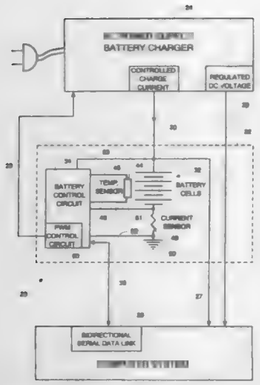
charging current sensing means for sensing the charging current supplied to said one or more battery cells;

temperature sensing means for sensing the temperature of said one or more battery cells;

voltage sensing means for sensing the voltage of said one or more battery cells; and

means responsive to said charging current sensing means, said temperature sensing means and said voltage sensing means

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for controlling the charging current applied to said one or more battery cells by generating a charge control signal, said charge control signal being a continuously variable reference signal which varies as a predetermined function of the charging current supplied to said one or more battery cells and the voltage and temperature of said one or more battery cells.

5,629,605

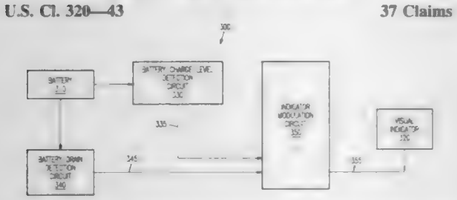
PULSEWIDTH MODULATED VISUAL INDICATOR FOR BATTERY STATUS

Thomas J. Lavan, and Jerry D. Gandre, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 24, 1995, Ser. No. 378,127

Int. Cl.[6] H01M *10/44;10/46;10/48*

U.S. Cl. 320—43 **37 Claims**



18. A method of indicating battery status, comprising the steps of:

receiving a charge level signal indicating a charge level of a battery into an indicator modulation circuit;

transmitting, in response to said receiving, a pulsewidth modulated indicator signal to an indicator having an inactive state and an active state, a duty cycle of said indicator signal being a function of said charge level, said indicator thereby toggling, at a frequency determined by said duty cycle, between said inactive and active states to provide an indication of said charge level; and,

measuring a period of time with a counter circuit in said indicator modulation circuit, said counter circuit thereby determining said duty cycle.

24. A method of indicating battery status, comprising the steps of:

sensing a charge level of a battery coupled to a battery charge level detection circuit, said battery charge level detection circuit transmitting a charge level signal indicating a value that is a function of said charge level;

sensing a drain rate of said battery with a battery drain detection circuit coupled to said battery, said battery drain detection circuit transmitting a drain rate signal indicating a value that is a function of said drain rate; and

receiving said charge level signal and said drain rate signal from said battery charge level detection circuit and said battery drain detection circuit, respectively, into an indicator modulation circuit, said indicator modulation circuit transmitting, in response thereto, a pulsewidth modulated indicator signal to a visual indicator having an inactive state and an active state, a duty cycle of said indicator signal being a function of said charge level and said drain rate, said indicator thereby toggling, at a frequency determined by said duty cycle, between said inactive and active states to provide an indication of remaining battery life; and

storing a plurality of values relating to said duty cycle, said indicator modulation circuit retrieving selected ones of said values to generate said indicator signal.

5,629,606

BATTERY CHARGING DEVICE FOR VEHICLE

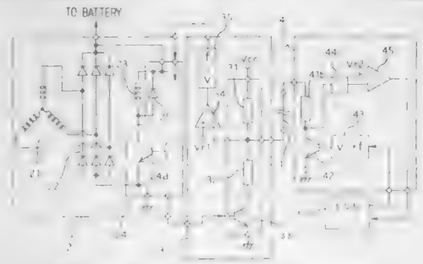
Tadatoshi Asada, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 8, 1995, Ser. No. 569,506

Claims priority, application Japan, Dec. 28, 1994, 6-328404; Sep. 22, 1995, 7-244748

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—28 **29 Claims**



1. A battery charging device for a vehicle comprising:

a generator;

a voltage source;

voltage regulating means having a power switch disposed near a vehicle generator, for controlling field exciting current so that the generator output voltage can be regulated to desired voltage;

a transmitting wire;

generator control signal transmitting means, disposed remote from said vehicle generator, for providing a vehicle-side terminal of said transmitting wire with a generator control signal to control generator operating condition;

generator control signal receiving means, disposed near said vehicle generator, for receiving said generator control signal from a generator-side terminal of said transmitting wire and providing said generator output voltage regulating means with said generator control signal;

generator condition signal transmitting means, disposed near said vehicle generator, for providing a generator-side terminal of said transmitting wire with a generator condition signal to represent generating condition of said vehicle generator; and

generator condition signal receiving means, disposed remote from said vehicle generator, for receiving said generator condition signal from said vehicle-side terminal of said transmitting wire;

wherein said generator control signal and said generator condition signal are combined and transmitted by the same transmitting wire.

5,629,607

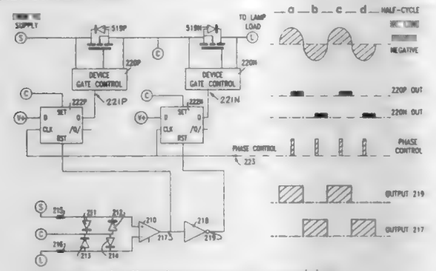
INITIALIZING CONTROLLED TRANSITION LIGHT DIMMERS

Michael Callahan, 40 W. 94th St., New York, N.Y. 10025; John K. Chester, 78 Washington Ave., High Bridge, N.J. 08829, and Robert M. Goddard, 448 E. 20th St., New York, N.Y. 10009

Continuation of Ser. No. 213,762, Mar. 16, 1994, abandoned, which is a continuation of Ser. No. 18,000, Feb. 11, 1993, Pat. No. 5,319,301, which is a continuation of Ser. No. 797,718, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 615,760, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 336,014, Apr. 10, 1989, Pat. No. 4,975,629, which is a continuation-in-part of Ser. No. 943,381, Dec. 17, 1986, Pat. No. 4,823,069, which is a continuation-in-part of Ser. No. 640,978, Aug. 15, 1984, Pat. No. 4,633,161. This application May 23, 1995, Ser. No. 448,076

Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—237 **14 Claims**



1. An electronic dimming apparatus comprising:

a semiconductor power controller for selectively coupling a lamp load with an alternating current supply, said alternating current supply supplying alternating current, said alternating current having positive and negative half-cycles, said semiconductor power controller including

at least one first semiconductor power device having a first control input said at least one first semiconductor power device coupling or uncoupling said lamp load with said alternating current supply during said positive half-cycles responsive to a control value then being applied to said first control input, and

at least one second semiconductor power device having a second control input said at least one second semiconductor power device coupling or uncoupling said lamp load with said alternating current supply during said negative half-cycles responsive to a control value then being applied to said second control input;

a control circuit coupled with said first and said second control inputs, said control circuit increasing a duration of a transition between said coupled and uncoupled conditions to a period greater than the minimum possible said duration and less than a remainder of said half-cycle, such that the electro-magnetic interference product of said transition is reduced, said control circuit applying control values to said first and said second control inputs, wherein the control value applied to said first control input can differ from the control value then being applied to said second control input.

5,629,608

POWER REGULATION SYSTEM FOR CONTROLLING VOLTAGE EXCURSIONS

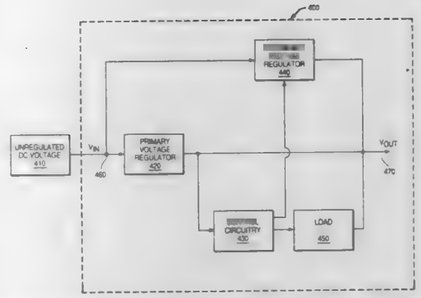
Gerald A. Budelman, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 28, 1994, Ser. No. 365,367

Int. Cl.[6] G05F *1/613*

U.S. Cl. 323—268 **31 Claims**

1. An apparatus for providing voltage regulation, comprising:



a first voltage regulator that provides a regulated output voltage at an output;

a second voltage regulator, coupled in parallel to the first voltage regulator, that regulates voltage with a faster transient response than the first voltage regulator;

a load component, coupled to the output, that sinks current at the output;

a first circuit that sets an allowable regulated output voltage range; and

a second circuit that compares the regulated output with the allowable regulated output voltage range and activates the second voltage regulator when the regulated output voltage is below the allowable regulated output voltage range and activates the load component when the regulated output is above the allowable output voltage range, wherein the second voltage regulator does not regulate voltage when the load component is activated.

5,629,609

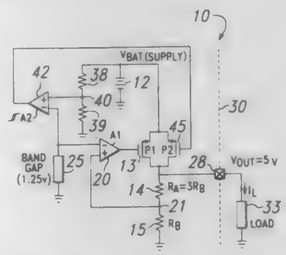
METHOD AND APPARATUS FOR IMPROVING THE DROP-OUT VOLTAGE IN A LOW DROP OUT VOLTAGE REGULATOR

Baoson Nguyen, Plano, and Fernando D. Carvajal, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1994, Ser. No. 207,863

Int. Cl.[6] G05F *1/56*

U.S. Cl. 323—269 **21 Claims**



1. A low voltage drop out circuit, comprising:

a voltage regulating transistor between a supply voltage and an output terminal;

an active feedback loop for controlling the voltage regulating transistor according to a magnitude of the supply voltage to control the voltage on the output terminal;

a reference voltage source to produce a reference voltage;

a switch in parallel with said voltage regulating transistor;

and a comparing circuit for determining when the supply voltage falls below the reference voltage to operate said switch.

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5,629,610
DUAL THRESHOLD CURRENT MODE DIGITAL PWM CONTROLLER

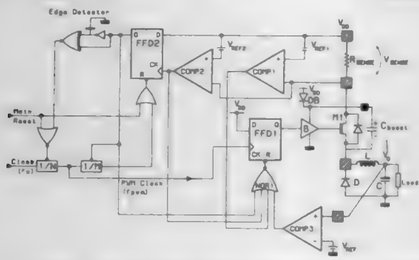
Giorgio Pedrazzini, Pavia; Giuseppe Scrocchi, Besana in Brianza; Paolo Cordini, Pavia, and Domenico Rossi, Cilavegna, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed May 8, 1995, Ser. No. 436,947

Claims priority, application European Pat. Off., May 6, 1994, 94830217

Int. Cl.[6] G05F *1/563*

U.S. Cl. 323—283 **22 Claims**



4. A digital, current mode, PWM control circuit for an output stage comprising a sensing resistance of an input current connected in series with a power switch of the output stage, a bistable driving circuit having a clock input suitable to receive a PWM clock signal and a reset input driven by an output of a multi-input logic circuit, comprising:

at least a first comparator of the voltage on said sensing resistance having a certain threshold and an output connected to a first input of said logic circuit;

at least a second comparator of the voltage on said sensing resistance, having a threshold higher than the threshold of said first comparator and an output connected to a second input of said logic circuit;

means driven by the output of said second comparator capable of generating a logic signal for disabling said power switch for a preset period of time, fed to a third input of said logic circuit.

5,629,611
CURRENT GENERATOR CIRCUIT FOR GENERATING SUBSTANTIALLY CONSTANT CURRENT

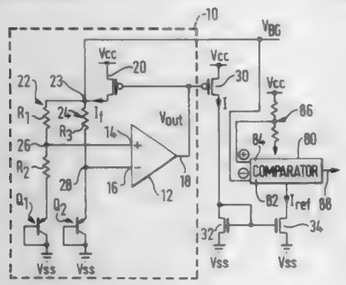
David H. McIntyre, Bristol, United Kingdom, assignor to SGS-Thomson Microelectronics Limited, Almondsbury Bristol, United Kingdom

Filed Aug. 24, 1995, Ser. No. 519,341

Claims priority, application United Kingdom, Aug. 26, 1994, 9417267

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **15 Claims**



1. A current generator circuit for generating a substantially constant reference current which includes a bandgap reference circuit comprising:

an operational amplifier having first and second inputs receiving signals respectively from intermediate nodes of first and second resistive chains, each resistive chain having in series a first terminal connected to a first potential, a unidirectional current control element, at least one resistive element and a second terminal, the second terminals of the resistive chains being connected at a junction node;

the operational amplifier having an output for supplying an output signal to a control terminal of an output device which has a controllable path connected between a power supply voltage and said junction node of said first and second resistive chains, the current generator circuit further comprising:

a current setting device which receives at a control terminal thereof the output signal of the operational amplifier and which has its controllable path connected between said power supply voltage and a current supply terminal to provide at said current supply terminal a substantially constant reference current.

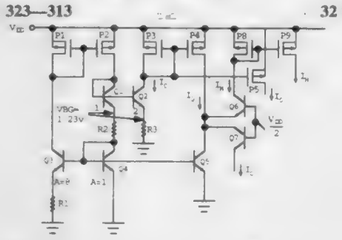
5,629,612
METHODS AND APPARATUS FOR IMPROVING TEMPERATURE DRIFT OF REFERENCES

Gregory L. Schaffer, Cupertino, Calif., assignor to Maxim Integrated Products, Inc., Sunnyvale, Calif.

Filed Mar. 12, 1996, Ser. No. 614,195

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **32 Claims**



1. A method of temperature compensating the output of a reference circuit to better achieve the desired output of the reference circuit over temperature comprising the steps of:

a) generating a first electrical parameter having a value which is substantially independent of temperature;

b) generating a second electrical parameter having a value which has a substantially constant value below a first reference temperature and which has a value which varies with temperature in a predetermined manner at temperatures above the first reference temperature, the first and second electrical parameters being generated by an integrated circuit on the same integrated circuit substrate as at least part of the reference circuit;

c) adjusting the output of the reference circuit when at the first reference temperature to obtain a desired output of the reference circuit at that temperature by applying a weighted portion of the first electrical parameter to the reference circuit; and

d) adjusting the output of the reference circuit when at a second temperature substantially above the first reference temperature to obtain a desired output of the reference circuit at that temperature by applying a weighted portion of the second electrical parameter to the reference circuit.

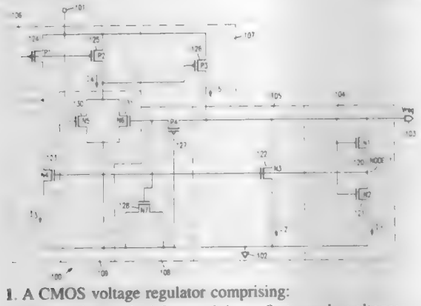
5,629,613
CMOS VOLTAGE REGULATOR

Philip R. Marzolf, Campbell, and Alan C. Rogers, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Mt. View, Calif.

Filed Oct. 4, 1994, Ser. No. 317,897

Int. Cl.[6] G05F *3/26*

U.S. Cl. 323—315 **16 Claims**



1. A CMOS voltage regulator comprising:

a first supply terminal for receiving a first supply voltage;

a second supply terminal for receiving a second supply voltage;

an output terminal for providing a regulated output voltage;

a first MOS circuit providing a first current path coupled between said output terminal and said second supply terminal, which develops a first current as a function of said regulated output voltage, said first MOS circuit comprising a first and a second MOS transistor having their current carrying paths coupled in series between said second voltage supply terminal and said output terminal, and a common node coupled to said current mirror circuitry;

a second MOS circuit providing a second current path coupled between said first supply terminal and said output terminal, which provides a second current from said first supply terminal to said output terminal as a function of said first current; and

MOS current mirroring circuitry responsive to said first current to provide control of said second current.

5,629,614
VOLTAGE-TO-CURRENT CONVERTER

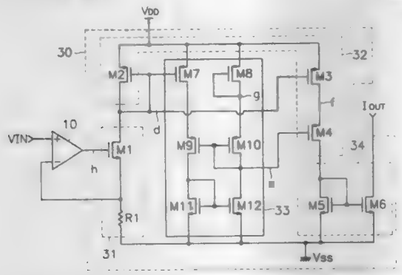
Myung-Jun Choe, Puchon, and Byeong-Whee Yun, Puchon-si, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 4, 1996, Ser. No. 584,210

Claims priority, application Rep. of Korea, Apr. 24, 1995, 95-9622

Int. Cl.[6] G05F *3/16;3/20*

U.S. Cl. 323—315 **2 Claims**



1. A voltage-to-current converter, comprising:

an amplifying means for amplifying an input voltage after receiving a constant voltage from a constant-voltage source to a noninverting terminal of said amplifying means as an input, thereby providing an amplified voltage as an output voltage;

a converting means for converting voltage input thereto to current after receiving said output voltage from said amplifying means, thereby providing an output current;

a current mirror for receiving said output current from said converting means as an input, and enabling two transistors of said current mirror to flow current of a similar value relative to one another;

an electric potential holding means for maintaining two electric potentials which are applied on respective drain terminals of said two transistors to be equal; and

an output current mirror for constantly maintaining current flowing out from said current mirror, which biases the electric potential of said drain terminal of a first transistor between said two transistors used in said current mirror by a predetermined value, and flows a constant voltage to a constant-current source output terminal of said output current mirror.

5,629,615
OSCILLOSCOPE CASING STRUCTURE

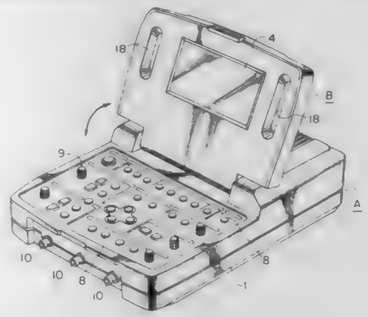
Fujio Nita, Sayama, and Kazuya Natori, Kodaira, both of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 309,737

Claims priority, application Japan, Sep. 21, 1993, 5-257694; Sep. 25, 1993, 5-056494 U

Int. Cl.[6] G01R *13/20*

U.S. Cl. 324—121 R **5 Claims**



1. An oscilloscope casing structure comprising:

a main unit having a unit base and a unit cover, said unit cover comprising at least a first portion and a second portion, an upper surface of which is provided at a height lower than an upper surface of said first portion;

an operating means arranged on the upper surface of said second portion of said unit cover, said operating means including a plurality of operational press buttons having a low height arranged at a center of said upper surface of said second portion of said unit cover and a plurality of operational turning knobs, each of which is higher than said press buttons and is arranged at the periphery of said upper surface of said second portion;

a display means constructed as a cover for said operating means when said display means is closed, said display means having a waveform display inside and recesses formed at a periphery thereof, the recesses being positioned so as to correspond to positions of the plurality of operational turning knobs, wherein said plurality of operational turning knobs extend within said recesses when said display means is closed; and

a hinge for pivotally connecting said display means to said unit cover so that said display means can be opened and closed.

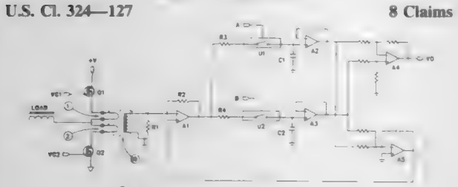
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5,629,616

CIRCUIT FOR MEASURING CURRENT IN CLASS-D AMPLIFIERS

Craig R. Weggel, Willow Grove, Pa., assignor to Performance Conrols, Inc., Horsham, Pa.

Filed Jul. 13, 1995, Ser. No. 501,957
Int. Cl.[6] G01R 31/28
U.S. Cl. 324—127 8 Claims



1. A circuit for measuring current flowing through a load, the circuit comprising:

a) a transformer having primary and secondary windings, the primary winding being connected to the load,

b) operational amplifier means, connected to the secondary winding, for applying a current to the secondary winding which current tends to cancel current in the secondary winding, the operational amplifier means having an output,

c) peak detection means, connected to the output of the operational amplifier means, for determining maximum and minimum voltages appearing at the output of the operational amplifier means, the peak detection means having two outputs corresponding to a maximum positive voltage and a maximum negative voltage, and

d) means for measuring a difference between the maximum positive and maximum negative voltages, wherein said difference is proportional to current flowing in the load,

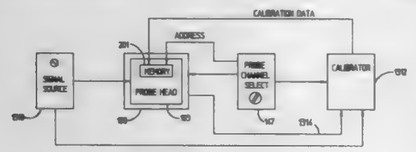
wherein current is applied to the load through electronic switches, the electronic switches being driven by control signals, and wherein the peak detection means include electronic switches controlled by signals which are derived from said control signals.

5,629,617

MULTIPLEXING ELECTRONIC TEST PROBE

Thomas F. Uhling, Monument; David J. Dascher, Colorado Springs; Kenneth Rush, Colorado Springs, and Keith C. Griggs, Colorado Springs, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 6, 1995, Ser. No. 369,607
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—158.1 17 Claims



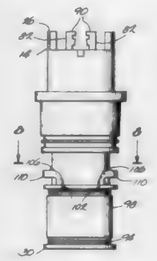
1. An analog electronic test probe of the type including a probe head, said probe head manually connectable to a circuit to be tested and including a plurality of probe inputs and a probe output; said test probe comprising selection means for selecting one of said probe inputs; and said probe head further comprising multiplexing means, responsive to said selection means, for electrically connecting said selected probe input to said probe output; said multiplexing means comprising an integrated circuit, and said test probe further including an on-chip spark gap.

5,629,618

HOUSING FOR A WHEEL SPEED SENSOR

Brian G. Babin, Clinton Township, Mich., and Daniel D. Jarodsky, St. Charles, Ill., assignors to SSI Technologies, Inc., Janesville, Wis.

Filed Dec. 27, 1994, Ser. No. 363,900
Int. Cl.[6] G01P 3/488; H01F 27/28
U.S. Cl. 324—173 4 Claims



1. A sensor for detecting the angular velocity of a rotating member, said sensor comprising:

a bobbin having an outer surface, said outer surface defining an annular recess;

at least one electrically conductive terminal mounted on said bobbin;

a coil mounted on said bobbin and within said recess;

a lead connected to said electrically conductive terminal and to said coil and having a portion of said lead extending between said recess and said terminal; and

a support on said bobbin for supporting and positioning adjacent to said bobbin said portion of said lead extending between said recess and said terminal, said support including a shelf having thereon a tang spaced from said outer surface and a sloped chute between said outer surface and said tang to receive said portion of said lead so that said shelf and said tang support and position said portion of said lead within said chute and against said outer surface and prevent radially outward movement of said portion away from said surface.

5,629,619

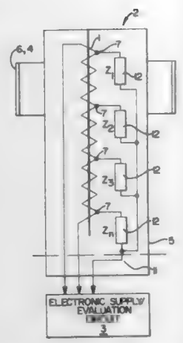
NONCONTACT DISTANCE-MEASURING SYSTEM HAVING AT LEAST ONE COIL AND METHOD OF NONCONTACT DISTANCE MEASURING OPERATING EITHER ON THE BASIS OF EDDY CURRENTS OR BY INDUCTANCE

Felix Mednikov, Samara, Russian Federation, assignor to Micro-Epsilon Messtechnik GmbH & Co. KG, Ortenburg, Germany

PCT No. PCT/DE93/00703, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO94/03778, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 6, 1993, Ser. No. 331,478
Claims priority, application Germany, Aug. 6, 1992, 42 25 968.1
Int. Cl.[6] G01B 7/14; G01D 5/20
U.S. Cl. 324—207.16 18 Claims

1. Noncontact distance measuring system comprising a sensor (2) which includes a measuring coil (1), an electronic supply/evaluation circuit (3), connected to the measuring coil and including means for supplying an alternating current to the coil, and an electrically and/or magnetically conductive test object (4) associated to the sensor (2), the measuring coil (1) being packaged in a coil housing (5), and the test object (4) surrounding the coil housing (5) at least in part and being movable in its longitudinal direction,

characterized in that the test object (4) is constructed as a ring (6) surrounding the coil housing (5) at a distance therefrom,



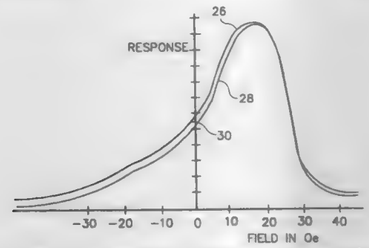
that the measuring coil (1) is provided with at least two voltage taps (7), so that voltage values of the voltage taps can be tapped one after the other, each between the individual voltage tap (7) and a reference potential, and that the electronic supply/evaluation circuit (3) comprises an electronic component (10) for processing a summation of the tapped voltages to produce a total voltage which is correlated with the position of the test object (4).

5,629,620

APPARATUS AND METHOD FOR MEASUREMENT OF MAGNETIC REMANENCE-THICKNESS PRODUCT OF THIN MAGNETIC LAYERS

Frederick J. Jeffers, Escondido, and Neil Smith, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1995, Ser. No. 398,197
Int. Cl.[6] G01R 33/12; G01N 27/76
U.S. Cl. 324—210 3 Claims



1. A method of measuring the remanence-thickness product of a magnetic material, comprising the steps of:

stationarily mounting a thin rectangular magnetoresistive (MR) element in a first plane, said MR element having a longitudinal edge;

stationarily mounting a short piece of thin, planar, magnetic material having an edge in a second plane perpendicular to said first plane of said MR element, said edge of said magnetic material being close to and above said edge of said MR element, said magnetic material being magnetized to saturation with its magnetization lying perpendicular to said magnetic material edge and in the plane of said magnetic material; and

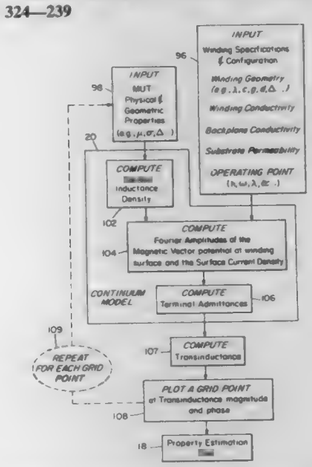
biasing said MR element to detect a magnetic field from said magnetic material, said magnetic field arising from the discontinuity in magnetic material magnetization occurring at said edge of said magnetic material, said edge being perpendicular to said magnetization.

5,629,621

APPARATUS AND METHODS FOR OBTAINING INCREASED SENSITIVITY, SELECTIVITY AND DYNAMIC RANGE IN PROPERTY MEASUREMENT USING MAGNETOMETERS

Neil J. Goldfine, Newton, Mass., and James R. Melcher, deceased, late of Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 803,504, Dec. 6, 1991, Pat. No. 5,453,689.
This application Jun. 2, 1995, Ser. No. 460,664
Int. Cl.[6] G01R 33/12; G01N 27/72;27/82
U.S. Cl. 324—239 6 Claims



1. A method for generating a property estimation grid for use with a magnetometer for measuring preselected properties of a material comprising the steps of:

a) defining physical and geometric properties for a material including preselected properties of the material;

b) defining operating point parameters and a winding geometry and winding configuration for the magnetometer;

c) inputting the material properties, the operating point parameters and the magnetometer winding geometry and configuration into a model to compute an input/output terminal relation value;

d) recording the terminal relation value as a property estimation grid point;

e) adjusting the preselected properties of the material and repeating steps c) and d).

5,629,622

MAGNETIC FIELD SENSE SYSTEM FOR THE PROTECTION OF CONNECTED ELECTRONIC DEVICES

Steven A. Scampini, Bedford, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 11, 1995, Ser. No. 501,264
Int. Cl.[6] G01R 33/02;33/07; A61B 5/055; H02H 7/00
U.S. Cl. 324—247 8 Claims

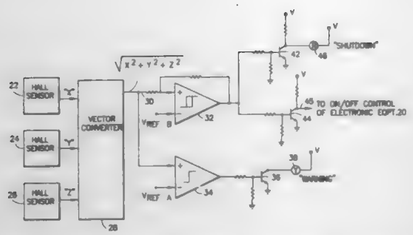
1. A circuit for protection of a transportable electronics system in the presence of a high level electro-magnetic field, said circuit comprising:

field sense means for providing output signals indicative of component field strengths of said electro-magnetic field;

circuit means connected to said field sense means and responsive to said output signals for providing an output having a magnitude indicative of a vector strength of said electro-magnetic field;

first indicator means responsive to an output from said circuit means reaching a first threshold, for manifesting a signal that said vector strength of said electro-magnetic field has reached a cautionary level; and

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second indicator means including a comparator for issuing an indication which disables said electronic system when an output from said circuit means reaches a second threshold that is higher than said first threshold, said second indicator means further operative to remove said indication only when said output from said circuit means falls below said first threshold.

5,629,623

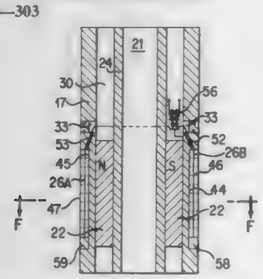
PULSED NUCLEAR MAGNETISM TOOL FOR FORMATION EVALUATION WHILE DRILLING

Abdurrahman Sezginer, Brookfield, and Robert L. Kleinberg, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Continuation-in-part of Ser. No. 200,815, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 922,254, Jul. 30, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 338,317

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—303 **10 Claims**



1. A method comprising:

drilling a borehole in an earth formation; and

making nuclear magnetic resonance (NMR) measurements while the borehole is being drilled, including:

a) producing a static magnetic field from within a drill collar and into the formation;

b) producing an oscillating magnetic field from the drill collar into the formation to excite nuclei of materials in the formation; and

c) detecting resulting signals induced in the formation and determining a property of the formation in light of the detected signals.

5,629,624

SWITCHED FIELD MAGNETIC RESONANCE IMAGING

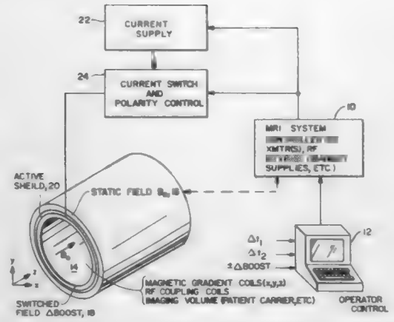
Joseph W. Carlson, Kensington; Lawrence E. Crooks, Richmond, and Leon Kaufman, San Francisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 29, 1990, Ser. No. 545,068

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **13 Claims**

1. A magnetic resonance imaging method performed with a constant substantially homogeneous, static polarizing magnetic field B_o generator and a plurality of pulsed gradient magnetic field G_x, G_y, G_z generators applied to nuclei to be imaged, said method comprising the steps of:



(a) applying a switched further polarizing magnetic field to said nuclei during a time interval Δt_1, which is less than the spin-lattice relaxation constant T1 NMR parameter of said nuclei.

(b) performing an NMR pulse sequence including application of at least one RF NMR nutation pulse and a responsive RF NMR signal reception time window for acquiring MRI data; and

wherein step (a) occurs during occurrence of step (b) and wherein said further polarizing magnetic field opposes said static magnetic field B_o.

5,629,625

PROCESS FOR ADJUSTING AS TO FREQUENCY, PARTICULARLY MICROWAVE BRIDGES, AND DEVICE EMBODYING SUCH A PROCESS

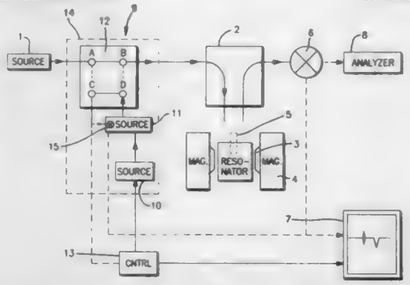
Victor Ringeisen, Riedseltz, and Laurent Martinache, Haguenau, both of France, assignors to Sadis Bruker Spectrospin, Societe Anonyme de Diffusion de l'Instrumentation Scientifique, Bruker Spectrospin (Societe Anonyme a Directive), Wissembourg, France

Filed Oct. 19, 1995, Ser. No. 545,100

Claims priority, application France, Oct. 19, 1994, 94 12652

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—316 **13 Claims**



1. Process for tuning and adjusting, as to frequency, emitter/receiver assemblies comprising microwave bridges allowing microwave radiation to be coupled to a resonator disposed in a static magnetic field and adapted to receive a sample, the process comprising: subjecting a resonator (**3**) to radiation from a secondary independent microwave source (**10**) sweeping a band of frequencies, said band of frequencies including a frequency (F) of a radiation delivered by a principal microwave source (**1**), said radiation from the secondary microwave source (**10**) being mixed, before application to the resonator (**3**), with strongly attenuated radiation from the principal microwave source (**1**); detecting radiation reflected by said resonator (**3**) and said mixed radiation; marking relative positions in the frequency spectrum of the frequency (F) and of a resonance frequency (Fr) of said resonator (**3**); varying the frequency (F) of radiation delivered by the principal microwave source (**1**) by controlling, in real time, the effect of this variation on the relative positions of said frequencies (F and Fr); and subjecting at least one sample (**5**), and a resonator (**3**) assembly to the radiation delivered, in an unattenuated manner, from the principal microwave source (**1**) after tuning of the frequency (**5**) relative to the resonance frequency (Fr) of said resonator (**3**).

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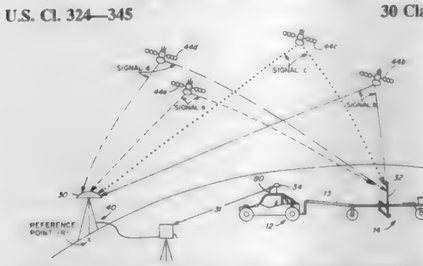
APPARATUS AND METHOD FOR MEASURING BURIED FERROMAGNETIC OBJECTS WITH A HIGH ACCURACY OF POSITION AND IN SYNCHRONIZATION WITH A SYNC PULSE PROVIDED BY A GLOBAL POSITIONING SYSTEM

Richard J. Russell, Chelmsford; Alan L. Crandall, Lunenburg; Robert M. Siegel, West Newton; John E. Foley, Lowell; Thomas A. Glenn, Reading, all of Mass., and Thomas J. Gorman, Middletown, R.I., assignors to Geo-Centers, Inc., Newton Centre, Mass.

Filed Jul. 12, 1994, Ser. No. 273,600

Int. Cl.[6] G01V *3/08;3/00*

U.S. Cl. 324—345 **30 Claims**



1. In a method for detecting at an earth's surface anomalies in an earth's magnetic field caused by buried ferromagnetic objects, an improvement comprising:

providing a plurality of magnetometers in a predetermined array on a mobile platform movable on the earth's surface;

providing a fixed station on the earth's surface;

collecting, on the mobile platform, pseudo range data and range correction data from a global positioning system (GPS) and the fixed station in synchronization with and in a first time period centered around a sync pulse signal provided by the GPS; and

traversing the mobile platform over an area on the earth's surface while collecting magnetic field strength data, wherein the collecting of the magnetic field strength data is performed in a second time period initiated upon receipt of the sync pulse signal.

5,629,627

INSPECTION DEVICE FOR A WATERPROOF CONNECTOR

Takanari Hoshino, and Atsushi Takani, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

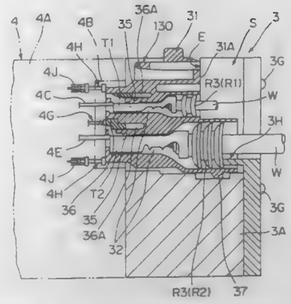
Filed Jun. 7, 1995, Ser. No. 479,221

Claims priority, application Japan, Jun. 13, 1994, 6-130525

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—538 **16 Claims**

1. An inspection device for an electrical connector having a housing, a terminal accommodation chamber which extends through the housing, a terminal within the chamber and a closure plug for one end aperture of the chamber, said closure plug being integral with said terminal, and wherein said device comprises a frame having a position setting surface defining a pre-determined inspection position for a housing of an electrical connector, a stopping member movable with respect to the frame to hold said housing in said pre-determined inspection position, and a pressing member of one of the frame and stopping members, the pressing member being positioned to abut a closure plug which is not fully inserted in the housing so as to press the closure plug into the housing as the housing is moved into said pre-determined inspection position in use.



5,629,628

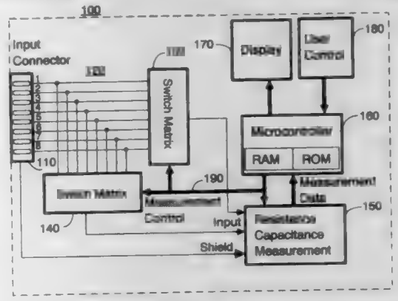
INSTRUMENT AND METHOD FOR TESTING LOCAL AREA NETWORK CABLES

Mark E. Hinds; Robert J. Lewandowski, both of Seattle; Thomas P. Locke, Woodinville, and Tzafrir Sheffer, Seattle, all of Wash., assignors to Fluke Corporation, Everett, Wash.

Division of Ser. No. 222,156, Apr. 4, 1994, Pat. No. 5,559,427. This application May 23, 1996, Ser. No. 652,767

Int. Cl.[6] G01R *27/04*

U.S. Cl. 324—628 **10 Claims**



1. In a LAN cable test instrument, a method for determining a set of twisted-wire pairs within a LAN cable containing a plurality of wires, comprising:

(a) measuring capacitance between each pair of said wires within said LAN cable to produce a set of capacitance measurement values;

(b) selecting a subset of said set of capacitance measurement values which are substantially higher than all remaining capacitance measurement values;

(c) comparing each of said capacitance measurement values in said subset with each of said remaining capacitance measurement values in said set to determine a minimum ratio of

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paired capacitance to unpaired capacitance wherein an error signal is generated if said minimum ratio is less than a predetermined figure of merit; and

(d) displaying said twisted-wire pairs according to said subset.

5,629,629

CIRCUIT ARRANGEMENT FOR DETERMINING DIFFERENCES IN CAPACITANCE

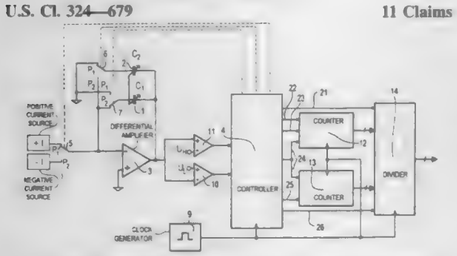
Reinhard Tielert, Winnweiler, and Andreas Hildebrandt, Speyer, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 4, 1996, Ser. No. 627,407

Claims priority, application Germany, Apr. 6, 1995, 19 513 022.7

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—679 **11 Claims**



1. A circuit arrangement for determining a difference between a capacitance of a first capacitor and a capacitance of a second capacitor, comprising:

a differential amplifier having an inverting input and a non-inverting input and having an output, a positive current source that delivers a current with a constant current intensity and a first flow direction, a negative current source that delivers a current with constant current intensity and a second flow direction opposite to the first flow direction, a ground terminal, a control device, a first switch device and a second switch device;

said first switch device having first and second switch positions, in the first switch position the positive current source being connected to the inverting input of the differential amplifier and in the second switch position the negative current source being connected to the inverting input of the differential amplifier;

the non-inverting input of said differential amplifier connected to the ground terminal;

said second switch device configured such that in a first switch position a first terminal of the first capacitor is connected to the inverting input of the differential amplifier and a first terminal of the second capacitor is connected to the non-inverting input of the differential amplifier, and such that in a second switch position the first terminal of the first capacitor is connected to the non-inverting input of the differential amplifier and the first terminal of the second capacitor is connected to the inverting input of the differential amplifier;

second terminals of said first and second capacitors connected to the output of said differential amplifier and to an input of said control device;

said control device synchronously switching said first switch device and said second switch device;

device for determining a time between two switching events and the voltage occurring at the first and second capacitors, for adding said times and for determining values required for defining a difference in capacitance between the first and second capacitances.

5,629,630

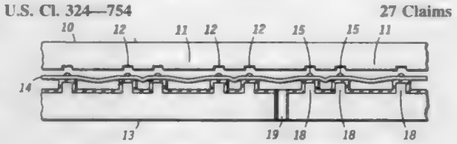
SEMICONDUCTOR WAFER CONTACT SYSTEM AND METHOD FOR CONTACTING A SEMICONDUCTOR WAFER

Patrick F. Thompson, Chandler; William M. Williams, Gilbert; Scott E. Lindsey, Mesa, all of Ariz., and Barbara Vasquez, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1995, Ser. No. 395,127

Int. Cl.[6] G01R *1/06*

U.S. Cl. 324—754 **27 Claims**



6. A semiconductor wafer contact test system comprising:

a base including a grid of raised supports;

a compliant layer overlying the grid of raised supports; and

a removable flexible circuit layer overlying the compliant layer, the removable flexible circuit layer including a grid of electrical contacts, each of the grid of electrical contacts aligned to a different one of the grid of raised supports.

5,629,631

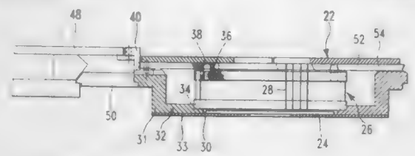
INTERFACE CARD FOR A PROBE CARD ASSEMBLY

Charles H. Perry, Poughkeepsie; Tibor L. Bauer, Hopewell Junction; David C. Long, Wappingers Falls; Bruce C. Pickering, Wappingers Falls, and Pierre C. Vittori, Cold Spring, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 227,936, Apr. 15, 1994, Pat. No. 5,546,012. This application Apr. 24, 1995, Ser. No. 427,395

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—755 **5 Claims**



1. An interface card comprising:

a planar multilayer ceramic body having wiring metallization on a top layer, a first internal layer, and a bottom layer, wherein said ceramic body and wiring metallization have been co-fired from the green unsintered state;

the wiring metallization on the top layer comprising contact pads for making contact with at least one connector;

the wiring metallization on the bottom layer comprising contact pads for making contact with at least one connector, wherein all the contact pads on the top layer are offset from all the contact pads on the bottom layer such that the contact pads on the top layer are closer to the periphery of said interface card than are the contact pads on the bottom layer; and

the wiring metallization on the first internal layer electrically connecting the contact pads on the top layer with the contact pads on the bottom layer.

5,629,632

SYSTEM FOR TESTING ELECTRIC PROPERTIES OF AN OBJECT

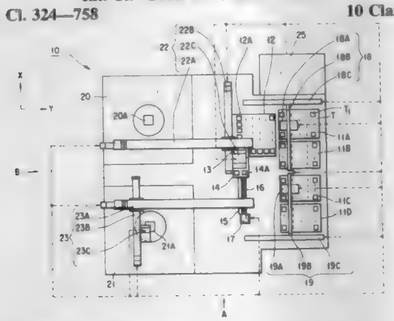
Kenichi Tsutsumi, Yokohama, Japan, assignor to Tokyo Electron Limited, Japan

Filed Mar. 13, 1996, Ser. No. 614,743

Claims priority, application Japan, Mar. 14, 1995, 7-081738

Int. Cl.[6] G01R *1/02*; **B07C** *5/36*

U.S. Cl. 324—758 **10 Claims**



1. A tester system comprising

first areas on which objects to be tested are mounted;

a first movable alignment section for aligning objects to be tested;

first and second tester means each having terminals electrically connected to each object and serving to test electric properties of each object to be tested, while electrically contacting its terminals with each object;

a second movable alignment section for aligning the objects after they have been tested;

second areas on which the objects are mounted after they have been tested;

a loader for transferring a predetermined number of objects from the first areas to the first alignment section;

a first carrier mechanism for holding the predetermined number of objects aligned on the first alignment section and transferring them to the first tester means, electrically and individually connecting the object thus transferred to the terminals of the first tester means, and transferring the objects to the second alignment section after the testing of all objects held is finished;

a second carrier mechanism for holding the predetermined number of objects aligned on the first alignment section and transferring them to the second tester means electrically and individually connecting the object thus transferred to the terminals of the second tester means, and transferring the objects to the second alignment section after the testing of all objects held is finished;

an unloader for transferring the predetermined number of tested objects aligned on the second alignment section to the second areas; and

control means for controlling the first and second carrier mechanisms.

5,629,633

METHOD FOR PREDICTING AN OUTPUT CURRENT OF A TRANSISTOR

Eiichi Sakao, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 18, 1996, Ser. No. 588,251

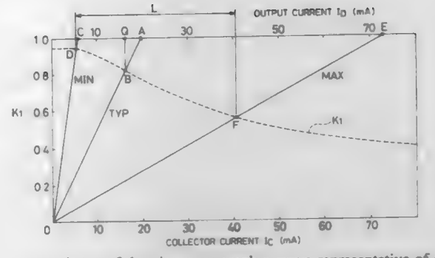
Claims priority, application Japan, Jan. 19, 1995, 7-006438

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—768 **7 Claims**

1. A method for predicting an output current of a transistor, comprising:

a first step of obtaining a relationship between a direct current amplification factor and an output current of a transistor;



a second step of drawing on a graph a curve representative of a ratio of said direct current amplification factor to a direct current amplification factor of a predetermined value for said output current from said relationship obtained in the first step;

a third step of obtaining an output current at a driving voltage to drive said transistor by regarding the direct current amplification factor as a direct current amplification factor of a predetermined value;

a fourth step of plotting a value of the output current obtained in the third step on the graph on a same scale as the output current of the graph obtained in the second step and connecting the plotted value to an origin where the output current is zero by a straight line; and

a fifth step of reading out an output current at an intersection of the curve in the second step and the straight line in the fourth step.

5,629,634

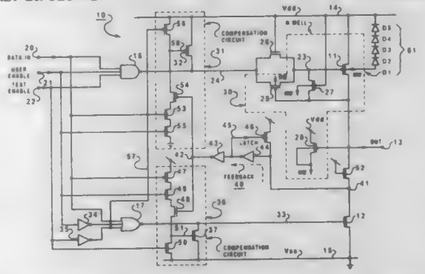
LOW-POWER, TRISTATE, OFF-CHIP DRIVER CIRCUIT

Allen R. Carl, Essex Junction, and Ronald A. Piro, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1995, Ser. No. 517,227

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—27 **14 Claims**



1. An output driver circuit for a semiconductor chip, comprising:

a) a predriver circuit having a data input, an enable input, a first data output, and a second data output;

b) a push, pull out put circuit having an output node for coupling to an off-chip connection, and having first and second inputs, said first input of said output circuit being coupled to receive said first data output of said predriver circuit;

c) a first compensator circuit having inputs coupled to said data input, said enable input, and said first data output of said predriver circuit;

d) a second compensator circuit having inputs coupled to said data input, said enable input, and said second data output of said predriver circuit; said first and second compensator circuits preventing change of voltage on said first and second inputs of said push-pull output circuit at a rate as high as the rate of change of voltage at said first and second data output; and

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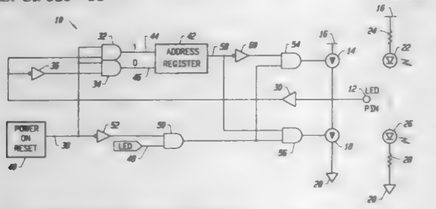
e) a circuit formed in a well of said semiconductor chip, having an input coupled to receive said second data output of said predriver circuit and having an output coupled to said second input of said push-pull output circuit; said circuit formed in a well preventing damage to said output driver circuit due to overvoltage on said output node.

5,629,635

ADDRESS PROGRAMMING VIA LED PIN

T. Kevin Reno, Frederick, Md., assignor to ICS Technologies, Inc., Valley Forge, Pa.

Filed Sep. 26, 1995, Ser. No. 533,962
Int. Cl.[6] H03K *19/173;19/0175*
U.S. Cl. 326—38 **14 Claims**



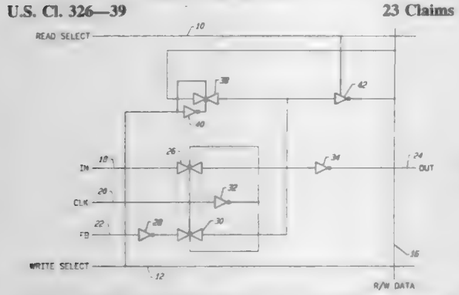
1. An integrated circuit comprising:
a pin for connecting to a LED, only a single pin being connectable to each LED;
an LED driver connected to said pin;
an input buffer connected to said pin;
a programmable memory coupled to said input buffer; and
means for enabling the input of a voltage on said pin to said programmable memory during a first mode and enabling said LED driver during a second mode, a connection of said LED providing a programming input.

5,629,636

RAM-LOGIC TILE FOR FIELD PROGRAMMABLE GATE ARRAYS

Michael G. Ahrens, Sunnyvale, Calif., assignor to Crosspoint Solutions, Inc., Santa Clara, Calif.

Continuation of Ser. No. 325,714, Oct. 19, 1994, Pat. No. 5,465,055. This application Aug. 1, 1995, Ser. No. 521,375
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—39 **23 Claims**



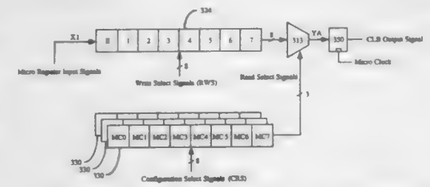
23. In a field programmable gate array, a circuit block comprising:
a first transmission gate, responsive to a first conducting line, coupled in parallel to a second conducting line;
a multiplexer having first and second inputs, a control input and an output, said output being coupled to said first transmission gate; and
a second transmission gate, responsive to a third conducting line, coupled between said first transmission gate and said multiplexer output.

5,629,637

METHOD OF TIME MULTIPLEXING A PROGRAMMABLE LOGIC DEVICE

Stephen M. Trimberger, San Jose; Richard A. Carberry, Los Gatos; Robert A. Johnson, San Jose, and Jennifer Wong, Fremont, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Aug. 18, 1995, Ser. No. 517,017
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—93 **14 Claims**



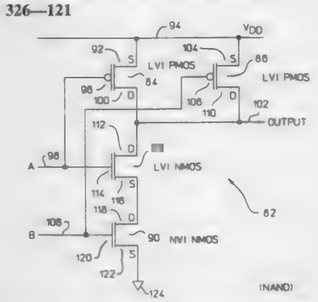
1. A method of clocking a time multiplexed programmable logic device implementing a user's circuit, said circuit having a fastest clock and at least one other clock, said method comprising:
implementing said fastest clock as a user clocks, wherein said user clock defines a cycle during which the output signals for the combinational logic of said circuit are updated; and
implementing any other synchronous clock with a micro cycle register enable signal.

5,629,638

ADAPTIVE THRESHOLD VOLTAGE CMOS CIRCUITS

Rajendra Kumar, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 153,937, Nov. 17, 1993, abandoned. This application Oct. 12, 1995, Ser. No. 542,235
Int. Cl.[6] H03K *19/0948;19/017*
U.S. Cl. 326—121 **8 Claims**



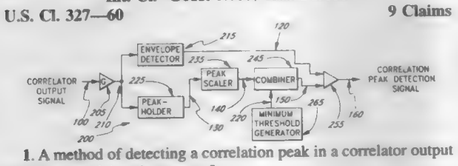
1. A CMOS circuit operatively connectable to first and second potentials, comprising:
a PMOS transistor having a threshold voltage, said PMOS transistor having a source terminal operatively connected to the first potential, a gate terminal for receiving a first input signal, and a drain terminal operatively connected to an output terminal; and
a first and a second NMOS transistor, said first NMOS transistor having a source terminal operatively connected to the second potential, a gate terminal for receiving a second input signal, and a drain terminal, and said second NMOS transistor having a source terminal connected to said drain terminal of said first NMOS transistor, a gate terminal connected to receive said first input signal, and a drain terminal connected said output terminal;
wherein the threshold voltage of one of said NMOS transistors is a standard threshold voltage and the threshold voltage of the other NMOS transistor is lower than the standard threshold voltage, and wherein the threshold voltages are made different so as to optimize speed of said CMOS circuit while minimizing leakage current,
wherein the first potential is a supply potential and the second potential is a ground potential, and
wherein the lower threshold voltage is about 5% of the first potential.

5,629,639

CORRELATION PEAK DETECTOR

Claude M. Williams, Colorado Springs, Colo., assignor to Omnipoint Corporation, Colorado Springs, Colo.

Filed Jun. 7, 1995, Ser. No. 476,206
Int. Cl.[6] G01R *19/00;* **H03K** *5/153*
U.S. Cl. 327—60 **9 Claims**



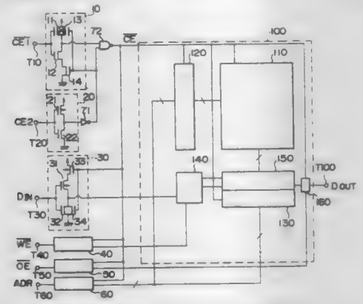
1. A method of detecting a correlation peak in a correlator output signal, comprising the steps of:
detecting an envelope of the correlator output signal to produce a correlator output envelope signal:
detecting and holding a peak of the correlator output signal to produce a peak detection signal;
scaling the peak detection signal to produce a peak threshold signal;
comparing the magnitude of the correlator output envelope signal with the magnitude of the peak threshold signal to produce a correlation peak detector output signal
said step of comparing the magnitude of the correlator output envelope signal with the magnitude of the peak threshold signal including the step of determining whether the magnitude of the correlator output envelope signal exceeds the sum of the magnitude of the peak threshold signal and the magnitude of a minimum threshold signal.

5,629,640

SEMICONDUCTOR MEMORY DEVICE

Noboru Egawa, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 306,916, Sep. 16, 1994, Pat. No. 5,500,614. This application Dec. 26, 1995, Ser. No. 587,787
Int. Cl.[6] H03K *17/16*
U.S. Cl. 327—107 **7 Claims**



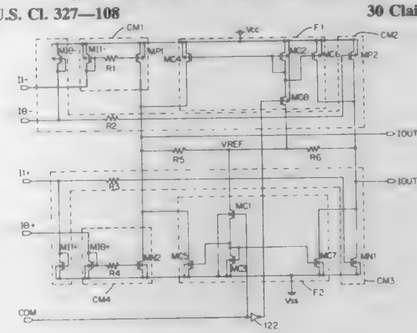
1. A semiconductor memory device comprising:
a first input buffer that outputs a CMOS level signal in response to a first TTL level input signal, said first input buffer having a first transistor of a first conductivity, the first transistor having a gate to which the first TTL level input signal is input; and
a second input buffer that responds to a second TTL level input signal and the CMOS level signal, said second input buffer having a second transistor of the first conductivity, the second transistor having a gate to which the second TTL level input signal is input;
wherein a gate length of the second transistor is greater than a gate length of the first transistor.

5,629,641

DIFFERENTIAL CMOS CURRENT AMPLIFIER WITH CONTROLLED BANDWIDTH AND COMMON MODE DISTORTION

Yi Cheng, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 6, 1996, Ser. No. 595,870
Int. Cl.[6] H03K *3/00;17/687;* **H02M** *7/162*
U.S. Cl. 327—108 **30 Claims**



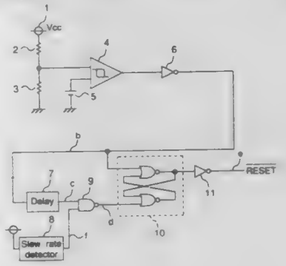
1. A line driver comprising:
a plurality of input terminals,
first and second output terminals, and
a plurality of current mirror circuits coupled to said plurality of input terminals, said plurality of current mirror circuits including a first pair of current mirror circuits connected to said first output terminal, and a second pair of current mirror circuits connected to said second output terminal, said first and second output terminals being connected with each other to arrange the current mirror circuits into a bridge configuration.

5,629,642

POWER SUPPLY MONITOR

Yoshimasa Yoshimura, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 579,135
Claims priority, application Japan, Aug. 18, 1995, 7-210570
Int. Cl.[6] H03L *7/00;* **H03K** *3/02*
U.S. Cl. 327—142 **10 Claims**



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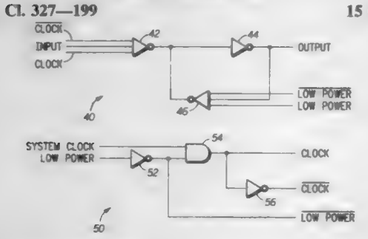
1. A power supply monitor comprising:
a first voltage generator generating a first voltage in proportion to a power supply voltage;
a reference voltage generator generating a reference voltage;
a comparator supplying a first signal when the reference voltage generated by said reference voltage generator is larger than the first voltage generated by said first voltage generator;
a slewing rate detector supplying a second signal when a slewing rate of decreasing in said power supply voltage is larger than a threshold value; and
a signal generator supplying a signal set by a trailing edge of the second signal received from said slewing rate detector except a period after the second signal is received and reset by a trailing edge of the first signal received from said comparator.

5,629,643

FEEDBACK LATCH AND METHOD THEREFOR

Claude Moughanni, and Jeffrey E. Maguire, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 343,003, Nov. 21, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,181
Int. Cl.[6] H03K *3/356*
U.S. Cl. 327—199 **15 Claims**



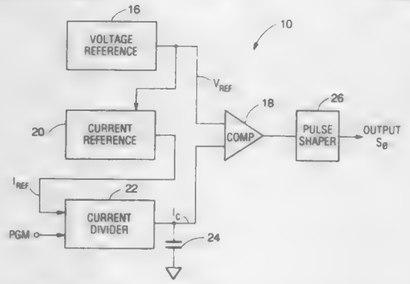
1. A latch comprising:
a generation circuit having a first input terminal for receiving a periodic clock signal, a second input terminal for receiving a low power signal, and an output terminal for providing a gated clock signal, said generation circuit providing said periodic clock signal to said output terminal thereof if said low power signal is in a first logic state, said generation circuit providing said gated clock signal at a predetermined logic state if said low power signal is in a second logic state;
a first gated inverter having a data input terminal for receiving an input signal of the latch, a control input terminal coupled to said output terminal of said generation circuit, and an output terminal;
a second inverter having an input terminal coupled to said output terminal of said first gated inverter, and an output terminal for providing an output signal of the latch; and
a third gated inverter having a data input terminal coupled to said output terminal of said second inverter, a control input terminal for receiving said low power signal, and an output terminal coupled to said input terminal of said second inverter, wherein when said low power signal is in said first logic state, said third gated inverter provides an output signal to said output terminal thereof to be a complement of an input signal at said data input terminal thereof, and when said low power signal is in said second logic state, said third gated inverter provides said output signal in a high impedance state;
wherein when said low power signal is in said first logic state, said latch functions as a dynamic latch, and when said low power signal is in said second logic state, said latch functions as a static latch.

5,629,644

ADJUSTABLE TIMER CIRCUIT

Christophe J. Chevallier, Palo Alto, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jul. 28, 1995, Ser. No. 509,035
Int. Cl.[6] H03K *3/023;5/13*
U.S. Cl. 327—393 **59 Claims**



1. A timer circuit comprising:
a timing capacitor;
a reference voltage source for supplying a first reference voltage, with the first reference voltage being relatively independent of variations in a primary supply voltage for the timer circuit
a current source, operably coupled to the reference voltage source, with the current source configured to produce a reference current having a magnitude related to the first reference voltage;
a current divider, operably coupled to the timing capacitor and to the current source, the current divider being configured to produce a unidirectional capacitor current for the timing capacitor, with the capacitor current having a magnitude which is equal to the magnitude of the reference current divided by a value greater than one;
a comparator circuit, operably coupled to the timing capacitor, the comparator circuit being configured to compare a magnitude of a voltage across the timing capacitor with a comparison voltage having a magnitude related to the first reference voltage and producing a comparator output based upon the comparison, with the comparator means including a pair of differentially-connected transistors having respective control terminals connected to receive the voltage across the timing capacitor and to receive the comparison voltage; and
output circuitry, operably coupled to the comparator circuit, said output circuitry configured to produce a timer output in response to the comparator output.

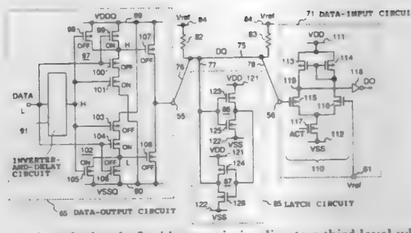
5,629,645

TRANSMISSION-LINE-VOLTAGE CONTROL CIRCUIT AND ELECTRONIC DEVICE INCLUDING THE CONTROL CIRCUIT

Yoshinori Okajima, and Kazuyuki Kanazashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 14, 1995, Ser. No. 403,945
Claims priority, application Japan, May 13, 1994, 6-099990
Int. Cl.[6] H03K *19/094*
U.S. Cl. 327—399 **20 Claims**

1. A transmission-line-voltage control circuit for controlling a level of a transmission line, a signal of a first level indicating a logic high and a signal of second level indicating a logic low being supplied to the transmission line, the transmission-line-voltage control circuit comprising:
a comparing means for comparing said signal supplied to the transmission line to a reference voltage value;
a circuit means, connected to the transmission line, for supplying a transmission signal to said transmission line and for reducing, after said signal of the first level is supplied to the transmission line and compared to said reference voltage



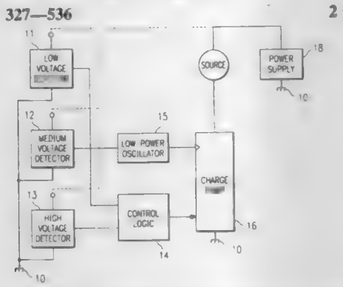
value, the level of said transmission line to a third level which indicates the logic high and is less than the first level, and for increasing, after said signal of the second level is supplied to the transmission line and compared to the reference voltage value, the level of the transmission line to a fourth level which indicates the logic low and is higher than the second level,
wherein when the transmission signal in the transmission line transits to another logic level, said transmission signal transits from said third level to said second level and from said fourth level to said first level and, wherein said circuit means latches the level of said transmission line.

5,629,646

APPARATUS AND METHOD FOR POWER REDUCTION IN DRAM UNITS

Vinod J. Menezes, Bangalore, India; Subramani Kengeri, Norwood, Mass., and Raghava Madhu, Kerala, India, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1995, Ser. No. 407,568
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—536 **2 Claims**



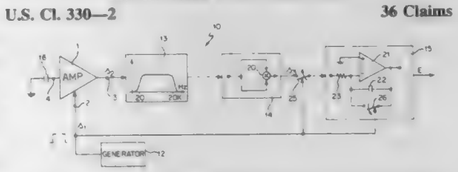
1. Apparatus for controlling the substrate bias voltage in a DRAM unit, said apparatus comprising:
a charge pump coupled to a substrate and responsive to control signals, said charge pump operating at a first power level to raise an absolute value of said substrate bias voltage in response to a first control signal, said charge pump turning off in response to a second control signal, said charge pump operating at a second power level to raise an absolute value of said substrate bias voltage in response to a third control signal; and
a first voltage detector for providing said first control signal when an absolute value of said substrate bias voltage is below a preselected first magnitude;
a second voltage detector for providing said second control signal when an absolute value of said substrate supply voltage is above a preselected second magnitude; and
a third voltage detector for providing said third control signal when an absolute value of said substrate bias voltage is below a preselected third magnitude, said preselected third magnitude being between said first magnitude and said second magnitude.

5,629,647

AUDIO AMPLIFIER SWITCHING NOISE MEASURING METHOD AND DEVICE

Andrea Fassina, Milan; Giovanni Avenia, Gorgonzola, and Elia Pagani, Bergamo, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jun. 21, 1995, Ser. No. 493,367
Claims priority, application European Pat. Off., Jun. 22, 1994, 94830302
Int. Cl.[6] H03F *21/00;* **G01R** *29/26*
U.S. Cl. 330—2 **36 Claims**



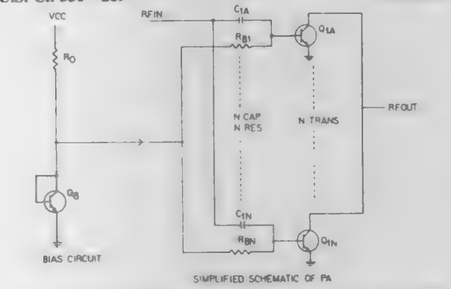
1. A method of measuring switching noise of an audio amplifier, comprising the steps of:
switching said audio amplifier between at least two different operational states which generates a noise signal at an output of the audio amplifier;
filtering said noise signal to obtain an audio band signal; and
determining a value of energy contained in said audio band signal.

5,629,648

HBT POWER AMPLIFIER

William J. Pratt, Greensboro, N.C., assignor to RF Micro Devices, Inc., Greensboro, N.C.

Continuation of Ser. No. 412,667, Mar. 29, 1995. This application Aug. 30, 1996, Ser. No. 697,897
Int. Cl.[6] H03F *3/68;1/30*
U.S. Cl. 330—289 **20 Claims**



19. A method of providing thermally stable radio frequency (RF) power amplification with parallel transistors in a semiconductor comprising:
providing an RF signal to amplify;
providing a DC bias voltage to a resistive element to each base of a plurality of parallel transistor elements of a semiconductor amplifier;
DC isolating the RF signal at the base of each of the plurality of parallel transistor elements;
selecting a value for each resistive element to offset a drop in voltage across a base and an emitter of each transistor due to decreasing Beta values for the power transistors as junction temperatures of the power transistors increase during operation to provide thermally stable RF power amplification;
amplifying the RF signal with the parallel transistor elements; and
providing an amplified RF signal output.

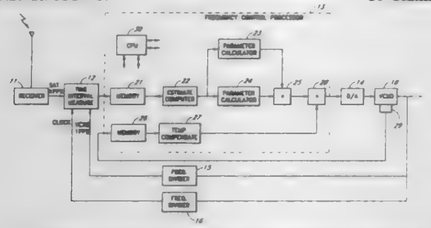
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,649

FREQUENCY STANDARD GENERATOR SYNCHRONIZED WITH SATELLITE OR OTHER COMMUNICATION NETWORK REFERENCE CLOCKS

Hitoshi Ujiie, Sendai, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Nov. 22, 1995, Ser. No. 562,106
Claims priority, application Japan, Nov. 24, 1994, 6-314192
Int. Cl.[6] H03L *7/085*
U.S. Cl. 331—17 **16 Claims**



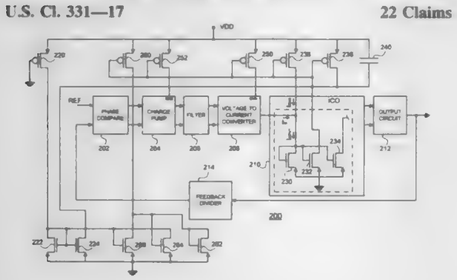
1. A frequency standard generator for generating an high accuracy reference frequency signal, comprising:
a voltage controlled crystal oscillator for generating high stability output signal to be used as a standard frequency signal;
a satellite wave receiver which receives a radio wave from a satellite which includes a highly accurate satellite time signal and reproduces said satellite time signal to be used as a reference for said voltage controlled crystal oscillator;
a frequency divider which divides said output signal of said voltage controlled crystal oscillator by a dividing ratio arranged to generate a crystal time signal which is identical in frequency to said satellite time signal;
a time interval measuring circuit which measures a time interval which is a phase difference between said satellite time signal and said crystal time signal and generates a digital signal indicating said phase difference;
a frequency control processor which arithmetically determines control data based on said digital signal from said time interval measuring circuit such that said phase difference maintains a constant value by a phase lock loop; and
a D/A converter which converts said control data from said frequency control processor to an analog voltage which is used to control the output frequency of said voltage controlled crystal oscillator.

5,629,650

SELF-BIASED PHASE-LOCKED LOOP

John E. Gersbach, Burlington; Masayuki Hayashi, Williston, and Charles J. Masenas, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1996, Ser. No. 593,755
Int. Cl.[6] H03L *7/085;7/099*
U.S. Cl. 331—17 **22 Claims**



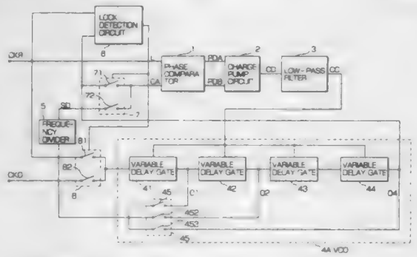
1. A current controlled semiconductor device, wherein said current controlled semiconductor device is biased with a bias current, said device comprising:
a) a first feedback path, said first feedback path dynamically controlling an output of said current controlled semiconductor device with a control current; and
b) a second feedback path, said second feedback path including a bias loop, said bias loop determining the magnitude of said control current and thereby providing said bias current in response to said control current.

5,629,651

PHASE LOCK LOOP HAVING A REDUCED SYNCHRONIZATION TRANSFER PERIOD

Masayuki Mizuno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,860
Claims priority, application Japan, Aug. 12, 1994, 6-190452
Int. Cl.[6] H03L *7/095;7/099*
U.S. Cl. 331—34 **8 Claims**



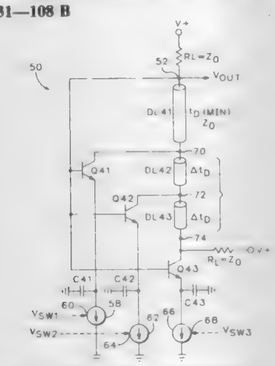
1. A phase lock loop comprising:
a control signal generating section, receiving an input signal and a first signal through first and second inputs of said control signal generating section, respectively, to generate a control signal based on a phase difference between said input signal and said first signal;
a variable delay circuit, including a plurality of cascaded variable delay gates wherein each of said cascaded variable delay gates is controlled by the control signal;
a frequency divider for supplying a divided signal obtained by dividing the output of said phase lock loop;
a phase lock detecting section for detecting a phase difference between said input signal and the output of said variable delay circuit and for generating a phase lock detection signal when said phase difference between said input signal and the output of said variable delay circuit is smaller than a predetermined value;
a first switching section for connecting the input of said variable delay circuit to the first input of said control signal generating section in the absence of the phase lock detection signal, the output of said phase lock loop being connected to the output of one of said variable delay gates and for connecting the input of said variable delay circuit to the output of one of said variable delay gates to form a loop for oscillation when said phase lock detection signal is generated by said phase lock detecting section; and
a second switching section for connecting the second input of said control signal generating section selectively to the output of said variable delay circuit in the absence of the lock detection signal and for connecting the second input of said control signal generating section to the output of said frequency divider when said phase lock detection signal is generated by said phase lock detecting section.

5,629,652

BAND-SWITCHABLE, LOW-NOISE VOLTAGE CONTROLLED OSCILLATOR (VCO) FOR USE WITH LOW-Q RESONATOR ELEMENTS

Frederick G. Weiss, Newberg, Oreg., assignor to Analog Devices, Corvallis, Oreg.

Filed May 9, 1996, Ser. No. 647,395
Int. Cl.[6] H03B *5/00;5/20;27/00*
U.S. Cl. 331—108 B **49 Claims**



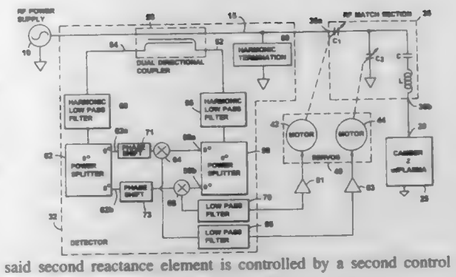
1. A variable frequency oscillator comprising:
a load coupled between a first supply voltage terminal for receiving a first supply voltage and an output terminal;
a first transistor having a collector, an emitter coupled to a second supply voltage terminal for providing an AC return path, and a base coupled to the output terminal for providing an oscillator output signal;
a first delay element connected between the output terminal and the collector of the first transistor, the first delay element having a first delay;
a second transistor having a collector, an emitter coupled to the second supply voltage terminal for providing an AC return path, and a base connected to the base of the first transistor;
a second delay element connected between the collector of the first transistor and the collector of the second transistor, the second delay element having a second delay; and
a switchable current source having a first output connected to the emitter of the first transistor, a second output connected to the emitter of the second transistor, and a control input for receiving a control signal, the switchable current source providing a current to the first transistor responsive to a first state of the control signal to turn on the first transistor and a current to the second transistor responsive to a second state of the control signal to turn on the second transistor,
wherein the oscillator output signal has a first frequency of oscillation that is inversely proportional to the first delay when the first transistor is turned on and a second frequency of oscillation inversely proportional to the sum of the first and second delays when the second transistor is turned on.

5,629,653

RF MATCH DETECTOR CIRCUIT WITH DUAL DIRECTIONAL COUPLER

Bradley O. Stimson, Mountain View, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jul. 7, 1995, Ser. No. 499,697
Int. Cl.[6] H03H *7/40*
U.S. Cl. 333—17.3 **29 Claims**



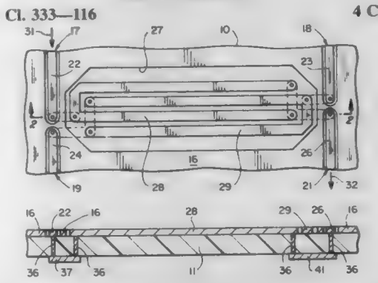
1. A detector circuit for controlling an RF match circuit that receives an RF power signal from an RF source and delivers said RF power signal to a load, said RF match circuit including a first variable reactance element and a second variable reactance element, wherein a variable reactance of said first reactance element is controlled by a first control signal and a variable reactance of said second reactance element is controlled by a second control signal, said detector circuit comprising:
a dual directional coupler having an input for connecting to the RF source and an output for connecting to the RF match circuit, said dual directional coupler generating a forward signal and a reflected signal, said forward signal being proportional to RF power delivered to the match circuit and said reflected signal being proportional to RF power reflected back from the RF match circuit;
a first branch circuit receiving the reflected signal and producing a first and second output signal therefrom;
a second branch circuit receiving the forward signal and producing a first and second output signal therefrom;
a first phase detector receiving the first output signals of the first and second branch circuits and generating a first phase detection output signal from which said first control signal is derived; and
a second phase detector receiving the second output signals of the first and second branch circuits and generating a second phase detection output signal from which said second control signal is derived.

5,629,654

COPLANAR WAVEGUIDE COUPLER

Eric A. Frick, Mountain View, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed May 6, 1996, Ser. No. 643,852
Int. Cl.[6] H01P *5/18*
U.S. Cl. 333—116 **4 Claims**



1. A coplanar waveguide coupler comprising:
a printed circuit board including at least a first layer of dielectric material having coupled conductive traces formed by selectively etching a first metalization layer on one surface of said first layer of dielectric material;
input and output coplanar waveguides formed by selectively etching said first metalization layer on said one surface of said first layer of dielectric material;
interconnect conductors formed by etching a second metalization first layer on the other surface of said layer of dielectric material; and,
through vias connecting the interconnect conductors to the conductive traces and the coplanar waveguides.

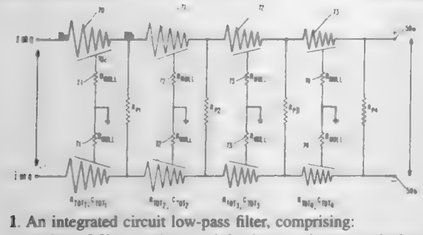
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,655

INTEGRATED DISTRIBUTED RC LOW-PASS FILTERS

Paul W. Dent, Stehag, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 305,702, Sep. 14, 1994, Pat. No. 5,530,722, which is a continuation-in-part of Ser. No. 967,027, Oct. 27, 1992. This application Feb. 23, 1996, Ser. No. 606,437
Int. Cl.[6] H03H 7/06
U.S. Cl. 333—172 16 Claims



1. An integrated circuit low-pass filter, comprising:

a number of filter sections each having two input terminals and two output terminals and a common terminal, each filter section comprising:

a first resistor connected in series between a first input terminal and a first output terminal of said filter section and a substantially identical second resistor connected in series between a second input terminal and a second output terminal of said filter section, each of said first and said second resistors being formed by depositing a pattern of resistive material over respective conducting plates with an intervening dielectric layer to provide distributed capacitance between said resistive pattern and said conductive plate;

a resistive means connected between each of said conducting plates

a resistor connected between the output terminals of at least one of said filter sections,

said filter sections being integrated and cascade-connected such that the output terminals of one section are connected to the input terminals of the next.

5,629,656

DIELECTRIC RESONATOR APPARATUS COMPRISING CONNECTION CONDUCTORS EXTENDING BETWEEN RESONATORS AND EXTERNAL SURFACES

Hitoshi Tada, Ishikawa-ken; Hideyuki Kato, and Tatsuya Tsujiguchi, both of Kanazawa, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 4, 1994, Ser. No. 317,334
Claims priority, application Japan, Oct. 6, 1993, 5-250669
Int. Cl.[6] H01P 1/205
U.S. Cl. 333—202 13 Claims

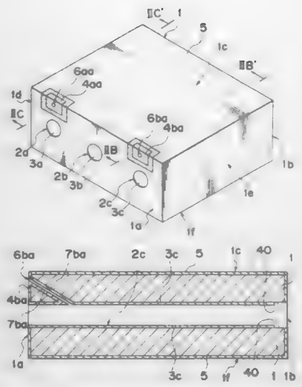
1. A dielectric resonator apparatus comprising:

a dielectric block of a dielectric material having first and second end surfaces, and a plurality of side surfaces located between the first end surface and the second end surface;

at least one cylindrical resonator hole disposed so as to penetrate an inner portion of said dielectric block, said at least one resonator hole respectively having an opening on the first end surface of said dielectric block and another opening on the second end surface of said dielectric block;

an outer conductor disposed on at least the first end surface and said plurality of side surfaces of said dielectric block;

at least one inner conductor respectively disposed on an inner portion of said corresponding at least one resonator hole, said respective at least one inner conductor having one end thereof located adjacent the first end surface of said dielectric block is electrically connected to said outer conductor and another end thereof located adjacent the second end surface of said dielectric block is electrically insulated from said outer conductor, thereby constituting at least one dielectric coaxial resonator;



a pair of input and output electrodes respectively disposed on at least one predetermined side surface of said dielectric block so as to be electrically insulated from said outer conductor and so as to be close to said one end of said inner conductor of an associated one of said at least one resonator, said respective electrode being located adjacent the first end surface of said dielectric block;

two penetrating holes respectively disposed so as to penetrate an inner portion of said dielectric block between said pair of input and output electrodes and said inner conductor of the corresponding ones of said at least one resonator; and

two connection conductors for electrically connecting said pair of input and output electrodes to said inner conductor of the corresponding ones of said at least one resonator, said two connection conductors being respectively disposed on inner portions of said corresponding penetrating holes; wherein

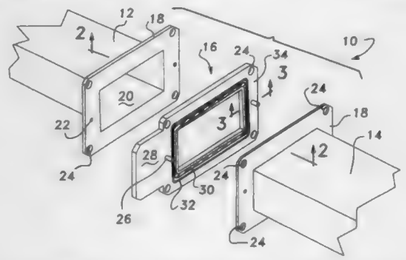
said pair of input and output electrodes are respectively disposed so as to extend from the predetermined side surface of said dielectric block to an adjacent said side surface of said dielectric block.

5,629,657

HIGH POWER WAVEGUIDE RF SEAL

Jeffrey T. Bayorgeon, Chino Hills; Robert Boubion, Brea; William L. Lange, Placentia; Stan W. Livingston, Fullerton, and Ted C. Schmidt, La Palma, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 30, 1996, Ser. No. 640,327
Int. Cl.[6] H01P 1/04
U.S. Cl. 333—254 23 Claims



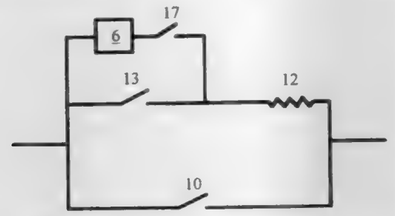
1. A waveguide seal for joining a pair of waveguides to form a joint, each waveguide having a flange in proximity to the joint, the waveguide seal including a helical coil making contact between the waveguide seal and each waveguide flange.

5,629,658

METHODS OF ARC SUPPRESSION AND CIRCUIT BREAKERS WITH ELECTRONIC ALARMERS

William W. Chen, Dept. of Mechanical and Aerospace Engineering, 151 Link Hall, Syracuse University, Syracuse, N.Y. 13244-1240

Continuation-in-part of Ser. No. 931,870, Aug. 18, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,507
Int. Cl.[6] H01H 9/30
U.S. Cl. 335—201 19 Claims



1. A method for interrupting a circuit with efficient arc suppression comprising:

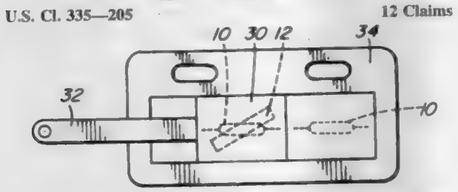
connecting a member of PTC elements selected from the group consisting of doped-$BaTiO_3$-based ceramics and conductive polymers in parallel with a first pair of contacts but in series with a second pair of contacts, said first pair of contacts being connected in series with said circuit, said second pair of contacts being connected in parallel with said first pair of contacts, said first pair of contacts being so mechanically associated with said second pair of contacts that said second pair of contacts is always opened one to ten millisecond after the opening of said first pair of contacts to interrupt said circuit.

5,629,659

SINGLE SWITCHING OF MAGNETIC REED SWITCH

George A. Steiner, 58 Hillcrest Avenue, Montreal, Quebec, Canada

Filed Oct. 31, 1995, Ser. No. 551,301
Int. Cl.[6] H01H 9/00
U.S. Cl. 335—205 12 Claims



1. A magnetic switching device with single switching comprising:

a reed switch switchable by a magnetic field with contact reeds extending longitudinally in a switching line;

at least one permanent bar magnet;

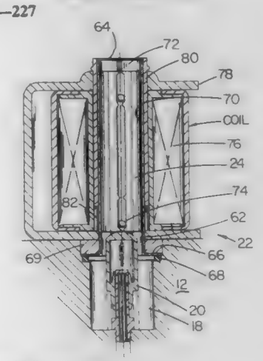
a path of movement for the permanent bar magnet to move relative to the reed switch, the path of movement being parallel to the switching line of the reed switch and spaced apart a predetermined distance therefrom, the permanent bar magnet being tilted at a predetermined angle to the switching line of the reed switch, the angle being sufficient to cause only a single switching action when movement occurs between the magnet and the reed switch in the path of movement, the switching action occurring when the approximate centre of the magnet substantially overlaps the contact reeds of the reed switch.

5,629,660

EXPANSION VALVE FOR AIR CONDITIONING SYSTEM WITH PROPORTIONAL SOLENOID

Richard L. Kenyon, Irvine, Calif.; Roger G. Riefler, Brandon, Miss., and Ashok G. Zopey, Anaheim Hills, Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 161,000, Dec. 3, 1993, Pat. No. 5,390,897, which is a division of Ser. No. 961,567, Oct. 15, 1992, Pat. No. 5,295,656, which is a continuation-in-part of Ser. No. 951,259, Sep. 25, 1992, Pat. No. 5,252,939. This application Feb. 15, 1995, Ser. No. 389,117
Int. Cl.[6] H01F 7/08
U.S. Cl. 335—227 13 Claims



7. A solenoid comprising:

an actuator member comprised of magnetic material;

an isolation member comprised of nonmagnetic material, said isolation member having an interior area, said actuator member movable longitudinally in said interior area;

a sleeve member comprised of magnetic material, said sleeve member in surrounding relation of said isolation member, said sleeve member terminating at a longitudinal edge surface;

a longitudinal non-magnetic gap adjacent said sleeve member edge surface;

a variable permeance element longitudinally disposed from said edge surface of said sleeve member, said variable permeance element including means for accepting said actuating member adjacent thereto in variable longitudinal position;

an electrical coil in generally surrounding relation of said sleeve member, said coil having a first end and a second end; and a frame comprised of magnetic material supporting said coil, said frame extending adjacent said sleeve member at said first coil end and adjacent said variable permeance element at said second coil end, and wherein said nonmagnetic gap is bound by said sleeve member edge surface and said frame.

5,629,661

CHOKE COIL FOR ELIMINATING COMMON MODE NOISE AND NORMAL MODE NOISE

Takaaki Ooi, Takefu; Kouichi Yamaguchi; Tatsuyuki Yamada, both of Fukui-ken, and Iwao Fukutani, Takefu, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

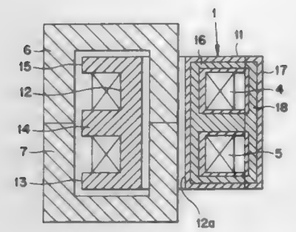
Filed Feb. 2, 1996, Ser. No. 597,462
Claims priority, application Japan, Feb. 3, 1995, 7-017159
Int. Cl.[6] H01F 27/26;27/30
U.S. Cl. 336—198 6 Claims

1. A choke coil comprising:

a pair of windings;

a bobbin having a main body including a body portion around which said pair of windings are wound, flange portions provided on the body portion, and a cap bonded to a circumferential end face of each of said flange portions of the main body, said bobbin incorporating a first magnetic core which surrounds at lust a segment of each of said pair of windings.

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wherein said first magnetic core forms a closed magnetic circuit for eliminating normal mode noise and wherein said first magnetic core having a first core portion in said main body and a second core portion in said cap; and

a second magnetic core separated and offset from said first magnetic core forming a closed magnetic circuit for eliminating common mode noise one side of which is inserted in a hole in said body portion.

5,629,662

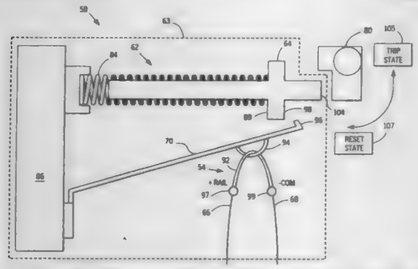
LOW ENERGY MEMORY METAL ACTUATED LATCH

Bruce G. Floyd, and Jack E. Steinhilper, both of Lilburn, Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Feb. 1, 1995, Ser. No. 382,474

Int. Cl.[6] H01H *61/00*

U.S. Cl. 337—36 **37 Claims**



1. A system for interrupting current flow in a circuit breaker, the circuit breaker including a contact operating mechanism mechanically coupled to at least one contact and a trip bar, the trip bar capable of residing in a trip state where the current flow through the contact is interrupted, the system comprising:

a plunger positioned proximate the trip bar, the plunger residing in a first state and a second state;

a spring mechanically coupled to the plunger, the spring biasing the plunger towards the second state when the plunger is in the first state;

a latch positioned to releasably capture the plunger in the first state; and

a memory metal actuator coupled to the latch, the memory metal actuator releasing the latch in response to a trip signal so that the plunger changes from the first state to the second state and engages the trip bar, thereby forcing the trip bar to the trip state;

the memory metal actuator comprising a length of memory wire that changes lengthwise in response to a change in the wire and that is disposed to release the latch by acting on the latch in a direction along which the wire changes in length; and

occurrence of a trip signal causing a change in the wire that changes the wire's length to release the latch.

5,629,663

DISCONNECTION MECHANISM FOR A DARK CURRENT FUSE

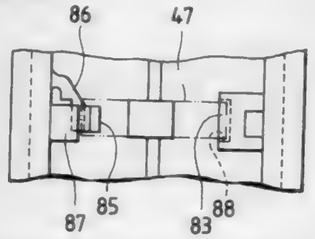
Yoshinobu Seki; Kenichiro Kawaguchi; Gen Oozono; Akio Sugiyama, and Ryuetsu Oikawa, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 269,674, Jul. 1, 1994, Pat. No. 5,488,345. This application Aug. 31, 1995, Ser. No. 521,647

Claims priority, application Japan, Jul. 2, 1993, 5-164368; Oct. 19, 1993, 5-260567; Feb. 2, 1994, 6-010830

Int. Cl.[6] H01H *85/02;85/52;* **H01R** *13/64;13/68*

U.S. Cl. 337—186 **1 Claim**



1. A disconnection mechanism for a dark current fuse, comprising:

a connecting terminal connecting the dark current fuse;

a fuse block body receiving said connecting terminal;

a fuse holder slidably engaged with said fuse block body in a direction of connecting the dark current fuse;

a fuse guide wall including a first engaging projection for engaging a head of the dark current fuse on a first inner side wall of said fuse holder;

a flexible engaging arm including a second engaging projection opposite to said first engaging projection on a second inner side wall of said fuse holder, said flexible engaging arm elongating in a direction perpendicular to the direction of connecting the dark current fuse; and

an arm contacting plate projected opposite to a fuse extraction direction of said flexible engaging arm.

5,629,664

BLADE FUSE WITH BIFURCATED GRIPPING PIECES

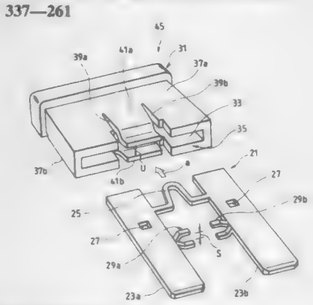
Kenji Muramatsu, and Toshiharu Kudo, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 21, 1995, Ser. No. 531,961

Claims priority, application Japan, Sep. 27, 1994, 6-231635

Int. Cl.[6] H01H *85/02;85/143;85/36*

U.S. Cl. 337—261 **5 Claims**



1. A fuse comprising:

an element; and

a housing for accommodating said element, said element comprising:

a pair of terminals parallel to each other;

a fusible portion provided between said terminals; and

a pair of bifurcated gripping pieces projected from inner edge portions of said terminals so as to confront each other, each of said bifurcated gripping pieces having a clearance in a thickness direction of said terminal, and

said housing comprising:

both lateral walls forming an inserting space into which base end portions having said fusible portion of said terminals are to be inserted; and

a pair of closing plates provided in said both lateral walls and interposed between a pair of slits extending in a terminal inserting direction from an inserting opening of the inserting space,

wherein said pair of closing plates are gripped from outside by the clearances of said gripping pieces while said terminals are inserted into the inserting space.

5,629,665

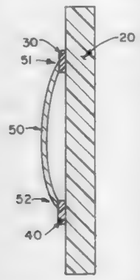
CONDUCTING-POLYMER BOLOMETER

James Kaufmann, 19845 State Rte. P, Newburg, Mo. 65550; Mary G. Moss, 12901 County Rd. 3000, Rolla, Mo. 65401; Ryan E. Giedd, 1724 W. Highland St., Springfield, Mo. 65807, and Terry L. Brewer, 17971 County Rd. 8440, Rolla, Mo. 65401

Filed Nov. 21, 1995, Ser. No. 561,357

Int. Cl.[6] H01L *31/08*

U.S. Cl. 338—18 **7 Claims**



1. A bolometer comprising:

(a) an electrically non-conductive substrate;

(b) means for supplying an electric current affixed to the substrate;

(c) means for receiving an electric current affixed to the substrate and electrically isolated from the supply means; and

(d) an electrically conductive polymer single layer sensor bridging over said substrate with a first end electrically connected to said supply means and a second end electrically and physically connected to said receiving means, while otherwise avoiding contact with the substrate.

5,629,666

POWER RESISTOR, METHOD OF MANUFACTURING THE SAME, AND POWER CIRCUIT BREAKER

Motomasa Imai, Tokyo; Naoki Shutoh, and Fumio Ueno, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 22, 1995, Ser. No. 445,725

Claims priority, application Japan, May 23, 1994, 6-108617

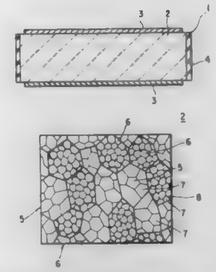
Int. Cl.[6] H01C *7/10*

U.S. Cl. 338—20 **9 Claims**

1. A power resistor comprising:

a sintered body containing aluminum oxide and carbon; and

a pair of electrodes formed on two opposing surfaces of said sintered body;



wherein said sintered body consists of a plurality of first regions and a plurality of second regions containing carbon in an amount larger than in each of said first regions;

said second regions having a mean grain size of aluminum oxide particles smaller than that of the aluminum oxide particles in said first regions;

said plurality of first regions occupying a greater part by weight of said sintered body, with said plurality of second regions occupying the remaining part by weight of said sintered body; and

the carbon present in said second regions electrically connecting said second regions and said pair of electrodes and existing at triple points of aluminum oxide particles in said second regions.

5,629,667

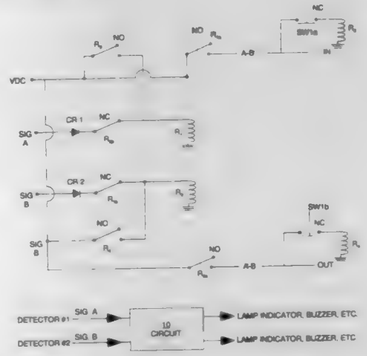
DIRECTION INDICATOR CIRCUIT

Lindley V. Nyberg, 4368 Strawberry Park Dr., San Jose, Calif. 95129

Filed Jun. 22, 1995, Ser. No. 493,645

Int. Cl.[6] G08B *5/16*

U.S. Cl. 340—330 **8 Claims**



1. An electrical circuit for use in an alarm system, the circuit configured for electrical communication with an electrical power source, such an alarm system having a detector configured to generate a first signal and a second signal in response to triggering by a body, such an alarm system further having an announcer adapted to produce an IN announcement in response to an IN signal and an OUT announcement in response to an OUT signal, the circuit comprising:

a) first means responsive to such a first signal for generating the IN signal to activate such an announcer;

b) second means responsive to such a second signal for generating the OUT signal to activate such an announcer; and

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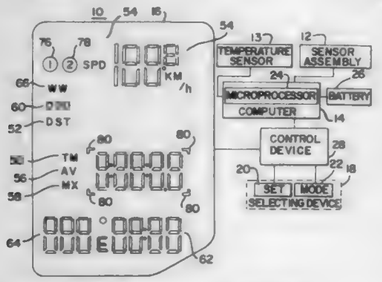
c) switch means for resetting the circuit to a default setting; the switch means operated externally of the circuit and such an alarm system.

5,629,668

DATA DISPLAY UNIT FOR A BICYCLE

Robert M. Downs, Madison, Wis., assignor to Trek Bicycle, Corp., Waterloo, Wis.

Filed Aug. 10, 1994, Ser. No. 288,399
Int. Cl.[6] B62J 2/00
U.S. Cl. 340—432 26 Claims



1. A data display unit for a bicycle, comprising:

wheel rotation sensor for generating plural pulse signals at a rate corresponding to the rotary speed of a wheel of the bicycle;

computing means responsive to said pulse signals for generating an operational data signal and a workout data signal of a plurality of predetermined information when said pulse rate is greater than zero, said computing means being adapted to generate said workout data signal separate from said operational data signal;

display means for displaying said predetermined information of each of said operational data and workout data signals, said display means having a plurality of screens for displaying said predetermined information, wherein each of said screens include a plurality of display fields for displaying each of said predetermined information for said operational data signal and workout data signal; and

control means for controlling the calculation and display of said operational and workout data signals of the unit, said control means connected to said computing means for controlling the operation of the unit in a normal operating mode and in a workout window mode, said control means operating to supply said display means said predetermined information of said operational data signal in said plural fields when in said normal operating mode, said control means operating to supply said display said workout data signal in said plural fields when in said workout window mode, said control means adapted to generate and display separately said predetermined information for said operational data signal and said workout data signal;

said normal mode calculating and maintaining cumulative data so long as said unit is energized;

said cumulative data including a cumulative average speed, a cumulative maximum speed and cumulative distance and selectively displaying data representing said cumulative speeds and distance;

said workout window mode calculating a workout average speed, a workout maximum speed and a workout distance and selectively displaying data representing said workout speeds and distance;

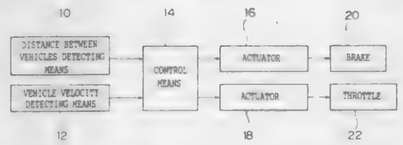
said normal mode data and said workout window mode data being independently calculated and maintained so that said workout window mode may be selected, cleared, and reset without clearing or resetting said cumulative data.

5,629,669

RUNNING CONTROL APPARATUS FOR VEHICLES AND ALARM APPARATUS FOR VEHICLES

Katsuhiro Asano, Toyoake; Yoshikazu Hattori, Nagoya; Masashi Mizukoshi, Susono, and Takashi Shigematsu, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 242,839, May 16, 1994, abandoned. This application May 25, 1995, Ser. No. 450,583
Claims priority, application Japan, May 21, 1993, 5-120217; May 27, 1993, 5-126361; May 27, 1993, 5-126362
Int. Cl.[6] B60Q 1/00
U.S. Cl. 340—436 14 Claims



1. A running control apparatus for vehicles, comprising:

relative acceleration detecting means for detecting a relative acceleration between a subject vehicle and an object;

judging means for judging whether the subject vehicle and the object relatively approach each other at the relative acceleration detected by the relative acceleration detecting means not less than a predetermined value of relative acceleration; and

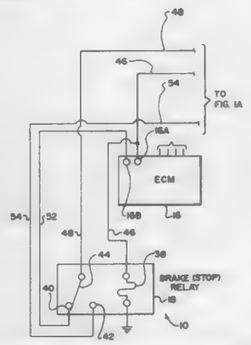
control means for controlling the subject vehicle velocity such that the relative acceleration for which a direction to make a relative approach of the subject vehicle and the object positive is not more than a predetermined target value of relative acceleration when the judging means judges that the subject vehicle and the object relatively approach each other at the relative acceleration not less than the predetermined value of relative acceleration, wherein said relative acceleration detecting means includes a radar means for obtaining at least one of the distance and the relative speed therebetween, and the relative acceleration is obtained by differentiating the obtained one of the distance and the relative speed thereof.

5,629,670

CIRCUIT FOR INTERFACING BRAKE, TURN, AND HAZARD WARNING SIGNALS WITH ECM

Parmjit S. Pabla, Fort Wayne, and Merrill D. Miller, Huntington, both of Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Mar. 26, 1996, Ser. No. 622,485
Int. Cl.[6] G08B 17/12
U.S. Cl. 340—479 18 Claims



1. An electric circuit interfacing a brake system of an automotive vehicle that operates vehicle brakes in response to brake application by an operator of the vehicle with both a signaling system of

the vehicle that gives brake application, right turn, left turn, and hazard warning signals, and with an electronic control module of the vehicle, said electric circuit comprising in combination:

an electronic control module comprising first and second inputs;

a signaling system that gives brake application, right turn, left turn, and hazard warning signals;

brake switch means that serves both said electronic control module and said signaling system and that is selectively operable to give respective brake non-application and brake application signals;

a first feed from said brake switch means to said first input of said electronic control module for enabling said first input of said electronic control module to sense which of said brake application and brake non-application signals is being given by said brake switch means;

slave switch means slaved to said brake switch means to be selectively operable to first and-Second switch conditions corresponding respectively to said brake switch means giving a brake non-application signal and a brake application signal respectively, said slave switch means comprising first and second controlled conductivity paths which are selectively operable to respective first and second conductivity conditions corresponding respectively to the first and second switch conditions of said slave switch means respectively;

a second feed from said first controlled conductivity path of said slave switch means to said second input of said electronic control module for enabling said second input of said electronic control module to sense the one of said first and second switch conditions to which said slave switch means is being operated;

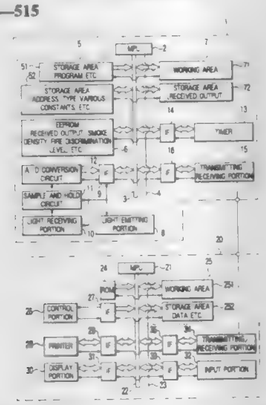
and a third feed from said second controlled conductivity path of said slave switch means to said signaling system that, when said slave switch means is operated to its second switch condition by said brake switch means, enables said signaling system to give a stop signal, and that, when said slave switch means is operated to its first conductivity condition, prevents the hazard warning signal from having any effect on said second input of said electronic control module via said slave switch means.

5,629,671

PHOTOELECTRIC TYPE FIRE DETECTOR AND ADJUSTMENT UNIT THEREFOR

Toshikazu Morita, Tokyo, Japan, assignor to Nohmi Bosai Ltd., Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,257
Claims priority, application Japan, Dec. 22, 1993, 5-325040
Int. Cl.[6] G08B 29/00
U.S. Cl. 340—515 23 Claims



7. A photoelectric type fire detector having a light-scattering-type smoke detection portion including a light emitting device and a light receiving device, arranged to transmit a physical quantity signal of smoke in accordance with an output from said smoke detection portion representing received light and as well as to adjust the sensitivity by using a scattering and translucent plate, said photoelectric type fire detector comprising:

first detection means for detecting a first received output from said smoke detection portion realized when said light emitting device emits light in a case where said scattering and translucent plate is not inserted and as well as no smoke is present;

second detection means for detecting a second received output from said smoke detection portion realized when said light emitting device emits light in a case where said scattering and translucent plate is inserted and as well as no smoke is present;

third detection means for detecting a third received output from said smoke detection portion realized when said light emitting device does not emit light in a case where said scattering and translucent plate is inserted and as well as no smoke is present;

fourth detection means for detecting a fourth received output from said smoke detection portion realized when said light emitting device does not emit light in a case where said scattering and translucent plate is not inserted and as well as no smoke is present; and

calculating means for calculating said physical quantity of smoke with respect to said received output from said smoke detection portion realized when said light emitting device emits light in a state where a fire is supervised based on said first received output, said second received output, said third received output, said fourth received output and a smoke density of said scattering and translucent plate realized when said second received output and said third received output have been obtained.

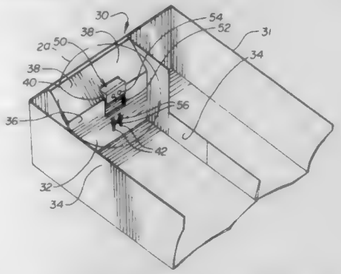
wherein the sensitivity is adjusted in accordance with an output from said calculating means.

5,629,672

LOW PAPER DETECTION SYSTEM

Stephen S. Brown, Plymouth, and David E. Falkner, Blaine, both of Minn., assignors to Gift Certificate Center, Inc., Minneapolis, Minn.

Filed Jun. 27, 1995, Ser. No. 495,285
Int. Cl.[6] G08B 21/00
U.S. Cl. 340—540 21 Claims



8. An improved paper image reproduction device having a cabinet, the cabinet having at least one cassette receiver for receiving a paper cassette and having a paper cassette paired with each such paper cassette receiver, each of said paper cassettes bearing a supply of stacked paper sheets, the improved paper image reproduction device being communicatively integrated into a communications network, including a plurality of work stations, the improvement comprising;

detector means disposed within the cabinet for sensing a partial supply of paper in each such paper cassette; and

signal generation means operably coupled to the detector means and being operably communicatively coupled to the commu-

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nications network for providing a signal to the local area network representative of a partial supply of paper in each such paper cassette,

whereby the communications network communicates such signal to at least one work station on the communications network.

5,629,673

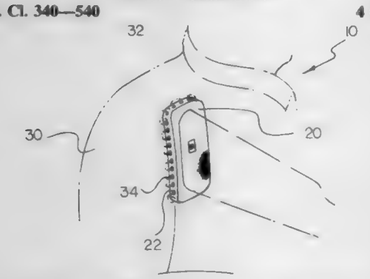
SHOOTING PATCH

Douglas Juhasz, 1513 Longley Ct., Sommerville, N.J. 08876

Filed May 28, 1996, Ser. No. 654,077

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—540 **4 Claims**



1. A device for positioning the butt end of a firearm, the device functioning to assist the user in properly positioning and aiming the firearm, the device comprising, in combination:

a rectangular cushioning member having a front face, a rear face, a peripheral extent and an interior region, a plurality of eyelets formed within the peripheral extent;

a pressure sensor centrally disposed within the interior region of the cushioning member, the pressure sensor functioning to sense pressures applied to the front face of the cushioning member, a microprocessor associated with the pressure sensor functioning to calculate the amount and distribution of pressure applied to the pressure sensor, sounding means associated with the microprocessor functioning to produce an audio signal when the microprocessor determines that a predetermined amount and distribution of pressure have been applied to the sensor; and

clothing to be worn by the user of the device, the shirt having two shoulder regions, the rear face of the cushioning member being affixed to one of the shoulder regions by way of the eyelets, a filament interconnecting the eyelets of the cushioning member to one of the shoulder regions of the shirt.

5,629,674

DEVICE FOR MONITORING THE ALLEYWAYS BETWEEN SHELF UNITS IN A WAREHOUSE

Otmar Fahrion, Dürerstr. 9, 70806 Kornwestheim, Germany

PCT No. PCT/EP92/00628, § 371 Date Sep. 9, 1993, § 102(e) Date Sep. 9, 1993, PCT Pub. No. WO92/18803, PCT Pub. Date Oct. 29, 1992

PCT Filed Mar. 21, 1992, Ser. No. 117,046

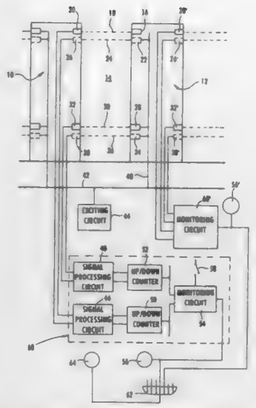
Claims priority, application Germany, Apr. 18, 1991, 41 12 728

Int. Cl.[6] G08B *13/18*

U.S. Cl. 340—556 **10 Claims**

1. A monitoring device for an alleyway defined by a pair of upstanding structures, the alleyway having at least one accessible end, comprising:

at least two light barrier assemblies (**16** to **26**, **28** to **38**) mounted at a first height level and a second height level, respectively, on said pair of upstanding structures at said at least one accessible end, each of said light barrier assemblies supplying an output signal responsive to an object breaking light beams formed by said light barrier assembly, the output signal being based on the particular sequence of breaking of the light beams of said light barrier assembly, the sequence being based on a direction of motion of the object which breaks the light beams; an up/down counter (**50**, **52**) for each of said light barrier assemblies, each up/down counter being supplied with the output signals of its associated one of said light barrier assemblies (**16** to **26**, **28** to **38**); and a monitoring circuit (**54**) being connected to output signals of the up/down counters (**50**, **52**), said monitoring circuit (**54**) supplying an alarm signal whenever said monitoring circuit (**54**) determines a pre-set combination of readings of said up/down counters (**50**, **52**).



5,629,675

VEHICLE INTRUDER DETECTION SYSTEM

John Connolly, Farnborough, United Kingdom, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, England

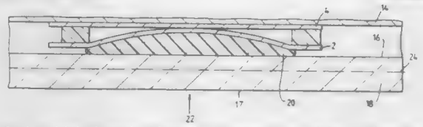
PCT No. PCT/GB93/02311, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO94/13516, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 10, 1993, Ser. No. 454,278

Claims priority, application United Kingdom, Dec. 16, 1992, 9226217

Int. Cl.[6] G08B *13/00*

U.S. Cl. 340—565 **9 Claims**



1. A vehicle intruder detection system comprising at least one pressure operated switch connected into a circuit with an electrical source and detection means capable of detecting variations in the state of the circuit, wherein each switch has a first, movable contact and a second, fixed contact, each contact comprising a strip of electrically conductive material, and at least one spacer element of electrically insulating material located between the first contact and the second contact whereby contacts are spaced apart from one another, the second contact being attached to a fixed surface located within a vehicle interior so that the first contact is located in proximity, but not fixedly attached, to an internal face of a vehicle window, such that the application of a predetermined force to the external surface of the protected window causes the first and second electrical contacts to be brought into contact by displacement of the first electrical contact thereby actuating the switch.

5,629,676

ALARM SYSTEM

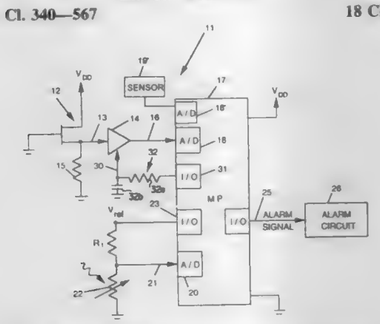
David Kartoun, Ramat Hasharon, and Vyacheslav Kofman, Holon, both of Israel, assignors to Rokonet Electronics, Limited, Rishon LeZion, Israel

Filed Dec. 28, 1994, Ser. No. 365,076

Claims priority, application Israel, Jul. 25, 1994, 110429

Int. Cl.[6] G08B *13/18*

U.S. Cl. 340—567 **18 Claims**



1. A system for detecting intrusion into a protected area by virtue of a change in detected infrared energy from an ambient level, and generating an alarm signal in response thereto, comprising:

a first assembly including a Passive Infrared (PIR) sensing element for generating a contrast signal C(T) representative of a deviation in detected infrared energy from that corresponding to the ambient temperature, wherein $C_p(T)$ signifies the peak value of said contrast signal;

a second assembly for generating an ambient temperature signal representative of the ambient temperature T;

an amplifier for amplifying the contrast signal by a gain G(T) which is a function of the ambient temperature, so as to generate an amplified contrast signal (C(T)*G(T)), wherein ($C_p(T)$*G*(T)) signifies the peak value of said amplified contrast signal;

a processor coupled to said second assembly and to said amplifier, which processor is adapted to generate a threshold Th(T) which is a function of the ambient temperature, said gain G(T) and threshold Th(T) being selectively varied so as to define an "alarm trigger condition" signal in which the absolute value of the peak value of the amplified contrast signal ($C_p(T)$*G(T)) exceeds the absolute value of said threshold Th(T) by substantially a constant value over an ambient temperature range which extends between a first value below an intruder temperature level and a second value above the intruder temperature level; and

an alarm activator in association with said processor for activating an alarm signal when said alarm trigger condition signal is encountered.

5,629,677

APPARATUS FOR LOCATING A PAIR OF EYEGLASSES

Anthony Staino, Jr., 25 Lenore Ct.M, Hammonton, N.J. 08037

Filed Feb. 26, 1996, Ser. No. 607,293

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **1 Claim**



1. A apparatus for locating a pair of eyeglasses comprising, in combination:

a pair of eyeglasses having a front section with a pair of transparent lenses and a pair of side sections including a first side section and a second side section hingably coupled to the front section, each side section comprising an elongated rod with a linear front extent and an arcuate rear extent;

an envelope with a rectangular configuration comprising a flexible material; the envelope having a pair of halves comprising a first half and a second half each with an inner surface, an outer surface, a top edge, a bottom edge, and a pair of side edges; the halves coupled together along the top edge, bottom edge, and one of the side edges thereof thus defining an interior space with an opening for allowing the insertion of the glasses therein; the envelope further comprising a first pile fastener coupled to the outer surface of the first half of the envelope at a lower extent thereof opposite the opening and a signaling means with a second pile fastener coupled thereto for affording coupling with the first pile fastener, the signalling means including a transmitter, a power source, an antenna, and a push button, the signalling means adapted to actuate manually;

a couple comprising a first section with a top planar surface having adhesive situated thereon for adhesively coupling to the second half of the envelope at a central extent thereof and a lower surface with a plurality of dove tail mortises formed therein parallel with the top edge and bottom edge of the envelope, the couple further comprising a second section with an adhesive situated on a lower surface thereof for adhesively coupling to a recipient surface and a plurality of dove tail tenons formed on an upper surface thereof for removably inserting within the mortises thereby allowing selective coupling of the envelope to the recipient surface;

a small locator with a rectangular configuration having a front surface, a rear surface, and a periphery formed therebetween defining an interior space, the locator having an ornament situated thereon, the locator comprising a clip with a first arcuate end coupled to the rear surface thereof and a second free linear end for releasably coupling to the front extent of the first side section of the eyeglasses and an indicator means situated within the interior space and adapted to provide a locating indication upon the manual activation of the signalling means, the indicator means including a receiver, a battery, an audio alarm, and an antenna; and

an ornamental locator with a structure identical to that of the locator and adapted to be releasably coupled to the front extent of the second side section of the glasses, the ornamental locator having an ornament situated thereon.

5,629,678

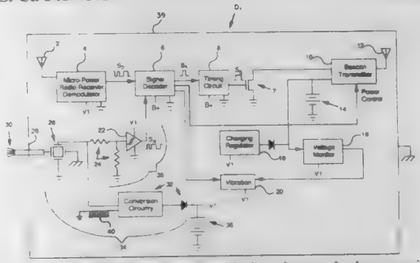
PERSONAL TRACKING AND RECOVERY SYSTEM

Paul A. Gargano, 154 Clifton St., Belmont, Mass. 02178; David H. Gilmore, Cayman Kai, Cayman Islands; Frank A. Pace, Ballston Spa, N.Y., and Lee Weinstein, Somerville, Mass., assignors to Paul A. Gargano, Belmont, Mass.

Filed Jan. 10, 1995, Ser. No. 371,089

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—573 **19 Claims**



1. A transceiver device implantable in a human body comprising:

a triggerable radio frequency transmitter,

a power source for powering said transmitter,

triggering means for activating said transmitter,

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receiver means allowing the detection of an externally generated information signal,

an antenna for effectively radiating RF energy from said transmitter to produce an identifiable RF signal for a period of time following activation by said trigger means,

said receiver means comprising an electromechanical device having a binary output, a digital decoder for detecting predetermined time-encoded information in the binary output of said electromechanical device and for providing an electrical trigger signal representative of the presence of such pre-determined information, and

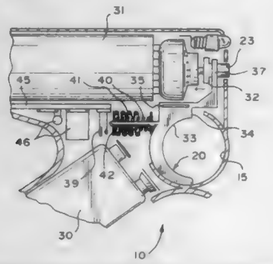
said trigger signal causing the activation of said transmitter.

5,629,679

PERSONAL SECURITY DEVICE

Richard Cranford, 401 Greensward La., A104, Del Ray Beach, Fla. 33445, and D. Robert Jordan, 1094 Fisher La., Winnetka, Ill. 60093

Filed Dec. 15, 1994, Ser. No. 356,506
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—574 **5 Claims**



1. A portable personal security device, comprising:

a hollow housing of compact size capable of being carried in a pocket or purse, and having a handgrip portion and a barrel portion, said barrel portion having a forward end with a discharge opening therein, and a cavity for receiving a canister of material to be discharged through the opening;

a canister of noxious chemical supported in said cavity, having a discharge valve positioned adjacent said discharge opening, and a discharge nozzle associated with the discharge valve and adapted to open the discharge valve and dispense chemical from the canister and through the opening upon inward movement of the discharge nozzle;

an audible alarm means supported in the housing and having speaker means exposed through the exterior of the housing, said alarm means including switch means for energizing the alarm means; and

single movable trigger means supported on the housing and having a first actuator means for operating said switch means to energize the alarm means upon a first predetermined movement of the trigger means, and a second actuator means for moving the discharge nozzle on the canister to discharge said chemical upon a second predetermined movement of the trigger means.

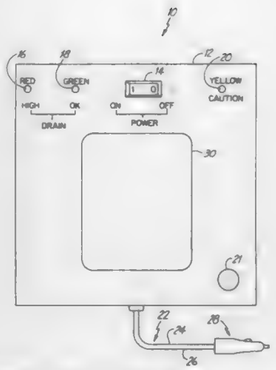
5,629,680

VEHICLE CURRENT DRAIN TESTER WITH MEMORY SAVER

Surender K. Makhija, 21370 Lower Cambridge Cir., Brookfield, Wis. 53045

Continuation-in-part of Ser. No. 570,589, Dec. 11, 1995. This application Feb. 2, 1996, Ser. No. 596,411
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—664 **20 Claims**

1. A vehicle nominal current drain tester for testing nominal current drawn by a vehicle's electrical circuit from the vehicle battery when the ignition is off, the tester comprising:



a measurement current loop comprising:

first and second tester terminals for connection in series with the electrical circuit;

first and second voltage source terminals coupled in series with the first and second tester terminals; and

a current sensor coupled in series with the first and second tester terminals and the first and second voltage source terminals, which generates a measurement signal representative of nominal current drawn by the electrical circuit through the measurement current loop;

a first offset circuit coupled to the current sensor which applies a first offset to the measurement signal and provides a fail output as a function of whether the measurement signal exceeds the first offset, wherein the first offset represents a first selected nominal drain current level drawn by the electrical circuit when the ignition is off; and

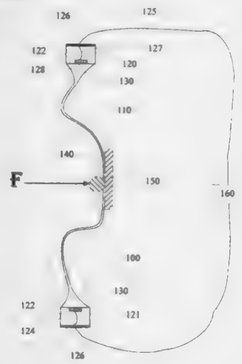
a fail indicator coupled to the first offset circuit and responsive to the fail output.

5,629,681

TUBULAR SONIC DISPLACEMENT SENSOR

Wilbur E. DuVall, Kimberling City, Mo.; Wendell C. Johnson, Topanga, Calif., and David S. Breed, Boonton Township, N.J., assignors to Automotive Technologies International, Inc., Boonton Township, N.J.

Continuation-in-part of Ser. No. 24,076, Mar. 1, 1993, Pat. No. 5,441,301, Ser. No. 239,977, May 9, 1994, and Ser. No. 239,978, May 9, 1994, abandoned. This application May 17, 1995, Ser. No. 443,002
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—665 **20 Claims**



1. A device for determining the displacement of an object relative to a stationery support comprising:

a) a compliant tube having two ends and a bore therein, said bore of said tube having a length, said tube being in contact with said object and positioned so that the displacement of said object against said tube relative to said support causes said tube to deform to thereby decrease the cross section area at some location along said length of said bore of said tube;

b) a sonic transmitter attached to one end of said tube;

c) a sonic receiver attached to one end of said tube; and

d) processor means connected to said sonic transmitter and said sonic receiver;

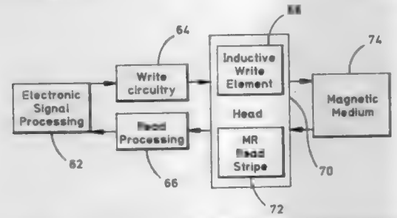
wherein said processor means causes said sonic transmitter to send sonic waves into said tube where said sonic waves are modified by the amount of change of said tube bore cross section area at said location along said length of said bore, after which, said modified waves are received by said receiver which produces a signal which is processed by said processor means to determine the amount of constriction of said tube caused by said object.

5,629,682

MAGNETIC RECORDER HAVING MR READ AND INDUCTIVE WRITE CAPABILITY

Todd L. Hylton, San Jose, and Richard D. Umphress, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,492
Int. Cl.[6] G11B *5/02;5/33;5/127*
U.S. Cl. 340—671 **33 Claims**



1. A magnetic read-write encoder coupled to a moving object for determining a position of the moving object, the encoder being further coupled to read signal circuitry and write signal circuitry, the read signal circuitry and the write signal circuitry being coupled to an electronic signal processor, the encoder comprising:

a substrate;

a magnetic medium disposed on at least one side of the substrate;

a magnetoresistive (MR) read-write head having an MR read element and an inductive transducer write element, the MR read-write head being in a transducing relationship with respect to the magnetic medium;

means for causing relative motion between the magnetic medium and the MR read-write head, such that the transducing relationship is maintained;

the inductive transducer write element being adapted to dynamically write encoded bits received from the dynamically write circuitry, on the magnetic medium, the encoded bits containing information that defines a rotational position of the medium; and

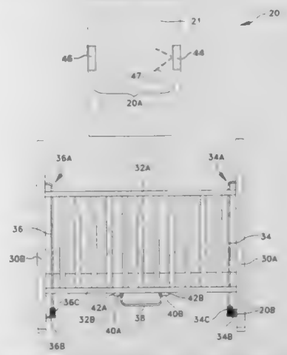
the MR read element being adapted to read the encoded bits and to generate an output signal based on the encoded bits that is sent to the read circuitry for sending to the electronic signal processor in order to decipher the rotational position of the moving object.

5,629,683

CRIB GATE POSITION INDICATOR

Cynthia J. Slomowitz, and Scott M. Slomowitz, both of 2603 Tonbridge Dr., Wilmington, Del. 19810

Filed Sep. 1, 1995, Ser. No. 524,006
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—686 **22 Claims**



1. An apparatus for use with a baby crib having a displaceable gate that can be positioned in an open condition or in a closed condition, said apparatus providing an automatic, remotely-located indication of the condition of the gate, said apparatus comprising:

gate sensor means, coupled to the crib, including a transmitter for wirelessly transmitting a gate indication signal representative of the open condition of the gate;

a remotely-located receiver including an indication means, said remotely-located receiver receiving said gate indication signal and said gate indication signal controlling the activation of said indication means; and

remotely-located enabling means, said enabling means enabling said gate sensor means whenever a person moves into the vicinity of the crib.

5,629,684

TIMER FOR AN ELECTRICAL APPARATUS

Masao Isshiki, and Taizo Kodama, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 21, 1994, Ser. No. 345,698
Claims priority, application Japan, Mar. 22, 1994, 6-050692
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.06 **15 Claims**

1. A timer for controlling an operation of an electrical apparatus, comprising:

a) a clock having an active state in which the clock is set to an initial value and operative therefrom and a nonactive state in which the clock is not provided with an initial value, the clock generating a current time in the active state;

b) initial time setting means for setting the initial value for the current time of the clock so as to set the clock in the active state; and

c) controlling means for controlling the operation of the electrical apparatus, comprising:

first time designating means for designating a time interval;

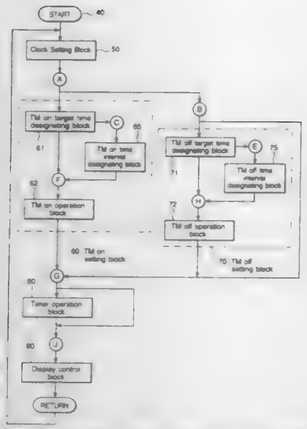
first time counting means for counting toward an end of the time interval and for controlling the operation of an electrical apparatus at the end of the time interval;

second time designating means for designating a target time;

second time counting means for controlling the operation of the electrical apparatus responsive to the current time corresponding to the target time; and

activating means for operating the timer in a first mode, wherein the first time designating means and the first time counting means are activated, responsive to the clock being in the nonactive state and for operating the timer in a

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second mode, wherein the second time designating means and the second time counting means are activated, responsive to the clock being in the active state.

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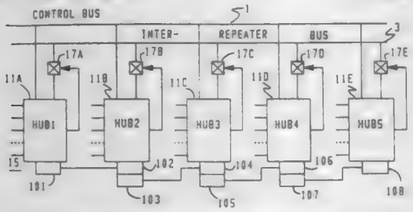
SEGMENTABLE ADDRESSABLE MODULAR COMMUNICATION NETWORK HUBS

James J. Allen, and Thomas J. Prorock, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1995, Ser. No. 393,621

Int. Cl.[6] H04Q *9/00*

U.S. Cl. 340—825.02 **15 Claims**



1. In an addressable communications network having a network bus, a control bus, and a plurality of data terminals adapted to communicate over the network bus, hub apparatus for selectively connecting the plurality of data terminals to the network bus, the hub apparatus comprising:

a controller that receives a control signal from the control bus and connects the plurality of data terminals to the network bus by generating a controller output signal based on the state of the network;

control logic coupled to said controller output signal that generates a logic output signal in response to said controller output signal;

a repeater that passes data between the network bus and the plurality of data terminals, said repeater having a repeater input that receives data from the network bus and a repeater output coupled to the plurality of data terminals; and

a logic gate having a gate input coupled to the network bus, a gate output coupled to said repeater input, and an enable input coupled to said logic output signal for controllably connecting the gate input to the gate output, so that when the controller receives the control signal from the control bus, the logic output signal activates the logic gate to connect the plurality of data terminals to the network bus.

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SELECTIVE CALL RECEIVER HAVING AN OPTIONAL DISPLAY MODE

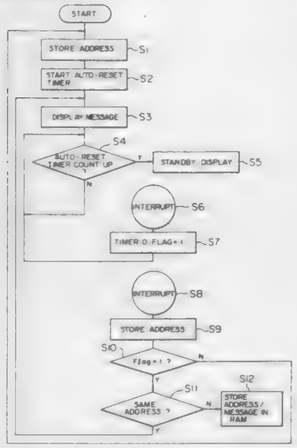
Motoya Miyauchi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 955,407, Oct. 2, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,441

Claims priority, application Japan, Oct. 11, 1991, 3-263474

Int. Cl.[6] G08B *5/22*

U.S. Cl. 340—825.44 **11 Claims**



1. A selective call receiver comprising:

receiving means for receiving call data transmitted from an internal source and containing an address and message data;

signalling means for signalling that said message data has been received;

storage means for storing said message data received by said receiving means in a memory location designated by said address;

display means for displaying message data stored in said storage means;

comparing means for comparing an address of message data currently being displayed on said display means and an address of call data newly received by said receiving means;

switch means for performing a predetermined switch operation;

timer means for being set, in accordance with said predetermined switching operation, in either an automatic reset mode in which said timer means will generate a time-out signal when a predetermined count value is counted up or a non-automatic-reset mode in which said timer means has no count value at which it will generate a time-out signal; and

processing means for controlling said storage means and said display means such that: (i) when said timer means is in said automatic reset mode and said comparing means judges that the address of said newly received call data does not coincide with the address of the message data currently being displayed, said processing means controls said display means to continue displaying said message currently being displayed and controls said storage means to store message data contained in said newly received call data in a memory location designated by the address contained in said newly received call data, (ii) when said timer means is in said non-automatic-reset mode and said comparing means judges that the address of said newly received call data coincides with the address of the message data currently being displayed on said display means, said processing means controls said display means to immediately replace said message data currently being displayed on said display means with message data of said newly received call data and when said timer means is in said non-automatic-reset mode and said comparing means judges that the address of said newly received call data does not coincide with the address of the message data currently being displayed, said processing means controls said display means to continue displaying the message currently being displayed and controls the storage means to store message data contained in said newly received call data in a memory location designated by the address contained in said newly received call data, and (iii) when message data of newly received call data is already stored in said storage means when said timer means is switched from said non-automatic-reset mode to said automatic-reset mode, said processing means controls said display means to replace a message currently being displayed on said display means with message data of said newly received call data.

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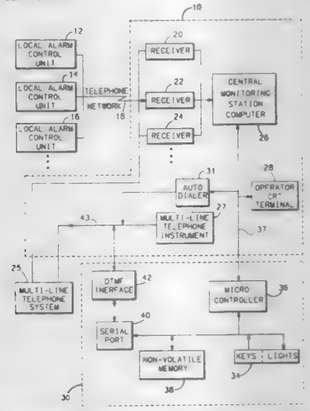
UNIVERSAL INTERFACE FOR REMOTELY-MONITORED SECURITY SYSTEMS

Gary E. Sutton, La Jolla; Roger A. Moore, Running Springs; Milt E. Hamilton, Glendora, and Manuel Castillo, North Hollywood, all of Calif., assignors to Emergency Technologies, Inc., Redmond, Wash.

Filed Aug. 29, 1994, Ser. No. 297,027

Int. Cl.[6] G08B *13/00*

U.S. Cl. 340—825.37 **15 Claims**



1. An apparatus for generating local commands in a remotely monitored security system for transmission to a remote monitored site, comprising:

a controller for receiving an alarm type from said monitored site;

an input device for selecting a central command from a predetermined set of central commands;

a memory for storing a plurality of predetermined relationships, each uniquely corresponding to one said alarm type, each said predetermined relationship including at least one selectable command and at least one local command, said selectable command being in said predetermined set of central commands; and

said controller for selecting a predetermined relationship in response to said alarm type and for producing a sequence of one or more local commands in response to the selected central command and the selected predetermined relationship.

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RADIO SELECTIVE CALLING RECEIVER STORING MESSAGES BASED ON SENDING-GROUP NAMES

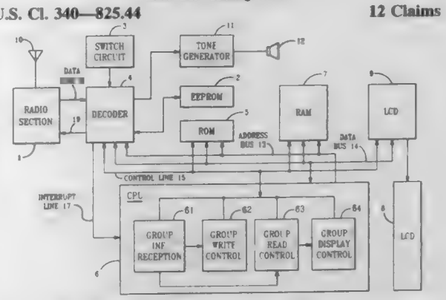
Toshihiko Muramatsu, Tokyo, and Hiroaki Shibayama, Shizuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,527

Claims priority, application Japan, Apr. 28, 1994, 6-092483

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.44 **12 Claims**



1. A radio selective calling receiver having a plurality of address codes, comprising:

a memory for storing a plurality of received messages on the basis of each of a plurality of group names corresponding to a caller who sent said messages, said plurality of address codes being classified to said plurality of group names according to callers, at least one of said plurality of group names corresponding to at least two of said plurality of address codes.

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WARNING SYSTEM

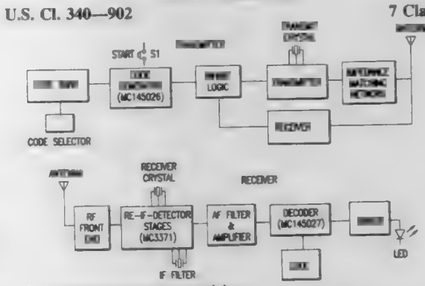
Robert J. Curwood, South Melbourne, Australia, assignor to Wholesale Publications Pty. Ltd., South Melbourne, Australia

Filed Mar. 14, 1995, Ser. No. 404,145

Claims priority, application Australia, Mar. 15, 1994, PM4475

Int. Cl.[6] G08G *1/00*

U.S. Cl. 340—902 **7 Claims**



1. A warning system comprising:

a receiver to receive and recognize a coded signal, and upon reception and recognition thereof to generate a warning signal; and

a transmitter selectively actuable to transmit the coded signal receivable and recognizable by the receiver and including monitoring means for monitoring the presence of an extraneous signal originating from another transmitter, said transmitter delaying transmission of the coded signal upon detection of the extraneous signal from said another transmitter;

wherein the transmission of the coded signal is delayed by a predetermined time interval or is delayed until the monitoring means determines that the extraneous signal has terminated or dropped below a pre-selected signal strength.

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SYSTEM AND METHOD OF INSTALLATION FOR LOCATING A HIDDEN SENSOR EXTERNALLY ACTIVE ON A MOTOR VEHICLE

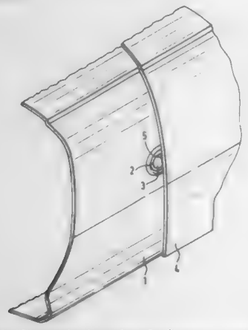
Peter Knoll, Ettlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 27, 1995, Ser. No. 394,576

Claims priority, application Germany, Mar. 29, 1994, 44 10 895.1

Int. Cl.[6] G08G 1/00

U.S. Cl. 340—904 12 Claims



1. A method of transducing signals from a motor vehicle, comprising the steps of

securely mounting a transducer (2) having an outer membrane (3) on an outer surface part (1) of the vehicle,

with the outer surface of the membrane (3) being flush, or even with the outer surface of said outer surface part, wherein the outer surface part has a predetermined surface shape or contour; and

covering said outer surface part (1) including the region where the transducer is located, with a cover (4) which is shaped to match, and fit over, the surface shape or contour of the outer surface part (1) and visually covering and hiding the transducer to render said transducer essentially invisible.

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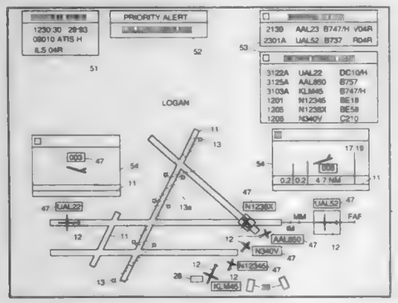
AIRPORT SURFACE MONITORING AND RUNWAY INCURSION WARNING SYSTEM

Atul Jain, Los Angeles, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed May 26, 1995, Ser. No. 451,597

Int. Cl.[6] G08G 5/04

U.S. Cl. 340—961 12 Claims



1. An airport runway incursion warning system for monitoring air and ground traffic in the vicinity of a runway of an airport, said system comprising:

a radar system comprising of a plurality of radar sensor units disposed at predetermined installation sites adjacent to the runway and wherein the plurality of radar sensor units generate substantially overlapping radar beams that illuminate the runway;

a central processing unit coupled to the plurality of radar sensor units, for receiving radar data produced by the plurality of radar sensor units, and for processing the radar data to produce a map of the runway that identify objects and aircraft in the vicinity thereof, wherein each radar sensor unit is coupled to an interface processor for processing radar data generated by the radar sensor unit, wherein each interface processor is coupled to RF telemetry electronics for transmitting the radar data to the central processing unit and wherein the central processing unit is coupled to an RF/telemetry interface for receiving the radar data transmitted from the radar sensor unit by the RF telemetry electronics;

an operator display coupled to the central processing unit for displaying the map of the runway, objects and aircraft generated by the central processing unit; and

wherein the aircraft comprises an electronic tag that stores identification information regarding the aircraft, and comprises an RF transponder coupled to the electronic tag for receiving interrogation signals generated by the central processing unit and for transmitting the identification information in response to the interrogation signals;

the interrogation signals generated by the central processing unit are transmitted to the aircraft by way of the RF/telemetry interface, and the identification information is received from the RF transponder by way of the RF/telemetry interface and wherein the central processing unit generates signals for display on the operator display that identifies the aircraft;

and wherein the central processing unit produces data for display that includes priority alert information indicating aircraft that are runway incursions, a list of arriving and departing arriving and departing aircraft, and displays that show landing and take-off patterns of arriving and departing aircraft.

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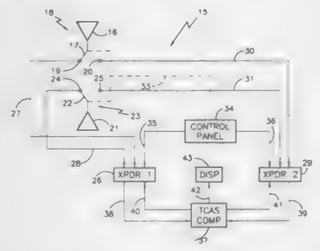
METHOD AND APPARATUS FOR ALERTING PILOT TO TRANSPONDER ANTENNA FAILURE IN A TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM

Gregory T. Stayton, Glendale; Desi D. Stelling, and David A. Zinder, both of Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 20, 1995, Ser. No. 504,977

Int. Cl.[6] G08G 5/04

U.S. Cl. 340—961 4 Claims



1. In an aircraft warning system that uses first and second transponder systems with each transponder system including first and second antennas and a selected one of first and second transponders either of which are connected to the first and second antennas by a transponder switch, the warning system further including a selector switch when in a first position is operable to provide a first warning when intruder aircraft are about to enter a first zone which is within no less than a first time period in advance of possible collision and a second warning when intruder aircraft are about to enter a closer zone which is within no less than a second time period in advance of a possible collision, and the selector switch in a second position is operable to provide the first warning only, the warning system also including a failure warning when there is a transponder system failure using the first transponder, the method of extinguishing the failure warning whenever the failure warning is due to only a single antenna failure comprising the steps of:

A. upon receiving the failure warning, selecting the second transponder and if the failure warning is not then extinguished,

B positioning the selector switch in the second position, in which case the failure warning will thereby be extinguished if only a single antenna failed.

5,629,693

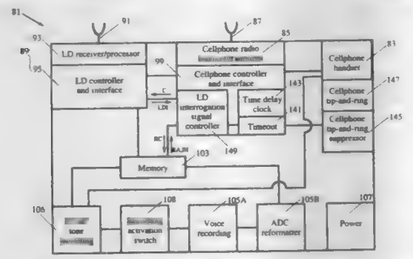
CLANDESTINE LOCATION REPORTING BY A MISSING VEHICLE

James M. Janky, Los Altos, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 157,726, Nov. 24, 1993, abandoned. This application May 17, 1995, Ser. No. 443,235

Int. Cl.[6] G08G 1/123

U.S. Cl. 340—988 30 Claims



1. Apparatus for determining and reporting the present location of a missing vehicle, the apparatus comprising:

a location determination (LD) unit, including an LD signal antenna and LD receiver/processor, positioned on the vehicle to receive LD signals from at least three distinguishable LD signal sources and to process these LD signals so that the processed signals can be used to determine the present location of the LD antenna;

a cellular phone unit positioned on the vehicle and comprising:

a cellular phone handset that receives audio signals at a first port and converts these audio signals to electronic signals and that receives electronic signals at a second port and converts these electronic signals to audio signals; and

a cellular phone radio transceiver and antenna that receives electronic signals at a signal port and transmits these signals as outgoing radiowave signals at a selected frequency to a central station that is spaced apart from the cellular phone transceiver, that receives incoming radiowave signals from the central station and issues these signals as electronic signals at the signal port, and that can generate and issue an audibly perceptible or visually perceptible incoming call signal that indicates when the radio transceiver and antenna is receiving an incoming radiowave signal intended for that transceiver, where the cellular phone transceiver and antenna are capable of receiving and responding to an LD interrogation signal from the central station that requests information on the present location of the LD antenna; and

a controller, positioned on the vehicle, connected to and selectively controlling and acting as an interface between the LD unit and the cellular phone unit, for passing signals between the LD unit and the cellular phone unit, wherein (i) when the cellular phone unit receives an incoming phone call, the controller causes the cellular phone unit to delay issuance of an incoming call signal for a selected initial time interval of length Δt_d; (ii) when the cellular phone unit receives an LD interrogation signal during an initial time interval of length Δt_d as part of the incoming phone call, the controller causes the cellular phone unit not to issue an incoming call signal indicating receipt of an incoming call, causes the LD unit to provide the cellular phone unit with information on the present location of the LD antenna, and causes the cellular phone radio transceiver and antenna to transmit this present location information to the central station; and (iii) when the cellular phone unit does not receive an LD interrogation signal during an initial time interval of length Δt_d as part of the incoming phone call, the controller causes the cellular phone unit to operate as a normal cellular phone and to issue an incoming call signal that is perceptible by an occupant of the vehicle.

5,629,694

COMPUTER KEYBOARD WITH POWER CONTROL KEY

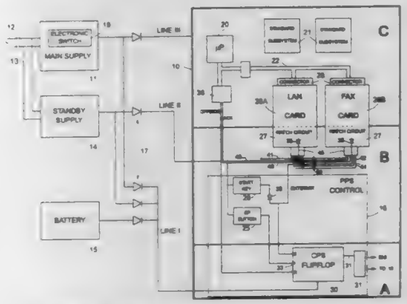
Jean-Jacques Simon, Bresson, and Francois Loison, Grenoble, both of France, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 30, 1995, Ser. No. 565,547

Claims priority, application European Pat. Off., Jan. 24, 1995, 95410003; Nov. 10, 1995, 95410127

Int. Cl.[6] H03K 17/94; H03M 11/00

U.S. Cl. 341—22 18 Claims



1. A keyboard comprising a key matrix having a plurality of keys each with a respective key switch operated by depression of the key; and scanning means for scanning the key matrix to detect operation of a said key switch and thereupon generate a keycode identifying that key; characterised in that the keyboard further comprises:

a further switch operated by the depression of a said key, and means for enabling operation of said further switch to be detected independently of operation of the scanning means.

5,629,695

ORDER PRESERVING RUN LENGTH ENCODING WITH COMPRESSION CODEWORD EXTRACTION FOR COMPARISONS

Steven J. Watts, and Balakrishna R. Iyer, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

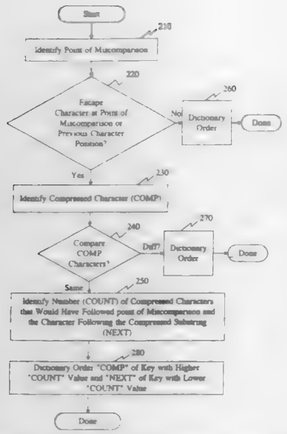
Division of Ser. No. 434,775, May 4, 1995. This application Jun. 6, 1995, Ser. No. 466,918

Int. Cl.[6] G06F 17/30

U.S. Cl. 341—51 20 Claims

1. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform the method steps for comparing character strings that are compressed through run length encoding, said method steps comprising:

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(a) comparing the compressed character strings to identify a point of miscomparison; and

(b) ordering said compressed character strings based on characters at the point of miscomparison, characters at the two character positions prior to said point of miscomparison and characters at the two character positions after said point of miscomparison.

5,629,696

PARALLEL TO SERIAL DATA CONVERTER

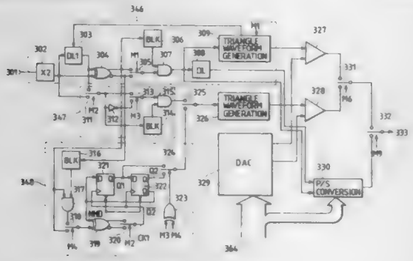
Somei Kawasaki, Urawa; Masami Iseki, Yokohama, and Hironari Ebata, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 70,876, Jun. 3, 1993, Pat. No. 5,502,419. This application Aug. 17, 1995, Ser. No. 516,210

Claims priority, application Japan, Jun. 5, 1992, 4-145693; Jun. 5, 1992, 4-145694; Oct. 13, 1992, 4-274319; Oct. 13, 1992, 4-274320; May 28, 1993, 5-127503; May 28, 1993, 5-127504

Int. Cl.[6] H03M *9/00*

U.S. Cl. 341—101 **9 Claims**



1. A parallel/serial converter comprising:

means for inputting a first clock signal;

a plurality of latch means for latching parallel data with a cycle of the first clock signal;

means for generating a second clock signal having a duty ratio of 50% in accordance with the input first clock signal;

delay means for delaying the second clock signal to output a third clock signal; and

switching means for selecting and outputting data latched by said plurality of latch means in accordance with said second and third clock signals.

5,629,697

CODE CONVERSION CIRCUIT

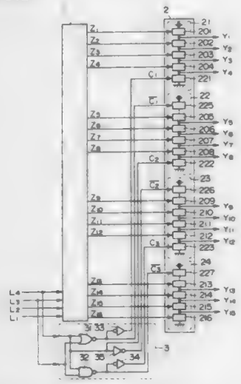
Atushi Miyanishi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 115,346

Claims priority, application Japan, Sep. 3, 1992, 4-235752

Int. Cl.[6] H03M *7/20*

U.S. Cl. 341—102 **15 Claims**



1. A code conversion circuit, comprising:

a first decoder including means for receiving an a-bit binary input representing a value i, where i is an integer≧0;

said first decoder including b first output lines being ordinally numbered, where b≦2[a];

said first decoder further including means responsive to said a-bit binary input for producing a plurality of first output signals on said b first output lines;

said plurality of first output signals including a signal "1" only on an (i+1)th one of said b first output lines and a signal "0" on a remainder of said b first output lines;

a second decoder including means for receiving said first output signals;

said second decoder including a plurality of second output lines being ordinally numbered;

said second decoder further including means responsive to said plurality of first output signals for producing a plurality of second output signals;

said plurality of second output signals including a signal "1" on a second output line i-th from a first end of said plurality of second output lines and on each of said plurality of second output lines from said second output line i-th from said first end to a one of said second output lines located at said first end, and a signal "0" on a remainder of said second output lines;

said second decoder being segmented into a plurality of blocks, each of said plurality of blocks including a different set of ordinally numbered ones of said second output lines;

said plurality of blocks being ordered from a lowest ordered block to a highest ordered block;

said lowest ordered block including said first end of said plurality of second output lines;

each of said plurality of blocks including state determining means for selectively placing an associated one of said plurality of blocks in one of a first state, a second state and a third state;

said first state wherein a signal "1" is developed on all of said plurality of second output lines included in said associated one of said plurality of blocks;

said second state wherein a signal "1" is developed on a second output line i-th from said first end of said plurality of second output lines and all of said second output lines nearer to said first end which are included in said associated one of said plurality of blocks, and a signal "0" is developed on a remainder of said plurality of second output lines included in said associated one of said plurality of blocks;

said third state wherein a signal "0" is developed on all of said plurality of second output lines included in said associated one of said plurality of blocks;

block control signal generating means responsive to said a-bit binary input for producing and supplying block control signals including means for controlling respective ones of said state determining means in each of said plurality of blocks;

said block control signals each being one of a first, a second and a third block control signal to place a respective block in one of said first state, said second state and said third state respectively;

said block control signal generating means including means for supplying said second block control signal to said state determining means in an n-th block of said plurality of blocks to which said second output line i-th from said first end belongs;

said block control signal generating means including means for supplying said first block control signal to said state determining means in each of a first to a (n−1)th block of said plurality of blocks; and

said block control signal generating means including means for supplying said third block control signal to said state determining means in each of a (n+1)th and higher order blocks of said plurality of blocks.

5,629,698

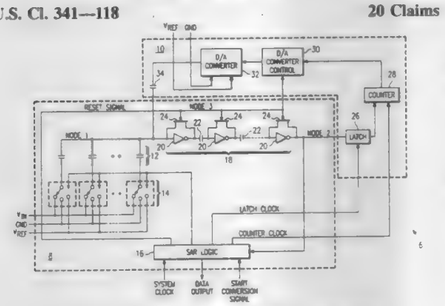
AUTOMATIC OFFSET TRACKING AND CORRECTING CIRCUIT AND METHOD OF OPERATION

Michiel De Wit, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 177,830, Jan. 5, 1994, abandoned. This application May 21, 1996, Ser. No. 651,021

Int. Cl.[6] H03M *1/06*

U.S. Cl. 341—118 **20 Claims**



1. An analog-to-digital conversion system, comprising:

a sampling network comprising a plurality of capacitors having a first node of each capacitor coupled to a common node; and

an automatic offset tracking and correcting circuit coupled to the common node of the sampling network and operable to sense an offset voltage present on the common node during the operation of the sampling network and to inject charge onto the common node and pull charge from the common node responsive to the sensing of the offset voltage in order to reduce the offset voltage, wherein the automatic offset tracking and correcting circuit is operable to sense a sign of the offset voltage and to inject and pull charge responsive to the sign of the offset voltage.

5,629,699

ANALOGUE-TO-DIGITAL CONVERTER AND ANALOGUE-TO-DIGITAL CONVERSION SYSTEM EMBODYING SAID CONVERTER

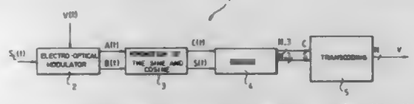
Jean Chazelas, Paris; Guy Le Parquier, Versailles, and François Renault, Paris, all of France, assignors to Thomson-CSF, Paris, France

Filed Jul. 10, 1995, Ser. No. 499,957

Claims priority, application France, Jul. 29, 1994, 94 09436

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—137 **14 Claims**



1. Analogue-to-digital converter outputting a value V of an electric signal coded on a number of bits N, comprising:

electro-optic means of phase modulation on a predetermined interaction length L, receiving an optical input signal and the electric signal to be converted, and outputting a first and second optical signal having with respect with each other a differential phase that varies linearly function of said electric signal to be converted;

an opto-electric device into which the first and second optical signals are input and that outputs at least a first and second electric signal, which are functions of the sine and cosine respectively of said differential phase;

coding means to extract absolute values of the first and second electric signals in digital form coded on [N−3] bits, said coding means having maximum coding dynamics adjusted to code absolute values with reference to a differential phase included in a home sector which will be one of the four possible consecutive sectors partitioning the trigonometric circle into 2 π radians;

transcoding means outputting said value V, by coding said differential phase on N bits, starting from absolute values coded on [N−3] bits and the given home sector.

5,629,700

PIPELINE TYPE ANALOG TO DIGITAL CONVERTER INCLUDING PLURAL SERIES CONNECTED ANALOG TO DIGITAL CONVERTER STAGES

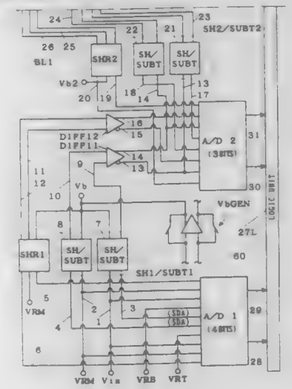
Toshio Kumamoto; Osamu Matsumoto; Takahiro Miki; Masao Ito, and Takashi Okuda, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1995, Ser. No. 552,016

Claims priority, application Japan, May 25, 1995, 7-126529

Int. Cl.[6] H03M *1/34*

U.S. Cl. 341—161 **14 Claims**



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1. A pipeline type analog to digital converter comprising:

plural analog to digital converter stages connected in series, each stage comprising an analog to digital converter block for analog to digital converting analog input signals to a digital signal of a predetermined number of bits and for digital to analog converting a result of the analog to digital conversion to output a digital to analog conversion result, said input signals consisting of two differential input signals, each of said analog to digital converter blocks of the second to the final stages, comprising,

first and second ladder-type resistors composed of plural serially connected resistors; and

said pipeline type analog to digital converter further comprising in a path, between each stage from the second to the final stages, between said analog to digital converter block of a certain stage and said analog to digital converter block of its next stage,

input signal S/H & subtracting means for sampling each of the input signals input to said analog to digital converter block of said certain stage at the same timing as inputting of said input signals to said analog to digital converter block of the certain stage and, at a time of holding, subtracting each of the two digital to analog outputs output by said analog to digital converter block of said certain stage from each of the corresponding sampled input signals to output the subtraction results,

input signal differential amplifying means for differentially amplifying two outputs of said input signal S/H & subtracting means to output two outputs as input signals of said analog to digital converter block of said next stage and, at the same time, for applying said two outputs to opposite ends of said first ladder-type resistor in said analog to digital converter block of said next stage,

reference voltage S/H means having the same circuit constants and the same circuit construction as said input signal S/H & subtracting means, for sampling and holding each of tap voltages taken out from a specific two taps inside said second ladder-type resistor in said analog to digital converter block of said certain stage, and

reference voltage differential amplifying means for differentially amplifying two outputs of said reference voltage S/H means and for applying its two outputs, as reference voltages in said analog to digital converter block of said next stage, to opposite ends of said second ladder-type resistor in said analog to digital converter block of said next stage, and

said input signal S/H & subtracting means and said reference S/H voltage means each alternately performing its respective sampling operation and holding operation.

5,629,701

CASCADED NTH ORDER (N>2) FEEDFORWARD SIGMA-DELTA MODULATORS

Tapani Ritoniemi, Insinöörinkatu 84 B 31, FIN-33720 Tampere, Finland; Teppo Karema, Pori, and Hannu Tenhunen, Tampere, both of Finland, assignors to Tapani Ritoniemi, Tampere, Finland

PCT No. PCT/FI93/00027, § 371 Date Aug. 11, 1994, § 102(e) Date Aug. 11, 1994, PCT Pub. No. WO93/15557, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 28, 1993, Ser. No. 256,567

Claims priority, application Finland, Jan. 28, 1992, 920378

Int. Cl.[6] H03M *3/00*

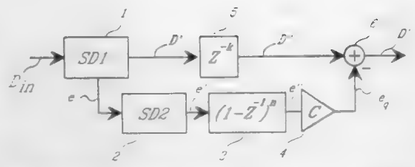
U.S. Cl. 341—143 **9 Claims**

1. A method of cascading at least two feedforward sigma-delta modulators, comprising the steps of:

producing an integrated signal estimate of a primary signal, in a first feedforward sigma-delta modulator;

producing an integrated signal estimate error associated with said integrated signal estimate;

quantizing the integrated signal estimate error, in a second feedforward sigma-delta modulator;



differentiating the quantized error; and

subtracting the differentiated quantized error from the integrated signal estimate.

5,629,702

ANALOG TO DIGITAL CONVERTER

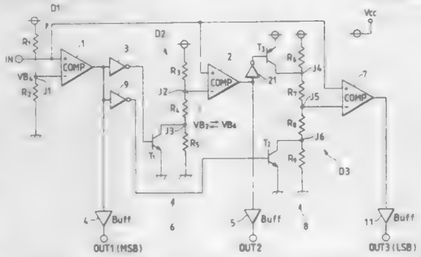
Takahisa Koyasu, Chita, and Mitsuhiro Saitou, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 5, 1994, Ser. No. 318,546

Claims priority, application Japan, Oct. 5, 1993, 5-274986

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—155 **10 Claims**



1. An analog to digital converter for converting an analog voltage signal to n-bit digital signal, comprising:

a comparing circuit, having first to n^{th} stages of comparators, having a tandem structure, responsive to an input voltage signal, said first to n^{th} stages of comparators outputting first to n^{th} comparing results using first, second to n^{th} reference voltages, respectively, such that said first comparing result is determined from said first reference voltage and said second to n^{th} comparing results are successively determined from a higher bit; and

a reference voltage switching circuit for generating said reference voltages such that one of said second to n^{th} reference voltages is changed in accordance with a portion of said n-bit comparing results of an earlier stage of said first to n^{th} stages of comparators, wherein said reference voltage switching circuit changes said second to n^{th} reference voltage such that said second to said n^{th} reference voltages are increased responsive to a first stage comparator outputting a "1" and said second to said n^{th} reference voltages are decreased responsive to said first stage comparator outputting a "0".

5,629,703

METHOD FOR REDUCING HARMONIC DISTORTION IN AN ANALOG-TO-DIGITAL CONVERTER SYSTEM

Roy W. Lewallen, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

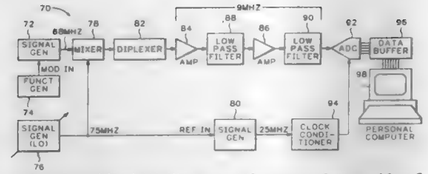
Filed Aug. 9, 1995, Ser. No. 512,797

Int. Cl.[6] H03M *1/12*

U.S. Cl. 341—155 **30 Claims**

1. In a system including an analog-to-digital converter, a method for reducing an amplitude of a distortion-generated signal related to an input signal, comprising:

digitizing a signal spectrum of the input signal with the analog-to-digital converter to provide a normal frequency-domain



data record having a first center frequency datum with a first amplitude and a first distortion-generated signal datum with a second amplitude;

shifting a frequency spectrum of the digitized input signal to provide a shifted frequency-domain data record having a second center frequency datum with the first amplitude and a second distortion-generated signal datum with the second amplitude;

realigning the shifted frequency-domain data record to provide a realigned frequency-domain data record having a realigned center frequency substantially equaling the first center frequency; and

combining the normal frequency-domain data record and the realigned frequency-domain data record to provide a combined frequency-domain data record in which the combined first and realigned center frequency data have substantially the first amplitude and the first and second distortion-generated signal data each have a third amplitude that is less than the second amplitude.

5,629,704

TARGET POSITION DETECTING APPARATUS AND METHOD UTILIZING RADAR

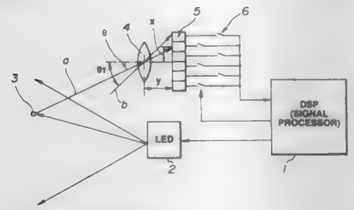
Kraisorn Throngnumchai, Yokohama; Teruyoshi Mihara; Hiroshige Fukuhara, both of Yokosuka, and Yukitsugu Hirota, Kamakura, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Sep. 12, 1995, Ser. No. 527,677

Claims priority, application Japan, Sep. 12, 1994, 6-243381

Int. Cl.[6] G01S *7/483*

U.S. Cl. 342—54 **31 Claims**



1. An apparatus comprising:

a) beam transmitting means for generating and transmitting beams of at least one of either electromagnetic waves or ultrasonic waves, said beams being provided with a fixed predetermined divergence angle with said beam transmitting means as a vertex;

b) beam receiving means for receiving at least one reflected beam of the transmitted beams, said beam receiving means including a plurality of individually operable beam receiving elements arranged in an array form and each one of the beam receiving elements having a mutually different directivity from those of any other beam receiving elements;

c) first measuring means for determining which one of the beam receiving elements receives the reflected beam and determining a direction of the reflected beam with respect to the reflected beam receiving element on the basis of a position of the reflected beam receiving element in said array formed plurality of beam receiving elements; and

d) second measuring means for measuring a time duration from a time at which said beams are transmitted from said beam transmitting means to a time at which said reflected beam receiving element has received the reflected beam and calculating a distance from a beam reflected point of the transmitted beams to the reflected beam receiving element on the basis of the measured time duration.

5,629,705

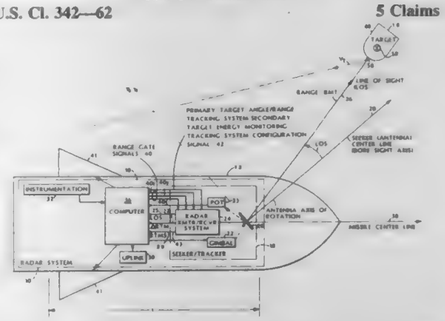
HIGH RANGE RESOLUTION RADAR SYSTEM

Aaron Spettel, Oak Leaf, Tex., and Anthony J. Sarantakis, Acton, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 9, 1996, Ser. No. 605,341

Int. Cl.[6] G01S *13/72*

U.S. Cl. 342—62 **5 Claims**



1. A radar system for tracking radar energy reflected by a point on a target different from the centroid of a target's radar reflected energy, the radar system comprising:

a radar receiver for receiving target radar reflected energy;

a target angle/range tracking system;

a target energy monitoring/range tracking system; and,

a processor for:

directing, during a first mode, the target angle/range tracking system to track the centroid of the target's reflected energy and the secondary energy monitoring system to monitor reflected energy from other points of the target, and when the signal to noise ratio from a reflection from one of the other points of the target monitored by the target energy monitoring system exceeds a predetermined level, directing, during a second mode, the target angle/range target tracking system to track the reflection from the second point of the target while the secondary energy monitoring system monitors other points on the target.

5,629,706

METHOD FOR SIMULTANEOUSLY MEASURING THE POSITIONS OF MORE THAN ONE SURFACE IN METALLURGIC PROCESSES

Lars Bååth, Blindskärsvägen 11, S-439 92 Onsala, Sweden

Filed Aug. 2, 1995, Ser. No. 510,216

Claims priority, application Sweden, Feb. 3, 1993, 9300348

Int. Cl.[6] G01S *13/88;* **G01N** *22/00;* **G01F** *23/284*

U.S. Cl. 342—124 **20 Claims**

1. A method for measuring the position of at least one surface in a metallurgical process, said method comprising the steps of:

providing a metallurgical melt, said metallurgical melt comprising at least a metal portion and a slag layer;

said metal portion having at least one metal portion surface, and said slag layer having at least one slag layer surface;

providing signal generation means for generating signals at a plurality of frequencies over a frequency band;

providing antenna means for receiving said signals generated by said signal generation means and for transmitting circularly polarized radio waves at said plurality of frequencies over said frequency band;

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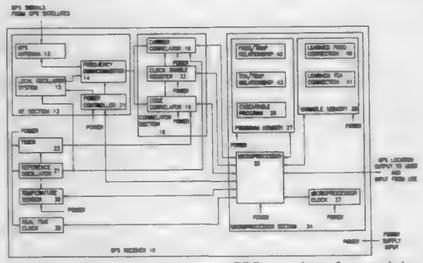


disposing said antenna means adjacent said metallurgical melt;
transmitting said circularly polarized radio waves from said antenna means toward said metallurgical melt;
said circularly polarized radio waves being transmitted by said antenna means at said plurality of frequencies over said frequency band;
receiving reflected images of said transmitted radio waves through said antenna means;
said received reflected images of said transmitted radio waves having a substantially opposite circular polarization from said transmitted circularly polarized radio waves;
determining a phase displacement between said transmitted radio waves and said received reflected images of said transmitted radio waves;
transforming said determined phase displacement from the frequency domain to the time domain; and
determining from said time domain transform a position of at least one of said at least one metal portion surface and said at least one slag layer surface.

5,629,707
FLEXIBLE SIGNAL SOURCE LOCATION APPARATUS AND METHOD THEREFOR
Dean P. V. Heuvel, Chandler; Scott D. Blanchard, and Joseph O. Lester, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 6, 1995, Ser. No. 369,617
Int. Cl.[6] G01S *5/02;* **H04B** *7/185;1/00*
U.S. Cl. 342—357 **17 Claims**

1. In a satellite communication system that includes an earth terminal and satellites, a method of providing an estimate of a location of a subscriber unit that is emitting a signal comprising the steps of:
collecting, by at least one of said satellites, two measurements of said signal, each of said measurements having a measurement error associated therewith;
sending said measurements to said earth terminal;
generating a surface contour for each of said measurements;
finding intersection points and near intersection points between said surface contours and a surface contour representing earth's surface;
using said intersection points and near intersection points to seed a least-squares algorithm to generate final locations;
generating statistical confidence regions around each final location using said measurement error, each confidence region having a probability associated therewith indicating the probability that said subscriber unit is within the associated confidence region, each confidence region corresponding with a geographic region on earth's surface; and
when smaller confidence regions are desired, collecting additional measurements of said signal and repeating the steps of sending, finding, using and generating to increase said probability associated with each confidence region.

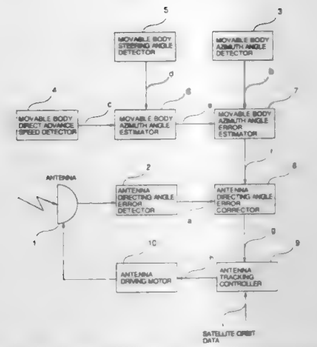
5,629,708
GPS RECEIVER HAVING AN INITIAL ADJUSTMENT FOR CORRECTING FOR DRIFT IN REFERENCE FREQUENCY
Eric B. Rodal, Cupertino; Dominic G. Farmer, Milpitas, and Chung Y. Lau, Sunnyvale, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.
Division of Ser. No. 332,958, Nov. 1, 1994, Pat. No. 5,594,453.
This application Apr. 18, 1996, Ser. No. 634,612
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—357 **12 Claims**



1. A global positioning system (GPS) receiver for receiving a GPS signal, including:
a memory including an executable program for calculating an initial time of arrival (TOA) adjustment to correct for a TOA drift caused by a drift in a reference frequency that has occurred during a time duration in a standby mode; and
a microprocessor coupled to the memory for using the executable program for providing said initial TOA adjustment.

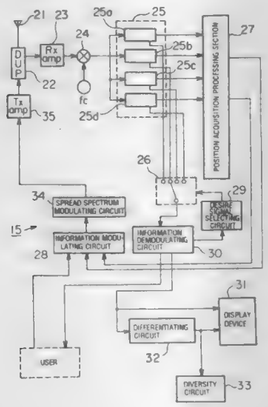
5,629,709
TRACKING CONTROL DEVICE OF ANTENNA LOADED ON MOVABLE BODY AND TRACKING CONTROL METHOD OF THE ANTENNA
Toshiaki Yamashita, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 1, 1994, Ser. No. 333,046
Claims priority, application Japan, Nov. 2, 1993, 5-274223
Int. Cl.[6] H01Q *3/00*
U.S. Cl. 342—359 **28 Claims**

1. A tracking control device for an antenna disposed on a movable body so as to track a wave generating source, said tracking control device comprising:
a speed detection means for detecting a speed of said movable body;



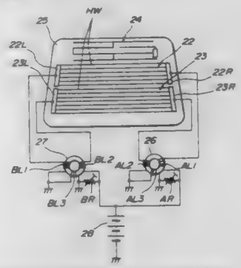
a steering angle detection means for detecting a steering angle of said movable body;
an estimated azimuth angle calculation means for calculating an estimated azimuth angle of said movable body, based on the speed detected by said speed detection means and the steering angle detected by said steering angle detection means;
an azimuth angle detection means for detecting an azimuth angle of said movable body;
an error calculation means for calculating an error between said estimated azimuth angle calculated by said estimated azimuth angle calculation means and said azimuth angle detected by said azimuth angle detection means;
a directing angle error detection means for detecting an antenna directing angle error; and
a correction means for correcting said antenna directing angle error, based on said error calculated by said error calculation means.

5,629,710
APPARATUS FOR ACQUIRING THE POSITION OF A MOBILE STATION
Kensuke Sawada, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Jan. 10, 1995, Ser. No. 371,006
Claims priority, application Japan, Mar. 16, 1994, 6-045534
Int. Cl.[6] G01S *3/02;1/24;* **H04M** *11/00*
U.S. Cl. 342—457 **2 Claims**



1. An apparatus for acquiring position of a mobile station in a mobile communication system which includes a plurality of base stations for transmitting signals each including a predetermined synchronizing signal synchronized with an identical clock and an identifying signal identifying an originating base station, and a mobile station receiving signals transmitted from the base stations, the apparatus comprising:
receiving means provided in the mobile station, for receiving signals transmitted from the base stations;
extracting means for extracting the predetermined synchronizing signal and the identifying signal contained in each signal transmitted from the base stations;
time difference detecting means for detecting a time difference between timing at which each of the predetermined synchronizing signals is extracted by said extracting means and predetermined timing;
base station coordinates detecting means for detecting position coordinate values of each of the base stations, based on the identifying signals from the base stations extracted by said extracting means;
mobile station coordinates calculating means for calculating position coordinates of the mobile station, based on the time difference detected by said time difference detecting means and the position coordinate values detected by said base station coordinates detecting means;
moving speed detecting means for detecting moving speed of the mobile station based on time-based change in the position coordinates calculated by said mobile station coordinates calculating means; and
reception control means for controlling diversity reception of the mobile station based on the moving speed of the mobile station detected by said moving speed detecting means.

5,629,711
WINDOW GLASS ANTENNA DEVICE
Yoshinori Matsuoka, and Harunori Murakami, both of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan
Continuation of Ser. No. 100,930, Aug. 3, 1993, abandoned.
This application Dec. 11, 1995, Ser. No. 570,077
Claims priority, application Japan, Aug. 3, 1992, 4-059949
U; Nov. 12, 1992, 4-327371
Int. Cl.[6] H01Q *1/32*
U.S. Cl. 343—704 **10 Claims**



1. A window glass antenna device comprising:
a window glass panel;
defrosting heaters for use as part of a reception antenna, said defrosting heaters including at least first and second heaters each comprising a plurality of heater wires disposed on said window glass panel, first bus bars interconnecting ends of said heater wires, and second bus bars interconnecting opposite ends of said heater wires;
current supply means for supplying electric currents to said defrosting heaters;
a first choke coil connected between the first bus bars of said first and second heaters and said current supply means; and

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a second choke coil connected between the second bus bars of said first and second heaters and said current supply means;

said first choke coil having a core and at least two windings disposed around said core, said windings being connected respectively to the first bus bars of said first and second heaters such that magnetic fluxes generated in said core by a first electric current flowing through said first heater and a second electric current flowing through said second heater will be canceled;

said second choke coil having a core and at least two windings disposed around said core, said windings being connected respectively to the second bus bars of said first and second heaters such that magnetic fluxes generated in said core by said first electric current flowing through said first heater and said second electric current flowing through said second heater will be canceled; and

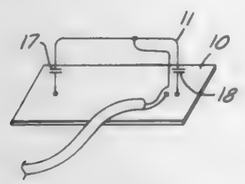
at least one of said first and second choke coils including a third winding disposed around said core, and current adjusting means for supplying an electric current from said current supply means to said third winding for producing a magnetic flux to cancel any magnetic flux produced by the difference between electric currents flowing through said two windings of said at least one of said first and second choke coil.

5,629,712

VEHICULAR SLOT ANTENNA CONCEALED IN EXTERIOR TRIM ACCESSORY

Andrew Adrian, Dexter; Timothy J. Talty, Trenton, and Bruce R. Jones, Romulus, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 6, 1995, Ser. No. 540,113
Int. Cl.[6] H01Q *1/32;11/12*
U.S. Cl. 343—713 9 Claims



1. A multi-band vehicular antenna for receiving signals in first and second radio-frequency bands, said antenna comprising:

a sheet metal ground plane;

a body trim piece elevated over said ground plane;

a conducting loop passing through said trim piece and connected to said ground plane at first and second points, whereby said conducting loop circumscribes a slot area between said sheet metal ground plane and said conducting loop;

a transmission line having first and second conductors, said first conductor being connected to said ground plane at a third point, and said second conductor being connected to said conducting loop at a fourth point located along said slot area between said first and second points and

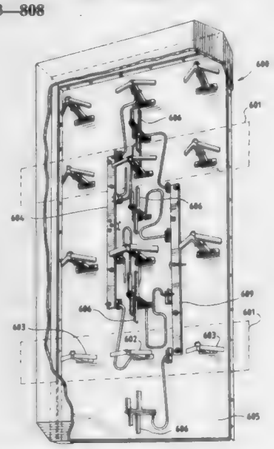
first and second capacitors coupling said conducting loop to said sheet metal ground plane at said first and second points, respectively, said capacitors providing a low impedance to said first band and a relatively higher impedance to said second band so that said antenna operates in a slot antenna mode in said first band and in a monopole antenna mode in said second band.

5,629,713

HORIZONTALLY POLARIZED ANTENNA ARRAY HAVING EXTENDED E-PLANE BEAM WIDTH AND METHOD FOR ACCOMPLISHING BEAM WIDTH EXTENSION

Peter Mailandt, Dallas, and Tan D. Huynh, Hurst, both of Tex., assignors to Allen Telecom Group, Inc., Solon, Ohio

Filed May 17, 1995, Ser. No. 443,148
Int. Cl.[6] H01Q *19/10*
U.S. Cl. 343—808 24 Claims



1. An antenna array comprising:

a driven dipole element mounted to a conductive means forming a ground plane, the driven dipole element having opposing arms; and

a pair of collinear parasitic dipole elements disposed on opposite ends of the driven dipole element, the parasitic dipole elements having opposing arms inclined toward the ground plane such that the opposing arms of each parasitic dipole element are perpendicular to one another.

5,629,714

INFORMATION PROCESSING SYSTEM

Shigeyuki Nishitani, Ebina; Michihiro Mese, Chigasaki; Kimiyoshi Ohno, Yokohama; Manabu Sasaki, Fujisawa, and Tsuneaki Amanuma, Urawa, all of Japan, assignors to Hitachi, Ltd.; Hitachi Information Systems, Ltd., both of Tokyo, and Hitachi Microsoftware Systems, Inc., Kanagawa-ken, all of Japan

Filed Feb. 28, 1992, Ser. No. 843,307
Claims priority, application Japan, Feb. 28, 1991, 3-034026
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—1 19 Claims

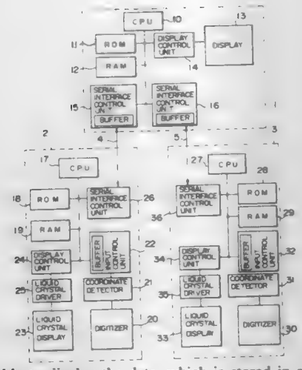
1. An information processing system for supporting a conference in which a plurality of participants can meet face to face and view the same data at the same time, comprising:

(a) a plurality of terminals, each terminal having input means for inputting data to said terminal and transmission means for outputting the data inputted to said terminal by said input means;

(b) a display for displaying the data, said display being constructed to permit all of the participants in the conference to view the data being displayed on said display at the same time;

(c) a communication line for transmitting the data outputted from said terminal by said transmission means; and

(d) a control unit having a plurality of receiver buffers, each receiver buffer stores the data transmitted from one of said terminals via said communication line, said control unit being



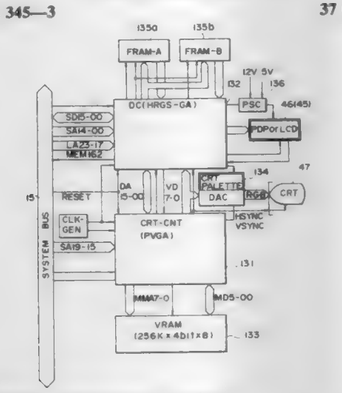
operable to display the data, which is stored in each of said receiver buffers, on said display at the same time.

5,629,715

DISPLAY CONTROL SYSTEM

Hiroki Zenda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 578,216, Sep. 6, 1990, abandoned.
This application Sep. 9, 1993, Ser. No. 118,787
Claims priority, application Japan, Sep. 29, 1989, 1-254961; Sep. 29, 1989, 1-254968; Sep. 29, 1989, 1-254969
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—3 37 Claims



1. A display control system comprising:

first display control means for driving a flat panel display unit using a specific display element, the flat panel display unit including at least a liquid crystal display (LCD) or a color panel;

second display control means for driving a CRT display unit using a display element different from that of the flat panel display unit;

means for generating at least one of a first signal indicating whether or not said CRT display unit is in use, a second signal indicating an enable or a disable state of said flat panel and said CRT display control means, a third signal indicating an enable or a disable state of said flat panel display unit, and a fourth signal indicating whether or not said flat panel display unit is in use;

determining means for determining whether the flat panel display unit is in use according to at least one of the first through fourth signals;

means for detecting which one of said LCD, and said color panel is connected to said display control system, the detecting means comprising a connector, and specified pins indicating types of flat panel display being assigned to said connector;

means for supplying power to said flat panel display unit; and

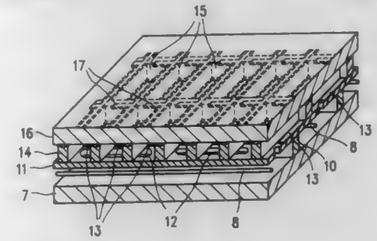
means for cutting off power for said flat panel display unit, when either the detecting means detects that the flat panel display is not connected to the display control system, or said determining means determines that the flat panel display unit is not in use.

5,629,716

LUMINESCENT PANEL FOR COLOR VIDEO DISPLAY AND ITS DRIVING SYSTEM, AND A COLOR VIDEO DISPLAY APPARATUS UTILIZING THE SAME.

Takio Okamoto, Kusatsu; Kazunori Hirao, Yao; Toru Hirayama; Hajime Mae, both of Osaka; Takao Wakitani, Akashi; Yukiharu Ito, Takatsuki; Kouichi Nomura, Takatsuki, and Seiji Matsubara, Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Takatsuki, Japan

Filed Jul. 14, 1994, Ser. No. 274,808
Claims priority, application Japan, Jul. 19, 1993, 5-177897; Jul. 19, 1993, 5-177898; Nov. 21, 1993, 5-282986; Feb. 21, 1994, 6-022238; Mar. 7, 1994, 6-035529
Int. Cl.[6] G09G *3/28*
U.S. Cl. 345—60 20 Claims



1. A luminescent panel for color video display, comprising:

a rear plate on which a plurality of filaments are stretched in a row direction;

an insulating plate provided on the rear plate so as to cover the plurality of filaments, the insulating plate having a plurality of through-holes arranged in a matrix for exposing respective predetermined portions of the plurality of filaments;

a light-transmissive front plate including a plurality of anode lines stretched in a column direction and a rib covering the plurality of anode lines,

the rib comprising a plurality of cavities arranged in a matrix for igniting hot cathode discharge between a selected one of the plurality of filaments and a selected one of the plurality of anode lines via a corresponding one of the plurality of through-holes;

a first phosphor means for being excited by the discharge and emitting a first kind of phosphorescence, the first phosphor means provided corresponding to a first line group of the plurality of the anode lines; and

a second phosphor means for being excited by the discharge and emitting a second kind of phosphorescence, the second phosphor means provided corresponding to a second line group of the plurality of the anode lines.

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5,629,717

DISPLAY SYSTEM

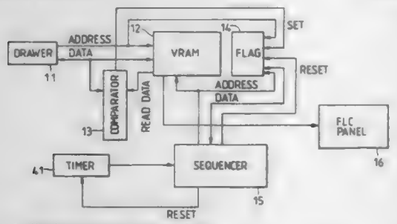
Hiroshi Netsu, Funabashi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 144,498, Nov. 2, 1993, abandoned, which is a continuation of Ser. No. 797,359, Nov. 25, 1991, abandoned, which is a division of Ser. No. 426,766, Oct. 26, 1989, abandoned. This application May 1, 1995, Ser. No. 432,007

Claims priority, application Japan, Oct. 31, 1988, 63-273179; Oct. 31, 1988, 63-273180; Oct. 31, 1988, 63-273181; Oct. 31, 1988, 63-273182

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—98 **8 Claims**



1. A display system comprising:

a. a display panel having matrix electrodes comprised of scanning lines and information lines;

b. a display information storage memory for performing write access of transmitted write data and for performing read-out access of stored read out data; and

c. control means for comparing the write data with the read out data, for performing a first sequence of scanning a scanning line corresponding to a partial region in a display image frame at a changing display at the partial region and for performing a second sequence of interlace refresh scanning the scanning line in the display image frame at a non-changing display on the display image frame, wherein the first sequence is interrupted when a predetermined time of the first sequence elapses, and therefore the second sequence is performed.

5,629,718

ADDRESSING A MATRIX-TYPE LIQUID CRYSTAL CELL

Paul W. H. Surguy, Hayes, England, assignor to Central Research Laboratories Limited, Middlesex, England

PCT No. PCT/GB93/02056, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/08329, PCT Pub. Date Apr. 14, 1994

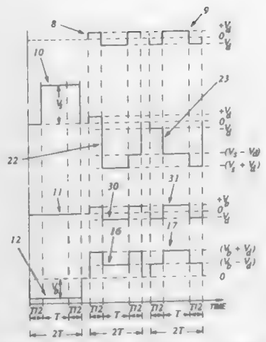
PCT Filed Oct. 4, 1993, Ser. No. 397,177

Claims priority, application United Kingdom, Oct. 3, 1992, 9220836

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—99 **7 Claims**

1. A method of addressing a matrix-type liquid crystal cell including liquid crystal material which is electrically settable to first and second stable optical states, the cell comprising a plurality of pixels which are defined by areas of overlap between members of a first set of electrodes on one side of the material and members of a second set of electrodes, which cross the first set, on the other side of the material, in which method the pixels are addressed in lines, the addressing of each line comprising (a) applying an erase signal having a given polarity to the corresponding electrode of the first set while applying at least one charge-balanced bipolar data signal to each electrode of the second set, thereby setting any pixel of the line which is not already in the first state to that state, and (b) subsequently applying a strobe signal having an opposite polarity to said given polarity to the corresponding electrode of the first set while applying a charge-balanced bipolar data signal to each electrode of the second set, thereby selectively setting to the second state any pixel of the line for which the data signal applied to the corresponding electrode of the second set has a given form, characterised in that when said data signal has said given form it comprises first, second and third successive portions in which it has said given polarity, said opposite polarity and said given polarity respectively, the amplitude of the second portion being less than the amplitude of the strobe signal, the end of the first portion coinciding with or occurring before the start of the strobe signal, the end of the second portion occurring after the start of the strobe signal, and the start of the third portion occurring before the end of the strobe signal.



5,629,719

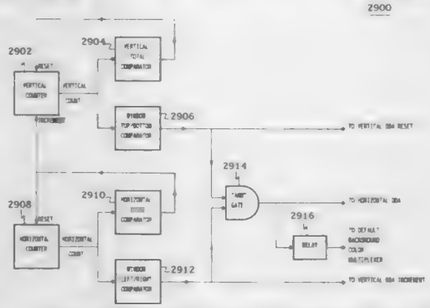
DISPLAYING IMAGE SIGNALS USING HORIZONTAL AND VERTICAL COMPARISONS

Benjamin M. Cahill, III, Ringoes, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 86,636, Jul. 1, 1993, abandoned. This application Jun. 3, 1994, Ser. No. 253,377

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—118 **30 Claims**



1. A computer-implemented method for displaying image signals, comprising the steps of:

(a) generating horizontal counter signals using a processor;

(b) comparing the horizontal counter signals to a window left limit and a window right limit using the processor;

(c) generating horizontal comparison signals in accordance with the comparison of step (b) using the processor;

(d) comparing the horizontal counter signals to a horizontal limit using the processor;

(e) generating horizontal reset signals in accordance with the comparison of step (d) using the processor;

(f) generating vertical counter signals in accordance with the horizontal reset signals using the processor;

(g) comparing the vertical counter signals to a window top limit and a window bottom limit using the processor;

(h) generating vertical comparison signals in accordance with the comparison of step (g) using the processor;

(i) comparing the vertical counter signals to a vertical limit using the processor;

(j) generating vertical reset signals in accordance with the comparison of step (i) using the processor; and

(k) displaying image signals on a display monitor in accordance with the horizontal comparison signals and the vertical comparison signals and in accordance with digital differential accumulator processing, wherein step (k) comprises the steps of:

(1) incrementing a vertical digital differential accumulator value when the horizontal counter signals first fall outside of the window left and right limits;.

(2) resetting the vertical digital differential accumulator value when the vertical counter signals first fall outside of the window top and bottom limits;

(3) incrementing a horizontal digital differential accumulator value when the horizontal counter signals fall within the window left and right limits and the vertical counter signals fall within the window top and bottom Limits;

(4) resetting the horizontal digital differential accumulator value when the horizontal counter signals fall outside of the window left and right limits; and

(5) resetting the horizontal digital differential accumulator value when the vertical counter signals fall outside of the window top and bottom limits.

5,629,720

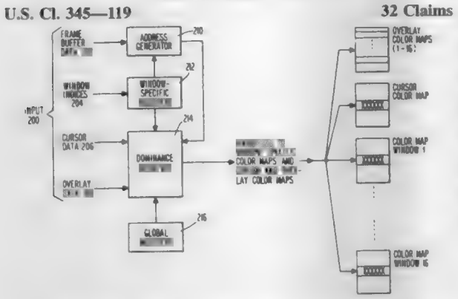
DISPLAY MODE PROCESSOR

Robert W. Cherry, Loveland; Erin A. Handgen, Ft. Collins, and Brad D. Reak, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 39,551, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 650,513, Feb. 5, 1991, abandoned. This application Apr. 24, 1995, Ser. No. 427,467

Int. Cl.[6] G09G *5/14*

U.S. Cl. 345—119 **32 Claims**



1. A computer graphics system having a display device, comprising:

means for processing input display data for display on said display device;

a window-specific color look-up table for each display window of said display device for storing color values of pixels to be displayed within corresponding display windows of said display device, each window-specific color look-up table having color values stored therein in a format of one of a plurality of display modes for pixels to be displayed within a corresponding display window of said display device;

a display mode processor for mapping said processed input display data into addresses to said window-specific color look-up tables, said display mode processor comprising means, responsive to input window index data specifying which display window of said display device said input display data is to be displayed in, for holding window-specific control information for each display window of said display device and for outputting window specific control information including display mode control data specifying in which of said plurality of display modes the display window selected by said window index data will display said input display data, and means, responsive to said window-specific control information for the selected display window, for converting said processed input display data into an addresses to the window-specific color look-up table corresponding to the selected display window in accordance with a display mode format for the selected display window specified by said window-specific control information; and

means for providing to said display device the color values at addresses in said window-specific color look-up tables determined by said display mode processor.

5,629,721

GRAPHICS DISPLAY SYSTEM

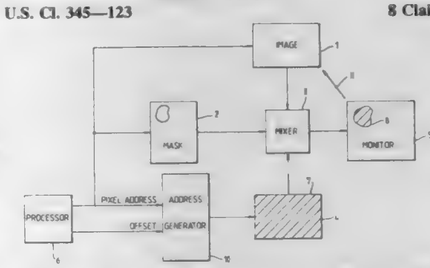
Richard A. Kirk, Herts, England, assignor to Crosfield Electronics Limited, Herts, England

Continuation of Ser. No. 684,095, Apr. 12, 1991, abandoned. This application Mar. 28, 1994, Ser. No. 218,234

Claims priority, application United Kingdom, Apr. 12, 1990, 9009476

Int. Cl.[6] G09G *5/34*

U.S. Cl. 345—123 **8 Claims**



1. A graphics display system comprising a monitor; a first frame store for holding digital data defining the colour content of an underlying image to be displayed on said monitor; a second frame store for holding an array of control data, there being a control data value corresponding to each pixel of the underlying image in said first frame store; and processing means to cause said monitor to display the underlying image in said first frame store under control of the control data array, wherein said processing means is adapted to cause a second image, having contrast image data that is scrolled continuously within it, to be mixed with the underlying image under control of the values in the control data array so as to distinguish said second image from said underlying image.

5,629,722

SECTION ERASURE CONTROL APPARATUS OF CHARACTER GENERATOR

Yong G. Oh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 59,653, May 12, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,227

Claims priority, application Rep. of Korea, May 15, 1992, 8217/1992

Int. Cl.[6] G09G *5/22*

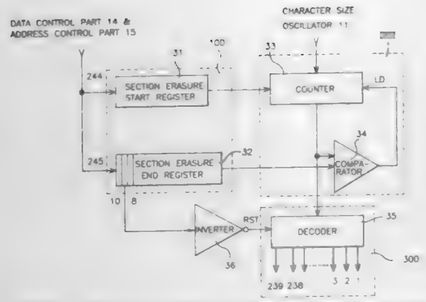
U.S. Cl. 345—141 **13 Claims**

1. A section erasure control apparatus for a character generator for removing an erroneous character inserted during interfacing of the character generator with a microprocessor, comprising:

section erasure data receiving means for receiving section erasure data, including a section erasure start address, a section erasure end address, and erasure on/off bit data as one data block from a memory of the microcomputer;

section erasure region control means for analyzing said section erasure data and identifying a section erasure region which defines all character areas to be erased; and

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decoding means for decoding output data from said section erasure region control means and outputting an erasure execution signal identifying the section erasure region in accordance with said decoding;

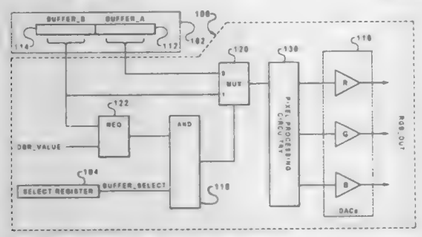
said character generator erasing all character areas to be erased in accordance with the erasure execution signal.

5,629,723

GRAPHICS DISPLAY SUBSYSTEM THAT ALLOWS PER PIXEL DOUBLE BUFFER DISPLAY REJECTION

Roderick M. P. West, Colchester, and Edward K. Evans, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1995, Ser. No. 528,866
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—201 **21 Claims**



1. A graphics display subsystem that allows rejection of double buffer display of pixel data in a graphics layer, comprising:

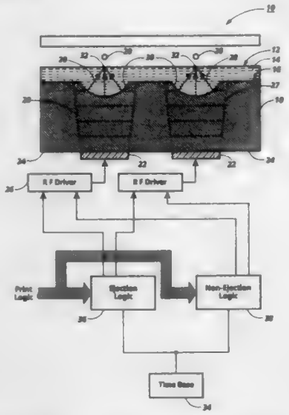
a double buffer reject circuit that compares one or more bits of each double buffer sub-pixel field of a given pixel with a predetermined double buffer reject value to determine equality of the one or more bits and the predetermined double buffer reject value, wherein the given pixel is represented by binary bits and wherein the given pixel is divided into two or more sub-pixel fields including one or more double buffer sub-pixel fields, and wherein the double buffer reject circuit receives a buffer select signal selecting one of the two or more sub-pixel fields of the given pixel to be accessed during a current display frame, the double buffer reject circuit accessing the selected sub-pixel field of the given pixel when the buffer select signal does not select a double buffer sub-pixel field or when the buffer select signal selects a particular double buffer sub-pixel field and the comparison for that particular double buffer sub-pixel field does not show equality, and further the double buffer reject circuit accessing a predetermined one of the two or more sub-pixel fields of the given pixel when the buffer select signal selects a particular double buffer sub-pixel field and the comparison for that particular double buffer sub-pixel field shows equality.

5,629,724

STABILIZATION OF THE FREE SURFACE OF A LIQUID

Scott A. Elrod, Redwood City; Butrus T. Khuri-Yakub, Palo Alto, and Calvin F. Quate, Stanford, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 29, 1992, Ser. No. 890,995
Int. Cl.[6] B41J *2/04*
U.S. Cl. 347—10 **2 Claims**



1. An apparatus for stabilizing the spatial location of the free surface of a liquid against variations in the acoustic impulse induced rate of droplet ejection from the free surface of the liquid, the apparatus comprising:

a transducer for converting input electrical energy into acoustic radiation;

means for focusing said acoustic radiation into an area near the free surface of the liquid;

a time base for segmenting time into a plurality of ejection periods;

means for ascertaining if a droplet is to be ejected in each of said ejection periods; and

a driver operatively connected to said ascertaining means and to said transducer, said driver for inputting electrical energy to said transducer to create an impulse of acoustic radiation sufficient to cause droplet ejection from the free surface of the liquid in each of said ejection periods in which a droplet is to be ejected, said driver **38** further for inputting electrical energy to said transducer sufficient to cause substantially the same acoustic radiation to be directed toward the free surface of the liquid, but with impulse characteristics insufficient to cause droplet ejection in each of said ejection periods in which a droplet is not to be ejected.

5,629,725

CARRIAGE MOUNT FOR AN INK JET CARTRIDGE

Eugene Buican, Cordova, Tenn., assignor to Brother International Corporation, Somerset, N.J.

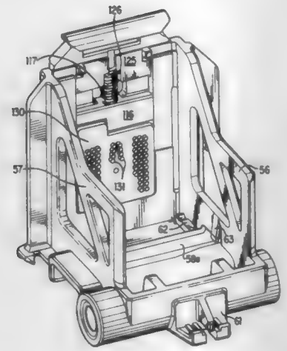
Filed Jan. 4, 1995, Ser. No. 368,537
Int. Cl.[6] B41J *2/01*
U.S. Cl. 347—49 **19 Claims**

1. A carriage for an ink jet cartridge having a nozzle section, comprising:

a first side section, a second side section and a connecting section, said first side section, second side section and connecting section having a U-shape configuration;

a positioning bar attached to and extending between said first side section and said second side section parallel to and offset from said connecting section;

a latching spring; and



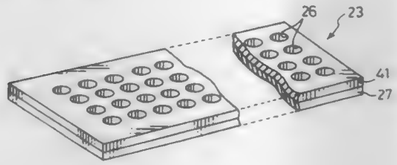
a latching member mounted to said connecting section wherein said connecting section has an opening for receiving a first part of said latching member and said latching spring is mounted between and in contact with said first part of said latching member and an opposing part of said opening of said connecting section.

5,629,726

IMAGE FORMING APPARATUS WITH ELECTROSTATICALLY CONTROLLED DEVELOPER PARTICLE MANIPULATION

Hideo Yamasa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1995, Ser. No. 550,767
Claims priority, application Japan, Nov. 9, 1994, 6-275313
Int. Cl.[6] B41J *2/385*
U.S. Cl. 347—55 **33 Claims**



1. An image forming apparatus for forming an image by allowing developing particles to fly, comprising:

negatively charged developing particles;

a holder for holding said developing particles;

a counter electrode provided oppositely to said holder;

electric field forming means for forming an electric field which allows said developing particles to fly by generating prescribed potential difference across said holder and said counter electrode;

a control electrode having a plurality of gates for letting said flying developing particles pass through, said control electrode provided between said holder and said counter electrode; and

control electrode control means for changing the electric field formed between said holder and said counter electrode by controlling the potential given to said control electrode so as to control the flying of said developing particles, which pass through each gate,

wherein said control electrode includes:

an insulating layer which is made of resin with electron attractiveness stronger than that of resin contained in said developing particles and electrostatically repulses said developing particles because said insulating layer is negatively charged due to contact with said developing particles; and

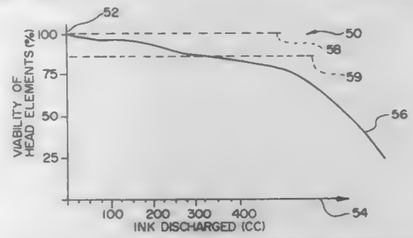
an electrode layer, to which a potential is given, formed on said insulating layer.

5,629,727

CONTINUOUS INK REFILL SYSTEM FOR DISPOSABLE INK JET CARTRIDGES HAVING A PREDETERMINED INK CAPACITY

Paul E. Erickson, 1112 Hidden Pond Trail, Prior Lake, Minn. 55372

Continuation of Ser. No. 345,510, Nov. 28, 1994, abandoned, which is a continuation of Ser. No. 139,576, Oct. 20, 1993, Pat. No. 5,369,429. This application Feb. 21, 1996, Ser. No. 604,401
Int. Cl.[6] B41J *2/175*
U.S. Cl. 347—85 **23 Claims**



1. A continuous ink refill system for an ink jet printer having a print carriage that moves laterally with respect to a print-receiving medium, the refill system comprising:

(a) a disposable ink jet cartridge removably mountable in the print carriage, the disposable ink jet cartridge housing, in a self-contained unit:

(1) an internal ink supply container defining a first volume of liquid ink of at least about 40 cubic centimeters, the internal ink supply container being maintained at a sub-atmospheric pressure and being free of a foam insert; and

(2) a print head coupled directly with the internal ink supply container to receive liquid ink from the internal ink supply container for discharge to the print-receiving medium during a printing operation;

the print head having a known pattern of reliability expressed as a function of the amount of liquid ink discharged through the print head during the printing operation;

the first volume of liquid ink of the internal ink supply container defining an amount of liquid ink that, when discharged through the print head, corresponds to a pattern of reliability above a first predetermined minimum value corresponding to a viability of the print head of about 99%;

(b) an external ink reservoir container, external to the disposable ink jet cartridge, defining a second volume of liquid ink separate from the first volume of liquid ink to supply liquid ink to the internal ink supply container of the disposable ink jet cartridge, the second volume of liquid ink being at least about 160 cubic centimeters, the second volume of liquid ink being greater than the first volume of liquid ink;

the sum of the first volume of liquid ink and the second volume of liquid ink defining an extended volume of liquid ink;

the extended volume of liquid ink defining an amount of liquid ink dischargeable through the print head without the corresponding pattern of reliability falling below a second predetermined minimum value corresponding to a viability of the print head of about 75%, the second predetermined minimum value being lower than the first predetermined minimum value; and

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(c) flexible tubing operably coupled to the internal ink supply container and to the external ink reservoir container to draw liquid ink from the external ink reservoir container to the internal ink supply container due to the sub-atmospheric pressure maintained within the internal ink supply container, freely of moving mechanical ink-transfer components and freely of capillary action, as liquid ink is discharged by the print head from the internal ink supply container;

(d) wherein:

(1) the external ink reservoir container and the flexible tubing are sealed together, replacement of the external ink reservoir container consequently causing replacement of at least a portion of the flexible tubing;

(2) the disposable ink jet cartridge and the flexible tubing are sealed together, replacement of the disposable ink jet cartridge consequently causing replacement of at least a portion of the flexible tubing; and

(3) the operating time during which the reliability pattern of the print head remains above the second predetermined minimum value during use of the ink jet printer corresponds to the operating time needed to exhaust the first and second volumes of liquid ink in the internal ink supply container and the external ink reservoir container.

5,629,728

INK CONTAINER HAVING ATMOSPHERE COMMUNICATING SECTION AND RECORDING HEAD

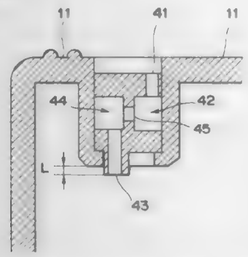
Seiichiro Karita, Yokohama, and Teruo Arashima, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 911,950, Jul. 10, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 356,777

Claims priority, application Japan, Jul. 15, 1991, 3-173957

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **19 Claims**



1. An ink container having an ink containing section for containing ink, a buffer chamber communicating with said ink containing section and an atmosphere communicating section communicating with outside air, said atmosphere communicating section comprising:

a plurality of chambers disposed between an inside of said ink containing section and the outside air; and

a communicating port opening communicating each of said chambers with another of said chambers, said communicating port opening being smaller in size than each of said chambers communicating therewith,

wherein a portion of said atmosphere communicating section including an inner opening communicates with the inside of said ink containing section through the buffer chamber, and said portion projects into the buffer chamber.

5,629,729

THERMAL PRINTER AND OPTICAL FIXING DEVICE THEREFOR

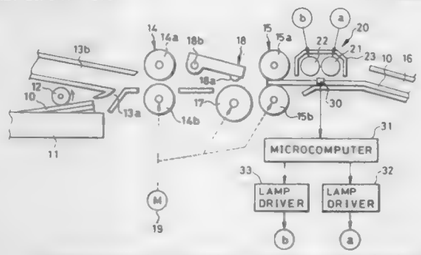
Takeshi Fujishiro, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 11, 1996, Ser. No. 661,724

Claims priority, application Japan, Jun. 19, 1995, 7-152062; Sep. 18, 1995, 7-238447

Int. Cl.[6] B41J *2/32;* **B41M** *5/26*

U.S. Cl. 347—175 **16 Claims**



1. A thermal printer for use with a recording medium having at least a thermosensitive layer which develops a color when heated and is fixed when exposed to a predetermined quantity of electromagnetic rays of a specific kind, the thermal printer comprising:

a thermal head which records an image to the thermosensitive layer while the recording medium is transported along a transport path;

a the first fixing lamp for projecting the electromagnetic rays onto the recording medium to fix the thermosensitive layer after recording, the fixing lamp extending across the transport path of the recording medium such that an intermediate portion of the fixing lamp, where luminance is approximately uniform, extends over a range exceeding a maximum width of the recording medium;

a photosensor disposed on a lateral side of the recording medium so as to receive the electromagnetic rays from the intermediate portion of the fixing lamp; and

a control device for controlling the quantity of electromagnetic rays applied to the recording medium in accordance with an illuminance value detected by the photosensor.

5,629,730

THERMAL PRINTER AND PRINTING METHOD THEREOF

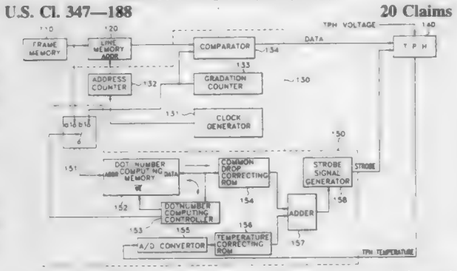
Sang-sin Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed May 17, 1994, Ser. No. 243,784

Claims priority, application Rep. of Korea, May 17, 1993, 1993-8418

Int. Cl.[6] B41J *2/36;2/37;2/365*

U.S. Cl. 347—188 **20 Claims**



1. A system for compensating for common drop and thermal print head (TPH) temperature in a thermal printer of the type having,

said thermal print head (TPH), which receives a strobe signal and printing data, including heating elements which produce dots on a printing medium when said heating elements are heated during a heating period,

gradation controlled printing means, which outputs the printing data to said TPH, for printing a line of input data according to a gradation scale corresponding to a predetermined number of gradation levels by causing said TPH to print a number of successive dots for a given pixel, the number of dots printed depending upon the gradation scale and said value of the input data for the given pixel,

a system for compensating for common drop and TPH temperature comprising:

first detecting means, which receives the line of input data and an addressing data output from said gradation controlled printing means, for developing data representing a number of dots simultaneously printed by said TPH in a given gradation level of printing;

second detecting means for developing data representing the temperature of said TPH;

correcting means which outputs the strobe signal to said TPH responsive to said data from said first and second detecting means for controlling the heating period of said TPH during printing of each gradation level to compensate for the temperature of said TPH and the common drop during each gradation level of printing.

5,629,731

THERMAL PRINTING APPARATUS HAVING A THERMAL PRINT HEAD AND LINE BUFFER

Sang-cheol Kwon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 175,231, Dec. 29, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 620,746

Claims priority, application Rep. of Korea, Dec. 29, 1992, 92-25916

Int. Cl.[6] B41J *2/355*

U.S. Cl. 347—211 **13 Claims**



13. A sublimate-type thermal printing apparatus, comprising:

a frame memory which receives and stores by frame units an image signal input from a signal source;

a selector which reads and selects R, G, and B signals from said frame memory;

a color converter which converts the image signal selected by said selector into a respective complimentary color and outputs the result;

a corrector which performs at least one of gamma-correction, resistance correction, temperature correction, and color correction on the output of said color converter to produce corrected data;

a driving signal generator which generates a parallel clock signal, a latch signal, and a strobe signal;

a thermal print head, comprising:

a line buffer for storing m bytes of the corrected data in response to the parallel clock signal;

a latch register coupled to said line buffer for latching, in response to the latch signal, one line unit of data at a time as output by said line buffer according to a predetermined bit sequence, wherein each line unit of data comprises m bits of data according to the predetermined bit sequence;

a plurality of heating elements for emitting heat for a period corresponding to a desired gradation level according to the data latched by said latch register and the strobe signal, wherein m indicates the number of heating elements, and each of said m bytes of the corrected data is expressed in n-bit form when the number of the gradations is 2^n; and

a controller for controlling reception of the image signal by said frame memory and for controlling the reading of the R, G, and B signals from said frame memory by said selector.

5,629,732

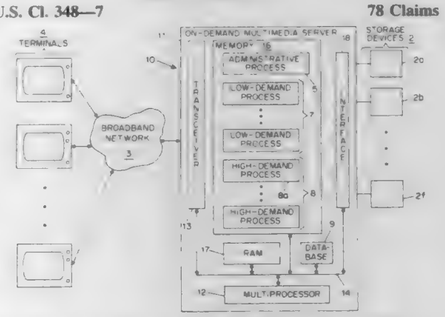
VIEWER CONTROLLABLE ON-DEMAND MULTIMEDIA SERVICE

Alan S. Moskowitz, Weston, Conn., and Michael Rizkalla, Pleasantville, N.Y., assignors to The Trustees of Columbia University in the City of New York

Filed Mar. 29, 1994, Ser. No. 219,670

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 **78 Claims**



1. Apparatus for providing multimedia events comprising:

a memory for storing a plurality of data groups at different memory locations, said data groups representative of a selected multimedia event;

a processing element for retrieving data groups from said memory; and

a transmitter for providing a plurality of data streams, each data stream representative of a version of the selected multimedia event starting at a different time; said processing element generating a plurality of pointers, each pointer being associated with a different data stream, each pointer indicating memory locations from where data groups are retrieved to form the data stream associated therewith.

5,629,733

ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM AND METHOD WITH DISPLAY AND SEARCH OF PROGRAM LISTINGS BY TITLE

Roger Youman, Wayne, Pa., and Marney Morris, Palo Alto, Calif., assignors to News America Publications, Inc., New York, N.Y., and Telecommunications of Colorado, Inc., Englewood, Colo.

Filed Nov. 29, 1994, Ser. No. 346,603

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 **23 Claims**

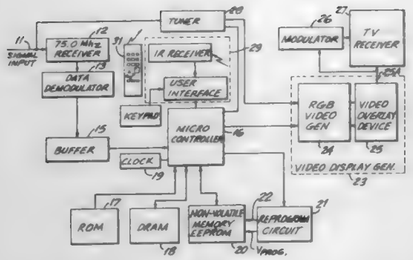
1. An electronic television programming guide for use in connection with a television receiver for displaying a plurality of television programs from a plurality of program sources on a plurality of user-selectable television channels comprising:

user control means for issuing control commands, including channel-control commands;

data processing means for receiving said control commands and for generating video control commands;

video display generator means adapted to receive video control commands from said data processing means for generating and displaying a visual display of a plurality of television

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program titles on said television receiver, said plurality of television program titles arranged alphabetically by title; and

selection means for allowing said user to select a title for display on said television receiver by selecting the first n characters of said title, where n is greater than one; said data processing means being responsive to said selection means and adapted to select said plurality of television program titles for display on said television receiver in response to said n characters;

wherein said video display generator means displays said n characters and said selection means comprises means for causing each of said n characters to cycle forward and backward through a plurality of alphanumeric characters and means for assigning one of said alphanumeric characters to each of said n characters.

5,629,734

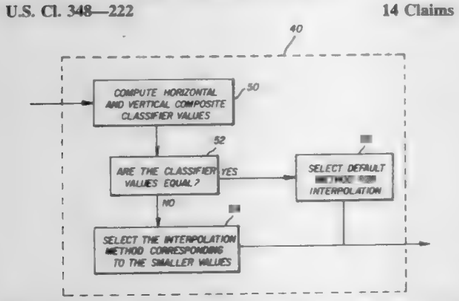
ADAPTIVE COLOR PLAN INTERPOLATION IN SINGLE SENSOR COLOR ELECTRONIC CAMERA

John F. Hamilton, Jr., and James E. Adams, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 17, 1995, Ser. No. 407,423

Int. Cl.[6] H04N *5/228;9/07*

U.S. Cl. 348—222 **14 Claims**



1. In apparatus for utilizing a digitized image signal obtained from an image sensor having color photosites aligned in rows and columns that generate at least three separate color values but only one color value for each photosite location, said apparatus including means for interpolating the color values for each photosite location so that each photosite has the three separate color values, said means for interpolating the color values comprising:

means for storing the digitized image signal;

a processor operative with said storing means for generating an appropriate color value missing from a photosite location by the interpolation of an additional color value for such photosite locations from color values of different colors than the missing color value at nearby photosite locations, said processor including

means for obtaining Laplacian second-order values and gradient values in at least two image directions from nearby photosites of the same column and row;

means for adding the Laplacian second-order values and the gradient values to define a classifier and for selecting a preferred orientation for the interpolation of the missing color value based upon the classifier; and

means for interpolating the missing color value from nearby multiple color values selected to agree with the preferred orientation.

5,629,735

IMAGE SENSING DEVICE HAVING A SELECTABLE DETECTING AREA

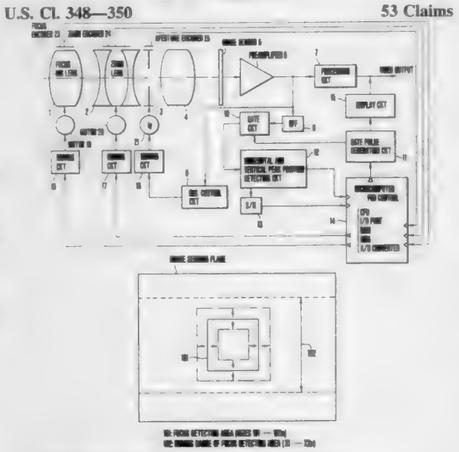
Kitahiro Kaneda; Akihiro Fujiwara, both of Kanagawa-ken; Kunihiko Yamada, Tokyo; Hirofumi Suda, Kanagawa-ken; Masamichi Toyama, Kanagawa-ken, and Hideyuki Arai, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 158,145, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 888,458, May 20, 1992, abandoned, which is a continuation of Ser. No. 565,278, Aug. 9, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,227

Claims priority, application Japan, Aug. 20, 1989, 1-213837; Jan. 9, 1990, 2-002971

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—350 **53 Claims**



1. An image processing apparatus, comprising:

a) setting means for movably setting a detecting area in an image screen;

b) detecting means for detecting a predetermined information obtained within said detecting area;

c) computing means for computing a setting position of said detecting area; and

d) control means arranged to move said detecting area on the basis of an output of said computing means and to control and vary the movable range of said detecting area in said image screen and/or the moving response speed of said detecting area on the basis of information on a depth of field.

5,629,736

CODED DOMAIN PICTURE COMPOSITION FOR MULTIMEDIA COMMUNICATIONS SYSTEMS

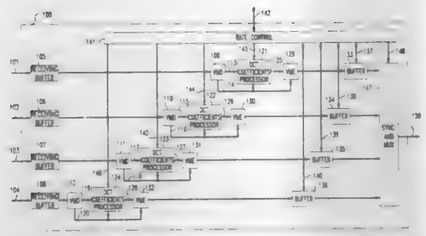
Barin G. Haskell, Tinton Falls, and Li Yan, Holmdel, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 1, 1994, Ser. No. 332,985

Int. Cl.[6] H04N *7/12;11/02*

U.S. Cl. 348—387 **3 Claims**

1. A compressed domain video composition system for integrating up to four coded video input bit streams into a composite video output bit stream in a compressed domain, the system comprising:



(a) a bit rate reduction device for selectively applying bit rate reduction to the up to four coded video input bit streams to generate a set of bit rate reduced video bit streams each having a corresponding rate-reduced bit rate,

(b) a compositing device for combining the bit rate reduced video bit streams into the composite video output bit stream, the composite video output bit stream having a bit transfer rate equal to the sum of the rate-reduced bit rates,

wherein the bit rate reduction device selectively applies rate reduction to any of the up to four coded video input bit streams so as to provide a composite video output bit stream having a desired bit transfer rate:

(c) up to four buffers for receiving a corresponding plurality of up to four coded video input bit streams;

(d) a synchronization and multiplexing device for synchronizing the up to four coded video input bit streams and multiplexing the up to four coded video input bit streams into a single, compressed, composite video output bit stream;

(e) for each of the up to four coded video input bit streams, a corresponding transmission rate reduction system wherein a first compressed video bit stream having a first transfer rate is converted into a second compressed video bit stream having a second transfer rate, the second transfer rate being slower than the first transfer rate, the transmission rate reduction system comprising:

(i) a video multiplex decoder for demultiplexing and decoding the first video bit stream to generate (a) quantized DCT coefficient microblocks representing a plurality of digitized frequency components for the first video bit stream, (b) motion vector pairs specifying a vertical displacement and a horizontal displacement for each microblock; and (c) header information specifying a starting point for a compressed video image, compressed video image synchronization information, and the location of each microblock or group of microblocks in the compressed video image;

(ii) a DCT coefficients processor for receiving quantized DCT coefficient microblocks from the video multiplex decoder and receiving quantization information from a rate control processor to generate a set of processed DCT coefficient microblocks containing fewer DCT coefficients than the number of coefficients in the quantized DCT coefficient microblocks received from the video multiplex decoder; and

(iii) a video multiplex encoder for encoding requantized DCT coefficient microblocks obtained from the DCT coefficients processor, for encoding a motion vector obtained from the DCT coefficients processor, and for multiplexing header information with the encoded motion vector and encoded DCT coefficient microblocks to produce the second compressed video bit stream; and

(f) a central rate control processor providing control information for the up to four DCT coefficients processors, the rate control processor comprising a processor for generating new quantization information for the up to four DCT coefficients processors, each DCT coefficients processor coupled to a transmission buffer, the new quantization information generated according to a transmission buffer status value specifying the number of available bits remaining in the video transmission buffer, and according to a desired bit rate for the composite video output bit stream.

5,629,737

METHOD AND APPARATUS FOR SUBBAND CODING VIDEO SIGNALS

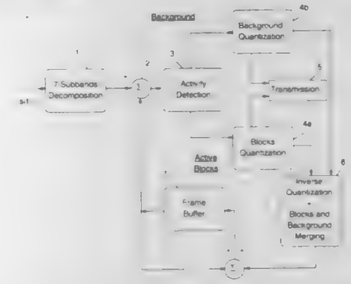
Jean Menez, Cagnes-sur-Mer; Michele Rosso, Saint-Jeannet, and Paolo Scotton, Vence, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 28,871, Mar. 10, 1993, abandoned. This application Mar. 17, 1995, Ser. No. 405,727

Claims priority, application European Pat. Off., Jun. 30, 1992, 92480095

Int. Cl.[6] H04N *7/12*

U.S. Cl. 348—398 **10 Claims**



1. A method for digitally coding video signals using subband decomposition of the video signals, said method comprising:

filtering each video signal using a tree-structured filter bank into a plurality of subband video signals;

generating a plurality of predicted subband images from said plurality of subband video signals using a differential pulse code modulation loop;

determining a plurality of subband error prediction images by subtracting from each of said plurality of subband video signals a corresponding predicted subband image from said plurality of predicted subband images;

for each of a first set of said plurality of subband error prediction images, performing an activity detection operation based on a plurality of threshold values to separate each subband error prediction image into a plurality of subband active blocks in which interframe motion is detected, and a plurality of subband background blocks in which no interframe motion is detected; and

for each of a second set of said plurality of subband error prediction images, determining a plurality of subband active blocks by correlation with the plurality of subband active blocks in said first set of subband error prediction images;

for each of said plurality of subband error prediction images, quantizing the plurality of subband active blocks and the plurality of subband background blocks separately with a multi-resolution quantizer that encodes each of said plurality of subband active blocks and each of said plurality of subband background blocks using a number of bits associated with encoding each active block and each background block in the corresponding subband wherein each video signal is filtered into seven subband video signals and said activity detection step comprises:

performing an activity detection step on subband one using a first plurality of threshold values to determine the active blocks and background blocks in said subband one; and

performing a joined activity detection on subbands two to four using a second plurality of threshold values to determine the active blocks and background blocks in said subbands two to four, wherein a block is determined to be active if it is active in at least one of subbands two to four.

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5,629,738

APPARATUS FOR GENERATING A DETECTION CLOCK FOR DETECTING DIGITAL DATA CONTAINED IN A COMPOSITE VIDEO SIGNAL AND A DATA DETECTOR USING DETECTION CLOCK

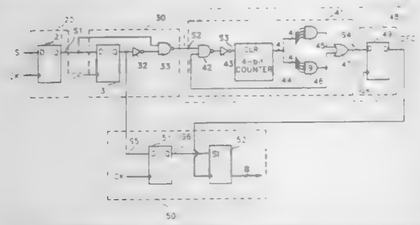
Hak-sung Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 480,327

Claims priority, application Rep. of Korea, Jun. 10, 1994, 94-13097

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—465 **20 Claims**



1. An apparatus for generating a detection clock signal for detecting digital data contained in a vertical blanking period of a received composite video signal based on an analog clock run-in signal which has a constant frequency and which is contained in said vertical blanking period of said received composite video signal, said apparatus comprising:

a slicer for generating a slicing reference signal based on said analog clock run-in signal, for slicing said analog clock run-in signal by using said slicing reference signal, and for outputting sliced data according to said slicing of said analog clock run-in signal;

a synchronizing portion for receiving said sliced data from said slicer, wherein said synchronizing portion synchronizes said sliced data with an internal clock signal to produce synchronized sliced data and wherein said internal clock signal has a frequency higher than a frequency of said analog clock run-in signal;

an edge detecting portion for receiving said synchronized sliced data, for detecting rising edges of pulses of said synchronized sliced data, and for outputting an edge detection signal which comprises pulses that respectively correspond to said rising edges; and

a clock generator for receiving said edge detection signal from said edge detecting portion and for generating a detection clock signal based on said pulses of said edge detection signal.

5,629,739

APPARATUS AND METHOD FOR INJECTING AN ANCILLARY SIGNAL INTO A LOW ENERGY DENSITY PORTION OF A COLOR TELEVISION FREQUENCY SPECTRUM

Robert A. Dougherty, Ozona, Fla., assignor to A.C. Nielsen Company, Schaumburg, Ill.

Filed Mar. 6, 1995, Ser. No. 399,187

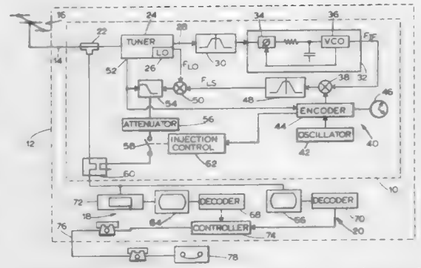
Int. Cl.[6] H04N *7/081*

U.S. Cl. 348—486 **52 Claims**

1. A method for compatibly transmitting and receiving both a program signal and an ancillary signal within a frequency band normally occupied by the program signal alone, the program signal including a modulated carrier having a carrier frequency and a low energy density portion of the frequency band, the method comprising the following steps:

receiving the program signal; and,

selectively adding the ancillary signal at an injection frequency within the lower energy density portion of the frequency band



so that the injection frequency is locked to the carrier frequency.

5,629,740

VIDEO TRANSMITTER FOR EFFECTING AFTER-RECORDING

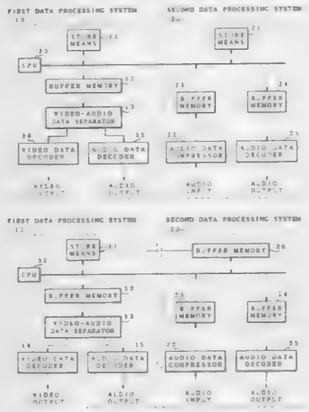
Hiroshi Tanaka; Toru Kawanobe, and Masaru Kawazoe, all of Tsurugashima, Japan, assignors to Toko, Inc., Japan

Filed Aug. 18, 1995, Ser. No. 515,336

Claims priority, application Japan, Aug. 26, 1994, 6-225623

Int. Cl.[6] H04N *5/38;9/475*

U.S. Cl. 348—515 **4 Claims**



1. A video transmitter including a first data processing system wherein compressed and encoded video-audio data are read out of a first store means under the control of a CPU and then decoded, said video transmitter comprising a second data processing system including an audio data compressor, a first buffer memory, second store means, a second buffer memory, and an audio data decoder,

wherein when after-recording is effected, an audio signal is inputted to said audio data compressor in parallel with a reproduce process of said first data processing system, and audio data resulting from compression of said audio signal in said audio data compressor is stored in said second store means through said first buffer memory; and

wherein when after-recording is reproduced, audio data is read out of said second store means in parallel with the reproduce process of said first processing system, then inputted to said audio data decoder through said second buffer memory and decoded, while the data processing operation of said first data processing system and the data processing operation of said second data processing system are effected in synchronism with each other.

3. A video transmitter comprising:

a first data processing system wherein compressed and encoded video-audio data are read out of a first store means under

control of a CPU and then separated into video and audio data which in turn are decoded and reproduced;

an audio data compressor wherein a audio signal to be added during after-recording operation is inputted in parallel with reproduce process of said first data processing system and said audio signal is compressed and converted to audio data which in turn is passed to a first buffer memory;

the first buffer memory being adapted for transmitting said audio data to a second store means;

the second store means being arranged such that said audio data inputted thereto from said audio data compressor through said first buffer memory is stored therein and during reproduction of after-recording, said audio data is read out in parallel with the reproduce process of said first data processing system and transferred to a second buffer memory;

the second buffer memory being adapted for transferring said audio data to an audio data decoder during reproduction of after-recording; and

the audio data decoder being adapted for decoding said audio data during reproduction of after-recording, wherein the data processing operations of said first and second data processing systems are synchronized with the aid of a CPU.

5,629,741

LATERAL IMAGE REVERSAL OF DIGITAL TELEVISION SIGNALS

Robert W. Hopper, Ipswich, England, assignor to British Telecommunications public limited company, London, England

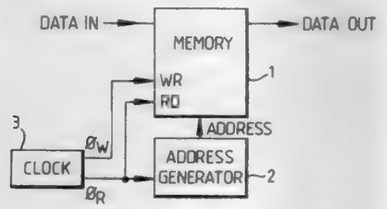
PCT No. PCT/GB90/01253, § 371 Date Feb. 5, 1992, § 102(e) Date Feb. 5, 1992, PCT Pub. No. WO91/03132, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 9, 1990, Ser. No. 828,987

Claims priority, application United Kingdom, Aug. 15, 1989, 8918584

Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—578 **13 Claims**



1. Apparatus for line inversion of an input television signals, each line of which contains a time multiplex sequence of interleaved luminance samples and first and second chrominance samples, said apparatus comprising:

a memory having an address generator arranged to produce during each two-line period first and second address sequences, each one of said sequences being of one television signal line period duration, and

read/write control means operable during a first line of the input signal to write the samples of said first line of the input signal, in the order of receipt, into the locations specified by the generated sequence for said first line and, during a subsequent line of the input signal, to read out samples from, and to write the samples of said subsequent line of the input signal, in the order of receipt, into, the locations specified by the generated sequence for said subsequent line,

the first and second address sequences being such that the luminance samples are read out in the reverse order from that in which they were received, and that the output first and second chrominance samples, considered separately, are read out in the reverse order from that in which they were received.

5,629,742

COMPATIBLE NON LINEAR PRE-EMPHASIS FOR COMPOSITE VIDEO SIGNALS

Brian H. Beech, Bishopstoke, England, assignor to National Transcommunications, Ltd., Hampshire, England

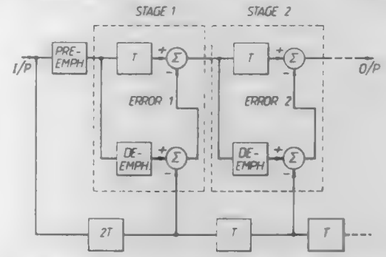
PCT No. PCT/GB91/02288, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/11732, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 20, 1991, Ser. No. 78,168

Claims priority, application United Kingdom, Dec. 20, 1990, 9027598

Int. Cl.[6] H04N *5/21;5/217*

U.S. Cl. 348—613 **15 Claims**



1. A method for pre-emphasising a video signal comprising a first component and a second component, the second component being modulated onto a subcarrier, the method comprising the steps of:

a) filtering the high frequency portion of the video signal to attenuate the signal over a range of frequencies including the subcarrier frequency, the filtering attentuating the signal at the subcarrier frequency substantially to zero;

b) applying a non-linear processing to the filtered high frequency portion of the video signal to produce a first pre-emphasised signal;

c) applying a non-linear de-emphasis to the first pre-emphasised signal to produce a reconstructed signal, the transfer function of the applied de-emphasis being inverse to that of the desired pre-emphasis;

d) comparing the reconstructed signal with the input video signal to produce a first error signal; and

e) subtracting the first error signal from the pre-emphasised signal to produce a closer approximation to the desired pre-emphasised signal.

5,629,743

VIDEO SIGNAL PROCESSOR FOR TWO-PANEL LIQUID CRYSTAL PROJECTOR

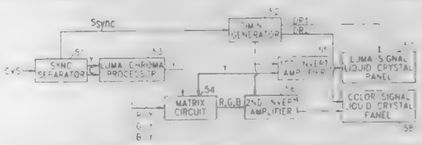
Myeong-hwan Lee; Han-il Ko, and Dong-il Song, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 7, 1995, Ser. No. 418,625

Claims priority, application Rep. of Korea, Apr. 7, 1994, 94-7248

Int. Cl.[6] H04N *5/74;9/67*

U.S. Cl. 348—751 **8 Claims**



2. A video signal processing apparatus for use in a two-panel liquid crystal projector, comprising:

a luminance/chroma processor for receiving a luminance signal and a chroma signal and for generating a first luminance signal and a plurality of color difference signals;

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a matrix circuit for receiving the first luminance signal and the plurality of color difference signals and for generating a second luminance signal and a plurality of color signals using one of the plurality of color difference signals as a reference; and

means for receiving and processing the second luminance signal and the plurality of color signals, so as to be used by a luminance signal liquid crystal panel and a color signal liquid crystal panel, respectively, wherein the plurality of color difference signals generated by said luminance/chroma processor includes a R-Y color difference signal, a G-Y color difference signal and a B-Y color difference signal, and wherein said matrix circuit comprises:

a minimum value detector for detecting a minimum value among values of the plurality of color difference signals output from said luminance/chroma processor;

a first subtracter for subtracting the minimum value from the R-Y color difference signal output from said luminance/chroma processor to generate a red color signal;

a second subtracter for subtracting the minimum value from the G-Y color difference signal output from said luminance/chroma processor to generate a green color signal;

a third subtracter for subtracting the minimum value from the B-Y color difference signal output from said luminance/chroma processor to generate a blue color signal; and

an adder for subtracting the minimum value from the first luminance signal to generate the second luminance signal.

5,629,744

ACTIVE MATRIX DISPLAY DEVICE AND TIMING GENERATOR

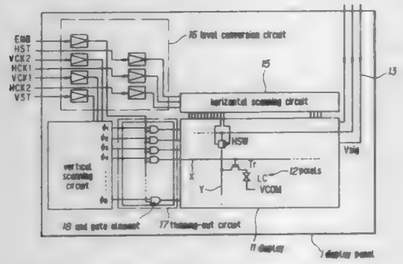
Akio Kawamura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 424,058

Claims priority, application Japan, Apr. 22, 1994, 6-107600

Int. Cl.[6] H04N *3/14;9/30;5/46*

U.S. Cl. 348—792 **4 Claims**



1. An active matrix display device comprising:

a plurality of pixels arranged in a matrix on a normal standard screen;

a vertical scanning circuit for sequentially selecting pixels every line;

a horizontal scanning circuit for writing single horizontal period portions of a wide standard image signal for selected lines of pixels;

a thinning-out circuit for controlling timing of sequential selection by the vertical scanning circuit and thinning-out a prescribed number of horizontal period portions from the wide standard image signal in such a manner that wide displaying compressed in the longitudinal direction of the screen is carried out; and

a control circuit for controlling the horizontal scanning circuit and the vertical scanning circuit in such a manner that a dark signal is written to portions left-over at the top and bottom of the screen during wide displaying at a higher speed than the speed of the image signal,

wherein the control circuit provides a high-speed clock signal at the time of writing the dark signal and drives the horizontal scanning circuit and vertical scanning circuit.

5,629,745

TELEVISION CABINET

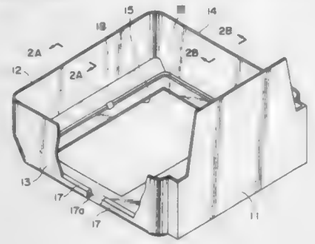
Ryoji Naito, Tokyo; Yumi Imaizumi, Saitama, and Scott Piniz-zotto, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,596

Claims priority, application Japan, Jun. 17, 1994, 6-15838

Int. Cl.[6] B29C *45/00;* **B29D** *22/00;* **H04N** *5/64*

U.S. Cl. 348—836 **9 Claims**



1. A cabinet forming a casing molded integrally by blow molding, comprising:

a first panel having an edge at one end and a continuous portion at an opposite end and formed to a substantially uniform thickness from the one end to the opposite end from a molding resin;

a second panel connected to said continuous portion and formed to a substantially uniform thickness from one end to an opposite end, the thickness being substantially equal to that of the first panel from the molding resin; and

a gas channel formed from the molding resin adjacent said continuous portion and formed to a thickness greater than the thicknesses of the first panel and the second panel, whereby a pressure of the resin is reduced at said gas channel so as to form a substantially uniform thickness in said first and second panels during the blow molding process.

5,629,746

REMOTE IMAGE MAGNIFYING DEVICE

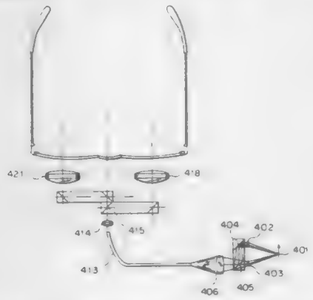
Oren Aharon, 23 Shikma St., Haifa 34739, Israel

Filed Jun. 26, 1995, Ser. No. 494,877

Claims priority, application Israel, Jun. 28, 1994, 110143

Int. Cl.[6] G02C *7/08;1/00;* **H04N** *13/00*

U.S. Cl. 351—57 **4 Claims**



1. A fiber-scope system for use in conjunction with spectacles, comprising:

an objective lens for imaging the object;

an eyepiece;

a coherent fiber-optic bundle for optically coupling the eyepiece to the objective lens, the fiber-optic bundle having an objective end and an eyepiece end; and

mechanical eyepiece means for attaching the eyepiece to the spectacles, in a position wherein a user wearing the spectacles view the object selectively through the spectacles and the system;

a left objective lens for imaging the object;

a right objective lens for imaging the object;

a left eyepiece;

a right eyepiece;

a coherent left fiber-optic bundle for optically coupling the eyepiece to the objective lens, the left fiber-optic bundle having a left objective end and a left eyepiece end; and

a coherent right fiber-optic bundle for optically coupling the eyepiece to the objective lens, the right fiber-optic bundle having a right objective end and a right eyepiece end; and

wherein the mechanical eyepiece means includes means for attaching the left eyepiece to the spectacles adjacent a left eye of the user and for attaching the right eyepiece to the spectacles adjacent a right eye of the user;

whereby the image is simultaneously viewed by a right eye of the user and a left eye of the user.

5,629,747

HAND-HELD OPHTHALMOLOGICAL APPARATUS HAVING A RETRACTABLE FOREHEAD CONTACT MEMBER

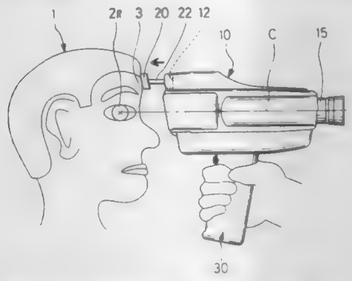
Nobuyuki Miyake, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 566,912

Claims priority, application Japan, Dec. 12, 1994, 6-307928

Int. Cl.[6] A61B *3/10;3/00*

U.S. Cl. 351—218 **5 Claims**



1. A hand-held ophthalmological apparatus comprising:

a measuring unit for measuring a characteristic of an eye of an examines, said measuring unit having a housing portion;

a hand unit, attached to said measuring unit, for being held by an operator;

a forehead contact member for contacting a forehead of the examines, said forehead contact member being supported by a support member that is extendable and retractable relative to said housing portion, and said housing portion having a recessed portion for receiving said forehead contact member when said support member is in a retracted state.

5,629,748

VISUAL FUNCTION EXAMINATION APPARATUS INCLUDING BINOCULAR FIXATION TARGET

Akihiro Hayashi, Toyokawa, and Yasumi Hikosaka, Gamagori, both of Japan, assignors to Nidek Co., Ltd., Japan

Filed Jul. 19, 1995, Ser. No. 504,111

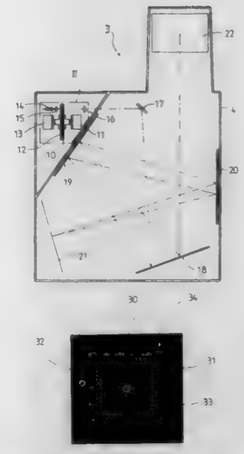
Claims priority, application Japan, Aug. 10, 1994, 6-210484

Int. Cl.[6] A61B *3/02*

U.S. Cl. 351—232 **7 Claims**

1. A visual function examination apparatus, comprising:

an optotype presenting device for presenting optotypes for use in examinations of visual functions of examinee's eyes; and



means for delivering luminous flux from said optotype presenting device to the examinee's eyes;

wherein said optotype presenting device includes examination optotypes for examinations to be carried out when the eyes of the examinee are open, the examination optotypes comprising polarizing plates and a binocular fixation target, which should become fusion impulse to binocular vision, disposed around said examination optotypes.

5,629,749

FILM UNIT HAVING AN INFORMATION PART

Daiki Tsukahara, Kawasaki, and Hideya Inoue, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

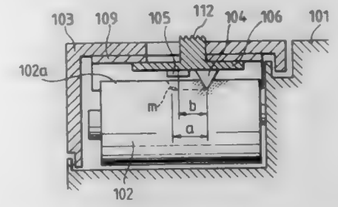
Division of Ser. No. 351,145, Nov. 30, 1994, abandoned, which is a continuation of Ser. No. 247,392, May 23, 1994, abandoned, which is a continuation of Ser. No. 141,694, Oct. 26, 1993, abandoned, which is a continuation of Ser. No. 961,345, Oct. 15, 1992, abandoned, which is a division of Ser. No. 747,458, Aug. 12, 1991, Pat. No. 5,159,365, which is a continuation of Ser. No. 465,310, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 321,793, Mar. 10, 1989, abandoned.

This application Jun. 7, 1995, Ser. No. 472,727

Claims priority, application Japan, Mar. 15, 1988, 63-60916

Int. Cl.[6] G03B *17/26*

U.S. Cl. 396—515 **25 Claims**



1. A film unit having a film and a container for loading in a camera provided with a recorder and a film transporting device, and for unloading from the camera after a part of said film outside said container is rewound into said container by said transporting device, comprising:

an information recording part in which, when an exposure of said film has been conducted by said camera, recording of information showing that said film has been exposed is performed by said recorder.

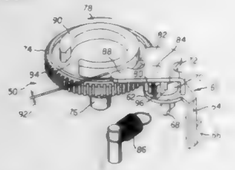
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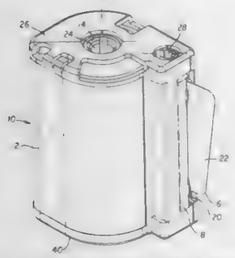
5,629,750

ONE-TIME USE CAMERA UNCOVERS INGRESS OPENING FOR INSERTION TOOL TO EJECT CASSETTE WHEN CASSETTE CLOSED

David C. Smart, Rochester, and Thomas E. Dussinger, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1996, Ser. No. 590,717
Int. Cl.[6] G03B *17/02;17/26*
U.S. Cl. 396—538 7 Claims





1. A camera for use with a film cassette having a light lock movable to be closed after an exposed filmstrip is wound into the cassette, comprises a chamber for the cassette from which the cassette can be removed, and a driver movable to close the light lock before the cassette is removed from said chamber, and is characterized in that:

an ingress opening to said chamber is provided to admit an insertion tool into the chamber to push the cassette out of the chamber; and

covering means is movable relative to said ingress opening to uncover the ingress opening after said driver is moved to close the light lock, to permit the insertion tool to be moved through the ingress opening to push the cassette out of said chamber when the light lock is closed.

5,629,751

AUTOMATIC PHOTOGRAPHIC DEVELOPING MACHINE

Kazunori Tsumura, and Junichi Miyai, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Jul. 3, 1996, Ser. No. 675,187
Claims priority, application Japan, Jul. 10, 1995, 7-173471
Int. Cl.[6] G03D *3/08*
U.S. Cl. 396—622 4 Claims

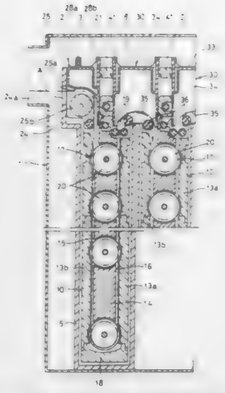
1. An automatic photographic developing machine comprising:

a developing box,

a plurality of treating tanks housed in said developing box,

racks mounted in respective said treating tanks and each having a handle for guiding a photosensitive material fed through said treating tanks, and

an inlet guide detachably mounted between a front wall of one of said treating tanks that is located at an inlet of said developing box and a handle of the said rack inserted in said one of said treating tanks to guide the photosensitive material fed into said developing box into said rack in said one of said treating tanks, said inlet guide having a support member supported on a top surface of said handle of said rack and having a fixed control piece and a resiliently deformable



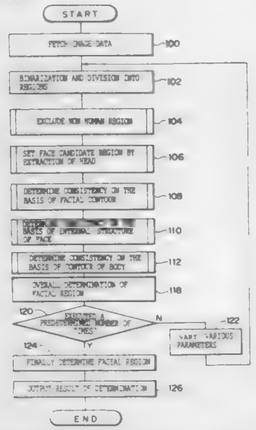
movable control piece provided opposite to said handle of said rack, said movable control piece being formed with a protrusion adapted to engage in a recess formed in a front surface of said handle.

5,629,752

METHOD OF DETERMINING AN EXPOSURE AMOUNT USING OPTICAL RECOGNITION OF FACIAL FEATURES

Naoto Kinjo, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1995, Ser. No. 549,181
Claims priority, application Japan, Oct. 28, 1994, 6-265850; Oct. 31, 1994, 6-266598; Oct. 5, 1995, 7-258977
Int. Cl.[6] G03B *27/32;27/73;27/80*
U.S. Cl. 355—35 31 Claims



1. A method of determining an exposure amount, comprising the steps of:

searching a first shape pattern which is present in an original image and is peculiar to a first portion of a human figure;

setting a region estimated to correspond to a face of the human figure, in accordance with a size and a direction of the searched first shape pattern and a positional relationship between the face of the human figure and the first portion;

determining a region having a high probability of being a region corresponding to the face of the human figure in the original image, by searching whether or not a second shape pattern peculiar to at least one second portion different from the first portion of the human figure is present in a range of search set

in accordance with the set size and direction of the first shape pattern in the original image and a positional relationship between the face of the human figure and the second portion; and

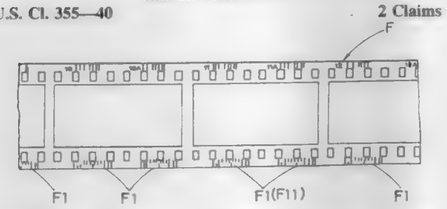
determining an exposure amount for printing the original image onto a printing material on the basis of at least one of a color and a density of the determined region.

5,629,753

METHOD AND APPARATUS OF DETERMINING SETTINGS FOR PHOTOGRAPHIC PRINTING CONDITION

Toshiro Akira, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Oct. 24, 1995, Ser. No. 547,338
Claims priority, application Japan, Oct. 25, 1994, 6-260418
Int. Cl.[6] G03B *21/52*
U.S. Cl. 355—40 2 Claims



1. A method of determining settings for photographic printing condition, comprising the steps of:

reading a plurality of identification codes from a negative film on which the identification codes are recorded at intervals of a given distance;

when the identification codes are found of two or more types, determining the settings corresponding to one of the types of which the number of the identification codes is the greatest; and

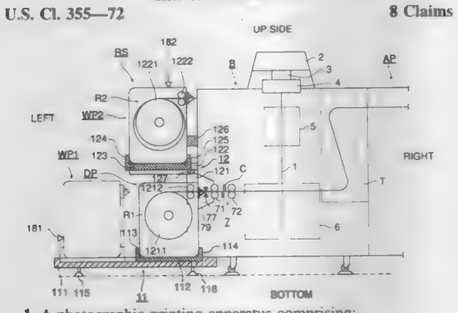
when the identification codes are found of one single type, determining the settings corresponding to the type of the identification codes.

5,629,754

PHOTOGRAPHIC PRINTING APPARATUS AND A ROLL MAGAZINE HOLDER THEREFOR

Nobu Nakane, and Mitsuru Katagiri, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,568
Claims priority, application Japan, Dec. 26, 1994, 6-323061
Int. Cl.[6] G03B *27/58*
U.S. Cl. 355—72 8 Claims



1. A photographic printing apparatus comprising:

a first roll magazine for storing roll-shaped photographic light-sensitive material therein, the first roll magazine being movable between a draw-out position and a first standby position away from the draw-out position, the material being drawn out from the first roll magazine and fed into a main body of the apparatus when the first roll magazine is in the draw-out position;

first detecting means for detecting when the first roll magazine is at the first standby position;

a second roll magazine for storing roll-shaped photographic light-sensitive material therein, the second roll magazine being movable between the draw-out position and a second stand by position away from the draw-out position, the material being drawn out from the second roll magazine and fed into the main body of the apparatus when the second roll magazine is in the draw-out position;

second detecting means for detecting when the second roll magazine is at the second standby position;

first transport means for transporting the first roll magazine between the first standby position and the draw-out position, the first transport means transporting the first roll magazine to the draw-out position when the second detecting means detects the second roll magazine at the second standby position;

second transport means for transporting the second roll magazine between the second standby position and the draw-out position, the second transport means transporting the second roll magazine to the draw-out position when the first detecting means detects the first roll magazine at the first standby position; and

feeding means for drawing the material out from either the first or the second roll magazine when the first or the second roll magazine is positioned at the draw-out position, the feeding means feeding the material back to the first roll magazine before the first transport means transports the first roll magazine from the draw-out position to the first standby position and feeding the material back to the second roll magazine before the second transport means transports the second roll magazine from the draw-out position to the second standby position, the feeding means including

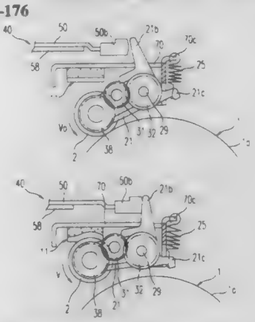
a pair of elastic rollers in pressure contact with one another so that the pair of elastic rollers shield an inside of the main body from light.

5,629,755

IMAGE FORMING APPARATUS

Hirohisa Ohtsuka, Kawaguchi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 522,101
Claims priority, application Japan, Sep. 1, 1994, 6-208959
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—176 32 Claims



1. An image forming apparatus comprising:

a rotating photosensitive body;

a charging member rotating in a direction opposite to a rotational direction of said photosensitive body while contacting said photosensitive body and uniformly charging a surface of said photosensitive body;

a cleaning member cleaning a surface of said charging member;

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means for bringing said charging member into contact with said photosensitive body or separating said charging member from said photosensitive body;

said charging member being rotated while contacting said cleaning member and cleaning said charging member when said charging member is separated from said photosensitive body; and

speed reducing means for reducing a peripheral surface speed of said charging member when said charging member is separated from said photosensitive body so as to become slower than a peripheral surface speed of said charging member maintained when said charging member is rotated contacting said photosensitive body.

5,629,756

LASER BEAM PROJECTION APPARATUS

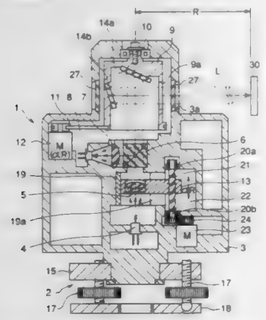
Eiichi Kitajima, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 31, 1995, Ser. No. 381,417

Claims priority, application Japan, Feb. 3, 1994, 6-031900

Int. Cl.[6] G01C *3/08;5/00*

U.S. Cl. 356—3.09 **7 Claims**



1. A laser beam projection apparatus comprising:

a laser beam generator, including a focus adjusting device, for supplying laser beams periodically swept within one plane and, at the same time, converged at a controllable distance;

a light receiving element for receiving reflected laser beams from a predetermined object and generating an output signal;

a distance calculating unit for calculating a distance to the object on the basis of the output signal; and

a controller for operating said focus adjusting device so that the swept laser beams are converged in a position corresponding to the calculated distance.

5,629,757

MULTICOMPONENT LASER STRAINMETER USING FABRY-PEROT INTERFEROMETERS

Shoji Sakata, Tsukuba, Japan, assignor to Science and Technology Agency National Research Institute for Earth Science & Disaster Prevention, Ibaraki, Japan

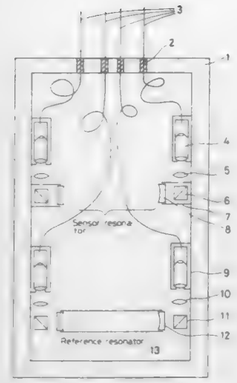
Filed Aug. 10, 1995, Ser. No. 513,637

Claims priority, application Japan, Oct. 5, 1994, 6-264398

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—35.5 **6 Claims**

1. A laser strainmeter for observing small strain changes of a medium by measuring changes of diameters of a container disposed in the medium, said laser strainmeter comprising:



a plurality of sensor resonators, each resonator comprising a multiple reflection interferometer having a pair of concave mirrors which are attached to an inner wall of said container to face each other in a diametrical direction of said container so that optical axes of said sensor resonators extend in different directions;

a reference resonator comprising a multiple reflection interferometer having a pair of concave mirrors which are disposed in the vicinity of said sensor resonators, and which are held at a fixed distance from each other; and

laser oscillators which are connected to said sensor and reference resonators through optical fibers, respectively, so that laser light beams having the same resonance frequencies as those of the associated resonators are transmitted from said laser oscillators to said resonators through said optical fibers;

wherein change in distance between the pair of concave mirrors of each of said sensor resonators is obtained from difference in resonance frequency between each sensor resonator and said reference resonator, thereby obtaining a strain change of the medium in which said container is buried.

5,629,758

TONER TRANSPORTING AND LOOSENING DEVICE

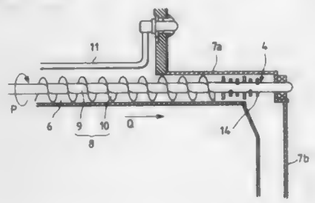
Toshikazu Kageyama, and Hirohisa Hoshino, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,237

Claims priority, application Japan, Jul. 19, 1994, 6-167195

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—263 **10 Claims**



1. A toner transporting and loosening device for transporting toner to a developing unit by way of a toner transporting path, comprising:

a shaft having a spiral portion and a non-spiral portion, and

a toner lump loosening means for loosening soft blocking toner lumps, said loosening means being movably located in an outer transport path contiguous to a developing unit and including loosening portions mounted on the non-spiral portion of said shaft.

5,629,759

DEVELOPING DEVICE WITH A DETACHABLY MOUNTED TONER CARTRIDGE

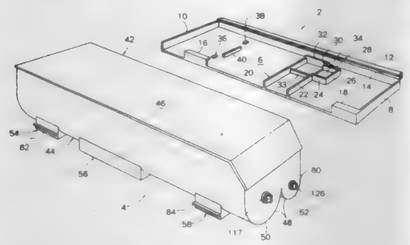
Kazuo Jyoroku, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed Mar. 15, 1996, Ser. No. 616,187

Claims priority, application Japan, Apr. 5, 1995, 7-80047

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—262 **3 Claims**



1. A developing device comprising a toner cartridge receiver, and a toner cartridge to be mounted detachably on the toner cartridge receiver, wherein

the toner cartridge includes a container body having a toner discharge opening, a shutter member mounted on the container body so as to be free to reciprocate between a closing position where it covers the toner discharge opening and an opening position where it is displaced from the toner discharge opening, and a flexible band-like sealing member; the shutter member is situated at the closing position, and that sealing portion of the sealing member which lies between the container body and the shutter member is bonded strippably to the container body at the peripheral edge of the toner discharge opening, thus sealing the toner discharge opening; when the shutter member is forwarded from the closing position to the opening position, the sealing portion of the sealing member is stripped from the container body and displaced from the toner discharge opening to unclose the toner discharge opening, while when the shutter member is returned from the opening position to the closing position, the sealing portion of the sealing member and the shutter member cover the toner discharge opening again;

by inserting the container body of the toner cartridge to a predetermined position of insertion in a direction perpendicular to the direction of the reciprocation of the shutter member, and then moving the container body to a predetermined position of mounting in the direction of the returning of the shutter member relative to the container body in the toner cartridge, the toner cartridge is mounted on the toner cartridge receiver; by moving the container body of the toner cartridge from the position of mounting to the position of insertion in the direction of the forwarding of the shutter member relative to the container body in the toner cartridge, and then withdrawing the container body in a direction perpendicular to the direction of the reciprocation of the shutter member, the toner cartridge is released from the toner cartridge receiver;

the toner cartridge receiver is provided with a shutter member forwarding means and a shutter member returning means; when the toner cartridge is inserted as far as the position of insertion, the shutter member forwarding means is positioned so as to face the rear edge of the shutter member when viewed in the direction of the forwarding of the shutter member relative to the container body, while the shutter member returning means is positioned so as to face the rear edge of the shutter member when viewed in the direction of the returning of the shutter member relative to the container body; when the container body is moved from the position of insertion to the position of mounting, the shutter member is inhibited by the shutter member forwarding means from moving as an accompaniment to the container body, and is thus forwarded relative to the container body to unclose the toner discharge opening; and when the container body is moved from the position of mounting to the position of insertion, the shutter member is inhibited by the shutter member returning means from moving as an accompaniment to the container body, and is thus returned relative to the container body to cover the toner discharge opening again with the sealing portion of the sealing member and the shutter member.

5,629,760

IMAGE FORMING APPARATUS COMPRISING MEDIUM ATTRACTION MEANS

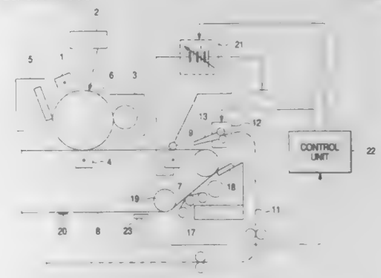
Yukio Hayashi; Norio Hokari; Shuji Iseki; Jyunichiro Sameshima; Mikio Kobayashi, and Ryoichi Tsuruoka, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 630,480

Claims priority, application Japan, Apr. 15, 1996, 7-114020

Int. Cl.[6] G03G *15/14;15/01*

U.S. Cl. 399—312 **5 Claims**



1. An image forming apparatus, comprising:

medium transporting means for carrying an image recording medium on a surface thereof;

means for driving said medium transporting means so that the surface thereof is circulatively turned;

a plural number of toner image forming means disposed facing said medium transporting means, each of said toner image forming means including an image bearing means the surface of which an electrostatic latent image is to be formed, a developing unit for developing the electrostatic latent image into a toner image by applying toner to the electrostatic latent image, and an image transferring unit for transferring the toner image on said medium transporting means or an image recording medium held on said medium transporting means;

medium supplying means for successively supplying image recording media to said medium transporting means;

a medium attracting electrode being disposed facing said medium transporting means;

a counter electrode being disposed in opposition to said medium attracting electrode with respect to said medium attracting electrode;

a power source for applying a voltage between said medium attracting electrode and said counter electrode; and

control means for controlling an output of said power source;

wherein an electric field is formed between said medium attracting electrode and said counter electrode, to cause said medium transporting means to attract the image recording medium to said medium transporting means per se;

wherein said control means controls the voltage, which is applied from said power source between said medium attracting electrode and said counter electrode, in such a manner that any electric field, which is formed between said medium attracting electrode and said counter electrode when the image recording medium is not interposed between said medium attracting electrode and said counter electrode, is weaker than an electric field formed therebetween when the image recording medium is interposed therebetween, and has such a direction as to cause said medium transporting means to attract the toner to said medium transporting means per se.

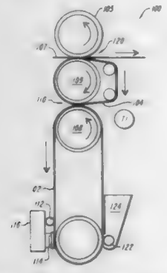
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5,629,761

TONER PRINT SYSTEM WITH HEATED INTERMEDIATE TRANSFER MEMBER

Sotos M. Theodoulou, 23 Greenmount Road, Bramlea, Ontario, Canada; Robert A. Moore, 6 Salt Hay Rd., Waquoit, Mass. 02536, and Wojciech Zalewski, 3652 Bertand Road, Mississauga, Ontario, Canada

Filed May 4, 1995, Ser. No. 435,517
Int. Cl.° G03G *15/14;15/20*
U.S. Cl. 399—307 14 Claims



1. A printing system of the type comprising an imaging member for forming a toner image and a transfer member for receiving the toner image from the imaging member and transferring said toner image to a receiver to form a print, characterized in that

the imaging member has a dielectric surface layer which is smooth, hard and has a surface energy below about 20 dynes/cm, and

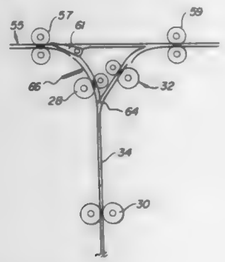
the transfer member has an image-receiving surface which is compressible and has a surface energy above 20 dynes/cm, said transfer member forming a transfer nip with said imaging member and operating substantially isothermally at a temperature which transforms the toner image from a solid particulate state to a cohesive flow-softened body that adheres to the transfer member in said nip.

5,629,762

IMAGE FORMING APPARATUS HAVING A DUPLEX PATH AND/OR AN INVERTER

Gregory P. Mahoney, Fairport; Steven M. Russel, Pittsford; Robert M. Peffer, Penfield, and Charles D. Odum, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 7, 1995, Ser. No. 474,348
Int. Cl.° G03G *15/23*
U.S. Cl. 399—364 19 Claims



15. A sheet inverter comprising:

an inverter sheet guide,

an entrance sheet drive for feeding a sheet into the inverter sheet guide at a first speed, and

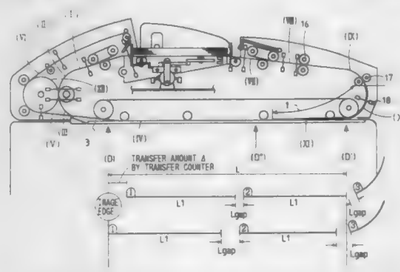
an exit sheet drive for feeding a sheet out of the inverter sheet guide at a second speed less than half the first speed.

5,629,763

ORIGINAL TRANSPORTING DEVICE CAPABLE OF EFFECTING EXPOSURE WHILE TRANSPORTING THE ORIGINAL

Yoshinori Isobe, Tokyo; Chikara Sato, Hachioji, and Akimaro Yoshida, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,386
Claims priority, application Japan, Oct. 8, 1993, 5-252718
Int. Cl.° G03G *21/00*
U.S. Cl. 399—371 12 Claims



1. An original transporting device for transporting a plurality of originals to an exposure unit of a copying machine comprising:

loading means for loading the plurality of originals;

first separation means for separating a first original on the bottom of the plurality of originals loaded on said loading means from a first side of said loading means;

first transporting means for transporting the first original separated by said first separation means along a first transporting passageway;

second separation means for separating a second original on the bottom of the plurality of originals loaded on said loading means from a second side of said loading means;

second transporting means for transporting the second original separated by said second separation means along a second transporting passageway;

third transporting means for transporting the first original transported by said first transporting means in a first direction, stopping the first original at said exposure unit for a while, then transporting the first original in a second direction, and transporting the second original transported by said second transporting means in the second direction to pass through said exposure unit; and

ejection means for ejecting the first and second originals transported by said third transporting means from said exposure unit in the second direction onto said loading means;

wherein the transporting speed of said second transporting means is higher than the transporting speed of said third transporting means in the second direction.

5,629,764

PRISM FINGERPRINT SENSOR USING A HOLOGRAPHIC OPTICAL ELEMENT

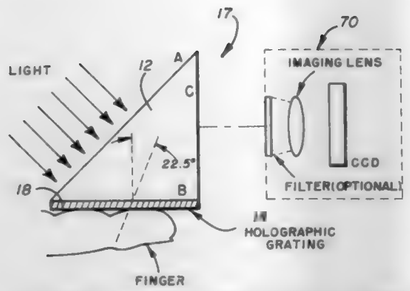
Ramendra D. Bahuguna, and Thomas M. Corboline, both of San Jose, Calif., assignors to Advanced Precision Technology, Inc., Castro Valley, Calif.

Filed Jul. 7, 1995, Ser. No. 499,673
Int. Cl.° G06K *9/74*
U.S. Cl. 356—71 7 Claims

1. A fingerprint sensor for generating a light waveform image of finger surface ridges, comprising, in combination,

a) a right angled prism having a hypotenuse surface and a first and a second right angle surface,

b) a holographic phase grating plate having a plate surface optically coupled with the first right angle transmission surface of the prism and an exterior plate surface for diffracting light totally internally reflecting from its exterior plate surface



to propagate normally (⊥) back into the prism, wherein a finger is pressed against the exterior plate surface of the holographic phase grating plate providing a finger-surface interface;

c) a source of light illuminating the finger-surface interface through the hypotenuse surface of the prism, the illuminating light being refracted and absorbed in areas where finger surface ridges are in contact with the exterior plate surface, and being totally internally reflected back into the prism in areas corresponding to valleys between and pores in the finger surface ridges not in contact with exterior plate surface of the holographic phase grating plate,

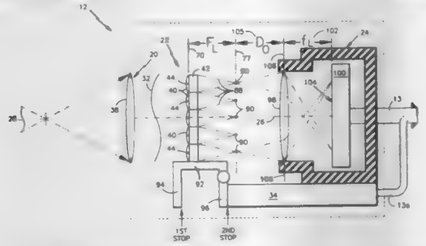
whereby the totally internally reflected light containing a true image of the finger-surface interface is reflected out of the the second right angle transmission surface of the prism by the hypotenuse surface of the prism, the true image of the finger-surface interface being oriented a plane parallel to the the second right angle transmission surface for capture, the areas corresponding to finger surface ridges being dark, the areas corresponding to valleys between and pores in the finger surface ridges being bright.

5,629,765

WAVEFRONT MEASURING SYSTEM WITH INTEGRAL GEOMETRIC REFERENCE (IGR)

Lawrence E. Schmutz, Watertown, Mass., assignor to Adaptive Optics Associates, Inc., Cambridge, Mass.

Filed Dec. 15, 1995, Ser. No. 572,907
Int. Cl.° G01J *1/20*
U.S. Cl. 356—121 3 Claims



1. A geometric wavefront sensor, for use in a system of the type having a signal processor for determining the phase gradient of a received full aperture wavefront as the aggregate of the difference coordinate position between two dimensional spot images of the received wavefront and a reference wavefront in each of a plurality of subapertures, the sensor comprising:

a monolithic lens module (MLM), having a plurality of subaperture lenses arrayed in a MLM pupil plane for dividing the received full aperture wavefront into plural subaperture images and for focusing each as a two dimensional spot image in a MLM focal plane located on the subaperture beam path at a MLM focal length from said MLM pupil plane; and

camera means, for providing an electrical signal equivalent of each of said subaperture spot images to the signal processor; as characterized by:

each said subaperture lens having an integral geometric reference (IGR) disposed thereon in the form of a substantially opaque center portion concentric with a lens optical axis, at the location of the lens chief ray, each said IGR identifying its associated subaperture lens with an IGR spot image equivalent of a reference plane wave in said MLM pupil plane; and

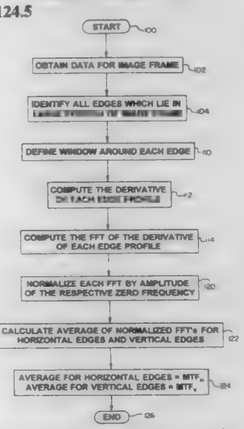
said camera means providing electrical signal equivalents of said subaperture spot and, alternately, each of said IGR spot images to the signal processor which determines therefrom the phase gradient of the received full aperture wavefront as the aggregate of the difference coordinate positions in the subaperture spot image and the IGR spot image from each said subaperture lens.

5,629,766

GLOBAL MTF MEASUREMENT SYSTEM

Eran Kaplan, Holon, Israel, assignor to Neuromedical Systems, Inc., Suffern, N.Y.

Filed Sep. 6, 1995, Ser. No. 523,871
Int. Cl.° G01M *11/02*
U.S. Cl. 356—124.5 21 Claims



1. In a system having one or more optical or electronic elements for obtaining an image of an object, means for obtaining a modulation transfer function comprising:

means for imaging the object in an image frame based on the elements;

means for determining a modulation transfer function with respect to each of a plurality of locations within the image frame, the plurality of locations being substantially distributed within the image frame; and

means for processing the modulation transfer functions obtained with respect to the plurality of locations to obtain a composite modulation transfer function for at least part of the system.

5,629,767

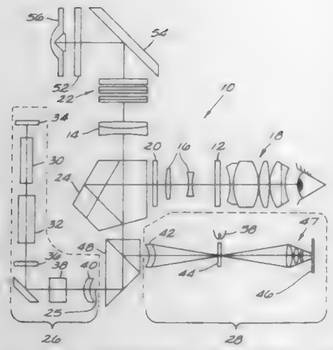
IR LASER LINE-OF-SIGHT ALIGNMENT

Sarkis K. Tchejeyan, Santa Barbara, Calif., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 7, 1995, Ser. No. 486,496
Int. Cl.° G01B *11/26*; G01C *1/00*
U.S. Cl. 356—153 24 Claims

17. An optical element for visually aligning an optical instrument that simultaneously operates at two different wavelengths where said first wavelength is in the visible photopic electromagnetic spectral region and said second wavelength is outside the

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visible photopic electromagnetic spectral region, said optical instrument having a first plate having a first reticle pattern, said first plate being located at the eyepiece of said optical instrument, said first reticle pattern being in focus when viewed through said eyepiece, said optical element comprising a second plate which has a second reticle pattern on one side and a clear field stop on the opposite side, the position of said second plate being such that when said second reticle pattern is illuminated with light of said first wavelength and a removable retroreflector is inserted in said optical instrument, then said second reticle pattern will be in focus and superimposed on said first reticle pattern when viewed through said eyepiece such that alignment of said optical instrument can be accomplished by aligning the focused image of said second reticle pattern onto said first reticle pattern displayed at said eyepiece, and the thickness and orientation of said second plate being such that when said clear field stop is illuminated with light of said second wavelength and said removable retroreflector is inserted in said optical instrument, then said clear field stop will be in focus and superimposed on said first reticle pattern when viewed through said eyepiece.

5,629,768

DEFECT INSPECTING APPARATUS

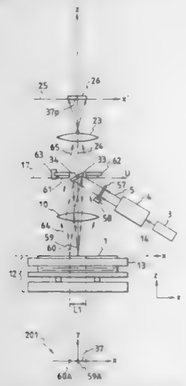
Tsuneyuki Hagiwara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 187,492, Jan. 28, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 396,325

Claims priority, application Japan, Jan. 28, 1993, 5-012959; Jan. 28, 1993, 5-012960

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—237 **14 Claims**



1. A defect inspecting apparatus for inspecting a surface of a substrate having a pattern thereon, including:

a light source which supplies illuminating light;

an illuminating system which applies the illuminating light from said light source onto the surface of said substrate to be inspected;

a lens system for condensing light from said surface to be inspected and creating a spatial frequency spectrum on a Fourier transform plane to said surface to be inspected or a plane conjugate therewith;

a light intercepting member having a light intercepting portion which sets a spectrum-free area at a region along at least one of two axes perpendicular to each other on said Fourier transform plane or said plane conjugate therewith in the absence of a defect on said surface to be inspected, said light intercepting member being disposed between said light source and said substrate and being effective to intercept part of said illuminating light;

a spatial filter which is disposed on said Fourier transform plane or the plane conjugate therewith, which passes therethrough a condensed beam of light in said spectrum-free area created from a defect on said surface to be inspected, and which blocks light from said pattern without relying on the directivity of said pattern;

a light receiver which receives said beam of light passed through said spatial filter and outputs a photoelectric signal; and

a signal processor which determines means a state of the surface of said substrate to be inspected based on said photoelectric signal.

5,629,769

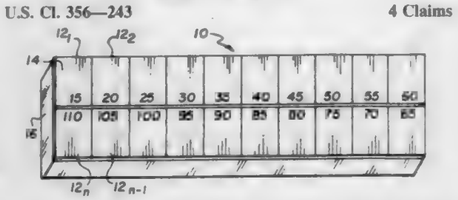
APPARATUS AND METHOD FOR THE MEASUREMENT OF GRAIN IN IMAGES

Robert E. Cookingham, Webster, and Paul J. Kane, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1995, Ser. No. 456,845

Int. Cl.° G01J *1/02*

U.S. Cl. 356—243 **4 Claims**



1. A generalized grain ruler incorporating a plurality of uniform patches representing a range of granularities, each patch being a perceptually distinct representation of graininess spaced at perceptually uniform intervals and recorded in an increasing sequence of graininess.

5,629,770

DOCUMENT COPYING DETERRENT METHOD USING LINE AND WORD SHIFT TECHNIQUES

John T. Brassil, Berkeley Heights; Steven H. Low, Bridgewater; Nicholas F. Maxemchuk, Mountainside, and Lawrence P. O'Gorman, Madison, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

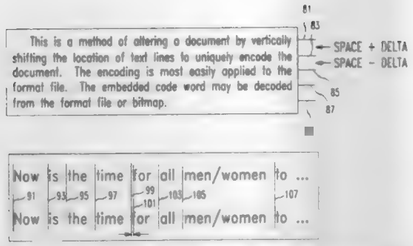
Continuation-in-part of Ser. No. 170,619, Dec. 20, 1993. This application Mar. 31, 1995, Ser. No. 414,857

Int. Cl.[6] H04N *1/419;* **G09C** *1/06*

U.S. Cl. 358—261.1 **16 Claims**

1. A method of deterring illicit copying of electronically published documents, comprising the steps of:

electronically creating a plurality of copies of a document for distribution to a plurality of subscribers;



encoding each of said plurality of copies of said document with a unique identification code, said identification code being based on a combination of line-shift coding and word-shift coding; and

creating a codebook to correlate each such identification code to a particular one of said plurality of subscribers.

5,629,771

RECORDING APPARATUS FEATURING RECORDING ELEMENTS DISPOSED IN A LINE WHEREIN THE LINE IS SLANTED RELATIVE TO A SUBSCANNING DIRECTION AND A METHOD OF USING SAME

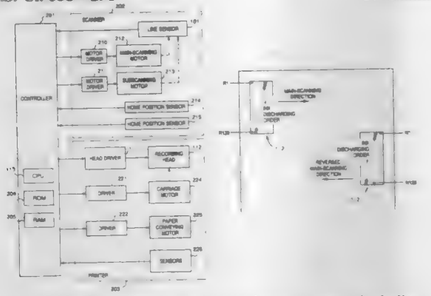
Fumio Mikami, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1993, Ser. No. 153,037

Claims priority, application Japan, Nov. 19, 1992, 4-309888

Int. Cl.° H04N *1/04;1/34;* **B41J** *29/38;2/145*

U.S. Cl. 358—296 **21 Claims**



1. A recording apparatus using an image scanner including a plurality of reading elements and a recording head including a plurality of recording elements which are disposed in a line wherein the line is slanted at a predetermined angle with respect to a subscanning direction of the recording head, said recording apparatus comprising:

reading means for reciprocating the image scanner along a main-scanning direction and driving the image scanner to read an image when forward-scanning and when reverse-scanning;

signal generating means for generating a recording signal for the recording elements based on image data read by said reading means;

recording head moving means for reciprocating the recording head along the main-scanning direction so that forward/reverse of a moving direction of the recording head substantially corresponds to that of the image scanner; and

driving means for driving the recording elements of the recording head being moved by said recording head moving means in accordance with the recording signal generated by said signal generating means, said driving means including driving order reverse means for reversing a driving order of the recording elements of the recording head, and means for, when a scanning direction of the recording head is changed from a forward direction to a reverse direction or vice versa, activating said driving order reverse means.

5,629,772

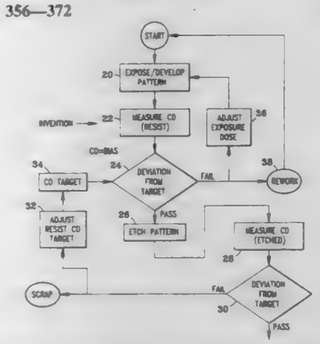
MONITORING OF MINIMUM FEATURES ON A SUBSTRATE

Christopher P. Ausschnitt, Brookfield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,797

Int. Cl.° G01B *11/00*

U.S. Cl. 356—372 **11 Claims**



1. A method of measuring lithographic process bias of a minimum feature formed in a lithographic process, using a measurement tool, comprising the steps of:

creating an array of elements on a substrate, each element in the array having a nominal length and a nominal width, and adjacent element having a nominal space therebetween, wherein the nominal width of each element and the nominal space between each adjacent element correspond to said minimum feature, the nominal length being larger than the minimum feature;

measuring length of said created elements in the array resulting from said lithographic process;

calculating change in length of said elements from nominal length; and,

means for calculating lithographic process bias of the minimum feature (width, space) from said change in length of said elements in the array.

5,629,773

THREE-DIMENSIONAL IMAGE MEASURING DEVICE

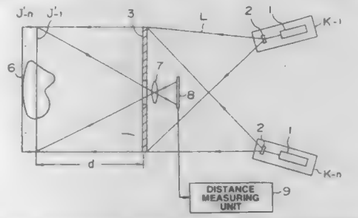
Hideyuki Wakai; Toru Suzuki; Keiji Terada; Masato Moriya, and Manabu Ando, all of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 165,418, Dec. 13, 1993, Pat. No. 5,448,360. This application Jun. 7, 1995, Ser. No. 492,146

Claims priority, application Japan, Dec. 18, 1992, 4-338914

Int. Cl.° G01B *11/24*

U.S. Cl. 356—376 **6 Claims**



1. A three-dimensional image measuring device comprising:

a hologram adapted for multi-exposure such that when reproduced light is irradiated, a plane light image is formed at a

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plurality of different positions located at a depth direction in accordance with a position of a reproduced light source;

a plurality of light sources disposed at a plurality of different positions for irradiating the reproduced light on the hologram;

light source turning-on control means for imaging the plane light image at positions in the depth direction according to positions of each of turned-on light sources by sequentially turning on the plurality of light sources one by one;

an object to be measured being disposed in a space where the plane light image is formed;

light receiving means including a plurality of two-dimensional-arranged light receiving elements for sequentially measuring the strength of scattered light of the plane light image imaged on a surface of the object as each of the light sources is turned on by the light source turning-on control means; and

distance measuring means for measuring the distance to the object based on an output of each light receiving element of the light receiving means.

5,629,774

OPTICAL SENSOR

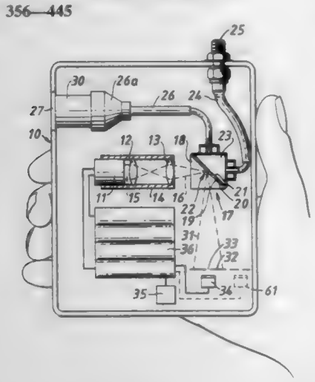
Stanley J. Peacock, Sanderstead; Henry C. Jaggers, Slough, and John S. Shaw, Blackfield, all of Great Britain, assignors to British Gas Plc, London, Great Britain

Continuation of Ser. No. 90,011, Nov. 10, 1993, Pat. No. 5,508,809. This application Sep. 29, 1995, Ser. No. 537,277

Claims priority, application United Kingdom, Sep. 19, 1991, 9120000

Int. Cl.[6] G01N *21/55*

U.S. Cl. 356—445 **34 Claims**



1. An optical sensor assembly for sensing the presence of analyte in a fluid, comprising:

a surface plasmon resonance-sensitive structure for reflecting light, said structure responding to exposure to an analyte so as to alter an intensity of the reflecting light;

means for producing light focussed on said surface plasmon resonance sensitive structure;

a light detecting means positioned to receive a portion of the light reflected from the surface plasmon resonance-sensitive structure and for producing an output signal in response to the received portion of the reflected light indicative of the presence of, or representative of the concentration or a concentration range of, the analyte in the fluid;

control means for controlling the portion of the reflected light which reaches the light detecting means; and

indicating means for receiving the output signal and in response thereto indicating the presence, concentration or concentration range of the analyte in the fluid.

5,629,775

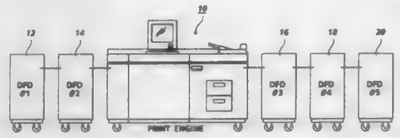
SYSTEM ARCHITECTURE FOR ATTACHING AND CONTROLLING MULTIPLE FEEDING AND FINISHING DEVICES TO A REPRODUCTION MACHINE

Dale T. Platteter, Jacksonville, Fla., and Jeff C. Carter, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1994, Ser. No. 280,978

Int. Cl.[6] H04N *1/00;1/32;* **G03G** *21/00*

U.S. Cl. 358—296 **15 Claims**



1. An electronic image processing apparatus comprising a marking machine, a source of copy sheets, a controller, and a plurality of resources, each of the resources including an associated processor, each of the processors storing data related to operational timing of an associated resource, a bus for interconnecting the processors to the controller for directing the operation of the image processing apparatus to provide images on copy sheets, the controller including circuitry for interrogating each of the processors for operational timing data and logic for responding to the operational timing data of each of the processors for dynamically configuring the controller to operate in accordance with the operational timing of said processors.

5,629,776

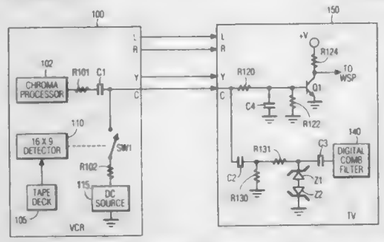
APPARATUS FOR USE IN A VCR OR LASERDISC PLAYER FOR PROVIDING A SIGNAL INDICATIVE OF THE REPRODUCTION OF WIDE-SCREEN PICTURE

William A. Lagoni, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 9,302, Feb. 10, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,307

Int. Cl.[6] H04N *5/46*

U.S. Cl. 386—45 **9 Claims**



1. In a videocassette recorder for playing a videotape prerecorded in accordance with a standard television system in a first format in which the video images have been horizontally compressed, and in a second format in which the video images have not been horizontally compressed, apparatus comprising:

an output S-video connector at which is developed separate luminance and chrominance information for application to an external display device;

said output S-video connector including a first terminal at which said chrominance signal is developed, and a second terminal at which said luminance signal is developed;

means for reading a prerecorded code from said videotape, said prerecorded code indicating that said prerecorded videotape contains said video images which have been horizontally compressed; and

means for coupling said first terminal of said output S-video connector to a source of DC potential in response to the detection of said prerecorded code in order to apply a DC signal along with said chrominance signal to said first terminal of said S-video connector to provide an indication to said external display device that said videotape currently being played contains said horizontally compressed images.

5,629,777

IMAGE FORMING APPARATUS FOR FORMING IMAGE TO EXCLUDE EXTRA-ORIGINAL AREA

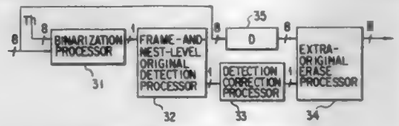
Akihiro Moro, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

Filed Mar. 10, 1994, Ser. No. 208,982

Claims priority, application Japan, Mar. 24, 1993, 5-065256

Int. Cl.[6] H04N *1/04;1/23;1/38*

U.S. Cl. 358—401 **13 Claims**



6. An image forming apparatus comprising:

means for radiating light to a target area including an original image area, scanning the target area in a predetermined direction, and converting an optical image obtained by scanning to an electrical signal;

means for changing the electrical signal obtained by said scanning means to a digital signal;

means for abstracting an area in the target area surrounded by a low-density portion based on the digital signal;

means for determining the area of the original image area when the area is larger than a predetermined range, and for determining the area of an extra-original area when the area is less than the predetermined range; and

means for forming an image of the original image area without the extra-original area.

5,629,778

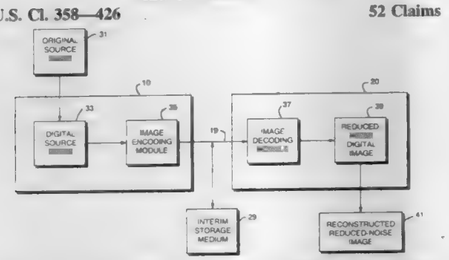
METHOD AND APPARATUS FOR REDUCTION OF IMAGE DATA COMPRESSION NOISE

Steven R. Reuman, Acton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 15, 1995, Ser. No. 441,372

Int. Cl.[6] H04N *1/415*

U.S. Cl. 358—426 **52 Claims**



1. A method for reducing the effects of blocking artifacts attributable to quantization incurred in the transform image coding and compression of a two-dimensional image signal into a digital image, the degree of compression determined by a scaling factor κ and a quantization table, and the image signal provided as a series of electrical signals, each electrical signal corresponding to a characteristic of an element of a two-dimensional image, where the image elements have been configured as a two-dimensional H×V array, said method comprising the steps of:

converting the series of electrical signals into a set of numerical values, each said numerical value quantitatively describing a feature characteristic of a corresponding image element, said numerical values further denoted by $s_0(z,y)$ where $0 \leq y \leq H-1$ and $0 \leq z \leq V-1$;

formatting said set of numerical values into a plurality of N×N image data matrices identified by indices 'p' and 'q', each said image-data matrix comprising image-data terms denoted by $s_{q,p}(j,i)$, each said image data term comprised of a said numerical value determined in accordance with the relationship;

$$s_{q,p}(j,i)=s_0(j+Nq,i+Np)$$

where $0 \leq i,j \leq N-1$;

transforming each said image-data matrix into an N×N frequency-coefficient matrix comprising frequency-coefficient terms denoted by $S_{q,p}(\upsilon,\mu)$, said step of transforming each said image-data matrix accomplished by means of an orthogonal transform basis matrix C in accordance with the expression,

$$S_{q,p}(\upsilon,\mu)=C \times s_{q,p}(j,i) \times C^T;$$

dividing each said frequency-coefficient term $S_{q,p}(\upsilon,\mu)$ by a scaled quantization term denoted by $Q(\upsilon,\mu)$, said scaled quantization term obtained from the quantization table and modified by the scaling factor, to yield a plurality of N×N quotient-coefficient matrices comprising quotient terms denoted by $Qu_{q,p}(\upsilon,\mu)$ derived in accordance with the expression,

$$Qu_{q,p}(\upsilon,\mu)=\frac{S_{q,p}(\upsilon,\mu)}{Q(\upsilon,\mu)};$$

rounding each said quotient term to a less precise value to yield a quantized-coefficient matrix comprising quantized-quotient terms denoted by $Qc_{q,p}(\upsilon,\mu)$ in accordance with the expression,

$$Qc_{q,p}(\upsilon,\mu)=\text{round}\left(\frac{S_{q,p}(\upsilon,\mu)}{Q(\upsilon,\mu)}\right);$$

subtracting each said quantized-coefficient term $Qc_{q,p}(\upsilon,\mu)$ from a corresponding said quotient term $Qu_{q,p}(\upsilon,\mu)$ to form a plurality of N×N difference-coefficient matrices comprising difference terms $Dc_{q,p}(\upsilon,\mu)$ derived in accordance with the expression,

$$Dc_{q,p}(\upsilon,\mu)=abs\left|\left(\frac{S_{q,p}(\upsilon,\mu)}{Q(\upsilon,\mu)}\right)-\text{round}\left(\frac{S_{q,p}(\upsilon,\mu)}{Q(\upsilon,\mu)}\right)\right|;$$

deriving a quantization error matrix, comprising terms $E_Q(\upsilon,\mu)$, by summing and averaging error terms, said error terms comprising functions of said difference-coefficient matrices;

selecting a set of filter parameters, denoted by α and β;

multiplying each said quantized coefficient term by a corresponding quantization term to yield a plurality of N×N mask-multiplied transform coefficient matrices comprising terms denoted by $R_{q,p}(\upsilon,\mu)$ derived in accordance with the expression,

$$R_{q,p}(\upsilon,\mu)=Qc_{q,p}(\upsilon,\mu) \times Q(\upsilon,\mu);$$

applying an inverse orthogonal transform to said mask-multiplied transform coefficient matrices to yield a plurality of N×N received image-data matrices denoted by $r_{q,p}(j,i)$, in accordance with the inverse transform equation,

$$r_{q,p}(j,i)=C^T \times R_{q,p}(\upsilon,\mu) \times C;$$

formatting said received image-data matrices into an H×V received image-data set comprising terms denoted by $s_R(z,y)$, in accordance with the equation,

$$s_R(j+Nq,i+Np)=r_{q,p}(j,i)$$

where $0 \leq i+Np \leq H-1$ and $0 \leq j+Nq \leq V-1$;

forming said received image data set into a plurality of N×N overlapped image-data matrices comprising terms denoted by $v_{q,p}(j,i)$, in accordance with the equation,

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$v_{s,r}(j,i)=s_R(j+\omega s,\ i+\omega r)$;

transforming said overlapped image-data matrices into modified coefficient matrices comprising terms denoted by $Sv_{s,r}(\upsilon,\mu)$, in accordance with the equation,

$$Sv_{s,r}(\upsilon,\mu)=C\times v_{s,r}(j,i)\times C^T;$$

converting said modified coefficient matrices into filtered coefficient matrices by means of said quantization error matrix and said filter parameters, said modified coefficient matrix comprising terms denoted by $Sf_{s,r}(\upsilon,\mu)$, said step of converting said modified coefficient matrices performed in accordance with the equation,

$$Sf_{s,r}(v,\mu)=[Sv_{s,r}(v,\mu)]\times\left[\frac{[Sv_{s,r}(v,\mu)]^2}{[Sv_{s,r}(v,\mu)]^2+\alpha[E_0(v,\mu)]^2}\right]^{\beta};$$

transforming said filtered coefficient matrices into filtered image-data matrices in accordance with the transform equation,

$$rf_{s,r}(j,i)=C^T\times Sf_{s,r}(\upsilon,\mu)\times C;\ \text{and}$$

converting said filtered image-data matrices into a series of filtered electrical signals such that said filtered electrical signals can be configured into a two-dimensional H×V array of filtered image elements, each said filtered electrical signal corresponding to a characteristic of one said filtered image element.

5,629,779

IMAGE CODING METHOD AND APPARATUS THEREFOR

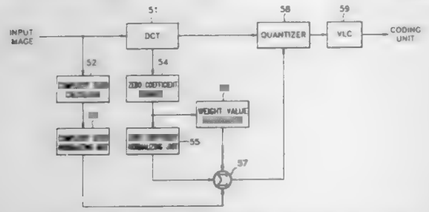
Jong-gu Jeon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 8, 1994, Ser. No. 337,836

Claims priority, application Rep. of Korea, Jan. 12, 1994, 94-411

Int. Cl.[6] H04N *1/415;1/419;7/12*

U.S. Cl. 358—432 **13 Claims**



1. An image coding method for dividing an input image signal into a plurality of sub-blocks composed of a predetermined number of unit blocks, quantizing the divided image signal by a quantization step size determined in accordance with a scale factor, and then coding the quantized image signal, the image coding method comprising the steps of:

producing a complexity normalizing signal of a sub-block, based on a complexity in the space domain of the input image signal;

producing a zero coefficient sum by performing a discrete cosine transform operation on the input image signal, which produces discrete cosine transformation coefficients for the sub-block, and counting the discrete cosine transform coefficients having a value within a predetermined range;

producing a zero coefficient normalizing value for the sub-block in accordance with said zero coefficient sum;

producing a transient weight signal for the sub-block in accordance with said zero coefficient sum and a predetermined compression ratio; and

producing the scale factor by summing said complexity normalizing signal, said zero coefficient normalizing value and said transient weight signal.

5,629,780

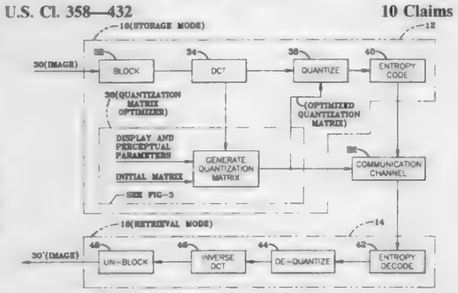
IMAGE DATA COMPRESSION HAVING MINIMUM PERCEPTUAL ERROR

Andrew B. Watson, Los Gatos, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 19, 1994, Ser. No. 358,446

Int. Cl.[6] H04N *1/415*

U.S. Cl. 358—432 **10 Claims**



1. A method for transforming a digital color image into a compressed representation of said image comprising the steps of:

(a) transforming each color image pixel to three color channel values corresponding to brightness and two color signals,

(b) down-sampling each transformed color channel by a predetermined factor,

(c) partitioning each color channel image into a set of square blocks of pixels, each block having an index b,

(d) applying a Discrete Cosine Transform (DCT) to transform each said block of pixels into digital signals represented by DCT transformation coefficients ($c_{u,v,b,\theta}$);

(e) selecting luminance-adjusted thresholds for each block of pixels based on parameters comprising said DCT transformation coefficients $c_{u,v,b,\theta}$, and display and perceptual parameters;

(f) selecting a DCT mask ($m_{u,v,b,\theta}$) for each block of pixels based on parameters comprising said DCT transformation coefficients $c_{u,v,b,\theta}$ and luminance-adjusted thresholds, and said display and perceptual parameters;

(g) selecting a quantization matrix ($q_{u,v,\theta}$) comprising the steps of:

(i) selecting an initial value of $q_{u,v,\theta}$;

(ii) quantizing the DCT coefficient $q_{u,v,\theta}$ in each block b to form quantized coefficient $k_{u,v,b,\theta}$;

(iii) de-quantizing the quantized coefficients by multiplying them by $q_{u,v,\theta}$

(iv) subtracting the de-quantized coefficient $q_{u,v,\theta}k_{u,v,b,\theta}$ from $c_{u,v,b,\theta}$ to compute the quantization error $e_{u,v,b,\theta}$;

(v) dividing $e_{u,v,b,\theta}$ by the DCT mask $m_{u,v,b,\theta}$ to obtain perceptual errors $j_{u,v,b,\theta}$;

(vi) pooling the perceptual errors of one frequency u,v and color channel θ over all blocks b to obtain an entry in the perceptual error matrices $p_{u,v,\theta}$;

(vii) repeating steps i–vi for each frequency u,v,θ;

(viii) adjusting the values $q_{u,v,\theta}$ up or down until each entry in the perceptual error matrix $p_{u,v,\theta}$ is within a target range

(h) entropy coding said quantization matrices and the quantized coefficients of said image.

5,629,781

HIGH-SPEED IMAGE PROCESSING USING PARALLEL STORAGE

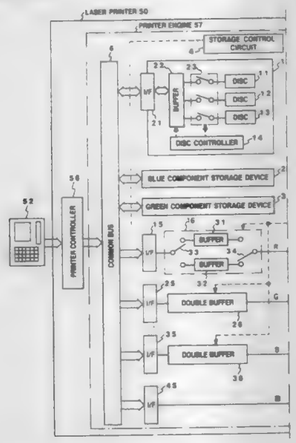
Fumihiro Ueno, Yokohama; Akira Torisawa, Machida; Yasuo Ito, Inagi; Eihiro Sakaki, Chofu; Masaki Ohtake, Kawasaki; Hiromi Kataoka, Yokohama; Atsushi Kashihara, Hachioji, and Kaoru Seto, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 263,408, Jun. 21, 1994, abandoned, which is a continuation of Ser. No. 139,050, Oct. 21, 1993, abandoned, which is a continuation of Ser. No. 675,278, Mar. 26, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,497

Claims priority, application Japan, Mar. 30, 1990, 2-086164; Jul. 26, 1990, 2-199480

Int. Cl.[6] H04N *1/54*

U.S. Cl. 358—523 **21 Claims**



1. An image processing apparatus comprising:

a plurality of storage means, each for storing image data corresponding to plural portions, each of which includes a plurality of pixels, in one page;

a plurality of read means for respectively reading out the image data corresponding to different portions from said plurality of storage means in parallel; and

output means for receiving the image data corresponding to the plurality of the portions which are in parallel read out from said plurality of storage means by said plurality of read means, and serially outputting the image data as one unit,

wherein each portion read in parallel by said plurality of read means is different from one another.

5,629,782

HOLOGRAPHIC DISPLAY APPARATUS

Kouichi Ichimura, Yokohama, and Masayuki Nakamoto, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1995, Ser. No. 526,095

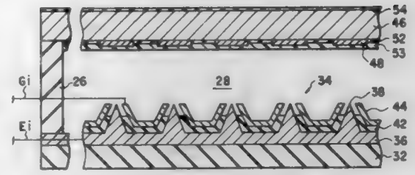
Claims priority, application Japan, Sep. 16, 1994, 6-222191

Int. Cl.[6] G03H *1/08*

U.S. Cl. 359—9 **20 Claims**

1. A holographic display apparatus for displaying an interference pattern of a holographic diffraction figure which is irradiated with a reproduction light to reproduce a stereoscopic image, comprising:

a plurality of anode electrodes arranged such that each of a plurality of pixels arranged in a matrix is defined by at least one of the anode electrodes, said anode electrodes being excited and induced to change their reflection coefficient when irradiated with electrons;



a plurality of emitter electrodes arranged opposite said anode electrodes, said emitter electrodes selectively emitting electrons to said anode electrodes by field emission;

a casing for defining an air-tight vacuum space containing said anode and emitter electrodes; and

a drive mechanism for selecting some of said emitter electrodes and causing them to emit electrons, in accordance with an input signal representing an interference pattern to be displayed by said pixels;

wherein an interference pattern is displayed on the basis of a change in the reflection coefficient of said anode electrodes due to radiation of electrons emitted from said emitter electrodes.

5,629,783

ACTIVE MATRIX POLYMER DISPERSED LIQUID CRYSTAL DISPLAY DEVICE WITH FLOURESCENT FILM

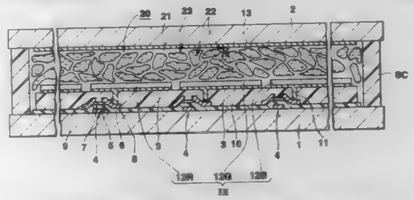
Minoru Kanbara, Hachioji; Tetsushi Yoshida, Sagamikomachi; Zenta Kikuchi, Hamura, and Jiro Takei, Tama, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1994, Ser. No. 317,230

Claims priority, application Japan, Oct. 5, 1993, 5-249103; Oct. 5, 1993, 5-249105; Oct. 5, 1993, 5-249106; Oct. 5, 1993, 5-249110; Oct. 5, 1993, 5-249111; Oct. 14, 1993, 5-256959; Oct. 14, 1993, 5-256963; Oct. 14, 1993, 5-256964

Int. Cl.[6] G02F *1/1335;1/13;1/135*

U.S. Cl. 349—70 **21 Claims**



1. A polymer dispersed liquid crystal device comprising:

a first substrate on which active elements and pixel electrodes connected thereto are arranged in the form of a matrix;

a second substrate having a counter electrode formed thereon and arranged to oppose said first substrate;

a polymer dispersed liquid crystal layer arranged between said first substrate and said second substrate and having a composite layer formed by dispersing a polymer resin and a liquid crystal;

a fluorescent film arranged on said first substrate to correspond to said pixel electrode, for emitting light with a specific wavelength range by the energy of absorbed light passing through said polymer dispersed liquid crystal layer; and

a reflecting means, arranged on a side of said first substrate which is opposed to said second substrate which is irradiated with incident light, for reflecting at least one of light passing through said polymer dispersed liquid crystal layer and light emitted from said fluorescent film.
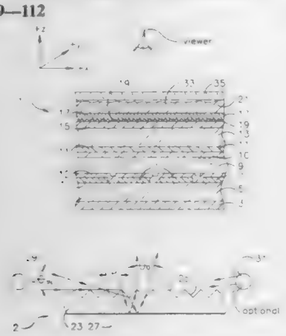
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,784

LIQUID CRYSTAL DISPLAY WITH HOLOGRAPHIC DIFFUSER AND PRISM SHEET ON VIEWER SIDE

Adiel Abileah, Farmington Hills, and Nicholas D. Vergith, Holly, both of Mich., assignors to OIS Optical Imaging Systems, Inc., Troy, Mich.

Filed Apr. 12, 1994, Ser. No. 229,337
Int. Cl.° G02F *1/1335;* **G02B** *5/02*
U.S. Cl. 349—112 **12 Claims**



1. In a backlit liquid crystal display which includes a backlight assembly for directing light toward a display panel, said display panel including a liquid crystal layer and being capable of providing an image to a remotely positioned viewer, the improvement comprising:

an optical system disposed on the viewer side of said liquid crystal layer, said optical system including a film means for substantially enlarging the effective viewing zone of said liquid crystal display and for providing substantial uniformity of contrast ratio and color uniformity in the viewing zone, and wherein said film means has a plurality of optical facets therein; and

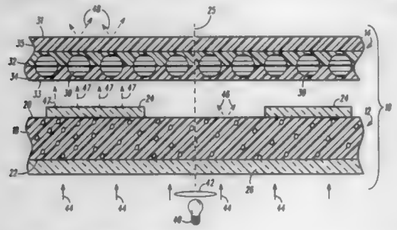
wherein said optical system includes a diffuser, and wherein said diffuser and said film means are affixed to said panel and sandwiched between a first polarizer and said liquid crystal layer so as to reduce the ambient diffused reflection of said display panel.

5,629,785

POLYMER DISPERSED LIQUID CRYSTAL DISPLAY DEVICE WITH ASYMMETRIC OPTICAL DIFFUSER

George T. Valliath, Buffalo Grove; Kevin W. Jelley, La Grange Park, and Alan G. Chen, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1995, Ser. No. 434,876
Int. Cl.° G02F *1/1333;1/1335*
U.S. Cl. 349—86 **3 Claims**



2. A display device comprising

a polymer dispersed liquid crystal film comprising a transparent polymeric matrix and microdroplets containing a liquid crystal material dispersed within the transparent polymeric matrix, said polymer dispersed liquid crystal film having a front side wherefrom light emanates for forming a display and a back side opposite the front side, said polymer dispersed liquid crystal film further comprising at least one region switchable in response to an applied electric field between a translucent condition and a transparent condition,

a collimated light source for producing a collimated light beam that illuminates the back side of the polymer dispersed liquid crystal film along an axis generally perpendicular to said back side, and

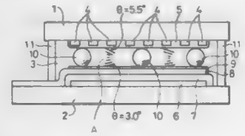
an asymmetric optical diffuser optically coupled to the front side of the polymer dispersed liquid crystal film to receive light emanating therefrom, said asymmetric optical diffuser comprising an opaque matrix and a plurality of transparent microspheres arranged in the opaque matrix to form light paths through the asymmetric optical diffuser that selectively transmit collimated light along the axis, whereby collimated light transmitted through the region in the transparent condition is transmitted through the asymmetric optical diffuser to create a bright area for a display and diffuse light emanating from the region in the translucent condition in directions nonparallel to the axis are excluded to create a dark area for a display.

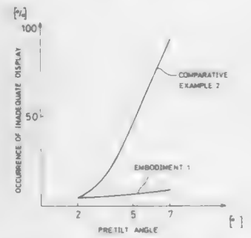
5,629,786

LIQUID CRYSTAL DISPLAY DEVICE

Masami Ogura, Kashihara; Masayuki Yamanaka, Yamatokoriyama, and Hiroshi Takanashi, Soraku-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 22, 1996, Ser. No. 589,545
Claims priority, application Japan, Jan. 26, 1995, 7-010991
Int. Cl.° G02F *1/1337;1/1335*
U.S. Cl. 349—123 **7 Claims**





1. A liquid crystal display device, comprising:

a first substrate with a smooth orientation film surface;

a second substrate with an orientation film surface less smooth than the first substrate; and

a liquid crystal layer sandwiched between the first substrate and the second substrate, the liquid crystal layer having super twisted nematic liquid crystal whose twist angle is not less than 250°,

wherein pretilt angles of the liquid crystal molecules close to the first substrate is not less than 4°, and great enough to obtain required anchoring energy, and

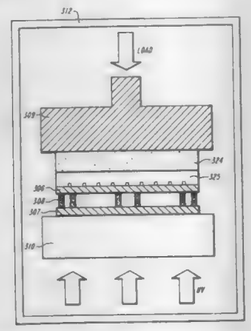
pretilt angles of the liquid crystal molecules close to the second substrate are smaller than the pretilt angles of the liquid crystal molecules close to the first substrate.

5,629,787

METHOD FOR PRODUCING AN LCD BY PRESSING THE SUBSTRATES

Koujiro Tsubota, Nara; Kazuyoshi Fujioka, Higashiosaka; Yohji Yoshimura, Nara; Hiroyuki Ohgami, Tenri; Yutaka Takafuji, Nara; Katsumi Nomura, Tenri; Masumi Kubo, Nara, and Hirokazu Kamei, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 67,466, May 25, 1993, Pat. No. 5,499,127.
This application May 23, 1995, Ser. No. 447,952
Claims priority, application Japan, May 25, 1992, 4-132870; Jul. 3, 1992, 4-177155
Int. Cl.° G02F *1/1339;1/1333;1/13*
U.S. Cl. 349—153 **16 Claims**



5. A method for producing a liquid crystal display device including two substrates combined together through a sealing member containing a spacer mixed therein, the spacer determining a thickness of a gap between the substrates, the gap including no spacer in a display area at a central portion thereof, the method comprising the steps of:

entirely pressing at least one of the substrates by a complex pressing medium including a buffering member and a pressing member; and

curing the sealing member and thus adhering the substrates to each other in a state of being pressed wherein said complex pressing medium includes a groove formed at least at one surface thereof for eliminating air from between the pressing medium and one of the two substrates in contact with said complex pressing medium.

5,629,788

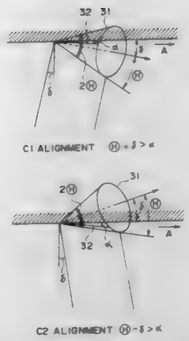
LIQUID CRYSTAL DEVICE PROVIDING TILT ANGLE INCLINATION ANGLE AND PS SATISFYING RELATIONSHIPS AT 55 DEGREES

Shosei Mori, Hiratsuka; Masataka Yamashita, Chigasaki; Kazuharu Katagiri, Tama; Masahiro Terada; Syuji Yamada, both of Atsugi, and Hiroshi Mizuno, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,440
Claims priority, application Japan, Dec. 29, 1992, 4-361354
Int. Cl.° G02F *1/13*
U.S. Cl. 349—172 **12 Claims**

1. A liquid crystal device, comprising: a pair of substrates and a chiral smectic liquid crystal disposed between the pair of substrates, each of the pair of substrates having thereon an electrode for applying a voltage to the liquid crystal, the pair of substrates being provided with respective uniaxial alignment axes extending in directions which are parallel to each other or intersect each other at a prescribed angle, wherein

the chiral smectic liquid crystal is placed in such an alignment state that the liquid crystal assumes at least two stable states and provides a pretilt angle α (degrees), a tilt angle Ⓗ (degrees), an inclination angle δ (degrees) of the liquid crystal layer, and an apparent tilt angle θa satisfying the following relationships (I) and (II) in a temperature range of 10°–55° C.:



$$Ⓗ<\alpha+\delta \text{ and } \delta<\alpha \quad \text{(I)},$$

$$Ⓗ>\theta a>Ⓗ/2 \quad \text{(II)};$$

and the liquid crystal provides a tilt angle Ⓗ (degrees), an inclination angle δ (degrees) of the liquid crystal layer, and a spontaneous polarization Ps (nC/cm²) satisfying the following relationships (III) and (IV) at 55° C.:

$$Ⓗ\times\delta>70 \quad \text{(III)},$$

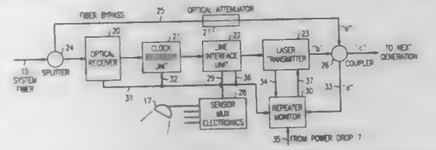
$$Ⓗ\times\delta/Ps>20 \ (\text{deg.}^2\text{cm}^2/\text{nC}) \quad \text{(IV)}.$$

5,629,789

PASSIVE OPTICAL REPEATER BYPASS FOR OPTICAL FIBER SYSTEMS

John H. Myers, Jersey City; Carmine J. Pagano, II, Summit, and Richard J. Ramsay, Somerville, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 236,059, May 2, 1994, abandoned.
This application Oct. 25, 1995, Ser. No. 547,917
Int. Cl.⁶ H04B *10/02*
U.S. Cl. 359—177 **4 Claims**



1. A data transmission system that comprises an optical fiber transmission line and at least first and second repeaters that receive incoming optical information signals from the transmission line, wherein the second repeater is situated downstream of the first repeater with respect to a data stream in the transmission line, the second repeater includes means for collecting data from a sensor and injecting said data into said data stream, and each of the first and second repeaters comprises means for generating and amplifying electrical information signals in response to said incoming signals, generating outgoing optical signals in response to said electrical information signals, and injecting said outgoing signals into the transmission line, the first repeater comprising:

a) a receiver for generating and amplifying the electrical information signals;

b) a clock recovery unit for receiving the electrical information signals from the receiver and re-timing digital data within said signals, said unit comprising a local clock source for generating, on demand, a system startup frame that will enable the

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second repeater to continue to operate in the event that there is a fault in the transmission line upstream of the first repeater;,

c) a laser transmitter for receiving said signals after they have been processed by the clock recovery unit, and for generating the outgoing optical signals;

d) a bypass line for directing a portion of the incoming optical signals into the transmission line as outgoing optical signals without conversion of said portion to electrical signals;

e) a power supply electrically connected to the receiver, clock recovery unit, and transmitter;

f) a monitor distinct from, and electrically connected to the power supply, receiver, clock recovery unit, and transmitter; and

g) passive optical coupling means for receiving outgoing optical signals from the laser transmitter and the bypass line, coupling a portion of said outgoing optical signals into the transmission line, and diverting a portion of said outgoing optical signals directly into the monitor, wherein:

h) the monitor includes control means for making transitions from one to another of respective internal states selected from a plurality of states, said plurality including a NORMAL state, a DISABLE state, and a STARTUP state;

i) the first repeater includes means for turning off the laser transmitter when the DISABLE state is entered;

j) the control means are adapted to make a transition from the NORMAL state to the DISABLE state when the monitor receives a faulty diagnostic signal from the receiver, the clock recovery unit, or the power supply;

k) the control means are further adapted to make a transition from the DISABLE state to the STARTUP state when the optical input to the monitor from the passive optical coupling means drops below a threshold; and

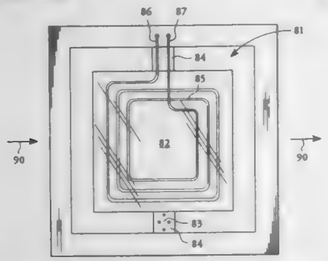
l) means, activated when the STARTUP state is entered, for causing the clock recovery unit to generate a system start-up frame using the local clock source, and for transmitting said start-up frame, whereby at least the second repeater is allowed to operate.

5,629,790

MICROMACHINED TORSIONAL SCANNER

Armand P. Neukermans, 3510 Arbutus Ave., Palo Alto, Calif. 94303, and Timothy G. Slater, 1226-25th Ave., San Francisco, Calif. 94122

Filed Oct. 18, 1993, Ser. No. 139,397
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—198 **41 Claims**



1. A torsional scanner comprising:

a planar micromachined mirror formed in a surface layer of a silicon wafer section, said mirror having a mirror surface;

a pair of opposed torsion bars for supporting said mirror as an island within the wafer section, said mirror thus supported within the wafer section by said torsion bars exhibiting a plurality of vibrational modes including a principal torsional vibrational mode about an axis that is collinear with said torsion bars, a vertical shaking vibrational mode, a vertical rocking vibrational mode, a lateral shaking vibrational mode, and a lateral rocking vibrational mode, each such vibrational mode of said mirror having a vibrational frequency, the vibrational frequency of the principal torsional vibrational mode being lower by at least 20% than the vibrational frequency of any other vibrational mode of said mirror; and

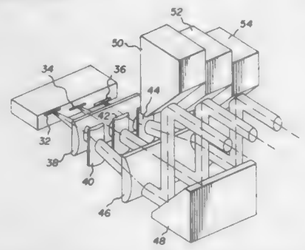
drive means for communicating a reciprocating torsional force to said mirror, thereby establishing a rotary motion of said mirror about the axis that is collinear with said torsion bars.

5,629,791

OPTICAL COMPENSATION FOR LASER EMITTER ARRAY NON-LINEARITY

Michael E. Harrigan, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1996, Ser. No. 658,904
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—223 **13 Claims**



1. An optical apparatus for correcting deviations from straightness of an array of laser emitters, said apparatus comprising:

an array of laser emitters in generally aligned positions along an array direction, the positions of the emitters deviating from a straight, array direction line in a cross-array direction perpendicular to the array direction, each laser emitter producing a beam of light in a direction normal to the array and the cross-array directions such that the light beams travel along individual light beam paths;

a plurality of mirrors along the light beam paths, at least one of the plurality of mirrors being associated with each light beam, and positioned to reflect its associated light beam along a folded light beam path; and

means for selectively displacing individual ones of the plurality of mirrors along its associated light beam path in a direction so as to align the reflected light beams from all of the plurality of mirrors along the folded light beam path, thereby to correct for any deviation of a laser emitter from the straight, array direction line of the laser emitters.

5,629,792

EXTERNAL MODULATOR AND METHOD FOR EXTERNALLY MODULATING LIGHT

Katsumi Masaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 31, 1995, Ser. No. 521,655
Claims priority, application Japan, Sep. 7, 1994, 6-213830
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—245 **12 Claims**

1. An external modulator comprising:

an external modulating device of an interference type;

low frequency signal generating means for generating a predetermined low frequency signal;

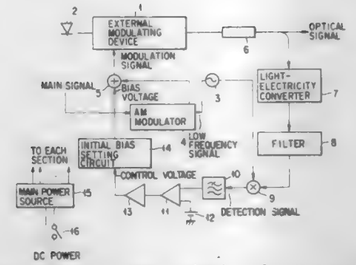
bias generating means for generating a bias voltage and capable of changing the level of the bias voltage within a predetermined range centered on a ground level;

superimposing means for amplitude-modulating a main signal by said low frequency signal, and superimposing said bias signal thereon to obtain a signal serving as a modulation signal to be supplied to said external modulating device of the interference type;

low frequency signal extracting means for extracting a component corresponding to said low frequency signal from an output light of said external modulating device of the interference type;

bias controlling means for controlling a voltage level of said bias voltage based on the low frequency signal extracted by said low frequency signal extracting means so that the operation point of the external modulating device of an interference type is set at a predetermined operation stable point; and

initial setting means for initially setting the level of the bias voltage so that the operation point of the external modulating device of an interference type is set to the operation stable point nearest the operation point attained when the bias voltage of the ground level is applied.

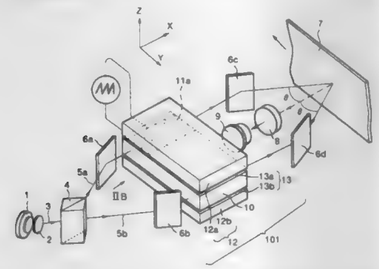


5,629,793

FREQUENCY SHIFTER AND OPTICAL DISPLACEMENT MEASUREMENT APPARATUS USING THE SAME

Makoto Takamiya, Tokyo, and Hidejiro Kadowaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,125
Claims priority, application Japan, Jul. 11, 1994, 6-181760; Feb. 17, 1995, 7-053445
Int. Cl.[6] G02F *01/23*
U.S. Cl. 359—278 **13 Claims**



1. A frequency shifter for modulating a frequency of an incident light beam, said shifter comprising:

an electro-optic crystal portion to be arranged at an incident position;

an electrode arranged on said electro-optic crystal portion;

voltage application means for applying a voltage to said electro-optic crystal portion via said electrode; and

means, arranged at least at a portion of said electro-optic crystal portion, for uniformizing a temperature of said electro-optic crystal portion, wherein

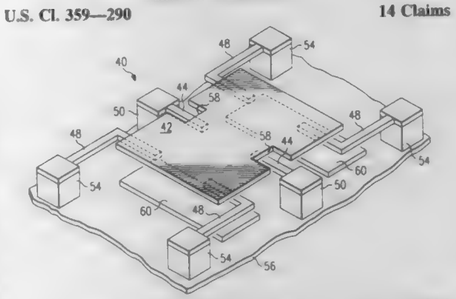
said means for uniformizing the temperature is arranged over portions, of said electro-optic crystal portion, on which two light beams are respectively incident.

5,629,794

SPATIAL LIGHT MODULATOR HAVING AN ANALOG BEAM FOR STEERING LIGHT

Gregory A. Magel, Dallas; James M. Florence, Richardson, and Robert M. Boysel, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1995, Ser. No. 455,475
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—290 **14 Claims**



1. An improved spatial light modulator of the type which includes a generally planar light-reflective pixel which is deflectable out of a first, normal position into a plurality of second positions, light incident on the pixel being selectively modulated by being reflected from the pixel in selected directions depending on the position of the pixel, the position of the pixel being dependent on a selected characteristic of an electrical signal provided to an underlying address circuit, the deflection of the pixel storing potential mechanical energy in a pixel-supporting facility, which stored energy tends to return the pixel to the first position, wherein the improvement comprises:

the pixel-supporting facility including

a first torsion member connected between the pixel and a first stationary post and defining a torsion axis, deflection of the pixel effecting its rotation about the torsional axis of the first member; and

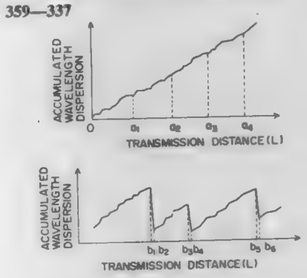
a second flexure member connected between the pixel and a second stationary post, deflection of the pixel effecting flexure of the second member.

5,629,795

OPTICAL AMPLIFYING-REPEATING TRANSMISSION SYSTEM

Masatoshi Suzuki, Kawajima-Saitama; Itsuro Morita, Tokyo; Shu Yamamoto, Shiki; Noboru Edagawa, Tokyo; Hidenori Taga, Sakado, and Shigeyuki Akiba, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 521,973
Claims priority, application Japan, Sep. 12, 1994, 6-242405; May 30, 1995, 7-154141
Int. Cl.[6] H01S *3/00*; **H04B** *10/02*
U.S. Cl. 359—337 **6 Claims**



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1. An optical amplifying-repeating transmission system, comprising: an optical fiber for transmitting a lightwave signal with digital information added to return-to-zero lightwave pulses and a plurality of optical amplifying repeaters disposed on said optical fiber.

a mean value of wavelengths at which wavelength dispersion of said optical fiber is zero being smaller than a wavelength of said lightwave signal which is transmitted over said system;

an accumulated wavelength dispersion value of said optical fiber increasing with the distance of transmission considered macroscopically:

said optical fiber for transmitting the lightwave signal being divided into a plurality of sections; and

in accordance with an accumulated wavelength dispersion value of said optical fiber in each section except the last one, a wavelength dispersion medium, locally changing the wavelength dispersion effectively to cancel the accumulated wavelength dispersion in the section concerned at the wavelength of said lightwave signal, being disposed in said section.

5,629,796

IMAGE FRAME

Ian A. Shanks, Penn, England, assignor to Central Research Laboratories Limited, Hayes, England

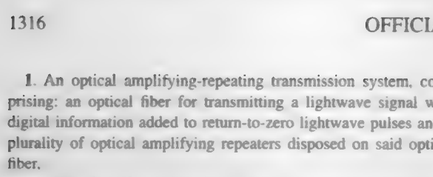
PCT No. PCT/GB93/00054, § 371 Date Jul. 12, 1994, § 102(e) Date Jul. 12, 1994, PCT Pub. No. WO93/13699, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 12, 1993, Ser. No. 256,438

Claims priority, application United Kingdom, Jan. 13, 1992, 9200584

Int. Cl.[6] G02B *27/22;27/10;* **A47G** *1/06;* **B44C** *5/02*

U.S. Cl. 359—463 **3 Claims**



1. A frame for substantially enclosing the circumference of an image, the frame comprising a pair of arrays each comprising a plurality of paraboloidal or spherical lens type structures having a radial dimension within the micrometer to millimeter range, the arrays being superimposed on and spaced from one another, said arrays combining to form a resultant "bubble-like" pattern in a different plane to either array.

5,629,797

AUTOSTEREOSCOPIC IMAGE SYSTEM

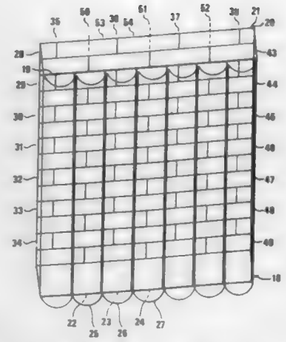
Michael Ridgway, 9 Richard Moss House, St. Peter Street, Winchester, Hants, 50238BT, England

Filed May 3, 1995, Ser. No. 433,065

Int. Cl.[6] G02B *27/22*

U.S. Cl. 359—464 **12 Claims**

1. An autostereoscopic image system comprising; the first filter containing vertical bands of alternating polarization behind which is positioned the second filter containing horizontal bands of alternating polarization behind which is positioned the composite picture with picture elements arranged to be viewed through the



combination of both first and second filters and producing an autostereoscopic effect when viewed through the filters.

5,629,798

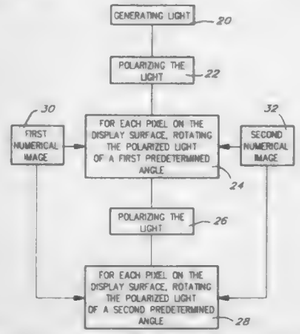
STEREOSCOPIC DISPLAYING METHOD AND DEVICE

Jean E. Gaudreau, 50 Place Crémazie, Suite 723, Montréal (Québec), Canada

Continuation of Ser. No. 353,423, Dec. 9, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 612,204

Int. Cl.[6] G02B *27/46;* **G02F** *1/1335;* **H04N** *13/00*

U.S. Cl. 359—465 **11 Claims**



1. A method for concurrently displaying first and second numerical images on a display surface, said first and second images being formed of respective identical arrays of pixels of variable light intensity, said display surface being formed of an array of picture elements for displaying the pixels of the first and second numerical images, said method comprising, for each picture element of said display surface, the steps of:

supplying light to said picture element;

selecting a corresponding pixel of said first image and a corresponding pixel of said second image;

polarizing the light supplied to said picture element in a first predetermined direction;

rotating the light polarized in said first direction by a first rotation angle which is calculated according to the function:

$$A1 = \arccos\left(\sqrt{L^2 + R^2}\right)$$

where A1 is the first rotation angle, L is the light intensity of the corresponding pixel of the first image, and R is the light intensity of the corresponding pixel of the second image; wherein the resulting rotated polarized light comprises, in a second predetermined direction, a component having an intensity which is a function of the light intensities of said selected corresponding pixels of said first and second images;

polarizing the light which has been polarized in said first direction and rotated by said first rotation angle in said second predetermined direction;

rotating the light polarized in said second direction to orient said polarized light into a displaying direction in which (a) a first component of the rotated polarized light in a first predetermined viewing direction corresponds to the light intensity of the selected corresponding pixel of the first numerical image and (b) a second component of the rotated polarized light in a second predetermined viewing direction, substantially perpendicular to said first viewing direction, corresponds to the light intensity of the selected corresponding pixel of the second numerical image,

whereby concurrent display of said first and second numerical images on said display surface is carried out, for each picture element, through combination of said selected corresponding pixels of said first and second images into a polarized and rotated light which may be decomposed, through further adequate polarization along said first and second predetermined viewing directions, into said corresponding pixel of said first numerical image and said corresponding pixel of said second numerical image, respectively.

5,629,799

CHROMATIC ABERRATION CORRECTING ELEMENT AND ITS APPLICATION

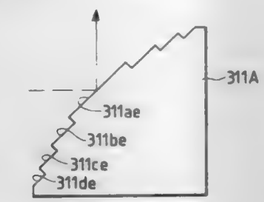
Koichi Maruyama; Masahiro Oono; Satoru Tachihara; Masato Noguchi, and Tsuyoshi Ishikawa, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 91,983

Claims priority, application Japan, Jul. 16, 1992, 4-189474; Dec. 21, 1992, 4-340562; Dec. 28, 1992, 4-348593; Jan. 14, 1993, 5-004958; Mar. 25, 1993, 5-066504; Jun. 10, 1993, 5-138300; Jun. 10, 1993, 5-138301; Jun. 10, 1993, 5-138302; Jun. 25, 1993, 5-155074

Int. Cl.[6] G02B *3/08;5/18*

U.S. Cl. 359—565 **4 Claims**



1. A chromatic aberration correcting device having a diffractive surface, said diffractive surface comprising:

a central surface characterized by rotation symmetry with respect to said optical axis and

a plurality of ring-shaped surfaces that are concentric with said central surface,

wherein said central surface, one of said ring-shaped surfaces just outward of said central surface and the remaining ring-shaped surfaces are offset in position by the same step distance t in said optical axis direction, respectively, and

wherein said diffractive surface is of substantial concave or convex shape as a whole when viewed macroscopically and said central surface and said plurality of ring-shaped surfaces are planes which are perpendicular to said optical axis, and said macroscopic shape of said diffractive surface is an aspheric surface the radius of curvature of which decreases in absolute value with the increasing distance from said optical axis toward a periphery of said chromatic aberration correcting device and, the axial displacement $\Delta X^1(h)$ of said planes defined by said plurality of ring-shaped surfaces from said plane defined by said central surface at a point having distance h from the optical axis is given by the following relationship:

$$\Delta X^1(h) = (m\lambda_0/(n-1))\mathrm{Int}((\Delta X(h)/(m\lambda_0/(n-1))) + 0.5)$$

where $\Delta X(h)$ is a displacement of said aspheric surface from said plane defined by said central surface at a point having distance h from the optical axis; m is an integer; n is the refractive index of the medium of which said device is made; λ_0 is the wavelength at which the chromatic aberration correcting device is used or an arbitrary wavelength within the operating wavelength; and int(X) is a function giving an integer not greater than X.

5,629,800

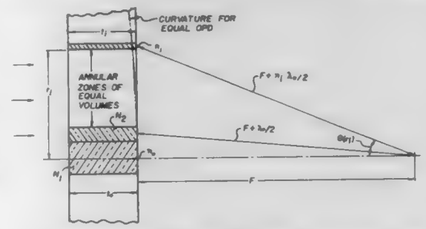
GRADIAL ZONE LENS AND METHOD OF FABRICATION

David P. Hamblen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 169,839, Dec. 16, 1993, Pat. No. 5,486,951. This application Jun. 5, 1995, Ser. No. 464,487

Int. Cl.[6] G02B *5/18;27/44;* **B29D** *11/00*

U.S. Cl. 359—565 **18 Claims**



1. A method of making a diffractive lens, comprising the steps of:

providing a mold having an axis and a mold cavity symmetrically surrounding the axis, the cavity having a desired geometry for at least one exterior surface of the diffractive lens;

spinning the mold about the axis;

injecting a first volume of a first optically transparent material into the cavity during the spinning, thereby placing the first volume at a periphery of the cavity to define a radially outer zone of the diffractive lens;

curing the first volume within the outer zone to at least partially solidify the material;

injecting a second volume of a second optically transparent material into the cavity during the spinning, thereby placing the second volume against an inner periphery of the outer zone to define a first radially inner zone of the diffractive lens;

curing the second volume within the first inner zone to at least partially solidify the material; and

repeating the injecting and curing steps to define and cure subsequent inner zones of the diffractive lens until the mold cavity is filled with concentric zones of cured material, the cross sectional areas of the zones and the first and second materials being chosen to produce an optical phase difference between adjacent zones of 2π; and the first and second optically transparent materials defining alternate ones of the zones.

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5,629,801

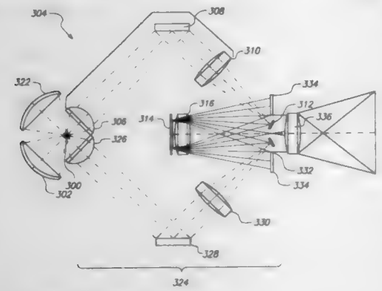
DIFFRACTION GRATING LIGHT DOUBLING COLLECTION SYSTEM

Bryan P. Staker, Palo Alto; David M. Bloom, Portola Valley, and Bryan E. Loucks, Los Altos Hills, all of Calif., assignors to Silicon Light Machines, Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 473,759

Int. Cl.[6] G02B *5/18;* **G02F** *1/03;1/00;* **G03B** *21/14*

U.S. Cl. 359—572 **8 Claims**



1. An optical system comprising:

a. a light source for generating light;

b. a light valve for receiving light from the light source, wherein the light valve is selectably configurable to operate in each of a reflecting mode and a diffracting mode;

c. means for collecting a first portion of the light in a first collection path;

d. means for directing the first portion of the light to the light valve via the first collection path;

e. means for collecting a second portion of the light in a second collection path; and

f. means for directing the second portion of the light to the light valve via the second collection path,

wherein the first portion of the light returns to the light source via the second path and the second portion of the light returns to the light source via the first path in the reflecting mode, and wherein first order diffractions of the first portion and the second portion of the light exit the system in the diffracting mode.

5,629,802

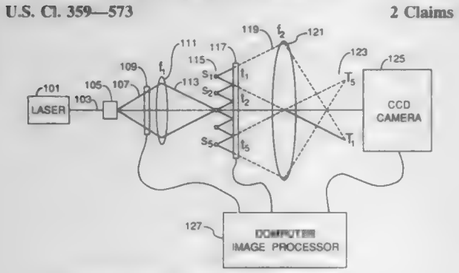
SPATIALLY MULTIPLEXED OPTICAL SIGNAL PROCESSOR

Natalie Clark, Albuquerque, N.M., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1995, Ser. No. 369,037

Int. Cl.[6] G02B *5/18;* **G03H** *1/16*

U.S. Cl. 359—573 **2 Claims**



1. An optical image processor comprising:

(a) a spatial light modulator;

(b) image display means having signals therein within a plurality of subareas thereof;

(c) a variable programmable diffraction grating within said spatial light modulator, said variable programmable diffraction grating having apertures that can be varied, and having parallel, equidistant slits of the same width;

(d) means for illuminating said variable programmable diffraction grating to produce diffracted light;

(e) focusing lens means, positioned between said variable programmable diffraction grating and said spatial light modulator, for producing a phased array of point sources of light from the diffracted light produced by said variable programmable diffraction grating, each point source of light being positioned adjacent an associated subarea of said image display means;

(f) an image recording device; and

(g) a Fourier transform lens coupled between said image display means and said image recording device for directing Fourier transforms of images within each subarea of said image display means upon said recording device.

5,629,803

SYSTEM FOR A DIRECT IMAGE TRANSMISSION BY SPECTRAL CODING

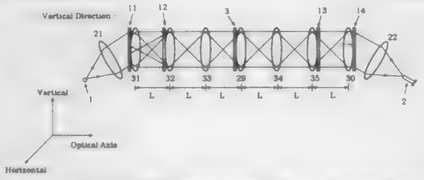
Jung Y. Son; Hyung W. Jeon, and Yong J. Choi, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Sep. 21, 1994, Ser. No. 309,655

Claims priority, application Rep. of Korea, May 7, 1994, 94-10028

Int. Cl.[6] G02B *5/18*

U.S. Cl. 359—575 **2 Claims**



1. A system for the direct transmission of image signals through a transmission medium comprising:

a transmitter comprising:

a point source of white light,

a first grating for diffracting light discharged from said point source to form a one-dimensional spectrum,

a plurality of second diffraction gratings disposed so that they disperse light in a direction perpendicular to the dispersion direction of said first grating for continuously separating and distributing said one-dimensional spectrum formed by said first grating two-dimensionally for one-to-one correspondence to each pixel of a two-dimensional image wherein the spacings of each diffraction grating in said plurality of second diffraction gratings increase in a predetermined manner,

an input device including image signals to be transmitted and permitting a selected portion of said diffracted light received from said plurality of second diffraction gratings to pass therethrough, and

means for focusing the light received from said input device into said transmission medium; and

a receiver for receiving image signals transmitted from said transmitter through said transmission medium and reproducing the image that appears at the output of said input device from the received image signals.

5,629,804

DIFFRACTION GRATING

Haruo Tomono, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1994, Ser. No. 182,562

Claims priority, application Japan, Jan. 18, 1993, 5-005971

Int. Cl.[6] G02B *5/18;* **C08L** *75/14;75/16*

U.S. Cl. 359—576 **4 Claims**

1. A diffraction grating comprising:

a substrate and a resin layer having a repetitive pattern formed on the substrate, wherein said resin layer comprises a cured product of a photocurable resin composition comprising:

(i) 25–45 wt. % of (A) a polyfunctional urethane-modified polyester (meth)acrylate comprising a polyester oligomer and a plurality of (meth)acryloyl groups bonded to the polyester oligomer via a urethane group and having a number-average molecular weight of at least 800,

(ii) 31–70 wt. % of (B) a polyfunctional (meth)acrylate having a number-average molecular weight of less than 650,

(iii) 5–44 wt. % of (C) a monofunctional (meth) acrylate, and

(iv) (D) a photopolymerization initiator.

5,629,805

ALIGNER EQUIPPED WITH ANNULAR ILLUMINATION SYSTEM FOR ANNULAR ILLUMINATION LIGHT WITH LARGE ILLUMINANCE

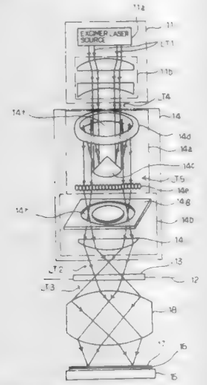
Shinichi Fukuzawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 339,678

Claims priority, application Japan, Nov. 15, 1993, 5-308689

Int. Cl.[6] G02B *27/10;5/08;* **G03B** *27/52*

U.S. Cl. 359—627 **5 Claims**



1. An aligner comprising:

a light source section for radiating a laser light;

a reticle holder for retaining a reticle having a transparent pattern;

an annular illuminating section provided between said light source section and said reticle, and having

a condenser means for condensing said laser light into an annular illumination light comprising:

a cone-shaped reflecting mirror placed in an optical path of said laser light and having an outer surface for reflecting said laser light,

a ring-shaped reflecting mirror having an aperture for transferring said laser light to said outer surface of said cone-shaped reflecting mirror and an inner surface for reflecting the laser light reflected from said outer surface of said cone-shaped reflecting mirror for producing said annular illumination light, and

a fly-eye lens for shaping said annular illumination light into parallel rays;

an oblique illumination means for obliquely illuminating said reticle with said annular illumination light so as to cause an oblique-incident 0-order light component of said annular illumination light to transfer a pattern image of said transparent pattern formed in said reticle; and

a movable stage for holding a photo-sensitive layer to which said transparent pattern is transferred.

5,629,806

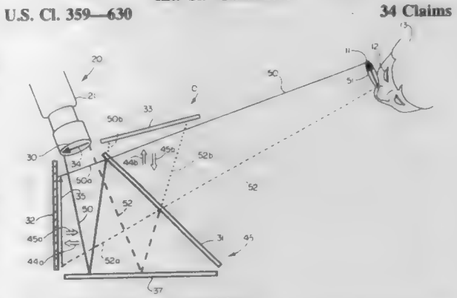
RETRO-REFLECTOR BASED PRIVATE VIEWING SYSTEM

James L. Fergason, 92 Adam Way, Atherton, Calif. 94025

Filed Nov. 28, 1994, Ser. No. 345,657

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—630 **34 Claims**



2. A viewing system, comprising

projector means for projecting along an optical path image from an image source,

beamsplitter means for reflecting at least some of the light incident thereon and for transmitting at least some light incident thereon,

retro-reflector means for receiving at least some light from the beamsplitter means and for reflecting such light in a conjugate path back toward said beamsplitter means,

a reflector for folding at least part of the optical path between said beamsplitter means and retro-reflector means, and

said beamsplitter means and retro-reflector means being positioned relative to each other and cooperative to cause at least some of the light reflected via said retro-reflector mean to be provided by said beamsplitter means for direct viewing of an image at a viewing location.

5,629,807

HELMET MOUNTED IMAGE INTENSIFIER

John M. Hall, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 31, 1995, Ser. No. 455,887

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—630 **2 Claims**

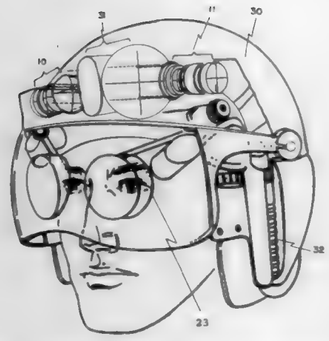
1. A helmet-mounted vision enhancement system, the system having left and right side subsystems allowing the relay of an intensified image scene to the eye, the subsystems for each side comprising:

each input subsystem including reflecting means for reflecting the field of view of the outside environment perpendicular to the normal human eye line of sight as a reflected image;

goggle subsystem including intensifier means for focus and image intensification of the reflected image, both reflecting means and intensifier means substantially parallel to the user's forehead and facing in toward the user's nose;

output subsystem for orienting an input image from the goggle subsystem which is accepted into relay optics and eyepiece optics so that a user can view an image intensified scene with a 1:1 magnification and restored normal image orientation

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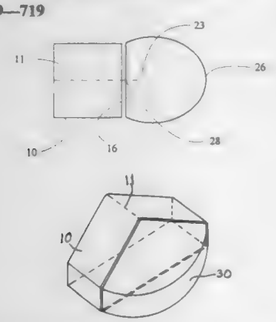
onto an eyepiece, wherein the output subsystem further includes eyepieces optics constructed to provide see-through capability by coating partial mirrors to reflect only green phosphor light whereby eliminating hypersteropsis to the user, and further allowing relay of an intensified image scene to the eye with optional other superimposed images.

5,629,808

D-SHAPE LASER BEAM PROJECTOR

Ian Powell, Gloucester, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Dec. 15, 1995, Ser. No. 573,124
Int. Cl.[6] G02B *13/18;3/02*
U.S. Cl. 359—719 16 Claims



1. An optical lens comprising

a linear diverging element having a primary surface, a secondary surface and a side surface,

a section of an axicon cut in a plane passing through its apex or near thereof, said section having a primary surface, a secondary surface and a cut surface and connected with said linear diverging element, said cut surface of said axicon adjoining said side surface of said linear diverging element,

wherein said primary surface of said linear diverging element has a shape described by the equation

$$z = \frac{cy^2}{1+\sqrt{1-(1+Q)c^2y^2}}$$

where c is the curvature at the apex, Q is the conic constant, and the surface is defined in an (x, y, z) Cartesian coordinate system, the conic constant having a negative value,

and the primary surface of said axicon has a surface shape described by the equation

$$z = \frac{\rho}{\sqrt{-Q}}$$

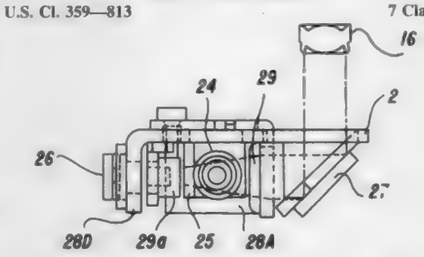
where Q is the conic constant and ρ (rho) is the semi-diameter.

5,629,809

OPTICAL PICKUP FOR REPRODUCING INFORMATION ON A DISC

Toshihiko Kurihara; Taichi Akiba; Osamu Ueda, and Shinichi Takahashi, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 391,279, Feb. 21, 1995, abandoned, which is a continuation of Ser. No. 80,768, Jun. 24, 1993, abandoned. This application Jun. 12, 1996, Ser. No. 660,957
Claims priority, application Japan, Jun. 26, 1992, 4-192941
Int. Cl.[6] G11B *7/095*
U.S. Cl. 359—813 7 Claims



1. An improved optical pickup for reproducing information on an optical disc comprising:

a pickup body mounting an optical system which outputs a laser beam, said optical system including a laser device and other optical devices, said pickup body is formed by bending a single plate made of magnetic material, said bent single plate has bent portions mounted with said laser device and said other optical devices; and

a yoke base mounting an actuator, and an objective lens supported on the actuator and movable with respect to the yoke base, the objective lens being such that the laser beam from the optical system of the pickup body passes therethrough and is directed to the optical disc and focused on the optical disc, said actuator includes a pair of yokes which are made of a magnetic material and which are fixed on said yoke base, at least one of said pair of yokes is provided with a magnet,

wherein a magnetic circuit is formed by said pair of yokes, said magnet and said yoke base, and wherein the pickup body and the yoke base being made of a same magnetic material to prevent an optical axis of the laser beam, from deflecting from a designed optical axis.

5,629,810

MIRROR ASSEMBLY FOR THE EXTERIOR OF AN AUTOMOTIVE VEHICLE HAVING A HAND SET MECHANISM

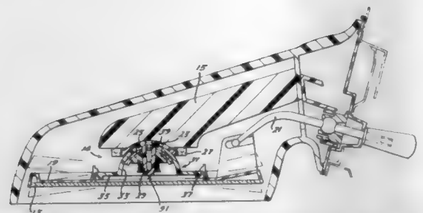
William M. Perry, Palestine, and Kerry L. Helmer, Hollansburg, both of Ohio, assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Continuation of Ser. No. 61,618, May 12, 1993, abandoned. This application Feb. 3, 1995, Ser. No. 384,384
Int. Cl.[6] G02B *5/08;7/182;* B60R *1/06*
U.S. Cl. 359—872 16 Claims

1. A mirror assembly for the exterior of an automobile having a hand set adjustment mechanism, said mirror assembly comprising:

a mirror,

a mirror casing supporting said mirror,



a base having a partially spherical center portion with a concave surface, said concave surface having an upwardly extending post, said base having outwardly extending mounting flanges defining a substantially nominal planar surface located closest to said mirror casing, said partially spherical center portion being depressed below said nominal planar surface away from said mirror casing,

a mounting bracket contacting against said mounting flanges,

a pivot cup having a central semi-spherical portion, said semi-circular portion being circumferentially bordered by a generally flat surface outwardly extending therefrom attached to said mirror casing, said semi-spherical portion having an centrally located opening through which said post extends, said semi-spherical portion being located adjacent to said concave surface of said base and being at least partially disposed below said nominal planar surface of said base away from said mirror casing,

a sleeve being of a semi-spherical shape with an aperture through which said post extends, said sleeve having an outside and an inside surface, said outside surface being located against said semi-circular portion of said pivot cup, and

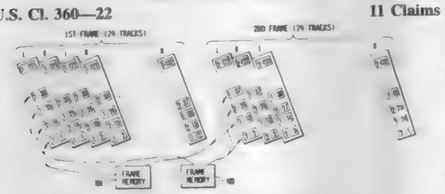
means for forcibly compressing said pivot cup against said partially spherical portion of said base; whereby said pivot cup can pivotally move between said compression means and said partially spherical portion of said base.

5,629,811

VIDEO SIGNAL RECORDING APPARATUS WITH TRANSFORMING AN ARRANGEMENT OF VIDEO DATA

Hidenori Hoshi, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 90,247, Jul. 9, 1993, abandoned, which is a continuation of Ser. No. 956,599, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 427,327, Oct. 25, 1989, abandoned. This application Mar. 9, 1994, Ser. No. 208,483
Claims priority, application Japan, Oct. 31, 1988, 63-275254
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—22 11 Claims



1. A video signal recording apparatus comprising:

(a) input means for inputting a digitized video signal which includes video data of successive pictures;

(b) transposing means for transposing the video data between two pictures included in the digitized video signal; and

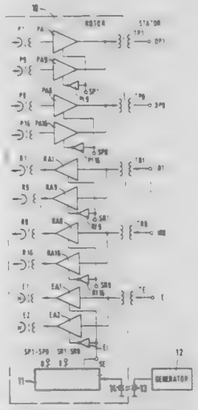
(c) recording means for recording a digital video signal on a plurality of recording tracks formed in parallel on a recording medium, said recording means recording the video data so that video data which correspond to respective parts of both two pictures are recorded on each of the recording tracks by concurrently forming a plurality of tracks.

5,629,812

MAGNETIC-TAPE APPARATUS COMPRISING A ROTARY SCANNING DEVICE WITH STEPWISE HEAD CONTROL

Bernhard Kleinhuis, Fischbachtal, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 9, 1994, Ser. No. 336,617
Claims priority, application Germany, Nov. 10, 1993, 43 38 391.2
Int. Cl.[6] G11B *15/14*
U.S. Cl. 360—64 19 Claims



17. A magnetic-tape apparatus comprising:

a rotary scanning device comprising a rotary member having a plurality of magnetic heads mounted at the circumference thereof,

a plurality of amplifiers mounted on the rotary member and electrically coupled to respective magnetic heads,

a plurality of rotary transformers for the transfer of signals from a stator side of the apparatus to the magnetic heads and vice versa,

means located on the stator side for transmitting to a control device located on the rotary member a phase-data signal related to the rotational position of the rotary member, said phase-data signal comprising a periodic pulse sequence straddled by first and second synchronization pulses which, via the control device, synchronizes a transfer of signals to and from the magnetic heads, and

means for moving a magnetic tape past the rotary member.

5,629,813

INITIALIZATION AND CALIBRATION OF MAGNETIC TAPE HAVING MULTIPLE SERVO AREAS

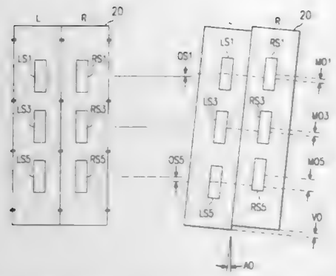
Robert C. Baca; Alex Chliwnyj; Wayne T. Comeaux; James F. Crossland, and Ronald K. Rhodes, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 77,471, Jun. 14, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 406,277
Int. Cl.[6] G11B *5/584*
U.S. Cl. 360—77.12 8 Claims

1. An apparatus for initializing a bi-directional, multi-track magnetic tape drive having multiple, spaced-apart, longitudinal servo elements, comprising:

a magnetic tape head having left and right modules, each of said modules having an upper group of servo read elements vertically interleaved with a lower group of servo read elements, each of said upper and lower groups of each of said left and right modules having a number of servo elements corresponding to the number of servo areas on a removable magnetic tape, said servo elements of each of said upper and lower groups of said left module being horizontally aligned with corresponding servo elements of each of said upper and lower

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groups, respectively, of said right module, each said servo element capable of generating an unadjusted position error signal representative of a position of said servo element relative to a selected one of an upper edge and a lower edge of one of the servo areas on the tape;

servo control means for moving said head among a first plurality of index positions and, after moving said head to a desired one of said index positions, moving said head in small increments about said desired index position whereby a predetermined position of at least one of said servo elements in a selected one of said upper and lower groups of a selected one of said left and right modules follows a selected one of the upper and lower edges of a corresponding servo area during a tape access operation; and

a control unit, interconnected with said tape head and said servo control means, for determining element-to-element, module-to-module and azmuthal offsets in each of said servo elements each time a magnetic tape is mounted in the tape drive and, during data read operations, for generating an adjusted position error signal for each active servo element during data read operations based upon the unadjusted position error signals and the determined offsets and directing said servo control means in accordance with the adjusted position error signals, said control unit comprising:

means for measuring individual average position error signals AvgPES(C,D,E,G,M) generated by said servo elements, where: C specifies a selected servo area; D specifies a selected direction of the tape; E specifies a selected servo area edge; G specifies a selected group; and M defines a selected module;

means for calculating group average position error signals GroupAvg(D,E,G,M) from the individual average position error signals;

means for calculating module-to-module average position error signals ModModAvg(D) from the group average position error signals;

means for calculating read offsets ReadOffset(C,D,E,G,M) from the individual average position error signals and the group average position error signals;

a first memory for storing the calculated read offsets for the mounted magnetic tape; and

means for calculating an adjusted position error signal AdjPES(C,D,E,G,M) for each active servo element from measured position error signals and the stored read offsets during data read operations on the mounted magnetic tape.

5,629,814

AUTOMATIC TRACKING CONTROL APPARATUS AND METHOD

Dong K. Mok, Kyungki-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

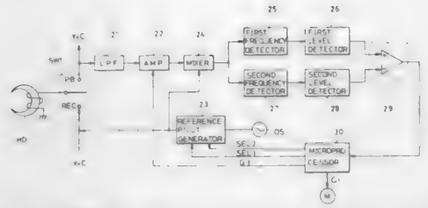
Filed Jan. 26, 1994, Ser. No. 186,616

Claims priority, application Rep. of Korea, Jan. 27, 1993, 1012/1993; Mar. 5, 1993, 3318/1993

Int. Cl.[6] **G11B** *15/467;5/584*

U.S. Cl. 360—77.14 **7 Claims**

1. An automatic tracking control apparatus comprising:



low pass filtering means for detecting a pilot signal from high frequency signals read from a magnetic tape by video heads in a playback mode;

amplification means for amplifying the detected pilot signal from said low pass filtering means at a varied gain;

reference pilot generation means for dividing a frequency signal from an oscillator by N to generate reference pilot signals, where N iS determined according to select signals;

mixing means for generating tracking control signals of 16 KHz and 46 KHz frequency components in accordance with differences between the respective reference pilot signals from said reference pilot generation means and the amplified pilot signal from said amplification means;

first frequency detection means for detecting the tracking control signal of the 16 KHz frequency component from output signals from said mixing means and wave-shaping the detected tracking control signal;

first level detection means for detecting a level of the resultant tracking control signal of the 16 KHz frequency component from said first frequency detection means;

second frequency detection means for detecting the tracking control signal of the 46 KHz frequency component from the output signals from said mixing means and wave-shaping the detected tracking control signal;

second level detection means for detecting a level of the resultant tracking control signal of the 46 KHz frequency component from said second frequency detection means;

comparison means for subtracting output levels from said first and second level detection means from each other and outputting a tracking error signal in accordance with the subtracted result: and

control means for generating a capstan motor control signal and a gain control signal in response to the tracking error signal from said comparison means, said control means generating the select signals for the generation of the reference pilot signals and applying the generated select signals to said reference pilot generation means, said gain control signal being applied to said amplification means to vary the gain of said amplification means.

5,629,815

APPARATUS AND METHOD FOR REDUCING HEAD WEAR IN HELICAL SCAN TAPE TRANSPORT

Samuel D. Cheatham, Golden; William C. Dodt, Broomfield; John C. Owens, Arvada, and Debra C. Rutherford, Longmont, all of Colo., assignors to Storage Technology Corp., Louisville, Colo.

Continuation-in-part of Ser. No. 155,569, Nov. 22, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 408,920

Int. Cl.[6] **G11B** *5/027*

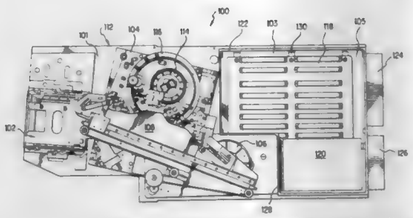
U.S. Cl. 360—84 **3 Claims**

1. A transport apparatus for reducing head wear of a rotary head assembly, the transport apparatus comprising:

a housing having a transport region and a circuit card region;

an intake opening disposed on a rearward portion of said transport region and a loading opening disposed on a forward portion of said transport region;

an elevator assembly disposed within said transport region between said intake opening and said loading opening, wherein a tape cartridge is inserted through said loading opening and onto said elevator assembly;



a take-up reel disposed within said rearward portion of said transport region;

a rotary head disposed within said transport region between said elevator assembly and said take-up reel for performing read/write operations on a magnetic recording tape;

a threading mechanism disposed within said transport region for threading said magnetic recording tape through a tape path, wherein said tape path advances from the tape cartridge, across said rotary head and onto said take-up reel;

air flow means for passing a flow of air through said housing along a predetermined air flow path, wherein said flow of air passes:

a) through said circuit card region;

b) through said intake opening to enter said transport region;

c) past, without flowing directly on said rotary head;

d) along the magnetic recording tape as it is being threaded through said tape path so that contaminants on said magnetic recording tape are removed before the tape is threaded across said rotary head; and

e) through said loading opening to exit said housing, so that contaminants are prevented from entering said housing while the tape cartridge is being exchanged.

5,629,816

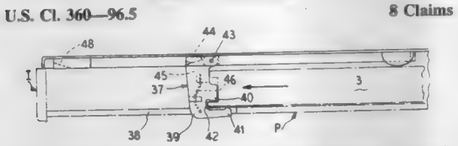
TAPE CARTRIDGE GRIPPER MECHANISM

Petter Busengdal, and Jan E. Dilling, both of Oslo, Norway, assignors to Tandberg Data Storage A/S, Oslo, Norway

Continuation of Ser. No. 88,748, Jul. 8, 1993, Pat. No. 5,440,435. This application Dec. 29, 1994, Ser. No. 365,826

Int. Cl.[6] **G11B** *15/60*

U.S. Cl. 360—96.5 **8 Claims**



1. A system for longitudinally loading and unloading a magnetic tape cassette endwise in a magnetic tape recorder, said cassette having a base plate and being of rectangular configuration having a pair of opposed sides and a pair of opposed ends which are shorter than said sides and a dust cover rotatable about a dust cover hinge on one side of said cassette proximate one of said ends, said dust cover being rotatable to expose the tape in said cassette for operative engagement by a magnetic head, said system comprising:

a gripper disposed for back and forth longitudinal movement in said magnetic tape recorder, said gripper disposed for rotational movement about a lateral axis between biting and non-biting positions and having a self-locking jaw configuration for biting onto the base plate of said cassette at one end thereof; and

said gripper being connected to a rack that is guided by a rack track located on an interior wall of the recorder and having a cam surface which engages a first cam located on the rack track to rotate the gripper to a non-biting position at an unloading position and a second cam located on the rack track that engages the cam surface of the gripper to rotate the gripper to a non-biting position at a fully loaded state.

5,629,817

CASSETTE LOADING APPARATUS HAVING A CASSETTE HOLDER AND A PAIR OF SLIDERS WHICH ARE SHORTER THAN THE CASSETTE HOLDER IN ONE DIRECTION

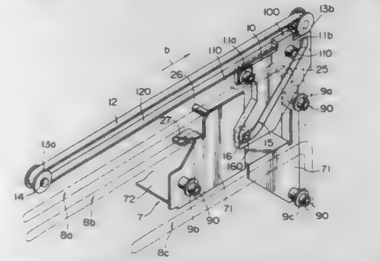
Tetsuhiro Shiomi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 305,160, Sep. 13, 1994, Pat. No. 5,493,459, which is a division of Ser. No. 852,730, Mar. 17, 1992, Pat. No. 5,402,405. This application Jun. 6, 1995, Ser. No. 466,447

Claims priority, application Japan, Mar. 18, 1991, 3-077248; Mar. 18, 1991, 3-077249; Mar. 18, 1991, 3-077250; Mar. 18, 1991, 3-077251; Mar. 18, 1991, 3-077252

Int. Cl.[6] **G11B** *15/675*

U.S. Cl. 360—96.5 **5 Claims**



1. A cassette loading apparatus for transporting a tape cassette having one of a plurality of sizes from an insertion opening through which said tape cassette is inserted to a playing position, comprising:

a holder for receiving said tape cassette having any one of said plurality of sizes, said holder having opposite side faces and three guide pins provided on each of the opposite side faces;

a pair of side plates each having three L-shaped guides each of which has a horizontal guide portion for respectively guiding one of said three guide pins in a horizontal direction for moving said tape cassette received in said holder in said horizontal direction inwardly from said insertion opening and a vertical guide portion for respectively guiding said one of said three guide pins in a vertical direction for moving said tape cassette received in said holder vertically to the playing position after said tape cassette has been moved horizontally inwardly from said insertion opening;

a pair of sliders each having an inclined guide which is inclined with respect to the horizontal guide portions and vertical guide portions of said L-shaped guides, each of said sliders further having two guide rollers arranged such that the two guide roller of each slider are guided by only one of said three L-shaped guides, each of said sliders being dimensioned so that it is shorter than said holder in a direction that is parallel to said horizontal direction in which said tape cassette is moved;

driving means for driving said sliders in said horizontal direction with respect to the horizontal guide portions of said L-shaped guides; and

an engaging element provided on each of the opposite side faces of said holder for engaging with the inclined guides of said sliders without engaging any of said three L-shaped guides to transmit to said holder a driving force transmitted to said sliders from said driving means;

wherein said holder is moved in said horizontal direction integrally with said sliders by said driving force from said driving means until said guide pins reach end portions of the horizontal guide portions of said L-shaped guides and then said engaging elements move, upon further movement of said sliders in said horizontal direction, downwardly along the inclined guides of said sliders while said holder is moved downwardly under the guidance of the vertical guide portions of said L-shaped guides to transport said tape cassette in said holder to the playing position, wherein the arrangement of said three L-shaped guides in each of said side plates, the dimension of said sliders, and the arrangement of said guide

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rollers of said sliders and the arrangement of said guide pins and said engaging elements of said holder enable said holder to have a large operation stroke so as to enable said tape cassette having any one of said plurality of sizes to be properly accommodated in said playing position; and

wherein the horizontal movement of said sliders is more than the horizontal movement of said holder and said cassette loading apparatus enables said horizontal movement of said sliders to be substantially accommodated when a space for said holder and the horizontal movement thereof so that said sliders project only a relatively small amount past said holder in the horizontal direction when said tape cassette is in said playing position.

5,629,818

CASSETTE LOADING DEVICE HAVING DECREASED LOADING EFFORT

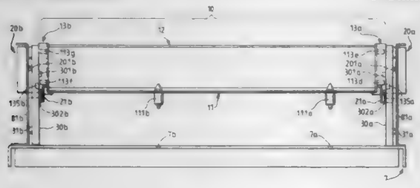
Hartmut Schandl, Wien, Austria, and Fritz Weisser, St. Georgen, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

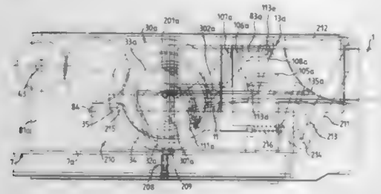
Continuation of Ser. No. 211,257, Mar. 24, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 626,584

Claims priority, application Germany, Oct. 30, 1991, 41 35 834.1

Int. Cl.° G11B *5/008*

U.S. Cl. 360—96.5 **5 Claims**





1. Cassette loading facility for a cassette device for the recording and/or reproduction of information, said cassette loading facility having a guide frame arranged on a cassette drive chassis in a fixed position, a cassette receiving device movable between a loading position in which a cassette can be introduced into the cassette receiving device and removed therefrom and an operating position in which the recording or reproduction of information is carried out, wherein the cassette is positioned on the drive chassis by means of positioning pins and catch apertures, said catch apertures being formed on the cassette housing, and having means using the catch apertures for locking the cassette during its transportation between the loading and the operating position and also for centering it in the operation position, and having means for driving and controlling the cassette receiving device between the loading and the operating positions, characterized in that the positioning pins are fixed on a first pivoted lever which is pivotally mounted on the cassette receiving device and which can be pivoted into a first position in which the positioning pins release the cassette so that the cassette can be introduced into the cassette receiving device and removed therefrom, and can be pivoted into a second position, in which the positioning pins engage with the catch apertures, and that upon reaching the operating position, the lower ends of the positioning pins each engage with a set of correspondingly arranged centering apertures in the drive chassis, a control disk having a first and second drive spigot is provided to the left and right of the loading facility, wherein the control disks are driven in synchronization, and wherein the cassette receiving device is driven with the first and second drive spigots, essentially engaging successively in corresponding guides of the cassette receiving device, and whereby the horizontal and the vertical movement of the cassette receiving device between the loading and the operating position is controlled with the aid of pegs and further guides, a first helical guide groove is disposed on each control disk on the side facing away from the cassette receiving device, and said groove engages with the peg mounted on a vertically movable lifting mechanism of the loading facility, and that a second helical guide groove is disposed on each control disk on the side facing the cassette receiving device, and said groove is provided for engaging with the peg disposed on the cassette receiving device, a third helical guide groove is disposed on the side of the right-hand control disk facing away from the cassette receiving device, and said groove is provided for controlling a cassette drawer flap as well as for controlling a sliding blind which is mounted on the right-hand wall such that is moved horizontally and with which, in the loading position of the cassette receiving device, a tape-end sensor serving for the monitoring of the tape drive is shaded, and that through the shading of this tape-end sensor in the loading position of the cassette receiving device, the motor drive for the cassette receiving device is activated for the loading procedure.

5,629,819

FLOPPY DISK ASSEMBLY HAVING STORAGE-CAPACITY DISCRIMINATION MEANS

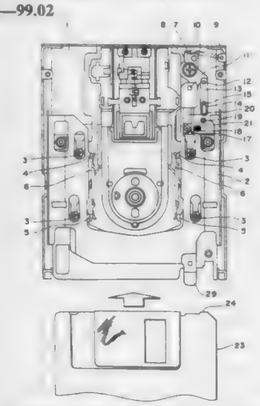
Takamasa Kitano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 96,986, Jul. 27, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 373,021

Claims priority, application Japan, Jul. 27, 1992, 4-199355

Int. Cl.° G11B *17/04*

U.S. Cl. 360—99.02 **4 Claims**



1. A floppy disk assembly adapted to accommodate a floppy disk having two faces and an abutment surface end, a head window shutter, an abutment surface disposed on the abutment surface end and to one side of the head window shutter and a discrimination hole disposed near to the abutment surface end and on the same side of the head window shutter as the abutment surface, for discriminating a storage capacity, said floppy disk assembly comprising:

a cassette holding plate which holds said floppy disk;

a sliding plate which has a projection and which is subjected to a spring action for causing said cassette holding plate to slide from a position at which said floppy disk is mounted/dismounted to a position at which writing/reading is performed by a magnetic head;

a lock member which engages with said projection of said sliding plate and is allowed to rotate a guide pivot fixed to an assembly frame;

a rod member which abuts at its first end said abutment surface of said floppy disk when mounted and is pivotably connected at its second end to said lock member **1**, wherein said rod member has, adjacent to said first end, an elongated guide slot, and said rod member has, adjacent to said second end, a connecting pivot by which said rod member and said lock member are connected, wherein when said abutment surface of said floppy disk abuts said first end of said rod member, said rod member moves guided by said guide pivot causing said lock member to rotate and to release said projection of said sliding plate; and

a detecting member which detects whether or not said discrimination hole is present, said detecting member located opposite a first of the two faces of the floppy disk and said discrimination hole when said floppy disk is mounted, wherein said lock member is positioned beyond the location of said discrimination hole when said floppy disk is mounted, and on the same side of said head window shutter as said abutment surface, and on the same side of the floppy disk as said detecting member.

5,629,820

STRUCTURE FOR SUPPORTING HEAD SUSPENSION OF ACTUATOR OF MAGNETIC DISK DRIVE

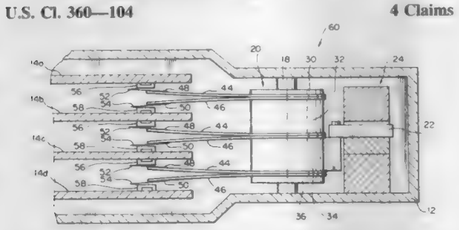
Hiroshi Koriyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 833,028, Feb. 10, 1992, abandoned. This application Mar. 2, 1994, Ser. No. 204,804

Claims priority, application Japan, Feb. 8, 1991, 3-037900

Int. Cl.° G11B *5/48;21/16;33/14*

U.S. Cl. 360—104 **4 Claims**



1. A magnetic disk drive for writing and reading data out of a plurality of magnetic disks, comprising:

a magnetic head assembly comprising a plurality of data head sliders disposed individually facing respective faces of associated magnetic disks for writing and reading data out of said disks, and a plurality of servo head sliders for positioning associated data head sliders;

a plurality of gimbal springs each having a tongue for supporting one of said data head sliders and said servo head sliders;

a plurality of load springs each carrying an associated one of said gimbal springs at a first end thereof while causing said one gimbal spring to face an adjoining face of one of said disks, said load springs being respectively formed with coaxial holes at a second end for receiving a center shaft of a rotary carriage, said load springs being integrally affixed to said rotary carriage with said coaxial holes directly receiving said center shaft of said shaft of said rotary carriage; and

a plurality of discrete spacers, distinct from said load springs, for maintaining constant separation distances between adjacent load springs, said spacers defining coaxial holes for receiving said center shaft of said rotary carriage, and said spacers being made of a material having a different coefficient of thermal expansion than a material of which said load springs are made.

5,629,821

MAGNETIC HEAD

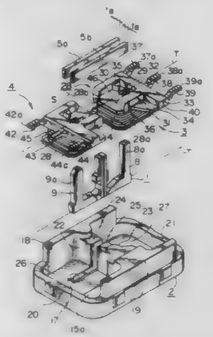
Makoto Wakasugi, Tokorozawa; Toshiro Atobe, Kitasaku-gun; Chiaki Hara, and Naofumi Asanuma, both of Saku, all of Japan, assignors to Citizen Watch Co., Ltd., and Cimeo Precision Co., Ltd., both of Japan

Filed Mar. 15, 1995, Ser. No. 404,906

Claims priority, application Japan, Mar. 17, 1994, 6-071276

Int. Cl.° G11B *5/17*

U.S. Cl. 360—125 **11 Claims**



1. A magnetic head for recording data on a magnetic recording medium and reading the recorded data from the magnetic recording medium, said magnetic head comprising:

a magnetic core having gaps formed along a direction transversing the longitudinal axis of the magnetic core;

a slider having a main sliding face brought into sliding contact with a magnetic recording medium and fixedly supporting the magnetic core with said gaps thereof being exposed through the main sliding face;

a coil through which part of the magnetic core is passed; and

a coil bobbin for holding the coil, said coil bobbin comprising:

a bobbin body holding the coil;

two parallel frame members formed in the bobbin body on the side opposite to the magnetic recording medium and disposed on the opposite sides of the magnetic core to extend parallel to each other in the longitudinal direction of said magnetic core and to be spaced away from each other;

an orthogonal frame member formed to extend in a transverse direction perpendicular to the longitudinal direction of the magnetic core and located in contact with end portions of the two parallel frame members, the orthogonal frame member having, at only one end, an extension extending beyond the two parallel frame members in a direction away from the magnetic core;

said parallel frame members terminating at end portions located opposite said orthogonal frame member;

reinforcing beam located between the extension of said orthogonal frame member and one of said parallel frame members; and

terminals formed to extend from the orthogonal frame member and wound by the ends of the coil conductor wires,

said coil bobbin being substantially entirely housed within said slider with respect to both the longitudinal and transverse directions of said magnetic core except said terminals.

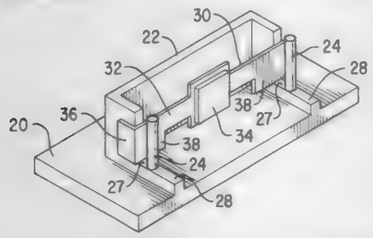
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,822

TAPE CASSETTE AND METHOD OF MANUFACTURING A TAPE CASSETTE

Richard F. Rich, and James R. Roe, both of Warren, Pa., assignors to Loran Cassettes and Audio Products, Warren, Pa.

Filed Nov. 18, 1994, Ser. No. 344,699
Int. Cl.[6] G11B *23/02*
U.S. Cl. 360—132 11 Claims



1. A tape cassette containing a tape for passage relative to a magnetic head, the tape cassette comprising:

a base having a peripheral wall surrounding a floor;

a cover having a peripheral wall surrounding a ceiling, the peripheral walls of the base and cover mating to enclose the tape between the base and cover, the tape being supported on two spools with a portion of the tape between the spools extending along an interior portion of the mated peripheral walls of the base and cover;

a head intrusion area defined by openings in the peripheral walls of the base and cover, the tape being exposed to the magnetic head in the head intrusion area;

a bracket integrally formed with the base and cover to surround the head intrusion area, the tape passing between the bracket and the openings in the peripheral walls of the base and cover;

at least two azimuth posts integrally formed with one of the base and the cover on opposite sides of the head intrusion area, the azimuth posts being substantially perpendicular to the floor and ceiling of the base and cover, respectively, the azimuth posts guiding the tape through the head intrusion area; and

at least two support ribs integrally formed with each corresponding azimuth post, a first support rib of the at least two support ribs being located between the bracket and the corresponding azimuth post and a second support rib of the at least two support ribs being located between the corresponding azimuth post and the peripheral wall such that the first and second support ribs are arranged symmetrically about the azimuth post, each of the first and second support ribs having the same mass and height as measured from the floor of the base to a top surface of the support ribs; wherein said first and second support ribs maintain each of said azimuth posts perpendicular to the floor of said base or ceiling of said cover of the tape cassette.

5,629,823

MAGNETIC DISK CARTRIDGE

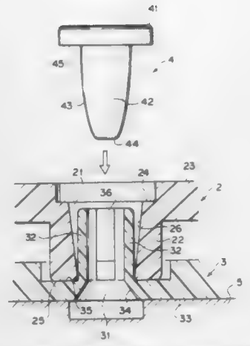
Akira Mizuta, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 29, 1996, Ser. No. 609,906
Claims priority, application Japan, Mar. 3, 1995, 7-044068
Int. Cl.[6] G11B *23/03*; F16B *4/00*
U.S. Cl. 360—133 4 Claims

1. A magnetic disk cartridge comprising a cassette shell, which is constituted of a pair of cassette shell halves joined to each other, and a magnetic disk incorporated in the cassette shell such that the magnetic disk can rotate, wherein:

the pair of the cassette shell halves are provided with contact surfaces on their inner surfaces, which contact surfaces come into contact with each other when the cassette shell halves are temporarily assembled to each other,

one of the cassette shell halves is provided with a cylindrical body, which protrudes from said one cassette shell half toward the other cassette shell half, said cylindrical body having a rivet press-fit hole constituted of a through hole, into which a temporary securing rivet is to be press-fitted, said cylindrical body being constituted of a plurality of elastic engagement pieces divided from one another by a plurality of slits, which are formed in the wall of said cylindrical body and extend along the axial direction of said cylindrical body,



said other cassette shell half is provided with an opening for rivet insertion, which opens to an outer surface of said other cassette shell half, and an engagement piece receiving hole, which receives said elastic engagement pieces, said engagement piece receiving hole communicating from said opening for rivet insertion to the inner surface of said other cassette shell half, an inner wall surface of said engagement piece receiving hole forming a tapered surface, the diameter of which is increased from an end, that stands facing said one cassette shell half, toward said opening for rivet insertion, and

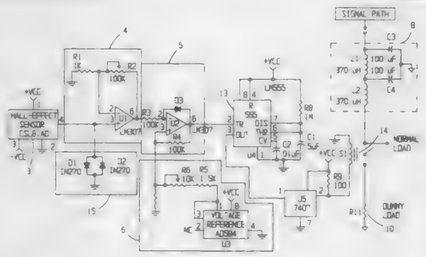
in a state in which said elastic engagement pieces have been inserted into said engagement piece receiving hole and said contact surfaces of the pair of the cassette shell halves have been brought into contact with each other, said elastic engagement pieces are brought into pressure contact with and engaged with said tapered surface of said engagement piece receiving hole by said temporary securing rivet, which is press-fitted through said opening for rivet insertion and into said rivet press-fit hole, whereby the pair of the cassette shell halves are temporarily assembled to each other.

5,629,824

HALL-EFFECT ARC PROTECTOR

Richard A. Rankin, Ammon, and Dale K. Kotter, Shelley, both of Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 27, 1993, Ser. No. 97,187
Int. Cl.[6] H02H *9/00*
U.S. Cl. 361—57 11 Claims



1. A Hall-Effect arc protection system for protecting an instrument from the potentially damaging effects of an electrical arc, comprising:

a transducer coupled to a conductor of the instrument where said conductor is selected as having an input signal such that said input signal experiences a spike in the presence of an electrical arc and where said transducer outputs a voltage signal, having an output signal magnitude, in response to an input current flowing in said conductor,

a threshold detection means coupled to said transducer where said detection means determines if said output signal magnitude exceeds a predetermined threshold value and if said threshold is exceeded, said detection means transmits an arc present signal, a pulse generation means coupled to said detection means for generating a pulsed signal, of a predetermined timed duration, in response to said arc present signal,

an arc suppression means for preventing instantaneous changes in said input signal from being transmitted to sensitive components of the instrument by attenuating and delaying said are where said arc suppression means is coupled to said conductor, and

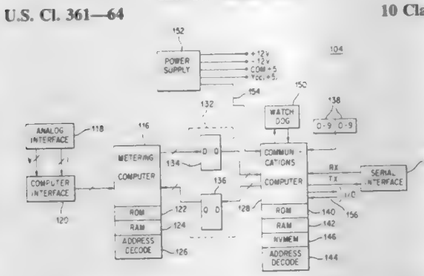
a circuit breaker means for shunting said input signal through a dummy load to ground in response to said pulsed signal from said pulse generation means where said pulsed signal triggers and resets said circuit breaker means providing for a predetermined interruption in current flow in said conductor, where said circuit breaker is coupled to said suppression means and said pulse generation means and serially coupled to said dummy load, and where said dummy load has sufficient impedance so that it does not act as a short with respect to a signal source.

5,629,825

APPARATUS AND METHOD FOR DETECTING A FAULT IN A DISTRIBUTED LINE NETWORK

Lee D. Wallis, and Robert A. Kennedy, both of Murfreesboro, Tenn., assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 239,274, May 6, 1994, Pat. No. 5,495,384, which is a continuation of Ser. No. 810,780, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 622,432, Dec. 5, 1990, Pat. No. 5,233,538, which is a continuation of Ser. No. 503,267, Apr. 2, 1990, Pat. No. 5,224,054. This application Aug. 10, 1995, Ser. No. 513,427
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—64 10 Claims



1. A system for monitoring a power-related waveform in a power line distributed from a non-residential loadcenter to each of a plurality of powered equipment, the system providing automatic circuit interruption in response to detection of a ground fault in a multi-phase, ungrounded distribution system, comprising:

a circuit interrupter actuated to interrupt the flow of current in the system;

a line monitoring device disposed to sense a power-related waveform of the power line at a position adjacent to the power line between the loadcenter and at least one of said powered equipment and communicatively coupled to the circuit interrupter, the line monitoring device automatically actuating the circuit interrupter in response to detection of a specialized signal in any one phase so as to isolate a section of the system having a ground fault;

a specialized signal generator activated in response to a fault being detected in the power line to produce the specialized signal along one of the lines of the multi-phase system, the specialized signal being unique with respect to the power-related waveform; and

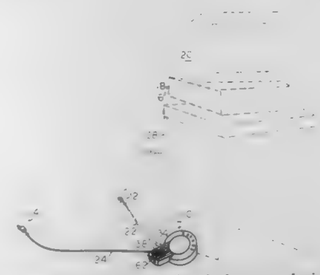
a control station communicatively coupled to the line monitoring device to evaluate the sensed power-related waveform.

5,629,826

RETRACTABLE CORD SURGE PROTECTOR

Robert Roca, Los Angeles, Calif.; Richard J. Tremmel, Secaucus, N.J.; Edward L. Hames, Peterborough, N.H.; John Peterson, Hollywood, Calif.; Eric Parker, Los Angeles, Calif., and Bernd H. Wiegandt, Long Beach, Calif., assignors to Curtis Computer Products, Inc., Mustatine, Iowa

Filed Nov. 30, 1995, Ser. No. 565,003
Int. Cl.[6] H02H *1/00*
U.S. Cl. 361—118 16 Claims



1. A retractable multiple cord electrical power device, which comprises:

a) an arcuate reel housing having an interior surface arranged and constructed to receive and retain at least two cords in a coiled arrangement within the housing;

b) at least a first and a second cord means, one of which is an electrical power cord, said first and second cords in a coiled, generally side-by-side relationship within said housing, each cord having a first and second end, said first end of said electrical cord having a connector for the connection of electrical power from an electrical power source, said first end of said second cord having a connector for connection with a signal source;

c) biasing means in said housing and connected to each cord to permit said cords independently to move between a non-use, coiled position within said housing and a use, extended position outside of said housing;

d) connection means on said housing connected to said second end of said first and second cord and adapted for the respective connection of said first and second cords to an electrical power and signal source respectively; and

e) at least a first and second releasable cord retention means to provide for the retention of each cord independently in an extended use position.

5,629,827

Patent Not Issued For This Number

5,629,828

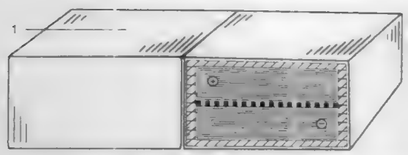
CAPACITORIZED CHASSIS

LeRoy M. DeVries, P.O. Box 591, Rhinebeck, N.Y. 12572

Continuation-in-part of Ser. No. 341,627, Nov. 17, 1994, abandoned. This application Jun. 21, 1995, Ser. No. 493,345
Int. Cl.[6] H01G *2/22*
U.S. Cl. 361—272 1 Claim

1. A capacitorized structure comprising removable and interchangeable cubic areas of an electric entity consisting of:

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a. a long, positive charged metallic plate folded into multiple, involuted flat layers that are superimposed on both sides of said plate with argon gas under pressure,

b. a dielectric, and

c. a long, negative charged metallic plate having the same size as above positive plate and folded into similar multiple, involuted, flat layers that are also superimposed on both sides of said negative plate with argon gas under pressure.

5,629,829

ELECTROLYTIC SOLUTION FOR ELECTROLYTIC CAPACITOR AND ELECTROLYTIC CAPACITOR

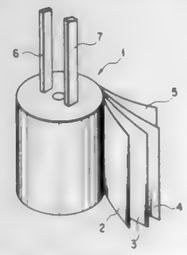
Hirotoshi Ikeya, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1995, Ser. No. 526,097

Claims priority, application Japan, Sep. 14, 1994, 6-220641; Sep. 14, 1994, 6-220642

Int. Cl.[6] H01G *9/02*

U.S. Cl. 361—505 **34 Claims**



1. An electrolytic solution for an electrolytic capacitor, which comprises a quaternary ammonium salt of cyanic acid, at least one phosphorus compound selected from an organic phosphorus acid compound, phosphoric acid and salts thereof, water, and an organic solvent.

5,629,830

SOLID STATE ELECTROLYTIC CAPACITOR HAVING A CONCAVE

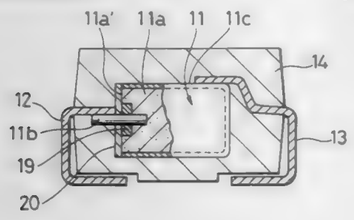
Mamoru Yamagami, and Makoto Aoyama, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed May 26, 1995, Ser. No. 452,436

Claims priority, application Japan, May 27, 1994, 6-115074

Int. Cl.[6] H01G *2/10*

U.S. Cl. 361—535 **6 Claims**



1. A solid state electrolytic capacitor comprising: a capacitor device having a porous chip formed by hardening a metal powder and an anode bar protruding from one end surface of the chip, wherein a dielectric film, a solid state electrolytic layer and a cathode film are successively formed on a surface of the chip; a first lead terminal connected to the anode bar; and a second lead terminal connected to the cathode film,

wherein a concave, in which a synthetic resin is filled, is formed in the end surface of the chip, and wherein said anode bar passes through the synthetic resin to be fixed to the chip.

5,629,831

MODULAR CONTROL CIRCUIT WITH BUS CONDUCTOR

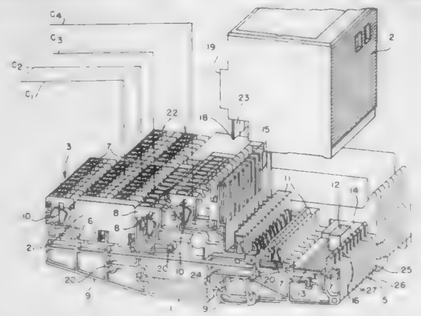
Gerhard Eggert; Walter Hanning, both of Detmold; Uwe Fiene, Steinheim; Michael Schnatwinkel, Herford; Rudolf Steinmeier, Detmold; Manfred Wilmes, Detmold; Eckhard Beins, Detmold; Matthiass Liesenjohann, Lage; Bernhard Schuster, Detmold, and Andreas Wedler, Kalletal, all of Germany, assignors to Weidmueller Interface GmbH & Co, Detmold, Germany

Filed Oct. 30, 1995, Ser. No. 550,114

Claims priority, application Germany, Oct. 31, 1994, 44 38 806.3

Int. Cl.[6] H02B *1/26*

U.S. Cl. 361—624 **36 Claims**



1. A modular control system for the electronic control of the operating systems of an automated building or the like having a grounded support rail (**1**), comprising:

(a) a first terminal block assembly (**3**) including a plurality of generally-rectangular terminal blocks (**24–27**) laterally stacked to define a stack axis;

(b) catch feet means (**9**,**9'**) for mounting said terminal block assembly on the grounded support rail (**1**) with said stack axis extending parallel with the support rail;

(c) distributor bar means (**7**) for distributing electrical power between the terminal blocks of said assembly;

(d) internal bus bar means (**13**) extending parallel with said stack axis and operable to connect said first terminal block assembly with another terminal block assembly mounted on the support rail;

(e) at least one electronics module (**2**) removably mounted on said terminal block assembly, said module and said first terminal block assembly including at least one row of cooperating terminals (**11**) that extends parallel with said stack axis;

(f) bus bar connecting means (**14**) for connecting said internal bus bar means to an associated field bus (**4**);

(g) at least some of said terminal blocks of said assembly including:

(1) means (**6**) supporting said distributor bar means (**7**) on said terminal blocks;

(2) means (**8**) for supplying control signals to said electronics module;

(3) means (**15**) for removably supporting said electronics module on said terminal block assembly; and

(4) means for supporting said internal bus bar means;

(h) said terminal block assembly including at least one ground terminal block (**25**), at least one power supply terminal block (**16**), and at least one control signal supply terminal block (**27**), said terminal blocks having terminal contacts spaced on said assembly relative to said electronics module transversely of said stack axis.

5,629,832

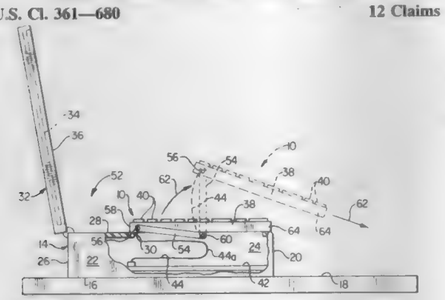
ELECTRONIC DEVICE KEYBOARD WITH PIVOT BAR TILT MECHANISM

Charles A. Sellers, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 260,706, Jun. 16, 1994, Pat. No. 5,539,615. This application Jan. 5, 1996, Ser. No. 583,414

Int. Cl.[6] G06F *1/16*; **B41J** *11/56*; **H05K** *5/02*

U.S. Cl. 361—680 **12 Claims**



1. An electronic device comprising:

a base housing having a bottom side restable on a generally horizontal support surface, a top side upwardly spaced apart and generally parallel to said bottom side, and front and rear sides generally perpendicular to said top side;

a keyboard structure having a body portion with a top side upon which a series of manually movable key elements are operably disposed, and a front side; and

linkage means for connecting said keyboard structure to said base housing for selective translational and pivotal movement relative thereto between:

(1) a storage/transport and first use orientation in which said keyboard structure body portion is positioned on and generally parallel to said top side of said base housing with said key elements facing upwardly, with said front side of said keyboard structure being generally aligned in a front-to-rear direction with said front side of said base housing, and

(2) a second use orientation in which said keyboard structure body portion is positioned generally forwardly of said base housing, and is sloped forwardly and downwardly relative thereto in a manner permitting a front portion of said keyboard structure body portion to be rested on the support surface,

said base housing having first and second opposite, parallel sides each extending perpendicularly to said top, front and bottom sides of said base housing, and

said linkage means including a pair of elongated pivot bars each having a first end pivotally connected to one of said first and second opposite, parallel sides of said base housing, and a second end pivotally connected to a side portion of said keyboard structure body portion.

5,629,833

PANEL UNIT SWING MECHANISM HAVING FIRST AND SECOND GUIDE GROOVES AND FIRST AND SECOND CONNECTING MEMBERS

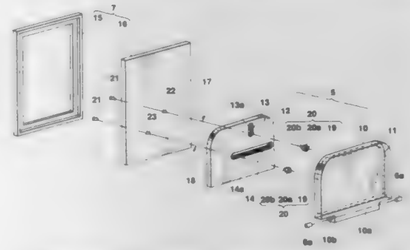
Yukinori Ido, Tokyo; Hiroaki Hishiyama, Tachikawa, and Haruki Ota, Yokohama, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,886

Claims priority, application Japan, Aug. 22, 1994, 6-218313

Int. Cl.[6] G06F *1/16*; **H05K** *7/16*

U.S. Cl. 361—681 **20 Claims**



1. A mechanism for swinging a rectangular plate-like panel unit between a first state in which the panel unit is set with its longer sides parallel to a horizontal direction and a second state in which the panel unit is set with its shorter sides parallel to the horizontal direction, said mechanism comprising:

a support unit swingably supporting the panel unit;

a first connecting member coupling the panel unit and the support unit, said first connecting member comprising a shaft around which the panel unit is swingable relative to the support unit;

a second connecting member coupling the panel unit and the support unit;

a first guide groove formed in the support unit to regulate movement of the first connecting member, said first connecting member engaging the first guide groove and being movable therein when the panel unit is swung between the first and second states; and

a second guide groove formed in the support unit to regulate movement of the second connecting member, said second connecting member engaging the second guide groove and being movable therein when the panel unit is swung between the first and second states.

5,629,834

ELECTRONIC COMPONENT COOLING APPARATUS

Nobumasa Kodama, Ueda, and Toshiki Ogawara, Chiisagata-gun, both of Japan, assignors to Sanyo Denki Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 208,125

Claims priority, application Japan, Aug. 20, 1993, 5-206198; Dec. 28, 1993, 5-334392

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—695 **11 Claims**

1. An electronic component cooling apparatus comprising:

a motor of the rotor out-rotation type in which a rotor is rotated outside a stator and which includes a housing;

an impeller including a plurality of blades mounted on an outer periphery of said rotor;

a casing arranged so as to surround said motor;

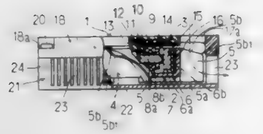
a plurality of webs for interconnecting said housing of said motor and said casing;

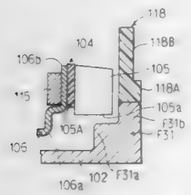
a heat sink including a base provided thereon with a plurality of radiation fins and fixed on said casing;

said radiation fins being arranged so as to surround at least a part of said impeller;

said blades of said impeller being arranged so as to draw in air from a side of said webs and while in the zone of said blades,

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generally change direction to move said air radially outward to pass through said radiation fins;

said blades each having an upper edge facing said webs and sloping gradually away from said webs as each of said upper edge extends in an outward direction toward said radiation fins;

said radiation fins being arranged so as to define an air passage between each adjacent two of said radiation fins for outwardly guiding air from said impeller therethrough.

5,629,835

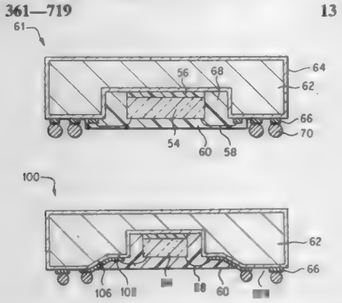
METAL BALL GRID ARRAY PACKAGE WITH IMPROVED THERMAL CONDUCTIVITY

Deepak Mahulikar, Madison, Conn.; Paul R. Hoffman, Modesto, and Jeffrey S. Braden, Livermore, both of Calif., assignors to Olin Corporation, Manteca, Calif.

Filed Jul. 19, 1994, Ser. No. 277,387

Int. Cl.[6] H05K *7/20;* **H01L** *23/34*

U.S. Cl. 361—719 **13 Claims**



1. A ball grid array electronic package having improved thermal conductivity and reduced solder member creep, comprising:

a base selected from the group consisting of aluminum and aluminum alloys having first and second opposing sides;

an anodization layer coating at least a portion of said base;

a cavity formed in said first surface;

a semiconductor device bonded to the base in said cavity;

a metallized circuit trace directly on said anodization layer extending from said cavity to a peripheral portion of said first surface of said base, said metallized circuit trace electrically interconnected to said semiconductor device and bonded to a solder member; and

a cover sealing said cavity and encapsulating said semiconductor device and an inner portion of said metallized circuit trace.

5,629,836

LEVER MECHANISM

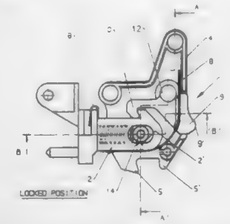
Andrew C. W. Wright, Surrey, United Kingdom, assignor to DZUS Fastener Europe Ltd., Surrey, United Kingdom

Filed Aug. 25, 1995, Ser. No. 519,607

Claims priority, application United Kingdom, Aug. 25, 1994, 9417194

Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—755 **19 Claims**



1. A lever mechanism for clamping a panel to a housing, said lever mechanism comprising:

a support block adapted to be attached to said panel;

a first lever, pivotally connected to said support block, and arranged so that it can engage with said housing when in a first position and disengage from said housing when in a second position;

a second lever, pivotally mounted on said first lever, and arranged to hold said first lever in its said first position by engagement with said support block; and;

at least one first spring for biasing said first lever towards said second position and biasing said second lever towards the position in which it engages with said support block; and

a second spring; wherein

said first lever is mounted for translational movement relative to said support block against an action of said second spring to provide a predetermined clamp load between the panel and housing.

5,629,837

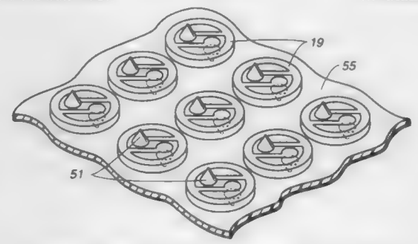
BUTTON CONTACT FOR SURFACE MOUNTING AN IC DEVICE TO A CIRCUIT BOARD

Nasser Barabi, Lafayette, and Iraj Barabi, Danville, both of Calif., assignors to Oz Technologies, Inc., Oakland, Calif.

Filed Sep. 20, 1995, Ser. No. 531,367

Int. Cl.[6] H05K *1/00*

U.S. Cl. 361—767 **17 Claims**



1. A button contact for surface mounting an IC device to a circuit board, said button contact comprising

a body lying in a plane and having opposed contact faces, said body providing a conductive path between the contact faces thereof, and

at least one contact point protruding from at least one of the opposed contact faces of said body, said contact point acting to outwardly extend the conductive path between the contact faces of said body in a direction generally perpendicular to the plane of said body and being inwardly displaceable toward the plane of said body.

5,629,838

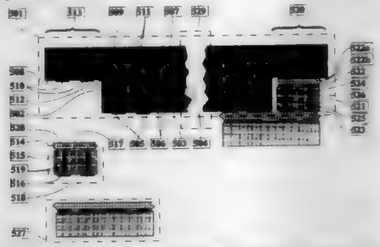
APPARATUS FOR NON-CONDUCTIVELY INTERCONNECTING INTEGRATED CIRCUITS USING HALF CAPACITORS

Thomas F. Knight, Belmont, Mass., and David B. Salzman, Washington, D.C., assignors to Polychip, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 82,328, Jun. 24, 1993. This application Jun. 24, 1994, Ser. No. 265,607

Int. Cl.[6] H05K *7/02;1/16*

U.S. Cl. 361—782 **11 Claims**



1. An apparatus for interconnecting electronic circuits comprising:

a lower substrate having substantially planar lower and upper surfaces, said upper surface having a plurality of half-capacitors and a plurality of lines connected to said half-capacitors;

an upper substrate having a substantially planar lower surface, said lower surface having a plurality of half-capacitors and a plurality of lines connected to said half-capcitors;

said lower and upper surface substrates being affixed such that:

(i) said upper surface of said lower substrate is adjacent to said lower surface of said upper substrate and

(ii) an extending portion of said lower surface of said upper substrate extends beyond and is not adjacent to said upper surface of said lower substrate; and

a spacer having upper and lower half-capacitors;

said spacer being positioned such that:

(i) its upper half-capacitor communicates a signal to a half-capacitor on said extending portion of said lower surface of said upper substrate and

(ii) its lower half-capacitor is substantially aligned with said lower surface of said lower substrate.

5,629,839

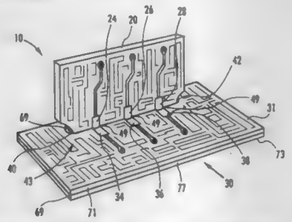
MODULE INTERCONNECT ADAPTER FOR REDUCED PARASITIC INDUCTANCE

Gerard A. Woychik, Waukesha, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 12, 1995, Ser. No. 527,315

Int. Cl.[6] H05K *1/11;* **H01R** *9/09*

U.S. Cl. 361—803 **6 Claims**



1. A multilayer circuit board system, comprising:

a board module having finger connectors at an edge of the module;

a first circuit board layer having a mounting area for receiving the board module; and

a second board layer having an aperture, the aperture comprising hemicylindrical contacts and configured so that the mounting area is exposed to receive the edge of the board module, Wherein the finger connectors of the module corresponds to the mounting area and wherein the finger connectors of the module are spaced 0.020 inches apart from each other to reduce parasitic inductance at the mounting area.

5,629,840

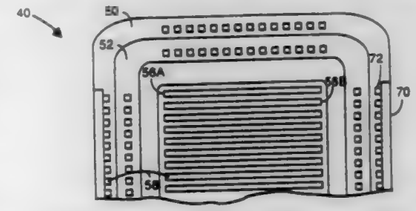
HIGH POWERED DIE WITH BUS BARS

William R. Hamburgen, Palo Alto; John S. Fitch, Newark, and Norman P. Jouppi, Palo Alto, all of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 883,544, May 15, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,877

Int. Cl.[6] H05K *7/02;* **H01L** *23/02;23/48*

U.S. Cl. 361—820 **3 Claims**



1. A high powered die for use with a die package of the type which includes a housing with a central cavity forming an opening on a first side of said housing, said central cavity extending toward a second side of said housing where said high powered die is positioned, said die package further includes bond shelf means accessible to said high powered die through said central cavity for distributing signals and separate bond shelf means for distributing power and ground to said high powered die through bond wires coupled to said high powered die, said high powered die comprising:

semiconductor chip circuitry located on one or more surfaces of said high powered die, including at least one of said high powered die surfaces usable for power and ground distribution;

a plurality of discrete electrically isolated bus bars positioned on said one of said die surfaces for power and ground distribution, said plurality of bus bars extending from a first side of said high powered die to a second side of said high powered die, said plurality of discrete electrically isolated bus bars grouped into a first portion of said plurality of discrete electrically isolated bus bars, each having at least one ground connection to said die, and a second portion of said plurality of discrete electrically isolated bus bars, each having at least one power connection to said die, said first and second portions of said plurality of discrete electrically isolated bus bars being coupled at both said first and at said second side of said high powered die to said bond wires of said die package.

5,629,841

LOW POWER DC-DC CONVERTER

Brian E. Attwood, 3 Peel House, Barttelot Road, Horsham, West Sussex, England

PCT No. PCT/GB94/00296, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/18747, PCT Pub. Date Aug. 18, 1994

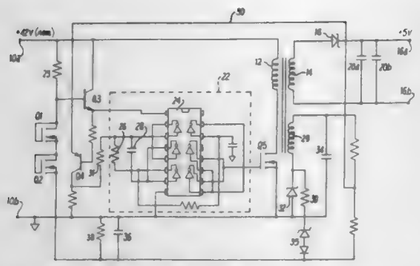
PCT Filed Feb. 14, 1994, Ser. No. 505,194

Int. Cl.[6] H02M *3/335;3/24;5/42;7/44*

U.S. Cl. 363—21 **11 Claims**

1. A dc-dc converter comprising:

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an input for receiving an input voltage;

a transformer having primary and secondary windings and producing a secondary side voltage;

switching means operative to switch the input voltage across the transformer primary winding;

oscillator means connected to the switching means to cause the switching means to operate repetitively;

an output coupled to the transformer secondary winding via a low-pass filter;

a control circuit for controlling the operation of the oscillator means to regulate an output voltage;

a primary-side voltage reference source; and

feedback means generating a feedback signal which varies with at least one parameter of the secondary side voltage;

and in which the feedback means is operative to provide a feedback signal representative of the output voltage and an on-time of the switching means; and

the converter further includes means for providing to the primary-side voltage reference source a variable dc offset which varies with the on time of the switching means to modify the output of the primary-side voltage reference source.

5,629,842

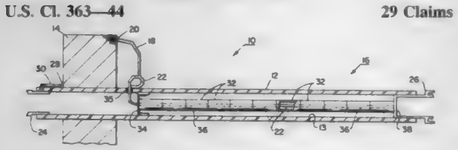
TWO-STAGE, HIGH VOLTAGE INDUCTOR

Nathaniel M. Johnson, Laconia, and S. Edward Neister, New Durham, both of N.H., assignors to Zero Emissions Technology Inc., New Durham, N.H.

Filed Apr. 5, 1995, Ser. No. 417,130

Int. Cl.[6] B03C *3/68*

U.S. Cl. 363—44 **29 Claims**



1. A two-stage inductor assembly comprising:

a. a first inductor member defined by a plurality of turns of a continuous length of wire; and

b. a second inductor member defined by a plurality of ferrite beads positioned in end-to-end relationship, wherein the first and second inductor members are connected in series for reducing ripple of a varying voltage applied to the two-stage inductor assembly.

5,629,843

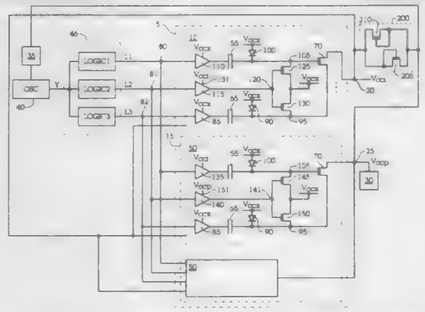
SELF COMPENSATING CLAMP CIRCUIT AND METHOD FOR LIMITING A POTENTIAL AT A PUMP CIRCUIT NODE

Daniel R. Loughmiller; Stephen L. Casper, both of Boise, and Greg A. Blodgett, Nampa, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 396,311, Feb. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 137,565, Oct. 15, 1993, Pat. No. 5,394,320. This application Apr. 24, 1996, Ser. No. 637,008

Int. Cl.[6] H02M *7/25*

U.S. Cl. 363—60 **28 Claims**



1. A circuit for increasing a value of an input supply potential, comprising:

a) a first pump circuit configured to provide a first pumped potential greater than the input supply potential;

b) a second pump circuit configured to provide a second pumped potential, wherein said second pump circuit comprises;

i) a switching device having a control terminal, a first terminal, and a second terminal;

ii) a first increasing circuit configured to provide a first increased potential greater than the input supply potential at the first terminal of said switching device;

iii) a precharge circuit configured to precharge said control terminal to a potential having a value less than the input supply potential;

iv) a second increasing circuit configured to increase the potential of the control terminal to a second increased potential having a value greater than the input supply potential, said switching device actuated by the second increased potential to drive the second pumped potential to the second terminal; and

c) a clamp circuit electrically interposed between said first pump circuit and the second terminal of the switching device, said clamp circuit configured to limit at least one of said first and said second pumped potentials to within a range of potentials.

5,629,844

HIGH VOLTAGE POWER SUPPLY HAVING MULTIPLE HIGH VOLTAGE GENERATORS

Igor A. Krichtafovitch, Kirkland, and Irina Z. Sinitsyna, Bothell, both of Wash., assignors to International Power Group, Inc., Woodinville, Wash.

Filed Apr. 5, 1995, Ser. No. 416,997

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—65 **23 Claims**

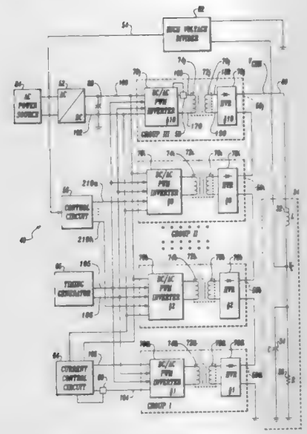
1. A high voltage power supply for generating a controlled current in a load having component parts, comprising:

(a) a timing generator producing a repetitive timing signal, wherein during each repetition of the timing signal the power supply cycles through a driving mode and a tracking mode;

(b) a first voltage generator connected to the timing generator and producing a tracking voltage during the tracking mode;

(c) a second voltage generator and the timing generator and coupled in cascode with the first voltage generator, the second voltage generator producing a base voltage during the driving mode and the tracking mode; and

(d) a third voltage generator connected to the timing generator and coupled in cascode with the first and second voltage generators, the third voltage generator producing an accelerator voltage during the driving mode, wherein an output voltage produced by the power supply is equal to the sum of the tracking voltage, the base voltage, and the accelerator voltage produced by the first voltage generator, the second voltage generator, and the third voltage generator so that during the driving mode the output voltage from the power supply induces an increasing voltage in the lead to raise the current in the load to a desired level, and during the tracking mode the output voltage from the power supply maintains the current in the load at substantially the desired level.



5,629,845

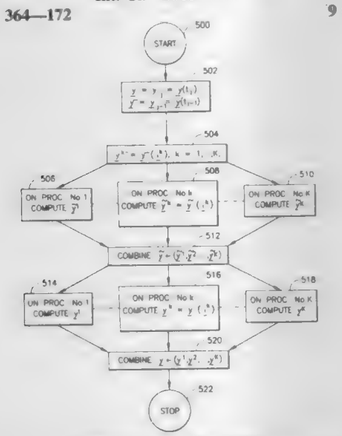
PARALLEL COMPUTATION OF THE RESPONSE OF A PHYSICAL SYSTEM

Werner Liniger, 703 Fieldstone Ct., Yorktown Heights, N.Y. 10598

Filed Aug. 17, 1995, Ser. No. 516,167

Int. Cl.[6] G06F *17/13*

U.S. Cl. 364—172 **9 Claims**



PARALLEL UPDATING OF NUMERICAL SOLUTION

1. A method of obtaining values of state variables of a physical system of interconnected components, individual ones of said components comprising electrical components or mechanical components or fluidic components or biological components, the state variables including current in the case of an electrical component and speed in the case of a mechanical component and fluidic flow rate in the case of a fluidic component and signal strength in the case of a biological component, wherein the physical system is describable by a coupled system of ordinary differential equations providing time-dependent values of the state variables of the respective components, the method employs a distributed network of computers or a parallel computer having a plurality of processors of which p is the number of processors, the method comprising steps of:

counting a number m of unknown state variables wherein m is the number of equations in the system of differential equations, said equations to be solved over an interval of time subdivided into a sequence of time steps;

representing said state variables for all of said components of said physical system by state vectors wherein components of the vectors correspond respectively to said state variables of said physical system, each vector consisting of m components;

slicing the state vectors into a number K of subvectors wherein K is greater than one, each of said subvectors having a number of components equal to or smaller than b, wherein K is equal to m/b for integral values of m/b or equal to one plus the integer part of the quotient m/b for nonintegral values of m/b, the slicing providing an array of subvectors;

splitting respective ones of the equations into respective first parts having first sets of unknown values of state variables and into respective second parts having second sets of unknown values of state variables;

estimating values of said second sets of unknown values of state variables and inserting estimates of said second sets of unknown values of state variables into said second parts of said equations, said estimates corresponding to a state of said physical system at a first instant of time of a predetermined one of said time steps;

updating the state vector concurrently over any one of said time steps by use of a plurality of said processors of said computer, wherein in any one of said time steps, there are obtained first computed values of said first sets of unknown values of state variables at a final instant of time of said one time step, said final instant of time being equal to the sum of said first instant plus the duration of said one time step; and

performing a further updating of the state vector over said one time step, wherein there are obtained second values of said first sets of unknown values of state variables, but with said first computed values used as estimated values of said second sets of state variables in said second parts of the differential equations.

5,629,846

METHOD AND SYSTEM FOR DOCUMENT TRANSLATION AND EXTRACTION

Andrew W. Crapo, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1994, Ser. No. 313,961

Int. Cl.[6] G06F *17/22*

U.S. Cl. 395—785 **24 Claims**

1. A method for translating an electronic source document having a first format into an electronic target document having a second format, the method comprising the steps of:

selecting portions from the source document having various constructs and formats;

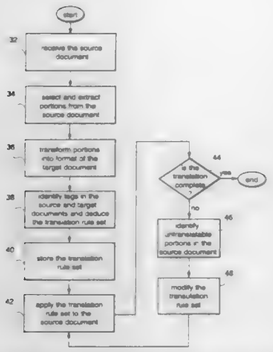
extracting the selected portions from the source document;

transforming the format of the extracted portions into the second format of the electronic target document;

deducing a translation rule set from the extracted portions and the transformed portions;

applying the translation rule set to the electronic source document;

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producing a first draft of the electronic target document as the translation rule set is applied to the electronic source document; and

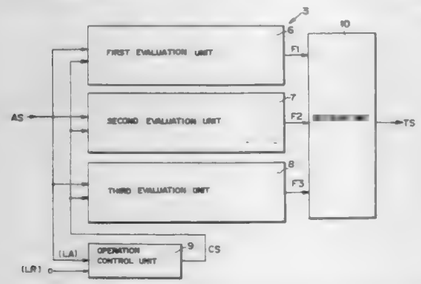
identifying portions from the electronic source document which were unable to be translated into the target document.

5,629,847

CONTROL SYSTEM FOR VEHICLE SAFETY DEVICES

Shu Shirakawa, and Hideki Yoshino, both of Tomioka, Japan, assignors to Airbag Systems Co., Ltd., Japan

Filed Dec. 22, 1994, Ser. No. 361,506
Claims priority, application Japan, Dec. 27, 1993, 5-347022
Int. Cl.[6] B60R *21/32*
U.S. Cl. 364—424.055 **19 Claims**



1. A control system for controlling activation of a vehicle safety device in response to an acceleration signal from a detecting means for detecting vehicle acceleration, said system comprising:

first evaluation means for calculating from the acceleration signal a first evaluation value related to vehicle speed change,

second evaluation means for calculating from the acceleration signal a second evaluation value related to passenger position change,

third evaluation means for squaring the value of the acceleration signal and calculating from the squared value a third evaluation value related to collision energy magnitude,

operation control means for starting and stopping the calculations in the first to third evaluation means in response to the acceleration signal, and

decision means for deciding whether or not to activate the vehicle safety device in response to the first to third evaluation values calculated under the control of the operation control means,

wherein the first evaluation means comprises a first calculation means responsive to the operation control means for integrating the acceleration signal and outputting the integrated value as a first output, and a first correction means for correcting the first output to obtain the first evaluation value indicating vehicle speed change,

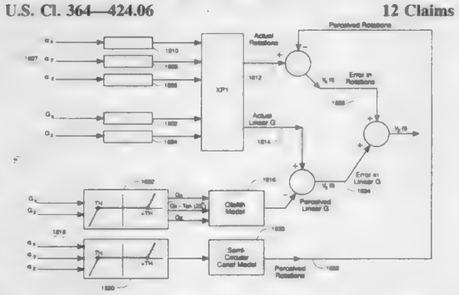
and wherein the first correction means comprises a first map calculation means responsive to the acceleration signal for calculating from a mad a threshold value for the first output at the current vehicle acceleration value, and a first rate calculation means for calculating the ratio of the first output to the threshold value calculated by the first map calculation means and for outputting the calculated ratio as the first evaluation value.

5,629,848

SPATIAL DISORIENTATION DETECTOR

D. W. Repperger, Dayton, and W. B. Albery, Spring Valley, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 4, 1992, Ser. No. 994,200
Int. Cl.[6] G06F *7/70*
U.S. Cl. 364—424.06 **12 Claims**



1. Airborne spatial disorientation apparatus for protecting an aircrew member from the effects of aircraft maneuvering related spatial disorientation, said apparatus comprising the combination of:

first means for computing electrical signals representing true position and orientation of said aircraft with respect to an earth reference;

second means, inclusive of dead zone and noise tolerant mathematical models for a plurality of human position and orientation perceiving functions, for computing electrical signals representing aircrew member perceived position and orientation of said aircraft;

means for comparing differences between said true position and perceived position and said true orientation and perceived orientation electrical signals with predetermined difference magnitude limits therefor; and

means for informing said aircrew member of instances when said predetermined difference magnitude limits are exceeded.

5,629,849

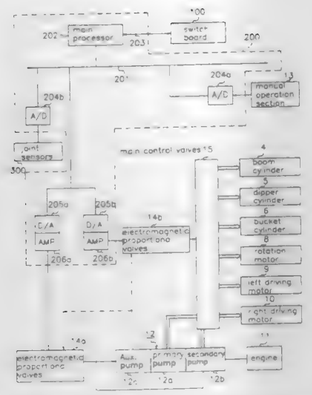
METHOD FOR CONTROLLING OPERATION OF REPEATED WORK OF EXCAVATOR VEHICLE

Seong-Ho Ahn, Seoul, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Kyoungsangnam-do, Rep. of Korea

Continuation of Ser. No. 164,711, Dec. 10, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,717
Claims priority, application Rep. of Korea, Jun. 30, 1993, 93-12199
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—424.07 **5 Claims**

1. A method for automatically controlling repetitive operations of a construction machine having a plurality of attachments, said method comprising:

storing during a teaching mode in a memory device a plurality of operational positions defined by manual actions of the attachments including attachment pivot angles of a boom,



dipper stick and bucket and an angle of rotation of the construction machine of a work mode used in the construction machine to regulate fluid flow from a hydraulic pump according to a work load or a ground condition; and

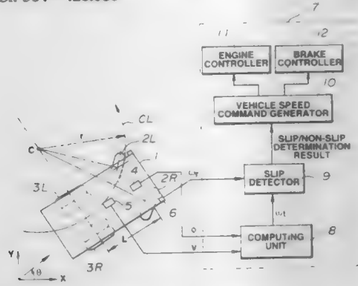
providing during a repetitive mode a repetitive operation control signal responsive to the stored angles and controlling a work mode of the attachments in accordance with the control signal to automatically perform a controlled operation of the manual actions of an operator during the repetitive mode and controlling a speed of the work mode performed by the construction machine during the repetitive mode by comparing a maximum flow rate of the hydraulic pump of the work mode in the teaching mode with a maximum flow rate of the hydraulic pump of the work mode in the repetitive mode to regulate the fluid flow from the hydraulic pump to cylinders to power the attachments according to the work load or the ground condition in the repetitive mode.

5,629,850

VEHICLE SLIP DETECTION DEVICE

Yukio Okawa, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP93/01267, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/05521, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 7, 1993, Ser. No. 397,111
Claims priority, application Japan, Sep. 8, 1992, 4-239744
Int. Cl.[6] B60K *28/16*
U.S. Cl. 364—426.016 **4 Claims**



1. A vehicle slip detection device comprising:

a vehicle speed sensor provided in a vehicle, for detecting a speed of the vehicle;

a steering angle sensor provided in the vehicle, for detecting a steering angle of the vehicle;

a heading angle sensor provided in the vehicle, for detecting a heading angle of the vehicle;

theoretical turning angular velocity computing means for computing a theoretical turning angular velocity of the vehicle based on outputs of the vehicle speed sensor and the steering angle sensor;

correcting means for correcting the theoretical turning angular velocity based on the theoretical turning angular velocity computed by the theoretical turning angular velocity computing means and on a lag time from operation of steering of the vehicle to a start of turning of the vehicle resulting from the operation;

current turning angular velocity computing means for computing a current turning angular velocity of the vehicle based on an output of the heading angle sensor; and

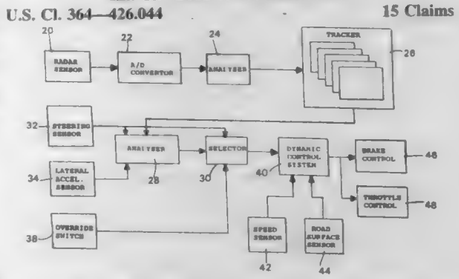
detection means for detecting a slip of the vehicle based on a difference between the computed current turning angular velocity and the corrected theoretical turning angular velocity.

5,629,851

CRUISE CONTROL SYSTEMS FOR MOTOR VEHICLES

Malcolm Williams, 16 Ashlawn Crescent, Solihull, West Midlands, and Nigel J. Clarke, 57 Cherry Tree Lane, Halesowen, West Midlands B63 1DU, both of United Kingdom

Continuation of Ser. No. 162,499, Dec. 3, 1993. This application May 8, 1995, Ser. No. 438,095
Claims priority, application United Kingdom, Dec. 24, 1992, 9226930
Int. Cl.[6] G01S *13/93*; **B60K** *31/00*
U.S. Cl. 364—426.044 **15 Claims**



1. A cruise control system for a motor vehicle comprising:

a) a forward looking distance sensor means, the distance sensor means being arranged to sense vehicles moving in the same path as the equipped vehicle and also in paths adjacent to the path of the equipped vehicle;

b) means to process signals from the sensor means to provide information of range, relative speed and direction of movement of vehicles traveling substantially in the same direction as and in front of the equipped vehicle, in the same path and in paths adjacent to the equipped vehicle;

c) means for processing the successive range, relative speed and directional information of vehicles traveling substantially in the same direction as and in front of the equipped vehicle, in the same path as and in paths adjacent to the equipped vehicle, to track said vehicles;

d) means to initially select said tracked vehicle that is closest to and in the same path as the equipped vehicle as a preferred target, while said means for processing continues to track all said tracked vehicles;

e) means for identifying said tracked vehicle in an adjacent path that is converging with the path of the equipped vehicle;

f) means for determining, according to the successive range, relative speed and directional information of the preferred target and the converging vehicle, whether the converging vehicle is the most appropriate target, and if the converging vehicle is the most appropriate target, switching to the converging vehicle as the preferred target; and

g) means to control speed of the equipped vehicle in response to the preferred target, in order to maintain a safe distance between the equipped vehicle and preferred target.

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5,629,852

VEHICLE CONTROL DEVICE FOR CONTROLLING OUTPUT POWER OF MULTI-CYLINDER ENGINE UPON EMERGENCY

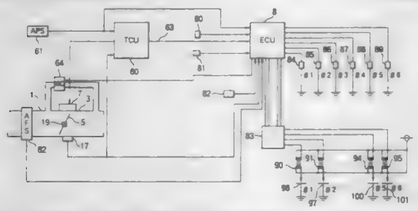
Etsuya Yokoyama, and Nobutake Taniguchi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1994, Ser. No. 202,150

Claims priority, application Japan, Feb. 26, 1993, 5-038474; Mar. 11, 1993, 5-051010; Mar. 25, 1993, 5-066706

Int. Cl.[6] F02D *29/00*

U.S. Cl. 364—431.03 **13 Claims**



1. A vehicle control device for controlling an output power of a multi-cylinder engine upon an occurrence of a failure in parts associated with said engine, said vehicle control device comprising:

acceleration pedal position sensor means for detecting a position of an acceleration pedal, said acceleration pedal position sensor means generating an output corresponding to said position of said acceleration pedal;

engine rotational speed sensor means for detecting an engine rotational speed of the engine;

throttle means, including a throttle valve disposed in an air-intake pipe coupled to said engine, for regulating an amount of air-intake into said engine;

failure detector means for detecting an occurrence of a failure in said throttle means; and

means for enabling a reduced output power limp home operation of the vehicle in response to the occurrence of a failure in the throttle means as detected by the failure detector means, said enabling means comprising control means coupled to said acceleration pedal position sensor means, said engine rotational speed sensor means and said failure detector means for disabling some cylinders of said multi-cylinder engine in accordance with said output of said acceleration pedal position sensor means when the rotational speed of the engine detected by said engine rotational speed sensor means is less than or equal to a predetermined level and upon detection of a throttle means failure.

5,629,853

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Ken Ogawa, and Kei Machida, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 398,082

Claims priority, application Japan, Mar. 9, 1994, 6-065518

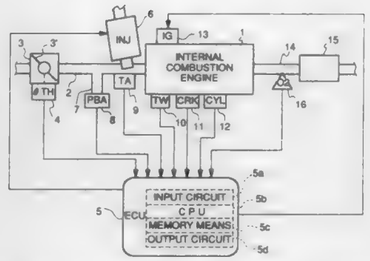
Int. Cl.[6] F02D *41/04;41/26*

U.S. Cl. 364—431.051 **6 Claims**

1. A fuel injection control system for an internal combustion engine having an intake system, at least one combustion chamber, and at least one fuel injection valve disposed to inject fuel into said intake system, comprising:

operating condition-detecting means for detecting operating conditions of said engine;

direct supply ratio-calculating means for calculating a direct supply ratio defined as a ratio of a fuel amount directly drawn into said at least one combustion chamber to a whole fuel amount injected by said at least one fuel injection valve, based on the operating conditions of said engine detected by said operating condition-detecting means;



carry-off ratio-calculating means for calculating a carry-off ratio defined as a ratio of a fuel amount carried off said intake system of said engine and drawn to said at least one combustion chamber to a whole fuel amount which adhered to said intake system, based on the detected operating conditions of said engine;

fuel amount-increasing operating condition-detecting means for detecting a predetermined operating condition of said engine in which an increased amount of fuel is to be supplied to said engine, based on the detected operating conditions of said engine;

fuel injection amount-calculating means responsive to detection of said predetermined operating condition of said engine by said fuel amount-increasing operating condition-detecting means, for calculating a plurality of fuel injection amounts to be sequentially injected by said at least one fuel injection valve, based on the detected operating conditions of said engine, said direct supply ratio calculated by said direct supply ratio-calculating means and said carry-off ratio calculated by said carry-off ratio-calculating means;

adherent fuel amount-calculating means for calculating an amount of fuel adhering to said intake system of said engine, based on a total sum of said plurality of fuel injection amounts calculated by said fuel injection amount-calculating means, as well as on the calculated direct supply ratio and the calculated carry-off ratio;

correction means for correcting at least one of the calculated plurality of said fuel injection amounts, based on said amount of fuel adhering to said intake system calculated by said adherent fuel amount-calculating means; and

control means for controlling said at least one fuel injection valve to sequentially carry out a plurality of fuel injections in one operating cycle of said engine, based on the calculated plurality of fuel injection amounts including said at least one thereof corrected by said correction means.

5,629,854

DEVICE FOR DISPLAYING CARTOGRAPHIC INFORMATION, METHOD FOR DISPLAYING CARTOGRAPHIC INFORMATION, NAVIGATION SYSTEM PROVIDED WITH THE DEVICE AND VEHICLE PROVIDED WITH THE NAVIGATION SYSTEM

Hans H. Schulte, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 951,513, Sep. 25, 1992, abandoned. This application Mar. 3, 1995, Ser. No. 400,317

Claims priority, application European Pat. Off., Sep. 25, 1991, 91202496

Int. Cl.[6] G08G *1/123;1/13*

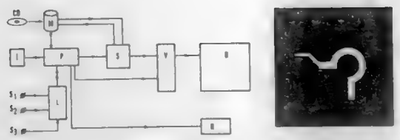
U.S. Cl. 364—449.1 **13 Claims**

1. Device for displaying cartographic information, comprising:

a memory for storing cartographic data in the form of a network of road segments,

a location-determining unit for determining the location of a user with respect to said network,

a selection unit for repeated selection from the memory, on the basis of data from the location-determining unit, of data



representing an upcoming elementary road configuration presenting a decision to the user as to a change in road segment to be taken or a change in speed,

a classification unit for analyzing the selected data representing the upcoming elementary road configuration and based on said selected data assigning from a set of basic pictograms depicting different elementary road configurations in a stylized easy-to-interpret way a basic pictogram that best corresponds to the selected data representing the upcoming elementary road configuration,

an adaptation unit for geometrically adapting the assigned basic pictogram to conform to the selected data representing the upcoming elementary road configuration, and

a display for displaying the adapted pictogram.

5,629,855

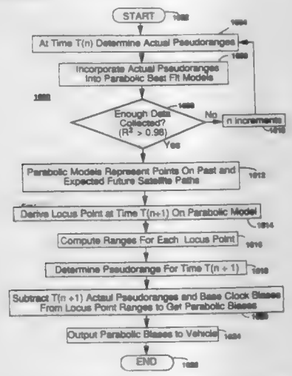
SYSTEM AND METHOD FOR USING PARABOLIC MODELS TO IMPROVE POSITION ESTIMATES FROM A GLOBAL POSITIONING SYSTEM

Christos T. Kyrtsos, Peoria; James W. Sennott, Bloomington; Adam J. Gudat, Edelstein; Dana A. Christensen, Peoria; Douglas W. Friedrich, Pekin, and Darrell E. Stafford, Dunlap, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 155,374, Nov. 23, 1993, Pat. No. 5,555,503, which is a continuation of Ser. No. 628,560, Dec. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 487,980, Feb. 5, 1990. This application Jun. 1, 1995, Ser. No. 457,960

Int. Cl.[6] G01C *21/00*

U.S. Cl. 364—460 **4 Claims**



1. A system for improving the accuracy of a position estimate provided by a global positioning system based on pseudoranges derived from the global positioning system, the system comprising:

first means for determining a plurality of pseudoranges for each of a plurality of satellites; in the global positioning system, said plurality of pseudoranges determined for each corresponding; satellite at consecutive times over a time period, wherein each pseudorange represents a distance between a reference antenna and a corresponding satellite in view of said reference antenna at a corresponding time;

second means, responsive to said first means, for constructing a parabolic model for each satellite from said corresponding plurality of pseudoranges;

third means, responsive to said first means and said second means, for computing a parabolic bias for each satellite from an extrapolated pseudorange determined from said parabolic: model and a future pseudorange derived after the time period; and

fourth means, responsive to said third means, for using said parabolic bias for each satellite to improve the accuracy of the position estimates.

5,629,856

PROCESS AND DEVICE FOR AVOIDING FRAUD ON A TAXI EQUIPPED WITH A TAXIMETER OR ON A TRUCK EQUIPPED WITH A CHRONOTACHOGRAPH

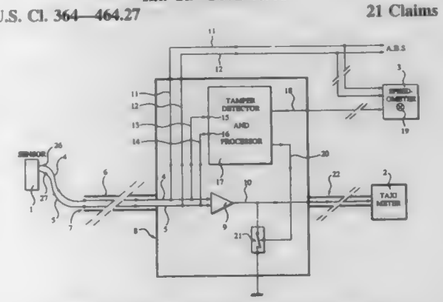
Claude Ricard, 52 Cours Gambetta, 13100 Aix-en-Provence, France

Filed Jan. 18, 1995, Ser. No. 374,095

Claims priority, application France, Jan. 25, 1994, 94 01046; Jun. 8, 1994, 94 07203

Int. Cl.[6] G07B *13/02*

U.S. Cl. 364—464.27 **21 Claims**



1. A process for preventing fraud in a vehicle equipped with one of a taximeter and chronotachograph, said vehicle being equipped with at least one electronic sensor which is used at least for supplying a signal to said one of said taximeter and chronotachograph, comprising the steps of:

monitoring, in parallel, two electric signal output wires of said sensor; and

triggering an electronic anti-fraud action, including at least modifying electronic data normally transmitted to said one of said taximeter and chronotachograph, if, during said monitoring step, at least one of (a) an internal characteristic of an active dipole then present between said two wires and (b) a characteristic of said electric signal available between said two wires during normal displacement of said vehicle, has been modified with respect to reference values.

5,629,857

METHOD AND SYSTEM FOR INDICATING A STATUS OF A CIRCUIT DESIGN

Thomas C. Brennan, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1994, Ser. No. 339,529

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **14 Claims**

1. A method in a data processing system for graphically indicating a status of a circuit unit displayed within a circuit design on a display within the data processing system, the method comprising:

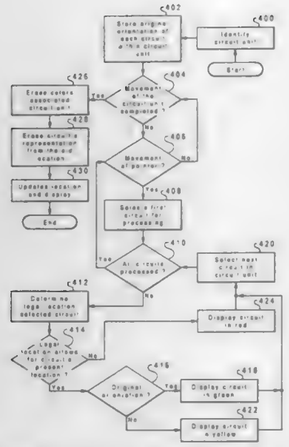
selecting the circuit unit displayed within the circuit design, wherein the circuit unit is located at a location and has a first status;

detecting a movement of the selected circuit unit;

determining whether the movement of the selected circuit unit changes the status of the selected circuit unit; and

automatically indicating a status change of the selected circuit unit by graphically indicating the status change in response to

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the change of status of the selected circuit unit, wherein the status of the selected circuit unit is dynamically indicated to a user in response to a movement of the selected circuit unit.

5,629,858

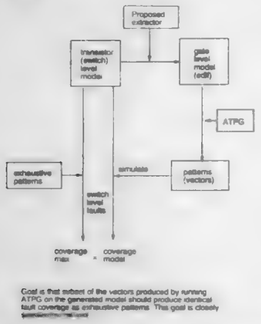
CMOS TRANSISTOR NETWORK TO GATE LEVEL MODEL EXTRACTOR FOR SIMULATION, VERIFICATION AND TEST GENERATION

Sandip Kundu, Austin, Tex.; Andreas Kuehlmann, Poughkeepsie, N.Y., and Arvind Srinivasan, Sunnyvale, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 332,180, Oct. 31, 1994, abandoned. This application Mar. 17, 1995, Ser. No. 406,283

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **2 Claims**



1. A transistor network to gate level model extraction method, comprising:

reading in a transistor netlist and user inputs;

providing user inputs identifying a particular section of the transistor network to be analyzed;

inputting a set of relationships that are not accepted by the transistor network;

listing, for every net that drives an input to a transistor, the channel-connected paths that act as inputs to the transistor;

determining the conduction status of each path under precharge conditions and evaluating the condition;

forming AND gates representing the logical condition under which each path will conduct;

using OR gates, OR'ing all AND gate outputs in various groups that represent paths ending at various terminal nodes, e.g., GND, V_{DD}, primary input;

based upon the user input, and the output of the OR gates, producing an output such that: if only paths to logic node 0 are turned on, the output will be 0; if only paths to logic node 1 are turned on, the output will be 1; and if the paths to logic nodes 0 and 1 are turned on, the output is based on additional information, including user information, and further analysis of transistor sizes; and if no paths are turned on, producing an appropriate output such as a floating output or X.

5,629,859

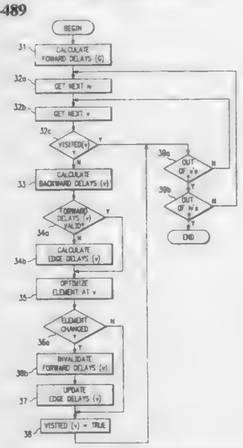
METHOD FOR TIMING-DIRECTED CIRCUIT OPTIMIZATIONS

Sanjive Agarwala, Dallas, and Patrick W. Bosshart, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 964,585, Oct. 21, 1992, abandoned. This application Sep. 12, 1994, Ser. No. 304,625

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—489 **5 Claims**



1. A method of performing a time-driven optimization on a logic circuit represented as a set of input vertices, element vertices for associated circuit elements, and output vertices, and a set of edges connecting ordered pairs of vertices, comprising the steps of:

calculating a backward delay value at each vertex of the logic circuit;

for a given output vertex of the logic circuit, selecting a set of element vertices on all paths from that output vertex to an input vertex;

selecting an element vertex from said set of element vertices for local computation, on a depth first traversal basis;

calculating a path length at said selected element vertex, wherein said path length includes a local computation of edge delays of the element associated with said selected element vertex;

optimizing the circuit element associated with said selected element vertex by changing one or more characteristics of said circuit element;

updating the edge delays of the edges associated with said selected element vertex as a result of the local optimization;

invalidating the backward delay values at element vertices immediately succeeding said selected element vertex;

invalidating backward delay values at all predecessor vertices of said immediately succeeding vertices; and

repeating said selecting, calculating, optimizing, updating, and invalidating steps with respect to each element vertex of said set of element vertices.

5,629,860

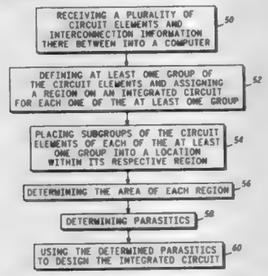
METHOD FOR DETERMINING TIMING DELAYS ASSOCIATED WITH PLACEMENT AND ROUTING OF AN INTEGRATED CIRCUIT

Thomas R. Jones, Scottsdale; Steven L. Crain, Chandler, both of Ariz., and Joseph J. Burkis, Hilton, N.Y., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 16, 1994, Ser. No. 242,984

Int. Cl.[6] G11C *7/02*

U.S. Cl. 364—490 **12 Claims**



1. A design specific method for designing an integrated circuit by estimating parasitics associated with placement and routing of the integrated circuit in a floor planner tool, the method comprising the steps of:

inputting a plurality of circuit elements and interconnection therebetween into a computer;

defining at least one group of circuit elements and assigning a region on an integrated circuit for each one of said at least one group;

placing subgroups of said circuit elements of each of said at least one group into a location within its respective region;

estimating an area of each of said region;

determining parasitics as a function of said estimated area of each of said regions prior to performing an actual place and route step; and

using said determined parasitics to design said integrated circuit.

5,629,861

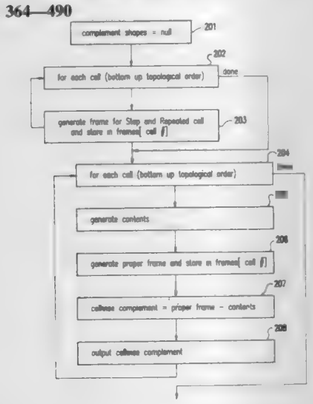
NESTED MAXIMUM SPACE COMPUTATION AND EFFICIENT GENERATION OF NESTED SHAPE COMPLEMENTATION

Young O. Kim, Santa Clara, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1995, Ser. No. 445,436

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—490 **11 Claims**



1. A computer-implemented method of efficiently generating nested complemented shapes of a physical design for integrated circuit chip or electronic package designs without flattening or denesting hierarchal design data of the physical design comprising the steps of:

inputting an original design as nested shapes information in a data file;

generating a contents for each cell of the nested shapes information;

generating a proper frame bounding the generated contents for each cell of the nested shapes information;

determining complemented shapes for each cell as a difference between the generated proper frame and the generated contents for each cell of the nested shapes information;

storing the complemented shapes as native shapes in each cell; and

removing parts of the complemented shapes that overlap original design level shapes.

5,629,862

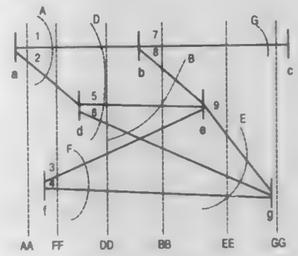
RULE-BASED PROCEDURE FOR AUTOMATIC SELECTION OF CONTINGENCIES IN EVALUATION OF DYNAMIC SECURITY OF A POWER DISTRIBUTION SYSTEM

Vladimir Brandwajn, San Jose; Ali Ipakchi, San Carlos; A. B. Ranjit Kumar, Cupertino, and Gerald W. Cauley, San Jose, all of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Aug. 30, 1994, Ser. No. 297,988

Int. Cl.[6] H02J *3/00*

U.S. Cl. 364—492 **12 Claims**



1. A method for selecting fault contingencies to be evaluated in a real-time determination of their effects upon the dynamic security of a power system that includes power generators and power-carrying lines, the method comprising the following steps:

(a) defining a full set of potential contingencies for said power system; and

(b) using a computer system to apply a rule set including at least one interface rule to said full set to determine at least one sub-set thereof, said subset identifying contingencies that are potentially unstable to said power system;

wherein said interface rule governs a cut-set defined by the following steps:

(c) representing said power system as a collection of network nodes having inter-node connections represented as interconnecting arcs, wherein said network nodes are spatially identified such that power flow of said power system in any said arc goes from a first direction toward a second direction;

(d) defining a said cut-set as a set of said interconnecting arcs that when removed from a connected said network separates said network into at least two second unconnected parts;

(e) defining from a set of each said cut-set a minimal cut-set, wherein a said minimal cut-set is a cutset such that a subset set of said minimal cut-set arcs is not itself a cutset; and

(f) arriving at a minimal cut-set that is not a subset of another cut-set.

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5,629,863

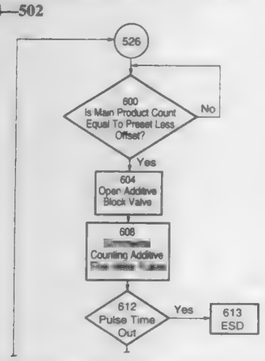
ADDITIVE BLENDING CONTROLLER

Nicola Palozzi, Woodbridge, and Andrew M. Kipiniak, Etobicoke, both of Canada, assignors to 372103 Ontario Ltd., Concord, Canada

Continuation of Ser. No. 25,270, Mar. 2, 1993. This application May 25, 1995, Ser. No. 450,018

Int. Cl.[6] G05D *11/02;11/13;* G06F *17/00*

U.S. Cl. 364—502 23 Claims



1. A method of controlling a blending system process, including the addition of at least two different additives, comprising the steps of:

(i) defining in an additive controller desired ratios of at least two additives to a main product;

(ii) providing a flow of main product;

(iii) measuring the volume of said main product flow and determining when a user defined volume of main product flow has occurred, said user-defined volume being less than a preselected volume;

(iv) adding predefined amounts of each of said at least two additives to said measured main product flow to substantially achieve said desired ratio of each of said at least two additives to said main product after said user-defined amount has occurred;

(v) creating a non-volatile record in said additive controller indicating the time, date, amount and type of each of said at least two additives added in step (iv); and

(vi) repeating steps (iii) and (v) as necessary until the process is terminated.

5,629,864

TESTING PROCESS FOR THE QUALITY CONTROL OF ELECTROMAGNETICALLY ACTUATED SWITCHING DEVICES

Ernst-Ludwig Noé , Heroldsbach, and Peter Schwarz, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00433, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO93/24845, PCT Pub. Date Dec. 9, 1993

PCT Filed May 18, 1993, Ser. No. 335,877

Claims priority, application Germany, May 22, 1992, 42 17 065.6; May 22, 1992, 42 17 067.2; May 22, 1992, 42 17 105.9

Int. Cl.[6] G01R *31/327*

U.S. Cl. 364—506 24 Claims

1. A testing process for the quality control of electromagnetically actuated switching devices in which current contacts are made by actuating an armature, the process including steps of:

a) actuating the armature of a switching device to close the switching device;

b) detecting sound emitted by the switching device when its armature is actuated;



c) transmitting the sound detected in step (b) to an evaluation device;

d) discriminating sound signals caused by a making of the contact from sound signals caused by the armature striking a magnetic core by analyzing at least one of a time curve of individual components of the sound and a frequency curve of the individual components of the sound;

e) evaluating only the sound signals caused by the armature striking the magnetic core.

5,629,865

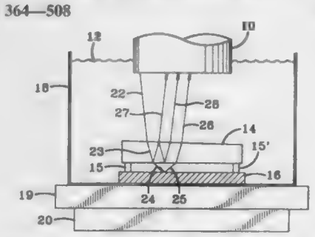
PULSE-ECHO ULTRASONIC IMAGING METHOD FOR ELIMINATING SAMPLE THICKNESS VARIATION EFFECTS

Don J. Roth, Lakewood, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 23, 1995, Ser. No. 546,972

Int. Cl.[6] G01N *29/00;29/04*

U.S. Cl. 364—508 15 Claims



1. A pulse-echo, immersion method for ultrasonic evaluation of a material, employing automatic scanning and digital imaging to obtain an image of a property of said material, wherein said material is held in a holding apparatus which is positioned in an immersion liquid over an acoustic reflector, said reflector having an acoustic impedance which is greater than that of said liquid, and wherein nonlevelness in said holding apparatus and material thickness are accounted for and eliminated, said method comprising:

(i) ultrasonically scanning said material at a plurality of scan points and receiving the first and second echoes, each of which is a complete waveform, reflected off the back surface of said material and the first echo reflected off the front surface of said reflector both with and without the presence of said material;

(ii) adjusting the time delay for each said received echo from each said scan point during said scanning in (i) above, gating each said received echo so that it is centered within its respective time window;

(iii) automatically scanning said material at said scan points to receive said first and second back surface echoes and said two front surface echoes using the information obtained in (ii) above, so that each echo received from each scan point during said automatic scanning is centered within its time window;

(iv) digitizing each echo received during said automatic scanning and determining the time delay between said first two

successive sample back surface echoes, 2τ, and the time delay, Δt, between the two different reflector front surface echoes received at each scan point during said automatic scanning and calculating the wave velocity, using a cross correlation function, at each said scan point from

$$v = c\left(\frac{\Delta t}{2\tau} + 1\right)$$

where c is the speed of the ultrasonic wave transmitted in said liquid, and

(v) scaling the velocity values obtained in (iv) to corresponding proportional color or grey scale values and displaying the resulting image.

5,629,866

AUDIO-VISUAL PRESENTATION SYSTEM

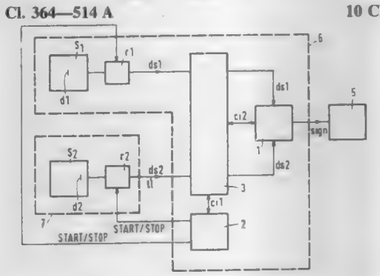
Francis P. Carrubba, and Peter J. L. A. Swillens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,537

Claims priority, application European Pat. Off., Mar. 18, 1994, 94200714

Int. Cl.[6] H04N *9/79*

U.S. Cl. 364—514 A 10 Claims



1. System for providing an audio-visual presentation comprising a basic part and at least a complementary part, the system comprising functionally distinguishable storage media for storing the basic part and the complementary part, and merging means for merging the basic part with the complementary part into the audio-visual presentation, characterized in that the complementary part is intended for enhancing the quality of the audio-visual presentation that can be achieved with the basic part and wherein the storage medium containing the basic part is located near the merging means and wherein the storage medium containing the complementary part is coupled to the merging means via a transmission line of a communications network.

5,629,867

SELECTION AND RETRIEVAL OF MUSIC FROM A DIGITAL DATABASE

Robert J. Goldman, 100 W. Broadway, #7P, Long Beach, N.Y. 11561

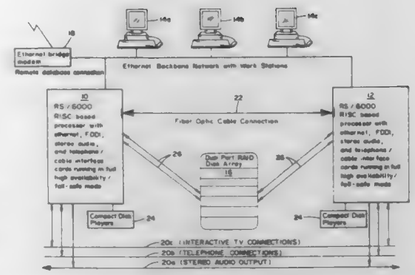
Filed Jan. 25, 1994, Ser. No. 186,302

Int. Cl.[6] H04H *1/00*

U.S. Cl. 364—514 R 10 Claims

1. A method for operating a digital radio broadcast station comprising:

a. digitally storing in a single on-line database, of a computer system, a plurality of at least several hundred different selections of music which is to be played and broadcast by the radio station;



b. programming the computer system with a sequence of music selections to be played by the radio station;

c. retrieving from the single on-line digital database and broadcasting over the radio station the programmed sequence of music selections; and

d. providing a bridged network for connecting the radio station to a further digital database for music selections not stored in the single on-line digital database.

5,629,868

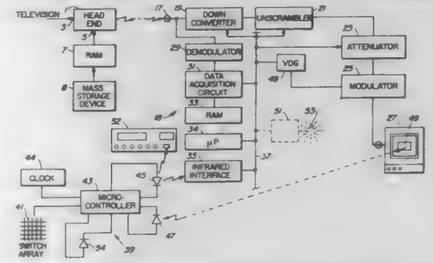
METHOD OF PROGRAMMING LOCAL CONTROL

Alain Tessier, Piedmont; Alain Cartier, Pierrefonds; Michel Beaudry, and Geneviéve Ayotte, both of Montreal, all of Canada, assignors to Le Groupe Vidéotron Ltée, Montreal, Canada

Filed Feb. 7, 1994, Ser. No. 193,413

Int. Cl.[6] G08B *1/08*

U.S. Cl. 364—514 R 28 Claims



1. A method of programming a remote control comprising:

(a) storing in a memory, data for control of a population of appliances, said data being sufficient to allow a remote control to remotely control functions of any of the population of appliances;

(b) selecting which appliances are to be controlled by the remote control,

(c) transmitting to the remote control data for control of the selected appliances;

(d) storing said transmitted data in said remote control;

whereby the remote control is programmed to control the selected appliances,

(e) said memory being at a central location, and said data is transmitted to a user terminal for acquisition by said remote control,

(f) the data is acquired by the remote control by flashing a code using electromagnetic energy at the user terminal corresponding to said data for control of said appliances on a display, and

(g) pointing said remote control at a display for reception and thus acquisition of said data.

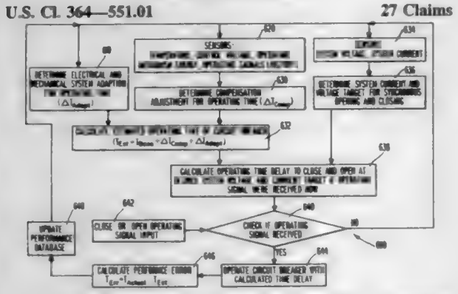
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5,629,869

INTELLIGENT CIRCUIT BREAKER PROVIDING SYNCHRONOUS SWITCHING AND CONDITION MONITORING

David S. Johnson, Greensburg, Pa.; Aftab H. Khan, Raleigh, N.C.; Paul H. Stiller, and Jeffry R. Meyer, both of Greensburg, Pa., assignors to ABB Power T&D Company, Raleigh, N.C.

Filed Apr. 11, 1994, Ser. No. 226,274
Int. Cl.[6] G07C *3/00*
U.S. Cl. 364—551.01 27 Claims



1. A modular system for monitoring and controlling a switching device, comprising:

(a) a breaker control unit (BCU) module operatively coupled to said switching device for controlling the operation of said switching device;

(b) a synchronous control unit (SCU) module operatively coupled to said switching device for opening and closing said switching device; and,

(c) a condition monitoring unit (CMU) module operatively coupled to said switching device for monitoring a plurality of operating parameters associated with said switching device;

each of said BCU, SCU and CMU modules being individually removable from said modular system as desired and each of said BCU, SCU and CMU modules being replaceable in said modular system as needed, wherein the system will remain operable even if a module fails, said CMU comprising wear determination means for determining the wear condition of a component of the switching device, said wear determination means being operative to determine said wear condition on the basis of at least measurements of: (1) reaction time, defined as an elapsed time from initiation of a close signal for closing said switching device to a first signal generated by a sensing device indicating that said switching device has begun to close; (2) velocity of the switching device during free travel without the effect of contact make/break or damping; and (3) absolute travel of the switching device.

5,629,870

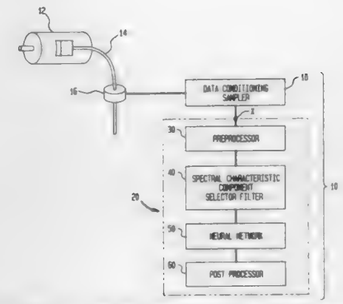
METHOD AND APPARATUS FOR PREDICTING ELECTRIC INDUCTION MACHINE FAILURE DURING OPERATION

Samir F. Farag, Roswell; Thomas G. Habetler, Snellville, and Jay H. Schlag, Marietta, all of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed May 31, 1994, Ser. No. 251,814
Int. Cl.[6] G01R *23/00*
U.S. Cl. 364—551.01 29 Claims

3. A method for identifying an operating condition of an induction machine which operates as one of a power source and load on a power line of an electrical distribution system comprising:

a. coupling an electric induction machine to a power line of an electrical distribution system and operating the machine;



b. monitoring in real time power line waveform signature influenced by operating conditions of the machine;

c. spectrally separating at least a representative portion of the power line waveform into a plurality of frequency-domain components;

d. selecting for analysis at least one specific component of the plurality of frequency-domain components based on at least one of frequency and magnitude values of the component by referencing a base of stored knowledge of representative operational characteristics of the machine;

e. associating the selected component with an operating condition of the machine by referencing the base of stored knowledge; and

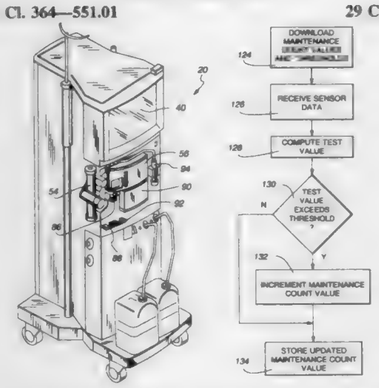
f. updating the base of stored knowledge with at least one of at least a portion of new selected components and new machine operating condition associations, which have been identified during real-time monitoring.

5,629,871

WEAR TREND ANALYSIS TECHNIQUE FOR COMPONENTS OF A DIALYSIS MACHINE

Steve Love, Bailey; Jim Rosa, Conifer, and Robert Chambers, Morrison, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 7, 1995, Ser. No. 486,942
Int. Cl.[6] A61M *1/16*
U.S. Cl. 364—551.01 29 Claims



1. A method of analyzing wear on at least one component in a dialysis machine, comprising the steps of:

establishing a threshold value which defines the limits of normal performance for each component to be analyzed;

monitoring actual performance of each component during use of the dialysis machine;

determining a test value from the actual performance monitored;

comparing the test value to the threshold value;

incrementing a maintenance count value in relation to each instance of the test value exceeding the threshold value; and

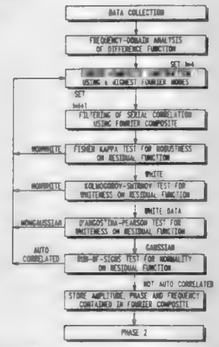
analyzing the wear on the component by referring to the maintenance count value.

5,629,872

SYSTEM FOR MONITORING AN INDUSTRIAL PROCESS AND DETERMINING SENSOR STATUS

Kenneth C. Gross, Bolingbrook; Kristin K. Hoyer, Chicago, both of Ill., and Keith E. Humenik, Columbia, Md., assignors to ARCH Development Corporation, Chicago, Ill.

Continuation of Ser. No. 472,749, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 68,713, May 27, 1993, Pat. No. 5,459,675, which is a continuation-in-part of Ser. No. 827,776, Jan. 29, 1992, Pat. No. 5,223,207. This application Apr. 8, 1996, Ser. No. 631,745
Int. Cl.[6] G21C *7/36*
U.S. Cl. 364—554 22 Claims



1. A method of testing at least one of a process and a sensor for determining a particular condition therein, comprising the steps of:

operating at least a first and second sensor to redundantly detect at least one variable of the process to provide a first signal from said first sensor and a second signal from said second sensor, each said signal being characteristic of the one variable;

obtaining a difference function characteristic of the difference pairwise between said first signal and said second signal at each of a plurality of different times of sensing the one variable;

obtaining a frequency domain transformation of said first difference function to procure Fourier coefficients corresponding to Fourier frequencies;

generating a composite function over time domain using the Fourier coefficients;

obtaining a residual function over time by determining the difference between the difference function and the composite function, the residual function being substantially free of serially correlated noise;

operating on the residual function using computer means for performing a statistical analysis technique to determine whether a particular condition is present in at least one of the process and the sensor, the residual function having substantially white noise characteristics input to the statistical analysis technique; and

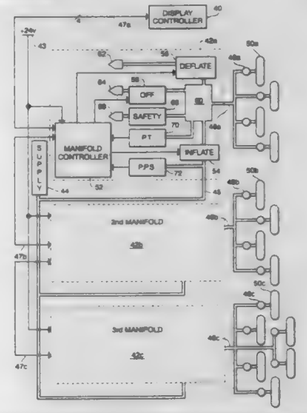
said sensor system providing alarm information to a user of the process allowing changing of at least one of the process and the at least first and second sensor when the particular condition is detected.

5,629,873

DISTRIBUTED INTELLIGENCE VEHICULAR TIRE AIR PRESSURIZATION SYSTEM AND METHOD

Chander P. Mittal, Rowand Heights, and Glenn M. Stanley, Azusa, both of Calif., assignors to CM Automotive Systems Inc, Walnut, Calif.

Filed Mar. 8, 1995, Ser. No. 401,087
Int. Cl.[6] G01N *11/08*
U.S. Cl. 364—558 17 Claims



1. A system in a vehicle for adjusting respective tire air pressures in respective sets of tires using an air supply, said system comprising,

a controller means comprising a memory means for storing programs, processor means for executing said programs, and a communication means for transmitting respective commands communicating sets of respective desired pressures, said controller means for selecting one of a plurality of operating conditions referenced to one of said sets of respective desired pressures and for generating said respective commands communicating respective desired pressures for said respective sets of tires,

a plurality of respective manifold means comprising respective manifold controller means each of which comprising respective manifold memory means for storing respective manifold programs, respective manifold processor means for executing said respective manifold programs, respective manifold communication means for receiving said respective commands, said respective manifold controller means for monitoring said respective tire air pressures in said respective sets of tires, said respective manifold controller means for respectively responding to said respective commands for adjusting said respective tire air pressures to said respective desired pressures, said plurality of respective manifold means further comprises respective inflation means for supplying respective supply air from said air supply to said respective sets of tires, respective deflation means for exhausting respective exhaust air from said respective sets of tires, and respective air pressure sensors for sensing said respective tire air pressures in said respective sets of tires, said respective commands identifying said respective manifold means independently responding and adjusting said respective tire air pressures to said respective desired pressures in said respective sets of tires, and

a plurality of respective air channel means respectively connected between said respective inflation means, said respective deflation means, and said respective set of tires for communicating said respective supply air to said respective sets of tires, for communicating said respective exhaust air from said respective sets of tires, and for communicating said respective tire air pressures from said respective sets of tires to said respective air pressure sensor.

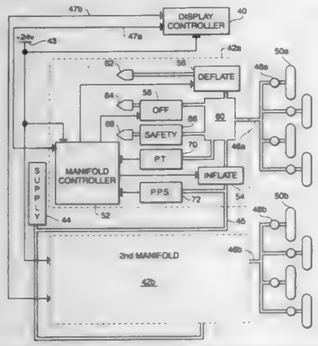
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5,629,874

VEHICULAR TIRE AIR PRESSURIZATION SYSTEM AND METHOD

Chander P. Mittal, Rowand Heights, Calif., assignor to CM Automotive Systems Inc., Wainut, Calif.

Filed Mar. 8, 1995, Ser. No. 401,088
Int. Cl.[6] G01N *11/08*
U.S. Cl. 364—558 **20 Claims**



1. A system in a vehicle for adjusting respective tire air pressures in one or more respective sets of tires from an air supply, said system comprising,

a controller means comprising memory means for storing programs and data, processor means executing said programs using said data, communication means for communicating signals used for adjusting said respective tire air pressures to said respective desired pressures, panel means for selecting said respective desired pressures and entering entered data, said memory means comprising rewritable non volatile for storing said entered data and for updating said data,

respective manifold means comprising respective electronic means for communicating said signals and for adjusting said respective tire air pressures to said respective desired pressures, respective inflation means for supplying supply air from said air supply to said respective sets of tires, respective deflation means for exhausting air from said respective sets of tires, and respective air pressure sensors for sensing said respective tire air pressures in said respective sets of tires, and

respective air channel means connected between both of said respective inflation means and said respective deflation means to said respective sets of tires for communicating said supply air to said respective sets of tires, for communicating said exhaust air from said respective sets of tires, and for communicating said respective tire air pressures to said respective air pressure sensors.

5,629,875

METHOD AND APPARATUS FOR INTERACTIVELY TUNING FREQUENCY HOPPING TRANSMITTER

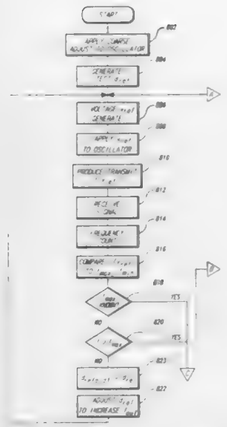
Henry H. Adair, Jr., Duluth, Ga., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Filed Apr. 20, 1995, Ser. No. 425,567
Int. Cl.[6] H04B *17/00*
U.S. Cl. 364—571.03 **11 Claims**

1. A method for storing sequences corresponding to minimum and maximum frequencies in maximum and minimum limit locations, respectively, in a frequency hopping transmitter, wherein the transmitter transmits radiowave signals at frequencies determined by an input voltage from a voltage generator received at a frequency adjust input, comprising:

(a) producing a series of test data sequences with a microprocessor;

(b) supplying a series of test data sequences to the voltage generator such that the voltage generator produces a series of voltages, each corresponding to a respective data sequence;



(c) supplying the voltages from the voltage generator to the frequency adjust input of the transmitter such that the transmitter transmits the radiowave signal at the frequencies corresponding to the voltages;

(d) receiving with a radiowave receiver the radiowave signals from the transmitter;

(e) detecting the frequencies of the radiowave signals;

(f) for the radiowave signal having a frequency closest to, but less than to the maximum frequency, identifying the corresponding data sequence;

(g) storing the data sequence corresponding to the frequency closest to, but less than the maximum frequency in the maximum limit location;

(h) for the frequencies closest to, but greater than to the minimum frequency, identifying the corresponding data sequence; and

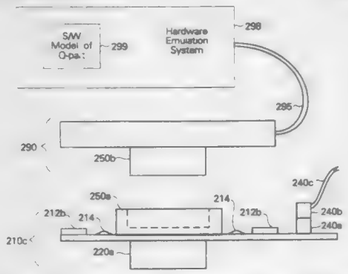
(i) storing the data sequence corresponding to the radiowave signal having a frequency closest to, but greater than the minimum frequency in the minimum limit location.

5,629,876

METHOD AND APPARATUS FOR INTERIM IN-SITU TESTING OF AN ELECTRONIC SYSTEM WITH AN INCHOATE ASIC

Jen-Hsun Huang; Michael D. Rostoker, both of San Jose, and David Gluss, Woodside, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 911,846, Jul. 10, 1992, Pat. No. 5,339,262. This application Aug. 31, 1992, Ser. No. 937,643
Int. Cl.[6] G06G *7/62*
U.S. Cl. 364—578 **10 Claims**



1. A method of emulating an electronic system for functional testing; the electronic system including a support member, a system device formed on the support member, a first connector that is formed on the support member and operatively connected to the system device, and a core-cell based Application Specific Integrated Circuit (ASIC) that interconnects with the first connector; the ASIC comprising a core-cell, and electronic core devices that are operatively connected to the core-cell; the method comprising the steps of:

(a) constructing and operatively interconnecting the support member, system device and first connector;

(b) constructing a test pod to include a Field-Programmable Circuit Board (FPCB), a Field-Programmable Interconnect (FPIC) that is mounted on the FPCB, a core unit that is mounted on the FPCB and is substantially functionally equivalent to the core-cell, programmable logic devices that are mounted on the FPCB, and a second connector that is mounted on the FPCB and interconnects with the first connector;

(c) programming the FPIC to operatively interconnect the core unit, logic devices, and second connector via the FPCB; and programming the logic devices such that they are substantially functionally equivalent to core devices; such that the test pod is substantially functionally equivalent to the ASIC;

(d) interconnecting the first and second connectors such that the support member, system device and test pod emulate the electronic system; and

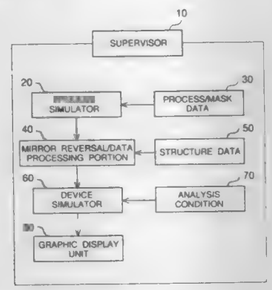
(e) functionally testing the support member, system device and test pod.

5,629,877

PROCESS AND DEVICE COMPOSITE SIMULATION SYSTEM AND SIMULATION METHOD

Yukio Tamegaya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 23, 1994, Ser. No. 264,350
Claims priority, application Japan, Jun. 24, 1993, 5-152553
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—578 **12 Claims**



1. A unified process and device simulation system unitarily performing simulation for a process design and a device design of a semiconductor device, comprising:

a process simulator performing a process simulation for one of a pair of regions of the semiconductor device, said regions being symmetric in configuration and structure about a center line which is perpendicular to a direction about which the simulation is carried out, and generating a first simulation data;

mirror reversal processing means for performing a mirror reversing process for establishing a mirror data of said first simulation data symmetric about said center line;

extension data adding means for generating an extension data by extending the first simulation data and for adding said extension data between said first simulation data and said mirror data to generate a second data equivalent to a process simulation data obtained through the process simulation for an entire region of the semiconductor device; and

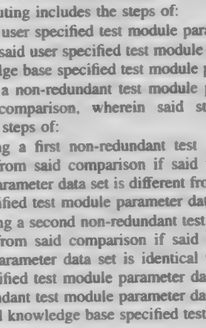
a device simulator for performing a device simulation with respect to said second data on the basis of a predetermined analysis condition.

5,629,878

TEST PLANNING AND EXECUTION MODELS FOR GENERATING NON-REDUNDANT TEST MODULES FOR TESTING A COMPUTER SYSTEM

Walid M. Kobrosly, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1993, Ser. No. 133,481
Int. Cl.[6] G05B *1/00*
U.S. Cl. 364—579 **4 Claims**



4. A method for executing a non-redundant test case needed to test a component or a unit within a given computer system, the non-redundant test case having a set of n non-redundant test modules associated therewith, wherein n is any positive integer, said n non-redundant test modules being included as entries in a knowledge base wherein each non-redundant test module defines, in terms of a set of user specified parameters, the steps needed to test the component or unit within the given computer system, the method comprising the steps of:

(a) executing each of said n non-redundant test modules; wherein said step of executing includes the steps of:

(1) inputting a user specified test module parameter data set;

(2) comparing said user specified test module parameter data set to a knowledge base specified test module parameter data set;

(3) generating a non-redundant test module parameter data set from said comparison, wherein said step of generating includes the steps of:

(i) generating a first non-redundant test module parameter data set from said comparison if said user specified test module parameter data set is different from said knowledge base specified test module parameter data set; and

(ii) generating a second non-redundant test module parameter data set from said comparison if said user specified test module parameter data set is identical to said knowledge base specified test module parameter data set; said second non-redundant test module parameter data set being identical to said knowledge base specified test module parameter data set;

(4) applying said non-redundant test module parameter data set to said component; and

(5) sampling said component undergoing said application of non-redundant test module parameter data for collecting result data;

(b) recording the result data of each executed non-redundant test module in said knowledge base in order to maintain the knowledge base specified test module parameter data set integrity of the non-redundant test modules stored therein and to provide information for subsequent test cases using the same knowledge base.

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5,629,879

CONTROL DEVICE FOR THE ACTUATION OF SWITCHGEARS ACCORDING TO A TIME PROGRAM

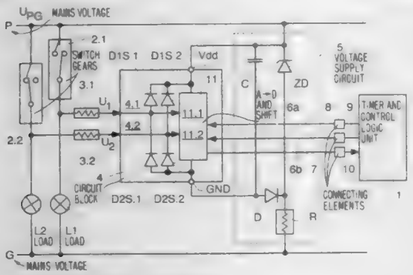
Josef Lelie, Baden-Baden, Germany, assignor to Landis & Gyr Technology Innovation AG, Zug, Switzerland

Filed Dec. 19, 1994, Ser. No. 359,277

Claims priority, application European Pat. Off., Dec. 24, 1993, 93810909

Int. Cl.[6] **G07F** *11/00*

U.S. Cl. 364—579 **15 Claims**



1. A control device comprising.

a timer and control logic unit,

a plurality of switchgears actuated by said timer and control logic unit according to a time program,

a plurality of loads having a current supply which is controlled by the switchgears, the loads being connected in a mains-voltage network between a phase and ground in series with the switchgears,

a circuit block having a plurality of inputs electrically connected to taps located in a current path between said switchgears and said loads and having an output connected to said timer and control logic unit,

a plurality of call circuits, each call circuit having an output connected to an input of the circuit block and an input connected to one of said taps wherein each call circuit comprises a resistor, and

a voltage supply circuit which supplies said circuit block from between said phase and said ground,

wherein said circuit block comprises a plurality of protection diodes.

wherein when one of said switchgears is in an open state, current flows via said protection diodes assigned to a corresponding input of said circuit block so that voltage signals from said call circuits assume a varying evolution in time at said corresponding input in relation to a reference point of said circuit block, and wherein said evolution of said voltage signals is constant when said switchgear is in a closed state, and

wherein said timer and control logic unit carries out a test cycle at given points in time to ascertain the state of the switchgears.

5,629,880

CALIBRATION DATA TRANSMISSION APPARATUS AND METHOD FOR SEMICONDUCTOR TEST EQUIPMENT

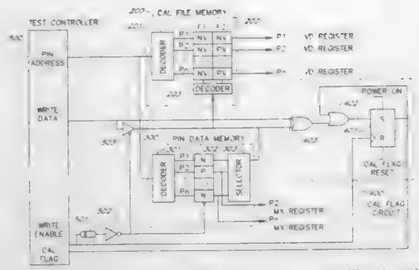
Toshiyuki Negishi, Ohizumi-machi, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Apr. 24, 1995, Ser. No. 426,857

Claims priority, application Japan, Apr. 22, 1994, 6-107939

Int. Cl.[6] **G06F** *17/00*

U.S. Cl. 364—579 **6 Claims**



1. A data transmission apparatus which transmits calibration data for each test pin of a semiconductor test equipment comprising:

a pin mode data memory (**300**) which stores different types of calibration mode data for each test pin;

a calibration file memory (**200**) which stores calibration data each of which corresponds to said each test pin and said calibration mode data, said calibration file memory being accessed by a pin address from a test controller to define the calibration data for a specific test pin and a file address from said pin mode data memory to define said calibration mode data for said specified test pin; and

a calibration flag circuit (**400**) which detects a coincidence between said calibration data to be transmitted and the previous calibration data.

5,629,881

METHOD FOR FILTERING A DIGITAL VALUE TRAIN WITH IMPROVED NOISE BEHAVIOR, AND CIRCUIT CONFIGURATION FOR PERFORMING THE METHOD

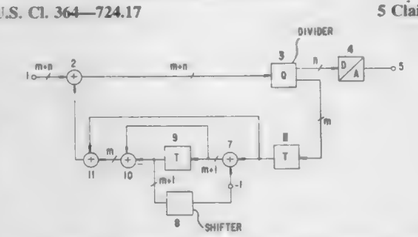
Ferenc Leeb, Villach, Austria, and Lajos Gazsi, Düsseldorf, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 15, 1995, Ser. No. 404,366

Claims priority, application Germany, Mar. 15, 1994, 44 08 768.3

Int. Cl.[6] **G06F** *17/10;7/38*

U.S. Cl. 364—724.17 **5 Claims**



1. A method for filtering a digital value with improved noise behavior, which comprises:

adding a digital input value and a feedback value to form a digital output value;

forming the feedback value from a first variable from which a second variable is subtracted, from which the second variable shifted m places to the right is subtracted, and to which the first variable is added;

forming the first variable from a bottom m bits of a previous digital output value to always represent a positive value;

forming the second variable from a previous first variable from which a previous second variable shifted arithmetically by m bits to the right is subtracted;

calculating the feedback value with at least one additional least significant bit until at least a last addition with the first variable; and

subsequently no longer taking the least significant bit into account.

5,629,882

DISCRETE COSINE TRANSFORMATION SYSTEM AND INVERSE DISCRETE COSINE TRANSFORMATION SYSTEM, HAVING SIMPLE STRUCTURE AND OPERABLE AT HIGH SPEED

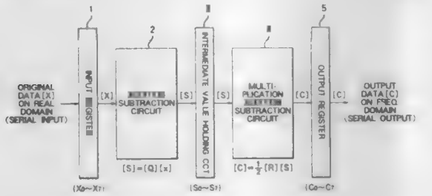
Eiji Iwata, Chiba, Japan, assignor to Sony Corporation, Japan

Filed Sep. 3, 1993, Ser. No. 115,756

Claims priority, application Japan, Sep. 17, 1992, 4-273738

Int. Cl.[6] **G06F** *7/38*

U.S. Cl. 364—725 **14 Claims**



1. A two-dimensional 8 row×8 column discrete cosine transformation device for performing a transformation in accordance with the following formula:

$$[C]=\tfrac{1}{4}[R]\,[Q]\,[X]$$

where, [X] denotes matrix data to be subjected to the discrete cosine transformation and is defined as follows:

$$[X]=x_j\,(j=0\text{–}7)=\begin{pmatrix}x_0\\x_1\\x_2\\x_3\\x_4\\x_5\\x_6\\x_7\end{pmatrix}$$

[C] denotes matrix data obtained by the discrete cosine transformation and is defined as follows:

$$[C]=c_j\,(j=0\text{–}7)=\begin{pmatrix}c_0\\c_1\\c_2\\c_3\\c_4\\c_5\\c_6\\c_7\end{pmatrix}$$

[Q] denotes an 8×8 constant matrix and is defined as follows:

$$[Q]=\begin{bmatrix}1&1&1&1&1&1&1&1\\1&-1&-1&1&1&-1&-1&1\\0&1&-1&0&0&-1&1&0\\1&0&0&-1&-1&0&0&1\\0&0&0&1&-1&0&0&0\\0&0&1&0&0&-1&0&0\\0&1&0&0&0&0&-1&0\\1&0&0&0&0&0&0&-1\end{bmatrix}=\begin{bmatrix}Q1&Q2\\Q3&Q4\end{bmatrix}$$

[R] denotes an 8×8 matrix and is defined as follows:

$$[R]=\begin{bmatrix}A&0&0&0&0&0&0&0\\0&0&0&0&G&F&E&D\\0&0&C&B&0&0&0&0\\0&0&0&0&-F&-D&-G&E\\0&A&0&0&0&0&0&0\\0&0&-B&C&0&0&0&0\\0&0&0&0&-D&E&-F&G\end{bmatrix}$$

wherein,

A=cos (π/4),

B=cos (π/8),

C=cos (3π/8),

D=cos (π/16),

E=cos (3π/16),

F=cos (5π/16), and

G=cos (7π/16)

said device comprising:

first computing means for computing a matrix [S]=[Q] [X], where, $[S]0=s_j$ (j=0–7);

second computing means for computing a matrix [T]=[R] [S] where, $[T]=t_j$ (j=0–7); and

shifting means for shifting the matrix [T] by one bit, to obtain the matrix [C]=[T]/2.

5,629,883

CORRELATION DETECTOR

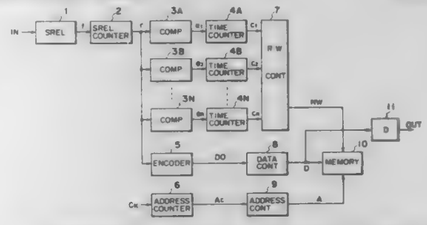
Toshio Iwata, Sagamihara, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 306,945

Claims priority, application Japan, Sep. 29, 1993, 5-265700

Int. Cl.[6] **G06F** *17/15*

U.S. Cl. 364—728.07 **3 Claims**



1. An apparatus for processing a digital signal obtained by sampling and quantizing an analog signal, said apparatus comprising:

a comparator for comparing a quantized level at one sample point with a quantized level at a sample point immediately before said one sample point,

a counter means for counting the number of consecutive samples having a substantially identical quantized level before one sample point,

an encoder means for outputting a predetermined code corresponding to a count value outputted from said counter means,

a write means for writing into a memory said predetermined code outputted from said encoder,

a modification means responsive to the count value from said counter means for modifying a plurality of previously written codes, and

a read means for reading out the written codes from said memory after completion of the code modification,

whereby the code corresponding to a sum (r+ra) of the number r of consecutive samples having a substantially identical quantized level before one sample point and the number ra of consecutive samples having said substantially identical quantized level after said one sample point is outputted.

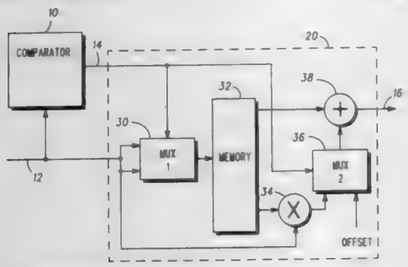
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5,629,884

LOG CONVERTER UTILIZING OFFSET AND METHOD OF USE THEREOF

Shao W. Pan, Schaumburg, and Shay-Ping T. Wang, Long Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1995, Ser. No. 508,365
Int. Cl.° G06F 7/00;15/00;1/02; H03M 7/50
U.S. Cl. 364—748.5 14 Claims



5. A log converter, which comprises:

a comparator for determining whether an upper bit-slice of an input signal equals zero;

a first multiplexer, operatively coupled to the comparator, for selecting an address;

a memory for providing a first parameter and a second parameter corresponding to the address;

a multiplier for multiplying the first parameter by a lower bit-slice of the input signal to produce a product;

a second multiplexer, operatively coupled to the comparator, for selecting either the product or a negative offset as a mux output; and

an adder for summing the second parameter and the mux output to generate a log signal;

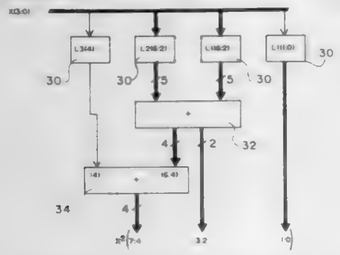
wherein if the upper bit-slice equals zero, the first multiplexer selects the address to include bits of the input signal which are less significant than the upper bit-slice and the second multiplexer selects the product, otherwise, the first multiplexer selects the address to include bits of the input signal which are more significant than the lower bit-slice and the second multiplexer selects the negative offset.

5,629,885

SQUARING CIRCUIT FOR BINARY NUMBERS

Alain Pirson, Seyssins; Jean-Michel Bard, Crolles, and Mohamed Daoudi, Eybens, all of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Nov. 7, 1994, Ser. No. 335,576
Claims priority, application France, Nov. 8, 1993, 93 13589
Int. Cl.° G06F 7/38
U.S. Cl. 364—753 31 Claims



1. A squaring circuit for squaring a binary number X of n bits, the bits having values x_0 to x_{n-1}, the squaring circuit comprising:

a plurality of pre-processing circuits constructed to form a plurality of products x_ix_j of the bits of number X, wherein i and j range between 0 and n−1 such that i≦j, each product x_ix_j being affected with one of a weight i+j+1, if i is different from j, and a weight 2i if i=j, wherein said products are provided in a plurality of groups, each group representing a digital word; and

at least one adder connected to form the sum of the digital words as a square of the number X;

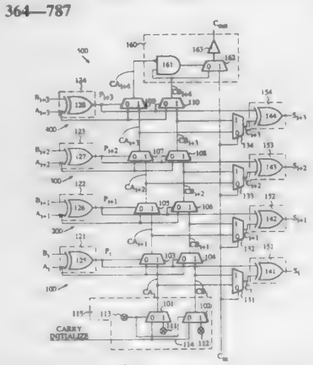
wherein the pre-processing circuits include means for forming a sum of two products that differ from each other, each of the two products corresponding to a bit, having a same weight, in one of two digital words, said sum replacing one of the two products in its corresponding one of the two digital words, a carry bit of said sum being provided as a higher order bit of one of the digital words, so as to reduce at least one of a number of digital words that are added to form the square of the number X and a length of one of the two digital words.

5,629,886

METHOD AND STRUCTURE FOR PROVIDING FAST PROPAGATION OF A CARRY SIGNAL IN A FIELD PROGRAMMABLE GATE ARRAY

Bernard J. New, Los Gatos, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 310,113, Sep. 20, 1994, Pat. No. 5,481,206, which is a continuation-in-part of Ser. No. 116,659, Sep. 2, 1993, Pat. No. 5,349,250. This application Jun. 23, 1995, Ser. No. 494,131
Int. Cl.° G06F 7/50
U.S. Cl. 364—787 11 Claims



1. A field programmable gate array having at least one carry logic circuit comprising:

a first carry chain which propagates a first plurality of carry chain signals;

a second carry chain which propagates a second plurality of carry chain signals;

a first line coupled to receive a carry input signal;

a plurality of multiplexers, each having a first input terminal coupled to the first carry chain, a second input terminal coupled to the second carry chain, a control terminal coupled to the first line, and an output terminal which receives one of the first plurality of carry signals or one of the second plurality of carry signals in response to the carry input signal on the first line; and

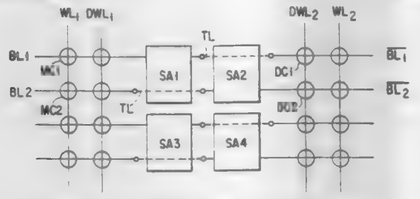
a plurality of programmable function generators coupled to the first and second carry chains, wherein the function generators control the propagation of the first and second plurality of carry chain signals is through the first and second carry chains.

5,629,887

DYNAMIC SEMICONDUCTOR MEMORY DEVICE

Hiroaki Nakano; Daisaburo Takashima, both of Kawasaki, and Tohru Ozaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 308,926, Sep. 20, 1994. This application Apr. 27, 1995, Ser. No. 429,638
Claims priority, application Japan, Sep. 21, 1993, 5-235016; Mar. 15, 1994, 6-043883
Int. Cl.° G11C 5/02;5/06
U.S. Cl. 365—51 9 Claims



1. A dynamic semiconductor memory device comprising:

at least one memory cell array in which memory cells are arranged in a matrix;

bit lines connected to said memory cells and used to read and write information from or into said memory cells;

word lines provided so as to cross said bit lines and used to select a memory cell from which information is to be read onto said bit line;

sense amplifier blocks which are connected to said bit lines and contain sense amplifiers for sensing and amplifying the information read from a memory cell onto said bit line, with at least two of said sense amplifier blocks being placed side by side along said bit line; and

wires which connect said bit lines to said sense amplifier blocks to be connected to the bit lines by passing through sense amplifier blocks placed between said bit lines and said sense amplifier blocks, and

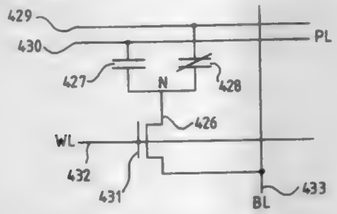
wherein said wires are formed in a layer different from a layer in which said bit lines are formed.

5,629,888

SEMICONDUCTOR MEMORY DEVICE AND METHOD OF OPERATION THEREOF

Ryuichi Saito; Hidekatsu Onose, both of Hitachi; Yutaka Kobayashi, Katsuta, and Michio Ohue, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 738,601, Jul. 31, 1991, Pat. No. 5,307,304. This application Jan. 18, 1994, Ser. No. 182,503
Claims priority, application Japan, Aug. 3, 1990, 2-205004
Int. Cl.° G11C 11/22
U.S. Cl. 365—145 21 Claims



12. A semiconductor memory device comprising:

a) at least one memory cell having at least one switching element, said at least one switching element having first, second and control terminals, and a plurality of capacitive elements, each of said plurality of capacitive elements having a first terminal connected to said first terminal of said switching element, and at least two of said plurality of capacitive element being ferroelectric capacitive elements; and

b) control means for:

establishing respective first operating states, for each of said capacitive elements, said respective first operating states of said at least two of said plurality of capacitive elements corresponding to a respective first polarization; and

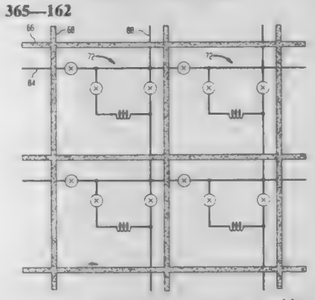
selectively applying a first voltage to a second terminal of a selected at least one of said capacitive elements and a second voltage, different from said first voltage, to a second terminal of said capacitive elements other than said selected at least one of said capacitive elements; whereby said control means is arranged to change said selected one of said capacitive elements to a second operating state corresponding to a second polarization, and to hold said capacitive elements other than said selected at least one of said capacitive elements in said respective first operating state.

5,629,889

SUPERCONDUCTING FAULT-TOLERANT PROGRAMMABLE MEMORY CELL INCORPORATING JOSEPHSON JUNCTIONS

Premala Chandra, and Lev B. Loffe, both of Highland Park, N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Dec. 14, 1995, Ser. No. 572,483
Int. Cl.° G11C 11/44
U.S. Cl. 365—162 20 Claims



1. A superconducting fault-tolerant programmable memory cell comprising:

N bit lines of superconducting wires disposed in substantially parallel relation to one another;

N word lines of superconducting wires disposed in substantially parallel relation to one another, said word lines being superimposed with said bit lines and being disposed substantially orthogonally with respect to said bit lines; and

N×N nodes of Josephson junctions, a junction being formed at each of the intersections of said bit lines and said word lines, comprising a READ array to address stored information in the form of a N-bit image.

5,629,890

INTEGRATED CIRCUIT SYSTEM FOR ANALOG SIGNAL STORING AND RECOVERY INCORPORATING READ WHILE WRITING VOLTAGE PROGRAM METHOD

Lawrence D. Engh, Redwood City, and Trevor Blyth, Milpitas, both of Calif., assignor to Information Storage Devices, Inc., San Jose, Calif.

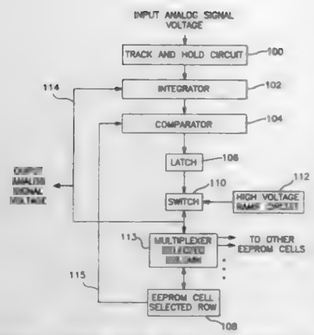
Filed Sep. 14, 1994, Ser. No. 306,266
Int. Cl.° G11C 11/34
U.S. Cl. 365—185.03 47 Claims

1. In an analog memory device, a method for storing a voltage level within a storage element of said device, said method comprising the steps of:

a) receiving a voltage level to be stored;

b) determining a target voltage for applying to the storage element representative of a voltage level less than the received voltage level;

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c) applying a voltage ramp signal to the storage element for increasing an amount of voltage held in the storage element while simultaneously reading a voltage level of the storage element to determine whether the voltage level of the storage element matches the target voltage;

d) deactivating the voltage ramp signal when the voltage level of the storage element matches the target voltage;

e) reading a resulting stored voltage of the storage element;

f) increasing the target voltage by an amount proportional to a difference between the resulting stored voltage and the received voltage level; and

g) repeating steps c)–f) until the difference between the stored voltage and the received voltage level is less than a predetermined value.

5,629,891

WRITABLE ANALOG REFERENCE VOLTAGE STORAGE DEVICE

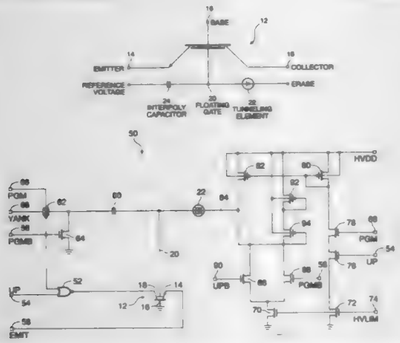
John LeMoncheck, El Granada; Timothy P. Allen, Los Gatos; Günter Steinbach, Palo Alto, and Carver A. Mead, Pasadena, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation of Ser. No. 267,595, Jun. 27, 1994, Pat. No. 5,541,878, which is a continuation-in-part of Ser. No. 112,393, Aug. 26, 1993, abandoned, which is a continuation of Ser. No. 961,785, Oct. 15, 1992, Pat. No. 5,243,554, which is a continuation of Ser. No. 697,410, May 9, 1991, Pat. No. 5,166,562.

This application Mar. 25, 1996, Ser. No. 622,763

Int. Cl.[6] B11C *16/04*

U.S. Cl. 365—185.03 **16 Claims**



1. A circuit disposed on a semiconductor substrate for generating N analog voltage signals in a semiconductor integrated circuit disposed on said semiconductor substrate, including:

N analog floating gate storage devices disposed on said semiconductor substrate, each of said analog floating gate storage devices including a floating gate;

a non-avalanche hot electron injection means associated with each of said analog floating gate device for injecting electrons onto its floating gate;

digital control means for selectively activating each electron injection means;

means associated with each of said analog floating gate devices for removing electrons from its floating gate;

an analog output voltage bus associated with each of said analog floating gate devices, each of said analog output voltage busses having a capacitance associated therewith; and

a high input impedance follower amplifier associated with each of said analog floating gate devices, each of said follower amplifiers having an input connected to its floating gate and an output connected to its analog output voltage bus.

5,629,892

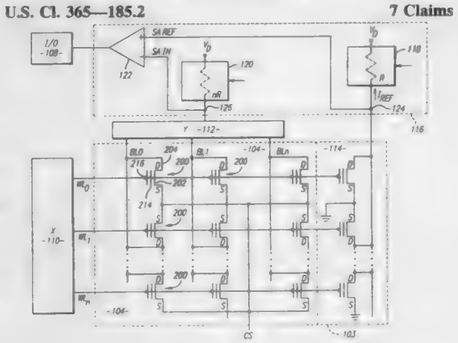
FLASH EEPROM MEMORY WITH SEPARATE REFERENCE ARRAY

Yuan Tang, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 16, 1995, Ser. No. 543,684

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.2 **7 Claims**



1. A memory device including an array of cells, where:

each cell comprises first, second and channel semiconductor regions and a selectively chargeable gate structure including a tunnel dielectric overlying the channel region;

the first and second regions define a controlled current path through the channel region which tends to be rendered conductive in response to a voltage at least equal to a gate threshold level being applied to the gate structure;

the gate threshold level is a function of the charge on the gate structure, such that comparison of the current conducted by the cell in response to application to the gate structure of a predetermined voltage to a reference current is indicative of the logical state of the cell; and

each cell is dischargeable by movement of era-tiers from the gate structure through the tunnel dielectric to the first semiconductor region to remove the charge on the gate structure;

the device improved wherein:

the reference current is generated by a predetermined number of reference cells disposed separate from the array of cells, the transconductance of such reference cells being adjusted to be equal to the transconductance of the cells of the array.

5,629,893

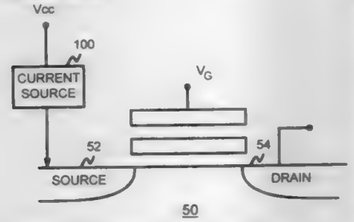
SYSTEM FOR CONSTANT FIELD ERASURE IN A FLASH EPROM

Yuan Tang, San Jose; Chi Chang, Redwood City, and James C. Yu, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 440,046, May 12, 1995, abandoned. This application Apr. 18, 1996, Ser. No. 634,512

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—185.29 **6 Claims**



1. A constant field erasure system comprising:

a FLASH EPROM cell including a source, a drain and a gate;

a power supply for supplying current; and

a constant current means coupled between the source and the power supply during erasure of the FLASH EPROM cell, the constant current means for ensuring that a constant field is applied to tunneling oxide of the FLASH EPROM cell, thereby improving the endurance of the FLASH EPROM cell.

5,629,894

MEMORY MODULE HAVING READ-MODIFY-WRITE FUNCTION

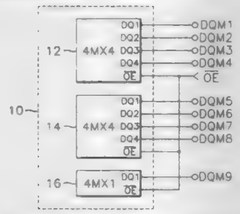
Soo-In Cho, Seoul; Dong-Il Seo, and Seung-Moon Yoo, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 30, 1995, Ser. No. 563,407

Claims priority, application Rep. of Korea, Nov. 30, 1994, 32090/1994

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.01 **8 Claims**



1. A memory module for storing a plurality of words containing a plurality of data bits and at least one parity bit, comprising:

a plurality of data input/output pins;

at least one parity data input/output pin;

a plurality of data control pins;

at least one parity data control pin;

a first semiconductor memory device for storing said parity bit, said first semiconductor memory device receiving and outputting parity data through said parity data input/output pin and receiving a parity data control signal through said at least one parity data control pin; and

a plurality of second semiconductor memory devices for storing said data bits, each of said second semiconductor memory devices receiving and outputting data through at least one respective one of said plurality of data input/output pins and receiving a data control signal through at least one respective one of said plurality of data control pins.

5,629,895

SEMICONDUCTOR MEMORY DEVICE

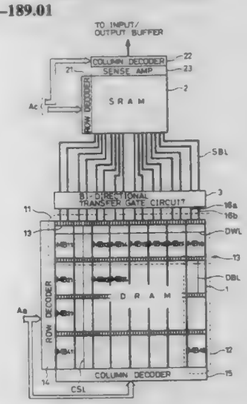
Katsumi Dosaka; Masaki Kumanoya; Kouji Hayano; Akira Yamazaki; Hisashi Iwamoto; Hideaki Abe; Yasuhiro Konishi; Katsumitsu Himukashi; Yasuhiro Ishizuka, and Tsukasa Saiki, all of Hyogo-ken, Japan, assignors to Mitsubishi Electric Engineering Co., Ltd., and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 463,564, Jun. 5, 1995, which is a division of Ser. No. 869,917, Apr. 15, 1992, abandoned. This application Apr. 30, 1996, Ser. No. 639,997

Claims priority, application Japan, Apr. 18, 1991, 3-85625; Aug. 23, 1991, 3-212140; Sep. 24, 1991, 3-242286; Feb. 3, 1992, 4-17809

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.01 **4 Claims**



1. A semiconductor memory device including a memory cell array having a plurality of memory cells arranged in a matrix of rows and columns, an address generating means receiving an externally address signal corresponding to the received external address signal, said external address signal including an external row address signal for designating a row of said memory cell array and an external column address signal for designating a column of said memory cell array, wherein

said address generating means includes

row address control means receiving a clock signal and, responsive to a first leading edge thereof, supplying a row address load signal of a predetermined level;

column address control means receiving said clock signal and, responsive to a mode select signal, selectively supplying a column address load signal of a predetermined level responsive to (i) a first trailing edge of said clock signal immediately after said first leading edge, (ii) a next leading edge of said clock signal immediately after said first leading edge, and (iii) a second leading edge of said clock signal after said first leading edge;

first address latch means receiving said external row address signal for supplying a first internal address signal in response to said row address load signal; and

second address latch means receiving said external column address signal for supplying a second internal address signal in response to said column address load signal.

5,629,896

WRITE CONTROLLED ADDRESS BUFFER

David C. McClure, Carrollton, Tex., assignor to SGS-THOMSON Microelectronics, Inc., Carrollton, Tex.

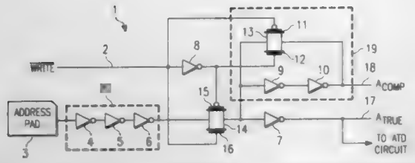
Filed Aug. 31, 1995, Ser. No. 521,800

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **26 Claims**

1. An input buffer circuit in an asynchronous integrated memory circuit having a first input terminal receiving an input signal and a

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first output terminal for communicating a signal depending from the logic level of the input signal, comprising:

a control input for receiving a write enable signal;

a latch, having an input, an output and a control terminal, the output of said latch coupled to the first output of said input buffer circuit and the control terminal coupled to the control input of the input buffer circuit, so that the signal present on the input of the latch is latched responsive to the write enable signal being active; and

a first pass gate coupled between said first input terminal of the input buffer circuit and the input of said latch, said first pass gate controlled by the control input of the input buffer circuit so that the pass gate is nonconductive responsive to the write enable signal being active.

5,629,897

SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE HAVING A MODE REQUIRING AN INTERNAL CLOCK SIGNAL AND A MODE NOT REQUIRING THE INTERNAL CLOCK SIGNAL

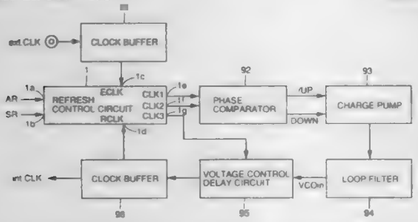
Hisashi Iwamoto, and Yasuhiro Konishi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 524,927

Claims priority, application Japan, Nov. 22, 1994, 6-287950

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—195 **5 Claims**



1. A synchronous semiconductor memory device having a mode requiring an internal clock signal and a mode not requiring said clock signal, comprising:

a plurality of memory arrays including a plurality of memory cells arranged in a matrix,

a delay circuit controllable of a delay time for delaying an external clock signal and providing the delayed signal as said internal clock signal,

a phase control circuit to detect a phase difference of said external clock signal and said internal clock signal for controlling a delay time of said delay circuit so that said phase difference is eliminated,

a data input/output circuit for carrying out data input and output between a selected memory cell in said plurality of memory arrays and an external source in synchronization with said internal clock signal, and

a signal control circuit for inhibiting input of said external clock signal to said delay circuit and said phase control circuit for a predetermined time period in response to designation of said mode not requiring said clock signal.

5,629,898

DYNAMIC MEMORY DEVICE, A MEMORY MODULE, AND A METHOD OF REFRESHING A DYNAMIC MEMORY DEVICE

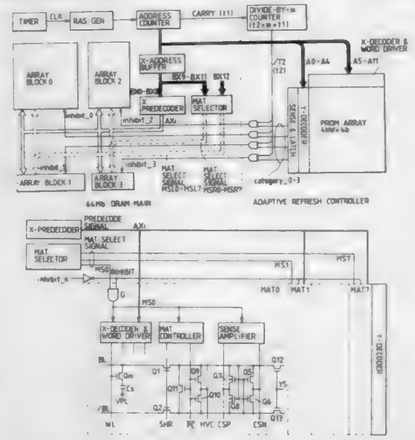
Youji Idei, Asaka; Katsuhiro Shimohigashi, Musashimurayama; Masakazu Aoki, Tokorozawa; Hiromasa Noda, Tokyo; Katsuyuki Sato, Akishima; Hidetoshi Iwai; Makoto Saeki, both of Ome; Jun Murata, Kunitachi; Yoshitaka Tadaki, Hannou; Toshihiro Sekiguchi, Hidaka, and Osamu Tsuchiya, Hamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 29, 1996, Ser. No. 607,977

Claims priority, application Japan, Mar. 3, 1995, 7-068976; Aug. 25, 1995, 7-240729

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **15 Claims**



1. A dynamic memory device formed on a semiconductor substrate, said dynamic memory device having a plurality of memory blocks, a refresh address counter for receiving a periodic pulse signal to output a refresh address signal, a controller for receiving said refresh address signal, and a word line select circuit for receiving said refresh address signal;

said plurality of memory blocks including a first memory block having a plurality of first word lines and a plurality of first dynamic memory cells each of which is coupled to corresponding one of said plurality of first word lines and arranged in a matrix and a second memory block having a plurality of second word lines and a plurality of second dynamic memory cells each of which is coupled to corresponding one of said plurality of second word lines and arranged in a matrix;

said controller including a refresh period retention circuit for holding information about refresh periods each of which correspond to said plurality of first word lines and said plurality of second word lines; and

wherein, if said refresh period retention circuit has information that a refresh period of one of said plurality of first word lines corresponding to said refresh address signal is a first refresh period and a refresh period of one of said plurality of second word lines corresponding to said refresh address signal is a second refresh period longer than said first refresh period, said controller performs one of control operations, said control operations including a first operation such that said word line select circuit simultaneously selects said one of said plurality of first word lines corresponding to said refresh address signal and said one of said plurality of second word lines corresponding to said refresh address signal and a second operation such that said word line select circuit selects said one of said plurality of first word lines corresponding to said refresh address signal and does not select said one of said plurality of second word lines corresponding to said refresh address signal.

5,629,899

SEMICONDUCTOR MEMORY

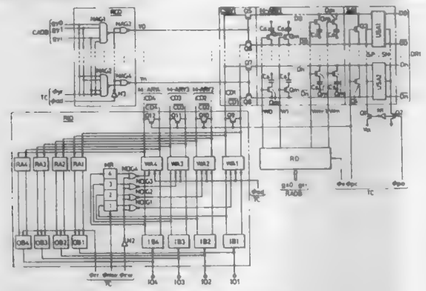
Katsuyuki Sato, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 124,001, Sep. 21, 1993, Pat. No. 5,404,337, which is a continuation of Ser. No. 744,512, Aug. 13, 1991, Pat. No. 5,249,159, which is a continuation of Ser. No. 472,284, Jan. 30, 1990, Pat. No. 5,042,013, which is a continuation of Ser. No. 196,262, May 20, 1988, Pat. No. 4,916,669. This application Apr. 3, 1995, Ser. No. 415,510

Claims priority, application Japan, May 27, 1987, 62-128198

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.03 **16 Claims**



1. A semiconductor memory comprising:

a plurality of pairs of data lines;

a plurality of word lines;

a plurality of dynamic memory cells each being coupled to a word line and one data line of a pair of data lines;

a plurality of sense amplifiers coupled to said plurality of pairs of data lines, respectively;

a pair of common data lines;

a plurality of pairs of switching MOSFETs provided between said plurality of pairs of data lines and said pair of common data lines, respectively; and

a write circuit coupled to said pair of common data lines,

wherein said write circuit supplies a pair of write signals to said pair of common data lines,

wherein said plurality of sense amplifiers amplify potential differences of said plurality of pairs of data lines to obtain a high-level potential and a low-level potential, respectively,

wherein said plurality of sense amplifiers are made operative for amplifying said pair of write signals received by said plurality of pairs of data lines via said plurality of pairs of switching MOSFETs which are simultaneously switched into ON state, and

wherein each pair of write signals received by each pair of data lines is a pair of complementary signals having voltages that are relatively positive and relatively negative with respect to an intermediate-level potential, respectively, and voltage differences between said intermediate-level potential and the relatively positive voltage and between said intermediate-levels potential and the relatively negative voltage are, respectively, smaller than voltage differences between said intermediate-level potential and said high-level potential and between said intermediat-level potential and said low-level potential.

5,629,900

SEMICONDUCTOR MEMORY DEVICE OPERABLE TO WRITE DATA ACCURATELY AT HIGH SPEED

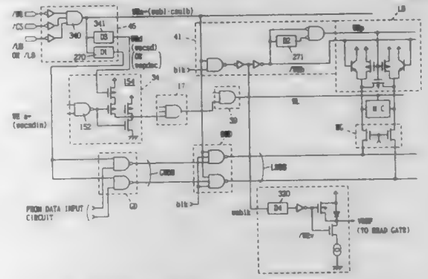
Toshihiko Hirose; Shigeki Ohbayashi; Setsu Kondo; Takashi Hayasaka; Yoshiyuki Fujino, and Masayuki Iketani, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 271,691, Jul. 7, 1994. This application Sep. 11, 1995, Ser. No. 526,247

Claims priority, application Japan, Jul. 8, 1993, 5-168983

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.03 **7 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory blocks each including a plurality of memory cells arranged in rows and columns;

first generator means responsive to a write instructing signal for generating a write control signal determining a data write operation timing;

second generator means responsive to an address signal for generating a block selection signal for selecting a memory block out of said plurality of memory blocks; and

block control means provided corresponding and closely adjacent to respective memory blocks and each responsive to said block selection signal and said write control signal for generating a control signal for controlling a data write operation in a corresponding memory block.

5,629,901

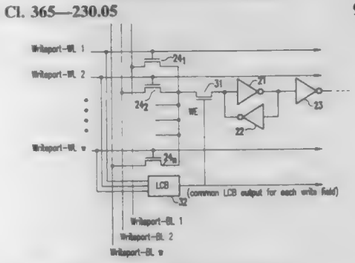
MULTI WRITE PORT REGISTER

Stanley T. Ho, Chittenden County, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1995, Ser. No. 567,607

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—230.05 **9 Claims**



1. A multi-write port register file comprising:

a plurality of gates connected between multiple write ports and a corresponding plurality of cells of the multi-write port register file; and

a plurality of local clock buffers connected to control selected ones of said gates, the number of said local clock buffers corresponding to a number of write fields for the multi-write

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port register, each local clock buffer generating a write-enable signal to corresponding selected ones of said gates which write-enable signal is common among all cells contained in the same write field, said local clock buffer incorporating a fixed time delay between a system clock and an output of the local clock buffer to reduce timing hazards in writing data to the register in succeeding data cycles.

5,629,902

SEMICONDUCTOR MEMORY DEVICE

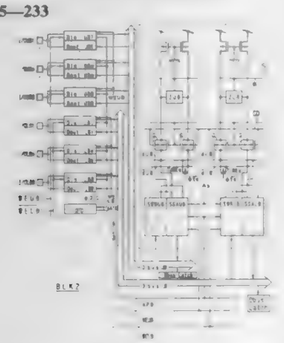
Satoru Hoshi, Kawasaki, and Masami Masuda, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,164

Claims priority, application Japan, Dec. 28, 1993, 5-337489

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **25 Claims**



17. A semiconductor memory device, comprising:

a plurality of input/output terminal groups through each of which a data group composed of a predetermined number of bits is inputted and outputted;

a memory cell array having a plurality of memory cell groups to each of which a plurality of the data groups can be written and read individually;

a plurality of buses for connecting each of said memory cell groups and each of said input/output terminal groups;

a plurality of data group control signal input terminals provided in correspondence to each of said input/output terminal groups, for receiving data group control signals each having a select level for inputting and outputting data group through its own corresponding input/output terminal group and a non-select level for inputting and outputting no data group;

a write request signal input terminal for receiving a write request signal having a write enable level and a write disable level; and

a control circuit responsive to a plurality of the data group control signals and the write request signal, for outputting a write start signal on the basis of a logical result of the select-level data group control signals and the enable-level write request signal, for writing the data group in the memory cell group through the input/output terminal group corresponding to the select-level data group control signal, and after that further controlling a write end signal in such a way that: when levels of the data group control signal related to the write operation and the write request signal both change to another level respectively, the write end signal is outputted to end the write operation; however, even if the write request signal level changes, when the data group control signal level does not change, the write end signal is not outputted.

5,629,903

SEMICONDUCTOR MEMORY DEVICE

Masashi Agata, Osaka, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 16, 1996, Ser. No. 632,826

Claims priority, application Japan, Apr. 18, 1995, 7-092035

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233 **2 Claims**



1. A semiconductor memory device capable of reading data in a clock-synchronized manner, comprising:

a memory cell array wherein, when any one of plural column-select lines are activated, data is read out of a corresponding column of said memory cell array;

an address counter for continuously updating column addresses in synchronization with a clock signal and for sequentially providing said column addresses thus updated;

a first column predecoder for activating signals generated by decoding plural low-order bits of said column addresses in synchronization with one of two consecutive clock edges of said clock signal, one of which is a clock leading edge and the other of which is a clock trailing edge, for deactivating said signals in synchronization with the other clock edge, and for providing said signals in the form of first predecode signals;

a second column predecoder for providing signals generated by decoding plural high-order bits of said column addresses in the form of second predecode signals; and

a column decoder for providing AND signals obtained from all combinations of said first predecode signals and said second predecode signals in the form of signals for activation of said plural column-select lines.

5,629,904

MIGRATION PROCESS USING A MODEL BASED APERTURE TECHNIQUE

Dan D. Kosloff, Ramat-Aviv; Oleg V. Meshbey, Lod; Zvi Koren, Ramat-Gan, all of Israel, and Alexander Litvin, London, United Kingdom, assignors to Paradigm Geophysical, Ltd., Israel

Filed Nov. 30, 1994, Ser. No. 346,891

Int. Cl.[6] G01V *1/28; 1/36;* **G06F** *15/00*

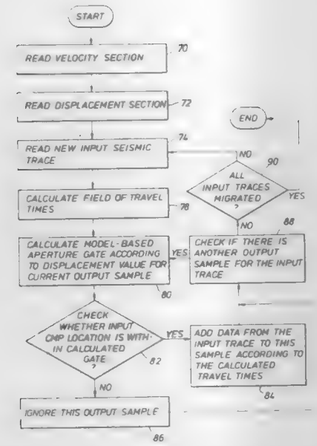
U.S. Cl. 367—53 **9 Claims**

1. A method of migrating a seismic input trace in a seismic data section recorded in the time domain from an area of interest into output samples in the depth domain, comprising the steps of

generating a field of travel times for the input trace selecting the output: samples desired,

identifying a displacement for each output sample, locating a common-midpoint ("CMP") associated with the displacement of each output sample,

selecting an aperture gate relative to the CMP for each output sample, and



migrating the input trace to the output samples using the field of travel times when the input trace CMP is within each aperture gate of each output sample.

5,629,905

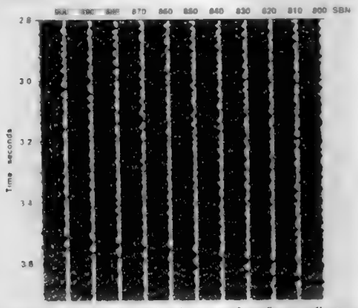
METHOD OF DATUMING SEISMIC DATA AND METHOD OF PROCESSING SEISMIC DATA

Yiu-Wa A. Lau, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Sep. 24, 1993, Ser. No. 127,297

Int. Cl.[6] G01V *1/36*

U.S. Cl. 367—54 **13 Claims**



1. A method of datuming seismic trace data from a first geologic horizon to a second geologic horizon, wherein the first horizon is located above the second horizon which is located above a target horizon, wherein a seismic source and receiver are positioned on the first horizon and each assigned a coordinate indicating its position along the first horizon, wherein the seismic trace data comprises seismic signal data and a trace data portion comprising trace coordinates, wherein the trace coordinates comprise the coordinates assigned to the source and receiver on the first horizon, and wherein the seismic signal data is a record of reflection amplitude as a function of travel time of a seismic signal traveling from the source, downward through and intersecting the second horizon at a downward intersection point, downward to and reflecting upward from the target horizon, upward through and intersecting the second horizon at an upward intersection point and to the receiver where it is recorded as seismic signal data, the method comprising:

(a) determining a source coordinate for the downward intersection point, said source coordinate corresponding to the position of the downward intersection point along the second horizon;

(b) determining a receiver coordinate for the upward intersection point, said receiver coordinate corresponding to the position of the upward intersection point along the second horizon; and

(c) changing the trace data portion of the seismic trace data by assigning as trace coordinates, the source coordinate from step (a) and the receiver coordinate from step (b).

5,629,906

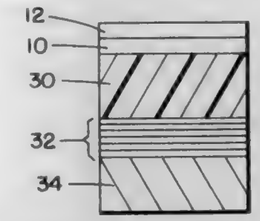
ULTRASONIC TRANSDUCER

Wojtek Sudol, Burlington; Francis E. Gurrie, Ipswich, and Larry A. Ladd, Lawrence, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 15, 1995, Ser. No. 389,536

Int. Cl.[6] H04R *17/00*

U.S. Cl. 367—162 **14 Claims**



1. An acoustic transducer comprising:

acoustic pulse generating means for producing pulses of acoustic energy and having a front application face and a rear face;

acoustic absorber means coupled to said rear face for absorbing a substantial portion of acoustic energy of pulses emerging from said rear face;

acoustically non-attenuative support means; and

acoustic isolator means coupled between said acoustic absorber means and said acoustically non-attenuative support means, said acoustic isolator means including a first material sub-layer exhibiting a first acoustic impedance value and a second material sub-layer exhibiting a second acoustic impedance value that is substantially different from said first acoustic impedance value, said acoustic isolator means causing reflections of acoustic energy not absorbed by said acoustic absorber means to substantially reduce an amount thereof entering said support means.

5,629,907

LOW POWER TIMEKEEPING SYSTEM

Clark R. Williams, and William J. Podkowa, both of Plano, Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 142,755, Oct. 25, 1993, abandoned, which is a division of Ser. No. 717,215, Jun. 18, 1991, Pat. No. 5,267,222. This application Dec. 13, 1995, Ser. No. 571,677

Int. Cl.[6] G04C *15/00;* **G06F** *13/00*

U.S. Cl. 368—155 **5 Claims**

1. A method for keeping time comprising the steps of:

(a) reading seconds data from a memory;

(b) comparing said seconds data to 59 seconds;

(c) incrementing said seconds data;

(d) storing said seconds data;

(e) if said seconds data equals 59 seconds in step (b), then

(i) reading minutes data from said memory;

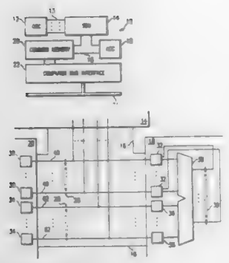
(ii) comparing said minutes data to 59 minutes;

(iii) incrementing said minutes data;

(iv) storing said minutes data; and

(v) if said minutes data equals 59 minutes in step (e)(ii), then reading hours data from said memory, incrementing said hours data, and storing said hours data.

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(f) repeating steps (a)–(e),

wherein said memory comprises:

a first plurality of bitline pairs;

a second plurality of bitline pairs;

an array of dual storage cells;

each dual storage cell of said array of dual storage cells comprising a first latch coupled between a first pair of data nodes and a second latch coupled between a second pair of data nodes;

and each dual storage cell of said array of dual storage cells further comprising a first pair of pass transistors coupled to said first pair of data nodes and a second pair of pass transistors coupled to said second pair of data nodes;

said first pair of pass transistors of each dual storage cell of said array of dual storage cells coupled to at least one pair of said first plurality of bitline pairs, and said second pair of pass transistors of each dual storage cell of said array of dual storage cells coupled to at least one pair of said second plurality of bitline pairs;

each dual storage call of said array of dual storage cells coupled to receive a first control signal and a second control signal;

and each dual storage cell of said array of dual storage cells further comprising a transfer circuit

wherein, for each dual storage cell of said array of dual storage cells, the transfer circuit is coupled to said first and second pairs of data nodes and configured

to drive at least one data node of said second pair of data nodes when said first control signal is activated, which data node(s) of said second pair of data nodes driven determined in accordance with logic levels of said first pair of data nodes and

to drive at least one data node of said first pair of data nodes when said second control signal is activated, which data node(s) of said first pair of data nodes driven determined in accordance with logic levels of said second pair of data nodes.

5,629,908

MAGNETO-OPTICAL RECORDING MEDIUM HAVING MAGNETIZATION VARIABLE BETWEEN IN-PLANE MAGNETIZATION AND PERPENDICULAR MAGNETIZATION

Junji Hirokane, Nara; Junichiro Nakayama; Michinobu Mieda, both of Shiki-gun, and Akira Takahashi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,168

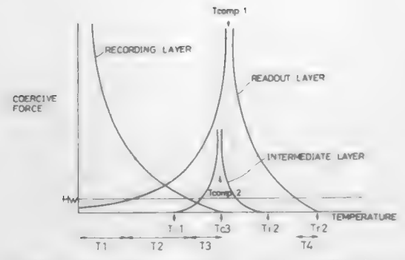
Claims priority, application Japan, Nov. 25, 1994, 6-291621

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **18 Claims**

1. A magneto-optical recording medium comprising:

a recording layer which is constituted of a magnetic substance where information is magneto-optically recorded and which exhibits a perpendicular direction of magnetization from room temperature T1 to a Curie temperature Tc3;



a readout layer, which is provided or said recording layer and which is constituted of a magnetic stance composed of a rare-earth transition metal alloy, from which readout layer the information recorded in said recording layer is reproduced, the readout layer having a compensation temperature Tcomp1 and exhibiting a perpendicular direction of magnetization from room temperature to a temperature Tr2 and

an intermediate layer which is provided between said recording layer and said readout layer and which is constituted of a magnetic substance, the intermediate layer having a compensation temperature Tcomp2, and exhibiting a perpendicular direction of magnetization only in a temperature range from a temperature Ti1 to a temperature Ti2 including the Curie temperature Tc3 therein and an in-plane magnetization from room temperature to the temperature Ti1;

wherein

defining T3 as a temperature not lower than Ti1, not higher than Tcomp1 and not higher than Tcomp2; and

defining T4 as a temperature not lower than Tc3, not lower than Tcomp1, not lower than Tcomp2, and not higher than Tr2; and

defining Hc1 and Hc3 respectively as a coercive force of said readout layer and a coercive force of said recording layer, for a predetermined magnetic field Hw, the following conditions are satisfied:

when a temperature of said medium is T1, Hc1<Hw and Hw<Hc3;

when a temperature of said medium is T3, Hc3<Hw and Hw<Hc1; and

when a temperature of said medium is T4, Hc1<Hw.

5,629,909

MAGNETO-OPTICAL RECORDING MEDIUM WITH INITIALIZING LAYER FOR INITIALIZING DIFFERENT REGIONS IN DIFFERENT DIRECTIONS

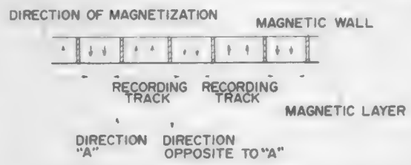
Tsutomu Shiratori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 156,839, Nov. 24, 1993, abandoned. This application Feb. 8, 1996, Ser. No. 597,382

Claims priority, application Japan, Nov. 30, 1992, 4-320501

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **4 Claims**



1. A magneto-optical recording medium having at least first and second magnetic layers and being capable of overwriting a recording mark string recorded in a recording region of said first magnetic layer by using (i) a first kind of recording process in which the direction of magnetization of the first magnetic layer is oriented in a direction that is stable with respect to an exchange-coupling force of the second magnetic layer, which has been initialized, by a heating/cooling process in which the medium is heated to a first temperature, and (ii) a second kind of recording process in which the direction of magnetization of the second magnetic layer is reversed by a heating/cooling process in which the medium is heated to a second temperature and thereafter the direction of magnetization of the first magnetic layer is oriented in a direction that is stable with respect to the exchange-coupling force of the second magnetic layer,

characterized in that said magneto-optical recording medium includes an initializing magnetic layer for initializing the direction of magnetization of the second magnetic layer, and wherein said initializing magnetic layer (i) initializes, in a first direction, the direction of magnetization in a first region of the second magnetic layer that corresponds to the recording region of the first magnetic layer for forming the recording mark string, and (ii) initializes, in a direction opposite to the first direction, the direction of magnetization in other regions of the second magnetic layer located on two sides of the first region.

5,629,910

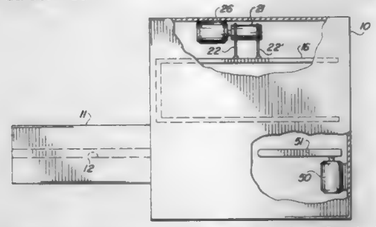
OPTICAL DISK LIBRARY INCLUDING OPTICAL DISK MEDIA WITH NON-STANDARD THIN HUBS AND DISK DRIVE SPINDLE ADAPTOR

David P. McReynolds, and Kevin J. Reardon, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1994, Ser. No. 320,918

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—38 **6 Claims**



1. Library apparatus for maximizing the number of optical disks stackable within library space by utilizing non-standard optical disks, said library apparatus for use with a standard disk drive apparatus which is used to read standard optical disks having a standard media portion upon which information may be resident and a standard media hub portion, said standard optical disks positioned within a standard optical disk cartridge, said library apparatus comprising said non-standard optical disks having said standard media portion and a non-standard media hub portion, said non-standard optical disks positioned within a non-standard optical disk cartridge, said library apparatus further comprising an inner case for holding a stack of said non-standard optical disk cartridges within said library space, said inner case contained within a housing, said housing having a slot adapted for alignment with an entry slot in said standard disk drive apparatus, said standard disk drive apparatus having a spindle modified by a spindle adaptor designed to mate with said non-standard optical disks, said non-standard media hub portion has a centering hole adapted for a mating relationship with the spindle adaptor, said non-standard media hub portion having a relatively thin non-standard thickness dimension commensurate with the thickness of the standard media portion thus saving space in the thickness dimension relative to the standard media hub portion, said non-standard optical disk cartridge having a slimmer thickness than said standard optical disk cartridge to take advantage of the savings in thickness dimension provided by said non-standard optical disks, thereby maximizing the number of optical disks which can be stacked upon said inner case.

5,629,911

OPTICAL INFORMATION RECORDING/ REPRODUCTION APPARATUS INCLUDING AN INTEGRATED PHOTODETECTOR USED IN THE DETECTION OF FOCUSING AND/OR TRACKING ERROR SIGNALS

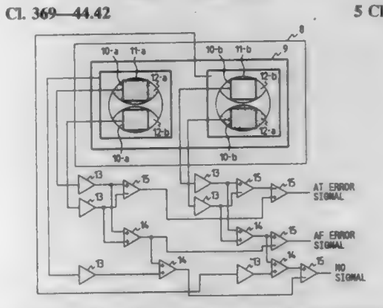
Kenichi Sasaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,476

Claims priority, application Japan, Dec. 1, 1992, 4-343535

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.42 **5 Claims**



1. An optical information recording/reproducing apparatus comprising:

radiation means for radiating a light beam onto an information recording medium;

converging means for converging the light beam from the information recording medium;

means for splitting the converged light beam into two light beams;

guiding means for guiding the two split light beams onto a single light-receiving surface of an integrated photodetector, which can receive the two split light beams, via optical paths having different optical path lengths, said guiding means guiding the two split light beams, so that one of the two split light beams is projected onto said light-receiving surface at a position before the light beam passes a convergent point thereof, and the other light beam is projected onto said light-receiving surface at a position after the light beam passes a convergent point thereof;

said integrated photodetector having two photodetection areas each having first, second and third regions, corresponding to the respective light beams, so that said light-receiving surface thereof receives the respective light beams;

means for detecting a focusing error signal by adding signals from respective ones of said first and second regions corresponding to the respective light beams and executing a differential operation for the two added signals corresponding to the respective light beams;

means for detecting a tracking error signal by executing a differential operation for signals from respective ones of said first and second regions corresponding to the respective light beams to generate respective push-pull signals and executing a differential operation for the respective push-pull signals corresponding to the respective light beams; and

means for reproducing information recorded on the recording medium by executing a differential operation for signals from respective ones of said first, second and third regions.

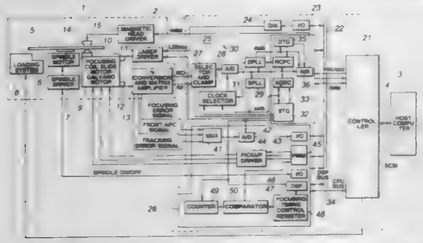
VOL 1198 ISS 2 MY 13 1997 UMI

5,629,912

FOCUSING SERVO CONTROLLING APPARATUS

Sumihiro Okawa; Takayasu Muto, and Shuji Uehara, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1996, Ser. No. 593,045
Claims priority, application Japan, Jan. 30, 1995, 7-013204; Jan. 30, 1995, 7-013209
Int. Cl.[6] G11B 7/095
U.S. Cl. 369—44.29 16 Claims



1. An apparatus for reproducing signals recorded on an optical disc having a plurality of equal angular servo areas each having servo patterns for providing control of tracking, focusing and clocks, the apparatus comprising:

drive means for rotating the optical disc and including an optical pickup for tracing a track formed on the optical disc, the drive means reproducing signals from the rotating optical disc;

servo clock generating means for deriving servo clocks from the reproduced signals output by the drive means;

servo control means for controlling the focusing and tracking of the optical pickup based upon the servo clocks supplied therewith so as to establish a focusing servo and a tracking servo;

fixed clock generating means for producing fixed clocks so that the servo control means performs a focusing search based upon the fixed clocks;

switching means for selectively supplying either the servo clocks or the fixed clocks to the servo control means; and

switching control means for controlling the switching means so that the fixed clocks, as a substitute for the servo clocks, are supplied to the servo control means in the focusing search, and for controlling the switching means so that the servo clocks are supplied to the servo control means after engagement of the focusing servo.

5,629,913

OPTICAL DISK RECORDING CONTROL METHOD AND APPARATUS FOR RECORDING USER DATA BASED ON TEST SIGNAL

Toshimitsu Kaku, Sagamihara, and Masahiko Ishimaru, Odawara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

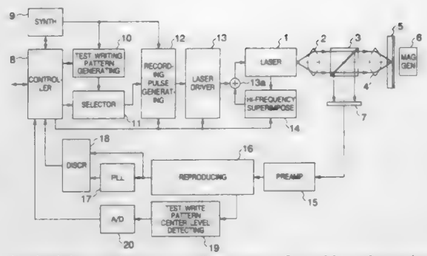
Filed Mar. 7, 1996, Ser. No. 612,328
Claims priority, application Japan, Mar. 10, 1995, 7-051238
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—54 14 Claims

1. An optical disk recording control method in which test write data are written as test writing in an optical disk so that user information is recorded in said optical disk on the basis of a result of the test writing, said method comprising the steps of:

a) judging identification information possessed by said optical disk for identifying a modulation system of said user information;

b) generating a test write pattern constituted by densest and sparsest patterns corresponding to a code configuration of the identified modulation system;

c) generating a test write pulse string from said test write pattern and recording said test write pulse string in a predetermined zone of said optical disk;



d) obtaining optimum recording power for said predetermined zone on the basis of a densest pattern waveform and a sparsest pattern waveform so that the zero level of the densest pattern waveform coincides with the zero level of the sparsest pattern waveform in said test write pulse string recorded in said predetermined zone; and

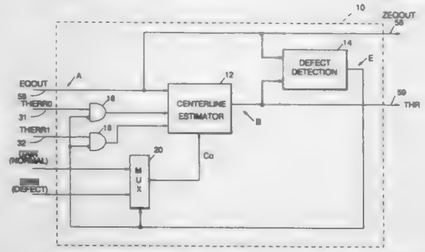
e) recording said user information into each zone of said optical disk correspondingly to said obtained optimum recording power in accordance with said identification information of the identified modulation system.

5,629,914

DATA-TRANSITION THRESHOLD FOLLOWING IN OPTICAL RECORDING

Alan R. Clark; Robert A. Hutchins; Glen A. Jaquette, all of Tucson, Ariz.; Ara S. Patapoutian, Westboro, Mass., and Pantas Sutardja, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,125
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—59 13 Claims



1. Apparatus for tracking a data detection threshold to an amplitude centerline of a read signal fluctuating between maximum and minimum peaks, said apparatus comprising:

means for estimating the centerline of the read signal in response to a present amplitude mid-point of the read signal and in response to phase errors in transitions of the read signal between minimum and maximum values, said estimating means providing a centerline estimated value as a data detection threshold value;

means for detecting departure of the data detection threshold value from an average centerline value of the read signal and producing a defect present signal as long as the departure is greater than a predetermined amount;

means responsive to said defect present signal for inhibiting the response by said estimating means to phase errors so that the phase errors in transitions of the read signal have no effect on the centerline estimated value; and

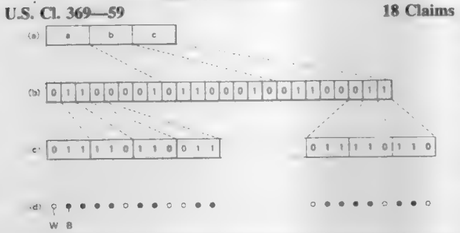
means responsive to said defect present signal for enhancing the response of said estimating means to the present amplitude mid-point so that the centerline estimated value follows the present amplitude mid-point.

5,629,915

DIGITAL SIGNAL CONVERSION ENABLING TO FIND UNAUTHORIZED CHANGE OF THE SIGNAL

Ryoichi Mori, No. 1-24-12, Hakusan, Bunkyo-ku, Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,720
Claims priority, application Japan, Dec. 14, 1994, 6-333200
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—59 18 Claims



1. A method of processing a digital signal, comprising the steps of:

replacing a bit "0" in the digital signal with a first n-bit length binary coded signal including at least one bit of "0" and also replacing a bit "1" in the digital signal with a second n-bit length binary coded signal including at least one bit of "0" wherein n is an integer equal to or greater than two and wherein the first n-bit length binary coded signal and the second n-bit length binary coded signal are different from each other; and

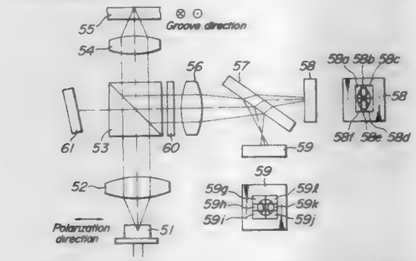
writing in a non-rewritable recording medium the replaced binary coded signals in accordance with the bits constituting the digital signal.

5,629,916

OPTICAL INFORMATION REPRODUCING DEVICE FORMING LIGHT SPOT ON PHOTO-DETECTOR WITH MAJOR AXIS ALONG PUSH-PULL SIGNAL DETECTION

Masaaki Komiya, Akigawa, Japan, assignor to Olympic Optical Co., Ltd., Tokyo, Japan

Filed May 30, 1995, Ser. No. 453,361
Claims priority, application Japan, Jun. 1, 1994, 6-120069
Int. Cl.[6] B11B 7/09
U.S. Cl. 369—110 17 Claims



1. An optical information reproducing device comprising:

a light source for generating incident light having a first linear polarization direction,

an information recording medium for recording information thereon,

an optical system provided between the light source and the information recording medium and including one beam splitter for separating a path of the incident light from a path of return light reflected by the information recording medium and having about 100% transmittivity or reflectance for a polarization component of the return light which has a second linear polarization direction perpendicular to said first linear polarization direction, and

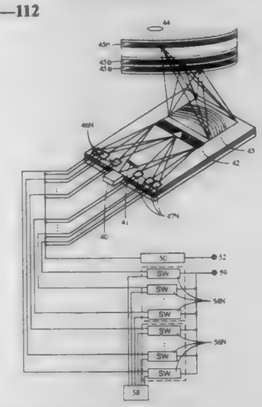
optical detecting means, comprising a photodetector for receiving the light reflected by the information recording medium, for producing from the return light a first light flux with astigmatism and for making the light flux incident on the photodetector in such a manner that a major axis of an ellipsoidal spot formed on the photodetector due to the astigmatism lies along a push-pull signal direction.

5,629,917

INTEGRATED OPTICAL PICK-UP EMITS LIGHT BEAMS OF SELECTIVE WAVELENGTHS TO AN OPTICAL DISK WITH MULTIPLE DATA LAYERS

Yasuo Kamatani, 2-12-2 Yokoyama, Sagamihara-shi, Kanagawa 229, Japan

Filed Jan. 12, 1995, Ser. No. 371,787
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—112 20 Claims



1. An integrated optical apparatus comprising:

a substrate;

an optical waveguide formed on a surface of the substrate;

an incoherent laser source which emits incoherent laser beam;

an optical filter positioned to intercept the incoherent laser beam for eliminating selective wavelength parts and securing selective wavelength parts of a spectrum of the incoherent laser beam;

a first grating positioned to intercept the laser beam transmitted from the optical filter for deflecting and focusing each selective wavelength part of the spectrum of the laser beam onto an optical recording medium at selective points dependent upon wavelength of the spectrum;

a second grating positioned to intercept the laser beam reflected from the optical medium for deflecting the each selective wavelength part of the spectrum of the laser beam into at least one selective photo-detector dependent upon wavelength of the spectrum; and

a set of photo-detector array positioned to selectively receive the laser beam deflected by and transmitted from the second grating.

5,629,918

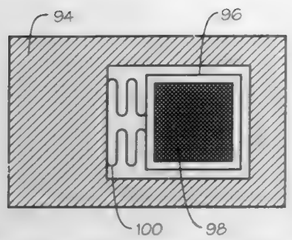
ELECTROMAGNETICALLY ACTUATED MICROMACHINED FLAP

Chih-Ming Ho, Rancho Palos Verdes; Denny K. Miu, Valencia, both of Calif.; Jeremy Tzong-Shyng Leu, Plainsboro, N.J.; Raanan Miller, Pasadena, Calif.; Amish Desai, Pasadena, Calif.; Chang Liu, Pasadena, Calif.; Tom Tsao, Pasadena, Calif., and Yu-Chong Tai, Pasadena, Calif., assignors to The Regents of the University of California, Oakland, and California Institute of Technology, Pasadena, both of Calif.

Filed Jan. 20, 1995, Ser. No. 377,018
Int. Cl.[6] B44C 1/22
U.S. Cl. 369—112 33 Claims

21. An improvement in a method of fabricating a microelectromagnetic magnetic actuator, said improvement comprising:

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providing a substantially completed microelectromechanical magnetic actuator on a sacrificial layer disposed on an underlying substrate;

removing said sacrificial layer upon which said microelectromechanical magnetic actuator has been fabricated by etching away said sacrificial layer through at least one opening defined through said microelectromechanical magnetic actuator to expose said underlying sacrificial layer; and

drying said microelectromechanical magnetic actuator while simultaneously actuating said microelectromechanical magnetic actuator to maintain the released portions of said actuator out of contact with said underlying substrate until said drying is complete.

5,629,919

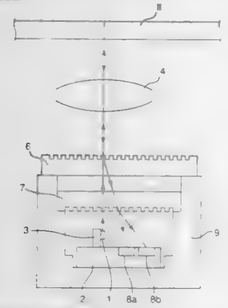
TWO PLATE-LIKE BEAM SPLITTING DEVICE

Takao Hayashi; Toru Nakamura, both of Katano; Hideki Aiko, Higashi-Osaka, and Akira Matsubara, Kameoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 27, 1995, Ser. No. 429,877

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **12 Claims**



1. An optical had comprising:

a light emitting element for emitting a beam;

a condensing element for condensing a beam onto an information recording medium and for transmitting the beam reflected by the information recording medium;

a first plate beam-splitting element having a first optical element,

said first beam-splitting element transmitting at least a part of a beam entering vertically from said light emitting element towards said condensing element,

said first optical element having a splitting ratio for P polarization different from that for S polarization,

said first optical element splitting at least a part of a beam reflected by the information recording medium and entering to said first optical element at a side thereof opposing said condensing element, the beam split by said first optical element propagating along a direction different from that of the beam entering said first optical element;

a second plate beam-splitting element comprising a second optical element provided between said first plate beam-splitting element and said light emitting element in parallel to the first optical element of said first plate beam-splitting element,

said second plate beam-splitting element being arranged so that the beam emitted by said light emitting element enters vertically to said second optical element,

said second optical element splitting the beam having been reflected by the information recording medium and having been split by said first optical element along the direction different from that of the beam entering said first optical element into at least two beams having polarization planes perpendicular to each other;

a pair of photodetectors for detecting beams provided at positions to detect the beams split by said second beam-splitting element.

5,629,920

PHOTOELECTRIC SENSOR, INFORMATION RECORDING SYSTEM, AND INFORMATION RECORDING METHOD

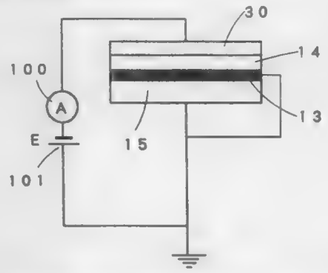
Shinichi Sakano; Daigo Aoki; Minoru Utsumi; Masanori Akada, and Osamu Shimizu, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 141,110, Oct. 26, 1993, Pat. No. 5,488,601. This application Oct. 13, 1995, Ser. No. 543,135

Claims priority, application Japan, Oct. 26, 1992, 4-287983; Jan. 27, 1993, 5-011721; Apr. 28, 1993, 5-102244; Jul. 14, 1993, 5-173988

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—120 **4 Claims**



1. A photoelectric sensor, said photoelectric sensor being semiconductive, wherein when an electric field having an intensity of 10^5 V/cm to 10^6 V/cm is applied to said photoelectric sensor during voltage application, a passing current density on a portion unexposed to light is 10^{-7} A/cm^2 to 10^{-4} A/cm^2.

5,629,921

LEVEL DETECTOR FOR DETECTING A VOLTAGE LEVEL OF A SIGNAL

Clarke K. Eastman, and Jeffrey T. Klaus, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 179,472, Jan. 10, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,273

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—124 **3 Claims**

1. A level detector for detecting a voltage level of a signal, comprising:

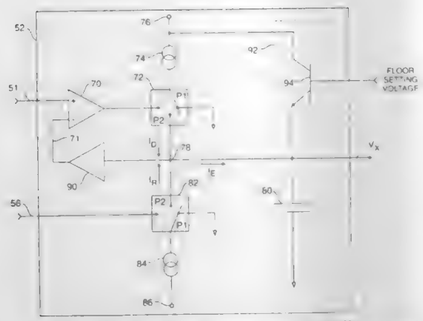
signal comparing means having a first input for receiving said signal;

a first switch responsive to an output of said signal comparing means to connect a first current source to an output of said detector, said first current source connected between a first voltage reference and said first switch, said detector output feeding back to a second input of said signal comparing means, such that said first current source supplies current to said detector output until a voltage at said detector output is greater than said voltage level of said signal;

a reference pulse input for receiving a reference pulse having a predetermined time duration;

a second switch responsive to said reference pulse to connect a second current source to said detector output, said second current source connected between a second voltage reference and said second switch, such that said second current source supplies current to said detector output for a period of time substantially equivalent to said predetermined reference pulse duration; and

energy storage means connected between said detector output and a constant voltage potential of said detector, such that said output voltage of said detector varies in response to current supplied to said detector output from said first and said second current sources.



5,629,922

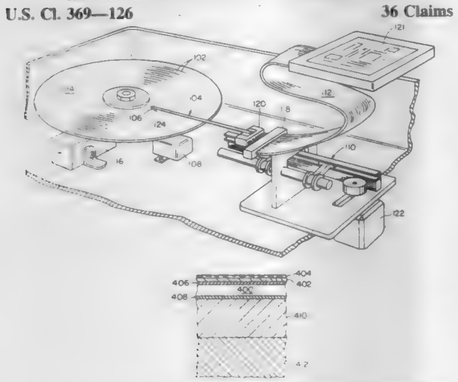
ELECTRON TUNNELING DEVICE USING FERROMAGNETIC THIN FILMS

Jagadeesh S. Moodera, Somerville; Terrilyn Wong, Cambridge, both of Mass.; Lisa Kinder, Charleston, W. Va., and Robert H. Meservey, Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 393,083, Feb. 22, 1995, abandoned. This application Mar. 21, 1995, Ser. No. 407,761

Int. Cl.[6] G11B *9/00*; G11C *11/15*; H01L *27/22*

U.S. Cl. 369—126 **36 Claims**



1. A device forming a junction having a resistance comprising:

a first electrode having a first magnetization direction,

a second electrode having a second magnetization direction, and

an electrical insulator between the first and the second electrodes, wherein applying a small magnitude of electromagnetic energy to the junction reverses at least one of the magnetization directions and causes a change in the resistance by at least 10% at room temperature.

5,629,923

DISK PLAYER WITH COMPACT DISK TRANSPORTER

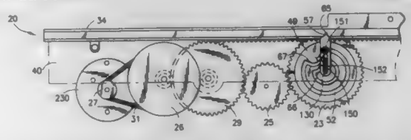
Yuichiro Hisatomi, Tokyo, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

Division of Ser. No. 205,031, Mar. 1, 1994, abandoned. This application May 18, 1995, Ser. No. 444,057

Claims priority, application Japan, Mar. 5, 1993, 5-71180; Mar. 5, 1993, 5-71233

Int. Cl.[6] G11B *17/22; 17/04*

U.S. Cl. 369—191 **16 Claims**



1. A disk player for playing a disk of a plurality of disks comprising:

a magazine;

means for holding said plurality of disks in said magazine;

a tray for carrying said disk from a first position, for insertion and extraction of disks to and from said disk player, to a second position;

a first transport means for transporting and engaging said tray between said first position and said second position;

a second transport means for transporting said disk between said second position and a third position;

a disk reader at said third position;

said second transport means including locking means for locking said tray at said second position;

a third transport means for transporting said disk between said third position and a fourth position within said magazine; and

alignment means for aligning a selected holding means with said fourth position;

said first transport means including a tray drive gear and said tray having a tray rack engaging said tray drive gear;

said second transport means including a cam member, coupled to and driven by said tray drive gear;

said second transport means including a cam follower member engaging said cam member; and

said tray drive gear advancing said cam member to a position wherein said cam follower member is moved to a position engaging and fixing said tray at said second position.

5,629,924

OPTICAL DISK HAVING SYNCHRONOUS MARKS AND DATA MARKS TO SATISFY CERTAIN CRITERIA

Fumihiko Yokogawa, and Hideki Hayashi, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 337,229, Nov. 7, 1994, abandoned. This application Aug. 19, 1996, Ser. No. 699,191

Claims priority, application Japan, Nov. 11, 1993, 5-282514

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.3 **5 Claims**

1. An optical disk comprising a synchronous mark for synchronizing detection, and a data field for recording data on each track; wherein, if:

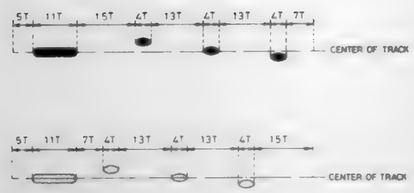
a length of one pit interval of said data is given by T;

a length of said synchronous mark in a direction of the track is given by nT, wherein n is an integer;

a maximum detection error generated when reading said synchronous mark is given by αT; and

a maximum inversion interval between recorded marks with respect to said data is given by mT,

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the integer n is set to satisfy the following two expressions:

$(n-\alpha)T>mT$

$mT\times(n+\alpha)/n<nT.$

where $\alpha\geqq 2$.

5,629,925

METHOD OF OPERATING A SWITCHING NETWORK, AS WELL AS SWITCHING NETWORK AND EXCHANGE THEREFOR

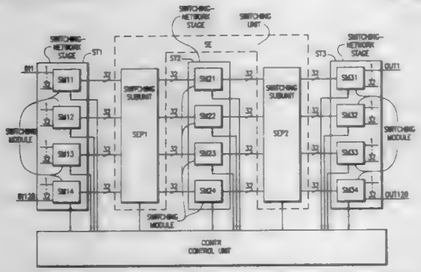
Bodo Pfeiffer, and Stefan Wahl, both of Schwieberdingen, Germany, assignors to Alcatel SEL Aktiengesellschaft, Stuttgart, Germany

Filed Apr. 27, 1995, Ser. No. 429,719

Claims priority, application Germany, Apr. 29, 1994, 44 15 016.4

Int. Cl.[6] **H04G** *11/00;* **H04J** *3/02*

U.S. Cl. 370—217 **7 Claims**



1. A method of operating a switching network formed by a number of switching modules (SM11 to SM34) and an interconnect network between the switching modules (SM11 to SM34), characterized in that

the interconnect network includes a switch unit (SE) and interconnects the switching modules (SM11 to SM34) in accordance with a changeable logic interconnection structure, and that

said changeable logic interconnection structure is reconfigured by means of the switch unit (SE) as required.

5,629,926

CUSTOMER PREMISE EQUIPMENT INTERFACE

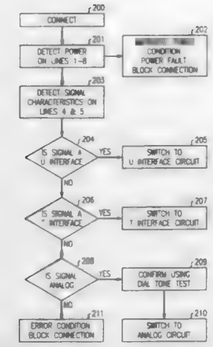
Douglas A. Deutsch, Carol Stream, Ill.; Norman W. Petty, Boulder, Colo., and Douglas J. Rippe, Naperville, Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 31, 1995, Ser. No. 414,560

Int. Cl.[6] **H04Q** *1/20*

U.S. Cl. 370—252 **28 Claims**

1. A method of operating customer premise equipment (CPE) enabling connection to any one of a plurality of different types of network interfaces where each type of network interface includes a plurality of conductors for transmitting power and signals to the CPE, comprising the steps of:



connecting a CPE interface with one of said plurality of different types of network interfaces to create an electrical pathway between said plurality of conductors of the network and corresponding conductors in the CPE interface to deliver power and signals between the network interface and the CPE interface;

detecting the predetermined characteristics of the signals delivered to the CPE interface on at least one of said plurality of corresponding conductors including the step of examining the frequency spectrum of the signals; and

in response to the results of detecting the predetermined characteristics of the signals, switching the signals to appropriate connections corresponding to said one of said plurality of different types of network interfaces, said connections delivering said signals and power to circuits in the CPE to control the operation of the CPE.

5,629,927

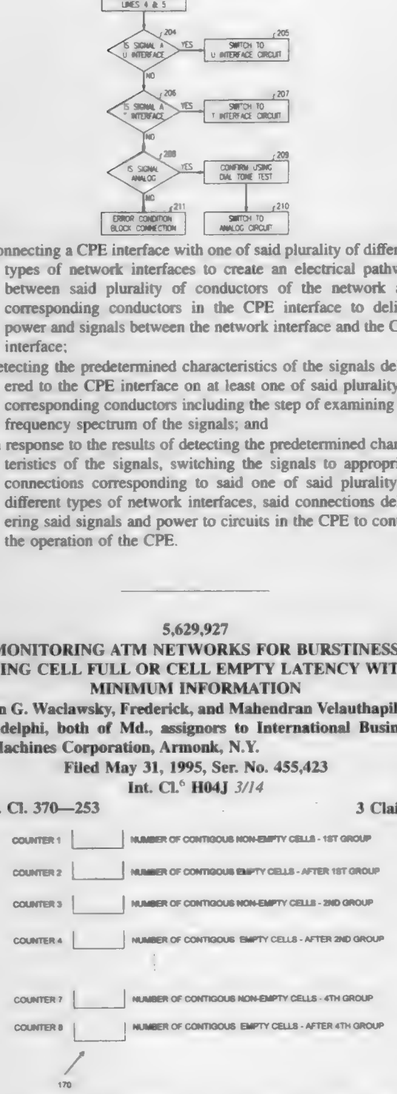
MONITORING ATM NETWORKS FOR BURSTINESS USING CELL FULL OR CELL EMPTY LATENCY WITH MINIMUM INFORMATION

John G. Waclawsky, Frederick, and Mahendran Velauthapillai, Adelphi, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 455,423

Int. Cl.[6] **H04J** *3/14*

U.S. Cl. 370—253 **3 Claims**



1. A system for monitoring and controlling an ATM network having at least a first and a second ATM station connected by a communications link and merging plural input streams into a consolidated stream on the link, comprising:

an event driven interface coupled to the communications link for monitoring contiguous non-empty cells and contiguous empty cells of the consolidated stream communicated by the ATM stations on the communications link, and outputting count values for selected contiguous non-empty cell ranges and contiguous empty cell ranges;

an analysis computer means coupled to an output of the event driven interface, for analyzing the count values and outputting control signals;

a data reordering means, coupled to an output of the analysis computer means, and coupled to at least one of said ATM stations on said communications link, for altering the relative position of the plural input streams to be transmitted over the communications link in response to the control signals.

5,629,928

DYNAMIC FAIR QUEUING TO SUPPORT BEST EFFORT TRAFFIC IN AN ATM NETWORK

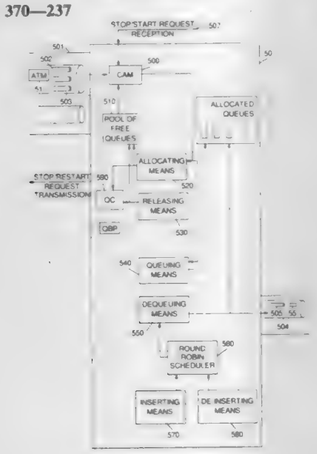
Jean Calvignac, La Gaude; Daniel Orsatti, Cagnes sur Mci, and Fabrice Verplanken, La Gaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1995, Ser. No. 570,840

Claims priority, application European Pat. Off., Dec. 13, 1994, 94480170

Int. Cl.[6] **H04L** *12/56*

U.S. Cl. 370—237 **8 Claims**



1. In a data communication network having a plurality of nodes interconnected by links, each of said links being identified by a link identifier and supporting a plurality of virtual paths, each of the virtual paths being identified by a virtual path identifier VPi and further supporting a plurality of virtual channels, each of said channels being identified by a virtual channel identifier VCi, the combination of said link, virtual path and virtual channel identifiers defining a virtual connection over which data cells can be conveyed between nodes, each of said data cells including a virtual path identifier CVPi and a virtual channel identifier CVCi, a flow control apparatus located at a node in the network and comprising:

a pool of free queues for storing incoming data cells;

identifying means for reading the CVPi and CVCi identifiers for each incoming data cell;

means for performing a look up operation based on the CVPi and CVCi identifiers to determine whether a queue already exists for the virtual connection identified by said CVPi and CVCi identifiers;

means responsive to a determination that no queue exists for said virtual connection for allocating a queue from said pool of free queues and for storing cells received on said virtual connection in said allocated queue; and

means responsive to a determination that a queue already exists for said virtual connection to store cells received on said virtual connection in the already existing queue.

5,629,929

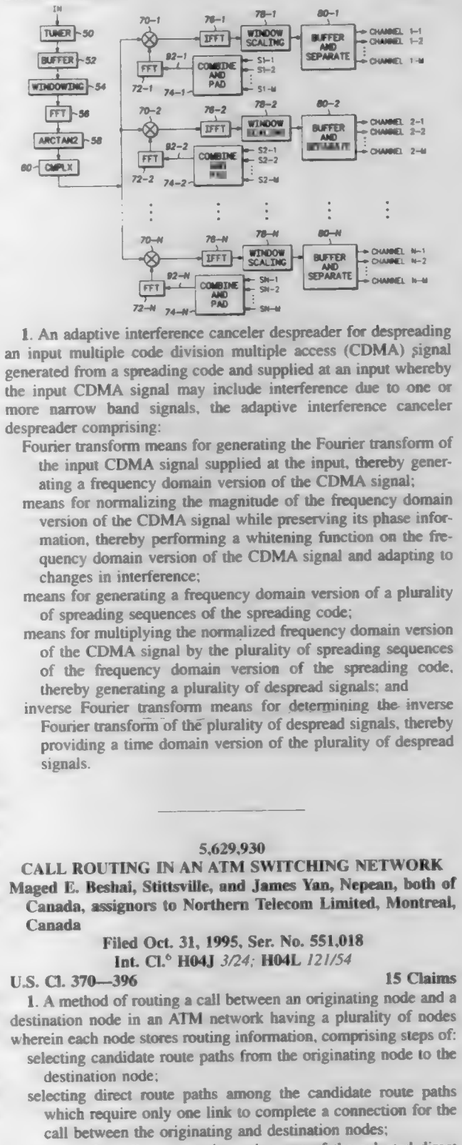
APPARATUS FOR RAPID INTERFERENCE CANCELLATION AND DESPREADING OF A CDMA WAVEFORM

Scott D. Blanchard, Mesa; Kenneth S. Wreschner; Marc D. Brack, both of Chandler, and Terry Winningham, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 7, 1996, Ser. No. 657,576

Int. Cl.[6] **H04J** *13/00;11/00*

U.S. Cl. 370—201 **15 Claims**



1. An adaptive interference canceler despreader for despreading an input multiple code division multiple access (CDMA) signal generated from a spreading code and supplied at an input whereby the input CDMA signal may include interference due to one or more narrow band signals, the adaptive interference canceler despreader comprising:

Fourier transform means for generating the Fourier transform of the input CDMA signal supplied at the input, thereby generating a frequency domain version of the CDMA signal;

means for normalizing the magnitude of the frequency domain version of the CDMA signal while preserving its phase information, thereby performing a whitening function on the frequency domain version of the CDMA signal and adapting to changes in interference;

means for generating a frequency domain version of a plurality of spreading sequences of the spreading code;

means for multiplying the normalized frequency domain version of the CDMA signal by the plurality of spreading sequences of the frequency domain version of the spreading code, thereby generating a plurality of despread signals; and

inverse Fourier transform means for determining the inverse Fourier transform of the plurality of despread signals, thereby providing a time domain version of the plurality of despread signals.

5,629,930

CALL ROUTING IN AN ATM SWITCHING NETWORK

Maged E. Beshai, Stittsville, and James Yan, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 31, 1995, Ser. No. 551,018

Int. Cl.[6] **H04J** *3/24;* **H04L** *12/54*

U.S. Cl. 370—396 **15 Claims**

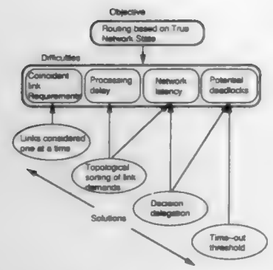
1. A method of routing a call between an originating node and a destination node in an ATM network having a plurality of nodes wherein each node stores routing information, comprising steps of:

selecting candidate route paths from the originating node to the destination node;

selecting direct route paths among the candidate route paths which require only one link to complete a connection for the call between the originating and destination nodes;

granting the call a connection using one of the selected direct route paths whose routing information meets predetermined criteria;

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if no direct route paths are found,

selecting two-link route paths which require two links to complete a connection for the call between the originating and destination nodes;

the originating node sending connection messages to candidate middle nodes located in the selected two-link route paths;

each of the middle nodes storing the connection message in a respective message queue and responding to the originating node with state information when the connection message in the queue of the middle node reaches the head of the queue;

comparing the routing information given to the originating node by each candidate middle node; and

granting the call a connection using one of the selected two-link route paths whose routing information meets predetermined criteria.

5,629,931

INFORMATION TRANSMISSION SYSTEM

Wilfried Kausel, Vienna, Austria, assignor to Semcotec Handelsgesellschaft m.b.H., Vienna, Austria

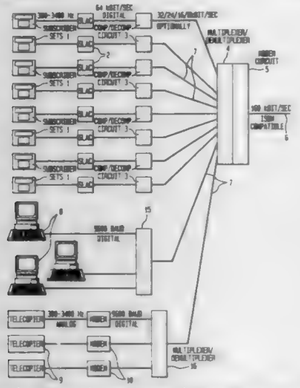
PCT No. PCT/AT93/00165, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/10809, PCT Pub. Date May 11, 1994

PCT Filed Oct. 27, 1993, Ser. No. 428,147

Claims priority, application Austria, Oct. 27, 1992, 2123/92

Int. Cl.[6] H04J *3/18;* **H04M** *11/06;19/08*

U.S. Cl. 370—241 **12 Claims**



1. Information transmission system in which subscribers (1) can be connected with a central office via a line (7), a bidirectional multiplexer and demultiplexer (4, 4'), respectively, being connected at the central office end and at the subscriber end of the line via a modem circuit (5, 5'; 18, 18') which is likewise bidirectional and which modulates and demodulates the data corresponding to the intended transmission, and in which a bidirectional compressor circuit and decompressor circuit (3, 3'; 17, 17') are connectable to the multiplexer and demultiplexer (4, 4'), respectively, to which the subscribers (1) are connected via a forward channel and a reverse channel and at least one bidirectional analog-to-digital converter (CODEC), and to which switching equipment (11) of the central office is connected via control circuits, wherein a circuit circuit (33, 34, 36, 37, 38) is arranged between every subscriber (1) and the CODEC (30) associated with the subscriber (1), and wherein controllable switches (30, 50, 51, 52) are connected to the lines leading to the subscribers (1) so as to enable a signal connection between the forward channel and the reverse channel of the same subscriber, and a signal connection in multichannel solutions to another subscriber.

5,629,932

12×12 STS-1 SWITCH

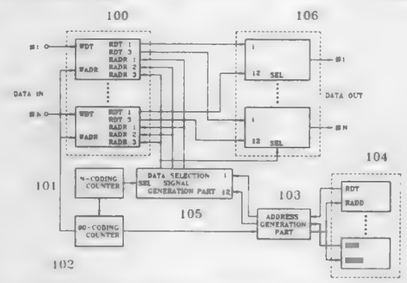
Dong-Wook Kim, Kyeongki-do, Rep. of Korea, assignor to Goldstar Information Communications, Ltd., Seoul, Rep. of Korea

Filed Dec. 9, 1994, Ser. No. 355,211

Claims priority, application Rep. of Korea, Dec. 9, 1993, 1993-27100

Int. Cl.[6] H04J *3/02;* **H04Q** *11/04*

U.S. Cl. 370—382 **4 Claims**



1. A 12×12 STS-1 Switch characterized by the configuration comprising

a 4-coding counter for generating a data control signal and a carry out signal by counting an input signal in accordance with an the operation frequency;

a 90-coding counter for generating a VT group and a VT channel by counting a frame pulse in accordance with said carry out signal generated at said 4-coding counter;

address generation means for generating a switch information read address and a data selection address in accordance with the VT group and said VT channel generated at said 90-coding counter;

data selection signal generation means for outputting said data selection address generated at said address generation means in accordance with a selection signal outputted from said 4-coding counter; and

data output means for selecting and outputting an output data of a data memory in accordance with said data selection address outputted from said data selection signal generation means.

5,629,933

METHOD AND SYSTEM FOR ENHANCED COMMUNICATION IN A MULTISESSION PACKET BASED COMMUNICATION SYSTEM

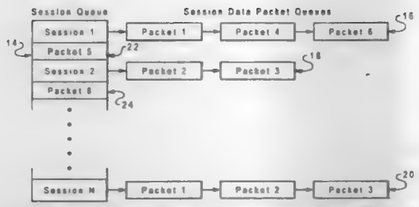
Gary S. Delp, Rochester, and Albert A. Slane, Orocono, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 472,368

Int. Cl.[6] H04Q *11/04;* **H04J** *3/24*

U.S. Cl. 370—411 **11 Claims**

1. A method for enhanced communication in a multisession packet based communication system wherein said communication



system utilizes a series of data packets, each data packet including an indication of the identity of a particular session which includes that data packet, said method comprising the steps of:

examining each data packet as that data packet is received within said series to determine a session identity associated therewith;

enqueing within a session queue each determined session identity only in response to an initial occurrence of each session identity;

enqueing within said session queue each data packet associated with a predetermined session identity;

providing a data packet queue in association with each enqueued session identity; and

enqueing within an associated data packet queue each received data packet included within a particular session, other than said predetermined session, wherein selected data packets may be efficiently processed from a data packet queue and from said session queue.

5,629,934

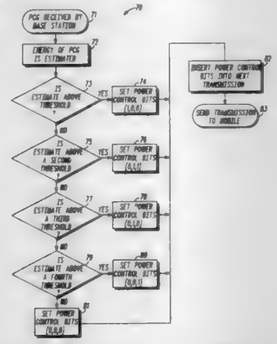
POWER CONTROL FOR CDMA COMMUNICATION SYSTEMS

Amitava Ghosh, Fort Worth, and Kamyar Rohani, Grapevine, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1995, Ser. No. 491,336

Int. Cl.[6] H04J *13/00*

U.S. Cl. 370—335 **4 Claims**



1. A method of controlling power in a CDMA communication system, said method comprising the step of:

processing, at a first transmission rate, a first frame of a continuous signal to be transmitted from a mobile station to a base station;

storing said first frame of said continuous signal in a mobile station;

processing, at a second transmission rate, a second frame of a continuous signal to be transmitted from said mobile station to said base station;

inserting, in said first frame of said continuous signal, an indicator of said second transmission rate of said second frame, to be used to control power in said CDMA communication system; and

transmitting said first frame of said continuous signal.

5,629,935

SIGNAL MULTIPLEXING APPARATUS USING MULTICONNECTION

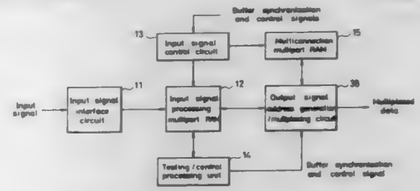
Yun S. Oh, Seoul, Rep. of Korea, assignor to Korea Telecommunication Authority, Rep. of Korea

Filed Jul. 14, 1995, Ser. No. 502,545

Claims priority, application Rep. of Korea, Jul. 14, 1994, 94-16956

Int. Cl.[6] H04L *12/64*

U.S. Cl. 370—471 **16 Claims**



1. A signal multiplexing apparatus using multiconnection, comprising:

input signal interface means for inputting a DS1 or DS1E signal, a video signal and an ATM cell signal;

input signal processing multiport memory means connected to testing/central processing means;

input signal control means connected to said input signal processing multiport memory means, said input signal control means including a microprocessor and peripheral devices to operate in response to timing signals from said input signal interface means and buffer synchronization and control signals from said testing/central processing means, said peripheral devices including a read only memory, a random access memory, a timer and an interrupt control circuit, said timing signals including a clock signal, a data synchronous signal and a frame synchronous signal; and

output signal address generation/multiplexing means responsive to the buffer synchronization and control signals from said testing/central processing means, for reading data from said input signal processing multiport memory means and multiplexing the read data into a desired format, said output signal address generation/multiplexing means generating address and applying the generated addresses to multiconnection multiport memory means.

5,629,936

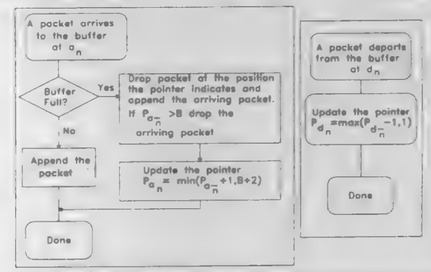
CONTROL OF CONSECUTIVE PACKET LOSS IN A PACKET BUFFER

Chaewoo W. Lee, Coralville, and Mark S. Andersland, Iowa City, both of Iowa, assignors to University of Iowa Research Foundation Inc., Iowa City, Iowa

Filed Aug. 1, 1994, Ser. No. 283,698

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—230 **19 Claims**



1. A method for producing a desired average packet gap size in a packet buffer, comprising the steps of:

receiving incoming packets at said packet buffer;

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transmitting outgoing packets from said packet buffer;

selecting a state transition rule based on the desired average packet gap size; and

dropping packets from said packet buffer according to said state transition rule, when said buffer reaches overflow, to produce said average packet gap size.

5,629,937

APPARATUS AND METHOD FOR ATM QUEUING AND SCHEDULING

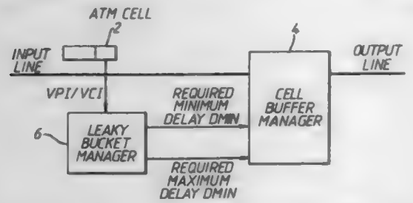
Andrew T. Hayter, Bitterne Park; Simon P. Davis, Romsey; Paul P. Momtahan, Totton, all of England, and Eugen B. Wallmeier, Eichenau, Germany, assignors to Roke Manor Research Limited, Hampshire, England, and Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 23, 1995, Ser. No. 408,997

Claims priority, application United Kingdom, Mar. 23, 1994, 9405788

Int. Cl.[6] H04J *3/22;3/14*

U.S. Cl. 370—233 **5 Claims**



1. In an apparatus for queuing and scheduling ATM cells connected to an output side of an ATM switch including buffer means connected to an input line upon which ATM cells are received, an output line upon which ATM cells are transmitted, control means for receiving, for each cell, a channel identifier and a path identifier from which a first signal is generated indicative of a maximum delay value which is applied to the buffer means and used to schedule a particular cell for transmission on a first calendar for controlling a sustainable cell rate, the improvement comprising:

means for generating in said control means a second signal indicative of a minimum delay value simultaneously applied with the first signal to the buffer means to schedule the particular cell for transmission, wherein the minimum delay value controls a second calendar for controlling a peak cell rate, and wherein the means for generating in said control means a second signal indicative of a minimum delay value is further defined by utilizing a value T+Dmin to schedule a cell onto the second calendar, where T is a real time value and Dmin is the minimum delay value and wherein the second calendar further comprises a real time read pointer for each cell incremented for each time slot, wherein each cell is applied only once to said buffer means and wherein each cell has a first pointer identifying its time slot in a peak cell rate calendar and a second pointer identifying its timeslot in the sustainable cell rate calendar.

5,629,938

METHOD FOR AUTOMATED PROVISIONING OF DEDICATED CIRCUITS

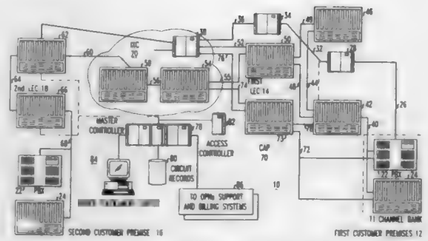
John A. Cerciello, Coplay, Pa.; Stephen E. Hanson, Edgewood, Md., and David G. Priest, Budd Lake, N.J., assignors to AT&T, Middletown, N.J.

Filed May 25, 1995, Ser. No. 449,984

Int. Cl.[6] H04L *12/56;* **H04M** *7/00*

U.S. Cl. 370—384 **24 Claims**

1. A method for automatically provisioning dedicated circuits within a network, each circuit having a location and a bandwidth and each circuit being selectable for connection in response to a provisioning command, to yield connectivity of a prescribed bandwidth between an origin and an end point, comprising the steps of:



maintaining a record for each individual circuit specifying its location and its bandwidth and at least one of the following data: length, cost and reliability;

automatically identifying those circuits that have the prescribed bandwidth and a suitable location in response to a need for connectivity of a prescribed bandwidth between the origin and the end point;

selecting from among the identified circuits, a group of circuits for interconnnection to each other based on at least one of said circuit length, cost and reliability data specified in said circuit records and

automatically supplying provisioning commands to accomplish interconnection of the circuits in the group to provide connectivity between the origin and the end point.

5,629,939

TIME SLOT REARRANGING APPARATUS IN MULTIPLEXER

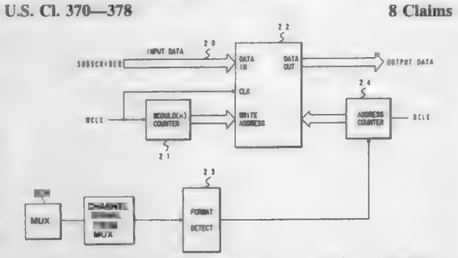
Hiroyuki Ohde, and Noriyuki Kutsuwada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 950,078, Sep. 23, 1992, abandoned. This application Jul. 14, 1994, Ser. No. 275,924

Claims priority, application Japan, Sep. 26, 1991, 3-247429

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—378 **8 Claims**



1. A time slot rearranging apparatus, for use with a multiplexer, for converting a plurality of subscriber signals transmitted through at least one subscriber line into a primary rate multiple signal having a predetermined format of a plurality of channels corresponding to the plurality of subscriber signals, said time slot rearranging apparatus comprising:

format detecting means for receiving a channel signal from the multiplexer and for detecting a type of format that the plurality of subscriber signals must be converted into to produce said predetermined format of the primary rate multiple signal; and

rearranging means, responsive to said format detecting means, for accepting said plurality of subscriber signals as an input and rearranging time slots corresponding to channels included in said plurality of subscriber signals in accordance with the type of format detected by said format detecting means so that the primary rate multiple signal having the predetermined type of format is obtained.

5,629,940

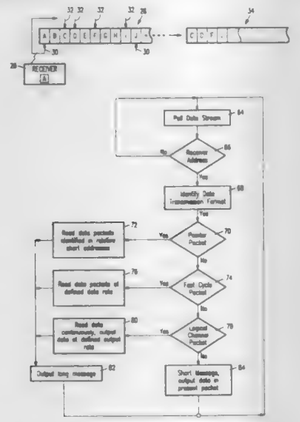
TRANSMITTING AND RECEIVING LONG MESSAGES IN A WIRELESS ONE-WAY COMMUNICATION SYSTEM WHILE RESERVING SELECTED SLOTS FOR SHORT MESSAGES

Garold B. Gaskill, Tualatin, Oreg., assignor to Seiko Communications Holding N.V., Netherlands Antilles

Continuation of Ser. No. 277,913, Jul. 20, 1994, abandoned, which is a continuation of Ser. No. 981,968, Nov. 25, 1992, Pat. No. 5,552,779, which is a continuation of Ser. No. 568,932, Aug. 17, 1990, Pat. No. 5,168,271, which is a continuation of Ser. No. 101,137, Sep. 24, 1987, abandoned, which is a division of Ser. No. 802,844, Nov. 27, 1985, Pat. No. 4,713,808. This application Apr. 4, 1996, Ser. No. 627,635

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—311 **2 Claims**



1. A method for communicating long messages in a wireless one-way communication system, comprising:

transmitting a time division multiplexed data frame which includes both format packets and data packets positioned in specific temporal locations in said data frame, each format packet containing both an address corresponding to an associated receiver and containing pointers to a plurality of data packets each containing a portion of a given long message targeted for transmission to a given receiver;

polling the data frame with said given receiver at a first data rate for receiving an initial format packet addressed to said given receiver; and

reading said plurality of data packets containing the long message at a second data acquisition rate defined by the initial format packet, the data acquisition rate defined according to temporal locations in the data frame of data packets containing portions of said long message.

5,629,941

MULTIPLEX TRANSMISSION SYSTEM

Toshiaki Kawanishi, Akishima, and Koji Terayama, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

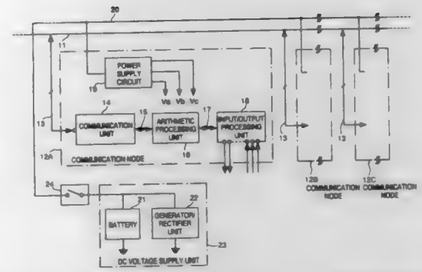
Filed Feb. 16, 1995, Ser. No. 390,225

Claims priority, application Japan, Feb. 16, 1994, 6-019112

Int. Cl.[6] H04L *12/40*

U.S. Cl. 370—236 **25 Claims**

1. A multiplex transmission system to which a plurality of communication nodes are connected via a multiplex transmission path, and in which each of said plurality of communication nodes comprises a control unit for, when a communication state is normal, controlling transmission of a communication frame having its own predetermined data via said multiplex transmission path and



selective reception of a communication frame transmitted from another communication node,

each of said plurality of communication nodes comprising:

detection means for detecting if the communication state of its own communication node is normal;

means for, when the communication state of the communication node is not normal, setting the communication state of its own node as a first communication state, and prohibiting transmission and reception of the communication frame during a predetermined first period after detection of the communication state;

means for setting the communication state of its own node as a second communication state, and prohibiting transmission of the communication frame but permitting reception of the communication frame during a predetermined second period after the end of the first period; and

means for, when a predetermined communication frame transmitted from another communication node is received On the Second communication state, permitting transmission of the communication frame of its own node, while is still being in the second communication state, before the end of the second period.

5,629,942

METHOD AND ARRANGEMENT FOR CHANNEL ALLOCATION FOR DATA TRANSMISSION BETWEEN A MAIN STATION AND A PLURALITY OF SUBSTATIONS

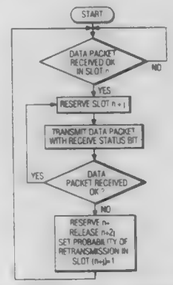
Frans Zijderhand, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 909,893, Jul. 7, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,647

Claims priority, application European Pat. Off., Jul. 8, 1991, 91201765

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—341 **24 Claims**



1. Method of transmitting data from a plurality of substations to a main station by way of a common channel including an up link and a down link, which channel is subdivided into time slots, the length and synchronization of which are determined by a corresponding time slot distribution of a data transmission signal transmitted on the downlink by the main station, each substation having

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a probability p, $0 \leq p \leq 1$, of transmitting a data packet on the up link in each time slot; the method comprising:

determining in the main station if the main station has correctly received, in the up link in a specific time slot n, a data packet coming from a specific substation, and

if the data packet has been correctly received, reserving a next time slot n+j of the up link to be exclusively used by that specific substation, with j being a predetermined integer assigned to the substation such that $j \geq 2$,

wherein each substation, in transmitting each data packet, transmits at least one bit indicative of a time slot reservation relating to said next time slot, and

wherein the messages to be sent by the substation are classified in various categories and said reservation applies only to messages in predetermined ones of these categories,

the method further comprising the steps of:

after a reservation sequence has been terminated by an incorrect reception of a data packet in the time slot n, continuing to reserve the time slot n+j and releasing the time slot n+2j, and

for messages in a predetermined category, if the first data packet has not been received correctly, setting the probability of retransmission of that first data packet in the time slot n+j equal to 1.

5,629,943

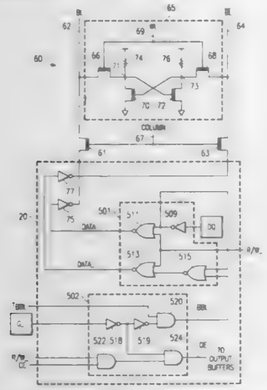
INTEGRATED CIRCUIT MEMORY WITH DOUBLE BITLINE LOW SPECIAL TEST MODE CONTROL FROM OUTPUT ENABLE

David C. McClure, Denton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 173,197, Dec. 22, 1993, Pat. No. 5,577,051, and Ser. No. 172,854, Dec. 22, 1993, abandoned. This application May 31, 1994, Ser. No. 251,565

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—21.1 **22 Claims**



1. An integrated memory circuit having a normal operating mode and a special test mode, comprising:

a plurality of memory cells, arranged in rows and columns, each column of memory cells associated with a pair of bitlines;

means for selecting one of said plurality of memory cells responsive to an address value received at address terminals;

output circuitry for presenting the contents of the selected one of said plurality of memory cells at an output terminal during a read operation in the normal operating mode;

first and second write drivers, coupled to the pair of bitlines of the column containing the selected one of said plurality of memory cells, for presenting a differential signal on the pair of bitlines corresponding to input data received at an input terminal during a write operation in the normal operating mode;

output enable circuitry, coupled to an output enable terminal and to said output circuitry, for selectively enabling and disabling said output circuitry in the normal operating mode responsive to an output enable signal received at the output enable terminal;

test mode enable circuitry, for causing the memory to enter the special test mode, said test mode enable circuitry presenting a test mode enable signal at an output thereof; and

bitline test control circuitry, coupled to said test mode enable circuitry, to the output enable terminal and to the first and second write drivers, for controlling the write drivers to drive both bitlines in a pair of bitlines associated with a column of memory cells to a selected logic level responsive to the bitline test control circuitry receiving the test mode enable signal and to said output enable terminal receiving a signal at a first logic level.

5,629,944

TEST MODE SETTING CIRCUIT OF TEST CIRCUIT FOR SEMICONDUCTOR MEMORY

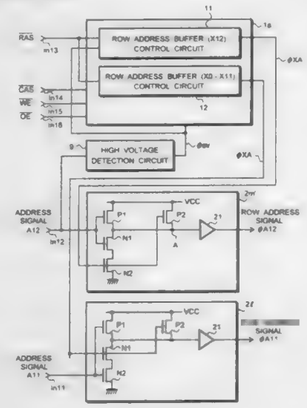
Akihiko Kagami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 25, 1996, Ser. No. 670,823

Claims priority, application Japan, Jun. 30, 1995, 7-166253

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—21.4 **3 Claims**



1. A test mode setting circuit comprising:

a clock generator which generates predetermined internal control signals in response to an inverted RAS signal, inverted CAS signal, inverted WE signal and inverted OE signal which are synchronized with clock signals;

a plurality of row address buffers which receive address signals other than an uppermost address signal among multiplexed address signals externally supplied, and distribute the received address signals as internal row address signals;

a high voltage detection circuit which receives a high voltage higher than a power source voltage or a voltage of said uppermost address signal through a common input terminal, and which outputs a test mode setting signal when a voltage difference between the voltage received and said power source voltage becomes higher than a predetermined voltage;

an uppermost row address buffer which receives through said common input terminal said high voltage or said uppermost address signal among said multiplexed address signals, and provides said uppermost address signal as an uppermost internal row address signal; and

a voltage supplying means which operates such that, when, on receiving said high voltage through said common input terminal for setting a test mode, an upper stage transistor of two N-channel MOS transistors stacked one on the other in the uppermost row address buffer for said uppermost address signal becomes conductive through said high voltage, an uppermost internal control signal for said uppermost row address buffer among said internal control signals is supplied to a lower stage transistor connected to a ground thus causing said lower stage transistor to become a non-conductive state whereby a voltage across a gate electrode and a source electrode and a voltage across the gate electrode and a drain electrode of said upper stage transistor are rendered to be a level lower than said high voltage.

5,629,945

ELECTRONIC ARITHMETIC UNIT WITH MULTIPLE ERROR DETECTION

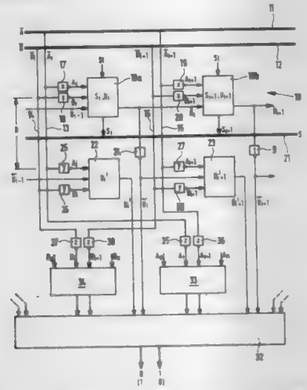
Peter Sulzberger, and Eberhard Boehl, both of Reutlingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 14, 1995, Ser. No. 389,707

Claims priority, application Germany, Feb. 26, 1994, 44 06 391.1

Int. Cl.[6] G01R *31/28*; **G06F** *11/00*

U.S. Cl. 371—22.5 **11 Claims**



1. An electronic arithmetic unit for gating a plurality of digital operands, the digital operands being provided by at least one data bus having a plurality of lines, each of the digital operands being coded by at least one code bit, comprising:

a plurality of first stages, each of the first stages gating a respective at least one bit of the operands and generating at least one carry bit and at least one bit of a result word;

at least one device for generating code bits for the result word;

at least one circuit for duplicated carry generation coupled to the at least one data bus, including a plurality of second stages, each of the second stages gating a respective at least one bit of the operands and generating at least one duplicated carry bit;

at least one testing device for checking the carry bits and duplicated carry bits for identity;

at least one code checker;

a plurality of first connecting lines linking the lines of the data bus to the code checker;

a plurality of second connecting lines linking the first stages to the first connecting lines; and

a plurality of third connecting lines linking the second stages to the first connecting lines.

5,629,946

HIGH SPEED TEST PATTERN GENERATOR

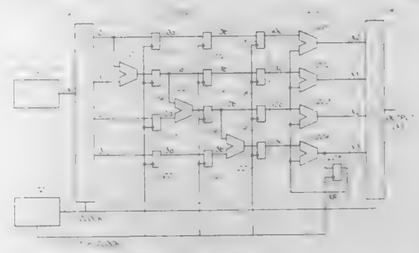
Kazuo Takano, Menuma-machi, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,796

Claims priority, application Japan, Dec. 28, 1993, 5-350145

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—27 **3 Claims**



1. A test pattern generator, comprising:

a parallel circuit for converting an instruction signal of a serial form to n instruction signals of a parallel form;

an instruction processing circuit having n−1 instruction processors for performing arithmetic operations based on instruction data in said instruction signals given in said parallel form and a plurality sets of registers each set of which is commonly provided with a lower speed clock signal, each of said instruction processors providing the results of said arithmetic operation to an input of another instruction processor;

an arithmetic circuit receiving the parallel data from said instruction processing circuit and performing arithmetic operations by n arithmetic units therein, said arithmetic circuit including a register which provides the data in the previous cycle to the other inputs of all of the arithmetic units; and

a multiplexing circuit for converting the parallel data from said arithmetic circuit to a serial form having n times faster than the parallel data based on a higher speed clock signal having n times faster speed than said lower speed clock.

5,629,947

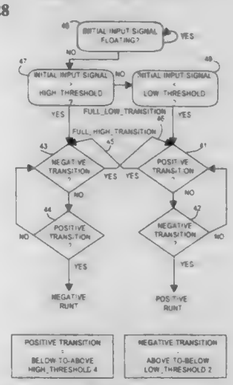
METHOD AND APPARATUS FOR DETECTING POSITIVE AND NEGATIVE RUNT PULSES SIMULTANEOUSLY

Reginald Kellum, and B. Allen Montijo, both of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1996, Ser. No. 585,057

Int. Cl.[6] G06F *11/60*

U.S. Cl. 371—28 **19 Claims**



1. A runt fault detector comprising:

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a threshold comparator responsive to an input signal, a first voltage threshold and a second voltage threshold, which produces a first transition signal when the input signal transitions across the first voltage threshold in a first direction away from the second voltage threshold, and a second transition signal when the input signal transitions across the second voltage threshold in a second direction opposite the first direction;

a full transition detector responsive to the first transition signal and the second transition signal which produces a first full-transition signal upon detection of a full transition by the input signal across the second voltage threshold and then the first voltage threshold in sequence in the first direction; and

a runt detector responsive to the first full-transition signal and the first transition signal to generate a runt fault upon detection in sequence of the first full-transition signal and then the first transition signal without an intervening detection of the second transition signal.

5,629,948

DATA TRANSMISSION SCHEME WITH AUTOMATIC REPEAT REQUEST

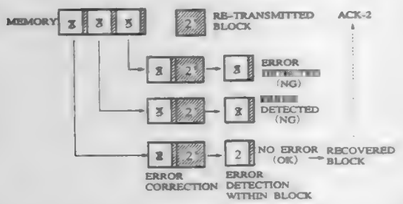
Junichirou Hagiwara, Yokosuka; Kouichi Sawai, and Shinji Uebayashi, both of Yokohama, all of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

Filed Jul. 22, 1994, Ser. No. 279,009

Claims priority, application Japan, Jul. 22, 1993, 5-181257

Int. Cl.[6] H04L *1/18*

U.S. Cl. 371—32 **20 Claims**



1. A data transmission scheme using automatic repeat request function for automatically requesting re-transmission of data received with an error at a reception side to a transmission side, comprising the steps of:

(a) dividing transmission data into a plurality of blocks and attaching error detection code to each block to form a plurality of transmission blocks at the transmission side;

(b) grouping N transmission blocks obtained at the step (a) together and attaching one ARQ control data to a group of N transmission blocks to form a transmission frame at the transmission side, where N is an integer;

(c) transmitting transmission blocks of the transmission frame formed at the step (b) sequentially from the transmission side to the reception side;

(d) detecting a presence of an error in each transmission block transmitted from the transmission side and received at the reception side at the step (c);

(e) storing in a memory each transmission block for which the presence of the error is detected at the step (d) as an error block along with a block number identifying said each transmission block at the reception side, and returning a re-transmission request signal for the error block from the reception side to the transmission side;

(f) producing an error correction code for each error block as a re-transmission block at the transmission side in response to the re-transmission request signal for said each error block returned at the step (e);

(g) grouping M re-transmission blocks produced at the step (f) together and attaching one ARQ control data to a group of M re-transmission blocks to form a re-transmission frame at the transmission side, where M is an integer greater than 1;

(h) transmitting the re-transmission blocks of the re-transmission frame formed by the step (g) sequentially from the transmission side of the reception side whenever the re-transmission frame is formed at the step (g);

(i) carrying out an error correction operation for each re-transmission block of the re-transmission frame transmitted from the transmission side and received at the reception side at the step (h) with respect to each error block stored in the memory to obtain an error correction trial block for each error block at the reception side;

(j) judging each re-transmission block of the re-transmission frame transmitted from the transmission side and received at the reception side at the step (h) as corresponding to a respective error block when the error correction trial block obtained at the step (i) using the respective re-transmission block has no error at the reception side; and

(k) adopting the error correction trial block judged in step (j) for said respective error block as a recovered block for said one error block at the reception side.

5,629,949

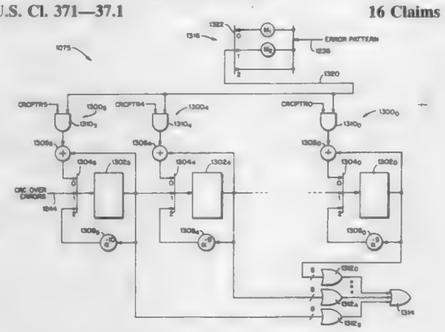
ERROR CORRECTION VERIFICATION METHOD AND APPARATUS USING CRC CHECK REMAINDERS

Christopher P. Zook, Longmont, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 326,126, Oct. 18, 1994, Ser. No. 325,717, Oct. 18, 1994, Ser. No. 326,164, Oct. 18, 1994, Pat. No. 5,446,743, Ser. No. 325,831, Oct. 18, 1994, Pat. No. 5,467,297, and Ser. No. 325,850, Oct. 18, 1994, Pat. No. 5,491,701, said Ser. No. 326,126is a continuation-in-part of Ser. No. 147,865, Nov. 4, 1993, Pat. No. 5,465,260, Ser. No. 147,650, Nov. 4, 1993, abandoned, Ser. No. 147,758, Nov. 4, 1993, abandoned, Ser. No. 148,068, Nov. 4, 1993, abandoned, Ser. No. 310,973, Sep. 23, 1994, and Ser. No. 124,936, Sep. 21, 1993, Pat. No. 5,449,424. This application Jun. 6, 1995, Ser. No. 468,108

Int. Cl.[6] G11B *20/18*

U.S. Cl. 371—37.1 **16 Claims**



1. An error correction system for rotating magnetic media, the error correction system comprising:

a CRC generator/checker which generates CRC check remainder bytes by (1) using input data from a read sector to obtain regenerated CRC bytes for the read sector, and (2) adding the regenerated CRC bytes to incoming CRC bytes of the read sector;

a correction unit which generates error patterns for correcting errors in the read sector;

a correction checker unit, responsive to the CRC check remainder bytes and the error patterns, for confirming that the error patterns accurately correct the errors in the read sector, the correction checker unit including:

a predetermined number of registers into which are loaded a corresponding predetermined number of the CRC check remainder bytes;

for each register of the predetermined number of registers having its CRC check remainder byte affected by one of the error patterns in the sector, an adder for adding a corresponding affecting one of the error patterns to the register;

a circuit for determining whether the contents of any of the registers indicates inaccurate correction of the errors.

5,629,950

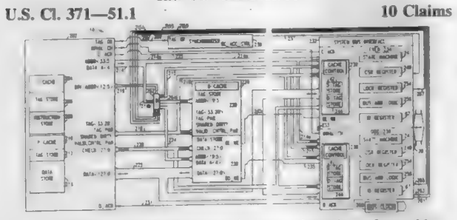
FAULT MANAGEMENT SCHEME FOR A CACHE MEMORY

Nitin D. Godiwala, Boylston; Kurt M. Thaller, Acton; Jeffrey A. Metzger, Leominster, and Barry A. Maskas, Sterling, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 297,273, Aug. 26, 1994, abandoned, which is a continuation of Ser. No. 874,241, Apr. 24, 1992, abandoned. This application Jul. 8, 1996, Ser. No. 676,987

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—51.1 **10 Claims**



1. A method of managing a cache upon detection of an address TAG parity error, the cache including a plurality of entries for storage of data, and each entry having a corresponding address TAG entry, the method comprising the steps of:

performing a TAG parity check for each access to the cache;

upon detection of a parity error in an address TAG; disabling allocation of TAG entries for storage of new address TAGs;

indicating the TAG parity error to an error correction mechanism: and

while said allocation is disabled, allowing access to and modification of data and status bits of said plurality of cache entries such that the cache operates as if no error had been detected with the exception of said disabling allocation of TAG entries for storage of new address TAGS.

5,629,951

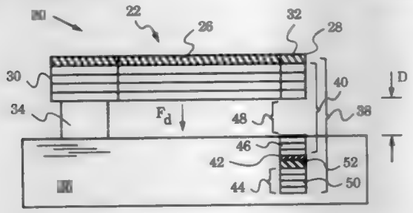
ELECTROSTATICALLY-CONTROLLED CANTILEVER APPARATUS FOR CONTINUOUS TUNING OF THE RESONANCE WAVELENGTH OF A FABRY-PEROT CAVITY

Constance J. Chang-Hasnain, 837 Allardice Way, Stanford, Calif. 94309; Edward C. Vail, 117 Cowper St., Palo Alto, Calif. 94305, and Marianne S. Wu, P.O. Box 10233, Stanford, Calif. 94309

Filed Oct. 13, 1995, Ser. No. 542,057

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **25 Claims**



1. A cantilever apparatus for tuning a resonance wavelength of a Fabry-Perot cavity, said Fabry-Perot cavity comprising a bottom reflecting means and a top reflecting means, said cantilever apparatus comprising:

a) an electrically responsive substrate;

b) a support block positioned on said electrically responsive substrate;

c) a cantilever structure comprising a base section resting on said support block, a deformable section extending above said electrically responsive substrate and creating an air gap between said deformable section and said electrically responsive substrate, and an active head positioned at a predetermined location on said deformable section and comprising at least a portion of said top reflecting means;

d) an electrical tuning contact disposed on said cantilever structure for applying a first tuning voltage V_{t1} to produce a vertical electrostatic force F_d between said electrical tuning contact and said electrically responsive substrate, thereby altering the size of said air gap and tuning said resonant wavelength.

5,629,952

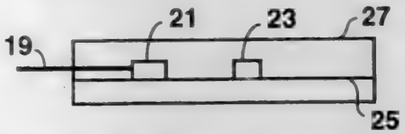
PACKAGING OF HIGH POWER SEMICONDUCTOR LASERS

Roger F. Bartholomew, Painted Post; Paul A. Jakobson, Corning; Douglas W. Hall, Corning, and Julia A. Sharps, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 168,125, Dec. 17, 1993, Pat. No. 5,513,198, which is a continuation-in-part of Ser. No. 91,657, Jul. 14, 1993, Pat. No. 5,392,305. This application Jun. 7, 1995, Ser. No. 481,008

Int. Cl.[6] H01S *3/00*; H01L *23/36*

U.S. Cl. 372—33 **17 Claims**



1. A packaged high power semiconductor laser comprising: a semiconductor laser which comprises a GaAs substrate said laser having an operating optical power of at least 50 milliwatts;

a getter tier adsorbing or absorbing organic impurities; and

a hermetically sealed container surrounding said laser and said getter, said container being filled with a gaseous medium whose oxygen content is greater than 100 ppm.

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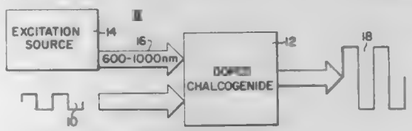
CHALCOGENIDE OPTICAL PUMPING SYSTEM DRIVEN BY BROAD ABSORPTION BAND

Stephen G. Bishop, Champaign; Shiqun Gu, and Douglas A. Turnbull, both of Urbana, all of Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed May 5, 1995, Ser. No. 435,353

Int. Cl.[6] H01S *3/14*

U.S. Cl. 372—39 **32 Claims**



1. An optical pumping system comprising:

a chalcogenide glass;

a rare earth dopant within the chalcogenide glass; and

an excitation source for exciting photoluminescence emissions in the chalcogenide glass, the chalcogenide glass having a continuous broad pumping absorption range which extends for approximately 400 nm, the excitation source subjecting the chalcogenide glass to pumping light anywhere throughout the continuous broad pumping absorption range of approximately 400 nm in width to excite said emissions.

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5,629,954

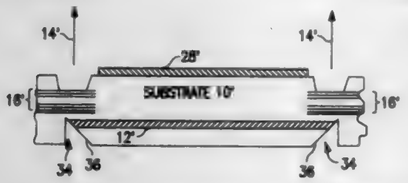
SEMICONDUCTOR LASER DIODE WITH INTEGRATED ETALON

Michael Jansen, Torrance; Phillip D. Hayashida, Redondo Beach; Simon S. Ou, Manhattan Beach, and Dennis P. Bowler, Hawthorne, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 25, 1994, Ser. No. 329,017

Int. Cl.[6] H01S *3/18*

U.S. Cl. 372—43 **16 Claims**



13. A surface emitting semiconductor laser diode structure for single frequency operation, the structure comprising:

a plurality of generally parallel semiconductor layers formed on a semiconductor substrate and including a planar active region and means for applying an electrical voltage across the diode structure;

a plurality of layers of dielectric material forming an etalon and formed integrally with the laser diode structure, between the parallel semiconductor layers and the semiconductor substrate; and

at least two transverse channels formed in the semiconductor layers and extending in depth through the active region;

wherein at least one of the transverse channels has a reflective surface that is inclined to a direction normal to the plane of the active region, to reflect light of a single frequency out of the structure through a surface that is parallel to the semiconductor layers.

5,629,955

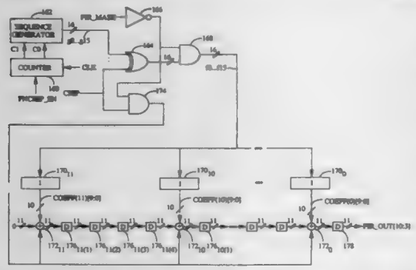
VARIABLE SPECTRAL RESPONSE FIR FILTER AND FILTERING METHOD

John G. McDonough, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 194,823, Feb. 14, 1994, which is a continuation of Ser. No. 846,312, Mar. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 543,496, Jun. 25, 1990, Pat. No. 5,103,459. This application Aug. 16, 1994, Ser. No. 291,647

Int. Cl.[6] H04B *1/69;* **H04J** *13/02;* **H04K** *1/02;* **G06F** *17/10*

U.S. Cl. 375—200 **39 Claims**



1. An apparatus for providing a filtered information signal in a transmission signal gated transmitter comprising:

gating means for receiving an information signal and a predefined filter mask signal for use in masking out portions of said information signal, and for selecting portions of said information signal for transmission as a gated information signal in response to said filter, mask signal; and

filtering means for receiving and filtering said gated information signal using a predetermined filter format.

5,629,956

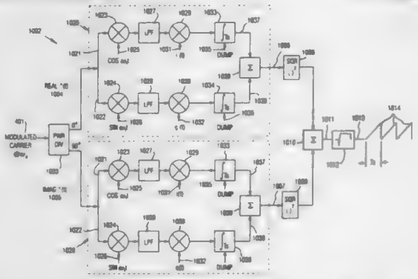
METHOD AND APPARATUS FOR RECEPTION AND NONCOHERENT SERIAL CORRELATION OF A CONTINUOUS PHASE MODULATED SIGNAL

Randolph L. Durrant, Colorado Springs, and Mark Burbach, Peyton, both of Colo., assignors to Omnipoint Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 304,091, Sep. 9, 1994. This application Jun. 7, 1995, Ser. No. 480,167

Int. Cl.[6] H04B *1/707*

U.S. Cl. 375—208 **14 Claims**



11. An apparatus for despreading a received continuous phase modulated spread spectrum signal comprising:

a power divider connected to a received spread spectrum signal, having as outputs a real signal and an imaginary signal,

a first serial correlator connected to said real signal and having as an output a real correlation signal,

a second serial correlator connected to said imaginary signal and having as an output an imaginary signal, and

a calculation circuit connected to said first serial correlator and said second serial correlator, said calculation circuit outputting a unified correlation signal corresponding to a combination of said real correlation signal and said imaginary correlation signal.

5,629,957

METHOD AND APPARATUS FOR SIMULTANEOUSLY DISPLAYING DISTRIBUTION PATTERNS OF EQUALIZED OUTPUT SIGNALS FROM MULTIPLE CHANNELS

Hiroyasu Murata, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 32,236, Mar. 17, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 566,485

Claims priority, application Japan, Mar. 17, 1992, 4-059991

Int. Cl.[6] H03H *7/30;* **G09G** *5/00;* **H04N** *5/445*

U.S. Cl. 375—232 **19 Claims**

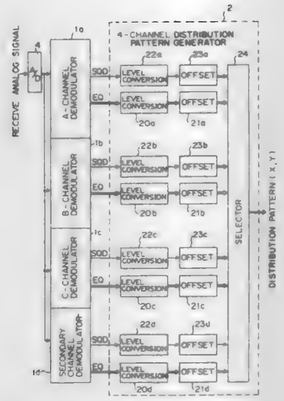
1. A distribution pattern display device for receiving and equalizing signals transmitted on a frequency-division multiplex basis and displaying the distribution patterns of received signals subjected to equalization, comprising:

equalizing means for compensating for distortion which a signal on each frequency channel undergoes on a transmission path;

level conversion means for converting the signal level of an equalized output signal on each channel from said equalizing means by multiplying the equalized output signal on each channel by a predetermined value;

coordinate transformation means for transforming the coordinates of a level-converted equalized output signal on each channel output from said level conversion means so as to display the level-converted equalized output signal in a display having respective display areas corresponding to each frequency channel; and

control means for permitting each of coordinate-transformed equalized output signals on the frequency channels output from said coordinate transformation means to be displayed simultaneously on a corresponding one of display areas of said display.



5,629,958

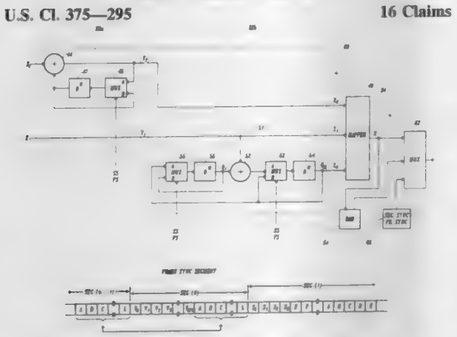
DATA FRAME STRUCTURE AND SYNCHRONIZATION SYSTEM FOR DIGITAL TELEVISION SIGNAL

David A. Willming, Palatine, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 8, 1994, Ser. No. 272,357

Int. Cl.[6] H04L *27/06;7/00*

U.S. Cl. 375—295 **16 Claims**



1. A method of structuring a data frame comprising:

arranging a plurality of encoded data symbols representing a plurality of source data bytes into a predetermined number of data segments comprising a data frame, a predetermined one of said data segments comprising a frame sync segment; and

copying the last N encoded data symbols of the data segment immediately preceding said frame sync segment into the last N symbol positions of said frame sync segment.

5,629,959

WIDEBAND SQUARE-LAW DETECTOR HAVING A TRIANGULAR FREQUENCY CHARACTERISTIC AS WELL AS A TRANSMISSION SYSTEM AND A RECEIVER INCLUDING SUCH A DETECTOR

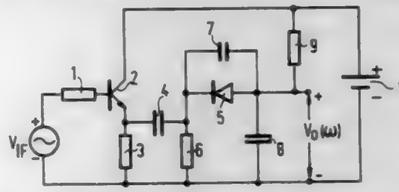
Markus T. Tomesen, Eindhoven, and Pieter W. Hooijmans, Waalre, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1995, Ser. No. 388,547

Claims priority, application European Pat. Off., Feb. 18, 1994, 94200413

Int. Cl.[6] H03D *1/00*

U.S. Cl. 375—340 **6 Claims**



5. A square law detector having an input for an intermediate frequency (IF) signal which is modulated by an FSK baseband signal, an output, and further comprising:

transfer circuit means coupled to said input for processing the IF signal in accordance with a first frequency transfer characteristic in the form of a continuous function having an ascending branch up to a predetermined frequency and a descending branch thereafter, a resulting processed IF signal being produced at an output of said transfer circuit means; and

square law circuit means coupled to the output of said transfer circuit means for detecting an FSK baseband component of the processed IF signal by subjecting the processed IF signal to further processing in accordance with a square law amplitude transfer characteristic, the detected FSK baseband component being produced at an output of said square law circuit means, said output being an output of said square law detector;

said transfer circuit means and said square law circuit means together having a combined frequency transfer characteristic in the form of a continuous function having an ascending branch up to said predetermined frequency and a descending branch thereafter, the angle between the ascending and descending branches of said combined transfer characteristic being narrower than the angle between the ascending and descending branches of said first transfer characteristic.

5,629,960

METHOD FOR REDUCING DISTORTION EFFECTS ON DC OFF-SET VOLTAGE AND SYMBOL CLOCK TRACKING IN A DEMODULATOR

Marek K. Dutkiewicz, Delta, and Philip J. Houghton, Surrey, both of Canada, assignors to Sierra Wireless, Inc., Richmond, Canada

Filed May 22, 1995, Ser. No. 450,947

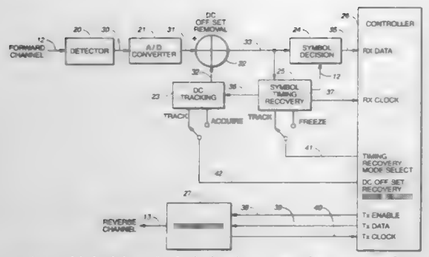
Int. Cl.[6] H03D *1/06;* **H04B** *1/12*

U.S. Cl. 375—346 **14 Claims**

9. In a system having a receiver for receiving an information signal on a first channel, said receiver including a means for deriving a decision clock from said information signal, said information signal having an associated amplitude and DC off-set, a method for minimizing effects of distortion on said decision clock derivation means, said distortion corresponding to a preknown distortion event and having associated event onset and event termination times, said method comprising the steps of:

setting said decision clock derivation means into a first "distortion ready" mode for essentially the duration of said distortion event, wherein when said decision clock derivation means is in said first mode said decision clock is not adjusted and is thereby uneffected by said distortion;

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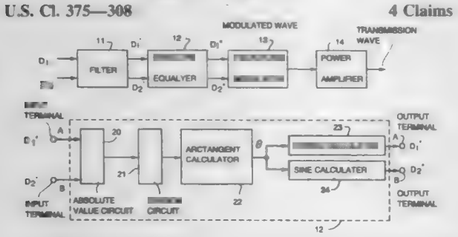
setting said decision clock derivation means into a second mode for times other than said duration of said distortion event.

5,629,961

TRANSMITTER APPARATUS FOR MOBILE SATELLITE COMMUNICATION TERMINAL HAVING AN ENVELOPE EQUALIZER

Hisashi Kawabata, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 20, 1994, Ser. No. 360,237
Claims priority, application Japan, Dec. 21, 1993, 5-322061
Int. Cl.[6] H04L *27/20*
U.S. Cl. 375—308 **4 Claims**



1. A transmitter apparatus for a mobile satellite communication terminal, comprising:

a Nyquist filter receiving two series of orthogonal data (in-phase data and quadrature-phase data) for eliminating high-frequency components from said two series of orthogonal data;

an envelope equalizer for equalizing an amplitude of an output of said Nyquist filter such that an envelope of each phase point to the phase change provides a circular locus with a constant distance to an origin;

an orthogonal phase modulator for orthogonal phase-modulating output signals from said envelope equalizer; and

a high-power amplifier receiving output signals from said orthogonal phase modulator for converting the output signals from said orthogonal phase modulator to RF signals and transmitting said RF signals at a high power.

5,629,962

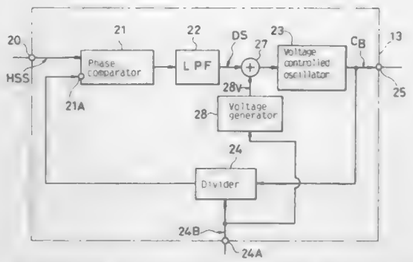
PHASE LOCKED LOOP CIRCUIT

Naoji Okumura, Mino, and Masaaki Fujita, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 27, 1993, Ser. No. 8,797
Claims priority, application Japan, Jan. 28, 1992, 4-013006
Int. Cl.[6] H03L *7/06:7/16:7/18*
U.S. Cl. 375—376 **1 Claim**

1. A phase locked loop circuit comprising:

divider means for dividing a frequency of an input signal to a frequency designated by an external control signal, said external control signal being independent of a video signal provided to said phase locked loop circuit and representing a dividing ratio of said divider means, said external control signal being applied to a control signal input terminal of said divider means, said divider means outputting a divided frequency signal;



a voltage generator for generating a voltage based on said external control signal representing said dividing ratio;

a phase comparator for comparing a phase of a horizontal synchronizing signal of said video signal with a phase of said divided frequency signal output by said divider means, and thereby outputting a compared output signal;

low pass filter means for extracting a direct current component from said compared output signal output by said phase comparator;

an adder for adding said voltage generated by said voltage generator to an output of said low pass filter means, an output of said adder being provided to said oscillation means; and

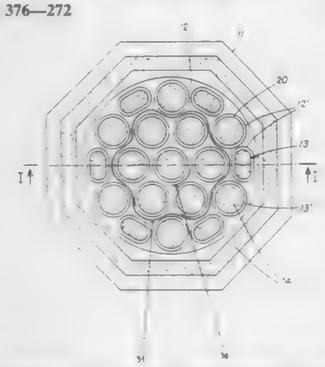
oscillation means for outputting an oscillating signal having a frequency that equals a product of a frequency of said horizontal synchronizing signal and said dividing ratio, which is based on said direct current component output from said low pass filter, said oscillating signal being applied to said divider means.

5,629,963

STORAGE TANK FOR A RADIOACTIVE FISSILE MATERIAL SOLUTION

Jean-Marc Niezborala, Rueil-Malmaison; Jacques Bara, Hermeray, and François Justin, Villebon sur Yvette, all of France, assignors to Compagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

PCT No. PCT/FR93/01135, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/11883, PCT Pub. Date May 26, 1994
PCT Filed Nov. 18, 1993, Ser. No. 436,456
Claims priority, application France, Nov. 19, 1992, 92 13906
Int. Cl.[6] G21F *5/002*
U.S. Cl. 376—272 **7 Claims**



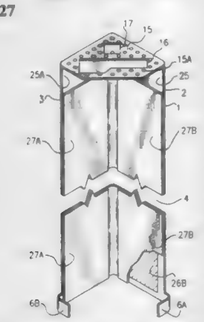
1. A storage tank for radioactive fissile material solutions, said tank (**11**) comprising at least one cell for containing a radioactive solution (**12**) and solid neutron absorbing material (**14**) for avoiding the risks of criticality, said radioactive solution (**12**) being separated from said solid neutron absorbing material (**14**) by metal walls (**12'**, **13'**), which tank is characterized in that an array of substantially vertical tubes (**13**) containing solid neutron absorbing material (**14**) is arranged within said cell, said tubes (**13**) having metal walls (**13'**) and being located in compartments which are themselves delimited by metal walls (**12'**) and distributed throughout said radioactive solution (**12**).

5,629,964

NEUTRON ABSORBING APPARATUS

Paul Roberts, 3057 SE. Waveland Pl., Stuart, Fla. 34996

Continuation-in-part of Ser. No. 208,866, Mar. 11, 1994, Pat. No. 5,479,463. This application Jul. 25, 1995, Ser. No. 506,184
Int. Cl.[6] G21C *7/00*
U.S. Cl. 376—327 **26 Claims**



1. A neutron absorbing apparatus for external application to a BWR fuel assembly of the type incorporating a flow channel and having a longitudinal axis, a generally rectangular cross section lying in a plane orthogonal to said longitudinal axis, an upper and a lower end with each of said ends lying in separate planes that are generally orthogonal to said longitudinal axis, and four sides with each side generally extending from one side of the upper end to a corresponding side of the lower end and running generally parallel to said longitudinal axis, a fuel rod affixed to and located within said fuel assembly and oriented generally parallel to said longitudinal axis, a bail affixed to and extending outwardly from said upper end and oriented generally parallel to said longitudinal axis, a triangular corner plate lying in a plane generally orthogonal to said longitudinal axis with the edges along two of its triangular sides aligned with and attached to two edges of one corner of the fuel assembly at said upper end of the fuel assembly, said neutron absorbing apparatus comprising:

(a) a mounting plate having a generally rectangular cross section and a size generally equal to that of said upper end of the neutron absorbing apparatus, said mounting plate being oriented in a plane generally orthogonal to said longitudinal axis and being positioned immediately above and in generally alignment with said upper end of the neutron absorbing apparatus, said mounting plate including a first and a second aperture, said first aperture being aligned with and being of sufficient magnitude to pass said bail,

(b) a tongue rotatably mounted to said mounting plate and located in said second aperture in said mounting plate, said tongue having a first and a second end and said tongue being positioned to set the first end of the tongue beneath the corner plate to secure said neutron absorbing apparatus to said fuel assembly,

(c) means for detachably securing the second end of the tongue to the mounting plate to latch said first end of the tongue beneath said corner plate, and

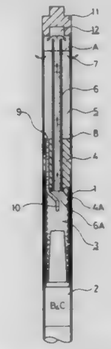
(d) a first backing plate positioned generally parallel to and generally covering a first side of said four sides of the fuel assembly, said first backing plate having an upper and a lower end, the upper end of said first backing plate being connected to a first edge of the mounting plate, said backing plate being formed from a material that is a neuron absorber.

5,629,965

DIVING BELL TYPE CONTROL ROD EQUIPPED WITH SODIUM INFLOW PORT

Tomonori Soga, Ibaraki-ken, and Kiyoshi Harada, Hitachi, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed May 15, 1996, Ser. No. 647,761
Claims priority, application Japan, May 16, 1995, 7-140065
Int. Cl.[6] G21C *7/10*
U.S. Cl. 376—327 **1 Claim**



1. A diving bell type control rod having a control element including

a cladding tube to be immersed longitudinally in a liquid sodium coolant, both ends of said cladding tube being provided with upper and lower end plugs;

a pellet chamber disposed in said cladding tube for loading a plurality of pellets of boron carbide;

an intermediate plug disposed above said pellet chamber;

an upper chamber formed above said intermediate plug;

a vent tube so disposed as to penetrate through said intermediate plug and to allow said pellet chamber to communicate with said upper chamber; and

a vent hole so formed as to penetrate through said cladding tube located at said upper chamber; characterized in that

said vent hole comprises an upper vent hole and a lower vent hole formed in upper and lower two stages in such a manner as to penetrate through said cladding tube located at said upper chamber,

a sodium inflow port is so formed as to open to the upper surface of said intermediate plug, and

a sodium introduction tube is so disposed as to extend from said sodium inflow port to a position below the lower end surface of said vent tube while penetrating through said intermediate plug.

5,629,966

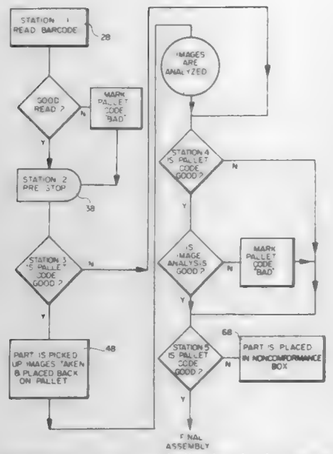
REAL TIME RADIOGRAPHIC INSPECTION SYSTEM

Kerry R. Dykster, West Haven; Jeffrey P. England, Clinton, and Ronda R. Devereaux, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Division of Ser. No. 450,452, May 25, 1995. This application Apr. 8, 1996, Ser. No. 629,307
Int. Cl.[6] G01N *23/04*
U.S. Cl. 378—57 **15 Claims**

1. A real time radiographic system for performing a real time radiographic test on an article, comprising: a code reading station; code reading means located at said code reading station for verifying the presence of an acceptable identifying code on an article

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and for producing a good data indication in the presence of an acceptable identifying code and a bad data indication in the absence of an acceptable identifying code; a test station; a real time radiographic test instrument located at said test station for performing a real time radiographic test on an article and producing corresponding test data; first bypass means responsive to said bad data indication for causing the corresponding article to bypass said real time radiographic test instrument without being tested thereby; data analysis means for analyzing said test data and producing said good data indication if said test data is acceptable and a bad data indication if said test data is not acceptable; a reject station; conveyor means for conveying a part through said code reading station, said test station and said reject station; and reject means located at said reject station and responsive to a bad data indication for removing the corresponding article from said conveyor means.

5,629,967

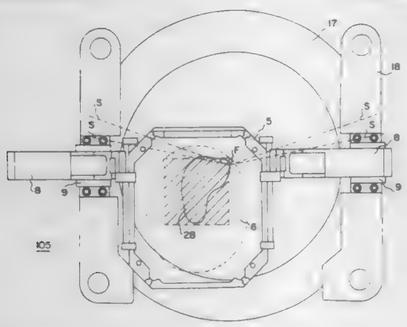
POSITIONING DEVICE AND METHOD FOR RADIATION TREATMENT

Dan Leksell, Stockholm, and Börje Nilsson, Uppsala, both of Sweden, assignors to Elekta Instrument AB, Sweden

Division of Ser. No. 255,667, Jun. 9, 1994, Pat. No. 5,528,651. This application Feb. 13, 1996, Ser. No. 596,870

Int. Cl.[6] A61N *5/10*

U.S. Cl. 378—65 **38 Claims**



1. A method of selectively irradiating an object, comprising:

determining the position of a focus point with respect to a radiation unit;

immobilizing a portion of an object with respect to a frame;

supporting said object with respect to a base of said radiation unit with said frame;

coupling said frame to a suspension system;

fixing a position of said frame by said suspension system with respect to said radiation unit to determine the position of said object;

automatically moving said frame by said suspension system with respect to said focus point to expose said object to radiation from said radiation unit wherein said object maintains a position with respect to said focus point during said movement such that said focus point remains inside said object while said object is being moved.

5,629,968

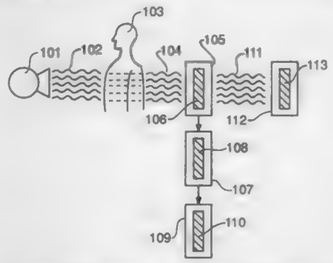
APPARATUS AND METHOD FOR OBTAINING TWO RADIOGRAPHIC IMAGES OF AN OBJECT FROM ONE EXPOSING RADIATION DOSE

David P. Trauernicht, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 12, 1995, Ser. No. 440,052

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.8 **16 Claims**



1. An apparatus for diagnostic radiographic imaging, said apparatus comprising:

(a) a stationary x-ray source for providing a two dimensional area exposing dose of x-rays, thereby irradiating a stationary imaging object;

(b) a first x-ray radiation large area receptor for detecting two dimensional imagewise modulated x-rays from said exposing dose emitted from said x-ray source and from said imaging object, said object being interposed between said source and said first receptor, said first receptor thereby providing a first image of said object from said exposing dose; and

(c) a second x-ray radiation large area receptor for detecting two dimensional imagewise modulated x-rays from said exposing dose emitted from said first receptor, said second receptor being situated behind said first receptor and comprising x-ray converter means and detector means for detecting a converted x-ray image, said second receptor thereby providing a digital second image of said object from said exposing dose;

wherein said x-ray converter means comprises a scintillating phosphor, a channeled light converter, or a fiber-optic scintillator, and said detector means comprises a thin-film transistor (TFT) array.

5,629,969

X-RAY IMAGING SYSTEM

Hiroya Koshishiba, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

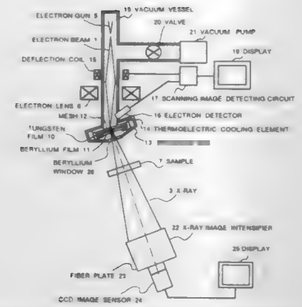
Filed Mar. 13, 1995, Ser. No. 404,198

Claims priority, application Japan, Mar. 18, 1994, 6-048316

Int. Cl.[6] H01J *35/30*

U.S. Cl. 378—138 **10 Claims**

1. An X-ray imaging system comprising:



an electron gun for generating and accelerating an electron beam;

an electron optical means for focusing the electron beam generated from the electron gun and irradiating said electron beam to a transmission-type target, said transmission-type target being disposed on a prolonged line in an incident direction of the focussed electron beam directed to said transmission-type target;

a scanning electron image detection unit for deflecting said electron beam and detecting reflected electrons from the transmission-type target and secondary electrons;

an X-ray image intensifier installed other than on the prolonged line in the incident direction of the electron beam directed to said transmission-type target, said X-ray image intensifier being an image detector for detecting transmitted X-rays; and

a device for imaging an output image of said X-ray image intensifier.

5,629,970

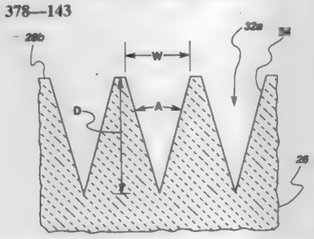
EMISSIVITY ENHANCED X-RAY TARGET

David W. Woodruff, Clifton Park, and Robert D. Lillquist, Niskayuna, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 11, 1996, Ser. No. 583,916

Int. Cl.[6] H01J *35/08*

U.S. Cl. 378—143 **20 Claims**



1. A target operable at operating temperature and rotary speed in an x-ray tube comprising:

an annular disk having an outer surface including front and back opposite faces;

an annular focal track fixedly joined to said disk front face for producing x-rays upon electron impingement thereof, and for heating said disk to said operating temperature; and

said disk outer surface being rough away from said focal track, with surface roughness pits having width and depth dimensions greater than a wavelength of peak radiant emissions of said target at said operating temperature for increasing emissivity of said target to increase thermal radiation cooling thereof, and said surface roughness being disposed substantially uniformly around said disk for maintaining vibratory balance of said target at said operating speed.

5,629,971

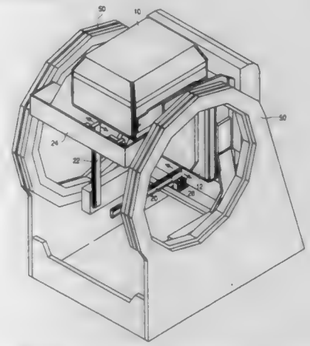
SCAN SPEED FOR TRANSMISSION EXPOSURE REDUCTION IN A NUCLEAR MEDICINE CAMERA

Steven M. Jones, Pleasanton; Michael J. Janicki, San Jose; Thomas F. Lang, Fremont; John R. Liebig, San Jose, and Xiaohan Wang, Alameda, all of Calif., assignors to ADAC Laboratories, Milpitas, Calif.

Filed May 11, 1995, Ser. No. 439,111

Int. Cl.[6] G21K *5/10*

U.S. Cl. 378—145 **24 Claims**



1. An apparatus for collecting transmission data associated with an object, said apparatus comprising:

a radiation detector for detecting radiation and reporting image information;

a source of radiation for emitting transmission radiation through said object to said radiation detector;

a processor coupled to receive information from said radiation detector and coupled to control said source of radiation, said processor for controlling said source of radiation to perform a first transmission prescan over said object for a first duration and generating in response thereto a first count density information;

said processor for computing a second duration for a second transmission scan phase based on said first count density information; and

said processor for controlling said source of radiation to perform said second transmission scan phase over said object for said second duration and generating in response thereto a second count density information.

5,629,972

INTRAORAL RADIOGRAPH ALIGNMENT DEVICE

Ernest Hausmann, Amherst; Darold Wobschall, Williamsville; Lance Ortman, Snyder, all of N.Y.; Evren Kutlubay, San Jose, Calif.; Kristin Allen, Buffalo, and David Odrobina, West Seneca, both of N.Y., assignors to Research Foundation of State University of New York, Buffalo, N.Y.

Continuation-in-part of Ser. No. 63,590, May 18, 1993, Pat. No. 5,513,240. This application Nov. 3, 1995, Ser. No. 552,591

Int. Cl.[6] A61B *6/14*

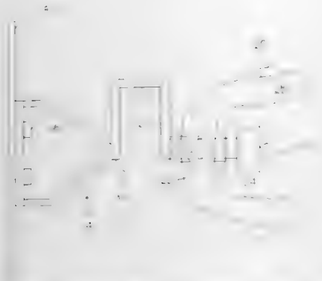
U.S. Cl. 378—170 **16 Claims**

1. An apparatus for providing a replicable projection geometry between an energy source, an intraoral target area, and an image receptor, comprising:

a rigid alignment arm, supporting at one end an alignment ring, and supporting at its opposite end an image receptor, the plane of said alignment ring being perpendicular to said alignment arm and said alignment ring having a planar face;

a platform mountable to said arm a fixed relationship to said image receptor, said platform supporting a quantity of a material bearing impressions of a patient's tooth surfaces; and,

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a sensor ring, mountable about an energy beam source and having a planar surface for engaging the planar face of said alignment ring,

whereby flat contact between the planar surfaces of said alignment ring and sensor ring produces a replicable projection geometry between said energy beam source, target area, and image receptor.

5,629,973

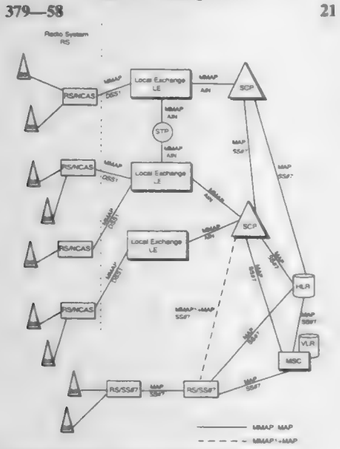
Patent Not Issued For This Number

5,629,974

COMMUNICATION SYSTEM PROVIDING MOBILITY MANAGEMENT INTERNETWORKING BETWEEN A C-INTERFACE RADIO SYSTEM AND AN OVERLAY MOBILE RADIO NETWORK

Jussi Rajala, Espoo; Kari Aaltonen, Järvenpää, both of Finland, and Juhani Murto, Coppel, Tex., assignors to Nokia Telecommunications Oy, Espoo, Finland

Filed Nov. 16, 1995, Ser. No. 558,533
Int. Cl.[6] H04Q *7/24*
U.S. Cl. 379—58 **21 Claims**



1. A communication system comprising:

a mobile radio network including

at least one radio system comprising a plurality of radio stations for communicating with mobile stations and a radio station controller for performing control functions;

a service control point SCP for providing mobility management functions, the service control point SCP having access to a common channel signalling network for sending and receiving first application layer protocol messages;

a switch for transmitting transparently second application layer protocol messages between the radio station controller and the service control point SCP;

at least one network element having access to said common channel signalling network for sending and receiving first application layer protocol messages;

wherein in said system:

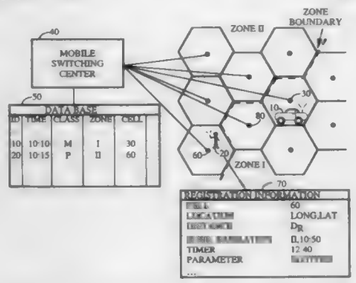
the service control point SCP includes a protocol conversion means for converting the first application layer protocol of the mobility management message to the second application layer protocol and for converting the second application layer protocol of the mobile management message to the first application layer protocol.

5,629,975

COMPREHENSIVE MOBILE COMMUNICATIONS DEVICE REGISTRATION METHOD

Edward G. Tiedemann, Jr.; Gadi Karmi, and Frank Quick, all of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Division of Ser. No. 370,771, Dec. 23, 1994, abandoned, which is a continuation of Ser. No. 26,899, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 763,091, Sep. 20, 1991, Pat. No. 5,289,527. This application Sep. 29, 1995, Ser. No. 537,059
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 379—60 **28 Claims**



1. In a cellular communication system in which a mobile station in a first coverage area registers and where said mobile station is provided location information of a first base station corresponding to said first coverage area and is provided zone information of said first base station, a method for re-registration comprising the steps of:

communicating to said mobile station, by a second base station corresponding to a second coverage area, location information and zone information of said second base station;

computing at said mobile station a distance between said first base station and said second base station;

registering by said mobile station with said second base station if said computed distance is greater than or equal to a predetermined distance value; and

registering by said mobile station with said second base station if said zone information of said second base station is different from said zone information of said first base station.

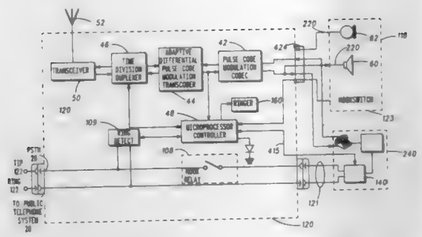
5,629,976

TELCO-LESS CT-2 BASE

Wai S. Loke, No. 25 Victoria Park Road, Singapore, Singapore, and Chee T. Tai, No. 94 Pemimpin Terrace, Singapore, Singapore

Filed Jan. 23, 1995, Ser. No. 376,984
Int. Cl.[6] H04Q *7/30*
U.S. Cl. 379—61 **7 Claims**

1. A CT-2 base telephone converter comprising:



a CT-2 transceiver for receiving a modulated RF signal and for demodulating the signal to produce CT-2 packets;

a time division duplexer for splitting the packets into signalling bits and a compressed ADPCM digital signal;

a controller for receiving the signalling bits from the time division duplexer, reading the signalling bits, and performing associated conventional signalling functions in response thereto;

an ADPCM transcoder for receiving the compressed ADPCM digital signal from the time division duplexer and decompressing the ADPCM digital signal to form a digital signal;

a PCM codec for receiving the digital signal for decoding the digital signal into an analog telephone signal;

a telephone port having a pair of tip and ring lines for connecting the tip and ring lines to a separate telephone base having a TELCO interface; and

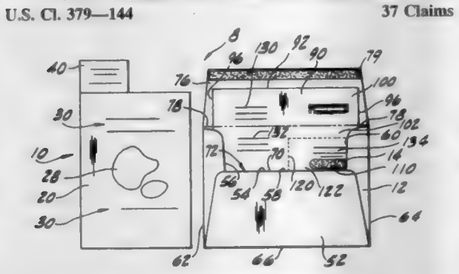
a PCM codec port for coupling the analog telephone signal to a wired handset port of the separate telephone base having internal connections to the TELCO interface, wherein the analog telephone signal is coupled via the TELCO interface and the tip and ring lines of the telephone port to a PSTN.

5,629,977

METHOD AND ASSEMBLY FOR PROVIDING TELEPHONE CALLING CREDIT IN COMBINATION WITH A GREETING CARD

David Fonseca, 3208 Saddlehorn Dr., Lawrence, Kans. 66049

Filed Mar. 17, 1993, Ser. No. 32,797
Int. Cl.[6] H04M *17/00*; **G06K** *5/00*; **B42D** *15/00*
U.S. Cl. 379—144 **37 Claims**



1. A greeting card assembly constructed to enable a recipient designated by a sender to remotely credit telephone charges against a prepaid account thereby enabling the recipient to selectively and interactively communicate with a person by telephone, the greeting card assembly comprising:

the combination of a greeting card and an envelope having an inside pocket adapted to receive and hold the greeting card; and

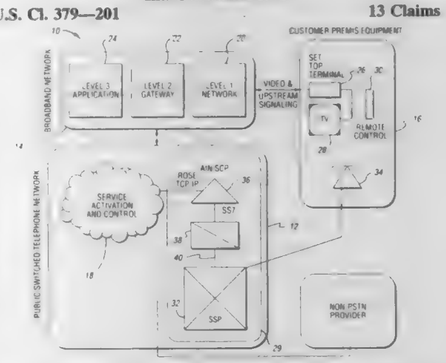
a unique visually-discernible calling card access identifier associated with the combination, the access identifier designating the prepaid account having a predetermined amount of telephone calling credit against which telephone calls can be charged.

5,629,978

SERVICE DELIVERY USING BROADBAND

Mark S. Blumhardt, Niwot, and Carleton A. Smith, Broomfield, both of Colo., assignors to US WEST Technologies, Inc., Boulder, Colo.

Continuation of Ser. No. 202,325, Feb. 28, 1994, abandoned. This application Nov. 16, 1995, Ser. No. 558,203
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—201 **13 Claims**



1. A system for providing a telephone service subscriber the interactive capability to activate or create telephone services without direct interaction with telephone service provider personnel, comprising:

a Public Switched Telephone Network (PSTN) having Service Activation and Control functionality including Service Negotiation;

a Set Top Terminal (STT) for receiving downloaded video and for sending upstream signaling;

a Broadband Network electrically coupled between the PSTN and the SST, the Broadband Network comprising a level **1** network for coordinating the delivery of video applications and for handling the upstream signaling from the STT, a level **2** gateway for providing an interface for video applications, and at least one level **3** video application;

a Graphical User Interface GUI) electrically coupled to the STT, said GUI operative to display the downloaded video to the telephone service subscriber and to access the Service Activation and Control functionality in the PSTN; and,

a Control Unit for enabling the telephone service subscriber to navigate the GUI.

5,629,979

HINGE APPARATUS HAVING A SELF-LATCHING HINGE SHAFT FOR FOLDABLE RADIOTELEPHONES

James D. Domoleczny, Vernon Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 696,430, May 6, 1991, abandoned. This application Feb. 9, 1995, Ser. No. 386,172
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—433 **8 Claims**

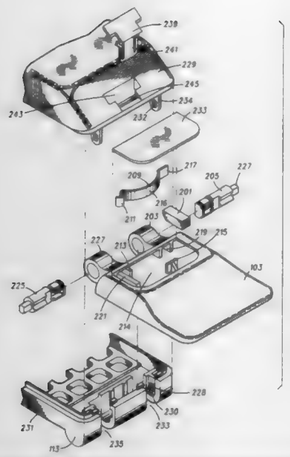
1. A foldable radiotelephone comprising:

first and second housing portions;

a first hinge shaft for rotatably coupling the first and second housing portions about an axis of rotation, the first hinge shaft having lateral surfaces and a circumferential surface; and

a first spring arm integrally formed with the first hinge shaft and disposed parallel to the axis of rotation, the first spring arm having a first end attached to a lateral surface of the first hinge shaft and a second end disposed in free space, the second end of the first spring arm being permitted to flex in a direction substantially perpendicular to the axis of rotation, the first spring arm latches the first hinge shaft and the first housing portion when the first hinge shaft is moved to a first axial position on the axis of rotation and unlatches the first hinge

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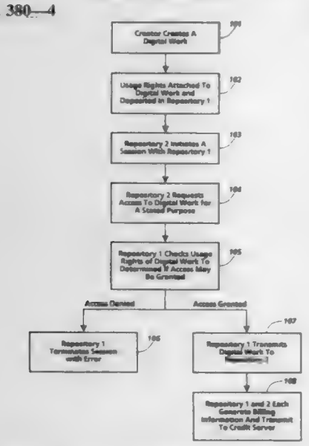
shaft and the first housing portion when the first hinge shaft is moved to a second axial position on the axis of rotation.

5,629,980

SYSTEM FOR CONTROLLING THE DISTRIBUTION AND USE OF DIGITAL WORKS

Mark J. Stefik, Woodside, and Michalene M. Casey, Morgan Hill, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1994, Ser. No. 344,042
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **31 Claims**



1. A system for secure distribution and control of digital works between repositories comprising:

means for creating usage rights, each instance of a usage right representing a specific instance of how a digital work may be used or distributed;

means for attaching a created set of usage rights to a digital work;

a communication medium for coupling repositories to enable exchange of repository transaction messages;

a plurality of general repositories for storing and securely exchanging digital works with attached usage rights, each of said general repositories comprising:

a storage means for storing digital works and their attached usage rights;

an identification certificate for indicating that the associated general repository is secure;

an external interface for removably coupling to said communications medium;

a session initiation transaction processing means for establishing a secure and trusted session with another repository, said session initiation transaction processing means using said identification certificate;

a usage transaction processing means having a requester mode of operation for generating usage repository transaction messages to request access to digital works stored in another general repository, said usage repository transaction message specifying a usage right, said usage transaction processing means further having a server mode of operation for determining if a request for access to a digital work stored in said storage means may be granted, said request being granted only if the usage right specified in said request is attached to said digital work; and

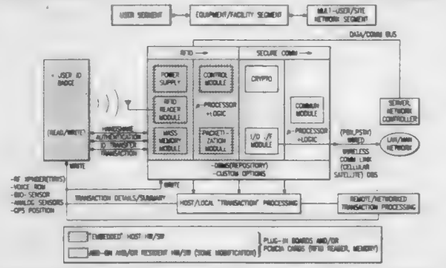
an input means coupled to said usage transaction processing means for enabling user created signals to cause generation of a usage repository transaction message to request access to digital works.

5,629,981

INFORMATION MANAGEMENT AND SECURITY SYSTEM

Virupax M. Nerlikar, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 29, 1994, Ser. No. 283,081
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—25 **42 Claims**



27. An information management and security system comprising:

a first security badge including a transponder, a mass memory and an input/output circuit;

a first transceiver to wirelessly send and receive signals to and from said first transponder, said first transceiver to continuously transmit a broadcast signal until receiving a response from said first security badge and then, upon receipt of said response, said transceiver to receive a first authorization code from said first security badge and to store a record of the receipt of the authorization code;

a first terminal device connected to and activated by said first transceiver;

a second security badge including a transponder, a mass memory and an input/output device;

a second transceiver to send and receive signals to and from said second RFID transponder, said second transceiver to continuously transmit a broadcast signal until receiving a response from said second security badge and then, upon receipt of said response, said second transceiver to receive a second authorization code from said second security badge and to store a record of the receipt of the authorization code;

a second terminal device connected to and activated by said transceiver; and

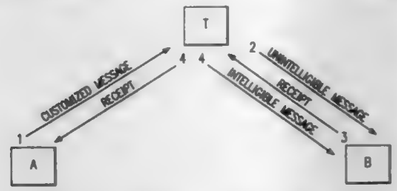
a host network element in communication with said first transceiver and said second transceiver, said host network element to receive the first authorization code from the first transceiver and the second authorization code from the second transceiver and compare the first and second authorization codes with at least one host authorization code, said host network element to send a first verification code to the first transceiver upon verification of the first authorization code and to send a second verification code to the second transceiver upon verification of the second authorization code.

5,629,982

SIMULTANEOUS ELECTRONIC TRANSACTIONS WITH VISIBLE TRUSTED PARTIES

Silvio Micali, 459 Chesnut Hill Ave., Brookline, Mass. 02146

Continuation of Ser. No. 511,518, Aug. 4, 1995, Pat. No. 5,553,145, which is a continuation-in-part of Ser. No. 408,551, Mar. 21, 1995. This application Aug. 20, 1996, Ser. No. 700,270
Int. Cl.[6] H04L *9/30*
U.S. Cl. 380—30 **35 Claims**



1. A method of transmitting a message using a trusted party, comprising the steps of:

(a) a sender causing the trusted party to be provided with a version of the message that is encrypted in a key that is not available to the trusted party, and causing the trusted party to receive information identifying the sender and information identifying a recipient;

(b) the trusted party using the information identifying the recipient to cause information to be provided to the recipient that allows the recipient to retrieve the message and identify the sender; and

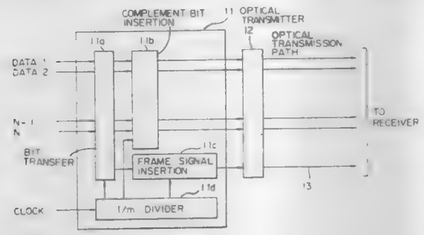
(c) the trusted party causing a receipt for the message to be provided to the sender.

5,629,983

PARALLEL TRANSMISSION THROUGH PLURALITY OF OPTICAL FIBERS

Nobuhiro Fujimoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 991,462, Dec. 16, 1992, abandoned. This application Oct. 31, 1995, Ser. No. 538,620
Claims priority, application Japan, Dec. 17, 1991, 3-333018
Int. Cl.[6] H04B *10/12;* **H04J** *3/06*
U.S. Cl. 380—46 **14 Claims**



1. A parallel transmission system for transmitting a plurality of series of input data from a transmitter side to a receiver side through a plurality of optical transmission lines, comprising:

a coding unit for coding N series of the input data into N+1 series of transmission data so that each of N+1 series of transmission data have frames and have the same transmission rates as those of the input data in the transmitter side;

an optical transmitter for converting the N+1 series of transmission data into N+1 series of optical signals in the transmitter side;

an optical receiver for converting the N+ 1 series of optical signals into N+1 series of electrical signals of the transmission data in the receiver side; and

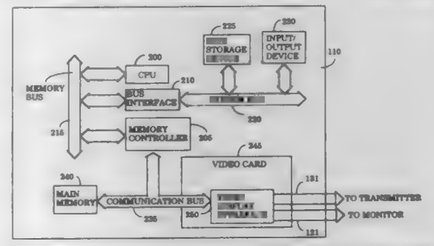
a decoding unit for decoding the N+1 series of the transmission data into N series of data to reproduce the N series of the input data in the receiver side.

5,629,984

SYSTEM AND METHOD FOR DATA SECURITY

Charles E. McManis, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 10, 1995, Ser. No. 402,485
Int. Cl.[6] G09C *5/00;* **H04K** *1/02*
U.S. Cl. 380—54 **20 Claims**



12. A system for preventing an unauthorized person from intelligibly viewing a video data frame displayed on a display device, comprising;

a shutter device;

a transmitter coupled to said shutter device, said transmitter activates said shutter device to become opaque when the display device is displaying a video flash frame being a video frame having a majority of its pixels illuminated and to become transparent when the display device is displaying said video data frame; and

a data processing system coupled to the display device and said transmitter, including:

a memory bus,

a central processing unit coupled to said memory bus, said central processing unit processes said video data frame,

a communication bus,

a main memory element coupled to said communication bus, said main memory element contains said video data frame,

a memory controller coupled to said memory bus and said communication bus, said memory controller enables said video data frame to propagate from said central processing unit to said main memory element, and

a video display interface coupled to said communication bus, said transmitter and the display device, said video display interface alternatively displays said video data frame and said video flash frame and to output control signals to said transmitter in order to place said shutter device in a transparent state upon displaying said video data frame via the display device and to place said shutter device in an opaque state upon displaying said video flash frame via the display device.

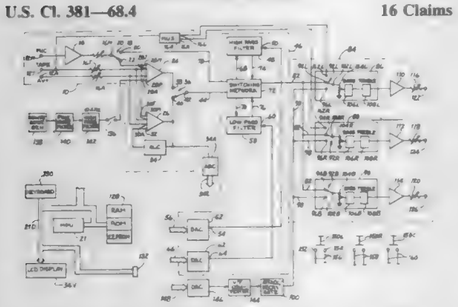
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5,629,985

APPARATUS AND METHODS FOR AUDITORY CONDITIONING

Billie M. Thompson, 1635 E. Seldon La., Phoenix, Ariz. 85020

Filed Sep. 23, 1994, Ser. No. 311,215
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68.4 16 Claims



1. Apparatus for enhancing an input signal representation of sound, comprising:

input means for providing a signal in the audio frequency range in response to said input signal, said input means comprising:

an amplifier stage having a gain inversely related to the amplitude of said input signal, whereby said amplifier stage provides a compressed gain signal, said amplifier stage comprising:

a summing amplifier of the type that provides an output signal having an amplitude proportional to the sum of the amplitude of signals respectively applied to its inputs, said input signal being applied to a first input of said summing amplifier; and

an automatic level control circuit connected to the output of said summing amplifier and to a second input of said summing amplifier said automatic level control circuit having a gain inversely related to the signal provided by said summing amplifier;

an audio filter, connected to said input means, that provides a filtered audio signal, said audio filter having variable transmission characteristics;

output means, connected to said audio filter means, for providing an output signal in response to said filtered audio signal; and

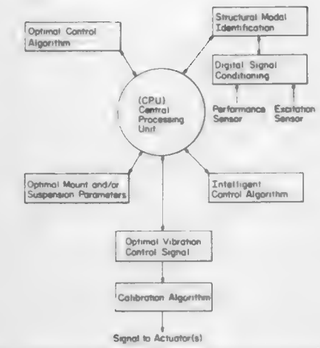
control logic means for selecting said transmission characteristics and for causing an attenuation and equalization of said output signal in accordance with a stored program, said control logic means being operable to alternatively cause a coupling of at least one of said input signal and said compressed gain signal to said audio filter.

5,629,986

METHOD AND APPARATUS FOR INTELLIGENT ACTIVE AND SEMI-ACTIVE VIBRATION CONTROL

Rahmat Shoureshi, West Lafayette, Ind., assignor to Cooper Tire & Rubber Company, Findlay, Ohio

Continuation of Ser. No. 273,377, Jul. 11, 1994, Pat. No. 5,418,858. This application May 22, 1995, Ser. No. 445,647
Int. Cl.[6] A61F *11/06*; H04B *15/00*
U.S. Cl. 381—71 10 Claims



1. The method of controlling and attenuating vibration or noise in a structure, such as an automotive vehicle, where the vibration is induced by vibration excitation sources, comprising

providing a plurality of sensors for extracting signals related to vibration and/or acoustic noise from the structure and its environs,

providing a plurality of actuators for applying attenuating noise and/or vibration to the structure,

providing a microprocessor having inputs from the sensors and outputs to the actuators,

operating the microprocessor with an optimal control algorithm based on minimum variance,

then operating the microprocessor using an intelligent control algorithm,

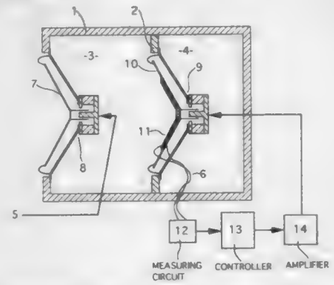
the microprocessor then generating an output signal and applying such signal to the actuators which will minimize and/or filter the vibration or noise introduced to the structure.

5,629,987

LOUDSPEAKER SYSTEM WITH CLOSED HOUSING FOR IMPROVED BASS REPRODUCTION

Maximilian H. Hobelsberger, Dorfstr. 16, CH-5303 Würenlingen, Switzerland

Continuation of Ser. No. 15,855, Feb. 10, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,738
Claims priority, application Switzerland, Feb. 15, 1992, 438/92
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—96 6 Claims



1. A loudspeaker system with closed housing for improved bass reproduction, comprising:

an acoustically closed housing;

a loudspeaker being so mounted in the housing that said loudspeaker's membrane's front faces outward of the housing;

a soundproof and pressure-tight wall dividing the inner volume of said acoustically closed housing into two chambers, whereby the first of said chambers is enclosed by the membrane of said loudspeaker, said inner wall and the walls of said housing, and the second of said chambers is enclosed by said inner wall and the walls of said housing;

a closed loop automatic control system, comprising:

an electrodynamic transducer, being built into an opening of said inner wall and separating with said transducer's membrane said first and said second chamber;

a pressure sensor, being placed in said first inner chamber which adjoins the membrane of said loudspeaker, whereby said pressure sensor is attached to the surface of said transducer's membrane, for measuring the air pressure changes in this chamber and producing an electrical signal which is proportional to these pressure changes;

a measuring circuit, to the input of which the output of said sensor is applied;

a power amplifier, the output of said amplifier being connected to said electrodynamic transducer to drive said transducer;

an electrical controller, to the input of which the signal produced by said measuring circuit is applied,

the output of said controller being connected to the input of said power amplifier to drive the amplifier,

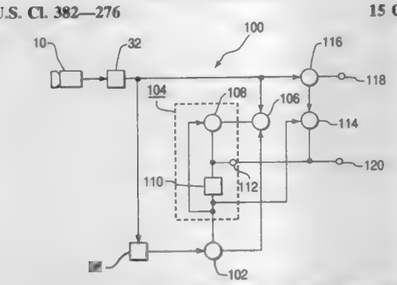
and said controller being dimensioned to hold constant the pressure in said first inner chamber by causing said electrodynamic transducer's membrane to move.

5,629,988

SYSTEM AND METHOD FOR ELECTRONIC IMAGE STABILIZATION

Peter J. Burt, and Keith J. Hanna, both of Princeton, N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Continuation of Ser. No. 71,814, Jun. 4, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 328,783
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—276 15 Claims



1. In an electronic image stabilization method responsive to a sequence of successive pairs of image frames in digital form, wherein said method includes the steps of

(a) employing an iteratively-operated feedback loop comprising a first image warper, a displacement estimator, an adder and a memory to reduce a most erroneous initial estimate of displacement between images depicted by each pair of image frames of said sequence to a least erroneous final estimate of displacement, and

(b) storing said final estimate of displacement in said memory; the improvement comprising the further steps of:

(c) converting said final estimate of displacement stored in said memory into output transformation parameters in accordance with a given image-change model that includes at least one of zoom, parallax translation, rotation, dilation, and lens distortion; and

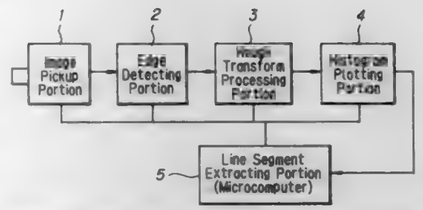
(d) employing a second image warper to warp a certain image frame of each of said successive pairs of image frames in accordance with said output transformation parameters.

5,629,989

IMAGE LINE-SEGMENT EXTRACTING APPARATUS

Taku Osada, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1994, Ser. No. 229,371
Claims priority, application Japan, Apr. 27, 1993, 5-135718
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—281 3 Claims



1. An image line-segment extracting apparatus which extracts a sequence of pixels (dots) of an edge in an image from a digital image composed of pixels, conducts Hough transformation of the sequence of pixels, plots a histogram according to the Hough transform function values, detects a peak of frequency on the histogram, and extracts a line segment corresponding to the detected peak from the image, characterized in that:

the apparatus includes means to determine a scope in which influence may appear and an amount of influence that may prevent the extraction of a line segment of a specified peak to be an object of line segment extracting processing detected on the histogram upon frequency distribution thereof;

means to determine whether another peak besides the specified peak exists in the region of influence;

means to correct a histogram frequency value of each of detected peaks other than the specified peak and their neighboring points in the histogram defined to be in the region of influence according to the determined amount of influence; and

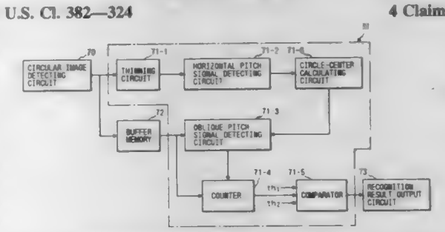
means for detecting a peak in the corrected histogram and then extracting a line segment corresponding to said peak in the corrected histogram detected by said detecting means.

5,629,990

IMAGE PROCESSING SYSTEM

Masato Tsuji; Masao Seki; Svay Leng; Koji Aikawa; Koichiro Shinohara, and Fumio Nakaya, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 132,983, Oct. 7, 1993, Pat. No. 5,515,451. This application Jun. 2, 1995, Ser. No. 458,697
Claims priority, application Japan, Oct. 8, 1992, 4-296323
Int. Cl.[6] G06K *9/28*
U.S. Cl. 382—324 4 Claims



1. In an image processing system which reads, in pixel units, an image on an original document using a scanner, processes the read image, and outputs image data, said image processing system comprising a system for recognizing a concentric circular image, and said recognizing system comprising:

detecting means for detecting the concentric circular image on an original document;

thinning means for thinning a signal representing a pixel on a line in a fast scan direction that is detected by said detecting means;

horizontal pitch signal detecting means for detecting a circular image signal on a line, extending in the fast scan direction, which is located at a specific pitch corresponding to a diameter of the circle from the detected signal thinned by said thinning means;

circle-center calculating means for calculating a center position of a circle on the assumption that the pixel signal detected by said thinning means and said circular image signal detected

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by said horizontal pitch signal detecting means are located at both ends of the diameter of the circle;

oblique pitch signal detecting means for detecting that the image data at both ends of the diameter of the circle is on an oblique line turned a predetermined angle from the fast scan direction and for detecting that an oblique line in the slow scan direction is contained in the image data stored in a detected image storing means;

counter means for counting the number of concentric circle pixels of the image data stored in a detected image storing means within the circle when the image data is detected by said oblique pitch signal detecting means; and

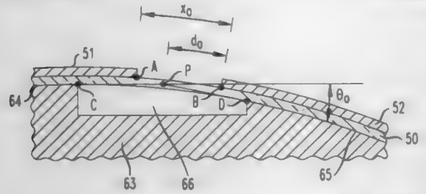
determining means for determining when the count of said counter means is within a specific number of pixels previously stored, that the image detected by said detecting means is a specific concentric circular image.

5,629,991

METHOD FOR REDUCING BIREFRINGENCE IN OPTICAL GRATINGS

Corrado Dragone, Little Silver, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 11, 1995, Ser. No. 514,038
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—11 10 Claims



1. A method for reducing the polarization shift between different modes of an optical signal propagating in an optical grating having a plurality of waveguides initially on a common surface that extends on an initial plane, said method comprising the step of:

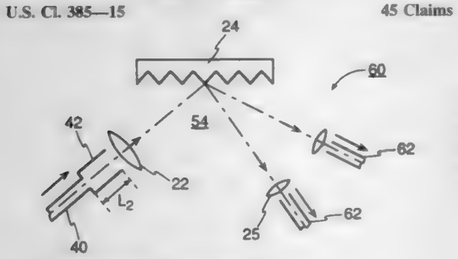
forming a curved surface from the common surface by imparting curvature to the optical grating along a line that traverses the plurality of waveguides in a direction that is substantially perpendicular to the direction in which the optical signal propagates, said curvature varying in a nonuniform manner along said line.

5,629,992

PASSBAND FLATTENING OF INTEGRATED OPTICAL FILTERS

Martin R. Amersfoort, Eatontown, and Julian B. D. Soole, Edison, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Sep. 14, 1995, Ser. No. 528,447
Int. Cl.[6] G02B 6/24
U.S. Cl. 385—15 45 Claims



1. An optical coupler, comprising:

a plurality of single-moded optical waveguides optically connected to at least one optical interaction region; and

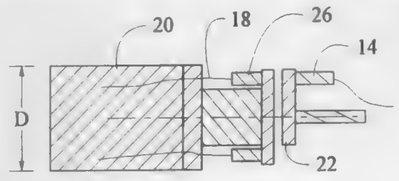
at least one multi-mode interference filter disposed between a respective one of said single-moded optical waveguides and said interaction region and having a length to produce a multiple image at an end thereof.

5,629,993

COMPACT OPTICAL SWITCH

John O. Smiley, Ottawa, Canada, assignor to JDS Fitel Inc., Ottawa, Canada

Filed Aug. 29, 1995, Ser. No. 520,702
Int. Cl.[6] G02B 6/26;6/42
U.S. Cl. 385—22 4 Claims



1. An optical switching device comprising:

a stationary fiber holding means,

a motor mounted to said stationary holding means on one side of said holding means, said motor having a shaft and disposed such that said shaft passes through said stationary fiber holding means,

a first optical fiber having an end portion,

a plurality of optical fibers each having an end portion, said end portions of said plurality mounted to said stationary holding means on said one side along a pitch circle,

a rotary fiber holding means mounted to said shaft on a second side of said stationary holding means for rotation relative thereto.

said end portion of said first optical fiber mounted to said rotary fiber holding means for selective optical alignment, substantially parallel to said shaft, with one of said plurality of optical fibers,

wherein said fixed fiber holding means and said pitch circle have a diameter smaller than the size of the motor in a plane perpendicular to said shaft and are distanced from said motor sufficiently to allow said plurality of fibers to bend away from said pitch circle and encompass said motor without breaking.

5,629,994

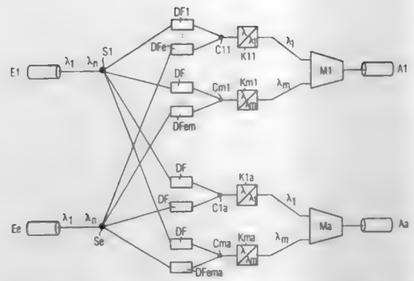
OPTICAL WDM COUPLING SYSTEMS

Manfred Huber, Graefelfing; Volker Tegtmeyer, Munich, and Hartmut Wolf, Peissenberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 7, 1995, Ser. No. 499,455
Claims priority, application Germany, Jul. 8, 1994, 44 24 139.9
Int. Cl.[6] G02B 6/28
U.S. Cl. 385—24 2 Claims

1. An optical coupling system for providing wavelength-individual through-connection between a plurality of wavelength-division multiplex (WDM) optical input fibers having a WDM signal thereon and a plurality of optical output fibers given simultaneously possible wavelength conversion, the system comprising:

a plurality of optical splitters individually associated with said plurality of input fibers respectively, said optical splitters constructed and arranged to multiply the WDM signal incoming on the associated optical input fiber to provide an increased plurality of WDM signals;



a plurality of tunable optical filters connected to the optical splitters to receive the increased plurality of WDM signals, said tunable optical filters capable of inhibiting and providing an output signal;

a plurality of optical combiners connected to the plurality of tunable filters to receive said output signal therefrom, said optical combiners providing a further output signal;

a plurality of wavelength converters respectively connected to the optical combiners to receive said further output signal therefrom and to convert said further output signal to a defined wavelength output independently of the input wavelength of said further output signal; and

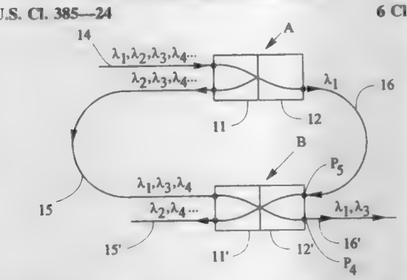
a plurality of wavelength division multiplexers constructed and arranged to receive said defined wavelength output from said plurality of wavelength converters and to provide said defined wavelength output to a respective one of said plurality of output fibers.

5,629,995

WAVELENGTH FILTER ARRANGEMENTS FOR USE IN FIBER OPTICS

Gary S. Duck, Nepean, and Yihao Cheng, Kanata, both of Canada, assignors to JDS Fitel Inc., Nepean, Canada

Filed Feb. 1, 1996, Ser. No. 595,487
Int. Cl.[6] G02B 6/28; H04J 14/02
U.S. Cl. 385—24 6 Claims



1. A wavelength filter for use with optical fibers, comprising a plurality of filter units, each unit comprising first and second collimating lenses separated by a filter element, the filter elements of the two units being capable of passing first and second wavelengths respectively, and each unit being such as to reflect light transmitted by the filter element of each of the other units,

wherein a first of said units has its first lens connected to the first lens of the second unit by a first connecting fiber, while the second lens of the first unit is connected to the second lens of the second unit by a second connecting fiber,

wherein an input optical fiber carrying light with a plurality of wavelengths is connected to the first lens of the first unit and positioned so that one of the input and first connecting optical fibers is capable of receiving light from the other fiber reflected off the filter element of the first unit,

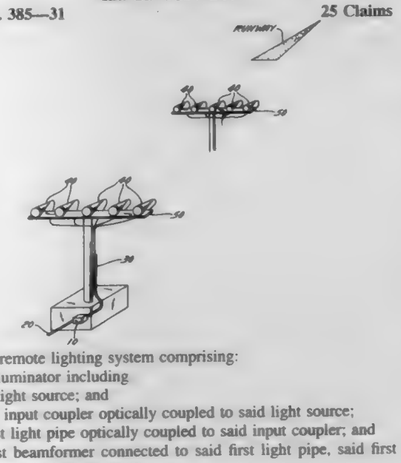
and wherein an output optical fiber is connected to the second lens of one of the units, said second connecting optical fiber and said output optical fiber are positioned so that one is capable of receiving light from the other reflected off the filter element of said one unit.

5,629,996

UNIVERSAL REMOTE LIGHTING SYSTEM WITH NONIMAGING TOTAL INTERNAL REFLECTION BEAM TRANSFORMER

Alexander Rizkin, Rendondo Beach; Lev S. Sadovnik, and Vladimir Manasson, both of Los Angeles, all of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Continuation of Ser. No. 564,596, Nov. 29, 1995, abandoned.
This application Apr. 22, 1996, Ser. No. 636,798
Int. Cl.[6] F21V 8/00
U.S. Cl. 385—31 25 Claims



1. A remote lighting system comprising:

an illuminator including

a light source; and

an input coupler optically coupled to said light source;

a first light pipe optically coupled to said input coupler; and

a first beamformer connected to said first light pipe, said first beamformer including

a first nonimaging total internal reflection light transformer optically coupled to said first light pipe; and

a first holographic diffuser optically coupled to said first nonimaging total internal reflection light transformer,

wherein light from said first nonimaging total internal reflection light transformer is transmitted through said first holographic diffuser.

5,629,997

METHOD AND APPARATUS FOR COUPLING LASER DIODE BEAMS TO OPTICAL FIBERS AND ACHIEVING HIGH POWER DENSITIES

Arthur H. Hardy, Jr., Santa Barbara, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

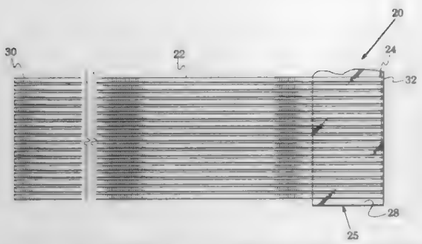
Filed Nov. 3, 1995, Ser. No. 552,891
Int. Cl.[6] G02B 6/32
U.S. Cl. 385—33 18 Claims

6. An optical coupler for receiving a plurality of radiation beams which each have a radiation numerical aperture, comprising:

a plurality of rectangular optical fibers, each having a pair of broad walls, a pair of narrow walls and a fiber numerical aperture, said optical fibers each terminating in a fiber end; and

a plurality of cylindrical lenses, each formed across a different one of said ends, each of said cylindrical lenses shaped to define a curved surface whose cross section is arranged substantially parallel with the narrow walls of a respective one of said fibers and is configured to reduce the radiation numerical

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aperture of a different one of said radiation beams to be less than or equal to said fiber numerical aperture when that radiation beam is incident upon that lens; and

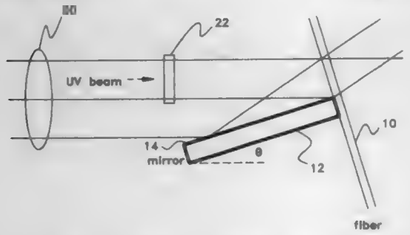
a retainer configured to receive and hold said fiber ends in a fixed spatial relationship.

5,629,998

METHOD AND APPARATUS FOR WRITING PHOTOSENSITIVE GRATING USING LLOYD'S MIRROR

Thomas A. Cook, Corning, and Robert A. Modavis, Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jan. 29, 1996, Ser. No. 593,637
Int. Cl.[6] G02B *6/34*; C03B *37/023*
U.S. Cl. 385—37 **10 Claims**



1. A method for forming a refractive index grating in a waveguide comprising the steps of:

positioning the waveguide against an edge of a mirror

directing a first portion of a coherent beam of optical radiation on the mirror at a first angle, and a second portion of the coherent beam of optical radiation on an optical phase delay plate,

combining the first and second portions in an interfering beam, and directing the interfering beam on the waveguide to form a grating in the waveguide.

9. Apparatus for forming a refractive index grating in a waveguide comprising:

a waveguide formed from a material that changes its index of refraction when exposed to a beam of optical radiation;

a source of coherent optical radiation for forming a beam of radiation:

a mirror arranged to intercept a first part of the beam and to reflect the first part of the beam through an angle ϕ;

a phase delay plate arranged to intercept a second part of the beam for delaying the second part of the beam propagating through the plate;

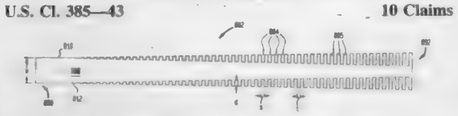
the mirror and phase delay plate arranged so that the reflected first part of the beam and the delayed second part of the beam form an interference pattern on the waveguide for changing the index of refraction of the waveguide in a pattern for forming a refractive index grating.

5,629,999

SIDE-GAP MODE TAPERING FOR INTEGRATED OPTIC WAVEGUIDES

Charles H. Henry, Skillman; Edward J. Laskowski; Yuan P. Li, both of Scotch Plains, and Weyl-kuo Wang, Westfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 10, 1995, Ser. No. 401,545
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—43 **10 Claims**



1. A waveguide taper, comprising:

a core having a first end, a second end for being coupled to a fiber, a first side and a second side; and

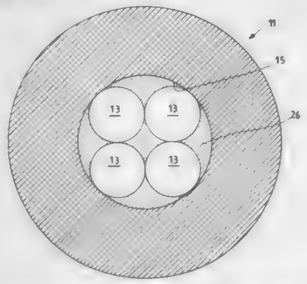
side-gaps disposed along at least one of said first and second sides of said core from said first end to said second end, wherein each of said side-gaps has a depth, said depth of each said side-gap progressively increases from said first end to said second end, and the side-gaps extend only partially into the core.

5,630,000

MULTI-FIBRE CONNECTOR WITH CYLINDRICAL FERRULES

Stefano Pitassi, Udine, and Enrico Serafini, Milan, both of Italy, assignors to Sirti S.p.A., Milan, Italy

Filed Nov. 27, 1995, Ser. No. 563,024
Claims priority, application Italy, Aug. 10, 1995, MI95A1777
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—62 **6 Claims**



1. A multi-fibre connector consisting of a bush acting as a guide and coupling element for two ferrules, which are located one in front of the other and contain a sized hole in which two or more fibres are located in a radial arrangement, characterised in that said two or more fibres are inserted and glued into the sized hole, after which the entire end surface of the ferrule and fibres is lapped in such a manner as to obtain a convex and/or angled surface, means being provided for securely coupling together said ferrules and said bush.

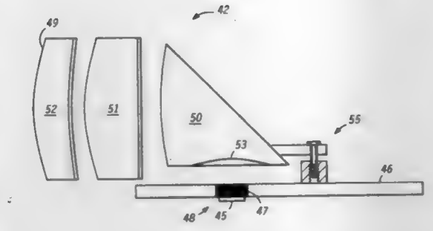
5,630,001

IMAGE GENERATOR FOR USE IN IMAGE MANIFESTATION APPARATUS

Karen E. Jachimowicz, Laveen; Louis E. Silverstein, Scottsdale; George R. Kelly, Gilbert, and Fred V. Richard, Scottsdale, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed May 22, 1995, Ser. No. 447,297
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—89 **15 Claims**

1. An image generator for image manifestation apparatus comprising:



a supporting substrate with opposed first and second major surfaces, the supporting substrate including a bundle of optical fibers extending from the first major surface to the second major surface and defining a mounting area on the first major surface; and

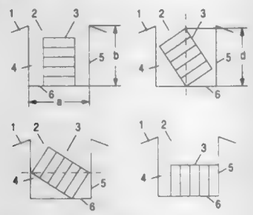
a two-dimensional array of light emitting devices affixed to the mounting area of the supporting substrate so as to direct light from the array of light emitting devices into the bundle of optical fibers at the first major surface, the light being directed to the second major surface of the supporting substrate by the bundle of optical fibers, wherein the array of light emitting devices is an array of organic light emitting devices formed on the first surface of the supporting substrate.

5,630,002

OPTICAL FIBER CABLE

Junichi Ota; Kazuhiro Hamada; Yoshiyuki Suetugu; Hiroaki Sano, and Hiroki Ishikawa, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 26, 1996, Ser. No. 607,350
Claims priority, application Japan, Feb. 27, 1995, 7-038257
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—111 **13 Claims**



1. An optical fiber cable comprising:

a spacer which is a body of said optical fiber cable;

a reverse-lay groove being provided in an outer circumference of said spacer, said reverse-lay groove having inverted portions and being inverted periodically; and

an optical fiber tape unit being accommodated in said reverse-lay groove;

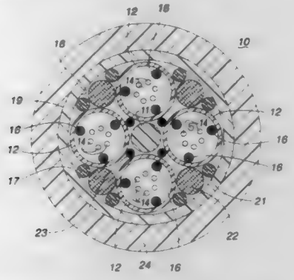
wherein a normal vector of a tape plane of said optical fiber tape unit points to a direction perpendicular to an opening direction of said groove in said inverted portions of said groove while the normal vector of the tape plane of said optical fiber tape unit points to the opening direction of said groove in intermediate portions between inverted portions of said groove.

5,630,003

LOOSE TUBE FIBER OPTIC CABLE

Candido J. Arroyo, Lithonia, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 30, 1995, Ser. No. 565,705
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—113 **14 Claims**



1. A communication cable comprising:

a core having a longitudinal axis and comprising at least one optical fiber communication medium;

a first longitudinally extending organizing member substantially axially disposed in said core;

at least one tubular member disposed adjacent said organizing member;

at least one optical fiber member within said tubular member wound in a loose helical configuration, said optical fiber member having a diameter considerably less than the inner diameter of said tubular member, thereby forming a loose tube assembly;

at least one longitudinally extending filamentary member of superabsorbent material within said tubular member;

said optical fiber member being free to move within said tubular member relative to said filamentary member;

a layered strength member surrounding and enclosing said first organizing member and said tubular member to form a first jacket, said strength member comprising a tubular member of material of high tensile strength and having an inner surface and an outer surface;

a first layer of water blocking material on said inner surface of said tubular member;

a plurality of water blocking members disposed within said first jacket; and

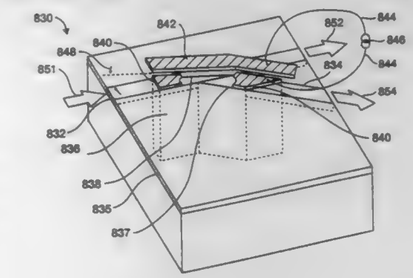
a second jacket surrounding and enclosing said first jacket.

5,630,004

CONTROLLABLE BEAM DIRECTOR USING POLED STRUCTURED

David A. G. Deacon, Los Altos; Michael J. Brinkman, Redwood City, and William K. Bischel, Menlo Park, all of Calif., assignors to Deacon Research, Palo Alto, Calif.

Filed Sep. 9, 1994, Ser. No. 303,847
Int. Cl.[6] G02B *6/10*
U.S. Cl. 385—129 **53 Claims**



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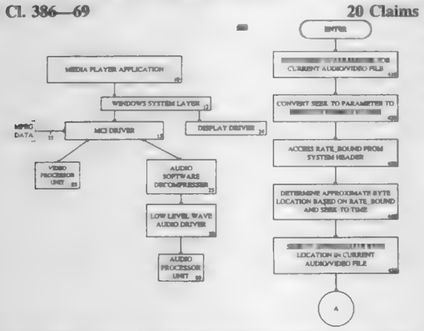
1. A patterned poled dielectric device comprising:
a solid inorganic material having an embedded pattern of differing domains within a common plane, at least a first type of said domains being a poled structure adjacent to a second type of said domains; and
at least a first electrically-conductive material forming a first electrode, said first electrode confronting said solid inorganic material.

5,630,005

METHOD FOR SEEKING TO A REQUESTED LOCATION WITHIN VARIABLE DATA RATE RECORDED INFORMATION

Jeffrey Ort, Kirkland, Wash., assignor to Cirrus Logic, Inc, Fremont, Calif.

Filed Mar. 22, 1996, Ser. No. 620,984
Int. Cl.[6] H04N *5/76;5/92*
U.S. Cl. 386—69 **20 Claims**



1. In a digital playback system including a video processor unit and a software driver, a method of seeking to a requested playback time within a selected audio/video file, said method comprising the steps of:
(a) identifying a data rate associated with said audio/video file by accessing a maximum data rate value stored in said audio/video file, said audio/video file recorded in a variable data rate format;
(b) determining an approximate location within said audio/video file based on said data rate and said requested playback time;
(c) identifying an intended playback time stored within data of said audio/video file located near said approximate location;
(d) if said intended playback time does not match said requested playback time, updating said approximate location based on said intended playback time;
(e) repeating steps (c) and (d) until said intended playback time matches said requested playback time.

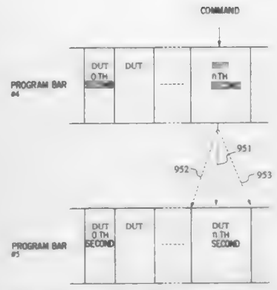
5,630,006

MULTI-SCENE RECORDING MEDIUM AND APPARATUS FOR REPRODUCING DATA THEREFROM

Koichi Hirayama, Yokohama; Masatoshi Nakai, Kawasaki, and Kenji Shimoda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP93/01570, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO95/12197, PCT Pub. Date May 4, 1995
PCT Filed Oct. 29, 1993, Ser. No. 454,289
Int. Cl.[6] H04N *5/91;7/08;5/781*
U.S. Cl. 386—92 **39 Claims**

1. An apparatus for reproducing information from a multi-scene recording medium including a disk having a management area and a data area, the data area located around an outer perimeter of the management area, the data area recording a first program information item, a second program information item following the first



program information item, a third program information item following the second program information item, and a fourth program information item for replacing the second program information item, and the management area recording multi-scene configuration information showing that the second and fourth program information items are linked to each other, where the second and fourth program information items are derived from a same event, where the second and fourth program information items correspond to different angles of view for the same event, and where each of the first to fourth program information items are recorded in units of a data unit, the apparatus comprising:
pickup means for generating signals based on information recorded on the disk;
demodulation means for generating multi-scene configuration data and program data by demodulating signals generated by the pickup means, the program data being based on the program information items recorded in the data area of the disk;
management data storage means for storing the multi-scene configuration data generated by the demodulation means;
menu generating means for generating, on the basis of the multi-scene configuration data, a menu indicating a first data string corresponding to a string including the first, second and third program information items and a second data string corresponding to a string including the first, fourth and third program information items;
control means for outputting program signals generated by the demodulation means when one of the first and second data strings is selected and input, the program signals being output in accordance with the data string selected and input; and
program information decoding means for reproducing program information items corresponding to the data string selected by decoding the program signals output by the control means, so that when reproduction is to be switched from one of the first and second data strings to another of the first and second data strings while reproducing one of the second and fourth program information items, reproduction of another of the second and fourth program information items starts from a head portion of a data unit of the other of the second and fourth program information items.

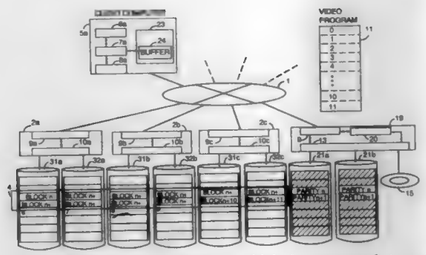
5,630,007

CLIENT-SERVER SYSTEM WITH PARITY STORAGE

Tsuyoshi Kobayashi; Shunichiro Nakamura; Harumi Minemura, and Tomohisa Yamaguchi, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1996, Ser. No. 621,227
Claims priority, application Japan, Mar. 30, 1995, 7-073929; Oct. 31, 1995, 7-283473
Int. Cl.[6] H04N *5/91;9/79*
U.S. Cl. 386—113 **4 Claims**

1. A client-server system comprising:
(a) a plurality of storage devices for storing data wherein said data is distributed in said plurality of storage devices;
(b) a plurality of servers, each of which is connected to a portion of said plurality of storage devices, for accessing said data;



(c) an administration apparatus which is connected to said plurality of servers, the administration apparatus comprises:
(c1) an administration means for administrating said data stored in said plurality of storage devices, and said plurality of servers;
(c2) a parity storage device for storing parities;
(c3) an inter-server parity generation means for generating parities from said data stored in said plurality of storage devices connected to said plurality of servers, and for storing said generated parities into said parity storage device; and
(c4) an inter-server restoration means for restoring data which are stored in an inaccessible storage device connected to a server, using data which are stored in accessible storage device and parities which are stored in said parity storage device, when any one of said plurality of storage devices becomes inaccessible, and for storing said restored data into said parity storage devices; and
(d) a client which is connected to both said administration apparatus and said plurality of servers, wherein said client comprises:
(d1) an access demand means for specifying a server, identified by said administration apparatus, which is connected to a storage device where a head block of said data is stored, and for accessing said data through said plurality of servers according to an order in which said data is distributed in the plurality of storage devices after said specified server, and for informing the inter-server restoration means of a location of said inaccessible storage device connected to a server when any one of said plurality of servers fails to access said data; and
(d2) an inter-client restoration means, for restoring data which are stored in an inaccessible storage device, using data which are stored in accessible storage devices and parities which are stored in said parity storage device, before the data are restored by said inter-client restoration means, and for accessing restored data which are stored in said parity storage devices after said data are restored by said inter-client restoration means.

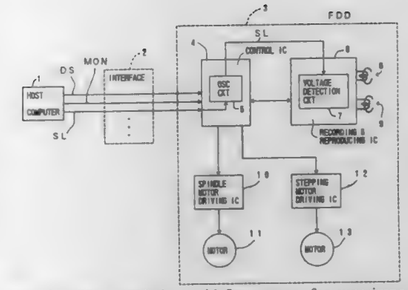
5,630,008

CONTROL CIRCUIT FOR DRIVING MOTOR WITH REDUCED POWER CONSUMPTION AND DISK UNIT HAVING THE CONTROL CIRCUIT

Yoshihiro Okuyama, and Koichi Seno, both of Tendou, Japan, assignors to Mitsumi Electric Co., Ltd., Japan

Filed Dec. 28, 1994, Ser. No. 365,487
Claims priority, application Japan, Dec. 28, 1993, 5-337320; Dec. 28, 1993, 5-337321
Int. Cl.[6] H02P *7/00*
U.S. Cl. 388—804 **14 Claims**

1. A control circuit for driving a motor, comprising:
first means for generating an excitation current to be supplied to the motor and having a predetermined period that is dependent on a predetermined rotation period of the motor, said excitation current including first excitation pulses having a period and second excitation pulses having a period, said second excitation pulses having a phase which lags a phase of the first excitation pulses by 90°;



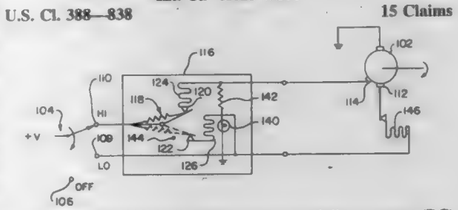
second means, coupled to said first means, for superimposing, on said first excitation pulses, pulses having a period that is small compared to said period of said first and second excitation pulses.

5,630,009

METHOD AND APPARATUS FOR CONTROLLING A DC ELECTRIC MOTOR

William L. Hayden, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 24, 1992, Ser. No. 903,402
Int. Cl.[6] H02P *7/288*
U.S. Cl. 388—838 **15 Claims**



1. A control circuit for operating a two speed direct current (DC) motor comprising:
switch means for selecting among a zero speed or motor off, a low speed and a high speed for operation of said two speed DC motor, said switch means connecting power to a first terminal for selection of said low speed and a second terminal for selection of said high speed; and
control means connected between said first and second terminals and low speed and high speed inputs for said motor for preventing stalling of said motor in said high speed by switching between said high speed input and said low speed input dependent upon motor operating conditions when said high speed is selected by said switch means.

5,630,010

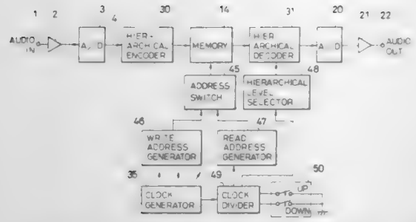
METHODS OF EFFICIENTLY RECORDING AN AUDIO SIGNAL IN SEMICONDUCTOR MEMORY

Kazuhiro Sugiyama, and Yukari Ono, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 45,705, Apr. 14, 1993, Pat. No. 5,495,552. This application Sep. 29, 1995, Ser. No. 536,356
Claims priority, application Japan, Apr. 20, 1992, 4-99647; Jul. 24, 1992, 4-198463; Jul. 24, 1992, 4-198464
Int. Cl.[6] G10L *3/02;9/00*
U.S. Cl. 395—2.1 **21 Claims**

1. A method of high speed decoding of an audio signal hierarchically encoded by,
(a) digitizing the audio signal, and
(b) hierarchically encoding the digitized audio signal into a plurality of frames, step (b) including, for encodation of each of the plurality of frames, the substeps of,

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(1) encoding a relatively lowest hierarchical level with a first number of bits, from a first portion of the digitized audio signal below a first predetermined frequency, and

(2) encoding a relatively higher hierarchical level with a second number of bits, greater than the first number of bits, from a portion of the digitized audio signal below a second predetermined frequency greater than the first predetermined frequency, the encoded relatively higher hierarchical level further excluding the encoded first portion of the digitized audio signal, the method of decoding comprising the steps of:

(a) determining a predetermined minimal frame length; and

(b) decoding only each of the plurality of frames greater than the predetermined minimal frame length, step (b) including, for decoding each of the plurality of frames, the substeps of,

(1) identifying the first number of bits of the relatively lowest hierarchical level and the second number of bits of the relatively higher hierarchical level,

(2) decoding the encoded relatively lowest hierarchical level based upon the identified first number of bits,

(3) decoding the encoded relatively higher hierarchical level based upon the identified second number of bits, and

(4) converting the decoded relatively lowest and higher hierarchical levels of substeps (2) and (3) into an audio signal.

5,630,011

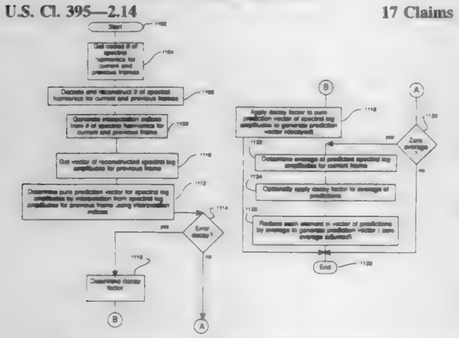
QUANTIZATION OF HARMONIC AMPLITUDES REPRESENTING SPEECH

Jae S. Lim, Winchester, and John C. Hardwick, Somerville, both of Mass., assignors to Digital Voice Systems, Inc., Burlington, Mass.

Division of Ser. No. 983,418, Nov. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 624,878, Dec. 5, 1990, Pat. No. 5,226,084. This application Dec. 16, 1994, Ser. No. 358,108

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.14 **17 Claims**



1. A method for predicting speech signal parameters for use in encoding or decoding speech, comprising:

representing segments of a speech signal by frames of a data signal that each comprise a fundamental frequency and multiple spectral harmonics;

reconstructing speech signal parameters that characterize a first segment of speech from a first frame;

reconstructing a first control parameter that characterizes the first segment using a first digitally encoded signal, wherein all digital bits of the first digitally encoded signal that represent the first control parameter are protected by an error protection code;

reconstructing a second control parameter that characterizes a second segment of speech from a second frame using a second digitally encoded signal, wherein all digital bits of the second digitally encoded signal that represent the second control parameter are protected by an error protection code; and

predicting speech signal parameters that characterize the second segment based on the reconstructed speech signal parameters and the first and second control parameters.

5,630,012

SPEECH EFFICIENT CODING METHOD

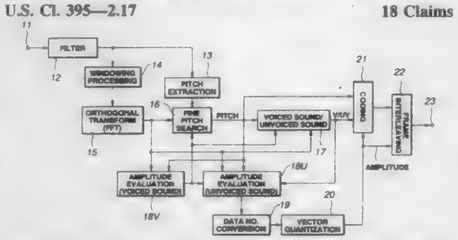
Masayuki Nishiguchi, Kanagawa; Jun Matsumoto, and Joseph Chan, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 280,617

Claims priority, application Japan, Jul. 27, 1993, 5-185324

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.17 **18 Claims**



10. An efficient speech coding method comprising the steps of:

(a) dividing an input speech signal into a plurality of signal blocks in a time domain;

(b) dividing each of the signal blocks into a plurality of frequency bands in a frequency domain;

(c) determining whether a signal component in each of the frequency bands is a voiced sound component or an unvoiced sound component;

(d) determining whether the signal components in a predetermined number of frequency bands below a first frequency are the voiced sound components, and

(e) deciding that the signal components in all of the frequency bands below a second frequency higher than the first frequency are the voiced sound components or the unvoiced sound components in accordance with the determination in the preceding step (d).

5,630,013

METHOD OF AND APPARATUS FOR PERFORMING TIME-SCALE MODIFICATION OF SPEECH SIGNALS

Ryoji Suzuki, Nara, and Masayuki Misaki, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

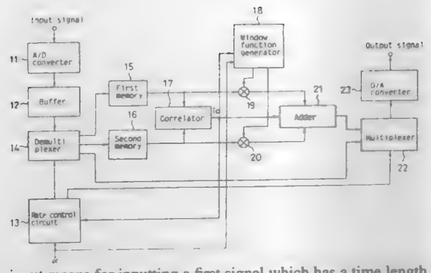
Filed Jan. 25, 1994, Ser. No. 187,295

Claims priority, application Japan, Jan. 25, 1993, 5-009737; Jun. 21, 1993, 5-149224

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.25 **13 Claims**

1. An apparatus for transforming an input signal having a time length L into an output signal having a time length L in accordance with a given time-scale modification ratio α, said apparatus comprising:



input means for inputting a first signal which has a time length T and a second signal which has said time length T and succeeds said first signal;

correlating means for calculating a value of a correlation function between said first signal and said second signal and for determining a time delay T_c at which said value of said correlation function becomes the greatest;

window function generating means for generating a first window function and a second window function according to said time-scale modification ratio α and said time delay T_c;

first multiplying means for multiplying said first signal by said first window function;

second multiplying means for multiplying said second signal by said second window function;

adding means for adding the output of said first multiplying means to the output of said second multiplying means with a displacement of said time delay T_c; and

outputting means for selectively outputting the output of said adding means and a third signal succeeding said output of said adding means so that the sum of a time length of said output of said adding means and a time length of said third signal is substantially equal to a time length defined by $\alpha(T-T_c)/(\alpha-1)$ or $\alpha(T-T_c)/(1-\alpha)$.

5,630,014

GAIN CONTROLLER WITH AUTOMATIC ADJUSTMENT USING INTEGRATION ENERGY VALUES

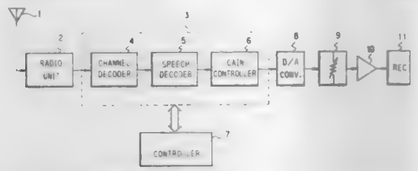
Toshio Yoshida, and Mititaka Sisido, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 330,387

Claims priority, application Japan, Oct. 27, 1993, 5-268615

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.34 **4 Claims**



3. A gain controller comprising:

antenna means for receiving a radio modulated digital data comprising speech delta and control data for a predetermined time length;

a radio unit means for decoding the signal supplied from said antenna means and producing the modulated digital data;

a channel decoder means for separating the digital data from said radio unit means into speech data and control data;

judging means for judging whether digital input data includes speech data or not;

measuring means, when the digital input data includes speech data, for measuring an integration energy value of the digital speech data for a predetermined time length;

comparison means for comparing the measured integration energy value with a higher threshold value and a lower threshold value;

setting means for setting a step level to a predetermined minus value, a predetermined plus value and "0" when the integration energy value is higher than the higher threshold value, lower than the lower threshold value and within a range between the higher and lower threshold values, respectively;

adding means for adding the step level to the digital speech data;

D/A converter means for converting the speech data from said adding means into an analog speech signal;

amplifying means for amplifying the analog speech signal; and

speech reproducing means for reproducing speech sound based upon the amplified speech signal.

5,630,015

SPEECH SIGNAL PROCESSING APPARATUS FOR DETECTING A SPEECH SIGNAL FROM A NOISY SPEECH SIGNAL

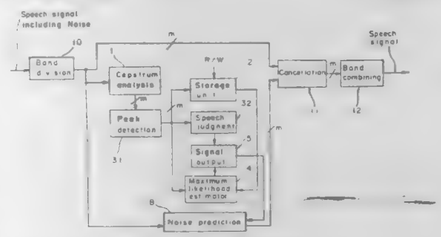
Joji Kane, Nara, and Akira Nohara, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 982,770, Nov. 27, 1992, abandoned, which is a division of Ser. No. 706,576, May 28, 1991, abandoned. This application May 31, 1995, Ser. No. 456,057

Claims priority, application Japan, May 28, 1990, 2-138053; May 28, 1990, 2-138061; May 28, 1990, 2-138062; May 28, 1990, 2-138063; May 28, 1990, 2-138067

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.35 **10 Claims**



1. A signal processing apparatus comprising:

band division means for performing a band division process including a Fourier transformation for an inputted speech signal and outputting spectrum signals of plural channels;

cepstrum analysis means for performing a cepstrum analysis process for the spectrum signals of plural channels outputted from said band division means and outputting a cepstrum analysis result;

pitch frequency detection means for detecting a pitch frequency in response to the cepstrum analysis result outputted from said cepstrum analysis means;

pitch frequency judgment control means for storing predetermined pitch frequencies of speeches of plural groups of speech signals and sequentially outputting the stored pitch frequencies;

pitch frequency judgment means for detecting which group among said plural groups of the speech signals the pitch frequency detected by said pitch frequency detection means corresponds to by comparing the pitch frequency detected by said pitch frequency detection means with the stored pitch frequencies outputted from said pitch frequency judgment control means and outputting a detection result;

switch control means for outputting a switch control signal according to the detection result outputted from said pitch frequency judgment means; and

switch means for outputting speech signals discriminating them by respective groups of the speech signals according to the switch control signal outputted from said switch control means in response to the inputted speech signal.

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5,630,016

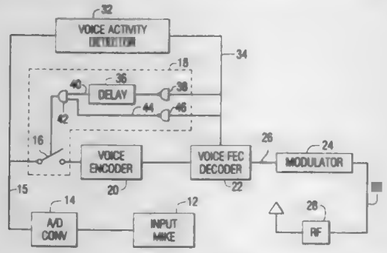
COMFORT NOISE GENERATION FOR DIGITAL COMMUNICATION SYSTEMS

Kumar Swaminathan, Gaithersburg, Md., and Brian M. McCarthy, Lafayette Hill, Pa., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 890,747, May 28, 1992, Pat. No. 5,537,509. This application Mar. 7, 1996, Ser. No. 614,777

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.37 **3 Claims**



1. A method of generating background noise during voice inactivity intervals in a communication system having a transmitter with an encoder for encoding and transmitting audio data, and a receiver remote from the transmitter with a decoder for receiving and decoding the transmitted audio data, said method comprising the steps of:

encoding audio data in the transmitter and transmitting the encoded audio data to the receiver;

detecting in the transmitter voice activity and voice inactivity;

continuing transmission of encoded audio data during a predetermined time interval following each detection of voice inactivity;

discontinuing transmission of encoded audio data at the expiration of each of said predetermined time intervals;

resuming transmission of encoded audio data upon detection in the transmitter of voice activity;

decoding in the remote receiver the encoded audio data received from the transmitter;

detecting in the remote receiver voice activity and voice inactivity at the transmitter;

processing in the receiver the decoded audio data including data received during each of said predetermined time intervals after the detection of voice inactivity in the transmitter, said processing step further comprising the steps of:

deriving a first series of output signals corresponding to an average loudness level of received noise;

deriving a second series of output signals having spectral shape attributes corresponding to the received noise; and

combining the first and second series of derived signals to generate audible analog audio of varying loudness level representing background noise;

wherein the deriving of the first and second series of signals includes weighting each of the first and second series of signals successively to vary the loudness level and spectral shape during periods of voice inactivity, the weighting of each of the first and second series of signals comprising multiplying each of the first series of signals by a first weighting factor and each of the second series of signals by a second weighting factor, the first and second weighting factors being varied to vary the loudness level and spectral shape; wherein the weighting each of the first and second series of signals successively includes repeatedly incrementing the value of the first weighting factor in steps from a minimum value to a maximum value and then decrementing the value of the first weighting factor from the maximum value to the minimum value; and

repeatedly generating audible analog audio representing background noise based upon the audio data processed during each of said predetermined time intervals until the resumption of transmission of the encoded audio data.

5,630,017

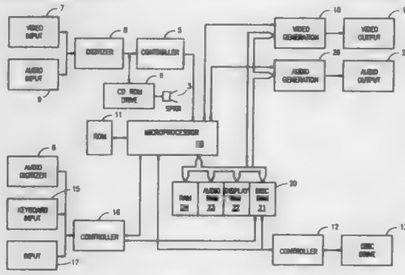
ADVANCED TOOLS FOR SPEECH SYNCHRONIZED ANIMATION

Elon Gasper, Bellevue; Joseph H. Matthews, III, Bothell, and Richard Wesley, Seattle, all of Wash., assignors to Bright Star Technology, Inc., Bellevue, Wash.

Division of Ser. No. 65,704, May 20, 1993, abandoned, which is a continuation of Ser. No. 657,714, Feb. 19, 1991, abandoned. This application May 31, 1995, Ser. No. 458,007

Int. Cl.[6] G10L *3/00*

U.S. Cl. 395—2.85 **16 Claims**



1. Apparatus for generating and displaying user created animated objects having synchronized visual and audio characteristics, said apparatus comprising:

a program-controlled microprocessor;

first means coupled to said microprocessor and responsive to user input text for segmenting said user input text in accordance with predefined algorithms to generate a set of vector signals, each said vector signal associated with a sound segment of said user input text;

second means coupled to said microprocessor and to said first means and responsive to said user input text and said set of vector signals for generating a sequence of phonetic codes, each of said phonetic codes associated with a corresponding vector signal and its associated sound segment, each of said phonetic codes identifying a predefined visual image associated with said phonetic code;

display means coupled to said first and second means responsive to said set of vector signals for displaying a dendrogram defined by said set of vector signals and representative of an acoustical relationship among said sound segments of said user input text, each of said phonetic codes displayed on said dendrogram disposed in relative relationship with said associated sound segment; and

controller means coupled to said first and second means, to said display means and to said microprocessor and having editing means for generating a set of instructions synchronizing said sequence of visual images with said associated sound segments corresponding to said user input text and for editing said set of instructions hereby defining an animated object having synchronized visual and audio characteristics.

5,630,018

FUZZY INFERENCE DEVICE USING NEURAL NETWORK

Isao Hayashi, Osaka; Noboru Wakami, Hirakata, and Hiroyoshi Nomura, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

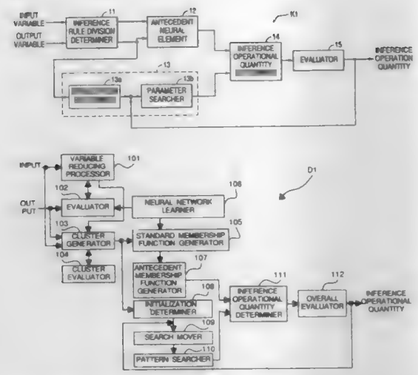
Continuation-in-part of Ser. No. 683,179, Apr. 9, 1991, abandoned. This application Jun. 24, 1994, Ser. No. 265,617

Claims priority, application Japan, Apr. 9, 1990, 2-93632

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—22 **2 Claims**

1. A fuzzy inference device for determining an inference operational quantity from system input variables and output variables in accordance with inference rules each constituted by an antecedent and a consequent, comprising:



an inference rule determiner having means for receiving data denoting the system input variables and output variables and including

a) variable reducing processor which receives data of the input variables and reduces a quantity of the input variables to determine a number of the input variables,

b) an evaluator for evaluating the determined number of the input variables performed by said variable reducing processor,

c) a cluster generator which receives data of the input variables determined by said variable reducing processor and the output variables, and formulates a plurality of data groups so as to determine a number of fuzzy inference rules by determining representative data of each of the data groups,

d) a cluster evaluator for determining the fuzzy inference rules in said cluster generator;

an antecedent neural element, operatively coupled to said inference rule determiner, including

e) a standard membership generator for generating learning data to determine a membership function of an antecedent of fuzzy inference by using input data belonging to each of the fuzzy inference rules determined by said cluster generator,

f) a neural network learner which has a learning function of a neural network which is set according to the learning data generated in said standard membership generator,

g) an antecedent membership function generator for determining a shape of the membership function by using the learning data in said standard membership generator and the learning function in said neural network learner;

a situational change processor, operatively coupled to said inference rule determiner, including

h) an initialization determiner for determining an initial value of a search parameter to determine a real number of a consequent of fuzzy inference by using the input data and output data belonging to each of the fuzzy inference rules determined by said cluster generator,

i) a search mover for moving the search parameter along each of search axes from the initial

value in said initialization determiner.

j) a pattern searcher for increasing a motion distance of the search parameter in said search mover; an inference operational quantity determiner, operatively coupled to said antecedent neural element and to said situational change processor, which performs fuzzy inference by using the membership function in said antecedent membership function generator and the search parameter in said pattern searcher to determine the inference operational quantity; and an overall evaluator, operatively coupled to said inference operational quantity determiner, for evaluating, in accordance with an evaluation criterion, the inference operational quantity outputted by said inference operational quantity determiner.

5,630,019

WAVEFORM EVALUATING APPARATUS USING NEURAL NETWORK

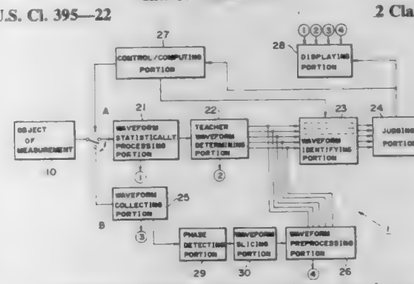
Nobuo Kochi, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation of Ser. No. 66,521, May 24, 1993, abandoned. This application May 30, 1995, Ser. No. 454,407

Claims priority, application Japan, May 23, 1992, 4-155984; May 23, 1992, 4-155985; Jan. 29, 1993, 5-034040

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **2 Claims**



1. A waveform evaluating apparatus using a neural network comprising:

a plurality of neural network modules each being made up of at least an input layer, a hidden layer, and an output layer, connected in the neural network having the neural weight ratio;

first means for providing a first predetermined output value by inputting a first standard waveform to said neural network module, said first means including means for adjusting said neural weight ratio;

second means for providing a second predetermined output value by inputting a second standard waveform to said neural network module, said second means including means for adjusting said neural weight ratio, said first standard waveform being predeterminedly preferred to said second standard waveform;

means for producing a third output value in response to inputting an input waveform to said neural network, wherein said third output value's closeness to said first and second predetermined output value is ascertainable; and

a signal extracting portion disposed in said input layer for extracting a signal which is in phase with the first standard waveform, wherein said signal extracting portion supplies the extracted signal to said input layer as an input waveform for said neural network;

wherein said signal extracting portion is formed of a phase detecting portion for detecting phasic information and a waveform slicing portion for performing waveform slicing using the phasic information detected by said phase detecting portion.

5,630,020

LEARNING METHOD AND NEURAL NETWORK STRUCTURE

Sherif Makram-Ebeid, Gif sur Yvette, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 839,020, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 533,651, Jun. 5, 1990, abandoned. This application Dec. 21, 1994, Ser. No. 363,554

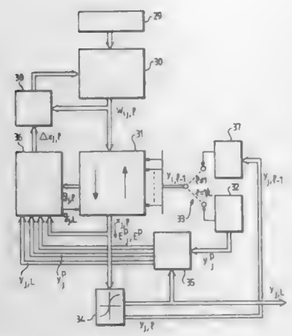
Claims priority, application France, Jun. 9, 1989, 89 07662

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **7 Claims**

1. A learning method for, training a neural network, under the control of error-backpropagation, the network including neurons organized in successive layers among which there are an input layer and an output layer, a state of a neuron j in a layer l being determined according to the equation:

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$x_{j,t}=\Sigma W_{ij,t}Y_{i,(t-1)};$

wherein:

a) $Y_{j,(t-1)}$ is an output potential of a neuron i in a preceding layer l−1, and

b) $W_{ij,t}$ is a synaptic coefficient, representative of a coupling from the neuron i to the neuron j, the neural network including a computer memory for storing a value of the synaptic coefficient to be retrieved for use after training, the method comprising the steps of:

i) determining a value of a quantity E representative of a discrepancy between actual result and desired result at a neural net output at the output layer;

ii) determining for a particular neuron j in layer 1 a value of a partial derivative $g_{j,t}$: $g_{j,t}=\alpha E/\alpha x_{j,t}$;

iii) producing a product of $g_{j,t}$ and $x_{j,t}$;

iv) rescaling the product by a first factor if the partial derivative $g_{j,t}$ and the state $x_{j,t}$ have opposite polarities, for producing an increment $\Delta W_{ij,t}$;

v) rescaling the product by a second factor if the partial derivative $g_{j,t}$ and the state $x_{j,t}$ have equal polarities, for producing the increment $\Delta W_{ij,t}$;

vi) updating the value of the synaptic coefficient $W_{ij,t}$ with the increment $\Delta W_{ij,t}$; and

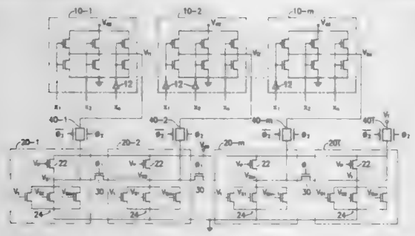
vii) storing the updated value in the computer memory.

5,630,021

HAMMING NEURAL NETWORK CIRCUIT

Zhi-Jian Li; Bing-Xue Shi, and Bin-Qiao Li, all of Beijing, China, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Sep. 30, 1994, Ser. No. 316,135
Int. Cl.[6] G06K *9/00*
U.S. Cl. 395—24 **5 Claims**



1. A Hamming neural network circuit having N binary inputs and M exemplar template outputs, comprising:

a template matching calculation subnet including M first neurons in which M exemplar templates are stored respectively, each first neuron including N pull-up and pull-down transistor pairs connected in parallel with each other, said N pull-up and pull-down transistor pairs of each first neuron being connected to and controlled by said N binary inputs, respectively, so that said M first neurons generate M template matching signals depending on an amount of matching between said N binary inputs and said M exemplar templates stored in said M first neurons; and

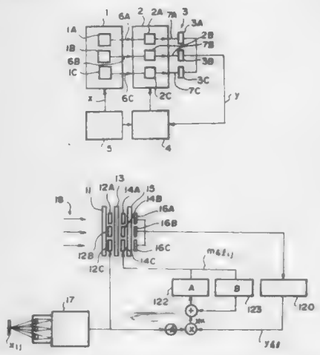
a winner-take-all subnet including M second neurons, each having a template competition node, a load element connected between a power source and said template competition node, and a competition circuit connected between said template competition node and ground; said M template competition nodes being connected to said M template matching signals respectively for generating said M exemplar template outputs, and said competition circuit of each second neuron including M−1 parallel-connected transistors controlled respectively by said template competition nodes of all second neurons except the template competition node of itself so that the template competition node connecting with the largest template matching signal is established at a high voltage level, and the other template competition nodes are at a low voltage level relative to the high voltage level, after competition.

5,630,022

SELF-ORGANIZING PATTERN LEARNING OPTICAL SYSTEM

Shuji Ono, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 9, 1994, Ser. No. 208,988
Claims priority, application Japan, Mar. 10, 1993, 5-048432
Int. Cl.[6] G02F *15/76;1/135*
U.S. Cl. 395—25 **51 Claims**



1. A self-organizing pattern learning system for learning a plurality of different patterns, comprising:

i) an optical pattern correlation degree detecting means, which comprises:

a pattern storing means for storing a plurality of memory patterns;

an input pattern displaying means for displaying a presented input pattern; and

a photo detecting means,

wherein at least two of said input pattern displaying means, said pattern storing means, and said photo detecting means are located at positions adjacent to each other, and

wherein said photo detecting means optically detects a degree of pattern correlation between the input pattern displayed on said input pattern displaying means and each of said plurality of memory patterns stored in said pattern storing means,

ii) a learning pattern creating means for creating a plurality of learning patterns as a product of said degree of pattern correlation and said input pattern, wherein said product is weighted by said memory patterns and

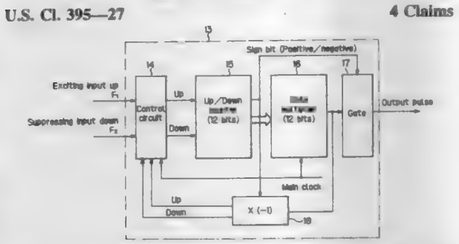
iii) a memory pattern updating means for updating the memory patterns with said learning patterns.

5,630,023

SIGNAL PROCESSOR

Sugitaka Oteki, Ikeda, Japan, assignor to Ricoh Company, Limited, Tokyo, Japan

Filed Oct. 14, 1994, Ser. No. 322,498
Claims priority, application Japan, Oct. 14, 1993, 5-257348
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—27 **4 Claims**



1. A signal processor comprising: a coupling updating unit for updating a coupling coefficient according to a positive error signal and a negative error signal each generated depending on a teacher signal and output from a neuron-simulated element in which a plurality of neuron elements are connected to each other in a form like a network by combining said coupling updating unit with said neuron-simulated element;

a first delaying unit for delaying an output from said neuron-simulated element by m cycles;

a second delaying unit for delaying an output from said neuron-simulated element by n cycles wherein n is not equal to m;

a first logical product unit for computing a logical product of an output from said first delaying unit above and an output from said second delaying unit; and

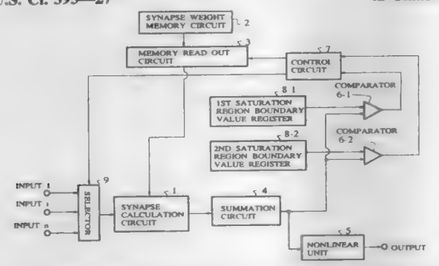
a second logical product unit for computing a logical product of negation of an output from said first delaying unit and negation of an output from said second delaying unit.

5,630,024

METHOD AND APPARATUS FOR PROCESSING USING NEURAL NETWORK WITH REDUCED CALCULATION AMOUNT

Kimihisa Aihara, and Kuniharu Uchimura, both of Kanagawaken, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jan. 17, 1995, Ser. No. 373,440
Claims priority, application Japan, Jan. 19, 1994, 6-003885; Jan. 19, 1994, 6-004043; Jul. 18, 1994, 6-165641
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—27 **42 Claims**



1. A neural network circuit receiving a plurality of input values and outputting one output value, comprising:

calculation means for carrying out a synapse calculation for each input value and a corresponding synapse weight of each input value which are expressed by binary bit sequences, by using a sequentially specified bit of the corresponding synapse weight, and a summation calculation for sequentially summing synapse calculation results for the input values to obtain a summation value;

synapse weight memory circuit for storing a plurality of synapse weights;

memory read out circuit for selectively reading out a specified bit of a specified synapse weight from the synapse weight memory circuit to the calculation means;

a nonlinear unit for applying a prescribed nonlinear processing to the summation value obtained by the calculation means so as to determine the output value;

judging means for judging whether the summation value obtained by the calculation means reached to a saturation region of a transfer characteristic of the nonlinear unit; and

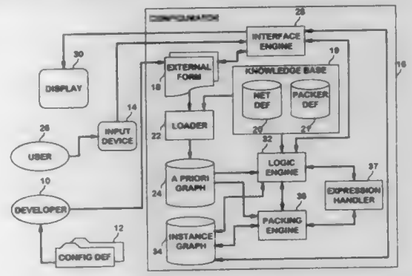
control means for controlling the memory read out circuit and the calculation means to sequentially carry out the synapse calculation from upper bits of the corresponding synapse weight, and to stop the synapse calculation and the summation calculation whenever the judging means judges that the summation value obtained by the calculation means reached to the saturation region.

5,630,025

GENERALIZED CONFIGURATOR USING A DECLARATIVELY CONSTRUCTED TWO-LEVEL BI-PARTITE GRAPH AS A KNOWLEDGE REPRESENTATION

Nigel I. Dolby, Ham Lake; Timothy E. Nagle, Bloomington, and Thomas R. Goessling, Burnsville, all of Minn., assignors to UNISYS Corporation, Blue Bell, Pa.

Filed Jul. 13, 1994, Ser. No. 274,618
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—51 **35 Claims**



1. An expert system using control logic based on spreading activation and graphs as a knowledge representation for generating a value configuration of connected components, said expert system comprising:

a priori net means for storing component definitions declaratively specified by a configurator developer, wherein said component definitions and the implied requirements of their use are represented as first nodes in a first spreading activation bi-partite graph;

instance net means for storing instances of components defined in said a priori net means interactively selected by a configurator user, wherein said instances and the interconnections between said instances are represented as second nodes in a second bi-partite graph; and

processing means coupled to said a priori net means and said instance net means for accepting requests from the configurator user to configure selected components, matching said configurator user requests to said component definitions, automatically propagating logical implications of said configurator user requests across as many ones of said first nodes of said first spreading activation bi-partite graph and said second nodes of said second bi-partite graph as are required to build a complete set of connected components fulfilling said configurator user requests by creating and connecting selected

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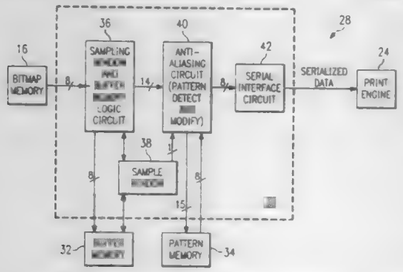
instances of said selected components only if creation and connection of said selected instances are valid based on said component definitions in said a priori net means and prior configurator user requests, and reporting the configuration resulting from said configurator user requests to the configurator user.

5,630,026

TONER SAVER USING ANTI-ALIASING APPARATUS AND METHODOLOGY

Thomas M. Ogletree; Michael J. Dougherty, both of Houston, and Stephen M. Zaudtke, Spring, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 23, 1994, Ser. No. 344,065
Int. Cl.° G06K *15/00;15/14;* **H04N** *1/29;1/409*
U.S. Cl. 395—107 **19 Claims**



1. A method of conserving a substance dispensed by a printer engine for forming print on a media, the method comprising:

storing a plurality of bits in a memory, said plurality of bits representing a cumulative pattern to be printed by reproducing said bits on said media, wherein each bit is selected from a first memory state and a second memory state;

selecting a subset of said plurality of bits, wherein said subset forms a first pattern and has a center bit;

responsive to each of said plurality of bits of said subset being in said first memory state, outputting to said printer engine a print bit corresponding to said center bit and having a print state which is opposite said memory state of said center bit; and

responsive to at least one of said plurality of bits of said subset being in said second memory state, outputting to said printer engine a print bit corresponding to said center bit and having a print state the same as said memory state of said center bit.

17. A printing system, comprising:

a printer engine for dispensing a substance for forming print on a media;

a memory operable to store a plurality of bits in a memory, said plurality of bits representing a cumulative pattern to be printed by reproducing said bits on said media, wherein each bit is selected from a first memory state and a second memory state;

circuitry for selecting a subset of said plurality of bits, wherein said subset forms a first pattern and has a center bit;

detection circuitry for detecting when each of said plurality of bits of said subset is in said first memory state and for detecting when at least one of said plurality of bits of said subset is in said second memory state;

circuitry for outputting to said printer engine a print bit corresponding to said center bit and having a print state which is opposite said memory state of said center bit in response to said detection circuitry when each of said plurality of bits of said subset is in said first memory state; and

circuitry for outputting to said printer engine a print bit corresponding to said center bit and having a print state the same as said memory state of said center bit in response to said detection circuitry when at least one of said plurality of bits of said subset is in said second memory state.

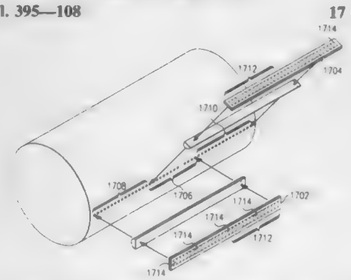
19. The printing system of claim 17 wherein said substance comprises toner.

5,630,027

METHOD AND APPARATUS FOR COMPENSATING HORIZONTAL AND VERTICAL ALIGNMENT ERRORS IN DISPLAY SYSTEMS

Vadlamannati Venkateswar, Plano, Tex., and Vivek K. Thakur, Bangalore, India, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 28, 1994, Ser. No. 364,916
Int. Cl.° B41B *15/00*
U.S. Cl. 395—108 **17 Claims**



1. A system for forming a two-dimensional array of pixels comprised of at least two rows of pixels, said system comprising:

at least two modulators for forming a row of pixels, the row of pixels comprised of at least three abutting segments;

a first of the three segments formed by a first modulator;

a second of the three segments formed by a second modulator;

a third of the three segments formed by both the first modulator and the second modulator, the third segment located between the first and second segments; and

wherein the third segment is divided into two end portions separated by a breakpoint between the two end portions, one end portion of the third segment being formed by the first modulator and the other end portion the third segment being formed by the second modulator, wherein the breakpoint may change position each line of pixels; and

a modulator controller for inputting data m the modulators and for controlling the location of the breakpoint.

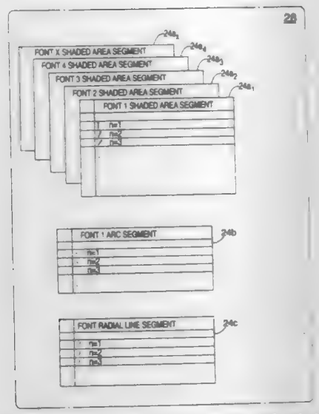
5,630,028

METHOD OF REPRESENTING GRAPHIC DATA USING TEXT

Vincent DeMeo, N. Valley Stream, N.Y., assignor to Bowne & Co., Inc., New York, N.Y.

Filed May 28, 1996, Ser. No. 653,794
Int. Cl.° G06K *15/00*
U.S. Cl. 395—110 **12 Claims**

1. A method of printing graphic data on a print system having associated data memory, at least one processor and a printer mechanism, using at least two fonts, said at least two fonts comprised of n predefined text characters stored in said data memory to generate a chart having a common origin and at least two shaded area regions having different attributes, each text character of each of said fonts comprising a shaded area sector having a unique predefined angular position around said common origin relative to a phantom datum line passing through said common origin, said shaded area sector having a border defined by a first phantom radial of a predetermined length and a second phantom radial of said predetermined length joined at a vertex and diverging at an angle 360/n therebetween, and a phantom arc segment joining said first and second phantom radials opposite said vertex, said chart being represented in character data, the method comprising the steps of:



(a) said processor selecting at least one predefined shaded area sector character from a first of said at least two fonts in accordance with said character data to define a first of said at least two shaded area regions;

(b) said processor selecting at least one predefined shaded area sector character from a second of said at least two fonts in accordance with said character data to define a second of said at least two shaded area regions; and

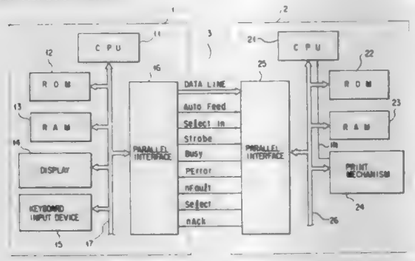
(c) said processor enabling said printer mechanism to print said selected predefined shaded area sector characters, with said vertex of each of said predefined shaded area sector characters at said common origin and each of said predefined shaded area sector characters in said predefined angular position for each of said predefined shaded area sector characters around said common origin relative to said phantom datum line.

5,630,029

DATA TRANSFER SYSTEM FOR TRANSFERRING DATA FROM A DATA TRANSMISSION APPARATUS TO A DATA RECEPTION APPARATUS VIA A PARALLEL INTERFACE, AND DATA TRANSFER SYSTEM FOR PRINTER USING THIS DATA TRANSFER SYSTEM

Masanori Kosukegawa, Mishima, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Feb. 14, 1994, Ser. No. 195,925
Claims priority, application Japan, Feb. 15, 1993, 5-025538; Nov. 9, 1993, 5-279813
Int. Cl.° G06K *15/00*
U.S. Cl. 395—114 **4 Claims**



1. A data transfer system for transferring data from a data transmission apparatus to a data reception apparatus via a parallel interface, said parallel interface including a plurality of control signal lines for control signal transfer and a data line for parallel transfer of data having a predetermined bit width, said data transmission apparatus comprising:

first high-speed data transfer means for changing a level of a data transmission signal sent over one of said plurality of control signal lines, and for transferring data in parallel to said data reception apparatus over said data line at a timing of that level change;

first state transition means for changing a level of a control signal sent over said plurality of control signal lines to predetermined states;

wherein said first high-speed data transfer means is responsive to a single change in the level of the control signal so as to enable said first high-speed data transfer means to both start and end high-speed data transfer;

means for sending test data to said data reception apparatus;

means for determining a delay time at a time of transmitting data, based on a result of discrimination of a reception status of said test data, received from said data reception apparatus;

second high-speed data transfer means for delaying data to be sent based on said delay time determined by said determining means, for changing a level of a data transmission signal sent over one of said plurality of control signal lines, and for transferring data in parallel to said data reception apparatus over said data line at a timing of that level change; and

second state transition means for changing a level of a control signal sent over said plurality of control signal lines to predetermined states; and

wherein said second high speed data transfer means is responsive to a single change in the level of the control signal so as to enable said second high-speed data transfer means to both start and end high-speed data transfer; and

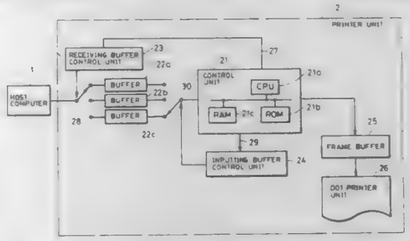
wherein said data reception apparatus includes data discriminating means for receiving said test data from said data transmission apparatus, for discriminating a reception status of said test data, and for sending a discrimination result to said data transmission apparatus.

5,630,030

OUTPUT METHOD AND APPARATUS FOR A RECORDING DEVICE

Yoshiaki Kawamura, Narashino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 53,348, Apr. 28, 1993, abandoned, which is a continuation of Ser. No. 683,836, Apr. 11, 1991, abandoned. This application Oct. 17, 1994, Ser. No. 323,607
Claims priority, application Japan, Apr. 20, 1990, 2-103198
Int. Cl.° G06K *15/00*
U.S. Cl. 395—115 **17 Claims**



1. An output apparatus comprising:

input means for receiving data from an external apparatus, the data including information to be output and priority information designated by the external apparatus;

storage means having a plurality of memories for receiving the data from said input means, and for storing the received data;

selection means for selecting a memory storing the data having the priority information among all of the data stored in said plurality of memories; and

output means for outputting information to be output from the memory selected by said selection means.

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5,630,031

HIGH-SPEED DOT MATRIX OUTPUT APPARATUS

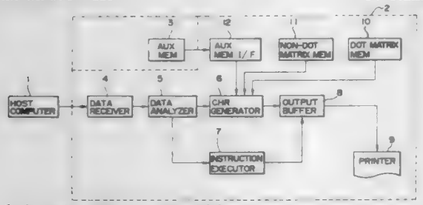
Tsuneaki Kurumida, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 224,191, Apr. 7, 1994, which is a continuation of Ser. No. 908,889, Jul. 7, 1992, abandoned, which is a continuation of Ser. No. 789,401, Oct. 3, 1991, abandoned, which is a continuation of Ser. No. 724,478, Jun. 28, 1991, abandoned, which is a continuation of Ser. No. 342,871, Apr. 25, 1989. This application Jun. 6, 1995, Ser. No. 465,910

Claims priority, application Japan, Apr. 28, 1988, 63-104312

Int. Cl.[6] **G06K** *15/00*

U.S. Cl. 395—115 **64 Claims**



1. An output apparatus comprising:

code data memory means for storing code data received from outside the apparatus;

first dot matrix data memory means for storing dot matrix data for converting the code data stored in said code data memory means into dot matrix data;

connecting means for detachably connecting a second dot matrix data memory means for storing dot matrix data for converting code data into dot matrix data to said apparatus;

non-dot-matrix data memory means for storing non-dot matrix data for converting the code data stored in said code data memory means into non-dot-matrix data and then into dot matrix data; and

conversion control means for referring the code data to the second dot matrix data memory means, said first dot matrix data memory means and said non-dot-matrix data memory means in this sequential order to obtain a desired dot pattern.

5,630,032

IMAGE GENERATING APPARATUS HAVING A MEMORY FOR STORING DATA AND METHOD OF USING SAME

Ikunori Yamaguchi; Yoshikazu Ikenoue, and Nobuo Kamei, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 4,588, Jan. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 959,532, Oct. 13, 1992, abandoned, and a continuation-in-part of Ser. No. 574,379, Aug. 28, 1990, abandoned, said Ser. No. 959,532is a continuation of Ser. No. 195,730, May 18, 1988, abandoned, said Ser. No. 574,379is a continuation of Ser. No. 177,594, Apr. 4, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 478,757

Claims priority, application Japan, Apr. 7, 1987, 62-86289; Apr. 7, 1987, 62-86290; Apr. 7, 1987, 62-86291; Apr. 7, 1987, 62-86292; Apr. 7, 1987, 62-86293; Apr. 7, 1987, 62-86294; Apr. 7, 1987, 62-86295; Apr. 7, 1987, 62-86296; May 21, 1987, 62-124157; May 21, 1987, 62-124158; Jun. 8, 1987, 62-142972; Jun. 8, 1987, 62-142973

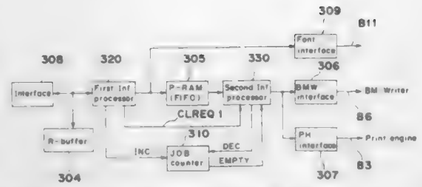
Int. Cl.[6] **G06F** *3/12*

U.S. Cl. 395—115 **61 Claims**

1. An image generating apparatus for printing information received from an external device, comprising:

receiving means for receiving information including image data to be printed and control data to control an operation of said image generating apparatus;

first processing means for transforming said image data into intermediate codes;



first memory means for storing said intermediate codes;

second processing means for requesting said intermediate codes from said first memory means and transforming said intermediate codes into dot images, wherein said second processing means operates independently from said first processing means;

second memory means for storing said dot images; and

print control means for printing said dot images according to said control data.

5,630,033

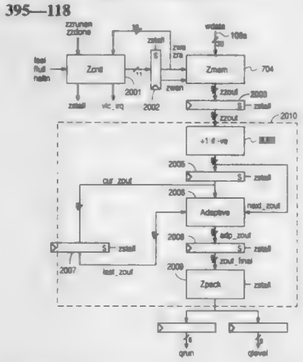
ADAPTIC THRESHOLD FILTER AND METHOD THEREOF

Stephen C. Purcell, Mountain View, and Didier J. Le Gall, Los Altos, both of Calif., assignors to C-Cube Microsystems, Inc., Milpitas, Calif.

Division of Ser. No. 105,253, Aug. 9, 1993. This application Aug. 28, 1995, Ser. No. 520,287

Int. Cl.[6] **G06T** *1/00*

U.S. Cl. 395—118 **2 Claims**



1. An adaptive thresholding circuit receiving a first value, a second value and a third value, comprising:

first, second and third registers connected in a pipeline configuration, said first, second and third registers holding respectively said first, second and third values; and

means for setting the content of said second register to zero when (i) said first and third values are zero, and (ii) said second value is less than a predetermined threshold value.

5,630,034

THREE-DIMENSIONAL IMAGE PRODUCING METHOD AND APPARATUS

Michio Oikawa, Ebina; Koichi Sano, and Yoshiaki Isobe, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., and Hitachi Medical Corporation, both of Tokyo, Japan

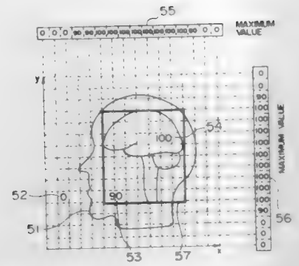
Filed Apr. 3, 1995, Ser. No. 415,941

Claims priority, application Japan, Apr. 5, 1994, 6-067257

Int. Cl.[6] **G06F** *15/00*

U.S. Cl. 395—124 **22 Claims**

1. A three-dimensional image producing method of projecting a three-dimensional object, defined by volume data composed of a



three-dimensional array of voxel data disposed in a three-dimensional space, onto a projection plane disposed in the three-dimensional space to produce an image, comprising the steps of:

inputting to a memory volume data composed of a three-dimensional array of voxel data classified beforehand into a plurality of classifications;

setting a positional relationship between the projection plane and the volume data in the three-dimensional space;

setting a display threshold for density;

setting at least one of the plurality of classifications as a display classification;

determining, as display candidates, voxel data of the input volume data which has a value exceeding the display threshold and voxel data of the input voxel data classified into the set display classification; and

projecting the voxel data as the determined display candidate onto the projection plane.

5,630,035

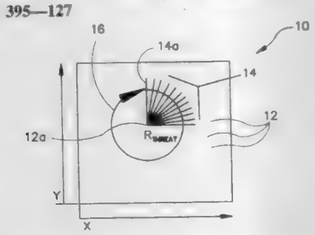
METHOD OF SAMPLING A TERRAIN DATA BASE

Robert M. Gjullin, Corrales, and Douglas E. Thorpe, Albuquerque, both of N.M., assignors to Honneywell Inc., Minneapolis, Minn.

Filed Jan. 18, 1994, Ser. No. 183,533

Int. Cl.[6] **G06F** *15/00;* **G05D** *1/00*

U.S. Cl. 395—127 **3 Claims**



1. A method of providing intervisibility calculations for known terrain using a computer comprising the steps of:

providing a digital terrain elevation data (DTED) database which models the known terrain and has data posts corresponding to points on the known terrain, the data posts being individually addressable in X and Y dimensions wherein spacing between adjacent terrain points varies as a function of at least one of said X and Y dimensions;

identifying a threat data post by X and Y dimension values;

identifying a set of radials of length corresponding to said constant radius and emanating from said threat data post;

dividing said at least one of said X and Y dimensions into a plurality of sub-zones and for each sub-zone identifying a data post spacing value in said X and Y dimensions corresponding to terrain point spacing therein;

traversing at least one of said radials by identifying a plurality of delta X and delta Y value pairs based on an angular orientation of said at least one radial, said plurality of delta X and delta Y value pairs are scaled according to said plurality of sub-zones, further identifying a given delta X and delta Y value pair from said plurality of sub-zones according to said threat post X and Y dimension values, and successively sampling along said at least one radial by successively accumulating said given delta X and delta Y values to identify successive sample points along said at least one radial whereby sampling at a given number of said successive sample points provides sampling along said at least one radial to said given length; and

calculating intervisibility of the sample points with respect the threat point.

5,630,036

IMAGE DATA COMPRESSION METHOD INVOLVING DELETING DATA IN AREAS WHERE PREDICTED COLOR VALUE, BASED ON COLOR CHANGE BETWEEN ADJACENT PIXELS, IS SMALL, AND IMAGE DATA PROCESSING DEVICE IMPLEMENTING SAME METHOD

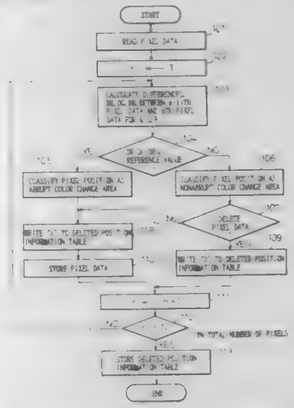
Satoshi Sonohara; Shigeki Furuta; Hitoshi Matsumoto, all of Kawasaki, and Motoyuki Morita, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 4, 1993, Ser. No. 101,698

Claims priority, application Japan, Nov. 2, 1992, 4-294657

Int. Cl.[6] **G06T** *9/00*

U.S. Cl. 395—131 **25 Claims**



1. An image data compression method, comprising:

a reading step in which an image is read as plural pixel data;

a prediction error calculating step in which a prediction error is calculated that represents a difference between actual color value pixel data, of a pixel in question, and a predicted color value thereof as predicted by a prescribed prediction method from the pixel data of a pixel adjacent to the pixel in question;

an area-type classifying step in which the pixel data, of the entire image area, is classified into one of an abrupt color change area type in which said prediction error is large and a nonabrupt color change area type in which said prediction error is small;

a deleting step in which some of the pixel data, classified in said area classifying step as said nonabrupt color change area type, are deleted and remaining pixel data are maintained for storage; and

a deleted-position information appending step in which deleted-position information, that indicates the position of a pixel

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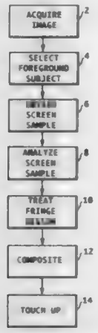
whose data has been deleted, is appended to the remaining pixel data for storage therewith.

5,630,037

METHOD AND APPARATUS FOR EXTRACTING AND TREATING DIGITAL IMAGES FOR SEAMLESS COMPOSITING

Keith W. Schindler, Malibu, Calif., assignor to Schindler Imaging, Inc., San Jose, Calif.

Filed May 18, 1994, Ser. No. 245,377
Int. Cl.[6] G06T *5/40*
U.S. Cl. 395—131 **21 Claims**



1. A method for extracting a digitized foreground image for compositing with an arbitrary background image, said method comprising the steps of:

acquiring an image comprising a foreground subject and a background,

obtaining data representing coloration of said background, said data comprising a plurality of values corresponding to color intensities,

generating from said data a statistical range of color intensities for each of a selected group of colors,

deriving an indication of average background color from said statistical range of color intensities,

differentiating said foreground subject from said background by comparing color intensity values of said foreground subject with said indication of average background color,

generating a control image comprised of values representing a distance in color of each color intensity value in said foreground subject from said average background color, and

generating a second control image by dividing said first control image into a background region, a fringe region of variable width, and a foreground region, and mixing color into foreground pixels at locations corresponding to said fringe region of said second control image from nearby background pixels at locations corresponding to said background region of said second control image,

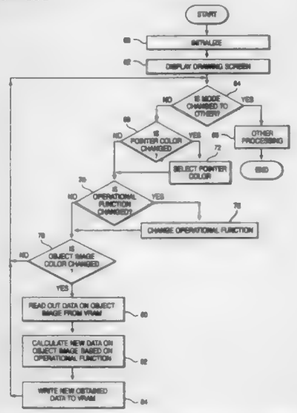
wherein said second control image comprises a plurality of values corresponding to pixels at specific locations, and wherein said step of mixing color into foreground pixels at locations corresponding to said fringe region of said second control image from nearby background pixels at locations corresponding to said background region of said second control image comprises the steps of (a) identifying a pixel in said fringe region bordered by pixels from said background region, (b) changing a color of the corresponding pixel in said foreground image to reflect an average color of a plurality of background pixels in locations corresponding to said background region near said pixel, (c) associating said pixel no longer with said fringe region but instead with said background region, and (d) repeating steps (a) through (c) for a plurality of pixels in said fringe region.

5,630,038

METHOD AND APPARATUS FOR COLORING AN IMAGE ON A SCREEN

Masaharu Itoh, and Shichiro Miyashita, both of Yamato, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 989,287, Dec. 11, 1992, abandoned.
This application May 17, 1995, Ser. No. 442,607
Claims priority, application Japan, Dec. 18, 1991, 3-333785
Int. Cl.[6] G06T *5/00*
U.S. Cl. 395—131 **6 Claims**



1. An apparatus for altering a color of a displayed image comprising:

means for coloring a displayed pointer with a first color;

means, using said colored pointer, for selecting an area of said displayed image to be color-altered, said area having a second color different from said first color; and

means, based on said first color, for altering said second color in incremental stages, said altering means including means for subtracting said first color from said altered color.

5,630,039

TESSELLATING COMPLEX IN POLYGONS IN MODELING COORDINATES

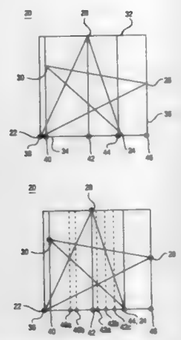
Gordon C. Fossum, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 963,790, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 439,903, Nov. 21, 1989, Pat. No. 5,276,783. This application Feb. 28, 1994, Ser. No. 203,714
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—134 **9 Claims**

1. A computer program, including instructions which implement specific operations and are stored as a unique data structure on a computer readable media in a computer graphics system, for displaying at least one complex polygon, having at least one edge that intersects itself, comprising:

means for determining an angle from which said complex polygon is to be viewed;

means, implemented by said instructions in said data structure, for causing said complex polygon to be encompassed by a bounding rectangle which is the smallest rectangle that will encompass said complex polygon, said bounding rectangle intersecting at least two exterior vertex coordinates of said complex polygon;



means, implemented by said instructions in said data structure, for dividing said bounding rectangle into rectangular regions, such that none of said regions contain any interior vertices where at least one of said complex polygon edges intersects itself;

means for controlling a graphics adapter to fill portions of said complex polygon within said rectangular regions; and

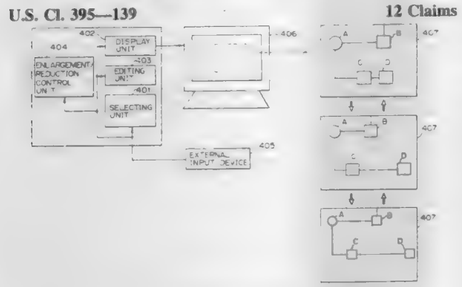
means for causing all of said complex polygon to be displayed, based upon said filled portions.

5,630,040

EDIT SCREEN DISPLAY CONTROL DEVICE TO CONFIRM DATA LAYOUT WITHOUT SWITCHING TO SCREEN SHOWING ENTIRE LAYOUT

Satoshi Furuya, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 285,430, Aug. 4, 1994, abandoned.
This application Feb. 7, 1996, Ser. No. 598,132
Claims priority, application Japan, Aug. 13, 1993, 5-201510; Jul. 28, 1994, 6-176607
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—139 **12 Claims**



1. An edit screen display control device comprising:

selecting means for selecting at least one of a plurality of elements on a screen;

display means for displaying the elements selected by said selecting means in an enlargement/reduction area on the screen;

editing means for performing an editing process on an element in the selected elements; and

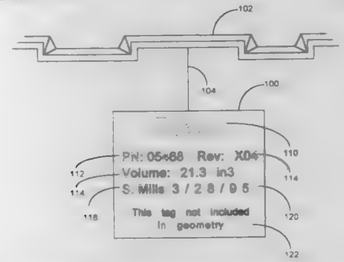
enlargement/reduction control means for controlling the display means to display an enlargement/reduction of the selected elements in the same enlargement/reduction area that the selected elements are displayed based on the editing process performed on the element by said editing means.

5,630,041

SYSTEM FOR PERMANENTLY RETAINING MULTI DIMENSIONAL CAD PART INFORMATION IN THE FORM OF A TAG WITHIN A PART FILE

R. Steven Mills, Austin, and Ty R. Schmitt, Round Rock, both of Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Filed Jun. 23, 1995, Ser. No. 494,272
Int. Cl.[6] G06T *17/40*
U.S. Cl. 395—141 **25 Claims**



17. A method of presenting part information to a user of a computer system, the computer system including a processor, memory coupled to the processor, and a screen coupled to the processor and the memory, the method comprising the steps of:

presenting on the screen a screen presentation of a part having a part geometry corresponding to a geometry data field,

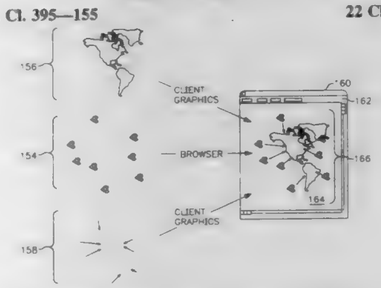
presenting on the screen a part information tag corresponding to an informational data field, the information data field being coupled to the geometry data field, the geometry data field and the information data field being stored within a part data file.

5,630,042

METHOD AND APPARATUS FOR PROVIDING COLLECTION BROWSERS

Heather A. McIntosh, Nahant; Eswar Priyadarshan, Reading, both of Mass.; Alan Ruberg, Foster City, Calif., and Timothy Shea, Charlestown, Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 936,763, Aug. 27, 1992, abandoned.
This application Jun. 6, 1995, Ser. No. 470,840
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—155 **22 Claims**



1. In a computer system having a display coupled to a central processing unit (CPU) executing a window system and at least one independent application, a method for said at least one independent application to provide collection browsers having browser items for selective browsing by users comprising the steps of:

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(a) accepting frame attributes, browser attributes, browser item layout attributes and browser items from said at least one independent application;

(b) generating a frame and displaying said frame on said display by said window system according to said frame attributes provided by said at least one independent application, said frame attributes describing said frame and specifying where said frame is to be displayed on said display;

(c) generating a browser pane within said frame and displaying said browser pane on said display by said window system according to the browser attributes provided by said at least one independent application, said browser attributes describing said browser pane and specifying where said browser pane is to be tiled over said frame;

(d) generating a plurality of identical browser item layouts by said window system according to the browser item layout attributes provided by said at least one independent application, said browser item layout attributes describing said identical browser item layouts and specifying where said identical browser item layouts are to be tiled over said browser pane; and

(e) generating the browser items within said identical browser item layouts, one browser item per identical browser item layout, and displaying said browser items on said display by said window system, said browser items being provided by said at least one independent application;

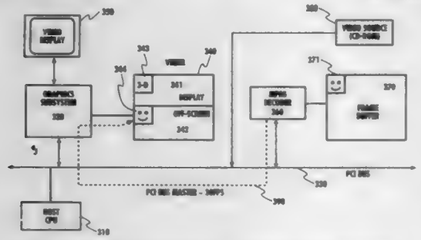
wherein the independent application is relieved of the burden of display maintenance.

5,630,043

ANIMATED TEXTURE MAP APPARATUS AND METHOD FOR 3-D IMAGE DISPLAYS

Keith Uhlin, Alamo, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed May 11, 1995, Ser. No. 439,247
Int. Cl.° G06F *15/00*
U.S. Cl. 395—174 **20 Claims**



1. An apparatus for generating a 3-D image, comprising:

a system bus, for transferring data;

a video decoder, coupled to said system bus, for receiving and decoding encoded animated texture data to produce decoded animated texture data; and

a graphics subsystem, coupled to said system bus, for receiving 3-D image data and decoded animated texture data and combining and processing said received 3-D image data and decoded animated texture data to output processed 3-D image data,

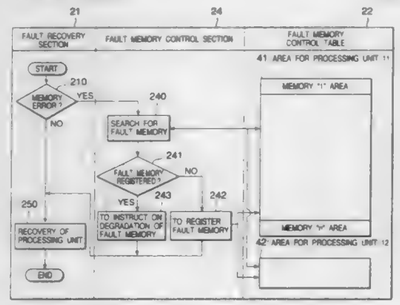
wherein said video decoder may control said system bus to the exclusion of other devices to transfer the decoded animated texture data to said graphics subsystem at texture data frame rates sufficient to provide a realistic animation.

5,630,044

MEMORY FAULT RECOVERY SYSTEM WHICH EXECUTES DEGRADATION OR RECOVERY OF MEMORY

Takashi Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 268,111, Jul. 6, 1994. This application Mar. 25, 1996, Ser. No. 624,957
Claims priority, application Japan, Jul. 6, 1993, 5-166738
Int. Cl.° G06F *11/00*
U.S. Cl. 395—182.03 **8 Claims**



1. A memory fault recovery system in an information processor comprising:

fault recovering means for detecting a memory fault occurring in each memory of a plurality of logic units contained in an information processor and recovering the memory fault;

fault memory registering means for registering an identification information of said memory whose fault is detected;

fault memory controlling means for searching said fault memory registering means for the identification information of a memory whose fault is detected by said fault recovering means to instruct said fault recovering means on degradation of said memory indicated by said identification information when the identification information of said memory whose fault is detected is registered and to newly register the identification information of said memory whose fault is detected in said fault memory registering means when the identification information is not registered; and

registration monitoring means for measuring a time elapsed since the fault memory controlling means registered the identification information of the memories registered in the fault memory registering means to delete the identification information of a memory whose registration time period exceeds a fixed time period.

5,630,045

DEVICE AND METHOD FOR FAULT TOLERANT DUAL FETCH AND STORE

Matthew A. Krygowski, Hopewell Junction, and Arthur J. Sutton, Cold Spring, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1994, Ser. No. 349,768
Int. Cl.° G06F *11/34*
U.S. Cl. 395—182.08 **7 Claims**

7. A device for concurrently allowing parallel fetch and store commands in a multiprocessor system having at least two central processors (CPs) which can be partitioned to provide a plurality of system sides for said multiprocessor system, said device comprising:

at least two memory controllers (SCs);

at least two memory units;

a plurality of input-output (I/O) processors, each of said CPs and I/O processors being defined as a requestor;

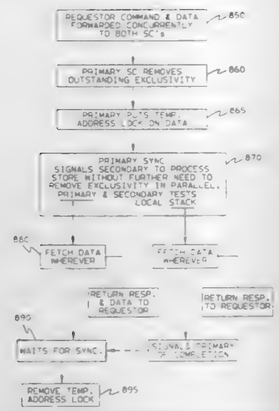
communication lines for providing said requestors access to both of said memory controllers; said communication lines allowing interchanging access to said memory controllers selectively in order to prevent continuous engagement of one of said memory controllers at all times;

a configuration array associated with each of said requestors for designating one of said memory controllers as a primary memory controller and said other remaining memory controller as a secondary memory controller;

an interlocking data protection mechanism providing data access to only one of said requestors at any one time, said memory controllers determining an exclusivity ownership access status for said data as held by any one of said requestors and removing said exclusivity ownership access when said requestor discontinues accessing said data;

at least a processing unit for processing a command issued by one of said requestors, said memory controllers signalling a response to said requestor upon processing completion; and

said requestor concurrently performing other data updates while waiting for said response from both said memory controllers, said response including both a first response message and any requested data from said primary memory controller, and a second response message from said second memory controller.

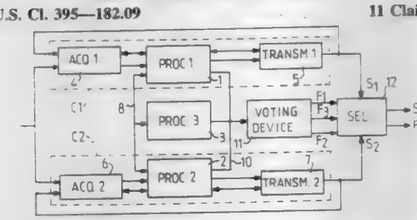


5,630,046

FAULT-TOLERANT COMPUTER ARCHITECTURE

Dominique Loise, Velizy-Villacoublay, France, assignor to Sextant Avionique, Velizy Villacoublay, France

Filed Jan. 18, 1996, Ser. No. 588,599
Claims priority, application France, Jan. 27, 1995, 95 01076
Int. Cl.° G01R *31/28*; **G06F** *11/00*
U.S. Cl. 395—182.09 **11 Claims**



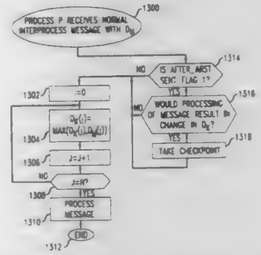
1. A computer designed to perform at least one given function, to detect failures and to further perform said function subsequent to the detection of a failure, said computer comprising data inputs and data outputs, two redundant processing chains each performing said function, and a monitoring device comprising a processor monitoring operation of said two processing chains, each processing chains comprising an acquisition circuit connected to said data inputs of said computer, a transmission circuit providing output data to be applied to said data outputs of said computer and a processor performing said function from data provided by said acquisition circuit in order to provide data applied to said transmission circuit, and monitoring operation of said monitoring device and of one other of said processing chains, each of said processing chains and said monitoring device supplying status data relating to the operating status of each of said processing chains and said monitoring device, the computer further comprising a voting device connected to said two processing chains and to said monitoring device so as to receive said status data in order to determine whether one of said two processing chains or said monitoring device is out of order, and a selection device applying to said data outputs of said computer only the output data provided by one of the two processing chains determined to be operating properly by said voting device.

5,630,047

METHOD FOR SOFTWARE ERROR RECOVERY USING CONSISTENT GLOBAL CHECKPOINTS

Yi-Min Wang, Berkeley Heights, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 12, 1995, Ser. No. 526,737
Int. Cl.° G06F *11/16*
U.S. Cl. 395—182.13 **29 Claims**



1. A method for operation of a computer system executing a plurality of processes and for recovering from an error in said system, each of said processes capable of inter-process communication and each of said processes capable of performing periodic local checkpoints, the method comprising the steps of:

in response to an occurrence of said error:

defining a first set of local checkpoints;

determining a maximum consistent global checkpoint including said first set of local checkpoints;

rolling back each of said processes to an associated checkpoint in said maximum consistent global checkpoint;

in response to a subsequent occurrence of said error:

defining a second set of local checkpoints;

determining a minimum consistent global checkpoint including said second set of local checkpoints; and

rolling back each of said processes to an associated checkpoint in said minimum consistent global checkpoint.

5,630,048

DIAGNOSTIC SYSTEM FOR RUN-TIME MONITORING OF COMPUTER OPERATIONS

Leslie T. La Joie, 4203 Dauphine Dr., Austin, Tex. 78727; Eugene M. Miller, 13112 Marble Falls Cove, Austin, Tex. 78729; Carl S. Dobbs, and Michael B. Solka, both of 1101 S. Capital of Texas Hwy., Bldg. J. Suite 220, Austin, Tex. 78746

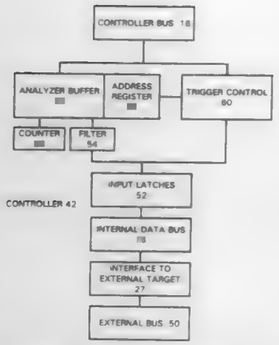
Filed May 19, 1994, Ser. No. 246,058
Int. Cl.° G06F *11/34*
U.S. Cl. 395—183.01 **10 Claims**

1. A monitoring system comprising:

a processing unit coupled to a data bus;

an interface between the data bus and an external computer system, said interface for coupling to a bus within the external

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computer system to receive signals from the bus within the external computer system and to provide signals from the external computer system directly to said data bus;

a latch, connected to said data bus for receiving and storing signals from said data bus provided from said interface, wherein said latch stores said signals at a rate at which said signals are provided on the external data bus;

a writable memory for storing a plurality of at least portions of said signal stored within said latch;

a first data path coupled to said latch, wherein said signals from the latch pass along said first data path to said writable memory;

a second data path coupled to said latch;

a trigger circuit to receive said signals provided to the interface from the external computer system along said second data path wherein said trigger circuit generates a trigger signal on the basis of a comparison between a one of said signals from said latch and a predetermined mask pattern representing a state of a bus that is diagnostic between normal, error-free operation and abnormal, incorrect operation of the external computer system, wherein said trigger signal identifies a target transaction on the bus of the external computer system; and

a filter circuit connected to said first data path and to said writable memory, said instructions from the latch passing through said filter circuit before being provided to said writable memory, wherein said filter circuit causes some of said signals from said latch to not be stored in said writable memory.

5,630,049

METHOD AND APPARATUS FOR TESTING SOFTWARE ON A COMPUTER NETWORK

Wayne M. Cardoza, Amherst, N.H.; Jeffrey M. Diewald, Billerica, Mass.; Jeffrey E. Nelson, Milford, N.H.; Steven D. DiPirro, Amherst, N.H.; James R. Goddard, Candia, N.H.; Wendell B. Fisher, Jr., Nashua, N.H.; Anne E. McElearney, Groton, and Richard Sayde, Littleton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

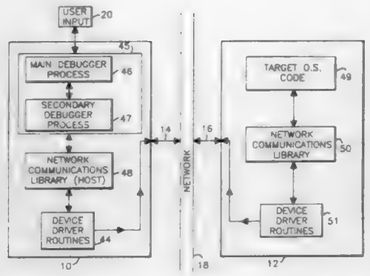
Filed Nov. 30, 1994, Ser. No. 347,614

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.01 **22 Claims**

1. A method of testing software on a network comprising a target computer system and a host computer system, said target computer system comprising a target operating system and the software being tested, said host computer system comprising a host operating system and a software debugger that controls testing of said software, the method comprising:

establishing, using said software debugger, a network connection for communications between said host computer system and said target computer system;



transitioning, in response to said establishing, said target computer system into a stopped state in which it awaits input from said host computer system and in which system interrupts are masked;

issuing to said software debugged a debug command that indicates a function to be performed by said target computer system;

determining, in response to said issuing, one or more network debugging protocol messages defining steps necessary for the target computer system to perform said function indicated by said debug command;

communicating to said target computer system using said network connection said network debugging protocol messages;

performing said steps in said target computer system to complete said function indicates by said debug command;

transitioning, in response to performing said steps, the target computer system between said stopped state and an interrupt-driven state in which said target computer system is in a normal system processing and execution state and in which a network hardware device that interfaces said target computer system with said network signals interrupts; and

reporting to said host computer system results of performing said steps and state information upon transitioning about said target computer system.

5,630,050

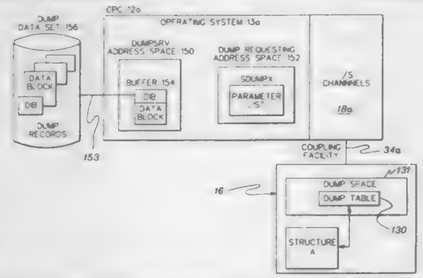
METHOD AND SYSTEM FOR CAPTURING AND CONTROLLING ACCESS TO INFORMATION IN A COUPLING FACILITY

Deborah E. Neuhard, Poughkeepsie; Jeffrey M. Nick, Fishkill; Kelly B. Pushong, Highland, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 73,909, Jun. 8, 1993. This application Nov. 1, 1993, Ser. No. 146,647

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—183.03 **39 Claims**



16. A system for capturing data in a data processing system having one or more operating systems coupled to a coupling facility, said system for capturing data comprising:

means for requesting, external to said coupling facility, creation of a dump of information stored within said coupling facility; and

means for creating said dump within said coupling facility, said means for creating being included within said coupling facility.

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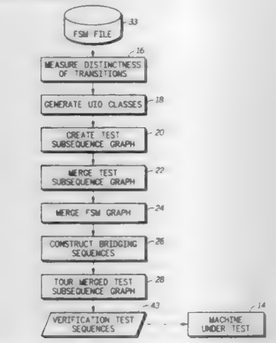
METHOD AND APPARATUS FOR MERGING HIERARCHICAL TEST SUBSEQUENCE AND FINITE STATE MACHINE (FSM) MODEL GRAPHS

Xiao Sun, and Carmie A. Hull, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 6, 1995, Ser. No. 399,307

Int. Cl.[6] G01R *31/28*

U.S. Cl. 395—183.08 **21 Claims**



1. A method utilizing a computer for merging Hierarchical Test Subsequence (TS) Subgraphs into a merged Test Subsequence (TS) Graph, the merged Test Subsequence (TS) Graph being used to generate test sequences utilized in testing a Machine Under Test (MUT) for conformance against a Hierarchical Finite State Machine (FSM) model, wherein:

each said Test Subsequence (TS) Subgraph is a Directed Graph stored in a Memory with one or more Test Subsequence (TS) Subgraph Vertices and one or more Test Subsequence (TS) Subgraph Micro-Edges between the Test Subsequence (TS) Subgraph Vertices;

each of said Test Subsequence (TS) Subgraph Micro-Edges corresponds to a Test Subsequence (TS);

each Test Subsequence (TS) comprises an Ordered Sequence of Input/Output (I/O) Sequences; and

all said Test Subsequence (TS) Subgraphs are hierarchically related to each other, wherein:

at least one Test Subsequence (TS) Subgraph is a Parent Test Subsequence (TS) Subgraph,

at least one Test Subsequence (TS) Subgraph is a Child Test Subsequence (TS) Subgraph,

each Child Test Subsequence (TS) Subgraph has one Parent Test Subsequence (TS) Subgraph,

at least one Parent Test Subsequence (TS) Subgraph is a Parentless Test Subsequence (TS) Subgraph,

Parentless Test Subsequence (TS) Subgraphs do not have Parent Test Subsequence (TS) Subgraphs, and

each Child Test Subsequence (TS) Subgraph has an Incoming Test Subsequence (TS) Subgraph Micro-Edge and an Outgoing Test Subsequence (TS) Subgraph Micro-Edge;

said method comprising the steps of:

(a) identifying the Parent Test Subsequence (TS) Subgraph for each Child Test Subsequence (TS) Subgraph;

(b) identifying all Incoming Test Subsequence (TS) Subgraph Micro-Edges and all Outgoing Test Subsequence (TS) Subgraph Micro-Edges for Each Child Test Subsequence (TS) Subgraph;

(c) merging all Child Test Subsequence (TS) Subgraphs with their corresponding Parent Test Subsequence (TS) Subgraphs by connecting all Incoming Child Test Subsequence (TS) Subgraph Micro-Edges and all Outgoing Child Test Subsequence (TS) Subgraph Micro-Edges to Test Subsequence (TS) Subgraph Vertices in Test Subsequence (TS) Subgraphs other than the Child Test Subsequence (TS) Subgraph;

(d) sequentially repeating steps (a)–(c) until all Child Test Subsequence (TS) Subgraphs have been merged with their Parent Test Subsequence (TS) Subgraph to form one or more Merged Parentless Test Subsequence (TS) Subgraph; and

(e) forming the Merged Test Subsequence (TS) Graph for storage in the Memory by combining all of the one or more Merged Parentless Test Subsequence (TS) Subgraphs.

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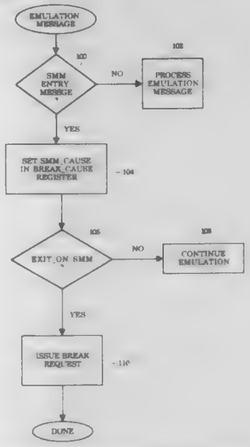
SYSTEM DEVELOPMENT AND DEBUG TOOLS FOR POWER MANAGEMENT FUNCTIONS IN A COMPUTER SYSTEM

Tushar Shah, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 519,624, Aug. 25, 1995, abandoned, which is a continuation of Ser. No. 129,662, Sep. 30, 1993, abandoned. This application Oct. 18, 1996, Ser. No. 730,891

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.14 **17 Claims**



1. An arrangement for debugging power management software, comprising:

a processor emulator for coupling to a target computer system that executes user software stored in a target system memory and enters an interrogate mode in response to a system management interrupt from the target computer system, wherein the interrogate mode enables access to a system management memory and power control circuitry in the target computer system; and

a control module coupled to the processor emulator that enables the processor emulator to begin execution of the user software and to control the processor emulator in the interrogate mode, wherein the control module accesses the system management memory and the power control circuitry via the processor emulator.

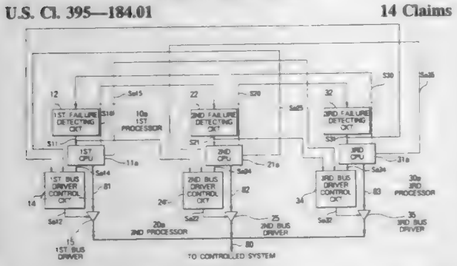
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5,630,053

FAULT-TOLERANT COMPUTER SYSTEM CAPABLE OF PREVENTING ACQUISITION OF AN INPUT/OUTPUT INFORMATION PATH BY A PROCESSOR IN WHICH A FAILURE OCCURS

Takahiro Morikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 22, 1995, Ser. No. 408,302
Claims priority, application Japan, Mar. 22, 1994, 6-049619
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—184.01 **14 Claims**



1. A computer system comprising:

first through N-th processors which are provided with first through N-th input/output information transmission paths, respectively, where N represents a positive integer which is not less than two, where n represents each of integers 1 through N, and where:

when n is equal to N, an (n+1)-th processor corresponds to the first processor and an (n+2)-th processor corresponds to a second processor,

when n is equal to N−1, the n+2)-th processor corresponds to the first processor,

when n is equal to N−1, an (n−1)-th processor corresponds to the N-th processor and an (n−2)-th processor corresponds to an (N−1)-th processor, and

when n is equal to 2, the (n−2)-th processor corresponds to the N-th processor; and an input/output information transmission path control device coupled to the first through the N-th input/output information transmission paths and to a system input/output information transmission path for a controlled system, said input/output information transmission path control device configured to connect the system input/output information transmission path to one of the first through the N-th input/output information transmission paths, wherein

in n-th processor comprises:

an n-th central processing unit (CPU) connected to an n-th input/output information transmission path, said (n−1)-th processor, and said (n+1)-th processor, said n-th CPU managing the n-th processor,

an n-th failure detecting circuit connected to said (n−1)-th processor and said n−2)-th processor for monitoring an operation state in said (n−1)-th processor, and

an n-th input/output information transmission path acquisition control circuit connected to said n-th CPU, said input/output information transmission path control device, said n+1)-th processor, and said (n+2)-th processor, for directing a control operation of said input/output information transmission path control device, and wherein

said n-th CPU periodically supplies said (n+1)-th processor with an n-th periodic signal indicative of an operation state of the n-th CPU,

said n-th failure detecting circuit monitors the operation state in said (n−1)-th processor by receiving an (n−1)-th periodic signal from said (n−1)-th processor, said n-th failure detecting circuit delivering an n-th monitored result signal to said -th CPU and to an (n−2)-th input/output information transmission path acquisition control circuit in said (n−2)-th processor,

said n-th CPU supplies said n-th input/output information transmission path acquisition control circuit with an n-th input/output information transmission path acquisition request signal when said n-th CPU requires acquisition of the system input/output information transmission path,

said n-th CPU supplies, in response to the n-th monitored result signal, an n-th input/output information transmission path acquisition prohibited signal to an (n−1)-th input/output information transmission path acquisition control circuit in said (n−1)-th processor, said n-th input/output information transmission path acquisition prohibited signal indicating whether or not said n-th CPU determines that said (n−1)-th processor may acquire the system input/output information transmission path, and

said n-th input/output information transmission path acquisition control circuit receives an (n+2)-th monitored result signal, the n-th input/output information transmission path acquisition request signal, and an (n+1)-th input/output information transmission path acquisition prohibited signal,

said n-th CPU, an (n+1)-th CPU in said (n+1)-th processor, and said n-th input/output information transmission path acquisition control circuit providing a determination of whether or not the system input/output information transmission path can be acquired by the n-th processor on the basis of the (n+2)-th monitored result signal and the (n+1)-th input/output information transmission path acquisition prohibited signal,

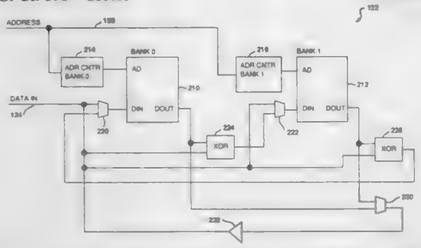
said n-th input/output information transmission path acquisition control circuit directing, in response to the n-th input/output information transmission path acquisition request signal and in accordance with the determination, said input/output information transmission path control device to operate control of acquisition of the system input/output information transmission path.

5,630,054

METHOD AND APPARATUS FOR STORING AND RETRIEVING ERROR CHECK INFORMATION

Duc Trang, San Jose, Calif., assignor to MTI Technology Center, Sunnyvale, Calif.

Filed Apr. 18, 1995, Ser. No. 424,771
Int. Cl.[6] G01R *31/28*; **G06F** *11/00*
U.S. Cl. 395—185.05 **28 Claims**



13. In a computer system having a host computer, a storage subsystem and a plurality of storage devices, wherein the storage subsystem includes a control logic, a data buffer and a plurality of bus controllers, and wherein data is transferred between the host computer and the plurality of storage devices through the storage subsystem, the data buffer comprising:

a data bus;

a first memory device having a data input terminal, an address input terminal and a data output terminal, the data input terminal of the first memory device coupled to the data bus;

a second memory device having a data input terminal, an address input terminal and a data output terminal, the data input terminal of the second memory device coupled to the data bus;

a first logic function having a first input terminal coupled to the data output terminal of the first memory device, a second input terminal coupled to the data bus and an output terminal coupled to the second memory device;

a second logic function having a first input terminal coupled to the data output terminal of the second memory device, a second input terminal coupled to the data bus and an output terminal coupled to the first memory device; and

a control circuit for alternately selecting between the first memory device and the second memory device

wherein the control circuit selects the first memory device to cause the first memory device to receive a first new data word from the data bus and to output a first existing check value to the first logic function, the first existing check value and the first new data word being input to the first logic function to calculate a first updated partial check value which is stored in the second memory device, and

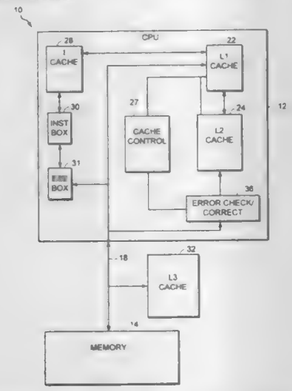
the control circuit selects the second memory device to cause the second memory device to receive a second new data word from the data bus and to output a second existing check value to the second logic function, the second existing check value and the second new data word being input to the second logic function to calculate a second updated partial check value which is stored in the first memory device.

5,630,055

AUTONOMOUS PIPELINE RECONFIGURATION FOR CONTINUOUS ERROR CORRECTION FOR FILLS FROM TERTIARY CACHE OR MEMORY

Peter J. Bannon, Concord; Ruben W. Castelino, Marlboro, both of Mass., and Chandrasekhara Somanathan, Milpitas, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 5, 1995, Ser. No. 437,111
Int. Cl.[6] H03M *13/00*; **G06F** *11/00*
U.S. Cl. 395—185.05 **6 Claims**



1. A computer system comprising:

a central processing unit (CPU) including a plurality of cache memories and an execution unit coupled to a computer bus;

error checking means coupled to said computer bus for identifying errors in data received by said execution unit over said computer bus;

means for transferring said data to said execution unit prior to transmitting said data to said error checking means;

means responsive to said error checking means for aborting use of said data by said execution unit, and for forcing subsequently received data to be transferred directly to said error checking means, when an error in said data is detected; and

error correcting means for correcting any errors associated with said data;

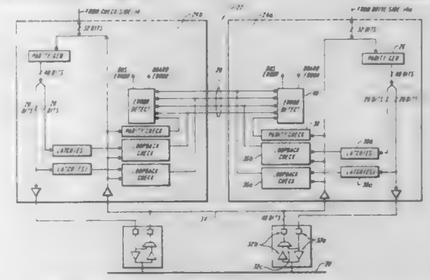
means for transferring said data to said cache memories only after said data has been evaluated to be error free by said error checking means or has been corrected by said error correcting means.

5,630,056

DIGITAL DATA PROCESSING METHODS AND APPARATUS FOR FAULT DETECTION AND FAULT TOLERANCE

Charles J. Horvath, Concord; William I. Leavitt, Grafton; Mark D. Tetreault, Northborough; Gregory M. Green, and Peter C. Churchill, both of Boxborough, all of Mass., assignors to Stratus Computer, Inc., Marlboro, Mass.

Filed Sep. 20, 1994, Ser. No. 309,210
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—185.09 **16 Claims**



1. A digital data processing device comprising

A. bus means for transmitting applied signals between plural functional units.

B. a first such functional unit including a first processing section for generating a first signal and for applying a portion thereof to said bus means.

C. said first functional unit further including a second processing section for generating a second signal and for applying a portion thereof to said bus means, said second signal normally being normally identical to said first signal,

said portion of said second signal applied to said bus means by said second processing section being complementary to said portion of said normally identical first signal applied to said bus means by the first processing section,

said second processing section applying said portion of said second signal to said bus means substantially concurrently with application of said portion of said first signal to said bus means by said first processing section, said portions of said first and second signals so applied to said bus means defining a third signal, and

D. fault-detection means, coupled to said first and second processing sections and to said bus means, for receiving said third signal from said bus means and for comparing at least portions thereof with corresponding portions of said first signal and of said second signal generated by those respective processing sections,

said fault-detection means signaling fault in response to at least selected differences between those compared signal portions, and including

D.1. first loopback-checking means, coupled to said bus means and to said first processing section, for generating a signal representative of identity of

i) a portion of said first signal applied to said bus means by said first processing section as compared with a corresponding portion of said third signal received from said bus means, and

ii) a portion of said first signal other than that applied to said bus means by the first processing section as compared with a corresponding portion of said third signal received from said bus means.

D.2. second loopback-checking means, coupled to said bus means and to said second processing section, for generating a signal representative of identity of

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i) a portion of said second signal applied to said bus means by said second processing section as compared with a corresponding portion of said third signal received from said bus means,

ii) a portion of said second signal other than that applied to the bus means by the second processing section as compared with a corresponding portion of said third signal received from said bus, and

D.3. bus-checking means, coupled to said first and second loopback-checking means, for responding to absences of identity as reflected in signals generated by both of said first and second loopback-checking means for generating a transmission error signal.

5,630,057

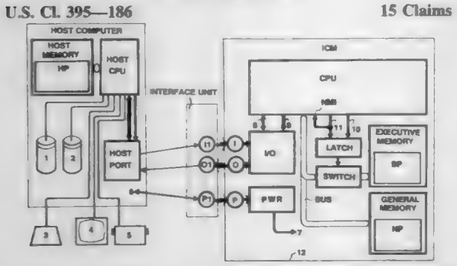
SECURE ARCHITECTURE AND APPARATUS USING AN INDEPENDENT COMPUTER CARTRIDGE

John N. Hait, Missoula, Mont., assignor to Progressive Technology Inc., Missoula, Mont.

Continuation of Ser. No. 235,248, Apr. 29, 1994, Pat. No. 5,817,630, which is a continuation of Ser. No. 512,815, Apr. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 206,001, Jun. 14, 1988, abandoned. This application Jul. 1, 1996, Ser. No. 677,324

Int. Cl.° G06F *13/00*

U.S. Cl. 395—186 **15 Claims**



2. A first portable secure computer architecture for protecting information and at least one program for controlling said information, comprising:

a single sealed cartridge and a computer contained within said cartridge, said computer having a central data processing means, communications means controlled by said central data processing means for providing information into and/or output from said cartridge and said computer, memory means controlled by said central data processing means, information within said memory means, at least one program within said memory means Which controls said central data processing means and ultimately said information and said at least one program.

said computer further having a cryptographic program including at least one encryption/decryption key for encrypting outgoing information and decrypting incoming information, said cryptographic program having an only existing copy of said at least one encryption/decryption key which exists only in said portable secure computer architecture and which is unknown to any human.

5,630,058

NETWORK CONNECTED DEVICE PROTECTION

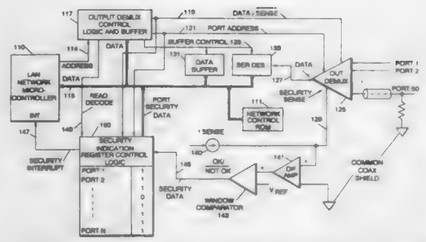
Joseph M. Mosley, and Walter N. Zalph, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1994, Ser. No. 322,627

Int. Cl.° G06F *11/30*

U.S. Cl. 395—187.01 **7 Claims**

1. A network controller comprising:



a security signal generator for periodically providing a security signal on at least one port of said network, said port performing normal data transfers between said periods when said security signal is provided;

a security sensor connected to said port for sensing during one period, a first feedback signal from said port, said first feedback signal being a response by a normal impedance of a terminal device to said security signal without regard to operation of said terminal device and providing a first security data during said one period, said security sensor sensing during another period, a second feedback signal when a terminal device is not connected to said port, and providing a second security data during said another period;

security logic connected to said sensor and responsive to said sensor for comparing said first security data with said second security data in order to determine if said terminal device has been removed from said port and to determine if said terminal device has been added to said port; and

an alarm connected to said security logic and responsive to said security logic for alerting an operator when said security logic has determined that said terminal device has been removed from said port and when said security logic has determined that said terminal device has been added to said port.

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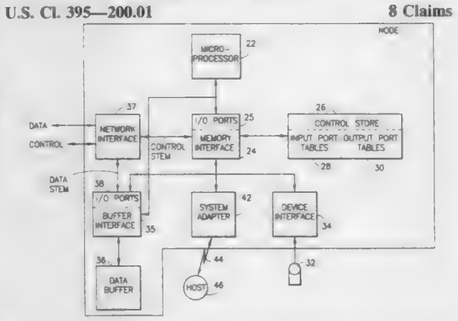
EXPEDITED MESSAGE TRANSFER IN A MULTI-NODAL DATA PROCESSING SYSTEM

James T. Brady; Damon W. Finney, both of San Jose, and David R. Nowlen, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1995, Ser. No. 383,962

Int. Cl.° G06F *13/00*

U.S. Cl. 395—200.01 **8 Claims**



1. A computing system including multiple nodes said system comprising:

a communication network;

a first node connected to said communication network and including means for transmitting an information transfer request that includes identification data usable by a node to access requested information and further data identifying a destination for said requested information; and

a second node connected to said communication network for receiving said information transfer request, said second node including a memory for storing said requested information, a processor and a message output control data structure, said second node also including a processor that is responsive to identification data contained in said message output control data structure to access information from said memory, said processor further responsive to receipt of said information transfer request from said first node to insert said identification data contained in said information transfer request from said first node into said message output control data structure, said second node initiating an output operation, without performing an interrupt of said processor, by employing said message output control data structure and pointers to required data as included with said information transfer request from said first node, to access said requested information from said memory and to communicate said requested information to said destination.

5,630,060

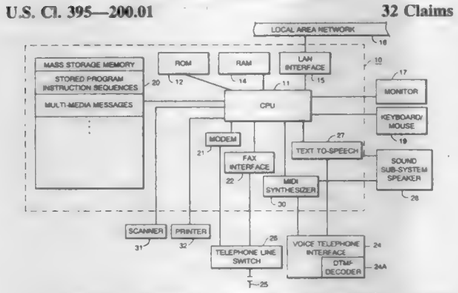
METHOD AND APPARATUS FOR DELIVERING MULTI-MEDIA MESSAGES OVER DIFFERENT TRANSMISSION MEDIA

Hien Tang, Orange; Randy A. Cwikowski, Dana Point, and Alistair Egan, Lake Forest, all of Calif., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 5,768, Jan. 13, 1993, abandoned. This application May 1, 1995, Ser. No. 432,534

Int. Cl.° G06F *13/00*; **H04M** *3/50*

U.S. Cl. 395—200.01 **32 Claims**



1. A method for delivering a multi-media message to a remote site over a sender-specified one of plural different transmission media, the plural different transmission media including at least a voice telephone transmission medium, a facsimile transmission medium and a modem transmission medium, the multi-media message having plural components of differing types, the method comprising the steps of:

allowing a sender to specify a delivery medium for delivering the components of the multi-media message to the remote site;

obtaining, for each component of the multi-media message whose type is incompatible with said sender-specified delivery medium, an equivalent component whose type is compatible;

forming a delivery schedule for delivering the multi-media message, the delivery schedule selectively scheduling an original multi-media component or its equivalent component in accordance with which is compatible with said sender-specified delivery medium; and

delivering the multi-media message to the remote site in accordance with the delivery schedule.

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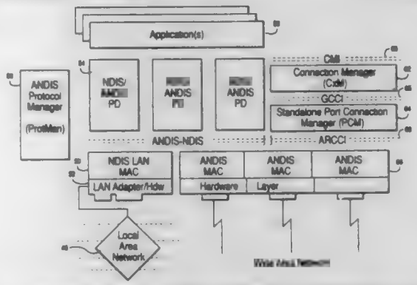
SYSTEM FOR ENABLING FIRST COMPUTER TO COMMUNICATE OVER SWITCHED NETWORK WITH SECOND COMPUTER LOCATED WITHIN LAN BY USING MEDIA ACCESS CONTROL DRIVER IN DIFFERENT MODES

Roger K. Richter; Robert O. Sharp, both of Round Rock, and Quentin H. Stephenson, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1993, Ser. No. 49,895

Int. Cl.° G06F *13/00*

U.S. Cl. 395—200.02 **24 Claims**



1. A system for enabling a first computer to communicate over a switched network with a second computer located within a local area network connectable to the switched network, the first computer having a media access control driver for providing a communication channel to connect the first computer to the switched network, comprising:

means for placing the media access control driver in a first mode to establish a connection between the first computer and the second computer via the switched network;

means for placing the media access control driver in a second mode in which messages in a protocol of the local area network are passed between the first and second computers over the switched network;

means for managing a status of a connection between the first and second computers; and

means for passing messages in the local area network protocol between the first and second computers when the media access control driver is in the second mode.

5,630,062

IMAGE FORMING APPARATUS, IMAGE FORMING SYSTEM, AND IMAGE FORMING METHOD THEREFOR

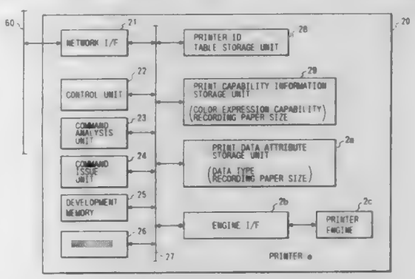
Toshihisa Okutsu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 262,874

Claims priority, application Japan, Jun. 23, 1993, 5-151716

Int. Cl.° G06F *13/00*

U.S. Cl. 395—200.03 **20 Claims**



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1. An image forming apparatus connected to a network which connects a plurality of image forming apparatuses, said image forming apparatus comprising:

reception means for receiving image information to be subjected to image formation;

image forming means for forming an image on the basis of the image information;

determination means for determining whether or not said image forming means can perform image formation of the image information received by said reception means; and

transfer means for searching by bidirectional communication via the network for a second image forming apparatus which can perform image formation of the received image information in accordance with a determination result of said determination means, and transferring the image information via the network to the second image forming apparatus,

wherein said determination means comprises:

a capability generation unit for generating image formation capability information of said image forming means; and

an attribute generation unit for generating data attribute information of the image information by analyzing the image information,

wherein said determination means determines, based on the image formation capability information and the data attribute information, whether or not image formation of the image information is possible, and

wherein said transfer means comprises:

a storage unit for pre-storing identification information to be used for identifying the second image forming apparatus on the network;

an acquisition unit for acquiring image information capability information of the second image forming apparatus via the network on the basis of the identification information stored in said storage unit;

a determination unit for determining, based on the image formation capability information acquired from the second image forming apparatus by said acquisition unit and the data attribute information generated by said attribute generation unit, whether or not the second image forming apparatus can perform image formation of the image information; and

transfer means for transferring the image information to the second image forming apparatus in accordance with a determination result of said determination unit.

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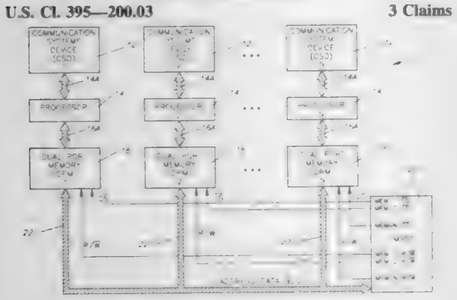
DATA DISTRIBUTION SYSTEM FOR MULTI-PROCESSOR MEMORIES USING SIMULTANEOUS DATA TRANSFER WITHOUT PROCESSOR INTERVENTION

William D. McConnell, Garland, Tex., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 234,658, Apr. 28, 1994, abandoned. This application Feb. 19, 1996, Ser. No. 603,200

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.03 **3 Claims**



1. A data distribution system for a network of multi-processors, wherein each of the multi-processors includes, a memory for storage of data, the data being accessed by an address, the system comprising:

(a) an address/data bus interconnected to the memories of the multi-processors; and

(b) data distribution means for routing data to one or more of the memories of the multi-processors without the multi-processors requesting data, said address/data bus being interconnected to said data distribution means, said data distribution means including:

(1) means for generating address information along said address/data bus for simultaneous transmission to each of the memories for data access;

(2) means for generating a memory select signal to each of the memories for selecting one of the memories for data access at a selected address; and

(3) means for generating a read/write signal to each of the memories for selecting one or more memories to which data is to be transferred from said address/data bus selected by said address generating means and said memory select means to thereby write data simultaneously to one or more memories of the multi-processors at a selected address.

5,630,064

DATA PROCESSING APPARATUS USING READER/WRITER AND DATA CARRIER

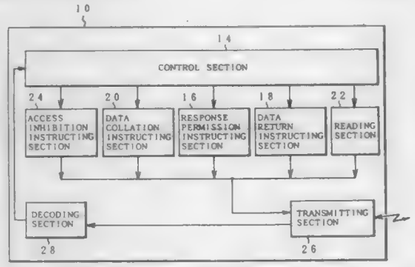
Yoshihito Ishibashi; Masao Oba, and Manabu Asakura, all of Tokyo, Japan, assignors to Tokimec, Inc., Tokyo, Japan

Filed Jun. 21, 1995, Ser. No. 493,307

Claims priority, application Japan, Jun. 24, 1994, 6-142842

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—200.05 **21 Claims**



1. A data processing apparatus for performing at least a data reading operation from data carriers by a reader/writer, wherein said data carrier comprises:

a memory for holding data;

response means for returning a predetermined signal in accordance with the data read out from said memory when receiving a predetermined command from said reader/writer;

response permitting means for permitting said response means to return the data; and

data collating means for collating data for collation added to a data collation command transmitted from said reader/writer and the data held in said memory and, when the collation succeeds, for permitting the reading of next data,

said reader/writer comprises:

response permission command means for permitting said response means of said data carrier to permit the return of the data;

data return command means for returning a signal corresponding to the data from said memory held in said data carrier;

decoding means for decoding the reception data returned from said data carrier; and

data collation command means for allowing said data collating means of said data carrier to collate said reception data decoded by said decoding means.

5,630,065

TIME DIVISION MULTIPLEXING COMMUNICATION SYSTEM FOR TRANSMITTING DATA FROM PLURALITY OF TRANSMITTING LINKS TO PLURALITY OF RECEIVING LINKS USING LINK HIGHWAY, CONCENTRATOR, AND DISTRIBUTOR

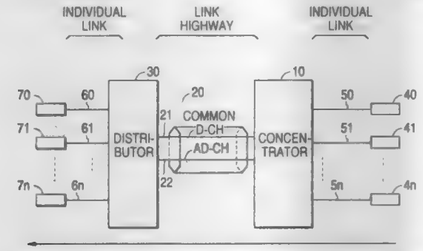
Nobuaki Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 15, 1995, Ser. No. 559,047

Claims priority, application Japan, Nov. 17, 1994, 6-283400

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.06 **4 Claims**



1. A time-division multiplex communication system for transmitting data from a plurality of transmitting individual links connected to respective individual link terminators to a plurality of receiving individual links connected to respective individual link terminators, comprising:

a link highway having a common data link channel and an address identification channel;

a concentrator comprising:

a plurality of input ports for receiving and temporarily holding input signals transmitted from said transmitting individual links through said respective individual link terminators;

address detecting means for detecting reception of the input signals by said input ports and detecting input port addresses of the input signals from physical positions of said input ports;

input port switching means for connecting an indicated input port to said common data link channel for a first indicated period of time;

concentration control means for controlling said input port switching means to connect one of said input ports which is indicated by the input port address of an input signal to said common data link channel of the link highway for a period of time depending on a length of said input signal; and

address information transmitting means for transmitting the input port address to said address identification channel of the link highway; and

a distributor comprising:

a common data link channel input port for receiving a signal from said common data link channel;

an address channel input port for receiving address information from said address identification channel;

individual link connecting means for connecting said common data link channel input port to an indicated one of said receiving individual links for a second indicated period of time; and

distribution control means for controlling selection of one of said receiving individual links to be connected to said common data link channel input port and said second indicated period of time based on said address information received by said address channel input port.

5,630,066

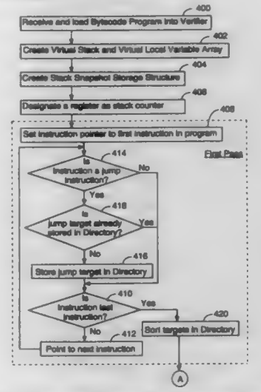
SYSTEM AND METHOD FOR LOCATING OBJECT VIEW AND PLATFORM INDEPENDENT OBJECT

James A. Gosling, Woodside, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 20, 1994, Ser. No. 359,884

Int. Cl.[6] G06F *9/24;13/38;15/16*

U.S. Cl. 395—200.09 **12 Claims**



1. A method of operating a distributed computer system having a plurality of distinct computers, the method comprising steps of:

a) in a first computer, storing viewer programs, each viewer program enabling a user thereof to view data in objects of an associated data type;

b) in said first computer, enabling a user to view data in a first object having an associated first data type using a first one of said viewer programs; said data in said first object including link data referencing a second object of a second data type, said link data identifying a second computer in which said second object is located;

c) in said first computer, enabling said user to select said link data;

e) said first computer responding to user selection of said link data by establishing a first communication link between said first computer and said second computer and initiating retrieval of said second object from said second computer including retrieving data type information associated with said second object;

f) said first computer, determining whether said viewer programs stored in said first computer include a viewer program associated with said second data type;

g) when said determination in step (f) is negative, determining whether a viewer program associated with said second data type is stored in said second computer;

h) when said determination in step (g) is positive,

h1) loading a copy of said viewer program associated with said second data type into said first computer,

h2) executing a verification procedure on said copied viewer program to determine whether said copied viewer program meets predetermined operand stack usage criteria;

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h3) when said determination is step h2 is positive, executing said copied viewer program so as to enable said user to view said second object.

5,630,067

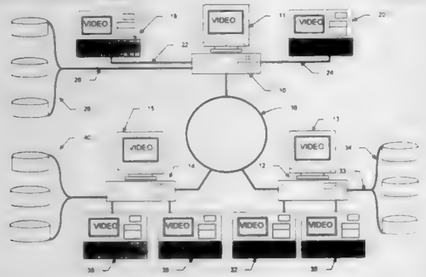
SYSTEM FOR THE MANAGEMENT OF MULTIPLE TIME-CRITICAL DATA STREAMS

Craig N. Kindell, Delray Beach; Kenneth L. Milsted; Michael P. Vogt, both of Boca Raton; Susan E. Waefler, Delray Beach, and Brian E. Yoder, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 283,030, Jul. 29, 1994. This application Jun. 4, 1996, Ser. No. 658,167

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.09 **18 Claims**



1. A multimedia storage and presentation system for storing video clips, each clip comprising a plurality of segments, and for displaying said video clips in response to requests by viewers, said system comprising:

a computer network;

a plurality of computers connected to said computer network, each computer having attached thereto at least one storage device, at least one viewing station, input means for allowing said viewers to request display of a specific video clip on said at least one viewing station and buffer means for temporarily storing segments of said specific video clip prior to display;

client means in each of the plurality of computers for retrieving one of the video clips from the local storage device coupled thereto and for sending a request for one of said video clips over the computer network to other of said plurality of computers;

server means in each of said plurality of computers responsive to said request for retrieving said video clip from a selected storage device coupled to said computer said server means having a predetermined maximum retrieval capacity;

means cooperating with said server means in one of said plurality of computers for monitoring said buffer means in said one of said plurality of computers coupled to said network to determine a number of video clip segments retrieved from said selected storage device; and stored in said buffer means; and

means responsive to said number of video clip segments stored in said buffer means and to said maximum retrieval capacity for controlling said client means and said server means to refuse said viewer request to display said specific video clip when said maximum retrieval capacity would be exceeded or said number of said video clip segments stored in said buffer means exceeds a predetermined threshold, the controlling means comprising a configuration table for each of said plurality of computers coupled to said computer network, said configuration containing at least one entry comprising said predetermined maximum retrieval capacity.

5,630,068

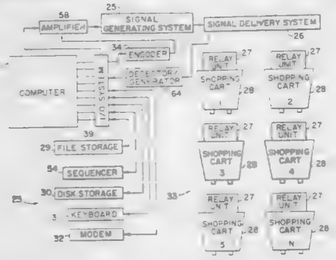
SHOPPERS COMMUNICATION SYSTEM AND PROCESSES RELATING THERETO

Leo Vela, P.O. Box 331707, Coconut Grove, Fla. 33233-1707; Thurman Sasser, 1816 Sarazan Dr., Orlando, Fla. 32808, and Roger L. Martin, P.O. Box 5591, Deltona, Fla. 32728-5591

Continuation of Ser. No. 796,653, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 432,599, Nov. 6, 1989, which is a continuation of Ser. No. 108,437, Oct. 14, 1987, Pat. No. 4,882,724. This application Jan. 5, 1994, Ser. No. 177,708

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—201 **6 Claims**



1. A system for communicating product information from a given location to a prospective customer at a remote retail establishment comprising:

means at said given location for transmitting a first signal containing said information to said remote retail establishment;

means at said remote retail establishment for transmitting, in response to said first signal, a second signal containing said information;

means movable by said prospective customer about said remote retail establishment including means for receiving said second signal, means for storing the information contained therein, means operative when triggered by a third signal for retrieving said stored information from said storing means, and means for communicating said retrieved information, in a form discernible by a human, to said prospective customer wherein said movable means includes means for generating data indicating the presence of a human at said movable means at the time said information is communicated; and

means at said remote retail establishment for automatically transmitting said third signal for automatically triggering said means for retrieving said stored information.

5,630,069

METHOD AND APPARATUS FOR CREATING WORKFLOW MAPS OF BUSINESS PROCESSES

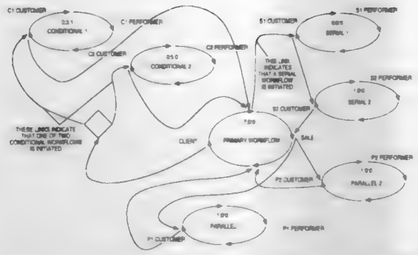
Fernando Flores, Berkeley; Chauncey F. Bell, III; Pablo A. Flores, both of Alameda; Rodrigo F. Flores, Berkeley, all of Calif.; Raul Medina-Mora Icaza, Mexico City, Mexico; Jaime G. Vasquez, Alameda; Thomas E. White, Monte Sereno, both of Calif.; Russell G. Redenbaugh, Philadelphia, Pa.; John A. McAfee, Kensington; Bart A. Macleod, Alameda, both of Calif.; Juan L. Saldivar, Mexico City, Mexico; Terry A. Winogard, Stanford, and Robert P. Dunham, Pleasanton, both of Calif., assignors to Action Technologies, Inc., Calif.

Filed Jan. 15, 1993, Ser. No. 5,236

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—207 **26 Claims**

1. A computer based system for creating a representation of a business process and its associated workflows, said system comprising a computer which executes a program, said program including means for generating when said program is executed by said computer i) a component representation of at least a predetermined subset of said business process in terms of its workflows, ii)



at least a predetermined subset of links between said workflows based upon a predetermined set of workflow rules, and iii) conditional links between said workflows, each of said conditional links including a conditional junction, an origin link between a source workflow and said conditional junction and at least one target link between said conditional junction and a corresponding number of target workflows.

5,630,070

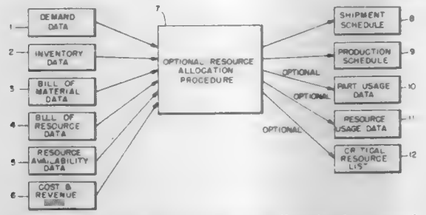
OPTIMIZATION OF MANUFACTURING RESOURCE PLANNING

Brenda L. Dietrich, Yorktown Heights, and Robert J. Wittrock, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1993, Ser. No. 108,014

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—208 **23 Claims**



1. A method for optimizing component allocation in a manufacture of a plurality of products of different types from a set of components by a plurality of manufacturing procedures to obtain an optimum production quantity for each of said product types, comprising steps of:

within each of said procedures, establishing quantities of components to be employed in respective ones of said procedures;

providing an inventory of said components, and placing each type of component of the inventory in a separate location of a vector;

arranging said products as variables in respective product columns of a matrix having rows and columns wherein individual ones of the rows are reserved for respective components of the products, there being a plurality of product columns with a separate column for each product type;

establishing a material constraint for the set of components of the respective component rows by, in each of the component rows, multiplying the product variable of each column by coefficients designating the amount of each component in the product, each of the component rows corresponding to the location of an amount of component type in the vector;

via a plurality of production constraints for said products, constraining shipments of respective ones of said product types minus the quantity of each of the respective product types produced to be less than or equal to a quantity of each of the product types in inventory;

placing said production constraints of said product types in respective ones of additional rows of the matrix with shipments being located in separate shipment columns of the matrix and said product types being located in the respective product columns, there being a separate row for each product type having a nonzero shipment, the quantities of the product types in inventory being entered at locations of said vector corresponding to the matrix row having the production constraints;

via a plurality of demand constraints for said products, constraining shipments of respective ones of said product types to be less than or equal to a demand for the respective product types;

placing said demand constraints of said products in separate additional rows of said matrix with shipments being located in respective ones of said shipment columns of the matrix, the demands for said product types being located in separate locations of said vector corresponding to the respective rows of the demand constraints;

applying a linear programming optimization to said matrix and said vector in accordance with an objective function to obtain an optimum production quantity for each of said product types; and

producing, via said plurality of manufacturing procedures, said optimum production quantity for each of said product types.

5,630,071

POS SYSTEM HAVING SELF SCANNER AND DISPLAY FOR ISSUING TOTAL NUMBER OF PURCHASED COMMODITIES AFTER EACH FIXED INTERVAL OF TIME

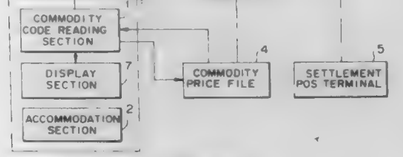
Kazuhito Sakai; Tomochika Shibata; Chizuo Suzuki; Chizu Shimizu, all of Kawasaki; Kaoru Kikuchi, Hachioji, and Kyouko Terada, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 273,789, Jul. 12, 1994, abandoned. This application Feb. 7, 1996, Ser. No. 598,087

Claims priority, application Japan, Nov. 26, 1993, 5-296990

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—221 **15 Claims**



1. A point of sale system, comprising:

a purchased commodity accommodating and transporting means having a scanning function and including at least one of a commodity code reading section for reading a commodity code applied to a commodity, an accommodation section for accommodating therein a commodity whose commodity code has been read by said commodity code reading section, and an inputting section for inputting at least information substantially unique to a user;

a commodity price file, operably coupled to said purchased commodity accommodating and transporting means, for accommodating price information of commodities corresponding to commodity codes;

a settlement POS terminal for performing final settlement of accounts for purchased commodities accommodated in said accommodation section of said purchased commodity accommodating and transporting means, said settlement POS terminal including a receipt issuance section for issuing a result of the settlement of accounts as a receipt;

a control means, operably coupled to said purchased commodity accommodating and transporting means and to said settlement POS terminal, for controlling said purchased commodity accommodating and transporting apparatus and said settlement POS terminal, said control means further controlling said settlement POS terminal for intermittently issuing said result of the settlement; and

a sorting processing section, operably coupled to said commodity price file, for sorting, at a point of time when reading of

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commodity codes by said commodity code reading section of said purchased commodity accommodating and transporting means is completed, purchased commodity data related to prices of the commodities obtained by retrieval of said commodity price file based on the commodity code information read by said commodity code reading section arranged into commodity categories to which the commodities belong,

wherein said receipt issuance section of said settlement POS terminal, operably coupled to said sorting processing section, issues a result of the sorting processing by said sorting processing section as a receipt.

5,630,072

RELIA PROCESS: INTEGRATED RELATIONAL OBJECT UNIT IDENTIFICATION AND LOCATION ADDRESSING PROCESSES

Larry D. Dobbins, 1319 Southern Hills Rd., Kingwood, Tex. 77339

Filed Aug. 30, 1994, Ser. No. 298,562
Int. Cl.[6] G06F *17/60;17/30;19/00*
U.S. Cl. 399—222 **35 Claims**

- [illegible] for Equipment using the Normalized Form of the ReliA Process

with Item Identifier and Item Description for reference

Unique Identifier Record File

Unique Unit Identifier (OUI)	Hierarchically Ordered Immediate Parent Object Identifier (Object Name) Hierarchy Level (UNI 1, UNI 2, UNI 3, UNI 4, UNI 5)					Item Identifier	Item Description
	UNI 1	UNI 2	UNI 3	UNI 4	UNI 5		
2106	101	45	1	01	01	TCB09	Telecom Bay A
2988	109	32	1	45	08	FP1230	Building, Fiber-Composite
2948	109	32	9	05	09	15CH40	Generator Assy
3478	109	45	1	01	05	TCB06	Telecom Bay B
3488	101	48	1	01	08	TCB09	Telecom Bay A

Illustrating the OLARP utilizing the Normalized Form of the ReliA Process. This file supplements the OUISP illustrated in Figure 1

Notes:
1 Item Identifier determined by reference to the OUISP with the OUUI
2 Item Description determined by reference to an IMSP with the Item Identifier
3 The same OLARP applies to the Normalized Form of both the Component Positioning and Component Non-Positioning Addressing Methodologies

1. An integrated relational object unit identification and location addressing (ReliA) process including a number of sub-processes for tracking and configuration management and identification of any subject Object Unit (any individual, tangible, measurable or observable object and a number of Descendant generations thereof, the number of Descendants or Descendant generations selected from the group consisting of a number of Object Units contained, a number of Object Units held and a number of Object Units physically controlled by the subject Object Unit which exists at a higher hierarchy level than the number of Descendant Object Units) in a hierarchy (a hierarchical object system with "N" hierarchy levels, where "N" is a positive integer), said number of subprocesses performed by a computer system using information about Object Units' location addresses in relation to each other to facilitate integration of control over the hierarchy and to refer relationally to any location in the hierarchy, said process:

(a) tracking any subject Object Unit identified by a Unique Unit Identifier (referred to as Object Unit Unique Identifier, a unique combination of characters affixed to the subject Object Unit that uniquely identifies the subject Object Unit within a universe of other Object Units) at any hierarchy level, and, thus, tracking a number of Descendant tracked Object Units of the tracked subject Object Unit;

(b) identifying the location address, comprising a Normalized Address (a location address in which a Hierarchically Coded Location Address of tracked Ancestor Object Units is not included in the Hierarchically Coded Location Address of its Component Object Units, the location address of the Component Object Units being indicated by a reference to the lowest tracked Ancestor Object Unit of each Component Object Unit), of the subject Object Unit by referencing a number of physically related tracked Object Units within a number of physically related Ancestor Object Units (a number of related Object Units selected from the group consisting of a number of Object Units containing, a number of Object Units holding and a number of Object Units physically controlling the number of subject Object Units which exists at a lower hierarchy level than the number of Ancestor Object Units) of the subject Object Unit, with a number of intermediate tracked Ancestor Object Units existing between the subject Object Unit and referenced Ancestor Object Units and between the referenced Ancestor Object Units and an Origin Object Unit (an Object Unit without a tracked Ancestor Object Unit and as a highest hierarchy level tracked Ancestor of the subject Object Unit), to support descriptions of a location address not fully provided by hierarchical location address elements and their individual descriptions included within an Ancestor Object Unit Record (a Data Base Management System record containing parameters of an Object Unit, comprising an Ancestor, that are unique to the Object Unit); and

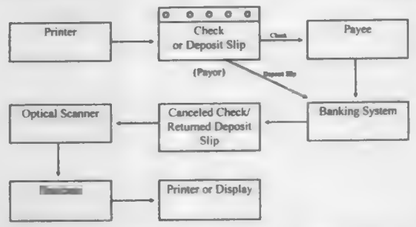
(c) recording the hierarchical location address for the subject Object Unit relative to one of the related Object Units using a record (referred to as an Object Unit Record), and placing the parameters of the subject Object Unit in a file that is controlled by a series of steps performed by a computer; (ReliA Integrated Process).

5,630,073

PERSONAL ACCOUNT TRACKING SYSTEM

Jon D. Nolan, 7537 Berkshire Dr., NE., Cedar Rapids, Iowa 52402

Filed Jul. 25, 1994, Ser. No. 279,415
Int. Cl.[6] G06F *17/60*
U.S. Cl. 395—245 **20 Claims**



1. A system for enabling automated entry of transaction data into a data base for the purpose of tracking specific expenditures, income, assets, and liability items, comprising:

negotiable instrument means including a tangible medium which carries payment order means for enabling a first party to order a second party to pay a third party for a purchase;

machine readable means on said negotiable instrument means for enabling the first party to manually enter information concerning said payment, other than an amount of said payment, on said negotiable instrument means during preparation of the order by the first party;

automatic reading means for automatically reading said information and entering said information into a database; and

information processing means for processing said information for use by the first party.

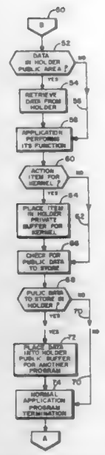
5,630,074

INTER-PROGRAM COMMUNICATION AND SCHEDULING METHOD FOR PERSONAL COMPUTERS

Anthony R. Beltran, Columbia Heights, Minn., assignor to Network Systems Corporation, Minneapolis, Minn.

Continuation of Ser. No. 995,409, Dec. 18, 1992, abandoned. This application May 15, 1995, Ser. No. 441,120
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—250 **7 Claims**

1. In a microcomputer of the IBM compatible type incorporating a random access memory for storing an MSDOS type disk operating system, a plurality of serial communication ports and a real-time clock for generating real-time interrupts, apparatus for



extending and enhancing the operating environment of subordinate application programs, said apparatus comprising:

(a) a public buffer of fixed capacity resident in said random access memory for storing inter-program messages and data indicative of a conditionally specified execution sequence for asynchronous communication with a kernel program;

(b) a private buffer of fixed capacity resident in said random access memory for storing data (execution thread) indicative of a conditionally specified application program execution sequence for asynchronous communication between application programs;

(c) a first controlling means (Holder program) for controlling the transfer of data to and from said public buffer according to a first predetermined command protocol, said first controlling means further controlling the transfer of data to and from said private buffer according to a second predetermined command protocol; and

(d) a second controlling means (Kernel program) for controlling the execution of a plurality of distinct and subordinate application programs in a serial sequence according to the data stored in said private buffer, said subordinate application programs communicating asynchronously via said inter-program messages stored in said public buffer.

5,630,075

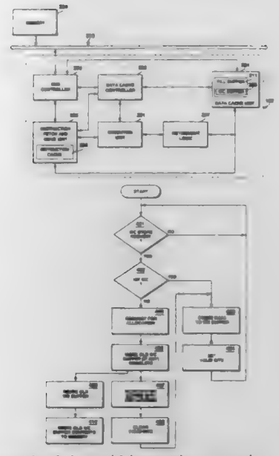
WRITE COMBINING BUFFER FOR SEQUENTIALLY ADDRESSED PARTIAL LINE OPERATIONS ORIGINATING FROM A SINGLE INSTRUCTION

Mandar S. Joshi, Beaverton; Andrew F. Glew, Hillsboro, and Nitin V. Sarangdhar, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 175,800, Dec. 30, 1993, abandoned. This application May 25, 1995, Ser. No. 450,397
Int. Cl.[6] G06F *5/06*
U.S. Cl. 395—250 **34 Claims**

1. In a computer system having a memory for storing data and instructions and a microprocessor for processing said data and said instructions, a method of writing data to said memory comprising the steps of:

decoding an instruction to determine whether said instruction comprises a plurality of write operations on a block of data strings, each of said data strings being smaller than a line of data;



if it is determined that said instruction comprises a plurality of write operations on a block of data strings, each of said data strings being smaller than a line of data,

for each write operation:

determining whether an address of said write operation matches a tag entry of a buffer of said microprocessor; and

writing data corresponding to said address to said buffer if said address matches said tag entry;

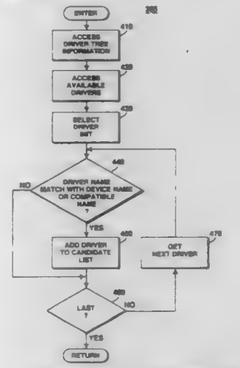
combining said data written to said buffer to generate a combined set of data, such that data is combined for select write operations.

5,630,076

DYNAMIC DEVICE MATCHING USING DRIVER CANDIDATE LISTS

Thomas E. Saulpaugh, San Jose; Holly Knight, La Honda; Jano Banks, San Jose, and Ron Hochsprung, Los Gatos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 5, 1995, Ser. No. 435,676
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—284 **23 Claims**



1. In a computer system having a processor coupled to a communication bus, a memory unit coupled to said communication bus, and devices coupled to said communication bus, a method for configuring a particular device of said devices with a device driver, said method comprising the computer implemented steps of:

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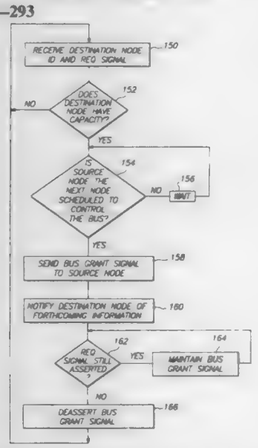
determining a device name associated with said particular device;
determining at least one compatible device name associated with said particular device, said at least one compatible device name indicating a device compatible with said particular device;
scanning a first set of available drivers within said computer system to determine a second set of drivers individually having a driver name that matches with either said device name or said at least one compatible device name;
sequentially attempting installation of individual drivers of said second set of drivers with said particular device to determine a matching driver of said second set of drivers that properly configures said particular device; and
determining said matching driver of said set of drivers that properly configures said particular device.

5,630,077

SYSTEM AND METHOD FOR COORDINATING ACCESS TO A BUS

William T. Krein, San Jose; Charles M. Flaig, Cupertino, and James D. Kelly, Aptos, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 186,169, Jan. 25, 1994, abandoned. This application Apr. 4, 1996, Ser. No. 626,905
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—293 **10 Claims**



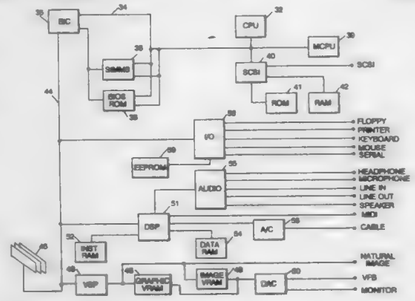
1. A method for coordinating access to a bus in a system having a source node, a destination node and a bus coordinator, comprising the steps of:
determining at said source node whether said source node has capacity to receive read data;
selectively sending a bus request from said source node to said bus coordinator in response to said source node determining that said source node has capacity to receive read data;
receiving said bus request at said bus coordinator, said bus request identifying a destination node;
determining at said bus coordinator whether said destination node has capacity to receive said read request;
in response to a determination that said destination node has said capacity, said bus controller selectively granting control of said bus to said source node to allow said source node to transfer said read request to said destination node;
depriving said source node of control of said bus using said bus coordinator after said read request is transferred;
receiving a response request at said bus coordinator from said destination node; and
in response to receiving said response request, said bus coordinator selectively granting control of said bus to said destination node to allow said destination node to transfer read data to said source node.

5,630,078

PERSONAL COMPUTER WITH PROCESSOR RESET CONTROL

Daniel P. Fuoco; Luis A. Hernandez; Eric Mathisen, all of Boca Raton; Dennis L. Moeller, Delray Beach, all of Fla.; Jonathan H. Raymond, Essex Junction, Vt., and Esmaeil Tashakori, Delray Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 706,490, May 28, 1991, abandoned. This application Jun. 20, 1994, Ser. No. 262,397
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—309 **12 Claims**



1. A personal computer system comprising:
a high speed local processor data bus;
an input/output data bus;
a resettable microprocessor coupled directly to said local processor bus; and
a bus interface controller coupled directly to said processor bus and directly to said input/output data bus for providing communications between said local processor bus and said input/output data bus,
said bus interface controller providing for arbitration among said resettable microprocessor and any other master devices coupled directly to said local processor bus for access to said local processor bus, and providing for arbitration among said local processor bus and any devices coupled directly to said input/output data bus for access to said input/output data bus,
said bus interface controller further recognizing receipt at said bus interface controller of a reset signal (HOTRESET) intended to initiate a reset of said microprocessor and delaying generation of a reset signal (CPU_RESET) to said microprocessor until after said bus interface controller has gained control of said local processor bus and said input/output bus from all of the devices and said microprocessor by the exchange of hold and hold acknowledge signals (CPU_HOLD and CPU_HLDA).

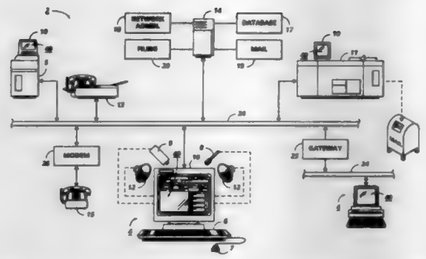
5,630,079

DOCUMENT JOB KEY TO TAILOR MULTIFUNCTIONAL USER INTERFACES

Denise C. McLaughlin, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 202,606, Feb. 28, 1994, abandoned. This application May 18, 1995, Ser. No. 444,806
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—335 **21 Claims**

1. A method of distributing a document on a user interface screen, the user interface having access to a plurality of electronic



devices over a network, the plurality of electronic devices being represented by identifiers on the interface screen comprising the steps of:
selecting at the user interface identifiers representing a first combination of electronic devices from the plurality of electronic devices including a source device and a destination device,
automatically responding to the selecting of the first combination of electronic devices to provide a first set of feature options for display on the interface screen, the first set of displayed feature options being dependent upon the first combination of electronic devices and avoiding non-pertinent feature options,
selecting at the user interface identifiers representing a second combination of electronic devices from the plurality of electronic devices including a source device and a destination device, and
automatically responding to the selecting of the second combination of electronic devices to provide a second set of feature options for display on the interface screen, the second set of feature options being dependent upon the second combination of electronic devices and avoiding non pertinent features, whereby the operator is presented with feature options associated with a particular combination of electronic devices.

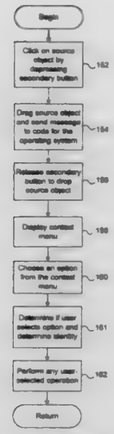
5,630,080

METHOD AND SYSTEM FOR THE DIRECT MANIPULATION OF INFORMATION, INCLUDING NON-DEFAULT DRAG AND DROP OPERATION

Mark A. Malamud, Seattle; John E. Elsbree, Redmond; Satoshi Nakajima, Bellevue; Christopher J. Guzak, Kirkland; Kurt J. Eckhardt, Redmond, and Royce A. Levien, Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 278,455, Jul. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 794,063, Nov. 19, 1991, abandoned, and a continuation-in-part of Ser. No. 54,565, Apr. 28, 1993, abandoned. This application Dec. 15, 1995, Ser. No. 573,517
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—346 **22 Claims**

1. In a data processing system having an input device and a video display, a method comprising the steps of:
(a) displaying a source-visual element that is associated with a source object, a target-visual element that is associated with a target object, and a cursor on the video display;
(b) selecting the source-visual element for movement in response to a user positioning the cursor in proximity with the source-visual element using the input device;
(c) moving the source-visual element on the video display in response to use of the input device by the user so that the source-visual element is displayed on the video display in proximity with the target-visual element;
(d) dropping the source-visual element on the target-visual element in response to use of the input device by the user, while the source-visual element is in proximity with the target-visual element;
(e) displaying on the video display a menu of operations for selection by the user in response to the dropping of the source-visual element, wherein the operations involve the



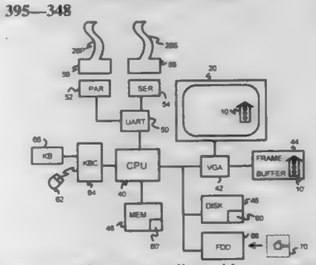
source object and the target object and are to be performed in response to the moving and dropping;
(f) determining if the user selected an operation from the menu and identity of any user-selected operation; and
(g) performing the user selected operation with the source object and the target object.

5,630,081

CONNECTION RESOURCE MANAGER DISPLAYING LINK-STATUS INFORMATION USING A TRAFFIC LIGHT ICONIC REPRESENTATION

Steve G. Rybicki, Mountain View, and Dale L. Palmer, Fremont, both of Calif., assignors to Puma Technology, Inc., San Jose, Calif.

Filed Sep. 7, 1995, Ser. No. 525,836
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—348 **20 Claims**



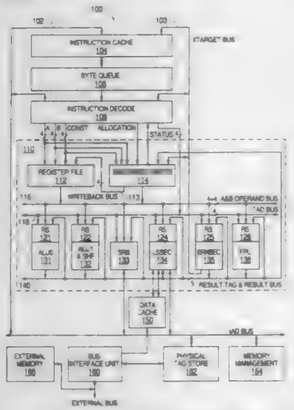
15. A programmable apparatus directed by a computer program, the apparatus comprising:
display means for displaying an icon to a user on a display screen;
a connection resource manager in the computer program, the connection resource manager signaling the display means to change a graphical appearance of the icon from red to yellow to green as a connection is made to indicate the progress of establishing a communications link;
a connection establisher in the computer program, for establishing the communications link and notifying the connection resource manager of the progress in establishing the communications link;
memory means for storing at least a portion of the computer program; and
processor means, coupled to the memory means, for executing instructions in the computer program;
whereby the progress of establishing the communications link is reported to the user by the changing graphical appearance of the icon.

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5,630,082
APPARATUS AND METHOD FOR INSTRUCTION QUEUE SCANNING

Nathan L. Yao, and Michael D. Goddard, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 146,383, Oct. 29, 1993, abandoned. This application Aug. 18, 1994, Ser. No. 292,649
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—389 **24 Claims**



1. An apparatus for scanning an instruction queue of a superscalar processor having a plurality of dispatch positions, wherein the instruction queue includes instructions that map to mapped instructions, and wherein the instructions include opcodes at locations identified by respective identification elements, the apparatus comprising:

a first stage for a first dispatch position of the superscalar processor, the first stage comprising a plurality of groups of masking logic having inputs coupled to the identification elements, a look-ahead generator having an input coupled to the identification elements and outputs coupled to higher order ones of the masking logic groups of the first stage, and a mapped instruction information generator coupled to outputs of the masking logic groups of the first stage; and

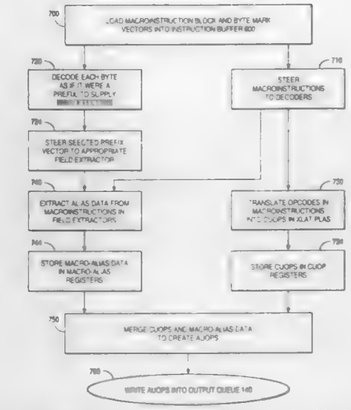
a second stage for a second dispatch position of the superscalar processor, the second stage comprising a plurality of groups of masking logic having inputs coupled to outputs of corresponding masking logic groups in the first stage, and a look-ahead generator having inputs coupled to outputs of the mapped instruction information generator and of the masking logic groups in the first stage, and outputs coupled to higher order ones of the masking logic groups of the second stage.

5,630,083
DECODER FOR DECODING MULTIPLE INSTRUCTIONS IN PARALLEL

Adrian L. Carbine, Hillsboro; Gary L. Brown, Aloha, and Donald D. Parker, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 204,602, Mar. 1, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 673,897
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—388 **15 Claims**

1. A multiple instruction decoder coupled to receive a plurality of macroinstructions in parallel and responsive thereto to output a plurality of micro-operations in parallel, said macroinstructions having a format defined by a predetermined instruction set and including one or more opcode bytes, said multiple instruction decoder comprising:



(a) a full decoder capable of decoding all of said plurality of macroinstructions within said instruction set, said full decoder having

an input coupled to receive a first macroinstruction within the instruction set, and

first circuitry to decode said first macroinstruction into a plurality of micro-operations and to output at least two of said plurality of micro-operations in parallel, wherein the first circuitry comprises a plurality of XLAT PLAs coupled to receive first opcode bytes from the first macroinstruction, each first XLAT PLA including a circuit for supplying a Cuop in response to said first opcodes; and

(b) a partial decoder capable of decoding a subset of frequently used macroinstructions within said instruction set, said partial decoder having

an input coupled to receive a second macroinstruction, and

second circuitry to decode a subset of macroinstructions in said predetermined instruction set into one or more micro-operations, wherein the second circuitry comprises an XLAT PLA coupled to receive second opcodes from the second macroinstruction, said XLAT PLA including a circuit for supplying a Cuop in response to said second opcodes, in parallel with the full decoder.

5,630,084
SYSTEM FOR CONVERTING DATA IN LITTLE ENDIAN TO BIG ENDIAN AND VICE VERSA BY REVERSING TWO BITS OF ADDRESS REFERENCING ONE WORD OF FOUR WORDS

Nobuyuki Ikumi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 23, 1992, Ser. No. 872,359
Claims priority, application Japan, Apr. 25, 1991, 3-095666
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—376 **3 Claims**



2. A data processing device connected to a memory for receiving four words of data in parallel from said memory in a format for either a little-endian system or a big-endian system, one word of data being composed of four bytes of data, said data processing device converting four bytes of data in little-endian format to four bytes of data in big-endian format or vice versa when said data processing device generates data in big-endian format while data received from said memory is in little-endian format or vice versa, said data processing device comprising:

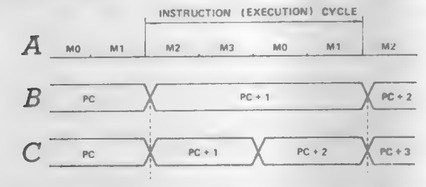
a bit reversing circuit which receives two bits of an address referencing one of four bytes within one word of the four words of data received from said memory, the bit reversing circuit including inverters for inverting said two bits of said address and replacing said two bits of said address with an inverted two bits; and

a word reversing circuit connected to said memory for reversing an order of the four words of data received by said data processing device.

5,630,085
MICROPROCESSOR WITH IMPROVED INSTRUCTION CYCLE USING TIME-COMPRESSED FETCHING

Nobuhisa Watanabe, Kanagawa-ken, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 810,532, Dec. 19, 1991, which is a continuation of Ser. No. 465,613, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 368,942, Jun. 13, 1989, abandoned, which is a continuation of Ser. No. 251,039, Sep. 23, 1988, abandoned, which is a continuation of Ser. No. 810,357, Dec. 18, 1985, abandoned. This application Jun. 28, 1993, Ser. No. 82,822
Claims priority, application Japan, Dec. 29, 1984, 5-276835
Int. Cl.[6] G06F *9/30;9/38*
U.S. Cl. 395—383 **8 Claims**



1. A method of operating a microprocessor, said processor having a pipe-line architecture for allowing a first byte of data defining a first selected instruction that is to be executed during at least one respective machine cycle to be fetched from a memory during an earlier machine cycle for completion of execution of a second selected instruction previously fetched from said memory, said first and second selected intructions being herein referred to as the current and preceding instructions, respectively, and being selected from a plurality of instructions, respective ones of said plurality of instructions being plural-byte instructions as a result of including at least a second byte of operand data, wherein all of said bytes of each said plural-operand instruction to be executed are sequentially fetched, each said byte of each said instruction being stored at and fetched from a respective sequential address in said memory, each said address of a byte to be fetched being indicated by a counter, said method comprising the steps of:

providing each said instruction to include an operation code in its first byte, wherein said operation code for each said plural-byte instruction includes information indicating that a time-compressed fetching of each said second byte and of any such third byte of the same instruction is to be sequentially performed when that instruction is said current instruction;

fetching said first byte of the current instruction from said memory at the end of said machine cycle for said completion of said preceding instruction, and simultaneously incrementing said counter to indicate the next byte stored therein; and

when said operation code of said current instruction indicates that it is one of said plural-byte instructions, subsequently fetching said second byte of said current instruction from said memory at the end of the first half of the first said at least one machine cycles for said current instruction, and simultaneously incrementing said counter for indicating the next byte to be fetched at the end of the second half of said first machine cycle of said current instruction, as a result of said information in said operation code of said current instruction;

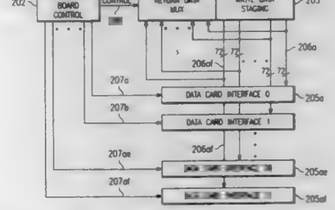
wherein if said operation code in said first byte of said current instruction does not indicate that said time-compressed fetching is to occur, namely that the current instruction does not have such a second and third byte, said counter is incremented simultaneously with said fetching of said operation code thereof at said end of said machine cycle for completing said previous instruction, without any further incrementing of said counter at the end of the first half of said first machine cycle for said current instruction; and

wherein, and each said instruction having three of said bytes is fetched and executed in two successive machine cycles, including the fetching of each operand and data indicated by the bytes of the instruction when said current instruction is a 2-byte instruction the execution of which requires said operand of said second byte thereof only during said second half of said first machine cycle of said current instruction, execution of said current instruction is completed in said second half of said first machine cycle.

5,630,086
APPARATUS SYSTEMS AND METHODS FOR CONTROLLING ELECTRONIC MEMORIES

Bryan D. Marietta, Dallas, and Douglas A. Oppedahl, Garland, both of Tex., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Dec. 3, 1993, Ser. No. 161,937
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—405 **17 Claims**



1. Memory control circuitry comprising:

gray code circuitry for generating a sequence of gray code values;

operation type circuitry for generating an operation type signal;

duration control circuitry coupled to said gray code circuitry for controlling the duration of assertion of each of said gray code values;

transmitting circuitry coupled to said gray code circuitry and said operation type circuitry for transmitting said gray code values and said operation type signal;

gate array circuitry for receiving said sequence of gray codes and said operation type signal and generating in response a first selected one of a timed sequence of operation type signals; and

programmable array logic for receiving said sequence of gray codes and said operation type signal and generating in response a second selected one of said timed sequence of operation type signals.

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5,630,087

APPARATUS AND METHOD FOR EFFICIENT SHARING OF VIRTUAL MEMORY TRANSLATIONS

Madhusudhan Talluri, Madison, Wis., and Yousef A. Khalidi, Sunnyvale, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 2, 1994, Ser. No. 333,487
Int. Cl.[6] G06F *9/26;9/34;12/00;12/02*
U.S. Cl. 395—412 **19 Claims**



1. A method of sharing virtual memory translations, said method comprising the steps of:

identifying a plurality of distinct virtual memory translation entries, associated with a plurality of distinct processes running on a computer, that map to a common physical memory page address;

defining said plurality of distinct virtual memory translation entries as an equivalency class;

assigning a first mask value to said plurality of distinct virtual memory translation entries;

storing said plurality of distinct virtual memory translation entries as a single address associated with said first mask value; and

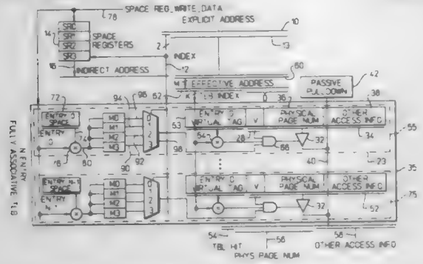
comparing a second mask value of a translation-request virtual memory translation value to said first mask value to determine whether said second mask value corresponds to said first mask value and thereby determine whether said translation-request virtual memory translation value maps to said common physical memory page address.

5,630,088

VIRTUAL TO PHYSICAL ADDRESS TRANSLATION

Rajiv Gupta, Los Altos, and Richard J. Carter, Menlo Park, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 9, 1995, Ser. No. 401,585
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—417 **22 Claims**



1. A method of translating an virtual address comprised of an indirect address and an explicit address into a physical address comprising:

(a) providing a translation look-aside buffer (TLB) organized as N entries, each entry having a virtual tag, a valid bit, a physical page number, and an entry space tag;

(b) partitioning the explicit address into an index and a TLB index;

(c) comparing the TLB index with a virtual tag;

(d) comparing, prior to the comparing (c), the indirect address with an entry space tag;

(e) generating a TLB hit when the TLB index comparison and the indirect address comparison are both affirmative for the same TLB entry; and

(f) supplying the physical page number of the TLB entry wherein the TLB hit occurred as a portion of the physical address.

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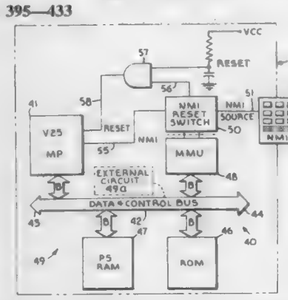
Patent Not Issued For This Number

5,630,090

APPARATUS FOR AND METHODS OF PROVIDING A SAFE-STOP MODE FOR A MICROPROCESSOR OPERATING IN A PSRAM-MEMORY ENVIRONMENT

William H. Keehn, Cedar Rapids, and Robert B. Jaeger, Swisher, both of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 177,675, Jan. 5, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 644,607
Int. Cl.[6] G11C *7/00*
U.S. Cl. 395—433 **28 Claims**



7. A method for controlling access to pseudo-static memory within which pseudo-static memory data may be stored and from which such stored data may be retrieved during active periods of the pseudo-static memory, the pseudo-static memory remaining addressable and active during periods of externally applied refresh pulses, and becoming self-refreshing and non-responsive during periods without externally applied refresh pulses during address-inactive periods of the pseudo-static memory, the method comprising the steps of:

using an access means to access the pseudo-static memory in response to receipt of a non-maskable interrupt signal from one of a plurality of NMI sources when the pseudo-static memory is addressable and active;

inhibiting the access means from accessing the pseudo-static memory during the address-inactive periods;

intercepting a non-maskable interrupt signal from one of the plurality of NMI sources to the access means occurring at the conclusion of an address-inactive period;

converting the intercepted non-maskable interrupt signal to a reset signal; and

re-routing the reset signal to the access means.

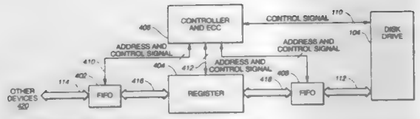
5,630,091

HIGH DENSITY BUFFER ARCHITECTURE AND METHOD

Chong M. Lin, Sunnyvale, and Raymond J. Werner, San Jose, both of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 867,637, Apr. 13, 1992, abandoned. This application Dec. 13, 1994, Ser. No. 357,166
Int. Cl.[6] G06F *13/16;12/02*
U.S. Cl. 395—437 **13 Claims**

5. A memory buffer for use with a computer storage device, said memory buffer comprising:



a first FIFO (first-in first-out) buffer;

means for storing data from a data source in said first FIFO buffer at a first speed;

means for retrieving data from said first FIFO buffer at a second speed;

a memory device comprising a plurality of register rows each comprising a shift register;

means for storing data retrieved from said first FIFO buffer in said memory device at said second speed on a row basis such that each memory store operation operates to store data in one of said register rows of said memory device;

means for retrieving data from said memory device at a third speed on a row basis such that each memory read operation operates to retrieve data from one of said register rows of said memory device;

a second FIFO buffer;

means for storing data retrieved from said memory device in said second FIFO buffer at said third speed;

means for retrieving data from said second FIFO buffer at a fourth speed; and

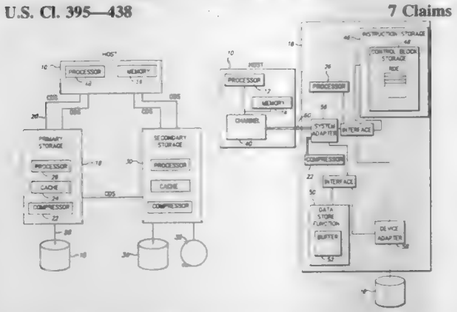
means for storing data retrieved from said second FIFO buffer in a computer storage device at said fourth speed.

5,630,092

SYSTEM AND METHOD FOR TRANSFERRING COMPRESSED AND UNCOMPRESSED DATA BETWEEN STORAGE SYSTEMS

Paul P. Carreiro; Robert R. Fish, both of San Jose, and David R. Nowlen, Morgan Hill, all of Calif., assignors to International Business Machines, Armonk, N.Y.

Continuation of Ser. No. 326,407, Oct. 20, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 581,719
Int. Cl.[6] G06F *12/02;13/00*
U.S. Cl. 395—438 **7 Claims**



7. A system for sharing a data stream of data records between a first and second storage system in communication with each other and each storage system wherein both compressed and non-compressed data records are transmitted as part of the data stream in communication with at least one host system, each storage system including at least one storage device having a plurality of data records stored on the storage device, said system comprising:

means for associating with at least one data record stored on the first storage system a record length indicator;

compression means for compressing and decompressing at least one data record at the first storage system independent of the host system and the second storage system;

means for associating with a compressed data record stored on the first storage system a compressed data record length indicator;

means for sending the data stream including the compressed data record with the record length indicator and a compressed record length indicator from the first storage system to the second storage system;

means for storing the compressed data record and indicators on a storage device at the second storage subsystem;

means for retrieving a data record from a storage device at the second storage system;

means for identifying a compressed data record. at the second storage system independent of the first storage system and the host system

means for decompressing the compressed data record at the second storage system independent of the first storage system and the host system; and

means for sending a data stream to a requesting host system directly from the second storage system independent of the first storage system and the host system;

means for transferring the data stream from the second storage system to a third storage system wherein all data records in the data stream are in a non-compressed state.

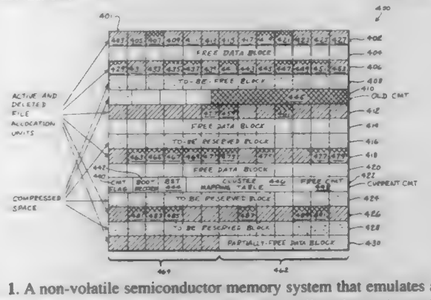
means for transferring a data record from the second storage system to the third storage subsystem in a compressed state wherein the third storage subsystem is unaware of the compressed state and stores the data record on a storage device controlled by the third storage system independent of the first and the second storage system and the host system.

5,630,093

DISK EMULATION FOR A NON-VOLATILE SEMICONDUCTOR MEMORY UTILIZING A MAPPING TABLE

Gerald S. Holzhammer, Aloha, Oreg., and Kurt B. Robinson, Newcastle, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 293,413, Aug. 23, 1994, abandoned, which is a continuation of Ser. No. 635,988, Dec. 31, 1990, abandoned. This application Apr. 19, 1996, Ser. No. 635,030
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—442 **26 Claims**



1. A non-volatile semiconductor memory system that emulates a disk storage device comprising at least one allocation unit, each allocation unit comprising at least one sector, said non-volatile semiconductor memory system comprising non-volatile semiconductor memory comprising a plurality of blocks, wherein said memory is erased in blocks, each of said blocks comprising a plurality of sectors, said system comprising:

(A) an active block for storing first data;

(B) a reserve block for storing second data, wherein the second data is a copy of the first data, wherein the copy is made during a clean-up operation prior to an erasure of the active block;

(C) a mapping table for mapping a logical address of an allocation unit of a disk storage device to a physical address of a

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sector within the non-volatile semiconductor memory, said mapping table comprising:

(1) at least one logical address field corresponding to a logical address of an allocation unit on a disk storage device emulated,

(2) a first corresponding physical address field of a sector within the non-volatile semiconductor memory,

(3) a next logical address field comprising a first value if the first corresponding physical address is clean such that valid data is located in the non-volatile semiconductor memory at that first physical address, said next logical address comprising a logical address value pointing to a second logical address and corresponding second physical address in the mapping table if said first physical address is dirty such that invalid data is located at the first physical address, and

said mapping table being updated during a clean-up operation to change the first value of the next logical address field to point to the second logical address and to update the corresponding physical address to identify the second physical address, the second physical address being an address of the data copied into the reserve block in the non-volatile semiconductor memory.

5,630,094

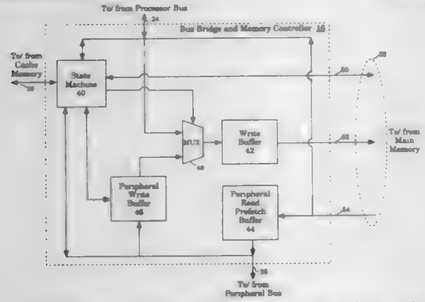
INTEGRATED BUS BRIDGE AND MEMORY CONTROLLER THAT ENABLES DATA STREAMING TO A SHARED MEMORY OF A COMPUTER SYSTEM USING SNOOP AHEAD TRANSACTIONS

George Hayek, Cameron Park, Calif.; Ali S. Oztaskin, Beaverton, Oreg.; Brian Langendorf, El Dorado Hills, Calif., and Bruce Young, Tigard, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 20, 1995, Ser. No. 375,972

Int. Cl.[6] G06F *13/00;13/40;3/00*

U.S. Cl. 395—473 **8 Claims**



5. A bus bridge and memory controller circuit for use in a computer system having a processor and cache memory, each coupled to a first bus, and a bus agent coupled to a second bus, the bus bridge and memory controller circuit coupled to the first bus and the second bus, the computer system further including a main memory coupled to the bus bridge and memory controller circuit, the bus bridge and memory controller circuit comprising:

state machine circuitry for enabling read and write access to the main memory from the first bus and the second bus and for initiating and performing a plurality of snoop ahead transactions to the cache memory over the first bus during memory access transactions originated over the second bus and targeted for the main memory;

buffer circuitry for buffering write data received over the second bus and targeted for the main memory; and

circuitry for storing, for each of the plurality of snoop ahead transactions, a snoop status indication for indicating if a respective one of the plurality of snoop ahead transactions corresponding to a respective one of the memory access transactions has completed.

5,630,095

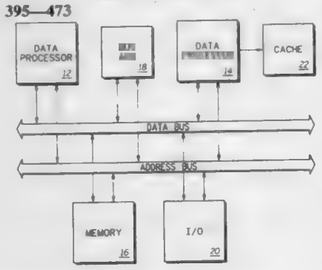
METHOD FOR USE WITH A DATA COHERENCY PROTOCOL ALLOWING MULTIPLE SNOOP QUERIES TO A SINGLE SNOOP TRANSACTION AND SYSTEM THEREFOR

Michael D. Snyder, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 100,942, Aug. 3, 1993, abandoned. This application Jul. 3, 1995, Ser. No. 497,815

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—473 **2 Claims**



1. A method of maintaining data coherency in a data processing system, the data processing system comprising a bus and a plurality of subsystems coupled to the bus, the bus operating at a first clock frequency, at least a first one of the plurality of subsystems operating at a second clock frequency, a ratio of the second clock frequency to the first clock frequency greater than or equal to two, the method comprising the steps of:

receiving a single bus transaction in the first one of the plurality of subsystems from a second one of the plurality of subsystems, the bus transaction comprising a data address;

generating a snoop response to the single bus transaction for each cycle of the second clock cycle occurring during a first interval, the first interval coincident with a predetermined cycle of the first clock signal, each step of generating a snoop response comprising the steps of:

querying a memory location with the single bus transaction to determine if the memory location comprises data indexed by the data address;

generating a first signal responsive to the querying step;

saving one of an Nth pair of signals responsive to a data coherency protocol during an Nth cycle of the second clock signal occurring during the first interval, the Nth pair of signals comprising the snoop response generated during the Nth cycle of the second clock signal occurring during the first interval and the snoop response generated during an Mth cycle of the second clock signal occurring during the first interval, where N and M are integer indices and where M is less than N and where N is greater than or equal to 2; and

outputting a saved one of the Nth pair of signals to the second one of the plurality of subsystems.

5,630,096

CONTROLLER FOR A SYNCHRONOUS DRAM THAT MAXIMIZES THROUGHPUT BY ALLOWING MEMORY REQUESTS AND COMMANDS TO BE ISSUED OUT OF ORDER

William K. Zuravleff, Mountainview, and Timothy Robinson, Boulder Creek, both of Calif., assignors to Microunity Systems Engineering, Inc., Sunnyvale, Calif.

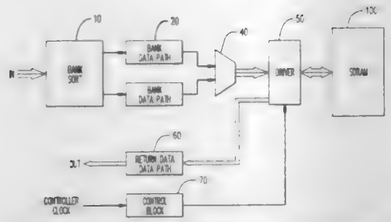
Filed May 10, 1995, Ser. No. 437,975

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—481 **20 Claims**

1. A controller for a synchronous DRAM comprising:

a sorting unit for receiving memory requests and sorting said memory requests based on their addresses, wherein said



memory requests are tagged for indicating a sending order thereof before said memory requests are sent to said sorting unit;

a throughput maximizing unit for processing said memory requests to the synchronous DRAM in response to scheduling which maximizes the use of data slots by the synchronous DRAM.

5,630,097

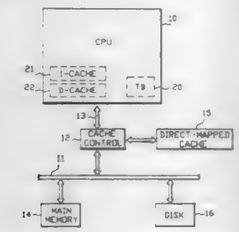
ENHANCED CACHE OPERATION WITH REMAPPING OF PAGES FOR OPTIMIZING DATA RELOCATION FROM ADDRESSES CAUSING CACHE MISSES

David A. Orbits, Redmond; Kenneth D. Abramson, Seattle, and H. Bruce Butts, Jr., Redmond, all of Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 716,207, Jun. 17, 1991, abandoned. This application Jan. 7, 1994, Ser. No. 178,487

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—492 **18 Claims**



14. A method of operating a computer system, comprising the steps of:

a) storing in a main memory, pages of data used by a task executing on a CPU, where said CPU is using a virtual memory system;

b) storing in a cache, a subset of said pages of data of said main memory in cache page locations;

c) generating virtual page addresses in said CPU while executing said task;

d) translating said virtual page addresses to physical page addresses to access said cache page locations in said cache and said pages in said main memory;

e) detecting physical addresses of accesses that cause cache misses wherein said detected physical addresses correspond to said cache page locations;

f) counting the number of cache misses and producing a detected cache miss count;

g) storing said detected physical addresses in a buffer each time said detected cache miss count reaches a predetermined number;

h) recording said stored physical addresses in entries in a structure, wherein each of said entries corresponds to one of said cache page locations, and counting the number of occurrences of cache misses for each cache page location and recording a cache miss location count for each cache page location in said corresponding entries in said structure, each time said buffer is filled and clearing said buffer after each of said stored physical addresses are recorded; and

i) remapping data, corresponding to said physical addresses recorded in said entries, having a cache miss location count greater than a predetermined threshold value, to a different physical address corresponding to a different cache page location.

5,630,098

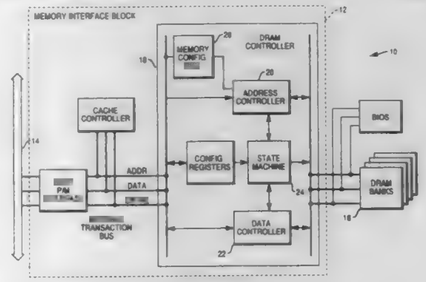
SYSTEM AND METHOD FOR INTERLEAVING MEMORY ADDRESSES BETWEEN MEMORY BANKS BASED ON THE CAPACITY OF THE MEMORY BANKS

Fulps V. Vermeer, Nieuwegein, Netherlands, and Edward C. King, Fremont, Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 30, 1991, Ser. No. 752,702

Int. Cl.[6] G06F *12/06*

U.S. Cl. 395—497.03 **11 Claims**



1. A computer memory system comprising:

a plurality of memory banks;

a register for storing data representing the capacity of each bank; and

a controller connected to said register and banks for determining, from the data stored in said register, whether or not addresses are to be interleaved between a pair of banks, said controller comprising:

an address router for receiving a first address having a plurality of bit positions and for assigning said bit positions to row and column addresses in response to the capacity of each bank stored in the register.

5,630,099

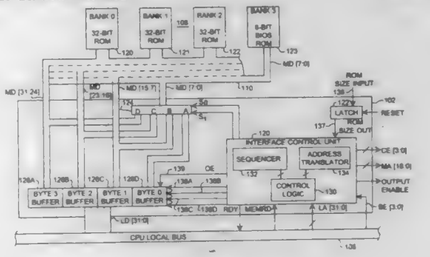
NON-VOLATILE MEMORY ARRAY CONTROLLER CAPABLE OF CONTROLLING MEMORY BANKS HAVING VARIABLE BIT WIDTHS

James R. MacDonald, Buda, and Douglas D. Gephardt, Austin, both of Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Filed Dec. 10, 1993, Ser. No. 166,124

Int. Cl.[6] G06F *12/04*

U.S. Cl. 395—497.03 **20 Claims**



1. A computer system comprising:

a microprocessor;

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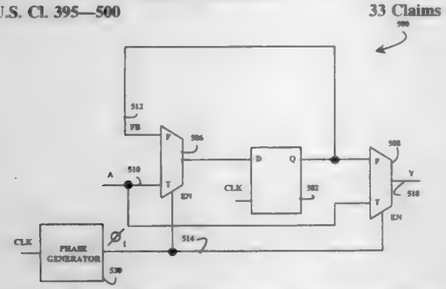
a local bus coupled to said microprocessor and including at least a first byte lane and a second byte lane;
a memory controller coupled to said local bus;
a memory data bus coupled to said memory controller and including at least a first byte lane and a second byte lane; and
a first bank of non-volatile memory coupled to said memory data bus;
wherein said memory controller includes:
a first output buffer configured to drive data from said first bank of non-volatile memory on said first byte lane of said local bus and a second output buffer configured to drive data from said first bank of non-volatile memory on said second byte lane of said local bus;
a data routing unit configured to selectively route data from said first byte lane of said memory data bus to either said first output buffer or to said second output buffer; and
an interface control unit configured to receive at least one local bus control signal, wherein said interface control unit is configured to generate at least one memory control signal in response to said at least one local bus control signal such that data is provided from said first bank of non-volatile memory simultaneously to said first and said second byte lanes of said memory data bus if a memory size input signal indicates that said first bank of non-volatile memory has a first predetermined bit width, and wherein said interface control unit is configured to generate at least one memory control signal in response to said at least one local bus control signal such that data is sequentially provided from said first bank of non-volatile memory through said first byte lane of said memory data bus to said data routing unit if said memory size input signal indicates that said first bank of non-volatile memory has a second predetermined bit width.

5,630,100

SIMULATING MULTI-PHASE CLOCK DESIGNS USING A SINGLE CLOCK EDGE BASED SYSTEM

Gopi Ganapathy, and David B. Witt, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 17, 1994, Ser. No. 323,643
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **33 Claims**



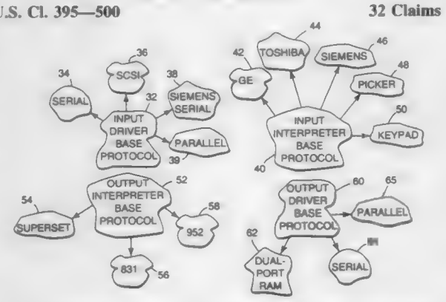
1. A simulator circuit for simulating a multiple-phase circuit using a single-clock-edge system comprising:
a data node;
a system clock node;
a phase generator having an input terminal coupled to the system clock node and an output terminal;
a first control switch having a first input terminal coupled to the data node, a second input terminal, a control terminal coupled to the output terminal of the phase generator and an output terminal;
a latch having an input terminal coupled to the first control switch output terminal, an output terminal coupled to the first input terminal of the first control switch and a clock terminal coupled to the system clock node; and
a second control switch having a first input terminal coupled to the data node, a second input terminal coupled to the output terminal of the latch, a control terminal coupled to the output terminal of the phase generator and an output terminal.

5,630,101

SYSTEM FOR COMMUNICATION OF IMAGE INFORMATION BETWEEN MULTIPLE-PROTOCOL IMAGING DEVICES

Kent J. Sieffert, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 22, 1994, Ser. No. 343,184
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—500 **32 Claims**



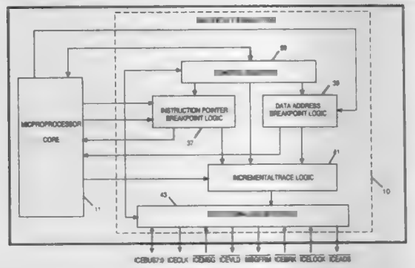
1. A software system for communicating image information between at least one of a plurality of different input imaging devices and at least one of a plurality of different output imaging devices, said software system comprising:
one or more input driver components, each of said input driver components being configured to receive image information from one of said input imaging devices, said image information being received according to one of a plurality of different input driver protocols, wherein each of said input driver protocols is specifically associated with one of said input imaging devices;
one or more input interpreter components, each of said input interpreter components being configured to generate first imaging requests based on the image information received by one of said input driver components, said first imaging requests being generated according to one of a plurality of different input interpreter protocols, wherein each of said input interpreter protocols is specifically associated with one of said input imaging devices;
one or more output interpreter components, each of said output interpreter components being configured to generate second imaging requests based on the first imaging requests generated by one of said input interpreter components, said second imaging requests being generated according to one of a plurality of different output interpreter protocols, wherein each of said output interpreter protocols is specifically associated with one of said output imaging devices;
one or more output driver components, each of said output driver components being configured to communicate the second imaging requests generated by one of said output interpreter components to one of said output imaging devices, said second imaging requests being communicated according to one of a plurality of different output driver protocols, wherein each of said output driver protocols is specifically associated with one of said output imaging devices; and
an interface executive component for defining one or more communication pipelines, each of said pipelines communicatively interconnecting one of said input imaging devices, one of said input driver components, one of said input interpreter components, one of said output interpreter components, one of said output driver components, and one of said output imaging devices.

5,630,102

IN-CIRCUIT-EMULATION EVENT MANAGEMENT SYSTEM

Thomas M. Johnson, Tempe; Aravindh Bakthavathsalu, Chandler; Richard Brunner, Gilbert; Eliot Garbus, Scottsdale; Byron Gillespie, Phoenix, and Stephen J. Strazdus, Chandler, all of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1994, Ser. No. 359,057
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **12 Claims**



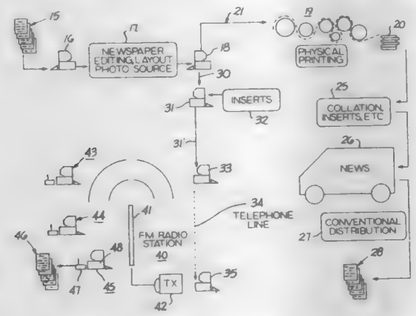
2. A microprocessor with an in-circuit-emulator having an interrogation mode and an emulation mode, wherein said microprocessor outputs a plurality of trace messages over an in-circuit emulator bus, said in-circuit-emulator supporting a plurality of initialization modes and a plurality of control registers, said in-circuit-emulator comprising:
an fheightICELOCK pin, which when asserted during said initialization mode, clears a first set of control registers in said in-circuit-emulator during initialization, wherein said fheightICELOCK pin when asserted also protects from being overwritten a second set of control registers when the in-circuit-emulator is engaged in said initialization mode, whereby the processor is configured for operation in said emulation mode.

5,630,103

RADIO TRANSMISSION SYSTEM FOR DISTRIBUTION OF NEWSPAPER COPY IN COMPUTER FORMAT TO PERSONAL COMPUTERS FOR VIEWING

Patrick C. Smith, 107 Morningside Dr.; Joel B. Aud, 1763 Stoopto Rd., and William D. Cotten, 208 Lake Rd., all of Sylvania, Ga. 30467

Filed Mar. 20, 1995, Ser. No. 407,300
Int. Cl.[6] G06F *9/00;9/455*
U.S. Cl. 395—500 **25 Claims**



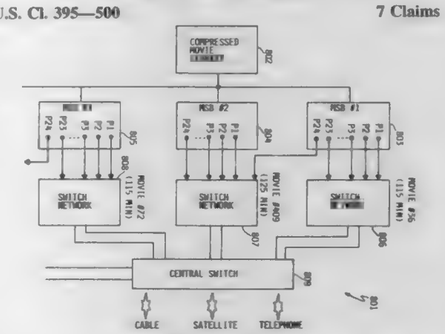
1. An electronic distribution system for mass distribution of media copy to readers, comprising in combination,
means for organizing the media copy into an electronic data stream formatted in a set of computer files each file comprising media copy with accompanying control identification tags,
radio transmission means for transmission of the data stream to a set of end user receivers for viewing directly with corresponding personal computers at corresponding reading stations,
radio reception means at the reading stations for receiving the electronic data stream,
personal computer means at subscriber stations responsive to the control identification tags in a received data stream for extracting and storing computer files from the data stream, and
viewing means at the reading stations for viewing of the media copy selected from stored computer files.

5,630,104

APPARATUS AND METHOD FOR PROVIDING MULTIMEDIA DATA

Hal H. Ottesen; Gordon J. Smith, and George W. Van Leeuwen, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 288,525, Aug. 10, 1994, which is a continuation-in-part of Ser. No. 184,417, Jan. 21, 1994. This application May 18, 1995, Ser. No. 444,116
Int. Cl.[6] G06F *17/00;9/455*
U.S. Cl. 395—500 **7 Claims**



1. A method for providing multimedia presentation data, said multimedia presentation being divisible into a plurality of portions corresponding to successive time intervals, each said portion being for presentation during the respective time interval to which it corresponds, said method comprising the steps of:
reading a plurality of multimedia data segments from at least one mass storage device, each of said multimedia data segments containing multimedia data from a respective one of said portions,
wherein a plurality of multimedia data segments contain data from each said portion, and wherein successive data segments read during said step of reading a plurality of multimedia data segments contain data from different ones of said plurality of portions, the data segments containing data from a particular one of said plurality of portions being interleaved among data segments containing data from other portions;
selectively transferring each of said multimedia data segments to a selected one of a plurality of buffers, wherein each of said plurality of buffers corresponds to a respective one of said time intervals, and said step of selectively transferring each of said data segments transfers each data segment containing data from a respective portion to the buffer corresponding to the time interval to which the respective portion corresponds; and
simultaneously providing a different portion of said multimedia presentation at a respective output from each of said plurality of buffers.

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5,630,105

MULTIMEDIA SYSTEM FOR PROCESSING A VARIETY OF IMAGES TOGETHER WITH SOUND

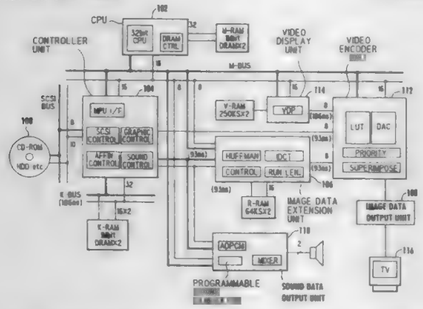
Fumihiko Itagaki, Hokkaido, Japan, assignor to Hudson Soft Co., Ltd., Hokkaido, Japan

Continuation of Ser. No. 112,366, Aug. 27, 1993. This application Nov. 27, 1995, Ser. No. 563,779

Claims priority, application Japan, Sep. 30, 1992, 4-285155

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **18 Claims**



17. A multimedia system for processing a variety of images and sounds, comprising:

a Video RAM (VRAM) for storing image data;

means for writing image data of external-block type to be processed block-by-block into the VRAM;

a video display (VDP) unit, coupled with the VRAM, for processing the image data stored in the VRAM;

an external storage for storing image and sound data, including image data of internal-dot type to be processed dot-by-dot;

a control unit, coupled with the external storage, for reading the image and sound data stored in the external storage, to produce image data of external-dot type to be processed dot-by-dot and managing a plurality of Background (BG) screens, in which a main picture and a sub-picture are specified as BG image data and scrolled independently of each other, and in which the sub-picture is superimposed on the main picture;

an image data extension unit, coupled with the control unit, for extending a scaled-down image data of external-dot type;

a video encoder unit, coupled with the video display unit, the control unit, and the image data extension unit, for encoding each image data of the external-block, internal-dot, and external-dot types, respectively;

means, coupled with the video encoder unit, for decoding the encoded image data to produce transferable data; and

a sound data output unit, coupled with the control unit, for processing a variety of sound data.

5,630,106

DRAM CONTROLLER INCLUDING BUS-WIDTH SELECTION AND DATA INVERSION

Shohzoh Ishibashi, Chigasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 127,946

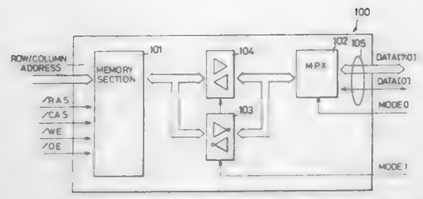
Claims priority, application Japan, Sep. 29, 1992, 4-283898

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—521 **6 Claims**

1. A controller comprising:

n-DRAMs each having bus-width selecting means for selecting the width of a data bus on the basis of a mode signal for designating the bus width, where n is a positive integer;



a first buffer for inputting data to and outputting data from said n-DRAMs;

a second buffer for inputting data to and outputting data from said n-DRAMs; and

access switching means for switching first and second access operations by controlling a setting operation of said mode signal and selecting an accessed DRAM,

wherein the controller is arranged such that bus-width full data (2^N data) of one DRAM among said n-DRAMs are accessed through the first buffer in the first access operation, where N is a non-negative integer, and wherein

data of m-DRAMs ($m \leqq n$) extended with the data bus of each of the DRAMs as one bit are accessed through the second buffer in the second access operation, where m is a positive integer.

5,630,107

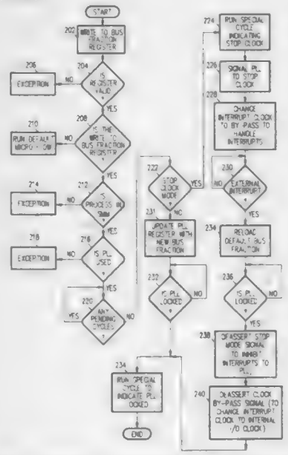
SYSTEM FOR LOADING PLL FROM BUS FRACTION REGISTER WHEN BUS FRACTION REGISTER IS IN EITHER FIRST OR SECOND STATE AND BUS UNIT NOT BUSY

Douglas Carmean; Kathakali Debnath, both of Beaverton; Roshan Fernando, Portland; Robert Krick, Beaverton, and Keng Wong, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 954,872, Sep. 30, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 210,066

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—560 **21 Claims**



1. In a micro processor including a bus fraction register, data processing logic that includes a number of units arranged as an instruction pipeline, one of said units being a bus unit that controls bus cycles in said pipeline, said bus unit asserting a bus unit busy signal line upon a condition that a bus cycle unit is underway, said units being clocked by an internal clock running at a first frequency and operating with an I/O bus clocked by an I/O clock running at a second frequency driven by a phase locked loop (PLL), said second frequency being a fraction of said first frequency, said bus fraction register having a contents set to an initial state indicating a default bus clock speed, a method comprising steps of:

A. writing an encoded value to said bus fraction register, said encoded value placing said contents of said bus fraction register in either a first state or a second state, said first state indicating a first bus clock speed of said I/O clock and said second state indicating a second bus clock speed of said I/O clock;

B. decoding said bus fraction register contents to determine if said encoded value is in said initial state, in said first state, or in said second state;

C. examining said bus unit busy signal line;

D. generating a stop PLL signal to said PLL upon a condition that said bus fraction register value is in said first state or in said second state and a condition that said bus unit busy signal line is not asserted; and

E. loading said PLL with said contents of said bus fraction register upon a condition that said bus fraction register value is in said first state or said second state and a condition that said bus unit busy signal line is not asserted.

5,630,108

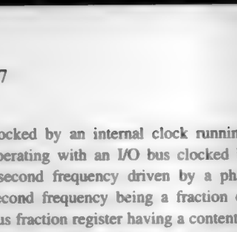
FREQUENCY INDEPENDENT PCMCIA CONTROL SIGNAL TIMING

Shannon A. Wichman; John Cornish, both of Dallas, and Qadeer A. Qureshi, Round Rock, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 18, 1995, Ser. No. 375,317

Int. Cl.[6] G06F *1/10*

U.S. Cl. 395—556 **10 Claims**



1. In a data processing system having a system clock that clocks data processing events at a system clock frequency, a bus interface timing unit, responsive to a system dock value signal representing the frequency of said system dock that is selectable among a plurality of frequencies, for providing control signals to a bus interface unit that controls the transfer of signals across said interface, under control of at least one of said control signals having predetermined timing requirements, wherein said timing requirements are substantially independent of the frequency of said system clock signal and depend upon an operation to be performed in said data processing system, comprising:

signal generation means, responsive to said system clock signal, for generating said at least one control signal; and

means responsive to a signal representative of the selected frequency of said system clock signal and for controlling said signal generation means such that said control signal is generated in accordance with said predetermined timing requirements for said selected frequencies, regardless of the frequency of said system clock.

5,630,109

APPARATUS FOR PROCESSING OF A SERIES OF TIMING SIGNALS

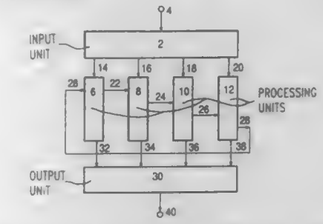
Dieter E. Staiger, Weil Im Schoenbuch, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 487,371

Claims priority, application European Pat. Off., Jun. 4, 1994, 94108675

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—556 **18 Claims**



1. Apparatus for processing a series of timing parameters representing series of timing signals comprising:

an input unit for inputting the series of timing parameters representing the series of timing signals;

n processing units, including a first processing unit and a successive processing unit for processing and calculating time values from the series of timing parameters;

an output unit for outputting a series of timing signals from said time values;

wherein said input unit comprises means to divide the series of timing parameters into sequences of timing parameters, the first sequence having n timing parameters, said input unit further comprising means to distribute the n timing parameters of a sequence to said n processing units for parallel processing of the n timing parameters; and

wherein said first processing unit comprises means to calculate a first time value from a first one of the timing parameters of each sequence and said successive processing unit comprises means to calculate a successive time value from a successive one of the timing parameters and from said first time value.

5,630,110

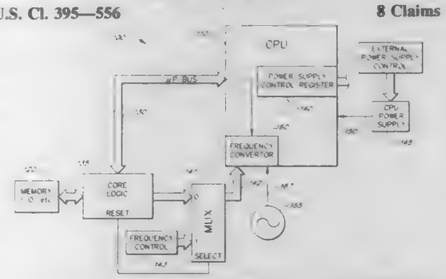
METHOD AND APPARATUS FOR ENHANCING PERFORMANCE OF A PROCESSOR

L. Randall Mote, Jr., Laguna Hills, Calif., assignor to Samsung Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 1, 1996, Ser. No. 609,357

Int. Cl.[6] G06F *1/08*

U.S. Cl. 395—556 **8 Claims**



1. A method of enhancing the performance of a variable frequency processor in a computer system, wherein said processor has a specified maximum voltage level and is powered by a digitally controlled supply voltage, said method comprising the steps of:

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applying a digital power supply control value to set said supply voltage to said specified maximum voltage level;

applying a first digital value to said processor to set a clock rate at which said processor operates to an initial frequency;

determining if said computer system operates properly when said processor is set at said frequency; and

if said computer system does not operate properly when said processor is set at said initial frequency, applying different digital values to said processor to decrease said clock rate until a maximum clock rate is found at which said processing operates properly; and, if said computer system does operate properly when said processor is set at said initial frequency, applying digital values to increase said clock rate until a maximum clock rate is found at which said computer system operates properly.

5,630,111

PROCESSING AND PLAYBACK APPARATUS FOR RECORDED DIGITAL DATA

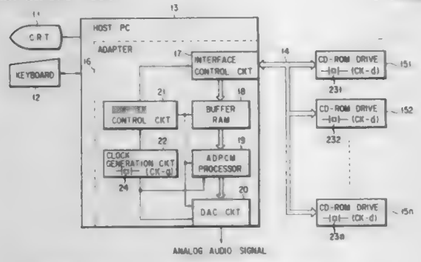
Takuji Yoshida, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 971,961, Apr. 16, 1993, abandoned. This application Jul. 5, 1995, Ser. No. 498,794

Claims priority, application Japan, Jun. 17, 1991, 3-144513

Int. Cl.[6] G06F *1/14*

U.S. Cl. 395—550 **6 Claims**



1. A digital data processing apparatus comprising:

a disc reproduction section which reproduces digital data from a digital data-recorded disc based on a first clock, the disc reproduction section having a first clock generating means for generating the first clock based on a first crystal oscillator, the first clock having a minimum frequency corresponding to a deviation of the first crystal oscillator during an ambient condition; and

a host processing section having:

a second clock generating means for generating a second clock based on a second crystal oscillator, the second clock having a maximum frequency corresponding to a deviation of the second crystal oscillator during the ambient condition,

a memory into which the digital data output from the disc reproduction section is stored at a rate based on the first clock and from which the digital data is read at a rate based on the second clock, and

a processor which performs predetermined data processing,

the minimum frequency of the first clock during the ambient condition being higher than the maximum frequency of the second clock during the ambient condition, and

a storage capacity of the memory being greater than a maximum amount of unprocessed data accumulated in the memory which corresponds to a maximum difference between the first and second clocks and a maximum data reproduction time at the disc reproduction section.

5,630,112

SYSTEM USING TIMING INFORMATION CONTAINED IN DATA READ FROM REPRODUCTION UNIT CONTROLLED BY FIRST OSCILLATOR TO VARY FREQUENCY OF INDEPENDENT SYSTEM CLOCK SIGNAL

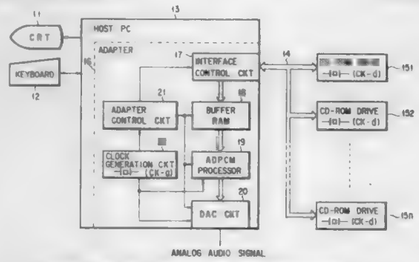
Takuji Yoshida, Yokohama, and Takayuki Uchida, Kumagaya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 969,315, Apr. 16, 1993, abandoned. This application Sep. 6, 1994, Ser. No. 301,266

Claims priority, application Japan, Jun. 19, 1991, 3-146426; Jun. 19, 1991, 3-146431

Int. Cl.[6] G06F *13/42*

U.S. Cl. 395—556 **12 Claims**



1. A digital data processing apparatus comprising:

a reproduction section for reproducing and outputting based on a first clock signal generated by a first clock generation circuit, digital data which is stored on a recording medium, wherein the first clock generating circuit has a first oscillator means;

a host processing section for performing predetermined processing, the host processing section having a memory for storing the digital data that is outputted by the reproduction section and for outputting the digital data stored in the memory in accordance with a second clock signal generated by a second clock generating circuit, wherein the second clock generating circuit has a second oscillator means and the second oscillator means is physically different from the first oscillator means; and

control means for detecting a shift in a frequency of the first clock signal based on a specific timing reference component contained in the digital data that is outputted by the reproduction section and for varying a frequency of the second clock signal in accordance with the detected shift in the frequency of the first clock signal.

5,630,113

METHOD AND APPARATUS FOR REDUCING JITTER ACCUMULATION IN A SERIES OF REPEATING DEVICES

Carl G. Hayssen, III, Andover, Mass.; Stanley P. Sassower, Nashua, N.H., and Steven E. Archambault, Haverhill, Mass., assignors to Ungermann-Bass, Inc., Santa Clara, Calif.

Filed Jan. 22, 1991, Ser. No. 644,803

Int. Cl.[6] G06F *11/14*

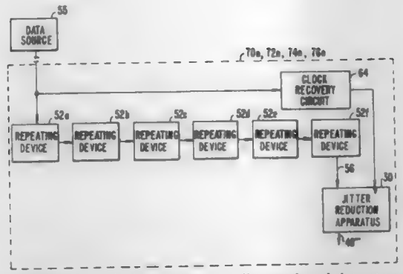
U.S. Cl. 395—558 **17 Claims**

1. A method for reducing jitter in a data stream transmission along a physical communication channel, the data stream accumulating jitter during retransmission along a series of repeating devices, the data stream entering the series of repeating devices as an entry data stream, the data stream exiting from the series of repeating devices as an exit data stream, the method comprising the steps of:

receiving the exit data stream from the series of repeating devices;

storing said exit data stream;

recovering a clock signal of the entry data stream; and



outputting the exit data stream as a jitter-reduced data stream at a timing defined by the recovered clock signal.

5,630,114

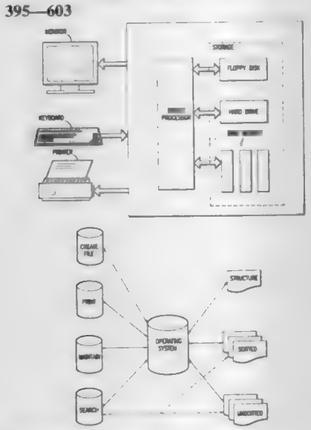
DATABASE MANAGEMENT SYSTEM EMBEDDED IN AN OPERATING SYSTEM COMMAND

Bill Serra, 4043 Park Blvd., Palo Alto, Calif. 94306, and Antoni Drudis, 19523 Miller Ct., Saratoga, Calif. 95070

Filed Jan. 22, 1993, Ser. No. 7,463

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—603 **19 Claims**



1. A machine comprising:

a computer; and

a computer operating system directing the computer, the computer operating system having a database management system, including database search and maintenance means, responsive to a single operating system command provided by a user, the database search and maintenance means planning a resource strategy to avoid deadlocks prior to executing the single operating system command,

if the single operating system command is concatenated with a "search" parameter, the database search and maintenance means to search a sorted file to locate a record having a user-specified value in any field selected by a user, the sorted file including a plurality of records sorted according to data contained in a key field of each record, the key field being specified in a structure file that defines a structure for the records, the structure including the key field and at least one other field,

if no such record is located in the sorted file when the single operating system command is concatenated with a "search" parameter, then the database search and maintenance means to search an unsorted file to locate a record having the value in the field, the unsorted file being for receiving records from the user,

the database search and maintenance means responsive to the single operating system command concatenated with a "maintenance" parameter provided by the user to sort and merge unsorted file records into the sorted file.

5,630,115

METHOD OF REWRITING INFORMATION ON A RECORD MEDIUM BY REWRITING ONLY CHANGED PORTIONS

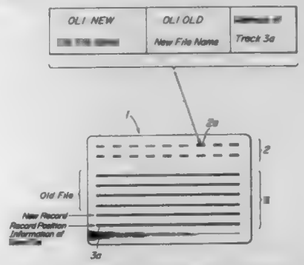
Noboru Mikamo, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 10, 1993, Ser. No. 59,127

Claims priority, application Japan, May 11, 1992, 4-117564

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—621 **22 Claims**



1. A method of rewriting information recorded on a record medium, said method comprising:

reading out of said record medium old file contents onto which new file contents are to be written;

detecting a difference between said old file contents and said new file contents to determine a portion of the new file contents which is different from a corresponding portion of said old file contents;

forming management information for denoting a fact that said portion of the old file contents is to be rewritten by said portion of the new file contents, said management information comprising recording position information which denotes a position on said record medium at which said portion of said new file contents is to be written;

recording said portion of the new file contents as well as said management information on said record medium, said recording position information being recorded in a vacant track in a data record section in the record medium; and

recording, in a vacant region in a directory record section in said record medium, a position of said vacant track in which said recording position information has been recorded.

5,630,116

AUTOMATIC DELIVERY SYSTEM FOR MASTER FILES IN A DISTRIBUTED PROCESSING SYSTEM

Masahiro Takaya, Tokyo, and Hiroko Tsuji, Fukuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 279,885

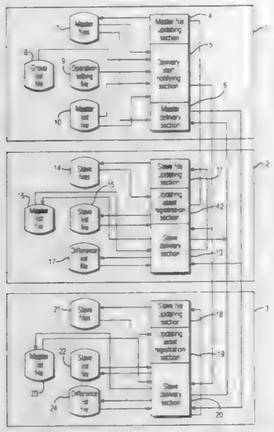
Claims priority, application Japan, Aug. 11, 1993, 5-199399

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—617 **3 Claims**

1. An automatic delivery system for master files in a distributed processing system comprising a parent workstation provided with master files for storing data or information to be shared within said distributed processing system; child workstations connected by communication lines to the parent workstation and provided with slave files for storing data or information acquired from said master files; and grandchild workstations, connected by communication lines to the child workstations, for utilizing data or information in said slave files to execute business processing, wherein said

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parent workstation comprises a master file updating section, a delivery start notifying section, and a master delivery section:

the master file updating section comprising means for updating said master files with data or information forwarded from said child workstations;

the delivery start notifying section comprising means for forwarding directory lists of said master files to said child workstations;

the master delivery section comprising means for removing data or information requested by said child workstations from said master files, and means for forwarding said requested data or information to said child workstations;

and wherein each of said child workstations comprises a slave file updating section, an updated asset registering section, and a slave delivery section;

the slave file updating section comprising means for updating said slave files;

the updated asset registering section comprising means for forwarding to said parent workstation data or information in said slave files upon updating by the slave file updating section; and

the slave delivery section comprising means for comparing a content of the directory list of said master files forwarded by said parent workstation with a content of the directory lists of said slave files, means for requesting said parent workstation to forward the data or information in said master files which is found to be different, and means for instructing said slave file updating section to update said slave files with the data or information received in response to the request.

5,630,117

USER INTERFACE SYSTEM AND METHOD FOR TRAVERSING A DATABASE

Timothy R. Oren, Sunnyvale; Kristee M. Kreitman, Atherton, and Gitta B. Salomon, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 900,538, Jun. 18, 1992, Pat. No. 5,408,655, which is a continuation of Ser. No. 316,331, Feb. 27, 1989, abandoned. This application Mar. 13, 1995, Ser. No. 404,187

The portion of the term of this patent subsequent to Jun. 18, 2012, has been disclaimed.

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **15 Claims**

1. A method for a user of a computer system to traverse a database to retrieve an electronic document stored in said database, said method comprising the steps of:

a) providing a hypertext-type database, said hypertext-type database including a plurality of hypertext-type nodes, said plurality of hypertext-type nodes corresponding to a plurality of electronic documents, wherein each of said plurality of hypertext-type nodes may be selectively linked to others of said plurality of hypertext-type nodes;

b) providing a set of descriptive index terms;

c) indexing said hypertext-type database by assigning a unique first subset of said descriptive index terms to each electronic document of said plurality of electronic documents;

d) receiving user input that selects a second subset of said descriptive index terms;

e) comparing said first subset of descriptive index terms of said plurality of electronic documents with said second subset of said descriptive index terms;

f) producing a list of electronic documents based on said comparing step e), said list of electronic documents having a first electronic document that represents a user's position within the hypertext-type database;

g) receiving user input that selects a selected electronic document from said list of electronic documents; and

h) changing said user's position within the hypertext-type database to correspond with said selected electronic document.

5,630,118

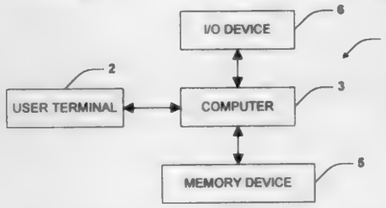
SYSTEM AND METHOD FOR MODIFYING AND OPERATING A COMPUTER SYSTEM TO PERFORM DATE OPERATIONS ON DATE FIELDS SPANNING CENTURIES

Daniel P. Shaughnessy, Cleveland, Ohio, assignor to 2000, Inc., Cleveland, Ohio

Filed Nov. 21, 1994, Ser. No. 342,841

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **22 Claims**



1. A method of modifying a computer system comprising the steps of:

storing at least one subroutine in a memory accessible to the computer system;

modifying an application program of said computer system to include a call to said at least one subroutine, said call operative to pass at least one data field representative of at least two dates to said at least one subroutine,

wherein said at least one subroutine determines which of said at least two dates corresponds to said date field according to a predetermined criteria, performs a date operation on said date field, and returns a parameter to said application program for use in further operations.

5,630,119

SYSTEM AND METHOD FOR DISPLAYING PROGRAM LISTINGS IN AN INTERACTIVE ELECTRONIC PROGRAM GUIDE

Phivos C. Aristides, Seattle; Brian D. Crites, Redmond; Robert M. Hohman, Renton, and Frank A. Lawler, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed May 5, 1995, Ser. No. 435,988

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **15 Claims**



1. In an interactive entertainment distribution network having a headend which is connected to provide programs to a plurality of user interface units in individual homes, each of the programs corresponding to a scheduled time period, an information storage system comprising:

a storage medium containing a plurality of program data records, the program data records containing information about the programs provided by the headend;

each program data record being indexed by one of a plurality of bucket numbers, the bucket numbers corresponding respectively to a plurality of discrete time slots;

wherein the scheduled time period of a particular program provided by the headend occupies at least a portion of one or more of the discrete time slots;

said particular program being represented by a program data record and associated bucket number for each of the one or more discrete time slots which are at least partially occupied by said particular program.

5,630,120

METHOD TO HELP IN OPTIMIZING A QUERY FROM A RELATIONAL DATA BASE MANAGEMENT SYSTEM

Eric Vachey, Paris, France, assignor to Bull, S.A., Paris, France

Continuation of Ser. No. 128,159, Sep. 29, 1993, abandoned. This application Sep. 8, 1995, Ser. No. 525,072

Claims priority, application France, Oct. 12, 1992, 92 12148

Int. Cl.[6] G06F *9/00;15/00*

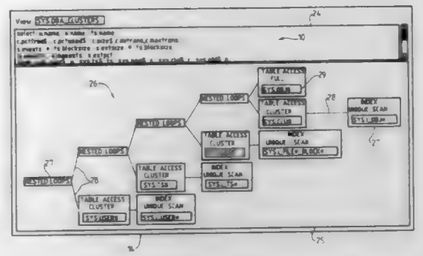
U.S. Cl. 395—602 **22 Claims**

1. A method for displaying a query execution plan of a query for a relational database management system (RDBMS), said RDBMS being of the type that processes aspatial data only and having a screen display, said query execution plan comprising operations to be executed by said RDBMS, said operations being interconnected through links, said method comprising the steps of:

generating information representative of said query execution plan, said information including at least one of operation names for said operations of the query execution plan, an option, and at least one characteristic of each said operation;

analyzing said information to determine said operation names, said options, said characteristics and said links; and

displaying on said screen display the operations in respective boxes, each of said boxes incorporating said operation name and corresponding options and characteristics, and the links between said boxes in a linear graphical form.



5,630,121

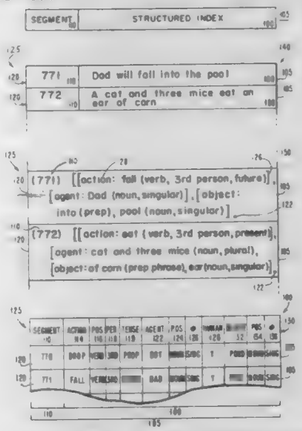
ARCHIVING AND RETRIEVING MULTIMEDIA OBJECTS USING STRUCTURED INDEXES

Lisa C. Braden-Harder, Somers; Michelle Y. L. Kim, Scarsdale; Judith L. Klavans, Hastings-on-Hudson, and Wlodek W. Zadrozny, Mohegan Lake, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1993, Ser. No. 13,888

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—604 **9 Claims**



1. A method for identifying a location of multimedia information in a computer database comprising the steps of:

using a heuristic interface to assist a user in creating a structured index conforming to a set of rules of a natural language grammar from two or more components of a description of the multimedia information, the structured index having a function field for each of one or more of the components, the function field containing one or more functions describing a

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component function of the component, the component function determined by the set of rules of the natural language grammar, and the structural index further having a relationship field for each of one or more of the components, the relationship field containing a relationship between the respective component and one or more of the other components, the relationships also being defined by the natural language grammar, the grammar also defining a structure of the description;

creating a matched pair by associating the structured index with a storage location information pointer that points to a location containing the multimedia information; and

storing the matched pair in a computer memory to archive the multimedia information as being in the location identified by the storage location information pointer.

5,630,122

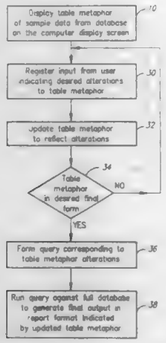
COMPUTERIZED REPORT-BASED INTERACTIVE DATABASE QUERY INTERFACE

Craig A. Kaplan, Santa Cruz; Stanley E. Taylor, San Jose, and Gregory J. Wolff, Mountain View, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 876,255, Apr. 30, 1992, Pat. No. 5,426,781. This application Mar. 2, 1995, Ser. No. 398,583

Int. Cl.[6] **G06F** *17/30*

U.S. Cl. 395—604 **2 Claims**



1. A computer program on a computer usable medium having computer readable program code means embodied in said medium for generating a report by enabling a user to interact with a computer system connected to a storage device having a database of data, comprising:

computer readable program code means for causing a displaying, on a display screen of the computer system, of a table metaphor having rows and columns of attribute value cells, the attribute value cells containing attribute values reflective of a subset of attribute values of the database data;

computer readable program code means for causing a registering of direct alterations to the table metaphor;

computer readable program code means for causing a displaying, on the display screen, of a revised table metaphor graphically representing a revised report format reflecting the registered direct alterations;

computer readable program code means for causing a query statement, corresponding to the revised table metaphor, to be determined; and

computer readable program code means for causing a running of the query statement on the database to produce query output in the revised report format.

5,630,123

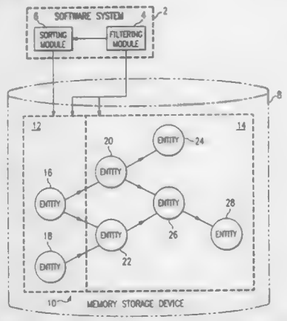
SOFTWARE SYSTEM UTILIZING A FILTERED PRIORITY QUEUE AND METHOD OF OPERATION

John C. Hogge, Richardson, Tex., assignor to i2 Technologies, Inc., Dallas, Tex.

Filed Sep. 28, 1994, Ser. No. 314,073

Int. Cl.[6] **G06F** *7/24*

U.S. Cl. 395—607 **22 Claims**



11. A method of operating a software system to filter and sort a plurality of data records representing a plurality of entities to identify a most critical entity, comprising:

storing a plurality of data records in a memory storage device, each data record representing one of a plurality of entities from which a most critical entity is to be identified based upon defined sorting criteria;

arranging the plurality of data records to build a lattice interrelating the plurality of data records based upon a first part of the sorting criteria, where each data record in the lattice is more critical than those data records it is positioned ahead of based upon the first part of the sorting criteria;

identifying a remaining set of data records containing those data records that are lattice heads and identifying a filtered set of data records containing those data records that are positioned in sublevels of the lattice; and

sorting the remaining set of data records, based upon a second part of the defined sorting criteria, to identify a highest ordered data record from the remaining set as representing the most critical entity.

5,630,124

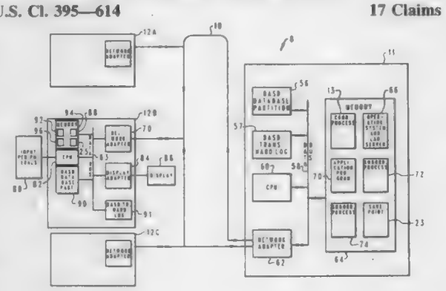
SYSTEM AND METHOD FOR ASSURING ATOMICITY OF DISTRIBUTED UPDATE REQUESTS IN A PARALLEL DATABASE

Daniel J. Coyle, Jr., San Jose, Calif.; Amy Chang, Cortlandt Manor, N.Y.; Timothy R. Malkemus, Round Rock, Tex., and Walter G. Wilson, New Paltz, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1993, Ser. No. 163,100

Int. Cl.[6] **G06F** *17/30;17/40;19/00*

U.S. Cl. 395—614 **17 Claims**



7. A parallel database management system for managing distributed requests which each comprise a plurality of request instances which may span a plurality of subordinate processes, comprising:

a network having a plurality of computers;

a database distributed among partitions on the plurality of computers;

a plurality of subordinate processes resident on the plurality of computers for generating local savepoints for the partitions, for executing a request instance and for signalling over the network failure or success of execution;

a coordinator resident on a computer for receiving requests from applications wherein each request comprises a plurality of request instances, for distributing request instances and request savepoint data relating to the request to selected subordinate processes and for issuing a rollback request with a reference for comparison to the local savepoints upon receipt of a signal indicating failure of execution by a subordinate process;

memory for each of the plurality of computers for storing the local savepoints between the requests; and

the subordinate processes being responsive to the reference of the matching the local savepoints for executing a rollback.

5,630,125

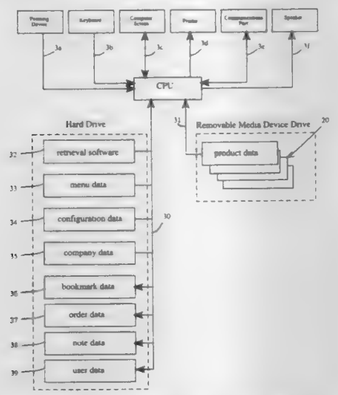
METHOD AND APPARATUS FOR INFORMATION MANAGEMENT USING AN OPEN HIERARCHICAL DATA STRUCTURE

Paul Zellweger, 12 Holworthy Pl., Cambridge, Mass. 02138

Filed May 23, 1994, Ser. No. 247,688

Int. Cl.[6] **G06F** *17/30;15/82*

U.S. Cl. 395—614 **30 Claims**



1. An information management system comprising:

means for creating an open hierarchical data structure having a plurality of nodes, a plurality of information objects, and a plurality of paths for connecting nodes to nodes, and nodes to an information object at the end of said paths in said open hierarchical data structure whereby a plurality of said paths connects to the same said information object;

means for creating said information object by associating a plurality of media elements, each media element having a plurality of fields;

means for creating at least one file according to a predetermined file format, said at least one file including said plurality of information objects and said open hierarchical data structure, said open hierarchical data structure including the means for locating said information object;

means for accessing said at least one file for dynamically building a plurality of selection menus corresponding to said paths in said open hierarchical data structure; and

means for displaying each said information object disposed at the end of each said path.

5,630,126

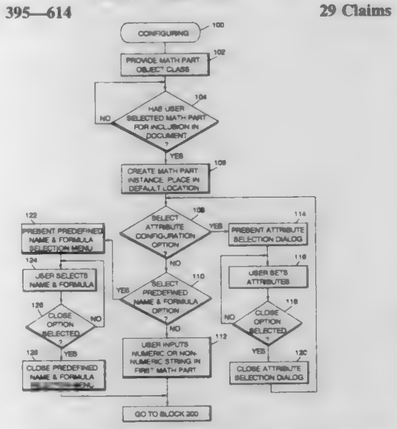
SYSTEMS AND METHODS FOR INTEGRATING COMPUTATIONS INTO COMPOUND DOCUMENTS

Richard J. Redpath, Cary, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 13, 1994, Ser. No. 354,687

Int. Cl.[6] **G06F** *17/30*

U.S. Cl. 395—614 **29 Claims**



1. A system for integrating computations into a compound document in a computing environment including a computing platform, said computation integrating system comprising:

means for configuring a compound document including a document text and first, second and third math parts at corresponding first, second and third locations within said compound document, each math part comprising a name, an associated formula and an associated value, wherein the second formula is a computational function of the first value, and wherein the name of said third math part is identical to the name of said first math part;

means, responsive to user input of a predetermined non-numeric string at said first location, for evaluating the first formula associated with the first math part to produce a result, for displaying said result at said first location and for assigning the result as the first value;

means, responsive to user input of a numeric string at said first location, for assigning said numeric string as the first value, without evaluating the first formula of the first math part;

means, responsive to assignment of a value to said first math part, for communicating the first value of the first math part to said second and third math parts;

means, responsive to receipt of said first value by said second math part, for reevaluating the second formula using the first value, and for displaying the reevaluated formula at the second location; and

means, responsive to receipt of said first value by said third math part, for displaying the first value at said third location.

5,630,127

PROGRAM STORAGE DEVICE AND COMPUTER PROGRAM PRODUCT FOR MANAGING AN EVENT DRIVEN MANAGEMENT INFORMATION SYSTEM WITH RULE-BASED APPLICATION STRUCTURE STORED IN A RELATIONAL DATABASE

Allan R. Moore, Herndon; Lori J. Poulos, McLean, and Lynn G. DeFazio, Manassas, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

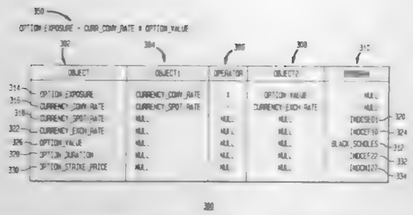
Division of Ser. No. 883,460, May 15, 1992, Pat. No. 5,446,885. This application Jun. 7, 1995, Ser. No. 485,897

Int. Cl.[6] **G06F** *17/30*

U.S. Cl. 395—615 **16 Claims**

15. A program storage device readable by a computer system, tangibly embodying a program of instructions executable by said

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computer system to perform method steps for enabling said computer system, to store rules utilized by application programs, wherein the rules are stored as objects in a database, said method steps comprising:

(1) converting a rule in the form of a mathematical or a logical formula having variables to a table format, wherein each of said variables in said rule is decomposed into a rule previously converted into said table format, a program for retrieving a primitive data value for each said variable or a program for calculating a value for each said variable; and

(2) storing said table as an object in said database.

5,630,128

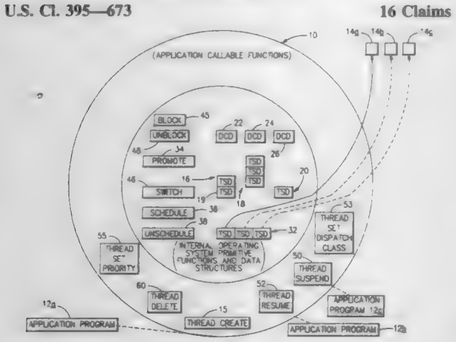
CONTROLLED SCHEDULING OF PROGRAM THREADS IN A MULTITASKING OPERATING SYSTEM

Joel A. Farrell, Endicott, N.Y.; Stephen E. Record, Ridgefield, Conn., and Brian K. Wade, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 9, 1991, Ser. No. 743,541

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—673 **16 Claims**



1. A multitasking operating system comprising:

means for receiving from one or more application program threads specification of classes in which a multiplicity of application program threads reside and assigning said multiplicity of application program threads to classes based on said specification, wherein at least one of said classes can be assigned a plurality of program threads;

means for assigning priority levels to said program threads;

means for scheduling execution of said program threads such that the highest priority program thread in each of said classes which is available for execution is selected for execution before a lower priority program thread which is available for execution in the same class; and

means, responsive to a request from one of said application program threads which is executing to halt execution of said one program thread and select for execution a particular application program thread which is specified in said request and available for execution from the same class, for complying with said request, and wherein there is another application program thread, in addition to said particular program thread and said one program thread, which is available for execution from said same class and has a higher priority than said particular program thread.

5,630,129

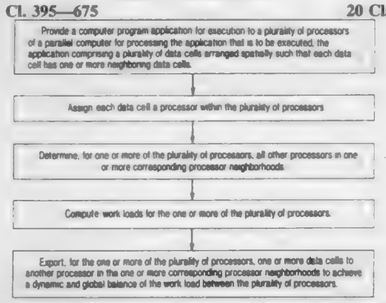
DYNAMIC LOAD BALANCING OF APPLICATIONS

Stephen R. Wheat, Albuquerque, N.M., assignor to Sandia Corporation, Albuquerque, N.M.

Filed Dec. 1, 1993, Ser. No. 161,003

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—675 **20 Claims**



1. A method for dynamically maintaining global load balance in a multiprocessor system that executes an application on a parallel computer, the method comprising the steps of:

a) providing an application for execution to a plurality of processors of the parallel computer for processing the application that is to be executed, the application comprising a plurality of data cells arranged spatially such that each data cell has one or more neighboring data cells;

b) assigning each data cell a processor within the plurality of processors;

c) determining for one or more of the plurality of processors all other processors in one or more corresponding processor neighborhoods;

d) computing work loads for the one or more of the plurality of processors; and

e) for the one or more of the plurality of processors, exporting one or more data cells to another processor in the one or more corresponding processor neighborhoods to achieve a dynamic and global balance of the work load between the plurality of processors.

5,630,130

MULTI-TASKING LOW-POWER CONTROLLER HAVING MULTIPLE PROGRAM COUNTERS

Jean-Félix Perotto, Colombier, and Christian Lamothe, Neuchâtel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

PCT No. PCT/EP93/03498, § 371 Date Aug. 22, 1994, § 102(e) Date Aug. 22, 1994, PCT Pub. No. WO94/15287, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 10, 1993, Ser. No. 290,954

Claims priority, application Switzerland, Dec. 23, 1992, 03935/92

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—677 **12 Claims**

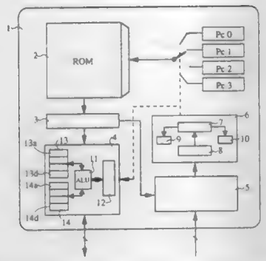
1. A multitasking controller comprising:

task storage means (**2**) for storing up to N tasks (**P0**,**P1**,**P2**,**P3**) each comprising a sequence of instructions,

a microprocessor for processing, by time-sharing, a plurality of said N tasks, and

data storage means (**12**) for storing variable data created and used by said microprocessor, characterized in that said microprocessor further comprises

a scheduler (**7**) realized in hardware for controlling the use of said microprocessor by said tasks, and



program counter storage means for storing N program counters (**Pc0**,**Pc1**,**Pc2**,**Pc3**) each for use by said scheduler (**7**) to control the instruction sequence of a separate one of said N tasks, said scheduler (**7**) selecting a different one of said program counters (**Pc0**,**Pc1**,**Pc2**,**Pc3**) when the task processed by said microprocessor is changed without requiring the transfer of data from said data storage means (**12**), wherein said micro processor is configurable so as to process a portion of each of X said tasks in turn, where 1<X<N, the program counter of one or more of the remaining N-X tasks being used by said microprocessor to control the instruction sequence of a subroutine called from within said X tasks.

5,630,131

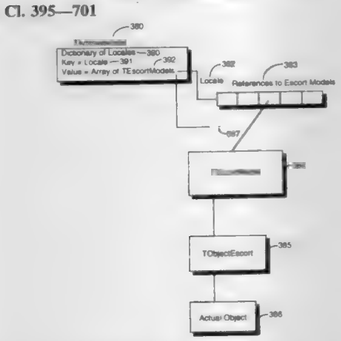
METHOD AND APPARATUS FOR IMPORTING AND EXPORTING ARCHIVE FILES FOR A GRAPHICAL USER INTERFACE

Jack H. Palevich, Sunnyvale, and Thomas H. Taylor, San Jose, both of Calif., assignors to Object Technology Licensing Corp., Cupertino, Calif.

Filed Nov. 14, 1994, Ser. No. 340,087

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—701 **15 Claims**



1. A user interface object archive system for use in an object oriented programming (OOP) based computer system which utilizes a first application program having user interface objects for building a second application program, said archive system comprising:

(a) storage means for storing objects in a hierarchical locale tree, said locale tree having a root locale level associated with a first locale and at least one other locale level associated with a second locale;

(b) object creation means, operatively coupled to said storage means, for creating a first plurality of user interface objects having interface object controls and a second plurality of user interface objects not having interface object controls of said first locale, said second plurality of user interface objects being stored in said other locale level associated with said second locale;

(c) tree traversal means, operatively coupled to said storage means, for traversing said locale tree starting at said other locale level associated with the second local and proceeding to said root locale level to assemble a set of available user interface objects from said user interface objects stored in said other locale level and said root locale level;

(d) application generation means, operatively coupled to said tree transversal means, for utilizing user interface objects stored in said storage means to develop a third application program derived in part from said first and second application programs by utilizing polymorphic streaming and a presentation framework such that users can design a new user interface and then load that new user interface into a running program without stopping and restarting the running program; and

(f) interface means, operatively coupled to the application generation means, for importing and exporting objects during processing for use in other program applications by segmenting an object into a human readable and a binary representation.

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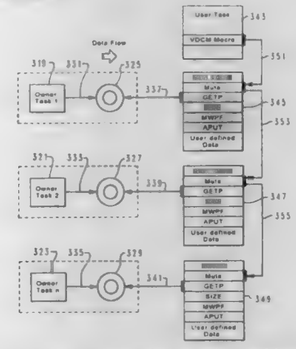
METHOD AND APPARATUS FOR FACILITATING REAL-TIME AND ASYNCHRONOUS LOADING AND TEMPORALLY-OVERLAPPING OF MODULAR MULTIMEDIA SOFTWARE TASKS IN A MULTIMEDIA DATA PROCESSING SYSTEM

Gary G. Allran, Boca Raton, Fla.; Donald E. Carmon, Durham, N.C.; Fetchi Chen, Boca Raton; Jose A. Eduartez, Miami Beach, both of Fla.; Charles R. Knox, Raleigh, N.C.; William L. Lawton, Boca Raton, Fla.; Llewellyn B. Marshall, Cary, N.C.; Nathan A. Mitchell, Raleigh, N.C.; Malcolm C. Ware, Raleigh, N.C.; Raymond W. Weeks, Apex, N.C., and Charles R. Young, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 960,951, Oct. 13, 1992, abandoned. This application May 23, 1995, Ser. No. 449,511

Int. Cl.[6] G06F *3/00;17/00;13/00*

U.S. Cl. 395—670 **27 Claims**



1. A data processing system for executing multimedia applications which interface with multimedia end devices that consume or produce at least one of (a) real-time and (b) asynchronous streamed data, comprising:

a central processing unit for data processing operations including execution of said multimedia application;

a digital signal processor for processing data including said streamed data;

a plurality of modular multimedia software task means which are executable by said digital signal processor and which are available to said multimedia application for execution in said digital signal processor;

a plurality of data communication module means for:

(a) linking selected ones of said plurality of modular multimedia software tasks with selected others of said plurality of modular multimedia software task means, and

(b) linking selected multimedia end devices with selected ones of said plurality of modular multimedia software task means;

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each of said plurality of data communication module means allowing continuous, real-time, and unidirectional communication of said streamed data;

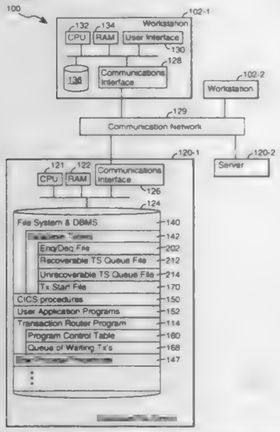
a digital signal processor manager program means which is resident in said central processing unit and which dynamically monitors data processing system resource allocation to allow at least one of said plurality of modular multimedia software task means to be loaded and executed while at least one other of said plurality of modular multimedia software task means is being executed by said digital signal processor, without interfering with execution of any of said plurality of modular multimedia software tasks.

5,630,133

CUSTOMER INFORMATION CONTROL SYSTEM AND METHOD WITH API START AND CANCEL TRANSACTION FUNCTIONS IN A LOOSELY COUPLED PARALLEL PROCESSING ENVIRONMENT

Andreas E. Hotea; John S. de Roo, both of Santa Clara; Mark Phillips, and David G. Velasco, both of Campbell, all of Calif., assignors to Tandem Computers, Incorporated, Cupertino, Calif.

Filed Jun. 7, 1995, Ser. No. 479,702
Int. Cl.[6] G06F *13/00;15/00*
U.S. Cl. 395—671 **8 Claims**



5. A method of operating a distributed computer system having a plurality of end user terminals and a plurality of server computers; said server computers including a multiplicity of user application processes distributed over said plurality of server computers; the steps of the method comprising:

storing a transaction start table on a first one of said server computers, including storing transaction start data representing transactions whose execution has been requested by other transactions being executed by said user application processes; said transaction start data indicating a start condition for each said transaction whose execution has been requested;

whenever any executing transaction executes a Start transaction instruction, generating and storing a transaction start record in said transaction start table representing a transaction whose execution has been requested; wherein said transaction start record is stored in said transaction start table on said first one of said server computers regardless of which one of said server computers executes said Start transaction instruction;

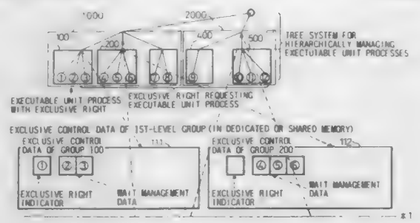
executing a transaction start process on one of said server computers, said transaction start process evaluating said start condition for each said transaction whose execution has been requested, and when said start condition for one of said requested transactions is satisfied, initiating execution of said one requested transaction by one of said user application processes.

5,630,134

INTER-PROCESSOR EXCLUSIVE CONTROL APPARATUS FOR ENABLING ONE OF A PLURALITY OF PROCESSORS EXECUTE AN EXECUTABLE UNIT PROCESS

Yutaka Haga, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Mar. 17, 1994, Ser. No. 214,308
Claims priority, application Japan, Jun. 11, 1993, 5-140404
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—676 **8 Claims**



1. An inter-processor exclusive control apparatus for enabling one of a plurality of processors to execute an executable unit process to exclusively manipulate a resource or an instruction procedure apart from other executable unit processes executed by the other of said processors, wherein said inter-processor exclusive control apparatus comprises:

a plurality of local areas for managing exclusive control data, formed in a memory shared by said plurality of processors, said plurality of executable unit processes being optionally divided into a plurality of groups that are associated with said plurality of local areas, respectively, exclusive requests from said plurality of executable unit processes in a corresponding one of said plurality of groups being managed by a corresponding one of said plurality of local areas, said plurality of groups of said executable unit processes being further grouped and managed in a tree structure, said further groups being provided with exclusive control data areas, respectively, formed in said shared memories that are accessible only by said further groups, said exclusive control data areas managing exclusive requests from said executable unit processes in the respective groups, execution requests to higher groups being hierarchically transmitted; and

a shared area for managing exclusive control data, formed in said shared memory, said shared area managing exclusive requests from said plurality of groups, thereby decreasing a number of accesses to said shared area by both said local areas and said shared area managing exclusive requests from said executable unit processes and by only said plurality of groups accessing said shared area.

5,630,135

MULTIPLE-EXECUTION METHOD OF MULTIPLE-VERSION PROGRAMS AND COMPUTER SYSTEM THEREFOR

Masayuki Orimo, Kawasaki; Kinji Mori, Machida; Katsumi Kawano, Kawasaki; Shigeki Hirasawa, Sagamihara; Hiroshi Fujise, Yokohama; Hitoshi Suzuki, Owariasahi, and Tomoaki Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

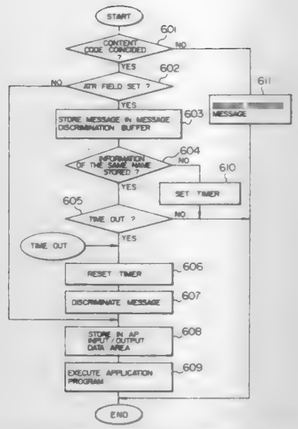
Filed Jun. 3, 1994, Ser. No. 253,482
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—676 **11 Claims**

8. A computer system comprising:

a transmission line for transmitting messages;

a plurality of first processors, connected to said transmission line, for executing multiple-version programs each performing a same function, each of said first processor including:

program execution means for executing a respective one of said programs,



message preparation means for preparing a message containing data derived from the execution of said respective one of said programs and attribute information indicating which of said programs generated said data, and

first interface means for sending the message prepared by said message preparation means to said transmission line; and

a second processor connected to said transmission line and including:

second interface means for receiving messages prepared and sent from said first processor along said transmission line,

message decoding means for extracting the data and attribute information contained in each of the messages received by said interface,

selection means for selecting data contained in one of said messages based on the data and attribute information contained in each of said messages, and

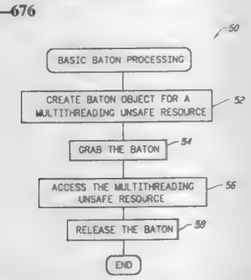
program execution means for executing a program, other than one of said multiple-version programs, by using the data selected by said selection means.

5,630,136

METHOD AND APPARATUS FOR SERIALIZING ACCESS TO MULTITHREADING UNSAFE RESOURCES

Andrew E. Davidson, Boulder Creek, Calif.; Maurice Balick, Fairhaven, Md., and Alan Snyder, Palo Alto, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 9, 1995, Ser. No. 494,117
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—676 **27 Claims**



8. A computer-implemented method for synchronizing multithreaded processes so that multiple threads can safely access a multithreading unsafe algorithm, said method comprising the computer-implemented steps of:

(a) creating baton objects for each thread desiring access to a multithreading unsafe algorithm, each of the baton objects contending for a baton associated with the multithreading unsafe algorithm;

(b) before one of the threads calls the multithreading unsafe algorithm, requiring the baton object associated with the one of the threads to grab the baton associated with the multithreading unsafe algorithm;

(c) subsequent to said requiring step (b), permitting the thread associated with the baton object holding the baton to call the multithreading unsafe algorithm, wherein the multithreading unsafe algorithm may only be called by a particular thread when such thread's associated baton object holds the baton;

(d) returning from the multithreading unsafe algorithm; and

(e) subsequent to said returning step (d), releasing the baton from the baton object that grabbed the baton in step (b); and

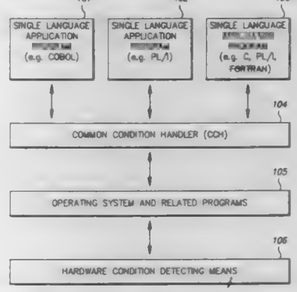
whereby when a particular baton object holds the baton, other baton objects are prevented from holding the baton and the threads associated with the baton object that are prevented from holding the baton are prevented from accessing the multithreading unsafe algorithm.

5,630,137

CONDITION HANDLING IN A MULTI-LANGUAGE COMPUTER PROGRAM

William P. Carney, San Jose, Calif.; Ralph O. Conder, Deerfield Beach, Fla.; Laurence E. England, Morgan Hill, Calif.; Jeffrey A. Grantz, Boca Raton, Fla.; Daniel R. Hicks, Byron, Minn.; George Lausman, North York, Canada; Robert M. Smith, Morgan Hill, Calif., and William N. J. Tindall, Toronto, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 755,706, Sep. 6, 1991, abandoned.
This application Feb. 13, 1995, Ser. No. 387,494
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—678 **48 Claims**



1. A method for handling conditions in a computer system, the conditions occurring during execution of a program including routines prepared in a plurality of computer programming languages (a multi-language thread), comprising the steps of:

(a) initializing a condition processing means to turn over control of the computer system to a means for managing cooperatively condition handlers for said multi-language thread while preserving a language semantic of an executing routine, procedure, or function (a Common Condition Handler (CCH) when a condition occurs;

(b) queuing a plurality of language specific condition handlers (LSH) as a program routines are initialized, each LSH being associated with a separate stack frame of each separate program routine and corresponding to the language in which the separate program routine is written;

(c) queuing one or more user condition handler routines (User Handlers) as requested by the program with each being associated with a stack frame;

(d) detecting occurrence of a condition and determining a current stack frame, then executing a last queued LSH for the

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current stack frame to determine whether the condition is enabled and resuming execution of the program if the condition is not enabled;

(e) executing the User Handlers for the current stack frame in queue order beginning with the last queued User Handler until one of the User Handlers indicates that the condition has been handled or until the queue is empty;

(f) executing the last queued LSH for the current stack frame to handle the condition if none of the User Handlers handled the condition; and

(g) applying semantics of the high level language of the routine, procedure or function where the condition occurred to handle the condition if the condition needs to be handled after each queue of User Handlers and each queued LSH associated with the stack had an opportunity to handle the condition.

5,630,138

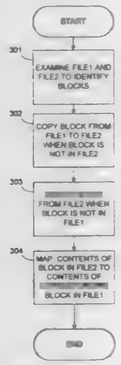
METHOD AND SYSTEM FOR MERGING FILES HAVING A PARALLEL FORMAT

Suryanarayanan V. Raman, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 996,705, Dec. 24, 1992. This application May 8, 1995, Ser. No. 436,929

Int. Cl.[6] G06F *7/16;7/24*

U.S. Cl. 395—712 **9 Claims**



5. A method in a computer system for performing a merge of a first file and a second file into an output file, the first file and the second file containing blocks, each block having an identifier and containing instruction, wherein a plurality of the instructions cause the computer system to display a graphical object having attributes, comprising the computer-implemented steps of:

comparing the block identifiers of the first file with the block identifiers of the second file to identify a pair of blocks formed by a block in the first file and a block in the second file that have equivalent block identifiers and to identify additional blocks that are in the first file and not in the second file;

storing the additional blocks in the output file;

for each pair of blocks identified as having equivalent block identifiers,

comparing the instructions in the block from the first file to the instructions in the block from the second file to identify equivalent instructions in the block of the first file that are equivalent to instructions in the block of the second file, to identify additional instructions in the block of the first file that are not in the block of the second file, and to determine partially matching instructions, wherein a first instruction and second instruction are partially matching instructions when at least one of the attributes of the graphical object that is caused to be displayed by the first instruction is equivalent to at least one of the attributes of the graphical object that is caused to be displayed by the second instruction;

storing the equivalent instructions from the block in the second file in the output file; and

storing the additional instructions in the output file.

5,630,139

PROGRAM DOWNLOAD TYPE INFORMATION PROCESSOR

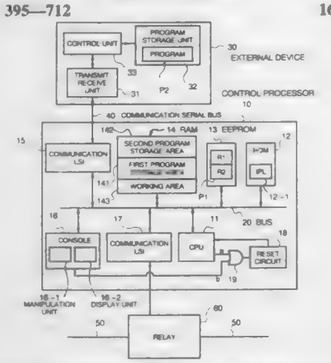
Hirokazu Ozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 8, 1995, Ser. No. 385,683

Claims priority, application Japan, Feb. 10, 1994, 6-037831

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—712 **16 Claims**



1. A program download type information processor comprising:

control means including a CPU for executing programmed control; and

external storage means for storing a new program replacing a current program being executed by the CPU of said control means;

said control means including:

first storage means for storing a program for executing ordinary processing and program download control; and

second storage means having a first storage area for loading the program stored in said first storage means to be executed by said CPU and a second storage area for storing a new program downloaded from said external storage means;

said CPU, at its activation, executing ordinary processing under control of said ordinary processing program loaded from said first storage means into the first storage area of said second storage means; and

said CPU executing said download control program without stopping said ordinary processing, to download said new program stored in said external storage means into the second storage area of said second storage means and store said new program into said first storage means after the down-loading.

5,630,140

ORDERED AND RELIABLE SIGNAL DELIVERY IN A DISTRIBUTED MULTIPROCESSOR

Ramin Modiri; Srinivasa D. Murthy, and Alan L. Rowe, all of San Jose, Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

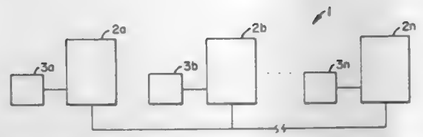
Filed Jan. 23, 1995, Ser. No. 377,387

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—726 **42 Claims**

1. A method for ordering the delivery of signals to a process in a distributed data processing system, the system having a plurality of distributed, interconnected processors, each of said processors having a memory, said method comprising:

ordering said plurality of processors;



establishing one of said plurality of processors as a control processor that maintains a global lock;

generating on a first signalling processor between or among (hereinafter, "among") said plurality of processors a first signal for delivery to said process;

generating on a second signalling processor among said plurality of processors a second signal for delivery to said process;

after said first step of generating, requesting of said control processor for said first signalling processor said global lock;

after said step of requesting, requesting of said control processor for said second signalling processor said global lock;

after said step of requesting for said first signalling processor, acknowledging to said first signalling processor that said first signalling processor has the global lock;

after said step of requesting for said second signalling processor, failing to acknowledge to said second processor that said second signalling processor has said global lock;

after said step of acknowledging, sending said first signal to each of said plurality of processors in order;

after said step of failing to acknowledge, refraining from sending said second signal to any of said plurality of processors;

after said step of sending, relinquishing said global lock to said control processor;

receiving said first signal;

then delivering said first signal to said process; and

then delivering said second signal to said process.

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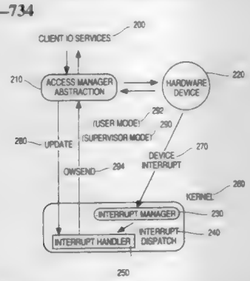
HIERARCHICAL APPARATUS AND METHOD FOR PROCESSING DEVICE INTERRUPTS IN A COMPUTER SYSTEM

Patrick D. Ross, Sunnyvale, and George W. Norman, Fremont, both of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Continuation of Ser. No. 36,791, Mar. 25, 1993, abandoned. This application Mar. 7, 1996, Ser. No. 612,199

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—734 **17 Claims**



1. An apparatus for providing interrupt processing utilizing interrupt management means for distributing interrupts to interrupt handlers for a plurality of devices connected together in a multi-level branching hardware hierarchy having a root level device and at least one other level having a plurality of leaf level devices in a computer system, the apparatus comprising:

(a) a plurality of interrupt handlers connected together in a multi-level branching software hierarchy having a root level interrupt handler corresponding to said root level device and a plurality of leaf level interrupt handlers, each of said plurality of leaf level interrupt handlers corresponding to one of said plurality of leaf lever devices;

(b) processing means in one of said interrupt handlers at a first level in said software hierarchy for determining a device interrupt state;

(c) a first interrupt handler dispatch means in said one interrupt handler for analyzing said device interrupt state and initiating one of said plurality of interrupt handlers at a second level lower than said first level in said software hierarchy for each of said plurality of devices which is generating an interrupt at the corresponding level in the hardware hierarchy;

(d) means in each of said initiated second level interrupt handlers for servicing said device interrupt state; and

(e) processing means for passing information from each of said initiated second level interrupt handlers to an application to complete interrupt notification.

5,630,142

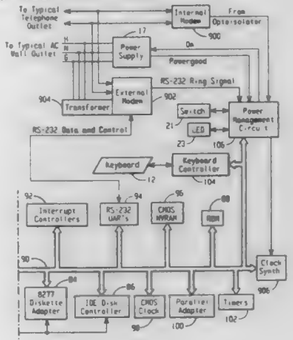
MULTIFUNCTION POWER SWITCH AND FEEDBACK LED FOR SUSPEND SYSTEMS

Dwayne T. Crump; Steven T. Pancoast; Duane E. Norris, and Paul H. Benson, IV, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1994, Ser. No. 302,147

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **8 Claims**



1. A computer system capable of operating in any selected one of four states of power management, namely a normal operating state in which code is executed normally by said computer system, a standby state, an off state, and a suspend state, the system comprising:

(a) a CPU capable of executing code;

(b) a power management unit in circuit communication with said CPU for changing said computer system between each of said states and at least one other of said states in response to at least one of a plurality of preselected events; said power management unit having an internal failsafe timer in circuit communication with said CPU, said failsafe timer being set to expire after a first preselected time interval after said code executing on said CPU ceases executing properly,

(c) a switch in circuit communication with said power management unit;

(d) a peripheral device in circuit communication with said CPU and said power management unit and capable of operating in a selected one of a high electrical power usage state and a low electrical power usage state, said peripheral device changing between said high and low electrical power usage states in response to said power management unit;

(e) a non-volatile storage device in circuit communication with said CPU, said non-volatile storage device requiring no electrical power to maintain data stored therein:

(f) volatile system memory in circuit communication with said CPU and for storing memory data;

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(g) a power supply in circuit communication with said CPU and said power management unit and said peripheral device and comprising power selection circuitry for selectively providing system power from an external source to said computer system, said power supply being capable of operating in a selected one of a first power supply state and a second power supply state, said power supply changing between said first and second power supply states in response to said power management unit, and further characterized by having circuitry for providing auxiliary power to said power management unit;

wherein said first power supply state is characterized by said power supply providing system power to said CPU, said non-volatile storage device, and said volatile system memory and auxiliary power to said power management unit from said external source;

wherein said second power supply state is characterized by said power supply not providing system power to said CPU, said non-volatile storage device, and said volatile system memory from said external source and said power supply providing auxiliary power to said power management unit from said external source;

(1) said normal operating state being characterized in that said power supply is in said first power supply state and said peripheral device is in said high electrical power usage state;

(2) said standby state being characterized in that said power supply is in said first power supply state and said peripheral device is in said low electrical power usage state;

(3) said suspend state being characterized in that said power supply is in said second power supply state and code which was executing on said CPU prior to entering said suspend state has been reversibly interrupted such that the execution of the code on said CPU may be resumed after said power supply changes to said first power supply state;

(4) said off state being characterized in that said power supply is in said second power supply state and code which was executing on said CPU prior to entering said off state has been irreversibly interrupted; and

(5) said power management unit being characterized in that while in said standby state or said suspend state or said on state, responsive to a closure event of said switch, said power management unit tests said failsafe timer for expiration and if said failsafe timer has expired, said power management unit immediately causes said computer system to change to said off state.

5,630,143

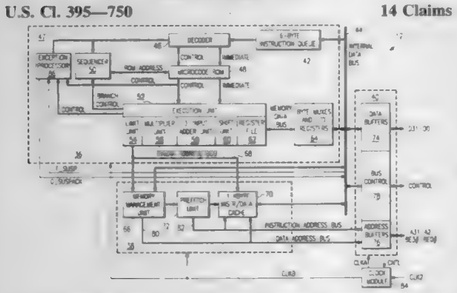
MICROPROCESSOR WITH EXTERNALLY CONTROLLABLE POWER MANAGEMENT

Robert Maher, Carrollton; Raul A. Garibay, Jr., Plano; Margaret R. Herubin, Coppell, and Mark Bluhm, Carrollton, all of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Continuation of Ser. No. 858,579, Mar. 27, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,895

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **14 Claims**



1. A microprocessor device having external interface terminals, comprising:

a plurality of subcircuits including at least one pipeline subcircuit to execute instructions for data processing;

clock pulse generator circuitry which is an internal part of said microprocessor device, wherein said clock pulse generator circuitry is coupled to said plurality of subcircuits to supply clock pulses thereto;

detector circuitry which is coupled to one of said external interface terminals to detect a control signal at said one external interface terminal from an external source; and

circuitry which is coupled to said detector circuitry to respond to said control signal by disabling the supply of said clock pulses by said clock pulse generator circuitry to said at least one pipeline subcircuit, after completion of execution of an instruction currently in said at least one pipeline subcircuit, and to generate a signal at another of said external interface terminals, indicating disablement of the supply of said clock pulses to said at least one pipeline subcircuit.

5,630,144

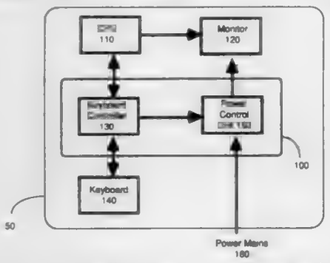
DESKTOP COMPUTER MONITOR POWER CONTROL USING KEYBOARD CONTROLLER

Kenneth M. Woog, El Toro; Tony Casano, Felton, and Mark Caradori, Milpitas, all of Calif., assignors to Phoenix Technologies Ltd., Santa Clara, Calif.

Continuation of Ser. No. 20,292, Feb. 19, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 384,350

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **9 Claims**



1. A system for controlling power to a peripheral device associated with a computer, the computer including a central processing unit and an input device in addition to the peripheral device, the system comprising:

an input device controller having a port pin, the input device controller monitoring a time duration of inactivity of said input device and producing, without intervention by said central processing unit, a signal on said port pin responsive to said time duration of inactivity of said input device exceeding a predetermined threshold value; and

power control means coupled to said port pin and to said peripheral device for controlling power to said peripheral device responsive to said signal on said port pin without intervention by said central processing unit.

5,630,145

METHOD AND APPARATUS FOR REDUCING POWER CONSUMPTION ACCORDING TO BUS ACTIVITY AS DETERMINED BY BUS ACCESS TIMES

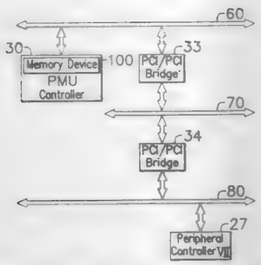
David Y. Chen, Taipei, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed May 5, 1995, Ser. No. 435,351

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **11 Claims**

1. A power management method for a computer, the computer including a plurality of Peripheral Component Interconnect (PCI) buses, a plurality of bus controllers for controlling the PCI buses, each bus controller being capable of generating an asynchronous signal, a plurality of peripheral devices connected to the PCI buses, each peripheral device being capable of generating an asynchronous signal, a Power Management Unit (PMU) controller connected to a first of the PCI buses the PMU controller being capable of detecting an asynchronous signal generated by any one of the bus controllers or peripheral devices, the method comprising the steps of:



sending clock pulses to the peripheral devices,

storing a first time constant in a memory,

reading a head configuration of a peripheral device to obtain a second time constant,

detecting an asynchronous signal generated by any one of the bus controllers or peripheral devices,

stopping the sending of a clock signal to the bus controllers and the peripheral devices when the second time constant is smaller than the first time constant plus a predetermined time constant greater than or equal to zero, and

restarting the clock signal when the asynchronous signal generated by any one of the bus controllers or peripheral devices is detected by the PMU controller.

5,630,146

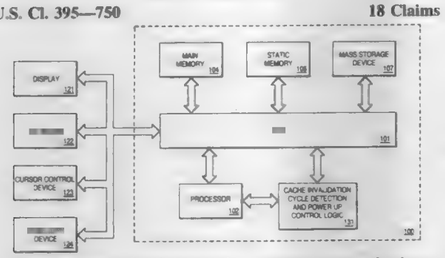
METHOD AND APPARATUS FOR INVALIDATING A CACHE WHILE IN A LOW POWER STATE

James W. Conary, Aloha, and Robert R. Beutler, Lake Oswego, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 36,470, Mar. 24, 1993, Pat. No. 5,481,731, which is a continuation-in-part of Ser. No. 778,575, Oct. 17, 1991, abandoned. This application Oct. 16, 1995, Ser. No. 543,523

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **18 Claims**



1. An integrated circuit for use in a computer system having an external clock generator that provides a frequency input clock signal, said integrated circuit comprising:

a phase locked loop (PLL) circuit that generates at least one clock signal in response to the frequency input clock signal;

a processor that processes data synchronous with said at least one clock signal;

a cache memory coupled to said processor that stores and provides information to said processor;

a first logic circuit that places said integrated circuit in a reduced power consumption state;

a second logic circuit that powers up said integrated circuit out of said reduced power consumption state to run an invalidation cycle in said cache memory to invalidate information in the cache memory, wherein said second logic circuit places said integrated circuit back into the reduced power consumption state after said invalidation cycle has been completed.

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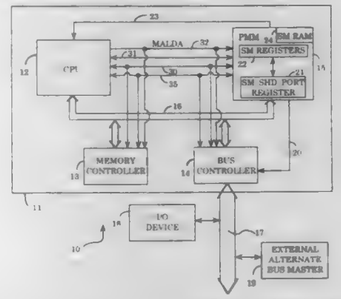
SYSTEM MANAGEMENT SHADOW PORT

Sham Datta; Jayesh Joshi, both of Santa Clara, and James P. Kardach, San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 168,953, Dec. 17, 1993, abandoned. This application Feb. 15, 1996, Ser. No. 601,697

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—750 **18 Claims**



1. A power management device operating in combination with a power management software routine to monitor access request signals for a bus slave which are placed on a system bus by an alternate bus master during a current bus cycle the power management device comprising:

first means for capturing data, address and status information of the current bus cycle, said first means is temporarily disabled from capturing information pertaining to a bus cycle immediately following the current bus cycle upon determining that said address of the current bus cycle is directed to the bus slave when it is non-accessible; and

second means for subsequently accessing said data, address and status information stored within said first means through a single port, said second means includes a system management shadow port register that is accessible to said power management software routine.

5,630,148

DYNAMIC PROCESSOR PERFORMANCE AND POWER MANAGEMENT IN A COMPUTER SYSTEM

David Norris, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 261,457, Jun. 17, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 613,778

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750 **15 Claims**

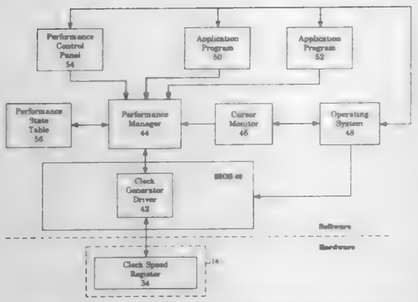
1. A computer system, comprising:

clock generator circuit having a clock speed register and circuitry for generating a processor clock signal at a frequency determined by the clock speed register;

storage means for storing processor instructions;

processor coupled to the clock generator circuit to receive the processor clock signal such that the processor clock signal synchronizes the processor, the processor coupled to the storage means to fetch and execute a performance manager program that writes the clock speed register according to a performance state selected by an application program to be

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executed by the processor, the performance state having been selected from a performance state table maintained by the performance manager program.

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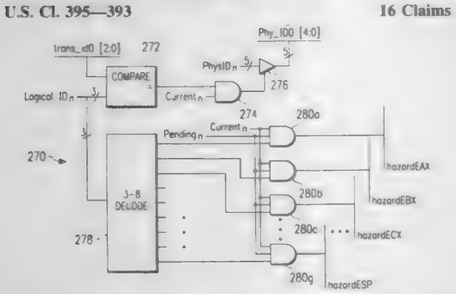
PIPELINED PROCESSOR WITH REGISTER RENAMING HARDWARE TO ACCOMMODATE MULTIPLE SIZE REGISTERS

Mark Bluhm, Carrollton, Tex., assignor to Cyrix Corporation, Richardson, Tex.

Continuation of Ser. No. 138,281, Oct. 18, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 561,209

Int. Cl.[6] G06F *9/30;12/02*

U.S. Cl. 395—393 **16 Claims**



1. A microprocessor including register renaming apparatus, the microprocessor having at least one instruction pipeline with a plurality of stages for processing a stream of instructions, and having a plurality of logical registers, the stream of instructions including write instructions that when processed addressably write to a logical register having multiple addressable portions, comprising:

a plurality of physical registers exceeding in number the plurality of logical registers, and

register translation circuitry coupled to said at least one instruction pipeline and to said physical registers, said register translation circuitry being operable to allocate, for each of at least some of said write instructions processed, a physical register to said logical register based at least in part on which of said addressable portions of said logical register is addressed by said write instruction:

wherein, for a current write instruction that is processed when a write is pending to said logical register in response to a previous write instruction, said register translation circuitry selectively allocates a new physical register to said logical register based on which of said addressable portions of said logical register are addressed by said previous and current instructions.

5,630,150

AUTOMATIC EDITING DEVICE FOR AN ENGLISH LETTER

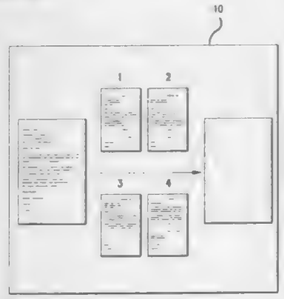
Haruki Kira, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 97,234, Jul. 27, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 517,611

Claims priority, application Japan, Aug. 5, 1992, 4-231463

Int. Cl.[6] G06F *17/24*

U.S. Cl. 395—789 **27 Claims**



1. A text processing device, comprising:

input means for inputting text data and commands;

data storage means for storing the text data input from said input means;

a plurality of predetermined document formats stored in the data storage means, each of the plurality of predetermined document formats corresponding to a different predetermined arrangement of text sections in a document;

display means for displaying the text data, the display means including a display;

format display control means for displaying a graphical layout of at least one of the plurality of predetermined document formats on said display according to an automatic edit command input from said input means;

format selecting means for selecting and setting one of the at least one of the plurality of predetermined document formats through the graphical layout displayed on said display; and

edit control means for automatically editing the text data inputted from said input means and stored in said data storage means to place the text data into the selected one of the plurality of predetermined document formats.

5,630,151

DATA DRIVEN INFORMATION PROCESSOR GENERATING MULTIDIMENSIONAL GENERATION NUMBER IDENTIFYING GENERATION AND ADDITIONAL ATTRIBUTES OF DATA IN DATA PACKET

Tsuyoshi Muramatsu, and Ryuji Miyama, both of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 2, 1994, Ser. No. 299,098

Claims priority, application Japan, Sep. 2, 1993, 5-218774

Int. Cl.[6] G06F *15/82;15/00*

U.S. Cl. 395—377 **15 Claims**

9. A data driven information processor comprising:

data packet producing means for producing data packets; and

a data flow ring architecture for operating, according to data flow computational protocol, upon data packets received from the data packet producing means;

wherein the data packet producing means configures each data packet to include a multidimensional generation number, the multidimensional generation number identifying at least two things to the data flow ring architecture, the first thing being a generation to which data contained in the data packet belongs, and the second thing being an additional attribute of the data contained in the data packet;

wherein the data driven information processor is a data driven image processor that operates upon a sequence of images;

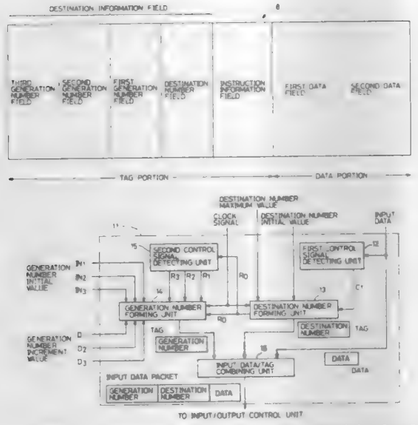
wherein each image in the sequence is identified with a field number;

wherein each image is organized as a two-dimensional matrix of pixels;

wherein the data packet producing means configures the multidimensional generation number to have a first component and a second component:

wherein the data packet producing means establishes a field number as the first component of the multidimensional generation number, thereby identifying the field number as the generation; and

wherein the data packet producing means establishes a location of a pixel in the matrix as the second component of the multidimensional generation number, thereby identifying the pixel location as the attribute.



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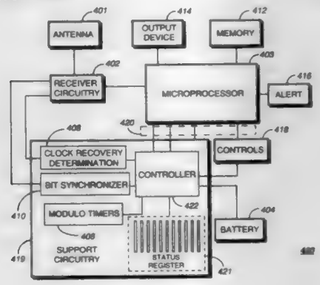
COMMUNICATION PROTOCOL BETWEEN MASTER AND SLAVE DEVICE WITH REGISTER INFORMATION SHARING

Joan S. DeLuca, and Barry W. Herold, both of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 884,689, May 18, 1992, abandoned. This application Oct. 3, 1994, Ser. No. 317,107

Int. Cl.[6] H03K *3/3562*

U.S. Cl. 395—800 **17 Claims**



5,630,153

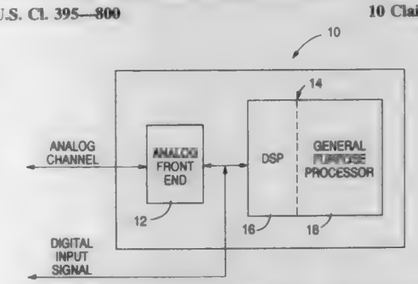
INTEGRATED DIGITAL SIGNAL PROCESSOR/GENERAL PURPOSE CPU WITH SHARED INTERNAL MEMORY

Amos Intrater, Lantau, Hong Kong; Moshe Doron, Sunnyvale, Calif.; Gideon Intrater, Ramat-Gan; Lev Epstein, Holon, both of Israel; Maurice Valentaten, Geldtendorf, Germany, and Israel Greiss, Raanana, Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 11,102, Jan. 29, 1993, abandoned, which is a continuation of Ser. No. 467,148, Jan. 18, 1990, abandoned. This application Oct. 4, 1994, Ser. No. 317,783

Int. Cl.[6] G06F *9/26;9/40;9/44;13/36*

U.S. Cl. 395—800 **10 Claims**



1. A data processing system for processing a digital signal, the data processing system comprising:

a shared bus for transferring both data and instructions;

a shared memory array for storing both data and general purpose instructions and that is connected for transfer of both data and general purpose instructions between the shared bus and the shared memory array;

a digital signal execution unit connected to the shared bus for processing the digital signal utilizing both data transferred between the shared memory array and the digital signal execution unit on the shared bus and a selected sequence of individual digital signal processor (DSP) instructions, the selected sequence of DSP instructions consisting of individual general purpose instructions transferred between the shared memory array and the digital signal execution unit on the shared bus; and

a general purpose processor connected to the shared bus for controlling the digital signal execution unit by selecting each general purpose instruction to be transferred to the digital signal execution unit from the shared memory array

whereby the selected sequence of individual DSP instructions executed by the digital signal execution unit is selectively configurable by the general purpose processor.

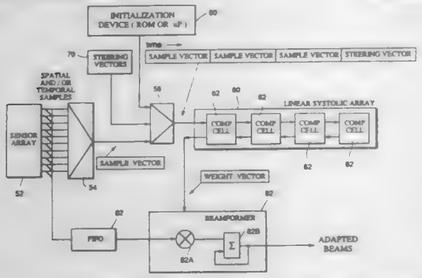
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5,630,154

PROGRAMMABLE SYSTOLIC ARRAY SYSTEM ARRANGED IN A FOUND ARRANGEMENT FOR PASSING DATA THROUGH PROGRAMMABLE NUMBER OF CELLS IN A TIME INTERLEAVED MANNER

Gregory D. Bolstad, Orange; Kenneth B. Neeld, Fountain Valley; Charles J. Robie, Fullerton, and John R. Staub, Corona, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 11, 1994, Ser. No. 321,278
Int. Cl.[6] G06F *15/16;15/82*
U.S. Cl. 395—800 30 Claims



1. A programmable processor system for performing extremely high throughput matrix arithmetic operations on linear systems of equations in real time, said processor system comprising a linear systolic array of computation cells, each cell comprising a plurality of vector rotation stages, and programmable means responsive to configuration data to configure respective cells according to said configuration data, said configuration data determining which cells are operational during said matrix arithmetic operations, where in said linear array is programmable in operational cell length, wherein said computation cells are programmably arranged in a folded arrangement wherein data is passed successively through a programmable under of said cells in a first direction and back through said cells in a second direction in a time interleaved manner, and wherein said cells further include programmable latency delay means for delaying transfer of data between cells in order to achieve proper interleaving of said data for different operational array lengths, said configuration data further includes latency programming data, said programmable latency delay means responsive to said latency programming data to set said delay means in accordance with said latency programming data.

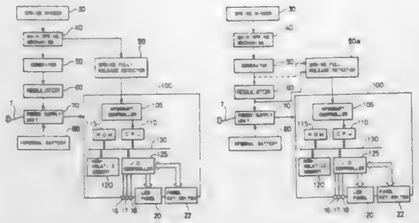
5,630,155

PORTABLE COMPUTER SYSTEM WITH MECHANISM FOR ACCUMULATING MECHANICAL ENERGY FOR POWERING THE SYSTEM

Nobuo Karaki, and Osamu Miyazawa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 710,488, Jun. 5, 1991, abandoned.
This application Oct. 18, 1994, Ser. No. 323,698
Claims priority, application Japan, Jun. 5, 1990, 2-146763; Jun. 4, 1991, 3-160974
Int. Cl.[6] H02P *9/04;* G06F *11/30*
U.S. Cl. 395—800 22 Claims

1. A portable computer system comprising:
a main computer circuit including a CPU and a memory;
energy accumulation means for accumulating and storing mechanical energy, comprising a spring member for storing mechanical energy, said spring member undergoing a change in position as a function of stored mechanical energy;
energy affording means coupled to said energy accumulation means for affording mechanical energy to said energy accumulation means through operation by a user;
power supply means coupled between said energy accumulation means and said main computer circuit for converting said mechanical energy accumulated and stored in said energy



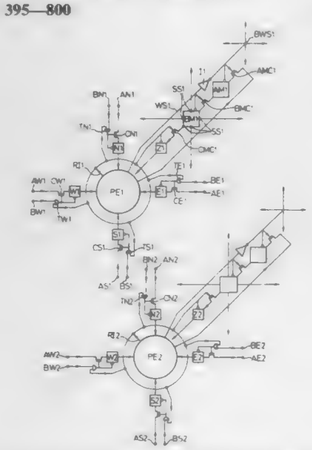
accumulation means into electrical energy and supplying said electrical energy to said main computer circuit;
energy depletion detecting means coupled to said spring member of said energy accumulation means for detecting a drop of said mechanical energy accumulated and stored in said energy accumulation means before said mechanical energy decreases to a lower limit level ensuring normal operation for said main computer circuit, comprising means for detecting the position of said spring member and outputting a signal representing said drop of said mechanical energy based on the detected position of said spring member; and
means for altering functioning of said CPU from a first operating state existing prior to receiving said signal output from said energy depletion detecting means to a second operating state of reduced power consumption upon receiving said signal output from said energy depletion detecting means.

5,630,156

PROCESS FOR PARALLEL OPERATION OF SEVERAL COMPUTATION UNITS, ESPECIALLY IN IMAGE PROCESSING, AND CORRESPONDING ARCHITECTURE

Gilles Privat, Meylan; Patricia Planet, Grenoble, and Marc Renaudin, Biviers, all of France, assignors to France Telecom, Paris, France

Filed Oct. 18, 1994, Ser. No. 324,945
Claims priority, application France, Oct. 18, 1993, 93 12368
Int. Cl.[6] G06F *15/80*
U.S. Cl. 395—800 36 Claims



1. A process for affecting a pseudo-asynchronism of operation between several computation units (PE1, PE2) which are together intended to evaluate in an iterative and cellular manner convergence values of a plurality of variables associated respectively with various points (P1–P5) of a predetermined grid (MA), each variable having to satisfy a prespecified iterative relation between itself and n neighboring variables associated with n neighboring grid points (P2–P5), wherein:

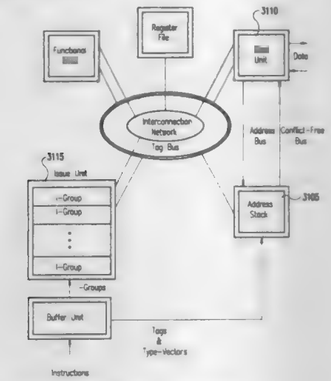
a memory means (AM1, BM1, Z1) is assigned per point of the grid, intended to store successively all the values of the variable associated with this grid point (P1),
the computation units are apportioned in such a way as to assign every grid point (P1) to a computation unit and two distinct computation units (PE1, PE2) to two chosen neighboring points (P1, P2) of the grid,
all the computation units are made to operate in parallel and independently of one another,
and for each current point of the grid,
the computation unit assigned to this current point is made to compute each successive value of the variable associated with this current point on the basis of the value contained in the memory means assigned to the current point and of those available and arising from the memory means assigned to the points neighboring the current point, irrespective of iteration levels to which these available values correspond, and
the said computation unit is made to store each new value thus computed in the memory means associated with the current point.

5,630,157

COMPUTER ORGANIZATION FOR MULTIPLE AND OUT-OF-ORDER EXECUTION OF CONDITION CODE TESTING AND SETTING INSTRUCTIONS

Harry Dwyer, III, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 721,853, Jun. 13, 1991, abandoned.
This application Oct. 25, 1994, Ser. No. 328,933
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—800 6 Claims



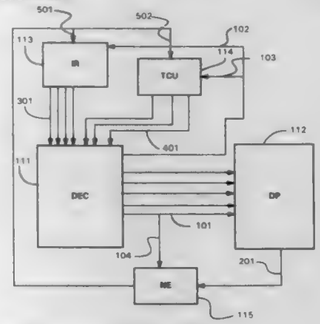
2. A computer system unit, comprising:
bus means for providing a stream of instructions including condition code setting and condition code testing instructions;
a buffer to store instructions until they are issued;
scheduling and issuing unit means for scheduling and issuing multiple concurrent instructions, including condition code setting instructions and condition code testing instructions, which are out-of-order with respect to instruction stream order within a sufficiently short time so that the cycle time of said computer system unit is not limited by the operation time of the scheduling and issuing unit means;
said scheduling and issuinq unit means including means for binding a condition code testing instruction to an immediately precedinq condition code setting instruction and preventing issue of a condition testing instruction until completion of the condition code setting instruction with which it is bound;
multiple condition code registers;
means to attach a tag (CC_tag) to a condition code setting instruction; and
means for using such condition code setting instruction to address a specific condition code register when the condition code setting instruction executes.

5,630,158

CENTRAL PROCESSING UNIT INCLUDING INHIBITED BRANCH AREA

Kazuhiko Hara, Sanda; Shinichi Yamaura, Kobe; Kelichi Yoshioka, Sanda, and Takao Katayama, Ikeda, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,936
Claims priority, application Japan, Dec. 22, 1993, 5-323813
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—800 5 Claims



1. A central processing unit comprising:
an instruction register storing instruction codes;
a timing control unit controlling timings of steps of execution of an instruction;
an execution unit executing an operation on data and temporarily storing data, the execution unit having a program counter and a data bus;
a decoder decoding instruction codes read from the instruction register and controlling the instruction register, the timing control unit and the execution unit; and
a next enable unit for providing an indication signal indicating whether proceeding to a next instruction should be performed, and controlling outputting of the indication signal to the instruction register and the timing control unit based on first and second signals,
wherein the first signal is supplied from the decoder and indicates that data is on the data bus to be input to the program counter, and
the second signal is supplied from the execution unit and indicates whether a counter value of the program counter is an odd number or an even number.

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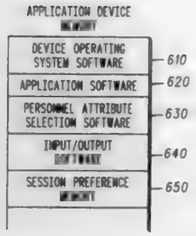
METHOD AND APPARATUS FOR PERSONAL ATTRIBUTE SELECTION HAVING DELAY MANAGEMENT METHOD AND APPARATUS FOR PREFERENCE ESTABLISHMENT WHEN PREFERENCES IN A DONOR DEVICE ARE UNAVAILABLE

William F. Zancho, Hawthorn Woods, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1994, Ser. No. 366,122
Int. Cl.[6] H04Q *7/32;* G06F *9/445*
U.S. Cl. 395—800 35 Claims

1. An application device capable of a preference set-up, said application device comprising:
a port for coupling with a donor device;
a session preference memory capable of storing preferences for a particular user;

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a user interface device; and

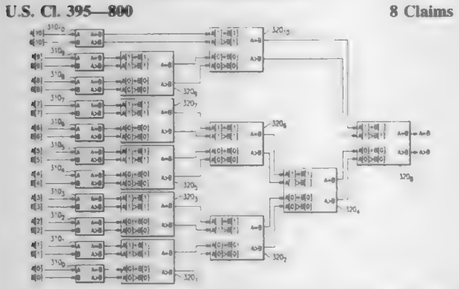
a controller operatively coupled to said user interface device, said session preference memory and said port to access the donor device via the port, wherein said controller determines if a donor device is available when new preferences need to be set-up, wherein said controller connects to the donor device when said controller determines the donor device is available when the new preferences need to be set up to obtain and store preferences from the donor device in said session preference memory, and wherein said controller of the application device performs a preference establishment procedure upon data in the session preference memory procedure by assigning default preferences when said controller determines the donor device is unavailable when the new preferences need to be set up, and wherein said controller refines the default preferences through user interaction with said user interface device to produce refined user preferences.

5,630,160

FLOATING POINT EXPONENT COMPARE USING REPEATED TWO BIT COMPARE CELL

Richard Simpson, Carlton, Great Britain, and Erick Oakland, Zavalla, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1995, Ser. No. 400,709
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—800 **8 Claims**



1. A magnitude comparator for first and second N bit data words comprising:

a set of N single bit comparators, each single bit comparator having an A input receiving one bit of the first N bit data word, a B input receiving a corresponding bit of the second N bit data word, each single bit comparator forming a signal on an A=B output having a first digital state if a signal received on said A input equals a signal received on said B input and supplying said signal received on said A input to an A>B output;

a set of N−1 two bit comparators disposed in at least one layer, each two bit comparator having an A[**0**]=B[**0**] input, an A[**0**]>B[**0**] input, an A[**1**]=B[**1**] input and an A[**1**]>B[**1**] input, each two bit comparator generating at an A=B output an AND of signals received at said A[**0**]=B[**0**] input and said A[**1**]=B[**1**] input and generating at an A>B output a signal equal to said signal received on said A[**1**]>B[**1**] input if said signal received at said A[**0**]=B[**0**] input has a first digital state and generating at said A>B output a signal equal to said signal received on said A[**0**]>B[**0**] input if said signal received at said A[**0**]=B[**0**] input has a second digital state opposite to said first digital state;

a first layer of said two bit comparators each having said A[**0**]=B[**0**] input connected to said A=B output of a first one of said single bit comparators, said A[**0**]>B[**0**] input connected to said A>B output of said first single bit comparator, said A[**1**]=B[**1**] input connected to said A=B output of a second single bit comparator corresponding to a next most significant bit than said first single bit comparator, said A[**1**]>B[**1**] input connected to said A>B output of said second single bit comparator;

subsequent layers of said two bit comparators each having said A[**0**]=B[**0**] input connected to said A=B output of a first two bit comparator of a prior layer, said A[**0**]>B[**0**] input connected to said A>B output of said first two bit comparator, said A[**1**]=B[**1**] input connected to said A=B output of a second comparator of a prior layer corresponding to a next most significant bit than said first two bit comparator, said A[**1**]>B[**1**] input connected to said A>B output of said second comparator;

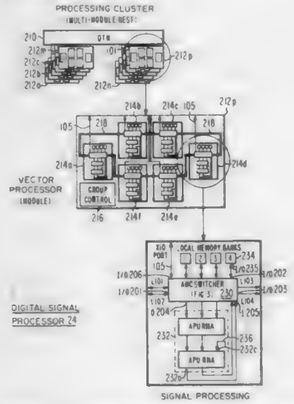
a last layer of two bit comparators consisting of a single two bit comparator, said A=B output of said single two bit comparator of said last layer indicating whether said first N bit data word equals said second N bit data word and said A>B output of said single two bit comparator of said last layer indicating whether said first N bit data word is greater than said second N bit data word if said A=B output indicates inequality.

5,630,161

SERIAL-PARALLEL DIGITAL SIGNAL PROCESSOR

Richard G. Branco, Westmont; Edward J. Monastra, Voorhees, both of N.J., and David J. Ovadia, New York, N.Y., assignors to Martin Marietta Corp., Moorestown, N.J.

Filed Apr. 24, 1995, Ser. No. 428,817
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—800 **3 Claims**



1. An apparatus for processing signals in serial pipeline fashion or in parallel fashion through a plurality of processors, said apparatus comprising:

first, second and third processors, each including an input port and an output port, for processing signals;

first, second and third memories, for temporarily storing and retrieving data;

first, second and third switching means coupled to said first, second and third processors, respectively, and to said first, second and third memories, respectively, each of said first, second and third switching means including local **1** and local **2** input/output ports, at least one of said first, second and third switching means including an external connection input-output port, said first switching means being

for, in a first direction in a first mode of operation, coupling signals from said local **1** port of said first switching means to said input port of said first processing means, and from said output port of said first processing means to said first memory means;

for, in a second direction in a first mode of operation, coupling signals from said local **2** port to said input port of said first processing means, and from said output port of said first processing means to said local **1** port;

for, in a first direction in a second mode of operation, coupling signals from said local **1** port of said first switching means to said input port of said first processing means, and from said output port of said first processing means to said local **2** port of said first switching means;

for, in a second direction in said second mode of operation, coupling signals from said local **2** port of said first switching means to said input port of said first processing means, and from said output port of said first processing means to said local **1** port of said first switching means;

for, in a third mode of operation, for coupling signals from said first memory means to said input port of said first processing means, and from said output port of said first processing means to said first memory means;

for, in a first direction of a fourth mode of operation, coupling signals from said first memory means to said input port of said first processing means, and from said output port of said first processing means to said local **1** port of said first switching means;

for, in a second direction of a fourth mode of operation, coupling signals from said first memory means to said input port of said first processing means, and from said output port of said first processing means to said local **2** port of said first switching means;

for, in a first direction of a fifth mode of operation, coupling signals from said external connection port of said first switching means, if such a port exists, to said first memory means; and

for, in a second direction of said fifth mode of operation, coupling signals to said external connection port of said first switching means, if such a port exists, from said first memory means;

said second switching means being

for, in a first direction in a first mode of operation, coupling signals from said local **1** port of said second switching means to said input port of said second processing means, and from said output port of said second processing means to said second memory means;

for, in a second direction in said first mode of operation, coupling signals from said local **2** port of said second switching means to said input port of said second processing means, and from said output port of said second processing means to said local **1** port of said second switching means;

for, in a first direction in a second mode of operation, coupling signals from said local **1** port of said second switching means to said input port of said second processing means, and from said output port of said second processing means to said local **2** port of said second switching means;

for, in a second direction in said second mode of operation, coupling signals from said local **2** port of said second switching means to said input port of said second processing means, and from said output port of said second processing means to said local **1** port of said second switching means;

for, in a third mode of operation, coupling signals from said second memory means to said input port of said second processing means, and from said output port of said second processing means to said second memory means;

for, in a first direction of a fourth mode of operation, coupling signals from said second memory means to said input port of said second processing means, and from said output port of said second processing means to said local **1** port of said second switching means;

for, in a second direction of a fourth mode of operation, coupling signals from said second memory means to said input port of said second processing means, and from said output port of said second processing means to said local **2** port of said second switching means;

for, in a first direction of a fifth mode of operation, coupling signals from said external connection port of said second switching means, if such a port exists, to said second memory means; and

for, in a second direction of said fifth mode of operation, coupling signals to said external connection port of said second switching means, if such a port exists, from said second memory means;

said third switching means being

for, in a first direction in a first mode of operation, coupling signals from said local **1** port of said third switching means to said input port of said third processing means, and from said output port of said third processing means to said third memory means;

for, in a second direction in said first mode of operation, coupling signals from said local **2** port of said third switching means to said input port of said third processing means, and from said output port of said third processing means to said local **1** port of said third switching means;

for, in a first direction in a second mode of operation, coupling signals from said local **1** port of said third switching means to said input port of said third processing means, and from said output port of said third processing means to said local **2** port of said third switching means;

for, in a second direction in said second mode of operation, coupling signals from said local **2** port of said third switching means to said input port of said third processing means, and from said output port of said third processing means to said local **1** port of said third switching means;

for, in a third mode of operation, coupling signals from said third memory means to said input port of said third processing means, and from said output port of said third processing means to said third memory means;

for, in a first direction of a fourth mode of operation, coupling signals from said third memory means to said input port of said third processing means, and from said output port of said third processing means to said local **1** port of said third switching means;

for, in a second direction of a fourth mode of operation, coupling signals from said third memory means to said input port of said third processing means, and from said output port of said third processing means to said local **2** port of said third switching means;

for, in a first direction of a fifth mode of operation, coupling signals from said external connection port of said third switching means, if such a port exists, to said third memory means; and

for, in a second direction of said fifth mode of operation, coupling signals to said external connection port of said third switching means, if such a port exists, from said third memory means;

interconnection means coupled to said local **1** and local **2** input/output ports of said first, second, and third switching means, for coupling said local **2** input/output port of said first switching means to said local **1** input/output port of said second switching means, for coupling said local **2** input/output port of said second switching means to said local **1** input/output port of said third switching means, and for coupling said local **2** input/output port of said third switching means to said local **1** input/output port of said first switching means.

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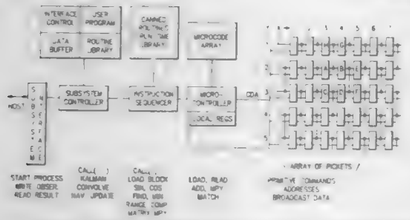
ARRAY PROCESSOR DOTTED COMMUNICATION NETWORK BASED ON H-DOTS

Paul A. Wilkinson, Apalachin, and Peter M. Kogge, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 887,997, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 611,594, Nov. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 798,788, Nov. 27, 1991, abandoned. This application Apr. 27, 1995, Ser. No. 430,708

Int. Cl.° G06F *15/16*

U.S. Cl. 395—800 **18 Claims**



1. A parallel SIMD or MIMD array processor communication network, comprising:

a plurality of processing elements interconnected in an array topology configuration, each of the processing elements having at least two ports for communication with other processing elements;

a plurality of physical links, each physical link providing an interconnection among four processing elements of said plurality of processing elements, said physical link having four ports respectively coupled to one of the ports for each of the four processing elements, and having a common low impedance connection among the four ports of the physical link such that any said one of the ports for each of the four processing elements is coupled by a low impedance path through said physical link to another one of the ports of the four processing elements over the physical link, and wherein said physical link is independent of providing a common, physical bus interconnection between a first, second, and third processing element for any identically specified direction and dimension relationship, according to the array topology, between the first and the second processing element and between the second and the third processing element; and

a communications control mechanism in each of the four processing elements operative in transferring a message from one of the four processing elements to another one of the four processing elements over the physical link.

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COMPUTER HAVING A SINGLE BUS SUPPORTING MULTIPLE BUS ARCHITECTURES OPERATING WITH DIFFERENT BUS PARAMETERS

Henry T. Fung; Siu K. Tsang, both of San Jose; Phillip M. Mitchell, Milpitas, and Norman P. Farquhar, San Jose, all of Calif., assignors to Vadem Corporation, San Jose, Calif.

Continuation of Ser. No. 744,710, Aug. 9, 1991, abandoned. This application May 26, 1995, Ser. No. 452,246

Int. Cl.° G06F *13/00*

U.S. Cl. 395—800 **27 Claims**

1. A data processing system comprising.

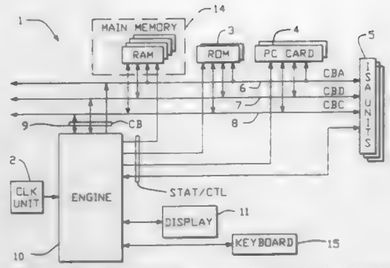
a processor,

a plurality of external bus devices connected to the processor for communicating with the processor at different times, said bus devices operating with different timing parameters that include different information transfer rates associated with different bus bandwidths,

a plurality of special-purpose buses each connected to the processor and to one of the external devices and each operating at a different bus bandwidth corresponding to the bus bandwidth associated with the bus device to which it is connected.

a single common bus connecting the plurality of external bus devices to the plurality of special-purpose buses, and

bus processing means for controlling the bus bandwidth of the common bus, to correspond to the bus bandwidth associated with the external bus device that is communicating with the processor at any one of said different times.



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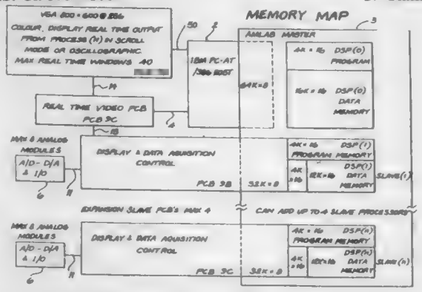
SCIENTIFIC INSTRUMENT EMULATOR HAVING A COMPUTER AND AN ANALOG SIGNAL INTERFACE FOR REAL-TIME SIGNAL PROCESSING

Donald V. Williams, Balmain; John B. Keeble, Neutral Bay; John D. Oates, Quakers Hill, and Alejandro G. Campos, North Rocks, all of Australia, assignors to Associative Measurements Pty. Ltd., Australia

Continuation of Ser. No. 343,368, Nov. 22, 1994, abandoned, and Ser. No. 843,889, Feb. 27, 1992, abandoned. This application Mar. 29, 1996, Ser. No. 627,908

Int. Cl.° G06F *15/00*

U.S. Cl. 395—800 **17 Claims**



1. A scientific instrument emulator comprising:

a computer including a memory coupled to a processor;

a multifunctional input/output signal module having at least one analogue signal input with digitizing means connected thereto and at least one signal output and being configurable with respect to at least a sampling frequency of said analogue signal input;

a video display coupled to a video display generator, said video display generator being coupled to said processor;

a library program stored in said memory, said library program including a plurality of instrumentation units each being able to be displayed on said video display and each having a predetermined signal processing function;

a set-up program stored in said memory and carried out by said processor to allow an operator to interconnect selected instrumentation units to form an array of interconnected instrumentation units, wherein a sampling frequency for said multifunctional input/output signal module is specified, said set-up program enables contiguous signal feedback interconnection in said array, said array having an output being provided to at least one of the following; said video display, said multifunctional input/output signal module and said memory; and

a graphic compiler program stored in said memory and executable by said processor on completion of said set-up program to create a scientific instrument emulation program to carry out an overall signal processing function of said array of selected interconnected instrumentation units, said graphic compiler program being capable of resolving contiguous signal feedback in said array and to form an ordered list in said emulation program of said predetermined signal processing functions of said instrument units, which are each to be carried out once between successive samples of an input signal obtained using said multifunctional input/output signal module, said emulation program containing operations for configuring said sampling frequency of said multifunctional input/output signal module for sampling said input signal to provide a contiguous data stream;

an instrument emulation sub-assembly coupled to said processor, said memory, and said video display generator, wherein said instrument emulation sub-assembly is directly connected to said multifunctional input/output signal module, said instrument emulation sub-assembly having:

a second processor for executing said scientific instrument emulation program to continuously carry out said overall signal processing function so that each sample of said contiguous data stream is processed during a single sample time to produce an array output of said scientific instrument emulator before a successive sample of said input signal is obtained by said multifunctional input/output signal module;

wherein at least one of a plurality of operations is performed, said plurality of operations including each of displaying said array output on said video display in real time, storing said array output in the memory, and providing said array output to said signal output of said multifunctional input/output signal module in real time.

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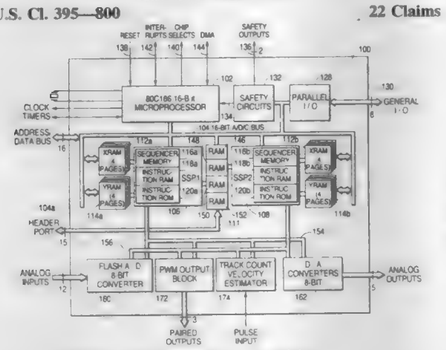
SERVO SYSTEM CONTROLLED BY MASTER AND SECOND PROCESSORS THROUGH MEMORY BEING ACCESSED FOR READ AND WRITE BY PROCESSORS IN SEPARATE PORTIONS RESPECTIVELY

Saf Asghar, and Brett Stewart, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 400,498, Mar. 8, 1995, abandoned, which is a continuation of Ser. No. 983,477, Dec. 3, 1992, abandoned. This application Jun. 28, 1996, Ser. No. 673,317

Int. Cl.° G06F *19/00*

U.S. Cl. 395—800 **22 Claims**



1. A servo loop control apparatus comprising:

input circuitry arranged to receive signals from a servo loop to be controlled;

output circuitry arranged to provide signals to a servo loop to be controlled;

a master processor to control said apparatus, said master processor being connected via a bus to a memory and having write access at any time to any location in a first portion of said memory and read access at any time to any location in said first portion and a second portion of said memory;

a second processor, said second processor communicatively coupled to at least one of said input and said output circuitry and programmed to operate autonomously of said master processor, said second processor being dedicated to specific, pre-programmed servo loop control tasks and being connected to said memory with write access at any time to any location in said second portion of said memory and read access to any location in said first and second portions of said memory, said second processor comprises means for executing repetitive preprogrammed servo loop processing instructions without interruption, thereby maintaining operation of a servo loop independent of said master processor; and

a plurality of vector registers, said vector registers forming a means for interrupting said servo loop processing in said second processor under a limited set of predefined conditions;

wherein said at least one of said input circuitry and said output circuitry are controlled by said master processor and said second processor through said memory.

5,630,166

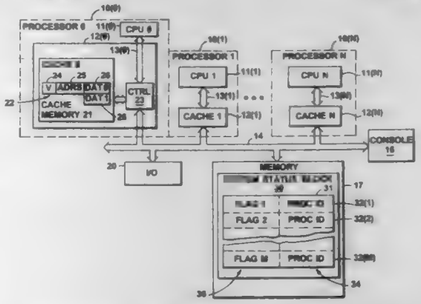
CONTROLLING REQUESTS FOR ACCESS TO RESOURCES MADE BY MULTIPLE PROCESSORS OVER A SHARED BUS

Rodney Gamache, Merrimac; Stuart Farnham, Brookline; Michael Harvey, Nashua, all of N.H.; William A. Laing, Newbury, England; Kathleen Morse, Hollis, N.H., and Michael Uhler, Marlboro, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 884,258, May 8, 1992, abandoned, which is a continuation of Ser. No. 378,436, Jul. 10, 1989, abandoned, which is a continuation of Ser. No. 159,185, Feb. 23, 1988, abandoned. This application Aug. 27, 1996, Ser. No. 703,622

Int. Cl.° G06F *12/02;13/20*

U.S. Cl. 395—800 **31 Claims**



1. A processor for use in a data processing system that includes a plurality of processors which access multiple resources over a bus shared by said processors, and a system memory connected to the bus for storing entries each of which corresponds to one of said resources and designates whether said resource is available for use, said processor comprising

a processing unit for generating a request for access to one of said resources, said request identifying said resource,

a local memory for storing copies of said system memory entries, and

a controller for examining said copies of said entries stored in said local memory in response to said request to determine whether said resource identified in said request is available for use by said processing unit, said controller preventing said request from being transmitted over said bus if one of said copies of said entries stored in said local memory designates

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said identified resource as being unavailable, and otherwise transmitting said request over said bus, said controller comprising

means for determining when said identified resource has become available, and

means for updating the copy of said entry stored in said local memory that corresponds to said identified resource to indicate that said identified resource has become available in response to said determining, said controller thereafter permitting a subsequent request for access to said identified resource to be transmitted over said bus.

5,630,167

ELECTRONIC APPARATUS HAVING A PLURALITY OF CONNECTORS EACH CONNECTING ONE OF A PLURALITY OF KINDS OF CARDS

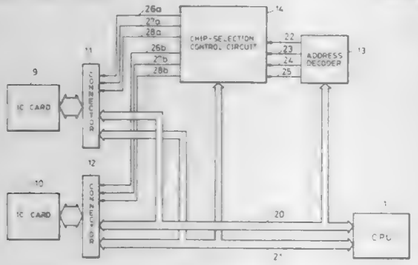
Naohiro Hosokawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 735,759, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 324,661, Mar. 17, 1989, abandoned. This application Jan. 6, 1994, Ser. No. 178,436

Claims priority, application Japan, Mar. 18, 1988, 63-63449

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—823 **5 Claims**



1. An electronic apparatus comprising:

a plurality of connectors, each connector electrically detachably connecting one of a plurality of kinds of integrated circuit cards:

address decoding means for receiving and decoding address data to determine the kind of integrated circuit card corresponding to the address data, wherein said address decoding means comprises a plurality of card selection lines, wherein the number of said card selection lines equals the number of said plurality of kinds of integrated circuit cards, wherein each card selection line corresponds to a different kind of integrated circuit card, wherein said address decoding means outputs a card selection signal selecting the kind of integrated circuit card corresponding to the decoded address data over the card selection line corresponding to the kind of integrated circuit card specified by the address data;

setting means for setting an arbitrary one of said plurality of connectors through which a particular kind of integrated circuit card will be activated for each of the plurality of kinds of integrated circuit cards, respectively;

storing means, provided in the apparatus, for storing connector selection data specifying one of the plurality of connectors for each of said plurality of card selection lines, respectively, wherein the connector selection data specifies a connector, which is set for a particular kind of integrated circuit card by said setting means, for the card selection line corresponding to the particular kind of integrated circuit card specified by the address data; and

selection control means, connected to said address decoding means by said plurality of card selection lines and connected to said storing means, and comprising a plurality of groups of connector selection lines, wherein each group of connector selection lines is connected to a respective one of said plurality of connectors, wherein the number of said connector selection lines in each group equals the number of kinds of integrated circuit cards and equals the number of card selection lines, wherein each card selection line in one group corresponds to a different kind of integrated circuit card, wherein said selection control means receives the card selection signal output from said address decoding means over one of the card selection lines and activates the connector selection line connected to the connector specified by the connector selection data corresponding to the card selection line from which the card selection signal is received.

5,630,168

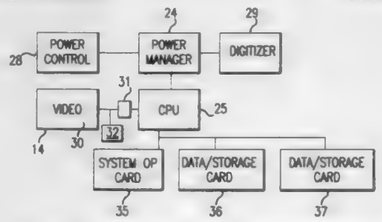
SYSTEM FOR UTILIZING OBJECT ORIENTED APPROACH IN A PORTABLE PEN-BASED DATA ACQUISITION SYSTEM BY PASSING DIGITIZED DATA BY DATA TYPE TO HIERARCHICALLY ARRANGED PROGRAM OBJECTS

Christopher Rosebrugh, Lake Oswego; Eng-Kee Kwang, and Jin H. Kim, both of Beaverton, all of Oreg., assignors to PI Systems Corporation, Portland, Oreg.

Filed Oct. 27, 1992, Ser. No. 966,996

Int. Cl.[6] G06F *17/40;* **G06K** *9/22*

U.S. Cl. 395—825 **14 Claims**



1. An object oriented database data acquisition means comprising:

a housing having a substantially planar video screen suitable for displaying images of at least electrical signals input through said video screen;

a pen having power means for generating said electrical signals;

a digitizer positioned substantially coextensively under said video screen for receiving said input signals from said pen to generate images substantially coextensive with the position of said pen on said video screen, and said digitizer converting said input signals into digitized data;

a first microprocessor for controlling said data acquisition means;

a second microprocessor connected to said digitizer and said first microprocessor for scanning said digitizer;

a third microprocessor connected to said video screen for controlling said screen images;

a power manager means connected to said first microprocessor, said power manager means including a power source and controller for supplying power to said data acquisition means;

program storage mmeans for storing computer code for controlling said microprocessors;

said program storage means comprising data storage means including a plurality of object mailboxes for storing said digitized data according to data type;

at least one program from said object oriented database stored in said program storage means for controlling said first microprocessor for characterizing said digitized data according to data type such that said digitized data is passed to hierarchically arranged program objects and accepted or rejected by one of said objects dependent on said data type; and wherein said accepted digitized data is stored in at least one said object mailbox associated with said data type.

5,630,169

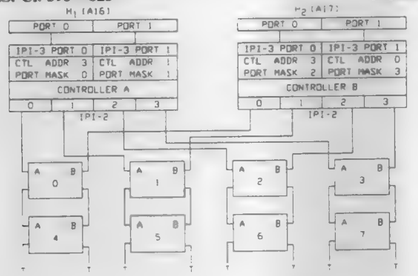
APPARATUS FOR A HOST CENTRAL PROCESSOR WITH ASSOCIATED CONTROLLER TO CAPTURE A SELECTED ONE OF A NUMBER OF MEMORY UNITS VIA PATH CONTROL COMMANDS

Gary E. Jackson, Lake Forest, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 949,967, Sep. 24, 1992, Pat. No. 5,504,926. This application Mar. 29, 1996, Ser. No. 625,662

Int. Cl.[6] G06F *12/02;13/14*

U.S. Cl. 395—825 **3 Claims**



1. An arrangement for allocating a disk drive memory unit to a selected controller in a pair of data processing systems, each said data processing system having a host central processor and an associated controller including memory, both said data processing systems to be cooperatively associated with a number of disk drive memory units, each said disk drive memory unit coupled to both said controllers, whereby either one of said host central processors can appropriate any one of said disk drive memory units as a "selected" disk drive memory unit by propagating "path-control-data" to the memory in both said controllers and in the selected disk drive memory unit, the arrangement further comprising:

propagate means for propagating command signals and said "path control data" from one of said host central processors to the associated controller as the "selected" controller to allocate one of said disk drive memory units as the "selected" disk drive memory unit;

store means for storing said "path control data" in said memory of said selected controller in response to said command signals;

first read means for reading by the selected disk drive memory unit, in response to signals from said "selected" controller and said path control data from the memory of the selected controller and for storing said path-control data in said selected disk drive memory unit;

interrupt means for interrupting the other controller by sending a command from said selected controller via said selected disk drive memory unit;

second read means for reading said path control data by said other controller from said selected disk drive memory unit and storing the path control data into its own memory; and to accommodate

transmit means for sending a command by said other controller via said selected disk drive memory unit to said selected controller indicating that the information is received; and

signal means for indicating successful allocation by said selected controller to said one of said host central processors.

5,630,170

SYSTEM AND METHOD FOR DETERMINING PERIPHERAL'S COMMUNICATION MODE OVER ROW OF PINS DISPOSED IN A SOCKET CONNECTOR

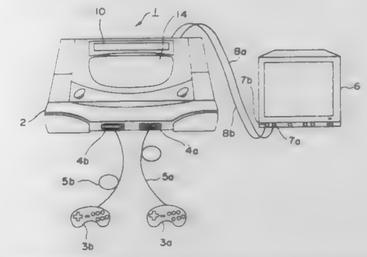
Masahiro Koizumi; Naoki Niizuma; Yasuhisa Kawase, and Hajime Ikebe, all of Tokyo, Japan, assignors to Kabushiki Kaisha SEGA Enterprises, Tokyo, Japan

Filed May 19, 1995, Ser. No. 445,108

Claims priority, application Japan, Oct. 12, 1994, 6-246581

Int. Cl.[6] G06F *3/00;3/023;13/38*

U.S. Cl. 395—834 **61 Claims**



1. A peripheral device for use with a data processing apparatus having an interface means for communicating with a peripheral device with any of communication modes of a clocked parallel type, a clocked serial type, a three-wire handshake type and a TH/TR selection type, said interface means including a socket connector with a set of socket pins, comprising:

a plug connector detachably connectable to the socket connector, said plug connector having a set of plug pins disposed in a row and corresponding to the socket pins, said plug pins including a pair of first pins for connecting to fixed potentials, a plurality of second pins for conducting data signals, and a pair of third pins for receiving a control signal;

means for configuring said plurality of second pins to be indicative of a communication mode of the peripheral device; and

a cable including a plurality of wires connecting the plug pins with terminals on a printed circuit board of said peripheral device;

said configuration means comprising means for supplying a data signal including identification data representing the communication mode of said peripheral device on said plurality of second pins in response to a first control signal supplied via said pair of third pins from said apparatus for requesting the identification data; and

means for supplying said apparatus with a data signal including manipulation data via at least one of said plurality of second pins in response to a second control signal supplied from said apparatus via at least one of said pair of third pins.

5,630,171

TRANSLATING FROM A PIO PROTOCOL TO DMA PROTOCOL WITH A PERIPHERAL INTERFACE CIRCUIT

Edward J. Chejlava, Jr., San Bruno; Leslie E. Cline, Sunnyvale, and Kenneth C. Curt, Saratoga, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 452,476, May 26, 1995, abandoned, which is a division of Ser. No. 329,554, Oct. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 964,590, Oct. 20, 1992, abandoned. This application Jun. 20, 1996, Ser. No. 667,914

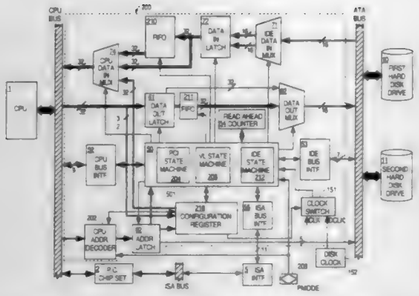
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—843 **7 Claims**

1. A method of transferring information from a CPU to a disk drive, comprising the steps of:

transferring information from the CPU to an interface circuit over a computer bus using a PIO protocol, the CPU being

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incapable of transferring information to the interface circuit over the computer bus using DMA; and

transferring the information from the interface circuit to the disk drive over a peripheral bus using DMA, wherein the DMA is initiated at least in part by the interface circuit receiving a DMA request signal on the peripheral bus, the DMA request signal not being used to arbitrate for the peripheral bus, the interface circuit outputting a DMA acknowledge signal onto the peripheral bus which causes the information to be transferred into a predetermined location in the disk drive.

5,630,172

DATA TRANSFER CONTROL APPARATUS WHEREIN AN EXTERNALLY SET VALUE IS COMPARED TO A TRANSFER COUNT WITH A COMPARISON OF THE COUNT VALUES CAUSING A TRANSFER OF BUS USE RIGHT

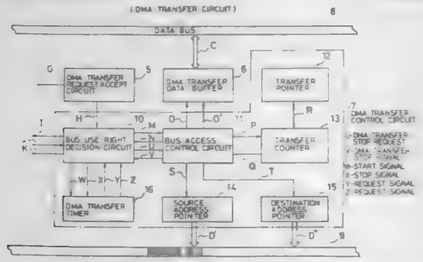
Yasuhiro Ami, and Takeshi Fujii, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 13,450, Feb. 4, 1993, Pat. No. 5,535,362. This application Nov. 13, 1995, Ser. No. 557,987

Claims priority, application Japan, Mar. 6, 1992, 4-84517

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—845 **2 Claims**



1. A data transfer control system for a data processing system comprising:

a central processing unit for performing arithmetic and control operations for data processing.

a memory for storing data required for data processing.

peripheral functional circuits having special functions for data processing.

a data bus for connecting said central processing unit, said memory and said peripheral functional circuits, and

a direct transfer circuit for directly transferring data, comprising a plurality of pieces of data, without the use of said central processing unit from said peripheral functional circuits or said memory to said memory or said peripheral functional circuits through said data bus, respectively, by acquiring the right to use said data bus, where said direct transfer circuit returns the right to use said data bus to the central processing unit when a first signal is asserted, with said direct transfer circuit further including:

a first counter, holding a first count value initialized to a total transfer value indicating a total number of data pieces to be transferred, with said first counter counting down the first count value each time a piece of data is transferred by the direct transfer circuit;

a first register for holding a comparison value set by an external terminal or software;

a comparison circuit, coupled to said first register and said first counter, for asserting a direct transfer priority signal when the count value held by said first counter is less than the comparison value; and

a bus use right decision circuit, coupled to receive said first signal and said direct transfer priority signal, for granting the bus use right to the direct transfer circuit when the direct transfer priority signal is asserted despite the assertion of said first signal so that a direct transfer will be completed when the number of data pieces left to be transferred is less than the comparison value.

5,630,173

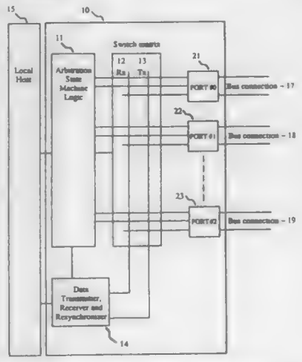
METHODS AND APPARATUS FOR BUS ACCESS ARBITRATION OF NODES ORGANIZED INTO ACYCLIC DIRECTED GRAPH BY CYCLIC TOKEN PASSING AND ALTERNATIVELY PROPAGATING REQUEST TO ROOT NODE AND GRAND SIGNAL TO THE CHILD NODE

Florin Oprescu, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 21, 1992, Ser. No. 994,983

Int. Cl.[6] G06F *13/14;13/362;13/368*

U.S. Cl. 395—860 **13 Claims**



1. In a computer system comprising a plurality of components interconnected by a plurality of communications links, said plurality of components each having at least a first communications node wherein said communications nodes interface their associated component with a communications link through a node port, said nodes being capable of having a plurality of ports, said configuration of nodes and communications links comprising a directed acyclic graph wherein one node is designated a root node, all nodes coupled to only one adjacent node are designated leaf nodes, all other nodes in the graph being designated branch nodes, said acyclic directed graph having established hierarchical parent-child relationships between all adjacent nodes proceeding from the root node down to any leaf nodes wherein a leaf node has only one parent node and all nodes adjacent to the root node are child nodes with respect to the root node but parent nodes with respect to other adjacent nodes, the root node being defined as having no parent node, a method of fair bus access arbitration comprising the steps of:

transmitting a "Bus Request" (BR) signal from a requesting node to its parent node, said requesting node having a packet of information to propagate on said bus;

all nodes receiving the BR signal forwarding the BR signal to their respective parent node;

the root node, upon receiving a BR signal from one adjacent node, responding to said adjacent node with a "Bus Grant" (BG) signal;

all nodes receiving the BG signal from a parent node then propagating the BG signal to the child node which previously forwarded the BR signal, unless the node is the requesting node; and

the requesting node, upon receiving the BG signal propagating said packet of information on the bus,

wherein after the requesting node has propagated said packet of information, the requesting node waits for a gap period before again requesting access to said bus, said gap period being greater than a worst case signal propagation delay through the bus.

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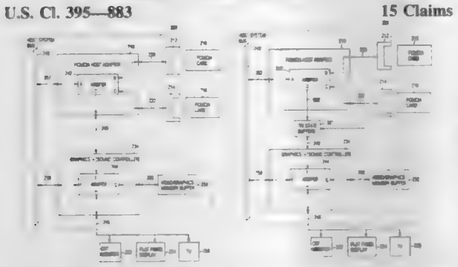
ADAPTER FOR DETECTING WHETHER A PERIPHERAL IS STANDARD OR MULTIMEDIA TYPE FORMAT AND SELECTIVELY SWITCHING THE PERIPHERAL TO COUPLE OR BYPASS THE SYSTEM BUS

John E. Stone, III, Austin, Tex., and Stephen A. Smith, Palo Alto, Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Feb. 3, 1995, Ser. No. 383,582

Int. Cl.[6] G06F *13/00;13/14*

U.S. Cl. 395—883 **15 Claims**



1. A host adapter logic circuit for use within a computer system having a host system bus and an output device, for controlling operation of a communication interface to a peripheral coupled to the computer system through a PCMCIA expansion slot and for interfacing communications between the peripheral and the computer system, the host adapter logic circuit comprising:

a detecting circuit coupled to communicate with the peripheral for determining under which one of a standard format and a multimedia type format the peripheral operates;

a host system bus interfacing circuit coupled to the detecting circuit and coupled for communicating with the peripheral and the host system bus for controlling and directing communications between the peripheral and the computer system, over the host system bus, if the peripheral is a standard peripheral;

a display and audio interfacing circuit coupled to the detecting circuit and coupled for communicating with the peripheral and the output device for controlling and directing communications between the peripheral and the output device directly, thereby bypassing the host system bus, if the peripheral is a multimedia type peripheral; and

a switching circuit coupled to the detecting circuit, to the host system bus interfacing circuit, to the display and audio interfacing circuit, and to a plurality of dual-purpose pins within the PCMCIA expansion slot for coupling the dual-purpose pins to either the host system bus interfacing circuit if the peripheral is a standard peripheral or the display and audio interfacing circuit if the peripheral is a multimedia type peripheral.

5,630,175

SURROUND SOUND SYSTEM FOR GENERAL PURPOSE COMPUTER USING DUAL SOUND CARDS

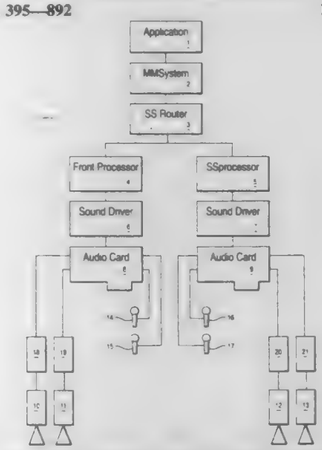
Witold Gajewski, Richmond Hill; Richard M. Helms, Sunderland; Stephen Y. Hon, Scarborough; Peter G. Moogk, Keswick, and John V. Taglione, Scarborough, all of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1995, Ser. No. 428,996

Claims priority, application Canada, Sep. 23, 1994, 2132763

Int. Cl.[6] H01S *5/02;* **G06F** *3/00;3/16*

U.S. Cl. 395—892 **18 Claims**



1. A method for utilizing a stereo enabled computer system which is designed to run existing software application for sending instructions to a first audio card for recording and digitizing two channel audio data, and for utilizing said system in order to record more than two channels, comprising the steps of

redirecting said instructions to a routing means;

sending instructions from said routing means to said first audio card and to at least one additional audio card;

recording on each audio card and converting such recording into digital data;

processing the two channel digital data digitized from each audio card to form a single set of two channel digital data; and

returning said single set of digital data to said existing software application.

5,630,176

LENS-FITTED PHOTOGRAPHIC FILM UNIT WITH A SWINGABLE SHUTTER BLADE

Yasuhiro Yamashina; Kazuo Itakura, and Yukihiko Yamaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 9, 1992, Ser. No. 973,624

Claims priority, application Japan, Nov. 7, 1991, 3-291763; Jan. 9, 1992, 4-002450

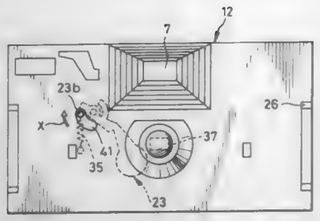
Int. Cl.[6] G03B *9/10;17/02*

U.S. Cl. 396—6 **25 Claims**

1. A lens-fitted photographic film unit having a main body and a front cover attached to a front of said main body, said main body being preloaded with photographic film and provided with a shutter device mounted on a front of said main body behind said front cover, said lens-fitted photographic film unit comprising:

an access opening formed in said front cover for the insertion of a member causing said shutter device to move forcibly from a closed state to an open state and to hold said shutter device in

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said open state when said front cover is attached to said main body;

wherein said shutter device includes a single swingable shutter blade.

5,630,177

DATA PRINT UNIT FOR NON-REMOVABLE-FILM CAMERA

Haruyoshi Yamada; Hiroshi Kobayashi; Masaki Ozawa, and Seiji Tanaka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

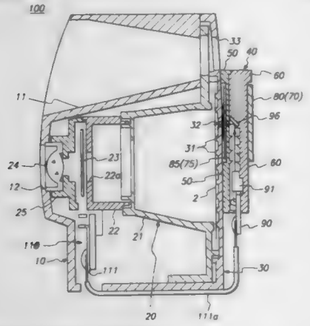
PCT No. PCT/JP92/00419, § 371 Date Jan. 12, 1993, § 102(e) Date Jan. 12, 1993, PCT Pub. No. WO92/17815, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 1, 1992, Ser. No. 982,811

Claims priority, application Japan, Apr. 2, 1991, 3-069980; Apr. 25, 1991, 3-095685; Apr. 25, 1991, 3-095686; Apr. 25, 1991, 3-095705; Apr. 25, 1991, 3-095706; Dec. 10, 1991, 3-326000

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—6 **25 Claims**



1. A data print unit comprising:

a) an assembled unit having an inner surface and an outer surface, and comprising a lower frame having a light transmission hole, and an upper frame;

b) a light source for emitting light and disposed within said assembled unit;

c) an optical means that projects the light emitted from said light source through said light transmission hole;

d) at least one removable print data plate having multiple data sections at positions equidistant from its rotational center; and

e) at least one data indicator wheel positioned on said outer surface of said assembled unit for rotation with respect to said assembled unit, comprising:

1) a flange having a plurality of data indicator sections corresponding to said data sections on said print data; and

2) a central axial member passing through a corresponding axial hole in said assembled unit and extending into detachable, frictional engagement with said print data plate to selectively align said data sections of said removable print data plate with said light transmission hole, wherein said removable print data plate is removably attached to an end of said axial member by means of a flanged pin.

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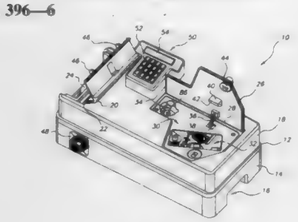
APPARATUS AND METHOD FOR LOADING A CAMERA

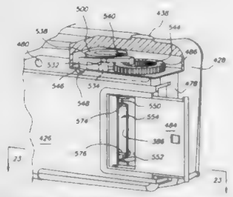
Dennis R. Zander, Penfield; Paul Teremy, Rochester, and Eric P. Hochreiter, Bergen, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,957

Int. Cl.[6] G03B *1/00;17/02*

U.S. Cl. 396—6 **12 Claims**





1. Apparatus for loading a photographic camera of a type including an external housing having a movable closure giving access to a film guide track within the camera; an externally accessible means for moving film within the camera; a counterwheel, operatively connected to the means for moving, for counting a number of frames exposed during use of the camera, said counterwheel having a feature optically detectable when illuminated; and a window in said housing for external viewing of said feature, said apparatus comprising:

a support frame;

a source for unexposed film positioned on said support frame;

a nest supported by said frame for receiving said camera;

film loading means extending between said source and said nest for guiding film from said source into said film guide track within said camera, said loading means having a film path length between said source and said camera;

means for driving film from said source, along said loading means and into said camera;

means associated with said nest for directing radiation through said window, for sensing reflected radiation and for producing a signal corresponding to presence or absence of said feature at said window;

camera drive means associated with said nest for engaging and operating said means for moving; and

control means responsive to said signal for operating said camera drive means.

5,630,179

OPHTHALMOLOGICAL IMAGING APPARATUS

Nobuyoshi Kishida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,823

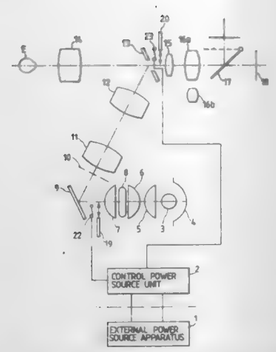
Claims priority, application Japan, Oct. 22, 1993, 5-287561; Sep. 12, 1994, 6-243269

Int. Cl.[6] G03B *29/00;9/08*

U.S. Cl. 396—18 **15 Claims**

1. An ophthalmological imaging apparatus comprising:

a main body portion for effecting the imaging of an eye to be examined, said main body portion having a light source producing light for the imaging of the eye to be examined;



power source means provided in said main body portion, said power source means supplying electrical energy for the production of light to said light source; and

connecting means, provided in said main body portion, for connecting thereto an external power source apparatus for supplying from the outside of said main body portion electrical energy to said light source corresponding to the deficiency in the amount of light from said light source produced by the electrical energy from said power source means relative to a desired amount of light for imaging.

5,630,180

CAMERA SYSTEM

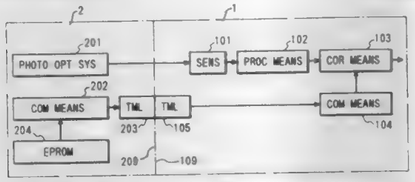
Yosuke Kusaka, Yokohama, Japan, assignor to Nikon Corporation, Japan

Continuation of Ser. No. 124,699, Sep. 22, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,478

Claims priority, application Japan, Sep. 25, 1992, 4-256098

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—63 **19 Claims**



1. An interchangeable lens camera system comprising:

an interchangeable lens comprising:

a photographic optical system,

a lens mount to mount the interchangeable lens,

a lens side communication terminal to communicate to and from the interchangeable lens,

a storage circuit to store lens data representing an optical property of said photographic optical system of said interchangeable lens without a supply of external power, said lens data being electrically erasable or rewritable, and

a lens side communication device to transmit the lens data stored in said storage circuit through said lens side communication terminal; and

a camera body comprising:

a body mount engageable with said lens mount to mount said interchangeable lens on said camera body,

a sensor to receive light from a field through said photographic optical system and to generate an output corresponding to the light received, when said interchangeable lens is mounted on the camera body by said body mount,

a processing circuit to process the output generated from said sensor and to output a condition signal, based on the processed output, indicating a focus or photometry condition of a subject image formed by said photographic optical system,

a body side communication terminal connected to said lens side communication terminal to communicate with said lens side communication terminal, when said interchangeable lens is mounted on the camera body by said body mount,

a body side communication device to communicate with said lens side communication device, through said body side communication terminal and said lens side communication terminal, to receive said lens data transmitted from said lens side communication device, and

a correction circuit to receive said condition signal from said processing circuit and said lens data from said body side communication device, and to correct said condition signal based on said lens data thereby to correct a focus or photometry value of said subject image.

5,630,181

VARIABLE FOCAL LENGTH OPTICAL SYSTEM

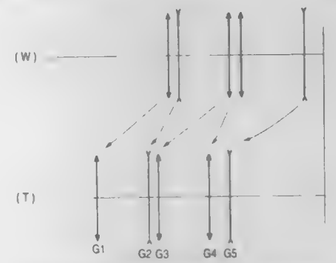
Motoyuki Ohtake, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 6, 1996, Ser. No. 709,508

Claims priority, application Japan, Sep. 18, 1995, 7-263581

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—72 **7 Claims**



1. A variable focal length optical system comprising:

a first lens unit (G1) having a positive refractive power and arranged to be closest to an object;

a final lens unit (Gb) having a negative refractive power and arranged to be closest to an image,

said first lens unit (G1) and said final lens unit (Gb) moving to said object side when a focal length of an entire lens system changes from a smallest focal length state to a largest focal length state; and

an aperture stop arranged on said image side of said first lens unit (G1) and on said object side of said final lens unit (Gb),

wherein said system satisfies the following conditions:

$$0.25<|fb/f1|<0.45$$

$$0.7<M1/f1<0.9$$

$$0.4<|fb/Mb|<0.5$$

$$D/fw<0.7$$

where f1 is the focal length of said first lens unit (G1), fb is the focal length of said final lens unit (Gb), M1 is the moving amount of said first lens unit (G1) to said object side, which is obtained when the focal length of said entire lens system changes from the smallest focal length state to the largest focal length state, Mb is the moving amount of said final lens unit (Gb) to said object side,

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which is obtained when the focal length of said entire lens system changes from the smallest focal length state to the largest focal length state, D is the distance along an optical axis between a surface of said lens system, which is closest to said object, and said aperture stop in the smallest focal length state, and fw is the focal length of said entire lens system in the smallest focal length state.

5,630,182

CONTROL DEVICE FOR PREVENTING RED-EYE EFFECT ON CAMERA

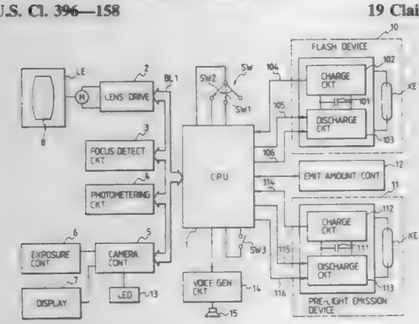
Toru Fukuhara, Isehara; Toshio Sosa, Narashino; Toshio Dobashi, Yokohama; Nobuaki Sasagaki, and Masaharu Hara, both of Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 486,505, Jun. 7, 1995, abandoned, which is a division of Ser. No. 71,613, Jun. 4, 1993, which is a continuation of Ser. No. 974,512, Nov. 12, 1992, abandoned, which is a division of Ser. No. 930,466, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 785,210, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 632,648, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 445,996, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 323,386, Mar. 14, 1989, abandoned. This application Sep. 16, 1996, Ser. No. 714,520

Claims priority, application Japan, Mar. 16, 1988, 63-064031

Int. Cl.[6] G03B *15/03*

U.S. Cl. 396—158 **19 Claims**



1. A camera comprising:

a main illuminating device operable to provide main illumination;

a pre-illuminating device operable to provide pre-illumination before main illumination;

a selecting device which selects whether or not said pre-illuminating device should be operated;

a control device which controls operation of said pre-illuminating device so as to operate said pre-illuminating device when said selecting device selects that said pre-illuminating device should be operated;

a counter responsive to operation of said pre-illuminating device under the control of said control device, which starts to count a predetermined time; and

an exposing device which exposes a film;

wherein, when said selecting device selects that said pre-illuminating device should be operated, said exposing device starts to expose said film after said pre-illumination, with a delay therefrom based on said predetermined time, and when said selecting device selects that said pre-illuminating device should not be operated, said exposing device starts to expose said film without said delay.

5,630,183

CAMERA ACCESSORY MOUNTING AND FIXING DEVICE

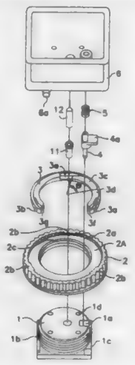
Nobuyoshi Hagiuda, Yokohama; Hideki Matsui, Fujisawa, and Masakuni Ohta, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 27, 1996, Ser. No. 671,520

Claims priority, application Japan, Jul. 26, 1995, 7-190696

Int. Cl.[6] G03B *11/00*

U.S. Cl. 396—198 **20 Claims**



1. A camera accessory mounting and fixing device for mounting and fixing a camera accessory to an accessory shoe of a camera body, wherein the accessory shoe has a stop hole, the camera accessory mounting and fixing device comprising:

a mounting foot member mountable in the accessory shoe and having a threaded portion;

a clamping member having a screw member to engage said threaded portion of said mounting foot member;

a stop pin biased towards the stop hole; and

a cam member engaging said clamping member and said stop pin, to insert the stop pin into and remove the stop pin from the stop hole via rotation of the clamping member.

5,630,184

METHOD OF DELETING AND ADDING NODES IN A SPANNING TREE NETWORK BY COLLATING REPLIES FROM OTHER NODES

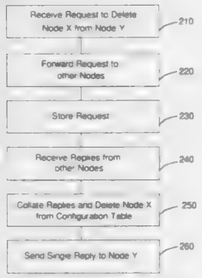
Michael I. Roper, Chandlers Ford, and Graham D. Wallis, Southampton, both of Great Britain, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1993, Ser. No. 135,713

Claims priority, application United Kingdom, Nov. 7, 1992, 9223389

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.1 **11 Claims**



1. A method of operating a computer forming a node in a network, said network consisting of a plurality of nodes linked together in a minimum spanning tree topology, wherein the nodes may join or leave the network dynamically, the method comprising the steps of:

maintaining, in each of the nodes, a table containing configuration information of the network;

receiving a message from a first node linked to said computer commanding the computer to delete a specified node from the network;

storing information identifying the message;

forwarding the message to other nodes linked to said computer;

receiving replies to the message from said other nodes;

collating the replies received from said other nodes with the stored information to generate a single reply, and dependent on the contents of said replies, deleting the specified node from the information maintained by the node concerning the configuration of the network; and

sending the single reply to said first node.

5,630,185

INFORMATION SETTING DEVICE FOR A CAMERA

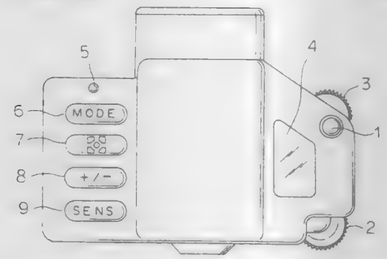
Koichiro Kawamura, Ichihara, and Satoshi Ejima, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 21, 1995, Ser. No. 517,347

Claims priority, application Japan, Feb. 14, 1995, 7-025594

Int. Cl.[6] G03B *7/00;17/00*

U.S. Cl. 396—223 **18 Claims**



1. An information setting device for a camera, comprising:

a first operation member;

a second operation member which is different from said first operation member;

a setting change means for changing the set content of a previously set first item of control information in response to unaccompanied operation of said first operation member, and for changing the set content of a previously set second item of control information which differs from said first item of control information in response to a specific coordinated operation of said first operation member and said second operation member together;

an internal setting change means for changing the set content of said first item of control information when the set content of said second item of control information is changed to a predetermined content by said setting change means, based upon said predetermined set content of said second item of control information;

a valid/invalid mode setting means for setting one of a valid mode which permits processing for change of the set content of said first item of control information, and an invalid mode which prohibits processing for change of the set content of said first item of control information; and

a valid/invalid mode changeover means for changing over from said invalid mode to said valid mode when the set content of said second item of control information is changed to said predetermined content by said setting change means while said invalid mode is being set.

5,630,186

MOVING BODY CAMERA

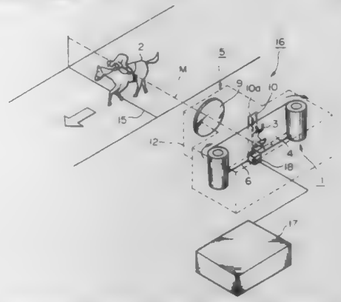
Yoshihisa Yamaguchi, Tokyo, Japan, assignor to Plusmic, Tokyo, Japan

Continuation of Ser. No. 991,142, Dec. 16, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,174

Claims priority, application Japan, Dec. 24, 1991, 3-356272

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—300 **7 Claims**



1. A moving body camera for use to determine an arrival order at a finish line of a race, said moving body camera comprising:

(a) recording means for recording a series of images of moving objects which pass the finish line sequentially;

(b) a photographing mechanism for receiving the images of the moving objects via an object glass and a slit, said slit being of a predetermined width to limit an area of viewing of said photographing mechanism to an area about said finish line, said photographing mechanism supplying said images of said moving objects to said recording means;

(c) a plurality of light emitting means which are placed in proximity to said recording means for focusing light on a predetermined position on said recording means;

(d) data creating means, manipulated by a human operator, for creating character data and control data in accordance with instructions given by the human operator, wherein the character data designate characters which represent information regarding the race, the control data designate control elements for the photographing mechanism;

(e) photographing mechanism control means for automatically controlling actuation of said photographing mechanism in response to the control elements designated by the control data;

(f) light emission control means for controlling illumination of said plurality of light emitting means in response to said character data so that said characters are automatically recorded sequentially in time by said recording means together with the images of the moving objects; and

(g) means for rewinding said recording means so that the recording means is rewound in an opposite direction, which is opposite to a direction of movement of the moving objects with a speed that is controlled in response to a speed of the moving objects.

5,630,187

LENS DEVICE AND METHOD

Tomoaki Kawamura, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,497

Claims priority, application Japan, Dec. 21, 1994, 6-318010

Int. Cl.[6] G03B *7/26*

U.S. Cl. 396—304 **24 Claims**

1. A lens device, comprising:

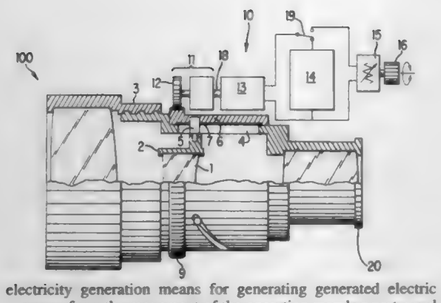
a lens;

a lens barrel that contains the lens;

operation member parts held by the lens barrel and movably connecting the lens to the lens barrel;

movement means for moving the lens corresponding to movement of the operation member parts;

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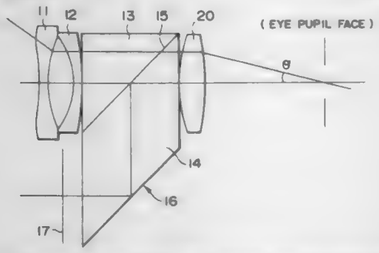
electricity generation means for generating generated electric power from the movement of the operation member parts; and electric power consumption means for consuming the generated electric power generated by the electricity generation means.

5,630,188

LIGHTING TYPE BRIGHT FRAME FINDER

Kazuyasu Ohashi, Funabashi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 351,704
Claims priority, application Japan, Feb. 10, 1994, 6-016797
Int. Cl.[6] G03B *13/04;13/08*
U.S. Cl. 396—385 **5 Claims**



1. An inverse Galilean type lighting bright frame finder comprising:

an objective lens having a negative focal length;

an eyepiece having a positive focal length;

a frame; and

a joining prism composed of two parts between which a half mirror is interposed, for forming an optical path from said frame to said eyepiece by being arranged such that the half mirror is located between the objective lens and the eyepiece, wherein a visual field image is overlapped with a frame image formed by only said eyepiece so as to observe these images;

the focal length f_e of said eyepiece, a distance E from an eye pupil side lens face of the eyepiece to an eye pupil face, and a maximum emitting angle θ satisfying the following condition (1)

$$f_e/(E\cdot\tan\theta) < 7.5 \qquad (1)$$

5,630,189

EASY-LOADING CAMERA

Roger A. Siekierski, Webster, and Charles W. Greene, Clarence Center, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 3, 1996, Ser. No. 626,865
Int. Cl.[6] G03B *17/02;17/00*
U.S. Cl. 396—440 **5 Claims**

1. An easy loading camera comprising a cartridge receiving chamber for receiving a film cartridge with a protruding film leader, and a leader insertion slit beginning at said cartridge receiving chamber, is characterized by:

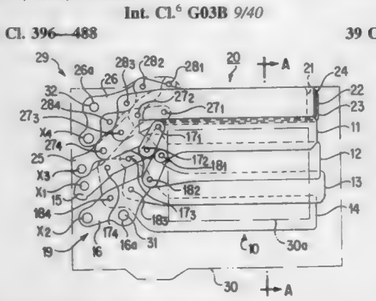
a leader guide supported in a guiding position within said cartridge receiving chamber to guide the protruding film leader into said leader insertion slit before the film cartridge is loaded into the chamber and to be moved to a retracted position to make room for the film cartridge when the film cartridge is loaded into the chamber.

5,630,190

FOCAL PLANE SHUTTER AND METHOD FOR FORMING THE SAME

Takashi Matsubara, and Masanori Hasuda, both of Yokohama, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 498,844, Jul. 6, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 665,298
Claims priority, application Japan, Jul. 6, 1994, 6-177594; Jun. 15, 1995, 7-174235
Int. Cl.[6] G03B *9/40*
U.S. Cl. 396—488 **39 Claims**



1. A focal plane shutter comprising:

a front blind and a rear blind each having a plurality of blades;

a driving mechanism that moves the front blind and the rear blind between an open position in which an exposure aperture is formed and a closed position in which the exposure aperture is covered;

at least one of said blades of the front blind having a larger range of movement than the other blades of the front blind; and

at least one of said blades of the rear blind having a larger range of movement than the other blades of the rear blind;

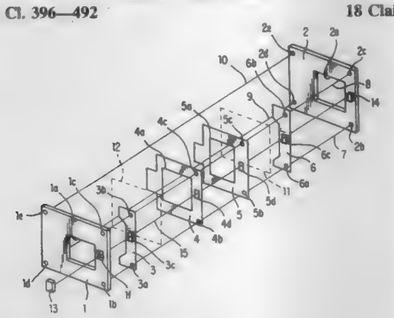
wherein a blade having a largest range of movement of the rear blind has greater rigidity than a blade having a largest range of movement of the front blind, and wherein a thickness of the blade having a second largest amount of movement in the front blind is substantially equal to a thickness of the blade having the largest amount of movement in the front blind, and further wherein a thickness of a blade having a second largest amount of movement in the rear blind is thinner than the blade having the largest amount of movement in the rear blind.

5,630,191

SHUTTER DEVICE

Masanori Hasuda, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 26, 1995, Ser. No. 578,022
Claims priority, application Japan, Feb. 1, 1995, 7-036007
Int. Cl.[6] G03B *9/40*
U.S. Cl. 396—492 **18 Claims**



1. A shutter device, comprising:

a substrate;

a cover plate;

a diaphragm plate between said substrate and said cover plate and including a first aperture which passes exposure light and a second aperture which defines a different area from the first aperture;

a light blocking blade that travels between said substrate and said cover plate to alternatively expose and block said first aperture and said second aperture, said second aperture being of varying width in the direction of travel of said light blocking blade; and

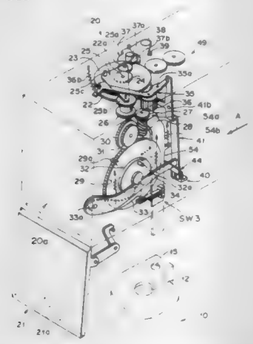
a travelling state detection device that uses a light beam wherein said second aperture is aligned with said travelling state detection device to allow said light beam to pass when said light blocking blade does not block said second aperture in order to detect the travelling state of said light blocking blade.

5,630,192

PHOTOGRAPHIC CAMERA

Kiyotaka Kobayashi, Saitama-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 3, 1995, Ser. No. 398,520
Claims priority, application Japan, Mar. 4, 1994, 6-034715; May 13, 1994, 6-099909
Int. Cl.[6] G03B *1/04;17/02;17/26*
U.S. Cl. 396—513 **18 Claims**



1. A photographic camera having a magazine chamber which is opened and closed by a light-shielding lid and in which is loaded a film magazine comprising a magazine body provided with a film exit slit and a light-shielding door for opening and closing the film exit slit, said camera comprising:

a light-shielding door opening and closing mechanism which opens and closes the light-shielding door of the film magazine loaded in the magazine chamber;

an electric motor which is disposed in the camera and provides the light-shielding door opening and closing mechanism with a driving force for opening and closing the light-shielding door, the driving force of said electric motor is also used for feeding the film; and

a control means which causes the light-shielding door opening and closing mechanism to open and close the light-shielding door under the driving force provided by the electric motor when the light-shielding lid is closed;

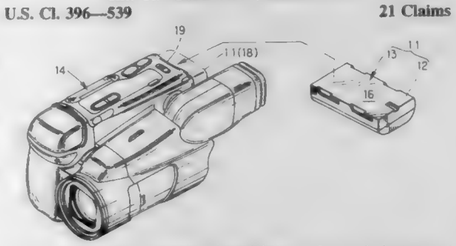
wherein said light-shielding door opening and closing mechanism comprises a light-shielding door driving member which is brought into engagement with the light-shielding door and is rotated to open and close the light-shielding door, and a driving force transmitting mechanism which receives the driving force of the electric motor from a part of a film feed mechanism which is driven by said electric motor and transmits the driving force to the light-shielding door driving member only when the light-shielding door is to be closed or opened, said driving force transmitting mechanism for opening and closing the light-shielding door comprises a sun gear which forms a part of the film feed mechanism, a planetary gear in mesh with the sun gear, a revolution limiting mechanism which selectively prevents and permits revolution of the sun gear and an engagement member which is actuated by rotation of the sun gear to be engaged with the light-shielding door opening and closing mechanism.

5,630,193

POWER SUPPLY SYSTEM FOR ELECTRONIC INSTRUMENT

Michihiro Miyake, and Wataru Nakamura, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 12, 1995, Ser. No. 571,185
Claims priority, application Japan, Dec. 16, 1994, 6-312903
Int. Cl.[6] G03B *17/02;* **H01M** *2/10*
U.S. Cl. 396—539 **21 Claims**



1. A power supply system comprising an electronic instrument and a first power source unit electrically connected thereto, for supplying said electronic instrument with electric power, or for being supplied by said electronic instrument with electric power, said first power source unit comprising:

a first terminal group; and

a first outer wall being at least partially flat;

said electronic instrument comprising:

a second terminal group, connectable to said first terminal group;

a receiving wall fitted on said first outer wall when said first electronic instrument is attached to said first power source unit;

a projected portion, disposed in movable fashion between a projected state to project from an inside to an outside of said receiving wall, and a retracted state to retract to said inside of said receiving wall, said projected portion being pressed by said first outer wall and moved from said

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projected state to said retracted state, said projected portion being unmoved when said electronic instrument is attached to a unit not having said first outer wall;

a terminal cover, disposed on said receiving wall in movable fashion between a covering position of covering said second terminal group, and an uncovering position of uncovering said second terminal group, said terminal cover being pressed by said first power source unit and moved from said covering position to said uncovering position, said second terminal group being connected to said first terminal group, to allow loading of said first power source unit; and

a lock device, associated with said projected portion and said terminal cover, for hindering said terminal cover from moving away from said covering position while said projected portion has said projected state, said lock device allowing said terminal cover to move to said uncovering position when said projected portion has said retracted state.

5,630,194

IMAGE FORMING MACHINE

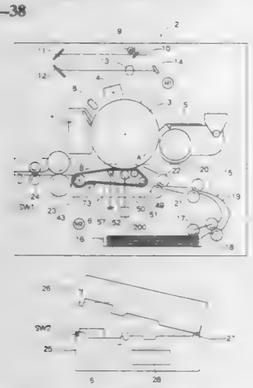
Shigeo Fujita; Ryuji Wataki; Noritaka Okazaki; Michio Uchida; Yuzuru Nanjo, and Yuki Ito, all of Osaka, Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Dec. 1, 1995, Ser. No. 565,893

Claims priority, application Japan, Dec. 2, 1994, 6-323978

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—38 **2 Claims**



1. An image forming machine comprising a machine body housing, an image bearing member disposed within the machine body housing, a transfer device for transferring a toner image formed on the image bearing member to a transfer paper, a transfer paper feeder for feeding a transfer paper to the transfer device, a fixing means for fixing the toner image transferred to the transfer paper by the transfer device, and a discharge roller for discharging the transfer paper having the toner image fixed by the fixing means,

the transfer device having a belt unit including a driving roller to be rotationally driven by a driving means, a driven roller disposed at a distance from the driving roller, and a transfer belt looped between the driving roller and the driven roller and disposed opposite the image bearing member; and a cleaning means including a cleaning blade to be pressed against the surface of the transfer belt to clean this surface, and a moving mechanism for moving the cleaning blade to an operating position where the cleaning blade is pressed against the surface of the transfer belt, and a non-operating position where the cleaning blade is separated from the transfer belt, wherein

the image forming machine includes a safety detecting means for detecting the completion of setting of an opening/closing member constituting the image forming machine, and a controlling means for controlling the operation of the driving means for the driving roller on the basis of a signal from the safety detecting means, and

when the safety detecting means signals the completion of the setting after signaling the incompletion of the setting, the controlling means controls the driving means so as to perform a reverse driving, thereby driving the driving roller reversely by a predetermined amount.

5,630,195

COLOR TONER DENSITY SENSOR AND IMAGE FORMING APPARATUS USING THE SAME

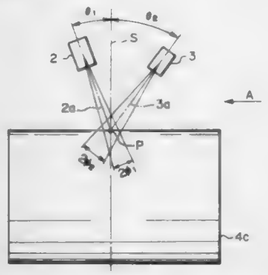
Noboru Sawayama, and Kouta Fujimori, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 584,443

Claims priority, application Japan, May 12, 1995, 7-114480; Dec. 28, 1995, 7-342647

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—49 **6 Claims**



4. A toner density sensor for emitting light from a light emitting element toward a toner pattern image formed on an image carrier, and receiving a resulting reflection from said toner pattern image with a light receiving element, wherein said light emitting element and said light receiving element each has a directivity, wherein an optical axis of said light emitting element and an optical axis of said light receiving element intersect each other at a point exiting on or in the vicinity of a surface of said image carrier, and wherein said light emitting element and said light receiving element are positioned such that a plane containing said optical axes is inclined a predetermined angle relative to a normal extending from a surface of said image carrier through said point.

5,630,196

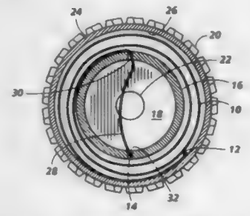
RECYCLABLE PHOTORECEPTOR END FLANGE

Eugene A. Swain, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1994, Ser. No. 358,443

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—117 **15 Claims**



1. An end flange for supporting a hollow cylinder having an inside diameter, said end flange comprising

a disk-shaped member having

a circular periphery,

an axis and

a major plane perpendicular to said axis and

a helical coil spring having

a major plane substantially parallel to said major plane of said disk shaped member,

an exposed arcuate outer periphery having a diameter larger than said inside diameter of said hollow cylinder,

an outer exposed end and

an inner end comprising a section secured to said end flange, said coil of said spring spiraling within said major plane toward said axis from said outer exposed end to said inner end and said exposed arcuate outer periphery of said coil spring being adjacent said circular periphery of said disk shaped member for engagement with a hollow cylindrical member upon winding, insertion, and expansion of said coil spring in said hollow cylindrical member.

5,630,197

MOUNTING DEVICE FOR INTERCHANGEABLY MOUNTING DIFFERENT TYPES OF PHOTOCONDUCTORS

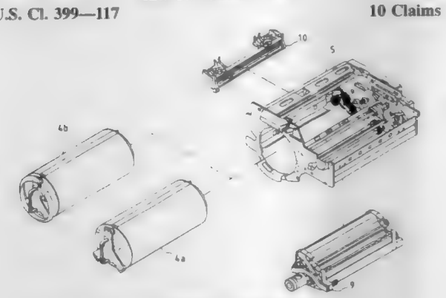
Shinichi Nishino; Osamu Nishino, and Toshitaka Ogawa, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 407,280, Mar. 20, 1995, abandoned, which is a continuation-in-part of Ser. No. 129,361, Sep. 30, 1993, abandoned. This application May 3, 1996, Ser. No. 642,667

Claims priority, application Japan, Sep. 30, 1992, 4-261187

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—117 **10 Claims**



3. An image forming apparatus, comprising:

a base machine; and

mounting means for interchangeably mounting a plurality of different types of photoconductor units to said base machine, wherein a single type of photoconductor unit is mounted to said base machine at any one time, said different types of said photoconductor units having different internal configurations so as to have at least one of different printing speeds and different duties, while having external configurations of substantially the same dimensions.

5,630,198

TONER FILLABLE CARTRIDGE HAVING PROTRUSIONS ENGAGEABLE WITH A DEVELOPMENT CASE SHUTTER

Kazumasa Makino, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 29, 1996, Ser. No. 638,776

Claims priority, application Japan, Dec. 28, 1995, 7-39458; Apr. 3, 1996, 8-9535

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—120 **22 Claims**

1. A toner fillable cartridge for use with a toner developing device, comprising:

a toner body having first and second ends;

a toner exhaust port located between the first and second ends, said toner body being rotatable with respect to the development device;

a toner box shielding member rotatably mounted on said toner body to open and close the toner exhaust port as the toner body is rotated; and

a pair of protrusions formed adjacent each side of the toner box shielding member, each said pair of protrusions being structured to engage a developing device shielding member movably positioned over a toner introduction port of the developing device,

wherein rotation of said toner body causes each said pair of protrusions to engage and displace said developing device shielding member to open and close said toner introduction port as the toner exhaust port rotates to align with the toner introduction port.

5,630,199

RECIPROCATION BRUSH CONTACT CHARGER

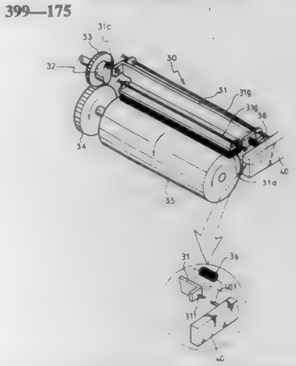
Ki-Jae To, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 7, 1995, Ser. No. 554,708

Claims priority, application Rep. of Korea, Nov. 8, 1994, 29181/1994

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—175 **21 Claims**



1. A brush contact charger for charging a photosensitive drum of an image forming apparatus of an electrostatic recording system, said brush contact charger comprising:

a body having a brush disposed to be in contact with said photosensitive drum, said brush providing an electrostatic charge to said photosensitive drum;

reciprocating means for vibrating said body perpendicularly with respect to a rotating direction of said photosensitive drum, said reciprocating means comprising:

a first gear installed on a rotational shaft of said photosensitive drum, said first gear being rotated in dependence upon rotation of said rotational shaft;

a second gear engagedly meshed with said first gear, said second gear being rotated simultaneously with said first gear;

a cam fixed to said second gear, said cam being rotated simultaneously with said second gear for moving said body in a first direction; and

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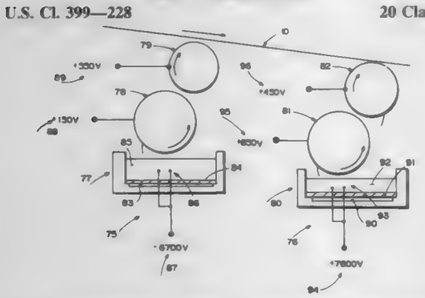
biasing means for moving said body in a second direction opposite to said first direction.

5,630,200

MULTI-ROLLER ELECTROSTATIC TONING SYSTEM APPLICATION TO TRI-LEVEL IMAGING PROCESS

Orrin D. Christy, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 6, 1995, Ser. No. 466,365
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—228 **20 Claims**



1. A method of forming images, using first and second fluidized beds of non-magnetic toner, having first and second, respective, applicator rollers, comprising the steps of substantially continuously:

(a) uniformly charging a charge retentive surface to a predetermined voltage level;

(b) forming on the charge retentive surface at different locations thereof at least first and second different, spaced, latent electrostatic images;

(c) moving the charge retentive surface past the first fluidized bed of non-magnetic toner, so that the charge retentive surface comes into operative association with the first applicator roller of the first fluidized bed;

(d) electrically biasing the first fluidized bed and the first applicator roller at a first bias level effective so that the first image is developed by non-magnetic toner transferred from the first applicator roller to the first image while development of the second image is precluded;

(e) moving the charge retentive surface past the second fluidized bed of non-magnetic toner, so that the charge retentive surface comes into operative association with the second applicator roller of the second fluidized bed; and

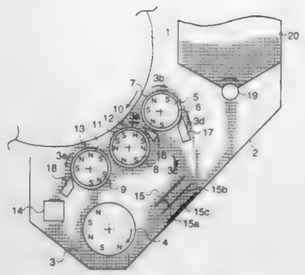
(f) electrically biasing the second fluidized bed and the second applicator roller at a second bias level, different than the first bias level of step (d), effective so that the second image is developed by non-magnetic toner transferred from the second applicator roller to the second image while development of the first image is precluded.

5,630,201

DEVELOPMENT APPARATUS HAVING A PLURALITY OF ROLLS ROTATED AT PARTICULAR SPEEDS

Katsuhiko Suzuki; Takao Umeda, both of Mito, and Masayasu Anzai, Hitachi, all of Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1996, Ser. No. 607,094
Claims priority, application Japan, Mar. 10, 1995, 7-050857; Apr. 14, 1995, 7-089240
Int. Cl.[6] G03G *15/09*
U.S. Cl. 399—269 **14 Claims**



1. A development apparatus for performing a magnetic brush phenomenon by supplying a developer to an opposed photoconductive body with photoconductivity by use of a plurality of development rolls with magnetically attractive forces disposed near said photoconductive body, said apparatus comprising:

an upstream development roll having a unipole development magnet at a development pole contributing to development, and being movable in a direction opposite to a moving direction of said photoconductive body, wherein said movement directions are relative to a reference point between the photoconductive body and the upstream development roll;

a downstream development roll having a plurality of magnetically attractive nearby forces and causing a plurality of magnets of same polarity to be disposed near a development pole contributing to development;

wherein said upstream development roll is provided in an upstream of the moving direction of said photoconductive body;

wherein said downstream development roll is provided in a downstream of said moving direction of said photoconductive body; and

wherein said upstream development roll and said photoconductive body define a peripheral speed ratio ranging from 0.5 to 1.5, while allowing said downstream development roll and said photoconductive body to define a peripheral speed ratio ranging from 0.6 to 0.95 and from 1.05 to 1.5.

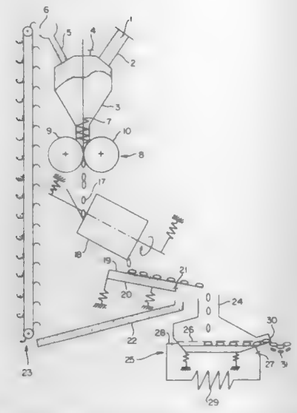
5,630,202

METHOD FOR MAKING SPONGE IRON BRIQUETTES FROM FINE ORE

Hans G. Bergendahl, Bochum, Germany, assignor to Maschinenfabrik Koppern GmbH & Co. KG, Germany

PCT No. PCT/EP93/02681, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO95/09079, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 30, 1993, Ser. No. 446,707
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—69 **28 Claims**

1. A method for making sponge iron briquettes (**17**) from fine ore (**1**) with a maximum grain size of less than 2 mm, preferably less than 0.5 mm, wherein hot fine ore (**1**) is fed to a roller press (**8**) and is briquetted by opposite briquette pockets (**11**) of said roller press (**8**) to form sponge iron briquettes (**17**) and wherein during briquetting fine ore compacted between said briquette pockets (**11**) by one of the separating webs, and fines in dust form are produced, said materials being separated as returns (**6**) from said sponge iron briquettes (**17**) and fed to the hot fine ore (**1**) prior to briquetting, the mean grain size of fine ore (**1**) being smaller than the mean particle size of said returns (**6**), characterized in that said returns (**6**) are directly supplied to a conveyor system (**23**) after having been separated from said sponge iron briquettes (**17**) and said returns (**6**) which are still hot are fed by said conveyor system



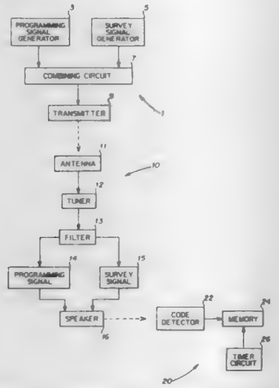
(**23**) substantially evenly and continuously to the hot fine ore to be still briquetted.

5,630,203

TECHNIQUE FOR SURVEYING A RADIO OR A TELEVISION AUDIENCE

Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666

Filed Jan. 12, 1993, Ser. No. 3,325
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—2 **4 Claims**



1. Apparatus for surveying an audience to determine whether a tuning device is tuned to a given signal source which is transmitting a program signal along with a survey signal characteristic of said signal source, said programming signal and said survey signal being in a frequency range to be human audibly reproduced by a receiver unit, comprising:

transmission means for combining said programming signal and said survey signal for transmission thereof as a combined signal;

receiving means responsive to said combined signal for separating the survey signal from the programming signal;

conversion means for converting the separated survey signal to an output signal;

means for reproducing the output signal and the programming signal, with the output signal being reproduced outside of the human audible frequency range; and

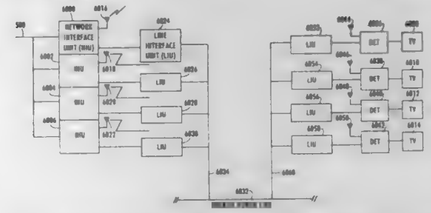
means for detecting the reproduced output signal as being indicative of the transmitting signal source.

5,630,204

CUSTOMER PREMISE WIRELESS DISTRIBUTION OF BROAD BAND SIGNALS AND TWO-WAY COMMUNICATION OF CONTROL SIGNALS OVER POWER LINES

Denny L. Hylton, Fairfax County, Va.; Steven Olsen, Baltimore, Md.; William Burton, Montgomery County, Md., and Dave Lichtenwalner, Howard County, Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 431,940, May 1, 1995, and Ser. No. 508,131, Jul. 27, 1995. This application Jul. 27, 1995, Ser. No. 508,345
Int. Cl.[6] H04N *7/173*
U.S. Cl. 455—3.3 **21 Claims**



1. A customer premise installation for distributing on said premise from a communication network terminating link broadband digital information and two-way narrow band control signals, comprising:

plural user video terminals each connected to a collocated control terminal;

each video terminal being coupled to said terminating link through a coupling including a pair of interface units;

a first interface coupler in each pair of interface units comprising a receiver and a transmitter for respectively receiving and transmitting spread spectrum radio frequency signals, said transmitter transmitting radio frequency signals including a broadband digital information signal and said receiver receiving and translating from said spread spectrum radio frequency signals and delivering to said video terminal broadband signals;

a second interface coupler in each pair of interface units receiving and transmitting said two-way control signals including upstream signals corresponding to signals received from one of said control terminals and downstream signals corresponding to signals received from said terminating link;

said second interface coupler in each pair of interface units including a power line transporting said two-way control signals on carriers modulated by said control signals corresponding to said downstream control signals emanating from said terminating link and said upstream control signals emanating from said one control terminal.

5,630,205

MOBILE PHONE HAVING VOICE MESSAGE CAPABILITY

Björn Ekelund, Lund, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Jun. 14, 1994, Ser. No. 261,146
Int. Cl.[6] H04B *1/00*
U.S. Cl. 455—54.1 **5 Claims**

1. A mobile unit of a radiocommunication system, said mobile unit comprising:

means for transmitting outgoing radio signals,

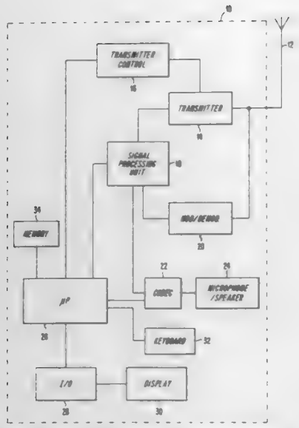
means for receiving and demodulating incoming radio signals,

means for digitizing said demodulated signals,

means for selectively decompressing said digitized signals to generate decompressed, digital signals, and

control means for storing said digitized signals in a memory device when said digitized signals remain compressed and for outputting said decompressed, digital signals as voice data when said digitized signals have been decompressed, wherein

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said memory also has prestored messages and said control means retrieves a prestored message for decompression by said selective decompression means and outputs said prestored message as voice data, after the occurrence of a predetermined event associated with the prestored message, said prestored messages including at least one of:

(a) a message associated with failure to establish a call;

(b) a message associated with premature disconnection of a call;

(c) a message associated with cell barred status;

(d) a message associated with scanning for a base station;

(e) a message associated with cell retry;

(f) a massage associated with no radiocommunication service; and

(g) a message associated with a low battery.

5,630,206

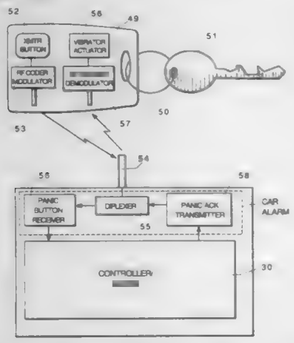
POSITION ENHANCED CELLULAR TELEPHONE SYSTEM

G. Daniel Urban, Silver Spring, Md.; Robert McCarthy, Arlington, Va.; David Schuchman, Rockville, Md., and Ronald Bruno, Arlington, Va., assignors to Stanford Telecommunications, Inc., Reston, Va.

Filed Aug. 11, 1994, Ser. No. 288,764

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—54.1 **7 Claims**



1. In a position monitoring system having a position finder subsystem connected via a cellular telephone to a central monitoring station, a receive/transmit means carried with said position monitoring subsystem, the improvement comprising:

a remote personal signalling subsystem comprising an RF coder modulator for transmitting a coded RF signal, and operating switch means for activating said RF coder modulator,

a receiver/transmit means carried with said position finding subsystem for receiving said coded RF signal, decoding same and transmitting a coded RF acknowledgement signal,

said remote personal signalling subsystem including RF decoder and demodulator for receiving and decoding said coded RF acknowledgement signal and a tactile signalling means operated by said RF decoder and demodulator upon receipt of said coded RF acknowledgement signal and provide a tactile signal to a user that said RF coded signal had been properly received by said position finding subsystem.

5,630,207

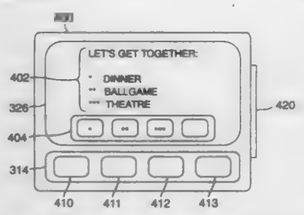
METHODS AND APPARATUS FOR BANDWIDTH REDUCTION IN A TWO-WAY PAGING SYSTEM

Richard D. Gitlin, Little Silver; Krishan K. Sabnani, Westfield, and Thomas Y. C. Woo, Red Bank, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 19, 1995, Ser. No. 492,468

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—54.1 **48 Claims**



40. A method of transmitting a message in a two-way paging system comprising the steps of:

transmitting an original message lacking codes to identify portions of the original message as reply components to a pager;

analyzing the original message at the pager to identify the reply components;

displaying on the pager the original message and identification codes identifying the reply components of the original message;

computing from the original message a reply code corresponding to a specified one of the reply components in response to a signal generated by a user of the pager pressing a key wherein pressing the key corresponds to a selection of the specified one of the reply components; and

transmitting from the pager a reply message incorporating the reply code corresponding to the specified one of the reply components.

5,630,208

ADAPTIVE MULTIPATH EQUALIZATION

Per Enge, Mountain View; Dominic Farmer, Milpitas, and John F. Schipper, Palo Alto, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Jul. 19, 1994, Ser. No. 277,150

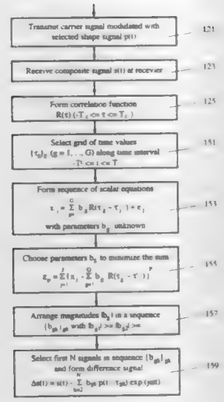
Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—65 **23 Claims**

1. A method for compensating for the presence of one or more multipath signals in an electromagnetic signal received at a receiver, the method comprising the steps of:

receiving a signal s(t) at a receiver that is the result of a transmitted message signal with frequency ω and having a shape signal p(t) with frequency $f_c=1/T_c$;

selecting a grid of values $\{\tau_g\}_g$ (g=1, 2, . . . , G) of the time variable t lying in the interval $-T_c \leq t \leq T_c$;



selecting a set of sampling times $(\tau'_j)_j$ (j=1, . . . , J; J a selected integer≧2) for a correlation function R(τ), and determining the correlation function values $R(\tau'_j)=x_j$, where the correlation function R(τ) is defined by

$$R(\tau)=\int_0^T s(t)p(t-\tau)\exp(-j(\omega t)\}dt/T,$$

and T is a selected time satisfying $T>>T_c$; choosing complex numbers b_g so that a sum

$$\epsilon_q=\sum_{j=1}^{J}\left|x_j-\sum_{m=1}^{N} b_m R(\tau_m-\tau'_i)\right|^q.$$

is minimized, where q is a selected positive number;

arranging the magnitudes $|b_g|$ of the complex numbers b_g in a sequence $\{|b_{gk}|\}_{gk}$ in decreasing order of magnitude so that $|b_{g1}|\geq|b_{g2}|\geq|b_{g3}|\geq \ldots$, and choosing H members of this sequence, where H is a selected positive integer;

designating the time $t=\tau_{g1}$ as the time of arrival of the direct signal and the times $t=\tau_{gk}$ (k=2, . . . , H) as the times of arrival of multipath signals; and

interpreting a difference signal

$$\Delta s(t)=s(t)-\sum_{k=2}^{H} b_{gk}p(t-\tau_{gk})\exp(j\omega t)$$

as a signal from which at least one multipath signal has been removed.

5,630,209

EMERGENCY CALL SYSTEM

Manfred Wizgall; Axel Kuttner, both of Stuttgart, and Horst Ohnsorge, Freiberg, all of Germany, assignors to Alcatel Sel Aktiengesellschaft, Stuttgart, Germany

Filed Jun. 3, 1994, Ser. No. 253,741

Claims priority, application Germany, Jun. 3, 1993, 43 18 441.3

Int. Cl.[6] H04B *1/00*

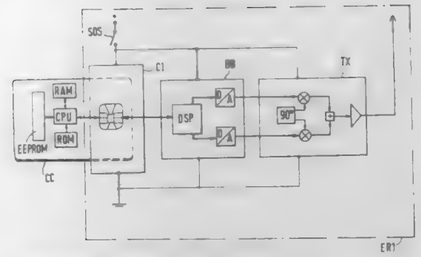
U.S. Cl. 455—66 **18 Claims**

1. An emergency call system comprising:

a wireless telecommunication network having predetermined radio channels;

at least one wireless emergency call transmission means for reading emergency data and transmitting the data in an emergency call message on at least one of the radio channels; and

at least one emergency call receiver means for receiving and evaluating the emergency call message, and at least one of:



triggering at least one alarm function, and

further conducting the emergency data to an alarm center connected to the wireless telecommunication network;

wherein the at least one wireless emergency call transmission means comprises:

a card reader for reading the emergency data from a memory card.

5,630,210

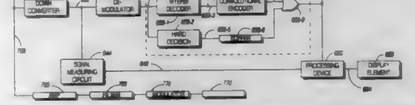
METHOD AND APPARATUS FOR DETERMINING SIGNAL TRANSMISSION QUALITY LEVELS OF A TRANSMITTED SIGNAL

Patrick J. Marry, Huntley; David C. Schuster, Buffalo Grove, and Adam F. Gould, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 873,466, Apr. 24, 1992, abandoned. This application Aug. 7, 1995, Ser. No. 511,666

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—67.3 **17 Claims**



1. An apparatus for calculating and displaying signal transmission quality level of a wireless information bearing communications signal comprised of sequences of encoded data transmitted between a transmitter and a receiver, said apparatus comprising:

means for measuring signal level magnitudes of the signal transmitted between the transmitter and the receiver to form a received-signal strength value;

means for determining bit errors introduced upon the communications signal transmitted between the transmitter and the receiver to form an interference level value;

means, when the levels of interference indicate no bit errors, for scaling the received-signal strength value formed by said means for measuring by a scale factor to provide a signal transmission quality level value representative of quality levels of the signal transmission between the transmitter and the receiver and, when the levels of interference indicate bit errors, for mutiplying the received-signal strength value by an interference number less than one to produce a product and scaling the product by a scale factor to provide the signal transmission quality level value; and

a display element having display portions operatively coupled to the means for multiplying and scaling for displaying in human perceptible form the signal transmission quality level value formed by said means for multiplying to cause various portions of the display element to turn on responsive to the signal transmission quality level value.

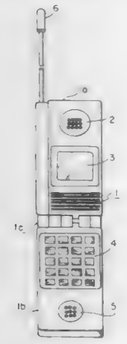
VOL 1198 ISS 2 MY 13 1997 UMI

5,630,211

ROTATING ANTENNA TYPE PORTABLE RADIO APPARATUS

Michio Nagai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,160
Claims priority, application Japan, Dec. 28, 1993, 5-335272
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—89 **8 Claims**



1. A portable radio apparatus comprising:
a first body including at least a receiving section;
a second body;
a hinge section for connecting said first body and said second body such that said first body can be rotated with respect to said second body from a closed position to an open position; and
an antenna rotatably installed on said hinge section, wherein said hinge section comprises:
a first hinge portion integral to said second body;
a second hinge portion integral to said first body and being rotatably coupled with said first hinge portion;
a third hinge portion integral to said first body;
a fourth hinge portion integral to said second body and being rotatably coupled to said third hinge portion;
a fifth hinge portion integral to said antenna, and
coupling means for mechanically coupling said fifth hinge portion with one of said third and fourth hinge portions;
wherein said antenna is rotatable when said first and second bodies are closed, and
wherein said antenna rotates in response to rotation of a corresponding one of said first and second bodies.

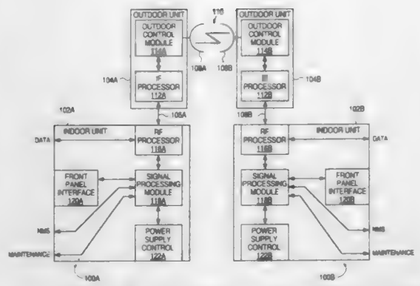
5,630,212

MICROWAVE RADIO SYSTEM WITH SOFTWARE CONFIGURATION OF OPERATING PARAMETERS

Gideon Ben-Efraim, Cupertino, Calif., assignor to P-Com, Inc., Santa Clara, Calif.

Continuation of Ser. No. 219,684, Mar. 28, 1994, abandoned.
This application Nov. 20, 1995, Ser. No. 561,228
Int. Cl.[6] H04B *1/40*
U.S. Cl. 455—127 **11 Claims**

8. A method for controlling operation of an RF assembly of a microwave transmitter, comprising:
transmitting a telemetry signal from a remote radio to the RF assembly through a microwave link;
transmitting the telemetry signal from the RF assembly to an indoor unit;
extracting from the telemetry signal a command to change an operating parameter of the RF assembly, wherein in response



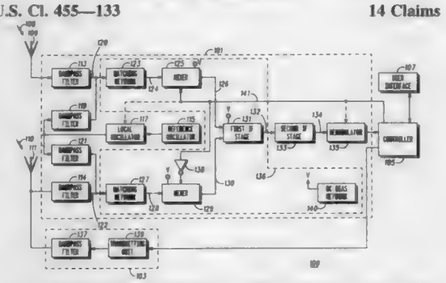
the command, the indoor unit transmits a digital value from the indoor unit to the RF assembly;
storing the digital value in a nonvolatile memory located in the RF assembly; and
using the digital value as an operating parameter for the RF assembly.

5,630,213

RF ANTENNA SWITCH AND METHOD OF OPERATING THE SAME

Louis J. Vannatta, Crystal Lake, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 997,275, Dec. 22, 1992, abandoned.
This application Jun. 14, 1995, Ser. No. 490,523
Int. Cl.[6] H04B *7/08*
U.S. Cl. 455—133 **14 Claims**



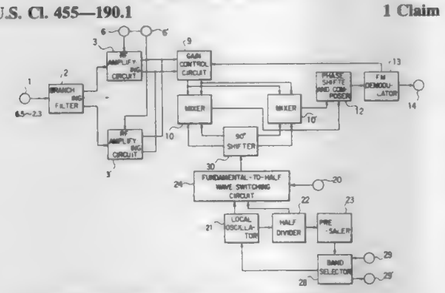
1. An antenna switch operative to switch between at least a first antenna and a second antenna comprising:
a first active mixer having an input terminal coupled to the first antenna and having an output terminal, the first active mixer having a first output impedance when the first active mixer is enabled and a second output impedance when the first active mixer is disabled;
a second active mixer having an input terminal coupled to the second antenna and having an output terminal, the second active mixer having a first output impedance when the second active mixer is enabled and a second output impedance when the second active mixer is disabled;
a matching network directly connected to the output terminal of the first active mixer and the output terminal of the second active mixer, the matching network having an input impedance; and
a controller operative to alternatively enable the first and the second active mixers, the first output impedance of the first active mixer in combination with the second output impedance of the second active mixer matching the input impedance of the matching network, and the second output impedance of the first active mixer in combination with the first output impedance of the second active mixer matching the input impedance of the matching network.

5,630,214

WIDE-BAND RECEIVING APPARATUS WITH LOCAL OSCILLATING CIRCUIT

Akio Yamamoto, Hiratsuka; Masaki Noda, Chigasaki; Toshio Nagashima, Yokohama, and Masatoshi Oga, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 882,276, May 13, 1992, abandoned.
This application Mar. 2, 1995, Ser. No. 397,735
Int. Cl.[6] H04B *1/18*
U.S. Cl. 455—190.1 **1 Claim**



1. A wide-band receiving apparatus, comprising:
means for receiving a wide-band input signal containing modified RF signals of two or more different frequency bands and separating said RF signals by the bands;
means for selecting one of said separated RF signals;
a variable frequency local oscillating circuit for generating a first oscillating signal of a selected variable fundamental frequency;
frequency converting means for converting the fundamental frequency of said first ocillating signal into at least one second oscillating signal of a frequency having a predetermined ratio to said selected variable fundamental frequency;
a band-selector circuit for controlling the fundamental frequency of said oscillating signal based on a comparison of a frequency relating to the frequency of said second oscillating signal with a frequency relating to the frequency band of the selected RF signal;
second selecting means for selecting one of said first oscillating signal and said at least one second oscillating signal based on the frequency band of said selected RF signal;
means for changing a phase of said oscillating signal selected by said second selecting means thereby producing third and fourth oscillating signals having phases shifted 90 with respect to each other;
a first mixer circuit for mixing said selected RF signal with said third oscillating signal to produce a first intermediate-frequency signal;
a second mixer circuit for mixing said selected RF signal with said fourth oscillating signal to produce a second intermediate-frequency signal;
means for composing said first and second intermediate-frequency signals together, with a phase difference of 90 between said first and second intermediate-frequency signals thereby generating a composed output; and
a circuit for demodulating said composed output.

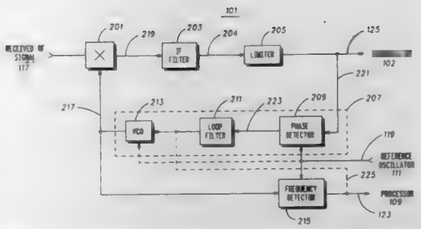
5,630,215

RADIO HAVING A COMBINED PLL AND AFC LOOP AND METHOD OF OPERATING SAME

William T. Waldie, Elgin, Ill., and Joseph P. Heck, Fort Lauderdale, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 926,727, Aug. 6, 1992, abandoned.
This application Apr. 5, 1995, Ser. No. 417,189
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—192.2 **31 Claims**

1. A radio comprising:



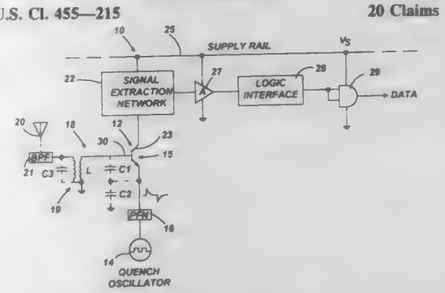
means for converting a received radio frequency (RF) signal of interest, if any, to an intermediate frequency (IF) signal responsive to an injection signal;
first means for locking the injection signal to the received RF signal responsive to a difference between the IF signal and a reference signal to precisely locate the received RF signal; and
second means for locking the reference signal to the received RF signal responsive to a difference between the injection signal and the reference signal to generally locate the received RF signal,
wherein the first means for locking and the second means for locking operate simultaneously.

5,630,216

MICROPOWER RF TRANSPONDER WITH SUPERREGENERATIVE RECEIVER AND RF RECEIVER WITH SAMPLING MIXER

Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Sep. 6, 1994, Ser. No. 300,765
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—215 **20 Claims**



1. An RF receiver comprising in combination:
a) an external quench oscillator for generating a series of quench oscillation pulses at a predetermined quench frequency;
b) an RC pulse forming network connected to said quench oscillator for converting said series of quench oscillation pulses into a series of differentiated exponentially damped drive pulses;
c) a self-detecting RF oscillator connected to, and driven by said drive pulses;
d) an antenna, connected to said RF oscillator, for receiving modulated RF signals;
e) an RC signal extraction network, connected to said RF oscillator, for blocking said quench frequency signals and for passing detected RF signals; and
f) a micropower amplifier, connected to said signal extraction network for amplifying said detected RF signals.

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5,630,217

ERROR-FREE PULSE NOISE CANCELER USED IN FM TUNER

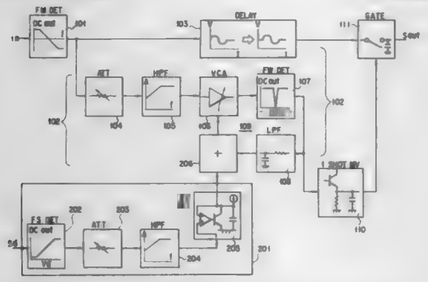
Yutaka Matsumoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 21, 1994, Ser. No. 360,299

Claims priority, application Japan, Dec. 21, 1993, 5-322239; Dec. 7, 1994, 6-304041

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—222 24 Claims



1. A pulse noise canceler used in an FM tuner, comprising:

an FM wave detector for demodulating an FM input signal;

FM pulse noise detecting means for detecting a level of noise to be canceled from an output from said FM wave detector;

over deviation detecting means for detecting a magnitude of an over deviation of an FM wave corresponding to the output signal from said FM wave detector;

transfer control means having a function of holding and controlling an output signal from said FM wave detector in accordance with an output from said FM pulse noise detecting means; and

transmission control means for disabling effective transmission of the output from said FM pulse noise detecting means to said transfer control means in accordance with a detection output from said over deviation detecting means.

5,630,218

RADIO RECEIVING DEVICE FOR MEASURING AN ELECTRIC FIELD LEVEL OF A RECEIVING CHANNEL AND ADJACENT CHANNELS USING COMMON COMPONENTS

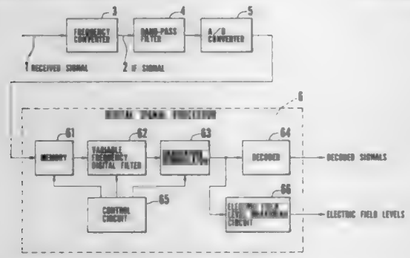
Hiroyasu Muto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 15, 1994, Ser. No. 275,407

Claims priority, application Japan, Jul. 21, 1993, 5-180414

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—226.2 14 Claims



1. A radio receiving device, comprising:

a frequency converter for converting signals received on a receiving channel and adjacent channels of higher- and lower-frequencies than the receiving channel into IF signals;

a band-pass filter for passing the IF signals on the receiving channel and the adjacent channels;

an A/D converter for converting an output signal from said band-pass filter into a digital signal; and

a digital signal processor for switching a frequency band to the receiving channel and the adjacent channels of the higher- and lower-frequencies, for sequentially switching the frequency band to the receiving channel and the adjacent channels on the higher- and lower-frequencies and calculating electric field levels of the received signals of the respective channels on the basis of digital signals output from said A/D converter,

wherein said digital signal processor comprises:

a variable frequency digital filter for switching a frequency band to the receiving channel and the adjacent channels of higher- and lower-frequencies;

a demodulator for demodulating a digital received signal passing through said variable frequency digital filter; and

an electric field level measuring circuit for measuring an electric field level of a received signal on the basis of an output from said demodulator.

5,630,219

RECEPTION ELECTRIC FIELD LEVEL DETECTION CIRCUIT

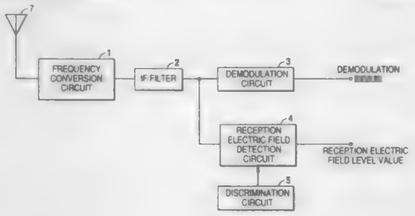
Toru Matsuki, and Masayuki Takahashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,566

Claims priority, application Japan, Dec. 28, 1993, 5-334094

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—226.2 3 Claims



1. A reception electric field level detection circuit for a mobile communication system wherein a plurality of mobile radio units send out individual carriers to a plurality of stationary radio units using a plurality of radio channels which are adjacent to each other, comprising:

reception electric field detection means provided in each of said plurality of stationary radio units for, detecting a reception electric field level value of any of the carriers; and

control means connected to said reception electric field detection means for controlling the detection of a reception electric field level value by said reception electric field detection means;

said control means being operable to discriminate a modulated portion and a non-modulated portion of the carrier and control said reception electric field detection means so that said reception electric field level value from the non-modulated portion of the carrier.

5,630,220

AUTOMATIC GAIN CONTROL CIRCUIT FOR RADIO COMMUNICATION APPARATUS

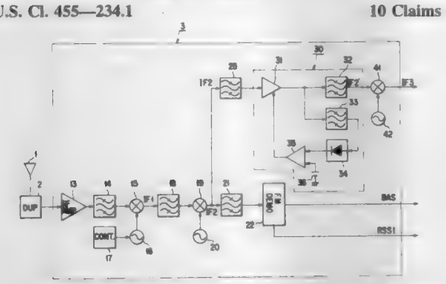
Ryuji Yano, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 24, 1993, Ser. No. 64,939

Claims priority, application Japan, May 22, 1992, 4-130977

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—234.1 10 Claims



1. A radio communication apparatus for use in a radio communication system wherein signals are transmitted between a base station and the radio communication apparatus over a radio link, comprising:

receiving means for receiving signals transmitted from the base station over the radio link and for outputting received signals having a desired frequency;

level changing means for changing a level of the received signals output from said receiving means and outputting the level-changed signals;

first band-pass filtering means connected to an output terminal of said level changing means, having a first pass band including the desired frequency, for filtering the level-changed signals output from said level changing means and outputting the first filtered signals;

mixer means for mixing the first filtered signals output from said first filtering means with a local oscillation signal to output an intermediate-frequency signal;

demodulating means for demodulating the intermediate-frequency signal output from said mixer means;

second band-pass filtering means connected parallel to the first band-pass filtering means and connected to an output terminal of said level changing means prior to said mixing means, having a second pass band narrower than the first pass band, for filtering the level-changed signals output from said level changing means and outputting the second filtered signals, the second pass band including the desired frequency; and

level controlling means for controlling said level changing means according to a level of the second filtered signals output from said second filtering means.

5,630,221

DYNAMIC RANGE EXTENSION SYSTEM

Stanley V. Birleson, Rowlett, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 809,366, Dec. 18, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,062

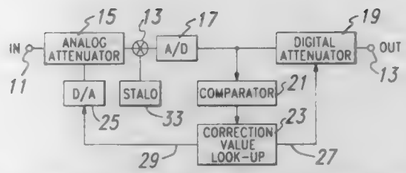
Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—249.1 18 Claims

1. A receiver which comprises:

(a) an analog to digital converter having an input terminal and an output terminal for converting an analog signal at the input terminal thereof to a corresponding digital signal at the output terminal thereof;

(b) an analog attenuator for receiving and attenuating analog signals applied thereto, said analog attenuator coupled to the input terminal of said converter and applying attenuated analog signals to said input terminal of said converter;



(c) a digital attenuator for receiving and attenuating digital signals applied thereto, said digital attenuator coupled to the output terminal of said converter and attenuating digital signals received from said output terminal of said converter; and

(d) circuitry for concurrently maintaining the combined attenuation level of said analog attenuator and said digital attenuator to about one;

(e) wherein said circuitry for maintaining includes circuitry responsive to the pulse repetition interval of signals at the input terminal of said converter to adjust the attenuation of said analog attenuator and said digital attenuator.

5,630,222

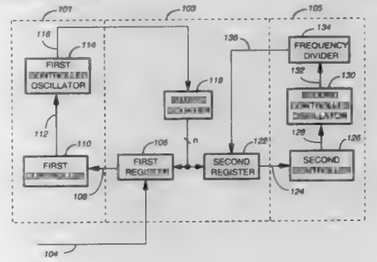
METHOD AND APPARATUS FOR GENERATING MULTIPLE SIGNALS AT MULTIPLE FREQUENCIES

Raymond L. Barrett, Jr., Lauderdale; Barry W. Herold, Boca Raton, and Grazyna A. Pajunen, Delray Beach, all of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 4, 1995, Ser. No. 566,518

Int. Cl.[6] H04B *1/14*

U.S. Cl. 455—260 21 Claims



1. A method of producing a plurality of generated signals operating at a plurality of generated frequencies that are integer multiples of a reference frequency at which a reference signal operates, the method utilizing a phase error detector comprising a shared counter, the method comprising the step of:

generating a first generated signal operating at a first frequency in a first phase lock loop, comprising in the phase error detector the steps of:

counting transitions of the first generated signal, and

coincident with a predetermined edge of the reference signal, producing a first count value representing a first phase correction signal for correcting the first frequency,

wherein the method further comprises the step of

simultaneously generating a second generated signal operating at a second frequency in a second phase lock loop, comprising in the phase error detector, the step of

producing, coincident with a predetermined transition of a sampler signal operating at a sampler frequency and derived from the second generated signal, a second count value representing a second phase correction signal for correcting the second frequency.

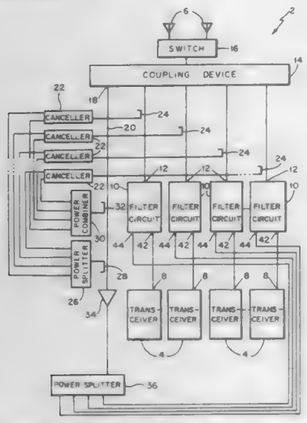
VOL 1198 ISS 2 MY 13 1997 UMI

5,630,223

ADAPTIVE METHOD AND APPARATUS FOR ELIMINATING INTERFERENCE BETWEEN RADIO TRANSCEIVERS

Mark B. Bahu, Ventura; Ashok K. Talwar, Westlake Village, both of Calif., and Guy R. Brossard, Cholet, France, assignors to American Nucleonics Corporation, Westlake Village, Calif.

Filed Dec. 7, 1994, Ser. No. 351,586
Int. Cl.[6] H04B 1/10
U.S. Cl. 455—296 **29 Claims**



25. A device for the cosite processing of interference between radio transceivers comprising at least one transmission/reception antenna coupled to N transceivers by means of N transmission channels of a multicoupler, wherein said device comprises N agile filters placed respectively on each of the transmission channels and an N-channel interference cancellation device coupled between the N transmission channels and one reception channel common to all the radio transceivers to cancel interfering signals produced by at least one transmitted signal generated by the radio transceivers and present in a received signal on the reception channel wherein the received signal from the common reception channel is being provided to each of the N agile filters for processing therein.

5,630,224

METHOD AND APPARATUS FOR AVOIDING DESENSITIZATION OF A RADIO FREQUENCY RECEIVER

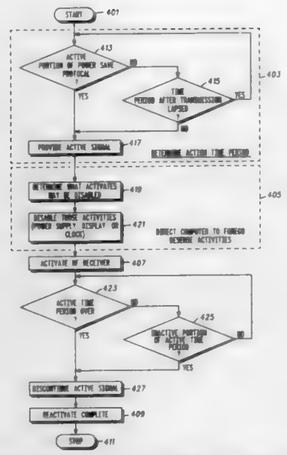
Bruce D. Swail, Woodinville, Wash., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1994, Ser. No. 366,360
Int. Cl.[6] H04B 1/10
U.S. Cl. 455—296 **20 Claims**

1. In a wireless communications system having an infrastructure and subscriber terminals and arranged and constructed to provide data communications between the infrastructure and the subscriber terminals, the subscriber terminals including a computer operatively coupled to a radio frequency (RF) receiver, a method of avoiding desensitization of the radio frequency receiver by the computer including the steps of:

determining an active time period for the RF receiver, where the active time period is predetermined according to a communications protocol;

directing the computer to forego desense generating activities during at least a portion of said active time period, including



disabling a display for the computer during at least said portion of said active time period; and

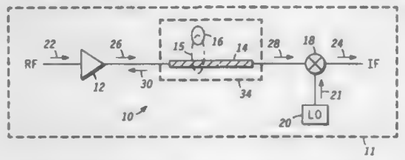
activating said RF receiver during said active time period.

5,630,225

DIELECTRIC RESONATOR IMAGE REJECT MIXER AND METHOD

David W. Corman, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 320,850, Oct. 7, 1994, abandoned, which is a continuation of Ser. No. 930,949, Aug. 17, 1992, abandoned. This application May 10, 1996, Ser. No. 644,733
Int. Cl.[6] H04B 1/10
U.S. Cl. 455—302 **10 Claims**



1. A dielectric resonator image reject mixer comprising:

a low noise amplifier for receiving a receive frequency (RF) signal input and outputting a first combined signal comprising a RF signal, a RF noise signal, and an image noise signal;

a local oscillator for producing a local oscillation frequency signal;

a mixer coupled to the local oscillator;

a microstrip line coupled between the low noise amplifier and the mixer, the microstrip line to receive the first combined signal; and

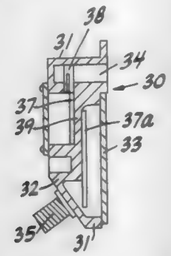
a dielectric resonator coupled in close proximity to the microstrip line such that a magnetic field is generated when the first combined signal is passed through the microstrip line, said magnetic field interacting with the dielectric resonator such that an image noise signal is rejected from the microstrip line to the low noise amplifier and a second combined signal comprising the RF signal and the RF noise signal is conducted through the microstrip line to the mixer, the mixer mixes the second combined signal with the local oscillation frequency signal to produce an intermediate frequency output signal.

5,630,226

LOW-NOISE DOWNCONVERTER FOR USE WITH FLAT ANTENNA RECEIVING DUAL POLARIZED ELECTROMAGNETIC WAVES

Minoru Kanda; Mikio Komatsu; Naoki Ao; Kyoji Masamoto, and Yoshitaka Kimura, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 270,845, Jul. 5, 1994. This application Dec. 9, 1994, Ser. No. 353,050
Claims priority, application Japan, Jul. 15, 1991, 3-172871; Jul. 15, 1991, 3-172872; Jul. 15, 1991, 3-172886; Oct. 25, 1991, 3-279889; Jan. 9, 1992, 4-2264; Jan. 9, 1992, 4-94662
Int. Cl.[6] H04B 1/18
U.S. Cl. 455—313 **4 Claims**



1. A low-noise-block downconverter for use with a flat antenna receiving dual polarized electromagnetic waves, comprising:

a case body mounted to a rear side surface of said flat antenna and having a partition dividing an interior space of the case body into front and back spaces;

a pair of input ports provided in said case body so as to correspond respectively to wave guide apertures of said flat antenna for receiving radio frequency signals of said polarized electromagnetic waves of two different types;

a selective means disposed in said case body for allowing an alternative one of said radio frequency signals of each of said two different types of polarized electromagnetic waves received to pass there through in accordance with a magnitude of a DC voltage supplied from a DC power source;

means disposed in said case body for converting the frequency of said radio frequency signals of said selected one of the polarized electromagnetic waves received; and

two printed-circuit boards respectively provided with a low-noise amplifier section including said radio frequency signal selective means and with a frequency converter section including a local oscillator circuit, said printed-circuit board of said amplifier section and said printed-circuit board of said converter section being disposed respectively on opposite sides of said partition of said case body so as to respectively lie in said front and back spaces,

wherein each of said pair of input ports is formed, as viewed in a depth direction of the port, in a rectangular shape having a longitudinal axis, and wherein the input ports are disposed so that the longitudinal axes of the rectangular shapes of the ports are substantially perpendicular to each other.

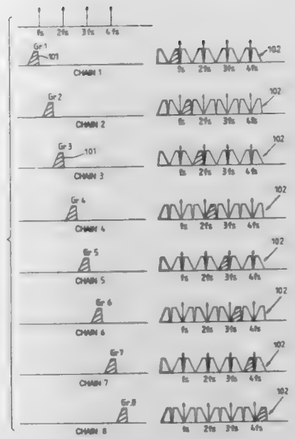
5,630,227

SATELLITE RECEIVER HAVING ANALOG-TO-DIGITAL CONVERTER DEMODULATION

Luigi Bella, Noordwijk aan Zee; Javier V.-T. Bosch, Katwijk; Irene Echaniz-Elgarresta, Leiden, all of Netherlands, and Gerhard Hoffmann, Uhldingen-Mühlhofen, Germany, assignors to Agence Spatiale Europeenne, Paris Cedex, France

Continuation of Ser. No. 212,900, Mar. 14, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,911
Claims priority, application France, Mar. 17, 1993, 93 03067
Int. Cl.[6] H04B 1/30
U.S. Cl. 455—324 **5 Claims**

1. A radio frequency (RF) receiver comprising:



means for downconverting an incoming band of signals received at a carrier frequency to a downconverted signal having a frequency spectrum centered about an intermediate frequency (IF);

said downconverted signal comprising a plurality of bandlimited components with a reference bandwidth equal to the bandwidth of the largest of said bandlimited components;

means for filtering said downconverted signal to provide a plurality of filtered signals corresponding to said plurality of bandlimited components; and

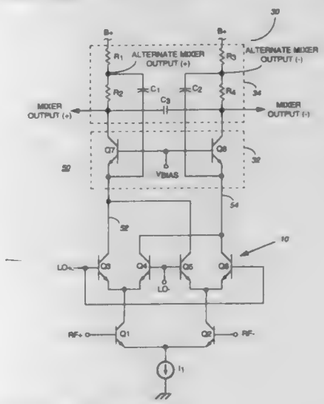
means for substantially concurrently sampling said plurality of filtered signals at a sampling frequency (f_s) which is at least the Nyquist rate for said reference bandwidth but lower than the Nyquist rate for said downconverted signal, in order to provide said plurality of filtered signals at baseband directly from said downconverted signal.

5,630,228

DOUBLE BALANCED MIXER CIRCUIT WITH ACTIVE FILTER LOAD FOR A PORTABLE COMUNICATION RECEIVER

James G. Mittel, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 24, 1995, Ser. No. 427,026
Int. Cl.[6] H04B 1/16
U.S. Cl. 455—326 **15 Claims**



1. A mixer circuit comprising:

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a multiplication circuit having a first input suitable for connection to an oscillator signal and a second input suitable for connection to a radio frequency (RF) signal to be mixed with the oscillator signal, the multiplication circuit generating at an output an output current which is a multiplication of the oscillator signal and the RF signal;

a direct-current (DC) current source coupled to the multiplication circuit for supplying DC current for operation of the multiplication circuit;

an active filter circuit coupled to the multiplication circuit, the active filter circuit being biased for operation by DC current that is coupled to it through the output of the multiplication circuit from the DC current source, the active filter circuit comprising:

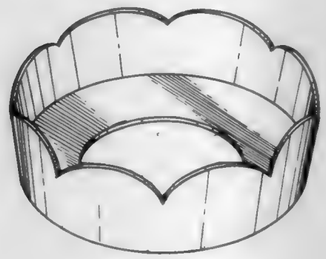
a common-base amplifier coupled to the output of the multiplication circuit and generating a current output in response to the output current of the multiplication circuit, wherein the common-base amplifier comprises a voltage bias, a first transistor comprising an emitter, base and collector, the emitter of the first transistor coupled to the output of the multiplication circuit, the DC current being coupled to the active filter circuit through the emitter of the first transistor, and the base of the first transistor coupled to the voltage bias; and

a low pass active filter coupled to the common-base amplifier for filtering the current output of the common-base amplifier and generating at an output a filtered mixer output signal.

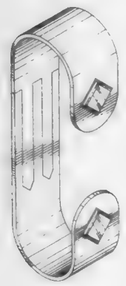
DESIGNS

MAY 13, 1997

379,107
COLLAR FOR AN ICE CREAM CONE
Ronald A. Loch, 6930 Knollwood Cir. W., West Bloomfield, Mich. 48322, and Stephen L. Henri, 26133 Meadowview, Farmington Hills, Mich. 48331
Filed Sep. 12, 1995, Ser. No. 43,795
Term of patent 14 years
LOC (6) Cl. 09 - *05*
U.S. Cl. D1—118



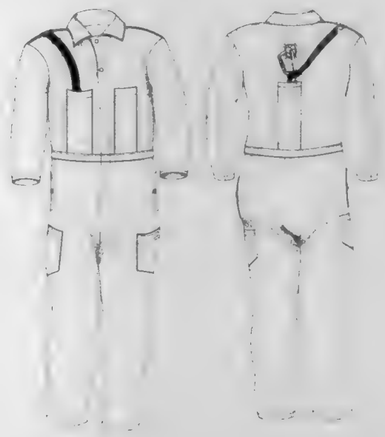
379,108
BELT HOLDER
Teresa M. Munoz, 515 N. Roosevelt, Casa Grande, Ariz. 85222
Filed Sep. 26, 1995, Ser. No. 44,526
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—639



379,109
COSTUME
Katrina L. Van Gendt, North Sydney, Australia, assignor to Australian Broadcasting Corporation, Ultimo New South Wales, Australia
Filed Nov. 8, 1994, Ser. No. 30,806
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—741



379,110
SAFETY SUIT
Craig W. Neustater, New Brunswick, N.J.; Henry Dowding, Staten Island, N.Y., and Patrick A. Dowson, Cromwell, Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed May 17, 1995, Ser. No. 38,957
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—743

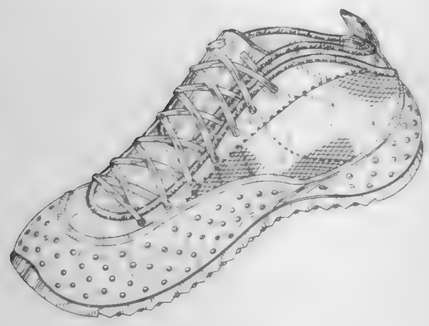


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379,111
HAT
Cyril P. Foray, 470 H Euclid Ave., Lancaster, Pa. 17603
Continuation of Ser. No. 20,391, Mar. 25, 1994. This application Jun. 25, 1995, Ser. No. 39,718
Term of patent 14 years
U.S. Cl. D2—882



379,112
WATER SPORTS SHOE
Steve McDonald, Portland, Oreg., assignor to Patagonia, Incorporated, Ventura, Calif.
Filed May 17, 1996, Ser. No. 54,640
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—903



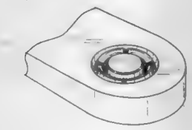
379,113
SHOE
Steve McDonald, Portland, Oreg., and Tom Diegel, Santa Barbara, Calif., assignors to Patagonia, Incorporated, Ventura, Calif.
Filed Nov. 8, 1995, Ser. No. 46,165
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—907



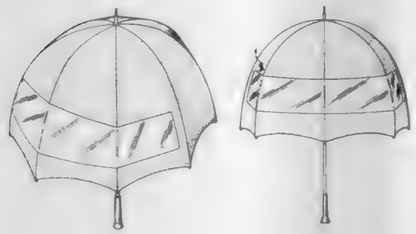
379,114
SHOE SOLE
Jean-Paul Merceron, Monthodon, France, assignor to Article Chaussant Europeen (Arche S.A.), Chateau-Renault, France
Filed Aug. 15, 1994, Ser. No. 27,347
Claims priority, application France, Feb. 16, 1994, 940902
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—952



379,115
FOOTWEAR HEEL CUSHION
Timothy M. Kramer, Creve Coeur, Mo., assignor to Brown Group, Inc., St. Louis, Mo.
Filed Jul. 6, 1995, Ser. No. 41,115
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—968



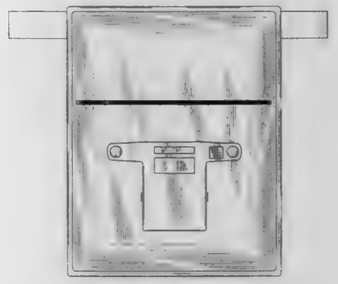
379,116
UMBRELLA
Troy Selberg, 217 Rolling Hills Rd., Mooresville, N.C. 28115
Filed Nov. 3, 1995, Ser. No. 45,942
Term of patent 14 years
LOC (6) Cl. 03 - *03*
U.S. Cl. D3—6



379,117
CLASP FOR SEWING
Deborah Ortiz, 3915 Josh St., Eugene, Oreg. 97402
Filed Dec. 27, 1994, Ser. No. 32,771
Term of patent 14 years
LOC (6) Cl. 03 - *03*
U.S. Cl. D3—20



379,118
BEEPER POUCH
Celina X. Wilson, 65 Park Dr., Rocky Point, N.Y. 11778
Filed Oct. 23, 1995, Ser. No. 46,688
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—218



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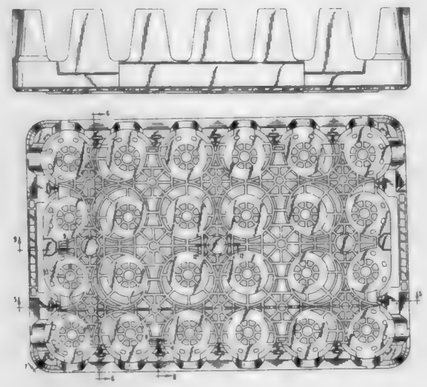
379,119
BOTTLE HOLDER
Charles L. Wolfe, Bloomfield, N.J., and Samuel Cotte, New York, N.Y., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Filed Oct. 16, 1995, Ser. No. 46,620
Term of patent 14 years
U.S. Cl. D3—229



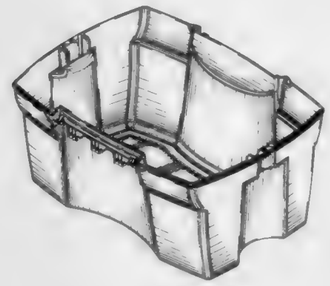
379,120
SPORTS CARRYING PACK
Victor E. Steinfels, Dublin, Ohio, assignor to Universal Licensed Products, Ltd., Columbus, Ohio
Filed Mar. 13, 1996, Ser. No. 51,539
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—254



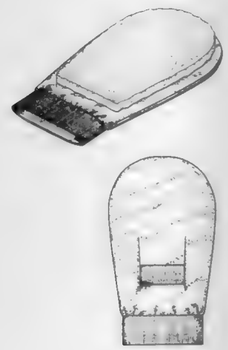
379,121
NESTABLE CRATE WITH HANDLE
William P. Apps, Alpharetta, and Gerald R. Koefelda, Atlanta, both of Ga., assignors to Rehrig Pacific Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 18,317, Feb. 3, 1994, Pat. No. Des. 361,431. This application Apr. 18, 1995, Ser. No. 37,636
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—312



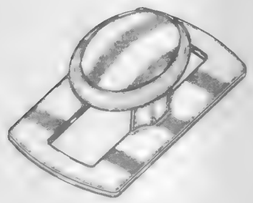
379,122
STORAGE CONTAINER
Stacy L. Wolff, Houston, Tex., assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed May 16, 1996, Ser. No. 54,543
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—312



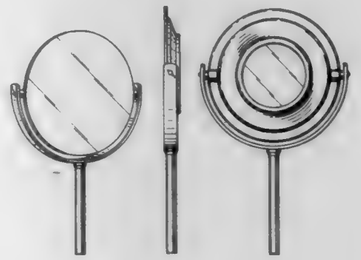
379,123
MITT FOR APPLYING PAINT
Susan G. Driggers, 4275 Bending River Trail, Lilburn, Ga. 30247
Filed Jan. 19, 1996, Ser. No. 49,170
Term of patent 14 years
LOC (6) Cl. 04 - *04*
U.S. Cl. D4—137



379,124
HANDLE FOR SCRUB BRUSH
Matt Bantly, Granby, Conn., and Kathryn K. McEntee, Washington, N.C., assignors to Rubbermaid Cleaning Products Inc., Greenville, N.C.
Filed Apr. 26, 1996, Ser. No. 53,647
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D4—138



379,125
TWO-SIDED PIVOTALLY MOUNTED MIRROR
Luther G. Simjian, 1750 S. Ocean La. #213B, Fort Lauderdale, Fla. 33316
Filed May 17, 1996, Ser. No. 54,612
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—309

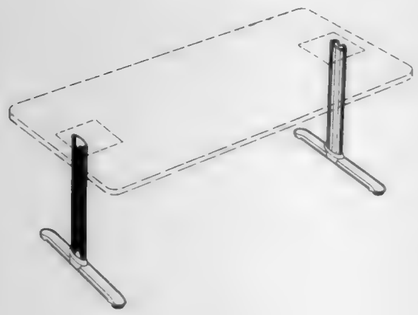


379,126
TRIM FOR FURNITURE
H. Thomas Keller, High Point, N.C., assignor to Bernhardt Furniture Company, Lenoir, N.C.
Filed Sep. 13, 1994, Ser. No. 28,378
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—495

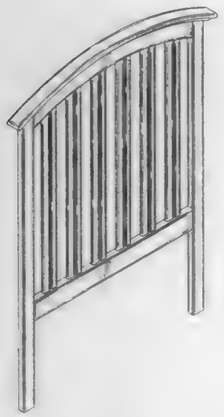


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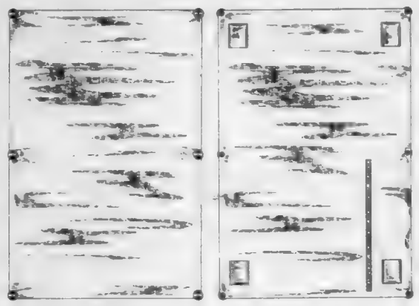
379,127
PAIR OF LEGS FOR A TABLE
William F. Schacht, Grand Rapids, Mich., assignor to Haworth, Inc., Holland, Mich.
Filed Jun. 9, 1995, Ser. No. 40,120
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—495



379,128
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed May 17, 1996, Ser. No. 54,601
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—508



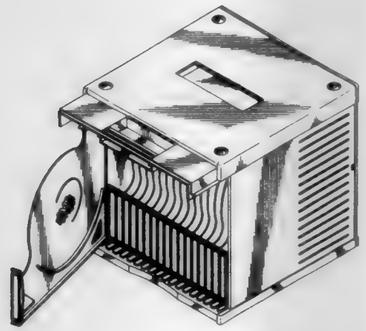
379,129
ANCHOR BLANKET
Tanya V. Yost, and Shawn V. Yost, both of 1350 Chambers St., Trenton, N.J. 08610
Filed May 30, 1995, Ser. No. 39,512
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—596



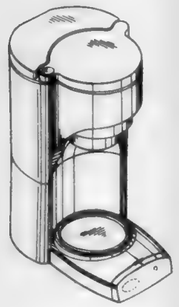
379,130
PILLOW
Maureen Bernett, 77 McGinnis Rd., Tijeras, N.M. 87059
Filed Sep. 25, 1995, Ser. No. 44,500
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—598



379,131
DISK CONTAINER
Mineko Ohta, Osaka, Japan, assignor to Elecom Kabushiki Kaisha, Osaka-fu, Japan
Filed Oct. 30, 1995, Ser. No. 45,776
Claims priority, application Japan, May 9, 1995, 7-12935
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—635



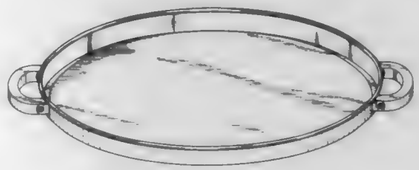
379,132
COFFEE MAKER
Martin Brady, Chesterfield County, and Michael J. Morecroft, Glen Allen, both of Va., assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Aug. 1, 1995, Ser. No. 42,110
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



379,133
FOOD STORAGE CONTAINER LID
Richard B. Ahern, Jr., Akron; Derek Campbell, Dayton; Maaike Evers, Columbus, all of Ohio; Debra A. Fritsch, Grand Rapids, Mich.; Norio Fujikawa, Columbus, Ohio; David Gresham, East Hampton, N.Y.; Paul J. Kudirka, Ada; Mark Metzler, Alto, both of Mich.; Donald J. Staufenberg, Dublin, Ohio, and Michael Sullivan, Ada, Mich., assignors to Rubbermaid Incorporated, Wooster, Ohio, and Amway Corporation, Ada, Mich.
Filed Dec. 11, 1995, Ser. No. 47,669
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—392.1

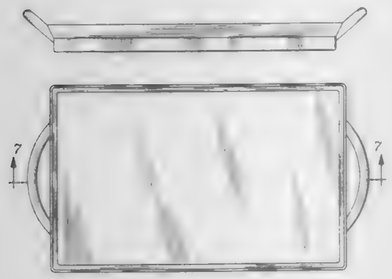


379,134
TRAY
Carsten Joergensen, Dattenbergrain, Switzerland, assignor to PI Design AG, Jriengen, Switzerland
Filed Mar. 24, 1995, Ser. No. 35,356
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—548



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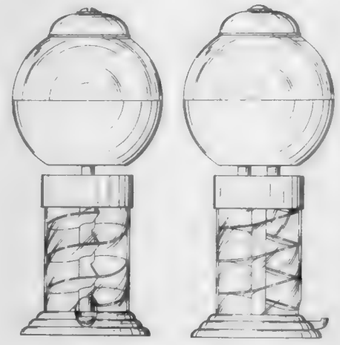
379,135
FREEZER TRAY
Thomas P. Vina, P.O. Box 112, Center Strafford, N.H. 03815
Filed Aug. 9, 1995, Ser. No. 42,386
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—550



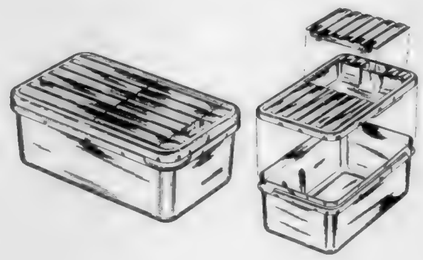
379,136
SPICE BALL
Donald S. Salvato, Rte. 82, Salt Point, N.Y. 12578
Filed Jul. 6, 1995, Ser. No. 41,104
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—596



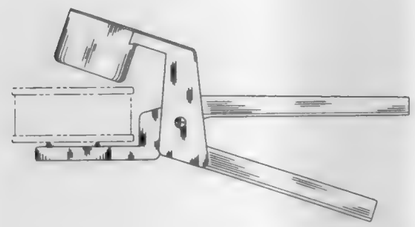
379,137
DISPENSER
Chan Lam, Kwai Chung, Hong Kong, assignor to Chit Hing Metal & Plastic Mfg., Ltd., Kwai Chung, Hong Kong
Filed Jul. 6, 1995, Ser. No. 41,114
Claims priority, application United Kingdom, Jan. 6, 1995, 2044305
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—598



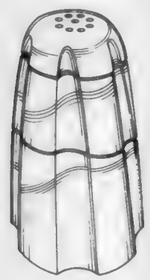
379,138
FOOD CONTAINER
Arthur R. Carlson, 23 Leura Grove, East Hawthorn, Victoria, Australia
Filed Aug. 16, 1995, Ser. No. 42,742
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—629



379,139
COMBINED LIQUID EXTRACTION AND LID REMOVAL TOOL FOR CANS
Stan Berde, 146 Avila, San Francisco, Calif. 94123
Filed Jan. 4, 1996, Ser. No. 48,584
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—666



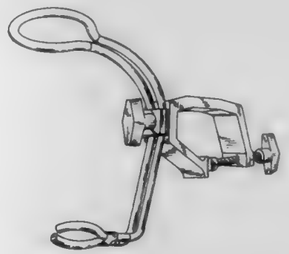
379,140
PEPPERMILL
Wayne Husted, 73 California Ave., Mill Valley, Calif. 94941
Filed May 2, 1996, Ser. No. 53,929
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—679



379,141
GARDEN HOE
Lawrence E. Cleghorn, 215 S. Seventh St., Rifle, Colo. 81650
Filed Oct. 20, 1995, Ser. No. 46,659
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—9

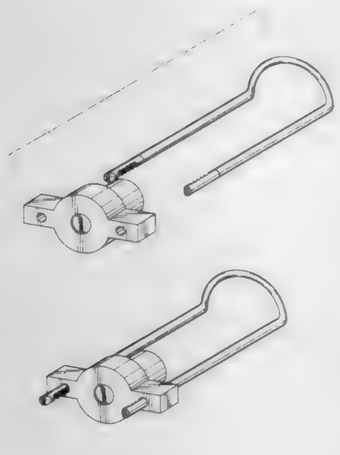


379,142
ADJUSTABLE POLE HOLDER
Timothy J. Miller, Ligonier, Ind., assignor to Universal Consolidated Methods, Inc., Topeka, Ind.
Continuation-in-part of Ser. No. 28,230, Sep. 9, 1994, Pat. No. Des. 365,870. This application Jan. 12, 1995, Ser. No. 34,714
The portion of the term of this patent subsequent to Jan. 2, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—71

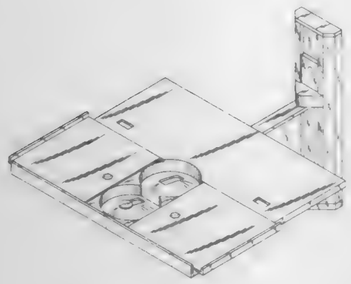


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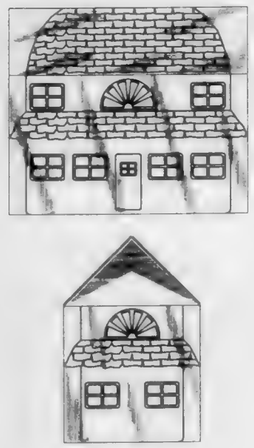
379,143
PROPELLER ANTI-THEFT DEVICE
Richard Alley, P.O. Box 2, Warfield, Ky. 41267
Filed Oct. 2, 1995, Ser. No. 44,854
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—346



379,144
WALL MOUNT FOR TELEVISION RECEIVER
Delphine G. Hunter, P.O. Box 1387, Medicine Hat, Alberta, Canada, and Mark J. Lumbard, 1631 - 15 Avenue SW, Calgary, Alberta, Canada
Filed Nov. 16, 1995, Ser. No. 46,846
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—363



379,145
GIFT BOX
Ginny Hunt, 2054 B Qtrs, Quantico, Va. 22134
Filed Oct. 23, 1995, Ser. No. 46,689
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—322



379,146
ACTUATOR SPOUT FOR A DISCHARGE SPRAY VALVE
Franz Zimmerhackel, Hattersheim, Germany, assignor to Deutsche Prazisions-Ventil GmbH, Hattersheim, Germany
Filed Nov. 28, 1994, Ser. No. 31,473
Claims priority, application Germany, May 28, 1994, M 94 04 343.4
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



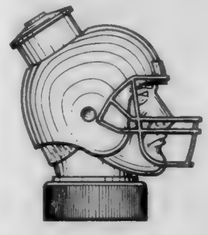
379,147
ACTUATOR SPOUT FOR A DISCHARGE SPRAY VALVE
Franz Zimmerhackel, Hattersheim, Germany, assignor to Deutsche Prazisions-Ventil, GmbH, Hattersheim, Germany
Filed Nov. 30, 1994, Ser. No. 31,530
Term of patent 14 years
U.S. Cl. D9—448



379,148
DISPENSING CAP
Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661, and Gregory S. Burcham, Spruce Pine, Ala., assignors to Edward S. Robbins, III, Muscle Shoals, Ala.
Filed Aug. 8, 1995, Ser. No. 42,405
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—449



379,149
DISPENSING VALVE FOR A BEVERAGE BOTTLE INCORPORATED IN A HEAD FIGURINE WEARING A FOOTBALL HELMET
James Powell, 5410 Seneca Pl., and Michael F. Leverette, 1966 E. Maryland Pl., both of Simi Valley, Calif. 93063
Filed Oct. 6, 1995, Ser. No. 45,054
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—451



379,150
SIDEWALL FOR A BOTTLE
William E. Richardson, Decatur, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 6, 1996, Ser. No. 49,987
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—500



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379,151
COMBINED BOTTLE AND CAP
John D. Stevens, Seattle, Wash., assignor to Talking Rain Beverage Co., Inc., Preston, Wash.
Filed May 2, 1996, Ser. No. 53,976
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—503



379,152
SIDEWALL FOR A BOTTLE
William E. Richardson, Decatur, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 6, 1996, Ser. No. 49,989
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—537



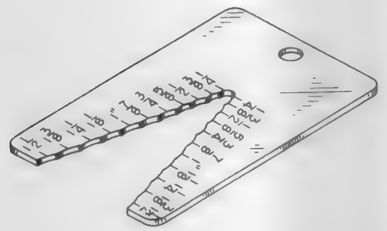
379,153
SIDEWALL FOR A BOTTLE
William E. Richardson, Decatur, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 6, 1996, Ser. No. 49,990
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—537



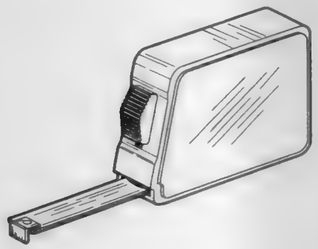
379,154
SIDEWALL FOR A BOTTLE
Thomas W. Cox, Woodstock, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Feb. 6, 1996, Ser. No. 49,991
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—540



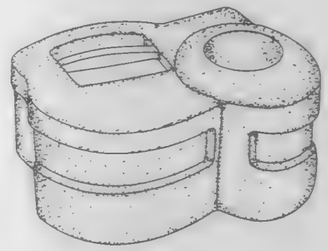
379,155
ROD DIAMETER GAUGE
Jerry L. Bond, 1020 120th Ave. S.E., Clara City, Minn. 56222
Filed Feb. 23, 1995, Ser. No. 35,261
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—64



379,156
BRICK SPACER SCALE WITH RETRACTIBLE MEASURING ELEMENT
Gerald Hochstetler, and Marlene Hochstetler, both of R.R. #4 Box 175, Salem, Ind. 47167
Filed Dec. 11, 1995, Ser. No. 47,696
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—72



379,157
PORTABLE ALARM
Brian K. Hess, Westerville, Ohio, assignor to Tattletale Portable Alarm, Inc., Columbus, Ohio
Filed Apr. 10, 1996, Ser. No. 53,029
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—106

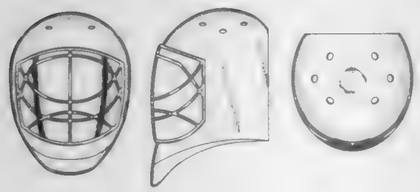


379,158
MOTORIZED DISPLAY DESIGN
Edward R. Bazinet, Eden Prairie, Minn., assignor to D 56, Inc., Eden Prairie, Minn.
Filed Apr. 26, 1996, Ser. No. 48,130
Term of patent 14 years
LOC (6) Cl. 11 - *05*
U.S. Cl. D11—121

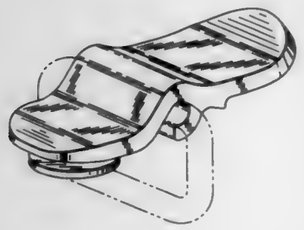


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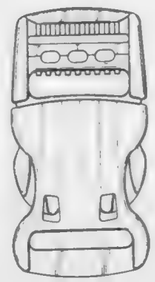
379,159
REPLICA GOALIE MASK
Texas C. Jackson, Box 502, Killam, Alberta, Canada
Filed Jun. 20, 1995, Ser. No. 40,517
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—157



379,160
BUCKLE
Ronald C. Johansson, Stillwater Township, Washington County; Vaughn B. Grannis, Inver Grove Heights, and Gerald M. Brostrom, Burnsville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 9, 1995, Ser. No. 42,389
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—216



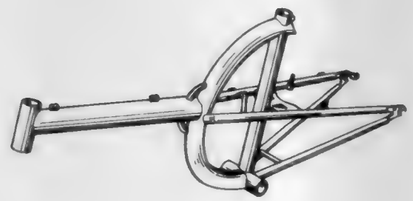
379,161
BUCKLE
Hiroshi Matoba, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Dec. 22, 1995, Ser. No. 48,803
Claims priority, application Japan, Jul. 17, 1995, 7-20607
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—216



379,162
ZIPPER PULL
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Feb. 9, 1996, Ser. No. 50,167
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—221



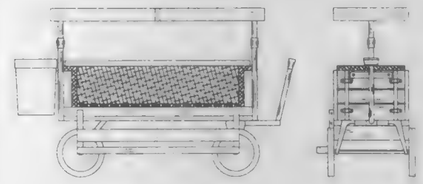
379,163
BICYCLE FRAME
Yen-Pin Lai, No. 199, Wu-Tung South Road, Pu Shin Country, Changhua, Taiwan
Filed Nov. 10, 1994, Ser. No. 30,867
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—111



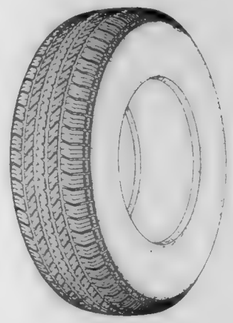
379,164
AERODYNAMIC BICYCLE
Forrest D. Yelverton, Longmont, Colo., assignor to GT Bicycles, Inc., Santa Ana, Calif.
Filed Dec. 5, 1994, Ser. No. 32,641
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—111



379,165
WAGON CONVERTED TO A STROLLER AND HAVING A REMOVABLE CONTAINER ATTACHED TO THE REAR THEREOF
Anthony Marozza, and Sharon L. Marozza, both of 237 N. Wisconsin Ave., Villa Park, Ill. 60181
Filed Aug. 18, 1995, Ser. No. 42,836
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—129



379,166
AUTOMOBILE TIRE
Koichiro Aikawa; Kazuhito Kimura, both of Hiratsuka; Hiroshi Tokizaki, and Izumi Kuramochi, both of Tokyo, all of Japan, assignors to The Yokohama Rubber Co. Ltd., Tokyo, Japan
Filed Apr. 27, 1995, Ser. No. 38,052
Claims priority, application Japan, Nov. 2, 1994, 6-33240
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



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379,167

DECORATIVE BAND FOR A TIRE SIDEWALL

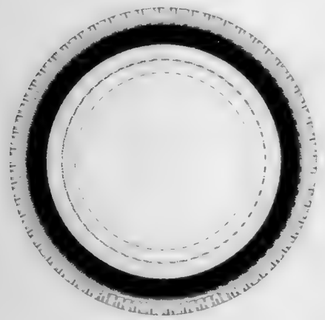
John S. Attinello, Hartville, and Samuel P. Landers, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 29, 1995, Ser. No. 40,875

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—152



379,168

DECORATIVE BAND FOR A TIRE SIDEWALL

Bill J. Ratliff, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1996, Ser. No. 51,428

Term of patent 14 years

LOC (6) Cl. 12 - *15*

U.S. Cl. D12—152



379,169

VEHICLE WINDOW AND WINDSHIELD SUNSHADE

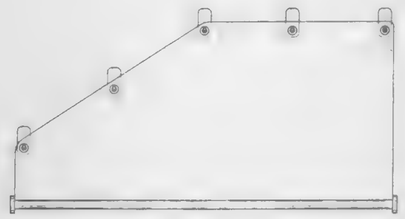
Jake D. Johnson, Sr., and Valerie J. Johnson, both of 1323 Kramer Dr., Carson, Calif. 90746

Filed Apr. 5, 1996, Ser. No. 52,777

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—183



379,170

VEHICLE RAIL MODULE EXTERIOR SURFACE INCORPORATING A HANDLE, COATHOOK AND LAMP

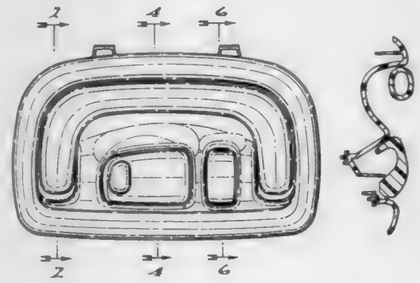
Michael G. Moore, Shelby Township; Harlan E. Kifer, Bloomfield Hills, and Barry Hutzel, Holland, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 29, 1994, Ser. No. 32,836

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—190



379,171

WHEEL RIM COVER

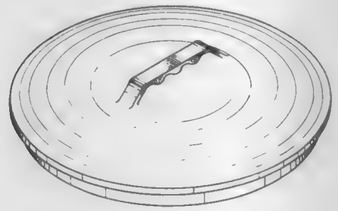
Leon Hope, 301 Hudson La., Albany, Ga. 31705, and Willie J. Davis, 1119-A University St., Albany, Ga. 31707

Filed May 19, 1995, Ser. No. 39,085

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—213



379,172

COVER FOR AUTOMOBILE HUBCAP DURING CLEANING OF TIRE

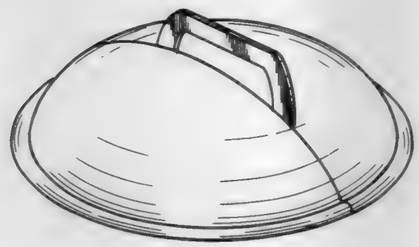
Bryan P. Hale, 13317 S. Dockery, Selma, Calif. 93662

Filed Nov. 27, 1995, Ser. No. 47,135

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—213



379,173

COVER FOR THE BED OF A PICKUP TRUCK

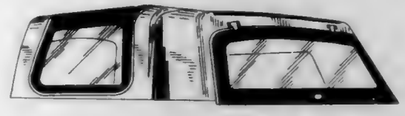
Armando Quiniones, Condibar, Carrera 2 con calle 4, Barquisimeto, Estado Lara, Venezuela

Filed May 11, 1995, Ser. No. 38,707

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—404



379,174

MOTOR CONTROL HOUSING

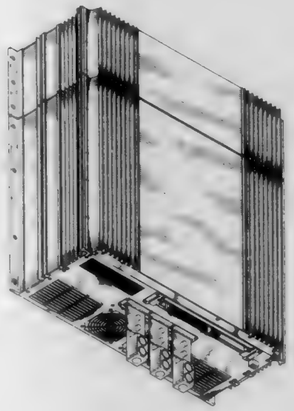
Matthew A. Kornblum; Lawrence D. Finocchi, both of Charlotte, and Mark A. Hilliard, Gastonia, all of N.C., assignors to Pacific Scientific Company, Rock Hill, S.C.

Filed Feb. 20, 1996, Ser. No. 50,452

Term of patent 14 years

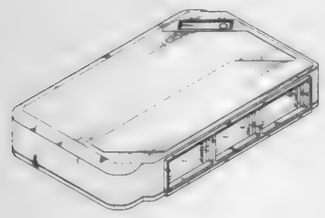
LOC (6) Cl. 13 - *03*

U.S. Cl. D13—123

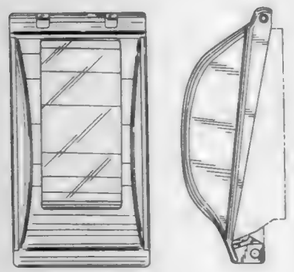


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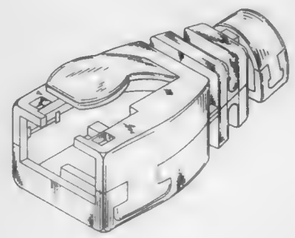
379,175
OUTLET BOX
Scott T. Robinson, Redmond, Wash., assignor to Leviton Manufacturing Co., Inc., Littleneck, N.Y.
Filed Feb. 23, 1996, Ser. No. 50,690
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—152



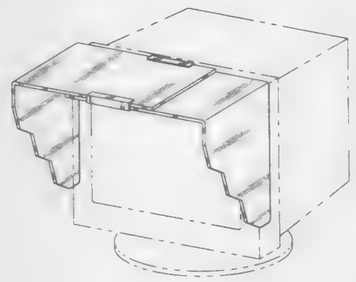
379,176
COVER FOR ELECTRICAL BOXES
William M. Chambers, Valley City, and David P. Marshall, Chagrin Falls, both of Ohio, assignors to The Lamson & Sessions Co., Cleveland, Ohio
Filed Nov. 17, 1994, Ser. No. 31,108
The portion of the term of this patent subsequent to Apr. 22, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156



379,177
JACKET FOR ELECTRIC CONNECTOR
Max Chu, 3F., No. 33, Lane 39, Po Chueh Street, Tsi Chih Chen, Taipei Hsien, Taiwan
Filed Mar. 7, 1995, Ser. No. 35,787
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156



379,178
ANTI-GLARE SHADE
Paul Kane, 5744 E. Creekside Ave. - Unit 33, Orange, Calif. 92669
Filed Sep. 29, 1995, Ser. No. 44,759
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



379,179
COMPUTER KEYBOARD
Masahiko Kawauchi; J. Scott Petermann, both of San Jose; Shigetoshi Amano, Sunnyvale, and Thomas Overthun, San Francisco, all of Calif., assignors to Alps Electric (USA) Inc., San Jose, Calif.
Filed Aug. 7, 1995, Ser. No. 42,345
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115

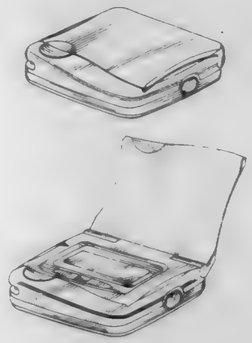


379,180
Patent Not Issued For This Number

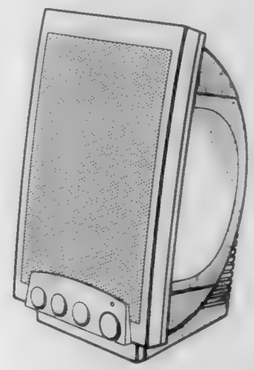
379,181
COMBINED PAGER, TELEPHONE DIALER AND ELECTRONIC CALCULATOR HAVING THE FUNCTIONS OF TELEPHONE BOOK, ADDRESS BOOK, CALENDAR, SCHEDULE BOOK AND MEMO BOOK
Tadahisa Sawano, Hachioji, and Haruki Ota, Kanagawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Aug. 28, 1995, Ser. No. 43,190
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—191



379,182
PAGER
Masataka Suzuki, and Masakatsu Takizawa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Sep. 14, 1995, Ser. No. 43,901
Claims priority, application Japan, Mar. 14, 1995, 7-6985
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—191

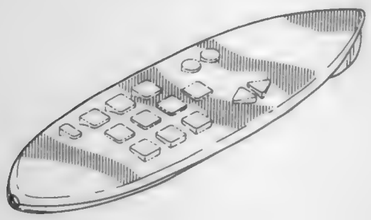


379,183
MULTI MEDIA SPEAKER
Chun-Sung Lin, 1st Floor, No. 156 Chung Hua Road, Shu Lin Town, Taipei County, Taiwan
Filed Oct. 25, 1994, Ser. No. 30,267
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—214



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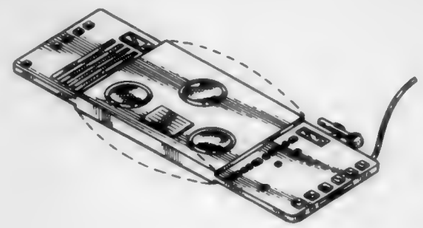
379,184
ELECTRONIC REMOTE CONTROL
Daniel C. Luciano, 3842 Grenville Rd., University Heights, Ohio 44122; Christopher H. Hunter, 3600 Lytle Rd., Shaker Heights, Ohio 44122, and Matthew J. Maphis, 7923 Lester Dr., Painesville, Ohio 44077
Filed May 12, 1995, Ser. No. 38,869
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—218



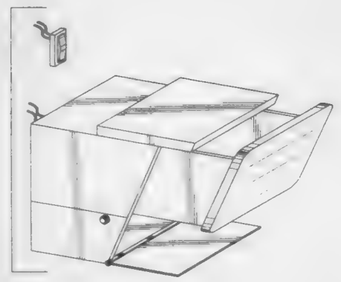
379,185
MICROPHONE
James Luther, and Norio Fujikawa, both of Minneapolis, Minn., assignors to Telex Communications, Inc., Minneapolis, Minn.
Division of Ser. No. 22,767, May 11, 1994, Pat. No. Des. 365,564. This application Dec. 1, 1995, Ser. No. 47,386
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—227



379,186
MUSIC PILLOW
Centrella Taylor, 482 Rahway Ave., Woodbridge, N.J. 07095
Filed Jun. 22, 1995, Ser. No. 40,598
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—299



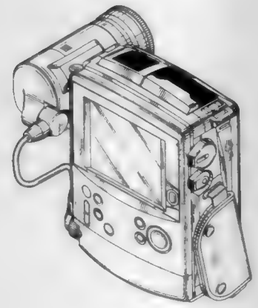
379,187
AUTOMOTIVE TRASH COMPACTOR
K. James Trekofski, 684 Stewart Drive, N.W., Medicine Hat, Canada
Filed Apr. 16, 1996, Ser. No. 53,061
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—123



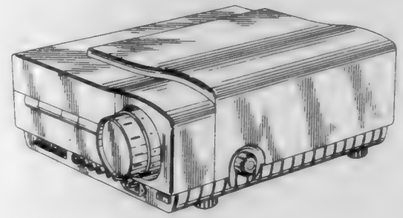
379,188
SOCCERBALL-TYPE BINOCULARS
Takashi Ushiyama, Tokyo, Japan, assignor to Copitar Co. Ltd, Japan
Filed Nov. 8, 1995, Ser. No. 46,176
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—133



379,189
COMBINED VIDEO TAPE RECORDER AND CAMERA
Yukinobu Maruyama; Atsuhiko Urushihara, both of Kokubunji; Ryuuichi Nemoto, Iruma, and Nariaki Syigyo, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 31, 1995, Ser. No. 45,824
Claims priority, application Japan, May 10, 1995, 12825/1995
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



379,190
PROJECTOR
Mitsuru Takami; Kuniyuki Kawamoto, and Muneyuki Nagai, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 27, 1996, Ser. No. 53,012
Term of patent 14 years
LOC (6) Cl. 16 - *02*
U.S. Cl. D16—234

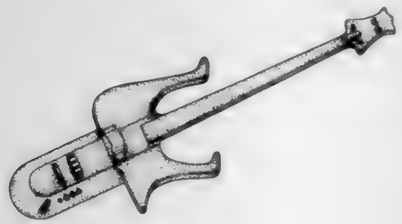


379,191
TEMPLE PIECES FOR AN EYEWEAR
Mark J. Flanagan, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 20, 1995, Ser. No. 46,671
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—335

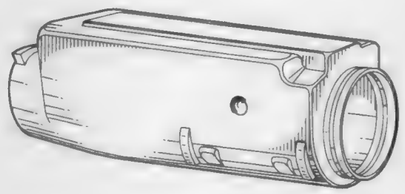


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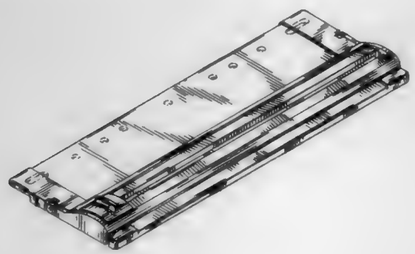
379,192
BOW PLAYABLE, ELECTRIC BASS GUITAR
Joseph D. Agostino, 1138 Maxum Southard Rd., Howell, N.J. 07731
Filed Apr. 10, 1996, Ser. No. 52,885
Term of patent 14 years
LOC (6) Cl. 17 - *01*
U.S. Cl. D17—18



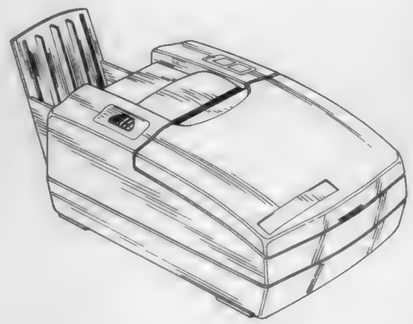
379,194
SUPPLY ACCESSORY FOR A PRINTING OR COPYING MACHINE
John D. Sundquist, Clarksville, Va.; Daniel C. Miller, Fairport, and Venkat K. Iyer, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 23,963, Jun. 6, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 45,747
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D18—43



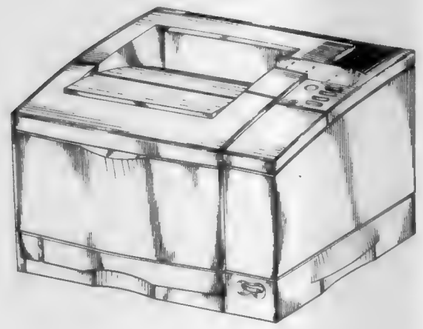
379,193
PAPER TRIMMER
Robert W. Cornell, Schofield, Wis., assignor to Fiskars Inc., Madison, Wis.
Filed Oct. 10, 1995, Ser. No. 45,121
Term of patent 14 years
LOC (6) Cl. 18 - *04*
U.S. Cl. D18—34



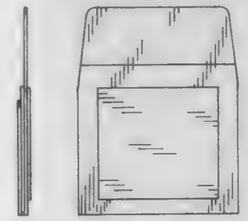
379,195
PRINTER CONSOLE
James M. Stanton, San Jose, Calif., assignor to Verifone, Inc., Redwood City, Calif.
Filed Aug. 23, 1995, Ser. No. 43,019
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—50



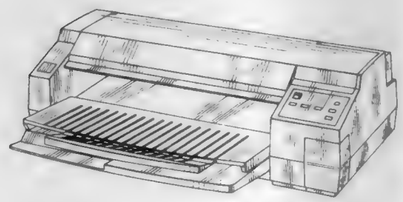
379,196
PRINTER
Anthony G. Laidlaw, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 6, 1995, Ser. No. 43,578
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—55



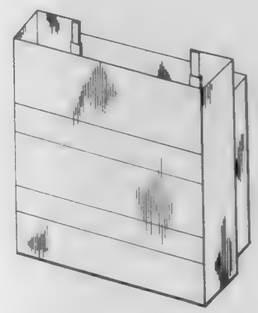
379,198
ENVELOPE
Martin Dowda, 1718 Plantation Oaks Dr., Jacksonville, Fla. 32223
Filed Feb. 27, 1995, Ser. No. 35,445
Term of patent 14 years
LOC (6) Cl. 19 - *01*
U.S. Cl. D19—3



379,197
INK JET PRINTER
Manabu Kawahara, and Takeo Kishida, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan
Filed Feb. 12, 1996, Ser. No. 50,225
Claims priority, application Japan, Aug. 17, 1995, 7-23906
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—55



379,199
SIGN HOLDER
Hal Sandy, 4937 Glendale Rd., Shawnee-Mission, Kans. 66205
Filed May 2, 1995, Ser. No. 38,386
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41

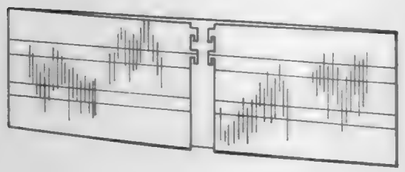


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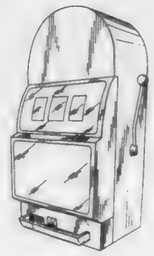
379,200
VEHICLE-MOUNTED SIGN
Tom O. Nelson, 1112 - 62nd Ave. North, Moorhead, Minn. 56560
Filed Apr. 10, 1995, Ser. No. 37,281
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—42



379,201
SIGN HOLDER WITH TOOTHED TABS
Hal Sandy, 4937 Glendale Rd., Shawnee-Mission, Kans. 66205
Filed May 22, 1995, Ser. No. 39,164
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—43



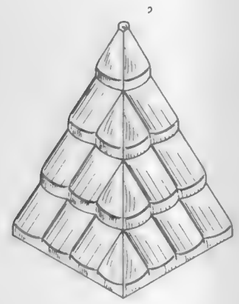
379,202
DISPLAY DEVICE
Takatoshi Takemoto, and Toshitaka Ihara, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Japan
Filed Dec. 13, 1994, Ser. No. 32,067
Term of patent 14 years
LOC (6) Cl. 21 - *05*
U.S. Cl. D21—38



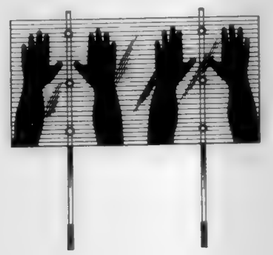
379,203
CONTROLLER FOR VIDEO GAME MACHINE
Akitoshi Oikawa, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Japan
Filed Sep. 25, 1995, Ser. No. 44,483
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



379,204
TOY BUILDING ELEMENT
Niels Øhrwald, Espergærde, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,991
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



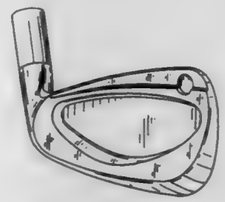
379,205
HAND-HELD VOLLEYBALL TRAINING AID
Terry L. Morris, Rte. 3, Box 335, Somerville, Ala. 35670
Filed Dec. 11, 1995, Ser. No. 47,692
Term of patent 14 years
LOC (6) Cl. 21 - *99*
U.S. Cl. D21—199



379,206
INTERACTIVE SPHERICAL GAME HAVING LIGHTS AND SWITCHES
Uwe Meffert, 28A, Tower 7, South Horizons, AP Lei Chau, Abderdeen, Hong Kong
Filed Sep. 6, 1995, Ser. No. 43,517
Claims priority, application United Kingdom, Mar. 27, 1995, 9506209; May 3, 1995, 2047200
Term of patent 14 years
U.S. Cl. D21—204

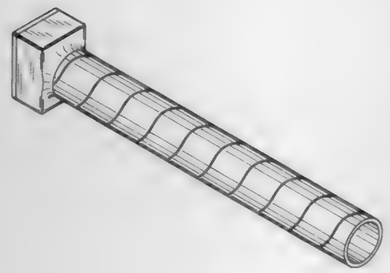


379,207
GOLF CLUB HEAD
Philippe Besnard, Yverdon, Switzerland; Larry Tang, Calabasas, Calif.; Richard L. Rugge, Encinitas, Calif.; Jim Sieleman, San Diego, Calif., and Franck Dumontier, Vista, Calif., assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Filed Aug. 31, 1995, Ser. No. 43,310
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220

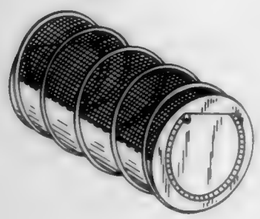


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379,208
SPORTING EQUIPMENT HANDLE GRIP
Joseph A. Kulisek, Jr., Las Vegas, Nev., assignor to Tacki-Mac Grips, Inc., Las Vegas, Nev.
Filed Aug. 22, 1995, Ser. No. 42,974
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—222



379,209
CHILDREN'S BARREL PLAY ENCLOSURE
Russell J. Coddington, Jr., Imperial, Pa., assignor to Hedstrom Corporation, Bedford, Pa.
Filed May 11, 1995, Ser. No. 38,759
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



379,210
PLASTIC ARROW HEAD
Thomas R. Hartmann, Eagle, Wis., assignor to Molded Rubber & Plastic Corp., Butler, Wis.
Filed Jun. 27, 1995, Ser. No. 40,804
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—107



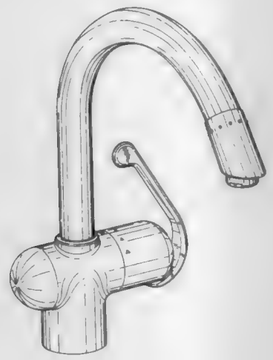
379,211
KNIFE
Lynn C. Thompson, 2747 Seahorse, Ventura, Calif. 93001
Filed Feb. 1, 1996, Ser. No. 49,839
Term of patent 14 years
LOC (6) Cl. 22 - *02*
U.S. Cl. D22—118



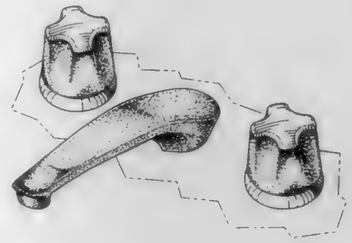
379,212
HAND HELD SHOWER HEAD
Raymond W. M. Chan, Vancouver, Canada, assignor to Jing Mei Industrial Holdings, New Zealand
Filed Jan. 17, 1995, Ser. No. 33,568
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—223



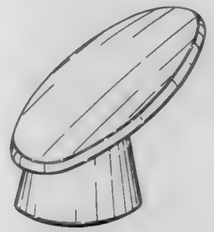
379,213
FAUCET
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Oct. 20, 1995, Ser. No. 46,662
Claims priority, application Germany, May 17, 1995, M9504047.1
The portion of the term of this patent subsequent to Jan. 28, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



379,214
FAUCET SET
Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.
Filed Sep. 22, 1995, Ser. No. 44,346
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—242

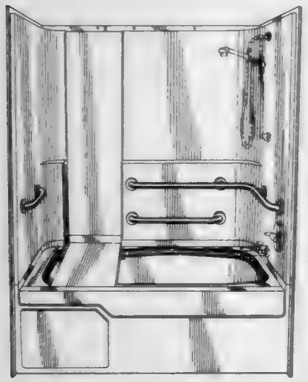


379,215
FAUCET HANDLE
Adolf Gottwald, Iserlohn, Germany, assignor to Friedich Grohe Aktiengesellschaft, Hemer, Germany
Filed Aug. 25, 1995, Ser. No. 43,362
Claims priority, application Germany, Feb. 27, 1995, M9501629.5
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—252



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379,216
COMBINED BATHTUB AND SHOWER STALL
Kenneth Salach, Granger, Ind., and Gregory Salach, Western Springs, Ill., assignors to G.K.L. Corporation, Romeoville, Ill.
Division of Ser. No. 6,356, Mar. 26, 1993, Pat. No. Des. 354,555. This application Jan. 13, 1995, Ser. No. 33,495
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—277



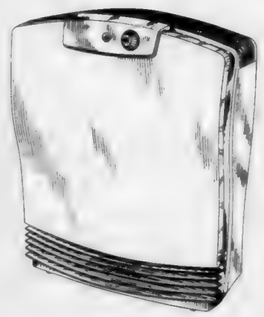
379,217
WATER CLOSET
Francois Kergoet, Malakoff, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 3, 1995, Ser. No. 45,957
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—295



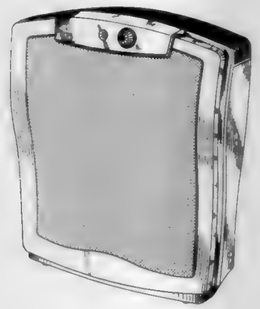
379,218
WALL BAR FOR HAND SHOWER
Horst G. Neufeld, Velbert, and Michael Stein, Wuppertal, both of Germany, assignors to Hans Grohe GmbH & Co., Germany
Filed Sep. 26, 1995, Ser. No. 44,567
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—304



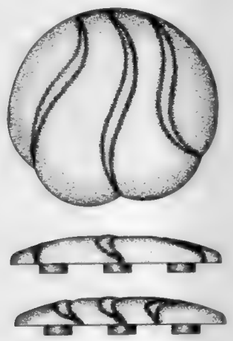
379,219
AIR CLEANER
Iain P. Ellwood, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 21, 1995, Ser. No. 44,284
Claims priority, application WIPO, Apr. 7, 1995, DMA/002861
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—364



379,220
AIR CLEANER
Iain P. Ellwood, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 21, 1995, Ser. No. 44,291
Claims priority, application WIPO, Apr. 7, 1996, DMA/002861
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—364



379,221
BLADE MEDALLION FOR A CEILING FAN
Jan Jaspers-Fayer, Idyllwild, and Scott Searle, Malibu, both of Calif., assignors to Minka Lighting, Inc., Corona, Calif.
Division of Ser. No. 10,231, Jun. 29, 1993. This application Jan. 11, 1994, Ser. No. 17,339
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



379,222
COMBINED CEILING FAN HOUSING AND LAMP
Tung-Liang Kuo, P.O. Box 53-8, Taichung, Taiwan
Filed May 16, 1995, Ser. No. 38,930
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



379,223
PHARMACEUTICAL TABLET
Kenneth A. Kramer, Green Lane, and Ashok V. Katdare, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Sep. 13, 1995, Ser. No. 43,867
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—101

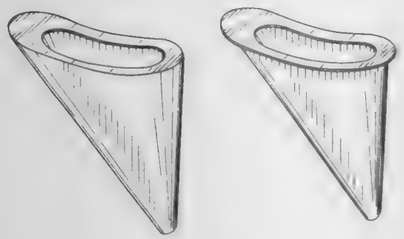


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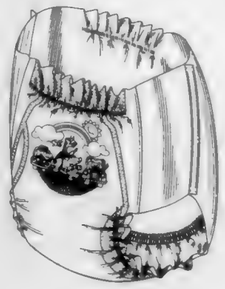
379,224
BOTTLE
Patrick E. McCallister, Columbus; Richard P. Macauley, Westerville, both of Ohio; Jay A. Smithberger, Evanston, Ill.; Thomas W. Osip, Dublin, and Joseph M. Lippian, Worthington, both of Ohio, assignors to Abbott Laboratories
Division of Ser. No. 26,130, Jul. 20, 1994. This application Jul. 14, 1995, Ser. No. 41,468
The portion of the term of this patent subsequent to Dec. 10, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D24—121



379,225
HYGIENIC URINARY DISCHARGE AID
Esper Canahuate, 17 Midwood Dr., Marlton, N.J. 08053, and Frank A. Juliano, Sr., P.O. Box 458, Mt. Laurel, N.J. 08054
Filed Jun. 7, 1995, Ser. No. 39,910
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—122



379,226
TRAINING PANT
Leonard M. Kaczmarzyk, Hortonville; Marci E. Kuske, Appleton; Thomas M. Lager, Neenah; Robert L. Popp, Hortonville, and Richard T. Wehrle, New London, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 23, 1996, Ser. No. 53,521
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D24—126



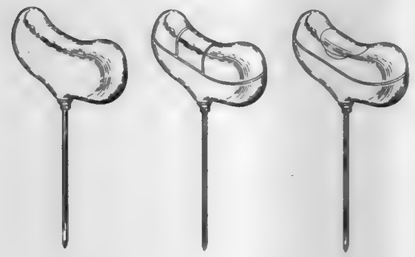
379,227
REFLEX-CORRESPONDENCE TOOL
Meyer Robert Rosen, 7 Deusenberg Dr., East Norwich, N.Y. 11732
Filed Mar. 9, 1994, Ser. No. 19,729
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—142



379,228
SURGICAL STAPLER CLIP APPLICATOR HANDLE
Baharam B. Rahimzadeh, Durham, and Stephen J. Dawes, Raleigh, both of N.C., assignors to Pilling Weck Incorporated, Research Triangle Park, N.C.
Filed Mar. 31, 1994, Ser. No. 20,717
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—145



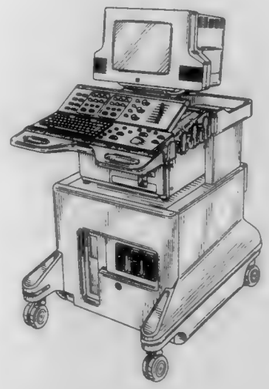
379,229
BONE MARROW BIOPSY NEEDLE
Jan L. Como Rodriguez, Libertyville, Ill.; Gregory D. Volan, Boulder; James W. Kendall, Westminster, both of Colo., and T. Michael Dennehey, Arlington Heights, Ill., assignors to Baxter International, Inc., Deerfield, Ill.
Continuation-in-part of Ser. No. 22,280, Feb. 25, 1993, abandoned. This application Aug. 28, 1995, Ser. No. 43,169
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—146



379,230
DROPLET LIQUID APPLICATOR BRUSH
Phillip Mark, 6417 Marlberry Dr., Orlando, Fla. 32819
Filed Oct. 28, 1994, Ser. No. 30,430
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—152



379,231
MEDICAL ULTRASONIC IMAGING SYSTEM
Joseph L. Ungari, Everett, Wash., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.
Filed Oct. 12, 1994, Ser. No. 29,613
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—160

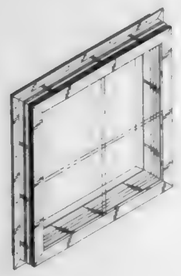


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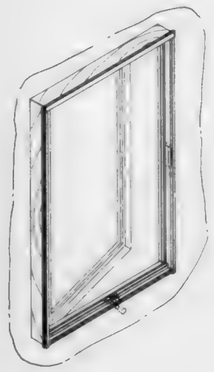
379,232
NECK BRACE
Roger Brooke, Columbus, Ohio, assignor to Hollister Incorporated, Libertyville, Ill.
Filed Feb. 26, 1996, Ser. No. 50,916
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—191



379,233
GLASS BLOCK FRAME
Brian C. Wright, Snohomish, Wash., assignor to Seattle Glass Block Windows, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 28,301, Sep. 12, 1994. This application Mar. 20, 1995, Ser. No. 36,369
The portion of the term of this patent subsequent to Apr. 2, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—60



379,234
INSIDE STOP PROFILE
Frank W. Campbell, Oakdale, Minn., and David R. Bogenhagen, Hudson, Wis., assignors to Andersen Corporation, Bayport, Minn.
Filed May 19, 1995, Ser. No. 39,022
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—60



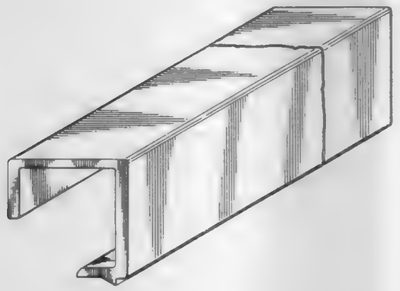
379,235
COMBINED TREE SEAT AND FOOT REST
David K. Jones, P.O. Box 301, Canvas, W. Va. 26662
Filed Sep. 26, 1995, Ser. No. 44,550
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—62



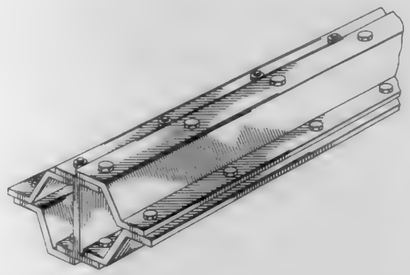
379,236
FOLDING SAWHORSE
Steven J. Sheftel, Marstons Mills, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.
Filed May 10, 1995, Ser. No. 38,790
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—67



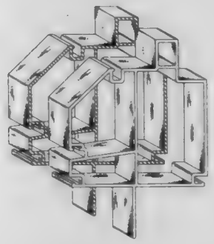
379,237
GLAZING STOP
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,399
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—119



379,238
WING SHAPED BEAM
Ally O. Hing, P.O. Box A, Superior, Ariz. 85273
Filed Dec. 27, 1994, Ser. No. 32,747
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124

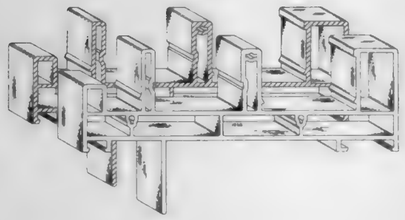


379,239
WINDOW COMPONENT EXTRUSION
Michael D. Lockbeam, Tocoma, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,341
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124

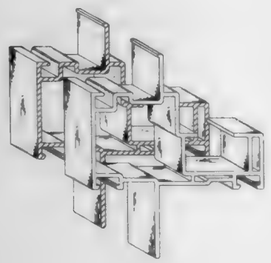


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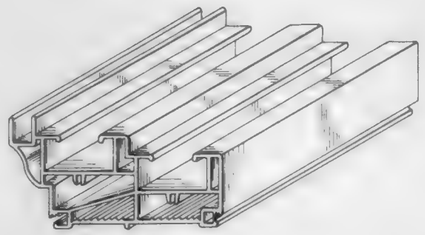
379,240
WINDOW COMPONENT EXTRUSION
Robert B. Jarrell, Seattle, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,376
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



379,241
WINDOW COMPONENT EXTRUSION
Robert B. Jarrell, Seattle, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,377
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D25—124



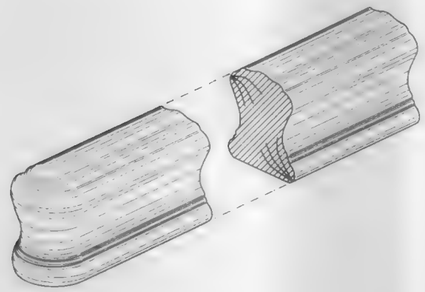
379,242
WINDOW FRAME COMPONENT
Raymond Lin, Fresh Meadows, N.Y., assignor to S.C. & W. Corp., Flushing, N.Y.
Filed Dec. 27, 1995, Ser. No. 48,359
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—125



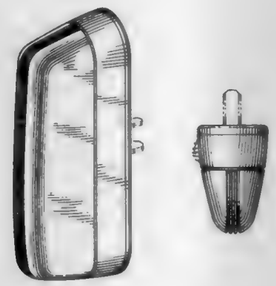
379,243
PYLON
Francois Deslaugiers, Paris, France, assignor to Electricite de France, Paris, France
Filed Sep. 25, 1995, Ser. No. 44,423
Claims priority, application France, Mar. 23, 1995, 951 745
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—127



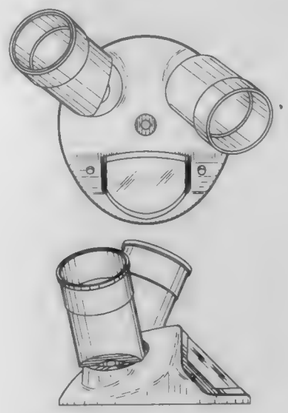
379,244
HAND RAIL
Charles F. Wiebe, 238 Meacham, Kirkwood, Mo. 63122
Filed Apr. 2, 1996, Ser. No. 52,472
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—164



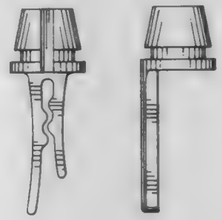
379,245
NIGHT LIGHT
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to BRK Brands, Inc., Aurora, Ill.
Filed Jan. 14, 1996, Ser. No. 48,726
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—26



379,246
COMBINED TWIN FLOODLIGHT FIXTURE AND MOTION DETECTOR
Gary M. Haslam, Graham; Andrew J. Parker, Chapel Hill, and Edward R. Small, Elon College, all of N.C., assignors to Regent Lighting Corporation, Burlington, N.C.
Filed Mar. 20, 1995, Ser. No. 36,456
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63

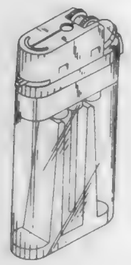


379,247
COMBINATION CLIP AND MINIATURE LIGHT HOLDER FOR CHRISTMAS TREE LIGHT COVERS
Chris K. Stangland, Lake Oswego, Oreg., assignor to Euro/Pacific Corporation, Lake Oswego, Oreg.
Filed Sep. 27, 1995, Ser. No. 47,019
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—138



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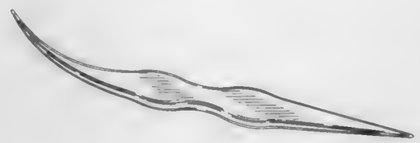
379,248
SPARKWHEEL LIGHTER
Preecha Khemarangsan, Samutsakorn THX, assignor to Thai Merry Co., Ltd., Samutsakorn THX
Filed Sep. 6, 1995, Ser. No. 43,527
Term of patent 14 years
LOC (6) Cl. 27 - *05*
U.S. Cl. D27—141



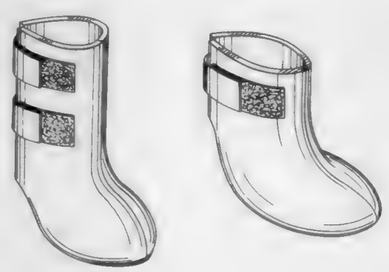
379,249
COMBINED SOAP AND EXFOLIATION PAD WITH HANGING CORD
Lendell J. Williams, St. Charles, Mich., assignor to Karlen Manufacturing, Inc., St. Charles, Mich.
Filed Sep. 9, 1994, Ser. No. 28,224
The portion of the term of this patent subsequent to Nov. 5, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 28 - *02*
U.S. Cl. D28—8.1



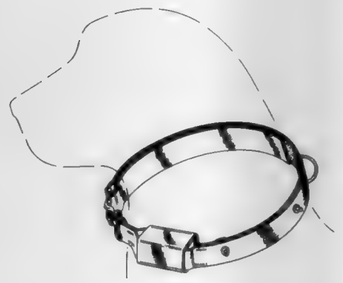
379,250
TOOTH AND GUM CLEANING IMPLEMENT
Charles A. Brewer, 536 Via Lido Nord, Newport Beach, Calif. 92663
Filed Jun. 27, 1995, Ser. No. 40,923
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—64



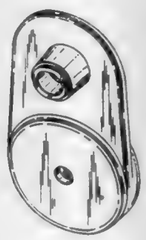
379,251
BOOT FOR A DOG
Michael J. Mezey, 7416 Altiva Pl., Carlsbad, Calif. 92009
Filed Oct. 31, 1994, Ser. No. 30,478
Term of patent 14 years
LOC (6) Cl. 30 - *01*
U.S. Cl. D30—146



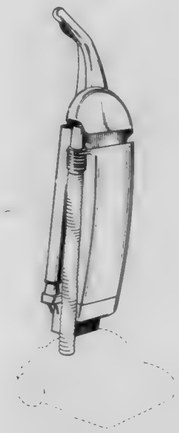
379,252
ILLUMINATING ANIMAL COLLAR
John A. McIntosh, 26744 33rd Avenue, Aldergrove British Columbia, Canada
Filed Jul. 7, 1995, Ser. No. 41,130
Claims priority, application Canada, May 10, 1995, 1995-1014
Term of patent 14 years
LOC (6) Cl. 30 - *09*
U.S. Cl. D30—152



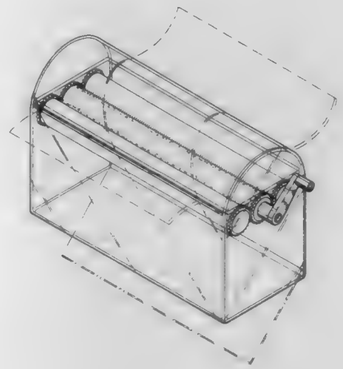
379,253
ELECTRONIC IDENTIFICATION TAG FOR LIVESTOCK
Ronald K. Knapp, and Robert J. Zatkos, both of Cody, Wyo., assignors to Y-Tex Corporation, Cody, Wyo.
Filed Aug. 11, 1995, Ser. No. 42,543
Term of patent 14 years
LOC (6) Cl. 30 - *08*
U.S. Cl. D30—155



379,254
VACUUM CLEANER UPRIGHT PORTION
Kenneth L. Roberts, Walker; Steven R. Umbach, East Grand Rapids, and Michael D. Luyckx, Bloomfield Hills, all of Mich., assignors to Bissell Inc., Grand Rapids, Mich.
Filed Sep. 18, 1995, Ser. No. 44,093
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—31

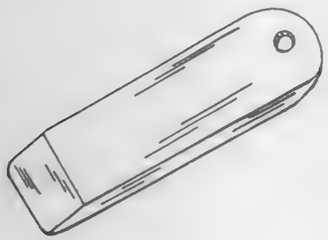


379,255
LOTTERY TICKET SCRAPER
Gregory J. Steiner, W289 N520 Elmhurst Rd., Waukesha, Wis. 53188
Filed Jun. 16, 1995, Ser. No. 40,369
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D32—46



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379,256
GAME SCRAPER
Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806
Filed Jul. 18, 1995, Ser. No. 41,579
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D32—46



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13th DAY OF MAY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C. Nielsen Company: *See—*
Dougherty, Robert A., 5,629,739, Cl. 348-486.000.

A.I.D. Agriculture Industrial Developments S.p.A.: *See—*
Palumbo, Cesare; and Torrisi, Salvatore, 5,628,247, Cl. 99-509.000.

A-Line Products Corporation: *See—*
Laura, Alger E.; Easton, Ronald J.; Frisch, Kurt C.; and Xiao, Han X., 5,629,046, Cl. 427-385.500.

Aaltonen, Kari: *See—*
Rajala, Jussi; Aaltonen, Kari; and Murto, Juhani, 5,629,974, Cl. 379-58.000.

AAT Laboratories, Inc.: *See—*
Lee, Richard K., 5,628,891, Cl. 204-612.000.

ABB Air Preheater, Inc.: *See—*
Brophy, Mark E.; and Mattison, Glenn D., 5,628,360, Cl. 165-9.000.

ABB Power T&D Company: *See—*
Johnson, David S.; Khan, Aftab H.; Stiller, Paul H.; and Meyer, Jeffry R., 5,629,869, Cl. 364-551.010.

ABB Power T&D Company Inc.: *See—*
Segal, Vladimir M., 5,628,861, Cl. 156-291.000.

Abber, Herman; Machida, Takao; and Smith, Mark T. Aqueous-based, shear-thinning, erasable ink and roller-ball pen containing same. 5,629,363, Cl. 523-161.000.

Abbott Laboratories: *See—*
Klosterman, Kurt, 5,628,929, Cl. 219-497.000.
Lin, Nan-Horng; He, Yun; Holladay, Mark W.; Ryther, Keith; and Li, Yihong, 5,629,325, Cl. 514-318.000.

Abe, Hideaki: *See—*
Dosaka, Katsumi; Kumanoya, Masaki; Hayano, Kouji; Yamazaki, Akira; Iwamoto, Hisashi; Abe, Hideaki; Konishi, Yasuhiro; Himukashi, Katsumitsu; Ishizuka, Yasuhiro; and Saiki, Tsukasa, 5,629,895, Cl. 365-189.010.

Abe, Takayuki: *See—*
Furukawa, Kazuaki; Abe, Takayuki; Akamatsu, Hidekazu; Matsuyama, Akinobu; Ito, Michio; Yamasaki, Noritsugu; Miki, Katsuya; Ikura, Kiyoshi; and Ishiguro, Takeshi, 5,629,200, Cl. 435-280.000.

Abileah, Adiel; and Vergith, Nicholas D., to OIS Optical Imaging Systems, Inc. Liquid crystal display with holographic diffuser and prism sheet on viewer side. 5,629,784, Cl. 349-112.000.

Abrahmsen, Lars; Burnier, John; Wells, James A.; and Jackson, David Y., to Genentech, Inc. Methods of use of serine protease variants having peptide ligase activity. 5,629,173, Cl. 435-68.100.

Abramson, Kenneth D.: *See—*
Orbits, David A.; Abramson, Kenneth D.; and Butts, H. Bruce, Jr., 5,630,097, Cl. 395-492.000.

ACCO USA, Inc.: *See—*
Smith, Mark R.; and Wessells, Philip G., 5,628,483, Cl. 248-118.000.

Ackerman, Doug: *See—*
Jones, Cary; Kemp, Carolyn; and Ackerman, Doug, 5,628,436, Cl. 224-148.300.

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Actel Corporation: *See—*
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Zenda, Hiroki, to Kabushiki Kaisha Toshiba. Display control system. 5,629,715, Cl. 345-3.000.

Zeneca Limited: *See*—
Campbell, James S.; Gregory, Peter; and Thetford, Dean, 5,629,417, Cl. 540-122.000.

Zenith Data Systems Corporation: *See*—
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Zhang, Hong, to Robert Bosch GmbH. Method and arrangement for controlling the output power of a drive unit of a motor vehicle. 5,628,706, Cl. 477-166.000.

Zhang, Minhua; Liu, Zongzhang; Yu, Shenbo; Qian, Shenghua; and Li, Chuanzhao, to Tianjin University; and China Petro-Chemical Corporation. Dephenolizing process for production of high-quality polycarbonate grade bisphenol A. 5,629,457, Cl. 568-724.000.

Zhang, Yang: *See*—
Mascarenhas, Desmond; Zhang, Yang; Olson, Pamela S.; Olsen, David R.; and Cohen, Pedro A., 5,629,172, Cl. 435-64.700.

Zheng, Qun Y.; Darbie, Lynn G.; and Murray, Christopher K., to Hauser, Inc. Selective process for the deacylation and deacetylation of taxol and taxanes. 5,629,433, Cl. 549-510.000.

Ziemek, Gerhard, to Alcatel Kabel AG & Co. Method of manufacturing internally grooved tubes for heat exchangers. 5,628,447, Cl. 228-147.000.

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Zijderhand, Frans, to U.S. Philips Corporation. Method and arrangement for channel allocation for data transmission between a main station and a plurality of substations. 5,629,942, Cl. 370-341.000.

Zimmerman, Paul A.: *See*—
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Zimmerman, Steven M., to International Business Machines Corporation. Process and structure of an integrated vacuum microelectronic device. 5,629,579, Cl. 313-309.000.

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Jones, Gary W.; and Zimmerman, Steven M., 5,629,583, Cl. 313-495.000.

Zimmermann, Matthias: *See*—
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Zinser Textilmaschinen GmbH: *See*—
Mack, Karl-Heinz; and Güttler, Hermann, 5,628,174, Cl. 57-281.000.

Zirm, Mathias. Artificial lens. 5,628,793, Cl. 623-4.000.

Zoiss, Edward J.: *See*—
Fallandy, Michael M.; and Zoiss, Edward J., 5,628,105, Cl. 29-566.400.

Zommer, Nathan, to IXYS Corporation. Stable high voltage semiconductor device structure. 5,629,552, Cl. 257-490.000.

Zook, Christopher P., to Cirrus Logic, Inc. Error correction verification method and apparatus using CRC check remainders. 5,629,949, Cl. 371-37.100.

Zopey, Ashok G.: *See*—
Kenyon, Richard L.; Riefler, Roger G.; and Zopey, Ashok G., 5,629,660, Cl. 335-227.000.

Zotter, Johann; and Leichtfried, Friedrich, to HTM Sport- und Freizeitgeraete Aktiengesellschaft. Heel part for a ski binding. 5,628,526, Cl. 280-633.000.

Zucholl, Klaus. Closed circuit for treating drinking water with UV treatment and filtering. 5,628,895, Cl. 210-85.000.

Zumsteg, Philip J.: *See*—
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Zuravleff, William K.; and Robinson, Timothy, to Microunity Systems Engineering, Inc. Controller for a synchronous DRAM that maximizes throughput by allowing memory requests and commands to be issued out of order. 5,630,096, Cl. 395-481.000.

Zwahlen, Fritz; and Brügger, Robert, to Ascom Autelca AG. Cash vault with a vault control unit to be operated selectively by two tellers. 5,628,258, Cl. 109-45.000.

Zweifel, Mark J.: *See*—
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2000, Inc.: *See*—
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372103 Ontario Ltd.: *See*—
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NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Uchida, Naoshi; Asakawa, Kouji; and Oyama, Jun, Re. 35,507, Cl. 335-16.000.

Berg Technology, Inc.: *See*—
Lemke, Timothy A.; Elco, Richard A.; and Houtz, Timothy W., Re. 35,508, Cl. 439-101.000.

Boero, Michael J.: *See*—
Hughes, Gregory G.; Struss, Rodney A.; and Boero, Michael J., Re. 35,502, Cl. 62-515.000.

Chemplex Industries, Inc.: *See*—
Solazzi, Michael C.; and Solazzi, Monte J., Re. 35,506, Cl. 264-40.500.

Elco, Richard A.: *See*—
Lemke, Timothy A.; Elco, Richard A.; and Houtz, Timothy W., Re. 35,508, Cl. 439-101.000.

Fleetwood Systems, Inc.: *See*—
Mojden, Andrew E.; and Hoinacki, Richard P., Re. 35,505, Cl. 198-493.000.

Fuji Electric Co., Ltd.: *See*—
Uchida, Naoshi; Asakawa, Kouji; and Oyama, Jun, Re. 35,507, Cl. 335-16.000.

Fujii, Susumi; Ishida, Hiromi; Morioka, Masataka; Saito, Akihiro; and van der Meer, Roelof, to General Electrical Company. Polyphenylene ether/polyamide blends having improved physical properties. Re. 35,509, Cl. 525-397.000.

General Electrical Company: *See*—
Fujii, Susumi; Ishida, Hiromi; Morioka, Masataka; Saito, Akihiro; and van der Meer, Roelof, Re. 35,509, Cl. 525-397.000.

Hoinacki, Richard P.: *See*—
Mojden, Andrew E.; and Hoinacki, Richard P., Re. 35,505, Cl. 198-493.000.

Houtz, Timothy W.: *See*—
Lemke, Timothy A.; Elco, Richard A.; and Houtz, Timothy W., Re. 35,508, Cl. 439-101.000.

Hughes, Gregory G.; Struss, Rodney A.; and Boero, Michael J., to Modine Manufacturing Company. Evaporator. Re. 35,502, Cl. 62-515.000.

Hunter, Robert M. Apparatus and technique for metering liquid flow. Re. 35,503, Cl. 73-861.630.

Ishida, Hiromi: *See*—
Fujii, Susumi; Ishida, Hiromi; Morioka, Masataka; Saito, Akihiro; and van der Meer, Roelof, Re. 35,509, Cl. 525-397.000.

Lemke, Timothy A.; Elco, Richard A.; and Houtz, Timothy W., to Berg Technology, Inc. Plug terminator having a grounding member. Re. 35,508, Cl. 439-101.000.

Modine Manufacturing Company: *See*—
Hughes, Gregory G.; Struss, Rodney A.; and Boero, Michael J., Re 35,502, Cl. 62-515.000.

Mojden, Andrew E.; and Hoinacki, Richard P., to Fleetwood Systems, Inc. Air hold up assembly for a stick of can ends. Re. 35,505, Cl. 198-493.000.

Morioka, Masataka: *See*—
Fujii, Susumi; Ishida, Hiromi; Morioka, Masataka; Saito, Akihiro; and van der Meer, Roelof, Re. 35,509, Cl. 525-397.000.

Oyama, Jun: *See*—
Uchida, Naoshi; Asakawa, Kouji; and Oyama, Jun, Re. 35,507, Cl. 335-16.000.

Saito, Akihiro: *See*—
Fujii, Susumi; Ishida, Hiromi; Morioka, Masataka; Saito, Akihiro; and van der Meer, Roelof, Re. 35,509, Cl. 525-397.000.

Solazzi, Michael C.; and Solazzi, Monte J., to Chemplex Industries, Inc. Powder compacting press apparatus and methods. Re. 35,506, Cl. 264-40.500.

Solazzi, Monte J.: *See*—
Solazzi, Michael C.; and Solazzi, Monte J., Re. 35,506, Cl. 264-40.500.

Struss, Rodney A.: *See*—
Hughes, Gregory G.; Struss, Rodney A.; and Boero, Michael J., Re. 35,502, Cl. 62-515.000.

Uchida, Naoshi; Asakawa, Kouji; and Oyama, Jun, to Fuji Electric Co., Ltd. Repulsion type circuit breaker control device. Re. 35,507, Cl. 335-16.000.

van der Meer, Roelof: *See*—
Fujii, Susumi; Ishida, Hiromi; Morioka, Masataka; Saito, Akihiro; and van der Meer, Roelof, Re. 35,509, Cl. 525-397.000.

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Albright & Wilson Limited: *See*—
Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., B1 4,753,754, Cl. 252-354.000.

Anchor Wall Systems, Inc.: *See*—
Woolford, Michael E., B1 5,249,950, Cl. 425-412.000.

Arnoldt, Peter J., to Ductmate Industries, Inc. Flange type duct joint assembly and seal arrangement therefor. B1 4,508,376, Cl. 285-363.000.

Arnoldt, Peter J., to Ductmate Industries, Inc. Flange type duct joint assembly and seal arrangement therefor. B1 4,662,661, Cl. 285-363.000.

Buckman, Jay A.: *See*—
Scaringe, Robert P.; Buckman, Jay A.; and Grzyll, Lawrence R., B1 4,856,294, Cl. 62-259.300.

Ditzik, Richard J.: *See*—
Zenk, George E.; and Ditzik, Richard J., B1 4,066,854, Cl. 200-5.00A.

Ductmate Industries, Inc.: *See*—
Arnoldt, Peter J., B1 4,508,376, Cl. 285-363.000.
Arnoldt, Peter J., B1 4,662,661, Cl. 285-363.000.

Etra, William, to Grass Valley Group, Inc., The. Video image bank for storing and retrieving video image sequences. B1 5,012,334, Cl. 348-96.000.

Grass Valley Group, Inc., The: *See*—
Etra, William, B1 5,012,334, Cl. 348-96.000.

Grzyll, Lawrence R.: *See*—
Scaringe, Robert P.; Buckman, Jay A.; and Grzyll, Lawrence R., B1 4,856,294, Cl. 62-259.300.

Imajo, Yasutaka: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, B1 5,443,747, Cl. 134-1.000.

Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, to Kabushiki Kaisha Toshiba. Cleaning compositions. B1 5,443,747, Cl. 134-1.000.

Kabuki, Kimiaki: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, B1 5,443,747, Cl. 134-1.000.

Kabushiki Kaisha Toshiba: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, B1 5,443,747, Cl. 134-1.000.

Kurita, Akitsugu: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, B1 5,443,747, Cl. 134-1.000.

Mainstream Engineering Corporation: *See*—
Scaringe, Robert P.; Buckman, Jay A.; and Grzyll, Lawrence R., B1 4,856,294, Cl. 62-259.300.

Mather, Douglas E.: *See*—
Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., B1 4,753,754, Cl. 252-354.000.

Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., to Albright & Wilson Limited. Concentrated aqueous surfactant compositions. B1 4,753,754, Cl. 252-354.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Rear derailleur for a bicycle. B1 4,690,663, Cl. 474-80.000.

Oguni, Takayuki: *See*—
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, B1 5,443,747, Cl. 134-1.000.

Pacific Energy: *See*—
Roqueta, Alexander, B1 5,458,006, Cl. 73-861.420.

Philippson, Walter M., to Stewart Connector Systems, Inc. Low profile jack. B1 4,703,991, Cl. 439-676.000.

Phillips, Brinley M.: *See*—
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Saitoh, Nobuhiro: *See—*
Inada, Minoru; Kabuki, Kimiaki; Imajo, Yasutaka; Oguni, Takayuki; Yagi, Noriaki; Saitoh, Nobuhiro; Kurita, Akitsugu; and Takezawa, Yoshiaki, B1 5,443,747, Cl. 134-1.000.
Scaringe, Robert P.; Buckman, Jay A.; and Grzyll, Lawrence R., to Mainstream Engineering Corporation. Micro-climate control vest. B1 4,856,294, Cl. 62-259.300.
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Whatmore, Roger W.; and Young, Iain M., to Plessey Company Limited, The. Application of lithium tetraborate to electronic devices. B1 4,634,913, Cl. 310-313.00A.
Willman, Samuel A. Container with inner bag sealing feature. B1 5,427,267, Cl. 220-403.000.
Woolford, Michael E., to Anchor Wall Systems, Inc. Heated stripper shoe assembly. B1 5,249,950, Cl. 425-412.000.
Yagi, Noriaki: *See—*
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Young, Iain M.: *See—*
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Zenk, George E., to St. Clair Intellectual Property Consultants, Inc. Vented membrane-type touch panel. B1 4,066,855, Cl. 200-5.00A.

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Aikawa, Koichiro; Kimura, Kazuhito; Tokizaki, Hiroshi; and Kuramochi, Izumi, to Yokohama Rubber Co. Ltd., The. Automobile tire. 379,166, Cl. D12-147.000.
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Berde, Stan. Combined liquid extraction and lid removal tool for cans. 379,139, Cl. D7-666.000.
Bernett, Maureen. Pillow. 379,130, Cl. D6-598.000.
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Chrysler Corporation: *See—*
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86 5,628,896
94 5,628,897
108 5,628,898
142 5,628,899
223 5,628,900
251 5,628,901
474 5,628,902
519 5,628,903
602 5,628,904
615 5,628,905
634 5,628,906
635 5,628,907
646 5,628,908
650 5,628,909
691 5,628,910
710 5,628,911
768 5,628,912
770 5,628,913
5,628,914
782 5,628,915
798 5,628,916

CLASS 211

13.1 5,628,413
40 5,628,414
189 5,628,415

CLASS 212

292 5,628,416

CLASS 215

44 5,628,417

CLASS 216

2 5,628,917
8 5,628,918
13 5,629,245
14 5,629,239
18 5,628,919
58 5,628,920
91 5,628,921

CLASS 218

48 5,629,506

CLASS 219

56.21 5,628,922
86.25 5,628,923
121.5 5,628,924
121.64 5,628,925
121.71 5,628,926
207 5,628,927
488 5,628,928
497 5,628,929

CLASS 220

3.2 5,628,418
3.3 5,628,419
4.04 5,628,420
216 5,628,421
266 5,628,422
319 5,628,423
403 B1 5,427,267
407 5,628,424
414 5,628,425
608 5,628,426
669 5,628,427

CLASS 221

197 5,628,428

CLASS 222

1 5,628,429
132 5,628,430
145.5 5,628,431
175 5,628,432
327 5,628,433
383.1 5,628,434

CLASS 223

39 5,628,435

CLASS 224

148.3 5,628,436
155 5,628,437
275 5,628,438
5,628,439
329 5,628,440
483 5,628,441
543 5,628,442
583 5,628,443

CLASS 227

130 5,628,444
151 5,628,445
175.1 5,628,446

CLASS 228

147 5,628,447
198 5,628,448
262.41 5,628,449

CLASS 229

109 5,628,450
114 5,628,451
235 5,628,452
403 5,628,453

CLASS 235

38 R 5,629,508
98 C 5,629,509
462 5,629,510
5,629,511
468 5,629,512
492 5,629,513

CLASS 238

306 5,628,454

CLASS 239

2.1 5,628,455
14.2 5,628,456
28 5,628,457
242 5,628,458
280.5 5,628,459
433 5,628,460
464 5,628,461
542 5,628,462
690 5,628,463

CLASS 241

5 5,628,464
34 5,628,465
82.6 5,628,466
88.4 5,628,467

CLASS 242

345.1 5,628,468
374 5,628,469
375.3 5,628,470
377 5,628,471
433.3 5,628,472
444 5,628,473
559.4 5,628,474
571.4 5,628,475

CLASS 244

158 R 5,628,476
214 5,628,477

CLASS 246

194 5,628,478
249 5,628,479
453 5,628,480

CLASS 248

58 5,628,481
118 5,628,482
5,628,483
149 5,628,484
231.61 5,628,485
311.2 5,628,486
314 5,628,487
610 5,628,488

CLASS 250

201.5 5,629,514
207 5,629,515
208.1 5,629,516
5,629,517
288 5,629,518
292 5,629,519
330 5,629,520
338.1 5,629,521
338.4 5,629,522
370.05 5,629,523
370.09 5,629,524
395 5,629,525
396 ML 5,629,526
455.11 5,629,527
492.21 5,629,528
559.24 5,629,529

CLASS 251

29 5,628,489
57 5,628,490
129.21 5,628,491
149.1 5,628,492
288 5,628,493

CLASS 252

312 5,628,930
354 B1 4,753,754
373 5,628,931
518 5,628,932
5,628,933
586 5,628,934
589 5,628,935

CLASS 256

24 5,628,494
5,628,495

CLASS 257

40 5,629,530
77 5,629,531
5,629,532
5,629,533
84 5,629,534
120 5,629,535
173 5,629,536
205 5,629,537
254 5,629,538
306 5,629,539
5,629,540
316 5,629,541
328 5,629,542
330 5,629,543
355 5,629,544
362 5,629,545
368 5,629,546
370 5,629,547
400 5,629,548
421 5,629,549
435 5,629,550
470 5,629,551
490 5,629,552
531 5,629,553
586 5,629,554
590 5,629,555
592 5,629,556
620 5,629,557
653 5,629,558
666 5,629,559
712 5,629,560
5,629,561
717 5,629,562
723 5,629,563
762 5,629,564
780 5,629,565
789 5,629,566

CLASS 264

4.1 5,628,936
9 5,628,937
28 5,628,938
29.1 5,628,939
30 5,628,940
38 5,628,941
40.5 Re.35,506
41 5,628,942
45.3 5,628,943
46.9 5,628,944
117 5,628,945
120 5,628,946
143 5,628,947
146 5,628,948
161 5,628,949
241 5,628,950
272.15 5,628,951
331.11 5,628,952
346 5,628,953
426 5,628,955
438 5,628,956
512 5,628,957

CLASS 266

143 5,628,958

CLASS 267

64.11 5,628,496
140.12 5,628,497
140.13 5,628,498
140.14 5,628,499

CLASS 269

37 5,628,500

CLASS 270

45 5,628,501
58.07 5,628,502

CLASS 271

4.1 5,628,503
171 5,628,504
218 5,628,505

CLASS 273

1.5 R 5,628,508
148 R 5,628,511
153 S 5,628,512
157 R 5,628,513
292 5,628,514

CLASS 277

1 5,628,516
26 5,628,517
180 5,628,518
216 5,628,519
235 A 5,628,520

CLASS 280

6.1 5,628,521
43.17 5,628,522
47.26 5,628,523
284 5,628,524
406.2 5,628,525
633 5,628,526
730.2 5,628,527
736 5,628,528
801.2 5,628,529

CLASS 283

67 5,628,530

CLASS 285

81 5,628,531
133.1 5,628,532
363 B1 4,508,376
B1 4,662,661

CLASS 290

3 5,629,567
40 R 5,629,568

CLASS 292

80 5,628,533
128 5,628,534
201 5,628,535

CLASS 293

117 5,628,536

CLASS 294

1.4 5,628,537
19.1 5,628,538
86.4 5,628,539

CLASS 296

3 5,628,540
26 5,628,541
136 5,628,542

CLASS 297

113 5,628,543
188.14 5,628,544
228.11 5,628,545
316 5,628,546
354.11 5,628,547
484 5,628,548

CLASS 299

104 5,628,549

CLASS 303

115.4 5,628,550

CLASS 307

117 5,629,569
118 5,629,570
130 5,629,571

CLASS 310

49 R 5,629,572
64 5,629,573
71 5,629,574
91 5,629,575
237 5,629,576
313 A B1 4,634,913
328 5,629,577
334 5,629,578

CLASS 312

235.7 5,628,551
330.1 5,628,552

CLASS 313

309 5,629,579
310 5,629,580
318.12 5,629,581
456 5,629,582
495 5,629,583
565 5,629,584
570 5,629,585

CLASS 315

46 5,629,586
292 5,629,587
308 5,629,588
411 5,629,589

CLASS 318

16 5,629,590
107 5,629,591
5,629,592
432 5,629,593
568.11 5,629,594
587 5,629,595
762 5,629,596
805 5,629,597
808 5,629,598

CLASS 320

2 5,629,599
5 5,629,600
6 5,629,601
5,629,602
11 5,629,603
31 5,629,604
43 5,629,605

CLASS 322

28 5,629,606

CLASS 323

237 5,629,607
268 5,629,608
269 5,629,609
283 5,629,610
313 5,629,611
5,629,612
315 5,629,613
5,629,614

CLASS 324

121 R 5,629,615
127 5,629,616
158.1 5,629,617
173 5,629,618
207.16 5,629,619
210 5,629,620
239 5,629,621
247 5,629,622
303 5,629,623
309 5,629,624
316 5,629,625
345 5,629,626
538 5,629,627
628 5,629,628
679 5,629,629
754 5,629,630
755 5,629,631
758 5,629,632
768 5,629,633

CLASS 326

27 5,629,634
38 5,629,635
39 5,629,636
93 5,629,637
121 5,629,638

CLASS 327

60 5,629,639
107 5,629,640
108 5,629,641
142 5,629,642
199 5,629,643
393 5,629,644
399 5,629,645
536 5,629,646

CLASS 330

2 5,629,647
289 5,629,648

CLASS 331

17 5,629,649
5,629,650
34 5,629,651
108 B 5,629,652

CLASS 333

17.3 5,629,653
116 5,629,654
172 5,629,655
202 5,629,656
254 5,629,657

CLASS 335

16 Re.35,507
201 5,629,658
205 5,629,659
227 5,629,660

CLASS 336

198 5,629,661

CLASS 337

36 5,629,662
186 5,629,663
261 5,629,664

CLASS 338

18 5,629,665
20 5,629,666

CLASS 340

330 5,629,667
432 5,629,668
436 5,629,669
479 5,629,670
515 5,629,671
540 5,629,672
5,629,673
556 5,629,674
565 5,629,675
567 5,629,676
568 5,629,677
573 5,629,678
574 5,629,679
664 5,629,680
665 5,629,681
671 5,629,682
686 5,629,683
825.02 5,629,685
825.06 5,629,684
825.37 5,629,687
825.44 5,629,686
5,629,688
902 5,629,689
904 5,629,690
961 5,629,691
5,629,692
988 5,629,693

CLASS 341

22 5,629,694
51 5,629,695
101 5,629,696
102 5,629,697
118 5,629,698
137 5,629,699
143 5,629,701
155 5,629,702
5,629,703
161 5,629,700

CLASS 342

54 5,629,704
62 5,629,705
124 5,629,706
357 5,629,707
5,629,708
359 5,629,709
457 5,629,710

CLASS 343

704 5,629,711
713 5,629,712
808 5,629,713

CLASS 345

1 5,629,714
3 5,629,715
60 5,629,716
98 5,629,717
99 5,629,718
118 5,629,719
119 5,629,720
123 5,629,721
141 5,629,722
201 5,629,723

CLASS 347

10 5,629,724
49 5,629,725
55 5,629,726
85 5,629,727
87 5,629,728
175 5,629,729
188 5,629,730
211 5,629,731

CLASS 348

7 5,629,732
B1 5,012,334
222 5,629,734
350 5,629,735
387 5,629,736
398 5,629,737
465 5,629,738
486 5,629,739
515 5,629,740
578 5,629,741
613 5,629,742
751 5,629,743
792 5,629,744
836 5,629,745

CLASS 349

70 5,629,783
86 5,629,785
112 5,629,784
123 5,629,786
153 5,629,787
172 5,629,788

CLASS 351

57 5,629,746
218 5,629,747
232 5,629,748

CLASS 353

122 5,628,553

CLASS 355

35 5,629,752
40 5,629,753
72 5,629,754

CLASS 356

3 09 5,629,756
35.5 5,629,757
71 5,629,764
121 5,629,765
124.5 5,629,766
153 5,629,767
237 5,629,768
243 5,629,769
372 5,629,772
376 5,629,773
445 5,629,774

CLASS 358

261.1 5,629,770
296 5,629,771
5,629,775
401 5,629,777
426 5,629,778
432 5,629,779
5,629,780
523 5,629,781

CLASS 359

9 5,629,782
177 5,629,789
198 5,629,790
223 5,629,791
245 5,629,792
278 5,629,793
290 5,629,794
337 5,629,795
463 5,629,796
464 5,629,797
465 5,629,798
565 5,629,799
5,629,800
572 5,629,801
573 5,629,802
575 5,629,803
576 5,629,804
627 5,629,805
630 5,629,806
5,629,807
719 5,629,808
813 5,629,809
872 5,629,810

CLASS 360

22 5,629,811
64 5,629,812
77.12 5,629,813
77.14 5,629,814
84 5,629,815
96.5 5,629,816
5,629,817
5,629,818
99.02 5,629,819
104 5,629,820
125 5,629,821
132 5,629,822
133 5,629,823

CLASS 361

57 5,629,824
64 5,629,825
118 5,629,826
272 5,629,828
505 5,629,829
535 5,629,830
624 5,629,831
680 5,629,832
681 5,629,833
695 5,629,834
719 5,629,835
755 5,629,836
767 5,629,837
782 5,629,838
803 5,629,839
820 5,629,840

CLASS 362

114 5,628,555
119 5,628,556
252 5,628,557
288 5,628,558
363 5,628,559

CLASS 363

21 5,629,841
44 5,629,842
60 5,629,843
65 5,629,844

CLASS 364

172 5,629,845
424.055 5,629,847
424.06 5,629,848
424.07 5,629,849
426.016 5,629,850
426.044 5,629,851
431.03 5,629,852
431.051 5,629,853
449.1 5,629,854
460 5,629,855
464.27 5,629,856
5,629,857
5,629,858
489 5,629,859
490 5,629,860
5,629,861
492 5,629,862
502 5,629,863
506 5,629,864
5,629,865
514 A 5,629,866
514 R 5,629,867
551.01 5,629,868
5,629,869
5,629,870
5,629,871
554 5,629,872
558 5,629,873
5,629,874
571.03 5,629,875
578 5,629,876
5,629,877
579 5,629,878
5,629,879
5,629,880
724.17 5,629,881
725 5,629,882
728.07 5,629,883
748.5 5,629,884
753 5,629,885
787 5,629,886

CLASS 365

51 5,629,887
145 5,629,888
162 5,629,889
185.03 5,629,890
5,629,891
185.2 5,629,892
185.29 5,629,893
189.01 5,629,894
5,629,895
189.05 5,629,896
195 5,629,897
222 5,629,898
230.03 5,629,899
5,629,900
230.05 5,629,901
233 5,629,902
5,629,903

CLASS 366

83 5,628,560
136 5,628,561
240 5,628,562
270 5,628,563

CLASS 367

53 5,629,904
54 5,629,905
162 5,629,906

CLASS 368

155 5,629,907

CLASS 369

13 5,629,908
5,629,909
5,629,910
38 5,629,912
44.29 5,629,911
44.42 5,629,913
54 5,629,914
59 5,629,915
5,629,916
110 5,629,917
112 5,629,918
5,629,919
5,629,920
120 5,629,921
124 5,629,922
126 5,629,923
191 5,629,924
275.3

CLASS 370

201 5,629,929
217 5,629,925
230 5,629,936
233 5,629,937
236 5,629,941
237 5,629,928
241 5,629,931
252 5,629,926
253 5,629,927
311 5,629,940
335 5,629,934
341 5,629,942
378 5,629,939
382 5,629,932
384 5,629,938
396 5,629,930
411 5,629,933
471 5,629,935

CLASS 371

21.1 5,629,943
21.4 5,629,944
22.5 5,629,945
27 5,629,946
28 5,629,947
32 5,629,948
37.1 5,629,949
51.1 5,629,950

CLASS 372

121 5,628,564
143 5,628,565

CLASS 375

200 5,629,955
5,629,956
232 5,629,957
295 5,629,958
5,629,961
340 5,629,959
346 5,629,960
376 5,629,962

CLASS 376

272 5,629,963
327 5,629,964
5,629,965

CLASS 378

57 5,629,966
65 5,629,967
98.8 5,629,968
138 5,629,969
143 5,629,970
145 5,629,971
170 5,629,972

CLASS 379

58 5,629,974
60 5,629,975
61 5,629,976
144 5,629,977
201 5,629,978
433 5,629,979

CLASS 380

4 5,629,980
25 5,629,981
30 5,629,982
46 5,629,983
54 5,629,984

CLASS 381

68.4 5,629,985
71 5,629,986
96 5,629,987

CLASS 382

276 5,629,988
281 5,629,989
324 5,629,990

CLASS 383

63 5,628,566

CLASS 384

100 5,628,567
123 5,628,568
278 5,628,569
448 5,628,570
518 5,628,571

CLASS 385

11 5,629,991
15 5,629,992
22 5,629,993
24 5,629,994
5,629,995
31 5,629,996
33 5,629,997
37 5,629,998
43 5,629,999
62 5,630,000
89 5,630,001
111 5,630,002
113 5,630,003
129 5,630,004

CLASS 386

45 5,629,776
69 5,630,005
92 5,630,006
113 5,630,007

CLASS 388

804 5,630,008
838 5,630,009

CLASS 395

2.1 5,630,010
2.14 5,630,011
2.17 5,630,012
2.25 5,630,013
2.34 5,630,014
2.35 5,630,015
2.37 5,630,016
2.85 5,630,017
22 5,630,018
5,630,019
5,630,020
24 5,630,021
25 5,630,022
27 5,630,023
5,630,024
51 5,630,025
107 5,630,026
108 5,630,027
110 5,630,028
114 5,630,029
115 5,630,030
5,630,031
5,630,032
118 5,630,033
124 5,630,034
127 5,630,035
131 5,630,036
5,630,037
5,630,038
134 5,630,039
139 5,630,040
141 5,630,041
155 5,630,042
174 5,630,043
182.03 5,630,044
182.08 5,630,045
182.09 5,630,046
182.13 5,630,047
183.01 5,630,048
5,630,049
183.03 5,630,050
183.08 5,630,051
183.14 5,630,052
184.01 5,630,053
185.05 5,630,054
5,630,055
185.09 5,630,056
186 5,630,057
187.01 5,630,058
200.01 5,630,059
5,630,060
200.02 5,630,061
200.03 5,630,062
200.05 5,630,063
200.06 5,630,064
200.09 5,630,065
5,630,066
5,630,067
200.1 5,630,184
201 5,630,068
207 5,630,069
208 5,630,070
221 5,630,071
245 5,630,073
250 5,630,074
5,630,075
5,630,076
293 5,630,077
5,630,078
335 5,630,079
5,630,080
5,630,081
376 5,630,084
377 5,630,151
383 5,630,085
388 5,630,083
5,630,082
393 5,630,149
405 5,630,086
412 5,630,087
417 5,630,088
433 5,630,090
437 5,630,091
438 5,630,092
442 5,630,093
473 5,630,094
5,630,095
481 5,630,096
492 5,630,097
497.03 5,630,098
5,630,099
5,630,100
5,630,101
5,630,102
5,630,103
501 5,630,104
521 5,630,106
550 5,630,111
556 5,630,108
5,630,109
5,630,110
5,630,112
558 5,630,113
560 5,630,107
5,630,118
5,630,119
602 5,630,117
5,630,120
603 5,630,114
5,630,121
5,630,122
607 5,630,123
614 5,630,124
5,630,125
5,630,126
615 5,630,127
617 5,630,116
621 5,630,115
670 5,630,132
671 5,630,133
673 5,630,128
675 5,630,129
676 5,630,134
5,630,135
5,630,136
677 5,630,130
678 5,630,137
701 5,630,131
712 5,630,138
5,630,139
726 5,630,140
734 5,630,141
750 5,630,142
5,630,143
5,630,144
5,630,145
5,630,146
5,630,147
5,630,148
785 5,629,846
789 5,630,150
800 5,630,152
5,630,153
5,630,154
5,630,155
5,630,156
5,630,157
5,630,158
5,630,159
5,630,160
5,630,161
5,630,162
5,630,163
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860 5,630,173
883 5,630,174
892 5,630,175

CLASS 396

6 5,630,176
5,630,177
5,630,178
18 5,630,179
63 5,630,180
72 5,630,181
158 5,630,182
198 5,630,183
223 5,630,185
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385 5,630,188
440 5,630,189
488 5,630,190
492 5,630,191
513 5,630,192
515 5,629,749
538 5,629,750
539 5,630,193
622 5,629,751

CLASS 399

38 5,630,194
49 5,630,195
117 5,630,196
5,630,197
120 5,630,198
175 5,630,199
176 5,629,755
222 5,630,072
228 5,630,200
262 5,629,759
263 5,629,758
269 5,630,201
307 5,629,761
312 5,629,760
364 5,629,762
371 5,629,763

CLASS 400

322 5,628,572
578 5,628,573
621 5,628,574
693 5,628,575

CLASS 401

190 5,628,576

CLASS 403

150 5,628,577
290 5,628,578
297 5,628,579
314 5,628,580
408.1 5,628,581

CLASS 404

6 5,628,582

CLASS 405

3 5,628,583
79 5,628,584
154 5,628,585
195.1 5,628,586
302.1 5,628,587

CLASS 406

88 5,628,588

CLASS 407

15 5,628,589
114 5,628,590

CLASS 408

75 5,628,591
97 5,628,592
139 5,628,593

CLASS 409

144 5,628,594

CLASS 410

7 5,628,595
29 5,628,596

CLASS 411

85 5,628,597
5,628,598
163 5,628,599
354 5,628,600
383 5,628,601
405 5,628,602

CLASS 414

216 5,628,603
225 5,628,604
331 5,628,605
339 5,628,606
495 5,628,607
526 5,628,608
563 5,628,609
680 5,628,610
737 5,628,611
786 5,628,612
5,628,613
790 3 5,628,614

CLASS 415

55.1 5,628,615
58.2 5,628,616
134 5,628,617
198 1 5,628,618

CLASS 416

114 5,628,620
198 A 5,628,621
241 R 5,628,622

CLASS 417

44 2 5,628,619
151 5,628,623
456 5,628,624
523 5,628,625

CLASS 418

61.3 5,628,626

CLASS 419

69 5,630,202

CLASS 422

37 5,628,959
56 5,628,960
63 5,628,961
5,628,962
73 5,628,963
101 5,628,964
102 5,628,966
139 5,628,967
173 5,628,968
190 5,628,969
297 5,628,970
301 5,628,971

CLASS 423

121 5,628,972
179.5 5,628,973
5,628,974
213.2 5,628,975
531 5,628,976
573.1 5,628,977
705 5,628,978

CLASS 424

1.11 5,628,979
5 5,628,980
9 363 5,628,982
9 364 5,628,983
45 5,628,984
49 5,628,985
5,628,986
59 5,628,987
5,628,988
65 5,628,989
5,628,990
70.1 5,628,991
85.7 5,628,993
93.2 5,628,994
93.21 5,628,995
94 5,628,981
150.1 5,628,996
195 1 5,628,998
5,628,999
234.1 5,629,001
401 5,629,002
5,629,003
5,629,004
402 5,629,005
405 5,629,006
423 5,629,007
426 5,629,008
5,629,009
434 5,629,011
436 5,629,012
441 5,629,013
449 5,629,014
450 5,629,015
464 5,629,016
476 5,629,017
488 5,629,018
489 5,629,019
5,629,020
5,629,021
5,629,022
655 5,629,023
667 5,629,024
680 5,629,025
686 5,629,026

CLASS 425

4 C 5,629,027
67 5,629,028
112 5,629,029
135 5,629,030
139 5,629,031
168 5,629,032
353 5,629,033
382 R 5,629,034
412 B1 5,249,950

CLASS 426

5 5,629,035
19 5,629,036
36 5,629,037
72 5,629,038
417 5,629,039
548 5,629,040
659 5,629,041
660 5,629,042

CLASS 427

79 5,629,043
240 5,629,044
297 5,629,045
385.5 5,629,046
389 9 5,629,047
403 5,629,048
429 5,629,049
475 5,629,050
5,629,051
508 5,629,052
571 5,629,053
575 5,629,054

CLASS 428

1 5,629,055
5,629,056
9 5,629,057
34.2 5,629,058
34.9 5,629,059
35.2 5,629,060
35.8 5,629,061
36.9 5,629,062
40.1 5,629,063
42.3 5,629,064
63 5,629,065
64.3 5,629,066
116 5,629,067
148 5,629,068
154 5,629,069
174 5,629,070
192 5,629,071
195 5,629,072
206 5,629,073
212 5,629,074
216 5,629,075
220 5,629,076
306.6 5,629,082
308.8 5,629,083
315 7 5,629,084
318.6 5,629,085
336 5,629,086
355 AC 5,629,087
373 5,629,080
391 5,629,088
392 5,629,089
402.2 5,629,090
403 5,629,091
407 5,629,092
411.1 5,629,093
447 5,629,094
5,629,095
594 5,629,097
626 5,629,098
659 5,629,099
700 5,629,100
701 5,629,101

CLASS 429

17 5,629,102
33 5,629,103
34 5,629,104
97 5,629,105
121 5,629,106
128 5,629,107
174 5,629,108
218 5,629,000
5,629,109
223 5,629,110
5,629,111
224 5,629,112

CLASS 430

5 5,629,113
5,629,114
5,629,115
58 5,629,116
83 5,629,117
99 5,629,118
106 6 5,629,119
5,629,120
109 5,629,121
110 5,629,122
5,629,123
5,629,124
139 5,629,125
5,629,126
191 5,629,127
192 5,629,128
201 5,629,129
5,629,130
204 5,629,131
258 5,629,132
269 5,629,133
270.1 5,629,134
5,629,135
272.1 5,629,136
313 5,629,137
455 5,629,138
461 5,629,139
489 5,629,140
495 1 5,629,141
502 5,629,142
524 5,629,143
567 5,629,144

CLASS 431

153 5,628,627
208 5,628,628

CLASS 432

180 5,628,629

CLASS 433

174 5,628,630

CLASS 434

29 5,628,631
254 5,628,632
265 5,628,633

CLASS 435

1.3 5,629,145
5 5,629,146
5,629,147
6 5,629,149
5,629,150
5,629,152
5,629,153
5,629,154
5,629,156
5,629,157
5,629,158
5,629,159
7.1 5,629,160
5,629,161
5,629,162
7.2 5,629,163
7.21 5,629,165
7.23 5,629,166
7.9 5,629,164
5,629,168
32 5,629,169
34 5,629,170
47 5,629,171
64.7 5,629,172
68.1 5,629,173
69.1 5,629,174
5,629,175
69.2 5,629,176
91.2 5,629,177
5,629,178
5,629,179
106 5,629,180
156 5,629,181
172.3 5,629,182
5,629,183
5,629,184
5,629,192
173.7 5,629,185
177 5,629,186
178 5,629,187
183 5,629,188
189 5,629,189
227 5,629,190
262 5,629,198
262.5 5,629,199
280 5,629,200
283.1 5,629,201
286.5 5,629,202
320.1 5,629,203
5,629,204
5,629,205
325 5,629,193
5,629,194
344 5,629,197
395 5,629,191
418 5,629,196
736 5,629,167

CLASS 436

46 5,629,206
50 5,629,207
55 5,629,208
69 5,629,209
71 5,629,210
74 5,629,211
125 5,629,212
518 5,629,213
5,629,214

CLASS 438

3 5,629,229
14 5,629,224
16 5,628,954
33 5,629,233
40 5,629,232
50 5,629,243
52 5,629,244
106 5,629,240
125 5,629,241
158 5,629,218
259 5,629,222
286 5,629,220
322 5,629,219
389 5,629,226
397 5,629,225
5,629,228
398 5,629,223
446 5,629,230
480 5,629,217
492 5,629,215
502 5,629,216
509 5,629,231
514 5,628,871
533 5,629,235
563 5,629,234
591 5,629,221
600 5,629,227
607 5,629,236
645 5,629,238
692 5,629,242
694 5,628,869
701 5,629,237
729 5,628,870
763 5,629,246

CLASS 439

13 5,628,634
70 5,628,635
5,628,636
5,628,637
74 5,628,638
78 5,628,639
79 5,628,640
101 Re.35,508
5,628,640
131 5,628,641
157 5,628,642
218 5,628,643
263 5,628,644
331 5,628,645
369 5,628,646
404 5,628,647
489 5,628,648
5,628,649
536 5,628,650
557 5,628,651
595 5,628,652
607 5,628,653
622 5,628,654
651 5,628,655
676 B1 4,703,991
851 5,628,656

CLASS 441

5 5,628,657
130 5,628,658

CLASS 442

5,629,077
60 5,629,079
96 5,629,081
374 5,629,078

CLASS 445

3 5,628,659
24 5,628,660
5,628,661
5,628,662
49 5,628,663
70 5,628,664
73 5,628,665

CLASS 446

125 5,628,666
278 5,628,667
355 5,628,668
382 5,628,669
487 5,628,670

CLASS 449

6 5,628,671

CLASS 451

5 5,628,672
9 5,628,673
48 5,628,674
49 5,628,675
168 5,628,676
231 5,628,677
296 5,628,678
508 5,628,679

CLASS 452

106 5,628,680
194 5,628,681

CLASS 454

143 5,628,682
187 5,628,683

CLASS 455

2 5,630,203
3.3 5,630,204
6 5,629,155
54.1 5,630,205
5,630,206
5,630,207
65 5,630,208
66 5,630,209
67.3 5,630,210
89 5,630,211
127 5,630,212
133 5,630,213
190.1 5,630,214
192.2 5,630,215
215 5,630,216
222 5,630,217
226.2 5,630,218
5,630,219
234.1 5,630,220
249.1 5,630,221
260 5,630,222
296 5,630,223
5,630,224
302 5,630,225
313 5,630,226
324 5,630,227
326 5,630,228

CLASS 463

17 5,628,684
25 5,628,685
36 5,628,686

CLASS 464

111 5,628,687
162 5,628,688

CLASS 472

118 5,628,689
131 5,628,690

CLASS 473

48 5,628,691
73 5,628,692
86 5,628,693
157 5,628,694
229 5,628,695
286 5,628,696
326 5,628,697
341 5,628,698
363 5,628,699
446 5,628,515
479 5,628,507
486 5,628,506
562 5,628,509

CLASS 474

18 5,628,700
80 B1 4,690,663
103 5,628,701
213 5,628,702

CLASS 475

159 5,628,703

CLASS 477

5 5,628,704
46 5,628,705
166 5,628,706

CLASS 482

53 5,628,709
57 5,628,710
61 5,628,711
74 5,628,713
92 5,628,714
97 5,628,715
106 5,628,716

CLASS 492

7 5,628,717

CLASS 493

29 5,628,718

CLASS 501

26 5,629,247
40 5,629,248
87 5,629,249
97 5,629,250
112 5,629,251
136 5,629,252

CLASS 502

111 5,629,253
117 5,629,254
120 5,629,255
154 5,629,256
217 5,629,257
439 5,629,258

CLASS 503

227 5,629,259

CLASS 504

116 5,629,260
5,629,261
148 5,629,262
158 5,629,263
240 5,629,264
249 5,629,265

CLASS 505

210 5,629,266
238 5,629,267
329 5,629,268
471 5,629,269

CLASS 507

125 5,629,270
269 5,629,271

CLASS 508

185 5,629,272
208 5,629,273
485 5,629,274

CLASS 510

108 5,629,275
133 5,629,276
202 5,629,277
236 5,629,278
237 5,629,279
463 5,629,280

CLASS 514

1 5,629,281
2 5,629,282
5,629,283
5,629,284
5,629,285
5,629,286
8 5,629,287
9 5,629,288
11 5,629,289
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12 5,629,291
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129 5,629,300
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5,629,309
221 5,629,310
223.2 5,629,311
242 5,629,312
249 5,629,313
256 5,629,314
263 5,629,315
264 5,629,316
278 5,629,317
284 5,629,318
5,629,319
302 5,629,320
307 5,629,321
313 5,629,322
314 5,629,323
316 5,629,324
318 5,629,325
321 5,629,326
323 5,629,327
327 5,629,328
5,629,329
376 5,629,330
381 5,629,331
383 5,629,332
397 5,629,333
407 5,629,334
5,629,335
425 5,629,336
443 5,629,337
451 5,629,338
456 5,629,339
461 5,629,340
485 5,629,341
504 5,629,342
513 5,629,343
588 5,629,344
592 5,629,345
617 5,629,346
620 5,629,347
631 5,629,348
653 5,629,349
736 5,629,350
765 5,629,351

CLASS 521

40.5 5,629,352
64 5,629,353

CLASS 522

25 5,629,354
31 5,629,355
34 5,629,356
84 5,629,358
96 5,629,359

CLASS 523

106 5,629,360
118 5,629,361
139 5,629,362
161 5,629,363
219 5,629,364

CLASS 524

37 5,629,365
56 5,629,366
88 5,629,367
446 5,629,368
493 5,629,369
503 5,629,370
505 5,629,371
507 5,629,372
512 5,629,373
549 5,629,374
556 5,629,375
745 5,629,376
832 5,629,377

CLASS 525

57 5,629,378
65 5,629,379
113 5,629,380
131 5,629,381
158 5,629,382
316 5,629,383
326 8 5,629,384
328 2 5,629,385
354 5,629,386
397 Re.35,509
478 5,629,387
479 5,629,388
534 5,629,389

CLASS 526

114 5,629,390
133 5,629,391
160 5,629,392
175 5,629,393
219.2 5,629,394
238.23 5,629,395
260 5,629,396
262 5,629,397
281 5,629,398

CLASS 528

15 5,629,399
38 5,629,400
43 5,629,401
45 5,629,402
48 5,629,403
196 5,629,404
215 5,629,405

CLASS 530

331 5,629,406
387.1 5,629,407
413 5,629,408

CLASS 534

631 5,629,409
642 5,629,410

CLASS 536

18.1 5,629,411
22.1 5,629,412
23.1 5,629,413
23.53 5,629,415
23.7 5,629,414
106 5,629,416

CLASS 540

122 5,629,417
141 5,629,418
350 5,629,419
357 5,629,420
591 5,629,421

CLASS 544

38 5,629,422
48 5,629,423
316 5,629,424

CLASS 546

202 5,629,425
216 5,629,426
276.7 5,629,427
303 5,629,428

CLASS 548

311.4 5,629,429
421 5,629,430
491 5,629,431

CLASS 549

326 5,629,432
510 5,629,433

CLASS 554

219 5,629,434

CLASS 556

1 5,629,435
148 5,629,436
444 5,629,437
466 5,629,438
480 5,629,439

CLASS 558

238 5,629,440
357 5,629,441
408 5,629,442
435 5,629,443
466 5,629,444

CLASS 560

209 5,629,445

CLASS 562

483 5,629,446
553 5,629,447

CLASS 564

134 5,629,448
417 5,629,449
425 5,629,450
490 5,629,451
505 5,629,452

CLASS 568

322 5,629,453
327 5,629,454
343 5,629,455
633 5,629,456
724 5,629,457
842 5,629,458
896 5,629,459

CLASS 570

134 5,629,460
168 5,629,461
176 5,629,462

CLASS 585

455 5,629,463
634 5,629,464
648 5,629,465
724 5,629,466
805 5,629,467

CLASS 600

16 5,628,719

CLASS 602

19 5,628,721
26 5,628,722
53 5,628,723
58 5,628,724
62 5,628,725

CLASS 604

4 5,628,726
6 5,628,727
19 5,628,728
20 5,628,729
21 5,628,730
153 5,628,731
167 5,628,732
267 5,628,733
272 5,628,734
317 5,628,735
366 5,628,736
383 5,628,737
385.1 5,628,738
5,628,739
385 2 5,628,741

CLASS 606

1 5,628,743
12 5,628,744
38 5,628,745
45 5,628,746
61 5,628,740
79 5,628,747
5,628,748
80 5,628,749
88 5,628,750
104 5,628,751
5,628,752
108 5,628,753
5,628,754
5,628,755
139 5,628,756
148 5,628,757
5,628,758
167 5,628,759
170 5,628,760
5,628,761
5,628,762
5,628,763
182 5,628,764
5,628,765
232 5,628,766

CLASS 607

46 5,628,768
98 5,628,769
101 5,628,770
102 5,628,771
109 5,628,772
116 5,628,773
5,628,774
5,628,775
119 5,628,776
122 5,628,777
123 5,628,778
5,628,779
126 5,628,780

CLASS 623

1 5,628,781
5,628,782
5,628,783
5,628,784
5,628,785
5,628,786
5,628,787
5,628,788
2 5,628,789
5,628,790
5,628,791
5,628,792
4 5,628,793
5 5,628,794
6 5,628,795
5,628,796
5,628,797
5,628,798

CLASS 800

200 5,629,468
205 5,629,469
5,629,470

CLASSIFICATION OF DESIGNS

D1— 118 379,107
D2— 639 379,108
741 379,109
743 379,110
882 379,111
903 379,112
907 379,113
952 379,114
968 379,115
D3— 6 379,116
20 379,117
218 379,118
229 379,119
254 379,120
312 379,121
379,122
D4— 137 379,123
138 379,124
D6— 309 379,125
495 379,126
379,127
508 379,128
596 379,129
598 379,130
635 379,131
D7— 309 379,132
392.1 379,133
548 379,134
550 379,135
596 379,136
598 379,137
629 379,138
666 379,139
679 379,140
D8— 9 379,141
71 379,142
346 379,143
363 379,144
D9— 322 379,145
448 379,146
379,147
449 379,148
451 379,149
500 379,150
503 379,151
537 379,152
379,153
540 379,154
D10— 64 379,155
72 379,156
106 379,157
D11— 121 379,158
157 379,159
216 379,160
379,161
221 379,162
D12— 111 379,163
379,164
129 379,165
147 379,166
152 379,167
379,168
183 379,169
190 379,170
213 379,171
379,172
404 379,173
D13— 123 379,174
152 379,175
156 379,176
379,177
D14— 114 379,178
115 379,179
191 379,181
379,182
214 379,183
218 379,184
227 379,185
299 379,186
D15— 123 379,187
D16— 133 379,188
202 379,189
234 379,190
335 379,191
18 379,192
D17— 34 379,193
43 379,194
50 379,195
D18— 55 379,196
379,197
D19— 3 379,198
D20— 41 379,199
42 379,200
43 379,201
D21— 38 379,202
48 379,203
108 379,204
199 379,205
204 379,206
220 379,207
222 379,208
D22— 107 379,210
118 379,211
D23— 223 379,212
238 379,213
242 379,214
252 379,215
277 379,216
295 379,217
304 379,218
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62 379,235
67 379,236
119 379,237
124 379,238
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125 379,242
127 379,243
164 379,244
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138 379,247
D27— 141 379,248
D28— 8.1 379,249
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D30— 146 379,251
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CLASSIFICATION OF PLANTS

P.—	33.1	9,889	39	9,890	82	9,891	9,892	87.12	9,893	88.1	9,894	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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PATENTS

01	5,628,485	5,628,136	5,628,744	5,629,294	5,629,790	5,630,131
	5,628,824	5,628,143	5,628,754	5,629,319	5,629,801	5,630,133
	5,628,845	5,628,154	5,628,775	5,629,345	5,629,806	5,630,136
	5,628,878	5,628,156	5,628,777	5,629,348	5,629,826	5,630,137
	5,629,164	5,628,196	5,628,779	5,629,360	5,629,837	5,630,140
02	5,628,275	5,628,198	5,628,780	5,629,379	5,629,840	5,630,141
04	5,628,142	5,628,214	5,628,783	5,629,389	5,629,861	5,630,144
	5,628,193	5,628,232	5,628,803	5,629,413	5,629,862	5,630,147
	5,628,273	5,628,235	5,628,830	5,629,414	5,629,873	5,630,153
	5,628,327	5,628,245	5,628,831	5,629,469	5,629,874	5,630,154
	5,628,696	5,628,272	5,628,869	5,629,479	5,629,876	5,630,163
	5,628,761	5,628,308	5,628,870	5,629,489	5,629,886	5,630,169
	5,628,772	5,628,309	5,628,873	5,629,499	5,629,890	5,630,171
	5,628,781	5,628,311	5,628,879	5,629,501	5,629,891	5,630,173
	5,628,782	5,628,313	5,628,930	5,629,503	5,629,892	5,630,208
	5,628,786	5,628,321	5,628,983	5,629,517	5,629,893	5,630,212
	5,628,829	5,628,350	5,628,999	5,629,519	5,629,918	5,630,216
	5,628,866	5,628,357	5,629,019	5,629,524	5,629,951	5,630,223
	5,629,215	5,628,363	5,629,039	5,629,527	5,629,954	5,458,006
	5,629,277	5,628,373	5,629,077	5,629,535	5,629,955	08 5,628,117
	5,629,290	5,628,379	5,629,105	5,629,543	5,629,971	5,628,216
	5,629,536	5,628,403	5,629,126	5,629,552	5,629,975	5,628,270
	5,629,630	5,628,412	5,629,137	5,629,563	5,629,980	5,628,338
	5,629,692	5,628,413	5,629,143	5,629,590	5,629,984	5,628,715
	5,629,707	5,628,439	5,629,150	5,629,595	5,629,996	5,628,743
	5,629,813	5,628,462	5,629,152	5,629,612	5,629,997	5,628,745
	5,629,860	5,628,476	5,629,153	5,629,613	5,630,004	5,628,943
	5,629,910	5,628,482	5,629,154	5,629,620	5,630,033	5,629,049
	5,629,914	5,628,483	5,629,157	5,629,624	5,630,037	5,629,155
	5,629,929	5,628,484	5,629,159	5,629,636	5,630,043	5,629,209
	5,629,985	5,628,514	5,629,160	5,629,637	5,630,054	5,629,214
	5,630,001	5,628,515	5,629,172	5,629,638	5,630,059	5,629,354
	5,630,102	5,628,538	5,629,173	5,629,641	5,630,060	5,629,433
	5,630,225	5,628,544	5,629,174	5,629,644	5,630,066	5,629,617
05	5,628,653	5,628,563	5,629,175	5,629,653	5,630,069	5,629,639
	5,628,837	5,628,584	5,629,184	5,629,654	5,630,076	5,629,720
	5,629,058	5,628,593	5,629,186	5,629,657	5,630,077	5,629,815
06	5,628,062	5,628,599	5,629,189	5,629,660	5,630,081	5,629,871
	5,628,063	5,628,601	5,629,197	5,629,667	5,630,088	5,629,947
	5,628,068	5,628,612	5,629,203	5,629,682	5,630,091	5,629,949
	5,628,073	5,628,619	5,629,224	5,629,687	5,630,092	5,629,956
	5,628,075	5,628,623	5,629,227	5,629,691	5,630,094	5,629,978
	5,628,077	5,628,641	5,629,239	5,629,693	5,630,096	09 5,628,131
	5,628,092	5,628,644	5,629,240	5,629,695	5,630,098	5,628,161
	5,628,105	5,628,667	5,629,241	5,629,708	5,630,110	5,628,181
	5,628,109	5,628,676	5,629,243	5,629,724	5,630,114	5,628,249
	5,628,114	5,628,697	5,629,270	5,629,764	5,630,117	5,628,407
	5,628,115	5,628,716	5,629,291	5,629,767	5,630,122	5,628,446
	5,628,122	5,628,721	5,629,292	5,629,780	5,630,124	5,628,504

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5,628,627 | 5,628,293 | 5,629,578 | 5,629,260 | 33 : 5,628,908 | 5,628,834
5,628,695 | 5,628,296 | 5,629,635 | 5,629,273 | 5,628,957 | 5,628,851
5,628,799 | 5,628,392 | 5,629,927 | 5,629,350 | 5,629,084 | 5,628,897
5,628,802 | 5,628,427 | 5,630,016 | 5,629,374 | 5,629,156 | 5,628,905
5,628,826 | 5,628,481 | 5,630,206 | 5,629,377 | 5,629,528 | 5,628,906
5,629,020 | 5,628,506 | 25 : 5,628,100 | 5,629,396 | 5,629,842 | 5,628,916
5,629,029 | 5,628,576 | 5,628,213 | 5,629,399 | 5,630,049 | 5,628,917
5,629,295 | 5,628,580 | 5,628,276 | 5,629,401 | 5,630,166 | 5,628,918
5,629,426 | 5,628,639 | 5,628,323 | 5,629,439 | 34 : Re.35,506 | 5,628,925
5,629,623 | 5,628,648 | 5,628,330 | 5,629,447 | 5,628,066 | 5,628,938
5,629,732 | 5,628,748 | 5,628,364 | 5,629,464 | 5,628,082 | 5,628,959
5,629,772 | 5,628,757 | 5,628,418 | 5,629,476 | 5,628,083 | 5,628,964
5,629,835 | 5,628,915 | 5,628,513 | 5,629,481 | 5,628,230 | 5,628,966
10 5,628,932 | 5,628,929 | 5,628,558 | 5,629,593 | 5,628,231 | 5,629,032
5,629,081 | 5,629,025 | 5,628,561 | 5,629,594 | 5,628,234 | 5,629,053
5,629,257 | 5,629,083 | 5,628,617 | 5,629,604 | 5,628,260 | 5,629,061
5,629,372 | 5,629,090 | 5,628,621 | 5,629,618 | 5,628,335 | 5,629,140
5,629,462 | 5,629,249 | 5,628,726 | 5,629,712 | 5,628,395 | 5,629,142
5,629,683 | 5,629,266 | 5,628,936 | 5,629,784 | 5,628,429 | 5,629,144
12 5,628,070 | 5,629,325 | 5,628,974 | 5,630,009 | 5,628,451 | 5,629,170
5,628,151 | 5,629,446 | 5,628,982 | 27 : 5,628,103 | 5,628,556 | 5,629,281
5,628,184 | 5,629,488 | 5,629,009 | 5,628,169 | 5,628,713 | 5,629,301
5,628,242 | 5,629,532 | 5,629,024 | 5,628,171 | 5,628,739 | 5,629,314
5,628,266 | 5,629,569 | 5,629,044 | 5,628,199 | 5,628,840 | 5,629,367
5,628,271 | 5,629,785 | 5,629,065 | 5,628,317 | 5,628,867 | 5,629,369
5,628,280 | 5,629,855 | 5,629,068 | 5,628,387 | 5,628,933 | 5,629,397
5,628,282 | 5,629,872 | 5,629,073 | 5,628,487 | 5,628,945 | 5,629,405
5,628,305 | 5,629,884 | 5,629,162 | 5,628,509 | 5,628,961 | 5,629,408
5,628,348 | 5,629,926 | 5,629,165 | 5,628,565 | 5,628,980 | 5,629,418
5,628,370 | 5,629,953 | 5,629,169 | 5,628,595 | 5,628,990 | 5,629,435
5,628,383 | 5,629,958 | 5,629,188 | 5,628,614 | 5,629,035 | 5,629,449
5,628,432 | 5,629,979 | 5,629,191 | 5,628,710 | 5,629,041 | 5,629,458
5,628,488 | 5,630,159 | 5,629,194 | 5,628,719 | 5,629,051 | 5,629,460
5,628,511 | 5,630,210 | 5,629,204 | 5,628,730 | 5,629,064 | 5,629,465
5,628,537 | 5,630,213 | 5,629,298 | 5,628,735 | 5,629,102 | 5,629,506
5,628,542 | 5,630,215 | 5,629,328 | 5,628,753 | 5,629,125 | 5,629,510
5,628,583 | 18 : 5,628,097 | 5,629,329 | 5,628,770 | 5,629,199 | 5,629,564
5,628,675 | 5,628,274 | 5,629,333 | 5,628,785 | 5,629,232 | 5,629,579
5,628,681 | 5,628,302 | 5,629,337 | 5,628,787 | 5,629,233 | 5,629,580
5,628,714 | 5,628,525 | 5,629,363 | 5,628,789 | 5,629,261 | 5,629,584
5,628,727 | 5,628,541 | 5,629,383 | 5,628,794 | 5,629,276 | 5,629,601
5,628,740 | 5,628,620 | 5,629,621 | 5,628,806 | 5,629,279 | 5,629,607
5,628,764 | 5,628,671 | 5,629,622 | 5,628,827 | 5,629,280 | 5,629,631
5,628,788 | 5,628,751 | 5,629,626 | 5,628,846 | 5,629,310 | 5,629,658
5,628,819 | 5,628,818 | 5,629,646 | 5,628,935 | 5,629,313 | 5,629,734
5,628,886 | 5,629,007 | 5,629,678 | 5,628,952 | 5,629,318 | 5,629,750
5,628,887 | 5,629,060 | 5,629,761 | 5,629,037 | 5,629,322 | 5,629,762
5,628,894 | 5,629,092 | 5,629,765 | 5,629,063 | 5,629,326 | 5,629,769
5,629,014 | 5,629,181 | 5,629,778 | 5,629,079 | 5,629,343 | 5,629,791
5,629,196 | 5,629,289 | 5,629,838 | 5,629,093 | 5,629,394 | 5,629,800
5,629,362 | 5,629,317 | 5,629,906 | 5,629,149 | 5,629,400 | 5,629,828
5,629,522 | 5,629,425 | 5,629,922 | 5,629,349 | 5,629,415 | 5,629,845
5,629,599 | 5,629,486 | 5,629,950 | 5,629,355 | 5,629,434 | 5,629,846
5,629,679 | 5,629,670 | 5,629,982 | 5,629,380 | 5,629,463 | 5,629,867
5,629,739 | 5,629,776 | 5,630,011 | 5,629,577 | 5,629,470 | 5,629,921
5,629,775 | 5,629,986 | 5,630,042 | 5,629,672 | 5,629,533 | 5,629,952
5,629,964 | 19 : 5,628,328 | 5,630,055 | 5,629,727 | 5,629,673 | 5,629,968
5,630,058 | 5,628,958 | 5,630,056 | 5,629,857 | 5,629,677 | 5,629,970
5,630,067 | 5,629,936 | 5,630,113 | 5,629,933 | 5,629,719 | 5,629,972
5,630,068 | 5,630,073 | 5,630,125 | 5,630,025 | 5,629,736 | 5,629,998
5,630,078 | 5,630,090 | 26 : 5,628,140 | 5,630,074 | 5,629,770 | 5,630,028
5,630,132 | 20 : 5,628,166 | 5,628,150 | 5,630,101 | 5,629,789 | 5,630,045
5,630,152 | 5,628,197 | 5,628,158 | 5,630,104 | 5,629,889 | 5,630,050
5,630,222 | 5,628,284 | 5,628,221 | 4,066,854 | 5,629,988 | 5,630,070
5,630,228 | 5,628,490 | 5,628,257 | 4,066,855 | 5,629,991 | 5,630,079
4,856,294 | 5,628,551 | 5,628,292 | 5,249,950 | 5,629,992 | 5,630,121
13 5,628,149 | 5,628,560 | 5,628,299 | 28 : 5,628,507 | 5,629,999 | 5,630,128
5,628,200 | 5,629,977 | 5,628,303 | 5,628,548 | 5,630,047 | 5,630,157
5,628,381 | 21 : 5,628,329 | 5,628,312 | 5,628,907 | 5,630,161 | 5,630,162
5,628,436 | 5,628,860 | 5,628,367 | 29 : 5,628,300 | 5,630,203 | 5,630,178
5,628,534 | 5,628,901 | 5,628,390 | 5,628,306 | 5,630,207 | 5,630,189
5,628,711 | 5,629,373 | 5,628,398 | 5,628,382 | 5,012,334 | 5,630,196
5,629,008 | 5,629,438 | 5,628,441 | 5,628,434 | 35 : 5,628,443 | 5,630,200
5,629,080 | 5,630,142 | 5,628,442 | 5,628,461 | 5,628,850 | 4,703,991
5,629,263 | 22 : 5,628,341 | 5,628,453 | 5,628,467 | 5,629,033 | 37 : 5,628,086
5,629,376 | 5,628,459 | 5,628,470 | 5,628,478 | 5,629,353 | 5,628,119
5,629,498 | 5,628,493 | 5,628,486 | 5,628,479 | 5,629,802 | 5,628,145
5,629,508 | 5,628,594 | 5,628,528 | 5,628,588 | 5,630,035 | 5,628,159
5,629,662 | 5,628,722 | 5,628,531 | 5,628,606 | 5,630,129 | 5,628,172
5,629,870 | 5,628,904 | 5,628,533 | 5,628,610 | 36 : 5,628,148 | 5,628,173
5,629,875 | 5,629,071 | 5,628,535 | 5,628,734 | 5,628,153 | 5,628,176
5,630,003 | 5,629,177 | 5,628,536 | 5,628,746 | 5,628,165 | 5,628,334
5,630,103 | 23 : 5,628,141 | 5,628,543 | 5,628,798 | 5,628,179 | 5,628,344
16 5,629,108 | 5,628,228 | 5,628,552 | 5,628,823 | 5,628,180 | 5,628,430
5,629,223 | 5,628,345 | 5,628,577 | 5,629,180 | 5,628,207 | 5,628,431
5,629,230 | 5,628,574 | 5,628,589 | 5,629,307 | 5,628,212 | 5,628,475
5,629,246 | 5,628,658 | 5,628,625 | 5,629,365 | 5,628,215 | 5,628,496
5,629,484 | 24 : 5,628,204 | 5,628,630 | 5,629,412 | 5,628,360 | 5,628,530
5,629,546 | 5,628,310 | 5,628,682 | 5,629,424 | 5,628,380 | 5,628,590
5,629,824 | 5,628,374 | 5,628,692 | 5,629,475 | 5,628,428 | 5,628,654
5,629,843 | 5,628,733 | 5,628,693 | 5,629,665 | 5,628,440 | 5,628,656
17 Re.35,505 | 5,628,910 | 5,628,766 | 5,629,681 | 5,628,457 | 5,628,832
5,628,089 | 5,628,994 | 5,628,833 | 30 : Re.35,503 | 5,628,464 | 5,628,861
5,628,108 | 5,629,021 | 5,628,854 | 5,628,135 | 5,628,502 | 5,628,971
5,628,146 | 5,629,045 | 5,628,949 | 5,630,057 | 5,628,517 | 5,628,984
5,628,164 | 5,629,145 | 5,628,950 | 31 : 5,628,102 | 5,628,522 | 5,629,262
5,628,167 | 5,629,183 | 5,628,970 | 5,628,144 | 5,628,523 | 5,629,335
5,628,170 | 5,629,192 | 5,629,028 | 5,628,262 | 5,628,664 | 5,629,370
5,628,189 | 5,629,193 | 5,629 046 | 5,628,399 | 5,628,701 | 5,629,375
5,628,226 | 5,629,299 | 5,629,050 | 5,628,725 | 5,628,704 | 5,629,387
5,628,229 | 5,629,385 | 5,629,091 | 32 : 5,628,205 | 5,628,752 | 5,629,407
5,628,237 | 5,629,454 | 5,629,095 | 5,628,425 | 5,628,795 | 5,629,416
5,628,255 | 5,629,492 | 5,629,104 | 5,628,881 | 5,628,809 | 5,629,531

5,629,583 | 5,629,573 | 5,628,811 | 5,628,349 | 5,629,943 | 5,629,520
5,629,648 | 5,629,581 | 5,628,847 | 5,628,351 | 5,629,974 | 5,629,549
5,629,685 | 5,629,810 | 5,628,976 | 5,628,369 | 5,629,981 | 5,629,807
5,630,126 | 5,629,848 | 5,628,981 | 5,628,375 | 5,630,026 | 5,630,127
38 : 5,628,208 | 5,629,865 | 5,629,168 | 5,628,386 | 5,630,027 | 5,630,204
5,628,371 | 5,630,118 | 5,629,247 | 5,628,404 | 5,630,039 | 53 : 5,628,320
39 5,628,078 | 40 : 5,628,065 | 5,629,264 | 5,628,421 | 5,630,041 | 5,628,409
5,628,080 | 5,628,259 | 5,629,324 | 5,628,494 | 5,630,048 | 5,628,477
5,628,152 | 5,628,285 | 5,629,327 | 5,628,495 | 5,630,051 | 5,628,680
5,628,201 | 5,628,316 | 5,629,346 | 5,628,559 | 5,630,061 | 5,628,686
5,628,224 | 5,628,540 | 5,629,403 | 5,628,585 | 5,630,063 | 5,628,774
5,628,248 | 5,628,608 | 5,629,404 | 5,628,586 | 5,630,072 | 5,628,996
5,628,384 | 5,628,616 | 5,629,429 | 5,628,591 | 5,630,082 | 5,629,023
5,628,396 | 5,628,987 | 5,629,437 | 5,628,603 | 5,630,086 | 5,629,076
5,628,422 | 5,629,097 | 5,629,485 | 5,628,624 | 5,630,095 | 5,629,216
5,628,426 | 5,629,466 | 5,629,567 | 5,628,637 | 5,630,099 | 5,629,283
5,628,445 | 41 : 5,628,128 | 5,629,616 | 5,628,659 | 5,630,100 | 5,629,285
5,628,450 | 5,628,129 | 5,629,733 | 5,628,662 | 5,630,108 | 5,629,286
5,628,532 | 5,628,168 | 5,629,822 | 5,628,666 | 5,630,123 | 5,629,315
5,628,578 | 5,628,326 | 5,629,869 | 5,628,750 | 5,630,143 | 5,629,423
5,628,633 | 5,628,405 | 5,629,938 | 5,628,776 | 5,630,149 | 5,629,628
5,628,646 | 5,628,553 | 5,427,267 | 5,628,791 | 5,630,160 | 5,629,844
5,628,688 | 5,628,581 | 44 : 5,628,211 | 5,628,797 | 5,630,165 | 5,630,005
5,628,732 | 5,628,596 | 5,628,397 | 5,628,822 | 5,630,174 | 5,630,017
5,628,736 | 5,629,163 | 5,628,444 | 5,628,862 | 5,630,221 | 5,630,080
5,628,737 | 5,629,547 | 45 : 5,628,178 | 5,628,880 | 49 : 5,628,261 | 5,630,097
5,628,741 | 5,629,608 | 5,628,264 | 5,628,955 | 5,628,414 | 5,630,119
5,628,760 | 5,629,652 | 5,628,268 | 5,628,969 | 5,628,435 | 5,630,138
5,628,814 | 5,629,703 | 5,628,355 | 5,629,074 | 5,628,455 | 5,630,224
5,628,821 | 5,629,940 | 5,628,393 | 5,629,147 | 5,628,527 | 54 : 5,628,093
5,628,856 | 5,630,052 | 5,628,592 | 5,629,218 | 5,629,006 | 5,629,344
5,628,858 | 5,630,075 | 5,628,607 | 5,629,228 | 5,629,494 | 5,629,388
5,628,876 | 5,630,083 | 5,628,808 | 5,629,253 | 5,629,966 | 55 : Re.35,502
5,628,882 | 5,630,093 | 47 : 5,628,090 | 5,629,271 | 50 : 5,628,076 | 5,628,124
5,628,893 | 5,630,107 | 5,628,473 | 5,629,306 | 5,628,663 | 5,628,163
5,628,928 | 5,630,146 | 5,628,674 | 5,629,451 | 5,628,694 | 5,628,352
5,628,940 | 5,630,148 | 5,628,724 | 5,629,471 | 5,628,889 | 5,628,474
5,628,986 | 5,630,168 | 5,628,747 | 5,629,545 | 5,629,544 | 5,628,521
5,629,001 | 42 : Re.35,508 | 5,628,749 | 5,629,556 | 5,629,634 | 5,628,566
5,629,013 | 5,628,067 | 5,628,756 | 5,629,587 | 5,629,650 | 5,628,731
5,629,038 | 5,628,087 | 5,628,790 | 5,629,605 | 5,629,723 | 5,628,865
5,629,047 | 5,628,112 | 5,628,914 | 5,629,609 | 5,629,901 | 5,628,868
5,629,048 | 5,628,137 | 5,629,210 | 5,629,643 | 51 : 5,628,139 | 5,628,899
5,629,052 | 5,628,195 | 5,629,468 | 5,629,698 | 5,628,339 | 5,628,912
5,629,087 | 5,628,252 | 5,629,725 | 5,629,705 | 5,628,437 | 5,628,927
5,629,089 | 5,628,394 | 5,629,825 | 5,629,713 | 5,628,438 | 5,629,179
5,629,098 | 5,628,424 | 48 : 5,628,096 | 5,629,794 | 5,628,632 | 5,629,213
5,629,256 | 5,628,456 | 5,628,121 | 5,629,832 | 5,628,691 | 5,629,598
5,629,278 | 5,628,549 | 5,628,183 | 5,629,858 | 5,628,759 | 5,629,668
5,629,309 | 5,628,555 | 5,628,244 | 5,629,859 | 5,628,804 | 5,629,680
5,629,341 | 5,628,582 | 5,628,251 | 5,629,878 | 5,629,171 | 5,629,839
5,629,427 | 5,628,609 | 5,628,254 | 5,629,896 | 5,629,178 | 5,630,087
5,629,444 | 5,628,640 | 5,628,279 | 5,629,905 | 56 : 5,629,229 | 5,628,138
5,629,448 | 5,628,647 | 5,628,281 | 5,629,907 | 5,629,234 |
5,629,571 | 5,628,689 | 5,628,342 | 5,629,934 | 5,629,248 |

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01 : 379,148 | 379,164 | 379,216 | 32 : 379,208 | 39 379,120 | 379,194
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06 379,139 | 379,230 | 25 379,236 | 379,129 | 379,168 | 379,233
379,140 | 13 379,121 | 26 379,107 | 379,186 | 379,176 | 379,239
379,149 | 379,123 | 379,127 | 379,192 | 379,184 | 379,240
379,169 | 379,150 | 379,170 | 379,225 | 379,224 | 379,241
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379,195 | 379,171 | 379,158 | 379,191 | 379,117 | 379,210
379,207 | 16 379,196 | 379,160 | 379,227 | 379,247 | 379,226
379,211 | 17 379,162 | 379,185 | 379,242 | 42 379,111 | 379,255
379,214 | 379,165 | 379,200 | 37 379,116 | 379,209 | 56 379,253
379,221 | 379,229 | 379,234 | 379,126 | 379,223 |
379,250 | 379,245 | 29 379,115 | 379,174 | 48 379,122 |
379,251 | 18 379,142 | 30 379,256 | 379,228 | 51 379,132 |
08 379,141 | 379,156 | 379,246 | 379,145 |

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06 9,890 | 9,891 | 9,892 | 12 9,894 |

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Bruce Lehman, *Commissioner*

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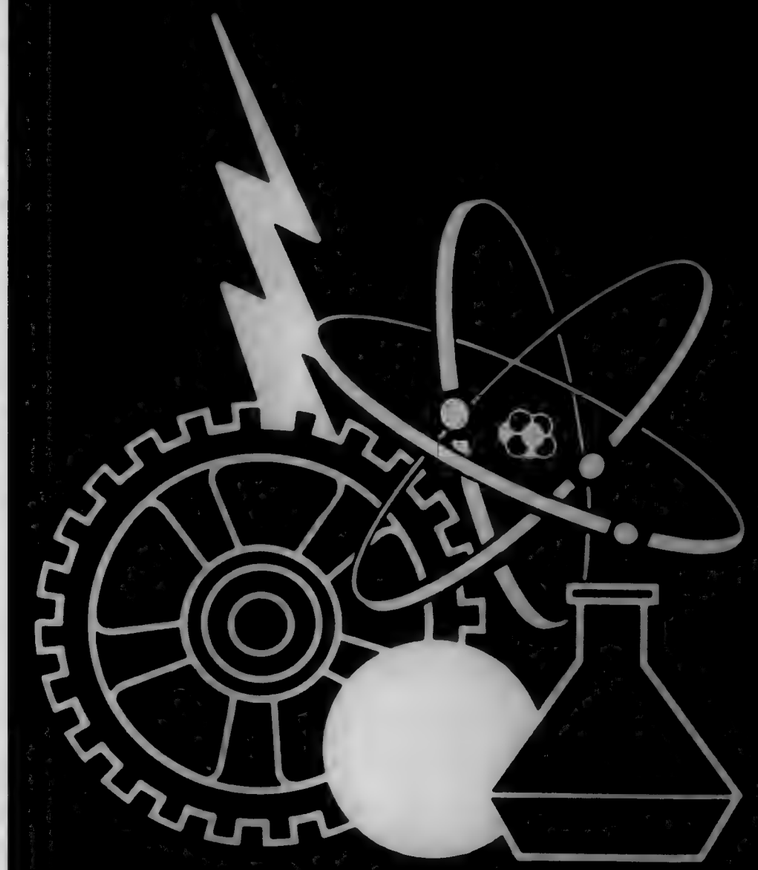
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 17, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,311,617 through 5,313,664
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 15, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,924,525 through 4,926,500
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 13, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,587,671 through 4,589,145
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

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By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED March 12, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,415	07/458,160	10/30/90
(4,810,924)	(07/053,721)	(03/07/89)
Re. 34,315	07/666,150	07/20/93
(4,809,539)	(07/210,352)	(03/07/89)
Re. 34,318	07/666,118	07/20/93
(4,811,172)	(07/123,844)	(03/07/89)
Re. 34,346	07/359,834	08/17/93
(4,811,159)	(07/162,818)	(03/07/89)
4,503,568	06/325,057	03/12/85
4,503,571	06/459,798	03/12/85
4,503,572	06/419,187	03/12/85
4,503,575	06/446,225	03/12/85
4,503,577	06/388,492	03/12/85
4,503,581	06/473,545	03/12/85
4,503,585	06/484,938	03/12/85
4,503,588	06/448,725	03/12/85
4,503,599	06/462,014	03/12/85
4,503,603	06/492,459	03/12/85
4,503,605	06/524,227	03/12/85
4,503,615	06/467,315	03/12/85
4,503,617	06/474,476	03/12/85
4,503,622	06/486,631	03/12/85
4,503,626	06/433,805	03/12/85
4,503,629	06/572,915	03/12/85
4,503,630	06/532,494	03/12/85
4,503,638	06/517,788	03/12/85
4,503,642	06/491,277	03/12/85
4,503,645	06/493,148	03/12/85
4,503,646	06/499,303	03/12/85
4,503,650	06/467,379	03/12/85
4,503,654	06/422,649	03/12/85
4,503,656	06/441,304	03/12/85
4,503,658	06/479,360	03/12/85
4,503,662	06/420,858	03/12/85
4,503,670	06/396,284	03/12/85
4,503,671	06/507,030	03/12/85
4,503,677	06/380,203	03/12/85
4,503,681	06/513,934	03/12/85
4,503,698	06/497,555	03/12/85
4,503,703	06/413,743	03/12/85
4,503,706	06/495,034	03/12/85
4,503,711	06/537,973	03/12/85
4,503,714	06/467,471	03/12/85
4,503,718	06/365,052	03/12/85
4,503,726	06/274,912	03/12/85
4,503,734	06/402,235	03/12/85
4,503,735	06/430,995	03/12/85
4,503,736	06/473,961	03/12/85
4,503,740	06/340,506	03/12/85
4,503,748	06/542,454	03/12/85
4,503,755	06/418,310	03/12/85
4,503,760	06/308,158	03/12/85
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5,192,218	07/691,037	03/09/93
5,192,226	07/878,971	03/09/93
5,192,237	07/743,346	03/09/93
5,192,241	07/887,834	03/09/93
5,192,242	07/771,788	03/09/93
5,192,243	07/703,462	03/09/93
5,192,244	07/833,946	03/09/93
5,192,259	07/731,995	03/09/93
5,192,262	07/782,917	03/09/93
5,192,263	07/703,802	03/09/93
5,192,265	07/625,268	03/09/93
5,192,270	07/615,325	03/09/93
5,192,272	07/603,323	03/09/93
5,192,282	07/756,835	03/09/93
5,192,301	07/754,163	03/09/93
5,192,321	07/499,884	03/09/93
5,192,330	07/740,723	03/09/93
5,192,333	07/834,387	03/09/93
5,192,334	07/877,860	03/09/93
5,192,337	07/727,776	03/09/93
5,192,341	07/782,936	03/09/93
5,192,349	07/519,887	03/09/93
5,192,351	07/812,130	03/09/93
5,192,356	07/748,266	03/09/93
5,192,358	07/723,872	03/09/93
5,192,367	07/693,860	03/09/93
5,192,369	07/789,773	03/09/93
5,192,370	07/542,148	03/09/93
5,192,383	07/851,935	03/09/93
5,192,384	07/707,560	03/09/93
5,192,397	07/761,767	03/09/93
5,192,411	07/638,839	03/09/93
5,192,421	07/685,758	03/09/93
5,192,422	07/817,794	03/09/93
5,192,424	07/802,587	03/09/93
5,192,426	07/701,489	03/09/93
5,192,427	07/528,149	03/09/93
5,192,437	07/570,138	03/09/93
5,192,438	07/567,258	03/09/93
5,192,443	07/657,957	03/09/93
5,192,461	07/749,126	03/09/93
5,192,471	07/698,663	03/09/93
5,192,477	07/758,721	03/09/93
5,192,481	07/444,235	03/09/93
5,192,490	07/799,066	03/09/93
5,192,494	07/752,517	03/09/93
5,192,495	07/821,873	03/09/93
5,192,500	07/681,005	03/09/93
5,192,509	07/748,986	03/09/93
5,192,513	07/736,628	03/09/93
5,192,515	07/668,196	03/09/93
5,192,516	07/764,869	03/09/93
5,192,538	07/818,453	03/09/93
5,192,542	07/473,927	03/09/93
5,192,552	07/458,600	03/09/93
5,192,556	07/770,246	03/09/93
5,192,558	07/833,293	03/09/93
5,192,561	07/932,921	03/09/93
5,192,562	07/912,225	03/09/93
5,192,563	07/810,669	03/09/93
5,192,564	07/726,427	03/09/93
5,192,566	07/588,517	03/09/93
5,192,573	07/764,138	03/09/93
5,192,583	07/866,739	03/09/93
5,192,593	07/720,697	03/09/93
5,192,595	07/744,360	03/09/93
5,192,601	07/674,703	03/09/93
5,192,608	07/781,861	03/09/93
5,192,610	07/534,796	03/09/93
5,192,615	07/816,912	03/09/93
5,192,618	07/692,349	03/09/93
5,192,660	07/341,949	03/09/93
5,192,662	07/241,291	03/09/93
5,192,668	07/842,814	03/09/93
5,192,671	07/721,744	03/09/93
5,192,686	07/512,748	03/09/93
5,192,687	07/432,760	03/09/93
5,192,688	07/765,378	03/09/93
5,192,695	07/727,402	03/09/93
5,192,696	07/821,518	03/09/93
5,192,699	07/628,763	03/09/93
5,192,715	07/873,920	03/09/93
5,192,721	07/752,667	03/09/93
5,192,739	07/723,032	03/09/93
5,192,745	07/764,989	03/09/93
5,192,749	07/526,485	03/09/93
5,192,755	07/525,299	03/09/93
5,192,758	07/843,139	03/09/93
5,192,759	07/809,874	03/09/93
5,192,760	07/546,375	03/09/93
5,192,767	07/617,374	03/09/93
5,192,770	07/624,028	03/09/93
5,192,774	07/465,238	03/09/93
5,192,775	07/661,494	03/09/93
5,192,787	07/538,422	03/09/93
5,192,791	07/551,457	03/09/93
5,192,793	07/548,917	03/09/93
5,192,794	07/886,262	03/09/93
5,192,795	07/715,120	03/09/93
5,192,801	07/839,093	03/09/93
5,192,807	07/762,086	03/09/93
5,192,810	07/807,189	03/09/93
5,192,813	07/694,621	03/09/93
5,192,818	07/553,555	03/09/93
5,192,819	07/897,078	03/09/93
5,192,820	07/722,685	03/09/93
5,192,821	07/612,799	03/09/93
5,192,833	07/731,575	03/09/93
5,192,839	07/811,225	03/09/93
5,192,840	07/817,453	03/09/93
5,192,851	07/641,875	03/09/93
5,192,856	07/615,367	03/09/93
5,192,866	07/730,422	03/09/93
5,192,868	07/741,543	03/09/93

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5,192,875	07/787,474	03/09/93
5,192,877	07/707,059	03/09/93
5,192,899	07/740,091	03/09/93
5,192,907	07/763,929	03/09/93
5,192,912	07/743,677	03/09/93
5,192,913	07/851,716	03/09/93
5,192,918	07/786,519	03/09/93
5,192,928	07/754,565	03/09/93
5,192,930	07/813,680	03/09/93
5,192,931	07/835,733	03/09/93
5,192,939	07/852,010	03/09/93
5,192,956	07/790,909	03/09/93
5,192,962	07/706,538	03/09/93
5,192,964	07/847,759	03/09/93
5,192,982	07/684,690	03/09/93
5,192,984	07/630,087	03/09/93
5,192,992	07/794,739	03/09/93
5,192,996	07/788,240	03/09/93
5,193,013	07/529,959	03/09/93
5,193,014	07/721,581	03/09/93
5,193,015	07/593,215	03/09/93
5,193,016	07/773,774	03/09/93
5,193,026	07/767,632	03/09/93
5,193,031	07/635,118	03/09/93
5,193,042	07/624,360	03/09/93
5,193,052	07/788,831	03/09/93
5,193,058	07/603,645	03/09/93
5,193,080	07/547,154	03/09/93
5,193,085	07/761,131	03/09/93
5,193,090	07/490,684	03/09/93
5,193,100	07/718,808	03/09/93
5,193,101	07/650,125	03/09/93
5,193,161	07/525,792	03/09/93
5,193,176	07/599,098	03/09/93
5,193,178	07/606,644	03/09/93
5,193,210	07/737,256	03/09/93
5,193,215	07/470,267	03/09/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 3/21/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
Re. 32,525	06/797,656	11/13/85	10/20/87	03/24/97
4,385,634	06/257,166	04/24/81	05/31/83	03/26/97
4,420,907	06/217,987	12/18/80	12/20/83	03/24/97
4,426,021	06/318,600	11/05/81	01/17/84	03/26/97
4,612,578	06/720,650	04/04/85	09/16/86	03/26/97
4,631,124	06/735,790	05/20/85	12/23/86	03/26/97
4,638,512	06/721,887	04/11/85	01/27/87	03/21/97
4,644,556	06/573,752	01/25/84	02/17/87	03/21/97
4,644,810	06/691,862	01/16/85	02/24/87	03/21/97
4,648,083	06/716,569	01/03/85	03/03/87	03/24/97
4,651,372	06/757,957	07/23/85	03/24/87	03/21/97
4,697,623	06/899,068	08/21/86	10/06/87	03/21/97
4,717,042	06/868,660	05/28/86	01/05/88	03/28/97
4,717,548	06/421,344	09/22/82	01/05/88	03/21/97
4,732,062	07/003,861	01/16/87	03/22/88	03/21/97
4,762,747	06/891,655	07/29/86	08/09/88	03/25/97
4,770,080	07/086,409	08/17/87	09/13/88	03/28/97
4,770,446	07/035,670	04/08/87	09/13/88	03/27/97
4,772,193	07/020,713	03/02/87	09/20/88	03/28/97
4,773,834	07/024,423	03/10/87	09/27/88	03/28/97
4,779,411	06/946,751	12/29/86	10/25/88	03/21/97
4,782,335	06/925,653	10/30/86	11/01/88	03/24/97
4,797,779	07/104,685	10/05/87	01/10/89	03/28/97
4,804,392	07/097,887	09/17/87	02/14/89	03/24/97
4,829,545	06/899,626	08/25/86	05/09/89	03/28/97
4,994,668	07/402,174	09/01/89	02/19/91	03/25/97
5,012,797	07/461,624	01/08/90	05/07/91	03/25/97
5,024,032	07/336,254	04/11/89	06/18/91	03/21/97
5,043,749	07/458,940	12/29/89	08/27/91	03/21/97
5,079,029	07/366,951	06/16/89	01/07/92	03/21/97
5,084,717	07/607,762	10/30/90	01/28/92	03/21/97
5,088,056	07/587,044	09/24/90	02/11/92	03/26/97
5,088,723	07/620,559	12/03/90	02/18/92	03/21/97
5,091,677	07/653,305	02/11/91	02/25/92	03/28/97
5,092,473	07/701,192	05/16/91	03/03/92	03/27/97
5,102,529	07/656,598	02/19/91	04/07/92	03/21/97
5,103,946	07/609,626	11/06/90	04/14/92	03/28/97
5,106,518	07/611,995	11/09/90	04/21/92	03/24/97
5,108,527	07/339,183	04/17/89	04/28/92	03/28/97
5,117,774	07/689,983	04/23/91	06/02/92	03/26/97
5,118,206	07/685,039	04/15/91	06/02/92	03/21/97
5,127,108	07/690,010	04/23/91	07/07/92	03/28/97
5,128,912	07/219,553	07/14/88	07/07/92	03/21/97
5,145,549	07/747,791	08/19/91	09/08/92	03/24/97
5,146,743	07/604,060	10/25/90	09/15/92	03/26/97
5,149,026	07/751,137	08/28/91	09/22/92	03/25/97
5,157,132	07/525,545	05/18/90	10/20/92	03/21/97
5,161,799	07/837,950	02/20/92	11/10/92	03/26/97
5,163,462	07/748,670	08/22/91	11/17/92	03/21/97
5,165,045	07/774,781	10/10/91	11/17/92	03/24/97

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Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
5,169,200	07/875,261	04/27/92	12/08/92	03/25/97
5,170,620	07/693,141	04/29/91	12/15/92	03/25/97
5,172,313	07/463,161	01/10/90	12/15/92	03/21/97
5,178,649	07/454,791	12/21/89	01/12/93	03/27/97
7,179,292	07/894,476	06/05/92	01/12/93	03/25/97
5,179,831	07/561,093	07/31/90	01/19/93	03/24/97
5,180,014	07/655,086	02/14/91	01/19/93	03/27/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,133,333, Re. S.N. 08/665,994, June 19, 1996, Cl. 363/2s, MAGNETIC DC-TO-DC CONVERTER, Niann-Gwo L. Ou, Owner of Record: *Intech L.P., Santa Clara, Calif.,* Attorney or Agent: Thomas P. Dowling, Ex. Gp.: 2111

5,209,619, Re. S.N. 08/791,937, Jan. 31, 1997, Cl. 411/85, CHANNEL NUT FASTENER, Eric R. Rinderer, Owner of Record: *B-Line Systems, Inc., Highland, Ill.,* Attorney or Agent: Michael E. Godar, Ex. Gp.: 3508

5,289,452, Re. S.N. 08/606,029, Feb. 22, 1996, Cl. 368/73, MULTIFUNCTION ELECTRONIC ANALOG TIMEPIECE, Kenji Sakamoto, et. al., Owner of Record: *Seiko Epson Corp., Tokyo, Japan,* Attorney or Agent: Lawrence Rosenthal, Ex. Gp.: 2107

5,370,048, Re. S.N. 08/761,070, Dec. 5, 1996, Cl. 101/148, INKING UNIT FOR PRINTING PRESSES, Nikolaus Spiegel, et. al., Owner of Record: *Heidelberger Druckmaschinen Aktiengese, Heidelberg, Federal Republic of Germany,* Attorney or Agent: Robert A. Shack, Ex. Gp.: 3307

5,379,761, Re. S.N. 08/781,648, Jan. 10, 1997, Cl. 128/205.24, FIRST STAGE SCUBA REGULATOR, Manfred Schuler, Owner of Record: *Inventor,* Attorney or Agent: Walter A. Hackler, Ex. Gp.: 3307

5,380,149, Re. S.N. 08/781,689, Jan. 10, 1997, Cl. 415/002.100, WIND TURBINE CROSS WIND MACHINE, Michael Valsamidis, Owner of Record: *Inventor,* Attorney or Agent: Richard L. Miller, Ex. Gp.: 3401

5,433,374, Re. S.N. 08/792,376, Feb. 3, 1997, Cl. 229/125, VENTING/OPENING FOR PAPERBOARD CARTON, Hampton E. Forbes, Jr., Owner of Record: *Westvaco Corp., New York, N.Y.,* Attorney or Agent: Dennis P. O'Reilley, Ex. Gp.: 3207

5,496,416, Re. S.N. 08/788,660, Jan. 24, 1996, Cl. 136/258, COLUMNAR-GRAINED POLYCRYSTALLINE SOLAR CELL AND PROCESS OF MANUFACTURE, Robert B. Hall, et. al., Owner of Record: *Astropower, Inc., Newark, Del.,* Attorney or Agent: Harold Pezzner, Ex. Gp.: 1109

5,532,014, Re. S.N. 08/745,242, Oct. 18, 1996, Cl. 426/513, METHOD OF LINKING A STRAND OF UNCASED COEXTRUDED MEAT EMULSON PRODUCT, Jos Kobussen, et. al., Owner of Record: *Townsend Engineering Co., Des Moines, Iowa,* Attorney or Agent: Donald H. Zarley, Ex. Gp.: 1302

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,605,576, Reexam. No. 90/004,593, April 7, 1997, Cl. 428/036.6, MULTILAYER PLASTIC ARTICLES, Saleh A. Jabarin, Owner of Record: *Owens-Brockway Plastic Products, Inc., Toledo, Ohio,* Attorney or Agent: Howard Bruss, Owens-Brockway Plastic Products, Toledo, Ohio, Ex. Gp.: 1315, Requester: Continental Plastic Containers, Inc., Norwalk, Conn., c/o Nixon & Vanderhye, Arlington, Va. & Bell, Boyd & Lloyd, Chicago, Ill.

5,553,727, Reexam. No. 90/004,592, April 3, 1997, Cl. 215/044, TAMPER-EVIDENT CAP AND NECK FINISH, Luca Molinaro, Owner of Record: *Rical S.A., Longvic, France,* Attorney or Agent: Thomas C. W. Wittach, Titus & McConorey, Pittsburgh, Pa., Ex. Gp.: 3207, Requester: Thomas J. Edgington, Kirkpatrick & Lockhart, Pittsburgh, Pa.

5,587,954, Reexam. No. 90/004,590, April 3, 1997, Cl. 365/221, RANDOM ACCESS MEMORY ARRANGED FOR OPERATING SYNCHRONOUSLY WITH A MICROPROCESSOR AND A SYSTEM INCLUDING A DATA PROCESSOR, A SYNCHRONOUS DRAM, A PERIPHERAL DEVICE, AND A SYSTEM CLOCK, Wilbur C. Vogley, et. al., Owner of Record: *Texas Instruments, Inc., Dallas, Texas,* Attorney or Agent: Robert N. Rountree, Dallas, Tex., Ex. Gp.: 2511, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
February 10, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
110,163	71/091,863	05/09/1916
332,497	71/371,023	02/18/1936
334,398	71/359,835	05/05/1936
334,401	71/359,505	05/05/1936
334,404	71/372,227	05/05/1936
334,417	71/369,546	05/05/1936
334,473	71/365,511	05/05/1936
334,484	71/372,898	05/05/1936
334,493	71/372,772	05/05/1936
334,544	71/372,566	05/05/1936
334,558	71/370,987	05/05/1936
334,559	71/370,996	05/05/1936
334,573	71/372,359	05/05/1936

Reg. Number	Serial Number	Reg. Date	1,038,673	73/055,049	05/04/1976
			1,038,681	73/008,251	05/04/1976
334,584	71/371,096	05/05/1936	1,038,686	73/027,458	05/04/1976
334,589	71/371,417	05/05/1936	1,038,689	73/051,435	05/04/1976
624,884	71/693,031	04/10/1956	1,038,692	73/053,294	05/04/1976
626,410	71/691,181	05/08/1956	1,038,693	73/053,401	05/04/1976
626,411	71/691,182	05/08/1956	1,038,695	73/054,003	05/04/1976
626,421	71/695,129	05/08/1956	1,038,698	73/055,149	05/04/1976
626,440	71/689,734	05/08/1956	1,038,699	73/032,554	05/04/1976
626,450	71/698,048	05/08/1956	1,038,700	73/032,613	05/04/1976
626,451	71/698,125	05/08/1956	1,038,701	73/048,691	05/04/1976
626,457	71/694,948	05/08/1956	1,038,702	73/010,444	05/04/1976
626,458	71/679,016	05/08/1956	1,038,704	73/014,659	05/04/1976
626,471	71/691,080	05/08/1956	1,038,713	73/041,441	05/04/1976
626,474	71/667,267	05/08/1956	1,038,716	73/043,650	05/04/1976
626,484	71/694,865	05/08/1956	1,038,719	73/044,715	05/04/1976
626,493	71/689,686	05/08/1956	1,038,721	73/045,040	05/04/1976
626,496	71/659,731	05/08/1956	1,038,722	73/045,400	05/04/1976
626,510	71/692,694	05/08/1956	1,038,724	73/046,354	05/04/1976
626,518	71/695,146	05/08/1956	1,038,725	73/047,212	05/04/1976
626,522	71/695,359	05/08/1956	1,038,727	73/047,557	05/04/1976
626,530	71/694,790	05/08/1956	1,038,739	73/060,372	05/04/1976
626,538	71/696,466	05/08/1956	1,038,740	73/062,002	05/04/1976
626,542	71/687,968	05/08/1956	1,038,749	73/016,111	05/04/1976
626,576	71/692,354	05/08/1956	1,038,751	73/036,858	05/04/1976
626,577	71/621,837	05/08/1956	1,038,754	73/064,342	05/04/1976
626,586	71/488,961	05/08/1956	1,038,756	73/064,418	05/04/1976
626,589	71/635,316	05/08/1956	1,038,757	73/064,452	05/04/1976
626,590	71/635,338	05/08/1956	1,038,761	73/035,447	05/04/1976
626,592	71/650,797	05/08/1956	1,038,764	73/058,054	05/04/1976
626,595	71/671,350	05/08/1956	1,038,766	73/060,430	05/04/1976
626,602	71/689,146	05/08/1956	1,038,767	73/060,901	05/04/1976
626,605	71/690,471	05/08/1956	1,038,768	73/060,916	05/04/1976
626,606	71/694,598	05/08/1956	1,038,770	73/062,047	05/04/1976
626,609	71/694,942	05/08/1956	1,038,775	73/047,550	05/04/1976
626,612	71/695,083	05/08/1956	1,038,776	73/049,123	05/04/1976
626,618	71/679,284	05/08/1956	1,038,777	73/049,535	05/04/1976
626,633	71/644,348	05/08/1956	1,038,781	73/054,380	05/04/1976
626,637	71/663,292	05/08/1956	1,038,784	73/016,953	05/04/1976
626,638	71/665,412	05/08/1956	1,038,785	73/016,957	05/04/1976
626,643	71/684,264	05/08/1956	1,038,786	73/035,346	05/04/1976
626,645	71/684,840	05/08/1956	1,038,789	73/041,392	05/04/1976
626,674	71/690,128	05/08/1956	1,038,791	73/052,189	05/04/1976
626,678	71/690,136	05/08/1956	1,038,793	73/015,176	05/04/1976
626,684	71/656,925	05/08/1956	1,038,794	73/040,332	05/04/1976
626,687	71/679,492	05/08/1956	1,038,796	73/028,533	05/04/1976
626,690	71/681,289	05/08/1956	1,038,798	73/030,376	05/04/1976
626,698	71/685,796	05/08/1956	1,038,799	73/034,838	05/04/1976
626,703	71/691,780	05/08/1956	1,038,801	73/041,901	05/04/1976
626,710	71/699,347	05/08/1956	1,038,802	73/042,717	05/04/1976
626,718	71/665,486	05/08/1956	1,038,804	73/044,948	05/04/1976
626,719	71/674,979	05/08/1956	1,038,809	73/050,696	05/04/1976
1,023,751	73/031,029	10/28/1975	1,038,814	73/066,678	05/04/1976
1,036,659	73/044,480	03/30/1976	1,038,817	73/034,404	05/04/1976
1,038,007	72/448,866	04/13/1976	1,038,820	73/055,016	05/04/1976
1,038,613	73/061,073	05/04/1976	1,038,822	73/027,142	05/04/1976
1,038,615	73/061,352	05/04/1976	1,038,827	73/036,583	05/04/1976
1,038,617	73/064,707	05/04/1976	1,038,828	73/037,753	05/04/1976
1,038,625	73/019,734	05/04/1976	1,038,834	73/053,040	05/04/1976
1,038,626	73/032,859	05/04/1976	1,038,839	73/059,598	05/04/1976
1,038,628	73/049,278	05/04/1976	1,038,842	73/019,986	05/04/1976
1,038,630	73/059,206	05/04/1976	1,038,850	73/025,280	05/04/1976
1,038,632	73/060,004	05/04/1976	1,038,853	73/045,183	05/04/1976
1,038,634	73/061,000	05/04/1976	1,038,854	73/060,174	05/04/1976
1,038,636	73/062,367	05/04/1976	1,038,857	73/027,852	05/04/1976
1,038,637	73/062,855	05/04/1976	1,038,863	73/044,658	05/04/1976
1,038,638	73/063,081	05/04/1976	1,038,866	73/046,995	05/04/1976
1,038,639	73/063,082	05/04/1976	1,038,868	73/049,392	05/04/1976
1,038,640	73/063,083	05/04/1976	1,038,869	73/050,523	05/04/1976
1,038,641	73/063,084	05/04/1976	1,038,870	73/050,524	05/04/1976
1,038,644	73/064,969	05/04/1976	1,038,871	73/050,525	05/04/1976
1,038,645	73/065,198	05/04/1976	1,038,875	73/053,723	05/04/1976
1,038,647	73/050,176	05/04/1976	1,038,877	73/003,787	05/04/1976
1,038,653	73/036,452	05/04/1976	1,038,878	73/010,018	05/04/1976
1,038,654	73/036,776	05/04/1976	1,038,879	73/015,690	05/04/1976
1,038,659	73/060,990	05/04/1976	1,038,881	73/019,019	05/04/1976
1,038,662	73/064,960	05/04/1976	1,038,883	73/033,019	05/04/1976
1,038,663	73/064,961	05/04/1976	1,038,885	73/043,425	05/04/1976
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Reg. Number	Serial Number	Reg. Date
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1,038,900	73/034,951	05/04/1976
1,038,905	73/047,708	05/04/1976
1,038,913	73/023,751	05/04/1976
1,038,914	73/028,744	05/04/1976
1,038,915	73/028,746	05/04/1976
1,038,919	73/053,848	05/04/1976
1,038,920	73/055,431	05/04/1976
1,038,923	73/062,274	05/04/1976
1,038,924	73/027,921	05/04/1976
1,038,925	73/050,961	05/04/1976
1,038,926	73/002,596	05/04/1976
1,038,927	73/032,693	05/04/1976
1,038,928	73/041,840	05/04/1976
1,038,931	73/044,780	05/04/1976
1,038,934	73/057,830	05/04/1976
1,038,940	73/037,704	05/04/1976
1,038,941	73/048,559	05/04/1976
1,038,942	73/049,393	05/04/1976
1,038,949	73/060,434	05/04/1976
1,038,952	73/034,304	05/04/1976
1,038,953	73/042,239	05/04/1976
1,038,957	73/058,138	05/04/1976
1,038,958	73/059,232	05/04/1976
1,038,960	73/021,753	05/04/1976
1,038,964	73/047,900	05/04/1976
1,038,969	73/013,698	05/04/1976
1,038,970	73/022,748	05/04/1976
1,038,977	73/039,093	05/04/1976
1,038,979	73/043,312	05/04/1976
1,038,985	73/057,615	05/04/1976
1,038,992	72/417,311	05/04/1976
1,038,993	72/450,028	05/04/1976
1,038,994	72/464,388	05/04/1976
1,038,995	72/460,680	05/04/1976
1,038,996	72/458,527	05/04/1976
1,038,998	72/438,596	05/04/1976
1,039,005	73/032,505	05/04/1976
1,039,010	73/031,175	05/04/1976
1,039,015	73/044,487	05/04/1976

Patent Term Extended Under 35 U.S.C. § 156

Certificates extending the term of the following patents were issued on April 21, 1997:

U.S. Patent No. 4,514,390; Granted April 30, 1985, to Ernst A. H. Friedheim; Owner of Record: The Rockefeller University; Title: Melaminylthioarsenites; Classification: 514/184; Product Trade Name: IMMITICIDE®; Original Expiration Date: April 30, 2002; Term Extended: 1,632 days.

U.S. Patent No. 4,525,358; Granted June 25, 1985, to Eugene Baltes, et. al.; Owner of Record: UCB Pharma, Inc.; Title: 2-[4-(Diphenylmethyl)-1-Piperazinyl]-Acetic Acids and Their Amides; Classification: 514/255; Product Trade Name: ZYRTEC®; Original Expiration Date: June 25, 2002; Term Extended: 5 years.

U.S. Patent No. 4,621,077; Granted November 4, 1986, to Sergio Rosini, et. al.; Owner of Record: Istituto Gentili S.p.A.; Title: Pharmacologically Active Biphosphonates, Process for the Preparation Thereof and Pharmaceutical Compositions Therefrom; Classification: 514/108; Product Trade Name: FOSOMAX®; Original Expiration Date: November 4, 2003; Term Extended: 1,371 days.

U.S. Patent No. 4,636,505; Granted January 13, 1987, to Howard Tucker; Owner of Record: Zeneca Limited; Title: Amide Derivatives; Classification: 514/256; Product Trade Name: CASODEX®; Original Expiration Date: January 13, 2004; Term Extended: 1,723 days.

U.S. Patent No. 4,797,413; Granted January 10, 1989, to John J. Baldwin, et. al.; Owner of Record: Merck & Co., Inc.; Title: Thieno Thiopyran Sulfonamide Derivatives, Pharmaceutical Compositions and Use; Classification: 514/432; Product Trade Name: TRUSOPT®; Original Expiration Date: December 12, 2004; Term Extended: 1,233 days.

U.S. Patent No. 4,904,769; Granted February 27, 1990, to Erich Rauenbusch; Owner of Record: Bayer Aktiengesellschaft; Title: Highly Pure Acarbose; Classification: 536/17.2; Product Trade Name: PRECOSE®; Original Expiration Date: February 27, 2007; Term Extended: 922 days.

U.S. Patent No. 5,155,268; Granted October 13, 1992, to Jackson B. Hester, Jr.; Owner of Record: The Upjohn Company; Title: Antiarrhythmic N-aminoalkylene Alkyl and Aryl Sulfonamides; Classification: 564/99; Product Trade Name: CORVERT®; Original Expiration Date: October 13, 2009; Term Extended: 76 days.

Errata

"All reference to Patent No. 5,624,797 to Dominique P. Bridon, et. al. of Illinois, for PEPTIDES FOR HIV-1 DETECTION appearing in the Official Gazette of April 29, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,625,761 to Gilbert P. Hyatt, of California, for TRANSFORM PROCESSOR SYSTEM HAVING A LOWER RESOLUTION HIGHER SPEED TRANSFORM PROCESSOR IN COMBINATION WITH A HIGHER RESOLUTION LOWER SPEED TRANSFORM PROCESSOR appearing in the Official Gazette of April 29, 1997, should be deleted since no patent was granted."

Certificates of Correction For The Week of May 20, 1997

D. 366,058	5,418,779	5,509,424	5,554,534
D. 372,055	5,422,424	5,510,474	5,556,413
D. 375,522	5,429,692	5,512,650	5,556,899
D. 376,013	5,432,333	5,514,660	5,557,360
D. 377,518	5,443,458	5,516,805	5,560,227
Re. 35,295	5,446,068	5,516,849	5,560,322
Re. 35,341	5,457,496	5,517,765	5,560,716
Re. 35,402	5,460,329	5,523,004	5,561,010
4,794,517	5,460,572	5,525,778	5,561,247
4,828,898	5,466,041	5,526,904	5,561,270
4,938,564	5,467,178	5,526,956	5,561,476
4,944,327	5,471,538	5,529,498	5,561,536
4,955,025	5,476,601	5,529,985	5,862,505
4,963,484	5,478,826	5,531,728	5,563,425
5,053,489	5,478,856	5,536,304	5,565,461
5,115,252	5,481,413	5,536,582	5,565,995
5,160,321	5,483,258	5,537,626	5,566,005
5,212,636	5,484,447	5,537,913	5,566,827
5,237,151	5,485,027	5,538,936	5,567,329
5,275,415	5,487,676	5,539,389	5,568,018
5,283,654	5,488,657	5,539,863	5,568,273
5,312,298	5,489,261	5,543,215	5,568,562
5,324,770	5,494,384	5,544,218	5,568,714
5,344,837	5,497,701	5,546,231	5,568,949
5,347,989	5,498,476	5,547,531	5,568,961
5,358,639	5,500,305	5,547,631	5,569,640
5,376,611	5,500,808	5,547,745	5,569,820
5,380,837	5,501,668	5,548,309	5,569,958
5,384,642	5,502,605	5,548,469	5,570,119
5,386,973	5,505,921	5,548,737	5,570,201
5,387,692	5,506,548	5,550,347	5,570,211
5,400,842	5,507,104	5,550,638	5,570,618
5,401,390	5,507,667	5,551,101	5,572,629
5,403,676	5,508,032	5,551,684	5,572,683
5,406,306	5,508,754	5,552,757	5,572,706
5,414,088	5,508,897	5,553,588	5,572,856
5,417,130	5,509,001	5,554,465	5,572,937

5,573,281	5,578,500	5,583,618	5,587,680	5,592,444	5,599,327	5,602,845	5,605,875
5,573,703	5,578,554	5,583,626	5,587,776	5,592,616	5,600,015	5,602,902	5,606,091
5,574,357	5,578,887	5,583,837	5,587,921	5,593,123	5,600,024	5,602,939	5,607,598
5,574,492	5,579,047	5,583,943	5,588,069	5,594,136	5,600,315	5,602,956	5,607,643
5,574,556	5,579,080	5,584,128	5,588,208	5,594,653	5,600,681	5,603,014	5,607,821
5,574,876	5,579,323	5,584,693	5,588,266	5,595,372	5,600,796	5,603,514	5,608,243
5,575,232	5,579,329	5,584,934	5,588,391	5,596,588	5,600,806	5,603,535	5,608,283
5,575,855	5,579,465	5,585,383	5,589,197	5,597,207	5,601,170	5,603,638	5,608,321
5,575,884	5,579,824	5,585,692	5,589,251	5,597,689	5,601,492	5,603,712	5,608,453
5,576,326	5,580,313	5,585,860	5,589,908	5,597,913	5,601,677	5,603,718	5,608,489
5,576,746	5,581,089	5,585,875	5,590,048	5,597,944	5,602,012	5,603,755	5,608,707
5,576,851	5,581,230	5,585,903	5,590,132	5,598,228	5,602,131	5,603,933	5,609,193
5,577,028	5,581,328	5,585,923	5,590,158	5,598,241	5,602,139	5,604,018	5,609,317
5,577,029	5,581,348	5,586,166	5,590,436	5,598,309	5,602,169	5,604,212	5,610,311
5,577,076	5,581,374	5,586,276	5,590,808	5,598,313	5,602,198	5,605,088	5,610,670
5,577,509	5,581,530	5,586,278	5,591,451	5,598,445	5,602,535	5,605,304	5,610,691
5,577,540	5,583,029	5,586,307	5,591,668	5,598,972	5,602,666	5,605,347	5,611,891
5,577,988	5,583,233	5,586,332	5,591,871	5,599,113	5,602,672	5,605,583	5,611,908
5,578,041	5,583,321	5,586,804	5,591,898	5,599,240	5,602,719	5,605,647	5,612,552
5,578,407	5,583,390	5,587,248	5,592,076	5,599,264	5,602,794	5,605,772	5,613,144
5,578,470	5,583,592	5,587,285	5,592,155				

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

March 24-March 28, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
3-24	EX EX	74/521,764 74/523,374	Metal Art of California, Inc.	2(e)(2)	Refusal Affirmed		"AMERICAN GAME CAPS" and "AMERICAN GAME CAPS" (and design) [both marks for games, namely, a game comprising plastic and cardboard discs for amusement, trading, and collecting]		No
3-24	EX	74/485,532	Superior Images, Inc.	2(e)(1)	Refusal Affirmed		"SUPERIOR IMAGES" [high resolution art prints produced from digital information]		No
3-24	OPP	97,912	Britches of Georgetowne, Inc. v. R & R Enterprises	2(d)	Opposition Dismissed	"WARTHOG" and warthog design mark [both marks for men's, women's, and children's shirts]	"WILD PIGS" (and design incorporating a wild pig's head and an American flag) [hats, shirts, jackets, sweaters, footwear, pants, and coats]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

March 31-April 4, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
4-1	OPP	91,786	Sara Lee Corp. and Saramar Corp. v. Mastex Industries, Inc.	2(d)	Opposition Sustained (although no likelihood of confusion found with respect to opposer's pleaded registered mark "ISOTONER" for "knits and scarves" and "ladies' hosiery and pantyhose")	"ISOTONER" [foot and body creams and lotions]; "ISOTONER FOOT CARE KIT" (and design) [kits consisting of foot gel, lotion, and exfoliating cream]; "ISOTONER" [knit hats and scarves]; "ISOTONER" [slippers, men's gloves, stretch garments (i.e., shirts, pants, gloves, and hose)]; "ISOTONER" [ladies' hosiery and pantyhose]; "ISOTONER" (in stylized lettering) [hand, foot, and body creams and lotions]; "ISOTONER GLOVES" [ladies' and misses' gloves]	"ISOTHERM" (in stylized lettering) [skin moisturizer cream to be used in connection with electric mitts and booties, all of which are packaged together]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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	San Francisco Public Library	(415) 557-4500
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Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
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Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
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Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
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New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
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	Toledo/Lucas County Public Library	(419) 259-5212
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Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
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South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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PATENT EXAMINING CORPS

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/08/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/15/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	09/29/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/27/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/15/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/13/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/20/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/26/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	07/04/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/28/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/04/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/27/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	08/31/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/10/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/06/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/10/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/06/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of April 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	01/30/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	11/13/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/04/96	03/17/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/20/96	12/27/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/02/96	12/12/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/16/96	10/28/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	01/13/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/96	01/22/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	02/03/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	02/21/97	—0—
Renewals (All Classes)	02/10/97	—0—
Section 12(c) Publications (All Classes)	12/05/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

MAY 20, 1997

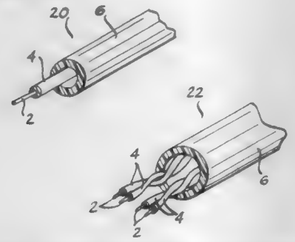
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,500,748 (3198th)

FLAME RETARDANT ELECTRICAL CABLE

Gary S. Klein, Cleveland, and Vijayraj M. Kotian, Hudson, both of Ohio, assignors to Furon Company, Laguna Niguel, Calif.

Reexamination Request No. 90/004,209, Apr. 4, 1996.
Reexamination Certificate for Patent 4,500,748, issued Feb. 19, 1985, Ser. No. 483,360, Apr. 8, 1983.
Continuation-in-part of Ser. No. 381,235, May 24, 1982, Pat. No. 4,456,654.
Int. Cl.[6] H01B *7/28*
U.S. Cl. 174—121 A



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** and **2** is confirmed.

1. A flame retardant electrical cable comprising at least one elongate electrical conductor having a layer of electrical insulation disposed thereabout within a protective jacket that is able to meet or exceed the flame spread requirements of Underwriters Laboratories Tunnel Flame Test UL 910 as a result of at least one of said conductor insulation and jacket being made from a first melt processible, non-fluorocarbon, polymer and the other of said conductor insulation and jacket being made from a second melt processible polymer selected from the class consisting of fluorocarbon and non-fluorocarbon polymers, said cable satisfying the condition that the composite Steiner Index of the first and second polymers is less than about 3500 according to the formula:

$$\frac{(\text{mass of first polymer})(S.I.\text{ of first polymer})}{(\text{total mass of first and second polymers})} + \frac{(\text{mass of second polymer})(S.I.\text{ of second polymer})}{(\text{total mass of first and second polymers})} = S.I.\text{ (composite)}$$

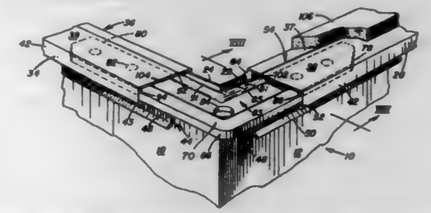
where S.I. (Steiner Index) is (A) (B) (C) (1—O.I.);
wherein:
mass is the respective number of pounds of the first and second polymers included in the cable subjected to the UL 910 Flame Test;
(A) is the respective specific heat of the first and second polymers in Btu/lb;
(B) is the respective specific gravity of the first and second polymers;
(C) is the respective percent by molecular weight of non-halogenated elements of the first and second polymers to the respective total molecular weight thereof expressed in decimal form; and
O.I. is the respective Limiting Oxygen Index of the first and second polymers under ASTM D2863 expressed in decimal form;
and said cable devoid of any component disposed as a barrier intermediate the conductor insulation and the jacket having at least a portion thereof made from a polymer having more than about 35% by molecular weight of fluorine to the total molecular weight of the polymer.

B1 5,022,688 (3199th)

FLANGE TYPE DUCT JOINT ASSEMBLY AND SEAL ARRANGEMENT THEREFOR

Peter J. Arnoldt, Puce, Canada, assignor to Ductmate Industries, Inc., Monongahela, Pa.

Reexamination Request No. 90/004,371, Sep. 16, 1996.
Reexamination Certificate for Patent 5,022,688, issued Jun. 11, 1991, Ser. No. 392,076, Aug. 10, 1989.
Continuation of Ser. No. 232,627, Aug. 11, 1988, abandoned, Ser. No. 46,460, May 4, 1987, abandoned, Ser. No. 682,091, Dec. 17, 1984, Pat. No. 4,662,661, and Ser. No. 327,934, Dec. 7, 1981, Pat. No. 4,508,376, which is a continuation of Ser. No. 933,179, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,644, Jan. 26, 1978, Pat. No. 4,218,079.
Int. Cl.[6] F16L *23/00*
U.S. Cl. 285—363



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. A corner piece for connecting a pair of duct connecting flange members comprising,

a corner section with a pair of legs extending angularly therefrom,

said corner section having a front surface portion and a corner portion,

said legs arranged to extend into said duct connecting flange members to form a generally rectangular duct frame for connection to a duct end portion, and

corner means associated with said corner section at said corner portion, said corner means having a front surface displaced rearwardly from said corner section front surface for permitting a corner edge portion of the duct end portion positioned between the end portions of adjacent duct connecting flange members to extend beyond said front surface of said corner means into abutting relation with a unitary continuous external gasket means having a uniform thickness that extends around the periphery of said duct connecting flange members and by said uniform thickness seals said duct connecting flange members and also the corner edge portions of the duct, said unitary continuous external gasket means forming the only seal for the corner edge portions of the duct extending beyond said front surface of said corner means.

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B1 5,260,279 (3200th)

NUTRITIONAL COMPOSITION COMPRISING HYDROLYZED GUAR GUM

Norman A. Greenberg, New Hope, Minn., assignor to Sandoz Ltd., Basel, Switzerland

Reexamination Request No. 90/004,021, Nov. 16, 1995.
Reexamination Certificate for Patent 5,260,279, issued Nov. 9, 1993, Ser. No. 878,096, May 4, 1992.
Continuation-in-part of Ser. No. 602,531, Oct. 24, 1990, abandoned.
Int. Cl.[6] **A61K** *38/00;31/715*
U.S. Cl. 514—21

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2**, **3**, **5**, **6**, **9**, **11**, **12** and **14** are cancelled.

Claims **1**, **4**, **7**, **8**, **10** and **13** are determined to be patentable as amended.

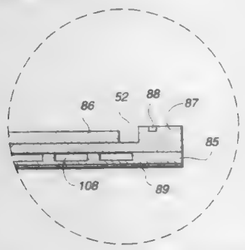
1. A [feeding] *liquid* composition which *has a viscosity of less than 50 cp and* is nutritionally complete comprising hydrolyzed [soluble fiber] *guar gum* in an amount such that the daily dosage of said [feeding] composition provides up to 60 grams of said hydrolyzed [soluble fiber] *guar gum* per day.

B1 5,433,835 (3201st)

SPUTTERING DEVICE AND TARGET WITH COVER TO HOLD COOLING FLUID

Richard E. Demaray, Portola Valley; Manuel Herrera, San Mateo, and David E. Berkstresser, Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Reexamination Request No. 90/004,362, Sep. 12, 1996.
Reexamination Certificate for Patent 5,433,835, issued Jul. 18, 1995, Ser. No. 157,763, Nov. 24, 1993.
Int. Cl.[6] **C23C** *14/34*
U.S. Cl. 204—298.09



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–23** is confirmed.

Claims **24–26** are cancelled.

1. A sputtering target assembly comprising:

a sputtering target in intimate contact with a first side of a target backing plate assembly;

said target backing plate assembly configured to cover an opening of a sputtering chamber so as to seal the opening;

said sputtering target and said target backing plate assembly comprising a plurality of layered members,

one of said target backing plate assembly members having a surface with grooves therein,

said surface being bonded to a surface of a neighboring one of said members with an adhesive, said grooves thereby forming heat exchange fluid passages in said grooves,

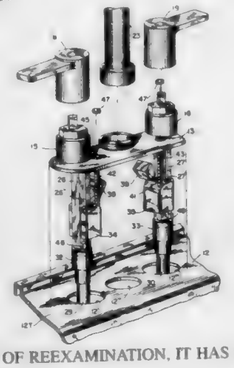
said heat exchange fluid passages having one or more inlet and outlet openings.

B1 5,465,749 (3202nd)

TOP MOUNTING FAUCET ASSEMBLY

Bruce M. Sauter, Elgin; Kevin G. Short, Modlothian, and Peter P. Beltemacchi, Chicago, all of Ill., assignors to Sterling Plumbing Group, Inc., Rolling Meadows, Ill.

Reexamination Request No. 90/004,402, Oct. 1, 1996.
Reexamination Certificate for Patent 5,465,749, issued Nov. 14, 1995, Ser. No. 348,634, Dec. 2, 1994.
Int. Cl.[6] **F16L** *5/00*
U.S. Cl. 137—359



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **14** is confirmed.

Claim **4** is cancelled.

Claims **1** and **5** are determined to be patentable as amended.

Claims **2**, **3** and **6–13**, dependent on an amended claim, are determined to be patentable.

1. A valve assembly for mounting on a support, the support having a wall with an opening, a supporting surface at one side, and a clamping surface at an opposite side, the valve assembly comprising:

a riding member having at least one pivot arm adapted to be extended and retracted *along a horizontal axis*, said riding member adapted to be inserted through said opening when said pivot arm is in a retracted position;

a valve body adapted to be positioned on said supporting surface;

a threaded actuating member extending through a portion of said valve body for actuation from a position on said supporting surface at said one side and also threadably engaging said riding member; and

a guide member connected to said valve body and extendable through the support wall such that the riding member is operatively guided by said guide member;

whereby rotation of said threaded actuating member can effect movement of said riding member toward said clamping surface and engagement of said pivot arm in an extended and blocking position that can restrict movement of said riding member through the supporting surface.

REISSUES

MAY 20, 1997

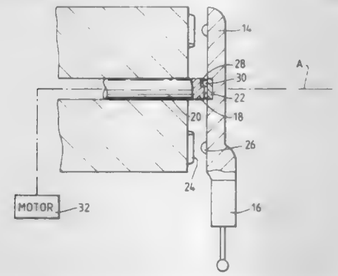
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,510

PROBE HEAD WITH INDEXING MECHANISM

David R. McMurtry, Wotton-under-Edge, United Kingdom, assignor to Renishaw Metrology Limited, Gloucestershire, United Kingdom

Original No. 5,185,936, dated Feb. 16, 1993, Ser. No. 911,120, Jul. 9, 1992. Application for reissue Feb. 16, 1995, Ser. No. 389,785
Claims priority, application United Kingdom, Jul. 11, 1991, 9114946
Int. Cl.[6] **G01B** *5/012;* **B23Q** *17/22*
U.S. Cl. 33—572 **21 Claims**



1. A probe head for orienting a probe relative to [the] *a* movable arm of a coordinate positioning machine, comprising:

a support by which the probe head is connectable to the arm of the machine;

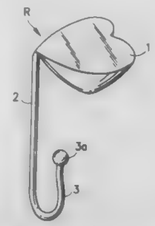
a rotor for carrying a probe;

retaining means for releasably retaining the rotor on the support, to enable one rotor to be exchanged for another;

indexing means for providing a plurality of *angularly* indexed [angular] positions of [the] *said* rotor relative to [the] *said* support, comprising a first set of engagement elements provided on one of [the] *said* rotor and support, and a plurality of sets of second engagement elements provided on the other of [the] *said rotor* and *said* support, said first set of engagement elements being engageable with each set of said plurality of sets of second engagement elements to provide, at each *angularly* indexed position *of the plurality of angularly indexed positions*, a stable[,] *and* repeatable [rest] position of [the] *said* rotor on [the] *said* support;

coupling and decoupling means *provided on said rotor and said support* for engaging and disengaging said first set of engagement elements with a set of said second engagement elements; and

driving means *provided on said support* for rotating said rotor relative to said support substantially about an axis when said first and second engagement elements are disengaged, thereby to rotate said rotor from one *angularly* indexed position to another.



a tube member having a top end fixed to an upper holding means and extending downwardly;

an inserting member which is formed with a U-shaped bar member including a first vertical section adapted to be inserted into said tube member so as to be able to slide in an up and down direction and further including adjusting means capable of adjusting the angle of a second vertical section of said inserting [means] *member*;

lower holding means fixed at a top end of the second vertical section, said lower holding means having a concave surface on the top surface thereof and to be worn on a rear side of a human ear and forming approximately a heart shape, and being provided with a magnet; and

accessory means mounted at said tube member.

Re. 35,511

ACCESSORY FOR EARRING

Azuko Nakamura, 816-70 3-Chome, Mukouhara, Higashiyamato-shi, Tokyo-to, Japan

Original No. 5,097,682, dated Mar. 24, 1992, Ser. No. 629,153, Dec. 18, 1990. Continuation of Ser. No. 210,348, Mar. 18, 1994, abandoned. Application for reissue Mar. 15, 1995, Ser. No. 405,380
Int. Cl.[6] **A44C** *7/00*
U.S. Cl. 63—14.1 **15 Claims**

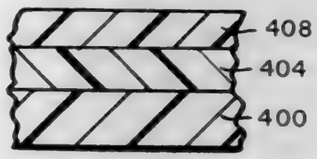
1. An earring comprising:

Re. 35,512

LITHOGRAPHIC PRINTING MEMBERS FOR USE WITH LASER-DISCHARGE IMAGING

Michael T. Nowak, Leominster, Mass., and Thomas E. Lewis, Hampstead, N.H., assignors to Presstek, Inc., Hudson, N.H.

Original No. 5,379,698, dated Jan. 10, 1995, Ser. No. 247,016, May 20, 1994. Continuation-in-part of Ser. No. 62,431, May 13, 1993, Pat. No. 5,339,737, which is a continuation-in-part of Ser. No. 917,481, Jul. 20, 1992, abandoned. Application for reissue Sep. 19, 1995, Ser. No. 530,526
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[6] **B41N** *1/08*
U.S. Cl. 101—454 **31 Claims**



1. A lithographic printing member directly imageable by laser discharge, the member comprising:

a. a topmost first layer which is polymeric; and

b. a thin metal layer underlying the first layer; and

c. a substrate underlying the metal layer; wherein

d. the metal layer is formed of a material which is subject to ablative absorption of imaging infrared radiation and the first layer is not; and

e. the first layer *exhibits an affinity for an abhesive fluid for ink* and the substrate [exhibit different affinities for at least one printing liquid selected from the group consisting of ink and an abhesive fluid for ink] *exhibits an affinity for ink*.

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Re. 35,513

CYANIDE-FREE PLATING SOLUTIONS FOR MONOVALENT METALS

Fred I. Nobel, Sands Point; William R. Brasch, Nesconset, and Anthony J. Drago, East Islip, all of N.Y., assignors to Learonal, Inc., Freeport, N.Y.

Original No. 5,302,278, dated Apr. 12, 1994, Ser. No. 19,949, Feb. 19, 1993. Application for reissue Apr. 10, 1996, Ser. No. 633,271

Int. Cl.[6] **C25D** *3/38*

U.S. Cl. 205—263 **35 Claims**

29. A metal plating bath which comprises: a solution of at least one monovalent metal ion which forms a thiosulfate complex; a solution soluble thiosulfate ion in an amount sufficient to form a complex with the metal ion or ions; and an organic sulfinate ion in an amount sufficient to stabilize the thiosulfate ion in the solution.

Re. 35,514

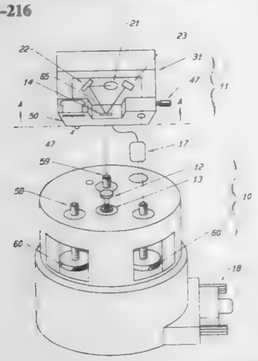
SCANNING FORCE MICROSCOPE HAVING ALIGNING AND ADJUSTING MEANS

Thomas R. Albrecht, San Jose; Moris-Musa Dovek, San Carlos; Michael D. Kirk, San Jose, and Sang-Il Park, Palo Alto, all of Calif., assignors to Park Scientific Instruments, Sunnyvale, Calif.

Original No. 5,157,251, dated Oct. 20, 1992, Ser. No. 668,886, Mar. 13, 1991. Application for reissue Oct. 19, 1994, Ser. No. 325,997

Int. Cl.[6] **H01J** *40/14*

U.S. Cl. 250—216 **46 Claims**



34. A scanning probe microscope sensor head comprising:

a probe;

a light source;

a detector; and

a mount for removably mounting the sensor head on a base and for adjusting the position of the probe relative to a sample on the base;

the sensor head having a space substantially vertically above the probe, the light source and detector being arranged on the sensor head to enable visual observation of the probe from the space substantially vertically above the probe without removal of the light source or detector.

Re. 35,515

PHOTO SIGNAL PROCESSING APPARATUS

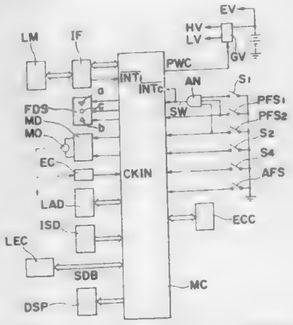
Nobuyuki Taniguchi, Nishinomiya; Toshihiko Ishimura, Habikino; Norio Ishikawa, Osaka; Reiji Seki, Sakai, and Yasuaki Akada, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original No. 4,920,370, dated Apr. 24, 1990, Ser. No. 29,755, Mar. 24, 1987. Continuation of Ser. No. 871,721, Apr. 20, 1992, abandoned. Application for reissue Dec. 6, 1993, Ser. No. 163,588

Claims priority, application Japan, Mar. 25, 1996, 61-66670; Mar. 25, 1996, 61-66671; Mar. 25, 1996, 61-66672; Mar. 25, 1996, 61-66673

Int. Cl.[6] **G03B** *13/36;3/00*

U.S. Cl. 396—96 **11 Claims**



7. A photo signal processing apparatus comprising:

a microcomputer consisting of only a single microprocessor for sequentially calculating data utilized in exposure control and for calculating data utilized in focus control;

means for driving a photographing lens towards its in-focus position under the control of said microprocessor;

means for selecting either of a first mode of operation and a second mode of operation; and

means, operating when a movement amount of the photographing lens towards its in-focus position is larger than a predetermined value, for controlling said single microprocessor and said driving means so as to make said driving means operable while enabling both of the exposure and focus control calculations to be operable sequentially in the microcomputer when the first mode is selected by said selecting means, and to make said driving means operable while enabling only the exposure control calculation to be operable in the microcomputer when the second mode is selected by said selecting means.

Re. 35,516

ADIABATIC REFLECTION Y-COUPLER APPARATUS

Charles H. Henry, Skillman; Rudolf F. Kazarinov, Martinsville, both of N.J., and Yosi Shani, Makabimm, Israel, assignors to Lucent Technologies Inc., Murray Hill, N.J.

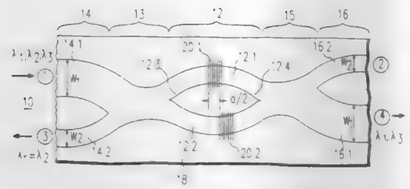
Original No. 5,048,909, dated Sep. 17, 1991, Ser. No. 559,010, Jul. 27, 1990. Continuation of Ser. No. 122,826, Sep. 16, 1993, abandoned. Application for reissue May 30, 1995, Ser. No. 452,806

Int. Cl.[6] **G02B** *6/26*

U.S. Cl. 385—27 **23 Claims**

19. An adiabatic Y-coupler comprising

a first structure having a first single mode waveguide branch which converts guided light to a symmetric mode, a second single mode waveguide branch which converts guided light to an anti-symmetric mode, and a common multimode waveguide section where said first and second branches



merge and which supports both symmetric and anti-symmetric modes, said common section comprises physically separate, but optically coupled single mode waveguides, and

a second structure having one end coupled to said common section, said second structure comprising at least two single mode waveguide arms coupled to said common section.

Re. 35,517

METHOD, COMPOSITIONS, AND COMPOUNDS FOR MODULATING BRAIN EXCITABILITY

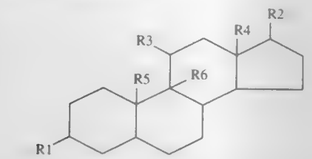
Kelvin W. Gee, Irvine; Michael B. Bolger, Los Alamitos, and Nancy C. Lan, South Pasadena, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Original No. 5,120,723, dated Jun. 9, 1992, Ser. No. 521,724, May 10, 1990. Continuation-in-part of Ser. No. 379,047, Jul. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 89,362, Aug. 25, 1987, abandoned. Application for reissue Nov. 23, 1992, Ser. No. 980,377

Int. Cl.[6] **A61K** *31/56;31/44;31/425;31/445, 31/58;31/495;* **C07J** *41/00;7/00*

U.S. Cl. 514—176 **10 Claims**

1. A method for modulating excitability of the central nervous system as mediated by the ability to regulate chloride ion channels associated with the GABA-benzodiazepine receptor complex comprising administering to a patient in need of such treatment a central nervous system [excitabiilty] *excitability* modulating pharmaceutically effective amount of a [3-hydroxylated-5-reduced] neuroactive steroid compound that activates the GABA-benzodiazepine receptor-chloride ionophore complex by attaching to a brain receptor site other than any previously known recognition site of said complex, but associated with and still activating said complex, of the formula

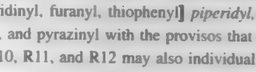


wherein R1 is selected from the group consisting of hydroxyl,



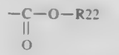
wherein R7, R8, and R9 are individually a C_1–C_{20} straight chain aliphatic radical, [C_1] *a* C_3–C_{20} branched chain aliphatic radical, [or] *a* C_3–C_{10} cyclic aliphatic radical, [or C_3] *a* C_6–C_{10} aromatic radical, or a heterocyclic radical selected from the group consisting of 1-methyl-1,4-dihydronicotinoyl, [piperidinyl, pyridinyl, furanyl, thiophenyl] *piperidyl, pyridyl, furyl, thienyl*, and pyrazinyl with the provisos that

(1) R10, R11, and R12 may also individually be an amide



radical wherein R16 and R17 individually are a C_1–C_{20} straight chain aliphatic radical, [C_1] *a* C_3–C_{20} branched cain aliphatic radical, [or] *a* C_3–C_{10} cyclic aliphatic radical, [or C_3] *a* C_6– C_{10} aromatic radical, or a heterocyclic radical selected from the group consisting of 1-methyl-1,4-dihydronicotinoyl, [piperidinyl, pyridinyl, furanyl, thienyl] *piperidyl, pyridyl, furyl, thienyl*, and pyrazinyl, and n=1 to 8 and

(2) R20 and R21 may also individually by [H] *hydrogen*, or



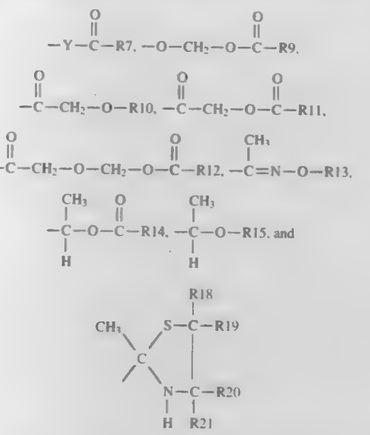
wherein R22 is [H or] *hydrogen*, a C_1–C_{20} straight chain aliphatic radical, [C_1] *a* C_3–C_{20} branched chain aliphatic radical, [or] *a* C_3–C_{10} cyclic aliphatic radical, [or C_3] *a* C_6–C_{10} aromatic radical, or a heterocyclic radical selected from the group consisting of 1-methyl-1,4-dihydronicotinoyl, [piperidinyl, pyridinyl, furanyl, thiophenyl] *piperidyl, pyridyl, furyl, thienyl*, and pyrazinyl[, and n is an integer of 1 to 8];

R3 is selected from the group consisting of hydrogen, hydroxy, keto, [C_1–C_{18} alkyloxy,] aryloxy, [and] amino, *and* C_1–C_{18} *alkyloxy*; and

R4, R5, and R6 individually are selected from the group consisting of [C_1–C_{18} alkyl,] aryl, halo, [and] trifluoroalkyl, *and* C_1–C_{18} *alkyl*.

wherein Y, R7, and R9 are as defined previously and R10, R11,R12, R13, R14, R15, R18, R19, R20, and R21 are individually a C_1–C_{20} straight chain aliphatic radical, [C_1] *a* C_3–C_{20} branched chain [alipahtic] *aliphatic* radical, [or] *a* C_3–C_{10} cyclic aliphatic radical [or C_3], *a* C_6–C_{10} aromatic radical, or a heterocyclic radical selected from the group consisting of 1-methyl-1,4-dihydronicotinoyl, [piperidinyl, pyridinyl, furanyl, thiophenyl] *piperidyl, pyridyl, furyl, thienyl*, and pyrazinyl with the provisos that

R2 is selected from the group consisting of OH, acetyl, [2-hydroxyethanonyl] *2-hydroxyethanoyl*, 1-hydroxyethyl,



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PLANT PATENTS

GRANTED MAY 20, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,895
PEACH TREE 'P.F. 24-007'
Paul J. Friday, P.O. Box 850, Coloma, Mich. 49038, assignor to Paul J. Friday, Coloma, Mich.
Filed Jan. 16, 1996, Ser. No. 585,913
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described as a large size tree, a consistent bearer of lavender-red colored, large fruit for the mid-season peach growing season, said fruit at maturity being of spherical shape with firm flesh.

9,896
CANNA PLANT NAMED 'ROBLIBSCA'
Robert J. Roberson, 31706 E. Pink Hill Rd., Grain Valley, Jackson County, Mo. 64029
Filed Dec. 21, 1995, Ser. No. 576,341
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Canna, substantially as described and illustrated herein, characterized particularly as to novelty by its dwarf height, with overall compact growth characteristics, a multiplication rate of eight to twenty-five plants per growing season, an inflorescence with blooms of scarlet red accented by darker scarlet splashes, contrasting burgundy foliage, and strong winter storage capability providing a cultivar well suited as a garden or pot plant having no unusual susceptibility to the traditional Canna diseases and insects.

9,897
OSTEOSPERMUM PLANT NAMED 'STARDUST'
Patricia G. Perry, River Gardens Sleights, Whitby North Yorkshire, England
Filed Jan. 3, 1996, Ser. No. 582,692
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of *Osteospermum jucundum* named Stardust, as illustrated and described.

9,898
ANTHURIUM PLANT NAMED FRANZISKA
Renate Plate, Bremen, Germany, assignor to Wolfgang Bock Pflanzenexport KG, Bremen, Germany
Filed Nov. 17, 1995, Ser. No. 560,473
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named 'Franziska', as illustrated and described.

9,899
ANTHURIUM PLANT NAMED DOLLY
Renate Plate, Bremen, Germany, assignor to Wolfgang Bock Pflanzenexport KG, Bremen, Germany
Filed Nov. 28, 1995, Ser. No. 563,606
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named 'Dolly', as illustrated and described.

9,900
ANTHURIUM PLANT NAMED MOLLY
Renate Plate, Bremen, Germany, assignor to Wolfgang Bock Pflanzenexport KG, Bremen, Germany
Filed Nov. 17, 1995, Ser. No. 559,949
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named 'Molly', as illustrated and described.

9,901
SPATHIPHYLLUM PLANT 'S9'
Marian W. Osiecki, Marianna, Fla., assignor to Ogiesby Plant Laboratories, Inc., Altha, Fla.
Filed Jan. 31, 1996, Ser. No. 594,689
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum plant named 'S9', substantially as described and illustrated herein, characterized particularly as to novelty by its small size, compact growth habit, vigorous growth, early and abundant branching, exceptionally early, abundant and year-round natural flowering, good quality inflorescence from the onset of flowering, very little green coloration on spathes, good proportion between inflorescence and foliage in 10–15 cm pots, symmetrical growth habit at close pot spacing and having no unusual susceptibility to the traditional *Spathiphyllum* diseases and insects.

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ERRATA

For CLASS	See PATENT NO.
165–281	5,630,475
182–082	5,630,482
473–474	5,630,589
128–695	5,630,664
273–108	5,630,760
417–326	5,630,770
588–255	5,630,785
601–002	5,630,837
438–669	5,630,904
438–507	5,630,905
430–544	5,630,927
210–180	5,630,956
434–011	5,630,998
442–118	5,631,071
442–125	5,631,072
442–364	5,631,073
442–035	5,631,074
435–091	5,631,115
437–206	5,631,191
029–827	5,631,193
438–020	5,631,196
438–699	5,631,197
438–053	5,631,198
438–770	5,631,199
435–012	5,631,228
473–385	5,631,324
399–066	5,631,725
399–111	5,631,726
399–059	5,631,728
386–052	5,631,742
386–095	5,631,743
349–110	5,631,750
349–005	5,631,751
349–173	5,631,752
349–110	5,631,753
349–064	5,631,754

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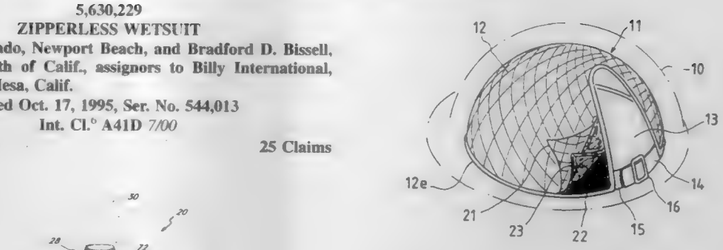
349–117 5,631,755
349–058 5,631,756
345–001 5,632,010

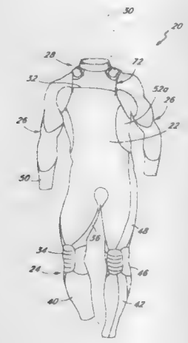
PATENTS

GRANTED MAY 20, 1997

GENERAL AND MECHANICAL

5,630,229
ZIPPERLESS WETSUIT
Mark R. Machado, Newport Beach, and Bradford D. Bissell, San Jose, both of Calif., assignors to Billy International, Ltd., Costa Mesa, Calif.
Filed Oct. 17, 1995, Ser. No. 544,013
Int. Cl.[6] A41D *7/00*
U.S. Cl. 2—2.15 **25 Claims**



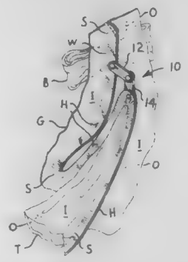


1. A wetsuit, comprising:
an inner collar defining an entryway for a human body between shoulders of the wetsuit, the inner collar having a relaxed size approximating a neckline of the wearer and made of resilient material adapted to stretch at least two times its relaxed size to allow entry of a human into the wetsuit through the stretched entryway;
an outer collar attached to the wetsuit and laving a closed circular portion adapted to stretch over the head of a wearer to overlie the inner collar and supplement a seal at the entryway preventing water ingress to the wetsuit;
a first bib extending from said wetsuit on a first side of said inner collar, said outer collar being attached to said first bib: and
a second bib extending from said wetsuit on a second side of said inner collar opposite from said first side and including an adjustment strap, wherein said outer collar includes a fastener and said strap has a complementary fastener to mate with said outer collar fastener and help seal said entryway.

5,630,230
COOLING CAP ELEMENT
Yukio Fujino, and Yuuichi Matsuura, both of Tokyo, Japan, assignors to Kure Grinding Wheel Co., Ltd., Hiroshima-ken, Japan
Filed Jun. 7, 1995, Ser. No. 477,746
Claims priority, application Japan, Jun. 20, 1994, 6-008389 U
Int. Cl.[6] A42B *1/00*
U.S. Cl. 2—200.1 **5 Claims**

1. A cooling cap comprising a three-layer fabric member forming a cap body for covering a head, a peripheral length adjusting means connected to the three-layer fabric member for surrounding the head, the three-layer fabric member having a plurality of ventilation holes formed therein, the three-layer fabric member comprising:
a mesh-like first surface fabric,
a waterproof second surface fabric, and
a non-woven fabric sealed between the first surface fabric and the second surface fabric, the non-woven fabric comprising water absorptive high molecular fibers comprising acrylic resin staples having a surface layer coated with a high molecular gel material.

5,630,231
GATHERING CLIP FOR GOWN TRAIN
Alexandria A. Stevens, 24 Abbott St., Gardner, Mass. 01440
Filed Jan. 19, 1996, Ser. No. 588,913
Int. Cl.[6] A41F *19/00*
U.S. Cl. 2—217 **17 Claims**



1. A gathering clip for a trailing extension of a garment, comprising:
a first link and a second link, with each said link having a garment attachment pin extending therefrom adapted to removably penetrate and secure to the fabric of the garment and extension;
said second link further including a link connecting pin, and said first link including a link connecting pin receptacle, with said second link and said first link being removably securable to one another by said connecting pin and said pin receptacle;
a smoothly rounded retaining button adapted to secure removably over each said garment attachment pin of each said link, with each said button including a receptacle formed therein adapted to fit closely over each respective said garment attachment pin, whereby;
said first link is removably secured to a portion of the garment and said second link is removably secured to a portion of the trailing extension, with said first link and said second link being selectively connected together or disconnected respectively to gather the extension to the garment or to permit the extension to extend freely behind the garment as desired.

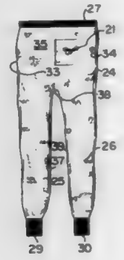
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5,630,232

NETHER GARMENT HAVING A FLY FRONT AND METHOD OF MAKING SAME

Robert A. Miller, New Ringgold, and George Banavage, McAdoo, both of Pa., assignors to J.E. Morgan Knitting Mills, Inc., Tamaqua, Pa.

PCT No. PCT/US94/14792, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO95/17106, PCT Pub. Date Jun. 29, 1995
Continuation-in-part of Ser. No. 16,756, Dec. 23, 1993, abandoned. This PCT application Dec. 22, 1994, Ser. No. 545,784
Int. Cl.° A41B 9/02
U.S. Cl. 2—404 20 Claims



1. In a nether garment having an interior and comprising a knitted tube with a front panel and a rear panel, said tube having a top waist opening and a pair of bottom leg openings, said leg openings being defined by a seam connecting the front and rear panels and extending from an inner side of one of said pair of leg openings across a central part of the knitted tube between said leg openings and terminating at an inner side of the other of said leg openings,

a fly assembly in said front panel between said seam and the waist opening comprising

a linear fly opening having a top end and a bottom end, and a length defined by a pair of closely-spaced parallel fabric edges formed by a cut in said tube, and

a pair of fabric fly flaps, each flap being sewn to said fabric tube along an associated one of said fabric edges by a seam extending the entire length of said opening,

said flaps having top margins and bottom margins and being coextensive in length with said fly opening and overlapping each other and the fabric tube at one side of the fly opening, the top margins of both flaps being adjacent the top end of said fly opening and the bottom margins of both flaps being adjacent the bottom end of said fly opening, thereby providing a triple layer of fabric along the full length of the fly opening at one side thereof,

said triple layer being united by two lines of stitching respectively extending through both of said flaps and said fabric tube along the top margins and bottom margins of said flaps, leaving a free edge on each flap extending parallel to said fabric edges remote from said fly opening between said lines of stitching, a first one of said flaps being positioned on the interior of the garment, a second one of said flaps being positioned intermediate the first flap and the knitted tube,

said first and second flaps defining between them a transversely open tunnel extending from said fly opening to the free edges of said flaps, and

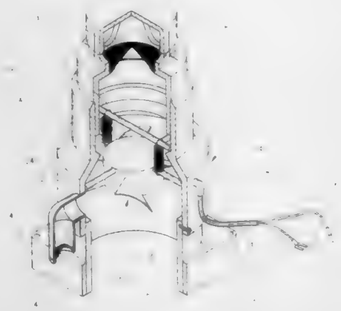
the second flap and said tubular fabric defining between them a pocket closed at one end by the seam sewing said second flap to the associated fabric edge of said fly opening.

5,630,233

VEHICLE TOILET VENT APPARATUS

Alton L. Alexander, 502 Majestic Blvd., Lafayette, La. 70508

Division of Ser. No. 920,654, Jul. 28, 1992, Pat. No. 5,299,326. This application Jun. 18, 1993, Ser. No. 77,661
Int. Cl.° E03D 9/04
U.S. Cl. 4—213 8 Claims



1. A tank ventilation apparatus for the exhausting and dilution of gases emitted by a tank capable of sustaining a vacuum comprising:

a) a housing having an intake port at one end, a primary exhaust port at its opposite end, said intake port being attachable to an outlet port of a vent tube extending from an otherwise sealed container;

b) an air mixing chamber, located intermediate said housing, having an inside diameter greater than said intake or primary exhaust ports;

c) a rotatable fan and electrical drive unit, located within said mixing chamber; and

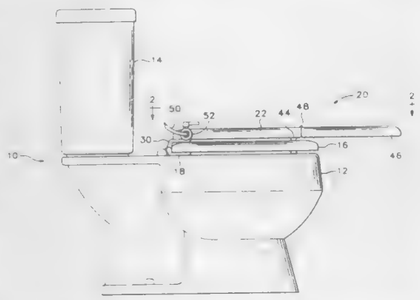
d) an auxiliary exhaust port defined by an orifice exiting said mixing chamber adjacent the periphery of said rotatable fan.

5,630,234

BIDET ASSEMBLY

Jack D. Childs, 6353 Green Rd., Woodridge, Ill. 60517

Filed Aug. 28, 1995, Ser. No. 520,103
Int. Cl.° A47K 3/20
U.S. Cl. 4—420.4 3 Claims



1. A bidet assembly for use with a toilet having a toilet bowl and a toilet seat, comprising:

(a) a bidet seat to be coupled rotatably to said toilet to be moveable between a raised position and a lowered position over said toilet seat on said toilet bowl, said bidet seat defining a central opening;

(b) a nozzle for providing a fluid flow therethrough, said nozzle being connected to said bidet seat proximate said central opening, said nozzle being moveable with said bidet seat when said bidet seat is rotatably coupled to said toilet; and

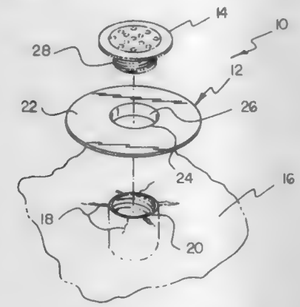
(c) said bidet seat including an upper seat portion and a lower base portion, said upper and lower portions being attached to one another, said nozzle having an inlet end, an outlet end and a fluid flow passage interconnecting said inlet and outlet ends, said nozzle being connected to said lower base portion of said bidet seat, said outlet end of said nozzle being directed upward toward the center of said central opening.

5,630,235

BATHTUB DRAIN REPAIR SEAL

Randall Angstadt, 17880 NE. 31st Court #2304, N. Miami Beach, Fla. 33160

Filed Jun. 26, 1995, Ser. No. 494,842
Int. Cl.° A47K 3/02
U.S. Cl. 4—583 3 Claims



1. A bathtub drain repair seal comprising:

a bathtub having a drain conduit and a drain fitting coupled to the drain conduit, the bathtub including cracks extending therethrough;

a sealing means interposed between the drain fitting and the drain conduit for sealing the cracks of the bathtub, the sealing means comprising a substantially flexible planar circular member shaped so as to define a center aperture directed therethrough, the planar circular member being concentrically positioned over the drain conduit, with the drain fitting extending through the center aperture, the sealing means further comprising a cylindrical projection concentrically positioned about the center aperture of the planar circular member and depending from a lower surface of the planar circular member, the cylindrical projection being positioned into the drain conduit of the bathtub,

said drain fitting includes a threaded cylinder threadably engaged with interior threads of the drain conduit, the cylindrical projection being interposed between the threads of the drain fitting and the drain conduit.

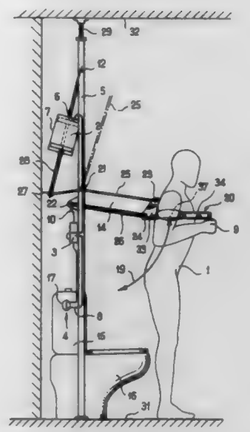
5,630,236

LAVORATORY ASSISTANCE DEVICE

Claude Messin, Dampierre-En-Yvelines, France, assignor to Messin Brevets, Dampierre-En-Yvelines, France

Continuation of Ser. No. 356,212, Dec. 14, 1994, abandoned. This application May 15, 1996, Ser. No. 648,290
Claims priority, application France, Jun. 16, 1992, 92 07253
Int. Cl.° A47K 13/10
U.S. Cl. 4—667 21 Claims

1. Device for allowing a handicapped person to be seated effortlessly, wherein the handicapped person passes from a standing to a seated position, and then to a standing position again, comprising:



a frame;

a cradle comprising a backrest and two arms, each arm having one end linked to said backrest and a free end remote from said one end, said arms being capable of engaging under the armpits of said handicapped person in order to support the handicapped person during lowering movement of the handicapped person between the standing position and the seated position, and during raising movement of the handicapped person back from the seated position to the standing position, the free end of each of said arms being connected to a clinging handle permitting the handicapped person to hold on to the clinging handles during lowering and raising movements;

a mechanism linking the cradle to the frame for moving the cradle between a standing position and a seated position, following a trajectory inclined downwards and backwards relative to a user having his back against the backrest; and

a motor means for actuating the mechanism,

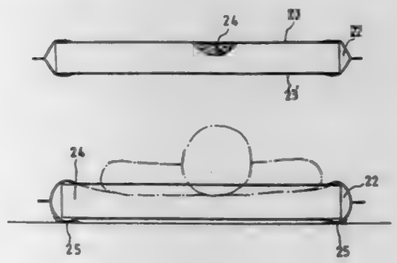
said mechanism being linked to the backrest in such a manner that the arms of the cradle remain in a substantially horizontal plane when the cradle follows said trajectory.

5,630,237

FOAM FILLED INFLATABLE MAT WITH A PERIPHERAL AIR DUCT

Tun-Jen Ku, 16,Kuo Chung 2nd Rd., Da-Li City, Taichung Hsien, Taiwan

Filed Apr. 3, 1996, Ser. No. 627,043
Int. Cl.° A47C 27/18;27/08
U.S. Cl. 5—420 3 Claims



1. An inflatable mat comprising:

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an upper fabric layer made of a fabric material impermeable to water and air, and provided on an inner side thereof with a foam material attached thereto;

a lower fabric layer made of a fabric material impermeable to water and air, and provided on an inner side thereof with a foam material attached thereto, the lower fabric layer attached to the upper fabric layer so as to form an airtight space between said upper fabric layer and said lower fabric layer, said airtight space is provided in a periphery thereof with an air duct which is previous to air, wherein said air duct is capable of being inflated by air to become a support rib extending above, to the sides and below the foam material to serve as an anchoring means to prevent said lower fabric layer from drifting when said lower fabric layer is in contact with a floor or ground surface; and

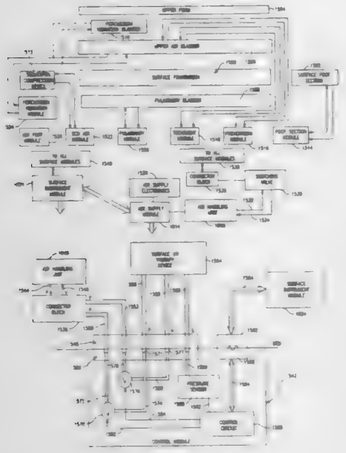
an inflation valve attached to one of said upper fabric layer and said lower fabric layer and in communication with said air duct.

5,630,238

BED WITH A PLURALITY OF AIR THERAPY DEVICES, HAVING CONTROL MODULES AND AN ELECTRICAL COMMUNICATION NETWORK

Matthew W. Weismiller, Batesville; David J. Ulrich, Sunman; Jay T. Butterbrodt, Lawrenceburg; Kenneth L. Kramer, St. Paul; Jason C. Brooke; Eric R. Meyer, both of Greensburg; Gregory W. Branson, Batesville, all of Ind., and James M. C. Thomas, Mt. Pleasant, S.C., assignors to Hill-Rom, Inc., Batesville, Ind.

Filed Aug. 4, 1995, Ser. No. 511,542
Int. Cl.[6] A61G *7/057;7/00*
U.S. Cl. 5—600 **31 Claims**



1. A bed comprising:

a base frame;

a deck coupled to the base frame:

an electrical communication network:

an air handling unit mounted on the base frame;

a plurality of air therapy devices located on the bed; and

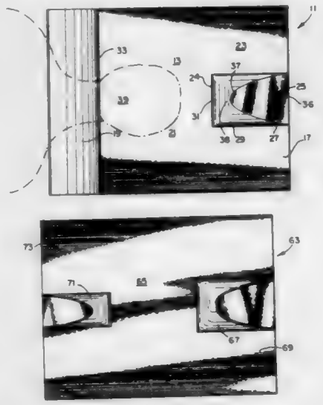
a plurality of control modules, each control module including a connector for coupling a corresponding air therapy device to the air handling unit and to the electrical communication network, each control module also including a controller for operating the corresponding air therapy device with the air handling unit based on command signals received from the electrical communication network.

5,630,239

ORTHOPEDIC PILLOW AND METHOD OF USING IT

Paul W. Franzen, Jr., 550 Ridge Pike, Lafayette Hill, Pa. 19444

Division of Ser. No. 44,951, Apr. 9, 1993, Pat. No. 5,482,355.
This application Jun. 6, 1995, Ser. No. 466,204
Int. Cl.[6] A47G *9/00;* **A61G** *7/07*
U.S. Cl. 5—632 **32 Claims**



1. An orthopedic pillow for helping to correct and helping to prevent hyperkyphosis and rigidity of the upper thoracic spine and for returning the normal lordotic cervical curve comprising

a base panel having a first end portion and a second end portion,

the base panel having a left top surface segment extending between the first end portion and the second end portion and a right top surface segment extending between the first end portion and the second end portion,

a first crown for supporting the thoracic spine, the first crown being formed on the first end portion of the base panel, extending toward the second end portion of the base panel, and dividing at least partially the left top surface segment from the right surface segment,

the first crown having a first end portion and a second end portion,

support means formed in the first end portion of the first crown for supporting the spine just under and between the shoulder blades of a reclining person, said support means including

a transition ramp formed in the first end portion of the first crown,

the transition ramp sloping upwardly in a direction from the first end portion of the base panel toward the second end portion of the base panel,

and further including

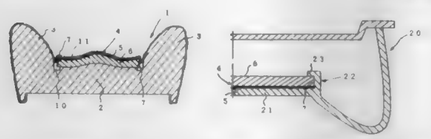
neck area support means formed in the second end portion of the first crown for supporting the neck area of a reclining person.

5,630,240

CUSHION BODY STRUCTURE COMFORTABLE TO SIT

Chikara Matsuoka, 33-15, Wada 3-chome, Tamano City, Okayama Prefecture 706; Takeshi Watadani, 564-A302, Kojima-Hiedacho, Kurashiki City, Okayama Prefecture 711; Kunihisa Wakimoto, 919-4, Kawairi, Okayama City, Okayama Prefecture 701-01, and Yukihiro Kinoshita, 4021-1, Tamashima-Michiguchi, Kurashiki City, Okayama Prefecture 713, all of Japan

PCT No. PCT/JP94/00685, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO95/08508, PCT Pub. Date Mar. 3, 1995
PCT Filed Apr. 25, 1994, Ser. No. 446,785
Claims priority, application Japan, Sep. 19, 1993, 5-254799
Int. Cl.[6] A47C *27/14*
U.S. Cl. 5—653 **11 Claims**



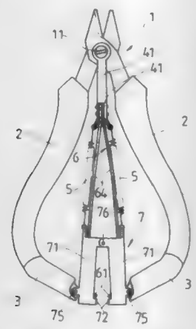
1. A cushion structure for a vehicle seat comprising, a foamed cushion body having a main portion and upwardly extending side portions, said cushion body having a rising portion to form spaces between said rising portion and said side portions, a planar fastening body having a support layer having a constant thickness overlying said rising portion of said main portion of said cushion body and disposed between said side portions, a skin material positioned over said planar fastening body and said side portions and attached to said planar fastening body, the periphery of said fastening body projecting over said spaces to said side portions, an impregnation layer formed between and integrating said support layer and said rising portion of said cushion body, and a non-impregnation layer in said periphery of said fastening body being not impregnated by said foamed cushion body.

5,630,241

COMBINATION PLIERS

Leonard Chang, 4F, No. 5, Lane 130, Min-Chung Rd., Hsin-Tian City, Taipei Hsien, Taiwan

Filed Apr. 29, 1996, Ser. No. 638,714
Int. Cl.[6] B25F *1/00*
U.S. Cl. 7—107 **1 Claim**



1. A combination pliers structure, comprising:

a pliers body having a press handle mechanism consisting of two press handles pivotally connected by a pivot at one end thereof, each of said press handles forming a projecting portion at a rear end, said projection portion having a notch:

two elbow portions each of which is located at said notch of each of said press handles, each of said elbow portions consisting of a pair of links, a couple of pins, and an outer covering, each one of said pair of links being provided with a hole in either end thereof, said pins being used to join one end of said pair of links to said notch of one of said press handles, said outer covering having a first slot formed in an upper inner wall thereof and a second slot formed in a lower inner wall thereof, said first and second slots being shaped to match said links, said outer covering further having an indentation at one end thereof for receiving said projecting portion of one of said press handles such that when said elbow portions are located at the rear ends of said press handles, said press handles may utilize said pins in said notches as pivots to control displacement of said links;

a positioning lever pivotally connected with said pivot of said pliers body, a joint between said positioning lever and said pivot forming a fork-like structure, said positioning lever having one end extending to between said press handles of said pliers body and the other end forming a slot with an opening orienting towards the rear ends of said press handles;

an inner jaw means consisting of two elongate strips having their front ends secured in said slot of said positioning lever and their rear end portions opening outwardly to a suitable extent with their extreme ends bending inwardly to form face-to-face L-shaped portions, said L-shaped portions constituting a pointed cutter of a sharpness capable of penetrating into the wire skin but incapable of cutting the wire filaments;

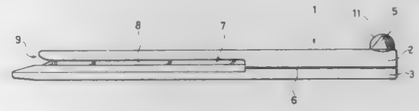
an outer jaw means consisting of two jaw portions integrally formed from reinforced plastic material, each of said jaw portions having one end thereof forming a pivot portion with a lug, said lug forming a depressed portion with a hole at one side thereof, a tail portion with a hole being provided adjacent to said pivot portion, and the other end thereof forming a clamping portion provided with a groove, a metal sheet being inserted between said grooves of said clamping portions, each of said jaw portions having an inclined surface at an inner side thereof adjacent to said clamp portion such that said clamping portion decreases in thickness from said clamp portion to a certain extent before extending to said pivot portion, a mounting lug having a hole being disposed at an outer side of said clamping portion, said outer jaw means being located outside of said inner jaw means, two springs being provided such that one of said springs has one end thereof engaging said hole of said tail portion of one of said jaw portions and the other end thereof secured to said positioning lever, a pin being passed through said holes of said lugs of said jaw portions to pivotally connect said jaw portions together, said outer jaw means and said inner jaw means being pivotally connected by means of said positioning lever, and said pivot portions of said jaw portions being linked-up with said links of said elbows and and capable of swinging when said press handles are pressed.

5,630,242

SEAT BELT CUTTER

Takao Oginaezawa, Niigata, Japan, assignor to Yugenkaisha MD, Niigata-ken, Japan

Filed Jul. 31, 1995, Ser. No. 508,396
Claims priority, application Japan, Aug. 1, 1994, 6-197149
Int. Cl.[6] B25F *1/00;* **B60R** *22/32*
U.S. Cl. 7—144 **16 Claims**



1. A seat belt cutter comprising:

an upper surface member;

a lower surface member, the upper surface member being joined to and overlying the lower surface member;

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a gap being formed between the upper and lower surface members, the gap extending lengthwise in the seat belt cutter from a first end of the seat belt cutter, the lower surface member being longer than the upper surface member with an end of the lower surface member extending beyond the upper surface member at the first end of the seat belt cutter;

a gripping handle member formed by said upper surface member and said lower surface member, the gripping handle member having a head portion on a second end of the seat belt cutter, the first and second ends of the seat belt cutter being opposed ends;

a hammer member having a sharply pointed tip potion and being secured to the upper surface member at the head portion of the gripping handle member;

a blade member positioned within the gap, the blade member being attached to the lower surface member and having a serrated edge portion, the blade member extending lengthwise in the seat belt cutter and the serrated edge portion having a top and sides;

a groove defined in the upper surface member, the groove overlying the serrated edge portion of the blade member and the portion of the upper surface member forming the groove enclosing the top and at least a portion of the sides of the serrated edge portion to thereby cover the serrated edge portion, the portion of the upper surface member defining the groove being spaced from the serrated edge portion of the blade member.

5,630,243

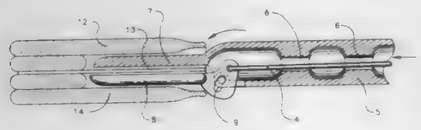
TOILET CLEANING DEVICE WITH CLEANING PAD

Vera L. Federico, and William F. Gabella, both of 1941 Summit Dr., Escondido, Calif. 92027

Filed Feb. 14, 1996, Ser. No. 558,644

Int. Cl.[6] B08B *1/00*

U.S. Cl. 15—104.94 **4 Claims**



1. A combination toilet cleaning tool and pad comprising:

a toilet cleaning tool having a handle, a movable grasper jaw, a trigger means for moving said jaw and;

a biodegradable cleaning pad having a first envelope and a second envelope, said first and second envelopes containing a water activated detergent and deodorant for cleaning and disinfecting a surface;

said biodegradable cleaning pad further having a biodegradable tongue disposed between said first and second envelopes, wherein during use, said grasper jaw grasps said biodegradable tongue to allow for manipulation of said biodegradable cleaning pad without a user coming into contact with said surface.

5,630,244

ELASTIC TOOTHBRUSH

Ching-Min Chang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jan. 2, 1996, Ser. No. 581,986

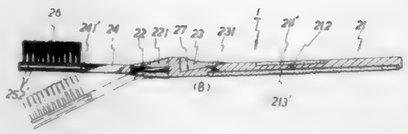
Int. Cl.[6] A46B *9/04*

U.S. Cl. 15—167.1 **5 Claims**

1. An elastic toothbrush comprising:

a head with a large number of bristles thereon;

a neck connected to said head;



a connector connected to said neck;

a handle connected to said connector;

a slot and a groove formed on an upper surface of said handle;

an elongated recess formed on a lower surface of said handle;

said groove communicated with said elongated recess via a through hole;

said slot and said elongated recess communicated via at least a slant hole;

an anti-skid rubber infilling said slot;

a rubber mark infilling said groove;

a non-slip rubber infilling said elongated recess;

a circular recess formed between said head and said neck;

a rim recess formed on a rim of said head;

a notch formed on said head;

an end rubber infilling said notch;

a circular rubber infilling said circular recess;

a rim rubber infilling said rim recess; and

a connector rubber enclosing said connector.

5,630,245

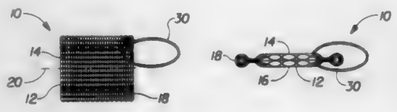
IMPLEMENT FOR PERSONAL CLEANSING AND METHOD OF CONSTRUCTION

Lyle B. Tuthill, Indian Hill; John P. Grooms, Cincinnati, both of Ohio; H. Norman Reiboldt, West College Corner, Ind.; William P. Dirksing, Cleves, Ohio; Charles G. Yeazell, Cincinnati, Ohio; Richard M. Girardot, Cincinnati, Ohio; Eric J. Grosgogeat, Cincinnati, Ohio, and Richard G. Bausch, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 339,094, Nov. 14, 1994, Pat. No. 5,491,864, which is a continuation-in-part of Ser. No. 221,430, Mar. 31, 1994, Pat. No. 5,412,830. This application Dec. 8, 1995, Ser. No. 569,757

Int. Cl.[6] A47L *13/10*

U.S. Cl. 15—229.11 **3 Claims**



1. A personal cleansing implement comprising a substantially rectangular hydrophobic batt, said batt having a top surface, a bottom surface and a perimeter, said batt being a piece of tubular diamond mesh scrim which is gathered along a longitudinal axis of said piece of tubular scrim to form circumferential pleats, said piece of tubular scrim being held in a longitudinally gathered condition while said top surface and said bottom surface are bonded together adjacent said perimeter, said personal cleansing implement further comprising quilt-like bonding between said top and said bottom surfaces internal to said perimeter of said batt, said quilt-like bonding occurring at at least one spot.

5,630,246

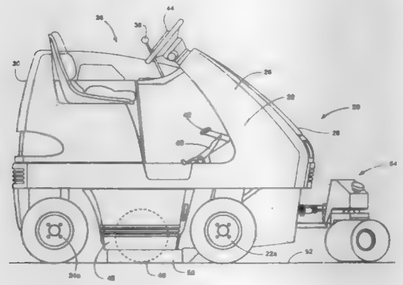
FLOOR CLEANING APPARATUS WITH FLAP HAVING WEAR INDICATOR

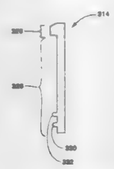
Christopher M. Knowlton, Pinehurst, N.C.; Robert J. O'Hara, Castle Rock, Colo., and Timothy A. Strickland, Raeford, N.C., assignors to Windsor Industries, Inc., Englewood, Colo.

Continuation of Ser. No. 233,014, Apr. 25, 1994, Pat. No. 5,485,653. This application May 30, 1995, Ser. No. 454,436

Int. Cl.[6] B08B *5/04*

U.S. Cl. 15—340.4 **14 Claims**





1. An apparatus for cleaning a surface comprising:

a frame;

means, operatively attached to said frame, for cleaning a surface;

at least three wheels for moving said frame and said means for cleaning over a surface; and

means for steering at least one of said at least three wheels;

wherein said means for cleaning includes a flexible, substantially planar member that includes a first terminal edge and a second terminal edge, wherein when said flexible, substantially planar member is in use, said first terminal edge contacts said surface and said second terminal edge is operatively connected to said frame and separated from said surface;

wherein said flexible, substantially planar member includes a wear indicator located between said first and second terminal edges, wherein said wear indicator includes a bulb structure.

5,630,247

LEAF COLLECTION BOX WITH DUST RECIRCULATION

Steven P. Venia, 6633 Tennyson, Ottawa Lake, Mich. 49267

Filed Sep. 5, 1995, Ser. No. 523,141

Int. Cl.[6] E01H *1/08*

U.S. Cl. 15—347 **18 Claims**

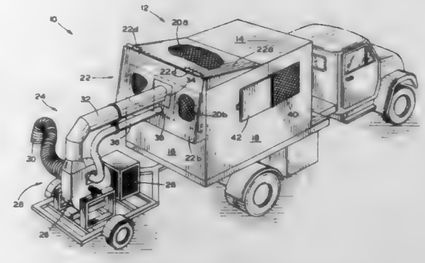
1. A leaf collection apparatus comprising:

a vacuum generating apparatus for collecting leaves;

a leaf collection box including a top wall, a rear wall, and a side wall for holding leaves connected to said vacuum generating apparatus, said leaf collection box including a screened opening in each of two of said walls;

a dust shroud connected to said leaf collection box and covering said screened openings; and

a recirculating means connecting said dust shroud to said vacuum generating apparatus so that leaf dust is removed



from said dust shroud and recirculated to said vacuum generating apparatus.

5,630,248

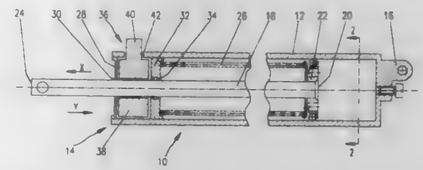
DOOR CLOSER WITH SEMI-AUTOMATIC LATCHING

Valentin Luca, 125 Katona Dr. #4A6, Fairfield, Conn. 06430

Filed Oct. 25, 1995, Ser. No. 547,921

Int. Cl.[6] E05F *1/00;5/02*

U.S. Cl. 16—71 **13 Claims**



1. A door closer comprising:

(a) a cylinder having a free end and an attachable end attachable to a door or door frame;

(b) a piston rod having a piston end retaining a piston and an attachable end attachable to a door frame or door, said piston rod and said piston being contained in said cylinder with said attachable end of said piston rod extending out of said cylinder free end and slidably displaceable within said cylinder from a maximum retracted position in said cylinder to a maximum extended position;

(c) piston urging means within said cylinder urging said piston to the maximum retracted position, said urging means being placed within said cylinder, in between said free end of said cylinder and said piston and pushing, directly or through means, against said piston;

(d) an end cap fixed on said cylinder proximate said free end of said cylinder, said end cap having a passage for said piston rod;

(e) an intermediate support fixed in said cylinder longitudinally spaced from said end cap in between said end cap and said piston urging means, said intermediate support having a passage for said piston rod; and

(f) latching means, a portion thereof within said cylinder between said end cap and said intermediate support, and another portion thereof extending through an aperture in said cylinder.

5,630,249

SLIDING SCREEN DOOR CLOSING DEVICE

Delbert D. Rebal, Jr., 12802 Aspenwood, Garden Grove, Calif. 92640

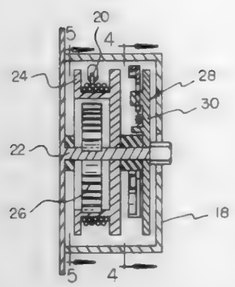
Filed Jan. 11, 1996, Ser. No. 587,107

Int. Cl.[6] E05F *1/08*

U.S. Cl. 16—78 **2 Claims**

1. A sliding screen door closing device comprising:

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a closure means for effecting movement of a sliding screen door along a linear track in a predetermined direction so as to effect closing of the sliding screen door subsequent to opening thereof, the closure means comprises a housing mountable to a portion of a building adjacent to a sliding screen door; a cable stored within the housing which can be resiliently extended therefrom, the cable extending from the housing and being couplable to a portion of the sliding screen door, whereby an opening of the sliding screen door will effect extension of the cable from the housing, with a releasing of the sliding screen door resulting in a resilient retraction of the cable into the housing to effect closing of the sliding screen door, the closure means further comprises a center axle extending through the housing; a spool rotatably mounted within the housing about the center axle, with the cable being spirally wound about the spool when stored within the housing; a spiral spring interposed between the spool and the center axle, the spiral spring being wrapped about the center axle secured thereto, the spiral spring being further secured to an interior surface of the spool, whereby extension of the cable from the spool will result in a tightening of the spiral spring tending to effect biasing of the cable back into the housing and onto the spool, the closure means further comprises a centrifugal brake means for limiting a rotational speed of the spool, the centrifugal brake means comprises a plate rotatably mounted about the center axle and secured to the spool so as to rotate therewith; a plurality of arcuate brake pads slidably mounted to the plate and positioned in a circumferentially spaced orientation relative to one another, a plurality of retaining springs, with each of the arcuate brake pads being inwardly radially biased towards the center axle by an individual one of the retaining springs extending between the plate and the respective arcuate brake pad such that a rotation of the plate with the spool will effect centrifugal acceleration of the arcuate brake pads towards an interior surface of the housing such that the brake pads engage the interior surface of the housing to retard rotational motion of the plate and the spool relative to the housing.

5,630,250

DRAWBAR DEVICE

Cheng-Tsan Chou, 27, Lane 280, Chung Zhen Road, Sa Lu, Taichung Shien, Taiwan

Filed Apr. 9, 1996, Ser. No. 637,321

Int. Cl.[6] B25G *1/04*

U.S. Cl. 16—115 **1 Claim**

1. A drawbar device comprising:

a first sectional handle having a first rectangular recess formed on an upper middle portion of said first sectional handle and a first retaining plate disposed at a bottom of said first sectional handle transversely;

a first and second positioning holes formed on said first sectional handle;

a second sectional handle having a second rectangular recess formed on an upper middle portion of said second sectional handle and a second retaining plate disposed at a bottom of said second sectional handle transversely;

a third and fourth positioning holes formed on said second sectional handle;

said second sectional handle coupling with said first sectional handle to form a grip;

an upper seat disposed under said grip;

said first and second rectangular recesses receiving a top portion of a push button;

two blind holes formed at two opposite ends of said push button;

a first and second control plates connecting said corresponding blind holes, respectively;

said first control plate having a first through hole thereon, a first pin hole, and a first protrusion to receive a first spring;

said second control plate having a second through hole thereon, a second pin hole to receive an elongated pin, and a second protrusion to receive a second spring;

two ends of said grip connecting two upper ends of a first and second drawbars, respectively;

a first and second square holes formed at two lateral ends of said upper seat, respectively;

two upper ends of a first and second control rods connecting said first and second control plates, respectively;

each of a first and second positioning blocks having a round hole to receive a corresponding lower end of said control rod, respectively;

each of said first and second positioning blocks having a lower lug to engage with a corresponding first and second pinions, respectively;

said first and second positioning blocks inserted in said first and second drawbars, respectively;

each of said first and second drawbars having a circular hole and a rectangular notch at a lower end of each of said first and second drawbars, respectively;

each said rectangular notch receiving said pinion;

each said pinion having a center hole;

a positioning pin passing through said circular hole and said center hole to fasten said pinion in said drawbar pivotally;

a first rack and said first drawbar inserted in a first outer pipe in parallel;

a second rack and said second drawbar inserted in a second outer pipe in parallel;

each said rack having a plurality of positioning teeth to engage with pinion teeth of said pinion;

a lower seat having two recess holes to receive two lower ends of said corresponding first and second outer pipes, respectively;

said first control plate and said second control plate being pivotally fastened to said grip;

said first spring disposed between said first control plate and said grip; and

said second spring disposed between said second control plate and said grip.

5,630,251

SLIVER GUIDE ASSEMBLY INCLUDING A SLIVER GUIDING DEVICE AND A SLIVER PREFORMER

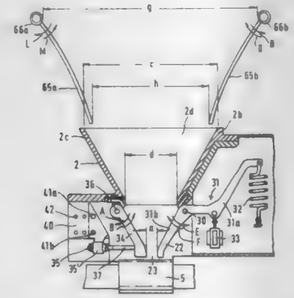
Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Oct. 27, 1995, Ser. No. 549,307

Claims priority, application Germany, Aug. 3, 1995, 195 28 484.4

Int. Cl.[6] D01H *5/72*

U.S. Cl. 19—291 **10 Claims**



1. An apparatus for measuring sliver thickness in a drawing frame, comprising

(a) a sliver guiding device including

(1) an inlet for simultaneously receiving a plurality of side-by-side running slivers having an advancing direction;

(2) sliver combining means defining a plane extending parallel to said advancing direction for bringing the slivers together to form a sliver assembly constituted by a plurality of side-by-side positioned running slivers arranged in said plane and laterally contacting one another; the sliver assembly having oppositely located first nd second outermost slivers; said sliver combining means comprising oppositely located, converging wall surfaces forming a cross-sectionally closed space;

(3) an outlet for discharging the sliver assembly from said sliver guiding device;

(b) a sensor element contacting said first outermost sliver at said outlet;

(c) positioning means for movably supporting said sensor element;

(d) a counterelement contacting said second outermost sliver at said outlet;

(e) biasing means for urging said sensor element into a resilient contact with said first outermost sliver in a direction towards said second outermost sliver, whereby said sensor element undergoes excursions upon variation of thickness of said sliver assembly in said plane; said sensor element and said counterelement together defining a restriction through which said sliver assembly passes; said sensor element and said counterelement forming part of said combining means;

(f) transducer means for converting excursions of said sensor element into electric pulses;

(g) a preformer adjoining said sliver guiding device upstream thereof for causing the slivers to laterally approach one another prior to entering said sliver guiding device from said preformer; said preformer having opposite lateral sides, a top side and a bottom side; said lateral sides being formed by wall components converging in the sliver advancing direction; at least one of said top and bottom sides being open;

(h) a withdrawing roller pair supported downstream of said sliver guiding device as viewed in said advancing direction; said withdrawing roller pair defining a nip through which the sliver assembly passes; and

(i) means for driving said withdrawing roller pair for pulling the slivers through said preformer and said sliver guiding device.

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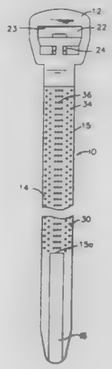
CABLE TIE HAVING AN IMPROVED STRAP BODY

Peter M. Wells, Germantown, Tenn., assignor to Thomas & Betts Corporation, Memphis, Tenn.

Continuation of Ser. No. 228,547, Apr. 15, 1994, abandoned. This application Dec. 14, 1995, Ser. No. 572,685

Int. Cl.[6] B65D *63/14*

U.S. Cl. 24—168 PB **18 Claims**



1. A bundling tie for securement about a plurality of articles comprising:

an elongate strap having a planar strap body defining first and second opposed planar surfaces;

said strap body having a strap thickness of a first dimension as measured between said opposed first and second surfaces;

a head having an aperture therethrough for insertable receipt of said strap body, said head having a wall defining a portion of said aperture for engagement with said first planar surface upon insertion of said strap body thereinto by movement of said strap body in a first direction; and

a locking barb movably supported by said head and having an elongate portion extending into said aperture toward said wall for biting engagement with said strap body when said strap body is moved in a second direction opposite said first direction;

a distal extent of said portion of said locking barb being spaced from said wall a distance not substantially less than said first dimension;

said strap having a plurality of protrusions extending from said second surface, said plurality Of protrusions being longitudinally and transversely spaced from each other, said plurality of protrusions having an extent of a second dimension such that the sum of said first dimension and said second dimension is greater than said distance between said distal extent of said barb and said wall

such that movement of said strap body in said second direction causes said barb to initially engage said protrusions and thereafter to bitingly engage said strap body.

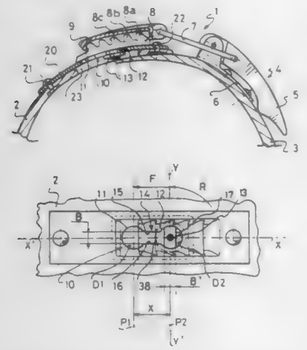
VOL 1198 ISS 3 MAY 20 1997 UMI

5,630,253

BOOT AND ADJUSTABLE CLOSURE THEREFOR

Louis Benoit, La Balme De Sillingy, and Laurent Marechal, Argonnay, both of France, assignors to Salomon S.A., Metz Tessy, France

Filed Apr. 15, 1996, Ser. No. 635,264
Claims priority, application France, Apr. 25, 1995, 95 05190
Int. Cl.[6] A43C *11/00*
U.S. Cl. 24—70 SK 17 Claims



1. A closure device for a boot, including a ski boot, for maintaining a pair of flaps of the boot close to each other in a latched position, said closure device comprising:

a control lever;

a plate adapted to be mounted upon one of the pair of flaps of the boot, said lever being mounted upon said plate for manipulation for movement for selective latching and unlatching the device;

a rack having a plurality of teeth, said rack being adapted to be affixed to a second of the pair of flaps of the boot;

a latching member having a portion shaped for engagement with at least one of said teeth of said rack;

an inextensible member connecting said latching member to said control lever; and

a rack position adjustment mechanism, said mechanism comprising:

a member having a buttonhole-shaped oblong slot adapted to be fixed with respect to the second of the pair of flaps of the boot, said slot including a pair of opposite circular end portions connected by a straight portion, said circular portions having a common predeterminate diameter and said straight portion having a predeterminate width;

a pin affixed to a lower surface of said rack, said pin having a projecting portion extending through said oblong slot;

said projecting portion of said pin having a pair of opposed flat sides and a pair of opposed arcuate sides, said flat sides being spaced apart by a distance substantially equal to said predeterminate width of said straight portion of said oblong slot, said arcuate sides of said projecting portion of said pin having diameter substantially equal to said predeterminate diameter of said circular end portions of said oblong slot;

said rack being adapted to be rotated about said pin from a functional locked position to a movable position, whereby:

in said functional locked position, said pin is positioned in one of said circular portions of said oblong slot and said flat sides of said projecting portion of said pin extend in a direction perpendicular to a longitudinal direction of said oblong slot; and

in said movable position, said rack is rotated +90° with respect to the longitudinal slot; and

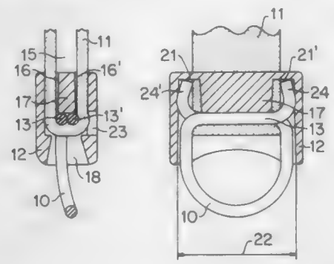
in said movable position, said rack is rotated +90° with respect to the longitudinal direction of said oblong slot and said flat sides of said projecting portion of said pin extend parallel to said straight portion of said oblong slot to enable movement of said pin through said straight portion of said oblong slot from one of said circular portions to the other of said circular portions, following said movement of said pin through said straight portion of said oblong slot, said rack being adapted to be rotatable −90° to said functional locked position to thereby effect a longitudinal adjustment of said rack.

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SUSPENSION LUG AND LOCKING ELEMENT FOR A CARRYING STRAP

Alfred Hengst, Lahnau, and Ernst Ruehl, Wetzlar, both of Germany, assignors to Leica Camera GmbH, Solms, Germany

Filed Mar. 10, 1995, Ser. No. 402,044
Claims priority, application Germany, Mar. 10, 1994, 44 07 990.7
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—265 AL 13 Claims



1. A combination suspension lug and locking element adapted for retaining a carrying strap, comprising:

an approximately U-shaped suspension lug, said suspension lug including an open leg located on an end of each prong of said U-shape, said open legs are bent inward at substantially right angles with respect to said prongs of said U-shape, wherein said legs face each other and are substantially parallel and coextensive for at least a portion of their respective lengths, and wherein said legs are separated by a distance, and are adapted to be retained in a loop of said carrying strap; and

a locking element having an upper part, said upper part includes two substantially rectangular slot openings, with a separating web positioned therebetween, wherein said separating web is adapted to be retained in a loop of said carrying strap and said separating web is connected to side walls of said locking element, said locking element further having a lower part which includes a substantially rectangular cross-section lower opening in a bottom wall of said locking element, wherein said rectangular opening is adapted to receive the legs of the suspension lug, when said legs are retained in the loop of the carrying strap,

whereby said locking element is adapted to be pushed over the loop of the carrying strap and the legs of the suspension lug to lockingly engage the carrying strap and suspension lug.

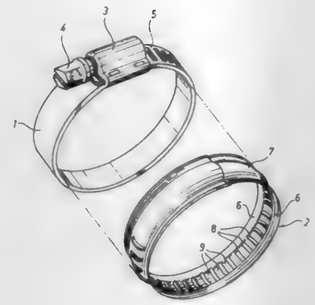
5,630,255

HOSE CLAMP

Roger Eliasson, Bösshult, Sweden, assignor to ABA of Sweden AB, Anderstorp, Sweden

PCT No. PCT/SE94/00792, § 371 Date Jan. 6, 1996, § 102(e) Date Jun. 6, 1996, PCT Pub. No. WO95/08073, PCT Pub. Date Mar. 23, 1995
PCT Filed Aug. 29, 1994, Ser. No. 612,867
Claims priority, application Sweden, Sep. 15, 1993, 9302995
Int. Cl.[6] F16L *33/08*
U.S. Cl. 24—274 R 1 Claim

1. An improved hose clamp consisting of an essentially rigid tightening band (**1**) which is bent to annular shape with its ends



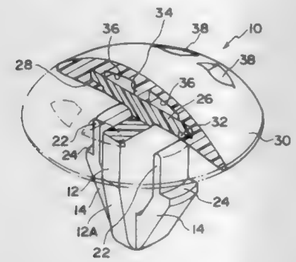
extending in an overlapping position through a tightening device (**3**, **4**) to tighten the hose clamp about an object, such as a hose (**10**) of an elastic material, and also of a resilient band (**2**) which is positioned internally of the tightening band (**1**), said resilient band being formed with two axially spaced, inwardly directed peripheral beads (**6**) which extend around the resilient band, and also with an outwardly projecting ridge (**7**) intermediate said beads, said ridge (**7**) abutting against the internal face of said tightening band (**1**), characterized by the provision in said resilient band ridge of a number of openings (**8**) dividing said ridge (**7**) into a number of bridges (**9**) interconnecting said peripheral beads (**6**) around the resilient band, said bridges arranged to impart to said beads some movability radially as well as axially.

5,630,256

BUFFER CLIP

Yoshikazu Kanno, Kanagawa-ken, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Mar. 11, 1996, Ser. No. 613,570
Claims priority, application Japan, Mar. 9, 1995, 7-050134
Int. Cl.[6] A44B *1/16*
U.S. Cl. 24—297 22 Claims



1. A buffer clip which is adapted to be mounted upon a body member so as to absorb impact forces and shocks which would otherwise be generated as a result of another member forcibly coming into contact with a body member, comprising:

leg means for insertion into a mounting hole formed within a body member and having means thereon for engaging a first surface of a body member;

a flange formed upon said leg means adapted to engage a second opposite surface of a body member such that said clip can be secured to a body member;

first engagement means defined upon said flange of said leg means;

a soft layer covering said flange of said leg means and being elastically deformable so as to absorb impact forces and shocks when another member, which would otherwise impact against a body member, impacts against said soft layer; and

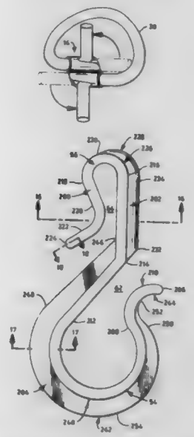
second engagement means defined upon said soft layer for engaging said first engagement means of said flange of said leg means such that said soft layer is mechanically secured upon said flange of said leg means.

5,630,257

VERSATILE ADJUSTABLE FASTENER SYSTEM

Scott D. Brody, Dedham, Mass., and J. Scott Nelson, Chico, Calif., assignors to Tiger Products, Inc., Sharon, Mass.

Filed Dec. 7, 1994, Ser. No. 351,487
Int. Cl.[6] F16G *11/00*
U.S. Cl. 24—300 10 Claims



1. A versatile adjustable fastener system comprising:

(a) at least one elastic rope, wherein said rope has a substantially circular cross-section with a diameter selected from the class consisting about 9 mm and about 11 mm, and is composed of a synthetic rubber compound;

(b) a plurality of accessory members comprising a tubular portion and a second portion selected from the class consisting of another tubular portion, a hook portion, and an anchor portion; wherein said accessory member composed of a first tubular portion and a second tubular portion is called an extender member, said accessory member composed of a tubular portion and a hook portion is called a hook member, and said accessory member composed of a tubular portion and an anchor portion is called an anchor member;

(c) wherein said tubular portion has walls about 3 mm thick and extends about 44 mm from a proximal end to a distal end;

(d) wherein said tubular portion includes a flared opening in the wall, having a closed end about 10 mm from said distal end and increasing gradually in width symmetrically about a central line parallel to the axis of said tubular portion from about 1.59 mm at said closed end to the width of said tubular portion at said distal end;

(e) wherein the edge of said flared opening gradually changes planes from parallel to the axis of said tubular portion at said closed end to coincident with the edge of said distal end;

(f) wherein the side profile of said flared opening slopes gradually from said distal end, gradually changing the radius of curvature until said profile becomes coincident with said outer wall of said tubular portion;

(g) wherein said second tubular portion of said extender member is integrally joined to said first tubular portion such that said distal end of said first tubular portion is adjacent to said proximal end of said second tubular portion and said first tubular portion flared opening and said second tubular portion flared opening are opposed;

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(h) wherein said hook portion of said hook member includes a hook element and a rib element; wherein said hook element has substantially an "S" shape and a constant thickness of about 2.6 mm; wherein said hook element is attached to said tubular portion at a point about 7 mm from said proximal end in a line parallel to the axis of said tubular portion and about 125° around from the center line of said flared opening; wherein the width of said hook element is about 17 mm and decreases in width to about 6 mm;

(i) wherein said rib element has an inner edge and an outer edge, wherein said rib element is symmetrical about the plane that bisects said hook element through its width, and is about 4.5 mm thick; wherein said rib element inner edge is coincident with said hook element outer surface from the point on said hook element outer surface where it intersects with said outer wall of said tubular portion to a point opposite said final curve of said hook element inner surface; wherein said rib element outer edge follows a curvilinear path;

(j) wherein said anchor portion of said anchor member is a disk with a first mounting hole and a second mounting hole;

(k) wherein said disk is attached tangentially to said tubular portion opposite the center line of said flared opening;

(l) at least one J-hook member including a J-hook portion, a small rib portion, and a large rib portion;

(m) wherein said J-hook portion has a substantially "S" shape with a constant thickness from a first surface to a second surface of about 2.8 mm; wherein the width of said J-hook portion is substantially constant throughout its length at about 10.8 mm;

(n) wherein said small rib portion has a small rib inner edge and a small rib outer edge; wherein said small rib portion is symmetrical about the plane that bisects said J-hook portion through its width, and is about 3.8 mm thick; wherein said small rib inner edge is coincident with said J-hook first surface; wherein said small rib outer edge follows a curvilinear path;

(o) wherein said large rib portion has a large rib inner edge and a large rib outer edge; wherein said large rib portion is symmetrical about the plane that bisects said J-hook portion through its width, and is about 3.8 mm thick; wherein said large rib inner edge is coincident with said J-hook second surface; wherein said large rib outer edge follows a curvilinear path;

(p) wherein said extender member, said hook member, said anchor member, and said J-hook member are composed of a hard plastic.

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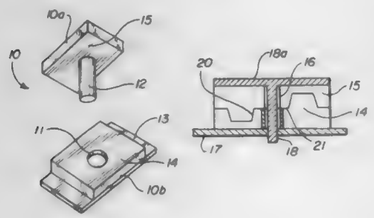
MAGNETIC BUCKLE

John R. Schneider, 4 Woodside Dr. East, Apalachin, N.Y. 13732

Filed Aug. 7, 1995, Ser. No. 511,787

Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—303 **18 Claims**



1. A magnetic fastening article for attaching two separate items to each other, comprising:

a) a plate of magnetic material having an aperture and having a post extending through said aperture and affixed to said plate, the major axis of said post being substantially perpendicular to the plane of said plate, said post being of a predetermined length and having a tip at its distal end, and comprising ferrous material; and

b) a base having an upper surface and a lower surface, and having an aperture disposed therein for receiving said post;

said predetermined length of said post being greater than the distance between said plate and said lower surface of said base when said plate and said base are juxtaposed with respect to each other, whereby, when said plate is caused to come into contact with said upper surface of said base, said end of said post extends through said aperture, coming to rest at a position beyond said lower surface of said base, so that a user can directly press said end of said post to separate said plate from said base.

5,630,259

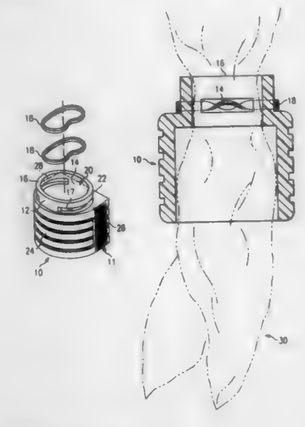
NECKERCHIEF SLIDE

E. Randall Ricketts, 16198 C.R. 434, Lindale, Tex. 75771

Filed Jul. 5, 1995, Ser. No. 498,117

Int. Cl.[6] A44B *6/00*; **A41F** *1/00*

U.S. Cl. 24—482 **20 Claims**



1. A neckerchief slide, comprising:

a body having a cavity therethrough, the cavity comprising a closed elongated opening,

a first post and a second post, the first post and second post connected to the body on opposing sides of the cavity, wherein the first post and second post are operable to secure an elastic band such that the elastic band extends across the cavity, and

a first elastic band secured to the body by the first post and second post, a first portion of the first elastic band extending across the cavity in opposed relation to a second portion of the first elastic band extending across the cavity.

5,630,260

METHOD AND APPARATUS FOR DISCHARGING FABRIC FROM CLOTH SPREADING MACHINE

Toshiaki Morita, Kaiso-gun, and Akihiro Otani, Wakayama, both of Japan, assignors to Shima Seiki Manufacturing Limited, Wakayama, Japan

Filed Jan. 25, 1995, Ser. No. 377,974

Claims priority, application Japan, Jan. 27, 1994, 6-007810

Int. Cl.[6] A41H *43/02*

U.S. Cl. 26—99 **13 Claims**

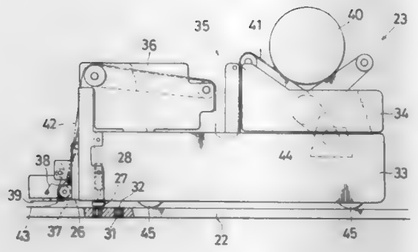
1. A method for discharging a fabric from a cloth spreading machine having a discharge direction, wherein the fabric is delivered and piled in layers in a predetermined length onto a spreading table of the cloth spreading machine from a running carriage with a catching device, the running carriage loaded with a fabric roll, the method comprising:

moving the running carriage to a predetermined catching position in relation to the piled fabric;

operating the catching device of the running carriage to catch the piled fabric such that moving the running carriage will cause the piled fabric to move;

blowing air toward a bottom surface of the piled fabric from the spreading table to facilitate movement of the piled fabric; and

discharging the piled fabric from the spreading table by running the running carriage in the discharge direction.



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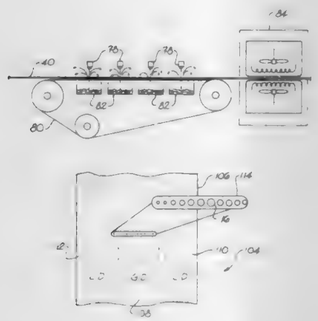
AIR BAG FOR USE IN A MOTOR VEHICLE AND METHOD OF PRODUCING SAME

Alonzo W. Beasley, Jr., Easley, S.C., assignor to JPS Automotive Products Corporation, Greenville, S.C.

Continuation-in-part of Ser. No. 259,869, Jun. 15, 1994, abandoned. This application Feb. 9, 1995, Ser. No. 385,904

Int. Cl.[6] D04H *3/02*; **D03D** *1/02*

U.S. Cl. 28—104 **11 Claims**



1. A method of producing an air bag fabric having a predetermined final permeability and a predetermined final thread count, said method comprising the steps of:

(a) providing a woven fabric constructed substantially entirely of synthetic yarn, said woven fabric having a preselected starting thread count in which at least a warp thread count thereof is less than that of said final thread count;

(b) directing a plurality of fluid jets onto the woven fabric under selected operating conditions such that the final permeability and the final thread count are achieved; and

(c) selectively heating the fabric to set the final permeability and the final thread count.

5,630,262

YARN LAYING-ON-GUIDE FOR ELECTRONICALLY CONTROLLED SAMPLE WARPER

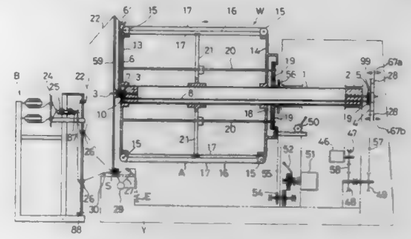
Yoshihiro Tanaka, Kiryu, Japan, assignor to Suzuki Warper Ltd., Kiryu, Japan

Filed Oct. 17, 1994, Ser. No. 323,790

Claims priority, application Japan, Nov. 9, 1993, 5-279886

Int. Cl.[6] D02H *3/00*

U.S. Cl. 28—184 **9 Claims**



1. An electronically controlled sample warper for automatically warping in a desired pattern of yarns, said warper including a warper drum having a longitudinal axis and longitudinally extending drum spokes, a yarn introduction lever rotatably disposed adjacent to one end of the warper drum, rollers rotatably mounted at opposite ends of each drum spoke, conveyor belts wound around said rollers, means for moving each of said conveyor belts a desired distance longitudinally of said drum and a yarn guide device; said yarn guide device comprising guide means slideably mounted on each of the drum spokes at said end adjacent to the yarn introduction lever, said guide means being slidable in the longitudinal direction of the drum spoke for guiding the yarn from the yarn introduction lever, means for moving said guide means to move the yarn in a warping direction by a first distance which is twice to half the thickness of the yarn for each revolution of the yarn introduction lever, means for rapidly moving said guide means back a second distance which is equal to the product of said first distance and a preset multi-winding value when the number of revolutions of the yarn introduction lever reaches said preset multi-winding value, thereby returning said guide means to an original start position, and means for moving said conveyor belts in the warping direction by a third distance which is equal to a longitudinal warp density, said moving of said conveyor belts being concurrently with a rapid movement back of said guide means through said second distance by said means for rapidly moving said guide means.

5,630,263

MANUFACTURING METHOD OF EXPANDED MESH

Tadakazu Shimano, Takatsuki, Japan, assignor to Yuasa Corporation, Osaka, Japan

PCT No. PCT/JP93/01899, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/15375, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 27, 1993, Ser. No. 454,204

Claims priority, application Japan, Dec. 28, 1992, 4-360487; Aug. 11, 1993, 5-220654

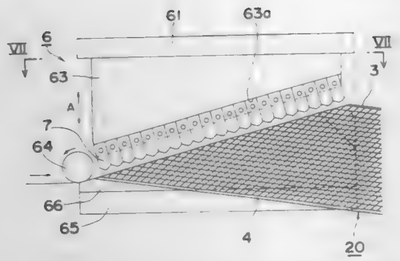
Int. Cl.[6] H01M *4/82*; **B21D** *47/02*

U.S. Cl. 29—2 **2 Claims**

1. A manufacturing method of sheet-shaped expanded mesh made of a sheet-shaped material; characterized in that

the expanded mesh comprises a reticulated portion and straight portions composed of non-expanded portions formed at least on one-side, the reticulated portion has a large number of meshes surrounded by longitudinal skeletal elements inclining relative to the straight portions, latitude skeletal elements approximately parallel to the straight portions, and nodes of the both skeletal elements, meshes not adjacent to the straight

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portions are surrounded by a pair of approximately parallel latitude skeletal elements, a pair of approximately parallel longitudinal skeletal elements, and a pair of nodes opposing each other, meshes adjacent in latitudinal direction have the longitudinal skeletal elements in common.

a die-set is used which is equipped with at least one-row of die installed in an inclining position relative to a feed direction of the sheet-shaped material and plural shearing cutters protruding at its middle part and shearing with the die to shear the sheet-shaped material into broken-line-like shapes and opening it to form the reticulated portion, and a direction of shearing motion relative to the die of shearing cutter is set in a direction inclining to a thickness direction of the sheet-shaped material so as to include a pitch feed motion of the sheet-shaped material from its feed destination side to its feed origin side.

5,630,264

APPARATUS FOR INSERTING INSERT MEMBERS

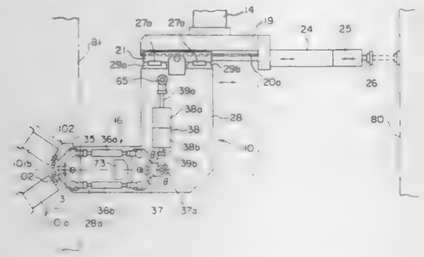
Makoto Tsuji, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 24, 1995, Ser. No. 394,295

Claims priority, application Japan, Feb. 25, 1994, 6-028317

Int. Cl.° B23P *19/04*

U.S. Cl. 29—234 **12 Claims**



1. An apparatus for inserting one or more insert members having an insert head comprising:

insert holders for holding sleeve-like insert members;

a mechanism for holding said insert holders for transferring movement in the direction of inserting said insert members and for pivotable movement about a shaft intersecting perpendicular to the direction of said transferring movement; and

a mechanism for pressing out said insert members from said insert holders in the direction of inserting said insert members; and

a positioning mechanism which supports said insert head for transferring movement in at leas: the two and more axial directions intersecting perpendicularly to each other and which positions said insert head between said metal molds which are apart, wherein said insert head comprises:

a first support member connected to said positioning mechanism;

a second support member pivotably mounted on said first support member;

a third support member which is mounted on said second support member for sliding movement in the direction of inserting said insert members and which holds said insert holders;

a fourth support member which is mounted on said second support member for sliding movement in the direction of inserting said insert members and which partially engages said insert members held on said insert holders;

a swinging mechanism secured to said first support member and for driving said second support member in pivotable movement;

a sliding means secured to said second support member and for sliding said third member; and

a drive means secured to said second support member and for driving said fourth support member.

5,630,265

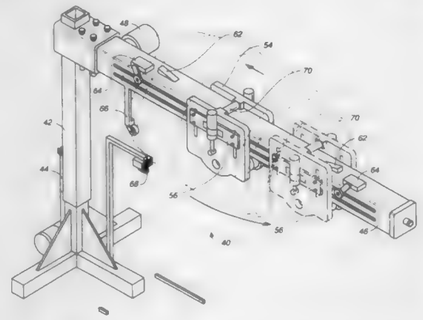
WINE BARREL RECONDITIONING METHOD AND APPARATUS

Christopher S. Stone, 2010 Barlow La., Sebastopol, Calif. 95472

Filed Nov. 18, 1994, Ser. No. 342,377

Int. Cl.° B23P *6/00*; **B21D** *1/00*

U.S. Cl. 29—402.06 **3 Claims**



1. A method for reconditioning wood wine barrels having a pair of ends including barrel heads and an inside surface, said method comprising the steps of:

placing an open wine barrel with heads removed on a barrel rotator stand;

cutting said wine barrel inside surface by positioning a planer-cutter apparatus into one end of said open wine barrel, setting cutting parameters into a control device in the planer-cutter apparatus, advancing the planer-cutter apparatus into said wine barrel, cutting a linear swath the length of said wine barrel to remove a portion of the wine barrel inside surface, rotating said wine barrel, and repeating the cutting and rotating steps for the number of swaths required to cut and remove a desired amount of said wine barrel inside surface.

5,630,266

METHOD AND APPARATUS FOR MAKING INTEGRAL SUPPORT PLATES FOR CHAIR SEATS

Helmut Bauer, 65 Colton Crescent South, Woodbridge, Ontario, Canada

Filed Aug. 16 1995, Ser. No. 515,977

Claims priority, application Canada, May 5, 1995, 2148736

Int. Cl.° B23P *17/00*

U.S. Cl. 29—417 **7 Claims**

1. A method of making a plurality of integral support plates for use in constructing chair seats, the method comprising passing a



strip of deformable metallic material along a forming line and carrying out a series of operations on the strip, the operations being experienced by the strip as a predetermined sequence of groups of operations, each group containing one or a plurality of operations, the groups including, in order:

a) a first group comprising, in any order:

piercing two laterally spaced-apart lancing holes in a middle region of the strip,

removing material adjacent to the holes to provide an opening for a strip carrier, and

providing a modality adjacent at least one of the opposed longitudinal sides of the strip for cooperation with a safety switch;

b) a second group having the effect of lancing the strip along two substantially transverse lines reaching from the longitudinal sides to corresponding lancing holes, thus facilitating the flow of strip material during subsequent operations, said transverse lines generally identifying the rearward edge of a leading support plate and the forward edge of the next subsequent support plate;

c) a third group comprising a plurality of sequential operations for creating, in a mid-region of the leading plate, an integral, cylindrical, closed-ended sleeve of which the axis extends substantially perpendicular to the plate, said sequential operations utilizing a plurality of sets of male and female die members, the sequential operations commencing with the formation of a relatively shallow, wide bubble in the plate, followed by the deepening and narrowing of the bubble by the sequential operation of said sets of die members;

d) a fourth group comprising, in any order:

using a piercing tool to remove the closed end of the sleeve of the leading plate, and

trimming away excessive edge material so as to give the leading plate a desired peripheral configuration;

e) a fifth group comprising, simultaneously or in any order:

forming reinforcement rib means adjacent the junction of the sleeve with the leading plate, and

forming any required additional profiles in the leading plate;

f) a sixth group comprising, in any order:

piercing all required mounting holes in the leading plate, and

piercing all required slots in the leading plate; and

g) a seventh group comprising cutting a completed leading support plate from the strip.

5,630,267

METHOD OF MANUFACTURING A PARTICULATE COLLECTOR ASSEMBLY

Manfred F. Dehne, Uferstrasse 41, D-88149 Nonnenhorn, Germany

Division of Ser. No. 399,447, Mar. 7, 1995, Pat. No. 5,536,287.

This application Jun. 4, 1996, Ser. No. 658,244

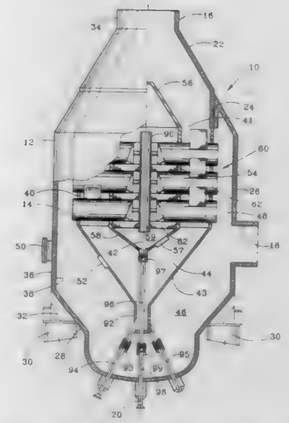
Int. Cl.° B01D *45/00*

U.S. Cl. 29—469 **19 Claims**

1. A method of supporting a plurality of cyclone separator units within a particulate collector assembly for removing solid particulates from a gas stream, the plurality of cyclone separator units each having a cyclone unit inlet in fluid communication with a particulate-laden gas chamber, a cyclone unit outlet in fluid communication with a clean gas chamber, a particulate outlet in fluid communication with a particulate chamber, and each cyclone separator unit including a cyclone housing and a cone member within the cyclone housing, the method comprising:

forming an outer collector housing including a gas inlet for receiving particulate-laden gas and a gas outlet for discharging clean gas;

forming an intermediate housing supported within the outer housing, the intermediate housing and the outer housing



defining the clean gas chamber therebetween in fluid communication with the gas outlet;

forming an inner housing supported within the intermediate housing, the inner housing and intermediate housing defining the particulate-laden gas chamber therebetween in fluid communication with the gas inlet;

forming the particulate chamber within the inner housing for receiving separated particulates;

providing a central support member within the particulate chamber;

arranging the plurality of cyclone separator units circumferentially about the central support member;

fixedly securing a radially outward portion of each cyclone housing to the intermediate housing, each cyclone housing extending radially inward through the inner housing; and

fixedly securing a plurality of cyclone supports to a radially inward end of a respective cyclone housing and to the central support member.

5,630,268

PROCESS FOR MANUFACTURING TAPER POINT SURGICAL NEEDLES

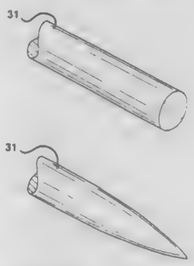
Daniel Smith, Manalapan Township; Bernard M. Willis, East Brunswick; Kenneth P. Marschke, Jr., Medford; Barry Littlewood, Harmony; Vulgens Schoen, Stockton; Carl Gucker, Branchburg; Michael Nordmeyer, Neshanic Station, all of N.J., and Thaddeus Miklewicz, Nazareth, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 146,681, Nov. 1, 1993, Pat. No. 5,477,604.

This application Jun. 7, 1995, Ser. No. 478,116

Int. Cl.° B23P *13/04*

U.S. Cl. 29—557 **1 Claim**



1. A method for manufacturing a taper point needle, comprising:

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mounting a plurality of solid, cylindrical surgical needle blanks to a carrier means wherein each needle blank has a distal end; and,

moving each needle blank to a grinding means and grinding the distal end of the needle blank while maintaining the needle blank fixed in the carrier means to form a taper point.

5,630,269

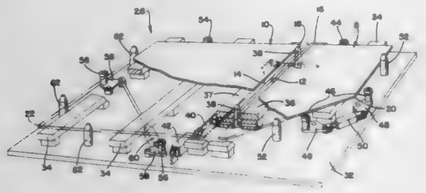
METHOD FOR FIXTURING ABUTTED SHEET METAL PARTS FOR WELDING

Eberhard E. Wasserbaech, Shelby Township, and Mark M. Eisenmenger, Canton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1995, Ser. No. 491,662

Int. Cl.[6] B23P *17/00*

U.S. Cl. 29—559 **1 Claim**



1. A method for fixturing a pair of sheet metal blanks so as to be welded together at comparable length abutted straight edges thereof, with adjacent ends of said straight edges forming blank reference corners, comprising the steps of,

providing a generally planar fixture foundation,

providing a pair of locating corners on said foundation, each locating corner matching a respective blank reference corner and including a pair of pivotable stops having planar surfaces that define a ledge establishing the desired weld line at which said straight edges are to be abutted, said stops being pivotable from above to below said blanks,

placing a first one of said blanks on said foundation near its respective locating corner when said locating stops are pivoted up,

applying a force to said first blank sufficient to force it diagonally into its respective locating corner and into abutment with said upwardly pivoted locating stops,

clamping said first blank to said fixture foundation in its respective locating corner,

pivoting said locating stops down,

placing a second one of said blanks near its respective locating corner,

applying a force to said second blank sufficient to force it diagonally into its respective locating corner and into abutment with the prior clamped straight edge of said first blank, and,

clamping said second blank to said fixture foundation in its respective locating corner, thereby holding said blanks solidly in a proper orientation for welding.

5,630,270

CIRCUIT BOARD IDENTIFICATION METHOD

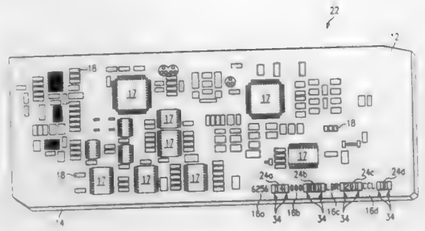
Donna F. O'Malley, Raleigh, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Division of Ser. No. 205,196, Mar. 3, 1994. This application Jun. 7, 1995, Ser. No. 485,681

Int. Cl.[6] H05K *3/30*

U.S. Cl. 29—832 **15 Claims**

1. A method of assembling a circuit board comprising at least one operational characteristic and a surface, comprising the steps of:



affixing an alphanumeric identifier to an identification component, wherein the identification component has a measurable electrical characteristic;

affixing the identification component to the surface, wherein the alphanumeric identifier identifies the at least one operational characteristic; and

wherein said step of affixing the identification component to the comprises

placing the identification component adjacent a solder paste attached to the surface; and

heating the solder paste after said placing step.

5,630,271

METHOD OF FORMING A WIRING PATTERN FOR AN ELECTRONIC CIRCUIT ON A GENERAL-PURPOSE CIRCUIT BOARD

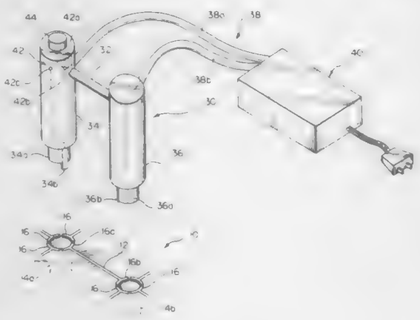
Kei Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,994

Claims priority, application Japan, Sep. 29, 1994, 6-234647

Int. Cl.[6] H05K *3/02*

U.S. Cl. 29—846 **1 Claim**



1. A method of forming a wiring pattern for an electronic circuit on a general-purpose circuit board, comprising the steps of:

(a) providing a general-purpose circuit board and a burning jig, said circuit board comprising a plate made of an insulating material, a plurality of parallel conductive lines extending on said plate in a vertical and a horizontal direction, and through holes formed in said plate at all junctions of said plurality of conductive lines and each being surrounded by a four conductive portions which are respectively connected to four of said plurality of conductive lines adjoining the through hole in the horizontal and vertical directions and are insulated from each other, said burning jig comprising a flat plate and a plurality of burning pins studded on said flat plate and respectively corresponding in position to all of said through holes, said burning pins each comprising four metal pieces insulated from each other and respectively corresponding to said four conductive portions;

(b) inserting all of said burning pins into corresponding ones of said through holes; and

feeding a current to between facing ones of said metal pieces of two of said burning pins which correspond to designated two nearby ones of said through holes to thereby burn off one of said conductive lines connecting the facing conductive portions of said two nearby through holes.

5,630,272

METHOD OF FORMING CONTACTS THROUGH BORES IN MULTI-LAYER CIRCUIT BOARDS

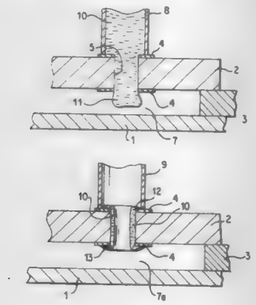
Stephan Wenke, Springe, Germany, assignor to LPKF CAD/CAM Systeme GmbH, Garbsen, Germany

Filed Nov. 2, 1995, Ser. No. 551,950

Claims priority, application Germany, Nov. 2, 1994, 44 39 [illegible]

Int. Cl.[6] H01K *3/10*

U.S. Cl. 29—852 **5 Claims**



1. A method for creating through-connections in holes through multi-layer printed circuit boards comprising the steps of:

placing a circuit board having through holes which are to be provided with a through-connection on a supporting frame which leaves free areas beneath the holes;

placing a cartridge needle of a dispensing device against the printed circuit board over each hole that is to be provided with a through connection, dispensing a solderable conductive paste through the cartridge needle into each hole such that a protruding, outwardly spreading plug of conductive paste is formed at the back of the hole, and thereafter removing the cartridge needle; and

placing a vacuum probe of the dispensing means against the printed circuit board in the area of each hole into which conductive paste has been dispensed and partially sucking out the conductive paste such that contact overlaps of conductive paste are formed on both sides of the printed circuit board adjacent the holes and a continuous layer of conductive paste remains on inside walls of the holes leaving the holes with a defined minimum hole diameter.

5,630,273

HOLDING JIG AND METHOD FOR TEMPORARILY RETAINING LAST-IN TERMINALS

Takashi Kobayashi, and Masayoshi Imoto, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

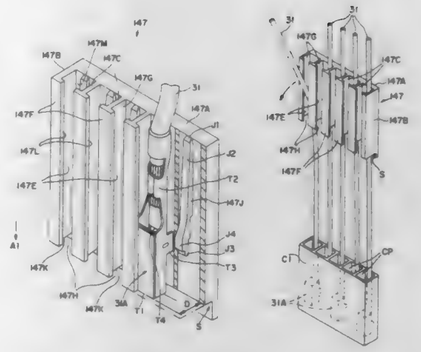
Filed May 30, 1995, Ser. No. 453,917

Claims priority, application Japan, Aug. 24, 1994, 6-199664

Int. Cl.[6] H01R *43/20*

U.S. Cl. 29—881 **17 Claims**

1. A holding jig for temporarily retaining a plurality of last-in terminals, said terminals being electrically connected to a plurality of corresponding cables, said terminals and said cables constituting a wire harness,



said jig comprising a plurality of longitudinal receiving chambers, parallel to and adjacent one another, each of said chambers having a terminal entry at an upper end and a terminal exit at a lower end, said terminal exit being at least as large as a cross section of said terminal to permit the ejection of said terminals through said terminal exit by pressure applied thereon in a downstream direction from said upper end toward said lower end, the distance between said upper end and said lower end of each of said chambers being longer than the length of said terminals in said downstream direction to thereby enclose one of said terminals therein.

5,630,274

METHOD OF MAKING AN INK JET RECORDING HEAD

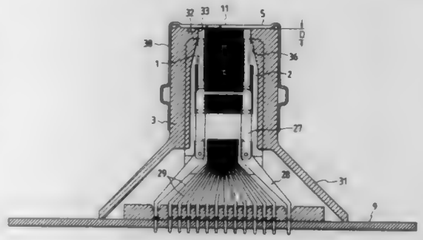
Hisashi Miyazawa; Takashi Nakamura; Osamu Nakamura; Shinji Yasukawa; Minoru Usui; Tomoaki Abe; Satoru Hosono, and Takahiro Naka, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 997,571, Dec. 28, 1992. This application Jun. 6, 1995, Ser. No. 471,230

Claims priority, application Japan, Dec. 26, 1991, 3-345343; Feb. 7, 1992, 4-22833; Feb. 12, 1992, 4-25126; Mar. 3, 1992, 4-45195; Apr. 6, 1992, 4-84003; Apr. 22, 1992, 4-103059; Apr. 22, 1992, 4-103060

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—890.1 **17 Claims**



1. A process for forming an ink jet recording head wherein the movement of a piezoelectric element moves part of an ink flow passage substrate so as to jet out ink stored therein, said process comprising the steps of:

attaching a plate shaped piezoelectric element to a fixing plate;

cutting said piezoelectric element into a plurality of piezoelectric vibrators;

mounting an ink flow passage substrate on a holding device;

inserting said piezoelectric vibrators, mounted on said fixing plate, into said holding device so as to allow said piezoelectric vibrators and said ink flow passage substrate to be brought into contact therebetween;

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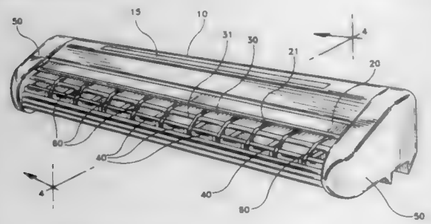
engaging a vibrator positioning member with said ink flow passage substrate and said holding device so as to regulate the relative position thereof.

5,630,275

MULTI-BLADE RAZOR HEAD WITH IMPROVED PERFORMANCE

Fred C. Wexler, Madison, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 294,463, Aug. 23, 1994, Pat. No. 5,456,009. This application Sep. 1, 1995, Ser. No. 522,901
Int. Cl.[6] B26B *21/60;21/02*
U.S. Cl. 30—50 18 Claims



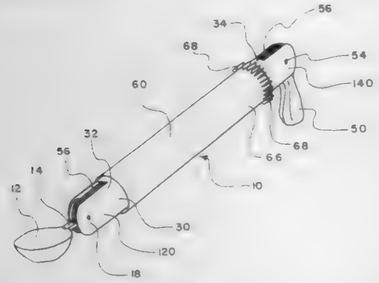
1. A razor head comprising:
means for supporting a plurality of blades;
a first blade comprising a first cutting edge and a second blade comprising a second cutting edge;
wherein said first blade is constructed from a first material and said second blade is constructed from a second material, and wherein said first material and said second material are different from each other.

5,630,276

EATING UTENSIL

Alex H. Weinstein, 4403 W. Grace St., Richmond, Va. 23230

Filed Aug. 16, 1994, Ser. No. 281,117
Int. Cl.[6] A47J *43/28*
U.S. Cl. 30—324 17 Claims



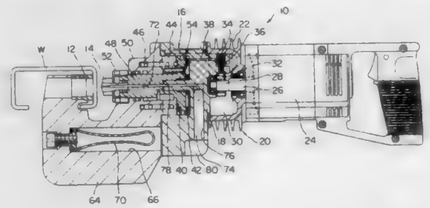
1. An eating utensil comprising:
an elongate main body having a longitudinal axis and proximal and distal ends;
a handle having proximal and distal ends which substantially surrounds said main body and is free to move with respect to said main body;
a working portion which is connected to the proximal end of said main body and is free to rotate with respect to said main body;
a weighted portion which is connected to the distal end of said main body and is free to rotate with respect to said main body; and
a mechanical link which is disposed parallel to the longitudinal axis of said main body and which is connected to both the working portion and the weight portion;
whereby said working portion is held relatively level regardless of the angular orientation of said handle.

5,630,277

PORTABLE, POWER DRIVEN PUNCHING MACHINE HAVING AN AIMING BEAM

Kiyoshi Kimura, Fujisawa, Japan, assignor to Kabushiki Kaisha Ogura, Japan

Filed Jul. 5, 1995, Ser. No. 498,360
Claims priority, application Japan, Aug. 18, 1994, 6-194212
Int. Cl.[6] B26D *5/12;* B26F *1/36*
U.S. Cl. 30—362 9 Claims



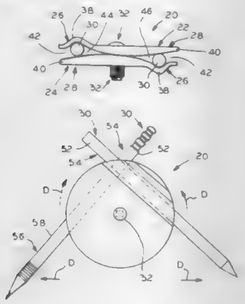
1. A punching machine for cutting holes in a work, comprising:
(a) a die;
(b) a punch having an axis;
(c) drive means for moving the punch along the axis thereof toward and away from the die so as to be capable of cutting a hole in a work held between the die and the punch;
wherein the drive means comprises:
a pump for supplying a fluid under pressure to the fluid actuated cylinder; and
a fluid actuated cylinder having a piston coupled to the punch wherein the fluid actuated cylinder has a fluid chamber and a spring chamber on opposite sides of the piston, the fluid chamber, being in fluid communication with the pump, for receiving the pressurized fluid therefrom in order to cause the punch to move toward the die, the spring chamber accommodating a return spring for causing the punch to move away from the die;
(d) a light passageway extending through the axis of the punch and opening toward the die;
(e) a light source for projecting an aiming beam from the light passageway in the punch toward the die so as to be capable of aiding in the creation of a hole in a required position on the work; and
(f) a return valve assembly comprising:
a return valve comprising a valve stem slidably extending through a hole formed in the piston, and a valve head formed on one end of the valve stem and disposed in the fluid chamber, the valve head being movable with the stem into and out of fluid tight contact with the piston;
a fluid passageway formed in the valve stem capable of permitting fluid flow from the fluid chamber into the spring chamber when the valve head is out of contact with the piston, the fluid passageway being open to the spring chamber at another end of the valve stem;
a spring for biasing the valve head out of contact with the piston; and
the valve stem butting endwise against an end wall of the spring chamber upon full admission of the pressurized fluid into the fluid chamber, with the consequent movement of the valve head out of contact with the piston, so that the valve head is unseated from the piston both by a force of the biasing spring and by a reaction of the pressurized fluid flowing out the fluid passageway against the end wall of the spring chamber, thereby permitting the punch to travel away from the die under the force of the return spring.

5,630,278

CIRCLE COMPASS

Bruce Stoneberg, LaGrange, Ill., assignor to Safe-T Products, Inc., LaGrange, Ill.

Filed Mar. 28, 1995, Ser. No. 412,049
Int. Cl.[6] B43L *9/20*
U.S. Cl. 33—27.02 12 Claims



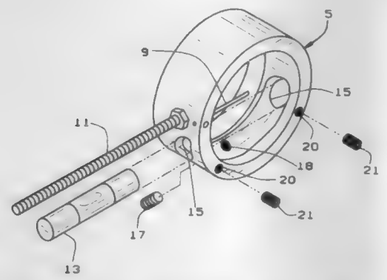
1. A device for forming circles on a surface comprising:
a first member and a rotatably attached second member,
said first member and said second member each having a first peripheral section and a second peripheral section with one of said peripheral sections being arcuate and one of said peripheral sections being tapered,
said first peripheral section of said first member being generally opposite said second peripheral section of said second member, and said first peripheral section of said second member being generally opposite said second peripheral section of said first member;
marking means removably secured between said opposing sections of said first and second members; and
means for securing said first member to said second member in a pre-selected position.

5,630,279

BOW SIGHT HAVING AN ADJUSTABLE LEVEL

Scott O. Slates, St. Charles, Mo., assignor to Toxonics Manufacturing, Inc., Wentzville, Mo.

Filed Jun. 26, 1995, Ser. No. 494,945
Int. Cl.[6] F41G *1/467*
U.S. Cl. 33—265 3 Claims



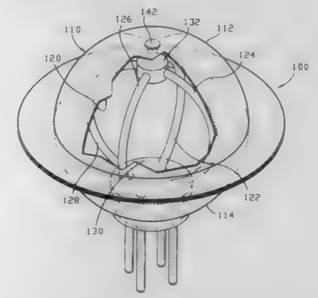
1. A sight for a bow, the sight including a frame, sighting means, including a horizontal member, secured in the frame, and a level secured in the frame to be generally parallel to the horizontal sighting member, said level securing in the bottom portion of said frame, said frame having an axially outer surface and a front surface, said axially outer surface defining a pair of openings through which said level is journaled, said openings being co-axially aligned to be generally parallel to, and off-set from, said horizontal sighting member, said openings having a diameter larger than a diameter of said level, said level being adjustable in said openings such that said level can be squared to said bow independent of the position of the sight, said level being secured in a desired position relative to said frame by a pair of outer screws and a center screw, said frame including first screw holes which extend through said front surface to said openings, said outer screws threadedly engaging within said first screw holes and bearing against said level to secure said level in a desired adjusted position, said outer screws being independently adjustable in said first screw holes to adjust the position of said level relative to said sight frame, said center screw extending through said frame radially of its outer surface, said center screw being located in approximate the bottom portion of said frame and provided for further tightening of said level into its adjusted position after said outer screws have tightened said level into the adjusted position.

5,630,280

DUAL AXIS ELECTROLYTIC TILT SENSOR

Wallace R. Crossan, Jr., Huntingdon Valley, Pa., assignor to The Fredericks Company, Huntingdon Valley, Pa.

Filed May 1, 1995, Ser. No. 432,102
Int. Cl.[6] G01C *9/06*
U.S. Cl. 33—366 20 Claims



1. A tilt sensor which comprises:
a) a spherical containment vessel for sealingly containing an electrolytic solution and having an inner surface defining a common electrode; and
b) a plurality of electrodes each including an arcuate contact portion housed within the containment vessel and a lead portion depending from the containment vessel and extending to the exterior of the containment vessel for allowing interfacing with an external electrical circuit, the arcuate contact portion of each electrode having a radius of curvature that is less than the radius of the inner surface of the spherical containment vessel.

5,630,281

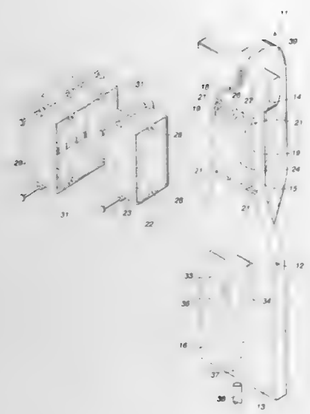
TEMPLATE FOR ELECTRICAL SERVICE BOX

G. Dale Pledger, 163 Albert Ave., N.W., Rome, Ga. 30165, and John L. Morris, 736 Compton Rd., Silver Creek, Ga. 30173

Filed Jul. 17, 1995, Ser. No. 503,447
Int. Cl.[6] B25B *11/00;* B23Q *3/00*
U.S. Cl. 33—528 16 Claims

1. A jig for use by a carpenter or electrician during construction of a building to position electrical utility boxes against appropriate studs of a framed-in wall of the type that is formed with a sole plate resting on a floor of a building and vertical studs extending upwardly from the sole plate, said jig positioning each of the electrical boxes against its respective stud at a first predetermined distance from the floor of the building and with a forward rim of the utility boxes protruding a second predetermined distance from

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he side of the stud to accommodate a thickness of a wall covering o be applied to the studs, said jig comprising:

a body having a bottom end portion, a top end portion, and a middle section intermediate said top end and said bottom end portions, said body having a predetermined thickness, a front face, and a rear face;

a recess formed in said front face of said body in the middle section thereof with said recess extending into said body a distance substantially equal to said second predetermined distance, said recess being sized and shaped to receive the forward rim of an electrical utility box with the forward rim extending into the recess;

means on said body for releasably holding an electrical utility box firmly in place with its forward rim extending into said recess;

said bottom end portion of said body being formed to define a first bearing surface for resting on the floor of a building adjacent to a framed-in wall section in which an electrical utility box is to be installed, and a second bearing surface for bearing against the sole plate of the framed-in wall substantially at the location of a wall stud to which the electrical utility box is to be affixed, and a third bearing surface formed in the top end portion of said body for bearing against the wall stud to which an electrical utility box is to be installed at a position above the location of the electrical utility box;

wherein said intermediate section of said body is narrowed in the region of said recess to allow access to an electrical utility box for hammering the box in place on its stud;

whereby the jig can be loaded with an electrical utility box and placed on the floor adjacent a framed-in wall with the utility box positioned against a wall stud and with the first, second, and third bearing surfaces of the body resting firmly against the floor, sole plate, and stud respectively to securely and accurately position the electrical utility box against the stud whereupon the box can be fastened to the stud with nails.

5,630,282

GAGE, SYSTEM, AND METHOD FOR MEASURING CAN BLANK SLITTER KNIVES SPACING

Garvin T. West, Greer; Ronnie D. Lee, Union; Darnell Palmer, Magness; Sammy G. Middlebrooks; Joe E. Willis, both of Spartanburg, and Clifton S. Burnett, Inman, all of S.C., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Jun. 28, 1995, Ser. No. 496,077

Int. Cl.[6] B27G *23/00*

U.S. Cl. 33—635 **20 Claims**

1. A positioning device for conveniently and accurately positioning a first deformation edge of a first material deformation tool a predetermined distance from a second deformation edge of a second material deformation tool, comprising:

a support structure;

securing means, attached to said support structure, for securing the positioning device adjacent to the first material deformation tool;

a member movably mounted to said support structure;

said member, said support structure, and said securing means being configured and arranged such that when said securing means secures said support structure to the first material deformation tool, said member is in contact with the second material deformation tool; and

measurement means mounted to said support structure for measuring the difference between where said member is positioned and where said member would be positioned when the positioning device is secured to the first deformation tool, said member is in contact with the second deformation tool, and the deformation edges are located a predetermined distance apart from each other.

5,630,283

LINEAR OR ANGULAR ENCODER

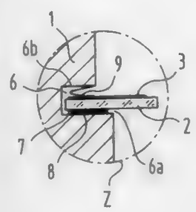
Günther Nelle, Bergen, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Apr. 3, 1995, Ser. No. 415,955

Claims priority, application European Pat. Off., May 6, 1994, 94107103

Int. Cl.[6] G01B *11/04*

U.S. Cl. 33—702 **7 Claims**



1. An encoder, comprising:

a measuring standard having a grating;

a scanner for scanning the grating;

a measuring standard carrier having a groove for receiving said measuring standard, said groove having two opposite surfaces between which said measuring standard is received;

a relatively thin glue layer provided between one of the two opposite surfaces of said groove and said measuring standard; and

at least one spring element provided between another of the two opposite surfaces of said groove and said measuring standard for retaining said measuring standard in said groove with a possibility of thermal elongation of said measuring standard in a measuring direction substantially independent of said carrier,

wherein said at least one spring element comprises a continuous section of a spring steel sheet.

5,630,284

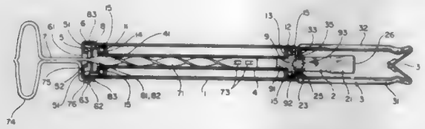
APPARATUS FOR USE IN WASHING PAINT BRUSHES

Chin-Chen Huang, No. 12, 41th Road, Taichung Industrial Park, Taichung City, Taiwan

Filed Sep. 8, 1995, Ser. No. 525,151

Int. Cl.[6] F26B *17/30*

U.S. Cl. 34—58 **3 Claims**



1. An apparatus for use in working paint brushes comprising:

a) a cylindrical casing;

b) an inner tube rotatably mounted within the cylindrical casing so as to rotate with respect to the cylindrical casing;

c) a driving rod having a spiral portion extending into the inner tube and a handle portion located exteriorly of the cylindrical casing;

d) a transmission plate connected with the inner tube and engaging the spiral portion of the driving rod such that axial movement of the driving rod relative to the cylindrical casing causes rotation of the inner tube;

e) a cap on the cylindrical casing, the driving rod passing through the cap;

f) a projecting stop rod extending from the cap;

g) a stop arm extending from the driving rod, the stop arm having a recessed portion releasably engageable with the projecting stop rod so as to releasably prevent relative axial motion between the driving rod and the cylindrical casing;

h) an outer retainer connected to the inner tube so as to rotate therewith; and,

i) an inner retainer connected to the inner tube so as to rotate therewith.

5,630,285

METHODS FOR DRYING A PAPER WEB

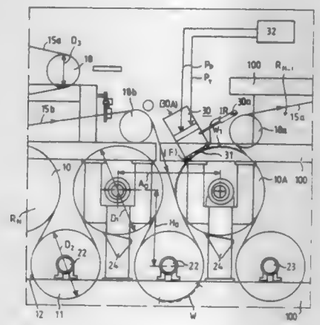
Reima Kerttula, and Jouko Yli-Kauppila, both of Muurame, Finland, assignors to Valmet Corporation, Helsinki, Finland

Division of Ser. No. 229,471, Apr. 18, 1994. This application Jan. 30, 1996, Ser. No. 593,609

Claims priority, application Finland, Nov. 30, 1993, 935340

Int. Cl.[6] F26B *3/00*

U.S. Cl. 34—446 **25 Claims**



1. Method for drying a paper web in a dryer section, comprising the steps of:

supporting the web on a drying wire in a run through the dryer section, a first face of the web being in direct contact with the drying wire,

guiding the drying wire to press a second face of the web opposite the first face of the web into contact with heated faces of contact-drying cylinders in the dryer section such that the web is dried through its second face,

removing the drying wire from contact with a first face of the web while the second face of the web is in direct contact with one of said contact-drying cylinders to expose the first face of the web on a sector of said one of said contact-drying cylinders, and

applying heat from a source other than said one of said contact-drying cylinders to the exposed first face of the web as the web runs over the sector of said one of said contact-drying cylinders such that the web is dried through its first face.

5,630,286

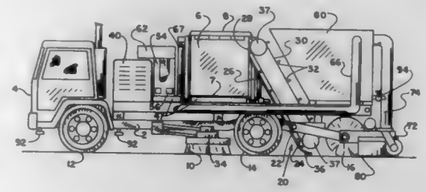
VEHICULAR APPARATUS FOR REMOVING DE-ICING LIQUID

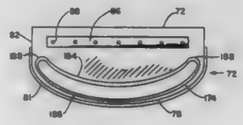
Glenn M. Vanderlinden, Vinemount, Canada, assignor to Zenon Airport Environmental, Inc., Burlington, Canada

Continuation-in-part of Ser. No. 155,132, Nov. 22, 1993. This application Oct. 31, 1994, Ser. No. 331,923

Int. Cl.[6] F01H *5/04*

U.S. Cl. 37—227 **15 Claims**





1. A vehicular apparatus adapted for removing fluids including snow and/or ice and de-icing or anti-icing liquids from a surface as said apparatus traverses said surface, the apparatus comprising:

(a) a first container for depositing a first portion of said fluids removed from a zone of said surface;

(b) means for collecting and means for transferring the first portion of said fluids from said zone to said first container;

(c) a second container capable of being maintained at less than atmospheric pressure for depositing residual fluids remaining on said zone of said surface after said first portion of fluids is removed;

(d) a head device connected by a conduit to said second container, the head device being open to said surface and having a forward wall located above said surface to permit entry of said residual fluids into said head device, the head device comprising:

(i) means for impinging water at a high pressure on said surface to loosen said residual fluids;

(ii) side walls connected to a rear wall having a concave curved shape, the side walls and rear wall connected forward of said concave curved shape, said rear wall provided with a wiper blade for contacting said surface for maintaining residual fluids and water in a region defined by said head device for removal to said second container;

(iii) a top wall connected to said side walls and said rear wall, the top wall having a concave-shaped opening therein adjacent said rear wall; and

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(iv) said conduit having a lower portion connected to said concave-shaped opening, the lower portion of said conduit defined by a concave-shaped forward wall and a concave-shaped rear wall, said concave-shaped forward wall and said concave-shaped rear wall having edges connected to form said conduit, said concave-shaped rear wall and said concave-shaped forward wall tapered inwardly from said concave-shaped opening to form a conduit having a generally concave shape in cross section at said opening to a substantially circular cross section at an upper portion; and

(e) air sweep means in fluid communication with said second container for drawing said loosened residual fluids and water in said head device through said conduit into said second container.

5,630,287

ELECTRIC STEAM IRON

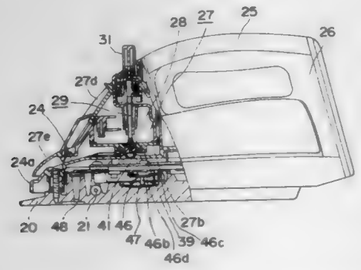
Kiichi Shimosaka, Moriguchi; Masao Shimizu, Nishinomiya; Atsushi Matsuo, Takarazuka; Naruaki Akai, Kawanishi; Shinichiro Kobayashi, Osaka, and Hiroshi Fujimoto, Takatsuki, all of Japan, assignors to Matsushita Electric Co., Ltd., Osaka, Japan

Filed Nov. 30, 1995, Ser. No. 565,054

Claims priority, application Japan, Nov. 30, 1994, 6-296582

Int. Cl.[6] D06F *75/18*

U.S. Cl. 38—77.3 **14 Claims**



1. An electric steam iron having a standard steam spray mode, in which a quantity of steam is sprayed, and an enhanced steam spray mode in which an increased quantity of steam is sprayed as compared with that afforded during the standard steam spray mode, said electric steam iron comprising:

a soleplate having a heater mounted thereon for heating the soleplate, said soleplate having a vaporizing chamber defined therein;

a handle disposed above the soleplate;

a water tank unit for supplying water to the vaporizing chamber;

a nozzle disposed at a bottom of the water tank unit;

a valving mechanism for selectively opening and closing the nozzle for controlling supply of water to the vaporizing chamber;

a pumping mechanism for supplying an increased quantity of water within the water tank unit towards the vaporizing chamber to accomplish the enhanced steam spray mode; and

a cover plate defining a water passage beneath the water tank unit and covering the pumping mechanism and an exit side of the nozzle, said cover plate having an opening defined therein in communication with the vaporizing chamber.

5,630,288

PROCESS FOR MANUFACTURING BIMETALLIC COINS OR MEDALS AND COINS OR MEDALS THUS OBTAINED

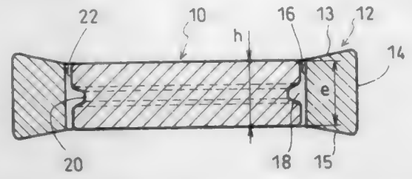
Michel Lasset, Paris, and Maurice Mano, Audenge, both of France, assignors to Administration des Monnaies et Medailles, Cedex, France

Filed Oct. 24, 1994, Ser. No. 327,875

Claims priority, application France, Feb. 4, 1994, 94 01279

Int. Cl.[6] A44C *21/00*

U.S. Cl. 40—27.5 **14 Claims**



1. A set of elements used for making a substantially flat bimetallic coin or medal comprising a metallic ring having an inner opening and a metallic insert for being disposed inside said opening and one of said rings and said inserts including a connection means for connecting said insert to said ring, wherein the ring has a substantially trapezoidal cross-sectional shape with a small base of a trapezoid thereby formed constituting an inner peripheral wall defining the inner opening of the ring and a large base of the trapezoid constituting an outer peripheral wall of the ring, the ring having upper and lower faces which are inclined outwardly toward said outer peripheral wall, the thickness of the ring varying substantially gradually and evenly from its outer peripheral wall to its inner peripheral wall.

5,630,289

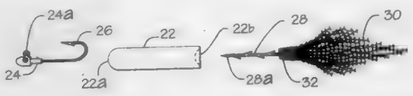
FISHING LURE AND KIT

Allen R. Dotson, 2020 Panorama Dr., Bull Head City, Ariz. 86442

Filed May 22, 1995, Ser. No. 446,241

Int. Cl.[6] A01K *85/00*

U.S. Cl. 43—42.09 **10 Claims**



1. A kit for forming one or more fishing lures from an assortment of components comprising:

at least one main pliable body member of somewhat cylindrical configuration and having a concavity at one end thereof;

at least one means including a fish hook for securing to and through the other end of said main pliable body member;

at least one pliable component configured to simulate a body portion of a fish forage creature;

a bi-directional barb member for insertion into the concavity of said main body member and said pliable component for interconnection thereof;

at least one elongate barbed shaft member having a barbed end and a flanged end adjacent said barbed end, said barbed shaft member being insertable into said concavity for interconnection thereof;

at least one flexible disc washer having a radial slit therethrough; and

at least one array of cilia-like projections having a center opening for attachment to said barbed shaft member with said disc washer attached adjacent said flange for retaining said cilia array thereon, said fishing lure being configuable by utilization of one of said body member, one of said means including a fish hook and one of said bi-directional barb member and said at least one barbed shaft member having a barbed end inserted into said cavity, whereupon with said bi-directional barb member, said pliable component is utilized and on selection of said at least one barbed shaft member having a barbed end, an array is used.

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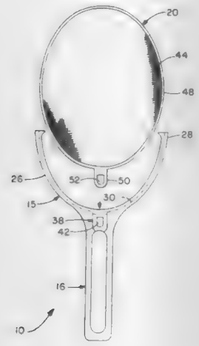
INSECT SWATTING AND COLLECTING APPARATUS

Bill R. Wade, and Thelma L. Wade, both of P.O. Box 157, N. 1025th St., Farmington, Wash. 99128

Filed Jun. 6, 1994, Ser. No. 254,251

Int. Cl.[6] A01M *3/04*

U.S. Cl. 43—136 **16 Claims**



1. An insect collection apparatus comprising:

a frame including a handle portion;

a means for mounting a collection means within said frame,

said means for mounting including a continuous slot formed in said frame for slidably accepting said collection means, said mounting means having the shape of a semi-circle having a semi-circumference, wherein a lower region of said frame joins an upper region of said frame at approximately a midpoint of said semi-circumference; and

said collection means extending from said handle portion,

said collection means having at least one flexible surface for capturing insects including an outside support means configured to be removably mounted with said frame, said at least one flexible surface including a means for adhering to an insect.

5,630,291

CANDELABRA FLOWER HOLDER

Shirley E. Fontana, 1404 Madison Ave., Metairie, La. 70001

Filed Dec. 5, 1995, Ser. No. 567,274

Int. Cl.[6] A01G *5/04*; **A47G** *7/02*

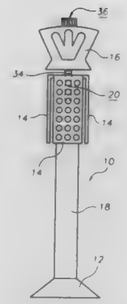
U.S. Cl. 47—41.01 **2 Claims**

1. A candelabra flower holder comprising:

a base member including a column extending outwardly therefrom having an internally threaded bore formed into a distal end thereof;

at least one J-shaped flower display member, having an attachment aperture formed through a central section thereof and a plurality of flower mounting holes formed through a longest vertical section thereof; and

a candle holder member including a threaded rod, extending from one end thereof, that is positionable sequentially through the attachment aperture of the at least one flower display member and then screwable into the threaded bore of the column, and a candle receiving aperture at an opposite end thereof.



5,630,292

SUPPORT APPARATUS

David D. Heinz, 2885 W. El Paso St., Fresno, Calif. 93727, and Frank A. Logoluso, 28281 Avenue 7 M, Madera, Calif. 93637

Filed Oct. 27, 1995, Ser. No. 549,247

Int. Cl.[6] A01G *17/06*; *17/14*

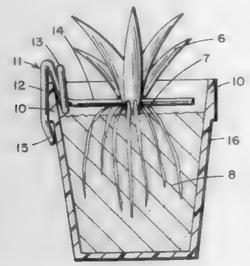
U.S. Cl. 47—46 **12 Claims**



1. A support apparatus comprising a first mounting element adapted to be mounted on a means of support; a second mounting element having means for receiving at least one work object thereon; and means for interconnecting said first mounting element and said second mounting element to support said receiving means of the second mounting element in a predetermined attitude relative to said means of support, in which said interconnecting means includes a slot provided in one of said first mounting element or second mounting element and a flange provided in the other of said first mounting dement or second mounting element, said slot and flange dimensioned to be interfitted to support the second mounting element in said predetermined attitude, and wherein said first mounting element has a pair of said slots which are aligned with each other to define a plane of reference substantially defining a first axis of orientation of said predetermined attitude, said slots terminate at corresponding terminal ends which are aligned substantially to define a second axis of orientation of said predetermined attitude, and the second mounting element mounts said flange which is dimensioned slidably to be received in said slots for retention in said predetermined attitude substantially defined by said first and second axes of reference.

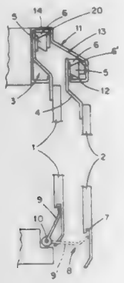
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5,630,293
RHIZOME CLIP FOR ORCHID PLANTS AND THE LIKE
John T. Hicks, Sr., 11410 Judge Ave., Orlando, Fla. 32817-4407
Filed Feb. 7, 1996, Ser. No. 598,121
Int. Cl.[6] A01G 9/04
U.S. Cl. 47—70 8 Claims



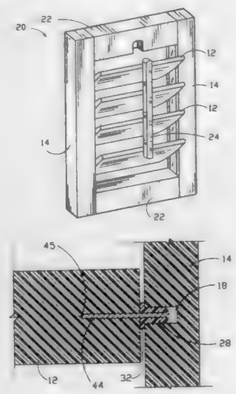
1. A clip device having a coiled section and an elongated stem portion adapted to support a rhizomatous orchid in the center of a pot having a predetermined diameter, said elongated stem having a length sufficient to extend over the center of said pre-determined diameter once said coiled section is attached to the rim of said pot and wherein the coiled section of the device has two adjacent semi-circular coils and a vertical rim clip at an outer end of said coiled section so that the device can be removably attached to the rim of the pot by placing the coiled section over the rim such that the rim of the pot fits between the coiled section and the vertical rim clip.

5,630,294
ARRANGEMENT OF SLIDING DOOR FOR CARGO VEHICLES
Eduardo Vicente Bruno, Alsina 474, (1642) San Isidro, Buenos Aires, Argentina, assignor to Eduardo Vicente Bruno, and Jorge Ricardo Lepretre, both of Buenos Aires, Argentina
Filed Mar. 4, 1994, Ser. No. 205,490
Claims priority, application Argentina, Mar. 5, 1993, 324431
Int. Cl.[6] E05D 15/10
U.S. Cl. 49—209 8 Claims



1. An arrangement of sliding side doors, for closing an opening in a side of a cargo transport vehicle, comprising:
a single rail provided along the side of the vehicle;
at least one door;
support means provided at an upper edge of said at least one door, said support means enabling said at least one door to be supported on and be guided by said single rail to slide relative to the side of the vehicle and relative to each other, said support means comprising a rotatable wheel and a fixed guide lug both non-pivotably mounted to the corresponding door and located during use inside said single rail; and
closing means supported at a lower portion of said side of the vehicle to engage a lower portion of each door in a respective closed position thereof.

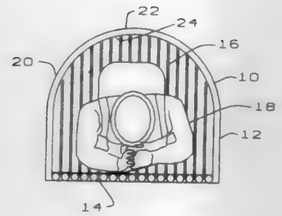
5,630,295
INTERFACE MECHANISM FOR INTERFACING A LOUVER TO A STILE OF A SHUTTER SYSTEM
David B. Neiman, Northridge, Calif., assignor to Danmer, Inc., Chatsworth, Calif.
Filed Jan. 25, 1996, Ser. No. 591,740
Int. Cl.[6] E06B 7/08
U.S. Cl. 49—403 9 Claims



1. A mechanism used in conjunction with a shutter system having at least one louver and at least one stile with an aperture, the mechanism comprising:
a. a hollow bushing having a circular base, a circumferential sidewall and a multiplicity of equally spaced apart flanges located on the circumferential sidewall, the circumferential sidewall integrally formed with and upwardly extending from the circular base;
b. an elongated pin having a distal portion with a distal head end, a proximal portion with a proximal sharp tip end, and a section of grippers located on the distal portion and adjacent to the distal head end, where the distal portion is positioned inside said hollow bushing and covered by said circumferential sidewall; and
c. said proximal sharp tip end of said pin driven into said at least one louver such that said proximal portion is embedded therein, said circumferential sidewall of said hollow bushing being press fitted within said aperture in said stile such that said multiplicity of flanges of said hollow bushing prevent said bushing from rotating within said aperture so that said distal portion of said pin rides rotatably inside said bushing, where said circular base of said hollow bushing is located between said at least one louver and said at least one stile, thereby providing space for said at least one louver to rotate in a vertical direction and said section of grippers of said pin deter said at least one louver from drooping.

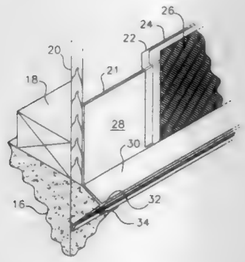
5,630,296
INFLATABLE EMERGENCY SHELTER
Robert T. Kendall, Jr., 1381 Rounds Ave., Grants Pass, Oreg. 97527
Filed Aug. 25, 1994, Ser. No. 295,393
Int. Cl.[6] E04H 15/40; E04B 1/34
U.S. Cl. 52—2.11 15 Claims

1. A temporary emergency structure comprising:



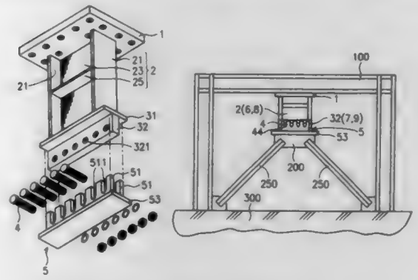
an inflatable framework formed from a plurality of contiguous inflatable tubes connected together and forming at least a partial floor, said inflatable tubes formed of ultra-high temperature resistant fabric,
a cover of ultra-high temperature resistant cloth supported by said framework and expandable during inflation of said framework to define an area of protection about an article to be protected, and
means actuable to inflate said framework.

5,630,297
UNIVERSAL WEEP SCREED
Barry Rutherford, Chatsworth, Calif., assignor to Flannery, Inc., San Fernando, Calif.
Filed Oct. 24, 1995, Ser. No. 547,245
Int. Cl.[6] E04B 1/62
U.S. Cl. 52—58 12 Claims



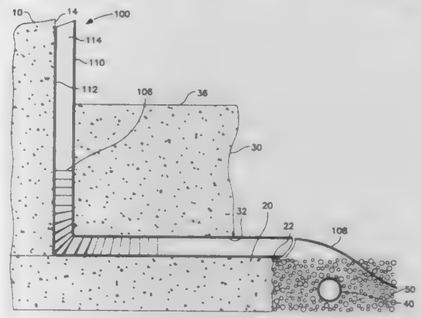
11. A weep screed installed onto a structure, the weep screed comprising:
a flat vertical member that is attached along one surface to an outside surface of a structural member of the structure that is disposed on a foundation;
an outwardly projecting member extending downwardly from an end of the vertical member, at an end of the structural member;
an inwardly projecting member extending downwardly from an end of the outwardly projecting member opposite the vertical member and toward a surface of the foundation;
one or more grooves along the length of the inwardly projecting member to facilitate bending or breaking a terminal portion of inwardly projecting member to provide a snug friction fit against an adjacent surface of the foundation;
wherein the structural member is disposed on the foundation so that the outside surface of the structural member is not collinear with the surface of the foundation.

5,630,298
SHEAR LINK ENERGY ABSORBER
Keh-Chyuan Tsai, Taipei, and Ray-Jeng Wang, Chiai, both of Taiwan, assignors to National Science Council, Taipei, Taiwan
Filed Sep. 5, 1995, Ser. No. 523,549
Int. Cl.[6] E04H 9/02
U.S. Cl. 52—167.3 7 Claims



1. A shear link energy absorber comprising:
a beam having an I-shaped cross-section comprising a pair of flange plates and a web plate extending between said flange plates;
a fixture having a bottom plate and two parallel and spaced apart side plates connected to said bottom plate;
a base plate connected to a first end of said beam;
at least one connecting plate connected to a second end of said beam opposite said first end thereof; and
a plurality of bolts bolting said connecting plate and said fixture together.

5,630,299
APPARATUS FOR CONTROLLING WATER SEEPAGE AT A STRUCTURAL INTERFACE
Robert Jackman, 12920 W. Francis Rd., Mokena, Ill. 60448; John Dvorscek, Oak Lawn, and Alan Stratton, Richton Park, both of Ill., assignors to Robert Jackman, Mokena, Ill.
Filed Aug. 29, 1995, Ser. No. 520,552
Int. Cl.[6] E04B 1/70; E04F 17/00
U.S. Cl. 52—169.5 13 Claims



1. Apparatus to prevent water seepage on a floor at a junction of a wall and the floor partially supported by a footing for the wall, and to avoid buckling of the floor as a result of expansion, the apparatus comprising a unitary pliable panel intended to be interposed between the floor and the wall and footing, said panel having a first layer, a second layer, and a series of ribs interposed between the layers to form drain channels from a top to a bottom of the panel to define a water flow path, said panel further comprising a series of slits transverse to the series of ribs and extending through

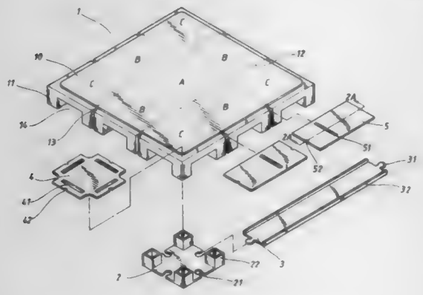
VOL 1198 ISS 3 MY 20 1997 UMI

the second layer and at least partially through the series of ribs to render the panel foldable to conform to the surface of the wall and the footing.

5,630,300
LOW RAISED ACCESS FLOOR STRUCTURE FOR OFFICE AUTOMATION

Yao-Chung Chen, 7F, No. 214, Sec. 3, Ta-Tung Rd., Hsi-Chieh Chen, Taipei Hsien, Taiwan

Filed Jan. 29, 1996, Ser. No. 593,356
Int. Cl.[6] E04C *2/52*
U.S. Cl. 52—220.5 **12 Claims**



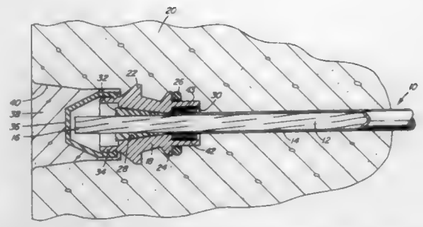
1. A low raised access floor structure comprising:
low raised access floor member;
a square joining element;
a first cover positioned above said square joining element;
an elongated cable channel; and
a second cover positioned above said elongated cable channel, wherein,
said low raised access floor member comprises a plurality of units connected by a plurality of film-like thin walls to form a square, said square having a flat top surface and a plurality of grooves formed on periphery thereof at a position where said units are connected
said square joining element includes a plurality of coupling slots formed on a periphery thereof and a plurality of hollow columns extending therefrom, at least one of said columns being disposed on a corner of said square joining element accommodating posts located on said low raised access floor member, and
said elongated cable channel has raised flanges on opposite side edges and a tongue on each end, said tongue engaging said coupling slots of said square joining element.

5,630,301
ANCHORAGE ASSEMBLY AND METHOD FOR POST-TENSIONING IN PRE-STRESSED CONCRETE STRUCTURES

Lyle D. Sieg, Delta, Canada, assignor to Harris P/T, A Division of Harris Steel Limited, Stoney Creek, Canada

Filed May 25, 1995, Ser. No. 450,024
Int. Cl.[6] E04C *5/08*
U.S. Cl. 52—223.13 **7 Claims**

1. A pre-stressed concrete tendon anchorage assembly, comprising:
an anchor;
said anchor having a bore extending through said anchor;
said bore having a first bore portion and a second bore portion and said first bore portion converging towards said second bore portion;
a tendon extending through said bore, said tendon having a sheath and an end portion from which said sheath is removed;

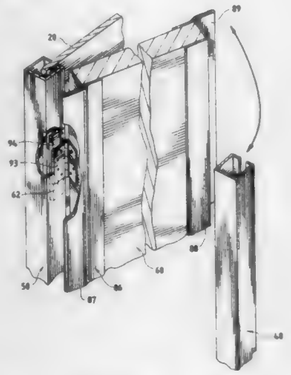


said second bore portion having a bore surface spaced from said sheath;
an annular seal of resilient material;
said annular seal having an annular inner surface and being located in said second bore portion between said sheath and said bore surface of said second bore portion;
an adhesive bonding said annular seal to said anchor;
said annular seal having a wedge-shaped cross-section, when in an uncompressed state, and being compressed by a wedging action by said tendon into sealing engagement with said sheath and said anchor so as to seal said sheath to said anchor; and
wedges located in said first bore portion at a spacing from said annular seal and in wedged engagement with said end portion of said tendon to retain said tendon relative to said anchor.

5,630,302
FITTING ROOM

Phillip Rosenband, Hammond, Ind., assignor to Morgan Marshall Industries, Inc., Chicago Heights, Ill.

Filed Feb. 2, 1996, Ser. No. 594,674
Int. Cl.[6] E04H *1/12*
U.S. Cl. 52—239 **5 Claims**

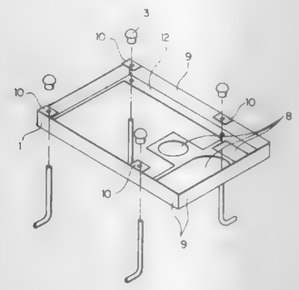


1. A fitting room comprising a first side panel defining a first side, a second side panel defining a second side, and a front panel, said first and second side panels and said front panel defining an interior space, said front panel including a pair of spaced vertical studs and a door hinged at one side to one of said studs for swinging movement on a vertical hinge axis between a closed position and open positions, said door including a first vertically extending lateral extension at one vertical side edge and overlapping a front surface portion of said first stud when said door is in a closed position to prevent viewing of the interior space of said fitting room, said door including a second vertically extending lateral extension at the other vertical side edge and overlapping a rear surface portion of said second stud when said door is in a closed position to prevent viewing of the interior space of the fitting room, each of said extensions comprising metallic frame members mounted on respective vertical side edges of said door for overlapping said studs.

5,630,303
REMOTE ENCLOSURE ANCHOR FRAME AND INSTALLATION METHOD

William R. Devenish, III, Beaverton, Oreg., assignor to NEC America, Inc., Melville, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,430
Int. Cl.[6] E02D *27/32*
U.S. Cl. 52—295 **13 Claims**

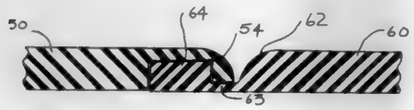


1. An anchor frame for mounting a remote electronic equipment enclosure to a concrete pad, comprising:
a unibody metal plate to be set in said concrete pad, having anchor holes and wire holes, said anchor holes located to correspond to holes in said enclosure; and
a plurality of anchor bolts which pass through said anchor holes to secure said remote electronic equipment enclosure to said concrete pad;
wherein said plate comprises edges folded to extend away from said plate and thereby stabilize said plate in said concrete, at least some of said edges including tabs having additional anchor holes and extending parallel to said plate so that said additional anchor holes align with anchor holes in said plate to receive and stabilize said anchor bolts.

5,630,304
ADJUSTABLE INTERLOCK FLOOR TILE

John Austin, 899 El Centro, South Pasadena, Calif. 91030

Continuation of Ser. No. 579,233, Dec. 28, 1995. This application Aug. 26, 1996, Ser. No. 703,366
Int. Cl.[6] E04F *13/08*
U.S. Cl. 52—384 **3 Claims**

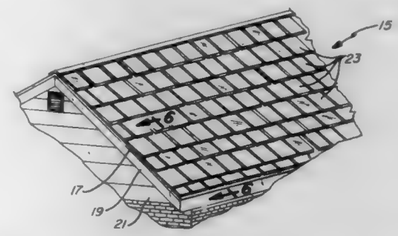


1. An interlocking tile for forming a walking surface, having an adjustable interlock, comprising:
a. a top surface with four sides and a bottom surface;
b. each of said sides having a downwardly sloping edge, inclining outwardly from said top surface to said bottom surface;
c. at least one of said sides having an intergral strip which extends outwardly from said side, said strip supporting a plurality of male connecting members and constructed to be severable at any point from said downwardly sloping edge; and,
d. at least one of said sides having a plurality of cavities, which are located adjacent to said side and facing downward from said top surface, said cavities being positioned to mate with any male connecting member of any other like tile.

5,630,305
SURFACE COVERING UNIT METHODS OF USE AND MANUFACTURE

Richard S. Hlasnicek, 197 Skytrail Rd., Boulder, Colo. 80302

Continuation of Ser. No. 953,544, Sep. 29, 1992, abandoned, which is a division of Ser. No. 749,983, Aug. 26, 1991, abandoned. This application May 19, 1995, Ser. No. 445,166
Int. Cl.[6] E04D *1/00*
U.S. Cl. 52—518 **16 Claims**

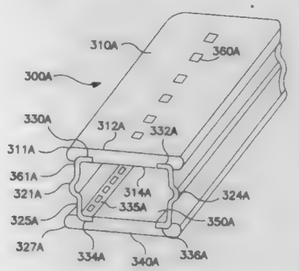


1. A method of manufacturing roof covering units used as substitutes for wooden shingles, said method comprising the steps of:
creating a casting of an exposed surface of a single one of the wooden shingles;
formulating a plastic material;
heating said plastic material to process said plastic material; and
utilizing said casting to make a structure and mounting said structure in a machine for receiving said heated plastic material for configuring said roof covering units while said plastic material is still heated so that each individual one of said units has a size, overall shape and first exposed surface configuration substantially similar to said single one of the wooden shingles, said structure including a portion made so that a second substantially planar surface is formed opposite said first surface configuration of each of said units.

5,630,306
INSULATING SPACER FOR CREATING A THERMALLY INSULATING BRIDGE

Douglas H. Wylie, Waterdown, Canada, assignor to Bay Mills Limited, Weston, Canada

Filed Jan. 22, 1996, Ser. No. 589,633
Int. Cl.[6] E04C *2/54*
U.S. Cl. 52—786.13 **26 Claims**



1. An insulating spacer for creating a thermally insulating bridge between spaced apart panes of a multiple pane unit, the insulating spacer comprising:
a top bridge member for contacting spaced apart panes of the multiple pane unit, the top bridge member being made of one of a synthetic resin material and a composite synthetic resin material and having an upper surface and a lower surface substantially parallel to the upper surface;

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a metallic first leg member and a metallic second leg member, the first leg member and the second leg member having extensions on one end thereof, the extensions being perforated, and the perforated extensions being secured to the lower surface of the top bridge member;

a bottom bridge member substantially parallel to the top bridge member and which cooperates with each of the first and second leg members; and

a channel portion defined by a configuration of the top bridge member, the first and second leg members and the bottom bridge member.

5,630,307

METHOD AND A QUICK-OPENING WRAPPING FOR OBJECTS

Georges Cathala, Bernay, France, assignor to Generale de Grandes Sources, Paris, France

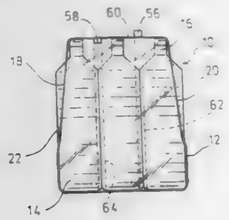
PCT No. PCT/FR93/00799, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/03375, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 10, 1993, Ser. No. 382,037

Claims priority, application France, Aug. 10, 1992, 92 09879

Int. Cl.[6] B65B *21/00*

U.S. Cl. 53—398 **13 Claims**



11. A method of making a quick-opening wrapping for packing objects, comprising the steps of:

preparing a composition by adding an embrittling agent to at least one extrudable plastics material, the concentration by weight of said embrittling agent being within the range of 15% to 25%;

monoextruding said composition by blow extrusion with a take-off ratio within the range of 1.5 to 30 and a blow-up ratio with in the range of 1.5 to 10, whereby the extruded film is tearable in the extrusion direction and in a direction orthogonal to the extrusion direction; and

surrounding at least in part said objects by a portion of said film, and providing tear initiator means in said portion of said film whereby it is possible to tear said wrapping in the direction that is predetermined by said initiator.

5,630,308

LASER SCORING OF PACKAGING SUBSTRATES

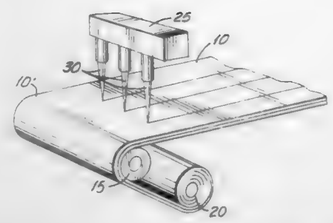
Anthony Guckenberger, Appleton, Wis., assignor to American National Can Company, Chicago, Ill.

Continuation of Ser. No. 963,084, Oct. 9, 1992, abandoned, which is a division of Ser. No. 720,121, Jul. 1, 1991, Pat. No. 5,158,499, which is a continuation of Ser. No. 550,738, Jul. 9, 1990, abandoned. This application Jul. 5, 1994, Ser. No. 270,782

Int. Cl.[6] B65B *61/18;43/04*

U.S. Cl. 53—412 **25 Claims**

15. A method of making an easy open pouch, comprising forming said pouch on a manufacturing machine with side-to-side weave, comprising forming a tube of polymeric material, said pouch having a horizontal and a vertical width, laser scoring a circumferential area of said tube at least at one end thereof so as to



provide at least two substantially parallel, substantially straight or linear laser scores, wherein said laser scores are continuous and wherein said laser scores are spaced from about 1/16 to 3/16 inches apart, said circumferential area corresponding to the horizontal width of the pouch to be formed by sealing one end of the tube, sealing one end of said tube to make an open pouch, and sealing the other end to make a closed pouch.

5,630,309

METHOD OF AND APPARATUS FOR SUPPLYING BLANKS TO PACKING MACHINES

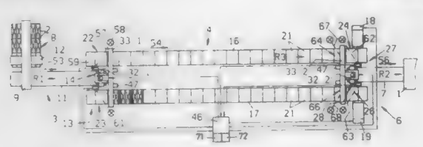
Otto Blidung; Lothar Wohlgemuth, both of Geesthacht, and Jens Deichmöller, Reinbek, all of Germany, assignors to Hauni Maschinenbau AG, Hamburg, Germany

Filed May 19, 1995, Ser. No. 445,137

Claims priority, application Germany, Jun. 3, 1994, 44 19 416.1

Int. Cl.[6] B65B *35/30*

U.S. Cl. 53—443 **24 Claims**



1. A method of supplying discrete commodities to a consuming machine, comprising the steps of delivering a series of successive commodities to a first station at a first frequency; advancing a series of successive commodities from a second station to the consuming machine at a second frequency which, is less than said first frequency during delivery of said commodities to said first station; transporting commodities from the first station to the second station along one of a plurality of elongated paths at a third frequency which at least closely approximates said second frequency so that the rate of transport of commodities along said one path is less than the rate of delivery of commodities to said first station to thus establish at the first station a surplus of commodities when the first frequency exceeds the second and third frequencies; continuously diverting the commodities which constitute the surplus from the first station; and introducing the diverted commodities into another of said plurality of elongated paths.

5,630,310

AUTOMATIC ICE BAGGER WITH SELF-CONTAINED SANITIZING SYSTEM

Thomas J. Chadwell, San Antonio, Tex., assignor to Packaged Ice, Inc.

Division of Ser. No. 145,434, Oct. 29, 1993, Pat. No. 5,458,851. This application Oct. 10, 1995, Ser. No. 541,407

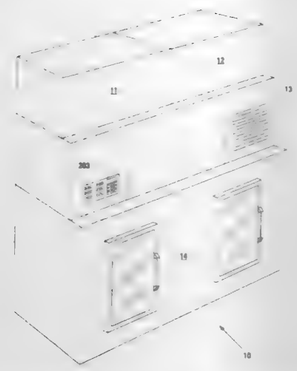
Int. Cl.[6] B65B *1/32;37/18;43/44*

U.S. Cl. 53—502 **4 Claims**

1. An apparatus for bagging ice, comprising:

a frame;

means for storing ice housed within said frame;



means for making ice mounted onto said frame and communicating with said means for storing ice;

means supported by said frame and communicating with said means for storing ice for transporting ice from said means for storing ice to means for discharging ice;

a bag supply mounted to said frame;

means mounted within said frame for grasping a bag from said bag supply and opening the grasped bag underneath said means for discharging ice;

a balance beam scale mounted underneath said frame for supporting the grasped bag during the delivery of ice into the bag, for registering when said means for transporting has delivered a desired amount of ice into the grasped bag from said means for storing ice, and for depositing the filled bag into means for storing ice filled bags, said balance beam, comprising:

a scale housing having an opening defined by its inner periphery, arm means connected to said scale housing,

drive means coupled to said arm means for manipulating said arm means to raise and lower said scale housing,

a counterweight beam positioned within said opening and pivotally connected to said scale housing near a first end,

a sensor mounted to said scale housing and to said counterweight beam, and

a pressure plate positioned over said opening and pivotally connected at a first end to said scale housing wherein, when ice fills the bag, a second end of said pressure plate presses against said first end of said counterweight beam to pivot a second end of said counterweight beam within said scale housing thereby tripping said sensor; and

means mounted within said frame for sealing the grasped bag after the bag has been filled with ice.

5,630,311

APPARATUS FOR FORMING LOTS OF PRODUCTS FOR THE PACKING THEREOF

Jean-Marie Flix, Saint Germain, France, assignor to Societe A.P.I., France

PCT No. PCT/FR94/01118, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO95/08475, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 26, 1994, Ser. No. 436,441

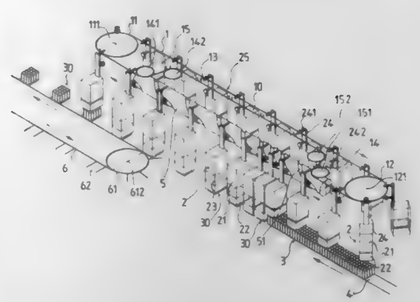
Claims priority, application France, Sep. 24, 1993, 93 11546; Dec. 17, 1993, 93 15407

Int. Cl.[6] B65B *35/30*

U.S. Cl. 53—543 **8 Claims**

1. An apparatus for forming, for their packing, lots of products fed by a conveyor and arranged in contiguous rows, said apparatus being characterized by comprising:

a plurality of carriages (**2**, **2**, etc.) each comprising a movable holding and separation means (**21**–**33**, etc.) for forming a lot (**30**) of products (**3**);



a transfer chain (**1**) stretched between first and second feed wheels (**11**, **12**) having respective vertical axes (**111**, **121**), said chain (**1**) being provided with uniformly spaced drive units (**13**) each intended for holding one of said carriages (**2**) to carry same downstream from said first wheel (**11**) to said second wheel (**12**);

said chain (**1**) extending along a path having first and second points of offset (**14**, **15**), with the first point of offset (**14**) being upstream of said second point of offset (**15**) and being located a short distance downstream of the second feed wheel (**12**);

said chain (**1**) including a strand (**10**) that runs downstream from said first point of offset (**14**) to said second point of offset (**15**), with said strand (**10**) being disposed so that said drive units (**13**) on said strand (**10**) are free of driving engagement with said carriages (**2**) while traveling downstream from said first point of offset to said second point of offset;

a variable pitch screw (**5**) having an axis which is generally parallel to a straight line extending between the first and second points of offset (**14**, **15**), said screw (**5**) having a length which is approximately equal to a distance by which said first and second points of offset (**14**, **15**) are separated from each other, said screw (**5**) having a variable pitch groove (**51**);

each of said carriages (**2**) having a roller (**242**) attached thereto and engageable in said groove (**51**) while said carriage (**2**) is free of driving engagement with said drive units (**13**) whereby rotation of said screw (**5**) is effective to move said carriages (**2**) downstream from said first point of offset (**14**) to said second point of offset (**15**).

5,630,312

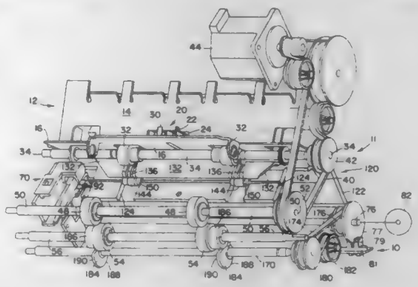
EJECTION MECHANISM FOR ENVELOPE INSERTING MACHINE

Michael D. Ballard, Sandy Hook, and Joseph H. Marzullo, Brookfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 28, 1995, Ser. No. 580,414

Int. Cl.[6] B65B *43/26;43/28;43/42*

U.S. Cl. 53—569 **10 Claims**



VOL 1198 ISS 3 MAY 20 1997 UMI

1. In an envelope inserting machine having means for feeding envelopes seriatim in one direction along a feed path to and through an inserting station, means for incrementally moving the envelopes in the reverse direction through the inserting station until they reach an insert receiving position, means disposed at said inserting station for opening the throats of the envelopes when the they are at the insert receiving position to permit insert material to be inserted into the envelopes by an inserting mechanism, and means for driving said throat opening means through successive cycles of operation in synchronism with the reverse direction incremental movement of the envelopes to the insert receiving position, an envelope ejecting mechanism for ejecting envelopes from the inserting machine, said envelope ejecting mechanism comprising:

A. means for ejecting the envelopes from the insert receiving position after the insert material has been inserted thereinto,

B. means connecting said envelope ejecting means to said means for driving said throat opening means and said means for incrementally moving said envelopes in said reverse direction, and

C. control means operatively interconnected between said envelope throat opening means and said envelope ejecting means for preventing said envelope ejecting means from ejecting an envelope until it is positioned at said insert receiving position and insert material has been inserted thereinto,

whereby said envelope ejecting means is driven in synchronism with the operation of said envelope throat opening means and the incremental reverse movement of the envelopes to the insert receiving position to prevent envelopes from being ejected prior to insert material being inserted thereinto.

5,630,313

GRASS CONDITIONING DEVICE

Wilhelm Von Allwörden, Oberstotzingen, and Martin Häfele, Adelmannsfelden, both of Germany, assignors to Same S.p.A., Treviglio, Italy

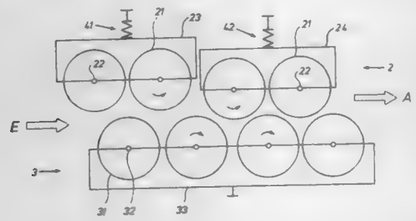
PCT No. PCT/EP93/02347, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/05147, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 30, 1993, Ser. No. 392,784

Claims priority, application Germany, Aug. 29, 1992, 42 28 857.6

Int. Cl.[6] A01D *82/00*

U.S. Cl. 56—16.4 B 12 Claims



1. A grass conditioning device for a grass mowing machine comprising:

an inlet for receiving mown grass;

an outlet for discharging conditioned grass;

a first row (2) of cylinders in juxtaposed relation to one another between said inlet and said outlet including at least two cylinders having axes lying in a first plane,

a second row (3) of cylinders in juxtaposed relation to one another between said inlet and said outlet including at least two cylinders having axes lying in a second plane,

said at least two cylinders of said second row (3) of cylinders being disposed below said at least two cylinders of said first row (2) of cylinders and said at least two cylinders of said first row of cylinders being driven separately from said at least two cylinders of said second row of cylinders in such a manner that the peripheral speed of said at least two cylinders (21) of said first row (2) is different than the peripheral speed of said at least two cylinders (31) of said second row (3).

5,630,314

THERMAL STRESS RELAXATION TYPE CERAMIC COATED HEAT-RESISTANT ELEMENT

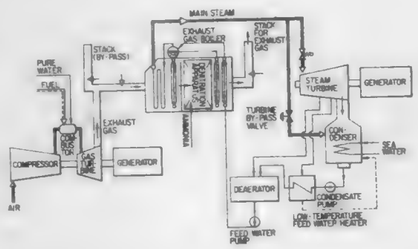
Yoshitaka Kojima; Hideyuki Arikawa, both of Hitachi; Mitsuo Haginoya, Ibaraki; Akira Mebata, Kitaibaraki; Tetsuo Sasada, and Hajime Toriya, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 118,641, Sep. 10, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 320,780

Claims priority, application Japan, Sep. 10, 1992, 4-266889

Int. Cl.[6] F02C *6/18*

U.S. Cl. 60—39.182 2 Claims



2. A combined power generating plant system provided with a gas turbine driven by a combustion gas flowing at a high speed, a waste heat recovering boiler for obtaining steam by combustion exhaust gas from the gas turbine, a steam turbine driven by the steam, and a generator driven by the gas turbine and the steam turbine wherein the gas turbine has an arrangement of buckets and nozzles, each bucket having a blade part, a platform and a shank part, and each nozzle having a blade part, said buckets of the gas turbine being provided on a disk and rotated by causing a compressed combustion gas to pass through a nozzle and collide against a bucket, wherein the temperature of the combustion gas at an inlet of a first stage bucket is 1300° C. or higher, the temperature of the combustion exhaust gas at the outlet of the gas turbine is 560° C. or higher, steam of 530° C. or higher is obtained by the waste heat recovering boiler, the steam turbine is of high and low pressure integrated type, the steam temperature at a first stage bucket of the steam turbine is 530° C. or higher, the power generation capacity of the gas turbine is at least 50,000 KW and that of the steam turbine is at least 30,000 KW, overall thermal efficiency of the system is at least 45%, the bucket of the first stage of the gas turbine having a whole length of at least 200 mm, the platform of said bucket having flat portion connected to the blade part, the shank part is connected to the platform, and has fins provided on both sides thereof and a dovetail connected thereto, a surface of the blade part of at least one of the bucket and the nozzle is covered with a heat-resistant coating layer comprising a ZrO_2 ceramic layer having a columnar texture composed of a plurality of columnar ZrO_2 materials divided by micro-cracks and extending in a direction appropriately normal to the surface of the blade part, each of said columnar ZrO_2 materials comprising a plurality of smaller columnar ZrO_2 textures oriented appropriately normal to the surface of the blade part.

5,630,315

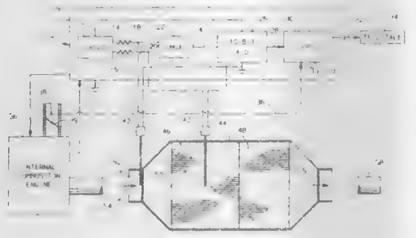
CATALYST DIAGNOSTIC SYSTEM AND METHOD

Joseph R. Theis, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 6, 1995, Ser. No. 556,292

Int. Cl.[6] F01N *3/00*

U.S. Cl. 60—274 8 Claims



1. A catalytic converter catalyst diagnostic method according to the steps of:

(a) measuring a first temperature of an engine exhaust gas flowing into the catalytic converter before the gas enters the catalytic converter catalyst;

(b) measuring a second temperature of the catalytic converter catalyst;

(c) determining a first value of mass air flow into an engine;

(d) determining a second value indicative of exothermic activity of the catalytic converter responsive to the first and second temperatures;

(e) storing the first and second values in respective first and second tables, each table having at least n table locations;

(f) repeating steps (a)–(e) until the first and second tables are filled;

(g) comparing a first difference between a first minimum and a first maximum of the first values stored in the first table to a first predetermined threshold;

(h) comparing a second difference between a second minimum and a second maximum of the second values stored in the second table to a second predetermined threshold;

(i) if the first and second differences are respectfully less than the first and second predetermined thresholds, then:

updating a filtered exotherm value according to the second value indicative of exothermic activity; and

comparing the filtered exotherm value to a threshold, wherein filtered exotherm values below the threshold are indicative of an improperly operating catalytic converter.

5,630,316

HYDRAULIC DRIVING APPARATUS USING A BLADDER-TYPE ACCUMULATOR WITH AN IMPROVED SAFETY

Yoshiyasu Itsuji, and Shinji Terada, both of Chiba, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Nov. 16, 1995, Ser. No. 558,476

Claims priority, application Japan, Nov. 16, 1994, 6-281769; Nov. 16, 1994, 6-281772

Int. Cl.[6] F16D *31/02*

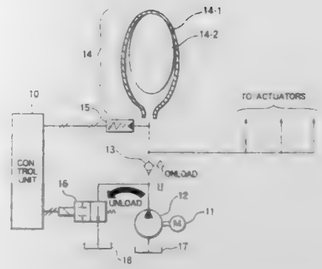
U.S. Cl. 60—418 7 Claims

1. A hydraulic driving apparatus with a bladder-type accumulator connected to a fluid supply pipe extending from a hydraulic fluid source to at least one actuator, said hydraulic driving apparatus comprising:

a hydraulic pressure sensor attached to said fluid supply pipe in the vicinity of said bladder-type accumulator; and

a control unit responsive to a detected pressure detected by said hydraulic pressure sensor for controlling said hydraulic fluid source to adjust a fluid flow rate;

said control unit carrying out the steps of:



judging, at the start of said hydraulic driving apparatus, an initial gas pressure supplied to said bladder-type accumulator with reference to a gradient of variation of the detected pressure detected by said hydraulic pressure sensor;

monitoring, during a normal operation of said hydraulic driving apparatus, a difference ΔP between said initial gas pressure and said detected pressure; and

judging occurrence of a trouble when said difference ΔP becomes smaller than a predetermined first difference ΔP1 or when said difference ΔP becomes greater than a predetermined second difference ΔP2, where ΔP2 is greater than ΔP1.

5,630,317

CONTROLLER FOR HYDRAULIC DRIVE MACHINE

Fujitoshi Takamura, Hirakata; Tetsuya Nakayama, Chigasaki, and Shuki Akushichi, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

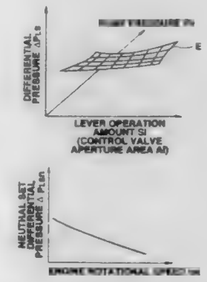
PCT No. PCT/JP94/00491, § 371 Date Sep. 21, 1995, § 102(e) Date Sep. 21, 1995, PCT Pub. No. WO94/23213, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 28, 1994, Ser. No. 531,942

Claims priority, application Japan, Mar. 26, 1993, 5-068609; Mar. 26, 1993, 5-068611; Mar. 26, 1993, 5-068612; Mar. 26, 1993, 5-068613

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—445 14 Claims



1. A controller for a hydraulic drive machine, which has a hydraulic pump driven by a motor, a plurality of hydraulic actuators driven by the supply of discharge pressure oil of the hydraulic pump via a pressure oil supply line, and a plurality of flow rate control valves for controlling, in accordance with operation amounts, a flow rate of the pressure oil supplied to the plurality of work machine actuators; and which controls a discharge flow rate of the hydraulic pump so that a differential pressure between a

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discharge pressure of the hydraulic pump and a load pressure of the plurality of work machine actuators becomes a set value, characterised in that the controller comprises:

pressure detection means for detecting the discharge pressure of the hydraulic pump or the load pressure of the plurality of work machine actuators throughout a pressure operating range; and

means for varying the differential pressure set value substantially throughout the pressure operating range so that the differential pressure set value decreases as the pressure detected by the pressure detection means increases.

5,630,318

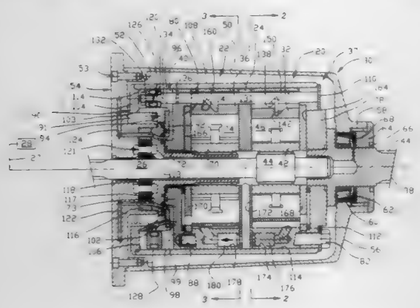
METHOD OF PUMPING WITH A VANE-TYPE PUMP HAVING A FLEXIBLE CAM RING

Lawrence R. Folsom, and Clive Tucker, both of Pittsfield, Mass., assignors to Folsom Technologies, Inc., Pittsfield, Mass.

Continuation-in-part of Ser. No. 93,192, Jul. 13, 1993, Pat. No. 5,423,183, which is a continuation-in-part of Ser. No. 640,645, Jan. 14, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 481,802

Int. Cl.[6] F16D *39/00*

U.S. Cl. 60—492 **7 Claims**



1. A method of converting mechanical energy in the form of torque in a rotating input shaft to fluid pressure at a variable delivery flow rate and pressure, comprising:

rotating a pump rotor with said input shaft, said pump rotor having a plurality of radially extending vanes inside a flexible cam ring;

contacting an inside surface of said flexible cam ring with outside edges of said vanes and sweeping a swept volume within said flexible cam ring with said vanes;

sealing said swept volume on opposite axial sides thereof with a port plate on one side and a side seal plate on the side opposite said port plate, and engaging opposite sides of said flexible cam ring and said vanes with said plates;

drawing fluid into said swept volume within said cam ring through a first set of ports in said port plate by rotating said vanes into a suction region within said cam ring, said suction region having an increasing radius in the direction of said vane rotation, and then pressurizing said fluid for exhausting through a second set of ports in said port plate, circumferentially offset from said first set of ports, by rotating said vanes into a pressurizing region within said cam ring having a decreasing radius in the direction of said vane rotation; and

changing said cam ring cross-sectional shape from a round elliptical shape to a flatter elliptical shape by radially flexing said cam ring to vary said delivery flow rate and pressure.

5,630,319

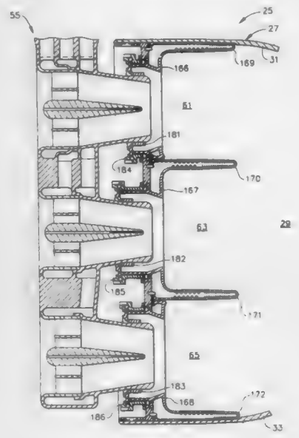
DOME ASSEMBLY FOR A MULTIPLE ANNULAR COMBUSTOR

Jan C. Schilling, Middletown, and Edward C. Vickers, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 12, 1995, Ser. No. 440,437

Int. Cl.[6] F02C *1/00*

U.S. Cl. 60—747 **20 Claims**



1. A dome assembly for a multiple annular combustor, comprising

(a) an annular dome plate having at least two radial domes, each of said radial domes including a plurality of circumferential openings therein;

(b) a heat shield positioned within each of said openings, said heat shield having a forward end located upstream of said dome plate and an aft end located downstream of said dome plate, wherein said forward end of said heat shield has threads formed thereon; and

(c) a retainer nut having an inner annular surface with threads formed thereon, said retainer nut threads being matingly engagable with said heat shield threads;

wherein said heat shield is mechanically attached to said dome plate by said retainer nut.

5,630,320

GAS TURBINE COMBUSTOR AND GAS TURBINE

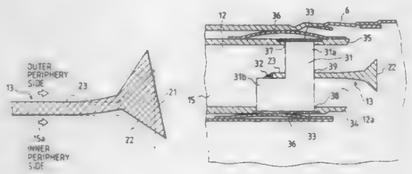
Noriaki Matsuda, Mito; Kunihiro Ichikawa, Hitachi; Shigeru Azuhata, Hitachi; Nobuyuki Iizuka, Hitachi; Yoshikazu Moritomo, Hitachi; Yoshiharu Nakayama, Hitachi, and Nariyoshi Kobayashi, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 357,187

Claims priority, application Japan, Dec. 15, 1993, 5-314685

Int. Cl.[6] F02C *1/02*

U.S. Cl. 60—749 **16 Claims**



1. A gas turbine combustor having a combustion chamber for effecting combustion therein, a fuel air supply device for supplying fuel and combustion air into said combustion chamber, the supplied fuel air being burnt in said combustion chamber to generate a flame, and a stabilizer for stabilizing the flame, characterized in that said stabilizer is cylindrical as a whole and comprises a cylindrical part axially extending from an upstream end thereof and to a downstream end and a stabilizing part axially extending from said downstream end of said cylindrical part toward a downstream side for stabilizing the flame, said cylindrical part havinq a plurality of openinqs arranqed at intervals in a circumferential direction of said cylindrical part, and a mounting device is disposed in fuel and combustion air in said fuel air supply device and mounted for mounting said stabilizer on an inside of said combustor, said mounting device including a plurality of members each secured to the inside of said combustor and slidably inserted in one of said plurality of openings and connected to said cylindrical part so as to restrict axial and radial movement of said stabilizer while allowing deformation of said stabilizer due to thermal stress caused therein.

5,630,321

METHOD AND APPARATUS FOR FREEZING

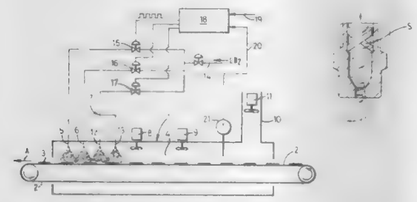
Jeremy P. Miller, Berks, Great Britain, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 196,671, Feb. 15, 1994, abandoned. This application Jan. 3, 1995, Ser. No. 367,911

Claims priority, application United Kingdom, Feb. 17, 1993, 9303212

Int. Cl.[6] F25D *13/06;17/02*

U.S. Cl. 62—63 **12 Claims**



1. A method of freezing articles, which method comprises the steps of:

installing at least two banks of spray nozzles, each bank having at least one spray nozzle of the type having a spray orifice and swirling device upstream of said orifice in a freezing chamber, each nozzle in a bank being identical and selected to show optimum heat transfer at a pressure of liquid cryogen between 1.6 and 4 bar gauge immediately upstream of said nozzle;

introducing a supply of liquid cryogen into each of said banks of spray nozzles;

establishing a flow of cryogen through each of said nozzles in at least one bank of nozzles at the upstream pressure for the particular nozzle so that each of said nozzles provides at least 50% of its maximum heat transfer coefficient to articles to be cooled by said cryogen;

pre-cooling said freezing chamber by maintaining flow of cryogen through at least one bank of nozzles until a desired operating temperature is reached in said freezing chamber; and

maintaining said temperature in said freezing chamber by selectively initiating or terminating flow of cryogen through each of said first and or second banks of nozzles while maintaining a constant pressure of cryogen upstream of each nozzle.

5,630,322

PROCESS AND APPARATUS FOR HEAT TREATMENT OF WORKPIECES BY QUENCHING WITH GASES

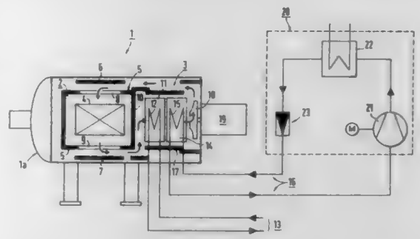
Paul Heilmann, Maintal; Klaus Löser, Mainhausen, and Friedrich Preisser, Büdingen, all of Germany, assignors to Ald Vacuum Technologies GmbH, Erlensee, Germany

Filed Jun. 6, 1995, Ser. No. 471,996

Claims priority, application Germany, Jun. 28, 1994, 44 22 588.1

Int. Cl.[6] F25D *13/06*

U.S. Cl. 62—63 **14 Claims**



1. Process for quenching workpieces with a quenching gas comprising

quenching said workpieces by passing said quenching gas over said workpieces, thereby heating said quenching gas,

passing said quenching gas through a heat exchanger having cooling surfaces which are cooled with a primary refrigerant, and

cooling said primary refrigerant to a temperature below 0° C. by circulating said primary refrigerant in a closed circuit through refrigeration apparatus comprising a refrigeration unit.

5,630,323

REFRIGERATING APPARATUS

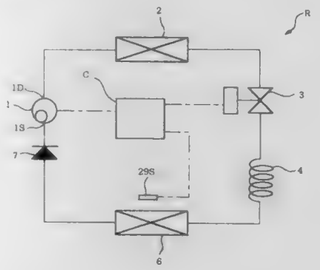
Hirosi Niijima, Ouragun Gunmaken; Takeshi Kawaguchi, Ootashi Gunmaken; Hisao Sagara, Ouragun Gunmaken; Zenichi Kakinuma, Sanoshi Tochigiken, and Yoshirou Ishizaka, Ouragun Gunmaken, all of Japan, assignors to Sanyo Electric Co., Ltd., Osakafu, Japan

Filed Jul. 11, 1995, Ser. No. 500,736

Claims priority, application Japan, Jul. 15, 1994, 6-164228

Int. Cl.[6] F25B *1/00;* **G05D** *23/32*

U.S. Cl. 62—158 **2 Claims**



1. A refrigerating apparatus comprising:

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a compressor, a condenser, an expansion device, and an evaporator, serially connected by piping to form a closed loop;

a first valve located between an outlet of the condenser and the expansion device;

a second valve located between the compressor and the evaporator for preventing the refrigerant from flowing back from the compressor to the evaporator when the compressor stops; and

a control unit controlling the compressor and the first valve, said control unit opening and closing the first valve in response to the operation and stopping of the compressor so the closing of the first valve occurs before the compressor is stopped.

5,630,324

MULTIPLE TYPE AIR CONDITIONER SYSTEM AND ADDRESS SETTING METHOD THEREOF

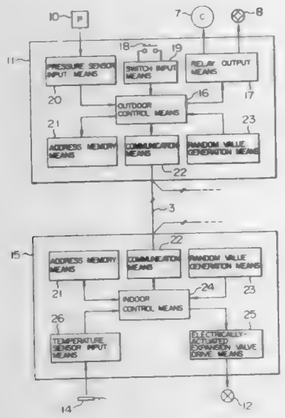
Satoru Yoshida, Shimizu; Keiji Sato, Shizuoka-ken; Masamichi Mochizuki, Fujinomiya; Masashi Watanabe, Shimizu, and Takashi Kato, Fujieda, all of Japan, assignors to Hitachi Ltd., and Hitachi Shimizu Engineering Co., Ltd., both of Japan

Division of Ser. No. 308,106, Sep. 16, 1994, Pat. No. 5,499,510. This application Feb. 20, 1996, Ser. No. 603,344

Claims priority, application Japan, Sep. 20, 1993, 5-232795

Int. Cl.[6] F25B *49/02*

U.S. Cl. 62—175 **8 Claims**



1. An air conditioner system comprising a plurality of outdoor units each having a compressor, an outdoor heat exchanger and a 4-way valve, and a plurality of indoor units having an expansion means and an indoor heat exchanger, said plurality of outdoor units are serially connected to said plurality of indoor units through a communication line, each of said outdoor units has an outdoor controller, each of said indoor units has an indoor controller, said outdoor controller includes communication means, outdoor control means for performing transmission and reception of a message to and from the other outdoor and indoor units through said communication means, indoor control means for performing transmission and reception of a message to and from the other outdoor units through said communication means, random value generation means for generating random address under a command of said indoor control means, and address control means for storing therein said random address.

5,630,325

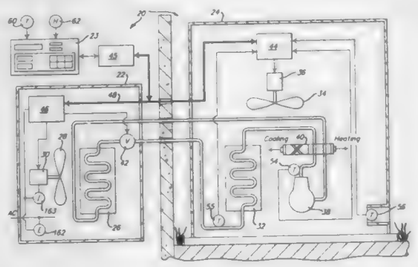
HEAT PUMP MOTOR OPTIMIZATION AND SENSOR FAULT DETECTION

Vijay Bahel, Sidney; Hank Millet, Piqua; Mickey Hickey, Sidney; Hung Pham, Dayton; Gregory P. Herroon; Wayne R. Warner, both of Piqua, and Jean-Luc M. Caillat, Dayton, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Division of Ser. No. 186,010, Jan. 24, 1995, Pat. No. 5,440,895. This application Jun. 1, 1995, Ser. No. 456,960

Int. Cl.[6] F25B *41/04*

U.S. Cl. 62—222 **15 Claims**



1. In a heat pump system including a refrigerant compressor and an electrically controlled expansion valve, a system operating method comprising,

obtaining a discharge temperature by measuring a property indicative of the temperature of refrigerant discharged from the compressor;

comparing the discharge temperature with a predetermined temperature indicative of an alert condition;

based on said comparing step:

(a) if the discharge temperature is above said predetermined temperature, using the discharge temperature to control the setting of said expansion valve, and

(b) if the discharge temperature is not above said predetermined temperature, setting said expansion valve to a predetermined setting.

5,630,326

EXPANSION VALVE MOUNTING MEMBER

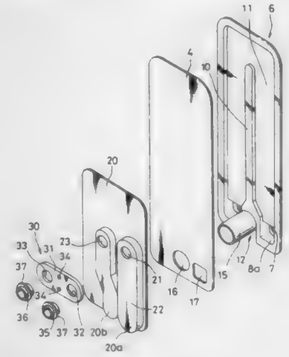
Kunihiko Nishishita, and Seiji Inoue, both of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 527,424

Claims priority, application Japan, Sep. 14, 1994, 6-246922

Int. Cl.[6] F25B *41/04*

U.S. Cl. 62—299 **7 Claims**



1. A heat exchanger comprising:

a heat exchanger assembly comprising:

a plurality of fins,

a plurality of tube elements alternately laminated with said fins, each of said tube elements comprising a pair of tanks at one end thereof and a U-shaped passage communicating said pair of tanks with each other, said plurality of tube elements and said fins forming a first sub-assembly having opposite sides in a direction of lamination,

end plates located on said opposite sides of said first sub-assembly, and

a plate having an intake passage and an outlet passage therein secured to one of said end plates,

wherein a pair of tank groups are formed by said tanks of said tube elements by connecting said tanks adjacent to one another in the direction of lamination, one of said pair of tank groups comprises two first tank sub-groups formed by separating the one of said pair of tank groups at a central position of the one of said pair of tank groups with respect to the direction of lamination, and the other of said pair of tank groups comprises two second tank sub-groups that directly fluidly communicate with each other,

wherein a communicating pipe is connected between one of said intake passage and said outlet passage and the one of said two first tank sub-groups located furthest from said plate, and the other of said intake passage and said outlet passage is communicated with the other of said two first tank sub-groups, located closest to said plate, and

wherein said plate has an intake hole and an outlet hole therein communicating with said intake passage and said outlet passage, respectively; and

an expansion valve mounting member comprising:

a pair of tubular members, each one of said pair of tubular members having one end for connection with one of said intake hole and said outlet hole and another end for connection with an expansion valve, and each one of said pair of tubular members having an external circumferential surface with a collar formed at a predetermined position thereon, and

a plate member having a pair of holes receiving said pair of tubular members inserted therein, said plate member having a specific width,

wherein said expansion valve mounting member has been temporarily assembled by inserting said tubular members into said holes of said plate member such that said collars contact circumferential edges of said holes of said plate member so as to position said tubular members relative to said plate member;

wherein said expansion valve mounting member is mounted on said intake and outlet holes of said intake and outlet passages of said heat exchanger assembly; and

wherein said heat exchanger assembly and said expansion valve mounting member have been simultaneously brazed together in a furnace.

5,630,327

IMMERSION FREEZER WITH BOTTOM CHAMBER SERIES OF CASCADING CONVEYOR BELTS

Edward F. Kiczek, Long Valley, N.J.; Donald J. Ehnot, Coopersburg; Richard Reider, Allentown, both of Pa., and Brian Sink, Orland Park, Ill., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 5, 1996, Ser. No. 611,317

Int. Cl.[6] F25D *17/02*

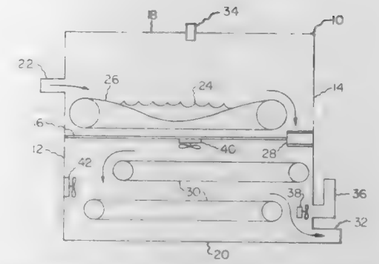
U.S. Cl. 62—374 **4 Claims**

1. An immersion freezer comprising:

(a) an insulated housing having a first end running horizontally to a second end;

(b) a horizontal baffle that divides said housing into a top chamber and a bottom chamber;

(c) an item entrance port located in the top chamber at or near the first end for introducing the items to be frozen into the freezer;



(d) an refrigerant bath located in the top chamber for immersing all or part of the items to be frozen in a liquid refrigerant;

(e) a top chamber conveyor belt for transporting the items from the item entrance port and through said refrigerant bath to the second end;

(f) a chamber transfer port that pierces the horizontal baffle at or near the second end for allowing the items to drop from the top chamber conveyor belt and into the bottom chamber and for allowing vaporized refrigerant from the refrigerant bath to move into the bottom chamber;

(g) a series of cascading conveyor belts located in the bottom chamber for transporting the items within the bottom chamber from the second end, to the first end, and back to the second end again wherein the initial cascading conveyor belt in said series receives the items as they drop from the top chamber conveyor belt and wherein each successive belt in said series receives the items as they drop form the preceding belt; and

(h) an item exit port located in the bottom of the bottom chamber at or near the second end for receiving the items as they drop from the final conveyor belt in said series of cascading conveyor belts and for subsequently withdrawing the frozen items from the freezer.

5,630,328

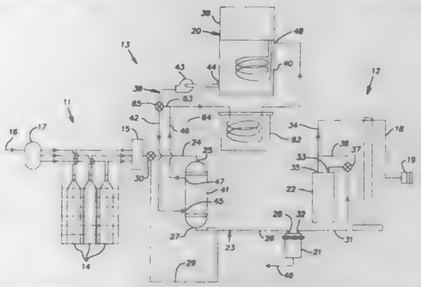
NATURAL GAS CONDITIONING FACILITY

Ralph E. Hise, and Paul F. Swenson, both of Shaker Heights, Ohio, assignors to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Filed Sep. 22, 1995, Ser. No. 532,422

Int. Cl.[6] F25J *1/00*

U.S. Cl. 62—619 **25 Claims**



1. A facility for conditioning natural gas to be dispensed in a compressed state to vehicle fuel tanks, said facility comprising:

a fuel storage system for compressed natural gas;

a dispensing system for dispensing said compressed natural gas to the vehicle fuel tanks;

a chilling apparatus including a refrigeration unit for cooling the natural gas to a sub ambient temperature and a liquid separator for removing condensed water and other liquid contaminants from the natural gas cooled by said refrigeration unit; and

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a fuel delivery circuit coupling said fuel storage system, said dispensing system, and said chilling apparatus in a manner such that gas passing through said circuit to said dispensing system is chilled by said chilling apparatus and thereby permits a fuel tank to be filled without overpressuring such tank.

5,630,329

WRISTWATCH BRACELET AND PROCESS FOR THE PRODUCTION THEREOF

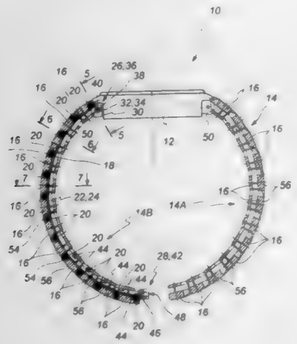
Scott Lauffer, Horb, and Pieter Kuschel, Schiltach, both of Germany, assignors to Junghans Uhren GmbH, Schramberg, Germany

Filed Jan. 19, 1996, Ser. No. 588,896

Claims priority, application Germany, Jan. 24, 1995, 195 01 952.0

Int. Cl.[6] **A44C** *5/04*

U.S. Cl. 63—5.1 **10 Claims**



1. A bracelet segment for a wristwatch comprising a first flexible, elastically stretchable core element of elongated strip shape, said first core element including longitudinally spaced enlargements constituting spacer members which define recesses between one another, said spacer members being interconnected by connector portions of said first core element which are of one-piece construction with said spacer members, said first core element including a passage extending longitudinally therethrough;

decorative elements mounted on said first core element within respective ones of said recesses; and

a second flexible core element, stiffer than said first core element, extending through said passage.

5,630,330

LOCK FOR DISKETTE DRIVE

Ching-hu Kung, Taipae, Taiwan, assignor to Tigerex Enterprise Co., Ltd., Taipei, Taiwan

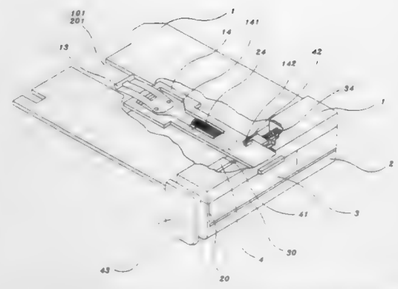
Filed Jun. 11, 1996, Ser. No. 661,750

Int. Cl.[6] **E05B** *73/00*

U.S. Cl. 70—58 **1 Claim**

1. A lock for diskette drive suitable for inserting into and locking up a disk slot of said diskette drive to prevent any unauthorized data reading, writing, and copying, comprising:

a top and a bottom cover detachably connected together to form a flat front part of said lock for inserting into said disk slot of said diskette drive; said top cover being formed at a front central portion with a first notch and said bottom cover being formed at a front central portion with a second notch corresponding to said first notch, said top cover being provided on an inner surface with a pair of guide rails behind two sides of said first notch, two fixing pins located within said pair of rails near said first notch, and a boss centered on said inner



surface of said top cover; said bottom cover being a T-shaped member and having a recess formed at a transverse portion thereof, said recess being provided at inner surfaces of two lateral sidewalls with a bar each, and at one outer sidewall with a slot, said bottom cover further having a longitudinally extended central channel formed on a longitudinal portion thereof;

a springy plate disposed between said top and said bottom covers, said springy plate having a liftable front hook portion and two through holes formed near a rear portion thereof for engaging with said two fixing pins of said top cover so that said springy plate is fixedly connected to said top cover;

a push plate also disposed between said top and said bottom cover below said springy plate and within said pair of guide rails on said top cover, said push plate being formed at a front portion with an opening and at a rear portion at one side with a dent, said opening having an expanded front part for said two fixing pins on said top cover to project upward therefrom and a narrowed rear part corresponding to said central channel of said bottom cover for receiving a first compression spring therein, said first compression spring having one end thereof pressed against said boss on said top cover and another end against an end wall of said narrowed portion of said opening on said push plate;

a lock body disposed in said recess of said bottom cover, said lock body having a U-shaped seat at an upper portion thereof and a reverse U-shaped long through hole extended the length of said U-shaped seat at a lower portion thereof for a spindle to extend therethrough; a plurality, spaced in parallel, of lock pins each having a hook portion and a lug portion being hung on said spindle by hooking their hook portions on said spindle, such that a front end of each said lock pin freely move up or down about said spindle; said lock body being further formed with a series of parallel through holes, such that said front ends of said lock pins and said lug portions thereof are separately hung on and project forward from said parallel through holes, said long through hole forming two long openings on two end walls of said lock body to engage with said two bars on said recess, such that said lock body is firmly positioned in said recess, and a card slot being provided to a lower portion of said lock body;

a movable member disposed between said recess and said lock body to cover a top portion of said lock body, said movable member having a sunk portion formed near an inner end thereof for supporting the rear portion of said push plate and allowing the same to move inward or outward over there, a projection formed at one inner corner of said sunk portion for detachably engaging with said dent on said push plate, a push button connected to an outer end of said movable member opposite to said sunk portion, a guide portion for engaging into said slot formed on one outer sidewall of said recess to limit a travel of said movable member, a plurality of parallelly arranged upper teeth and lower teeth pairs formed at a lower rear part of said movable member below said sunk portion, a sliding groove formed between said upper teeth and said lower teeth for receiving said forward projected front end of said lock pins, and a second compression spring disposed between said recess and an end of said movable member near said sunk portion; and

a key card formed with a plurality of specially arranged through holes corresponding to said lug portions of said lock pins on said lock body;

whereby, by inserting said lock for diskette drive into said disk slot of said diskette drive, inserting said key card into said card slot of said lock body to cause said front end portions of said lock pins to locate in said sliding groove on said movable member, pushing said push plate inward between said top and said bottom covers until said dent near said rear portion of said push plate engages with said projection of said movable member with said front hook portion of said springy plate being lifted to contact with an inner edge of said disk slot of said diskette drive and be retained thereto, and pulling said key card out of said card slot again, said card slot of said diskette drive is locked by said lock; and by inserting said key card into said card slot of said lock body, and by depressing said push button of said movable member to disengage said projection from said dent on said push plate and allow said first compression spring to push said push plate backward, said front hook portion of said springy plate lowers down to disengage from said inner edge of said disk slot of said diskette drive and thereby unlock the latter.

5,630,331

KEY CYLINDER AUTOMATIC RETURNING DEVICE FOR CYLINDER LOCK DEVICE

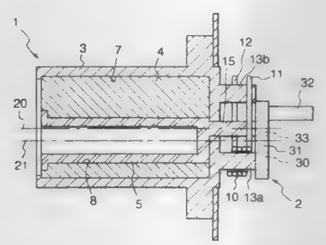
Kelichi Miyamoto, Kanagawa, Japan, assignor to Alpha Corporation, Kanagawa, Japan

Filed Apr. 28, 1995, Ser. No. 430,610

Claims priority, application Japan, Apr. 28, 1994, 6-092737

Int. Cl.[6] **E05B** *9/10*

U.S. Cl. 70—379 R **3 Claims**



1. A key cylinder lock and key cylinder automatic returning device comprising:

a case having a first housing;

a sleeve rotatably incorporated in said first housing of said case and said sleeve having a second housing and an engaging portion;

a key cylinder rotatably incorporated in said second housing of said sleeve;

tumblers slidably arranged in said key cylinder and capable of engaging with said engaging portion of said sleeve, wherein said key cylinder is rotated with respect to said sleeve then a proper key is inserted into said key cylinder and turned, and said key cylinder and said sleeve are rotated together when an improper key is inserted into said key cylinder and turned;

first and second case shafts projecting from said case;

a cylinder shaft projecting from said key cylinder along a center line of said sleeve, and located between said first and second case shafts; and

a spring coiled on said first case shaft, and having two legs between which said cylinder shaft and said second case shaft are placed,

wherein when said key cylinder is rotated with respect to said sleeve by the proper key being inserted in said key cylinder, said spring imparts returning force to said cylinder shaft that is making an arcuate movement in a circular-arc groove formed in said case; and

wherein when said key cylinder and said sleeve are rotated together by the improper key being inserted in said key cylinder, said cylinder shaft is rotated on a center line of said sleeve in the circular-arc groove of said case and between said two legs of said spring without deforming said spring.

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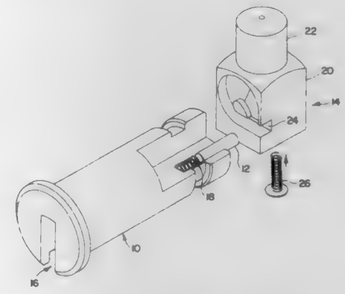
HYBRID PLUG LOCK

Raymond Aldieri, Plantsville; Thomas J. DiVito, and Edward F. Humphrey, both of Southington, all of Conn., assignors to Kaba High Security Locks Corporation, Southington, Conn.

Filed Jun. 7, 1995, Ser. No. 479,759

Int. Cl.[6] **E05B** *17/04*

U.S. Cl. 70—379 R **11 Claims**



1. A deadlocking latch assembly comprising:

a cylinder, said cylinder having a shell and a plug, said plug having oppositely disposed first and second ends and defining a keyway which is accessible from said first end, said plug being rotatable relative to said shell about an axis from a locked to an unlocked condition upon insertion of a properly bitted key in said keyway;

bolt means, said bolt means being supported for reciprocal motion in a direction which is generally transverse to said axis of plug rotation, the location of said bolt means along said axis of plug rotation being fixed, said bolt means including:

a body portion, said body portion having a first side which faces said plug second end;

a guide groove in said first side of said bolt means body portion, said guide groove extending smoothly and continuously from a first end to a second end, said guide groove first end being displaced from said plug second end a greater distance than said guide groove second end, said guide groove first and second ends being angularly adjacent; and

a latch member extending from said bolt means body portion generally in the direction of bolt means movement for engaging a stationary receiver;

drive pin means for coupling said cylinder to said bolt means, said drive pin means being supported for rotation with said cylinder plug, said drive pin means extending from said plug second end for engagement with said guide groove, said drive pin means having an axis which is parallel to and offset from said axis of plug rotation, said drive pin means being positioned in said guide groove adjacent said first end thereof with said cylinder in the locked condition to define the deadlocked state of said latch assembly, rotation of said cylinder plug in a first direction through an angle of 360° from the locked position causing said drive pin means to travel in said guide groove from said first to said second end thereof and beyond said second end to a position where said drive pin means is in registration with said guide groove first end; and

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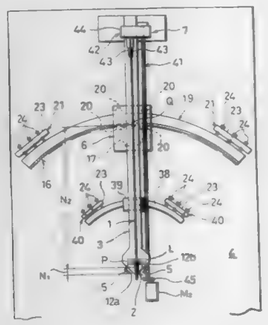
means for resiliently biasing said bolt means outwardly with respect to said axis of plug rotation and toward the stationary latch member receiver.

5,630,333

APPARATUS FOR BENDING BLADE MATERIAL

Chuji Yanagimoto, Yao, Japan, assignor to Itami Industrial Co., Ltd., Yao, Japan

Filed Aug. 10, 1995, Ser. No. 513,506
Claims priority, application Japan, Aug. 20, 1994, 6-011378 U; Aug. 20, 1994, 6-218215
Int. Cl.° B21D *5/04*
U.S. Cl. 72—14.8 **32 Claims**



1. An apparatus for bending blade material comprising:
an oscillating arm having a movable clamp portion for freely fixing and releasing a strip-shaped blade material at a front end portion thereof and rotating freely on a vertical axis with a portion thereof slightly backward from said clamp portion connected to a base:
a pair of stationary bits placed on said base near an end of said movable clamp portion of said oscillating arm and adjoining at a predetermined distance;
an oscillation driving mechanism attached to said backward portion of said oscillating arm and oscillating said oscillating arm horizontally in order to bend said blade material between said stationary bits and said movable clamp portion; and
a feeding mechanism sending said blade material forward along said oscillating arm, wherein a length N_1 from a pivot point where said oscillating arm is attached to said base and pivots to said movable clamp portion of said oscillating arm and a distance N_2 from said pivot point to a point of application where said oscillating driving mechanism applies force on said oscillating arm are arranged so that $N_2/N_1=10-N_2/N_1=30$.

5,630,334

LIQUID IMPACT TOOL FORMING MOLD

Stanley P. Ash, Greenville, Mich., assignor to Greenville Tool & Die Company, Greenville, Mich.

Filed Oct. 31, 1995, Ser. No. 550,711
Int. Cl.° B21D *9/15*
U.S. Cl. 72—61 **20 Claims**

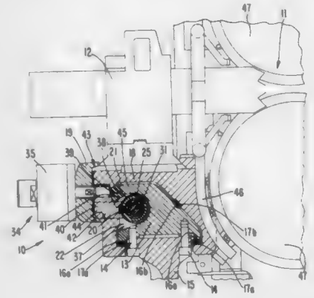
1. A process for cold forming a metal tube comprising the steps of:
filling a tube with a liquid;
sealing the tube with at least one cap having a pair of relief valves, one relief valve relieving liquid from the tube at approximately static pressure and the other relief valve relieving liquid from the tube at a stamping pressure substantially above static pressure, said sealing step forming a sealed tube having a given interior volume and confining the liquid within the sealed tube at approximately atmospheric pressure, the one relief valve permitting excess liquid to exit the tube during the sealing step;
stamping the sealed tube in a die having a die cavity of a given interior configuration to form a stamped member having an exterior configuration conforming to the interior configuration of the die cavity and having an interior volume no greater than the interior volume of the sealed tube;
releasing a volume of the liquid from within the sealed tube during the stamping operation approximately equal to the difference between the interior volume of the sealed tube and the interior volume of the stamped member, the other relief valve permitting the volume of liquid to exit the tube during the stamping step; and
removing the cap and draining from within the stamped member the liquid remaining after the stamping step.

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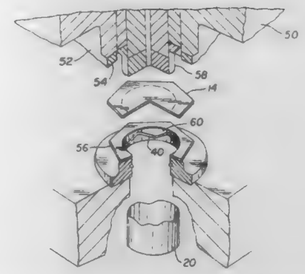
EQUIPMENT-HOLDER BAR FOR A ROLLING MILL STAND

Lars G. Tingvall; Lennart Mikael, both of Smedjebacken, Sweden; Gianni Nonino, and Ferruccio Tomat, both of Udine, Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Mar. 28, 1995, Ser. No. 411,462
Claims priority, application Italy, Mar. 31, 1994, UD94A0050
Int. Cl.° B21B *39/16*
U.S. Cl. 72—250 **6 Claims**



1. Equipment-holder bar associated with a rolling mill stand for the positioning and successive clamping in position of at least a guide box to guide rolled stock in relation to a specific rolling pass defined by rolling rolls, the bar comprising a slider able to move lengthwise in both directions on a stationary body solidly fitted to a frame of the rolling mill stand, the slider being positioned lengthwise by positioner means comprising an outer sleeve associated with a rotary positioner shaft set in rotation by a motor, the stationary body and the slider including reciprocal, lower guide means, and downstream inclined guide means and upper movable guide means, the stationary body including a lengthwise lodgement seat for the positioner means and a part extending upstream of the seat and containing an inclined surface cooperating with the upper movable guide means, the slider including a movable body associated with fork means and with the positioner means, the movable body comprising an inclined surface cooperating with the upper movable guide means, the upper movable guide means being driven perpendicularly by a hydraulic actuator so as to displace reciprocally and clamp the stationary body and the slider.

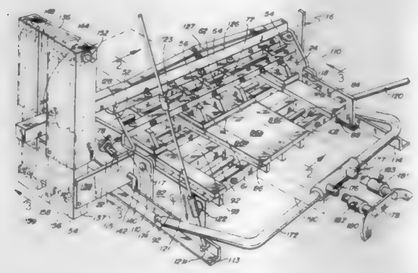


5,630,336

BENDING BRAKE

Jerry N. Jorgenson, 6692 Gerdine Path W., Rosemount, Minn. 55068

Continuation of Ser. No. 915,906, Jul. 17, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 488,555
Int. Cl.° B21D *5/04*
U.S. Cl. 72—319 **30 Claims**



12. A bending brake comprising three assemblies, namely a base assembly having a near end and a remote end and an upward brake surface between said ends, a cover assembly having a near end and a remote end and a downward brake surface therebetween, said cover assembly being above said base assembly and having its near end hinged to paid base assembly, said downward brake surface of said cover assembly being movable into and out of a clamping relationship with said upward brake surface of said base assembly in a manner involving movement of said remote end of said cover assembly toward and away from the remote end of said base assembly, and an apron assembly mounted for pivotal movement with respect to said base assembly and having an upward brake surface for performing a bending operation on material clamped between said brake surfaces of said cover assembly and said base assembly, the brake surface of each of said three assemblies being formed by linearly movable table segments, said table segments of each said assembly consisting essentially of a table means supported by leg means, an elongated support system for each said assembly, said table segments of each said assembly being mounted at said leg means thereof to said elongated support system in a manner permitting linear sliding movement along said support system to locations entirely vacated by a said segment, and each said assembly having means for fixing said movable table segments thereof against said linear sliding movement.

5,630,337

APPARATUS AND METHOD FOR FORMING A CONTAINER

Elmer D. Werth, 7025 W. 61st Ave., Arvada, Colo. 80003

Filed Sep. 7, 1995, Ser. No. 524,480
Int. Cl.° B21D *22/28;* **B21C** *3/02*
U.S. Cl. 72—349 **8 Claims**

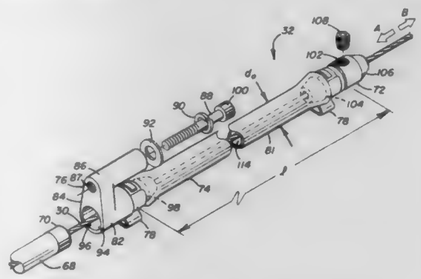
1. An improved process of forming a container, of the type employing the steps of forming from sheet stock a blank; drawing the blank into a cup; and re-drawing and ironing the cup into a container body having an open end; wherein the improvement comprises:
in said step of forming from sheet stock a blank, forming a blank having a geometric shape configured with a plurality of circumferential protrusions at predetermined locations;
providing a means for laterally redistributing material from the predetermined locations of said protrusions, said means including a die element defined by an annular shaping surface for longitudinally processing said blank and having a plurality of wedge-shaped die portions oriented longitudinally both at a leading edge of the die element and within the annular shaping surface; and
longitudinally processing the blank through said die element within the annular shaping surface with said wedge shaped die portions aligned with the predetermined locations of the protrusions.

5,630,338

BICYCLE DERAILLEUR CABLE PRELOAD AND SEALING SYSTEM

Sam Patterson; Frederick W. Day; Michael Larson, and Brian Jordan, all of Chicago, Ill., assignors to SRAM Corporation, Chicago, Ill.

Filed Jul. 11, 1995, Ser. No. 500,774
Int. Cl.° F16C *1/22*
U.S. Cl. 74—502.6 **11 Claims**



9. A bicycle control cable sealing system, comprising:
a derailleur attached to a bicycle;
a shift actuator operatively affixed to the bicycle;
a control cable having first and second ends, said first end operatively connected to said derailleur and said second end operatively connected to said shift actuator;
a control cable sheath adapted to slideably receive said control cable therethrough, said cable sheath having first and second ends, said first end of said cable sheath being disposed proximate said derailleur;
a resilient tubular sealing member having first and second ends, said sealing member being adapted to slideably receive said control cable therethrough;

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a sealing member connector having a cable lumen configured to receive said control cable, said sealing member connector being adapted to sealably engage said first end of said sealing member and said control cable;

a frame connector adapted to attach to the bicycle, said frame connector including first and second seals, said first seal adapted to sealably engage said second end of said cable sheath, said second seal adapted to engage said second end of said sealing member.

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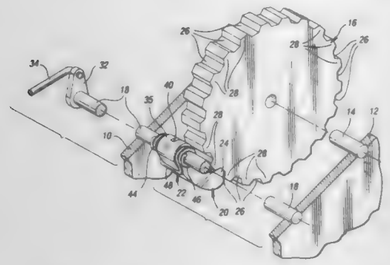
PARK MECHANISM FOR VEHICLE TRANSMISSION

Thomas Tuday, Tecumseh, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1995, Ser. No. 556,880

Int. Cl.[6] G05G *1/00*

U.S. Cl. 74—577 R **3 Claims**



1. In a vehicle transmission having a housing and a toothed output gear secured for rotation with an output shaft rotatably supported on the housing, an improved Park mechanism for locking the output shaft against rotation; comprising:

a control rod supported in the housing for rotation to a Park and non-Park position;

a pawl member having a tooth portion and being rotatably supported on the control rod;

a spring drivingly connected to the control rod and resiliently engaging the pawl to urge the toothed portion into engagement with the toothed output member; and

a drive member carried by one of the pawl member and control rod for selective engagement with the other pawl member and control rod upon rotation of the control rod from the Park to the non-Park position to enforce engagement of the pawl member from the toothed output member.

5,630,340

CONNECTING ROD FOR ENGINE

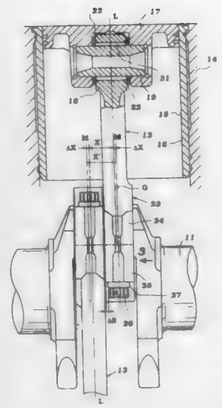
Masahiko Iikura, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 23, 1994, Ser. No. 311,382

Int. Cl.[6] F16C *7/02*

U.S. Cl. 74—579 E **6 Claims**

1. A reciprocating machine comprising a cylinder block having at least one cylinder bore formed therein, a piston reciprocating in said cylinder bore, a crankshaft journaled for rotation about a first axis relative to said cylinder block, a connecting rod for transmitting reciprocation of said piston into rotation of said crankshaft about said first axis, said connecting rod having a small end defining a cylindrical bearing opening having an axis for receiving a piston pin, means for coupling said piston pin to said piston for transmitting motion from said piston to said connecting rod, the other end of said connecting rod comprising a big end split into two pieces defining a cylindrical crankshaft bearing opening having an axis that extends parallel to said first axis and which axis is parallel to the axis of said cylindrical bearing opening of said small



end of said connecting rod and is in a common plane therewith, at least two threaded fasteners being disposed on opposite sides of said connecting rod for fixing said two pieces of said big end together in embracing relationship with a throw of said crankshaft, the center of gravity of said connecting rod being offset from a first plane perpendicular to said common plane and passing through an axial center of said crankshaft bearing opening, said at least two threaded fasteners having axes lying on a plane containing the said center of gravity and extending parallel to said first plane.

5,630,341

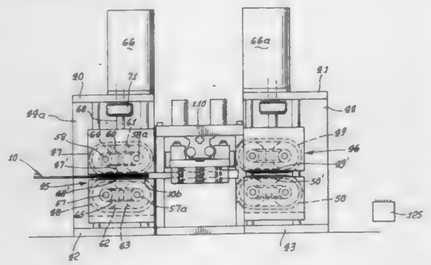
METHOD FOR PROCESSING CABLE AND WIRE

Jack L. Hoffa, Brea, Calif., assignor to Eubanks Engineering Co., Monrovia, Calif.

Division of Ser. No. 205,372, Mar. 4, 1994, Pat. No. 5,515,602, which is a continuation of Ser. No. 851,972, Mar. 13, 1993, abandoned, which is a division of Ser. No. 765,986, Sep. 26, 1991, Pat. No. 5,253,555, which is a continuation-in-part of Ser. No. 659,557, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 83,512, Jun. 30, 1993, Pat. No. 5,297,457, which is a continuation-in-part of Ser. No. 611,057, Nov. 9, 1990, Pat. No. 5,146,673. This application Jun. 26, 1995, Ser. No. 494,385

Int. Cl.[6] H02G *1/12*

U.S. Cl. 81—9.51 **33 Claims**



1. In processing means for processing longitudinally axially extending wire that includes a core and protective structure extending about the core, the combination comprising

a) first blade means for relative movement laterally to sever the wire,

b) other blade means spaced axially from said first blade means for relative movement laterally to penetrate said wire structure to selected depth,

c) said first and other blade means being operatively interconnected to move laterally simultaneously to first sever the wire and to then penetrate said structure to said selected depth,

d) and wire guide means to guide the wire as it moves axially proximate the blade means, and means to displace at least a part of said guide means to allow removal of a severed length of said structure, as the wire is moved axially relative to said blade means.

5,630,342

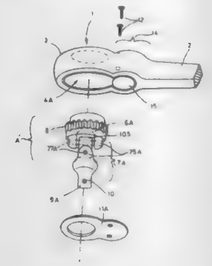
RATCHET WRENCHES COMPRISING RATCHER GEARS/ROTATABLE PAWLS THAT EMBODY U-JOINTED, LOCKED SOCKET DRIVE TANGS

Gregory J. Owoc, 101 White Oak Rd. (B-4), Greenville, S.C. 29609

Continuation of Ser. No. 359,933, Dec. 20, 1994, abandoned, and a continuation of Ser. No. 62,819, May 14, 1993, abandoned. This application Dec. 5, 1995, Ser. No. 567,734

Int. Cl.[6] B25B *13/46*

U.S. Cl. 81—57.39 **19 Claims**



1. A ratchet wrench apparatus comprising:

a wrench body having a handle whereby a wrench user may manipulate said handle to apply rotational torque to a fastener;

a ratchet wrench head, said ratchet wrench head having a cylindrically recessed head portion;

a dual-directionally rotatable ratchet gear received in said cylindrically recessed head portion of said ratchet wrench head;

a socket drive support having an integral U-joint, said socket drive support and said U-joint assembled in said wrench head such that when assembled said U-joint is both axially non-slidable and axially non-detachable with respect to said wrench head;

a retaining assembly, said retaining assembly retaining said ratchet gear within said recessed head portion; and

a pawl assembly, said pawl assembly operatively affixed within said wrench body and engageable with said ratchet gear.

5,630,343

POWER DRIVE MULTIPLE SOCKET WRENCH

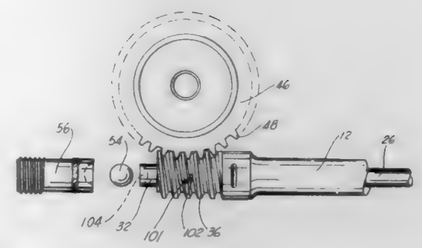
Paul Begin, 145 Whipple Rd., Pascoag, R.I. 02856

Continuation-in-part of Ser. No. 209,529, Mar. 11, 1994, abandoned. This application Dec. 5, 1995, Ser. No. 567,670

Int. Cl.[6] B25B *17/00*

U.S. Cl. 81—57.46 **1 Claim**

1. A wrench assembly for right angle torque transmission comprising a housing having a substantially elongated configuration with a hollow interior portion, said housing further including a head portion, said head portion having an outer housing and a hollow interior; a driving device for driving said wrench assembly including an elongated drive shaft having an axis and being rotatably mounted within said hollow interior portion and including a first gear element at one end thereof adjacent said head portion, said first gear element having a first end located adjacent said head



portion and a second end located opposite said first end; said driving device further comprising a second gear element movably mounted within said housing in meshing driven engagement with said first gear element, whereby rotation of said drive shaft causes rotation of said first and second gear elements; an adaptor connected to said second gear element and projecting outwardly from said housing at about 90° relative to the axis of said driving device, said adaptor engageable with a wrench socket, such that rotation of said driving device causes rotation of said first and second gear elements which causes rotation of said adaptor which, when fitted with a wrench socket, can drive a socket wrench, with the turning socket projecting outwardly from said housing at about 90° relative to the axis of said driving device, the improvement comprising:

a) said drive shaft extending through and beyond said first end of said first gear element, the extending end portion of said drive shaft having a hemispherically recessed end;

b) an Allen nut having a hemispherically recessed end, said Allen nut being located opposite the hemispherically recessed end of said drive shaft, said Allen nut being threaded through said outer housing of said head portion and extending inwardly toward the hemispherically recessed end of the drive shaft and generally axially aligned with the axis of said drive shaft;

c) a single spherically shaped ball bearing located and cradled between said recessed end of said drive shaft and said recessed end of said Allen nut thereby creating a cradled ball connection; and

d) the cradled ball connection being adjustable by the threaded Allen nut so as to constrain the axial motion and force of the drive shaft when the drive shaft is rotated axially in the forward direction when the socket is rotated in a forward, driving direction.

5,630,344

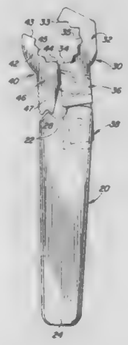
SIDE-ENTRY, RATCHETED WRENCH ASSEMBLY

Yuji Nammoto, 5751 SW. 39th St., Davie, Fla. 33314

Filed Jan. 25, 1996, Ser. No. 591,824

Int. Cl.[6] B25B *13/28*

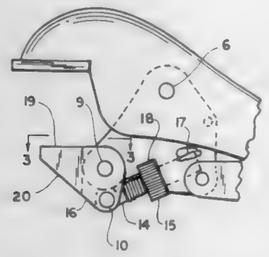
U.S. Cl. 81—91.2 **14 Claims**



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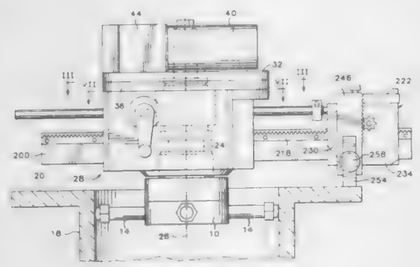
1. A side-entry, ratcheted wrench assembly comprising:
a handle segment, said handle segment including a first end and a second end,
a first jaw member, said first jaw member including a first collar segment, a first hub segment, and a first pivot segment extending from said first hub segment,
said first collar segment including an exterior end, an interior end, and a first interior contact face extending from said exterior end to said interior end,
said first pivot segment being pivotally secured to said handle segment, at generally said first end of said handle segment,
a second jaw member, said second jaw member including a second collar segment, a second hub segment, and a second pivot segment extending from said second hub segment,
said second collar segment including an exterior end, an interior end, and a second interior contact face extending from said exterior end to said interior end,
said second pivot segment being pivotally secured to said first jaw member so as to provide for pivotal movement of said second jaw member relative to said first jaw member between a generally engaged and a generally disengaged orientation,
said engaged orientation including said interior end of said first collar segment abutting said interior end of said second collar segment such that said first interior contact face and said second interior contact face define a retention area therebetween wherein a head of a bolt to be turned is retained, said abutting engagement between said interior ends of said first and said second collar segments preventing a clamping force from being exerted on the head of the bolt,
said disengaged orientation including said second jaw member pivoting relative to said first jaw member such that said exterior end of said second collar segment and said exterior end of said first collar segment are spaced sufficiently apart from one another to permit side entry of the bolt into said retention area therebetween,
lock means structured to engage said second jaw member and retain said second jaw member in said engaged orientation upon said first jaw member, to which said second jaw member is pivotally secured, pivoting in a first direction relative to said handle segment such that further pivotal movement of said first jaw member in said first direction results in corresponding rotation of the bolt within said retention area as a result of a torque force exerted by said first and said second clamp members on the bolt, and
said second jaw member being structured to pivot generally into said disengaged orientation upon said first jaw member pivoting in a second direction relative to said handle segment, so as to permit free ratcheted rotation of said first and said second collar segments about the bolt without effecting rotation thereof.

5,630,345
PLIERS HAVING A MANUALLY ADJUSTABLE, SELF-LOCKING HINGED JAW PIECE
Stephen S. Ciccotelli, P.O. Box 1414, Deming, N.M. 88031
Filed Oct. 26, 1994, Ser. No. 329,606
Int. Cl.[6] B25B *7/12*
U.S. Cl. 81—373 **4 Claims**



1. In a pliers comprising: (a) a fixed jaw; (b) a support arm for the fixed jaw fixedly attached to the fixed jaw; (c) a hinged jaw piece; (d) a support arm for the hinged jaw piece pivotally attached to the hinged jaw piece, the support arm for the hinged jaw piece being pivotally attached to the support arm for the fixed jaw; (e) a handle attached to the support arm for the fixed jaw; (f) a handle attached to the support arm for the hinged jaw piece; and (g) means for adjusting the position of the hinged jaw piece parallel relative to the fixed jaw including means for locking the hinged jaw piece in adjusted position, the adjusting and locking means for the hinged jaw piece including a link pivotally connected to the hinged jaw piece and operatively connected to the support arm for the hinged jaw piece.

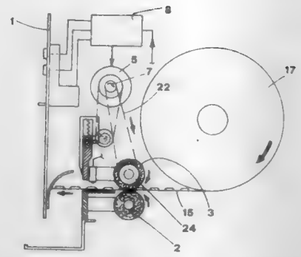
5,630,346
PORTABLE FLANGE FACER
David S. Strait, Newberg, Oreg., assignor to Climax Portable Machine Tools, Inc., Newberg, Oreg.
Filed May 2, 1995, Ser. No. 432,979
Int. Cl.[6] B23B *5/00*
U.S. Cl. 82—113 **11 Claims**



1. A portable machine tool comprising:
a main spindle having a central axis,
a machine body that is rotatable relative to the main spindle about said central axis,
a take-off shaft that is mounted in the machine body and is rotatable relative to the machine body about a second axis,
a first coupling member that is rotatable about said second axis,
a mechanism for converting relative rotation of the machine body and the main spindle about said central axis to reciprocating rotation of the first coupling member about said second axis, and
a converting means effective between the first coupling member and the take-off shaft and having at least a first state in which it converts reciprocating rotation of the first coupling member to unidirectional rotation of the take-off shaft in a first rotational sense and also having at least a second state in which the first coupling member is uncoupled from the take-off shaft, and
a switch means for switching the converting means between its first state and its second state.

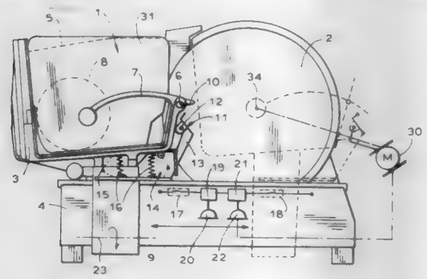
5,630,347
PHARMACEUTICAL DISPENSER FOR DISPENSING A VARIABLE AND PREDETERMINED NUMBER OF TABLETS OR SIMILAR PRODUCTS PACKAGED IN A BLISTER BAND
Gasperini Elvio, Via Marecilji, Italy, assignor to I.M.A. Industria Macchine Automatiche S.P.A., Ozzano Emilia, Italy
Filed Nov. 29, 1995, Ser. No. 564,603
Claims priority, application Italy, Dec. 5, 1994, BO94A0535
Int. Cl.[6] B26D *5/24*
U.S. Cl. 83—210 **13 Claims**

1. A dispenser for a variable and predetermined number of tablets or similar products packaged in a blister band, the blister band rolled longitudinally so as to form a reel, the dispenser having at least one dispensing unit comprising:



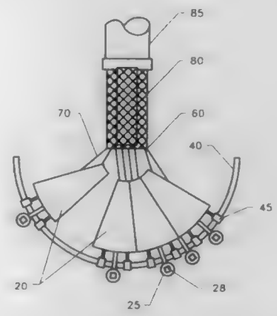
means for driving the blister band so that the blister band is gradually unrolled from the reel and pushed toward a delivery opening;
means for checking the number of dispensed products in accordance with a predetermined number of products;
means for cutting the blister band, operated after the predetermined number of the products has been counted and after the driving means have been stopped;
means for operating the driving means and cutting means;
said operating means being an electric motor, a first ratchet one-way rotation transmission mechanism and a second ratchet one-way rotation transmission mechanism, each driven by the electric motor, a first belt means linking the first mechanism to a first wheel means, integral with said driving means, a second belt means linking the second mechanism, to a second wheel means, combined with a pinion that engages the cutting means.

5,630,348
SLICING MACHINE WITH CIRCULAR BLADE
Fritz Kuchler, Klatteweg 4 - 6, A-9010 Klagenfurt, Austria
Filed Dec. 20, 1994, Ser. No. 359,704
Claims priority, application Austria, Dec. 21, 1993, 2585/93
Int. Cl.[6] B26D *5/26*
U.S. Cl. 83—713 **8 Claims**



1. A slicing machine, comprising:
a slicing-machine bed;
motor means on said bed for actuating a blade to rotate about an axis in a blade plane perpendicular to said axis;
carriage means mounted displaceably on said bed transversely to said axis for slicing a product as said carriage is moved past a cutting edge of said blade;
a stop plate mounted on said bed and disposed alongside said blade;
a bar mounted on said carriage and extending parallel to said axis;
a clamping device mounted swingably on said bar between an operative lower position and an inoperative upper position and displaceable along said bar parallel to said axis upon slicing said product; and
detecting means on said bed actuatable upon swinging of said clamping device independently of a position of said clamping device along said bar and operatively connected with said motor means for inactivating said motor means upon detecting of the clamping device in said upper position during slicing of said product, said detecting means comprising:
a magnetic strip extending on said carriage in a direction of displacement, and
at least one reed switch mounted on said bed, and juxtaposed with said magnetic strip, said clamping device including:
an arm mounted swingably on said bar and being displaceable along said bar toward and away from said stop plate;
a pusher plate carried by said arm and engageable with said product for urging same toward said stop plate, said arm being provided with a projection;
a pivotal strip pivotally mounted on said carriage and engageable by said arm; and
a link connecting said magnetic strip with pivotal strip for drawing said magnetic strip away from said reed switch upon swinging of said arm into said upper position of said device.

5,630,349
METHOD AND APPARATUS FOR THREE DIMENSIONAL BRAIDING
Gary L. Farley, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 342,452, Nov. 16, 1994, abandoned, which is a division of Ser. No. 953,562, Sep. 29, 1992, Pat. No. 5,392,683. This application Feb. 1, 1996, Ser. No. 601,665
Int. Cl.[6] D04C *3/00*
U.S. Cl. 87—8 **9 Claims**



1. An apparatus for forming an article by intertwining a plurality of fiber strands, wherein said fibers intersect in a braiding zone where said article is being formed, comprising:
(a) a three-dimensionally curved braiding surface which is segmented about one axis thereof, said segments formed by intersecting planes having said axis as their line of intersection with each segment spanning the entire diameter along said axis, whereby the segments are capable of movement about said axis through an arc of revolution;
(b) fiber dispensers situated on the concave side of the segments of said braiding surface; and
(c) means for moving the segments of said braiding surface through a desired arc of revolution.

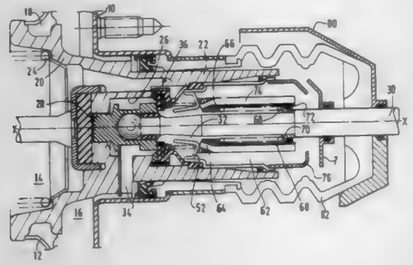
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PNEUMATIC SERVO FOR BOOSTED BRAKING WITH SILENT OPERATION

Ulysse Verbo, Aulnay-Sous-Bois, and Jean Claude Monteillet, Drancy, both of France, assignors to AlliedSignal Europe Services Techniques, Drancy, France

PCT No. PCT/FR94/01382, § 371 Date Dec. 27, 1995, § 102(e) Date Dec. 27, 1995, PCT Pub. No. WO95/18733, PCT Pub. Date Jul. 13, 1995
PCT Filed Nov. 29, 1994, Ser. No. 360,782
Claims priority, application France, Jan. 7, 1994, 94 00124
Int. Cl.[6] F15B 9/10
U.S. Cl. 91—376 R 11 Claims



1. A pneumatic servo for assisting with braking, including a casing having an axis of symmetry, divided in leaktight fashion by a movable wall structure into a from chamber permanently connected to a source of partial vacuum, and a rear chamber connected selectively to the front chamber or to an outside atmosphere by a three-way valve actuated by a plunger sliding in a bore of the movable wall structure, said three three-way valve being connected to an axial control rod subjected to the action of a return spring located in an annular space between the control rod and a rear tubular part extending from the movable wall structure and projecting out of the casing, said three-way valve being located in this rear tubular part and including a shutter element interacting via a first annular surface with a first valve seat formed on the plunger and via a second annular surface with a second valve seat formed on the movable wall, said first and second annular surfaces being in different transverse planes, characterized in that said first and second annular surfaces are joined together by a surface having an overall frustoconical shape for guiding a downstream flow of air from said outside atmosphere as it moves past said first valve seat when said first valve seat moves away form said first annular surface and that said second annular surface and said frustoconical surface are formed on an annular element secured to an annular element on which said first annular surface is formed.

5,630,351

WOBBLE YOKE ASSEMBLY

Donald M. Clucas, Christchurch, New Zealand, assignor to Whisper Tech Limited, Christchurch, New Zealand

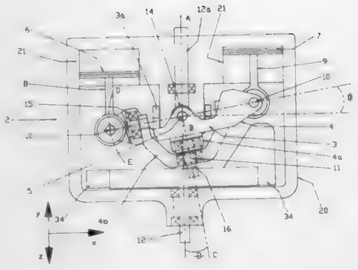
Filed Nov. 6, 1995, Ser. No. 587,444
Claims priority, application New Zealand, May 7, 1993, 247571
Int. Cl.[6] F01B 3/00
U.S. Cl. 92—12.2 9 Claims

1. A wobble yoke mechanism for converting reciprocating motion to rotary motion, said mechanism providing a plurality of pistons having piston heads operatively connected to the wobble yoke mechanism and a crankshaft;

said wobble yoke mechanism comprising:

a central pivot point through which the torque reaction passes;

a first beam having two ends and which pivots about said point in one plane, at least one piston being attached to at least one said via bearings with one degree of freedom;



at least a first yoke connected to at least one end of said first beam via at least one beating the axis of which passes through the central pivot point, each said bearing having one degree of freedom;

a second beam having two ends and which pivot about said point in one plane, at least one piston being attached to at least one said end via bearings with one degree of freedom;

a second yoke at 90° out of phase to the first yoke, said second yoke being connected to at least one end of said second beam via at least one bearing the axis of which passes through the central pivot point, each said bearing having one degree of freedom; and

an eccentric bearing fitted to or about the crankshaft and connected to one end of each of the first and second yokes;

wherein

no bearing has more than one degree of freedom;

the axes of all bearings pass through said central pivot point; and

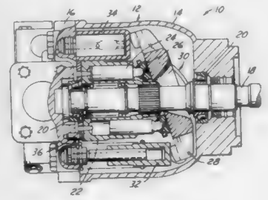
there is a degree of rotary freedom between the two yokes about the axis of the eccentric bearing.

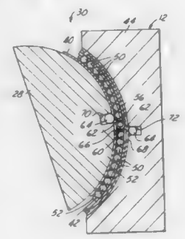
5,630,352

VARIABLE DISPLACEMENT HYDRUALIC PISTON MACHINE SADDLE BEARING

Steven M. Todd, Omaha, Nebr., assignor to Vickers, Incorporated, Maumee, Ohio

Filed Mar. 8, 1996, Ser. No. 613,104
Int. Cl.[6] F01B 3/00; F16C 32/02
U.S. Cl. 92—12.2 14 Claims





1. A variable displacement hydraulic piston machine that includes a shaft mounted for rotation within a housing, a plurality of pistons in a cylinder block coupled to said shaft, a yoke engaged by said pistons for controlling displacement of said pistons in said cylinder block, and saddle bearing means pivotally mounting said yoke to a base within said housing, characterized in that said saddle bearing means comprises:

arcuate inner and outer bearing races engaged with said yoke and said housing base respectively,

a plurality of rolling elements captured by a cage between said races, and

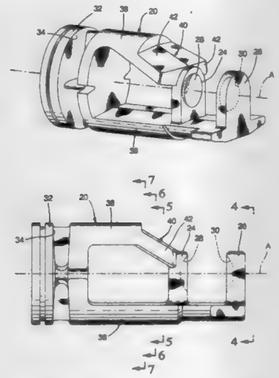
timing means positioning and retaining said races and said cage with respect to each other comprising interengaging means having a central portion carried by and pivotally mounted on said bearing means to pivot about an axis that is fixed on said bearing means and opposed end portions slidably received in said housing base and said yoke.

5,630,353

COMPRESSOR PISTON WITH A BASIC HOLLOW DESIGN

Kurt R. Mittlefehldt, Amherst; Daniel P. Kurbiel, East Amherst; Michael G. Thurston, Buffalo, and David M. Ebbing, Clarence Center, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1996, Ser. No. 665,276
Int. Cl.[6] F01B 3/00
U.S. Cl. 92—71 3 Claims



1. An integral piston (**20**) for use in an air conditioning compressor (**10**) having cylinder bores (**18**) arrayed in a circular pattern around a generally cylindrical cylinder block (**16**), in which a piston (**20**) is reciprocated back and forth in each cylinder bore (**18**) with close sliding contact between said piston (**20**) and cylinder bore (**18**), and in which said piston (**20**) has a cylindrical outer envelope comprised of a front end (F), a back end (B), a semi cylindrical outer surface portion (O) facing radially outwardly of said cylinder block (**16**), a semi cylindrical inner surface portion (I) and two semi cylindrical side surface portions (S), said inner (I) and outer (O) surface portions being bisected by a central plane (P) through a central axis (A) of said piston (**20**), said piston (**20**) comprising,

a relatively short cylindrical head (**32**) at the front end (F) of said envelope having a continuous annular outer surface in full contact with said cylinder bore (**16**),

an outer semi cylindrical segment (**36**) integral with and extending axially along said piston (**20**) and having an outer surface coincident with said outer surface portion (O) of said envelope and having a greatest radial thickness that is everywhere substantially less than the radius of said piston head (**32**),

an inner semi cylindrical segment (**38**) integral with and extending axially of said piston (**20**) and having an outer surface coincident with said inner surface portion (I) of said envelope and having a radial thickness comparable to said outer semi cylindrical segment (O), and,

a wing member (**40**) integral with and extending axially of said piston (**20**) said wing member (**40**) having a radial thickness that is every where substantially less that the radius of said piston head (**32**) and side edges (**42**) symmetrically coincident with at least part of each of said envelope side surface portions (S),

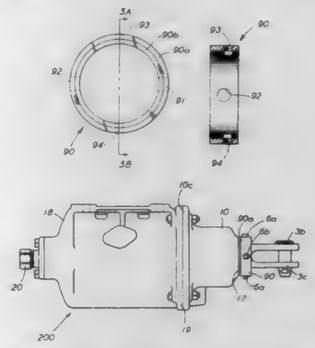
whereby, said piston (**20**) is evenly supported within said cylinder bore (**16**) by outer surfaces that lie on all four portions (O, I, S) of said envelope, but no piston material is encountered between said piston segments (**36**, **38**) and wing member (**40**) moving in a direction generally perpendicular to said central plane (P), thereby reducing piston weight.

5,630,354

EXTENDED LIFE BRAKE CYLINDER HOLDER

James C. Hoffner, Irwin; Patricia T. Karczewski, Export, and Julie A. Krawczyk, Monroeville, all of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Feb. 27, 1996, Ser. No. 607,477
Int. Cl.[6] F16J 15/18
U.S. Cl. 92—168 18 Claims



1. An improved brake cylinder for a railroad vehicle, said brake cylinder comprising:

(a) a brake cylinder body having a bolting flange and defining a first bore extending therefrom to a piston head seat and an inlet port in communication with said first bore, said inlet port connectable to a source of pressurized air;

(b) a head casing having a bolting flange and defining a second bore extending therefrom to a seal seat circumscribing an open bore therein, said bolting flanges bolt together so as to form an enclosure encompassing said first and said second bores;

(c) a piston and rod assembly housed compressively within said enclosure, said piston and rod assembly including

(i) a hollow piston rod having at a closed end a diaphragm piston head and defining at an open end at least one set screw hole and a first pair of aligned holder pin throughholes each of which being oriented perpendicularly to a longitudinal axis of said hollow piston rod, said diaphragm piston head being slidable within said first bore, said hollow piston rod less said diaphragm piston head being slidable within and extendable from said open bore, said diaphragm piston head having on a back side thereof an annular surface formed to a first spring seat,

(ii) a second spring seat concentrically disposed about said hollow piston rod and within which said hollow piston rod is slidable,

(iii) a sealing member disposed between said second spring seat and said seal seat of said head casing and within which said hollow piston rod is slidable, and

(iv) a release spring concentrically disposed about said hollow piston rod and situated between said first spring seat and said second spring seat so that said release spring is compressed within said enclosure thereby forcing said diaphragm piston head against said piston head seat of said

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brake cylinder body and forcing said sealing member via said second spring seat against said seal seat of said head casing;

(d) a push rod assembly having a socket end for insertion within said hollow piston rod via said open end and a coupler end for coupling to brake rigging, said coupler end defining a locking holder pin throughhole; and

(e) a push rod holder having an annular outer metal member and a dampening means secured to said annular outer metal member and defining at least one set screw throughhole and a second pair of aligned holder pin throughholes each of which being oriented perpendicularly to a longitudinal axis of said push rod holder, said push rod holder concentrically disposed about said hollow piston rod and said push rod assembly therein such that at least one set screw inserts through said at least one set screw throughhole of said push rod holder and fastens into said at least one set screw hole of said hollow piston rod thereby attaching said push rod holder to said hollow piston rod and such that a holder pin means inserts through said holder pin throughholes of said push rod holder, said hollow piston rod and said push rod assembly therein thereby locking said hollow piston rod and said push rod assembly therein within said push rod holder, said dampening means of said push rod holder snugly fits concentrically about said hollow piston rod for dampening vibrations encountered thereat thereby reducing likelihood of damage to and prolonging operational life of said brake cylinder;

so that with less than a predetermined pressure fed into said inlet port said brake cylinder sets in a release position wherein said diaphragm piston head remains situated forcibly against said piston head seat of said brake cylinder body and said hollow piston rod with said push rod assembly locked therein remains predominately retracted within said enclosure thereby transmitting no force to such brake rigging through said push rod assembly and with more than a prespecified pressure fed into said inlet port said brake cylinder sets in an applied position wherein said diaphragm piston head moves away from said piston head seat further compressing said release spring and said hollow piston rod with said push rod assembly locked therein extends from said enclosure thereby transmitting force to such brake rigging through said push rod assembly.

14. A push rod holder for use with a brake cylinder of a railroad vehicle, such brake cylinder includes a hollow piston rod and a push rod assembly inserted therein, said push rod holder comprising:

(a) an annular outer metal member; and

(b) a dampening means secured to said annular outer metal member for providing snug concentric fitting of said push rod holder onto such hollow piston rod;

said push rod holder defining at least one set screw throughhole and a pair of aligned holder pin throughholes each of which being oriented perpendicularly to a longitudinal axis of said push rod holder, said at least one screw throughhole is used to attach said push rod holder to such hollow piston rod and said pair of holder pin throughholes are used to attach said push rod holder to such hollow piston rod and such push rod assembly contained therein, said dampening means dampens vibrations encountered at a junction of said push rod holder, such hollow piston rod and such push rod assembly thereby reducing likelihood damage occurring to same and prolonging operational life of such brake cylinder.

5,630,355

RECIPROCATING TYPE COMPRESSOR WITH IMPROVED CYLINDER BLOCK

Hayato Ikeda; Hiromi Nagata; Yuji Kaneshige, and Masaaki Nishimoto, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

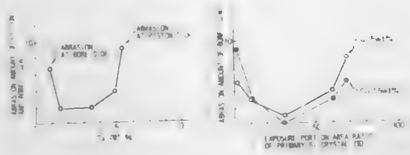
Continuation of Ser. No. 261,829, Jun. 17, 1995, abandoned. This application Dec. 29, 1995, Ser. No. 580,535

Claims priority, application Japan, Jun. 21, 1993, 5-174882

Int. Cl.[6] **F01B** *11/02*

U.S. Cl. 92—169.1 **3 Claims**





1. A reciprocating-type compressor having excellent slidability and abrasion resistance, including a cylinder block provided with a plurality of cylinder bores and a piston, said piston reciprocating in said cylinder bore when a drive shaft is rotated, wherein said cylinder block comprises an aluminum alloy consisting essentially of, by weight, 1.5 to 5.0% of Cu, 13 to 16% of Si and the remainder of Al as chemical compositions, having a Vickers hardness of 85 to 116, and an inner surface of said cylinder bore is provided with exposure portions of primary Si crystals and portions of exfoliated recessions of said primary Si crystals and further said exposure portion area ratio of said primary Si crystals on the inner surface of said cylinder bore is 10 to 60%.

3. A method for producing a reciprocating-type compressor having excellent slidability and abrasion resistance, including a cylinder block provided with a plurality of cylinder bores and a piston, said piston reciprocating in said cylinder bore when a drive shaft is rotated, comprises the steps of:

producing said cylinder block by a die-casting process of an aluminum alloy consisting essentially of, by weight, 1.5 to 5.0% of Cu, 13 to 16% of Si, and the remainder of Al as chemical compositions, primary Si crystals being precipitated on an inner surface of said cylinder bore in consequence of sufficient cooling after casting, and exfoliated recessions of said primary Si crystals being regulated by polished said inner surface of said cylinder bore so that an exposure portion area ratio of said primary Si crystals on the inner surface of said cylinder bore is 10 to 60%.

5,630,356

Patent Not Issued For This Number

5,630,357

DISPENSER FOR FOODS OR DRINKS

Mineo Akiyama, Tokyo, Japan, assignor to Robotex, Inc., Tokyo, Japan

Filed Feb. 9, 1996, Ser. No. 599,589

Claims priority, application Japan, Apr. 4, 1995, 7-078607

Int. Cl.[6] **A23L** *1/18*

U.S. Cl. 99—323.6 **6 Claims**

1. A dispenser for foods or drinks comprising:

(a) a doll movable for selling foods or drinks; a doll driving device coupled to said doll for driving said doll;

(b) a controlling device connected to said doll driving device for controlling said doll driving device to make said doll carry out movement for selling the foods or drinks;

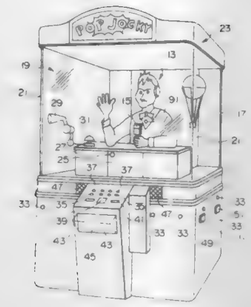
(c) money receiving means for receiving money to produce a money receipt signal;

(d) food or drink harvesting means for harvesting the foods or drinks;

(e) a selecting device for producing a selecting signal which selects one of the foods or drinks;

(f) a food or drink releasing device connected to said money receiving means, said food or drink harvesting means, and said selecting device. for releasing the selected one of the foods or drinks from said food or drink harvesting means when said food or drink releasing device is supplied with said money receipt signal and said selecting signal; and

(g) a sound producing device for producing sounds of voice which are useful for selling the foods or drinks.



5,630,358

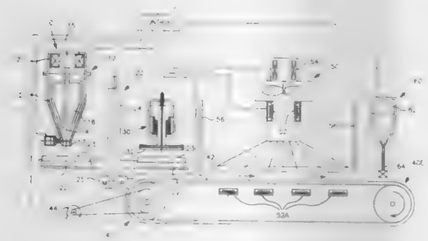
COUNTERTOP APPLIANCE FOR MAKING DISC-SHAPED EDIBLES

Chandulal Patel, 10 Sai Kripa Soc., Watertank, Anandnagar, Baroda-22 Gujarat, India

Filed Nov. 14, 1994, Ser. No. 337,893

Int. Cl.[6] **A21C** *3/04;* **A47J** *27/12;37/00;39/00*

U.S. Cl. 99—349 **4 Claims**



1. A countertop appliance for automatically making a plurality of disc-shaped edibles comprising:

a dough maker having an outer shell including a lower portion having a removable mixing bowl within, and an upper portion configured for covering the lower portion and engaging therewith, and including a drive motor engaging a blade assembly extending downwardly from the drive motor into the mixing bowl to mix and knead a dough mixture placed within the mixing bowl, the lower portion including a discharge valve at a lower end thereof for dropping a plurality of portions of the dough mixture;

a transfer carousel having a plurality of platens, each with an upfacing support surface, the platens arranged on a rotating vertical drive shaft rotatably engaged with a first prime mover for moving the patens in circular rotation in a plane so that each of the platens in a first rotational position, passes under the dough maker to receive one of the dough portions, and for tilting any one of the platens so that the upfacing support surface is in a non-horizontal attitude for dropping the dough portion;

a pneumatically actuated shaper plate having a downwardly facing press surface positioned for engaging the upfacing support surface of each of the platens at a second rotational position of the carousel, the dough portion being flattened and shaped thereby;

a conveyor having a conveying surface positioned for receiving the flattened dough portions as dropped from the platens, and including a second drive means for moving the portions in a path;

a heating assembly having heating elements positioned above and below the conveyor surface along the path for cooking the portions as each moves along the path.

5,630,359

APPARATUS FOR THE DISCONTINUOUS PREPARATION OF PORTIONED PASTA PRODUCTS AND APPARATUS FOR PORTIONING A PREDETERMINED AMOUNT OF LONG-STEMMED PASTA PRODUCTS

Hans-Ulrich Stein, Comano, Switzerland, assignor to Alitecnica S.A., Switzerland

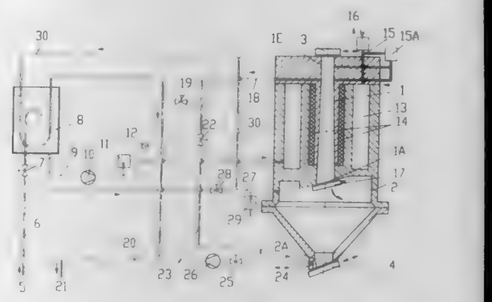
PCT No. PCT/EP94/03366, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/14415, PCT Pub. Date Jun. 1, 1995

PCT Filed Oct. 12, 1994, Ser. No. 648,057

Claims priority, application Germany, Nov. 20, 1993, 43 39 594.5

Int. Cl.[6] **A23L** *1/00;* **A47J** *19/00;27/00;* **G01F** *11/00*

U.S. Cl. 99—407 **15 Claims**



1. An apparatus for the discontinuous preparation of portioned pasta products, in particular spaghetti, with a supply container (**51A**, **51B**) to receive the raw pasta products, a cooking chamber (**1**) and a draining chamber (**2**), wherein the cooking chamber (**1**) and the draining chamber (**2**) can each be closed by valves (**3**, **17**, **4**) in the respective inlets (**1E**, **1A**) and respective outlets (**1A**, **2A**), the valve in the outlet region (**2A**) of the draining chamber (**2**) being constructed as a shut-off flap (**4**) that can be linearly displaced, and a single valve (**17**) being provided in the outlet region (**1A**) of the cooking chamber (**1**) and in the inlet region of the draining chamber (**2**), the improvement in said apparatus characterized in that the valves (**3**, **4**) in the inlet region (**1E**) of the cooking chamber (**1**) and in the outlet region (**2A**) of the draining chamber (**2**) are shut-off flaps that can be moved linearly while spaced apart from the wall of the chamber (**1**, **2**) containing the respective opening of the valves, in that to close the openings at the end of the linear movement, the shut-off flaps (**3**, **4**) are pressed against the respective chamber (**1**, **2**) in a direction perpendicular to the plane of the opening by means of a lever mechanism (**36**, **37A**, **37B**), and in that the valve (**17**) between the outlet region of the cooking chamber (**1**) and the inlet region of the draining chamber (**2**) is constructed as a pivotable shut-off flap (**17**), which is closed and locked in place by means of a linear drive means and an articulated-lever mechanism (**42**, **43**).

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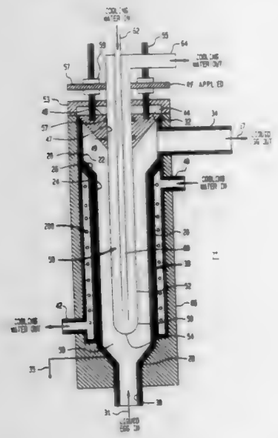
APPARATUS FOR ELECTROHEATING FOOD EMPLOYING CONCENTRIC ELECTRODES

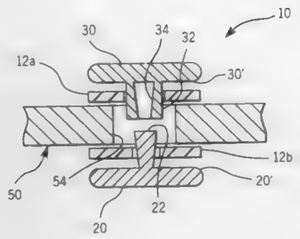
Thaddeus J. Polny, Jr., 705 Suburban Rd., Union, N.J. 07083

Division of Ser. No. 470,020, Aug. 2, 1995, Pat. No. 5,562,024, which is a division of Ser. No. 71,572, Jun. 3, 1993, Pat. No. 5,571,550, which is a continuation-in-part of Ser. No. 7,553, Jan. 22, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 617,224

Int. Cl.[6] A23L *3/32;* **A23B** *5/01*

U.S. Cl. 99—451 **35 Claims**





1. An apparatus for electroheating food comprising:

at least one first electroheating cell having a first pair of electrodes separated by a first gap through which food can flow;

at least one second electroheating cell having a second pair of electrodes separated by a second gap through which food can flow and in fluid communication with said first gap;

and a source of AC electric current having a frequency which is effective to electroheat said food without electrolysis operably linked to said at least one first and said at least one second electroheating cells, said source of AC electric current applying a relatively high voltage, relatively low current, high frequency AC electric current across said first pair of electrodes, and said source of AC electric current applying a relatively low voltage, relatively high current, high frequency AC electric current across said second pair of electrodes.

5,630,361

SANITARY WEAR BUTTON

Stephen J. Van Pay; Thomas L. Niermann, both of Green Bay, and Blake A. Halderson, Valders, all of Wis., assignors to Stoelting, Inc., Kiel, Wis.

Filed Sep. 14, 1995, Ser. No. 528,017

Claims priority, application Japan, Oct. 28, 1994, 6-265330

Int. Cl.[6] A01J *11/06;25/00;25/11;* **A23C** *19/00*

U.S. Cl. 99—454 **10 Claims**

9. A guillotine blade assembly for use within a cheese block former, said blade assembly comprising:

a. guillotine blade having a cutting edge, a first edge, a second edge, an upper surface and a lower surface, wherein said first and second edges are each provided with at least one through bore extending between said upper and lower surfaces; and

b. a wear button disposed in each of said through bores, each wear button comprising:

(1). a first portion comprising a lip and a neck having a distal end and a proximal end, said neck tapering from a larger diameter at its distal end to a smaller diameter at its proximal end, wherein said first portion is inserted into said through bore at said lower surface of said blade such that said neck extends into said through bore and said lip abuts the lower surface of said blade; and

(2) a second portion comprising a lip and a projection extending from said lip, said projection having a distal end and a proximal end and defining a recess within said projection, wherein said recess tapers from a smaller diameter at the distal end of said projection to a larger diameter at the proximal end of said projection,

wherein said second portion is inserted into said through bore at said upper surface of said blade such that said projection extends into said through bore and said lip abuts the upper surface of said blade allowing the proximal end of said neck of said first portion to seat in the recess defined within said second portion.

5,630,362

REFUSE COMPACTOR WITH DEWATERING CAPABILITY

Rolf Jönsson, Stenungsund, Sweden, assignor to Roto-Sieve AB, Kungalv, Sweden

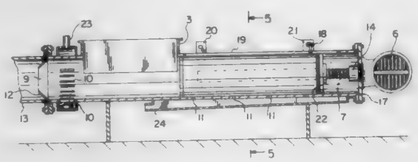
PCT No. PCT/SE93/00710, § 371 Date Apr. 25, 1995, § 102(e) Date Apr. 25, 1995, PCT Pub. No. WO94/09978, PCT Pub. Date May 11, 1994

PCT Filed Aug. 30, 1993, Ser. No. 428,125

Claims priority, application Sweden, Nov. 4, 1992, 9203259

Int. Cl.[6] B30B *9/04;1/18*

U.S. Cl. 100—52 **9 Claims**



1. A refuse compaction device for compacting and dewatering wet refuse material comprising:

an outer and open cylinder having a longitudinal axis and defined by an outside and inside surface and a pair of ends, one of said ends having an end plate secured thereto and the other of said ends including a conically shaped refuse throttling member attached thereto and defining a cylinder outlet, said cylinder including a radially disposed refuse inlet tunnel near said outlet end for feeding refuse into said outer cylinder and a plurality of axially arranged apertures generally oriented between said refuse inlet and said cylinder outlet, said apertures extending at least hemicircularly about said cylinder for allowing water to be drained from said outer cylinder;

an axially elongate piston disposed concentrically within said outer cylinder and axially operable in a reciprocating fashion towards and away from said cylinder outlet so as to compact said refuse and displace water therefrom, said piston comprised of an open cylindrical jacket having a front end and a rear end, each of said ends closed by a respective front end wall and rear end wall, said rear end wall including a centrally located throughbore;

means for driving said piston, said means comprised of a drive motor for rotationally turning a threaded rod within a threaded nut, said nut secured to said rear end wall of said piston and centered about said throughbore, said threaded rod having an inner end that interacts with said nut and an outer end that is connected to said motor and supported by a bearing, said bearing and said motor attached to said end plate of said outer cylinder, said threaded rod extending into said open cylinder of said piston, thereby connecting said piston with said outer open cylinder such that clockwise and counterclockwise rotation of said rod within said nut axially displaces said piston towards and away from said cylinder outlet, said piston formed with an inner pipe secured to and extending between each of said piston end walls such that said inner pipe, with said end walls and said nut, delimits a closed space, said closed space filled with an amount of lubricant adjusted to said threaded rod and said nut,

wherein displacement towards said outlet compacts said refuse between said conical throttling member and said piston, when said piston is in a fully axially displaced position, whereby water is drained from said refuse into said plurality of apertures in said open cylinder and out of said device.

5,630,363

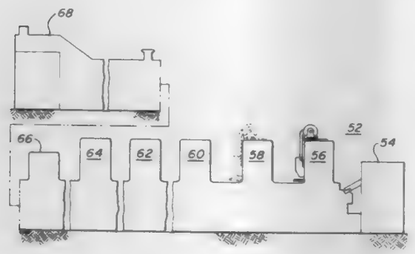
COMBINED LITHOGRAPHIC/FLEXOGRAPHIC PRINTING APPARATUS AND PROCESS

Bill L. Davis, Irving, and Jesse S. Williamson, Dallas, both of Tex., assignors to Williamson Printing Corporation, Dallas, Tex.

Filed Aug. 14, 1995, Ser. No. 515,097

Int. Cl.[6] B41M *1/18;7/00;1/04;* **B41F** *23/00*

U.S. Cl. 101—141 **41 Claims**



1. Apparatus for a combined lithographic/flexographic printing process comprising:

a substrate;

a plurality of successive printing stations for printing color images on the substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a liquid vehicle image on said substrate with a slurry containing an encapsulated essence using the flexographic process;

at least one of said successive printing stations being a lithographic printing station; and

an overcoating applied over the liquid vehicle image on the printed substrate at at least one of said successive lithographic printing stations using the lithographic process in said continuous in-line process.

5,630,364

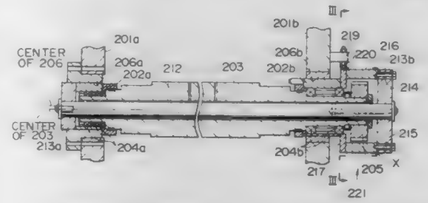
PRINTING PRESS

Kazuyuki Koura; Jiro Tanaka, and Takuji Tsugawa, all of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 242,321, May 13, 1994, Pat. No. 5,458,061. This application Jun. 7, 1995, Ser. No. 478,537

Int. Cl.[6] B41F *5/00*

U.S. Cl. 101—216 **2 Claims**



1. An apparatus for interlocking eccentric bearings for a printing cylinder in a printing press, said printing cylinder having a bore extending therethrough along a rotational axis thereof, said apparatus comprising:

a pair of spaced-apart side frames;

first and second eccentric bearings mounted on said side frames, said first and second eccentric bearings rotatably supporting said printing cylinder;

a connecting shaft extending through said eccentric bearings and said bore of said printing cylinder, said connecting shaft and said printing cylinder being supported for relative rotation between said printing cylinder and said connecting shaft;

a first link member interconnecting said first eccentric bearing with a first end portion of said connecting shaft; and

a second link member interconnecting said second eccentric bearing with a second end portion of said connecting shaft.

5,630,365

RAIL LOADING TRAIN FOR TRANSPORTING AS WELL AS LOADING AND UNLOADING LONG RAILS

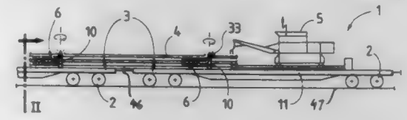
Josef Hertelendi, Freilassing, Germany, assignor to Georg Robel GmbH & Co., München, Germany

Filed May 22, 1995, Ser. No. 446,504

Claims priority, application Germany, May 26, 1994, 44 18 376.3

Int. Cl.[6] B60P *3/04*

U.S. Cl. 104—5 **38 Claims**



1. A rail loading train for transporting as well as loading and unloading rails; comprising:

a loading car having a frame supported on undercarriages for movement in an operating direction;

support means mounted on said frame for supporting long rails, said support means including a plurality of rail supports spaced from each other longitudinally in direction of said frame, each said rail support including a separate pivot drive for swinging said rail support about a vertical axis between a receiving position in which said rail support extends perpendicular to said frame and an idle position in which said rail supports extends longitudinally in direction of the frame, and

a locking mechanism including a slotted-link mechanism operatively connected to each of said rail supports for automatically securing said rail supports after said rail supports conclude a swinging motion and occupy the receiving and idle positions.

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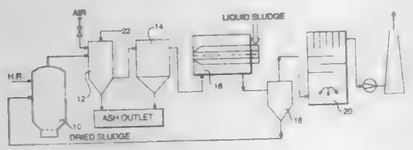
wherein said support means includes a support column secured to said frame for attachment of a rail support and a support ring connected to said support column and having two recesses spaced from each other about the longitudinal axis by 90°, and a bearing sleeve resting on said support ring coaxial to the longitudinal axis of said support column and connected to said rail support, said slotted-link mechanism including a slotted guideway formed in said bearing sleeve, and a slider projecting from said pivot bar and received in said guideway, said locking mechanism further including a locking lug projecting from a lower edge of said bearing sleeve for selective engagement in said recesses of said support ring in the end positions of said rail support.

5,630,366

PROCESS FOR AUTOTHERMAL INCINERATION OF SLUDGE AND OPTIONALLY IN ADDITION OF HOUSEHOLD REFUSE

Marcel Lesoille, Bougival, France, assignor to Degremont, Reuil-Malmaison, France

Filed Aug. 11, 1995, Ser. No. 513,694
Claims priority, application France, Aug. 29, 1994, 94 10378
Int. Cl.[6] F23G *5/04*
U.S. Cl. 110—221 **10 Claims**



1. A process for autothermal incineration of sludge originating from urban an/or industrial water purifications stations and of household refuse, the steps comprising:
conveying liquid sludge for dehydration;
subjecting the sludge to centrifuging for removing liquid therefrom;
simultaneously subjecting the centrifuging sludge to heat for accelerating drying and completing the dehydration;
conveying resulting pulverizing dried sludge for incinerating the sludge;
simultaneously incinerating household refuse; and
utilizing the heat of fumes generated during incinerating to dry the sludge during the dehydration step.

5,630,367

ACTIVATED CARBON AND PRODUCTION THEREOF

Takeji Kobata, and Yoshihiro Ikenaga, both of Sapporo, Japan, assignors to The Social Welfare Foundation Hokkaido Rehabily, Hokkaido, Japan

Division of Ser. No. 197,964, Feb. 17, 1994, Pat. No. 5,438,029. This application Feb. 8, 1995, Ser. No. 385,464
Claims priority, application Japan, Apr. 9, 1993, 5-83486; May 17, 1993, 5-114764
Int. Cl.[6] F23G *5/12*
U.S. Cl. 110—229 **1 Claim**

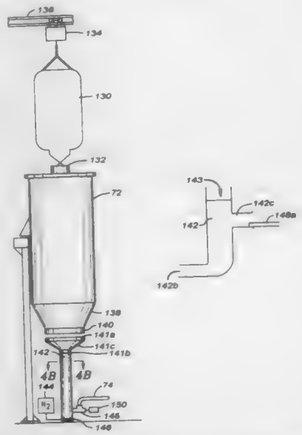
1. An apparatus for burning scrap tires and for the production of activated carbon comprising:
a boiler outer casing with a tire charging port;
an upper water chamber;
a lower combustion chamber;
an ash collecting room:
a lattice partition disposed between an upper part composed of said upper water chamber and said lower combustion chamber and a lower part composed of said ash collecting room;
a lower water chamber communicating with said upper water chamber;
an upper combustion chamber communicating with said lower combustion chamber;
a number of inclined water pipes, disposed inside said lower combustion chamber and connected to said lower water chamber;
a number of furnace tubes, disposed inside said upper water chamber and connected to said upper combustion chamber;
said upper water chamber, said lower combustion chamber, said ash collecting room, said lower water chamber and said upper combustion chamber being disposed inside said boiler outer casing;
an air jacket disposed on a side wall of said outer casing;
a number of blast tubes for communicating said air jacket with said lower combustion chamber through said lower water chamber;
a blower connected to said air jacket by a duct, said blower connected through a valve means with a tubular body for supplying a water spray;
the walls of said ash collecting room being constructed of a porous castable structure;
the apparatus further comprising an inertial separation type dust collector connected to an exhaust gas tube disposed in the rear portion of said furnace tubes; and
an electric dust collector between said exhaust gas tube and a chimney.

5,630,368

COAL FEED AND INJECTION SYSTEM FOR A COAL-FIRED FIRETUBE BOILER

Charles L. Wagoner, and John P. Foote, both of Tullahoma, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 66,783, May 24, 1993, Pat. No. 5,429,059. This application Feb. 21, 1995, Ser. No. 395,384
Int. Cl.[6] F23B *7/00*
U.S. Cl. 110—234 **11 Claims**



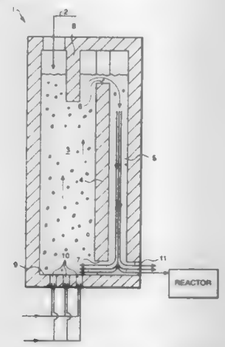
1. A coal injection system for use with a coal burning firetube boiler, comprising:
a. an eductor comprising an inlet region, a reducer region comprising a large diameter end adjacent said inlet region and a small diameter end opposite said large diameter end, and a mixing chamber extending longitudinally through said eductor, said mixing chamber comprising a smaller diameter end adjacent the small diameter end of said reducer region and a larger diameter end opposite said smaller diameter end, said mixing chamber increasing in internal diameter from its smaller diameter end to its larger diameter end, said inlet region, reducer region, and mixing chamber forming a longitudinal bore through said eductor; and
b. a coal delivery tube having a first end attachable to a source of finely divided coal of uniform density and pressure and a second end extending through said inlet and reducer regions and terminating in said mixing region near the smaller diameter end of said mixing region, said tube having an outer diameter slightly less than the smaller diameter of said mixing region and said tube further being concentrically located within said eductor so as to form an annular passageway around the perimeter of said tube in said eductor, said passageway having sufficient width to permit air injected into said annular passageway to draw a vacuum at the second end of said tube.

5,630,369

REACTOR AND A METHOD OF SMELTING COMBUSTION RESIDUES IN THE REACTOR

Alfred Edlinger, Baden, Switzerland, assignor to Holderbank Financiere Glarus AG, Glarus, Switzerland

PCT No. PCT/AT94/00085, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO95/01312, PCT Pub. Date Jan. 12, 1995
PCT Filed Jul. 1, 1994, Ser. No. 392,943
Claims priority, application Austria, Jul. 1, 1993, 1297/93
Int. Cl.[6] F23J *3/00*
U.S. Cl. 110—344 **7 Claims**



3. A method for melting inorganic combustion residues in a reactor comprising two chambers separated by an essentially vertical wall dimensioned to provide an overflow between the two chambers at its upper end and a return flow opening between the chambers at its bottom end, said method including the steps of:
introducing a charge of said residues into one of the chambers through a feeding opening in said one chamber, said charge being heated to a temperature above 1,400° C.; and
injecting gas into said one chamber through a nozzle in the chamber at a rate that results in a foamed slag being formed, said slag having a foam weight between 0.06 and 0.15 kg/liter in said one chamber.

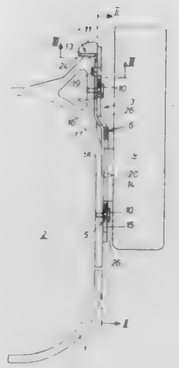
5,630,370

DEVICE FOR DETACHABLY FASTENING AN EMBROIDERY FRAME

Mathias Herbach, Pfinztal, Germany, assignor to G.M. Pfaff Aktiengesellschaft, Kaiserslautern, Germany

Filed May 15, 1996, Ser. No. 648,337
Claims priority, application Germany, May 19, 1995, 295 08 373.5
Int. Cl.[6] D05C *9/04*
U.S. Cl. 112—103 **6 Claims**

1. A device for detachably fastening an embroidery frame slidingly arranged on a support surface to a drive member of a feed mechanism of a sewing or embroidery machine, the device comprising:



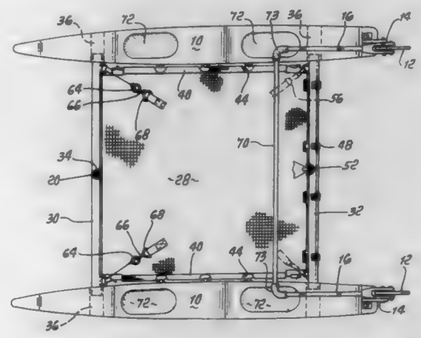
coupling means acting in a positive-locking manner and non-positively acting locking means, including two coupling pins fastened to the embroidery frame and located at mutually spaced locations from one another in a horizontal direction, each of said coupling pins carrying a head, a holding element fastened to the drive member, said holding element containing two elongated holes, which extend in parallel to the support surface of the machine and which have a height corresponding to a diameter of said coupling pins, a free space provided in an area of said elongated holes for accommodating said heads of said coupling pins, said elongated holes being offset in relation to one another in a parallel direction at right angles to a longitudinal extension of said elongated holes and each elongated hole having an opening for entry and withdrawal of said coupling pins, said entry and withdrawal taking place at fight angles to the longitudinal axis of the pin, a spring element provided with a handle and being movable to and fro between two end positions, said embroidery frame being provided with a depression, said spring element snapping into said depression when the embroidery frame is inserted with said coupling pins into said elongated holes.

5,630,371

CATAMARAN

Gino J. Morrelli, Tustin; James H. Melvin, Westminster; John A. Wake, Dana Point; Kevin M. Thompson, Temecula, and Matt S. Miller, Del Mar, all of Calif., assignors to R.R. Sail, Oceanside, Calif.

Filed Oct. 6, 1995, Ser. No. 540,574
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 **5 Claims**



1. A catamaran having two spaced apart elongated hulls joined by front and rear cross members holding said hulls in alignment,

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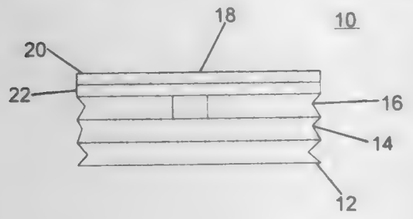
and having a trampoline extending between said cross members, the improvement comprising cables carried within enclosures forming side loops in the trampoline and running from the front to the rear cross members, a plurality of restraining hooks affixed to the sides of each of the hulls, the cables being detachably held by said hooks to maintain lateral tension in the trampoline, and the leading edge of the trampoline being slidably received and held in the front cross member.

5,630,372

ON DEMAND USEFUL LIFE INDICATOR

Joseph W. Ramsey, 11 Great Meadow La., East Hanover, N.J. 07936, and Peter L. Gill, 1 Kenley Way, Hackettstown, N.J. 07840

Filed Jul. 25, 1995, Ser. No. 506,334
Int. Cl.[6] G01D *21/00*
U.S. Cl. 116—206 **10 Claims**



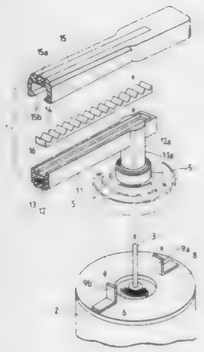
1. A useful life indicator comprising:
a) a base member that is impermeable to a selected ambient fluid;
b) an indicator material having a first side and an opposite second side, said first side being applied to one side of the base member in a predetermined pattern, said indicator material having a selected composition providing a visual indication when exposed to a predetermined active component of the ambient fluid;
c) an adhesive applied with a predetermined pattern on a same side of the useful life indicator as the indicator material, said predetermined pattern of adhesive being applied to at least portions of the second side of the indicator material, said adhesive being impereable with respect to the active component of said ambient fluid; said predetermined pattern of the adhesive providing at least one void area that is absent adhesive therein said void area providing exposure of at least one selected portion of the indicator material to the active component of the ambient fluid; and
d) a co-layered cover member that fully covers said adhesive and the indicator material, said cover member having at least two layers, a first layer of the two layers being impermeable to the selected ambient fluid for isolating said indicator material from the ambient fluid, a second layer of the two layers being permeable to the selected ambient fluid, and being positioned between the adhesive and the first layer said second layer having a greater attraction to the adhesive than to the first layer and said greater attraction resulting in said second layer being adhered to the adhesive for providing a membrane between the ambient fluid and the indicator material, the first layer being selectably removable from said second layer for completely exposing said second layer, thus enabling predetermined active component of the ambient fluid to permeate through the exposed second layer thereby equally and only exposing the selected portion of the indicating material interior of the void areas to the selected ambient fluid, to provide said visual indication said visual indication being observable through the exposed surface of the second layer, the visual indication beginning after removal of said first layer and being completed near the end of a predetermined period of time said membrane further providing abrasion protection for the adhesive and the indicator material during the predetermined period of time.

5,630,373

ANALOG INDICATOR WITH SELF-LUMINESCENT POINTER

Miki Kato, Kariya, and Kazuhiko Miyazaki, Aichi-ken, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 108,516, Aug. 18, 1993, Pat. No. 5,372,087. This application Nov. 16, 1994, Ser. No. 342,004
Claims priority, application Japan, Aug. 24, 1992, 4-224413
Int. Cl.[6] G01D *13/22*
U.S. Cl. 116—288 **17 Claims**



6. A self-luminescent indicator apparatus comprising:
an indicating pointer having a housing and a cover for covering the housing, the housing including a groove formed therein having a bottom and two opposing side walls, the cover including an opening formed therein;
a luminescent element disposed on the bottom of the groove formed in the housing of said indicating pointer;
means for conducting energy to said luminescent element to cause said luminescent element to emit light; and
a lens interposed between the cover of said indicating pointer and said luminescent element and abutting with top portions of the side walls of the groove formed in the housing, said lens having a flat surface through which light emitted from said luminescent element enters, and a corrugated surface opposite the flat surface which projects the light entering through the flat surface out of said indicating pointer through the opening formed in the cover.

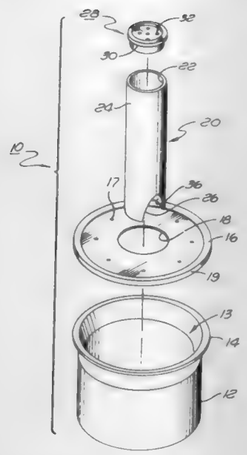
5,630,374

CRICKET DISPENSER

John D. Cunningham, Granada Hills, Calif., assignor to David D. Rose, Van Nuys, Calif.

Filed Aug. 28, 1995, Ser. No. 520,141
Int. Cl.[6] A01K *1/60;1/00*
U.S. Cl. 119—6.5 **14 Claims**

1. Apparatus for storing at least one cricket comprising, in combination:
a) a container comprising a lateral portion integral with a bottom portion;
b) a top on said container;
c) an elongated hollow member, the length of said elongated member exceeding the height of said lateral portion of said container; and



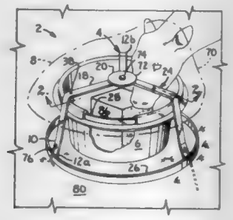
d) said top having an internal aperture removably slidably receiving said elongated hollow member within said container in a substantially vertical orientation.

5,630,375

LIVESTOCK FEEDER

Fred W. Mann, Box 444, Waterville, Kans. 66548

Filed Mar. 31, 1995, Ser. No. 414,223
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—51.03 **11 Claims**



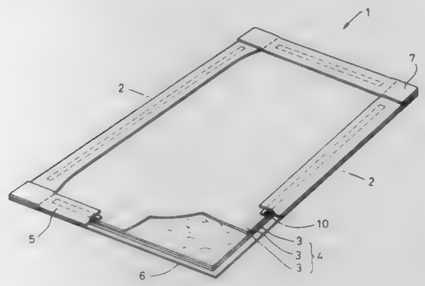
1. A livestock feeder, which comprises:
(a) a frame including a plurality of legs each having upper and lower ends, said frame further including web means connected to said leg upper ends and converging at a center of said frame;
(b) tub means for holding feed having an upwardly-open receptacle and a rim;
(c) tub capture means connected to each of said legs in proximity to their upper ends for capturing said tub rim whereby said tub means is mounted on the frame; and
(d) tub retainer means for retaining said tub means in a locked position on said frame;
(e) a flexible cover mounted on said web means and flexibly bendable between a first position in close proximity to said tub rim in covering relation over said tub and a second position bent upwardly therefrom for providing livestock access to said tub receptacle; and
(f) said web means comprising a plurality of support bars each extending from a respective leg upper end to a web center, each web bar having an outer end connected to a respective leg upper end and an inner end, said web bar inner ends converging and being interconnected at a center of said web means.

5,630,376

ABSORBENT COMPOSITE PANEL FOR PET ANIMAL

Kengo Ochi, Kawanoe, and Yuko Kawasaki, Kanonji, both of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Aug. 18, 1995, Ser. No. 517,031
Claims priority, application Japan, Aug. 23, 1994, 6-198629
Int. Cl.[6] A01K *1/015*
U.S. Cl. 119—169 **5 Claims**



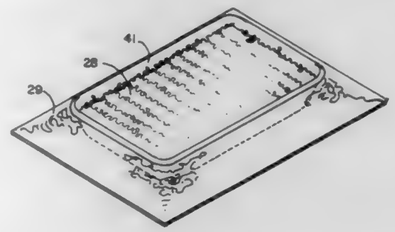
1. An absorbent composite panel for pet animal waste comprising:
an absorbent panel having peripheral edges;
a liquid-impermeable backsheet covering the bottom surface of said absorbent panel;
a plurality of liquid-impermeable overflow barrier strips, each one of said plurality of barrier strips being disposed along one of the peripheral edges and bonded integrally to said backsheet along an outer side edge thereof to provide a water-tight seal along the peripheral edges of said absorbent panel; and
spacer means disposed between an inner side edge of each of the plurality of barrier strips and the top surface of said absorbent panel and attached to said panel for spacing each inner side edge of said overflow strips upward from the top surface of said absorbent panel by a desired distance.

5,630,377

DISPOSABLE PET TOILET ASSEMBLY

Robert R. Kumlin, 109 Wexford Dr., Cherry Hill, N.J. 08003

Continuation-in-part of Ser. No. 220,829, Mar. 31, 1994, Pat. No. 5,482,007. This application Sep. 25, 1995, Ser. No. 533,070
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—172 **17 Claims**



1. A pet toilet absorbent pad comprising a plurality of individual flexible and resilient strips of absorbent material secured to a resilient base sheet, said strips being secured to said base sheet so that an end region of a portion of the strips stands substantially freely upright, said plurality of strips being secured at selected locations on the base sheet whereby individual strips touch and develop discontinuous frictional support for one another.

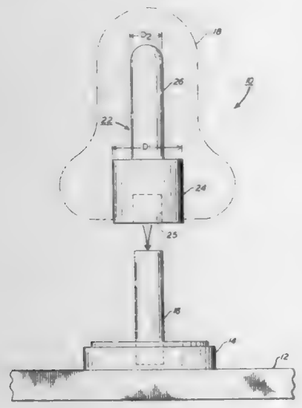
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5,630,378

SCRATCHING POST FOR PETS

Pentti V. Multala, 49 Amsden Dr., Rochester, N.Y. 14623

Filed Nov. 13, 1995, Ser. No. 556,486
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—621 3 Claims



1. A pet scratching post, including a base and an upstanding brush removably mounted thereon;

said brush including a hub and bristles extending radially from said hub;

said brush having a bell shaded configuration with a generally toroidal lower section and a hemispherical top;

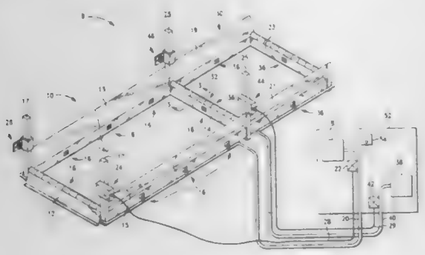
said base having an area such that a pet in contact with said brush also weighs upon said base to keep said post upright.

5,630,379

ELECTRICALLY CONTROLLED SPRAYING DEVICE FOR CLEANING AND TREATING ANIMALS

John K. Gerk, and W. Michael Ryden, both of Julesburg, Colo., assignors to SSI Corporation, Julesburg, Colo.

Continuation-in-part of Ser. No. 601,075, Feb. 12, 1996. This application Jun. 10, 1996, Ser. No. 660,871
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—667 20 Claims



1. A device for cleaning animals and treating diseases, infections and abrasions thereof, comprising:

at least one component for cleaning and subsequently treating an animal;

each component having opposing side rails and opposing end rails defining an enclosure through which the animals are walked on a single direction one after the other, one end rail of each component being an entrance end for the animal; and

a plurality of nozzles attached to each rail of each component, the plurality of nozzles being subdivided into sets of nozzles, each of the nozzles being mounted to direct a spray of fluid to a pre-determined body part of the animal, such that the animal first passes a set of cleaning nozzles and subsequently passes at least one set of treatment nozzles

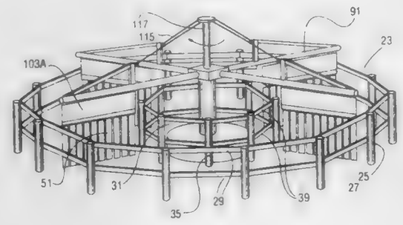
whereby as the animal walks through the device, the pre-determined body part of the animal is spray cleaned and then chemically treated.

5,630,380

ANIMAL EXERCISE APPARATUS

Nick S. Karanges, 2301 N. Collins, No. 124, Arlington, Tex. 76011

Filed Mar. 9, 1995, Ser. No. 401,343
Int. Cl.[6] A01K *15/02*
U.S. Cl. 119—704 6 Claims



1. An apparatus for exercising animals, comprising:

a generally circular outer barrier secured to the ground,

a generally circular inner barrier secured to the ground generally concentrically within said outer barrier defining an annular pathway between said inner and outer barriers,

a central shaft located within said inner barrier and extending upward to an upper portion,

a plurality of spaced apart spokes fixedly secured to said upper portion of said shaft and extending outwardly to positions above said annular pathway,

a movable barrier coupled to each spoke at a position to hang down between said inner and outer barriers such that a space is formed between adjacent movable barriers sufficient to receive an animal,

means for rotating said shaft and hence said spokes and said movable barriers,

electrical leads coupled to said movable barriers, and

means for applying electrical energy to said electrical leads as said movable barriers are rotated to encourage the animals to move between said movable barriers,

each of said movable barriers is hinged to its respective spoke such that each of said movable barriers may swing relative to its respective spoke, between said inner and outer barriers,

each of said movable barriers comprises an upper barrier member hinged to its respective spoke and a plurality of flexible members coupled to said upper barrier member at spaced apart positions to hang down between said inner and outer barriers,

said flexible members are formed of electrical insulating material,

said electrical leads are coupled to said flexible members at positions sufficient to engage an animal on said pathway.

5,630,381

ANIMAL RETENTION DEVICE

Thomas Kroyer, 14328 Allen Blvd., Savage, Minn. 55378

Continuation-in-part of Ser. No. 172,948, Dec. 27, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,736
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—801 1 Claim



1. An animal capture and retention device including:

a. a longitudinally extendable unit including an inner and an outer tube, said inner tube being limitedly extendable with respect to said outer tube and providing an extending end and an inner end, said outer tube having a forwardmost end and a rear end;

b. said inner tube being rotatable with respect to said outer tube when in extended position;

c. hook means carried by and attached to said extending end of said inner tube;

d. said hook means including a shaft and a resilient trapping portion adjacent thereto to provide an animal capturing area therebetween; and

e. a button receiving aperture adjacent said rear end of said outer tube, a spring loaded button arranged on said inner tube whereby upon registration of said button with said aperture, said button will pass into said outer tube aperture and lock said tubes in non-extended position.

5,630,382

ILLUMINATED PET HARNESS

Annette M. Barbera, 1176 Idylewild Dr., Annapolis, Md. 21401, and Charlene H. Brannon, 12722 Kembridge Dr., Bowie, Md. 20715

Filed Sep. 22, 1995, Ser. No. 532,229
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—859 3 Claims



1. An illuminated pet harness, comprising,

a neck collar strap, the neck collar strap having neck collar strap free distal ends, with first strap fasteners arranged for selective securement of the neck collar strap free distal ends together, and

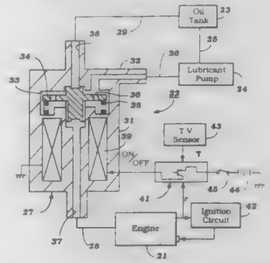
illumination means directed through the neck collar strap for effecting selective illumination from the neck collar strap, wherein the illumination means includes a fiber optic core directed through the neck collar strap, and the fiber optic core having a plurality of lens members in contiguous communication with the fiber optic core, with the lens members directed through the neck collar strap.

5,630,383

LUBRICATING OIL SUPPLYING SYSTEM FOR ENGINE

Hiroyuki Kidera, and Toru Izumi, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 321,963, Oct. 11, 1994, Pat. No. 5,511,524, which is a division of Ser. No. 947,497, Sep. 18, 1992, Pat. No. 5,390,635. This application Jun. 7, 1995, Ser. No. 473,436
Claims priority, application Japan, Mar. 16, 1992, 4-089297
Int. Cl.[6] F01M *1/16;3/02*
U.S. Cl. 123—73 AD 8 Claims



1. A lubricating system for an internal combustion engine comprising a positive displacement lubricant pump driven in timed relationship to the engine for pumping an amount of lubricant which is fixed for a fixed number of revolutions of said engine regardless of the speed of said engine, a lubricant control valve for controlling the amount of lubricant delivered by said lubricant pump to said engine by selectively delivering only a controlled amount of lubricant pumped by said lubricant pump to said engine for its lubrication, means for sensing the running condition of said engine and means for controlling said valve for maintaining the duration of supply of lubricant to the engine from the lubricant pump constant under a certain range of running conditions so that the amount of lubricant supplied at said certain range will vary with engine speed and means for controlling said valve for changing the duration of supply under other running conditions.

5,630,384

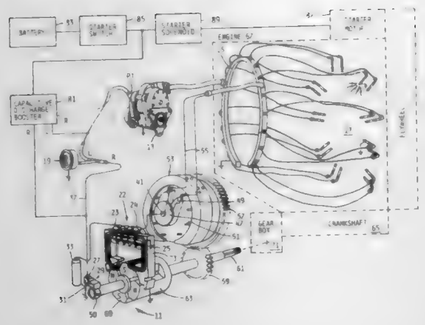
MAGNETO-BASED IGNITION SYSTEM FOR RECIPROCATING INTERNAL COMBUSTION ENGINE HAVING A CAPACITIVE DISCHARGE BOOSTER FOR AIDING ENGINE STARTING

Bradley D. Mottier, and J. Norman MacLeod, both of Jacksonville, Fla., assignors to Unison Industries Limited Partnership, Jacksonville, Fla.

Filed Jan. 17, 1996, Ser. No. 587,515
Int. Cl.[6] F02P *1/00*
U.S. Cl. 123—149 C 18 Claims

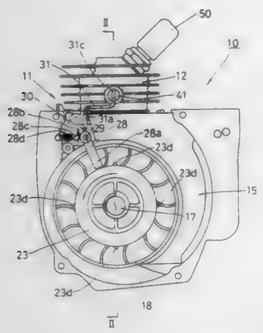
1. An ignition system for providing spark energy to a spark plug of an internal combustion engine having at least one reciprocating piston, the ignition system comprising in combination: a magneto having a primary coil, a rotary magnet driven by the engine and generating energy in the primary coil having a voltage of alternating polarity and a single breaker for timing a discharge of the energy from the coil to the spark plug; a capacitor for concentrating energy from a source of energy; an output circuit for delivering the concentrated energy to the primary coil of the magneto as discrete pulses whose timing is independent of the reciprocating motion of the piston; a converter responsive to the source of energy for pumping increments of energy from the source into the capacitor at a rate of at least several thousand increments per second; and

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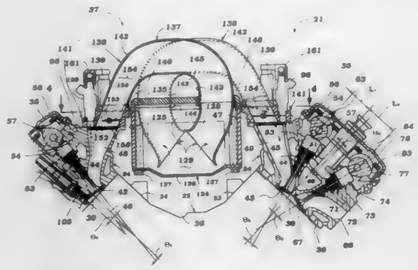
a start switch for starting the internal combustion engine that enables the converter while the engine is being started and disables the converter thereafter.

5,630,385
INTERNAL COMBUSTION ENGINE WITH DECOMPRESSION DEVICE
Toshio Taomo, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Nov. 16, 1995, Ser. No. 558,881
Claims priority, application Japan, Nov. 21, 1994, 6-286621
Int. Cl.[6] F02N *3/02;17/08*
U.S. Cl. 123—182.1 **20 Claims**



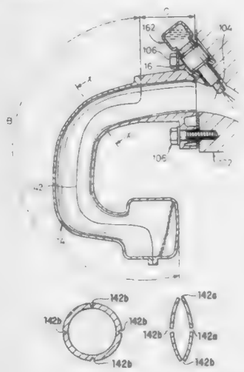
1. An internal combustion engine for powering a portable working machine comprising:
- an automatic decompression device including a pressure reducing valve;
- a recoil starter; and
- a decompression working means for opening and closing said pressure reducing valve, said decompression working means working in association with said recoil starter;
- said decompression working means comprising a rotatable recoil reel decompression lever means, swingably mounted to a fixed member of said internal combustion member for swinging upon abutment against said abutting jut of said recoil reel, and a decompression rod means for opening or closing said pressure reducing valve in accordance with rotation of said recoil reel, said decompression rod means being a crooked-rod which is pivotally supported by said fixed member and which is rotated upon abutment against said decompression lever.

5,630,386
INTAKE STRUCTURE FOR V-TYPE ENGINE
Masahiro Uchida, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Dec. 23, 1994, Ser. No. 363,411
Claims priority, application Japan, Dec. 29, 1993, 5-353187
Int. Cl.[6] F02M *35/10*
U.S. Cl. 123—184.34 **25 Claims**



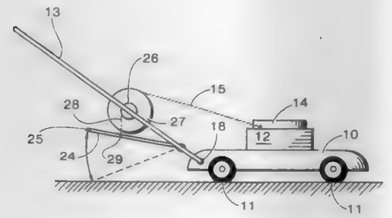
1. An induction system for an engine having a pair of angularly disposed cylinder banks, each having at least two cylinder bores formed therein, said cylinder banks defining a valley between them, each cylinder bank having a plurality of intake ports for the cylinder bores therein formed adjacent said valley, a plenum chamber extending through said valley and spaced from said cylinder banks for forming a cooling air flow path therearound, said plenum chamber being comprised of a generally open topped body closed by an upper closure plate, a first series of intake pipes extending from the intake ports of one of said cylinder banks into said plenum chamber through said upper closure plate, and a second series of intake pipes extending from the intake ports of the other of said cylinder banks into said plenum chamber through said upper closure plate, said intake pipes being all spaced from each other for providing a cooling air flow path therebetween.

5,630,387
INTAKE MANIFOLD
Eiichi Kamiyama, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Mar. 11, 1996, Ser. No. 613,520
Claims priority, application Japan, Mar. 13, 1995, 7-052489
Int. Cl.[6] F02M *35/10*
U.S. Cl. 123—184.38 **8 Claims**



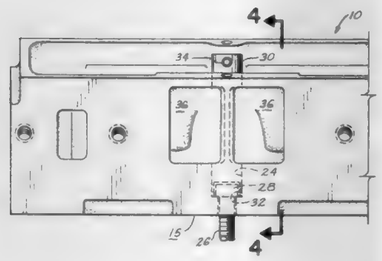
1. An intake manifold connectable to a forward-facing side of a transversely mounted engine, the manifold having at least one region of increased fragility relative to other regions of the manifold, the at least one region of increased fragility extending in a direction generally parallel to a longitudinally extending axis of the manifold.

5,630,388
STARTER MECHANISM FOR SMALL ENGINES
Daniel L. Eaton, 74 W. Lamoka Ave., Savona, N.Y. 14879
Filed May 20, 1996, Ser. No. 650,327
Int. Cl.[6] F02N *3/04*
U.S. Cl. 123—185.4 **4 Claims**



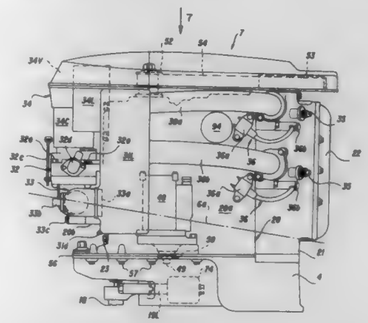
1. A machine including a frame, an engine with a rewind starter mounted on said frame and a starter rope operatively connected to said starter, an operator handle connected to said frame, and the improvement comprising:
- a pulley mechanism with a driver pulley wheel and a driven pulley wheel disposed on said handle, said driver pulley wheel operatively connected to said driven pulley wheel, said driven pulley wheel operatively connected to said starter rope;
- a foot operated starter lever pivotally mounted for movement up and down; and
- a driver rope from said starter lever operatively connected to said driver pulley wheel;
- whereby said starter lever is adapted to pull said driver rope and, through said pulley mechanism, said starter rope to start said engine.

5,630,389
CYLINDER HEAD BOLT PLUG
Kevin G. Self, Rte. 1, Box 28A, Caddo, Okla. 74729
Filed Sep. 29, 1995, Ser. No. 537,267
Int. Cl.[6] F02F *1/24*
U.S. Cl. 123—193.3 **30 Claims**



1. A method for increasing air flow through the air inlet of the cylinder head of an internal combustion engine, wherein the cylinder head includes longer bores and shorter bores through which longer cylinder head bolts and shorter head bolts, respectively, pass to secure the cylinder head to the block of the internal combustion engine, said method comprising:
- countersinking a longer bore to create a larger bore to a depth such that the cylinder head can be secured to the block by a shorter inner-fitting cylinder head bolt of substantially the same length as the shorter cylinder head bolts;
- replacing the longer cylinder head bolt with said short inner-fitting cylinder head bolts;
- inserting a cylindrical plug into said larger bore, said cylindrical plug substantially filling said larger bore;
- securing said cylindrical plug to the cylinder head so said cylindrical plug does not move within said larger bore;
- recontouring and reshaping the interior air inlet wall near said larger bore by removing metal simultaneously from the interior air inlet wall and from said cylindrical plug inserted into said larger bore;
- sealing said cylindrical plug to prevent open communication between adjacent chambers within the cylinder head; and
- sealing said cylindrical plug to prevent oil from leaking into the air chamber within the cylinder head.

5,630,390
COMPACT OUTBOARD ENGINE STRUCTURE
Masaki Tsunoda; Kouji Koishikawa, and Hitoshi Suzuki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaishi, Tokyo, Japan
Filed May 14, 1996, Ser. No. 645,791
Claims priority, application Japan, May 18, 1995, 7-120260
Int. Cl.[6] F02F *7/00*
U.S. Cl. 123—195 P **11 Claims**



1. An engine for an outboard engine system, comprising:
- an engine block subassembly for supporting a crankshaft in a vertical attitude, and having a plurality of cylinders formed therein into a V-shape to open rearwardly from said crankshaft;
- a cylinder head coupled to a rear end of said engine block subassembly;
- a throttle body disposed in front of said engine block subassembly;
- a starter motor mounted at a lower portion of said engine block subassembly on one side thereof for driving said crankshaft;
- an oil filter mounted above said starter motor; and
- a plurality of intake pipes extending from said throttle body through left and right opposite sides of said engine block subassembly and connected to said cylinder head, at least one of said plurality of intake pipes is disposed such as to extend between said starter motor and said oil filter.

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5,630,391
PISTON WITH PIN BOSS COOLING

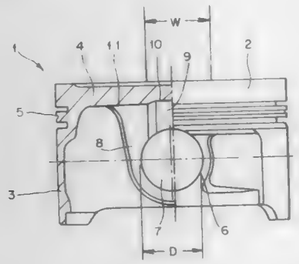
Werner Anderson, Oberboihingen; Thomas Hoch, and Dietmar Wetzel, both of Stuttgart, all of Germany, assignors to Mahle GmbH, Stuttgart, Germany

Filed Dec. 8, 1994, Ser. No. 351,823

Claims priority, application Germany, Dec. 9, 1993, 43 43 044.3

Int. Cl.[6] F01B *31/10;* **F02F** *3/16*

U.S. Cl. 123—196 M **2 Claims**



1. A piston for an internal combustion engine including a ring belt, a skirt, a piston head with a bottom and two pin bosses extending downwardly from said piston head bottom; said pin bosses having a pin boss bore for receiving a piston pin, the piston comprising;

an oil-collecting chamber having a depth and disposed between said two pin bosses and above said pin boss bore;

said piston head bottom including an oil-collecting dome shaped recess formed therein, said oil-collecting recess being in communication with said oil-collecting chamber so that after oil collects in the recess, it is directed into the bosses when the movement of the piston reverses;

wherein said oil-collecting chamber and said oil-collecting recess have a common width W,

wherein the pin boss bore has a diameter D,

wherein width W is approximately the same length as diameter D; and

wherein the depth of said oil collecting chamber and said oil collecting recess is generally within the range of 0.2 mm to 1.5 mm.

5,630,392
EXHAUST BRAKE

Victor A. Harris, Nr. Arundel, United Kingdom, assignor to Hersham Valves Limited, Ford, United Kingdom

PCT No. PCT/GB94/01300, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO94/29583, PCT Pub. Date Dec. 22, 1994

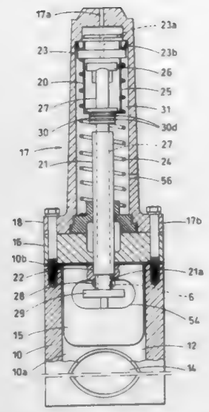
PCT Filed Jun. 16, 1994, Ser. No. 564,136

Claims priority, application United Kingdom, Jun. 16, 1993, 061693

Int. Cl.[6] F02D *9/06*

U.S. Cl. 123—323 **14 Claims**

1. An exhaust brake of the sliding valve gate (**15**) type comprising a piston cylinder device (**17**) for operating the slidable valve gate (**15**) to close the exhaust brake, an aperture (**54**) through the valve gate for relieving manifold pressure, and control means (**6, 26, 28, 29**) for controlling the exhaust gases through the aperture in the valve gate, characterised in operable means **20, 23, 25, 26, 30** being operable by the same pressure source as that for operating



the control means (**29**) to control venting of exhaust gases in addition to the control available by said control means.

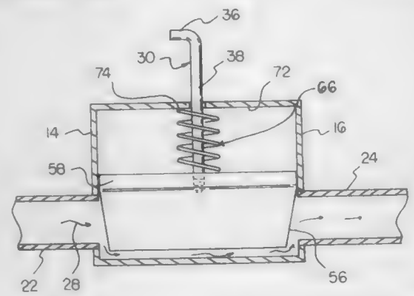
5,630,393
ANTI-TURBO DEVICE

Jaroslaw Grzesiak, 3219 N. Neenah, Chicago, Ill. 60634

Filed Mar. 1, 1996, Ser. No. 609,429

Int. Cl.[6] F02D *9/10;9/12*

U.S. Cl. 123—336 **8 Claims**



1. An anti-turbo device for regulating the flow of air into a fuel injector system of an engine comprising in combination:

a generally rectangular housing unit having a first end and a second end, the first end having an intake pipe being interconnected and projecting outwardly therefrom, the second end having an exhaust pipe being interconnected and projecting outwardly therefrom, the housing unit capable of receiving a flow of air from the intake pipe, the air flow being capable of exiting from the housing through the exhaust pipe;

an air pedal projecting from a top portion of the housing, the air pedal having a short member and an elongated member being interconnected, the short member and the elongated member being interconnected to give the air pedal a generally L-shaped appearance, the short member of the air pedal having a proximal end while the elongated member having a distal end, the short member being coupled with a linkage of a gas pedal for allowing movement of the air pedal in an upwardly and downwardly direction within the top portion;

a generally rectangular baffle being formed of a rigid material, the baffle having a top side, a bottom side and a peripheral edge therearound, the top side of the baffle having the distal end of the air pedal being interconnected thereto, the air pedal being capable of moving the baffle when the linkage moves the air pedal, the distal end being centrally positioned on the top side and spaced from a top peripheral edge of the baffle, the baffle having a bottom peripheral edge being spaced from a bottom interior portion of the housing, the baffle being axonometric within the housing and with respect to the planes of the housing, the bottom peripheral edge of the baffle being capable of modulating the air flow through the housing when the linkage moves the air pedal upwardly and downwardly; and

a return spring being attached to the top side of the baffle at one end and an interior top portion of the housing at another end, the spring being capable of having the elongated member of the air pedal positionable therethrough, the return spring being capable of recoiling to return the baffle and pushing the air pedal upward when the gas pedal is released for restricting the air flow through the housing.

5,630,395
FEEDBACK CONTROL SYSTEM FOR MARINE PROPULSION ENGINE

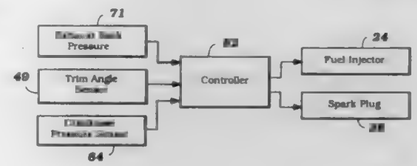
Masahiko Katoh; Kimihiro Nonaka, and Kazuhiro Nakamura, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation-in-part of Ser. No. 402,193, Mar. 10, 1995. This application Dec. 20, 1995, Ser. No. 575,221

Claims priority, application Japan, Mar. 10, 1994, 6-40065; Mar. 10, 1994, 6-40066; Mar. 10, 1994, 6-40067; Mar. 10, 1994, 6-40068; Dec. 22, 1994, 6-320029

Int. Cl.[6] F02P *5/00*

U.S. Cl. 123—406 **28 Claims**



1. A control method for a marine propulsion system for propelling a hull, an internal combustion engine carried by said hull and comprised of a combustion chamber, an air and charge forming system for supplying a fuel air charge to said engine combustion chamber for combustion therein for driving a propulsion device carried by said hull for propelling said hull, an exhaust system for discharging combustion products from said combustion chamber to the atmosphere, a combustion sensor for sensing the combustion condition in said combustion chamber, and a hull condition sensor for sensing a hull condition that will affect combustion, said method comprising the steps of reading the output of the combustion condition sensor, adjusting at least one of the engine systems in response to the output of the combustion condition sensor to maintain the desired combustion condition, sensing the hull condition that may effect the combustion, and adjusting at least one of the engine systems in response to the sensed hull condition for compensating for variations in hull condition.

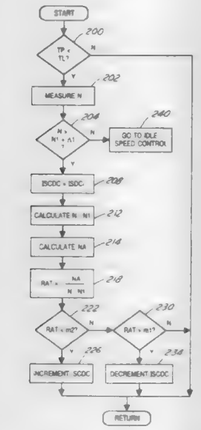
5,630,394
IDLE SPEED CONTROL

Jessy W. Grizzle, Ann Arbor, and Jing Sun, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 4, 1996, Ser. No. 610,777

Int. Cl.[6] F02D *41/16*

U.S. Cl. 123—339.23 **10 Claims**



1. A control method for an internal combustion engine having an intake manifold and a throttling device connected thereto, comprising the steps of:

detecting an operator actuated engine idle speed command;

detecting engine speed and calculating engine acceleration;

decelerating the engine to a preselected engine speed in response to said idle speed command detection by adjusting the throttling device to concurrently force both said detected engine speed and said calculated engine acceleration within a predetermined acceleration and speed range so that, both said calculated engine deceleration and said detected engine speed occurs within said range; and

regulating said detected engine speed after said preselected engine speed is detected to maintain said detected engine speed at a desired idle speed by adjusting said throttling device to force a difference between said detected engine speed and said desired engine speed towards zero.

5,630,396
APPARATUS FOR GENERATING CONTROL SIGNAL FOR CONTROLLING OPERATION OF INTERNAL COMBUSTION ENGINE

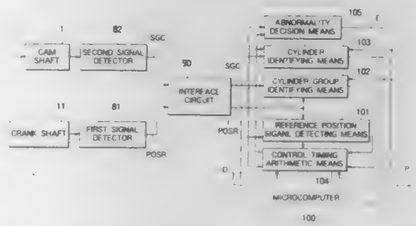
Wataru Fukui, and Yasukazu Koezuka, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 598,014

Claims priority, application Japan, Apr. 6, 1995, 7-081354

Int. Cl.[6] F02P *7/067;11/00*

U.S. Cl. 123—414 **9 Claims**



1. An apparatus for generating a control signal for controlling operation of an internal combustion engine, comprising:

a first signal detector for generating a first signal series relating to rotation of a crank shaft of said internal combustion engine;

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a second signal detector for generating a second signal series relating to rotation of a cam shaft driven with a speed reduction ratio of "½" relative to said crank shaft; and

control means for controlling at least one parameter involved in operation of said internal combustion engine on the basis of at least one of said first and second signal series;

said first signal series including an angular position signal generated at every first predetermined angular position in synchronism with the rotation of said crank shaft and a reference position signal generated at every second predetermined angular position corresponding to a reference position of each of the engine cylinders;

said second signal series containing a cylinder identifying signal, wherein a pulse form of said cylinder identifying signal at least for a given one of the engine cylinders differs from those for the other engine cylinders and wherein a pulse form of said cylinder identifying signal for a group of the engine cylinders which can simultaneously be controlled differs from the other engine cylinder group;

said control means including:

reference position signal detecting means for detecting said reference position signal on the basis of said first signal series;

cylinder group identifying means for identifying said cylinder group on the basis of at least said second signal series;

cylinder identifying means for discriminatively identifying each of said engine cylinders on the basis of at least said second signal series;

control timing arithmetic means for arithmetically determining control timings for controlling said parameter or parameters on the basis of the results of the cylinder identification performed by said cylinder identifying means and said second signal series; and

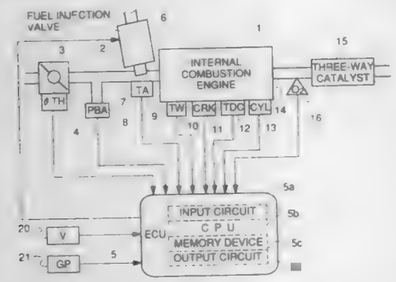
abnormality decision means for generating and outputting an abnormality decision signal to said cylinder identifying means and said control timing arithmetic means upon detection of a failure in said first signal series.

5,630,397

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Daisuke Shimizu; Kenji Nakano; Yuichiro Tanabe, and Hiroshi Yatani, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1996, Ser. No. 631,111
Claims priority, application Japan, Apr. 12, 1995, 7-111343
Int. Cl.[6] F02M *7/00*
U.S. Cl. 123—436 **14 Claims**



1. A control system for an internal combustion engine, comprising:

fuel supply amount-calculating means for calculating an amount of fuel to be supplied to said engine;

rotational speed variation-detecting means for detecting an amount of variation in rotational speed of said engine;

averaging means for averaging said amount of variation in said rotational speed of said engine detected by said rotational speed variation-detecting means;

rotational speed variation reference value-calculating means for calculating a rotational speed variation reference value based on an average value of said amount of variation from said averaging means;

comparison means for comparing said detected amount of variation in said rotational speed of said engine with said rotational speed variation reference value; and

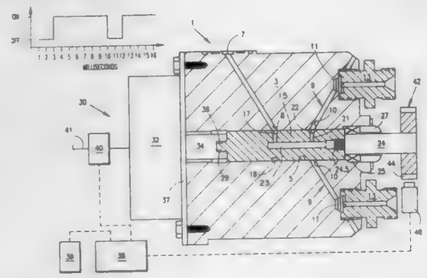
correction means for correcting said amount of fuel to be supplied to said engine, calculated by said fuel supply amount-calculating means, based on results of said comparison by said comparison means.

5,630,398

STEPPED ROTATION FUEL DISTRIBUTION VALVE

Gary L. Gant; George L. Muntean; Harry L. Wilson; John R. Youngblood, and Mark S. Cavanagh, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 5, 1996, Ser. No. 658,574
Int. Cl.[6] F02M *41/00;* **F16K** *11/076*
U.S. Cl. 123—450 **20 Claims**



1. A fuel distribution valve for receiving metered, pressurized fuel pulses and conducting said fuel pulses to the combustion cylinders of an internal combustion engine, comprising:

a distributor housing having an elongated bore, a fuel receiving passage in communication with a side portion of said bore for conducting metered pressurized pulses of fuel, and a plurality of fuel distributing passages in communication with another side portion of said bore;

a fuel distribution shaft rotatably mounted in said bore including axially spaced, mutually communicating fuel receiving and fuel discharging ports in a side of said shaft that are registrable with said fuel receiving and fuel distributing passages of said housing as said shaft rotates, and

drive means for intermittently rotating said fuel distributor shaft such that said shaft discharge port dwells in registration with one of said fuel distributing passages in said housing whenever a pressurized pulse of fuel is discharged from said housing passageway and through said shaft discharge port to prevent said shaft from rotating during a high side load.

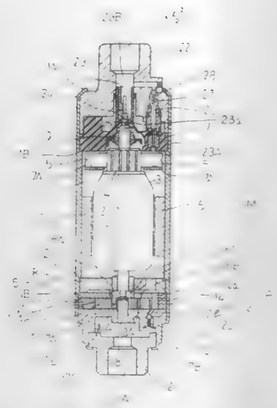
5,630,399

FUEL INJECTION SYSTEM WITH EMPLOYING VANE TYPE FUEL PUMP

Kenichi Nomura, and Makoto Sakai, both of Yokohama, Japan, assignors to Keihin Seiki Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,169
Claims priority, application Japan, Mar. 30, 1995, 7-097720
Int. Cl.[6] F02M *41/00;* **F04B** *49/00*
U.S. Cl. 123—467 **4 Claims**

1. A fuel injection system employing a vane-type fuel pump, in which a fuel in a fuel tank is supplied to a fuel delivery pipe under pressure by means of said vane-type fuel pump and is injected toward engine through a fuel injection valve connected to said fuel



delivery pipe, said vane-type fuel pump being controlled a pump speed by an electric control signal from an electronic control unit depending upon an electric signal from a pressure sensor detecting a fuel pressure in said fuel delivery pipe and electric signals from various sensors detecting engine operating parameters, said vane-type fuel pump comprising:

a casing;

a vane type pump portion;

a motor portion rotatingly driving said pump portion;

a fuel suction passage communicated with a suction port of said pump portion and opening to one end of said casing;

a fuel discharge passage communicated with a discharge port of said pump portion and opening to the other end of said casing via the outer periphery of said motor portion;

a check valve disposed in said fuel discharging passage and permitting only fuel flow directed in a discharge direction;

a normally closed first relief valve arranged in a first bypass passage communicating said fuel discharge passage upstream of said check valve and said fuel discharge passage downstream of said check valve bypassing said check valve, for opening said first bypass passage when a fuel pressure in said fuel discharge passage downstream of said check valve is elevated to be higher than or equal to a given pressure level; and

a normally closed second relief valve disposed within a second bypass passage communicating said fuel suction passage and said fuel discharge passage upstream of said check valve, for opening said second bypass passage when a fuel pressure in said fuel discharge passage upstream of said check valve (**24**) is elevated to be higher than or equal to a given pressure.

5,630,400

FUEL INJECTION VALVE FOR AN INTERNAL COMBUSTION ENGINE

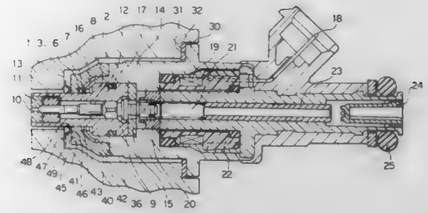
Mamoru Sumida; Norihisa Fukutomi, both of Tokyo; Tsuyoshi Munezane, Kobe, and Keita Hosoyama, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1996, Ser. No. 633,164
Claims priority, application Japan, Oct. 17, 1995, 7-268820
Int. Cl.[6] F02M *55/02*
U.S. Cl. 123—470 **13 Claims**

1. A fuel injection valve for an internal combustion engine having one end adapted to be inserted into a fuel injection valve insertion hole (**2**) in a cylinder head (**1**) of the internal combustion engine, said hole having a shoulder portion (**3**), and another opposite other end adapted to be connected to a fuel supply pipe (**5**), said fuel injection valve comprising:

a) a valve assembly (**6**);

b) a hollow housing (**14**) having a coupling portion (**16**) at one end thereof coupled to said valve assembly and connected to



the fuel supply pipe at an other, opposite end, said housing having an abutting surface (**36**) disposed at a position radially outward of said coupling portion with respect to said valve assembly and in an opposing relationship relative to said shoulder portion of the fuel injection valve insertion hole and a mounting surface (**31**) for positioning said housing relative to the cylinder head;

c) a solenoid assembly (**22**) disposed within said housing for opening and closing an injection valve (**12**) of said valve assembly; and

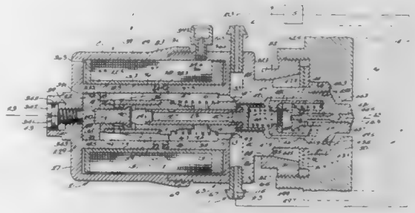
d) a sleeve (**40**:**50**) having one end (**41**) disposed on said valve assembly in opposition to said shoulder portion of the cylinder head and another, opposite end **42**) mounted to said housing in abutment against said abutting surface to bridge across said valve assembly and said housing over said coupling portion to prevent the coupling portion from being subjected to a force Urging the fuel injection valve against the cylinder head.

5,630,401

COMBINED FUEL INJECTION PUMP AND NOZZLE

Gregory J. Binversie, Grayslake; David J. Hall, Zion, both of Ill.; Richard T. Tunkieicz, and Paul W. Breckenfeld, both of Kenoshn, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 18, 1994, Ser. No. 276,545
Int. Cl.[6] F02M *37/04;* **F04B** *17/04*
U.S. Cl. 123—495 **25 Claims**



1. An internal combustion engine comprising an engine block including a member defining a portion of a combustion chamber and having therein an opening communicating with said portion of said combustion chamber, and a combined fuel injection pump and nozzle including a housing fixed to said member of said engine block and defining a high reluctance gap and a low pressure fuel chamber having an axis, and a tubular member extending in said low pressure fuel chamber in said housing in coaxial relation to said axis, said tubular member having therein an axial bore communicating with said low pressure fuel chamber, and said tubular member at least partially defining a high pressure fuel chamber, and a nozzle assembly fixed to said housing, extending into said opening, communicating with said combustion chamber and with said axial bore, and including a valve member moveable to an open position in response to a fuel pressure in said high pressure fuel chamber above a predetermined level.

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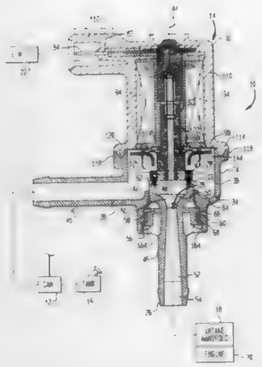
5,630,402

FUEL INJECTION TIMING SYSTEM

Michael J. Devine, Kent, and Robert L. Kiliz, Sumner, both of Wash., assignors to Timing Systems, Inc., Kent, Wash.

Filed Jun. 19, 1996, Ser. No. 666,081
Int. Cl.[6] F02M *37/04*; F16D *3/10*
U.S. Cl. 123—501 7 Claims





1. A fuel injection timing system for controlling the angular position of a diesel engine fuel injection pump, comprising

an output drive member adapted to be rotatably coupled to a pump shaft of the injection pump to rotate the injection pump shaft about its axis,

an input drive member adapted to be rotatably coupled to a drive source,

an intermediate drive sleeve axially movable along an axis of the pump shaft between the output and input drive members, and

an actuator, movable along an axis perpendicular to the pump shaft axis, and coupled to the intermediate sleeve, to move the intermediate sleeve along the pump shaft axis,

the intermediate sleeve coupled to the output drive member in a manner where movement of the intermediate sleeve along the pump shaft axis causes rotational movement of the output drive member about the pump shaft axis,

the intermediate sleeve also coupled to the input drive member in a manner where axial movement of the intermediate sleeve causes the intermediate sleeve to rotate about the pump shaft axis,

whereby the actuator axially drives the intermediate sleeve along the pump shaft axis to adjust the angular position of the output drive member relative to the input drive member.

5,630,403

FORCE-BALANCED SONIC FLOW EMISSION CONTROL VALVE

Leo Van Kampen, Dover Centre, and John E. Cook, Chatham, both of Canada, assignors to Siemens Electric Limited, Mississauga, Canada

Filed Jun. 13, 1996, Ser. No. 662,554
Int. Cl.[6] F02M *33/02*; F16K *31/06*
U.S. Cl. 123—520 20 Claims

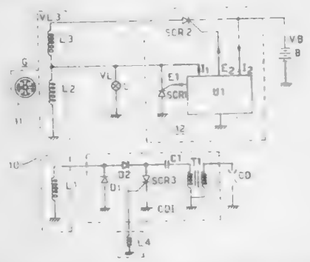
1. In a vapor collection system for an internal combustion engine fuel system wherein a canister purge valve disposed in a purge flow path between an intake manifold of an engine and a fuel vapor collection canister that collects vapor generated by volatile fuel in a fuel tank controls the purging of the canister to the intake manifold in accordance with a purge control signal that defines the extent to which the canister purge valve allows purge flow through the purge flow path, the improvement in the purge valve which comprises, the purge valve comprising a body having an interior space through which purge flow passes, a tube forming a section of the purge flow path and comprising an annular valve seat, the tube disposing the valve seat within the interior space in circumscribing relation to the section of the purge flow path, a valve element controlled by the purge control signal in relation to the valve seat for establishing the extent to which the canister purge valve allows flow from the canister to the intake manifold, and means relating the tube to the valve body comprising a screw thread on the tube, a hole in the valve body comprising a complementary screw thread with which the screw thread of the tube is threadedly engaged to provide for the valve seat to be disposed at a desired axial location within the interior space during fabrication of the valve by twisting the tube relative to the hole in the body, and means effective once the valve seat has been positioned in a desired axial location for constraining the tube against further twisting on the body and sealing the tube to the hole to cause the purge flow to pass through the tube and not leak between the tube and the hole.

5,630,404

SELECTIVELY POWER FEEDING DEVICE FOR ELECTRICAL LOADS AND THE IGNITION CIRCUIT OF INTERNAL COMBUSTION ENGINES, IN MOTOR-VEHICLES

Gianni Regazzi, Bologna; Astorre Biondi, S.G.Persiceto, and Beniamino Baldoni, Bologna, all of Italy, assignors to Ducati Energia S.p.A., Bologna, Italy

Filed Oct. 24, 1995, Ser. No. 547,628
Int. Cl.[6] F02P *3/06*
U.S. Cl. 123—602 6 Claims



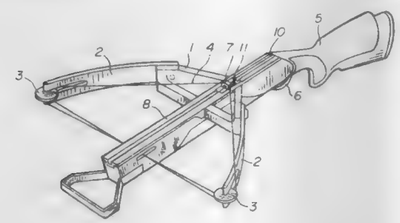
1. A feeding device for feeding the alternating-current and direct-current electrical loads and for feeding the capacitive-discharge ignition circuit of a motor-vehicle combustion engine, comprising an electric generator one winding of which can be connected to the feeding circuit of electrical loads of the vehicle and to said ignition circuit, respectively, said winding of the generator being selectively connectable, via differently polarized diodes and electronic swith devices to the engine ignition circuit and to the electrical loads circuits of the vehicle, respectively, under the control of a voltage regulator, said voltage regulator comprising said electronic switch devices serially connected to the said electrical-load circuits and parallelly connected to the generator respectively, and a control circuit to selectively feed power from the generator to said electrical-load circuits with positive voltage out-goings for a part of each period of the alternating voltage of the generator, and to feed with the engine ignition circuit with negative voltage out-going for the remainder of the aforementioned period, respectively.

5,630,405

SHOOTING BOW WITH SPRINGBACK COMPENSATION

Sergei N. Nizov, ulitsa Latyshskikh Strelkov, 1, kv. 13, Orel, Russian Federation

PCT No. PCT/RU94/00071, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO95/08091, PCT Pub. Date Mar. 23, 1995
PCT Filed Apr. 4, 1994, Ser. No. 428,104
Claims priority, application Russian Federation, Sep. 15, 1993, 93044916; Nov. 15, 1993, 93051887
Int. Cl.[6] F41B *5/12*
U.S. Cl. 124—25 3 Claims



1. A shooting bow comprising:

a main part;

a frame on which the main part is mounted;

arms, mounted on the main part and convex in a direction of shooting;

pulleys disposed at tips of the arms;

a bowstring, made up from two end spans and one middle span, passing said pulleys and through a horizontal slotted hole in the frame; and

a trigger mechanism mounted on the frame;

characterized in that said shooting bow further comprises a carriage, arranged on said bowstring, and a carriage guide, said frame is manufactured with a frame slot and a horizontal slotted hole disposed in its forward part, said carriage is made up with a groove for said bowstring, the carriage guide is arranged in the frame slot, the carriage is movable along said carriage guide, and the profile of the pulleys satisfies a relationship $\Delta S_1 = K x \Delta S_2$, wherein:

ΔS_1 is a displacement of a centre of mass M_1 to a position M_1' of a system including said arms and said pulleys;

ΔS_2 is a displacement of a centre of mass M_2 to a position M_2' of a system including an arrow and said carriage; and

K is a constant for a specific shooting bow at each instant of straightening of the arms, which is determined from $\Delta S_1 / \Delta S_2$, the arms satisfying the condition, when a total impulse of said systems acting on the main part at a point of fixation of said systems, at each instant of straightening of the arms, approaches zero.

5,630,406

PAINT-BALL GUN

Maurice Dumont, 26½ Broad St., Binghamton, N.Y. 13904

Filed Apr. 10, 1995, Ser. No. 419,494
Int. Cl.[6] F41B *11/00*
U.S. Cl. 124—56 6 Claims

1. A paint-ball pistol having a removable barrel that is held to the front receiver of the pistol by a first, biased, detent-pin mechanism which firmly affixes said barrel of said paint-ball pistol to said front receiver in a first locking position, and upon actuation thereof, releases a locking detent pin, so that said barrel can be slid from said front receiver, and said front receiver being removable and held to the trigger housing of the pistol by a second, biased, detent-pin mechanism which firmly affixes said front receiver of said paint-ball pistol to said trigger housing in a first locking position, and upon actuation thereof, releases a locking detent pin, so that said front receiver can be slid from said trigger housing,

said first, biased, detent-pin mechanism comprising:

a front receiver supporting said barrel of said pistol:

a first knob that is movable between a locked and a retracted position, said first knob being carried upon said front receiver of said pistol;

a first shaft extending from, and affixed to, said first knob, said first shaft extending through and beyond the front receiver to engage with and lock said barrel to said front receiver in said locked position, said barrel being freed from said front receiver when said first shaft is withdrawn by said first knob to said retracted position; and

first biasing means supported by said front receiver for biasing said first knob against movement from said locked position to said retracted position;

said second, biased, detent-pin mechanism comprising:

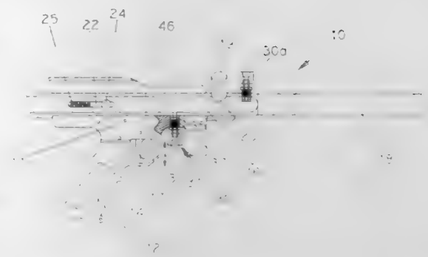
a trigger housing supporting said front receiver of said pistol;

a second knob that is movable between a locked and a retracted position, said second knob being carried upon said trigger housing of said pistol;

a second shaft extending from, and affixed to, said second knob, said second shaft extending through and beyond the trigger housing to engage with and lock said front receiver in said locked position, said front receiver being freed from said trigger housing when said second shaft is withdrawn by said second knob to said retracted position; and

second biasing means supported by said trigger housing for biasing said second knob against movement from said locked position to said retracted position; and

two pedestals respectively carried by said front receiver and said trigger housing, each of said pedestals having a tongue, and each one of said knobs comprising means defining a groove, and further wherein each of said tongues nest within each of said grooves when said respective knobs are in said locked position.



5,630,407

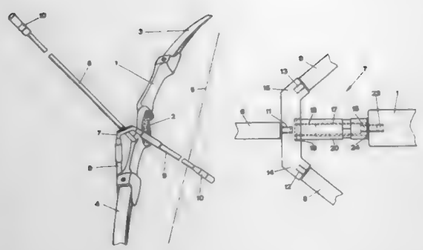
CONNECTING PIECE FOR THE STABILISER SYSTEM ON A BOW

Max Gasser, St. Margrethen, Switzerland, assignor to AGF Gasser AG, Switzerland

Filed Apr. 20, 1994, Ser. No. 230,555
Claims priority, application Switzerland, Apr. 27, 1993, 1279/93
Int. Cl.[6] F41B *5/20*
U.S. Cl. 124—89 14 Claims

1. Connecting piece for the stabiliser system on a sports bow, which connecting piece is substantially T-shaped with a central leg and a crossbar wherein a threaded part is provided at the free end of the central leg to enable the connecting piece to be screwed in a corresponding threaded hole in the sports bow and wherein one

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stabiliser may be fastened to one end of said crossbar and wherein the central leg is provided at its other end with a second threaded part which is engageable in a screw-threaded bore in the crossbar, a tube with an internal screw-thread being mounted on the central leg and engageable with said second threaded part whereby the rotational position of the crossbar relative to the sports bow may be adjusted and the crossbar can be clamped in position by engaging the tube with said bow.

5,630,408

GAS/AIR RATIO CONTROL APPARATUS FOR A TEMPERATURE CONTROL LOOP FOR GAS APPLIANCES

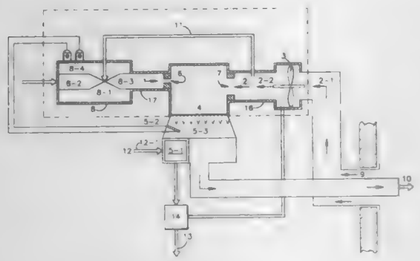
Marius Versluis, Tavistock, England, assignor to Ranco Incorporated of Delaware, Wilmington, Del.

Filed May 27, 1994, Ser. No. 250,277

Claims priority, application Germany, May 28, 1993, 43 17 981.9

Int. Cl.[6] F24H *1/10*

U.S. Cl. 126—351 **17 Claims**



1. Fuel/air ratio control apparatus for controlling operation of a burner of an appliance for heating water, said fuel/air ratio control apparatus comprising:

a) a temperature measuring device for determining an actual temperature of water heated by the appliance and a controllable fan adapted to supply a predetermined air stream that is related to the determined actual temperature of water heated by the appliance;

b) an air supply line adapted to supply the air stream to the burner through a restriction arranged in the air supply line;

c) a fuel supply line adapted to supply fuel to the burner through a nozzle,

d) a pressure sensing line adapted to transfer the absolute pressure of the air stream produced by the controllable fan, and

e) a pressure-controllable valve connected to the fuel supply line, said pressure-controllable valve including a main diaphragm separating first and second chambers that are sealed from each other, a main valve connected to said main diaphragm adapted to be movable to regulate fuel flow in the first chamber, and a control valve including a control diaphragm adapted to be externally controlled exclusively in response to the absolute pressure transferred by said pressure sensing line, wherein said control valve communicates with said second chamber to enable said main diaphragm to adjust the position of said main valve.

5,630,409

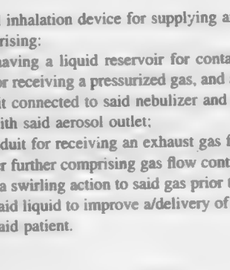
NEBULIZER AND INHALATION DEVICE CONTAINING SAME

Michael Bono, 882 Black Rd., Collegeville, Pa. 19426, and Gary Ruff, 549 Astor Sq., West Chester, Pa. 19380

Continuation-in-part of Ser. No. 409,259, Mar. 22, 1995, Pat. No. 5,611,332. This application Mar. 22, 1995, Ser. No. 409,360

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—200.18 **23 Claims**



1. An aerosol inhalation device for supplying an aerosol mist to a patient, comprising:

a nebulizer having a liquid reservoir for containing a liquid, a gas inlet for receiving a pressurized gas, and an aerosol outlet;

a first conduit connected to said nebulizer and in open communication with said aerosol outlet;

a second conduit for receiving an exhaust gas from said patient;

said nebulizer further comprising gas flow controlling means for providing a swirling action to said gas prior to contacting said gas with said liquid to improve a/delivery of said liquid to the lungs of said patient.

5,630,410

ACCELERATED GAS REMOVAL FROM DIVERS' TISSUES UTILIZING GAS METABOLIZING BACTERIA

Susan R. Kayar, 18739 Pier Point Pl., Gaithersburg, Md. 20879, and Milton J. Axley, 14106 Heathfield Ct., Rockville, Md. 20853

Filed Jan. 4, 1996, Ser. No. 583,171

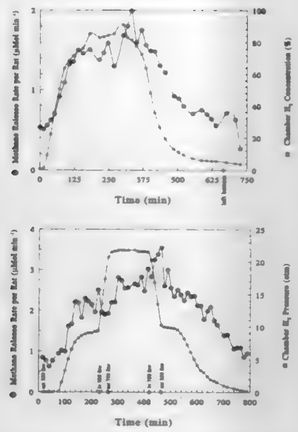
Int. Cl.[6] A61M *15/00;* **A62B** *7/00;* **A01N** *63/00;* **A61K** *39/02*

U.S. Cl. 128—200.24 **9 Claims**

1. A method of accelerating decompression of a diver decompressing from a dive while breathing a mixture of an H_2 or N_2 diluent and O_2, comprising the steps of:

a. Introducing bacteria selected from the group consisting of hydrogenase possessing bacteria and nitrogen-fixing bacteria into the large intestine;

b. Permitting said bacteria to colonize the large intestine; and



c. metabolizing said H_2 or N_2, whereby the rate of elimination of H_2 or N_2 from a diver's tissues is accelerated with no serious side, toxic or immunological effects.

5,630,411

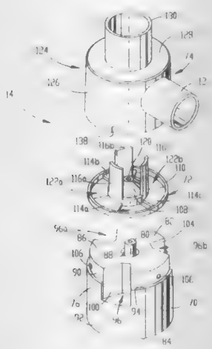
VALVE FOR USE WITH INHALATION/EXHALATION RESPIRATORY PHASE DETECTION CIRCUIT

Russell L. Holscher, Olathe, Kans., assignor to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Continuation of Ser. No. 240,334, May 10, 1994, abandoned, which is a division of Ser. No. 3,129, Jan. 12, 1993, Pat. No. 5,438,980. This application Sep. 18, 1995, Ser. No. 529,670

Int. Cl.[6] A62B *9/02*

U.S. Cl. 128—205.24 **6 Claims**



1. A valve for controlling air flow within a respiratory circuit, the valve comprising:

a valve base;

a valve element cover secured to said valve base, said valve element cover having an inlet tube configured to connect to a source of air and an outlet tube configured to be placed in fluid communication with an airway of a patient; and

a rotatable valve element, said rotatable valve element configured to rotate between a closed position, an open position and intermediate positions between the open and closed positions, said rotatable valve element and said valve base forming at least one exhaust port;

wherein said rotatable valve element blocks access from the inlet tube to both the outlet tube and the exhaust port and wherein the outlet tube is in fluid communication with the exhaust port when said rotatable valve element is configured in the closed position.

5,630,412

PROTECTIVE EQUIPMENT FOR THE HEAD COMPRISING A BREATHING MASK AND AN OPTICAL SCREEN

Alain Dubruille, Rambouillet, and Frédéric Berthet, Maurepas, both of France, assignors to Intertechnique, Plaisir, France

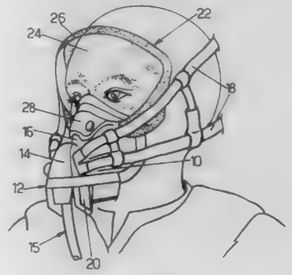
PCT No. PCT/FR95/00134, § 371 Date Oct. 2, 1995, § 102(e) Date Oct. 2, 1995, PCT Pub. No. WO95/20995, PCT Pub. Date Aug. 10, 1995

PCT Filed Feb. 2, 1995, Ser. No. 530,191

Claims priority, application France, Feb. 2, 1994, 94 01159

Int. Cl.[6] A62B *7/00;* **A61M** *16/00*

U.S. Cl. 128—206.23 **12 Claims**



1. A protective headgear comprising:

a breathing mask connectable to a source of breathable gas;

a harness for applying said breathing mask on a wearer's face; and

a transparent eye shield for protecting the wearer's eyes against smoke, having peripheral sealing means arranged for being sealingly applied against the face and against said breathing mask;

said eye shield and breathing mask being separate and including mutually cooperating locking means for releasibly locking the eye shield onto the mask and forcibly applying said sealing means onto the face when locked.

5,630,413

RELIABLE NONINVASIVE MEASUREMENT OF BLOOD GASES

Edward V. Thomas; Mark R. Robinson; David M. Haaland, all of Albuquerque, and Mary K. Alam, Cedar Crest, all of N.M., assignors to Sandia Corporation, Albuquerque, N.M.

Continuation of Ser. No. 910,004, Jul. 6, 1992, Pat. No. 5,355,880. This application Aug. 12, 1994, Ser. No. 257,875

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **36 Claims**

1. A quantitative analysis instrument for noninvasive measurement of two or more blood gas parameters present in blood containing tissue of a human, said instrument comprising:

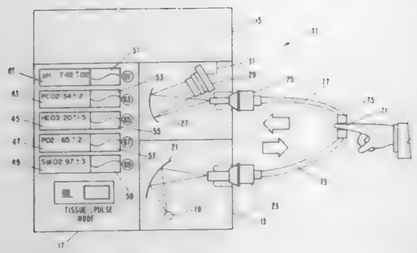
a. a source of at least three different wavelengths of light, said wavelengths being in the range of 500 to 2500 nm;

b. optics for directing said wavelengths of light into said tissue;

c. at least one detector for measuring the intensities of at least a portion of said wavelengths of said light emerging from said tissue at, at least, three wavelengths of said light during the systolic and diastolic portions of the cardiac cycle;

d. electronics for processing said measured intensities to estimate the values at least two of pH, PCO_2, and $[HCO_3^-]$ and a

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measure of oxygen saturation in said blood based on the intensity variations of said wavelengths of light due to blood pulsations; and

e. means for indicating said estimated values of said blood gas parameters.

5,630,414

X-RAY DIAGNOSTICS INSTALLATION FOR SUBTRACTION ANGIOGRAPHY

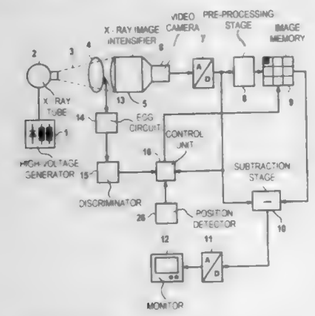
Heinz Horbaschek, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 17, 1995, Ser. No. 405,871

Claims priority, application Germany, Apr. 18, 1994, 44 13 458.4

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 **10 Claims**



1. An X-ray diagnostics installation comprising:

a subject support;

an X-ray source which emits an X-ray beam;

an X-ray image intensifier for detecting X-rays in said X-ray beam emitted by said X-ray source and attenuated by a subject to produce X-ray images;

video processing means, including a display, for generating video images from said X-ray image and for displaying said video images on said display;

drive means for cyclically producing relative movement between said subject support and said X-ray beam for producing a plurality of cycles of identical exposure positions;

detector means for generating a detector signal identifying when each of said exposure positions is reached;

control means for controlling said video processing means for producing an X-ray image and a video image of said subject at each of said exposure positions;

memory means for storing a plurality of video images, as stored video images, respectively produced at a plurality of different exposure positions in a cycle; and

subtraction means, in said video processing means, for forming a series of difference images respectively from said stored video images and a plurality of current video images respectively obtained during a current cycle at the same exposure positions as said stored video images, said difference images being displayed on said display.

5,630,415

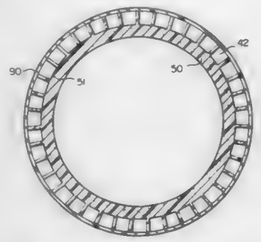
RIGIDIZED GRADIENT COIL

Leon Kaufman, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 19, 1995, Ser. No. 374,882

Int. Cl.[6] G01R *33/20*

U.S. Cl. 128—653.2 **45 Claims**



1. An MRI gradient coil assembly, comprising:

at least one gradient coil to induce a gradient magnetic field in an imaging area;

a gradient coil former fixed to the gradient coil;

a grid fixed to the gradient coil former, the grid having a plurality of interconnected ribs forming a web wherein the grid opposes elastic deformation of the gradient coil former induced by operation of the gradient coil; and

a skin fixed to the grid opposite the gradient coil former.

5,630,416

ULTRASONIC DIAGNOSTIC PROBE

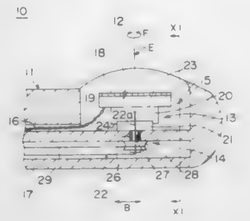
Shiro Uchikura, and Narutaka Nakao, both of Kawasaki, Japan, assignors to Fujitsu, Ltd., Kawasaki, Japan

Filed Jul. 18, 1995, Ser. No. 503,681

Claims priority, application Japan, Sep. 19, 1994, 6-223811

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.08 **14 Claims**



1. An ultrasonic diagnostic probe comprising:

a tube-like shaft having an end and an accommodating part provided at the end;

a piezoelectric vibrator disposed in said accommodating part, having an ultrasonic transmission and reception face;

swinging means provided in said accommodating part, which swings said piezoelectric vibrator around an axis parallel with the ultrasonic transmission and reception face of said piezoelectric vibrator, the swinging means having a relative position which is substantially fixed with respect to the tube-like shaft; and

rotating means provided in said accommodating part, which rotates said piezoelectric vibrator around an axis perpendicular to the ultrasonic transmission and reception face of said piezoelectric vibrator.

5,630,417

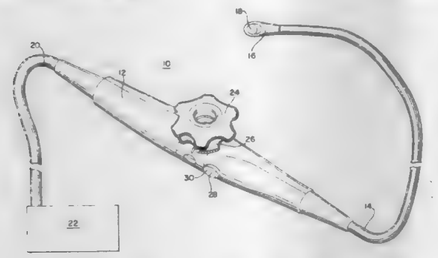
METHOD AND APPARATUS FOR AUTOMATED CONTROL OF AN ULTRASOUND TRANSDUCER

Alan W. Petersen, and Robert M. Perlman, both of Santa Clara County, Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Sep. 8, 1995, Ser. No. 526,040

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.08 **27 Claims**



1. An ultrasound probe for imaging human tissue including an apparatus for automatically controlling rotation of a transducer array comprising:

a transducer housing, the transducer array being rotatably mounted within the transducer housing;

a motor coupled to the transducer array;

a motor controller comprising a state-machine and an encoder, the motor controller being coupled to the motor; and

a microprocessor coupled to the state-machine.

5,630,418

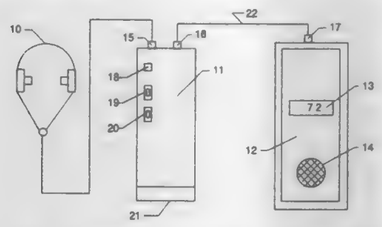
NOISE CONTROLLER FOR AUTOMATICALLY DETECTING AND ATTENUATING BREAK NOISE IN A PORTABLE HAND HELD DOPPLER FETAL HEART BEAT PROBE

William C. Lee, Orinda; Delmer D. Fisher, Santa Cruz, and Andras Boross, Belmont, all of Calif., assignors to MedaSonics, Inc., Fremont, Calif.

Filed Jun. 12, 1996, Ser. No. 662,055

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.07 **7 Claims**



1. A noise controller for use in a probe in a hand held ultrasonic Doppler fetal heart beat detection and monitoring system, said probe including a crystal for generating an input signal as a function of the ultrasonic energy in received ultrasonic wave and a detector for generating a first signal from said input signal, said noise controller comprising:

a volume controller for receiving said first signal and for processing said first signal to produce an analog signal as the output of said probe,

a detector for generating a second signal whenever break noise is detected in said first signal;

a muting means connected to said volume controller and said detector for immediately lowering the amplitude of said analog signal upon detection of said break noise by said detector sensor to substantially attenuated in said analog signal said break noise which occurred in said first signal.

5,630,419

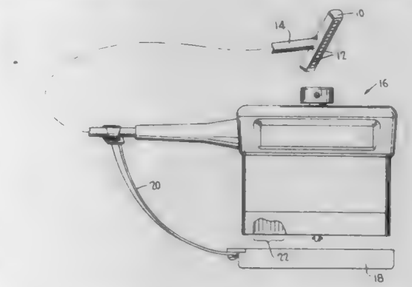
SEALING CONNECTOR FOR MULTICONDUCTOR CABLES

Joseph V. Ranalletta, Englewood, Colo., assignor to Tetrad Corporation, Englewood, Colo.

Filed Dec. 20, 1994, Ser. No. 359,465

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—662.03 **21 Claims**



1. A sealable connector assembly for terminating a multiconductor cable, comprising:

a body, defining an internal volume, and defining a first aperture in communication with said internal volume, through which first aperture extend a plurality of connecting pins, for mating connection with a like plurality of pins on a mating device, said first plurality of connecting pins lying generally in a plane, and said aperture being surrounded by an upstanding flange, said flange having a continuous distal edge lying in a second plane parallel to the plane of said first plurality of connecting pins;

a cable strain relief sealed to said body at a second aperture extending through said body into said internal volume at a location spaced from said first aperture;

a multi-conductor cable extending through and sealed to said cable strain relief, and comprising a number of conductors connected to said first plurality of connecting pins;

a cap assembly adapted to be secured to said body to provide a seal around said distal edge of said flange, said cap assembly comprising:

a substantially rigid cover member defining a recess having a planar bottom surface of dimensions exceeding the dimensions of said flange in said second plane;

a resilient gasket fitting within said recess in said cover member, for sealingly engaging said distal edge of said flange; and

means for retaining said gasket in said recess; and means for urging said cap assembly into sealing engagement with said body, without requiring relative rotation of said cap with respect to said body, such that said gasket is compressed against said distal edge of said flange, sealing said first plurality of pins and the internal volume of said body;

said means for urging said cap assembly into sealing engagement with said body comprising an elongated control element extending through said body, wherein a distal end of said control element is adapted to be secured to said cap assembly and a proximal end of said control element extends out of said body through a third aperture spaced from said first and second apertures, means for sealing said control element to said body at said third aperture, and hand-actuable means operatively connected to said proximal end of said control

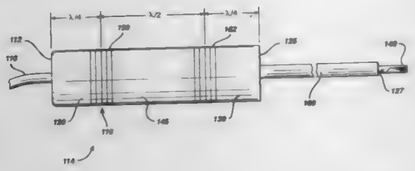
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element for operating said control element to urge said cap assembly into sealing engagement with said body.

5,630,420
ULTRASONIC INSTRUMENT FOR SURGICAL APPLICATIONS

Jeffrey J. Vaitekunas, West Chester, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Sep. 29, 1995, Ser. No. 536,812
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.03 **17 Claims**



1. A method of exciting an ultrasonic stack in a surgical instrument wherein said stack includes a piezoelectric section located between a first and a second resonator wherein said method comprises the steps of:

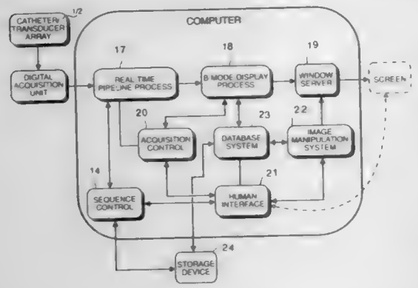
exciting said piezoelectric section by driving said section with an electrical excitation signal at a first frequency; and

simultaneously exciting said piezoelectric section by driving said section with an electrical excitation signal at a second frequency which is a multiple of said first frequency.

5,630,421
ULTRASOUND IMAGING

Christopher J. Barlow, Ontario, Canada; Robert J. Dickinson, and David A. Wicks, both of London, England, assignors to Intravascular Research Limited, London, United Kingdom

Filed Dec. 15, 1995, Ser. No. 573,062
Claims priority, application United Kingdom, Dec. 23, 1994, 9426191
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.06 **16 Claims**



1. An intravascular ultrasound imaging system having the following combination of features:

(a) an ultrasound transducer array mounted on a distal end of a catheter and electrically connected to a transceiver at a proximal end of the catheter;

(b) the transceiver includes means for converting analog echo signals generated by the ultrasound transducer array into digital signals and transferring those digital signals as data to a processing pipeline to produce a real-time image on a display;

(c) the pipeline includes a number of data processing stages for processing said data, with sets of said data varying in size at different points in the pipeline;

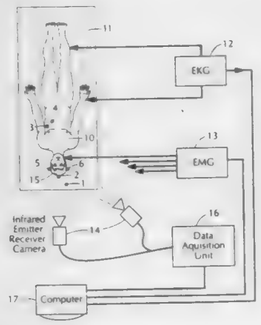
(d) the pipeline includes means to divert/extract data from the pipeline at at least one point prior to a final one of said data processing stages and to store the diverted/extracted data in a dedicated memory; and

(e) means to recall the stored data and reintroduce the stored data into the pipeline at the same point that said stored data was removed, for further processing, to retrospectively display the stored image.

5,630,422
DIAGNOSTIC SYSTEM FOR DETECTING AND INDICATING CRANIAL MOVEMENTS

Michael F. Zanakis, 1 Ken Pl., Port Jefferson Station, N.Y. 11776

Filed Sep. 8, 1995, Ser. No. 524,989
Int. Cl.[6] A61B *5/11*
U.S. Cl. 128—664 **9 Claims**



1. A diagnostic system for detecting and indicating cranial movements in a human subject whose brain case is composed of a plurality of articulated bones which define the cranium, which bones normally undergo oscillatory motion, said system comprising:

(a) reflector elements placeable on selected bones of the cranium whereby the elements are caused to vibrate as a function of the oscillatory motion of these bones;

(b) an infrared camera directed at the cranium which during a test period emits infrared light that is reflected by the elements and is picked up by the camera to produce in an image analyzer information regarding relative motion between the vibrating elements; and

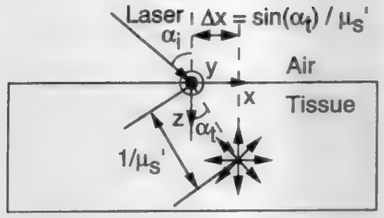
(c) a computer to which said information is supplied, said computer being programmed to reconstruct the relative motion as a diagram illustrating cranial movement during the test period.

5,630,423
METHOD OF MEASURING TISSUE OPTICAL PROPERTIES USING AN OPTICAL BEAM OF OBLIQUE INCIDENCE AND USES THEREOF

Lihong Wang, 1404 E. Circle #B, College Station, Tex. 77840, and Steven L. Jacques, 4302 Compton Cir., Bellaire, Tex. 77401

Filed Jan. 31, 1996, Ser. No. 594,757
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—664 **8 Claims**

1. A method of determining the reduced scattering coefficient of a turbid medium having an absorption coefficient less than the reduced scattering coefficient of said medium, comprising the steps of:



directing an optical beam that is obliquely incident upon said medium;

determining the reduced scattering coefficient of the medium using the diffuse reflectance profile based on the following formula:

$$\Delta x = \frac{\mathrm{Sin}(\alpha_i)}{n \cdot \mu_s'}$$

wherein

Δx is the distance between the incident point and the center of the diffuse reflectance that is several transport mean free paths away from the center;

α_i is the incident angle;

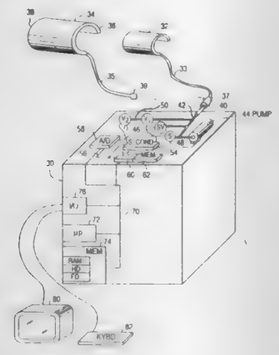
n is the relative refractive index; and

μ_s' is the reduced scattering coefficient.

5,630,424
CALIBRATION OF SEGMENTAL BLOOD VOLUME CHARGES IN ARTERIES AND VEINS FOR PULSE VOLUME RECORDER

Jeffrey K. Raines, Miami; Leon T. Snyder, Boca Raton, and John Hoffman, Jupiter, all of Fla., assignors to Vasocor, Inc., Miami, Fla.

Division of Ser. No. 285,904, Aug. 4, 1994, Pat. No. 5,566,677. This application Jun. 7, 1995, Ser. No. 484,933
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—694 **25 Claims**



1. A method of calibrating measurements of blood volume change through an artery or vein of a patient with a pressure cuff bound about a limb containing said artery or vein comprising the steps of:

selecting discrete levels of cuff pressure and placing said artery or vein under a plurality of discrete levels of induced pressure with a closed pneumatic system contained by said pressure cuff;

substantially continually sensing cuff pressure at each one of said plurality of discrete levels of cuff pressure and thereby sensing blood volume change through said artery or vein, and generating representative signals of said blood volume change;

electronically determining when a predetermined number of representative blood volume change signals are substantially equivalent;

changing a volume in said closed pneumatic system at each one of said plurality of discrete levels of cuff pressure by a predetermined calibration mount after determining substantial equivalency of said blood volume change signals, the changing of said volume in said closed pneumatic system including expansion of said volume of said closed pneumatic system by controlled sequential opening and closing of a first valve that is connected between said closed pneumatic system and a chamber having a predetermined volumetric size and a second valve that is connected between said chamber and an ambient environment;

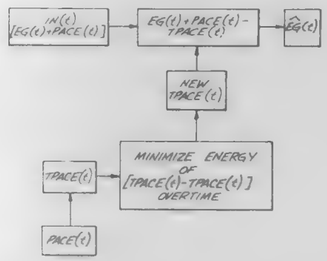
generating a calibration signal for each one of said plurality of discrete levels of cuff pressure based upon a change in said cuff pressure sensed substantially simultaneously with the change in volume of said closed pneumatic system by said predetermined calibration amount; and,

correcting said representative blood volume signal based upon said calibration signal at each one of said plurality of discrete levels of cuff pressure.

5,630,425
SYSTEMS AND METHODS FOR ADAPTIVE FILTERING ARTIFACTS FROM COMPOSITE SIGNALS

Dorin Panescu, Sunnyvale, and James G. Whayne, Saratoga, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Feb. 17, 1995, Ser. No. 390,687
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—697 **28 Claims**



1. An element for filtering an artifact from a signal derived from a biological event comprising sample values arranged with respect to time, the element comprising

means for generating a variable expressing a template of an artifact having a substantially similar morphology to the signal,

means for reducing the derived biological signal by the variable to derive a filtered derived biological signal, and

means for changing the variable over time based upon the energy of the filtered derived biological signal to minimize the energy of the artifact remaining in the filtered derived biological signal over time and to substantially preserve the shape of the signal, and means for outputting the filtered derived biological signal.

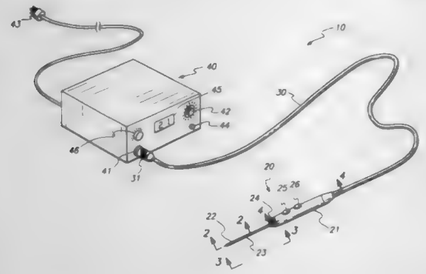
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5,630,426

APPARATUS AND METHOD FOR CHARACTERIZATION AND TREATMENT OF TUMORS

Philip E. Eggers, Dublin, Ohio, and Ascher Shmulewitz, Mercer Island, Wash., assignors to NeoVision Corporation, Seattle, Wash.

Filed Mar. 3, 1995, Ser. No. 398,644
Int. Cl.[6] A61B 5/05; A61N 1/05
U.S. Cl. 128—734 35 Claims



1. Apparatus for in situ diagnosis and treatment of biological tissue comprising:

a probe comprising an elongate member including first and second electrodes, the probe having a first mode of operation in which a parameter indicative of a property of a biological tissue is sensed to enable differentiation among normal biological tissue, malignant tumorous biological tissue, and non-malignant tumorous biological tissue, and a second mode of operation causing in situ necrosis of the biological tissue;

first circuitry coupled to the first electrode for sensing the parameter during the first mode of operation;

second circuitry coupled to the second electrode for inducing necrosis of the biological tissue during the second mode of operation; and

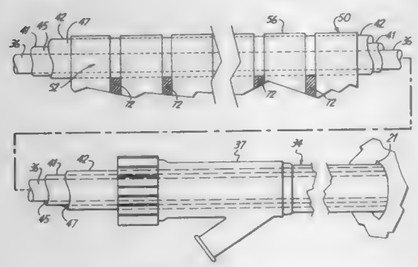
means for coupling the probe to the first and second circuitries.

5,630,427

MEDICAL SHAFT MOVEMENT CONTROL DEVICE AND METHOD

Roger N. Hastings, Burnsville, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 194,926, Feb. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 929,083, Aug. 12, 1992. This application Jun. 14, 1996, Ser. No. 663,796
Int. Cl.[6] A61B 5/00
U.S. Cl. 128—772 6 Claims



1. Apparatus for controlling relative movement between a tube and a shaft, wherein the shaft is slidably mounted within the tube comprising:

a. a sleeve having a magnetic portion including a plurality of discrete magnetic segments and a number of non-magnetically permeable sections, wherein selected ones of the plurality of discrete magnetic segments are separated by one or more of the number of non-magnetically permeable sections;

b. means for mounting the sleeve to a proximal portion of the shaft; and

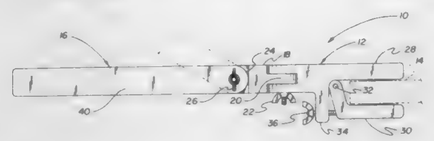
c. a movement actuator including at least a further magnetic portion for coupling with the sleeve magnetic portion for moving the shaft relative to the tube.

5,630,428

SPINE BOARD LIMB SUPPORTING EXTENSION

Ted T. Wallace, P.O. Box 75, Pinetown, N.C. 27865

Filed Feb. 2, 1996, Ser. No. 595,652
Int. Cl.[6] A61G 15/00
U.S. Cl. 128—845 5 Claims



1. A spine board limb supporting extension comprising:

a mounting means for securing to an edge of a spine board;

a support means mounted relative to the mounting means for supporting a limb of a patient relative to the spine board;

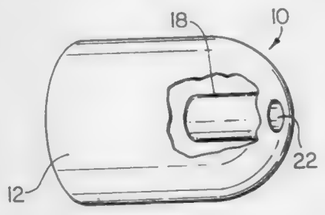
a connecting member pivotally interposed between the mounting means and the support means, the connecting member being pivotally mounted to the mounting means by a lateral hinge which permits the connecting member to pivot about a vertical axis, the lateral hinge including a lateral hinge fastener which can be manually operated to lock the lateral hinge in a predetermined orientation, and further wherein the connecting member is pivotally mounted to the support means by a vertical hinge which permits the connecting member to pivot relative to the support means about a horizontal axis oriented orthogonally relative to the vertical axis, the vertical hinge including a vertical hinge fastener which can be manually operated to lock the vertical hinge in a predetermined orientation.

5,630,429

MALE INCONTINENCE DEVICE

Jeffrey A. Dann, Worcester, Mass., assignor to NEBL, Inc., Worcester, Mass.

Filed Oct. 11, 1995, Ser. No. 540,896
Int. Cl.[6] A61F 5/48
U.S. Cl. 128—885 15 Claims



1. A device for preventing male urinary incontinence comprising:

a sheath, having an inner surface and an outer surface, sized to cover at least a portion of the glans penis of a user; and

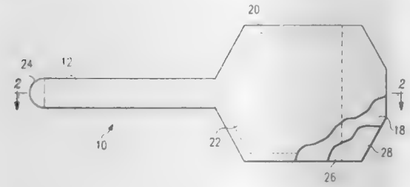
a protuberance, extending from said inner surface of said sheath, said protuberance sized and shaped to extend into and terminate in the urethra of the penis so as to occlude the urethra, wherein said protuberance defines a hollow.

5,630,430

WOUND CLOSURE DEVICE

Tod H. Shultz, Arlington, and Cubie E. Ward, Jr., Grand Prairie, both of Tex., assignors to Tecnol Medical Products, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 278,575, Jul. 20, 1994, Pat. No. 5,497,788, which is a continuation of Ser. No. 92,594, Jul. 16, 1993, abandoned. This application Oct. 17, 1995, Ser. No. 544,146
Int. Cl.[6] A61F 13/00
U.S. Cl. 128—888 18 Claims



1. An incision closure device providing visibility of an incision during closure and permitting full observation of the incision after the closure device has been applied, comprising:

an elongated closure member having a width substantially narrow as compared to the length of the incision to be closed;

an adhesive on a side thereof arranged to be applied to skin adjacent to the incision for holding adjacent edges of the incision closed;

an enlarged, substantially transparent, viewing member having one end attached to an adjacent end of the closure member, the viewing member having a length at least equal to the length of the closure member and having a width greater than the width of the closure member; and,

an adhesive on a side of the viewing member remote from the closure member for securing the viewing member to the skin adjacent to the incision when the viewing member is disposed in overlying relation to the closure member.

5,630,431

SYSTEM AND METHOD FOR AUGMENTATION OF SURGERY

Russell H. Taylor, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

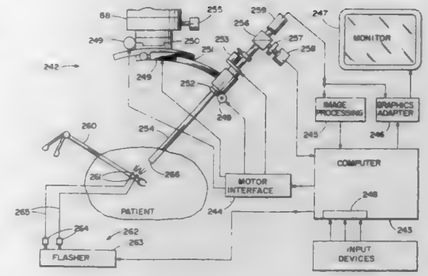
Division of Ser. No. 223,969, Apr. 6, 1994, which is a division of Ser. No. 147,008, Nov. 2, 1993, which is a continuation of Ser. No. 714,816, Jun. 13, 1991, abandoned. This application Oct. 11, 1994, Ser. No. 321,320
Int. Cl.[6] A61B 19/00
U.S. Cl. 128—897 5 Claims

1. A system for assisting a surgeon in positioning a surgical instrument relative to a target position, the system comprising:

means for manipulating the position of a surgical instrument;

means for sensing the position of the surgical instrument;

means for determining a path from a sensed position of the surgical instrument to the target position, wherein the means for determining a path includes means for sensing the position of the target position;



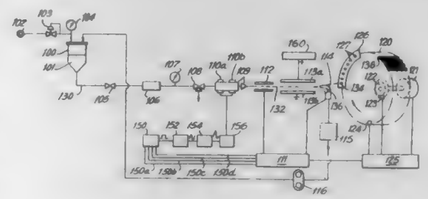
means for audibly signaling deviation of the position of the surgical instrument from the path.

5,630,432

DROPLET JET APPLICATION OF ADHESIVE TO CIGARETTE ENDS

Robert T. Gaudlitz, 4661 Melody Ct., Richmond, Va. 23234; Hugh J. McCafferty, II, 2811 Bosham La., Midlothian, Va. 23113, and James M. Washington, 2400 Stuts La., Richmond, Va. 23236

Filed Sep. 20, 1988, Ser. No. 246,768
Int. Cl.[6] A24C 5/60
U.S. Cl. 131—284 11 Claims



1. A method for applying a predetermined pattern of droplets of a fluid to an end of each of a series of cigarettes occupying at least some of a series of grooves located around the circumference of a cigarette drum having a variable rate of rotation, the fluid being capable of accepting an electric charge, the method comprising the steps of:

(a) generating a series of droplets of fluid;

(b) passing the series of droplets in the vicinity of a charging electrode;

(c) detecting incremental rotational movement of the cigarette drum;

(d) generating a clocking signal in response to the detection of incremental rotational movement of the cigarette drum;

(e) detecting the presence of a cigarette in a groove on the rotating cigarette drum as the groove passes a predetermined sensor location;

(g) applying the clocking signal to a control circuit to cause a series of voltages to be applied to the charging electrode at predetermined intervals after the cigarette drum has rotated a predetermined number of increments following detection of the presence of the cigarette, whereby a charge is applied to at least some of the series of droplets passing in the vicinity of the charging electrode; and

(g) passing the series of droplets through an electric field to cause the charged droplets to be deflected at an acceleration in proportion to the charge on each droplet and to cause at least some of the charged droplets to contact the end of the detected cigarette in a predetermined pattern as the detected cigarette passes through a predetermined target location.

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Patent Not Issued For This Number

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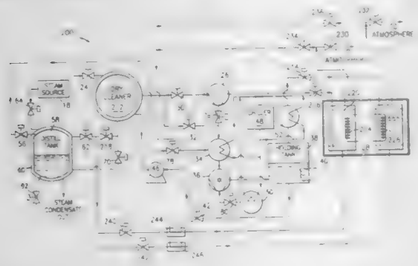
FILTER REGENERATION SYSTEM

Donald J. Gray, 9 McGraw Ct., East Greenwich, R.I. 02818, and Peter T. E. Gebhard, III, 335 Valley St., Providence, R.I. 02908

Continuation-in-part of Ser. No. 281,303, Jul. 27, 1994, Pat. No. 5,538,025, which is a continuation-in-part of Ser. No. 53,161, Apr. 26, 1993, Pat. No. 5,469,876, which is a continuation of Ser. No. 787,935, Nov. 5, 1991, Pat. No. 5,240,507. This application Jun. 6, 1995, Ser. No. 467,357

Int. Cl.[6] **B08B** *3/10;5/04*

U.S. Cl. 134—10 **6 Claims**



1. A method of stripping contaminants from a filter comprising the steps of:

subjecting the filter to a negative gauge pressure;

stripping contaminants from the filter by applying superheated solvent vapor to the filter while maintaining the negative gauge pressure, whereby the negative gauge pressure and the superheated solvent vapor combine to vaporize liquid contaminants embedded in the filter.

5,630,435

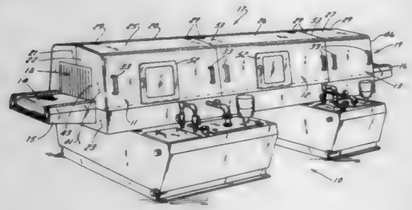
REMOVABLE SPLIT CANOPY FOR AN INDUSTRIAL PARTS WASHER

Jeffery P. Brouchoud, Appleton, and Keith D. Daun, Waupun, both of Wis., assignors to Alliance Manufacturing, Inc., Fond du Lac, Wis.

Filed Feb. 5, 1996, Ser. No. 596,661

Int. Cl.[6] **B08B** *1/00*

U.S. Cl. 134—68 **13 Claims**



1. A canopy for an industrial parts washer, said washer comprising one or more processing zones for removing manufacturing soils from manufactured industrial parts, and an elongated, horizontal conveyor for transporting the parts through the processing zones, said conveyor having a first end portion for introducing the parts into the processing zones and a second end portion for removing the parts from the processing zones, said canopy comprising:

an elongated corrosion resistant canopy covering the conveyor and processing zones of the parts washer, the canopy having a first side portion, a second side portion, and a central top portion between and adjoined to the first side portion and second side portion, and the canopy further having a first opening over the first end portion of the conveyor and a second opening over the second end portion of the conveyor;

the canopy having a seam extending longitudinally down the central top portion from the first opening to the second opening thereby splitting the canopy into a first section and second section;

the first section of the canopy being attached to the parts washer; and,

the second section of the canopy being releasably fastened to the parts washer for selectively and completely removing the second section from said parts washer for exposing the processing zones of the parts washer and replacing the second section back onto said parts washer.

5,630,436

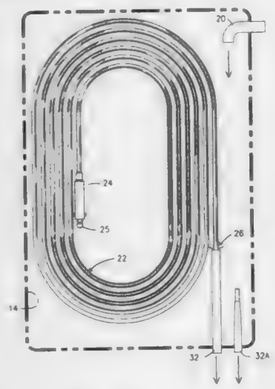
APPARATUS FOR CLEANING LONG TUBULAR MEDICAL INSTRUMENTS

John G. Chase, 1620 E. Dorchester, Palm Harbor, Fla. 34684

Filed Dec. 18, 1995, Ser. No. 574,217

Int. Cl.[6] **B08B** *3/12*

U.S. Cl. 134—111 **5 Claims**



1. Apparatus for cleaning long tubular instruments comprising,

a) an ultrasonically agitated sump,

b) a cleaning fluid in said sump,

c) confluently connected pump and filter means,

d) suction means extending from said filter means into said fluid in said sump for confluent connection to one of the ends of the instrument to be cleaned,

e) and return means confluently connecting said pump means to said sump.

5,630,437

DISHWASHER WITH DOWNWARD OPENING PUMP INLET MOUTH FOR IMPROVED OPERATION

John E. Dries, and James M. Edwards, both of Kinston, N.C., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

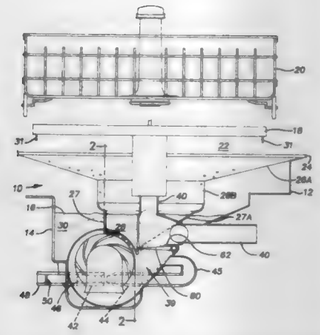
Continuation of Ser. No. 420,674, Apr. 12, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 664,795

Int. Cl.[6] **A47L** *15/42*

U.S. Cl. 134—186 **15 Claims**

1. A washer, comprising:

a washing chamber adapted for containing objects to be washed;



a sump in connection with the washing chamber and adapted for collecting washing liquid from the washing chamber;

a pump in communication with the sump;

a drain conduit communicable with a drain;

a delivery conduit adapted for spraying washing liquid into the washing chamber;

a diverter valve for diverting washing liquid from the pump to a selected one of the drain conduit and delivery conduit, wherein the diverter valve is biased to divert washing liquid to the delivery conduit and movable to a drain position for diverting washing liquid to the drain conduit;

an operator connected to move the valve to the drain position, wherein the operator is activated momentarily and deactivated so that liquid flowing past the valve maintains the valve in the drain position; and

an inlet of the pump having a generally horizontal mouth disposed in a lower part of the sump at a location below the pump.

5,630,438

COLLAPSIBLE DOOR FOR A WAREWASHER

Richard Hoover, Troy; Ron Grise, Piqua, and Gary Hoying, Sidney, all of Ohio, assignors to Premark FEG L.L.C., Wilmington, Del.

Filed Apr. 15, 1996, Ser. No. 632,556

Int. Cl.[6] **A47L** *15/42*

U.S. Cl. 134—201 **14 Claims**



1. A warewashing machine comprising:

a base;

a washing chamber supported on the base, the washing chamber having at least one generally rectangular opening with two vertical sides on a first side of the washing chamber;

vertical tracks mounted on each vertical side of the opening; and

a door for providing access to the opening, the door including,

a lower panel, having an upper end, a lower end, an inner surface and an outer surface, slidably mounted in the vertical tracks;

a handle mounted to the outer surface of the lower panel;

an upper panel slidably mounted in the vertical tracks inside of the lower panel, having an upper end, a lower end, a lower surface, an inner surface, and a first flange extending inwardly from the upper end of the upper panel for engaging with a top surface of the washing chamber and for restricting the upper panel from sliding below the top surface of the washing chamber; and

a door stop mounted on the inner surface of the lower panel, near the lower end of the lower panel, for engaging with the lower surface of the upper panel;

wherein the door can be opened to an intermediate position by raising the lower panel such that the door stop contacts the lower surface of the upper panel, providing a first area of access to the washing chamber; and

wherein the door can be opened to an advanced position by raising the lower panel further such that the door stop, engaged with the lower surface of the upper panel, causes the upper panel to be simultaneously raised, providing a second area of access to the washing chamber which is larger than the first area of access.

5,630,439

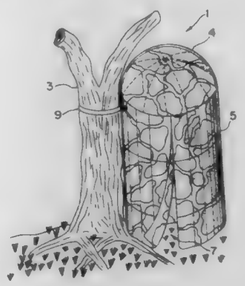
PORTABLE HUT

Eddy H. Hutto, P.O. Box 151, Clara, Miss. 39324

Filed Jun. 19, 1996, Ser. No. 667,233

Int. Cl.[6] **E04H** *15/04*

U.S. Cl. 135—90 **5 Claims**



1. A portable hut comprising:

a fabric material;

a frame structure over which said fabric can be mounted, said frame having vertical and horizontal disposed interconnected members, said vertical members being connected to the horizontal members by foldable connections;

an elongated flexible strap assembly with a connected bracket, said bracket having an extending portion;

a receiving connector on said frame shaped and sized to receive and hold said bracket's extending portion whereby the frame structure may be vertically supported above ground when said strap is tighten around a tree.

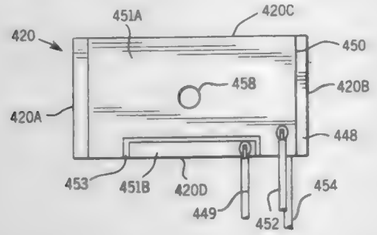
VOL 1198 ISS 3 MY 20 1997 UMI

5,630,440

PIEZO COMPOSITE SHEET ACTUATED VALVE

Dale A. Knutson, Nashotah, and George R. Steber, Mequon, both of Wis., assignors to Applied Power Inc., Butler, Wis.

Filed Feb. 21, 1995, Ser. No. 392,016
Int. Cl.[6] F15B 13/044; F16K 31/02
U.S. Cl. 137—82 5 Claims



2. In a hydraulic valve of the type having a housing, an inlet port in the housing, an outlet port in the housing, and a valve seat having an axis, an interior and an exterior, the interior being in communication with one of the ports and the exterior being in communication with the other of the ports, and with the seat lying in a plane which is orthogonal to an axis of the seat, and a piezo-electric valve actuator for varying a flow area between the exterior and the interior of the seat, wherein the seat is formed on an end surface of a nozzle, the actuator is in the shape of a sheet having opposed planar surfaces, at least one of the surfaces facing and being generally parallel and adjacent to the plane of said seat and the actuator is mounted in the housing at opposite edges of the actuator so that the housing constrains the edges against movement in the direction of the axis of the seat, the one surface of the actuator and the seat defining between them the flow area, and the actuator is a piezo-electric monomorph comprising a layer of piezo-electric material and all electrode sheet laminated to the piezo-electric layer, the improvement wherein:

said layer of piezo-electric material is on only one side of said actuator and said electrode sheet is on an opposite side, and said one side faces said seat; and

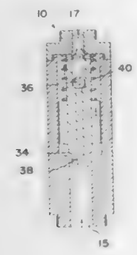
said piezo-electric layer has two sub-areas, electrode surfaces of said sub-areas opposite from said electrode sheet being electrically isolated from one another such that applying an electric field to one of said areas to deflect said actuator results in an electrical output from the other sub-area.

5,630,441

SELF-CLOSING LIQUID/GAS CONTROL VALVE

Joseph Feldman, Tel-Aviv, Israel, assignor to Selector, Ltd., Petach Tikua, Israel

Filed Mar. 13, 1996, Ser. No. 615,601
Claims priority, application Israel, Mar. 29, 1995, 113180
Int. Cl.[6] F16K 17/42
U.S. Cl. 137—183 6 Claims



1. For interrupting the flow of a liquid under the propulsion of pressurized gas, a self closing valve comprising:

a housing;

an inlet port at one side, an outlet port at the other side of the housing and a hollow space extending therebetween;

a first valve seat formed at said inlet port side of the said space;

a second valve seat formed at said outlet port side of the space;

a first, elongated freely slidable valve member placed within said space, comprising:

a portion configured to close against said first valve seat;

a blind bore, open at the outlet port side and extending in register therewith;

a second, freely movable valve member placed within said bore, configured to close against the second valve seat; and

an orifice communicating said bore with said space upstream of said first valve seat;

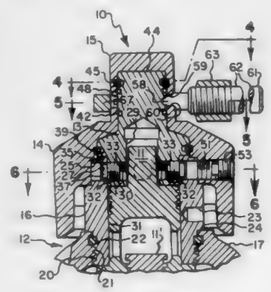
the arrangement being such that during supply of the liquid through said inlet, the first valve member becomes displaced to allow the flow of the liquid through the first valve seat, around the first valve member and through said outlet, and upon the gas reaching the level of said orifice, the said second valve member becomes seated against said second valve seat to close said outlet.

5,630,442

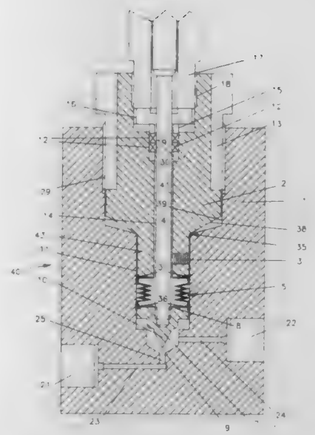
TAMPER RESISTANT CONSTRUCTION FOR HYDRANT ACTUATING NUT

Bradley J. Julicher, Williamsville, N.Y., assignor to McGard, Inc., Orchard Park, N.Y.

Filed Jun. 7, 1996, Ser. No. 651,294
Int. Cl.[6] F16K 35/06; E03B 9/06
U.S. Cl. 137—296 26 Claims



1. In a fire hydrant having a hydrant body and a hydrant cover mounted on said hydrant body and a hydrant shaft having an upper portion with a valve-actuating polygonal nut positioned at said upper portion of said hydrant shaft and extending outwardly from said hydrant cover, a construction for rendering said nut tamper resistant against unauthorized actuation comprising a packing nut threaded into said hydrant cover proximate to said upper portion of said hydrant shaft, a hydrant nut actuating body, a recess in said hydrant nut actuating body for receiving said polygonal nut in turning relationship, a plurality of circumferentially spaced threaded openings in said hydrant nut actuating body, a plurality of threaded studs having inner and outer ends with said inner ends located in said threaded openings, at least one bore in said packing nut alignable with said spaced threaded openings, a circumferential groove in said packing nut for receiving said outer ends of said threaded studs for establishing a force-transmitting connection between said hydrant nut actuating body and said packing nut while permitting relative rotation between said hydrant nut actuating body and said packing nut whereby said hydrant nut actuating body can rotate relative to said packing nut while said valve actuating polygonal nut retains a turning relationship with said hydrant nut actuating body, a shroud positioned in encircling relationship to said packing nut and having a lower portion positioned proximate said hydrant cover, a first rotatable connection between said shroud and said hydrant nut actuating body for permitting free rotation of said shroud on said hydrant nut actuating body, a cap mounted on said hydrant nut actuating body proximate said shroud, and a second rotatable connection between said cap and said hydrant nut actuating body, said force-transmitting connection between said hydrant nut actuating body and said packing nut transmitting external forces applied to said cap and to said shroud to said hydrant body.

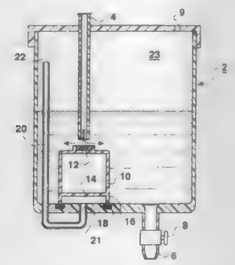


5,630,443

BUOYANT BODY CONTROL DEVICE

Peretz Rosenberg, 30 046, Moshav Beit Shearim, Israel

Filed Oct. 2, 1995, Ser. No. 537,956
Claims priority, application Israel, Oct. 3, 1994, 111126
Int. Cl.[6] F16K 31/22;33/00
U.S. Cl. 137—393 19 Claims



1. A control device comprising:

a liquid reservoir having an inlet for feeding a liquid into the reservoir, and an outlet for discharging the liquid from the reservoir;

and a buoyant body within said reservoir and movable to an upper control position and to a lower control position in response to the level of the liquid in said reservoir;

said buoyant body including an outer surface normally engageable with a surface of the reservoir in said lower control position but movable by buoyancy away from said surface of the reservoir towards said upper control position during filling of the reservoir with liquid; characterized in that said outer surface of the buoyant body includes a cavity circumscribed by a rim engageable with said surface of the reservoir in said lower control position of the buoyant body to define a chamber isolated from the reservoir when the liquid is at a low level within said reservoir;

and in that said device includes a passageway which normally connects said chamber to a source of low pressure but which is connectible to a source of higher pressure, such that during the filling of the reservoir with the liquid, the low pressure applied to said chamber by said low pressure source normally holds the buoyant body in said lower control position until the chamber is connected by said passageway to said source of higher pressure to permit the buoyant body to move by buoyancy to said upper control position.

5,630,444

HIGH PRESSURE BELLOWS VALVE

David Callaghan, Edinboro, and Richard K. Reber, Erie, both of Pa., assignors to Snap-Tite, Inc., Union City, Pa.

Filed Apr. 24, 1996, Ser. No. 639,267
Int. Cl.[6] F16K 31/00
U.S. Cl. 137—550 12 Claims

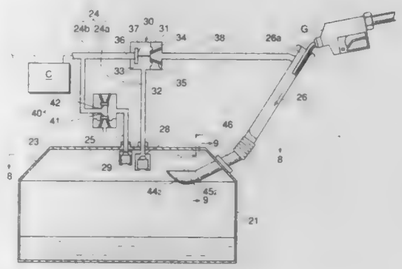
1. A valve comprising a body; said body includes a passageway therethrough; a stem; a stem end; said stem end affixed to said stem and moveable therewith; a cover affixed to said body; a bellows; said bellows includes an interior and an exterior; said bellows affixed and sealed to said stem end and said cover; said cover includes a filter; said stem end moveable between first, closed, and second, open, positions; said stem end engaging said body and prohibiting fluid flow through said passageway of said body when said stem end is in said first, closed position; said stem end permitting fluid flow through said passageway of said body when said stem end is in said second, open position; a packing; said packing sealingly engaging said cover and said stem; said filter permits pressurization of said interior of said bellows such that the pressure on said interior and exterior of said bellows is substantially equal when said stem end is in said second, open position; and, said filter prohibiting entry of contaminants into said passageway of said body.

5,630,445

FUEL TANK FOR AUTOMOTIVE VEHICLES AND EVAPORATIVE EMISSION CONTROL SYSTEM INCORPORATING SAME

Masaaki Horiuchi; Takeaki Nakajima; Koichi Hidano; Kazumi Yamazaki, and Teruo Wakashiro, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1995, Ser. No. 531,607
Claims priority, application Japan, Sep. 22, 1994, 6-254367; Oct. 25, 1994, 6-260293
Int. Cl.[6] F16F 24/00
U.S. Cl. 137—592 18 Claims



1. A fuel tank for an automotive vehicle, comprising:

a tank body for storing fuel;

a filler pipe connected to the tank body; and

a fuel outlet port device located within said tank body and connected to an end of said filler pipe, said fuel outlet port device having an upwardly facing fuel outlet opening from which fuel supplied through said filler pipe flows out into said

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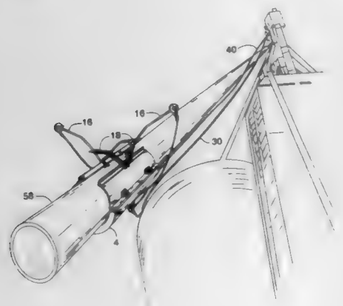
tank body wherein said upwardly facing fuel outlet opening has an area which is at least larger than a cross-sectional area of said filler pipe, said fuel tank further comprising a fuel trap for storing part of said fuel supplied through said filler pipe to thereby prevent evaporative fuel generated within said tank body from flowing into said filler pipe.

5,630,446

REPAIR APPARATUS FOR A GRAIN CHUTE

Richard D. Stallings, 305 S. Ivy, Yuma, Colo. 80759-2313

Filed Oct. 4, 1995, Ser. No. 538,906
Int. Cl.[6] F16L *55/16*
U.S. Cl. 138—99 18 Claims



1. A remotely actuated repair apparatus for grain pipe, comprising:

a sleeve assembly with a bottom member and at least one top member pivotally connected to said bottom member;

locking means permanently interconnected during use on two members of said sleeve assembly, said locking means having a travelling position and a securing position; and

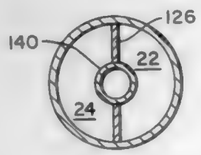
means for remotely manually actuating said locking means, wherein in said travelling position said sleeve assembly is slidingly positionable over a hole in said grain pipe, and when said locking means with an actuation tether is in said securing position said sleeve assembly is immobilized around said hole in said grain pipe.

5,630,447

PIPE FOR GEOTHERMAL HEATING AND COOLING SYSTEMS

Robert C. B. Jensen, River Vale, N.J., assignor to Endot Industries, Inc., Rockaway, N.J.

Filed Oct. 6, 1995, Ser. No. 543,291
Int. Cl.[6] F16L *9/18*
U.S. Cl. 138—115 11 Claims



1. A conduit for use in a geothermal heating and cooling system which comprises:

an elongated first tubular member having first and second ends, said elongated first tubular member having an inner and an outer surfaces;

an elongated second tubular member having first and second ends, said elongated second tubular member having an inner and an outer surfaces, said second tubular member being disposed within said first tubular member;

a first longitudinally extending divider wall disposed within said first tubular member, said first longitudinally extending divider wall extending from said first tubular member to said second tubular;

a second longitudinally extending divider wall disposed within said first tubular member, said second longitudinally extending divider wall extending from said first tubular member to said second tubular; said first and second longitudinally extending members dividing the annular space intermediate said first and second tubular members into first and second fluid flow passageways extending longitudinally; and

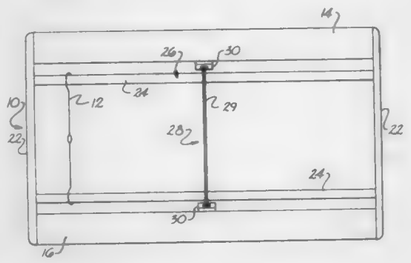
a toroidal section shaped member engaging said second end of said first tubular member and said second end of said second tubular member whereby said first and second fluid flow passageways are in fluid communication and said second and of said second tubular member is unobstructed.

5,630,448

HEDDLE FRAME WITH TORQUE LOCKING BLOCK CENTER BRACE ASSEMBLY

Gene E. Faasse, Taylors, S.C., assignor to Steele Heddle Manufacturing Company, Greenville, S.C.

Filed Mar. 25, 1996, Ser. No. 621,252
Int. Cl.[6] D03C *9/06*
U.S. Cl. 139—91 13 Claims



1. A center brace assembly for use with heddle frames to maintain parallelism between the top and bottom rails of the heddle frames, said assembly comprising:

a center brace having a length to extend between, and configured to be connectable between, a top rail and a bottom rail of a heddle frame for maintaining parallelism of said top and bottom rails, said center brace including

an elongated center portion, and

first and second flanges at opposite longitudinal ends of said center portion; and

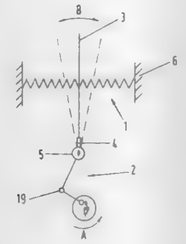
first and second locking blocks confiqured to be respectively attached to said top rail and said bottom rail and configured to respectively receive and cooperate with said first flange and said second flange and to exert forces on said first and second flanges to create opposing torques thereon, thereby placing said center portion in torsion and locking said first flange and said second flange within their respective locking blocks.

5,630,449

ENERGY STORER, FOR REDUCING DRIVE TORQUE AND IMPROVING POWER CONSUMPTION IN A WEAVING MACHINE

Stefan Ammann, Winterthur; Lorant Gacsay, and Alfred Stirnemann, both of Zürich, all of Switzerland, assignors to Sulzer Rueti AG, Rueti, Switzerland

Filed Aug. 4, 1995, Ser. No. 511,157
Claims priority, application European Pat. Off., Sep. 6, 1994, 94810515
Int. Cl.[6] D03D *49/60*
U.S. Cl. 139—188 R 11 Claims



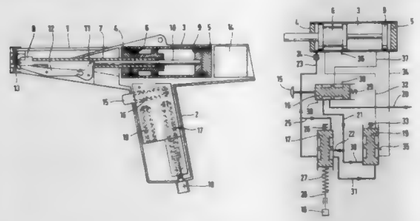
1. Apparatus for pivotally reciprocating a member about an axis while reducing energy requirements, the apparatus comprising the member; means pivotally mounting the member on a support; a torsion spring operatively coupled with the member and the support so that pivotal movements of the member causes the torsion spring to alternatingly store and release energy as the member pivotally reciprocates; and drive means operatively coupled with the member for pivotally reciprocating the member, said drive means being configured to reciprocate the member independent of a force exerted by the torsion spring on the member.

5,630,450

TOOL FOR TENSIONING A BAND

Viktor Kurmis, Pinneberg, and Hans-Dieter Thieme, Uetersen, both of Germany, assignors to Paul Hellermann GmbH, Pinneberg, Germany

Filed Mar. 22, 1996, Ser. No. 621,106
Claims priority, application Germany, Mar. 23, 1995, 295 04 940.5
Int. Cl.[6] B21F *9/00*
U.S. Cl. 140—123.6 2 Claims



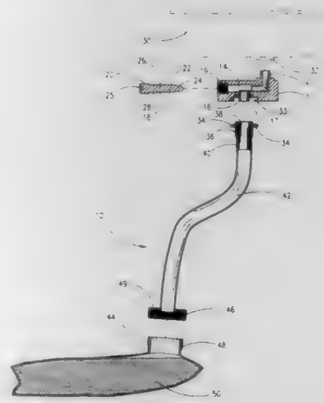
1. In a tool for tensioning a band and for actuating a band fastening and/or for cutting off the band at the end of the tensioning operation, having a pressure-medium operated tensioning drive (3, 6), a pressure-medium operated actuating drive (3, 9) and a valve arrangement (17, 19) which, when a predetermined pressure is attained at the tensioning drive (3, 6), liberates the supply of pressure medium to the actuating drive (3, 9), the combination wherein the valve arrangement comprises a reducing valve (17), which can be set to reducing pressure corresponding to the desired band tension, a pressure-medium supply line (23) connected to the tensioning drive (3, 6), a restrictor (24) housed within the pressure-medium supply line (23), a pressure-medium actuated reversing valve (19) connected to the actuating drive (3, 9) and movable toward an actuating position, spring means (33) for moving the reversing valve toward the actuating position in conjunction with pressure obtaining at the tensioning drive (3, 6), said reversing valve being movable away from an actuating position by the pressure present in front of the restrictor (24) in the pressure-medium supply line (23).

5,630,451

OIL CHANGE APPARATUS

Aaron L. Bernard, 122 Fairway Dr., Lafayette, La. 70506

Filed Dec. 23, 1994, Ser. No. 365,565
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—10 6 Claims



1. An oil pan drain assembly, adapted to be screwably mounted to an oil pan of an internal combustion engine having a threaded oil pan drain hole, in place of the threaded oil pan drain hole plug, comprising:

a) a housing, said housing extending along a longitudinal axis between first and second housing ends and having upper and lower housing surfaces, said housing having an internal longitudinal oil flow space between said first and second housing ends and a threaded bore at said first end of said housing, said threaded bore being aligned and in communication with said oil flow space;

b) an oil inlet port protruding upward from said upper surface of said housing, said oil inlet port having an opening in communication with said internal oil flow space of said housing, said oil inlet port having external threads around its periphery so that said oil inlet port is adapted to be screwably received into an oil pan drain hole for mounting said housing to said oil pan;

c) a protruding oil outlet port extending downward from said lower surface of said housing in communication with said internal oil flow space of said housing;

d) a longitudinally extending valve stem having a base end and a lead end, said valve stem having a needle end lead segment, a shoulder segment corresponding in length to said internal flow space of said housing and of substantially the same diameter as said internal oil flow space and a threaded neck segment for screwably engaging said valve stem with said threaded bore at said first end of said housing so as to position said shoulder segment of said valve stem within said internal flow space of said housing to seal said flow space;

e) a means for rotating said valve stem;

f) first and second asymmetrical connector slots integral with said housing, each of said connector slots having an open end and a closed end, said a first and second connector slots being

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positioned transverse to said longitudinal axis of said housing adjacent to and on opposite sides of said oil outlet port so that said closed end of said first connector slot is adjacent to said open end of said second connector slot;

g) a detachable drain hose, said drain hose having first and second ends, said first hose end having a pair of opposing flanges extending perpendicular from said first hose end, said first hose end being adapted for receiving said oil outlet port and said flanges being adapted for rotational engagement with said first and second connector slots for attachment and detachment of said drain hose with said oil outlet port;

h) a detachable oil collection bag;

i) means for detachably mounting said drain hose to said oil collection bag at said second hose end.

5,630,452

FUNNEL WITH LEVEL INDICATOR

Dieter Schmid, Radaustrasse 23a, 86199 Augsburg, and Oliver Schmid, Grundweg 2, 86356 Neusass, both of Germany

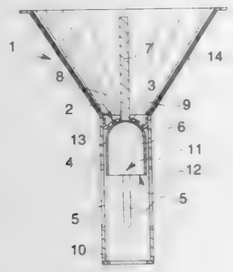
PCT No. PCT/EP94/00980, § 371 Date Jul. 11, 1995, § 102(e) Date Jul. 11, 1995, PCT Pub. No. WO94/25390, PCT Pub. Date Nov. 10, 1994

PCT Filed Mar. 29, 1994, Ser. No. 500,881

Claims priority, application Germany, Apr. 30, 1993, 9306567 U; Jul. 8, 1993, 9310141 U; Oct. 12, 1993, 9315446 U

Int. Cl.[6] B65B *1/04*

U.S. Cl. 141—199 **20 Claims**



1. A funnel comprising:

a funnel flare;

a funnel tube connected to said funnel flare at a downstream end of said funnel flare;

a float positioned inside said funnel tube and movable along an axis of said funnel tube;

a measuring rod connected to said float and extending upstream from said float;

a perforated plate mounted adjacent to a connection between said funnel tube and said funnel flare, said perforated plate surrounding and guiding said measuring rod along said axis of said funnel tube, said perforated plate being designed to be repetitively replaceable without damaging said perforated plate, said funnel tube and said funnel flare;

passage slots defined by said funnel tube, said passage slots being positioned downstream in said funnel tube of said perforated plate, an upstream side of said float having a dome shape and said perforated plate having a downstream side substantially complimentary to said dome shape to substantially block passage of fluid from said funnel flare to said funnel tube when said float is positioned against said perforated plate, said float being a hollow body open on a downstream side.

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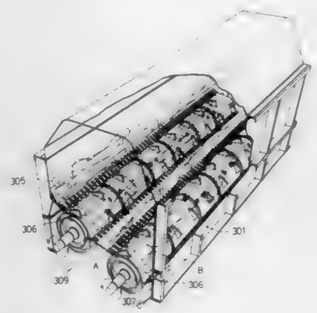
DEBARKING MACHINE

Seiya Ishizawa, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan

Filed May 24, 1996, Ser. No. 652,932

Int. Cl.[6] B27L *1/00*

U.S. Cl. 144—208.9 **17 Claims**



1. A debarking machine having a wood-infeeding side for feeding wood to said debarking machine and a wood-outfeeding side for outputting wood from said debarking machine, said debarking machine comprising:

one of a line of first to n-th rotary members coupled in series, and a plurality of lines thereof coupled in series, from said wood-infeeding side to said wood-outfeeding side, each rotary member having a debarking blade on an outer surface,

wherein said first rotary member is inclined downwardly in a direction toward said wood-outfeeding side from said wood-infeeding side and said second to n-th rotary members are arranged one of horizontally and inclined downwardly in said direction toward said wood-outfeeding side from said wood-infeeding side,

wherein an inclined angle of said first rotary member located at an end of said wood-infeeding side is set greater than an inclined angle of said n-th rotary member located at an end of said wood-outfeeding side, and

wherein inclined angles of said second to (n−1)-th rotary members are set within a range from an angle no less than said inclined angle of said n-th rotary member to an angle no more than said inclined angle of said first rotary member and are each set no less than said inclined angle of an adjoining rotary member which is located on said wood-infeeding side.

5,630,454

CUTTING BLADE HOLDING DEVICE IN VENEER LATHE

Masaru Koike, Obu, Japan, assignor to Meinan Machinery Works, Inc., Obu, Japan

Filed Nov. 9, 1995, Ser. No. 552,476

Claims priority, application Japan, Nov. 14, 1994, 6-305494

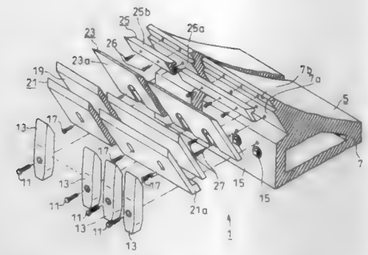
Int. Cl.[6] B27L *5/00*

U.S. Cl. 144—212 **5 Claims**

1. A cutting blade holding device in a veneer lathe, said cutting blade holding device being supported by a frame of the veneer lathe with its cutting blade kept in parallel with a log to be peeled, and said cutting blade holding device comprising:

a blade stock having a side thereof facing the log formed with a blade retaining portion for retaining the cutting blade, the cutting blade being detachably mounted in the blade retaining portion of the blade stock, and

an abutment member as a member separate from the blade stock, which is separately replaceably disposed in the upper end portion of the blade retaining portion in the vicinity of a



cutting edge of the cutting blade mounted in the blade retaining portion.

5,630,455

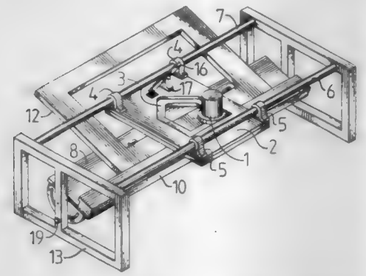
GROOVE FORMING APPARATUS AND METHOD

Rejean Julien, 276 Lac Clair, Ste-Mar Guerite Du Lac, Masson, Quebec, Canada

Continuation-in-part of Ser. No. 251,138, May 31, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 395,531

Int. Cl.[6] B27C *5/00*

U.S. Cl. 144—372 **11 Claims**



10. A method of forming grooves of uniform configuration on a face surface of a one-piece frame, such that the adjacent grooves meet at inside corners to define respective miter lines, said method comprising the steps of:

machining a central portion of said frame;

cutting corner groove portions by a cutter means thus forming corresponding inside corners defining respective miter lines, wherein said cutter means is guided by a first guiding means;

cutting side groove portions by said cutter means, wherein said cutter menus are guided by a second guiding means.

5,630,456

WINDOW BLIND CORD WINDING APPARATUS

Marie J. R. Hugo, and Ross Hugo, both of R.R. #2, New Sarepta, Alberta, Canada

Filed May 8, 1996, Ser. No. 646,385

Int. Cl.[6] E06B *9/30*

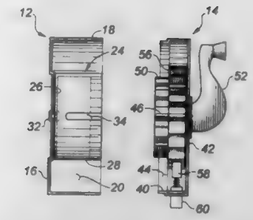
U.S. Cl. 160—173 **3 Claims**

1. A window blind cord winding apparatus, comprising:

an outer housing having a circular spool receiving cavity with a cord access opening;

a spool positioned in the spool receiving cavity of the outer housing, the spool having a circular cord bell receiving cavity with an inner gear profile and a cord access opening;

a removable closure cap engagable with the outer housing, the closure cap having an exterior surface and an interior cavity, a shaft extending through the closure cap, the shaft having a



first end extending into the interior cavity and a second end extending from the exterior surface, a gear being mounted to the first end of the shaft, a hand grip being secured to the second end of the shaft, the gear engaging the inner gear profile on the cord bell receiving cavity of the spool, whereby the hand grip is used to rotate the gear with the gear engaging the inner gear profile to rotate the spool; and

means for locking the spool in a selected rotational position relative to the outer housing.

5,630,457

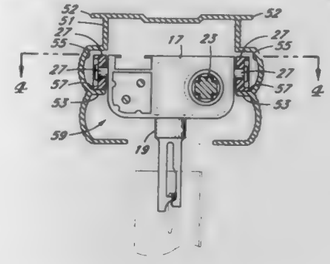
EXTRUSION TRACK FOR BLINDS

Tser-Wen Chou, 19464 Via Del Caballo, Yorba Linda, Calif. 92686

Filed Nov. 27, 1995, Ser. No. 563,178

Int. Cl.[6] E06B *90/30*

U.S. Cl. 160—173 **11 Claims**



1. An improved track for vertical blinds comprising:

an elongate track having an overall inverted "U" transverse shape having a pair of opposing lower ends, and including a pair of opposing raceways each having an upwardly directed horizontal raceway surface and a downwardly directed horizontal raceway surface, said upwardly directed horizontal raceway surface and said downwardly directed horizontal raceway surface connected by a continuously curving internal wall surface.

5,630,458

SYSTEM FOR CHILDPROOFING WINDOW CLOSURES

Miles A. Holden, 1275 Sliverspear Rd. Apt 203, Mississauga, On, Canada

Filed Apr. 5, 1996, Ser. No. 628,526

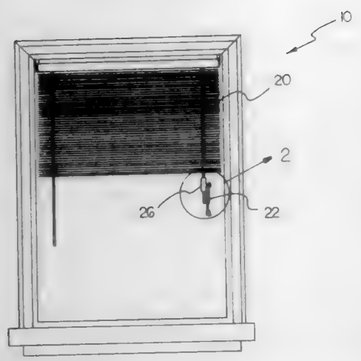
Int. Cl.[6] E06B *9/30*

U.S. Cl. 160—178.1 **4 Claims**

1. A system for use in child proofing a window closure, the system comprising in combination:

a plurality of window covering elements being supported adjacent a window by two cords, wherein a first cord supports a first half of the window covering and a second cord supports a second half of the window covering, the first and second cords each having distal ends for use in adjusting the plurality

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of window covering elements, the distal ends of the first and second cords facilitating the adjustment of the plurality of window covering elements in between a first orientation wherein the plurality of window covering elements cover substantially the entire window and a second orientation where the plurality of window covering elements are suspended substantially above the window;

a clamp having a first half and a second half with each half having a ridged interior surface and a rounded exterior surface, a first side, a second side, an upper rounded edge and a lower rounded edge, each of the sides having an upper extent, a lower extent and an intermediate extent therebetween, a J-shaped hook having a base edge, the base edge integral with the intermediate extent of the first side, a first eyelet secured to the upper extent of the first side, a second eyelet secured to the lower extent of the first side;

the first and second halves of the clamp interconnected such that the first eyelet of the first half comes into contact with the first eyelet of the second half and the second eyelet of the first half comes into contact with the second eyelet of the second half and the interior surfaces of each half are brought into facing relation, a spring positioned through each of the eyelets, a dowel positioned through each of the eyelets, the spring serving to bias the two halves into facing relation;

the interior surfaces of each of the halves adapted to be secured upon the distal ends of the cords with a portion of each of the cords being draped over each of the J-hooks.

5,630,459

SHIELD APPARATUS AND METHOD FOR SECTIONAL DOOR HINGE

David O. Martin, Salt Lake City, Utah, assignor to Martin Door Manufacturing, Inc., Salt Lake City, Utah

Filed Mar. 9, 1995, Ser. No. 401,562
Int. Cl.[6] E06B *3/12;9/00*
U.S. Cl. 160—236 **5 Claims**

1. A joint shield for shielding the gap formed between an upper edge of a lower door section of a sectional door and a lower edge of an upper door section of the sectional door as the sectional door traverses between the raised, open position and the lowered, closed position, the upper door section and the lower door section being hingedly joined in an edge-to-edge relationship, the improvement comprising:

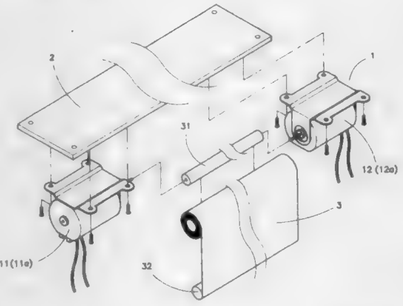
an outer joint shield comprising a strip of material having a length and a width, said strip being formed into a generally L-shaped configuration along said length, said L-shaped configuration having a horizontal foot portion and a vertical leg portion, said foot portion being configured to being mounted to the upper edge of the lower door section, said leg portion extending upwardly in shielding relationship across the gap between the upper edge of the lower door section and the lower edge of the adjoining upper door section, said outer joint shield including first attachment means for releasably securing said outer joint shield the lower edge of to the upper door section during shipment and a second attachment means for securing said outer joint shield to the upper edge of the lower door section after assembly of the sectional door, said first attachment means comprising a masking tape for releasably securing of said vertical leg to said upper door section.

5,630,460

MOTOR-DRIVEN SCREEN ROLLER ASSEMBLY FOR AUTOMOBILES

Jenchieh Yuan, No. 14, Yen Ping S. Rd., Taipei, Taiwan

Filed Feb. 22, 1996, Ser. No. 604,884
Int. Cl.[6] E06B *9/56*
U.S. Cl. 160—310 **6 Claims**



1. A motor-driven screen roller assembly for subdividing a passenger space inside a motor vehicle, comprising:

a pair of screens for dividing the passenger space inside the motor vehicle, said screens having lower free ends coupled respectively to a pair of slats;

a pair of rollers suspended inside the passenger space of the motor vehicle, each of said rollers having coupled thereto an upper end of a respective one of said pair of screens, wherein when each said roller is rotated in a forward direction said lower free end of said respectively coupled screen is lowered and when each said roller is rotated in a backward direction said free end of said respectively coupled screen is raised;

a pair of power drives coupled respectively to said pair of rollers, each of said power drives including at least one reversible DC motor coupled to a respective one of said pair of rollers for rotating said roller in said forward direction to lower said screen, for rotating said roller in said backward direction for raising said screen, and for stopping said rotations of said roller; and,

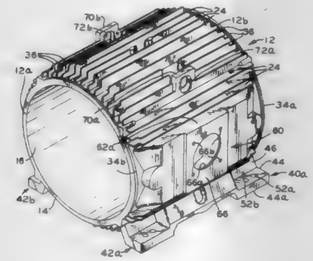
a control circuit for providing selective control of each said power drive and said respective roller coupled thereto, said control circuit including a FORWARD/STOP/BACKWARD switch and a selector switch coupled in series for controlling a selected one of said power drives, said FORWARD/STOP/BACKWARD switch being connected between a battery power supply circuit of the motor vehicle and said selector switch, said selector switch being connected between said FORWARD/STOP/BACKWARD switch and both of said pair of power drives to selectively connect one of said power drives to said FORWARD/STOP/BACKWARD switch for control thereby, said FORWARD/STOP/BACKWARD switch being adapted to provide a selection between forward rotation, backward rotation and stopping of said selected one of said pair of power drives to correspondingly lower said screen, raise said screen and halt movement of said screen.

5,630,461

METHOD FOR MAKING STATOR FRAME FOR DYNAMOELECTRIC MACHINE

Jimmy CoChimin, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 834,684, Feb. 11, 1992, abandoned. This application Aug. 17, 1994, Ser. No. 291,834
Int. Cl.[6] B22C *9/04;7/02*
U.S. Cl. 164—34 **13 Claims**



1. A method for making an integral single piece stator frame for use in a dynamoelectric machine, wherein the stator frame comprises a housing having a generally annular wall defining an axial bore and having a plurality of external longitudinally extending cooling fins integral with the annular wall, said method comprising the steps of;

a. forming an integral single piece vaporizable pattern having a configuration substantially identical to the stator frame and being capable of vaporization when contacted by a molten metal;

b. forming a coating on the full surface of the pattern which is gas permeable but will not vaporize when contacted by said molten metal,

c. burying the coated pattern in sand in a manner enabling molten metal to be poured into contacting relation with the pattern,

d. pouring a sufficient quantity of molten metal into contacting relation with the pattern to vaporize the pattern and fill the resulting void with molten metal so as to define a molten metal annular wall and external longitudinal cooling fins establishing a ratio of effective cooling fin height over the outer diameter of said annular wall in the range of approximately 4.0–6.0,

e. allowing the molten metal to solidify and cool to thereby form a single piece stator frame casting, and

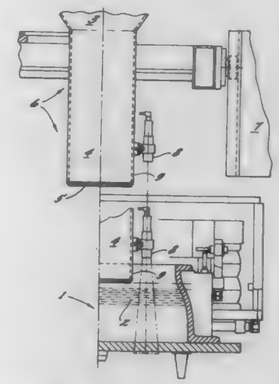
f. removing the casting from the sand.

5,630,462

DEVICE FOR FILLING SHOOTING HEADS

Werner Landua, Mannheim, and Werner Pichler, Brühl, both of Germany, assignors to Adolf Hottinger Maschinenbau GmbH, Mannheim, Germany

PCT No. PCT/DE94/01171, § 371 Date Apr. 4, 1996, § 102(e) Date Apr. 4, 1996, PCT Pub. No. WO95/09706, PCT Pub. Date Apr. 13, 1995
PCT Filed Oct. 6, 1994, Ser. No. 624,451
Claims priority, application Germany, Oct. 7, 1993, 4334117.9
Int. Cl.[6] B22C *13/12;15/24;19/04*
U.S. Cl. 164—151.2 **6 Claims**



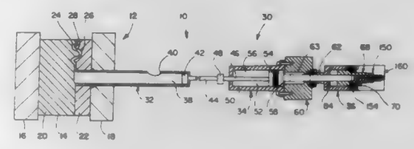
1. A device for filling a shooting head with molding material, the device being provided with a filling assembly that comprises a storage hopper for the molding material, an outlet member for discharging the molding material into the shooting head, and a gate for closing the outlet member, the filling assembly being mounted on a machine frame for vertical movement so as to immerse the outlet member into the shooting head that is to be filled, the device further comprising a noncontacting sensor associated with the outlet member, the sensor being directed into the shooting head so as to detect the level of the molding material therein.

5,630,463

VARIABLE VOLUME DIE CASTING SHOT SLEEVE

Dennis S. Shimmell, Hudsonville, Mich., assignor to Nelson Metal Products Corporation, Grandville, Mich.

Filed Dec. 8, 1994, Ser. No. 351,937
Int. Cl.[6] B22D *17/08;17/32*
U.S. Cl. 164—312 **11 Claims**



1. A variable volume metal delivery system for use in a die casting apparatus, comprising:

a shot sleeve defining an internal shot volume;

a plunger reciprocable within said shot sleeve between a retracted position wherein molten metal may be introduced into said shot sleeve and an extended position wherein metal is expelled from said shot sleeve, said plunger having an extended stroke limit and a retracted stroke limit;

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gross volume control means for changing the retracted stroke limit of said plunger between a low-volume position and a high-volume position without varying the extended stroke limit of said plunger; and

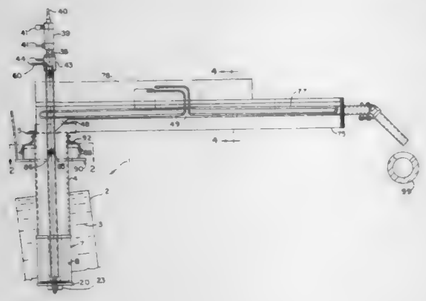
fine volume control means for providing fine adjustment of the retracted stroke limit of said plunger in both of the low-volume and high-volume position without varying the extended stroke limit of said plunger.

5,630,464

COLD CHAMBER MAGNESIUM PUMP ASSEMBLY

Robert Bauman; Frank Wilson, both of Sparta, and Lynn Robb, Steeleville, all of Ill., assignors to Spartan Light Metal Products, Inc., Sparta, Ill.

Filed Nov. 3, 1995, Ser. No. 552,604
Int. Cl.[6] B22D *17/08;17/30;39/00*
U.S. Cl. 164—337 **5 Claims**



1. In a magnesium die casting machine wherein a charge of molten magnesium is delivered to a die charging chamber, the die casting machine including a holding pot containing molten magnesium in which a pumping chamber is submerged, said pumping chamber having bottom, top and side walls, the improvement comprising a fi...ag port through said bottom wall, defined at least in part by a cylindrical wall surface, said pumping chamber being defined by inner surfaces of said bottom, side and top walls, spaced passages in said top wall, one control rod-receiving passage aligned with said filling port and one riser pipe-receiving passage; an axially moveable control rod mounted to extend through said control rod passage, said control rod having a shut-off part with an external surface complementary to said cylindrical wall surface of the filling port, and means for moving said control rod between a position at which said shut-off part is within the confines of the cylindrical wall surface and a position at which said shut-off part is free of said cylindrical wall surface; a riser pipe extending through said riser pipe passage to a point near the inner surface of said bottom wall where it communicates with said pumping chamber, said riser pipe being sealed around its periphery to said top wall and extending to connect and communicate with a runner pipe connected to deliver molten magnesium to said charging chamber; means for delivering inert gas to said pumping chamber, when said chamber contains a charge of molten magnesium, under sufficient pressure to force molten magnesium through said riser pipe and runner pipe when said control rod shut-off part is within the confines of said cylindrical wall surface, the complementary surfaces of said control rod shut-off part and said cylindrical passage being spaced a distance sufficient to permit flee passage of said control rod shut-off part but closely enough to prevent molten magnesium from being forced through the space under the influence of said gas pressure, said molten magnesium wetting the said complementary surfaces to form a seal when the shut-off part is within the confines of said cylindrical passage wall surface.

5,630,465

CERAMIC SHELL MOLDS AND CORES FOR CASTING OF REACTIVE METALS

Roy C. Feagin, Boca Raton, Fla., assignor to Remet Corporation, Chadwicks, N.Y.

Division of Ser. No. 7,883, Jan. 28, 1987, Pat. No. 5,335,811.
This application Jun. 1, 1995, Ser. No. 456,469
Int. Cl.[6] B22C *9/02;1/00*
U.S. Cl. 164—361 **5 Claims**

1. A refractory shape made from a composition comprising a slurry of yttria, an acid and an inert organic solvent.

5,630,466

PROCESS FOR SHAPING METAL MATERIALS IN A SEMI-SOLID STATE

Michel Garat, Saint Quentin sur Isere, and Willem Loue, Chirens, both of France, assignors to Aluminium Pechiney, Courbevoie, France

PCT No. PCT/FR95/00042, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO95/19237, PCT Pub. Date Jul. 20, 1995
PCT Filed Jan. 13, 1995, Ser. No. 501,030
Claims priority, application France, Jan. 17, 1994, 94 00610
Int. Cl.[6] B22D *17/08;17/32;23/00*
U.S. Cl. 164—457 **8 Claims**

1. A process for shaping metal materials in a semi-solid state comprising:

a) preparing a blank of a thixotropic metal material which corresponds in weight to metal material to be used in each production cycle in making a series of articles;

b) reheating the blank to a semi-solid state to obtain a liquid fraction corresponding to a predetermined viscosity desired for said shaping, while determining power used in said reheating;

c) transferring the reheated blank to a forging press including a forging stamp or to a pressure die casting machine including an injection plunger;

d) determining the resistance of the material to the forging stamp or injection plunger, said resistance being defined as a set point value;

e) shaping the blank by means of forging or pressure die casting;

f) preparing a subsequent blank of said thixotropic metal material, reheating said subsequent blank to a semi-solid state, transferring said reheated subsequent blank to said forging press or pressure die casting machine, measuring resistance of the material to the forging stamp or injection plunger and shaping said subsequent blank; and

g) regulating the power used in reheating said subsequent blank to maintain said resistance at said set point value.

5,630,467

THIN SLAB CONTINUOUS CASTING MACHINE AND METHOD

Yasutsugu Yoshimura; Mituru Onose; Kenji Horii; Koichi Seki; Tadashi Nishino; Hironori Shimogama, all of Hitachi, and Chukichi Hanzawa, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

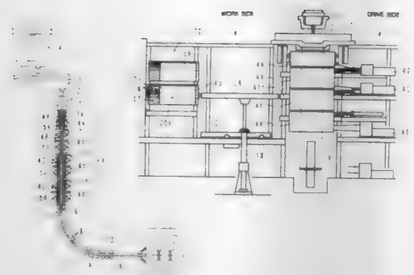
Filed Sep. 29, 1995, Ser. No. 536,259
Claims priority, application Japan, Sep. 30, 1994, 6-236882
Int. Cl.[6] B22D *11/12;11/20;11/124*
U.S. Cl. 164—486 **6 Claims**

1. A thin slab continuous casting machine comprising a mold for casting molten metal and a secondary cooling region for cooling and solidifying a slab cast in said mold while feeding said cast slab, thereby continuously casting a slab with a thickness not larger than 100 mm, wherein:

said secondary cooling region consists of a plurality of sections, and at least one of said sections includes a guide roller unit equipped with cooling spray comprising guide rollers for feeding said slab and cooling sprays for cooling said slab, a slab lagging cover for preventing a temperature drop of said slab, and replacement means for selectively replacing said guide roller unit and said slab lagging cover from one to the other.

6. A thin slab continuous casting method comprising the steps of casting molten metal in a mold, and cooling and solidifying a cast slab in a secondary cooling region while feeding said cast slab through said secondary cooling region, thereby continuously casting a slab with a thickness not larger than 100 mm, wherein

said secondary cooling region comprising a plurality of sections, and at least one of said sections includes a guide roller unit equipped with cooling spray comprising guide rollers for feeding said slab and cooling sprays for cooling said slabs, and a slab lagging cover for preventing a temperature drop of said slab, wherein the continuous casting method further comprising a step of selectively replacing said guide roller unit and said slab lagging cover from one to the other depending on casting speed of the slab to adjust a cooling rate of said slab so that slab temperature is kept at a value capable of carrying out subsequent rough rolling of the slab.

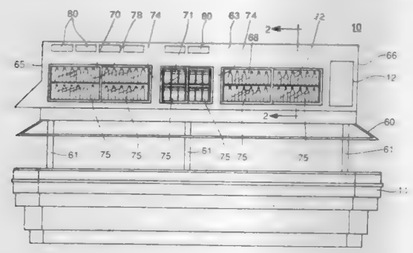


5,630,468

SALAD BAR UNIT WITH REFRIGERATED OVERHEAD STORAGE CABINET

James C. McKee, Coopersburg, Pa., assignor to Clemens Markets, Inc., Kulpsville, Pa.

Filed Aug. 16, 1995, Ser. No. 515,949
Int. Cl.[6] F25B *29/00*
U.S. Cl. 165—48.1 **8 Claims**



1. A salad bar unit which comprises:

a salad bar having a first, hot portion to hold and present hot food items and a second, cold portion to hold and present cold food items,

a storage cabinet positioned a distance above and mounted to said salad bar to present cold food items,

a refrigeration unit for refrigerating the second, cold portion of the salad bar and for refrigerating the storage cabinet, and

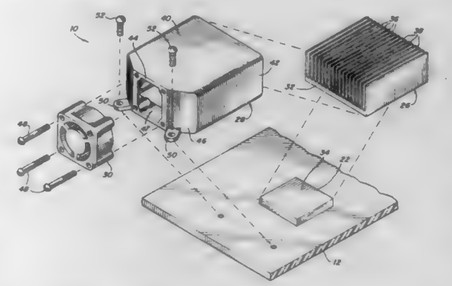
a heater unit for heating the first, hot portion of the salad bar.

5,630,469

COOLING APPARATUS FOR ELECTRONIC CHIPS

Matthew A. Butterbaugh, Rochester; Donald W. Dingfelder, Winona; Peter M. Herman, Oronoco, and Sukhvinder S. Kang, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 11, 1995, Ser. No. 501,202
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—80.3 **5 Claims**



1. Apparatus for cooling an integrated circuit chip mounted on a circuit board, said apparatus comprising:

a heat sink having a base mounted in heat transfer relation upon the top of the chip;

said heat sink including spaced apart fins extending upwardly from said base, said fins defining air flow interstices generally extending in a given direction parallel to said base, said fins being parallel to one another and separated from one another by a given generally constant distance so that said interstices are of generally uniform width;

an outermost pair of said fins defining lateral side surfaces of said heat sink;

the tops of said fins lying in a generally flat plane defining an upper heat sink surface;

a shroud covering the chip and said heat sink;

means including at least one fastener for mechanically attaching said shroud in a fixed position directly to the circuit board;

said shroud having a flat, planar top wall parallel with the circuit board and overlying said heat sink and an opposed pair of side walls extending in said given direction, said side walls flanking the chip and said heat sink, said side walls extending from said top wall to the surface of the circuit board, said shroud having opposed air inlet and air outlet ends;

said shroud top wall being parallel to said upper heat sink surface and spaced from said upper heat sink surface by a distance substantially equal to said given distance and said shroud side walls being parallel to said heat sink lateral side surfaces and spaced from said heat sink lateral side surfaces by a distance substantially equal to said given distance; and

a fan attached to one of said ends for moving air through said interstices, the other of said ends opposite to said fan being unobstructed defining an air flow opening at least equal in width and height to the width and height of said heat sink; and

said fan extending above the surface of the circuit board a distance equal to or less than the distance between the surface of the board and said shroud top wall.

5,630,470

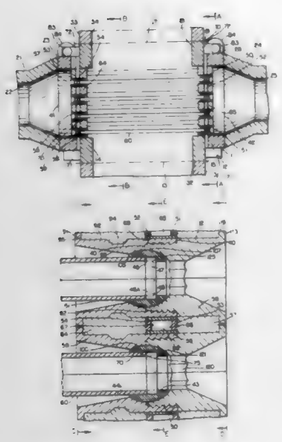
CERAMIC HEAT EXCHANGER SYSTEM

Hanford N. Lockwood, Jr., San Mateo, Calif., assignor to Sonic Environmental Systems, Inc., Parsippany, N.J.

Filed Apr. 14, 1995, Ser. No. 422,097
Int. Cl.[6] F28F *9/04*
U.S. Cl. 165—82 **28 Claims**

1. A ceramic heat exchanger for a heat recovery system comprising:

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a shell having a first tube sheet at a first end and a second tube sheet at a second end;

at least one ceramic heat exchanger tube disposed between said first tube sheet and said second tube sheet, said ceramic heat exchanger tube mounted into seal assembly means on each of said tube sheets; and

each of said seal assembly means allowing for both axial tube expansion and contraction as well as angular freedom of motion to prevent the development of a moment force on said ceramic heat exchanger tube.

5,630,471

APPARATUS FOR TRANSFERRING CLEANING BODIES FOR A HEAT EXCHANGE THROUGH WHICH CAN FLOW A COOLING FLUID

Detlef Taprogge, Hagen, Germany, assignor to Taprogge GmbH, Wetter, Germany

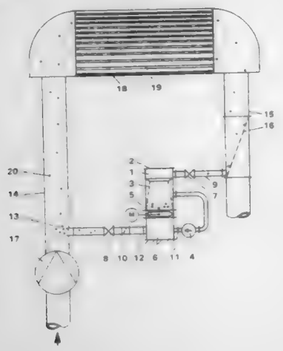
PCT No. PCT/EP94/02051, § 371 Date Feb. 22, 1995, § 102(e) Date Feb. 22, 1995, PCT Pub. No. WO95/00811, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 23, 1994, Ser. No. 387,881

Claims priority, application Germany, Jun. 23, 1993, 9309320 U

Int. Cl.[6] F28G *1/12*

U.S. Cl. 165—95 **10 Claims**



9. A method for transferring cleaning bodies through a heat exchanger comprising the steps of:

providing a heat exchanger having an inlet, an outlet, a casing having an inlet and an outlet, said casing inlet connected to said heat exchanger outlet, a sink having an inlet and an outlet, said sink inlet connected by an openable conduit to said casing outlet and said sink outlet connected to said heat exchanger inlet by a second conduit including therein a pressure controllable valve, and a third conduit further connecting said casing and said sink and including therein a pump suitably positioned between the outlet of said casing and said inlet of said,

providing cleaning bodies in said casing,

activating a pump to deliver water from said casing to said sink at a predetermined pressure such that said valve in said outlet opens and cause said cleaning bodies to move through said sink outlet,

passing said cleaning bodies through said heat exchanger but preventing the unintended return flow through said heat exchanger through selective operation of said pressure controllable valve.

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HEAT EXCHANGER WITH A BUNDLE OF TUBES AND A METALLIC TUBE PLATE

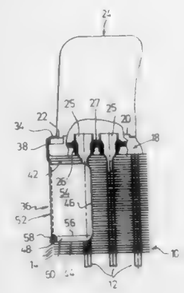
Michel Potier, Rambouillet, France, assignor to Valeo Thermique Moteur, Le Mesnil-Saint-Denis, France

Filed Oct. 17, 1995, Ser. No. 544,096

Claims priority, application France, Oct. 19, 1994, 94 12491

Int. Cl.[6] F28D *1/00*

U.S. Cl. 165—149 **4 Claims**



1. A heat exchanger comprising: a tube bundle including a plurality of tubes each having an end and a plurality of fins carried by said tubes, said fins having edges; a metallic tube plate having a plurality of holes, said ends of the tubes in the bundle being fitted sealingly into the holes in the tube plate; and a header fitted over the tube plate, wherein the heat exchanger further includes a retaining plate having a substantially U-shaped cross-section for cooperating with said fins and for resisting displacement of the tube bundle relative to the tube plate, said retaining plate being integral with the metallic tube plate and extending parallel to a longitudinal direction of the tubes so as to engage against the edges of said fins; said retaining plate including a generally rectangular spine portion, a tongue joining said spine portion to said tube plate, two wing portions joined to the spine portion and bent back at right angles with respect to said spine portion, said spine portion engaging a first end of the tube bundle and said two wing portions engaging respectively against two longitudinal sides of said tube bundle, and edge portions joined to said spine portion and said wing portions, said edge portions being slightly opened so as to avoid damage to the fins.

5,630,473

LAMINATED HEAT EXCHANGER

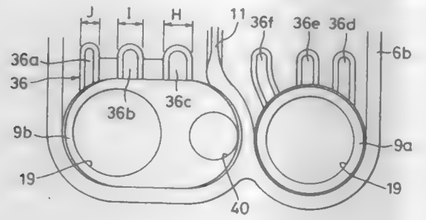
Kunihiko Nishishita, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Division of Ser. No. 550,290, Oct. 30, 1995. This application Mar. 6, 1996, Ser. No. 611,671

Claims priority, application Japan, Nov. 4, 1994, 6-295862

Int. Cl.[6] F28D *1/03*

U.S. Cl. 165—153 **5 Claims**



1. A laminated heat exchanger comprising:

a plurality of tube elements laminated with fins, each of said tube elements including a first tank portion, formed in a first end of said tube element, said first tank portion being provided with communicating holes to permit flow of heat exchanging medium therethrough,

a second tank portion, formed in said first end of said tube element, said second tank portion being provided with communicating holes to permit flow of heat exchanging medium therethrough, and

a projection extending from a location between said first and second tank portions toward a second end of said tube element to define a U-shaped passageway communicating between said tank portions,

wherein in one of said tube elements one of said first and second tank portions is distended in a direction which is perpendicular to the direction of lamination;

a communicating pipe extending adjacent a plurality of said first and second tank portions and being fluidly connected with said distended tank portion; and

a plurality of beads in an area between said distended tank portion and said U-shaped passageway, said plurality of beads including an outer bead having a width J, an inner bead positioned closest to said communicating pipe and having a width H, and at least one intermediate bead positioned between said outer bead and said inner bead and having a width I, wherein H, I, and J satisfy the relationship H>I>J.

5,630,474

PROCESS FOR THE EXTRACTION OF CRUDE OIL

Willibald Burger; Peter Huber, both of Burghausen, Germany; Piotr Meschkov, Moskau, Russian Federation; Serguei V. Goussevt, Tjumen, Russian Federation; Vladimir V. Mazajev, Tjumen, Russian Federation, and Jaroslav G. Koval, Tjumen, Russian Federation, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Sep. 25, 1995, Ser. No. 533,239

Claims priority, application Germany, Sep. 29, 1994, 44 34 580.0

Int. Cl.[6] E21B *43/22*

U.S. Cl. 166—275 **5 Claims**

1. A process for the extraction of crude oil from crude oil-containing deposits wherein an emulsion consisting of

(A) an organopolysiloxane made up of units of the formulae

$R_3SiO_{1/2}$, (I)

R_2SiO_2, (II)

$RSiO_{3/2}$, (III)

$SiO_{4/2}$, (IV)

-continued

$R_2(R'O)SiO_{1/2}$, (V)

$R(R'O)SiO$ (VI)

$R'OSiO_{3/2}$ (VII)

in which

R represents monovalent hydrocarbon radicals having 1 to 18 carbon atoms, the hydrocarbon radicals being unsubstituted or substituted by halogen atoms, cyano, amino, alkylamino, quaternary ammonium, mercapto, epoxy, anhydrido, carboxylato, sulfonato, sulfato, phosphonato, isocyanato or polyoxy alkylene groups,

R' represents monovalent hydrocarbon radicals having 1 to 30 carbon atoms and hydrogen atoms, the hydrocarbon radicals being unsubstituted or substituted by halogen atoms, cyano, amino, alkylamino, quaternary ammonium, mercapto, epoxy, anhydrido, carboxylato, sulfonato, sulfato, phosphonato, iso cyanato or polyoxyalkylene groups,

(B) from 10 to 100 parts by weight of a surfactant per 100 parts by weight of the organopolysiloxane, wherein the surfactant is selected from the group consisting of alkyl sulfates, sulfonates, alkyl polyglycol ethers, alkylaryl polyglycol ethers and ethylene oxide/propylene oxide block copolymers,

(C) water, and optionally

(D) fillers, fungicides, bactericides, algicides and corrosion inhibitors, where the total of components (A), (B) and (D) is from 0.01% to 2% by weight of the emulsion,

is introduced into the crude-oil containing deposits, thereby displacing crude oil and subsequently extracting the displaced crude oil through a production well.

5,630,475

DEVICE FOR PRESSURIZING A PLATE BUNDLE, ESPECIALLY FOR A PLATE HEAT EXCHANGER

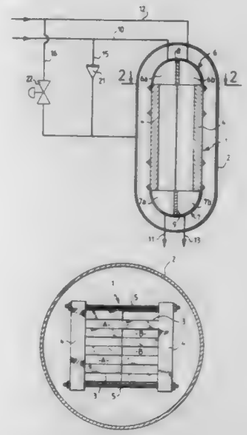
Dominique Sabin, Herbeville; William Levy, Paris, and Emmanuel Martin, Le Mesnil St Denis, all of France, assignors to Framatome, Courbevoie, and Packinox, Paris, both of France

Filed Apr. 28, 1995, Ser. No. 431,087

Claims priority, application France, Apr. 29, 1994, 94 05270

Int. Cl.[6] G05D *23/00*

U.S. Cl. 165—281 **9 Claims**



1. Device for pressurizing a plate bundle, especially for a plate heat exchanger, said plate bundle being arranged in a leakproof vessel and comprising a stack of metal plates which are parallel to one another to form a first circuit for circulating a first fluid under pressure and a second circuit for circulating a second fluid under

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pressure, said first fluid being at a pressure which is higher than the pressure of said second fluid, said device comprising a first conduit for connecting the vessel to a delivery of said first fluid continuously feeding said vessel, a second conduit for connecting said vessel to the delivery of said second fluid feeding said vessel in the event of stoppage of the feed of said first fluid, and means for controlling feeding of said vessel with said second fluid

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5,630,476

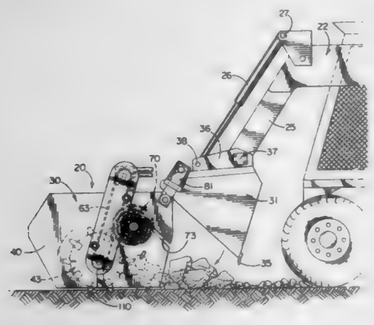
ROCK RAKING APPARATUS

Phillip W. Foster; Gerald T. Foster; Paul Burton, all of Lee, and John J. Broz, Hinckley, all of Ill., assignors to Farmers' Factory Co., Lee, Ill.

Continuation-in-part of Ser. No. 387,305, Feb. 27, 1995, Pat. No. 5,564,506. This application Feb. 26, 1996, Ser. No. 607,340

Int. Cl.[6] A01D *19/02*

U.S. Cl. 171—63 **15 Claims**



1. Apparatus adapted to be attached to a self-propelled vehicle and operable to rake up rocks from the ground as the vehicle moves along the ground, said apparatus comprising a raking unit having first and second ends and having a pair of laterally spaced side walls, a rotor supported by said side walls to rotate about a first laterally extending axis, said rotor having an outer periphery from which extend a plurality of angularly spaced rows of laterally spaced and generally radially extending teeth, a motor for rotating said rotor about said axis, said rotor normally being rotated in a first direction to rake rocks along the ground toward the vehicle and toward the first end of said raking unit when said vehicle is moved in a direction such that said first end of said raking unit is disposed in leading relation to said second end, a bucket movable with said raking unit and normally closing the first end thereof whereby rocks raked along the ground by said rotor are propelled into said bucket, and deflector means for directing rocks propelled by the rotor into the bucket, the deflector means comprising a brush supported by the side walls for rotation about a second axis parallel to the first axis and positioned with respect to the rotor to:

(a) deflect rocks propelled by the rotor into the bucket,

(b) remove rocks from the surface of the rotor to prevent carryover, and

(c) direct rocks into the rear of the bucket for filling the same.

5,630,477

DOWNCROWDABLE TELESCOPIC AUGERING APPARATUS

William H. Minatre, P.O. Box 546, Benicia, Calif. 94510

Filed Jun. 2, 1995, Ser. No. 459,215

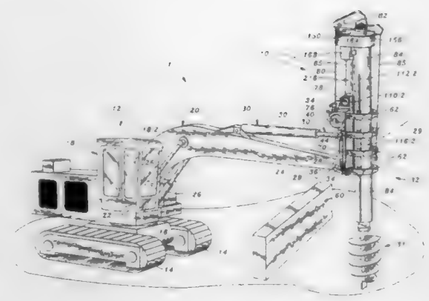
Int. Cl.[6] E21C *5/00*

U.S. Cl. 173—184 **4 Claims**

1. Downcrowdable telescopic augering apparatus, comprising:

a vehicle having a power-operated boom which has a distal end remote from said vehicle;

an auger mounted on said distal end of said boom; and



a power and control system comprised of a vehicle power and control system mounted on said vehicle and an auger power and control system mounted on said auger;

said vehicle being provided with internal combustion engine means, electrical power source means, and hydraulic pump means for supplying electrical power and hydraulic fluid under pressure to said power and control system;

said auger comprising a cradle pivotably mounted on said distal end of said boom, a kelly tube slidably mounted in said cradle, a kelly assembly telescopingly mounted in said kelly tube, a kelly winch mounted on said cradle and including a drum, a brake for controlling the operation of said drum, and a kelly cable wound on said drum, and a service winch mounted on said cradle and including a drum, a brake for controlling the operation of said drum, and a service cable wound on said drum, whereby to raise a load attached to said service cable;

wherein said power and control system includes a winch management system for automatically operating said winches to prevent said cables from being broken or becoming slack when said kelly tube is moved with respect to said cradle; and

wherein said winch management system includes service cable stored signal producing means including an arm adapted to be attached to the end of said service cable remote from said service winch and a switch operated by said arm to produce a signal when said service cable is attached to said arm and is taut.

5,630,478

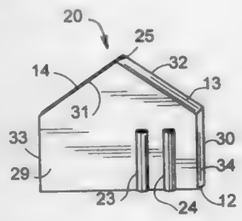
MASONRY DRILL BIT AND METHOD OF MAKING A MASONRY DRILL BIT

Thomas O. Schimke, Louisville, Ky., assignor to Credo Tool Company, Woodburn, Oreg.

Continuation-in-part of Ser. No. 475,034, Jun. 7, 1995, abandoned. This application Oct. 19, 1995, Ser. No. 545,272

Int. Cl.[6] E21B *10/44;10/58*

U.S. Cl. 175—420.1 **13 Claims**



1. A masonry drill bit, comprising:

(a) an elongated cylindrical drill body having at one distal end a transverse slot extending thereacross and a shank at the opposite distal end, said drill body having at least one spiral groove formed along its exterior surface from said transverse slot to said shank;

(b) a drill bit insert brazed within said transverse slot, said insert having:

(1) a bottom surface;

(2) a first and second planar surface;

(3) a first and second side face connecting said first and second planar surfaces;

(4) a leading crown tip forming a first and a second upper surface extending downward from said crown tip to said first and second side faces;

(5) a first and a second cutting edge formed along opposite sides of said first and second upper surfaces;

(6) at least one projection extending vertically on each of said first and said second planar surface wherein said first and second cutting edge do not have a projection formed on the planar surface directly thereunder, said at least one projection causing a clearance between said insert and said transverse slot; and,

(7) a braze fill in said clearance between said insert and said transverse slot.

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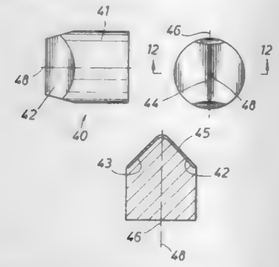
CUTTING ELEMENT FOR DRILL BITS

Mahlon D. Dennis, 3726 Rocky Woods, Kingswood, Tex. 77339

Division of Ser. No. 323,898, Oct. 17, 1994, Pat. No. 5,544,713, which is a continuation-in-part of Ser. No. 108,071, Aug. 17, 1993, Pat. No. 5,379,854. This application Dec. 22, 1995, Ser. No. 577,899

Int. Cl.[6] E21B *10/58*

U.S. Cl. 175—426 **4 Claims**



1. A cutting element comprising:

(a) a metal carbide stud having an outer end having a transverse transecting edge portion at the remote outer end thereof;

(b) left and right opposing tapered faces formed next to said edge portion wherein each of said faces has a substantially planar surface area extending from said edge and wherein said faces are the left face and the right face and said faces intersect to define said transecting edge portion; and

(c) a layer of polycrystalline material disposed directly over said face portion of said metal carbide stud, wherein said face has mechanisms which enhance the adhesion of said polycrystalline material to said face, and wherein said polycrystalline material comprising particles selected from diamond, cubic boron nitride, wurtzite boron nitride, and mixtures thereof bonded together in a unitary relationship.

5,630,480

ACCELERATION SLIP CONTROL SYSTEM FOR A MOTOR VEHICLE

Hirohito Nishikata, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

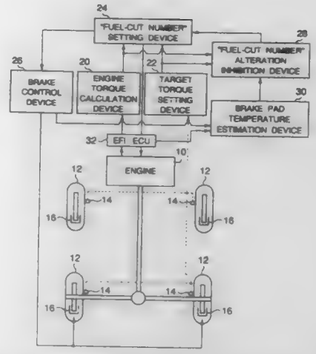
Filed Jul. 25, 1995, Ser. No. 506,561

Claims priority, application Japan, Aug. 8, 1994, 6-185823

Int. Cl.[6] B60K *28/16*

U.S. Cl. 180—197 **2 Claims**

1. An acceleration slip control system for a motor vehicle which suppresses a slip of a driving wheel in an acceleration mode of said motor vehicle, comprising:



brake control means for suppressing said slip of the driving wheel in a predetermined range;

engine torque detection means for detecting a torque of an engine of said motor vehicle under running;

target engine torque setting means for setting a target engine torque according to a running state of said motor vehicle;

fuel-cut number setting means for setting a number of cylinders of the engine to which fuel is to be cut off, in accordance with said detected engine torque and said set target engine torque in order to reduce engine torque toward said set target engine torque; and

fuel-cut number alteration restraint means for restraining alteration of the fuel-cut number when a fluctuating magnitude of a difference between said detected engine torque and said set target engine torque falls within said predetermined range of said brake control means.

5,630,481

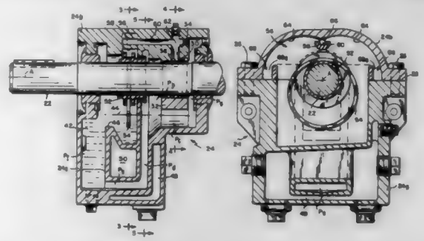
RADIAL SLEEVE BEARING AND ASSOCIATED LUBRICATION SYSTEM

Robert L. Rivard, West Boylston, Mass., assignor to Tuthill Corporation, Millbury, Mass.

Filed Mar. 7, 1995, Ser. No. 399,426

Int. Cl.[6] F01M *1/00*

U.S. Cl. 184—11.2 **9 Claims**



1. An oil ring lubrication system for a sleeve bearing rotatably supporting the rotor shaft of a steam turbine, said lubrication system comprising:

a bearing housing fixedly supporting said bearing and defining a reservoir containing a supply of liquid lubricant;

a ring loosely surrounding and rotatable relative to said shaft at a location spaced axially from said bearing, a lower portion of said ring being partially submerged in said lubricant, said ring being rotatably driven in response to rotation of said shaft, with lubricant picked up on said ring through capillary attraction being centrifugally discharged radially outwardly from said ring; and

supply conduit means for receiving and delivering the centrifugally discharged lubricant to said bearing.

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CLIMBING DEVICE, IN PARTICULAR FOR A CLIMBING SCAFFOLD

Artur Schwörer, Senden, Germany, assignor to Peri GmbH, Weissenhorn, Germany

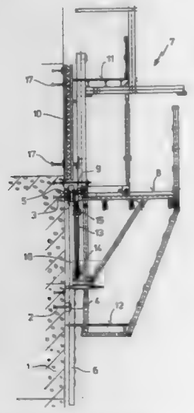
PCT No. PCT/DE94/00062, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/17265, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 22, 1994, Ser. No. 500,983

Claims priority, application Germany, Jan. 27, 1993, 43 02 197.2

Int. Cl.[6] E04G *11/28*

U.S. Cl. 182—82 **12 Claims**



1. A self-climbing device comprising:
a moving console;
a mounting rail extending in a direction of displacement;
a linear device means to produce a relative displacement between the moving console and the mounting rail;
a first and a second climbing head connected between the linear drive means and the mounting rail, the first and the second climbing head being separated from each other, each of the first and the second climbing heads having a pivotable locking member and a pivotable control member coupled to the pivotable locking member;
locking cam means integral with the mounting rail and cooperating with the locking member during relative displacement between the mounting rail and the climbing head; and
a control curve means integral with the mounting rail and cooperating with the control member during relative displacement between the mounting rail and the climbing head, wherein the control curve means rotates the locking member via the control member to abut the locking member on the locking cam means during relative motion in a first direction, the locking member being lifted over the locking cam means during relative motion in a second direction.

5,630,483

PROCEDURE AND APPARATUS FOR TRIGGERING THE SAFETY GEAR OF AN ELEVATOR

Franz J. Karner, Jessnitz, Austria, assignor to KONE Oy, Helsinki, Finland

Filed Jan. 4, 1995, Ser. No. 368,637

Claims priority, application Finland, Jan. 5, 1994, 940056

Int. Cl.[6] B66B *5/00*

U.S. Cl. 187—350 **20 Claims**

1. A procedure for triggering a safety gear of an elevator at a speed lower than a gripping speed of the elevator using an overspeed governor, the overspeed governor having coupling elements for causing an overspeed condition wherein a brake of the overspeed governor engages a rope pulley and due to friction brakes a rope driving the rope pulley, at least one coupling element having a braking point being provided on the overspeed governor, the at least one coupling element being rotatable with the overspeed governor, the procedure comprising the steps of:
rotating the braking point with the at least one coupling element as the overspeed governor rotates;
frictionally engaging an outer face of the braking point with a braking element, the outer face of the braking point facing the braking element; and
turning the at least one coupling element upon subsequent rotation of the overspeed governor after the step of frictionally engaging to thereby move the coupling element to a position to activate the brake to engage the rope pulley.

5,630,484

BRAKE SHOE AND INTERNAL SHOE DRUM BRAKE

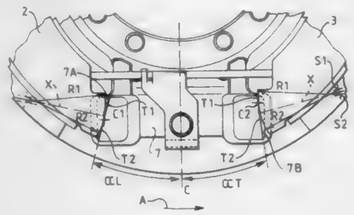
Paul F. Ridealgh, Newport, Wales, assignor to Lucas Industries public limited company, West Midlands, England

Continuation of Ser. No. 314,660, Sep. 29, 1994, abandoned, which is a continuation of Ser. No. 974,090, Nov. 10, 1992, Pat. No. 5,407,037. This application Jul. 10, 1995, Ser. No. 500,143

Claims priority, application United Kingdom, Nov. 19, 1991, 9124645

Int. Cl.[6] F16D *65/09*

U.S. Cl. 188—250 A **15 Claims**



1. An internal shoe drum brake of the leading/trailing shoe type, comprising a pair of interchangeable brake shoes mounted on a backplate and separable by an actuator into braking engagement with a rotary brake drum the shoes having respective linings of fiction material of identical thickness carried in identical positions thereon over the same arcuate extent, one pair of adjacent shoe ends providing shoe tips slidably engaged respectively with oppositely directed surfaces of a fixed abutment which resists braking torque applied to the shoes from the rotating drum during braking, the shoe tips being identical and each formed by two differently directed surface portions, the shoes being arranged so that the abutment is engaged respectively by non-corresponding shoe tip surface portions of the shoes, both shoe tip surface portions on each shoe are arcuate, the shoe tip surface portions of each shoe having different radii, the smaller radius portion engaging a trailing abutment surface and the larger shoe tip portion engaging a leading abutment surface, at least the normally leading abutment surface being directed, relative to a center line extending radially from the center of the brake towards the abutment, such that it diverges from the center line in a direction away from the brake center and diverges also from the other abutment surface, the shoe tips engaging the abutment surfaces respectively at different locations thereallong.

5,630,485

TELESCOPING VIBRATION DAMPER WITH A TWO DISK BASE VALVE

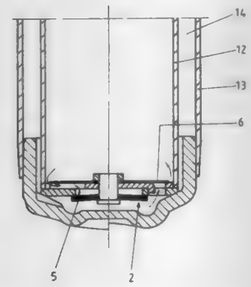
Hubert Beck, Eitorf, Germany, assignor to Fichtel & Sachs AG, Eitorf, Germany

Filed Feb. 24, 1995, Ser. No. 396,175

Claims priority, application Germany, Feb. 26, 1994, 44 06 349.0

Int. Cl.[6] F16F *9/34*

U.S. Cl. 188—322.14 **14 Claims**



1. A vibration damper for damping vibrations of a motor vehicle, said vibration damper comprising:
a first tubular member;
means for attaching said vibration damper to one of: a wheel suspension and a support structure of the motor vehicle;
said first tubular member defining a chamber therewithin, said chamber comprising damping fluid therewithin, and said first tubular member defining a longitudinal dimension;
piston rod means, said piston rod means having a first end within said first tubular member and a second end external to said first tubular member, said piston rod means being movable within said first tubular member in a direction along said longitudinal dimension of said first tubular member;
means for attaching said second end of said piston rod means to the other of: the wheel suspension and the support structure of the motor vehicle;
piston means disposed at said first end of said piston rod means, said piston means having a first side disposed adjacent said piston rod means and a second side opposite to said first side, and said piston means dividing said chamber into a first work chamber adjacent the first side thereof and a second work chamber adjacent the second side thereof;
a base;
said base being disposed at said second work chamber;
a passage for leading damping fluid from said second work chamber;
a base valve disposed in said base
said base valve comprising a flow connection of damping fluid between said second work chamber and said passage to permit flow from said second work chamber to said passage;
said base valve comprising at least a first disk and a second disk;
said first disk and said second disk comprising apertures;
said apertures comprising means for mounting said first disk and said second disk non-rotationally with respect to one another to form said flow connection;
said aperture of said first and second disks comprising at least a part of said flow connection between said second work chamber and said passage;
said apertures of said first and second disks comprising at least a first flow connection and a second flow connection;
said first flow connection comprising a first check valve for permitting flow in a direction from said second work chamber to said passage;
said second flow connection comprising a second check valve for permitting flow in a direction from said passage to said second work chamber;
said first check valve comprising at least one valve disk;
said second check valve comprising at least one valve disk;
said base valve having a first side and a second side;
said first valve disk being disposed on said first side of said base valve; and
said second valve disk being disposed on said second side of said base valve.

5,630,486

MECHANICAL ACTUATION DEVICE FOR DRUM BRAKE

Jean Charles Maligne, Aubervilliers, France, assignor to AlliedSignal Europe Service Techniques, Drancy, France

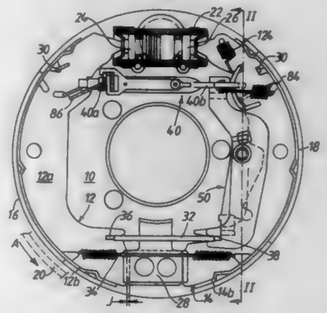
PCT No. PCT/FR95/01331, § 371 Date Nov. 3, 1995, § 102(e) Date Nov. 3, 1995, PCT Pub. No. WO96/15387, PCT Pub. Date May 23, 1996

PCT Filed Oct. 12, 1995, Ser. No. 545,742

Claims priority, application France, Nov. 9, 1994, 94 13435

Int. Cl.[6] F16D *65/22*

U.S. Cl. 188—328 **10 Claims**



1. A drum brake including a carrier plate on which there are slidably mounted first and second shoes each one including a web and a rim section of which the face opposite the drum receives a friction lining capable of being brought into frictional engagement against an internal face of the drum by a hydraulic actuation device acting on a first end of said webs of said first and second shoes, a variable-length strut which in interaction with a tension spring, determines the se of said first and second shoes and which is located in the of said hydraulic actuation device a second end on said first and second webs of the shoes bearing, when the drum brake is at rest or hydraulically actuated, on a bearing piece integral with said carrier plate, said drum brake further comprising a mechanical actuation device for bringing said friction linings into frictional engagement against said internal face of said drum and said first and second webs on said shoes away from said bearing piece by means of a force-transmission device mounted on the web of said first shoe and bearing, when the drum brake is mechanically actuated, on the web of said second shoe by means of said variable-length strut and means for joining the two shoes together, characterized in that a brace is located on said web of said first

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shoe that includes an active part interposed retractably between said first end of said web of said first shoe and a first end of said force-transmission device.

(ii) fully de-pressurize the brakes and reconnect the master cylinder thereto.

5,630,487

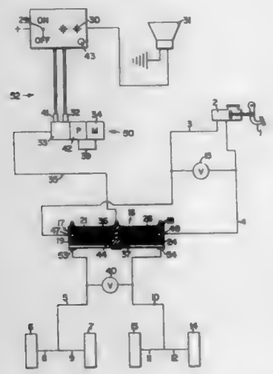
METHOD OF INSTALLING ELECTRIC MOTORIZED BRAKE-LOCK SYSTEM

Seth W. Hamman, Kasota, and Terry M. Bangert, Mankato, both of Minn., assignors to Mico, Inc., No. Mankato, Minn.

Division of Ser. No. 316,822, Oct. 3, 1994, Pat. No. 5,505,528, which is a continuation of Ser. No. 3,538, Jan. 13, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,365

Int. Cl.[6] B60T *17/16*

U.S. Cl. 188—353 **19 Claims**



1. A method of installing a supplemental vehicle brake locking system in an existing closed hydraulic primary vehicle braking control system of the type having a master cylinder for providing hydraulic pressure through braking control lines to control hydraulically actuated brakes on the vehicle, the method comprising the steps of:

(a) installing an actuator in the braking control lines of the vehicle, the actuator installing step including the steps of running a braking control line between a first input of the actuator and a portion of the existing closed hydraulic primary vehicle braking control system that is in fluid communication with the master cylinder and running a braking control line between an output of the actuator and a portion of the existing closed hydraulic primary vehicle braking control system that is in a fluid communication with the hydraulically actuated brakes, wherein the actuator installing step is the only modification to the existing closed hydraulic primary vehicle braking control system, the actuator including:

(i) isolating means for isolating the master cylinder from the brakes when pressure applied to a second input of the actuator exceeds a predetermined pressure; whereby control of the brakes is provided by the existing closed hydraulic primary vehicle braking control system when the pressure applied to the second input of the actuator is below the predetermined pressure; and

(ii) auxiliary pressurizing means for pressurizing the brakes responsive to pressure applied to the second input of the actuator when the master cylinder is isolated from the brakes;

(b) installing an auxiliary hydraulic pump in fluid communication with the second input of the actuator; and

(c) installing an auxiliary hydraulic pump controller, the controller being configured to selectively activate the auxiliary hydraulic pump to:

(i) fully pressurize the brakes and isolate the master cylinder therefrom; and

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5,630,488

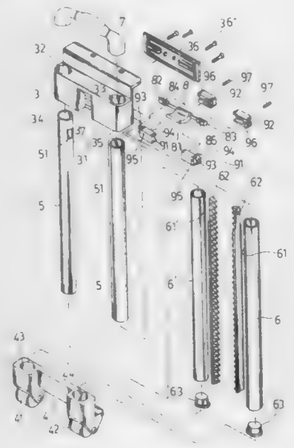
RETRACTABLE HANDLE POSITIONING STRUCTURE FOR LUGGAGE

Ding-Fang Chen, No. 422, Sec. 1, Chung-shan Rd., Tachia Chen, Taichung Hsien, Taiwan

Filed Jun. 20, 1995, Ser. No. 492,816

Int. Cl.[6] A45C *5/14;13/28*

U.S. Cl. 190—115 **1 Claim**



1. A retractable handle positioning structure comprising: a transverse top mounting frame and a transverse bottom mounting frame configured to be fixedly secured to one side of a luggage piece at different elevations; first and second sleeves fixedly connected to and extending between said transverse top mounting frame and said transverse bottom mounting frame; first and second inner tubes slidably located in said first and second sleeves and extending through openings in said transverse top mounting frame; a hand grip connected to said first and second inner tubes, and located outside of said top mounting frame; a rack mounted to each of said first and second inner tubes; a from opening formed in said top mounting frame; support means mounted at two opposite sides of said from opening; a control bar supported by said supporting means on said top mounting frame and rotatable about an axis, said control bar comprising a finger strip in a middle portion thereof extending through the front opening, a cylindrical end block at each opposite end with the axis of the cylindrical end blocks aligned with the axis of rotation, and spiral grooves formed around said cylindrical end blocks; two locating blocks respectively engaged with said spiral grooves around said cylindrical end blocks, each locating block having a toothed projection engageable through an opening in one of said sleeves with the rack on one of said first and second inner tubes and a raised portion positioned for engagement with the spiral groove on one of said cylindrical end blocks of said control bar; wherein the toothed projection of each locating block is disengaged from the racks of said inner tubes for permitting said inner tubes to be slidably moved with respect to said sleeves when said control bar is turned in a first direction with respect to the axis of rotation to retract the two locating blocks, and the toothed projection of each locating block is engaged with the racks of said first and second inner tubes to prevent slidable

movement of said first and second inner tubes relative to said sleeves when said control bar is turned in a second direction with respect to the axis of rotation.

5,630,489

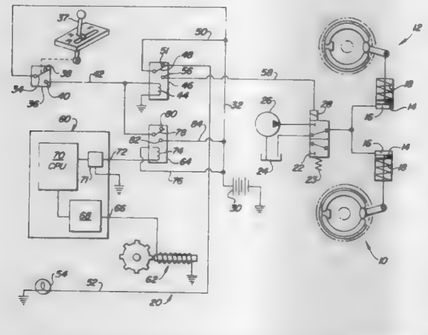
ELECTROHYDRAULIC PARKING BRAKE CONTROL SYSTEM FOR PREVENTING BRAKE ENGAGEMENT WHEN VEHICLE IS IN MOTION

Thomas D. Bebernes, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 29, 1995, Ser. No. 564,530

Int. Cl.[6] B60K *41/26*

U.S. Cl. 192—4 C **7 Claims**



1. A parking brake system including at least one spring-applied, hydraulic pressure-released brake having a pressure chamber for receiving release-pressure fluid; a source of fluid pressure; a sump; a parking brake control valve coupled to said chamber source of fluid pressure and sump and being movable between brake-engage and brake-release positions respectively coupling said chamber to said sump and source of fluid pressure; said control valve including a spring biasing the valve to said brake-engage position and a solenoid energizable for moving the valve to said brake-release position; an electrohydraulic control for said parking brake control valve comprising an electric power source; a transmission shift lever movable among a neutral position and various forward or reverse positions; a parking brake relay switch including a switching element coupled to said power source, a contact coupled to said solenoid and a coil energizable for connecting said switching element to said contact for completing a circuit to said solenoid; a neutral switch having a switching element connected to said power source and an "on" contact connected to said parking brake relay coil with the switching element being operatively connected to said shift lever so as to be moved to engage said "on" contact to complete a circuit to said relay coil whenever said lever is not in its neutral position; a vehicle ground speed sensing device for generating an electrical signal representative of ground speed; a ground speed relay having a coil connected to said power source, having a switching element connected to said parking brake relay switch coil and having an "on" contact connected to said power source; a ground speed signal processing means connected to said sensing device and to said ground speed relay switch coil and including means responsive to said electrical signal for establishing a completed circuit through said ground speed relay switch coil only if said ground speed signal represents a speed above a predetermined minimum speed, whereby said brake control valve will ensure that the brake remains disengaged even if the transmission shift lever is in its neutral position so long as the ground speed remains above said predetermined minimum speed.

5,630,490

TORQUE LIMITER

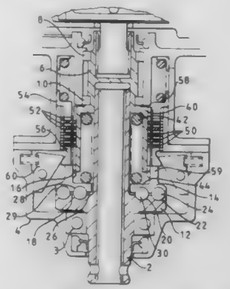
Philip Hudson, Wolverhampton, and Stephen H. Davies, Telford, both of England, assignors to Lucas Industries public limited company, West Midlands, England

Filed Feb. 15, 1996, Ser. No. 601,996

Claims priority, application United Kingdom, Feb. 18, 1995, 9503191

Int. Cl.[6] F16D *7/08;67/02*

U.S. Cl. 192—7 **6 Claims**



1. A torque limiter comprising: an input element; an output element; a clutch for transmitting torque between said input element and said output element such that, when said clutch is disengaged, said input is completely disconnected from said output element and is free to rotate; a brake which is applied to said output element in response to a torque exceeding a predetermined value prior to disengagement of said clutch; and a latch for latching said brake in an applied state of said brake.

5,630,491

FRICTION CLUTCH FOR A TRANSMISSION OF A MOTOR VEHICLE AND A CLUTCH DISC FOR A FRICTION CLUTCH

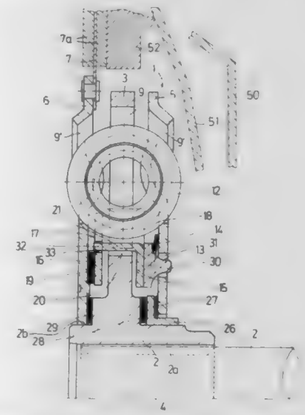
Norbert Ament, Eltingshausen, and Harald Raab, Schweinfurt, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Aug. 10, 1994, Ser. No. 288,327

Claims priority, application Germany, Aug. 12, 1993, 43 27 050.6; Mar. 16, 1994, 44 08 881.7

Int. Cl.[6] F16D *13/64;3/14*

U.S. Cl. 192—70.17 **14 Claims**

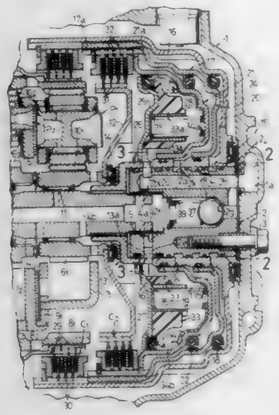


8. A clutch disc for a friction clutch, said clutch disc comprising: a hub, said hub defining an axis of rotation;

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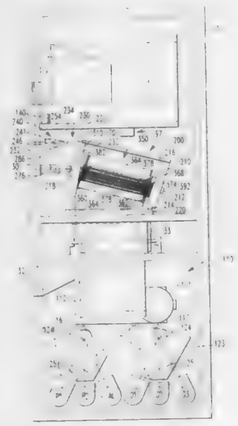
a hub disc disposed concentrically about said hub and extending radially away from said hub, said hub disc having a first side and a second side;
a first cover plate disposed adjacent said first side of said hub disc;
a second cover plate disposed adjacent said second side of said hub disc;
said first and second cover plates being rotatable about said hub with respect to said hub disc;
a plurality of biasing members disposed about said hub for torsionally damping said friction clutch;
said plurality of biasing members comprising at least two biasing members;
said at least two biasing members being a first biasing member and a second biasing member;
each of said first biasing member and said second biasing member having an end surface;
control plate means disposed about said hub;
said control plate means comprising means for centering said control plate means about said hub in at least one first direction;
said means for centering comprises means for engaging said end surface of said first biasing member;
said means for centering comprises means for engaging said end of said second biasing member;
said hub has a diameter and a circumference;
said control plate means has an orifice for being disposed about said hub, said orifice having a diameter, said diameter of said orifice being greater than said diameter of said hub to define a space between said control plate means and said hub;
said means for engaging said end surface of said first biasing member and said means for engaging said end surface of said second biasing member are disposed diametrically opposite one another with respect to said hub; and
means for centering said control plate means about said hub in a second centering direction, the second centering direction being substantially perpendicular to said first centering direction and said axis of rotation.

5,630,492
OIL SUPPLYING AND DISCHARGING STRUCTURE FOR CANCELLER IN HYDRAULIC CLUTCH
Haruhiko Yoshikawa; Kazuhisa Yamamoto; Yoichi Kojima, and Yoshihiro Kodama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1995, Ser. No. 501,961
Claims priority, application Japan, Jul. 13, 1994, 6-160889
Int. Cl.[6] F16D *25/0638;25/06*
U.S. Cl. 192—106 F **9 Claims**



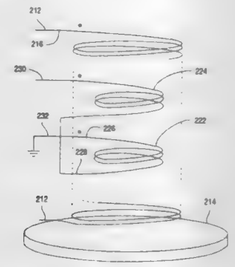
1. A hydraulic clutch, comprising,
an oil supplying and discharging structure for a canceller in the hydraulic clutch,
a clutch drum, a clutch piston and a canceller plate which are all supported around an outer periphery of a rotary shaft to define a clutch oil chamber between said clutch drum and said clutch piston and to define a canceller oil chamber between said clutch piston and said canceller plate, and
said oil supplying and discharging structure comprising a stationary shaft fitted to an inner periphery of said clutch drum, and an annular groove defined around an outer periphery of said stationary shaft, said annular groove being divided into an oil supplying groove and an oil discharge groove by a weir means, said oil supply groove and said oil discharge groove being in communication with said canceller oil chamber through a plurality of oil holes disposed circumferentially of said rotary shaft.

5,630,493
ACCEPTANCE ASSEMBLY FOR A REVERSE VENDING MACHINE
Bruce H. DeWoolfson; Ken R. Powell, and David Alexander, all of Fairfax, Va., assignors to Environmental Products Corporation, Fairfax, Va.
Continuation-in-part of Ser. No. 132,233, Oct. 6, 1993, Pat. No. 5,355,987, which is a continuation of Ser. No. 851,494, Mar. 16, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 321,864
Int. Cl.[6] G07F *7/06*
U.S. Cl. 194—209 **19 Claims**



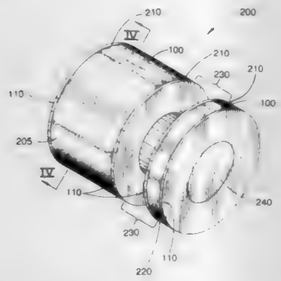
1. An acceptance assembly for a commodity collection, densification, and storage device comprising:
a frame;
an insert tube disposed in the frame defining an inlet for receiving a commodity, and an outlet;
a driven roller supported by the frame and disposed in the insert tube rotatable in a direction to contact and draw the commodity through the insert tube from the inlet through the outlet;
a sensor disposed in the frame proximate the outlet for sensing a feature of the commodity; and
an iris device disposed in the frame between the outlet and the sensor, the iris device having a base secured to the frame and defining an opening therethrough adjacent the outlet, and a plurality of plates swingably secured to the base, the plates being pivotable between a first position covering the opening and the outlet, and a second position uncovering the opening and the outlet, the iris device precluding access to the sensor via the inlet of the insert tube when the iris device is in the first position.

5,630,494
COIN DISCRIMINATION SENSOR AND COIN HANDLING SYSTEM
Eric Strauts, Park Ridge, Ill., assignor to Cummins-Allison Corp., Mt. Prospect, Ill.
Filed Mar. 7, 1995, Ser. No. 399,771
Int. Cl.[6] G07D *3/14*
U.S. Cl. 194—317 **10 Claims**



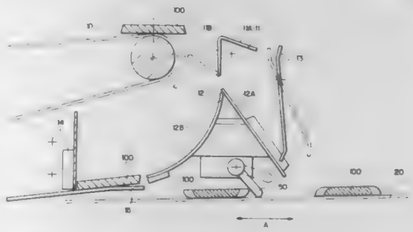
1. A coin discrimination sensing system for discriminating among desired and undesired coins, comprising:
an excitation coil and a voltage source connected thereto for producing an alternating magnetic field;
said alternating magnetic fields coupling to said desired and undesired coins to induce eddy currents in said coins;
a detection coil having a pair of windings for detecting said eddy currents in said desired and undesired coins, said windings being positioned at different distances from said coins to produce a differential voltage across said detection coil corresponding to the composition of the desired and undesired coins being sensed, said excitation coil and said detection coil both being located on the same side of the coin being sensed, and
means for producing a single signal representing both the amplitude of the voltage produced by said detection coil and the phase difference between the voltage applied to the excitation coil and the differential voltage induced in the detection coil.

5,630,495
CONVEYOR SYSTEM DIVERTER COMPONENTS HAVING FRICTION-ENHANCING SURFACES AND RELATED METHODS OF USE
Gerald A. Brouwer, Granville, Mich., assignor to Rapistan Demag Corp., Grand Rapids, Mich.
Continuation of Ser. No. 314,331, Sep. 28, 1994, abandoned. This application Nov. 18, 1996, Ser. No. 751,786
Int. Cl.[6] B65G *47/10*
U.S. Cl. 198—367 **27 Claims**



1. A conveyor diverter system utilizing at least one diverter component having a friction-enhancing outer article contacting surface, said system comprising:
a conveyor including a conveying surface supported by a framework structure;
a divert apparatus including at least one diverter component, said divert apparatus disposed along said conveyor; and
wherein said at least one diverter component includes a friction-enhancing layer disposed on an outer article contacting surface of said component, said friction-enhancing layer including an effective mount of grit material dispersed in a metallic material cornering said outer article contacting surface of said diverter component.

5,630,496
APPARATUS AND METHOD FOR FLIPPING AND POSITIONING ARTICLES
Herman D. Mims, Ellenboro, N.C., assignor to Machine Builders and Design, Shelby, N.C.
Filed Mar. 30, 1995, Ser. No. 413,832
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—374 **11 Claims**

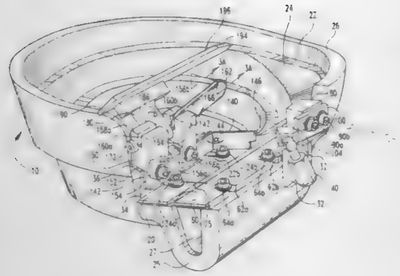


1. An article flipping and positioning apparatus comprising:
a transport device;
a slide member operative to selectively direct the articles to one of two paths to thereby slide or flip articles transported thereto, the articles being deposited on said transport device after being slid or flipped; and
a restricting device disposed proximate said transport device, said restricting device being operative to selectively retain the articles which have been flipped at a desired position on said transport device and to release the articles that have been flipped at a predetermined timing to define a desired spacing between the articles that have been flipped and the articles that have been slid, wherein said restricting device comprises a positioning surface defined by an elongated member having a plurality of pins extending therefrom, said elongated member extending across at least a portion of said transport device and being rotatably mounted to allow said pins to be selectively moved from a restricting position, wherein said pins contact the articles that have been flipped, to a release position, wherein the articles that have been flipped can freely be transported by said transport device.

5,630,497
VIBRATORY PARTS FEEDER WITH PIVOTAL TOP CONFINEMENT
S. Neal Graham, 12997 Fawns Ridge, Fishers, Ind. 46038
Filed Feb. 16, 1995, Ser. No. 389,241
Int. Cl.[6] B65G *47/24*
U.S. Cl. 198—391 **33 Claims**

1. A parts feeding apparatus for providing oriented parts having common configuration, the apparatus comprising:
a vibratory bowl having a discharge port, said bowl being configured to receive a disoriented mass of the parts therein, and having an inner surface configured to transport each of said parts, in a circumferential manner, toward said discharge port under vibratory action; and

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a parts orientation unit detachably mounted to said bowl adjacent said discharge port for vibration therewith, said parts orientation unit receiving parts having a number of orientations from said discharge port and serially providing the parts in a predetermined orientation, said parts orientation unit including:

a receiving unit mounted adjacent said discharge port receiving the parts therefrom and orienting the parts according to said predetermined orientation; and

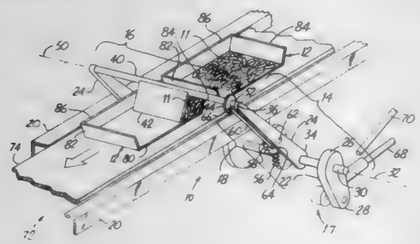
a confining member pivotably attached to said bowl, said confining member being pivotable between a first position adjacent said receiving unit and a second position remote from said receiving unit, said confining member including a locking member rigidly securing said confining member in said first position to thereby maintain the parts in said predetermined orientation when said locking member is in a locked position, said locking member permitting said confining member to freely pivot between said first and second positions when said locking member is in an unlocked position.

5,630,498

FOOD POSITIONING APPARATUS

Carry Montgomery, Jackson; Larry Newman, Hamden, and Scott R. Jones, Jackson, all of Ohio, assignors to Luigino's, Inc., Duluth, Minn.

Filed May 10, 1995, Ser. No. 438,565
Int. Cl.° B65G *47/26*
U.S. Cl. 198—434 **28 Claims**



1. An apparatus for positioning food components in a container that is moving along a conveyor, the apparatus comprising:

a paddle member movable between a first position within the container and a second position outside of the container and pivotable when the paddle member is moved between the first position and the second position, the paddle member being adapted to engage the food components and move the food components to a selected location in the container as the container moves along the conveyor; and

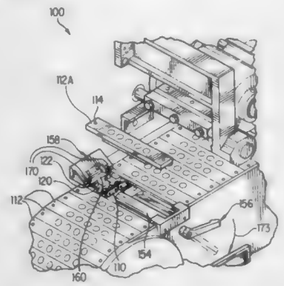
a link for moving the paddle member between the first position and the second position and pivoting the paddle member as the paddle member is moved between the first position and the second position.

5,630,499

METHOD AND APPARATUS FOR RELEASABLY FASTENING A BAR-LIKE MEMBER TO A CONVEYOR BELT

Samuel J. Louden, and John T. Hayes, both of Moorestown, N.J., assignors to Ackley Machine Corporation, Moorestown, N.J.

Filed Dec. 15, 1995, Ser. No. 573,375
Int. Cl.° B65G *29/00*
U.S. Cl. 198—803.01 **34 Claims**



1. An article conveying system comprising:

a conveyor belt including a plurality of carrier bars;

a drive mechanism for driving said conveyor belt; and

a quick-release pin for releasably fastening each of said carrier bars to said drive mechanism; said quick-release pin comprising:

an upper body portion defining longitudinal and transverse directions;

an upper body portion recess formed in and surrounding a periphery of said upper body portion, and

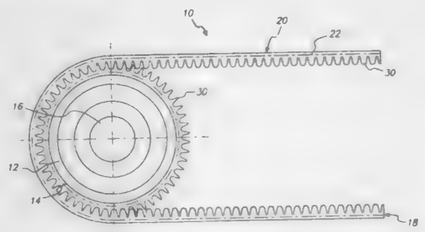
a flexible member positioned within and surrounding the periphery of the upper body portion recess, said flexible member having a compressed transverse dimension no greater than a transverse dimension of the upper body portion and an uncompressed transverse dimension greater than the transverse dimension of the upper body portion.

5,630,500

POSITIVE GEARED TRACKING PULLEY AND BELT FOR A REVERSIBLE CONVEYOR BELT SYSTEM

Rene A. Conrad, 1614 Ascension Dr., San Mateo, Calif. 94402

Filed May 17, 1995, Ser. No. 443,346
Int. Cl.° B65G *23/14*
U.S. Cl. 198—833 **15 Claims**



1. A reversible endless belt system comprising:

belt means defining lower and upper surfaces;

drive pulley means defining an outer surface, and return means, for movement of the belt means therebetween in forward and reverse directions;

flexible tracking means on as least one of the lower and upper surfaces and on the outer surface of the drive pulley means, the flexible tracking means comprising a generally planar sheet defining on a surface thereof outwardly extending projections arranged in transverse rows and longitudinal columns of projections to form an asymmetrical grid pattern, the projections in the transverse rows spaced at a distance different from a distance between projections in the longitudinal columns to form longitudinal channels between columns, the flexible tracking means on the drive pulley means offset from the flexible tracking means on the belt means so the columns of projections on the belt means interlock in the channels on the pulley means and the columns of projections of the pulley means interlock in the channels on the belt means; and

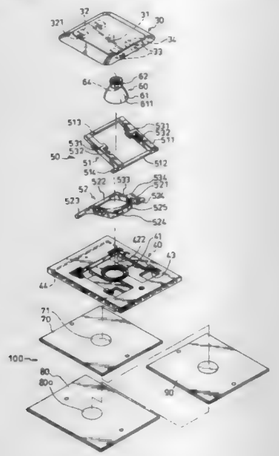
drive means for rotating the drive pulley means.

5,630,501

COMPUTER KEY

Laurance Tsay, Taipei Hsien, Taiwan, assignor to Shin Jiuh Corp., Hsin-Tien, Taiwan

Filed Jun. 20, 1996, Ser. No. 667,804
Claims priority, application Taiwan, Apr. 12, 1996, 85205202
Int. Cl.° H01H *13/70*
U.S. Cl. 200—344 **3 Claims**



1. A computer key comprising:

a base board including

a lower base plate,

a membrane circuit disposed above said lower base plate, said membrane circuit including an upper circuit layer with a first contact area, a lower circuit layer with a second contact area, and a spacer interposed between said upper circuit layer and said lower circuit layer so as to space first contact area with said second contact area, and

an upper base member disposed above said membrane circuit to sandwich said membrane circuit between said lower base plate and said upper base member, said upper base member having a contact opening to expose said first contact area, a first hingeably retaining groove, and a first slidably retaining guideway disposed on an opposite side of said contact opening relative to said hingeably retaining groove;

an upright elastomeric biasing member having an upper depressing portion, and a spacing lower portion to space said upper depressing portion from said first contact area, said upper depressing portion being movable against biasing action of said upright elastomeric biasing member to depress said first contact area so as to make electric contact between said first and said second contact areas;

a push button disposed to actuate said depressing portion to move said depressing portion toward said first contact area, said push button having a second hingeably retaining groove and a second slidably retaining guideway disposed in an underside of said pushbutton and in diagonal positions relative to said first slidably retaining guideway and said first hingeably retaining groove respectively;

a first plastic linking frame including

a first transverse axle capable of being press fitted to and hingeably retained in said first hingeably retaining groove; and

a pair of longitudinal first linking arms respectively and radially extending from two ends of said first transverse axle, said first longitudinal linking arms having:

a pair of first hooking fingers respectively disposed at and transverse to distal ends of said pair of first linking arms, said hooking fingers being capable of being press fitted to and slidably retained in said second slidably retaining guideway; a pair of first projections disposed respectively in intermediate portions of said first linking arms; and a pair of first recesses disposed respectively adjacent to said first projections, each of said first recesses having a first bearing surface that faces upwards; and

a second plastic linking frame including

a second transverse axle capable of being press fitted to and hingeably retained in said second hingeably retaining groove; and

a pair of longitudinal second linking arms respectively and radially extending from two ends of said second traverse axle, and flanking said pair of first linking arms respectively when said upper depressing portion is in a depressed position, said second longitudinal linking arms having:

a pair of second hooking fingers respectively disposed at and transverse to distal ends of said pair of second linking arms, said second hooking fingers being capable of being of press fitted to and slidably retained in said first slidably retaining guideway; and a pair of second projections disposed respectively in intermediate portions of said second linking arms, and matching said pair of first recesses respectively; a pair of second recesses disposed respectively adjacent to said second projections, and matching said pair of first projections respectively, each of said second recesses having a second bearing surface that faces upwards,

said first and second projections and said first and second recesses being positioned and dimensioned such that when said first transverse axle is hingeably retained in said first hingeably retaining groove, insertion of said second pair of hooking fingers into said first slidably retaining guideway will enable said second projections and recesses to press fit into said first recesses and projections through downwardly pressing of the intermediate portions of said second linking arms against the intermediate portions of said first linking arms, thereby journalling said projections on said bearing surfaces respectively during the depressing of said push button so as to provide said hooking fingers with resistance to downward movement of said pushbutton.

5,630,502

ROCKER-TYPE ELECTRICAL SWITCH

Stephen R. Kurek, 66-32 Alderton St., Rego Park, N.Y. 11374, and David Schroeder, 6405 Pino Real Dr., El Paso, Tex. 79912

Continuation of Ser. No. 373,687, Jan. 17, 1995, Pat. No. 5,500,498, which is a continuation of Ser. No. 976,073, Nov. 13, 1992, Pat. No. 5,382,768. This application Feb. 21, 1996, Ser. No. 604,595
Int. Cl.° H01H *21/82*
U.S. Cl. 200—559 **1 Claim**

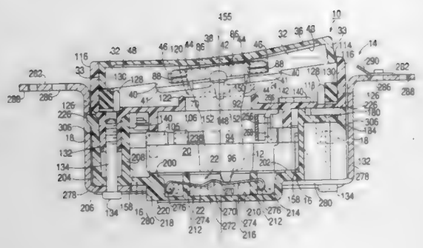
1. An electrical rocker switch comprising:

a manually movable rocker cover;

actuator means attached to said rocker cover and movable in response to movement of said rocker cover;

slider means responsive to movement of said actuator means to move in one of two opposite directions;

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a fixed terminal assembly having a contact thereon and a movable brush assembly having a first contact thereon, said movable brush assembly being movable by said slider to bring said contact of said movable brush assembly into mating position with said contact of said fixed terminal assembly to electrically close said switch and said movable brush assembly being movable by said slider to disengage said first contact of said movable brush assembly from said contact of said fixed terminal assembly to electrically open said switch;

a cam spring positioned adjacent to one of said actuator means to contact said one end of said actuator means and thus oppose movement thereof;

a switch base having chambers therein for housing said slider means, said cam spring, said fixed terminal assembly, and said movable brush assembly;

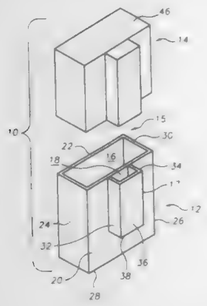
said cam spring being substantially symmetrical about a center plane and comprises a small center well whose sides respectively rise to a pair of apices, a pair of downward ramp portions respectively joined to said well sides at said pair of apices, a pair of horizontal support portions respectively joined to the ends of said pair of downwardly ramp portions remote from said apices, and a pair of folded under end portions respectively joined to ends of said pair of horizontal support portions.

5,630,503

COMBINATION CIGARETTE PACK AND LIGHTER HOLDER

Kenneth Rhodes, and Nancy Rhodes, both of 109 W. Lake Mead Dr., Henderson, Nev. 89015

Filed Dec. 5, 1995, Ser. No. 567,435
Int. Cl.[6] B65D *85/10*
U.S. Cl. 206—85 **1 Claim**



1. A combination cigarette pack and lighter holder comprising:

a base member having a first section and a second section; said first and said second sections being integrally formed from substantially rigid plastic, said first section having a front wall, a rear wall, a left side wall, a right side wall and a bottom wall, said front wall and said rear wall being parallel to one another and interconnecting said left side wall, said right side wall and said bottom wall in a manner to form a five sided box defining a cigarette compartment; said second section having a first side wall, a second side wall, a cover wall and a floor wall, said first and said second side wall being spaced from one another and extending perpendicularly outward from said front wall of said first section approximate the midpoint thereof, said cover wall being substantially parallel to said front wall and interconnecting said first side wall, said second side wall and said floor wall, said floor wall extending substantially perpendicularly from said front wall and interconnecting said first and said second side wall and said cover wall, said second section defining a lighter compartment, said first section and said second section of said base member forming a substantially planar, open top surface; and

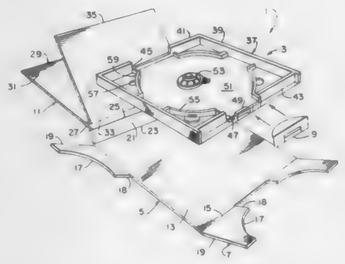
a top member adapted for removably inserting said base section therein in a manner such that the said cigarette pack and said lighter are enclosed therein, said top member having a first wide wall, a second wide wall, a pair of narrow side walls and a top wall, said first wide wall, said second wide wall, said pair of narrow side walls and said top wall being integrally formed of rigid plastic, said first and said second wide walls being substantially parallel to one another and interconnecting said pair of narrow walls and said top wall, said second wide wall of said top member having a U-shaped section, said U-shaped section having a first leg, a second leg and a third leg, said first and said second leg extending perpendicularly outward from said second wide wall and substantially parallel to one another, said third leg interconnecting said first and said second leg and being substantially parallel to said first wide wall, said base member being insertable within said top member said second section of said base member being disposed within a channel formed by said U-shaped section of said top section.

5,630,504

COMPACT DISC PACKAGE WITH PLASTIC TRAY

W. Tyler Fitzsimmons, 22 Ocean View Ave., South Portland, Me. 04106, and Anthony L. Gelardi, P.O. Box 213, Cape Porpoise, Me. 04014

Continuation of Ser. No. 362,968, Dec. 23, 1994, abandoned. This application Apr. 30, 1996, Ser. No. 641,271
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 **19 Claims**



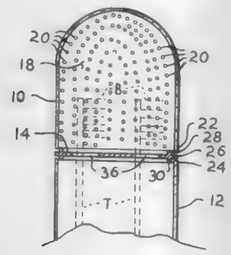
1. A CD package apparatus, comprising a molded plastic tray, a paperboard having a base panel attached to the tray, a spline panel overlying an end of the tray and a cover panel overlying the tray, and a clasp connected to a front of the tray for engaging a front edge portion of the cover panel and holding the panel cover closed, wherein the tray further comprises a base and outer walls extending upward from the base, and segmental inner walls extending upward from the base near intersections of the outer walls, the segmental walls defining a generally circular area for receiving a compact disc, and openings in the base for receiving portions of the paperboard and detents on the segmental wall for engaging the portions of the paperboard.

5,630,505

COVER FOR TOOTHBRUSH HOLDER

Guadalupe M. Garcia, 1123 Hacienda Way, Santa Maria, Calif. 93454

Filed Nov. 17, 1995, Ser. No. 560,014
Int. Cl.[6] B65D *81/00*
U.S. Cl. 206—362.1 **8 Claims**



1. A toothbrush holder cup and cover assembly providing for the generally vertical storage of a plurality of conventional toothbrushes therein, said assembly comprising:

a toothbrush cup including an upper rim and having a hollow interior with a diameter and depth sufficient for the storage of a plurality of toothbrush handles placed generally vertically therein;

a toothbrush placement disc providing for the individual placement of a plurality of toothbrush handles therethrough, said disc having a plurality of toothbrush handle passages therethrough and a periphery adapted for removable placement atop said upper rim of said cup, said periphery of said toothbrush placement disc has a diameter substantially equal to said rim of said cup and an upper flange and an opposite lower flange each inwardly offset from said periphery of said disc, with said disc being adapted for removable placement atop said rim of said cup with said lower flange of said disk fitting closely within said rim of said cup to provide positive location of said disc upon said cup, and;

a ventilated cover, comprising a peripheral base edge adapted to fit closely and removably adjacent said periphery of said disc and said rim of said cup and a ventilated dome portion extending upwardly from said base edge, with said ventilated dome portion including a hollow interior having sufficient space therein to provide clearance for a plurality of conventional toothbrush bristle ends therein and further including a plurality of small ventilation holes therethrough, said cover is adapted for removable placement atop said disc with said upper flange of said disc fitting closely within said peripheral base edge of said cover to provide positive location of said cover upon said disc, so that said periphery of said disc is sandwiched between said rim of said cup and said base edge of said cover and said cup and said cover are separated from one another by said disc when said cup, said disc, and said cover are assembled, whereby;

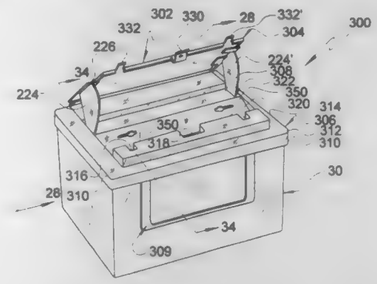
said cover is removably placed over said toothbrush placement disc and atop said rim of said toothbrush holder cup to provide for air circulation within said cover and through the bristles of any toothbrushes stored thereunder by means of said ventilation holes in said cover.

5,630,506

APPARATUS AND METHOD FOR TRANSPORTING AND DISCARDING MEDICAL MATERIALS

Gale H. Thorne; David A. Robinson, and Brad C. Robinson, all of Bountiful, Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah

Continuation-in-part of Ser. No. 417,797, Apr. 6, 1995, Pat. No. 5,570,783, which is a continuation-in-part of Ser. No. 294,533, Aug. 8, 1994, Pat. No. 5,474,180, which is a continuation-in-part of Ser. No. 207,480, Mar. 7, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 664,396
Int. Cl.[6] B65D *85/20*
U.S. Cl. 206—366 **21 Claims**



1. A sharps container suitable for being manually carried from place to place whereat medical procedures are performed, subsequent to which used and contaminated sharps are deposited into the container, said sharps container comprising:

a container body comprising a closed bottom and four closed sides integral with the closed bottom;

a top comprising:

a frame by which said top is securely affixed to said container body;

an opening through which waste products are dispensed into a space formed by the container body and the top;

a biased flap attached to the frame, the flap being normally closed until forcibly opened to provide a pathway through the opening;

a cover affixed to said frame, said cover being disposed to permit access to said biased flap and pathway when opened and to safely cover said biased flap when closed;

a latch by which said cover is releasibly affixed to said frame when the cover is closed;

a permanent latch by which the cover is selectively securely and permanently affixed to said frame when the container body is filled to a predetermined level.

18. A method for using a sharps container comprising a container body, a top securely affixed to said container body and comprising an opening through which contaminated products are dispensed, a biased flap which is displaced to permit products to be dispensed through the opening, a cover which is selectively closed over said opening and releasibly latched to be used again and permanently latched for the purpose of sealing the container when the container is filled, comprising the steps of:

when said container is closed at a first site, disengaging the releasible latch and raising the cover to provide access to said opening and said biased flap;

placing a contaminated item on said biased flap;

displacing the flap to cause the item to drop into the container body;

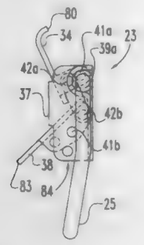
releasing the flap to close against bias;

closing and releasibly latching said cover;

moving said container to a second site.

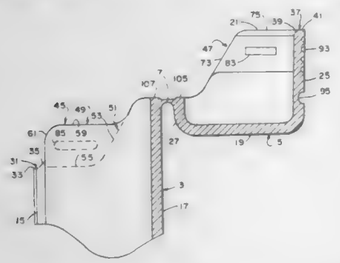
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5,630,507
SINGLE-ACTION LATCH
Terry L. Baker, Indianapolis, Ind., assignor to Carr Metal Products, Inc., Indianapolis, Ind.
Filed Feb. 9, 1996, Ser. No. 598,921
Int. Cl.[6] B65D *45/00*
U.S. Cl. 206—370 **17 Claims**



1. A single-action latch for use on a container having a storage tray and a closing lid, said latch comprising:
a latch base having a mounting surface and means for attaching said latch base to the storage tray;
a hook portion pivotally attached to said latch base;
a release/closing lever pivotally attached to said latch base;
a pair of oppositely-disposed connecting links wherein each connecting link being pivotally connected at one end to said hook portion and being pivotally connected at an opposite end to said lever; and
said latch being operable between a closed condition wherein said hook portion secures said closing lid to said storage tray and an opened condition wherein said closing lid is separable from said storage tray, said lever being pivotally movable so as to transition said latch from said closed condition to said opened condition and back to said closed condition.

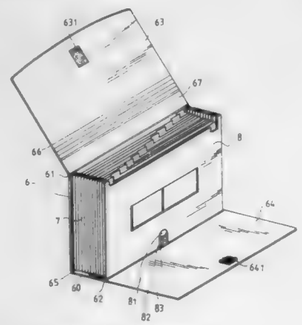
5,630,508
CONTAINER FOR HOLDING FLAT, THIN OBJECTS
Robert G. Petit, Phillipston, Mass., assignor to Microplas, Inc., Clinton, Mass.
Filed Apr. 28, 1995, Ser. No. 431,037
Int. Cl.[6] B65D *43/22*
U.S. Cl. 206—387.1 **20 Claims**



1. A unitary molded container apparatus for holding thin, flat objects comprising a molded base, a molded cover connected to the base, and a coupler for connecting the cover to the base, wherein the base has a bottom, a pair of base side walls extending from the bottom, a base front wall extending from the bottom and a base rear wall extending from the bottom, wherein the cover has a top, a pair of cover side walls extending from the top, a cover front wall extending from the top, and a cover rear wall extending from the top, wherein the base rear wall extends higher than the base front wall, wherein the cover front wall is longer than the cover rear wall, wherein the base side walls have upper portions, each upper portion having a front segment having a thickness approximately half a thickness of the base side wall and having a width less than a width of the base side wall, and a rear segment having a width less than the width of the base side wall, the rear segment having a forward and downward sloping edge, a middle edge extending forward from the sloping edge along a bottom of the front segment, the front segment having an upper edge above the middle edge, and wherein the cover side walls have lower portions, each lower portion having a thickness approximately half a thickness of a remainder of the cover side wall and having a lower edge and a forward and downward sloping rear, wherein the upper portions of the base side walls and the lower portions of the cover side walls have connectors for holding the upper portions to the lower portions when the cover is closed over the base, and wherein the coupler extends between and connects the base rear wall to the cover rear wall.

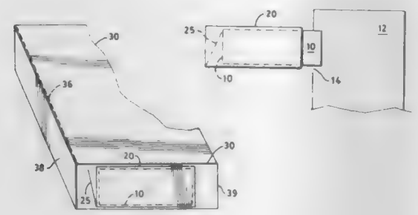
17. A quarter inch data cartridge case apparatus comprising a base, a cover, and a hinge for connecting the base to the cover, the base having a bottom, a front, a back and a pair of sides, the cover having a top, a front, a back and a pair of sides, wherein the base side walls have upper portions, each upper portion having a front segment having a thickness approximately half a thickness of the base side wall and a width less than a width of the base side wall, and a rear segment having a width less than the width of the base side wall, wherein the cover side walls have lower portions, each lower portion having a thickness approximately half a thickness of a remainder of the cover side wall and having a lower edge and a forward and downward sloping rear, and wherein the upper portions of the base side walls and the lower portions of the cover side walls have connectors for holding the upper portions to the lower portions when the cover is closed over the base.

5,630,509
ACCORDION-LIKE FILE
Ken-Jui Su, No. 102, Lane 52, Fu-Te Road, Shu Wang Tsun, Ta-Li City, Taichung Hsien, Taiwan
Filed Mar. 18, 1996, Ser. No. 617,195
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—425 **2 Claims**



1. An accordion-like file comprising:
a bottom panel,
a rear panel secured to said bottom panel at a first folding line and foldable to a perpendicular position relative to said bottom panel,
a front panel secured to said bottom panel at a second folding line and foldable to a perpendicular position relative to said bottom panel, said front panel including a first surface having a first engaging means provided thereon and including a second surface having a second engaging means provided thereon,
a top panel secured to said rear panel at a third folding line and foldable to a perpendicular position relative to said rear panel,
a cover panel secured to said top panel at a fourth folding line and foldable to a perpendicular position relative to said top panel, said cover panel including a third engaging means for engaging with said first engaging means so as to secure said cover panel to said front panel,
a plurality of envelopes including a rear portion secured to said rear panel and including a front portion, and
a plate secured to said front portion of said envelopes, said envelopes being expanded to an open position when said plate is moved away from said rear panel, said plate including an opening formed therein and including an ear engaged in said opening, said ear including a bottom portion secured to said plate so as to allow said ear to be folded relative to said plate about said bottom portion thereof, said ear including a fourth engaging means secured thereon for engaging with said second engaging means of said front panel when said front panel is disposed horizontally and when said envelopes are expanded so as to maintain said envelopes in the open position.

5,630,510
PACKAGING AND LOADING SOLID INK NUGGETS FOR INK JET APPARATUS
Walter C. Lamb, Jr., N. Billerica, and Leonard E. Westgate, Chelmsford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Sep. 7, 1995, Ser. No. 524,534
Int. Cl.[6] B65D *83/00*
U.S. Cl. 206—497 **15 Claims**



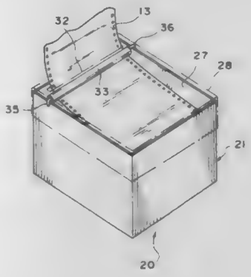
1. A package containing a solid ink nugget for ink jet apparatus, the package including an inner sleeve containing the nugget and having opposite open ends and a flap at one of said ends movable towards the other open end, a second sleeve receiving the first sleeve and closing said open ends of the first sleeve, said second sleeve being removable from the first sleeve to expose said flap and open said other open end to allow the nugget to be pushed through said other open end upon pushing the flap in the first sleeve.

7. A solid ink nugget package for ink jet apparatus, the package having opposite top and bottom walls and side walls enclosing the nugget, said package having opposite open ends and a flap hinged to one of said walls at one of said open ends and movable towards the other open end to push the nugget through the other open end to allow the nugget to project and thereby guide insertion into the ink reservoir.

11. A method of handling a solid ink nugget and loading it into ink jet apparatus, the method comprising the steps of: packaging the nugget in a sleeve having opposite open ends with one end having a flap movable in the sleeve towards the other open end, aligning the nugget projecting from the other open end with an opening in the ink jet apparatus and pushing the flap into the sleeve to engage and push the ink nugget through the other open end and into the opening in the ink jet apparatus.

15. A method of packaging an article comprising the steps of containing the article in a sleeve having opposite open ends with a flap at one end movable towards the other end, placing the sleeve in a second sleeve having opposite open ends directed generally at right angles to the direction of the open ends of said first sleeve, and heat shrinking the second sleeve on the first sleeve to close said other open end of said first sleeve until such time as it is desired to remove the article whereupon the second sleeve may be removed to open said other end of said first sleeve and the flap may be pushed into the sleeve to push the article from said open end of said first sleeve.

5,630,511
DISPENSING BOX AND METHOD FOR THE CONTINUOUS FEED OF FAN-FOLDED COMPUTER PAPER
Ajit K. Bose, Lawrenceville, N.J., assignor to Union Camp Corporation, Lawrenceville, N.J.
Filed Sep. 26, 1995, Ser. No. 533,702
Int. Cl.[6] B65H *5/28*
U.S. Cl. 206—555 **10 Claims**

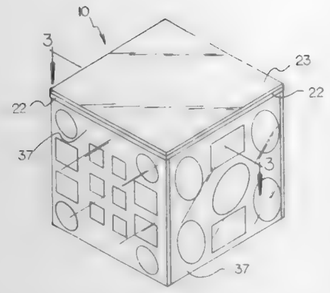


1. A carton for shipping, storing, holding and dispensing a quantity of fan-folded paper for supply to a printer; said carton comprising:
a bottom, opposite side and end walls having an upper edge, an open top, and a lid covering the open top;
said lid having length and width dimensions and means defining an elongate slot therein adjacent one end and extending across the width of the lid, whereby one end of the fan-folded paper can be extended through the slot for feeding the paper from the carton through the slot in the lid, with the lid in place on the carton, to thereby prevent ingress of dirt, debris and the like into the carton during use; and
a guide roller supported on the upper edge of the side walls adjacent the slot, in a position to be engaged by the fan-folded paper as it is fed through the slot, to guide and smooth the flow of the paper through the slot.

5,630,512
DISPLAY AND STORAGE CONTAINER APPARATUS
E. Laura Wells, 262 Lakeshore Dr., Pleasant Valley, N.Y. 12569
Filed Feb. 23, 1996, Ser. No. 606,210
Int. Cl.[6] B65D *5/44*
U.S. Cl. 206—776 **6 Claims**

1. A display and storage container apparatus, comprising:
a base member which includes a top surface and a bottom surface,
a set of inner wall members projecting upward from said top surface of said base member, wherein said base member and said inner wall members define an interior storage space,
a set of transparent outer wall members projecting upward from said top surface of said base member, wherein each of said transparent outer wall members is spaced from an adjacent

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inner wall member by a gap, such that each gap provides a graphic reception region for receiving a graphic element for display, and

a cover assembly, supported by said transparent outer wall members, for covering said graphic reception region and said interior storage space;

a set of brace assemblies supported by said base member and extending upward from said base member for supporting an inner wall member, wherein said set of brace assemblies includes a set of strut members, wherein each strut member extends upward from said base member adjacent to two adjacent inner wall members, and a set of transverse connectors connected to each strut member, wherein each transverse connector extends transversely from a respective strut member for interconnecting between two adjacent inner wall members, each of said transverse connectors including an eye through which the respective strut member extends, whereby removal of the strut member allows for separation of the adjacent inner wall members.

5,630,513

APPARATUS FOR FRACTIONATING SUSPENSIONS

Siri V. Frykhult, Huddinge, Sweden, assignor to Beloit Technologies, Inc., Wilmington, Del.

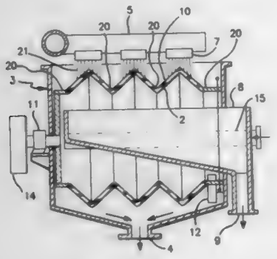
PCT No. PCT/SE94/00768, § 371 Date Feb. 22, 1996, § 102(e) Date Feb. 22, 1996, PCT Pub. No. WO95/06160, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 23, 1994, Ser. No. 600,953

Claims priority, application Sweden, Aug. 27, 1993, 9302781

Int. Cl.[6] B07B *1/22*

U.S. Cl. 209—270 **8 Claims**



1. An apparatus for fractionating suspension, including

a tubular body (**1.16.39**) having a centre and a circumferential strainer (**2.17.30.32.33**),

drive means (**14**) arranged to turn the tubular body such that the strainer is turned at least intermittently about an axis extending through the centre of and substantially axially along the tubular body.

spray means (**7**) arranged to spray a suspension to be fractionated against the strainer such that a fine fraction of the suspension penetrates the strainer and a coarse fraction of the suspension is rejected by the strainer, and

fine fraction discharge means (**8.9**) for discharging the fine fraction from the apparatus, characterized in that

the tubular body (**1.16.39**) is positioned such that said axis extends substantially horizontally,

the strainer comprises at least two strainer sections (**2.17.30.32.33**) spaced from each other and disposed axially in series along the tubular body, and

the spray means comprises at least one row of spray nozzles (**7**) extending axially along the tubular body and adapted to spray the suspension onto the strainer sections from above the tubular body.

5,630,514

CAGE TYPE CYCLONE FINE SCREEN DEVICE

Zhigang Fang, and Fenggang Song, both of Beijing, China, assignors to Beijing General Research Institute of Mining and Metallurgy, China

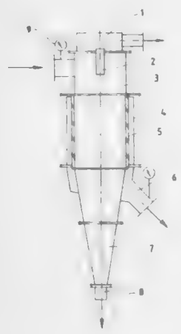
PCT No. PCT/CN95/00044, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO95/32057, PCT Pub. Date Nov. 30, 1995

PCT Filed May 19, 1995, Ser. No. 581,544

Claims priority, application China, May 20, 1994, 94 2 11268.7

Int. Cl.[6] B07B *1/04*

U.S. Cl. 209—273 **4 Claims**



1. A cage type cyclone fine screen device comprising an overflow cap, an overflow pipe, a feeding section having a lower flange, a conical section, a lower outlet, and a pressure gauge, an undersized section having, in its upper portion, an inner ring with an upper end opening, said undersized section having a hollow inverted conical annulation with an exhaust pipe inclined by 45° from the horizontal plane and a bottom in a hoof shape, an integrated cylindrical section having an upper end opening connected to the lower flange of the feeding section and a lower end connected to an upper flange of said undersized section, and a cage screen being positioned between the upper end opening of the integrated cylindrical section and the upper end opening of the inner ring of the undersized section, said cage screen being provided with an upper flange, a plurality of intermediate flanges and a lower flange and having cylindrical screens, each of said cylindrical screens being disposed between two adjacent flanges that are connected with three screw bolts for each pair of adjacent flanges to form the cage screen having different height with different numbers of the cylindrical screens.

5,630,515

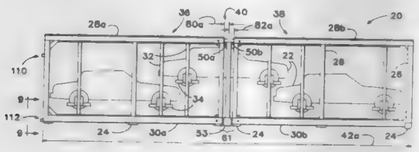
ADJUSTABLE VEHICLE-CARRYING FRAME

Peter Gearin, Portland, and Everett A. Leech, Oregon City, both of Oreg., assignors to G & G Intellectual Properties, Inc., Portland, Oreg.

Continuation of Ser. No. 520,747, Aug. 28, 1995, Pat. No. 5,553,716, which is a continuation of Ser. No. 433,629, May 3, 1995, Pat. No. 5,470,490, which is a continuation of Ser. No. 871,288, Apr. 20, 1992, Pat. No. 5,417,332, which is a continuation of Ser. No. 720,893, Jun. 25, 1991, Pat. No. 5,105,951, which is a continuation of Ser. No. 500,476, Mar. 28, 1990, Pat. No. 5,040,938, which is a continuation of Ser. No. 261,504, Oct. 24, 1988, Pat. No. 4,963,067, which is a continuation-in-part of Ser. No. 943,688, Dec. 18, 1986, Pat. No. 4,797,049. This application Jul. 26, 1996, Ser. No. 686,685

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—85.8 **46 Claims**



1. A system for loading and transporting wheeled vehicles comprising:

(a) an elongate three-dimensional cargo-carrying enclosure having a closable opening;

(b) an elongate three-dimensional frame having transversely-spaced longitudinally-oriented upright sides and having respective vehicle wheel supports capable of supporting at least a first vehicle upon said frame in an elevated condition and at least a second vehicle upon said frame at a level below said first vehicle, said frame being matingly insertable into said enclosure through said opening while said first and second vehicles are supported upon said frame by said wheel supports; and

(c) at least one of said vehicle wheel supports being movable vertically relative to said upright sides so as to move at least one end of said first vehicle vertically relative to the other end of said first vehicle.

5,630,516

BALL CAP DISPLAY AND STORAGE RACK ASSEMBLY

Barry Helman, Oxnard, Calif., assignor to Hersh/Helman, Inc., Oxnard, Calif.

Filed Oct. 27, 1995, Ser. No. 549,269

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—32 **13 Claims**

1. A rack assembly for displaying and storing caps, and the like, having a head cover portion comprising:

a rack having;

at least two vertical members;

at least two cross members extending laterally between and connected to said vertical members, at least one of said cross members having at least one fixed and outwardly projecting cap support segment; and

a plurality of capture arms for capturing the head cover portion, removably and hingeably attached to said cross members and each cooperating with one of said fixed cap support segments to capture, position, retain and release the head cover portion of said caps and the like.



5,630,517

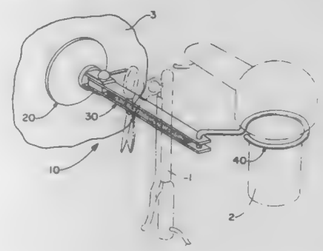
HOLDER FOR HAIR STYLING TOOLS AND APPLIANCES

Gary Maznik, 5827 Grovewood Dr., Mentor, Ohio 44060

Filed Jul. 11, 1995, Ser. No. 501,205

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—70.6 **24 Claims**



1. An apparatus for holding household tools and appliances from a support surface, comprising:

a base for securing said apparatus to said support surface, said base having at least a first side and a second side;

a means for securing said first side of said base to said support surface;

an arm having a first end and a second end, said first end connected to said second side of said base wherein said arm has a magnetic means for releasably securing said household tools and appliances; and

a bracket connected to said second end of said arm for holding at least one said household tool or appliance.

5,630,518

MERCHANDISING DISPLAY

Larry D. Collins, 1999 Avenue of the Stars, Ste. 2800, Los Angeles, Calif. 90067

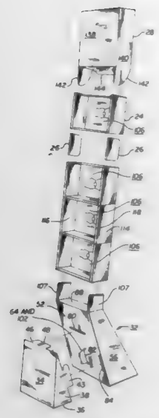
Filed May 4, 1995, Ser. No. 433,831

Int. Cl.[6] A47F *3/14*

U.S. Cl. 211—132.1 **16 Claims**

1. A merchandising display, comprising:

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a base having a pair of upstanding stacking members, and a front portion and a separate rear portion each formed from a paperboard blank, wherein the base front portion and rear portion interlock with each other by a plurality of tabs and slots; and

at least one tray interlocked and mounted on the stacking members, wherein the tray is formed from a folded paperboard blank.

5,630,519

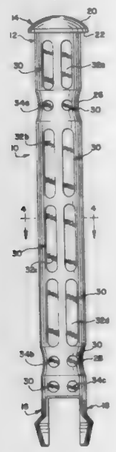
PLASTIC KNUCKLE PIN

Michael K. Burke, Wheaton, and John D. Anderson, Aurora, both of Ill., assignors to Zeftek, Inc., Montgomery, Ill.

Filed Mar. 27, 1996, Ser. No. 622,961

Int. Cl.[6] B61G *3/04*

U.S. Cl. 213—155 **12 Claims**



1. A plastic knuckle pin for a coupler on a railway car comprising:

a shaft having a plurality of longitudinally spaced apart and circumferentially arranged slots;

a head on one end of the shaft; and

means at the end of the shaft opposite the head for locking the pin in the coupler.

5,630,520

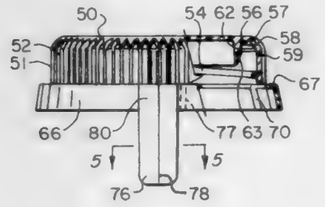
TABS FOR CONTAINER CLOSURES AND CONTAINER NECK

Daniel Luch, Morgan Hill; Richard E. Repp, San Jose, and Steven H. Bietzer, Sunnyvale, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 29,177, Mar. 10, 1993, Pat. No. 5,456,376, which is a continuation-in-part of Ser. No. 830,133, Jan. 31, 1992, Pat. No. 5,267,661, which is a continuation-in-part of Ser. No. 772,945, Oct. 8, 1991, Pat. No. 5,213,224, which is a continuation-in-part of Ser. No. 565,638, Aug. 9, 1990, Pat. No. 5,190,178. This application Oct. 26, 1994, Ser. No. 329,210

Int. Cl.[6] B65D *39/00*

U.S. Cl. 215—256 **27 Claims**



1. A container closure for a container neck,

said neck having an opening, a lip surrounding said opening, a neck stretch below said lip, said neck stretch having an exterior, at least one first engagement means on said exterior of said neck stretch;

said closure having a top, a skirt depending from said top, said skirt having an interior, at least one second engagement means on said interior of said skirt shaped to engage said first engagement means, said skirt having frangible means extending horizontally around said skirt and a removable portion below said frangible means;

the improvement in said closure comprising a tab connected to said removable portion of said skirt, said tab having a longitudinal axis and wall portions extending outwardly from said axis and terminating in a plane spaced from said axis to define a longitudinally extending bend for reinforcing said tab.

5,630,521

ERGONOMIC UPRIGHT WHEELED LUGGAGE

Charles E. Waddell, Bristol; Andrew Zionts, Providence, both of R.I.; William L. King, Denver, Colo.; Roland E. Mongeau, Cumberland, R.I., and David Crumrine, Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Apr. 23, 1996, Ser. No. 636,595

Int. Cl.[6] A45C *13/00*

U.S. Cl. 190—18 A **85 Claims**

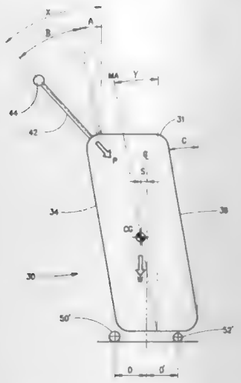
1. In a wheeled upright luggage case having a main body with a back and with a depth dimension and a width dimension, each of which is less than a height dimension of the body, and a handle mounted at an upper portion of the body for moving the case on the wheels along a supporting surface, the luggage case, at least when packed with clothing and the like, having a center of gravity about in the geometric center of the body, the improvement comprising:

at least a pair of wheels, spaced along the width dimension, mounted to a first lower portion of the body;

at least one other wheel mounted on a second lower portion of the body at a distance along the depth dimension forward of the pair of wheels;

wherein the depth dimension is less than the width dimension, and wherein the body, when resting on the other wheel and the pair of wheels, tilts at an angle from vertical, and a vertical line passing through the center of gravity falls between the pair of wheels and the other wheel; and

whereby the case can stand unattended on the wheels and pushed or pulled by the handle on at least some of the wheels.



5,630,522

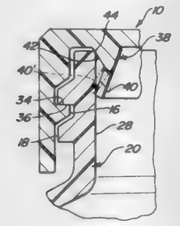
DUAL CONTACT PLUG SEAL FOR THREADED CLOSURE

Gary V. Montgomery, Evansville, Ind., assignor to Rexam Closures, Inc., Evansville, Ind.

Filed Feb. 9, 1996, Ser. No. 599,064

Int. Cl.[6] B65D *53/00*

U.S. Cl. 215—344 **3 Claims**



1. A sealing closure for application to a threaded container neck comprising:

a top;

a cylindrical cap skirt depending from a periphery of said top, said cap skirt having an internal thread for engagement with said threaded container neck; and

a dual sealing plug comprising an inner skirt depending from said top inwardly of said cap skirt for engaging an internal surface of said container neck, said plug including:

an inwardly directed conical section depending from said cap top contacting said internal neck surface at a corner with an adjacent lip of said container neck creating a secondary seal; and

a rotary seal portion extending downwardly from said conical section creating a continuous rotary seal with the internal neck surface.

5,630,523

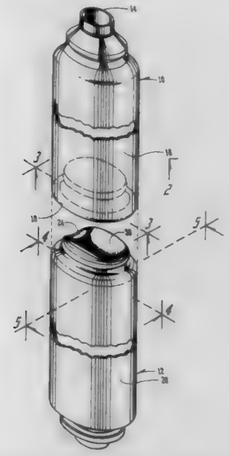
INTERCONNECTED FLUID CONTAINERS

Earl K. Wright, Chariton, Iowa, assignor to Novotrend Ventures, Inc., Aurora, Colo.

Filed Apr. 20, 1995, Ser. No. 425,660

Int. Cl.[6] B65D *23/00*

U.S. Cl. 220—23.83 **5 Claims**



1. The combination of two separate containers containing separate contents secured together, comprising,

a first container having a top, a bottom, and a continuous side wall,

a second container having a top, a bottom, and a continuous side wall,

one of said containers having a cavity in the bottom thereof,

the other of said containers having a protruding portion thereon,

said containers being secured together at their respective bottoms by having said protruding portion on the bottom of one container frictionally and detachably held within the cavity on the bottom of said other container,

said cavity and said protruding portion being oval in shape and being non-rotatable with respect to each other when assembled together to prevent said containers from being assembled together in an infinite number of different orientations.

5,630,524

WASTE CONTAINER CASE AND INNER CONTAINER

Manfred Badura, Hermann-Köhl-Str. 18, D-86159 Augsburg, Germany

Filed Jan. 30, 1996, Ser. No. 593,866

Claims priority, application Germany, Feb. 8, 1995, 195 04 094.5

Int. Cl.[6] B65F *1/06*

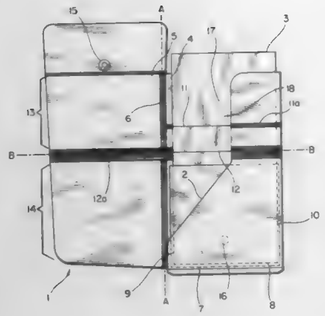
U.S. Cl. 220—403 **24 Claims**

1. A waste container case and inner container for waste material, comprising:

an inner container made of a flame retardant material, said inner container having a front and rear joined together along two side edges and a bottom edge and open at its top edge, at least one transverse closing fold separating an upper reception part from a lower storage part, with the front and rear being capable of separation to enable waste material to fall from the reception part to the lower storage part; and

a case for containing said inner container, said case having a front wall, a rear wall foldable along a side edge of said inner container, an insertion wall part provided on the rear wall at least along the other side edge of said inner container, said

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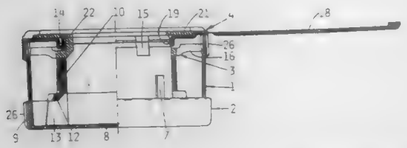
insertion wall part being engageable with the front wall, and fold lines congruent with said at least one transverse closing fold of said inner container.

5,630,525

DISPENSER FOR CONSECUTIVE DISPENSING OF TABLETS

Peter Bender Christoffersen, Lyngby, and Ib Hansen, Herlev, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK93/00424, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/14681, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 17, 1993, Ser. No. 464,751
Claims priority, application Denmark, Dec. 18, 1992, 1516/92
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—5 **12 Claims**



1. A dispenser for consecutive dispensing tablets in a fixed order, the dispenser comprising:

(a) a cylindrical body comprising one or more peripheral juxtaposed vertical chutes each accommodating one or more tablets piled on edge radially orientated in the cylindrical body;

(b) a cup shaped dispensing part comprising a bottom plate and an upstanding cylindrical wall on the bottom plate, the plate forming a stop at the lower end of the chutes, and the cylindrical wall comprising at its upper end a stop ring comprising one or more peripheral walls which in step positions of the dispensing part form continuations of the chutes, the stop ring being secured to the dispensing part to rotate with the dispensing part in relation to the cylindrical body; the cylindrical wall comprising at its lower end adjacent to the bottom plate a slot forming an opening allowing a tablet on edge to pass from the outside of the cup into the inner space thereof, a protrusion above the slot extending radially outwards from the cylindrical wall into the space between a tablet abreast of the slot and a possible overlying tablet in the chute, and a radially outward extending wall adjacent to the slot and extending into the lower ends of the chutes, and

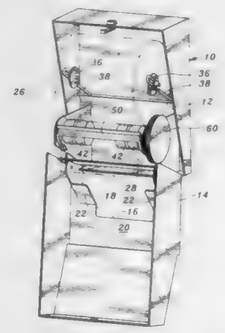
(c) a detent mechanism making the body and the dispensing part stepwise unidirectionally rotatable in relation to each other, the number of steps corresponding to the number of chutes, and the direction of rotation being so that the chutes are moved from a position abreast of the slot towards the radially extending wall.

5,630,526

SHEET MATERIAL DISPENSING SYSTEM

John R. Moody, Antioch, Calif., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Oct. 31, 1995, Ser. No. 550,931
Int. Cl.[6] A47K *10/24*
U.S. Cl. 221—45 **14 Claims**



1. Apparatus for dispensing sheet material from a roll of sheet material, said apparatus comprising, in combination:

a housing defining an interior for accommodating a roll of sheet material having a terminal end and side edges, said sheet material additionally having a plurality of perforated tear lines dividing said sheet material into a plurality of sheet material segments including an end-most segment partially defined by said terminal end, said roll having an axis of rotation and said perforated tear lines being parallel to each other and extending across the sheet material between said side edges, and said housing additionally defining a sheet material dispensing opening in communication with said interior for receiving the end-most segment of said roll of sheet material, said sheet material dispensing opening having a width less than the distance between the side edges of said roll of sheet material whereby the edges of the end-most segment of said roll of sheet material are engaged and moved toward one another by said housing at opposed ends of said sheet material dispenser opening to constrict said end-most segment when the end-most segment is received by and projects from said sheet material dispensing opening;

roll support rollers rotatably mounted on said housing at spaced locations on said housing adjacent to said sheet material dispensing opening for rotatably supporting said roll of sheet material for rotation of the roll of sheet material about the axis of rotation thereof when a pulling force is exerted by a user on the end-most segment projecting from said sheet material dispensing opening and cooperable with said roll of sheet material to terminate rotation thereof after separation of the end-most segment from the remainder of the roll of sheet material; and

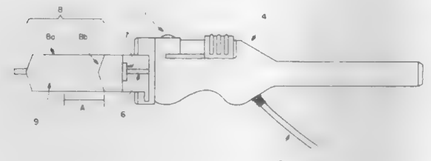
nip defining means cooperating with said roll support rollers to form nips positioned between said roll of sheet material and said sheet material dispensing opening to exert drag forces on said roll support rollers and on sheet material being unwound from said roll of sheet material and passing through said nips when a pulling force is exerted by a user on the end-most segment projecting from said sheet material dispensing opening.

5,630,527

ELECTRONICALLY CONTROLLED, POSITIVE-DISPLACEMENT FLUID DISPENSER

W. Scott Beebe, Ashland, and Michael J. Leuschner, Millville, both of Mass., assignors to Philip Fishman Corporation, Hopkinton, Mass.

Filed Sep. 12, 1994, Ser. No. 304,267
Int. Cl.[6] B67B *7/00*
U.S. Cl. 222—1 **8 Claims**



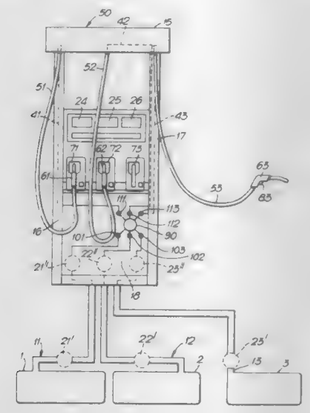
1. An electronically controlled, positive-displacement fluid dispenser system comprising an electronic control unit capable of allowing the use of either preprogrammed settings or variable settings, a control tether, and an ergonomic, handheld applicator having a finger switch, wherein the ergonomic, handheld applicator is attached to the electronic control unit by the control tether and wherein the ergonomic, handheld applicator is capable of accommodating a conventional syringe and piston assembly and wherein the ergonomic, handheld applicator is provided with a motor that displaces a drive rod, to be disposed within said conventional syringe and piston assembly, a specific distance in response to an electronic drive signal generated by the control unit after the finger switch is depressed by the operator.

5,630,528

METHOD AND APPARATUS FOR METERING AND DISPENSING FLUID, PARTICULARY FUEL

Seifollah S. Nanaji, Greensboro, N.C., assignor to Gilbarco, Inc., N.C.

Filed Jan. 27, 1995, Ser. No. 379,062
Int. Cl.[6] B67B *7/00*
U.S. Cl. 222—1 **30 Claims**



1. An apparatus for dispensing fluids comprising:

a plurality of fluid sources;

at least one fluid outlet;

a meter, each of said plurality of fluid sources being in fluid communication with said meter, said meter measuring the amount of fluid discharged through said at least one fluid outlet;

a plurality of valves, said plurality of valves controlling a flow of fluid from said plurality of fluid sources through said meter to said at least one fluid outlet; and

a controlling device, said controlling device controlling said plurality of valves whereby said flow of fluid comprises flow from only one of said plurality of fluid sources and to only said at least one fluid outlet.

20. A method for dispensing fuel comprising the steps of:

providing a plurality of fuel sources;

providing at least one fuel discharge nozzle;

extracting fuel from said plurality of fuel sources;

passing all fuel extracted from each of said plurality of sources through a single meter; and

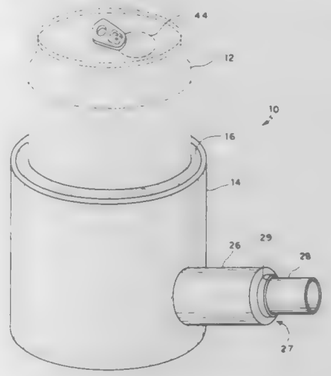
dispensing fuel passed through said meter from said at least one fuel discharge nozzle.

5,630,529

PIERCING TAP AND METHOD OF USE THEREFOR

Christopher F. Chlupp, 1334 Pine St., LaCrosse, Wis. 54601

Filed Jun. 26, 1995, Ser. No. 494,534
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—1 **8 Claims**



1. An apparatus for tapping a container comprising:

a cylindrical shell having an open end and a throughbore, said shell being dimensioned and configured to closely receive a cylindrical container;

a cylindrical tap received through said throughbore, said tap having a piercing tip at a first end and an opposite open end;

a cylindrical sleeve mounted on said shell at said throughbore, said sleeve slidingly receiving said first end of said tap;

a cylindrical collar sealingly interposed between said sleeve and said tap; and

a pad disposed within said shell, said pad having a second throughbore in registration with said throughbore in said shell for receiving said tap, whereby a user may pierce the container by slidable inserting said first end of said tap through said sleeve, causing flowable material to exit out said open end of said tap.

7. A method for tapping a container comprising the steps:

inserting a container in the open end of a tapping apparatus;

rotating the container and apparatus and orienting the tap upwardly;

urging the tap through the container;

locating the tap proximate to the dispensing target; and

rotating the container and apparatus and inducing flow of the flowable material through the tap.

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5,630,530

DISPENSING MODULE

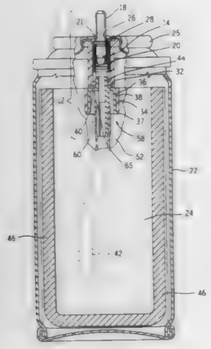
Adalberto Geier, Villazzano, and Giuseppe Dalsant, Baselga di Pine, both of Italy, assignors to Coster Tecnologie Speciali S.p.A., Italy

Filed Aug. 1, 1995, Ser. No. 509,747

Claims priority, application Germany, Aug. 1, 1994, 44 27 175.1

Int. Cl.[6] B65D *35/28*

U.S. Cl. 222—95 9 Claims



1. A dispensing module including an outer container having an open end closed by a closing lid and having a lid opening including a rim for dispensing of a pressurized medium from the container, comprising a bag of flexible material, said bag being capable of location within said outer container through said open end and which opening is closed by the lid, a dispenser valve including a valve body attachable to the rim of the lid opening, and having a discharge aperture,

a discharge nozzle (**58**) disposed within the valve body and defining a discharge channel and aligned with said discharge aperture to the valve body,

spring means coupled to said discharge nozzle and said valve body and supporting said discharge nozzle, said discharge nozzle for displacement between a closed position and an open position, said spring means urging said discharge nozzle to the closed position,

a resilient sealing member disposed between the rim and the valve body and aligned with said discharge nozzle, said discharge nozzle engaging said sealing member in the position and thereby closing the discharge aperture and thereby said discharge channel;

a delivery nozzle (**58**) disposed within said bag and having a connecting portion abutting the bag, said bag being located between the nozzle and the valve body, said delivery nozzle is formed substantially completely of a fracture-resistant material that is substantially impermeable to organic media, and having said connecting portion having a surface bonded to the bag; and

a sealing means between said delivery nozzle and the valve body to permit fluid communication only from the interior of the bag through said delivery nozzle into the valve body.

5,630,531

DEVICE FOR PACKAGING A PRODUCT WITH A MANUAL PUMP FOR DISPENSING INDIVIDUAL METERED AMOUNTS

Denis Gaucher, Annecy, France, assignor to Societe d'Innovation Recherche Plastique, Annecy, France

Filed Aug. 4, 1995, Ser. No. 511,441

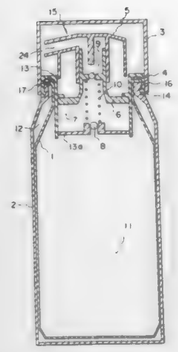
Claims priority, application France, Aug. 8, 1994, 94 09815

Int. Cl.[6] B65D *35/54*

U.S. Cl. 222—96 13 Claims

1. A device for packaging and dispensing a product comprising:

a rigid outer container having an open neck and a closed bottom;



a deformable inner container having a body and an open neck which is more rigid than said body, said inner container being accommodated inside of the outer container with a volume provided therebetween and containing a product to be packaged and dispensed;

a manual pump which operates without air intake into said inner container to dispense the product in individual metered amounts, said pump having a body which is mounted on said necks of said inner container and said outer container;

a leaktight means for sealing said manual pump in a leaktight manner with the neck of said inner container on which said pump is mounted;

a channel which provides external air intake into the volume between said inner container and said outer container at least when said pump is actuated, said channel including (a) at least one air intake passage located outside of said leaktight means and located at least partially in one of said necks of said outer container and said inner container and (b) at least one orifice in said body of said pump located outside of said leaktight means; and

a confining means for preventing any part of the product passing through the body of said deformable inner container and into the volume between said inner container and said outer container from escaping through said air intake passage at least when said pump is not actuated.

5,630,532

AIR PUMP FOR GENERATING EXCESS PRESSURE IN A FUEL TANK FOR LIQUID FUEL IN A PORTABLE HEATING DEVICE

Jacques Herkenne, Ettenhausen, and Isidor Fritschi, Andelfingen, both of Switzerland, assignors to Sigg AG Haushaltgerate, Frauenfeld, Switzerland

Filed Feb. 9, 1994, Ser. No. 194,053

Claims priority, application Switzerland, Feb. 11, 1993, 00419/93-0

Int. Cl.[6] B65D *83/14*

U.S. Cl. 222—396 8 Claims

1. An air pump for generating excess pressure in a fuel tank for liquid fuel for running a portable heating device which is provided with a burner, to which the fuel can be fed from the fuel tank under pressure, the air pump being configured as a reciprocating compressor and comprising:

a cylinder fitted on the fuel tank;

a piston rod which is disposed coaxially in the cylinder and is axially displaceable;

a handle which is designed to actuate the air pump and is supported on the piston rod at an end of the piston rod lying farther from the fuel tank;

a piston which is axially movable in the cylinder and is disposed so as to form a one-way seal and which is fitted at the other end of the piston rod lying closer to the fuel tank and divides the interior of the cylinder into two chambers, of which

one said chamber lying closer to the fuel tank communicates with the fuel tank via a first one-way valve which lets air enter into the fuel tank but prevents air and fuel from escaping from the fuel tank, and

another said chamber lying farther from the fuel tank is able to communicate essentially unchecked with the atmosphere;

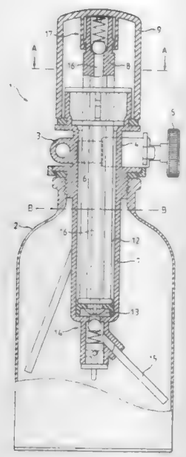
one-way sealing of the piston against the cylinder permitting passage of air past the piston in a first direction from the chamber lying farther from the fuel tank to the chamber lying closer to the fuel tank, but prevents passage of air past the piston in a second direction which is counter to said first direction;

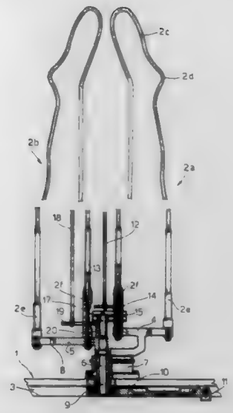
said piston rod being provided with a coaxial duct and with a second one-way valve controlling the passage of air through this duct;

the two chambers being able to intercommunicate via the duct and the second one-way valve;

said first and second one-way valves each having a direction of one-way flow, said directions of one-way flow being opposed to one another, and

from a predetermined pressure, the second one-way valve allowing air to escape from said predetermined pressure, from the chamber lying closer to the fuel tank in the direction of the atmosphere, but preventing air from escaping in a counter-direction.





intermediate plane between the forms, as the forms are rotated into said facing position.

5,630,534

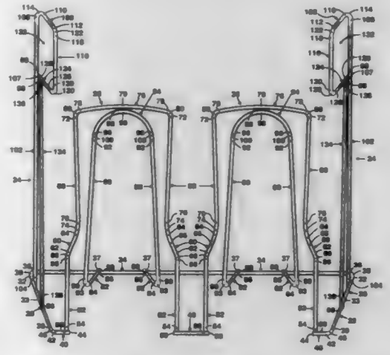
MULTIPLE SOCK DONNING ASSIST DEVICE

Manfred Maier, and H. Millicent MacCannell, both of c/o Samtex Inc., 205 E. Erie St., Blauvelt, N.Y. 10913

Filed Feb. 12, 1996, Ser. No. 600,089

Int. Cl.[6] A47G *25/90*

U.S. Cl. 223—112 16 Claims



1. A multiple leg covering donning assist device, comprising:

a) a hollow horizontally-oriented and substantially opened-front base frame with ends; said hollow horizontally-oriented and substantially opened-front base frame includes a pair of straightily forwardly-tapering, spaced-apart, horizontally-oriented, and slender short side members; each of said pair of straight, forwardly-tapering, spaced-apart, horizontally-oriented, and slender short side members of said hollow horizontally-oriented and substantially opened-front base frame has a front end, a back end, and an intermediate point; said hollow horizontally-oriented and substantially opened-front base frame further includes a straight, horizontally-oriented, and slender long back member that has a pair of ends, and two pair of substantially equally-spaced-apart intermediate points; said straight, horizontally-oriented, and slender long back member of said hollow horizontally-oriented and substantially opened-front base frame, at each of said pair of ends of said straight, horizontally-oriented, and slender long back member of said hollow horizontally-oriented and

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5,630,533

METHOD AND DEVICE FOR FOLDING WOMEN'S TIGHTS ON HOSE SHAPING MACHINES

Carmelo A. Cortese, Via Porrettana, 134/4, 40037 Sasso Marconi, Italy

Filed Jan. 22, 1996, Ser. No. 589,291

Claims priority, application Italy, Jan. 27, 1995, BO95A0023

Int. Cl.[6] D06C *5/00*

U.S. Cl. 223—77 10 Claims

2. A device for folding tights on a hose shaping machine comprising a carousel conveyor with a number of pairs of peripheral tubular forms for receiving respective tights; said forms being movable in relation to each other between a parted position in which the forms substantially lie in the same vertical plane at a station at which the tights are fitted onto the forms, and a facing position in which the forms lie in parallel planes for shaping and removing the tights; characterized in that it comprises a first tensioning member fitted to a first of said forms and for operating on the front of the body of the tights, in an intermediate plane between the forms, as the forms are rotated into said facing position; and a second tensioning member fitted to a second of said forms and for operating on the rear of the body of the tights, in said

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substantially opened-front base frame, extends smoothly from said back end of each of said pair of straight, forwardly-tapering, spaced-apart, horizontally-oriented, and slender short side members of said hollow horizontally-oriented and substantially opened-front base frame and forms therewith a pair of smooth convexo-concave acute bends; said straight, horizontally-oriented, and slender long back member of said hollow horizontally-oriented and substantially opened-front base frame and said pair of straight, forwardly-tapering, spaced-apart, horizontally-oriented, and slender short side members of said hollow horizontally-oriented and substantially opened-front base frame lie in the same horizontal plane; said hollow horizontally-oriented and substantially opened-front base frame further includes a pair of straight, horizontally-oriented, and slender front short outer members; each of said pair of straight, horizontally-oriented, and slender front short outer members of said hollow horizontally-oriented and substantially opened-front base frame has a proximal end, and a distal end; each of said pair of straight, horizontally-oriented, and slender front short outer members of said hollow horizontally-oriented and substantially opened-front base frame, at said proximal end of each of said pair of straight, horizontally-oriented, and slender front short outer members of said hollow horizontally-oriented and substantially opened-front base frame, extends smoothly inwardly from said front end of each of said pair of straight, forwardly-tapering, spaced-apart, horizontally-oriented, and slender short side members of said hollow horizontally-oriented and substantially opened-front base frame and form therewith a pair of smooth convexo-concave obtuse bends; said pair of straight, horizontally-oriented, and slender front short outer members of said hollow horizontally-oriented and substantially opened-front base frame lie in the same horizontal plane as, are parallel to, and are disposed in front of, said straight, horizontally-oriented, and slender long back member of said hollow horizontally-oriented and substantially opened-front base frame;

b) a pair of hollow substantially vertically-oriented side frames for gripping by a user and extending vertically upwardly and slightly rearwardly from the ends of said hollow horizontally-oriented and substantially opened-front base frame and having a height; and

c) a pair of hollow tandemly-positioned and substantially vertically-oriented intermediate frames for receiving leg coverings and extending vertically upwardly and slightly rearwardly from said hollow horizontally-oriented and substantially opened-front base frame and being disposed intermediate said pair of hollow substantially vertically-oriented side frames, so that both legs of a user can be covered simultaneously.

5,630,535

CLIP FOR HANDGUN SUPPORT

Paul J. Valenti, 7311 Coal Creek Pkwy. #B104, Newcastle, Wash. 98059-3170

Filed May 30, 1995, Ser. No. 453,973

Int. Cl.[6] A45F *5/00*

U.S. Cl. 224—271 **2 Claims**



1. A support device for an automatic handgun having a body with an upper portion supporting a barrel slide movable relative to the body and a handle having removable grips, comprising:

an elastically resilient clip having

a substantially planar elongate clip body extending along the handgun body and having fastening means for attachment to a handgun comprising a U-shaped clip bracket having a first inner leg structurally communicating by a back with a second outer leg, said first and second legs spaced to fit on both sides of the upper portion of the body of an automatic handgun having a barrel slide, with the back of the clip bracket extending between the gun body portion and barrel slide and the clip body being fastened substantially vertically above the second outer leg of the clip bracket,

a clip portion structurally communicating with the clip body and extending forwardly, substantially parallel to the handgun body at a spaced distance therefrom, said clip portion having a high frictional material on its surface facing the handgun body and

a tang portion structurally carried by the clip portion at its end opposite the clip body to extend forwardly in the plane of the clip body, said tang portion having an end distal from the clip body angulated outwardly away from the handgun body.

5,630,536

ADJUSTABLE BODY PACK

Mark S. Bugnaski, 7501 Shipley La., Kingsville, Md. 21087

Filed Aug. 25, 1995, Ser. No. 519,359

Int. Cl.[6] A45F *3/04*

U.S. Cl. 224—600 **4 Claims**



1. A carrying system comprising: two similar compartment bags; a belt loop attached to one said side of each compartment bag; an adjustable belt passing through each compartment bag belt loop; a pair of adjustable shoulder straps each having distal ends attached to opposite sides of each compartment bag, respectively; and an adjustable flexible binding slidably mounted to said shoulder straps to position the adjustable shoulder straps together adjacent the upper back of a user when worn over the user's shoulders.

5,630,537

COMPARTMENTALIZED BOX AND KNAPSACK INCORPORATING SAME

Vince Sciacca, 180 Widgee Road, Noranda 6062, Western Australia, Australia

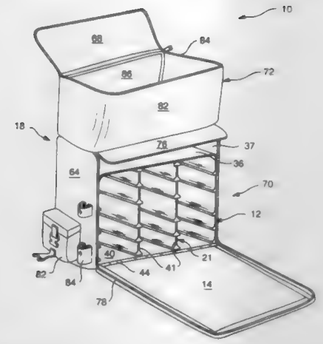
Filed Apr. 20, 1995, Ser. No. 426,001

Claims priority, application Australia, Apr. 20, 1994, PM5214

Int. Cl.[6] A45F *3/04*

U.S. Cl. 224—629 **11 Claims**

1. A compartmentalized box comprising:



a receptacle formed of a top wall, a bottom wall and a plurality of side walls, one of the side walls being moveable to allow access into the receptacle;

a plurality of containers removably locatable within the receptacle, each container being capable of containing items to be stored; and,

a plurality of columns extending between the bottom wall and the top wall, the columns each being formed of a plurality of panels located one atop the other, each panel having a shoulder so that the shoulders of panels of adjacent columns align horizontally so that the containers can be slid in and out of the receptacle along the shoulders through the moveable side wall, the panels being able to be removed and rearranged to vary the location of the shoulders so that the plurality of containers can be rearranged in the receptacle and containers of differing sizes placed in the receptacle.

5,630,538

FLEXIBLE TYPE CASTING GATE BREAKING MACHINE

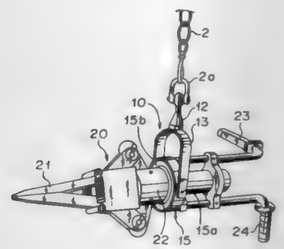
Akiyoshi Hatakeyama, Tokyo, and Isamu Takemoto, Hachinohe, both of Japan, assignors to Nippon Koshuha Steel Co., Ltd., and Koshuha Foundry Co. Ltd, both of Tokyo, Japan

Filed Jan. 3, 1995, Ser. No. 367,942

Claims priority, application Japan, Jul. 15, 1994, 6-185100

Int. Cl.[6] B22D *31/00*; **B26F** *3/00*

U.S. Cl. 225—103 **1 Claim**



1. The combination of a casting-gate breaking machine having a body portion with an outer surface, and a supporting device including:

a ring-shaped bearing installed on said outer surface of said body portion of said casting-gate breaking machine enabling rotation thereof around a central axis of said body portion;

a pair of pivot pins outwardly extending from said ring-shaped bearing;

a U-shaped supporting member having a top and having opposite arms with free ends for supporting said ring-shaped bearing by means of said pivot pins engaged at said free ends of said arms;

a horizontally rotatable coupling secured to the top of said U-shaped supporting member for freely rotating said U-shaped member;

a shackle connected to said rotatable coupling; and

a flexible line connected to said shackle at a lower end and connected to a ceiling structure at an upper end thereof; whereby

said breaking machine when in use and suspended from said ceiling structure by means of said flexible line and said rotatable coupling is capable of substantially omnidirectional movement.

5,630,539

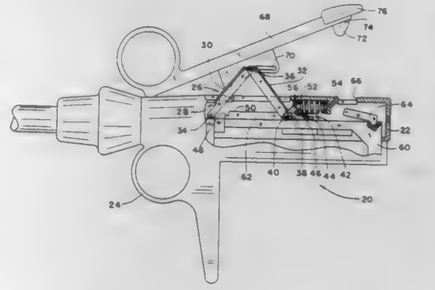
LAPAROSCOPIC STAPLER WITH OVERLOAD SENSOR AND INTERLOCK

Alan K. Plyley; Claude A. Vidal, both of Santa Barbara, and Roger Lagerquist, Isla Vista, all of Calif., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 237,004, May 2, 1994, Pat. No. 5,470,007. This application Nov. 27, 1995, Ser. No. 565,631

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.1 **9 Claims**



1. A surgical stapler comprising:

(a) a housing;

(b) an elongated shaft, defining a longitudinal axis, mounted to said housing;

(c) first and second jaws mounted with respect to said elongated shaft, said first and second jaws being movable with respect to each other so as to receive tissue therebetween;

(d) an approximating handle movably mounted with respect to said housing; and

(e) an assembly having proximal and distal ends and an intermediate portion, said assembly movably mounted with respect to said elongated shaft and operatively connected to said approximating handle at said intermediate portion and to at least one of said first and second jaws at said distal end, said intermediate portion adapted to move inwardly with respect to said longitudinal axis to a first position and further adapted to move to a second position longitudinally offset from said first position in response to a preselected stimulus exerted on at least one of said first and second jaws.

5,630,540

SURGICAL STAPLE AND STAPLE DRIVE MEMBER

Jeffrey J. Blewett, Plantsville, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed May 24, 1995, Ser. No. 449,637

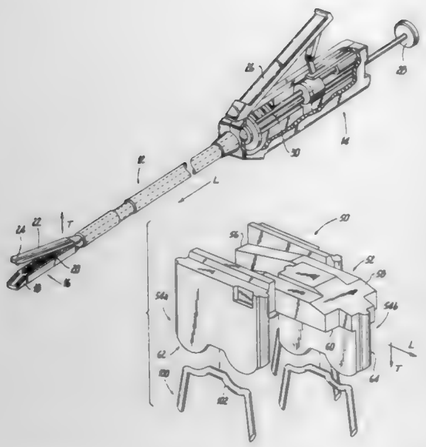
Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—176.1 **11 Claims**

1. A cartridge assembly for a surgical stapler comprising:

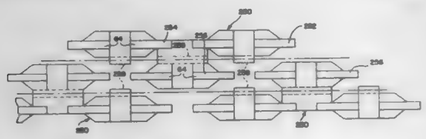
a cartridge body defining a plurality of slots, each slot including therein a surgical staple having a bridge portion including at least two concave arcuate sections; and

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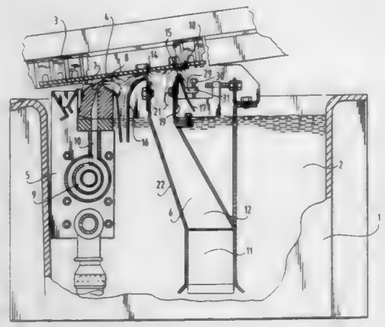
a plurality of staple drive members disposed within the cartridge body and positioned adjacent the staples, each of the staple drive members having at least one pusher element, each pusher element including a curvilinear support portion configured to engage at least a portion of the arcuate sections of the bridge of the staple for supporting the bridge portion of the staple, each of the pusher elements configured to eject the staples from the slots when acted upon by an actuating force.

5,630,541
SURGICAL STAPLER AND STAPLE CARTRIDGE
Warren P. Williamson, IV, Loveland; Thomas W. Huitema, Cincinnati, and James H. Chambers, Milford, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio
Division of Ser. No. 58,325, May 5, 1993, Pat. No. 5,415,334.
This application Dec. 21, 1994, Ser. No. 360,460
Int. Cl.° A61B *17/072*
U.S. Cl. 227—178.1 **3 Claims**



1. A surgical stapler comprising:
cam means having a cam surface;
means for actuating said cam means for a longitudinal movement of said cam surface;
a staple cartridge including a plurality of staple drive members longitudinally arranged and driven by the longitudinal movement of said cam surface, said staple drive members each having three staple driving surfaces, each said staple driving surface being engageable with a surgical staple, said three staple driving surfaces comprising a front staple driving surface and a rear staple driving surface longitudinally aligned with each other and a center staple driving surface laterally spaced from said front staple driving surface and said rear driving surface; and
at least one longitudinally extending cam contact surface formed in each of said staple drive members, said cam contact surface being laterally spaced from each of said front, rear and center staple driving surfaces, said cam contact surface being positioned laterally between said center staple driving surface and said front and rear staple driving surfaces, and in longitudinal alignment with said center staple driving surface, longitudinally adjacent ones of said staple drive members being arranged in a laterally-reversed orientation and configured to be complementary to each other so that said front, rear and center staple driving surfaces of said staple drive members are arranged in at least two laterally spaced rows and said cam contact surfaces of said staple drive members are arranged in one or more rows laterally spaced from said rows of staple driving surfaces.

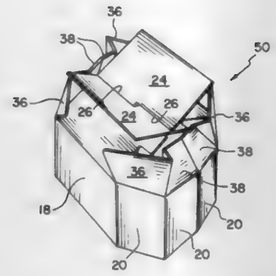
5,630,542
SOLDERING APPARATUS WITH ABRUPT SEPARATION OF SOLDER STREAMS
Adrianus J. M. Hendrikx, Etten-Leur, Netherlands, assignor to Soltec B.V., Oosterhout, Netherlands
Filed Dec. 5, 1994, Ser. No. 341,199
Int. Cl.° B23K *3/06*
U.S. Cl. 228—37 **23 Claims**



1. Soldering apparatus, comprising:
a solder vessel;
at least one soldering tower located in said solder vessel;
transport means for transporting objects to be soldered over said soldering tower; and
solder wave generating means for generating a solder wave emerging from the apex of the soldering tower and contacting the objects to be soldered, the soldering tower comprising a weir such that at least part of the solder wave flows parallel to the direction of movement of the objects to be soldered over said weir, said solder wave generating means including guide means for guiding said part of the solder wave wherein the solder wave leaves the soldered object substantially abruptly, said guide means comprising a guide plate extending obliquely downward from the top of the weir, said guide plate being concave in the upward direction.

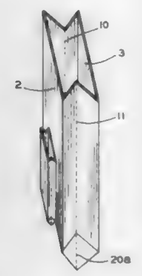
5,630,543
ONE PIECE OCTAGONAL BOX
Thomas F. Dugan, Fort Wayne, Ind., assignor to Covington Box & Packaging, Inc., Waterloo, Ind.
Filed Oct. 13, 1995, Ser. No. 542,692
Int. Cl.° B65D *5/36*
U.S. Cl. 229—109 **10 Claims**

1. A bulk bin box, comprising:
a unitary piece of cardboard folded into an octagonal box having a top portion and bottom portion, said unitary piece of cardboard adjacent said bottom portion having two tabs on opposite sides of said box shape with each said tab having a slot, each tab slot simultaneously and continuously intermeshing



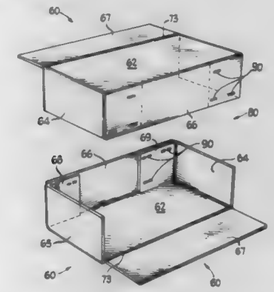
with the other tab whereby no action other than opening said box is necessary to erect the box.

5,630,544
FOOD PRODUCTS CONTAINER WITH POCKET
Penny K. Shane, 10214 W. State Rte. 12, Fostoria, Ohio 44830
Filed Aug. 25, 1995, Ser. No. 519,297
Int. Cl.° B65D *5/36*
U.S. Cl. 229—117.06 **21 Claims**



1. A collapsible container for holding food products comprising:
a flat rectangular bottom;
a front wall having a top and a bottom, said front wall bottom joined to said flat bottom, said front wall top being wider than said front wall bottom;
a rear wall spaced apart from said front wall having a top and a bottom, said rear wall bottom joined to said flat bottom, said rear wall top being wider than said rear wall bottom;
a first side wall having a top and a bottom, said first side wall joined to said front wall and said rear wall, said first side wall bottom joined to said flat bottom, said first side wall top being wider than said first side wall bottom;
a second side wall having a top and a bottom, said second side wall joined to said front wall and said rear wall, said second side wall bottom joined to said flat bottom, said second side wall top being wider than said second side wall bottom, said front wall, rear wall, first side wall, second side wall and bottom forming said container having a top opening which is larger than the area of said bottom when said container is in a non-collapsed position; and
a collapsible pocket attached to said front wall of said container, said pocket including a flat pocket bottom joined to said front wall of said container, a pocket front wall spaced apart from said front wall of said container and extending upwards from said pocket bottom, and a pair of pocket side walls extending upwards from said pocket bottom and joining said front pocket wall and said front wall of said container to form a pocket opening, said pocket being smaller in size than said container such that said container is sized to hold the food product while said pocket is sized to hold a condiment suitable for the food product.

5,630,545
APPARATUS FOR PACKAGING ARTICLES
Joseph J. Jaglowitz, Monett, Mo., assignor to Stone Container Corporation, Chicago, Ill.
Filed Dec. 5, 1995, Ser. No. 567,674
Int. Cl.° B65D *5/32*
U.S. Cl. 229—125.19 **13 Claims**

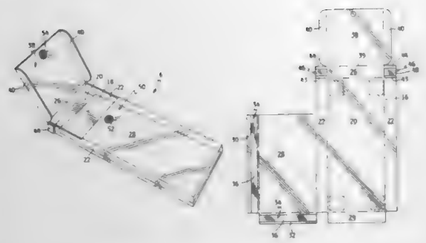


1. A container apparatus for the retained packaging and enclosure of articles, comprising:
a first cover member; and
a second cover member,
said first and second cover members being configured from blanks of container material, which blanks, upon preliminary articulation, form partially erected first and second cover members, respectively, having substantially identical internal and external dimensions,
each of the blanks being formed as a plurality of substantially unbroken, unperforated rectangular regions each continguously emanating from at least one adjacent rectangular region, as part of a single, monolithic sheet,
each of the partially erected first and second cover members having the same height,
each of the partially erected first and second cover members having at least one side wall member remaining in an unarticulated state, connected to the remainder of the blank along a single fold without abutting adjacent flaps,
each unarticulated side wall member having a transverse dimension substantially equal to the height of its respective partially erected cover member,
at least one of the preliminarily articulated and partially erected first and second cover members being provided with at least one wall member capable of deflection from its partially erected configuration, upon exertion of a deflecting force against at least one wall member,
each one of the preliminarily articulated and partially erected first and second cover members being capable of forced placement over the other one of preliminarily articulated and partially erected first and second cover members, as a result of said deflection, in a cooperative article-enclosing configuration.

5,630,546
BROCHURE HOLDER AND POINT OF SALE DISPLAY SYSTEM
William A. Velch, Long Lake, Minn., assignor to Bailey Nurseries, Inc., St. Paul, Minn.
Filed Jun. 2, 1994, Ser. No. 252,934
Int. Cl.° B65D *43/16*
U.S. Cl. 229—125.37 **8 Claims**

1. A brochure holder, which comprises:

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(a) a rear wall having integral side walls, a top wall, and a bottom wall connected thereto by fold lines such that the side, top and bottom walls are bendable relative to the rear wall along the fold lines, the side, top and bottom walls capable of being bent at 90° relative to the rear wall to form a three dimensional pocket bounded thereby;

(b) a front wall extending from one of the side walls and connected to the one side wall along a fold line such that the front wall is bendable relative to the one side wall, the front wall capable of being bent at 90° relative to the one side wall to extend across the width of the rear wall and be spaced from but parallel to the rear wall to enclose a front side of the pocket, the front wall being shorter than the rear wall;

(c) means for securing the front and rear walls together to form an assembled pocket comprising a side attachment panel and a bottom attachment panel carried on the front wall which are suited for being bent at 90° relative to the front wall along fold lines, wherein the attachment panels carry adhesive strips to allow such attachment panels to be pressed against and secured to the other side wall and the bottom wall;

(d) the top wall having outwardly extending flaps secured at each side thereto by fold lines with such flaps being separated from the rear wall by cut lines such that the flaps are bendable relative to the top wall, the flaps being capable of being bent down over and secured to the upper ends of each side wall to close any gaps between the side walls and the top wall to prevent the transmission of moisture therebetween; and

(e) a pivotal cover secured to a front edge of the top wall by a fold line, the cover having means for releasably securing the cover to the front wall when the cover is pivoted downwardly to close the cover over the pocket.

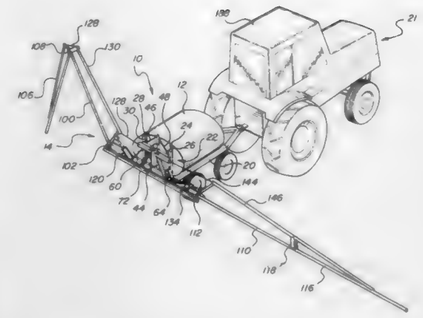
5,630,547

SPRAYER BOOM SELF-LEVELING LOCKOUT AND METHOD OF SPRAYER BOOM OPERATION

David Klemenhagen, North Mankato, and Robert J. Scheurer, Kasota, both of Minn., assignors to Hiniker Company, Mankato, Minn.

Filed Apr. 20, 1995, Ser. No. 425,457
Int. Cl.[6] B05B *3/02*
U.S. Cl. 239—161 **5 Claims**

1. A sprayer boom assembly including an intermediate frame adapted to be attached to a sprayer boom carrier; a center boom having a left end and a right end, a left wing boom pivotally connected to the left end of the center boom for pivotal movement about a generally horizontal axis between a left wing working position and a left wing folded transport position and a right wing boom pivotally connected to the right end of the center boom for pivotal movement about a generally horizontal axis between a right wing working position and a right wing folded transport position; a left leveling link with an upper end pivotally connected to the intermediate frame for pivotal movement about a left upper axis and a lower end pivotally connected to the center boom for pivotal movement about an axis that is parallel to the left upper axis; a right leveling link with an upper end pivotally connected to the intermediate frame for pivotal movement about a right upper axis that is spaced from the left upper axis and a lower end pivotally connected to the center boom for pivotal movement about an axis



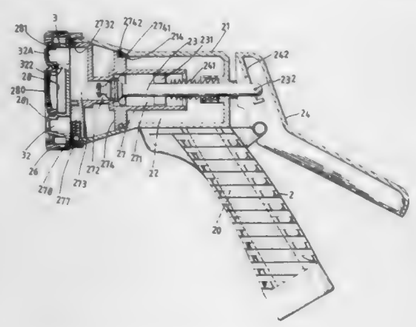
that is parallel to the right upper axis and spaced from the axis of the pivotal connection between the lower end of the left leveling link and the center boom; a left hydraulic cylinder pivotally attached to the center boom and to the left wing for pivoting the left wing between the left wing working position and the left wing folded transport position; a right hydraulic cylinder pivotally attached to the center boom and to the right wing for pivoting the right wing between the right wing working position and the right wing folded transport position; a left sprayer boom lock assembly including a left latch, a left latch contact surface engagable by the left latch to limit pivotal movement of the left and right leveling links in a direction which lowers the right end of the center boom while leaving the left and right leveling links free to pivot in a direction which raises the right end of the center boom, and a linkage connected to the left latch and to the left wing boom that moves the left latch from contact with the left latch contact surface when the left wing boom is in the left wing working position; and a right sprayer boom lock assembly including a right latch, a right latch contact surface engagable by the right latch to limit pivotal movement of the left and right leveling links in a direction which lowers the left end of the center boom while leaving the left and right leveling links free to pivot in a direction which raises the left end of the center boom, and a linkage connected to the right latch and to the right wing boom that moves the right latch from contact with the right latch contact surfaces when the right wing boom is in the right wing working position.

5,630,548

GUN TYPE WATER SPRAYING NOZZLE

I-Shun Chih, P.O. Box 1750, Taichung, Taiwan

Filed May 1, 1995, Ser. No. 431,974
Int. Cl.[6] B05B *1/16*
U.S. Cl. 239—394 **1 Claim**



1. A water spraying gun comprising:

a gun body including a rear portion having a hand grip extended downward therefrom, said gun body including a water conduit and said hand grip including a water passage formed therein and communicating with said water conduit of said gun body, said hand grip including a rear portion said gun body including a front portion having an annular flange formed thereon and having an annular rib extended radially outward from said annular flange,

a control ferrule engaged on said front portion of said gun body, said control ferrule including a front portion having a center portion and having a plurality of orifices formed around said center portion, said center portion of said front portion of said control ferrule including a plurality of holes formed therein, said control ferrule including a rear portion having a first engaging means for engaging with said annular rib of said gun body so as to rotatably engage said control ferrule to said gun body, said control ferrule including a middle portion having a ratchet tooth means extended radially inward therefrom,

a control plate including ear means extended radially outward therefrom for engaging with said ratchet tooth means so as to secure said control plate to said control ferrule, said control plate including a plurality of bulges extended therefrom for engaging with said room of said tube and each having an opening formed therein for forming various kinds of water spraying forms,

handle pivotally coupled to said rear portion of said hand grip and including an upper portion having a wall member provided therein,

a tube engaged in said gun body and including a middle portion having a mouth formed therein and including a front portion having a first peripheral wall formed therein so as to define a room, said room being communicating with said mouth and said tube,

a piston rod slidably engaged in said tube and including a rear end coupled to said wall member of said handle and including a front end having a plug for engaging with and for enclosing said mouth, said piston rod including a middle portion having a plurality of fins extended radially outward therefrom for engaging with said tube so as to support said piston rod in place, and

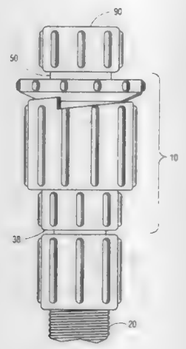
means for biasing said plug to engage with and to enclose said mouth of said tube.

5,630,549

ADJUSTABLE, STACKABLE WATER SPRINKLER HEAD

Thong H. Le, 3041 Sierra Rd., San Jose, Calif. 95132

Continuation of Ser. No. 309,352, Sep. 20, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 638,857
Int. Cl.[6] B05B *1/32;1/14*
U.S. Cl. 239—451 **8 Claims**



1. A lawn sprinkler nozzle assembly for attachment to a water supply bib comprising:

a vertically oriented, cylindrical body having an exterior surface, an axial, central water conduit, a first means for rotational attachment of a lower end of the body to the water supply bib, a plurality of passages arranged circumferentially in the body, radially interconnecting the water conduit with the exterior surface, a plurality of separate angled body embossments arranged circumferentially on the exterior surface and extending radially away therefrom, an external threaded portion adjacent the passages, and a threaded attachment means adjacent to an upper end of the body;

an open ended, vertically oriented, cylindrical valving sleeve having an internal threaded portion at a lower end thereof engaging the external threaded portion of the body, and a plurality of interior sleeve embossments extending radially inwardly each terminating with a concave surface, each of the embossments positioned opposite one of the water conduits of the body, the concave surfaces contacting the exterior surface of the body, the embossments of the valving sleeve being rotationally positionable so as to control a radially outward flow of water through the passages in the body, said flow entering a lower space formed between the body and the valving sleeve to move upwardly between the angled body embossments into a second space formed between the body and the valving sleeve, adjacent an upper open end of the valving sleeve;

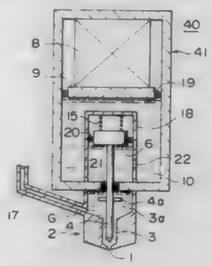
a water diverting washer rotationally threadably engaged with the threaded attachment means in a position immediately above the second space formed between the body and the valving sleeve, the diverting washer including a downfacing, upwardly angled annular surface for diverting the upward flow from the second space radially outwardly therefrom for disbursement thereof.

5,630,550

FUEL INJECTION SYSTEM

Masahiko Kurishige; Koji Hasunaka; Masaaki Kawamoto; Michio Fujiwara, and Shinji Nakadeguchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 427,830
Claims priority, application Japan, Aug. 25, 1994, 6-201085
Int. Cl.[6] F02M *51/06*
U.S. Cl. 239—533.8 **7 Claims**



1. A fuel injection system comprising:

a valve main body having a needle guide cavity with the distal end thereof formed as an injection aperture, fuel passing through said needle guide cavity to be injected through said injection aperture;

a pressure control chamber filled with a pressure transmitting medium;

a piston for changing the fluid pressure of said pressure transmitting medium in said pressure control chamber;

a needle valve having one end thereof located in said needle guide cavity and the other end thereof located in said pressure

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control chamber, said needle valve being installed in such a manner that it is allowed to move to open or close said injection aperture;

a pressure receiving section which is provided on a portion of said needle valve located in said pressure control chamber and which is subjected to said fluid pressure;

a pre-loading means for pre-loading said needle valve in a direction for closing said injection aperture; and

a piezoelectric element which changes said fluid pressure of said pressure transmitting medium by driving said piston, applies said changed fluid pressure to said pressure receiving section, and moves said needle valve in a direction for opening or closing said injection aperture so as to start or stop the flow of an injection fuel through said injection aperture,

wherein a flow channel for said injection fuel is airtightly independent from said pressure control chamber, and

wherein said pressure transmitting medium is completely sealed off from said injection fuel by a sealing member.

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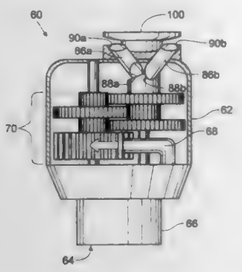
IN-GROUND RECIPROCATING SPRINKLER

Mitchell D. Forcier, 417 Kirby Ct., Walnut Creek, Calif. 94598

Filed May 30, 1995, Ser. No. 453,870

Int. Cl.[6] B05B *3/08*

U.S. Cl. 239—563 **6 Claims**



1. A reciprocating sprinkler device for dispensing water uniformly over an area, comprising:

a housing;

an inlet port for receiving water under an inlet pressure into the housing;

at least two outlet ports from the housing, each outlet port having a receiving end in fluid communication with fluid entering the housing from the inlet port and a dispersing end external from the housing; a water powered drive mechanism powered by fluid communication with the inlet pressure; and

a reciprocating valve driven by the water powered drive mechanism to shunt varying flows of water between the outlet ports so as to reciprocally increase and decrease the flows from each outlet port to distribute said flows radially from the sprinkler device;

wherein said outlet ports include at least a first opening and a second opening, wherein the reciprocating valve includes a cylindrical outer surface abutting said first and/or second openings and having a sloped top surface with a high end and a low end, said cylindrical surface substantially spanning the space between the first and second openings and covering at least a portion of said openings to present a cylindrical surface abutting against at least a portion of the first and/or second opening when the valve is rotated.

5,630,552

PAINT DOSAGE DEVICE FOR PROGRAM CONTROLLED SPRAY PAINTING SYSTEM

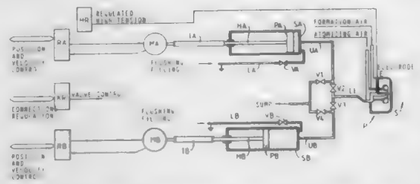
Ole A. Anfindsen, Sandnes, and Alf Sunde, Byrne, both of Norway, assignors to ABB Flexible Automation AS, Bryne, Norway

PCT No. PCT/NO92/00093, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/23173, PCT Pub. Date Nov. 25, 1993

PCT Filed May 15, 1992, Ser. No. 335,817

Int. Cl.[6] B05B *5/025*

U.S. Cl. 239—708 **9 Claims**



1. A spray painting apparatus adapted for dosed supply of electrically conductive paint to a spray gun, the spray gun being provided with a high tension electrode for electrostatically charged atomizing of electrically conductive paint supplied thereto:

at least two dosage cylinders, each having an inlet conduit through which paint and cleansing liquid are alternatively supplied, and an outlet conduit for alternative delivery of said paint and cleansing liquid to, respectively, the spray gun and a sump for spent cleansing liquid;

at least one inlet valve disposed in each of said inlet conduits; and

a valve assembly including a plurality of valves arranged for connecting said outlet conduits alternatively to the spray gun and the sump for spent cleansing liquid,

wherein each valve of the valve assembly as well as each inlet valve includes:

a valve housing and a movable valve member, the valve housing having an internal bore in communication with a valve inlet and a valve outlet connected by a portion of said bore, wherein the movable valve member is a plunger closely fitted in said bore and disposed for alternatively closing and opening said valve inlet and valve outlet, and the bore is furnished with a sealing gasket resting against the movable valve member and positioned in a surface of the bore outside of said portion of the bore connecting the valve inlet and valve outlet.

5,630,553

METHOD AND DEVICE FOR RECYCLING HETEROGENEOUS MIXTURES OF MATERIALS RESULTING FROM SIZE-REDUCTION PROCESSES

Petre Serban, Kassel; Siegmar Schäfer, Freiberg; Dietrich Häusler, Ahnatal; Hans-Joachim Bornemann, Vellmar; Wilfried Sinning, Baunatal, and Ulrich Tölle, Hofgeismar, all of Germany, assignors to Thyssen Industrie AG, Essen, Germany

Filed May 5, 1995, Ser. No. 435,227

Claims priority, application Germany, May 6, 1994, 44 15 905.6

Int. Cl.[6] B02C *19/00*

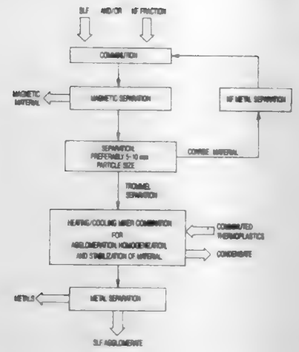
U.S. Cl. 241—23 **15 Claims**

1. A method for recycling heterogeneous mixtures of materials resulting from size-reduction processes, said method comprising the steps of:

comminuting a heterogenous mixture of materials to form a comminuted intermediate product;

separating from the intermediate product comminuted particles of a preset size; and

subjecting the selected comminuted particles to an agglomeration treatment for producing agglomerate particles of a preset degree of agglomeration having an upper limit with respect to agglomerate particle size, said agglomerate particles being



individualizable according to the different materials of the heterogeneous mixture.

5,630,554

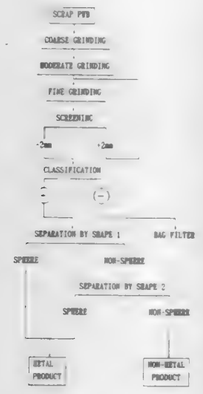
METHOD OF SEPARATING AND RECOVERING VALUABLE METALS AND NON-METALS FROM COMPOSITE MATERIALS

Chiaki Izumikawa, Tokyo; Hiroyuki Iwata, Ryugasaki; Shigehisa Endoh, and Hitoshi Ohya, both of Tsukuba, all of Japan, assignors to Dowa Mining Co., Ltd., and Jiro Hiraishi, both of Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,344

Int. Cl.[6] B02C *23/10*

U.S. Cl. 241—24.13 **20 Claims**



1. A method of separating and recovering valuable metals and non-metals from a composite material that comprises:

(a) breaking into coarse particles by shearing a composite material comprising a metal and a non-metal part;

(b) grinding said coarse particles from step (a) in a rotary grinding machine at a peripheral speed of 100 m/s to not less than 30 m/s, thereby separating said particles into spherical metal particles and non-spherical non-metal particles;

(c) charging said ground particles from step (b) into a classifier to remove extremely fine particles; and

(d) continuously feeding the ground particles obtained in step (c) onto an inclined belt conveyor and guiding the spherical metal particles and the non-spherical non-metal particles in such a way that the spherical metal particles are moved down the inclination of the inclined belt conveyor, whereas the non-spherical non-metal particles stay on the inclined belt conveyor and are transported in the direction of their travel, whereby the spherical metal particles are separated and recovered from the non-spherical non-metal particles.

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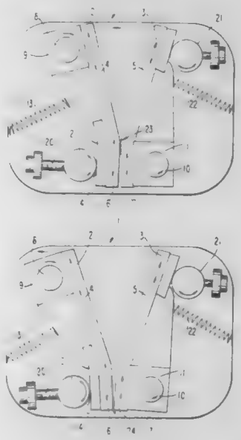
ROCK CRUSHER

Phillip G. Boyd, Waihi, New Zealand, assignor to Boyd Motors Limited, Waihi, New Zealand

Continuation of Ser. No. 190,232, Jan. 31, 1994, abandoned, which is a continuation of Ser. No. 54,466, Apr. 28, 1993, abandoned, which is a continuation of Ser. No. 880,739, May 8, 1992, abandoned. This application Aug. 1, 1995, Ser. No. 509,731

Int. Cl.[6] B02C *1/02*

U.S. Cl. 241—29 **11 Claims**



1. A method of crushing rocks in a rock crusher, said rock crusher having a first jaw and a second jaw, wherein each of said first jaw and said second jaw have an upper portion and a lower portion, said first jaw and said second jaw being arranged to allow movement of said first jaw and said second jaw with respect to each other, the movement including pivoting of at least one jaw of said first jaw and said second jaw about a pivot point, the movement of said first jaw and said second jaw resulting in an upper portion of said first jaw and an upper portion of said second jaw having a crushing action when in operation and a lower portion of said first jaw and a lower portion of said second jaw having at least two crush points when in operation, said method of crushing rocks comprising the steps of:

introducing rocks between said first jaw and said second jaw;

crushing certain of said rocks which are larger than others of said rocks between said upper portion of said first jaw and said upper portion of said second jaw by said crushing action; and

crushing said rocks between said lower portion of said first jaw and said lower portion of said second jaw at said at least two crush points.

5,630,556

PORTABLE APPARATUS FOR COMMINUTING GYPSUM WALLBOARD

Robert A. Chrestenson, 981 Randy Way, Brentwood, Calif. 94513

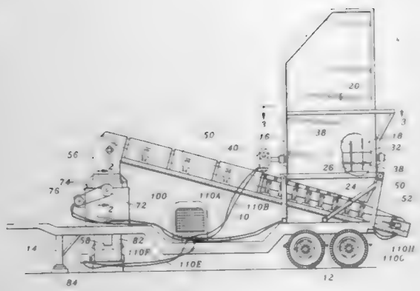
Filed Nov. 7, 1995, Ser. No. 559,526

Int. Cl.[6] B02C *21/02*

U.S. Cl. 241—79 **15 Claims**

1. Portable apparatus for comminuting gypsum wallboard, said portable apparatus comprising, in combination:

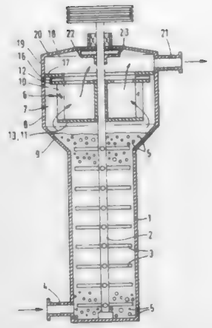
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a unitary, rigid platform;
wheels rotatably connected to said platform for supporting said platform;
a first hopper mounted on said platform defining a first hopper interior for receiving gypsum wallboard and having a first hopper inlet and a first hopper outlet communicating with said first hopper interior;
a plurality of rotary milling units mounted for rotational movement in said first hopper interior, each said rotary milling unit including an elongated shaft and a plurality of milling arms connected to said elongated shaft at spaced locations on said elongated shaft and projecting outwardly from said elongated shaft, said milling arms having distal ends, and milling arms of adjacent rotary milling units intermeshing to define a plurality of restricted passageways;
rotary milling unit drive means for rotating said rotary milling units;
a first conveyor mounted on said platform for receiving wallboard pieces exiting said first hopper outlet and for transporting said wallboard pieces;
first conveyor drive means on said platform for driving said first conveyor;
a second hopper mounted on said platform at a location thereon spaced from said first hopper, said second hopper having second hopper side walls defining a second hopper interior for receiving wallboard pieces transported from said first hopper by said first conveyor, said second hopper having a second hopper inlet and a second hopper outlet communicating with said second hopper interior;
a rotatable chain mill mounted for rotational movement in said second hopper interior, said rotatable chain mill including a rigid elongated member and a plurality of chains connected to said rigid elongated member about the periphery of said rigid elongated member at spaced locations along the length thereof, said chains having free distal ends which move away from said rigid elongated member due to centrifugal force and are positioned closely adjacent to said second hopper side walls upon rotation of said rigid elongated member;
chain mill drive means for rotating said chain mill;
a second conveyer for receiving comminuted wallboard particles exiting from said second hopper outlet after comminution of said wallboard pieces by said chain mill and for transporting said comminuted wallboard particles to a location spaced from said second hopper; and
second conveyor drive means for driving said second conveyor.

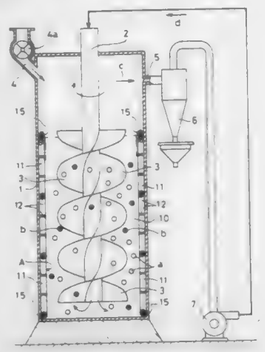
5,630,557
STIRRING BEAD MILL WITH SEPARATOR TO STRAIN OUT GRINDING BEADS
Ulrich Barthelmess, Niederstotzingen, Germany, assignor to OMYA GmbH, Germany
Filed Dec. 28, 1995, Ser. No. 579,813
Claims priority, application Germany, Dec. 31, 1994, 44 47 321.4
Int. Cl.[6] B02C *17/16*
U.S. Cl. 241—80 **8 Claims**

1. A stirring mill having a grinding tank for holding a charge of grinding beads, an inlet, an outlet, a stirring shaft provided with



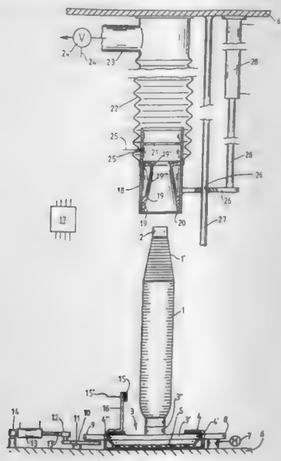
rotatable stirring means, and a separator mounted on the stirring shaft for holding back the grinding beads ahead of the outlet, an outer annular chamber formed between an outer circumference of the separator and an inner circumference of the grinding tank, and an inner outlet chamber annularly surrounding the stirring shaft and extending to the outer circumference of the separator, the separator being formed as a centrifugal force sifting rotor, comprising a plurality of circumferentially arranged, axially oriented, spaced-apart paddles, having a plurality of first openings therebetween, the first openings communicating the outer annular chamber with the inner outlet chamber, the separator further comprising at least one radial second opening communicating the inner outlet chamber with the outlet, and a seal means for selectively preventing direct passage of particles over a certain chosen size between the outer annular chamber and the outlet.

5,630,558
WEAR PROTECTIVE MEANS
Sachihito Nitta, Yao, and Shigetoshi Kawabata, Kashiwa, both of Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Oct. 30, 1995, Ser. No. 550,113
Int. Cl.[6] B02C *17/22*
U.S. Cl. 241—172 **8 Claims**



1. A pulverizing apparatus, comprising:
a vertical shell for accommodating a material to be pulverized and a pulverizing medium, said vertical shell having an inner surface;
a vertical screw shaft provided in said vertical shell; and
a wear protective means for protecting said vertical shell from wear, said wear protective means comprising a lattice-shaped shelf mounted on said inner surface of said vertical shell having a plurality of vertical and circumferential ribs, and said shelf being divided vertically and circumferentially into a plurality of blocks that are coupled together so that each of said blocks can be individually replaced with a new block, whereby pulverizing medium trapped in spaces defined by said ribs forms a lining layer covering said inner surface of said vertical shell.

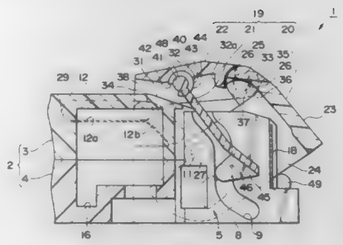
5,630,559
DEVICE FOR LOCATING A FREE END OF YARN WOUND ON A COP
Rene Bucken, Grefrath; Helmut Kohlen, Erkelenz, and Guido Mirbach, Kerken, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany
Filed Aug. 10, 1995, Ser. No. 513,277
Claims priority, application Germany, Aug. 10, 1994, 44 28 245.1
Int. Cl.[6] B65H *69/04;63/00;* **D01H** *5/28*
U.S. Cl. 242—35.6 E **12 Claims**



1. A device for locating a yarn end at the conical upper yarn windings on a textile yarn cop, comprising:
a yarn grasping mechanism for placement at a predetermined spacing from the conical windings and a lifting mechanism for moving the yarn grasping mechanism toward and away from the conical windings, the yarn grasping mechanism including a nozzle element configured for contact with cop cone and supported to be movable relative to the lifting mechanism,
a controller for controlling movement of the lifting mechanism, and
a sensor disposed to detect a change in the position of the nozzle element relative to the lifting mechanism upon contact of the nozzle element with the conical windings, the sensor communicating with the controller.

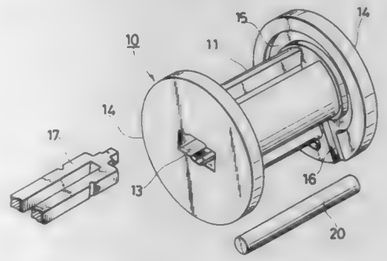
5,630,560
TAPE CASSETTE
Hiroshi Fujii; Nobuyuki Kodama, both of Tokyo, and Eiji Ohshima, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 1, 1995, Ser. No. 382,161
Claims priority, application Japan, Feb. 3, 1994, 6-030821; Feb. 10, 1994, 6-036392
Int. Cl.[6] G11B *23/087*
U.S. Cl. 242—338 **15 Claims**

1. A tape cassette for use in a recording/reproducing apparatus, wherein:



a front lid is swingably secured on a cassette case, said front lid covering and protecting, when said tape cassette is not in use, a recording medium tape at a portion exposed out of said cassette case in which said recording medium tape is accommodated;
said cassette case is formed at a front section thereof with a recess through which a lid-opening member passes, said lid-opening member being provided on said recording/reproducing apparatus for opening the front lid of said tape cassette;
said front lid is formed at an inner face thereof with a closing projection to be engaged with said recess, and
said front lid is further formed at the inner face thereof with a rib being flush with a projected end face of said closing projection, said rib being positioned generally in parallel with said recording medium tape when said front lid is closed.

5,630,561
WEBBING RETRACTOR
Kiyoshi Ogawa, and Satoshi Hirase, both of Kanagawa, Japan, assignors to NSK, Ltd., Japan
Filed Nov. 1, 1995, Ser. No. 551,415
Claims priority, application Japan, Nov. 10, 1994, 6-300109
Int. Cl.[6] B60R *22/28;22/36*
U.S. Cl. 242—376 **20 Claims**



1. A webbing retractor provided with a lock mechanism, comprising;
a bobbin having a drum portion and a pair of flanges arranged on opposite ends of said drum, said flanges defining grooves formed in a mutually-opposing relationship and angularly extending over a groove length in a webbing-releasing direction as a first direction of rotation, each said groove having a deepest portion at an end of said groove length;
a webbing-holding member extending between said grooves and arranged at a distance from said deepest portions of said grooves; and
a webbing secured at one end thereof in said bobbin, wound back about said webbing-holding member at a first portion thereof apart from said one end thereof toward an opposite end thereof, and then wound in layers around said drum portion in said first direction of rotation at a second portion thereof closer to said opposite end than said first portion.

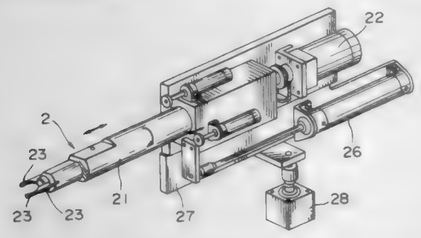
VOL 1198 ISS 3 MY 20 1997 UMI

5,630,562

WINDING METHOD AND APPARATUS FOR WOUND BALLS

Fumio Fukazawa, Chichibu, Japan, assignor to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,550
Claims priority, application Japan, Dec. 15, 1994, 6-333476
Int. Cl.[6] B65H 54/64
U.S. Cl. 242—435.2 9 Claims



1. A method for making a wound core for a wound ball having a core with a rubber thread wound on a spherical center and a cover on the core, comprising the steps of:

grasping the center with a plurality of grasping fingers,

locating the center among a plurality of rotatable winding rollers at a predetermined spacing from the rollers,

securing a leading end of said rubber thread to the surface of said center by means of a capture finger,

rotating the center at least one revolution together with the grasping fingers and the capture finger, thereby winding the rubber thread at least one turn on the center and over the grasping fingers and the capture finger,

bringing the winding rollers in pressure contact with the surface of the center through the rubber thread while said winding rollers avoid contact with the grasping fingers and the capture finger, thereby holding the center by the winding rollers and securing the rubber thread wound on the center by the winding rollers,

withdrawing the grasping fingers and the capture finger from between the center and the rubber thread, and

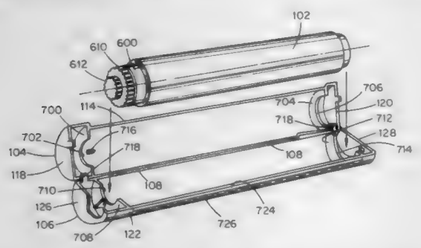
drivingly rotating at least one of said winding rollers for rotating the center, thereby further winding the rubber thread on the center.

5,630,563

APPARATUS FOR DISPENSING A CONTROLLED LENGTH OF SHEET MATERIAL FROM A ROLL

Edward H. Meisner, Short Hills, and Michael P. Ballone, New Providence, both of N.J., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jun. 5, 1995, Ser. No. 463,901
Int. Cl.[6] B26F 3/02
U.S. Cl. 242—598.6 97 Claims



1. Apparatus for containing a replaceable roll of a sheet material and for enabling controlled removal of selected lengths of the sheet material wound on a hollow core having first and second ends and first and second core end support means provided respectively thereat, comprising:

an upper cover pivotally connected to a lower cover, the upper and lower covers each comprising an elongate wall having respective front and rear edges and transverse first and second end walls, the upper and lower covers each being shaped and sized to cooperatively define a containment space for containing the roll and core therebetween, a free end of the sheet material unwound from the roll being accessible through an elongate material delivery gap of adjustable width between the front edges of the upper and lower covers;

first support means located inside the containment space adjacent to the first end walls of the upper and lower covers for rotatably supporting a first end of the core by cooperating with the first core end support means;

second support means located inside the containment space and adjacent to the second end walls of the upper and lower covers for rotatably supporting a second end of the core by cooperating with the second core end support means;

biasing means for resiliently biasing the upper and lower covers to pivotally separate them apart;

separation limiting means for limiting an extent of a pivotal separation generated between the upper and lower covers by the biasing means; and

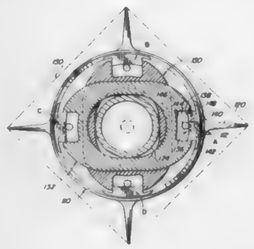
rotation stopping means for stopping rotation of the core to limit an amount of the material unrolled from the roll via the material delivery gap.

5,630,564

DIFFERENTIAL YOKE-AEROFIN THRUST VECTOR CONTROL SYSTEM

John M. Speicher; Allan A. Voigt, and Che-Ram S. Voigt, all of Geyserville, Calif., assignors to Versatron Corporation, Healdsburg, Calif.

Division of Ser. No. 139,939, Oct. 19, 1993, Pat. No. 5,505,408.
This application Mar. 19, 1996, Ser. No. 483,954
Int. Cl.[6] F42B 10/06;15/01; F16H 29/20
U.S. Cl. 244—3.24 3 Claims



1. A gear assembly for driving a transversely mounted yoke plate within a missile in conjunction with pivotable aerofins extending outside the missile shell comprising:

a rotatable gear shaft mounted to an interior wall of the missile in the vicinity of a corresponding aerofin;

a first bevel gear mounted on one end of said shaft;

a second bevel gear connected to said aerofin and mounted in a position to engage the first bevel gear for driving the aerofin from said shaft;

a first pinion gear mounted at the other end of said shaft as part of a rack and pinion gear for driving the yoke plate;

a rack carrier positioned between the first pinion gear and the missile shell in sliding engagement with the shell, said carrier having a rack gear with teeth cut along a radially inward surface of the carrier for engagement with said first pinion gear and an arcuate shape along a radially outward surface matching the arcuate shape of the missile shell;

a second pinion gear mounted on said shaft between the two ends thereof;

a speed reducing gear set having an output coupled to engage said second pinion gear; and

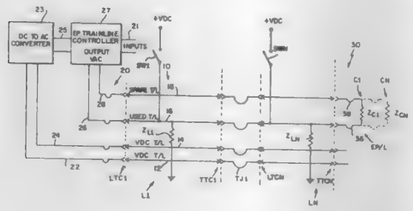
an electric motor coupled to drive said shaft through the speed reducing gear set to develop transverse movement of the rack carrier in conjunction with pivotal rotation of the aerofin.

5,630,565

LOCOMOTIVE M. U. TRAINLINE/JUMPER FOR EP BRAKE APPLICATION

Anthony W. Lumbis, Watertown, N.Y., assignor to New York Air Brake Corporation, Watertown, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,624
Int. Cl.[6] B61C 17/12
U.S. Cl. 246—182 B 11 Claims



1. A train including at least one locomotive and a plurality of cars, said locomotive having a leading end and a trailing end electric trainline connector for interconnecting power and control lines to an adjacent locomotive, each car being serially connected electrically to an adjacent car forming an EP line and having an electropneumatic brake controlled by an EP controller in said locomotive over said EP line, including:

a first cable connecting said EP controller to said leading end trainline connector of said locomotive for powering said EP controller and providing communication by said EP controller over said trainline; and

a second cable connecting said EP line of a first car in said train to said trailing end trainline connector for providing communication between said EP controller said electropneumatic brakes on each car over said trainline and EP line.

5,630,566

PORTABLE ERGONOMIC WORK STATION

Laura Case, P.O. Box 883412, 3325 Meadow La., #28, Steamboat Springs, Colo. 80488

Filed May 30, 1995, Ser. No. 453,095
Int. Cl.[6] F16L 3/00
U.S. Cl. 248—122.1 15 Claims

1. A portable ergonomic work station for supporting computer components in such a fashion to be easily usable by a person whether confined to bed, lying prone in bed, sitting in a chair, confined to a wheelchair or standing, said workstation comprising:

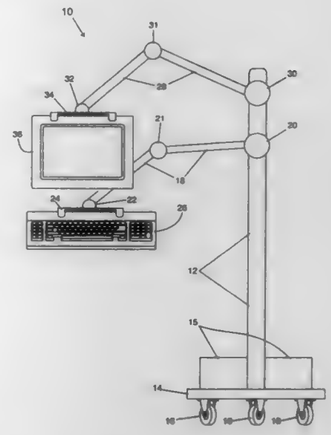
a platform,

a vertical shaft, said vertical shaft supported by said platform,

a first arm member, said first arm member connected to said vertical shaft at a first arm connection means, said first arm connection means located on a proximal end of said first arm,

a second arm member, said second arm member connected to said vertical shaft at a second arm connection means, said second arm connection means located on a proximal end of said second arm,

said first arm member further having a keyboard mounting means, said keyboard mounting means having a computer keyboard mounted thereon, said keyboard mounting means located on a distal end of said first arm,



said second arm member further having a screen mounting means, said screen mounting means having a computer screen mounted thereon, said screen mounting means located on a distal end of said second arm,

said first arm member including a first arm pivot means, said first arm pivot means located intermediate said first arm connection means and said keyboard mounting means,

said second arm member including a second arm pivot means, said second arm pivot means located intermediate said second arm connection means and said screen mounting means,

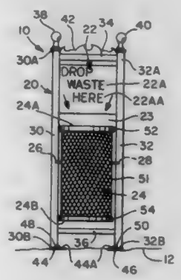
whereby said first arm member and said second arm member may be adjusted independently of each other in such a fashion to permit a user to utilize said computer keyboard and said computer screen in a comfortable manner despite being confined to bed, in a wheelchair, or in a sitting or standing position.

5,630,567

MONUMENTAL WASTE BASKET

Alcides Molina, P.O. Box 780, Canovanas, Puerto Rico

Filed May 8, 1995, Ser. No. 438,030
Int. Cl.[6] A47F 5/12
U.S. Cl. 248—137 12 Claims



1. A waste basket uprightably mountable to a generally horizontal surface at a location in a park and compensating for irregularities in contour of the generally horizontal surface at the location in the park and compensating for expansion and contraction caused by changes in temperature while providing a visual display of the location of said waste basket in the park for a viewer to observe so

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as to allow the viewer to know the location the viewer is at in the park and being normally upright and prevented from turning completely upside down and spinning when waste is being evacuated therefrom while eliminating the waste from sticking therein by jarring and dislodging the waste therefrom, comprising:

a) a frame having:

i) a first elongated, slender, and vertically-oriented column with an upper end and a lower end;

ii) a second elongated, slender, and vertically-oriented column being horizontally spaced from, and parallel to, said first elongated, slender, and vertically-oriented column of said frame and having an upper end and a lower end;

iii) an elongated, slender, and horizontally-oriented upper cross member extending perpendicularly from said upper end of said first elongated, slender, and vertically-oriented column of said frame perpendicularly to said upper end of said second elongated, slender, and vertically-oriented column of said frame;

iv) an elongated, slender, and horizontally-oriented lower cross member disposed below, and parallel to, said elongated, slender, and horizontally-oriented upper cross member of said frame and extending perpendicularly from slightly above said lower end of said first elongated, slender, and vertically-oriented column of said frame perpendicularly to slightly above said lower end of said second elongated, slender, and vertically-oriented column of said frame;

v) a first flat, thin, rectangular-shaped, and horizontally-oriented mounting plate fixedly attached perpendicularly to said lower end of said first elongated, slender, and vertically-oriented column of said frame and being abutable against the generally horizontal surface at the location in the park and having a pair of oval-shaped throughbores extending vertically therethrough each of which being on opposite sides of said first elongated, slender, and vertically-oriented column of said frame and receiving for lateral movement therein fasteners for mounting said waste basket to the generally horizontal surface at the location in the park, so that irregularities in the contour of the generally horizontal surface at the location in the park and expansion and contraction caused by changes in temperature are compensated for by the lateral movement of the fasteners in said pair of oval-shaped throughbores in said first flat, thin, rectangular-shaped, and horizontally-oriented mounting plate; and

vi) a second flat, thin, rectangular-shaped, and horizontally-oriented mounting plate fixedly attached perpendicularly to said lower end of said second elongated, slender, and vertically-oriented column of said frame and being abutable against the generally horizontal surface at the location in the park and having a pair of oval-shaped throughbores extending vertically therethrough each of which being on opposite sides of said second elongated, slender, and vertically-oriented column of said frame and receiving for lateral movement therein fasteners for mounting said waste basket to the generally horizontal surface at the location in the park, so that irregularities in the contour of the generally horizontal surface at the location in the park and expansion and contraction caused by changes in temperature are compensated for by the lateral movement of the fasteners in said pair of oval-shaped throughbores in said second flat, thin, rectangular-shaped, and horizontally-oriented mounting plate;

b) a rectangular-shaped display board extending perpendicularly from, and being fixedly attached to, said first elongated, slender, and vertically-oriented column of said frame perpendicularly to, and being fixedly attached to, said second elongated, slender, and vertically-oriented column of said frame and slightly below said elongated, slender, and horizontally-oriented upper cross member of said frame and having a front face with a map having an arrow and "YOU ARE HERE" indica thereon with said arrow of said map on said front face of said rectangular-shaped display board pointing on said map on said front face of said rectangular-shaped display board to the location in the park of said waste basket, so that a visual display of the location of said waste basket in the park is provided for the viewer to observe so as to allow the viewer to know the location the viewer is at in the park;

c) a cylindrically-shaped basket being pivotally mounted to said first elongated, slender, and vertically-oriented column of said frame and said second elongated, slender, and vertically-oriented column of said frame and between said rectangular-shaped display board and said elongated, slender, and horizontally-oriented lower cross member of said frame and having a closed bottom, a cylindrically-shaped outer surface, a center of gravity, and an open top for receiving the waste; and

d) pivoting means for pivotally mounting said cylindrically-shaped basket to said first elongated, slender, and vertically-oriented column of said frame and said second elongated, slender, and vertically-oriented column of said frame and including a first horizontally-oriented pivot pin extending normally outwardly from said cylindrically-shaped outer surface of said cylindrically-shaped basket to said first elongated, slender, and vertically-oriented column of said frame and a second horizontally-oriented pivot pin extending normally outwardly from said cylindrically-shaped outer surface of said cylindrically-shaped basket to said second elongated, slender, and vertically-oriented column of said frame in an opposite direction to, and in horizontal alignment with, said first horizontally-oriented pivot pin of said pivoting means; said first horizontally-oriented pivot pin of said pivoting means and said second horizontally-oriented pivot pin of said pivoting means disposed closer to said open top of said cylindrically-shaped basket than to said closed bottom of said cylindrically-shaped basket so as to cause said center of gravity of said cylindrically-shaped basket to be below said first horizontally-oriented pivot pin of said pivoting means and said second horizontally-oriented pivot pin of said pivoting means, so that said cylindrically-shaped basket is normally upright; said first horizontally-oriented pivot pin of said pivoting means and said second horizontally-oriented pivot pin of said pivoting means disposed a distance from said closed bottom of said cylindrically-shaped basket so as to allow said closed bottom of said cylindrically-shaped basket to abut against, and be stopped by, said rectangular-shaped display board when said cylindrically-shaped basket is pivoted and the waste is being evacuated therefrom, so that said cylindrically-shaped basket is prevented from turning completely upside down and spinning when the waste is being evacuated therefrom while eliminating the waste from sticking therein by banging said cylindrically-shaped basket against said rectangular-shaped display board so as to jar and dislodge the waste therefrom.

5,630,568

METHOD AND APPARATUS FOR SUPPORTING AN ARCHERY BOW FROM A SURFACE

Edward Lubrecht, Edgewood, Ky., assignor to Advanced Hunting Equipment, L.L.C., Edgewood, Ky.

Filed Feb. 24, 1995, Ser. No. 394,411

Int. Cl.° A47F *5/00*

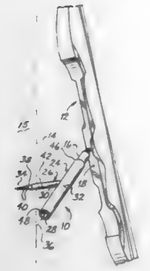
U.S. Cl. 248—217.4 **12 Claims**

1. An archery bow holder comprising:

an archery bow having a bow counterweight extending in a generally forward direction from the archery bow;

a generally tubular support having a generally longitudinal bore with an opening at one end shaped to receive the bow counterweight; and

a connecting element rigidly connected to an outer lateral surface of the support and adapted to mount the archery bow



holder to a tree, thereby supporting the bow counterweight support and the archery bow from the tree.

5,630,569

ELECTROMAGNETICALLY ACTUATED VALVE FOR SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEMS IN MOTOR VEHICLES

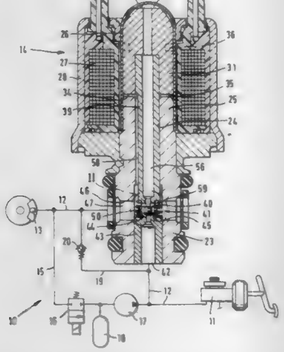
Martin Oehler, Leingarten; Guenther Hohl, Stuttgart; Norbert Mittwollen, Markgroeningen; Hans-Juergen Herderich, Kernen, and Stephan Jonas, Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 5, 1995, Ser. No. 465,670

Claims priority, application Germany, Aug. 19, 1994, 44 29 211.2

Int. Cl.° F16K *31/06*

U.S. Cl. 251—129.15 **3 Claims**



1. An electromagnetically actuated valve (**14**), for slip-controlled hydraulic brake systems (**10**) in motor vehicles, said valve comprising the following features:

a magnet armature (**31**) is accommodated in longitudinally movable fashion in a valve dome (**26**), a pressure medium flows around opposite end faces (**32**, **34**) of said magnet armature,

the valve dome (**26**) is surrounded by a magnet coil (**27**),

a tappet (**39**) projects from the magnet armature (**31**) and includes a closing member (**40**) of a seat valve (**41**),

a valve body (**43**) having a valve seat (**45**) of the seat valve (**41**) is arranged in a housing bore (**24**) of the solenoid valve (**14**), a bore in said valve body that leads from a pressure-medium inlet (**42**),

a pressure-medium passage (**56**) leads from the seat valve (**41**) into the valve dome (**26**),

a circular-cylindrical sleeve (**50**) surrounds the valve seat (**45**) and is accommodated in the housing bore (**24**) coaxially to said valve seat (**45**),

when the magnet coil (**27**) is not excited, the closing member (**40**) assumes an open position relative to said valve seat (**41**) due to an action of a return spring (**59**),

said valve further comprises the following features:

at an end remote from the tappet, the sleeve (**50**) is secured in a sealed manner on the valve body (**43**),

the sleeve (**50**) is connected relative to a pressure-medium outlet (**47**) of the solenoid valve (**14**),

in the closed position of the closing member (**40**), the tappet (**39**) forms a small radial gap (**62**) in combination with an inner surface of the sleeve,

the pressure medium outlet of the seat valve (**41**) is connected by a first pressure-medium passage (**56**) to a first chamber (**33**) relative to that end face (**32**) of the magnet armature (**31**) which is remote from the seat valve,

at an outlet end of the sleeve (**50**), a second pressure-medium passage (**58**) leads to that end face (**34**) of the magnet armature (**31**) which is nearer to the seat valve, and

the magnet armature (**31**) is sealed off at a circumferential surface from the valve dome by a sealing means.

5,630,570

QUICK COUPLING CONNECTOR

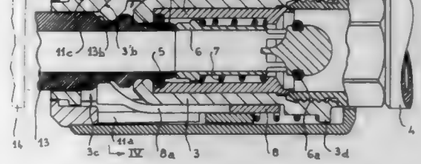
Jean-Jacques Lacroix, Poisy, and Christophe Laporte, Doussard, both of France, assignors to Staubli Faverges, Faverges, France

Filed Jan. 4, 1996, Ser. No. 582,733

Claims priority, application France, Jan. 16, 1995, 95 00612

Int. Cl.° F16L *29/00*

U.S. Cl. 251—149.9 **9 Claims**



1. A quick release safety coupling connector for removably joining first and second fluid conveying conduits comprising,

a tubular body,

a female member defining a fluid passageway and having first and second ends,

a valve member slidably mounted within said female member between an open position in which said fluid passageway communicates with the first conduit and a closed position wherein said fluid passageway is closed with respect to the first conduit,

a male member extending from the second conduit and having an end portion receivable within said second end of said female member so as to engage said valve member, said male member including an annular depression,

a locking member engageable with said depression in said male member for securing said male member within said female member so as to retain said valve member in said open position,

a safety member mounted about said female member and including a plurality of yieldable claws which are receivable within said depression of said male member to thereby retain said male member within said body,

a bush surrounding said body and said male and female members and being axially moveable in a first direction with respect thereto from a first position wherein said locking member and said claws of said safety member are engageable with said depression to thereby retain said valve member in said open position to a second position wherein said locking

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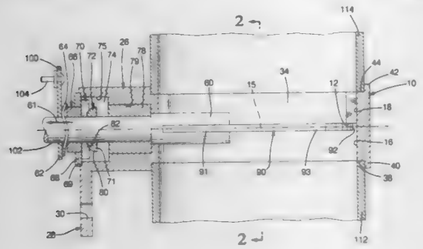
member is released from said depression and said male member is separated from said female member while being retained within said body by said claws of said safety member which are retained within said depression, said bush being thereafter moveable in a second direction opposite said first direction whereby said claws of said safety member are released from said depression, whereby said male member is released from said body.

5,630,571

EXHAUST FLOW CONTROL VALVE

Melvin D. Kipp, Flint; David A. Singer, Farmington; Mehrnam Sharif-Bakhtiar, Lansing, and Frank Ament, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1995, Ser. No. 543,712
Int. Cl.[6] F16K *41/00;41/06*
U.S. Cl. 251—214 **1 Claim**



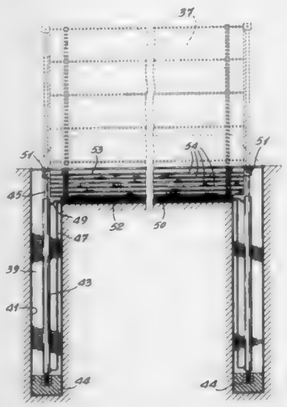
1. In an exhaust flow control valve comprising a cylindrical flow housing having a cylinder axis and defining a flow passage and a valve plate pivotably mounted within the cylindrical flow housing, also comprising a sealed pivotable mount for pivotably mounting the valve plate, the improvement wherein the sealed pivotable mount comprises:
- a cylindrical extension of the cylindrical flow housing extending in a radial direction exterior of the flow passage, wherein the cylindrical extension defines a cavity with a first cavity portion closest to the flow passage having a first constant diameter and a second cavity portion extending from the first cavity portion away from the flow passage and having a second constant diameter greater than the first constant diameter;
- a first bushing fixedly mounted to an inner peripheral wall of the first cavity portion;
- a second bushing fixedly mounted at an end of the second cavity portion spaced apart from the first cavity portion;
- a shaft attached to the plate and extending through the first bushing, the first and second cavity portions and the second bushing;
- a metal washer rigidly affixed to the shaft within the second cavity portion, wherein the metal washer has one end forming an annular convex surface, wherein the one end faces away from the flow passage;
- a ceramic washer having an opening through which the shaft extends and forming on one end an annular concave surface engageable with the annular convex surface of the metal washer, wherein the ceramic washer is located within the second cavity portion between the metal washer and a face of the second bushing facing the first bushing;
- a retainer rigidly affixed to the shaft exterior of the first bushing with respect to the flow passage; and
- a spring located between the retainer and the second bushing, wherein the spring biases the shaft in a direction forcing engagement of the metal washer to the ceramic washer, wherein the metal washer seals against the ceramic washer and the ceramic washer seals against the second bushing, thereby providing a high sealing performance over a wide operating temperature range for preventing exhaust gas from escaping through the pivotable mount to an exterior of the flow passage.

5,630,572

RETRACTABLE FENCE SYSTEM FOR SWIMMING POOL OR THE LIKE

Claude Guay, 4479 Marie-Victorin, St-Antoine-de-Tilly, Québec, Canada

Filed Nov. 8, 1995, Ser. No. 555,315
Int. Cl.[6] E04H *4/06*
U.S. Cl. 256—1 **13 Claims**



1. A fence system which is movable between a retracted and an extended position and that can be used around a pool to prevent trespassing when in said extended position, a trench being provided for said fence system, said fence system comprising
- a collapsible rectangular screen having a lower part and an upper part,
- means for mounting the lower part of said collapsible screen in said trench,
- means engaging the upper part of said screen,
- means operable to cause said engaging means to raise said upper part of said collapsible screen to said extended position at a predetermined height above said trench, and to lower same to said retracted position inside said trench,
- said engaging means comprising a plurality of lifting rods one said lifting rod being provided for both lateral ends of said rectangular screen, means to engage the upper part of said screen between upper extremities of the two lifting rods provided at said lateral ends of said rectangular screen, and means enabling said lifting rods to project upwardly from and to withdraw downwardly into said trench, and
- a closure for said trench when said screen is in said retracted position.

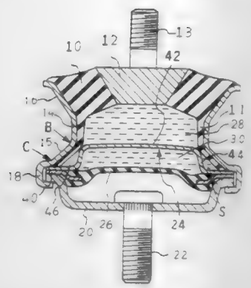
5,630,573

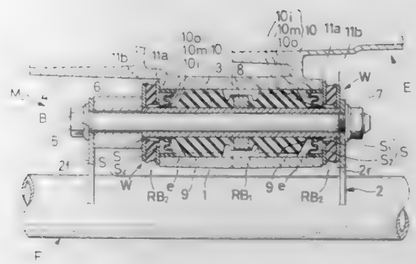
FLUID-FILLED VIBRATION ISOLATOR

Tatsuo Suzuki; Osamu Nakagaki, and Futoshi Namima, all of Nakashima-gun, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, Japan

Filed Dec. 7, 1994, Ser. No. 350,844
Claims priority, application Japan, Dec. 20, 1993, 5-345196
Int. Cl.[6] F16F *13/00*
U.S. Cl. 267—140.13 **10 Claims**

1. A fluid-filled vibration isolator comprising:
- a hollow, thick-walled, rubber body which opens downwardly;
- an annular side plate having an upper part bonded to an outer surface of said rubber body;
- a bottom plate secured to a lower end edge of said annular side plate;
- a partition; and
- a rubber diaphragm,
- peripheral edges of said partition and said rubber diaphragm being sandwiched strongly by said lower end edge to define a main fluid chamber between said rubber body and said partition on the upper side of said partition, and define an auxiliary fluid chamber between said partition and said rubber diaphragm on the lower side of said partition, a lower part of said annular side plate inclining obliquely and outwardly toward said lower end edge, said peripheral edge of said partition bending into an L-shaped cross-section to define an annular space with said lower part of said annular side plate, said annular space opening into both said main fluid chamber and said auxiliary fluid chamber to define a throttle passage.



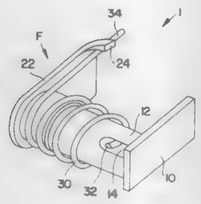


5,630,574

TORQUE SHOCK ABSORBER DEVICE

Ryoichi Itakura, Mitaka, Japan, assignor to Jamco Corporation, Tokyo, Japan

Filed Feb. 5, 1996, Ser. No. 596,666
Claims priority, application Japan, Feb. 8, 1995, 7-000440 U
Int. Cl.[6] F16F *1/06*
U.S. Cl. 267—155 **4 Claims**



1. A torque shock absorber device comprising a shaft, a cylindrically shaped sleeve which is rotatably mounted on the shaft, a torque transmission part fixed to the sleeve, and a coil spring wound about the circumference of the shaft and sleeve, said spring being supported by the sleeve and having one end fixed directly to the shaft and another end engaging the torque transmission part.

5,630,575

ELASTIC MOUNT ASSEMBLY

Masashi Koyanagi; Yoshiaki Hamada; Hitoshi Furuhashi, and Kazuhiro Yasuda, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 465,332
Claims priority, application Japan, Jun. 22, 1994, 6-140587
Int. Cl.[6] F16C *27/06;* **F16J** *15/16*
U.S. Cl. 267—140.3 **17 Claims**

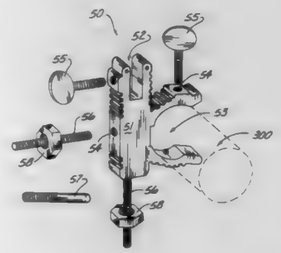
1. An elastic mount assembly comprising:
- an outer cylinder portion;
- an inner cylinder portion disposed radially inwardly of said outer cylinder portion;
- an elastic cushion extending between an outer surface of the inner cylinder portion and an inner surface of the outer cylinder portion;
- an elastic seal member for providing a watertight seal between the inner and outer cylinder portions, said elastic seal member being integrally molded in an annular shape and including an outer circumferential bead portion lightly press-fitted against said outer cylinder portion, an inner circumferential bead portion lightly press-fitted against said inner cylinder portion, and a seal body disposed between said outer bead portion and said inner bead portion for providing a watertight seal; and
- a cover member for covering an outer face of said elastic seal member, with a space formed between said cover member and said elastic seal member including a first annular space adjacent to said elastic seal and a second annular space disposed adjacent to said inner cylinder portion and in direct communication with said first annular space, said cover member being fitted to the inner cylinder portion and clamped against an end of said outer cylinder portion, said cover member including a first brace and a second brace with a resilient vibration absorbing material disposed therebetween for providing a seal for preventing exposure of said elastic seal to water pressure.

5,630,576

SADDLE CLAMP WORKPIECE CLAMPING APPARATUS

Willis R. Williams, 767 S. Fielder, Arlington, Tex. 76013

Filed Aug. 11, 1995, Ser. No. 514,436
Int. Cl.[6] B25B *1/20*
U.S. Cl. 269—45 **6 Claims**



1. A workpiece clamping apparatus for securing pipes and bars to a planar support surface provided with a plurality of spaced apertures and a plurality of channels wherein the workpiece clamping apparatus comprises
- a pair of saddle clamp members wherein each saddle clamp member is provided with an enlarged generally C-shaped recess dimensioned to receive a section of pipe and a recessed portion dimensioned to receive a portion of a bar; and each saddle clamp member is further provided with a plurality of threaded apertures

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securing means operatively associated with said enlarged C-shaped recess and said recessed portion for captively engaging said section of pipe and said portion of a bar

mounting means associated with each saddle clamp member for operatively securing each saddle damp member selectively in the apertures and channels in the planar support surface such that the saddle clamp member may be selectively disposed in a horizontal or vertical orientation; and

adjustment means associated with the mounting means for varying the height of the saddle clamp member relative to said planar support surface.

5,630,577

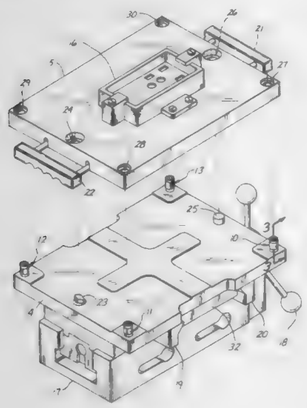
CLAMP ASSEMBLY

James E. Tankersley, Laser-Tronics, 1413 Linda Vista Dr., San Marcos, Calif. 92069

Continuation-in-part of Ser. No. 358,187, Dec. 16, 1994, Pat. No. 5,516,086. This application Jun. 27, 1995, Ser. No. 495,207

Int. Cl.[6] B23Q *3/00*

U.S. Cl. 269—309 **10 Claims**



1. A method of clamping a first object having a first bore extending through the first object to a second object having a threaded second bore so that the first object lies flat against the second object and the first and second bores are axially aligned, the method comprising:

providing a clamp assembly having (i) a resiliently deformable sleeve with a slit extending from a first end of the sleeve to a second end of the sleeve and an unexpanded size adapted to fit in the first bore, (ii) a conically shaped member facing the second end of the sleeve, and (iii) a bolt having a conically shaped head facing the first end of the sleeve and a shank extending through the sleeve and through the conically shaped member, such that the head of the bolt is adapted to be engaged by a tool for purposes of rotating the bolt, the head of the bolt has a size and shaped adapted it in the first bore, and the shank of the bolt is adapted to screw into the second bore for purposes of engaging the second object;

placing the shank of the bolt through the sleeve and through the conically shaped member so that the head of the bolt faces the first end of the sleeve and the conically shaped member faces the second end of the sleeve;

screwing the shank of the bolt partially into the second bore without expanding the sleeve beyond the unexpanded size;

placing the first object onto the second object so that the first and second bores are axially aligned and the sleeve is disposed within the first bore;

engaging the head of the bolt with the tool and rotating the bolt in order to screw the shank of the bolt further into the second bore, thereby to expand the sleeve radially against the first object within the first bore while forcing the sleeve and the first object axially toward the second object.

5,630,578

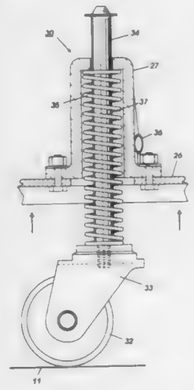
LOW MANUAL EFFORT SYSTEM FOR REMOVABLY MOUNTING PAPER HANDLING MODULES TO REPRODUCTION MACHINES

Raymond A. Naramore, Webster, and Steve S. Counoupas, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1996, Ser. No. 618,045

Int. Cl.[6] B65H *39/02*

U.S. Cl. 270—58.08 **17 Claims**



1. In a reproduction system for generating printed sheets with a reproduction apparatus and providing for docking and operatively connecting and disconnecting one or more selected paper handling modules of substantial weight to said reproduction apparatus, wherein said reproduction apparatus and said paper handling module have respective sheet feed openings, which respective sheet feed openings are operatively aligned for sheet feeding therebetween when a said selected paper handling module is operatively connected to said reproduction apparatus;

a system for said docking and removably operatively connecting and disconnecting a selected said paper handling module accessory unit to said reproduction apparatus with greatly reduced manual movement force irrespective of the weight of said module, including a locking system for positively securing said module to said reproduction apparatus in a locking position with said sheet feed opening of said module sufficiently operatively vertically aligned with said sheet feed opening of said reproduction apparatus for sheet feeding opening of said reproduction apparatus for sheet feeding therebetween, wherein

said paper handling module accessory unit has a transporting system allowing said module to be freely manually movable in any horizontal direction for both frontal and lateral horizontal movement relative to said reproduction apparatus into a docking position therewith while supporting the weight of said module,

said paper handling module accessory unit has a low-force vertical docking position adjustment system providing for low force manual vertical movement of said module relative to said reproduction apparatus from said docking position into said locking position, after said module is initially horizontally docked with said reproduction apparatus, and

said vertical docking position adjustment system includes a weight supporting system for automatically supporting a major portion of the weight of said module in said manual vertical movement of said module into said locking position, for said greatly reduced manual movement force.

5,630,579

AUTOMATIC MANUSCRIPT SHEET FEEDER

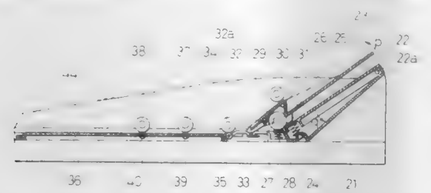
Kouichi Minami; Mitsuru Wakabayashi, both of Tokyo; Yoshihiro Takahashi, Ebina, and Hiroshi Torikai, Matsudo, all of Japan, assignors to Plus Corp., Tokyo, Japan

Filed Sep. 5, 1995, Ser. No. 523,334

Claims priority, application Japan, Sep. 5, 1994, 6-235921

Int. Cl.[6] B65H *5/22*

U.S. Cl. 271—3.15 **4 Claims**



1. An automatic manuscript sheet feeder to be used for feeding manuscript sheets for an overhead projector comprising:

a base for placement on the overhead projector,

a stage glass mounted onto said base,

a manuscript tray,

a manuscript receiver,

common feeding rollers for forward and backward rotations to feed the manuscript sheet from the manuscript tray to the stage glass and to discharge the manuscript sheet from the stage glass,

side feeding rollers located at one side of the stage glass to make forward and backward rotations keeping pressurized contact with an upper face of a side edge of the manuscript sheet,

control means to determine the positioning of the manuscript sheet which is being fed and to control rotations of the common feeding rollers and the side feeding rollers corresponding to the determined positioning of the manuscript sheet, and

a guide plate to guide the manuscript sheet discharged by the rotation of the common feeding rollers toward the manuscript receiver.

5,630,580

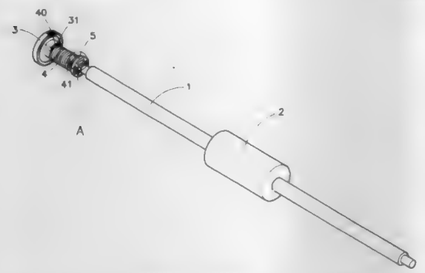
FEED ROLL ASSEMBLY ADAPTED FOR DELIVERING SHEET OF PAPER IN A FAX MACHINE OR THE LIKE

Wei-Ming Tsao, and Kung-Her Su, both of Taipei, Taiwan, assignors to Silitek Corporation, Taipei, Taiwan

Filed May 2, 1996, Ser. No. 641,732

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—10.13 **2 Claims**



1. A feed roll assembly comprising an axle installed in a machine and having a non-circular extension rod at one end, a roll fixedly mounted around said axle in the middle and turned by it to deliver inserted sheets of paper one after another, a coupling wheel coupled to the non-circular extension rod of said axle and turned with it, said coupling wheel having an outward flange at one end and a plurality of wedge-like grooves spaced around the periphery adjacent to said outward flange, a transmission gear revolvably mounted around the non-circular extension rod of said axle and having a circular center through hole which receives the non-circular extension rod of said axle and an arched groove around said circular center through hole, and a spring movably mounted around said coupling wheel and stopped between said transmission gear and the outward flange of said coupling Wheel, said spring having a rear end moved in the arched groove of said transmission gear and a front end moved relative to the wedge-like groove of said coupling wheel, wherein the front end of said spring is forced into one wedge-like groove of said coupling wheel when said transmission gear is rotated forwards, thereby causing said spring to be compressed and coupled to said coupling wheel so that said coupling wheel is driven by said transmission gear to turn said axle.

5,630,581

APPARATUS FOR DISPENSING LIGHTWEIGHT SHEET-STYLE ARTICLES FROM A STACKED SUPPLY OF ARTICLES

Gregory Rodesch, Oceanside, Calif., assignor to Rodesch Associates, Inc., Escondido, Calif.

Filed Jan. 5, 1996, Ser. No. 583,606

Int. Cl.[6] B65H *3/30*

U.S. Cl. 271—23 **11 Claims**

1. An article dispensing apparatus for dispensing, in serial order, individual articles from a stacked supply of articles, said articles comprising thin planar paper sheets and said apparatus comprising:

a supply magazine for receiving and storing a supply of said articles in the form of a stack, the magazine having opposing first and second endwalls, said magazine further having sidewalls extending between and interconnecting said endwalls to define an enclosure of said supply magazine which receives said stack of articles;

a base member, a roller mounted on the base member and adapted for rotation in two opposing directions, said base member having first and second slots disposed on opposite sides of the roller, said first slot providing a bending opening through which a portion of the bottommost article of said stack may be bent by rotation of said roller in a first direction, said second slot providing a dispensing opening through which said bottommost article may be dispensed by rotation of said roller in a second direction opposite that of said first direction;

said dispensing assembly further including a deflector disposed on said base member in the path of said bottommost article as it is driven by said roller in said second direction, said deflector including a curved article-contacting surface disposed proximate to and extending across at least a portion of said second opening, whereby, when said roller rotates in said second direction, a leading edge of the bottommost article contacts said article-contacting surface and is deflected into said dispensing opening and out of said supply magazine and dispensing assembly.

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SHEET SEPARATING APPARATUS

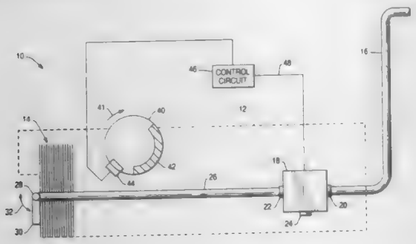
John A. Peebles, Dundee, and Robert J. Suttie, Perthshire, both of Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed May 9, 1996, Ser. No. 644,016

Claims priority, application United Kingdom, Dec. 8, 1995, 9525106

Int. Cl.[6] B65H *3/08*

U.S. Cl. 271—90 16 Claims



1. Sheet separating apparatus for removing sheets singly from a stack of sheets, the sheet separating apparatus comprising:

suction means for separating the top sheet of the stack;

vacuum pump means for supplying a reduced pressure to the suction means;

air filter means connected between the vacuum pump means and the suction means such that air is drawn by the vacuum pump means in a first direction through the air filter means to create the reduced pressure;

pressure sensing means for sensing the pressure supplied to the suction means; and

control means for, when the sensed pressure attains a predetermined value, causing an air flow to be supplied by the vacuum pump means through the air filter means in a second direction and towards a dust collection means.

5,630,583

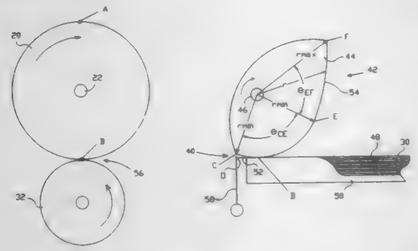
SHEET MEDIA FEEDING MECHANISM HAVING A VARIABLE RADIUS FEED ROLLER

Robin P. Yergenson, Eagle, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 22, 1995, Ser. No. 577,587

Int. Cl.[6] B65H *5/00;3/06*

U.S. Cl. 271—119 1 Claim



1. An image forming machine, comprising:

a. a photoconductive drum for holding a toner image;

b. a rotatable feed roller for moving sheet media from an input tray, wherein the sheet media are stacked, to the photoconductive drum;

c. the feed roller having a perimeter that engages individual sheet media and throughout the period of engagement continuously advances the individual sheet media, the perimeter characterized by a radius that extends out from a central rotational axis of the feed roller, the radius increasing in magnitude in the direction of rotation between a first point on the perimeter and a second point on the perimeter;

d. a frictionally adherent surface on the perimeter of the feed roller;

e. the input tray disposed adjacent to the feed roller so that, upon rotation of the feed roller, the frictionally adherent surface engages a top sheet in the stack and moves the top sheet through a pick/feed area downstream immediately adjacent to the feed roller and into an image area further downstream immediately adjacent to the photoconductive drum; and

f. wherein the top sheet is engaged by the frictionally adherent surface at the first point on the perimeter of the feed roller and the top sheet is thereafter engaged through the second point on the perimeter of the feed roller so that the speed at which the top sheet moves through the pick/feed area into the image area increases as the feed roller rotates from the first point to the second point.

5,630,584

DEVICE FOR DEPOSITING PRODUCTS

Heinz G. Seeber, Ludwigshafen, Germany, assignor to Albert-Frankenthal Aktiengesellschaft, Frankenthal, Germany

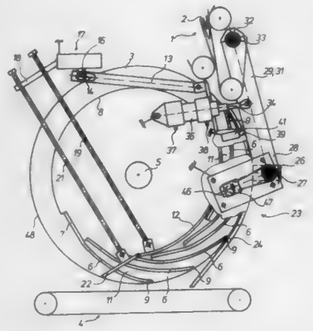
PCT No. PCT/DE93/01192, § 371 Date Jun. 19, 1995, § 102(e) Date Jun. 19, 1995, PCT Pub. No. WO94/14692, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 14, 1993, Ser. No. 454,199

Claims priority, application Germany, Dec. 18, 1992, 42 42 585.5

Int. Cl.[6] B65H *29/20*

U.S. Cl. 271—315 4 Claims



1. A product delivery device usable for the deposit of folded printed products on a delivery belt comprising:

a paddle wheel having a plurality of paddles having outer ends defining a peripheral surface of said paddle wheel, said paddle wheel being rotatably supported in a frame above said delivery belt to receive said folded products and to deposit said folded products on said delivery belt;

a guide device having a plurality of guide plates extending outwardly forward peripheral surface of said paddle wheel and spaced from said outer ends of said paddles;

spaced levers extending generally tangentially to said periphery of said paddle wheel and having first ends pivotable about a first shaft secured to said frame, and second ends secured to a second shaft which is pivotably secured to said guide plates;

a lever arm having an outer end secured to said second shaft; and

a cam secured to said frame and supporting a sliding block, said lever arm having an inner end secured to said sliding block, said guide device being movable away from said peripheral surface of said paddle wheel in response to an accumulation of said folded products in said paddle wheel to form an overflow chamber between said guide device and said peripheral surface of said paddle wheel.

5,630,585

PACHINKO BALL COUNTER AND BALL DROPPING APPARATUS PREVENTING BRIDGE PHENOMENON

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

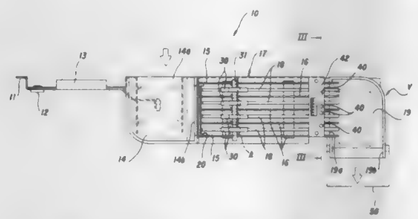
PCT No. PCT/JP93/00742, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO93/25289, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 2, 1993, Ser. No. 338,546

Claims priority, application Japan, Jun. 11, 1992, 4-152416; Sep. 7, 1992, 4-238659

Int. Cl.[6] A63F *7/02*

U.S. Cl. 273—121 B 8 Claims



1. A pachinko ball counter for counting balls discharged into a tray by a player comprising:

an introduction path for receiving pachinko balls;

counting sensors mounted at an end side of said introduction path;

said introduction path including a plurality of alignment rails, through which pachinko balls flow in an aligned state, juxtaposed with one another between a beginning end and a terminal end of the introduction path, and including partition guides disposed between said alignment rails, said counting sensors being disposed at the end side of the introduction path as to correspond to the alignment rails, respectively.

5,630,586

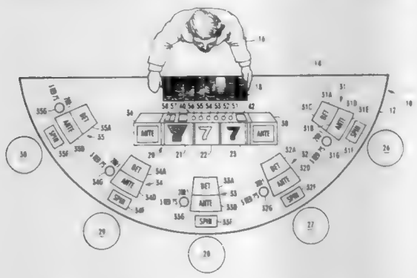
COMBINED SLOT MACHINE AND TABLE GAME APPARATUS AND METHOD OF PLAY

David Lowden, 3221 S. Torrey Pines, Las Vegas, Nev. 89102

Filed Apr. 16, 1996, Ser. No. 633,067

Int. Cl.[6] G07F *17/34;* A47B *25/00*

U.S. Cl. 273—138.2 14 Claims



1. A method of playing a game at a table, comprising the steps of:

causing an indicium on one of a plurality of arc segments of a player reel of a slot machine to randomly appear on a payline of the machine in response to operation of a spin button at a player station carried on a covering of the top of said table;

giving a player an option of placing a bet on a prospective appearance of said indicium on said payline; and

operating said player spin button.

5,630,587

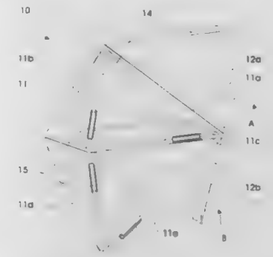
MANIPULATIVE GAME

Dmitry Zlotsky, 59 W. Cedar St., Livingston, N.J. 07039

Filed Sep. 29, 1995, Ser. No. 536,381

Int. Cl.[6] A63F *9/08*

U.S. Cl. 273—155 9 Claims



1. A manipulative game comprising:

a three dimensional frame having a plurality of ribs and further having a plurality of planar sides, wherein each two adjacent planar sides have at least one common rib,

a plurality of game elements, each of said game elements having a plurality of planar surfaces, containing indicia, and substantially equal to the planar sides of said frame,

a plurality of detachable means of attachment connecting the edges of said game elements to the ribs of said frame, said means of attachment allowing a game element to rotate around a rib of said frame and to reconnect to a planar side of the frame, adjacent to the side of the original attachment;

the object of said game being to consequently rotate said game elements around connected means of attachment so as to achieve a predefined pattern of said game elements' indicia.

5,630,588

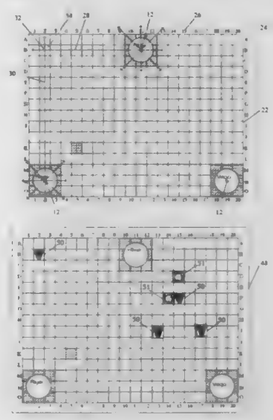
APPARATUS AND METHOD OF PLAYING A GAME USING AZIMUTHS

William C. Gladish, 2427 Windsor Village Dr., Miamisburg, Ohio 45342

Filed Jan. 30, 1995, Ser. No. 380,826

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—265 35 Claims



1. An instructional apparatus for teaching azimuths, comprising:

at least one viewing area means for displaying a plurality of spaces and a plurality of reference points;

azimuth indicator lines for use in selecting an azimuth;

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means for determining a space location from two azimuths which intersect within the viewing the area means selected from a first azimuth emanating from a reference point at any orientation in angular degrees, from zero to three hundred sixty degrees, and a second azimuth emanating from a second reference point at any orientation in angular degrees, from zero to three hundred sixty degrees.

said means for determining a space location comprising an encoder and decoder system having first indicia corresponding to each of said plurality of reference points and to a plurality of angular degrees from zero to three hundred sixty degrees emanating from each of said reference points, wherein said first indicia corresponds to said point of intersection of two azimuths

said encoder and decoder system further having a second indicia corresponding to said plurality of spaces on said viewing area means, and a third indicia for converting the location of said point of intersection from said first indicia to said second indicia; and

instructional means for teaching the player how to operate said apparatus.

5,630,589

APPARATUS AND METHOD OF PLAYING A PADDLE BALL GAME

William S. Adie; Ian Adie, both of 6854 Bellflower Ct., Mentor, Ohio 44060, and Steven D. Goldenbogen, 733 Broughton St., Pittsburgh, Pa. 15213

Filed Mar. 1, 1996, Ser. No. 610,467

Int. Cl.[6] A63B *67/00*

U.S. Cl. 473—474 **7 Claims**



1. A paddle game apparatus comprising:

a. at least two posts;

b. each of said posts including a post support means for supporting said post in a substantially vertical position;

c. a thin, flexible barrier for extending between said posts, said barrier having a top edge, a bottom edge, a first end and a second end;

d. at least two first attachment means for attaching said barrier to said post near said top edge of said barrier;

e. at least two second attachment means for attaching said barrier to said post near said bottom edge of said barrier;

f. at least two paddles and a projectile;

g. at least four top grommets positioned near said top edge of said barrier and positioned substantially equidistant from each other and distributed from near the first end of said barrier to near the second end of said barrier, whereby a cord may be laced through each of said top grommets to support said barrier substantially along its entire length, and said cord may be attached to each of said first attachment means.

5,630,590

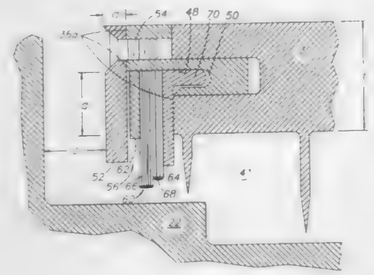
METHOD AND APPARATUS FOR IMPROVING THE AIRSEALING EFFECTIVENESS IN A TURBINE ENGINE

Joseph P. Bouchard, Arundel, and Merrell W. Long, North Waterboro, both of Me., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 26, 1996, Ser. No. 625,427

Int. Cl.[6] F16J *15/447*

U.S. Cl. 277—53 **9 Claims**



1. A refurbished gas turbine engine component having at least one knife edge seal for inhibiting air leakage through an intercomponent gap between the component and a second component, the refurbished component characterized by:

a brush seal mounted on the refurbished component in tandem with the knife edge seal, the bristles of the brush seal extending toward the second component for impeding the leakage of air through the intercomponent gap.

5,630,591

SEALING ELEMENT

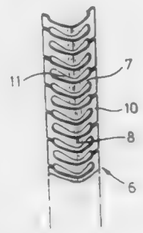
Frans P. Drijver, Eze sur Mer, and Leendert Poldervaart, La Turbie, both of France, assignors to Single Buoy Moorings Inc., Marly, Switzerland

Filed Apr. 5, 1994, Ser. No. 223,025

Claims priority, application Netherlands, Apr. 5, 1993, 9300593

Int. Cl.[6] F16J *15/32*

U.S. Cl. 277—164 **8 Claims**



1. Annular sealing element to be placed between two moveable parts which can move in relation to each other, said annular sealing element having a diameter greater than 20 cm, comprising a body provided in one of the moveable parts and two lips which are connected to the body and which engage the other moveable part, said lips being made of synthetic material, wherein between the lips and the body, a spring is present having two upstanding members which each engage a respective lip, and an intermediate member interconnecting the upstanding members and engaging the body, said spring being made of a material having a primarily constant thickness and a surface area which for the upstanding members which are in contact with the lips, is smaller than that of the intermediate member, such that the moment of resistance against bending in the spring is substantially constant over its length for the intermediate member and for the upstanding members.

5,630,592

METAL GASKET, VACUUM FLANGE FOR THE METAL GASKET, AND VACUUM SEAL STRUCTURE USING THE METAL GASKET

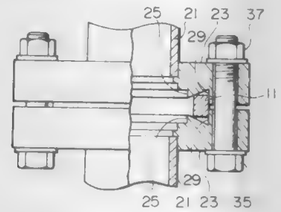
Kenjiro Obara; Yoshio Murakami, both of Ibaraki-ken, and Mitsuyosi Saito, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute, and Japan Vac's Metal Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 319,093, Oct. 6, 1994, abandoned, which is a continuation of Ser. No. 998,684, Dec. 30, 1992, abandoned. This application Jun. 5, 1996, Ser. No. 658,307

Claims priority, application Japan, Dec. 30, 1991, 3-360188

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—167.5 **9 Claims**



1. A vacuum flange for a reusable metal gasket comprising a sealing groove for receiving the reusable metal gasket at the surface of said flange, the width of a cross section of said groove gradually decreasing in the direction of the depth thereof, an outer side wall section of said sealing groove being substantially perpendicular to the flange surface, and an inner side wall section of said sealing groove being inclined with respect to the flange surface, with a difference in level being provided so that the flange surface positioned to the inside of said sealing groove is lower than the flange surface positioned to the outside of said sealing groove; and there being no protruding section on said flange surface on the inside of said sealing groove wherein, no portion of the ring-shaped reusable gasket member extends out of the sealing groove and does not extend past the inner wall.

5,630,593

PRESSURE-ENERGIZED SEALING RINGS

Jeffrey E. Swensen, Eldersburg, and Robert A. Barrett, Crofton, both of Md., assignors to EG&G Pressure Science, Inc., Beltsville, Md.

Filed Sep. 12, 1994, Ser. No. 302,467

Int. Cl.[6] F16J *15/00*

U.S. Cl. 277—206 R **36 Claims**

1. A pressure-energized sealing ring in its unstressed state, comprising:

an annular bight portion having at least one curved section extending through an arc with a first substantially smooth concave surface adapted to be in fluid contact with a first high pressure fluid and a second convex surface adapted to be fluid contact with a second low pressure fluid of a lower pressure than the first fluid;

a first annular leg portion extending from one end of said bight portion to a first free end thereof, and having a first substantially smooth surface extending coextensively from said first surface of said bight portion to said first free end of said first leg portion, and a second surface extending from said second surface of said bight portion to said first free end of said first leg portion said first leg portion having a first substantially u-shaped bent section reversing direction of said first leg portion and a first annular sealing surface formed on said first surface of said first leg portion with said first free end of said first leg portion being in fluid contact with the second low pressure fluid; and

a second annular leg portion extending from the other end of said bight portion to a second free end thereof, and having a first substantially smooth surface extending coextensively from said first surface of said bight portion to said second free end of said second leg portion, and a second surface extending from said second surface of said bight portion to said second free end of said second leg portion, said second leg portion having a second substantially u-shaped bent section reversing direction of said second leg portion and a second annular sealing surface on said first surface of said second leg portion with said second free end of said second leg portion being in fluid contact with the second low pressure fluid,

said first and second sealing surface forming an annular sealing line therebetween for dividing said first surface into a pair of low pressure sections and a high pressure section,

said curved section of said bight portion being located on a first side of said sealing together with said first and second free ends of said first and second leg portions, said first and second bent sections of said first and second leg portions being located on a second side of said sealing line which is opposite from said first side of said sealing line,

said high pressure section of said first surface lying on said fist side of said sealing line being greater in area than said high pressure section of said first surface lying on said second side of said sealing line,

each of said first and second leg portions including a substantially planar portion extending between said bight portion and said bent sections respectively,

said bight portion being shaped as a partial circle when viewed in longitudinal cross-section and extending approximately 180°,

said bent sections of said first and second leg portions being shaped as partial circles when viewed in longitudinal cross-section, and extending approximately 180°,

said planar sections of said first and second leg portions converge towards each other as they extend away from said bight portion in their unstressed state.

5,630,594

CHUCK

Walter Bronzino, and Pier M. Bronzino, both of Turin, Italy, assignors to SMW Autoblok Spannsysteme GmbH, Meckenbeuren, Germany

Filed Jan. 26, 1996, Ser. No. 592,064

Claims priority, application Germany, Jan. 26, 1995, 195 02 363.3

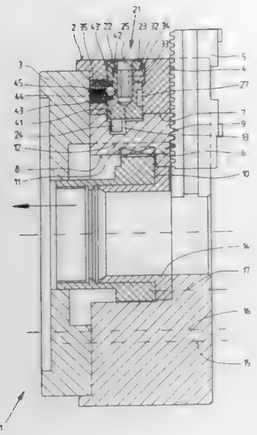
Int. Cl.[6] B23B *31/167*

U.S. Cl. 279—123 **9 Claims**

1. A chuck for turning machines, comprising:

a chuck body;

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clamping jaws that are radially displaceably guided in said chuck body and are provided with teeth;

wedge bars that are disposed in said chuck body transverse to a longitudinal axis thereof, said wedge bars being provided with teeth for engaging said teeth of said clamping jaws for driving the latter, said wedge bars being displaceable in said chuck body beyond a clamping stroke to such an extent that said teeth of said wedge bars do not engage said teeth of said clamping jaws so that said clamping jaws can be radially removed from said chuck body; and

a locking mechanism for each of said clamping jaws, including an adjustment pin that is rotatably held in said chuck body and that is provided with an eccentric means for engaging an angular recess formed in said wedge bars, wherein each of said wedge bars, on a side facing one of said adjusting pins, is provided with a slot-like recess for receiving said adjusting pin in an operating range of said chuck, said slot-like recess extending in a longitudinal direction of said wedge bar beyond said clamping stroke, and wherein in an operating position of said chuck said adjusting pin is adapted to be inserted into said slot-like recess of said wedge bar in an automatic manner.

5,630,595

BRAKING DEVICE FOR ROLLER SKATES

Johann Perner, Graz, Austria, assignor to Koflach Sport Gesellschaft m.b.H. & Co. KG, Austria

PCT No. PCT/AT94/00041, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO94/22542, PCT Pub. Date Oct. 13, 1994

PCT Filed Apr. 6, 1994, Ser. No. 347,384

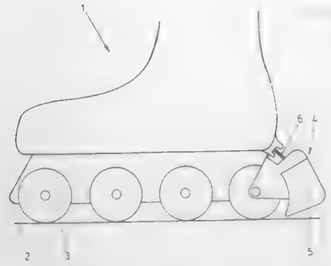
Claims priority, application Austria, Apr. 6, 1993, 700/93

Int. Cl.° A63C *17/14*

U.S. Cl. 280—11.2 **14 Claims**

1. A braking device for a roller skate comprising a boot and a frame, said frame mounting rollers for rotation about respective parallel roller axes, said braking device comprising:

an actuation block including a bottom contact surface, said actuation block detachably mounted to one of said frame and said boot, for pivotal movement about a pivot axis from an inoperative position to an operative position against a force of a spring located between said actuation block and one of said frame and said boot, acting to return said actuation block to the inoperative position, said pivot axis being generally parallel to the roller axes;



a braking member associated with said actuation block and arranged to frictionally contact at least one of said rollers when said actuation block is pivoted to its operative braking position; and

a guideway provided in at least one of said frame and said actuation block, cooperating with a shaft extending through said frame and parallel to said pivot axis to guide and support said actuation block and said braking member during pivotal movement of said actuation block and said braking member relative to said frame and in the operative braking position thereof.

5,630,596

BRAKE DEVICE FOR IN-LINE SKATES

Robert K. Rudolph, 9043 Moody Ave., Morton Grove, Ill. 60053

Filed Feb. 16, 1995, Ser. No. 389,286

Int. Cl.° A63C *17/14*

U.S. Cl. 280—11.2 **21 Claims**



1. A braking device for an in-line roller skate having a boot with a sole platform, a frame mounted to a lower side of the sole platform, the frame having a pair of frame members in a spaced apart parallel relationship to one another, and a plurality of wheels supported for rotation in a common plane by a plurality of axles, the axles being operatively connected to the frame members, the braking device comprising:

(a) a braking disc supported for rotation by a braking disc axle, the braking disc axle being operatively connected to the frame members;

(b) drive means for interconnecting the braking disc with at least two of the wheels for synchronized wheel rotation;

(c) braking means for simultaneously moving a first brake pad against a first side of the braking disc and a second brake pad against a second side of the braking disc; and

(d) actuation means for engaging said braking means, the actuation means including: a pivot platform pivotally connected to the sole platform at a front portion of the boot; biasing means for moving the pivot platform from a toe engaged position in an angled relation from the sole platform to a toe unengaged position in a coplanar relation with the sole platform; and a push rod having a first end and a second end, the first end being operatively connected to the pivot platform and the second end being operatively connected to the braking means.

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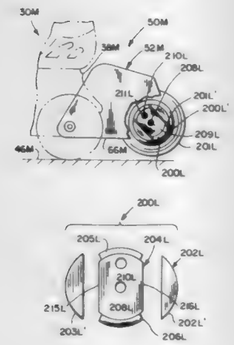
BRAKE SYSTEM FOR ROLLER SKATES

Edward O. Klukos, 10030 152nd Ave., West Olive, Mich. 49460

Continuation-in-part of Ser. No. 302,046, Sep. 7, 1994, Pat. No. 5,511,803. This application May 17, 1995, Ser. No. 442,950

Int. Cl.° A63C *17/14*

U.S. Cl. 280—11.2 **42 Claims**



1. An in-line roller skate comprising:

a wheeled frame including a hub-supporting subframe;

a plurality of aligned wheels operably supported by the wheeled frame and adapted to rollingly engage a hard surface; and

a braking mechanism including:

a hub supported on said hub-supporting subframe, and a braking wheel rotatably supported on a permeter surface of said hub, said hub and said braking wheel each including friction-generating surfaces for generating a braking force therebetween when the roller skate is pivoted to rollingly engage said braking wheel with the hard surface, said hub including a first member and a second member movable relative to said first member, and a third member positioned between the first and second members, said third member being fixed to the hub-supporting subframe, and said first and second members being movable relative to said third member when said braking wheel rollingly engages the hard surface.

5,630,598

Patent Not Issued For This Number

5,630,599

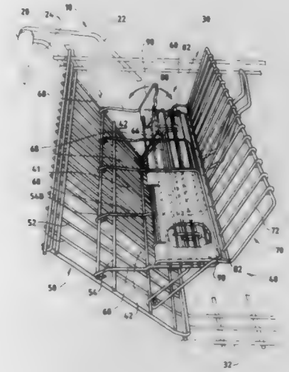
SHOPPING CART HAVING IMPROVED CHILD SEAT

Mark A. Adamson, and Val-Jean Duchene, both of Broken Arrow, Okla., assignors to Unarco L.L.C., Chicago, Ill.

Filed Jun. 4, 1996, Ser. No. 658,195

Int. Cl.° B62B *3/02*

U.S. Cl. 280—33.993 **7 Claims**



1. A shopping cart comprising a handle, a handle mounting, to which the handle is mounted, a main basket, which also is mounted to the handle mounting, and a child seat comprising

(a) a primary panel defining a back panel of the main basket and a front panel of the child seat, wherein the primary panel is mounted pivotally to the generally vertical portions of the handle,

(b) a secondary panel having a substantially open portion and a weight-supporting portion and defining a lower panel of the child seat, wherein the secondary panel has at least three pivot wires extending longitudinally from the secondary panel and mounted pivotally to the primary panel, below where the primary panel is mounted pivotally to the generally vertical portions of the handle, wherein two of the pivot wires of the secondary panel extend along the substantially open and weight-supporting portions of the secondary panel so as to define two lateral edges of the substantially open and weight-supporting portions of the secondary panel, and wherein at least one of the pivot wires of the secondary panel extends along the substantially open portion, between the pivot wires defining the lateral edges of the substantially open portion, so as to divide the substantially open portion into at least two leg openings for a child seated so that his or her weight is supported by the weight-supporting portion of the secondary panel, the leg openings permitting such a seated child to dangle his or her legs through the leg openings, within the main basket, and

(c) a tertiary panel defining a back panel of the child seat and mounted pivotally to the primary panel, below where the secondary panel is mounted pivotally to the primary panel, the tertiary panel being engaged with the secondary panel so as to restrain the secondary panel against pivoting upwardly or downwardly, so as to restrain the tertiary panel against pivoting away from the primary panel, but so as to permit pivoting of the tertiary panel toward the primary panel, the tertiary panel being disengagable from the secondary panel so as to permit pivoting of the secondary panel downwardly,

wherein the primary panel constitutes means for confining the legs of such a seated child within the main basket.

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5,630,600

SHOPPING CART BRAKE

Norbert Q. Pasillas, 8644 Jacmar Ave., Whittier, Calif. 90605

Filed Sep. 22, 1995, Ser. No. 532,242
Int. Cl.[6] B62B 5/04
U.S. Cl. 280—33.994 16 Claims



1. A restraining device for preventing undesired motion of a manually propelled cart, said cart having a basket mounted on front and rear wheels, and a crossbar mounted to the cart and disposed between the front wheels, said restraining device comprising:

a frame;

brake means, disposed on said frame, for engaging a ground surface;

means for pivotally connecting the brake means to the cart crossbar in a suspended position; and

counterweight means, mounted to said frame, for balancing the brake means in a disengaged, free swinging position and, upon a jerking motion of the cart, for causing the brake means to pivot into engagement with the ground surface.

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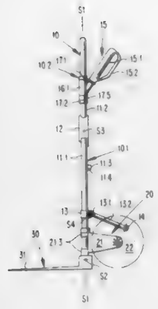
TWO-WHEELED TROLLEY WITH VERTICAL FRAME AND FOLDABLE SUPPORT WHEELS

Hans vom Braucke, Vlotho, and Manfred vom Braucke, Bielefeld, both of Germany, assignors to Bielefelder Kuchenmaschinen- und Transportgerate-Fabrik vom Braucke GmbH, Bielefeld, Germany

Filed May 30, 1995, Ser. No. 452,714
Claims priority, application Germany, Jun. 20, 1995, 9409735 U
Int. Cl.[6] B62B 1/04
U.S. Cl. 280—40 21 Claims

1. A collapsible hand-operated trolley comprising:

a frame;



a support plate mounted on a lower portion of said frame and swivelable about a substantially horizontal first axis between folded-down and folded up positions;

manual gripping portions disposed on an upper portion of said frame;

a pair of horizontally-spaced wheel carriers disposed at a lower end of the frame, each wheel carrier being rotatable about a substantially vertical second axis between a folded-out operable position and a folded-in storage position; and

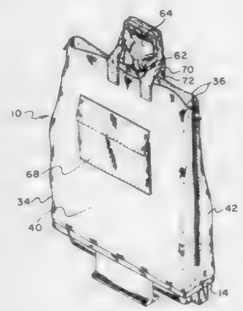
a connection rod mounted to the frame for rotation about a substantially horizontal axis oriented substantially parallel to said first axis between a securing position wherein it extends between said wheel carriers when said wheel carriers are disposed in said folded-out positions, to prevent said wheel carriers from being folded-in.

5,630,602

BEACH CARRY-ALL CART DEVICE

Claudia F. Vanderslice, 6 Kenton Ave., Pitman, N.J. 08071, and John W. Fox, 306 Westwood Dr., Woodbury, N.J. 08096

Filed Nov. 9, 1994, Ser. No. 336,502
Int. Cl.[6] B62B 1/00
U.S. Cl. 280—47.26 19 Claims



1. An all terrain carry all cart device comprising:

a base elongate member comprising two ends, a bottom surface and an upper surface,

wheel means depending downwardly from said bottom surface to support the device and allow the device to travel freely over loose sand,

an open topped flexible bag attached to the base member, the bag comprising:

a height terminating in an upper edge,

an elongate bottom,

side walls each extending upwardly the height from the bottom to the upper edge, and

at least one zipper means alternatively opening and closing adjacent edges of a vertical slit extending a distance proximate the height of a side wall and opening at the upper edge,

first support means for holding up the flexible bag consisting of:

a single elongate vertically disposed handle member comprising a lower end attached to a median section of the base member, and an upper end section extending upwardly to a height at least as high as the upper edge of the bag, and

a vertical sleeve attached on the rear wall of the bag terminating proximate the upper edge of the bag, wherein the handle member is threaded through the sleeve, and

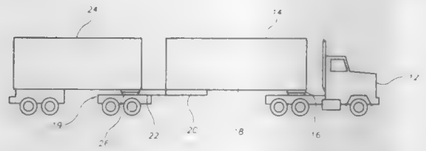
handle means attached on the upper end section of the handle member to allow said means to be gripped and to allow the device to be pulled and pushed while riding on the wheel means and said handle member and said handle means being the only rigid support for holding up the flexible bag.

5,630,603

RETRACTABLE TRAILER COUPLING ASSEMBLY

Thomas D. Turner, and Donna N. Turner, both of 4318 Hollygrove St., New Orleans, La. 70118

Filed Mar. 1, 1995, Ser. No. 396,974
Int. Cl.[6] B62D 53/08
U.S. Cl. 280—407.1 1 Claim



1. A retractable trailer coupling assembly rearwardly disposable from a trailer and adaptable for towing an additional trailer, the improvement comprising:

a) a coupling frame, in mechanical connection with the underside of said trailer;

b) said coupling frame having a first and a second elongated T-shaped member oriented in a manner parallel to each other;

c) each said T-shaped member having a first planar member, having a first edge, and a planar track member;

said first edge of said first planar member being connected to said planar track member along the midpoint axis of said planar track member and extending perpendicularly therefrom;

d) said first planar member has a forward and a rear locking aperture formed therethrough;

e) a coupling dolly, having a fifth wheel and an axle carrier, in slidable connection with said coupling frame between a first position wherein said axle carrier and said fifth wheel are entirely positioned under said trailer and a second position wherein said axle carrier and said fifth wheel are positioned a sufficient distance rearward of said trailer to allow connection of said additional trailer;

f) said coupling dolly has a first and a second trackway member;

g) said first elongated trackway member has two right angle members forming a first track channel enclosed on three sides with a vertical section extending upward from said track channel; and

said second elongated trackway member has two right angle members forming a second track channel enclosed on three sides with a vertical section extending upward from said track channel;

said first track channel slidably entrapping a portion of said first T-shaped member in a manner such that said coupling dolly is slidable along an axis parallel with said coupling frame;

said second track channel slidably entrapping a portion of said second T-shaped member;

h) said vertical section of each said trackway member having a pin aperture formed therethrough;

said pin aperture being concentrically aligned with said forward locking aperture when said coupling dolly is positioned in said first position, said pin aperture being concentrically aligned with said rear locking aperture when said coupling dolly is positioned in said second position;

I) locking means, in functional connection between said coupling frame and said coupling dolly, for locking said coupling dolly in a fixed relationship with said coupling frame in said first position and said second position, said locking means including a bracket, having a first surface and a second surface and a concentric aperture passing therethrough; two support posts, extending perpendicularly from said first surface and located adjacent to said concentric aperture; a pin having an initial end and a terminal end, said pin passing through said concentric aperture; a handle, connected to said initial end; a spring plate, mounted around said pin midway between said second surface and said terminal end; and a spring, encircling said pin between said second surface and said spring plate;

j) said handle forming a hand passageway having a cross-section sufficient to fit a hand therethrough in a manner such that said pin may be urged in a first direction and said pin may be rotated laterally along a longitudinal axis;

k) said bracket further includes a first and second leg member extending outwardly from said second surface in a manner such that said first and second leg members are oriented substantially parallel with one another;

l) said first leg member further includes a first foot connected to a first terminal end of said first leg member; and

said second leg member further includes a second foot connected to a second terminal end of said second leg member;

said first and said second foot being connected to said vertical section of said trackway adjacent to said pin aperture in a manner such that said pin is concentrically aligned with said pin aperture;

m) said leg members having a length sufficient to allow said pin to be urged in said first direction a distance sufficient to remove said pin entirely from said locking aperture releasing said coupling dolly from said fixed relationship with said coupling frame;

n) said support posts being of a height such that when said pin is urged in said first direction, a distance sufficient to release said coupling dolly from said fixed relationship with said coupling frame, said handle may be rotated in a manner such that said handle is aligned and situated atop said support posts maintaining said pin in a position releasing said coupling dolly; and

o) said planar track member of each said T-shaped member forming an elongated positioning slot therethrough, having a first slot end and a second slot end; and

each said trackway member has a sliding post extending substantially perpendicularly therefrom;

said sliding post being slidably entrapped within said elongated positioning slot, said sliding post contacting said first slot end when said coupling dolly is positioned in said first position and contacting said second slot end when said coupling dolly is positioned in said second position.

5,630,604

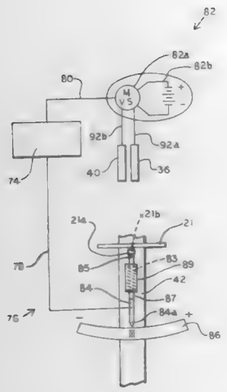
REMOTELY-STEERED TRAILERS

Edgar A. Ducote, P.O. Box 45654, Baton Rouge, La. 70895

Continuation-in-part of Ser. No. 371,383, Jan. 11, 1995, Pat. No. 5,501,288, which is a continuation-in-part of Ser. No. 130,470, Oct. 1, 1993, Pat. No. 5,392,872, which is a continuation-in-part of Ser. No. 807,199, Dec. 16, 1991, Pat. No. 5,305,844, which is a division of Ser. No. 594,716, Oct. 9, 1990, Pat. No. 5,135,064, which is a continuation-in-part of Ser. No. 337,292, Apr. 13, 1989, Pat. No. 5,026,085. This application Jul. 31, 1995, Ser. No. 509,455
Int. Cl.[6] B62D 53/06
U.S. Cl. 280—426 17 Claims

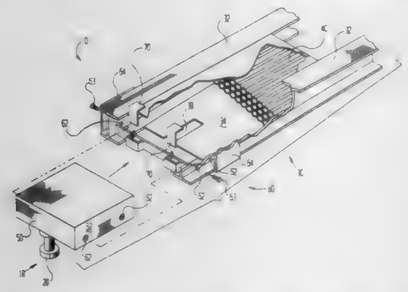
1. A remotely-steered trailer having front and rear ends, and towed by towing means having front and rear ends, the remotely-steered trailer comprising:

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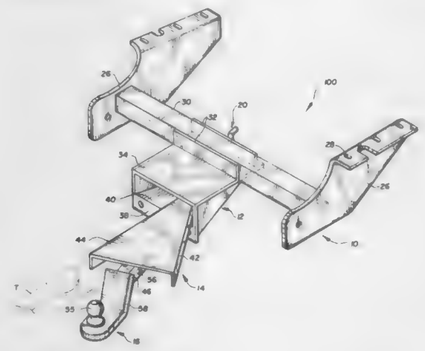
(a) a trailer supported by a pair of steerable wheels pivotally connected to a first fixed axle near the rear end of the trailer, and by a pair of fixed wheels mounted on a second fixed axle near the longitudinal center of the trailer;
(b) means for coupling the trailer to the towing means;
(c) means for sensing the direction of motion of the towing means, said sensing means including an electrical sensor contiguous with the towing means, the sensor being constructed and arranged to produce an electrical signal indicative of the direction of motion of the towing means; and
(d) a servomechanism constructed and arranged to receive the electrical signal from the electrical sensor, and to forcibly steer the steerable wheels near the rear end of the trailer in accordance with said signal.

5,630,605
COMBINATION ARTICULATED VEHICLE DAMPING SYSTEM
Leonard F. Smallwood, 1501 Katherine, Pecos, Tex. 79772
Filed Jun. 5, 1995, Ser. No. 463,984
Int. Cl.[6] B62D *3/10*
U.S. Cl. 280—432 **8 Claims**



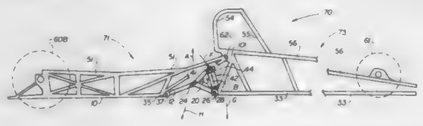
1. A combination articulated vehicle damping system comprising:
a. a damping material retaining means attached to a trail vehicle;
b. a damping material retained in the damping material retaining means;
c. a slider frame slidably positioned within damping material retaining means;
d. wherein the slider frame is designed and positioned to deform the damping material as the slider frame moves;
e. a shearable fastening means for preventing relative displacement of the slider frame and the damping material retaining means until exposed to a predetermined force; and
f. a connector means attached to the slider frame for connecting the trail vehicle to a lead vehicle.

5,630,606
TRAILER HITCH WITH EXTENSIBLE THROAT
John M. Ryan, 1515 Little Ave., Paducah, Ky. 42002
Filed Jun. 23, 1995, Ser. No. 493,988
Int. Cl.[6] B60D *1/40*
U.S. Cl. 280—479.3 **9 Claims**



1. A trailer hitch comprising:
a frame, suited for operative attachment to a towing vehicle,
a throat, having a forward and a rearward end, operatively affixed to said frame and defining a cavity with an opening at the rearward end, whereby the rearward end may face a vehicle to be towed.
an elongated glide means, having a forward end and a rearward end, said forward end operably mounted within said throat cavity for lateral movement of the rearward end, said elongated glide means being a U-shaped rail;
a telescoping member having a forward and a rearward end, said forward end adapted to matingly engage said throat and adapted to matingly engage said glide means, and adapted for selected operative securement to a vehicle to be towed; and
a locking pin assembly including a movable pin which is biased toward engagement with said telescoping member so as to lock said telescoping member in place into a predefined orientation of the telescoping member, whereby the trailer hitch is made ready to tow the vehicle to be towed.

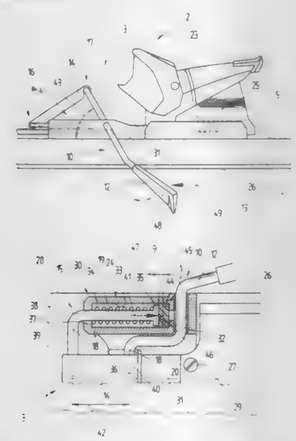
5,630,607
SUSPENSION SYSTEM FOR VEHICLE FRAME
Thomas D. Yancer, 155 S. Fir St., Chandler, Ariz. 85226
Filed Aug. 17, 1995, Ser. No. 516,491
Int. Cl.[6] B62D *21/11*
U.S. Cl. 280—489 **7 Claims**



1. In combination with a frame for a vehicle, said frame including:
a front structure spaced above the ground and including an inner portion and an outer portion,
at least one ground engaging wheel mounted on said outer portion of said front structure,

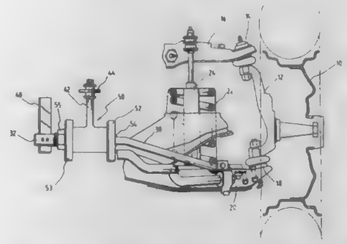
a rear structure spaced above the ground and including an inner portion and an outer portion, and
at least two ground engaging wheels mounted on said outer portion of said rear structure,
the improvements comprising suspension means to compensate for frame flexure when the vehicle accelerates, said suspension means including
(a) means for connecting said inner portions of said front structure and said rear structure at at least a primary pivot point (**62**) such that said front and rear structures can turn about said pivot point;
(b) linkage means for pivotally interconnecting a first pivot point (**37**) on said inner portion of said rear structure with a second pivot point (**26**) on said inner portion of said front structure, said linkage means including at least one link (**12**) interconnecting said first and second pivot points, said linkage means permitting the distance between said first and second pivot points to alter when said inner portions of said front and rear structures are upwardly displaced away from the ground and pivot about said primary pivot point; and,
(c) resilient shock absorber and spring means (**42**) mounted on said vehicle frame to
(i) maintain said inner portions of said front and rear structures above the ground while the vehicle is stationary,
(ii) prevent the force of gravity from causing said front structure and rear structure to rotate about said primary, first and second pivot points such that said inner portions of said front and rear structures contact the ground while said vehicle frame is stationary,
(iii) dampen the movement of said inner portions of said front and rear structures when the vehicle accelerates and said inner portions of said front
and rear structures are displaced away from the ground and pivot about said primary pivot point;
said resilient shock absorber and spring means including
(iv) a first end pivotally connected to said linkage means, and
(v) a second end pivotally connected to said vehicle frame.

5,630,608
SKI BRAKE
Max Luitz, Blaichach-Bihlerdorf, and Hans Frick, Wiggensbach, both of Germany, assignors to Atomic Austria GmbH, Altenmarkt im Pongau, Austria
Filed Jan. 27, 1995, Ser. No. 379,980
Claims priority, application Austria, Jan. 28, 1994, 164/94
Int. Cl.[6] A63C *7/10*
U.S. Cl. 280—605 **21 Claims**



1. A brake gear for an elongated sports apparatus having an upper surface, a running surface and a central axis extending in a longitudinal direction, which comprises
(a) a bearing device arranged symmetrically with respect to the central axis, the bearing device comprising
(1) a housing mounted on the upper surface on each side of the central axis, the housing defining a first bore extending parallel to the upper surface and the central axis, and a bearing bore extending parallel to the upper surface and perpendicularly to the central axis,
(b) a brake lever having a portion rotatably mounted in the bearing bore, a crank arm extending from one end of the brake lever portion above the upper surface and a brake arm extending from an opposite end of the brake lever portion at an angle thereto, rotation of the brake lever portion in the bearing bore causing the brake arm to be pivoted from a rest position above the upper surface to a braking position therebelow,
(c) a spring force storage device arranged in the first bore for applying an adjusting force to the brake lever to pivot the brake arm into the braking position,
(d) an adjustment element having a portion extending into the first bore and having a flange at an end thereof, the spring force storage device being arranged between the flange and an end wall of the housing, and a pivot pin extending outside the housing perpendicularly to, and towards, the central axis,
(e) a foot pedal arranged between the adjustment element and the crank arm for transmitting the adjusting force, and
(f) a damping device arranged between the flange and an abutment of the housing opposite the end wall, the damping device exerting a damping force in a direction opposite to the adjusting force of the spring force storage device and having a length which is variable along an adjustment path from a rest position in the direction of the damping force, the minimal damping force in the rest position being at least equal to the adjusting force in the braking position of the brake arm.

5,630,609
FRONT WHEEL SUSPENSION FOR A VEHICLE
Dong-Woo Shin, Kyungsangnam-Do, Rep. of Korea, assignor to Hyundai Motor Company, Ltd., Seoul, Rep. of Korea
Filed Apr. 26, 1995, Ser. No. 427,825
Claims priority, application Rep. of Korea, May 4, 1994, P94-9882
Int. Cl.[6] B60G *3/00*
U.S. Cl. 280—664 **9 Claims**

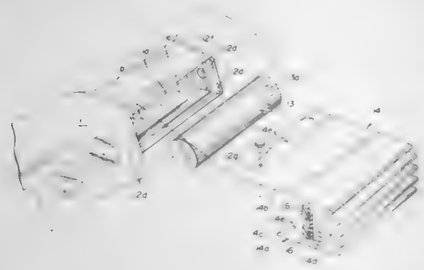


1. A front wheel suspension apparatus for a vehicle, comprising:
a wheel supporter for rotatably supporting a wheel;
an upper arm movably connected to said wheel supporter through an upper joint, and a lower arm movably connected to said wheel supporter through a lower joint;
a spring member disposed between said upper arm and said lower arm for reducing a rolling of the vehicle;
a shock absorber disposed within said spring member for absorbing a rolling of said spring member;
at least one strut bar fixed to said lower arm at one end thereof;
an elastic tiebar member connected to another end of said strut bar at one end thereof, wherein said elastic tiebar member includes:
a pair of first and second brackets,

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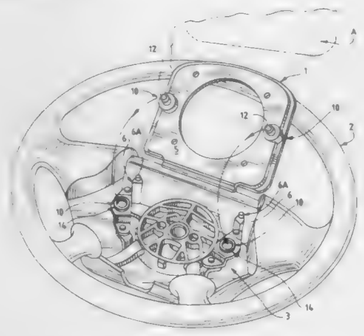
an elastic material tube surrounding said strut bar for absorbing any impact, said elastic material tube having an outer length shorter than an inner length adjacent said strut bar,
an outer tube surrounding only said elastic material tube and connected to a radially extending link connected to a vehicle frame,
means for securing said first and second brackets to said strut bar, and
an extension member longitudinally extending from said strut bar; and
a torsion bar connected to another end of said elastic tiebar member by said extension member, whereby the front wheel suspension apparatus can effectively reduce the rolling of the vehicle, which is delivered from a surface of a rough road and a vibration of wheels.

5,630,610
ADAPTABLE VEHICULAR AIR BAG INSTALLATION ARRANGEMENT
Takashi Murakami, and Hirohiko Kikuchi, both of Omiya, Japan, assignors to Kansei Corporation, Saitama, Japan
Filed Jul. 7, 1995, Ser. No. 499,574
Claims priority, application Japan, Jul. 7, 1994, 6-155937
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **14 Claims**



1. A vehicular air bag installation arrangement for a passenger, comprising:
an instrument panel positioned before a passenger position within a vehicle;
a recessed compartment in said instrument panel, said recessed compartment including a front side thereof open to a front side of said instrument panel;
first engaging means within said recessed compartment;
a foldable air bag;
inflation means actuatable for generating a gas capable of timely and sufficiently inflating said air bag, wherein said air bag is folded such that extended portions thereof surround said inflation means, and said inflation means and said folded air bag being dimensioned to substantially equal an internal space of said recessed compartment and adapted to be packable snugly therein:
second engaging means securely attached to side portions of said folded air bag for engaging with said first engaging means of said recessed compartment when said air bag and said inflation means are packed within said recessed compartment; and
a lid member openably mounted over an open side of said recessed compartment,
wherein said extended portions of said air bag are wrapped around said inflation means to act as an insulative layer between said inflation means and said recessed compartment such that heat generated by said inflation means is not directly imparted to said recessed compartment, to prevent deformation thereof as a result of air bag operation.

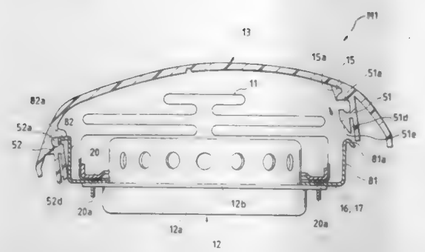
5,630,611
MOUNTING ASSEMBLY FOR AIR BAG
David C. Goss, Rockford; Steven P. Donovan, Roscoe, and David W. Everdon, Rockford, all of Ill., assignors to Textron Inc., Providence, R.I.
Filed Jul. 21, 1995, Ser. No. 505,670
Int. Cl.[6] B60R *21/16;* **F16B** *21/18*
U.S. Cl. 280—728.2 **3 Claims**



1. A fastening assembly for mounting an inflatable module of a vehicle comprising: a support structure arranged for securing the inflatable module to a vehicle component; a coupling member having a portion projecting from said support structure; a locking member securable to said vehicle component and arranged for reception of said coupling member; and a lock element separately formed and movably linked to and carried on said projecting portion of said coupling member in arrangement enabling insertion of said lock element with said projecting portion into said locking member for fit into a locking position within said locking member to secure fastening of said module to said vehicle component, wherein said lock element comprises a resiliently compressible split-ring, expandably inserted into a cavity formed in said locking member to define said locking position, said split-ring being movably carried within an annular recess formed in said projecting portion of the coupling member, said recess comprising a tapered surface enabling progressive gradual compression of said split-ting further into said recess during said insertion of said projecting portion of said coupling member into said locking member, said tapered surface being contoured so that said split-ring reacts therewith to produce a resulting, axially directed force on said coupling member when in said locking position tending to pull said projecting portion of the coupling member in the direction of said insertion into said locking member to maintain tight engagement between said support structure and said vehicle component.

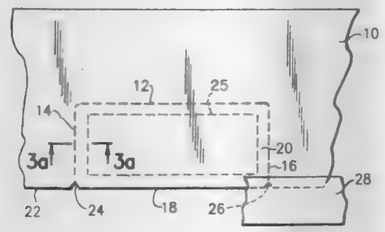
5,630,612
AIR BAG DEVICE
Tadashi Yamamoto, and Norinari Nagata, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan
Filed Feb. 16, 1996, Ser. No. 602,447
Claims priority, application Japan, Feb. 22, 1995, 7-033796
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **11 Claims**

6. An air bag device comprising:
a folded air bag:
a cover for covering said air bag, said cover having a top wall and four of front, rear, right and left side walls, said front and rear side walls respectively having securing grooves on the inner peripheral surface thereof; and
a bag holder for holding said air bag, said bag holder having four of front, rear, right and left vertical walls, disposed on the inner surface of said respective side walls, and respectively having securing piece portions at the upper end thereof;



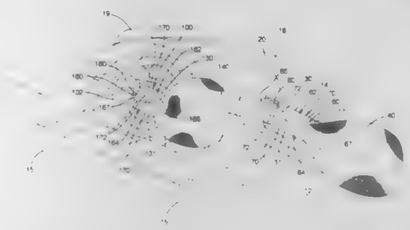
wherein said rear securing piece portion is inserted into and secured to said rear securing groove so as to be rotatable with a secured portion thereof as a fulcrum, and said front securing piece portion is inserted into and secured to said front securing groove so that said cover is held by said bag holder;
wherein the width dimension of the opening of said rear securing groove is substantially smaller than the height dimension of said rear securing piece portion and the width dimension of the opening of said front securing groove is substantially larger than the height dimension of said front securing piece portion.

5,630,613
APPARATUS FOR AIDING IN THE OPENING OF AN INTEGRAL DEPLOYMENT DOOR IN A PANEL OF AN AIRBAG ASSEMBLY
Timothy J. Leonard, Stuttgart, Germany; Joseph L. Ralston; Donald J. Bolieau, both of North Ogden, Utah; Mark Rogers, Roy, Utah; Daniel W. Anderson, South Weber, Utah, and Axel W. Kaiser, Vaihingen, Germany, assignors to Morton International, Inc., Chicago, Ill., and Robert Bosch GmbH, Stuttgart-Feuerbach, Germany
Filed Oct. 23, 1995, Ser. No. 543,845
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **8 Claims**



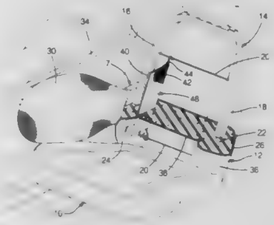
1. A vehicle panel assembly having a contoured panel and a single integral airbag deployment door defined in a portion of said contoured panel for deployment of an airbag from an airbag module positioned behind said contoured panel and deployment door, said panel assembly comprising:
a panel front surface for facing an interior of a vehicle compartment and having a front edge,
a panel rear surface substrate,
a foam core between said panel front surface and said panel rear surface substrate,
said integral deployment door having the same contour as said panel and being hinged in said panel assembly in a hinge region along a first side of said door with said front edge of said panel comprising a second side of deployment door,
a pair of spaced notches in said front edge of said panel assembly on said second side of said deployment door opposite the hinged region of the first side of said door for delineating the ends of the second side of said door and for concentrating stresses and initiating separation of said deployment door from said panel assembly in only two tear regions from said notches to said hinge region of said door to define the remaining sides of said door.

5,630,614
BIAS APPARATUS FOR AIR BAG MODULE
James K. Conlee, Dayton, and Paul K. Egelston, Franklin, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1995, Ser. No. 558,112
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.1 **20 Claims**



20. An air bag module in a vehicle comprising:
an air bag;
an inflator for generating gas to inflate the air bag; and
a bias apparatus including first and second bias flaps being separate and independent from each other, the bias flaps cooperatively defining an overlapped portion located atop the air bag prior to inflation, the overlapped portion having a lateral length and the overlapped portion having a width that is varied and uneven along the lateral length of the overlapped portion.

5,630,615
SIDE IMPACT SUPPLEMENTAL INFLATION RESTRAINT
Glen Miesik, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 11, 1995, Ser. No. 570,425
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.2 **2 Claims**



1. A side impact supplemental inflation restraint (SIR) system for an automotive vehicle comprising:
a vehicle seat positioned within the vehicle, the seat having a generally rigid frame, the frame having at least two leg portions connected by extending wires;

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cushion material surrounding the frame forming a seating surface;

a cover enclosing the frame and cushion material;

an inflatable air bag positioned within the cushion material for penetrating through the cover and outward extension upon a side impact of the vehicle; and

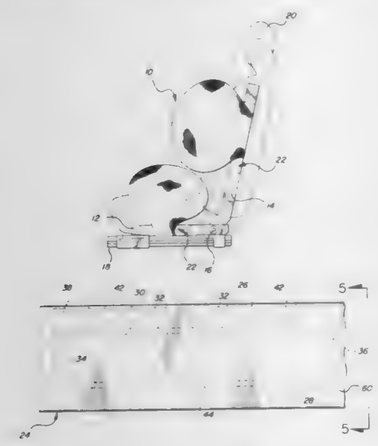
a blocking panel with a first end anchored with respect to the seat frame and a second end anchored with respect to the cover to prevent the travel of the air bag upon deployment between the cushion and cover along an undesired portion of the vehicle seat, the first end of the blocking panel being connected to the wires which extend between the leg portions of the frame.

5,630,616

SEAT FRAME INTEGRATED AIR BAG INFLATOR

William G. McPherson, Grand Blanc, Mich., assignor to Lear Seating Corporation, Southfield, Mich.

Filed Feb. 14, 1996, Ser. No. 601,405
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.2 **16 Claims**



1. A seat assembly (**10**) for a vehicle including an inflatable air bag for protecting the occupant of the seat assembly during a collision, said assembly comprising;

a seat frame (**12. 14**), occupant supporting materials supported by said seat frame;

said seat frame including a load bearing frame member having a length and an integral section (**24**) thereof extending longitudinally along a portion of said length thereof;

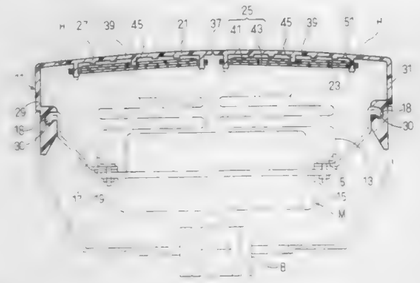
said integral section (**24**) defining an air bag storage pocket (**26**) and an inflator housing, said integral section (**24**) including a common wall (**30**) separating said bag storage pocket (**26**) from said inflator housing, said common wall (**30**) having air holes (**32**) extending therethrough, said frame member including a base wall (**38**) with an integral dished recess therein defining said bag storage pocket (**26**), said common wall (**30**) defining the bottom of said dished recess, said dished recess (**26**) being defined by lateral walls (**40**) and end walls (**42**), said lateral walls (**40**) extending downwardly below said common wall (**30**) to define opposing side walls of said inflator housing and into one another to define a bottom wall (**44**) of said inflator housing, said end walls (**42**) of said dished recess (**26**) being spaced inwardly from said ends (**34, 36**) of said inflator housing.

5,630,617

HORN PAD FOR A STEERING WHEEL

Takahiro Hashiba, Aichi-ken, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi-ken, Japan, and TG North America Corporation, Troy, Mich.

Filed Jan. 2, 1996, Ser. No. 581,837
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—731 **13 Claims**



1. A horn pad for a steering wheel, the steering wheel having an air bag device, the horn pad being constructed and arranged to cover an upper surface of said air bag device, the horn pad comprising:

a main body including a horn operating portion, said horn operating portion having an upper surface and a lower surface,

a plurality of pressing protrusions extending from said lower surface of said horn operating portion,

a planar switch opposing said pressing protrusions of said horn operating portion so as to define a gap therebetween when said horn operating portion bears no load, said switch being operable upon contact with said protrusions due to a load on said horn operating portion,

a support plate constructed and arranged to support said planar switch and including first and second support plates, said first and second support plates being movable relative to each other,

at least one work preventive protrusion provided between said lower surface of said horn operating portion and said second support plate so as to define a space, said at least one work preventive protrusion extending through said planar switch and through at least a portion of said first support plate, said at least one work preventive protrusion being constructed and arranged to prevent contact between said pressing protrusions and said planar switch.

5,630,618

HYBRID INFLATOR WITH A VALVE

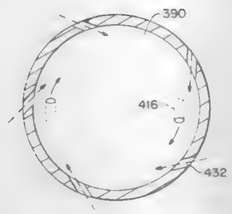
Brian K. Hamilton, Littleton, and Brent A. Parks, Englewood, both of Colo., assignors to OEA, Inc., Aurora, Colo.

Continuation-in-part of Ser. No. 389,297, Feb. 16, 1995, Pat. No. 5,553,889, which is a continuation-in-part of Ser. No. 328,657, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 210,668, Mar. 18, 1994. This application Sep. 11, 1995, Ser. No. 518,925
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—736 **30 Claims**

1. A hybrid inflator for an automotive inflatable safety system comprising an air/safety bag, said inflator comprising:

a stored gas housing which contains a pressurized medium;

a gas generator comprising a gas generator housing, a propellant contained within said gas generator housing, at least one gas generator inlet port which fluidly interconnects said gas generator housing and said inflator housing, and at least one gas generator outlet port which fluidly interconnects said gas generator housing and the air/safety bag;



a propellant ignition assembly interconnected with said gas generator; and

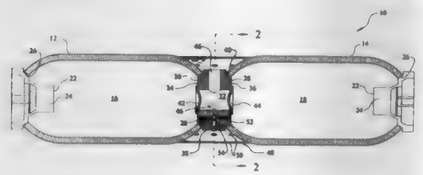
valve means, operatively associated with said at least one gas generator inlet port, for substantially inhibiting flow between said inflator housing and said gas generator housing through said at least one gas generator inlet port until a pressure within said inflator housing exceeds a pressure within said gas generator housing by a predetermined degree after said propellant ignition assembly is activated.

5,630,619

HYBRID ADAPTIVE INFLATOR FOR AIRBAGS

Eric S. Buchanan, North Ogden; Bradley W. Smith, Ogden, and Mark B. Woodbury, Salt Lake, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Division of Ser. No. 651,010, May 20, 1996, Pat. No. 5,582,428, which is a continuation-in-part of Ser. No. 608,356, Feb. 28, 1996, abandoned. This application Sep. 9, 1996, Ser. No. 709,917
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—741 **6 Claims**



1. A hybrid adaptive airbag inflator, comprising:

first and second pressure vessels defining, respectively, first and second chambers, each said pressure vessel including an exit orifice;

a quantity of inert gas stored in each of said chambers;

a heating device mounted to each of said pressure vessels for heating an associated one of said quantities of stored gas upon receipt of a signal;

a connector having a central chamber and at least one exit port communicating with said central chamber, said pressure vessels being mounted to said connector with each of said exit orifices in communication with said central chamber; and

a burst disc associated with each of said exit orifices and normally preventing flow of said stored gas from said pressure vessels into said central chamber.

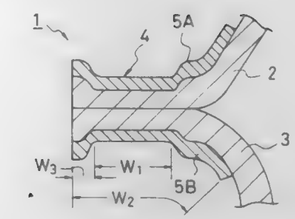
5,630,620

REINFORCED THERMOPLASTIC RESIN FILM AIR BAG

Kinji Hirai, Kanagawa, and Hiroshi Tomita, Shiga, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,181
Claims priority, application Japan, Sep. 1, 1994, 6-208567
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—743.1 **6 Claims**

1. A thermoplastic resin film air bag, comprising:



a plurality of thermoplastic resin films for constituting the air bag, said thermoplastic resin films having peripheries and being superposed together along the peripheries, and

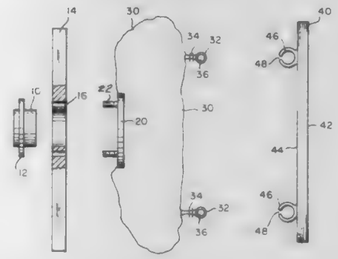
at least one reinforcing thermoplastic resin film superposed on at least one surfaces of the peripheries of the thermoplastic resin films opposite to facing surfaces superposed each other, said at least one reinforcing thermoplastic resin film and the thermoplastic resin films superposed together being fused and bonded together along the peripheries of the thermoplastic resin films inside the at least one reinforcing thermoplastic resin film to thereby securely connect the thermoplastic resin films while reinforcing a fuse bonded portion of the thermoplastic resin films, total thicknesses of the fuse bonded portion of the thermoplastic resin films and the at least one reinforcing thermoplastic resin film being less than total thicknesses of the thermoplastic resin films and the at least one reinforcing thermoplastic resin film outside the fuse bonded portion, the width of the fuse bonded portion being less than the width of the at least one reinforcing thermoplastic resin film and greater than the width between edges of the thermoplastic resin films and an edge of the fuse bonded portion near the edges of the thermoplastic resin films.

5,630,621

KNEE BAG COVER RETENTION DESIGN

David W. Schneider, Waterford, Mich., assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 12, 1996, Ser. No. 728,136
Int. Cl.[6] B60R *21/045*
U.S. Cl. 280—753 **7 Claims**



1. An automotive vehicle knee bag cushion/knee bolster assembly with enhanced stability which includes:

a knee bolster panel or cover,

at least two spaced channels secured to said bolster panel or cover,

a knee bag cushion, and

at least two retention rods attached to the outside of said cushion,

whereby when said retention rods are slid into said channels, said bolster panel is secured to said knee bag cushion.

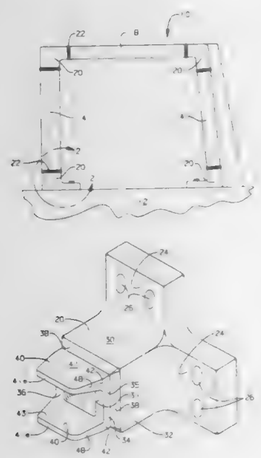
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5,630,622

STRUCTURAL WELD JOINT WITH INTERNAL GUSSET

Kolin J. Kirschenmann, Decatur; Robert L. McNabb, Monticello, and Gail F. Westendorf, Decatur, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 12, 1994, Ser. No. 354,345
Int. Cl.[6] B60R 21/13
U.S. Cl. 280—756 14 Claims



1. A structural weld joint, comprising:

a cast member including a first portion having an outer surface of a predetermined external size and shape, a second portion projecting from one end of the first portion and having a free end and an external surface of a predetermined size and shape which is smaller than the predetermined size and shape of the first portion, a transition portion extending between the first and second portions of the cast member, at least one gusset having a free end and an outer surface and being secured to and extending from the free end of the second portion of the cast member; and

a tubular member having an inner surface of a predetermined internal size and shape and being disposed in telescopic relationship with the at least one gusset and the second portion of the cast member and a portion of the tubular member inner surface is disposed in close proximity to the outer surface of the at least one gusset for load bearing contact therewith due to deflection under load.

5,630,623

VEHICLE ROLL CONTROL SYSTEM

Blaise J. Ganzel, Ann Arbor, Mich., assignor to Kelsey Hayes, Ann Arbor, Mich.

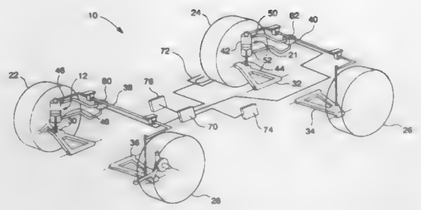
Continuation of Ser. No. 290,692, Aug. 15, 1994, abandoned. This application Apr. 4, 1996, Ser. No. 627,384
Int. Cl.[6] B60G 11/26
U.S. Cl. 280—772 10 Claims

1. A semi-active system for controlling the roll of a motor vehicle, the system comprising:

an accumulator;

an actuator connected between an unsprung portion of the vehicle and a sprung portion of the vehicle, the actuator having first and second ports;

a first check valve in communication with the accumulator and the first port of the actuator preventing flow from the first port to the accumulator;



a second check valve in communication with the accumulator and the second port of the actuator preventing flow from the second port to the accumulator;

a first pressure control valve in parallel with the first check valve and having a first position where flow from the first port to the accumulator is prevented up to a predetermined pressure so that the first pressure control valve and the first check valve completely isolate the first port from the accumulator at a pressure less than the predetermined pressure; and

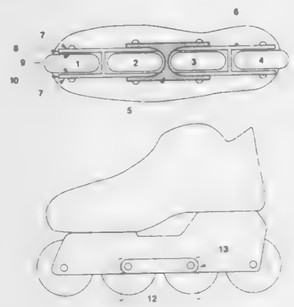
a second pressure control valve in parallel with the second check valve and having a first position where flow from the second port to the accumulator is prevented up to a predetermined pressure so that the second pressure control valve and the second check valve completely isolate the second port from the accumulator at a pressure less than the predetermined pressure.

5,630,624

IN-LINE SKATE FRAME PROTECTOR

Scott A. Goodman, 311 Montana Ave., Apt. 205, Santa Monica, Calif. 90403

Filed Nov. 22, 1993, Ser. No. 155,281
Int. Cl.[6] A63C 17/00
U.S. Cl. 280—809 6 Claims



1. An in-line skate frame protector attached to an in-line skate frame, wherein the skate frame carries at least two wheels mounted linearly front to rear between two spaced, parallel sides of the skate frame, the skate frame protector being made of an impact or abrasion resistant material and capable of preventing impact with or abrasion of at least 0.01 inch of a lowermost underside portion of the skate frame, comprising:

(a) a first vertical member attached to one of the spaced, parallel sides of the skate frame;

(b) a second vertical member attached to the other spaced, parallel side of the skate frame and opposite the first vertical member; and

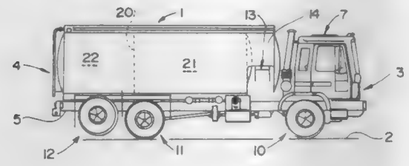
(c) a connector spanning from the first vertical member to the second vertical member such that the skate frame protector shields a lowermost underside portion of the skate frame.

5,630,625

TANK TRUCK

Donald W. Shaw, 1309 Fairbourne Ct., Lansdale, Pa. 19446

Continuation-in-part of Ser. No. 53,528, Apr. 23, 1993, abandoned. This application Dec. 7, 1994, Ser. No. 350,817
Int. Cl.[6] B60P 3/22
U.S. Cl. 280—838 24 Claims



1. A tank truck including a front end and a rear end for traversing roads to deliver liquid in the form of refined petroleum product and having a tank including a front section for receiving, storing, and discharging said liquid, a rear section for receiving, storing, and discharging said liquid independent of the front section, and a wheel assembly mounted between the front end and the rear end arrangeable, in tandem axle or single axle configuration for supporting the tank, in the single or tandem axle configuration, the subcombination for effecting said rear tandem axle and rear single axle configurations:

mechanism to provide for said wheel assembly to support the tank by a tandem axle configuration of a predetermined wheel base or by a single axle configuration of a shorter wheel base; and

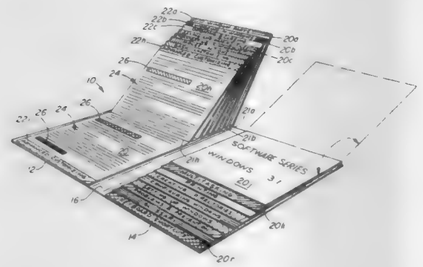
a sensor connected with said rear tank section and operable as a function of the amount of liquid stored in the rear tank section to cause said mechanism to support the tank in said tandem axle configuration and to cause said mechanism to support the tank in said single axle configuration.

5,630,626

INFORMATION GUIDES

David Harper, Vancouver, Canada, assignor to InfoFlip Systems Corporation, Vancouver, Canada

Filed Jan. 18, 1995, Ser. No. 373,844
Int. Cl.[6] B42D 1/00
U.S. Cl. 281—38 18 Claims



1. An information guide, comprising:

a backing sheet;

a plurality of leaves attached to said backing sheet;

said leaves each having information text on opposite sides thereof,

said information text including first text portions identified by color blocks of various colors;

said leaves having marginal portions on opposite sides thereof and said marginal portions being color coded with colors corresponding to those of said color blocks;

said information text including second text portions containing information related to corresponding ones of said first text portions and said second text portions being associated, by said color coding of said marginal portions, with said corresponding ones of said first text portions, so that a user is guided from any one of said first text portions to the associated one of said second text portions by the color coding; and

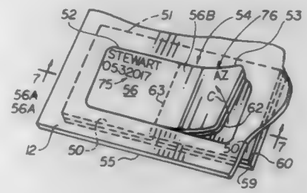
said leaves being secured to said backing sheet along fold lines in said sheets and said fold lines being parallel to one another and spaced apart from one another to expose said marginal portions on one side thereof when leaves lie in mutually overlapping relationship on said backing sheet and on the opposite side thereof when any of said leaves is pivoted away from said backing sheet.

5,630,627

BUSINESS FORM WITH REMOVABLE LABEL, AND METHOD FOR PRODUCING THE SAME

Gary E. Stewart, 2405 E. Desert Crest, Paradise Valley, Ariz. 85253

Filed Apr. 18, 1995, Ser. No. 423,313
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—81 8 Claims



1. A business form having a die cut laminate card removable therefrom, said form including

(a) a substrate sheet having a back side, a front side, and an outer peripheral edge;

(b) at least one piece of plastic having an outer peripheral edge;

(c) a first layer of adhesive intermediate said piece of plastic and said back side of said sheet, said layer of adhesive securing said piece of plastic to a limited area on said back side of said sheet such that the outer peripheral edge of said piece of plastic generally lies within the outer peripheral edge of said sheet;

(d) a layer of backing material having an outer peripheral edge;

(e) a second layer of adhesive intermediate said layer of backing material and said piece of plastic, said second layer of adhesive securing said backing material to said piece of plastic such that the outer peripheral edge of said piece of backing material generally lies within the outer peripheral edge of said sheet;

(f) a card area die cut in said sheet above said layer of backing material and having an outer peripheral edge, the outer peripheral edge of said die cut card area generally lying within the outer peripheral edge of said piece of plastic and the outer peripheral edge of said backing material,

(g) a card adhesive layer die cut in said first adhesive layer; and

(h) a card plastic layer die cut in said piece of plastic above said layer of backing material and having an outer peripheral edge coterminating with the outer peripheral edge of said card area;

said card area, said card adhesive layer die cut in said first adhesive layer, and said card plastic layer peelable from said layer of backing material and away from said sheet to produce a laminate card.

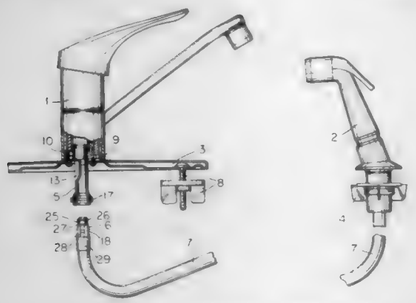
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CONNECTING COUPLING

Heiner Mönch, Kenn, Germany, assignor to Ideal-Standard GmbH, Bonn, Germany

PCT No. PCT/DE94/01181, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO95/10003, PCT Pub. Date Apr. 13, 1995
PCT Filed Sep. 29, 1994, Ser. No. 446,682
Claims priority, application Germany, Oct. 1, 1993, 43 34 153.5
Int. Cl.° F16L *35/00*
U.S. Cl. 285—24 8 Claims



1. A connecting coupling, comprising a nozzle having an end section insertable into a hose line and a connection section including an external retaining groove; a coupling piece connectable to a hose line or faucet fitting and having an inner contour corresponding to an outer contour of said nozzle connection section so as to receive said nozzle connection section, said coupling piece having a connecting region provided with external grooved sections and at least two slot-shaped openings; and an element penetrating said slot-shaped openings of said couplings piece so as to lock in said retaining groove of said nozzle connection section with positive fit, said securing element being provided with holding and blocking tongues for maintaining a connection between said nozzle connection section and said coupling piece, said securing element being a disk-shaped body with a central opening therethrough and which is split on one side and is provided with a reinforced outer rim, said holding and blocking tongues engaging in said slot-shaped openings and said retaining groove and being formed and arranged relative to said reinforced outer rim so that when said securing element is closed, said central opening forms a substantially rectangular opening.

5,630,629

FASTENING ELEMENT

Klaus Moessinger, Obersulm, Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

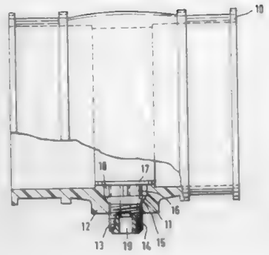
Filed Dec. 12, 1994, Ser. No. 354,764
Claims priority, application Germany, Dec. 10, 1993, 9318988 U
Int. Cl.° F16L *41/08*
U.S. Cl. 285—156 4 Claims

1. A fastening element for fastening a component to a rubber-elastic tube or preform, said rubber-elastic tube or preform having an interior surface, an exterior surface, and an opening extending between said interior surface and said exterior surface, said opening being defined by an opening surface, said fastening element being adapted to be inserted in use into said opening and having an essentially concentric shape with respect to a central axis, said fastening element comprising:

an end flange forming a first longitudinal end thereof;

an oppositely disposed second longitudinal end which is provided with a threaded connection;

a conical section which expands conically from said threaded connection toward said end flange; and



a cylindrical section which extends between the conical section and the end flange.

said end flange extending radially with respect to said central axis to form a flat first support surface which contacts said interior surface of the rubber-elastic tube or preform,

said conical section forming a second support surface which contacts said opening surface of the rubber-elastic tube or preform, and

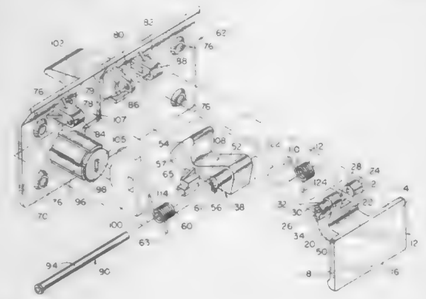
said cylindrical section forming a further support surface which contacts said opening surface of the rubber-elastic tube or preform.

5,630,630

GLOVE COMPARTMENT LATCH MECHANISM

Robert J. Price, Oconomowoc, and John E. Bailen, West Allis, both of Wis., assignors to Strattec Security Corporation, Milwaukee, Wis.

Filed Jul. 11, 1995, Ser. No. 500,629
Int. Cl.° E05B *19/12*
U.S. Cl. 292—128 19 Claims



19. A latch mechanism for a compartment, comprising:

a plate mountable to a door of the compartment, the plate having first and second opposing sides, and an opening extending therebetween;

a lever pivotably mounted to the plate for actuating the latch mechanism, the lever pivotable between a first latch opening position and a second latch closing position;

means for biasing the lever toward the latch closing position;

a hook pivotably mounted to the panel, the hook pivotable between a latched position and an unlatched position;

means for interlocking the lever and the hook such that the hook is pivotable from the latched to the unlatched position in response to the pivoting of the lever from the latch closing position to the latch opening position, and such that the hook pivots independent of the lever when the lever is in the latch closing position, wherein the means for interlocking the lever and the hook includes a key member extending laterally from the lever, the key member receivable within the key receipt cavity in the hook;

means for biasing the hook toward the latched position;

a plurality of flanges extending from the first side of the plate, each flange including an opening extending therethrough, each opening in axial alignment with the other openings;

a pin extending through each opening in each flange and through the hook; and

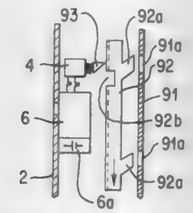
first and second ears extending from the lever, each ear including an opening for receiving the pin therethrough thereby allowing pivotable movement of the lever about the pin.

5,630,631

DOOR LOCKING APPARATUS FOR DISPENSER

Shozo Iwamoto; Tetsuya Miyao, and Kosaku Ito, all of Mie, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 383,487, Feb. 3, 1995, Pat. No. 5,575,515.
This application Mar. 18, 1996, Ser. No. 617,082
Claims priority, application Japan, Feb. 10, 1994, 6-015621
Int. Cl.° E05C *1/08*
U.S. Cl. 292—156 5 Claims



1. A door locking apparatus for locking and unlocking a door of a dispenser and a case thereof comprising:

a door lock mechanism situated between the door and the case for latching the door at a locked position and including a lock plate fixed to one of the door and the case and having a slit therein, and engaging means fixed to the other of the door and the case, said engaging means having a cam plate vertically slidably situated in said the other of the door and the case, a pawl fixed to the cam plate to be engagable with the slit of the lock plate when the door is closed, a groove formed in the cam plate, and a latch situated adjacent to the cam plate to be engagable with the groove;

a solenoid mounted inside the door for releasing the door lock mechanism, said solenoid being connected to the latch so that when the solenoid is actuated in a condition that the door is closed, the latch is moved from the groove to allow the cam plate to move downwardly and to disengage the pawl of the cam plate from the slit of the lock plate;

a receiver mounted inside the door and connected to the solenoid; and

a transmitter for sending an ID signal from an outside of the door to the receiver so that when the receiver receives the ID signal from the transmitter, the solenoid actuates the latch of the engaging means to release the lock plate of the door lock mechanism.

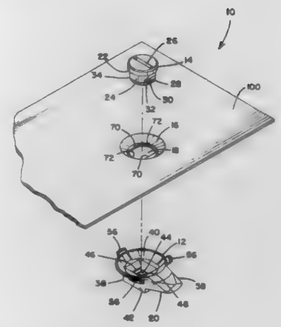
5,630,632

QUARTER TURN LATCH

David A. Swan, Shoreview, Minn., assignor to Federal-Hoffman, Inc., Anoka, Minn.

Filed Dec. 7, 1994, Ser. No. 350,654
Int. Cl.° E05C *3/02*
U.S. Cl. 292—240 15 Claims

5. A quarter turn latch attached to a mounting surface, comprising:



a raised portion extending out of the plane of the mounting surface and having an orifice formed therein;

a latching member including an engaging portion on a first side of the mounting surface;

an actuating member on a second side of the mounting surface inserting through the orifice, including rotation limiting means for limiting rotation of the latch, wherein the rotation limiting means comprises an actuating member body having first opposed corners alternating with second opposed rounded corners and wherein the orifice is elongated with a first dimension greater than a second dimension; and

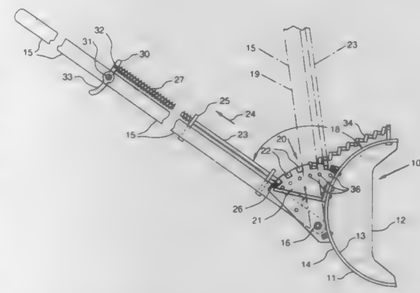
means for attaching the latching member to the actuating member.

5,630,633

SHOVEL WITH DRIVEN TILTABLE BLADE

Herman K. Dupre, c/o Seven Springs, Champion, Pa. 15622, and Charles Bihun, Jr., R.D. 1, Box 8B, Mill Run, Pa. 15454

Filed Apr. 22, 1996, Ser. No. 635,562
Int. Cl.° A01B *1/22*
U.S. Cl. 294—53.5 7 Claims



1. A shovel comprising: a shovel blade having a front and a back, a handle pivotally mounted on the back of said blade with a mechanism for pivotally retaining the handle at various angles relative to said blade between an open position and a closed position, and a releasable locking mechanism operable for releasing and relocking said blade relative to said handle at different relative angles between said open and closed positions, the improvement comprising a spring biased drive connected between said blade and said handle and for pivoting said blade under bias relative to said handle from said open position toward said closed position when said releasable locking mechanism is released.

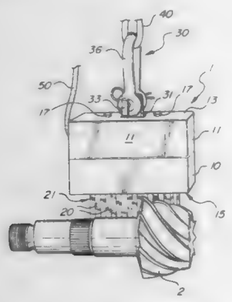
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5,630,634

DEVICE FOR MAGNETICALLY ENGAGING OBJECTS HAVING VARIABLE SURFACE CONTOURS

Michael W. Stowe, P.O. Box 402, Boyne City, Mich. 49712, and Claire T. Martin, Charlevoix, Mich., assignors to Michael W. Stowe, Boyne City, Mich.

Continuation of Ser. No. 364,376, Dec. 27, 1994, abandoned.
This application Apr. 23, 1996, Ser. No. 639,247
Int. Cl.[6] B66C *1/06*; H01F *7/20*
U.S. Cl. 294—65.5 21 Claims



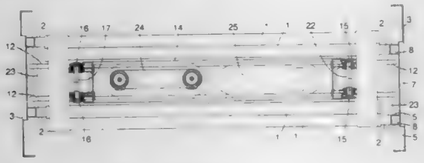
1. A device for engaging articles of varying surface contours, comprising:
- a plurality of independently positionable magnetically-conductive elements;
- a bobbin assembly having at least a first pair of plates fixedly connected in parallel-opposed fashion to define a walled slot therebetween for slidingly receiving said magnetically-conductive elements, each of said at least first pair of plates having upper and lower surfaces;
- a selectively magnetizable core member for selectively magnetizing said plurality of magnetically-conductive elements;
- each one of said plurality of magnetically-conductive elements including at least one element-arresting projection extending therefrom and opposing said upper surfaces of at least one of said first pair of plates; and
- wherein said upper surfaces of said plates each comprise a plate extending approximately perpendicularly away therefrom.

5,630,635

ADJUSTABLE CONTAINER-HANDLING YOKE HAVING INDIVIDUALLY CROSS-BEAMS RESILIENTLY MOUNTED TO EXTENSION BEAMS

Gösta K. A. Karlsson, Killeberg, Sweden, assignor to Elmhults Konstruktions AB, Almhult, Sweden

Filed Oct. 7, 1994, Ser. No. 319,547
Int. Cl.[6] B66C *1/10*
U.S. Cl. 294—81.21 4 Claims



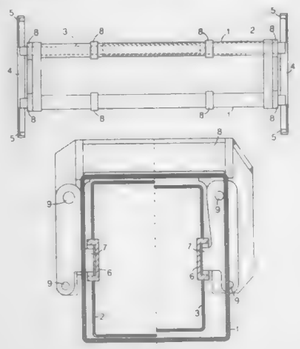
1. A container yoke, comprising:
- four main beams providing a yoke frame,
- two first extension beams mounted in a first two of said main beams for linear movement in one direction;
- two second extension beams mounted in a second two of said main beams for linear movement in another direction which is opposite to said one direction;
- a first cross-beam carried by said two first extension beams and attached thereto by respective fasteners provided as respective elastic couplings;
- a second cross-beam carried by said two second extension beams, and attached thereto by respective fasteners provided as respective elastic couplings; and
- said cross-beams being collectively provided with four lifting hooks arranged in a rectangular pattern, for releasably gripping a shipping container at four upper corners of the shipping container;
- each said elastic coupling between a respective said cross-beam and the respective said extension beam including:
  - two flanges mounted in spaced, confronting relation on the respective extension beam;
  - a spring base mounted on the respective cross-beam, each said spring base having two elastic bushing assemblies extending between said two flanges; and
  - two retainers, securing respective elastic bushing assemblies securing each said elastic bushing assembly to the respective said two flanges.

5,630,636

CONTAINER YOKE

Gosta Karlsson, Killeberg, Sweden, assignor to Elmhults Konstruktion AB, Almhult, Sweden

Filed Mar. 14, 1996, Ser. No. 619,444
Claims priority, application Sweden, Mar. 14, 1995, 9500843-9
Int. Cl.[6] B66C *1/66*
U.S. Cl. 294—81.21 5 Claims



1. A container yoke comprising a frame (**1**), axially moveable beams (**2**, **3**) fitted in the frame and axially moveable reciprocatingly in relation thereto, and transverse beams (**4**) which are attached to the free ends of the axially moveable beams that extend beyond the frame (**1**), characterized in that respective axially moveable beams (**2**, **3**) are supported in the frame (**1**) by means of at least four support elements (**7**) disposed in mutually opposing pairs and engaging in grooves (**6**) disposed along the length of the axially moveable beams (**2**, **3**) and in the horizontal bending plane (B) of said axially moveable beams.

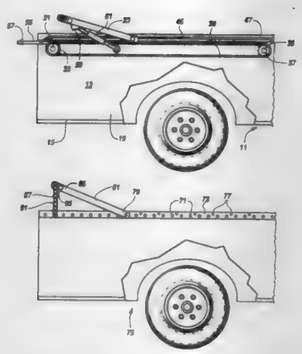
5,630,637

PICKUP TRUCK HAVING AN ADJUSTABLE TAILGATE

Gregory M. Sauri, Garland, Tex., assignor to Gregory Mark Sauri, Garland, Tex.

Filed Jun. 13, 1996, Ser. No. 663,576
Int. Cl.[6] B62D *33/08*
U.S. Cl. 296—56 13 Claims

1. A pickup truck, comprising:



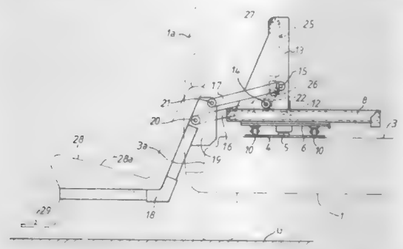
- a truck bed, defined by a floor, a front, and two sides, leaving a rectangular opening at one end;
- a tailgate;
- a rear shaft extending across the truck bed and having a sprocket near each end of the rear shaft;
- a front shaft extending across the truck bed and having a sprocket near the end of each end of the front shaft;
- a pair of chains, each chain traveling around the sprockets near each end of the rear shaft and the front shaft, and connected to the tailgate;
- a motor for rotating the front shaft to move the chains, thus moving the tailgate upward and forward through the truck bed; and
- means for temporarily attaching the tailgate to the sides of the truck bed in a selected position.

5,630,638

SEAT LIFT MECHANISM FOR AN AUTOMOTIVE VEHICLE

Kazuhiro Hirasawa, Toyota, and Shigeru Yamaki, Ageo, both of Japan, assignors to Wako Kogyo Kabushiki Kaisha, Gumma-ken, and Araco Kabushiki Kaisha, Aichi-ken, both of Japan

Continuation of Ser. No. 325,903, Oct. 19, 1994, abandoned.
This application Aug. 15, 1996, Ser. No. 698,183
Int. Cl.[6] B60N *2/14*
U.S. Cl. 296—65.1 2 Claims



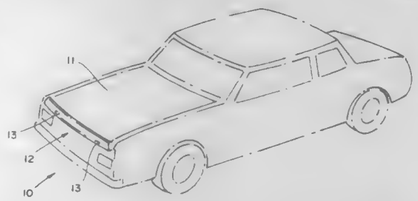
1. A seat lift mechanism for an automotive vehicle, said seat lift mechanism comprising:
- a stationary base fixedly mounted on a compartment floor of the vehicle;
- a swivel base rotatively mounted on said stationary base, said swivel base including means for rotatively swiveling on said stationary base about a vertical axis between a forward-facing position where a front of said swivel base is oriented to a front of the vehicle and a sideways position where the front of the swivel base is oriented toward a side door opening of the vehicle;
- a pair of parallel rail members fixedly mounted on said swivel base at opposite sides thereof;
- a slide frame slidably supported on said rail members, said slide frame being placed at a backward position on said swivel base for horizontal movement in a predetermined distance toward a forward position when said swivel base is placed in the sideways position;
- a lift rack mounted on said slide frame, said lift rack having a passenger seat thereon;
- a link mechanism mounted on said slide frame behind said lift rack, said link mechanism including means for operatively connecting said lift rack to said slide frame and means for moving said lift rack and said seat between a first position on said slide frame inside the vehicle and a second position with said lift rack and said seat extending from said slide frame through the side door opening and adjacent a ground surface when said swivel base is in the sideways position oriented toward the side door opening; and
- actuator means, operatively connected to said link mechanism, for actuating movement of said lift rack between the first and second positions, wherein
- said slide frame, said lift rack, and said passenger seat are mounted to each other on said swivel base so as to rotatively swivel about the vertical axis on said swivel base such that axes of rotation of each of said slide frame, said lift rack, and said passenger seat with said swivel base are concentric with said swivel base along said vertical axis.

5,630,639

FIXING ASSEMBLY FOR VEHICLE HOOD PROTECTORS

Rodney E. Horwill, PO Box 171, Salisbury Queensland 4107, Australia

Filed Jan. 11, 1996, Ser. No. 584,066
Claims priority, application Australia, Apr. 13, 1995, PN2407
Int. Cl.[6] B60J *1/00*
U.S. Cl. 296—91 20 Claims



1. A fixing assembly for mounting a hood protector to the hood of a vehicle, said hood being of a type which has a downwardly extending leading lip, said fixing assembly including:
- a hood protector mounting portion external of the hood in use and spacing the hood protector from the hood;
- a locating portion engageable with said lip, and
- a securing portion adapted to secure to the underside of the hood; whereby securing thereof maintains said locating portion engaged with said lip against vibrational and downward loads.

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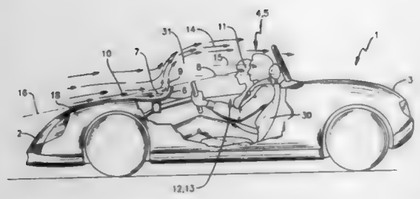
VEHICLE WITH A DEFLECTING DEVICE FORMING A FRONT AIR SCREEN

Claude Fior, Caupenne d'Armagnac, 32110 Nogaro, France

Filed Mar. 4, 1996, Ser. No. 610,457
Claims priority, application France, Mar. 6, 1995, 95 02891
Int. Cl.[6] B60J *1/20*
U.S. Cl. 296—91 37 Claims

1. A vehicle intended to travel at subsonic speed, comprising:

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means defining at least one front place for at least one occupant with a standard zone in which the eyes are situated and which is inscribed between a lower horizontal plane and an upper horizontal plane, said means being open forward of said standard zone,

an air deflecting device comprising a deflecting surface attached, in front of said at least one front place, to a front portion of said vehicle receiving a relative air current when said vehicle is moving, said deflecting surface:

extending overall at least essentially in the transverse direction of said vehicle,

having a concave profile, with a concavity facing forwards,

having a trailing edge directed upwards, so that at least a substantial fraction of said relative air current escapes above said upper trailing edge of said deflecting surface, wherein:

said air deflecting device further comprises at least one wing having a curved, generally concave profile with a concavity facing forwards, said at least one wing defining a furthest upstream leading edge and a furthest downstream trailing edge,

said at least one wing being attached to said vehicle and extending in said relative air current immediately upstream, opposite and adjacent to said deflecting surface,

said furthest upstream leading edge of said at least one wing extends facing at a distance above said deflecting surface,

said furthest downstream trailing edge of said at least one wing extends at least essentially forwards and facing at a distance towards said deflecting surface,

said air deflecting device is disposed below said lower horizontal plane of said standard zone,

the distance between said furthest upstream leading edge of said at least one wing and said deflecting surface is less than the distance between said furthest downstream trailing edge of said at least one wing and said deflecting surface,

said deflecting surface and at least one wing are adapted to form an air flow which is deflected upwards and flows upwards in a laminar regime in front of said standard zone and above said upper horizontal plane, with sufficient energy to deflect said substantial fraction of said relative air current above said standard zone, in which the air is at least essentially still.

5,630,641

SUNROOF DEVICE FOR VEHICLE

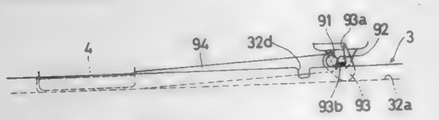
Keiji Mori, Kariya; Hironori Ochiai, Chiryu, and Akitoshi Sometani, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Continuation of Ser. No. 281,685, Jul. 28, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 562,492

Claims priority, application Japan, Jul. 29, 1993, 5-188343

Int. Cl.[6] B60J *7/19*

U.S. Cl. 296—224 **8 Claims**



1. A sunroof for a vehicle having a roof and an opening in said roof, comprising:

a guide rail to be mounted adjacent said opening and having a groove;

a movable panel for opening and closing the opening in said roof;

a link mechanism, said movable panel being connected to said link mechanism;

a driving shoe slidably disposed along the guide rail and connected to the link mechanism;

means for driving said driving shoe;

a driven shoe slidably disposed along the guide rail and connected to the movable panel;

a check mechanism for preventing and permitting movement of the driven shoe, including a movable striker connected to the driving shoe to move in response to movement of said driving means, a check member engagable with and disengagable from the groove in the guide rail connected to the driven shoe, an elastic member for biasing the check member so that the check member is removably retained in the groove in the guide rail, and disengagement means co-acting with and positioned adjacent said check member for contact by said striker for disengaging the check member from the groove in the guide rail;

said disengagement means being rotatable so that the disengagement means is rotated during engagement of the check member with and disengagement of the check member from the groove in the guide rail.

5,630,642

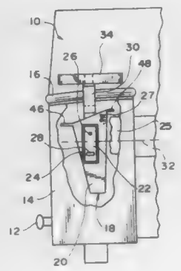
CONVENIENCE TABLE FOR FURNITURE

Andrew S. Grimmett; Robert O. Giltnane, both of Athens, and Laurence A. Nelson, Knoxville, all of Tenn., assignors to Plastic Industries, Inc., Athens, Tenn.

Filed Jan. 24, 1995, Ser. No. 377,591

Int. Cl.[6] A47B *39/00*

U.S. Cl. 297—145 **18 Claims**



14. A table assembly comprising:

a hinge adapted for mounting within a piece of sitting furniture;

a support arm movably mounted to the hinge for movement between an arm storage position and an arm use position; and

a table top disposable in a table storage position and generally horizontal at least first and second use positions and in which the table top is supported by the support arm, the table top and the support arm having a different relative position in the first use position than a relative position between the table top and the support arm in the second use position; and

wherein the table top is rotatable about a generally vertical axis relative to the support arm and the first and second use positions of the table top correspond to the table top being in different rotary positions relative to the support arm; and further combined with a piece of sitting furniture having an arm rest and a storage container that is within and hidden from view by the arm rest, and wherein the arm storage position and table storage position are within the storage container and the support arm and table top are hidden from view by the arm rest when respectively in the arm storage position and the table storage position; and further comprising an arm cap on the arm rest and the arm cap is rotatable from a capping position about a generally horizontal arm cap axis to an access position for accessing the storage container and wherein the arm cap is disposable in its capping position even with the support arm in its arm use position and table top in either of its first and second use positions.

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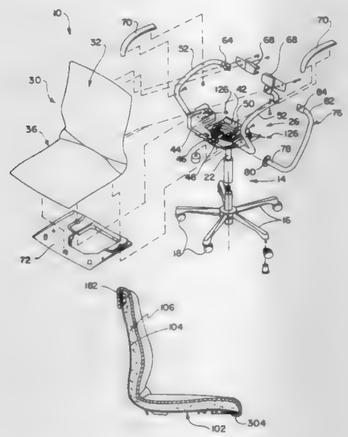
UPHOLSTERED CHAIR WITH TWO-PIECE SHELL

Brian L. Scholten, 8525 Beretta Ct., Jenison, Mich. 49428; James E. Abraham, 3460 Navaho SW., Grandville, Mich. 49418; Dale M. Groendal, 2528 PineWood St., Jenison, Mich. 49428; Robert M. Scheper, 25 Wallinwood NE., Grand Rapids, Mich. 49503; Thomas R. Hahn, 4727 Southstone SE., Kentwood, Mich. 49548, and Douglas A. Smith, 943 Oakhurst NW., Grand Rapids, Mich. 49504

Filed Jun. 1, 1993, Ser. No. 71,391

Int. Cl.[6] A47C *7/00;31/02*

U.S. Cl. 297—218.2 **69 Claims**



1. A chair, comprising:

a base;

a seat shell defining a rear edge, lateral edges and a front edge, said seat shell being fixed to said base;

a back shell having a top edge, lateral edges and a front edge;

at least one tab integral with said back shell; and

at least one socket integral with said seat shell, said at least one socket being dimensioned to receive and retain said at least one tab in order to interconnect said shells, said at least one tab being clamped between said base and said seat shell to secure said back shell in place.

5,630,644

MODULAR SOFA ASSEMBLY AND MOUNTING APPARATUS FOR SECURING INDEPENDENT SECTIONS THEREOF

Larry P. LaPointe, Temperance; Jonathan R. Saul, LaSalle; Karl J. Komorowski, Petersburg, and Richard E. Marshall, Monroe, all of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Continuation-in-part of Ser. No. 209,159, Mar. 10, 1994, which is a continuation-in-part of Ser. No. 109,832, Aug. 20, 1993, Pat. No. 5,520,437. This application Apr. 26, 1995, Ser. No. 429,535

Claims priority, application Canada, Aug. 22, 1994, 2130610

Int. Cl.[6] A47C *15/00*

U.S. Cl. 297—232 **21 Claims**

1. A modular sofa assembly including a plurality of furniture sections comprising:

at least one chair section having a chair frame and a chair back portion having a first height, said chair frame operably coupled to a chair base for providing relative movement therebetween;

a console section having a console base and a low-profile console back portion positionable between an upright, raised position substantially in-line with said chair back portion for providing a substantially contiguous sofa back and a horizontal, use position defining a second height which is less than said first height for providing clearance laterally adjacent said chair back portion; and

mounting means for releasably securing said chair base to said console base in side-by-side relationship, said mounting means adapted to permit relative movement between said chair frame and said console section.

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SAFETY SEAT TETHER STRAP

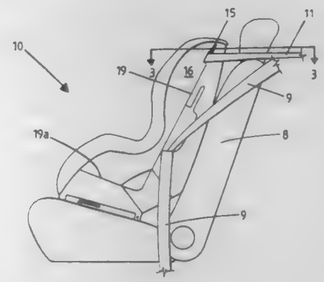
Michael A. Lumley, Torquay, and William Bowtell, Box Hill Ntl., both of Australia, assignors to Britax Child-Care Products Pty Ltd., Victoria, Australia

Filed Jul. 31, 1995, Ser. No. 509,687

Claims priority, application Australia, Aug. 1, 1994, PM7154

Int. Cl.[6] A47C *1/08*

U.S. Cl. 297—250.1 **24 Claims**



23. A safety seat, for use in a vehicle, comprising:

a seat portion,

a backrest having a head end remote from said seat portion,

a side wall on each side of said backrest,

first and second mutually spaced anchorage locations on said side walls, each anchorage location comprising an aperture in each said side wall,

a connector for engagement with a securement point on said vehicle, said connector having a strap opening,

a tether strap having a first and a second end with one end of said tether strap extending from said first anchorage location, through said connector strap opening, to said second anchorage location,

an in-line length adjuster located between said connector and one of said anchorage locations with the first end of said tether strap looping through one side of said in-line adjuster,

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a first three bar slide located over the aperture of said first anchorage location on the outside surface of said side wall, and

a second three bar slide located over the aperture of said second anchorage location on the outside surface of said side wall,

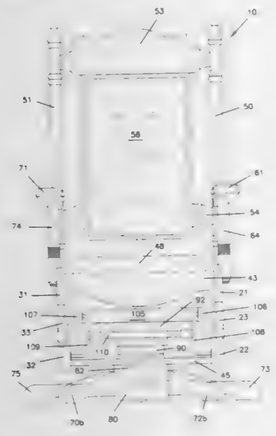
said tether strap, from said in-line adjuster, passing through the strap opening in said connector and through said first three bar slide and respective aperture, passing through said aperture of said second anchorage location and through said second three bar slide, looping through another side of said in-line adjuster, passing back through said second three bar slide and respective aperture, and looping around a center bar of said first three bar slide, with the second end of said tether strap, extending from the center bar of said first three bar slide, secured to a center bar of said second three bar slide.

5,630,646

SWIVEL GLIDER CHAIR ASSEMBLY

David W. Trimble, P.O. Box 161, Rose Creek, Minn. 55970

Filed Feb. 28, 1995, Ser. No. 395,566
Int. Cl.[6] A47D *13/10*
U.S. Cl. 297—281 **9 Claims**



1. The swivel glider chair assembly comprising:

(a) a chair proper;

(b) a base disposed about a base axis, comprising;

(i) a plurality of floor-engaging legs;

(ii) leg retaining means comprising a pair of opposing retainer members for retainably sandwiching a portion of each of said legs therebetween and for radially aligning said legs about said axis:

(iii) an upper base support member;

(iv) variable spacer means disposed between said upper base support member and said leg retaining means for selectably varying the spacing therebetween; and

(v) bolts for operatively fixedly securing said leg retaining means, said variable spacer means and said upper base support to one another;

(c) swivel means having a pair of generally parallel spaced mounting plates, said plates being rotatably movable in parallel planes relative to one another;

(d) means for fixedly mounting a first of said pair of swivel mounting plates to said upper base support such that said second of said swivel mounting plates rotatably moves about said axis; and

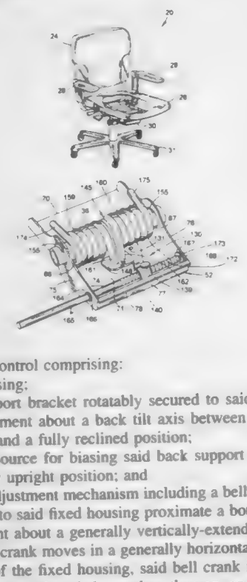
(e) glider means operatively mounted to a second of said pair of swivel mounting plates and to said chair proper for imparting transverse gliding motion to said chair proper relative to said second swivel mounting plate.

5,630,647

TENSION ADJUSTMENT MECHANISM FOR CHAIRS

Kurt R. Heidmann, Grand Rapids; Brian L. Christensen, Wayland; Michael W. Haan, Byron Center; Glenn A. Knoblock, Kentwood; Eric T. McClure, Grand Rapids; Noe Palacios, Rockford; Brian H. Root, Grandville; David D. Sayers, Kentwood; Robert M. Scheper, Grand Rapids, all of Mich.; Patrick P. Schwoerer, Sarrebourg, France; James P. Steffens, Hopkins, and Greg A. VanStee, Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Division of Ser. No. 390,118, Feb. 17, 1995. This application May 26, 1995, Ser. No. 451,991.
Int. Cl.[6] A47C *3/00*
U.S. Cl. 297—303.3 **24 Claims**



1. A chair control comprising:

a fixed housing;

a back support bracket rotatably secured to said fixed housing for movement about a back tilt axis between a fully upright position and a fully reclined position;

an energy source for biasing said back support bracket toward said fully upright position; and

a tension adjustment mechanism including a bell crank pivotally attached to said fixed housing proximate a bottom thereof for movement about a generally vertically-extending axis so that said bell crank moves in a generally horizontal plane near the bottom of the fixed housing, said bell crank including a first leg having a threaded member thereon and a second leg operably engaging said energy source, said tension adjustment mechanism further including a threaded rod engaging said threaded member and rotatably engaging said fixed housing so that said threaded rod can be rotated to move said threaded member along said rod in a selected axial direction to thus pivot said bell crank and in turn change a tension of said energy source.

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DYNAMIC POSTURE CHAIR

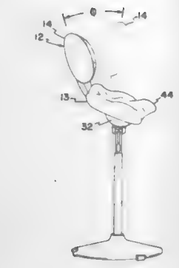
Peter B. Allard, Minnetonka; Jack K. Hockenberry, Albert Lea, both of Minn., and Harry C. Sweere, 5637 Woodlawn Blvd., Minneapolis, Minn. 55417, assignors to Harry C. Sweere, and Industrial Design Center Inc., both of Minneapolis, Minn.

Continuation of Ser. No. 936,576, Aug. 27, 1992, abandoned. This application Jan. 13, 1995, Ser. No. 372,854
Int. Cl.[6] A47C *1/027:1/032*
U.S. Cl. 297—327 **27 Claims**

1. A dynamic posture chair intended for use in sit/stand tasks, comprising:

a chair member comprising a seat member and a back member that are integrally connected and relatively subtend an angle in the range of about 120°–135°;

support means for the chair member, the support means being adapted to be supported by a support surface;



tiltable mounting means for tiltably mounting the chair member to the chair member support means, the tiltable mounting means being constructed and arranged to enable the chair member to be selectively and infinitely tilted over a predetermined range of tilt positions comprising:

a first friction surface disposed on the chair member;

a second friction surface disposed on the support means in substantial opposition to the first friction surface;

a friction brake member disposed between said first and second friction surfaces and having opposed side surfaces that respectively engage said first and second friction surfaces in frictional relation, the friction brake member being formed from a material having coefficients of static and dynamic friction that are substantially equal; and

means for pivotally securing the friction brake member to the first and second friction surfaces in face-to-face relation to permit said tilting movement between the chair member and support means;

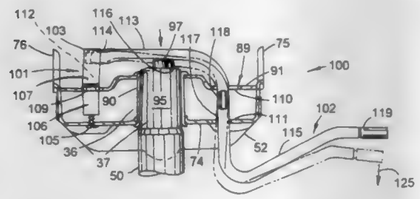
the tiltable mounting means being constructed and arranged so that the tilting of the chair member to various desired tilt positions within said predetermined range can be effected solely by forward and rearward leaning movement of a user in the chair member, with said tiltable mounting means permitting tilting movement to be initiated by the user with said leaning movement and resistably restraining the chair member in the desired tilt position when said leaning movement ceases.

5,630,649

MODULAR CHAIR CONSTRUCTION AND METHOD OF ASSEMBLY

Kurt R. Heidmann, Grand Rapids; Brian L. Christensen, Wayland; Brian H. Root, Grandville, all of Mich.; Patrick P. Schwoerer, Sarrebourg, France, and James P. Steffens, Hopkins, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Division of Ser. No. 390,118, Feb. 17, 1995. This application May 26, 1995, Ser. No. 452,665
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—344.19 **17 Claims**



5. A vertically adjustable chair comprising:

a base assembly including a base and a vertically adjustable pedestal with a top actuator;

a fixed housing engaging said pedestal; and

a vertical adjustment control mechanism comprising:

an arm pivotally mounted in said fixed housing, said arm including a bearing section for engaging said top actuator, a first section, and a handle-forming second section spaced from said first section; and

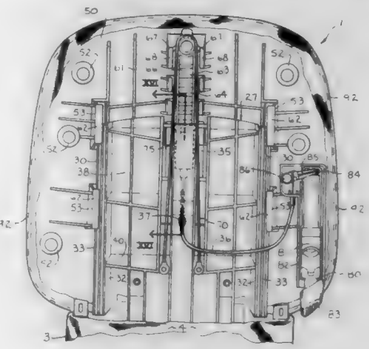
an adjustment member engaging said fixed housing and said first section for pivotally supporting said first section, said adjustment member being adjustable from an exterior of said fixed housing to reposition said first section and thus reposition said bearing section relative to said top actuator to eliminate looseness and play of said arm in said fixed housing, said arm operably engaging at least one of said fixed housing and said adjustment member so that when said handle-forming second section is pivoted, said bearing section actuates said top actuator; said adjustment member including a slot for slidably engaging said first section of said arm, said slot limiting the movement of said first section of said arm in a predetermined direction.

5,630,650

VERTICALLY ADJUSTABLE BACK CONSTRUCTION FOR SEATING

Gordon J. Peterson; Arnold B. Dammermann, both of Grand Rapids; Charles P. Roossien, Wyoming; David L. Rundhaug, Grand Rapids, and James M. Mancewicz, Wyoming, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Mar. 30, 1994, Ser. No. 220,041
Int. Cl.[6] B60N *2/02*
U.S. Cl. 297—353 **40 Claims**



18. In a chair of the type having a one-piece back and seat appearance, the improvement of a vertically adjustable back construction therefor, comprising:

a lower back member having an upholstered upright portion, and a first connector associated therewith;

an upper back member including a second connector associated therewith which engages said first connector on the upright portion of said lower back member and movably supports said upper back member on said chair for vertical adjustment of the same; said upper back member including an upholstered, downwardly opening shroud portion which is disposed over, covers and telescopes onto at least an uppermost end of the upright portion of said lower back member, and translates thereover to permit ready vertical adjustment of said upper back member by a user to accommodate various tasks and users, while preserving the one-piece back and seat appearance of said chair;

a lock releasably connecting said upper back member with said lower back member to retain said upper back member at selected vertical positions; said lock including a remotely positioned actuator which can be manipulated by the user seated in a comfortable, forwardly facing position in said chair to facilitate quick and accurate adjustment of said upper

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back member; said lock actuator being positioned along a lower edge of said upper back member and projects downwardly therefrom;

said shroud portion comprising an outwardly protruding pocket having an inverted U-shaped plan configuration into which the upright portion of said lower back member is closely received;

said upper back member being slidably mounted on said lower back member for manual adjustment of said upper back member by the user when seated on the chair;

an upholstered seat member integrally formed with said lower back member to provide a one-piece construction;

said seat member, said lower back member and said upper back member each have marginal portions which blend together to impart a generally hourglass shape to said chair;

said lower back member including a plurality of slide blocks thereon; said upper back member including a pair of rails thereon, which are slidably received in the slide blocks on said lower back member to movably interconnect said upper and lower back members for vertical translation therebetween; and

said lock including a toothed rack on said upper back member, and a reciprocating pawl on said lower back member which selectively engages said rack.

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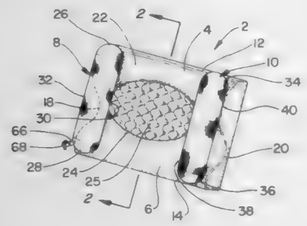
PRESSURE ADJUSTABLE CERVICAL PILLOW WITH LATERAL SIDES

Bruce M. Fishbane, 1040 Bimini La., Singer Island, Fla. 33404

Filed Dec. 19, 1994, Ser. No. 358,527

Int. Cl.[6] A47C *7/38*

U.S. Cl. 297—397 **4 Claims**



1. A cervical pillow for supporting the head and cervical area of a person who is sitting in an existing seat or lying in a supine position comprising:

a headrest portion having a top edge, a bottom edge, a first lateral side and a second lateral side, the edges and the lateral sides extending from a posterior side, the edges being parallel in relation to each other and spaced apart to define the height of the pillow, the lateral sides being parallel in relation to each other and perpendicular to the edges and spaced apart to define the width of the pillow, so that the headrest portion is generally rectangular in shape;

a cervical roll portion being adjacent and parallel to the bottom edge and extending the width of the headrest portion, the cervical roll portion being generally cylindrical in shape and having a diameter to provide support to the user's cervical area;

the headrest portion having a ridge adjacent and parallel to the top edge and an occiput cavity defined by the ridge and the cervical roll portion, the occiput cavity is parallel to the cervical roll portion and the edges, the occiput cavity extending the width of the headrest, the occiput cavity being adapted to provide support to the user's occiput area;

a first lateral support being generally cylindrical in shape and having an inside surface and an outside surface, the first lateral support outside surface being juxtaposed to the headrest portion first lateral side and extending from headrest portion;

a second lateral support being generally cylindrical in shape and having an inside surface and an outside surface, the second lateral support outside surface being juxtaposed to headrest portion second lateral side and extending from the headrest portion, so that the opposing lateral side portions provide side support for the user's head, maintaining the user's head in a straight ananatomically correct position while the use's head is at rest in the cervical pillow;

a headrest air bladder internal of the headrest portion;

a cervical roll air bladder internal of the cervical roll portion;

a first lateral support air bladder internal of the first lateral support;

a second lateral support air bladder internal of the second lateral support;

means for adjusting the pressure inside of the pillow portions comprising:

a bulb having a release valve and a pliable valve stem;

a rotatable member having a groove and a stationary member having a lip, the rotatable member groove being in rotating contact with the stationary member lip;

a first tube passageway extending from the stationary member to the headrest portion;

a second tube passageway extending from the stationary member to the cervical roll portion;

a third tube passageway bifurcated and extending from the stationary member to the first and second lateral supports, the rotatable member housing the pliable valve stem, the stationary member housing the first, second, and third tubes so that the rotatable member is aligned with one passageway and the bulb is used to pressurize and depressurize the connected pillow to the user's comfort preference.

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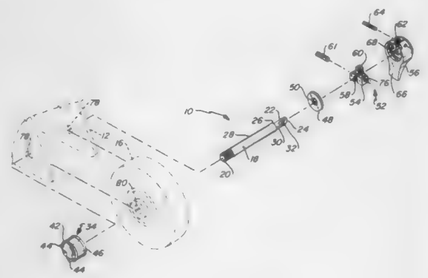
RELEASABLE AXLE ASSEMBLY FOR SKATE WHEELS

Donald E. Cech, Longmont, Colo., assignor to Dietrick Sports Products, Inc., Steamboat Springs, Colo.

Filed Jun. 27, 1995, Ser. No. 496,129

Int. Cl.[6] B62K *25/02*

U.S. Cl. 301—5.3 **18 Claims**



1. A skate wheel axle assembly comprising:

an axle having first and second end portions;

a first retainer at said first end portion of said axle;

a second retainer pivotably connected with said second end portion of said axle and having first surface; and

a stop including a center bore slidably maintained on said second end portion of said axle adjacent to said second retainer, said first surface of said second retainer bearing against said stop when said second retainer is pivoted to a securing position.

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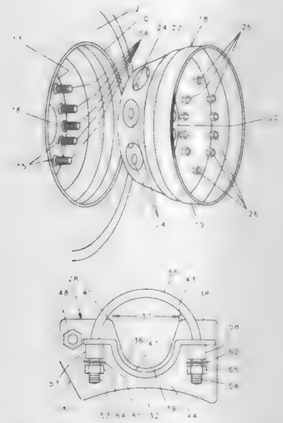
WHEEL COVER MOUNTING BRACKET

John G. Polka, 1355 Margate, Libertyville, Ill. 60048

Continuation of Ser. No. 459,711, Jun. 2, 1995, abandoned. This application Aug. 15, 1996, Ser. No. 698,480

Int. Cl.[6] B60B *7/14*

U.S. Cl. 301—37.37 **16 Claims**



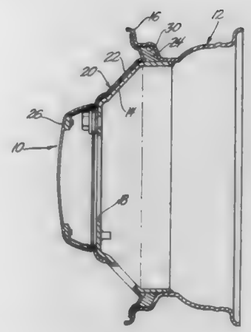
1. A mounting bracket for attaching a wheel cover to a lug nut used to retain the web of a wheel to a hub, where said lug nut has corners and a given greatest width, said bracket comprising in combination;

a base plate adapted to be fitted against the web of a wheel, said base plate including a lip,

clamping means on said base plate for clamping to an outer perimeter of a lug nut and for retaining said lip of said base plate under a corner of a lug nut, said clamping means providing retention of said lip of said base plate under a corner of a lug nut independent of support from any other lug nut,

a portion of said clamping means permanently attached to said base plate, and

attachment means attached to said mounting bracket for detachably retaining a wheel cover to said mounting bracket.



second portion of said axial surface of said wheel upon attaching said metal plated panel member to said wheel, such that said second portion of said inboard surface and said second portion of said axial surface define a void therebetween;

a spacing member fixedly mounted in said void, said spacing member being contiguous said second portion of said axial surface of said wheel and said second portion of said inboard surface of said metal plated panel member to thereby fill said void, said spacing member further being attached to said second portion of said axial surface of said wheel; and

means for attaching said metal plated panel member as a discrete unit to said disk portion of said wheel, said attaching means being disposed between said first portion of said inboard surface of said metal plated panel member and said first portion of said axial surface of said disk portion of said wheel;

whereby said metal plated panel member is a unitary member which is mounted as a discrete independent unit to said wheel such that said means for attaching said metal plated panel member to said disk portion of said wheel maintains said first portion of said axial surface of said wheel and said first portion of said metal plated panel member juxtaposed to each other while said spacing member is contiguous with said second portion of said axial surface of said wheel and said second portion of said inboard surface of said metal plated panel member so as to be independently mounted in said void.

5,630,654

HEAT-RESISTANT OVERLAY FOR AN AUTOMOTIVE STEEL WHEEL

Lee A. Chase, Ada, Mich., assignor to Lacks Industries, Inc., Grand Rapids, Mich.

Filed Sep. 26, 1994, Ser. No. 312,144

Int. Cl.[6] B60B *7/06*

U.S. Cl. 301—37.43 **49 Claims**

1. An overlay and wheel assembly, said wheel having a disk portion and a rim portion circumscribing said disk portion, said disk portion defining an axial surface of said wheel, said axial surface having a first portion and a second portion complementary with said first portion, said overlay comprising:

a metal plated panel member having an outboard surface and an inboard surface oppositely disposed from said outboard surface, said inboard surface having a first portion and a second portion, said first portion of said inboard surface of said metal plated panel member being configured to mate with said first portion of said axial surface of said wheel upon attaching said metal plated panel member as a discrete unit to said wheel, such that said first portion of said inboard surface is juxtaposed said first portion of said axial surface;

said second portion of said inboard surface of said metal plated panel member being configured to be spaced apart from said

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FLUID CONTROL SYSTEM FOR TRACTOR TRAILER BRAKE SYSTEM

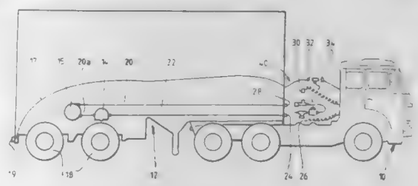
John J. Camm, 4 Melrose Avenue, East Malvern, Victoria, 3145, Australia, assignor to John J. Camm; James O. Camm, and Stephen J. Camm, all of Australia

Division of Ser. No. 196,158, Feb. 22, 1994, Pat. No. 5,464,278. This application Aug. 8, 1995, Ser. No. 512,413

Claims priority, application Australia, Jun. 26, 1992, PL3047; Mar. 5, 1993, PL7657; May 13, 1993, PL8774

Int. Cl.[6] B60T *17/04*

U.S. Cl. 303—7 **17 Claims**



1. A fluid control system for a brake system, including:

pressurized fluid supply means for supplying pressurized fluid;

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a relay valve coupled to the pressurized fluid supply means;

a control line coupled to the relay valve for supplying a control signal to actuate the relay valve to enable the relay valve to supply pressurized fluid from the pressurized fluid supply means to actuate brakes of a vehicle; and

priming fluid supply means coupled to the control line for directing priming fluid in the longitudinal direction of the control line for priming the control line, said priming fluid supply means having an outlet in communication with the control line, the outlet having a cross-sectional area which is smaller than the cross-sectional area of the control line in the vicinity of the outlet.

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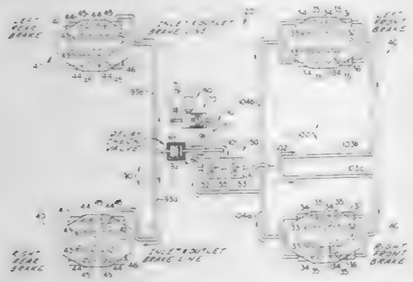
ANTI-LOCKING BRAKE SYSTEM, REAR BRAKE DELAY VALVE, AND METHOD FOR SAME

Howard C. Stewart, Jr., 813 E. Farris Ave., High Point, N.C. 27262

Continuation-in-part of Ser. No. 14,700, Feb. 8, 1993, Pat. No. 5,350,223, and Ser. No. 83,611, Jun. 28, 1993, Pat. No. 5,310,252. This application May 5, 1995, Ser. No. 435,826

Int. Cl.[6] B60T *8/62*

U.S. Cl. 303—9.62 **29 Claims**



1. A vehicle braking system for delaying the flow of brake fluid to the rear brakes, the braking system comprising:

a master cylinder;

a pair of hydraulically operable disk brakes respectively positioned on a pair of rear wheels of a vehicle;

an inlet brake line in fluid communication with said master cylinder and connected to said pair of rear disk brakes;

an outlet brake line in fluid communication with said pair of rear disk brakes and in fluid communication with said master cylinder;

a fluid circulator valve positioned between and in fluid communication with said master cylinder and said pair of rear disk brakes, and connected to said inlet brake lines, said fluid circulator valve allowing fluid to flow therethrough in only one direction from said master cylinder to said inlet brake line and to said pair of rear disk brakes, and said fluid circulator valve also allowing fluid to flow in only one direction from said pair of rear disk brakes, through said outlet brake line, through said fluid circulator valve, and into said master cylinder; and

a rear brake delay valve positioned between and in fluid communication with said circulator valve and said master cylinder and connected to said inlet brake line for delaying at least an initial braking pressure received by said pair of rear disk brakes as related to front brakes responsive to an initial actuation of said master cylinder, said rear brake delay valve including a housing having a first opening connected to a first portion of said inlet brake line fluidly connected to said master cylinder and a second opening connected to a second portion of said inlet brake line fluidly connected to said fluid circulator valve, and a perforated member having a predetermined sized orifice extending therethrough positioned within said housing in fluid communication with said first and second openings whereby said rear brake delay valve delays fluid flowing from said first opening through said second portion of said inlet brake lines, and to said pair of rear disk brakes.

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CRAWLER

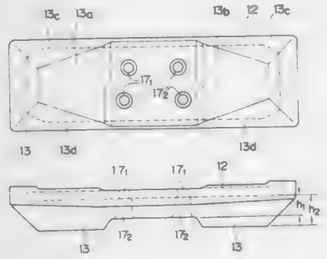
Yoichi Kumano, Miura-gun, and Takeo Muramatsu, Yokohama, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 341,985

Claims priority, application Japan, Nov. 20, 1993, 5-314423; Nov. 20, 1993, 5-314424; Dec. 5, 1993, 5-339676; Sep. 21, 1994, 6-265994; Sep. 21, 1994, 6-265995; Sep. 21, 1994, 6-265996; Oct. 12, 1994, 6-274513

Int. Cl.[6] B62D *55/26*

U.S. Cl. 305—46 **12 Claims**



1. A crawler comprising:

at least one connecting member;

at least one link connectable to other links by said at least one connecting member to form an endless shape such that said at least one link can be assembled onto a drive mechanism of a machine having a predetermined machine body weight, said at least one link having an inner link surface facing the drive mechanism of the machine when assembled thereon, and an outer link surface facing away from the drive mechanism when assembled thereon;

at least one crawler block having an inner crawler surface with a portion attached to the outer link surface, and an outer crawler surface facing away from the outer link surface; and

at least one pad having an inner pad surface vulcanized and adhered to said outer crawler surface and to a portion of the inner crawler surface not attached to the outer link surface, and an outer pad surface facing away from the at least one crawler block, the outer pad surface having a peripheral portion and a central portion, the at least one pad having a peripheral thickness defined by a distance between a peripheral portion of the outer pad surface that faces away from the outer side of the at least one crawler block and a peripheral portion of the outer pad surface that faces away from the inner side of the at least one crawler block, and a central thickness defined by a distance between said outer pad surface and said inner pad surface at said central portion, the peripheral thickness being greater than the central thickness, wherein the peripheral thickness is proportionally related to the machine body weight in accordance with a mathematical function.

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HEMMED EDGE FILE HOLDER

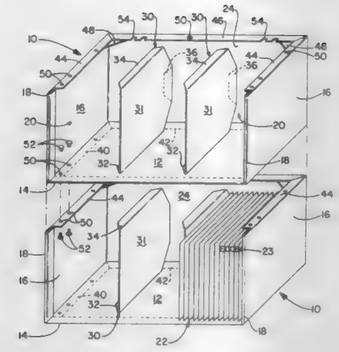
Jack W. Jeter, Akron, Ohio, assignor to Jeter Systems Corporation, Akron, Ohio

Continuation of Ser. No. 405,365, Mar. 16, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 664,794

Int. Cl.[6] A47B *87/02*

U.S. Cl. 312—107 **11 Claims**

1. A file holder, comprising:



a support surface having a hemmed support edge at a front edge of said support surface, said hemmed support edge comprising an edge portion of said support surface folded back into itself at an underside of said support surface and wherein said inner support surface is substantially parallel with said support surface; and

a plurality of panels carried by said support surface and substantially perpendicular thereto, each of said plurality of panels having a hemmed panel edge at a front edge of said panel, wherein said support surface and said plurality of panels form a file folder opening for receiving a plurality of file folders which rest upon both said support surface and said edge portion;

said hemmed support edge has an outer support surface that is a coplanar continuation of said support surface and opposite said inner support surface, and wherein said hemmed panel edge has an outer panel surface disposed inwardly and substantially parallel with and opposite an inner panel surface such that said inner panel surface bears upon itself, said hemmed panel edge extending orthogonally with respect to said hemmed support edge.

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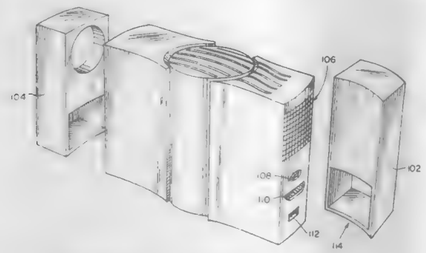
COMPACT HIGH RESOLUTION LIGHT VALVE PROJECTOR

Peter A. Ronzani, Los Gatos, and Stephen Pombo, Campbell, both of Calif., assignors to Kopin Corporation, Taunton, Mass.

Filed Sep. 28, 1994, Ser. No. 314,113

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—15 **17 Claims**



1. A light valve projector comprising:

a housing for a light valve projector, a base section of the housing extending substantially perpendicular from the optical axis and having extendable support elements;

an optical system contained within the housing and including a light source directing light along an optical axis, a lens positioned along the optical axis to receive light from light source and direct light onto a light valve, the light valve selectively transmitting light through a projection lens positioned along the optical axis to direct light onto an external viewing surface;

a first audio transducer positioned on or within the housing and directing sound along a first direction; and

a second audio transducer positioned on or within the housing and directing sound along a second direction.

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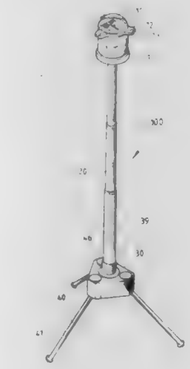
WARNING LIGHT

Wei-Fu Chen, No. 16, Lane 533, Da-Chi Road, Da-Li City, Taichung, Taiwan

Filed May 16, 1996, Ser. No. 648,540

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—183 **16 Claims**



1. A warning light comprising:

a base on which a plurality of through holes are formed to extend from an upper surface to an under surface of the base, each of the through holes having a diverging, expanded lower opening formed on the under surface which is defined by an inclined inside surface of the through hole;

an elongated post which is fixed to the base and extend therefrom, the post comprising a plurality of tubular segments telescopically jointed together so as to be movable within an expanded position and a telescoped position;

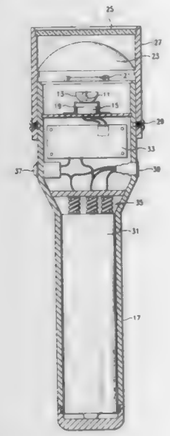
a lamp unit fixed on a top end of the post, opposite to the base;

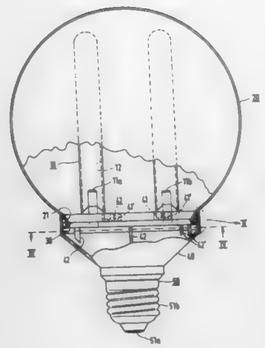
a primary power source received and held in an interior chamber defined within the base and electrically connected to the lamp unit through electrical wire extending through the tubular segments of the post;

a plurality of legs movably received within the plurality of through holes to support the base on an external fixture by means of lower ends of the legs, each leg comprising a primary member and a secondary member pivoted to an upper end of the primary member, the legs being movable relative to the base between an extended position where the secondary members of the legs are held within the through holes and the primary members extend out of the expanded lower openings of the through holes from the under surface of the base and are allowed to rotate relative to the secondary members along the inclined inside surfaces of the through holes to define an inclined, diverging configuration of the lower ends of the legs and a stowed position where the lower ends of the legs are held within the through holes to have the secondary members extending out of the through holes from the upper surface of the base, fastening means being provided to secure the legs in the stowed position.

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METAL ARC FLASHLIGHT
Donald P. Fox, 2421 Jefferson Ave., Berkeley, Calif. 94703
Filed Feb. 6, 1996, Ser. No. 597,601
Int. Cl.[6] F21L *9/00*
U.S. Cl. 362—187 **6 Claims**



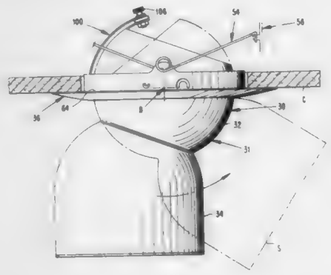


1. A metal arc flashlight comprising
a light generating assembly including a metal halide arc lamp mounted inside an elliptical reflector which focuses the light emitted by said lamp down to a spot located at a predetermined minimal distance in front of said lamp and reflector,
a lens assembly located in front of said arc lamp and reflector and including,
a diffusion screen located at said predetermined distance in front of said lamp where said emitted light is focused,
a collimating lens disposed in front of said diffusion screen to angulate the light emerging therefrom,
a UV blocking filter disposed in front of said collimating lens, and
means for changing the distance between said collimating lens and said focus point of said elliptical reflector,
a rechargeable battery disposed adjacent to said light generating assembly and having electrical contacts,
an electronic ballast for converting battery voltage to a voltage required to operate said metal are lamp and for supplying a high-voltage pulse that ionizes a gas inside said lamp to initiate lamp ignition,
electrical circuitry for electrically connecting said electronic ballast to said lamp and said ballast to said electrical contacts of said battery, said circuitry including an on/off switch for controlling a flow of electricity from said battery to said ballast and external electrical input connections for effecting the recharging of said battery, and
a container for enclosing said components.

5,630,662
CAPPED ELECTRIC LAMP
Pieter C. Ooms, Terneuzen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 22, 1996, Ser. No. 653,931
Claims priority, application European Pat. Off., May 24, 1995, 95201371; Dec. 7, 1995, 95203381
Int. Cl.[6] F21S *1/10*
U.S. Cl. 362—363 **4 Claims**

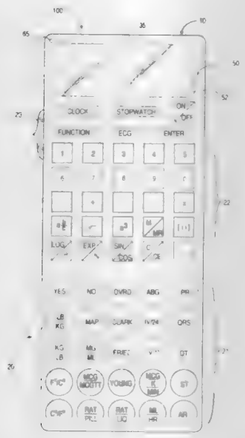
1. A capped electric lamp comprising a lamp vessel (**10**) which is closed in a gastight manner, encloses a light source, and is surrounded by a glass outer envelope (**20**) which at an end portion (**21**) is fastened to a housing (**40**) by means of a coupling member (**30**), which housing also supports a lamp cap (**50**), characterized in that the coupling member (**30**) is made of metal, and the end portion (**21**) of the outer envelope (**20**) is fused to the coupling member (**30**).

5,630,663
ADJUSTABLE TRIM FOR RECESSED LIGHTING FIXTURE
Geoffrey Ling, North Barrington; Alice M. Jandrisits, and James B. Lee, both of Schaumburg, all of Ill., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Apr. 12, 1996, Ser. No. 631,011
Int. Cl.[6] F21S *1/06*
U.S. Cl. 362—365 **18 Claims**



1. A recessed light fixture for mounting in a ceiling, comprising:
a trim ring defining a longitudinal first axis;
an enclosure unit mounted to the trim ring, the enclosure unit including upper and lower enclosures, the upper enclosure mounted to the trim ring for rotation relative to the trim ring about the first axis and about a second axis intersecting the first axis perpendicularly thereto, the second enclosure intersecting the first enclosure to form therewith a waist arranged to be disposed below the ceiling, the second enclosure including a downwardly open mouth, each of the upper and lower enclosures having a cross-sectional area increasing in size in a respective direction away from the waist; and
a lamp socket-mounting structure fixed within the upper enclosure for positioning a lamp socket along a longitudinal axis which is offset from the first axis.

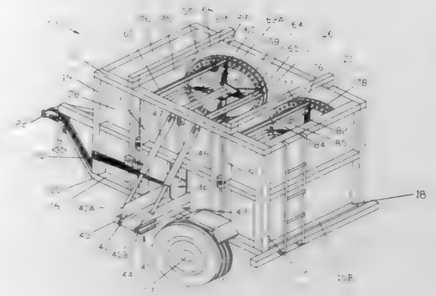
5,630,664
HAND HELD APPARATUS FOR PERFORMING MEDICAL CALCULATIONS
Patricia A. Farrelly, 431 Mills Dr., Benicia, Calif. 94510
Filed Dec. 20, 1995, Ser. No. 575,742
Int. Cl.[6] G06F *19/00*
U.S. Cl. 128—695 R **26 Claims**



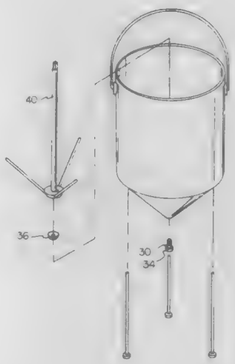
1. A hand-held apparatus for performing medical calculations, the apparatus comprising:
a compact housing capable of being held within a hand of an operator;
a data entry pad provided in the housing for selecting one of the medical calculations and entering data required for execution of the selected medical calculation;
a controller provided in the housing in communication with the data entry pad, the controller including a memory having the medical calculations stored therein, the controller being configured to retrieve the selected medical calculation from the memory and provide a prompt for entry of each required data to execute the selected medical calculation, the controller further being configured to provide a request for validation of each data entry made using the data entry pad and to identify a data entry that is outside an expected range corresponding to the prompt for required data, the controller providing a request for re-entry of the identified data entry that is outside the expected range; and
a display provided in the housing in communication with the controller, the display being configured to display each prompt for required data and each request for validation, the display further being configured to display the data entry made using the data entry pad, the request for re-entry of the identified data entry and results obtained by execution of the selected medical calculation.

5,630,665
FEED MIXER APPARATUS
Eldwyn VanBruggen, Valley City, N. Dak., assignor to National Feeding Systems, Inc., Valley City, N. Dak.
Filed Mar. 19, 1996, Ser. No. 618,494
Int. Cl.[6] B01F *7/00*
U.S. Cl. 366—186 **15 Claims**

1. A feed mixer apparatus comprising:
a frame having a front end and having a front wall, a back wall, and a first and second side walls with said second side wall having an opening therethrough which feed material is dispensed from said feed mixer apparatus, said opening being closeable by closure member;
a forward mixing chamber having a convexed curved bottom wall which is curved longitudinally of said frame;
a rearward mixing chamber having a convexed curved bottom wall which is curved longitudinally of said frame;
a trough extending between said side walls and separating said bottom walls of said mixing chambers;
a means for mixing said feed material in said mixing chambers, comprising a forward reel shaft journaled to said side walls in said forward mixing chamber, a forward reel mounted upon said forward reel shaft, a rearward reel shaft journaled in said side walls in said rearward mixing chamber, and a rearward reel mounted upon said rearward reel shaft, said reels mounted adjacent and parallel to said first wall with each reel having a plurality of teeth-engaging members spaced apart from one another; and
a means for dispensing said feed material from said feed mixer apparatus comprising a conveyor chute having a first end pivotally attached to said second wall in alignment with said opening and having a height adjustable second end.



5,630,666
CONE-SHAPED PAINT CONTAINER
Ernesto Rodriguez, 1509 N. 6th St., Carrizo Springs, Tex. 78834-1820
Filed Mar. 4, 1996, Ser. No. 610,325
Int. Cl.[6] B01F *7/18;15/02*
U.S. Cl. 366—192 **2 Claims**



2. A paint can comprising:

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a container having an upper portion formed in a cylindrical configuration and a lower portion formed in an inverted cone-shaped configuration, the lower portion having a threaded opening with internal female threads at its lower central extent;

a plurality of downwardly extending legs secured at their upper ends to the container adjacent to the lower end of the upper portion and the upper end of the lower portion to maintain the threaded opening at an elevated location for the dispensing of paint;

a threaded bolt threadedly received in the threaded opening with a knurled knob at its lower extent and an inverted cone-shaped stopper at its upper extent positionable in bearing contact with the interior surface of the container and for rotation by a user between a lower orientation to maintain paint within the container and an upper orientation to allow the dispensing of paint from the container; and

a stirrer positioned within the container having a vertical shaft with an adaptor at its upper end for being coupled to a drill for rotation thereof and having a lower end adjacent to the threaded opening, the stirrer including three equally spaced blades in a generally V-shaped configuration each with a lower end coupled with respect to the lower end of the vertical shaft and each having an upper end positioned adjacent to the upper end of the lower portion of the container, the lower portion of the container and the blades being essentially parallel with respect to each other and forming an interior angle of between about 30 and 60 degrees from the axis of the container and shaft.

5,630,667

MODEL AND METHOD FOR PREDICTING HEAT CRACKING OF HEAT-RESISTANT MEMBERS

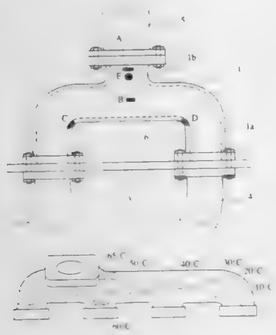
Kenji Ito, Moka, Japan, assignor to Hitachi Metals Ltd, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,160

Claims priority, application Japan, Mar. 30, 1994, 6-060806

Int. Cl.[6] **G01N** *3/60;25/72;* **G01M** *19/00*

U.S. Cl. 374—57 **3 Claims**



3. A model for predicting the heat-cracking of a heat resistant member, comprising:

a photo set resin formed in a shape similar to that of the heat-resistant member, having an inner wall and an outer surface, said resin having a thermal conductivity of 0.1–0.2 W/M·K, such that upon application of heat to the inner wall during a heat-cracking prediction operation, substantially no heat diffuses to the outer surface.

5,630,668

THRUST NEEDLE-SHAPED ROLLER BEARING, ROLLING BEARING, AND CAGE OF THE THRUST NEEDLE-SHAPED ROLLER BEARING

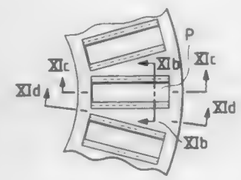
Katsuhiro Ikezawa; Hiroshi Iwasa; Yasuhiro Nomura; Toshiro Kawamura; Hiroshi Narai; Takashi Nagato; Dai Kinno; Tsutomu Abe; Magozo Hamamoto; Fumio Ueki, and Toshimi Takajo, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Aug. 21, 1995, Ser. No. 517,097

Claims priority, application Japan, Aug. 19, 1994, 6-217817; Oct. 14, 1994, 6-275657; Jun. 19, 1995, 7-175464

Int. Cl.[6] **F16C** *33/56;33/62*

U.S. Cl. 384—527 **10 Claims**



1. A rolling bearing comprising:

an outer raceway;

an inner raceway;

a plurality of rolling elements interposed between the outer raceway and the inner raceway and lubricated with lubricant; and

a cage for holding the rolling elements away from each other at the same interval in a rolling direction of the rolling elements,

the cage including a first layer subjected to a surface treatment of at least one of carbonitriding, phosphating, sulfonitriding, sulfurization and gas soft nitriding, and a second layer formed of at least one of PTFE, MoS_2, WS_2, Ag and Sn over the first layer, thereby enhancing the cage's resistance to corrosion caused by the lubricant's interaction with water entering from the outside.

5,630,669

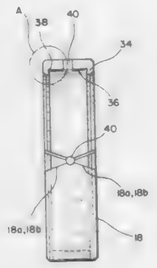
SPLIT BEARING, CAGE FOR SPLIT OR NON-SPLIT BEARING AND METHOD OF CUTTING A MEMBER OF A SPLIT BEARING

Robert N. Stewart, Hampton, Va., assignor to Craft Bearing Company, Inc., Hampton, Va.

Filed Jul. 12, 1994, Ser. No. 273,840

Int. Cl.[6] **F16C** *33/51*

U.S. Cl. 384—570 **10 Claims**



1. A split bearing, comprising:

an inner annular race having a longitudinal extent;

an outer annular race having a longitudinal extent;

a plurality of roller members; and

means for retaining the plurality of roller members between the inner race and the outer race,

wherein at least said outer race includes at least two parts, each part defining two longitudinally extending surfaces which mate with a corresponding longitudinal surface of the adjacent part, said surfaces defining a helix in their longitudinal extent.

5,630,670

AXIAL ROLLING BEARING

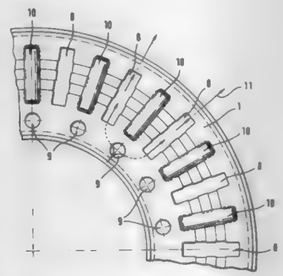
Joseph T. Griffin, and Bobby V. Cathey, Jr., both of Charlotte, N.C., assignors to INA Wälzlager Schaeffler KG, Herzogenaurach, Germany

Filed Mar. 19, 1996, Ser. No. 617,971

Claims priority, application Germany, Jun. 3, 1995, 195 20 483.2

Int. Cl.[6] **F16C** *33/66;19/30*

U.S. Cl. 384—606 **6 Claims**



1. An axial rolling bearing, comprising a cage having pockets for retaining rolling elements between two plane-parallel bearing disks, with the cage forming with the rolling elements and the bearing disks a structural unit through interlocking engagement, wherein at least a first one of said bearing disks exhibits a peripheral edge which is turned in to form an axial collar that surrounds the cage with clearance and extends towards a radial plane of the second one of the bearing disks to form at least one annular gap defined by a radial dimension, said cage being formed in an area of the annular gap with through-bores which are radially spaced from the pockets and are defined by a diameter, wherein the annular gap has a radial dimension which at least equals the diameter of the through-bores.

5,630,671

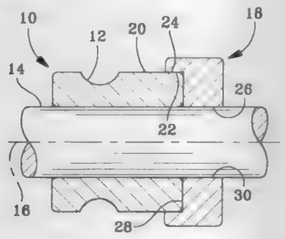
LOCKING DEVICE FOR A BEARING ASSEMBLY

John A. Larson, New Hartford, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Aug. 31, 1995, Ser. No. 521,770

Int. Cl.[6] **F16B** *4/00*

U.S. Cl. 403—28 **20 Claims**



1. A bearing inner ring in combination with an annular collar for reversibly locking the bearing inner ring against a shaft, the combination comprising:

the bearing inner ring;

the annular collar having a circumference and a first clamping surface to be positioned radially outwardly of a surface of the bearing inner ring;

the annular collar being made of a thermoelastic material such that an increase in temperature decreases the circumference of the annular collar and causes the first clamping surface to clamp against the surface of the bearing inner ring.

5,630,672

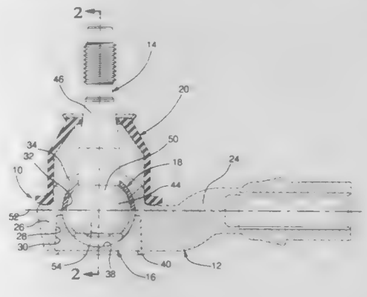
BALL AND SOCKET JOINT

Michael J. Mc Hale, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1995, Ser. No. 551,225

Int. Cl.[6] **F16C** *11/08*

U.S. Cl. 403—135 **4 Claims**



1. A ball and socket joint comprising:

a stud having a spherical ball with upper and lower hemispheres;

a socket housing having a bore defining an access opening through which the stud may be inserted into the housing and a hemispherical cavity surface for receiving the upper hemisphere of the stud;

a housing plug for closing the bore of the socket housing and having a hemispherical cavity surface adapted for receiving the lower hemisphere of the stud; and

a spherical bearing liner interposed between the spherical ball and the hemispherical cavity surfaces of the socket housing and the housing plug, said bearing liner having upper and lower hemispheres and one of the hemispheres having a plurality of longitudinal through slots defining a plurality of resilient spring fingers, said spring fingers being arranged to alternately seat against the ball and apply spring force against the housing plug to thereby eliminate lash in the ball and socket joint.

5,630,673

PIVOT JOINT ASSEMBLY

Ronald F. Krzywanos, Aurora, and Timothy A. Schaper, Plano, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 3, 1996, Ser. No. 582,245

Int. Cl.[6] **F16C** *11/00*

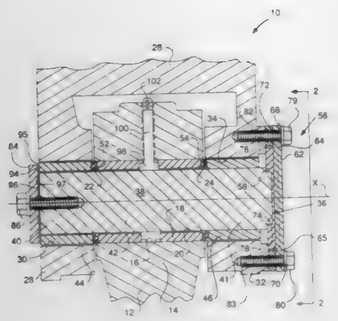
U.S. Cl. 403—158 **16 Claims**

1. A pivot joint, comprising:

a first member having a first end portion having a bore defined therethrough;

a second member having a pair of laterally spaced first and second brackets extending therefrom, each of said brackets defining a bore that extends therethrough, said bores being aligned about a common axis, said brackets being positionable on opposing sides of the first member with the bore of the first member also positioned about the common axis;

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a bushing fixedly secured within the bore of the first member;

a pin member having a first and second end portions and being slidably received within the bushing;

a first collar slidably positioned between both the bore defined in one of the brackets and the pin member;

a second collar slidably received in the bore defined by the other of the brackets and fixedly secured to the pin member;

a plate secured to the first end portion of the pin member, said plate being adapted for sealing engagement with the pin member and the first collar;

a first seal means positioned between the first collar and the bushing;

a second seal means positioned between the second collar and the bushing; and

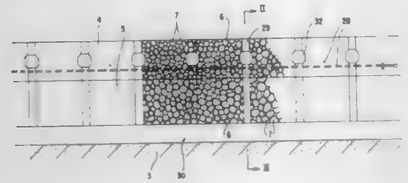
means for securing the pin member and the first and second collars within the aligned bores of the first and second members, said securing means being connected between one of the brackets and the second end portion of the pin member and being adapted to maintain an axial and rotational orientation of the pin member with respect to the aligned bores.

5,630,674

ROAD SURFACE

Takeo Inaba, 1-7-25, Mineoka-tyo, Hodogaya-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Oct. 10, 1995, Ser. No. 541,895
Claims priority, application Japan, Oct. 24, 1994, 6-284399
Int. Cl.[6] E01C *5/22;9/02*
U.S. Cl. 404—2 **10 Claims**



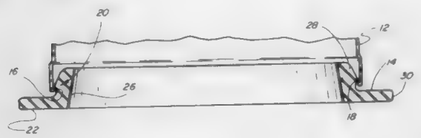
2. A road surface formed by laying on a roadbed a multiplicity of molded elastic plates each comprising aggregates having anti-wear properties mixed with rubber material wherein each of said elastic plates comprises a multiplicity of voids in a vehicle travel direction underneath the surface of said elastic plate, whereby said voids help the vehicle to restore the vehicle travel direction thereof when a front wheel of the vehicle deviates from the vehicle travel direction, and suppress skidding and sideways slipping of the vehicle.

5,630,675

TRAFFIC CHANNELIZER BASE

Michael A. Boeger, St. Louis, Mo., assignor to Flex-O-Lite, Inc., St. Louis, Mo.

Filed Sep. 29, 1995, Ser. No. 531,101
Int. Cl.[6] E01F *13/02*
U.S. Cl. 404—6 **15 Claims**



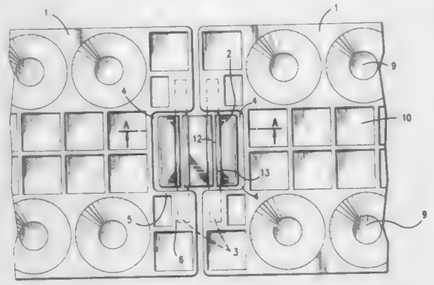
1. A low profile self-ballasting base for traffic control barrels comprising a dense, compact, resilient platform, the base having a barrel engaging portion and a bottom surface for contacting a roadway, the barrel engaging portion having a peripheral fastener for releasably engaging a complementary shaped traffic barrel, the barrel engaging portion being releasable on impact of a motor vehicle with the barrel, the base being annular in shape and having its mass concentrated at the outer periphery thereof to provide weight reduction and strength to the base, the base being sufficiently heavy that additional ballast is not required and the base is substantially self-ballasting when combined with a traffic channelizer barrel.

5,630,676

MARKER BUMP FOR PLACEMENT ON TRAFFIC LANE

Wilhelm Junker, Reutlingerstrasse 14, 71522 Backnang, Germany

Filed May 17, 1995, Ser. No. 442,727
Claims priority, application Germany, Jan. 26, 1995, 295 01 223.4
Int. Cl.[6] E01F *9/04;9/06*
U.S. Cl. 404—12 **7 Claims**



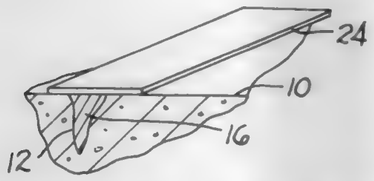
1. A marker bump comprising a plurality of plates connected in an articulated manner with one another, each of said plates having a notch recess on opposed longitudinal ends thereof, the recesses of neighboring plates being adjacent; a plurality of linking means, each of said plurality of linking means connecting one of said plurality of plates to another one of said plurality of plates, each of said linking means being disposed within adjacent ones of said recesses; a plurality of hinging means for hingeably mounting each linking means to respective adjacent ones of said plurality of plates, each of said plurality of hinging means including a pin disposed within each recess having a linking means therein; each linking means having a groove in opposite ends thereof, each groove rotatably accepting each respective hinging means disposed in the recess of each neighboring plate; and the groove in each linking means being laterally bounded in the lateral direction of the marker bump by the recess in which each pin is disposed.

5,630,677

METHOD FOR REPAIR OF CRACKED PAVEMENT

Luther C. Barroso, 1701 Grange Rd., Trenton, Mich. 48183-0119

Filed Jul. 25, 1995, Ser. No. 506,523
Int. Cl.[6] E01C *11/04*
U.S. Cl. 404—75 **7 Claims**



1. A method for making a water impermeable repair for a cracked area in a pavement, such as in a parking lot which experiences vehicular traffic, having an opening extending from a top surface to a depth below the top surface, the method comprising the steps of:

filling a crack opening in a pavement top surface with an adhesive material to a level corresponding to the plane of the pavement top surface, the adhesive comprising a mixture of a roofing adhesive and a roofing cement and being applied in a pliable condition to produce a relatively smooth surface such that it is continuous with respect to the pavement top surface;

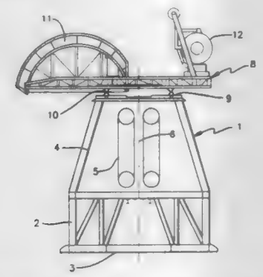
applying a cap of a cured roofing material over the adhesive material and overlapping the crack opening such that the cap is effective to bear the weight of vehicular traffic prior to the adhesive material fully curing.

5,630,678

APPARATUS FOR USE IN LAYING AN ELONGATED ARTICLE

Jean P. Branchut, Croix Chapeau, and Ange Lupi, Marseilles, both of France, assignors to Stolt Comex Seaway AS, Stavanger, Norway

Filed Jul. 24, 1995, Ser. No. 505,906
Claims priority, application Norway, Dec. 16, 1994, 944895
Int. Cl.[6] F16L *1/18*
U.S. Cl. 405—166 **9 Claims**



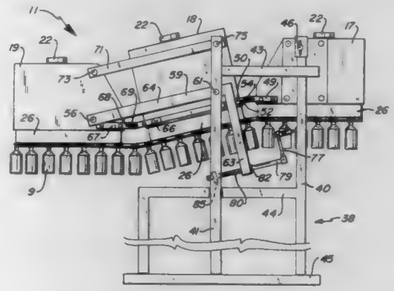
1. An apparatus for use in laying an elongated flexible article, such as a cable or pipeline, from a vessel supported on a body of water, said apparatus comprising a reel rotatably mounted onboard the vessel, a vertical passage through the vessel at a distance from said reel, a frame structure supported above the vertical passage, guide means mounted rotatably on said frame structure about a vertical axis through said vertical passage and adapted to receive said elongated flexible article from said reel and guide said article downwards in the frame structure towards the vertical passage, tensioner means supported in said frame structure for applying tension in said elongated flexible article, and means for holding said article when said tensioner means are not applying tension in said elongated flexible article.

5,630,679

HEIGHT ADJUSTABLE CONVEYOR SYSTEM

Donald J. Simkowski, Loveland, and Thomas M. Ingraham, Fort Collins, both of Colo., assignors to Goldco Industries, Inc., Loveland, Colo.

Continuation of Ser. No. 248,487, May 24, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,682
Int. Cl.[6] B65G *51/02*
U.S. Cl. 406—86 **14 Claims**



1. A height adjustable conveyor system for conveying articles, said system comprising:

guide means having input, middle, and output portions, said guide means being flexible and establishing a path along which the articles are conveyed between said input and output portions;

an air conveyor adjacent to said guide means, said air conveyor having apertures through which air from said air conveyor urges the articles along said path established by said guide means, and said air conveyor having adjacent input, middle, and output portions each having an end wall spaced from an opposing said end wall of the air conveyor portion adjacent thereto, said air conveyor having said input, middle, and output portions connected with said input, middle, and output portions, respectively, of said guide means with each of said portions of said air conveyor being capable of relative movement with respect to the other portions of said air conveyor;

a fixed support; and

actuating means connected with said fixed support and at least one of said portions of said air conveyor for causing said relative movement between said portions of said air conveyor, said relative movement between said portions of said air conveyor causing flexing of said guide means to provide curvature along said guide means and thereby establish a height adjustment between said input and output portions of said guide means that continues to allow the articles to be conveyed along said path between said input and output portions of said guide means due to said urging of said articles along said path by the air from said air conveyor.

5,630,680

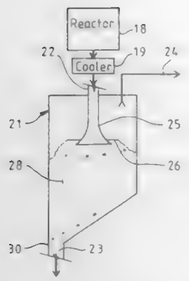
METHOD AND APPARATUS FOR SEPARATING SOLIDS FROM GAS IN A HIGH PRESSURE SOLIDS-GAS STREAM UTILIZING A PACKED BED OF THE SOLIDS

Arun K. Basak, Karhula, Finland, and Karukkampalayam M. Sellakumar, San Diego, Calif., assignors to Foster Wheeler Energia OY, Finland

Division of Ser. No. 51,969, Apr. 22, 1993, Pat. No. 5,567,090. This application Aug. 1, 1996, Ser. No. 691,912
Int. Cl.[6] B65G *53/60*
U.S. Cl. 406—155 **29 Claims**

22. Apparatus, for a high pressure solids gas stream having superatmospheric pressure, for reducing the pressure of the solids-gas stream and separating solids from the solids-gas stream, said apparatus comprising:

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a substantially vertical de-entrainment vessel having a packed bed of bed solids including the separated solids disposed at a level within said vessel, an open space above the level, and a side wall;

a transporting pipe containing the solids-gas stream therein at the superatmospheric pressure;

an inlet connected to said transporting pipe, and disposed within said de-entrainment vessel, and including a discharge opening at or below the level of the packed bed;

a gas outlet from said vessel located above the level of the packed bed and in communication with the open space in the vessel, and connected to an area having a lower pressure than the pressure in said transporting pipe, wherein a pathway for gas separated from the solids-gas stream is defined from the inlet, through the packed bed, through the open space in the vessel, and to the gas outlet;

a solids outlet from said vessel located below the level of the packed bed of the separated solids, and connected to an area having a lower pressure than the pressure in said transporting pipe; and

a substantially solids impermeable and gas permeable barrier connected to said inlet and extending toward said vessel side wall.

5,630,681

CUTTING INSERT WITH PERPENDICULAR RIDGES HAVING TRANSVERSE RIBS FOR CHIP GUIDING

José A. Paya, Mühlheim, Germany, assignor to Widia GmbH, Essen, Germany

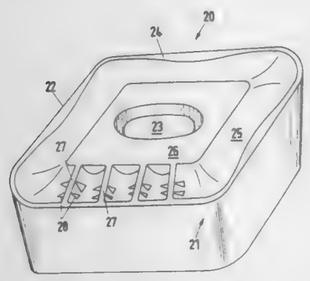
PCT No. PCT/DE93/01110, § 371 Date Apr. 18, 1995, § 102(e) Date Apr. 18, 1995, PCT Pub. No. WO94/12304, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 18, 1993, Ser. No. 424,344

Claims priority, application Germany, Nov. 21, 1992, 42 39 235.7

Int. Cl.[6] B23B *27/22*

U.S. Cl. 407—114 **27 Claims**



1. A cutting insert formed with

a cutting edge;

at least one chip-guiding groove defining a central part offset back from the cutting edge;

raised longitudinal ridges in the groove directed generally perpendicular to the cutting edge and at least partly bridging the chip-guiding groove; and

additional chip-guiding ribs in the groove extending from the ridges transverse to the respective longitudinal ridges.

5,630,682

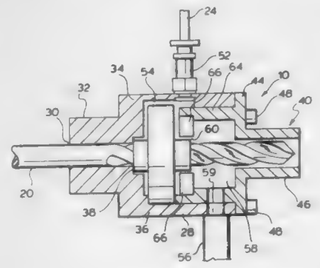
DRILL BIT ASSEMBLY

Leslie T. Davey, Windsor, Canada, assignor to Tooling Technology Centre Inc., Windsor, Canada

Filed Aug. 11, 1995, Ser. No. 514,371

Int. Cl.[6] B23B *47/34*

U.S. Cl. 408—67 **14 Claims**



1. A drill bit assembly for guiding a drill bit of a drill, said assembly comprising

a housing having a central passageway including a pressure chamber in fluid communication with a vacuum chamber, said pressure chamber connectable with a pressure source and said vacuum chamber connectable with a vacuum source,

a bearing assembly having an outer race mounted within the pressure chamber and an inner race for frictionally engaging said drill bit, and

a bracket for mounting said housing such that said drill bit extends through said central passageway,

whereby an air seal is formed between the pressure chamber and the vacuum chamber as fluid flows from said pressure chamber to said vacuum chamber substantially preventing ingress into the pressure chamber of debris generated by said drill bit.

5,630,683

CHIP BREAKER DRILL BUSHING ASSEMBLY

David B. Smith, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 30, 1995, Ser. No. 565,380

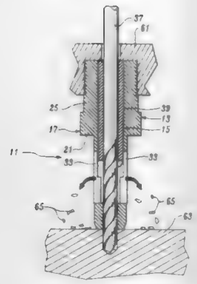
Int. Cl.[6] B23B *49/02*

U.S. Cl. 408—67 **28 Claims**

1. A chip breaker drill bushing assembly comprising:

(a) a drill bushing housing including a body and an outwardly protruding guide shaft, said guide shaft including a tip having a hole for receiving a drill bit, said guide shaft including at least one chip disposal aperture located between said tip and said body; and

(b) a sleeve located in said body, in alignment with said guide shaft, the end of said sleeve facing the tip of the guide shaft



including a chip breaker, said chip breaker including at least one helical trough that protrudes into said sleeve and is aligned with said at least one chip disposal aperture.

5,630,684

METHOD FOR MACHINING A SCROLL MEMBER

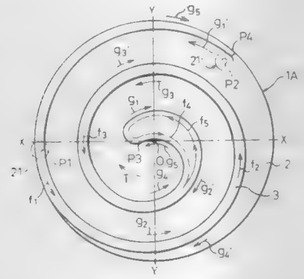
Yukio Yamaguchi, Okazaki; Junichi Iio, Nishio; Norio Suzuki, Anjo; Kouji Mikami, Handa; Masaaki Enya, Toyohashi; Yukihisa Tsuchimoto, Kariya; Yasuhiro Miura, Kariya, and Tomomi Ohno, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, both of Japan

Filed Apr. 25, 1995, Ser. No. 428,295

Claims priority, application Japan, Apr. 26, 1994, 6-088922

Int. Cl.[6] B23C *1/00*

U.S. Cl. 409—132 **8 Claims**



1. A method for machining a scroll member having a base plate having an axis and a scroll wall extending axially from the base plate, comprising steps of:

providing a tool having a first cutter part of a substantially straight cylindrical shape and a second cutter part of a tapered cylindrical shape extending from the first cutter part;

holding the tool while allowing a relative movement of the tool with respect to the scroll member in a first plane parallel to the axis of the tool and in a second plane transverse to the axis of the tool;

causing the tool to be moved in the first plane, so that the first and second cutter are engaged with an end surface of the scroll wall at respective desired depth, and;

causing the tool to be moved in the second plane, while the tool is rotated, so that a groove is formed at the end surface of the scroll wall by the first cutter part of the tool, while edges of the groove is bevelled by the second cutter part of the tool simultaneously with the machining of the groove by the first cutter part.

5,630,685

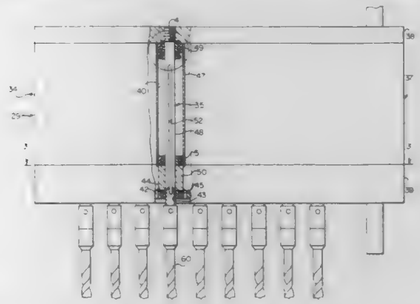
TOOLHEAD ASSEMBLY FOR MACHINE TOOLS

Kenneth J. Susnjara, Santa Claus; Michael P. Hardesty, Dale; Edwin H. Haefling, Evanston, and Robert A. Hardy, Gentryville, all of Ind., assignors to Thermwood Corporation, Dale, Ind.

Division of Ser. No. 298,096, Aug. 23, 1994, Pat. No. 5,471,724. This application Jul. 19, 1995, Ser. No. 504,287

Int. Cl.[6] B23C *1/06*; **B23B** *39/00*

U.S. Cl. 409—231 **5 Claims**



1. A spindle assembly for a toolhead assembly including a housing having an elongated chamber provided with a cylindrical inner wall surface, comprising:

a shaft disposed coaxially in said chamber, journaled in said housing and having means for securing a tool bit thereon; and

a head section comprising a ball bearing having an inner race rigidly secured to said shaft and an outer race disposed in sliding engagement with said inner cylindrical wall of said chamber.

5,630,686

SUPPORT DEVICE WITH NUT ASSEMBLY

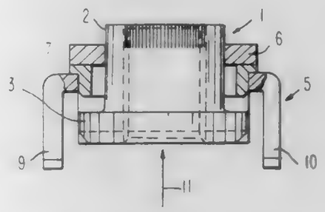
Peter Billmann, Nürnberg, Germany, assignor to Sukosim Sicherheitsmuttern Verbindungselemente GmbH & Co., Schrozberg, Germany

Filed Jun. 2, 1995, Ser. No. 458,204

Claims priority, application Germany, Jun. 3, 1994, 9409087 U

Int. Cl.[6] F16B *27/00*

U.S. Cl. 411—112 **9 Claims**

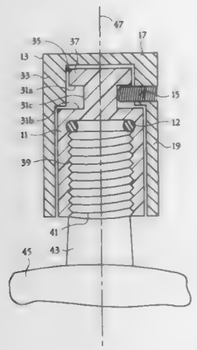


1. A support device comprising a nut, the nut having a neck-like retainer for a screw, the neck-like retainer having a radial outer circumference and being provided with a radial projection, and a support member for the nut, the support member having a stirrup-shaped cross section, the support member comprising two legs and a cross-member connecting the two legs to one another, wherein the cross-member of the support member engages over the radial projection of the neck-like retainer, and wherein the neck-like retainer extends with play through an opening of the support member, a support collar being supported in radial direction directly on the radial outer circumference of the neck-like retainer

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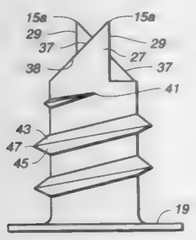
of the nut whereby the support collar is mounted releasably and in a clamping manner on the radial outer circumference of the neck-like retainer, wherein the support collar extends over the cross-member of the support member on a side facing away from the radial projection of the neck-like retainer.

5,630,687
TAMPER RESISTANT VALVE CAP
Robert R. Robinson, 695 Blaine Way, Hayward, Calif. 94544
Filed Jul. 24, 1995, Ser. No. 506,012
Int. Cl.[6] F16B *37/14*
U.S. Cl. 411—372 **19 Claims**



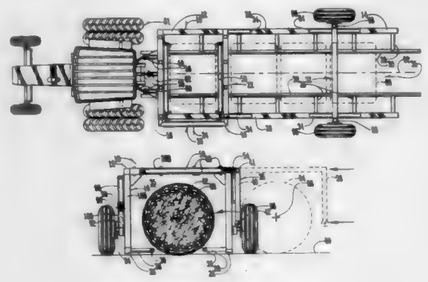
1. A cap for a threaded valve, said cap comprising:
an internally threaded cylindrical liner having a longitudinal axis and a top portion having a crown surface, the entire area of which is planar, with the threads of said liner being adapted to fit corresponding threads of said valve,
a sleeve positioned coaxial with said liner and in rotational relation therewith, about said axis, said sleeve including a closed end and a sidewall extending therefrom terminating in an opening, said closed end having an inside surface, the entire area of which is planar and adapted to seat proximate to said planar crown surface, and
means, positioned within said aperture, for selectively limiting both axial and rotational displacement between said liner and said sleeve.

5,630,688
SELF-TAPPING SLEEVE
Michael T. Tran, Oakland, Calif., assignor to Peerless Lighting Corporation, Berkeley, Calif.
Filed Feb. 28, 1995, Ser. No. 397,631
Int. Cl.[6] F16B *25/00*
U.S. Cl. 411—387 **12 Claims**



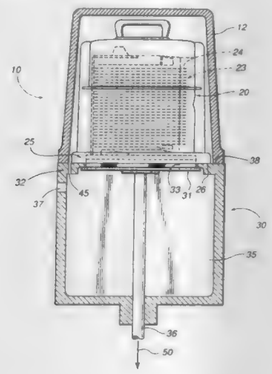
1. A self-tapping sleeve for insertion into a tapable material comprising
a cylindrical body having an cylindrical perimeter surface and a defined axis of rotation, and further having a bottom end, a top end, and a passageway extending along said axis of rotation through said body between the bottom and top ends thereof,
two upwardly projecting perimeter cutting elements at the top end of said body for producing a circular cutting action into a tapable material when the cylindrical body of the sleeve is rotated in an advance rotation, each of said cutting elements having an active cutting face which faces the direction of advance rotation of the sleeve and which tapers upwardly to a cutting point, said cutting faces lying in substantially parallel axially extending planes offset to opposite sides of the axis of rotation of said cylindrical body, and
a helical thread structure on the perimeter surface of said body for advancing the sleeve into a tapable material upon advance rotation of the sleeve.

5,630,689
MEANS FOR LOADING AND TRANSPORTING BALES
Ronald K. Willis, R.R. #1, Box 25A, Davis City, Iowa 50065
Continuation of Ser. No. 100,364, Aug. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 793,140, Nov. 18, 1991, Pat. No. 5,236,294. This application Jan. 6, 1995, Ser. No. 369,684
Int. Cl.[6] A01D *90/02*
U.S. Cl. 414—111 **10 Claims**



1. A bale transport, comprising:
a carrier frame,
a pair of elongated spaced beams on said frame,
a pair of elongated rails secured to said beams and spaced inwardly therefrom in generally parallel relation thereto,
wheels secured to said carrier frame,
first power means connecting said frame and said wheels for raising and lowering said frame with respect to a supporting surface for said wheels,
a loading frame on said carrier frame,
second power means on said carrier frame, for rigidly extending said loading frame laterally with respect to said carrier frame,
laterally slidable means on said loading frame for receiving and extending at least partially around a ground supported bale and engaging said bale for rolling lateral movement thereof on the ground surface onto said carrier frame when said loading frame is moved from an extended lateral position towards said carrier frame.

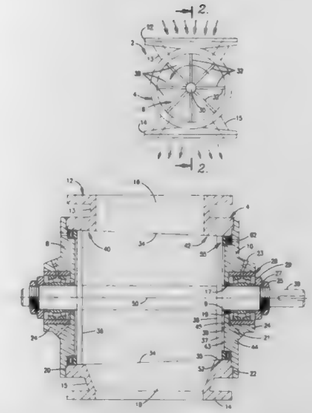
5,630,690
ENCLOSURE FOR LOAD LOCK INTERFACE
Philip M. Salzman, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Division of Ser. No. 146,482, Oct. 29, 1993. This application Dec. 20, 1995, Ser. No. 575,767
Int. Cl.[6] B65G *1/04*
U.S. Cl. 414—217 **9 Claims**



1. A load lock for a microenvironment wafer carrier, comprising:
a load lock having side walls joined to a base portion thereof to define a first inner volume, said load lock having an outer edge and a movable platform with a top surface, said load lock further defining a wafer port in communication with a process environment;
a wafer carrier including side walls joined to an upper wafer carrier portion to define a second inner volume that is adapted to surround a cassette holding a plurality of semiconductor wafers, said wafer carrier further including a movable base portion having a bottom surface arranged for complementary engagement with said top surface of said load lock movable platform;
a removable enclosure having a base perimeter edge, said enclosure being adapted to surround said wafer carrier and to engage with said load lock outer edge and hermetically seal a third inner volume defined by said enclosure, and thereby surround and seal said wafer carrier from an ambient environment while said wafer carrier is placed on said load lock platform;
means for equalizing ambient pressures in said first, second and third inner volumes defined by said enclosure, said load lock and said wafer carrier;
means for moving said load lock platform downward to separate said movable base portion from said wafer carrier and thereby lower said cassette into said first inner volume to effect transfer of said wafers between said process environment and said load lock; and
means for passing individual wafers from said cassette through said wafer port between said load lock and said process environment.

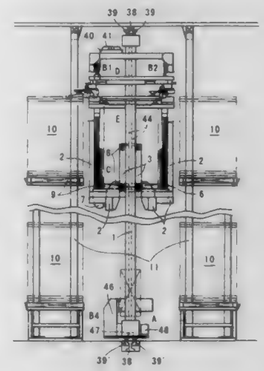
5,630,691
ROTARY AIRLOCK VALVE
Richard E. Newbolt, Sabetha, Kans., assignor to MAC Equipment, Inc., Sabetha, Kans.
Filed Aug. 14, 1995, Ser. No. 514,950
Int. Cl.[6] G01F *11/24*
U.S. Cl. 414—219 **16 Claims**

1. In a rotary airlock for delivering material to a pneumatic pipeline, the airlock having a tubular housing formed about a longitudinal axis, the housing including inlet and outlet ports to receive and discharge material and having end plates that rotatably



support opposite ends of a rotor assembly which is located in the housing and rotates about the longitudinal axis, the rotor assembly including multiple vanes spaced a vane clearance distance from the housing and having shrouds on opposite ends of the vanes spaced from the end plates by a gap, the improvement comprising:
a seal ring mounted between the shroud and the corresponding end plate, said seal ring engaging an exterior surface of said shroud about the longitudinal axis to maintain a sealed relation therewith; and
expandable means, comprising a hollow inflatable tubular ring seal extending concentrically about the longitudinal axis of rotation, for biasing the seal ring toward and against the exterior surface of the shroud, said expandable means expanding radially outward to sealably engage an inner surface of the housing.

5,630,692
METHOD AND APPARATUS FOR PICKING UP PACKAGED SHEET
Morimasa Hanaya, Mishima, Japan, assignor to Tokushu Paper Mfg. Co., Ltd., Shizuoka-ken, Japan
Filed May 15, 1995, Ser. No. 441,427
Claims priority, application Japan, May 16, 1994, 6-125801; Jun. 28, 1994, 6-170300; Nov. 2, 1994, 6-293910
Int. Cl.[6] B65G *1/04*
U.S. Cl. 414—277 **5 Claims**



1. A method of picking up a ream of packaged sheets of a desired kind from a plurality of reams of one or more kinds stacked

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on one of a plurality of cells in an automated warehouse and loading the picked-up ream on a pallet, the cells constituting a plurality of vertically spaced groups of horizontally extending racks, said method comprising the steps of:

locating a suction pick-up device having a picking, gripping and pulling mechanism and a discharging and stacking mechanism, at a position adjacent to said one of said cells by moving the pick-up device at least one of horizontally and vertically;

locating the pallet at a prescribed position;

positioning the pick up device over the ream of packaged sheets to be picked-up; and

operating the suction pick-up device to pick-up by suction the ream of packaged sheets of the desired kind from said plurality of reams stacked on a respective one of cells, said operating step including operating said picking, gripping and pulling mechanism to pick upwards and grip the stacked ream by suction to pull the stacked ream, and operating said discharging and stacking mechanism to withdraw the ream and discharge and stack the ream on said pallet.

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VEHICLE

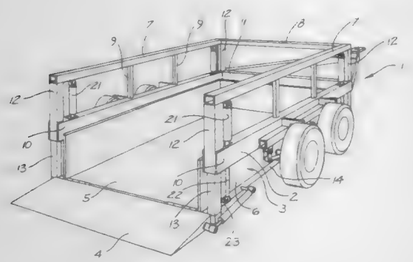
Roman Sobina, Hoppers Crossing, Australia, assignor to Workman Industries Pty Limited, Nowra, Australia

Filed Mar. 22, 1995, Ser. No. 408,617

Claims priority, application Australia, Mar. 22, 1994, PM4619; Aug. 24, 1994, PM7612

Int. Cl.[6] B60P *1/02*

U.S. Cl. 414—495 **19 Claims**



1. A vehicle comprising:

a U-shaped chassis formed by:

a top rail having two substantially parallel arm members and a base member linking said arm members;

a bottom rail substantially overlaid by said top rail, and having two substantally parallel arm members and a base member linking said arm members; and

a plurality of elongated hollow, substantially parallel members rigidly joining said top and bottom rails;

a tray having a plurality of posts parallel to each other extending from the tray; each of said posts mating in sliding engagement within a respective elongated hollow substantially parallel member, so as to enhance the rigidity of the chassis;

a wheel assembly located intermediate the ends of each arm member of said bottom rail; and

drive means to move said tray between a raised transport position and a ground engaging loading position such that said tray retains substantially the same orientation throughout its movement between said transport position and said loading position, as a result of the sliding engagement of the said posts within the respective elongated hollow substantially parallel members.

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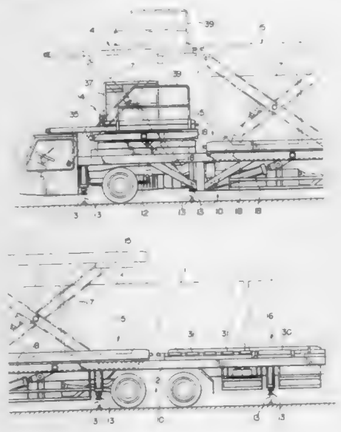
INTEGRATED CONTAINER HANDLING SYSTEM

Toshimichi Ihara, Ise, Japan, assignor to Shinko Electric Co., Ltd., and Japan Air System Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 293,891, Aug. 22, 1994, abandoned. This application Aug. 27, 1996, Ser. No. 699,714

Int. Cl.[6] B65G *67/02*

U.S. Cl. 414—495 **8 Claims**



1. An integrated container handling system for loading and unloading a plurality of containers, comprising a transport vehicle, and in a line on a chassis of said transport vehicle having a front elevator, a middle elevator, and a rear elevator;

said chassis of said transport vehicle including a stabilizer which is freely raisable and lowerable;

said front elevator platform being provided with forward/backward rotatable transfer rollers for moving containers forward or backwards, sideways transfer rollers for transferring containers sideways, freely-rotatable rollers and freely-rotatable balls for supporting containers, guide rails, which are freely raisable and lowerable for guiding containers forward and backward, and a stop bar, which is freely raisable and lowerable retaining containers in fixed positions;

said middle elevator platform and said rear elevator platform including container locks which are freely raisable and lowerable for fixing containers in place, said forward/backward transfer rollers, said side transfer rollers, said freely-rotatable rollers, said freely-rotatable balls, and said guide rails, and a plurality of containers can be loaded on each of said middle elevator platform and said rear elevator platform;

the front of opposite sides of said forward elevator platform being provided with an auxiliary platform which is upwardly and downwardly swingable; and

one side of said forward elevator platform being provided with an operating stand which freely moves up and down.

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PALLET SORTING MACHINE

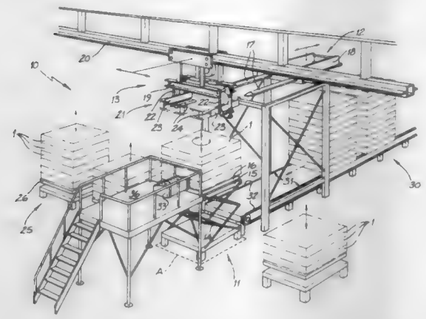
James J. McDonnell, Eastwood, Australia, assignor to Flomat Pty Ltd, Eastwood, Australia

Filed Sep. 14, 1995, Ser. No. 528,317

Int. Cl.[6] B65G *60/00*

U.S. Cl. 414—751 **26 Claims**

1. A sorting machine for damaged pallets wherein each pallet has one or more recesses extending between opposite ends thereof for receiving tynes of a lifting apparatus such as a forklift and sides extending between the ends so as to be generally rectangular in plan view, the sorting machine comprising:



a lifting and rotating apparatus having a first pallet support means, the apparatus being adapted to support and raise a pallet to a predetermined level and to rotate the pallet about a generally vertical axis;

a support device having a second pallet support means, the device being movable between a retracted out of use position and an extended position supporting the pallet at the predetermined level; and

a transfer carriage having a third pallet support means which is movable between a disengaged position spaced away from the pallet and an engaged position supporting the pallet, the transfer carriage being movable to transfer the pallet to one of a plurality of delivery locations selected by an operator depending on the type of damage the pallet has sustained;

a control means to control and coordinate operation of the lifting and rotating apparatus, the support device and the transfer carriage;

wherein, in use, each of the support means are arranged and controlled so as not to interfere with one another.

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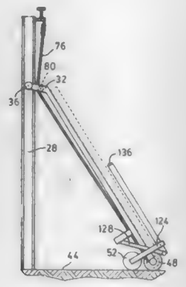
APPARATUS FOR POSITIONING AN OBJECT

Donald J. Gordon, Rockwood, Canada, assignor to Tampa Hall Limited, Ayr, Canada

Filed Feb. 26, 1996, Ser. No. 606,707

Int. Cl.[6] B65G *7/00*

U.S. Cl. 414—782 **14 Claims**



1. Apparatus for moving an object from a substantially vertical position to a substantially horizontal position such that a first side of the object is facing up and for then repositioning the object to a substantially horizontal position wherein a second, opposite, side of said object is facing up, the device comprising:

at least one elongate member fixed in a substantially vertical position;

a carriage having at least one carriage surface to contact said object, a first end of said carriage engaging said at least one elongate member in a manner such that said first end is moveable along said fixed member and a second carriage end having a bearing means moveable along a substantially horizontal surface;

carriage drive means to move said carriage between a first position wherein said carriage is substantially vertical and a second position wherein said carriage is substantially horizontal, said carriage drive means comprises at least one cable having one end of said at least one cable anchored to said elongate member and an opposite end of said at least one cable is anchored to a driven drum rotatably mounted to said carriage;

a gate located adjacent said second end of said carriage and being pivotally connected to said carriage and including at least one gate surface to contact said object; and

gate drive means to move said gate between a first gate position wherein said gate is positioned such that said at least one gate surface is opposed to and spaced from said at least one carriage surface defining an object receiving volume therebetween and a second gate position wherein said at least one gate surface is substantially perpendicular to said at least one carriage surface.

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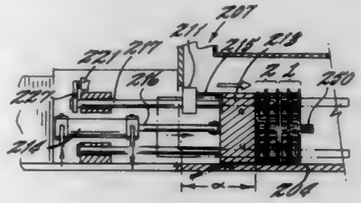
APPARATUS AND METHOD FOR PRODUCING TRUSS PLATE BUNDLES

William H. Black, Jr., Edenton, N.C., assignor to Tee-Lok Corporation, Edenton, N.C.

Division of Ser. No. 364,609, Dec. 27, 1994, which is a continuation-in-part of Ser. No. 232,899, Apr. 25, 1994, Pat. No. 5,392,908. This application Jan. 11, 1996, Ser. No. 583,825

Int. Cl.[6] B65G *47/22*

U.S. Cl. 414—798.6 **25 Claims**



1. An apparatus for forming a stack of truss plates, each of said truss plates comprising a generally planar backing member and a plurality of impaling members extending from one side thereof, said truss plates in said stack being oriented so that their backing members are substantially parallel to a predetermined plane, and the backing members of said truss plates being substantially aligned, said apparatus comprising:

a receiving compartment for receiving a substack of oriented and aligned truss plates, wherein each substack comprises a predetermined number of truss plates, said receiving compartment including two members positioned to receive the substack and retain the truss plates in their oriented and aligned relationship;

substack conveying means for conveying said substack from said receiving means, said substack conveying means being operatively coupled with said receiving means such that, as said substack is being conveyed, said receiving means is inaccessible for receipt of another substack; and

accumulating means for accumulating substacks conveyed by said substack conveying means, said accumulating means being configured to receive a plurality of substacks and to retain each of said plurality of substacks in oriented, substantially aligned, and contacting stacked relationship with at least one other substack until a predetermined number of substacks comprising a truss plate stack has been accumulated.

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5,630,698

CONVERTER FOR PROVIDING A LIQUID AT A MEASUREMENT PRESSURE CORRESPONDING TO A ROTATIONAL SPEED

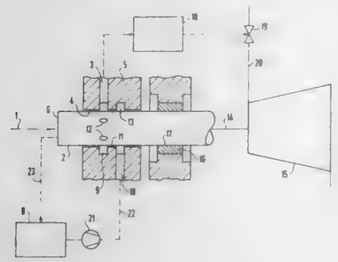
Matthias Hartmann, Görlitz, and Dieter Mürbe, Dresden, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

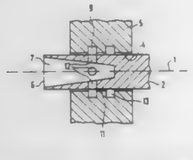
Filed Sep. 15, 1995, Ser. No. 528,960

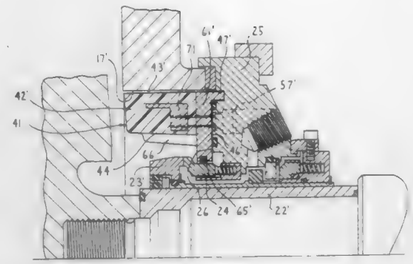
Claims priority, application Germany, Mar. 15, 1993, 43 08 206.8

Int. Cl.° F01D 17/06;17/08;17/26; G01P 3/28

U.S. Cl. 415—17 27 Claims







1. A converter assembly for providing a liquid in a measuring line, comprising:

a stationary housing;

a component being rigidly connected to said housing;

a journal being slidingly supported in said stationary housing and defining a gap disposed between said component and said journal forming a throttle, said journal having an axis of rotation, an end, at least one transverse bore formed in said journal, and a journal bore formed in said journal from said end along said axis;

said housing having a groove formed therein surrounding said journal and communicating with said journal bore through said at least one transverse bore;

a reservoir at a primary pressure;

a pressureless sump;

a liquid flow path communicating with said reservoir and said sump and including said throttle, said groove, said transverse bore and said journal bore; and

a measuring line branching off from said path between said transverse bore and said throttle, said measuring line carrying the liquid at a measurement pressure corresponding to a rotational speed of said journal rotating about said axis.

5,630,699

PUMP BOX WITH REPLACEABLE EROSION PROTECTOR

Michael P. Kirby, Illawong; Sarath Rujakaruna, Parramatta, and Jorge Mellado, Fairfield, all of Australia, assignors to Durametallic Corporation, Kalamazoo, Mich.

Filed Aug. 31, 1995, Ser. No. 521,637

Int. Cl.° F04D 29/12

U.S. Cl. 415—111 19 Claims

1. In a pump arrangement having a housing provided with a large-bore seal chamber defined and surrounded by an axially elongated annular boundary wall, a rotatable shaft mounting thereon a pumping element, said shaft projecting substantially axially through said seal chamber, and a mechanical seal assembly cooperating between said shaft and said housing for sealing said seal chamber from the surrounding atmosphere, said mechanical seal assembly including first and second relatively rotatable seal rings disposed in axially adjacent and surrounding relationship to said shaft and having axially opposed annular seal faces maintained in relatively rotatable sealing engagement with one another, said first seal ring being nonrotatably connected to said shaft and said second seal ring being nonrotatably mounted relative to said housing, said mechanical seal assembly also including a gland ring nonrotatably mounting said second seal ring thereon and projecting radially outwardly of said shaft and being fixedly but releasably connected to said housing for substantially closing off an outer axial end of said seal chamber, said gland ring defining thereon an axially-oriented inner end face defining an outer axial end boundary of said seal chamber, the improvement comprising an erosion protector ring means positioned within said seal chamber for substantially covering and protecting said annular boundary wall and said gland inner end face from erosion by pumping fluid contained within the seal chamber, said protector ring means including a first axially elongated annular wall part which is substantially concentrically disposed within said annular boundary wall in closely adjacent and directly radially opposed relation for covering said annular boundary wall, said protector ring means also including a second annular wall part which is fixed to and projects radially inwardly from said first annular wall part and is disposed directly axially adjacent in close and axially opposed overlapping relation to the gland inner end face for covering same, said second annular wall part projecting radially inwardly toward said shaft and terminating at a central opening defined by an inner annular edge wall which is disposed in closely adjacent and surrounding relationship to said second seal ring, and said protector ring means further including a plurality of flow-disrupting axially-elongated projections which are fixed thereto and project radially inwardly from said first annular wall part, said projections being disposed in angularly spaced relation around said protector ring means.

5,630,700

FLOATING VANE TURBINE NOZZLE

Andrew J. Olsen, Amesbury, and William L. Blair, Danvers, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 26, 1996, Ser. No. 638,094

Int. Cl.° F01D 25/26

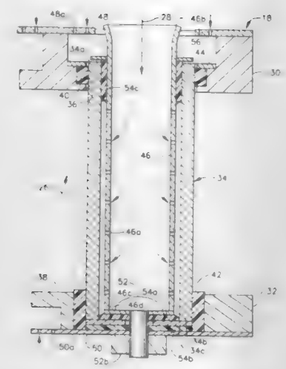
U.S. Cl. 415—134 19 Claims

1. A turbine nozzle comprising:

an outer band including a plurality of circumferentially spaced apart outer mounting holes;

an inner band spaced from said outer band and including a plurality of circumferentially spaced apart inner mounting holes;

a plurality of vanes extending through respective pairs of said outer and inner holes, and each vane having outer and inner ends disposed correspondingly thereat, and being shaped for channeling combustion gas thereover; and



means for resiliently supporting said vanes to said outer and inner bands for allowing differential thermal movement between said vanes and said outer and inner bands.

5,630,701

VARIABLE ANGLE VANE ARRAYS

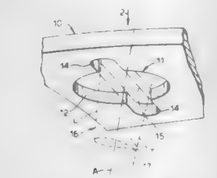
Steven D. Lawer, Derby, England, assignor to Rolls-Royce plc, London, England

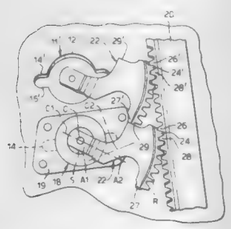
Filed Apr. 5, 1996, Ser. No. 628,155

Claims priority, application United Kingdom, Jun. 5, 1995, 9511269

Int. Cl.° F01D 17/16

U.S. Cl. 415—160 15 Claims





1. A variable area vane assembly comprising;

a casing ring having an axis and a circumferential array of apertures therein,

a plurality of pivotable aerofoil shaped vanes, each vane being pivotally supported in the casing ring about a radial axis to protrude radially inwardly of the casing ring from a respective aperture, the vanes being pivotable between a first extreme position giving maximum fluid flow delivery and a second extreme position giving minimum fluid flow delivery, each vane having a radially outer end,

drive means on a radially outer end of each vane for effecting pivoting movement thereof,

each said vane having a leading and trailing edge and each said aperture in said casing ring having spaced apart slots shaped to receive respectively said leading and trailing edges of a said vane at an orientation such that said respective vane will extend in an attitude that corresponds to one of said first and second extreme positions in the range of pivoting movements of the respective vane.

each drive means including at least one abutment located to engage with a portion of an adjacent drive means after a first vane is passed through an aperture in said casing ring and located in one of said extreme positions and the adjacent vane, upon insertion in a respective aperture in said casing ring, being constrained to assume the same one of said extreme positions in the range of pivoting movements by contact between a portion of said adjacent vane with said respective abutment of said first vane.

5,630,702

ARRANGEMENT FOR INFLUENCING THE RADIAL CLEARANCE OF THE BLADING IN AXIAL-FLOW COMPRESSORS INCLUDING HOLLOW SPACES FILLED WITH INSULATING MATERIAL

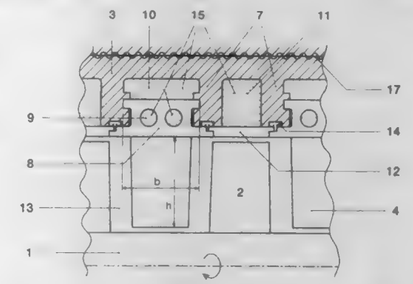
Robert Marmilic, Nussbaumen; François Meynard, and Roger Suter, both of Zürich, all of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Nov. 2, 1995, Ser. No. 556,074

Claims priority, application Germany, Nov. 26, 1994, 44 42 157.5

Int. Cl.° F01D 25/08

U.S. Cl. 415—177 8 Claims



1. An arrangement for influencing radial clearance of blading of an axial-flow, highly loaded compressor comprising a rotor equipped with moving blades and a blade carrier which is equipped with guide blades, the compressor being hung in a casing, wherein the blade carrier has mountings for the guide blades, at least one first hollow space arranged in roots of the guide-blades, at least one second hollow space being disposed in an embedded state in a peripheral direction between the guide-blade roots, the mountings and the blade carrier, at least one third hollow space being disposed in a peripheral direction between the blade carrier and ones of the mountings for two successive ones of the guide blades, the third hollow space being defined by a plurality of segments distributed over a periphery of the blade carrier and connected to the guide-blade roots, and the first, second, and third hollow spaces being filled with insulating material.

5,630,703

ROTOR DISK POST COOLING SYSTEM

David G. Hendley, Wyoming; Steve R. Fledderjohn, West Chester; Randall C. Bauer, Hamilton; Jonathon P. Clarke, West Chester, and Alan L. Webb, Mason, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

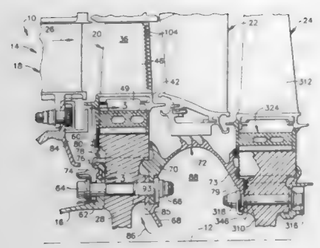
Filed Dec. 15, 1995, Ser. No. 573,317

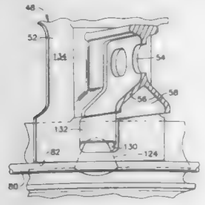
Int. Cl.° F01D 05/08

U.S. Cl. 416—95 28 Claims

1. A cooling system for use in a rotor assembly of a gas turbine engine, the rotor assembly including an annular disk rotatable

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about a centerline axis of the engine and a plurality of radially extending blades mounted on the disk, the disk including a plurality of circumferentially alternating posts and slots disposed about a periphery of the disk, each of the slots receiving a dovetail portion of one of the blades, said cooling system being effective for cooling each of the disk posts during operation of the engine, said cooling system comprising:

a plurality of seal bodies, each of said seal bodies forming a thermal isolation chamber positioned over a radially outer surface of one of the disk posts, wherein each of said seal bodies includes a cover plate;

a plurality of axially extending plenums, each of said plenums positioned inward of the dovetail portion of one of the blades, wherein said axially extending plenums receive cooling air during operation of the engine;

a first, annular retention member attached to the disk at a radially inner end thereof, said first retention member being effective for preventing egress of the blades from the disk slots in one axial direction, wherein a radially outer end of said first retention member is proximate a first axially facing surface of said cover plate;

a radially inner seal disposed in sealing engagement with said first retention member, the dovetail portion of each of the blades, and the disk posts; a radially outer seal disposed in sealing engagement with at least said first retention member and said cover plate of said seal bodies;

a recess formed in a second, opposite axially facing surface of said cover plate of each of said seal bodies, wherein each of said recesses receives cooling air from at least one of said plenums during operation of the engine, with the cooling air being diverted past said inner and outer seals into said recesses, wherein each of said recesses is also in fluid flow communication with one of said thermal isolation chambers.

5,630,704

PROPELLER DRIVE SLEEVE WITH ASYMMETRIC SHOCK ABSORPTION

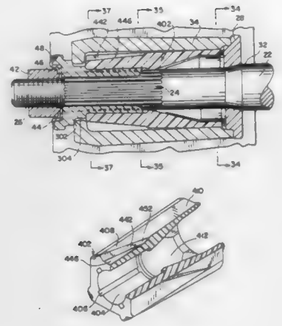
Hubert S. Gilgenbach, Oshkosh, and Michael P. Mihelich, Fond du Lac, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Mar. 19, 1996, Ser. No. 618,667

Int. Cl.[6] B63H *23/30*

U.S. Cl. 416—134 R **31 Claims**

1. In a marine drive comprising a propeller with a hub, and an axially extending propeller shaft, a shock absorbing drive sleeve in



said propeller hub and mounting said propeller hub to said propeller shaft and having an asymmetric spring rate such that said sleeve has a higher spring rate in one direction of rotation of said propeller shaft than in the other direction of rotation of said propeller shaft.

5,630,705

ROTOR CONSTRUCTION FOR WINDMILL

Pieter A. J. Eikelenboom, Wollefoppenweg 27, 2761 DH Zevenhuizen, Netherlands

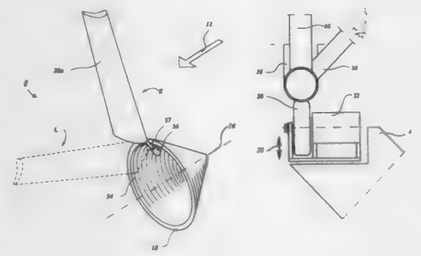
PCT No. PCT/NL93/00090, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/22555, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 29, 1993, Ser. No. 325,297

Claims priority, application Netherlands, Apr. 29, 1992, 9200756

Int. Cl.[6] B64C *11/28*

U.S. Cl. 416—142 **17 Claims**



1. A device for converting wind flow energy into mechanical energy, said device comprising a base construction and a rotor, said rotor being mounted on the base construction and comprising an essentially horizontal axis, a number of elongated rotor blades, and a rotor support comprising at least one annular tube, said rotor blades being connected to said rotor support and extending essentially radially therefrom, a portion of each rotor blade being connected to the rotor support by a hinge connection for tilting the longitudinal axis of the rotor blade to a predetermined orientation relative to the axis of rotation of the rotor support, wherein a hinge axis of the hinge connection between the rotor blade and the rotor support is directed at an acute angle both to the longitudinal axis of the rotor blade and to the axis of rotation of the support.

5,630,706

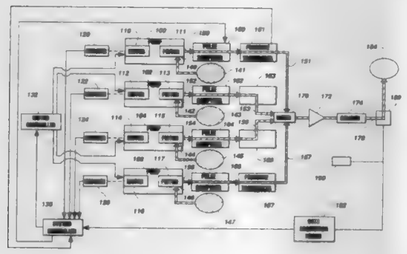
MULTICHANNEL PUMP APPARATUS WITH MICROFLOW RATE CAPABILITY

Frank J. Yang, 20056 Karn Cir., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 847,654, Mar. 5, 1992, Pat. No. 5,253,981. This application Aug. 31, 1993, Ser. No. 114,497

Int. Cl.[6] F04B *41/06;17/00;35/04*

U.S. Cl. 417—3 **53 Claims**



1. A fluid gradient proportioning system, comprising:

a plurality of reservoirs each containing one of a plurality of different fluids;

a plurality of pumps, each said pump being connected to a different corresponding one of said reservoirs, each said pump being a direct drive pump having a central housing having first and second ends:

a chamber housing mechanically attached to said central housing at said second end, and enclosing an elongated chamber having an opening at one end, said elongated chamber defining an inlet, and an outlet;

a piston having a drive end and a fluid end, each fluid end being slidably received within said chamber through said opening;

a bidirectional motor mounted to said first end of said central housing and having a motor shaft which rotates about a linear axis; and

motor connection means mounted within said central housing for directly drivingly connecting said drive end of said piston to said motor shaft with said motor shaft and said piston being arranged substantially colinearly along said linear axis, said motor connection means including a proximal portion having a first end mechanically affixed to said motor shaft for rotation in synchrony therewith about said axis and an externally threaded second end, and a distal portion coupled to said drive end of said piston and including mounting means operably mounted to said central housing for mounting said piston for slidable motion along the direction defined by said axis, said mounting means having an internally threaded cavity operably disposed and dimensioned for incremental and reversible engagement and rotation of said threaded second end of said proximal portion, said motor connection means further including a floating connection means for connecting said piston to said motor connection means, said floating connection means comprising a traveling bracket forming the distal end of said motor connection means and having attachment means for attaching said drive end of said piston;

at least one mixing unit having a plurality of inlets, each of said inlets connectable to receive fluid from a different one of said pumps, and said mixing unit having an outlet for discharging mixed fluid; and

system control means communicatively connected to each of said pumps for controlling said pumps, said system control means being constructed to control said pumps to pump at selected individual rates to produce a mixture in said mixing unit having said different fluids in proportions determined by the relative pumping rates of corresponding said pumps.

5,630,707

VARIABLE DISPLACEMENT MECHANISM FOR SWASH PLATE TYPE HYDRAULIC PUMP AND MOTOR

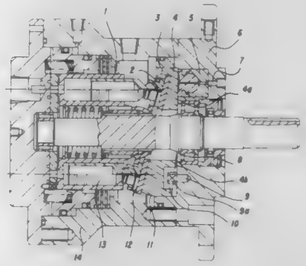
Hyong-Eui Kim, and Young-Bog Ham, both of Changwon-Si, Rep. of Korea, assignors to Korea Institute of Machinery & Metals, Daejeon-Si, Rep. of Korea

Filed Mar. 28, 1995, Ser. No. 412,125

Claims priority, application Rep. of Korea, Oct. 1, 1994, 94-25219

Int. Cl.[6] F04B *1/32*

U.S. Cl. 417—269 **4 Claims**



1. A variable displacement mechanism for swash plate type hydraulic pump and motor, comprising:

a housing;

a swash plate rockingly positioned in said housing;

a front cover on said housing having a bore on a face surface thereof for installing a securing pin to prevent rotation of said swash plate; said front cover further having a cylindrical bore for receiving a swash plate tilting control piston for tilting said swash plate; and said front cover further having a circular guide wall for guiding tilting of said swash plate.

5,630,708

RADIAL PISTON PUMP FOR LOW-VISCOSITY FUEL

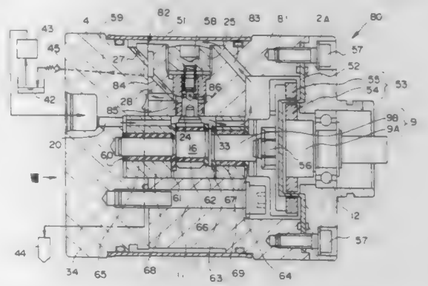
Takeo Kushida; Fujio Aoki; Takayuki Ikeda; Koichiro Futamase; Tomoharu Sato; Hideya Kikuchi; Ken Sato; Nobuo Aoki, and Katsuhiko Tsukazaki, all of Higashi-Matsuyama, Japan, assignors to Zexel Corporation, Japan

Filed Dec. 27, 1994, Ser. No. 364,857

Claims priority, application Japan, Dec. 28, 1993, 5-348915; Jul. 12, 1994, 6-181989

Int. Cl.[6] F04B *1/053*

U.S. Cl. 417—273 **20 Claims**



1. A radial piston pump for low-viscosity fuel comprising:

a pump housing formed with intake side fuel passages and discharge side fuel passages,

a plurality of pistons disposed radially within the pump housing to be capable of reciprocation,

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intake valves and discharge valves for enabling intake and discharge of low-viscosity fuel by the reciprocation of the pistons,

the pump housing comprising at least two structural bodies,

the intake valves and the discharge valves being formed in a single leaf valve member to communicate respectively with the intake side passages and the discharge side passages, and

the leaf valve member being disposed between two of the structural bodies of the pump housing.

5,630,709

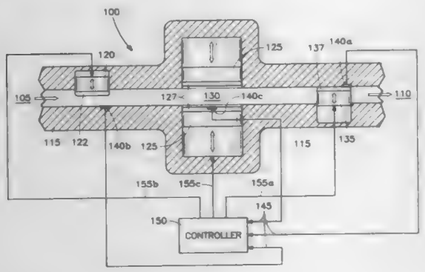
PUMP HAVING PISTONS AND VALVES MADE OF ELECTROACTIVE ACTUATORS

Yoseph Bar-Cohen, Seal Beach, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Feb. 9, 1996, Ser. No. 600,326

Int. Cl.[6] F04B *43/04;19/00;39/08*

U.S. Cl. 417—322 **31 Claims**



1. A pump for inducing a displacement of a fluid from a first medium to a second medium, comprising:

a conduit coupled to said first and second media;

a transducing material piston defining a pump chamber in said conduit and being transversely displaceable for increasing a volume of said chamber to extract said fluid from said first medium to said chamber and for decreasing said chamber volume to force said fluid from said chamber to said second medium;

a first transducing material valve mounted in said conduit between said piston and said first medium and being transversely displaceable from a closed position to an open position to admit said fluid to said chamber; and

control means for changing a first field applied to said piston to displace said piston for changing said chamber volume and for changing a second field applied to said first valve to change the position of said first valve.

5,630,710

AMBULATORY INFUSION PUMP

Joel Tune, Antioch, Ill.; Robert L. Anderson, Boulder, Colo.; Larry Blankenship, Boulder, Colo.; Daniel C. Colesworthy, III, Boulder, Colo.; Warren P. Heim, Boulder, Colo.; Scott A. Miller, III, Boulder, Colo.; Brad H. Sherman, Lafayette, Colo., and Donald R. Widrig, Boulder, Colo., assignors to Baxter International Inc., Deerfield, Ill.

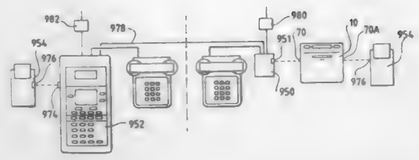
Filed Mar. 9, 1994, Ser. No. 209,519

Int. Cl.[6] F04B *43/09*

U.S. Cl. 417—326 **6 Claims**

1. A remotely programmable infusion system for administering liquid to a patient, comprising:

an infusion pump including pumping means for infusing liquids to a patient, a control including a programmed processing unit



and a memory circuit, the processing unit operating in accordance with delivery program data stored in the memory circuit for executing an infusion delivery sequence, an output circuit operatively disposed between said processing unit and said pumping means to control operation of said pumping means in accordance with the infusion delivery sequence, and an infrared communication circuit operatively connected to said control for transmitting and receiving data in an infrared format;

a programmer remote from the pump including a programmed processing unit, a memory circuit, a user interface operatively associated with said processing unit for entering program commands and configuring delivery program data for storage in the memory circuit, and a modem circuit operatively connected to said processing unit for transmitting and receiving data in a modem format; and

a communication interface unit including an infrared communication circuit operatively communicating, in use, with said pump infrared communication circuit, a modem circuit operatively communicating, in use, via a telephone line with the programmer modem circuit and a control circuit operatively connected to said modem circuit and said infrared communication circuit for channeling between the modem circuit and the infrared communication circuit.

5,630,711

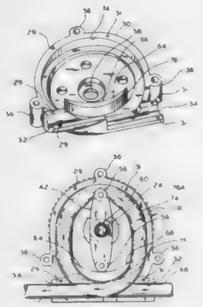
PERISTALTIC PUMP HAVING A LOOP-SHAPED TUBE PATH

Kenneth Luedtke, Wilmette, Ill.; Gary Pritchard, Rockwall, Tex., and Craig J. Shields, Chicago, Ill., assignors to Graymills Corporation, Chicago, Ill.

Filed Sep. 8, 1995, Ser. No. 525,394

Int. Cl.[6] F04B *43/09*

U.S. Cl. 417—477.9 **12 Claims**



1. A housing for a peristaltic pump for moving a fluid through a flexible tube, comprising:

an inlet port, an outlet port, and a loop-shaped tube path within said housing joining said inlet port to said outlet port;

said loop-shaped tube path including means for orienting said flexible tube to have parallel portions between said inlet port and said outlet port; and

said tube orienting means including a guide block for guiding said flexible tube located in the interior of said housing generally intermediate said inlet port and said outlet port.

5,630,712

ELECTRICALLY-DRIVEN CLOSED SCROLL COMPRESSOR HAVING MEANS FOR MINIMIZING AN OVERTURNING MOMENT TO AN ORBITING SCROLL

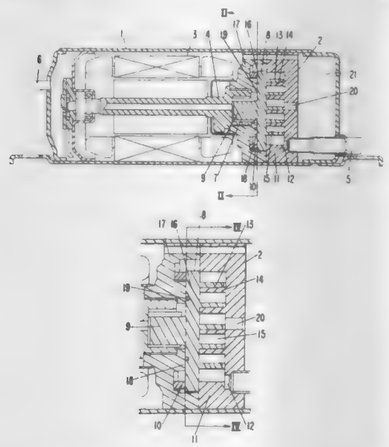
Manabu Sakai, and Shigeru Muramatsu, both of Kusatsu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 16, 1995, Ser. No. 515,591

Claims priority, application Japan, Aug. 22, 1994, 6-195838

Int. Cl.[6] F04C *18/04;27/00*

U.S. Cl. 418—55.4 **5 Claims**



1. An electrically-driven closed scroll compressor comprising:

a closed vessel,

a compression mechanism accommodated in said closed vessel and comprising,

a bearing member securely mounted in said closed vessel,

a stationary scroll having a stationary scroll wrap formed thereon,

an orbiting scroll mounted between said stationary scroll and said bearing member and having an orbiting end plate and an orbiting scroll wrap formed on said orbiting end plate so as to engage with said stationary scroll wrap to define a plurality of working pockets therebetween, and

an eccentric bearing for allowing said orbiting scroll to undergo an orbiting motion relative to said stationary scroll;

an electric motor accommodated in said closed vessel so as to drive said compression mechanism; and

a generally ring-shaped sealing member mounted on one of said bearing member and said orbiting end plate so as to be held in contact with the other of said bearing member and said orbiting end plate;

wherein said orbiting end plate has first and second regions defined therein internally and externally of said sealing member, respectively, said first and second regions receiving first and second pressures, respectively, both forming a first thrust force; and

wherein said sealing member has a center positioned relative to a center of said one of said bearing member and said orbiting end plate so as to constitute a means for causing, during the orbiting motion of said orbiting scroll and when a second thrust force applied to said orbiting scroll from said working pockets takes a substantially maximum value, a distance between a central point of application of said first thrust force and a central point of application of said second thrust force to take a substantially minimum value.

5,630,713

ROTARY BURNER

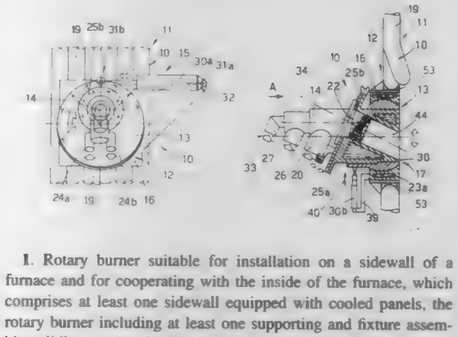
Val Shver, Alpharetta, Ga., and Gianni Gensini, S. Stefano Di Buia, Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy, and Process Technology International Inc., Atlanta, Ga.

Filed Jun. 7, 1995, Ser. No. 476,764

Claims priority, application Italy, Jun. 10, 1994, UD94A0100; Jun. 10, 1994, UD94A0103

Int. Cl.[6] F23C *5/06*

U.S. Cl. 431—189 **18 Claims**



1. Rotary burner suitable for installation on a sidewall of a furnace and for cooperating with the inside of the furnace, which comprises at least one sidewall equipped with cooled panels, the rotary burner including at least one supporting and fixture assembly solidly associated with the sidewall of the furnace and at least one positioning and orientation assembly rotatably fitted on the axis of the supporting and fixture assembly, the positioning and orientation assembly containing a through hole in which the body of the rotary burner is removably secured in a retracted position, the through hole having its axis downwardly inclined towards the inside of the furnace by an angle "β" between 10° and 60° in relation to the axis of rotation of the positioning and orientation assembly, the positioning and orientation assembly being able to be rotated by at least an arc of a circumference up to ±180° by the action of a drive assembly, the cooled panel including above the rotary burner at least one projection facing towards the inside of the furnace so as to provide protection.

5,630,714

PROCESS FOR CONTROLLING COMBUSTION OF BURNERS IN FURNACE AND AN APPARATUS THEREFOR

Tatsuya Yuino, Nagoya; Kazuhiro Miyahara, Yokkaichi, and Toyoshiro Miyajima, Tajimi, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 28, 1995, Ser. No. 411,314

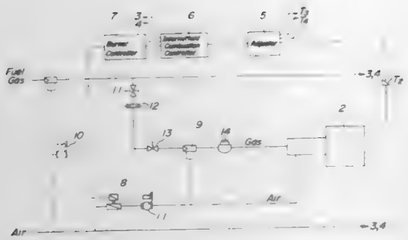
Claims priority, application Japan, Mar. 28, 1994, 6-057602

Int. Cl.[6] F27D *19/00*

U.S. Cl. 432—36 **4 Claims**

1. A process for controlling combustion of burners arranged in a plurality of respective control zones divided inside a furnace, said process comprising the step of repeating a cycle of successively subjecting said burners to combustion for a short time, wherein at least one temperature sensor is fitted in each control zone, a time period during which each burner is subjected to combustion is controlled according to a difference between a temperature

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detected by the corresponding temperature sensor and a preset temperature in a respective control zone.

5,630,715

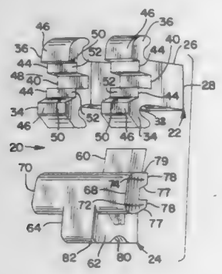
ORTHODONTIC BRACKET WITH AN ENGAGEMENT MECHANISM FOR RETAINING AN ARCHWIRE

John C. Voudouris, 16 Doon Road, Willowdale, Ontario, Canada

Continuation-in-part of Ser. No. 96,948, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 63,165, May 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 7,095, Jan. 21, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 392,040

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—8 **44 Claims**



1. A twin edgewise orthodontic bracket for attaching an archwire to a tooth comprising:

a bracket member including a base for attachment to the tooth, said base having an occlusal-gingivally extending opening, at least two sets of spaced apart occlusal and gingival tie wings extending from said base, each set of tie wings having a labial face which has a centrally disposed mesiodistally extending archwire slot segment, the segments of the tie wing sets combining to define an archwire slot of the bracket member for receiving the archwire, and said tie wings having a locking recess in the labial faces; and

a slidable locking shutter movable between open and closed positions having a guide bar slidably received in said occlusal-gingival opening, a locking body for engaging said locking recess without covering the labial or lingual faces of the sets of occlusal and gingival tie wings when in closed position, and an extension arm connecting said guide bar to said locking body and movable between said sets of tie wings, wherein said locking shutter is slidably mounted on said bracket between open and closed positions, said locking body having means adapted to align with the sets of tie wings to close the archwire slot by engaging said locking recess,

whereby the locking shutter allows placement and removal of the archwire when in the open position and prevents the displacement of the archwire from the bracket member when in the closed position.

5,630,716

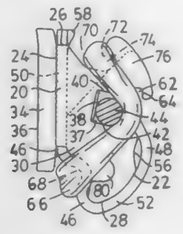
SELF-LIGATING ORTHODONTIC BRACKETS

G. Herbert Hanson, 57 Augusta Street, Hamilton, Ontario, Canada

Filed Dec. 29, 1995, Ser. No. 587,802

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—14 **29 Claims**



1. An orthodontic bracket comprising:

a bracket body having labial, lingual, gingival, occlusal, mesial and distal surface portions, the body having a mesial distal extending arch wire slot opening to the labial surface portion; and

a generally U-shaped ligating spring member having labial and lingual portions connected by an intervening occlusal portion and being movable on the body between two positions in which the slot labial opening is respectively open and is closed by the labial portion;

wherein the spring member is provided in the occlusal portion adjacent to its junction with the lingual portion with a mesial distal extending spring member slot that in the slot closed position is available to receive and retain an additional ligating means mounted on the bracket, and that is deep enough for such reception and retention, the spring member slot opening at least partly lingually and being convex in the labial gingival direction.

5,630,717

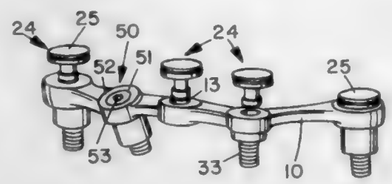
DENTAL IMPLANT BAR SYSTEM AND METHOD

Max Zuest, San Diego, and Paul Zuest, Poway, both of Calif., assignors to Zest Anchors, Inc., Escondido, Calif.

Filed May 1, 1995, Ser. No. 432,086

Int. Cl.[6] A61C *13/225*

U.S. Cl. 433—172 **35 Claims**



1. A dental implant bar system, comprising:

an elongate bar for extending between at least two dental implants, the bar having an upper face facing away from the implants and a lower face facing the implants;

at least two fastener devices for connecting the bar to the respective dental implants;

at least two socket formations with a low profile within the bar and having openings in the upper face of the bar, each socket formation comprising first snap engagement means; and

at least two male members, each male member comprising an elongate shaft having a first end for securing in a dental appliance and a second end comprising an enlarged head, the enlarged head comprising second snap engagement means for releasable snap engagement through one of said openings into a respective one of said socket formations.

5,630,718

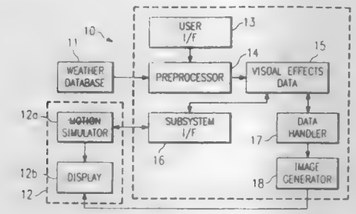
WEATHER SIMULATION SYSTEM

Bruce C. Montag; Dennis J. Wenzel, and Richard P. Weyrauch, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation of Ser. No. 326,601, Oct. 20, 1994, Pat. No. 5,480,305, which is a continuation of Ser. No. 145,761, Oct. 29, 1993, Pat. No. 5,409,379. This application Oct. 6, 1995, Ser. No. 539,852

Int. Cl.[6] G09B *9/00*

U.S. Cl. 434—2 **31 Claims**



1. A method of using a computer to provide frames of display data representing weather conditions based on real-world weather data for use in rendering a three-dimensional display, comprising the steps of:

accessing a real-world weather database to obtain a three-dimensional set of data elements, each data element having at least a location value and a liquid water content value;

accessing field-of-view data representing a current field-of-view for a current frame;

culling said data elements to determine which are within said field-of-view, to obtain a set of field-of-view data elements;

sorting said field-of-view data elements to form a list of data elements in depth order;

assigning a graphics primitive to each of said field-of-view data elements;

covering an image plane with the graphic primitives associated with the frontmost of said field-of-view data elements, such that a certain percentage of said image plane is covered;

repeating said covering step, using said field-of-view data elements in front to back order, until the image plane has been covered a predetermined number of times or until a predetermined number of said field-of-view data elements have been used; and

assigning said field-of-view data elements to one or more depth bins on the basis of the results of said covering step, so as to generate a prioritized display list for said current frame; and

repeating all of the above steps for each next frame, thereby providing said simulated display.

5,630,719

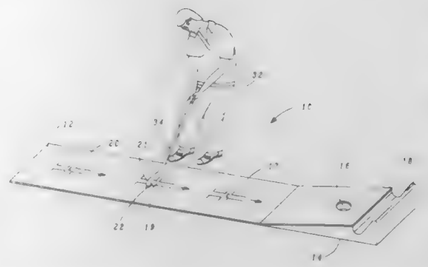
GOLF PUTTING TEACHING AID

Terry W. Franklin, 8749 Hummingbird Dr., Frisco, Tex. 75034

Filed Jun. 29, 1995, Ser. No. 496,497

Int. Cl.[6] A63B *69/36*

U.S. Cl. 434—252 **8 Claims**



5. A golf putting teaching aid, comprising:

a generally rectangular putting surface having a first end and a second end;

a cup disposed proximate to said first end for receiving a golf ball;

at least one teaching pattern disposed on and integral with said putting surface at a predetermined distance from said cup, said pattern having:

a ball location area for indicating the location of the golf ball on said putting surface;

a club squaring indicator disposed behind said ball location area for providing a visual indication to the user of a perpendicular orientation of a golf club head to a golf ball when disposed in said ball location area when addressing the golf ball with the golf club head;

a stroke initiator indicator disposed rearward of the ball location area and on said putting surface for indicating the distance that the club head should be moved away from said ball location area, the distance of said stroke initiator indicator from said ball location area being a function of the distance of said ball location area from said cup;

a stroke direction indicator disposed on the surface of said putting surface and proximate to said ball location area and said club squaring indicator, such that said stroke direction indicator can be viewed while viewing the golf ball when located in said ball location area during use of the teaching aid, said indicator extending from a position proximate said club squaring indicator to a position forward of said ball location area toward said cup and in the path of desired travel of the golf ball;

and extending along the desired path between said stroke initiator indicator, through said ball location area to a position forward of said ball location area toward said cup; and

said stroke direction indicator is comprised of lines that extend from said stroke initiator indicator to said ball location area, and two parallel lines that extend from said ball location area to forward of said ball location area toward said cup a predetermined distance from said ball location area, said predetermined distance being a function of the distance of said ball location area from said cup.

5,630,720

SELF POLARIZING ELECTRICAL CONTACT

Timothy L. Kocher, Camp Hill, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 412,044, Mar. 28, 1995, abandoned. This application Oct. 1, 1996, Ser. No. 724,436

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—78 **6 Claims**

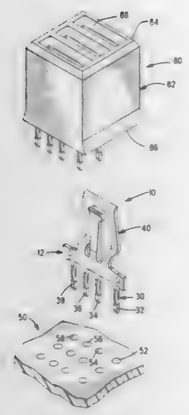
1. An electrical contact for electrically interconnecting a circuit board and an other electrical article comprising:

a conductive body portion having first and second connecting sections at opposite ends thereof; and

at least three legs extending from a common edge of said conductive body portion and aligned in a common row, altogether comprising one of said first and second connecting sections of said contact, each leg adapted to be received in a through-hole of a circuit board, the through-holes being aligned in a row, the other of said first and second connecting sections being adapted for becoming electrically connected with said other electrical article;

a first of said at least three legs being space from a second of said at least three legs a selected first distance and said second leg being spaced from a third of said at least three legs a

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selected second distance, said first distance being different from said second distance,;

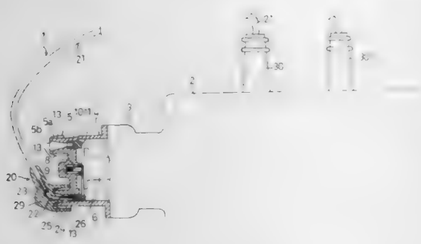
whereby said at least three legs of said contact are adapted to be received in respective through-holes of the circuit board in a polarized arrangement.

5,630,721

PLUG CORD CONNECTING STRUCTURE

Yoshiaki Nakatsuka, Nara, Japan, assignor to Seiwa Industry Co., Ltd. (Seiwa Kogyo Kabushiki Kaisha), Osaka, Japan

Filed Mar. 31, 1995, Ser. No. 414,617
Claims priority, application Japan, Jun. 20, 1994, 6-136207
Int. Cl.° H01R *13/44*
U.S. Cl. 439—125 5 Claims



1. A plug cord connecting structure for connecting a distributor and a spark plug or a distributor and an ignition coil having a connecting cap provided at one end of the plug cord, said connecting cap as a single unit comprising:

an outer tube fitting over a tubular wall of a wiring terminal, said outer tube having an inner diameter equal to or small to the outer diameter of said wiring terminal;

an inner tube fitting in a tubular wall of said wiring terminal and from the inside of which protrudes a cord connecting element, said inner tube having an outer diameter equal to or greater than the inner diameter of the tubular wall of said wiring terminal; and

a support member which supports said cord connecting element and a part of a connecting cord; and wherein

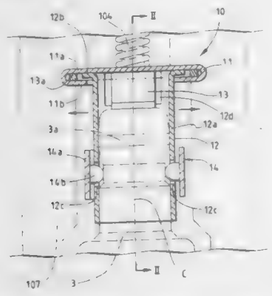
said outer tube and inner tube engaged respectively with outer and inner surfaces of said tubular wall to be tightly capped on the tubular wall of the wiring terminal.

5,630,722

IGNITION CABLE CONNECTION FITTING

Shigehiko Mochizuki, and Hiroshi Suzuki, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 321,834, Oct. 6, 1994, abandoned.
This application Jun. 4, 1996, Ser. No. 658,019
Claims priority, application Japan, Oct. 7, 1993, 5-274753
Int. Cl.° H01R *13/44*
U.S. Cl. 439—125 13 Claims



1. An ignition cable connection fitting comprising:

a connection fitting, one end of which is connected with an ignition cable and the opposite end of which is engaged with a terminal fitting provided in a recess; and

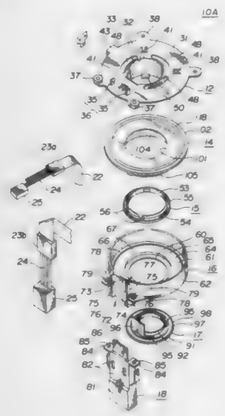
an insulator surrounding said connection fitting for insulation, wherein said connection fitting comprises first and second fittings, and wherein said insulator is inserted in the recess for connecting the second fitting with the terminal fitting, the first fitting being fixedly secured inside said insulator and connected with the ignition cable, the second fitting being movably engaged with the first fitting so the second fitting can be freely displaced relative to the first fitting in a direction substantially perpendicular to a longitudinal axis of the recess when said insulator is secured in the recess.

5,630,723

CABLE TYPE ELECTRIC CONNECTOR

Akio Kawamoto, Fuji, Japan, assignor to Nihon Plast Co., Ltd., Fuji, Japan

Filed Apr. 27, 1995, Ser. No. 429,656
Claims priority, application Japan, Nov. 30, 1994, 6-297515; Dec. 28, 1994, 6-329072
Int. Cl.° H01R *35/04*
U.S. Cl. 439—164 22 Claims



1. A cable type electric connector comprising:

an annular casing having a cylindrical wall;

an annular rotor having a concentric collar portion, said collar portion being coaxially and rotatably received in said annular casing to define therebetween a cable receiving annular space;

an annular guide body concentrically and rotatably received in said cable receiving annular space, said annular guide body having a cable passing slot;

a flat cable having an inner end connected to said collar portion and an outer end connected to said annular casing, said flat cable passing through said cable passing slot, so that when said collar portion and said annular casing make a relative rotation therebetween, said flat cable is forced to make a roll wound on said collar portion in one direction or a roll wound within the cylindrical wall of said annular casing in the other direction; and

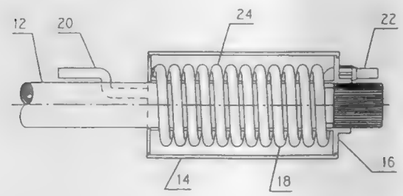
coupling means for coupling said annular guide body and said annular rotor in a manner to permit a relative rotation therebetween, said coupling means including a plurality of ridges formed on said collar portion of said annular rotor and means defining a circular opening in a center portion of said annular guide body, a peripheral portion of said circular opening being slidably disposed on said ridges.

5,630,724

ARRANGEMENT FOR ELECTRICALLY CONNECTING A ROTATING CURRENT CONTACT TO A STATIONARY CURRENT SOURCE

Manfred Lange, Königstein, and Hans-Dieter Pfeifer, Lautortal, both of Germany, assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Sep. 8, 1995, Ser. No. 525,801
Int. Cl.° H01R *3/00*
U.S. Cl. 439—164 12 Claims



1. An arrangement for electrically connecting a rotatable current contact to a stationary voltage, current or signal source comprising an insulated electric line which extends between the current contact on the one side and which is coiled around a longitudinal axis of a rotary shaft member, the electric line being in the form of a longitudinally elongate helical spring and having a plurality of mutually insulated wires.

5,630,725

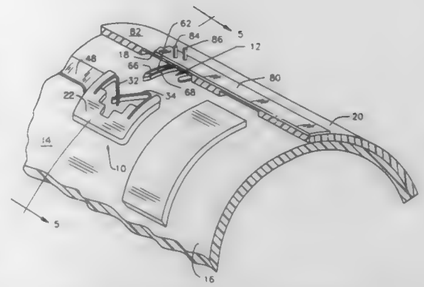
LOW PROFILE SWITCH ASSEMBLY

Eric T. Green, Harrisburg, and Brent D. Yohn, Newport, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 15, 1995, Ser. No. 559,514
Int. Cl.° H01R *29/00*
U.S. Cl. 439—188 9 Claims

1. A low profile switch having first and second matable assemblies each disposed on a respective one of opposed adjacent first and second surfaces of respective first and second articles which are relatively slidable along a line of travel with respect to each other between first and second relative positions, the switch comprising:

a receptacle assembly including:



a first dielectric housing secured to said first surface, said first housing defining a recess open toward said second position;

a first pair of contact members mounted to said first housing and extending into said recess, said first pair of contact members being resiliently biased into engagement with each other and being movable toward and away from each other substantially in a plane parallel to said first surface and transverse to said line of travel; and

first circuit means connected to said first pair of contact members; and

a plug assembly including:

a second dielectric housing secured to said second surface, said second housing including an elongated extension having a longitudinal axis parallel to said line of travel, said extension being so positioned that when said first and second surfaces are moved relatively from said first position to said second position a forward end of said extension enters said first housing recess and separates said first pair of contact members;

a second pair of contact members mounted to said extension on opposed sides thereof and generally parallel to said longitudinal axis so that when said extension separates said first pair of contact members each of said second pair of contact members engages a respective one of said first pair of contact members; and

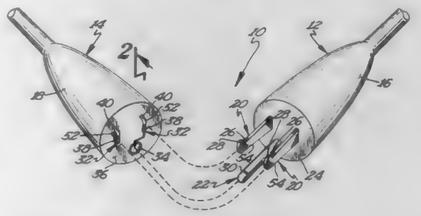
second circuit means connected to said second pair of contact members.

5,630,726

LOCKING ELECTRICAL CORD

Christopher T. Baldwin, R.R. 1, Box 116, Clarkfield, Minn. 56233

Filed Nov. 14, 1995, Ser. No. 557,452
Int. Cl.° H01R *4/50*
U.S. Cl. 439—346 20 Claims



1. A locking electrical cord, comprising:

a cord having a male end with two conductive prongs and a female end with two conductive prong receptacles;

said conductive prongs tapering from a maximum height at the male end to a lesser height at the remote end, and terminating in a rounded locking head at the remote end;

said conductive prong receptacles shaped to fit said male prongs, said receptacles tapering from a maximum height at the outer,

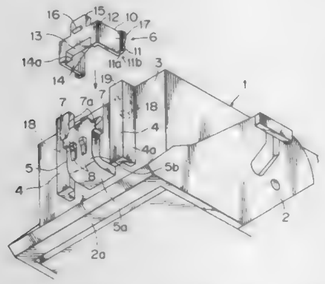
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entrance end to a lesser height at their inner ends, and terminating in an inner rounded recess adapted to tightly receive said locking head protrusion in snap-fit retention therewith.

5,630,727
LEVER LOCK MECHANISM FOR LEVER FITTING TYPE CONNECTOR

Isao Kameyama, Haibara-gun, Japan, assignor to Yasaki Corporation, Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 525,426
Claims priority, application Japan, Sep. 9, 1994, 6-215627
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 **4 Claims**



1. A lever lock mechanism for a lever fitting type connector in which a lever for use in fitting for the other connector is provided for a connector housing and a flexible lock arm in regard to the lever is formed, comprising:

a lock release spacer which is engaged with a guide rail formed on the connector housing on both sides of the flexible lock arm wherein said lever lock mechanism causes locking condition to release by bending the flexible lock arm by virtue of the lock release spacer;

a guide slope which is formed on a pointed end portion of said flexible lock arm;

an interference portion having a slide contacting slope to said guide slope formed in said lock release spacer; and

a contact projection part to said lever formed in said lock release spacer.

5,630,728
PLUG HOLDER

Henry W. Watters, Jr., Rte. 3, Box 8700, Bartlesville, Okla. 74003

Filed Nov. 1, 1995, Ser. No. 548,327
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—528 **10 Claims**

1. A plug holder for removably receiving an automotive electrical plug comprising:

a back wall provided with means for securing said back wall to a vehicle,

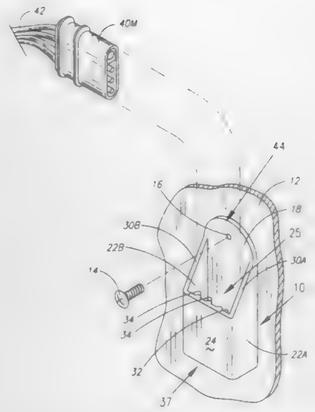
two spaced apart side walls each secured approximately perpendicularly to said back wall,

a front wall secured approximately perpendicularly to each said side wall, said front wall spaced apart from said back wall and approximately parallel therewith,

a floor securing approximately perpendicularly to said front, back and side walls,

means for securing an electrical plug being provided on one wall,

at least one rib being provided on an inwardly facing surface of said front wall of said plug holder, and

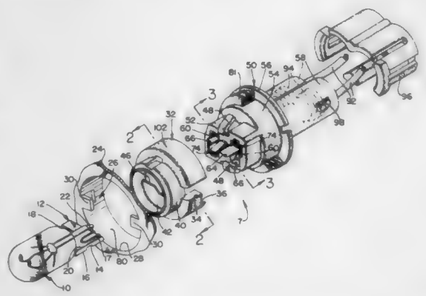


each at least one rib being provided vertically on said front wall.

5,630,729
W-2 BULB SOCKET ARRANGEMENT

Michael E. Francis, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1995, Ser. No. 578,416
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—548 **5 Claims**



1. A seal lamp socket arrangement for mounting a W-2 type bulb comprising:

a housing with a collar and a base with a bore with opposed inwardly projecting tabs;

a retainer with a diameter generally aligned with the housing bore with twist lock slots allowing for insertion of the retainer through the housing opening past the opposed tabs and for connection with the housing upon rotation, the retainer having at least one internal ledge;

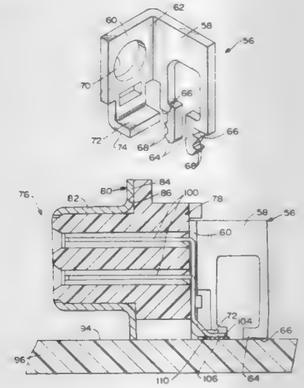
a socket base having a seal mounting portion to position a seal in sealing contact with the housing collar, the socket base also having at least two bores with a reduced diameter portion to entrap a spring terminal, and the socket base having two compliant tabs for capture of a W-2 type bulb and at least one ledge to connect the retainer to the socket base whereby the retainer retains a seal within the collar; and

a spring terminal held in position in the reduced diameter portion of the socket base.

5,630,730
ELECTRICAL CONNECTOR FOR SURFACE MOUNTING TO A PRINTED CIRCUIT BOARD

Leland Wang, Hacienda Hts., Calif.; Remo Chen, and Johnson Chiu, both of Taipei Hsien, Taiwan, assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 14, 1994, Ser. No. 324,284
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—567 **12 Claims**



1. An electrical connector for surface mounting to a printed circuit board, comprising:

a dielectric housing having a mounting face and a front mating face, the mounting face being substantially perpendicular to the front mating face; and

a stamped and formed conductive boardlock secured to the housing and including a first substantially planar portion having a projection extending beyond said mounting face for locking reception in a boardlock-receiving aperture in the printed circuit board and a second substantially planar portion having a foot for connection to a ground trace on the printed circuit board, the first and second portions being substantially perpendicular to each other and to the foot for resisting movement of the connector relative to the printed circuit board in different perpendicular directions.

5,630,731
WATERPROOF CONNECTOR

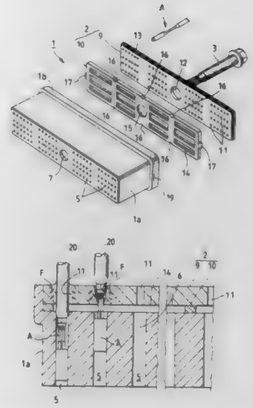
Yoshitsugu Sawada, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 269,100
Claims priority, application Japan, Jun. 30, 1993, 5-040510
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—587 **3 Claims**

1. A waterproof connector, comprising:

a connector housing; and

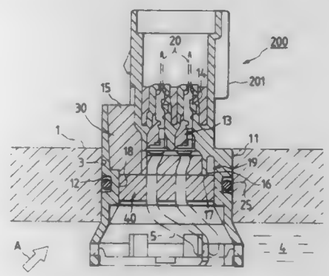
a waterproof rubber plug, fittable with said connector housing, having insertion holes formed therethrough, said waterproof rubber plug comprising an integral combination of an elastic member with said insertion holes formed therethrough and a substantially plate-shaped shift-preventing resin plate, said shift-preventing resin plate including windows for separating said insertion holes into groups, each of said groups each comprising a plurality of insertion holes, said shift-preventing resin plate also including engaging recessed portions for positioning said waterproof rubber plug in said connector housing.



5,630,732
LIQUID-TIGHT CONNECTOR FOR ELECTRICAL WIRES

Makoto Yamanashi, c/o Yazaki Parts Co., Ltd., 206-1, Nunobikibara, Haibara-cho, Haibara-gun, Shizuoka, Japan

Filed Jun. 26, 1995, Ser. No. 494,521
Claims priority, application Japan, Jun. 30, 1994, 6-149915
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—589 **3 Claims**



1. A connector comprising:

a housing;

terminals mounted in said housing;

gaps between said housing and said terminals;

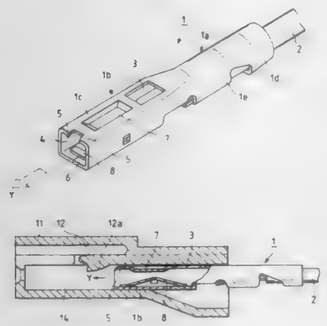
a filler, injected while in a molten state into said gaps to fill up said gaps such that said gaps are liquid-tight;

a sealing member attached inside said housing to seal said housing so as to prevent said filler from leaking out from said housing when said filler is injected into said housing;

ribs projecting inside said housing, said ribs provided in said housing to position said sealing member, and said ribs having pressure escape holes to prevent said sealing member from being displaced when or after said filler is injected into said gaps.

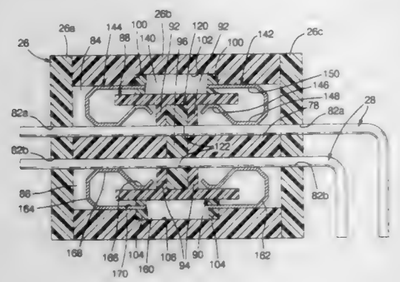
VOL 1198 ISS 3 MY 20 1997 UMI

5,630,733
FEMALE TERMINAL
Keishi Jinno, and Sakai Yagi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed May 2, 1995, Ser. No. 433,207
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—595 **2 Claims**



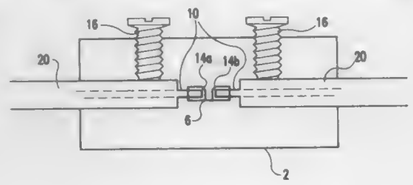
1. A female terminal for insertion into a terminal receiving chamber of a connector housing and for engagement with a retaining lance provided in said connector housing, comprising:
an electrical contact portion having a square cross-section, said electrical contact portion comprising a front portion at its front end for receiving a mating male terminal, said front portion having a retaining wall, said retaining wall being that wall of said terminal that faces and retains said lance when said terminal is inserted in said connector housing;
a wire connection portion formed at its rear portion for clamping a conductor and a sheath of a wire;
a retaining hole for engaging said retaining lance, said retaining hole being formed through said retaining wall generally centrally of a width of said retaining wall;
a notch formed in a central portion of a front end of said retaining wall; and
a pair of slanting piece portions formed at the front end of said retaining wall, and disposed respectively on opposite sides of said notch, said slanting piece portions being curved inwardly relative to said square cross-section of said front portion.

5,630,734
CONNECTOR WITH SOLDERLESS FILTER
William T. Phillips, Jr., Boardman, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 13, 1995, Ser. No. 571,616
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **14 Claims**



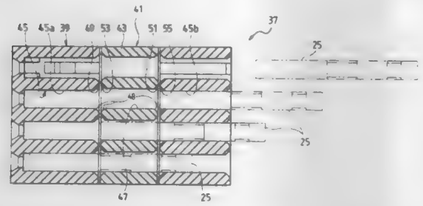
1. A solderless filter circuit for filtering electrical signals carried by electrical conductors, the filter circuit contained in a connector assembly including at least two mating connectors and comprising:
a housing having at least one filter passage therethrough;
the at least one filter passage sized to receive a corresponding electrical conductor therein;
an inductive element retained in the housing adjacent the at least one filter passage and in position to electrically contact the electrical conductor received in said at least one filter passage;
an integrated capacitor circuit retained in the housing and comprising, corresponding to each filter passage in the housing, at least one capacitor element with first and second electrical terminals; and
at least one of the electrical terminals of each capacitor element being adjacent the corresponding filter passage and having a conductor seat thereon for seating an electrical conductor received in the corresponding filter passage,
wherein the electrical conductor received in said filter passage makes electrical contact with the inductive element for applying an inductive load to electrical signals carried by said electrical conductor, and is seated in the conductor seat of the corresponding terminal of the corresponding at least one capacitor element, for applying capacitive filtering to electrical signals carried by said electrical conductor.

5,630,735
ELECTRICAL CONNECTOR
John C. Eckert, 11442 Applegrath Way, Germantown, Md. 20876
Filed Jul. 7, 1995, Ser. No. 499,657
Int. Cl.[6] H01R *9/22*
U.S. Cl. 439—721 **7 Claims**



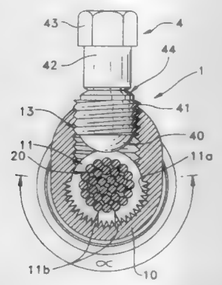
1. An electrical connector for coupling together at least two insulated electrical (conductors) wires in electrically conductive relationship to each other, wherein insulation has been stripped from the ends of the wires, said connector comprising:
a block formed of an electrically insulating material and having:
longitudinal bores for receiving an unstripped, insulated portion of said electrical wires; and
a plurality of transverse bores perpendicular to, and intersecting with, said longitudinal bores;
an electrically conductive bus encased within said block, said conductive bus comprising a conductive metal sheet with at least one rolled, hollow portion having opposing ends receiving and electrically coupling the stripped ends of the electrical wires when said electrical wires are fully inserted into said electrically conductive bus, the rolled, hollow portion having two crimps disposed approximately at the center of the hollow portion in mirror opposition for creating respective stops against which the stripped ends of the electrical wires make contact; and
securing means extending through said transverse bores for abutting the unstripped, insulated portion of said electrical wires to secure said electrical wires within said block.

5,630,736
DOUBLE-RETAINING CONNECTOR
Sakai Yagi; Masanori Tsuji, and Keishi Jinno, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Feb. 7, 1995, Ser. No. 385,304
Claims priority, application Japan, Feb. 10, 1994, 6-016628
Int. Cl.[6] H01R *13/436*
U.S. Cl. 439—752 **6 Claims**



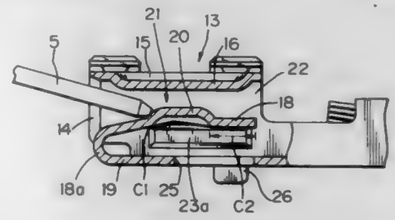
1. A double-retaining connector comprising:
a connector housing having terminal receiving chambers and a cavity formed in the connector housing across the terminal receiving chambers, said cavity opened to an outer surface of the connector housing; and
a spacer inserted into the cavity, said spacer having openings which are aligned respectively with the terminal receiving chambers for allowing terminals to pass through the openings, respectively,
wherein each of the terminal receiving chambers are divided by the cavity into a front receiving chamber at a front side of said connector housing in a terminal inserting direction and a rear receiving chamber at a rear side of said connector housing in such a manner that the cavity is interposed between the front and rear receiving chambers, first tapering surfaces are formed respectively at edges of a terminal insertion-side open end of each of said openings and edges of a terminal insertion side open end of each of the front receiving chambers, and second tapering surfaces are formed respectively at edges of a terminal withdrawal-side open end of each of the openings and edges of a terminal withdrawal-side open end of each of the rear receiving chambers.

5,630,737
JUNCTION CONNECTOR FOR PERMANENTLY CONNECTING ELECTRICAL CABLES
André Dupont, Gevrey Chambertin, France, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Jan. 11, 1996, Ser. No. 587,117
Claims priority, application France, Jan. 12, 1995, 95 00470
Int. Cl.[6] H01R *11/09*
U.S. Cl. 439—797 **7 Claims**



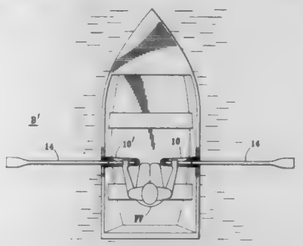
1. Splicing connector for permanently connecting bared ends of stranded conductor cables comprising:
a sleeve pierced with a bore which passes longitudinally therethrough to receive the bare ends of two cables to be connected;
on a part extending over an angle at the centre greater than 180°, the wall of said bore presents longitudinal ribs which project radially towards the centre;
a series of tapped holes disposed in alignment, open out in said bore, substantially opposite the central generatrix of the ribbed part of said bore; and
inside each tapped hole is engaged a locking bolt ensuring assembly of the cables and the sleeve, wherein the locking bolt comprises a cleavable head and an end in the form of a spherical cap.

5,630,738
FEMALE TERMINAL, METAL FIXTURE
Tomonari Ito, and Masaaki Kobayashi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan
Filed Jun. 27, 1995, Ser. No. 495,184
Claims priority, application Japan, Jul. 21, 1994, 6-191938; Jul. 29, 1994, 6-197964
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—852 **11 Claims**



1. A female terminal metal fixture comprising a box-like body, a resilient contact tongue bent back into an interior of said body from a front end of said body, an insertion space defined by said tongue and walls of said body, said space adapted to resiliently receive and make electrical contact with a tab of a male terminal metal fixture,
an inwardly bulged restrictive portion on at least one side wall of said body, said resilient contact tongue, when said tab is in said space, in contact with said restrictive portion at its distal end over a given length.

5,630,739
FORWARD-FACING ROWING
Peter C. Mele, P.O. Box 533, Crown Pt, N.Y. 12928
Filed Mar. 4, 1996, Ser. No. 611,464
Int. Cl.[6] B63H *16/04*
U.S. Cl. 440—102 **20 Claims**

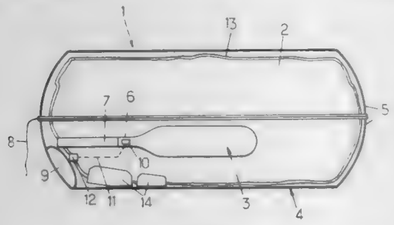


1. An oar mounting system for forward-facing rowing comprising

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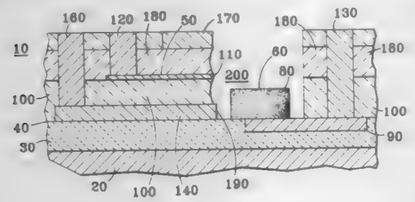
a support or gunwale frame;
an arm or pulley strut hinged to said support frame and having an end extending from said frame;
an auxiliary or inner oar frame rotationally mounted on said end;
an oar loom attached to said auxiliary frame; and
means for tensioning said auxiliary frame with respect to said arm.

5,630,740
DEVICE FOR SURVIVAL AT SEA
Marc Lavorata, Paris, France, assignor to Zodiac International, Paris, France
Filed Mar. 26, 1996, Ser. No. 621,584
Claims priority, application France, Mar. 31, 1995, 95 03824
Int. Cl.° B63B *35/58*
U.S. Cl. 441—42 **7 Claims**



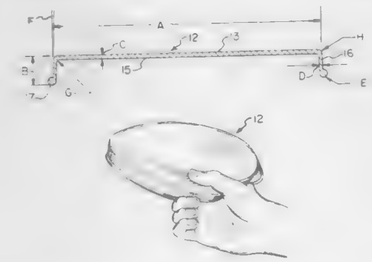
1. A device for survival at sea comprising a pneumatic raft in the uninflated and folded state, together with at least one reservoir of inflation fluid, which raft and reservoir are enclosed in a unitary compartment of a rigid container, the device being characterized in that unitary compartment of the container includes a hatch, and in that the reservoir of inflation fluid is provided with at least one sensor for detecting at least one magnitude characteristic of the state of the fluid contained in the reservoir and is organized in such a manner that said detected magnitude can be measured from the open hatch of the container, whereby the state of the survival device can be inspected without opening the container.

5,630,741
FABRICATION PROCESS FOR A FIELD EMISSION DISPLAY CELL STRUCTURE
Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.
Filed May 8, 1995, Ser. No. 438,107
Int. Cl.° H01J *9/02*
U.S. Cl. 445—24 **24 Claims**



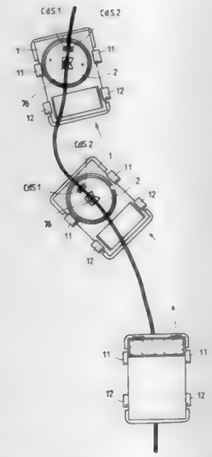
1. A method of fabricating a field emission device, comprising the steps of:
(a) providing a substrate;
(b) disposing a first insulating layer upon said substrate, said first insulating layer being of predetermined thickness;
(c) disposing a first conductive layer having a thickness of only several hundred angstroms relative to the upper surface of said substrate, said first conductive layer being disposed so as to extend parallel to the upper surface of said substrate, said first conductive layer having a bottom surface defining an emitter plane;
(d) providing an opening through said first insulating layer and through said first conductive layer, thereby forming an edge of said first conductive layer;
(e) disposing a conformal layer of material only on the walls of said opening provided in step (d), said conformal layer being of predetermined thickness;
(f) filling said opening partially with a phosphor layer such that said conformal layer spaces said phosphor layer from said edge of said first conductive layer, said predetermined conformal layer thickness equaling a desired spatial distance between said edge of said first conductive layer and said phosphor layer, and said phosphor layer being of a thickness less than said predetermined thickness of said first insulating layer disposed in step (b), said phosphor layer thereby having a top surface lying below said emitter plane; and
(g) providing means for applying an electrical bias voltage to said first conductive layer and to said phosphor layer, said bias voltage to be applied being sufficient to cause cold cathode emission current of electrons from said edge of said first conductive layer to said phosphor layer.

5,630,742
FLEXIBLE TOSS DEVICE
William L. Honaker, 5730 W. Milan Pl., Denver, Colo. 80235
Filed Aug. 7, 1995, Ser. No. 512,061
Int. Cl.° A63H *27/00*
U.S. Cl. 446—46 **23 Claims**



1. A flexible toss device comprising:
a flexible, one-piece, elastomer body in the form of an inverted dish having
a closed, flat top wall portion, said top wall portion having a substantially flat, top surface, a substantially flat, bottom surface, said top wall portion being of substantially uniform thickness, said top wall portion having a thickness between above 0.06 to 0.20 inches, and
a side wall portion having a vertical cross-section at any given point along said side wall portion extending down along a straight line from and at a slight outward angle to a line substantially normal to said top wall portion, said side wall portion having substantially straight up and down outer and inner surfaces, said side wall portion being of substantially uniform thickness, said side wall portion having a thickness between above 0.06 to 0.250 inches,
said side wall portion having an outwardly projecting, circumferentially continuous outside bead portion along the outer periphery at the bottom,
said top wall portion and side wall portion having sufficient rigidity so said side wall portion flexes outwardly causing said top wall portion to flex down during flight,
whereby by gripping the side wall portion on the inside with the index finger and on the top surface of top wall portion with the thumb in a pencil writing type grip the device can be propelled with a forward toss throwing motion and in flight the top wall portion becomes downwardly concave and the side wall portion flares out at a greater angle to a line normal to said top wall portion.

5,630,743
PHOTOSENSITIVE ELECTRIC TOY CAR
Show Li Shi, P.O. Box 82-144, Taipei, Taiwan
Filed Apr. 8, 1996, Ser. No. 629,087
Int. Cl.° A63H *17/36*
U.S. Cl. 446—175 **1 Claim**



1. A photosensitive electric toy car comprising:
a base provided with a pair of front wheels at a front portion thereof, a pair of rear wheels at a rear portion thereof, an opening between said front wheels, and a curved member on said base concentric with and having a larger diameter than said opening;
a power chamber fitted on said opening and having a partition dividing said power chamber into a control room and a transmission room, said control room being provided on a bottom thereof with two lugs, an opening between said two lugs, and a slot opposite to said opening;
a printed circuit board fitted within said control room and having a control means provided two photosensitive resistors which will pick up signal from ground to control rotating direction of a first motor, said first motor having a first output worm rod;
a battery chamber electrically connected with said control means;
a driven plate mounted on a top of said power chamber and provided with a first gear, a second gear coaxially mounted on said first gear, a third gear meshed with said first gear, and an axle having an upper end engaged with said third gear and a lower end with a first worm gear meshed with said first output worm rod;
a cover plate mounted on a top of said curved member and having a hole, a ferrule fitted into said hole, a fourth gear fitted into said ferrule, and a fifth gear coaxially mounted under said fourth gear, said fourth gear being meshed with said second gear; and
a driving means including a second motor mounted within said control room and provided with a second output worm rod meshed with a second worm gear, a third worm gear coaxial with said second worm gear, a third worm rod meshed with said third worm gear, a sixth gear coaxial with said third worm rod, and a circular toothed wheel engaged with said sixth gear, said circular toothed wheel being pivotally mounted between said two lugs and partially protruding out of said base through said opening, said second motor being electrically connected with said control means.

5,630,744
TOY GUN WITH BLOWING-OPERATED NOISEMAKER
Leon D. Bandy, 2116 W. Utopia Rd., Phoenix, Ariz. 85027
Filed Sep. 1, 1995, Ser. No. 522,510
Int. Cl.° A63H *05/00*
U.S. Cl. 446—202 **1 Claim**

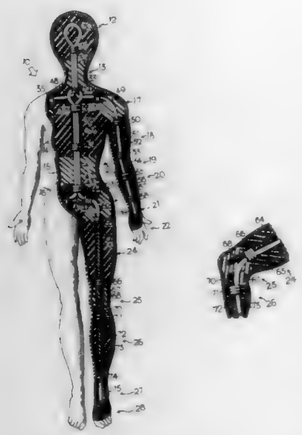


1. A device comprising, in combination:
a. a toy gun having a longitudinal pointable direction and having a rigid frame, said frame comprising at least three discrete, spaced, substantial frame portions, each said substantial frame portion lying along a different straight line from each other substantial frame portion and each said straight line being parallel to said longitudinal pointable direction, whereby said toy gun is graspable and pointable by a user;
b. at least one said substantial frame portion comprising a straight hollow cylinder;
c. a blowing-operated noisemaker attached within said straight hollow cylinder;
d. a mouthpiece portion positioned to be blown into by a user; and
e. a hollow cylindrical member attached at a first end of said hollow cylindrical member to said mouthpiece portion and attached at a second end of said hollow cylindrical member to said blowing-operated noisemaker;
f. whereby, when a user blows into said mouthpiece portion, said blowing-operated noisemaker makes sounds;
g. wherein said toy is constructed and arranged so that, when said mouthpiece portion is blown into by a user, said sounds are emitted from said blowing-operated noisemaker in said longitudinal pointable direction.

5,630,745
FIGURE HAVING NUMEROUS SEAMLESS REPOSITIONABLE PARTS
Hsu-Chong Yeh, 24 Jefferson Ave., Tenafly, N.J. 07670
Continuation of Ser. No. 110,966, Aug. 24, 1993, abandoned.
This application Nov. 27, 1995, Ser. No. 565,629
Int. Cl.° A63H *3/04*
U.S. Cl. 446—374 **7 Claims**

1. A doll figure comprising:
a skeleton-simulating flexible framework having substantially rigid portions and bendable portions representing joints;
body simulating means for simulating soft tissue enclosing said skeleton-simulating flexible framework and forming an exterior of said doll figure;
said skeleton-simulating flexible framework being made of material manually bendable and torsionally deformable and permanently deformable by manual force at said bendable portions;
said body simulating means including at least first and second resilient materials wherein said second resilient material is softer than said first resilient material;

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said second resilient material being disposed around said skeleton-simulating flexible framework at at least one of said bendable portions to facilitate life-like deformation at said at least one of said bendable portions during flexing of the bendable portion simulating bending at one of said joints; and said first resilient material being disposed around said skeleton-simulating flexible framework at at least a portion of said substantially rigid portions to simulate body tissue at areas other than said joints.

5,630,746

SPECTACLE LENS EDGE GRINDING MACHINE

Lutz Gottschald, Meerbusch, and Klaus Eickmeyer, Haan, both of Germany, assignors to Wernicke & Co. GmbH, Düsseldorf, Germany

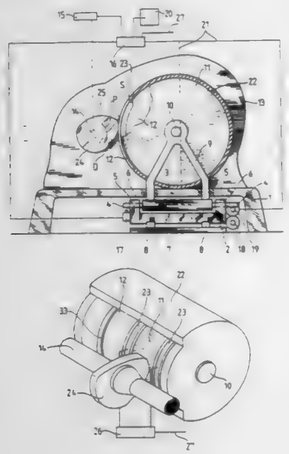
PCT No. PCT/EP94/01945, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO95/00292, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 15, 1994, Ser. No. 578,575

Claims priority, application Germany, Jun. 24, 1993, 43 20 934.3

Int. Cl.[6] B24B *49/00*

U.S. Cl. 451—5 **17 Claims**



16. A method for grinding the edge of a spectacle lens with a spectacle lens edge grinding machine, said method comprising the steps of:

a) measuring the actual radii of the entire spectacle lens contour of a ground spectacle lens relative to an abutment;

b) inputting the measured actual radii into a computer with a memory;

c) comparing the measured actual radii with corresponding nominal radii of the entire spectacle lens contour, stored in the computer, to determine the deviations from said nominal radii;

d) comparing said deviations to a threshold value stored in the memory of the computer; and

e) controlling with said computer an additional grinding step for correcting the spectacle lens contour such that only such areas of the spectacle lens contour are corrected in which the deviations surpass said threshold value.

5,630,747

GRINDING MACHINE FOR SHARPENING TOOLS

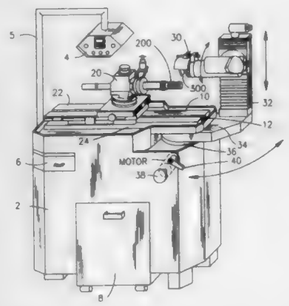
Hubert Haller, Trossingen, Germany, assignor to Hawema Werkzeugschleifmaschinen GmbH, Germany

Filed Sep. 6, 1995, Ser. No. 524,372

Claims priority, application Germany, Sep. 6, 1994, 44 31 634.8

Int. Cl.[6] B24B *49/00*

U.S. Cl. 451—11 **9 Claims**



1. Tool grinding machine comprising

a machine stand,

a horizontally oriented work platform supported by said machine stand,

a carrier for receiving a work piece, said carrier mounted upon said work platform,

a rotating disk (**36**) mounted below said work platform (**10**) and integrated in said machine stand (**2**), said rotating disk (**36**) mounted on a mounting shaft (**50**) which extends centrally through said rotating disk (**36**) and extends out above and below said rotating disk (**36**), and which mounting shaft (**50**) is restrained by bearings (**52**, **54**) provided both above and below the rotating disk (**36**),

a carrier arm (**34**) having a first end and a second end, said first end fixedly coupled to said rotating disk (**36**), said second end extending sideways beyond the work platform (**10**),

a grinder upright support (**32**) oriented vertically and mounted on said second end of said carrier arm (**34**) such that said upright grinder support (**32**) is rotatable about a vertically extending axis via said rotating disk and is thereby rotatable around the work platform (**10**), and

a grinder head for receiving a grinder disk, said grinder head mounted upon said grinder upright support.

5,630,748

MACHINING METHOD AND APPARATUS

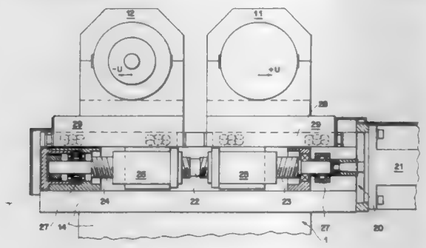
Maurice Guenin, La Chaux-de-Fonds, Switzerland, assignor to Voumard Machines Co., S.A., La Chaux-de-Fonds/NE, Switzerland

Filed Aug. 1, 1994, Ser. No. 283,742

Claims priority, application European Pat. Off., Sep. 6, 1993, 9381063

Int. Cl.[6] B24B *5/02*

U.S. Cl. 451—152 **14 Claims**



1. A grinding machine comprising a frame containing at least two working planes including substantially orthogonal displacement axes, at least two oscillating elements disposed movably on one of said working planes, at least one tool device disposed on the other of said working planes, at least one servomotor for driving said oscillating elements, at least one means for generating oscillating motion, at least one further tool device associated with each of said oscillating elements, and means for generating a reciprocating movement of each of said oscillating elements, forming part of said at least one means for generating oscillating motion, the resultant of the vectors representing the dynamic forces associated with the movement of each of said oscillating elements being substantially equal to zero.

5,630,749

APPARATUS FOR THE MECHANICAL REMOVAL OF DEPOSITS ON WELDING ELECTRODES

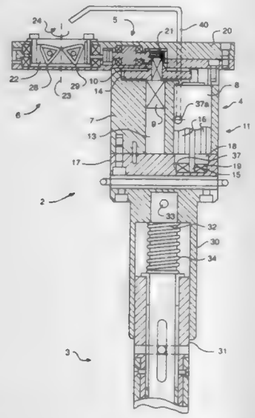
Walter Koch, Apolloweg 5, D 44287 Dortmund, and Kai Meermann, Finefrauweg 15, D 58456 Witten, both of Germany

Filed Aug. 30, 1995, Ser. No. 520,776

Claims priority, application Germany, Sep. 1, 1994, 9414151 U

Int. Cl.[6] B24B *9/02;41/00*

U.S. Cl. 451—180 **11 Claims**



1. Apparatus for the mechanical removal of deposits on welding electrodes, the apparatus including a holder for an abrading tool for abrading the deposits on welding electrodes, a pneumatic drive having a rotor and a gear for driving the holder in a rotational direction, and a machining head, wherein the machining head includes the drive, the gear, at least one abrading device, and a cavity for the direct reception of the rotor of the pneumatic drive.

5,630,750

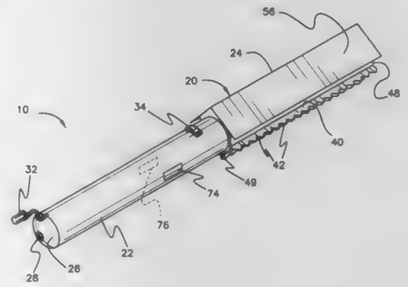
PORTABLE RECHARGEABLE FISH SCALER ASSEMBLY

Michael E. Byrd, 4215 Gorman St. SE., Washington, D.C. 20019

Filed Jun. 12, 1996, Ser. No. 662,184

Int. Cl.[6] A22C *25/02*

U.S. Cl. 452—101 **3 Claims**



1. A portable fish scaler assembly comprising:

a housing having a handle portion and a sealed scaler portion, the handle portion having a hollow interior and containing a battery pack and a motor;

said scaler portion having a blade assembly with a plurality of blades extending radially therefrom and connected to a central shaft which extends into an aperture in said handle portion, the shaft operably connected to said motor for rotation about its axis, a pair of endcaps secured to opposite ends of said blade assembly thereby forming a sealed hollow interior, said hallow interior having a sufficient volume to allow for bouyancy in water of said housing;

and a scale guard secured to said handle portion and extending over and partially enclosing said blade assembly.

5,630,751

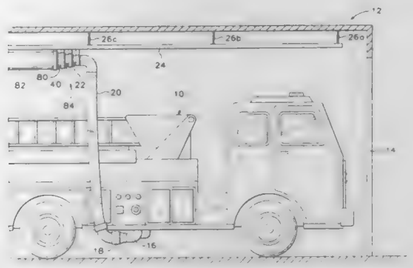
FIREHOUSE EXHAUST RECOVERY SYSTEM

Harold W. Hansen, Wilsonville, Oreg., assignor to Energy Savings Products, Inc., Tualatin, Oreg.

Filed Jul. 12, 1995, Ser. No. 501,635

Int. Cl.[6] F23J *11/04*

U.S. Cl. 454—64 **10 Claims**



VOL 1198 ISS 3 MAY 20 1997 UMI

1. An exhaust recovery system to vent exhaust from an exhaust pipe of a vehicle, located in an enclosed structure, as the vehicle is driven out of the structure, comprising:

(a) a coupling detachably connectable to the vehicle exhaust pipe;

(b) an elongate flexible hose having a first end and a second end, said first end of said hose connected to said coupling;

(c) a telescoping assembly including a plurality of elongate tubular members which includes at least a first tubular member and a second tubular member slidably engaged within one another;

(d) said second end of said hose connected to one of said tubular members; and

(e) a tube supporting assembly separating an exterior surface of said first tubular member and an interior surface of said second tubular member from each other leaving an air gap therebetween substantially completely surrounding said first tubular member along a major portion of its length, said assembly including spacing elements interposed in said air gaps between said exterior surface of said first tubular member and said interior surface of said second tubular member, said spacing elements movably engaging at least one of said exterior surface and said interior surface.

5,630,752

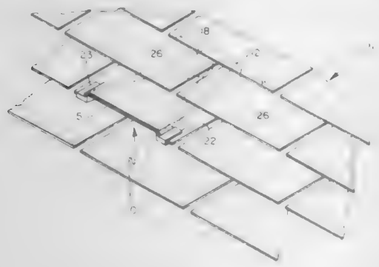
LOW PROFILE AIR VENT FOR SLANTED ROOF

Peter J. Gubash, 903 N. Dale St., St. Paul, Minn. 55103

Filed Dec. 11, 1995, Ser. No. 570,082

Int. Cl.° F24F *7/02*

U.S. Cl. 454—366 **3 Claims**



1. For a slanted shingled roof having a ventilating opening, a low profile ventilator, comprising:

a single sheet of generally triangular substantially stiff material formed into a raised area defining a low profile chamber which is open at one edge only and closed along the other edges by low side walls with a flat rim extending around the bottom edges of said side walls, said rim resting against the roof so that said chamber is above and in air communication with the roof ventilating opening and slanted downward along the roof toward said open edge from the ventilating opening;

said raised area being uncurved so that the covering shingle lays flat on top of the raised area;

a foraminous screen closing off the open edge of said chamber; and

tabs at said open edge for engaging the edge of a roof shingle covering over the ventilator for holding the shingle in place on top of the ventilator.

5,630,753

GAMING MACHINE

Anton Fuchs, Gross Sierning, Austria, assignor to Novo-Invest Casino Development Aktiengesellschaft, Gumpoldskirchen, Austria

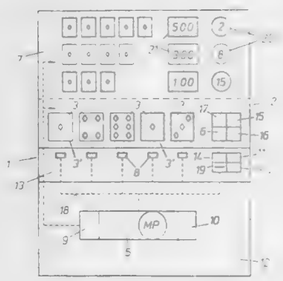
PCT No. PCT/AT93/00117, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO94/01840, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 9, 1993, Ser. No. 367,146

Claims priority, application Austria, Jul. 9, 1992, 1410/92

Int. Cl.° A63F *9/24*

U.S. Cl. 463—9 **14 Claims**



1. A gaming machine comprising

(a) a computer including a micro processor;

(b) a first display connected to the computer for displaying a plurality of randomly selected computer-generated gaming symbols upon starting the game by initiating a starter,

a first control for paying out possible winnings,

a second control for calling-up additional computer generated gaming symbols,

a plurality of selecting devices associated to each of the plurality of randomly selected computer-generated gaming symbols for one of immediately selecting, storing and selecting later each of the plurality of randomly selected computer-generated gaming symbols;

a first indicator for indicating a total winning amount,

a second indicator for indicting an available winning amount at any time during the game,

a third indicator for indicating an amount won in a previous game,

a fourth indicator for providing advice as to how to double a winning amount;

(c) a second display for displaying a game-specific combination of gaming symbols selected from the first display by pressing one of the plurality of selecting devices associated to each of the plurality of the randomly selected computer-generated gaming symbols and the computer-generated gaming symbols called up by the second control of the first display area and including

a price value display for displaying a price value of the game-specific combination of gaming symbols selected in the second display, and further including

a probability display for indicating winning chances of the game-specific combination of gaming symbols displayed in the second display.

5,630,754

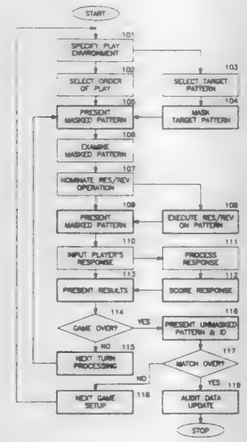
METHOD AND APPARATUS FOR DISCLOSING A TARGET PATTERN FOR IDENTIFICATION

George J. Rebane, Topanga, Calif., assignor to Resrev Partners, Topanga, Calif.

Continuation of Ser. No. 172,224, Dec. 23, 1993, Pat. No. 5,465,982, which is a continuation-in-part of Ser. No. 166,365, Dec. 14, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,691

Int. Cl.° A63F *9/24*

U.S. Cl. 463—9 **40 Claims**



1. A method of presenting a target pattern to be perceived by a player for identification of the target pattern comprising the steps of:

masking the target pattern to make it imperceptible to the player;

repetitively unmasking portions of the target pattern through resolution wherein the entire target pattern is partially resolved in each repetitive unmasking step;

continuing to unmask the target pattern through resolution until a completion criterion is met.

5,630,755

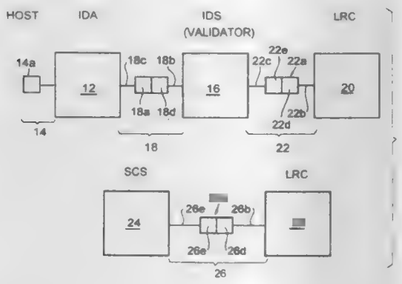
SOFT COUNT TRACKING SYSTEM

Michael Walsh, E. Patchogue; Miroslaw Blaszczec, Lindenhurst; Salvatore Soriano, Rosedale, all of N.Y., and William Wood, Hot Springs, Ark., assignors to Coin Bill Validator, Inc., Hauppauge, N.Y.

Filed Apr. 7, 1995, Ser. No. 418,556

Int. Cl.° A63F *9/24*

U.S. Cl. 463—25 **7 Claims**



1. A soft count tracking system for a currency operated host gaming machine comprising an identification adapter that includes an integral active electronic component, said component adapted to store a unique serial number, means for placing said identification adapter in data communication with the host machine, a currency note validator with microcontroller, means for placing said currency note validator in data communication with said identification adapter for interrogating the identification adapter for identification number, a storage mechanism that includes integral nonvolatile storage memory means, and means for placing said storage mechanism in data communication with said currency note validator thereby to receive and hold information from said identification adapter, and a soft count supervisor adapted to be placed in detachable data communication with said memory means to interrogate and extract data from the same, said soft count supervisor comprising a computer, including software means to provide spread sheet data manipulation of the data extracted from said memory means.

5,630,756

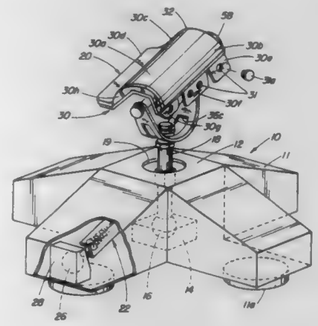
HAND CONTROLLER FOR VIDEO GAMES

Keith E. Thurston, 142B Medhurst Drive, Nepean, Ontario, Canada, and Kenneth G. Thurston, 2711 Pimlico Crescent, Gloucester, Ontario, Canada

Filed Feb. 5, 1996, Ser. No. 596,580

Int. Cl.° A63F *9/22*

U.S. Cl. 463—38 **19 Claims**



1. A hand controller for playing video games comprising:

a base suitable for resting on a level surface;

a shaft mounted for universal pivoting movement in said base;

an electrical circuit having means responsive to the position of said shaft, and

a handle mounted at the upper end of said shaft, said handle having a main hand grip portion with an upper surface in the form of a convex ridge having front and rear surfaces sloping forwardly and rearwardly from a crest, and with the top of said crest sloping downwards from an upper end of the handle at an angle of between 10° and 50° to said level surface on which the base part rests,

said handle also having a wrist supporting plate which projects from said rear surface, said supporting plate being positioned for supporting the wrist of a right hand when the palm and fingers of the hand are grasping the main body portion with the thumb near to said upper end.

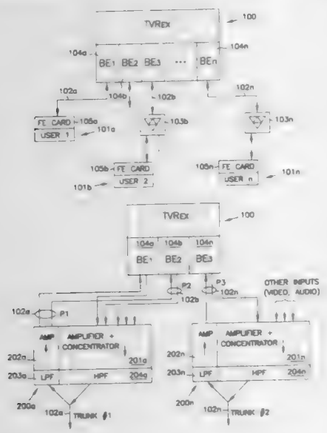
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5,630,757

REAL-TIME MULTI-USER GAME COMMUNICATION SYSTEM USING EXISTING CABLE TELEVISION INFRASTRUCTURE

Reuven Gagin, Tel Aviv; Joseph Livshitz, Rosh Ha'ain, and Erez Sharon, Cohav Yair, all of Israel, assignors to Net Game Limited, Israel

Filed Nov. 29, 1994, Ser. No. 346,389
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—43 **3 Claims**



1. A multi-user game playing network for attachment to a cable communication network, comprising:

a game server having a multi-threaded multi-processing operating system and located at a cable headend, including:

a first process thread operable for receiving uplink communication packets;

a second process thread operable for sending downlink communications packets;

a plurality of game processes, each capable of executing a first component of a specific game process and each logically connected to the first and second process threads for sending and receiving communication packets;

a first deterministic communications interface connected to the first and second process threads for transmitting and receiving the uplink and downlink communications packets onto the bidirectional cable communications network using a full duplex communications protocol;

at least one user station being connected to the bidirectional cable communications network and including:

a second deterministic communications interface for transmitting and receiving the uplink and downlink communications packets from the bidirectional cable communications network;

a game processor and user interface capable of executing a second component of one of the plurality of game processes, the second component being connected to the second communications interface for sending and receiving communications packets.

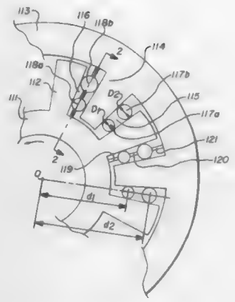
5,630,758

TORSIONAL CONNECTION WITH RADIALLY SPACED MULTIPLE FLEXIBLE ELEMENTS

Evgeny I. Rivin, 30236 Southfield Rd., #249, Southfield, Mich. 48076

Filed Jan. 3, 1994, Ser. No. 176,246
Int. Cl.° F16D *3/64*
U.S. Cl. 464—74 **12 Claims**

1. A torsional flexible connection for mechanical power transmission comprising:



an inner hub and an outer hub disposed in a coaxial relationship about a common axis of rotation, each hub including a plurality of wedge shaped blades projecting therefrom, each of said blades being defined by a pair of spaced apart sides which are disposed along radii of said connection passing through said axis of rotation, said blades of said inner hub being disposed in an interdigitating, spaced apart relationship with the blades of the outer hub so that a plurality of wedge shaped chambers are defined therebetween; and

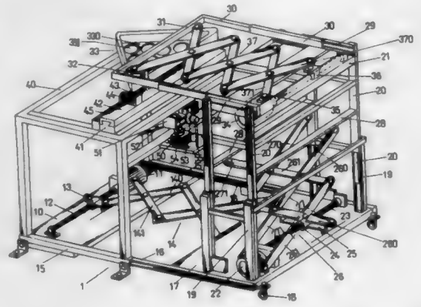
at least two of said chambers including a torque transmitting, flexible insert disposed therein, said flexible insert including at least a first and a second torque transmitting element, disposed in a spaced apart relationship, and lying along a common radius of said connection passing through said axis of rotation, said first element being spaced from said axis by a distance d_1 and having a diameter D_1, said second element being spaced from said axis by a distance d_2 and having a diameter D_2, said elements being configured so that $d_1/D_1=d_2/D_2$; whereby said first and second elements experience the same degree of relative compressional deformation when torque is transmitted between said inner hub and said outer hub.

5,630,759

DEVICE USED WITH BILLIARD TABLE FOR SENSING BALLS DROPPING INTO THE POCKETS AND SCORING AS WELL AS COLLECTING AND ARRANGING THE BALL

Pei-Ju Lee, No. 22, Lane 25, Fu-Der-One Road, Ling-Ya, Kaohsiung, Taiwan

Filed Jan. 4, 1996, Ser. No. 584,207
Int. Cl.° A63D *15/00*
U.S. Cl. 473—23 **1 Claim**



1. A device used with billiard table for sensing balls dropping into the pockets and scoring as well as collecting and arranging the balls, said device comprising:

a servomotor disposed on a platform on one side of a base frame, an output shaft of the servomotor being connected with a thread rod, a thread sleeve being screwed on the thread rod and pivotally connected with an elbow arm of an extensible elbow jointed lever, an other elbow arm of the elbow jointed lever being pivotally connected with a surface of the servomotor, two rail tubes being respectively disposed along a front and a rear sides of the platform, several telescopically slidable rail bars being fitted in each rail tube, between a last slidable rail bar of the slidable rail bars being connected another platform, the other ends of the elbow arms of the elbow jointed lever being pivotally connected with the another platform;

four vertical rail tubes respectively disposed on four corners of the another platform, several telescopic slidable rail bars being fitted in each rail tube, a servomotor being disposed on a portion of the platform with its output shaft coupled with a thread rod, a thread sleeve being screwed on the thread rod, two sides of the thread sleeve being pivotally connected with an elbow arm of each of two elbow jointed levers, the other elbow arm of each elbow jointed lever being pivotally connected with a surface of the servomotor, between each two last slidable rails fitted in the rail tubes being connected a support beam,, the other ends of the elbow arms of the elbow jointed levers being respectively pivotally connected to the support beams;

a seat board connected between the ends of the last rail bars, two rail tubes being respectively disposed along a front and a rear sides of the seat board, several telescopic slidable rail bars being fitted in each rail tube, between the ends of the last slidable bars being connected a beam member, under the beam member being connected interconnecting plates for connecting with a ball holding tray, a servomotor being disposed under the seat board, an output shaft of the servomotor being connected with one end of a thread rod, on the thread rod being screwed a thread sleeve which is pivotally connected with an elbow arm of an extensible elbow jointed lever, the other elbow arm of the elbow jointed lever being pivotally connected with a surface of the servomotor, the other ends of the elbow arms of the elbow jointed lever being pivotally connected with the beam member;

a ball holding tray having a bottom board formed with multiple ball holes arranged as a triangular pattern, a stopper board being disposed immediately adjacent to a lower face of the bottom board, the stopper board having the same shape as the bottom board and formed with the same number, size and pattern of through, holes as the bottom board, the through holes being slightly eccentrical from the ball holes of the bottom board so that the edges of the through holes can stop the balls in the ball holes from dropping down from the ball holding tray, the stopper board being engaged with the bottom board in such a manner that at least one front insertion pin and at least one rear insertion pin are respectively disposed at a front and a rear ends of the stopper board and inserted through a front and a rear flanges of the ball holding tray, a spring being disposed between each insertion pin and the flange, a solenoid switch being disposed at an outer end of the front insertion pin for controlling the forward or rearward movement of the stopper board;

a frame body disposed on the platform of the base frame, a male and a female slide seats being disposed on the frame body, a servomotor being disposed near a middle section of the female slide seat and a pocket being disposed under the male slide seat corresponding to the servomotor, a solenoid switch with a stopper rod being disposed beside an opening of the pocket for controlling the dropping of the ball in the pocket, an output shaft of the servomotor being engaged with a gear meshing with a rack parallelly disposed beside the male and female slide seats, whereby the servomotor can control the X axial movement of the pocket, another servomotor being disposed beside the male and female slide seats, an output shaft of the servomotor being engaged with a gear meshing with a rack disposed on one side of the frame body, whereby the servomotor can control the Y axial movement of the pocket;

a longitudinal/latitudinal color sensor means disposed under the male and female slide seats on an outer side thereof, the sensor means being connected to a frame member through the output shaft of a servomotor, the frame member having an open end coupled with a ball rail which has a dropping opening opposite to and in alignment with a ball entrance of the pocket, a servomotor being disposed on an outer side of the frame member, an output shaft of the servomotor being coupled with a disk in the frame member, a color sensing bar being disposed beside the frame member and electrically connected with the servomotors of the male and female slide seats by wires, whereby after the color sensor means senses the color of the ball, the color sensor means inputs an X axis and a Y axis coordinate commands respectively to the servomotors of the male and female slide seats which operate to move the pocket toward a position above a preset location of the ball in the ball holding tray; and

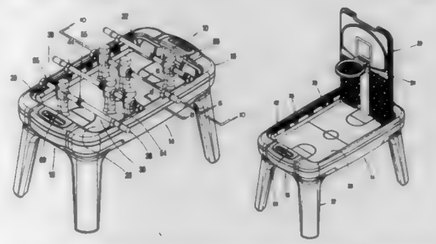
a stopper valve disposed at a dropping opening of a collecting ball rail of the billiard table, the stopper valve having a stopper board pivotally disposed on two lateral rail strips of the ball rail and urged by an extension spring, a brake rod being disposed above the stopper board and controlled by a solenoid switch, said device being mounted under the dropping opening of the collecting ball rail of the billiard table for sensing the balls hit down into the pocket and automatically scoring as well as locating the balls into the location in the ball holding tray, after all the balls on the table are hit down, sensed and rendered in the ball holding tray, the device automatically rearranging the balls in the preset triangular location on the billiard table for next game.

5,630,760

CONVERTIBLE GAME TABLE

Patrick Brown, Strongsville; Joseph C. Cacciola; William K. Ford, both of Hudson; Raymond J. Fritz, Maple Heights; John R. Nottingham, Chagrin Falls, and John W. Spirk, Gates Mills, all of Ohio, assignors to The Little Tikes Company, Hudson, Ohio

Filed Feb. 7, 1995, Ser. No. 384,757
Int. Cl.° A63F *7/06*
U.S. Cl. 473—108.52 **8 Claims**



6. A combination basketball and foosball game table comprising:

a first base member being generally rectangular in shape and having a pair of opposing end walls interconnecting with a pair of opposing side walls, said side walls and said end walls extending from said first base member in a generally upwardly direction and providing a walled element around said first base member,

said side walls each having at least one recess for receiving a clip member;

four leg members secured to a bottom portion of said first base member;

a first continuous ledge oriented adjacent a generally lower interior portion of each of said side walls and said end walls;

said first continuous ledge for supporting a removable second base member, said second base member oriented such that when said second base member is supported by said first continuous ledge said second base member is approximately parallel to said first base member;

a second continuous ledge oriented adjacent a generally upper interior portion of each of said side and end walls;

storage means, disposed between said first base member and said second base member, for storing game pieces

four rods disposed crosswise between said side walls, each of said rods having one of said clip members disposed adjacent

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to a first end and a second end of said rod, said clip members for retaining said rod;

locking means oriented adjacent to each of said side walls, said locking means selectively locking each of said clip members within one of said recesses.

5,630,761

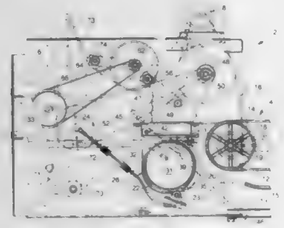
BOWLING BALL RETURN MECHANISM

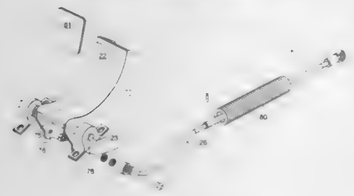
Sean Anderson, Richmond; Larry Gooss, Mechanicsville; Bill Riley, Richmond; Winston Sanders, Chesterfield; Yakov Shmerelzon, Richmond, and Michael Stephens, Glen Allen, all of Va., assignors to AMF Bowling, Inc., Richmond, Va.

Filed Mar. 14, 1996, Ser. No. 615,900

Int. Cl.[6] A63D *5/02*

U.S. Cl. 473—110 **74 Claims**





1. A bowling ball return mechanism for use with a pin spotter comprising a pair of side walls defining a chamber and a cradle disposed within said chamber for receiving a bowling ball thereon, means defining an opening in one of said sidewalls adjacent to said cradle for allowing a bowling ball to pass therethrough and into contact with said cradle and a sensor for sensing that a bowling ball is in contact with said cradle, means for moving said cradle in response to the sensing by said sensor, exit door means for preventing pins from being delivered to a ball return and a releasable locking assembly means for maintaining said exit door means in a closed position until released by contact with the ball in response to movement of said cradle.

5,630,762

METHOD OF MAKING A BOWLING PIN HAVING EXPANDED COPOLYMER CORE

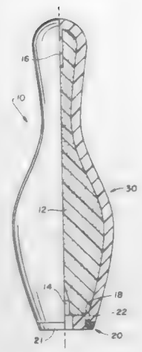
Alvin W. Mueller, St. Louis, Mo., assignor to Mueller-Perry Co., Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 290,211, Aug. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 79,040, Jun. 21, 1993, Pat. No. 5,354,239, and Ser. No. 105,364, Aug. 11, 1993, abandoned, and Ser. No. 735,001, Jul. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 438,048, Nov. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 294,654, Jan. 9, 1989, abandoned. This application Apr. 24, 1995, Ser. No. 427,150

Int. Cl.[6] A63B *63/00*

U.S. Cl. 473—119 **2 Claims**

1. The process of making a bowling pin, comprising the steps of



a. molding, against a mold wall of general bowling pin shape, a thermoset polymer foam plastic and causing or permitting such plastic to cure, thereby to form a foam cell core having a skin,

b. withdrawing such core from such mold,

c. physically removing at least the greater part of such skin, whereby to open cells formed against such mold wall,

d. then positioning the core in a larger cavity mold, and

e. pouring a non-foaming plastic therein about such core,

whereby such non-foaming plastic extends inward into and fills such opened cells,

f. then curing the non-foaming plastic or permitting it to cure, and then

g. removing from such larger cavity mold,

whereby such fill of such opened cells avoids separation of such shell from such core attendant to impacts on bowling pin use.

5,630,763

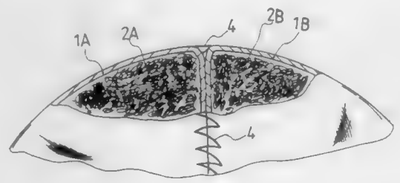
GOLF TRAINING BALL

Chu Li-Tsan, 2, floor, No. 15-1, Lane 81, Kwuang-Fu S. Rd., Taipei, Taiwan

Filed Feb. 27, 1996, Ser. No. 607,812

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—200 **4 Claims**



1. A golf training ball comprising at least two cloth stuffed elements each element featuring a sealing point and, stitching to combine the cloth stuffed elements into a unitary ball, where the stuffing comprises a soft fiber, and the cloth elements and stitching are so arranged such that the unitary ball has a core and a periphery with a density gradient between the core and periphery where the golf training ball has a heavier mass in the core and a lesser mass of a soft structure at its periphery to provide a high shock absorbing ability.

5,630,764

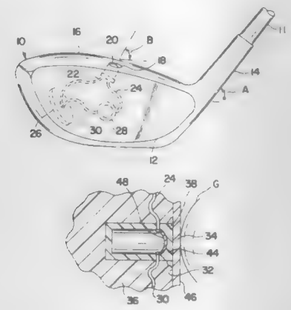
ILLUMINATED GOLF CLUB HEAD

Rhett McNair, 238 Harris Lake Dr., Lake City, Fla. 32055

Filed Mar. 5, 1996, Ser. No. 611,166

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—220 **17 Claims**



17. A switch for use in a golf club head having a face for impacting a golf ball during a swing, said switch comprising:

a) a body defining a chamber and comprising an end wall having an interior concave region said end wall adaptable for mounting to an interior surface of said face of said golf club head;

b) a pair of electrical conductors disposed in said chamber adjacent said end wall; and

c) a volume of mercury movable in said chamber, said volume of mercury naturally forming a droplet smaller than the distance between said pair of electrical conductors and in said natural form unable to simultaneously contact each of said electrical conductors regardless of the orientation of said switch, whereby upon impact of said face of said golf club head with a golf ball, said volume of mercury collides against said face concave region of said end wall and flattens sufficiently against said concave region of said end wall wherein said volume of mercury simultaneously contacts each of said electrical conductors to momentarily close said switch.

5,630,765

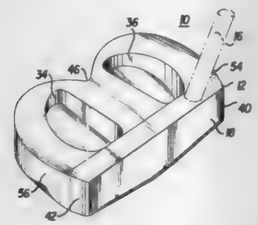
GOLF CLUB

James T. Moore, 2003 Foxcroft Dr., LaGrange, Ga. 30240

Filed Apr. 29, 1996, Ser. No. 639,622

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—252 **19 Claims**



1. A golf club head comprising: a body having the shape of the letter 'B' including a ball striking face, a sole and outboard heel and toe regions and formed with relatively dense weighted regions and reduced weighted recesses for locating the center of gravity of the club at a selected elevated central location; weighted portions about the center of gravity laterally distribute the weight of the club in gradually increasing amounts outboard of the center of the club; a central weighted portion perpendicular to the club face and aligned with the center of gravity; and a trailing portion for balancing the face of the club around the center of gravity; and means for visualizing the optimum impact point on the face of the club.

5,630,766

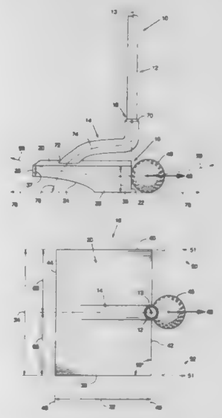
GOLF PUTTER

Dominic Granelli, San Francisco, Calif., assignor to TJZ Enterprises, San Francisco, Calif.

Filed Oct. 30, 1995, Ser. No. 549,882

Int. Cl.[6] A63B *53/02;53/04*

U.S. Cl. 473—313 **14 Claims**



1. A golf putter comprising:

(a) an elongated shaft having a hand grip end and a club head end;

(b) a club head having a top surface, a sole surface opposite to the top surface, a toe end, and a heel end parallel to the toe end, the top surface and the sole surface and the toe end and heel end defining a striking face and an opposite rear wall; and,

(c) a neck coupling the club head end of the shaft to the top surface of the club head;

wherein the top surface of the club head forms a parallelogram having a breadth and a width, the breadth of the top surface being at least 3.0 inches, the breadth being less than or equal to the width; and further wherein the striking face depth is greater than the rear wall depth such that the sole surface of the club head is upwardly sloped from the striking face to the rear wall.

5,630,767

AUTO-TENSIONER

Katsumi Hirabayashi, Anjo, and Yukimori Kobayashi, Gamagori, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi-pref., Japan

Filed Dec. 26, 1995, Ser. No. 578,313

Claims priority, application Japan, Dec. 26, 1994, 6-323105

Int. Cl.[6] F16H *7/08*

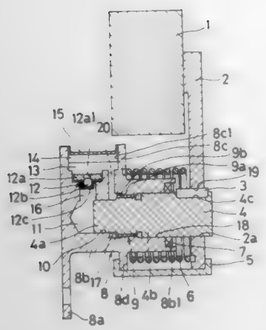
U.S. Cl. 474—110 **5 Claims**

1. An auto-tensioner comprising:

a body having a cylindrical bore defined therein;

a shaft having first and second ends, the first end of said shaft being slidably and rotatably engaged with the cylindrical bore

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of said body, said body including means for sealing said shaft in the cylindrical bore so as to be fluid-tight;

a support arm having upper and lower ends, the lower end of said support arm being fixedly connected to the second end of said shaft;

a pulley rotatably connected to the upper end of said support arm, said pulley being operatively engaged with a belt under tension;

means for rotatively urging said shaft and said support arm whereby said support arm maintains a tension engagement between said pulley and said belt, said urging means being operatively connected between said body and said shaft; and

means for converting rotational movement of said shaft into axial movement thereof along the cylindrical bore, said converting means operatively connected between said shaft and said body, wherein

said cylindrical bore includes an inner end and an outer end, the inner end of said cylindrical bore being formed so as to define a pressure chamber and a fluid chamber between the inner end of the cylindrical bore and the first end of said shaft,

the pressure and fluid chambers are further formed so as to define a narrow fluid passage therebetween,

the pressure and fluid chambers are filled with a viscous fluid,

said body has a reservoir chamber defined therein and formed so as to be located above said pressure and fluid chambers,

said reservoir chamber is filled with viscous fluid and gas,

a first main fluid passage is defined in said body to communicatively connect the pressure chamber with said reservoir chamber, and

a second main fluid passage is defined in said body to communicatively connect the fluid chamber with said reservoir chamber; and

valve means located in said first fluid passage for selectively controlling fluid communication of said pressure and fluid chambers with each other and with said reservoir chamber.

5,630,768

TENSIONER WITH SPRING HAVING NONLINEAR CHARACTERISTICS

Katsuya Nakakubo, Iruma, and Toru Fujiwara, Tokorozawa, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

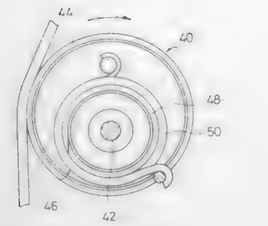
Continuation of Ser. No. 446,516, May 22, 1995, abandoned. This application Aug. 6, 1996, Ser. No. 692,646

Claims priority, application Japan, May 23, 1994, 6-130878

Int. Cl.[6] F16H *7/10*

U.S. Cl. 474—112 **4 Claims**

1. A tensioner, comprising:



a cam swingingly secured to a fixed axis, said cam being rotatably urged by a spring, wherein said spring has a nonlinear characteristic.

5,630,769

TENSION ROLLER FOR BELT DRIVES

Werner Schmidt, Herzogenaurach, and Klaus Kampitsch, Munich, both of Germany, assignors to INA Walzlager Schaeffler KG, Germany

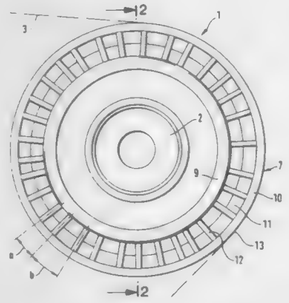
PCT No. PCT/EP94/03905, § 371 Date Dec. 16, 1995, § 102(e) Date Dec. 16, 1995, PCT Pub. No. WO95/16867, PCT Pub. Date Jun. 22, 1995

PCT Filed Nov. 25, 1994, Ser. No. 571,897

Claims priority, application Germany, Dec. 17, 1993, 9319394 U

Int. Cl.[6] F16H *55/40*

U.S. Cl. 474—167 **6 Claims**



1. A tension roller made of a plastic material, a castable material or a material spray-coated with a plastic material for adjusting a tension in a belt drive, comprising a wheel having an inner ring and an outer ring connected to each other by axially oriented, circumferentially spaced ribs and by a central web, the wheel being rotatably mounted on a support element which bears by a running face against a belt, characterized in that successive ribs (**12**, **32**, **52**) enclose different angles therebetween with reference to a central point of the wheel (**7**, **27**, **47**).

5,630,770

TOOTHED BELT

Toru Fujiwara, Tokorozashi; Tatsuo Arai, Chichibu, and Yoshinori Itoh, Hanno, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

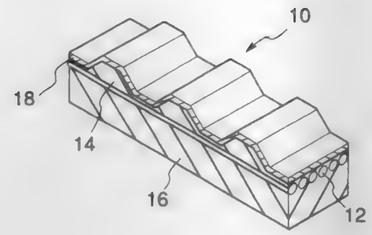
Continuation of Ser. No. 424,107, Apr. 19, 1995, abandoned. This application May 6, 1996, Ser. No. 642,959

Claims priority, application Japan, Apr. 21, 1994, 6-105017

Int. Cl.[6] F16G *1/28*

U.S. Cl. 474—205 **3 Claims**

1. A toothed belt, compromising a tensile body embedded therewithin and a tooth surface, said tooth surface being coated with a tooth sheet, wherein said tooth sheet is treated by resorcin-formaldehyde-latex solution containing inorganic pigments other than black series pigments.



5,630,771

COARSE AND FINE DRIVES FOR AN OBJECTIVE

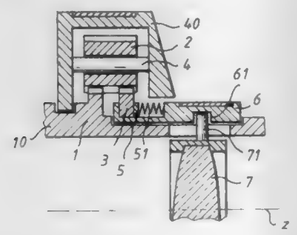
Uwe Weber, and Werner Flöther, both of Aalen, Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Mar. 20, 1995, Ser. No. 406,412

Claims priority, application Germany, Mar. 31, 1994, 44 11 208.4

Int. Cl.[6] F16H *57/08*

U.S. Cl. 475—338 **6 Claims**



1. An arrangement displacing at least a part of an objective, the arrangement comprising:

a housing defining a longitudinal axis;

a holding member for holding said one part and being displaceable along said axis;

a coarse adjusting ring rotatably mounted on said housing so as to be rotatable by an operator;

conversion means operatively connecting said coarse adjusting ring to said holding member for converting a rotatable movement of said coarse adjusting ring to a linear displacement of said holder and said part along said axis;

a fine adjusting ring mounted on said housing so as to be rotatable relative thereto by an operator through a first rotational angle;

interface means operatively connecting said fine adjusting ring to said coarse adjusting ring to effect a rotation thereof through a second rotational angle when said fine adjusting ring is rotated by the operator;

said interface means including: means for decoupling said fine adjusting ring from said coarse adjusting ring when said coarse adjusting ring is rotated by the operator whereby said fine adjusting ring remains at standstill; and, rotation reduction means for making said second rotational angle of said coarse adjusting ring a fraction of said first rotational angle whereby a fine adjustment of said linear displacement is obtained when said fine adjusting ring is rotated by the operator.

5,630,772

CONTROL METHOD AND CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

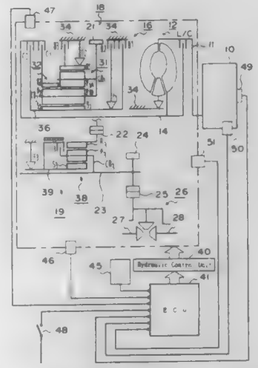
Kazumasa Tsukamoto, Toyota; Masahiro Hayabuchi; Masaaki Nishida, both of Anjo; Yoshihisa Yamamoto, Nishio; Muneo Kusafuka, Anjo; Hiroshi Tsutsui, Nishio, and Akihito Iwata, Hekinan, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Apr. 25, 1995, Ser. No. 428,552

Claims priority, application Japan, May 2, 1994, 6-093592

Int. Cl.[6] B60K *41/20*

U.S. Cl. 477—95 **10 Claims**



1. A method for controlling an automatic transmission in a drive train of a vehicle including an engine, the automatic transmission having an output shaft, a fluid coupling for transmitting rotation from the engine to the transmission, a first clutch applied when a forward running range is selected, a second, one-way clutch which is applied when the first clutch is applied, to establish a forward let speed; a brake for locking the one-way clutch, when applied, to block reverse rotation of the output shaft of the transmission, a first hydraulic servo for receiving oil pressure to apply the first clutch; and a second hydraulic servo for receiving oil pressure to engage the brake, said method comprising:

responsive to selection of a forward running range with the vehicle stopped, throttle opening for the engine at idle and a foot brake engaged, lowering oil pressure to the first hydraulic servo to a pressure below the oil pressure received by the first hydraulic servo at 1st speed and raising oil pressure of the second hydraulic servo to a modulated pressure, said modulated pressure generating, against the reverse force on the vehicle facing uphill on an incline, a resistance force corresponding to the forward driving force of the engine idling in 1st speed, thereby establishing a neutral control state with hill-holding.

5,630,773

METHOD AND APPARATUS FOR SLIP MODE CONTROL OF AUTOMATIC CLUTCH

James M. Slicker, West Bloomfield, Mich., and Kwok W. Chan, Lancashire, United Kingdom, assignors to Eaton Corporation, Cleveland, Ohio

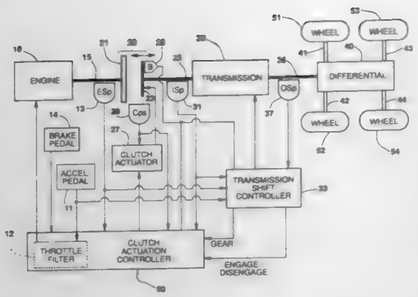
Filed Feb. 2, 1996, Ser. No. 597,573

Int. Cl.[6] B60K *41/02*

U.S. Cl. 477—176 **15 Claims**

1. An automatic clutch control in a power train including an engine controlled by a throttle, a friction clutch having an input shaft connected to the engine and an output shaft connected to the input of a transmission, a throttle position sensor for producing a throttle signal, an engine speed sensor connected to the engine for generating an engine speed signal, a transmission input speed sensor connected to the output shaft of the friction clutch for

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generating a transmission input speed signal corresponding to the rotational speed of the output shaft of the friction clutch, a clutch actuator connected to the friction clutch for controlling engagement of the friction clutch from disengaged to fully engaged according to a clutch engagement signal, the control comprising:

a slip reference generator responsive to the throttle signal for producing a slip reference signal which is a function of throttle and engine speed;

a circuit for producing a slip error signal from the input speed, the engine speed, and the slip reference signals;

a PID (proportional-integral-differential) regulator responsive to the slip error signal to regulate the slip error; and

a control circuit responsive to the regulated slip error for generating a clutch engagement signal to minimize the slip error signal, whereby the slip is controlled according to the slip reference signal.

5,630,774

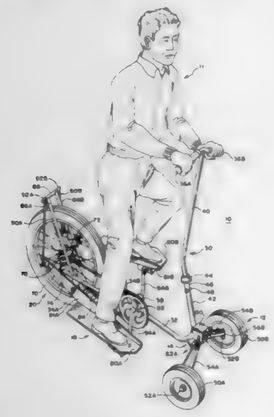
EXERCISE TECHNIQUE AND APPARATUS

Robert C. Geschwender, 3855 Orchard St., Lincoln, Nebr. 68503

Continuation of Ser. No. 333,861, Nov. 3, 1994, abandoned, which is a continuation of Ser. No. 919,825, Jul. 27, 1992, abandoned. This application Jul. 31, 1995, Ser. No. 507,033

Int. Cl.[6] A63B *25/08*; **B62M** *1/00*

U.S. Cl. 482—57 **21 Claims**



1. Apparatus comprising:

frame means having a tendency to pivot about a horizontal line as the apparatus is used by an operator; wheel means attached to said frame means for movement along a surface;

drive means;

steering means;

pedal means connected to the frame means for rotating said drive means as the pedal means is moved by the operator;

a horizontal pivot pin;

said steering means being connected to the frame means by said horizontal pivot pin for motion with respect to said frame means; wherein the steering means is moved in response to the pivoting of the frame means about said horizontal line, whereby the operator using the apparatus must move more than one portion of the operator's body to both move said pedal means and to control said pivoting;

said pedal means including pedals; and

the frame means including a frame and handlebars, said frame and handlebars being rigidly connected to each other for movement together during pivoting and turning of said apparatus;

each of said pedals being sufficiently large to support a different foot of the operator and said handlebars being spaced from said pedals a distance sufficient to permit the operator to pedal while standing on the pedals and holding the handle bars.

5,630,775

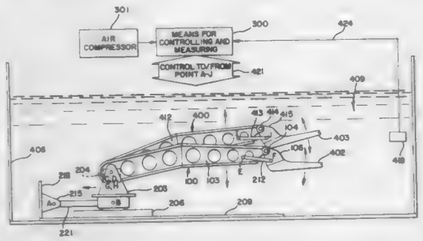
KICK STROKE SIMULATOR

Jason J. Raasch, Wheeling; Steve J. Fritz, and David C. Barnett, both of Gurnee, all of Ill., assignors to Dacor Corporation, Northfield, Ill.

Filed Jan. 25, 1995, Ser. No. 379,322

Int. Cl.[6] A63B *69/00*

U.S. Cl. 482—83 **14 Claims**



11. A kick stroke simulator machine for simulating the action of a swimmer's kicking legs, comprising:

at least one mechanical leg with a foot end and an end opposite said foot end;

a foot portion pivotably connected to said foot end;

actuator means connected to said opposite end for rotating said at least one leg in a vertical plane; and

a tank configured for retaining liquid in which said at least one leg, said foot portion and said actuator means are immersible for simulating the underwater kicking action of a swimmer.

5,630,776

FOLDING DUMBELL REST

Lien-Chuan Yang, 11F 1, No. 149, Sec. 3, Roosevelt Rd., Taipei, Taiwan

Filed Jun. 12, 1996, Ser. No. 662,357

Int. Cl.[6] A63B *21/072*

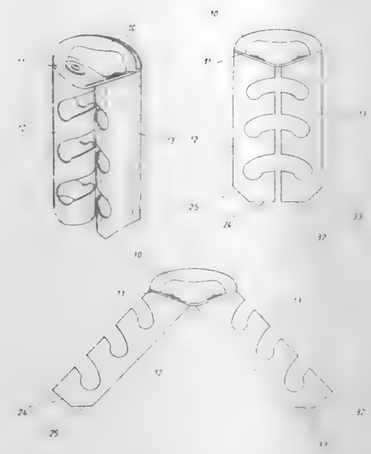
U.S. Cl. 482—104 **4 Claims**

1. A dumbbell rest comprising a handle, a V-shaped plate, two cylinders and a pair of connecting devices, wherein:

the handle is attached to the V-shaped plate;

the V-shaped plate being a plate body having two ends slightly upwardly inclined from the center, each end of the V-shaped plate being formed with a hole;

a top end of each cylinder is formed with a slope face corresponding to a respective end of the V-shaped plate, the slope face being formed with a hole at the center, the bottom end of



each cylinder being formed with a horizontal cut face and an inclined cut face, the cylinders being further respectively formed with several pairs of opposite notches on their sides for resting dumbbells therein; and

the connecting devices are passed through a respective hole of the V-shaped plate and the hole of the respective cylinder to rotatably associate the V-shaped plate with the cylinders, the slope faces of the cylinders being freely rotatably attached to the V-shaped plate, whereby when the two cylinders are rotated to a closed position, the horizontal cut faces of the bottoms thereof enable the cylinders to stand upright, while when the cylinders are rotated to an open position, the slope faces of the cylinders and the inclined ends of the V-shaped plate cooperate with each other to make the cylinders into a triangular rest body and the inclined cut faces of the cylinders together form a planar face enabling the cylinders to stand inclined.

5,630,777

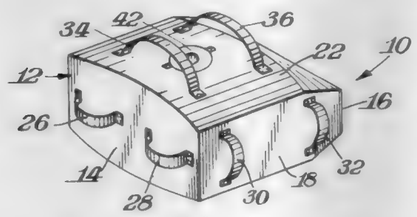
EXERCISE BLOCK

Mary L. Garren; Lloyd R. Garren; Melissa Garren, and Ross Garren, all of Middle Neck Rd., Warwick, Md. 21912

Filed May 18, 1995, Ser. No. 444,042

Int. Cl.[6] A63B *21/02*

U.S. Cl. 482—121 **5 Claims**



3. An exercise block comprising: a unitary body fabricated from compressible material that returns to its original shape after being compressed; the unitary body including a front end wall, a rear end wall, opposite side walls, a top wall and a bottom wall; pairs of spaced apart flexible hand straps attached to at least some of the walls; and an inner core also fabricated from compressible material that returns to its original shape after being compressed removably associated with the unitary body, both the unitary body and the removable inner core each having a different density, and locking means for releasably connecting the inner core to the unitary body, and wherein the locking means includes at least one lug on the outside of the inner core and a cooperating slot on the unitary body into which the lug is positioned.

5,630,778

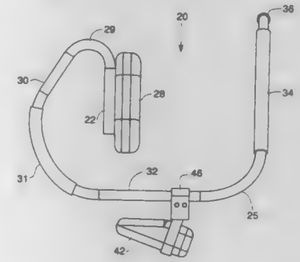
ABDOMINAL EXERCISE APPARATUS AND METHOD

Jack Barreca, Aurora, Colo., assignor to AB-CAM, L.L.C., Denver, Colo.

Filed Nov. 21, 1995, Ser. No. 561,188

Int. Cl.[6] A63B *23/02*

U.S. Cl. 482—140 **25 Claims**



1. An abdominal exercise device, comprising:

a frame comprised of tubular material having a generally double U-frame configuration that includes a substantially vertical downward portion having a first longitudinal axis and a bottom portion having a second longitudinal axis, said frame having a curved portion operatively connecting said vertical downward portion and said bottom portion, wherein an angle formed by extending imaginary lines running through said first longitudinal axis and said second longitudinal axis to an intersection point is between about 45° and about 80°;

two armrests fixedly attached to said tubular material to accommodate the upper arm region of a user when the user is in a supine position between said double U-frame configuration;

a neck support operatively connected to said tubular material in a fixed position by adjoinment to said double U-frame, said neck support firmly supporting the user's head throughout the movement of the user'head when performing a sit-up/curl exercise using said device.

5,630,779

EASY-OPEN BAG PACK, METHOD OF FORMING AND SYSTEM

Lawrence J. Glod, Macedon, and Richard E. Leone, Newark, both of N.Y., assignors to Tenneco Packaging, Evanston, Ill.

Continuation-in-part of Ser. No. 119,346, Sep. 9, 1993, Pat. No. 5,507,713. This application Jun. 7, 1995, Ser. No. 478,124

Int. Cl.[6] B31B *23/86*;*27/60*

U.S. Cl. 493—194 **13 Claims**

1. A method of forming a pack of gusseted, polyethylene film, integrally extended handle bags comprising:

(a) providing a collapsed tube of polyethylene film;

(b) corona discharge treating at least a portion of the external surfaces of said tube;

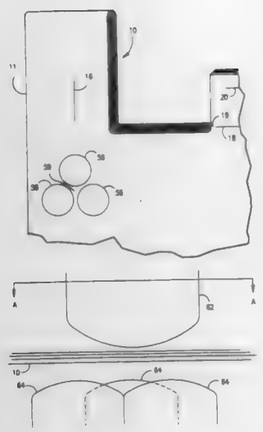
(c) forming side gussets in said tube;

(d) transverse-sealing said tube at bag-length distances apart to form a series of end-sealed gusseted pillowcases;

(e) separating and stacking a plurality of said pillowcases in at least general registration;

(f) severing all the film layers along a line so as to form integrally extended double film loop handles and an open mouth region in each bag and simultaneously or sequentially forming handle support orifices in each handle; and

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(g) applying localized force to at least one end of the stack by contacting the stack with at least a first pair of anvil means, the pair of anvil means including a lower anvil means positioned to contact the bottom bag of the stack within the corona discharge treated surface portion of the bottom bag and an upper anvil means substantially aligned with the lower anvil means and positioned to contact the top bag of the stack within the corona discharge treated surface portion of the top bag,

wherein said lower anvil means comprises a plurality of substantially convex endface surfaces each defining substantially circular peripheries;

wherein said upper anvil means comprises a convex endface surfaced anvil defining a substantially circular periphery;

wherein the force applied thereto is effective to cooperatively form at least one region within the corona discharge treated surface portions of each bag of the stack, said periphery of said upper anvil means defining an outer boundary of said region, the region being comprised of closely spaced, non-intersecting fused zones and a non-fused zone, the fused zones having substantially a same strength as a region of the bag pack to which the localized force is not applied.

5,630,780

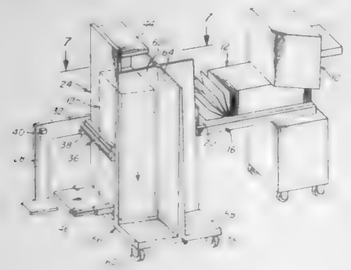
METHOD AND APPARATUS FOR BUSINESS FORMS

H. W. Crowley, Newton, Mass., assignor to Roll Systems, Inc., Burlington, Mass.

Division of Ser. No. 172,545, Dec. 23, 1993, Pat. No. 5,399,143, which is a division of Ser. No. 832,097, Feb. 6, 1992, Pat. No. 5,273,516. This application Mar. 10, 1995, Ser. No. 402,517

Int. Cl.[6] B65H *29/00*

U.S. Cl. 493—416 **9 Claims**



1. A system for stacking materials comprising a conveyor for the materials, a table having a tabletop support surface, the table being positioned adjacent to the conveyor in a position for receiving a substantially horizontal stack of the material from the conveyor, the table having a pivot structure that enables tilting of the table from a substantially horizontal position to a substantially vertical position to, likewise, move the stack from a horizontal to a vertical stack position, a movable supporting surface that is selectively locatable to support the stack as it is moved from the horizontal to the vertical stack position, and a cart having a stack supporting surface, the cart being movable to a position wherein the stack supporting surface of the cart is positioned substantially beneath the movable supporting surface of the table and wherein the stack supporting surface of the cart and the movable supporting surface of the table are constructed and arranged so that the stack can be transferred onto the stack supporting surface of the cart by moving the movable supporting surface of the table relative to the stack supporting surface of the cart.

5,630,781

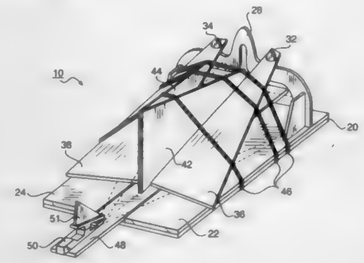
PAPER AIRPLANE FOLDING DEVICE

Dennis Hubbard, 229 Chapin St., Chadron, Nebr. 69337

Filed Dec. 22, 1994, Ser. No. 361,387

Int. Cl.[6] B31F *7/00*

U.S. Cl. 493—438 **8 Claims**



8. A method for forming a sheet of paper into an aerodynamic configuration, the method comprising the steps of:

providing a device for use in forming the sheet of paper into an aerodynamic configuration, said device having an entrance end and an exit end, said device including a number of wing folding surfaces and a number of tail folding surfaces;

providing a means for delivering the sheet of material from said entrance end of the device to said exit end of the device;

securing the sheet of material to said means for delivering;

pushing said means for delivering and the sheet from said entrance end of said device to said exit end of said device;

releasing the sheet of material from said means for delivering.

5,630,782

STERILIZABLE ENDOSCOPE WITH SEPARABLE AUXILIARY ASSEMBLY

Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104

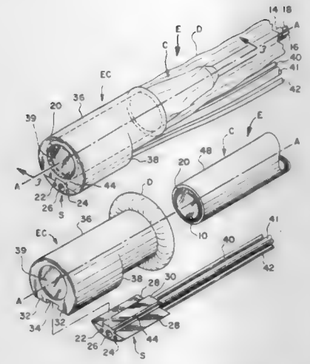
Continuation-in-part of Ser. No. 333,360, Nov. 2, 1994, Pat. No. 5,489,256, which is a continuation of Ser. No. 938,629, Sep. 1, 1992, abandoned. This application Mar. 7, 1995, Ser. No. 399,821

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—133 **48 Claims**

1. An apparatus for viewing a surgical operative site and conducting operative procedures in a sterile environment such as that of an operating room, said apparatus comprising:

an endoscope including a distal capsule portion, and means for transmitting an image of the operative site disposed within said capsule;



an end cap having an inner and outer surface, proximal and distal ends, and a first mating surface formed along at least a portion of said end cap outer surface, said capsule being insertable within space defined by said inner surface of said end cap; and

a separable disposable channel section having at least one longitudinal opening for transmitting fluids or gas or for receiving an operative instrument, and further including a second mating surface formed on said separable channel section for releasable attachment of said second mating surface to said first mating surface of said end cap.

5,630,783

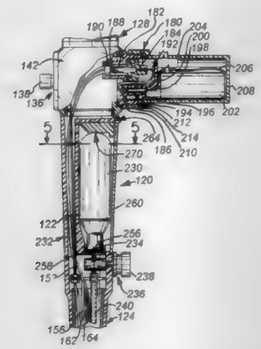
PORTABLE CYSTOSCOPE

Jeffrey Steinberg, 39 Border Rd., Needham, Mass. 02192

Filed Aug. 11, 1995, Ser. No. 514,193

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—158 **18 Claims**



14. A cystoscope comprising:

a handle having a proximal end and a distal end, the handle including a compartment thereon;

a viewing port located at the proximal end;

a flexible tube extending from the distal end, constructed and arranged for passage into a body;

a steering control located on the handle and steering cables interconnected with the steering control and passing from the handle into the tube the steering cables being attached adjacent a distal end of the tube wherein movement of the steering control causes an associated movement of the steering cables which causes a portion of the tube to define a predetermined curve to conform to a curve of the body;

a light source in communication with the handle, providing illuminating light to a fiber optic light conduit extending from the handle to a light outlet at a distal end of the tube;

a fiber optic viewing conduit that transmits viewed light from the distal end of the tube to the view port; and

a fluid conduit extending from the compartment of the handle to the distal end of the tube and a gas cartridge located within the compartment on the handle and in communication with the fluid conduit, the gas cartridge being operable at predetermined times to deliver gas at the distal end of the tube for insufflation of a portion of the body adjacent the distal end of the tube.

5,630,784

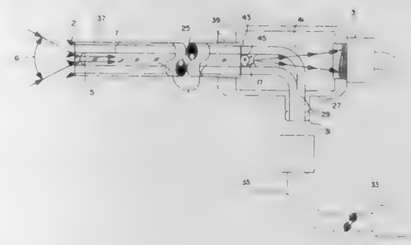
METHOD OF MAKING AND USING A RIGID ENDOSCOPE HAVING A MODIFIED HIGH REFRACTIVE INDEX TUNNEL ROD

Walter P. Siegmund, Pomfret Center, Conn.; Paul W. Remijan, Holland, and John M. Smith, Southbridge, both of Mass., assignors to Schott Fiber Optics Inc., Southbridge, Mass.

Division of Ser. No. 992,660, Dec. 18, 1992, Pat. No. 5,423,312. This application Jun. 6, 1995, Ser. No. 467,965

Int. Cl.[6] A61B *1/002*

U.S. Cl. 600—160 **10 Claims**



1. A method of producing an endoscope shaft which is capable of accurately transmitting image light from a distal end of an endoscope to a proximal end thereof, comprising:

modifying a rod of transparent material, said material having an index of refraction greater than one and having substantially zero focussing power, by blackening an outer surface of said rod, thereby creating an inner surface which minimizes the amount of light scattered and reflected within said rod to an extent that veiling glare and contrast reduction of an image transmitted by said rod are reduced.

5,630,785

PROCESS FOR THE TREATMENT OF WASTE PRODUCTS

Dennie E. Pridemore, Boulder, Colo., and Harald W. Kremnitz, Laguna, Philippines, assignors to Hydromex Inc., Boulder, Colo.

Filed Mar. 15, 1995, Ser. No. 405,245

Int. Cl.[6] A62D *3/00*; **B09B** *3/00*; **G21F** *3/00*

U.S. Cl. 588—255 **20 Claims**

1. A process for the treatment of waste products, of the type comprising:

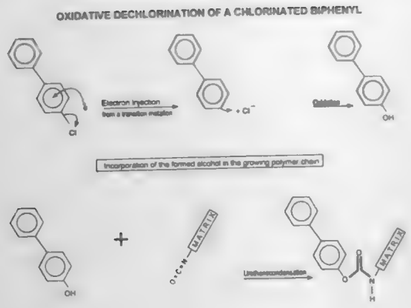
first, separating liquid and solid waste products; and

second, adding a means for formation of a polymeric matrix such that said waste products are absorbed in the chain of said polymeric matrix; characterized by:

prior to said second step, further dividing said liquid wastes into a first group of liquids with a pH-value of 7 at the most, and a second group of liquids with a pH-value higher than 7;

(a) preparing a first mixture by adding to the first group of liquids:

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(i) pH adjusting means sufficient to produce a resulting pH-value of no more than 5;

(ii) oxidant; and

(iii) metallic precipitating means sufficient to precipitate metals;

(b) preparing a second mixture of said solid waste products and liquid of said first mixture; and

adding pH adjusting means sufficient to produce a resulting pH-value of at least 8 in the second mixture;

(c) preparing a third mixture of said second group of liquids and the second mixture;

(i) allowing the second group of liquids and second mixtures to react; and

(ii) adding pH adjusting means sufficient to produce a resulting pH-value of at least 7; and

wherein, said means for formation of a polymeric matrix of said second step are added to said third mixture.

4. A process for chemical, thermal and mechanical treatment of wastes, wherein said wastes include a comminuted solid waste portion and a liquid waste portion, comprising:

forming a first mixture by combining said liquid waste portion, inorganic acid, and an oxidant;

forming a second mixture of said comminuted solid waste portion and said first mixture; and

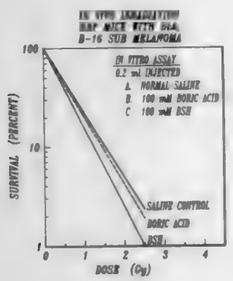
forming a third mixture of said second mixture and a phase transition catalyst.

5,630,786

BORON NEUTRON CAPTURE ENHANCEMENT OF FAST NEUTRON THERAPY

Brian R. Griffin, Edmonds, and George E. Laramore, Seattle, both of Wash., assignors to IONIX Corporation, Seattle, Wash.

Filed Jun. 27, 1994, Ser. No. 267,350
Int. Cl.[6] A61N *5/00*
U.S. Cl. 600—3 **21 Claims**



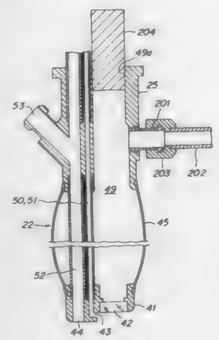
1. A method of killing target cells comprising irradiating the cells with a neutron beam from a source that emits neutrons having an energy distribution in which less than about 15% of the neutrons have energies below 100 KeV in the presence of a boron neutron capture agent comprising at least nine boron atoms per molecule of the agent.

5,630,787

SYSTEM INCLUDING ENDOSCOPE AND DISPOSABLE PROTECTION COVER WITH CHANNEL

Hisao Yabe, Hachioji; Yoshihiro Iida, Tama; Akira Suzuki; Hideo Ito, both of Hachioji; Yoshio Tashiro, Hino; Minoru Yamazaki; Osamu Tamada, both of Hachioji, and Naruto Shinkai, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,402
Claims priority, application Japan, Feb. 18, 1993, 5-005216 U; Feb. 18, 1993, 5-029070; Feb. 18, 1993, 5-029071
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—121 **7 Claims**



1. An endoscope system comprising:

a first endoscope of image guide fiber bundle type having a housing of an operation section; an image guide optical fiber bundle extending within said housing; an eyepiece section, supported by said housing, for inspecting an image of an object which is transmitted by means of said image guide optical fiber bundle; a shaft extending from said housing; and at least one angle knob detachably secured to said shaft; and

a second endoscope of solid state image sensing type having a housing of an operation section; a solid state image sensor, supported by said housing of said second endoscope, for converting an image of an object into an image signal; a switch section, supported by said housing of said second endoscope, for controlling the image picked up by said solid state image sensor; a shaft extending from said housing of said second endoscope; and at least one angle knob detachably secured to said shaft;

a first protection cover covering at least said housing of said first endoscope; and

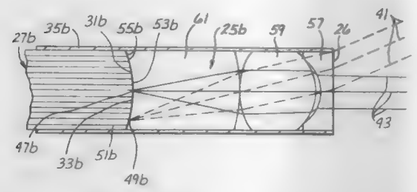
a second protection cover covering at least said housing of said second endoscope, wherein said angle knob and said shaft of said first endoscope and said shaft of said second endoscope are constructed such that said angle knob of the first endoscope can be detachably secured to said shaft of said second endoscope.

5,630,788

ENDOSCOPE WITH CURVED END IMAGE GUIDE

John F. Forkner, South Laguna, and Gary M. Woker, Escondido, both of Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.

Filed Aug. 12, 1994, Ser. No. 289,941
Int. Cl.[6] A61B *1/00; G02B 6/06*
U.S. Cl. 600—182 **18 Claims**



8. An endoscope comprising:

an elongated endoscope body having a distal end;

an objective carried by the endoscope body adjacent said distal end, said objective having a curved proximal surface;

an elongated fiberoptic image guide in the endoscope body for transmitting an image proximally, said image guide having a convex curved distal end surface which has a shape which generally conforms to the shape of the curved proximal surface of the objective, said curved distal end surface being substantially in contact with the curved proximal surface of the objective to provide an interface;

said objective providing a curved image plane substantially at said interface, said image plane having a shape which generally conforms to the shape of the curved proximal surface of the objective whereby the image guide can transmit an image at the image plane proximally; and

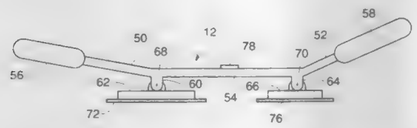
the image guide including optical fibers terminating at said interface, said optical fibers at said interface being substantially parallel.

5,630,789

ACTIVE COMPRESSION/DECOMPRESSION DEVICE FOR CARDIOPULMONARY RESUSCITATION

Robert B. Schock, and John J. Lucas, both of Sparta, N.J., assignors to Datascope Investment Corp., Montvale, N.J.

Filed Oct. 7, 1994, Ser. No. 319,559
Int. Cl.[6] A61H *31/00*
U.S. Cl. 601—41 **2 Claims**



1. A CPR device for alternating simultaneous compression of the thorax and decompression of the abdomen with simultaneous decompression of the thorax and compression of the abdomen, comprising:

a first pressure member for applying, alternatively, compressive forces and tensile forces;

a second pressure member for applying, alternatively, compressive forces and tensile forces; and

a support beam comprising a sternal lever at one end and an abdominal lever at the opposite end and a connecting rod between said two levers,

wherein said two pressure members are both attached to said support beam member and are separated from each other by a predetermined distance,

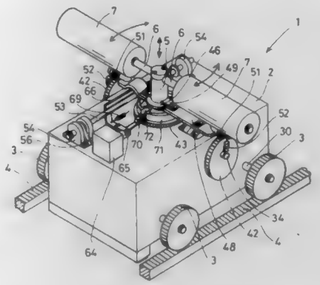
wherein neither of said levers is coaxial with said rod.

5,630,790

MASSAGER OF ROLLER TYPE

Takakazu Ito, 1-866 Kami Higashiozone-cho, kita-ku, Nagoya, Japan

Filed Feb. 3, 1995, Ser. No. 383,722
Int. Cl.[6] A61H *7/00*
U.S. Cl. 601—94 **3 Claims**



1. A massager of roller type for incorporation into a seat or backrest of a chair or a mat comprising:

a traveling massage unit comprising a traveling housing enclosing a drive and operating mechanisms assembly for incorporation as a unit into said seat or backrest of a chair or said mat;

a pair of parallel gear racks laterally spaced for defining a rectilinear travel path for said massage unit;

said traveling massage unit having driven gears on two opposite sides of said housing, each pair of gears engaging a respective gear rack for transporting said massage unit traveling housing reciprocably alternatively in opposite directions along said travel path;

a pair of elongate massage pressure rollers mounted on said massage unit externally of said traveling housing disposed in a common plane above a top level of said housing coaxially spaced apart extending in opposite directions transversely of said travel path for travel along said travel path;

means coupled to said mechanisms of said assembly for mounting said elongate massage pressure rollers on said housing selectively driven for driving the massage pressure rollers alternatively in circular clockwise and counterclockwise motion when the traveling housing is stationary and traveling for massaging a user of said massage; and

said means coupled to said mechanisms of said assembly for mounting said elongate pressure rollers selectively driven comprises means for reciprocably moving the massage pressure rollers jointly repetitively between said common plane upwardly relative to said housing to a second plane upwardly of said common plane for variable applying massage pressure to body parts of said user during said circular clockwise and counterclockwise motion.

5,630,791

ORTHOTIC JOINT

Daniel W. Glynn, Pembroke, Mass., assignor to Glynn Orthopedics Services, Inc., Pembroke, Mass.

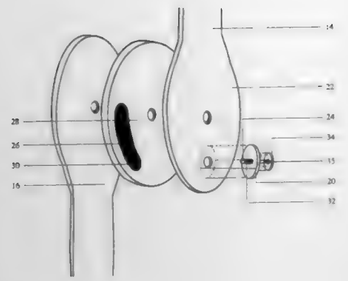
Filed Apr. 3, 1995, Ser. No. 415,731
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—16 **12 Claims**

1. An orthotic brace comprising:

a first molded support member and a second molded support member, said first and second support members being shaped so that when mated at adjacent ends said first and second support members rotate about a common axis;

a disk positioned between said mating portions of said adjacent ends of said first and second support members, said disk

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including an arc-shaped cutout on one surface of said disk, said cutout extending only partially through the depth of said disk;

means mounted to one of said first and second support members for passing into said cutout to limit the range of motion of said first support member relative to said second support member.

5,630,792

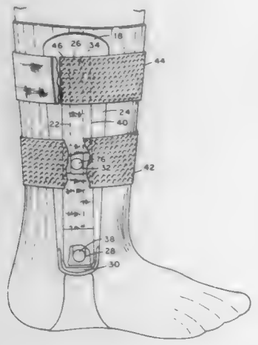
ANKLE BRACE

Charles O. Neal, Knoxville, Tenn., assignor to DeRoyal Industries, Inc., Powell, Tenn.

Filed Dec. 7, 1995, Ser. No. 568,960

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—27 **6 Claims**



1. An ankle brace comprising first and second elongated body members which are contoured to lie along opposite sides of an ankle.

each of said first and second body members including

a layer of substantially compliant and substantially inextensible material having top and bottom ends, an inner surface facing inwardly when the body member is applied to an ankle, and an outer surface facing outwardly when the body member is applied to an ankle,

and an elongated stay,

said stay being anchored to said outer surface of said layer at locations near the top and bottom ends of said layer and at a further location approximately midway between the anchored locations near the top and bottom ends of said layer and being unattached to said layer along those portions of the length of said stay that are intermediate said anchored locations, said stay being bendable along its length dimension by hand at least in the region thereof which is unattached to said layer and disposed between its bottom and midpoint anchored locations to said layer to effect recontouring of its respective body member to a cupped geometry at least in the region thereof between the bottom and midpoint anchored locations of said stay to said layer,

strap means for securing said body members on opposite sides of an ankle,

further strap means having first and second ends and being suitable to pass beneath the arch of a foot on which the brace is applied and upwardly therefrom along the opposite sides of the foot,

means releasably anchoring said first and second ends of said further strap means to the outer surface of respective ones of said first and second body members at selectable vertically spaced locations.

5,630,793

AQUEOUS OPHTHALMIC SPRAYS

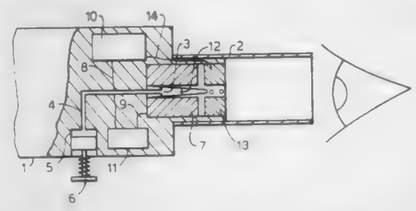
Raymond C. Rowe, Congleton, United Kingdom, assignor to Zeneca Limited, London, United Kingdom

Filed Mar. 23, 1995, Ser. No. 408,971

Claims priority, application United Kingdom, Mar. 25, 1994, 9405952

Int. Cl.[6] A61N *1/30*; **A61M** *35/00*

U.S. Cl. 604—20 **12 Claims**



1. A method for administering a liquid ophthalmic formulation to the surface of the eye, said method comprising the steps of:

providing a spray nozzle having a liquid outlet in proximity to but spaced from said surface, said nozzle being situated adjacent to a piezoelectric or electromagnetic transducer;

providing to said nozzle said liquid ophthalmic formulation comprising an ophthalmologically-acceptable liquid having a viscosity in the range 10^{-3} to 1.0 Pa.s and a resistivity lower than 10^4 ohm.cm;

ejecting a jet of said formulation from said spray nozzle towards said surface, forming a stream of uniformly-sized, equally spaced, uncharged droplets by means of said transducer; and

causing said droplets, upon formation, to pass through the charging field of a charging electrode, thereby inducing an electric charge on each droplet before contacting said surface; whereby the charged droplets discharge their electric charge by earthing on contact with the surface of said eye.

5,630,794

CATHETER TIP AND METHOD OF MANUFACTURING

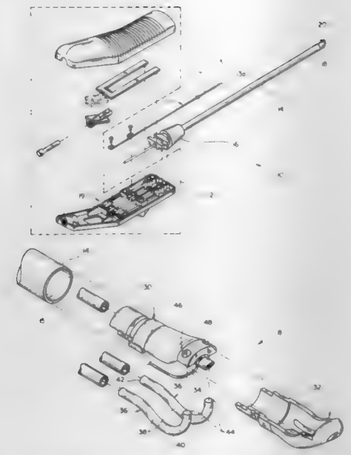
Ronald G. Lax, Grassvalley, and James A. Baker, Palo Alto, both of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, and a continuation-in-part of Ser. No. 62,364, May 13, 1993, Pat. No. 5,435,805. This application Sep. 23, 1994, Ser. No. 311,090

Int. Cl.[6] A61B *17/39*

U.S. Cl. 604—22 **26 Claims**

1. A medical device comprising an elongate probe member having proximal and distal extremities and having a passageway therein extending from the proximal extremity to the distal extremity along a longitudinal axis, a stylet mounted in the elongate probe member and having proximal and distal extremities, control means mounted on the proximal extremity of the elongate probe member,



means mounted on the proximal extremity of the elongate probe member and connected to the control means and connected to the stylet for causing advancement of the stylet through the passageway, a stylet guide housing mounted on the distal extremity of the elongate probe member and having an outer surface with a port therein, a tubular member defining a lumen in communication with the passageway and extending through the stylet guide housing in a curved path to the port for slidably receiving the stylet and causing the distal extremity of the stylet to be advanced from the stylet guide housing sidewise at an angle with respect to the longitudinal axis.

5,630,795

CLEANING TUBE APPARATUS FOR ENDOSCOPE

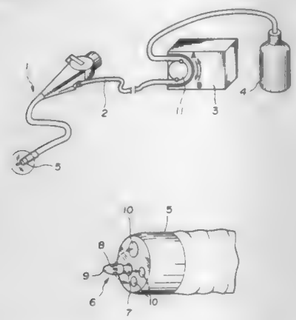
Seiji Kuramoto; Ryoji Masubuchi, both of Hachioji; Akio Nakada, Fujino-machi; Yasuhiko Omagari, Hamura-machi; Ichiro Nakamura, Kokubunji; Nobuhiko Washizuka, Tama, and Yoshinao Oaki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 897,354, Jun. 11, 1992, abandoned. This application Feb. 27, 1995, Ser. No. 395,524

Claims priority, application Japan, Aug. 2, 1991, 3-194454; Aug. 5, 1991, 3-195533; Oct. 11, 1991, 3-264072; Jan. 31, 1992, 4-016678; Apr. 16, 1992, 4-096473; May 13, 1992, 4-120823; May 13, 1992, 4-120824

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—30 **10 Claims**



1. A cleaning tube apparatus in combination with an endoscope comprising:

an observation optical system for observing a subject part, said observation optical system including a plurality of objective lenses at a forward-end portion;

a cleaning tube detachable with respect to said endoscope, said cleaning tube being provided at one end with a plurality of fluid jetting openings each oriented in a rearward peripheral direction of said cleaning tube toward one of said plurality of objective lenses; and

fluid supply means connected to said cleaning tube, for supplying the cleaning fluid to said cleaning tube.

5,630,796

METHOD OF DELIVERING POWDER TRANSDERMALLY WITH NEEDLESS INJECTOR

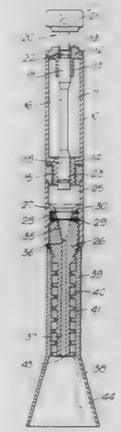
Brian J. Bellhouse, Islip; David F. Sarphie, Witney, and John C. Greenford, Abingdon, all of England, assignors to Oxford Biosciences Limited, Oxford, England

Filed Jun. 7, 1995, Ser. No. 474,367

Claims priority, application United Kingdom, Apr. 8, 1993, 9307459; Sep. 6, 1993, 9318407; Oct. 15, 1993, 9321356; Dec. 21, 1993, 9326069

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **14 Claims**



1. A method of therapeutic treatment, comprising transdermally delivering particles of a powdered therapeutic agent across skin tissue of a mammalian subject, said particles being delivered to the locus of transdermal administration at a velocity in the range of between 200 and 2,500 m/sec, in which the particles of the therapeutic agent have a size predominantly in the range of about 10 to 250 μm and a density in the range of 0.1 to 25 g/cm^3.

5,630,797

EVERTING CATHETER SYSTEM AND METHOD OF UTILIZING THE SAME

Klaus Diedrich, Lubeck; Otmar Bauer, Kludenbach, both of Germany; Guy R. Lowery, Mission Viejo, Calif.; Steven R. Bacich, Laguna Niguel, Calif., and Hien V. Nguyen, Santa Ana, Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.

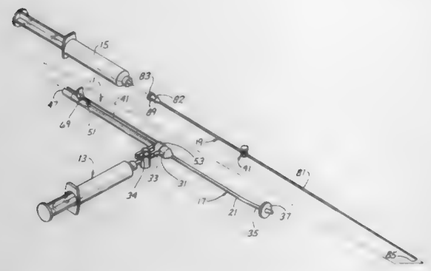
Filed Jan. 17, 1995, Ser. No. 372,970

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—55 **21 Claims**

1. In an everting catheter useable with an elongated instrument wherein the everting catheter includes an elongated outer tubular body having an outer body lumen and an opening leading from the

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outer body lumen, an elongated inner tubular body moveable longitudinally in the outer body lumen and having an inner body lumen adapted to receive the instrument, and an everting element coupled to the outer body and the inner body so that with movement of the inner body longitudinally in the outer body lumen the everting element can be everted and inverted, the improvement comprising:

coupling means on the outer body and cooperable with the instrument for retaining the instrument in the inner body lumen in a substantially fixed longitudinal position relative to the outer body.

5,630,798

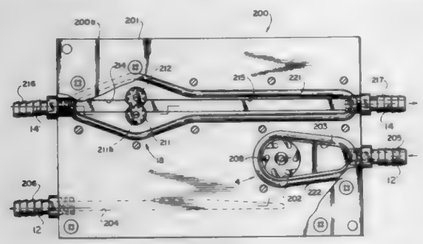
FLUID MANAGEMENT SYSTEM

David G. Beiser, Brookline; Steven B. Woolfson, Boston, both of Mass., and Kenneth W. Krause, Sandown, N.H., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Division of Ser. No. 255,281, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 867,981, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249, Aug. 21, 1991, abandoned, and Ser. No. 838,465, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249, Aug. 21, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,111

Int. Cl.[6] A61F *13/06;5/00*

U.S. Cl. 604—66 **26 Claims**



1. Apparatus for supplying liquid to a body cavity during an endoscopic procedure, which comprises:

inflow pump means inherently capable of supplying liquid at a substantially constant pressure substantially independent of the flow rate of liquid supplied by the inflow pump means;

pressure sensing means for generating a body cavity pressure signal representing the pressure in said body cavity;

conduit means for communicating said inflow pump means with said body cavity to deliver liquid under pressure to said body cavity;

control means responsive to said body cavity pressure signal for increasing or decreasing the pressure of said liquid delivered by said inflow pump means to thereby maintain said body cavity pressure at a predetermined level;

a liquid outflow cannula for insertion into said body cavity for transporting liquid from said body cavity;

an outflow suction pump means connected to said liquid outflow cannula; and

a disposable plastic pump cassette comprising a housing, said inflow pump means and said outflow suction pump means being in said housing and conduit means within said housing for supplying liquid to and delivering liquid under pressure from said inflow pump means and for supplying liquid to and delivering liquid from said outflow suction pump means.

5,630,799

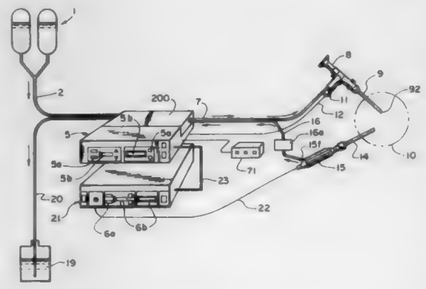
FLUID MANAGEMENT SYSTEM

David G. Beiser, Brookline; Steven B. Woolfson, Boston, both of Mass., and Kenneth W. Krause, Sandown, N.H., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Continuation of Ser. No. 255,281, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 867,981, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249, Aug. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 838,465, Feb. 19, 1992, abandoned. This application Nov. 9, 1995, Ser. No. 555,797

Int. Cl.[6] A61M *31/00;1/00*

U.S. Cl. 604—66 **7 Claims**



1. Apparatus for supplying liquid under pressure to a body cavity and establishing a predetermined body cavity pressure during an endoscopic procedure, which comprises:

a) a centrifugal inflow pump for supplying liquid at a pressure suitable for said predetermined body cavity pressure:

b) means for generating a body cavity pressure signal representing the pressure in said body cavity comprising pressure sensor means in communication with liquid under pressure delivered by said centrifugal inflow pump at a location upstream of said body cavity and pressure signal processing means for calculating the value of the pressure in said body cavity from said sensed pressure and for generating a calculated body cavity pressure signal as said body cavity pressure signal:

c) conduit means for communicating said centrifugal inflow pump with said body cavity to deliver liquid under pressure to said body cavity;

d) control means responsive to said body cavity pressure signal for increasing or decreasing the pressure of said liquid delivered by said centrifugal inflow pump to thereby maintain said body cavity pressure at said predetermined pressure;

e) said centrifugal inflow pump, when supplying said liquid at said suitable pressure, having an outflow flow rate that is inherently inversely responsive to changes in said body cavity pressure;

f) a liquid outflow cannula for insertion into said body cavity; and

g) a source of suction communicating with said liquid outflow cannula for aspirating liquid from said body cavity via said liquid outflow cannula.

5,630,800

INJECTION SYRINGE FOR THE MISSING AND APPLICATION OF INJECTION SUBSTANCES

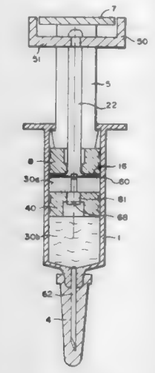
Norbert Blank, Strande, and Joachim Zwick, Kiel, both of Germany, assignors to Ferring Arzneimettel GmbH, Kiel, Germany

Filed Oct. 28, 1994, Ser. No. 330,935

Claims priority, application Germany, Nov. 8, 1993, 43 38 553.2

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—82 **4 Claims**



1. A double chamber injection syringe for mixing and applying injection substances, comprising:

a syringe cylinder;

a first plunger displaceable therein and having a proximal end projecting from the cylinder and a stopper at a distal end engaging against an inner surface of said cylinder to form an injection volume in the syringe cylinder;

a mixing plunger guided for movement in a longitudinal direction through said first plunger and projecting at a proximal end thereof from said stopper, said mixing plunger being provided at its distal end with a mixing piston having at least one opening through which injection substances can pass upon displacement of said mixing piston toward the injection volume; and

a displaceable second stopper disposed between said mixing piston and one end of said syringe cylinder and separating a first chamber and a second chamber on opposite sides of said second stopper, said first chamber containing a substance to be dissolved or suspended, said second chamber containing a solvent or suspension agent, wherein said second stopper carries a valve responsive to advance of said mixing piston relative to said second stopper to provide communication between said chambers within the syringe cylinder, to enable transfer of said solvent or suspension agent to the first chamber by downward displacement of the second stopper in response to depression of the mixing piston.

5,630,801

DEVICE FOR IMPLANTING A MEDICAL PROSTHESIS IN A DUCT OF A HUMAN OR ANIMAL BODY

Maurice Roussigne; Guy Nadal, both of Poitiers, and Gérard Chevillon, Montrouge, all of France, assignors to B. Braun Celsa, Chasseneuil, France

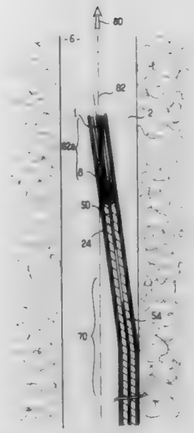
Filed Sep. 29, 1994, Ser. No. 314,649

Claims priority, application France, Oct. 5, 1993, 93 11851

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—95 **8 Claims**

1. A device kit for implanting a medical assembly in a duct of a human or animal body, said duct having an axis, said device comprising:



a tubular implantation sheath adapted for containing said assembly to be implanted, said sheath having a length along an axial line, a distal end, an internal diameter, and being flexible at least over a part of its length;

a hollow tube for controlling movement of the assembly in said sheath, said tube being at least partly flexible, and having external and internal diameters, the external diameter of the tube being less than the internal diameter of said sheath, for being slidingly inserted therein; and

a resiliently deformable centering cable having

(a) a naturally curved axial line;

(b) a length along the axial line, said length being less than that of the sheath; and

(c) an external diameter which is slightly less than said internal diameter of said hollow tube;

so that the cable is adapted to be inserted axially in the hollow tube in a constrained state, and to slide coaxially therein for exerting, through said hollow tube and because of its natural curved line, an internal force on the flexible part of the sheath, tending, by reaction and as a function of the insertion of said cable and said tube in the sheath, to act on the profile of the axial line of said sheath and vary the direction of its distal end.

5,630,802

DEVICE FOR INTRODUCING A CATHETER INTO A BODY CAVITY

Michael Moellmann, Muenster, and Kevin P. Woehr, Felsberg, both of Germany, assignors to B. Braun Melsungen AG, Melsungen, Germany

Filed Apr. 20, 1995, Ser. No. 425,865

Claims priority, application Germany, Apr. 25, 1994, 44 14 345.1; Dec. 8, 1994, 44 43 672.6

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—164 **11 Claims**



1. A device for introducing a catheter into a body cavity, comprising

a catheter having a proximal end and a distal end, and

a needle having a tip and being arranged to be moved within the catheter and to be positioned in such a manner that the tip of the needle protrudes from the catheter on the distal end thereof, wherein

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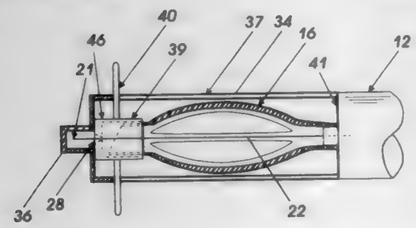
the needle is shorter than the catheter and has a closed proximal end attached to a flexible handling thread having a diameter smaller than that of the needle and protruding from the proximal end of the catheter in each position of the needle within the catheter.

5,630,803

SAFETY CAP ASSEMBLY FOR NEEDLES

Frank A. Tamaro, 22 Pancake Hollow Dr., Wayne, N.J. 07470

Filed Nov. 6, 1995, Ser. No. 554,037
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—263 **19 Claims**



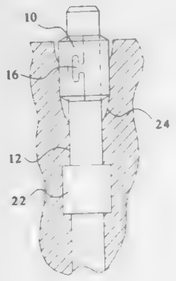
1. A safety needle cap assembly for use in combination with a hub portion for holding a needle, said assembly comprising:
(a) a safety needle cap; and
(b) an elastic sheath means, said elastic sheath means comprising an elastomeric material;
said elastic sheath means including a first end, said first end connected to said safety needle cap;
said sheath means including a second end for connecting to the hub portion;
said safety needle cap having at least a front face portion, and side wall means connected to said front face portion and extending back from said front face portion a minimum distance to a rear end, and at least one arm radially projecting outward from said side wall means of said cap;
said front face portion of said safety needle cap having at least a first opening, larger in diameter than the diameter of the needle;
said safety needle cap being constructed so as to prevent the passage therethrough of the needle other than through said first opening, so that when the needle is attached to the hub portion, and when the needle is positioned within said elastic sheath means with said second end of the said sheath means being connected to the hub portion in a pre-ready condition, and when said cap is moved by an operator so that a first axis of said first opening in said front face portion of said cap is in axial alignment with the axis of the needle, the needle within said cap can now be induced by said operator to pass through said opening in said front face portion of said cap to a ready position, the motion of said cap sliding back over the needle causing said elastic sheath means to be compressed so that when the needle is withdrawn during a procedure involving injecting the needle into a patient, and said compressed elastic sheath means is released, said cap is automatically urged forward by the releasing elastic sheath means over the tip of needle and beyond to a released condition, with said opening in said cap now out of alignment with the axial alignment of the needle, the minimum distance that said side wall means extends backwards and the length of said elastic sheath means in said released condition being sufficient such that the tip of the needle in the pre-ready or released condition of said elastic sheath means is captured within a volume defined by said front face portion and the rear end of said side wall; and,
an enclosure assembly, said enclosure assembly disposed to enclose said safety needle cap and said elastic sheath means in said ready condition,
said enclosure assembly including at least one slot, said slot adapted to cooperate with said radially projecting arm, whereby said safety needle cap assembly is maintained in the ready condition.

5,630,804

METALLIC SILVER-PLATED SILICON RING ELEMENT FOR EXIT SITE DISINFECTION AND A METHOD FOR PREVENTING CONTAMINATION AT AN EXIT SITE

Akio Imada, Osaka, and Tatsumichi Takeda, Tokyo, both of Japan, assignors to Baxter International Inc., Deerfield, Ill.

Filed Feb. 24, 1995, Ser. No. 394,685
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—265 **15 Claims**



1. A ring element for attachment to a length of tubing to prevent contamination at a site through which a portion of the length of tubing extends, the ring element comprising:
a resilient, silicon-based material having a first end and a second end capable of mating to form a hollow cylindrical shell;
an electrically conductive material on a surface of the resilient, silicon-based material;
a male component at the first end of the resilient, silicon-based material; and
a female component at the second end of the resilient, silicon-based material wherein the male component is removably attachable from the female component and further wherein the male component and the female component form a single, non-overlapping layer and continuous connection after insertion of the male component with the female component.

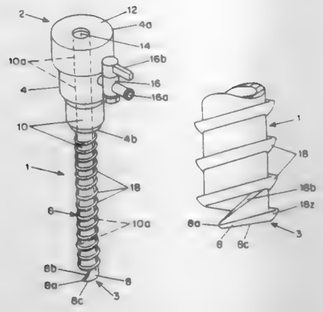
5,630,805

METHOD FOR ACCESSING THE PERITONEAL CAVITY

Artin M. Ternamian, 105 Glenayr Road, Toronto, Ontario, Canada

Division of Ser. No. 239,368, May 6, 1994, Pat. No. 5,478,329. This application Sep. 12, 1995, Ser. No. 527,075
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—274 **6 Claims**

1. A method for accessing the peritoneal cavity comprising the steps of:
(a) providing a cannula having a lumen extending throughout its entire length, the cannula having a distal end and a proximal end, and a body portion between the distal and proximal ends, the distal end comprising means for penetrating tissue layers of the anterior abdominal wall and safely accessing the peritoneal cavity by rotational movement without the use of a trocar, the penetrating means comprising at least one hook having a tip with an upper margin and a lower margin;



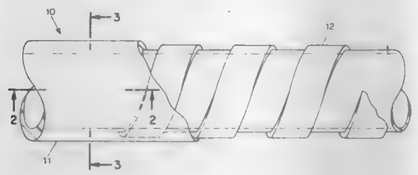
(b) making a small incision in the skin and the underlying tissues down to the anterior fascia, sufficient in size to allow passage of the cannula;
(c) making a smaller incision than in step (b) in the anterior fascia to create a window therein, the window being sufficient in size to accommodate and engage the tip of the hook of the cannula just below the fascia;
(d) placing the distal end of the cannula against the tissues exposed by the hole in the anterior fascia;
(e) engaging the tissues of step (d) with the tip of the hook; and
(f) repeatedly rotating the proximal end of the cannula in the direction in which the tip of the hook is pointing so that the cannula stretches the window in the anterior fascia enough to accommodate the body portion of the cannula while maintaining an airtight seal around the body portion of the cannula, the body portion of the cannula passing through the layers of the anterior abdominal wall until the distal end of the cannula is disposed within the peritoneal cavity.

5,630,806

SPIRAL WRAPPED MEDICAL TUBING

Tsutomu Inagaki, Lagrangeville, N.Y.; Gregory A. Gaston, Hixon, Tenn., and Thomas Eng, Pleasant Valley, N.Y., assignors to Hudson International Conductors, Inman, Ga.

Continuation of Ser. No. 52,055, Apr. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 744,318, Aug. 13, 1991, abandoned. This application Aug. 24, 1995, Ser. No. 519,071
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 **2 Claims**



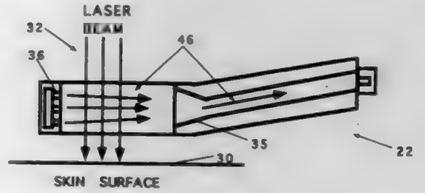
1. A radiopaque tube for use as a medical catheter comprising:
an inner wall layer made from a polymer resin and defining a lumen;
a spiral wound reinforcement layer comprising a strand of a radiopaque material spirally wound about said inner wall layer so that said strand does not overlap itself or any other strand;
a polymer resin outer wall layer over said spiral wound reinforcement layer;
said sprial wound radiopaque layer being embedded between said inner wall layer and said outer wall layer; and
sensor, power/signal, gauge or transducer means connected to at least one strand at either or both ends of the tube.

5,630,807

SUCTION DEVICE WITH JET BOOST

Michael Joffe, 25 Alderbrook, Wrentham, Mass. 02093

Filed Feb. 16, 1996, Ser. No. 601,327
Int. Cl.[6] A61M *1/00*; **B01D** *19/00*
U.S. Cl. 604—315 **11 Claims**



1. A plume suction device for evacuating plume products produced in an open air operation, said device comprising:
a) at least one evacuation orifice;
b) at least one compressed gas jet nozzle spaced apart from said at least one evacuation orifice and located so as to direct compressed gas toward said evacuation orifice;
c) a compressed gas source means for providing a compressed gas flow defining a compressed gas mass flow rate to said at least one compressed gas jet nozzle, wherein said device is configured to contain plumes produced by a pulse laser and further comprising a synchronizing compressed gas control means for synchronizing said compressed gas flow with pulses from said pulse laser, and
d) a suction means for providing a vacuum mass flow rate through said evacuation orifice substantially greater than said compressed gas mass flow rate,
wherein said plume suction device when positioned with said evacuation orifice and said jet nozzle on opposite sides of a plume, products of said plume are entrained in gas exiting said gas jet nozzle and evacuated along with said gas through said evacuation orifice.

5,630,808

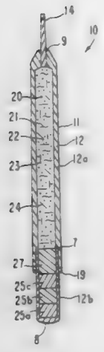
DELIVERY SYSTEM COMPRISING MEANS FOR GOVERNING FLUID INTO THE SYSTEM AND FOR RESTRICTING FLUID INTO THE SYSTEM

Judy A. Magruder, Mt. View; James B. Eckenhoff, Los Altos; Richard Cortese, Los Gatos; Jeremy C. Wright, Los Altos, and John R. Peery, Palo Alto, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 789,241, Nov. 7, 1991, Pat. No. 5,320,616, which is a continuation of Ser. No. 513,369, Apr. 20, 1990, abandoned, which is a division of Ser. No. 283,359, Dec. 13, 1988, Pat. No. 5,034,229. This application Mar. 1, 1994, Ser. No. 203,967
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—892.1 **8 Claims**

1. A dispenser for delivering a beneficial agent formulation to a fluid environment of an animal, and for protecting the beneficial agent from the fluid environment of the animal, the dispenser comprising:
(a) a wall that surrounds an internal lumen, which wall comprises:
(1) a first section that surrounds a first area of the lumen, comprising means impervious to the passage of fluid into the first section, a lead end and a receiving end;

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(2) a second section that surrounds a second area of the lumen, comprising means pervious to the passage of fluid into the second section, is free of the means impervious to the passage of fluid, a receiving end which forms a tight fit with said receiving end in said first section and a closed rear end to form said wall which surrounds said internal lumen, said wall being continuous;

(b) 20 nanograms to 20 grams of a beneficial agent formulation in the first section for protecting the beneficial agent formulation from fluid;

(c) a solid composition comprising a member selected from the group consisting of an osmagent and an osmopolymer in the second section; and

(d) exit means in the wall that connects the exterior of the dispenser with the lead end of the first section for delivering the beneficial agent formulation from the dispenser to the animal over a prolonged period of time.

5,630,809

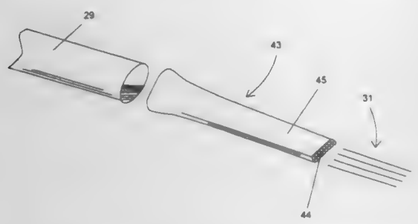
INTRAOCULAR SLIT ILLUMINATOR AND METHOD THEREFOR

Christopher S. Connor, 37 Carriage Ln., Hanover, N.H. 03755

Filed Dec. 19, 1994, Ser. No. 358,946

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—4 **9 Claims**



1. A surgical illumination system for providing illumination of intraocular target structures within an eye during surgical procedures for diagnosis or treatment of ocular conditions, comprising:

an intraocular instrument having a distal end capable of insertion into the eye, said intraocular instrument further comprising:

a light-conducting means for transmitting a light beam;

a means for forming said light beam into a slit-shaped beam, said slit-shaped beam being emitted from said distal end of said instrument when said instrument is inserted into the eye whereby intraocular slit-beam illumination of target structures is provided within the eye.

5,630,810

METHOD OF OPHTHALMOLOGICAL SURGERY

Jeffery J. Machat, 12 Kettredge Court, Richmond Hill, Ontario, Canada

Continuation of Ser. No. 238,857, May 6, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 606,504

Int. Cl.[6] A61N *5/06*

U.S. Cl. 606—5 **10 Claims**



1. An improved method of ophthalmological surgery to change the optical characteristics of an eye through a primary treatment of the corneal tissue of the eye by subjection to ultraviolet irradiation to volumetrically remove a portion of said corneal tissue of said eye by way of photoablative decomposition, the method comprising the initial step of pre-treating a relatively small central portion of said corneal tissue with ultraviolet radiation causing photoablative decomposition of said central portion of said corneal tissue to a pre-determined depth, said pre-treatment of said central portion of said corneal tissue being over and above the primary treatment of said corneal tissue, said pre-treatment step increasing qualitative visual results of the ophthalmological surgery while not significantly changing the refractive characteristics of the corneal tissue.

5,630,811

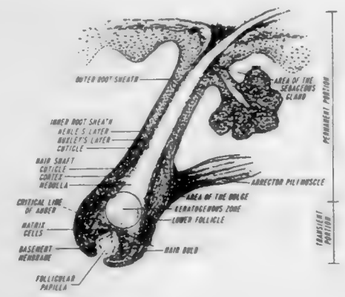
METHOD AND APPARATUS FOR HAIR REMOVAL

Iain D. Miller, 26 Tremont St., Charlestown, Mass. 02129

Filed Mar. 25, 1996, Ser. No. 621,952

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—9 **6 Claims**



1. A laser treatment method for the removal of unwanted hair from the skin of a human, said method comprising the steps of

irradiating on a first occasion a chosen section of human skin containing at least one hair growing within a hair follicular structure with pulsed coherent light with wavelength in the range 650–1000 nm, said light having a peak power level in the range 1–500 Watts and a pulse duration of 1–99 milliseconds, and said diameter of treatment beam being in the, range 1–5 mm.

allowing the skin to heal for a period of 1–3 months, and

irradiating on each of a set of subsequent occasions with pulsed coherent light with a wavelength in the range 650–1000 nm, said light having a peak power level of 1–500 Watts and a pulse duration of 1–99 milliseconds, and said diameter of treatment beam being in the range 1–5 mm.

5,630,812

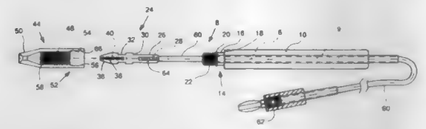
ELECTROSURGICAL HANDPIECE WITH LOCKING NOSE PIECE

Alan G. Ellman, and Jon C. Garito, both of 1135 Railroad Ave., Hewlett, N.Y. 11557

Filed Dec. 11, 1995, Ser. No. 570,714

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—41 **16 Claims**



1. An electrosurgical handpiece comprising:

an elongated handle member having a longitudinal axis and having at a first end a first threaded portion for receiving a nose piece,

first means for removably receiving and holding an electrode, said first means being positioned on the handle member at its first end such that when an electrode is mounted on and gripped by the first means it projects generally parallel to the longitudinal axis in a direction frontward of the handle member,

an electrode connector connected to the first means,

a nose piece having a second threaded portion for threaded engagement with the first threaded portion and configured such that, when rotated while in threaded engagement with the first threaded portion of the handle member, the nose piece functions to cause the first means to tighten and to loosen its grip on the electrode,

second means on the nose piece and handle member and functioning to automatically lock the nose piece to the handle member when the two are in threaded engagement yet still allow a limited amount of rotation of the nose piece relative to the handle member so it can carry out its function of causing the first means to tighten and to loosen its grip on the electrode.

5,630,813

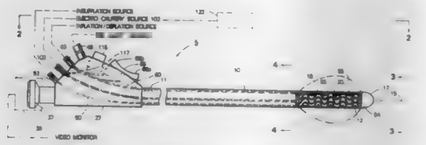
ELECTRO-CAUTERIZING DISSECTOR AND METHOD FOR FACILITATING BREAST IMPLANT PROCEDURE

Maciej J. Kieturakis, 372 Beverly Dr., San Carlos, Calif. 94070

Filed Dec. 8, 1994, Ser. No. 352,335

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—46 **16 Claims**



1. An instrument for dissecting and cauterizing in an interior of a body comprising:

an elongate probe member extending along a longitudinal axis;

an inflatable structure having an inflation chamber and carried around a distal portion of said probe member and in a contracted state having a diameter about equal to the diameter of said probe member and in an expanded state having a greater transverse dimension than that of said contracted state;

an inflation mechanism operatively connected to said inflation chamber thereby to inflate and deflate said inflatable structure between said contracted state and said expanded state; and

an electro-cautery grid comprising a plurality of electrodes carried around an exterior of said inflatable structure, said electrodes operatively connected to an electrical source, said electro-cautery grid being adapted for cauterizing dissected blood vessels;

wherein in said contracted state said electrodes are in an at least partly radial pattern, so that in said expanded state, said at least partly radial pattern is expanded by said inflatable structure to a straightened longitudinal pattern.

5,630,814

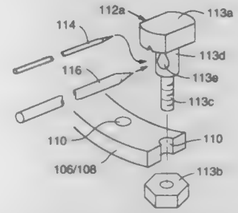
FASTENER FOR EXTERNAL FIXATION DEVICE WIRES AND PINS

John D. Ross, Jr., Ovilla; Mikhail L. Samchukov, and John G. Birch, both of Dallas, all of Tex., assignors to Texas Scottish Rite Hospital for Crippled Children, Dallas, Tex.

Division of Ser. No. 190,654, Feb. 2, 1994, Pat. No. 5,451,225, which is a continuation-in-part of Ser. No. 75,179, Jun. 10, 1993. This application Jun. 2, 1995, Ser. No. 456,646

Int. Cl.[6] A61B *17/62*

U.S. Cl. 606—59 **4 Claims**



1. In combination, an external fixation device frame member and a fixation wire fastening assembly, the fixation wire fastening assembly comprising:

an elongate first fastener member including first and second ends and a shaft therebetween disposed collinearly along a longitudinal shaft axis, wherein said shaft includes a shaft circumference, said shaft further disposed to be selectively rotated in situ about said shaft axis when said shaft is operationally received into a corresponding void in said external fixation device frame member;

a fastener head on said first end of said elongate first fastener member, wherein said fastener head includes a head circumference which is larger than said shaft circumference, said fastener head further disposed to allow torque to be applied to said first fastener member so as to enable said in situ rotation of said shaft;

a noncircular bore in said shaft including a bore axis disposed nonparallelly to said longitudinal shaft axis, wherein said noncircular bore includes a minimum radius and a maximum radius, and said maximum radius is directed generally toward said first end of said elongate first fastener member; and

engagement means on said second end of said elongate first fastener member for engaging a second fastener member.

5,630,815

EXTERNAL FIXATOR FOR MILITARY USE

Anthony P. Pohl, 8 Caralue Road, Marino, South Australia, Australia, and Bruce H. Ide, 7 Orchard Court, Newton, South Australia, Australia

Filed Aug. 2, 1995, Ser. No. 510,345

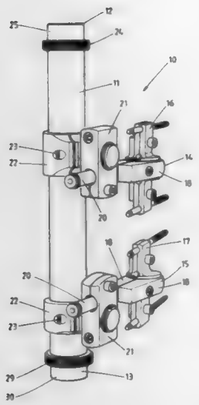
Claims priority, application Australia, Aug. 5, 1994, PM7311

Int. Cl.[6] A61B *17/60*

U.S. Cl. 606—59 **15 Claims**

14. An external fixation device which is positionable in a first mode wherein the device is adapted for connection to a bone for rigid fixation thereof and in a second mode wherein the device is

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configured as a brace-and-bit, said device including a tubular housing with a chuck-forming member and a handle forming member carried therein, said handle forming member and said chuck-forming member, when said device is in said second mode, being connected to the housing at opposite ends thereof and being laterally offset from said housing.

5,630,816

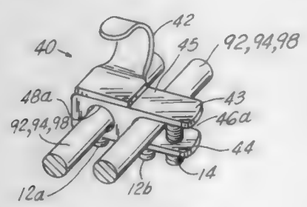
DOUBLE BARREL SPINAL FIXATION SYSTEM AND METHOD

Parviz Kambin, 239 Chester Rd., Devon, Pa. 19333

Filed May 1, 1995, Ser. No. 431,842

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **24 Claims**



1. A surgically installed spinal fixation system comprising:

(a) a body member having two generally parallel faces and a first opening therethrough adapted to receive a first longitudinal member; the centerline of said first opening is positioned generally along a spinal axis;

(b) said body member also having a slotted second opening is positioned generally along said spinal axis whereby a second longitudinal member can be inserted into said slotted second opening;

(c) a hook member connected to the outer surface of one of said generally parallel faces;

(d) means for securing the outer surface of said first longitudinal member to the body member;

(e) means for securing the outer surface of said second longitudinal member to the body member.

5,630,817

ROD ATTACHMENT DEVICE FOR RACHIDIAN ORTHOPAEDY

Pascal Rokegem, Saint Laurent Blangy, and Jean-Paul F. Steib, Strasbourg, both of France, assignors to Eurosurgical, Beaurains, France

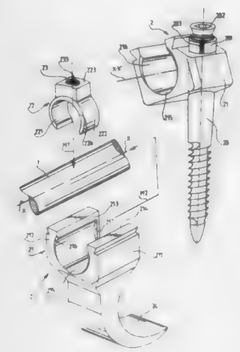
PCT No. PCT/FR93/01128, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/10929, PCT Pub. Date May 26, 1994

PCT Filed Nov. 17, 1993, Ser. No. 436,386

Claims priority, application France, Nov. 18, 1992, 92 13868

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **15 Claims**



1. An arrangement for fastening a member on a rod for a rachidian orthopaedic instrumentation, comprising:

a U-shaped body adapted to be secured to said member, said U-shaped body having a bottom portion and two legs extending from said bottom portion, said legs having inner faces facing toward one another and free ends, and wherein the rod is insertable between said legs;

an intermediate sleeve having substantially the shape of a slit ring adapted to be mounted onto the rod and within said U-shaped body, said intermediate sleeve having wings, each of said wings defining a free end and wherein said free ends of said wings define a slot therebetween, said wings further having opposing inner faces and outer faces substantially opposite from said inner faces,

clamping means secured to said intermediate sleeve and adapted to exert a radial pressure upon the rod situated in said intermediate sleeve such that the rod is pushed in a direction towards said slot, and

wherein said slot of said intermediate sleeve has a width, said width being smaller than the diameter of the rod such that the rod is adapted to move toward said slot upon said exertion of said radial pressure upon the rod by said damping means such that the rod bears against said free ends of said wings and axial motion of the rod in relation to said intermediate sleeve is prevented and the rod causes said wings to spread apart thereby enlarging said slot such that said outer faces of said wings are pressed against said inner face of said legs of said U-shaped body to securely retain said intermediate sleeve within said U-shaped body by a wedging effect.

5,630,818

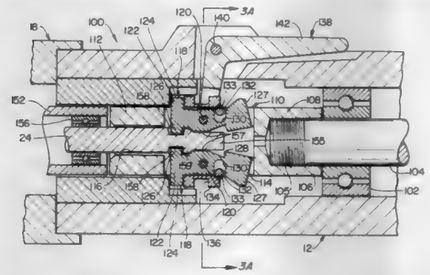
TOOL HOLDING MECHANISM FOR A MOTOR DRIVEN SURGICAL INSTRUMENT

Eddy H. Del Rio, Royal Palm Beach, and William E. Anspach, Jr., Palm Beach Gardens, both of Fla., assignors to The Anspach Effort, Inc., Palm Beach Gardens, Fla.

Division of Ser. No. 320,057, Oct. 7, 1994. This application Sep. 20, 1995, Ser. No. 531,136

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—80 **20 Claims**



1. An apparatus for attaching a tool bit to a surgical instrument having a housing which contains a motor that drives a spindle, said apparatus comprising:

a tool bit having a longitudinal shaft, said shaft including a slot formed to provide a longitudinal flat surface;

a body having a first end portion for attaching to the spindle, a central portion with a cavity therein, and a second end portion having an aperture therethrough in communication with the cavity wherein the aperture is adapted to receive the shaft of the tool bit that extends into the cavity;

a first lock pawl movably mounted in the cavity and having a engaging surface for contacting the surface of the shaft and a first tab having a flat surface, said flat surface being disposed to enter a slot in the shaft and face said longitudinal flat surface when said first lock pawl is in a first position and retracted from the slot when said first lock pawl is in a second positions, said first tab prevent longitudinal retraction of the tool bit from the cavity when the first lock pawl is in the first position;

an actuator which engages said first lock pawl to produce movement between the first and second positions.

5,630,819

ACETABULAR BONE GRAFT IMPACTOR

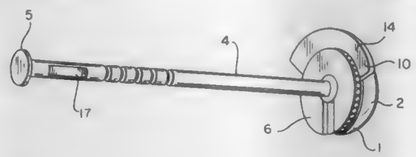
Alan Ashby, Caen, France; Denis Pichon, Middlesex, England, and Tom J. Slooff, Westerbeek, Netherlands, assignors to Howmedica International, Shannon, Ireland

Filed Aug. 2, 1995, Ser. No. 510,576

Claims priority, application United Kingdom, Aug. 11, 1994, 9416215

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—81 **2 Claims**



1. An acetabular bone graft impactor comprising a shaft having an anvil at one end and a head at a second end, a contact surface at least part of which is located on said head and, a flange releasably connected to said second end of said shaft forming at least part of said contact surface, wherein the flange is connected to the head and projects radially outwardly from the contact surface thereon; and

in which said flange is a sector of a circle.

5,630,820

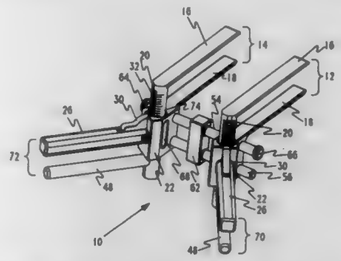
SURGICAL BICOMPARTMENTAL TENSIOMETER FOR REVISION KNEE SURGERY

Ronald C. Todd, Austin, Tex., assignor to Sulzer Orthopedics Inc., Austin, Tex.

Filed Dec. 5, 1994, Ser. No. 349,447

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—90 **13 Claims**



1. A surgical apparatus for spreading a distal end of a femur away from a proximal end of a tibia at a knee joint of a patient thereby placing adjacent collateral ligaments in tension, said apparatus comprising

means for spreading a medial side of said knee,

means for spreading a lateral side of said knee, and

a pair of parallel rods connecting said means for spreading said medial side and said means for spreading said lateral side for holding said means for spreading in selectable non-rotatable spaced relation with respect to each other, each rod slidingly received in at least one of said means for spreading.

5,630,821

APPARATUS FOR IMPLANTING AN INTRAOCULAR LENS

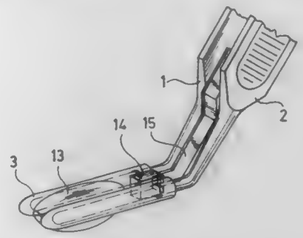
Dieter Klaas, Bahnhofstrasse 5, D-86316 Friedberg, Germany

Filed Apr. 11, 1995, Ser. No. 420,007

Claims priority, application Germany, Feb. 20, 1995, 195 05 761.9

Int. Cl.[6] A61F *9/00*; **A61B** *17/28*

U.S. Cl. 606—107 **22 Claims**



1. An apparatus for implanting an intraocular lens comprising:

first and second gripping elements having front ends which are movable towards each other for holding the intraocular lens therebetween for implanting;

at least one contact element mounted rotatably on each of the gripping elements; and

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an abutment disposed adjacent to rearward regions of the contact elements and between the contact elements;

the thickness of the contact elements being such that the intraocular lens is securely held between the contact elements while the rearward regions of the contact elements bear against side surfaces of the abutment so that rotary movement of the contact elements is prevented.

5,630,822

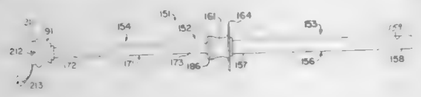
LAPAROSCOPIC TISSUE REMOVAL DEVICE

George D. Hermann, Los Gatos; Kenneth H. Mollenauer, Santa Clara; Michelle Y. Monfort, Los Gatos; Timothy J. Ryan, and Shigeru Tanaka, both of Palo Alto, all of Calif., assignors to General Surgical Innovations, Inc, Palo Alto, Calif.

Continuation-in-part of Ser. No. 226,386, Apr. 12, 1994, abandoned, which is a continuation of Ser. No. 87,214, Jul. 2, 1993, abandoned. This application Jan. 20, 1995, Ser. No. 376,027

Int. Cl.[6] A61B *17/22*

U.S. Cl. 606—114 **14 Claims**



7. A laparoscopic tissue removal device for use with an introducer having a tubular housing, the laparoscopic tissue removal device comprising:

an elongate tubular member having a proximal end and a distal end;

an elongate tubular sheath having a proximal portion and a distal portion and a passage in communication with said elongate tubular member, the distal portion of said sheath being expandable from a compressed configuration, the distal portion having an open end, the proximal portion of said sheath secured to the proximal portion of said elongate tubular member and the distal portion of said sheath extending beyond the distal end of said elongate tubular member, and;

an outer sleeve comprising an elongate tube, said outer sleeve slidably mounted over said elongate tubular member, said outer sleeve being movable relative to said elongate tubular member and said sheath between a first position wherein the outer sleeve surrounds at least a part of the distal portion of said sheath to compress said expandable portion of said sheath and a second position wherein at least a part of the distal portion of said sheath extends out of the outer sleeve and said sheath can expand.

5,630,823

APPARATUS FOR FRAGMENTATION OF A LUNG OR HEART EMBOLUS

Thomas Schmitz-Rode, and Rolf W. Günther, both of Aachen, Germany, assignors to William Cook Europe A/S, Bjaeverskov, Denmark

Filed Jun. 2, 1995, Ser. No. 459,272

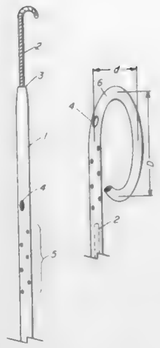
Claims priority, application Germany, Jun. 17, 1994, 9409863 U

Int. Cl.[6] A61B *17/22*

U.S. Cl. 606—128 **14 Claims**

1. An apparatus for fragmentation of a lung or heart embolus, comprising:

a torsionally stable catheter (**1**) having a distal end and a proximal end and a guide wire (**2**) located within the lumen of the catheter, wherein the distal end of the catheter (**1**) has a preformed bend (**6**), said catheter having sufficient rigidity to retain said preformed bend, which is controllable with guide wire (**2**) wherein an opening is located in the distal end of the



catheter (**1**) in the side of the catheter away from said bend and which is in line with a longitudinal central axis of the catheter (**1**) in order that the rotation of the catheter will result in the fragmentation of an embolus.

5,630,824

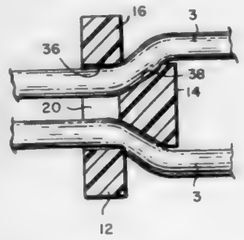
SUTURE ATTACHMENT DEVICE

Rickey D. Hart, Plainville, Mass., assignor to Innovasive Devices, Inc., Hopkinton, Mass.

Filed Jun. 1, 1994, Ser. No. 252,444

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—139 **18 Claims**



1. A device for locking a suture to a tissue, comprising:

a base element having a proximal surface and a distal surface, the base element having defined between the distal and proximal surfaces a first axial passage for receiving a suture; and

a locking element engaged with the base element and having:

a peripheral wall having defined therein a second passage terminating in an aperture defined in the peripheral wall for receiving the suture from the first passage; and

proximal and distal ends defining a longitudinal axis, wherein the locking element is adapted for movement along the longitudinal axis from:

a first position, in which the locking element is engaged with the proximal surface of the base element and can move in a proximal-distal direction relative to the suture threaded through the first and second passages; to

a second position, in which the locking element is disposable within the first passage by a force acting parallel to the longitudinal axis and parallel to the suture received within the first passage, so as to trap the suture between the locking element and the base element.

5,630,825

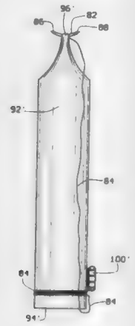
MAGAZINE FOR LOADING A NEEDLE ONTO A STITCHING INSTRUMENT AND FOR LOADING A LENGTH OF SUTURE ONTO A SUTURE DISPENSING INSTRUMENT

Roger A. de la Torre, 48 Dauphine Dr., Lake St. Louis, Mo. 63367; James S. Scott, 131 Muirfield Crest Ct., St. Charles, Mo. 63304, and James E. Jervis, 495 Walsh Rd., Atherton, Calif. 94027

Filed Apr. 27, 1995, Ser. No. 429,822

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 **15 Claims**



1. An apparatus for loading a needle onto a stitching instrument and for holding a loop of suture attached to the needle, the apparatus comprising:

a needle and a length of suture secured thereto;

a base having a longitudinal length with opposite proximal and distal ends and a passageway extending through the base between the proximal and distal ends, the passageway being configured to enable insertion of a stitching instrument through the passageway from the base proximal end toward the base distal end, the base having an exterior surface holding a loop formed in the length of suture adjacent the proximal end of the base where insertion of a stitching instrument through the passageway will also insert the stitching instrument through the loop of suture; and

the base having a holder spaced longitudinally from the loop of suture and positioned adjacent the distal end of the base, the holder being configured for holding the needle on the base where the needle can be removed from the holder by a stitching instrument inserted through the passageway.

5,630,826

TUBULAR SURGICAL CUTTING INSTRUMENTS WITH COATING

Suri A. Sastri, 10 Bicentenial Dr., Lexington, Mass. 02173

Continuation of Ser. No. 902,769, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 570,026, Aug. 20, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 26,123

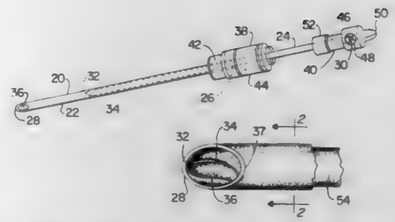
Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **19 Claims**

1. A tubular surgical cutting instrument comprising:

a) An inner tubular member having a proximal end and a distal end with a cutting edge disposed at said distal end;

b) An outer tubular member having a proximal end and a distal end with an opening disposed at said distal end, the inner channel of said outer tubular member having a diameter sufficient to accommodate the rotation and positioning of said inner tubular member so that said cutting edge of said inner tubular member is adjacent to said opening in said outer tubular member to provide said cutting edge with access through said opening to the tissue to be severed; and



c) A circumferential surface coating of a metal from the group consisting of silver and gold present along at least a portion of the working length of at least one of the outer surface of said inner tubular member and the inner surface of said outer tubular member whereby a wear resistant surface is provided to control and facilitate the rotation of said inner tubular member within said outer tubular member.

5,630,827

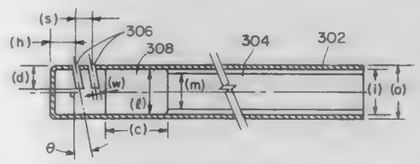
VITREOUS REMOVING APPARATUS

Gerrit J. Vijfvinkel, Geervliet, Netherlands, assignor to Dutch Ophthalmic Research Center International bv, Holland, Netherlands

Filed Jun. 19, 1995, Ser. No. 492,421

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—171 **19 Claims**



1. A vitreous removing apparatus for intraocular surgery comprising:

an outer tube having an open proximal end and a closed distal end, and a plurality of ports near the closed end for allowing vitreous tissue to flow, each port forming a slit having a substantially uniform width of about 0.1 mm or less; and

an inner tube concentric with the outer tube, snugly fitted inside the outer tube, having a sharp edge on a distal end for cutting vitreous tissue by sliding back and forth across the ports, and being open at an end of the tube adjacent to the sharp edge to pass cut portions of vitreous tissue,

wherein said slit of the outer tube is angled at a significant angle of about 10 degrees or less from a plane perpendicular to the longitudinal axis of the outer tube, each slit having proximal and distal edges extending through a center between edge ends, each end of each edge being proximal relative to the respective center of the edge.

5,630,828

LOW COST DISPOSABLE LANCET

James A. Mawhirt, Brooklyn, N.Y.; Anthony F. Kuklo, Jr., Bridgewater, N.J.; Donald Foggia, Ocean, N.J., and Donald W. Allen, Point Pleasant, N.J., assignors to International Technodyne Corporation, Edison, N.J.

Filed Apr. 17, 1996, Ser. No. 633,625

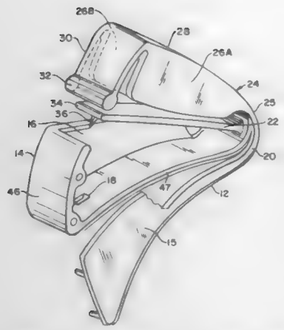
Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—187 **24 Claims**

1. A safety lancet device, comprising:

a housing having an aperture and a cam disposed on the inner surface of said housing;

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a trigger coupled to said housing, said trigger being movable relative to said housing between a first position and a second position, said trigger further having a tip positioned relative to said cam such that said tip slides over said cam when said trigger is moved from said first position to said second position;

a beam member including a cutting blade, enclosed within said housing and pivotally coupled thereto, said trigger being operative for moving said blade through said aperture when said trigger is moved from said first position to said second position; and

wherein said cam provides a predetermined measure of resistance to the movement of said trigger from said first position to said second position, wherein a user applying a force to said trigger which is sufficient to overcome said predetermined measure of resistance causes said tip of said trigger to slide over said cam and further causes said blade to accelerate through said aperture of said housing to incise the user's skin; and

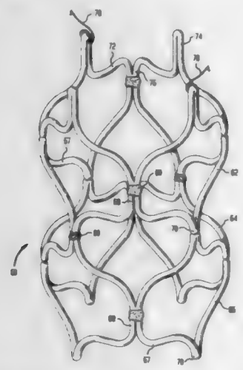
wherein said trigger includes blade retracting means for automatically allowing said blade to retract back into said housing after incising the user's skin independent of the user's interaction.

5,630,829

HIGH HOOP STRENGTH INTRALUMINAL STENT

Karl L. Lauterjung, Munich, Germany, assignor to InterVascular, Inc., Clearwater, Fla.

Filed Dec. 9, 1994, Ser. No. 353,066
Int. Cl.[6] A61M *29/00;* **A61F** *2/06*
U.S. Cl. 606—198 **26 Claims**



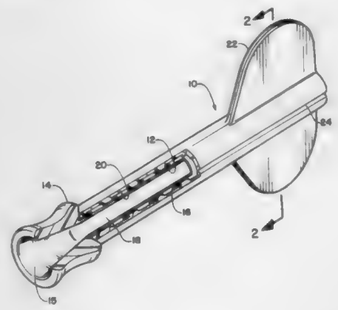
1. An intraluminal stent, comprising a plurality of elongated members extending in a circumferential direction around an axis and curving in two opposite directions transverse to said circumferential direction, each said member being curved over substantially its entire extent, said members joining one another to define cusps pointing in directions transverse to said circumferential direction each said cusp including a portion of one member curving in a direction away from a portion of an adjacent member.

5,630,830

DEVICE AND METHOD FOR MOUNTING STENTS ON DELIVERY SYSTEMS

Marcel A. E. Verbeek, Geleen, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 10, 1996, Ser. No. 631,750
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **21 Claims**



1. A device for mounting a stent on a delivery system which comprises:

an elongated body having an axial aperture therethrough;

a stent in said axial aperture in engagement with a wail of said aperture;

a sleeve of low friction material in said stent;

tubular entrance means having a proximal end secured to said sleeve and extending beyond an end of said axial aperture for axially moving said sleeve from said axial aperture; and

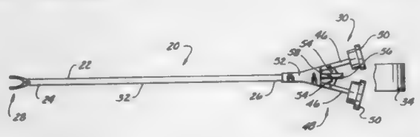
means for permitting said body to be split along said axial aperture comprising grooves running substantially parallel to said axial aperture in an exterior surface of said body to remove said body from said stent.

5,630,831

FINGERLIKE MEDICAL INSTRUMENTS FOR USE IN LAPAROSCOPIC PROCEDURES

Christopher J. Lahr, 921 Cottonhouse Dr., Charleston, S.C. 29412

Filed May 4, 1995, Ser. No. 434,944
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—207 **10 Claims**



1. A medical instrument for use in a laparoscopy and operable by at least one finger of a surgeon, the instrument comprising,

a long, slender body having opposite ends which are distal and proximal relative to a person holding the instrument, the distal end of the body being adapted to be inserted into a patient during the laparoscopy,

a pair of tips adjacent the distal end of the body, at least one of said pair of tips being movable with respect to the other of said tips,

tip actuation means movably connected at the proximal end of the body for actuating movement of the at least one movable tip, the tip actuation means being longitudinally aligned with said pair of tips and coplanar therewith whereby motion of the tip actuation means in a plane extending through the longitudinal axis of the body effects motion of the at least one movable tip with respect to the other of said pair of tips in the same plane, and

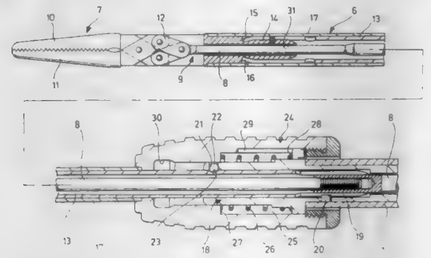
said tip actuation means including at least one finger element having an opening facing generally longitudinally outward from the body for receiving the finger in a generally longitudinal direction of the body, the finger element being movably mounted to the body for effecting movement of the at least one moveable tip and arranged such that the finger cooperating with the finger element translates in the plane extending through the longitudinal axis of the body such that movement of the tip generally follows a pinching movement of the fingers.

5,630,832

TUBULAR-SHAFTED SURGICAL INSTRUMENT

Nicola Giordano, Villingen-Schwenningen; Pedro Morales; Markus Nesper, both of Tuttlingen; Lino Taddia, Wurmlingen, and Dieter Weisshaupt, Immendingen, all of Germany, assignors to Aesculap AG, Tuttlingen, Germany

PCT No. PCT/EP94/03308, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/15720, PCT Pub. Date Jun. 15, 1995
PCT Filed Oct. 6, 1994, Ser. No. 656,252
Claims priority, application Germany, Dec. 8, 1993, 43 41 736.1
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—208 **18 Claims**



1. A tubular-shafted surgical instrument comprising:

two handle parts articulatedly connected to each other,

a tube held on one handle part,

a tool releasably mounted at an end of said tube,

a rod-shaped actuating element for said tool, said actuating element being mounted for longitudinal displacement in said tube and being articulatedly connected to said other handle part via a cylindrical or spherical end,

a releasable connection between said tube and actuating element being releasably connected to said two handle parts,

said tube being pushable into a tubular receptacle on said one handle part and axially fixable therein by at least one radially moveable locking body which in an end position enters into a positive connection with said tube, and

a retaining member being mounted on said other handle part, said retaining member at least partly embracing said cylindrical or spherical end of said actuating element in one end position and being moveable into another end position in which said cylindrical or spherical end is removable from said other handle part in the longitudinal direction, wherein:

said locking body is a ball,

said radial movement of said locking body is delimited by a stop resting against the outer side of said locking body, said stop being formed by a sleeve axially displaceable on said tubular receptacle,

said sleeve is displaceable relative to said locking body such that said locking body is radially outwardly displaceable to different extents,

said sleeve forms a stop for an outer tube which is mounted for axial displacement on said tube, where said sleeve in a forward end position locks the releasable mounting of said tool at the opposite end of said tube, and

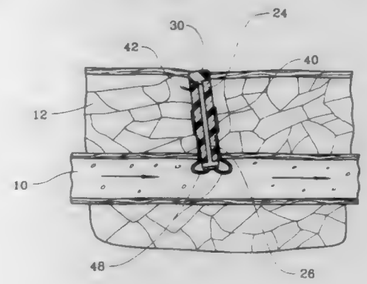
said sleeve is displaceable in the direction towards said handle parts in order to release the locking of said tube.

5,630,833

DEVICE FOR SEALING HEMOSTATIC INCISIONS

Georges Katsaros, Jupille, Belgium; David G. Thomas, Town and Country, and Richard D. Allison, St. Louis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 915,472, Jul. 16, 1992, Pat. No. 5,413,571. This application Mar. 24, 1995, Ser. No. 409,787
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—213 **12 Claims**



1. A device for sealing an incision which extends between the skin and a blood vessel in the body of a patient, the device comprising:

a bioabsorbable member for sealing the incision wherein said bioabsorbable member includes a first member having an elongate shaft member having a lumen therein and an expandable member operatively associated therewith, said shaft member and expandable member being sized to extend through the incision and at least one of said first member and said expandable member being constructed in such a manner so as to be absorbable within the body of the patient after a period of time sufficient for permitting the effective sealing of the incision.

5,630,834

ATRIAL DEFIBRILLATOR WITH MEANS FOR DELIVERING THERAPY IN RESPONSE TO A DETERMINATION THAT THE PATIENT IS LIKELY ASLEEP

Gust H. Bardy, Seattle, Wash., assignor to Medtronic, Inc., Minneapolis, Minn.

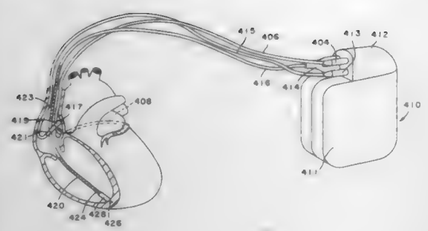
Filed May 3, 1995, Ser. No. 434,899
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **12 Claims**

1. A device for delivering defibrillation pulses to a patient's atrium, comprising:

means for sensing atrial fibrillation;

means for determining that the patient is likely to be asleep; and

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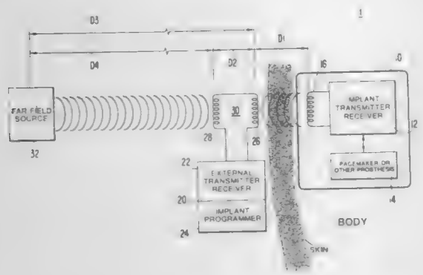
means for delivering a defibrillation shock to the patient's atrium in response to the determination that said patient is likely to be asleep and upon sensing atrial fibrillation.

5,630,835

METHOD AND APPARATUS FOR THE SUPPRESSION OF FAR-FIELD INTERFERENCE SIGNALS FOR IMPLANTABLE DEVICE DATA TRANSMISSION SYSTEMS

Robert R. Brownlee, Ormond Beach, Fla., assignor to Cardiac Control Systems, Inc., Palm Coast, Fla.

Filed Jul. 24, 1995, Ser. No. 506,302
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—60 **26 Claims**



1. An electronic device for non-invasively communicating with an implanted electronic device, comprising:

a transceiver, including an antenna, a transmitter portion and a receiver portion, said transceiver including means to send data to and receive data from said implanted device; and

said antenna comprising first and second coils arranged in serial phase opposition to suppress far-field interference signals when said transceiver is receiving data from said implanted device.

5,630,836

TRANSCUTANEOUS ENERGY AND INFORMATION TRANSMISSION APPARATUS

Edward K. Prem, Allison Park, and David E. Cuervo, McMurray, both of Pa., assignors to Vascor, Inc., Pittsburgh, Pa.

Filed Jan. 19, 1995, Ser. No. 375,357
Int. Cl.[6] A61B *17/36;* **A61N** *1/37*
U.S. Cl. 607—61 **44 Claims**

1. An apparatus for transcutaneously providing a first power signal to and communication of a first and a second information signal with an implantable device, said apparatus comprising:

a. an external unit including first power means for generating said first power signal, first signalling means for generating said first information signal, first receiving means for receiving said second information signal, and first coupling means connected to said first power means and said signalling means and said first receiving means, said first coupling means for independently coupling said first power signal and said first information signal; and

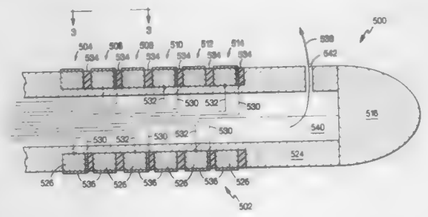
b. an internal unit including second power means for receiving said first power signal, second signalling means for generating said second information signal, second receiving means for receiving said first information signal, and second coupling means connected to said second power means and said second signalling means and said second receiving means for independently coupling said first power signal and said second information signal.

5,630,837

ACOUSTIC ABLATION

Robert J. Crowley, Wayland, Mass., assignor to Boston Scientific Corporation, Natick, Mass.

Continuation-in-part of Ser. No. 86,523, Jul. 1, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 415,514
Int. Cl.[6] A61F *7/00*
U.S. Cl. 601—2 **76 Claims**



1. A catheter system for tissue ablation, comprising:

a catheter body of extended length constructed for delivery to locations within a body of a living being, said catheter body being adapted for connection to a power source,

an array of acoustic transducers disposed along the length of said catheter body and constructed for receiving power from said power source and for generating acoustic energy, in response to said received power, sufficient for ablation of tissue, and

a mechanism for controlling one or more of said ablation transducers independently of other ones of said transducers to produce a desired acoustic energy pattern for ablating tissue at a select location spaced from said catheter.

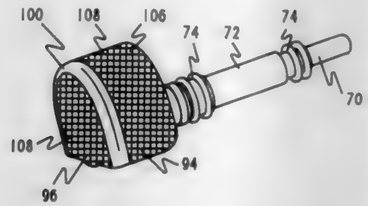
at least one of said acoustic transducers having an annular configuration designed for generating acoustic energy that radiates in a radial pattern surrounding the circumference of said catheter body.

5,630,838

MUSCLE STIMULATION ELECTRODE FOR IMPLANTABLE CARDIAC STIMULATION DEVICE WITH WARNING SYSTEM

David Prutchi; Patrick J. Paul, and Lawrence J. Stotts, all of Lake Jackson, Tex., assignors to Sulzer Intermedics, Inc., Angleton, Tex.

Filed Jul. 19, 1996, Ser. No. 684,430
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—116 **18 Claims**



1. An implantable cardiac therapy system comprising

means for producing a cardiac therapy,

at least one electrode adapted to be implanted adjacent a patient's heart for delivering said stimulation therapy to the heart,

a cardiac stimulation lead electrically connecting said therapy producing means to said electrode,

a header on said therapy producing means,

at least one socket in said header on said therapy producing means, said socket having electrical connections therein electrically connected to said therapy producing means,

means for detecting a predetermined condition,

means for producing a physiologic stimulation to warn said patient of said detected condition, and

a pin electrode, said pin electrode having a shaft configured to be inserted into said socket and to make electrical contact with the electrical connections therein and having electrode means substantially immediately adjacent said socket when said shaft is inserted in said socket, wherein said electrode means is a hood which surrounds a portion of said header.

5,630,839

MULTI-ELECTRODE COCHLEAR IMPLANT AND METHOD OF MANUFACTURING THE SAME

Scott S. Corbett, III; John W. Swanson; Jerry Martyniuk, all of Portland, Oreg.; Thomas R. Clary, Issaquah, Wash.; Francis A. Spelman, Seattle, Wash.; Ben Clopton, Bainbridge Island, Wash.; Arne H. Voie, and Claude N. Jolly, both of Seattle, Wash., assignors to PI Medical Corporation, Portland, Oreg., and University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 482,189, Jun. 7, 1995, Pat. No. 5,515,848, which is a continuation of Ser. No. 136,650, Oct. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 46,658, Apr. 12, 1993, abandoned, which is a division of Ser. No. 781,494, Oct. 22, 1991, Pat. No. 5,201,903. This application Aug. 18, 1995, Ser. No. 516,861
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—137 **27 Claims**

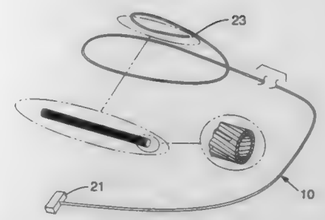
1. A multi-electrode cochlear implant, comprising:

a flexible core;

a plurality of fine wires, each having a wire surface collectively helically disposed about said tube;

a plurality of dielectric material coatings, each coating disposed about a unique one of said wires;

a quantity of a second dielectric material having an outer surface and disposed about said plurality of fine wires and holding said plurality of fine wires together about said core;



a first opening extending inwardly from said outer surface, through said first and second dielectric material, to a portion of a first one of said wire surfaces, thereby forming a first electrode; and

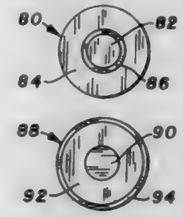
a second opening extending inwardly from said outer surface, through said first and second dielectric material, to a portion of a second one of said wire surfaces, thereby forming a second electrode.

5,630,840

CLAD COMPOSITE STENT

David W. Mayer, Bloomington, Minn., assignor to Schneider (USA) Inc, Plymouth, Minn.

Division of Ser. No. 239,595, May 9, 1994, which is a continuation-in-part of Ser. No. 6,216, Jan. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,334
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **22 Claims**



1. A body compatible device comprising:

an elongate filament substantially uniform in lateral cross-section over a length or the filament comprising an elongate core and an elongate case surrounding the core substantially over said length; and

a barrier layer surrounding the core and disposed between the core and the case substantially over said length;

wherein the case is constructed of a case material having a yield strength of at least 100,000 psi at 0.2 percent offset, and the core is constructed of a core material from the group consisting of: tantalum, a tantalum-based alloy, platinum, a platinum-based alloy, tungsten, a tungsten-based alloy, and combinations thereof.

5,630,841

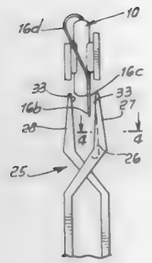
LENS HAPTIC CONTROL

Henry H. McDonald, 65 N. Madison, Suite 810, Pasadena, Calif. 91101

Filed Mar. 21, 1996, Ser. No. 619,365
Int. Cl.[6] A61F *2/16;* **A61B** *17/28*
U.S. Cl. 623—6 **13 Claims**

1. The method of controlling a lens haptic during insertion of an artificial lens into the eye, that includes

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a) releasably supporting an end portion of the haptic in a supported position relative to the lens during lens insertion into the eye, such supporting being independent of the lens itself,

b) and permitting the supported end portion of the haptic to progressively release from support as the lens becomes positioned in the eye,

c) and including tensioning the haptic in said supported position, whereby the tensioned haptic aids release of the lens from support.

5,630,842

BIOCOMPATIBLE SURGICAL IMPLANT

Teresa Brodniewicz, Laval, Canada, assignor to Haemacure Biotech Inc., Quebec, Canada

Continuation-in-part of Ser. No. 919,252, Jul. 27, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 186,590

Int. Cl.[6] A61F *2/12*

U.S. Cl. 623—8 **23 Claims**

1. A surgical prosthesis for soft tissue reconstruction or augmentation in a mammal comprising a resorption-resistant semisolid fibrin coagulate consisting essentially of insoluble fibrin polymer strands stabilized against biodegradation and sealed in a biocompatible, resorption-resistant plastic shell, wherein the semisolid fibrin coagulate is produced from a fibrinogen solution consisting essentially of fibrinogen, thrombin, and factor XIII in amounts sufficient to substantially convert the fibrinogen to insoluble fibrin polymer.

5,630,843

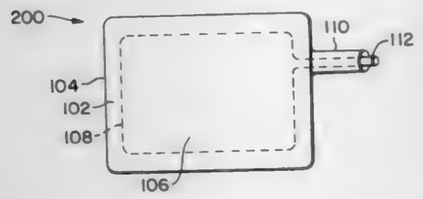
DOUBLE CHAMBER TISSUE EXPANDER

Paul H. Rosenberg, 1600 Parker Ave. #27D, Fort Lee, N.J. 10021

Filed Jun. 30, 1994, Ser. No. 268,508

Int. Cl.[6] A61F *2/12*

U.S. Cl. 623—8 **14 Claims**



1. A tissue expansion device for subcutaneous implantation and delivery of a tissue expansion promoter in a patient comprising:

an expansion and delivery means for subcutaneous implantation and tissue expansion comprising an expandable outer bladder prepared from a stretchable porous material capable of discharging an infusion solution therethrough, and

an expandable inner bladder disposed within said outer bladder and prepared from a stretchable non-porous material, which inner bladder and outer bladder are non-adherent, said inner bladder serving to effectuate the majority of the expansion of said expansion and delivery means;

wherein said inner and outer bladders are attached to a substantially non-stretchable and non-expandable rigid backplate member;

means for delivering said infusion solution adapted for location external to said patient in use, and in fluid communication with an interior of said outer bladder; and

means for inflating said inner bladder adapted for location external to said patient in use, and in fluid communication with an interior of said inner bladder.

5,630,844

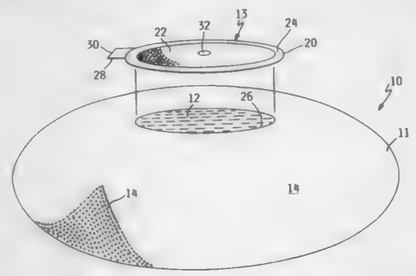
BIOCOMPATIBLE HYDROPHOBIC LAMINATE WITH THERMOPLASTIC ELASTOMER LAYER

Aydin Dogan, Köln, Germany; Kenneth C. Kredovski; Adam D. Kredovski, both of Roseville, Minn., and Thomas G. Hayes, Minneapolis, Minn., assignors to Novamed Medical Products Manufacturing, Inc., Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 473,284

Int. Cl.[6] A61F *2/12*

U.S. Cl. 623—8 **32 Claims**



1. A biocompatible hydrophobic laminate structure for enveloping matter, the laminate structure and matter to be introduced into a host's body, the laminate structure comprising:

a) at least one rubber layer which is biocompatible with an inside portion of the body or body tissue or body fluid;

b) a hydrophobic, water vapor barrier membrane laminated on each rubber layer to minimize the permeation of moisture through the laminate structure;

c) with the hydrophobic water vapor barrier membrane being isolated from the inside portion of the body or body tissue or body fluid by the at least one rubber layer; and

d) with the hydrophobic membrane comprising a thermoplastic elastomer which is substantially impermeable to water vapor and which is present in the membrane in a concentration effective such that the membrane also is substantially impermeable to water vapor and such that, when formed as an implantable water-based fluid enveloping structure, said structure prevents substantial permeation of the water vapor contained therein, barring rupture of said implantable structure.

5,630,845

Patent Not Issued For This Number

5,630,846

AGENT FOR TREATING TEXTILE, METHOD FOR TREATING TEXTILE AND TREATED TEXTILE

Kazuto Hara; Yasuo Itami; Tetsuya Masutani; Nobuyuki Nose; Takashi Enomoto; Akihiko Ueda; Taro Sano, and Motonobu Kubo, all of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

PCT No. PCT/JP93/00089, § 371 Date Aug. 5, 1994, § 102(e) Date Aug. 5, 1994, PCT Pub. No. WO93/15254, PCT Pub. Date Aug. 5, 1993

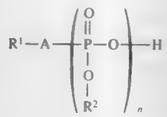
PCT Filed Jan. 26, 1993, Ser. No. 256,623

Claims priority, application Japan, Jan. 27, 1992, 4-011883

Int. Cl.[6] D06M *13/298*

U.S. Cl. 8—127.1 **26 Claims**

1. A method for treating a textile which comprises immersing the textile into a solution which contains a modifying agent and immersing the textile into a solution which contains a fixing agent, wherein the modifying agent is a fluorine-containing phosphoric acid derivative represented by the formula



(I)

or a salt thereof, wherein R^1 and R^2 are the same or different, and are each a hydrogen atom or $R_f(CH_2)_m$—, wherein R_f is a saturated or unsaturated, linear or branched fluorine-containing aliphatic group having 4 to 20 carbon atoms which is unsubstituted or is Substituted with a substituent selected from the group consisting of an oxygen atom a nitrogen atom, a sulfonyl group, an aromatic ring and combinations thereof, wherein said substituent is bonded to one or more carbon atoms of said aliphatic group; m is 1 or 2; and R^1 and R^2 each is non simultaneously a hydrogen atom; A is an oxygen tom, a sulfur atom or a direct bond; and n is 1 or 2; and wherein said modifying agent has a molecular weight of not larger than 2,000, and

the fixing agent is a metal compound that is at least one selected from the group consisting of chlorides, nitrate salts, sulfate salts and hydroxides of chromium, zirconium, titanium and aluminum.

5,630,847

PERFUMABLE DRY CLEANING AND SPOT REMOVAL PROCESS

Timothy C. Roetker, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 413,326, Mar. 30, 1995, abandoned. This application Oct. 17, 1995, Ser. No. 544,235

Int. Cl.[6] D06L *1/04;* **C11D** *3/37;3/43;7/50*

U.S. Cl. 8—137 **5 Claims**

1. A method for cleaning fabrics comprising agitating said fabrics with an article comprising an integral substrate having releasably containing or having releasably affixed thereto a fabric cleaning composition comprising

(a) at least about 4%, by weight, of butoxy propoxy propanol;

(b) at least about 0.0001%, by weight, of a perfume;

(c) at least about 80%, by weight, of water; and

(d) no more than about 0.2%, by weight, of a polyacrylate emulsifier.

5,630,848

DRY CLEANING PROCESS WITH HYDROENTANGLED CARRIER SUBSTRATE

Terrill A. Young; Jane L. Bavely, both of Cincinnati; Timothy C. Roetker, Fairfield, and Maxwell G. Davis, Forest Park, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 450,459, May 25, 1995, abandoned. This application Oct. 17, 1995, Ser. No. 544,354

Int. Cl.[6] D06L *1/04;* **C11D** *3/37;3/43;7/50*

U.S. Cl. 8—137 **8 Claims**

1. A process for cleaning and refreshing fabrics, comprising contacting said fabrics with an article comprising:

a hydroentangled carrier substrate, said substrate releasably containing

an aqueous cleaning composition

(a) at least about 60%, by weight, of water;

(b) at least about 4%, by weight, of an etherified propanol solvent;

(c) 1,2-octanediol;

(d) optionally, a polyacrylate emulsifier;

(e) a detersive surfactant; and

(f) optionally, a perfume.

5,630,849

DYEING METHOD

Taiji Kameoka, Chiba-ken; Isamu Kawamura; Isamu Gboda, both of Hyogo-ken; Masanobu Ajioka, Kanagawa-ken; Keisuke Takuma, Kanagawa-ken; Akihiro Yamaguchi, Kanagawa-ken, and Hiroshi Suizu, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 612,578

Claims priority, application Japan, Mar. 14, 1995, 7-054483

Int. Cl.[6] D06P *3/16;3/54*

U.S. Cl. 8—489 **12 Claims**

1. A method for dyeing an aliphatic polyester filament comprising dyeing the aliphatic polyester filament with a disperse dye, wherein the dyeing temperature is 70°–120° C., the dyeing pH is 4–9, and the dyeing time is 30–120 minutes, so as to obtain a lowering ratio of 20% or less after dyeing on a weight average molecular weight of the aliphatic polyester filament to be dyed.

5,630,850

PROCESS FOR PRINTING FIBRE MATERIAL BY THE DIRECT PRINTING PROCESS

Paul Schaffhützel, Basel, Switzerland, and Philippe Ouziel, Altkirch, France, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 376,499, Jan. 23, 1995, abandoned. This application May 31, 1996, Ser. No. 656,551

Claims priority, application Switzerland, Jan. 26, 1994, 231/94

Int. Cl.[6] D06P *1/46;1/52;1/382*

U.S. Cl. 8—549 **9 Claims**

1. A process for printing fibre material by the direct printing process, which process comprises applying to the fibre material a print paste comprising at least one dye, 10 to 100 g of an alginate per kg of print paste as thickener as well as further customary assistants, and subsequently fixing the dye, and wherein the print paste comprises ≦1% by weight, based on the print paste, of an acrylamide homopolymer having an average weight of 0.5 to 1 million of a copolymer of acrylamide and acrylic acid having an average molecular weight of 1 to 10 million.

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5,630,851
PROCESS FOR TRICHROMATIC DYEING OR PRINTING

Guido Jordine, Freiburg, Germany, and Jean-Marie Adam, Rosenau, France, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 353,836, Dec. 12, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 609,217

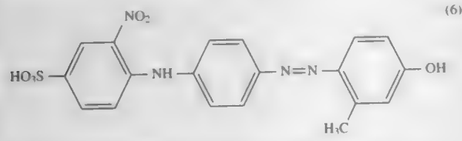
Claims priority, application Switzerland, Dec. 16, 1993, 3766/93

Int. Cl.[6] D06P *3/16;3/24*

U.S. Cl. 8—641 **10 Claims**

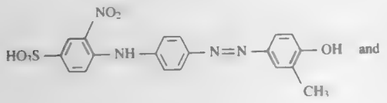
1. A process for dyeing or printing natural or synthetic polyamide fibre material by the trichromatic technique, which comprises using the yellow- or orange-dyeing dye of formula (6)

(6)



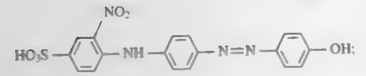
together with at least one yellow- or orange-dyeing dye of the formulae (7) and (8)

(7)



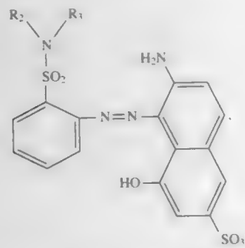
and

(8)



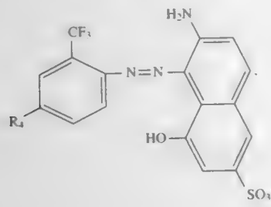
together with at least one red-dyeing dye of the formulae (2) and (3)

(2)



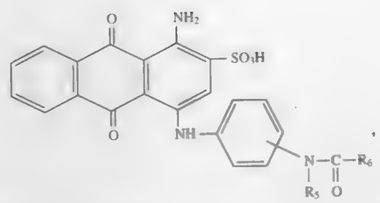
wherein R_2 is C_1–C_6alkyl, phenyl or cyclohexyl and R_3 is C_1–C_6alkyl, or wherein R_2 and R_3, together with the linking nitrogen atom, form an azepinyl ring,

(3)



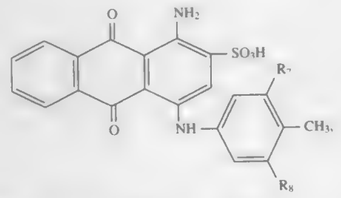
wherein R_4 is hydrogen, halogen or C_2–C_4alkanoylamino; and together with at least one of the blue-dyeing dyes of formulae (4) and (5)

(4)



wherein R_5 is hydrogen or C_1–C_4alkyl, and R_6 is C_1–C_4alkyl or amino.

(5)



wherein R_7 is hydrogen or methyl, and R_8 is a C_{2-4}hydroxyalkylsulfamoyl radical.

5,630,852
ORGANOPHOSPHORUS ADDITIVES FOR IMPROVED FUEL LUBRICITY

Douglas G. Placek, Fairless Hills, Pa., assignor to FMC Corporation, Philadelphia, Pa.

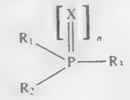
Filed Nov. 23, 1994, Ser. No. 344,763

Int. Cl.[6] C10L *1/26*

U.S. Cl. 44—379 **21 Claims**

1. An anti-wear fuel composition consisting essentially of a hydrocarbon fuel an oxygenate fuel or mixture thereof, and a minor proportion of a phosphorus acid ester component having a total acid number of from 10 to 300 mg KOH/g, the ester component comprising one or more esters having the general formula I:

I



wherein X represents an oxygen atom O or a sulphur atom S, n has a value of 0 or 1, and R_1, R_2 and R_3, which may be the same or different, represent a hydrogen atom, a hydroxyl group or a residue —OR wherein R represents an alkyl, alkoxyalkyl or alkenyl group having from 1 to 18 carbon atoms or an aryl group or an alkyl substituted aryl group wherein the alkyl substituents comprise from 1 to 12 carbon atoms and at least one of R_1, R_2 and R_3 represents a residue —OR.

5,630,853
COAL SLAGGING GASIFIER

David F. Eales, Dorridge, England, assignor to British Gas PLC, London, England

Filed May 17, 1995, Ser. No. 443,316

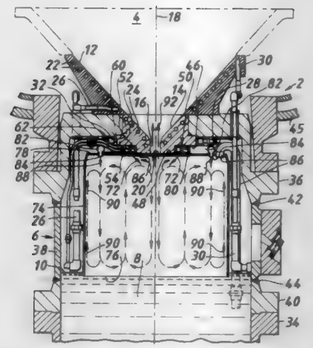
Claims priority, application United Kingdom, Jun. 9, 1994, 9411600

Int. Cl.[6] B01J *3/00*

U.S. Cl. 48—62 R **15 Claims**

1. In a coal slagging gasifier comprising:

a gasifying vessel; means or introducing carbonaceous fuel into the top of said vessel for gasification thereof in said vessel; means for introducing a gasifying medium comprising oxygen



and steam into said vessel; a hearth located at the bottom of said vessel and including a slag tap outlet therein for removing slag therefrom; a burner means positioned to direct combustion products up the slag tap outlet for maintaining a pool of molten slag in the hearth; a quenching chamber containing water located below said gasifying vessel into which molten slag and iron are periodically removed downwardly from said hearth through said slag tap outlet into said quenching chamber; venting means for producing a differential pressure between the quenching chamber and the gasifying vessel to promote tapping of the molten slag and iron, said slag tap outlet having a lowermost end providing an opening into said quenching chamber;

the improvement which comprises a nozzle means connected to a combustion-sustaining gas source, said nozzle means comprising a tube substantially in the form of a ring substantially centered and surrounding said burner means and disposed substantially at or adjacent to the horizontal level of said opening, said tube having a plurality of ports on its underside arranged for directing a substantially annular curtain of combustion-sustaining gas substantially vertically downwards toward the water level in said quenching chamber.

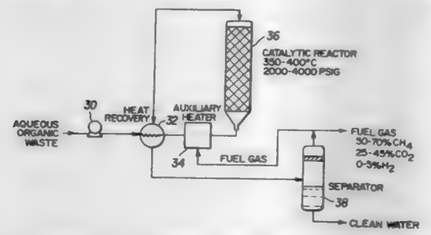
5,630,854
METHOD FOR CATALYTIC DESTRUCTION OF ORGANIC MATERIALS

L. John Sealock, Jr.; Eddie G. Baker, and Douglas C. Elliott, all of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation of Ser. No. 912,002, Jul. 10, 1992, abandoned, which is a continuation of Ser. No. 168,470, Mar. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 107,175, Oct. 13, 1987, abandoned, which is a continuation of Ser. No. 773,338, Sep. 6, 1985, abandoned, which is a continuation of Ser. No. 380,027, May 20, 1982, abandoned. This application Sep. 16, 1994, Ser. No. 307,552

Int. Cl.[6] C01B *3/00;* **C10D** *1/28*

U.S. Cl. 48—127.7 **1 Claim**



1. A method for converting nonlignocellulosic organic waste materials into an innocuous product gas, the method comprising:

providing, in a pressure reactor, a reactant mixture consisting essentially of a liquid nonlignocellulosic organic waste material and liquid water;

maintaining the reactant mixture inside the reactor (a) at conditions, including a temperature of from 250° C. to 500° C. and a pressure that is at least 50 atmospheres and that is sufficient to keep at least a portion of the reactant mixture in the liquid state, and (b) for a time sufficient to produce an innocuous gas product containing methane and carbon dioxide;

catalyzing production of the gas product by providing a catalyst in the reactor, the catalyst consisting essentially of supported or unsupported reduced nickel in an amount sufficient to catalyze production of the gas product; and

converting at least 50% of the carbon in the liquid nonlignocellulosic organic waste material to a product gas containing methane and carbon dioxide.

5,630,855
MOISTURE-COLLECTING DEVICE

Stig Lundbäck, Vaxholm, Sweden, assignor to Humanteknik AB, Stockholm, Sweden

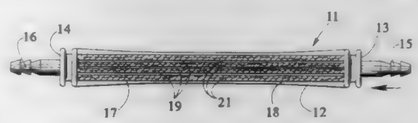
PCT No. PCT/SE93/00837, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/08636, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 13, 1993, Ser. No. 416,826

Claims priority, application Sweden, Oct. 16, 1992, 9203046

Int. Cl.[6] B01D *53/26*

U.S. Cl. 55—215 **24 Claims**



1. A moisture-collecting device, comprising

an envelope having a fluid inlet, a fluid outlet and a fluid passage which extends between the fluid inlet and the fluid outlet, and

a moisture-collecting means which is disposed in the fluid passage of the envelope,

characterized in that

the moisture-collecting means is a moisture-absorbing body a substantial constituent portion of which is a material having a high moisture-absorbing capability, and

the moisture-absorbing body defines or has formed within it, at least one fluid passageway which is in fluid flow communication with the fluid inlet and fluid outlet and is substantially free of moisture-absorbing material.

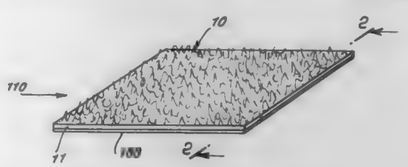
5,630,856
SELF-SUPPORTING FILTER COMPOSITE

Jack R. Pfeffer, Eagle, Id., assignor to UPF Corporation, Bakersfield, Calif.

Continuation-in-part of Ser. No. 209,920, Mar. 14, 1994, Pat. No. 5,472,467. This application Sep. 29, 1995, Ser. No. 536,974

Int. Cl.[6] B01D *50/00*

U.S. Cl. 55—488 **33 Claims**



1. In a filter composite, the combination comprising

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a) a first layer of glass fibers having random orientation, said layer being porous to gas flow therethrough, said first layer fibers having diameters between about 0.000035 and 0.00015 inch, and

b) a porous mat of sufficient stiffness as to support said glass fiber layer during use as a filter, said mat consisting of compacted glass fibers.

5,630,857

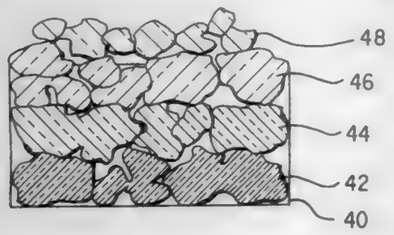
PROCESS FOR MANUFACTURING GRIN LENSES BY MELTING A SERIES OF LAYERS OF FRITS

Xiaojie Xu, and Michael E. Savard, both of Tucson, Ariz., assignors to Lightpath Technologies, Inc., Albuquerque, N.M.

Continuation of Ser. No. 163,861, Dec. 8, 1993, abandoned. This application May 15, 1995, Ser. No. 441,275

Int. Cl.[6] C03B *19/06*

U.S. Cl. 65—173 **6 Claims**



1. A method of manufacturing a body of optical material having a gradient of refractive index across its thickness, comprising the steps of:

(a) successively dispensing in order of decreasing density measured amounts of a plurality of different individual optical materials into a mold in the form of a frit to form a series of layers of such individual optical materials in which the density of the individual optical materials of the layers of decreases from the bottom toward the top of the mold, the frit forming each of said layers having a substantially uniform composition, the frit comprising particles in the size range of 0.1 to 30 mm in diameter; and

(b) heating the optical materials in the mold to at least the melting point of the highest melting point optical material in the mold to cause the dispensed materials to fuse together into a contiguous body of optical material having a gradient in its refractive index across its thickness.

5,630,858

TEMPERATURE RESISTANT MATERIAL, PARTICULARLY AS SUBSTITUTE FOR ASBESTOS IN DEVICES FOR HANDLING OBJECTS OF HOT GLASS

Wolfram Beier, Essenheim; Jochen Heinz, Sprendlingen; Henning Franek, Braunfels, and Dirk Bohr, Staudt, all of Germany, assignors to Westerwald Glasstein GmbH, Wirges, Germany

Filed Aug. 30, 1994, Ser. No. 297,888

Claims priority, application Germany, Nov. 10, 1993, 43 38 270.3

Int. Cl.[6] C03B *21/00;29/00*

U.S. Cl. 65—102 **24 Claims**

2. A method for reshaping objects of hot glass or molten glass comprising contacting said hot glass or molten glass with a temperature resistant material consisting of fiber-reinforced glass or fiber-reinforced glass ceramics, reshaping the hot glass or molten glass, and removing said temperature resistant material from the hot glass or molten glass.

5,630,859

OPTICAL ELEMENT FORMING METHOD

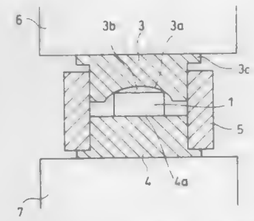
Kazuaki Takagi, and Takashi Inoue, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 7, 1994, Ser. No. 319,646

Claims priority, application Japan, Oct. 8, 1993, 5-252848; May 24, 1994, 6-109663

Int. Cl.[6] C03B *23/00*

U.S. Cl. 65—102 **3 Claims**



1. An optical element forming method comprising:

a step of heating an optical element blank placed in a forming mold to a temperature higher than the transition temperature of said blank; and

a step of pressurizing said heated blank with a forming surface of said forming mold so as to give, to said blank, force to be decomposed toward the center of an end surface of said blank such that said blank is deformed, under pressure, to an optical element having the center thickness not less than the center thickness of said blank.

5,630,860

METHOD AND APPARATUS FOR CONDITIONING AND HOMOGENIZING A GLASS STREAM

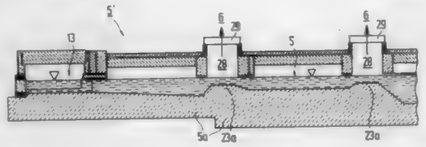
Helmut Sorg, Glattbach, and Richard Sims, Lohr am Main, both of Germany, assignors to Beteiligungen Sorg GmbH & Co. KG, Lohr am Main, Germany

Continuation-in-part of Ser. No. 175,283, Dec. 29, 1993, abandoned. This application May 4, 1994, Ser. No. 238,245

Claims priority, application Germany, Jun. 15, 1993, 43 19 773.6; Mar. 30, 1994, 44 11 038.3

Int. Cl.[6] C03B *5/23;5/18*

U.S. Cl. 65—135.1 **22 Claims**



1. A method of conditioning and homogenizing a continuously flowing stream of glass along a conditioning stretch, said conditioning stretch extending from an entry side of at least one of a working end or distribution channel to at least one extraction point of said at least one of a working end or distribution channel, at a beginning of said conditioning stretch there is at least one cooling zone to which at least a homogenizing zone for homogenizing the glass temperature is connected, whereby in the conditioning stretch the glass temperature is reduced from an entry temperature T1 to an extraction temperature T2, said method comprising arranging for in said at least one cooling zone a vertical cross section of a glass stream having a depth/width ratio D/W of a maximum of 0.6, which is created by at least one bank raised out of a bottom of said conditioning stretch in said cooling zone, whereby a maximum glass depth Dmax of the glass stream is about 300 mm and the temperature difference in the glass stream between T1 and T2 is reduced by at least 50% in said at least one cooling zone.

10. An apparatus for conditioning and homogenizing a glass stream flowing along a conditioning stretch, said apparatus comprising:

a conditioning stretch extending between an entry side of a working end or distribution channel and at least one extraction point of said working end or distribution channel; and

at least one cooling zone positioned in said conditioning stretch and including means for controlling a glass stream flowing through said cooling zone so that said glass stream has a depth/width ratio D/W of a maximum of 0.6 and has a maximum glass depth Dmax in said at least one cooling zone of about 300 mm.

5,630,861

CONTROLLED RELEASE FERTILIZERS

Itzhak Yaniv, Beer Sheva, Israel, assignor to Baran Advanced Materials (94) Ltd., Haifa, Israel

Filed Oct. 28, 1994, Ser. No. 331,324

Claims priority, application Israel, Jul. 7, 1994, 110241

Int. Cl.[6] C05C *9/00;* **C05B** *7/00;* **C05G** *3/00*

U.S. Cl. 71—28 **24 Claims**

1. Controlled-release fertilizers comprising a mixture of:

(a) one or more water-soluble fertilizer(s); and

(b) a magnesite cement cured from a composition comprising magnesium oxychloride, or magnesium oxysulphate, or mixtures thereof, and one or more organic carboxylic acid(s), or carboxylate salts thereof, or acid anhydrides thereof, or mixtures thereof.

5,630,862

METHOD OF PROVIDING FUEL FOR AN IRON MAKING PROCESS

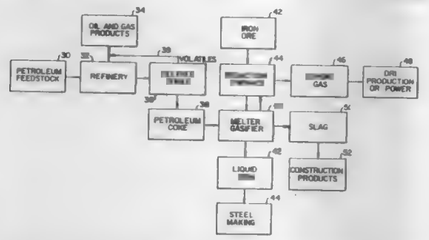
Richard B. Greenwalt, Danville, Calif., assignor to Bechtel Group, Inc., San Francisco, Calif.

PCT No. PCT/US93/08648, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/08055, PCT Pub. Date Apr. 14, 1994

Continuation-in-part of Ser. No. 84,888, Jun. 30, 1993, Pat. No. 5,397,376, which is a continuation-in-part of Ser. No. 56,341, Apr. 30, 1993, Pat. No. 5,259,865, which is a continuation-in-part of Ser. No. 991,914, Dec. 17, 1992, Pat. No. 5,354,356, which is a continuation-in-part of Ser. No. 958,043, Oct. 6, 1992, Pat. No. 5,259,864. This PCT application Sep. 14, 1993, Ser. No. 416,798

Int. Cl.[6] C21B *13/14*

U.S. Cl. 75—445 **72 Claims**



1. A method for both disposing of an environmentally undesirable material comprising petroleum coke and the sulfur and heavy metals contained therein and of providing fuel for a process of making molten iron or steel preproducts and reduction gas in a melter gasifier which method comprises providing a melter gasifier having an upper fuel charging end, a reduction gas discharging end, a lower molten metal and slag collection end, and means providing an entry for charging ferrous material into said melter gasifier; introducing petroleum coke and low-rank sub-bituminous coal into said melter gasifier at said upper fuel charging end; blowing oxygen-containing gas into the petroleum coke and the low-rank sub-bituminous coal to form at least a first fluidized bed of coke particles from said petroleum coke and said low-rank sub-bituminous coal; introducing particulate ferrous material into said melter gasifier through said entry means, reacting petroleum coke, low-rank sub-bituminous coal, oxygen and particulate ferrous material to combust the major portion of the petroleum coke and low-rank sub-bituminous coal to produce reduction gas and molten iron containing heavy metals freed from combustion of the petroleum coke and a slag containing sulfur freed from combustion of the petroleum coke.

5,630,863

METHOD FOR FLUXING MOLTEN-METAL

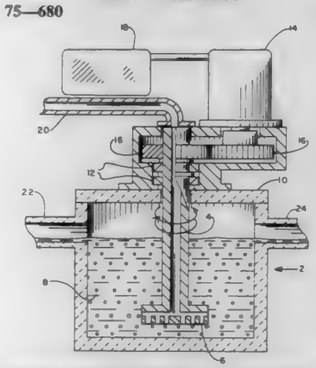
C. Edward Eckert, 260 Lynn Ann Dr., New Kensington, Pa. 15068

Continuation-in-part of Ser. No. 317,539, Oct. 4, 1994, Pat. No. 5,462,581, which is a continuation-in-part of Ser. No. 91,608, Jul. 13, 1993, Pat. No. 5,364,450. This application Oct. 25, 1995, Ser. No. 548,087

The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.

Int. Cl.[6] C22B *21/06*

U.S. Cl. 75—680 **25 Claims**



1. An improved method for fluxing a body of molten aluminum using a disperser to disperse fluxing gas in the body of molten aluminum, the method producing increased shear forces in the body of molten aluminum and reducing vortex formation, the method comprising the steps of:

(a) providing a body of molten aluminum;

(b) providing a disperser in said body;

(c) adding fluxing gas to said body, said fluxing gas being provided at a rate in the range of 1 to greater than 650 SCF/hour; and

(d) dispersing said fluxing gas in said body by:

(i) rotating said disperser in one direction; and thereafter

(ii) reversing the direction of rotation of said disperser to a counter direction;

(iii) the direction of rotation of said disperser being reversed periodically to substantially reduce formation of a vortex and to provide increased shear forces in said body for purposes of improving treatment of said molten aluminum by improved dispersion of said fluxing gas therein.

5,630,864

METHOD OF PROCESSING ORE ON A TRAVELING GRATE

David W. Rierson, 13245 Oakhurst Dr., Elm Grove, Wis. 53122

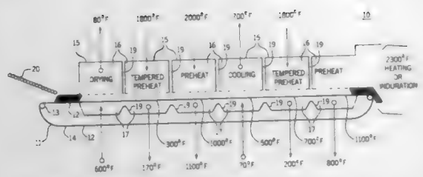
Filed Nov. 24, 1995, Ser. No. 562,396

Int. Cl.[6] C22B *1/20*

U.S. Cl. 75—755 **10 Claims**

1. The method of treating material that is transported on a continuous chain of a traveling grate through a series of longitudinally spaced furnace zones separated by baffle walls comprising the steps of

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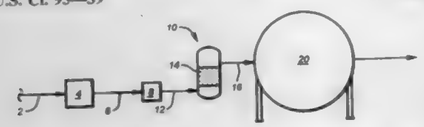
a. loading material to be treated onto said traveling grate chain near the end of said traveling grate where said chain is moving into the first of said furnace zones;
b. forcing a heated gas through said chain and material in the first zone;
c. forcing a heated gas downward through said material and said chain in the second zone;
d. forcing a cooling gas upward through said chain and said material in a third zone;
e. forcing a heated gas downward through said material and said chain in a fourth zone; and
f. transferring said material from said grate chain.

5,630,865

COLD GAS DRYER FOR COMPRESSED NATURAL GAS

Billy F. Price, Houston, Tex., assignor to Price Compressor Company, Inc., Houston, Tex.

Filed Oct. 11, 1995, Ser. No. 540,854
Int. Cl.[6] B01D *53/26*
U.S. Cl. 95—39 **11 Claims**



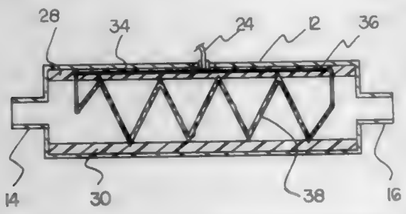
1. A process for dehydrating natural gas vehicle fuel while filling a compressed natural gas storage vessel for subsequent transfer of the gas to vehicle fuel tanks comprising:
supplying natural gas to a compressor;
compressing the natural gas to a pressure equal to a pressure desired in the compressed natural gas storage vessel at completion of filling;
rapidly reducing the pressure of the natural gas to a pressure about the same as a pressure contained in the compressed natural gas storage vessel during filling;
directing the natural gas across a moisture collecting material; and
supplying the natural gas to the compressed natural gas storage vessel.

5,630,866

STATIC ELECTRICITY EXHAUST TREATMENT DEVICE

Lloyd M. Gregg, 1974 42nd Ave., San Francisco, Calif. 94116

Filed Jul. 28, 1995, Ser. No. 508,741
Int. Cl.[6] B03C *3/70*
U.S. Cl. 96—67 **8 Claims**



1. A static electricity exhaust treatment device comprising:
a hollow housing having inlet and outlet ports extending therefrom to permit the device to be inserted in-line with an exhaust pipe and a muffler of an exhaust system of a vehicle;
a charge dispensing means mounted within the housing for contacting exhaust gases passing through the housing and receiving a static electrical charge to effect application of the static electrical charge to the exhaust gases passing through the housing, the charge dispensing means comprising an upper insulating panel mounted to an upper interior surface of the housing; a lower insulating panel mounted to a lower interior surface of the housing; and lateral insulating panels extending along opposed interior sides of the housing and into contiguous communication extending between the upper and lower insulating panels; a static charge supply wire extending through an aperture in the housing into the upper insulating panel; and a folded mesh panel positioned in electrical communication with the static charge supply wire and extending transversely across an interior of the housing, the folded mesh panel undulating in a zig-zag configuration in contact with and between the upper insulating panel and the lower insulating panel.

5,630,867

RECORDING INK

Shunichi Higashiyama, Yokkaichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 12, 1995, Ser. No. 527,085
Claims priority, application Japan, Sep. 20, 1994, 6-224928
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.37 **17 Claims**

1. A recording ink comprising:
water;
at least one coloring agent; and
a water soluble co-solvent selected from the group consisting of polyglycols, polyvinyl alcohol, polyvinyl pyrrolidone, methylcellulose and mixtures thereof having a molecular weight of lower than 1.000;
wherein the recording ink has a viscosity greater than 5 cps at 25° C.

5,630,868

INK JET INK FORMULATIONS CONTAINING MODIFIED CARBON PRODUCTS

James A. Belmont, Acton, Mass.; Joseph E. Johnson, Nahua, N.H., and Curtis F. Adams, Watertown, Mass., assignors to Cabot Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 356,460, Dec. 15, 1994, Pat. No. 5,571,311, and Ser. No. 356,653, Dec. 15, 1994, Pat. No. 5,554,739. This application Dec. 14, 1995, Ser. No. 572,545
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.75 **36 Claims**

1. An aqueous ink jet ink composition comprising an aqueous vehicle and a modified carbon product comprising carbon having attached at least one organic group, the organic group comprising a) at least one aromatic group, and b) at least one ionic group, at least one ionizable group, or a mixture of an ionic group and an ionizable group, wherein the at least one aromatic group of the organic group is directly attached to the carbon.

5,630,869

REVERSIBLY PHOTOCHROMIC PRINTING INKS

Albert Amon; Haim Bretler, both of Lausanne, Switzerland, and Anton Bleikolm, Ecublens, Austria, assignors to Sicipa Holding S.A., Switzerland

Filed Jan. 12, 1988, Ser. No. 143,448
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.37 **2 Claims**

1. A method for preparing a photochromic printing ink for the printing of ink accepting surfaces, comprising the following steps:

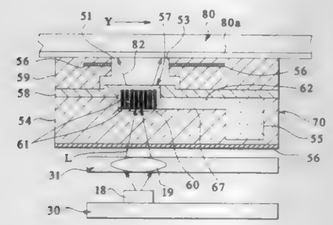
(A) providing at least one photochromic compound and a thermoplastic, light-transparent polymer not reactive with said photochromic compound and being a barrier for oxygen and for ink components capable of irreversibly interfering with the photochromic reaction sites of said photochromic compound,
(B) melting together said photochromic compound and said polymer at a temperature comprised between 50° and 150° C. to form a liquid solution or dispersion of the photochromic compound within the polymer,
(C) allowing said liquid solution or dispersion to cool to ambient temperature to form a solid solution or dispersion,
(D) breaking up the solid mass obtained in step (C) to lumps and micronizing the lumps to particles having a size of from 1 to 20 micrometers,
(E) incorporating the particles obtained in step (D) into a printing ink formulation and
(F) collecting the obtained ink comprising a particulate polymeric binder, a liquid phase, and at least one photochromic compound, embedded in said polymeric binder.

5,630,870

THERMAL TRANSFER RECORDING MATERIAL AND THERMAL TRANSFER RECORDING METHOD USING SAME

Kenji Shinozaki; Hideki Hirano; Yukichi Murata, and Mio Ishida, all of Kanagawa, Japan, assignors to Sony Corporation, and Mitsubishi Chemical Corporation, both of Tokyo, Japan

Filed Mar. 11, 1996, Ser. No. 613,344
Claims priority, application Japan, Mar. 10, 1995, 7-079909
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—22 H **13 Claims**



1. A thermal transfer recording material for use in a recording apparatus in which said thermal transfer recording material is introduced into a transfer section having a porous structure by an effect of capillarity, subjected to a state transformation such as vaporization or droplet formation by heating, and then transferred to a recording medium disposed opposed to said transfer section, comprising:
a dye having a molecular weight of 400 or less and represented by the general formula (I):



(I)

where A is a substituted or unsubstituted p-phenylene group, R^1 and R^2 are individually a hydrogen atom, a substituted or unsubstituted alkyl or alkenyl group, a cycloalkyl group or a substituted or unsubstituted phenyl group; and R^1 may constitute a heterocyclic group composed of a five- or six-member ring in combination with said p-phenylene group A and a nitrogen atom adjacent to said p-phenylene group A, or another heterocyclic group composed of a five- or six-member ring in combination with R^2 and the nitrogen atom adjacent to said p-phenylene group A.

5,630,871

FILM COATINGS AND FILM COATING COMPOSITIONS BASED ON CELLULOSIC POLYMERS AND LACTOSE

Martin P. Jordan, Orpington, England, assignor to Berwind Pharmaceutical Services, Inc., West Point, Pa.

Continuation of Ser. No. 3,604, Jan. 13, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 400,134
Claims priority, application European Pat. Off., Jan. 17, 1991, 92300406
Int. Cl.[6] C09D *101/00;101/28*
U.S. Cl. 106—162.7 **19 Claims**

1. A dry film coating composition for forming a coating suspension for film coating pharmaceuticals, food, confectionery forms, and agricultural seeds, comprising
a cellulosic polymer, and
lactose,
the cellulosic polymer being from 11% to 56% by weight of the composition,
the lactose being from 11% to 56% by weight of the composition.

5,630,872

FORMATION OF THIN-FILM PATTERNS OF A METAL OXIDE

Katsumi Ogi; Tadashi Yonezawa; Nobuyuki Soyama, and Kensuke Kageyama, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Dec. 11, 1995, Ser. No. 570,576
Claims priority, application Japan, Dec. 9, 1994, 6-306204; Dec. 20, 1994, 6-316467; Jan. 24, 1995, 7-008870; Feb. 15, 1995, 7-026696
Int. Cl.[6] C23C *18/14*
U.S. Cl. 106—287.18 **22 Claims**

1. A composition for formation of thin-film patterns of metal oxide by irradiation with light, comprising:
one or more metal alkoxides; and
one of more nitro compounds selected from the group consisting of nitrobenzyl alcohols, nitrobenzaldehydes, nitrostyrols, nitroacetophenones, nitroanisoles, nitrofurans, and photoreactive derivatives thereof.

5,630,873

METHOD OF PRODUCING DECLUSTERED ACETYL CELLULOSE FIBERS

Peter Weiser, Duisburg; Franz Meyers, Neukirchen-Vluyn; Jörg Hocken, Meerbusch-Osterrath, and Heinrich Dumke, Moers, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 282,496, Aug. 1, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 609,295
Claims priority, application Germany, Aug. 27, 1993, 43 28 851.0
Int. Cl.[6] C09J *4/00*
U.S. Cl. 106—417 **5 Claims**

1. A method of producing a delustered acetyl cellulose fiber comprising: stirring a delustering composition which contains 40 to 75 wt.-% TiO_2, 23 to 59 wt.-% paraffin oil and 1 to 2.5 wt.-% dispersing agent into a spinning solution used for producing acetyl

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cellulose fibers; and producing the acetyl cellulose fibers from the spinning solution.

5,630,874

APPARATUS FOR RESIN IMPREGNATION OF A FIBROUS SUBSTRATE

Robert A. Tait, Houston, Tex.; Walter R. Stelling, Milwaukee, Wis.; John J. Hartley, Pewaukee, Wis., and Donald M. Chevako, Milwaukee, Wis., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 248,841, May 25, 1994, which is a continuation of Ser. No. 982,264, Nov. 25, 1992, which is a continuation of Ser. No. 796,882, Nov. 25, 1991, which is a continuation of Ser. No. 583,119, Sep. 17, 1990. This application Jun. 7, 1995, Ser. No. 481,722

Int. Cl.[6] B05C *1/08*

U.S. Cl. 118—234 9 Claims



1. Apparatus for preparing an electrical prepreg from a porous glass web and a solventless epoxy resin system comprising an epoxy resin and a curing agent in the absence of a standing bath of the epoxy resin system, the apparatus comprising:

resin application means comprising a roller;

means for rotating the roller at a controlled speed;

resin delivery means comprising means to mix a solventless epoxy resin and a solventless curing agent to form a liquid-form solventless epoxy resin system, and means for depositing the liquid-form solventless epoxy resin system directly onto said roller, wherein said resin delivery means is characterized by the absence of a vessel for maintaining the epoxy resin system in a standing bath prior to application thereof to the porous glass web;

means for advancing, at a controlled rate and web tension and in a countercurrent direction with respect to the direction of rotation of the roller, a porous glass web to the roller and in contact with the solventless epoxy resin system deposited thereon;

means for removing any remaining epoxy resin system from the roller after contact with the porous glass web and prior to a complete rotation of the epoxy resin system on the roller;

means for maintaining sufficient tension in the porous glass web to enable said web to absorb the solventless epoxy resin system from the rotating roller, said tension-maintaining means positioned so as not to apply pressure to the opposite surface of said porous web as the web contacts the solventless thermosettable resin on the roller; and

means for advancing the epoxy resin-containing glass web from the roller to an oven for partially curing the epoxy resin.

5,630,875

APPARATUS FOR COATING THE INSIDE SURFACE OF METAL CONTAINERS WITH POLYOLEFIN MATERIALS

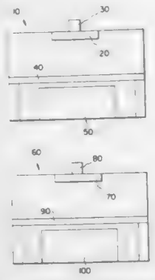
Gian L. Rigosi; Roberto Marzola; Gian P. Guidetti, all of Ferrara, Italy; Dino Bacci, Brusseis, and Georges Asperti, Ottignies L-L-N, both of Belgium, assignors to Montell North America Inc., Wilmington, Del.

Division of Ser. No. 172,517, Dec. 21, 1993. This application Mar. 31, 1995, Ser. No. 414,544

Claims priority, application Italy, Dec. 13, 1992, MI92A2948

Int. Cl.[6] B05B *7/00*

U.S. Cl. 118—309 1 Claim



1. Apparatus for coating interior surfaces of metal containers assembled from bottoms, lids and bodies, and having an interior volume of from 20 to 250 liters, comprising:

a first spray booth containing at least one electrostatic powder spraying device for spraying a polyolefin composition powder, said first spray booth adapted for spraying the bottoms and lids of said containers,

means for conveying said bottoms and lids of containers in said first spray booth,

a second spray booth containing at least one electrostatic powder spraying device for spraying a polyolefin composition powder, said second spray booth adapted for spraying the bodies of said containers,

means for conveying said bodies of containers in said second spray booth,

at least one electrostatic generator connected to said spraying devices, and

wherein said first and second spray booths further comprise means for recovering and recycling polyolefin powder which does not adhere to said bodies, lids and bottoms of said containers.

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COATING PRODUCT SPRAYER DEVICE

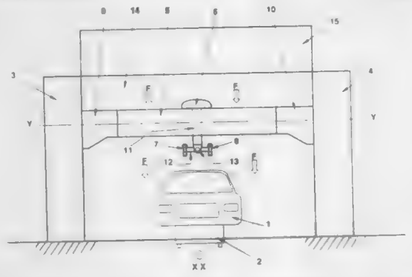
Pierre Ehinger, Faverges, and Patrice Gory, Fontaine, both of France, assignors to Sames S.A., Meylan, France

Filed Mar. 28, 1995, Ser. No. 412,054

Claims priority, application France, Mar. 30, 1994, 94 03751

Int. Cl.[6] B05B *3/18*

U.S. Cl. 118—323 16 Claims



1. Coating product sprayer device in the form of an overhead machine, said device comprising a beam supporting at least one carriage carrying at least one coating product sprayer wherein said beam comprises two longitudinal members parallel to and spaced from each other and defining between them a space and said at least one carriage moves between said two longitudinal members and lies at least partially in said space.

5,630,877

PAINTING WITH MAGNETICALLY FORMED PATTERN AND PAINTED PRODUCT WITH MAGNETICALLY FORMED PATTERN

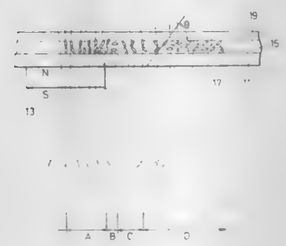
Takeshi Kashiwagi; Tatsuya Tamura, and Mitsuaki Narita, all of Yokohama, Japan, assignors to Hashimoto Forming Industry Co., Ltd., Yokohama, Japan

Division of Ser. No. 291,497, Aug. 17, 1994, abandoned, which is a division of Ser. No. 964,141, Oct. 21, 1952, Pat. No. 5,364,689. This application May 25, 1995, Ser. No. 450,534

Claims priority, application Japan, Feb. 21, 1992, 4-035220; Feb. 21, 1992, 4-035225; Apr. 10, 1992, 4-090764; May 13, 1992, 4-120667; Jun. 11, 1992, 4-151968; Jun. 11, 1992, 4-152049

Int. Cl.[6] B05B *5/00*

U.S. Cl. 118—623 20 Claims



1. An apparatus for painting a product with a desired pattern formed on the painted product, comprising:

support means for supporting the product;

painting means for forming a paint layer on a surface of the product, the paint layer comprising:

a paint medium capable of transmitting light rays incident on the paint layer; and

multiplicity of magnetic non-spherical particles mixed into the paint medium;

magnetic field production means for applying a magnetic field to the paint layer formed by the painting means on the surface of the product supported by the support means, the magnetic field having a first region containing lines of magnetic force which are oriented to be substantially parallel to a surface of the painted product and arranged in a shape corresponding to the desired pattern to be formed on the painted product, and second region containing lines of magnetic field which are oriented to be substantially non-parallel to the surface of the painted product and arranged with respect to the first region,

wherein the magnetic field is adapted to orient the particles such that the desired pattern has a three-dimensional appearance due to light rays incident on the paint layer being influenced differently with respect to reflection or absorption by the particles in accordance with the first region and second region of the magnetic field.

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LIQUID MATERIAL-VAPORIZING AND SUPPLYING APPARATUS

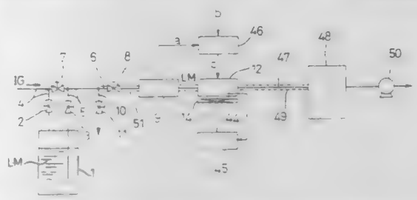
Hideaki Miyamoto; Kohichi Ishikawa, and Takeshi Kawano, all of Miyanohigashi-machi, Japan, assignors to STEC Inc., Kyoto, Japan

Filed Feb. 13, 1995, Ser. No. 387,216

Claims priority, application Japan, Feb. 20, 1994, 6-044990; Feb. 20, 1994, 6-044991; Feb. 20, 1994, 6-044993; Feb. 20, 1994, 6-044994

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—715 20 Claims



1. A liquid material-vaporizing and supplying apparatus comprising:

a source of liquid material;

a liquid flow meter connected to the liquid material to provide a signal representative of the liquid material flow rate;

a vaporizer member connected in series with the liquid flow meter, the vaporizer member integrally including means for vaporizing the liquid material and means for adjusting the flow rate of the liquid material through the vaporizer member; and

control means connected to the liquid flow ratio meter to compare the liquid material flow rate signal with a set flow rate and to drive the means for adjusting of the vaporizer member to match the set flow rate of liquid material.

5,630,879

METHOD AND APPARATUS FOR THE PARTIAL COATING OF SETS OF STRUCTURAL COMPONENTS

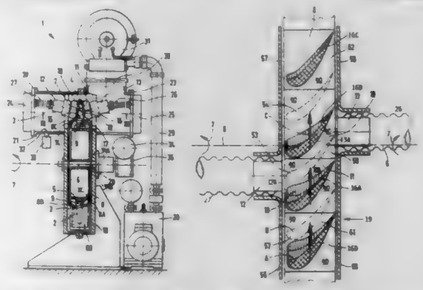
Wolfgang Eichmann, Puchheim; Martin Thoma, Munich; Horst Pillhoefer, Rochrmoos; Johannes Hartung, and Karl-Heinz Helling, both of Dresden, all of Germany, assignors to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Jul. 18, 1995, Ser. No. 503,705

Claims priority, application Germany, Jul. 22, 1994, 44 25 991.3

Int. Cl.[6] C23C *16/00:14/04:14/56*

U.S. Cl. 118—720 16 Claims



1. An apparatus for the partial coating of structural components having first surface areas to be coated and second surface areas not to be coated, comprising a carrier wheel for holding said components, said carrier wheel having a rotational axis about which said carrier wheel is rotatable, first and second wheel disks forming at least one radially open wheel pocket for insertion of said structural

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components into said pockets so that said first surface areas extend radially outwardly from said pockets for coating in a coating chamber when said carrier wheel carries said components through said coating chamber, and so that said second surfaces are protected in said at least one pocket against coating.

5,630,880

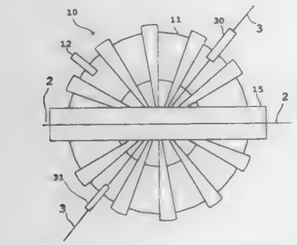
METHOD AND APPARATUS FOR A LARGE VOLUME PLASMA PROCESSOR THAT CAN UTILIZE ANY FEEDSTOCK MATERIAL

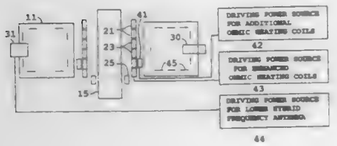
Bernard J. Eastlund, 6615 Chancellor Dr., Spring, Tex. 77379

Filed Mar. 7, 1996, Ser. No. 612,252

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 MP **20 Claims**





1. A method of coating deposition stages with the ionized species of elements of any feedstock material comprising:

a. filling a containment vessel with a low density gas chosen from a group of low atomic number gases that include hydrogen, helium and neon;

b. ionizing the low density gas generating a low temperature process plasma;

c. heating said low temperature process plasma to a temperature of at least 5000,000° C. generating a high temperature process plasma;

d. confining most of the high temperature process plasma spaced from walls of the containment vessel by a magnetic field;

e. injecting pellets of a feedstock material into the high temperature, process plasma forming a combination plasma comprising the high temperature process plasma and a plasma of the feedstock material;

f. rapidly increasing power supplied to said combination plasma to balance radiation losses transforming all of the feedstock material into a product plasma comprising principally lower temperature, higher, density ionized and unionized species of the feedstock material;

g. confining most of said product plasma spaced from the walls of said containment vessel by magnetic fields generated by applying higher voltage to maintain electric currents in a magnetic coil;

h. moving a portion of said product plasma across a space between said product plasma and the walls of the containment vessel to deposit on deposition stages lining the walls of the containment vessel by adjusting magnitude of said magnetic fields;

i. removing said deposition stages from said containment vessel.

5,630,881

THIN-FILM FORMING APPARATUS WITH MAGNETIC BEARINGS AND A NON-CONTACT SEAL AND DRIVE

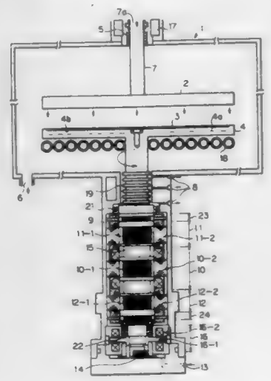
Naoaki Ogure, Tokyo, and Yoichi Kanemitsu, Kanagawa-ken, both of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Aug. 12, 1994, Ser. No. 289,215

Claims priority, application Japan, Aug. 16, 1993, 5-223845

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—730 **18 Claims**



1. A thin-film forming device including a reaction chamber having an atmosphere different from that externally thereof, a susceptor rotatably disposed in said reaction chamber for mounting a substrate thereon to form a thin film thereon, and a nozzle disposed within said reaction chamber facing said susceptor for supplying a thin-film forming material on said substrate, said thin-film forming device comprising:

a levitating means including magnetic bearings for non-contact support of said susceptor; and

a driving means for rotating said susceptor at a speed in a range above 2,000 rpm, in order to improve the radial uniformity of the deposited layer.

5,630,882

USE OF POLYETHER IONOPHORE ANTIBIOTICS TO CONTROL BACTERIAL GROWTH IN SUGAR PRODUCTION

Michel de Miniac, Paris, France, assignor to Union Nationale Des Groupements De Distallateurs D'Alcool (Ungda), Paris, France

PCT No. PCT/FR93/01089, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/10862, PCT Pub. Date May 26, 1994

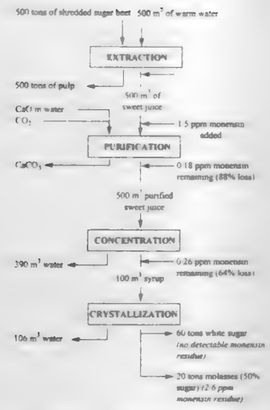
PCT Filed Nov. 4, 1993, Ser. No. 433,492

Claims priority, application France, Nov. 6, 1992, 92 13389

Int. Cl.[6] C08B *30/12;* **C13J** *1/06;* **C12N** *1/20;* **C12P** *17/18*

U.S. Cl. 127—32 **11 Claims**

1. In a method of producing sugar comprising extraction of the sugar from a feedstock selected form the group consisting of sugar beet juice, sugar cane juice, hydrolyzed grain, and starch or sugar containing materials to yield a sweet juice, purification of the sweet juice to yield a clear juice, concentration of the clear juice, and crystallization of the sugar, the improvement comprising adding to said feedstock during said extraction a gram positive bacteria controlling or suppressing amount of one or more polyether



ionophores to control or suppress bacterial growth during said method of producing sugar.

5,630,883

METHOD OF CLEANING DRAINS UTILIZING HALOGEN-CONTAINING OXIDIZING COMPOUND

Frank J. Steer, and Mark M. Gipp, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Feb. 24, 1995, Ser. No. 393,974

Int. Cl.[6] C23G *3/04;5/028;* **B08B** *9/02*

U.S. Cl. 134—22.13 **11 Claims**

1. A method of substantially removing a restriction from a drain pipe system comprising the steps of:

introducing to a drain pipe system having an organic restriction a dry cleaning composition comprising a gas generation/entrapment carrier and a non-caustic drain opening active comprising at least one halogen-containing oxidizing compound in an amount from about 10% to about 90% by weight of cleaning composition;

activating the cleaning composition by adding a sufficient amount of water to the drain pipe system while maintaining a flow-through state in the pipe system;

allowing the drain opening active to remain in contact with the restriction for a sufficient time to substantially degrade the restriction; and

rinsing the drain opening active and restriction from the pipe system, wherein the restriction removing method improves the water flow rate of the pipe system by an average of at least 0.7 liters/min. after 16 hours of the drain opening active contacting the restriction.

5,630,884

METHODS FOR CONTACT LENS CLEANING

Stanley W. Huth, Newport Beach, Calif., assignor to Allergan, Waco, Tex.

Division of Ser. No. 343,284, Nov. 22, 1994, which is a continuation of Ser. No. 79,195, Jun. 17, 1993, abandoned. This application Jul. 1, 1996, Ser. No. 673,993

Int. Cl.[6] B08B *3/08;* **C12S** *9/00*

U.S. Cl. 134—27 **16 Claims**

1. A method for cleaning a contact lens comprising:

contacting a contact lens in a liquid medium in the presence of an enzyme component effective to remove protein-based debris from a contact lens in an amount to remove debris from said contact lens at effective contact lens cleaning conditions and produce a cleaned contact lens; and

contacting said enzyme component in said liquid medium containing said contact lens with an activity regulating component selected from the group consisting of ionic and inorganic components and metal chelating components in an amount effective to deactivate said enzyme component located in said liquid medium sufficiently to allow said cleaned contact lens to be taken directly from said liquid medium and placed in a human eye for safe and comfortable wear.

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ALLOY INGOT FOR PERMANENT MAGNET, ANISOTROPIC POWDERS FOR PERMANENT MAGNET, METHOD FOR PRODUCING SAME AND PERMANENT MAGNET

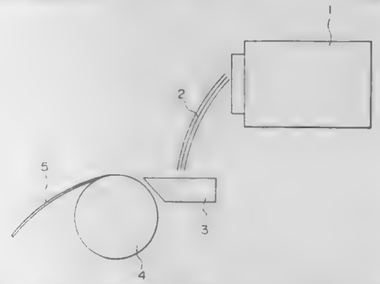
Kazuhiko Yamamoto, Kobe; Yuichi Miyake, Kasai, and Chikara Okada, Kobe, all of Japan, assignors to Santoku Metal Industry, Co., Ltd., Kobe, Japan

Continuation of Ser. No. 410,883, Mar. 27, 1995, abandoned, which is a division of Ser. No. 307,363, Sep. 16, 1994, abandoned, which is a division of Ser. No. 17,043, Feb. 12, 1993, Pat. No. 5,383,978. This application Apr. 4, 1996, Ser. No. 626,157

Claims priority, application Japan, Feb. 15, 1992, 4-028656; May 21, 1992, 4-128936; Sep. 7, 1992, 4-238299

Int. Cl.[6] H01F *1/00*

U.S. Cl. 148—122 **2 Claims**



1. A method of producing anisotropic powders for permanent magnet comprising: melting a rare earth metal-iron-boron alloy to obtain a molten alloy,

solidifying the molten alloy uniformly by controlling the cooling rate of said molten alloy to be between 10° and 1000° C./sec. and controlling the sub-cooling degree of said molten alloy to be between 10° and 500° C. to obtain an alloy ingot consisting essentially of rare earth metal, iron, and boron, said alloy ingot containing 90 vol % or more of crystals having a crystal grain size along a short axis of 0.1 to 50 μm and that along a long axis of 0.1 to 100 μm; and

subjecting said alloy ingot to hydrogenating treatment, said hydrogenating treatment further comprising:

heating said alloy ingot in a hydrogen gas atmosphere to hydrogenate said alloy ingot;

rapidly reducing the hydrogen gas pressure to which said alloy ingot is exposed to dehydrogenate said ingot, thereby recrystallizing said alloy ingot;

rapidly quenching said dehydrogenated alloy ingot; and

pulverizing said recrystallized alloy ingot.

5,630,886

CORROSION-RESISTANT FILM FOR PROTECTING SURFACES OF AG AND CORROSION-RESIST COMPOSITE STRUCTURES

Kenichi Hijikata, and Rie Mori, both of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 519,025

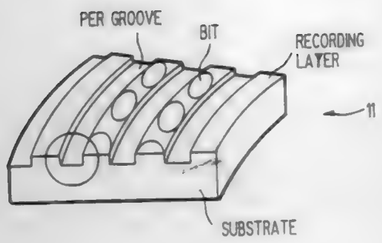
Claims priority, application Japan, Aug. 29, 1994, 6-203875

Int. Cl.[6] C23C *8/10;* **G11B** *11/10*

U.S. Cl. 148—277 **7 Claims**

1. A method of protecting an Ag surface from the corrosive effects of sulfide component and ozone of air comprising applying

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to an external surface of said Ag, an Ag—Mg alloy having an Mg content of from 1 to 10 atomic %,

wherein Mg is diffused into said Ag surface; and

oxidizing a surface part of said protective film of said Ag—Mg alloy to form an MgO layer on an external surface of said protective film wherein Mg is diffused from a surface of said Ag—Mg alloy opposite to an interface between said Ag surface and said Ag—Mg alloy

wherein said protective film has a thickness of 50 Å or more.

5,630,887

TREATMENT OF FURNACE TUBES

Les W. Benum, Red Deer; William Wong, and Mike C. Oballa, both of Calgary, all of Canada, assignors to Novacor Chemicals Ltd., Calgary, Canada

Continuation of Ser. No. 387,096, Feb. 13, 1995, abandoned. This application May 20, 1996, Ser. No. 650,224

Int. Cl.[6] C23C *8/10*

U.S. Cl. 148—280 **1 Claim**

1. A method of treating a cast steel alloy comprising from 23 to 35 wt. % of chromium; from about 25 to 50 wt. % of Ni; from 1 to 3 wt. % of Mn; from 1 to 2 wt. % of Si; from 0.1 to 1.0 wt. % of one or more elements selected from the group consisting of carbon, titanium, tungsten and the balance iron, comprising subjecting said steel to an atmosphere having an oxygen partial pressure of less than 10^{-20} atmospheres and comprising an oxygenate equivalent from 0.5 to 1.5 wt. % steam; from 10 to 99.5 wt. % of one or more reducing gases selected from the group consisting of hydrogen, CO and CO_2 and from 0 to 88 wt. % of one or more gases selected from the group consisting of nitrogen, argon, and helium for a period from 5 to 40 hours at a temperature from 900° to 1050° C. to generate a surface layer from 20 to 45 microns thick comprising less than 3 wt. % iron; less than 3 wt. % nickel; from 15 to 25 wt. % manganese; from 60 to 75 wt. % chromium; and the balance silica, niobium, and aluminum.

5,630,888

GOLF-CLUB HEAD

Daisaku Yoshida, and Katsumi Yamano, both of Kagawa-ken, Japan, assignors to Shintomi Golf Co., Ltd., Tokyo, and Kasco Corporation, Kagawa-ken, both of Japan

Division of Ser. No. 344,657, Nov. 18, 1994, Pat. No. 5,569,337. This application May 14, 1996, Ser. No. 645,753 Claims priority, application Japan, Nov. 19, 1993, 5-290346

Int. Cl.[6] C22C *38/44;38/52*

U.S. Cl. 148—325 **16 Claims**

1. A golf-club head comprising a face, said face comprising an alloy steel which comprises at most 0.2 wt. % of C, 0.05–1.0 wt. % of Si, at most 0.5 wt. % of Mn, 3.0–8.0 wt. % of Ni, 10.0–20.0 wt. % of Cr, 3.0–8.0 wt. % of Mo and 10.0–20.0 wt. % of Co, the remainder being substantially Fe, and has a metallic texture composed principally of martensite,

wherein said golf-club head has a face with a thickness of up to 2.7 mm.

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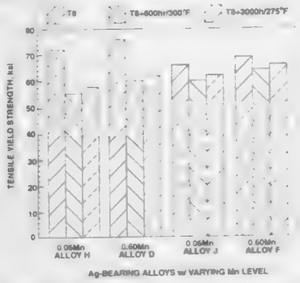
VANADIUM-FREE ALUMINUM ALLOY SUITABLE FOR EXTRUDED AEROSPACE PRODUCTS

Lynette M. Karabin, Ruffdale, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 22, 1995, Ser. No. 408,426

Int. Cl.[6] C22C *21/12*

U.S. Cl. 148—417 **18 Claims**



1. An extruded structural member having improved combinations of strength and toughness and a typical tensile yield strength of about 77 ksi or higher at room temperature, said structural member made from a substantially vanadium-free, aluminum-based alloy consisting essentially of: about 4.85–5.3 wt. % copper, about 0.5–1.0 wt. % magnesium, about 0.4–0.8 wt. % manganese, about 0.2–0.8 wt. % silver, up to about 0.25 wt. % zirconium, up to about 0.1 wt. % silicon, and up to about 0.1 wt. % iron, the balance aluminum, incidental elements and impurities.

5,630,890

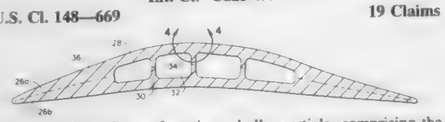
MANUFACTURE OF FATIGUE-RESISTANT HOLLOW ARTICLES

Russell W. Smashey, Loveland, Ohio; Andrew P. Woodfield, Cold Spring, Ky.; Michael F. X. Gigliotti, Jr., Scotia, N.Y., and Kenneth J. Meltsner, Johnstown, Pa., assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 30, 1995, Ser. No. 380,533

Int. Cl.[6] C22F *1/18*

U.S. Cl. 148—669 **19 Claims**



1. A method of manufacturing a hollow article, comprising the steps of:

providing an article made of a titanium alloy, having an internal cavity, and having hydrogen present in the article at a near-surface region of the internal cavity but not in a body region remote from the near-surface region;

heat treating the article in a hydrogen-containing atmosphere; and

removing the hydrogen from the article.

5,630,891

PNEUMATIC IN-LINE SKATE WHEEL

Tom Peterson, and Neal Piper, both of Huntington Beach, Calif., assignors to The Hyper Corporation, Huntington Beach, Calif.

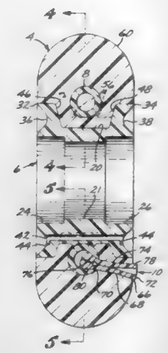
Filed Dec. 12, 1994, Ser. No. 354,374

Int. Cl.[6] A63C *17/22*

U.S. Cl. 152—165 **14 Claims**

1. A polyurethane cushioned pneumatic, in-line, roller skate wheel comprising:

a rigid urethane hub formed with a drop-center having axially spaced apart retainer flanges, said drop center defining a



plurality of spokes disposed in annular spaced relation about the drop center and projecting radially outwardly;

an annular urethane bladder received between said flanges and formed with a relatively thin bladder wall defining a pressure chamber and supported on said spokes;

a relatively soft, molded urethane tire body formed with a radially inner portion between said flanges and bonded thereto, and further formed with a radially outward annular cushion, said cushion being relatively thick compared to said bladder wall and formed with a generally rounded in radial cross section tread surface;

said tire and bladder being further formed with a valve bore; and

a valve in said bore for receipt of compressible pressurizing gas to adjust the pressure in said chamber to adjust the magnitude of shock absorption whereby said bladder may be pressurized so sharp forces applied radially inwardly on said tread surface will be cushioned by said cushion and tend to be absorbed by the compressible gas in said chamber.

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PNEUMATIC TIRE WITH SPECIFIED TREAD CURVATURE AND/OR SPECIFIED BREAKER CURVATURE

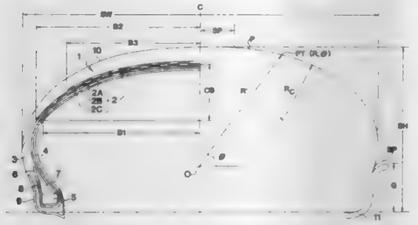
Arthur R. Williams, Solihull; Nigel G. Nock, Sutton Coldfield, and David H. Clarke, Waisall, all of England, assignors to Sumitomo Rubber Industries Limited, Hyogo, Japan

Filed Dec. 15, 1994, Ser. No. 356,552

Claims priority, application United Kingdom, Dec. 16, 1993, 9325715; Dec. 16, 1993, 9325716

Int. Cl.[6] B60C *3/00;3/04;11/00;11/01*

U.S. Cl. 152—209 R **25 Claims**



1. A pneumatic tire for a vehicle comprising a carcass ply extending between two bead regions and passing through a tread region which extends between two tread contact edges, a tread region reinforcing breaker radially outwards of the carcass in the tread region and a ground contacting tread surface curved in the axial direction wherein the outer tread surface has a curvature when the tire is mounted on a design wheel rim of said tire and normally inflated which has a continuously decreasing radius from a point P which is at a distance SP in the axial direction from the tire circumferential centerline equal to 20% of the distance from the tread center to the adjacent tread contact edge.

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PNEUMATIC TIRE WITH SPECIFIED TREAD CURVATURE AND/OR SPECIFIED BREAKER CURVATURE

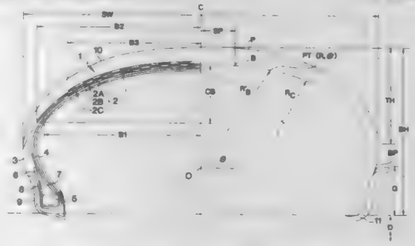
Arthur R. Williams, Solihull; Nigel G. Nock, Sutton Coldfield, and David H. Clarke, Rushall Walsall, all of England, assignors to Sumitomo Rubber Industries Limited, Hyogo, Japan

Division of Ser. No. 356,552, Dec. 15, 1994. This application Apr. 23, 1996, Ser. No. 636,644

Claims priority, application United Kingdom, Dec. 16, 1993, 9325715; Dec. 16, 1993, 9325716

Int. Cl.[6] B60C *3/00;3/04;9/20;9/28*

U.S. Cl. 152—209 R **20 Claims**



1. A pneumatic tire for a vehicle comprising a carcass ply extending between two bead regions and passing through a tread region which extends between two tread contact edges, a tread region reinforcing breaker radially outwards of the carcass in the tread region and a ground contacting tread surface curved in the axial direction wherein the outer surface of the widest breaker ply when the tire is mounted on a design wheel rim of said tire and normally inflated has a curved shape in the tire axial direction and has a continuously decreasing radius from a point B to the adjacent edge of the breaker wherein point B is spaced apart from the tire circumferential centerline by a distance SP equal to 20% of the distance from the tread center to the adjacent tread contact edge.

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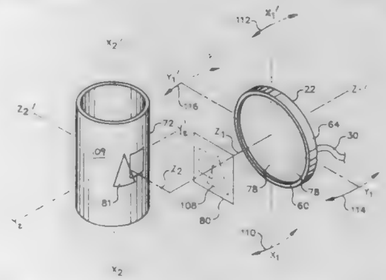
FLEXIBLE HEATING PAD FOR TRANSFER OF DECALCOMANIA

Esther A. Koch, Valley, and Jimmie M. Craig, Newport, both of Wash., assignors to Gemstone Memorials, Inc., Valley, Wash.

Filed Feb. 23, 1995, Ser. No. 393,224

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—64 **18 Claims**



13. A method for the application of heat and pressure to a heat sensitive transferable decalcomania to apply the same to a substrate, said method comprising:

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(a) the step of heating said decalcomania with a heating pad for a predetermined time period,

(i) wherein said heating pad comprises:

(A) a flexible body, said flexible body having a first axis and a second axis, said flexible body displaceably compliant with respect to said first axis and with respect to said second axis to conformably engage a selected substrate, said flexible body comprising a first portion having an exterior upper side, a second portion having a lower interior side, and a peripheral edge portion;

(B) a compliant porous skin portion provided adjacent to said lower interior side;

(C) an electric resistance heater, said heater integrally formed within said second portion of said flexible body; and

(D) an annular peripheral sealing lip of deformable material, said sealing lip located adjacent to said peripheral edge portion and adapted to provide sidewalls to form a seal between said heating pad and a substrate and to thereby form a chamber between said substrate and said lower interior side of said second portion of said flexible body;

(E) at least one passageway in said flexible body, said at least one passageway having an exit, said at least one passageway adapted to allow gas to move through said at least one passageway to thereby escape from said chamber when a vacuum is drawn on said exit of said at least one passageway; and

(ii) wherein said decalcomania is securely positioned between said porous skin portion and said substrate; and

(b) simultaneous with said heating step, the step of drawing a vacuum on said chamber with a vacuum pump, whereby air may be evacuated through said at least one passageway and thus from said chamber, so as to urge said porous skin portion of said heating pad against a transferrable decalcomania, and in turn urge said decalcomania against such substrate;

(c) the step of relieving the vacuum in said chamber; and

(d) the step of removing the heating pad from said substrate, while leaving said decalcomania affixed to said substrate.

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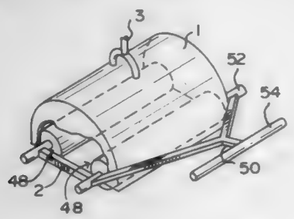
METHOD TO USE HIGH TEMPERATURE PRESSURE ROLLER TO MAKE STATIONARY STRUCTURE COVERING MATERIALS

Bernard Zeidler, 150-15-72 Rd, STA, Flush, N.Y. 11367

Division of Ser. No. 226,078, Apr. 11, 1994, which is a continuation-in-part of Ser. No. 926,196, Aug. 7, 1992, abandoned. This application Aug. 28, 1995, Ser. No. 519,744

Int. Cl.[6] E04B *1/64*

U.S. Cl. 156—71 **6 Claims**



1. A method to compress and fuse polymeric fibers in situ into a highly weather resistant, seamless, covering layer for the surface of a permanent structure using a propelled heater roller, said method comprising:

a) optionally placing on the areas to be covered on said surface a heat tolerant and poorly heat conductive underlayer;

b) placing a fiber layer comprised of said fibers over the area to be covered on said surface;

c) covering said fiber layer with an air-impermeable overlayer of high temperature tolerant material; and

d) concurrently compressing and fusing said fiber layer by in situ exposure through said air-impermeable layer to high temperatures applied by said heater roller in order to uniformly melt and fuse said fibers into a waterproof layer on said surface of said permanent structure.

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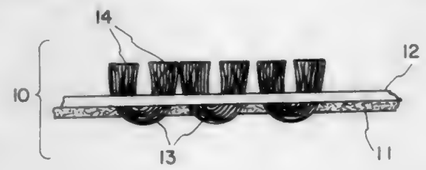
METHOD OF MAKING RECYCLABLE TUFTED CARPETS

James A. Corbin, Spartanburg, S.C.; Robert D. Johnson, Charlotte, N.C.; William G. Neely, Charlotte, N.C.; Ian S. Slack, Charlotte, N.C., and Barrie L. Davies, Weddington, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 203,290, Feb. 28, 1994, Pat. No. 5,532,035, which is a continuation of Ser. No. 876,617, May 1, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 465,804

Int. Cl.[6] B32B *3/00*

U.S. Cl. 156—72 **4 Claims**



1. A process for producing a tufted carpet, said process comprising providing a fibrous primary backing layer comprising thermoplastic binder fiber, inserting into said fibrous primary backing layer a plurality of fibrous tufts, said fibrous tufts extending through a face of said fibrous primary backing layer to form a plurality of anchoring loops projecting from an opposing face of said fibrous primary backing layer,

thereafter, needling a nonwoven, fibrous, secondary backing layer comprising thermoplastic binder fibers to said opposing face of said fibrous primary backing layer, wherein said primary and said secondary backing layers are of the same thermoplastic material, and thereafter, heatsetting to secure said anchoring loops of said fibrous tufts.

5,630,897

PROCESS FOR MAKING A CONTINUOUS STRUCTURE OF A COMPOSITE MATERIAL

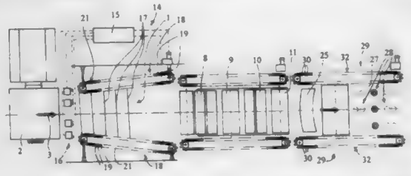
Alfonso Branca, and Giuseppe Marinelli, both of Milan, Italy, assignors to Somiver S.R.L., Italy

Filed Jun. 12, 1995, Ser. No. 489,504

Claims priority, application Italy, Jun. 28, 1994, MI94A1337

Int. Cl.[6] B32B *31/14*

U.S. Cl. 156—148 **15 Claims**



1. A process for making a continuous structure of a composite material comprising the following steps:

moving a continuous semifinished product (**1**) made of a reinforcing fiber along a predetermined working path, said continuous semifinished product (**1**) comprising an upper external layer (**4**) and a lower external layer (**5**) facing said upper external layer, the upper and the lower external layers being mutually connected by a plurality of intermediate threads (**6**);

impregnating said continuous semifinished product (**1**) with a given resin at an impregnation station (**7**) disposed along said working path;

moving one of said two layers (**4**,**5**) of continuous semifinished product (**1**) apart from the other facing layer to bring said intermediate threads (**6**) from one condition in which they are reclined and arranged substantially in parallel relationship with said two external layers (**4**,**5**), to a second condition in which they are disposed substantially perpendicular to the external layers;

polymerizing the impregnated semifinished product (**1**) at a polymerization station (**40**), so as to achieve a continuous composite material structure (**50**);

wherein before said impregnation step, an adjustment step for putting the two layers of said continuous semifinished product (**1**) in register is carried out at an adjustment and control station (**14**) in which the position of said external layers is verified;

said adjustment step comprising the following sub-steps:

detecting reference marks (**17**) associated with the upper external layer (**4**) and lower external layer (**5**) of said semifinished product (**1**), by detection means (**16**) operating above and under said continuous semifinished product (**1**), said detection means (**16**) sending corresponding signals to a processing unit (**15**) following passage of said reference marks (**17**);

aligning the reference marks (**17**) associated with the upper external layer (**4**) with the reference marks (**17**) associated with the lower external layer (**5**) by first grasping and advancement means (**18**) operating at either side of said semifinished product (**1**) and controlled by said processing unit (**15**).

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MAIL PARCEL SEALING METHOD AND APPARATUS

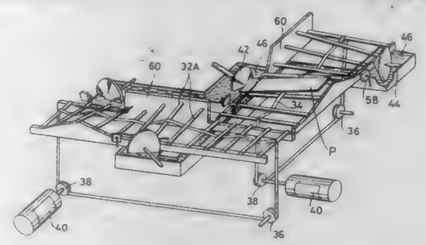
Luciano Meschi, Castiglioncello, Italy, assignor to Industria Grafica Meschi SRL, Livorno, Italy

Continuation of Ser. No. 353,151, Dec. 9, 1994, abandoned, which is a continuation of Ser. No. 899,504, Jun. 16, 1992, abandoned. This application Sep. 11, 1995, Ser. No. 526,195

Claims priority, application Italy, Jun. 17, 1991, MI91A1654

Int. Cl.[6] B31F *5/04*

U.S. Cl. 156—217 **10 Claims**



5. A method for sealing a mailer of at least two sheets of the same configuration, wherein each of said at least two sheets has two faces and an outer perimeter edge surrounding said two faces, comprising the steps of:

aligning said at least two sheets together so that the outer perimeter edges of said at least two sheets coincide;

applying glue solely to said coincided outer perimeter edges along the entire perimeter so that a mailer is produced which is completely closed on all said sides.

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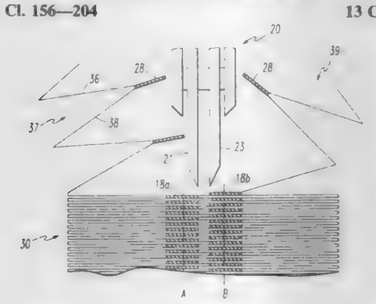
PLEATED AND CELLULAR MATERIALS AND METHOD FOR THE MANUFACTURE THEREOF USING A SPLITTER

Ren Judkins, 46 Newgate Rd., Pittsburgh, Pa. 15202

Filed Mar. 29, 1995, Ser. No. 412,875

Int. Cl.[6] B32B *31/18*; **E06B** *3/48*

U.S. Cl. 156—204 **13 Claims**



1. A method for producing a pleated and tabbed fabric comprising the steps of:

pleating a sheet of material to form a stack of pleated material having fabric layers and pairs of opposed pleat faces;

applying at least one bond line between each pair of opposed pleat faces so that the applied bond lines are in one of two bond line planes which are normal to the pleat faces;

stacking the opposed pleat faces on top of one another to bond the pleat faces together thereby forming a stack of cellular material having at least two sets of bond lines each set aligned in a bond plane transverse to the pleat lines; and

removing and discarding a portion of each fabric layer adjacent a bond plane to form at least one panel of pleated and tabbed fabric.

5,630,900

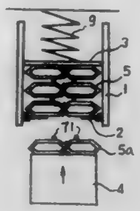
METHOD FOR MANUFACTURING BLIND MATERIAL

Chung-Chen Huang, Taipei, Taiwan, assignor to Teh Yor Industrial Co., Ltd., Taipei, Taiwan

Filed May 23, 1995, Ser. No. 448,085

Int. Cl.[6] B32B *31/04*; *3/12*

U.S. Cl. 156—227 **3 Claims**



1. A method for manufacturing an expandable honeycomb structure comprising the following steps:

A. placing a first dual cell layer onto a stack supporting means, said dual cell layer being formed from a single length of foldable material, said material being folded so that a first polygonal cell and a second polygonal cell are formed from said single length of foldable material, said first and said second polygonal cells being aligned horizontally,

said material including a plurality of longitudinal folds forming said first polygonal cell, a first free end of said material being affixed to a first side of a latitudinal center point of said material so that said first cell is formed as a closed polygonal cell,

a remaining half of said material including a further plurality of folds to form the second polygonal cell, a second free end of said material being affixed to a second side of said latitudinal center point of said material, side of said latitudinal center point of said material,

said second polygonal cell being integral to said first polygonal cell, and being formed from said single length of material;

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B. transferring said first dual cell layer to a stack receiving means, said first layer being cut to a predetermined length during said transfer operation;

C. placing a second dual cell layer onto said stack supporting means and applying an adhesive to a top side of said second dual cell layer;

D. transferring said second dual cell layer to said stack receiving means so that said second layer is adhered to said first layer, said second layer being cut to a predetermined length during said transfer operation;

E. repeating steps C–D for subsequent dual cell layers until a desired number of layers are adhered to each other to form a blind.

5,630,901

METHOD AND JIG FOR HOLDING CONTACT LENS MATERIAL, USING LIGHT-SCATTERING BONDING ADHESIVE

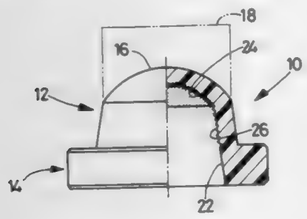
Yasuyoshi Yamamoto, Komaki; Atsuhiro Doke, Kasugai; Hiroyuki Ohyama; Seiichi Ichikawa, both of Kakamigahara, and Keiji Yamashita, Nagoya, all of Japan, assignors to Menicon Co., Ltd., Japan

Filed Dec. 22, 1994, Ser. No. 361,496

Claims priority, application Japan, Dec. 28, 1993, 5-337354

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—275.7 **3 Claims**



1. A method of holding a contact lens material having a concave surface while the contact lens material is processed into a contact lens, comprising the steps of:

preparing a Jig including a protruding portion which has a top end having as an outer surface thereof a convex surface and a bottom end, said convex surface being adapted to be bonded to said concave surface of the contact lens material, said protruding portion having an inner surface that defines a recess which extends from said top end opposite said convex surface, toward the bottom end of the protruding portion, said inner surface including a first portion that corresponds to said convex surface of said top end of said protruding portion;

applying an ultraviolet-curable bonding agent to at least one of said concave surface of said contact lens material and said convex surface of said protruding portion of said Jig;

placing said contact lens material such that said concave surface of said contact lens material is in contact with said convex surface of said jig through said ultraviolet-curable bonding agent; and

irradiating said ultraviolet-curable bonding agent through said jig via means for scattering light to cure said ultraviolet-curable bonding agent and thereby bond said contact lens material and said jig together, said means for scattering light comprising a roughed light-scattering texture along said first portion of said inner surface.

5,630,902

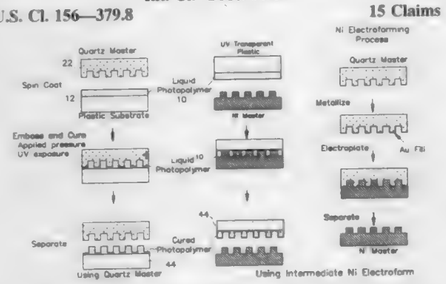
APPARATUS FOR USE IN HIGH FIDELTY REPLICATION OF DIFFRACTIVE OPTICAL ELEMENTS

Lynn Galarneau, Golden Valley, and Daniel J. Rogers, White Bear Lake, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1994, Ser. No. 366,852

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—379.8 **15 Claims**



1. An apparatus for forming diffractive optical replicas from a sample consisting of a substrate member coated with a photopolymer material, comprising:

a base member having a first face for receiving a compressive force thereon and having a second face for aligning the sample thereon;

a master element having a face embodying a pattern being duplicated;

a cap member releasably coupled to said base member and having a shouldered aperture, said master element releasably coupled to the shouldered aperture in said cap member; and

window means for transmitting radiation therethrough, said window means coupled to said shouldered aperture in said cap member.

5,630,903

MACHINE FOR THE MANUFACTURE OF A SINGLE-FACE LINED WEB OF CORRUGATED BOARD

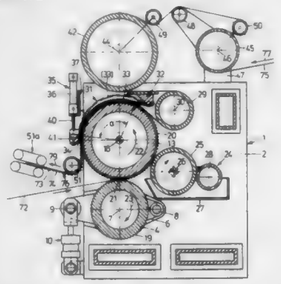
Andreas Knorr, Nürnberg; Josef Puff, Vohenstrauss; Reinhard Sternitzke, Kaltenbrunn; Hermann-Josef Mensing, and Heribert Reich, both of Weiherhammer, all of Germany, assignors to BHS Corrugated Maschinen- und Anlagenbau GmbH, Weiherhammer, Germany

Filed Jun. 15, 1995, Ser. No. 490,886

Claims priority, application Germany, Jun. 16, 1994, 44 20 958.4

Int. Cl.[6] B31F *1/28*; **B30B** *5/06*

U.S. Cl. 156—472 **10 Claims**



1. A machine for the manufacture of a single-face lined web of corrugated board (**76**), comprising

a first and a second fluted roller (**4**, **13**) for corrugating a paper web (**72**),

a gluing device (**24**) for spreading glue on peaks (**74**) of the corrugations (**73**) of the corrugated paper web (**72**),

a pressing device (**31**, **52'**) for pressing a liner web (**75**) on the Blue on the peaks (**74**), of the corrugated paper web (**72**) resting on the second fluted roller (**13**) along a contact area, the pressing device (**31**, **52'**) having a plurality of pressing belts pressable against the second fluted roller (**13**) along a pressing area,

wherein each of the plurality of pressing belts is stationary and open-ended rather than continuous,

wherein the plurality of pressing belts (**33**, **71**) are adjacent and disposed one beside the other over a maximal width (d) of the corrugated paper web (**76**),

wherein contiguous edges (**78**, **78'**) of the plurality of pressing belts (**33**, **71**) take a course deviating from a conveying direction (**77**) of the web of corrugated board (**76**).

5,630,904

STRIPPING AND CLEANING AGENT FOR REMOVING DRY-ETCHING AND PHOTORESIST RESIDUES FROM A SEMICONDUCTOR SUBSTRATE, AND A METHOD FOR FORMING A LINE PATTERN USING THE STRIPPING AND CLEANING AGENT

Tetsuo Aoyama; Rieko Nakano, both of Niigata; Akira Ishihama, and Koichiro Adachi, both of Nara, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, and Sharp Kabushiki Kaisha, Osaka, both of Japan

Filed Mar. 27, 1995, Ser. No. 410,726

Claims priority, application Japan, Mar. 28, 1994, 6-082518

Int. Cl.[6] C09K *13/00*

U.S. Cl. 438—669 **19 Claims**

1. A method for forming a line pattern comprising:

providing a semiconductor substrate comprising a semiconductor wafer having thereon a conductive layer containing aluminum;

dry etching the conductive layer through a patterned photoresist mask to form a wiring body having etched side walls and a side wall protection film on said side walls; and

releasing the side wall protection film by treating the dry-etched semiconductor substrate with a stripping and cleaning agent comprising:

(a) from 5 to 50% by weight of an organocarboxylic ammonium salt or an amine carboxylate, represented by the formula $[R^1]m[COONH_p(R^2)q]n$, where R^1 is hydrogen, or an alkyl or aryl group having from 1 to 18 carbon atoms; R^2 is hydrogen, or an alkyl group having from 1 to 4 carbon atoms; m and n independently are integers of from 1 to 4, p is an integer of from 1 to 4, q is an integer of from 1 to 3, and p+q=4; and

(b) from 0.5 to 15% by weight of a fluorine compound.

5,630,905

METHOD OF FABRICATING QUANTUM BRIDGES BY SELECTIVE ETCHING OF SUPERLATTICE STRUCTURES

William T. Lynch, Apex, N.C.; Kang L. Wang, Santa Monica, and Martin O. Tanner, Duarte, both of Calif., assignors to The Regents of the University of California, Los Angeles, Calif.

Division of Ser. No. 384,166, Feb. 6, 1995, Pat. No. 5,539,214. This application Jun. 5, 1995, Ser. No. 465,493

Int. Cl.[6] H01L *21/20*

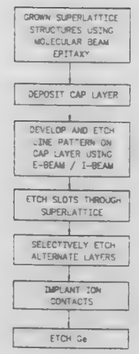
U.S. Cl. 438—507 **14 Claims**

1. A method of fabricating a quantum bridge structure comprising the steps of

a) providing a supporting substrate having a monocrystalline surface of a first semiconductor material,

b) depositing a buffer layer on said monocrystalline surface for stress relaxation,

c) alternately depositing layers of said first semiconductor material and a second semiconductor material over said buffer layer to form a superlattice structure,



d) etching trenches through said superlattice structure to form parallel rows of superlattice material and to form end support members for parallel wires, and

e) selectively etching said second semiconductor material from said parallel rows thereby forming parallel wires of said first semiconductor material, said parallel wires including a plurality of horizontally spaced wires parallel to said monocrystalline surface and a plurality of vertically stacked wires.

5,630,906

PROCESS FOR THE DELIGNIFCATION AND BLEACHING OF A LIGNOCELLULOSE MATERIAL

Jean-François Boe, Toulouse; Jean-Jacques Girerd, Gif Sur Yvette; Claude Guignard, Ossage; Jean-Louis Seris, Jurancon, and Jean-Baptiste Verlhac, Talence, all of France, assignors to Elf Aquitaine Production, Coubevoie, France

PCT No. PCT/FR93/00613, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO94/00234, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 21, 1993, Ser. No. 356,283

Claims priority, application France, Jun. 22, 1992, 92 07577

Int. Cl.[6] D21C *9/14*

U.S. Cl. 162—74 **13 Claims**

1. Process for the delignification and bleaching of a lignocellulose material in which an aqueous solution of a redox catalyst and of an oxidizing agent is reacted with the said material, wherein the said catalyst contains an organometallic cation of general formula (VII)

$$[(L)MnO_2Mn(L)]^{n+} \quad \text{(VII)}$$

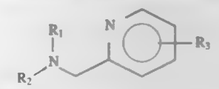
in which:

Mn represents manganese in a III or IV oxidation state, it being possible for the two Mn atoms of this cation to form the pair in the III-III or III-IV or IV-IV oxidation state,

n has the value 2, 3 or 4,

O representing oxygen,

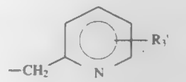
L represents a ligand of general formula (VIII):



(VIII)

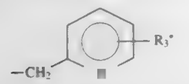
in which

either R_1 represents the radical:

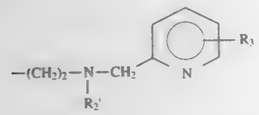


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R_2 then representing the radical:



R_3, R'_3 and R''_3 each representing, independently of one another, a group chosen from hydrogen, C_1 to C_4 lower alkyl, C_1 to C_4 lower alkoxy or halogen,
or R_1 represents the radical:



R_2 and R'_2 then being identical and representing a group chosen from hydrogen or C_1 to C_4 lower alkyl,
R_3 representing a group chosen from hydrogen, C_1 to C_4 lower alkyl, C_1 to C_4 lower alkoxy or halogen.

5,630,907

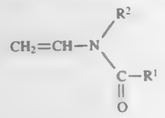
USE OF HYDROLYZED COPOLYMERS OF N-VINYLCARBOXAMIDES AND MONOETHYLENICALLY UNSATURATED CARBOXYLIC ACIDS IN PAPERMAKING

Claudia Nilz, Roedersheim-Gronau; Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof; Michael Kroener, Mannheim; Friedrich Linhart, Heidelberg; Rudolf Schuhmacher, Boehl-Iggelheim; Dietmar Moench, Weinheim, and Andreas Stange, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 411,699, Apr. 7, 1995, abandoned. This application May 21, 1996, Ser. No. 651,655
Claims priority, application Germany, Dec. 7, 1992, 42 41 117.3
Int. Cl.[6] D21H *21/10*
U.S. Cl. 162—168.2 **8 Claims**

1. A process for the production of paper with high dry and wet strengths, wherein the drainage rate and the retention are increased, comprising adding in an amount of 0.01 to 5 wt %, based on dry fibers, to paper stock containing no further additives, a copolymer having a K value of 30–300 obtained by copolymerization of

a) 5 to 99 mol % of an N-vinylcarboxamide of the formula



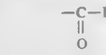
wherein R^1 and R^2 are H,

b) 95 to 1 mol % of monoethylenically unsaturated carboxylic acids having 3 to 8 carbon atoms or the alkali metal, alkaline earth metal or ammonium salts thereof,

c) 0 to 30 mol % of vinyl acetate, N-vinylpyrrolidone, N-vinylimidazole or a mixture thereof, and

d) 0 to 2 mol % of copolymerizable compounds having at least two ethylenically unsaturated nonconjugated double bonds, and

subsequent partial or complete elimination of said groups



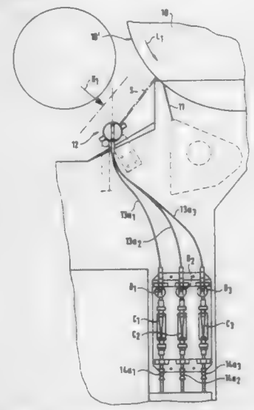
from said N-vinylcarboxyamide polymerized in the copolymer, with formation of amino or ammonium groups.

5,630,908

METHOD IN THE OPERATION OF A DOCTOR IN A PAPER/BOARD MACHINE

Arvo Viertola, Säynätsalo, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Sep. 22, 1994, Ser. No. 310,626
Claims priority, application Finland, Sep. 23, 1993, 934173
Int. Cl.[6] D21F *1/32*
U.S. Cl. 162—199 **15 Claims**



1. Method in the operation of an elongate doctor blade in a paper machine/board machine in which a lubricating medium is introduced in connection with the doctor blade, the doctor blade being arranged to engage and be operable against an opposed moving surface, comprising the steps of:

partitioning a jet pipe into a plurality of compartments,

directing a quantity of lubricating medium into each of the compartments,

supplying the lubricating medium from the compartments into different areas in the longitudinal direction of the doctor blade at a location proximate to and before engagement of the doctor blade with the opposed moving surface such that the lubricating medium is present during engagement of the doctor blade with the opposed moving surface, and

regulating the quantity of lubricating medium being supplied into the different areas independent of one another to supply a larger amount of lubricating medium into an area having a larger extent of wear of the doctor blade.

5,630,909

PULP FLUFFING GAS CONTACTOR

Christopher J. LaRiviere, Hudson, N.H., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Nov. 7, 1994, Ser. No. 335,282
Int. Cl.[6] D21C *1/10;9/153;* **D21D** *5/20*
U.S. Cl. 162—243 **19 Claims**

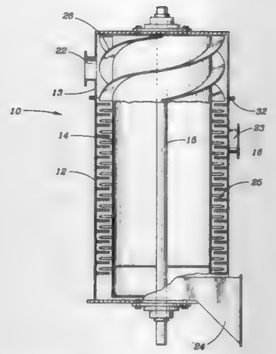
1. A pulp fluffing contactor comprising:

a cylindrical shell having a solids inlet adjacent one end and a solids outlet adjacent an opposite end and a gas inlet for introducing a gas into said shell;

a cylindrical rotor mounted for rotation within said shell of sufficient diameter to form a restricted annular space of convenient axial length;

said rotor being further provided with a plurality of radially outward extending projections subscribing a rotary path for imparting a circumferential swirl to solid fibrous material introduced within the shell;

said shell being further provided with a plurality of guide foils projecting into said annular space intermediate the rotary paths subscribed by said projections and oriented generally parallel to said rotary paths;



said guide foils further comprise a first combing portion and a second axially directing portion set at an accurate angle to said rotary paths for axially directing said circumferential swirl; and

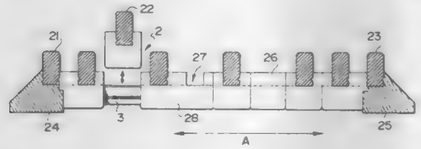
a leading edge of each guide foil being set at an inwardly diverging angle from a surface of the foil attached to the cylindrical shell and the second foil surface being structured to impart a slight lifting as the pulp flows past the surface.

5,630,910

CLIP FASTENER FOR A DEWATERING BOX

Douglas R. McPherson, Windsor, Conn., assignor to JWI Ltd., Ottawa, Canada

Filed Jun. 26, 1995, Ser. No. 494,816
Int. Cl.[6] D21F *1/54*
U.S. Cl. 162—352 **25 Claims**



1. A paper making machine dewatering box having a papermaking fabric support surface comprising a plurality of releasable clip fasteners, a plurality of static paper making fabric supporting elements, and a plurality of support members, wherein:

(1) each releasable clip fastener releasably interlocks at least one static paper making fabric contacting element oriented in the cross machine direction to a support structure member oriented in the machine direction, the clip fastener including:

(i) at least one first slot having side faces having first mating means engaged with second cooperating mating means on the or each element; and

(ii) at least one second slot having side faces having third mating means releasably engaged with fourth cooperating mating means on the member constructed and arranged such that the clip fastener can be engaged downwardly and disengaged upwardly from the member;

(2) each fabric support element oriented in the cross machine direction has its second mating means engaged with the clip fasteners on opposed side faces thereof extending in the cross machine direction;

(3) each support member oriented in the machine direction has its fourth mating means engaged with the clip fasteners on opposed side faces thereof extending in the machine direction;

(4) the mutual dimensional tolerances between the first and the second mating means, and between the third and the fourth mating means are each such that the element is held firmly in place without moving, and without the use of any other fastening means;

(5) the machine direction spacing of the elements is determined by the machine direction length of a spacing means located between the fasteners, and

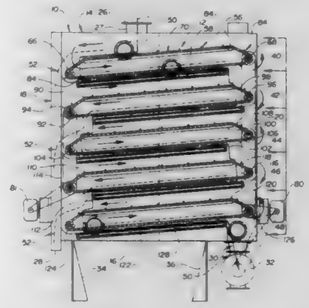
(6) the spacing means is chosen from the group consisting of (a) a spacer having a third slot having side faces having fifth mating means releasably engaged with the fourth cooperating mating means; (b) a clip fastener as defined above but engaged only with the member and not engaged with an element; and (c) a clip fastener as defined above but having additionally a different machine direction length.

5,630,911

APPARATUS FOR CONTINUOUS REMOVAL OF A SOLVENT OR OTHER LIQUID FROM SOLID PARTICLES OR GRANULES

William L. Kratochwill, Minneapolis, Minn., assignor to Crown Iron Works Company, Roseville, Minn.

Filed Jan. 18, 1995, Ser. No. 374,333
Int. Cl.[6] B01D *11/00;* **C10C** *1/18*
U.S. Cl. 196—14.52 **19 Claims**



1. Apparatus for separating a solvent entrained in solid particulate material, said apparatus comprising:

(a) a fully enclosed containment vessel defining the height, width and length of said apparatus and having means for feeding a stream of solid particles having said solvent dispersed therein, means for withdrawing vaporized solvent and means for withdrawing desolventized particles; and

(b) multiple desolventizing stages disposed within said fully enclosed containment vessel wherein each of said multiple desolventizing stages includes,

(1) an upper deck having a first end and a second end, said upper deck extending across said width of said vessel over a substantial portion of the length thereof,

(2) a lower deck having a first end and a second end, said lower deck extending across said width of said vessel over a substantial portion of the length thereof vertically spaced from and generally parallel to said upper deck, wherein said lower deck further includes means for heating said lower deck to effect vaporization of the solvent,

(3) a first gear disposed between said upper deck and said lower deck beyond the first end of said upper deck and the first end of said lower deck,

(4) a second gear disposed between said upper deck and said lower deck beyond the second end of said upper deck and the second end of said lower deck,

(5) means for conveying said solid particles, said means forming a continuous loop which operatively extends from said first gear over said lower deck and in contact therewith, over said second gear, over said upper deck and in contact therewith and back to said first gear, and

(6) drive means for rotating said means for conveying solid wherein in use said solid particles are conveyed over the lower heated deck to vaporize said solvent.

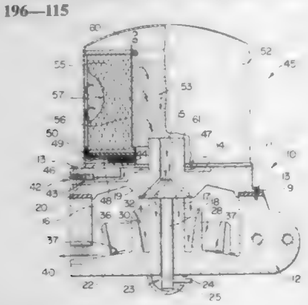
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5,630,912

OIL RECLAMATION DEVICE WITH EVAPORATOR BASE AND HEAD MOUNTED FILTER

Byron LeFebvre, Fort Lauderdale, Fla., assignor to T F Purifiner, Inc., Boynton Beach, Fla.

Continuation-in-part of Ser. No. 381,443, Jan. 31, 1995, abandoned. This application Jan. 31, 1996, Ser. No. 594,442
Int. Cl.[6] B01D *1/00;27/08;* C10G *31/09*
U.S. Cl. 196—115 10 Claims



1. An oil reclamation device comprising:
an evaporator head;
an evaporator base mounted to and below said evaporator head, said head and base defining an evaporator chamber therebetween;
a heating element connected to said evaporator base for heating oil containing contaminants within said evaporator chamber by conduction and convection to evaporate light contaminants in the oil;
a vent from said evaporator chamber;
an oil discharge conduit from said evaporator chamber formed in said evaporator base; and
an oil inlet conduit feeding oil from said head toward said evaporator chamber.

5,630,913

WATER DISTILLATION SYSTEM

Davoud Tajer-Ardebili, 31 Grey Gum Road, Mount Colah, NSW, Australia

PCT No. PCT/AU93/00372, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/02419, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 23, 1993, Ser. No. 374,577
Claims priority, application Australia, Jul. 24, 1992, PL3748
Int. Cl.[6] B01D *3/10;* C02F *1/04:1/20*
U.S. Cl. 202—176 8 Claims



1. A water distillation system comprising:
a water evaporator, a water condenser and a water storage tank, the evaporator, condenser and tank being connected in series so that water passes from the evaporator to the tank via the condenser;
a water inlet to deliver feed water to the evaporator;
a water outlet from said tank;
degassing means interposed between said water inlet and said evaporator for removing dissolved gasses in said feed water and for maintaining a predetermined level of said feed water in said evaporator;
means for reducing pressure in said evaporator and condenser relative to atmospheric pressure, wherein said means for reducing pressure includes an entrainment device and a circulation pump to pump water from said water storage tank around a circulation pipe, and wherein said pump receives water from said water storage tank and outputs water to a through input of said entrainment device, a through output of said entrainment device returning water to said water storage tank, said entrainment device further including a transverse port interconnected to an outlet of said condenser to entrain, under vacuum, condensate from said condenser to water passing to said water storage tank; and
a single refrigerant circuit, said refrigerant circuit including:
a refrigerant condenser in said water evaporator;
a refrigerant evaporator in said water condenser;
a throttle device through which refrigerant from said refrigerant condenser passes to said refrigerant evaporator;
a refrigerant compressor to circulate said refrigerant around said circuit;
desuperheater means, through which the refrigerant passes, to cool the refrigerant, said desuperheater means being positioned operatively after said compressor and before said refrigerant condenser; and
a heat exchanger, through which the refrigerant passes, located in said water storage tank to cool water located in said tank, said heat exchanger being positioned in said circuit after said throttle means and before said compressor relative to the direction of flow of the refrigerant about said circuit.

5,630,914

METHOD AND APPARATUS FOR DECONTAMINATING A LIQUID

Yesh P. Sachdeva, Burlington, and Richard L. Gabriel, Swampscott, both of Mass., assignors to Pharm-Eco Laboratories, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 124,971, Sep. 21, 1993, Pat. No. 5,562,808. This application Jun. 7, 1995, Ser. No. 478,945
Int. Cl.[6] B01D *1/14;1/22;3/28*
U.S. Cl. 203—49 16 Claims



1. A method for decontaminating a liquid of a contaminant having a vapor pressure which is higher than the vapor pressure of the liquid, comprising the steps of:
a) introducing a contaminated liquid, said liquid being selected from a group consisting of silicones, polydienes, epoxies, epoxides, phosphazenes, ethers, esters, caprolactones, sulfides, azalates, chlorinated alkanes and styrenes, into an inclined conduit at an upper portion of the conduit to form a thin film of liquid which flows along and through the inclined conduit, whereby the contaminant is volatilized; and
b) flowing a gas through the conduit and over the thin film of liquid to transport the contaminant, which has volatilized in the conduit, out of the conduit, thereby decontaminating the liquid.

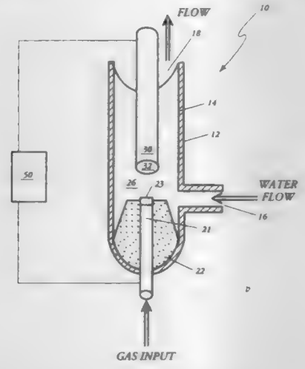
16. A method for decontaminating a liquid of a contaminant having a vapor pressure which is higher than the vapor pressure of the liquid, comprising the steps of:
a) introducing a contaminated liquid said liquid being selected from a group consisting of silicones, polydienes, epoxies, epoxides, phosphazenes, ethers, esters, caprolactones, sulfides, azalates, chlorinated alkanes and styrenes, into an upper conduit at an upper portion of the upper conduit to form a first thin film of liquid which flows along and through the upper conduit, whereby the contaminant is volatilized;
b) flowing a gas through the upper conduit and over the first thin film of liquid to transport the contaminant, which has volatilized in the upper conduit, out of the upper conduit, thereby at least partially decontaminating the liquid;
c) discharging the partially decontaminated liquid from a lower portion of the upper conduit into a middle conduit at an upper portion of the middle conduit to form a second thin film of liquid which flows along and through the middle conduit, whereby contaminant is volatilized;
d) flowing a gas through the middle conduit and over the second thin film of the partially decontaminated liquid to transport the contaminant, which has volatilized in the middle conduit, out of the middle conduit, thereby further decontaminating the liquid;
e) discharging the further partially decontaminated liquid from a lower portion the middle conduit into a lower conduit at an upper portion of the lower conduit to form a third thin film of liquid which flows along and through the lower conduit, whereby the contaminant is volatilized; and
f) flowing a gas through the lower conduit and over the third thin film of the further partially decontaminated liquid to transport the contaminant, which has volatilized in the lower conduit, out of the lower conduit, thereby decontaminating the liquid.

5,630,915

LIQUID DECONTAMINATION SYSTEM USING ELECTRICAL DISCHARGE WITH GAS INJECTION

Hugh W. Greene, P.O. Box 8, Somerville, Ala. 35670, and Paul E. Chism, Jr., P.O. Box 1851, Decatur, Ala. 35602

Continuation-in-part of Ser. No. 180,961, Jan. 11, 1994, Pat. No. 5,464,513. This application Jan. 9, 1995, Ser. No. 370,447
Int. Cl.[6] C02F *1/46*
U.S. Cl. 204—164 30 Claims



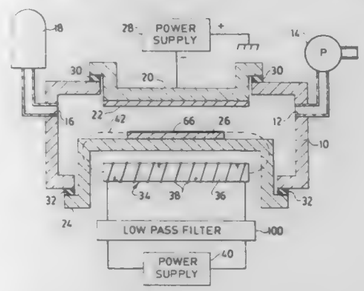
1. A liquid decontamination system comprising:
a. at least one decontamination module;
b. chamber means for holding liquid to be decontaminated, said chamber means integral to said module;
c. at least one anode assembly, said anode assembly including an anode electrode member, at least one cathode assembly, said cathode assembly including a cathode electrode member, said anode and cathode electrode members positioned in an opposed arrangement within said chamber means to define an arc discharge area between them;
b. liquid flow means for directing a flow of the liquid through said chamber means proximate the arc discharge area;
c. gas injector means for injecting a gas into the liquid in the arc discharge area, said gas injector means comprising a gas jet integral to said anode assembly whereby the gas is injected through the anode; and
d. pulse generator means for generating a series of electric arcs between said anode electrode member and said cathode electrode members.

5,630,916

MAGNETIC ORIENTING DEVICE FOR THIN FILM DEPOSITION AND METHOD OF USE

Kevin S. Gerrish, Spencerport, N.Y.; Paul H. Ballentine, Austin, Tex.; Dorian Heimanson, Rochester, N.Y., and Alan T. Stephens, II, Dayton, Ohio, assignors to CVC Products, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 25,261, Mar. 2, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,381
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.2 11 Claims



1. A method of magnetically orienting a film on a substrate comprising the steps of:
mounting the substrate on a substrate holder within a vacuum chamber;
mounting a target of magnetically orientable material adjacent to the substrate within the vacuum chamber;
depositing a thin film of the magnetically orientable material on a surface of the substrate;
locating a plate-shaped electromagnet adjacent to the substrate holder and in alignment with the target and the substrate holder, remote outside of from the target, and outside of the vacuum chamber;
orienting a plate-shaped core of the electromagnet parallel to the surface of the substrate;
sizing a surface of the plate-shaped core larger in area than the substrate surface;
using the plate-shaped electromagnet to apply a magnetic field that produces an average alignment between magnetic domains of the deposited film within one degree of uniaxial anisotropy; and
powering the electromagnet with an alternating current at a cycle rate less than one hertz for more evenly depositing the magnetically orientable material without producing substantial eddy currents in the electromagnet.

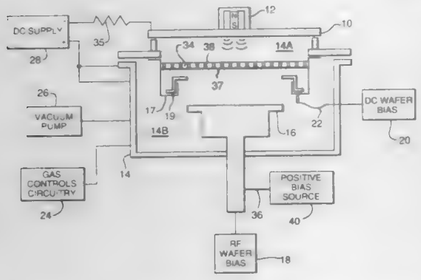
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5,630,917

CLEANING OF A PVD CHAMBER CONTAINING A COLLIMATOR

Xin S. Guo, Mountain View, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 63,478, May 17, 1993, Pat. No. 5,403,459. This application Jan. 3, 1995, Ser. No. 367,567
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.12 5 Claims



1. A method of in situ plasma cleaning of a physical vapor deposition chamber comprising a target, a substrate support mounted opposite said target, a power supply that couples energy to the region between the target and the substrate support so as to form a plasma in said region, and a collimator mounted between said target and said support, comprising

replacing said target with a cover plate,

connecting said cover plate to said power supply,

supplying a plasma precursor gas to said chamber and applying a voltage to create a first plasma to clean the upper portion of the chamber between the target and the collimator, and

applying a positive bias to the substrate support,

to create a second plasma to clean the lower portion of the chamber between the collimator and the substrate support.

5,630,918

ITO SPUTTERING TARGET

Toshiya Takahara, Yokohama, and Akio Kondo, Konan, both of Japan, assignors to Tosoh Corporation, Japan

Filed Jun. 5, 1995, Ser. No. 463,555
Claims priority, application Japan, Jun. 13, 1994, 6-130247
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.13 7 Claims

1. An ITO sputtering target comprising indium oxide and tin oxide and having a density of at least 6.4 g/cm^3, wherein the center line average height (R_a) of the surface to be sputtered is not larger than 0.8 μm, and at least one property selected from the following surface roughness requirements (i), (ii) and (iii) is satisfied:

(i) the maximum height (R_{max}) of said surface is not larger than 7.0 μm,

(ii) the ten point average height (R_z) of said surface is not larger than 6.0 μm, and

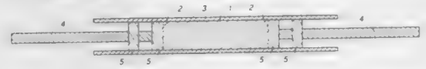
(iii) the maximum height (R_t) of said surface as expressed by the distance between two lines which are parallel to the center line of a surface roughness curve drawn as measured at a sample length of 2.5 mm, and which sandwich said surface roughness curve, is not larger than 6.5 μm.

5,630,919

ELECTRODE FOR CONDUCTIVITY CELLS COMPRISING HIGH SURFACE AREA METAL FOIL

On K. Chang, 1031 Belvedere La., San Jose, Calif. 95129

Continuation of Ser. No. 49,062, Aug. 6, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 400,123
Int. Cl.[6] G01N *27/403;27/406;27/417*
U.S. Cl. 204—400 14 Claims



1. A method for measuring the conductivity of an electrolyte comprising:

(a) providing a conductivity cell that comprises (1) a generally longitudinal chamber having substantially the same thickness throughout its length; and (2) a pair of electrodes, each electrode comprising:

(i) a rod-shaped support having an active electrode surface on at least a portion of one end of the support, said active electrode surface being a high surface area nickel or copper foil; and

(ii) means for holding the electrode in place in the chamber, wherein the active electrode surface and holding means of one electrode are in one end of the chamber and the active electrode surface and holding means of the other electrode are in the other end of the chamber, and further wherein in the holding means positions the active electrode surface so as to define a volume in the chamber for holding the electrolyte and such that each active electrolyte surface is in contact with the electrolyte,

(b) introducing a sample of unpolymerized liquid electrolyte into the conductivity cell and curing the sample with radiation to form a solid electrolyte; and

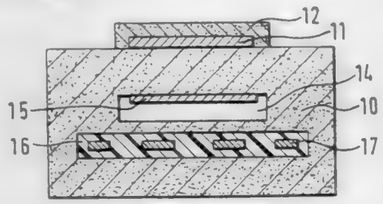
(c) measuring the resistance of the solid electrolyte.

5,630,920

ELECTROCHEMICAL SENSOR FOR DETERMINING THE OXYGEN CONCENTRATION IN GAS MIXTURES

Karl-Hermann Friese, Leonberg; Hans-Martin Wiedenmann, Stuttgart, and Frank Stanglmeier, Moeglingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00253, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/25276, PCT Pub. Date Sep. 21, 1995
PCT Filed Feb. 28, 1995, Ser. No. 545,865
Claims priority, application Germany, Mar. 14, 1994, 44 08 361.0
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—424 14 Claims



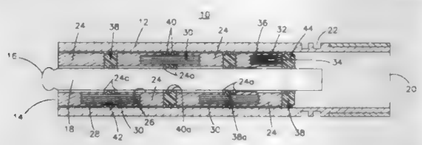
1. A sensor for determining the oxygen concentration in gas mixtures, having a solid electrolyte, with oxygen ionic conductivity, which has a measuring electrode that does not catalyze establishment of equilibrium of the gas mixture and is exposed to the gas mixture, wherein there is added to a platinum-containing measuring electrode (**11**) a material which is capable of inhibiting the catalytic action of the measuring electrode (**11**), in such a way that it is possible to set up at the measuring electrode (**11**) a potential which at least approximately corresponds to the free oxygen content.

5,630,921

ELECTROCHEMICAL SENSOR

Charles J. Hess, Carson City; Donald R. Spriggs, Reno, and Stewart Thoeni, Carson City, all of Nev., assignors to Elsag International N.V., Amsterdam, Netherlands

Filed Dec. 7, 1995 Ser. No. 569,035
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—435 13 Claims



1. A device for use in connection with measuring ionic properties in a specimen fluid, which comprises:

(a) a salt bridge comprising:

i. a first longitudinal series of semipermeable plugs impregnated with an electrolyte; and

ii. a second longitudinal series of semipermeable plugs impregnated with an electrolyte; said first and said second series of semipermeable plugs disposed in a longitudinally overlapping relationship with an interlocking fit; and

(b) a series of impermeable plugs, each of said impermeable plugs associated with a pair of adjoining transverse end surfaces of said first series of semipermeable plugs and interposed therebetween, a semipermeable plug in said second series of plugs passing through each of said impermeable plugs to thereby provide an ion path between said adjoining transverse end surfaces.

5,630,922

ELECTRODEPOSITABLE COATING COMPOSITION CONTAINING DIORGANOTIN DICARBOXYLATES

Venkatachalam Eswarakrishnan; Robert R. Zwack, both of Allison Park; Gregory J. McCollum, Gibsonia; Raphael O. Kollah, and Steven R. Zawacky, both of Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 26, 1995, Ser. No. 578,821
Int. Cl.[6] C25D *13/00;15/00;* C08L *63/00*
U.S. Cl. 204—499 21 Claims

1. An electrodepositable composition comprising (a) active hydrogen-containing, cationic salt group-containing resin electrodepositable on a cathode; (b) capped polyisocyanate curing agent; and (c) diorganotin dicarboxylate; wherein the dicarboxylate is at least one long chain carboxylate having from 14 to 22 carbon atoms and the diorganotin dicarboxylate is present in the electrodepositable composition in an amount of at least 0.01 percent by weight tin based on weight of total solids of the electrodepositable composition.

5,630,923

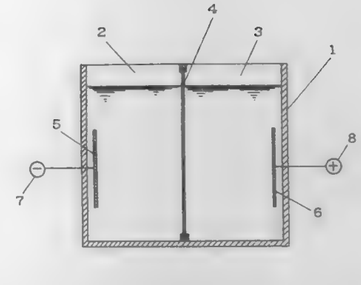
SEPARATION SYSTEM FOR PREPARING HIGH α-GLYCOSYL-L-ASCORBIC ACID

Hajime Aga; Masaru Yoneyama, and Shuzo Sakai, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation of Ser. No. 229,782, Apr. 19, 1994, abandoned, which is a division of Ser. No. 990,081, Dec. 14, 1992, Pat. No. 5,338,420. This application May 2, 1995, Ser. No. 434,327
Claims priority, application Japan, Jan. 30, 1992, 4-57617
Int. Cl.[6] B01D *61/46*
U.S. Cl. 204—530 1 Claim

1. A separation system for preparing a high α-glycosyl-L-ascorbic acid content product, which consists essentially of:

(a) a container which holds a solution having a pH of 2–7 containing α-glycosyl-L-ascorbic acid and L-ascorbic acid;



(b) a plurality of pairs of (1) cation-exchange membranes and (2) anion-exchange membranes which are provided within said container and spaced apart from one another and which separate said container into 50–5,000 cells of material-feed cells and permeation cells, said anion-exchange membranes having a molecular weight cut-off in the range of about 100–1,000;

(c) an anode and a cathode in different end cells of said container; and

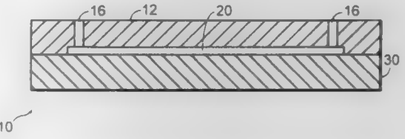
(d) a DC power supply means, connected to said anode and cathode, for decreasing stepwisely voltage across said anode and said cathode as specific electric resistance of the solution in said material-feed cell increases.

5,630,924

COMPOSITIONS, METHODS AND APPARATUS FOR ULTRAFAST ELECTROSEPARATION ANALYSIS

Martin Fuchs, Uxbridge; Wassim A. Nashabeh, Chestnut Hill, and Dieter R. Schmalzing, Boston, all of Mass., assignors to PerSeptive Biosystems, Inc., Framingham, Mass.

Filed Apr. 20, 1995, Ser. No. 425,828
Int. Cl.[6] C25B *7/00*
U.S. Cl. 204—601 16 Claims



1. A method for detecting the absence, presence or concentration of an analyte in a sample, the method comprising the steps of:

a) combining

(i) a first binding partner which binds to a first binding site on an analyte to be detected, said first binding partner comprising a detectable moiety, and

(ii) a second binding partner which binds to a second binding site on said analyte, said second binding partner comprising a charge-modifying moiety

with a sample to produce a mixture so that said analyte, if present, will form a three-membered complex comprising analyte, first binding partner and second binding partner;

(b) disposing said mixture within an electroseparation channel comprising an electrically-conductive medium;

(c) applying an electrical potential to said channel thereby to separate said three-membered complex, if present, from unbound first binding partner; and,

(d) detecting said complex.

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5,630,925

CAPILLARY ELECTROPHORESIS USING A CONDUCTIVE CAPILLARY TUBE

Stephen L. Pentoney, Jr., Yorba Linda, and Kenneth D. Konrad, Long Beach, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 13, 1995, Ser. No. 501,836
Int. Cl.[6] G01N 27/26
U.S. Cl. 204—604 8 Claims



1. An apparatus for electrokinetic injection of a sample, comprising:

a capillary tube having an end submersed in a sample;

an electrically conductive terminal attached to the tube at said end;

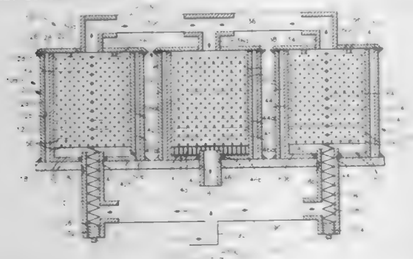
means electrically connected to said terminal for applying an electric field at said end of the tube, so that when said end is submersed in a sample, that will cause a portion of said sample to be introduced into the submersed end of the tube.

5,630,926

ELECTROSTATIC FILTER

Donald E. Thompson, Modesto, Calif., assignor to Contamco Corporation, Silver Spring, Md.

Continuation of Ser. No. 105,065, Aug. 12, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,513
Int. Cl.[6] B01D 35/06; B03C 5/02
U.S. Cl. 204—665 9 Claims



1. A filter for removing particles from fluids that are flowable through the filter comprising:

a first chamber for receiving fluid;

a plurality of spaced electrode surfaces in said first chamber for charging particles contained in the fluid, said spaced electrode surfaces electrically connectable to a voltage source of one polarity only, whereby the fluid is flowable between said spaced electrode surfaces and in contact with said electrode surfaces such that the particles within the fluid move into close proximity with said electrode surfaces to pick up the charge of the electrode surfaces;

first means for electrically connecting said spaced electrode surfaces in said first chamber to a voltage source of one and the same polarity only;

a second chamber;

a plurality of spaced electrode surfaces in said second chamber for charging particles contained in the fluid, said spaced electrode surfaces electrically connectable to a voltage source of one polarity only and opposite to the polarity of the first chamber electrode surfaces, whereby the fluid is flowable between said spaced electrode surfaces and in contact with said electrode surfaces such that the particles within the fluid move into close proximity with said electrode surfaces to pick up the charge of the electrode surfaces;

second means for electrically connecting said spaced electrode surfaces in said second chamber to a voltage source of one and the same polarity only and opposite to the polarity of said first chamber electrode surfaces;

porous filter media being interposed between said spaced electrode surfaces in said first and second chambers;

a third chamber in fluid communication with said first and second chambers, said third chamber adapted to receive the fluid bearing the charged particles from said first and second chambers; and

porous filter media in said third chamber for capturing particles contained in the fluid.

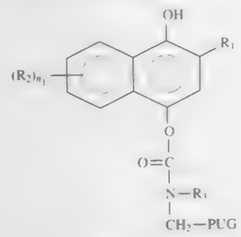
5,630,927

SILVER HALIDE COLOR LIGHT-SENSITIVE MATERIAL

Toshio Kawagishi; Kensuke Morita; Yoshio Ishii, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 45,257, Apr. 13, 1993, abandoned. This application Apr. 8, 1994, Ser. No. 225,362
Claims priority, application Japan, Apr. 13, 1992, 4-118504; Apr. 17, 1992, 4-122972; Aug. 28, 1992, 4-251907; Aug. 31, 1992, 4-253473; Sep. 3, 1992, 4-258909; Jan. 20, 1993, 5-023391
Int. Cl.[6] G03C 7/305;7/34
U.S. Cl. 430—544 3 Claims

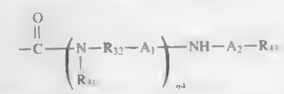
1. A silver halide color light-sensitive material containing a compound represented by formula (IV) which releases a photographically useful group or a precursor thereof upon reaction with an oxidation product of a developing agent and which does not form a substantial color image:



(IV)

wherein R_1 represents —$CONHR_{13}$ or a group represented by formula (II):

wherein R_{13} represents a a carbamoyl-, cyano-, or sulfamoyl-substituted alkyl group having not more than 4 carbon atoms excluding the carbon atoms in substituent group(s):



(II)

wherein R_{31} represents a hydrogen atom or an alkyl group having not more than 4 carbon atoms; R_{33} represents an alkyl group having from 1 to 10 carbon atoms; A_1 and A_2 each represents CO or SO_2; n_4 represents 0 or 1; R_{32} represents $—\{C(R_{34})R_{35}\}_{n5}$, wherein R_{34} and R_{35} each represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms; and n_5 represents an integer of from 1 to 3;

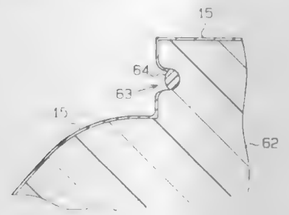
R_2 represents a hydrogen atom or a substituent; n_1 represents 0 to 4; the R_2 groups when n_1 is 2 or more may be the same or different; R_3 is non-diffusing and represents an alkyl group, an aryl group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, a sulfonyl group or a sulfamoyl group; and PUG represents a photographically useful group.

5,630,928

PROCESS FOR PRODUCING RESIN PRODUCTS

Yasuhiko Ogisu, Nagoya; Shigeyuki Takahashi, Kuwana, and Mamoru Kato, Nagoya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Continuation-in-part of Ser. No. 225,286, Apr. 8, 1994, Pat. No. 5,484,516. This application Mar. 9, 1995, Ser. No. 401,916
Claims priority, application Japan, Mar. 9, 1994, 6-038830; Aug. 3, 1994, 6-182656
Int. Cl.[6] C25D 5/02
U.S. Cl. 205—118 13 Claims



1. A process for producing a resin product, said resin product having a body made of a resin, said body having an outer surface including an ornamental surface and an unornamental surface, a first area defined on the outer surface, and a chemical plating layer and an electroplating layer respectively formed on the first area, said process comprising the steps of:

making a first boundary along a portion of a contour of the first area located on the ornamental surface, said first boundary being selected from the group consisiting of V-shaped groove and U-shaped groove;

making a second boundary along the rest of the contour of the first area located on the unornamental surface, said second boundary being constituted by a U-shaped groove, said second boundary making step including forming a resist layer in said U-shaped groove, and said resist layer having a resistivity to a chemical plating solution for making the chemical plating layer;

forming said chemical plating layer on the outer surface of the body except a part of the first boundary and the resist layer by chemical plating the body; and

selectively forming said electroplating layer on the chemical plating layer within the first area.

5,630,929

HIGHLY CORROSION-RESISTANT ZINCATE TYPE ZINC-IRON-PHOSPHORUS ALLOY PLATING BATH AND PLATING METHOD USING THE PLATING BATH

Katsuhide Oshima; Satoshi Yuasa, and Junko Ozawa, all of Tokyo, Japan, assignors to Dipsol Chemicals Co., Ltd., Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,166
Claims priority, application Japan, Oct. 17, 1994, 6-250305
Int. Cl.[6] C25D 3/56; C23C 16/00;18/00;20/00
U.S. Cl. 205—245 30 Claims

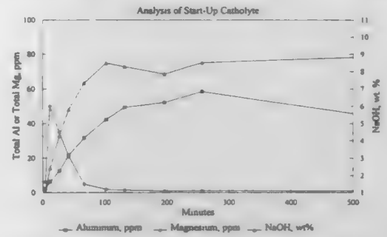
1. A zinc-iron-phosphorous alloy-plating bath having a pH of not less than 13 and comprising iron, phosphorous and zinc sources in amounts required for electro-depositing a zinc-iron-phosphorous alloy film having an iron content ranging from 0.1 to 30% by weight, a phosphorous content ranging from 0.001 to 1.5% by weight and a balance of zinc, and an auxiliary agent for depositing phosphorous selected from the group consisting of alkylenepolyamines having 4 to 12 carbon atoms; reaction products of alkyleneamines having 4 to 12 carbon atoms with alkylene oxides having 2 to 3 carbon atoms; reaction products of alkyleneamines each having 4 to 12 carbon atoms with epihalohydrins; alkanolamines having 2 to 6 carbon atoms; aminopolycarboxylic acids having 6 to 14 carbon atoms and salts thereof; and oxycarboxylic acids having 2 to 8 carbon atoms and salts thereof.

5,630,930

METHOD FOR STARTING A CHLOR-ALKALI DIAPHRAGM CELL

Bernard A. Maloney, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 26, 1995, Ser. No. 507,173
Int. Cl.[6] C25B 1/46
U.S. Cl. 205—350 18 Claims



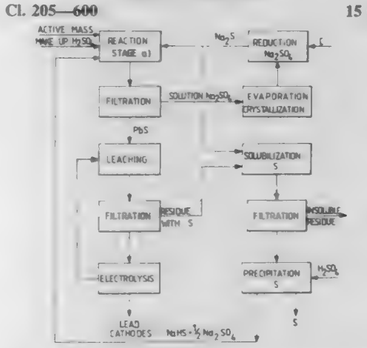
1. In the process of operating a chlor-alkali electrolytic cell having a synthetic liquid permeable diaphragm separating the anolyte compartment from the catholyte compartment, the improvement which comprises introducing into the anolyte compartment during the cell start-up period a permeability moderating amount of inorganic amphoteric material that is soluble in the anolyte, that has an insoluble form under the conditions existing within the diaphragm, and that is dissolved by product catholyte liquor.

5,630,931

PROCESS FOR THE HYDROMETALLURGICAL AND ELECTROCHEMICAL TREATMENT OF THE ACTIVE MASS OF EXHAUSTED LEAD BATTERIES, TO OBTAIN ELECTROLYTIC LEAD AND ELEMENTAL SULPHUR

Adilson C. Manequini, Toronto, Canada, assignor to Ecowin S.R.L., Milan, Italy

Filed Jan. 25, 1996, Ser. No. 591,717
Claims priority, application Canada, Jan. 25, 1995, 2141099
Int. Cl.[6] C25D 5/06
U.S. Cl. 205—600 15 Claims



1. A process for the hydrometallurgical and electrochemical production of electrolytic lead from an active mass containing lead sulphate $PbSO_4$, lead dioxide PbO_2, and lead oxide PbO of exhausted lead batteries,

comprising treating said active mass, containing lead sulphate $PbSO_4$, lead dioxide PbO_2, and lead oxide PbO, with sodium sulphide Na_2S and sulfuric acid, giving rise to the following reactions:

$$PbSO_4+Na_2S \rightarrow PbS+Na_2SO_4 \quad (1a)$$

$$PbO_2+2Na_2S+2H_2SO_4 \rightarrow PbS+S^\circ+2Na_2SO_4+2H_2O \quad (1b)$$

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$$PbO+Na_2S+H_2SO_4 \rightarrow PbS+Na_2SO_4+H_2O \quad (1c)$$

2. A process as claimed in claim 1, comprising the following stages in succession:

a) treating said active mass with Na_2S in a dilute aqueous sulphuric acid solution, giving rise to the following reactions:

$$PbSO_4+Na_2S \rightarrow PbS+Na_2SO_4 \quad (1a)$$

$$PbO_2+2Na_2S+2H_2SO_4 \rightarrow PbS+S^\circ+2Na_2SO_4+2H_2O \quad (1b)$$

$$PbO+Na_2S+H_2SO_4 \rightarrow PbS+Na_2SO_4+H_2O \quad (1c)$$

b) leaching the lead sulphide PbS formed in said stage a) with ferric fluoborate in accordance with the reaction:

$$PbS+2Fe(BF_4)_3 \rightarrow Pb(BF_4)_2+2Fe(BF_4)_2+S^\circ$$

and separating said elemental sulphur S° formed thereby by filtration, and

c) electrolyzing the lead fluoborate $Pb(BF_4)_2$ formed in said stage b) in a diaphragm cell, to obtain electrolytic lead at the cathode and ferric fluoborate in the anodic compartment.

3. A process as claimed in claim 2, comprising the following further stages:

d) reducing the sodium sulphate formed in said stage a) with carbon in accordance with the reactions:

$$Na_2SO_4+2C \rightarrow Na_2S+2CO_2$$

$$Na_2SO_4+4C \rightarrow Na_2S+4CO$$

and recycling said Na_2S obtained thereby to said stage a)

e) treating said elemental sulphur S° separated in said stage b) with an Na_2S solution in accordance with the reaction:

$$Na_2S+nS^\circ \rightarrow Na_2S_{n+1}$$

and treating the Na_2S_{n+1} with sulfuric acid in accordance with the reaction

$$Na_2S_{n+1}+\tfrac{1}{2}H_2SO_4 \rightarrow \tfrac{1}{2}Na_2SO_4+NaHS+nS^\circ$$

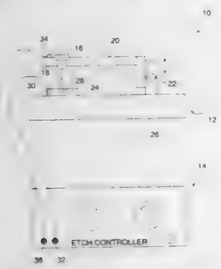
said sulphur nS° so produced being in a pure form.

5,630,932

TIP ETCHING SYSTEM AND METHOD FOR ETCHING PLATINUM-CONTAINING WIRE

Stuart M. Lindsay; Tianwei Jing; Yuri L. Lyubchenko, all of Tempe, Ariz., and Alexander A. Gall, Bothell, Wash., assignors to Molecular Imaging Corporation, Tempe, Ariz.

Filed Sep. 6, 1995, Ser. No. 524,054
Int. Cl.[6] C25F *3/14;7/00;* **B23H** *9/08*
U.S. Cl. 205—645 **17 Claims**



12. A method for etching a platinum-containing wire to form an STM tip, said method comprising:

placing the wire into a tip holder;

immersing an end of the wire into a solution containing sodium hydroxide at a concentration of from about 1M to about 10M to etch said end to form an STM tip;

placing a counter electrode in said solution;

applying a first alternating current signal between the wire and said counterelectrode, said first alternating current signal having a voltage amplitude within the range of about 10 V to about 100 V and a repetition rate in the range of about 100 Hz to about 500 Hz;

measuring an electrical current component of said first alternating current signal and turning off said first alternating current signal upon the first to occur of (a) detection of a detectable drop in said electrical current and (b) the elapse of a first period of time;

applying a second alternating current signal between the wire and said counterelectrode after turning off said first alternating current signal, said second alternating current signal having a voltage amplitude within the range of about 3 V to about 10 V and a repetition rate in the range of about 100 Hz to about 500 Hz for a second period of time occurring after said first period of time; and

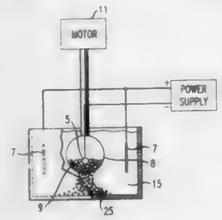
removing said STM tip from said solution.

5,630,933

PROCESSES INVOLVING METAL HYDRIDES

Henry H. Law, Berkeley Heights, and Brijesh Vyas, Warren, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 14, 1995, Ser. No. 502,504
Int. Cl.[6] C25F *5/00;* **C25D** *5/34;5/44*
U.S. Cl. 205—704 **3 Claims**



1. A process for activating a metal, said process comprising the steps of contacting said metal with an aqueous electrolyte in the region of a cathode, and passing a current between said cathode and an anode through said aqueous electrolyte to fracture said metal and to produce hydrogen, said hydrogen interacting with said metal to produce a metal hydride,

wherein said metal is activated such that the rate of reversible hydrogen reaction in said metal is increased.

5,630,934

IN-SITU TREATMENT SYSTEM FOR INHIBITING THE FORMATION OF, AND FOR ALLEVIATING, ACIDITY IN WATER

Ward Chesworth, Eden Mills; Gene S. Shelp, and Barry J. Shelp, both of Guelph, all of Canada, assignors to Enpar Technologies Inc., Guelph, Canada

Filed Aug. 23, 1995, Ser. No. 518,334
Int. Cl.[6] C02F *1/46*
U.S. Cl. 205—742 **15 Claims**

1. Procedure for inhibiting the formation of, and for alleviating, acidity in water, wherein:

the water upon which the procedure is carried out is a body of water residing in an aquifer below the water table in the ground, being ground in which there exists a seam or mass of a mineral;

in respect of the ground in which resides the body of water upon which the procedure is carried out, the disposition of the seam or mass in the ground is such that the seam or mass has an exposed portion, being an upper portion of the seam or mass which lies above the water table, and the seam or mass has a non-exposed portion, being a lower portion of the seam or mass which lies in the aquifer below the water table;

the mineral in the seam or mass is of the kind in which, when water passes through the said exposed portion, the water picks up acidity;

the disposition of the seam or mass and the aquifer is such that water passing down through the said exposed portion enters the aquifer;

the mineral in the seam or mass is of the kind that is electrically conductive;

the disposition of the seam or mass and the aquifer is such that the non-exposed portion of the seam or mass is in effective electrical contact with the body of water in the aquifer;

the procedure includes the step of providing a contact means, and of connecting the contact means to the mineral in the seam or mass, whereby the contact means makes effective electrical contact with the mineral;

the procedure includes the step of providing an electrode comprising a body of an electrically-conductive substance;

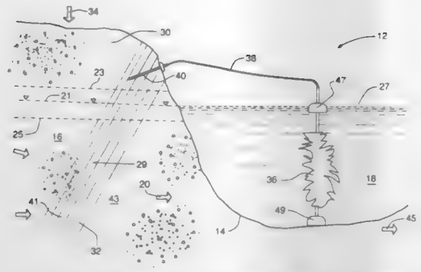
the procedure includes the step of so placing the electrode in relation to the body of water in the aquifer that the electrode is in operative effective electrical contact with the body of water in the aquifer;

in respect of the ground in which resides the body of water upon which the procedure is carried out, the extent and continuity of the body of water in the aquifer are such that ions of substances dissolved in the water can physically travel between the mineral and the electrode;

the procedure includes the step of providing an electrical connection means, and of connecting the same between the electrode in the water and the contact means in the mineral;

the substance comprising the electrode is higher in the electrochemical series than the mineral comprising the seam or mass;

whereby the mineral in the seam or mass comprises the cathode, and the electrode in the water in the aquifer comprises the anode, of an electro-chemical cell, and whereby the body of water in the aquifer, being in effective electrical contact with both the mineral and the electrode, comprises the electrolyte of that cell.



5,630,935

PRESSURE RELIEF VALVE WITH SAMPLE REMOVAL PORT

Dennis M. Treu, Gurnee, Ill., assignor to Aksys, Ltd., Lincolnshire, Ill.

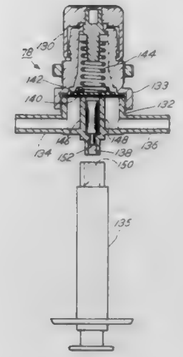
Division of Ser. No. 388,275, Feb. 13, 1995, Pat. No. 5,591,344. This application Nov. 17, 1995, Ser. No. 560,017
Int. Cl.[6] B01D *27/10;* **F16K** *17/06*
U.S. Cl. 210—130 **5 Claims**

1. A fluid pressure relief device having a housing comprising a fluid inlet, a fluid chamber, a fluid outlet, a sample removal port in fluid communication with said chamber, and pressure relief means movable with respect to said chamber for relieving fluid pressure in said chamber, the improvement comprising:

said housing having a central member fixed with respect to said housing and said central member having an upper portion, said upper portion in contact with said pressure relief means under normal pressure conditions, said central member having an open interior disposed above said sample removal port; and

an insert placed within said open interior of said central member and movable with respect thereto between upper and lower positions, a portion of said insert contacting said pressure relief means when said insert is moved to said upper position;

whereby insertion of an implement into said sample removal port pushes said insert into contact with said pressure relief means, pushing said pressure relief means away from said upper portion of said central member, permitting fluid to pass over said upper portion of said central member to said sample removal port, thereby allowing fluid to be selectively withdrawn from said sample removal port.

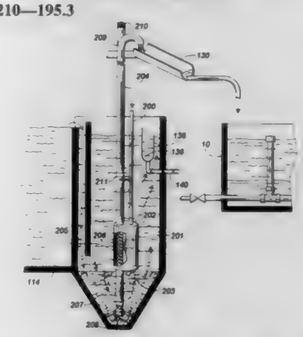


5,630,936

VERTICAL DRAINAGE DRYING BED FOR WASTE SLUDGE AND AN INTENSIFIED METHOD OF TREATING WASTEWATER

Boris Oyzboyd, 1504 D Dresden Dr., NE., Atlanta, Ga. 30319

Division of Ser. No. 285,053, Aug. 3, 1994. This application Jun. 7, 1995, Ser. No. 477,584
Int. Cl.[6] C02F *3/12*
U.S. Cl. 210—195.3 **1 Claim**



1. An airlift for communicating accumulated waste sludge from a lower portion of a secondary clarifier of a sewage treatment facility, comprising:

an elongated sludge evacuation pipe having a lower end open to a sludge settling basin in lower portion of a secondary clarifier of a sewage treatment facility for receiving concentrated waste activated sludge and water in which the waste activated sludge is carried, an upper end for discharging of the waste activated sludge and water selectively to a drying bed and a clarified water discharge or to an aeration tank, and a midsec-

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tion spaced-apart from the lower end and defining a series of spaced-apart holes arranged in a semi-circular side portion of the midsection;

a sealed cylindrical manifold enclosing the midsection of the sludge evacuation pipe;

an air supply line connected at one end to the manifold for communicating air into the interior of the manifold and for connecting at another end to a supply of pressurized air,

whereby the air, being introduced through the holes into an interior side portion of the sludge evacuation pipe, produces a lifting effect within the sludge evacuation pipe for elevating the waste activated sludge from the settling basin in the lower portion of the secondary clarifier while reducing the breakup and separation of the waste activated sludge into smaller particles in the water, thereby enhancing the physical treatment of raw sewage in the aeration tank and the settling of the waste activated sludge in the secondary clarifier during the cyclic processing of the sewage and sludge in the sewage treatment plant.

5,630,937

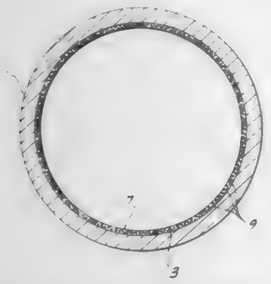
NUCLEOPHILIC BODIES BONDED TO SILOXANE AND USE THEREOF FOR SEPARATIONS FROM SAMPLE MATRICES

William R. Betz, Bellefonte, and James L. Desorcie, State College, both of Pa., assignors to Supelco, Inc., Bellefonte, Pa.

Division of Ser. No. 283,210, Jul. 29, 1994, which is a continuation-in-part of Ser. No. 276,048, Jul. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 201,752, Feb. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 191,644, Feb. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,453

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **17 Claims**



1. A solid phase adsorption device comprising a monolithic substrate having adsorbent bodies bonded to the surfaces thereof through a medium comprising a siloxane polymer.

5,630,938

EVERTABLE DRUM CENTRIFUGE FILTER

Johannes Feller, Tuntenhausen; Gunnar Grim, München, and Bruno Hegnauer, Gauting, all of Germany, assignors to Krauss-Maffei AG, Munich, Germany

Filed Jul. 11, 1996, Ser. No. 680,715

Claims priority, application Germany, Jul. 13, 1995, 195 25 567.4

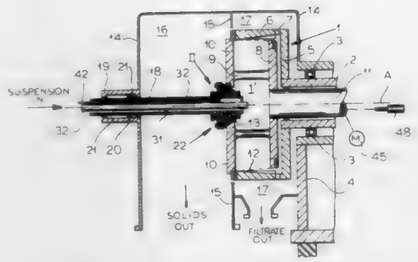
Int. Cl.[6] B04B *3/02;11/00;* **B01D** *33/11*

U.S. Cl. 210—350 **14 Claims**

1. An evertable drum centrifuge comprising:

a housing extending along an axis;

a hollow filter drum rotatably mounted in the housing about the axis and having a front end wall formed with a fill opening centered on the axis;



an evertably mounted filter medium inside the filter drum;

a nonrotatable fill tube extending along the axis and having a back end;

a fill head complementarily engageable in the fill opening and fitted in a closed position in the fill opening;

means for introducing a suspension to be filtered through the fill tube and fill opening into the drum;

a bearing rotatably supporting the fill head on the fill-tube back end;

a static seal engageable between the fill head and the fill opening;

a pair of dynamic seals flanking the bearing, defining with the head and fill tube an annular compartment surrounding the fill tube, and each having

a head ring fixed rotationally on the head and having a face,

a fill-tube ring fixed rotationally on the fill tube and having a face axially

engaging the face of the respective head ring, and

a spring urging the faces of the respective fill-tube ring and head ring axially together; and

means for pressurizing the compartment with a fluid and forcing the fluid from the compartment between the faces of the dynamic seals.

5,630,939

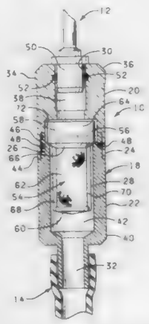
FILTER ASSEMBLY DEVICE FOR USE IN SURGICAL ASPIRATED SUCTION

Ronald A. Bulard, and Edward S. Gillespie, both of Ardmore, Okla., assignors to Imtec Corporation, Ardmore, Okla.

Filed Sep. 15, 1995, Ser. No. 528,573

Int. Cl.[6] B01D *35/02*

U.S. Cl. 210—416.1 **6 Claims**



1. A filter assembly for use in conjunction with a surgical evacuation system comprising an aspirator tip, a flexible suction conduit and a suction pump, the filter assembly comprising:

a filter housing comprising a head portion and a body portion, the head portion having a first end, a second end and a through passageway extending therebetween, the first end of the head portion connected to the aspirator tip and fluidly communicating the aspirator tip with the passageway extending through the head portion, a portion of the passageway in the second end of the head portion of the filter housing defining a first chamber, the body portion having a first end, a second end and a through passageway extending therebetween, the second end of the body portion connected to the flexible suction conduit, a portion of the passageway in the second end of the body portion defining a second chamber such that when the first end of the body portion is slidingly disposed in the second end of the head portion the first and second chambers in the head portion and the body portion cooperate to define a filter receiving chamber; and

a removable, elongated tubular mesh filter element disposed within the filter receiving chamber of the filter housing, the filter element comprising a head member having a fluid flow passageway extending therethrough, a fluid impermeable base member spatially disposed from the head member and a fluid permeable tubular mesh body member disposed between the head member and the based member, the head member having a first portion and a second portion, said first portion of the head member extending beyond the first end of the body portion of the filter body to facilitate removal of the filter element from the filter housing when the head portion of the filter housing is separated from the body portion of the filter housing and said second portion of the head member forming a substantially fluid-tight seal with the body portion of the filter housing whereby the fluid permeable tubular mesh body member of the filter element provides a collection chamber for aspirated tissue and materials during surgical procedures.

5,630,940

FILTER DEVICE FOR THE FILTRATION OF FLUIDS

Leonard M. Van Rossen, Bunnik, and Bertus Dijkman, Breda, both of Netherlands, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

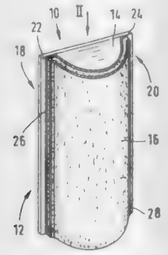
PCT No. PCT/US94/01974, § 371 Date Aug. 30, 1995, § 102(e) Date Aug. 30, 1995, PCT Pub. No. WO94/22557, PCT Pub. Date Oct. 13, 1994

PCT Filed Feb. 22, 1994, Ser. No. 513,882

Claims priority, application Germany, Apr. 1, 1993, 43 10 664.1

Int. Cl.[6] B01D *27/06;27/14*

U.S. Cl. 210—484 **19 Claims**



1. A filter device for the filtration of fluids, comprising at least one filter element comprising

at least one filter unit formed of a first material structure extending in a planer configuration and a second material structure which is curved in a substantially curved shape which first and second material structures are mechanically stable and connected to each other and of which at least the second material structure comprises a filter material,

wherein the second material structure is formed from a plastic, elastically deformed support structure curved in at least one substantially curved shape while being elastically deformed and attached to the support structure is a fibrous filter material having little or no resistance to bending, which second material structure is connected to said first material structure at two adjacent side edges of each curved shape, the side edges forming side flanges of said filter unit limiting each curved shape, wherein said support structure is elastically deformed and generates flexural restoring forces such that when the first and second material structures are connected, the substantially planar first material structure receives the flexural and restoring forces from the substantially curved second material structure thus subjecting the first material structure to tensile stress while the curved shape of the second material structure provides mechanical stability resisting deformation of the second material structure by fluid flow during filtration.

5,630,941

PERMANENT HYDROPHILIC MODIFICATION OF FLUOROPOLYMERS

Wolfgang Burger, Böcklerweg 30, 81825 München; Klaus Lunkwitz, Georg-Schumann-Str. 6, 01187 Dresden, and Heide-Marie Buchhammer, Winterbergstr. 81, 01237 Dresden, all of Germany

Continuation-in-part of Ser. No. 171,053, Dec. 21, 1993, Pat. No. 5,540,837. This application Nov. 15, 1995, Ser. No. 558,334

Claims priority, application Germany, Dec. 23, 1992, 42 43 995.7

Int. Cl.[6] B01D *29/00*

U.S. Cl. 210—490 **5 Claims**

1. A permanently hydrophilically modified fluoropolymer comprising a fluoropolymer having a surface, said surface having a thin film of a charged polyelectrolyte complex formed on the surface of the fluoropolymer and in which the polyelectrolyte complex consists essentially of a complex of:

(a) a water soluble polycation and/or a cationically modified synthetic resin; and

(b) a water soluble anionically modified hydrophilic synthetic resin.

5,630,942

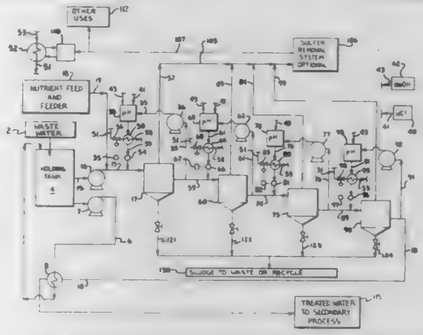
TWO PHASE ANAEROBIC DIGESTION PROCESS UTILIZING THERMOPHILIC, FIXED GROWTH BACTERIA

Charles G. Steiner, Shawnee Mission, Kans., assignor to Purification Industries International, Shawnee Mission, Kans.

Filed May 29, 1996, Ser. No. 654,534

Int. Cl.[6] C02F *3/06;3/28*

U.S. Cl. 210—603 **12 Claims**



1. An anaerobic waste water treatment process comprising the steps of:

a. introducing waste water containing organic material into a first reaction zone containing thermophilic, fixed growth, and acidogenic bacteria;

b. fermenting the waste water in said first reaction zone under anaerobic conditions at a pH in a range between about 5 and 6 and a temperature in a range between about 115 to 160 degrees Fahrenheit to produce an acid effluent;

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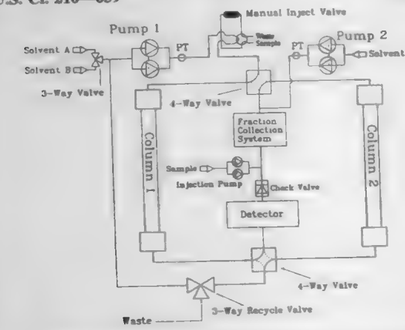
c. conveying said acid effluent to a second reaction zone containing thermophilic, fixed growth, methanogenic bacteria;
d. fermenting the acid effluent in said second reaction zone under anaerobic conditions at a pH in a range between about 7.2 and 8.2 and at a temperature in a range between about 115 to 160 degrees Fahrenheit to produce process effluent and gas including methane;
e. collecting at least a portion of said gas including methane; and
f. removing the process effluent.

5,630,943

DISCONTINUOUS COUNTERCURRENT CHROMATOGRAPHIC PROCESS AND APPARATUS

Charles M. Grill, East Greenwich, R.I., assignor to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Nov. 30, 1995, Ser. No. 566,425
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—659 **9 Claims**



1. A preparative chromatographic cyclical process comprising, at substantially steady state:
(a) establishing a figure-of-eight circulating chromatographic profile between two chromatographic columns with the provision that said chromatographic profile never passes through a pump;
(b) discontinuously and periodically injecting a sample comprising at least two components, into the interior of said circulating profile;
(c) collecting, discontinuously and periodically, at least two enriched fractions from said circulating profile; and
(d) through a first solvent pump, pumping solvent, as a mobile phase, substantially continuously into one of said chromatographic columns during a single cycle.

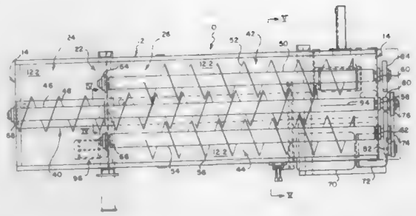
5,630,944

TREATMENT OF SEWAGE SLUDGE

Johannes S. Terblanche, 18 Suikerbos Crescent, Plattekloof, South Africa

Continuation-in-part of Ser. No. 75,076, Jun. 10, 1993, abandoned. This application Jan. 12, 1995, Ser. No. 371,725
Claims priority, application South Africa, Jun. 10, 1992, 92/4240; Sep. 1, 1992, 92/6615; Dec. 22, 1992, 92/9965
Int. Cl.[6] C02F *11/00*
U.S. Cl. 210—768 **9 Claims**

1. A method of mixing dewatered sewage sludge with an organic material thereby smearing said sludge over said organic material so as to form a coating thereon, which method comprises charging said sludge and said organic material into a mixer, feeding a first mass of sludge and organic material at a first velocity and feeding a second mass of sludge and organic material in the same direction as the first mass of sludge and organic material but at a second velocity, there being an interface between the first and second



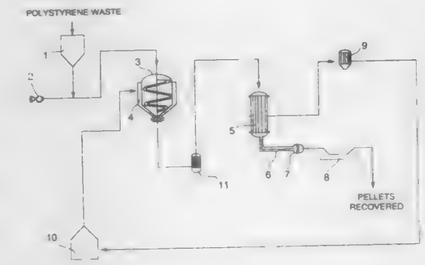
masses at which interface there is a shearing action between the two masses, feeding a third mass of sludge and organic material in the opposite direction to the first and second masses thereby creating interfaces between the second and third masses and between the first and third masses at which interfaces a shearing action takes place.

5,630,945

METHOD FOR RECOVERING UNCROSSLINKED SYNTHETIC RESIN WASTE

Yasuyuki Takayanagi; Satoshi Endoh; Naoki Sugama, all of Kanagawa, and Masaru Sugita, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1995, Ser. No. 517,760
Claims priority, application Japan, Aug. 24, 1994, 6-222670
Int. Cl.[6] B01D *11/04*
U.S. Cl. 210—773 **11 Claims**



1. A method for recovering an uncrosslinked synthetic resin waste selected from the group consisting of synthetic styrene resin, polyester resin and acrylic resin, comprising the steps of dissolving the uncrosslinked synthetic resin waste in a solvent to form a resin solution, and recovering said solvent from said resin solution to form a molten resin, said solvent comprising, as an active ingredient, an effective amount of at least one oxyisobutyric acid ester selected from the group consisting of: an alkyl α-alkoxyisobutyrate represented by the formula (1):

$$(CH_3)_2CCO_2R^2 \quad (1)$$
$$|$$
$$OR^1$$

an alkyl β-alkoxyisobutyrate represented by the formula (2):

$$R^1OCH_2CHCO_2R^2 \quad (2)$$
$$|$$
$$CH_3$$

and an alkyl α-hydroxyisobutyrate represented by the formula (3):

$$(CH_3)_2CCO_2R^2 \quad (3)$$
$$|$$
$$OH$$

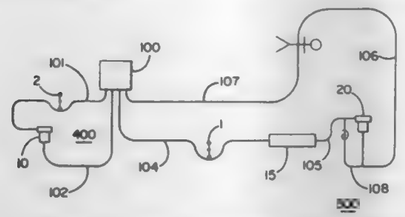
wherein R^1 and R^2 each represent an alkyl group having from 1 to 4 carbon atoms.

5,630,946

METHOD FOR PROCESSING A BIOLOGICAL FLUID INCLUDING LEUKOCYTE REMOVAL IN AN EXTRACORPOREAL CIRCUIT

Stephen Hart, Hants, England; Frank R. Pascale, and Vlado I. Matkovich, both of Glen Cove, N.Y., assignors to PALL Corporation, East Hills, N.Y.

Continuation-in-part of Ser. No. 389,682, Feb. 15, 1995, abandoned. This application Feb. 21, 1995, Ser. No. 392,358
Int. Cl.[6] A61M *1/38*
U.S. Cl. 210—805 **13 Claims**



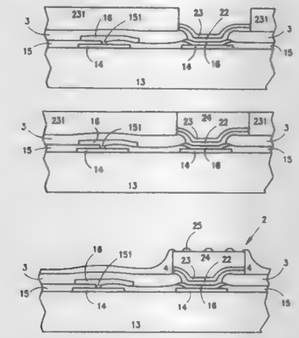
9. A method for processing biological fluid in an extracorporeal circuit comprising:
mixing a non-leukocyte depleted biological fluid with a biological fluid depleted of leukocytes to provide a mixture including leukocyte depleted and non-leukocyte depleted biological fluid;
passing a portion of the mixture to a patient while passing another portion of the mixture through a recirculation loop including a filter assembly for removing leukocytes to provide a portion of biological fluid depleted of leukocytes, and to mix the portion of biological fluid depleted of leukocytes with non-leukocyte depleted biological fluid.

5,630,947

METHOD OF MAKING A MULTICHIP MODULE COMPRISING AT LEAST ONE THIN FILM PROBE

Shei-Kung Shi, 6007 Porto Alegre Dr., San Jose, Calif. 95120; Fu-Hsiang Tseng, 19961 Buckhaven La., Saratoga, Calif. 95070, and Chong-Kai Kuo, 3582 Pleasant Echo Dr., San Jose, Calif. 95148

Filed Dec. 28, 1994, Ser. No. 365,135
Int. Cl.[6] H05K *3/02;* **H01K** *3/10*
U.S. Cl. 216—18 **9 Claims**



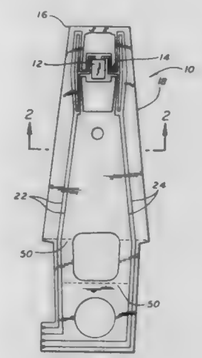
1. A process for preparing a multichip module comprising one or more thin film probes, which process comprises the steps of:
depositing a first metal layer evenly onto a transparent or non-transparent substrate;
masking and etching said first metal layer according to a predetermined pattern;
depositing an intermetal dielectric layer evenly thereover;
etching said layer according to a second predetermined pattern;
depositing a second metal layer evenly thereover;
etching said layer according to a third predetermined pattern;
depositing a second intermetal dielectric layer evenly thereover;
etching said layer such that vias are formed according to a fourth predetermined pattern;
evenly depositing a Cr film and then a Cu film thereover;
evenly depositing a polyimide layer thereover;
forming one or more recesses on the module by photomasking and developing to define a position for each thin film probe;
filling each recess with soldering material;
heating the multichip module to about 200° C. to melt the soldering material;
mechanically polishing the multichip module to flatten the polyimide and soldering material;
removing the polyimide;
depositing high hardness conducting material on the soldering material in each recess;
forming one or more tip heads by etching the high hardness material in each recess; and
depositing a nitride layer on the multichip module such that only each thin film probe is exposed.

5,630,948

METHOD FOR THE FABRICATION OF INTEGRATED CONDUCTOR SUSPENSIONS AND PRODUCT

Susumu Ueda, Tokyo, Japan, and Daniel Vera, Diamond Bar, Calif., assignors to Magnecomp Corp., Temecula, Calif.

Filed Nov. 21, 1995, Ser. No. 561,604
Int. Cl.[6] B44C *1/22;* **C23F** *1/00*
U.S. Cl. 216—20 **17 Claims**



1. Method for the fabrication of an integrated conductor suspension in a preformed laminate comprising a copper layer, a metal support layer, and an adherent resin layer therebetween, including defining a suspension shape in said copper layer, shaping said resin layer to conform to said copper suspension shape, defining pairs of signal lines within said suspension shape in said copper layer in a manner leaving each of said signal lines with an exposed top and exposed sides, and coating an adherent layer of gold on said tops and sides of said signal lines in protective relation against exposure of any portion thereof to ambient corrosive environments.

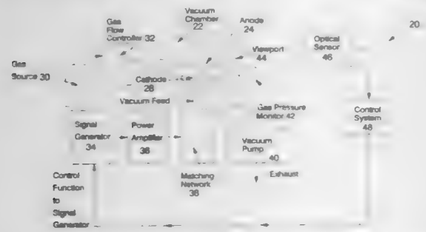
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5,630,949

METHOD AND APPARATUS FOR FABRICATING A PIEZOELECTRIC RESONATOR TO A RESONANT FREQUENCY

Kenneth M. Lakin, Redmond, Oreg., assignor to TFR Technologies, Inc., Bend, Oreg.

Filed Jun. 1, 1995, Ser. No. 458,025
Int. Cl.[6] H01L *21/3065*; **C23F** *1/02*; **C23C** *14/54*
U.S. Cl. 216—61 **22 Claims**



1. An apparatus for adjusting the resonant frequency of a piezoelectric resonator by changing the thickness of the resonator, comprising:

a pair of electrodes between which a piezoelectric resonator is placed;

an RF source operable at a desired resonant frequency for the piezoelectric resonator and at a desired power level, the RF source operatively connected to the electrodes to form a circuit therewith; and

a gas source for injecting gas between the electrodes, the RF source energizing the gas to form a plasma that acts to change the thickness of the piezoelectric resonator;

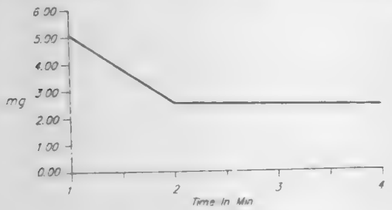
the resonator providing an impedance in the circuit which changes as the plasma action changes the thickness of the resonator and thereby changes the resonant frequency of the piezoelectric resonator, the changing impedance changing the rate of plasma action until, with the RF source set at the desired power level, the action substantially stops with the resonant frequency of the piezoelectric resonator substantially equal to the frequency of the RF source.

5,630,950

COPPER BRIGHTENING PROCESS AND BATH

Anthony R. Cangelosi, Clinton Township, Mich., assignor to Enthone-OMI, Inc., Warren, Mich.

Continuation-in-part of Ser. No. 89,856, Jul. 9, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 322,109
Int. Cl.[6] C09K *13/06*
U.S. Cl. 216—106 **31 Claims**



1. An aqueous copper brightening bath comprising:

an acid and a peroxide In effective amounts in water to provide brightening of a copper containing substrate; and

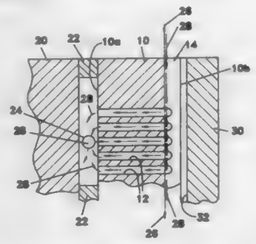
a bath soluble, peroxide stable constituent effective for formation of a dissolution inhibiting film upon brightening of the substrate thereby providing for substantially self-attenuating of the dissolution of the substrate after brightening of the substrate.

5,630,951

METHODS AND APPARATUS FOR MAKING HONEYCOMB EXTRUSION DIES

W. Neil Peters, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed May 15, 1995, Ser. No. 440,870
Int. Cl.[6] B23H *1/10;7/02;9/00*
U.S. Cl. 219—69.12 **6 Claims**



1. A method for making a honeycomb extrusion die comprising:

providing a die body having an array of feedholes extending into the body from an inlet face toward a discharge face thereon;

forming an array of discharge slots on the discharge face by wire electrical discharge machining removal and dielectric fluid flushing of material from the die body, such electrical discharge machining removal and flushing being continued at least until hole-slot intersections between the feedholes and some of the discharge slots are formed; and

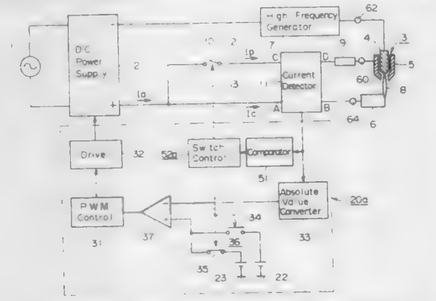
while the hole-slot intersections are being formed, providing a dielectric fluid in the feedholes.

5,630,952

PLASMA-ARC POWER SUPPLY APPARATUS

Kunio Karino, Suita; Haruo Moriguchi, Itami; Toshikazu Fujiyoshi, Kawanishi; Atsushi Kinoshita, Osaka, and Takashi Hashimoto, Suma-ku, all of Japan, assignors to Sansha Electric Manufacturing Company, Limited, Osaka, Japan

Filed Dec. 27, 1995, Ser. No. 579,254
Claims priority, application Japan, Dec. 27, 1994, 6-339850
Int. Cl.[6] B23K *10/00*
U.S. Cl. 217—121.57 **3 Claims**



1. A plasma-arc power supply apparatus for supplying DC current to a plasma load which includes a main electrode, a nozzle electrode surrounding said main electrode with a spacing disposed therebetween, and a workpiece spaced from said main electrode, said plasma-arc power supply apparatus comprising:

a main electrode terminal adapted for connection to said main electrode;

a nozzle electrode terminal adapted for connection to said nozzle electrode;

a workpiece terminal adapted for connection to said workpiece;

variable DC power supply means having first and second output terminals, for providing output DC current variable in accordance with a current control signal applied thereto, said first output terminal being connected to said main electrode terminal;

a pilot arc path connected between said second output terminal of said variable DC power supply means and said nozzle electrode terminal for causing pilot arc current from said variable DC power supply means to flow between said main electrode and said nozzle electrode to thereby cause a pilot arc to be generated therebetween;

switch means connected in said pilot arc path and selectively opened and closed in response to an open control signal and a close control signal;

a plasma-arc path connected between said second output terminal and said workpiece terminal for causing plasma-arc current from said variable DC power supply means to flow between said main electrode and said workpiece to thereby cause a plasma-arc to be generated therebetween;

current detecting means having a first input connected to said plasma-arc path and having a second input connected to said pilot arc path for developing a detection signal corresponding to the values of said pilot arc and plasma-arc currents; and

control means for providing said close control signal to said switch means and also providing said current control signal corresponding to the difference between said detection signal and a predetermined pilot arc reference signal, to said variable DC power supply means when said detection signal indicates that said pilot arc current is flowing, to thereby control said pilot arc current to have a value corresponding to said predetermined pilot arc reference signal;

said control means providing said open control signal to said switch means and also providing said current control signal corresponding to the difference between said detection signal and a predetermined plasma-arc reference signal, to said variable DC power supply means when said detection signal indicates that said plasma-arc current is flowing, to thereby control said plasma-arc current to have a value corresponding to said predetermined plasma-arc reference signal;

said current detecting means comprising:

a direct current transformer having conductors constituting said pilot arc path and plasma-arc path wound on a core as primary windings, and having a secondary winding wound on said core in which secondary winding transformer current corresponding to current flowing through said respective primary windings flows; and

detection signal output means for detecting said transformer current and developing a detection signal corresponding to the magnitude of said transformer current;

wherein:

said plasma-arc path has a larger number of conductor turns wound on said core than said pilot arc path, with the winding direction of said plasma-arc path conductor being opposite to that of said pilot arc path conductor;

said control means comprises:

polarity judging means for providing said open control signal to said switch means when said detection signal is of a first polarity, and providing said close control signal to said switch means when said detection signal is of a second polarity; and

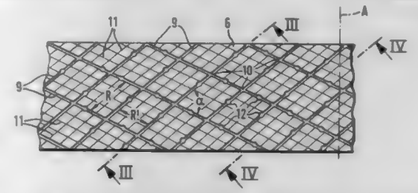
variable DC power supply means control means for providing said current control signal corresponding to the difference between said detection signal and said pilot arc current reference signal to said variable DC power supply means when said detection signal is of said first polarity, and providing said current control signal corresponding to the difference between said detection signal and said plasma-arc current reference signal to said variable DC power supply means when said detection signal is of said second polarity.

5,630,953

METHOD OF FINE-MACHINING A WORKPIECE SURFACE TO BE SUPPLIED WITH A LUBRICANT DURING OPERATION OF THE WORKPIECE

Ulrich Klink, Neuffen, Germany, assignor to Maschinenfabrik Gehring GmbH & Co., Ostfildern, Germany

Filed May 13, 1994, Ser. No. 242,285
Claims priority, application Germany, May 13, 1993, 43 16 012.3
Int. Cl.[6] B23K *26/00*; **F16C** *33/10*
U.S. Cl. 219—121.69 **26 Claims**



1. A method of fine-machining a workpiece surface to be supplied with a lubricant during operation of the workpiece, said method comprising the steps of:

subjecting the workpiece surface to a laser beam to produce linearly extending channels of a predetermined first depth in the workpiece surface, the linearly extending channels defining areas therebetween; and

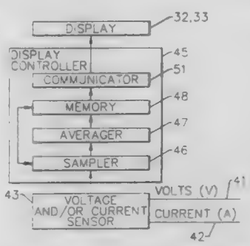
forming in said areas by subjecting the workpiece surface to a laser beam grooves of a second depth smaller than said predetermined first depth.

5,630,954

DIGITAL METER FOR CUTTING OR WELDING SYSTEM AND METHOD OF DISPLAYING DIGITAL DATA FOR SAME

Tibor E. Toth, Florence, S.C., assignor to The ESAB Group, Inc., Florence, S.C.

Filed Dec. 19, 1995, Ser. No. 575,363
Int. Cl.[6] B23K *9/095*
U.S. Cl. 219—130.01 **16 Claims**



6. A cutting or welding system which displays data to a user thereof, the system comprising:

an arc torch including at least an electrode having an arc discharge end and means for creating an electrical arc extending from the electrode to a workpiece; and

a cutting or welding power source operatively connected to said arc torch for supplying power to said arc torch, said power source including at least a power circuit comprising an electrical input line positioned to receive power from an external power supply, a transformer having a primary side connected to said input line and a secondary side, a rectifier operatively connected to the secondary side of said transformer, and an output line connected to said rectifier, a sensor operatively connected to said output line for sensing an electrical signal representative of a voltage level and an electrical signal representative of a current level, a digital display positioned to display digital data representative of the voltage level and the

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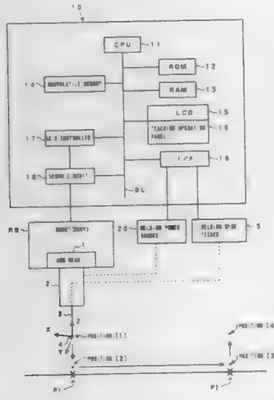
current level, and a display controller operatively connected to said voltage and current level sensor and said digital display for controlling said digital display responsive to said sensor, said display controller including a sampler responsive to said sensor for sampling a predetermined number of electrical signals representative of a voltage level and a current level, an averager responsive to said sampler for averaging the predetermined number of samples, and a memory operatively connected to said averager for storing data representative of voltage and current levels to be displayed to an operator of the cutting or welding system.

5,630,955

METHOD OF INDUCING ARC GENERATION IN ARC WELDING

Tetsuya Kosaka, and Hiromitsu Takahashi, both of Yamanashi, Japan, assignors to Fanuc Ltd., Minamitsuru-gun, Japan

Filed Sep. 13, 1995, Ser. No. 527,634
Claims priority, application Japan, Sep. 21, 1994, 6-251550
Int. Cl.[6] B23K *9/06*
U.S. Cl. 219—130.4 **9 Claims**



1. A method for inducing arc generation in arc welding between a head of a wire supported by a welding torch mounted on a robot and a workpiece, comprising the steps of:

attempting to generate an arc between the head of the wire and the workpiece to start the arc welding;

detecting whether a failure of the arc generation occurs; and

if the failure of the arc generation occurs, repeating a motion of the head of the wire toward the workpiece and a motion departing from the workpiece by moving the robot, to facilitate the generation of the arc between the head of the wire and the workpiece.

5,630,956

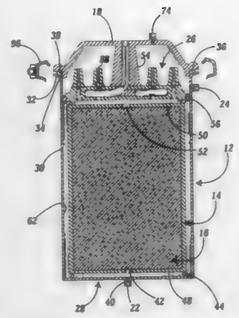
OIL FILTERING AND REFINING DEVICE

Donald C. Lynch, Minnetonka, Minn., assignor to Certified Technologies Corporation, Minneapolis, Minn.

Filed Jun. 20, 1995, Ser. No. 492,533
Int. Cl.[6] B01D *3/28;27/08*
U.S. Cl. 210—180 **17 Claims**

1. An oil filtration and refining device, comprising:

(a) a hollow container having an open top end, a closed bottom end, and a continuous sidewall extending between the open top end and the closed bottom end, said closed bottom and including an inlet port disposed proximate the closed bottom end, said continuous sidewall having an outlet port disposed proximate the open top end;



(b) a metering valve connected to the inlet port;

(c) a removable filter having an inlet and outlet wherein the filter's inlet is aligned proximate the hollow container's inlet port, said filter being positioned within said hollow container, wherein an end of said removable filter proximate the open top end of said hollow container is positioned below said outlet port;

(d) a cover sealably engaged with said open top end of said hollow container, said cover having an evaporator plate extending from said cover, wherein said evaporator plate includes an evaporating surface, such that when said cover is engaged with said open top end, an upper surface of the evaporator plate is aligned proximate said outlet port and a side of said evaporator plate sealably engages with an inner surface of said continuous sidewall, said upper surface and a lower surface of said evaporator plate having a plurality of bores extending therebetween; and

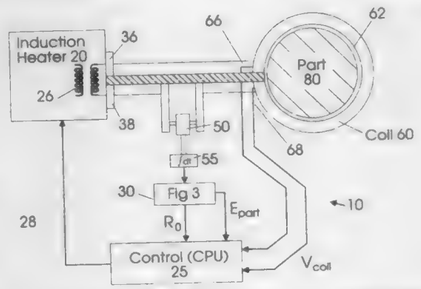
(e) a heating element enclosed within the evaporat or plate and in a spaced apart relationship from said upper surface and traverse to said plurality of bores, such that oil does not contact said heating element.

5,630,957

CONTROL OF POWER TO AN INDUCTIVELY HEATED PART

Douglas R. Adkins, 1620 Adelita Dr. NE., Albuquerque, N.M. 87112; Charles A. Frost, 1039 Red Oaks Loop NE., Albuquerque, N.M. 87122; Philip M. Kahle, 528 Longwood Loop NE., Rio Rancho, N.M. 87124; J. Bruce Kelley, 13200 Blue Corn Maiden Trail NE., and Suzanne L. Stanton, 2805 Palo Alto NE., both of Albuquerque, N.M. 87112

Filed Jan. 12, 1995, Ser. No. 371,901
Int. Cl.[6] H05B *6/08*
U.S. Cl. 219—665 **9 Claims**



1. A process of induction hardening a part to a desired depth with an AC signal applied to the part from a closely coupled induction coil comprising:

measuring parameters representative of the AC signal;

generating signals representative of the AC signal from the measured parameters;

processing the generated signals through a trained neural network to determine the depth of hardening of the part; and

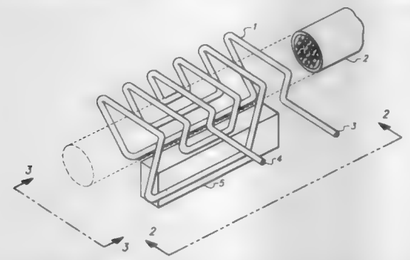
modifying the AC signal when the estimated depth of hardening reaches a predetermined value indicative of a desired depth of hardening.

5,630,958

SIDE ENTRY COIL INDUCTION HEATER WITH FLUX CONCENTRATOR

John B. Stewart, Jr., 1533 Meadow La., Burlingame, Calif. 94010; Peter M. Godfrey, 32328 Pollux Ct., Union City, Calif. 94587, and Philippe F. Levy, 2703 Sequoia Way, Belmont, Calif. 94002

Filed Jan. 27, 1995, Ser. No. 379,408
Int. Cl.[6] H05B *6/40*
U.S. Cl. 219—670 **19 Claims**



1. An induction heating apparatus, for heating a portion of a load containing a thermally responsive material, said induction heating apparatus comprising:

a coil including an opening such that the load may be inserted laterally into said opening with the portion of the load to be heated disposed within an area formed by said coil;

said coil generating a magnetic field when driven by an electric current through said coil, wherein the direction of the magnetic field is substantially transverse to the axis of the opening in a region surrounding and extending outwardly from at least a portion of the portion of the load to be heated;

a flux concentrator member movable between a heating position disposed along said opening and located in said region where said magnetic field is substantially transverse to the axis of the opening and a loading position removed from the opening of the coil, said flux concentrator member having a high magnetic permeability so as to thereby enhance the uniformity of the magnetic field generated within said coil; and

power supply means connected to said coil for driving alternating current through said coil, such that induction heating of the portion of the load to be heated is produced by the magnetic field generated by the current.

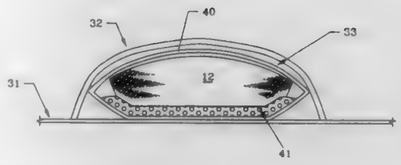
5,630,959

MICROWAVABLE HEATING PAD FOR WARMING FOOD AND METHOD

Byron C. Owens, Asheboro, N.C., assignor to Vesture Corporation, Asheboro, N.C.

Continuation of Ser. No. 224,569, Apr. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 136,021, Oct. 14, 1993, Pat. No. 5,500,010, which is a continuation of Ser. No. 85,570, Jun. 30, 1993, Pat. No. 5,300,105, which is a continuation of Ser. No. 871,826, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 643,344, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 486,806, Feb. 26, 1990, abandoned. This application Aug. 21, 1995, Ser. No. 517,293
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—730 **13 Claims**

1. Heating apparatus for a food item comprising: a planar cloth food cover, said planar food cover consisting of a single ply, a removable liquid-containing microwavable heating pad, said planar food cover comprising means to retain said heating pad, said retaining means located centrally of said planar food cover, said planar food cover having length and width exceeding the length and width of said retaining means, said heating pad positioned within said retaining means, whereby food placed on said retaining means can be warmed by said heating pad and enclosed by said planar food cover.

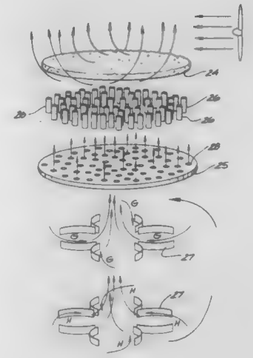


5,630,960

MICROWAVE COOKING APPARATUS WITH AIR CIRCULATION MEANS

Julio A. Gomez, 79 Amelia Street, Nundah Queensland 4012, Australia

PCT No. PCT/AU94/00033, § 371 Date May 21, 1996, § 102(e) Date May 21, 1996, PCT Pub. No. WO94/16606, PCT Pub. Date Aug. 4, 1994
PCT Filed Jul. 27, 1994, Ser. No. 501,136
Claims priority, application Australia, Jan. 28, 1993, PL 6984
Int. Cl.[6] H05B *6/80;* **A47J** *36/34*
U.S. Cl. 219—732 **8 Claims**



1. An apparatus for allowing air to circulate around food being heated in a microwave oven, said apparatus comprising a base adapted to be supported on a rotating turntable of the microwave oven, and a plurality of spaced apart support means extending upwardly from the base for supporting the food in spaced relation to the base, the base including a plurality of slots formed therethrough adapted to allow air to flow from beneath the base to the space around the support means, the base also including air flow directional means extending downwardly from the base and adapted to be supported on said turntable, said directional means comprising a plurality of spaced apart elongated members arranged in such a manner that they can impel and direct air to the space around the support means when the turntable is rotating in either a clockwise or anticlockwise direction.

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5,630,961

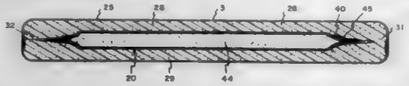
MICROWAVE-ACTIVATED MIXED-POWDER THERMAL STORAGE MATERIAL; AND METHOD

Gideon Salee, Columbus, Ohio, assignor to ThermaStor Technologies, Ltd., Columbus, Ohio

Continuation-in-part of Ser. No. 124,931, Sep. 21, 1993, Pat. No. 5,424,519. This application May 10, 1995, Ser. No. 438,443

Int. Cl.[6] **H05B** *6/80;* **A61F** *7/00*

U.S. Cl. 219—759 **20 Claims**



1. A thermal storage composition activatable by exposure to microwave energy, said composition comprising: a mixture of,

(a) a first powder comprising calcium silicate impregnated with a microwave-sensitive material; and,

(b) a second powder comprising calcium silicate impregnated with a phase-change material.

5,630,962

2-FLUOROPYRIDINES, THEIR PREPARATION AND THEIR USE IN LIQUID CRYSTAL MIXTURES

Hubert Schlosser, Glashütten/Taunus; Rainer Wingen, Hattersheim am Main; Gerd Illian, Frankfurt am Main, and Claus Escher, Mühltal, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 66,152, Aug. 9, 1993, abandoned. This application May 11, 1995, Ser. No. 439,446

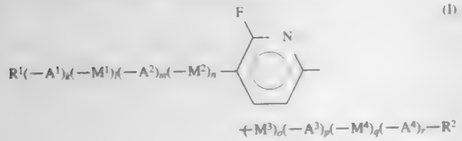
Claims priority, application Germany, Dec. 19, 1990, 40 40 575.3; Apr. 9, 1991, 41 11 461.2

The portion of the term of this patent subsequent to Jun. 7, 2013, has been disclaimed.

Int. Cl.[6] **C09K** *19/34;19/32;* **C07D** *239/02;211/70*

U.S. Cl. 252—299.61 **18 Claims**

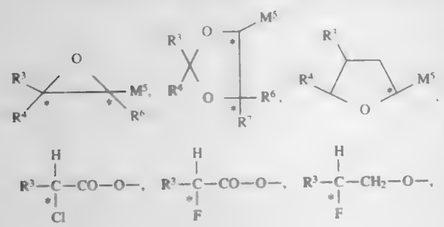
1. A fluoropyridine compound of the formula I



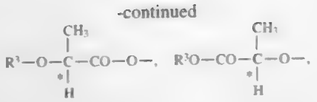
(I)

in which the symbols have the following meaning:

R^1, R^2, independently of one another, are H, or straight-chain or branched (with or without the inclusion of an asymmetric carbon atom) alkyl having 1 to 16 carbon atoms, it also being possible for one or two non-adjacent $-CH_2-$ groups to be replaced by —O—, —S—, —CO—, —CO—O—, —O—CO—, —O—CO—O—, —CH=CH—, —C≡C—, ⚠ or $-Si(CH_3)_2-$, and it also being possible for one or more hydrogen atoms of the alkyl radical to be substituted by F, Cl, Br or CN, or are one of the following chiral groups:



-continued



A^1, A^2, A^3, A^4, identical or different, are 1,4-phenylene, pyridazine-3,6-diyl, pyridine-2,5-diyl, pyrimidine-2,5-diyl, it being possible for one or two hydrogen atoms to be replaced by F, trans-1,4-cyclohexylene, in which one or two hydrogen atoms can be replaced by CN, 1,3,4-thiadiazole-2,5-diyl, 1,3-dioxane-2,5-diyl, naphthalene-2,6-diyl, or 1,3-dioxaborinane-2,5-diyl;

M^1, M^2, M^3, M^4, identical or different, are —CO—O—, —O—CO—, $-CH_2-O-$, $-O-CH_2-$, $-CH_2-CH_2-$, or —C≡C—;

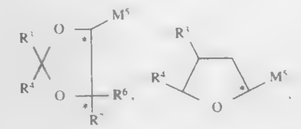
R^3, R^4, R^6, R^7, independently of one another, are H or straight-chain or branched alkyl having 1 to 16 carbon atoms or R^3 and R^4 together are also $-(CH_2)_4-$, or $-(CH_2)_5-$ if bound as substituents to a dioxolane system,

M^5 is $-CH_2-O-$, —CO—O—, $-O-CH_2-$, —O—CO—,

k, l, m, n, o, p, q, r are zero or one, with the proviso that the sum of k+m+p+r is less than 4 and greater than zero,

and with the proviso that either

a) R^1 or R^2 is H or a straight-chain or branched alkyl (with or without the inclusion of an asymmetric carbon atom) having 1 to 16 carbon atoms, in which one or two non-adjacent CH_2-groups are replaced by —C≡C—, ⚠ or $Si(CH_3)_2$, or one of the following chiral groups:



b) or at least one of A^1, A^2, A^3, A^4 is 1,3,4-thiadiazole-2,5-diyl or 1,3-dioxaborinane-2,5-diyl.

5,630,963

CLASS OF STABILIZING COMPOUNDS FOR PHOSPHOR SCREENS

Paul Leblans, Kontich; Paul Lardon, Wijnegem, and Jean-Marie Dewanckele, Drongen, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

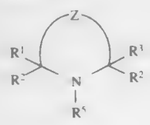
Filed May 29, 1996, Ser. No. 654,613

Claims priority, application European Pat. Off., Jun. 1, 1995, 95201433

Int. Cl.[6] **C09K** *11/61;* **G01T** *1/10*

U.S. Cl. 252—301.36 **7 Claims**

1. A phosphor screen, characterised in that said screen comprises at least one stabilizer being an organic compound or an oligomeric or polymeric compound comprising moieties corresponding to the following general formula I:



I

wherein:

R^1, R^2, R^3 and R^4 each independently represent a substituted unsubstituted alkyl- or aryl group,

R^5 represents hydrogen or a substituted or unsibstituted alkyl group and

Z represents the atoms necessary to form a substituted or unsubstituted 5 to 8 membered ring.

5,630,964

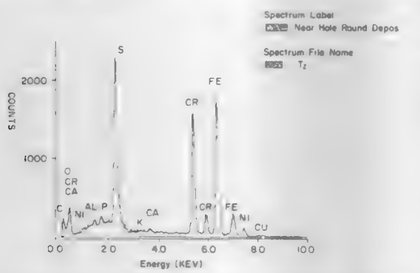
USE OF SULFIDING AGENTS FOR ENHANCING THE EFFICACY OF PHOSPHORUS IN CONTROLLING HIGH TEMPERATURE CORROSION ATTACK

Elizabeth Babaian-Kibala, Fulshear; John G. Hyatt, Missouri City, both of Tex., and Theodore J. Rose, Moores Town, N.J., assignors to Nalco/Exxon Energy Chemicals, L.P., Sugarland, Tex.

Filed May 10, 1995, Ser. No. 435,405

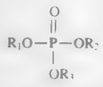
Int. Cl.[6] **C23F** *11/16;11/167*

U.S. Cl. 252—389.23 **15 Claims**



1. A method of inhibiting naphthenic acid corrosion occurring on the metal surfaces of a high temperature hydrocarbon system in contact with a crude oil containing naphthenic acid comprising adding simultaneously to the crude oil:

a) corrosion-inhibiting amount of a phosphate ester of the formula

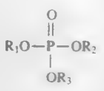


wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen and moieties having from one to thirty carbon atoms, and R_3 is a moiety having from one to thirty carbon atoms; and

b) a corrosion inhibiting amount of an organic polysulfide of the formula $R_4-(S)_x-R_5$ wherein R_4 and R_5 are selected from the group consisting of alkyl groups having from 6 to 30 carbon atoms, and cycloalkyl groups having from 6 to 30 carbon atoms and x ranges from 2 to 6, and wherein the ratio of such polysulfide to said phosphate ester ranges from 4:0.25 to 0.25:4.

6. A method of inhibiting naphthenic acid corrosion occurring on the metal surfaces of a high temperature hydrocarbon system in contact with a crude oil containing naphthenic acid comprising adding simultaneously to the crude oil:

a) corrosion-inhibiting amount of a phosphate ester of the formula

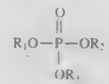


wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen and moieties having from one to thirty carbon atoms, and R_3 is a moiety having form one to thirty carbon atoms; and

b) a corrosion inhibiting amount of an organic polysulfide of the formula $R_4-(S)_x-R_5$ wherein R_4 and R_5 are selected from the group consisting of alkyl groups having from 6 to 30 carbon atoms, and cycloalkyl groups having from 6 to 30 carbon atoms and x ranges from 2 to 6, and wherein the ratio of such polysulfide to said phosphate ester ranges from 3:1 to 0.25:4.

11. A method of inhibiting naphthenic acid corrosion occurring on the metal surfaces of a high temperature hydrocarbon system in contact with a crude oil containing naphthenic acid comprising adding simultaneously to the crude oil:

a) a corrosion-inhibiting amount of a phosphate ester of the formula



where R_1 and R_2 are each independently selected from the group consisting of hydrogen and moieties having from one to thirty carbon atoms, and R_3 is a moiety having from one to thirty carbon atoms; and

b) a corrosion-inhibiting amount of an organic polysulfide of the formula $R_4-(S)_x-R_5$ wherein R_4 and R_5 are selected from the group consisting of alkyl groups having from 6 to 30 carbon atoms, and cycloalkyl groups having from 6 to 30 carbon atoms and x ranges from 2 to 6, and wherein the ratio of said polysulfide to said phosphate ester ranges from 1:1 to 1:4.

5,630,965

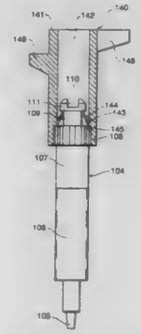
LOW FORCE LIMIT DEVICE

Scott R. Shaw, Nashville, and Richard L. Morris, Franklin, both of Tenn., assignors to U.S.A. Zama, Inc., Franklin, Tenn.

Continuation of Ser. No. 459,483, Jun. 2, 1995, abandoned. This application Jun. 14, 1996, Ser. No. 663,601

Int. Cl.[6] **F02M** *3/08*

U.S. Cl. 261—71 **31 Claims**



1. A limit device for a carburetor comprising

a body,

a fuel adjustment valve inserted in said body, said adjustment valve including a valve extension extending from said body, said valve extension having a screw head formed on the end thereof, a knurled portion nearly adjacent said screw head, and a lock groove interposed between said screw head and said knurled portion, and

a generally cylindrical cap mounted on said adjustment valve, said cap including an axial latch adapted to foldably pass over said screw head and close into said lock groove of said valve extension, and a radial lock adapted to engage said knurled portion of said valve extension.

5,630,966

Patent Not Issued For This Number

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5,630,967

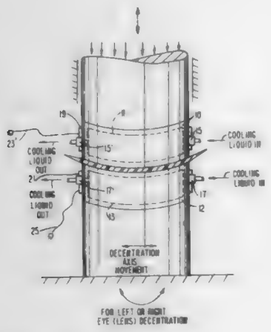
METHOD AND APPARATUS FOR MAKING LENSES

Martin Greshes, 70 Corey La., East Meadow, N.Y. 11554

Continuation-in-part of Ser. No. 932,088, Aug. 19, 1992, Pat. No. 5,368,970. This application Nov. 22, 1994, Ser. No. 343,107

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—2.4 19 Claims



1. An improved method for the rapid on-site making of a lens in a few minutes from thermoplastic material comprising the steps of:

a. placing a pair of lens molds in a press, having no need for any type of gasketing means disposed about said pair of molds and preheating said molds, to an elevated temperature;

b. preheating a monolithic preform mass having radii to a temperature below the softening temperature of said thermoplastic material;

c. positioning said preheated preform between said molds such that the radii make point or line contact with each of said molds for precluding the entrapment of air pockets and the formation of air bubbles in a formed lens;

d. closing and pressing said pair of molds toward each other and against said preform mass so as to mash down said preheated preform to at least about one-third to about one-half its original size;

e. continuing to heat up said pair of molds until said preform mass reaches a temperature at which said preform further softens and is almost generally flattened out between said pair of molds;

f. maintaining said temperature and maintaining pressure on said pair of molds until said preform mass is reconfigured and/or transformed by compression molding into a lens defined by said pair of molds with any excess preform material ended from between said pair of molds; and

g. terminating the heating of said pair of molds and thereafter removing a formed lens from said pair of molds.

5,630,968

WATER-INJECTION FOAMING DEVOLATILIZING METHOD

Ning-He Wang, and Noriaki Hashimoto, both of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 474,724

Int. Cl.[6] B29C *44/00*

U.S. Cl. 264—53 2 Claims

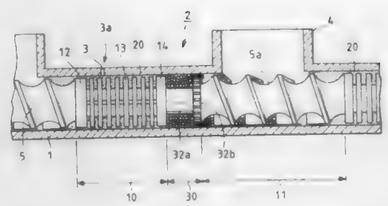
1. A water-injection foaming devolatilizing method, comprising the steps of:

melting and kneading a polymer in a water-injection dispersing zone of an extruder having a screw;

injecting water into a polymer melt so as to be dispersed into the polymer melt which is being kneaded; and

vaporizing volatile components contained in the polymer melt together with water in a devolatilizing zone having a vent port and located on a downstream side of said water-injection dispersing zone, so that the volatile components are removed and discharged through the vent port,

wherein a pressure-reducing expansion zone is provided between said water-injection dispersing zone and said devolatilizing zone so as to be upstream of the vent port, and further comprising gradually reducing a pressure in said pressure-reducing expansion zone so that bubbles in the water which is dispersed into said polymer melt are expanded to substantially their maximum size through a lack of kneading of said polymer melt in said pressure-reducing expansion zone and said bubbles are broken down at a downstream end portion of said pressure-reducing expansion zone by passing said polymer melt through slits in said downstream end portion.



5,630,969

CERAMIC HEATER PRODUCING METHOD

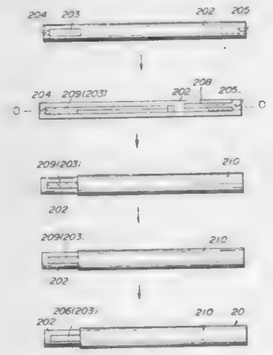
Takeo Shimada, and Masatoshi Yanase, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Division of Ser. No. 189,606, Feb. 1, 1994, abandoned. This application May 3, 1995, Ser. No. 434,415

Claims priority, application Japan, Feb. 4, 1993, 5-40573

Int. Cl.[6] C04B *41/81*

U.S. Cl. 264—642 12 Claims



1. A method of producing a ceramic heater, comprising the steps of:

molding a ceramic heater core in a rod shape having first and second cavities elongated axially thereof, and heater front and rear ends, wherein the first cavity opens at the rear end of the heater core, and the second cavity opens at the front end of the heater core, the heater core further having a pair of flattened portions near the rear end of the heater core;

printing a conductive heater pattern on the outer peripheral surface of the heater core while rotating the heater core about the first and second cavities, the heater pattern including end portions formed on the respective flattened portions;

printing a protective layer to cover the heater pattern except for the end portions while rotating the heater core about the first and second cavities; and

burning the heater core along with the printed protective layer.

5,630,970

PROCESS FOR RESTORING MEMBRANE PERMEATION PROPERTIES

Ingo Pinnau, Palo Alto; Lora G. Toy, San Francisco, and Carlos G. Casillas, San Jose, all of Calif., assignors to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed May 24, 1995, Ser. No. 448,652

Int. Cl.[6] B29C *71/00*

U.S. Cl. 264—83 33 Claims

1. A process for at least partially restoring an original selectivity of a condensable component over another component of a gas stream, in a membrane in which said original selectivity has deteriorated, said membrane comprising a polymer characterized by a glass transition temperature T_g of at least about 100 ° C. and a free volume V_F of at least about 15%, said process comprising exposing said membrane to a vapor having a sorption capacity of at least about 0.1 g of said vapor per gram of said polymer and a kinetic molecular diameter of less than about 6Å.

5,630,971

METHOD AND APPARATUS FOR MANUFACTURING BOBBINS

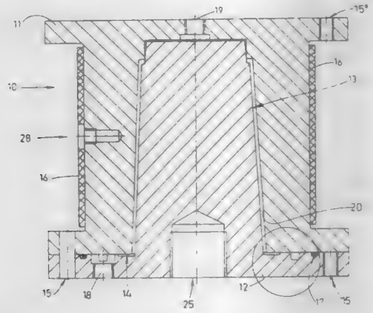
Zohar Ophir, Haifa, Israel, assignor to State of Israel, Ministry of Defence Rafael-Armaments Development Authority, Israel

Filed May 24, 1994, Ser. No. 248,486

Claims priority, application Israel, Jun. 1, 1993, 105876

Int. Cl.[6] B29C *45/02;45/73*

U.S. Cl. 264—101 11 Claims



1. A method of manufacturing a bobbin made essentially or partially of a curable resin, comprising the steps of:

a) providing a mold having a male portion and a female portion, the male and female portions together defining a gap of the shape and dimensions of the bobbin, the mold being provided with a resin inlet and vacuum port in communication with the gap, said female portion having a grooved inner surface, grooves on the grooved inner surface being a mirror image of grooves to be produced on a surface of the bobbin;

b) laying on a surface of the male portion of the mold, or winding thereon, an element or material;

c) inserting the male portion of the mold into the female portion thereof and securely connecting the two portions, when connected, being essentially sealed against pressure loss along their contact surfaces;

d) causing a curable resin to flow into the gap through the resin inlet and around the element or material which is on the surface of the male portion, while applying a vacuum at the vacuum port, until an empty space provided within the gap is substantially entirely filled with resin thereby embedding the element or material within the resin;

e) allowing the resin to solidify to produce the bobbin having grooves;

f) subjecting the mold to a heat treatment which results in a temporary difference in the expansions of the materials constituting the mold and the bobbin, the heat treatment being applied so as to facilitate separation of the bobbin from the mold; and

g) separating the bobbin from the female portion and/or the male portion while separation is facilitated due to the heat treatment.

5,630,972

METHOD OF MAKING DISPERSIBLE COMPOSITIONS AND ARTICLES

Gregg A. Patnode; Denise R. Rutherford, and Dietmar Schiel, all of P.O. Box 33427, St. Paul, Minn. 55133-3427

Continuation of Ser. No. 367,026, Dec. 30, 1994, Pat. No. 5,472,518. This application May 30, 1995, Ser. No. 453,245

Int. Cl.[6] D01F *8/18*

U.S. Cl. 264—103 8 Claims

1. A method of making a multilayered microfiber, comprising the steps of:

(a) introducing at least one water soluble polymer into a flowstream;

(b) introducing at least one hydrolytically degradable polymer into a second flowstream; and

(c) extruding the two flowstreams through a die having an array of side-by-side orifices to form the multilayer microfiber.

5,630,973

PROCESS FOR PRODUCING SLIDING BODIES FOR ELECTRIC COLLECTORS

Johann Hoell, Hallstatt, and Herbert Grabner, Bad Ischl, both of Austria, assignors to Hoffman & Co. Elektrokohle Ges. mbH, Steeg, Austria

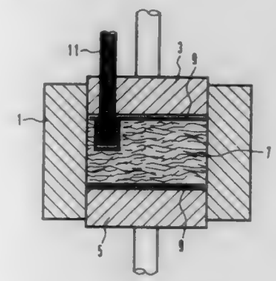
PCT No. PCT/EP93/02803, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995, PCT Pub. No. WO94/08771, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 12, 1993, Ser. No. 416,722

Claims priority, application Germany, Oct. 13, 1992, 42 34 497.2

Int. Cl.[6] C04B *35/00*

U.S. Cl. 264—105 9 Claims



1. A method for producing a compressed body of graphite material for use in electric collectors, contact brushes, or current collectors comprising the steps of placing a powder mass (7), which includes at least graphite and a synthetic resin binder, in a mold (1) having at least one press die (3); pressing said powder mass by means of the press die into a formed body; and subsequently heat treating said formed body by subjecting it to a sintering temperature at which the binder softens and binds the powder mass, the method further comprising the step of placing a parting layer (9) which is free of synthetic resin between the powder mass and the press die (3, 5) prior to said step of pressing, said parting layer (9) being formed of a powder made from a material which does not change when subjected to the sintering temperature.

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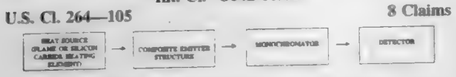
PREPARATION OF SELECTIVE INFRARED LINE EMITTER COMPOSITES

Millard F. Rose, and Peter L. Adair, both of Auburn, Ala., assignors to Auburn University, Auburn, Ala.

Division of Ser. No. 249,174, May 25, 1994, Pat. No. 5,447,786. This application Jun. 2, 1995, Ser. No. 460,042

Int. Cl.[6] C04B *35/00*

U.S. Cl. 264—105 8 Claims



1. A method of making a selective infrared line emitter composite of a sinter-bonded stuctural fiber and a selectively emitting rare earth metal oxide, said method comprising forming a dispersion of at least one structure-forming fiber having an emissivity less than 0.1 within the wavelength region of 0.7 to 5 microns, a high surface area carbon fiber of at least 200 m^2/g, and a binder in a liquid medium, collecting a mat of the dispersion, removing the liquid medium from the mat of the dispersion to afford a dried dispersion mat, heating the dried dispersion mat in an inert atmosphere at conditions sufficient to volatilize at least 99 weight percent of the binder and sinter-fuse the structure-forming fibers to form a binderless network of the structure-forming fiber and the high surface area carbon fiber, impregnating the high surface area carbon fiber of the binderless network with an aqueous solution of a rare earth compound, drying the impregnated binderless network, and heating the dried, impregnated binderless network to gasify the high surface area carbon fiber therein and convert the rare earth metal compound to its oxide.

5,630,975

METHOD AND A DEVICE FOR JOINING AT LEAST TWO PLASTIC ELEMENTS IN A LIQUID- AND/OR GASTIGHT MANNER

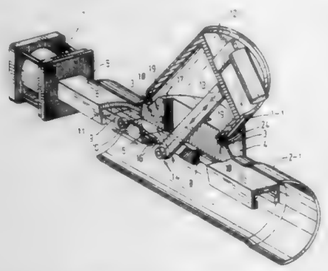
Frederik K. A. Wulff, GG Rotterdam, Netherlands, assignor to Nyloplast Europe B.V., 's-Gravendeel, Netherlands

Filed Nov. 2, 1994, Ser. No. 333,511

Claims priority, application Netherlands, Nov. 5, 1993, 9301914

Int. Cl.[6] B29C *65/70*

U.S. Cl. 264—138 24 Claims



1. A method for joining at least two plastic elements in a liquid- and/or gastight manner, comprising placing an edge of a first plastic element at least partially in an opening of a second plastic element, folding the edge of said first plastic element over an edge of said opening of the second plastic element under plastic deformation. using pressure means, wherein said first plastic element is pressed against a curved butting face of a pressure body placed in said second plastic element at the opening thereof and being supported independently therefrom such that said edge of said first plastic element is pushed radially outwardly and over said edge of the opening of said second plastic element, pressing together said edges of both plastic elements to form a joint, and exerting pressure on both sides of the joint using a pressure element and a pressure body which cooperate with each other to thereby form a liquid and/or gastight joint.

5,630,976

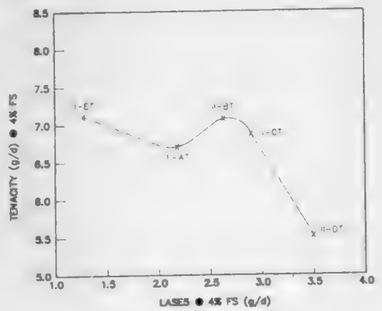
PROCESS OF MAKING DIMENSIONALLY STABLE POLYESTER YARN FOR HIGH TENACITY TREATED CORDS

Charles J. Nelson, Chesterfield; Jayendra H. Bheda; Peter B. Rim, both of Midlothian, all of Va., and James M. Turner, Cary, N.C., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 200,853, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 110,471, Aug. 23, 1993, abandoned, which is a continuation of Ser. No. 810,600, Dec. 19, 1991, abandoned, which is a division of Ser. No. 237,348, Aug. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 215,178, Jul. 5, 1988, abandoned. This application Sep. 12, 1995, Ser. No. 527,295

Int. Cl.[6] D01D *5/088;5/12;* D01F *6/62*

U.S. Cl. 264—210.8 17 Claims



1. A process for production of a drawn polyethylene terephthalate yarn which translates to a high tenacity dimensionally stable tire cord, comprising:

(A) extruding a molten melt-spinnable polyethylene terephthalate having an intrinsic viscosity of 0.8 or greater through a shaped extrusion orifice having a plurality of openings to form a molten spun yarn,

(B) solidifying the spun yarn gradually by passing the yarn through a solidification zone which comprises (a) a retarded cooling zone and (b) a cooling zone adjacent said retarded cooling zone wherein said yarn is rapidly cooled and solidified in a blown air atmosphere,

(C) withdrawing the solidified yarn at sufficient speed to form a crystalline, partially oriented yarn with a crystallinity of 3 to 13% and a melting point elevation of 2° to 10° C., and

(D) hot drawing the yarn to a total draw ratio between 1.5/1 and 2.5/1.

5,630,977

INJECTION MOLDING METHOD AND SYSTEM WITH EXPANDABLE CAVITY ELEMENT

Paul Catalanotti, West Newton, and Sassan Tarahomi, North Chelmsford, both of Mass., assignors to Roehr Tool Corporation, Hudson, Mass.

Continuation of Ser. No. 383,818, Feb. 6, 1995, abandoned, which is a continuation of Ser. No. 172,856, Dec. 23, 1993, Pat. No. 5,387,389. This application Oct. 17, 1995, Ser. No. 543,986

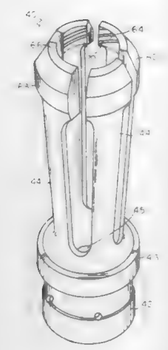
Int. Cl.[6] B29C *45/44*

U.S. Cl. 264—318 25 Claims

1. A method for the molding of a molded article having an exterior surface having an opening therein or projections thereon, which method comprises:

a) providing a mold having a first mold part and a second mold part, the mold parts adapted to move between a closed molding position and an open position, and which mold defines a mold cavity for an article to be molded, said mold including:

i) an expandable cavity element, formed of a spring steel metal and having a base with an opening therethrough with



a longitudinal axis and a plurality of generally vertically biased arms extending from said base and about said opening, to a first upper open end, said arms at said first upper open end adapted to extend into said mold cavity during the molding method, and having an interior surface, the interior surface to form projections or openings on the exterior surface of the molded article, and having an exterior tapered surface and having a generally arcuate band element having an exterior surface generally parallel to the longitudinal axis and extending downwardly from said tapered surface, said arms of said expandable cavity element adapted to move at said first end between an open unbiased position, with said first upper ends of said arms in an open, non-side-contacting position, and a closed, biased, molding position with said first upper ends of said arms in a closed-end, side-contacting position and the arcuate band elements forming a generally cylindrical exterior band surface in a closed molding position; and

ii) said second mold part having a retaining-ejector sleeve means with a surface so that in the closed, molding position of the mold said sleeve surface mechanically forces said first upper end of said unbiased arms of said expandable cavity element into said closed, biased molding position on movement of said second mold part;

b) moving said mold parts to a closed molding position and mechanically forcing said first upper open end of said unbiased arms of said cavity element in said mold cavity into the closed, biased molding position within said mold cavity by the movement of said second mold part and retaining-ejector sleeve means against said exterior tapered surface and said exterior surface of the arcuate band element of said unbiased arms;

c) injecting a molding material into said mold cavity to form a molded article in said mold cavity with an opening in or a projection on said exterior surface of said article;

d) moving said second mold part to an open article-recovery position to permit said arms of said expandable core element to spring open without the use of mechanical force to the open, unbiased position; and

e) recovering from the mold in the open position the article so molded.

5,630,978

PREPARATION OF BIOLOGICALLY ACTIVE MOLECULES BY MOLECULAR IMPRINTING

Abraham J. Domb, Efrat, Israel, assignor to Yissum Research Development Co. of The Hebrew University of Jerusalem, Jerusalem, Israel

Filed Jun. 7, 1995, Ser. No. 476,606

Int. Cl.[6] C08J *5/00*

U.S. Cl. 264—330 36 Claims

1. A method for preparing molecules comprising:

(a) polymerization of functional monomers around a template molecule that exhibits a desired known biological activity;

(b) removal of the template molecule; and

(c) polymerization of a second class of monomers in the void left by the template.

5,630,979

INSCRIPTION OF MOLDINGS

Martin Welz, Bad Dürkheim, and Frank Prissok, Lemförde, both of Germany, assignors to Elastogran GmbH, Lemfoerde, Germany

Filed Oct. 12, 1995, Ser. No. 542,186

Claims priority, application Germany, Oct. 15, 1994, 44 36 897.6

Int. Cl.[6] G03C *1/08*

U.S. Cl. 264—400 7 Claims

1. A process for the inscription of moldings based on thermoplastic polyurethane elastomers or mixtures of thermoplastic polyurethane elastomers with up to 45% by weight, based on the total weight of polymers, of further thermoplastics, which process comprises: exposing a mixture of thermoplastics and additives for improving the inscribability of the thermoplastics to high-energy radiation, said additives being a copper phosphate mixed with an inorganic phyllosilicate coated with TiO_2, SiO_2 or S_nO_2 or a copper phosphate mixed with a conductively doped compound on a silicate core.

5,630,980

PROCESS OF MAKING A SEAL WITH GROOVED SURFACE

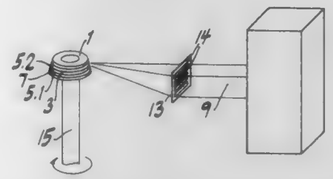
Ernst-Moritz von Arndt, Weinheim, and Günter Stein, Hemsbach, both of Germany, assignors to Firma Carl Freudenberg, Germany

Division of Ser. No. 308,857, Sep. 19, 1994, Pat. No. 5,507,505. This application Oct. 30, 1995, Ser. No. 550,425

Claims priority, application Germany, Sep. 30, 1993, 43 33 244.7

Int. Cl.[6] B29C *35/08*

U.S. Cl. 264—400 3 Claims



1. A method of manufacturing a seal comprising the steps of:

providing a seal body made of polymeric material and comprising a sealing surface;

providing a laser producing a laser beam;

passing said laser beam through a mask;

imaging said laser beam on said sealing surface after said step of passing said laser beam through a mask to thereby produce at least two grooves on said sealing surface.

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5,630,981

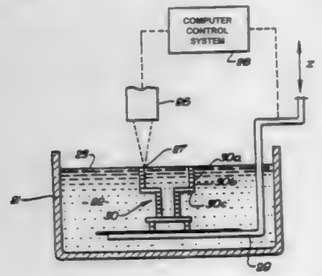
METHOD FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY

Charles W. Hull, Arcadia, Calif., assignor to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 299,878, Sep. 1, 1994, abandoned, which is a division of Ser. No. 967,303, Oct. 20, 1992, Pat. No. 5,344,298, which is a continuation of Ser. No. 749,125, Aug. 23, 1991, Pat. No. 5,474,943, which is a continuation of Ser. No. 637,999, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 493,498, Mar. 14, 1990, abandoned, which is a division of Ser. No. 340,894, Apr. 19, 1989, Pat. No. 4,929,402, which is a continuation of Ser. No. 161,346, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 792,979, Dec. 9, 1985, abandoned, which is a division of Ser. No. 638,905, Aug. 8, 1984, Pat. No. 4,575,030. This application Jun. 6, 1995, Ser. No. 469,284

Int. Cl.[6] B29C *35/08;41/02*

U.S. Cl. 264—401 12 Claims



1. A method of producing a three-dimensional object from a medium capable of solidification when subjected to prescribed synergistic stimulation, said method comprising the steps of:

providing said medium;

using data representing said object, generated using a CAD system, for forming successive cross-sectional layers of structure of said object at a surface of said medium; and

coating over each precedingly formed cross-sectional layer of structure of said object with a layer of said medium and adhering each successive cross-sectional layer of structure to a preceding cross-sectional layer of structure to produce said object.

5,630,982

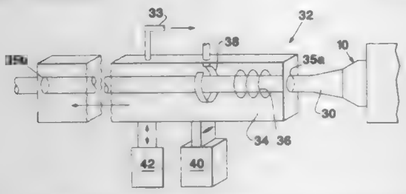
METHOD AND APPARATUS FOR EXTRUDING PLASTIC TUBING

David E. Boring, East Berlin, Pa., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 12, 1995, Ser. No. 571,188

Int. Cl.[6] B29C *47/92*

U.S. Cl. 264—407 12 Claims



1. A process for forming a polymer tube of predetermined diameter and wall thickness, comprising the steps of:

a) heating a thermoplastic material to a substantially molten state and extruding said molten thermoplastic through a die having a central insert to produce hot tube with a hollow central portion;

b) passing the hot tube into a vacuum calibration box containing a cooling fluid, the hot hollow tube passing through the cooling fluid to cool the polymer with the tube being maintained internally substantially at atmospheric pressure and externally under vacuum;

c) passing the hot hollow tube within the vacuum calibration box through a sizing collar;

d) downstream of the sizing collar, ultrasonically measuring the wall thickness of the tube simultaneously at a plurality of substantially coplanar points spaced at intervals in a plane at perpendicular to the direction of travel of the tube, and passing the cooled tube out of the box;

e) calculating a critical parameter which is a function of the measured wall thicknesses;

f) comparing the calculated critical parameter to a predetermined range, and when the critical parameter is outside of the predetermined range, moving the vacuum calibration box in the direction of greater wall thickness; and

g) after a predetermined interval, repeating said measuring, comparing and moving steps until the critical parameter is within the predetermined range.

10. Apparatus for extruding plastic tubing, comprising:

a) an extruder for converting solid plastic to a substantially molten form;

b) a die having an insert therein for extruding the molten polymer therethrough to produce an extruded tube;

c) a vacuum calibration box maintained internally under reduced pressure, containing a cooling fluid and having therein a calibration sleeve of a diameter which is the desired outer diameter of the extruded tubing;

d) means for passing extruded tubing through the vacuum calibration box;

e) means for horizontal and vertical movement of the vacuum calibration box;

f) means for ultrasonically determining wall thickness of the extruded tube as the tube passes through the vacuum calibration box, said means being located downstream of said calibration sleeve and comprising means for simultaneously determining wall thickness at a plurality of points located in a plane perpendicular to the direction of passing of the tube;

g) means for calculating a critical parameter which is a function of the wall measurements and comparing the critical parameter to a predetermined range;

h) means for automatically moving said vacuum calibration box in response to determination of a critical parameter which is outside of the predetermined range, in a direction towards a greater wall thickness; and

i) means for repeating the calculating, comparing and moving after a predetermined interval.

5,630,983

PRECIPITATION HARDENING STAINLESS STEELS

Tomonao Tateyama, Tokai; Tetsuya Shimizu, Nagoya, and Michio Okabe, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 30, 1996, Ser. No. 640,122

Claims priority, application Japan, May 11, 1995, 7-138827

Int. Cl.[6] C22C *38/42*

U.S. Cl. 420—60 8 Claims

1. A precipitation hardening stainless steel for cold working consisting essentially by weight percentage of not more than 0.010% of C and 0.010 to 0.025% of N with the proviso that the total sum of C and N does not exceed 0.025%, not more than 1.0% of Si, not more than 1.2% of Mn, not more than 0.040% of P, not more than 0.030% of S, 3.0 to 5.0% of Cu, 3.0 to 4.65% of Ni, 13.0 to 16.5% of Cr, not more than 1.0% of Mo, (−11.43 (percent C+percent N)+0.6) to 0.5% of Nb and the balance being substantially Fe with further proviso that C, N, Ni and Mn are correlated such that

452 (percent C+percent N)+11.1 (percent Ni+percent Mn)

is at most equal to 73.1, wherein volume percentage of an austenite phase observed after aging treatment is not more than 20%.

5,630,984

BRASS ALLOY

Helmut Waschke, Stein, and Leopold Sauer, Wittlich, both of Germany, assignors to Ideal-Standard GmbH, Bonn, Germany

Continuation of Ser. No. 347,295, Dec. 1, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 614,726

Claims priority, application Germany, Jun. 2, 1992, 42 18 513.0; Dec. 4, 1992, 42 40 880.6; Apr. 16, 1993, 43 12 484.4; Apr. 16, 1993, 43 12 466.6

Int. Cl.[6] C22C *9/01*

U.S. Cl. 420—478 9 Claims

1. An alloy having a composition (wt %) as follows:

Cu: 57–65%

Bi: 0.3–1.5%

Al: 0.4–0.8%

B: 5–15 ppm

impurities 0–1% and

Zn as remainder.

5,630,985

CHEMICAL AGENTS AND METHOD FOR THE INHIBITION OF CORROSION AND DEPOSIT FORMATION IN WATER SYSTEMS

Dennis C. Williams, Upchurch, and Christopher P. Rycroft, Rainham, both of England, assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

PCT No. PCT/GB93/00139, § 371 Date Jan. 4, 1995, § 102(e) Date Jan. 4, 1995, PCT Pub. No. WO94/17221, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 22, 1993, Ser. No. 302,925

Int. Cl.[6] C23F *11/12*

U.S. Cl. 422—17 22 Claims

1. A process of treating water to inhibit corrosion and/or deposit formation which process comprises adding to said water for the purpose of inhibiting said corrosion and/or deposit formation an effective amount of at least one mono or polyhydric alcohol wherein said monohydric alcohol has a molecular weight of from about 34 to about 142 and said polyhydric alcohol has a molecular weight of from 62 to about 496.

5,630,986

DISPENSING INSTRUMENT FOR FLUID MONITORING SENSORS

Steven C. Charlton, Osceola, Ind.; Anne T. Miller, Cambridge, United Kingdom; Joseph L. Moulton, Mishawaka, Ind.; Matthew A. Schumann, Cambridge, United Kingdom; Dennis Slomski, South Bend, and Frank W. Wogoman, Granger, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Continuation-in-part of Ser. No. 372,304, Jan. 13, 1995, Pat. No. 5,575,403. This application Mar. 14, 1995, Ser. No. 404,303

Int. Cl.[6] G01N *37/00*

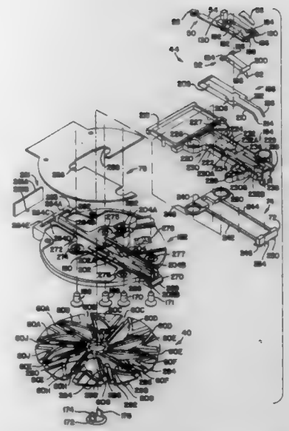
U.S. Cl. 422—64 17 Claims

1. A sensor dispensing instrument for handling of a plurality of fluid sensors comprising:

an outer housing;

a sensor pack having a plurality of sensor retaining means, each of which sensor retaining means being adapted to accommodate one of said plurality of fluid sensors and is at least partially enclosed by enclosure means;

indexing means mounted in said housing, said sensor pack being disposed on said indexing means so as to be advanced as said indexing means is advanced such that one of said sensor retaining means is disposed in a feed position;



a driver means disposed in said housing and movable between a first position and a second position, said driver means having a cutting means pivotally mounted thereon and riding on a cam track disposed in said housing as said driver means is moved from said first position towards said second position whereby said cutting means travels along said cam track so as to pivot towards one of said plurality of sensor retaining means to thereby pierce said enclosure means to enter into said one of said plurality of sensor retaining means that is in said feed position and to engage said sensor to advance said sensor from said sensor retaining means into a testing position;

indexing drive means associated with said driver means and said indexing means to advance said indexing means as said driver means is returned to said first position so as to position another one of said plurality of sensor retaining means in said feed position as said driver means is being returned to said first position; and

lifting means disposed in said housing relative to said cam track for lifting said cutting means away from said sensor pack as said driver means is being returned towards said first position.

5,630,987

METHOD AND APPARATUS FOR THE MEASUREMENT OF POLLUTANTS IN LIQUIDS

Ronald Briggs, Knebworth; Kenneth T. V. Grattan, Ickenham, and Zoheir Movaziz, London, all of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB93/01555, § 371 Date Jan. 24, 1995, § 102(e) Date Jan. 24, 1995, PCT Pub. No. WO94/02836, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 23, 1993, Ser. No. 374,658

Claims priority, application United Kingdom, Jul. 24, 1992, 9215741

Int. Cl.[6] G01N *21/59*

U.S. Cl. 422—82 8 Claims

1. Apparatus for measuring a concentration of a contaminant in a fluid, comprising;

a measuring chamber provided in a fluid path,

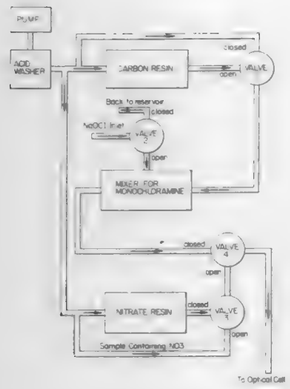
a first source of optical radiation of a predetermined wavelength for directing said radiation through said measuring chamber,

detector means to detect the radiation after passage through the measuring chamber,

pump means provided in the fluid path to urge a test fluid from a fluid source to said measuring chamber, said test fluid being subject to containing said contaminant,

fluid processing means provided in the fluid path to process said fluid to change an optical effect of said contaminant,

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acid washing means provided in the fluid path to inhibit the effect of precipitation of cations within the fluid path.

bypass means provided in the fluid path to bypass said fluid processing means, and

valve means provided in the fluid path alternately to direct said fluid to said fluid processing means and said bypass means.

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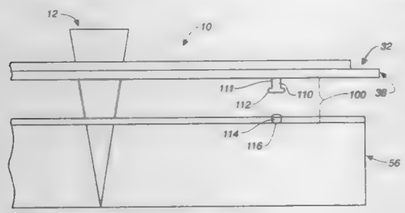
PIPETTE TIP MOUNTING AND TRANSFER APPARATUS

Philip E. Stolp, Kenwood, Calif., assignor to Point Plastics Inc., Petaluma, Calif.

Continuation-in-part of Ser. No. 196,967, Feb. 15, 1994, Pat. No. 5,487,997. This application Nov. 1, 1995, Ser. No. 551,457

Int. Cl.[6] B01L *3/02*

U.S. Cl. 422—100 **6 Claims**



1. A pipette tip assembly, comprising:

at least one longitudinally extending pipette tip, said tip defining a tapered portion which comprises a tapered abutment member inwardly tapered from an upper plane towards a lower plane and having a lower end disposed adjacent to the lower plane, wherein the upper and lower planes are transverse to a longitudinal axis of the tip when the tip is vertically oriented and wherein the lower plane is disposed above a lower end of the tip;

a tip support defining a support surface and adapted to receive the lower end of the tip with the lower end of the abutment member resting upon the support surface when the tip is vertically oriented;

a tip holder, having at least one aperture in which the tip is removably disposed, the tip holder disposed between the upper plane and the support surface, the tip holder selectively movable from an upper position relative to both the tip and the tip support, to a lower position in contact with the support surface, when in the upper position, the tip holder held above the support surface and rigidly maintaining the tip from wobble in the tip holder until selectively moved from the upper position, when in the lower position, the tip being removable from the tip holder; and,

a position-maintaining structure adapted to hold said tip holder in the lower position until said tip holder is selectively moved from the lower position.

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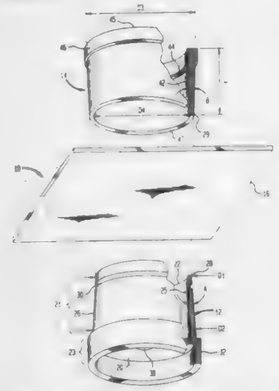
APPARATUS FOR TRIMLESS SAMPLE CUP USED IN X-RAY SPECTROSCOPY

Monte J. Solazzi, Jupiter, Fla., assignor to Chemplex Industries, Inc., Stuart, Fla.

Continuation of Ser. No. 440,644, May 15, 1995, abandoned, which is a continuation of Ser. No. 292,058, Aug. 17, 1994, Pat. No. 5,451,375. This application Aug. 13, 1996, Ser. No. 696,104

Int. Cl.[6] G01N *23/10*

U.S. Cl. 422—102 **20 Claims**



13. A cup assembly for holding a sample to be analyzed spectrochemically, consisting essentially of:

a first member forming a sample cell, said first member having a generally cylindrical wall which extends between a first end and a second end thereof, and an outwardly extending annular flange unitarily formed with said first end;

a second member having a generally cylindrical wall having a first end and a second, said second member cylindrical wall extending from said annular flange of said first member to said second end of said wall of said first member when said members are assembled together, wherein said first end of said second member cylindrical wall places the thin film against said annular flange of said first member; and

gripping means on an outer surface of said wall of said second member for providing a place to manually grip the second member during assembly of said cup.

5,630,990

OZONE GENERATOR WITH RELEASABLE CONNECTOR AND GROUNDED CURRENT COLLECTOR

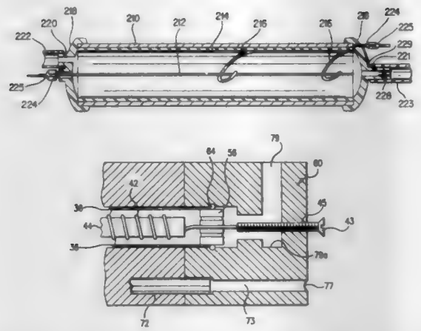
Wayne E. Conrad, Hampton; Richard S. Phillips, Courtice; Andrew R. H. Phillips, Oshawa; Raymond E. Bowman, Bowmanville, and Helmut G. Conrad, Oshawa, all of Canada, assignors to T I Properties, Inc., Los Angeles, Calif.

Filed Nov. 7, 1994, Ser. No. 336,237

Int. Cl.[6] B01J *19/12*

U.S. Cl. 422—186.07 **34 Claims**

1. An apparatus for producing ozone from oxygen comprising a generator element having a high voltage electrode, a ground electrode separated from the high voltage electrode to form a gap therebetween, and a dielectric element occupying a portion of the gap, the generator element being electrically connected to a circuit for producing an alternating current or pulsed direct current by



means of a releasable connector, said high voltage electrode extending into a spacer, and said releasable connector connecting the high voltage electrode through said spacer to said circuit.

16. An apparatus for producing ozone from oxygen comprising a generator element having a high voltage electrode, a ground electrode separated from the high voltage electrode to form a gap therebetween, end a dielectric element occupying a portion of the gap, the high voltage electrode being electrically connected to a circuit for producing alternating or pulsating direct current, and a grounded current collector at an outlet to the generator element.

5,630,991

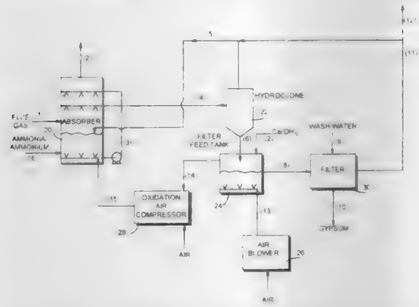
LIMESTONE-BASED WET FLUE GAS DESULFURIZATION PROCESS

Eli Gal, Lititz, and Michael L. Mengel, Fredericksburg, both of Pa., assignors to General Electric Co., Schenectady, N.Y.

Filed Aug. 16, 1994, Ser. No. 291,212

Int. Cl.[6] B01D *53/50*

U.S. Cl. 423—243.01 **11 Claims**



1. A wet flue gas desulfurization process comprising the steps of:

(a) bringing a sulfur-containing flue gas into contact with an aqueous limestone-containing slurry which includes a limestone-dissolution rate enhancing effective amount of ammonium ions in an absorber;

(b) forcing oxidation air into the absorber so as to oxidize sulfite therein to sulfate;

(c) removing desulfurized gas from the absorber; and

(d) recovering the ammonium ions from the slurry and recycling the recovered ammonium ions to the absorber; wherein

step (d) includes the steps of:

(I) transferring a stream of the slurry containing the ammonium ions from the absorber to a filtration tank;

(II) bringing the slurry into contact with calcium hydroxide within the filtration feed tank, while concurrently sparging the filtration feed tank with air so as to strip ammonia from the slurry and form an ammonia-lean slurry and an ammonia-rich air stream;

(III) dewatering and washing the ammonia-lean slurry so as to obtain a gypsum cake having less than 5 ppm ammonia; and

(IV) mixing at least a portion of the ammonia-rich air stream obtained according to step (II) with the oxidation air prior to the absorber so that a mixture of the ammonia-rich air stream and the oxidation air is forced into the absorber during practice of step (b) to thereby provide a source of the ammonium ions therein.

5,630,992

ANTI-CAKING AGENTS FOR AMMONIUM THIOCYANATE

Antonius E. D. M. van der der Heijden, Den Haag; Gerda M. van Rosmalen, and Marielle G. M. van der Horst, both of Delft, all of Netherlands, assignors to Akzo Nobel NV, Netherlands

Filed Aug. 25, 1995, Ser. No. 519,222

Claims priority, application European Pat. Off., Aug. 29, 1994, 94202452

Int. Cl.[6] C01C *3/20*

U.S. Cl. 423—268 **11 Claims**

1. A composition comprising ammonium thiocyanate and an amount of an anti-caking agent selected from the group consisting of amines and amine salts, which is effective to reduce the caking of the ammonium thiocyanate.

7. A method for reducing the caking of a composition which contains ammonium thiocyanate which comprises incorporating into said composition, 0.0001–1.0% by weight, based on the weight of the ammonium thiocyanate, of an anti-caking agent selected from the group consisting of amines and amine salts.

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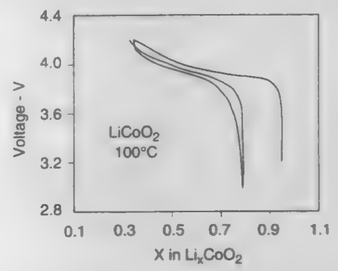
LOW TEMPERATURE SYNTHESIS OF LAYERED LITHIATED TRANSITION METAL OXIDES

Glenn G. Amatucci, Raritan, and Jean-Marie Tarascon, Martinsville, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Jul. 5, 1995, Ser. No. 498,315

Int. Cl.[6] C01G *51/04;53/04*

U.S. Cl. 423—594 **13 Claims**



1. A method of making a single phase layered alkali metal oxide material of the formula

$$H_xA_{1-x}MO_2$$

wherein A is an alkali metal of the group Ia, x is a number from 0.99 to 0, and M is a transition metal selected from the group consisting of CO and Ni, which method comprises reacting an alkali metal ion source in a basic solution with MOOH, wherein M is as defined above, in the presence of water and at a temperature of from about 50° C. to about 150° C. and a pressure greater than atmospheric.

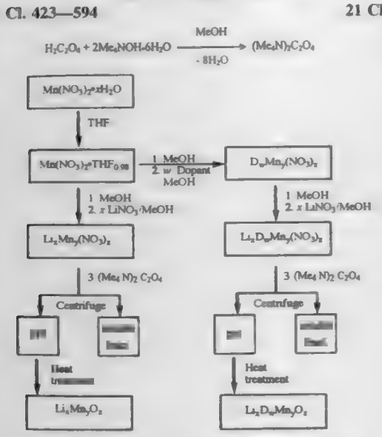
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5,630,994

NON-AQUEOUS SOLUTION PREPARATION OF DOPED AND UNDOPED LIXMNYOZ

Timothy J. Boyle, 5801 Eubank, N.E., Apt. #97, Albuquerque, N.M. 87111, and James A. Voigt, 187 Aaramar La., Corrales, N.M. 87048

Filed Aug. 1, 1995, Ser. No. 510,082
Int. Cl.[6] C01G *45/12*
U.S. Cl. 423—594 **21 Claims**



1. A method comprising preparing phase-pure $LiMn_2O_4$ comprising the steps of:

(a) preparing an approximately 3.4M solution of $Mn(NO_3)_2{\cdot}xH_2O$ in tetrahydrofuran (THF) and stirring the solution thereby substituting the H_2O with THF to form $Mn(NO_3)_2{\cdot}xTHF$;

(b) removing all the unreacted THF solvent in vacuo leaving substantially pure $Mn(NO_3)_2{\cdot}THF_{0.98}$;

(c) mixing an approximately 0.87M solution of $LiNO_3$ in an organic solvent with an approximately 0.40M solution of the $Mn(NO_3)_2{\cdot}THF_{0.98}$ in said organic solvent, in the volume ratio of about 1.0:4.4, respectively;

(d) mixing an approximately 6.0M solution of $Me_4NOH{\cdot}6H_2O$ in said organic solvent with an approximately 8.3M solution of $H_2C_2O_4$ in said organic solvent, in the volume ratio of about 1.0:0.36 respectively, while stirring under an inert gas and then removing the solvent in vacuo to form $(Me_4N)_2C_2O_4$ powder;

(e) mixing an approximately 0.29M solution of said $(Me_4N)_2C_2O_4$ in said organic solvent with the mixed $LiNO_3/Mn(NO_3)_2{\cdot}THF_{0.98}$ organic-solvent solutions in the volume ratio of about 1.0 part of the $(Me_4N)_2C_2O_4$ solution to about 0.26 part of the mixed $LiNO_3/Mn(NO_3)_2{\cdot}THF_{0.98}$ solutions, respectively, to form a precipitate;

(f) separating the precipitate from solution and processing the precipitate by drying and heating to facilitate crystallization of $LiMn_2O_4$.

5,630,995

PREPARATION OF ANATASE TITANIUM DIOXIDE

David L. Foulger, Fairfield, England; Piergiorgio Nencini, and Sergio Pieri, both of Follonica, Italy, assignors to Tioxide Group Services Limited, United Kingdom

Filed Jan. 17, 1996, Ser. No. 587,614
Claims priority, application United Kingdom, Jan. 20, 1995, 9501086
Int. Cl.[6] C01G *23/047*
U.S. Cl. 423—616 **26 Claims**

1. A process for the preparation of anatase titanium dioxide comprising precipitating hydrous titanium oxide from an aqueous solution of a titanium sulphate in the absence of added nuclei and subjecting the hydrous titanium oxide to calcination wherein the titanium sulphate solution has a concentration equivalent to from 200 to 300 grams TiO_2 per liter and a ratio by weight of sulphate to titanium between 1.6:1 and 2.2:1 expressed as $H_2SO_4{:}TiO_2$, the precipitation of hydrous titanium oxide is induced by the addition of water to the titanium sulphate solution in an amount between 5 and 35 parts of water per 100 parts of titanium sulphate solution by weight, the precipitated hydrous titanium oxide is separated from the aqueous solution and subjected to calcination in the presence of a potassium compound and a phosphorus compound, the potassium compound being present in an amount equivalent to between 0.20 and 0.60 percent by weight potassium oxide calculated as K_2O with respect to TiO_2 and the phosphorus compound being present in an amount equivalent to between 0.15 and 0.55 percent by weight phosphorus oxide calculated as P_2O_5 with respect to TiO_2, the thermal profile of the calcination being such that the titanium oxide is introduced initially into a first calcination zone having a gas temperature in the range 460° C. to 600° C. and subsequently passed to a second calcination zone having a gas temperature in the range 650° C. to 700° C., is heated by passing through the first zone and the second zone to a temperature in the range 650° C. to 700° C. over a period between 220 and 260 minutes, is further heated in a third zone to a temperature in the range 740° C. to 800° C. over a period between 20 and 60 minutes, is further heated in a fourth zone to a temperature in the range 845° C. to 900° C. over a period between 50 and 90 minutes, is further heated in a fifth zone to a temperature in the range 900° C. to 950° C. over a period between 30 and 70 minutes and is finally heated in a sixth zone to a temperature in the range 930° C. to 1020° C. over a period between 70 and 130 minutes.

5,630,996

TWO-STEP PRETARGETING METHODS USING IMPROVED BIOTIN-ACTIVE AGENT CONJUGATES

John M. Reno, Brier; Louis J. Theodore, Lynnwood, and Linda M. Gustavson, Seattle, all of Wash., assignors to NeoRx Corporation, Seattle, Wash.

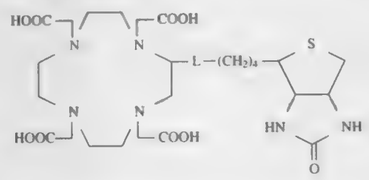
Continuation-in-part of Ser. No. 995,381, Dec. 23, 1992, abandoned, and Ser. No. 995,383, Dec. 23, 1992, abandoned, each which is a continuation-in-part of Ser. No. 895,588, Jun. 9, 1992, Pat. No. 5,283,342. This application Sep. 16, 1993, Ser. No. 122,979
Int. Cl.[6] A61K *51/10;31/415;* **C07K** *16/30;* **C07D** *257/02*
U.S. Cl. 424—1.49 **16 Claims**

1. An improved method of increasing active agent localization at a target cell site of mammalian recipient, which method comprises:

administering to the recipient a first conjugate comprising an antibody or antigen-binding antibody fragment and streptavidin;

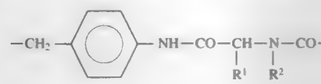
allowing an amount of time to pass that is sufficient for localization of the first conjugate to the target site;

subsequently administering to the recipient a second conjugate comprising an active agent and biotin, wherein the second conjugate localizes to target site-localized first conjugate, and wherein the improvement comprises that the second conjugate comprises a biotinidase-resistant biotin-DOTA compound of the following formula:

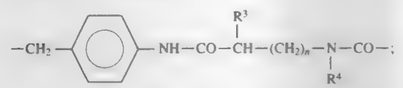


and further wherein a linker L is selected from the group consisting of:

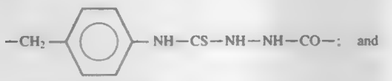
1) a D-amino acid-containing linker of the formula



2) a linker of the formula

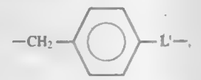


3) a linker of the formula



and

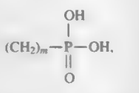
4) a linker of the formula



wherein L' is selected from the group consisting of:
a) —NH—CO—$(CH_2)_n$—O—;
b) —NH—;



d) —NH—CS—NH—; and
e) —NH—CO—$(CH_2)_n$—NH—,
wherein R^1 is hydrogen, lower alkyl; lower alkyl substituted with one or more hydrophilic groups including $(CH_2)_m$—OH, $(CH_2)_m$—OSO_3, $(CH_2)_m$—SO_3, and

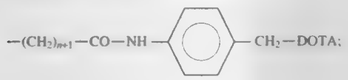


where m is 1 or 2; glucuronide-substituted amino acids; or other glucuronide derivatives;

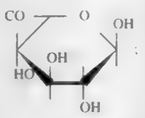
R_2 is hydrogen; lower alkyl; substituted lower alkyl having one or more substituents selected from the group consisting of hydroxy, sulfate, and phosphonate; or a hydrophilic moiety;

R^3 is hydrogen; an amine; a lower alkyl; a hydroxy-, sulfate- or phosphonate-substituted lower alkyl; a glucuronide; or a glucuronide-derivatized amino acid;

R^4 is hydrogen, lower alkyl or



R' is hydrogen; —$(CH_2)_2$—OH or a sulfate or phosphonate derivative thereof; or



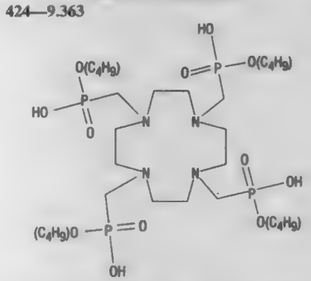
R" is a bond or —$(CH_2)_n$—CO—NH—; and
n ranges from 0–5 wherein R^3 and R^4 cannot both be hydrogen, and wherein the active agent is a radionuclide.

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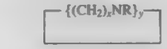
PHOSPHORYLATED POLYAZAMACROCYCLIC COMPOUNDS FOR COMPLEXATION OF METAL IONS

A. Dean Sherry, Dallas, and Garry E. Kiefer, Lake Jackson, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex., and Dow Chemical Company, Midland, Mich.

Division of Ser. No. 923,715, Jul. 31, 1992, Pat. No. 5,362,476, which is a continuation-in-part of Ser. No. 615,619, Nov. 19, 1990, Pat. No. 5,342,606, which is a continuation-in-part of Ser. No. 357,193, May 25, 1989, abandoned, and Ser. No. 291,053, Dec. 28, 1988, Pat. No. 4,983,376, which is a continuation-in-part of Ser. No. 7,729, Jan. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 662,075, Oct. 18, 1984, Pat. No. 4,639,365. This application Nov. 8, 1994, Ser. No. 336,180
Int. Cl.[6] A61B *5/055*
U.S. Cl. 424—9.363 **27 Claims**



1. A polyazamacrocyclic compound or a salt thereof, the compound having the formula



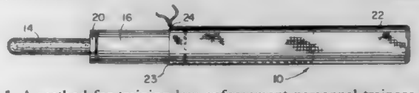
where
x is 2, 3 or a combination of p 2(s) and q 3(s) where p+q=y;
y is 3 or4;
R is $(CH_2)_zP(=O)OR^1OR^2$;
R^1 is H or CH_3;
R^2 is C_nH_{1+2n};
z is 1 to 3; and
n is 4 to 6.

5,630,998

MOCK TRAINING BATON AND METHOD OF TRAINING LAW ENFORCEMENT PERSONNEL USING SAME

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.

Filed Feb. 7, 1995, Ser. No. 384,920
Int. Cl.[6] F41A *33/00;* **A63H** *33/30*
U.S. Cl. 434—11 **48 Claims**



1. A method for training law enforcement personnel trainees in the proper use of a specific, standard issue baton, the method comprising the steps of:

a. providing to a trainee a mock baton, said mock baton comprising a flexible rod having a tip end, a handle and a cushioning, replaceable material forming an envelope over the rod to protect against injury, said handle being substantially identical to the standard issue baton handle;

b. instructing a trainee to utilize the mock baton in training exercises for maximizing the ability of law enforcement personnel in the safe manual handling and manipulation, of the actual standard issue baton;

c. having a trainee perform the training exercises; and

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d. replacing the mock baton with the standard issue baton after a predetermined level of skill in the manual handling of the mock baton has been achieved.

5,630,999

ORAL COMPOSITION CONTAINING ANIONIC SURFACTANTS HAVING REDUCED ADVERSE REACTION TO ORAL TISSUE

Michael R. Burke, Somerset, N.J., and Spencer Holover, Grenada, Grenada, assignors to Colgate Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 78,527, Jun. 16, 1993, Pat. No. 5,296,215. This application Jan. 21, 1994, Ser. No. 185,531

The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.

Int. Cl.[6] **C22C** *38/42;* **A61K** *31/70*

U.S. Cl. 424—49 **24 Claims**

1. An oral composition having a reduced irritancy to oral tissue the composition containing a surfactant system comprised of an effective amount of an anionic surfactant and an alkyl glycoside having the formula $RO(C_6H_{10}O_5)_xH$, wherein R is an aliphatic residue of a C_{12} to C_{22} fatty alcohol and x is an integer from 1 to 20.

5,631,000

ANHYDROUS TOOTH WHITENING GEL

Michael A. Pellico, and Veronica Sababa, both of Los Angeles, Calif., assignors to Laclede Professional Products, Inc., Gardena, Calif.

Filed Mar. 11, 1996, Ser. No. 599,364

Int. Cl.[6] **A61K** *7/16;* **A61C** *5/00*

U.S. Cl. 424—53 **20 Claims**

1. An anhydrous tooth whitening gel composition comprising carbamide peroxide dispersed in an anhydrous gelatinous carrier, said carrier comprising:

(a) a liquid polyol wherein glycerin, if present, is limited to an amount that does not exceed about 10 wt. % based on the total weight of the composition; and

(b) a thickener component containing neutralized carboxypolymethylene and cellulosic ether soluble in the liquid component,

said anhydrous tooth whitening gel composition having enhanced package stability, reduced tooth sensitivity, and improved thixotropic properties.

5,631,001

ANTIMICROBIAL GRAPEFRUIT EXTRACT

Jakob Harich, Winter Springs, Fla., and Elizabeth K. Harich, administratrix, 106 Concord Dr. - P.O. Box 181279, Casselberry, Fla. 32718

Division of Ser. No. 967,158, Oct. 27, 1992, Pat. No. 5,425,944. This application Jun. 6, 1995, Ser. No. 470,225

Int. Cl.[6] **A61K** *7/26;35/78*

U.S. Cl. 424—58 **8 Claims**

1. A mouth rinse for use in the treatment of HIV infections, comprising approximately 50 ppm to about 100 ppm of a composition comprising ascorbic acid in an amount of approximately 16.5% and bioflavonoids in an amount in the range of 14–15%, said composition being extracted from a ground mixture of 80:20 dried grapefruit seeds:grapefruit pulp by weight, said extraction being carried out using a glycerin solution equal in weight to the weight of the ground mixture and at a temperature of approximately 150° C.

5,631,002

LINIMENT FOR MELANIN INHIBITORS

Eiichiro Yagi; Hisayuki Komasaki; Yuki Shibata; Masako Naganuma, and Minoru Fukuda, all of Yokohama, Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,614

Claims priority, application Japan, Jun. 29, 1994, 6-168673; Jun. 29, 1994, 6-168679; Jun. 29, 1994, 6-168681; Jun. 29, 1994, 6-168685; Mar. 10, 1995, 7-078478

Int. Cl.[6] **A61K** *7/021;7/48*

U.S. Cl. 424—62 **10 Claims**

1. An endermic liniment in the form of an ointment, cream, emulsion, lotion, facial pack or bath additive comprising, on a dry basis, 0.005 to 20 wt % of a member selected from the group consisting of Cola de caballo extract, Piri-Piri extract, Pinon Negro extract, Pinon Blanco extract, and mixtures thereof, of the total endermic liniment.

5,631,003

HAIR TREATMENT PREPARTATION

Reinhard Mueller, Erkelenz; Kurt Seidel, Duesseldorf, and Detlef Hollenberg, Erkrath, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 211,258, Mar. 25, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,334

Claims priority, application Germany, Sep. 25, 1991, 41 31 898.6

Int. Cl.[6] **A61K** *7/08*

U.S. Cl. 424—70.31 **17 Claims**

1. Compositions for the treatment of hair, wherein the improvement comprises the presence in the compositions of a combination of

A) from 0.1 to 10% by weight of a zwitterionic polymer consisting essentially of:

α) monomers containing quaternary ammonium groups corresponding to formula (II):

$$R^8—CH=CR^9—CO—Z—(C_nH_{2n})—N^{(+)}R^{10}R^{11}R^{12}\ A^{(-)} \quad \text{(II)},$$

in which R^8 and R^9 independently of one another represent hydrogen or a methyl group and R^{10}, R^{11} and R^{12} independently of one another represent alkyl groups having 1 to 4 carbon atoms, Z is an NH group or an oxygen atom, n is an integer of 2 to 5 and $A^{(-)}$ is the anion of an organic or inorganic acid

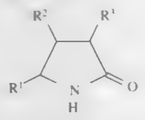
and

β) monomeric carboxylic acids corresponding to formula (III):

$$R^{13}—CH=CR^{14}—COOH \quad \text{(III)},$$

in which R^{13} and R^{14} independently of one another represent hydrogen or methyl groups, or alkali metal, alkaline earth metal, aluminum or ammonium salts of these acids, and

B) from 0.1 to 15% by weight of a compound corresponding to formula (I):



(I)

in which at least one of the substituents R^1 to R^3 is a group —$COOR^4$, where R^4 is hydrogen, an alkali metal ion, an alkaline earth metal ion or $^+NHR^5R^6R^7$, where R^5 to R^7 independently of one another represent hydrogen, alkyl groups having 1 to 22 carbon atoms, hydroxyalkyl groups having 1 to 4 carbon atoms, alkenyl groups having 2 to 22 carbon atoms, and the remaining substituents R^1 to R^3 represent hydrogen or alkyl groups having 1 to 4 carbon atoms, based on the weight of said compositions.

5,631,004

USE OF SUSTAINED RELEASE ANTIBIOTIC COMPOSITIONS IN OPHTHALMIC SURGICAL PROCEDURES

Gerald D. Cagle, Fort Worth; Tai-Lee Ke, Grand Prairie; Barry A. Schlech, and Ole J. Lorenzetti, both of Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Sep. 30, 1993, Ser. No. 129,924

Int. Cl.[6] **A61K** *31/70;31/74*

U.S. Cl. 424—78.04 **4 Claims**

4. A method of prophylactically treating ocular bacterial infections resulting from an ocular surgical procedure in a human or animal patient, which comprises topically applying to an eye of the patient which has undergone a surgical procedure a single dose of a composition comprising:

an antimicrobial effective amount of ciprofloxacin;

a carboxy vinyl polymer having a molecular weight of 50,000 to 6,000,000; and

0.01 to 1.0 wt. % of dodecylmaltoside.

5,631,005

USE OF AMIDOAMINES IN OPHTHALMIC COMPOSITIONS

Nissanke L. Dassanayake, Arlington; Ronald L. Schlitzer, Fort Worth, and Joonsup Park, Arlington, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

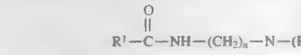
PCT No. PCT/US94/10695, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO95/08266, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 21, 1994, Ser. No. 381,889

Int. Cl.[6] **A61K** *31/74*

U.S. Cl. 424—78.04 **24 Claims**

1. A preserved pharmaceutical composition comprising an aqueous ophthalmic composition and 0.00001 to 0.05 wt. % of a compound of the following formula to preserve said ophthalmic composition from microbial contamination:



(I)

wherein:

R^1 is C_6-C_{18} saturated or unsaturated alkyl, alkylaryl, or alkoxyaryl;

n is 2 to 16; and

R^2 is C_1-C_8 saturated or unsaturated alkyl or hydroxyalkyl, or a pharmaceutically acceptable salt thereof.

5,631,006

IMMUNOTHERAPY PROTOCOL OF CULTURING LEUKOCYTES IN THE PRESENCE OF INTERLEUKIN-2 IN A HOLLOW FIBER CARTRIDGE

Georgiann B. Melink, St. Paul, and Raji A. Shankar, New Brighton, both of Minn., assignors to Endotronics, Inc., Coon Rapids, Minn.

Continuation of Ser. No. 233,547, Apr. 26, 1994, Pat. No. 5,541,105, which is a continuation of Ser. No. 998,643, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 758,191, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 240,471, Sep. 6, 1988, abandoned, which is a continuation of Ser. No. 856,827, Apr. 28, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 483,876

Int. Cl.[6] **A61K** *35/12;35/14;35/26;* **C12N** *5/08*

U.S. Cl. 424—93.71 **5 Claims**

1. An immunotherapy protocol comprising:

culturing leukocytes at a high density of about 8×10^7 cells per ml in the presence of recombinant interleukin-2, in a hollow fiber cartridge for at least four days to obtain a cell harvest having a yield of at least 100% with respect to the number of cells initially present in the hollow fiber cartridge, wherein the cultured leukocytes have a lyric activity approximately equal to or greater than that of leukocytes cultured in a static culturing system, and administering said cultured leukocytes to a patient in need of said immunotherapy.

5,631,007

ANTI-PATHOGENICALLY EFFECTIVE COMPOSITIONS COMPRISING LYTIC PEPTIDES AND HYDROLYTIC ENZYMES

John A. Ryals, Durham, N.C.; Philippe B. Gay, Mulhouse, France, and Patricia A. Ahl-Goy, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 82,310, Jun. 25, 1993, Pat. No. 5,348,743, which is a continuation of Ser. No. 491,801, Mar. 12, 1990, abandoned. This application Jun. 8, 1994, Ser. No. 253,443

Int. Cl.[6] **A61K** *38/47*

U.S. Cl. 424—94.61 **14 Claims**

1. A composition for controlling plant pathogens, comprising:

a) one or more agriculturally acceptable carriers; and

b) an antipathogenically effective amount of an active ingredient comprising

i) a lytic peptide selected from the group consisting of Synthetic Peptide #3, Synthetic Peptide #7, , melittin, hecate, thionin, and magainin and

ii) at least one hydrolytic enzyme selected from the group consisting of chitinase and beta-1,3-glucanase.

5,631,008

Patent Not Issued For This Number

5,631,009

PORCINE ADIPOCYTE ANTIGENS AND THEIR USE IN THE IMMUNOLOGICAL CONTROL OF FAT

Anthony Cryer, South Glamorgan, Wales; David J. Flint, Alloway, Scotland, and Steven C. Kestin, Langford, England, assignors to British Technology Group Ltd., England

PCT No. PCT/GB92/01721, § 371 Date Mar. 17, 1994, § 102(e) Date Mar. 17, 1994, PCT Pub. No. WO93/06131, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 18, 1992, Ser. No. 211,033

Claims priority, application United Kingdom, Sep. 19, 1991, 9120037

Int. Cl.[6] **A61K** *39/00;38/00;35/12;* **C07K** *16/00*

U.S. Cl. 424—184.1 **6 Claims**

1. An isolated antigen present in the plasma membrane of mature porcine white adipocytes, which is not detectable in porcine liver, kidney, spleen, brain, cardiac muscle, skeletal muscle or lung or in porcine erythrocytes, which reacts with antisera raised against said adipocytes, said antigen being selected from the group consisting of a 37, 50, 51, and 121 KiloDaltons relative molecular mass antigen as determined by SDS-PAGE using markers of relative molecular mass 29, 45, 66, 97, 116, and 205 KiloDaltons.

5,631,010

GENETICALLY STABLE CHOLERA VACCINES WITH DELETIONS OF CTXA, RECA AND ATTRS1

John J. Mekalanos, Cambridge, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 83,388, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 909,382, Jul. 6, 1992, abandoned. This application Mar. 14, 1995, Ser. No. 403,584

Int. Cl.[6] **A61K** *39/106;* **C12N** *1/21*

U.S. Cl. 424—235.1 **22 Claims**

1. A nontoxinogenic genetically stable mutant strain of *Vibrio cholerae*, said strain comprising a genetically engineered deletion

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of DNA encoding ctxA subunit such that said strain lacks a reactogenic subunit A of cholera toxin, said strain further comprising deletions of attRS1 sequences, and having at least 1000-fold lower attRS1 mediated site-specific recombination relative to a parent strain having at least two copies of attRS1.

5,631,011

TISSUE TREATMENT COMPOSITION COMPRISING FIBRIN OR FIBRINOGEN AND BIODEGRADABLE AND BIOCOMPATIBLE POLYMER

Jonas Wadström, Dag Hammarskjölds väg 281, S-756 52 Uppsala, Sweden

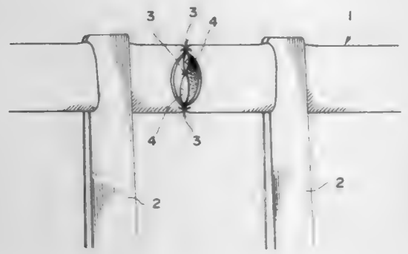
PCT No. PCT/SE92/00441, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO92/22312, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 17, 1992, Ser. No. 162,078

Claims priority, application Sweden, Jun. 17, 1991, 9101853

Int. Cl.[6] A61K *9/00;9/08;38/00*

U.S. Cl. 424—400 **10 Claims**



1. A tissue treatment composition to promote wound healing and reduce scar formation consisting essentially of i) a fibrin glue component comprising fibrin or fibrinogen, Factor XIII, thrombin, bivalent calcium, and ii) a hyaluronic acid component which is hyaluronic acid, crosslinked hyaluronic acid, or a salt thereof; wherein the hyaluronic acid component is present in a sufficient amount so that an aqueous solution formed from said composition has a viscosity of about 500 to about 1,000,000 cP.

5,631,012

COSMETIC PREPARATIONS FOR MOISTURIZING HUMAN SKIN CONTAINING SPECIFIC LIPIDS

David Shanni, 1310 Cushing Rd., Scotch Plains, N.J. 07076

Filed Sep. 2, 1994, Ser. No. 300,794

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **3 Claims**

1. A topically applied cosmetic preparation for moisturizing human skin comprising a dermatological acceptable carrier and a physiologically active ingredient, said active ingredient comprises lipids and the composition of said lipids approximates the composition of human vernix composition and has the following compositional ratio:

i) approximately one part saturated fatty acids;

ii) approximately one part monounsaturated fatty acids;

iii) approximately one quarter of a part polyunsaturated fatty acids;

iv) approximately four parts phosopholipids;

v) approximately two parts glycolipids; and

vi) approximately two-thirds of a part of aminolipids, waxes and miscellaneous lipids.

5,631,013

COSMETIC DEODORANT PRODUCTS CONTAINING ENCAPSULATED CO-MICRONIZED BICARBONATE INGREDIENT

Wolfgang R. Bergmann, Princeton, and Richard T. Murphy, Belle Mead, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Aug. 7, 1995, Ser. No. 511,863

Int. Cl.[6] A61K *7/32*

U.S. Cl. 424—401 **32 Claims**

1. A cosmetic deodorant product comprising an organic matrix which contains between about 0.5–20 weight percent of an encapsulated powder composition homogeneously dispersed therein, wherein the encapsulated powder composition comprises (1) discrete crystallite particles of at least one ingredient selected from alkali metal and ammonium bicarbonates, and (2) between about 10–50 weight percent of discrete crystallite particles of at least one inorganic compound ingredient having a Mohs hardness value between about 3–7, based on the powder composition weight; wherein the crystallites of the powder composition have an average particle size in the range between about 0.1–30 microns as obtained by mill co-micronization of the powder ingredients; and wherein the crystallites are in the form of polymer surface-coated particles.

5,631,014

OXAZOLINE DERIVATIVES, INSECTICIDAL AND MITICIDAL COMPOSITION, AND METHOD FOR CONTROLLING INSECTS AND MITES

Tatsuya Ishida, Nagano; Chiharu Morikawa, Suzaka; Tatsufumi Ikeda, Nagano; Junji Suzuki, Suzaka; Yasuaki Hariya, Kawaguchi, and Yasuo Kikuchi, Nagano, all of Japan, assignors to Yashima Chemical Industry Co., Ltd., Kanagawa-ken, Japan

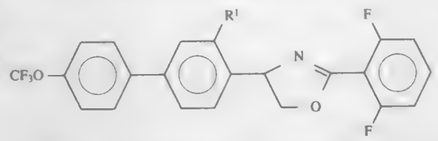
Filed Jun. 6, 1995, Ser. No. 471,233

Claims priority, application Japan, Jun. 9, 1994, 6-150637

Int. Cl.[6] A01N *25/02*

U.S. Cl. 424—405 **12 Claims**

1. A composition for control of plant-parasitic insects and mites which comprises an insecticidally and miticidally effective amount of an oxazoline derivative represented by the formula



wherein R^1 represents a fluorine atom, a chlorine atom or a methyl group,

and agrohorticulturally acceptable adjuvants.

5,631,015

LIQUID ABSORBABLE COPOLYMERS FOR PARENTERAL APPLICATIONS

Rao S. Bezwada, Whitehouse Station; Stephen C. Arnold, Franklin, both of N.J.; Shalaby W. Shalaby, Anderson, S.C., and Bernard L. Williams, Martinsville, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 94,823, Jul. 20, 1993, abandoned. This application May 20, 1996, Ser. No. 650,562

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—422 **6 Claims**

1. A liquid parenteral composition for injection subcutaneously or intramuscularly into animals of at least one drug consisting essentially of an admixture of at least one drug to be delivered in a therapeutically effective amount; and a bioabsorbable lactone copolymer composed of two lactone monomers selected from the group consisting of L-lactide, 1,4-dioxanone, ε-caprolactone, 1,5-dioxepan-2-one and trimethylene carbonate said copolymer being a liquid at body temperature, provided in an amount effective to sustain or extend the release rate of the drug, wherein the inherent viscosity of the copolymer is between about 0.05 dL/g and about 0.8 dL/g as determined in a 0.1 g/dL solution of hexafluoroisopropanol at 25° C. and the lactone copolymer contains substantially no unreacted monomer.

5,631,016

PROCESS FOR THE PRODUCTION OF SINGLE- OR MULTI-PHASE MATERIALS OF BIOLOGICAL INTEREST

Guy Daculsi, Vigneux de Bretagne, and Catherine Deudon, Nantes, both of France, assignors to Universite De Nantes, Nantes Cedex, France

PCT No. PCT/FR93/01064, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/09832, PCT Pub. Date May 11, 1994

PCT Filed Oct. 28, 1993, Ser. No. 428,105

Claims priority, application France, Oct. 28, 1992, 92 12837

Int. Cl.[6] A61E *2/02;* **A61F** *2/28*

U.S. Cl. 424—426 **7 Claims**

1. Process for producing a solid block of material of biological interest, consisting essentially of forming a specimen by integrating into calcium phosphate powder a biologically active principle in powder or liquid form, confining the specimen thus obtained in a mold cavity, and then subjecting the specimen in the mold cavity to a shockwave thereby to produce said solid block by cold bonding the particles of said calcium phosphate powder to each other.

5,631,017

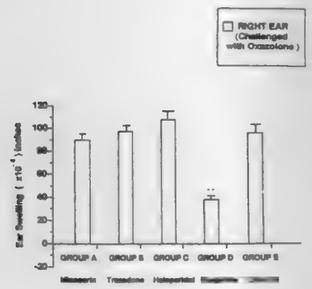
TOPICAL APPLICATION OF BUSPIRONE FOR TREATMENT OF PATHOLOGICAL CONDITIONS ASSOCIATED WITH IMMUNE RESPONSES

Richard J. Sharpe, Cambridge; Kenneth A. Arndt, Newton Centre, and Stephen J. Galli, Winchester, all of Mass., assignors to Beth Israel Deaconess Medical Center, Inc., Boston, Mass.

Filed Mar. 26, 1993, Ser. No. 37,225

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—449 **12 Claims**



1. A method for the treatment of a cutaneous, ocular, or mucosal pathology associated with an immune response in a human or other mammal that includes topical application of an effective amount of buspirone or its pharmaceutically acceptable salt, other than a quaternary salt, optionally in a pharmaceutically acceptable diluent or carrier for topical application.

5,631,018

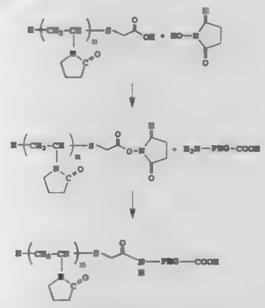
LIPID-POLYMER CONJUGATES AND LIPOSOMES

Samuel Zalipsky, Fremont; Martin C. Woodle, Menlo Park; Danilo D. Lasic, Newark, and Francis J. Martin, San Francisco, all of Calif., assignors to Sequus Pharmaceuticals, Inc., Menlo Park, Calif.

Continuation of Ser. No. 25,602, Mar. 3, 1993, Pat. No. 5,395,619. This application Oct. 4, 1994, Ser. No. 317,723

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **12 Claims**



1. A liposomal composition containing liposomes having sizes between 0.05–0.5 microns, and comprised of vesicle-forming lipids and between 1–30 mole percent of a lipid-polymer conjugate consisting of

a lipid polymer conjugate consisting of a lipid having two hydrocarbon chains as hydrophobic moieties and a polar head group, and

covalently attached to said polar head group is a homopolymer or copolymer polymer chain having one end at which the polymer chain is attached to said polar head group and an opposite free end, said polymer chain containing a polymer selected from the group consisting of polyvinylpyrrolidone, polyvinylmethylether, polyhydroxypropyl methacrylate, polyhydroxyethyl metacrylate, polyhydroxyethyl acrylate, polymethacrylamide, poly-dimethylacrylamide, polymethyloxazoline, polyethyloxazoloine, polyhydroxyproploxazoline, and polyaspartamide.

5,631,019

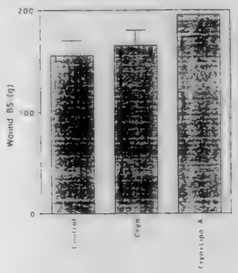
BIOLOGIC BIOADHESIVE COMPOSITIONS CONTAINING FIBRIN GLUE AND LIPOSOMES, METHODS OF PREPARATION AND USE

Gerard Marx, New York, N.Y., assignor to New York Blood Center, Inc., New York, N.Y.

Division of Ser. No. 198,158, Feb. 17, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 460,534

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **34 Claims**



1. A method for inducing coagulation of a liposome-containing fibrin glue bioadhesive composition at a site of injury, wound, or

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surgery in a mammal, thereby resulting in sealing and healing of the injury, wound, or surgical site, comprising:

a) preparing said liposome-containing fibrin glue composition, comprising in admixture:

(i) virus-inactivated fibrinogen present in said composition at a concentration of 10 to 90 mg/mL;

(ii) virus-inactivated thrombin present in said composition at a concentration of 1 to 200 U/mL;

(iii) liposomes present in said composition at a concentration of about 1% to 20%, by volume; and

(iv) calcium present in said composition at a concentration of about 1 to 30 mM; and

b) administering said composition to said mammal, wherein coagulation of said glue forms a medium for entrapping said liposomes at said site and embeds said liposomes in said glue.

5,631,020

METHOD FOR PRODUCING MICROCAPSULE

Hiroaki Okada; Yasuaki Ogawa, both of Osaka, and Takatsuka Yashiki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 228,452, Apr. 15, 1994, Pat. No. 5,476,663, which is a continuation of Ser. No. 748,423, Aug. 22, 1991, abandoned, which is a division of Ser. No. 469,784, Jan. 24, 1990, Pat. No. 5,061,492, which is a division of Ser. No. 103,117, Sep. 30, 1987, Pat. No. 4,917,893, which is a division of Ser. No. 940,614, Dec. 11, 1986, Pat. No. 4,711,782, which is a division of Ser. No. 667,096, Nov. 1, 1984, Pat. No. 4,652,441. This application Jun. 6, 1995, Ser. No. 468,657

Claims priority, application Japan, Nov. 4, 1983, 58-207760

Int. Cl.° A61K *9/14;9/52*

U.S. Cl. 424—451 **3 Claims**

1. A method for producing a prolonged release microcapsule for injection, which comprises redispersing a spherical microcapsule having an average diameter of 2 to 200 μm, comprising particles containing a water-soluble drug, the particles being dispersed in a spherical microcapsule matrix composed of a polymer of lactic acid and glycolic acid having comonomer ratio within the range of about 100/0 to 50/50and an average molecular weight within the range of about 5,000 to 200,000, in an excipient selected from the group consisting of mannitol, sorbitol, lactose and glucose and then solidifying,

wherein he resulting microcapsule upon reconstitution in a vehicle for injection, provides greater stability than if no redispersing step is performed, and

wherein the water-soluble drug is (Pyr) Glu-His-Trp-ser-Tyr-D-Leu-Leu-Arg-Pro-NH-C_2H_5.

5,631,021

METHOD FOR PRODUCING MICROCAPSULE

Hiroaki Okada; Yasuaki Ogawa, both of Osaka, and Takatsuka Yashiki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 468,657, Jun. 6, 1995, which is a division of Ser. No. 228,452, Apr. 15, 1994, Pat. No. 5,476,663, which is a continuation of Ser. No. 748,423, Aug. 22, 1991, abandoned, which is a division of Ser. No. 469,784, Jan. 24, 1990, Pat. No. 5,061,492, which is a division of Ser. No. 103,117, Sep. 30, 1987, Pat. No. 4,917,893, which is a division of Ser. No. 940,614, Dec. 11, 1986, Pat. No. 4,711,782, which is a division of Ser. No. 667,096, Nov. 14, 1984, Pat. No. 4,652,441. This application Feb. 20, 1996, Ser. No. 604,022

Claims priority, application Japan, Nov. 4, 1983, 58-207760

Int. Cl.° A61K *9/14;9/50;9/52*

U.S. Cl. 424—451 **5 Claims**

1. A prolonged release microcapsule for injection, which is produced by redispersing a spherical microcapsule having an average diameter of 2 to 200 μm, comprising particles containing a water-soluble drug, the particles being dispersed in a spherical microcapsule matrix composed of a polymer of lactic acid and glycolic acid having a comonomer ratio within the range of about 100/0 to 50/50 and an average molecular weight within the range of about 5,000 to 200,000, in an excipient selected from the group consisting of mannitol, sorbitol, lactose and glucose and then solidifying, wherein, the water-soluble drug is a polypeptide of the formula (I)

$$(Pyr)Glu\text{-}R_1\text{-}Trp\text{-}Ser\text{-}R_2\text{-}R_3\text{-}R_4\text{-}Arg\text{-}Pro\text{-}R_5 \quad (I)$$

wherein R_1 is His, Tyr, Trp or p-NH_2-Phe; R_2 is Tyr or Phe; R_3 is Gly or a D-amino acid residue; R_4 is Leu, Ile or Nle; and R_5 is Gly-NH-R_6 or NH-R_6, wherein R_6 is H or a lower alkyl group which may optionally be substituted by OH, or a salt thereof, and the resulting microcapsule, upon reconstitution in a vehicle for injection, provides greater stability than if no redispersing step is performed.

5,631,022

PICOSULFATE DOSAGE FORM

Kenneth G. Mandel, Fairfield, and Paula D. Davis, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 139,364, Oct. 19, 1993, abandoned. This application Jul. 6, 1995, Ser. No. 498,612

Int. Cl.° A61K *9/64*

U.S. Cl. 424—456 **13 Claims**

1. A pharmaceutical laxative composition in unit dosage form, for peroral administration of picosulphate to a human or other animal subject, comprising:

(a) from about 0.1 mg to about 10 mg of picosulphate in a rapidly dissolving matrix; and

(b) a proximal colonic delivery carrier which effects release of said picosulphate substantially near the junction between the small intestine and the colon or within the colon of said subject;

wherein the picosulphate dissolves substantially completely within about 1 minute to about 20 minutes from the matrix once dissolution commences.

5,631,023

METHOD FOR MAKING FREEZE DRIED DRUG DOSAGE FORMS

Patrick Kearney, Swindon, and Sang K. Wong, New Malden, both of England, assignors to R.P. Scherer Corporation, Troy, Mich.

PCT No. PCT/US94/07618, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO95/01782, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 8, 1994, Ser. No. 481,287

Int. Cl.° A61K *9/20*

U.S. Cl. 424—465 **10 Claims**

1. A method of manufacturing a solid, shaped dosage form which disintegrates in lass than about 10 seconds upon contact with an aqueous media, said method including the preparation of a liquid admixture comprising a solvent, gelatin, a granular therapeutic agent having a particle size ranging from about 1 to about 400 microns and from 0.01 to 0.05 weight percent xanthan gum sufficient to act predominantly as a gelatin flocculating agent; filing said liquid admixture into one or more shaped depressions in a tray; freezing said liquid admixture in said trays so as to form solid shaped admixtures of solvent, carrier and granular therapeutic agent; and removal of said solvent so as to form a solid shaped tablet of carrier matrix and granular therapeutic agent.

5,631,024

MEDICAMENTS FOR BENEFICIAL INSECTS AND METHOD

Sherrene D. Kevan; Peter G. Kevan, both of Cambridge, Canada, and Jack D. Trevino, San Antonio, Tex., assignors to Enviroquest, Ltd., Canada

Filed May 22, 1995, Ser. No. 445,705

Int. Cl.° A01N *25/28*

U.S. Cl. 424—486 **13 Claims**

1. An ingestible therapeutic microcapsule for bees comprising a non-toxic matrix comprising a food grade fat, food grade polymer, or mixtures thereof having substantially uniformly distributed therein a miticide.

5,631,025

LOW SODIUM PERITONEAL DIALYSIS SOLUTION

Ty R. Shockley, Highland Park; Leo Martis, Long Grove; Lee W. Henderson, Lake Forest; John Moran, Evanston, all of Ill., and Masaaki Nakayama, Tokyo, Japan, assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 205,304, Mar. 3, 1994, Pat. No. 5,589,197, which is a continuation-in-part of Ser. No. 130,968, Oct. 4, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 423,174

Int. Cl.° A61K *38/00;33/10;33/14;31/70*

U.S. Cl. 424—678 **10 Claims**

1. A peritoneal dialysis solution For providing a sustained osmotic gradient comprising:

an osmotic agent including at least one polypeptide; and

sodium in a concentration that is less than a sodium plasma concentration in a renal patient who is to receive the solution.

5,631,026

AQUEOUS ANTACIDS WITH CALCIUM CARBONATE AND MAGNESIUM SALT

Douglas S. Beyerle, Horsham, and Gerard P. McNally, Strafford, both of Pa., assignors to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 153,005, Nov. 12, 1993, Pat. No. 5,455,050. This application May 31, 1995, Ser. No. 455,234

Int. Cl.° A61K *33/06:33/00;33/10;33/12*

U.S. Cl. 424—682 **14 Claims**

1. A stable aqueous antacid suspension for oral use having a pH of about 7.5 to about 8.5 of calcium carbonate in combination with a magnesium salt selected from the group consisting of magnesium carbonate, magnesium trisilicate and a mixture thereof as the sole active antacid component, prepared by a process which comprises in the order specified the steps of:

(a) adding to water an effective antacid amount of particulate calcium carbonate and said magnesium salt, each in the particulate form of a micronized powder with 100% particle size distribution of about 0.1 to about 20 microns with mixing until the particulate material is completely wetted and dispersed;

(b) adding to said dispersion with stirring an effective suspending amount of a thickening agent for a time sufficient to substantially coat said particulate material and to produce a suspension; and

(c) adding to said suspension with stirring an effective pH adjusting amount of a carboxylic acid pH adjusting agent to provide a pH of about 7.5 to about 8.5 to the aqueous antacid suspension.

5,631,027

SUPPORT STRUCTURE FOR SUPPORTING FOAMABLE MATERIAL ON HOLLOW STRUCTURAL MEMBER

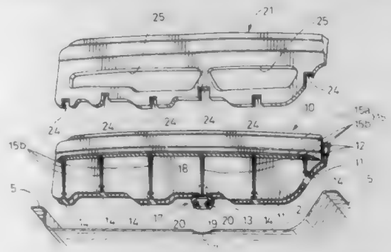
Yoshihiro Takabatake, Aichi-ken, Japan, assignor to Neo-Ex Lab, Inc., Aichi-ken, Japan

Filed Jul. 29, 1996, Ser. No. 688,280

Claims priority, application Japan, Jul. 31, 1995, 7-195079

Int. Cl.° B29C *39/02;39/22*

U.S. Cl. 425—4 R **8 Claims**



1. A support structure for supporting a foamable material on a hollow structural member, comprising:

a foamable material located in a cavity of a hollow structural member for blocking the cavity of the hollow structural member when it is foamed by external heating, said foamable material having a plate-like shape and having an external dimension smaller than the dimension of the cross section of the cavity; and

a support member for supporting said foamable material, said support member being disposed in the cavity and mounted on the hollow structural member by a mounting device, said support member comprising a pair of support plates for supporting both side surfaces of said foamable material and a desired number of connecting pieces located along a lower periphery of said support plates for integrally connecting said support plates, said support plates being adapted to be elastically spread and narrowed about said connecting pieces and being directed to an exterior surface of the hollow structural member at an upper periphery thereof.

5,631,028

GREEN TIRE CONVEYOR SYSTEM IN A TIRE VULCANIZER FACTORY

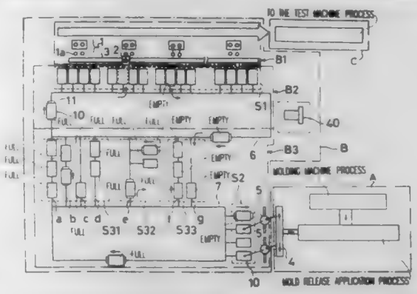
Takumi Mizokawa; Koji Ota, both of Toyohashi; Kashiro Ureshino; Katsumi Ichikawa, both of Takasago; Koichi Nomura, Tokyo, and Tadashi Tomita, Ise, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, and Shinko Electric Co., Ltd., Tokyo, both of Japan

Filed Feb. 14, 1995, Ser. No. 388,437

Claims priority, application Japan, Feb. 15, 1994, 6-041817

Int. Cl.° B29C *35/02*

U.S. Cl. 425—28.1 **13 Claims**



3. A conveyor system for conveying tires to a plurality of tire vulcanizers, comprising:

VOL 1198 ISS 3 MY 20 1997 UMI

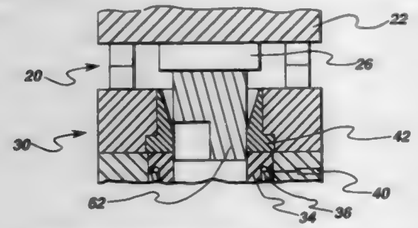
pallets for loading said green tires;
a storage area in which said pallets are stored;
a conveyor device for moving said pallets between said storage area and said tire vulcanizers as well as within said storage area; and
robots, each of which is movable to positions for transferring said green tires loaded on said pallets to a plurality of said tire vulcanizers.

5,631,029

MOULD FOR ISOSTATIC PRESSING

Bernard P. Bewlay, and Dennis J. Dalpe, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 623,464, Mar. 28, 1996, abandoned, which is a continuation of Ser. No. 269,271, Jun. 30, 1994, abandoned. This application Aug. 16, 1996, Ser. No. 698,824
Int. Cl.[6] B29C *43/00*
U.S. Cl. 425—78 **27 Claims**



1. A cold isostatic press comprising:
a press body having a cavity with at least one open end formed therein;
an elastic mould, operatively positioned in the cavity, for compacting metal powder;
means, operatively connected to the mould, for expanding the mould and compacting the metal powder; and
at least one punch having a base section normal to the cavity and having an extension, the extension having any one of a plurality of geometric shapes and having a surface contacting the metal powder, with the surface having first and second portions substantially normal to the cavity, and with the first portion extending further into the cavity than the second portion for reducing flared ends of a compact formed in the press.

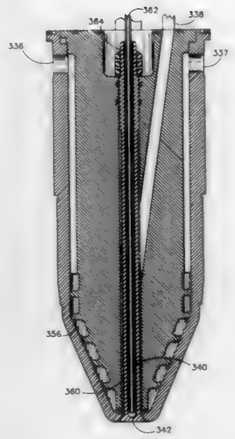
5,631,030

COOLED INJECTION CORE FOR AN INTEGRATED INJECTION BLOW MOLD MACHINE

Charles J. Brun, Jr., Xenia, and Richard J. Schock, Miamisburg, both of Ohio, assignors to Electra Form, Inc., Vandalia, Ohio

Filed May 5, 1995, Ser. No. 435,683
Int. Cl.[6] B29C *49/06;49/64*
U.S. Cl. 425—526 **11 Claims**

1. A removable cooled core for a plastic injection mold assembly, the removable cooled core forming at least a portion of a mold in which an article can be molded, the removable cooled core comprising
an outer wall and a distal end wall defining the exterior surface of the removable cooled core,
a first water channel within the core for circulating water through the core to cool hot plastic forming said article contiguous to the outer wall,
a first water inlet and a first water outlet connected to the first water channel for circulating water through the first water channel,
a poppet valve for controlling introduction of air between the molded article and the removable cooled core distal end wall to facilitate release of the molded article from the removable cooled core, and



means for cooling the poppet valve, the cooling means comprising a poppet cooling conduit connected to a second water inlet for circulating water between the second water inlet and a second water outlet to cool plastic forming said article adjacent to the poppet valve.

5,631,031

WATER-INSOLUBLE AMINO ACID SALT

Thomas L. Meade, 187 Walmsley La., Saunderstown, R.I. 02874

Filed Jun. 13, 1994, Ser. No. 260,450
Int. Cl.[6] A23K *1/16;1/18;1/22;* **A23L** *1/305*
U.S. Cl. 426—2 **30 Claims**

1. A water-insoluble amino acid salt of the formula:



wherein:
X is calcium or magnesium, and
R is the R group of any of the twenty naturally occurring amino acids, and ornithine.

5,631,032

PROCESS FOR THE PREPARATION OF GROUND CEREAL BASED FOODS AND FOODSTUFFS OBTAINED THEREBY

Angel Gil, Esmeralda; Daniel Morales, Pulianas, and Eduardo Valverde, El Serrallo, all of Spain, assignors to Union Industrial y Agro-Ganadera, S.A. (UNIASA), Granada, Spain

Continuation of Ser. No. 320,766, Oct. 11, 1994, abandoned, which is a continuation of Ser. No. 987,556, Dec. 8, 1992, abandoned, which is a continuation of Ser. No. 686,474, Apr. 17, 1991, abandoned. This application Mar. 31, 1995, Ser. No. 415,224
Int. Cl.[6] A21D *2/00*
U.S. Cl. 426—28 **7 Claims**

1. A process for the preparation of cereal based foods having an increased level of glucose, comprising the steps of:
a. selecting ground cereal grain,
b. toasting said ground cereal grain before said ground cereal grain is dispersed in water,
c. dispersing the toasted cereal grain in water to form a dispersion,

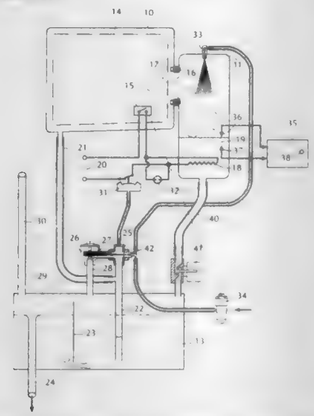
d. subjecting said cereal dispersion to a hydrolysis process with at least one amylolytic enzyme prior to a boiling step in (e) below, thereby producing a hydrolyzed cereal grain having an increased level of glucose,
e. subsequent to said hydrolysis, boiling said hydrolyzed cereal grain in water,
f. drying said hydrolyzed cereal grain, and
g. mixing said dried hydrolyzed cereal grain with at least one additive, wherein said additive is selected from sweeteners, aromas and food substances selected from the group comprising dairy products, infant formulas, vitamin complexes, mineral complexes, fruits, dehydrated fruit, juices and additional cereals.

5,631,033

METHOD OF COOKING FOOD WITH STEAM

Albert Kolvites, 55 Yeager Rd., Mountaintop, Pa. 18707

Continuation of Ser. No. 558,727, Nov. 16, 1995, Pat. No. 5,549,038. This application Jun. 10, 1996, Ser. No. 661,171
Int. Cl.[6] A23L *1/00*
U.S. Cl. 426—233 **4 Claims**



1. A method of cooking food with steam comprising the steps of:
A. placing the food to be cooked in an oven chamber provided with an access door;
B. generating steam in a generator and feeding it into the oven chamber when its door is closed to cook the food therein; and
C. modulating the flow of steam fed into the oven chamber as a function of the quantity and temperature of the food being cooked to effect efficient cooking thereof, the flow of steam fed into the oven chamber being modulated by draining steam from the oven chamber, sensing the pressure of the steam drained from the oven chamber, and interrupting the generator feeding steam into the oven chamber when the sensed pressure rises to a level above atmospheric pressure.

5,631,034

PREPARATION OF AN AQUEOUS SUGAR FROSTING MIX

Jerome F. Trumbetas, Tarrytown; Joaquin C. Lugay, Mahopac; Jimbay P. Loh, Peekskill, and Keisuke Morimoto, Congers, all of N.Y., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Mar. 31, 1994, Ser. No. 221,156
Int. Cl.[6] A23G *3/00*
U.S. Cl. 426—302 **21 Claims**

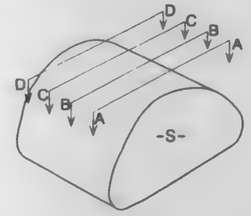
1. A method for preparing an aqueous sugar frosting mix comprising the following steps:
(1) forming an aqueous solution at temperatures ranging from room temperature to about 180° F. by adding an edible, water soluble crystal growth inhibitor selected from the group consisting of a hydrated protein, hydrocolloids, a first sugar and mixtures thereof to an aqueous liquid;
(2) adding a sufficient amount of a second sugar to said aqueous solution of step (1) to provide an aqueous sugar saturated solution comprising a crystalline sugar, wherein said second sugar is different from said first sugar dispersed in said aqueous sugar saturated solution; and
(3) grinding said crystalline containing saturated solution of step (2) to provide a viscous syrup having sugar crystals ranging in size from about 0.1 to about 50 microns.

5,631,035

METHOD FOR PREPARING SLICED MEAT PORTIONS

Edward T. Clarke; Harvey W. Jull, both of Herefordshire, and Rebecca S. Stock, Malvern, all of England, assignors to Sun Valley Poultry Limited, Hereford, United Kingdom

Continuation of Ser. No. 159,378, Nov. 29, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 427,711
Claims priority, application United Kingdom, Oct. 1, 1991, 9120867
Int. Cl.[6] A23L *1/315;1/318*
U.S. Cl. 426—281 **12 Claims**



1. A method of providing portions of meat of predetermined size comprising:
(a) injecting a body of meat with a liquid comprising oil and water;
(b) forming the injected body of meat into an initial shape;
(c) freezing the shaped body of meat at a rate effective to limit the size of ice crystals formed within the body of meat; then
(d) pressing the frozen body of meat into a desired shape under a pressure of 750 to 4000 psi, wherein the pressure is effective for producing liquification of ice in the body of meat such that muscle fibers in the body of meat are allowed to slip across one another without any significant disruption of muscle structure;
(e) quickly releasing the pressure applied in step (d) to re-freeze the ice liquified in step (d) and to limit ice-crystal growth during re-freezing; and then
(f) slicing the frozen body of meat into portions of desired size, wherein the method provides portions of meat without significant disruption of the muscle structure of the meat and which portions retain the texture of untreated meat.

5,631,036

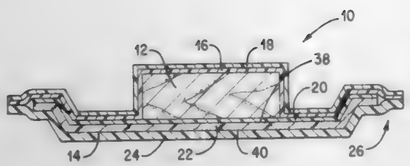
PEELABLE VACUUM SKIN PACKAGE WITH BARRIER FOAM TRAY

Kent A. Davis, Travelers Rest, S.C., assignor to W.R. Grace & Co.-Conn., Duncan, S.C.

Filed Dec. 7, 1993, Ser. No. 163,970
Int. Cl.[6] B65D *85/00*
U.S. Cl. 426—396 **22 Claims**

15. A method for packaging a product, comprising the steps of: providing a support member having a barrier film disposed thereon and supporting the product;

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providing a first and a second web means for enclosing the product and the support member wherein the second web means comprises a non-barrier layer and a peelable barrier layer;

sealing the non-barrier layer of the second web means to the first web means; and

providing means for initiating peel of the peelable barrier layer from the non-barrier layer at a location where the non-barrier layer is sealed to the first web means whereby peeling of the barrier layer does not cause peeling of the barrier film disposed on the support member.

5,631,037

Patent Not Issued For This Number

5,631,038

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

PCT No. PCT/US92/10179, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/10677, PCT Pub. Date Jun. 10, 1993

Continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This PCT application Nov. 24, 1992, Ser. No. 244,306

Int. Cl.[6] **A23L** *1/237*

U.S. Cl. 426—649 **16 Claims**

1. A composition comprising an eatable comprising sodium chloride and a salt taste enhancing amount of at least one tastand.

5,631,039

SECURITY THREAD, A FILM AND A METHOD OF MANUFACTURE OF A SECURITY THREAD

Malcolm R. M. Knight; Duncan H. Reid, both of Basingstoke, and Jeffrey A. Harrison, Hawarden, all of United Kingdom, assignors to Portals Limited, London, England

Filed Aug. 12, 1994, Ser. No. 289,440

Int. Cl.[6] **B41M** *3/14*; **B05D** *5/12*

U.S. Cl. 427—7 **23 Claims**

1. A method for manufacturing a security thread for use in security articles including security paper, said security thread comprising a polymeric substrate supporting a pattern of magnetic metal that provides a visually discernable security feature and a magnetically detectable security feature, said method comprising the steps of:

(a) providing a continuous polymeric web substrate.

(b) applying a catalytic material comprising palladium on a surface of said web substrate in a manner that defines said pattern.

(c) passing said web substrate with said pattern of catalytic material thereon through a solution containing magnetic metal comprising cobalt or cobalt alloy such that said magnetic metal will be electrolessly deposited on portions of the web substrate provided with said catalytic material so as to appear in said pattern.

(d) applying a transparent protective layer over said pattern of magnetic metal, and

(e) cutting said web substrate to provide said security thread.

5,631,040

METHOD OF FABRICATING A PIEZOELECTRIC/ELECTROSTRICTIVE ACTUATOR

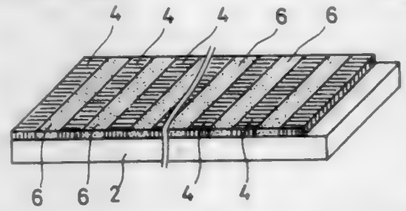
Yukihisa Takuchi, and Masato Komazawa, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 123,196, Sep. 20, 1993, which is a continuation of Ser. No. 860,127, Mar. 31, 1992, abandoned, which is a continuation of Ser. No. 551,176, Jul. 11, 1990, abandoned. This application May 19, 1995, Ser. No. 444,920

Claims priority, application Japan, Jul. 11, 1989, 1-178747; Jan. 20, 1990, 2-11173

Int. Cl.[6] **B05D** *5/12*

U.S. Cl. 427—100 **3 Claims**



1. A method of fabricating a piezoelectric or electrostrictive actuator, comprising the steps of:

forming, without the use of a bonding agent, a plurality of electrodes in the form of strips on a surface of a ceramic substrate, by one of a thick-film forming technique and a thin-film forming technique such that said strips are spaced apart from each other in a direction parallel to said surface of the substrate; and

forming a piezoelectric or electroetrictive portion by a thick-film forming technique without use of a bonding agent, said piezoelectric or electrostrictive portion being integral with said substrate and being disposed between said adjacent electrode strips along said direction, said piezoelectric or electrostrictive portion being in contact with said strips so as to produce a flexural displacement or force due to at least a longitudinal mode of converse piezoelectric effect or electrostrictive effect upon application of voltage between adjacent electrodes, wherein said piezoelectric or electrostrictive portion comprise piezoelectric or electrostrictive ceramic material having a major component which consists essentially of at least one material selected from the group consisting of; lead zirconium titanate, lead magnesium niobate, lead nickel niobate, lead manganese niobate, lead antimony niobate, lead titanate, barium titanate, lead niobate, barium niobate and a mixture thereof, and said substrate has a thickness of not greater the 30 μm and a bending strength of at least 1500 kgf/cm^2.

5,631,041

MANUFACTURING METHOD FOR MAGNETIC DISC

Tadahito Kanaizuka; Atsushi Kawamoto; Koichi Yamagishi; Shinichi Yasuda; Yasunori Yamanobe, and Shinichi Hayashi, all of Ichikawa, Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

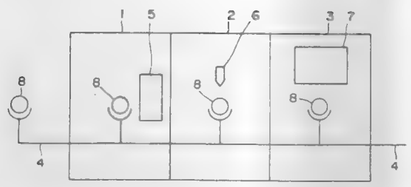
Continuation of Ser. No. 191,543, Feb. 4, 1994, abandoned. This application May 24, 1996, Ser. No. 653,107

Claims priority, application Japan, Sep. 27, 1993, 5-239541; Dec. 6, 1993, 5-339675

Int. Cl.[6] **B05D** *5/12*

U.S. Cl. 427—130 **13 Claims**

1. A method of fabricating a plurality of magnetic discs of corresponding quality from a plurality of workpieces which each



comprise a disc base plate, a layer of magnetic material on the disc base plate and a protective layer on the layer of magnetic material, said method comprising the steps of:

(a) providing a plurality of disc base plates each having a layer of magnetic material thereon;

(b) providing a protective layer forming means capable of forming a protective layer on the layer of magnetic material of each of said plurality of disc base plates to form a plurality of workpieces;

(c) providing means capable of polishing an exposed surface of a protective layer of a workpiece, to form a _polished surface on a workpiece;

(d) providing a lubricant dispensing means for applying lubricant to a polished surface of a workpiece;

(e) providing a conveyor mechanism which moves in a path adjacent said protective layer forming means, then adjacent said polishing means, and then adjacent said lubricant dispensing means;

(f) sequentially positioning said plurality of disc base plates one at a time on said conveyor mechanism;

(g) forming a protective layer on a first of said plurality of disc base plates with said protective layer forming means to form a first workpiece; then

(h) polishing the protective layer of said first workpiece with said polishing means at the end of a time interval of a fixed duration beginning immediately after formation of said first workpiece to form a polished surface of said first workpiece, and synchronously forming a protective layer on a second of said plurality of disc base plates with said protective layer forming means to form a second workpiece; then

(i) coating said polished surface of said first workpiece with lubricant applied by said lubricant dispensing means at the end of a time interval of said fixed duration beginning immediately after polishing the protective layer of said first workpiece, and synchronously polishing the protective layer of said second workpiece with said polishing means to form a polished surface of said second workpiece; and then

(j) coating the polished surface of said second workpiece with lubricant applied by said lubricant dispensing means at the end of a time interval of said fixed duration beginning immediately after polishing the protective layer of said second workpiece.

5,631,042

GRAFFITI-RESISTANT BARRIERS, RELATED COMPOSITIONS AND METHODS24M

Foster S. Becker, 11650 Holly Springs Dr., St. Louis, Mo. 63146, and Bruce R. Maier, Columbia, Mo., assignors to Foster S. Becker, St. Louis, Mo.

Filed Oct. 6, 1995, Ser. No. 540,123

Int. Cl.[6] **B05D** *5/08*

U.S. Cl. 427—154 **22 Claims**

1. A method for coating a substrate with a graffiti-resistant barrier, comprising applying to the substrate a composition comprising

(a) from about 0.1 to about 30 percent by weight polyvinyl alcohol of molecular weight from about 7,000 to about 120,000 and being at least about 50% hydrolyzed;

(b) from about 0.1 to about 30 percent by weight non-stick agent selected from the group consisting of silicone, polytetrafluoroethylene and mixtures thereof;

(c) from about 0.1 to about 40 percent by weight adhesion promoter comprising (i) a mixture of urethane and a cross-linked acrylic urethane or (ii) if the composition is non-aqueous, either such mixture or a polyester; and

(d) a solvent;

and allowing the composition to dry.

5,631,043

RE-INKING PROCESS

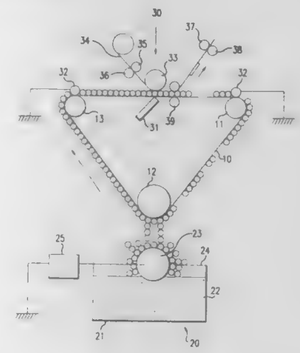
Kenji Ogi; Hiroshi Takayama; Yasuo Yamamoto, all of Minamiashigara; Kazuo Maruyama, and Eiichi Akutsu, both of Ebina, all of Japan, assignors to Fuji Xerox, Co. Ltd., Tokyo, Japan

Division of Ser. No. 314,458, Sep. 28, 1994, Pat. No. 5,458,954, which is a continuation of Ser. No. 907,536, Jul. 2, 1992, abandoned. This application May 26, 1995, Ser. No. 452,369

Claims priority, application Japan, Jul. 11, 1991, 3-196138

Int. Cl.[6] **B05D** *1/36*; *5/04*

U.S. Cl. 427—202 **4 Claims**



1. A re-inking process comprising the steps of:

(A) forming a first toner layer of toner particles on a toner holding means;

(B) bringing the first toner layer into toner particle transferring proximity of an ink release layer of an ink transfer medium, said ink transfer medium comprising in sequence:

a heat-generating resistive layer that is ohmically heated by input of an electrical current to fuse toner particles,

a conductive layer,

an ink release layer having an adhesion from 0.2 g/mm to 40 g/mm for toner particles as measured by the 90° peel off method, the ink release layer including a viscoelastomer, said ink release layer having a critical surface tension of 35 dynes/cm or less, and

a second toner layer not removed by a previous ink-transfer operation on the ink release layer, wherein the second toner layer comprises toner particles that are irregularly distributed so that said second toner layer requires re-inking with additional toner particles to conduct an ink transfer process; and

(C) applying a bias voltage to the toner holding means to re-ink said second toner layer of the ink transfer medium by causing toner particles to transfer from said toner holding means to said ink release layer.

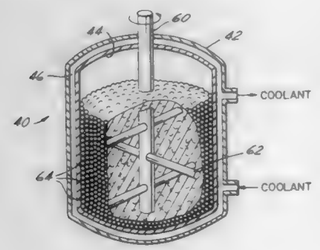
VOL 1198 ISS 3 MY 20 1997 UMI

5,631,044

METHOD FOR PREPARING BINDER-FREE CLAD POWDERS

Subramanian Rangaswamy, 642 Shellbourne Dr., Rochester Hills, Mich. 48309, and Robert A. Miller, 14110 Balfour, Oak Park, Mich. 48237

Continuation of Ser. No. 847,554, Mar. 6, 1992, Pat. No. 5,372,845. This application Aug. 9, 1994, Ser. No. 287,981
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—216 4 Claims



1. A method of forming a binderless clad powder, said method comprising the steps of:

(1) placing first and second materials in a drum of an attritor mill having a plurality of grinding balls, said attritor mill having a rotating shaft extending into said drum and said shaft having a plurality of impellers which set said grinding balls in motion, wherein said first material is selected from the group consisting of Fe, Ni, Co, Cu, Cr, Al, Ti, and alloys thereof and the second material is selected from the group consisting of Al, Ti, Ta, Mo, Si, Co, Ni, Fe, and alloys thereof, and wherein the first material is a powder and has a particle size in the range of about 10 to 200 microns, wherein the second material is a non-flake powder and has a particle size in the range of about 0.1 to 20 microns, wherein the particle size of the second material is significantly smaller than the particle size of the first material, and wherein at least one of the first and second materials is deformable within the high energy attritor mill;

(2) processing said first and second materials in the high energy attritor mill in the absence of any binder material for a time sufficient to form a binderless clad powder but where the particle size of the first material is substantially unchanged during the processing, wherein the clad powder consists essentially of the first material forming the core of the powder and the second material coating the surface of the core; and

(3) collecting the binderless clad powder.

5,631,045

POLYMER COATED POWDERS

Itzhak Yaniv, Haifa, Israel, assignor to Baran Advanced Materials (94) Ltd., Haifa, Israel

Filed Sep. 29, 1995, Ser. No. 536,972
Claims priority, application Israel, Sep. 28, 1995, 115450
Int. Cl.[6] B05D 1/36
U.S. Cl. 427—221 18 Claims

1. A process for coating a solid with a coating material, comprising the steps of:

(a) selecting the coating material from the group consisting of polymers, waxes and greases;

(b) dissolving the coating material in a solvent selected from the group consisting of carboxylic acids, carboxylic acid anhydrides and carboxylic acid halides, thereby creating a coating solution; with said coating solution and modifying said coating solution by a method selected from the group consisting of reacting said solvent with a base and dissolving said solvent in an aqueous medium, and thereby causing the formation of the coating on the solid.

5,631,046

METHOD OF METALLIZING A DIAMOND SUBSTRATE WITHOUT USING A REFRACTORY METAL

Paul J. Boudreaux, 7000 Nightingale Ter., Lanham, Md. 20706, and George A. De La Grange, 1290 Dorothy Rd., Crownsville, Md. 21032

Filed Mar. 25, 1996, Ser. No. 621,553
Int. Cl.[6] B05D 3/02
U.S. Cl. 427—383.3 16 Claims

1. A method of metallizing a diamond substrate, comprising the steps of:

a) firing the diamond substrate at a temperature within the range of 400° C. to 900° C. for a time sufficient to de-hydrogenate and oxidize the surface of the diamond substrate;

b) applying a metal interconnect layer to the diamond substrate; and

c) firing the diamond substrate and the metal interconnect layer at a temperature within the range of 400° C. to 900° C. for a time sufficient to adhere the metal interconnect layer to the diamond substrate.

5,631,047

COMBINATION FIRE RETARDANT, ANTI-SOILING AND BIOCIDAL AGENT

Edward E. Friloux, Broussard, La., assignor to American Fire Retardant Corp., Broussard, La.

Filed Sep. 19, 1995, Ser. No. 530,691
Int. Cl.[6] B05D 1/02;1/18
U.S. Cl. 427—421 12 Claims

7. A method of protecting porous material from fire damage, soil and water damage, and virus and fungus growth, by applying an effective amount of a composition of matter to said material, said composition of matter comprising:

ammonium phosphate, monobasic, from 2.30% to 9.22% by total weight;

ammonium phosphate, dibasic, from 2.30% to 9.22% by total weight;

a compound comprising approximately 50% ammonium polyphosphate, 3% urea, and 47% water, from 2.30% to 9.22% by total weight;

a fluorinated acrylic polymer, from 2.60% to 10.4% by total weight;

coco imidazuline dicarboxylate, from 0.025% to 0.1% by total weight;

organotin, from 1.00% to 4.00% by total weight; and

water, 57.84% to 89.475% by total weight.

5,631,048

METHOD OF FORMING A THIN FILM ON THE SURFACE OF A SUBSTRATE USING A ROLL COATER

Kazuo Kinose; Kazuto Ozaki, both of Shiga, and Tsuyoshi Okumura, Shiga-ken, all of Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Japan

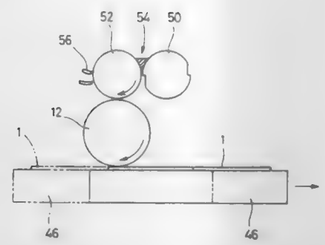
Continuation of Ser. No. 71,772, Jun. 4, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 397,545
Claims priority, application Japan, Jun. 10, 1992, 4-177382
Int. Cl.[6] B05D 1/28
U.S. Cl. 427—428 6 Claims

1. A method for utilizing an applicator roll to form a coating of film having a thickness on a surface of a substrate having a rear edge by applying coating liquid on the surface of said substrate, said method comprising the steps of:

(a) supplying said coating liquid on a circumferential surface of said applicator roll;

(b) rotating said applicator roll such that said circumferential surface of said applicator roll moves in a first direction;

(c) contacting said substrate with said circumferential surface at a start position;



(d) transporting said substrate in a second direction opposed to said first direction of said circumferential surface at said start position, and at a speed of transportation relative to said applicator roll, while continuously contacting the circumferential surface of said applicator roll with the surface of said substrate, from the start position at which said contact is started, to an end position at which end position said contact is terminated, for transferring coating liquid supplied on the circumferential surface of said applicator roll to the surface of said substrate; and

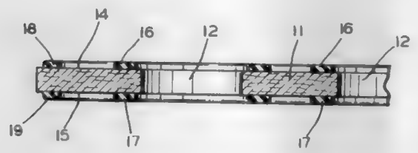
(e) increasing the speed of transportation of said substrate before said substrate is transported to said end position, relative to the speed of transportation when said substrate is at said start position for reducing an amount of said coating liquid transferred from the circumferential surface of said applicator roll to the surface of said substrate before said substrate is transported to said end position, relative to an amount of said coating liquid transferred from the circumferential surface of said applicator roll to the surface of said substrate when said substrate is at said start position.

5,631,049

PROCESS OF CURING A GASKET COATING

Brent R. Boldt, 2206 Martin La., Rolling Meadows, Ill. 60008

Continuation of Ser. No. 343,691, Nov. 22, 1994, Pat. No. 5,510,152, which is a division of Ser. No. 97,987, Jul. 27, 1993, Pat. No. 5,536,758. This application Jan. 11, 1996, Ser. No. 585,052
Int. Cl.[6] C08F 2/48
U.S. Cl. 427—508 2 Claims



1. A process for curing a gasket coating comprising the steps of:

(a) providing a gasket body;

(b) applying a resilient coating to said gasket body, wherein said coating is a mixture in parts by weight having from 50 to 100 parts of aromatic urethane acrylic oligomer, from 30 to 55 parts of isobornyl acrylate monomer, from three to ten parts of a photoinitiator, and from 0.5 to two parts of polydimethylsiloxane, said coating polymerizing in response to ultraviolet light;

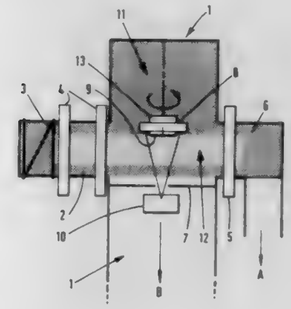
(c) exposing said coating and said body to ultraviolet radiation to initiate polymerization of said coating.

5,631,050

PROCESS OF DEPOSITING THIN FILM COATINGS

Michael Thwaites, Basingstoke, England, assignor to The BOC Group plc, Windlesham, England

Filed Jun. 6, 1996, Ser. No. 659,460
Claims priority, application United Kingdom, Jun. 7, 1995, 9511492
Int. Cl.[6] H05H 1/02
U.S. Cl. 427—571 9 Claims



1. A process of depositing thin film coatings by evaporation comprising:

forming a plasma in an evacuated chamber;

providing a source of material to be evaporated and evaporating material to produce evaporated material;

locating a substrate to be coated in the chamber; and

causing the evaporated material to pass through the plasma and be to be deposited on the substrate;

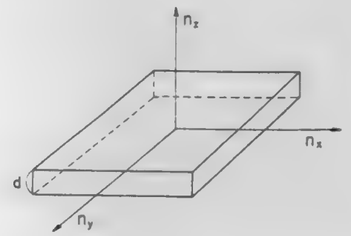
the plasma being generated by a helicon wave.

5,631,051

OPTICAL COMPENSATORY SHEET

Yoji Ito, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 10, 1996, Ser. No. 630,775
Claims priority, application Japan, Apr. 11, 1995, 7-085553; Jul. 14, 1995, 7-201512
Int. Cl.[6] G02F 1/1335
U.S. Cl. 428—1 15 Claims



1. An optical compensatory sheet which comprises a transparent support, an orientation layer provided thereon and an optically anisotropic layer provided on the orientation layer which comprises a compound having a discotic structure unit, wherein the orientation layer is a crosslinked polymer layer a surface of which has been subjected to rubbing treatment.

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5,631,052

COATED CEMENTITIOUS PACKAGING CONTAINERS

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Division of Ser. No. 320,522, Oct. 7, 1994, Pat. No. 5,514,430, and Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,865

Int. Cl.[6] **B32B** *13/02;13/04*

U.S. Cl. 428—34.5 **56 Claims**

1. An article of manufacture for storing, dispensing, packaging, portioning, or shipping comprising a container formed from a cementitious structural matrix, said cementitious structural matrix formed from a cementitious mixture comprising a hydraulic cement selected from the group consisting of portland cement, slag cement, calcium aluminate cement, silicate cement, phosphate cement, white cement, high alumina cement, and magnesium oxychloride cement, a rheology modifying agent, and water, the cementitious mixture having a rheology and early green strength during formation of the container such that the cementitious structural matrix of the container is form stable within a period of time of about 10 minutes or less after being positioned into a desired shape of the container, the cementitious structural matrix having a maximum thickness of about 5 mm, a maximum density of about 1.6 g/cm^3, and a coating on at least a portion of the surface of the cementitious structural matrix.

5,631,053

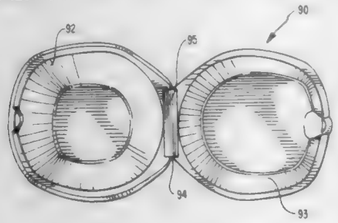
HINGED ARTICLES HAVING AN INORGANICALLY FILLED MATRIX

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Division of Ser. No. 192,965, Feb. 7, 1994, which is a continuation-in-part of Ser. No. 163,681, Dec. 6, 1993, abandoned, and Ser. No. 152,354, Nov. 19, 1993, Pat. No. 5,508,072, said Ser. No. 163,681is a continuation-in-part of Ser. No. 101,500, Aug. 3, 1993, Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, and Ser. No. 929,898, Aug. 11, 1992, abandoned, said Ser. No. 152,354is a continuation-in-part of Ser. No. 101,500, Aug. 3, 1993, Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, and Ser. No. 982,383, Nov. 25, 1992, abandoned, said Ser. No. 95,662is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, said Ser. No. 19,151is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, said Ser. No. 982,383is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 472,554

Int. Cl.[6] **B32B** *5/16;19/02;25/02;* **E05F** *1/08*

U.S. Cl. 428—36.4 **104 Claims**



1. An article of manufacture comprising a first member hingedly attached to a second member by a hinge, at least a substantial portion of said hinge comprising an inorganically filled matrix including a substantially homogeneous mixture of organic binder and inorganic aggregate, said organic binder being selected from the group consisting of polysaccharides, proteins, and mixture or derivatives thereof, said inorganic aggregate having a concentration in a range from about 40% to about 95% by weight of total solids in the matrix, the inorganically filled matrix further including a fibrous material substantially homogeneously dispersed throughout said matrix.

5,631,054

POLYESTER CONTAINER AND PROCESS FOR PRODUCING THE SAME

Yasunori Hosokawa, Wakayama; Nobuyuki Mita, Chiba, and Yutaka Yasuda, Kaizuka, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 53,546, Apr. 29, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,466

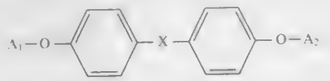
Claims priority, application Japan, Apr. 30, 1992, 4-111329

Int. Cl.[6] **B29C** *49/08*

U.S. Cl. 428—36.92 **18 Claims**

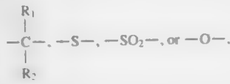
1. A process for producing a polyester container having increased mechanical strength, which comprises:

(a) preparing a polyester resin composition comprising a polyester resin and 1 to 5 parts by weight, based on 100 parts by weight of the polyester resin, of an additive compound represented by the formula (I):



(I)

where A_1 and A_2 are each an alkyl or aralkyl group having 6 to 22 carbon atoms and X is



, —S—, —SO_2—, or —O—.

wherein R_1 and R_2 are each an alkyl group having 4 or fewer carbon atoms,

(b) forming a preform from said resin composition, and

(c) stretch blow molding said preform to an areal stretching ratio of 4 or more, to form said polyester container.

5,631,055

PAINT MASKING ASSEMBLY AND METHOD OF MASKING

Douglass M. Vines, Farminton Hills, Mich.; Gerald L. Vogler, Maplewood, Minn.; Richard C. Williams, River Falls, Wis., and Thomas G. Cheesebrow, Vadnais Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

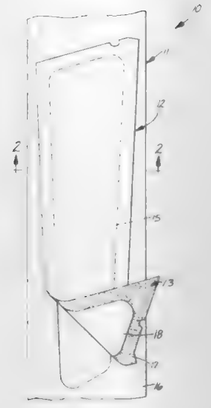
Continuation of Ser. No. 595,395, Oct. 10, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 18,427

Int. Cl.[6] **B32B** *3/14*

U.S. Cl. 428—40.1 **6 Claims**

1. A paint masking assembly for masking a first portion of a surface, which first portion of the surface has an irregular periphery, so that when masked, the first portion will remain unpainted while a second adjacent portion of the surface is painted, said paint masking assembly comprising

a sheet of liner material having opposite front and rear major surfaces, and a sheet of paint masking material having opposite first and second major surfaces, a periphery of a predetermined irregular shape corresponding to the irregular peripheral shape of the first portion of the surface that is to remain unpainted, and a layer of pressure sensitive adhesive permanently adhered on said first major surface of said sheet of paint masking material, said layer of pressure sensitive adhesive being releasably adhered to the front surface of said sheet of liner material and being releasably adherable to the first portion of the surface that is to remain unpainted,



said sheet of liner material extending across the entire layer of pressure sensitive adhesive and past the periphery of said sheet of paint masking material, and being slit between said major surfaces to define a first part of said sheet of liner material having a periphery and extending over a first portion of said layer of pressure sensitive adhesive, and a second part of said sheet of liner material extending over a second portion of said layer of pressure sensitive adhesive, the entire periphery of the second part of said sheet of liner material being spaced from the periphery of said sheet of paint masking material so that the first portion of said layer of pressure sensitive adhesive extends in a continuous band entirely around the periphery of the second part of the sheet of liner material between the periphery of the second part of the sheet of liner material and the periphery of said sheet of paint masking material,

said sheet of paint masking material and said second part of said sheet of liner material adhered to said layer of pressure sensitive adhesive being removable from said first part of said sheet of liner material to expose said first portion of said layer of pressure sensitive adhesive by which first portion of said layer of pressure sensitive adhesive said removed sheet of paint masking material and said second part of said sheet of liner material are releasably adherable to the first portion of the surface that is to remain unpainted, and

said sheet of paint masking material and said layer of pressure sensitive adhesive being of heat resistant material that while adhered to the first portion of the surface that is to remain unpainted can withstand baking at at least 250 Fahrenheit for at least one half hour while still being cleanly and easily manually removable from the first portion of the surface that is to remain unpainted after such baking without leaving any of the layer of pressure sensitive adhesive on the first portion of the surface that is to remain unpainted.

5,631,056

OPTICAL RECORDING MEDIUM

Toshinori Kawanishi, Yokosuka, and Mikiya Kuroda, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 335,905, Nov. 8, 1994. This application Mar. 30, 1995, Ser. No. 413,426

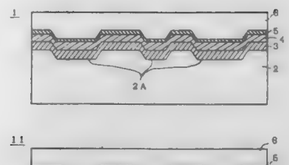
Claims priority, application Japan, Mar. 31, 1994, 6-086038

Int. Cl.[6] **B32B** *3/00*

U.S. Cl. 428—64.1 **5 Claims**

1. An optical recording medium comprising:

a transparent substrate made of resin having an information recorded portion;



information pits optically readable with a laser beam spot being formed on said information recorded portion of said transparent substrate;

a thermochromic layer provided over said transparent substrate, said thermochromic layer having a masking effect which provides for a larger light transmittance to allow said laser beam spot to pass therethrough when the thermochromic layer has a higher temperature than a threshold value by absorbing heat of said laser beam spot and wherein said thermochromic layer provides for a smaller light transmittance to prevent said laser beam spot to pass therethrough when the thermochromic layer has a lower temperature than the threshold value by being cooled down, so that a substantial diameter of said laser beam spot is reduced;

a reflecting layer provided on said thermochromic layer, and

a heat radiating layer composed of a transparent inorganic material having a thickness of 5 to 100 nm in contact with said thermochromic layer for enhancing said masking effect of said thermochromic layer so as to quickly cool down the temperature of said thermochromic layer by causing said heat radiating layer to absorb heat generated in said thermochromic layer by being irradiated with said laser beam spot.

5,631,057

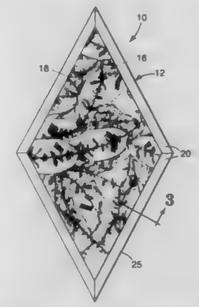
SIMULATED BEVELED GLASS APPLIQUE

Douglas C. Sundet, North Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 5, 1995, Ser. No. 435,584

Int. Cl.[6] **B32B** *3/02;* **B44F** *1/04;* **E04C** *1/42*

U.S. Cl. 428—60 **11 Claims**



1. An appliqué adapted to be adhered for decorative purposes to a planar surface of a layer of transparent material, said appliqué comprising only one layer of rigid polymeric material, said layer of rigid polymeric material being transparent and free of visible inclusions, and having a planar rear surface and an opposite front surface, said front surface including a central portion generally parallel with said rear surface and having a decorative surface texture selected from a group of surface textures typically found on textured glass consisting of rippled texture, wormy texture, hammered texture, moss texture, Flemish texture, glue chip texture,

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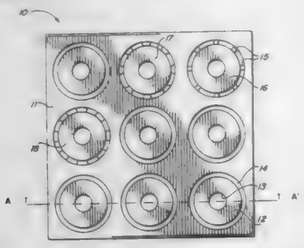
and baroque texture, said front surface also including beveled surface portions around said textured surface portion starting at and extending from said textured surface portion toward said rear surface.

5,631,058

HIGH THROUGHPUT MANUFACTURING OF THIN FILM DATA RECORDING DISKS

Richard H. Flachbart, Salinas, Calif.; Albert P. Lee, Poughkeepsie, N.Y.; Stafford Miller, Gilroy, Calif.; Chester C. Oldakowski, Morgan Hill, Calif., and Swie-In Tan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1992, Ser. No. 929,194
Int. Cl.° G11B *5/66*
U.S. Cl. 428—64.2 **5 Claims**



1. A blank for forming a plurality of magnetic storage disks comprising:

an aluminum alloy substrate having a plurality of holes;

a plurality of disks formed in the substrate, each disk being formed about a respective one of the plurality of holes and defined by a removed portion of the substrate material around the outer perimeter thereof, the disks being maintained in the substrate by remaining portions of the substrate material present at the outer perimeter;

a film of nickel-phosphorous formed over the substrate; and

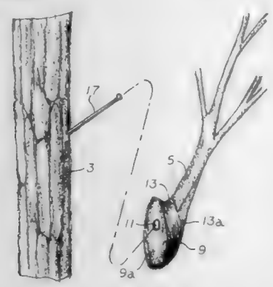
a magnetic layer formed over the film of nickel-phosphorous.

5,631,059

ARTIFICIAL SHRUB OR TREE AND METHOD OF CONSTRUCTION THEREFOR

Chien H. Liao, 3918 Misty Morn, Sugarland, Tex. 77479

Filed Jun. 2, 1995, Ser. No. 459,525
Int. Cl.° A47G *33/06*
U.S. Cl. 428—20 **5 Claims**



1. In the trunk of a synthetic tree or shrub for supporting limbs or branches therefrom and in which the limbs or branches are characterized by a base and a distal end wherein the distal end is of a thinner cross sectional diameter than the base end, the improvement comprising

an adapter having a rounded base to be affixed in abutting to the trunk, said adapter being characterized by a distal end having a cross sectional dimension substantially the same as the cross sectional dimension of the base end of the limb or branch, said distal end of the adapter being further characterized by a slot for receiving the branch therein, the base end of the adapter having a cross sectional dimension larger than the distal end thereof, and

a connective means extending into the adapter and into the trunk for affixing the former to the latter in order to present an authentic and aesthetically pleasing appearance of a branch extending from a trunk.

5,631,060

RESIN MOLDED ARTICLE HAVING A MOVABLE PROJECTING PORTION

Noritsugu Saiki, Midori-ku; Yoshihiro Akiba, Tokyo, and Sakae Shimotsuma, Atsugi, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 7, 1996, Ser. No. 597,933
Claims priority, application Japan, Feb. 8, 1995, 7-020492
Int. Cl.° G06C *7/02*
U.S. Cl. 428—101 **9 Claims**

1. A resin molded article having a movable projecting portion, which is formed of a resin composition comprising

(i) 100 parts by weight of a polyether ester block copolymer which comprises terephthalic acid, tetramethylene glycol and polyoxytetramethylene glycol and

(ii) 0.6 to 5 parts by weight of an alkali metal salt of an aliphatic carboxylic acid having 10 to 36 carbon atoms,

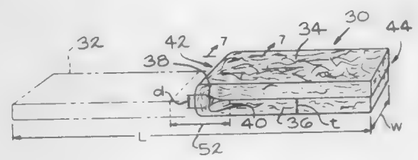
and which has the thick projecting portion, a base portion and a flexible thin side portion provided around the thick projecting portion for connecting the thick projecting portion to the base portion, the side portion having a thickness of 0.05 to 0.5 mm and showing a flexibility retention of at least 85%.

5,631,061

DOUBLE FOLD INSULATION BATT

Keith Wallace, Corunna, Canada, and Charles R. Weir, Westerville, Ohio, assignors to Owens Corning Canada, Inc., North York, Canada

Filed Oct. 11, 1995, Ser. No. 540,629
Int. Cl.° B32B *3/04*
U.S. Cl. 428—130 **9 Claims**



1. A folded fibrous insulation batt, the batt having a length and a width, comprising:

a. a first and second section, each section being approximately one half the length of the batt, the batt being folded so that the first section is generally parallel to and contacting the second section; and

b. two folds across the width of the insulation batt located between the first and second sections, the two folds being spaced apart from each other.

5,631,062

MAGNETIC RECORDING MEDIUM

Kenichi Masuyama; Hiroaki Takano; Kazuo Kato; Kazuko Hanai, and Noburo Hibino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 24, 1994, Ser. No. 248,246
Claims priority, application Japan, May 24, 1993, 5-121671
Int. Cl.° G11B *5/66;5/70*
U.S. Cl. 428—141 **5 Claims**

3. A magnetic recording medium comprising an organic or polymeric nonmagnetic support, a lower layer and a magnetic layer, wherein

the lower layer is provided on one surface of the nonmagnetic support and comprises an inorganic particle and carbon black;

the magnetic layer is provided on the lower layer, comprises a ferromagnetic particle, and has a center line average surface roughness of from 2 to 10 nm;

the nonmagnetic support has plural layers;

at least one layer of the plural layers comprises an antistatic agent selected from the group consisting of polyalkylene glycol, sulfonic acid metal salt derivative, aromatic amine, ammonium salt of aromatic amine and a mixture of an aromatic amine and an ammonium salt of an aromatic amine;

the antistatic agent is incorporated in at least the surface layer of the nonmagnetic support which is opposite to the magnetic layer; and

said surface layer has a center line average surface roughness of from 5 to 30 nm.

5,631,063

BIAXIALLY ORIENTED FILM OF POLYETHYLENE-2,6-NAPHTHALENEDICARBOXYLATE

Takao Chujo; Masanori Nishiyama, and Hisashi Hamano, all of Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 19, 1994, Ser. No. 358,763
Claims priority, application Japan, Dec. 22, 1993, 5-324049; Dec. 24, 1993, 5-327275
Int. Cl.° B32B *3/26;27/36;* **C08G** *63/189*
U.S. Cl. 428—141 **15 Claims**

1. A biaxially oriented film of a polyethylene-2,6-naphthalendicarboxylate having a longer length in the longitudinal direction than width in the transverse direction, which

(A) has a Young's modulus of at least 800 kg/mm^2 in the longitudinal direction and a Young's modulus of at least 500 kg/mm^2 in the transverse direction, the Young's modulus in the longitudinal direction being greater than the Young's modulus in the transverse direction,

(B) satisfies the following relationships between an elongation S_M (%) in the longitudinal direction and the Young's modulus Y_M (kg/mm^2) in the longitudinal direction,

$$-0.001Y_M+0.89<S_M<-0.001Y_M+1.57$$

when Y_M is 1,200 kg/mm^2 or less,

and

$$-0.31<S_M<0.37$$

when Y_M is greater than 1,200 kg/mm^2, and

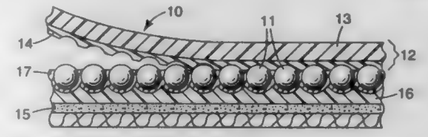
(C) has a heat shrinkage percentage of 0.1% or less in the longitudinal direction when the biaxially oriented film has been heat-treated under no load at 70° C. for 1 hour.

5,631,064

RETROREFLECTIVE TRANSFER SHEET AND APPLIQUE

Paul E. Marecki, May Township, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 15, 1995, Ser. No. 528,727
Int. Cl.° D06Q *1/12;* **B41M** *3/12;* **G02B** *5/128;* **B32B** *5/16*
U.S. Cl. 428—143 **35 Claims**



1. A retroreflective applique comprising:

(a) a layer of optical lens elements partially embedded in and protruding from the front surface of a binder resin layer; wherein the binder resin layer is prepared from ingredients comprising an isocyanate-functional hardener and a resin selected from the group consisting of a polyester resin and a polyurethane resin; and

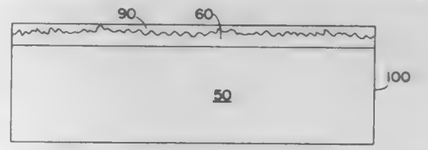
(b) a transfer adhesive layer comprising a vinyl plastisol disposed on the rear surface of the binder resin layer.

5,631,065

WINDOW COATING WITH LOW HAZE

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138

Filed Apr. 8, 1991, Ser. No. 682,185
Int. Cl.° B32B *3/00;* **B05D** *5/12*
U.S. Cl. 428—172 **15 Claims**



1. In a structure comprising a transparent sheet with a rough transparent coating on at least one surface of said sheet, the improvement wherein:

said rough coating is itself coated with a transparent glass layer having a refractive index substantially equal to the refractive index of said rough coating, the transparent coating having a smooth outer surface, the structure exhibiting reduced haze, enhanced abrasion resistance in reference to the structure without said glass coating and reduced ultraviolet transmission.

5,631,066

PROCESS FOR MAKING METALIZED FILMS AND FILMS PRODUCED THEREFROM

William G. O'Brien, Newark, Del., assignor to Chronopol, Inc., Golden, Colo.

Continuation of Ser. No. 171,080, Dec. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 8,889, Jan. 25, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 427,635
Int. Cl.° B32B *3/00;27/14;15/08;29/00*
U.S. Cl. 428—195 **12 Claims**

1. A metalized packaging film comprising (a) a biodegradable poly(hydroxy acid) film having a thickness of 25–125 micrometers having adhered to one side thereof (b) a metal coating having a thickness of 20–50 nanometers, wherein the coating metal is selected from the group consisting of Al, Au, Ag, Pt, Cu, Ni, Ti and Ta.

VOL 1198 ISS 3 MY 20 1997 UMI

5,631,067

HETEROGENEOUS KNITTED FABRIC

Lieven Anaf, Waregem, and Gabriël Dewaegheneire, Zwevegem, both of Belgium, assignors to N. V. Bekaert S.A., B-Zwevegem, Belgium

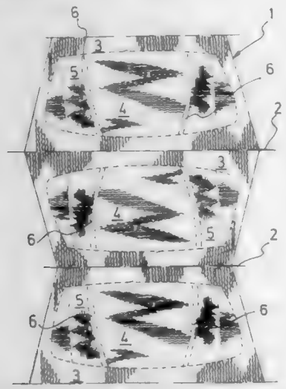
PCT No. PCT/BE93/00043, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO94/01372, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 29, 1993, Ser. No. 351,374

Claims priority, application Belgium, Jul. 1, 1992, 9200613

Int. Cl.[6] B32B *07/02*

U.S. Cl. 428—213 22 Claims



1. Custom knitted fabric for covering mold surfaces comprising predetermined surface zones having different knitting patterns.

5,631,068

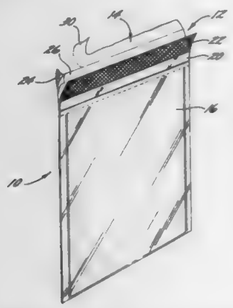
SELF-CONTAINING TAMPER EVIDENT TAPE AND LABEL

Christopher A. Smith, Redmond, Wash., assignor to Trigon Packaging Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 285,639, Aug. 2, 1994, abandoned. This application Feb. 13, 1995, Ser. No. 388,136

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 12 Claims



1. A tamper-evident tape for use in forming a closure for a security bag which will provide a visual indication of both opening of the closure and cooling of the closure below a breakdown temperature even if the closure is not opened, said tape comprising:

an elongate flexible plastic strip being adapted to be secured to one wall of a bag at an opening into the bag and having one surface thereof adapted to face another wall of the bag, said plastic strip having a first rate of thermal contraction or expansion,

a layer of ink applied to first portions of the surface of said plastic strip adapted to face the other wall of the bag and having an initial adhesion to that surface of said strip, said initial adhesion being lost upon separation of said ink layer from said plastic strip and said ink layer thereafter having no adhesive affinity for said strip,

a layer of adhesive applied to the surface of said strip having said ink layer thereon, including second portions thereof not covered by said ink layer, such that said ink layer is between said strip and said layer of adhesive, said adhesive layer having an adhesive tack at temperatures above a glass transition temperature at or below which said layer of adhesive loses its tack and being adhered to said strip and to said ink layer so long as said adhesive layer has the adhesive tack, said adhesive layer being adapted to contact and adhere to the other wall of the bag to close the opening into the bag to provide a secure closure therefor, said adhesive layer having a second rate of thermal contraction or expansion different from said first rate of contraction or expansion of said plastic strip,

said ink layer having a greater adhesion to said adhesive layer than its initial adhesion to said plastic strip and said adhesive layer having a greater adhesion to said plastic strip and for the other wall of a bag than said initial adhesion of said ink layer to said plastic strip so that said ink layer will separate from said plastic strip before said adhesive layer will separate from said plastic strip and will give a visual indication upon separation of said ink layer from said plastic strip, and

said tape having a breakdown temperature substantially lower than ambient temperature but higher than said glass transition temperature of said adhesive layer, below which said initial adhesion of said ink layer to said plastic strip is lost because of said differential rates of contraction or expansion and said ink layer will separate from said plastic strip.

5,631,069

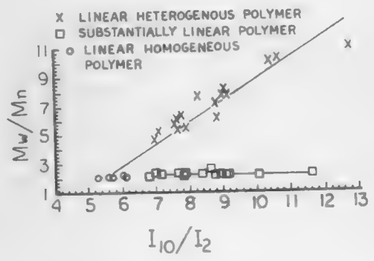
MEDIUM MODULUS MOLDED MATERIAL COMPRISING SUBSTANTIALLY LINEAR POLYETHLENE AND FABRICATION METHOD

Jeffrey J. Wooster, Lake Jackson, Tex.; Theo L. V. Geussens, Meeuwen-Gruitrode, and Jozef J. I. Van Dun, Zandhoven, both of Belgium, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 239,496, May 9, 1994, abandoned. This application May 9, 1995, Ser. No. 437,655

Int. Cl.[6] B29C *47/90;* C08L *23/04*

U.S. Cl. 428—220 20 Claims



1. A medium modulus, molded polyethylene material characterized as having a thickness greater than about 0.23 mm which comprises:

(A) from about 70 to about 99 weight percent, based on the combined weight of components (A) and (B), of at least one high molecular weight linear ethylene polymer having a density in the range of about 0.93 to about 0.96 g/cc and an I_5 melt index in the range of about 0.1 to about 3 g/10 minutes, and

(B) from about 1 to about 30 weight percent, based on the combined weight of components (A) and (B), of at least one substantially linear ethylene/α-olefin interpolymer characterized as having:

i. a melt flow ratio, I_{10}/I_2, ≧5.63,

ii. a molecular weight distribution, M_w/M_n, defined by the equation:

$$M_w/M_n \leq (I_{10}/I_2)-4.63, \text{ and}$$

iii. a critical shear rate at onset of surface melt fracture at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear olefin polymer having essentially the same I_2 and M_w/M_n

wherein the substantially linear ethylene/α-olefin polymer is further characterized as containing at least one α-olefin monomer and having a density in the range of about 0.85 to about 0.92 g/cc and an I_2 melt index in the range of 0.3 to about 3 g/10 minutes.

17. A method for preparing a medium modulus molded polyethylene material comprising the steps of:

(1) providing an extrudable thermoplastic composition containing (A) from about 70 to about 99 weight percent, based on the combined weights of components (A) and (B), of at least one high molecular weight linear ethylene polymer having a density in the range of about 0.93 to about 0.96 g/cc and an I_5 melt index in the range of about 0.1 to about 3 g/10 minutes, and (B) from about 1 to about 30 weight percent, based on the combined weights of components (A) and (B), of at least one substantially linear ethylene/α-olefin interpolymer characterized as having:

i. a melt flow ratio, I_{10}/I_2, ≧5.63,

ii. a molecular weight distribution, M_w/M_n, defined by the equation:

$$M_w/M_n \leq (I_{10}/I_2)-4.63, \text{ and}$$

iii. a critical shear rate at onset of surface melt fracture at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear olefin polymer having essentially the same I_2 and M_w/M_n

wherein the substantially linear ethylene/α-olefin interpolymer is further characterized as containing at least one α-olefin monomer and having a density in the range of about 0.85 to about 0.92 g/cc and an I_2 melt index in the range of 0.3 to about 3 g/10 minutes,

(2) introducing said composition of step (1) into an extrusion apparatus, and

(3) extruding said composition of step (1) to form a material with a thickness greater than about 0.23 mm, and

(4) conveying said material formed in step (3) for subsequent use down-line of the extrusion apparatus of step (2) or collecting said material formed in step (3) for subsequent use off-line.

5,631,070

POLYAMIDE RESIN COMPOSITION AND HOUSING FOR ELECTRONIC EQUIPMENT

Kota Nishii; Kouichi Kimura; Masanobu Ishizuka, and Katsura Adachi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 111,480, Aug. 25, 1993, Pat. No. 5,470,909. This application Jun. 7, 1995, Ser. No. 478,665

Claims priority, application Japan, Feb. 18, 1993, 5-029328

Int. Cl.[6] B32B *33/00*

U.S. Cl. 428—220 7 Claims

1. A housing for electronic equipment, comprising a molded product of a polyamide resin composition and having an average plate thickness of 2 mm or less, the polyamide resin composition comprising 100 parts by weight of a resin composition comprised of 20 to 80% by weight of an aromatic polyamide resin and 80 to 20% by weight of a modified polyphenylene ether resin (the total amount in % by weight of the aromatic polyamide resin and the modified polyphenylene ether resin being 100% by weight) and, incorporated in said resin composition, based on 100 parts by weight of the resin composition, 0.5 to 30 parts by weight of a copolyester liquid-crystalline polymer, 0.01 to 3 parts by weight of phenylenebisoxazoline and 2 to 40 parts weight of an inorganic filler, the modified polyphenylene ether resin being produced by reacting a polyphenylene ether resin with an unsaturated aliphatic carboxylic acid or its acid anhydride.

5,631,071

INTERIOR BASE MATERIAL AND PRINTING METHOD THEREOF

Akira Fukunishi, Shiga-ken, and Yukio Zenitani, Nara-ken, both of Japan, assignors to Sanyo Chemical Industries, Ltd., Japan

Filed May 8, 1995, Ser. No. 436,127

Claims priority, application Japan, Jun. 2, 1994, 6-145459

Int. Cl.[6] B32B *7/00*

U.S. Cl. 442—118 11 Claims

1. An interior base material suitable for a pigment ink printing process, which comprises an interior base material selected from the group consisting of ceiling materials, wall materials, floor materials, mural decorations, curtains, blinds, lampshades and furniture, to which has been applied, before printing, an organic solvent-soluble synthetic resin (A) and a water-insoluble water-absorbing resin having a water absorption ability for pure water of 50 to 1,000 ml/g (B), said resin (A) having been applied to the material in the form of a solution in an organic solvent.

5,631,072

METHOD AND MEANS FOR INCREASING EFFICACY AND WASH DURABILITY OF INSECTICIDE TREATED FABRIC

Richard D. Samson; James M. McKinney; Geoffrey Gettliffe, all of North Augusta, and John Russell, Aiken, all of S.C., assignors to Avondale Incorporated, Sylacauga, Ala.

Continuation-in-part of Ser. No. 401,986, Mar. 10, 1995, Pat. No. 5,503,918. This application Feb. 2, 1996, Ser. No. 595,795

Int. Cl.[6] A01N *25/34;* B32B *33/00;* E04H *15/54*

U.S. Cl. 442—125 19 Claims



1. A method of enhancing the efficacy of fabric to repel insects before and after successive washings of the fabric, said method comprising the steps of:

(a) providing a solution containing a dispersion of an insecticide in a thickening agent; and

(b) surface coating the solution on only one major surface of the fabric, the thickening agent functioning to dispose the insecticide essentially on but the one major surface of the fabric which was coated.

18. A fabric having a coating disposed essentially on but one major surface thereof which functions as a means for repelling insects before and after successive washings of the coated fabric, said coating having been derived from a solution containing a dispersion of an insecticide in a thickening agent, the thickening agent having functioned to limit disposition of insecticide to said one major surface.

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5,631,073

NONWOVEN SHEET MATERIALS, TAPES AND METHODS

John E. Riedel, Hugo, and Lauren K. Cran, Denmark Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 441,814, May 16, 1995, abandoned, which is a continuation-in-part of Ser. No. 114,376, Aug. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 830,063, Feb. 3, 1992, abandoned. This application Sep. 16, 1996, Ser. No. 716,803

Int. Cl.[6] B32B 7/12

U.S. Cl. 442—364 30 Claims

1. A nonwoven sheet material comprising a randomly interlaced fibrous web of tensilized nonfracturable staple fibers and binder fibers, wherein the fibrous web is first pattern embossed so as to be readily finger-tearable in the cross web direction, and subsequent to being pattern embossed is uniformly interbonded throughout by a chemical bonding agent, and further wherein the nonwoven sheet material exhibits a Hand measurement of less than 250 grams for about a 20 cm square sheet, and is readily finger-tearable in the cross machine direction and exhibits wet and dry break tensile strength of at least 10N/cm.

5,631,074

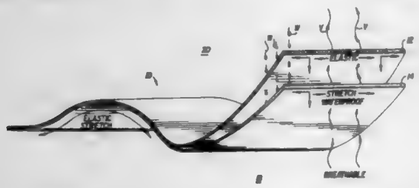
WATERPROOF BREATHABLE FABRIC FOR OUTDOOR ATHLETIC APPAREL

Daniel J. Herlihy, Jr., Bethany Beach, Del., assignor to Aquatic Design, Inc., Bethany Beach, Del.

Continuation-in-part of Ser. No. 14,237, Feb. 5, 1993, Pat. No. 5,415,924. This application May 3, 1995, Ser. No. 433,567

Int. Cl.[6] B32B 15/00;17/00; D03D 3/00

U.S. Cl. 442—35 38 Claims



1. A layered fabric for use in constructing sports apparel comprising:

a first layer comprised substantially of polypropylene filaments blended with elastomeric fibers, which layer substantially resists absorption of liquid water; and

a second layer, laminated to said first layer, said second layer being impervious to liquid water but pervious to water vapor.

5,631,075

HEAT-INSULATING PANEL SERVING AS CONCRETE FORM

Yuukou Ishikawa; Noboru Nishimoto, both of Tokyo; Michio Ootani, Matsudo; Tooru Tanibe, Funabashi; Kazushige Suzuki, Tokyo, and Kanesuke Kasahara, Atsugi, all of Japan, assignors to Nihon Cement Co., Ltd., Tokyo, and Fuji Kasei Kogyo Kabushiki Kaisha, Tottori Pref., both of Japan

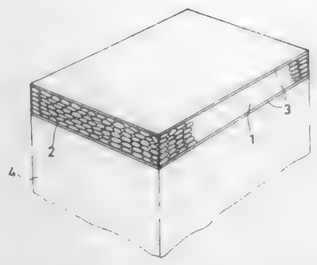
Filed Oct. 31, 1994, Ser. No. 331,715

Claims priority, application Japan, Mar. 23, 1994, 6-051718

Int. Cl.[6] E04B 1/90;1/80;1/92; B32B 27/04

U.S. Cl. 428—221 4 Claims

1. A heat-insulating panel formed by compression-molding of 100 parts by weight of curled contracted pieces of magnetic tapes mixed with 15 to 50 parts by weight of a thermosetting resin as a binder, wherein said curled contracted pieces of magnetic tapes are obtained by heating cut or shredded pieces having lengths of 5 to 20 mm in an amount of 50% or more on the basis of the total weight of the tapes, said panel having a bending strength of at least 50 kgf/cm^2 and a bending rigidity of at least 4×10^5 kgf cm^2.



5,631,076

HOT MELT INK THERMAL TRANSFER RECORDING SHEET

Masakazu Hakomori, Tokyo; Masatosi Maeda, Tomakomai; Yoshio Mizuhara, Kawasaki; Miwa Kimura, Tokyo; Toru Nakai, Chiba; Kosuke Asaeda, Tokyo; Tadahiro Nakada, Nagareyama, and Masasi Oka, Chiba, all of Japan, assignors to New OJI Paper Co., Ltd., and Asahi Denka Kogyo K.K., both of Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 603,584

Claims priority, application Japan, Feb. 24, 1995, 7-037170; Mar. 13, 1995, 7-052543; Apr. 14, 1995, 7-089602

Int. Cl.[6] B41M 5/00; B05D 3/02

U.S. Cl. 428—304.4 15 Claims

1. A hot melt ink thermal transfer recording sheet comprising:

a substrate sheet; and

an ink-receiving porous polymer coating layer comprising a polymeric material, laminated on a surface of the substrate sheet, provided with a plurality of pores of which those distributed in the surface portion thereof have an average size of 0.5 to 30 μm, and having an apparent density of 0.05 to 0.5 g/cm^3,

the laminate of the substrate sheet with the ink-receiving porous polymer coating layer having a thermal conductivity of 0.25 W/(m.K) or less, determined by the laser flash method.

5. A process for producing the hot melt ink thermal transfer recording sheet as claimed in any one of claims 1 to 4, comprising the steps of:

mechanically agitating a coating liquid containing a polymeric material to an extent such that a large number of fine air bubbles independent, from each other and having an average size of 0.5 to 30 μm are introduced into the coating liquid and the resultant bubbled coating liquid has a total volume larger than but not more than 10 times the original volume of the non-bubbled coating liquid;

coating a surface of a substrate sheet with the bubbled coating liquid; and

drying the coated bubbled coating liquid layer to provide an ink-receiving porous polymer coating layer.

5,631,077

IMMERSION-PROOF NON-PELLICULAR INTRA-MATRIX AQUEOUS BARRIER PROCESS

John C. Carlisle, 2505 Wendell Ave., Louisville, Ky. 40205

Continuation of Ser. No. 241,394, May 11, 1994, Pat. No. 5,460,849. This application Oct. 2, 1995, Ser. No. 538,276

Int. Cl.[6] B32B 3/06

U.S. Cl. 428—306.6 23 Claims

1. The process of constructing an aqueous repellent barrier interlocked to and over a material, comprising the following steps, step (c) being optional when steps (a) and (b) are combined, and step (b) being optional when steps (a) and (c) are combined:

(a) exposing a porous surface of a first material having a pore size capable of being penetrated by a second particulate material made from silicon dioxide reacted with an organo silane, said second particulate material having an average diameter of between about 7 and 45 nanometers, said first material being free of surface contaminants preventing contact of said second particulate material with said surface and/or pores,

(b) impacting said surface and/or pores with second particulate material and partly-porous implement with a force sufficient to cause second particulate material to impregnate said pores and to interlock to and over said surface and within said pores thereby forming a matrix of said second particulate material and said surface and said pores, said matrix serving as an aqueous repellent barrier over said surface, and providing a fire, mold, and decay resistant final surface finish composition

(c) applying said second particulate material onto said first material and said surface and/or pores by brushing, with a bristled brush, or rubbing with a partly-porous implement, the said second particulate material onto the first material and said surface and/or pores, utilizing sufficient pressure, agitation, and frictional force to cause second particulate material to impregnate said pores and to interlock to and over said surface and within said pores thereby forming a matrix of said second particulate material and said surface and said pores, said matrix serving as an aqueous repellent barrier over said surface, and providing an instantly-dry and not-slippery final surface composition.

5,631,078

FILMS MADE FROM PAPER CONTAINING CELLULOSE ESTER FIBER

Eric E. Ellery; Melvin G. Mitchell, both of Kingsport; Charles K. Crosswhite, Blountville, all of Tenn., and Donald W. Monk, Brevard, N.C., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 30, 1995, Ser. No. 550,474

Int. Cl.[6] B32B 3/26

U.S. Cl. 428—311.71 14 Claims

1. A thermoplastic film comprising an admixture of 20 to 85 weight percent cellulose ester fibers and 80 to 15 weight percent cellulose fibers and a functional amount of a cellulose ester plasticizer, said film having an opacity in the range of 10 to 85 percent, a thickness in the range of 0.002 to 0.010 inch, and a porosity in the range of 0.0 to 50 ml/min/cm^2 at a 1.0 centibar pressure drop, wherein the thermoplastic film is capable of being indistinguishable from a composting media within a composting time of 21 to 65 days, said composting media consisting of dehydrated alfalfa meal, cotton seed meal, poplar sawdust, cow manure, garden soil, newspaper, calcium carbonate, sodium bicarbonate, and water.

5,631,079

HIGH TEMPERATURE RESISTANT ANTISTATIC PRESSURE-SENSITIVE ADHESIVE TAPE

Gustav Gutman, and Steven D. Yau, both of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 239,309, May 6, 1994, abandoned. This application Jun. 29, 1995, Ser. No. 496,533

Int. Cl.[6] B32B 5/16

U.S. Cl. 428—327 17 Claims

1. A heat-resistant anti-static pressure-sensitive adhesive tape comprising a substrate having opposing surfaces, at least one of said surfaces bearing thereon a acrylic microparticulate adhesive having an average diameter of at least about 1 micrometer, wherein the microparticles have a surface bearing thereon an ionic conductive material formed from a polymer electrolyte base polymer, and at least one ionic salt selected from the group consisting of salts of alkali metals and salts of alkaline earth metals, said adhesive being bonded to said substrate by means of a primer, said primer comprising at lease one phenolic resin and at least one rubbery compound,

said adhesive tape being capable of surviving immersion in molten solder at about 260° C. for at least about 5 seconds.

5,631,080

METHOD FOR FLOCCULATING CLAY AND COMPOSITION PRODUCED THEREBY

Gary Fugitt, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 410,911, Mar. 27, 1995, abandoned. This application Aug. 18, 1995, Ser. No. 516,535

Int. Cl.[6] B32B 5/16;29/00; C08K 3/34

U.S. Cl. 428—331 17 Claims

1. A method for making a structured clay comprising the steps of:

preparing an aqueous dispersion of a processed anionic, kaolin clay containing an anionic or nonionic polymer as a flocculating agent, said polymer having a molecular weight in the range of about 400,000 to about 1,500,000 and being present in an amount sufficient to cause bridging of particles of the clay in said dispersion by said polymer; and mixing said dispersion to cause said polymer to bridge said particles and said particles to flocculate.

8. A paper coating composition containing a structured clay prepared by the method of claim 1.

5,631,081

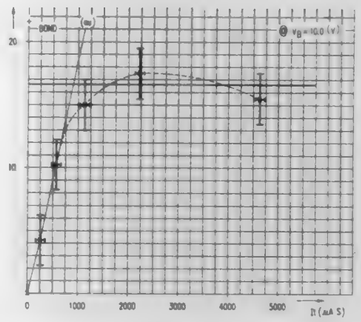
PROCESS FOR BONDING LUBRICANTS TO A THIN FILM STORAGE MEDIA

Li-Ju J. Lin, San Jose; John S. Foster, Morgan Hill; Christopher S. Gudeman, Los Gatos, and Gerard H. Vurens, Berkeley, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 681,272, Apr. 8, 1991, abandoned. This application Nov. 18, 1994, Ser. No. 341,856

Int. Cl.[6] G11B 5/66; B05D 5/12

U.S. Cl. 428—332 6 Claims



1. A magnetic recording media, comprising:

a substrate;

a magnetic film formed over said substrate;

a protective film formed over said magnetic film; and

a layer of lubricant bonded to said protective film by exposure to an electron beam having an energy of less than approximately 100 electron volts, said bonded lubricant being selected from a group consisting of hydrocarbons, fluorocarbons, and aliphatic fatty acids, and said bonded lubricant having a thickness of approximately 5 to 300 angstroms.

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5,631,082

PRESSURE-SENSITIVE ADHESIVE MATERIAL

Toshifumi Hirose, and Katsuhiko Isayama, both of Kobe, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 333,900, Apr. 6, 1989, abandoned. This application Aug. 30, 1993, Ser. No. 113,515
Claims priority, application Japan, Apr. 7, 1988, 63/86585
Int. Cl.[6] C09J 7/02
U.S. Cl. 428—343 18 Claims

1. A tape or sheet form pressure-sensitive adhesive material which comprises a substrate which is obtained by curing a curable resin composition comprising:

(A) an organic elastomeric polymer which is liquid at room temperature and has, in a molecule, at least one silicon-containing gropp to the silicon atom of which at least one hydroxyl group or hydrolyzable group is bonded and which is cross linkable through formation of a siloxane bond,

(B) a curing catalyst

and

(C) optionally a tackifier resin

and a pressure-sensitive adhesive layer comprising an acrylic adhesive laminated on said substrate.

5,631,083

FIBERS SUITABLE FOR THE PRODUCTION OF NONWOVEN FABRICS HAVING IMPROVED STRENGTH AND SOFTNESS CHARACTERISTICS

Leonardo Pinoca, Narni; Renato Africano, Ferrara, and Leonardo Spagnoli, Terni, all of Italy, assignors to Montell North America Inc., Wilmington, Del.

Filed Jun. 13, 1994, Ser. No. 259,318
Claims priority, application Italy, Jun. 17, 1993, MI93A1310
Int. Cl.[6] D02C 3/00
U.S. Cl. 428—365 9 Claims

1. A drawn, polyolefin fiber suitable for nonwoven fabrics, the composition of said fiber comprising an olefin polymer blend consisting essentially of (all parts and %s being by weight):

1) 50 to 80 parts of a crystalline polymer selected from the group consisting of a propylene homopolymer having an isotactic index greater than 90, and a random copolymer of propylene and an olefin selected from the group consisting of ethylene and C_4–C_8 α-olefins, said olefin being 0.05 to 15% of the copolymer; and

2) 20 to 50 parts of a heterophasic polyolefin composition comprising:

a) 20 to 70 parts of a propylene polymer of the group consisting of a propylene homopolymer and a random copolymer of propylene and an olefin selected from the group consisting of ethylene and C_4–C_8 α-olefins, said olefin being 0.5 to 10% of the copolymer of this group; and

b) 30 to 80 parts of a copolymer of ethylene and an olefin selected from the group consisting of propylene and C_4–C_8 α-olefins, said copolymer being soluble in xylene at 25° C., the intrinsic viscosity of said copolymer, when its ethylene content is 40 to 70% of the copolymer, being lower than or equal to 1.5 dl/g, and, when its ethylene content is less than 40% of the copolymer, being lower than or equal to 2.3 dl/g;

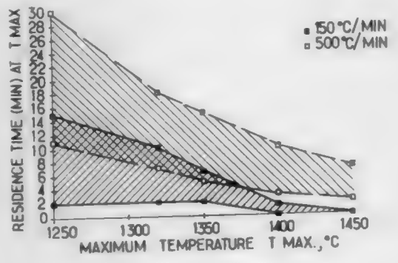
said fiber having been obtained by spinning said olefin polymer blend in a spinning apparatus with real or equivalent output hole diameter of less than 0.5 mm, and then drawing the resulting fiber out with a draw-ratio from 1.1 to 1.8.

5,631,084

THERMALLY-INSULATING COMPONENTS MADE OF THERMALLY-STABILIZED REFRACTORY CERAMIC FIBERS

Daniel Urffer, Morieres-les-Avignon, and Joseph Recasens, Sorgues, both of France, assignors to Societe Europeenne des Produits Refractaires, Courbevoie, France

Filed Dec. 21, 1994, Ser. No. 360,631
Claims priority, application France, Dec. 28, 1993, 93 15754
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—384 5 Claims



1. A refractory, thermally-insulating component which displays a linear shrinkage not exceeding 3% after exposure to a temperature of 1450° C. for 24 hours and which consists essentially of refractory ceramic fibers which are mechanically entangled and not bound by organic or inorganic binders, each said fiber being formed of a composition comprising 33–45 wt % Al_2O_3, 41–53 wt % SiO_2, 5.5–7 wt % ZrO_2, 0.02–2 wt % MgO, up to 0.2 wt % Fe_2O_3+TiO_2 and up to 0.3 wt % Na_2O+CaO+K_2O, the amount of Al_2O_3+SiO_2+ZrO_2 being at least 97.5 wt %, and each fiber having a homogenous degree of crystallinity of between 30 and 64%, crystals therein being essentially mullite and quadratic zirconia.

5,631,085

COMPOUND YARN PRODUCING THE SLIDING LAYER OF PLAIN BEARINGS MADE OF FIBER-REINFORCED THERMOPLASTICS

Elke Gebauer, Bobingen, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Sep. 2, 1993, Ser. No. 116,139
Claims priority, application Germany, Sep. 4, 1992, 42 29 581.5
Int. Cl.[6] D02G 3/04;3/36; D04C 1/06
U.S. Cl. 428—377 4 Claims

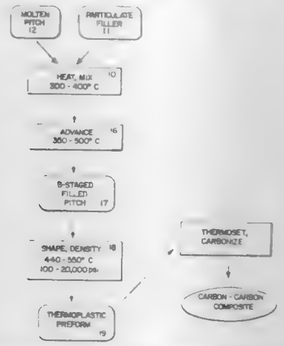
1. A multicomponent compound yam composed of at least three components comprising a first component of from 40 to 70 percent by volume of thermoplastic fibers having a melting point above the use temperature Of the yam, a second component of from 10 to 30 percent by volume of polyfluorocarbon fibers, and a third component of from 10 to 50 percent by volume of fiber made of a polymer whose melting point is at least 20° C. above the melting point of the fibers of the first component, and wherein the component fibers are statistically uniformly distributed over the cross-section of the compound yarn in a multiplicity of regions in which the fibers of each component predominate in turn.

5,631,086

THERMOPLASTIC COMPOSITIONS COMPRISING FILLED, B-STAGED PITCH

Leonard S. Singer, Berea, and David T. Orient, Medina, both of Ohio, assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 386,803, Jul. 27, 1989, Pat. No. 5,569,417, which is a continuation of Ser. No. 141,219, Jan. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 40,301, Apr. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 755,775, Jul. 11, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 478,716
Int. Cl.[6] B32B 9/00; H01B 1/04; C10C 1/20
U.S. Cl. 428—408 8 Claims



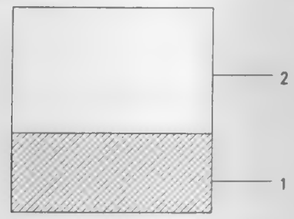
1. A thermoplastic composition comprising particulate filler and an advanced mesophase pitch having a TMA deformation temperature of at least 400° C.

5,631,087

ELECTROSTATIC IMAGE-BEARING DIELECTRIC MEMBER

Yuzuru Fukuda; Shigeru Yagi; Tsuyoshi Ohta, and Masato Ono, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 136,768, Oct. 15, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,566
Claims priority, application Japan, Nov. 11, 1992, 4-324704
Int. Cl.[6] B23B 9/00
U.S. Cl. 428—408 20 Claims



1. An ionographic apparatus for transfer of an image, comprising:

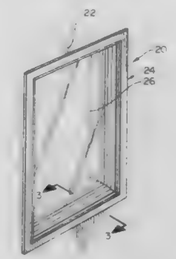
an ionographic electrostatic image-bearing dielectric member for receiving an ionographic image on a surface of the dielectric member, said member comprising a support and a dielectric layer formed on the support, the dielectric layer being formed of at least one film selected from the group consisting of an amorphous carbon film, a diamond-like carbon film and a diamond film, and an intermediate layer provided between said support and said dielectric layer and made of at least one member selected from the group consisting of silicon carbide, silicon nitride, silicon oxide and amorphous silicon; and an ion generator capable of forming an electrostatic image on said surface of the dielectric member.

5,631,088

WINDOWS AND METHODS OF MAKING AND INSTALLING WINDOWS

Ross Harper, 301 - 1135 Quayside Drive, New Westminster, B.C., Canada

Filed Aug. 30, 1994, Ser. No. 298,385
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—426 14 Claims



1. Sash material to be assembled into a window sash for mounting transparent material within an opening in a building, the opening being defined by inner surfaces of a plurality of sill members, comprising:

a. a rigid structure having an outer surface configured such that the window sash and the transparent material are supported within the opening by the inner surface of at least one of the sill members;

b. a cladding member that engages the rigid structure at first and second locations, the cladding member being formed of cladding material; and

c. foam material injected between the structural material and the cladding material to form an insulating foam core, where the structural material and the cladding material are attached to an outer surface of the foam core.

5,631,089

PREPARATION OF GLASS/PLASTIC LAMINATES HAVING IMPROVED OPTICAL QUALITY

Luther W. Center, Jr., Circleville, Ohio, and Charles A. Smith, Vienna, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US91/05395, § 371 Date Mar. 10, 1994, § 102(e) Date Mar. 10, 1994, PCT Pub. No. WO93/02857, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 30, 1991, Ser. No. 185,913
Int. Cl.[6] B32B 17/10
U.S. Cl. 428—437 9 Claims

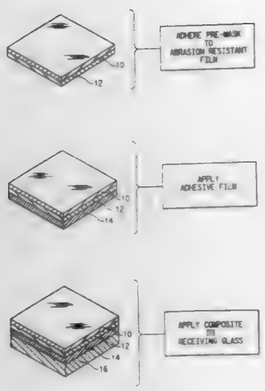
1. A process for controlling optical defects induced by particulate contaminates during the preparation of a glass/plastic surfaced laminate wherein heat and pressure are applied to a coverplate and a receiving glass to bond elements of said laminate comprising

a) forming a composite structure having surfaces comprised of outboard surfaces of a receiving glass and an abrasion resistant polymeric film with an adhesive material there between,

b) releasably adhering a plastic film of uniform thickness to the outboard surface of said abrasion resistant polymeric film, said plastic film being softer than said abrasion resistant polymeric film and when heated and placed under pressure, deforming to receive and entrap any particulate contaminates on the outboard surface of said abrasion resistant polymeric film,

c) positioning a coverplate over said composite structure, in contact with said plastic film, and

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d) applying sufficient heat and pressure to said coverplate and said receiving glass to bond the elements of said composite structure and permit deformation of said plastic film to entrap particulate contaminants present between the outboard surface of said abrasion resistant polymeric film and said coverplate in said plastic film while maintaining the optical integrity of the surface of said abrasion resistant polymeric film.

5,631,090

IRON-BASED MATERIAL HAVING EXCELLENT OXIDATION RESISTANCE AT ELEVATED TEMPERATURES AND PROCESS FOR THE PRODUCTION THEREOF

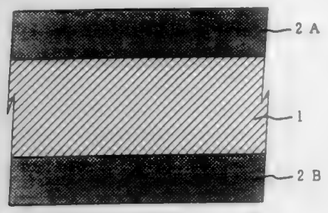
Yasushi Fukui, Osaka; Atsushi Ando, Sakai; Yoshikazu Morita; Masanori Matsuno, both of Izumisano; Minoru Saito, Izumiotsu; Hideo Miyake, Sakai, and Masahiko Souda, Amagasaki, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1993, Ser. No. 155,373

Claims priority, application Japan, Nov. 20, 1992, 4-333869; Jun. 17, 1993, 5-169870

Int. Cl.° B32B *9/00*

U.S. Cl. 428—469 **10 Claims**



1. An iron-based heat-generating material excellent in oxidation resistance at an elevated temperature which comprises an iron-based alloy of the iron-chromium-aluminum series capable of generating heat by passing electricity therethrough and an Al—O coating layer covering a surface of said alloy, wherein said iron-based alloy consists essentially of, by mass %, C in an amount up to 0.2, Si in an amount up to 6, Mn in an amount up to 5, Al 0.4 to 8, Cr in an amount up to 35, N in an amount up to 0.3, the balance Fe and impurities, and wherein said Al—O coating layer consists of uncombined metallic aluminum and Al_2O_3, the amount of the oxygen in said Al—O coating layer being substantially less than the stoichiometric amount of oxygen in Al_2O_3.

5,631,091

BISMUTH COATING PROTECTION FOR COPPER

Anthony M. Piano, Lodi, N.J., assignor to Fry's Metals, Inc., Providence, R.I.

Continuation of Ser. No. 214,050, Mar. 17, 1994, abandoned. This application Aug. 25, 1995, Ser. No. 524,123

Int. Cl.° B32B *9/00*

U.S. Cl. 428—469 **32 Claims**

1. A coating composition which is effective for immersion plating a coating of bismuth metal onto a copper-containing surface and which comprises an acid solubilized bismuth salt and an iodide.

5,631,092

SHEET FOR THERMAL MASS TRANSFER PRINTER

Tsutomu Komine, Tokyo, Japan, assignor to Nisshinbo Industries, Inc., Tokyo, Japan

Filed Jul. 13, 1995, Ser. No. 501,990

Claims priority, application Japan, Jul. 28, 1994, 6-194584

Int. Cl.° B41M *5/26*

U.S. Cl. 428—523 **5 Claims**

1. A sheet for thermal mass transfer printers consisting of a non-oriented film containing at least 5–45% by weight of inorganic pigment.

5,631,093

MAGNETICALLY CODED DEVICE

Thomas A. Perry, Washington; John R. Bradley, Centerline; Thaddeus Schroeder, Rochester Hills, and Carlton D. Fuerst, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 589,359, Sep. 28, 1990, Pat. No. 5,091,021. This application Nov. 8, 1991, Ser. No. 789,702

Int. Cl.° H01F *1/032*

U.S. Cl. 428—611 **2 Claims**



1. A motor armature comprising a body of permanent magnet material, said body consisting essentially of a motor armature substrate of unmagnetized permanent magnet material and a pattern of magnetized volumes in said substrate which are patterned to define alternate magnetic poles, each pole extending from a surface of the substrate to a depth therein, where each of said magnetized volumes is produced by

directing energy onto an unmagnetized substrate surface in a pattern to selectively heat a volume in the substrate to lower its coercivity below the coercivity of the surrounding portion of the substrate;

imposing a magnetic field to selectively magnetized the heated volume; and

cooling the treated volume in said magnetic field.

5,631,094

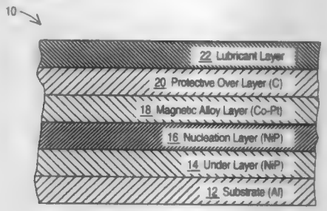
MAGNETIC ALLOY FOR IMPROVED CORROSION RESISTANCE AND MAGNETIC PERFORMANCE

Rajiv Y. Ranjan, San Jose; Tu Chen, Monte Sereno; Tsutomu T. Yamashita, Milpitas, and John K.-J. Chen, Los Gatos, all of Calif., assignors to Komag, Incorporated, Milpitas, Calif.

Continuation-in-part of Ser. No. 188,954, Jan. 28, 1994, abandoned. This application Dec. 1, 1994, Ser. No. 348,547

Int. Cl.° G11B *5/66*

U.S. Cl. 428—611 **3 Claims**



1. A magnetic recording medium, comprising:

a substrate;

a plated layer deposited onto said substrate;

a nucleation layer of sputtered amorphous NiP deposited onto said plated layer;

a magnetic alloy layer deposited onto said nucleation layer, said magnetic layer comprising platinum up to 20 atomic percent, nickel up to 10 atomic percent, at least 75 atomic percent cobalt, tantalum up to 10 atomic percent, and titanium up to 10 atomic percent, the ratio of tantalum to titanium being between in the range of 3:1 and 1:3, said magnetic alloy layer simultaneously having improved corrosion resistance, higher coercivity, and higher saturation as compared to said magnetic alloys not including tantalum and titanium in said ratio range; and

a protective over layer deposited onto said magnetic layer; and

a lubricant layer deposited onto said protective over layer.

5,631,095

MULTILAYERED COATED CORROSION RESISTANT STEEL MATERIAL

Toshio Kanasashi, Mishima, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan

Continuation of Ser. No. 390,385, Feb. 17, 1995, abandoned, which is a continuation of Ser. No. 163,884, Dec. 8, 1993, abandoned, which is a continuation of Ser. No. 3,796, Jan. 13, 1993, abandoned, which is a continuation of Ser. No. 871,037, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 348,856, May 8, 1989, abandoned, which is a continuation of Ser. No. 176,456, Apr. 1, 1988, Pat. No. 4,849,301, which is a continuation of Ser. No. 882,347, Jul. 7, 1986, abandoned. This application Oct. 12, 1995, Ser. No. 541,223

Claims priority, application Japan, Aug. 8, 1985, 60-172236

Int. Cl.° B32B *15/08*

U.S. Cl. 428—623 **4 Claims**



1. A multilayer coated corrosion resistant steel material which has on its surface a multilayer protective coating said multilayer coated corrosion resistant steel material consisting essentially of a steel base having at least one surface; a galvanized zinc layer having a thickness between approximately 8–20 microns thick on said steel surface; an electroplated deposited layer of zinc based alloy containing 5–15% by weight nickel deposited on said galvanized zinc layer and having a thickness of one to six microns; and a vinyl fluoride resin layer on said electroplated layer.

5,631,096

MAGNETO OPTICAL MEMORY DEVICE

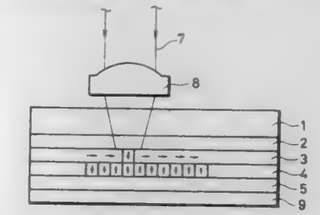
Junsaku Nakajima, Yamatotakada; Yoshiteru Murakami, Nishinomiya; Kenji Ohta, Kitakatsuragi-gun, and Akira Takahashi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 102,553, Aug. 5, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,464

Claims priority, application Japan, Sep. 2, 1992, 4-234486

Int. Cl.° G11B *5/66*

U.S. Cl. 428—694 ML **24 Claims**



1. A magneto-optical memory medium, comprising:

a first magnetic film which exhibits in-plane magnetization at room temperature and exhibits perpendicular magnetization in a predetermined temperature range above room temperature;

a second magnetic film whose Curie temperature (T2) is set above room temperature; and

a third magnetic film which exhibits perpendicular magnetization in a temperature range between room temperature and its Curie temperature (T3), wherein said third magnetic film is an alloy whereon recorded information is rewritten by overwriting using a magnetic field intensity modulation,

said first magnetic film, said second magnetic film and said third magnetic film being laminated in this order on a base substrate,

wherein:

the Curie temperature (T2) of said second magnetic film is set lower than the Curie temperature (T3) of said third magnetic film;

in a temperature range from not less than room temperature to less than Curie temperature (T_3) of said third magnetic layer, said third magnetic layer has a coercive force H_{c3} which is always stronger than a coercive force H_{c2} of said second magnetic layer; and

the Curie temperature (T3) of said third magnetic film is lower than the Curie temperature (T1) of said first magnetic film.

5,631,097

LAMINATE INSULATION BARRIERS HAVING A CEMENTITIOUS STRUCTURAL MATRIX AND METHODS FOR THEIR MANUFACTURE

Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation of Ser. No. 27,451, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 982,383, Nov. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,684

Int. Cl.° B32B *13/00*; **C04B** *14/00*

U.S. Cl. 428—703 **111 Claims**

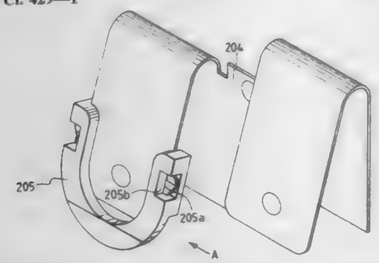
1. An insulation barrier having a laminate structure comprising:

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an insulating component which minimizes thermal conductivity across the insulation barrier such that the insulation barrier has a thermal conductivity less than about 0.1 W/m·K; and

a structural component including a cementitious sheet formed from a cementitious mixture comprising hydraulic cement, a rheology-modifying agent, and water, the cementitious mixture being characterized in that it can be passed between forming rollers to form a sheet having sufficient cohesive strength while still in a green state and prior to hardening such that the sheet will be form stable as it exits the rollers free from underlying support so as to maintain integrity of the sheet, the cementitious sheet having a maximum thickness of about 2 cm, the structural component and the insulating component being integrally affixed together to form the laminate structure of the insulating barrier.

5,631,098
BATTERY HOLDER
Shinichi Suzuki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jun. 30, 1995, Ser. No. 497,697
Claims priority, application Japan, Sep. 6, 1994, 6-212441; Sep. 7, 1994, 6-213405; Sep. 19, 1994, 6-223520
Int. Cl.° H01M *2/00;2/10*
U.S. Cl. 429—1 **6 Claims**

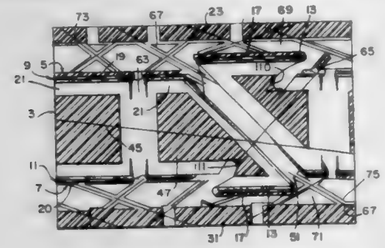


1. A reverse voltage prevention mechanism for a battery, comprising:

a contact piece member which is arranged in a battery holder, contacts a plus end of a battery, and is formed with bent portions on two edges thereof; and

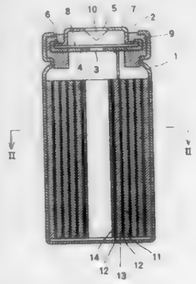
an insulating member formed with opening portions for receiving the bent portions of said contact piece member.

5,631,099
SURFACE REPLICA FUEL CELL
Robert G. Hockaday, 3025 Arizona Ave., Los Alamos, N.M. 87544
Filed Sep. 21, 1995, Ser. No. 531,378
Int. Cl.° H01M *8/10*
U.S. Cl. 429—30 **41 Claims**



1. A fuel cell apparatus comprising a first, central fiber-reinforced membrane having an oxygen side and a hydrogen side, electrodes positioned on the hydrogen side and the oxygen side of the membrane, each electrode comprising a first catalyst film layer deposited on the central membrane, the catalyst film layers separated from the central membrane by voids, metal film layers deposited over the catalyst film layers, and hydrophobic film layers positioned on the metal film layers, electrolyte disposed in voids between the catalyst film layers through the central membrane, a first water circulating and regulating membrane positioned above the hydrogen side electrode, a fuel channel flow manifold positioned above the first water circulating and regulating membrane and sealed to the hydrogen side electrode, a fuel inlet connected to the fuel manifold for delivering fuel to a region between the fuel manifold and the first water circulating and regulating membrane, a second water circulating and regulating membrane positioned below the oxygen side electrode, an oxidizer gas manifold positioned below the second water circulating and regulating membrane and sealed to the oxygen side electrode, an oxidizer gas inlet connected to the oxidizer gas manifold for delivering oxidizer gas to a region between the oxidizer gas manifold and the second water circulating and regulating membrane, a first electrical contact connected to the hydrogen electrode and a second electrical contact connected to the oxygen electrode, and a sealing rim extending around and connected to outer edges of the cell.

5,631,100
SECONDARY BATTERY
Akira Yoshino, Fujisawa; Yumiko Takizawa, Yokohama; Akira Koyama, Kawasaki; Katsuhiko Inoue, Yokohama; Masataka Yamashita; Yasufumi Minato, both of Kawasaki, and Isao Kuribayashi, Yokosuka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
PCT No. PCT/JP92/01175, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO93/06628, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 14, 1992, Ser. No. 117,175
Claims priority, application Japan, Sep. 13, 1991, 3-261293
Int. Cl.° H01M *10/50*
U.S. Cl. 429—62 **17 Claims**



1. A secondary battery comprising:

a casing,

an organic electrolytic solution contained in said casing, said solution having a water content of from 5 to 450 ppm.

a positive electrode comprising a lithium-containing composite metal oxide as a cathode active material,

a negative electrode comprising a carbonaceous material as an anode active material,

a separator disposed between said positive and negative electrodes, and

a PTC element which has an operative temperature of from 80° C. to 140° C. and has a sensitive temperature coefficient of from −10 to −130,

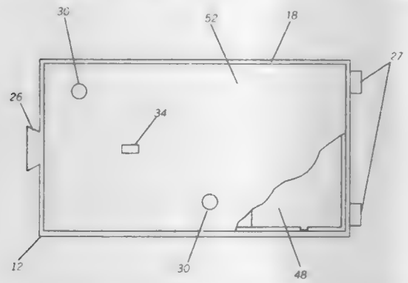
said operative temperature being defined as a temperature at which a resistance value of the PTC element becomes 1000-fold the resistance value measured at room temperature when the PTC element is heated without flowing current,

said sensitive temperature coefficient being defined as a gradient of a straight line obtained by plotting temperatures, at which, when currents of various values are individually flowed through the PTC element, resistance values of the PTC element individually become 1000-fold the corresponding resistance values measured at room temperature, against the currents in coordinates of current (abscissa) and temperature (ordinate),

said positive and negative electrodes and separator being disposed in said organic electrolytic solution,

wherein at least one of said positive and negative electrodes is in the form of a coating composition formed on a metallic current collector, said coating composition comprising an active material corresponding to said respective electrode and a binder, said metallic current collector being formed of a metallic foil having a surface roughness of from 0.1 to 0.9 μm.

5,631,101
MODULAR BATTERY PACK
Willard F. Amero, Jr., Flowery Branch, Ga., assignor to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 561,736, Nov. 22, 1995, Pat. No. 5,534,366. This application Apr. 19, 1996, Ser. No. 635,273
Int. Cl.° H01M *2/10*
U.S. Cl. 429—90 **9 Claims**



1. A modular battery pack for powering an electrical device, comprising:

a housing having a pocket formed therein, latching features formed in said pocket, spring contacts disposed in said pocket, battery contacts disposed on said housing for electrically connecting said modular battery pack with said electrical device, and a housing circuit disposed in said housing for connecting said spring contacts with said battery contacts; and

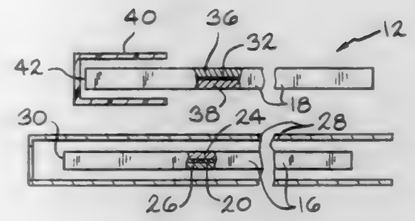
a battery cell cartridge, insertable into said pocket of said housing, and having a casing, at least one battery cell disposed in said casing, latching features formed on said casing corresponding with said latching features of said pocket for latching said battery cell cartridge into said pocket, and battery cell contacts corresponding with said spring contacts disposed on said casing for electrically interconnecting said at least one battery cell with said battery circuit.

5,631,102
SEPARATOR INSERT FOR ELECTROCHEMICAL CELLS
David M. Spillman, Tonawanda, and Esther S. Takeuchi, East Amherst, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.
Filed Feb. 12, 1996, Ser. No. 598,615
Int. Cl.° H01M *2/18;6/14*
U.S. Cl. 429—94 **22 Claims**

1. An electrochemical cell comprising:

(a) an anode comprising an anode active material in contact with an anode current collector;

(b) a cathode comprising an electrode active material in contact with a cathode current collector;

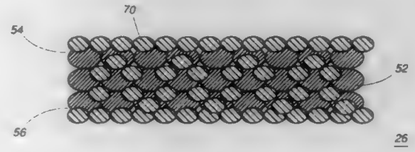


(c) a separator provided between the anode and the cathode operatively associated with each other, the separator preventing internal electrical short circuit conditions;

(d) a separator insert provided to cover an edge and at least one side of at least one of the anode and the cathode, the separator insert extending along the at least one anode and cathode a distance less than one-half the length thereof to prevent the covered portion of the one current collector in contact with the at least one anode and cathode from tearing through the separator and the separator insert; and

(e) an electrolyte activating the operatively associated anode and the cathode.

5,631,103
HIGHLY FILLED SOLID POLYMER ELECTROLYTE
Florence O. Eschbach; Manuel Oliver; Ganesh Venugopal, all of Duluth, and Shekhar Pendalwar, Lawrenceville, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 27, 1996, Ser. No. 720,062
Int. Cl.° H01M *6/18*
U.S. Cl. 429—190 **23 Claims**



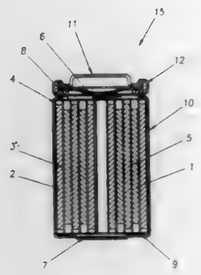
1. A rechargeable electrochemical cell including an anode, a cathode and an electrolyte system, said electrolyte system comprising: a polymeric support structure comprising at least 50 vol. % of a filler material and a gelling polymer; and

an electrolyte active species dispersed through at least said gelling polymer.

5,631,104
HIGH VOLTAGE INSERTION COMPOUNDS FOR LITHIUM BATTERIES
Qiming Zhong, Coquitlam, and Arman Bonakdarpour, North Vancouver, both of Canada, assignors to Moli Energy (1990) Limited, Canada
Filed Jan. 11, 1996, Ser. No. 583,974
Claims priority, application Canada, Sep. 13, 1995, 2158242
Int. Cl.° H01M *4/50;10/40;* **C01G** *45/12*
U.S. Cl. 429—194 **19 Claims**

1. A lithium insertion compound having the formula $Li_{x+y}M_yMn_{2-y-z}O_4$ wherein the insertion compound has a spinel-like crystal structure, M is a transition metal, x is a number greater than or equal to zero and less than 1, y is a number greater than or equal to zero and less than 0.33, z is a number greater than zero

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and less than about 1, and the potential of the lithium insertion compound is greater than about 4.5 volts versus Li/Li^+.

5,631,105

NON-AQUEOUS ELECTROLYTE LITHIUM SECONDARY BATTERY

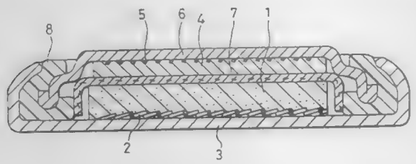
Masaki Hasegawa, Hirakata; Yasuhiko Bito, Minamikawachi-gun; Shuji Ito, Akashi; Toshihide Murata, Izumiotsu, and Yoshinori Toyoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1996, Ser. No. 651,365

Claims priority, application Japan, May 26, 1995, 7-128076; Jul. 14, 1995, 7-178781; Apr. 4, 1996, 8-082610

Int. Cl.[6] H01M *4/52;10/40*

U.S. Cl. 429—194 **6 Claims**



1. A non-aqueous electrolyte lithium secondary battery comprising a positive electrode, a negative electrode capable of absorbing and desorbing lithium in a reversible manner and a non-aqueous electrolyte, wherein said positive electrode comprises a compound represented by the formula $Li_xNi_{1-y}M_yO_{2+z}$, where M represents at least one element selected from the group consisting of Mg, Ca, Sr and Ba, and $0.05 \leqq x \leqq 1.1$, $0.01 \leqq y \leqq 0.3$, and $-0.3 \leqq z \leqq 0.1$.

5,631,106

ELECTRODES FOR LITHIUM ION BATTERIES USING POLYSILAZANES CERAMIC WITH LITHIUM

Jeffery R. Dahn, Surrey; Alf M. Wilson, Vancouver; Weibing Xing, Burnaby, all of Canada, and Gregg A. Zank, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 11, 1996, Ser. No. 661,533

Int. Cl.[6] H01M *4/02*

U.S. Cl. 429—218 **19 Claims**

1. A method of forming an electrode material for a lithium ion battery comprising:

(A) pyrolyzing a composition comprising a silazane polymer to form a ceramic material; and

(B) introducing lithium ions into the ceramic material to form an electrode material.

5,631,107

METHOD FOR PRODUCING OPTICAL MEMBER

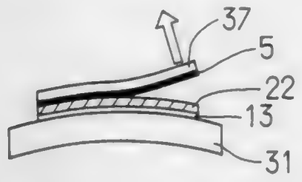
Hiroyuki Tarumi, Kariya; Teiyuu Kimura, Nagoya; Satoshi Koike, Chiryu; Kazumasa Kurokawa, Kariya; Tetsuya Kato, Okazaki, and Masayuki Goto, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 391,672, Feb. 17, 1995, abandoned. This application Aug. 30, 1996, Ser. No. 711,706

Claims priority, application Japan, Feb. 18, 1994, 6-045018; May 17, 1994, 6-128261

Int. Cl.[6] G03H *1/04*

U.S. Cl. 430—1 **25 Claims**



23. A method for producing an optical holographic member, comprising the steps of:

forming a hydrophilic coat film on a polymer film;

forming a holographic photosensitive film on said hydrophilic coat film;

exposing and developing said holographic photosensitive film to make it into a hologram having a holographic image;

coating an ultroviolet-curing adhesive resin on one of a surface of said hologram and a surface of a support plate on which said hologram is to be mounted;

causing a surface of said ultraviolet-curing adhesive resin to be sticky by irradiating said ultraviolet-curing adhesive resin with ultraviolet rays;

sticking said hologram onto said support plate using said ultraviolet-curing adhesive resin therebetween;

curing said ultraviolet-curing adhesive resin by irradiating said ultraviolet-curing adhesive resin with ultraviolet rays that are stronger than the ultraviolet rays used in the causing step, after said sticking step; and

peeling said polymer film along with said hydrophilic coat film off from said hologram, after said curing step.

5,631,108

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

Yoshihiko Okamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 288,905, Aug. 11, 1994, Pat. No. 5,484,671, which is a division of Ser. No. 87,074, Jul. 7, 1993, Pat. No. 5,358,807, which is a continuation of Ser. No. 730,221, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 437,268, Nov. 16, 1989, Pat. No. 5,045,417, and a continuation of Ser. No. 51,552, Apr. 23, 1993, Pat. No. 5,306,585, Ser. No. 51,351, Apr. 23, 1993, Pat. No. 5,350,649, and Ser. No. 51,238, Apr. 23, 1993, Pat. No. 5,352,550. This application May 25, 1995, Ser. No. 449,926

Claims priority, application Japan, Nov. 22, 1988, 63-295350; Oct. 2, 1989, 1-257226

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **4 Claims**

1. An integrated circuit device reduction projection exposure method for transferring a circuit pattern on a mask onto an integrated circuit wafer, the reduction projection exposure method comprising the step of focusing a reduced real image of the circuit pattern on the mask onto a photoresist film formed on a major surface of the wafer through an optical projection system with exposure light in such manner that the real image is made clear due to interference between transmitted light beams transmitted through the mask, the circuit pattern including a transmission region pattern having a first opening pattern, a second opening pattern adjacent thereto, and a light shield pattern defining the first and second opening patterns, and a transparent phase-shifting film pattern covering at least one surface portion of the second opening pattern and further extending onto the light shield pattern for reversing the phase of light passing through the at least one surface portion of the second opening pattern, the phase of the light passing through the at least one surface portion of the second opening pattern being substantially reversed in comparison with that of light passing through the first opening pattern, wherein the mask is formed by a mask making method comprising:

(a) preparing transmission region pattern data corresponding to the transmission region pattern;

(b) automatically preparing phase-shifting film pattern data corresponding to the phase-shifting film pattern in accordance with the transmission region pattern data corresponding to the transmission region pattern;

(c) forming the transmission region pattern on the mask according to the transmission region pattern data; and

(d) forming the phase-shifting film pattern on the mask according to the phase-shifting film pattern data.

5,631,109

EXPOSURE MASK COMPRISING TRANSPARENT AND TRANSLUCENT PHASE SHIFT PATTERNS

Shin-ichi Ito, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 377,249, Jan. 24, 1995, which is a continuation-in-part of Ser. No. 91,357, Jul. 15, 1993, Pat. No. 5,409,789. This application Jun. 7, 1995, Ser. No. 477,594

Claims priority, application Japan, Jul. 17, 1992, 4-191065; Sep. 25, 1992, 4-256779; May 25, 1993, 5-122815; Mar. 15, 1995, 7-055647

Int. Cl.[6] C03F *9/00*

U.S. Cl. 430—5 **24 Claims**



1. An exposure mask characterized in that the exposure mask is formed by providing a mask pattern comprising a transparent phase shift pattern and a translucent phase shift pattern on a light-transmissive substrate,

said transparent phase shift pattern and said translucent phase shift pattern cause a phase difference of 180° to exposure light passing through said transparent phase shift pattern relative to exposure light passing through said light transmissive substrate and said translucent phase shift pattern,

at least one opening portion in the mask pattern having at an adjacent region an overlap region of said transparent phase shift pattern and said translucent phase shift pattern region, and

a region of said translucent phase shift pattern provided on the outside of said overlap region.

5,631,110

PROCESS OF FABRICATING PHOTO-MASK USED FOR MODIFIED ILLUMINATION, PROJECTION ALIGNER USING THE PHOTO-MASK AND METHOD OF TRANSFERRING PATTERN IMAGE FROM THE PHOTO-MASK TO PHOTO-SENSITIVE LAYER

Satomi Shioiri, and Hiroyoshi Tanabe, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

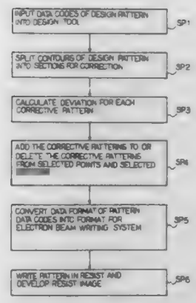
Filed Jul. 5, 1995, Ser. No. 498,335

Claims priority, application Japan, Jul. 5, 1994, 6-153185; Jul. 5, 1994, 5-153189; Nov. 21, 1994, 6-286265

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **11 Claims**

1. A process of fabricating a photo-mask available for a pattern transfer from a photo-mask to a photo-sensitive layer, comprising the steps of:



determining a design pattern having a target area, a first peripheral line of said target area being divided into a plurality of first sections respectively having target points;

determining a first image pattern having a deformed area image transferred from said target area to said photo-sensitive layer through said modified illumination and a second image pattern having a non-deformed area image obtained by transferring said target area onto said photo-sensitive layer without a deformation at a magnification ratio equal to a magnification ratio of said deformed area image, said deformed area image and said non-deformed area image respectively having a second peripheral line and a third peripheral line respectively divided into a plurality of second sections respectively corresponding to said plurality of first sections and a plurality of third sections respectively corresponding to said plurality of second sections, said plurality of second sections respectively having first reference points corresponding to said target points, said plurality of third sections respectively having second reference points corresponding to said first reference points;

determining a modified area having a fourth peripheral line divided into a plurality of fourth sections respectively corresponding to said plurality of first sections, said plurality of fourth sections having respective corrected points corresponding to said target points, distances between said target points and said corrected points being calculated through algebraic equations in such a manner that said plurality of fourth sections minimize differences in optical intensity between said first reference points and the corresponding second reference points;

replacing said target area with said modified area; and

forming a photo-mask having a modified pattern with said modified area.

5,631,111

METHOD FOR PRODUCING COLOR FILTERS

Chao-Wen Niu, Hsinchu; Hsien-Kuang Lin, Taipei; Hua-Chi Cheng, Hsinchu, and Pao-Ju Hsieh, Keelung, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 19, 1996, Ser. No. 588,962

Int. Cl.[6] G02B *5/20*

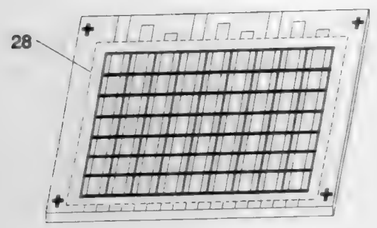
U.S. Cl. 430—7 **16 Claims**

1. A method for making color filters by electrodeposition or lithographic electrodeposition of a plurality of colored resins on an electrically conductive substrate, said method comprising the steps of:

(a) dividing said substrate into an intended zone and a conjugate zone, wherein said intended zone consists of portions of said substrate to be deposited with said colored resins and said conjugate zone consists of portions of said substrate not to be deposited with said colored resins; and

(b) forming a permanent insulation film on said conjugate zone of said substrate prior to electrodepositing said colored resins onto said intended zone of said substrate;

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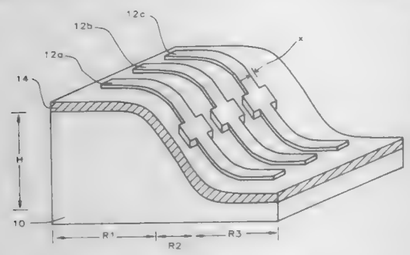
(c) wherein said permanent insulation film is formed on said conjugate zone according to the following steps:
(i) coating a photosensitive insulation film on said substrate;
(ii) subjecting said photosensitive insulation film to a masked exposure using a photomask;
(iii) developing said photosensitive insulation film into a developed insulation film, wherein said photomask is provided such that only said conjugate zone of said insulation film will remain on said substrate; and
(iv) curing said remaining insulation film to form a permanent insulation film on said conjugate zone of said substrate:
(d) further wherein said photosensitive insulation resin is a negative photosensitive resin containing:
(i) a resin binder containing a carboxyl (COOH) group;
(ii) 1–15 wt %, based on the weight of said resin binder, of a photopolymerization initiator; and
(iii) 30–100 wt %, based on the weight of said resin binder, of a photo-reactive monomer or oligomer.

5,631,112

MULTIPLE EXPOSURE METHOD FOR PHOTO-EXPOSING PHOTOSENSITIVE LAYERS UPON HIGH STEP HEIGHT TOPOGRAPHY SUBSTRATE LAYERS

Ming-Horn Tsai, Hsinchu; Bin Liu, Taipei, and Shih-Yin Lan, Hsin-Chu, all of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Continuation of Ser. No. 558,489, Nov. 16, 1995, abandoned. This application Oct. 7, 1996, Ser. No. 726,033
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—22 **19 Claims**



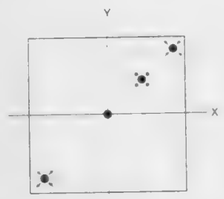
1. A method for photo-exposing within an integrated circuit a blanket conformal photosensitive layer upon a high step height topography substrate layer comprising:
providing within an integrated circuit a high step height topography substrate layer having a blanket conformal photosensitive layer formed thereupon, the high step height topography substrate layer having a first region having a first step height separated from a third region having a third step height by a second region having a second step height, the second step height being intermediate to the first step height and the third step height;
photo-exposing the blanket conformal photosensitive layer to form a first pattern upon the first region and the second region through the use of a first reticle and a first photo-exposure condition, the first photo-exposure condition providing a first depth of focus suitable for at least the first region; and,
photo-exposing the blanket conformal photosensitive layer to form a second pattern upon the second region and the third region through use of a second reticle and a second photo-exposure condition, the second photo-exposure condition providing a second depth of focus suitable for at least the third region, where the first pattern upon the second region and the second pattern upon the second region overlap, and where at least one of the first pattern upon the second region and the second pattern upon the second region has a serif formed therein, the serif providing improved resolution of the aggregate of the first pattern upon the second region and the second pattern upon the second region when both the first depth of focus and the second depth of focus are not suitable for the second region.

5,631,113

ELECTRON-BEAM EXPOSURE SYSTEM FOR REDUCED DISTORTION OF ELECTRON BEAM SPOT

Takamasa Satoh; Hiroshi Yasuda; Akio Yamada; Junichi Kai; Yoshihisa Oae; Keiji Yamada, and Toru Oshima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of Japan

Division of Ser. No. 319,022, Oct. 6, 1994, Pat. No. 5,444,257. This application May 5, 1995, Ser. No. 435,157
Claims priority, application Japan, Dec. 28, 1993, 5-337223
Int. Cl.[6] G03L *5/00;* **H01J** *37/00*
U.S. Cl. 430—30 **6 Claims**



1. A method for exposing a pattern on an object by scanning a surface of the object with a focused electron-beam, the focused electron-beam having a desired size as incident on the scan surface of the object when aligned with a central optical axis substantially perpendicular to the surface and being subject to changes in size of the beam as the beam is deflected from the central optical axis for scanning corresponding portions of the surface of the object displaced from the central optical axis, the method comprising the steps of:
dividing the surface of said object to be scanned by the focused electron-beam into a plurality of regions;
detecting the corresponding, different sizes of said electron-beam when selectively deflected to each of said plurality of regions;
storing data indicative of said detected, corresponding different sizes of said electron-beam, in association with said plurality of regions; and
exposing said pattern on said object by scanning the surface thereof with the focused electron-beam, the scanning step further comprising:
deflecting said focused electron-beam away from the central optical axis selectively to said plurality of regions for individually scanning each thereof, in a desired succession, and
for each of the plurality of regions to which the focussed electron beam is deflected, reading out the corresponding stored data and correcting the size of the focused electron-beam to maintain a desired size thereof.

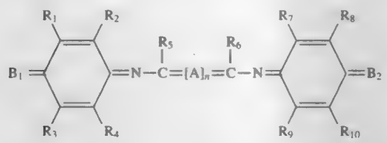
5,631,114

DERIVATIVES OF DIIMINOQUINONES USEFUL AS ELECTRON TRANSPORT AGENTS IN ELECTROPHOTOGRAPHIC ELEMENTS

Khe C. Nguyen, Los Altos, and Sivapackia Ganapathiappan, Fremont, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

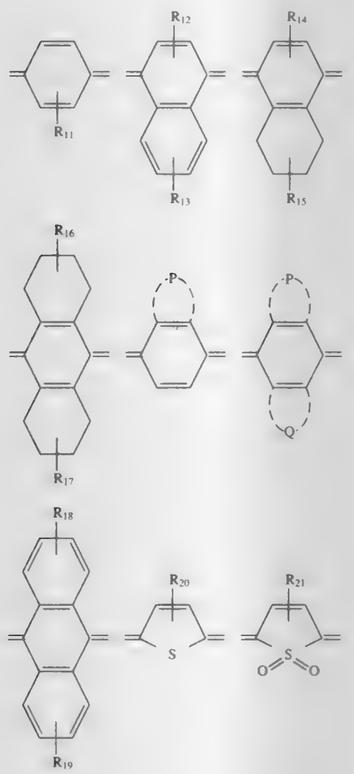
Filed Dec. 21, 1995, Ser. No. 576,234
Int. Cl.[6] G03G *5/04*
U.S. Cl. 430—58 **21 Claims**

1. An electrophotographic element for use in electrophotographic printing, said electrophotographic element including a charge generation region and a charge transport region and formed on an electrically conducting substrate, said charge transport region including at least one electron transport agent having the structure

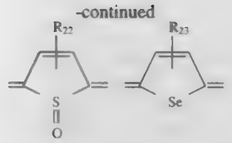


(I)

where A is a moiety selected from the group consisting of=CH—CH=,



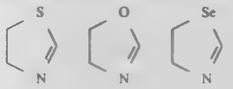
-continued



B_1 and B_2 are independently selected from the group consisting of O, S, Se, Te, dicyano, and alkoxy, and R_1 to R_{23} are independently selected from the group consisting of hydrogen, alkyl, alkoxy, alkene, aryl, hydroxy, halogen, cyano, nitro, and sulfuryl, n is an integer within the range of 0 to 3, and



are independently selected from the group consisting of



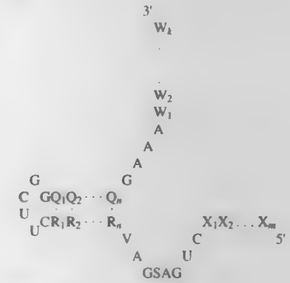
5,631,115

LOOPED, HAIRPIN RIBOZYME

Eiko Ohtsuka, Sapporo, and Makoto Koizumi, Tokyo, both of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

PCT No. PCT/JP93/00907, § 371 Date Dec. 29, 1994, § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO94/01549, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 2, 1993, Ser. No. 367,175
Claims priority, application Japan, Jul. 2, 1992, 4-175706; Sep. 4, 1992, 4-236916
Int. Cl.[6] C12P *19/34;* **C07H** *21/00*
U.S. Cl. 435—91.31 **22 Claims**

1. A polyribonucleotide represented by the following formula (I):



(I) (SEQ ID NO:11)

wherein,
U represents an uracil nucleotide, C a cytosine nucleotide, A an adenine nucleotide, and G a guanine nucleotide,
S represents either an uracil nucleotide, adenine nucleotide, cytosine nucleotide or guanine nucleotide,
V represents either an uracil nucleotide, adenine nucleotide, cytosine nucleotide or guanine nucleotide,
Q_1 through Q_n may be the same or different from one another and represent either a cytosine nucleotide or guanine nucleotide,
R_1 through R_n represent nucleotides that are respectively complementary to Q_1 through Q_n.

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W_1 through W_k may be the same or different from one another and represent either an uracil nucleotide, adenine nucleotide, cytosine nucleotide or guanine nucleotide,

X_1 through X_m may be the same or different from one another and represent either an uracil nucleotide, adenine nucleotide, cytosine nucleotide or guanine nucleotide, and

k, m and n may be the same or different from one another and represent an integer from 1 to 10.

5,631,116

CARRIER FOR ELECTROPHOTOGRAPHIC USE

Masafumi Uchida; Kishio Tamura, and Tsuneo Daidoji, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 278,316, Jul. 21, 1994, abandoned. This application Oct. 10, 1996, Ser. No. 728,665

Claims priority, application Japan, Aug. 23, 1993, 5-207983

Int. Cl.[6] G03G *9/113*

U.S. Cl. 430—108 **19 Claims**

1. A carrier for electrophotographic use having a resin-coated layer on the surface of the core member thereof, wherein said coated layer contains a copolymer having a Tg of 60° to 180° C. comprising a cyclohexyl methacrylate first monomer unit, with a second monomer unit of methylmethacrylate, ethylmethacrylate, propylmethacrylate, n-butylmethacrylate, hexylmethacrylate, octylmethacrylate or 2-ethylhexylmethacrylate and contains unpolymerized monomers in an amount of 10 to 2000 ppm relative to the whole coated layer and a surfactant in an amount of 5 to 1000 ppm relative to the whole coated layer.

5,631,117

MANUFACTURING METHOD OF AN IMAGE FORMING MATERIAL FOR LIGHT-HEAT CONVERTING HEAT MODE RECORDING

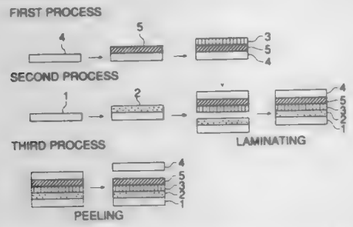
Atsushi Nakajima; Ai Katsuda; Sota Kawakami, and Shinji Kudo, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Jan. 18, 1996, Ser. No. 588,144

Claims priority, application Japan, Jan. 24, 1995, 7-008994

Int. Cl.[6] G03C *1/805:11/12;* **G03F** *7/34*

U.S. Cl. 430—200 **7 Claims**



1. A method of manufacturing a light-heat converting heat mode recording material comprising a support having thereon a cushion layer, an intermediate layer and an image forming layer in that order, the material comprising a light-heat converting substance, the method comprising the steps of:

a) providing a first unit comprising a first support;

b) providing a second unit comprising a second support having thereon the image forming layer, the intermediate layer and the cushion layer in that order, a releasing layer being provided between the second support and the image forming layer;

c) superposing the second unit on the first unit so that the image forming layer side is in close contact with the first support of the first unit; and

d) separating the second support from the image forming layer to form the recording material.

wherein the releasing layer contains a cross-linked compound, the releasing layer is insoluble in a coating solvent for both the intermediate layer and the image forming layer, or the releasing layer contains a fluorine-containing compound or a long chain alkyl group-containing compound.

5,631,118

IMAGING MEDIUM

Russell A. Gaudiana, Merrimack, N.H.; Robert W. Haddock, Malden, Mass.; John L. Marshall, Somerville, Mass.; Larry C. Takiff; Stephen J. Telfer, both of Arlington, Mass., and Michael A. Young, Natick, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 232,725, Apr. 25, 1994, Pat. No. 5,441,850. This application Apr. 28, 1995, Ser. No. 430,420

Int. Cl.[6] G03C *1/492:1/494;1/76*

U.S. Cl. 430—270.1 **30 Claims**

1. An imaging medium comprising an acid-generating layer or phase comprising a mixture of a superacid precursor, a sensitizing dye and a secondary acid generator, and a color-change layer or phase comprising an image dye;

the sensitizing dye having a first form and a second form, the first form having substantially greater substantial absorption in the first wavelength range than the second form;

the superacid precursor being capable of being decomposed to produce superacid by actinic radiation in a second wavelength range different from the first wavelength range, but not, in the absence of the sensitizing dye, being capable of being decomposed to produce superacid by actinic radiation in the first wavelength range;

the secondary acid generator being capable of thermal decomposition to form a secondary acid, the thermal decomposition of the secondary acid generator being catalyzed by unbuffered superacid; and

the image dye undergoing a change in its absorption of radiation upon contact with the secondary acid

the imaging medium further comprising a reagent capable of converting the sensitizing dye from its first form to its second form, said reagent being present either (a) in the color-change layer or phase; or (b) in a third layer interposed between the acid-generating layer and the color-change layer.

5,631,119

IMAGE-FORMING MATERIAL AND IMAGE FORMATION PROCESS

Fumiaki Shinozaki, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 281,688, Jul. 28, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 585,412

Claims priority, application Japan, Jul. 29, 1993, 5-188034; Jul. 29, 1993, 5-188035

Int. Cl.[6] G03F *7/26:7/023*

U.S. Cl. 430—326 **11 Claims**

1. An image formation process, which comprises

exposing an entire surface of an image-forming material which comprises a support having thereon, in the following order,

(1) a photosensitive composition layer comprising

(a) an o-quinonediazide compound, and

(b) an additive which reacts with a photoreaction product of said o-quinonediazide compound on heating to produce an alkali-insoluble matter, and

(2) a water-soluble high molecular compound layer or a silicon rubber layer,

to light rays which render said o-quinonediazide compound soluble in an alkaline developer,

imagewise heating the image-forming material, and then

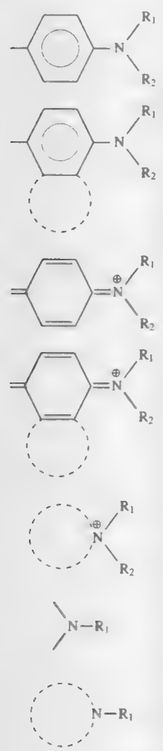
developing the image-forming material with an alkaline developer to remove those areas which have not been heated.

2. An image formation process, which comprises

exposing the entire surface of an image-forming material which comprise a support having thereon a photosensitive composition layer comprising the following compounds (a) and (b):

(a) an o-quinonediazide compound; and

(b) a dye comprising a group represented by any of the following formulas (1) to (7) and having a maximum absorption wavelength between 670 nm and 1,250 nm selected from the group consisting of a cyanine dye, an azlenium dye, a squarium dye, a croconium dye, a quinone dye, a thiazine dye and a xanthene dye; wherein the dye reacts with a photoreaction product of said o-quinonediazide compound on heating to produce an alkali-insoluble matter, and the dye is contained in the photosensitive composition layer in an amount of from 0.03 to 0.7 parts by weight based on the weight of said o-quinonediazide compound:



wherein R_1 and R_2 may be the same or different and each represent a hydrogen atom, an alkyl group, an alkoxy group, an aralkyl group or an aryl group;

to light rays which render said o-quinonediazide compound soluble in an alkaline developer,

irradiating the image-forming material with an infrared laser beam, and then

developing the image-forming material with an alkaline developer to remove those areas which have not been irradiated with the laser beam.

5,631,120

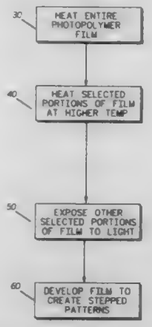
METHOD OF FORMING A PATTERN WITH STEP FEATURES IN A PHOTOPOLYMER

Thomas J. Swirbel, Davie, and Dale W. Dorinski, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 300,617, Sep. 2, 1994, abandoned. This application Mar. 20, 1996, Ser. No. 619,113

Int. Cl.[6] G03C *5/00:5/16*

U.S. Cl. 430—326 **5 Claims**



1. A method of forming a pattern with stepped features in a photopolymer, comprising the following steps in the order named:

a) providing a single layer of a photopolymer film;

b) heating the photopolymer film at a first temperature;

c) heating only selected first portions of the photopolymer film at a second temperature, the second temperature being greater than the first temperature;

d) exposing selected second portions of the photopolymer film to a laser beam; and

e) developing the photopolymer film under conditions sufficient to completely remove the exposed second portions and to remove only an upper section of the heated first portions.

5,631,121

PHOTOGRAPHIC PROCESSING

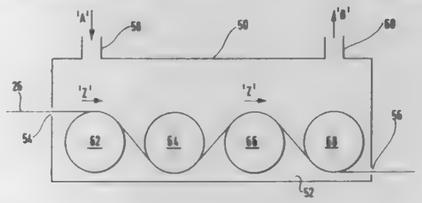
Michael Ridgway, Aldbury, and John R. Fyson, Hackney, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 518,731, Aug. 24, 1995, abandoned. This application Aug. 8, 1996, Ser. No. 694,225

Claims priority, application United Kingdom, Aug. 27, 1994, 9417319

Int. Cl.[6] G03C *5/29*

U.S. Cl. 430—423 **7 Claims**



1. A method of processing photographic material comprising the steps of:

developing the material in a developing solution;

bleaching and/or fixing the material; and

washing the material,

characterized in that the material is tempered in a conditioning chamber prior to entering the developing step such that the temperature of the material is adjusted to the temperature of

VOL 1198 ISS 3 MAY 20 1997 UMI

said developing solution and passed onto the developer solution while the material is still at the correct temperature for development.

5,631,122

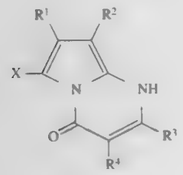
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Keiji Mihayashi, and Katsuyoshi Yamakawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

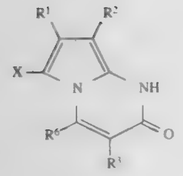
Filed Apr. 7, 1993, Ser. No. 43,894
Claims priority, application Japan, Apr. 7, 1992, 4-085777
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—506 **11 Claims**

1. A silver halide color photographic material having provided on a support at least one light-sensitive silver halide emulsion layer, wherein said photographic material contains a coupler selected from the group consisting of couplers represented by formulas (IIa) to (XIXa) and at least one coupler selected from the group consisting of couplers represented by formulas (II) and (III):

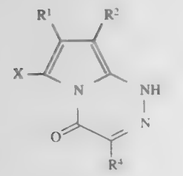
(IIa)



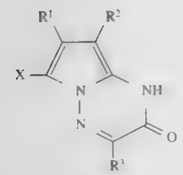
(IIIa)



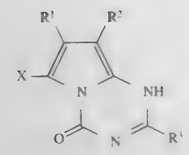
(IVa)



(Va)

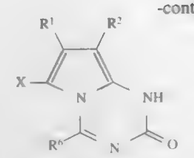


(VIa)

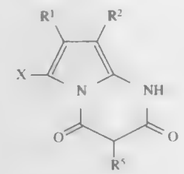


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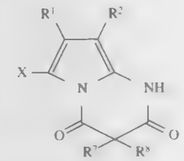
(VIIa)



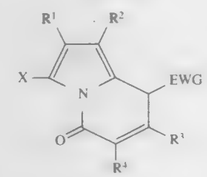
(VIIIa)



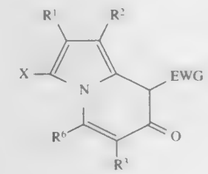
(IXa)



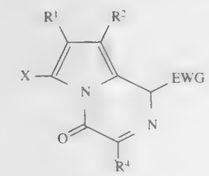
(Xa)



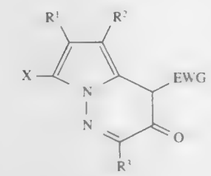
(XIa)



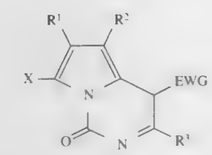
(XIIa)



(XIIIa)

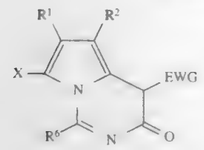


(XIVa)

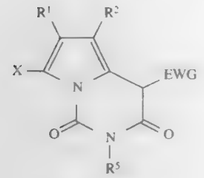


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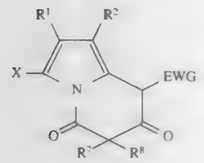
(XVa)



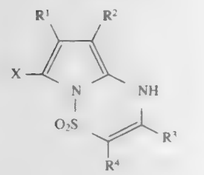
(XVIa)



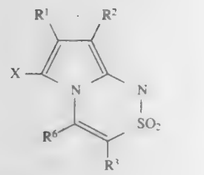
(XVIIa)



(XVIIIa)



(XIXa)



wherein

R_1 represents a hydrogen atom or a substituent;

R_2 represents a substituent;

X represents a hydrogen atom or a leaving group capable of splitting off in a coupling reaction with an oxidation product of a color developing agent;

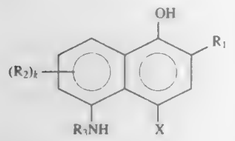
R_3, R_5, R_6, R_7 and R_8 are the same as or different from each other and each represents a hydrogen atom or a substituent;

R_4 represents a substituent;

EWG represents an electron attracting group having a Hammett's substituent constant σp value of 0.35 or more; and

said coupler may be in the form of a bis- or higher-form by bonding via a divalent or higher valent group at R_1, R_2, R_3, R_4, R_5, R_6, R_7 or R_8, or may be in the form of a polymer by bonding to a polymer chain at R_1, R_2, R_3, R_4, R_5, R_6, R_7 or R_8;

(II)



wherein

R_1 represents $-CONR_4R_5$, $-SO_2NR_4R_5$, $-NHCOR_4$, $-NHCOOR_6$, $-NHSO_2R_6$, $-NHCONR_4R_5$ or $-NHSO_2NR_4R_5$;

R_2 represents a substituent;

k represents an integer of from 0 to 3, and when k is 2 or 3, the plural R_2 groups are the same as or different from each other or may be bonded to each other to form a ring;

R_3 represents a substituent;

X represents a hydrogen atom or a leaving group capable of splitting off in a coupling reaction with an oxidation product of a color developing agent;

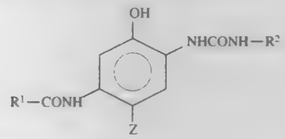
R_4 and R_5 are the same as or different from each other and each independently represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group, and R_4 and R_5 may be bonded to each other to form a nitrogen containing heterocyclic ring;

R_6 represents an alkyl group, an aryl group or a heterocyclic group;

R_2 and R_3, or R_3 and X may be bonded to each other to form a ring; and

the coupler may be in the form of a bis or higher form by bonding via a bivalent or higher valent group at R_1, R_2, R_3 or X, or may be in the form of a polymer by bonding to a polymer chain at R_1, R_2, R_3 or X;

(III)



wherein

R^1 represents an alkyl group, an aryl group or a heterocyclic group;

R^2 represents an aryl group; and

Z represents a hydrogen atom or a leaving group capable of splitting off in a coupling reaction with an oxidation product of a color developing agent.

5,631,123

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Ryuji Abe, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1995, Ser. No. 419,537
Claims priority, application Japan, Apr. 14, 1994, 6-075917
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—506 **5 Claims**

1. A silver halide color photographic material comprising a support having provided thereon at least one blue-sensitive emulsion layer, at least one green-sensitive emulsion layer and at least one red-sensitive emulsion layer, wherein at least one emulsion layer in any one of the color-sensitive layers contains a silver halide grain having incorporated therein a rhodium ion and wherein said at least one emulsion layer or a layer adjacent to said at least one emulsion layer contains a silver halide emulsion comprising (i) inside and/or surface fogged substantially light-insensitive grains or (ii) colloidal silver.

5,631,124

METHOD OF PRODUCING A PHOTOGRAPHIC POLYESTER LAMINATE SUPPORT

Isao Ikuhara; Fumio Kawamoto; Yoshiki Sakaino; Shohei Yoshida, and Yasutomo Goto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1995, Ser. No. 379,935
Claims priority, application Japan, Jan. 28, 1994, 6-008802
Int. Cl.[6] G03C *1/795;* **B32B** *3/10*
U.S. Cl. 430—533 **17 Claims**

1. A method of producing a photographic polyester laminate support comprising a laminate of layers of at least two kinds of

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polyesters each having a glass transition temperature (Tg) within the range of from 90° C. to 180° C., which comprises

subjecting the laminate of layers of polyesters to heat-fixing in a temperature range defined by formula (1):

$$\text{Heat-fixing temperature (°C.)} = (Tm(L) - 50) \text{ to } (Tm(H) - 10) \qquad \text{formula (1)}$$

wherein Tm(H) (°C.) means the highest melting temperature of polyesters that constitute the laminate support, and Tm(L) (°C.) means the lowest melting temperature of polyesters that constitute the laminate support, and

wherein each of the polyesters contains no hydrophilic group, and wherein the temperature of heat-fixing is higher than the Tg.

5,631,125

PHOTOGRAPHIC USEFUL GROUP RELEASING SYSTEM

Jean-Marie Dewanckele, Drongen; Johan Loccufier, Zwijnaarde; Pierre De Clercq, Gent; Dirk Van Haver, Sint-Niklaas, and Noel Hosten, Brugge, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 29, 1996, Ser. No. 609,964

Claims priority, application European Pat. Off., Mar. 9, 1995, 95200573

Int. Cl.[6] G03C *1/34;1/42;1/43;7/305*

U.S. Cl. 430—566 **9 Claims**

1. Photographic element comprising a support and at least one silver halide emulsion layer characterized in that said element further contains a compound which comprises in its molecular structure a redox moiety capable of forming a radical under photographic development conditions, said radical being capable of splitting by one or more consecutive reaction(s) a homolytically labile bond present in said same compound, thereby releasing a photographically useful group, wherein said compound corresponds to following general formula (I):

Redox-Link-X-PUG (I)

wherein,

PUG together with X, defined hereinafter, represents a photographically useful group,

Redox is a moiety capable of forming a radical under photographic development conditions,

Link is (a) an optionally substituted methylene group, or (b) a divalent linking group having an endstanding carbon atom at the side bonded to X and containing at least one radical trapping functional group chosen from the following list, and present in the indicated position vis-à-vis the original position of the generated radical:

(b.1) a Z═Y or Z═Y group, in the chain or exo positioned, in any of the fifth to ninth positions, wherein Z represents C, S or N, and Y represents C, S, O or N;

(b.2) a C—H, C—Cl, C—Br, C—I or N—H group in any of the fifth to seventh positions; and

(b.3) an aryl or a hetero-aryl group in any of the third to ninth positions;

(b.4) a carbocyclic or heterocyclic three-membered ring in any of the fifth to ninth positions; with the proviso that after the final trapping of the radical the X-PUG group takes the β-position vis-à-vis the final radical, and that there are no conformational restraints making this intramolecular reaction impossible;

X represents —S—, —Se—, —Sn— or SO_2—, —O— or —N— linked by one side to PUG, and by the other side to the endstanding carbon atom of Link thereby forming a homolytically labile bond.

5,631,126

EPITAXIALLY SENSITIZED TABULAR GRAIN EMULSIONS CONTAINING SPEED/FOG SULFODIHYDROXY ARYL ENHANCING ADDENDA

Richard L. Daubendiek; Jeffrey L. Hall, both of Rochester, and Melvin M. Kestner, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1994, Ser. No. 363,477

Int. Cl.[6] G03C *1/08;1/34*

U.S. Cl. 430—567 **15 Claims**

1. A radiation-sensitive silver halide emulsion comprising silver halide tabular grains

(a) having {111} major faces,

(b) containing greater than 70 mole percent bromide, based on silver,

(c) accounting for greater than 90 percent of total grain projected area,

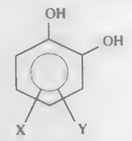
(d) exhibiting an average equivalent circular diameter of at least 0.7 μm,

(e) exhibiting an average thickness of less than 0.07 μm, and

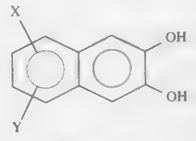
(f) having latent image forming chemical sensitization sites on the surfaces of the tabular grains, and

a spectral sensitizing dye adsorbed to the surfaces of the tabular grains,

wherein the surface chemical sensitization sites include at least one chemically sensitized silver salt epitaxially located on less than 50 percent of the surface of said tabular grains and said emulsion further comprising at least one sulfodihydroxy aryl compound represented by the Formulas I or II



(Formula I)



(Formula II)

wherein

X and Y represent an SO_3 group or a hydrogen with at least one of X and Y being a sulfo group wherein the silver salt is predominantly located adjacent at least one of the edges and corners of the tabular grains.

5,631,127

ENZYMATIC ASSAY FOR HOMOCYSTEINE AND A KIT THEREFOR

Erling Sundrehagen, Moss, Norway, assignor to Axis Biochemicals AS, Oslo, Norway

Division of Ser. No. 256,367, Sep. 14, 1994. This application May 16, 1995, Ser. No. 442,104

Claims priority, application Norway, Jan. 22, 1992, 920282; United Kingdom, Mar. 6, 1992, 9204922

Int. Cl.[6] C12Q *1/00;1/34;* **G01N** *33/53;* **A01N** *55/02*

U.S. Cl. 435—4 **24 Claims**

1. In a method for assaying homocysteine in a sample, said method comprising the steps of (i) contacting said sample with a homocysteine converting enzyme and at least one substrate for said enzyme other than homocysteine, and (ii) assessing an analyte which is a substrate for said enzyme, wherein the improvement comprises in step (i) contacting said sample with a said substrate other than homocysteine and in step (ii) without chromatographic separation assessing a non-labelled analyte selected from the group consisting of a homocysteine co-substrate and the homocysteine conversion products of the enzymic conversion of homocysteine by said enzyme.

5,631,128

POLYMERASE CHAIN REACTION ASSAYS FOR MONITORING ANTIVIRAL THERAPY AND MAKING THERAPEUTIC DECISIONS IN THE TREATMENT OF ACQUIRED IMMUNODEFICIENCY SYNDROME

Michael J. Kozal, Menlo Park, and Thomas C. Merigan, Portola Valley, both of Calif., assignors to Leland Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 883,327, May 14, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,311

Int. Cl.[6] C12Q *1/70;1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—5 **15 Claims**

1. A method of evaluating the effectiveness of antiretroviral therapy of an HIV-infected patient comprising:

(i) collecting a plasma sample from an HIV-infected patient who is being treated with an antiretroviral agent; and

(ii) determining whether the plasma sample comprises nucleic acid encoding HIV reverse transcriptase having a mutation at codon 74, or codons 215 and 74,

in which the presence of the mutations correlates positively with future immunologic decline of the patient within a six to twelve month period.

5,631,129

TARGET NUCLEIC ACID AMPLIFICATION/DETECTION SYSTEMS AND METHODS FOR THE USE THEREOF

Barbara C. Chu, Del Mar; Gerald F. Joyce, Encinitas, and Leslie E. Orgel, La Jolla, all of Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 74,261, Jun. 9, 1993, abandoned, which is a continuation of Ser. No. 710,433, Jun. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 279,817, Dec. 5, 1988, abandoned. This application May 16, 1995, Ser. No. 441,784

Int. Cl.[6] C12Q *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—5 **21 Claims**



1. Co-functioning nucleic acid primers useful for forming a recombinant, autocatalytically replicatable RNA having incorporated therein a target RNA sequence, said co-functioning primers comprising:

(1) a first nucleic acid primer comprising:

(a) at its 5'-end, a first portion of an autocatalytically replicatable RNA, wherein the complement of said first portion is a segment of an autocatalytically replicatable RNA which comprises the 3'-end of an autocatalytically replicatable RNA which is capable of RNA-dependent RNA polymerase-directed autocatalytic replication, and wherein said first portion is a segment of a (+) strand or a (−) strand of an autocatalytically replicatable RNA, including the 5'-end; and

(b) at its 3'-end, a first probe sequence which is capable of hybridizing to a segment of a target RNA sequence, and priming an extension reaction, using the target RNA sequence as template, to produce a first primer extension product which includes an RNA sequence complementary to the target RNA sequence; and

(2) a second nucleic acid primer comprising:

(a) at its 5'-end, a second portion derived from the opposite strand of said autocatalytically replicatable RNA, wherein the complement of said second portion comprises the 3'-end of an autocatalytically replicatable RNA which is capable of RNA-dependent RNA polymerase-directed autocatalytic replication, and wherein said second portion is a segment of a (+) strand or a (−) strand of said autocatalytically replicatable RNA, including the 5'-end; and

(b) at its 3'-end, a second probe sequence which is capable of hybridizing to a segment of said RNA sequence complementary to the target RNA sequence and priming an extension reaction, using the first extension product as template, to produce a second primer extension product which is autocatalytically replicatable RNA having incorporated therein a target RNA sequence;

provided that either the first or second portion of said autocatalytically replicatable RNA is derived from the (+) strand and the other portion of said autocatalytically replicatable RNA is derived from the (−) strand of the same autocatalytically replicatable RNA, and further provided that one of said cofunctioning primers includes a replicase binding site.

5,631,130

MATERIALS AND METHODS FOR THE DETECTION OF *MYCOBACTERIUM TUBERCULOSIS*

Gregor W. Leckie, Highland Park; Alan H. Davis, Vernon Hills; Ingrid E. Semple-Facey, Beach Park; Matthew T. Manlove, Vernon Hills, and Natalie A. Solomon, Buffalo Grove, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 13, 1994, Ser. No. 242,403

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **11 Claims**

1. A composition for detecting a target DNA sequence from *Mycobacterium tuberculosis*, said composition comprising a probe pair wherein said probe pair is characterized by:

a) said probe pair consists of two oligonucleotide probes each having between about 10 and about 30 nucleotides wherein each of said two oligonucleotide probes is complementary to different regions of said target DNA and are capable of hybridizing with a sequence within said target DNA sequence and wherein said target DNA sequence is SEQ ID NO. 21 or its complement; and

b) said probe pair does not detect *Mycobacterium avium*.

4. A method for detecting the presence of target DNA from *Mycobacterium tuberculosis* in a sample, said method utilizing the ligase chain reaction comprising the steps of:

a) providing a sample suspected of containing said target DNA;

b) providing one or more probe pairs according to claim **1**, wherein at least one probe of said probe pair has a label capable of detection;

c) providing a ligase; and

d) performing the following cycle at least once

i) hybridizing said probe pair to said target DNA thereby creating hybridized probes,

ii) correcting at least one of said hybridized probes in a template dependent manner,

iii) ligating said hybridized probes to form reorganized probes, and

iv) detecting said label in said reorganized probes as an indication of the presence of target DNA from *Mycobacterium tuberculosis*.

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5,631,131

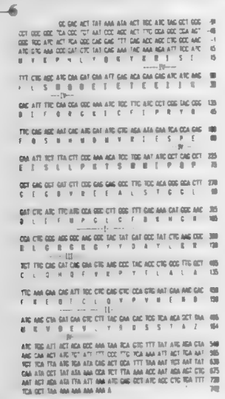
CDNA PROBES AND ANTIBODIES FOR HUMAN METHENYLTETRAHYDROFOLATE SYNTHETASE

Jacques Jolivet, Mount Royal, Canada, and Alain Dayan, Tours, France, assignors to Université De Montréal, Montreal, Canada

Continuation-in-part of Ser. No. 33,857, Mar. 19, 1993, Pat. No. 5,389,516. This application Jan. 19, 1995, Ser. No. 374,983

Int. Cl.[6] **C12N 15/11;15/12;15/52; C12Q 1/68**

U.S. Cl. 435—6 4 Claims



1. A cDNA probe for the detection of a mRNA encoding a for human methenyltetrahydrofolate synthetase (MTHFS), which comprises at least one nucleic acid sequence selected from the group consisting of SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, and any contiguous sequence of at least twelve nucleotides selected from the MTHFS-encoding region of SEQ ID NO:10, SEQ ID NO: 11, SEQ ID NO:12, SEQ ID NO:13 and SEQ ID NO:14.

5,631,132

NUCLEIC ACID PROBES AND METHODS FOR DETECTING *CANDIDA GLABRATA* DNA IN BLOOD

Timothy J. Lott; Christine J. Morrison, both of Atlanta; Errol Reiss, Chamblee; Brent Lasker, Atlanta, and Sandra Zakroff, Clarkston, all of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 65,845, May 20, 1993, Pat. No. 5,426,027. This application Apr. 26, 1995, Ser. No. 429,523

The portion of the term of this patent subsequent to Jun. 20, 2012, has been disclaimed.

Int. Cl.[6] **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 9 Claims

1. An isolated double stranded nucleic acid consisting of the nucleotide sequence defined in the Sequence Listing by SEQ ID NO: 8.

5,631,133

TRANSITION IN TRANSCRIPTIONAL ACTIVATION BY INTRACELLULAR HORMONE RECEPTORS AT THE TUMOR STAGE OF DERMAL FIBROSARCOMA DEVELOPMENT

Douglas Hanahan; Keith R. Yamamoto, and Maria d. M. Vivanco, all of San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 12, 1995, Ser. No. 439,813

Int. Cl.[6] **C12Q** *1/68;* **C12P** *21/00;* **C12N** *15/65;5/10*

U.S. Cl. 435—6 20 Claims

1. A method of detecting posttranslational regulation of an intracellular hormone receptor in the presence of a cognate hormone, comprising:

i. transfecting a eukaryotic cell with a recombinant expression cassette which comprises a marker gene operably linked to a promotor with a DNA binding site for the intracellular receptor;

ii. transfecting an immortal eukaryotic cell with the expression cassette of step (i) , wherein the cell of step (i) and the cell of step (ii) express the intracellular receptor in a non rate limiting amount;

iii. contacting the eukaryotic cell of step (i) and the immortal eukaryotic cell of step (ii) with the cognate hormone;

iv. measuring the level of expression of the marker gene in the eukaryotic cell of step (i) and the eukaryotic cell of step (ii): and,

v. comparing the level of expression of the marker gene in the eukaryotic cell of step (i) and the immortal eukaryotic cell of step (ii).

5,631,134

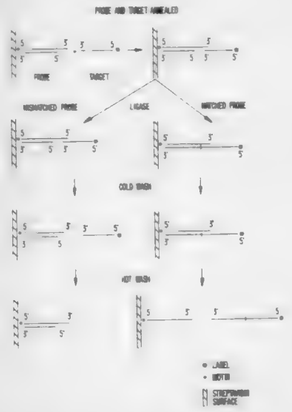
METHODS OF PREPARING PROBE ARRAY BY HYBRIDATION

Charles R. Cantor, Boston, Mass., assignor to The Trustees of Boston University, Boston, Mass.

Division of Ser. No. 322,526, Oct. 17, 1994, Pat. No. 5,503,980, which is a continuation of Ser. No. 972,012, Nov. 6, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,704

Int. Cl.[6] **C07H** *21/04;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 18 Claims



1. A method for creating a nucleic acid probe array comprising the steps of:

a) hybridizing a plurality of single-stranded first nucleic acids to a plurality of longer, single-stranded second nucleic acids complementary to the first nucleic acids wherein each second nucleic acid contains a variable terminal nucleotide sequence to form probes each having a double-stranded portion and a single-stranded portion with the variable nucleotide sequence in the single-stranded portion;

b) hybridizing target nucleic acids to the probes;

c) ligating hybridized targets to the first nucleic acids of the probes;

d) isolating the second nucleic acids; and

e) hybridizing additional first nucleic acids to isolated second nucleic acids to form the nucleic acid probe array.

5,631,135

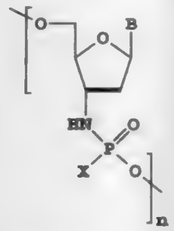
OLIGONUCLEOTIDE N3'→P5' PHOSPHORAMIDATES: HYBRIDIZATION AND NUCLEASE RESISTANCE PROPERTIES

Sergei M. Gryaznov, San Mateo; Ronald G. Schultz, Fremont, and Jer-Kang Chen, Palo Alto, all of Calif., assignors to Lynx Therapeutics, Inc., Hayward, Calif.

Division of Ser. No. 214,599, Mar. 18, 1994. This application Jun. 6, 1995, Ser. No. 473,015

Int. Cl.[6] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04*

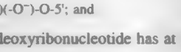
U.S. Cl. 435—6 40 Claims



1. A method of hybridizing an oligodeoxyribonucleotide to an RNA target, comprising:

(a) forming an oligodeoxyribonucleotide comprising a sequence of nucleoside subunits joined by inter-subunit linkages, wherein:

(i) at least 50% of the inter-subunit linkages of said oligodeoxyribonucleotide are N3'→P5' phosphoramidate inter-subunit linkages of the formula:



3'-NH-P(=O)(-O⁻)-O-5'; and

(ii) said oligodeoxyribonucleotide has at least 11 nucleotides; and

(b) contacting the oligodeoxyribonucleotide with said RNA target to allow formation of a hybridization complex between said oligodeoxyribonucleotide and said RNA target.

5,631,136

PROCESS FOR THE DETECTION OF COMPLEXED CATHEPSIN G AND α-1-ANTICHYMOTRYPSIN

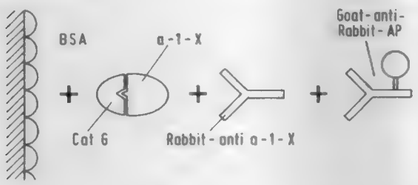
Klaus Havemann, Marburg, and Hans-Heinrich Heidtmann, Marburg-Bauerbach, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 76,214, Jun. 10, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 353,342

Claims priority, application European Pat. Off., Jun. 13, 1992, 92109994

Int. Cl.[6] **G01N** *33/53*

U.S. Cl. 435—7.4 11 Claims



1. A process for detecting complexes of α-1-antichymotrypsin and cathepsin G in a sample, comprising:

(a) providing a solid phase wherein surface of the solid phase is saturated with a coating capable of adsorbing said cathepsin G but not said α-1-antichymotrypsin and wherein said coating is selected from the group consisting of a non-specific binding protein and gelatin;

(b) contacting the sample to the solid phase of step (a) to adsorb said complexes;

(c) contacting the solid phase of step (b) with an antibody which specifically binds to the α-1-antichymotrypsin present in the adsorbed complexes; and,

(d) detecting bound antibody to detect the complexes in the sample.

5,631,137

REACTION-BASED SELECTION FOR EXPRESSION OF AND CONCENTRATION OF CATALYTIC MOIETIES

Mark T. Martin, Germantown; Rodger G. Smith, Jefferson; Michael J. Darsley, Rockville; David M. Simpson, Adelphi, and Gary F. Blackburn, Gaithersburg, all of Md., assignors to Igen, Inc., Gaithersburg, Md.

Continuation of Ser. No. 250,934, May 31, 1994, abandoned, which is a continuation of Ser. No. 101,274, Aug. 2, 1993, abandoned, which is a continuation of Ser. No. 841,648, Feb. 24, 1992, abandoned. This application Jan. 24, 1995, Ser. No. 377,495

Int. Cl.[6] **C12Q** *1/25;* **C12N** *9/00*

U.S. Cl. 435—7.6 7 Claims

1. A process for selecting a recombinant virus population capable of expressing a surface bound catalytic moiety, said process comprising the steps of:

(a) selecting from a population of recombinant viruses suspected of including viruses capable of expressing the catalytic moiety a subpopulation of recombinant viruses capable of expressing the catalytic moiety based upon interactions between the catalytic moiety and a desired substrate corresponding to the catalytic moiety and located on a surface; and

(b) isolating said subpopulation from said population of recombinant viruses.

5,631,138

METHOD FOR THE MEASUREMENT OF SERUM BILE ACIDS BY ELISA AND METHOD FOR THE DIAGNOSIS OF LIVER DISEASE

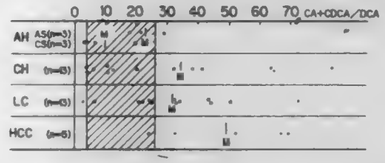
Motonari Kano, and Masaru Matsumoto, both of Tokyo, Japan, assignors to Yuugengaisha B.S.R., Tokyo, Japan

Filed Jan. 31, 1995, Ser. No. 381,497

Claims priority, application Japan, Nov. 24, 1994, 6-290104

Int. Cl.[6] **G01N** *33/53*

U.S. Cl. 435—7.92 6 Claims



1. A method for diagnosing the presence of a liver disease in an individual to be tested comprising:

(a) individually measuring the concentration of each bile acid in the group consisting of cholic acid, chenodeoxycholic acid, deoxycholic acid and ursocholic acid in a serum sample from the individual to be tested, according to the following steps: for each of the bile acids,

(i) preparing an ester of the bile acid;

(ii) reacting a portion of the ester with bovine serum albumin to produce an immunogen, dialyzing the immunogen, immunizing a mammal other than a human being with the dialyzed immunogen to obtain an anti-bile acid antibody;

(iii) reacting another portion of the ester with an enzyme to produce an enzyme-labelled bile acid;

(iv) providing a microtiter plate, wherein each well is coated with an anti-species immunoglobulin antibody, wherein the species is the same species as that of the immunized mammal;

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(v) contacting individual wells of the microtiter plate with (A) the anti-bile acid antibody, (B) the enzyme-labelled bile acid, and (C) either an aliquot of the serum sample from the individual being tested, a serum sample from a healthy individual or a control sample comprising a known concentration of the bile acid;
(vi) washing the microtiter plate of step (e);
(vii) contacting the individual wells of the microtiter plate with a substrate for the labelling enzyme to produce a detectable product in proportion to the amount of bound enzyme-labeled bile acid in the individual well;
(viii) measuring the absorbance of the individual wells;
(ix) constructing a standard curve based upon the absorbance of the control sample; and,
(x) determining the concentrations of the serum bile acid in the serum sample from the individual being tested and from the healthy individual using the standard curve;
(b) calculating total bile acid concentrations for both the individual being tested and the healthy individual;
(c) calculating an individual bile acid/total bile acid concentration ratio for each bile acid for both the individual being tested and the healthy individual; and,
(d) comparing corresponding bile acid ratios between the individual being tested and the healthy individual wherein an increased bile acid ratio in the individual being tested indicates the presence of liver disease.

5,631,139

METHOD AND COMPOSITIONS FOR ENHANCING AMINOLEVULINIC ACID DEHYDRATASE ASSAY

Martin Wong, Grayslake, and David M. Finley, Spring Grove, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 171,121, Dec. 21, 1993, abandoned. This application Jul. 26, 1995, Ser. No. 507,168
Int. Cl.[6] C12Q *1/34*; G01N *33/00*
U.S. Cl. 435—18 **28 Claims**

1. A lead assay comprising the steps of:
(a) providing an aqueous solution suspected of containing lead;
(b) isolating said lead from said solution in such a manner that said lead remains in solution;
(c) introducing to said solution of step (b) an enhancing reagent that combines with said lead and prevents said lead from precipitating from said solution; followed by
(d) introducing to said solution an enzyme the activity of which is inhibited in the presence of lead and a substrate for said enzyme; and
(e) measuring the amount of lead as a function of said activity of said enzyme.

5,631,140

METHOD FOR THE QUANTITATIVE DETERMINATION OF GLYCATED PROTEINS

Uwe Kobold, Wielenbach; Doris Renauer, Graefelfing; Andreas Finke, Penzberg, and Johann Karl, Peissenberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Jul. 17, 1995, Ser. No. 503,224
Claims priority, application Germany, Jul. 18, 1994, 44 25 162.9
Int. Cl.[6] C12Q *1/34*
U.S. Cl. 435—23 **19 Claims**

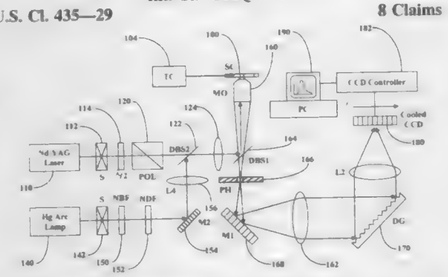
1. A method for the determination of a glycated protein relative to non-glycated protein in an aqueous sample, comprising:
reacting the sample with a proteolytic enzyme to form a peptide mixture comprising an amount of glycated peptides and an amount of non-glycated peptides,
separating said glycated peptides and said non-glycated peptides in said peptide mixture, and
determining said glycated protein relative to said non-glycated protein by measuring the amount of said glycated peptides and the amount of said non-glycated peptides and comparing the amount of said glycated peptides with the amount of said non-glycated peptides.

5,631,141

HIGH RESOLUTION BIOSENSOR FOR IN-SITU MICROTHERMOMETRY

Gregory J. Sonek; Yagang Liu; Bruce J. Tromberg, all of Irvine, and Michael W. Berns, Canyon, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 5, 1995, Ser. No. 435,354
Int. Cl.[6] C12Q *1/02*
U.S. Cl. 435—29 **8 Claims**



1. A method for high resolution in-situ measurement of temperature at a location within an aqueous biological system comprising:
(a) selecting a vesicle comprising a phospholipid membrane impregnated with an environmentally sensitive fluorescent dye, said membrane having a transition temperature at which said membrane undergoes a phase transition between gel and liquid-crystalline states chosen to be in predetermined relationship to the anticipated temperature range of the system to be measured, said membrane having a known relationship between generalized polarization and temperature, generalized polarization being the ratio (IG−IL)/(IG+IL) of the difference to the sums of the intensities measured at the maximum emission wavelengths in the gel (IG) and liquid-crystalline (IL) phases;
(b) introducing said vesicle into the biological system to be measured;
(c) manipulating said vesicle to the location where temperature is to be measured;
(d) optically measuring the generalized polarization of said vesicle; and
(e) calculating a value for the temperature of said system from said generalized polarization measured and said known relationship between temperature and generalized polarization for said membrane of said vesicle.

5,631,142

COMPOSITIONS COMPRISING BONE MORPHOGENETIC PROTEIN-2 (BMP-2)

Elizabeth A. Wang, Carlisle; John M. Wozney, Hudson, and Vicki A. Rosen, Brookline, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 884,353, May 18, 1992, abandoned, which is a division of Ser. No. 378,537, Jul. 11, 1989, Pat. No. 5,166,058, which is a continuation-in-part of Ser. No. 179,100, Apr. 8, 1988, Pat. No. 5,013,649, which is a continuation-in-part of Ser. No. 28,285, Mar. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 943,332, Dec. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 880,776, Jul. 1, 1986, abandoned. This application Sep. 7, 1993, Ser. No. 118,363
Int. Cl.[6] C07K *14/51*; C12N *15/12*
U.S. Cl. 435—69.1 **12 Claims**

1. A composition comprising a purified protein produced by the steps of

(a) culturing in a suitable culture medium a cell transformed with a DNA sequence comprising nucleotides #356 to #1543 as shown in FIG. 2; and
(b) recovering and purifying the maulting secreted protein from said culture medium.

5,631,143

K. LACTIS PYRUVATE-DECARBOXYLASE PROMOTER AND USE THEREOF

Sandrine Menart, Les Ulis, and Monique Bolotin, Gif-sur-Yvette, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00694, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/01569, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 6, 1993, Ser. No. 362,511
Claims priority, application France, Jul. 8, 1992, 92 08428
Int. Cl.[6] C12P *21/02*; C12N *15/14;15/81*; C07N *21/04*
U.S. Cl. 435—69.1 **12 Claims**

1. A DNA sequence selected from the group consisting of:
(a) the sequence presented in SEQ ID NO: 1 or SEQ ID NO 4;
(b) a complementary strand of the sequence presented in SEQ ID NO: 1 or SEQ ID NO 4; and
(c) a fragment of the sequence of (a) or (b); wherein said DNA sequence possesses transcriptional promoter activity.

5,631,144

APPLICATION OF NOVEL DNA FRAGMENTS AS A CODING SEQUENCE FOR A SIGNAL PEPTIDE FOR THE SECRETION OF MATURE PROTEINS BY RECOMBINANT YEAST, EXPRESSION CASSETTES, TRANSFORMED YEAST AND CORRESPONDING PROCESS FOR THE PREPARATION OF PROTEINS

Yves Lemoine, Strasbourg; Martine Nguyen, Wittersheim, both of France; Tilman Achstetter, Oberkirch, Germany, and Jean-Marc Reichhart, Strasbourg, France, assignors to Transgene S.A., Courbevoie, France

Continuation of Ser. No. 178,356, Jan. 4, 1994, abandoned, which is a continuation of Ser. No. 32,175, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 623,900, Feb. 26, 1991, abandoned. This application Feb. 7, 1995, Ser. No. 385,375
Claims priority, application France, Apr. 28, 1989, 89 05687; WIPO, Apr. 27, 1990, PCT/FR90/00306
Int. Cl.[6] C12N *1/19;5/10;15/63;15/81*
U.S. Cl. 435—69.9 **25 Claims**

1. An isolated DNA fragment comprising a DNA sequence which codes for a peptide comprising the amino acid sequence (III) (SEQ ID NO:5) R_1-R_2-R_3-Thr-Thr-R_4-Ala-Thr-Ala-Ala-Thr-Ala-Leu-Phe-Phe-Thr-Ala-R_5-R_6 in which
R_1 is an amino acid selected from Arg and Lys
R_2 and R_6 are each an amino acid selected independently from Ala, Asn, Cys, Gln, Gly, His, Ile, Leu, Met, Phe, Pro, Set, Thr, Trp, Tyr, and Val,
R_3 and R_5 are each an amino acid selected independently from Asp, Gly, Asn, Pro, and Ser, and
R_4 is an amino acid selected from Val, Leu, Ala, Cys, Phe, Ile and Met, wherein the peptide acts as a signal sequence.

5,631,145

PROCESS FOR PRODUCING HUMAN SERUM ALBUMIN

Kaoru Kobayashi; Kenji Tomomitsu; Shinobu Kuwae; Tomoshi Ohya, and Toyoo Ohda, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Nov. 28, 1994, Ser. No. 348,172
Claims priority, application Japan, Nov. 26, 1993, 5-296260
Int. Cl.[6] C12P *21/00;21/02*; C12N *1/14*
U.S. Cl. 435—71.1 **7 Claims**

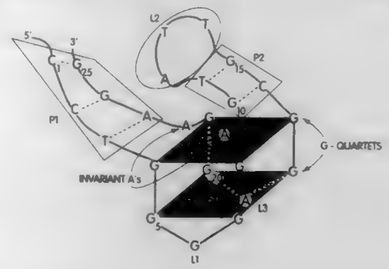
1. A process for producing recombinant human serum albumin which comprises culturing a human serum albumin producing host at a temperature of from 21° to 29° C., wherein the human serum albumin producing host is a strain of yeast of the genus Kluyveromyces.

5,631,146

DNA APTAMERS AND CATALYSTS THAT BIND ADENOSINE OR ADENOSINE-5'-PHOSPHATES AND METHODS FOR ISOLATION THEREOF

Jack W. Szostak, Boston, and David E. Huizenga, Winthrop, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Jan. 19, 1995, Ser. No. 375,116
Int. Cl.[6] C12P *19/34*; C12Q *1/68*; C07H *21/04*; A61K *48/00*
U.S. Cl. 435—91.1 **12 Claims**



1. A method for producing a single-stranded DNA molecule that binds adenosine or an adenosine-5'-phosphate, comprising the steps of:
a) providing a population of DNA molecules each having a region of random sequence;
b) contacting said population with adenosine or adenosine-5'-phosphate;
c) isolating a subpopulation of said population by partitioning DNA molecules in said population which specifically bind said adenosine or adenosine-5'-phosphate from those which do not;
d) amplifying said subpopulation in vitro;
e) optionally repeating steps b–d for said amplified subpopulation;
f) obtaining from said amplified subpopulation a single-stranded DNA molecule capable of binding adenosine or an adenosine-5'-phosphate.

5,631,147

DETECTION OF NUCLEIC ACIDS IN CELLS BY THERMOPHILIC STRAND DISPLACEMENT AMPLIFICATION

Kenton L. Lohman, San Jose; Natalie V. Ostrerova, Mountain View, both of Calif.; Mark V. Cleve, and Robert A. Reid, both of Durham, N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 21, 1995, Ser. No. 531,747
Int. Cl.[6] C12P *19/34*; C12Q *1/68*
U.S. Cl. 435—91.2 **35 Claims**

1. A method for amplifying a double stranded HIV gag target sequence comprising the steps of:

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a) hybridizing a first amplification primer comprising the target binding sequence of SEQ ID NO:1 3' to the target sequence on a first strand of the target sequence and hybridizing a second amplification primer comprising the target binding sequence of SEQ ID NO:2 3' to the target sequence on a second strand of the target sequence;

b) extending the first and second amplification primers with polymerase to produce first and second amplification primer extension products;

c) displacing the first and second amplification primer extension products from the target sequence, and;

d) repeating the hybridizing, extending and displacing steps such that the target sequence is amplified.

5,631,148

RIBOZYMES WITH PRODUCT EJECTION BY STRAND DISPLACEMENT

Michael S. Urdea, Alamo, Calif., assignor to Chiron Corporation, Emeryville, Calif.

Filed Apr. 22, 1994, Ser. No. 231,227

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/00;21/04*

U.S. Cl. 435—91.31 **28 Claims**

1. A synthetic ribozyme polynucleotide having a first end and a second end, comprising from said first end to said second end:

a catalytic region having endonuclease activity specific for a target polynucleotide sequence of a substrate;

a first substrate binding region linked to said catalytic region, said first substrate binding region comprising a first competitive binding nucleotide sequence capable of forming a first hybrid with said substrate; and

a first displaceable antisense arm linked to said first substrate binding region, wherein said first displaceable antisense arm comprises a first stabilization region and a second stabilization region, said first stabilization region being capable of hybridizing with said second stabilization region, and a first displacement region capable of forming a second hybrid with said competitive binding nucleotide sequence.

5,631,149

VARIANT-TYPE CARBOHYDRATE HYDROLASE, VARIANT GENE OF THE ENZYME AND METHOD FOR PRODUCING OLIGOSACCHARIDE USING THE ENZYME

Ikuo Matsui, Tsukuba, Japan; Kazuhiko Ishikawa, Ottawa, Canada; Sachio Miyairi, and Koichi Honda, both of Tsukuba, Japan, assignors to Director-General Of Agency Of Industrial Science Of Technology, Tokyo, Japan

Division of Ser. No. 204,656, Mar. 2, 1994, Pat. No. 5,538,882. This application Jun. 6, 1995, Ser. No. 470,702

Claims priority, application Japan, Mar. 4, 1993, 69303

Int. Cl.[6] C12N *9/10;9/30;* **C12P** *19/04;19/14*

U.S. Cl. 435—101 **1 Claim**

1. A method for producing a malto-oligosaccharide of a polymerization degree of 7 or more, comprising subjecting a substrate malto-oligosaccharide to transglycosylation with a variant α-amylase from *Saccharomycopsis Fibuligera* in which the tyrosine residue at position 83 of the amino acid sequence thereof is substituted with a phenylalanine, a tryptophan, a leucine, or an asparagine residue.

5,631,150

MANUFACTURING OF XYLITOL USING RECOMBINANT MICROBIAL HOSTS

Anu M. Harkki, Espoo; Andrey N. Myasnikov, Kantvik; Juha H. A. Apajalahti, Helsinki, and Ossi A. Pastinen, Kantvik, all of Finland, assignors to Xyrofin Oy, Kotka, Finland

Continuation of Ser. No. 110,672, Aug. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 973,325, Nov. 5, 1992, abandoned. This application Jan. 3, 1995, Ser. No. 368,395

Int. Cl.[6] C12P *19/02;* **C12N** *1/15;1/19*

U.S. Cl. 435—105 **29 Claims**

1. A method for production of xylitol from a recombinant microbial host, wherein said method comprises:

a) growing an arabitol-producing yeast or an arabitol-producing fungus under conditions that provide for synthesis of said xylitol, wherein said arabitol-producing yeast or said arabitol-producing fungus has been modified to synthesize xylitol as an end product in a single fermentation when grown on D-arabitol or a carbon source that the unmodified arabitol-producing yeast or unmodified arabitol-producing fungus utilized for D-arabitol biosynthesis, said carbon source being other than D-xylose, D-xylulose, mixtures of D-xylose and D-xylulose, and polymers and oligomers containing D-xylose or D-xylulose as major components under conditions that provide for synthesis of said xylitol wherein before said modification said host produced D-arabitol but did not utilize said D-arabitol for the synthesis of xylitol, and wherein said host has been transformed with a DNA encoding a D-xylulose forming D-arabitol dehydrogenase (E.C. 1.1.1.11) and with a DNA encoding xylitol dehydrogenase (E.C. 1.1.1.9); and

b) recovering said xylitol produced in step a.

5,631,151

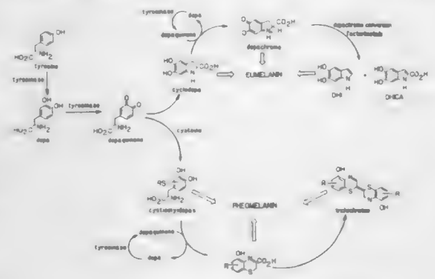
MELANIN PRODUCTION BY TRANSFORMED ORGANISMS

Guy della-Cioppa; Stephen J. Garger, Jr.; Genadie G. Sverlow; Thomas H. Turpen; Laurence K. Grill, all of Vacaville; Miles R. Chedekel, Orland, and Monto H. Kumagai, Davis, all of Calif., assignors to Biosource Technologies, Inc., Vacaville, Calif.

Division of Ser. No. 607,119, Nov. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 545,075, Jun. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 251,809, Oct. 3, 1988, abandoned. This application Mar. 20, 1992, Ser. No. 857,602

Int. Cl.[6] C12P *7/66;13/22;* **C12N** *9/02*

U.S. Cl. 435—133 **13 Claims**



1. A method for over-producing melanins, comprising:

(a) growing a melanin-producing Streptomyces microorganism, wherein said microorganism is transformed with a vector comprising:

a first DNA sequence which encodes a tyrosinase, and

a second DNA sequence which encodes tyrosinase activator sequence selected from the group consisting of a *Streptomyces antibioticus* tyrosinase activator sequence derived from the mel locus, and a *Streptomyces glaucescens* tyrosinase activator sequence derived from the mel locus; in a medium comprising:

casein nydrolysate or casein peptone as a nitrogen source,

$CuSO_4 \cdot 5H_2O$,

20–90% dissolved oxygen,

between 1.2 and 1.6 g/l of l-tyrosine, or an amount sufficient to saturate the solution during fermentation,

wherein said growth medium does not comprise a carbohydrate as an energy source;

(b) extracting said melanins from the growth medium.

5,631,152

RAPID AND EFFICIENT REGENERATION OF TRANSGENIC PLANTS

Joyce E. Fry, St. Louis, and Hua-ping Zhou, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 26, 1994, Ser. No. 329,742

Int. Cl.[6] C12N *15/00;15/05*

U.S. Cl. 435—172.3 **12 Claims**

1. A method for regenerating a fertile transformed wheat plant to contain foreign DNA comprising the steps of:

(a) producing regenerable tissue from said plant to be transformed:

(b) transforming said regenerable tissue with said foreign DNA where said foreign DNA comprises a selectable DNA sequence, where said sequence functions in a regenerable tissue as a selection device;

(c) between about one day to about 21 days after step b) placing said regenerable tissue from step b) in a medium capable of producing shoots from said tissue wherein said medium further contains a compound used to select regenerable tissue containing said selectable DNA sequence to allow identification or selection of the transformed regenerated tissue;

(e) after at least one shoot has formed from the selected tissue of step c), transferring said shoot to a second medium capable of producing roots from said shoot to produce a plantlet; and,

(e) growing said plantlet into a fertile, transgenic wheat plant wherein the foreign DNA is transmitted to progeny plants in mendelian fashion.

5,631,153

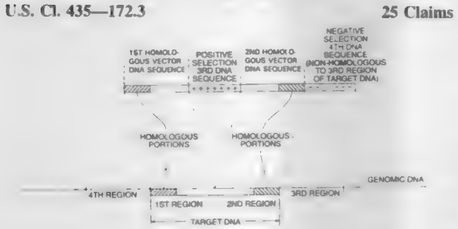
CELLS AND NON-HUMAN ORGANISMS CONTAINING PREDETERMINED GENOMIC MODIFICATIONS AND POSITIVE-NEGATIVE SELECTION METHODS AND VECTORS FOR MAKING SAME

Mario R. Capecchi, and Kirk R. Thomas, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation of Ser. No. 14,083, Feb. 4, 1993, Pat. No. 5,464,764, which is a continuation of Ser. No. 397,707, Aug. 22, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 463,813

Int. Cl.[6] C12N *5/00;15/00*

U.S. Cl. 435—172.3 **25 Claims**



16. A method for selecting a transformed cell containing a modification in a target DNA sequence in the genome of said cell comprising:

(a) transfecting cells capable of mediating homologous recombination with a positive-negative selection vector comprising:

a first homologous vector DNA sequence capable of homologous recombination with a first region of said target DNA sequence,

a positive selection marker DNA sequence capable of conferring a positive selection characteristic in said cells,

a second homologous vector DNA sequence capable of homologous recombination with a second region of said target DNA sequence, and

a negative selection marker DNA sequence, capable of conferring a negative selection characteristic in said cells, but substantially incapable of homologous recombination with said target DNA sequence,

wherein the spatial order of said sequences in said PNS vector is: said first homologous vector DNA sequence, said positive selection marker DNA sequence, said second homologous vector DNA sequence and said negative selection marker DNA sequence as shown in FIG. 1,

wherein the 5'-3' orientation of said first homologous vector sequence relative to said second homologous vector sequence is the same as the 5'-3' orientation of said first region relative to said second region of said target sequence;

wherein the vector is capable of modifying the target DNA sequence by homologous recombination of said first and second homologous vector sequences with the first and second regions of said target sequence;

(b) selecting for transformed cells in which said positive-negative selection vector has integrated into said target DNA sequence by homologous recombination by sequentially or simultaneously selecting against transformed cells containing said negative selection marker and selecting for cells containing said positive selection marker, and

(c) analyzing the DNA of transformed cells surviving the selection step to identify a cell containing the modification.

5,631,154

SELF ASSEMBLED, DEFECTIVE, NON-SELF-PROPAGATING LENTIVIRUS PARTICLES

Gail P. Mazzara, Winchester; Dennis L. Panicali, Acton; Bryan Roberts, Cambridge; Linda R. Gritz, Somerville, all of Mass.; Virginia Stallard, Sequim, Wash., and Anna Mahr, Natick, Mass., assignors to Therion Biologics, Incorporated, Cambridge, Mass.

Continuation of Ser. No. 580,538, Sep. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 540,109, Jun. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 360,027, Jun. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 205,454, Jun. 10, 1988, abandoned. This application Feb. 16, 1993, Ser. No. 18,344

Int. Cl.[6] C12N *15/86;15/63;* **A61K** *39/21;* **C07K** *14/155*

U.S. Cl. 435—236 **12 Claims**

1. An avipox virus vector having inserted therein at least two DNA sequences from a single species of lentivirus, wherein one of the lentivirus DNA sequences is the env gene and the other of the lentivirus DNA sequences is selected from the group consisting of the gag gene and gag-pol gene, such that the lentivirus DNA sequences express either env and gag proteins, or express env and gag-pol proteins in a eukaryotic host cell co-infected with the two pox virus vectors, and the lentivirus proteins self-assemble into defective, non-self-propagating lentivirus particles.

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5,631,155

SACCHAROPOLYSPORA SPINOSA STRAIN

Jan R. Turner, Carmel; Mary L.B. Huber, Danville; Mary C. Broughton; Jon S. Mynderse, both of Indianapolis, and James W. Martin, Coatesville, all of Ind., assignors to Dow-Elanco, Indianapolis, Ind.

Division of Ser. No. 397,306, Mar. 2, 1995, which is a continuation of Ser. No. 973,121, Nov. 6, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,462

Int. Cl.° C12N *1/20*

U.S. Cl. 435—252.1 1 Claim

1. A biologically pure culture of *Saccharopolyspora spinosa* NRRL 18823, or an A83543Q-producing mutant thereof.

5,631,156

DNA ENCODING AND 18 KD CDK6 INHIBITING PROTEIN

Yue Xiong, Chapel Hill, N.C., and Kunliang Guan, Ann Arbor, Mich., assignors to The University of Michigan, Ann Arbor, Mich., and The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Jun. 21, 1994, Ser. No. 263,935

Int. Cl.° C12N *1/21;5/10;15/12;15/63*

U.S. Cl. 435—252.3 6 Claims

1. An isolated nucleic acid encoding a CDK6 inhibiting protein, said nucleic acid sequence selected from the group consisting of:

(a) DNA having the nucleotide sequence given herein as SEQ ID NO:1; and

(b) nucleic acids which differ from the nucleic acid of (a) above due to the degeneracy of the genetic code, and which encode the CDK6 inhibiting protein encoded by the DNA of (a) above.

5,631,157

BACTERIAL STRAIN OF ESCHERICHIA COLI VNII GENETIKA 472T23 AS THE PRODUCER OF L-THREONINE

Vladimir G. Debabov; Jury I. Kozlov; Evgeny M. Khurges; Vitaly A. Livshits; Nelli I. Zhdanova; Mikhail M. Gusyatiner; Alexander K. Sokolov, and Tatyana A. Bachina, all of Moscow, Russian Federation, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 336,563, Nov. 9, 1994, which is a continuation of Ser. No. 872,141, Apr. 22, 1992, abandoned, which is a division of Ser. No. 499,278, Jun. 12, 1990, Pat. No. 5,175,107. This application Apr. 28, 1995, Ser. No. 430,455

Int. Cl.° C12N *1/21*

U.S. Cl. 435—252.33 2 Claims

1. An *E. coli* strain VNII genetika 472T23 which is deposited at the American Type Culture Collection under Accession No. ATCC 98081.

5,631,158

METHODS AND COMPOSITIONS FOR HIGH PROTEIN PRODUCTION FROM NON-NATIVE DNA

Haimanti Dorai, Lexington, and Herrmann Oppermann, Medway, both of Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Continuation of Ser. No. 143,498, Oct. 25, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,184

The portion of the term of this patent subsequent to Oct. 25, 2013, has been disclaimed.

Int. Cl.° C12N *5/16;15/09;15/13;15/33*

U.S. Cl. 435—172.3 26 Claims

1. A method of manufacturing a cell line for the enhanced production of a biosynthetic single chain binding protein, the method comprising the steps of:

(a) transfecting an immortalized eukaryotic cell with a nucleic acid comprising a DNA sequence encoding a viral transcription activator protein that acts on and stimulates a viral promoter, wherein said DNA sequence encoding said viral transcription activator protein is operatively associated with, and under the control of, a DNA sequence defining a transcription promoter sequence which can induce transcription of said viral transcription activator protein DNA sequence, said transcription promoter DNA sequence being selected to permit unlimited or limited transcription of said viral transcription activator protein DNA sequence;

(b) transfecting said immortalized eukaryotic cell with nucleic acids comprising:

(1) a DNA sequence encoding a viral transcription promoter operatively associated with a non-native reporter DNA sequence encoding a biosynthetic single chain binding protein, said viral transcription promoter capable of being stimulated by said viral transcription activator protein, and competent to act on and induce transcription of said reporter DNA sequence to produce an RNA transcript, said transcript, when translated, producing a single-chain binding protein that, when properly folded, has a structural conformation capable of mono- or bifunctional binding activity; and

(2) a DNA sequence encoding an RNA sequence, said RNA sequence promoting translation of said RNA transcript from step (b)(1) above;

(c) culturing said transfected cell under conditions that allow said transfected cell to integrate into its genome said DNA sequences such that said integration permits growth of said cell and production of said single-chain binding protein, said protein being produced at a level greater than if said cell is transfected with said reporter DNA sequence alone or in combination with only one of the DNA sequences of step (a) or (b)(2) above; and

(d) identifying a clone of said cultured transfected cell of step (c) that expresses at least 1 μg single-chain binding proteins/10^6 cell/ml.

5,631,159

LIPID-MODIFIED SERUM FREE MEDIA

Paul G. Marshall, Berkley, and Patrick M. Guertin, Mendon, both of Mass., assignors to Creative BioMolecules, Inc., Hopkinton, Mass.

Filed Sep. 22, 1993, Ser. No. 124,676

Int. Cl.° C12N *5/00*

U.S. Cl. 435—383 27 Claims

1. An improved serum-free cell culture medium having improved cell viability or recombinant protein production properties, wherein the improvement comprises an additive formed by alchohol hydrolysis of an intact phosphoglyceride ester defining a substituted glycerol wherein the hydroxyl group at each of C1 and C2 is esterified to the carboxyl group of a fatty acid and the C3 is esterified to a phosphate, the alcohol hydrolysis being sufficient to release one alkylated fatty acid ester from said phosphoglyceride.

5,631,160

METHOD FOR IN SITU SOIL REMEDIATION

Bruce L. Bruso, R.R. 1, Box 1T, Hegins, Pa. 17938

Continuation-in-part of Ser. No. 57,342, May 3, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 287,275

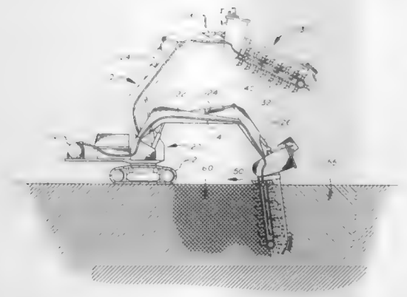
Int. Cl.° A62D *3/00*; B09C *1/06;1/10*

U.S. Cl. 435—262.5 19 Claims

1. A process for remediating a contaminated material at a contaminated site comprising:

comminuting the contaminated material with a trenching tool mechanism having a trenching tool; and

injecting a remediation fluid into the contaminated material in the proximity of the trenching tool below the surface of the contaminated material while the material is being commi-



nuted by the trenching tool, using a sufficient amount of remediation fluid, under conditions and for a time sufficient to remediate the contaminated material to provide a remediated material.

5,631,161

Patent Not Issued For This Number

5,631,162

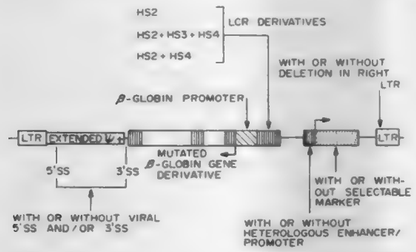
RETROVIRAL VECTORS FOR TRANSDUCING β-GLOBIN GENE AND β-LOCUS CONTROL REGION DERIVATIVES

Philippe LeBoulch; Irving M. London, both of Cambridge, and Dorothy Tuan, Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 11, 1993, Ser. No. 76,090

Int. Cl.° C12N *15/64;15/68;15/85;15/86*

U.S. Cl. 435—320.1 38 Claims



1. A method of making a retroviral vector for transducing β-globin genes and β-LCR sequences comprising the steps of:

(a) providing a retroviral vector in combination with a β-globin gene and an effective portion of the HS2 enhancer of the β-LCR, with or without additional β-LCR sites, to achieve transduction and expression of the β-globin gene, and

(b) modifying a DNA sequence of the second intron of the β-globin gene, and complementary/reverse splice-signals, polyadenylation signals, or combinations thereof, to remove or inactivate splicing sites or polyadenylation signals of the transduced β-globin gene or β-LCR, to form a retroviral vector characterized by:

i) stability of proviral transmission upon infection of cell-lines and murine bone marrow cells,

ii) viral titer effective to achieve infection of bone marrow cells, and

iii) high erythroid expression of the transduced human β-globin gene.

5,631,163

METHOD FOR THE DETERMINATION OF SPECIFIC GRAVITY OF FLUIDS

Michael J. Pugia, Granger, and Rena A. Ide, Elkhart, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed Oct. 23, 1995, Ser. No. 546,904

Int. Cl.° G01N *31/00*

U.S. Cl. 436—2 12 Claims

1. In a method for determining the specific gravity of a fluid test sample which method comprises combining the test sample with an acidic or basic polyelectrolyte polymer which is at least about 50 percent neutralized and a pH indicator capable of producing a detectable response based on interaction between the polyelectrolyte and the fluid test sample, the improvement which comprises introducing a crown ether ionophore into the combination of fluid sample, polymer and indicator.

5,631,164

METHOD OF DETERMINATION OF FLUORESCENT SUBSTANCE AND METHOD OF ASSAY OF ENZYME ACTIVITY

Hidechika Hayashi, Kanagawa, and Kazuya Kamata, Toyama, both of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Nov. 1, 1995, Ser. No. 551,490

Claims priority, application Japan, Nov. 8, 1994, 6-273746

Int. Cl.° G01N *21/64*

U.S. Cl. 436—8 5 Claims

1. A method for determining the concentration of a fluorescent substance, comprising adding a known amount of a reference fluorescent substance to a specimen containing an objective fluorescent substance to be determined; irradiating the specimen with excitation light capable of exciting both the objective fluorescent substance and the reference fluorescent substance; measuring a first fluorescence intensity at a first wavelength where fluorescence is emitted mainly by the objective fluorescent substance; measuring a second fluorescence intensity at a second wavelength where fluorescence is emitted mainly by the reference fluorescent substance; and calculating the concentration of the objective fluorescent substance from the equation:

$$1/(y-c)=a/x+b$$

where x is the concentration of the objective fluorescent substance, y is a ratio of the first fluorescence intensity to the second fluorescence intensity, and a, b and c are constants determined by measuring fluorescence intensities of reference specimens containing at least three different concentrations of the objective fluorescent substance.

5,631,165

METHOD FOR PERFORMING AUTOMATED HEMATOLOGY AND CYTOMETRY ANALYSIS

Vernon L. Chupp, Los Altos; Peter E. Lobban, Palo Alto; Young R. Kim, Sunnyvale; Roderick W. Larue, Sebastopol, and John P. Stuart, Mt. View, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 283,379, Aug. 1, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 488,532

Int. Cl.° G01N *33/533*

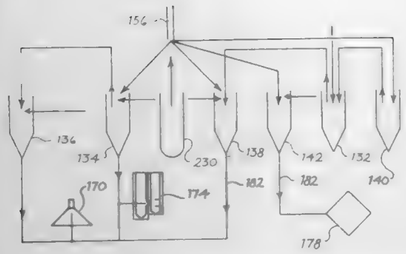
U.S. Cl. 436—43 10 Claims

1. An automated method for distinguishing and differentiating cells in a whole blood sample with an automated instrument system capable of performing both hematology and fluorescent cytometry analysis to which the whole blood sample is provided, the automated method comprising the steps of:

(a) selecting a series of one or more tests to be performed on the whole blood sample, and correlating the tests to be performed to the sample;

(b) aspirating a volume of the whole blood sample;

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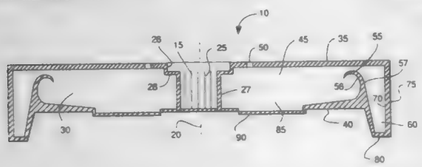
(c) dispensing an aliquot of the whole blood sample into at least three sample receiving vessels;
(d) diluting one or more first aliquots of the whole blood sample with a diluent reagent in at least one of the at least three sample receiving vessels, thereby producing a diluted sample;
(e) lysing at least one second aliquot of the whole blood sample with a lysing reagent in at least one of the at least three sample receiving vessels, thereby producing a lysed sample;
(f) transporting at least one aliquot of the diluted sample through a first flow transducer of the automated instrument system;
(g) detecting and counting red blood cells in the at least one aliquot of diluted sample with the first flow transducer;
(h) transporting at least one aliquot of the lysed sample through a second flow transducer;
(i) detecting multi-angle light scatter from the aliquot of lysed sample and counting and differentiating white blood cells or cell surface antigens in the aliquot of lysed sample with the second flow transducer;
(j) detecting multi-angle light scatter and fluorescence from the lysed sample or the diluted sample and counting and differentiating nucleated red blood cells or reticulocytes and cell surface antigens in the lysed sample or the diluted sample with the second flow transducer;
(k) storing data for the tests performed on the whole blood sample; and
(l) reporting results of each test performed on the whole blood sample,
wherein the automated instrument system automatedly performs method steps (a) through (l) without physically separating cells from the whole blood sample or an aliquot thereof and results of the hematology analysis are utilized in at least reporting of results of the fluorescent cytometry analysis.

5,631,166

SPECIMEN DISK FOR BLOOD ANALYSES

Charles R. Jewell, 9810 Kingsbridge Dr., #102, Fairfax, Va. 22031

Filed Mar. 21, 1995, Ser. No. 407,630
Int. Cl.[6] G01N *21/07*
U.S. Cl. 436—45 **6 Claims**



1. A specimen disk for receiving a plurality of fluid specimens to be subjected to centrifugal separation and visual analyses comprising:
a generally circular disk member having a plurality of reaction wells radiating outwardly from a central bore;
means for accurately positioning said specimen disk during said centrifugal separation and visual analysis;
means for introducing fluids into each of said reaction wells;
a plurality of waste chambers each associated with a corresponding one of said plurality of reaction wells; and
barrier means for trapping particulates when said disk is subjected to said centrifugal separation, said barrier means being positioned between each reaction chamber and a corresponding waste chamber and including an upstanding wall with inner and outer surfaces, an upper portion of said inner surface being substantially curved upward and inward toward said central bore in a generally C-shaped form in cross-section wherein
each of said plurality of reaction wells includes a viewing area for containing a portion of said fluid specimen after said centrifugal separation and facilitating microscopic viewing of said fluid specimen therein.

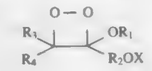
5,631,167

CAPSULE CHEMISTRY ANALYTICAL METHODS EMPLOYING DIOXETANE CHEMILUMINESCENCE

Robert F. Adolfsen, Montrose, N.Y.; Hashem Akhavan-Tafti, Sterling Heights, Mich.; Renuka De Silva, Northville, Mich., and A. Paul Schaap, Grosse Pointe Park, Mich., assignors to Bayer Corporation, Tarrytown, N.Y., and Board of Governors Wayne State Univ., Detroit, Mich.

Filed Jul. 31, 1995, Ser. No. 509,692
Int. Cl.[6] G01N *35/08;21/76*
U.S. Cl. 436—53 **17 Claims**

1. In a capsule chemistry analytical assay method wherein fluid capsules are flowed through a conduit, such fluid capsules comprising discrete isolated aqueous segments separated by an oil-based isolating fluid, and wherein at least one of said discrete segments contains a chemiluminescent dioxetane reagent, and at least one other of such discrete segments contains an activating agent which reacts with the dioxetane reagent to produce light, the improvement which comprises employing, as the chemiluminescent dioxetane reagent, a stable dioxetane of the formula:



wherein R_1 is a hydrophilic organic group comprising a substituted alkyl, heteroalkyl, alkenyl or alkynyl group containing 1 to 20 carbon atoms and at least two ionic groups which provide increased solubility in aqueous solution and optionally containing at least one oxygen atom, wherein R_3 and R_4 are each selected from the group consisting of acyclic, cyclic and polycyclic organic groups which can optionally be substituted with heteroatoms and which can optionally be joined together to form a cyclic or polycyclic ring group spiro-fused to the dioxetane ring, wherein R_2 is an aryl ring group selected from the group consisting of phenyl and naphthyl groups which can include additional substituents and wherein X is a protecting group which can be removed by an activating agent to produce light.

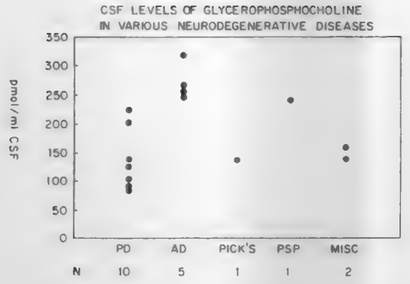
5,631,168

ANTEMORTEM DIAGNOSTIC TEST FOR ALZHEIMER'S DISEASE

John H. Growdon, Chestnut Hill; Roger M. Nitsch, and Richard J. Wurtman, both of Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 959,084, Oct. 9, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 353,960
Int. Cl.[6] G01N *33/92*
U.S. Cl. 436—71 **15 Claims**

1. A method of screening for Alzheimer's disease in a human, comprising the steps of:
a. determining the concentration of a neuronal phospholipid selected from the group consisting of phosphatidylcholine and phosphatidylethanolamine, or the concentration of a neuronal



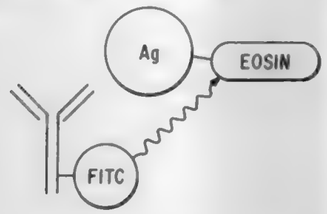
phospholipid metabolite selected from the group consisting of metabolites of phosphatidylcholine and metabolites of phosphatidylethanolamine, in a sample of cerebrospinal fluid obtained from the human, thereby obtaining a test value; and
b. comparing the test value with a control value, wherein the control value is the concentration of the neuronal phospholipid or the neuronal phospholipid metabolite in a sample of cerebrospinal fluid from a human who does not currently demonstrate clinical manifestation of neurodegenerative disease,
wherein a test value greater than the control value is indicative of Alzheimer's disease.

5,631,169

FLUORESCENT ENERGY TRANSFER IMMUNOASSAY

Joseph R. Lakowicz, 9142 Emerson's Reach, Columbia, Md. 21045; Badri P. Maliwal, Baltimore, Md.; Richard Thompson, 7106 Bristol Rd., Baltimore, Md. 21212, and Alvydas Ozinskas, Dayton, Md., assignors to Joseph R. Lakowicz, Ellicott City, and Richard Thompson, Baltimore, both of Md.

Continuation of Ser. No. 822,233, Jan. 27, 1992, abandoned. This application Jan. 19, 1994, Ser. No. 183,238
Int. Cl.[6] G01N *33/533*
U.S. Cl. 436—537 **22 Claims**



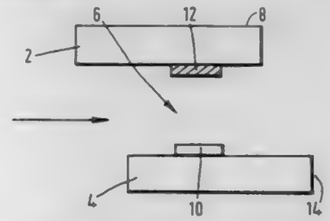
1. A competitive method of quantifying an analyte in a sample, consisting essentially of the steps of:
adding to said sample a first binding partner and a second binding partner, wherein said first binding partner competes with the analyte for binding to said second binding partner, wherein one of said first and second binding partners is labelled with a photoluminescent energy transfer donor and the other is labelled with a photoluminescent energy transfer acceptor, wherein the photoluminescent energy transfer donor and acceptor are chosen such that when the first binding partner binds to the second binding partner, the donor and the acceptor are brought into interacting proximity, producing a detectable luminescence lifetime change in the photoluminescence lifetime of the donor;
exposing the sample to an exciting amount of radiation;
detecting the resulting emission; and
calculating the apparant luminescence lifetime of the donor to quantify binding of the first binding partner to the second binding partner, thereby inversely quantifying the analyte.

5,631,170

METHOD FOR IMPROVING MEASUREMENT PRECISION IN EVANESCENT WAVE OPTICAL BIOSENSOR ASSAYS

John W. Attridge, Woking, United Kingdom, assignor to Applied Research Systems ARS Holding N.V., Netherlands

PCT No. PCT/GB93/01217, § 371 Date Dec. 12, 1994, § 102(e) Date Dec. 12, 1994, PCT Pub. No. WO93/25908, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 9, 1993, Ser. No. 351,338
Claims priority, application United Kingdom, Jun. 10, 1992, 9212302
Int. Cl.[6] G01N *33/543;33/552*
U.S. Cl. 436—518 **19 Claims**



1. A method of improving measurement precision in an optical biosensor assay for a ligand in a sample which comprises the steps of
i) incubating the sample in contact with a measurement surface which carries a directly or indirectly immobilised measurement reagent appropriate to the assay and which additionally carries an amount of a directly or indirectly immobilised reference reagent which gives rise to a reference signal, independent of the amount of ligand present in the sample, at the measurement surface, and prior to, during, or subsequent to the said incubation of the sample measuring said reference signal by a method appropriate to the assay;
ii) simultaneously with or sequentially to the said incubation of the sample in i) introducing one or more labelled ancillary reagents appropriate to the assay whereby if ligand is present in the sample, a complex involving said measurement reagent and at least one of said ligand or said labelled ancillary reagent(s) is formed giving rise to a detectable assay signal which is a first function of the amount of ligand (if any) present in the sample; and
iii) subsequently monitoring the assay signal arising from the measurement surface by a method appropriate to the assay and, comparing the reference signal with the assay signal, thereby determining using an appropriate algorithm whether and/or the extent to which the ligand under assay is present in the sample.

5,631,171

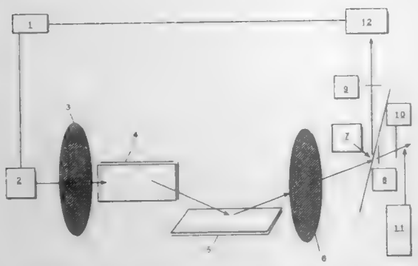
METHOD AND INSTRUMENT FOR DETECTION OF CHANGE OF THICKNESS OR REFRACTIVE INDEX FOR A THIN FILM SUBSTRATE

Torbjorn Sandstrom, Molnlycke; Lars Stiblert, Göteborg, both of Sweden, and Diana M. Maul, Thornton, Colo., assignors to Biostar, Inc., Boulder, Colo.

Continuation of Ser. No. 75,128, Jun. 10, 1993, Pat. No. 5,494,829, which is a continuation-in-part of Ser. No. 923,268, Jul. 31, 1992, abandoned. This application May 31, 1995, Ser. No. 455,493
Int. Cl.[6] G01N *33/543:33/552*
U.S. Cl. 436—518 **14 Claims**

1. An instrument configured and arranged to detect a change in thickness or refractive index of a thin film substrate, said instrument comprising:
a light source providing monochromatic light that is linearly polarized, positioned at an angle other than Brewster's angle relative to the substrate; and

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a detector and analyzing polarizer positioned at said angle relative to said substrate at a location suitable for detecting reflected polarized light from said substrate;

wherein said analyzing polarizer is positioned to maximize any change in polarization rotation or ellipticity as measured by the intensity of light reflected from the substrate that is transmitted to the detector when the thickness or refractive index of said substrate is changed.

5,631,172

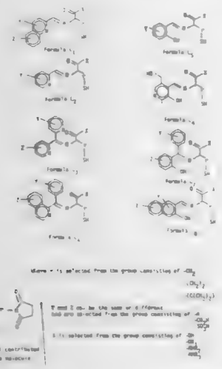
METAL ION-LIGAND COORDINATION COMPLEXES, ANTIBODIES DIRECTED THERETO, AND ASSAYS USING SUCH ANTIBODIES

David K. Johnson, Vernon Hills, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 176,360, Dec. 30, 1993, Pat. No. 5,476,939. This application May 5, 1995, Ser. No. 435,678

Int. Cl.[6] **A61K** *39/385;* **C07D** *401/12;217/16*

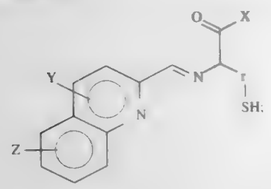
U.S. Cl. 436—543 **1 Claim**



1. A method for removing a metal ion from a sample comprising the steps of:

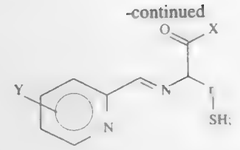
(a) contacting the sample with a ligand in order for the ligand to bind to the metal ion to form a metal-ligand complex (MLC), wherein said ligand has a structure selected from the group consisting of:

Formula L_1

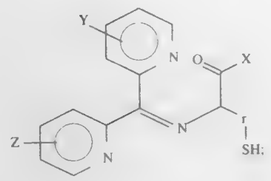


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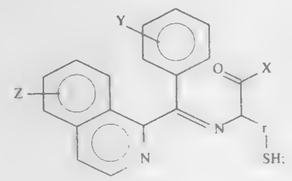
Formula L_2



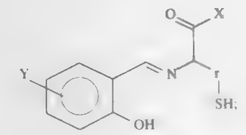
Formula L_3



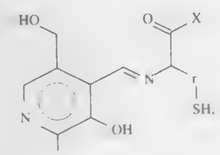
Formula L_4



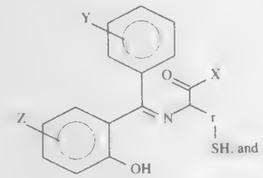
Formula L_5



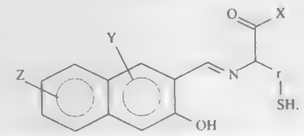
Formula L_6



Formula L_7



Formula L_8



Where r is selected from the group consisting of

$-CH_2-$

$-(CH_2)_2-$

$-(C(CH_3)_2)-$

Y and Z can be the same or different and are selected from the group consisting of

$-H$

$-CO_2H$

$-SO_3H$

X is selected from the group consisting of

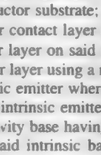
$-OH$

$-OR_1$

$-NHR_2$

$-NHR_3$

R_1 is C_1–C_4 alkyl or



R_2 is C_1–C_4 alkyl

R_3 is C_1–C_{10} alkyl contributed by a conjugate molecule; and

(b) removing the MLC from the sample.

5,631,173

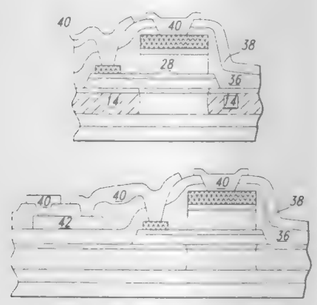
METHOD FOR FORMING COLLECTOR UP HETEROJUNCTION BIPOLAR TRANSISTOR HAVING INSULATIVE EXTRINSIC EMITTER

Joseph B. Delaney, Plano, and Kirk E. Bracey, Carrollton, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 12, 1996, Ser. No. 679,545

Int. Cl.[6] **H01L** *21/265*

U.S. Cl. 438—314 **11 Claims**



1. A method of forming a collector-up microelectronic transistor structure, said method comprising steps:

(a) forming a semiconductor substrate;

(b) depositing an emitter contact layer on said substrate;

(c) depositing an emitter layer on said emitter contact layer;

(d) oxidizing said emitter layer using a mask to form an intrinsic emitter and an extrinsic emitter wherein said extrinsic emitter is insulative and said intrinsic emitter is conductive;

(e) forming a low resistivity base having an intrinsic and extrinsic portion wherein said intrinsic base is over said intrinsic emitter layer and said extrinsic base is over a portion of said extrinsic emitter; and

(f) forming a collector disposed over a portion of said base.

5,631,174

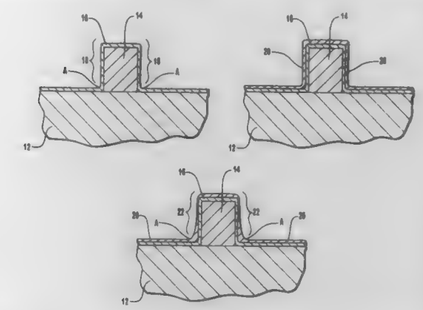
METHOD FOR FORMING A SPACER WITH A PROGRADE PROFILE

Ravi Iyer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 21, 1995, Ser. No. 576,785

Int. Cl.[6] **H01L** *21/28;21/44*

U.S. Cl. 438—760 **27 Claims**



1. A method for preventing the formation of stringers at the base of spacers in the manufacture of a semiconductor device, said method comprising the steps of:

(a) providing a semiconductor substrate having raised structures thereon, said raised structures having top and lateral surfaces;

(b) depositing conformably over said substrate and said raised structures a layer of dielectric spacer material;

(c) depositing conformably over said layer of dielectric spacer material a layer of compatible material compatible with said dielectric spacer material and having lower viscosity at high temperature than said dielectric spacer material, wherein the layer of compatible material has a thickness in range of about 50 Angstroms to less than 1500 Angstroms; and

(d) reflowing said layer of compatible material such that said layer of compatible material at said lateral surfaces of said raised structures is thicker in a lateral direction near the bottom of said raised structures than near the top of said raised structures.

5,631,175

METHOD FOR FABRICATING AN ELEVATED-GATE FIELD EFFECT TRANSISTOR

James G. Gilbert, Tempe; Lawrence S. Klingbeil, Jr., Chandler; David J. Halchin, Chandler, and John M. Golio, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 425,733, Apr. 20, 1995, Pat. No. 5,508,539, which is a continuation of Ser. No. 235,745, Apr. 29, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,434

Int. Cl.[6] **H01L** *21/8252*

U.S. Cl. 438—174 **7 Claims**

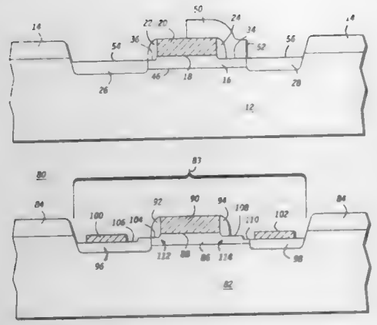
1. A method for fabricating a field effect transistor on a compound semiconductor substrate having an active layer disposed in a surface portion of said substrate and a gate layer formed directly on said active layer, said gate layer dividing said active layer into first and second portions, comprising the steps of:

etching said active layer to provide a recessed surface of said first portion of said active layer and an elevated platform, said recessed surface of said first portion disposed below a bottom surface of said gate layer and said elevated platform self-aligned to said gate layer and said gate layer disposed on said elevated platform;

forming a spacer adjacent to and on a side of said gate layer;

forming source and drain regions in said active layer on opposite sides of said gate layer wherein said source region is self-aligned to said spacer; and

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wherein said active layer is doped with the same dopant type in both a first region underneath said gate layer and in a second region underneath said spacer.

5,631,176

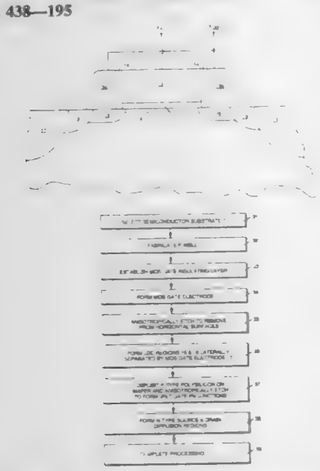
METHOD OF MAKING COMBINED JFET & MOS TRANSISTOR DEVICE

Ashok K. Kapoor, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 502,566, Jul. 13, 1995, Pat. No. 5,543,643. This application Mar. 6, 1996, Ser. No. 612,337

Int. Cl.[6] **H01L** *21/265*

U.S. Cl. 438—195 **3 Claims**



1. A method of fabricating a semiconductor device on a semiconductor substrate of a first conductivity type, the method comprising the steps of:

forming oxide on a selected region of the substrate to form a first insulatng layer;

depositing a gate material on the first insulating layer to form a gate electrode;

forming first and second diffusion regions of a second conductivity type in the substrate separated by substrate material below said first insulating layer;

forming a second insulating layer of oxide on the gate electrode with substantially horizontal surfaces and substantially vertical surfaces;

anisotropically etching the second insulating layer of oxide to remove the horizontal surfaces of the second insulating layer;

forming on the substrate immediately contiguous to the vertical surfaces of the second insulating layer a second layer of gate material of the first conductivity type to form semiconductor junctions with the first and second diffusion regions as a junction field effect transistor (JFET) gate; and

forming source and drain diffusion regions of the second conductivity type in the semiconductor substrate with the source and drain diffusion regions laterally separated by said gate electrode the JFET gate.

5,631,177

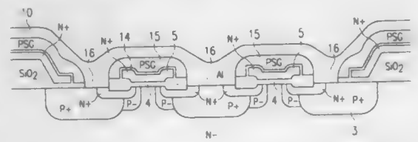
PROCESS FOR MANUFACTURING INTEGRATED CIRCUIT WITH POWER FIELD EFFECT TRANSISTORS

Raffaele Zambrano, San Giovannila Punta, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelectrtronica nel Mezzogiorno, Catania, both of Italy

Continuation of Ser. No. 987,759, Dec. 7, 1992. This application Jan. 30, 1995, Ser. No. 380,725

Int. Cl.[6] **H01L** *21/33;21/336*

U.S. Cl. 438—138 **13 Claims**



1. A manufacturing process for insulated gate field effect transistors with vertical current flow, comprising the steps of:

epitaxial growth on a monocrystalline silicon substrate of a layer of silicon having a first type of conductivity;

oxidation of said epitaxial layer to produce a field oxide layer;

patterning said field oxide layer to form a mask for implantation of second-conductivity-type dopants, to produce a deep-body region;

exposing said epitaxial layer in active area locations;

definition and implantation of body and source regions; wherein said source region is implanted through an oxidation resistant masking layer, which is also used to mask an oxidation process which forms a thickened oxide over substantially all of said source regions; and

growth of a gate oxide layer, and deposition, doping, and definition of a polycrystalline silicon layer thereover, to form a patterned insulated gate layer;

wherein said step of definition and implantation of the body region and source regions is performed before said steps of growth of a gate oxide layer and deposit of the gate polycrystalline silicon layer;

whereby the possibility of occurrence of short circuits between the gate and source regions is reduced and the parasitic capacitance between the gate and source regions is also reduced.

5,631,178

METHOD FOR FORMING A STABLE SEMICONDUCTOR DEVICE HAVING AN ARSENIC DOPED ROM PORTION

John S. Vogel, Gilbert; Ramesh V. Joshi, Mesa, and Anand M. Tulpule, Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1995, Ser. No. 381,387

Int. Cl.[6] **H01L** *21/265;21/70;27/00*

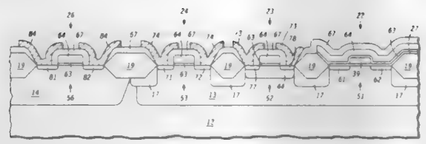
U.S. Cl. 438—200 **19 Claims**

1. A method for manufacturing a stable arsenic doped semiconductor device comprising the steps of:

providing a semiconductor substrate having a plurality of doped regions;

forming a thin oxide layer over the semiconductor substrate;

forming a polycrystalline semiconductor layer over the thin oxide layer;



patterning the polycrystalline semiconductor layer using a dry etch system;

annealing the semiconductor substrate at approximately 630° C. to 670° C. after the patterning step to reduce any detrimental effects caused by the dry etch system;

selectively incorporating arsenic into the semiconductor substrate after the annealing step; and

forming a surface sensitive device in one of the plurality of doped regions, the surface sensitive device having stable electrical characteristics.

5,631,179

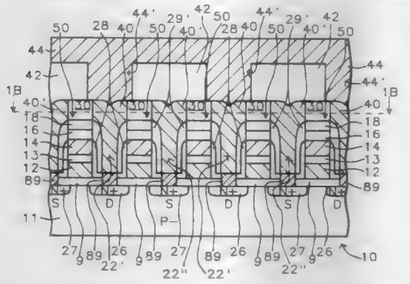
METHOD OF MANUFACTURING METALLIC SOURCE LINE, SELF-ALIGNED CONTACT FOR FLASH MEMORY DEVICES

Hung-Cheng Sung, Kaohsiung, Taiwan, and Ling Chen, Sunnyvale, Calif., assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Filed Aug. 3, 1995, Ser. No. 511,062

Int. Cl.[6] **H01L** *21/8247*

U.S. Cl. 438—264 **21 Claims**



1. A method for manufacturing integrated circuit memory devices which comprises the steps of:

providing a semiconductor substrate having memory devices thereon to which electrical connections must be made.

forming a tunnel oxide layer on said substrate.

forming a blanket, doped, floating gate layer said tunnel oxide layer on said substrate.

forming an intergate dielectric layer over said first, blanket, doped, floating gate layer,

forming a blanket control gate electrode layer over said intergate dielectric layer,

forming a silicon dioxide dielectric layer over said control gate electrode layer,

forming a silicon nitride (Si_3N_4) layer over said silicon dioxide layer,

forming a source/drain mask over said silicon nitride layer with source/drain openings therein,

etching to form an array of stacks of said silicon nitride (Si_3N_4) layer, said silicon dioxide dielectric layer, control gate electrode layer, said intergate dielectric layer, and said floating gate layer down to said tunnel oxide layer, said stacks having sidewalls with trench spaces therebetween,

ion implantation of source/drain dopant ions between said stacks forming alternating source regions and drain regions below said trench spaces between said sidewalls,

forming spacer dielectric structures adjacent to said sidewalls,

forming a blanket dielectric layer over said stacks, said trench spaces and said sidewalls,

etching source line openings down to said source regions and etching drain plug openings down to said drain regions through said blanket dielectric layer down to said source regions and said drain regions,

forming a conductive metal blanket layer over said device extending down into contact with said source regions through said source line openings and down into contact with said drain regions through said drain plug openings,

etching back said conductive metal layer leaving drain plugs and source lines,

said drain plugs being over said drain regions comprising conductive metal in said plug openings between said stacks and

said source lines being over said source regions comprising conductive metal in said source line openings between said stacks and said spacers,

depositing an intermetal dielectric layer over said device including said drain plugs and said source lines,

forming a via mask with via openings over said drain plugs upon said intermetal dielectric layer,

etching through said via openings in said via mask through said intermetal dielectric layer forming openings therethrough to said drain plugs,

stripping said via mask, and

depositing of metal over said intermetal dielectric layer into said via openings extending down into contact with said drain plugs,

whereby said memory devices include metallic source lines and self-aligned contacts.

5,631,180

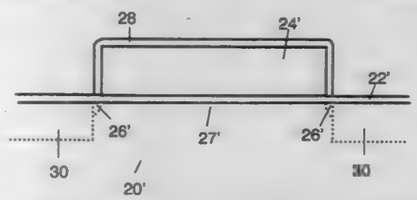
METHOD OF FABRICATING HIGH THRESHOLD METAL OXIDE SILICON READ-ONLY-MEMORY TRANSISTORS

Alex Gyure, Sunnyvale, Calif.; John Berg, Boise, Id.; Damian Carver, Boise, Id., and Pete Manos, Boise, Id., assignors to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 319,941, Oct. 7, 1994, Pat. No. 5,498,896, which is a division of Ser. No. 179,492, Jan. 7, 1994, Pat. No. 5,389,565. This application Jun. 7, 1995, Ser. No. 479,926

Int. Cl.[6] **H01L** *21/8246*

U.S. Cl. 438—275 **22 Claims**



1. A method of forming a read-only-memory circuit including memory locations on a silicon substrate comprising:

forming polysilicon lines at the memory locations;

implanting lightly doped regions in the silicon substrate at some but not all of the memory locations, this lightly doped regions implanting step being self-aligned around the polysilicon lines at the some but not all the memory locations;

thereafter, forming barrier layers on the polysilicon lines; and

implanting heavily doped regions in the silicon substrate at the memory locations, this heavily doped regions implanting step being self-aligned around the barrier layers on the polysilicon lines;

wherein a memory cell of one type is formed at the some but not all memory locations where the lightly doped regions are formed and a memory cell of another type is formed at other memory locations where lightly doped regions are not formed.

VOL 1198 ISS 3 MY 20 1997 UMI

5,631,181

METHOD OF MAKING A MONOLITHIC DIODE ARRAY

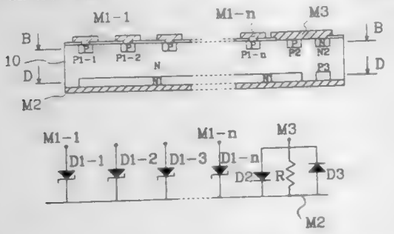
Robert Pezzani, Vouvray, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Division of Ser. No. 216,585, Mar. 22, 1994. This application Jun. 7, 1995, Ser. No. 479,953

Claims priority, application France, Apr. 13, 1993, 93 04586

Int. Cl.[6] H01L *21/70;27/00;21/60;23/48*

U.S. Cl. 438—106 18 Claims



1. A method for forming and mounting a semiconductor component in a casing, comprising the steps of:

vertically forming a plurality of protection diodes in a semiconductor wafer of a first conductivity type, each of the plurality of protection diodes having a first region of a second conductivity type formed at a top surface of the semiconductor wafer and covered by a first metallization and a second region of the first conductivity type formed at a bottom surface of the semiconductor wafer and connected to a second metallization;

forming a third metallization at the top surface of the semiconductor wafer that is electrically coupled to the second metallization of each of the plurality of protection diodes;

connecting, by means of a respective bond wire, the first metallization of said each of the plurality of protection diodes and the third metallization to a respective one of a plurality of bonding strips; and

connecting each bonding strip to one pin of a plurality of pins of the casing.

5,631,182

METHOD OF MAKING A SEMICONDUCTOR MEMORY CIRCUIT DEVICE

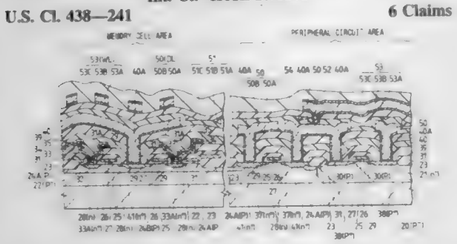
Naokatsu Suwanai, Koganei; Hiroyuki Miyazawa; Atushi Ogishima, both of Kodaira; Masaki Nagao, Koganei; Kyoichiro Asayama, Tachikawa; Hiroyuki Uchiyama, Kodaira; Yoshiyuki Kaneko, Kokubunji, all of Japan; Takashi Yoneoka, Irving, Tex.; Kozo Watanabe, Kodaira, Japan; Kazuya Endo, Kokubunji, Japan, and Hiroki Soeda, Koganei, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 104,014, Aug. 10, 1993, Pat. No. 5,389,558, which is a division of Ser. No. 799,541, Nov. 27, 1991, Pat. No. 5,237,187. This application Oct. 18, 1994, Ser. No. 327,861

Claims priority, application Japan, Nov. 30, 1990, 2-329122

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 438—241 6 Claims



1. A method for fabricating a semiconductor memory circuit device having an array of memory cells arranged in a matrix form and each consisting of a first MISFET and an information storing capacitor both connected in series with each other, and also having a peripheral circuitry constituted by a plurality of second MISFETs, said method comprising:

(a) a step of forming a first gate electrode of each said first MISFET and a second gate electrode of each said second MISFET over first and second regions, respectively, of a first electroconductivity type semiconductor substrate;

(b) a step of introducing first impurities of a second electroconductivity type, opposite to the first electroconductivity type, into said semiconductor substrate in self-alignment with said first and second gate electrodes, so as to form first semiconductor regions for the first and second MISFETs;

(c) a step of forming a side wall insulating film along end portions of said first and second gate electrodes;

(d) a step of forming a first electrode of said information storing capacitor so as to be in contact with one of the source and drain regions of said first MISFET;

(e) a step of forming a dielectric film and a second electrode of said information storing capacitor on said first electrode;

(f) a step of forming a second insulating film over said first and second regions of said semiconductor substrate, overlying the second gate electrode over the second region and overlying the second electrode over the first region;

(g) a step of forming a wiring layer over said second insulating film in said first and second regions;

(h) a step of introducing second impurities of said second electroconductivity type into said semiconductor substrate over said second region in self-alignment with said second gate electrode and said side wall insulating film, so as to form second semiconductor regions for said second MISFETs, after having carried out processes (a) and (c); and

(i) a step of forming a third insulating film overlying only said second region,

wherein said process (h) is carried out prior to said processes (i) and (f), and said process (i) is carried out between said processes (c) and (g).

5,631,183

METHOD OF REDUCING WORD LINE RESISTANCE OF A SEMICONDUCTOR MEMORY

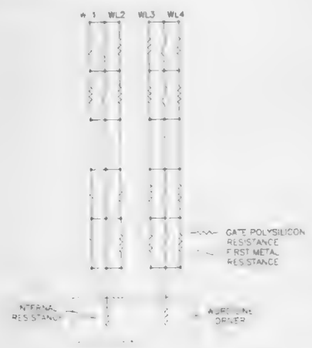
Hyeun-Su Kim, Suwon, and Dong-Jae Lee, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Division of Ser. No. 983,475, Dec. 3, 1992, Pat. No. 5,467,316. This application Jun. 7, 1995, Ser. No. 473,984

Claims priority, application Rep. of Korea, Dec. 4, 1991, 22107/1991

Int. Cl.[6] H01L *21/70*

U.S. Cl. 438—239 13 Claims



1. A process for making a semiconductor memory device having an open bit structure, comprising the steps of:

forming adjacent pair of word lines each comprised of a plurality of serially coupled layers of polycrystalline silicon forming gate electrodes of a plurality of transistor memory cells;

forming layers of metal extending substantially parallel to said adjacent pairs of word lines; and

coupling each said adjacent pair of word lines to a different single word line driver.

5,631,184

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE HAVING A FIN TYPE CAPACITOR

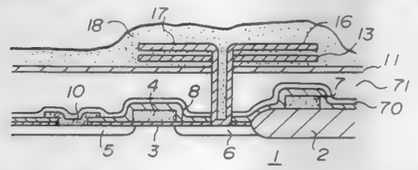
Shinichiro Ikemasu, and Kouichi Hashimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 31,183, Mar. 12, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 412,224

Claims priority, application Japan, Mar. 13, 1992, 4-055602; Oct. 9, 1992, 4-271283

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—397 27 Claims



10. A method of producing a semiconductor device comprising the steps of:

(a) forming a planarizing layer on a substrate surface, wherein said planarizing layer has a planarized surface remote from and approximately parallel to said substrate surface;

(b) forming a first insulator layer having a thickness on said planarized surface;

(c) alternately forming at least one first conductor layer and at least one second insulator layer on said first insulator layer, so that a lowermost first conductor layer is formed on said first insulator layer and each second insulator layer, wherein each of said second insulator layers is thinner than said first insulator layer;

(d) forming a contact hole which penetrates each second insulator layer, each first conductor layer, said first insulator layer, and said planarizing layer, into contact with said substrate;

(e) forming a second conductor layer on an uppermost second insulator layer and in effective contact with side surfaces of each second insulator layer, each first conductor layer, said first insulator layer, and said planarizing layer, whereby defining said contact hole; and

(f) patterning the second conductor layer, each first conductor layer and each second insulator layer.

5,631,185

METHOD FOR MANUFACTURING CAPACITOR OF SEMICONDUCTOR MEMORY DEVICE

Young-pil Kim, Suwon; Jong-bok Kim, Seongnam, and Kweon-jae Lee, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 7, 1995, Ser. No. 499,327

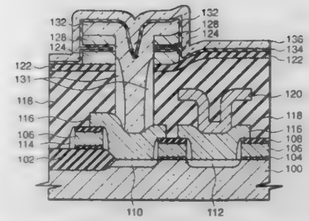
Claims priority, application Rep. of Korea, Jul. 8, 1994, 94-16453

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—397 7 Claims

1. A method for manufacturing a capacitor of a semiconductor memory device, comprising the steps of:

sequentially forming a first insulating layer, a first conductive layer, a second insulating layer, and a second conductive layer whose etching selectivity ratio is smaller than that of the second insulating layer, on a semiconductor substrate on which a transistor comprising a source region, a drain region and a gate electrode, and a buried bit-line surrounded by an insulating film are formed;



forming a contact hole by sequentially etching a portion of said second conductive layer, said second insulating layer, said first conductive layer, said first insulating layer and said insulating film stacked on said source region, thereby exposing said source region of said transistor;

forming a spacer made of an insulating material on side walls of said contact hole, while exposing a portion of a side surface of said first conductive layer in said contact hole;

forming a third conductive layer on a whole surface of the resultant structure after forming said spacer;

forming a photoresist pattern on said third conductive layer for forming a storage electrode; and

forming said storage electrode by sequentially etching a selected portion of said third conductive layer, second conductive layer, second insulating layer and first conductive layer.

5,631,186

METHOD FOR MAKING A DYNAMIC RANDOM ACCESS MEMORY USING SILICON-ON-INSULATOR TECHNIQUES

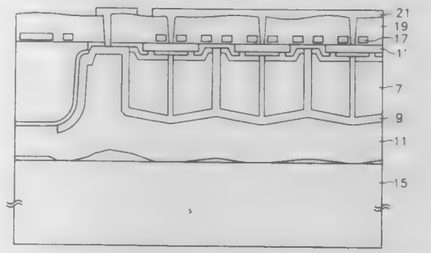
Kyucharn Park, Kyungki-do; Yeseung Lee; Cheonsu Ban, both of Seoul, and Kyungwook Lee, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 170,589, Dec. 22, 1993, abandoned. This application Dec. 28, 1995, Ser. No. 579,953

Claims priority, application Rep. of Korea, Dec. 30, 1992, 92-26778

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 438—155 7 Claims



1. A method for making a dynamic random access memory comprising the steps of:

preparing a substrate having a first surface and a second surface opposite the first surface;

dividing the first surface of the substrate into a memory cell area and a peripheral area;

recessing the memory cell area from the peripheral area by a first depth;

forming a trench having a bottom area and a sidewall into the recessed memory area;

forming a first insulated layer over the first surface;

forming a contact hole through the first insulating layer;

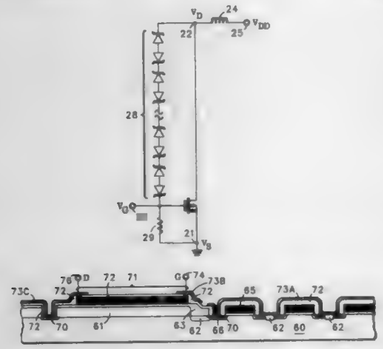
VOL 1198 ISS 3 MY 20 1997 UMI

depositing and pattering a first conductive layer to form a storage node in electrical contact with the first surface of the substrate thorough the contact hole;
forming a dielectric layer over the storage node;
forming a second conductive layer over the dielectric layer to form a plate node;
planarizing the first surface of the substrate;
thinning the second surface of the substrate to expose the first insulating layer filled in the trench such that a portion of the second surface opposite the memory cell area has a thin silicon on insulator layer surrounded by the trench and a portion of the second surface opposite the peripheral area has a thick silicon on insulator layer; and
forming switching elements on the second surface of thin silicon on insulator layer and the thick silicon on insulator layer.

5,631,187
METHOD FOR MAKING SEMICONDUCTOR DEVICE HAVING HIGH ENERGY SUSTAINING CAPABILITY AND A TEMPERATURE COMPENSATED SUSTAINING VOLTAGE

John P. Phipps, Phoenix; Stephen P. Robb, Tempe; Judy L. Sutor, Chandler, and Lewis E. Terry, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 37,501, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 278,988, Dec. 2, 1988, abandoned. This application Jan. 31, 1994, Ser. No. 188,975
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—237 **7 Claims**

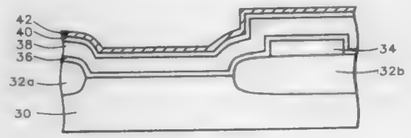


1. A method of forming a semiconductor device, comprising the steps of:
providing a semiconductor substrate of the first conductivity type;
forming a gate oxide layer on the semiconductor substrate;
forming a polysilicon layer on the gate oxide layer;
removing a portion of the polysilicon layer;
forming a region of the second conductivity type in the semiconductor substrate and in the polysilicon layer;
forming a patterned masking layer on a portion of the polysilicon layer;
forming a region of the first conductivity type in the region of the second conductivity type in the semiconductor substrate and in the polysilicon layer where the patterned masking layer is not disposed to form a plurality of back-to-back diodes in a polysilicon layer;
electrically connecting the plurality of back-to-back diodes in the polysilicon layer and the semiconductor substrate of the semiconductor device, wherein the plurality of back-to-back diodes provide for protection of the semiconductor device from avalanche stress-induced failure; and
forming a resistor electrically connected to the polysilicon layer and the region of the first conductivity type of the semiconductor device.

5,631,188
LOW VOLTAGE COEFFICIENT POLYSILICON CAPACITOR

Ming-Hsung Chang, Hsin-Chu, and Jiue-Wen Weng, Chai-Chi, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Dec. 27, 1995, Ser. No. 578,924
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—253 **23 Claims**

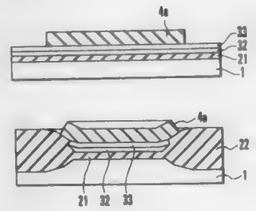


1. A method for forming a polysilicon electrode for use within a polysilicon capacitor comprising:
forming upon a semiconductor substrate a polysilicon layer;
forming upon the polysilicon layer an amorphous silicon layer;
forming upon the amorphous silicon layer a metal layer, the metal layer being formed from a metal from which a metal silicide is formed; and
annealing the metal layer and the amorphous silicon layer to form the metal silicide, where the thickness of the metal layer and the thickness of the amorphous silicon layer are chosen to form a stoichiometric metal silicide with minimal consumption of the polysilicon layer.

5,631,189
METHOD OF FORMING ELEMENT ISOLATION REGION

Toshio Kobayashi, and Satoshi Nakayama, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Japan

Filed Jul. 7, 1995, Ser. No. 499,704
Claims priority, application Japan, Jul. 13, 1994, 6-161097
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—448 **20 Claims**

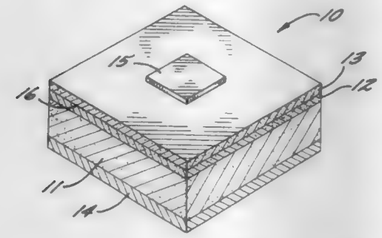


1. A method of forming an element isolation region, comprising the steps of:
forming an oxide film on a semiconductor substrate;
forming a silicon buffer layer consisting of silicon doped with an impurity which prevents crystallization of silicon and suppresses oxidation of silicon;
forming an oxidation-resistant film on said buffer layer;
selectively removing part of the oxidation-resistant film to form a mask for oxidation consisting of the oxidation-resistant film; and
forming an element isolation region by oxidizing a portion of said buffer layer and a portion of said semiconductor substrate.

5,631,190
METHOD FOR PRODUCING HIGH EFFICIENCY LIGHT-EMITTING DIODES AND RESULTING DIODE STRUCTURES

Gerald H. Negley, Hillsborough, N.C., assignor to Cree Research, Inc., Durham, N.C.

Filed Oct. 7, 1994, Ser. No. 319,803
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—33 **30 Claims**

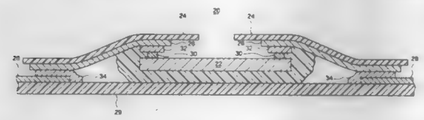


1. A method of producing light emitting diodes from silicon carbide with increased external efficiency, the method comprising:
directing a beam of laser light at one surface of a portion of silicon carbide, and in which the laser light has a wavelength for which the energy equivalent is equal to or greater than the bandgap of the silicon carbide and is sufficient to vaporize the silicon carbide that it strikes to thereby define a cut in the silicon carbide portion; and
dry etching the silicon carbide portion to remove by-products generated when the laser light cuts the silicon carbide portion.

5,631,191
METHOD FOR CONNECTING A DIE TO ELECTRICALLY CONDUCTIVE TRACES ON A FLEXIBLE LEAD-FRAME

David Durand, Providence; Chon M. Wong, Lincoln, and Roger A. Iannetta, Jr., Warwick, all of R.I., assignors to Poly-Flex Circuits, Inc., R.I.

Division of Ser. No. 112,226, Aug. 27, 1993, abandoned. This application May 15, 1995, Ser. No. 440,924
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—206 **17 Claims**

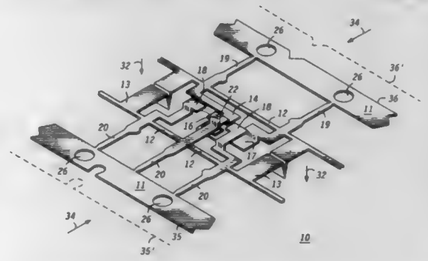


1. A method for connecting a plurality of contact pads of a die to a respective plurality of contact points of electrically conductive traces on a flexible lead-frame, said method comprising steps of:
applying a curable electrically conductive adhesive to one of said plurality of contact pads and said respective plurality of contact points of said electrically conductive traces;
aligning said plurality of contact pads to said respective plurality of contact points of said electrically conductive traces in alignment apparatus;
bringing said plurality of contact pads into mounting relation with said respective plurality of contact points of said electrically conductive traces such that said curable electrically conductive adhesive fills space between said plurality of contact pads and said respective plurality of contact points of said electrically conductive traces;
applying a securing force to said die and said flexible lead-frame so as to secure said die to said flexible lead-frame;
applying a curing force greater than said securing force to said die and said flexible lead-frame; and
curing said curable electrically conductive adhesive in apparatus separate from said alignment apparatus, and while maintaining said curing force applied to said die and said flexible lead-frame.

5,631,192
SEMICONDUCTOR DEVICE ON AN OPPOSED LEADFRAME AND METHOD FOR MAKING

Richard E. Heppler, Mesa, and Paul L. Sullivan, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1995, Ser. No. 537,584
Int. Cl.[6] H01L *21/10*
U.S. Cl. 438—25 **25 Claims**

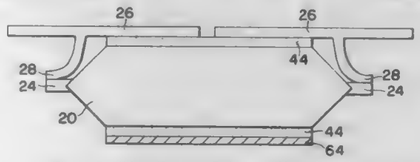


1. A method for forming a semiconductor device on an opposed leadframe comprising the steps of:
providing a leadframe having leads, a first die flag defining a first plane, and a second die flag defining a second plane substantially parallel to the first plane;
mounting a first electronic component to the first die flag;
mounting a second electronic component to the second die flag; and
forming a portion of the leadframe such that at least one of the first and second electronic components are moved substantially within their respective planes to a position closer to one another.

5,631,193
HIGH DENSITY LEAD-ON-PACKAGE FABRICATION METHOD

Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.

Continuation of Ser. No. 990,334, Dec. 11, 1992, Pat. No. 5,484,959. This application Jun. 30, 1995, Ser. No. 497,565
Int. Cl.[6] H01L *21/302;* **H05K** *3/30*
U.S. Cl. 29—827 **8 Claims**



1. A method of forming a warp-resistant integrated circuit package, comprising the steps of:
providing an integrated circuit package, said package having an upper and a lower major exterior planar surface, said package including an integrated circuit element at least substantially encapsulated within said package by an encapsulating material;
mounting a stiffener to said upper major exterior planar surface of said package, wherein said upper major exterior planar surface comprises encapsulation material; and
reducing the height of said package.

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5,631,194

HEAVY METAL FLUORIDE GLASS CONTAINING INDIUM TRIFLUORIDE

Annapoorna Akella, Union City; Elizabeth A. Downing, Palo Alto, both of Calif., and Lubos J. B. Vacha, Sturbridge, Mass., assignors to Galileo Corporation, Sturbridge, Mass.

Filed Oct. 17, 1995, Ser. No. 544,075

Int. Cl.[6] C03C *3/32;13/04*

U.S. Cl. 501—40 18 Claims

1. A heavy metal fluoride bulk glass composition used to form an optical fiber comprising, in mole percent, about:

20 to 40% InF_3, 20 to 0% GaF_3, 2 to 10% PbF_2, 0 to 25% ZnF 2, 0 to 25% CdF_2, 10 to 25% BaF_2, 0 to 6% NaCl, 0 to 6% NaF, 0 to 7% SrF_2 and 0 to 5% CaF_2; the total of InF_3 and GaF_3 being about 40%; the total of BaF_2, SrF_2 and CaF_2 being about 25%; the total of ZnF_2 and CdF_2 being between about 10 to 25%, and the total of NaCl and NaF being about 6%; said composition being further doped with a lanthanide series heavy metal fluoride in an amount up to about 1%.

5,631,195

GLASS COMPOSITION AND SUBSTRATE FOR PLASMA DISPLAY

Osamu Yanagisawa; Kenji Oda; Naoki Sugimoto, all of Yokohama; Yoshio Takegawa, Kawasaki; Akira Takada, Yokohama; Hideyo Osada, Yokohama; Haruo Aizawa, Yokohama, and Koji Miura, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,265

Claims priority, application Japan, Sep. 14, 1994, 6-220376

Int. Cl.[6] C03C *3/078;3/085;3/087*

U.S. Cl. 501—72 9 Claims

1. A glass composition comprising from 50 to 66 wt % of SiO_2, from 0 to 15 wt % of Al_2O_3, from 0 to 13.4 wt % of K_2O, from 10 to 24 wt % of $Li_2O+Na_2O+K_2O$, from 0 to 7 wt % of BaO, from 14 to 26 wt % of CaO+MgO+SrO+BaO+ZnO, and from 0 to 1 wt % of $SO_3+Sb_2O_3$, said glass composition containing substantially no zirconia and having a strain point of at least 560° C. and a linear thermal expansion coefficient of at least 80×10^{7}/°C. within a temperature range of from 50° to 350° C.

5,631,196

METHOD FOR MAKING INVERSION MODE DIAMOND ELECTRON SOURCE

Robert C. Kane, Scottsdale, and Xiaodong T. Zhu, Chandler, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Division of Ser. No. 276,879, Jul. 18, 1994, Pat. No. 5,430,348. This application Feb. 7, 1995, Ser. No. 385,027

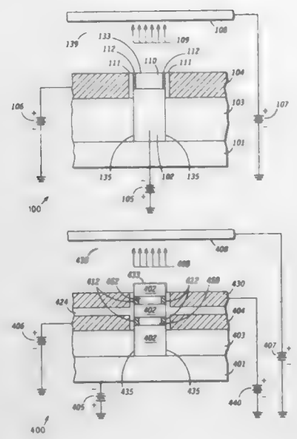
Int. Cl.[6] H01L *21/465*

U.S. Cl. 438—20 9 Claims

1. A method for making an inversion mode electron emitter device comprising the steps of:

A forming a selectively impurity doped diamond semiconductor electron emitter having an emitting surface, for emitting electrons, and a major surface; and

B forming a control electrode and an insulator, the control electrode disposed substantially peripherally about a part of the major surface and the insulator disposed between the major surface and the control electrode, such that application of an externally provided voltage of proper magnitude and polarity between the control electrode and the selectively impurity doped diamond semiconductor electron emitter



induces an electron conducting inversion layer in the electron emitter substantially at the part of the major surface.

5,631,197

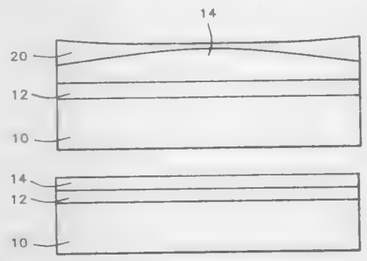
SACRIFICIAL ETCHBACK LAYER FOR IMPROVED SPIN-ON-GLASS PLANARIZATION

Chen-Hua Yu, Keelung; Syun-Ming Jang, Hsin-Chu; Lung Chen, Hsin-Chu, and Yuan-Chang Huang, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsinchu, Taiwan

Filed Aug. 30, 1995, Ser. No. 520,595

Int. Cl.[6] H01L *21/465*

U.S. Cl. 438—699 34 Claims



1. The method of forming a planar surface by uniformly etching back a spin-on-glass (SOG) layer over a substrate comprising:

(a) forming a SOG layer over a substrate; said substrate having an annular shape with a central area and a peripheral area: said SOG layer having a greater thickness in said central area than in said peripheral area;

(b) forming a sacrificial layer over said SOG layer; said sacrificial layer having a greater thickness in said peripheral area of said substrate compared to said central area, and

(c) etching back said sacrificial layer and portions of said SOG layer.

5,631,198

METHOD FOR MAKING A PIEZORESISTIVE PRESSURE SENSOR OF SEMICONDUCTOR MATERIAL EMPLOYING ANISOTROPIC ETCHING

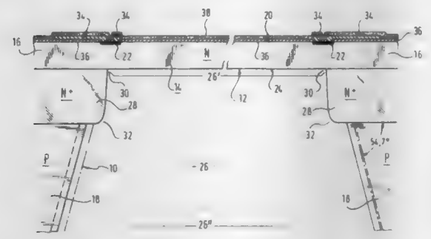
Siegbert Hartauer, Landshut, Germany, assignor to Texas Instruments Deutschland GmbH, Germany

Division of Ser. No. 416,548, Apr. 3, 1995, Pat. No. 5,514,898, which is a continuation of Ser. No. 210,758, Mar. 22, 1994, abandoned. This application Jan. 24, 1996, Ser. No. 590,984

Claims priority, application Germany, Mar. 22, 1993, 43 09 207.1

Int. Cl.[6] H01L *21/77*

U.S. Cl. 438—53 4 Claims



1. A method for making a semiconductor device in the form of a piezoresistive pressure sensor, said method comprising:

providing a substrate of semiconductor material of one conductivity type;

depositing dopant material of the other conductivity type opposite from the one conductivity type of said substrate in the semiconductor substrate to define an annular doped zone of the other conductivity type in the semiconductor substrate;

providing an epitaxial layer of semiconductor material of the other conductivity type opposite from the one conductivity type of said substrate on one surface of the semiconductor substrate and adjacent to the annular doped zone of the other conductivity type;

providing at least one piezoresistor on the outer surface of the epitaxial layer of semiconductor material of the other conductivity type;

providing a mask having an opening therethrough on a surface of the semiconductor substrate opposite from the one surface of the semiconductor substrate;

patterning the semiconductor substrate in accordance with the mask by electrochemical anisotropic semiconductor etching through the opening in the mask to define an opening penetrating the semiconductor substrate and exposing a portion of the epitaxial layer of the other conductivity type to define a membrane by the portion of the epitaxial layer exposed by the opening penetrating the semiconductor substrate; and

determining the periphery of the membrane defined by the exposed portion of the epitaxial layer of the other conductivity type during the electrochemical anisotropic semiconductor etching via the annular doped zone of the other conductivity type in the semiconductor substrate which serves as an etching stopper.

5,631,199

FURNACE FOR MANUFACTURING A SEMICONDUCTOR DEVICE, AND A METHOD OF FORMING A GATE OXIDE FILM BY UTILIZING THE SAME

Mi Ra Park, Kyungki-Do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

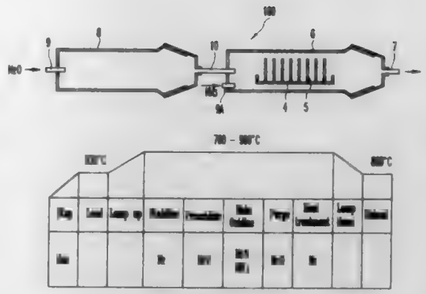
Filed Jul. 7, 1995, Ser. No. 499,241

Claims priority, application Rep. of Korea, Jul. 7, 1994, 1994/16248

Int. Cl.[6] H01L *21/318*

U.S. Cl. 438—770 3 Claims

1. A method of manufacturing a semiconductor device by utilizing a furnace to form a gate oxide film, comprising the steps of:



loading wafers into a main furnace of constant temperature, and injecting a N_2O gas into a source furnace of constant temperature through a second gas inlet;

raising the temperatures of said main furnace in a ramp-up process and resolving the N_2O in said source furnace by raising the temperature of the source furnace in a ramp-up process;

stabilizing the inside of said main furnace under N_2 gas environment;

allowing the resolved N_2O gas in said source furnace to flow into said main furnace through a connection pipe;

conducting a preoxidization process in said main furnace;

injecting NH_3 gas into said main furnace through a first gas inlet;

conducting a main oxidization process in said main furnace under an environment of said resolved N_2O gas and said injected NH_3 gas;

conducting a purge process in said main furnace under the environment of said resolved N_2O gas;

heat treating the wafer under an N_2 gas environment;

performing a ramp down process to lower the temperature of said main furnace; and

unloading said wafers.

5,631,200

SINTERED SILICON NITRIDE-BASED BODY

Harutoshi Ukegawa, and Matsuo Higuchi, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Feb. 7, 1996, Ser. No. 597,705

Claims priority, application Japan, Feb. 8, 1995, 7-020250; Apr. 21, 1995, 7-096379; Dec. 26, 1995, 7-338777

Int. Cl.[6] C04B *35/587;35/599*

U.S. Cl. 501—97 2 Claims

1. A sintered silicon nitride-based body comprising 20% or less by weight of a grain boundary phase and the balance being a major phase of grains of silicon nitride and/or sialon, wherein;

said major phase contains a grain phase formed of a β-Si_3N_4 phase and/or a β'-sialon phase, and a quantitative ratio of the grain phase formed of the β-Si_3N_4 phase and/or the β'-sialon phase is in a range of from 0.5 to 1.0 relative to the major phase;

said grain boundary phase contains $Re_2Si_2O_7$ wherein Re represents a rare-earth element other than Er and Yb, which applies hereinbelow as a first crystal component and at least one of $ReSiNO_2$, $Re_3Al_5O_{12}$, $ReAlO_3$, and $Si_3N_4.Y_2O_3$ as a second crystal component; and

a quantitative ratio of the first and second crystal components in the grain boundary phase to the grain phase of the β-Si_3N_4 phase and/or the β'-sialon phase in the major phase is in a range of from 0.03 to 1.6.

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5,631,201

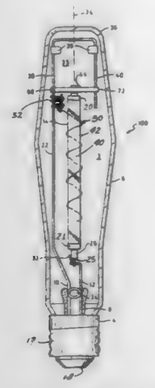
TRANSLUCENT POLYCRYSTALLINE ALUMINA AND METHOD OF MAKING SAME

George Wei, Weston; Arlene Hecker, Beverly, and David Goodman, Amesbury, all of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Jul. 29, 1996, Ser. No. 681,566

Int. Cl.[6] H01J *61/30;17/18;* **C04B** *35/115*

U.S. Cl. 501—152 **4 Claims**



4. An optically translucent polycrystalline alumina sintered body consisting essentially of alumina, magnesia, terbia and, optionally, yttria, said magnesia being present in an amount of about 0.020 to 0.050 wgt. percent; said terbia being present in an amount of from about 0.005 to about 0.060; and said yttria being present in an amount up to about 0.035 wgt. percent.

5,631,202

STEREOSPECIFIC METALLOCENE CATALYSTS WITH STEREOLOCKING α-CP SUBSTITUENTS

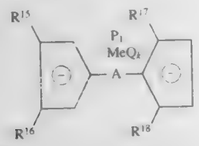
John A. Ewen, Houston, Tex., assignor to Montell Technology Company B.V., Netherlands

Filed Sep. 24, 1993, Ser. No. 126,795

Int. Cl.[6] C08F *4/643*

U.S. Cl. 502—117 **7 Claims**

1. A metallocene catalyst for preparing syndiospecific polyolefins comprising a catalyst or catalyst precursor characterized by formula (V):



(V)

where:

A is a structural bridge selected from the group consisting of a C1–C20 alkenyl radical, a peralkylated C1–C20 alkenyl radical, a dialkyl methylene radical, a C3–C 12 cyclohydrocarbyl radical, an aryl radical, a diarylmethylene radical, a diaryl allenyl radical, a silicon hydrocarbyl radical, a dihydrocarbyl silenyl radical, a germanium hydrocarbyl radical, a phosphorus hydrocarbyl radical, a nitrogen hydrocarbyl radical, a boron hydrocarbyl radical, and an aluminum hydrocarbyl radical;

R^{15} and R^{16} are the same or different radicals and are a linear or branched C1–C20 hydrocarbyl radical, a linear or branched C1-C20 halocarbyl radical, a C1–C20 hydrohalocarbyl radical, a linear or branched C1-C20 alkoxy radical, a C3–C12 cyclohydrocarbyl radical, a C3–C12 cyclohydrohalocarbyl radical, an aryl radical, an alkylaryl radical, an arylalkyl radical, a silicon hydrocarbyl radical, a germanium hydrocarbyl radical, a phosphorus hydrocarbyl radical, a nitrogen hydrocarbyl radical, a boron hydrocarbyl radical, an aluminum hydrocarbyl radical, or a Cl atom, a Br atom, or an I atom;

R^{17} and R^{18} are the same or different radicals as described for R^{15} and R^{16};

Me is a Group 3, 4, or 5 metal, or Lu, La, Nd, or Sm;

Q is a hydrocarbyl radical or halogen atom;

P is a stable non-coordinating or pseudo-non-coordinating arition;

k is an integer having a value from 0 to 2;

l is an integer having a value from 0 to 2; and

the overall catalyst has C_s or pseudo-C_s symmetry.

5,631,203

METALLOCENE COMPOUNDS AND PREPARATION THEREOF CONTAINING TERMINAL ALKYNES

M. Bruce Welch, Bartlesville, Okla.; Helmut G. Alt, and Bernd Peifer, both of Bayreuth, Germany, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1995, Ser. No. 434,807

Int. Cl.[6] B01J *31/00;* **C08F** *4/02;30/04;* **C07F** *9/00*

U.S. Cl. 502—152 **15 Claims**

10. A metallocene compound prepared by reacting an alkynyl ligand, an alkali metal compound, and a transition metal-containing compound:

wherein the alkynyl ligand contains a terminal alkynyl group and at least one cyclopentadienyl-type group,

wherein the cyclopentadienyl-type group is a cyclopentadienyl, substituted cyclopentadienyl, indenyl, substituted indenyl, tetrahydroindenyl, fluorenyl, substituted fluorenyl, or octahydrofluorenyl group,

wherein the substituents are hydrocarbyl groups containing from 1 to 20 carbon atoms, alkoxy groups containing from 1 to 12 carbon atoms, silyl groups, alkyl halide groups where the alkyl contains from 1 to 12 carbon atoms, or halide;

wherein the alkali metal compound is a hydrocarbyl compound of sodium, potassium, or lithium, wherein the hydrocarbyl group contains from 1 to 12 carbon atoms; and

wherein the transition metal-containing compound is represented by the formula MX_x, wherein M is a Group IVB or VB transition metal, each X is individually selected from the group consisting of hydrocarbyl groups containing from 1 to 20 carbon atoms, alkoxy groups containing from 1 to 12 carbon atoms, aryloxy groups containing 6 to 12 carbon atoms, halide and hydride, and x is the valence of the transition metal.

5,631,204

Patent Not Issued For This Number

5,631,205

HERBICIDE, CROP DESICCANT AND DEFOLLIANT ADJUVANTS COMPRISING AN UNSATURATED FATTY ACID ETHYL ESTER AND A NON-IONIC EMULSIFIER

Robert W. Killick, Mt Waverley; Peter R. Wrigley, Blackburn South; Peter W. Jones, Box Hill South, all of Australia, and David T. Schulteis, Fresno, Calif., assignors to Victorian Chemical International Pty. Ltd., Richmond, Australia, and Wilbur-Ellis Company, Fresno, Calif.

PCT No. PCT/AU94/00229, § 371 Date Apr. 26, 1996, § 102(e) Date Apr. 26, 1996, PCT Pub. No. WO94/24858, PCT Pub. Date Nov. 10, 1994

PCT Filed May 5, 1994, Ser. No. 545,665

Claims priority, application Australia, May 5, 1993, PL8660

Int. Cl.[6] A01N *25/30*

U.S. Cl. 504—116 **18 Claims**

1. An adjuvant composition consisting essentially of

(i) an ethyl ester of a fatty acid wherein the ethyl ester has a level of unsaturation of at least 40% by weight; and

(ii) a non-ionic emulsifier.

5,631,206

HERBICIDAL HETEROARYL SUBSTITUTED ANILIDES

Lucian R. Denes, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

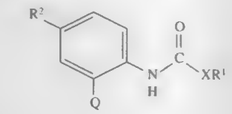
PCT No. PCT/US94/10342, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/09846, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 21, 1994, Ser. No. 600,985

Int. Cl.[6] C07D *213/16;* **A01N** *43/40*

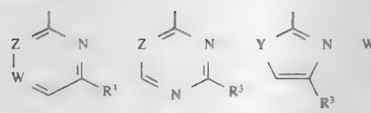
U.S. Cl. 504—130 **10 Claims**

1. A compound of Formula I:

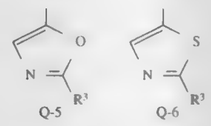


I

wherein Q is



Q-1 Q-2 Q-4 Q-3



Q-5 Q-6

X is a single bond; O, S; or NR^4;

Y is O; S; or NCH_3;

Z is CH or N;

W is CH or N;

R^1 is C_1-C_5 alkyl optionally substituted with C_1-C_2 alkoxy, OH, 1–3 halogens, or C_1-C_2 alkylthio; $CH_2(C_3$-C_4 cycloalkyl); C_3-C_4 cycloalkyl optionally substituted with 1–3 methyl groups; C_2-C_4 alkenyl; C_2-C_4 haloalkenyl; or phenyl;

R^2 is H; chlorine; bromine; C_1-C_2 alkyl; C_1-C_2 alkoxy; C_1-C_2 alkylthio; C_2-C_3 alkoxyalkyl; C_2-C_3 alkylthioalkyl; cyano; nitro; $NH(C_1$-C_2 alkyl); or $N(C_1$-C_2 alkyl)$_2$;

R^3 is C_1-C_4 haloalkyl; C1-C4 haloalkoxy; C_1-C_4 haloalkylthio; halogen; cyano; nitro; or methylthio;

R^4 is H; CH_3 or OCH_3; and agriculturally suitable salts thereof.

5,631,207

USE OF 5-ALKYL-1,3,4-OXADIAZOL (AND THIADIAZOL)-2-THIOMETHYLTHIOCYANATES AS MARINE ANTIFOULING AGENTS

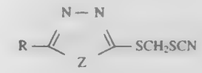
Duane R. Romer; Ravi B. Shankar, and R. Garth Pews, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 10, 1996, Ser. No. 678,025

Int. Cl.[6] A01N *43/36;43/82*

U.S. Cl. 504—156 **7 Claims**

1. A method for preventing the growth of marine organisms on a surface exposed to a marine environment in which marine organisms grow which comprises contacting said surface with a composition containing an inert diluent and a marine antifouling effective amount of an active 5-alkyl-1,3,4 -oxadiazole-(or thiadiazole)-2-thiomethylthiocyanate compound which corresponds to the formula:



wherein R represents a C_1–C_{12} straight or branched chain alkyl radical and Z is oxygen or sulfur.

5,631,208

HERBICIDAL CYCLOHEXANE-1,3-DIONE DERIVATIVES AND THEIR PREPARATION PROCESS

Eung K. Ryu; Kyoung M. Kim; Hyoung R. Kim, all of Daejeon; Jong H. Song, Chungchongbuk-do; Jae N. Kim, and Jin S. Kim, both of Daejeon, all of Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Rep. of Korea

PCT No. PCT/KR93/00069, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/03443, PCT Pub. Date Feb. 17, 1994

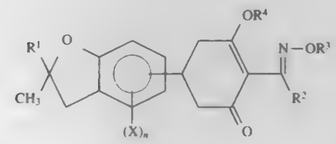
PCT Filed Aug. 6, 1993, Ser. No. 379,432

Claims priority, application Rep. of Korea, Aug. 7, 1992, 92-14193

Int. Cl.[6] A01N *43/12;35/10;* **C07L** *307/78*

U.S. Cl. 504—176 **18 Claims**

1. A compound of cyclohexane-1,3-dione derivatives of formula (I)



(I)

wherein,

X is selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_2–C_6 alkoxy, halogen, C_1–C_6 haloalkyl, nitro, cyano, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, sulfamoyl, N-(C_1–C_6 alkyl) sulfamoyl and N,N-di(C_1–C_6 alkyl) sulfamoyl group;

(X)n represents number of X substituents on which may be the same or different benzene ring, where n is 1, 2 or 3,

also, cyclohexyl moiety, one of the substituents on benzofuran ring, is possible substituted to 4, 5, 6 or 7 position, the (X)n can't be filled only with hydrogens and the (X)n can substitute position where cyclohexyl moiety is not substituted;

R^1 is selected from hydrogen and C_1–C_4 alkyl group;

R^2 is selected from C_1–C_6 alkyl, C_2–C_6 alkenyl and C_2–C_6 alkynyl group;

R^3 is selected from hydrogen, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_6 alkenyl, C_2–C_6 haloalkenyl, C_2–C_6 alkoxyalkyl, C_2–C_6 alkylthioalkyl, benzyl and C_2–C_6 haloalkanoyl group;

R^4 is selected from hydrogen, alkali metal cation, alkaline earth metal cation, C_1–C_4 alkanoyl, C_1–C_4 haloalkanoyl and benzoyl group.

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5,631,209
HERBICIDAL GLUTARIMIDES

Barry C. Lange; John W. Ashmore; Jane Wissinger-Cornille, all of Lansdale, and Colin M. Tice, Elkins Park, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

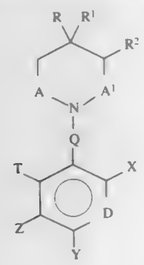
Division of Ser. No. 323,292, Oct. 14, 1994, Pat. No. 5,502,027, which is a division of Ser. No. 129,483, Sep. 30, 1993, Pat. No. 5,393,735, which is a continuation of Ser. No. 563,780, Aug. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 401,329, Aug. 31, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 470,197

Int. Cl.[6] C07D *221/02;211/88;211/84;* **A01N** *43/42;43/40*

U.S. Cl. 504—248 **20 Claims**

1. A herbicidal compound of the formula

I



wherein

A is carbonyl, or thiocarbonyl;

A^1 is carbonyl;

D is CH;

Q is $(CH_2)n$, where n is 0 or 1;

R is $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl containing from one to nine halo atoms, or phenyl;

R^1 is hydrogen or $(C_1–C_2)$alkyl;

R^2 is hydrogen; or

R, R^1 and R^2 taken together form a fused phenyl ring;

provided R^1 is hydrogen when X and Z are independently hydrogen or halogen and Y is halogen;

X is hydrogen, cyano or halogen;

Y is hydrogen, halogen, cyano, $(C_1–C_3)$alkylthio, halo$(C_1–C_3)$alkylthio, $(C_1–C_3)$alkyl, halo$(C_1–C_3)$alkyl, nitro, halo$(C_1–C_3)$alkoxy or $(C_1–C_3)$alkoxy;

provided when Y is hydrogen, R is trifluoromethyl, R^1 and R^2 are hydrogen and Z is not hydrogen;

T is hydrogen or fluorine; and

Z is formyl; carboxy; alkylcarbonyl; alkoxycarbonyl; (alkylthio-)carbonyl; alkoxycarbonylalkoxycarbonyl; phenoxycarbonyl; alkoxyalkoxycarbonyl; alkenyloxycarbonyl; alkynyloxycarbonyl; cycloalkoxycarbonyl; cycloalkylalkoxycarbonyl; (alkenylthio)carbonyl; (alkynylthio)carbonyl; (cycloalkylthio)carbonyl; (cycloalkylalkylthio)carbonyl; heterocyclylalkoxycarbonyl; heterocyclyloxycarbonyl; trialkylsilylalkoxycarbonyl; dialkoxyphosphonylalkoxycarbonyl; dialkyliminooxycarbonyl; alkyliminooxycarbonyl; alkyl(alkoxy)iminooxycarbonyl; alkyl(alkylthio)iminooxycarbonyl; phenylaminocarbonyl; aminocarbonyl; alkylaminocarbonyl; alkenylaminocarbonyl; alkynylaminocarbonyl; alkoxyaminocarbonyl; and the agronomically acceptables salts thereof.

5,631,210
HERBICIDAL THIOPHENE KETONES

Chi-Ping Tseng, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

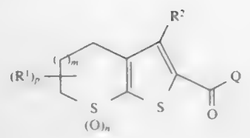
Filed Jun. 14, 1996, Ser. No. 665,166

Int. Cl.[6] A01N *43/56;43/18;* **C07D** *231/18;409/02*

U.S. Cl. 504—282 **6 Claims**

1. A compound selected from Formula I and agriculturally suitable salts thereof,

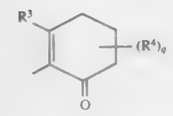
I



wherein

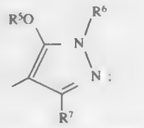
Q is

Q-1



or

Q-2



each R^1 is independently $C_1–C_6$ alkyl, $C_1–C_6$ haloalkyl, $C_1–C_6$ alkoxy, $C_1–C_6$ haloalkoxy, hydroxy, or halogen; or two R^1 bonded to the same carbon atom can be taken together with the carbon to which they are attached to form C(=O) or C(=N—OR^8); or two R^1 bonded to the same carbon atom can be taken together as —OCH_2CH_2O— or —$OCH_2CH_2CH_2O$—, each optionally substituted with 1–2 C_1—C_3 alkyl or 1–4 halogen;

R^2 is H, $C_1–C_6$ alkyl, $C_1–C_6$ haloalkyl, $C_1–C_6$ alkoxy, $C_1–C_6$ haloalkoxy, $C_1–C_6$ alkylthio, $C_1–C_6$ haloalkylthio, $C_1–C_6$ alkylsulfinyl, $C_1–C_6$ haloalkylsulfinyl, $C_1–C_6$ alkylsulfonyl, $C_1–C_6$ haloalkylsulfonyl, halogen, cyano or nitro;

R^3 is OR^9, $C_1–C_6$ alkylthio, $C_1–C_6$ haloalkylthio, $C_1–C_6$ alkylsulfinyl, $C_1–C_6$ haloalkylsulfinyl, $C_1–C_6$ alkylsulfonyl, $C_1–C_6$ haloalkylsulfonyl or halogen;

each R^4 is independently $C_1–C_3$ alkyl, $C_1–C_3$ alkoxy, $C_1–C_3$ alkylthio or halogen; or when two R^4 are attached to the same carbon atom, then said R^4 pair can be taken together to form —OCH_2CH_2O—, —$OCH_2CH_2CH_2O$—, —SCH_2CH_2S— or —$SCH_2CH_2CH_2S$—, each group optionally substituted with 1–4 CH_3;

R^5 is H, $C_1–C_6$ alkyl, $C_1–C_6$ haloalkyl, $C_2–C_6$ alkoxyalkyl, formyl, $C_2–C_6$ alkylcarbonyl, $C_2–C_6$ alkoxycarbonyl, $C_2–C_6$ alkylaminocarbonyl, $C_3–C_7$ dialkylaminocarbonyl, $C_1–C_6$ alkylsulfonyl or $C_1–C_6$ haloalkylsulfonyl; or R^5 is benzoyl or phenylsulfonyl, each optionally substituted with $C_1–C_3$ alkyl, halogen, cyano or nitro;

R^6 is H, $C_1–C_6$ alkyl, $C_1–C_6$ haloalkyl, $C_3–C_6$ alkenyl or $C_3–C_6$ alkynyl; or R^6 is phenyl or benzyl, each optionally substituted on the phenyl ring with $C_1–C_3$ alkyl, halogen, cyano or nitro;

R^7 is H, $C_1–C_6$ alkyl, $C_1–C_6$ haloalkyl, halogen, cyano, or nitro;

R^8 is H, $C_1–C_6$ alkyl, $C_1–C_6$ haloalkyl, C3-C_6 alkenyl or $C_3–C_6$ alkynyl;

R^9 is H, $C_1–C_6$ alkyl, $C_1–C_6$ haloalkyl, C2-C_6 alkoxyalkyl, formyl, $C_2–C_6$ alkylcarbonyl, $C_2–C_6$ alkoxycarbonyl, $C_2–C_6$ alkylaminocarbonyl, $C_3–C_7$ dialkylaminocarbonyl, $C_1–C_6$ alkylsulfonyl or $C_1–C_6$ haloalkylsulfonyl; or

R^9 is benzoyl or phenylsulfonyl, each optionally substituted with $C_1–C_3$ alkyl, halogen, cyano or nitro;

m is 1 or 2;

n is 0, 1 or 2; and

p and q are each independently 0, 1, 2, 3 or 4;

provided that, when Q is Q–1, then n is 1 or 2.

5,631,211
LUBRICATING OIL COMPOSITION FOR USE WITH SINTERED POROUS BEARINGS

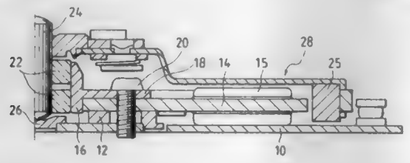
Hisaya Nakagawa; Michiaki Takizawa; Teruhiko Ohtaki, all of Nagano; Katsumi Nagano, Aichi; Masuhiro Onoyama, Aichi, and Tetsuo Ichimaru, Aichi, all of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Nov. 1, 1994, Ser. No. 334,317

Claims priority, application Japan, Nov. 1, 1993, 5-293867

Int. Cl.[6] C10M *107/02*

U.S. Cl. 508—108 **18 Claims**



1. A lubricating oil composition for use with sintered porous bearings comprising:

a base oil containing one of a poly-α-olefin hydride and ethylene-α-olefin copolymer hydride polyethylene; and

at least one additive selected from the group consisting of zinc dialkyl dithiophosphate, molybdenum dialkyl dithiocarbide, molybdenum dialkyl dithiophosphate and a sulfur-phosphorous containing extreme pressure additive added in an amount of 0.01 to 5 parts by weight per 100 parts by weight of the base oil.

5,631,212
ENGINE OIL

Elisavet P. Vrahopoulou, Chatham, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 359,792, Dec. 20, 1994, abandoned. This application Jan. 19, 1996, Ser. No. 589,175

Int. Cl.[6] C10M *141/06;129/26*

U.S. Cl. 508—192 **9 Claims**

1. A lubricating oil composition having improved fuel economy, wear resistance and antioxidancy properties which comprises:

(a) a lubricating oil base stock;

(b) from 0.002 to 1.0 wt %, based on oil composition, of a copper salt,

(c) from 0.004 to 4 wt %, based on oil composition, of an oil-soluble molybdenum salt of an organic acid of $C_4–C_{30}$ saturated or unsaturated carboxylic acid;

(d) from 50 to 4000 ppmw, based on oil composition, of a Group II metal atoms present as metal salicylate; and

(e) from 2 to 16 wt %, based on oil composition, of a borated polyalkenyl succinimide wherein the amount of boron in the oil is at least 900 ppm, based on oil.

5,631,213
PROCESS FOR PRODUCING MOLYBDENUM OXYSULFIDE DITHIOCARBAMATE

Noriyoshi Tanaka; Aritoshi Fukushima; Yukio Tatsumi; Kazuhisa Morita, and Yoko Saito, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K. K., Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 597,898

Claims priority, application Japan, Feb. 15, 1995, 7-026815

Int. Cl.[6] C10M *115/00;* **C07F** *1/00*

U.S. Cl. 508—363 **14 Claims**

1. A process for producing molybdenum oxysulfide dithiocarbamate comprising:

reacting [A] an aqueous solution or suspension prepared by reacting (a) a compound having hexavalent molybdenum. with (b) an alkali hydrogen sulfide or an alkali sulfide;

[B] a carbon disulfide;

[C] a secondary amine;

[D] a mineral acid; and

[E] a reducing agent

wherein said reducing agent, [E], is other than the compound used as [A] (b) and is added and reacted at any stage of said process.

5,631,214
PREPARATION OF BISMUTH DITHIOCARBAMATES

Thomas J. Karol, Norwalk, and Steven G. Donnelly, New Fairfield, both of Conn., assignors to R.T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Jul. 31, 1995, Ser. No. 509,277

Int. Cl.[6] C10M *141/12*

U.S. Cl. 508—365 **8 Claims**

1. A method for preparation of reaction mixtures by exchange reaction and comprising bismuth dithiocarbamates of the formula

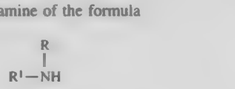


wherein R and R^1 are hydrocarbyl groups selected independently from alkyl, alkenyl, cycloalkyl, aryl, alkaryl and arylalkyl groups and metal carboxylates of the formula



wherein M represents a metal selected from alkali metals, group IIA and group IIB metals, n is 1 or 2, and R^2 is an alkyl or alkenyl group, naphthetic radical, or fatty radical having 8 to 22 carbon atoms comprising the steps of

(1) reacting a secondary amine of the formula



wherein R and R^1 represent groups defined above, with carbon disulfide and monovalent or divalent metal hydroxide or oxide to form the corresponding metal dithiocarbamate intermediate,

(2) adding bismuth carboxylate of the formula

wherein R^2 represents the groups defined above,

(3) heating at 25° to 120° C. to produce said reaction mixture, wherein the mole ratio of the bismuth dithiocarbamate to the metal carboxylate is about 1:1 to 1.5:1.

5,631,215
PROCESS FOR MAKING HIGH MOISTURE CONTENT SOAP BARS

Donald V. Kinsman, Ft. Thomas, Ky., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 278,464, Jul. 21, 1994, abandoned. This application Sep. 22, 1994, Ser. No. 310,907

Int. Cl.[6] C11D *9/00;15/04;13/00*

U.S. Cl. 510—130 **40 Claims**

1. A process for making a personal cleansing bar having a high moisture content comprising the steps of: (1) forming a soap composition comprised of from about 80 to about 99% by weight of a neutralized tallow-free fatty acid mixture and from about 1 to about 20% by weight of an alkyl polyglycoside of the formula I

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wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; Z is saccharide residue having 5 or 6 carbon atoms; a is a number having a value from 1 to about 6, wherein said tallow-free fatty acid mixture has an iodine value of less than about 7 and wherein the above percentages are based on the total weight of the fatty acid mixture and the alkyl polyglycoside; (2) finishing said soap composition to produce said bar having from about 15% to about 30% by weight of water.

5,631,216

INDUSTRIAL AND INSTITUTIONAL LIQUID CLEANING COMPOSITIONS CONTAINING ALKYL POLYGLYCOSIDE SURFACTANTS

Timothy C. Morris, Morton; Michael Hansberry, Conshohocken, both of Pa., and John F. Hessel, Metuchen, N.J., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 389,837, Feb. 16, 1995, Pat. No. 5,525,256. This application Feb. 22, 1996, Ser. No. 603,836

The portion of the term of this patent subsequent to Feb. 16, 2015, has been disclaimed.

Int. Cl.[6] **C11D** *1/66;3/00;* **B01J** *13/00*

U.S. Cl. 510—276 **21 Claims**

1. An industrial and institutional liquid cleaning composition which comprises:

(a) from about 1% to about 30% active by weight of a 1:1 to 1:0 mixture of an alkyl polyglycoside in which the alkyl group contains 12 to 16 carbon atoms to an alkyl polyglycoside in which the alkyl group contains 8 to 10 carbon atoms;

(b) from 0% to about 50% by weight of an alkali metal hydroxide;

(c) from 0% to about 40% by weight of an alkali metal silicate;

(d) from 0% to about 40% by weight of a builder;

(e) from 0% to about 5% by weight of a dispersing/antiredeposition agent;

(f) from about 5% to about 75% by weight of water; and

(g) from 0% to about 5% by weight of a hydrotrope, with the proviso that the sum of the percentages for the alkali metal hydroxide, alkali metal silicate and the builder must be greater than zero; and wherein the composition is free from ethoxylated alcohols and alkylphenol ethoxylates.

5,631,217

DETERGENT COMPOSITIONS COMPRISING A MODIFIED SUBTILISIN

Sven Branner, Lyngby; Sven Hastrup, Copenhagen; Nina Eriksen, Frerderiksberg; Poul Lindegaard, Copenhagen; Ole H. Olsen, Broenshoej, all of Denmark; Eric Casteleijn, Capelle, Netherlands; Maarten R. Egmond, Linschoten, Netherlands; Johan Haverkamp, Bergschenboek, Netherlands; Wouter Musters, Maassluis, Netherlands, and Jakob de Vlieg, Rotterdam, Netherlands, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and Unilever PLC, London, Great Britain

Division of Ser. No. 811,502, Dec. 20, 1991, Pat. No. 5,482,849. This application Sep. 13, 1995, Ser. No. 527,734

Claims priority, application European Pat. Off., Dec. 21, 1990, 90610077; United Kingdom, Dec. 21, 1990, 9027836

Int. Cl.[6] **C11D** *3/386;* **C12N** *9/54;9/56;9/50*

U.S. Cl. 510—320 **48 Claims**

1. A modified subtilisin comprising a mutation in an amino acid sequence of a subtilisin, wherein the mutation is a substitution of a tyrosine at position 167, numbered according to the amino acid sequence of the mature subtilisin BPN', with a threonine or tryptophan.

5,631,218

ANTIMICROBIAL CLEANING COMPOSITIONS

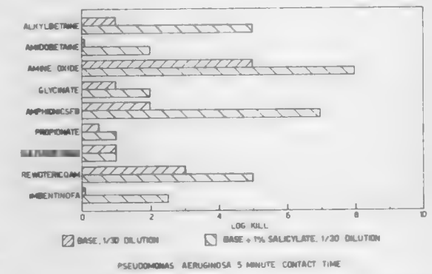
Alexander Allan, Wirral; Ian M. George, Chester, and Kenneth L. Rabone, Wirral, all of United Kingdom, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jun. 6, 1995, Ser. No. 469,946

Claims priority, application United Kingdom, Jun. 20, 1994, 9412356; Sep. 26, 1994, 9419379; Dec. 9, 1994, 9424895; Mar. 10, 1995, 9504827

Int. Cl.[6] **C11D** *1/72;1/75;1/90;1/94*

U.S. Cl. 510—423 **6 Claims**



1. An antimicrobial hard surface cleaning composition comprising:

a) 0.01 to 8 wt. % of an ortho-hydroxy benzoic acid derivative selected from the group consisting of:

2-hydroxy benzoic acid,

2-hydroxy benzoic acid substituted with a C_1–C_{12} alkyl group at the 3, 4 or 5 positions,

2-hydroxy benzoic acid substituted with a hydroxyl group at the 3, 4 or 5 positions,

and mixtures thereof; and

b) 0.01 to 8 wt. % of an amphoteric surfactant selected from the group consisting of: betaines, amine oxides, alkyl-amino glycinates; and

c) 0.1 to 30 wt. % of a C_8–C_{22} ethoxylated alcohol nonionic surfactant with 4 to 10 ethoxy groups per molecule,

said composition having a pH of 3.2–4.0.

5,631,219

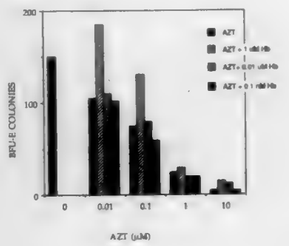
METHOD OF STIMULATING HEMATOPOIESIS WITH HEMOGLOBIN

Gary J. Rosenthal, Boulder, and Michael J. Gerber, Denver, both of Colo., assignors to Somatogen, Inc., Boulder, Colo.

Filed Mar. 8, 1994, Ser. No. 208,740

Int. Cl.[6] **A61K** *38/16;* **A01N** *61/00;1/02;* **G01N** *33/20*

U.S. Cl. 514—6 **24 Claims**



1. A method for stimulating hematopoiesis in a mammal comprising administering to the mammal a therapeutically effective amount of purified hemoglobin.

5,631,220

Patent Not Issued For This Number

5,631,221

POLLENOSIS-INDUCING POLYPEPTIDE, PROCESS FOR PREPARING THE SAME, AND USES THEREOF

Keizo Kohno; Manami Sawatani, and Masashi Kurimoto, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Sibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Dec. 14, 1994, Ser. No. 358,557

Claims priority, application Japan, Dec. 21, 1993, 5-344700

Int. Cl.[6] **A61K** *38/16;39/00;* **C07K** *1/00*

U.S. Cl. 514—8 **17 Claims**

1. A purified polypeptide having the following physicochemical properties:

(1) Molecular weight

40,000±5,000 daltons on sodium dodecyl polyacrylamide gel electrophoresis (SDS-PAGE);

(2) Isoelectric point (pI)

9.5±0.5 on isoelectrophoresis;

(3) Partial amino acid sequence containing the N-terminal as an N-terminal sequence Ser-Arg-His-Asp-Ala-Ile-, or Arg-Lys-Val-Glu-His-Ser-Arg-His-Asp-Ala-Ile- (SEQ ID NO: 1);

(4) Ultraviolet absorption spectrum

Exhibiting the maximum absorption spectrum at a wave length of around 280 nm;

(5) Solubility:

Soluble in water, physiological saline and phosphate buffer;

(6) Biological activity

Inducing pollenosis by binding to immunoglobulin E antibody collected from blood of a patient with pollenosis; and

(7) Stability

Being inactivated in an aqueous solution (pH 7.2) when incubated at 100° C. for 10 minutes; Substantially not losing its activity in an aqueous solution (pH 7.2) when allowed to stand at 4° C. for one month.

5,631,222

ENDOTHELIN-ANTAGONIZING PEPTIDE

Kenji Shibata, Kawasaki; Toshiyuki Suzawa, Yamato; Motoo Yamasaki; Takeo Tanaka, both of Machida; Eiji Tsukuda, Shimotogari; Koji Yamada, Sagamihara, and Tetsuji Ohno, Shimotogari, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01011, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO95/00546, PCT Pub. Date May 1, 1995

PCT Filed Jun. 23, 1994, Ser. No. 382,013

Claims priority, application Japan, Jun. 25, 1993, 5-155031

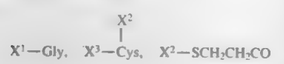
Int. Cl.[6] **A61K** *38/00;* **C07K** *7/08;5/12*

U.S. Cl. 514—9 **9 Claims**

1. A peptide compound represented by the following formula:

R^1-R^2-R^3-R^4-R^5-R^6-R^7-R^8-R^9-R^{10}-R^{11}-R^{12}-Phe-R^{14}-R^{15}-R^{16}-R^{17}-R^{18}-Ile-R^{20}-Z SEQ ID NO. 64

wherein R^1 represents



or hydrogen;

R^2 represents Asn, Asp, Phe, Tyr, Ser, or a single bond;

R^3 represents Trp, Ile, Pro, Ala, or a single bond;

R^4 represents His, Lys, Gly, Trp, Ala, or a single bond;

R^5 represents Gly, Thr, Trp, Val, or a single bond;

R^6 represents Gly, Thr, Asn, Tyr, Asp, or a single bond;

R^7 represents Ala, Ser, Asn, Asp, Tyr, Phe, or a single bond;

R^8 represents Pro, Ala, Arg, or a single bond;

R^9 represents



or a single bond;

R^{10} represents Trp or Ala;

R^{11} represents Val, Pro, or a single bond;

R^{12} represents Tyr or a single bond;

R^{14} represents Ala, MeAla, Ser, or Cys;

R^{15} represents His or Trp;

R^{16} represents Leu or Nva;

R^{17} represents Asp, Thr, Asn, Ser, Gly, or Glu;

R^{18} represents Ile, Leu, Cha, Abu, Thi, Met, Tyr, MeLeu, MeIle, Phg, or Nle;

R^{20} represents Trp, Phe, or Tyr; and

Z represents hydroxy, lower alkoxy, or amino (wherein X^1 and X^3 each represent hydrogen, benzyloxycarbonyl, t-butyloxycarbonyl, 9-fluorenylmethyloxycarbonyl, or carboxy-substituted or unsubstituted lower alkanoyl; X^2 represents hydrogen or acetamidomethyl; Y^1 represents hydroxy or lower alkoxy; Y^2 represents hydrogen, or X^1 and Y^1 or X^2 and Y^2 are combined together to form a single bond as X^1-Y^1 or X^2-Y^2; and Nva represents a norvaline residue, Cha represents a β-cyclohexylalanine residue, Abu represents a 2-aminobutanoic acid residue, Thi represents a β-(2-thienyl)alanine residue, Phg represents a phenylglycine residue, Nle represents a norleucine residue, MeAla represents a N-methylalanine residue, MeLeu represents a N-methylleucine residue, MeIle represents a N-methylisoleucine residue, and amino acid residues other than Gly each represent a D-, L-, or DL-amino acid residue, or a pharmaceutically acceptable salt thereof.

5,631,223

FUNGICIDALLY ACTIVE COMPOUNDS

Jens Breinholt, Bagsvaerd; Ruby I. Nielsen, Farum, and Georg W. Jensen, Bagsvaerd, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

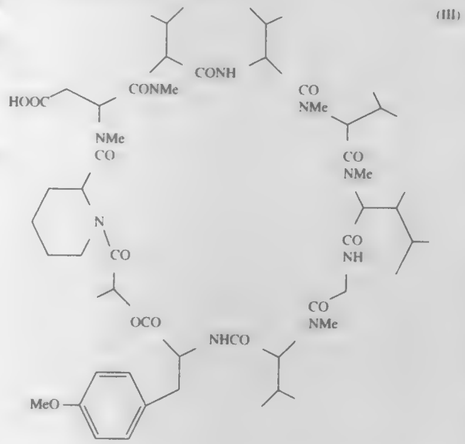
Division of Ser. No. 984,563, Aug. 16, 1993, Pat. No. 5,514,648. This application Jun. 6, 1995, Ser. No. 468,157

Claims priority, application Denmark, Sep. 17, 1990, 2236/90

Int. Cl.[6] **C07K** *11/02;* **C12P** *21/04;* **C12N** *1/14;* **A01N** *63/04*

U.S. Cl. 514—9 **10 Claims**

1. Compounds of formula III



cyclo-[Pec-MeAsp-MeVal-Val-MeVal-MeIle-Gly-MeVal-TyrOMe-D-Lact] (III)

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wherein each amino acid residue and the lactate residue independently may occur in L- or D-form, and derivatives thereof.

5,631,224

USE OF A PEPTIDE

Suad Efendic, Lindingö ; Mark Gutniak, Hässelby, both of Sweden, and Ole Kirk, Virum, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK93/00099, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/18786, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 18, 1993, Ser. No. 295,913

Claims priority, application Denmark, Mar. 19, 1992, 0363/92

Int. Cl.[6] **A61K** *38/26;* **C07K** *14/605*

U.S. Cl. 514—12 **12 Claims**

1. A method of treating diabetes which method comprises administering an effective amount of GLP-1(7-36)amide, GLP-1(7-37), or a fragment thereof which retains GLP-1(7-37)activity, to a patient in need of such a treatment in a regimen which additionally comprises treatment with an oral hypoglycaemic agent, wherein said hypoglycaemic agent is characterized as acting on an ATP-dependent potassium channel.

5,631,225

PHARMACEUTICAL FORMULATION

Hans H. Sørensen, Virum, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Oct. 13, 1994, Ser. No. 322,837

Int. Cl.[6] **A01K** *38/00;* **C07H** *21/04;* **C12P** *21/06;* **A61K** *38/00;51/00*

U.S. Cl. 514—12 **12 Claims**

1. A pharmaceutical formula comprising a growth hormone in the amount of about 0.1 mg/ml to about 40 mg/ml and isoleucine at a concentration up to about 100 mM.

5,631,226

TREATMENT TO REDUCE EDEMA

Edward T. Wei, Berkeley, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 229,911, Apr. 19, 1994, Pat. No. 5,488,033, which is a continuation-in-part of Ser. No. 876,487, Apr. 30, 1992, Pat. No. 5,306,710, which is a division of Ser. No. 386,885, Jul. 28, 1989, Pat. No. 5,137,871. This application May 19, 1995, Ser. No. 444,884

Int. Cl.[6] **A61K** *38/17;* **C07K** *5/00;7/00*

U.S. Cl. 514—12 **1 Claim**

1. A method of preserving organs for transplant comprising: perfusing the organ's vasculature with about 5 to about 500 μg of corticotropin-releasing factor.

5,631,227

SOMATOTROPIN ANALOGS

Gary C. Harbour; John G. Hoogerheide, both of Kalamazoo; Robert L. Garlick, Augusta; Stephen B. Lyle, and John E. Mott, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 365,999, Dec. 29, 1994, abandoned, which is a continuation of Ser. No. 171,874, Dec. 22, 1993, abandoned, which is a continuation of Ser. No. 929,796, Aug. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 691,008, Jun. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 622,125, Dec. 3, 1990, abandoned, which is a continuation of Ser. No. 52,651, May 18, 1987, abandoned, which is a continuation of Ser. No. 891,726, Jul. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 777,154, Sep. 18, 1985, abandoned, said Ser. No. 691,008is a continuation of Ser. No. 299,107, Jan. 19, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 462,255

Int. Cl.[6] **C07K** *14/61;* **A61K** *38/27*

U.S. Cl. 514—12 **11 Claims**

1. A non-naturally occurring mammalian somatotropin in which the amino acid corresponding to asparagine at position 99 of a native somatotropin is replaced with a different amino acid selected from the group consisting of aspartic acid and glutamic acid.

5,631,228

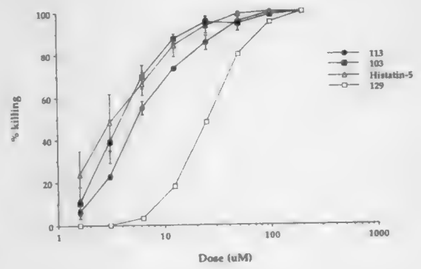
ANTI-FUNGAL AND ANTI-BACTERIAL HISTATIN-BASED PEPTIDES

Frank G. Oppenheim, Chestnut Hill; Tao Xu, Newton, and F. Donaid Roberts, Dover, all of Mass., assignors to Periodontix, Inc., Del., and The Trustees of Boston University, Mass.

Continuation-in-part of Ser. No. 287,717, Aug. 9, 1994, Pat. No. 5,486,503, which is a continuation of Ser. No. 145,030, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 786,571, Nov. 1, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 481,888

Int. Cl.[6] **A61K** *38/08;38/10;* **C07K** *7/06;7/08*

U.S. Cl. 514—12 **8 Claims**



1. A composition for treating a fungal or bacterial infection comprising a substantially pure peptide having an amino acid sequence, of at least 8 amino acids, selected from the amino acid sequence of peptide 113 as set forth in SEQ ID NO: 18.

5,631,229

METHOD FOR INACTIVATING GONADOTROPHS

Torrance M. Nett, Ft. Collins, and Leonard M. Glode, Aurora, both of Colo., assignors to Colorado State University Research Foundation, Fort Collins, Colo.

Division of Ser. No. 837,639, Feb. 14, 1992, Pat. No. 5,378,688, which is a continuation-in-part of Ser. No. 314,653, Feb. 23, 1989, abandoned. This application Jul. 7, 1993, Ser. No. 88,434

Int. Cl.[6] **A61K** *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—15 **27 Claims**

1. A method for functionally inactivating gonadotrophs in the pituitary gland of an animal, comprising administering to said animal an effective amount of a hormone/toxin conjugate comprising a peptide hormone conjugated to a toxin group, wherein said conjugate is capable of selectively binding with receptors on said gonadotrophs to render said gonadotrophs essentially incapable of secreting gonadotropins, wherein said animal is not weakened or killed by said method.

5,631,230

RECEPTOR SELECTIVE ANALOGUES OF CHOLECYSTOKININ-8

Sunan Fang, and Victor Hruby, both of Tucson, Ariz., assignors to Arizona Technology Development Corporation, Tucson, Ariz.

Continuation of Ser. No. 914,014, Jul. 15, 1992, abandoned, which is a continuation of Ser. No. 410,403, Sep. 21, 1989, abandoned. This application Jul. 25, 1994, Ser. No. 280,136

Int. Cl.[6] **A61K** *38/00;* **C07K** *7/00;7/06*

U.S. Cl. 514—16 **8 Claims**

1. A receptor selective analogue of cholecystokinin-8, having the amino acid sequence

1 2 3 4 5 6 7 8
M—Asp—X—Y—Gly—Trp—Z—Asp—Phe—NH_2

wherein

X is Tyr or Dopa

Y is N-MeNle, Val, D-Val, Phe or D-Phe

Z is Nle or N-MeNle, and

M is H or $—SO_3^-$, and exhibiting a pancreatic receptor/brain receptor selectivity ratio, measured by ^{125}I-cholecystokinin-8 binding inhibition, of less than 0.40 or in excess of 30.

5,631,231

SPECIFIC EATABLE TASTE MODIFIERS

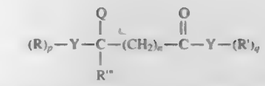
Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application May 31, 1995, Ser. No. 455,989

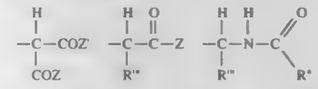
Int. Cl.[6] **A61K** *38/05*

U.S. Cl. 514—19 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



wherein n may be 0, 1 or 2; each Y which may be the same or different is selected from the group consisting of N, O, and S; Q is selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; p and q are 1 when Y is O, p and q are independently selected from the group consisting of 1 and 2 when Y is S; and p and q are independently selected from the group consisting of 2 and 3 when Y is N; each R which may be the same or different when p>1 and each R' which may be the same or different when q<1 is independently selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; and the following three structures F-2:



wherein Z and Z' are the same or different and are selected from the group consisting of OH, $—O^-X^+$, OR", NH_2, NHR", $N(R")_2$; R" is selected from the group consisting of alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aryl, substituted aralkyl, substituted alkaryl; R"' is selected from the group consisting of alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aryl, substituted aralkyl, substituted alkaryl, and an amino acid side chain; where CH—CH or CH_2—CH_2 bonds exist the level of saturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the CH—CH or CH_2—CH_2 bond and X^+ is selected from the group consisting of H^+ or a physiologically acceptable cation; and physiologically acceptable salts or all of the foregoing.

5,631,232

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

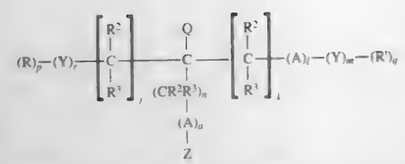
Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 1, 1995, Ser. No. 457,783

Int. Cl.[6] **A61K** *38/05*

U.S. Cl. 514—19 **13 Claims**

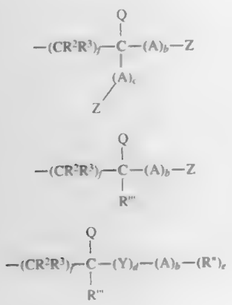
1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:

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V-1

wherein r, 1, and m are 0 or 1; j and k are 0, 1, 2, or 3; each R^2 and R^3 which may be the same or different are independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; each Y which may be the same or different is selected from the group consisting of N, O, and S; when r or m is 1 and Y is N, p or q are 2 or 3; when r or m is 1 and Y is O, p or q is 1; when r or m is 1 and Y is S, p is 1 or 2; A is selected from the group consisting of H, C═O, O═S═O, S═O, O═P(H)OH, $O═P(OH)_2$, and O═B(H)OH; Q is selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; each R which may be the same or different when p>1 and each R' which may be the same or different when q>1 are independently selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; and the following three structures V-2:



V-2

wherein b is 0, 1 or 2, each Y which may be the same or different is selected from the group consisting of N, O, and S; when d is 1, b is O and Y is N, e is 2 or 3; when d is 1, b is O and Y is O, e is 1; f is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; when d is 1, b is O and Y is S, e is 1 or 2; A is selected from H, C═O, O═S═O, S═O, O═P(H)OH or $O═P(OH)_2$, and O═B(H)OH; Q is selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; R''' and Q together may form a cyclic structure; any of the R^3's and Q together may form a cyclic structure; any of the R^3's and R'''s together may form a cyclic structure; and c is 0 or 1; Z and Z' are the same or different and are selected from OH, $—O^-X^+$, OR'', NH_2, NHR'' and $N(R'')_2$; R'' is selected from alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aryl, substituted aralkyl and substituted alkaryl; R''' is selected from alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aryl, substituted aralkyl, substituted alkaryl, and an amino acid group; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from each carbon atom participating in the CH—CH or CH_2—CH_2 bonds; X_-^+ is selected from H^+ and physiologically acceptable cations and physiologically acceptable salts of all of the foregoing.

5,631,233

Patent Not Issued For This Number

5,631,234

METHOD FOR TREATING ISCHEMIA-REPERFUSION TISSUE INJURY

Takayuki Ozawa; Satoru Sugiyama, both of Nagoya; Shigehisa Kitahara, Hino, and Katsuhiko Fujii, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

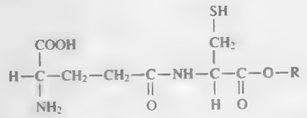
Continuation of Ser. No. 225,914, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 955,713, Dec. 15, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,634

Claims priority, application Japan, Apr. 15, 1991, 3-108163

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—19 **7 Claims**

1. A method for preventing or treating an ischemia-reperfusion tissue injury, comprising administering to a mammal in need thereof an ischemia-reperfusion tissue injury preventing or treating effective amount of: a γ-L-glutamyl-L-cysteine ester compound of formula (I):



(I)

wherein R is a straight chain, branched or cyclic hydrocarbon group having 1–10 carbon atoms, or a straight chain or branched hydrocarbon group having 1–5 carbon atoms substituted with an aromatic group; or an oxidized dimer obtained by dehydrogenation between two γ-L-glutamyl-L-cysteine esters having formula (I).

5,631,235

2-AMINOSUGAR DERIVATIVES OF MACROLIDES

Kevin Koch, Mystic, and Gary R. Schulte, Stonington, both of Conn., assignors to Pfizer, Inc., New York,, N.Y.

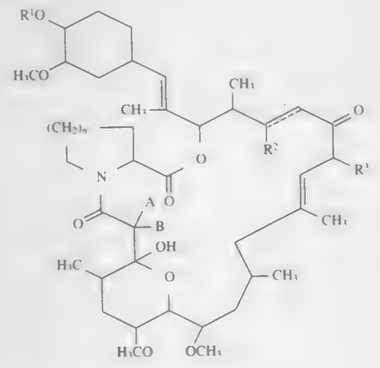
PCT No. PCT/US93/00427, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO93/18048, PCT Pub. Date Sep. 16, 1993

Continuation of Ser. No. 844,339, Mar. 2, 1992, abandoned. This PCT application Jan. 27, 1993, Ser. No. 284,687

Int. Cl.[6] A61K *31/70;* **C07H** *17/00*

U.S. Cl. 514—25 **22 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof; wherein n is 1 or 2;

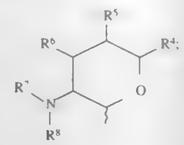
the dotted line represents an optional double bond in the case where R^2 is H;

A and B are taken separately and A is H and B is H or —OH or A and B are taken together and form ═O;

R^2 is H, (C_2–C_5)alkanoyloxy or $—OR^0$;

R^3 is (C_1 to C_4)alkyl or allyl;

R^1 and R^0 are each H or



R^4 is, for each occurrence, independently $—CO_2R^9$, $—CO_2H$, $—CH_2OH$, H, $—CH_3$, $—CONH_2$, $—CONHR^9$, $—CONR_2^9$, $—CH_2OCOR^9$, $—CH_2OCO_2R^9$, $—CH_2OCONHR^9$, $—CH_2OCONR_2^9$ or $—CH_2OR^9$;

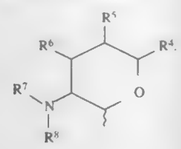
R^5 and R^6 are, for each occurrence, independently (C_1 to C_4)-alkoxy, benzyloxy, —OH, $—OCOR^9$, $—OCO_2R^9$ or $—OSiR_3^{10}$;

R^7 and R^8 are, for each occurrence, independently H, (C_1 to C_4)-alkyl, $—COCH_2R^9$, $—COR^9$, $—CO_2R^9$ or $—SO_2R^9$;

R^9 is, for each occurrence, independently (C_1 to C_6) alkyl, (C_3 to C_6) cycloalkyl, allyl, $—CF_3$, pyridyl, thienyl, thienylmethylene, furanyl, benzyl, benzyl variously substituted with one to five halogen atoms, —OH groups or (C_1 to C_4)alkoxy groups, phenyl or phenyl variously substituted with one to five halogen atoms, —OH groups or (C_1 to C_4)alkoxy groups; and

R^{10} is, for each occurrence, independently (C_1 to C_4) alkyl, phenyl or benzyl;

provided that when R^1 is H: then R^0 is



16. A method for treating resistance to transplantation in a mammal in need of such treatment comprising administering to said mammal a resistance to transplantation treating effective amount of a compound according to claim **1** or a pharmaceutically-acceptable salt thereof.

5,631,236

GENE THERAPY FOR SOLID TUMORS, USING A DNA SEQUENCE ENCODING HSV-TK OR VZV-TK

Savio L. C. Woo, and Shu-Hsia Chen, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Aug. 26, 1993, Ser. No. 112,745

Int. Cl.[6] A61K *48/00;* **A01N** *63/00;* **C12N** *5/00*

U.S. Cl. 514—44 **6 Claims**

1. A method of causing regression of a solid tumor in a mammal comprising the steps of,

introducing an adenoviral vector directly into said tumor wherein said vector is comprised of a DNA sequence encoding HSV-tk operatively linked to a promoter and wherein said tumor express HSV-tk; and

administering ganciclovir, acyclovir or FIAU in amounts sufficient to cause regression of said tumor when said ganciclovir, acyclovir or FIAU is converted to a toxic compound by HSV-tk.

5,631,237

METHOD FOR PRODUCING IN VIVO DELIVERY OF THERAPEUTIC AGENTS VIA LIPOSOMES

Victor J. Dzau, 12101 Dawn La., Los Altos Hills, Calif. 94022, and Yasufumi Kaneda, Molecular & Cellular Institute, Osaka University, 1-3, Yamada-oka, Suita-City, Osaka 565, Japan

Continuation-in-part of Ser. No. 995,022, Dec. 22, 1992, abandoned. This application May 10, 1994, Ser. No. 241,372

Int. Cl.[6] A61K *48/00;9/127*

U.S. Cl. 514—44 **10 Claims**

1. A method for producing liposomes for fusion with cells, said method comprising:

agitating in a first aqueous medium purified HN and F proteins of Sendai virus with liposome forming lipids to form first liposomes;

agitating in a second aqueous medium an agent of interest with liposome forming lipids to form second liposomes,

wherein at least 25 mole % of the total lipids is cationic lipids;

combining said first and second liposomes under fusing conditions to provide liposomes for fusion with cells.

5,631,238

SPICAMYCIN DERIVATIVES AND THE USE THEREOF

Noboru Ôtake, Toshima-Ku; Hiroyuki Kawai, Takasaki; Tomiko Kawasaki, Takasaki; Atsuo Odagawa, Takasaki; Masaru Kamishohara, Takasaki, and Teruyuki Sakai, Takasaki, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo-To, Japan

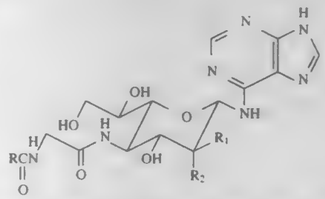
Division of Ser. No. 910,640, Jul. 8, 1992, Pat. No. 5,461,036. This application Apr. 26, 1995, Ser. No. 429,303

Claims priority, application Japan, Jul. 12, 1991, 3-198903; Nov. 15, 1991, 3-326845; Apr. 3, 1992, 4-110665

Int. Cl.[6] A61K *31/70;* **C07H** *19/16*

U.S. Cl. 514—45 **16 Claims**

1. A method of treating cancer comprising administering to a patient in need of such treatment an effective amount of a spicamycin derivative represented by the formula (I) or a salt thereof:



(I)

wherein R_1 and R_2 are different from each other and each represents H or OH and R represents any one of the substituents (1)–(16):

(1) a linear alkenyl having 11–13 carbon atoms;

(2) a linear alkyl having 12–13 carbon atoms, and a branched alkyl having 11–13 carbon atoms when R_1 represents H and R_2 represents OH;

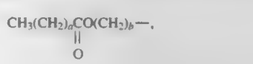
(3) a linear haloalkyl having 10–15 carbon atoms;

(4) $CH_3(CH_2)_nCH(OH)$— of $CH_3(CH_2)_{n-1}CH(OH)—CH_2$—, wherein n denotes an integer of 9–13;

(5) an alkyl having 10–15 carbon atoms with an azide group or a cyano group;

(6) a linear alkyl having 10–13 carbon atoms with a phenoxy group or a halogen-substituted phenoxy group;

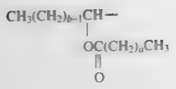
(7)



wherein a denotes an integer of 0–2 and b denotes an integer of 10–15;

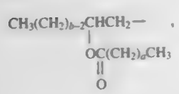
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(8)



wherein a denotes an integer of 0–2 and b denotes an integer of 10–15;

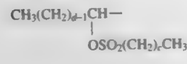
(9)



wherein a denotes an integer of 0–2 and b denotes an integer of 10–15;

(10) $CH_3(CH_2)_cSO_2O(CH_2)_d$— wherein c denotes an integer of 0–3 and d denotes an integer of 10–15,

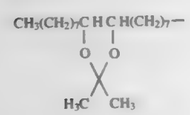
(11)



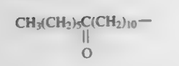
wherein c denotes an integer of 0–3 and d denotes an integer of 10–15;

(12) $(CH_3)_3Si(CH_2)_{10}$— or $(CH_3)_3Si$—C≡C—$(CH_2)_8$,

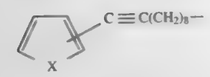
(13)



(14)



(15)



wherein X represents O or S and

(16) a linear alkadienyl having 11–13 carbon atoms.

5,631,239

L-2',3'-DIDEOXY NUCLEOSIDE ANALOGS AS ANTI-HEPATITIS B (HBV) AGENTS

Tai-Shun Lin, North Haven, and Yung-Chi Cheng, Woodbridge, both of Conn., assignors to Yale University, New Haven, Conn.

Continuation of Ser. No. 67,299, May 25, 1993, abandoned. This application Oct. 18, 1995, Ser. No. 544,650

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—49 **3 Claims**

1. The compound 1-(2,3-Dideoxy-beta-L-ribofuranosyl)-5-fluorocytosine.

3. A method of treating an HBV infection in a patient comprising administering to said patient a therapeutically effective amount of the compound .1-(2,3-Dideoxy-beta-L-ribofuranosyl)-5-fluorocytosine.

5,631,240

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

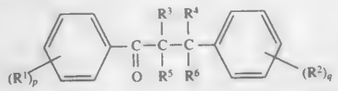
Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 5, 1995, Ser. No. 464,277

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—53 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:

I-1



wherein p and q are independently selected from the group consisting of 1, 2, 3, 4 or 5; each R^1 and R^2, which may be the same or different, are independently selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, q is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkylurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure; and each of R^3 and R^4, R^5, R^6, which may be the same or different, are independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the CH—CH or CH_2—CH_2 bonds, and physiologically acceptable salts or all of the foregoing.

5,631,241

PHARMACEUTICAL COMPOSITIONS CONTAINING HYALURONIC ACID FRACTIONS

Francesco della Valle, Padova; Aurelio Romeo, Rome, and Silvana Lorenzi, Padova, all of Italy, assignors to Fidia S.p.A., Via Ponte della Fabbrica, Italy

Continuation of Ser. No. 931,949, Aug. 19, 1992, Pat. No. 5,442,053, which is a continuation of Ser. No. 452,681, Dec. 19, 1989, Pat. No. 5,166,331, which is a continuation of Ser. No. 756,824, Jul. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 719,113, Apr. 2, 1985, abandoned, and a continuation-in-part of Ser. No. 669,431, Nov. 8, 1984, abandoned. This application Apr. 21, 1995, Ser. No. 426,905

Claims priority, application Italy, Oct. 10, 1983, 49143/83; Oct. 9, 1984, 48979/84; Apr. 2, 1985, 47924/85

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—54 **8 Claims**

1. A hyaluronic acid derivative which is a partial or a stoichiometrically neutral salt of hyaluronic acid or a molecular weight fraction thereof and at least one pharmacologically active substance of a basic nature.

5,631,242

HYALURONIC ACID-UREA PHARMACEUTICAL COMPOSITIONS UTILIZED FOR TREATMENT OF DISEASES OF CUTIS

Damian J. Gallina, Erie, Pa., assignor to Patent Biopharmaceutics, Inc., Erie, Pa.

Division of Ser. No. 101,826, Aug. 4, 1993. This application Jun. 2, 1995, Ser. No. 471,334

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—54 **8 Claims**

1. A method of treating disease of the cutis which comprises applying to cutis tissues in need of such treatment a therapeutically effective amount of a composition comprising a pharmaceutically acceptable carrier, urea in an amount of 0.1–40% by weight, and hyaluronic acid or a pharmaceutically acceptable salt thereof in an amount of 0.05–25% by weight, said disease having symptoms selected from the group consisting of inflammation, erythema, edema, papules, vesicles, macules, pustules, scaling, cracking, crusting, and lesions.

5,631,243

COLLAGEN-BASED VISCOELASTIC SOLUTION FOR VISCO-SURGERY

Charles D. Kelman, New York, N.Y., and Dale P. DeVore, Chelmsford, Mass., assignors to Collagenesis Inc., Acton, Mass.

Continuation of Ser. No. 939,955, Sep. 3, 1992, abandoned, which is a continuation of Ser. No. 547,458, Jul. 3, 1990, abandoned. This application Dec. 28, 1994, Ser. No. 365,167

Int. Cl.[6] A61K *31/725;31/715;* **A61M** *31/00*

U.S. Cl. 514—56 **23 Claims**

1. A viscoelastic solution comprising an acylated soluble collagen and a mucopolysaccharide in a saline physiologic diluent having an ionic strength of no more than 0.001μ, said collagen and mucopolysaccharide being in a weight ratio of collagen to mucopolysaccharide of between about 100:1 and about 20:1, and said solution having a kinetic viscosity ranging from 1,000 cps to 800,000 cps, said solution having an osmolarity of between about 260 to 340 milliosmoles, with about 75 to about 95% of the osmolarity of said solution provided by nonionic solutes.

5,631,244

MONO(6-AMINO-6-DEOXY)CYCLODEXTRIN DERIVATIVES SUBSTITUTED IN THE 6-POSITION BY AN α-AMINO ACID RESIDUE, PROCESS FOR THEIR PREPARATION AND THEIR USES

Hervé Galons, Paris; Jean Maignan, Tremblay les Gonesse, both of France, and Jallal Gnaim, Garbiah, Israel, assignors to L'Oreal, Paris, France

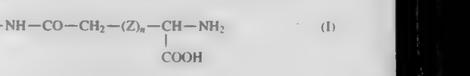
Filed May 13, 1994, Ser. No. 242,095

Claims priority, application France, May 13, 1993, 93 05782

Int. Cl.[6] A61K *31/715;* **C08B** *37/16*

U.S. Cl. 514—58 **8 Claims**

1. A mono(6-amino-6-deoxy) cyclodextrin derivative substituted in the 6-position by an α-amino acid residue, corresponding to the following formula:



(I)

in which:

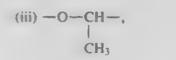
CD represents α-, β- or γ-cyclodextrin,

n is 0 or 1, and

Z represents a divalent radical selected from the group consisting of:

(i) —O—CH_2—

(ii) —S—CH_2—



(iii) —O—CH(CH₃)—,

and

(iv) —O—C_6H_4—CH_2—.

5,631,245

METHOD FOR MEDICATING THE INFLAMMATORY CONTROLLING SYSTEM AND ADVERSE INFLAMMATORY REACTIONS AND FOR MAKING COMPOUNDS FOR TREATING THE PATHOLOGY OF ADVERSE INFLAMMATORY REACTIONS

Clairmont G. Drube, Green Valley, Ariz., assignor to Biodynamics Pharmaceuticals, Inc., Green Valley, Ariz.

Filed Jun. 6, 1995, Ser. No. 470,501

Int. Cl.[6] A01N *43/04;* **A61K** *31/70*

U.S. Cl. 514—62 **21 Claims**

1. A method for the treatment of a mammal or fish exhibiting an adverse inflammatory response or reaction that are the result of the disruptions of a dynamic network of cellular mechanisms in said mammal or fish, which method comprises administration of a composition comprising diglucosylamine as the active ingredient to said organism in an amount effective to treat the adverse inflammatory response or reaction.

5,631,246

USE OF PAF

Sofia Hashemi, Ottawa, and Douglas Palmer, Hull, both of Canada, assignors to The Canadian Red Cross Society, Ottawa, Canada

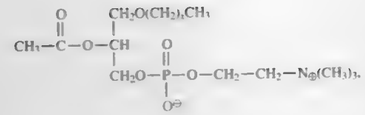
Filed Mar. 15, 1993, Ser. No. 31,573

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—114 **16 Claims**

1. A method for stimulating the release of von Willebrand factor and/or Factor VIII in human cells comprising administering to said human cells a compound selected from the group consisting of platelet activating factor (PAF) having the following formula:

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where x ≧ 13:0

and an analogue or derivative of PAF having PAF activity in an amount effective to stimulate the release of von Willebrand factor and/or Factor VIII in human cells.

5,631,247

COMPOUNDS AND COMPOSITIONS WITH NITROGEN-CONTAINING NON-BASIC SIDE CHAINS

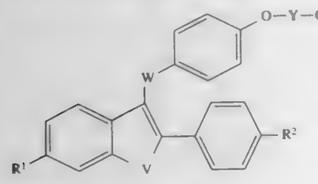
Jeffrey A. Dodge, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 476,154, Jun. 7, 1995, Pat. No. 5,567,828. This application Jul. 15, 1996, Ser. No. 680,475

Int. Cl.[6] A61K *31/56;31/38;31/34;31/275*

U.S. Cl. 514—177 **11 Claims**

1. A method for alleviating the symptoms of post-menopausal syndrome comprising administering to a woman in need of such treatment an effective amount of a compound of formula II



wherein

R^1 and R^2, independently, are H, OH, $O(C_1–C_6$ alkyl), $O—C(O)—(C_1–C_6$ alkyl), $O—C(O)—O(C_1–C_6$ alkyl), $O—C(O)—Ar$, $O—C(O)—O—Ar$, $O—SO_2—(C_4–C_6$ alkyl), chloro, fluoro, or bromo;

W is CHOH, C(O), or CH_2;

Y is $(CH_2)_n$, or $CH(C_1–C_4$ alkyl);

V is S, O, or CH_2CH_2;

n is 1, 2, or 3; and

Ar is optionally substituted phenyl;

or a pharmaceutically acceptable salt or solvate thereof.

5,631,248

SUPERSATURATED TOPICAL COMPOSITIONS

Adrian F. Davis, Dorking, and Jennifer J. Gordon, Godalming, both of England, assignors to SmithKline Beecham plc, England

PCT No. PCT/GB93/00692, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO93/20799, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 2, 1993, Ser. No. 318,614

Claims priority, application United Kingdom, Apr. 10, 1992, 9207988

Int. Cl.[6] A61K *9/06*

U.S. Cl. 514—179 **6 Claims**

1. A two-phase composition for topical application, wherein the two phases are intended to be mixed together on or immediately prior to application, comprising:

a first, non-aqueous liquid phase containing a drug dissolved therein and comprising a topically acceptable non-aqueous and non-volatile solubiliser; and a second, non-aqueous liquid phase, physically and/or chemically different from the first phase but miscible therewith on admixture, optionally containing the same drug dissolved therein and comprising a topically acceptable non-aqueous and non-volatile carrier; the composition of the first and second liquid phases being such that each has a different lipophilicity and each confers a different saturated solubility on the drug; the concentration of drug in each phase in which it is present and the composition of each of the first and second liquid phases being such that, on admixture of the phases, the total drug concentration in the mixture thus formed is greater than the saturated drug concentration in the same mixture, whereby the said mixture is supersaturated with the drug and wherein the composition further comprises a volatile solvent in each of the first and second liquid phases, whereby on admixture of the phases, the rate of loss of volatile solvent originally present in the first liquid phase is comparable to the rate of loss of volatile solvent originally present in the second liquid phase, such that the ratio of the total drug concentration in the mixture to the saturated drug concentration in the same mixture remains substantially constant.

5,631,249

ESTROGEN NUCLEUS DERIVATIVES FOR USE IN THE INHIBITION OF SEX STEROID ACTIVITY

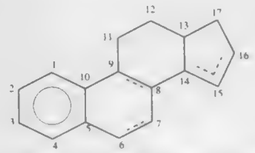
Fernand Labrie, and Yves Mérand, both of Ste-Foy, Canada, assignors to Endorecherche Inc., Quebec, Canada

Division of Ser. No. 917,915, Jul. 19, 1992, Pat. No. 5,204,337, which is a continuation of Ser. No. 377,010, Jul. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 322,154, Mar. 10, 1989, abandoned, Ser. No. 265,716, Nov. 19, 1988, abandoned, and Ser. No. 265,150, Oct. 31, 1988, abandoned. This application Feb. 12, 1993, Ser. No. 17,045

Int. Cl.[6] A61K *31/565;31/56;* **C07J** *31/00*

U.S. Cl. 514—182 **22 Claims**

1. A pharmaceutical composition comprising a pharmaceutically acceptable diluent or carrier and a therapeutically effective amount of a sex steroid activity inhibitor having, as part of its molecular structure, a substituted or unsubstituted estrogenic nucleus of structure I



wherein the dotted lines represent optional pi bonds and wherein said compound includes as another part of its molecular structure a side chain substituted onto a ring carbon of said structure I represented by the formula $—R^1[—B—R^2—]_x—L—G$ wherein at least one of said side chains is substituted at carbon 16, wherein:

x is an integer from 0 to 6, wherein at least one of L and G is a polar moiety distanced from said ring carbon by at least three intervening atoms, and wherein:

R^1 and R^2 are independently either absent or selected from the group consisting of straight- or branched-chain alkylene, straight- or branched-chain alkynylene, straight- or branched-chain alkenylene, phenylene, and fluoro-substituted analogs of the foregoing;

B is either absent or selected from the group consisting of —O—, $—CR^3OR^3—$, and phenylene (R^3 being hydrogen or lower alkyl);

L is selected from the group consisting of lower alkyl, $—CONR^4—$, $—CSNR^4—$, $—NR^5CO—$, $—NR^5CS—$, $—NR^5CONR^4—$, $—SO_2NR^4—$, $—NR^5SO_2—$, $—NR^4—$, —S—, —SO— $—SO_2—$ (R^4 and R^5 being independently selected from the group consisting of hydrogen, lower alkyl, and a derivative of the foregoing which, together with G forms a 5–7 member nitrogen hetero ring; and

G is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, $(C_3–C_7)$cyclo-alkyl, bromo(lower)alkyl, chloro(lower)alkyl, fluoro(lower)alkyl, iodo(lower)alkyl, (lower)alkoxycarbonyl(lower)alkyl, $(C_5–C_{10})$aryl, $(C_7–C_{11})$arylkyl, di(lower)alkylamino(lower-)alkyl, fluoro-substituted analogs of the foregoing, and a derivative of the foregoing thereof which, together with L forms a 5–7 member nitrogen hetero ring.

5,631,250

PROCESS AND SOLVATE OF 2-METHYL-THIENO-BENZODIAZEPINE

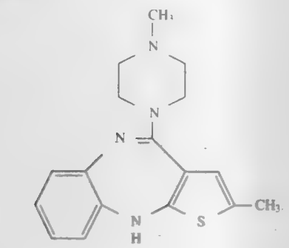
Charles A. Bunnell, Lafayette, Ind.; Terrence M. Hotten, Farnborough, England; Samuel D. Larsen, West Lafayette, Ind., and David E. Tupper, Reading, England, assignors to Eli Lilly and Company, Indianapolis, Ind., and Lilly Industries Limited, Basingstoke, England

Filed Mar. 24, 1995, Ser. No. 410,474

Int. Cl.[6] A61K *31/55;* **C07D** *495/04;243/10*

U.S. Cl. 514—220 **10 Claims**

1. A crystalline mono methanol solvate form of a compound of the Formula I



5,631,251

5-CYCLOPROPYL-1,4 BENZODIAZEPINE-2-ONES

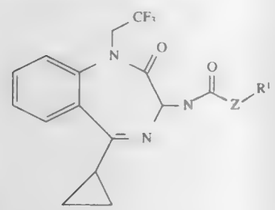
John Butcher, Telford; David A. Claremon, Maple Glen; Nigel Liverton, Harleysville, and Harold G. Selnick, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 7, 1995, Ser. No. 481,662

Int. Cl.[6] A61K *31/55;* **C07D** *243/24*

U.S. Cl. 514—221 **13 Claims**

1. The compounds of formula I



where

Z is $C_{0–6}$ alkyl; and

R^1 is phenyl or mono or disubstituted phenyl, where the substitutents are Cl, and CF_3,

or pharmaceutically acceptable salts, hydrates and crystal forms thereof.

5,631,252

SPECIFIC EATABLE TASTE MODIFIERS

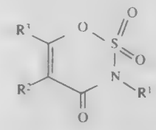
Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, and a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735, said Ser. No. 451,063is a continuation of Ser. No. 67,537, May 26, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,222

Int. Cl.[6] A61K *31/54*

U.S. Cl. 514—222.5 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



J-1

wherein R^1 is selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic and polycyclic; and R^2 and R^3 are independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; where C═C bonds exist the level of saturation may be increased by removing one hydrogen atom from each carbon atom participating in the C═C bond or decreased by substituting a hydrogen atom on each carbon atom participating in the C═C bond, and where C—C bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the C—C bond, and physiologically acceptable salts of all of the foregoing.

5,631,253

FUNGICIDAL PROPENOIC ACID DERIVATIVES

Paul J. de Fraine, and Anne Martin, both of Wokingham, England, assignors to Zeneca Limited, London, England

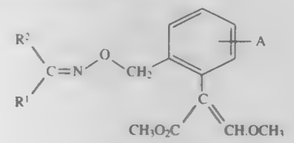
Continuation of Ser. No. 295,424, Aug. 25, 1994, Pat. No. 5,432,197, which is a continuation of Ser. No. 142,109, Oct. 28, 1993, Pat. No. 5,371,084, which is a continuation of Ser. No. 744,518, Aug. 13, 1991, abandoned, which is a division of Ser. No. 436,752, Nov. 15, 1989, Pat. No. 5,055,471. This application Dec. 2, 1994, Ser. No. 352,764

Claims priority, application United Kingdom, Nov. 21, 1988, 8827149; Mar. 9, 1989, 8905383

Int. Cl.[6] A61K *31/24;* **C07C** *251/60*

U.S. Cl. 514—243 **9 Claims**

1. A compound having the formula (I):

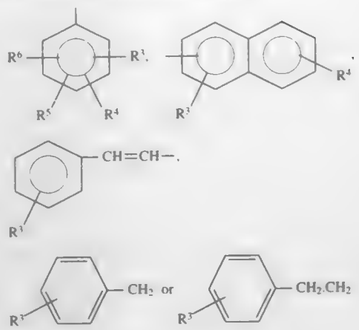


(I)

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or a stereoisomer thereof, wherein A is hydrogen, halo, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, phenoxy, nitro or cyano; R^1 is heterocycloalkyl, heteroaryloxyalkyl, heteroaryl or heteroaryloxy wherein the heteroaryl or heterocyclyl moiety is a 5- or 6-membered ring containing one or more O, N or S heteroatoms optionally fused to a benzene ring; R^2 is hydrogen, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, aryl(C_{1-4})alkyl, aryloxy(C_{1-4})-alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{1-6}alkoxy, aryl, aryloxy, nitro, halo, cyano, —NR^3R^4, —CO_2R^3, —$CONR^3R^4$, —COR^3, —$S(O)_mR^3$ or $(CH_2)_nPO(OR^3)_2$ wherein n is 0, 1 or 2, m is 0 or 1 and R^3 and R^4, which are the same or different, are hydrogen, C_{1-6} alkyl, aryl(C_{1-6})alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl or aryl; any of the foregoing aryl moieties, which are phenyl or naphthyl, and any of the foregoing heterocyclyl or heteroaryl moieties being optionally substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl, pyridyl, pyrimidinyl, phenoxy, pyridyloxy, pyrimidinyloxy, phenyl(C_{1-4})alkyl in which the alkyl moiety is optionally substituted with hydroxy, pyridyl- or pyrimidinyl(C_{1-4})-alkyl, phenyl(C_{2-4})alkenyl, pyridyl- or pyrimidinyl-(C_{2-4})alkenyl, phenyl(C_{1-4})alkoxy, pyridyl- or pyrimidinyl(C_{1-4})alkoxy, phenoxy(C_{1-4})alkyl, pyridyloxy- or pyrimidinyloxy(C_{1-4})alkyl, C_{1-4} alkanoyloxy, benzoyloxy, cyano, thiocyanato, nitro, —NR'R", —NHCOR', —NHCONR'R", —CONR'R". —COOR', —OSO_2R', —SO_2R', —COR', —CR'=NR" in which R' and R" are independently hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl or benzyl, the phenyl and benzyl groups being optionally substituted with halogen, C_{1-4} alkyl or C_{1-4} alkoxy; and any of the foregoing phenyl, pyridyl or pyrimidinyl substituents themselves being optionally substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, alkanoyloxy, benzoyloxy, cyano, thiocyanato, nitro, —NR'R", —NHCOR', —NHCONR'R", —CONR'R", —COOR', —SO_2R', —OSO_2R', —COR', —CR'=NR" or —N=CR'R" in which R' and R" have the meanings given above.

Q is an aromatic group selected from



Z is carbonyl (C=O), or thiocarbonyl (C=S);

Y is carbon substituted by halo, alkoxy, alkynylthio or triazolyl; wherein

(i) R^1 is alkynyl, haloalkynyl, phenylalkynyl, heterocyclyl, dialkynyl, heterocyclylalkynyl, cycloalkylalkynyl, alkenylalkynyl, hydroxyalkynyl, alkoxyalkynyl, alkanoyloxyalkynyl, formylalkynyl, trialkylsilylalkynyl, trialkyltinalkynyl, haloalkenylalkynyl, carboxyalkynyl, or alkoxycarbonylalkynyl;

R^2 is hydrogen, (C_1–C_3)alkyl, phenyl, or halogen;

R^7 is hydrogen, (C_1–C_3)alkyl, phenyl, halogen, alkynylalkenyl, alkynyl, dialkynyl, haloalkynyl, or alkenylalkynyl;

R^3 and R^6 are each independently hydrogen, alkoxy or halogen;

R^4 is hydrogen, halogen, alkoxy or nitro;

R^5 is hydrogen, halogen, nitro, alkyl, alkoxy, alkylthio, haloalkyl, haloalkoxy, haloalkylthio, phenyl, phenoxy or cyano; or

R^2 and R^3 together form a (C_1–C_3)alkyl; or

R^2 and R^7 together form a fused phenyl ring and R1, R3, R4, R5 and R6 are as above; n is 1; and

agronomically acceptable salts thereof.

5,631,254

DIHYDROPYRIDAZINONES, PYRIDAZINONES AND RELATED COMPOUNDS AS FUNGICIDES

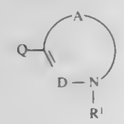
Enrique L. Michelotti; Anne R. Egan, both of Fort Washington; Ronald Ross, Jr., Jamison, and Willie J. Wilson, Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 749,576, Aug. 28, 1991, abandoned, which is a division of Ser. No. 221,229, Mar. 31, 1994, which is a continuation of Ser. No. 749,576, Aug. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,633, Sep. 21, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 467,384

Int. Cl.[6] A61K *31/50;* **C07D** *295/03;237/04*

U.S. Cl. 514—247 **25 Claims**

1. A compound of the formula



wherein the compound is a six member ring; and

A is —$(CHR^2)_n$—CHR^7—Z—; —CR^2=CR^7—Z—; CHR^2—CR^7=Y— or —CR^2=CR^2Y=;

D is nitrogen;

5,631,255

PYRIDAZINE DERIVATIVES

Robert Boigegrain, Clapiers; Roger Brodin, Montpellier; Jean P. Kan, Clapiers; Dominique Olliero, Montpellier, and Camille G. Wermuth, Strasbourg, all of France, assignors to Sanofi, Paris, France

Continuation of Ser. No. 964,901, Oct. 22, 1992, Pat. No. 5,461,053, which is a continuation-in-part of Ser. No. 737,654, Jul. 30, 1991, abandoned, and Ser. No. 871,505, Apr. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 475,489, Feb. 7, 1990, abandoned, and Ser. No. 615,373, Nov. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 473,582

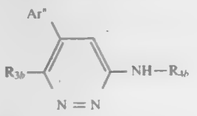
Claims priority, application France, Feb. 7, 1989, 89 01547; Feb. 7, 1989, 89 01548; Nov. 17, 1989, 89 15137; Jun. 15, 1990, 90 07533; Jul. 31, 1990, 90 09777

Int. Cl.[6] A61K *31/50*

U.S. Cl. 514—247 **12 Claims**

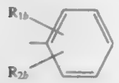
1. A compound of the formula

(IB)



in which

Ar" is a phenyl group of the formula

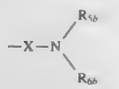


R_{1b} is hydrogen, a halogen atom, a hydroxyl group, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy or the trifluoromethyl group;

R_{2b} is hydrogen;

R_{3b} is a group —CH_2—C_6H_5 or a group —CH_2—CH_2—C_6H_5; and

R_{4b} is the group



in which

X is a linear or branched C_1–C_6 alkylene and

R_{5b} and R_{6b} are each independently hydrogen or a linear or branched C_1–C_4 alkyl;

or its salts which are pharmaceutically acceptable or permit crystallization thereof.

5,631,256

ANTIMICROBIAL QUINOLONE THIOUREAS

Thomas P. Demuth, Jr., Norwich, and Ronald E. White, South Plymouth, both of N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio

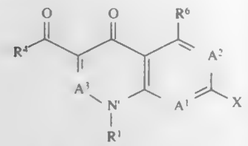
Division of Ser. No. 513,368, Apr. 20, 1990, Pat. No. 5,328,908, which is a continuation-in-part of Ser. No. 416,645, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 261,948, Oct. 24, 1988, abandoned. This application Apr. 8, 1994, Ser. No. 225,123

Int. Cl.[6] A61K *31/47;31/495;* **C07D** *401/00;403/00*

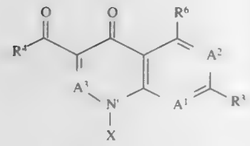
U.S. Cl. 514—252 **29 Claims**

1. Thiourea-containing compounds having one of the following structures:

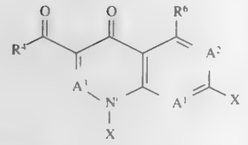
(I)



(II)



(III)



wherein

(A)

(1) X is the thiourea-containing moiety —R^{15}—$N(R^{16})(R^{17})$ or —R^{15}—R^{18}—$N(R^{19})(R^{17})$, where

(a)

(i) R^{15} is nil; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(ii) R^{16} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; or

(iii) when X is R^{15}—$N(R^{16})(R^{17})$, R^{16} and R^{15} may together comprise a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen atom to which R^{15} and R^{16} are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(b) R^{17} is —C(=S)—$NR^{20}R^{21}$; where R^{20} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and R^{21} is R^{20} or $N(R^{20})(R^{20})$; or R^{20} and R^{21}, together with the nitrogen to which they are bonded, form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(c)

(i) R^{18} is C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(ii) R^{19} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; or

(iii) K^{18} and K^{19} may together comprise a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen atom to which K^{18} and K^{19} are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(2) A^1 is N or $C(R^7)$; where

(a) R^7 is hydrogen, hydroxy, alkoxy, nitro, cyano, halogen, C_1–C_8 alkyl, or $N(R^5)(R^9)$, and

(b) R^8 and R^9 are, independently, R^{8a}; where R^{8a} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; or R^8 and R^9 together comprise a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle that includes the nitrogen atom to which they are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(3) A^2 is $C(R^2)$; where R^2 is hydrogen or halogen;

(4)

(a) when A^1 is N, A^3 is N or $C(R^5)$, where R^5 is hydrogen; and

(b) when A^1 is $C(R^7)$, A^3 is N;

(5) R^1 is hydrogen; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; alkoxy; hydroxy; C_2–C_8 alkenyl; arylalkyl; or $N(R^8)(R^9)$; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(6) R^3 is hydrogen; halogen; C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(7) R^4 is hydroxy; and

(8) R^6 is hydrogen, C_1–C_8 alkyl, halogen, nitro, $N(R^8)(R^9)$, or $S(R^{8a})$;

(B) and where

(1) when A^1 is $C(R^7)$, R^1 and R^7 may together comprise a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle

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including N' and A'; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

(2) R^2 and R^3 may together comprise —O—$(CH_2)_n$—O—, where n is from 1 to 4;

(3) when A^3 is $C(R^5)$, R^4 and R^5 may together comprise a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the carbon atoms to which R^4 and R^5 are bonded and the carbon atom to which said carbon atoms are bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N; and

(4) when A^3 is $C(R^5)$, R^1 and R^5 may together comprise a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N' and the adjacent carbon to which R^5 is bonded; wherein said heterocycles have one or more heteroatoms chosen from O, S, or N;

and pharmaceutically-acceptable salts, biohydrolyzable esters, and hydrates thereof.

5,631,257

BENZOXAZOLE DERIVATIVES

Katsuyoshi Iwamatsu; Yasuo Sato; Masaaki Izumi; Fukio Konno; Seiji Shibahara; Shigeharu Inoye, all of Kanagawa; Koichi Shudo, Tokyo, and Kazuko Amano, Kanagawa, all of Japan, assignors to Meiji Seika Kaisha, Ltd., and Koichi Shudo, both of Tokyo, Japan

Continuation of Ser. No. 228,894, Apr. 18, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,697

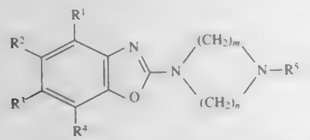
Claims priority, application Japan, Apr. 16, 1993, 5-090086; Mar. 14, 1994, 6-042909

Int. Cl.[6] A61K *31/495;31/55;* **C07D** *401/00;419/00*

U.S. Cl. 514—254 **9 Claims**

1. A compound represented by the formula (1)

(1)



wherein R^1, R^2, R^3, R^4 may be the same or different and each represents a hydrogen atom, a substituted or unsubstituted lower alkyl group, a substituted or unsubstituted lower alkenyl group, a halogen atom, a hydroxyl group, an amino group, a lower alkoxyl group, a carboxyl group, a carbamoyl group or a nitro group, in which any two groups of R^1 to R^4 may be linked to each other to form a six-membered ring structure comprising carbon atoms alone, which may be substituted; R^5 represents a substituted or unsubstituted lower alkyl group, a substituted or unsubstituted lower alkenyl group, a substituted or unsubstituted aralkyl group containing 7 to 10 carbon atoms or an alkoxycarbonyl group, with the proviso that R_5 is a substituted alkyl group and is not an alkyl group substituted with an amino or dialkylamino group when R_1, R_2, R_3 and R_4 represent hydrogen atoms simultaneously; and m is an integer of 2 or 3 and n is an integer of 2; wherein each substituent is selected from the group consisting of a halogen atom, a hydroxyl group, a cyano group, an alkylcarbonyl group, an alkoxy group, a carboxyl group, an alkoxycarbonyl group, a carbamoyl group, an amino group and a nitro group; and said halogen atom is selected from the group consisting of fluorine, chlorine, bromine, and iodine.

5,631,258

METHOD OF EFFECTING IMMUNOSUPPRESSION BY ADMINISTERING CARBOCYCLIC ADENOSINE ANALOGS

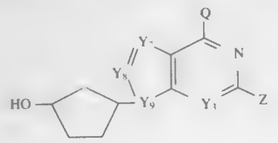
David R. Borcherding, Loveland; Carl K. Edwards, III, West Chester, and Ronald E. Esser, Sharonville, all of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 241,814, May 12, 1994, Pat. No. 5,514,688, which is a continuation-in-part of Ser. No. 94,837, Jul. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 824,411, Jan. 23, 1992, Pat. No. 5,244,896, which is a continuation-in-part of Ser. No. 748,172, Aug. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 582,280, Sep. 14, 1990, abandoned. This application Apr. 26, 1995, Ser. No. 427,937

Int. Cl.[6] A61K *31/52;31/505*

U.S. Cl. 514—261 **20 Claims**

1. A method of effecting immunosuppression in a patient in need thereof comprising administering to said patient an effective immunosuppressive amount of a compound of the formula



wherein

the hydroxy substituent on the cyclopentanyl ring is in the CIS configuration relative to the bicyclic substituent,

Y_3 is N, Y_7, Y_8 and Y_9 are each independently nitrogen or a CH group,

Q is NH_2, halogen or hydrogen, and

Z is hydrogen, halogen, or NH_2;

or a pharmaceutically-acceptable salt thereof.

5,631,259

CYCLOALKLTRIOLS CONTAINING CYCLIC SUBSTITUENTS, PROCESSES AND INTERMEDIATE PRODUCTS FOR THEIR PREPARATION AND THEIR USE AS ANTIVIRAL AND ANTIPARASITIC AGENTS

Gerhard Jähne, Frankfurt am Main; Irvin Winkler, Liederbach; Matthias Helsberg, Kelkheim, and Heinz Hänel, Oberursel, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 907,571, Jul. 2, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,883

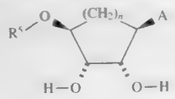
Claims priority, application Germany, Jul. 4, 1991, 41 22 068.4

Int. Cl.[6] A61K *31/52;* **C07D** *473/30;473/34;473/18*

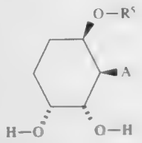
U.S. Cl. 514—261 **2 Claims**

1. A compound of the formula VIIa or VIIIa:

VIIa



VIIIa



wherein R^5 is hydrogen n is 1 or 2 and

A is

adenin-9-yl,

adenin-3-yl,

{N^6-(N-methyl-2-pyrrolidin-yliden)}adenin-9-yl,

adenin-N^1-Oxid-9-yl,

hypoxanthin-9-yl

6-chlorpurin-9-yl,

6-chlorpurin-7-yl,

adenin-7-yl,

6-(2,2-diphenyl-ethylamino)-purin-9-yl,

2,6-diaminopurin-9-yl,

2-amino-6-mercapto-purin-9-yl

2-aminopurin-9-yl,

guanin-9-yl,

guanin-7-yl,

N^2-acetyl -6-O-di-phenylcarbamoyl-guanin-7-yl,

N^6-acetyl-adenin-9-yl,

2-acetamido-6-ethoxy-purin-9-yl, or

N^6-methyl-adenin-9-yl;

and when n is 2, A can also be 2-amino-6-chloro-purin-9-yl.

5,631,260

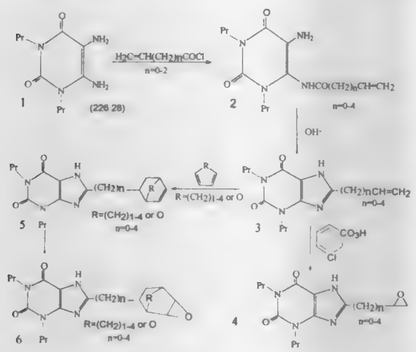
XANTHINE EPOXIDES AS A_1 ADENOSINE RECEPTOR AGONISTS AND ANTAGONISTS

Luiz Belardinelli, Gainesville; Ray Olsson, Tampa; Stephen Baker, Gainesville, all of Fla.; Peter J. Scammells, Highton, Australia; Peter G. Milner, Los Altos, Calif.; Jürg R. Pfister, Los Altos, Calif., and George F. Schreiner, Los Altos, Calif., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

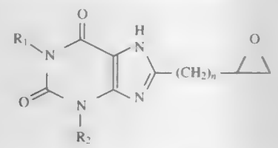
Continuation-in-part of Ser. No. 144,459, Oct. 28, 1993, Pat. No. 5,446,046. This application Oct. 28, 1994, Ser. No. 330,640

Int. Cl.[6] A61K *31/52;* **C07D** *473/06;473/08;519/00*

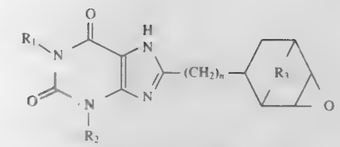
U.S. Cl. 514—263 **12 Claims**



1. A C-8 epoxide of xanthine, wherein said xanthine epoxide has a formula selected from the group consisting of:

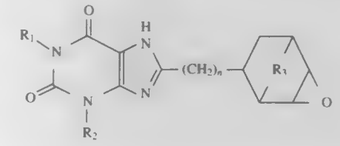


wherein R_1 and R_2 are the same or different, and can be H or an alkyl group of 1–4 carbons, and n=0–4; and

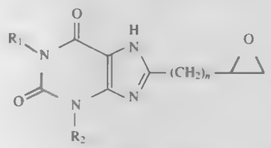


wherein R_1 and R_2 are the same or different, and can be H or an alkyl group of 1–4 carbons, R_3 is either O or $(CH_2)_{1-4}$, and n=0–4.

4. A method for modulating the biological activity of adenosine wherein said modulation of adenosine is antagonism of adenosine binding with an adenosine receptor, said method comprising administering an effective amount of a compound, wherein said compound has a formula selected from the group consisting of:



wherein R_1 and R_2 are the same or different, and can be H or an alkyl group of 1–4 carbons, R_3 is either O or $(CH_2)_{1-4}$, and n=0–4; and



wherein R_1 and R_2 are the same or different, and can be H or an alkyl group of 1–4 carbons, and n=0–4.

5,631,261

TRIAZOLOQUINAZOLINES, THEIR PREPARATION AND USE

Rainer Schlecker, Bissersheim; Hans-Joerg Treiber, Bruehl; Berthold Behl, Ludwigshafen, and Hans P. Hofmann, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03331, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/13672, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 27, 1993, Ser. No. 446,844

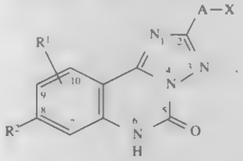
Claims priority, application Germany, Dec. 10, 1992, 42 41 563.2

Int. Cl.[6] C07D *487/04;* **A61K** *31/495*

U.S. Cl. 514—267 **3 Claims**

1. A triazoloquinazoline of the formula I

I



where

A is C_1–C_5-alkylene,

X is carboxyl which can be in the form of its salt with a physiologically tolerated amine cation or metal cation; the

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radical

$$-C(=O)-OR^4,$$

where R^4 is C_1–C_8-alkyl, and

R^1 and R^2, which can be identical or different, are each hydrogen, fluorine, chlorine or bromine, trifluromethyl, nitro, C_{1-5}-alkyl, or R^1 and R^2 together are a benzo group.

5,631,262

PYRIDINE COMPOUNDS FOR TREATING LEUKOTRIENE-RELATED DISEASES

Pamela A. Chambers, King of Prussia; Robert A. Daines, Lansdale; Dalia R. Jakas, Norristown; William D. Kingsbury, Wayne, and Israil Pendrak, Norristown, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

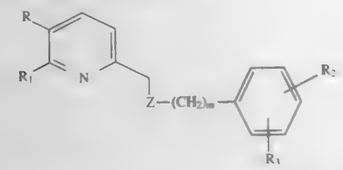
Continuation of Ser. No. 211,063, Jul. 18, 1994, abandoned. This application May 11, 1995, Ser. No. 439,023

Int. Cl.[6] A61K *31/44;* **C07D** *401/12;213/64;213/65*

U.S. Cl. 514—277 **8 Claims**

1. A compound of formula I

I



or an N-oxide, or a pharmaceutically acceptable salt where

Z is O.

m is 0–5;

R is C_1 to C_{20}-aliphatic, unsubstituted or substituted phenyl C_1 to C_{10}-aliphatic where substituted phenyl has one or more radicals selected from the group consisting of lower alkoxy, lower alkyl, trihalomethyl, and halo, or R is C_1 to C_{20}-aliphatic-O—, or R is unsubstituted or substituted phenyl C_1 to C_{10}-aliphatic-O— where substituted phenyl has one or more radicals selected from the group consisting of lower alkoxy, lower alkyl, trihalomethyl, and halo;

R_1 is —(C_1 to C_5 aliphatic)R_4, —(C_1 to C_5 aliphatic)CHO, —(C_1 to C_5 aliphatic)CH_2OR_8, —R_4, —CH_2OH, or CHO;

R_2 is H, halo, lower alkyl, lower alkoxy, —CN, —$(CH_2)_nR_4$, —$CH(NH_2)(R_4)$, or —$(CH_2)_nR_9$ where n is 0–5 and where R_9 is —$N(R_7)_2$ where each R_7 is independently H, or an aliphatic group of 1 to 10 carbon atoms, or acyl of 1–6 carbon atoms, or a cycloalkyl-$(CH_2)_n$-group of 4 to 10 carbons where n is 0–3, or both R_7 groups form a ring having 4 to 6 carbons; or

R_3 is hydrogen, lower alkyl, lower alkoxy, halo, —CN, R_4, $NHCONH_2$, or OH;

each R_4 group is independently —COR_5 where R_5 is —OH, a pharmaceutically acceptable ester-forming group —OR_6, or —OX where X is a pharmaceutically acceptable cation, or R_5 is —$N(R_7)_2$ where each R_7 is independently H, or an aliphatic group of 1 to 10 carbon atoms, or a cycloalkyl-$(CH_2)_n$-group of 4 to 10 carbons where n is 0–3, or both R_7 groups form a ring having 4 to 6 carbons, or R_4 is a sulfonamide, or tetrazol-5-yl; and

R_8 is hydrogen, C_1 to C_6 alkyl, or C_1 to C_6-acyl,

excluding those compounds where R_2 and R_3 are other than hydrogen and are substituted in the 2 and 6 positions.

5,631,263

USE OF DELTA OPIOID RECEPTOR ANTAGONISTS TO TREAT IMMUNOREGULATORY DISORDERS

Philip S. Portoghese, St. Paul; Burt M. Sharp, St. Louis Park, and Kristin M. Linner, St. Paul, all of Minn., assignors to Minneapolis Medical Research Foundation, and Regents of the University of Minnesota, both of Minneapolis, Minn.

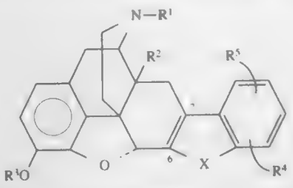
Continuation of Ser. No. 149,039, Nov. 8, 1993, Pat. No. 5,464,841. This application May 25, 1995, Ser. No. 450,010

Int. Cl.[6] A61K *31/445;* **C07D** *221/02*

U.S. Cl. 514—279 **22 Claims**

1. A therapeutic method for treating an immunoregulatory disease selected from the group consisting of rheumatoid arthritis, systemic lupus erythematosis, Sjogren's Syndrome, multiple sclerosis, chronic lymphocytic leukemia, Type I diabetes, Epstein-Barr virus and AIDS characterized by a depressed autologous mixed lymphocyte response comprising administering to a mammal in need of such treatment an amount of a compound of the Formula I:

(I)



wherein R^1 is (C_1–C_5)alkyl, C_3–C_6(cycloalkyl)alkyl, C_5–C_7(cycloalkenyl)alkyl, aryl, aralkyl, trans(C_4– C_5)-alkenyl, allyl or furan-2-ylalkyl, R^2 is H, OH or $O_2C(C_1$–$C_5)$alkyl; R^3 is H, (C_1–C_5)alkyl; or ((C_1–C_5)alkyl)-CO; R^4 and R^5 are individually H, F, Cl, Br, NCS, NO_2, NH_2, (C_1–C_5)alkyl or (C_1–C_5)alkoxy, or together are benzo; and X is O, S or NY, wherein Y is H, (C_1–C_5)alkyl or benzyl; and the pharmaceutically acceptable salts thereof; wherein said amount is effective to elevate the AMLR of said mammal.

5,631,264

SUBSTITUTED 6,11-ETHANO-6,11-DIHYDROBENZO[B]QUINOLIZINIUM SALTS AND COMPOSITIONS AND METHODS OF USE THEREOF

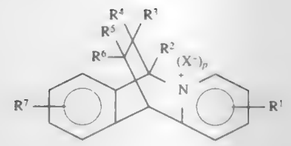
Diane L. DeHaven-Hudkins, West Pikeland Township, Chester County; John A. Dority, Jr., Upper Providence Township, Montgomery County; William G. Earley, East Vincent Township, Chester County; Virendra Kumar, Tredyffrin Township, Chester County; John P. Mallamo, Uwchlan Township, Chester County; Matthew S. Miller, Lower Makefield Township, Bucks County, and Chakrapani Subramanyam, Towamencin Township, Montgomery County, all of Pa., assignors to Sanofi Winthrop, Inc., New York, N.Y.

Division of Ser. No. 283,317, Jul. 7, 1994, Pat. No. 5,554,620, which is a continuation-in-part of Ser. No. 121,127, Sep. 14, 1993, abandoned. This application May 24, 1995, Ser. No. 449,125

Int. Cl.[6] A61K *31/44;* **C07D** *455/03;471/00*

U.S. Cl. 514—289 **26 Claims**

1. A compound of the formula



wherein:

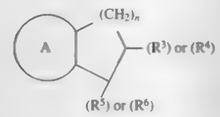
R^1 is hydrogen, or from one to four, the same or different, substituents in any of the 1-,2-, 3- or 4-positions selected from the group consisting of lower-alkoxy, lower-alkyl, halogen, hydroxy, OC(O)alkyl-CH=CH-alkyl, OCO(O)alkyl, OC(O)-lower-alkenyl-C(O)Oalkyl, alkocy, OC(O)alkylC(O)alkyl, hydroxymethyl, nitro, amino and lower-alkylsulfonylamino or R^1 is a fused benzene ring;

R^2 is hydrogen, lower-alkyl, cyano or lower-alkoxycarbonyl;

R^3 and R^4 is independently hydrogen, or lower-alkyl; or R^3 and R^4 together form a cycloalkyl ring, or a lower alkylidene group;

R^5 and R^6 are independently a 5-membered heterocyclic ring system (or said 5-membered heterocyclic ring system substituted on any available carbon atom thereof by hydroxy, lower-alkyl, oxo, nitro, halogen, or lower-alkoxy; or on any available nitrogen atom thereof by lower-alkyl, phenyl-lower-alkyl, trilower-alkylsilyl, lower-alkylphenylsulfonyl, or trilower-alkylsilyl-lower-alkoxy-lower-alkyl);

or R^3 and R^5, and/or R^4 and R^6 taken together with the carbon atoms to which they are attached form a bicyclic ring system of the formula A:



A

wherein A is a 5-membered heterocyclic ring system and n is one (or said A ring substituted on any available carbon atom thereof by lower-alkoxy, or lower-alkyl);

R^7 is hydrogen, or from one to four, the same or different, substituents in any of the 7-, 8-,9-, or 10-positions selected from the group consisting of lower-alkyl, lower-alkanolyloxy, halogen, nitro, hydroxy, lower-alkoxy, methylenedioxy, polyfluorolower-alkyl, $OCO(CH_2)_mC(O)Oalkyl$, OC(O)alkyl, C(O)Oalkyl, CO_2^-, carboxy, sulfo, SO_3^-, PO_3H; PO_3^- cyano, polychlorolower-alkyl, OC(O)alkyl-CH=CH-alkyl, OC(O)-lower-alkenyl-C(O)Oalkyl, alkoxy, OC(O)alkylC(O)Oalkyl, halomethyl, hydroxymethyl, amino and lower-alkylsulfonylamino wherein m is an integer from one to four and/or R^7 is a fused pyrazole ring; alkylsulfonylamino wherein m is an integer from one to four and/or R^7 is a fused pyrazole ring;

X^- is an anion; and p is zero when R^7 is a negatively charged radical and p is one when R^7 is other than a negatively charged radical; or a pharmaceutically acceptable acid-addition salt of basic members thereof; or a solvate thereof; or a stereoisomer thereof; with the following provisos: a) at least one of R^5 and R^6 when taken individually must be a substituted or unsubstituted 5-membered heterocyclic ring system and b) R^5 and R^6 cannot be furanyl.

5,631,265

8-SUBSTITUTED TETRAHYDRO-BETA-CARBOLINES

James E. Audia; James J. Droste, and Jeffrey S. Nissen, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

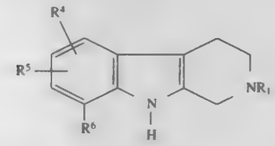
Continuation-in-part of Ser. No. 358,644, Dec. 19, 1994, abandoned, which is a continuation of Ser. No. 212,404, Mar. 11, 1994, abandoned. This application Feb. 6, 1995, Ser. No. 380,564

Int. Cl.[6] A61K *31/395;* **C07D** *471/04*

U.S. Cl. 514—292 **25 Claims**

1. A compound of Formula I

I



wherein:

R^1 is hydrogen, C_1–C_3 alkyl, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl-(C_1–C_3)alkyl, or C_7–C_{16} arylalkyl;

R^4 and R^5 are independently hydrogen, C_1–C_3 alkyl, C_2– C_6 alkenyl, halo, halo(C_1–C_6)alkyl, halo (C_2–C_6)alkenyl, COR^7, C_1– C_{10} alkanoyl, CO_2R^7, (C_1–C_6 alkyl)$_m$ amino, NO_2, —SR^7, OR^7, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl-(C_1–C_3) alkyl, or C_7–C_{16} arylalkyl;

m is 1 or 2;

R^7 is hydrogen or C_1–C_4 alkyl;

$R^{7'}$ is C_1–C_4 alkyl;

R^6 is selected from the group consisting of C_1–C_4 alkyl, $OR^{5'}$, fluoro, bromo, iodo, and chloro;

$R^{5'}$ is selected from the group consisting of hydrogen and C_1–C_4 alkyl;

with the proviso that, when

R^1 is hydrogen, C_1–C_3 alkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl or C_7– C_{16} arylalkyl;

R^4 is hydrogen or C_1–C_3 alkyl; and

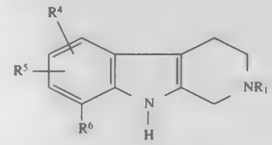
R^5 is hydrogen, C_1–C_3 alkyl, halo, or OR^7;

then R^6 must be selected from the group consisting of $OR^{5'}$, fluoro, bromo, iodo and chloro; or

a pharmaceutically acceptable salt or solvate thereof.

23. A method for treating a mammal suffering from or susceptible to a condition associated with the modulation of a 5-HT_{2C} receptor, comprising administering an effective amount of a compound of Formula I

I



wherein:

R^1 is hydrogen, C_1–C_3 alkyl, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl-(C_1–C_3)alkyl, or C_7–C_{16} arylalkyl;

R^4 and R^5 are independently hydrogen, C_1–C_3 alkyl, C_2– C_6 alkenyl, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, COR^7, C_1– C_{10} alkanoyl, CO_2R^7, (C_1–C_6 alkyl)$_m$ amino, NO_2, —SR^7, OR^7, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl-(C_1–C_3)alkyl, or C_7–C_{16} arylalkyl;

m is 1 or 2;

R^7 is hydrogen or C_1–C_4 alkyl;

$R^{7'}$ is C_1–C_4 alkyl;

R^6 is selected from the group consisting of C_1–C_4 alkyl, $OR^{5'}$, fluoro, bromo, iodo, and chloro; and

$R^{5'}$ is selected from the group consisting of hydrogen and C_1–C_4 alkyl; or

a pharmaceutically acceptable salt or solvate thereof.

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5,631,266

QUINOLONE CARBOXYLIC ACID DERIVATIVES AND PROCESS FOR PREPARING THE SAME

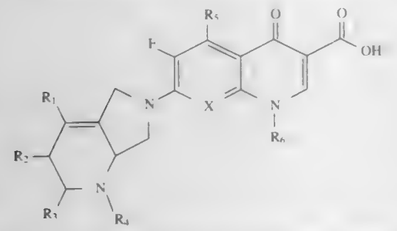
Wan J. Kim; Tae H. Park; Moon H. Kim; Tae S. Lee, and Keun S. Nam, all of Daejeon, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon, Rep. of Korea

Division of Ser. No. 277,602, Jul. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 52,711, Apr. 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,435

Int. Cl.[6] A61K *31/47;* **C07D** *471/02*

U.S. Cl. 514—300 **4 Claims**

1. A quinolone carboxylic acid derivative of formula (I):



(I)

wherein, R_1, R_2, and R_3, which may be the same or different, are each hydrogen or a halogen atom, or a lower alkyl group optionally substituted with an amino or a hydroxy group;

R_4 is a hydrogen atom, a lower alkyl, benzyl, t-butoxycarbonyl or ethoxycarbonyl group;

R_5 is a hydrogen atom, a chlorine atom, a methyl group or an amino group;

R_6 is a lower alkyl group, or a cyclopropyl group or a phenyl group optionally substituted with a halogen atom; and

X is a nitrogen atom, and pharmaceutically acceptable salts thereof.

5,631,267

METHOD FOR THE TREATMENT OF EOSINOPHIL-ASSOCIATED DISEASES BY ADMINISTRATION OF TOPICAL ANESTHETICS

Gerald J. Gleich, Rochester, Minn.; Tsukasa Ohnishi, Tokyo, Japan, and Loren W. Hunt, Rochester, Minn., assignors to Mayo Foundation For Medical Education & Research, Rochester, Minn.

Continuation of Ser. No. 12,343, Feb. 2, 1993, Pat. No. 5,510,339. This application Mar. 20, 1996, Ser. No. 618,860

Int. Cl.[6] A61K *31/47;31/24;31/16*

U.S. Cl. 514—312 **15 Claims**

1. A method for treating an eosinophil-associated disease consisting essentially of administering to a human afflicted with said disease an amount of a topical anesthetic effective to counteract the symptoms of said disease by inhibiting the activity of eosinophil-active cytokines, wherein the disease is selected from the group consisting of intranasal inflammation, nasal polyps, paranasal sinus inflammation, allergic rhinitis, ocular inflammation, vernal conjunctivitis, allergic conjunctivitis, and dermal inflammation, and the topical anesthetic is bupivacaine, dibucaine, an N-arylamide, an ester between a carboxylic acid of the general formula:

$(R^2)(R^3)ArCO_2H$.

wherein Ar is C_6H_3 and each R^2 and R^3 is H, halo, $(R^1)(H)N$— wherein R^1 is $(C_1$–$C_5)$alkyl, H_2N—, or $(C_2$–$C_5)$alkoxy; and an alcohol of the general formula:

$(R^4)(R^5)N(X)OH$

wherein X is a $(C_1$–$C_5)$ branched- or straight-chain alkylene; R^4 is H or $(C_1$–$C_4)$alkyl, R^5 is $(C_1$–$C_4)$alkyl or R^4 and R^5 taken together can be a 5- or 6-membered heterocycloaliphatic ring, optionally substituted by $(C_1$–$C_3)$alkyl or comprising an additional ring O- or N-atom; or a pharmaceutically acceptable salt thereof.

5,631,268

PIPERIDINYL THIACYCLIC DERIVATIVES

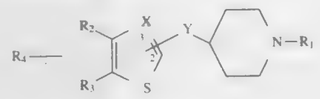
Albert A. Carr; John M. Kane; George D. Maynard; Hsien C. Cheng, all of Cincinnati, and Mark W. Dudley, Somerville, all of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 281,943, Jul. 28, 1994, Pat. No. 5,476,861, which is a division of Ser. No. 201,149, Feb. 24, 1994, Pat. No. 5,371,093, which is a continuation of Ser. No. 76,268, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 835,658, Feb. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 449,034

Int. Cl.[6] A61K *31/445;* **C07D** *417/02*

U.S. Cl. 514—321 **9 Claims**

1. A compound of the formula



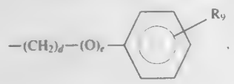
an optical isomer or a pharmaceutically acceptable salt thereof, wherein

Y is —C(OH)(phenyl)— wherein

Y is attached at the heterocycle position 2 or 3;

X is carbon, CH or nitrogen, provided that when Y is attached at the 3 position X is carbon, and when Y is attached at the 2 position X is CH or nitrogen;

R_1 is $—(CH_2)_n—Z—(CH_2)_mCOR_5$, —C(O)$R_8$ or



R_2 and R_3 are taken together, with the atoms to which R_2 and R_3 are respectively attached, to form a phenyl moiety substituted with R_4;

Z is a bond, O, or S;

R_4 is hydrogen, chloro, fluoro, C_{1-4} alkyl, or C_{1-4} alkoxy;

R_5 is OH, C_{1-4} alkoxy or $—NR_6R_7$;

R_6 and R_7 are the same or different and are H or C_{1-4} alkyl;

R_8 is C_{1-4} alkyl, C_{1-4} alkoxy;

R_9 is H, C_{1-4} alkyl, C_{1-4} alkoxy, OH, chloro, bromo, fluoro, $—CF_3$, $—NHC(O)R_{10}$, or CO_2R_{11};

R_{10} is C_{1-4} alkyl or C_{1-4} alkoxy;

R_{11} is hydrogen or C_{1-4} alkyl;

n is an integer from 0–3 provided that when Z is not a bond, n is an integer from 2–3;

m is an integer from 1 to 3;

d is an integer from 1–5; and

e is zero or 1, provided that when e is 1:

d is an integer from 2 to 5.

5,631,269

DOPAMINE RECEPTOR SUBTYPE LIGANDS

Howard B. Broughton, Harlow; Ian J. Collins, Ware; Raymond Baker, Much Hadham; Paul D. Leeson, Cambridge, and Michael Rowley, Harlow, all of United Kingdom, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

PCT No. PCT/GB93/02190, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/10145, PCT Pub. Date May 11, 1994

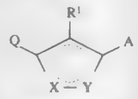
PCT Filed Oct. 22, 1993, Ser. No. 424,364

Claims priority, application United Kingdom, Oct. 23, 1992, 9222263; Oct. 23, 1992, 9222265

Int. Cl.[6] A61K *31/445;* **C07D** *211/28*

U.S. Cl. 514—326 **9 Claims**

1. A compound of formula I, or a pharmaceutically acceptable salt thereof or a prodrug thereof:

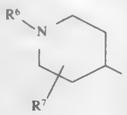


(I)

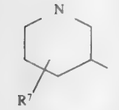
wherein the broken circle represents two non-adjacent double bonds to form a pyrazole, isoxazole or isothiazole ring;

one of X and Y represents nitrogen, and the other of X and Y represents oxygen, sulphur or N—R^2;

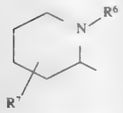
Q represents a ring of formula Qa to Qe



(Qa)



(Qb)

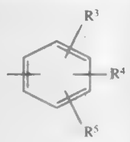


(Qc)

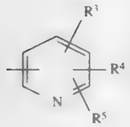
R^1 represents hydrogen, halogen, C_{1-6} alkyl, hydroxy or C_{1-6} alkoxy;

R^2 represents hydrogen or C_{1-6} alkyl;

A represents a group of formula (i), (ii) or (iii):

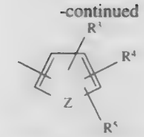


(i)



(ii)

-continued



(iii)

in which Z represents oxygen, sulphur or NH;

R^3, R^4 and R^5 independently represent hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, nitro, $—OR^a$, $—SR^a$, $—SOR^a$, $—SO_2R^a$, $—SO_2NR^aR^b$, $—NR^aR^b$, $—NR^aCOR^b$, $—NR^aCO_2R^b$, $—COR^a$, $—CO_2R^a$ or $—CONR^aR^b$;

R^a and R^b independently represent hydrogen, hydrocarbon or a heterocyclic group;

R^6 represents C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl(C_{1-6})alkyl, aryl, aryl(C_{1-6})alkyl, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, C_{3-7} heterocycloalkyl, C_{3-7} heterocycloalkyl(C_{1-6})alkyl, heteroaryl or heteroaryl(C_{1-6})alkyl, any of which groups may be optionally substituted; and

R^7 represents hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl(C_{1-6})alkyl, aryl, aryl(C_{1-6})alkyl, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, C_{3-7} heterocycloalkyl, C_{3-7} heterocycloalkyl(C_{1-6})alkyl, heteroaryl or heteroaryl(C_{1-6})alkyl, any of which groups may be optionally substituted.

5,631,270

SUBSTITUTED PYRIDINYLAMINO-1H-INDOLES, 1H-INDAZOLES, 2H-INDAZOLES, BENZO [B]THIOPHENES AND 1,2-BENZISOTHIAZOLES

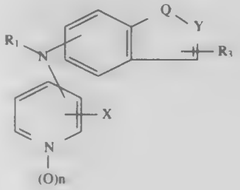
Richard C. Effland; Joseph T. Klein, both of Bridgewater, and Lawrence L. Martin, Lebanon, all of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 38,427, Mar. 25, 1993, Pat. No. 5,424,322, which is a division of Ser. No. 925,822, Aug. 7, 1992, Pat. No. 5,246,947, which is a division of Ser. No. 764,031, Sep. 23, 1991, Pat. No. 5,185,350. This application Jun. 5, 1995, Ser. No. 464,994

Int. Cl.[6] A61K *31/44;31/38;31/405;31/415*

U.S. Cl. 514—337 **1 Claim**

1. A method of treating a patient in need of relief from a memory dysfunction which comprises administering to said patient an effective amount of compound of the formula



wherein

Q is S, N or NR_2;

Y is CH, N or NR_2;

R_1 is hydrogen, loweralkyl, loweralkynyl, loweralkenyl, arylloweralkyl, loweralkoxycarbonylaminoloweralkylcarbonyl, arylloweralkoxycarbonylaminoloweralkylcarbonyl, aminoloweralkylcarbonyl, loweralkoxycarbonyl or acyl;

R_2 is hydrogen or loweralkyl;

R_3 is hydrogen or loweralkyl;

X is hydrogen, loweralkyl or halogen; and

n is 0 or 1; or a pharmaceutically acceptable acid addition salt thereof.

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5,631,271

METHODS AND PREPARATIONS FOR THE TREATMENT AND PROPHYLAXIS OF METABOLIC DISTURBANCES

Willem J. Serfontein, 47 Selikats Village, Selikats Causeway, Faerie Glen, South Africa

Continuation-in-part of Ser. No. 466,676, Jan. 17, 1990, Pat. No. 5,254,572, which is a continuation-in-part of Ser. No. 125,996, Nov. 27, 1987, abandoned, and Ser. No. 395,033, Aug. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 125,996, which is a continuation-in-part of Ser. No. 153,973, Feb. 9, 1988, abandoned. This application Aug. 2, 1993, Ser. No. 100,433

Claims priority, application South Africa, Nov. 29, 1986, 86/4001; United Kingdom, Jan. 17, 1989, 8900924; South Africa, Sep. 14, 1992, 92/6989

Int. Cl.[6] **A61K** *31/44*

U.S. Cl. 514—345 **43 Claims**

1. The method of raising the intracellular level, other than in a healthy liver, of pyridoxal (PLP) and the plasma level of pyridoxal (PL) in a human or animal patient having insufficient ability to convert pyridoxine (PN) into intracellular PLP leading to depressed or inadequate intracellular PLP contents, said insufficient activity arising from a condition ranging from depressed to absent enzymatic activity, caused by an inherent cellular defect, otherwise than primary acquired sideroplastic anaemia, which comprises administering to the patient an active agent selected from the group consisting of pyridoxal (PL, pyridoxamine, actals of pyridoxal, condensation products arising from the reaction of the aldehyde group of pyridoxal with an amine and addition salts of any of the foregoing members of the group with pharmaceutically acceptable acids in an amount and at a rate effective to supply from 0.008 to 7.2 mg/kg/day of said source, calculated as pyridoxal and based on body weight.

5,631,272

EATABLE TASTE MODIFIERS

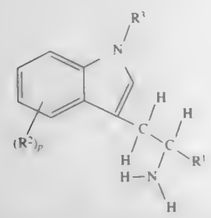
Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 5, 1995, Ser. No. 463,124

Int. Cl.[6] **A61K** *31/41*

U.S. Cl. 514—381 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



H-1

wherein R^1 is selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted allyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; and 5-tetrazol, p is 1, 2, 3, or 4; and each R^2, which may be the same or different, is independently selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, q is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkylurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure; and R^3 is selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the CH—CH or CH_2—CH_2 bond, and where C=C bonds exist, the level of saturation may be decreased by substituting a hydrogen atom on each carbon atom participating in the C=C bond, and physiologically acceptable salts of of the foregoing.

5,631,273

SYNERGISTIC WATER SOLUBLE PRESERVATIVE COMPOSITIONS OF BIOCIDAL MIXTURES

John J. Merianos, Middletown, N.J., assignor to ISP Chemicals Inc., Chatham, N.J.

Division of Ser. No. 413,742, Mar. 30, 1995, Pat. No. 5,552,425, which is a continuation-in-part of Ser. No. 234,089, Apr. 28, 1994, Pat. No. 5,428,050. This application May 23, 1996, Ser. No. 652,190

Int. Cl.[6] **A01N** *43/50;47/10*

U.S. Cl. 514—389 **8 Claims**

1. A water soluble preservative antimicrobial composition for addition to commercial use products at predetermined use levels to provide synergistic biocidal activity against a wide range of fungi and gram-negative and gram-positive bacteria, comprising an active liquid blend of

(1) an admixture of

(a) 1,3-dimethylol-5,5-dimethyl hydantoin; and

(b) 3-iodo-2-propynylbutyl carbamate, in a weight ratio of (a):(b) of 100:1 to 2000:1, and

(2) propylene glycol or 1,3-butylene glycol.

5,631,274

IMIDAZOLIUM, PYRAZOLIUM AND TRIAZOLIUM SAILTS AS SWIMMING POOL SANITIZERS

Peter W. Austin, Bury; Clive H. Barlow, Heywood; Brian D. Bothwell, Castleton; Andrew N. Collins, Marsh, and Mark R. James, Constable Lee Park, all of United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/02030, § 371 Date Apr. 11, 1995, § 102(e) Date Apr. 11, 1995, PCT Pub. No. WO94/08972, PCT Pub. Date Apr. 28, 1994

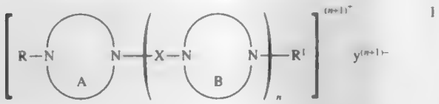
PCT Filed Sep. 29, 1993, Ser. No. 411,633

Claims priority, application United Kingdom, Oct. 20, 1992, 9221997

Int. Cl.[6] **C07D** *233/58;233/56;* **A01N** *43/50;43/56;43/653;* **C02F** *1/150*

U.S. Cl. 514—397 **19 Claims**

1. A method for inhibiting the growth of micro-organisms in a bathing facility which comprises adding to the water thereof from 1 to 1000 ppm of a heterocyclic salt of the formula I



I

wherein

R and R^1 are independently C_{4-20}-alkyl;

A and B are independently a pyrazolium, triazolium or imidazolium ring;

X is C_{6-18}-alkylene;

n is 1 to 6; and

Y is one or more anions providing (n+1) negative charges to give a neutral molecule.

5,631,275

SUBSTITUTED BENZENESULFONYLUREAS AND -THIOUREAS, PREPARATION PROCESSES AND POSSIBLE USES OF PHARMACEUTICAL PREPARATIONS BASED ON THESE COMPOUNDS

Heinrich Englert, Hofheim; Dieter Mania, Königstein; Jens Hartung, Höchberg; Heinz Gögelein; Joachim Kaiser, both of Frankfurt, and Uwe Gerlach, Hattersheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

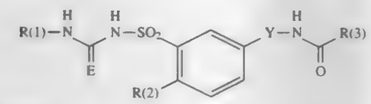
Continuation-in-part of Ser. No. 365,543, Dec. 28, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,033

Claims priority, application Germany, Dec. 30, 1993, 43 44 957.3

Int. Cl.[6] **C07D** *209/46;207/18;* **A61K** *31/40;31/47*

U.S. Cl. 514—423 **10 Claims**

1. A substituted benzenesulfonylurea or -thiourea of the formula I



(I)

In which:

R(1) is hydrogen, $(C_1$–$C_6)$-alkyl, $(C_3$–$C_6)$-cycloalkyl, C_aH_{2a}-$(C_3$–$C_5)$-cycloalkyl, $(C_3$–$C_6)$-alkenyl or C_cH_{2c}—C_dF_{2d+1};

a is 0, 1, 2, or 3;

c is 0, 1, 2, or 3;

d is 1, 2, 3, 4. 5, or 6;

R(2) is hydrogen, F,Cl, Br, I, $(C_1$–$C_6)$-alkyl, $(C_1$–$C_6)$-alkoxy, $(C_1$–$C_6)$-mercaptoalkyl, $(C_1$–$C_6)$-fluoroalkoxy, O—C_eH_{2e}—C_fF_{2f+1}, $(C_1$–$C_6)$-fluoroalkyl, C_gH_{2g}—C_hF_{2h+1}, $(C_3$–$C_6)$-cycloalkyl or NR(4)R(5);

e is 0, 1, 2, or 3;

f is 1, 2, 3, 4, 5. or 6

g is 0, 1, 2, or 3;

h is 1, 2, 3, 4, 5 or 6;

R(4) and R(5) together are a $(CH_2)_4$ chain; or

R(4) and R(5) independently of one another are hydrogen, $(C_1$–$C_6)$-alkyl, C_kH_{2k}—C_mF_{2m+1}, $(C_3$–$C_9)$-cycloalkyl, $(C_1$–$C_2)$-alkyl-$(C_3$–$C_5)$-cycloalkyl or $(C_3$–$C_6)$-alkenyl;

k is 0, 1, 2, or 3;

m is 1, 2, 3, 4, 5 or 6;

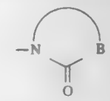
E is oxygen or sulfur;

Y is a hydrocarbon chain —{$CR(7)_2$}$_n$—

R(7) is H or $(C_1$–$C_2)$-alkyl;

n is 1, 2, 3, or 4;

R(3) is a substituted heterocyclic radical of the formula



B is C_3 alkenyl, which is unsubstituted or substituted by up to 3 $(C_1$–$C_4)$-alkyl groups or by a phenyl radical.

5,631,276

SYNERGISTIC COMPOSITIONS FOR CONTROLLING INSECTS AND ACARINA

Manfred Kern, Lörzweiler, Germany, assignor to Hoechst Schering AgrEvo GmbH, Berlin, Germany

PCT No. PCT/EP93/03128, § 371 Date Jul. 3, 1995, § 102(e) Date Jul. 3, 1995, PCT Pub. No. WO94/10846, PCT Pub. Date May 26, 1994

PCT Filed Nov. 9, 1993, Ser. No. 432,209

Claims priority, application Germany, Nov. 13, 1992, 42 38 311.0

Int. Cl.[6] **A01N** *43/02;43/22;63/00;63/04*

U.S. Cl. 514—431 **8 Claims**

1. An insecticidal and/or acaricidal composition which comprises synergistic effective amounts of endosulfan (A) and *Beauveria bassiana* (B).

5,631,277

(2-ONE (OR THIONE)-1,3-DITHIOLE 4,5-DIYL) BIS(THIOCYANATE) COMPOUNDS, COMPOSITIONS CONTAINING THE COMPOUNDS AND THEIR USE AS AN ANTIMICROBIAL AND MARINE ANTIFOULING AGENTS

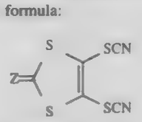
Duane R. Romer; Weishi W. Wu; Ravi B. Shankar, and R. Garth Pews, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 10, 1996, Ser. No. 676,621

Int. Cl.[6] **A01N** *43/28;* **C07D** *339/06*

U.S. Cl. 514—441 **11 Claims**

1. A (2-one (or thione)-1,3-dithiole 4,5-diyl) bis(thiocyanate) corresponding to the formula:



(I)

wherein Z is oxygen or sulfur.

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5,631,278

METHODS OF KILLING PROTOZOAL PARASITES

Theodore F. Taraschi, Tabernacle, N.J., and Bruno Pouvelle, Charbonnieres, France, assignors to Thomas Jefferson University, Philadelphia, Pa.

PCT No. PCT/US93/11668, § 371 Date Aug. 31, 1995, § 102(e) Date Aug. 31, 1995, PCT Pub. No. WO94/12172, PCT Pub. Date Jun. 9, 1994

Continuation-in-part of Ser. No. 9,131, Jan. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 984,915, Dec. 2, 1992, Pat. No. 5,356,927. This PCT application Dec. 2, 1993, Ser. No. 448,422

Int. Cl.[6] A61K *31/335*

U.S. Cl. 514—449 **6 Claims**

1. A method of inhibiting the proliferation of a protozoal parasite comprising contacting the protozoal parasite with an amount of taxol or taxol analog effective to inhibit the proliferation of said parasite wherein said parasite is selected from the group consisting of *Babesia, Pneumocystis, Cryptosporidium, Sarcocystis, Isospora,* and *Toxoplasma.*

5,631,279

PERHYDROISOINDOLE DERIVATIVES, PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Andre Crespo, Ormesson; Veronique Fardin, Saint Maur Des Fosses; Jean-Marc Guillaume, Paris; Jean-Luc Malleron, Marcoussis, and Jean-Francois Peyronel, Palaiseau, all of France, assignors to Rhone-Poulenc Rorer, S.A., Antony, France

PCT No. PCT/FR94/00371, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/22822, PCT Pub. Date Oct. 13, 1994

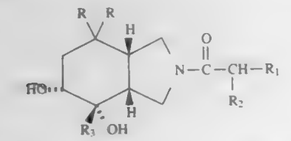
PCT Filed Apr. 1, 1994, Ser. No. 448,402

Claims priority, application France, Apr. 5, 1993, 93 03965

Int. Cl.[6] C07D *209/44; A61K 31/40*

U.S. Cl. 514—414 **14 Claims**

1. A perhydroisoindole derivative of the formula (I) or salts thereof:



(I)

in which

the R groups are identical and represent phenyl radicals optionally substituted with a halogen atom or with a methyl radical in the 2- or 3- position,

R_1 represents a phenyl radical optionally substituted with one or more halogen atoms or hydroxyl, benzyloxy or alkyl radicals, said alkyl radicals being optionally substituted with halogen atoms or with amino, alkylamino or dialkylamino radicals, or said phenyl radical being optionally substituted with alkyloxy or alkylthio radicals, said alkyloxy, and alkylthio radicals being optionally substituted with hydroxyl, amino, alkylamino or dialkylamino radicals that are optionally substituted with phenyl, hydroxyl or amino, or said alkyloxy and alkylthio radicals being optionally substituted by dialkylamino radical whose alkyl portions form, with the nitrogen atom to which they are attached, a 5- to 6-membered heterocycle that may contain another hetero atom that is oxygen, sulphur or nitrogen, and said dialkylamino radical being optionally substituted with an alkyl, hydroxyl or hydroxyalkyl radical, or said phenyl radical being substituted with amino, alkylamino or dialkylamino radicals whose alkyl portions may form, together with the nitrogen atom to which they are attached, a heterocycle as defined above, or

R_1 represents a cyclohexadienyl, naphthyl or indenyl radical, or a saturated or unsaturated mono- or polycyclic heterocyclic radical containing 5 to 9 carbon atoms and one or more hetero atoms chosen from oxygen, nitrogen or sulphur, and said cyclohexadienyl, naphthyl, or indenyl radicals being optionally substituted with a halogen atom or with an alkyl, alkyloxy, aminoalkyl, alkylaminoalkyl or dialkylaminoalkyl radical,

R_2 represents a hydrogen or halogen atom or a hydroxyl, alkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkyloxy, alkylthio, acyloxy, carboxyl, alkyloxycarbonyl, dialkylaminoalkyloxycarbonyl, benzyloxycarbonyl, amino or acylamino radical, and

R_3 represents a phenyl radical optionally substituted in the 2-position with an alkyl or alkyloxy radical containing 1 or 2 carbon atoms,

the alkyl and acyl radicals recited above being, with the exception of the recited heterocycles, straight or branched and containing 1 to 4 carbon atoms.

5,631,280

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

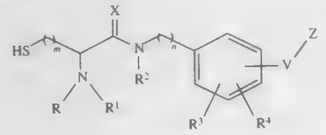
Terrence M. Ciccarone, Telford; Christopher J. Dinsmore, North Wales; Gerald E. Stokker, Gwynedd Valley; John S. Wai, and Theresa M. Williams, both of Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 412,621, Mar. 29, 1995, abandoned. This application May 24, 1995, Ser. No. 448,865

Int. Cl.[6] A61K *31/40;* **C07D** *209/44*

U.S. Cl. 514—416 **30 Claims**

1. A compound which inhibits farnesyl-protein transferase of the formula A:



A

wherein:

X is O or H_2;

m is 1 or 2;

n is 0 or 1;

q is 0, 1 or 2;

t is 1 to 4;

R, R^1 and R^2 are independently selected from: H, C_{1-6} alkyl, or C_{1-6} aralkyl;

R^3 and R^4 are independently selected from:

a) hydrogen,

b) C_1–C_6 alkyl,

c) C_1–C_6 alkyl substituted by C_2–C_6 alkenyl, R^6O—, $R^5S(O)_q$—, $R^7C(O)NR^6$—, CN, N_3, $R^6OC(O)NR^6$—, R^6R^7N—$C(NR^6R^8)$—, $R^6C(O)$—, $R^7R^8NC(O)O$—, $R^7R^8NC(O)$—, R^6R^7N—$S(O)_2$—, —$NR^6S(O)_2R^5$, $R^6OC(O)O$—, —NR^6R^7, or $R^7R^8NC(O)NR^6$—,

d) substituted cycloalkyl,

e) cycloalkyl, alkenyl, R^6O—, $R^5S(O)_q$—, $R^6C(O)NR^6$—, CN, NO_2, R^6R^7N—$C(NR^8)$—, $R^6C(O)$—, N_3, —NR^6R^7, halogen or $R^7OC(O)NR^6$—, and

f) C_1–C_6 alkyl substituted with a group selected from: aryl, substituted aryl, heterocyclic, substituted heterocyclic, C_3–C_{10} cycloalkyl and substituted C_3–C_{10} cycloalkyl;

Z is unsubstituted or substituted C_{1-8} alkyl, unsubstituted or substituted C_{2-8} alkenyl, unsubstituted or substituted aryl, unsubstituted or substituted heterocycle;

wherein the substituted C_{1-8} alkyl, substituted C_{2-8} alkenyl, substituted aryl or substituted heterocycle is substituted with one or more substituents selected from:

1) C_{1-4} alkyl,

2) C_{1-4} alkyl substituted with:

a) C_{1-4} alkoxy,

b) NR^6R^7,

c) C_{3-6} cycloalkyl,

d) aryl or heterocycle,

e) HO,

3) aryl or heterocycle,

4) halogen,

5) OR^6,

6) NR^6R^7,

7) CN,

8) NO_2, or

9) CF_3;

R^5 is C_{1-4} alkyl or aralkyl;

R^6, R^7 and R^8 are independently selected from: H, C_{1-4} alkyl, substituted C_{1-4} alkyl, C_{3-6} cycloalkyl, substituted C_{3-6} cycloalkyl, heterocycle, substituted heterocycle, aryl, substituted aryl, aroyl, substituted aroyl, heteroaroyl, substituted heteroaroyl, arylsulfonyl, substituted arylsulfonyl, heteroarylsulfonyl or substituted heteroarylsulfonyl,

wherein the substituted C_{1-4} alkyl, substituted C_{3-6} cycloalkyl, substituted heterocycle, substituted aryl, substituted aroyl, substituted heteroaroyl, substituted arylsulfonyl or substituted heteroarylsulfonyl is substituted with one or more substituents selected from:

a) C_{1-4} alkoxy,

b) aryl or heterocycle,

c) halogen,

d) HO,



e)

f) $—SO_2R^5$, or

g) $—NR^6R^7$, or

R^6 and R^7 may be joined in a ring, and

R^7 and R^8 may be joined in a ring;

R^9 is selected from: H, C_{1-4} alkyl, substituted C_{1-4} alkyl, C_{3-6} cycloalkyl, substituted C_{3-6} cycloalkyl, heterocycle, substituted heterocycle, aryl and substituted aryl,

wherein the substituted C_{1-4} alkyl, substituted C_{3-6} cycloalkyl, substituted heterocycle or substituted aryl is substituted with one or two substituents independently selected from:

a) C_{1-4} alkyl,

b) C_{1-4} alkoxy,

c) aryl or heterocycle,

d) halogen,

e) HO,



f)

g) $—SO_2R^5$, and

h) $—NR^6R^7$;

V is selected from: $—C(R^{11})=C(R^{11})—$, $—C\equiv C—$, $—C(O)—$, $—C(R^{11})_2—$, $—C(OR^{11})R^{11}—$, $—CN(R^{11})_2R^{11}—$, $—OC(R^{11})_2—$, $—NR^{11}C(R^{11})_2—$, $—C(R^{11})_2O—$, $—C(R^{11})_2NR^{11}—$, $—C(O)NR^{11}—$, $—NR^{11}C(O)—$, O, $—NC(O)R^{11}—$, $—NC(O)OR^{11}—$, $—S(O)_2N(R^{11})—$, $—N(R^{11})S(O)_2—$, or $S(O)_m$;

R^{10} and R^{11} are independently selected from hydrogen, C_1–C_6 alkyl, C_2–C_4 alkenyl, benzyl and aryl; or a disulfide or pharmaceutically acceptable salt thereof.

5,631,281

N-SUBSTITUTED CYCLOALKYL AND POLYCYCLOALKYL α-SUBSTITUTED TRP-PHE- AND PHENETHYLAMINE DERIVATIVES

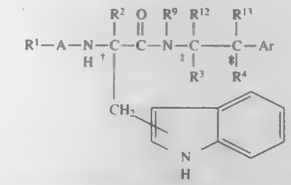
David C. Horwell, Foxton; Martyn C. Pritchard, Swavesey; Edward Roberts, Wood Ditton; Reginald S. Richardson, Haverhill, all of England, and Julian Aranda, Vorstetter, Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 958,196, Oct. 7, 1992, abandoned, which is a division of Ser. No. 629,809, Dec. 19, 1990, Pat. No. 5,278,316, which is a continuation-in-part of Ser. No. 545,222, Jun. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 580,811, Jun. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 422,486, Oct. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 374,327, Jun. 29, 1989, abandoned. This application Apr. 28, 1994, Ser. No. 235,814

Int. Cl.[6] A61K *31/40;* **C07D** *209/20*

U.S. Cl. 514—419 **37 Claims**

1. A compound of the formula

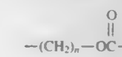


I

or a pharmaceutically acceptable salt thereof wherein:

R^1 is a cycloalkyl or polycycloalkyl hydrocarbon of from three to twelve carbon atoms with from zero to four substituents each independently selected from the group consisting of a straight or branched alkyl of from one to about six carbon atoms, halogen, CN, OR*, SR*, CO_2R^*, CF_3, NR^5R^6, and $—(CH_2)_nOR^5$ wherein R* is a straight or branched alkyl of from one to six carbon atoms, R^5 and R^6 are each independently hydrogen or alkyl of from one to about six carbon atoms and n is an integer from zero to six;

A is $—(CH_2)_nCO—$, $—SO_2—$, —S(=O) —, —NHCO—,



$—(CH_2)_n—OC—$,

—SCO—, $—O—(CH_2)_nCO—$ or —HC=CHCO— wherein n is an integer from zero to six;

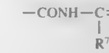
R^2 is a straight or branched alkyl of from one to about six carbon atoms, $—HC=CH_2$, $—C\equiv CH$, $—CH_2—CH=CH_2$, $—CH_2C\equiv CH$, $—(CH_2)_nAR$, $—(CH_2)_nOR^*$, $—(CH_2)_nOAr$, $—(CH_2)_nCO_2R^*$, or $—(CH_2)_nNR^5R^6$ wherein n, R* R^5 and R^6 are as defined above and Ar is as defined below;

R^3 and R^4 are each independently selected from hydrogen, R^2 and $—(CH_2)_{n'}—B—D$ wherein:

n' is an integer of from zero to three;

B is a bond,

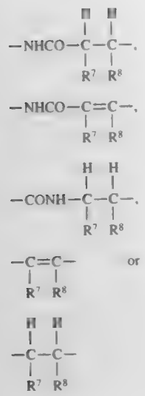
$—OCO(CH_2)_n—$,
$—O(CH_2)_n—$,
$—SO_2NH(CH_2)_n—$,
$—NHSO_2(CH_2)_n—$,
$—NHCO(CH_2)_n—$,
$—CONH(CH_2)_n—$,
$—NHCOCH=CH—$,
$—COO(CH_2)_n—$,
$—CO(CH_2)_n—$,
$—S—(CH_2)_n—$,
$—S(=O)—(CH_2)_n—$,
$—SO_2—(CH_2)_n—$,



$—CONH—C=C—$.
R^7 R^8

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-continued



wherein R^7 and R^8 are independently selected from hydrogen and R^2 or together form a ring $(CH_2)_m$ wherein m is an integer of from 1 to 5 and n is as defined above;

D is

—COOR*,

$—CH_2OR^*$,

$—CHR^2OR^*$,

$—CH_2SR^*$,

$—CHR^2SR^*$,

$—CONR^5R^6$,

—CN,

$—NR^5R^6$,

—OH,

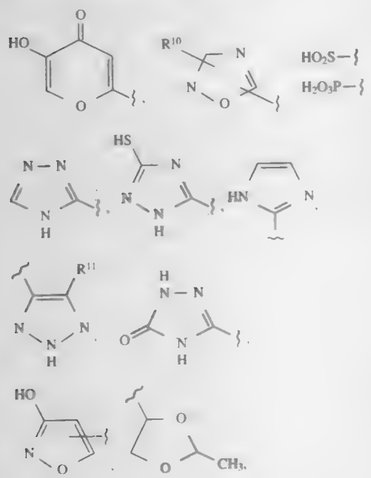
$PhSO_2NHCO—$,

$CF_3CONHCO—$,

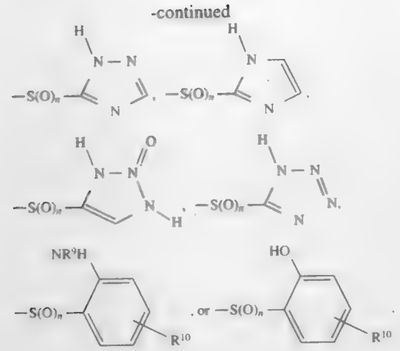
$CF_3SO_2NHCO—$,

$H_2NSO_2—$,

—H and acid replacements tetrazole, and



-continued



R^{10} is OH, NH_2, CH_3, or Cl;

R^{11} is CN, CO_2H, or CF_3;

s is in integer of from 0 to 2;

wherein R*, R^2, R^5, and R^6 are as defined above;

R^9 is hydrogen or a straight or branched alkyl of from one to about six carbon atoms, $—(CH_2)_nCO_2R^*$, $—(CH_2)_nOAr'$, $—(CH_2)_nAr'$ or $(CH_2)_nNR^5R^6$, wherein n, R*, R^5, and R^6 are as defined above or taken from R^3 and Ar' is taken from Ar as defined below;

R^{12} and R^{13} are each independently hydrogen or are each independently taken with R^3 and R^4 respectively to form a moiety doubly bonded to the carbon atom; and

Ar is 2- or 3-thienyl, 2- or 3-furanyl, 2-, 3- or 4-pyridinyl or an unsubstituted or substituted phenyl whose substituents if any are each independently hydrogen, fluorine, chlorine, bromine, iodine, methyl, methoxy, trifluoromethyl, nitro, OH, NH_2, OCF_3, $NHCOCH_2CH_2CO_2H$, or $CH_2CH_2CO_2H$,

with the proviso that only one heterocycle is present in the definitions of Ar, R^3 and R^4.

5,631,282

TRITERPENES

Michael A. Goetz, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

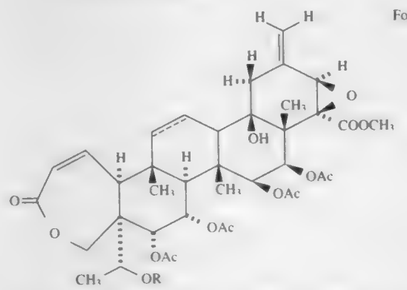
Filed Jun. 7, 1995, Ser. No. 476,806

Int. Cl.[6] C07D *493/02;* **A61K** *31/365*

U.S. Cl. 514—450 **12 Claims**

1. A compound of Formula 1

Formula 1



where '—' represents either the presence or absence of a double bond when R is H and '---' represents the presence of a double bond when R is Ac; or a pharmaceutically acceptable salt, hydrate or crystal form thereof.

5,631,283

USE OF SIALIC ACID OR ANTIBODIES TO SIALIDASE AS-ANTI-INFECTIOUS AGENTS AND ANTI-INFLAMMATORY AGENTS

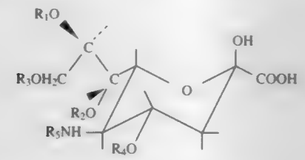
Alan S. Cross, Chevy Chase, Md.; Daniel G. Wright, Nahant, Mass.; Peter Gomatos, Ft. Lauderdale, Fla., and Nicholas Stamatos, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1994, Ser. No. 190,436

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—459 **12 Claims**

1. A method of treating inflammation by administration of an anti-inflammatory composition in dosage form comprising an anti-inflammatory effective amount of sialic acid or a sialic acid analogue of the formula:



wherein $R_{1,2,3\ and\ 4}$ is H, alkyl, SO_3H, PO_3H_2 or CO-alkyl, wherein alkyl has 1–4 carbons and may be substituted with OH, and R_5 is CO-alkyl of 1–4 carbons which may be substituted with OH in a pharmaceutically acceptable carrier.

5,631,284

COMPOSITIONS AND METHODS FOR RELAXING SMOOTH MUSCLES

Peter Legzdins, West Vancouver; Catherine C. Y. Pang, Vancouver, and Michael J. Shaw, Cowansville, all of Canada, assignors to University of British Columbia, Vancouver, Canada

Filed Oct. 6, 1993, Ser. No. 132,632

Int. Cl.[6] A61K *31/28*

U.S. Cl. 514—505 **10 Claims**

1. A pharmaceutical composition, comprising a transition-metal nitrosyl complex represented by the formula

$$L_yM(NO)_xX_{3-x}$$

wherein L is a two-electron Lewis base or L_3 is a six-electron Lewis base, M is a Group 6 to 8 transition-metal, wherein y is 1 or 2, X is either a halide or pseudohalide, and when y is 1, X_2 is either L_2 or XL, and a pharmaceutically acceptable carrier or diluent.

5,631,285

SYNERGISTIC INSECTICIDAL COMPOSITIONS

Masaaki Kataoka, Yaizu; Akira Wakai, Hadano, and Takehiko Nakamura, Haibara-gun, all of Japan, assignors to Uniroyal Chemical Company, Middlebury, Conn.

Division of Ser. No. 459,196, Jun. 2, 1995, Pat. No. 5,534,543, which is a division of Ser. No. 199,233, Feb. 22, 1994, Pat. No. 5,491,168. This application Apr. 23, 1996, Ser. No. 636,294

Claims priority, application Japan, Aug. 27, 1991, 238923; Oct. 8, 1991, 289157; WIPO, Aug. 27, 1992, PCT/US92/07288

Int. Cl.[6] A01N *37/34;41/02;53/00*

U.S. Cl. 514—517 **3 Claims**

1. A composition useful for controlling *Thrips palmi* comprising synergistic insecticidally effective amounts of:

(A) 2-(4-tert-butylphenoxy)cyclohexyl prop-2-ynyl sulfite; and

(B) a synthetic pyrethroid selected from the group consisting of fluvalinate, etofenprox, flucythirinate, permethrin, and fenvalelate.

5,631,286

COMPOUNDS USEFUL FOR TREATING ALLERGIC OR INFLAMMATORY DISEASES

Siegfried B. Christensen, IV, Philadelphia, Pa.; Paul E. Bender, Cherry Hill, N.J., and Cornelia J. Forster, Bensalem, Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

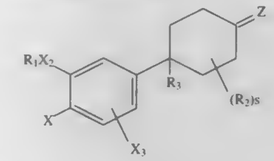
Continuation of Ser. No. 313,095, Sep. 29, 1994, Pat. No. 5,449,686, which is a continuation of Ser. No. 968,753, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,083, Apr. 2, 1992, abandoned. This application May 24, 1995, Ser. No. 449,633

Int. Cl.[6] A61K *31/275;* **C07C** *255/46*

U.S. Cl. 514—520 **4 Claims**

1. A compound of Formula (I):

(I)



wherein:

R_1 is —CH_2-cyclopropyl, CH_2-C_{5-6} cycloalkyl, C_{4-6} cycloalkyl, C_{7-11} polycycloalkyl, (3- or 4-cyclopentenyl), phenyl, tetrahydrofuran-3-yl, benzyl or C_{1-2} alkyl substituted by 2 or more fluorines, $—(CH_2)_{1-3}C(O)O(CH_2)_{0-2}CH_3$, $—(CH_2)_{1-3}O(CH_2)_{0-2}CH_3$, and $—(CH_2)_{2-4}OH$;

m is 0 to 2;

n is 1 to 4;

r is 1 to 6;

X is YR_2, halogen, nitro, NR_4R_5, or formyl amine;

Y is O or $S(O)_{m'}$;

m' is 0, 1, or 2;

X_2 is O or NR_8;

X_3 is hydrogen or X;

R_2 is independently selected from —CH_3 or —CH_2CH_3 unsubstituted or substituted by 1 or more halogens;

s is 0 to 4;

R_3 is hydrogen, halogen, C_{1-4} alkyl, $CH_2NHC(O)C(O)NH_2$, halo-substituted C_{1-4} alkyl, $—CH═CR_8R_8$, cyclopropyl optionally substituted by R_8, CN, OR_8, CH_2OR_8, NR_8R_{10}, $CH_2NR_8R_{10}$, C(Z')H, $C(O)OR_8$, $C(O)NR_8R_{10}$, or $C≡CR_8$;

Z' is O, NR_9, NOR_8, NNR_8R_8, NCN, $C(—CN)_2$, CR_8CN, CR_8NO_2, $CR_8C(O)OR_9$, $CR_8C(O)NR_8R_8$, $C(—CN)NO_2$, $C(—CN)C(O)OR_9$, or $C(—CN)C(O)NR_8R_8$;

Z'' is $C(Y')R_{14}$, $C(O)OR_{14}$, $C(Y')NR_{10}R_{14}$, $C(NR_{10})NR_{10}R_{14}$, CN, $C(NOR_8)R_{14}$, $C(O)NR_8NR_8C(O)R_8$, $C(O)NR_8NR_{10}R_4$, $C(NOR_{14})R_8$, $C(NR_8)NR_{10}R_{14}$, $C(NR_{14})NR_8R_8$ $C(NCN)NR_{10}R_{14}$, $C(NCN)SR_9$, (2-, 4- or 5-imidazolyl), (3-, 4- or 5-pyrazolyl), (4 - or 5-triazolyl[1,2,3]), (3-or 5-triazolyl[1,2,4]), (5-tetrazolyl), (2-, 4- or 5-oxazolyl), (3-,4- or 5-) isoxazolyl, (3- or 5-oxadiazolyl[1,2,4]), (2-oxadiazolyl[1,3,4]), (2-thiadiazolyl[1,3,4]), (2-, 4-, or 5-thiazolyl), (2-, 4-, or 5-oxazolidinyl), (2-, 4-, or 5-thiazolidinyl), or (2-, 4-, or 5-imidazolidinyl); wherein all of the heterocylic ring systems may be optionally substituted one or more times by R_{14};

Y' is O or S;

R_7 is $—(CR_4R_5)_qR_{12}$ or C_{1-6} alkyl wherein the R_{12} or C_{1-6} alkyl group is optionally substituted one or more times by C_{1-2} alkyl optionally substituted by one to three fluorines, —F, —Br, —Cl, $—NO_2$, $—Si(R_4)_3$, $—NR_{10}R_{11}$, $—C(O)R_8$, $—CO_2R_8$, $—OR_8$, —CN, $—C(O)NR_{10}R_{11}$, $—OC(O)NR_{10}R_{11}$, $—OC(O)R_8$, $—NR_{10}C(O)NR_{10}R_{11}$, $—NR_{10}C(O)R_{11}$, $—NR_{10}C(O)OR_9$, $—NR_{10}C(O)R_{13}$, $—C(NR_{10})NR_{10}R_{11}$, $—C(NCN)NR_{10}R_{11}$, $—C(NCN)SR_9$, $—NR_{10}C(NCN)SR_9$, $—NR_{10}C(NCN)NR_{10}R_{11}$, $—NR_{10}S(O)_2R_9$, $—S(O)_mR_9$, $—NR_{10}C(O)C(O)NR_{10}R_{11}$, $—NR_{10}C(O)C(O)R_{10}$, thiazolyl, imidazolyl, oxazolyl, pyrazolyl, triazolyl, or tetrazolyl;

q is 0, 1, or 2;

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R_{12} is C_{3-7} cycloalkyl, (2-, 3- or 4-pyridyl), pyrimidyl, pyrazolyl, (1- or 2-imidazolyl), thiazolyl, triazolyl, pyrrolyl, piperazinyl, piperidinyl, morpholinyl, furanyl, (2-or 3-thienyl), (4- or 5-thiazolyl), quinolinyl, naphthyl, or phenyl:

R_8 is independently selected from hydrogen or R_9;

$R_{8'}$ is R_8 or fluorine;

R_9 is C_{1-4} alkyl optionally substituted by one to three fluorines;

R_{10} is OR_8 or R_{11};

R_{11} is hydrogen, or C_{1-4} alkyl optionally substituted by one to three fluorines; or when R_{10} and R_{11} are as $NR_{10}R_{11}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing at least one additional heteroatom selected from O, N, or S;

R_{13} is oxazolidinyl, oxazolyl, thiazolyl, pyrazolyl, triazolyl, tetrazolyl, imidazolyl, imidazolidinyl, thiazolidinyl, isoxazolyl, oxadiazolyl, or thiadiazolyl, and each of these heterocyclic rings is connected through a carbon atom and each may be unsubstituted or substituted by one or two C_{1-2} alkyl groups:

R_{14} is hydrogen or R_7; or when R_8 and R_{14} are as NR_8R_{14} they may together with the nitrogen form a 5 to 7 membered ring optionally containing one or more additional heteroatoms selected from O, N, or S;

R_{15} is $C(O)R_{14}$, $C(O)NR_4R_{14}$, $S(O)_2R_7$, or $S(O)_2NR_4R_{14}$;

provided that:

a) when Z is O, X_2 is oxygen, and X is YR_2, then R_3 is other than hydrogen;

b) when R_{12} is N-pyrazolyl, N-imidazolyl, N-triazolyl, N-pyrrolyl, N-piperazinyl, N-piperidinyl, or N-morpholinyl, then q is not 1;

or the pharmaceutically acceptable salts thereof.

5,631,287

STORAGE-STABLE PROSTAGLANDIN COMPOSITIONS

L. Wayne Schneider, Crowley, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Dec. 22, 1994, Ser. No. 362,677

Int. Cl.[6] A61K *31/557*

U.S. Cl. 514—530 **12 Claims**

1. A method of enhancing the chemical stability of an aqueous composition comprising a therapeutically-effective amount of a prostaglandin, wherein the method comprises adding a chemically-stabilizing amount of a polyethoxylated castor oil to the composition.

5,631,288

THERAPEUTIC METHOD OF TREATING PATIENTS SUFFERING FROM AIDS AND AIDS-RELATED SYNDROMES AND ASYMPTOMATIC HIV-SEROPOSITIVE PATIENTS.

Claudio De Simone, Ardea, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Continuation of Ser. No. 115,050, Sep. 1, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,357

Claims priority, application Italy, Sep. 24, 1992, RM92A0693

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—556 **3 Claims**

1. A method for normalizing the triglyceride and TNF-α levels in patients in need thereof, which patients suffer from AIDS and AIDS-related syndromes and in asymptomatic HIV-seropositive patients, which comprises administering to said patients about 6–8 g L-carnitine/day or an equivalent amount of a straight or unbranched chain C_{2-6} alkanoyl L-carnitine or pharmaceutically acceptable salt thereof.

5,631,289

USE OF CALCIUM FORMATE IN ORALLY ADMINISTRABLE COMPOSITIONS

Ulf Abele, Munchen, Germany, assignor to Chevita GmbH, Pfaffenhofen/Ilm, Germany

Filed Jan. 26, 1995, Ser. No. 377,083

Claims priority, application Germany, Jan. 28, 1994, 44 02 544.0

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 **10 Claims**

1. A method for treating calcium deficiency by orally administering to an animal in need thereof a composition comprising calcium formate in a gel or paste form, said composition providing for prophylaxis and metaphylaxis of calcium deficiency in said animal.

5,631,290

FATTY ACID SALT PESTICIDAL COMPOSITION

David S. Almond, Victoria, and Diana L. Parker, Brentwood Bay, both of Canada, assignors to W. Neudorff GmbH, Emmerthal, Germany

Continuation of Ser. No. 19,109, Feb. 18, 1993, abandoned. This application Aug. 11, 1994, Ser. No. 288,986

Int. Cl.[6] A01N *31/02;37/02;37/06;65/00*

U.S. Cl. 514—560 **4 Claims**

1. An environmentally compatible composition toxic to insects, consisting essentially of

an insecticidally effective amount of an active ingredient selected from the group consisting of sodium salt of oleic acid, potassium salt of oleic acid, ammonium salt of oleic acid, sodium salt of sunflower oil, potassium salt of sunflower oil, ammonium salt of sunflower oil, sodium salt of canola oil, potassium salt of canola oil, ammonium salt of canola oil, sodium salt of sesame oil, potassium salt of sesame oil, ammonium salt of sesame oil, sodium salt of olive oil, potassium salt of olive oil, and ammonium salt of olive oil, present at 0.1 to 2.0 percent by weight;

a solvent component selected from the group consisting of water, lower alcohols, glycerol, ethylene glycol, vegetable oil, and mineral oil; and

an adjuvant, present at 0.02 to 0.1% by weight to increase the spreadability and efficacy of the active ingredient, the adjuvant selected from the group consisting of decanol, dodecanol and tetradecanol,

the ratio of the adjuvant to the fatty acid salt being in the range of about 1:2 to 1:50, and the composition having the property of being non-phytotoxic.

5,631,291

CYCLOPENTANE- AND -PENTENE-BETA-AMINO ACIDS

Joachim Mittendorf, Wuppertal; Franz Kunisch, Odenthal; Michael Matzke, Wuppertal; Hans-Christian Militzer, Bergisch Gladbach; Rainer Endermann, Wuppertal; Karl G. Metzger, Wuppertal; Klaus-Dieter Bremm, Wuppertal, and Manfred Plempel, Haan, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

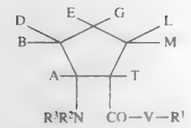
Division of Ser. No. 308,873, Sep. 19, 1994, which is a continuation of Ser. No. 66,751, May 21, 1993, abandoned. This application Nov. 9, 1994, Ser. No. 336,584

Claims priority, application Germany, May 29, 1992, 42 17 776.6; Jan. 27, 1993, 43 02 155.7

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—561 **9 Claims**

1. A cyclopentane- or -pentene-β-amino acid compound of the formula (I):



(I)

in which

A, B, D, L, M and T are identical or different and, represent hydrogen, halogen, benzyl, hydroxyl or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally monosubstituted or disubstituted by identical or different halogen, hydroxyl, phenyl, benzyloxy, carboxyl, a group of the formula $—NR^4R^5$, or by straight-chain or branched alkoxy, acyl or alkoxycarbonyl each having up to 6 carbon atoms; in which

R^4 and R^5 are identical or different and represent hydrogen, phenyl or straight-chain or branched alkyl having up to 6 carbon atoms;

E and G together represent a radical of the formula $=CR^6R^7$; in which

R^6 and R^7 are identical or different and represent hydrogen, halogen or straight-chain or branched alkyl, alkoxy or oxyacyl each having up to 8 carbon atoms, benzyl or phenyl;

R^2 represents hydrogen, an amino-protective group, straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally monosubstituted or disubstituted by identical or different substituents selected from the group consisting of hydroxyl, formyl, straight-chain or branched acyl having up to 6 carbon atoms, straight-chain or branched alkyl having up to 6 carbon atoms, or phenyl or benzoyl, each of which is optionally substituted up to 2 times by identical or different substituents selected from the group consisting of halogen, nitro or cyano;

or R^2 represents straight-chain or branched acyl having up to 8 carbon atoms, benzoyl which is optionally substituted as described above, or a group of the formula $—SO_2R^8$, in which

R^8 represents straight-chain or branched alkyl having up to 8 carbon atoms, or benzyl or phenyl, each of which is optionally substituted up to 3 times by identical or different substituents selected from the group consisting of halogen, hydroxyl, nitro, cyano, trifluoromethyl, trifluoromethoxy, straight-chain or branched alkyl, alkoxy or alkoxycarbonyl each having up to 6 carbon atoms, carboxyl, or $—NR^4R^5$;

or R^2 represents phenyl which is optionally substituted up to 3 times by identical or different substituents selected from the group consisting of halogen, hydroxyl, nitro, trifluoromethyl, trifluoromethoxy, straight-chain or branched alkyl, acyl, alkoxy or alkoxycarbonyl, each having up to 6 carbon atoms, $—NR^4R^5$, or $—SO_2R^8$;

or R^2 represents an amino acid radical of the formula $—CO—CH(R^9)—NHR^{10}$; in which

R^9 represents cycloalkyl having 3 to 8 carbon atoms, aryl having 6 to 10 carbon atoms, hydrogen, or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by a substituent selected from the group consisting of cyano, methylthio, hydroxyl, mercapto, guanidyl, cycloalkyl having 3 to 8 carbon atoms, aryl having 6 to 10 carbon atoms, which is in turn substituted by a substituent selected from the group consisting of hydroxyl, halogen, nitro, alkoxy having up to 8 carbon atoms and a group of the formula $—NR^{11}R^{12}$, or by a group of the formula $—NR^{11}R^{12}$ or $R^{13}—OC—$; in which

R^{11} and R^{12} independently represent hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl; and

R^{13} represents hydroxyl, benzyloxy, alkoxy having up to 6 carbon atoms or $—NR^{10}R^{11}$; and

R^{10} represents hydrogen or an amino-protective group;

R^3 represents hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by phenyl;

or R^2 and R^3 together represent a radical of the formula $=CHR^{14}$; in which

R^{14} represents hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by a substituent selected from the group consisting of halogen, hydroxyl, phenyl, carboxyl, or straight-chain or branched alkoxy or alkoxycarbonyl each having up to 6 carbon atoms;

V represents an oxygen or sulphur atom or the —NH group;

R^1 represents hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted up to 3 times by identical or different substituents selected from the group consisting of hydroxyl, halogen, nitro, cyano, carboxyl, trifluoromethyl, trifluoromethoxy or straight-chain or branched alkoxy, or phenyl, which is optionally substituted up to 3 times by identical or different substituents selected from the group consisting of hydroxyl, halogen, nitro, cyano, carboxyl, trifluoromethyl, trifluoromethoxy, straight-chain or branched alkoxy, alkyl, acyl or alkoxycarbonyl each having up to 6 carbon atoms, $—NR^4R^5$ or $—SO_2R^8$;

or in the case in which V represents the —NH group, then R^1 may represent $—SO_2R^8$;

an isomeric form of said compound, an acid addition salt thereof, or a metal salt complex thereof.

5,631,292

EATABLE TASTE MODIFIERS

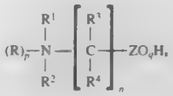
Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 2, 1995, Ser. No. 460,581

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—561 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



L-1

wherein R, R^1 and R^2, which may be the same or different, are independently selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; p is 0 or 1; each R^3 and R^4 are independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; n is an integer from 0 to 20; Z is selected from the group consisting of carbon, sulfur, boron, and phosphorus; q is an integer from 2 to 3 and r is an integer from 1 to 3; when Z is C, q is 2; when Z is S, P or B, q is 2 or 3; when Z is C or S, r is 1; when Z is P or B, r is 2; R^1 and R^2 can be eliminated with OH to give a cyclic amide; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms

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from each carbon atom which participates in the CH—CH or CH_2—CH_2 bond; and physiologically acceptable salts or all of the foregoing.

5,631,293

PREPARATION OF AMINO ACID-SUBSTITUTED BENZOYLGUANIDINES AS DIAGNOSTIC AGENTS

Heinz-Werner Kleemann, Bischofsheim; Hans-Jochen Lang, Hofheim; Jan-Robert Schwark, Frankfurt; Andreas Weichert, Egelsbach; Wolfgang Scholz, Eschborn, and Udo Albus, Florstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

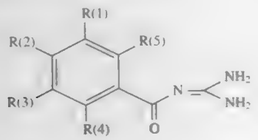
Filed Sep. 8, 1995, Ser. No. 525,204

Claims priority, application Germany, Sep. 9, 1994, 44 32 101.5

Int. Cl.[6] A61K *31/165;31/27;* **C07C** *271/14;279/22*

U.S. Cl. 514—563 **9 Claims**

1. A compound of the formula I



I

in which:

one of the three substituents R(1), R(2) and R(3) is —Y—[4-[$(CH_2)_k$—CHR(7)—(C=O)R(8)]phenyl], —Y—[3-[$(CH_2)_k$—CHR(7)—(C=O)R(8)]phenyl] or —Y—[2-[$(CH_2)_k$—CHR(7)—(C=O)R(8)]phenyl], in which the phenyl is in each case unsubstituted or substituted by 1–2 substituents from the group consisting of F, Cl, —CF_3, methyl, hydroxyl, methoxy and —NR(37)R(38);

R(37) and R(38) independently of one another are hydrogen or —CH_3;

Y is a bond, oxygen, —S— or —NR(9);

R(9) is hydrogen or —(C_1–C_4)-alkyl;

R(7) is —OR(10) or —NR(10)R(11);

R(10) and R(11) independently of one another are hydrogen, —(C_1–C_8)-alkyl, —(C_1–C_8)-alkanoyl, —(C_1–C_8)-alkoxycarbonyl, benzyl, benzyloxycarbonyl;

or

R(10) is trityl;

R(8) is —OR(12) or —NR(12)R(13);

R(12) and R(13) independently of one another are hydrogen, —(C_1–C_8)-alkyl or benzyl;

k is zero, 1, 2, 3 or 4;

and the other particular radicals R(1), R(2) and R(3) independently of one another are —(C_1–C_8)-alkyl, —(C_2–C_8)-alkenyl or —$(CH_2)_m$R(14);

m is zero, 1 or 2;

R(14) is —(C_3–C_8)-cycloalkyl or phenyl, which is unsubstituted or substituted by 1–3 substituents chosen from the group consisting of F, Cl, —CF_3, methyl, methoxy and —NR(15)R(16);

R(15) and R(16) are hydrogen or —CH_3;

or

the other particular radicals R(1), R(2) and R(3) independently of one another are R(18)R(19)N—C=Y')—NH—SO_2—;

Y' is oxygen, —S— or —N—R(20);

R(18) and R(19) independently of one another are hydrogen, —(C_1–C_8)-alkyl, —(C_3–C_6)-alkenyl or —$(CH_2)_t$—R(21);

t is zero, 1, 2, 3 or 4;

R(21) is —(C_5–C_7)-cycloalkyl or phenyl, which is unsubstituted or substituted by 1–3 substituents chosen from the group consisting of F, Cl, —CF_3, methoxy and —(C_1–C_4)-alkyl;

or

R(18) and R(19) together are 4 or 5 methylene groups, one CH_2 group of which can be replaced by oxygen, —S—, —NH—, —N—CH_3 or —N-benzyl;

R(20) is as defined for R(18) or amidine;

or

the other particular radicals R(1), R(2) and R(3) independently of one another are hydrogen, F, Cl, Br, I, —C≡N, X—$(CH_2)_p$—(C_qF_{2q+1}), R(22)—SO_n—, R(23)R(24)N—CO—, R(25)—CO— or R(26)R(27)N—SO_2—, in which the perfluoroalkyl group is straight-chain or branched;

X is a bond, oxygen, —S— or —NR(28);

u is zero, 1 or 2;

p is zero, 1 or 2;

q is 1, 2, 3, 4, 5 or 6;

R(22), R(23), R(25) and R(26) independently of one another are —(C_1–C_8)-alkyl, —(C_3–C_6)-alkenyl, —$(CH_2)_n$—R(29) or —CF_3;

n is zero, 1, 2, 3 or 4;

R(28) is hydrogen or —(C_1–C_3)-alkyl;

R(29) is —(C_3–C_7)-cycloalkyl or phenyl, which is unsubstituted or substituted by 1–3 substituents chosen from the group consisting of F, Cl, —CF_3, methyl, methoxy and —NR(30)R(31);

R(30) and R(31) are hydrogen or —(C_1–C_4)-alkyl;

or

R(23), R(25) and R(26) are hydrogen;

R(24) and R(27) independently of one another are hydrogen or —(C_1–C_4)-alkyl;

or

R(23) and R(24), and R(26) and R(27), together are 4 or 5 methylene groups, one CH_2 group of which can be replaced by oxygen, —S—, —NH—, —N—CH_3 or —N-benzyl;

or

the other particular radicals R(1), R(2) and R(3) independently of one another are —OR(35) or —NR(35)R(36);

R(35) and R(36) independently of one another are hydrogen or —(C_1–C_6)-alkyl;

or

R(35) and R(36) together are 4–7 methylene groups, one CH_2 group of which can be replaced by oxygen, —S—, —NH—, —N—CH_3 or —N-benzyl;

R(4) and R(5) independently of one another are hydrogen, —(C_1–C_4)-alkyl, F, Cl, —OR(32), —NR(33)R(34) or —C_rF_{2r+1};

R(32), R(33) and R(34) independently of one another are hydrogen or —(C_1–C_3)-alkyl;

r is 1, 2, 3 or 4;

or a pharmaceutically tolerated salt thereof.

5,631,294

SPECIFIC EATABLE TASTE MODIFIERS

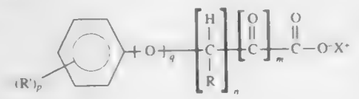
Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, and a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application May 31, 1995, Ser. No. 454,712

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—568 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



A-1

wherein m is selected from 0 to 1, n is selected from 0, 1, 2 or 3, p is selected from 1, 2, 3, 4 or 5, q is selected from 0 or 1; each R is independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; each of the substituents R' are independently selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, q is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkylurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, $SCH_3SCH_2CH_3$, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atom participating in the CH—CH or CH_2—CH_2 bond; and X^+ is selected from the group consisting of H^+ or a physiologically acceptable cation; and physiologically acceptable salts of all of the foregoing.

5,631,295

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 5, 1995, Ser. No. 461,563

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—568 **8 Claims**

1. A method of making a composition from an eatable possessing at least one taste selected from bitter, burning and metallic, which method comprises the step of incorporating in or ingesting with said eatable at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter, burning and metallic taste and wherein said tastand comprises a compound selected from the group consisting of (−)-2-(4-methoxyphenoxy) propionic acid, (±)-2-(4-methoxyphenoxy) propionic acid, (+)-2-(4-methoxyphenoxy) propionic acid, taurine, L-aspartyl-L-phenylalanine, L-aspartyl-L-tyrosine, 2,4-dihydroxybenzoic acid, 3,4-dihydroxybenzoic acid, 3,5-dihydroxybenzoic acid, 2,3-dihydroxybenzoic acid, 2,6-dihydroxybenzoic acid, 2,4,6-trihydroxybenzoic acid and physiologically acceptable salts thereof.

5,631,296

DRUGS CONTAINING S(+)-IBUPROFEN

Gerd Birrenbach, Kappel, and Rolf-Dieter Juch, Wangen, both of Switzerland, assignors to Spirig AG, Pharmazeutische Praeparate, Egerkingen, Switzerland

Continuation of Ser. No. 69,152, May 28, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,486

Claims priority, application European Pat. Off., Dec. 1, 1992, 92810938

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—570 **47 Claims**

1. S(+)-Ibuprofen pellets containing 90.0–99.0% by weight of S(+)-ibuprofen and 0.1–10.0% by weight of a basic compound selected from the group consisting of basic inorganic salts, dilute alkali metal hydroxide solutions, and mixtures thereof.

5,631,297

ANANDAMIDES USEFUL FOR THE TREATMENT OF INTRAOCULAR HYPERTENSION, OPHTHALMIC COMPOSITIONS CONTAINING THE SAME AND METHODS OF USE OF THE SAME

David W. Pate, Postbus 1397, 1000 BJ Amsterdam, Netherlands; Tomi Jarvinen; Kristiina Jarvinen, both of Sompatie 3 C1, Fin-70200 Kuopio, Finland, and Arto Urtti, 8 Whittier Ct., Mill Valley, Calif. 94941

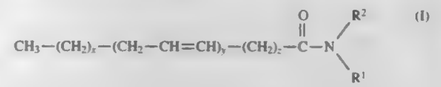
Filed Jul. 11, 1994, Ser. No. 272,532

Int. Cl.[6] A61K *31/16*

U.S. Cl. 514—627 **29 Claims**

1. An ophthalmic composition for reducing intraocular pressure comprising an admixture of:

(A) a pharmaceutically effective amount of an anandamide represented by Formula (I):



(I)

wherein

R^1 and R^2 are each H or $(CH_2)_a$-$(R^4CH)_b$—$(CH_2)_c$-R^3, wherein a, b and c are each an integer of from 0 to 10; and R^3 is OH, SH, CH_3, CH=CH_2, C≡CH, C≡N, F, Cl, Br or I; R^4 is H or $(CH_2)_l$—CH_3, wherein l is an integer from 0 to 10; provided that a+b+c+l≦10;

x is an integer of from 0 to 18;

y is an integer of from 0 to 8;

z is an integer of from 0 to 18; and

(B) a cyclodextrin.

5,631,298

GROWTH PROMOTION

David B. Anderson, and Edward L. Veenhuizen, both of Greenfield, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

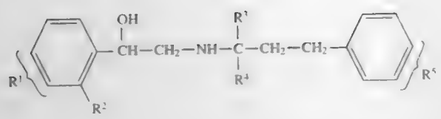
Division of Ser. No. 37,789, Mar. 18, 1993, which is a continuation of Ser. No. 606,670, Oct. 31, 1990, abandoned, which is a division of Ser. No. 328,996, Mar. 27, 1989, Pat. No. 4,992,473, and Ser. No. 153,640, Feb. 8, 1988, Pat. No. 4,849,453, which is a division of Ser. No. 860,719, May 7, 1986, Pat. No. 4,734,437, which is a continuation of Ser. No. 628,002, Jul. 5, 1984, abandoned, which is a continuation of Ser. No. 462,587, Jan. 31, 1983, abandoned. This application May 25, 1995, Ser. No. 449,874

Int. Cl.[6] A61K *31/135;31/70;31/65;31/43*

U.S. Cl. 514—653 **8 Claims**

1. A composition useful for treating a domesticated warm blooded animal to promote growth, improve feed efficiency, or improve leanness, which comprises both of (1) a first compound having the formula

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wherein:

R^1 is hydrogen, hydroxy, or methoxy;

R^2 is hydrogen or fluoro;

R^3 is hydrogen or C_1–C_2 alkyl;

R^4 is hydrogen or methyl;

R^5 is hydrogen, fluoro, nitro, hydroxy, SO_2CH_3 or $CONH_2$; provided that R^1 is hydrogen only when R^5 is nitro or SO_2CH_3, or an acid addition salt thereof; and (2) a second compound which is a tetracycline, tylosin, penicillin, cephalosporin, polyether, glycopeptide, or orthosomycin, in a ratio of about 1 to about 2 parts by weight of the first compound and about 1 to about 10 parts by weight of the second compound.

5,631,299

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, and Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 5, 1995, Ser. No. 461,594

Int. Cl.[6] A61K *31/13*

U.S. Cl. 514—665 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand comprising at least one compound selected from the group consisting of taurine and physiologically acceptable salts thereof.

5,631,300

METHOD OF MAKING A SUSTAINED RELEASE BIOCIDAL COMPOSITION

Stephen T. Wellinghoff, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 192,498, Feb. 3, 1994, abandoned, Ser. No. 192,499, Feb. 3, 1994, abandoned, and Ser. No. 228,671, Apr. 18, 1994, abandoned, which is a division of Ser. No. 16,904, Feb. 12, 1993, abandoned, said Ser. No. 192,498and Ser. No. 192,499, , each is a division of Ser. No. 17,657, Feb. 12, 1993, Pat. No. 5,360,609. This application Jun. 5, 1995, Ser. No. 462,164

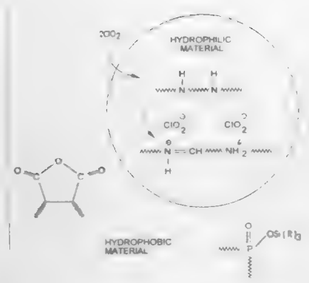
Int. Cl.[6] A61R *47/30;* **A01N** *25/08;25/34*

U.S. Cl. 514—772.3 **32 Claims**

1. A process for preparing a composite comprising:

dissolving a chlorite salt in a hydrophilic material; and

then mixing the hydrophilic material with a hydrophobic material containing an acid releasing agent, the hydrophilic and hydrophobic materials being adjacent and substantially free of water, the hydrophilic material being capable of releasing chlorine dioxide upon hydrolysis of the acid releasing agent.



5,631,301

TOPICAL ANTIBIOTIC COMPOSITION PROVIDING OPTIMAL MOISTURE ENVIRONMENT

David W. Osborne, The Woodlands, Tex., assignor to ViroTex Corporation, The Woodlands, Tex.

Filed Sep. 27, 1994, Ser. No. 313,417

Int. Cl.[6] A61K *9/107*

U.S. Cl. 514—772.4 **2 Claims**

1. A composition for the treatment of wounds comprising:

a topical semisolid composition which is capable of providing a moist environment for a wound by promoting increased water content in wounds becoming dry and promoting reduced water content in wounds having excess exudate, comprising vehicles, which are capable of incorporating water to at least 30% of their initial application weight, while also being capable of retaining at least 60% of their application weight for two hours when left at ambient conditions on a non-absorbing surface;

and an antibiotic formulation, wherein the topical semisolid comprises a hydrophilic gel or hydroalcoholic gel having between about 1% to about 4% ammonium acrylates/acrylonitrogen copolymer as the gelling agent.

5,631,302

PROCESS OF PRODUCING METHANOL

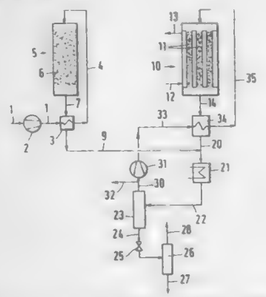
Peter König, Frankfurt am Main, and Hermann Göhna, Bad Soden, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 8, 1995, Ser. No. 437,255

Claims priority, application Germany, May 10, 1994, 44 16 425.4

Int. Cl.[6] C07C *27/06;29/151;27/26*

U.S. Cl. 518—706 **7 Claims**



1. A process of producing methanol from a synthesis gas containing hydrogen and carbon oxides by reactions in the presence of copper-containing catalysts under pressures in the range from 20 to 120 bars and at temperatures in the range from 200° to 350° C.,

wherein the synthesis gas is fed into a first synthesis reactor at an inlet temperature in the range from 220° to 270° C., said synthesis gas mainly comprising hydrogen and containing 0 to 15% by volume carbon monoxide and 15 to 25% by volume carbon dioxide, the stoichiometric number $S=(H_2-CO_2):(CO+CO_2)$ of said synthesis gas being at least 1.9 and the volume ratio CO_2:CO of said synthesis gas being at least 2:1,

said first synthesis reactor being a single shaft reactor containing a fixed bed of a copper-containing catalyst, reaction in said shaft reactor being carried out adiabatically and without a recycling of synthesis gas, furthermore, there being no indirect cooling of said fixed bed of catalyst and no synthesis gas being fed into said fixed bed for cooling purposes,

from the first synthesis reactor withdrawing a first product mixture containing methanol vapor, cooling said first product mixture and condensing methanol, separating condensed methanol from the gaseous components of the first product mixture and feeding the gaseous components to an inlet of a second synthesis reactor.

said second synthesis reactor containing tubes which are indirectly cooled by boiling water, said tubes containing a copper-containing catalyst and said gaseous components are passed through said tubes, a second product mixture containing methanol vapor is withdrawn from an outlet of said second synthesis reactor, said second product mixture being cooled to condense methanol, separating condensed methanol from the gaseous components of the second product mixture and feeding at least part of the gaseous components of the first and second product mixtures to the inlet of said second synthesis reactor.

5,631,303

PROCESS FOR REMOVING PLASTICS FROM MICROSTRUCTURES

Holger Reinecke, Dortmund, Germany, assignor to Micro-Parts, Dortmund, Germany

Continuation of Ser. No. 190,493, Feb. 2, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 559,765

Claims priority, application Germany, Feb. 10, 1993, 43 03 923.5

Int. Cl.[6] C08J *11/04;* **B08B** *7/04*

U.S. Cl. 521—40.5 **14 Claims**

1. A process for removing plastics from a metallic microstructure element, comprising treating a metallic microstructure element having an aspect ratio (height/width) of at least 4 included in a fusible or infusible plastic layer with a fluid consisting essentially of a polar solvent which does not substantially swell the plastic, at a temperature above 140° C.

5,631,304

METHOD OF MANUFACTURING RIGID FOAMED PRODUCT

Itsuro Hasegawa, 4-3-9, Obata, Moriyama-ku, Nagoya-shi, Aichi-ken, Japan

Filed Oct. 26, 1995, Ser. No. 548,611

Claims priority, application Japan, Oct. 27, 1994, 6-263912

Int. Cl.[6] C08J *9/08*

U.S. Cl. 521—94 **4 Claims**

1. A method of rigidifying a formed, metal component, comprising the steps of:

mixing together:

a metal adhesive resin selected from the group consisting of an ethylene-methyl acrylate copolymer resin, an ethylene-ethyl acrylate copolymer resin, an ethylene-butyl acrylate copolymer resin, and a mixture containing not less than 50% by weight of said ethylene-methyl acrylate copolymer resin, ethylene-ethyl acrylate copolymer resin or ethylene-butyl acrylate copolymer resin with not more than 50% by weight low density polyethylene;

a foaming agent;

a foaming accelerator;

a crosslinking agent;

a monomer selected from the group consisting of triallyl isocyanurate, triallyl cyanurate and trimethylolpropane trimethacrylate; and

a fibrous material;

to formulate a foamable composition;

arranging the foamable composition in a cavity of the formed metal component; and

heating the metal component with the foamable composition to foam, cross-link and rigidify the foamable composition.

5,631,305

AZEOTROPIC COMPOSITIONS OF DIMETHOXYMETHANE AND CYCLOPENTANE AND THE USE THEREOF IN THE PRODUCTION OF FOAMS

Joachim Werner, Bethel Park, Pa.; Scott A. Kane, Wellsburg, W. Va.; Herman P. Doerge, Pittsburgh, and Eric F. Boonstra, Oakdale, both of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Jun. 19, 1996, Ser. No. 665,934

Int. Cl.[6] C08J *9/12;9/14*

U.S. Cl. 521—114 **6 Claims**

1. A process for the production of a polyurethane foam comprising reacting a polyisocyanate-reactive material in the presence of an azeotropic composition consisting essentially of

a) from about 58 to about 77% by weight of dimethoxymethane and

b) from about 23 to about 42% by weight of cyclopentane.

5,631,306

FOAMABLE COMPOSITION CONTAINING UNSATURATED PERFLUOROCHEMICAL BLOWING AGENT

Rudolf J. Dams, Zwijndrecht, Belgium; Richard M. Flynn, Mahtomedi, Minn.; Koen Focquet, Antwerp, Belgium, and John G. Owens, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 174,826, Dec. 29, 1993, Pat. No. 5,539,008. This application Aug. 4, 1995, Ser. No. 511,415

Int. Cl.[6] C08J *9/14*

U.S. Cl. 521—131 **20 Claims**

1. A foamable composition comprising (a) at least one normally liquid, unsaturated perfluorochemical blowing agent compound which has a boiling point greater than or equal to about 20° C. and which is selected from the group consisting of perfluoroolefin compounds and perfluoroolefin compounds which contain at least one catenary heteroatom; and (b) at least one foamable polymer or the precursors of at least one foamable polymer.

5,631,307

PHOTOPOLYMERIZATION INITIATOR COMPOSITION AND PHOTOPOLYMERIZABLE COMPOSITION

Yasuhiro Tanaka; Yasumasa Toba; Madoka Yasuike; Tadashi Tanoue, and Kaoru Nakajima, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,795

Claims priority, application Japan, Jun. 28, 1994, 6-146017; Mar. 17, 1995, 7-058341

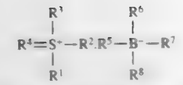
Int. Cl.[6] C08F *2/46*

U.S. Cl. 522—25 **8 Claims**

1. A photopolymerization initiator composition containing

(A) a sulfonium organoboron complex or oxosulfonium organoboron complex of the formula (1),

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(1)

wherein R^1 is benzyl, substituted benzyl, phenacyl, substituted phenacyl, aryloxy, substituted aryloxy, alkenyl or substituted alkenyl, each of R^2 and R^3 is independently benzyl, substituted benzyl, phenacyl, substituted phenacyl, aryloxy, substituted aryloxy, alkenyl, substituted alkenyl, alkyl, substituted alkyl, aryl, substituted aryl, aralkyl, substituted aralkyl, alkynyl, substituted alkynyl, alicyclic, substituted alicyclic, alkoxy, substituted alkoxy, alkylthio, substituted alkylthio, amino, substituted amino, arylthio or substituted arylthio, or R^2 and R^3 bond to each other to form a cyclic structure, R^4 is oxygen or a lone pair of electrons, and each of R^5, R^6, R^7 and R^8 is independently alkyl, substituted alkyl, aryl, substituted aryl, aralkyl, substituted aralkyl, alkenyl or substituted alkenyl, provided that not all of R^5, R^6, R^7 and R^8 are aryl or substituted aryl groups, and

(B) a sensitizer selected from the group consisting of a benzophenone derivative, a triazine derivative having a trihalogenomethyl group and 2,4-diethylthioxanthone.

5,631,308

ANTI-FOULING PAINT COMPOSITION

Jae H. Ryu, Seoul; Moon Y. Lee, Kyunggi-do; Bum S. Kim, Kyunggi-do, and Duk H. Kim, Kyunggi-do, all of Rep. of Korea, assignors to Korea Chemical Co., Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Feb. 9, 1996, Ser. No. 599,228

Claims priority, application Rep. of Korea, Dec. 30, 1995, 69081/1995

Int. Cl.[6] C09D *5/14*

U.S. Cl. 523—122 **5 Claims**

1. An anti-fouling paint comprising a self-polishing copolymer, said copolymer comprising the reaction product of (a) a base polymer containing at least one acid group; (b) a half-ester or half-amide containing at least one ether group in the chain; and (c) a metal oxide or metal-hydroxide or halogenated metal compound.

5,631,309

AQUEOUS INKS FOR INK JET RECORDING

Hideki Yanagi; Kouichi Sakai; Masayoshi Nawa, and Koichi Nakamura, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

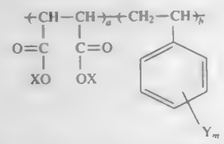
Filed Aug. 30, 1995, Ser. No. 521,327

Claims priority, application Japan, Aug. 31, 1994, 6-207620

Int. Cl.[6] C03C *17/00;* **C09D** *5/00;* **B41F** *31/00*

U.S. Cl. 523—160 **4 Claims**

1. An aqueous ink for ink jet recording comprising water, a dye and a polymeric compound which can undergo the decarboxylation reaction at a temperature of 150° to 500° C. and which has a molecular weight of 1,000 to 10,000, wherein the dye is an oil-soluble dye, a disperse dye, or a direct dye, and wherein the polymeric compound comprises the following recurring unit (I)



(I)

wherein X independently represents a hydrogen atom, an alkali metal ion, an ammonium ion, or a substituted or unsubstituted alkylamine; Y independently represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aryloxy group, a carboxyl group, an acyl group, a hydroxyl group, an amino group, a nitro group, a sulfonyl group, a sulfinyl group, or a halogen atom; and m represents an integer of 0 to 5.

5,631,310

PROCESSIBILITY AND LACING RESISTANCE WHEN SILANIZED PIGMENTS ARE INCORPORATED IN POLYMERS

Patricia A. Tooley, Wilmington; Dwight A. Holtzen, Newark, and Joseph A. Musiano, New Castle, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 203,108, Feb. 28, 1994. This application Jun. 7, 1995, Ser. No. 477,754

Int. Cl.[6] C08K *9/06*

U.S. Cl. 523—212 **4 Claims**

1. A process for preparing a polyethylene composition consisting essentially of TiO_2 pigment, comprising the steps of:

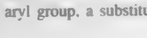
(a) coating TiO_2 pigment with at least one organosilicon compound having the formula:



wherein,

R is a nonhydrolyzable aliphatic, cycloaliphatic or aromatic group having 8–20 carbon atoms;

R' is a hydrolyzable group selected from alkoxy, halogen, acetoxy or hydroxy or mixtures thereof; and



x=1 to 3;

to form coated TiO_2 pigment; and

(b) mixing the coated TiO_2 pigment with a polyethylene matrix at a concentration of about 50 to about 87% by weight of coated TiO_2 pigment based on the weight of the polyethylene matrix to form a polyethylene composition consisting essentially of TiO_2 pigment.

5,631,311

TRANSPARENT STATIC DISSIPATIVE FORMULATIONS FOR COATINGS

Oswald R. Bergmann, Wilmington; Carol A. Brevett, Bear; Carl B. Douglas, Claymont, and Peter C. Szeto, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 18, 1994, Ser. No. 292,668

Int. Cl.[6] H01B *1/20;* **C08L** *31/06*

U.S. Cl. 523—333 **11 Claims**

1. A stable dispersion for use in making thermoformable and transparent coatings comprising an electroconductive powder, a thermoplastic resin, a polyester-polyamine copolymer dispersant, and at least one solvent, wherein said dispersion contains less than about 3 ppm of extractable chlorides.

5,631,312

FLOOR PAINT COMPOSITION

Izumi Takada, Kakamigahara; Noriyuki Niwa, and Ikuo Imaizumi, both of Tokyo-to, all of Japan, assignors to Kikusui Chemical Industries Co., Ltd., Nagoya, and Hoechst Industry Limited, Tokyo, both of Japan

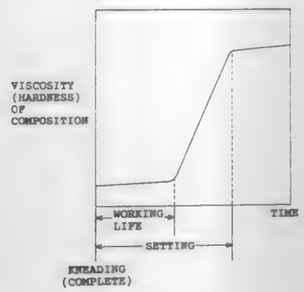
Filed May 21, 1996, Ser. No. 652,638

Claims priority, application Japan, May 22, 1995, 7-122530

Int. Cl.[6] C08L *13/02;63/00*

U.S. Cl. 524—5 **20 Claims**

1. A floor paint composition comprising:



an alpha-type hemihydrate gypsum and cement mixture having a ratio by weight of the alpha-type hemihydrate gypsum to the cement of between about 80:20 and about 95:5; and

a synthetic resin emulsion based on an anion copolymer, the emulsion having a ratio of solid content relative to 100 parts by weight of the mixture of between about 15 parts and about 35 parts by weight;

wherein the anion copolymer comprises

a) at least one unit of a monomer selected from the group consisting of ethylene unsaturated carboxylic acid, ethylene unsaturated sulfonic acid, and ethylene unsaturated phosphonic acid, and

b) an ethylene unsaturated monomer having at least one organic silicon radical.

5,631,313

SUSPENDING MEDIUM FOR PARTICULATE MATERIAL

Marshall D. Bishop, and John E. Hostettler, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 513,539, Apr. 24, 1990, Pat. No. 5,091,448. This application Nov. 14, 1991, Ser. No. 791,845

Int. Cl.[6] C08J *3/00;* **C08K** *3/00;* **C08L** *95/00;* **C09K** *7/00*

U.S. Cl. 524—45 **20 Claims**

1. A composition comprising an isoparaffin oil, an oil-soluble resin, and a particulate material wherein:

said isoparrafin oil is present in said composition in the range of from 40 to 95 weight percent and is selected from the group consisting of C_{13} isoparaffin oils, C_{14} isoparaffin oils, and combinations of two or more thereof;

said oil-soluble resin is selected from the group consisting of styrene-isoprene copolymers, hydrogenated styrene-isoprene block copolymers, styrene ethylene/propylene block copolymers, styrene isobutylene copolymers, styrene-butadiene copolymers, polybutylene, polystyrene, polyethylene-propylene copolymers, and combinations of two or more thereof; and

said particulate material is selected from the group consisting of lime, sodium bicarbonate, sodium carbonate, molybdenum disulfide, sodium hydroxide, graphite, zinc, tin, quebracho, lignin, lignite, caustisized lignite, lignosulfonate, chrome lignosulfonate, naphthalenesulfonate, unintahite (gilsonite), polyvinyl alcohol, and combinations of two or more thereof.

5,631,314

LIQUID COATING COMPOSITION FOR USE IN FORMING PHOTORESIST COATING FILMS AND PHOTORESIST MATERIAL USING SAID COMPOSITION

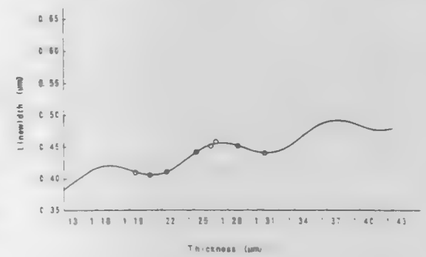
Kazumasa Wakiya; Masakazu Kobayashi, and Toshimasa Nakayama, all of Kanagawa-ken, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa-ken, Japan

Filed Apr. 26, 1995, Ser. No. 427,900

Claims priority, application Japan, Apr. 27, 1994, 6-110163

Int. Cl.[6] C08L *101/04;* **C08F** *2/44*

U.S. Cl. 524—165 **18 Claims**

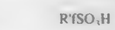


1. In a liquid coating composition for use in forming a photoresist coating film comprising a water-soluble, film-forming component and a fluorosurfactant, the improvement wherein said fluorosurfactant is at least one member selected from the group consisting of the salt of a compound represented by the following general formula (I):



(I)

(where Rf is a fluorohydrocarbon group having part or all of the hydrogen atoms in a C_2–C_{20} saturated or unsaturated hydrocarbon group replaced by fluorine atoms) with an alkanolamine and the salt of a compound represented by the following general formula (II):



(II)

(where R'f is a fluorohydrocarbon group having part or all of the hydrogen atoms in a C_2–C_{20} saturated or unsaturated hydrocarbon group replaced by fluorine atoms) with an alkanolamine.

5,631,315

PLASTICIZED POLYVINYL BUTYRAL SHEET CONTAINING EPOXY RESIN

John J. D'Errico, Glastonbury, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 1, 1993, Ser. No. 88,147

Int. Cl.[6] C08K *5/15*

U.S. Cl. 524—314 **10 Claims**

1. Plasticized polyvinyl butyral sheet containing glass adhesion control agent and epoxy resin from about 3 to about 7 parts by weight per 100 parts by weight of polyvinyl butyral to counteract a light induced reduction of adhesion between the sheet and a photoreactive component of a heat-wave-reflective or electrically conductive coating.

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5,631,316

TIRE INNERLINER COMPRISING ESTER-FUNCTIONALIZED ELASTOMERIC INTERPOLYMERS OF C4-C7 ISOMONOOLEFIN AND PARA-ALKYLSTYRENE

Bernard J. Costemalle, Rhode St Genese, Belgium; James V. Fusco, Red Bank, N.J.; Pierre T. Hous, Steenokkerzeel, Belgium, and Hsien-Chang Wang, Bellaire, Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 305,547, Sep. 14, 1994, Pat. No. 5,473,017, which is a continuation-in-part of Ser. No. 129,292, Sep. 30, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 472,373

Int. Cl.[6] **C08L** *25/16;* **C08K** *3/04*

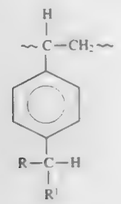
U.S. Cl. 524—521 **18 Claims**

14. A vulcanizable tire innerliner composition comprising a mixture of:

i) a blend of

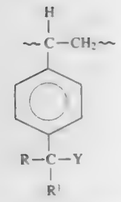
(A) from about 40 to 80 wt % of an elastomeric random interpolymer essentially free of halogen, comprising at least 80 wt % of a polymerized isomonoolefin containing from 4 to 7 carbon atoms and from about 0.05 up to about 20 wt % of copolymerized aromatic monomer units comprising a mixture of the following structures randomly distributed therein:

(a)

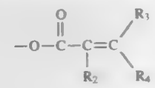


and

(b)



wherein **R** and R^1 are independently selected from the group consisting of hydrogen and C_1 to C_4 alkyl and Y comprises an ester group represented by the structure:



wherein R_2 and R_3 are independently selected from the group consisting of hydrogen and an alkyl group containing 1 to about 6 carbon atoms and R_4 is selected from the group consisting of hydrogen, an alkyl group containing from 1 to about 28 carbon atoms, an aryl group and an alkenyl group containing from 2 to about 28 carbon atoms; and

(B) one or a mixture of unsaturated rubbers selected from the group consisting of natural rubber, polyisoprene, polybutadiene, butyl rubber, halogenated butyl rubber, and copolymers of butadiene with up to about 35 wt % of styrene or acrylonitrile;

ii) from about 20 to about 45 wt % of a filler,

iii) from 0 to about 25 wt % of a plasticizer oil; and

iv) at least 1 wt % of a curing system for said interpolymer.

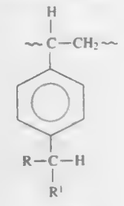
18. A process for fabricating a pneumatic tire comprised of a carcass element containing an unsaturated rubber and an innerliner element adhered to said carcass element comprising:

a. forming a composition comprising a mixture of:

i) a blend of

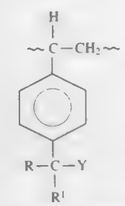
(A) from about 40 to 80 wt % of an elastomeric random interpolymer essentially free of halogen, comprising at least 80 wt % of a polymerized isomonoolefin containing from 4 to 7 carbon atoms and from about 0.05 up to about 20 wt % of copolymerized aromatic monomer units comprising a mixture of the following structures randomly distributed therein:

(a)

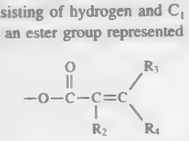


and

(b)



wherein R and R^1 are independently selected from the group consisting of hydrogen and C_1 to C_4 alkyl and Y comprises an ester group represented by the structure:



wherein R_2 and R_3 are independently selected from the group consisting of hydrogen and an alkyl group containing 1 to about 6 carbon atoms and R_4 is selected from the group consisting of hydrogen, an alkyl group containing from 1 to about 28 carbon atoms, an aryl group and an alkenyl group containing from 2 to about 28 carbon atoms; and

(B) up to 50 wt % based on the rubber content of said composition, of one or a mixture of unsaturated rubbers selected from the group consisting of natural rubber, polyisoprene, polybutadiene, butyl rubber, halogenated butyl rubber, and copolymers of butadiene with up to about 35 wt % of styrene or acrylonitrile;

ii) from about 20 to about 45 wt % of a filler,

iii) from 0 to about 25 wt % of a plasticizer oil; and

iv) at least 1 wt % of a curing system for said interpolymer into an innerliner sheet material;

b. exposing said sheet material to a source of high energy radiation sufficient to partially cure said sheet material;

c. contacting said partially cured innerliner sheet material with said tire carcass element to form a laminated structure; and

d. heating said structure at a temperature of from about 100° to 250° C. for a period of time sufficient to vulcanize said structure.

5,631,317

PROCESS FOR PRODUCING SELF-DISPERSING AND SALT-SENSITIVE POLYMER

Masanori Komatsu, and Ikuko Toki, both of Tokyo, Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Dec. 6, 1993, Ser. No. 161,795

Claims priority, application Japan, Dec. 10, 1992, 4-330751

Int. Cl.[6] **C08L** *33/06*

U.S. Cl. 524—561 **14 Claims**

1. A process for producing a self-dispersing and salt-sensitive polymer by polymerizing the following monomers (A). (B) and (C) in a total concentration of 25% by weight or above:

(A) 35 to 65% by weight of acrylic acid,

(B) 10 to 45% by weight of a vinyl monomer represented by the following general formula [I]:

$$CH_2{=}C(R^1)COOR^2 \quad [I]$$

wherein R^1 represents a hydrogen atom or a methyl group; and R^2 represents an alkyl group having 8 to 12 carbon atoms, and

(C) 20 to 25% by weight of a vinyl monomer represented by the following general formula [II]:

$$CH2{=}C(R^3)COOR^4 \quad [II]$$

wherein R^3 represents a hydrogen atom or a methyl group; and R^4 represents an alkyl group having 2 to 4 carbon atoms in a mixed solvent comprising 50 to 90% by weight of an organic solvent having a solubility parameter of 10 $(cal/cm^3)^{1/2}$ or below and miscible with water and 50 to 10% by weight of water, then neutralizing 2 to 15 molar % of the acrylic acid moiety of the polymer, distilling off the organic solvent while water is left, and further adding water.

5,631,318

REACTIVE HOT-MELT ELASTIC SEALANT COMPOSITION

Masahiro Ito, Mishima-gun, and Masaharu Takada, Osaka, both of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Takatsuki, Japan

Continuation of Ser. No. 732,100, Jul. 18, 1991, abandoned. This application Jan. 7, 1994, Ser. No. 178,611

Claims priority, application Japan, Jul. 25, 1990, 2-200683

Int. Cl.[6] **C08J** *3/00;* **C08K** *3/20;* **C08L** *75/00;* **C08G** *18/00*

U.S. Cl. 524—590 **4 Claims**

1. A reactive hot-melt elastic sealant composition comprising:

(A) a first component consisting essentially of a polyurethane prepolymer which is prepared by reacting a polyether polyol having a hydroxyl group at the terminus and having a weight average molecular weight of 6,000 to 40,000 and an excess amount of a polyisocyanate compound, and

(B) a second component comprising a thermoplastic urethane multi-block copolymer resin, which is prepared by reacting (a) a polyfunctional ring-containing and active hydrogen-containing compound having a weight average molecular weight of 100 to 4,000 selected from the group consisting of a bisphenol resin, a terpene resin, a coumarone resin, a xylene resin, a rosin ester resin, a styrene resin, a phenol resin, a terpene phenol resin, and a rosin resin, (b) a diol or triol compound selected from the group consisting of ethylene glycol, 1,4-butanediol, 1,6-hexanediol, 1,8-octanediol, a polycarbonate diol, a polytetramethylene glycol, a polyacryldiol, a polyalkylene ether diol, a polyoxyalkylene-adduct bisphenol, trimethylolpropane, glycerin, triethylene triol, and a polyoxyalkylene ether triol, and (c) an excess amount of a polyisocyanate compound,

wherein the reactive hot-melt elastic sealant composition contains 20 to 60% by weight of the polyurethane prepolymer, 5 to 30% by weight of the thermoplastic urethane multi-block copolymer resin, not more than 50% by weight of a filler, not more than 20% by weight of a plasticizer and not more than 10% by weight of other additives, and the first component is different from the second component.

5,631,319

PRESSURIZED, BLOWING-AGENT-CONTAINING ISOCYANATE SEMIPREPOLYMER MIXTURES BASED ON MIXTURES OF POLYHYDROXYL COMPOUNDS AND MONOALCOHOLS AND/OR HYDROXYKETONES, THE USE THEREOF FOR THE PRODUCTION OF POLYURETHANE FOAMS, AND A PROCESS THEREFOR

Hans-Juergen Reese, Schwarzheide; Franz Heimpel, Aiting, and Heinz Forster, Wolfratshausen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 29, 1995, Ser. No. 564,027

Claims priority, application Germany, Dec. 6, 1994, 44 43 432.4

Int. Cl.[6] **C08J** *9/00;* **C08K** *3/20;* **C08L** *75/00;* **C08G** *18/00*

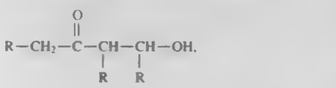
U.S. Cl. 524—590 **2 Claims**

1. A pressurized, blowing-agent-containing, single-component, isocyanate semiprepolymer mixture obtained by reacting

A) at least one polyhydroxyl compound with

B) at least one organic polyisocyanate

in a sealed reactor in the presence of at least one blowing agent or by treating the isocyanate semiprepolymer formed in the absence of blowing agent with at least one blowing agent, wherein the polyhydroxyl compound (A) is used in combination with a β-hydroxyketone (A1ii) of the formula



where the radicals R are identical or different and are hydrogen, phenyl, alkyl having 1 to 20 carbon atoms, phenylalkyl having 1 to 14 carbon atoms in the alkylene radical or halogen.

5,631,320

SOFT LINING MATERIAL COMPOSITION FOR DENTURES

Hiroshi Kamohara; Shunichi Futami, both of Tokyo; Masayuki Ikeno, and Hideki Sugahara, both of Matsuida-machi, all of Japan, assignors to GC Corporation, and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 629,225

Claims priority, application Japan, Apr. 17, 1995, 7-114136

Int. Cl.[6] **C08K** *3/02*

U.S. Cl. 524—789 **2 Claims**

1. A soft lining material composition for dentures, which comprises:

(A) 100 parts by weight of an organopolysiloxane represented by the following average compositional formula (1):

$$(R^1)_a(R^2)_bSiO_{(4-a-b)/2} \quad (1)$$

where R^1 is an alkenyl group, R^2 is a substituted or unsubstituted monovalent hydrocarbon group, a is a number as given by $0<a<3$, and b is a number as given by $0<b<3$, provided that $0<a+b<4$, and having a viscosity of 1,000 to 20,000 cps at 25° C.,

(B) 0.1 to 30 parts by weight of an organopolysiloxane represented by the following average compositional formula (2):

$$(H)_c(R^3)_dSiO_{(4-c-d)/2} \quad (2)$$

where R^3 is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 10 carbon atoms, c is a number as given by $0<c\leq 2$, and d is a number as given by $0<d\leq 3$, provided that $0<c+d<4$,

(C) 10 to 500 ppm, based on the total amount of A+B, of a platinum compound addition reaction catalyst soluble in silicone,

(D) 5 to 50 parts by weight of a finely divided silica having a BET specific surface area of 50 to 500 m^2/g and subjected to a hydrophobic treatment on the surface, and

(E) 10 to 200 parts by weight of a molten quartz powder having an average particle size of 0.5 to 10 μm.

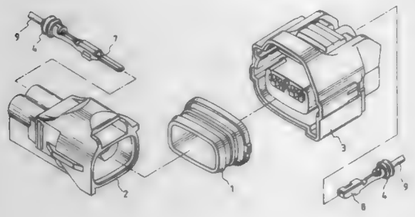
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5,631,321

SEALING COMPONENT FOR CONNECTOR WATERPROOFING

Kiyotaka Okazaki, and Masahiro Kanda, both of Shizuoka, Japan, assignors to Yazaki Corporation, and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 510,075
Claims priority, application Japan, Aug. 2, 1994, 6-181125
Int. Cl.[6] C08G *77/08*
U.S. Cl. 524—862 **8 Claims**



1. A sealing component for connector waterproofing, which comprises a vulcanized composition comprising at least (a) 100 parts by weight of an organopolysiloxane represented by the following average composition formula (I), (b) from 5 to 500 parts by weight of a finely divided silica filler, (c) from 0.01 to 5 parts by weight of a dialkyl peroxide or peroxy ketal which has a half-life of 1 hour at a temperature of from 130° C. to 150° C., (d) from 0.1 to 5 parts by weight of a silicon compound having two or more Si—H bonds per molecule, and (e) from 0.01 to 2 parts by weight of an organic peroxide represented by the following general formula (II):

$$R^1_mSiO_{(4-m)/2} \quad (I)$$

wherein R^1 represents a substituted or unsubstituted monovalent hydrocarbon group; and m represents a positive number of from 1.98 to 2.02;

$$R^2{-}OO{-}\underset{\underset{O}{\|}}{C}{-}O{-}X{-}O{-}\underset{\underset{O}{\|}}{C}{-}OO{-}R^3 \quad (II)$$

wherein X represents a C_{2-8} unsubstituted divalent hydrocarbon group; and R^2 and R^3 may be the same or different and each represent a C_{3-10} monovalent hydrocarbon group or a group represented by $—SiR^4_3$ in which R^4 represents a methyl, ethyl or phenyl group.

5,631,322

POLYMERS OF N-ACRYLOYLMORPHOLINE ACTIVATED AT ONE END AND CONJUGATES WITH BIOACTIVE MATERIALS AND SURFACES

Francesco M. Veronese; Oddone Schiavon; Paolo Caliceti, all of Padua; Luciana Sartore, Marano Vic.; Elisabetta Ranucci, Brescia, and Paolo Ferruti, Milan, all of Italy, assignors to Consiglio Nazionale delle Ricerche, Italy

Division of Ser. No. 243,869, May 17, 1994. This application Jun. 7, 1995, Ser. No. 475,177
Int. Cl.[6] C08F *8/00;20/58;20/60*
U.S. Cl. 525—54.1 **23 Claims**

1. A conjugate of preformed active polymeric N-acryloylmorpholine homopolymer and a substance selected from the group consisting of proteins, enzymes, polypeptides, drugs, dyes, nucleosides, lipids, and liposomes, in which the homopolymer is attached to the substance by an activated chain end by other than free radical polymerization.

5,631,323

COMPOSITION OF STYRENE-ACRYLONITRILE COPOLYMER MATRIX WITH PARTICLES OF GRAFT COPOLYMER AND CROSSLINKED COPOLYMER

Norbert Güntherberg, Speyer; Ekkehard Jahns, Weinheim; Wolfgang Fischer, Ludwigshafen; Graham E. McKee, and Bernhard Rosenau, both of Neustadt, all of Germany, assignors to BASF Aktiengeselischaft, Ludwigshafen, Germany

Filed Dec. 4, 1995, Ser. No. 567,056
Claims priority, application Germany, Dec. 9, 1994, 44 43 966.0
Int. Cl.[6] C08L *35/04;55/02*
U.S. Cl. 525—71 **6 Claims**

1. A thermoplastic molding material comprising
A) from 35 to 99.5% by weight of a matrix copolymer (A) of
a_1) from 50 to 95% by weight of styrene or α-methylstyrene or a mixture thereof,
a_2) from 5 to 50% by weight of acrylonitrile and
a_3) from 0 to 20% by weight of further comonomers
B) from 0 to 50% by weight of a particulate graft copolymer (B) which is insoluble in (A), has a median particle diameter of from 0.03 to 1 μm and comprises
b_1) from 30 to 80% by weight of a core comprising an elastomeric polymer having a glass transition temperature of less than −10° C. and
b_2) from 20 to 70% by weight of a graft shell comprising a polymer which is compatible or partly compatible with (A)
and
C) from 0.5 to 30% by weight of a particulate crosslinked copolymer (C) which is insoluble in (A), has a median particle diameter of from 0.5 to 50 μm and comprises
c_1) from 50 to 89.95% by weight of styrene or α-methylstyrene or a mixture thereof,
c_2) from 10 to 50% by weight of acrylonitrile,
c_3) from 0.05 to 5% by weight of a polyfunctional, crosslinking monomer,
c_4) from 0 to 10% by weight of a monomer which contains acidic or basic groups and
c_5) from 0 to 20% by weight of further comonomers.

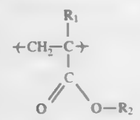
5,631,324

GOLF BALL COVERS

Murali Rajagopalan, South Dartmouth, Mass., and Robert J. Statz, Kennett Square, Pa., assignors to Acushnet Company, Fairhaven, Mass., and E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jun. 7, 1995, Ser. No. 488,162
Int. Cl.[6] C08L *23/08;* **A63B** *37/00*
U.S. Cl. 473—385 **31 Claims**

1. A golf ball comprising a cover and a core, wherein the cover comprises a blend of at least one olefinic ionomer and a terpolymer, said terpolymer comprising: (a) a first monomeric component comprising an olefinic monomer having from about 2 to about 8 carbon atoms; (b) a second monomeric component comprising an unsaturated carboxylic acid based acrylate class ester having from about 2 to about 18 carbon atoms; and (c) a third monomeric component comprising at least one monomer selected from the group consisting of carbon monoxide, anhydride monomers and monomers having a structure according to the following formula;



(I)

wherein R_1 is hydrogen or a linear chain or branched chain alkyl group of from about 1 to about 18 carbon atoms and R_2 is selected from the group consisting of linear chain or branched chain alkyl, carbocyclic and unsubstituted aryl groups, each containing an epoxy moiety.

5,631,325

COPOLYMERS OF ETHYLENE AND ALKYL ACRYLATE WITH IMPROVED MELT-POINT TEMPERATURES

Jerry G. Latiolais, Groves; Nicholas R. Galante, Orange; J. Paul Gathright, Orange, and James H. Wang, Orange, all of Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Division of Ser. No. 947,870, Sep. 21, 1992, Pat. No. 5,543,477, which is a continuation-in-part of Ser. No. 764,861, Sep. 24, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 485,874
Int. Cl.[6] C08L *23/02;23/08*
U.S. Cl. 525—227 **20 Claims**

1. A composition comprising a homogeneous blend of a polyolefin and an ethylene-alkyl acrylate copolymer having an alkyl acrylate content of X weight percent. X being greater than ten and being based on the total weight of ethylene and alkyl acrylate in the copolymer, said copolymer having an average melt-point temperature equal to or greater than the value obtained from the expression:

$$\text{temperature (deg F.)} = 238 - 2.16X$$

wherein the average melt-point temperature is about 10° F. greater than a copolymer having the same alkyl acrylate content and prepared by dividing the ethylene monomer and alkyl acrylate monomer equally among reactor zones.

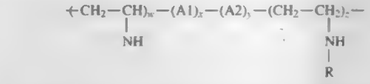
5,631,326

CROSSLINKED NITROGEN-CONTAINING VINYL COPOLYMERS PROCESSES FOR THEIR PREPARATION AND THE USE OF THESE COMPOUNDS

Michael Ahlers, Mainz; Heiner Glombik, Hofheim am Taunus; Stefan Müllner, Hochheim, and Axel Walch, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 95,624, Jul. 21, 1993, Pat. No. 5,428,112. This application May 30, 1995, Ser. No. 452,797
Claims priority, application Germany, Jul. 22, 1992, 42 24 110.3
Int. Cl.[6] C08F *8/42*
U.S. Cl. 525—328.2 **2 Claims**

A process for the preparation of a vinyl coploymer having units of the Formula I

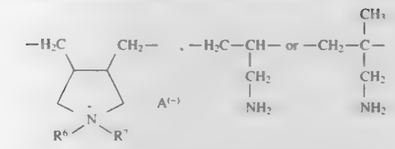


I

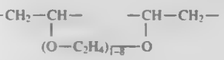
or a physiologically tolerated salt thereof, in which, in Formula I,
w is 0.1–0.98,
x is 0.0–0.8,
y is 0.0 o 0.3 and
z is 0.0–0.6,
in which w+x+y+z is 1, x=0 only if y≠0, y=0 only if at the same time x≠0 and z≠0 and R=R^4, and in which A 1
1. is a hydrolysis-stable radical of the formula

in which R^5 is a linear or branched alkoxy radical having 3 to 18 carbon atoms, a cycloalkyl radical having 5 to 8 carbon atoms or a phenoxy, tolyl, 4-(tert-butyl)phenyl, 4-aminophenyl, N-carbazyl, N-imidazolyl, 2-pyridinyl or 4-pyridinyl radical, or

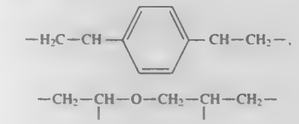
2. is a hydrolysis-stable radical of the formula



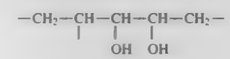
in which R_6 is alkyl radical having 1 to 18 carbon atoms and R^7 is H or, if R^6 is alkyl having 1 to 6 carbon atoms, an alkyl radical having 1 to 6 carbon atoms,
A2 **1**. is the radical of a hydrolysis-stable crosslinking agent of the formula



or
2. is a radical of the formula

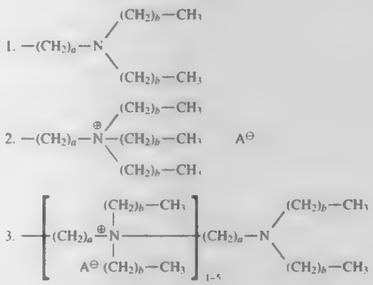


or



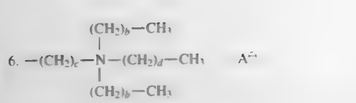
and in which
R is R^1-X, R^2-X, R^3 or R^4, in which
R^1 is a substituent selected from the group consisting of:
1. $—(CH_2)_n—CH_3$, in which n is an integer from 3 to 21, branched alkyl having 3 to 21 carbon atoms or straight-chain or branched alkenyl having up to 21 carbon atoms,
2. cycloalkyl, cycloalkenyl having in each case 5–12 carbon atoms or mono-, di- or trisubstituted cycloalkyl or cycloalkenyl having in each case 5–12 ring carbon atoms and
3. aryl, arylalkyl or arylalkenyl, in which the aryl radicals are mono- or polynuclear, can be mono-to trisubstituted and can contain hetero atoms and

X is a single bond or a bridge group or a spacer, and
R^2 is a hydrophilic or amphiphilic substituent selected from the group consisting of:



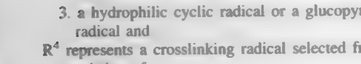
4 $—(CH_2)_c—B$, in which B is a pyrrolidinyl, piperidinyl or morpholinyl radical bonded via N,
5. $—(CH_2)_a—D^{\oplus}A^{\ominus}$, in which $D^{\oplus}$is pyridinium, pyrimidinium or imidazolinium and

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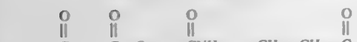
in which, in the substituents mentioned under 1 to 6,
a is an integer from 2 to 16,
b is zero, 1, 2 or 3,
c is an integer from 2 to 6,
d is an integer from 6 to 17 and
A is a physiologically tolerated anion,
R^3 is a radical selected from the group consisting of
1. a cholic acid which is bonded via the 3-α-OH or 24-COOH function directly or via a spacer,
2. a tauro- or glycocholic acid which is bonded via the 3α-OH or tauro or glyco function directly or via a spacer and
3. a hydrophilic cyclic radical or a glucopyranuronic acid radical and

R^4 represents a crosslinking radical selected from the group consisting of:





in which W is a single bond,





and in which
e is an integer from 3 to 12 and
f is an integer from 1 to 6.

which comprises preparing a compound of the Formula II

in which A1, A2, x and y have the meanings given in the case of Formula I and u is 0.1–0.98 (u is the sum of w and z), from vinylformamide by copolymerization, hydrolyzing this product to give a compound of the formula III

in which A1, A2, x and y have the meanings given in the case of Formula I and u has the meaning given in the case of Formula II, and then optionally forming derivatives by customary methods, to give a compound of the Formula I or a physiologically tolerated salt thereof.

5,631,327

POLYMERS CAPABLE OF REVERSIBLY COMPLEXING ACID GASES AND A METHOD OF USING THE SAME

Eric J. Beckman, Edgewood, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Division of Ser. No. 30,995, Mar. 12, 1993, Pat. No. 5,507,848. This application Sep. 12, 1995, Ser. No. 526,881

Int. Cl.[6] C08F *8/34*

U.S. Cl. 525—328.2 **10 Claims**

1. A reaction product from a reaction of an aminated polymer, said animated polymer having a molecular weight greater than or equal to approximately 500, said aminated polymer comprising covalently attached amino functional groups suitable to complex at least one acid gas, said at least one acid gas selected from the group consisting of CO_2, SO_2, H_2S, NO and NO_2, wherein said at least one acid gas reacts with amino groups of said aminated polymer to remove said at least one acid gas from a gas system.

5,631,328

LOW-HAZE IONOMERS OF COPOLYMERS OF ALPHA-OLEFINS, CARBOXYLIC ACID ESTERS, AND OPTIONAL COMONOMERS, AND PROCESSES FOR MAKING AND ACIDIFYING THESE IONOMERS

James H. Wang, Appleton, Wis.; David Rosendale, Mauriceville, Tex.; Victor P. Kurkov, San Rafael, Calif.; Leslie P. Theard, Houston, Tex.; Ta Y. Ching, Novato, Calif.; Lewis R. Compton; Tor H. G. Palmgren, both of Orange, Tex., and Mitchell P. Eichelberger, The Woodlands, Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 330,290, Oct. 27, 1994, Pat. No. 5,576,396, which is a continuation-in-part of Ser. No. 144,173, Oct. 27, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 379,411

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—329.7 **5 Claims**

1. A composition comprising a copolymer of alpha-olefins having from two to eight carbon atoms, esters of alpha, beta-ethylenically-unsaturated carboxylic acids having from four to twenty-two carbon atoms, and metal salts of acrylic or methacrylic acid, wherein said copolymer has a haze of no more than ten percent as measured by ASTM method D 1003, wherein the composition is acidified.

5,631,329

PROCESS FOR PRODUCING HYPER-COMB-BRANCHED POLYMERS

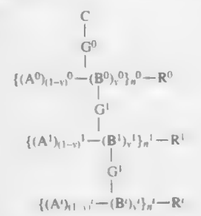
Rui Yin, Mount Pleasant; Donald A. Tomalia, Midland; David M. Hedstrand, Midland, and Douglas R. Swanson, Midland, all of Mich., assignors to Dendritech, Inc., Midland, Mich.

Continuation-in-part of Ser. No. 376,100, Jan. 20, 1995, which is a continuation-in-part of Ser. No. 4,849, Jan. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 739,167, Aug. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 573,362, Aug. 27, 1990, abandoned. This application Mar. 21, 1995, Ser. No. 408,833

Int. Cl.[6] C08F *293/00*

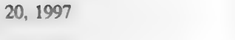
U.S. Cl. 525—417 **66 Claims**

1. A process for producing non-crosslinked poly-branched polymers having the general formula



wherein: C is a core molecule; each {(A)-(B)} branch is a linear polymer or copolymer chain; each R is the residual moiety of an initiator;

A and B are polymerizable monomers or comonomers capable of withstanding the conditions required for branching therefrom or grafting thereto, at least during the polymerization of the {(A)-(B)} linear polymer chain and during its grafting to a prior {(A)-(B)} branch; each G is a grafting component, and the designation



indicates that G can extend from either an (A) unit or a (B) unit;

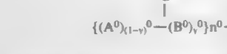
n is the degree of polymerization of the indicated generation comb branches, y is the fraction of B units in the indicated generation branch, and has a value of 0.01 to 1;

the superscripts 0, 1 and i designate the comb-branch generation level, with i beginning at "2" and continuing for the number of reiterative branch set generations in the polymer; and at least n^0 and n^1 are ≧2;

said process comprising

(I) forming a core having at least one reactive site;

(II) reacting essentially all of the reactive sites of said core with a reactive polymer having the unit formula

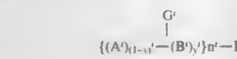


to form multiple branches which contain reactive (B^0) sites on each branch, using a reactive scheme such that the reactive monomer units (B^0) are capable of withstanding the conditions required for branching therefrom or grafting thereto to ensure that said reactive polymer



reacts with said reactive sites of said core, but that no reactions occur at said (B^0) sites;

(III) repeating step (II) sequentially by reacting reactive polymer having the unit formula



with the reactive sites of said polymerizable $B^{(i-1)}$ monomers or comonomers of the previous generation to form successive generation of branches to give the desired non-crosslinked poly-branched polymer.

5,631,330

PROCESS FOR PREPARING PHENOL-FUNCTIONAL POLYMER

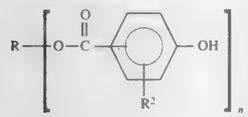
Albert I. Yezrielev, Kendall Park; William E. Wellman, Edison; Ralph M. Kowalik, Bridgewater; George A. Knudsen, Scotch Plains, all of N.J., and Michael G. Romanelli, Brooklyn, N.Y., assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

Division of Ser. No. 96,127, Jul. 22, 1993, Pat. No. 5,453,469, which is a division of Ser. No. 543,616, Jun. 22, 1990, Pat. No. 5,239,018, which is a continuation-in-part of Ser. No. 404,028, Sep. 6, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 472,625

Int. Cl.[6] C08G *63/06;63/12*

U.S. Cl. 525—418 **51 Claims**

1. A process for preparing an hydroxybenzoic acid-capped polymer represented by the formula:



wherein

R is a polyvalent radical with a number average molecular weight between about 200 and 10,000 derived from a polymer having at least 2 aliphatic hydroxy groups;

R^2 is hydrogen, hydroxy, halo, C_{1-4} alkyl, C_{1-4} alkoxy, or C_{1-4} alkoxycarbonyl; and

n is an integer between 2 and 10, inclusive;

comprising the step of directly esterifying a substantial amount of the aliphatic hydroxy-functional polymer with an effective amount of an hydroxybenzoic acid at a reaction temperature below about 200° C.

5,631,331

METHOD FOR THE PREPARATION OF A HEAT-RESISTANT SILICON-CONTAINING POLYMER

Toshiyasu Sakakura, and Masato Tanaka, both of Tsukuba, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 551,845

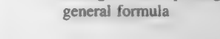
Claims priority, application Japan, Nov. 17, 1994, 6-283179

Int. Cl.[6] C08G *77/06*

U.S. Cl. 525—478 **4 Claims**

1. A method for the preparation of a heat-resistant silicon-containing crosslinked polymer which consists essentially of the step of:

exposing a silicon-containing polymer having a structure consisting of the repeating monomeric units represented by the general formula



in which A is a divalent hydrocarbon group, to an oxidizing atmosphere at an elevated temperature in the range from 50° to 400° C. to effect crosslinking between molecules of the polymer.

5,631,332

CURING AGENTS FOR EPOXY RESINS COMPRISING BIS(AMINOMETHYL)BICYCLO[2.2.1]HEPTANE ADDUCTS

Minato Karasawa, and Takuji Shimizu, both of Mobara, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 584,551

Claims priority, application Japan, Jan. 17, 1995, 7-004940

Int. Cl.[6] C08G *59/18;59/50*

U.S. Cl. 525—504 **9 Claims**

1. A curing agent for epoxy resins prepared by reacting 2,5- and 2,6-bis(aminomethyl)-bicyclo[2.2.1]heptanes with an epoxy resin wherein the equivalent of the epoxy group in the epoxy resin relative to one equivalent of the active hydrogen in the amino group of the 2,5 and 2,6-bis(aminomethyl)-bicyclo[2.2.1]heptanes is 0.025–0.50 and said epoxy resin is a polyglycidyl ether of a polyphenol having an epoxy equivalent of 150–600 g/eq.

5,631,333

BLENDS BASED ON COPOLYARYLENE ETHER SULFONES

Martin Weber, Neustadt; Gerhard Leiter, Weinheim; Jürgen Streib, Worms, all of Germany, and Eckhard M. Koch, Kuwana, Japan, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 10, 1995, Ser. No. 370,609

Claims priority, application Germany, Jan. 13, 1994, 44 00 747.7

Int. Cl.[6] C08G *75/00;75/14*

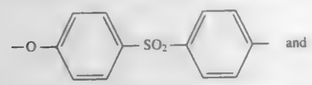
U.S. Cl. 525—535 **6 Claims**

1. A blend of polyarylene ether sulfones comprising

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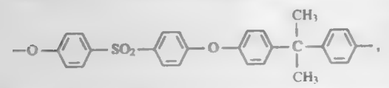
A) from 55 to 99% by weight of a matrix of copolyarylene ether sulfones composed of

a_1) from 91 to 97 mol % of structural units


(I)

and

a_2) from 3 to 9 mol % of structural units


(II)

B) from 1 to 45% by weight of a disperse phase comprising copolyarylene ether sulfones, composed of

b_1) from 91 to 97 mol % of structural units II and

b_2) from 3 to 9 mol % of structural units I, and

C) from 0 to 40% by weight of rubber impact modifiers.

5,631,334

PROCESS FOR THE MANUFACTURE OF A CATALYTIC SOLID, CATALYTIC SOLID AND PROCESS FOR (CO)POLYMERISATION OF OLEFINS BY MEANS OF THIS CATALYTIC SOLID

Nicola Zandona, Waterloo, Belgium, assignor to Solvay (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 72,943, Jun. 8, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 412,412

Claims priority, application Belgium, Jun. 9, 1992, 09200532

Int. Cl.[6] C08F *4/655*

U.S. Cl. 526—113 **28 Claims**

1. The process for the manufacture of a catalytic solid, comprising:

a) mixing at least one magnesium compound chosen from the group consisting of Mg oxide and compounds of formulae $MgX_n(O—R)_{2-n}$, and at least one transition metal compound selected from the group consisting of compounds of formulae $MY_x(O—R')_{t-x}$ and $M'O_y(O—R'')_{s-2y}$ in which

X denotes a halogen

each of M and M' denotes a transition metal chosen from the group consisting of the elements of groups IVB and VB of the Periodic Table, the valency of which is at least equal to 4

Y denotes a halogen or a group (O—R")

each of R, R', R" and R'" denotes an alkyl, aryl or cycloalkyl group containing up to 20 carbon atoms

$0 \leq n \leq 2$

$0 \leq x \leq t$, t being equal to the valency of M

$0 \leq y \leq s/2$, being equal to the valency of M', to obtain a solution comprising a complex of said at least one magnesium compound with said at least one transition metal compound.

b) reducing and halogenating the solution of the complex thus obtained by contacting it with a reducing-halogenating agent, in order to precipitate a catalytic solid, comprising an amorphous coprecipitate of a halogen compound of a transition metal M or M' in the trivalent state, a halogen compound of a transition metal M" in the trivalent state, and a magnesium halide, and

c) isolating the precipitated catalytic solid thus obtained from the solution,

wherein the reducing-halogenating agent consists essentially of at least one complex of empirical formula $M''(A)Al_2Cl_8$ in which

M" denotes a transition metal of group IVB of the Periodic Table, and

A denotes an aromatic hydrocarbon.

5,631,335

PROCESS OF POLYMERIZING OLEFINS USING DIPHENYLSILYL OR DIMETHYL TIN BRIDGED 1-METHYL FLUORENYL METALLOCENES

Helmut G. Alt; Konstantinos Patsidis, both of Bayreuth, Germany; M. Bruce Welch, and Peter P. Chu, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305, and a continuation-in-part of Ser. No. 984,054, Nov. 30, 1992, Pat. No. 5,393,911, which is a continuation-in-part of Ser. No. 697,363, May 9, 1991, Pat. No. 5,191,132, said Ser. No. 734,853is a continuation-in-part of Ser. No. 697,363. This application Jun. 7, 1993, Ser. No. 73,023

Int. Cl.[6] C08F *4/642*

U.S. Cl. 526—126 **15 Claims**

1. A process for producing a solid polymer comprising contacting at least one olefin having at least three carbons per molecule with a catalyst system comprising a metallocene, said metallocene consisting essentially of metallocenes selected from the group consisting of bis(1-methyl fluorenyl) diphenyl silyl zirconium dichloride and bis(1-methyl fluorenyl) dimethyl tin zirconium dichloride, under suitable reaction conditions to produce a solid polymer.

5,631,336

CHAIN-TERMINATED N-VINYL LACTAM POLYMERS AND GRAFT-COPOLYMERS AND METHODS FOR MAKING SAME

Paolo Ferruti, Milan; Elisabetta Ranucci, Brescia; Luciana Sartore, Marano Vicentino; Paolo Caliceti, Padova; Oddone Schiavon, Padova, and Francesco M. Veronese, Padova, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

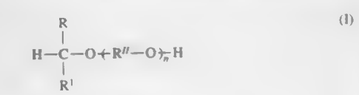
Filed Aug. 26, 1993, Ser. No. 112,077

Claims priority, application Italy, Aug. 27, 1992, MI92A2018

Int. Cl.[6] C08F *126/06;126/10;2/38*

U.S. Cl. 526—264 **6 Claims**

1. A water-soluble polymer consisting of a polyvinyl 5-membered lactam having a molecular weight ranging from about 1000 to about 20,000 and chain-terminated with a compound selected from the group consisting of compounds of the following formulas:


(I)

and


(II)

wherein R and R^1 are C_1 to C_4 alkyl or substituted alkyl; n is 1 to 20; R^{II} is ethylene; R^{III} is C_1 to C_{24} alkylene or substituted alkylene; and R^{IV} is C_1 to C_4 alkyl or substituted alkyl.

5,631,337

THERMOREVERSIBLE HYDROGELS COMPRISING LINEAR COPOLYMERS AND THEIR USE IN ELECTROPHORESIS

Alexander P. Sassi, Berkeley; Shi Lin, Fremont; M. Goretty Alonso-Amigo, Santa Clara, and Herbert H. Hooper, Belmont, all of Calif., assignors to Soane BioScience, Hayward, Calif.

Filed Jan. 19, 1996, Ser. No. 589,026

Int. Cl.[6] C08F *220/56;222/38*

U.S. Cl. 526—307.2 **18 Claims**

1. A non-ionic, linear copolymer capable of forming a thermoreversible hydrogel when combined with an aqueous phase, said copolymer comprising:

a polyacrylamide backbone, wherein 55 to 95 weight percent ratio of the acrylamide monomeric units of said copolymer comprise N-substituent groups capable of hydrogen bonding.

5,631,338

PROCESS FOR PREPARING BISPHENOL A

Kaoru Inoue; Tuneyuki Ohkubo, and Takashi Terajima, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 499,904

Claims priority, application Japan, Jul. 21, 1994, 6-169664; Dec. 1, 1994, 6-298405

Int. Cl.[6] C08G *77/28*

U.S. Cl. 528—30 **14 Claims**

9. A polyorganosiloxane having both a sulfonic acid group and a mercapto group-containing hydrocarbon group, said polyorganosiloxane being obtained by the following steps of:

hydrolyzing i) at least one silane compound expressed by the general formula of $X_nSi(R_1)_{4-n}$,

where n is an integer of from 1 to 3; X is at least one selected from the group consisting of a chlorine atom, a bromine atom, an iodine atom, and an alkoxyl group; R_1 is at least one hydrocarbon group selected from the group consisting of 1 to 20 carbon atoms-containing hydrocarbon groups having at least one mercapto group (—SH), 6 to 20 carbon atoms-containing hydrocarbon groups having an aromatic group, 1 to 15 carbon atoms-containing alkyl groups having at least one halogen atom, 2 to 15 carbon atoms-containing olefinic hydrocarbon groups having at least one carbon-carbon unsaturated double bond, and 2 to 15 carbon atoms-containing hydrocarbon groups having at least one epoxy group; and Si represents a silicon atom or ii) a mixture of said at least one silane compound expressed by the general formula of $X_nSi(R_1)_{4-n}$ and at least one silane compound expressed by the general formula of SiX_4,

where X is at least one selected from the group consisting of a chlorine atom, a bromine atom, an iodine atom, and an alkoxyl group; and Si represents a silicon atom to yield a polyorganosiloxane;

sulfonating said hydrocarbon group R_1 to yield a polyorganosiloxane having a sulfonic acid group;

silylating said sulfonic said group-containing polyorganosiloxane with at least one silane compound expressed by the general formula of $X_nSi(R_2)_{4-n}$,

where n is an integer of from 1 to 3; X is at least one selected from the group consisting of a chlorine atom, a bromine atom, an iodine atom, and an alkoxyl group; R_2 is a hydrocarbon group containing carbon atoms of from 1 to 20 having at least one mercapto group (—SH); and Si represents a silicon atom; and

hydrolyzing said silylated polyorganosiloxane.

5,631,339

ISOCYANATE CURED COATING HAVING REDUCED YELLOWING

Dennis L. Faler, Pittsburgh; James R. Franks, Gibsonia, and Daniel E. Rardon, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 358,219, Dec. 16, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,841

Int. Cl.[6] C08G *18/80*

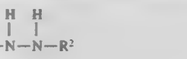
U.S. Cl. 528—45 **16 Claims**

1. A coating composition comprising:

(a) a component comprising at least one functional group that is reactive with isocyanate;

(b) a polyisocyanate functional material whose isocyanate groups are at least partially capped with a ketoxime; and

(c) an N-amino carbamate separate from (a) or (b) or grafted onto (b), and represented by the structural formula:



where R^1 is chosen from the group consisting of alkyl, cycloalkyl and aryl groups, R^1 being substantially free of groups reactive with isocyanate, and R^2 is chosen from the group consisting of hydrogen, alkyl, cycloalkyl, and aryl groups.

5,631,340

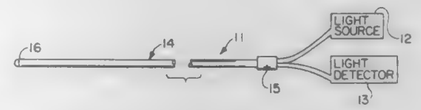
CROSS-LINKED GAS PERMEABLE MEMBRANE OF A CURED PERFLUORINATED URETHANE POLYMER, AND OPTICAL GAS SENSORS FABRICATED THEREWITH

Alan Olstein, Mendota Heights, Minn., assignor to Optical Sensors Incorporated, Eden Prairie, Minn.

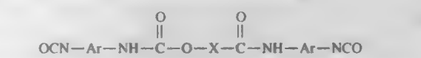
Division of Ser. No. 911,175, Aug. 12, 1992, which is a continuation-in-part of Ser. No. 848,627, Mar. 9, 1992, abandoned. This application Mar. 1, 1995, Ser. No. 396,632

Int. Cl.[6] C08G *18/58*

U.S. Cl. 528—59 **22 Claims**



1. A cured perfluorinated urethane polymer prepared by the process which comprises cross-linking a perfluorinated urethane polymer precursor having the structural formula


(I)

wherein Ar is a monocyclic aromatic moiety and X is a perfluorinated polyether linkage containing approximately 2 to 100 recurring perfluorinated mer units having the structure $-(CF_2O)-$, $-(CF_2CF_2O)-$, or combinations thereof, with a cross-linking agent selected from the group consisting of water, diols of the formula HO—R—OH wherein R is alkylene of 1 to 6 carbon atoms, bisphenol A and hexafluorobisphenol A, wherein the cross-linking agent is present such that, it represents on the order of 0.5 to 5 wt. % of the cured perfluorinated urethane polymer.

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5,631,341
SELF-EMULSIFIABLE POLYISOCYANATE MIXTURE AND AQUEOUS COATING OR ADHESIVE COMPOSITION COMPRISING THE MIXTURE

Takeshi Morishima, Yokohama; Shin Konishi, and Shinjiro Hama, both of Fujisawa, all of Japan, assignors to Nippon Polyurethane Industry Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1995, Ser. No. 570,473
Int. Cl.[6] C08G *18/10*
U.S. Cl. 528—60 **19 Claims**

1. A self-emulsifiable polyisocyanate mixture having (i) a free hexamethylene diisocyanate monomer content of not more than 1.0% by weight and (ii) an average NCO functionality of 2.0 to 3.7 obtained by subjecting hexamethylene diisocyanate to urethanation with

(a) a carbon-branched dihydric alcohol having overall 4 to 35 carbon atoms, of which 2 to 33 carbon atoms are a total number of the carbon atoms possessed by one or more branches, wherein component (a) is bonded in a proportion of 0.1 to 15% by weight based on the weight of the self-emulsifiable polyisocyanate compound,

(b) a hydrophilic surfactant having one or more active hydrogen atoms capable of reacting with isocyanate group and 3 to 90 alkylene oxide units, wherein component (b) is bonded in a proportion of 0.1 to 40% by weight based on the weight of the self-emulsifiable polyisocyanate mixture,

(c) optionally an aliphatic compound having one or more active hydrogen atoms capable of reacting with isocyanate group and 8 or more carbon atoms, wherein component (6) is bonded in a proportion of 0 to 30% by weight based on the weight of the self-emulsifiable polyisocyanate compound, and

(d) optionally a carbon-unbranched glycol having 1 to 10 carbon atoms, wherein component (d) is bonded in a proportion of 0 to 5% by weight based on the weight of the self-emulsifiable polyisocyanate mixture, and

to uretdione-forming reaction and isocyanurate-forming reaction, and wherein

(1) the percentage of hexamethylene diisocyanate dimer having uretdione group corresponds to an area percentage determined by a differential refractometer detection in a gel permeation chromatography (GPC) of 3 to 55%, and

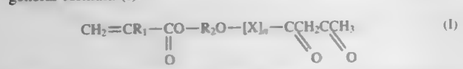
(2) the percentage of hexamethylene diisocyanate trimer having isocyanurate group corresponds to an area percentage determined by a differential refractometer detection in the GPC of 5 to 45%.

5,631,342
LACTONE-MODIFIED DIKETENE(METH)ACRYLATE COMPOUND, A PROCESS FOR THE PREPARATION THEREOF, AND A (CO)POLYMER

Takaaki Fujiwa, Otake, and Tomohisa Isobe, Iwakuni, both of Japan, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan

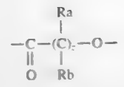
Division of Ser. No. 333,062, Nov. 1, 1994, Pat. No. 5,516,933. This application Nov. 22, 1995, Ser. No. 562,113
Claims priority, application Japan, Nov. 1, 1993, 5-273830; Feb. 28, 1994, 6-29615; Sep. 1, 1994, 6-208862
Int. Cl.[6] C08G *18/10*
U.S. Cl. 528—75 **1 Claim**

1. A curable composition which comprises a lactone-modified diketene(meth)acrylate compound represented by the following general formula (I):



(I)

wherein R_1 is hydrogen or a methyl group, R_2 is a hydrocarbon residual group having a carbon number ranging from 1 to 10, n is an integer ranging from 1 to 20 and X is a structural unit derived from the ring opening reaction of a lactone compound represented by the following formula:



Wherein z is an integer ranging from 4 to 8, and Ra and Rb are each an independent hydrogen atom or a methyl group and at least one selected from the group consisting of a melamine, an isocyanate, an aldehyde, and an amine.

5,631,343
ENZYMATIC SYNTHESIS

Falmai Binns, and Alan Taylor, both of Accrington, United Kingdom, assignors to Baxenden Chemicals Limited, United Kingdom

PCT No. PCT/GB93/02461, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/12652, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 30, 1993, Ser. No. 446,711
Claims priority, application United Kingdom, Nov. 30, 1992, 9225054
Int. Cl.[6] C08G *63/82;* **C12P** *17/00*
U.S. Cl. 528—274 **22 Claims**

1. A process for producing a polyester comprising as repeating units

(i) residues of at least one aliphatic hydroxycarboxylic acid monomer selected from the group consisting of aliphatic hydroxycarboxylic acids and esters and anhydrides thereof or

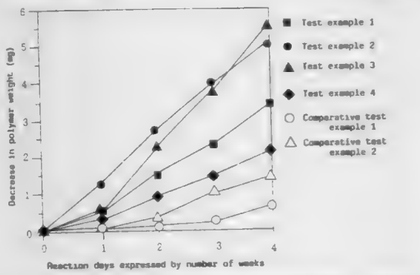
(ii) residues of (a) at least one aliphatic dicarboxylic acid monomer selected from the group consisting of aliphatic dicarboxylic acids and esters and anhydrides thereof, (b) at least one aliphatic hydroxyamine, diol or polyol, and optionally (c) at least aliphatic hydroxycarboxylic acid monomer selected from the group consisting of aliphatic hydroxycarboxylic acids and esters and anhydrides thereof;

which process comprises reacting the components defined in (i) or components defined in (ii) in the absence of a solvent and in the presence of a lipase, the molar ratio of acid groups to hydroxyl groups in the reactants being 1:1 to 1:1.1.

5,631,344
BLOCK COPOLYMER OF POLYESTERS AND POLYCARBONATES AND PROCESS FOR PREPARATION THEREOF

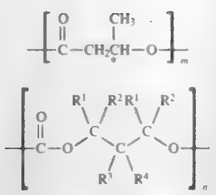
Hideyuki Hongo; Akio Yamaguchi; Yoji Hori; Toshimitsu Hagiwara, and Yoko Takahashi, all of Kanagawa, Japan, assignors to Takasago Koryo Kogyo Kabushiki Kaisha (Takasago International Corporation), Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,544
Claims priority, application Japan, Oct. 28, 1994, 6-287178
Int. Cl.[6] C08G *63/78*
U.S. Cl. 528—283 **18 Claims**



1. Block copolymer of polyesters and polycarbonates comprising at least one of each of the units (I) and (II) having the general

formulae:



(I)

(II)

where the symbol * indicates an asymmetric carbon atom; R^1, R^2, R^3, and R^4 are either a hydrogen atom or a methyl group; and m and n are each respective natural numbers ranging from 300 to 5,000, wherein said copolymer comprises block units of (I)-(II). (II)-(I), (I)-(II)-(I), (II)-(I)-(II), (I)-(II)-(X), or (II)-(I)-(X), wherein (I) and (II) are structural units as defined above, and (X) is a structural unit other than (I) or (II).

5,631,345
PROCESS FOR PRODUCING OPTICALLY ACTIVE POLYKETONE

Hidemasa Takaya, deceased, late of Shiga; Kyoko Tamao, Kyoto, and Naomasa Sato, Aichi, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

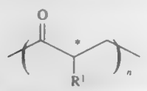
Filed Mar. 13, 1996, Ser. No. 614,995
Claims priority, application Japan, Mar. 13, 1995, 7-079367
Int. Cl.[6] C08G *67/02*
U.S. Cl. 528—392 **4 Claims**

1. A process for producing optically active polyketone which comprises reacting a mono-substituted ethylene represented by the following general formula (II)



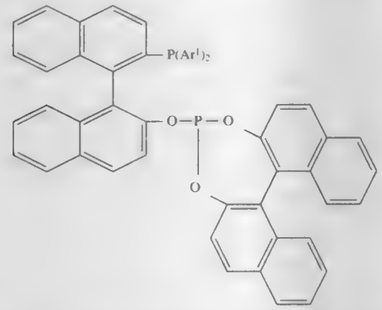
(II)

wherein R^1 represents a branched- or straight-chain alkyl group which may be substituted, an aralkyl group or an aryl group which may be substituted with a lower alkyl group, a lower alkoxy group or a halogen atom, each having 1 to 9 carbon atoms with carbon monoxide, thereby obtaining an optically active polyketone represented by the following general formula (III)



(III)

wherein R^1 is as defined above, and n is an integer of 10 to 10,000, said reacting being in the presence of a palladium-phosphine complex formed from a phosphine represented by the following general formula (I)



(I)

wherein Ar^1 represents a phenyl group which may be substituted with one or more substituent groups selected from a lower alkyl group, a lower alkoxy group and a halogen, and a palladium salt.

5,631,346
THERMOMECHANICAL DEGRADATION OF POLYOLEFINS

Andreas Deckers, Flomborn; Albin Berger, Bobenheim; Jürgen Hofmann, Ludwigshafen; Roger Klimesch, Alsbach-Hähnlein; Karl-Peter Farwerck, Worms, and Hilmar Ohlig, Kaiserslautern, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 19, 1995, Ser. No. 545,115
Claims priority, application Germany, Oct. 21, 1994, 44 37 754.1
Int. Cl.[6] C08F *6/04*
U.S. Cl. 528—481 **10 Claims**

1. A process for the thermomechanical degradation of polyolefins consists essentially of a twin-screw extruder without a downstream degradation apparatus, at from 300° to 550° C. and from 1 to 100 bar and in average residence times of the reaction mixture of from 0.5 to 10 minutes, wherein the pressure in the twin-screw extruder is changed periodically with a fluctuation of from 0.5 to 30 bar.

5,631,347
REDUCING GELATION OF A FATTY ACID-ACYLATED PROTEIN

Jeffrey C. Baker, Indianapolis; Jose M. Hanquier, Martinsville, and Warren E. Shrader, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 7, 1995, Ser. No. 484,545
Int. Cl.[6] C07K *1/113;1/16;1/34;14/62*
U.S. Cl. 530—303 **20 Claims**

1. In a method of processing an aqueous solution of a fatty acid-acylated protein, the improvement comprising conducting the processing of said protein in the presence of an aqueous solution containing a sufficient amount of a citrate buffering agent to retard gelation of the acylated protein.

5,631,348
PROTEIN SEQUENCE OF THE PLANT TOXIN GELONIN

Michael Rosenblum, Houston, Tex.; William J. Kohr, San Mateo, Calif., and Bharat Aggarwal, Houston, Tex., assignors to The Research Development Foundation, Carson City, Nev.

Continuation of Ser. No. 119,899, Sep. 10, 1993, abandoned, which is a continuation of Ser. No. 908,959, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 567,220, Aug. 14, 1990, abandoned. This application Jun. 6, 1994, Ser. No. 254,662
Int. Cl.[6] C07K *14/415;* **C12N** *15/29*
U.S. Cl. 530—370 **2 Claims**

1. Substantially pure gelonin toxin having the amino acid sequence:



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-continued

SerValTyrValValGlyTyrGlnValArg 90
AsnArgSerTyrPhePheLysAspAlaPro 100
AspAlaAlaTyrGluGlyLeuPheLysAsn 110
ThrIleLysAsnProLeuLeuPheGlyGly 120
LysThrArgLeuHisPheGlyGlySerTyr 130
ProSerLeuGluGlyGluLysAlaTyrArg 140
GluThrThrAspLeuGlyIleGluProLeu 150
ArgIleGlyIleLysLysLeuAspGluAsn 160
AlaIleAspAsnTyrLysProThrGluIle 170
AlaSerSerLeuLeuValValIleGlnMet 180
ValSerGluAlaAlaArgPheThrPheIle 190
GluAsnGlnIleArgAsnAsnPheGlnGln 200
ArgIleArgProAlaAsnAsnThrIleSer 210
LeuGluAsnLysTrpGlyLysLeuSerPhe 220
GlnIleArgThrSerGlyAlaAsnGlyMet 230
PheSerGluAlaValGluLeuGluArgAla 240
AsnGlyLysLysTyrTyrValThrAlaVal 250
AspGlnValLysProLysIleAlaLeuLeu 260
LysPheValAspLysAspProGlu

or a fragment or derivative thereof, said fragment or derivatives or having an activity which inhibits cellular protein synthesis but does not bind to a cell surface receptor.

5,631,349

CHIMERIC MONOCLONAL ANTIBODIES RECOGNIZING HUMAN INTERLEUKIN-2-RECEPTOR

Tibor Diamantstein, and Hisao Osawa, both of Berlin, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 758,342, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 681,630, Apr. 2, 1991, abandoned, which is a continuation of Ser. No. 34,874, Apr. 6, 1987, abandoned. This application Nov. 15, 1993, Ser. No. 152,782

Claims priority, application United Kingdom, Apr. 14, 1986, 8609058

Int. Cl.[6] **C07K** *16/28;* **C12N** *5/20*

U.S. Cl. 530—387.3 **2 Claims**

1. A chimeric mouse-human monoclonal antibody that specifically binds to the human interleukin-2 receptor, wherein the variable region of said antibody is identical to that of monoclonal antibody AHT-54 produced by the hybridoma deposited under accession number ECACC 86041801 and the Fc region of said antibody is obtained from a human antibody.

2. A chimeric mouse-human monoclonal antibody that specifically binds to the human interleukin-2 receptor, wherein the variable region of said antibody is identical to that of monoclonal antibody AHT-107 produced by the hybridoma deposited under accession number ECACC 86041802 and the Fc region of said antibody is obtained from a human antibody.

5,631,350

ANTI-HUMAN INFLUENZA VIRUS ANTIBODY

Yoshinobu Okuno, Toyonaka; Yuji Isegawa, Takatsuki; Fuyoko Sasao, Ibaraki, and Shigeharu Ueda, Nishinomiya, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto-fu, Japan

Division of Ser. No. 229,781, Apr. 19, 1994, Pat. No. 5,589,174, which is a continuation-in-part of Ser. No. 54,016, Apr. 29, 1993, abandoned. This application Apr. 5, 1996, Ser. No. 630,918

Claims priority, application Japan, Sep. 17, 1992, 4-272538; Apr. 20, 1993, 5-115216; Mar. 16, 1994, 6-070194

Int. Cl.[6] **C07K** *16/08;16/00*

U.S. Cl. 530—388.22 **8 Claims**

1. An anti-human influenza virus antibody having the following characteristics:

(a) specifically binds to the stem region of hemagglutinin of human influenza A virus subtype H3N2;

(b) does not specifically bind to the stem region of hemagglutinin of human influenza A virus subtypes H1N1 and H2N2; and

(c) does not specifically bind to the stem region of hemagglutinin of human influenza B virus.

5,631,351

ANTIBODIES TO MDC PROTEINS

Yusuke Nakamura, Kanagawa, and Mitsuru Emi, Tokyo, both of Japan, assignors to Cancer Institute, and Eisai Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 243,542, May 13, 1994. This application Jun. 7, 1995, Ser. No. 477,407

Claims priority, application Japan, May 14, 1993, 5-136602; Sep. 22, 1993, 5-257455; Feb. 23, 1994, 6-49904; Apr. 12, 1994, 6-73328

Int. Cl.[6] **A61K** *39/395;* **C07K** *16/30;* **C12P** *21/08*

U.S. Cl. 530—387.9 **5 Claims**

1. An antibody that specifically binds to an MDC protein having a sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3 and SEQ ID NO:4.

5,631,352

AZODYES CONTAINING A BRIDGE MEMBER BASED ON DIAMINO-SUBSTITUTED TRIAZINES

Urs Lauk, Zürich, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

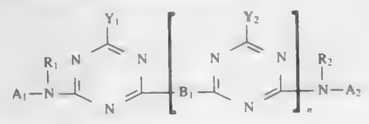
Filed Jun. 2, 1995, Ser. No. 460,174

Claims priority, application Switzerland, Jun. 20, 1994, 1952/94

Int. Cl.[6] **C09B** *35/02;35/00;31/00;67/22;* **D06P** *1/06;1/10*

U.S. Cl. 534—797 **8 Claims**

1. An anionic acid dye of the formula



(1)

in which

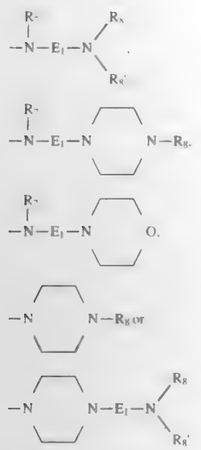
R_1 and R_2 independently of one another are hydrogen or C_1–C_4alkyl.

B_1 is an aliphatic or aromatic bridge member,

A_1 and A_2 independently of one another are the radical of a monoazo- or disazo dye or the radical of a metal complex azo dye,

n is the number 0 or 1 and

Y_1 and Y_2 independently of one another are a radical of the formula



in which

R_7, R_8 and R_8' independently of one another are hydrogen or C_1–C_8alkyl which is unsubstituted or substituted by hydroxyl, C_1–C_4alkoxy, halogen, amino or sulfato, and

E_1 is C_2–C_8alkylene which is unsubstituted or substituted by hydroxyl, C_1–C_4alkoxy, halogen, amino or sulfato and is uninterrupted or interrupted by one or more groups -O-, or C_5–C_7cycloalkylene, C_5–C_7cycloalkylene-C_1–C_8alkylene or C_1–C_8alkylene-C_5–C_7cycloalkylene, each of which is unsubstituted or substituted in the alkylene radical by hydroxyl or C_1–C_4alkoxy and in the cycloalkyl ring by C_1–C_4alkyl, and in which dye of formula (1) the number of sulfo groups is greater than the number of cationic groups and basic groups.

5,631,353

ALKENE ADAMANTANE INTERMEDIATES AND THE CORRESPONDING 1,2-DIOXETANES

Arthur P. Schaap, and Hashem Akhavan-Tafti, both of Detroit, Mich., assignors to Board of Governors of Wayne State University, Detroit, Mich.

Division of Ser. No. 185,031, Jan. 24, 1994, Pat. No. 5,438,146, which is a continuation of Ser. No. 289,837, Dec. 27, 1988, which is a continuation-in-part of Ser. No. 887,139, Jul. 17, 1986. This application Jul. 27, 1995, Ser. No. 507,982

Int. Cl.[6] **C07G** *3/00;* **C07D** *305/12*

U.S. Cl. 536—4.1 **3 Claims**

1. [(2-Aminoethoxy)(3-β-D-galactopyranosylphenyl) methylene] adamantane.

5,631,354

5-O-DESOSAMINYLERYTHRONOLIDE DERIVATIVES

Toshifumi Asaka; Yoko Misawa; Masato Kashimura; Shigeo Morimoto, and Katsuo Hatayama, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

PCT No. PCT/JP92/01714, § 371 Date Jun. 21, 1994, § 102(e) Date Jun. 21, 1994, PCT Pub. No. WO93/13116, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 25, 1992, Ser. No. 256,124

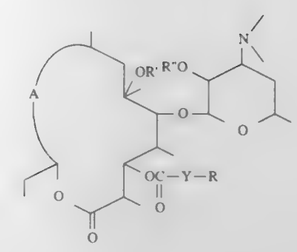
Claims priority, application Japan, Dec. 27, 1991, 3-346826; Jul. 27, 1992, 4-199368; Oct. 19, 1992, 4-279867

Int. Cl.[6] **C07H** *17/08*

U.S. Cl. 536—7.4 **13 Claims**

1. A 5-0-desosaminylerythronolide derivative represented by the formula:

(3a)

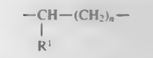


(3b)

(3c)

(3d) wherein:

Y is a group represented by the formula:



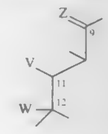
(3e)

(wherein R^1 is a hydrogen atom, a hydroxyl group, a halogen atom, a C_1–C_3 alkyl group or an amino group, and n is an integer of 0 to 4), an oxygen atom, a vinylene group, or a group represented by the formula —CH_2—NH—CO,

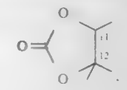
R is a C_7–C_{15} aralkyl group; a C_7–C_{15} aralkyl group substituted by at least one member selected from the group consisting of a nitro group, a methoxy group, a methoxythio group, a methoxycarbonyl group, a carboxy group, a methylene group, a halogen atom, a trifluoromethyl group, an amino group and a demethylamino group; a phenyl group; a phenyl group having 1 to 5 substituents selected from the group consisting of halogen atoms, nitro groups, amino groups, C_1–C_3 alkyl groups, C_1–C_3 alkyl groups substituted by one or more halogen atoms, C_1–C_4 alkylamino groups, C_2–C_7 acylamino groups and C_1–C_4 alkoxy groups; a naphthyl group; a thiazolyl group; an imidazolyl group; an amino-thiazolyl group; a biphenyl group; a thienyl group; a pyridyl group; a pyridyl group substituted by one or more nitro groups; a phenylthio group; a phenyloxy group substituted by one or more halogen atoms or nitro groups; or an indolyl group,

A is a group represented by:

the formula (i):

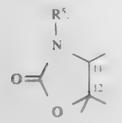


wherein Z is an oxygen atom or a group represented by the formula =N—O—R^4 (wherein R^4 is a hydrogen atom; a C_1–C_8 alkyl group; —$CH_2CH_2OCH_3$; —$CH_2CH_2OCH_2CH_2OCH_3$; —$CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_3$; —$CH_2CH_2CH_2OCH_3$; —$CH_2CH_2SCH_3$; —$CH_2CH_2(NH)CH_2CH_2N(CH_3)_2$; —$CH_2OCH_2CH_2OCH_3$; —$CH_2CH_2N(CH_3)_2$; —$CH_2CH_2N(CH_2)(CH_2Ph$; a benzyl group; or a benzyl group having 1 to 5 substituents selected from the group consisting of halogen atoms and C_1–C_4 alkyl groups), V is a hydroxyl group and W is a hydrogen atom or a hydroxyl group, or V and W represent, together with the carbon atoms at the 11- and 12-positions, a group represented by the formula:

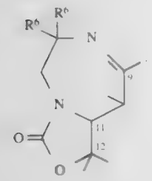


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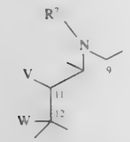
a group represented by the formula:



(wherein R^5 is a hydrogen atom or a C_1–C_3 alkyl group), a group represented by the formula (ii):



(wherein R^6 is a hydrogen atom or a C_1–C_3 alkyl group), or a group represented by the formula (iii):



(wherein R^7 is a hydrogen atom, a C_1–C_4 alkyl group, a C_3–C_5 alkenyl group or C_3–C_5 alkynyl group, and V and W are as defined above),

R' is a hydrogen atom, a C_1–C_5 alkyl group, a carbamoyl group or an acetyl group,

R" is a hydrogen atom, a C_2–C_{15} alkoxycarbonyl group, 2-[2-(2-methoxyethyoxy) ethoxy]ethoxycarbonyl group, 2-[2-(2-ethoxyethoxy)ethoxy]ethoxycarbonyl group, a C_2–C_{15} acyl group, an ethylsuccinyl group, or a pyridylcarbonyl group or a pharmaceutically acceptable acid addition salt thereof.

5,631,355

5-O-DESOSAMINYLERYTHRONOLIDE A DERIVATIVES

Toshifumi Asaka; Masato Kashimura; Yoko Misawa; Shigeo Morimoto, and Katsuo Hatayama, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

PCT No. PCT/JP93/00517, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO93/21200, PCT Pub. Date Oct. 28, 1993

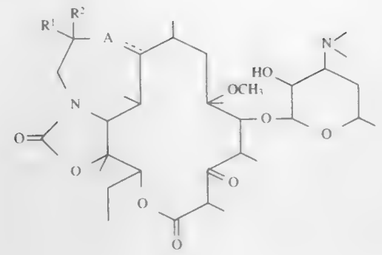
PCT Filed Apr. 21, 1993, Ser. No. 318,862

Claims priority, application Japan, Apr. 22, 1992, 4-101492

Int. Cl.^{6} C07H *17/08*

U.S. Cl. 536—7.4 **1 Claim**

1. A 5-O-desosaminylerythronolide A derivative represented by the formula:



wherein -A- - is a group of —N(R^3)— (wherein R^3 is a hydrogen atom or an alkyl group having 1–3 carbon atoms) or a group represented by —N═, and R^1 and R^2 are each a hydrogen atom or an alkyl group having 1–3 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

5,631,356

SELECTIVE N-ACYLATION OF AMINO ALCOHOLS

Jan W. H. Smeets, Vlaardingen, and Pieter G. Weber, Ridderkerk, both of Netherlands, assignors to Gist-brocades, N.V., Netherlands

PCT No. PCT/EP93/00849, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO93/20038, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 2, 1993, Ser. No. 313,287

Claims priority, application European Pat. Off., Apr. 3, 1992, 92200968

Int. Cl.^{6} C07H *1/00*

U.S. Cl. 536—18.6 **23 Claims**

1. A method for the production of N-acyl amino alcohols which is characterized by:

reacting an organic acid (or a salt thereof) of the formula:

R—COOH

wherein

R is a straight chain or branched alkyl group having up to 55 carbon atoms, wherein the alkyl chain may optionally be interrupted by an oxygen atom or by an internal ester group; may optionally contain one or more double bonds; and may optionally be substituted with one or more protected hydroxyl moieties,

with a C_{1-6}alkyl sulfonyl chloride or a C_{1-6}alkyl phenyl sulfonyl chloride, in an organic solvent and in the presence of an organic base, to form the corresponding mixed anhydride having the formula:

R—CO—O—SO_2R'"

wherein

R is as defined above; and

R'" is a C_{1-6}alkyl or a C_{1-6}alkyl phenyl group; and

reacting, in an organic solvent, the mixed anhydride with an amino alcohol or a salt thereof to form the corresponding N-acyl amino alcohol.

5,631,357

NONIONIC EMULSIFIERS

Manfred Weuthen, Solingen; Petra Riegels, Leichlingen, and Irmgard Hartel, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/01552, § 371 Date Jan. 26, 1996, § 102(e) Date Jan. 26, 1996, PCT Pub. No. WO94/28006, PCT Pub. Date Dec. 8, 1994

PCT Filed May 13, 1994, Ser. No. 553,313

Claims priority, application Germany, May 21, 1993, 43 17 089.7

Int. Cl.^{6} C07G *3/00;* **C07H** *15/04;1/06*

U.S. Cl. 536—18.6 **10 Claims**

1. A process for making nonionic emulsifiers comprising:

(a) performing an acid-catalyzed acetalization reaction on a mixture of (i) sugars or water-containing starch degradation products and (ii) primary alcohols in a molar ratio of (i):(ii) of from 1:2 to 1:8:

(b) terminating said reaction at a conversion ranging from 60 to 90% of the theoretical to form a reaction product;

(c) neutralizing said reaction product to form a neutralized reaction product; and

(d) purifying said neutralized reaction product by back-mixing said product through at least one coarse filter until said product becomes clear.

5,631,358

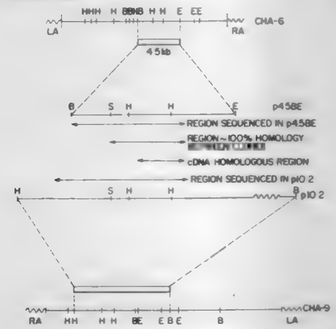
ENOD2 GENE REGULATORY REGION

Henk J. Franssen, Nijmegen, and Anton H. Bisseling, Ma Ede, both of Netherlands, assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Continuation of Ser. No. 214,297, Jul. 1, 1988, abandoned. This application Mar. 27, 1995, Ser. No. 411,062

Int. Cl.^{6} C12N *15/00;15/05;15/09;15/11*

U.S. Cl. 536—24.1 **8 Claims**



1. An isolated DNA molecule comprising an Enod2 gene 5' regulatory region, said regulatory region which hybridizes to the DNA sequence of Tables 1 or 2, and a plant-expressible structural gene other than an Enod2 structural gene positioned such that it is expressed under the regulatory control of said 5' regulatory region.

5,631,359

HAIRPIN RIBOZYMES

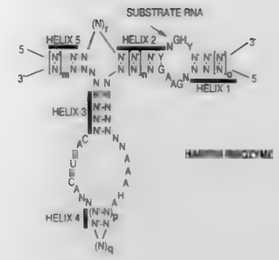
Bharat Chowrira, and James McSwiggen, both of Boulder, Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Filed Oct. 11, 1994, Ser. No. 321,993

Int. Cl.^{6} C12N *5/10;15/63;* **C07H** *21/04*

U.S. Cl. 536—24.5 **15 Claims**

1. A Hairpin ribozyme lacking a substrate moiety, comprising between six and eight bases inclusive in helix 2 and able to



base-pair with a separate substrate RNA, wherein said ribozyme comprises one or more bases 3' of helix 3 able to base-pair with said substrate RNA to form a helix 5 and wherein said ribozyme can cleave and/or ligate said separate substrate RNA in trans.

5,631,360

N-PHTHALOYL-PROTECTED 2'-AMINO-NUCLEOSIDE PHOSPHORAMDITES

Nassim Usman, Boulder; David Sweedler, Louisville, and Leonid Beigelman, Longmont, all of Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Division of Ser. No. 380,734, Jan. 30, 1995, which is a continuation-in-part of Ser. No. 345,516, Nov. 28, 1994, abandoned, and a continuation-in-part of Ser. No. 245,736, May 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 167,586, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 884,436, May 14, 1992, abandoned. This application May 5, 1995, Ser. No. 435,232

Int. Cl.^{6} C07H *1/00;19/10;19/20*

U.S. Cl. 536—25.31 **16 Claims**

1. 2'-deoxy-2'-amino-nucleoside phosphoramidite, wherein said 2'-amino group is protected by an N-phthaloyl protecting group.

5,631,361

METHOD OF SYNTHESIZING RADIOISOTOPICALLY LABELED OLIGONUCLEOTIDES BY DIRECT SOLID-PHASE 5' PHOSPHITYLATION

Weitian Tan, Framingham; Radhakrishnan P. Iyer, Shrewsbury; Zhiwei Jiang, Grafton; Dong Yu, and Sudhir Agrawal, both of Shrewsbury, all of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Filed May 22, 1995, Ser. No. 447,092

Int. Cl.^{6} C07H *1/02;21/00*

U.S. Cl. 536—25.33 **15 Claims**

1. A method of synthesizing labeled oligonucleotides comprising contacting a nascent oligonucleotide having an unprotected 5' hydroxyl group with an activating reagent to yield an activated oligonucleotide, and then contacting the activated oligonucleotide with a 5'-protected, labeled mononucleotide having an unprotected 3' hydroxyl, wherein the activated oligonucleotide is a phosphoramidite.

VOL 11 98 ISS 3 MY 20 1997 UMI

5,631,362

5'-O-DANS EOC MODIFIED NUCLEOSIDES AND METHODS FOR PREPARING SAME

Wolfgang Pfleiderer, Constance, and Frank Bergmann, Weissenberg, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

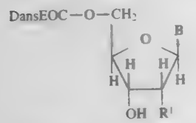
Continuation of Ser. No. 219,239, Mar. 28, 1994, abandoned, which is a continuation of Ser. No. 757,924, Sep. 12, 1991, abandoned. This application May 9, 1995, Ser. No. 437,566

Claims priority, application Germany, Sep. 14, 1990, 40 29 244.4; Apr. 9, 1991, 41 11 363.2

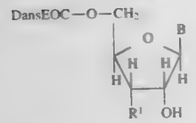
Int. Cl.[6] **C07H** *1/00*

U.S. Cl. 536—27.1 **4 Claims**

1. A compound of the formula (IIIa) or (IIIb)



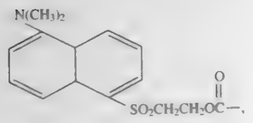
(IIIa)



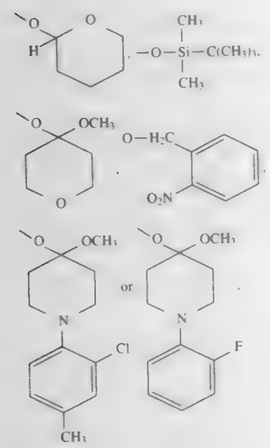
(IIIb)

in which

DansEOC is a group of the formula

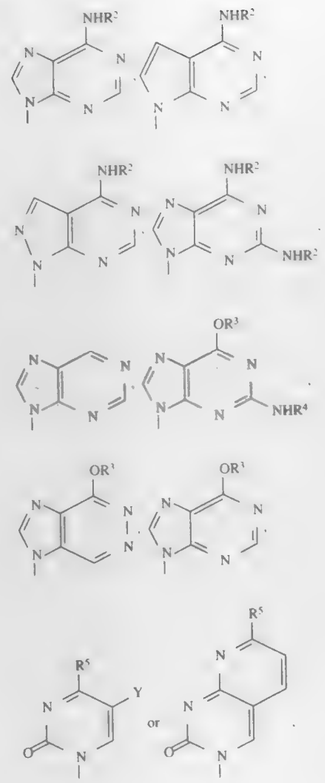


R^1 is hydrogen or a group of the formula



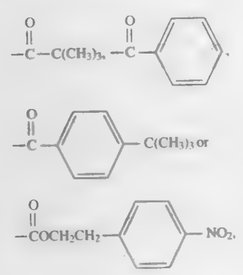
and

B is

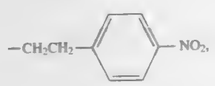


wherein

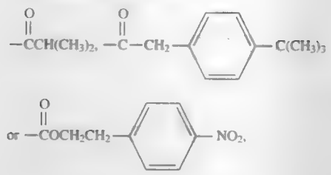
R^2 is a group of the formula



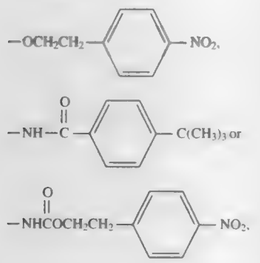
R^3 is hydrogen or



R^4 is a group of the formula



R^5 is —OH,



and

Y is H, CH_3 or alkyl C_1–C_4.

5,631,363

AZETIDINONE COMPOUND AND PROCESS FOR PREPARATION THEREOF

Tameo Iwasaki, Nishinomiya, and Kazuhiko Kondo, Osaka, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

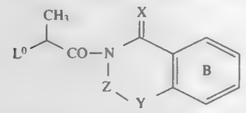
Division of Ser. No. 441,277, May 15, 1995, which is a continuation-in-part of Ser. No. 148,917, Nov. 5, 1993, Pat. No. 5,442,055. This application Jun. 7, 1995, Ser. No. 477,942

Claims priority, application Japan, Nov. 13, 1992, 4-303662; May 13, 1993, 5-111460; Jul. 8, 1993, 5-169182; Sep. 24, 1993, 5-238155

Int. Cl.[6] **C07D** *227/00*

U.S. Cl. 540—71 **5 Claims**

1. An α-halopropionamide compound of the formula [II]:



[II]

wherein Ring B is a benzene ring which may be substituted by one to four group(s) selected from the group consisting of a halogen atom, a lower alkyl group, a lower alkoxy group and an aryl group, X is an oxygen atom or a sulfur atom, Y is an oxygen atom, a sulfur atom, a methylene group or an imino group which may be substituted by a lower alkyl group, an acyl group or an aralkyloxycarbonyl group, Z is a methylene group which may be substituted by one to two group(s) selected from the group consisting of a C_{3-7} alkylene group, a C_{1-20} alkyl group, a C_{4-7} cycloalkyl group (said alkylene group, alkyl group and cycloalkyl group being further optionally substituted), an aryl group, an aralkyl group and a heterocyclic group, and L^0 is a halogen atom, or a salt thereof.

5,631,364

LABELLED BORONIC ACID DERIVATIVES

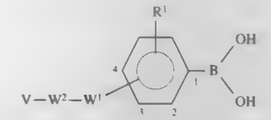
Erling Sundrehagen, Oslo, and Frank Frantzen, Tverlandet, both of Norway, assignors to AXIS Biochemicals ASA, Norway

Filed Mar. 31, 1994, Ser. No. 220,525

Int. Cl.[6] **C07F** *5/02*

U.S. Cl. 540—128 **17 Claims**

1. Labelled boronic acid compound of formula



(III)

(wherein V is a reporter moiety;

W^2 is a bond or an organic linker moiety;

W^1 is a $*SO_2NR^2$, $*CONR^2$ or $*CH_2N\oplus R^2{}_2$ group bound at the *-marked atom to the phenyl ring;

R^1 is hydrogen or an electron withdrawing substituent group; and

each R^2 independently is hydrogen or an optionally hydroxylated and optionally C_{1-6}-alkoxylated C_{1-6}-alkyl group) and salts thereof.

5,631,365

HYDROXY-SUBSTITUTED AZETIDINONE COMPOUNDS USEFUL AS HYPOCHOLESTEROLEMIC AGENTS

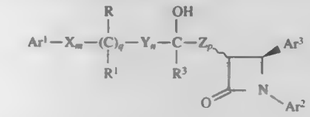
Stuart B. Rosenblum, West Orange; Sundeep Dugar, Bridgewater; Duane A. Burnett, Fanwood; John W. Clader, Cranford, and Brian A. McKittrick, Bloomfield, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 102,440, Sep. 21, 1993, abandoned. This application Jun. 9, 1994, Ser. No. 257,593

Int. Cl.[6] **C07D** *205/08;* **A61K** *31/395*

U.S. Cl. 540—200 **4 Claims**

1. A process for preparing a compound of the formula



wherein:

Ar^1 and Ar^2 are independently selected from the group consisting of aryl and R^4-substituted aryl;

Ar^3 is aryl or R^5-substituted aryl;

X, Y and Z are independently selected from the group consisting of —CH_2—, —CH(lower alkyl)- and —C(dilower alkyl)-;

R is —OH, —O(lower alkyl) or —O— benzyl:

R^1 and R^3 are independently selected from the group consisitng of hydrogen, lower alkyl and aryl;

q is 0 or 1; m and n are independently 0, 1, 2, 3 or 4, and p is 0, 1, 2, 3 or 4; provided that the sum of m, n, p and q is 1, 2, 3, 4, 5 or 6;

R^4 is 1–5 substituents independently selected from the group consisting of lower alkyl, —OH, —O(lower alkyl), —O-benzyl, —NR $^6R^7$, —$COOR^6$, —$CONR^6R^7$, —COR^6, —$SO_2NR^6R^7$, $S(O)_{0-2}R^9$, -(lower alkylene)$COOR^6$, —CH═CH—$COOR^6$, —CF_3, —CN, —NO_2 and halogen;

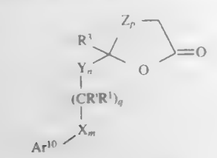
R^5 is is 1–5 substituents independently selected from the group consisting of —OH, —O(lower alkyl), —O-benzyl, —NR^6R^7, —$COOR^6$, —$CONR^6R^7$, —COR^6, —$SO_2NR^6R^7$, $S(O)_{0-2}R^9$, -(lower alkylene)-$COOR^6$ and —CH═CH—$COOR^6$;

R^5, R^7 and R^8 are independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl-substituted lower alkyl; and

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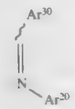
R^9 is lower alkyl, aryl or aryl-substituted lower alkyl, comprising:

(a) treating with a strong base in an anhydrous organic solvent a lactone of the formula



wherein X, Y, Z, R', R^3, m, n, p and q are as defined above, R' is R as defined above or a suitably protected hydroxy group, and Ar^{10} is Ar^1 as defined above, a suitably protected hydroxy-substituted aryl or a suitably protected amino-substituted aryl;

(b) reacting the product of step (a) with an Imine of the formula

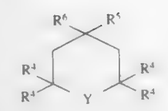


wherein Ar^{20} is Ar^2, a suitably protected hydroxy-substituted aryl or a suitably protected amino-substituted aryl, and Ar^{30} is Ar^3, a suitably protected hydroxy-substituted aryl or a suitably protected amino-substituted aryl;

c) quenching the reaction with an acid; and

d) removing as necessary a protecting group from any of substituents R', Ar^{10}, Ar^{20} and Ar^{30} to obtain a compound wherein R, Ar^1, Ar^2 and Ar^3 are as defined above.

of formula III

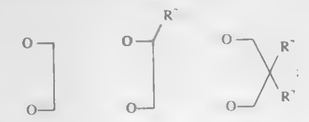


III

wherein

R^4 is lower alkyl;

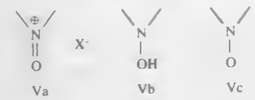
R^5 and R^6 either are both hydrogen or are both lower alkoxy or one of R^5 and R^6 is hydrogen and the other of R^5 and R^6 is hydroxy, lower alkoxy, alkylcarbonyloxy, arylcarbonyloxy or NH—CO-lower-alkyl; or R^5 and R^6 taken together are a ketal group selected from a formula IVa–IVc



IVa IVb IVc

R^7 is lower alkyl;

Y is a group selected from a formula Va–Vc



Va Vb Vc

and X^- is an anion,

and thereafter recovering the compound of formula I.

5,631,366

PROCESS FOR MAKING 3-FORMYLCEPHEM DERIVATIVES

Bruno Lohri, Kaiseraugst, and Peter Vogt, Münchenstein, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

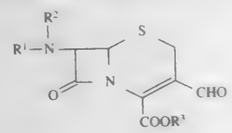
Filed Dec. 18, 1995, Ser. No. 573,825

Claims priority, application Switzerland, Jan. 12, 1995, 93/95

Int. Cl.[6] C07D *501/26*

U.S. Cl. 540—215 **34 Claims**

1. A process for making a compound of formula I



I

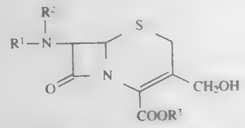
wherein

R^1 is hydrogen or an amino protecting group;

R^2 is hydrogen or an amino protecting group; and

R^3 is a carboxylic acid protecting group;

comprising oxidizing a compound of formula II



II

wherein R^1, R^2 and R^3 are defined as above, with an inorganic hypohalite or inorganic halite in the presence of a compound

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5,631,367

E-ROTAMERS OF 3-HYDROY CEPHEM DERIVATIVES

Jag M. Khanna, 74, Asian Games Village Complex, New Delhi 110 049; Yatendra Kumar, E-89, East of Kailash, New Delhi 110 065; Arun Malhotra, 413, Narmada Apartments Alaknanda, New Delhi 110 019; Rakesh Arora, E-18, East Uttam Nagar, New Delhi 110 059, and Neera Tiwari, 8-B, DDA Flats, Kutub Enclave, Phase-1, New Delhi 110 016, all of India

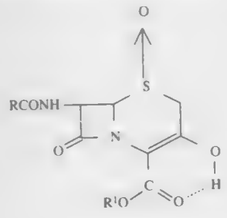
Division of Ser. No. 19,269, Feb. 18, 1993, Pat. No. 5,410,044. This application Mar. 10, 1995, Ser. No. 402,095

Claims priority, application India, Aug. 10, 1992, 700/DEL/92

Int. Cl.[6] C07D *501/04*

U.S. Cl. 540—222 **10 Claims**

1. An isolated E-rotamer of 7-acylamino-3-hydroxy-cephem-4-carboxylate-1-oxide compound having the formula:



wherein R is aryl, aralkyl, or aryloxyalkyl, and R^1 is linear or branched chain alkyl, aryl, aralkyl, aryloxyalkyl, or alkoxyalkyl.

5,631,368

POLYAZACYCLOALKANE COMPOUNDS

Lisa Schultze, and Alan R. Bulls, both of Wayne, Pa., assignors to Nycomed Imaging AS, Oslo, Norway

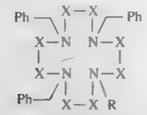
Filed Jun. 7, 1995, Ser. No. 478,755

Claims priority, application United Kingdom, Mar. 10, 1995, 9504910

Int. Cl.[6] C07D *257/02*

U.S. Cl. 540—474 **3 Claims**

1. A tribenzylcyclen of formula I



(I)

where R is hydrogen, or a C_{1-12} alkyl group optionally substituted by hydroxy, alkoxy or phenyl groups or R is an amphiphilic phenylalkyl group having a N, S, O or P interrupted C_{2-25} alkylene chain, or R is a second tribenzylcyclen group attached via a divalent bridging group, but with the proviso that R is other than benzyl; X is CHR_1, or where R is hydrogen two X groups may each represent CO groups; and R_1 is hydrogen, a C_{1-16} alkylo group optionally substituted by hydroxy, alkoxy or carboxy groups or an phenyl group having 1 to 6 carbons in the alkyl moiety and optionally substituted in the phenyl moiety by alkyl, alkoxy, hydroxy or isothiocyanate groups.

5,631,369

PROCESS FOR PREPARING BENZOIC ACID DERIVATIVE INTERMEDIATES AND BENZOTHIOPHENE PHARMACEUTICAL AGENTS

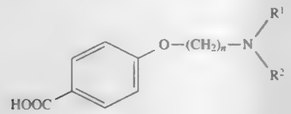
Douglas P. Kjell, and Fred M. Perry, both of West Lafayette, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 31, 1994, Ser. No. 298,636

Int. Cl.[6] C07D *223/04;211/08;207/04*

U.S. Cl. 540—610 **8 Claims**

1. A process for preparing a compound of formula I



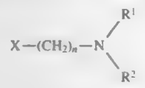
I

wherein

R^1 and R^2 each are independently C_1–C_4 alkyl, or combine to form piperidinyl, pyrrolidinyl, methylpyrrolidinyl, dimethylpyrrolidinyl, morpholino, dimethylamino, diethylamino, or 1-hexamethyleneimino; and

n is 2 or 3;

or a pharmaceutically acceptable salt thereof, comprising reacting a haloalkyl amine of formula III

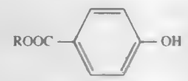


III

wherein

X is a halogen; and

R^1, R^2, and n are as defined above, with a compound of formula IV



IV

wherein R is C_1–C_6 alkyl, in the presence of an alkyl acetate solvent and a base.

5,631,370

OPTICALLY-ACTIVE ISOMERS OF DIDEOXYCARBOCYCLIC NUCLEOSIDES

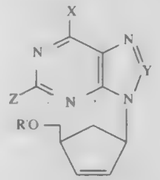
Robert Vince, St. Paul, Minn., and Mei Hua, Beijing, China, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 19,983, Feb. 17, 1993, abandoned, which is a continuation of Ser. No. 953,753, Sep. 29, 1992, abandoned, which is a continuation of Ser. No. 623,348, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 495,341, Mar. 19, 1990, abandoned, which is a division of Ser. No. 278,652, Dec. 5, 1988, Pat. No. 4,931,559, which is a continuation-in-part of Ser. No. 146,252, Jan. 20, 1988, Pat. No. 4,916,224. This application Aug. 15, 1994, Ser. No. 290,185

Int. Cl.[6] C07F *9/02;* **A61K** *31/52;* **C07D** *473/30;473/32*

U.S. Cl. 544—244 **11 Claims**

1. A compound of the formula:



wherein Z is H, OH, acetoxy or NH_2, R' is $O{=}P(OH)_2$, Y is CH, and X is selected from the group consisting of H, $N(R)_2$, SR, OR and halogen, wherein each R is H, or lower (C_1–C_4)alkyl and the pharmaceutically-acceptable salts thereof.

5,631,371

METHOD FOR THE PREPARATION OF SUBSTITUTED 3-(PHENYLIMINO)-3H-PHENOTHIAZINES AND PHENOXAZINES

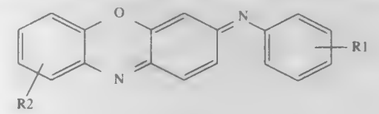
Michael L. Bloczynski, Elkhart, Ind., assignor to Bayer Corporation, Elkhart, Ind.

Filed Nov. 22, 1995, Ser. No. 562,164

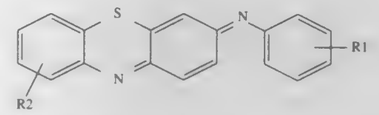
Int. Cl.[6] C07D *279/18;265/38*

U.S. Cl. 544—37 **10 Claims**

1. A method for the preparation of substituted 3 -(phehylimino)-3H-phenothiazine or phenoxizine characterized by the formula:

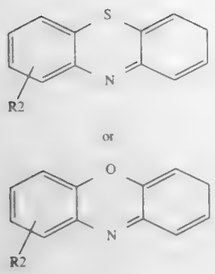


or



wherein R1 and R2 are H or one or more substituents which serve to modulate the reduction-oxidation potential of the compound, to vary the compound's solubility or to function as a site for the covalent attachment of the compound to a polymer or solid support which method comprises reacting a phenothiazine or phenoxazine of the formula:

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with a R1 substituted or unsubstituted aromatic amine in the presence of periodic acid in a polar organic solvent capable of dissolving the reactants for a time sufficient to form the desired product.

5,631,372

PROCESS FOR THE MANUFACTURE OF 1-SUBSTITUTED-4-FLUORO-1,4-DIAZONIABICYCLO[2.2.2] OCTANE SALTS

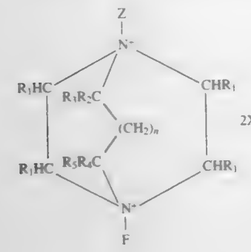
Andrew J. Poss, Kenmore; George A. Shia, Amherst, and Dennis M. Lavery, Springville, all of N.Y., assignors to AlliedSignal Inc., Morris Township, N.J.

Continuation-in-part of Ser. No. 477,038, Jun. 7, 1995, which is a division of Ser. No. 173,297, Dec. 23, 1993, Pat. No. 5,459,267. This application May 6, 1996, Ser. No. 642,994

Int. Cl.[6] **C07D** *247/00;245/04;243/14;* **C07F** *9/06*

U.S. Cl. 544—352 **20 Claims**

1. A process for the preparation of 1-substituted-4-fluoro-1,4-diazoniabicyclo[2.2.2] octane salts having the formula



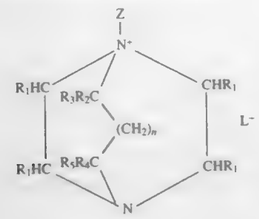
wherein the Z substituent is OH, OR, OC(O)R, SO_3, SO_2R, NO_2, NO, or $PO(OR)_2$, wherein R is an aryl or C_1–C_8 alkyl group; n is 0, 1 or 2; each of R_1, R_2, R_3, R_4 and R_5 independently represent hydrogen, C_1 to C_8 alkyl, or aryl, which process comprises

(a) either (i) or (ii):

(i) reacting 1,4-diazoniabicyclo[2.2.2]octane with a reactant compound of the formula, L—SO_2R, HNO_2, HNO_3, or L—$PO(OR)_2$; or

(ii) reacting 1,4-diazoniabicyclo[2.2.2]octane mono-N-oxide with a reactant compound of the formula L—H, L—R, R, L—C(O)R or SO_3

to produce an intermediate having the formula



wherein L is a leaving group:

(b) exchanging the leaving group L, from step (a) with an anion X which is selected from the group consisting of fluorosulfate (SO_3 F^-), alkyl sulfates, perfluoroalkylsulfonates, arenesulfonates, alkylcarboxylates, perfluoro-alkylcarboxylates, tetrafluoroborate (BF_4^-), tetraphenylborate (Ph_4^-), hexafluorophosphate (PF_6^-), hexafluoroantimonate (SbF_6^-), perchlorate (ClO_4^-) and sulfate SO_4=; and

(c) reacting the result from step (b) with molecular fluorine in the presence of a solvent that does not react substantially with fluorine and a fluoride scavenger that results in an X counter ion.

5,631,373

ALKYL, AZIDO, ALKOXY, AND FLUORO-SUBSTITUTED AND FUSED QUINOXALINEDIONES

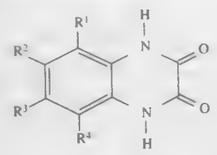
Sui X. Cai, Irvine; Eckard Weber, Laguna Beach, both of Calif.; John F.W. Keana, and Sunil Kher, both of Eugene, Oreg., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon, Eugene Oregon, Eugene, Oreg.; Acea Pharmaceuticals, Inc., Irvine, and The Regents of the University of California, Oakland, both of Calif.

Continuation-in-part of Ser. No. 208,878, Mar. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 148,268, Nov. 5, 1993, abandoned, and Ser. No. 148,259, Nov. 5, 1993, Pat. No. 5,514,680. This application Aug. 11, 1994, Ser. No. 289,603

Int. Cl.[6] **C07C** *241/36*

U.S. Cl. 544—354 **10 Claims**

1. A compound having the Formula



or a tautomer or a pharmaceutically acceptable salt thereof; wherein

R^1 is nitro, cyano, CF_3, carboxy, or alkanoyl;

R^2 is alkoxy, aralkoxy, thioalkyl, hydroxy, mercaptoalkyl, azido, or NR^5R^6, wherein R^5 and R^6 are independently hydrogen, alkyl, or aryl groups;

R^3 is halo, haloalkyl, nitro, alkyl, alkoxy, azido, or cyano; and

R^4 is hydrogen.

5,631,374

REAGENTS FOR DETECTION OF PRIMARY AMINES

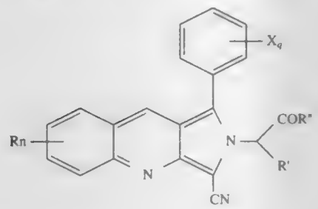
Milos V. Novotny; Donald Wiesler; Jinping Liu, all of Bloomington, Ind., and You-Zung Hsieh, Taipei, Taiwan, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Division of Ser. No. 598,508, Oct. 16, 1990, Pat. No. 5,459,272. This application Oct. 28, 1993, Ser. No. 144,912

Int. Cl.[6] **C07D** *471/08;* **C07K** *5/04;7/04;* **C08B** *37/00;* **C07H** *17/02*

U.S. Cl. 546—84 **15 Claims**

1. A compound of the formula:



or salts thereof wherein

R is a lower alkyl,

X is an ionizable group,

n is 0–5,

R' is a side chain of a naturally occurring amino acid,

R" is OH or $(AA)_w$, wherein AA is an amino acid moiety and w is an integer from 1–25,

wherein said ionizable group is an alkyl carboxylic acid, an alkyl sulfonic acid, alkyl sulfinic acid, alkyl phosphonic acid, phenol, thiol, quaternary amine, amidinium, imide, beta-diketone or nitroalkane.

5,631,375

PROCESS FOR PIPERIDINE DERIVATIVES

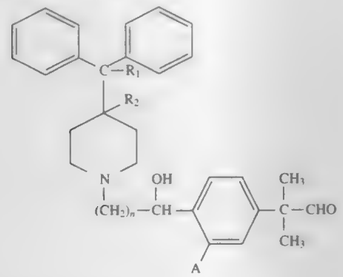
Chi-Hsin R. King, Cincinnati; Michele A. Kaminski, Reading, and Teng-Man Chen, Cincinnati, all of Ohio, assignors to Merrell Pharmaceuticals, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 152,606, Nov. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 99,773, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 17,251, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,370, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 867,261, Apr. 10, 1992, abandoned. This application Jan. 6, 1995, Ser. No. 369,234

Int. Cl.[6] **C07D** *211/22*

U.S. Cl. 546—241 **2 Claims**

1. A compound of the formula



wherein

R_1 represents hydrogen or hydroxy;

R_2 represents hydrogen; or

R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;

A is hydrogen or hydroxy;

n is an integer of from 1 to 5; and

pharmaceutically acceptable salts, hydrates and individual optical isomers thereof.

5,631,376

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

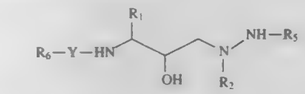
Daniel W. Norbeck, Crystal Lake; Hing L. Sham, Mundelein; Dale J. Kempf, Libertyville, and Chen Zhao, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 185,666, Feb. 1, 1994, Pat. No. 5,461,067, which is a continuation-in-part of Ser. No. 23,226, Feb. 25, 1993, abandoned. This application May 31, 1995, Ser. No. 455,458

Int. Cl.[6] **C07D** *401/02;213/02*

U.S. Cl. 546—256 **10 Claims**

1. A compound of the formula:

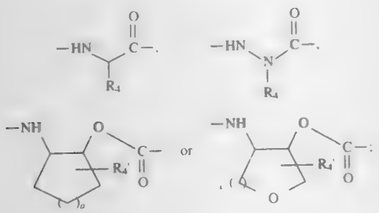


wherein R_1 and R_2 are independently selected from:

(i) hydrogen,
(ii) loweralkyl,
(iii) aryl,
(iv) thioalkoxyalkyl,
(v) (aryl)alkyl,
(vi) cycloalkyl,
(vii) cycloalkylalkyl,
(viii) hydroxyalkyl,
(ix) alkoxyalkyl,
(x) aryloxyalkyl,
(xi) haloalkyl,
(xii) carboxyalkyl,
(xiii) alkoxycarbonylalkyl,
(xiv) aminoalkyl,
(xv) (N-protected)aminoalkyl,
(xvi) alkylaminoalkyl,
(xvii) ((N-protected)(alkyl)amino)alkyl,
(xviii) dialkylaminoalkyl,
(xix) guanidinoalkyl,
(xx) loweralkenyl,
(xxi) heterocyclic,
(xxii) (heterocyclic)alkyl,
(xxiii) arylthioalkyl,
(xxiv) arylsulfonylalkyl,
(xxv) (heterocyclic)thioalkyl,
(xxvi) (heterocyclic)sulfonylalkyl,
(xxvii) (heterocyclic)oxyalkyl,
(xxviii) arylalkoxyalkyl,
(xxix) arylthioalkoxyalkyl,
(xxx) arylalkylsulfonylalkyl,
(xxxi) (heterocyclic)alkoxyalkyl,
(xxxii) (heterocyclic)thioalkoxyalkyl,
(xxxiii) (heterocyclic)alkylsulfonylalkyl,
(xxxiv) cycloalkyloxyalkyl,
(xxxv) cycloalkylthioalkyl,
(xxxvi) cycloalkylsulfonylalkyl,
(xxxvii) cycloalkylalkoxyalkyl,
(xxxviii) cycloalkylthioalkoxyalkyl,
(xxxix) cycloalkylalkylsulfonylalkyl,
(xl) aminocarbonyl,
(xli) alkylaminocarbonyl,
(xlii) dialkylaminocarbonyl,
(xliii) aroylalkyl,
(xliv) (heterocyclic)carbonylalkyl,
(xlv) polyhydroxyalkyl,

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(xlvi) aminocarbonylalkyl,
(xlvii) alkylaminocarbonylalkyl,
(xlviii) dialkylaminocarbonylalkyl,
(xlix) aryloxyalkyl and
(l) alkylsulfonylalkyl,
Y is



a is 0–3;
c is 1–2;
R_4' is hydrogen or loweralkyl;
R_4 is selected from:
(i) hydrogen,
(ii) loweralkyl,
(iii) aryl,
(iv) thioalkoxyalkyl,
(v) (aryl)alkyl,
(vi) cycloalkyl,
(vii) cycloalkylalkyl,
(viii) hydroxyalkyl,
(ix) alkoxyalkyl,
(x) aryloxyalkyl,
(xi) haloalkyl,
(xii) carboxyalkyl,
(xiii) alkoxycarbonylalkyl,
(xiv) aminoalkyl,
(xv) (N-protected)aminoalkyl,
(xvi) alkylaminoalkyl,
(xvii) ((N-protected)(alkyl)amino)alkyl,
(xviii) dialkylaminoalkyl,
(xix) guanidinoalkyl,
(xx) loweralkenyl,
(xxi) heterocyclic,
(xxii) (heterocyclic)alkyl,
(xxiii) arylthioalkyl,
(xxiv) arylsulfonylalkyl,
(xxv) (heterocyclic)thioalkyl,
(xxvi) (heterocyclic)sulfonylalkyl,
(xxvii) (heterocyclic)oxyalkyl,
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(xxx) arylalkylsulfonylalkyl,
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(xxxiii) (heterocyclic)alkylsulfonylalkyl,
(xxxiv) cycloalkyloxyalkyl,
(xxxv) cycloalkylthioalkyl,
(xxxvi) cycloalkylsulfonylalkyl,
(xxxvii) cycloalkylalkoxyalkyl,
(xxxviii) cycloalkylthioalkoxyalkyl,
(xxxix) cycloalkylalkylsulfonylalkyl,
(xl) aminocarbonyl,
(xli) alkylaminocarbonyl,
(xlii) dialkylaminocarbonyl,
(xliii) aroylalkyl,
(xliv) (heterocyclic)carbonylalkyl,
(xlv) polyhydroxyalkyl,
(xlvi) aminocarbonylalkyl,
(xlvii) alkylaminocarbonylalkyl,
(xlviii) dialkylaminocarbonylalkyl,
(xlix) aryloxyalkyl and
(l) alkylsulfonylalkyl,

wherein heterocyclic is selected from pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, furanyl, thienyl, tetrahydrofuranyl, tetrahydrothienyl and tetrahydro[2H]pyranyl and wherein the heterocyclic is unsubstituted or monosubstituted or disubstituted with substituents independently selected from hydroxy, halo, amino, alkylamino, dialkylamino, alkoxy, polyalkoxy, haloalkyl, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl, —COOH, $—SO_3H$, loweralkenyl and loweralkyl;

R_5 and R_6 are $—C(T)—G—R_7'$ wherein at each occurrence T is independently selected from O and S; at each occurrence G is independently selected from $—CH_2—$, —O—, —S— and $—N(R_8)—$ wherein at each occurrence R_8 is independently selected from hydrogen, loweralkyl and cycloalkyl; and at each occurrence R_7 is independently selected from:

(i) heterocyclic and (ii) (heterocyclic)alkyl, wherein at each occurrence the heterocyclic is unsubstituted or monosubstituted or disubstituted with substituents independently selected from hydroxy, halo, amino, alkylamino, dialkylamino, alkoxy, polyalkoxy, haloalkyl, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl, —COOH, $—SO_3H$, loweralkenyl and loweralkyl; or a pharmaceutically acceptable salt, ester or prodrug thereof.

5,631,377

POLYIMIDE INTERMEDIATES

Mitsunori Matsuo; Tsutomu Ishida; Akio Karasawa, all of Kanagawa-ken; Keizaburo Yamaguchi, Chiba-ken, and Akihiro Yamaguchi, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

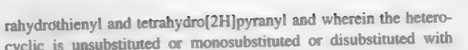
Division of Ser. No. 357,193, Dec. 13, 1994, Pat. No. 5,508,377. This application May 26, 1995, Ser. No. 450,150

Claims priority, application Japan, Dec. 21, 1993, 5-322631; Dec. 28, 1993, 5-335511; Jul. 12, 1994, 6-160313; Jul. 13, 1994, 6-160960

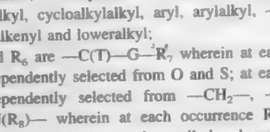
Int. Cl.[6] C07C *255/60;* **C07D** *213/38*

U.S. Cl. 546—296 **3 Claims**

1. An aromatic diamino compound represented by the formula (3):



wherein L is an oxygen atom, carbonyl, isopropylidene or hexafluoroisopropylidene, and X is



5,631,378

PROTECTED AMINOTHIAZOLYLACETIC ACID DERIVATIVES

Yoshio Urawa; Akihiko Shimotani; Takeo Kanai, all of Ibaraki, and Masahiko Tsujii, Chiba, all of Japan, assignors to Eisai Chemical Co., Ltd., Ibaraki, Japan

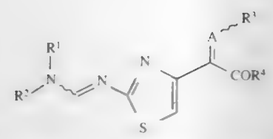
Division of Ser. No. 412,190, Mar. 28, 1995. This application Jan. 25, 1996, Ser. No. 591,022

Claims priority, application Japan, Mar. 30, 1994, 6-082619; Jun. 22, 1994, 6-139918; Nov. 17, 1994, 6-283543

Int. Cl.[6] C07D *277/38*

U.S. Cl. 548—194 **1 Claim**

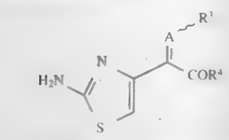
1. A process for the preparation of a protected aminothiazolylacetic acid derivative or a salt thereof, said protected aminothiazolylacetic acid derivative represented by the following formula (I):



(I)

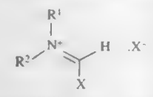
wherein A represents a nitrogen atom or a methine group, R^1 and R^2 may be the same or different and individually represent a hydrogen atom, a lower alkyl group or a substituted or unsubstituted aryl group, R^3 represents a lower alkoxy group, a halogenated lower alkoxy group, a triphenylmethoxy group, a lower alkyl group or an acyloxy group, and R^4 represents a halogen atom, a hydroxy group, a lower alkoxy group or a substituted or unsubstituted amino group, or a salt thereof, which process comprises:

reacting an aminothiazolylacetic acid derivative represented by the following formula (II):



(II)

wherein A, R^3 and R^4 have the same meanings as defined above, or a salt thereof, with a (halogenated methylene)-dialkylammonium halide represented by the following formula (III):



(III)

wherein R^1 and R^2 have the same meanings as defined above and X represents a halogen atom.

5,631,379

OXAZOLE AMINES AS INTERMEDIATES IN THE MANUFACTURE OF INSECTICIDAL PYRROLES

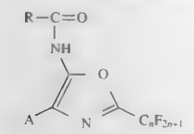
Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Company, Madison, N.J.

Filed Nov. 22, 1994, Ser. No. 343,154

Int. Cl.[6] C07D *263/28*

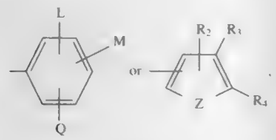
U.S. Cl. 548—233 **20 Claims**

1. A compound having the structure of formula I



wherein

n is an integer of 1, 2, 3, 4, 5, 6, 7 or 8;
R is C_1–C_6alkyl, C_1–C_6haloalkyl, $COOR_1$, or phenyl;
A is



L is hydrogen or halogen;
M and Q are each independently hydrogen, halogen CN, NO_2, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_1–C_4alkylthio, C_1–C_4alkylsulfinyl or when M and Q are on adjacent positions they may be taken together with the carbon atoms to which they are attached to form a ring in which MQ represents the structure
$—OCH_2O—$, $—OCF_2O—$ or —CH=CH—CH=CH—;
R_1 is C_1–C_4alkyl or C_1–C_4haloalkyl;
R_2, R_3 and R_4 are each independently hydrogen or halogen and
Z is O or S; or
the tautomers thereof.

5,631,380

HERBICIDAL SULPHONYLAMINOCARBONYLTRIAZOLINONES HAVING TWO SUBSTITUENTS BONDED VIA OXYGEN

Wilhelm Haas, Kerpen; Klaus-Helmut Müller, Duesseldorf; Klaus König, Odenthal; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

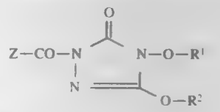
Division of Ser. No. 547,698, Oct. 19, 1995, Pat. No. 5,554,761, which is a division of Ser. No. 174,495, Dec. 28, 1993, Pat. No. 5,488,028, which is a division of Ser. No. 945,194, Sep. 15, 1992, Pat. No. 5,300,480, which is a continuation-in-part of Ser. No. 31,426, Mar. 15, 1993, Pat. No. 5,405,970, which is a continuation-in-part of Ser. No. 816,365, Dec. 30, 1991, Pat. No. 5,241,074, which is a division of Ser. No. 692,439, Apr. 29, 1991, Pat. No. 5,094,683, which is a division of Ser. No. 556,052, Jul. 20, 1990, Pat. No. 5,057,144, which is a continuation-in-part of Ser. No. 337,775, Apr. 13, 1989, abandoned. This application May 14, 1996, Ser. No. 644,999

Claims priority, application Germany, May 9, 1988, 38 15 765.9; Oct. 12, 1989, 39 34 081.3; Sep. 25, 1991, 41 31 842.0

Int. Cl.[6] C07D *249/12*

U.S. Cl. 548—263.4 **6 Claims**

1. A triazolinone derivative of the formula



(IV)

in which

R^1 represents C_1–C_6-alkyl, C_1–C_6-alkyl substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine, cyano, C_1– C_4-alkoxy, C_1–C_4-alkylcarbonyl and C_1–C_4-alkoxycarbonyl, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl each of which is substituted by one or more members selected from the group consisting of fluorine, chlorine and bromine, or represents C_3–C_7-cycloalkyl or C_4–C_7-cycloalkenyl, or represents C_3–C_7-cycloalkyl or C_4–C_7-cycloalkenyl each of which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine and C_1–C_4-alkyl, or represents phenyl-C_1–C_3-alkyl, or phenyl C_1–C_3-alkyl which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and C_1–C_4-alkoxycarbonyl,

R^2 represents C_1–C_6-alkyl or C_1–C_6-alkyl which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine, cyano, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy and C_1–C_4-alkoxycarbonyl, or represent C_3–C_6-alkenyl or C_3–C_6-alkinyl, or represent C_3–C_6-alkenyl or C_3–C_6-alkinyl each of which is substituted by one or more selected from the group consisting of fluorine, chlorine, and bromine, or represents C_3–C_6-cycloalkyl, or C_3–C_6-cycloalkyl which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine and C_1–C_4-alkyl, or represents cyclohexenyl, or represents phenyl-C_1–C_3-alkyl, or phenyl-C_1–C_3-alkyl which is substituted by one or more members selected from the group

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consisting of fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and C_1–C_4-alkoxycarbonyl, and

Z represents chlorine, C_1–C_4-alkoxy, benzyloxy or phenoxy.

5,631,381

PROCESS FOR THE PREPARATION OF PESTICIDAL 1-(HALOARYL) HETEROCYCLIC COMPOUNDS

Jamin Huang, Chapel Hill; Scot K. Huber, Raleigh, both of N.C.; Philip H. G. Smith, and John H. Wilkinson, both of Ongar, United Kingdom, assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

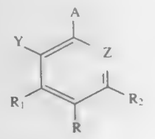
Continuation-in-part of Ser. No. 426,656, Apr. 21, 1995, abandoned. This application Jun. 28, 1996, Ser. No. 671,691

Int. Cl.[6] C07D *231/14*

U.S. Cl. 548—367.4 **35 Claims**

1. A process for the preparation of a heterocyclic compound of the formula:

(I)



wherein:

R is haloalkyl, haloalkoxy, haloalkylsulfenyl, haloalkylsulfinyl, haloalkylsulfonyl, F, Cl, Br, I or SF_5;

R_1 and R_2 are each independently hydrogen, F, Cl, Br or I;

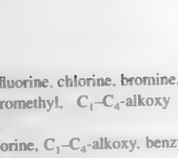
Y is F, Cl, Br or I;

Z is N, C—NO_2 or C—R_3 wherein R_3 is H, F, Cl, Br, I, CN, $C(O)NH_2$, $C(S)NH_2$, alkyl or haloalkyl;

and A represents an optionally substituted N-linked nitrogen-containing, five- or six-membered heterocyclic ring;

said process comprising reacting a nitro-containing compound of the formula:

(II)



wherein R_1, R_2, Z and A are defined as above, and G is haloalkyl, haloalkoxy, haloalkylsulfenyl, haloalkylsulfinyl, haloalkylsulfonyl, F, Cl, Br, I, SF_5 or NO_2; with a metallic halide of the formula MX_n wherein M is a metal cation, X is a halide anion and n is a positive integer equal to the valence of the metal cation, in the presence of a nitrite ion scavenging agent.

5,631,382

FULGIMIDE COMPOUND

Tsuneyoshi Tanizawa, and Takashi Kobayakawa, both of Tokuyama, Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Filed Aug. 4, 1995, Ser. No. 511,365

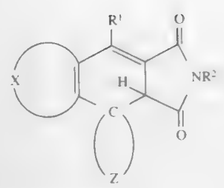
Claims priority, application Japan, Aug. 8, 1994, 6-186119; Jun. 26, 1995, 7-159389; Jun. 28, 1995, 7-161837

Int. Cl.[6] C07D *209/96*

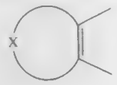
U.S. Cl. 548—407 **7 Claims**

1. A fulgimide compound represented by the following formula (I).

(I)



wherein the following formula (a)



represents a divalent unsaturated heterocyclic group which may have a substituent, R^1 represents a monovalent hydrocarbon group or a monovalent heterocyclic group which may have a substituent, respectively, and the following formula (b),

(b)



represents a norbornylidene group, bicyclo[3,3,1]nonylidene group or adamantylidene group which may have a substituent, respectively, and R^2 is a cyano group, alkoxycarbonyl group that may have a substituent, alkylcarbonyl group that may have a substituent, arylcarbonyl group that may have a substituent, nitro group, sulfonyl group, alkylsulfonyl group that may have a substituent, arylsulfonyl group that may have a substituent or aryloxycarbonyl group that may have a substituent.

5,631,383

DERIVATIVES OF 2-AZABICYCLO[2.2.1]HEPTANE, THEIR PREPARATION AND THEIR APPLICATION

Denis Largeau, Taluyers, and Patrick Leon, Tassin la Demi Lune, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

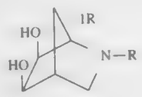
Filed Jun. 7, 1995, Ser. No. 476,156

Int. Cl.[6] C07D *491/113*

U.S. Cl. 548—430 **6 Claims**

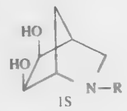
1. A 1R- or 1S 2-azabicyclo [2.2.1]heptane compound of formula:

(I)



or

(I')



wherein R represents a hydrogen atom or, respectively, a group with the formula:

(II)



-continued

or

(II')



wherein R_1 represents an alkyl group containing 1–4 carbon atoms and Ar represents a phenyl or α- or β-naphthyl group, optionally substituted by one or more atoms or groups, which are identical or different, selected from halogen atoms, alkyl groups containing 1–4 carbon atoms, alkoxy groups containing 1–4 carbon atoms or a nitro group.

5,631,384

ARENO [E]INDOLS, PREPARATION METHOD AND APPLICATION AS INTERMEDIATES IN THE SYNTHESIS OF PRODUCTS WITH ANTITUMORAL ACTIVITY

Koen Alexander, Amsterdam, Netherlands; Jose Delamano Garcia, Villagarcia de Arosa, Spain; Benedikt Sas, Turnhout, Belgium; Gabriel Tojo Suarez, Santiago de Compostela, and Dolores Garcia Gravalos, Madrid, both of Spain, assignors to Pharma-Mar, S.A.-Pharmar, Colmenar Viejo, Spain Division of Ser. No. 252,658, May 19, 1994, Pat. No. 5,571,927. This application Jul. 3, 1996, Ser. No. 674,863

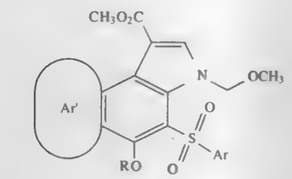
Claims priority, application Spain, Sep. 22, 1992, 9201894

Int. Cl.[6] C07D *487/02;209/56*

U.S. Cl. 548—433 **4 Claims**

1. New areno[e]indols useful as intermediates in the synthesis of products with antitumor activity of formula:

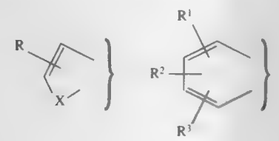
(I)



wherein:

—Ar represents phenyl or substituted phenyl

—Ar' represents a condensed radical of formulae:



wherein R, R^1, R^2, R^3 can represent a hydrogen, a halogen, a linear or branched alkyl, alkenyl or alkynyl radical, a formyl, acyl, carboxy, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, cyano, hydroxy, alkoxy, amino, alkylamino, dialkylamino, acylamino or nitro radical; and X represents oxygen, sulfur or substituted or unsubstituted nitrogen.

5,631,385

METHOD FOR THE PREPARATION OF N-SUBSTITUTED 4-KETOPROLINE DERIVATIVES

Karlheinz Drauz; Matthias Kottenhahn, both of Freigericht, and Klaus Stingl, Alzenau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Jun. 27, 1996, Ser. No. 671,535

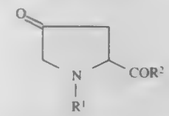
Claims priority, application Germany, Jul. 4, 1995, 195 24 339.0

Int. Cl.[6] C07D *207/46*

U.S. Cl. 548—530 **8 Claims**

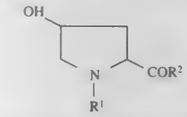
1. A process for the preparation of N-substituted 4-ketoproline derivatives of the general formula I

Formula I



by oxidation of the corresponding N-substituted 4-hydroxyproline derivatives of the general formula III

Formula III



wherein R^1 is (C_1–C_6) alkyl, CO-R^3 or fluorenylmethoxycarbonyl,

R^2 is NH_2, OR^4,

R^3 is (H), (C_1–C_6) aikyl, phenyl, benzyl, benzyloxy, NH_2, NO2-phenyloxy, NO_2-benzyloxy, (C_1–C_6) alkoxy or phenyloxy,

and R^4 is (C_1–C_6) alkyl, benzyl, phenyl, NO_2-benzyl, NO_2-phenyl or alkyl,

wherein the reaction is carried out in the presence of 2,2,6,6-tetramethylpiperidinyl oxy free radical (TEMPO) and a hypohalide solution.

5,631,386

ALKYLENE CARBONATE RECOVERY

Vijai P. Gupta, Berwyn, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Aug. 2, 1996, Ser. No. 691,665

Int. Cl.[6] C07D *317/36;317/38;321/06;319/06*

U.S. Cl. 549—228 **4 Claims**

1. In a process for the production of an alkylene carbonate by reaction of an alkylene oxide with carbon dioxide, the improvement which comprises reducing the residual alkylene oxide concentration in the reaction product mixture by stripping the reaction product mixture with inert gas.

5,631,387

PROCESS FOR THE PREPARATION AND RECOVERY OF MALEIC ANHYDRIDE

Henry C. Brown, and William H. Alumbaugh, both of Pensacola, Fla., assignors to Huntsman Petrochemical Corporation, Salt Lake City, Utah

Filed Mar. 20, 1995, Ser. No. 406,674

Int. Cl.[6] C07D *307/60*

U.S. Cl. 549—259 **21 Claims**

1. A process for the preparation and recovery of maleic anhydride comprising:

reacting a hydrocarbon having at least four carbon atoms in a straight chain with molecular oxygen in a reactor containing a vanadium-phosphorus-oxygen catalyst for the catalytic oxidation of the hydrocarbon to maleic anhydride to produce a reaction product gas comprising maleic anhydride;

cooling said reaction product gas;

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contacting said cooled product gas with a substantially water immiscible, maleic anhydride-absorbing solvent in an absorption zone, thereby absorbing maleic anhydride from said product gas into said absorbing solvent, and producing an exhaust gas substantially free of maleic anhydride and an absorption liquor comprising said absorbing solvent, maleic anhydride and contaminants comprising polymeric tars;

stripping maleic anhydride from the absorption liquor to produce a stream comprising maleic anhydride and a regenerated absorbing solvent substantially free of maleic anhydride comprising said absorbing solvent and said contaminants;

contacting at least a portion of said regenerated absorbing solvent in an agitated extraction zone with an aqueous liquid extractant that is substantially immiscible with said regenerated absorbing solvent to hydrolyze polymeric tars present in said regenerated absorbing solvent and transfer water-soluble contaminants to said aqueous extract phase, thereby producing a mixture comprising an aqueous extract phase containing water-soluble contaminants and an organic raffinate phase comprising regenerated absorbing solvent having a reduced concentration of polymeric tars;

separating said aqueous extract and said organic raffinate phases; and

recycling said organic raffinate phase to said absorption zone for absorption of maleic anhydride from said reaction product gas;

the portion of regenerated absorbing solvent introduced into said agitated extraction zone and the conditions of temperature, agitation and contact time between said regenerated absorbing solvent and said aqueous extractant in said extraction zone being controlled such that a stable emulsion is not formed in said extraction zone and, at an acceptable level of tars in the recirculating solvent, the rate of removal of polymeric tars by hydrolysis and extraction is substantially equivalent to the rate of introduction of tars into the absorbing solvent by absorption from said cooled product gas and generation within said solvent.

5,631,388

Patent Not Issued For This Number

5,631,389

NONIONIC GLYCASUCCINIMIDE SURFACTANTS AND A PROCESS FOR THEIR MANUFACTURE

Robert Vermeer, Nutley, N.J.; Van Au, New City, N.Y., and Bijan Harichian, South Orange, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

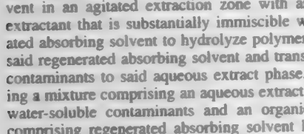
Division of Ser. No. 410,178, Mar. 24, 1995, Pat. No. 5,541,341. This application Apr. 30, 1996, Ser. No. 640,394

Int. Cl.[6] C07D *307/20;309/10*

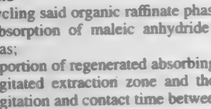
U.S. Cl. 549—417 **2 Claims**

1. A nonionic alkyl- or alkenyl bis(glyca)succinamide surfactant compound having the formula:

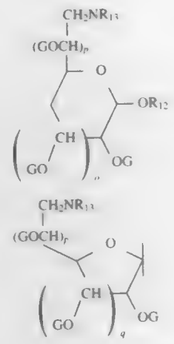
(II)



wherein A_2 is selected from the group consisting of the following structures which are attached to the succinate ring via the nitrogen atom on said structures:



-continued



A_1 is A_2, OR_{12}, $N(R_{12})_2$ group or mixtures thereof;
G is hydrogen;
X is hydrogen, an alkyl group having about 1 to about 4 carbon atoms;
Y is an oxygen atom;
Z is a CH═CH, CH_2CH_2 group or mixtures thereof;
W is a CH_2 group, oxygen atom or mixtures thereof;
R_9 is a straight or branched chain saturated hydrocarbon radical having about 4 to about 24 carbon atoms;
R_{12} is hydrogen, an alkyl, alkenyl or hydroxyalkyl group having about 1 to about 4 carbon atoms or mixtures thereof;
R_{13} is hydrogen, a straight or branched chain saturated or unsaturated hydrocarbon which may be unsubstituted or substituted with a hydroxyl, polyhydroxyl radical having about 1 to about 6 carbon atoms;
c=1; d=1–4; e=0–5; m=0; n=1–4; O=0–1; p=0–1; and q=1.

5,631,390

HALOGENATION OF COBALT DICARBOLLIDE

Paul K. Hurlburt; Kent D. Abney, and Scott A. Kinkead, all of Los Alamos, N.M., assignors to The Regents of the University of California, Alameda, Calif.

Filed May 31, 1995, Ser. No. 455,372

Int. Cl.[6] C07F *5/02;15/06*

U.S. Cl. 556—7 **10 Claims**

1. A process for halogenating cobalt dicarbollide anions in which a halogen atom is added only to a boron atom located in the number **10** position of each cage of a cobalt dicarbollide anion or substituted cobalt dicarbollide anion, said process comprising:

a. reacting cobalt dicarbollide anions with a halogenation agent selected from a group consisting of an N-halosuccinimide, hypohalous acid, and iron and gaseous chlorine, where the halogen of said hypohalous acid or N-halosuccinimide is chosen from a group consisting of chlorine, bromine, and iodine, and where said reaction is conducted by a method chosen from a group consisting of:

(1) forming a mixture comprised of tetraalkylammonium cobalt dicarbollide, hypohalous acid, and water and agitating said mixture for a time period sufficient for halogenation to take place, where the pH of said mixture is less than about 6.0;

(2) forming a mixture comprised of finely divided iron, a polar organic solvent, and x cobalt dicarbollide and adding chlorine gas to said mixture for a period of time sufficient for chlorination to take place, where the number of moles of iron in said mixture is equal to at least half the number of moles of x cobalt dicarbollide and where x is a cation chosen from a group consisting of hydrogen, lithium, sodium, potassium, rubidium, cesium, trialkylammoniium, and tetraalkylammonium; and

(3) forming a solution of x cobalt dicarbollide or a substituted x cobalt dicarbollide and an N-halosuccinimide in a polar organic solvent and agitating the solution for a time period sufficient for halogenation to take place; where x is a cation chosen from a group consisting of hydrogen, lithium, sodium, potassium, rubidium, cesium, trialkylammoniium, and tetraalkylammonium, and where said substituted x cobalt dicarbollide has a substituent group attached to one or more of the carbon and boron atoms of the cobalt dicarbollide anion cages by means of a linking atom chosen from a group consisting of carbon, oxygen, nitrogen, phosphorus, or sulfur; and

b. recovering from said mixture or solution a solid material comprised of cobalt dihalo dicarbollide or a substituted cobalt dihalo dicarbollide.

2. A process for chlorinating cobalt dicarbollide anions in which a chlorine atom is added only to a boron atom located in the number **10** position of each cage of a cobalt dicarbollide anion, said process comprising:

a. forming a mixture comprised of finely divided iron, a polar organic solvent, and x cobalt dicarbollide, where x is a cation chosen from a group consisting of hydrogen, lithium, sodium, potassium, rubidium, cesium, trialkylammonium, and tetraalkylammonium, where the alkyl groups of said cations contain from one to eight carbon atoms, and where the number of moles of iron in said mixture is equal to at least half the number of moles of x cobalt dicarbollide;

b. adding chlorine gas to said mixture for a period of time sufficient for chlorination to take place; and

c. recovering x cobalt dichloro dicarbollide from the mixture.

4. A process for halogenating tetraalkylammonium cobalt dicarbollide in which a halogen atom is added only to a boron atom located in the number **10** position of each cage of a cobalt dicarbollide anion, said process comprising:

a. forming a mixture comprised of tetraalkylammonium cobalt dicarbollide, hypohalous acid, and water and agitating said mixture for a time period sufficient for halogenation to take place, where said hypohalous acid is chosen from a group consisting of hypochlorons acid, hypobromous acid, and hypoiodus acid, where the pH of said mixture is less than about 6.0, and where the alkyl groups of tetraalkylammonium cobalt dicarbollide contain from one to eight carbon atoms; and

b. recovering tetraalkylammonium cobalt dihalo dicarbollide from said mixture.

5,631,391

MONOCYCLOPENTADIENYL TITANIUM METAL COMPOUNDS FOR ETHYLENE-α-OLEFIN-COPOLYMER PRODUCTION CATALYSTS

Jo Ann M. Canich, 900 Henderson Ave. #808, Houston, Tex. 77058

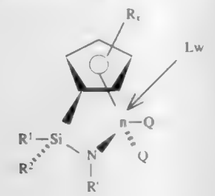
Division of Ser. No. 850,751, Mar. 13, 1992, Pat. No. 5,264,405, which is a continuation-in-part of Ser. No. 581,841, Sep. 13, 1990, Pat. No. 5,096,867, which is a continuation-in-part of Ser. No. 533,245, Jun. 4, 1990, Pat. No. 5,055,438, which is a continuation-in-part of Ser. No. 406,945, Sep. 13, 1989, abandoned. This application Aug. 19, 1993, Ser. No. 109,194

The portion of the term of this patent subsequent to Oct. 15, 2013, has been disclaimed.

Int. Cl.[6] C07F *17/00;7/28*

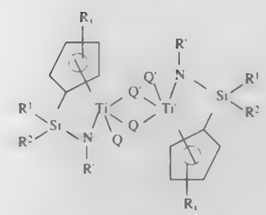
U.S. Cl. 556—11 **10 Claims**

1. A compound having the formula:



-continued

or



wherein R^1 and R^2 are each independently a C_1 to C_6 a hydrocarbyl radical, each Q and Q' is independently a halide or alkyl radical, R' is an aliphatic or alicyclic hydrocarbyl radical having from 1 to 20 carbon atoms and R' is covalently bonded to the nitrogen atom through a 1° or 2° carbon atom, L is a neutral Lewis base where "w" denotes a number from 0 to 3 and each R is, independently a C_{1-4} hydrocarbyl radical or hydrogen, x is 0, 1, 2, 3 or 4, and two adjacent R groups may join to form a C_{4-10} ring.

5,631,392

HYDROFORMYLATION PROCESS AND BIDENTATE PHOSPHITE LIGAND CATALYSTS USED THEREIN

Carolina B. Hansen, Sittard, and Antonius J. J. M. Teunissen, Geleen, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands, and E.I. Du Pont de Nemours and Company, Wilmington, Del.

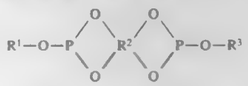
Filed Nov. 17, 1995, Ser. No. 559,807

Claims priority, application European Pat. Off., Nov. 17, 1994, 94203345

Int. Cl.[6] C07F *9/02;17/02*

U.S. Cl. 556—13 **12 Claims**

1. A process for preparing an aldehyde compound by hydroformylation of an ethylenically unsaturated organic compound in the presence of a Group VIII metal catalyst and a bidentate phosphite ligand having a chemical structure according to formula



wherein R^1 and R^3 are organic groups which may be the same or different and which contain 1 to 30 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl, aralkyl and alkaryl groups, and wherein R^2 is a tetravalent organic group having at least 4 and up to 35 carbon atoms.

5,631,393

PALLADIUM CATALYSTS CONTAINING SULFONATED BISPHOSPHINES AS LIGANDS, PROCESS FOR THEIR PREPARATION AND THEIR USE IN CARBONYLATION REACTIONS

Christian Kohlpaintner, Kelkheim, and Matthias Beller, Niedernhausen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed May 2, 1995, Ser. No. 433,315

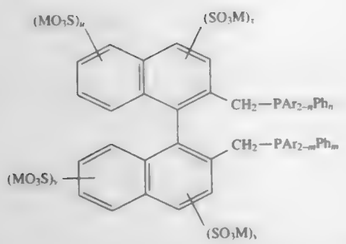
Claims priority, application Germany, May 4, 1994, 44 15 682.0

Int. Cl.[6] C07F *9/02;15/00*

U.S. Cl. 556—17 **18 Claims**

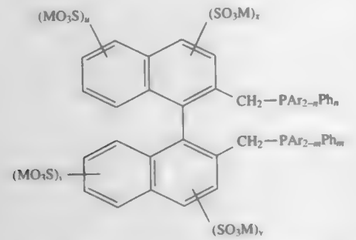
1. A palladium compound containing as ligands compounds of the formula (I)

VOL 1198 ISS 3 MY 20 1997 UMI



where Ar is $C_6H_4SO_3M$. M is hydrogen, ammonium, a monovalent metal or one equivalent of a polyvalent metal and Ph is the phenyl radical and n, m are zero, 1 or 2 and x, y, u, v are zero, 1 or 2.

10. A catalyst for carbonylation reactions comprising a palladium compound containing as ligands compounds of the formula (I)



where Ar is $C_6H_4SO_3M$, M is hydrogen, ammonium, a monovalent metal or one equivalent of a polyvalent metal and Ph is the phenyl radical and n, m are zero, 1 or 2 and x, y, u, v are zero, 1 or 2.

5,631,394

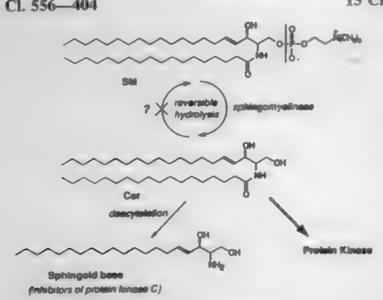
PHARMACEUTICALLY ACTIVE CERAMIDE-RELATED COMPOUNDS

Yong Wei, Branchburg; Eric Mayhew, Monmouth Junction; Imran Ahmad, Plainsboro, all of N.J., and Andrew S. Janoff, Yardley, Pa., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 190,295, Feb. 2, 1994, abandoned. This application Feb. 2, 1995, Ser. No. 383,291

Int. Cl.[6] **C07F** *9/02;* **C07C** *229/00;303/00*

U.S. Cl. 556—404 **15 Claims**



1. A compound having the formula $R^1—Y^1—CHZ^1—CH(NY^2Y^3)—CH_2—Z^2$, wherein:

R^1 is a straight-chained alkyl, alkenyl or alkynyl group having from 8 to 19 carbon atoms in the aliphatic chain;

Y^1 is —CH=CH—, —C≡C— or —CH(OH)CH(OH)—;

Z^1 is OH or a phosphorylcholine attachment-inhibiting group selected from the group consisting of $—X^1$, $—OX^1$, $—X^2X^3$ and $—OX^2X^3$;

Y^2 is H, a phenyl group, an alkyl-substituted phenyl group having from 1 to about 6 carbons in the alkyl chain, or an alkyl chain having from 1 to 6 carbons;

Y^3 is H or a group having the formula $—C(O)R^2$ or $—S(O)_2R^2$;

R^2 is a straight-chained alkyl group selected from the group consisting of $(CH_2)_3CH_3$, $(CH_2)_5CH_3$, $(CH_2)_7CH_3$ and $—(CH_2)_9CH_3$, an alkenyl having from 1 to 23 carbon atoms in the chain or an alkynyl group having from 1 to 23 carbon atoms in the chain;

Z^2 is a phosphorylcholine attachment-inhibiting group selected from the group consisting of $—X^1$, $—OX^1$, $—X^2X^3$ and $—OX^2X^3$;

X^1 is selected from the group consisting of C(O)H, CO_2H, $CH_3C(CH_3)_2$, $Si(C(CH_3)_3)_3$, $Si(PO_4)_2C(CH_3)_3$, a phenyl group, an alkyl-substituted phenyl group having from 1 to 6 carbons in the alkyl chain, an alkyl chain having from 1 to 6 carbons, an amino group, a fluorine, a chlorine, and a group having the formula $C(R^3R^4)OH$;

X^2 is selected from the group consisting of $CH_2—$, $C(CH_3)_2—$, $Si(PO_4)_2—$, $Si(CH_3)_2—$, $SiCH_3PO_4—$, C(O)— and $S(O)_2—$;

X^3 is selected from the group consisting of —C(O)H, $—CO_2H$, $—CH_3$, $—C(CH_3)_3$, $—Si(CH_3)_3$, $—SiCH_3(C(CH_3)_3)_2$, $—Si(PO)_4)_2C(CH_3)_3$, a phenyl group, an alkyl-substituted phenyl group having from 1 to 6 carbons in the alkyl chain, an alkyl chain having from 1 to 6 carbons, an amino moiety, a chlorine, a fluorine, or a group having the formula $C(R^3R^4)OH$, wherein each of R^3 and R^4 is independently an alkyl chain having from 1 to 6 carbons, a phenyl group or an alkyl-substituted phenyl group having from 1 to 6 carbons in the alkyl chain;

and wherein when Z^2 is an amino group, R^2 is an aliphatic chain having from 1 to 9 or from 19 to 23 carbon atoms in the aliphatic chain.

5,631,395

METHOD FOR REMOVING THE ACIDIC IMPURITIES CONTAINED IN A VAPOURIZED STREAM COMPOSED BY ORGANIC VAPOURS AND WATER

Franco Rivetti, Milan, and Daniele Delledonne, Oleggio, both of Italy, assignors to Enichem Synthesis S.p.A., Palermo, Italy

Filed May 31, 1995, Ser. No. 456,073

Claims priority, application Italy, Jun. 3, 1994, MI94A1159

Int. Cl.[6] **C07C** *69/96*

U.S. Cl. 558—277 **17 Claims**

1. A method for removing acidic impurities, comprising the steps of:

contacting a vaporized stream comprising an alkanol, an alkylcarbonate, water, and acidic impurities in an adsorption reactor comprising a solid adsorbent bed,

wherein said adsorbent bed comprises an adsorbent selected from the group consisting of alumina, activated charcoal, and a mixture thereof.

5,631,396

PROCESS FOR CONTINUOUSLY PRODUCING DIMETHYL CARBONATE

Keigo Nishihira; Shinichi Yoshida; Shuji Tanaka, and Yutaka Asada, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed May 9, 1996, Ser. No. 647,164

Claims priority, application Japan, May 12, 1995, 7-114305

Int. Cl.[6] **C07C** *68/00*

U.S. Cl. 558—277 **13 Claims**

1. A process for continuously producing dimethyl carbonate comprising:

a first step of introducing a feed gas containing carbon monoxide and methyl nitrite into a reactor and catalytically reacting carbon monoxide with methyl nitrite in a gas phase in the presence of a solid catalyst in the reactor, to prepare a reaction product gas comprising dimethyl carbonate mixed with a by-product containing nitrogen monoxide;

a second step of bringing the reaction gas into contact with an absorption medium comprising dimethyl oxalate in a dimethyl carbonate-absorbing column, to provide a liquid fraction containing dimethyl carbonate absorbed by the absorbing medium and a non-condensed gas fraction containing nitrogen monoxide and non-reacted carbon monoxide and methyl nitrite;

a third step of bringing the non-condensed gas fraction of the second step into contact with molecular oxygen and methyl alcohol in a methyl nitrite-regenerating column, to regenerate methyl nitrite from the nitrogen monoxide and provide a regenerated gas fraction containing the regenerated methyl nitrite; and

a fourth step of collecting dimethyl carbonate from the liquid fraction of the second step, wherein before the fourth step, the second step liquid fraction is brought into contact with carbon monoxide, to recover methyl nitrite accompanying with the second step liquid fraction and allow the recovered methyl nitrite and the carbon monoxide to be incorporated into the non-condensed gas fraction of the second step in the absorbing column; and after the third step, at least a major portion of the resultant regenerated gas fraction of the third step containing carbon monoxide and methyl nitrite is recycled as a feed gas to the reactor of the first step.

5,631,397

PROCESS FOR PRODUCING OPTICALLY ACTIVE DIAMINOHEXANONE DERIVATIVE

Tetsuro Yamasaki; Hidenori Kumobayashi; Noboru Sayo; Toshiyuki Murayama; Noboru Sano, and Takero Ishizaki, all of Hiratsuka, Japan, assignors to Takasago International Corporation, Tokyo, Japan

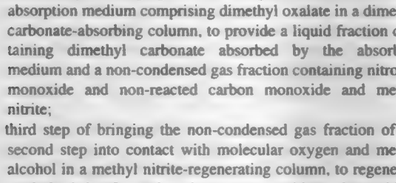
Division of Ser. No. 229,678, Apr. 19, 1994, Pat. No. 5,523,458. This application Jun. 6, 1995, Ser. No. 470,466

Claims priority, application Japan, Mar. 17, 1994, 6-47182

Int. Cl.[6] **C07C** *269/06;231/12*

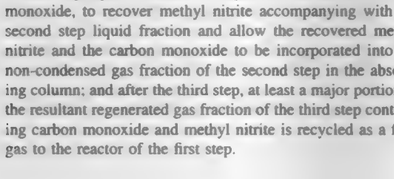
U.S. Cl. 560—27 **10 Claims**

1. A process for producing a (2S,5S)-2,5-diamino-1, 6-diphenyl-3-hexanone derivative represented by the formula (1):



(1)

wherein R^1 means a lower alkylcarbonyl group, a halogen-substituted lower alkylcarbonyl group, an arylcarbonyl group or a lower alkoxycarbonyl group, and R^2 and R^3 are identical with or different from each other and denote individually an aryl group or an alkoxy-substituted aryl group, which comprises subjecting a (2S)-2,5-diamino-1,6-diphenyl-4-hexen-3-one derivative represented by the formula (2):



(2)

wherein R^1, R^2 and R^3 have the same meaning as defined above, to a hydrogenation reaction in the presence of a transition metal-containing catalyst, wherein said transition metal-containing catalyst is either a mononuclear complex represented by the formula (3):

$$M(L_m)X_nY_p)(X_q) \quad (3)$$

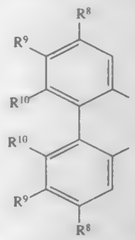
wherein M is ruthenium, rhodium, palladium or iridium, L denotes an organophosphorus compound represented by the formula (6):

$$(R^5)_2P\text{-}A\text{-}P(R^5)_2 \quad (6)$$

wherein R^5 means a lower alkyl group, a phenyl group or a tolyl group, and A denotes the formula (7):

$$(R^6)CH(CH_2)_mCH(R^7) \quad (7)$$

in which R^6 and R^7 mean individually a lower alkyl group, or R^6 and R^7 are bonded to each other to form a ring, and m stands for a number of 0–8, or the formula (8):



(8)

wherein R^{10} means a methyl group, and R^8 and R^9 denote individually a hydrogen atom, a halogen atom or a lower alkyl group, with the proviso that R^9 and R^{10} may form together a carbocyclic or aryl ring,

Y stands for cyclooctadiene, norbornadiene, p-cymene, acetonitrile, ethylene, pyridine, acetic acid or benzene, X is a halogen ion, sulfonate ion, acetate ion, nitrile ion, ClO_4, BF_4 or PF_4, or X and Y may form together a β-diketonate, n stands for a number of 1–3, and p and q are individually a number of 0–2, or a binuclear complex represented by the formula (4):

$$M_2(L_{2n})(Y_{2p})(X_{2q}) \quad (4)$$

wherein M, L, X, Y, n, p and q have the same meaning as defined above.

5,631,398

METHOD FOR THE PRODUCTION OF (3-ALKOXYCARBONYL-2-BUTENYL) TRIPHENYLPHOSPHONIUM SALTS

Bruno Burdet, Baldersheim, France; August Rüttimann, Arlesheim, Switzerland; Jean-Marie Santer, St. Louis. France, and Theodor Siegfried, Riehen, Switzerland, assignors to Roche Vitamins Inc., Paramus, N.J.

Division of Ser. No. 405,682, Mar. 17, 1995, Pat. No. 5,502,236. This application Nov. 16, 1995, Ser. No. 558,993

Claims priority, application Switzerland, Mar. 23, 1994, 868/94

Int. Cl.[6] **C07C** *69/56*

U.S. Cl. 560—105 **8 Claims**

1. A process for producing a Wittig ester salt of the formula:

$$Cl\text{-}(C_6H_5)_3P{+}CH_2CH{=}C(CH_3)COOR \quad I$$

wherein R is C_{1-4}-alkyl,

which process comprises reacting a compound of the formula:

$$CH_2{=}CHC(Cl)(CH_3)COOR \quad IV$$

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wherein R is as in formula I', with triphenylphosphine dissolved in an organic solvent to obtain said Wittig ester salt.

5,631,399

PROCESS FOR THE PREPARATION OF ETHYL 3S-[[4-[[4-(AMINOIMINOMETHYL)PHENYL]AMINO]-1,4-DIOXOBUTYL]AMINO]-4-PENTYNOATE

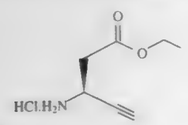
Kevin A. Babiak, Evanston, Ill.; Srinivasan Babu, San Diego, Calif.; James R. Behling, Lindenhurst; Mark L. Boys, Buffalo Grove, both of Ill.; Kimberly J. Cain-Janicki, Sleepy Hollow, Ill.; Wendel W. Doubleday, Twin Lakes, Wis.; Payman Farid, Vernon Hills, Ill.; Timothy J. Hagen, Gurnee, Ill.; E. A. Hallinan, Evanston, Ill.; Donald W. Hansen, Jr., Skokie, Ill.; Donald E. Korte, Mundelein, Ill.; Kathleen T. Mc Laughlin, Arlington Heights, Ill.; John R. Medich, Gurnee, Ill.; Sean T. Nugent, Grayslake, Ill.; Vlasdislav Orlovski, Buffalo Grove, Ill.; Jung M. Park, Glenview, Ill.; Karen B. Peterson, Vernon Hills, Ill.; Daniel R. Pilipauskas, Glenview, Ill.; Barnett S. Pitzele, Skokie, Ill.; Sofya Tsymbalov, Skokie, Ill., and Glenn L. Stahl, Buffalo Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 502,054, Jul. 14, 1995, Pat. No. 5,536,869. This application May 14, 1996, Ser. No. 647,514

Int. Cl.[6] C07C *229/30*

U.S. Cl. 560—155 **1 Claim**

1. A process for preparing ethyl 3S-amino-4-pentynoate, monohydrochloride having the following formula



II

which comprises:

(a) treating (trimethylsilyl)acetylene sequentially with n-butyllithium and 4-formylmorpholine in the presence of an aprotic solvent followed by acid hydrolysis to give 3-(trimethylsilyl)-2-propynal;

(b) treating 3-(trimethylsilyl)-2-propynal, the product of step a, with lithium bis(trimethylsilyl)amide in the presence of an aprotic solvent to give N,3 -bis(trimethylsilyl)-2-propyn-1-imine in situ, treating N,3-bis(trimethylsilyl)-2-propyn-1-imine with lithium t-butyl acetate followed by hydrolytic cleavage to give (±)1,1-dimethylethyl 3-amino-5-(trimethylsilyl)-4 -pentynoate;

(c) treating (±)1,1-dimethylethyl 3-amino-5 -(trimethylsilyl)-4-pentynoate, the product of step b, with p-toluenesulfonic acid in the presence of aprotic solvents to give (±)1,1-dimethylethyl 3-amino-5 -(trimethylsilyl)-4-pentynoate, mono p-toluenesulfonic acid salt, treating the resulting salt with ethanol in the presence of p-toluenesulfonic acid, followed by neutralization to give (±)ethyl 3-amino-5 -(trimethylsilyl)-4-pentynoate; and

(d) treating (±)ethyl 3-amino-5-(trimethylsilyl)-4 -pentynoate, the product of step c, with a catalytic amount of base in the presence of alkanol solvent followed by a catalytic amount of acid to give the desilylated (±)ethyl 3-amino-4-pentynoate in situ, treating (±)ethyl 3-amino-4-pentynoate with (R)-(−)-mandelic acid in the presence of aprotic solvents to give ethyl 3S-amino-4-pentynoate compounded with α R-hydroxybenzeneacetic acid; and

(e) treating ethyl 3S-amino-4-pentynoate compounded with αR-hydroxybenzeneacetic acid, the product of step d, with gaseous hydrochloric acid in the presence of an aprotic solvent to give ethyl 3S-amino-4-pentynoate, monohydrochloride; with the understanding that when a pharmaceutically acceptable acid addition salt other than hydrochloride is desired the ethyl 3S-amino-4 -pentynoate compounded with αR-hydroxybenzene acetic acid, the product of step d, is treated with the appropriate acid corresponding to the desired salt.

5,631,400

CARBONYLATION PROCESS

Sharon M. Beshouri, and Tonya L. Garcia, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1995, Ser. No. 574,822

Int. Cl.[6] C07C *69/52*

U.S. Cl. 560—207 **12 Claims**

1. A process for carbonylation of ethylenic unsaturation comprising the steps of:

providing a catalyst system comprising

a) a Group VIII metal compound,

b) an organic phosphine, and

c) an acid; and

contacting acetylene, the catalyst system, carbon monoxide, hydrogen, and a nucleophilic compound under conditions effective to carbonylate the acetylene.

5,631,401

INHIBITORS OF PROTEIN FARNESYLTRANSFERASE AND SQUALENE SYNTHASE

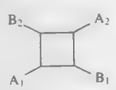
Herman H. Stein, Highland Park, Ill.; William R. Baker, Bellevue, Wash.; Anthony K. L. Fung, Gurnee, Ill.; Saul H. Rosenberg, Grayslake, Ill.; Todd W. Rockway, Grayslake, Ill.; Stephen A. Fakhoury, Mundelein, Ill.; David S. Garvey, Waltham, Mass.; B. Gregory Donner, Mundelein, Ill.; William J. McClellan, Waukegan, Ill.; Stephen J. O'Connor, Wilmette, Ill.; Rajnandan Prasad, Vernon Hills, Ill.; Wang Shen, Skokie, Ill., and Gerard M. Sullivan, Round Lake Beach, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 194,366, Feb. 9, 1994, abandoned. This application Jan. 24, 1995, Ser. No. 378,334

Int. Cl.[6] C07C *229/46;* **A61K** *31/19;31/195*

U.S. Cl. 562—451 **14 Claims**

1. A compound of the formula



wherein

A_1 and A_2 are independently —C(O)NR_1R_2 wherein

R_1 at each occurrence is independently selected from

(i) hydrogen,

(ii) loweralkyl,

(iii) cycloalkyl,

(iv) cycloalkylalkyl,

(v) aryl,

(vi) arylalkyl,

(vii) alkenyl,

(viii) alkynyl,

(ix) carboxyalkyl,

(x) heterocyclicalkyl,

(xi) aryloxyarylalkyl,

(xii) aryloxyalkyl,

(xiii) arylalkyl substituted arlyalkyl,

(xiv) arylalkoxyarylalkyl,

(xv) arylalkoxyaryl, and

R_2 at each occurrence is independently selected from

(i) aryl,

(ii) arylalkyl,

(iii) alkenyl,

(iv) alkynyl,

(v) arylalkenyl,

(vi) arylalkynyl,

(vii) heterocyclicalkyl,

(viii) aryloxyalkyl,

(ix) arylalkyl wherein the alkyl group is substituted with —OR_{10} wherein R_{10} is hydrogen or alkanoyl and

(x) aryl, arylalkyl or heterocyclicalkyl wherein the aryl group, the aryl part of the arylalkyl group or the heterocyclic part of the heterocyclicalkyl group is substituted with —Y—R_3 wherein at each occurrence Y is independently selected from

(a) a covalent bond,

(b) —C(O)—,

(c) —CH_2—,

(d) —O—,

(e) —S—,

(f) —NH—,

(g) —CH_2O—,

and at each occurrence R_3 is independently selected from

(a) aryl,

(b) arylalkyl,

(c) cycloalkyl,

(d) cycloalkylalkyl,

(e) heterocyclic and

(f) (heterocyclic)alkyl,

or R_1 and R_2 taken together with the nitrogen atom to which they are attached form a nitrogen-containing heterocycle;

B_1 and B_2 are independently —C(O)—OR_7 wherein at each occurrence R_7 is independently selected from hydrogen and a carboxy protecting group;

or a pharmaceutically acceptable salt thereof.

5,631,402

PROCESS FOR PREPARING AMINOBENZOIC ACID DERIVATIVES

Shuhei Miyazawa; Shigeki Hibi; Hiroyuki Yoshimura; Takashi Mori; Yorihisa Hoshino; Mitsuo Nagai; Kouichi Kikuchi; Hisashi Shibata; Kazuo Hirota; Takashi Yamanaka; Isao Yamatsu, and Masanori Mizuno, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

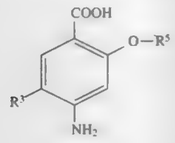
Division of Ser. No. 337,480, Nov. 8, 1994, Pat. No. 5,578,603, which is a division of Ser. No. 13,080, Feb. 3, 1993, Pat. No. 5,389,643. This application Jun. 7, 1995, Ser. No. 488,430

Claims priority, application Japan, Feb. 4, 1992, 4-18959; Sep. 3, 1992, 4-235533

Int. Cl.[6] C07C *229/40;229/52*

U.S. Cl. 562—453 **2 Claims**

1. A process for producing the aminobenzoic acid derivative or the pharmacologically acceptable salt thereof having the formula:



(a)

wherein R^3 represents a halogen atom and R^5 represents a lower alkynyl group having 3 to 10 carbon atoms which may be substituted, which comprises reacting a 4-amino-5-halogen-salicylic acid derivative, wherein the amino group is protected with an acyl, carboxyl or alkyl group and the carboxylic group is protected with a lower alkyl, arylalkyl, arylalkenyl, aryl or halogen-substituted lower alkyl, with a C_2–C_8 straight or branched chain alkynol in the presence of triphenylphosphine and dialkylazocarboxylate, followed by deprotecting the protective groups.

5,631,403

PROCESS FOR THE PREPARATION OF HYDROXYCARBOXANILIDES

Andreas Dierdorf, Frankfurt; Siegfried Planker, Königstein, and Theodor Papenfuhs, Frankfurt, all of Germany, assignors to Hoechst AG, Frankfurt, Germany

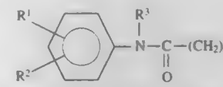
Filed Jun. 21, 1995, Ser. No. 493,272

Claims priority, application Germany, Jun. 23, 1994, 44 21 884.2

Int. Cl.[6] C07C *233/05;233/88*

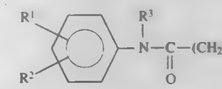
U.S. Cl. 564—202 **21 Claims**

1. A process for the preparation of hydroxycarboxanilides of the formula (1)



(1)

in which R^1 and R^2 are identical or different and are hydrogen, halogen, a nitro group, a cyano group, a straight-chain or branched alkyl, alkenyl, alkynyl or alkoxy group having 1 to 12 carbon atoms, an aralkyl group having 7 to 12 carbon atoms, a cycloalkyl group having 6 to 12 carbon atoms or an aryl group having 6 to 12 carbon atoms, R^3 is hydrogen or a straight-chain or branched alkyl group having 1 to 12 carbon atoms and n is an integer from 1 to 12, which comprises reacting a halocarboxanilide of the formula (2)



(2)

in which R^1, R^2, R^3 and n have the same meaning as in formula (1) and Hal is chlorine, bromine or iodine, with a basic compound in a solvent mixture comprising water and one or more polar aprotic solvents at a temperature of 40° to 180° C.

5,631,404

DIAMINE COMPOUNDS FOR USE IN ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS

Mitsutoshi Anzai; Yasuo Murakami; Atsushi Takesue, all of Tokyo; Masaomi Sasaki, Susono; Tomoyuki Shimada, Shizuoka-ken; Tamotsu Aruga, Mishima, and Masafumi Ohta, Susono, all of Japan, assignors to Ricoh Company, Ltd., and Hodogaya Chemical Co., Ltd., both of Tokyo, Japan

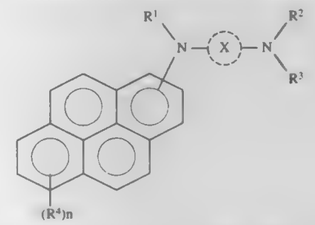
Division of Ser. No. 326,224, Oct. 20, 1994, Pat. No. 5,489,495. This application Jun. 1, 1995, Ser. No. 457,237

Claims priority, application Japan, Oct. 20, 1993, 5-285857; Nov. 1, 1993, 5-296045; Apr. 25, 1994, 6-109087; Apr. 25, 1994, 6-109085

Int. Cl.[6] C07C *211/01*

U.S. Cl. 564—308 **21 Claims**

1. A diamine compound represented by formula (I):



(I)

wherein R^1, R^2, and R^3 each is independently a substituted or unsubstituted alkyl group or aryl group not including pyrenyl; R^4 is hydrogen, an alkyl group or an alkoxyl group; n is an integer of 1 to 3; and

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is a substituted or unsubstituted bivalent arylene group not including phenylene, phenanthrenyl and 9,10-dihydrophenanthrenyl or a bivalent heterocyclic group.

5,631,405

METHOD OF FORMING AMINO ACID-DERIVED DIAMINOPROPANOLS USEFUL AS CHEMICAL INTERMEDIATES FOR PROTEASE-INHIBITORS

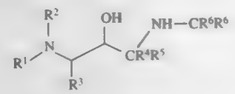
Biman Pal, Waltham; Siya Ram, Winchester, both of Mass.; Bing Cai, Iselin, N.J.; Yesh P. Sachdeva, Concord, Mass.; Jaechul Shim, Cambridge, Mass.; Salah A. Zahr, Acton, Mass.; Emile Al-Farhan, Dedham, Mass., and Richard L. Gabriel, Swampscott, Mass., assignors to Pharm-Eco Laboratories, Incorporated, Lexington, Mass.

Continuation-in-part of Ser. No. 271,619, Jul. 7, 1994, Pat. No. 5,475,138. This application Jun. 7, 1995, Ser. No. 472,496

Int. Cl.[6] C07C *215/28;213/00;229/34;227/02*

U.S. Cl. 564—342 **10 Claims**

1. A method for producing a protease inhibitor synthetic intermediate represented by the formula



or salts thereof, wherein:

R^1 is an amino protecting group;

R^2 is selected from the group consisting of —H, C1–C18 alkyl, aryl, acetyl and tosyl;

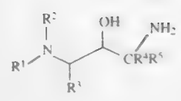
R^3 is a side-chain of a naturally occurring amino acid or a side chain of a naturally occurring amino acid substituted with a halogen, hydroxyl, sulfonate, C1–C3 alkyl, C1–C3 alkoxy or acyl;

R^4 and R^5 are each independently selected from the group consisting of —H, alkyl, aryl, nitrile and alkoxycarbonyl; and

each R^6 is independently selected from the group consisting of hydrogen, lower alkyl, halo-substituted lower alkyl, aryl and heteroaralkyl radicals,

comprising the steps of:

a) reacting a 1,3-diamino-3-substituted-2-propanol represented by the following structural formula:



with an aldehyde or a ketone, having the formula $R^6C(O)R^6$, in an anhydrous solvent, whereby $R^6C(O)R^6$ is condensed to form an imino compound; and

b) reacting said imino compound with an imino reducing agent, whereby the imino compound is reductively aminated, thereby forming said protease inhibitor synthetic intermediate.

5,631,406

CHEMICAL COMPOUNDS

William H. Gilligan, Ft. Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1981, Ser. No. 256,462

Int. Cl.[6] C07C *43/303;43/313*

U.S. Cl. 568—604 **15 Claims**

7. A method of synthesizing dichloroformals of the formula

$(RCH_2O)_2CCl_2$

by reacting a thionocarbonate of the formula

$(RCH_2O)_2C{=}S$

with sulfuryl chloride in the presence of a Friedel-Crafts catalyst, wherein R is selected from the group consisting of $—C(NO_2)_3$, $—CF(NO_2)_2$, $—CF_2(NO_2)$, $—CCl(NO_2)_2$, $—C(NO_2)_2CH_3$, $—CCl_3$, $—CF_3$, and $—CF_2F_3$.

5,631,407

TRANSGENIC MOUSE EXPRESSING DNA SEQUENCES ENCODING THE HUMAN POLIOVIRUS RECEPTOR

Vincent Racaniello, New York, N.Y.; Cathy Mendelsohn, Strasbourg, France, and Frank Costantini, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 495,744, Mar. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 321,957, Mar. 10, 1989, abandoned. This application Jan. 14, 1994, Ser. No. 182,371

Int. Cl.[6] C12N *5/00;15/00;* **C12P** *15/00;* **A61K** *49/00*

U.S. Cl. 800—2 **8 Claims**

1. A transgenic mouse which has stably integrated into the genome of its somatic and germ cells the DNA sequence H20A of FIG. 4 which encodes a human poliovirus receptor, wherein expression of said DNA sequence results in the mice becoming susceptible to poliovirus infection.

5,631,408

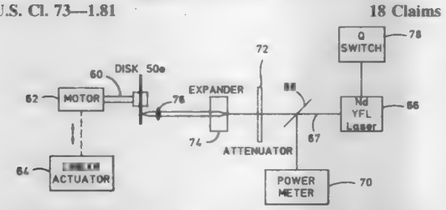
METHOD OF MAKING DISK BUMPS WITH LASER PULSES

Peter M. Baumgart, San Jose; Karl A. Flechsig, Los Gatos; Michael F. Lee, Los Altos; Wing P. Leung, Arcadia; Ullal V. Nayak, San Jose; Thao A. Nguyen, San Jose; Timothy C. O'Sullivan, San Jose, and Andrew C. Tam, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 364,562, Dec. 27, 1994, Pat. No. 5,528,922. This application Feb. 27, 1996, Ser. No. 606,773

Int. Cl.[6] B23K *26/00*

U.S. Cl. 73—1.81 **18 Claims**



1. A method of making a crater shaped bump on an article, the crater shaped bump having a peripheral ridge which projects upwardly from a nominal surface of the article a predetermined height h, comprising the steps of:

maintaining a laser source in a fixed position;

maintaining the article in a fixed position; and

while maintaining the article and laser source in fixed positions impinging at least two pulses of laser energy on a surface of the article until the peripheral ridge of the crater shaped bump projects upwardly from the nominal surface of the article said predetermined height h_r.

5,631,409

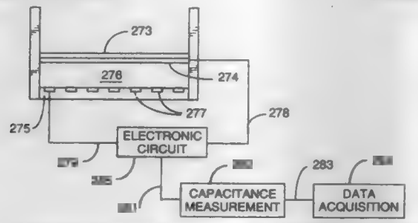
TORSIONAL RHEOMETER FOR GRANULAR MATERIALS SLURRIES AND GAS-SOLID MIXTURES AND RELATED METHODS

Chandrika Rajagopal; Kumbakonam R. Rajagopal, and Rattaya C. Yalamanchili, all of Allison Park, Pa., assignors to Viscoustech, Inc., Pittsburgh, Pa.

Division of Ser. No. 464,325, Jun. 5, 1995. This application Apr. 4, 1996, Ser. No. 627,541

Int. Cl.[6] G01N *11/14*

U.S. Cl. 73—54.35 **8 Claims**



1. Torsional rheometer apparatus for determining rheological properties of a specimen comprising

a stationary plate,

a rotatable plate substantially coaxially mounted with respect to said stationary plate,

said stationary plate and said rotatable plate being structured to receive said specimen therebetween,

motor means for effecting rotation of said rotatable plate,

said stationary plate having a flexible membrane having underlying electrically conductive surface and a rigid bottom member in spaced underlying relationship with respect to said flexible membrane,

said rigid bottom member having a plurality of electrically conductive members, and

electronic processing means receiving output from the said flexible membrane and said plurality of electrically conductive members in said rigid bottom element which function as a series of capacitors.

5,631,410

VIBRATING PROBE ATOMIC FORCE MICROSCOPE

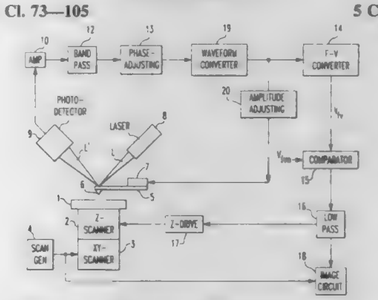
Shinichi Kitamura, Saitama, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Dec. 12, 1995, Ser. No. 570,758

Claims priority, application Japan, Dec. 12, 1994, 6-307737

Int. Cl.[6] G01B *5/28*

U.S. Cl. 73—105 **5 Claims**



1. A scanning probe microscope comprising:

a cantilever having one end fixed and another end to which a probe is attached;

a displacement detector for detecting displacement of said cantilever;

a waveform converter for converting an output signal from said displacement detector into a periodic pulse train waveform having a constant amplitude;

an amplitude-adjusting circuit for varying said amplitude of said waveform from said waveform converter; and

a means for vibrating said cantilever according to an output signal from said amplitude-adjusting circuit.

5,631,411

METHOD AND APPARATUS FOR ENGINE MONITORING

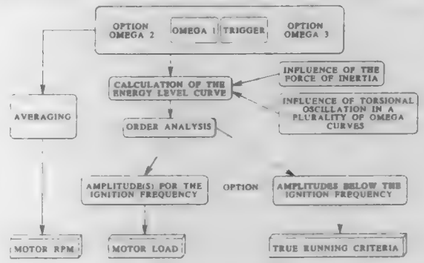
Klaus C. Harms; Hans-Michael Koegeler; Wilhelm Kunzfeld, and Herbert Schiffbaenker, all of Graz, Austria, assignors to AVL Gesellschaft fuer Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof. Dr. Dr. h.c. Hans List, Graz, Austria

Continuation of Ser. No. 175,428, Dec. 28, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 567,067

Claims priority, application Austria, Apr. 30, 1992, 895/92

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—117.3 **24 Claims**



1. A method for testing an internal combustion engine, whereby measurements of a rotation angle velocity that is dependent on a

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crank angle are continuously implemented and dimensional quantities for speed and torque are identified on a basis of an evaluation thereof, wherein an average oscillation amplitude corresponding to the ignition frequency of a total energy level is used as a dimensional quantity for torque, the total energy level is calculated from a momentary rotational angle velocity and from a momentary moment of inertia which are dependent on the crank angle and take into account a kinetic energy of oscillating masses of said engine.

5,631,412

APPARATUS AND METHOD FOR ESTIMATING ATMOSPHERIC PRESSURE IN AN INTERNAL COMBUSTION ENGINE

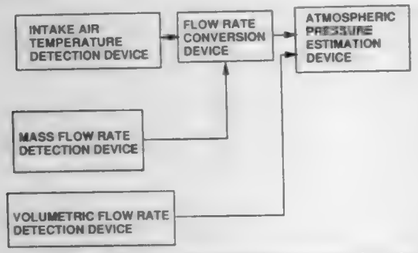
Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Kanagawa-ken, Japan

Filed Jan. 5, 1996, Ser. No. 583,407

Claims priority, application Japan, Jan. 6, 1995, 7-000539

Int. Cl.[6] G01M *19/00;5/00*

U.S. Cl. 73—118.2 **14 Claims**



1. An apparatus for estimating atmospheric pressure in an internal combustion engine, comprising:

mass flow rate detection means for detecting engine intake air flow rate as a mass flow rate;

volumetric flow rate detection means for detecting engine intake air flow rate as a volumetric flow rate;

intake air temperature detection means for detecting engine intake air temperature, flow rate conversion means for converting said mass flow rate into a volumetric flow rate based on said intake air temperature; and

atmospheric pressure estimation means for estimating atmospheric pressure based on a ratio of, the volumetric flow rate obtained by conversion with said flow rate conversion means, and the volumetric flow rate detected by said volumetric flow rate detection means, and outputting an atmospheric pressure signal,

wherein said atmospheric pressure estimation means respectively weighted averages the volumetric flow rate obtained by conversion with said flow rate conversion means, and the volumetric flow rate detected by said flow rate detection means, prior to obtaining the ratio thereof to five a previously set maximum allowable time constant.

5,631,413

FLUID HOLDUP TOOL AND FLOW METER FOR DEVIATED WELLS

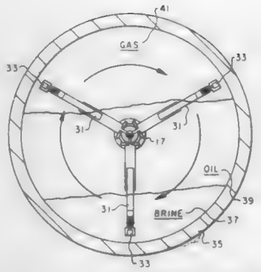
Allen R. Young, Arlington; Lucio N. Tello, and Thomas J. Blankinship, both of Fort Worth, all of Tex., assignors to Computalog USA, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 246,842, May 20, 1994, Pat. No. 5,531,112. This application Mar. 7, 1996, Ser. No. 610,813

Int. Cl.[6] E21B *47/10;* **G01N** *11/00;* **G01F** *1/00;* **G01R** *27/22*

U.S. Cl. 73—152.29 **18 Claims**

1. A production logging tool for use to determine flow velocities of a multiphase fluid flow through a cross-section of a well, said production logging tool comprising:



a tool housing having a tool axis which extends longitudinally through said tool housing;

an arm extensibly and rotatably mounted to said tool housing;

a flow sensor mounted to said arm and having a depth of investigation for measuring flow velocities of said multiphase fluid flow within localized regions of a cross section of said well which are proximate to said flow sensor;

means for rotating said arm to pass said flow sensor through a satellite path about said tool axis at different radial distances from and different angular displacements about said tool axis for moving said flow sensor between separate ones of said localized regions of said cross-section;

actuator means for selectively controlling said radial distance between said flow sensor and said tool housing;

means for monitoring said radial distances from and said angular displacements about said tool axis of said flow sensor; and

wherein said flow sensor measures said flow velocities within said separate ones of said localized regions of said cross-section for determining said flow velocities of a velocity profile of said multiphase fluid flow through said cross section of said well.

5,631,414

METHOD AND DEVICE FOR REMOTE DIAGNOSTICS OF OCEAN-ATMOSPHERE SYSTEM STATE

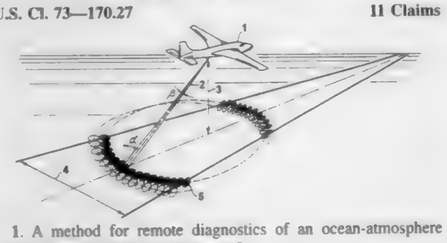
Igor V. Cherny, ul.Ramenki,d.25,korp.4,kv.1009, 117607 Moscow, Russian Federation

Filed Aug. 9, 1994, Ser. No. 287,847

Claims priority, application Russian Federation, Aug. 18, 1993, 93041426

Int. Cl.[6] G01W *1/00*

U.S. Cl. 73—170.27 **11 Claims**



1. A method for remote diagnostics of an ocean-atmosphere system state comprising the steps of:

concurrently measuring the upwelling microwave radiation of an ocean-atmosphere system at two operating frequencies, said operating frequencies being in the waveband between 20 GHz and 100 GHz and having a spectral interval within a range of 5% to 30%, said measuring using a viewing angle with respect to an ocean surface being in a range of 60 degrees to 80 degrees;

obtaining the brightness temperature of said upwelling microwave radiation of the ocean-atmosphere at at least said two operating frequencies in the waveband; and

determining specific spectral variations of the brightness temperature of the said upwelling microwave radiation of the ocean atmosphere system at said two operating frequencies on the waveband to classify the ocean-atmosphere system state.

5,631,415

AIR FLOW RATE MEASURING DEVICE

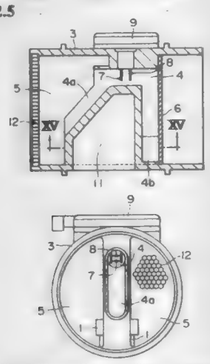
Shinya Igarashi; Hiroshi Hirayama; Chihiro Kobayashi, all of Katsuta; Mitsukuni Tsutsui, Ibaraki-ken, and Yukio Kato, Hitachi, all of Japan, assignors to Hitachi, Ltd., and Hitachi Automotive Engineering Co. Ltd., both of Japan

Division of Ser. No. 120,542, Sep. 14, 1993, Pat. No. 5,467,648. This application Aug. 14, 1995, Ser. No. 514,851

Claims priority, application Japan, Sep. 17, 1992, 4-247626; Sep. 18, 1992, 4-249504; Oct. 30, 1992, 4-292478; Mar. 18, 1993, 5-058371

Int. Cl.[6] G01F *1/68;5/00*

U.S. Cl. 73—202.5 **8 Claims**



1. An air flow rate measuring device, comprising:

a main air passage for intake air; and

a sub-air passage for allowing part of air flowing in said main air passage to pass therethrough, said sub-air passage being provided with a flow rate measuring portion therein;

said sub-air passage having an inlet bounded by an inlet surface in which said sub-air passage opens, said inlet surface comprising first and second stepped portions, said first stepped portion being offset from said second stepped portion in a direction of flow of air in said main air passage.

5,631,416

DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM

Heinz Rilling, Eberdingen, and Stefan Lehenberger, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00878, § 371 Date May 22, 1996, § 102(e) Date May 22, 1996, PCT Pub. No. WO96/03621, PCT Pub. Date Feb. 8, 1996

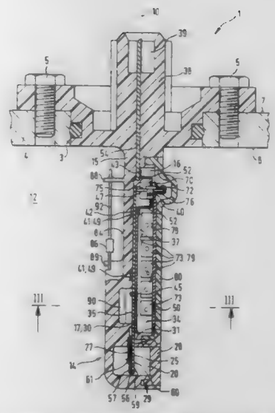
PCT Filed Jul. 6, 1995, Ser. No. 617,867

Claims priority, application Germany, Jul. 22, 1994, 44 26 101.2

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.22 **5 Claims**

1. A device for measuring a flow rate of an aspirated air medium in an internal combustion engine, comprising an elongated housing with a longitudinal axis, said housing has a measuring conduit through which the medium flows and in which a temperature-dependent sensor element is disposed, said sensor element has at least one temperature-dependent measuring resistor, and a flow temperature-dependent temperature resistor is provided to compensate for a temperature of the flowing medium, the temperature-dependent temperature resistor (**86**) is disposed outside the measurement conduit (**20**), relative to an outer face (**84**) of the housing (**15**) which extends approximately parallel to the longitudinal axis (**10**), said temperature-dependent temperature resistor (**86**) is spaced apart from the outer face (**84**), and the housing (**15**) on a side directed toward the temperature-dependent temperature resistor (**86**) is at right angles to the longitudinal axis (**10**) and extends in a region of the temperature-dependent temperature resistor (**86**) only as far as the outer face (**84**), electrical retaining means (**88**) are provided on the housing (**15**), and electrical connection wires (**92, 93**) of the temperature-resistor (**86**) are connected to the retaining means (**88**).



5,631,417

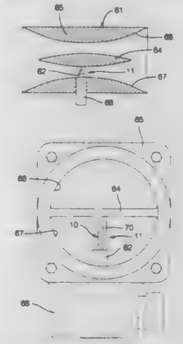
MASS AIR FLOW SENSOR STRUCTURE WITH BI-DIRECTIONAL AIRFLOW INCIDENT ON A SENSING DEVICE AT AN ANGLE

Charles R. Harrington, and Michel F. Sultan, both of Troy, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 6, 1995, Ser. No. 523,987

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.26 **18 Claims**



8. A mass air flow sensor comprising:

a sensing device with a substantially flat surface from a first point to a second point in a flow path, a heating element substantially centrally located between the first and second points, a first sensing element located between the first and second points on a first side of the heating element in a flow path direction, a second sensing element located between the first and second points on a second side of the heating element opposite the first side in the flow path direction, and wherein the sensing elements are responsive to heat generated by the heater that propagates upstream in the flow path towards one

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of the sensing elements and downstream in the flow path towards the other of the sensing elements; and

an air foil mounted a predetermined distance apart from the sensing device having an air foil surface that is convex and continuously curved along a direction parallel to the flow path between the first point and the second point facing the heating element and the first and second sensors, wherein the air foil surface deflects air flow past the sensing device to be incident on the sensing device at an angle, wherein the air foil is symmetrical with respect to a line perpendicular to the flat surface and intersecting a center of the heating element and wherein bi-directional air flow past the sensing device is substantially free of turbulence between the first and second points.

5,631,418

ELECTRICALLY DETECTED IMPEDANCE DETECTOR FOR THE MEASUREMENT OF PHYSICAL QUANTITIES, IN PARTICULAR OF TEMPERATURE OR HUMIDITY, AND PROCESS FOR THE MANUFACTURE OF SAID DETECTORS

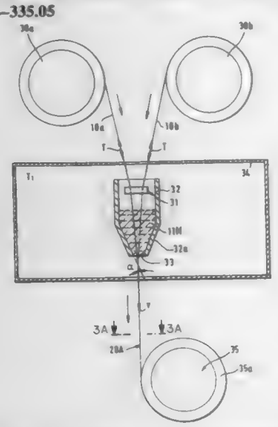
Ingmar Stuns, Helsinki; Simo Tammela, Espoo; Heikki Turtiainen, Vantaa, and Jorma Ponkala, Ylönkylä, all of Finland, assignors to Vaisala Oy, Vantaa, Finland

Filed Sep. 27, 1994, Ser. No. 312,886

Claims priority, application Finland, Sep. 29, 1993, 934268

Int. Cl.[6] **H01G** *7/00;5/01;* **G01K** *7/04;* **G01D** *21/02*

U.S. Cl. 73—335.05 **10 Claims**



1. Process for manufacturing electrical impedance detectors intended for measurement of physical quantities, in particular of temperature or relative humidity, the process comprising the steps of:

simultaneously drawing at least two conductive electrode wires (**10***a*, **10B**) in a continuous process as a carrier wire and a drawing means through an active coating material (**11**, **11P**) whose impedance properties are a function of the physical quantity to be measured, so as to form a continuous detector filament (**20**, **20H**, **20K**) in which the electrode wires are joined together by means of the coating material and the coating material remains between the electrode wires;

from the continuous detector filament, cutting off pieces of a length suitable for use as the impedance detectors; and

uncovering at least one end of the electrode wires (**10***a*, **10***b*; **10A**, **10W**) of the cut-off pieces so as to form electrical contact points for the impedance detectors.

5,631,419

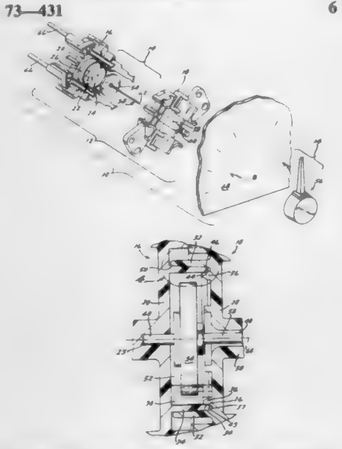
GAUGE ASSEMBLY

Lev A. Fruitman, Southfield, and Dale E. Thorsby, Riverview, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 17, 1996, Ser. No. 588,674

Int. Cl.[6] **G01L** *19/14*

U.S. Cl. 73—431 **6 Claims**



1. An instrument cluster gauge assembly, comprising:

a plastic housing having first and second housing elements, said first and second housing elements together including means defining a chamber;

a pointer assembly including a magnet rotatably disposed within said chamber, a pointer body positioned outside of said housing, and a shaft rotatably extending along an axis of rotation defined through one of said housing elements, said shaft coupling said pointer body to said magnet for rotative movement about said axis of rotation; and

a viscous damping fluid carried in said chamber for damping the rotational movement of said magnet;

said means defining a chamber including:

a receptacle defining:

a generally cylindrical receptacle side wall having an unrestricted circumferentially extending outer surface such that said receptacle side wall is free to flex radially outward and an inner surface;

a circumferentially extending receptacle mating surface on said inner surface; and

an end wall having a rib projecting therefrom and extending substantially in the same direction as said receptacle side wall and having a length substantially less than said receptacle side wall, said rib being spaced radially inward from said receptacle side wall to define a channel therebetween; and,

a plug defining:

a generally cylindrical plug side wall having an outer surface;

a circumferentially extending plug mating surface on said outer surface; and,

an end portion being received in said channel in sealing engagement therein;

said receptacle being placed in an interference overlapping sealing engagement with said plug and forming a labyrinthian seal between said plug mating surface and said receptacle mating surface, with said end portion of said plug side wall substantially restricting said plug side wall from radially inward movement resulting from said flexing of said receptacle side wall when said receptacle and said plug are placed in said interference overlapping sealing engagement.

5,631,420

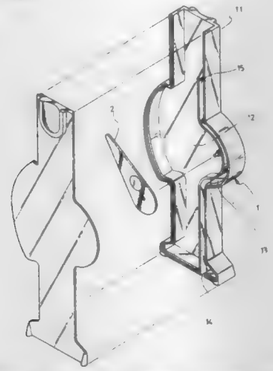
HYDROMETER

Tommy Chi-Kin Wong, 2/F,36 Lung Sum Avenue, Sheung Shui N.T., Hong Kong

Filed Jul. 10, 1996, Ser. No. 677,834

Int. Cl.[6] **G02N** *9/00*

U.S. Cl. 73—454 **1 Claim**



1. A hydrometer comprising a liquid container, said liquid container having a handle at a top side thereof, and a measuring chamber at a bottom side thereof for containing a liquid sample to be measured and having an upper limit liquid level defining an upper limit at which the measuring chamber may contain the liquid sample, and a pointer pivotally mounted inside said measuring chamber for indicating the specific gravity of the liquid sample contained in said measuring chamber, wherein said liquid container comprises a concealed liquid sample intake pipe, having a bottom open end extending out of the lowest side of said liquid container and a top open end located in said measuring chamber above said upper limit liquid level, for picking up the liquid sample to be measured at the bottom open end and delivering it to said measuring chamber through the top open end.

5,631,421

PIEZOELECTRIC ACCELERATION TRANSDUCER

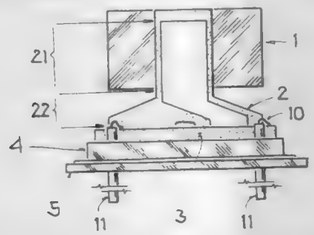
Thomas Ohgke; Dieter Nägele, both of Kirchheim; Gerald Brinks, Burgrieden; Manfred Weinacht, and Viktor Tiederle, both of Dettingen, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Nov. 7, 1995, Ser. No. 554,825

Claims priority, application Germany, Nov. 10, 1994, 44 40 078.0

Int. Cl.[6] **G01P** *15/09*

U.S. Cl. 73—514.34 **20 Claims**



1. Piezoelectric acceleration transducer comprising an assembly consisting of a flexible element which is made of a piezoelectric material and is provided with two external electrodes, and which is secured to a support, the assembly being mounted on a carrier plate, wherein:

a) the support consists of two nonconductive, plate-shaped supporting components, between which the flexible element is arranged;

b) the supporting components are connected mechanically to the carrier plate by mechanical points of contact in such a way that a principal axis of sensitivity of the flexible element lies in the same plane as the carrier plate;

c) the two supporting components are each provided with an electrically conductive coating in a respective area of contact with a respective external electrode of the flexible element;

d) to establish an electrical connection with the carrier plate, the electrically conductive coating on each of said supporting components extends to at least one of said mechanical points of contact between the supporting components and the carrier plate; and

e) the mechanical points of contact between the supporting components and the carrier plate are configured as electrical points of contact.

5,631,422

SENSOR COMPRISING MULTILAYER SUBSTRATE

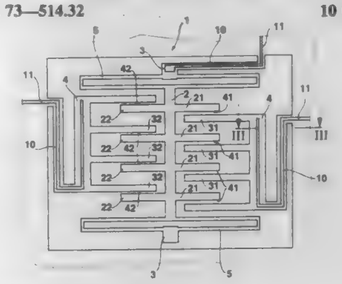
Peter Sulzberger, Treuchtlingen; Michael Offenberg, Tuebingen; Bernhard Elsner, Kornwestheim, and Markus Lutz, Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 30, 1995, Ser. No. 550,484

Claims priority, application Germany, Feb. 2, 1995, 195 03 236.5

Int. Cl.[6] **G01P** *15/125;* **H01G** *7/00*

U.S. Cl. 73—514.32 **10 Claims**



1. A sensor comprising:

a first silicon layer;

a sensor element including at least one electrode structured from the first silicon layer, the electrode having a first doping;

at least one connecting element structured from the first silicon layer, the connecting element having a second doping less than the first doping; and

at least one conductor track on the first silicon layer, the conductor track being routed over the connecting element and being electrically coupled to the sensor element for supplying an external signal.

5. The sensor according to claim 1, wherein:

the at least one electrode includes a plurality of first stationary electrodes, a plurality of second stationary electrodes, a plurality of first movable electrodes arranged opposite to the plurality of first stationary electrodes to form a first group of capacitors having a first capacitance, and a plurality of second movable electrodes arranged opposite to the plurality of second stationary electrodes to form a second group of capacitors having a second capacitance;

the first capacitance decreases when the second capacitance increases; and

the first capacitance increases when the second capacitance decreases.

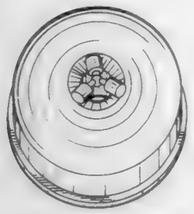
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5,631,423

METHOD FOR RESONANT MEASUREMENT

George W. Rhodes, Albuquerque, N.M., assignor to Quatro Corporation, Albuquerque, N.M.

Filed Mar. 25, 1995, Ser. No. 409,218
Int. Cl.[6] G01H 13/00
U.S. Cl. 73—579 15 Claims



1. A method for determination of surface conditions in objects comprising the steps of:

a. mathematically determining degenerate modes which are dependant only upon surface acoustic waves and which have degenerate resonant frequencies;

b. examining object resonance in at least one frequency region determined to exhibit degeneracy;

c. observing a deviation from determined degenerate resonances; and

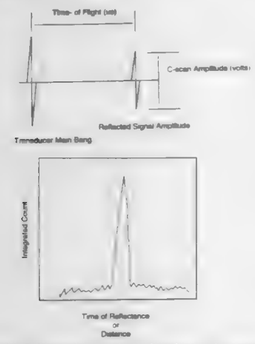
d. identifying objects which exhibit unacceptale deviations from the mathematically determined degenerate modes.

5,631,424

METHOD FOR ULTRASONIC EVALUATION OF MATERIALS USING TIME OF FLIGHT MEASUREMENTS

Edward J. Nieters, Rexford; Robert S. Gilmore, Burnt Hills, and Michael F. X. Gigliotti, Jr., Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 31, 1995, Ser. No. 509,679
Int. Cl.[6] G01N 29/04
U.S. Cl. 73—598 19 Claims



1. A method of detecting and evaluating microstructural features comprising regions of grain orientation or crystallographic texture, grain boundary orientation or grain size differential within a volume of a material having a microstructure comprising a plurality of randomly oriented grains defining a randomly oriented network of grain boundaries, comprising the steps of:

insonification of a plurality of locations within the volume of the material by using a transducing means to send an ultrasonic pulse through each location, whereby the ultrasonic pulse produces at each location a plurality of reflections characteristic of the microstructure of the material at that location, each reflection having a characteristic amplitude and time of flight;

detection of the amplitude and the time of flight for each of the plurality of reflections at each location;

identification of a time of flight (TOF_M) value of the reflection at each location having the largest amplitude;

storing information comprising the TOF_M value at each location and the associated location in an information storage means; and

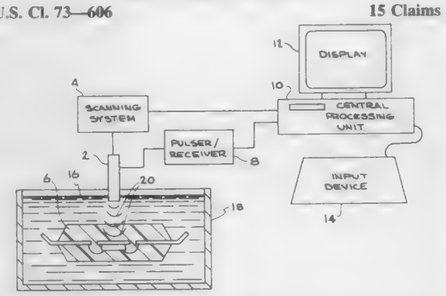
comparing the value of TOF_M at one location with the values of TOF_M at a plurality of other locations for the purpose of determining whether a region of adjacent locations exist having the same TOF_M, whereby a region of adjacent locations having the same values of TOF_M are indicative of grain orientation or grain boundary orientation within the material.

5,631,425

METHOD FOR IDENTIFYING MOLDING COMPOUND USING AN ACOUSTIC MICROSCOPE

Willy C. Wang, San Francisco, and Steve K. Sue, Richmond, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Mar. 7, 1996, Ser. No. 612,220
Int. Cl.[6] G01N 29/18;29/20
U.S. Cl. 73—606 15 Claims



1. A method for identifying a molding compound in an integrated circuit package comprising the steps of:

examining an integrated circuit package with an acoustic microscope;

determining a plurality of attributes of a molding compound in said integrated circuit package with the acoustic microscope; and

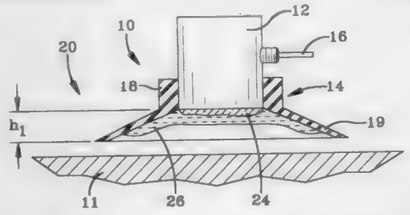
comparing the plurality of attributes of the molding compound in said package with attributes of known molding compounds to identify the molding compound of said package.

5,631,426

SENSORS FOR VIBRATION DETECTION

Shyh-Hua Jao, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 28, 1995, Ser. No. 519,902
Int. Cl.[6] G01H 1/00
U.S. Cl. 73—644 13 Claims



1. A sensor for measuring vibrations in an object comprising

(a) a pickup means for collecting vibration data of an object by contact with said object and converting said data to an electrical signal, and

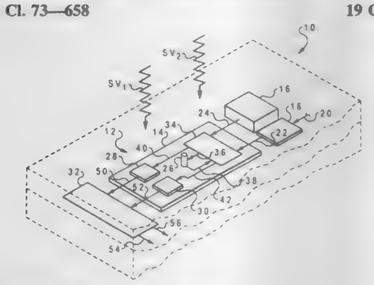
(b) an elastomeric material in the form of a housing wherein at least a portion of said housing forms at least one suction cup and provides means for vacuum attachment to the object being measured and wherein said housing has a hub portion for holding a pickup portion of the sensor, said hub having smaller dimensions than said pickup portion for holding said pickup means with a vacuum tight seal.

5,631,427

ACCELEROMETER-BASED SHOCK/VIBRATION TESTING APPARATUS AND ASSOCIATED METHODS FOR A PORTABLE COMPUTER

John W. Bridges, Pflugerville, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Jan. 16, 1996, Ser. No. 587,261
Int. Cl.[6] G01D 9/00;15/00
U.S. Cl. 73—658 19 Claims



1. Computer apparatus comprising:

a computer having a first power supply structure with an output from which electrical power from said first power supply structure may be transmitted during operational periods of the computer, and a second power supply structure with an output from which electrical power from said second power supply structure may be transmitted during non-operational periods of the computer;

an accelerometer carried by said computer and operative to sense shock and vibration loads to which said computer is subjected during said operational and non-operational periods thereof, said accelerometer having an electrical power supply input and an electrical measurement signal output;

first and second memory means carried by said computer and operative to separately receive and store shock and vibration load data for subsequent retrieval; and

switchover circuitry operative to automatically:

(1) couple said first power supply structure output to said accelerometer electrical power supply input, and to couple said accelerometer electrical measurement signal output to said first memory means, during said operational periods of said computer, and

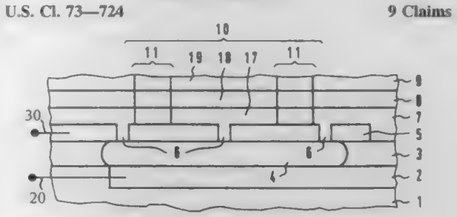
(2) couple said second power supply structure to said accelerometer electrical power supply input, and to couple said accelerometer electrical measurement signal output to said second memory means, during said non-operational periods of said computer.

5,631,428

CAPACITIVE SEMICONDUCTOR PRESSURE SENSOR

Ralf Catanescu, Bremen; Thomas Scheiter, and Christofer Hierold, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 22, 1995, Ser. No. 561,854
Claims priority, application Germany, Nov. 24, 1994, 44 41 908.2
Int. Cl.[6] G01L 9/12
U.S. Cl. 73—724 9 Claims



8. A semiconductor component pressure sensor, comprising:

an electrically conductive region;

a layer over the electrically conductive region defining a cavity;

an electrically conductive membrane layer overlying the cavity;

recesses in the membrane layer above the cavity;

a closure layer applied on the membrane layer;

said membrane layer being deformable so that given a change of pressure within a predetermined interval at a side of the membrane layer facing away from the cavity, the membrane layer can deflect so as to cause a change of electrical capacitance defined by the conductive region and the electrically conductive membrane layer;

electrical contacts respectively connected to the membrane layer and conductive region for measuring said change of electrical capacitance; and

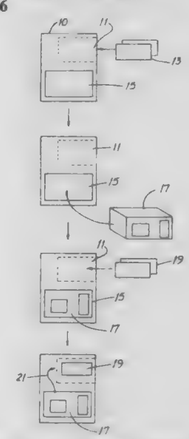
said membrane layer comprising metal.

5,631,429

METHOD AND APPARATUS RELATING TO TEST EQUIPMENT WITH HUMIDIFICATION CAPABILITY

Robert A. Cutright, Holland; Richard Walker, Hudsonville, and Wayne Walton, Holland, all of Mich., assignors to Venturedyne, Ltd., Milwaukee, Wis.

Filed Oct. 30, 1995, Ser. No. 550,463
Int. Cl.[6] G01N 17/00
U.S. Cl. 73—865.6 16 Claims



1. A method for testing electrical products and including the steps of:

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fabricating test equipment having an enclosure containing (a) a chamber for stress-testing products placed therein, (b) a vacant cavity for receiving a humidity module, and (c) a water vapor conduit in flow communication with the chamber;

installing the equipment in a product test facility;

stress-testing a first group of products placed in the chamber by changing the temperature of air around the products;

mounting the module in the cavity;

placing a second group of products in the chamber; and

circulating humidity-controlled air across the second group of products.

5,631,430

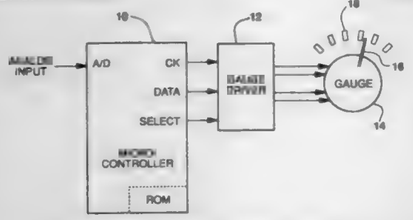
METHOD AND APPARATUS FOR ENHANCED GAUGE RESOLUTION

Douglas J. King, Flint, and Thomas J. Dolehanty, Gaines, both of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 24, 1995, Ser. No. 547,167

Int. Cl.[6] G01D *1/02*

U.S. Cl. 73—866.1 **10 Claims**



1. In a gauge having a limited resolution digital driver circuit limited to producing drive signals for discrete gauge positions, and a microcontroller for receiving an input signal and supplying drive data to the driver circuit, a method of controlling the gauge to points between the discrete positions comprising the steps of:

reading a desired gauge position from the input signal and expressing the position with a resolution greater than that of the gauge driver; and

energizing the driver circuit to alternately supply signals for the two discrete gauge positions nearest the desired position, whereby the signals are averaged by the gauge to achieve the desired gauge position.

5,631,431

PARTICULATE CaF_2 AGENT FOR IMPROVING THE MACHINABILITY OF SINTERED IRON-BASED POWDER

Owe Andersson, Viken, Sweden, assignor to Höganäs AB, Hoganas, Sweden

PCT No. PCT/SE93/00468, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24260, PCT Pub. Date Dec. 9, 1993

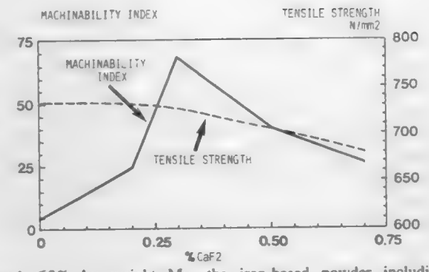
PCT Filed May 27, 1993, Ser. No. 343,504

Claims priority, application Sweden, May 27, 1992, 9201678

Int. Cl.[6] C22C *38/00*

U.S. Cl. 75—230 **14 Claims**

1. An iron-based powder composition essentially free from hard phase material for compacting and sintering into products having enhanced machinability, said composition comprising, in addition to iron, at least one of the alloying elements C, P, Cr, Mn, Cu, Ni



and ≦2% by weight Mo, the iron-based powder including 0.1–0.6% by weight of CaF_2 powder particles as agent for improving the machinability, the particles of the CaF_2 powder being unattached to graphite particles, the CaF_2 powder being optionally combined with one or more conventional machinability-improving agents and essentially no elementary sulfur being present in the agent(s) for improving the machinability of the sintered products.

5,631,432

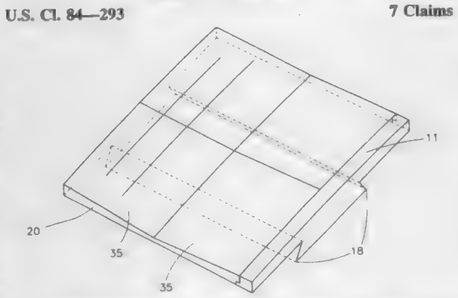
STRINGED INSTRUMENT

Gary O. Muncy, 128 Oak Dr., Kingston, Tenn. 37763

Filed Sep. 12, 1995, Ser. No. 527,006

Int. Cl.[6] G10D *3/00*

U.S. Cl. 84—293 **7 Claims**



1. A stringed instrument, said stringed instrument being adapted for mounting thereon a plurality of strings, said stringed instrument comprising:

a body;

a neck secured to said body and extending longitudinally therefrom, said neck defining a longitudinally disposed dovetail mortise; and

a fretboard positioned for underlying at least a portion of the plurality of strings mounted on said stringed instrument, said fretboard integrally defining a longitudinally disposed dovetail tenon for being slidably received in said dovetail mortise of said neck, said dovetail tenon defining a cross-section for being closely received in said dovetail mortise, whereby said fretboard is removably secured to said neck to facilitate ease of replacement, said fretboard being provide with a plurality of longitudinally spaced frets and defining playing surfaces between adjacent said frets, said playing surfaces defining a pair of connected facets, each said facet including a surface defining a continuous latitudinal are and extending substantially linearly from a high region of said playing surface proximate one of said adjacent frets to a low region where

said facets are connected proximate a midway point between said adjacent frets such that, in longitudinal cross-section, said pair of connected facets cooperatively define an obtuse angle.

5,631,433

KARAOKE MONITOR EXCLUDING UNNECESSARY INFORMATION FROM DISPLAY DURING PLAY TIME

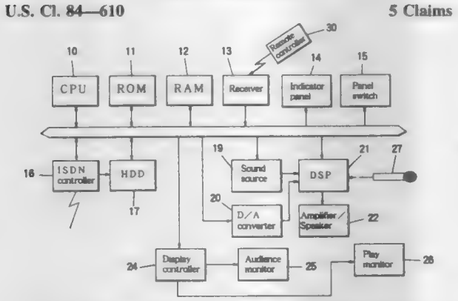
Toshiya Iida, and Hirokazu Kato, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 6, 1995, Ser. No. 553,887

Claims priority, application Japan, Nov. 8, 1994, 6-273388

Int. Cl.[6] G10H *1/36*

U.S. Cl. 84—610 **5 Claims**



1. A karaoke apparatus for sounding a karaoke accompaniment and displaying visual images of a karaoke performance, the karaoke apparatus comprising:

an audio generating device responsive to a request for generating an audio signal;

a sound device switchable from an inactive state to an active state for receiving the audio signal to provide a karaoke accompaniment corresponding to the request;

a video gathering device having a plurality of channels for generating a plurality of video signals, each of the video signals representing visual information to be transmitted through a corresponding channel, the visual information including at least a plurality of service items and a plurality of lyric items for the karaoke performance;

a channel selector device for selecting one of the plurality of channels; and

a monitor receptive of the selected channel for displaying images based upon the visual information corresponding to the selected channel such that, while the sound device is in the active state, the displayed image is based upon at least one of the lyric items exclusive of at least one of the service items, wherein

the channel selector device includes a first section operative when the sound device is in the inactive state for selecting a first video signal representative of visual information including the at least one service item and a second section operative when the sound device is in the active state for selecting a second video signal representative of visual information including the at least one lyric item exclusive of the at least one service item, whereby

the monitor displays the visual information including a necessary lyric item and excludes an unnecessary service item under the active state of the sound device.

5,631,434

FILTERING APPARATUS FOR AN ELECTRONIC MUSICAL INSTRUMENT

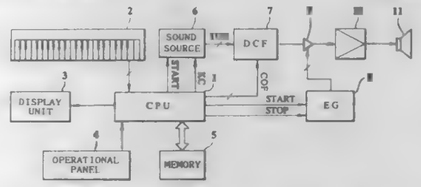
Toda Hiroyuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 325,542, Oct. 18, 1994, abandoned, which is a continuation of Ser. No. 81,069, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 593,683, Oct. 4, 1990, abandoned. This application Apr. 11, 1995, Ser. No. 420,232

Claims priority, application Japan, Oct. 11, 1989, 1-264469

Int. Cl.[6] G10H *1/02*

U.S. Cl. 84—661 **20 Claims**



1. A filtering apparatus for an electronic musical instrument comprising:

center frequency setting means for first setting a fundamental frequency, the center frequency setting means also setting, based upon an inputted keycode signal, a relative frequency that is a function of a plurality of keycodes, the center frequency setting means including an adder for calculating a center frequency which is a sum of the fundamental frequency and the relative frequency, the center frequency being used throughout a duration of a musical tone;

center frequency varying means for generating a relative center frequency which varies over a lapse of time, the relative center frequency representing a variation about the center frequency;

a filter characteristic adder for calculating a filter characteristic that includes a cutoff frequency determined by the sum of the center frequency and the relative center frequency to thereby implement a time-variant filter frequency characteristic having a cutoff frequency which changes about the center frequency over the lapse of time; and

digital controlled filter means for effecting a filter operation on a musical tone signal inputted thereto in accordance with the filter characteristic determined by the filter characteristic adder.

5,631,435

ELECTRO-MECHANICAL TREMOLO APPARATUS FOR AN ELECTRIC GUITAR

Eric Hutmacher, 1770 N. Green Valley Pkwy., Apt. 2612, Henderson, Nev. 89014

Filed Jan. 18, 1995, Ser. No. 370,824

Int. Cl.[6] G10D *3/00*; G10H *1/055*

U.S. Cl. 84—739 **3 Claims**

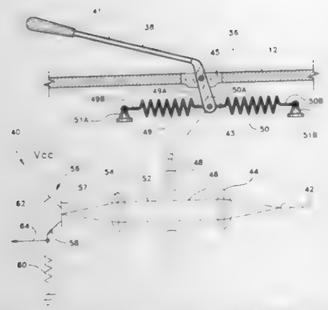
1. In a solid-body electric guitar of the type that has a body whereon a tremolo arm is pivotally mounted, the improvement comprising:

means for providing tactile feedback of the position of said tremolo arm;

a light source;

a photo-transistor having a photosensitive surface; and

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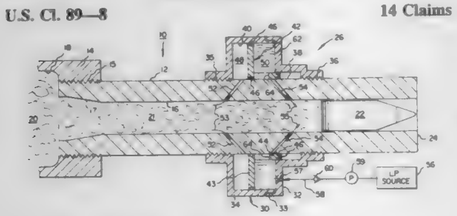
means coupled to said light source for focussing upon said photosensitive surface an amount of light that is an analog of the position of said tremolo arm.

5,631,436

GUN EQUIPPED WITH DOWN-BORE LIQUID PROPELLANT BOOSTER STAGE TO INCREASE PROJECTILE MUZZLE VELOCITY

Steven J. Brown, Pittsfield, Mass., and Robert A. Pate, Logan, Utah, assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 15, 1995, Ser. No. 491,052
Int. Cl.[6] F41F *1/00*
U.S. Cl. 89—8 **14 Claims**



1. A gun comprising, in combination:

a breech for receiving a projectile and a breech propellant charge;

an elongated gun barrel having a bore communicating at one end with the breech and terminating at a muzzle; and

a booster stage including:

a cannister equipped to the gun barrel down-bore from the breech to define a reservoir in fluid communication with the bore, said cannister including a cylindrical surface radially expanded from the bore to define an annular reservoir open to the bore; and

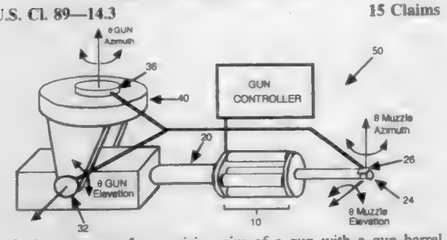
charging apparatus connected to a source of liquid propellant to introduce the liquid propellant into the reservoir tangentially to the cylindrical surface Such as to produce a toroidal flow of liquid propellant surrounding the bore for charging the reservoir with the liquid propellant for detonation by combustion gases generated by detonation of the breech propellant charge that propels the projectile down the bore.

5,631,437

GUN MUZZLE CONTROL SYSTEM USING BARREL MOUNTED ACTUATOR ASSEMBLY

Christopher LaVigna, Olney, Md.; Gilmer Blankenship, Washington, D.C., and Harry Kwatny, Elkins, Pa., assignors to Techno-Sciences, Inc., Lanham, Md.

Filed Jun. 28, 1996, Ser. No. 671,732
Int. Cl.[6] F41A *21/36;25/00*
U.S. Cl. 89—14.3 **15 Claims**



1. An apparatus for precision aim of a gun with a gun barrel having a longitudinal axis for firing a projectile comprising:

at least one bending actuator assembly wherein each assembly includes:

a first bracket member rigidly affixed to the gun barrel and for acting as a first fulcrum for bending the gun barrel;

a second bracket member rigidly affixed to the gun barrel at a location spaced along the longitudinal axis from the first bracket and for acting as a second fulcrum for flexing the barrel;

an actuator means connected between the first and second brackets for applying a force between the first and second brackets for generation of a bending moment in the gun barrel, and

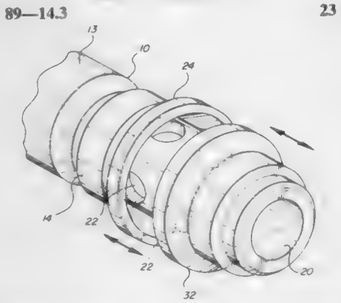
a muzzle sensory means attached at a muzzle portion of the gun for continuous sensing of the muzzle's i) displacement, ii) azimuth and iii) elevation angles; signals from the muzzle sensory means are connected to a feedback controller means for functions including control of the actuator assembly thereby compensating for the gun's i) barrel droop, ii) barrel whip, and iii) platform motions.

5,631,438

ADJUSTABLE GAS PRESSURE DEFLECTOR

Phillip C. Martel, 43551 Applewood, Canton, Mich. 48188

Filed Apr. 17, 1995, Ser. No. 423,764
Int. Cl.[6] F41A *21/00*
U.S. Cl. 89—14.3 **23 Claims**



1. An accuracy-improving gas pressure deflector system for use with a firearm muzzle brake, the muzzle brake having rearward and forward ends and including one or more vent apertures defining an elongated region of gas venting, the gas pressure deflector system comprising:

a first rear deflector mounted on an exterior surface of the muzzle brake in association with a rearward portion of the gas venting region for directing gas from the venting region forwardly;

a second front deflector mounted on an exterior surface of the muzzle brake in association with a forward portion of the gas venting region for directing gas from the venting region rearwardly;

the first and second deflectors being mounted on the muzzle brake in a manner permitting adjustable positioning along a longitudinal axis of the muzzle brake in order to adjust the spacing between the first and second deflectors;

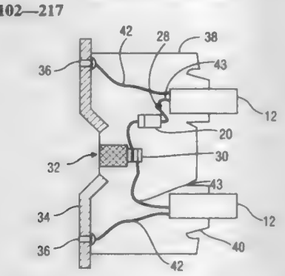
the deflectors further being slidingly mounted on the muzzle brake for axial adjustment and detachably secured by set screws which fix the deflectors in place on the muzzle brake when tightened against the muzzle brake to permit sliding movement of the deflectors along the muzzle brake when loosened.

5,631,439

MULTIPLE SQUIB ASSEMBLY

Bradley T. Sallee, Austin, and Beryl W. Cotton, III, Lexington, both of Tex., assignors to Tracor Aerospace, Inc., Austin, Tex.

Filed Jun. 7, 1995, Ser. No. 478,224
Int. Cl.[6] F42C *11/00*
U.S. Cl. 102—217 **15 Claims**



1. A multiple squib assembly for use in a chaff deployment system, the squib assembly comprising:

a brass base plate having an orifice formed therein;

a brass center contact positioned in the orifice in the base plate, said brass center contact and said orifice defining an insulative space therebetween;

a first squib and a second squib positioned in complementary relationship, each squib having a first end, a second end, a ground lead and a positive lead, the ground lead of each squib being connected to the base plate, and the positive lead of the first squib being connected to the center contact, and wherein each of staid second ends of said first and second squibs are insertable for insertion into a chaff chamber of said chaff deployment system;

a zener diode directly coupled in series between the positive lead of the second squib and the center contact; and

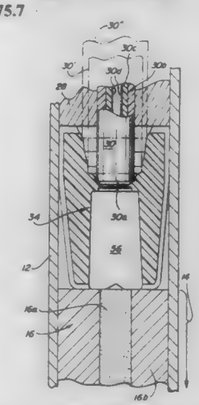
potting material engaging and retaining the first ends of said first and second squibs, the base plate, the center contact, the ground leads, the positive leads, and the zener diode, said potting material being shaped to form a first seal around said first squib and a second seal around said second squib, each of said first and second seals sealably insertable into a chaff chamber of said chaff deployment system, and wherein said potting material is disposed in said insulative space so as to insulate said brass center contact from said base plate.

5,631,440

UNIVERSAL ISOLATION MEMBER AND NON-ELECTRIC DETONATOR CAP INCLUDING THE SAME

Gary R. Thureson, Avon; Eric R. Davis, Torrington; Ernest L. Gladden, Granby, and Alvaro Zappalorti, Avon, all of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Continuation of Ser. No. 327,200, Oct. 21, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 606,224
Int. Cl.[6] C06C *5/06*
U.S. Cl. 102—275.7 **22 Claims**



1. An isolation member for positioning the signal-emitting end of a non-electric signal transmission line within the shell of a detonator cap comprises:

a substantially cylindrical body dimensioned and configured to be received within the shell of the detonator cap and having an input end, an output end and an interior passageway extending through the body for transmission therethrough of an initiation signal from the input end to the output end of the body, the interior passageway defining a positioning region at the input end of the body and a discharge port at the output end of the body;

wherein the positioning region comprises an entry mouth and a plurality of axially spaced-apart interior shoulders located between the entry mouth and the discharge port including two stepped interior shoulders, each interior shoulder being of lesser diameter than the preceding interior shoulder as sensed moving from the input end towards the output end of the body, so that the interior shoulders are respectively capable of receiving and seating thereon, at different axial spacings from the discharge port, signal transmission lines of different outside diameters.

5,631,441

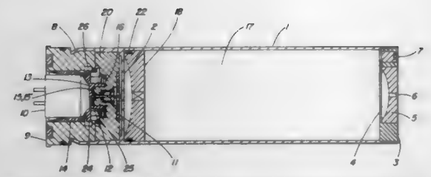
XDM PYROPHORIC COUNTERMEASURE FLARE

Paul Brière; Michel St-Onge; André Roy; Bruno Paradis, and Louis Légaré , all of Québec, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Apr. 2, 1996, Ser. No. 626,453
Int. Cl.[6] F42B *4/26*
U.S. Cl. 102—336 **20 Claims**

1. A decoy flare for infrared (IR) seeking missiles comprising a tubular outer shell with a first rupturing disc adjacent to and closing a rear end of the outer shell and a cover member with a central second rupturing disc sealing another end of the outer shell, a nozzle cap with a nozzle being attached to the cover member adjacent an outer surface of the second rupturing disc, the nozzle being located in front of that outer surface, the outer shell and cover member forming a container for a pyrophoric liquid with a movable closure in the tubular outer shell being initially located

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adjacent the first rupturing disc between pyrophoric liquid in the container and the first rupturing disc; the flare having a first holder for a gas generating means with that holder being connected in sealed relationship to said container in a position to locate the gas generating means near an outer surface of the first rupturing disc and form a gas generating chamber between the first rupturing disc and said first holder, the first holder being provided with an initiating means to activate said gas generating means and a sealing means to prevent gases generated by the gas generating means from exiting via said first holder when the initiating means is activated; the flare having a base portion, a means for attaching the base portion to the tubular outer shell and to separate the base from the outer shell when the flare is activated, the base portion forming a further holder for a means to activate said initiating means and then the gas generating means wherein said movable closure is movable towards said nozzle under pressure generated by the gas generating means upon rupture of the first rupturing disc under gas pressure generated in said chamber and movement of the closure transfers the pressure to said second rupturing disc to rupture the second rupturing disc and eject pyrophoric liquid through said nozzle.

5,631,442

MISSILE HAVING A PIVOTAL WARHEAD

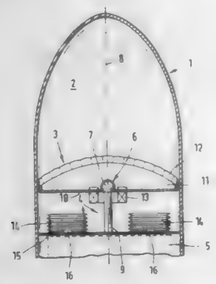
Wilfried Becker, Düsseldorf; Dirk Kilfitt, Velbert, and Werner Grosswendt, Ratingen, all of Germany, assignors to Rheinmetall Industrie GmbH, Ratingen, Germany

Filed May 1, 1996, Ser. No. 641,642

Claims priority, application Germany, May 4, 1995, 195 16 341.9

Int. Cl.[6] F42B *12/20*

U.S. Cl. 102—475 **7 Claims**



1. A missile having a longitudinal axis and a frontal portion defining an inner space, comprising

(a) a warhead accommodated in said inner space;

(b) a ball joint being in alignment with said longitudinal axis and pivotally supporting said warhead;

(c) an aiming device for placing said warhead into a desired pivotal orientation; said aiming device including

(1) a plurality of inflatable vessels arranged axially adjacent said warhead in a distribution about said longitudinal axis; each said vessel having a first end oriented toward said warhead and a second end oriented away therefrom; each said vessel having a deflated state and an inflated state;

(2) a disk supporting said vessels by engagement with said second ends thereof;

(3) a separate gas generator coupled to each said vessel for charging the vessel with a gas to place the vessel into said inflated state; in the inflated state each vessel exerting a torque on said warhead about said ball joint by an engagement between said first end of said vessel and said warhead; and

(d) an electronic control system accommodated in said inner space; said electronic control system being connected to each said gas generator for actuating a selected said gas generator to place said warhead into a desired inclined orientation relative to said longitudinal axis.

5,631,443

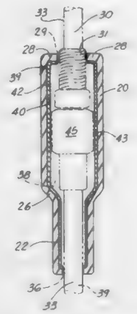
INTERFERENCE SUPPRESSING CABLE BOOT ASSEMBLY

James M. Scrimpshire, 141 Fairmont, Pearl, Miss. 39208, and Rudolph D. Sullivan, Jr., 475 Pineview La., Brandon, Miss. 39042

Filed May 30, 1995, Ser. No. 453,754

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 R **14 Claims**



1. An assembly for preventing electromagnetic interference in cable connections, comprising:

a) a generally flexible one-piece assembly body, having first and second end portions;

b) each of said end portions having an opening therethrough for accommodating a first cable connecting to a connector, the end portions forming a seal between the assembly body and the first cable and the connector;

c) a cavity within the assembly body for housing the connection between said first cable and said connector;

d) a metal-based lining positioned along an interior surface of a wall of the assembly body within the cavity for preventing ingress and egress of radiation from the connection between said first cable and said connector.

5,631,444

CABLE COUPLING FOR GROUNDING AN INTERNAL LIGHTNING PROTECTOR DEVICE

Peter Rook, Harsefeld, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

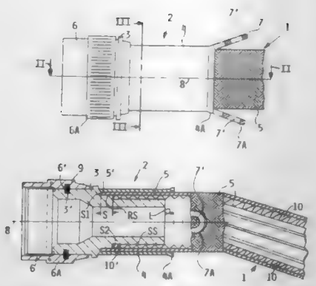
Continuation-in-part of Ser. No. 56,254, Apr. 30, 1993, Pat. No. 5,418,330. This application Apr. 12, 1995, Ser. No. 421,362

Claims priority, application Germany, May 1, 1992, 42 14 508.2

Int. Cl.[6] H02G *15/08*

U.S. Cl. 174—78 **14 Claims**

1. A cable and cable connector combination comprising an electrical cable, an electrically conducting cable casing enclosing said electrical cable, a cable connector, a device for grounding said cable casing for protecting said combination against lightning, said



grounding device comprising an electrically conducting grounding sleeve electrically contacting said cable casing and said cable connector for grounding said cable casing and said cable connector, and at least one grounding lug forming an integral part of said electrically conducting grounding sleeve so that said electrically conducting grounding sleeve and said grounding lug form together a one-piece electrical conductor, said grounding lug comprising means for electrically connecting a grounding conductor to said cable casing through said one-piece electrical conductor, and wherein said cable connector comprises a hollow support body of electrically conducting material arranged inside said electrically conducting grounding sleeve, said support body having a coupling end and an internal end, surrounded by said electrically conducting cable casing which in turn is surrounded by said electrically conducting grounding sleeve to clamp said electrically conducting cable casing between said support body and said electrically conducting grounding sleeve, said combination further comprising an electrically insulating protective hose enclosing said cable and surrounded by said electrically conducting cable casing formed as an electrically conducting wire mesh webbing surrounding said protective hose.

5,631,445

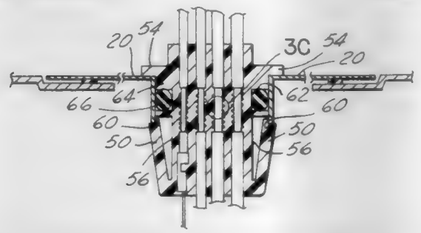
AUTOMOTIVE FUEL TANK ELECTRICAL FITTING

Alan M. Herster, Beverly Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 7, 1994, Ser. No. 319,693

Int. Cl.[6] H02G *3/22*

U.S. Cl. 174—151 **11 Claims**



1. A sealed electrical fitting for wires passing through an opening in a fuel tank, comprising:

(1) a chamberless, substantially solid plug adapted to be fitted into the opening;

(2) a plurality of unbroken electrical wires passing through a corresponding plurality of bores extending through the plug and defining a plurality of pores therebetween, each of the plurality of wires having:

(i) two insulated sections with insulation thereon; and

(ii) a center section stripped of the insulation and positioned between the two sections within one of the plurality of bores in the plug;

(3) means for sealing the plurality of pores between the plurality of wires and the plug; and

(4) means for retaining the plug to the fuel tank.

5,631,446

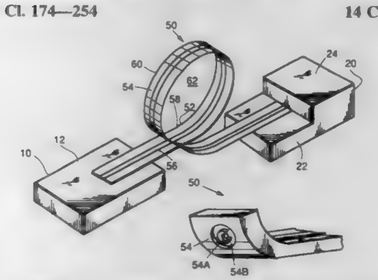
MICROSTRIP FLEXIBLE PRINTED WIRING BOARD INTERCONNECT LINE

Clifton Quan, Arcadia, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 485,067

Int. Cl.[6] H05K *1/14*

U.S. Cl. 174—254 **14 Claims**



1. Apparatus for electrically interconnecting first and second strip transmission line assemblies located on first and second dielectric substrates, comprising:

a microstrip flexible transmission line, said flexible line including an elongated thin flexible dielectric layer having first and second opposed surfaces;

an electrically conductive ground plane layer formed on said first surface;

an electrically conductive microstrip conductor formed on said second dielectric surface;

first interconnection means for interconnecting a first end of said flexible line to said first strip transmission line assembly, wherein said first strip transmission line assembly includes a first dielectric substrate, a first conductor formed on a first surface of said first substrate, and a first ground plane layer formed on a second surface of said first substrate, wherein said first interconnection means includes,

(i) means for forming a first electrical interconnection between said first conductor and said microstrip conductor,

(ii) means for forming a second electrical interconnection between said first ground plane layer of said first strip transmission line assembly and said ground plane of said conductive mocrostrip line of said flexible line,

(iii) an open region defined in said mocrostrip ground plane layer, said open region free of conductive layer material, said open region separating said ground plane layer from a first conductive pad formed on said first surface,

(iv) a first conductive plated through hole formed through said thin dielectric layer and interconnecting said microstrip conductor and said first conductive pad said first conductive pad in electronic connection with said first conductor,

(v) a second conductive plated through hole formed through said first substrate between said ground plane layer and a second conductive pad formed on said first surface of said first substrate, said second conductive pad in electrical conduction with said ground plane of said microstrip flexible line;

wherein said first interconnection means provides surface mount attachment of said first end of said flexible line to a surface defined by said first strip transmission line assembly and surface mount attachment of said ground plane of said microstrip flexible line to an exposed surface defined by said first strip transmission line assembly; and

second interconnection means for interconnecting a second end of said flexible line to said second strip transmission line assembly.

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5,631,447

USES OF UNIAXIALLY ELECTRICALLY CONDUCTIVE ARTICLES

Nicholas J. G. Smith, Cricklade; Michael J. Ludden, Swindon; Peter Nyholm, Swindon, and Paul J. Gibney, Swindon, all of England, assignors to Raychem Limited, Swindon, England

Continuation of Ser. No. 173,602, Dec. 27, 1993, abandoned, which is a continuation of Ser. No. 548,963, Feb. 26, 1991, abandoned. This application Jan. 3, 1995, Ser. No. 368,256

Claims priority, application United Kingdom, Feb. 5, 1988, 8802565; Jun. 29, 1988, 8815447; Aug. 22, 1988, 8819895; Sep. 30, 1988, 8823053; Dec. 2, 1988, 8828245

Int. Cl.[6] **H05K** *1/00*

U.S. Cl. 174—260 **27 Claims**



1. An electrically conductive article comprising electrically insulating sheet material having first and second opposed main sheet surface regions with through-holes extending between the opposed main sheet surface regions and electrically conductive material providing electrically separate conductive paths close-fitting within the through-holes in the sheet material and extending substantially only between the opposed main surface regions thereof, wherein the conductive material adjacent to the first main sheet surface region projects beyond the first main sheet surface region and the projecting conductive material is overplated with metal such that the conductive material at one end of the said paths is bondable at a temperature lower than the minimum bonding temperature of the conductive material at the other end of the said paths.

5,631,448

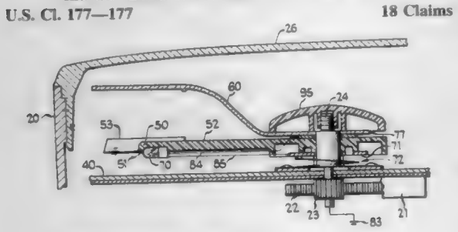
WEIGHING APPARATUS INCLUDING A MAGNIFIED, ILLUMINATED, MOVING INDICATOR

A. Jay Rabinowitz, Northbrook, and Ivan Lestan, Winthrop Harbor, both of Ill., assignors to Health O meter, Inc., Bridgeview, Ill.

Filed Jan. 14, 1994, Ser. No. 182,800

Int. Cl.[6] **G01G** *23/30;* **G01D** *11/28;* **H01H** *9/00*

U.S. Cl. 177—177 **18 Claims**



1. A weighing apparatus comprising:

a housing;

a weighing mechanism carried by the housing:

the housing having a viewing region;

a load receiving platform operatively associate with the weighing mechanism for receiving a load to be weighed;

a dial, including a face associated with the viewing region, the face of the dial bearing indicia for indicating the weight of the load received by the platform;

indicator means for moving relative to the dial in response to the weight of the load received by the platform and for providing, in cooperation with the weighing mechanism and the indicia of the dial, an indication corresponding to the weight of the load; and

magnifying means operatively associated with and movable with the indicator means for magnifying only a limited portion of the face of the dial in proximity to the indicator means.

5,631,449

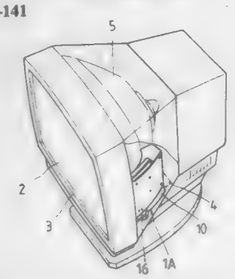
AUDIO TRANSMISSION DEVICE FOR MOUNTING IN A MONITOR OF A COMPUTER SYSTEM

Wen-Pin Wang, Taoyuan, Taiwan, assignor to Delta Electronics, Inc., Taoyuan, Taiwan

Filed Nov. 13, 1995, Ser. No. 555,862

Int. Cl.[6] **H05K** *5/00*

U.S. Cl. 181—141 **4 Claims**



1. An audio transmission device for mounting in a monitor of a computer system, comprising a pair of symmetric frameworks mounted behind a front frame of said monitor at two lower or upper corners thereof so that a distance left between said pair of frameworks is about a width of a system board disposed inside said monitor, said frameworks each further comprising a fixing arm being formed at an inner side with a longitudinal groove which has a width slightly larger than a thickness of said system board to clamp said system board between said pair of frameworks, a connecting arm extended from one side of said fixing arm, a resonant cabinet connected to said fixing arm via said connecting arm, and shock-absorbing arms extended from two side walls of said resonant cabinet for locking to said front frame of said monitor, said resonant cabinet being partitioned inside it to form a high-tone and a low-tone guide paths, said high-tone guide path being formed at a base portion with supporting grooves for a speaker to mount thereon, and said fixing arm each being provided at an extended end with locating means to engage with a fixed point provided behind said front frame of said monitor and thereby fixing said framework to said front frame.

5,631,450

MEGAPHONE

Hiromasa Itakura, Minamimachi 18, Oaza Kunotsubo, Nishiharu-cho, Nishikasugai-gun, Aichi-ken 481, Japan

Filed Mar. 2, 1995, Ser. No. 399,377

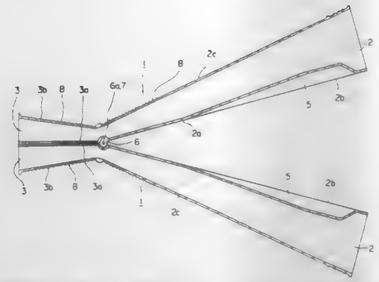
Claims priority, application Japan, Mar. 7, 1994, 6-064495

Int. Cl.[6] **G10K** *11/00*

U.S. Cl. 181—189 **9 Claims**

1. A megaphone comprising:

a pair of hollow bodies which include a connecting portion connected therebetween such that said hollow bodies are movably connected together, said hollow bodies being pivotal away from and toward each other to open and close freely, each of said hollow bodies including a hemiconical main part which is defined on one side by a flat part that extends longitudinally between opposite ends of said hemiconical main part, each said hemiconical main part including an



indented tuning part which is formed by denting the center of said flat part of each said hemiconical main part such that a level face of said flat part is disposed around the tuning part.

5,631,451

DEVICE FOR REDUCING NOISE PRODUCED BY AUTOMOTIVE VEHICLE COMPONENTS

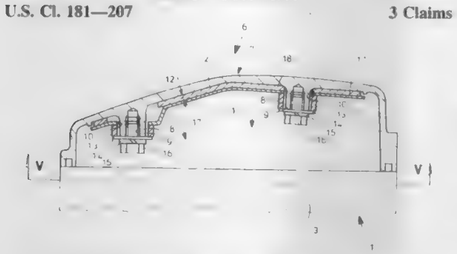
Hisaki Torisaka; Hideyuki Kakizawa; Ryutaro Shimogama, and Koji Shoyama, all of Hino, Japan, assignors to Hino Jidosha Kogyo Kabushiki Kaisha, Hino, Japan

Continuation of Ser. No. 761,239, Sep. 17, 1991, abandoned. This application May 20, 1993, Ser. No. 64,352

Claims priority, application Japan, Feb. 4, 1991, 3-010575 U

Int. Cl.[6] **F16F** *15/00*

U.S. Cl. 181—207 **3 Claims**



1. A device for reducing noise from a source of noise such as a cover for an oil pan of an automotive vehicle component comprising a retaining plate disposed over and spaced apart from a vibration loop of said cover, bolts releasably connecting said plate to said cover for preventing movement of said plate away from said cover, and a sheet-like elastic member compressedly interposed between said cover and said retaining plate, said plate having the sole function of retaining said sheet-like elastic member in its position of use.

5,631,452

SYSTEM FOR POSITION LOSS RECOVERY FOR AN ELEVATOR CAR

Eric K. Jamieson, Farmington; Christopher S. Pietrzykowski, Avon, and Jeffrey M. Izard, Bolton, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 18, 1994, Ser. No. 292,645

Int. Cl.[6] **B66B** *3/02*

U.S. Cl. 187—394 **21 Claims**

1. A system for position loss recovery for an elevator car; said system comprising:

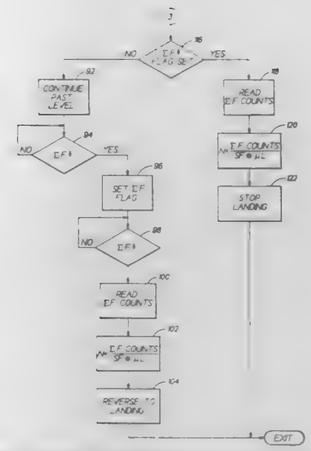
signal generating means for generating signals indicative of the distance travelled by an elevator car within a hoistway;

floor location means, disposed within said hoistway, for indicating each floor location;

floor identifying means, disposed within said hoistway, for uniquely identifying each floor location, said floor identifying means including identification means having a length that is uniquely associated with a respective floor;

sensing means, affixed to said elevator car, for separately sensing said floor location means and said floor identifying means; and

processing means for processing signals from said signal generating means and signals from said sensing means to determine an exact floor location of said elevator car.



5,631,453

MULTI-WAY FLIPPING SWITCH

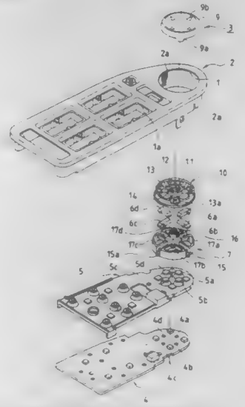
Takuya Maeda, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 8, 1995, Ser. No. 437,199

Claims priority, application Japan, May 12, 1994, 6-098690

Int. Cl.[6] **H01H** *25/04*

U.S. Cl. 200—6 A **6 Claims**



1. A multi-way flipping switch comprising:

a housing having an opening;

an operating member partly protruding through the opening and pivotally retained so as to be pivotable in a plurality of directions;

a base plate on which a plurality of stationary contacts are arranged;

a click rubber member having a plurality of hollow protrusions, each hollow protrusion being located over a corresponding

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one of the plurality of stationary contacts and having an end portion protruding toward the operating member;

a plurality of movable contacts, each movable contact respectively provided on an inner surface of an end portion of a corresponding one of the hollow protrusions; and

a plurality of rotating members for transmitting an operational force of the operating member to outer surfaces of the hollow protrusions, each of the rotating members being rotatable around a fulcrum and having a free end supported by an outer surface of an associated one of the hollow protrusions of the click rubber member,

wherein the operating member includes a plurality of driving sections, each driving section contacting an associated rotating member such that when the operating member pivots in a predetermined direction, the driving section forces the free end of the associated rotating member into an associated hollow protrusion, thereby collapsing the hollow protrusion, each driving section being positioned to contact an associated rotating member at a position between the fulcrum and the free end of the rotating member which presses the associated hollow protrusion.

5,631,454

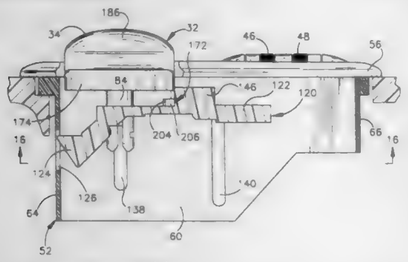
SWITCH AND INSTRUMENT PANEL INTERLOCK LATCH CONTROLLED BY SWITCH ACTUATOR

Larry P. Hubacher, Farmington Hills; John H. Montag, Macomb, both of Mich., and James F. Clark, Newport, N.C., assignors to TRW Inc., Lyndhurst, Ohio

Filed Sep. 27, 1995, Ser. No. 534,327

Int. Cl.° H01H *9/20*

U.S. Cl. 200—50.01 **61 Claims**



1. An apparatus comprising:

a switch assembly to be located in an instrument panel and actuatable between an actuated condition and an unactuated condition;

a housing for said switch assembly;

a latch assembly connected with said housing and operable between an engaged condition retaining said housing in the instrument panel and a disengaged condition in which said latch assembly is ineffective to retain said housing in the instrument panel; and

an actuator member connected with said switch assembly and movable along an actuation path to actuate said switch assembly between the actuated and the unactuated conditions, said actuator member being movable along the actuation path to operate said latch assembly between the engaged and disengaged conditions.

5,631,455

PENDULUM ACTUATED SWITCH

Richard A. Stenta, 5405 Round Hill La., Raleigh, N.C. 27604

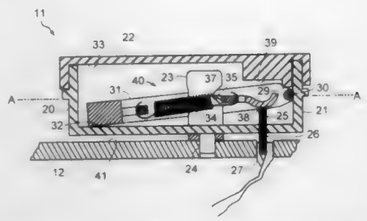
Filed Aug. 11, 1995, Ser. No. 514,154

Int. Cl.° H01H *35/02:35/14*

U.S. Cl. 200—61.48 **5 Claims**

1. Apparatus including

a pendulum with an axle.



a hinged structure supported by a hinge, said hinge having a hinge axis oriented to have a horizontal projection, said hinged structure rotating on said hinge over a range extending from a first limit position to a second limit position,

said hinged structure including

bearing structure holding said axle while permitting rotation of said pendulum,

a first stop bumper limiting rotation of said pendulum on said axle in a first direction and a second stop bumper limiting rotation of said pendulum on said axle in a second direction opposite to said first direction,

a first terminal affixed to said hinged structure with a portion thereof connectable to electrical circuitry,

a second terminal affixed to said hinged structure with a portion thereof connectable to electrical circuitry,

mechanism connected to said pendulum and said hinged structure which electrically connects said first terminal to said second terminal when said pendulum is rotated against said first stop bumper and disconnects said first terminal from said second terminal when said pendulum is rotated against said second stop bumper,

said hinge axis, said first stop bumper, and said second stop bumper being positioned and oriented so that said first bumper is below said second bumper when said hinged structure is at said first limit position and said first bumper is above said second bumper when said hinged structure is at said second limit position.

5,631,456

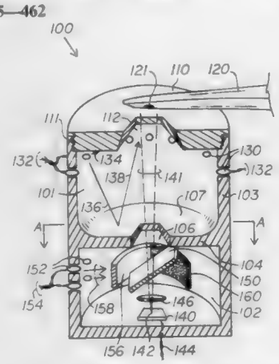
REFLECTION CONTROL APPARATUS

Karen L. Kost; William J. Fry; Timothy J. Lock, all of Ann Arbor, and Michael S. Davis, South Lyon, all of Mich., assignors to Lynn Ltd., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 203,546, Mar. 1, 1994, Pat. No. 5,554,841. This application Mar. 3, 1995, Ser. No. 397,777

Int. Cl.° G06K *7/10*

U.S. Cl. 235—462 **15 Claims**



1. A device for controlling reflections off of an information-bearing surface, comprising:

a chamber having a first opening through which to view the surface and a second opening to output an image of the surface, the image potentially including reflections associated with the interior of the chamber and the second opening,

means for uniformly illuminating the chamber to at least control the reflections associated with the interior of the chamber;

image sensing means supported outside the second opening to receive the image of the surface; and

means for equalizing the reflections associated with the second opening with those associated with the interior of the chamber, including:

a beam splitter supported in an optical path between the second opening and the image sensing means, the beam splitter having a first surface facing generally toward the second opening and a second surface facing generally toward the image sensing means; and

means for controllably illuminating the first surface of the beam splitter.

5,631,457

TWO-DIMENSIONAL SYMBOL DATA READ APPARATUS

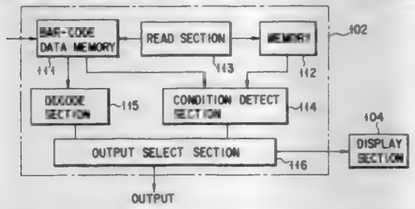
Yoshio Fukuda; Hisakatsu Tanaka, and Masahiro Takizawa, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,669

Claims priority, application Japan, Aug. 17, 1994, 6-193322; Mar. 3, 1995, 7-044349

Int. Cl.° G06K *7/10*

U.S. Cl. 235—462 **17 Claims**



1. A symbol data read apparatus comprising:

image pick-up means for picking up a bar-code symbol as a two-dimensional image, said bar-code symbol including at least one bar and at least one space;

memory means for storing the two-dimensional image picked up by the image pick-up means as bar-code symbol data;

condition detect means for detecting a bar-code condition of the bar-code symbol from the bar-code symbol data stored in the memory means;

decode means for performing decode-processing to obtain original bar-code symbol data on the basis of bar-code condition data detected by the condition detect means and the bar-code symbol data stored in the memory means; and

output select means for selectively outputting at least bar-code condition data.

5,631,458

RANGE FINDER

Toshiaki Nakahira, Yokohama; Susumu Iguchi; Kazumasa Aoki, both of Kawasaki, and Yoshihiko Shimura, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,538

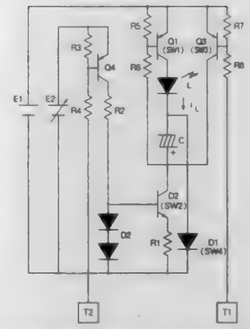
Claims priority, application Japan, Nov. 12, 1994, 6-303215

Int. Cl.° H01J *40/14*

U.S. Cl. 250—214 P **11 Claims**

1. A range finder for obtaining measured distance information by emitting light to a photographed subject and detecting reflected light from the photographed subject in synchronization with the light emission;

the range finder comprising:



a direct current power source of a low voltage;

a series circuit constructed by a light emitting element and a capacitor for light emission;

first and second switching means respectively connected between both ends of said direct current power source and the series circuit constructed by said light emitting element and the capacitor for light emission;

the first and second switching means being simultaneously turned on so that a discharging electric current flows from said capacitor for light emission in a first direction;

third and fourth switching means respectively connected between both the ends of said direct current power source and the capacitor for light emission of said series circuit;

the third and fourth switching means being simultaneously turned on so that a charging electric current flows to said capacitor for light emission in a second direction different from said first direction;

constant current control means for operating the series circuit of the light emitting element and the capacitor for light emission with a constant electric current when said first and second switching means are turned on; and

light emitting control means for charging the capacitor for light emission by turning off said first and second switching means and turning on said third and fourth switching means before light is emitted from said light emitting element;

the light emitting control means applying a sum of a charging voltage of said capacitor for light emission and a voltage of said direct current power source to said light emitting element by turning on said first and second switching means and turning off said third and fourth switching means when light is emitted from said light emitting element; and

the light emitting control means emitting light from said light emitting element with a constant electric current provided by said constant current control means.

5,631,459

DEVICE FOR GENERATING IMAGES BY LUMINESCENCE EFFECT

Paul de Groot, St. Ismier, France, assignor to Thomson Tubes Electroniques, Velizy, France

PCT No. PCT/FR93/01120, § 371 Date May 12, 1995, § 102(e) Date May 12, 1995, PCT Pub. No. WO94/13005, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 16, 1993, Ser. No. 439,873

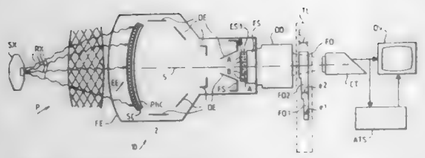
Claims priority, application France, Nov. 20, 1992, 92 13969

Int. Cl.° H01J *40/14*

U.S. Cl. 250—214 VT **14 Claims**

1. An image generating device including a luminescent screen with at least two phosphor materials emitting light with different emission spectra and different remanences wherein said generator device functions in modes producing images resulting from the detection of radiation having different fluctuation levels, said device comprising:

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at least one image detector;

a light transmission device inserted between the luminescent screen and the image detector wherein said transmission device includes removable filter means for wavelength-selectively altering the quantity of light produced by the luminescent screen and directed towards the image detector whereby the remanence which is most appropriate to the level of detected radiation is selected.

5,631,460

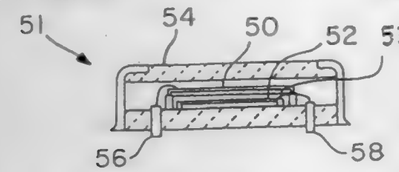
SORTING MACHINE USING DUAL FREQUENCY OPTICAL DETECTORS

Calvin G. Gray, Houston, and Jeffery S. Pawley, Sugar Land, both of Tex., assignors to Satake USA Inc., Houston, Tex.

Continuation-in-part of Ser. No. 377,451, Jan. 24, 1995, Pat. No. 5,508,512. This application Apr. 4, 1996, Ser. No. 627,431

Int. Cl.[6] B07C *5/342;* **G01J** *3/50;* **G01N** *21/27*

U.S. Cl. 250—226 **10 Claims**



1. A photo-optical detector including,

a first photo-sensitive device responsive to a first color frequency spectrum in a broadband light radiation signal, said first photo-sensitive device allowing at least partial passthrough of the broadband light radiation signal at wavelengths where said first photo-sensitive device is substantially unresponsive;

a second photo-sensitive device sandwiched behind and optically aligned with said first photo-sensitive device, responsive to a second color frequency spectrum;

a first optical filter in front of said first photo-sensitive device for passing a first defined light frequency spectrum within said first color frequency spectrum and for passing said second color frequency spectrum;

a second optical filter interposed between said first and second photo-sensitive devices for passing a second defined light frequency spectrum within said second color frequency spectrum;

said first photo-sensitive device producing an output which is proportional to the light radiation in said first defined light frequency spectrum; and

said second photo-sensitive device producing an output which is proportional to the light radiation in said second defined light frequency spectrum.

5,631,461

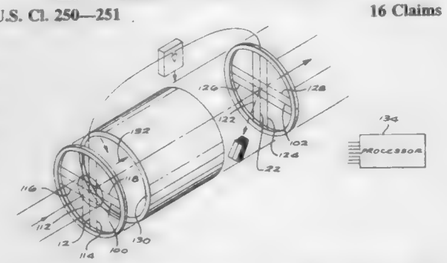
APPARATUS FOR, AND METHODS OF, DETECTING THE DIRECTION AND FOCAL PROPERTIES OF NEUTRAL PARTICLE BEAMS

Donald A. Swenson, Albuquerque, N.M., assignor to Science Applications International Corporation, San Diego, Calif.

Filed Jun. 19, 1987, Ser. No. 64,801

Int. Cl.[6] H01S *1/00;* **G01K** *1/08;* **G01N** *27/00*

U.S. Cl. 250—251 **16 Claims**



1. In combination for determining the characteristics of a neutral particle beam having negatively charged particles, neutral particles and positively charged particles,

a source wire disposed in the path of the neutral particle beam to strip electrons from the negatively charged particles and the neutral particles,

a detector wire disposed in the path of the neutron particle beam downstream from the source wire to produce signals in accordance with the total particle flux,

means for producing a magnetic field at a position between the source wire and the detector wire in a direction substantially perpendicular to the direction of the neutral particle beam,

means for providing at least one of the following: (1) varying the position of detector wire relative to the source wire in a direction substantially perpendicular to the direction of movement of the neutron particle beam and the direction of the magnetic field and (2) varying the characteristics of the magnetic field, and

means for processing the signals produced on the detector wire at progressive instants of time to indicate the characteristics of the neutral particle beam.

5,631,462

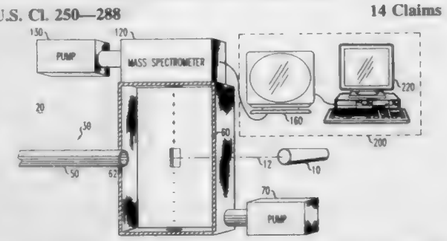
LASER-ASSISTED PARTICLE ANALYSIS

William D. Reents, Jr., Middlesex, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 17, 1995, Ser. No. 373,732

Int. Cl.[6] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—288 **14 Claims**



1. Apparatus for analyzing the particulate content of a sample, the sample particulates having a diameter in a range of 0.001–10 microns, the apparatus comprising:

an evacuable chamber, the evacuable chamber including a chamber entrance through which a particle-laden gas stream enters;

an inlet device communicating with the chamber entrance for inputting the particle-laden gas stream to the evacuable chamber at a velocity of less than about 64 m/sec.;

a laser positioned to produce a focused laser beam which intersects the particle-laden gas stream at a position approximately 0.1 mm from the chamber entrance, the laser beam having a power density sufficient to fragment and ionize particles entrained within the particle-laden gas stream; and

a detector positioned to detect ionized species produced by the laser.

5,631,463

DISPLACEMENT ELEMENT, PROBE EMPLOYING THE ELEMENT, AND APPARATUS EMPLOYING THE PROBE

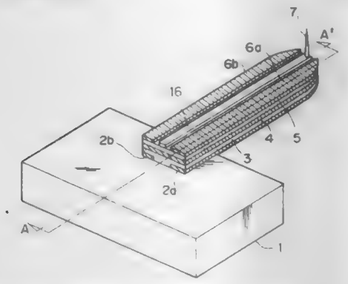
Takehiko Kawasaki, Atsugi; Keisuke Yamamoto, Yamato, and Yoshio Suzuki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 112,317, Aug. 27, 1993, abandoned. This application Jan. 26, 1996, Ser. No. 592,606

Claims priority, application Japan, Sep. 1, 1992, 4-255431; Jul. 27, 1993, 5-203709

Int. Cl.[6] H01J *37/00*

U.S. Cl. 250—306 **13 Claims**



8. A scanning tunneling microscope, comprising:

a cantilever type probe having a piezoelectric film layer, lower and upper electrode layers provided respectively on lower and upper faces of said piezoelectric film layer to displace said film layer by converse piezoelectric effect, said electrode layers being formed of platinum or palladium and said piezoelectric film layer and electrode layers together forming a displacement element;

a substrate supporting one end of said displacement element;

a tip provided on a free end of said displacement element;

a stage positioned opposite to said cantilever type probe for supporting a sample thereon; and

said piezoelectric film layer is composed of either one of zinc oxde and aluminum nitride, and

the crystal orientation in the platinum or palladium electrode layers is defined by the ratio of the intensity $I_{(200)}$ caused by a crystal plane (**200**) to the intensity $I_{(111)}$ of said lower electrode layer, measured by X-ray diffraction, in a range represented by the following relation:

$$I_{(200)}/I_{(111)}<0.02.$$

5,631,464

Patent Not Issued For This Number

5,631,465

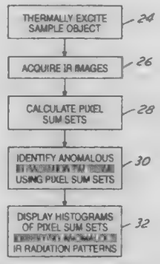
METHOD OF INTERPRETING THERMOGRAPHIC DATA FOR NON-DESTRUCTIVE EVALUATION

Steven M. Shepard, 23656 Hunter's La., Southfield, Mich. 48034

Filed Feb. 29, 1996, Ser. No. 608,901

Int. Cl.[6] G01N *25/72*

U.S. Cl. 250—330 **10 Claims**



1. A method of nondestructive evaluation of subsurface structural properties of an object, comprising the steps of:

irradiating a surface of said object thereby creating an irradiated surface to which thermal energy is imparted to said object;

acquiring a series of positionally fixed 2-dimensional thermal images from an emissive surface of said object, wherein successive said images are acquired at successive times during a fixed time period as the level of thermal energy present on said emissive surface changes, each said image having a plurality of pixels, each said pixel corresponding to a unique position on said emissive surface, wherein each said pixel is associated with a corresponding finite index value which is related to a measurement of a thermal energy level associated with said pixel's corresponding position on said emissive surface;

summing, for each possible said index value of each individual said image, the number of said pixels associated with each said possible index value of said image, establishing for each image a pixel sum set; and

determining, with reference to said pixel sum sets, which of said images was acquired at a time when said emissive surface exhibited an anomalous infrared radiation pattern.

5,631,466

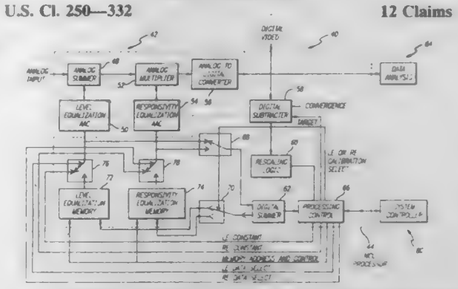
APPARATUS AND METHODS OF CLOSED LOOP CALIBRATION OF INFRARED FOCAL PLANE ARRAYS

Dominic J. Botti, Torrance, and Vernon F. Hutchens, Hermosa Beach, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 16, 1995, Ser. No. 491,134

Int. Cl.[6] G01J *5/10*

U.S. Cl. 250—332 **12 Claims**



1. A calibration system for a staring imaging sensor having an array of detectors, the system comprising:

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first means for storing a value representing the level of a first output of each detector in response to the illumination of said detector by a first target;

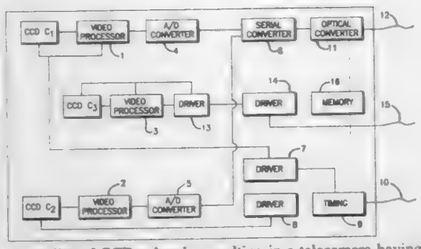
second means for storing a value representing the responsivity of each detector in response to said illumination of said detector by said first target;

third means responsive to the first means for adjusting the level of the output of each detector in response to a second target and providing a level adjusted signal in response thereto;

fourth means responsive to said second means for adjusting the responsivity of each detector in response to said second target and providing a responsivity adjusted signal in response thereto;

fifth means for feeding the output of said third means back to said first means; and

sixth means for feeding the output of said fourth means back to said second means.



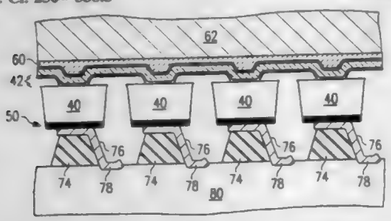
said plurality of CCDs, thereby resulting in a telecamera having a frame frequency greater than a frame frequency of any individual CCD among said plurality of CCDs.

5,631,467

ETCHING OF CERAMIC MATERIALS WITH AN ELEVATED THIN FILM

James F. Belcher, Plano, and Robert A. Owen, Rowlett, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 587,260, Jan. 16, 1996, which is a continuation of Ser. No. 223,073, Apr. 4, 1994, abandoned.
This application Jun. 13, 1996, Ser. No. 664,047
Int. Cl.[6] G01J 5/10
U.S. Cl. 250—338.3 20 Claims



1. A microelectronic infrared detector array, comprising:

a reticulated array of ceramic islands;

an optical coating layer disposed on a section of each of said ceramic islands, wherein said optical coating layer comprises elevated portions in a region between said ceramic islands, whereby said elevated portions of said optical coating layer provide improved thermal efficiency for sensing impinging infrared radiation; and

electrical contacts disposed on a surface of said ceramic islands opposite said optical coating layer.

5,631,468

TELECAMERA WITH A HIGH FRAME FREQUENCY AND ASSOCIATED MANUFACTURING METHOD

Alberto Dellacorna, Cisliano, Italy, assignor to B.T.S. Bioingegneria Tecnologia E Sistemi S.r.l., Milan, Italy

Filed May 5, 1995, Ser. No. 436,805
Claims priority, application Italy, May 6, 1994, MI94A0897
Int. Cl.[6] G01J 5/32
U.S. Cl. 250—339.05 12 Claims

1. Telecamera with a high frame frequency for detecting infrared radiation emitted by spot-shaped markers fixed to moving bodies and visible radiation emitted by said moving bodies as a whole comprising: a lens, an optical device which subdivides the radiation received by said lens into a plurality of separate radiation fluxes, a corresponding plurality of CCDs for independently detecting each of said radiation fluxes, a timing device which activates said CCDs sequentially, and a reading device which reads, in succession, images received by individual CCDs among

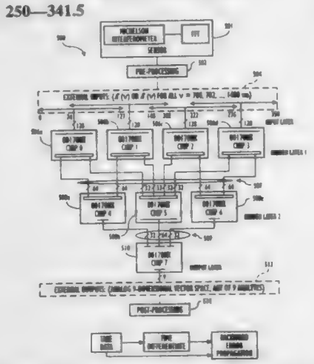
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5,631,469

NEURAL NETWORK COMPUTING SYSTEM FOR PATTERN RECOGNITION OF THERMOLUMINESCENCE SIGNATURE SPECTRA AND CHEMICAL DEFENSE

Arthur H. Carrieri, Abingdon, and Pascal I. Lim, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 15, 1996, Ser. No. 636,994
Int. Cl.[6] G01J 3/433
U.S. Cl. 250—341.5 19 Claims



1. A system for recognizing compositions of matter in accordance with thermoluminescence exhibited by the compositions of matter, the system comprising:

sensor means for detecting the thermoluminescence; spectral analysis means for analyzing the thermoluminscence detected by the sensor means to produce spectral data for a plurality of wave numbers; and

artificial neural network means for receiving the spectral data and for determining, in accordance with the spectral data, whether the thermoluminescence detected by the sensor means indicates the presence of the compositions of matter.

11. A method of training an artificial neural network to recognize compositions of matter in accordance with thermoluminescence exhibited by the compositions of matter, the method comprising:

(a) providing known absorption spectra for the compositions of matter;

(b) differentiating the known absorption spectra with respect to absorption time to derive differentiated absorption spectra; and

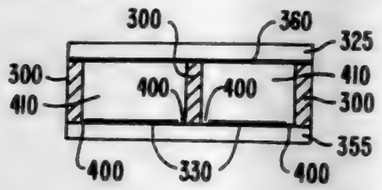
(c) training the artificial neural network by backward error propagation with the known absorption spectra and the differentiated absorption spectra to obtain a plurality of neural network weights for the artificial neural network.

5,631,470

LIQUID ION CHAMBER ELECTRODE APPARATUS

Derek J. Day, Los Gatos; Reza Majidi-Ahy, Los Altos, both of Calif.; Willi Fencl, Zurich, Switzerland; Heinrich Riem, Wettingen, Switzerland; Salvatore Provencale, Gebenstorf, Switzerland, and Rolf Staehelin, Schlieren, Switzerland, assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 13, 1996, Ser. No. 649,888
Int. Cl.[6] G01T 1/185
U.S. Cl. 250—385.1 22 Claims



1. A liquid ion chamber electrode assembly, comprising:

a first electrode array;

a second electrode array; and

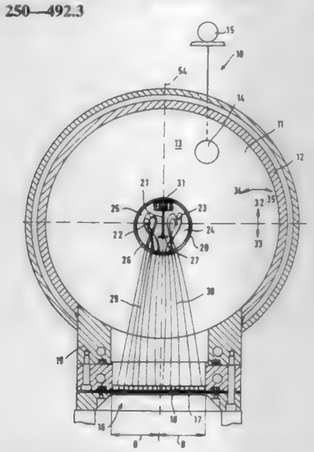
a film spacer interposed between said first and second electrode arrays, said spacer having a plurality of apertures containing an ionization liquid.

5,631,471

DEVICE TO IRRADIATE SURFACES WITH ELECTRONS

Peter Anderl; Klaus Bloemer, both of Munich; Alfred Mueller; Ulrich Schwab, both of Groebenzell; Eberhard Hartmann, Priester; Reiner Mehnert, Markkleeberg, and Alexander Mende, Leipzig, all of Germany, assignors to IGM-Robotersysteme Aktiengesellschaft, Germany

Filed Sep. 15, 1995, Ser. No. 528,957
Claims priority, application Germany, Sep. 16, 1994, 44 32 984.9
Int. Cl.[6] H01J 33/02;37/065
U.S. Cl. 250—492.3 7 Claims



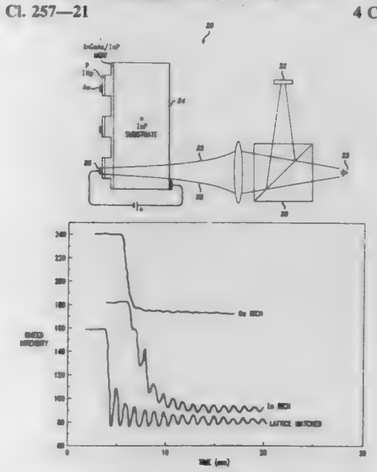
1. In a device to irradiate surfaces with electrons, said device having a vacuum chamber that has an electron beam window; an electron beam-permeable film that closes off the vacuum chamber from the ambient medium; and an electron beam generating system, consisting of a cathode and a forming electrode which are connected to a high-voltage and beam current feed line; the improvement that said forming electrode is designed as a tubular hollow body with an inner hollow space lengthwise divider and having a lengthwise slit that is open towards the electron beam window, and a wire-shaped cathode arranged in each hollow space segment.

5,631,472

ACCURATE IN-SITU LATTICE MATCHING BY REFLECTION HIGH ENERGY ELECTRON DIFFRACTION

John E. Cunningham, Lincroft; Keith W. Goossen, Aberdeen, and Rajiv N. Pathak, Matawan, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 263,305, Jun. 21, 1995, Pat. No. 5,480,813. This application Jun. 7, 1995, Ser. No. 473,679
Int. Cl.[6] H01L 29/205;31/0304;31/105
U.S. Cl. 257—21 4 Claims



1. A multiple quantum well light modulator comprising:

a semiconductor substrate formed of InP, transparent to incident light;

a multiple quantum well region, disposed on said InP substrate, composed of alternating films of InGaAs and InP, said substrate and said multiple quantum well region having a thickness of at least 4 μm and having a lattice mismatch of less than 2×10^{-4};

said multiple quantum well light modulator exhibiting a contrast ratio of at least 8:1 when operated in a reflectivity mode with a single incident light beam having a wavelength in the range of about 1.5 to 1.6 μm.

5,631,473

SOLID STATE ARRAY WITH SUPPLEMENTAL DIELECTRIC LAYER CROSSOVER STRUCTURE

George E. Possin; Robert F. Kwasnick, both of Schenectady, and Roger S. Salisbury, Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

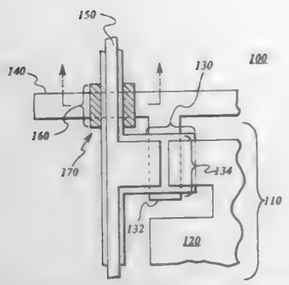
Filed Jun. 21, 1995, Ser. No. 493,020
Int. Cl.[6] H01L 29/04;31/062
U.S. Cl. 257—59 16 Claims

1. A solid state array device having a plurality of pixels with associated respective thin film transistors (TFT) disposed on a substrate, the device comprising:

a plurality of first address lines disposed in a first layer of said array device, said first address lines comprising conductive material and being coupled to respective ones of the pixel TFTs;

a plurality of second conductive address lines disposed in a second layer of said array device, respective ones of said first

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and second address lines being disposed substantially perpendicular to one another in a matrix arrangement such that respective ones of said second address lines overlie respective ones of said first address lines at respective pixel crossover regions, said second address lines further being coupled to respective ones of said pixel TFTs;

a TFT gate dielectric layer disposed in a channel region of each of said pixel TFTs and further being disposed over said first address lines and under said second address lines; and

a crossover region supplemental dielectric layer disposed between said first address line and said TFT gate dielectric layer in respective ones of said crossover regions but not extending over said TFT channel regions.

5,631,474

LIGHT EMITTING ELEMENT AND ARRAY OF LIGHT EMITTING ELEMENTS FOR LIGHT SOURCE

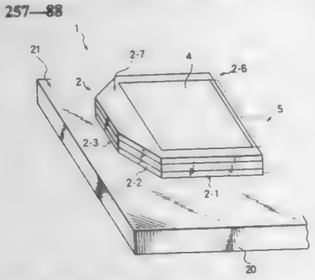
Tetsurou Saitoh, Sendai, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 554,682

Claims priority, application Japan, Nov. 11, 1994, 6-303161

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—88 **7 Claims**



1. A light emitting element comprising:

a plurality of semiconductor layers formed on a principal surface of a semiconductor substrate in a stacked arrangement and constructed such that at least one layer of the plurality of semiconductor layers is a light emitting layer;

a plurality of end faces formed in the stacked arrangement of semiconductor layers such that each of the plurality of end faces form a planar facet oriented perpendicular to the principal surface of the semiconductor substrate; and

a plurality of light emitting end faces selected from the plurality of end faces, wherein angles formed between adjacent light emitting end faces are set such that light emitted from at least two of the light emitting end faces of the plurality of light emitting end faces are mutually combined.

5,631,475

SEMICONDUCTOR LIGHT EMITTING ELEMENT

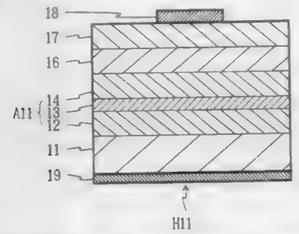
Shinichi Watabe; Hiroaki Okagawa, both of Itami; Takayuki Hashimoto, Kuga, and Kazuyuki Tadatomo, Itami, all of Japan, assignors to Mitsubishi Cable Industries, Ltd., Hyogo, Japan

Filed Jul. 6, 1995, Ser. No. 498,752

Claims priority, application Japan, Jul. 8, 1994, 6-157279

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—94 **9 Claims**



1. A semiconductor light emitting element comprising a light emitting part comprising an AlGaInP active layer and an AlGaInP cladding layer, which is formed on a GaAs substrate, and an AlGaAs layer and a $Ga_xIn_{1-x}P$ layer ($0.7 \leq x \leq 1.0$) deposited in this order on said light emitting part, wherein said $Ga_xIn_{1-x}P$ layer has a thickness of not more than 1.0 μm.

5,631,476

MOS-TECHNOLOGY POWER DEVICE CHIP AND PACKAGE ASSEMBLY

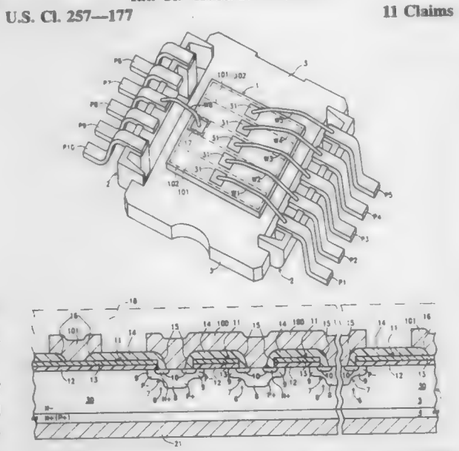
Giuseppe Ferla, Catania, and Ferruccio Frisina, Sant'Agata Li Battiati, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica Nel Mezzogiorno, Catania, both of Italy

Filed Aug. 1, 1995, Ser. No. 509,956

Claims priority, application European Pat. Off., Aug. 2, 1994, 94830394

Int. Cl.[6] H01L *23/498;29/74*

U.S. Cl. 257—177 **11 Claims**



1. MOS-technology power device chip and package assembly, MOS-technology power device chip comprising a semiconductor material layer in which a plurality of elementary functional units is integrated, each elementary functional unit contributing a respective fraction to an overall current and comprising a first doped region of a first conductivity type formed in said semiconductor layer, and a second doped region of a second conductivity type formed inside said first doped region, the package comprising a plurality of pins for the external electrical and mechanical connection, wherein said plurality of elementary functional units is composed of sub-pluralities of elementary functional units, the second doped regions of all the elementary functional units of each subplurality being contacted by a same respective metal plate electrically insulated from the metal plates contacting the second doped regions of all the elementary functional units of the other subpluralities, each of said metal plates being connected, through a respective bonding wire, to a respective pin of the package.

5,631,477

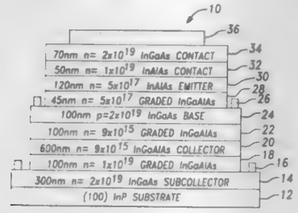
QUATERNARY COLLECTOR INALAS-INGAALAS HETEROJUNCTION BIPOLAR TRANSISTOR

Dwight C. Streit, Seal Beach; Aaron K. Oki, and Liem T. Tran, both of Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 2, 1995, Ser. No. 490,440

Int. Cl.[6] H01L *31/0328;31/0336*

U.S. Cl. 257—197 **17 Claims**



1. A semiconductor device comprising:

a substrate;

an InGaAlAs collector layer positioned on the substrate, said collector layer having a substantially constant composition of InGaAlAs;

a base layer positioned on the collector layer;

a first graded InGaAlAs layer positioned between the collector layer and the substrate and a second InGaAlAs graded layer positioned between the collector layer and the base layer, wherein the first and second graded layers include graded aluminum such that the concentration of aluminum of the first graded layer at a surface of the first graded layer opposite to the collector layer is substantially zero and the concentration of aluminum of the first graded layer at a surface of the first graded layer adjacent to the collector layer is substantially the same as the concentration of aluminum in the collector layer, and wherein the concentration of aluminum of the second graded layer at a surface of the second graded layer adjacent to the base layer is nearly zero and the concentration of aluminum of the second graded layer at a surface of the second graded layer adjacent to the collector layer is substantially the same as the concentration of aluminum in the collector layer;

a graded InGaAlAs emitter-base transition layer positioned on the base layer; and

an emitter layer positioned on the emitter-base transition layer, wherein the graded transition layer has a graded composition so as to have substantially the same composition as the base layer at a surface adjacent to the base layer and substantially the same composition as the emitter layer at a surface adjacent to the emitter layer.

5,631,478

SEMICONDUCTOR INTEGRATED CIRCUITS WITH SPECIFIC PITCH MULTILEVEL INTERCONNECTIONS

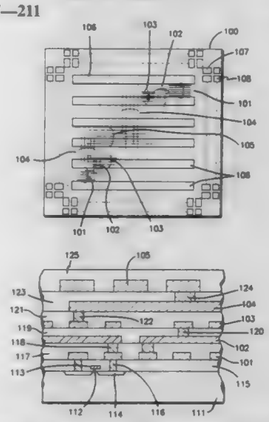
Koichiro Okumura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,675

Claims priority, application Japan, Dec. 15, 1993, 5-342848

Int. Cl.[6] H01L *27/10*

U.S. Cl. 257—211 **8 Claims**



1. A multilevel interconnection structure for semiconductor integrated circuits, said structure comprising at least five interconnection layer levels, each of said layers including interconnections at each level, wherein first, second and third lowest level interconnections have a first uniform pitch and are so provided in first, second and third lowest level interconnection layers as to have pitches less than approximately 2 micrometers and ranging from 4.5 to 5.5 times a minimum gate length of MOS field effect transistors of said semiconductor integrated circuits, and remaining higher level interconnections in remaining higher level interconnection layers have a second uniform pitch ranging from approximately 2 micrometers to approximately 3 micrometers.

5,631,479

SEMICONDUCTOR DEVICE WITH LAMINATED REFRACTORY METAL SCHOTTKY BARRIER GATE ELECTRODE

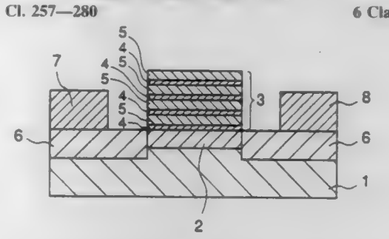
Toshihiko Shiga, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 567,991

Claims priority, application Japan, Apr. 26, 1995, 7-102353

Int. Cl.[6] H01L *29/80;31/112*

U.S. Cl. 257—280 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a surface;

an active layer comprising a compound semiconductor disposed at the surface of the semiconductor substrate; and

a Schottky barrier gate electrode disposed on and forming a Schottky barrier with the active layer, the Schottky barrier gate electrode comprising a multi-layer film including, alter-

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natingly laminated, (i) electrically conductive refractory metal silicide layers including a refractory metal (M_2) and (ii) refractory metal layers including a refractory metal (M_2), the Schottky barrier gate electrode including at least three of each of the refractory metal silicide and refractory metal layers.

5,631,480

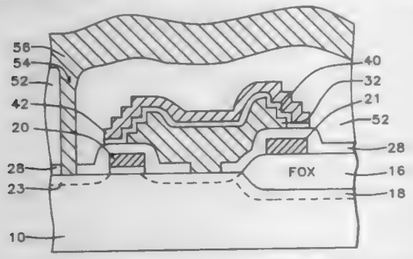
DRAM STACK CAPACITOR WITH LADDER STORAGE NODE

Horng-Huei Tseng, and Chih-Yuan Lu, both of Hsin-Chu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 289,633, Aug. 12, 1994, Pat. No. 5,451,537. This application Jun. 23, 1995, Ser. No. 494,637

Int. Cl.[6] H01L *27/108*

U.S. Cl. 257—309 **2 Claims**



1. A DRAM (Dynamic Random Access Memory) stack capacitor having a ladder storage node, connected to a transistor with source and drain regions, comprising:

a bottom electrode, connected to and extending up from the source region of the transistor, with a top surface having a central cavity, and side surfaces extending down from said top surface in steps, wherein said steps form an inclined profile in their entirety, wherein said steps have alternating substantially horizontal and substantially vertical surfaces, wherein said substantially horizontal surfaces have a length of between about 900 and 1100 Angstroms and wherein said bottom electrode has a thickness of between about 4000 and 8000 Angstroms, and is formed of doped polysilicon;

a capacitor dielectric over said bottom electrode; and

a top electrode over said capacitor dielectric.

5,631,481

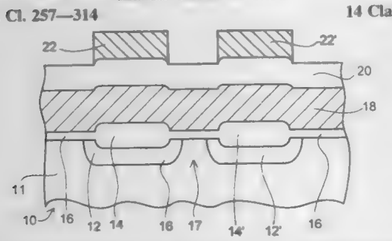
FLAT-CELL MASK ROM INTEGRATED CIRCUIT

Chen-Chiu Hsue, and Gary Hong, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 239,366, May 6, 1994, Pat. No. 5,418,175. This application May 5, 1995, Ser. No. 435,194

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—314 **14 Claims**



1. A semiconductor device including a semiconductor substrate, comprising:

(a) individual buried bit lines below the surface of said semiconductor substrate forming individual source and drain regions below the surface of said semiconductor substrate,

(b) a gate oxide layer on the surface of said substrate,

(c) a first conductive structure on said gate oxide layer,

(d) an insulating structure in contact with said first conductive structure,

(e) material etched from the surface of said first conductive structure exposing at least a portion of the surface beneath said first conductive structure, and

(f) a metallic structure formed on the remaining structure on said work piece, said metallic structure having edges vertically aligned with and above said individual source and individual drain regions in said buried bit lines,

whereby a compound conductive structure is provided on said semiconductor substrate.

5,631,482

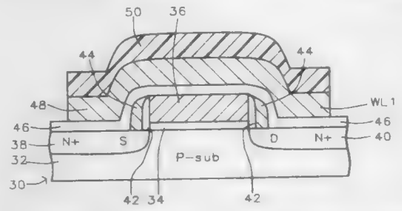
FLASH EEPROM MEMORY CELL WITH POLYSILICON SOURCE/DRAIN

Gary Hong, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 315,553, Sep. 30, 1994, Pat. No. 5,478,767. This application Sep. 29, 1995, Ser. No. 537,137

Int. Cl.[6] H01L *29/76;29/788;29/792*

U.S. Cl. 257—326 **8 Claims**



1. A MOSFET device formed on a semiconductor substrate comprising;

a stack of a first dielectric layer on said substrate, and a floating gate layer over said first dielectric layer;

doped source and drain regions formed in said substrate adjacent to said floating gate;

dielectric spacers extending vertically alongside of said floating gate and laterally over said doped source and drain regions, said dielectric spacers having asperities with a height of at least 20 Å;

polysilicon spacers formed alongside said dielectric spacers, said polysilicon spacers in electrical contact with said doped source and drain regions;

a blanket dielectric layer over said floating gate and said polysilicon spacers; and

a control gate formed over said blanket dielectric layer above said floating gate.

5,631,483

POWER DEVICE INTEGRATED STRUCTURE WITH LOW SATURATION VOLTAGE

Giuseppe Ferla, Catania, and Ferruccio Frisina, Sant'Agata li Battiati, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

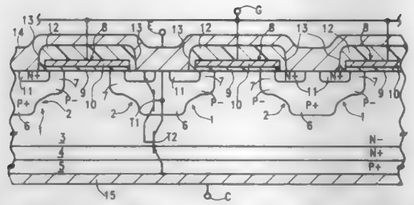
Filed Aug. 1, 1995, Ser. No. 509,881

Claims priority, application European Pat. Off., Aug. 2, 1994, 94830393

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—341 **15 Claims**

1. A power device integrated structure comprising a semiconductor substrate of a first conductivity type, a semiconductor layer of a second, opposite conductivity type superimposed over said



substrate, a plurality of first doped regions of the first conductivity type formed in said semiconductor layer, and a respective plurality of second doped regions of the second conductivity type formed inside said first doped regions, the power device comprising:

a power MOSFET having a first electrode region formed by the second doped regions and a second electrode region formed by the semiconductor layer;

a first bipolar junction transistor having an emitter, a base and a collector respectively formed by the substrate, the semiconductor layer and the first doped regions; and

a second bipolar junction transistor having an emitter, a base and a collector respectively formed by the second doped regions, the first doped regions and the semiconductor layer,

wherein the doping profiles of the semiconductor substrate, the semiconductor layer, the first doped regions and the second doped regions are such that the first and second bipolar junction transistors have respective first and second common base current gains sufficiently high to cause said bipolar junction transistors to be biased in the high injection region, so that carriers are injected from the substrate into the semiconductor layer and from the second doped regions, through the first doped regions, into the semiconductor layer, respectively, to modulate the conductivity of the second electrode of the power MOSFET, the sum of the common base current gains of the first and second bipolar junction transistors being less than unity to prevent a parasitic thyristor, formed by said first and second bipolar junction transistors, from triggering on.

5,631,484

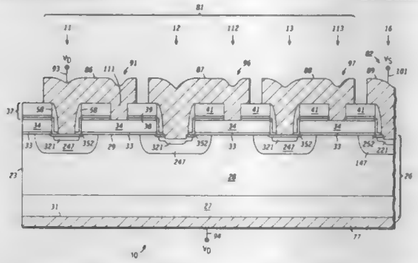
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND TERMINATION STRUCTURE

Hak-Yam Tsoi, Scottsdale; Pak Tam, and Edouard D. de Frésart, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1995, Ser. No. 576,983

Int. Cl.[6] H01L *29/76;21/265*

U.S. Cl. 257—341 **20 Claims**



1. A method of forming a semiconductor device comprising the steps of:

providing a semiconductor substrate having a first major surface, the semiconductor substrate having a first conductivity type;

forming a first insulated gate region and a second insulated gate region on a semiconductor substrate using a first photomasking step;

forming a first doped region of a second conductivity type in the semiconductor substrate through a first opening between the first and second insulated gate regions, the first doped region self-aligned to the first and second insulated gate regions;

forming a second doped region of the first conductivity type within the first doped region through the first opening, the second doped region self-aligned to the first and second insulated gate regions;

forming a protective layer over the semiconductor substrate;

selectively patterning the protective layer using a second photomasking step to form a second opening within the first opening and a third opening above the second insulated gate region;

removing a portion of the semiconductor substrate through the second opening and a portion of the second insulated gate region through the third opening to expose a conductive portion;

forming an ohmic layer over the semiconductor substrate; and

selectively patterning the ohmic layer using a third photomasking step to form a first ohmic contact to the semiconductor substrate and a second ohmic contact to the conductive portion.

5,631,485

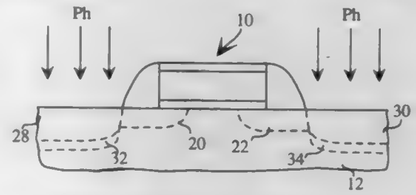
ESD AND HOT CARRIER RESISTANT INTEGRATED CIRCUIT STRUCTURE

Yi-Hen Wei; Ying T. Loh, both of Saratoga; Chung S. Wang, Fremont, and Chenming Hu, Alamo, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 394,064, Feb. 24, 1995, and a continuation of Ser. No. 58,749, May 7, 1993. This application Jun. 6, 1995, Ser. No. 484,703

Int. Cl.[6] H01L *29/76;29/94*

U.S. Cl. 257—344 **17 Claims**



1. An integrated circuit device comprising:

a substrate doped with a first polarity type;

a gate formed over said substrate said gate including a gate oxide, a polysilicon layer and a gate conductor;

a channel region defined in said substrate in proximity to said gate, said channel having a source side and a drain side;

a lightly doped drain side LDD region of a second polarity type formed in said substrate adjacent to said drain side of said channel;

a drain region of said second polarity type formed in said substrate in proximity to said drain side LDD region;

an implanted and annealed drain side DDD region of said second polarity type, said drain side DDD being relatively more heavily doped than said drain side LDD region, said drain side DDD region substantially separating said drain side LDD region from said drain region, said drain side DDD region further substantially isolates said drain region from a bulk portion of said substrate, where said DDD region is doped such that there are more than about 1×10^{14} and up to about 5×10^{15} atoms per cubic centimeter;

dielectric spacers formed against said drain side and said source side of said gate, and in direct contact with said substrate; and

wherein said implanted and annealed drain side DDD region is diffused to a greater extent into the substrate by performing thermal annealing after ion implantation when forming said implanted and annealed drain side DDD region.

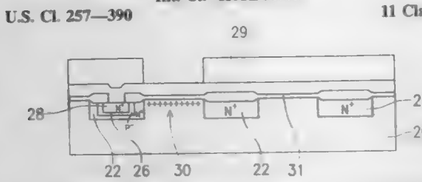
VOL 1198 ISS 3 MAY 20 1997 UMI

5,631,486

READ-ONLY-MEMORY HAVING BOTH BIPOLAR AND CHANNEL TRANSISTORS

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 22, 1995, Ser. No. 532,068
Int. Cl.[6] H01L 29/06
U.S. Cl. 257—390 11 Claims



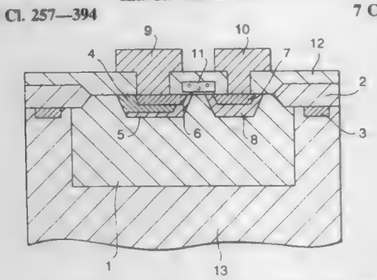
1. A structure for a read-only-memory on a semiconductor substrate comprising:
- a plurality of buried bit lines of a first conductivity type, equally spaced on the substrate, forming channel regions therebetween, predetermined ones of which to be later coded being implanted with impurities of a second conductivity type to become non-conductive;
- a gate oxide layer formed on said channel regions;
- a plurality of thick oxide layers formed on said buried bit lines, predetermined ones of said thick oxide layers having openings therein;
- base regions of the second conductivity type and emitter regions of the first conductivity type, formed in said buried bit lines beneath said openings, constructing bipolar transistors with said buried bit lines as collector regions of the first conductivity type; and
- a plurality of word lines, formed above said gate oxide layer and said thick oxide layers and across said buried bit lines to construct channel transistors with said buried bit lines and said channel regions, said word lines being connected with said emitter regions through said openings.

5,631,487

SEMICONDUCTOR DEVICE AND MOTOR DRIVER CIRCUIT USING THE SAME

Masayuki Hattori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 282,018, Aug. 1, 1994, abandoned. This application Oct. 2, 1995, Ser. No. 537,981
Claims priority, application Japan, Jul. 30, 1993, 5-189932
Int. Cl.[6] H01L 29/76
U.S. Cl. 257—394 7 Claims



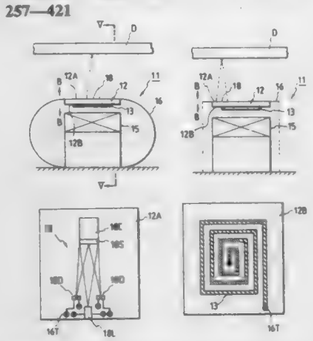
1. A semiconductor device including a field effect transistor formed in a semiconductor substrate comprising:
- a first base area;
- a second base area provided in said first base area;
- a drain area provided in said first base area;
- a source area provided in said second base area;
- a third base area provided in said second base area and having a higher density than that of said second base area;
- an insulation film provided between said source area and said drain area on said semiconductor substrate;
- a gate electrode provided on said insulation film;
- a drain electrode connected to said drain area; and
- a source electrode contacting said source area and not electrically contacting said third base area.

5,631,488

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Satoshi Sugiura, and Jun Suzuki, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 569,033, Aug. 17, 1990. This application Mar. 23, 1992, Ser. No. 855,496
Claims priority, application Japan, Mar. 16, 1990, 2-67885
Int. Cl.[6] H01L 29/82;43/00;27/14;31/0232
U.S. Cl. 257—421 14 Claims



1. A lightweight and dimensionally compact semiconductor integrated circuit device, comprising:
- a) magnet means for establishing a magnetic field;
- b) a generally planar semiconductor substrate having a surface proximate to and facing the magnet means,
- c) a generally planar electromagnetic coil fixedly disposed on said surface,
- d) flexible support means for movably supporting the substrate, and attendantly the coil, within a magnetic field established by the magnet means such that the substrate and coil are oriented perpendicular to a direction of said magnetic field, and
- e) electrical conductor means connected to the coil,
- f) wherein a current applied to the coil through the conductor means causes a displacement of the coil and attendantly the substrate, and a displacement of the coil and substrate causes a current to be induced in the coil.

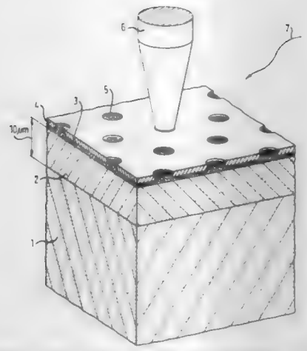
5,631,489

OPTOELECTRONIC DEVICE

Hans P. Röser, Bonn, Germany, assignor to Max-Planck-Gesellschaft Zur., Munich, Germany

Filed Feb. 15, 1995, Ser. No. 388,726
Claims priority, application Germany, Sep. 13, 1994, 94 14 895.3
Int. Cl.[6] H01L 31/00
U.S. Cl. 257—449 35 Claims

1. Optoelectronic device with a conduction constriction for current flow, the conduction constriction having a constriction cross-sectional area A of less than approximately 2 μm^2 and being made of a doped semiconductor layer of carrier mobility μ and of layer thickness D, the conduction constriction having an input side and an output side and being contacted on the input side from a metallically conducting input side element and on the output side by a metallically conducting output side element, wherein, in operation, the optoelectronic device is illuminated from a source of coherent radiation and wherein the thickness D of the doped



semiconductor layer is larger than approximately one-half and smaller than approximately one-and-a-half times a characteristic path length D_{mes}, i.e.

$$D_{mes}*0.5<D<D_{mes}*1.5$$

where D^2_{mes} is defined by the flux quantum (h/2e) multiplied by the carrier mobility μ, i.e.

$$D^2_{mes}=(h/2e)*\mu$$

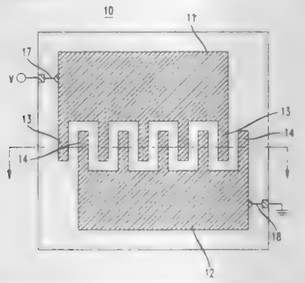
where h is Planck's constant and e elementary charge.

5,631,490

METAL SEMICONDUCTOR METAL PHOTODETECTORS

Niloy K. Dutta, Annandale; Dale C. Jacobson, Allamuchy, and Doyle T. Nichols, Stirling, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 11, 1995, Ser. No. 371,247
Int. Cl.[6] H01L 27/14
U.S. Cl. 257—457 5 Claims



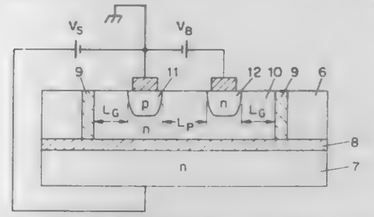
1. A metal-semiconductor-metal photodiode which comprises a silicon substrate and a pair of spaced metal contacts on an upper surface of the silicon substrate, wherein
- said upper surface is implanted with ions selected to decrease carrier lifetime and to increase the absorption coefficient of the silicon substrate,
- each of said contacts has a plurality of electrodes projecting laterally toward another of said contacts, said electrodes being interdigitated each relative to another,
- the spacing between adjacent electrodes and between the electrodes and the opposing contacts being identical, and the width of the electrodes being identical to the said spacing.

5,631,491

LATERAL SEMICONDUCTOR DEVICE AND METHOD OF FIXING POTENTIAL OF THE SAME

Kazuo Matsuzaki, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1995, Ser. No. 530,003
Claims priority, application Japan, Sep. 27, 1994, 6-230882
Int. Cl.[6] H01L 23/58;27/04
U.S. Cl. 257—487 7 Claims



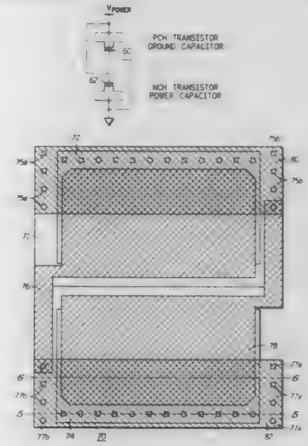
1. A lateral semiconductor device comprising a semiconductor substrate composite comprising first and second semiconductor substrates mutually bonded via an oxide film, wherein
- the first semiconductor substrate, having a thickness d, comprises an element region which is isolated from other element regions by an insulator region extending from a major surface of the first semiconductor substrate to the oxide film;
- a first diffusion region of a first conductivity type is disposed on the element region, spaced from the insulator region by a spacing L_G;
- a second diffusion region of a second conductivity type is disposed on the element region, spaced from the insulator region by the spacing L_G, and spaced from the first diffusion region by a spacing L_D, and
- the thickness d and the spacings L_D and L_G are such that $L_G \geqq (L_D - d)$.

5,631,492

STANDARD CELL HAVING A CAPACITOR AND A POWER SUPPLY CAPACITOR FOR REDUCING NOISE AND METHOD OF FORMATION

Richard S. Ramus, and James R. Lundberg, both of Austin, Tex., assignors to Motorola, Schaumburg, Ill.

Continuation of Ser. No. 184,167, Jan. 21, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,690
Int. Cl.[6] H01L 29/00
U.S. Cl. 257—532 18 Claims



VOL 1198 ISS 3 MAY 20 1997 UMI

1. An integrated circuit standard cell comprising:

a substrate;

a first doped substrate region within the substrate and biased to a ground voltage potential via a first metal region, the first doped substrate region having a doped portion of a first conductivity type;

a second doped substrate region within the substrate, laterally separated from the first doped substrate region, and being biased to a power supply voltage potential via a second metal region, the second doped substrate region having a doped portion of a second conductivity type which is different from the first conductivity type;

a gate oxide layer formed overlying the substrate; and

a first conductive region formed overlying the first doped substrate region and separated from the first doped substrate region by the gate oxide layer, the first conducive region being biased to the power supply voltage potential which creates an inversion region in the doped portion of the first conductivity type; and

a second conductive region formed overlying the second doped substrate region and separated from the second doped substrate region by the gate oxide layer, the second conductive region being biased to the ground voltage potential which creates an inversion region in the doped portion of the second conductivity type.

5,631,493

MONOLITHIC COMPONENT INCLUDING A PROTECTION DIODE IN PARALLEL WITH A PLURALITY OF PAIRS OF SERIES DIODES

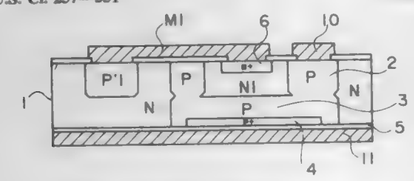
Robert Pezzani, Vouvray, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Jul. 21, 1994, Ser. No. 278,637

Claims priority, application France, Jul. 21, 1993, 93 09250

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—551 **26 Claims**



1. A monolithic component, incorporating a protection diode in parallel with a plurality of pairs of diodes oriented to have a same polarity as the protection diode, formed from a semiconductor substrate of a first conductivity type, the component including:

first regions of a second conductivity type at an upper surface of the substrate;

second regions of the first conductivity type at an upper portion of the substrate;

insulating walls of the second conductivity type around lateral surfaces of the second regions;

a third region of the second conductivity type at a lower surface of the second regions;

a fourth region of the second conductivity type at a lower surface of the third region;

a fifth region of the first conductivity type on a lower surface of the substrate;

first metallizations coupling each of the first regions to a respective second region; and

a second metallization over the insulating wall.

5,631,494

POWER SEMICONDUCTOR DEVICE WITH LOW ON-STATE VOLTAGE

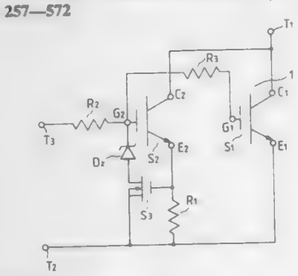
Naoki Sakurai, and Yoshitaka Sugawara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 308,292

Claims priority, application Japan, Sep. 17, 1993, 5-231252

Int. Cl.[6] H01L *29/74;29/00;27/082*

U.S. Cl. 257—572 **29 Claims**



1. A semiconductor device comprising:

a first main terminal;

a second main terminal having a voltage different from the voltage of the first main terminal;

a control terminal;

a first voltage control semiconductor element for conducting the flow of a main current therethrough, one of the main electrodes of the first control semiconductor element being connected to the first main terminal, the other main electrode being connected to the second main terminal;

a second voltage control semiconductor element having both of a current capacity and a saturated current per unit area smaller than those of the first voltage control semiconductor element, one of the main electrodes of the second control semiconductor element being connected to the first main terminal, the other main electrode being connected to the second main terminal through a resistance, the control electrode being connected to the control terminal, wherein the second voltage control semiconductor element permits the flow of a fraction of the main current therethrough and operates to detect a possible overcurrent flowing through the first voltage control semiconductor element;

means for decreasing a control voltage applied to the control electrodes of the first and the second voltage control semiconductor elements when the voltage developed across the resistance caused by the current flowing through the second voltage control semiconductor element exceeds a given value; and

a delay element connected between the control electrode of the first voltage control semiconductor element and the control electrode of the second voltage control semiconductor element, wherein the delay element delays the turning-on of the first voltage control semiconductor element to be after the turning-on of the second voltage control semiconductor element when an ON-signal is applied to the control terminal.

5,631,495

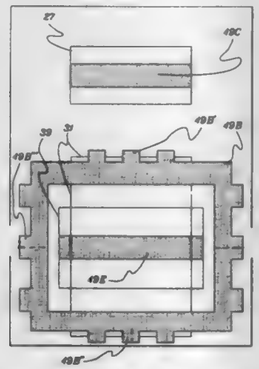
HIGH PERFORMANCE BIPOLAR DEVICES WITH PLURALITY OF BASE CONTACT REGIONS FORMED AROUND THE EMITTER LAYER

James S. Dunn, Jericho; Michael D. Hulvey, Burlington; Eric D. Johnson, Westford, all of Vt.; Robert A. Kertis, Rochester, Minn.; Kenneth K. Kieft, III, Essex Junction, Vt.; Albert E. Lanpher, Waterville, Vt., and Nicholas T. Schmidt, Colchester, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1994, Ser. No. 346,122

Int. Cl.[6] H01L *27/082;29/167*

U.S. Cl. 257—587 **18 Claims**



1. A base contact structure for a transistor having a base region, an emitter region and a collector region, said base contact structure comprising:

a unitary electrical contact structure at least partially disposed above, and electrically connected to, said base region of said transistor, said unitary electrical contact structure at least partially surrounding three sides of said emitter region of said transistor; and

wherein said unitary electrical contact structure includes a plurality of contact regions, each contact region of said plurality of contact regions extending away from said emitter region, said plurality of contact regions facilitating selective electrical contact to said base region of said transistor through said unitary electrical contact structure.

5,631,496

SEMICONDUCTOR COMPONENT HAVING A PASSIVATION LAYER AND METHOD FOR MANUFACTURING SAME

Albert Hammerschmidt, Erlangen; Gerhard Schmidt, Forchheim, and Rolf Schulte, Erlangen, all of Germany, assignors to Eupec Europaelsche Gesellsch. F. Leistungshalbleiter MBH & Co.KG, Warstein-Belecke, and Siemens Aktiengesellschaft, Munich, both of Germany

Continuation of Ser. No. 242,198, May 13, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 537,029

Claims priority, application Germany, May 13, 1993, 43 16 121.9

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—632 **4 Claims**

1. A semiconductor component comprising a semiconductor body having an n-region and a p-region forming at least one pn-junction therein extending to a surface of said semiconductor body, and a layer for electroactively passivating said surface of said semiconductor body, said layer electrically coupled to and covering at least a part of said pn-junction extending to said surface and composed of boron-doped, amorphous, hydrogenous carbon with a boron content in a range of from 0.01 per mil to 4% by weight and giving said layer a conductivity matched to a conductivity of said p-region.

5,631,497

FILM CARRIER TAPE AND LAMINATED MULTI-CHIP SEMICONDUCTOR DEVICE INCORPORATING THE SAME

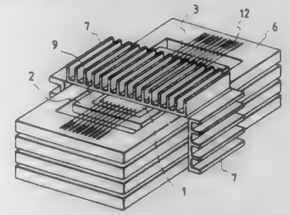
Ichiro Miyano, Fujisawa; Koji Serizawa, Shonandai-Fujisawa; Hiroyuki Tanaka; Tadao Shinoda, both of Yokohama, and Suguru Sakaguchi, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,050

Claims priority, application Japan, Jul. 11, 1990, 2-181416

Int. Cl.[6] H01L *23/495;23/02*

U.S. Cl. 257—668 **24 Claims**



1. A film carrier tape for a semiconductor device comprising a carrier member and a metallic layer superposed thereon, the metallic layer being an etched layer forming metallic leads and a heat sink for the semiconductor device, wherein the metallic leads extend in a first direction and the heat sink extends in a second direction transverse to the first direction.

5,631,498

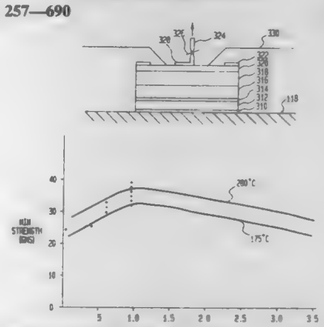
THIN FILM METALLIZATION PROCESS FOR IMPROVED METAL TO SUBSTRATE ADHESION

Morris Anschel; Douglas W. Ormond, both of Wappingers Falls, and Carl P. Hayunga, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 194,620, Feb. 10, 1994, which is a continuation of Ser. No. 893,860, Jun. 4, 1992, abandoned. This application May 19, 1995, Ser. No. 444,667

Int. Cl.[6] H01L *23/48;29/40*

U.S. Cl. 257—690 **3 Claims**



1. An electronic circuit module including a metallization layer formed on an exterior surface of said electronic circuit module, said metallization layer of metal containing a mixture of chromium and copper in a ratio in a range of 0.3:1 to 3.0:1 including clusters of said metal embedded within said electronic circuit module adjacent said exterior surface.

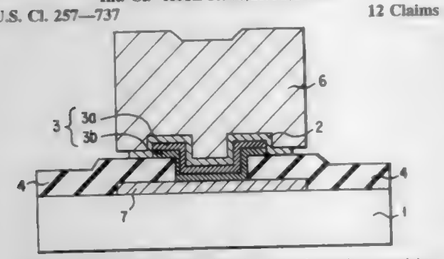
VOL 1198 ISS 3 MAY 20 1997 UMI

5,631,499

SEMICONDUCTOR DEVICE COMPRISING FINE BUMP ELECTRODE HAVING SMALL SIDE ETCH PORTION AND STABLE CHARACTERISTICS

Eiichi Hosomi, Kawasaki; Chiaki Takubo, Yokohama; Hiroshi Tazawa, Ichikawa; Ryouichi Miyamoto, Kawasaki; Takashi Arai, Oita, and Koji Shibasaki, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaka, Japan

Continuation of Ser. No. 428,695, Apr. 25, 1995, abandoned.
This application Jun. 3, 1996, Ser. No. 656,902
Claims priority, application Japan, Apr. 28, 1994, 6-090424
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—737 12 Claims



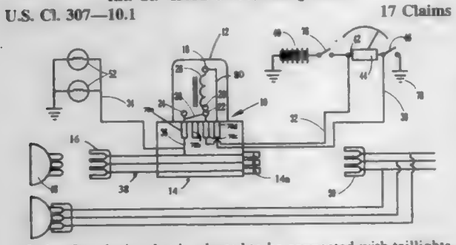
1. A semiconductor device having a bump electrode comprising:
a substrate;
a first conductive layer on a predetermined portion of said substrate;
an insulating layer on said substrate and said first conductive layer, and said insulating layer having an opening portion via which a predetermined portion of said first conductive layer is exposed;
a second conductive layer formed on said first conductive layer, a side wall of the opening portion of said insulating layer, and an upper surface of said insulating layer;
a third conductive layer covering said second conductive layer along said opening portion and an edge of said second conductive layer on said insulating layer and extending onto said insulating layer beyond said edge of said second conductive layer sufficiently to prevent side-etching of said edge; and
a fourth conductive layer provided on said third conductive layer, said fourth conductive layer, said third conductive layer, and said insulating layer together forming a side-etch region exclusive of the first and second conductive layers.

5,631,500

DEVICE THAT WILL ACTIVATE THE HEADLIGHTS AND TAILLIGHTS ONCE THE WINDSHIELD WIPER MOTOR IS SWITCHED ON

John B. Whitman, Rte. 3, Box 5300, Crawfordville, Fla. 32327; Chalmers A. Pritchard, deceased, late of Tallahassee, Fla., and by Brandee Crutchfield, legal representative, Rte. 5 Box 2505, Tallahassee, Fla. 32311

Continuation of Ser. No. 96,888, Jul. 26, 1993, abandoned.
This application Mar. 17, 1995, Ser. No. 406,679
Int. Cl.[6] H05B *37/00;* B60Q *1/076*
U.S. Cl. 307—10.1 17 Claims



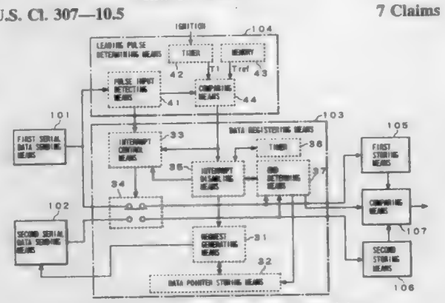
1. A safety device that is adapted to be connected with taillights, headlights, a windshield wiper motor, and a windshield wiper switch of a motor vehicle comprising in combination:
a first molded relay housing a first coil coupled to a first switch;
a male plug assembly is connected to said first molded relay;
said male plug assembly having first male extending means;
a female plug assembly having first female receiving means and is electrically and mechanically connected to said male plug assembly via a first wiring line;
a first circuit line has a first end that extends outwardly from said male plug assembly and a second end of said first circuit line is in electrical communication with a first end of said coil;
a second circuit line has a first end that extends outwardly from said male plug assembly and a second end of said second circuit line is in electrical communication with a second end of said coil via a second electrical communication means;
a third circuit line has a first end that extends outwardly from said male plug assembly or said female plug assembly and a second end of said third circuit line is coupled to a fourth circuit line;
said fourth circuit line has a first end that is coupled to said third circuit line and a second end of said fourth circuit line is coupled to said switch for enabling current to flow through said fourth circuit line when said switch is closed;
said male extending means is electrically connected to said fourth circuit line; and
wherein said safety device is adapted to be inserted into said motor vehicle by enabling said first circuit line to be connected to a windshield wiper motor or said windshield wiper switch such that said windshield wiper switch is grounded when said windshield wiper switch is closed, said second circuit line is adapted to be connected in series with an ignition switch, said third circuit line is adapted to be connected to said taillights, said female plug assemble is adapted to receive a male end of a driver's side headlight, said male plug assembly is adapted to receive a conventional plug of said driver's side headlight of said motor vehicle, and said headlights and said taillights will be activated once said windshield wiper switch is activated.

5,631,501

DATA PROCESSING METHOD AND APPARATUS FOR VEHICLE

Shinichi Kubota; Eiji Mutoh, and Susumu Maeda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 464,565
Claims priority, application Japan, Feb. 8, 1995, 7-042579; May 31, 1995, 7-155502
Int. Cl.[6] B60R *25/00*
U.S. Cl. 307—10.5 7 Claims



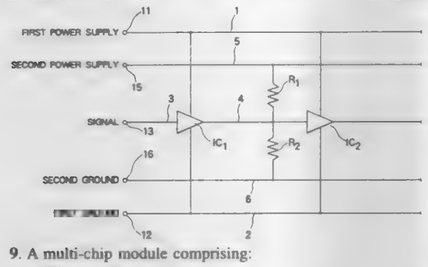
1. A vehicular data processing apparatus comprising:
first storing means for receiving and storing first serial data sent from an external device, said first serial data comprising distinctive leading data followed by other data,
means for sending out second serial data in response to a request;
second storing means for reading and storing the second serial data;
serial data registering means for selectively registering the first and second serial data in corresponding ones of the first and second storing means in a time-sharing mode;
means for comparing the first and second serial data stored in said first and second storing means, respectively; and
means for detecting said distinctive leading data of the first serial data; said serial data registering means being operative to read and store the second serial data sent in response to the request until said leading data is detected, and being operative to receive and store the first serial data in an interrupt mode after the leading data of the first serial data has been detected.

5,631,502

MULTI-CHIP MODULE

Osamu Shimada, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Mar. 4, 1994, Ser. No. 205,542
Claims priority, application Japan, Mar. 15, 1993, 5-054275
Int. Cl.[6] H01L *23/58;23/52*
U.S. Cl. 307—43 53 Claims



9. A multi-chip module comprising:
a multilayer substrate;
a first semiconductor chip mounted on the multilayer substrate, the first semiconductor chip including a signal output terminal, a power input terminal, and a ground terminal;
a second semiconductor chip mounted on the multilayer substrate, the second semiconductor chip including a signal input terminal, a power input terminal, and a ground terminal;
an inner line connecting the signal output terminal of the first semiconductor chip and the signal input terminal of the second semiconductor chip;
a first power supply line for supplying first power to the power input terminal of the first semiconductor chip and the power input terminal of the second semiconductor chip;
a second power supply line for supplying second power to the inner line through a resistor;
a first ground line for supplying a first ground potential to the ground terminal of the first semiconductor chip and the ground terminal of the second semiconductor chip; and
a second ground line for supplying a second ground potential through a resistor to the inner line.

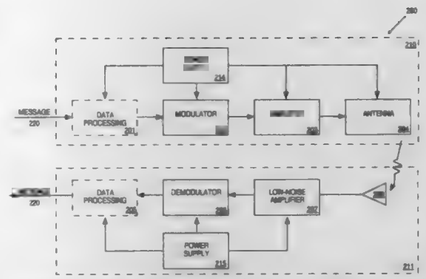
5,631,503

APPARATUS FOR GENERATING POWER FOR USE IN A COMMUNICATIONS DEVICE

Kenneth R. Cioffi, Milpitas, Calif., assignor to Wireless Access Inc., San Jose, Calif.

Filed Sep. 16, 1994, Ser. No. 307,933
Int. Cl.[6] H02J *7/04*
U.S. Cl. 307—66 28 Claims

1. An apparatus for generating power for use in an electronic device, said apparatus comprising:
a first power source to supply power at a first wattage;
a first battery to supply power at a second wattage, wherein the second wattage is greater than the first wattage; and
a charging mechanism coupled to the first power source and the first battery to charge the first battery using a voltage derived from the first power source.



5,631,504

AC/DC POWER SUPPLY

Carmeli Adahan, Netive Am 11, Ramot Gimmel, 97552 Jerusalem, Israel

Filed Nov. 4, 1993, Ser. No. 145,734
Int. Cl.[6] H02J *4/00*
U.S. Cl. 307—72 18 Claims

1. An AC/DC power supply, comprising:
an input connector for connection to an AC voltage source or a DC voltage source;
an input rectifier;
an output circuit including a power transformer having at least two primary windings;
a switching circuit outputting pulses to the primary windings of the power transformer;
an input sensing circuit for sensing whether said input connector is connected to said AC voltage source or said DC voltage source;
and a control circuit controlled by said input sensing circuit and effective, when said input connector is connected to said AC voltage source, to connect said input rectifier to said input connector and also to connect both primary windings in boosting relation to the output circuit; and when said input connector is connected to said DC voltage source, to bypass said input rectifier with respect to said input circuit, and to connect only one of said primary windings to the output circuit while bypassing another primary winding, such that coupling to the output circuit is maximized when aid input connector is connected to an AC voltage source, and the Voltage drop in the power transformer is minimized when the input connector is connected to DC voltage source.

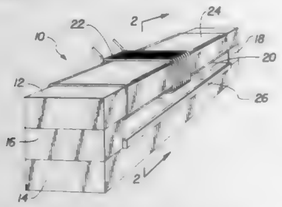
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5,631,505

MOVING COIL LINEAR ACTUATOR

Thomas M. Stephany, Churchville; William Mey, Rochester, and Edward P. Furlani, Lancaster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1995, Ser. No. 421,166
Int. Cl.[6] H02K *41/00*
U.S. Cl. 310—12 3 Claims



1. A moving coil linear actuator comprising:

a pair elongated core legs having spaced apart, parallel, opposing faces;

an elongated permanent magnet positioned in the space between the opposing core leg faces, the magnet having elongated top and bottom pole faces and first and second elongated non-pole edges, at least one pole face of the magnet being spaced from an opposing core leg face to form a magnetic field air gap therebetween, the cross section of the magnet in a plane normal to its elongated dimension having a width parallel to the face of the core leg which is substantially greater than the edge height perpendicular to the face of the core leg;

a moving coil encircling one of said core legs such that a side of said coil is disposed in the gap; and

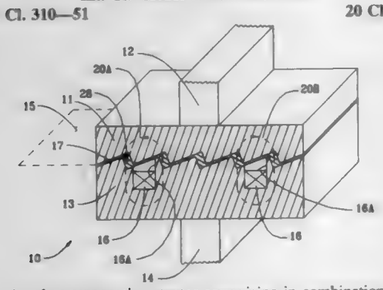
an elongated length of soft magnetic material disposed along at least one of said non-pole edges of the permanent magnet whereby an additive magnetic field is created by the elongated length of magnetic material that increases the field strength in the magnetic field gap over that created by the permanent magnet alone, the increased field strength occurring in a region of the magnetic field gap coincident with the length of soft magnetic material.

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SLOPED FACET ELECTROMAGNETIC ACTUATOR ADAPTED FOR VIBRATION COMPENSATION

Bradley E. Paden, Goleta, Calif., assignor to Tritium Technologies, Mesa, Ariz.

Filed Dec. 14, 1994, Ser. No. 358,064
Int. Cl.[6] H02K *5/24;41/00;15/00*
U.S. Cl. 310—51 20 Claims



1. An electromagnetic actuator comprising in combination:

(a) a first piece of ferromagnetic material having a first surface including a plurality of sloped facets;

(b) an electromagnet including

i. a second piece of ferromagnetic material having a second surface having a plurality of sloped facets corresponding, respectively, to the sloped facets of the first surface, the first surface and the second surface bounding a non-uniform gap; the sloped facets of the first and second surfaces defining a first portion of the gap, a second portion of the gap being defined by a remaining portion of the first surface and a remaining portion of the second surface, a thickness of the first portion of the gap being substantially less than a thickness of the second portion of the gap, whereby a Maxwell force between the first and second pieces of ferromagnetic material compresses an elastomeric material disposed to elastically couple the first and second pieces of ferromagnetic material and resist the Maxwell force between the first and second pieces of ferromagnetic material and urges translation of the first piece of ferromagnetic material relative to the second piece of ferromagnetic material in a direction perpendicular to the sloped facets; and

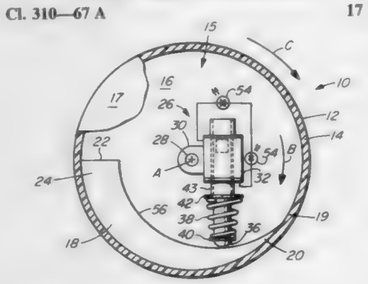
(c) a coil disposed in a coil slot in the second piece of ferromagnetic material adjacent to the second surface and adapted to receive a coil current producing magnetic flux flowing across the gap perpendicular to the first portion thereof and generating the Maxwell force between the first and second pieces of ferromagnetic material in a direction perpendicular to the sloped facets.

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ELECTRIC POWER GENERATOR

Suad Bajric, Etobicoke; Alp Batur; Bora Batur, both of Mississauga; Dominic Burns, Whitby; John F. Faulkner; Ljubisa Sandovski, both of Brampton; Rene Sonnenschein, Whitby, and Howard N. Stanleigh, Thornhill, all of Canada, assignors to Berent Light Limited, Mississauga, Canada

Filed Jan. 19, 1996, Ser. No. 588,849
Int. Cl.[6] H02K *11/00;7/06;35/02*
U.S. Cl. 310—67 A 17 Claims



1. An electric power generator comprising:

a housing having an inner cavity having a center and an inner circumferential surface spaced at a varying radial extent from said center;

a magnetic flux generator rotatably mounted eccentrically to said housing at said center, said magnetic flux generator having a central passageway for slidably receiving a shaft having a magnet, said magnetic flux generator having a coil mounted about the central passageway in an inductive relation with said magnet;

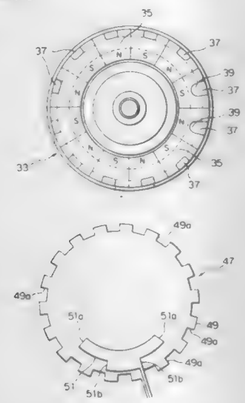
a biasing means between said shaft and magnetic flux generator for urging the shaft into contact with said inner circumferential surface whereby as said housing rotates, said magnetic flux generator rotates relative to said housing urging said shaft to travel along said inner circumferential surface causing relative reciprocating motion of said shaft through said passageway inducing a voltage in said coil.

5,631,508

COST-SAVING, SMALL-SIZED MOTOR WITH IMPROVED STABILITY OVER WIDE SPEED RANGE

Yasuhisa Cho, Hiratsuka, and Hiroshi Okusa, Isehara, both of Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1994, Ser. No. 279,994
Claims priority, application Japan, Jul. 27, 1993, 5-040814
Int. Cl.[6] H02K *11/00;1/22;21/24*
U.S. Cl. 310—68 B 22 Claims



1. A motor comprising:

(a) a shaft rotatably supported by a supporting member;

(b) a rotor member fixed to said shaft;

(c) a magnet assembly comprising a plurality of driving magnetized elements which are circumferentially aligned with each other such that two adjacent ones of said driving magnetized elements have different poles from each other, said magnet assembly being fixed to said rotor member;

(d) an armature having armature coils which are opposed to said magnet assembly and which are for use in generating induction magnetic fields to rotate said rotor member by interaction between the magnetic fields generated by said armature coils and said magnet assembly; and

(e) magnetic field sensing means disposed between said armature coils and said magnet assembly;

said magnet assembly further comprising:

(1) a plurality of first sensed magnetized elements which are circumferentially aligned with each other such that two adjacent ones of the first sensed magnetized elements and the driving magnetized elements have different poles from each other; and

(2) two second sensed said magnetic elements, the first sensed magnetized elements being of a different pole from respective corresponding driving magnetized elements, the second sensed magnetized elements being disposed on two adjacent ones of the driving magnetized elements, each of the second sensed magnetized elements being of a different pole from the corresponding driving magnetized element on which it is disposed and being radially displaced from the corresponding first sensed magnetic element, and

said magnetic field sensing means comprising:

(1) a first magnetic field sensor for sensing, as said rotor member rotates, the magnetic fields generated around the driving and first sensed magnetized elements; and

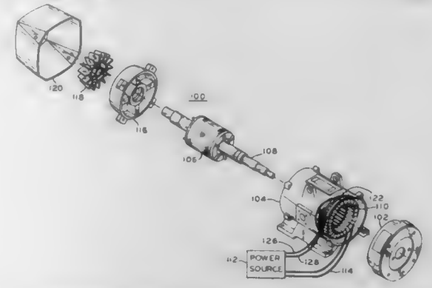
(2) a second magnetic field sensor, for sensing, as said rotor member rotates, the magnetic fields generated around the driving and second sensed magnetized elements.

5,631,509

MOTOR HAVING THERMOSTATICALLY CONTROLLED OR LIMITED SPACE HEATER

James R. Crowell, Huntertown, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 27, 1994, Ser. No. 281,336
Int. Cl.[6] H02K *11/00*
U.S. Cl. 310—68 C 21 Claims



1. An apparatus adapted to be connected to a power source, the apparatus for driving a rotatable component, the apparatus comprising:

a motor having a stationary assembly and a rotatable assembly in magnetic coupling relation to the stationary assembly, the rotatable assembly in driving relation to the rotatable component, the stationary assembly including windings adapted to be energized by the power source to produce an electromagnetic field for rotating the rotatable assembly, the windings having a maximum desired operating temperature and a predetermined minimum desired temperature rise;

a heater having a heating element in a conductive heat exchange relationship to and on an outer surface of the windings, the heater adapted to be connected to the power source at least when the motor windings are not energized to generate heat transferred from the heating element to the windings to increase the temperature of the windings;

a thermostat for sensing an operating temperature of the heater and for sensing an operating temperature of the motor windings, said thermostat connected in series between the heater and the power source, the thermostat having an opening temperature and a closing temperature such that when the temperature of the thermostat is below the closing temperature, the thermostat is adapted to provide a closed circuit between the heater and the power source to energize the heater and such that when the temperature of the thermostat is above the opening temperature, the thermostat is adapted to provide an open circuit between the heater and the power source to inhibit energizing the heater;

wherein the opening temperature of the thermostat is less than the maximum desired operating temperature of the motor windings so that the thermostat presents an open circuit and the heater does not generate heat immediately after energization of the motor windings is discontinued when the motor has reached the maximum desired operating temperature; and

wherein the closing temperature of the thermostat is greater than an ambient temperature of the motor so that the thermostat presents a closed circuit and the heater generates heat when the thermostat temperature is below the closing temperature whereby the thermostat limits a maximum temperature of the heater so that the generated heat is generally insufficient to cause overheating of the heater and the generated heat inhibits condensation on the windings during periods when the motor windings are not energized.

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5,631,510

ELECTRIC DRIVE WITH BRAKES, IN PARTICULAR FOR HOISTS, LIFTING DEVICES OR POSITIONING TRANSPORTING SYSTEMS

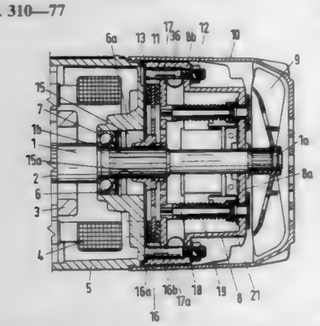
Heinz Flaig, Bochum; Josef Saeftel, Castrop-Rauxel; Harald Bitsch; Herbert Dreher, both of Witten; Axel Hauschild, Dortmund; Johannes Kluge, Wetter; Anton Münzebrock, Dortmund; Dirk Schulte, Schwerte; Roland Staggl, Wetter, and Karl Zacharias, Schwerte, all of Germany, assignors to Mannesmann Aktiengeselischaft, Dusseldorf, Germany

Filed Nov. 7, 1994, Ser. No. 335,467

Claims priority, application Germany, Nov. 5, 1993, 43 38 570.2

Int. Cl.[6] H02K *7/10*

U.S. Cl. 310—77 10 Claims



1. An electric drive with brakes, comprising: a motor shaft having a toothing thereon; a brake disk having a brake face on each side and being mounted on the shaft toothing so as to be axially movable on the motor shaft and so as to rotate therewith; stationary counter-brake disks, one of the counter-brake disks being arranged on each side of the brake disk; spring means for pressing the brake disk into engagement with the counter-brake disks; and electromagnetic means responsive to current for releasing the disks against spring force of the spring means, the electromagnetic means including at least two a.c. magnets, two separate E-shaped magnet coil yokes having end faces, and two E-shaped magnet yokes having counter-pole faces arranged opposite the end faces of the magnet coil yokes, the magnet yokes being arranged and adapted to be angularly movable when current is applied to the a.c. magnets so that the counter-pole faces of the magnet yokes are alignable with the end faces of the E-shaped magnet coil yokes without application of moment.

5,631,511

GEAR MOTOR WITH AN ELECTRIC MOTOR HAVING A HOLLOW SHAFT

Winfried Schulmann, Kleinosteim; Franz Thimm, Alzenau, and Helmut Kaiser, Bruchköbel, all of Germany, assignors to Leybold Aktiengesellschaft, Hanau am Main, Germany

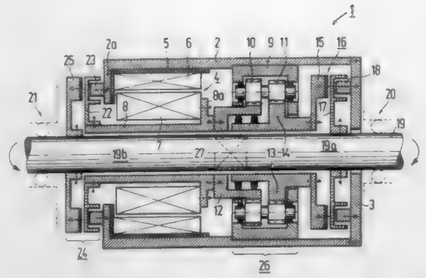
Filed Sep. 23, 1994, Ser. No. 311,355

Claims priority, application Germany, Sep. 23, 1993, 43 32 323.5

Int. Cl.[6] H02K *7/10;7/116;* F16D *27/12*

U.S. Cl. 310—83 20 Claims

1. Gear motor (**1**, **1***a*) with an electric motor (**4**) whose rotor (**7**) has a hollow shaft (**8**) which is disposed on an output shaft (**19**, **19***a*, **19***b*) and whose torque can be transmitted to the output shaft (**19**, **19***a*, **19***b*) through a transmission (**26**) with at least one transmission speed and through a first clutch (**16**), characterized in that the hollow shaft (**8**) can be engaged with the output shaft (**19**, **19***a*, **19***b*) as desired, so as to produce various speeds of the output



shaft (**19**, **19***a*, **19***b*), while circumventing said transmission (**26**) when desired, by means of a second clutch (**24**) which can be operated independently of the first clutch.

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SYNCHRONOUS MOTOR HAVING MAGNETIC POLES OF PERMANENT MAGNET AND MAGNETIC POLES OF A SOFT MAGNETIC MATERIAL

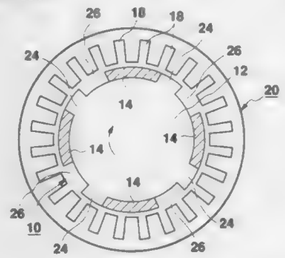
Yasutomo Kawabata, Aichi-ken, and Tetsuya Miura, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 24, 1995, Ser. No. 409,597

Claims priority, application Japan, Apr. 13, 1994, 6-075121; Jan. 31, 1995, 7-014614

Int. Cl.[6] H02K *21/12*

U.S. Cl. 310—156 12 Claims



1. A permanent magnet type synchronous motor, comprising:

a stator having a bore extending longitudinally therethrough; and

a substantially cylindrical rotor sized and adapted for rotational movement within said bore and having an outer peripheral surface comprising:

a plurality of hard magnetic poles fabricated from a permanent magnet material with each hard magnetic pole having a uniform arcuate length; and

a plurality of soft magnetic poles fabricated from a soft magnetic material whereby adjacent ones of said hard magnetic poles are spaced apart from one another at intervals substantially equal to the arcuate length of said hard magnetic poles with a respective one of said soft magnetic poles disposed between said adjacent ones of said hard magnet poles in a manner to abut a respective one of said hard magnetic poles and to define a space between said respective one of said soft magnetic poles and a consecutive one of said hard magnetic poles.

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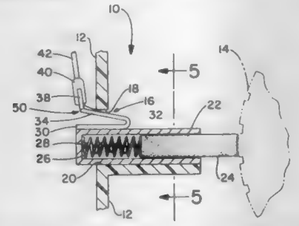
DYNAMOELECTRIC BRUSH HOLDER CLIP AND CONNECTOR

Michael Coles; Robert A. Ciccarelli, Jr., both of Kent, and Nick Vona, Jr., Uniontown, all of Ohio, assignors to Ametek, Inc., Kent, Ohio

Filed Mar. 20, 1995, Ser. No. 364,825

Int. Cl.[6] H02K *13/00;11/00*

U.S. Cl. 310—239 15 Claims



1. Apparatus for implementation in a dynamoelectric machine, comprising:

a housing;

a commutator received within said housing;

a brush assembly passing through an opening in said housing; and

a clip interposed between said brush assembly and said housing, said clip comprising a base member and a deflectable lip extending over said base member obliquely from an end thereof and positionally securing said brush assembly with respect to said housing.

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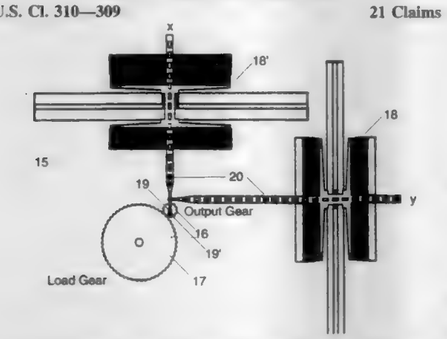
MICROFABRICATED MICROENGINE FOR USE AS A MECHANICAL DRIVE AND POWER SOURCE IN THE MICRODOMAIN AND FABRICATION PROCESS

Ernest J. Garcia, and Jeffry J. Sniegowski, both of Albuquerque, N.M., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 9, 1994, Ser. No. 257,317

Int. Cl.[6] F16H *21/22;* H02N *1/00*

U.S. Cl. 310—309 21 Claims



1. A microengine batch fabricated by polysilicon surface micromachining techniques, comprising:

a substrate base:

a mechanical output gear made rotatably secured by a central flanged restraining hub formed on and attached to said substrate base, said gear having a center and an outer perimeter, said gear for providing direct rotational power to a micromechanism;

a linear actuator means formed on said substrate base and linked to said mechanical output gear near said outer perimeter by a linkage means, said linear actuator means for causing rotation of said mechanical output gear; and

a linkage means for linking said linear actuator means to said mechanical output gear wherein said linkage means is rotatably connected to said gear between the center and the outer perimeter of said gear.

5,631,515

SURFACE ACOUSTIC WAVE DEVICE

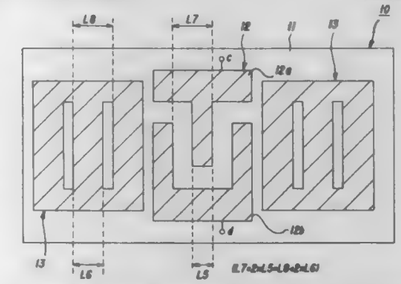
Seiji Mineyoshi, and Osamu Kawachi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 15, 1995, Ser. No. 404,310

Claims priority, application Japan, Mar. 17, 1994, 6-046707; Dec. 13, 1994, 6-308487

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—313 B 35 Claims



1. A surface acoustic wave device comprising a piezoelectric substrate, an inter-digital transducer provided on a surface of the piezoelectric substrate, and reflectors mounted as opposed to each other on both sides of the inter-digital transducer on the surface of the piezoelectric substrate wherein

$$\alpha \cdot L5 = L6;$$
$$L7 = L8;$$

α indicates a coefficient (≠1);

L5 indicates an electrode finger width of the inter-digital transducer;

L6 indicates the electrode finger width of the reflector;

L7 indicates a grating cycle of the inter-digital transducer; and wherein

L8 indicates the grating cycle of the reflector.

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VIBRATION TYPE ACTUATOR DEVICE

Kenichi Kataoka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 68,075, May 28, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 397,734

Claims priority, application Japan, Jun. 2, 1992, 4-141455

Int. Cl.[6] H02N *2/00*

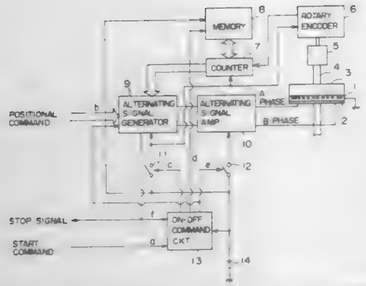
U.S. Cl. 310—316 15 Claims

1. A control system for an actuator device having a vibration member and a movable member, said control system obtaining a driving force by applying a driving signal to an electro-mechanical energy conversion element on said vibration member, said control system comprising:

(a) a detection circuit for detecting at least one of a moving amount or a position of said movable member relative to said vibration member caused by the driving force and for producing a detection result;

(b) a driving control circuit for outputting a driving control signal in accordance with the detection result of said detection circuit;

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(c) a driving circuit, having an operative state and an inoperative state, for supplying the driving signal to the actuator device in accordance with the driving control signal output by said driving control circuit;

(d) a power supply circuit for supplying electric power to said driving circuit, said driving control circuit, and said detection circuit;

(e) a power supply control circuit for stopping the power supply to said driving control circuit and said detection circuit when said driving circuit is switched from the operative state to the inoperative state, and for permitting power supply to said driving control circuit and said detection circuit when said driving circuit is switched from the inoperative state to the operative state; and

(f) a memory for storing the detection result of said detection circuit when said driving circuit is switched from the operative state to the inoperative state, and for transferring a memory value to said detection circuit when said driving circuit is switched from the inoperative state to the operative state.

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ULTRASONIC MOTOR AND DRIVING FOR THE ULTRASONIC MOTOR

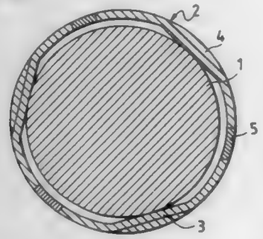
Kazuo Kato, Toukai-mura; Takashi Sase, Hitachi; Kikuo Tomita, Hitachioota; Shuzo Oshima, Mizusawa; Muneo Chiba, Chigasaki; Tomohiko Douken, Hitachi, and Kazuyoshi Takizawa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Media Electronics Co. Ltd., Misusawa, both of Japan

Filed May 8, 1995, Ser. No. 439,062

Claims priority, application Japan, May 23, 1994, 6-108099; May 26, 1994, 6-112443

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—323 **7 Claims**



1. An ultrasonic motor comprising:

a disk shaped piezoelectric stator having a center of gravity which revolves eccentrically through excitation by an ultrasonic resonant frequency signal; and

a cap shaped plastic rotor fitted to said disk shaped piezoelectric stator through the outer circumference of said disk shaped piezoelectric stator, said cap shaped plastic rotor includes a side plate facing one of the major faces of said disk shaped piezoelectric stator and for transmitting a rotating torque for an external load and more than two and less than seven flat contacting members extending in the tangential direction of the outer circumference and in the axial direction of said disk shaped piezoelectric stator and disposed along the outer circumference of said disk shaped piezoelectric stator with an equal angular spacing, and is formed integrally through an injection molding with a plastic material having a high Young's modulus and a lower hardness than that of said disk shaped piezoelectric stator, thereby the elasticity of the cap shaped plastic rotor as a whole exerts substantially equal predetermined contacting pressures on the other circumference of said disk shaped piezoelectric stator through said respective flat contacting members.

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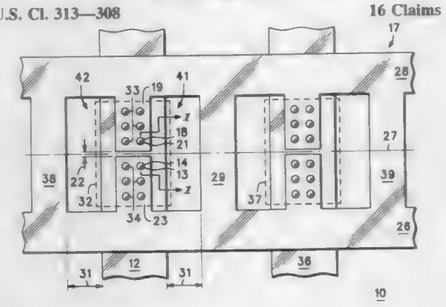
ELECTRON SOURCE HAVING SHORT-AVOIDING EXTRACTION ELECTRODE AND METHOD OF MAKING SAME

Dean Barker, Chandler, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed May 2, 1995, Ser. No. 433,884

Int. Cl.[6] H01J *1/46*

U.S. Cl. 313—308 **16 Claims**



10. A display comprising:

a plurality of column conductors;

a plurality of field emission emitters on each column conductor; and

a plurality of row conductors overlying the plurality of column conductors and crossing the plurality of column conductors forming a pixel at an intersection therewith, each row conductor having a first longitudinal element along a major axis, a second longitudinal element juxtaposed to the first longitudinal element, a first extraction section within the pixel and extending from the first longitudinal element toward the second longitudinal element wherein the first extraction section overlays a first portion of the plurality of field emission emitters, a second extraction section within the pixel and extending from the second longitudinal element toward the first extraction section wherein the second extraction section overlays a second portion of the plurality of field emission emitters, a space separating the first extraction section and the second extraction section, and a plurality of transverse connectors extending from the first longitudinal element to the second longitudinal element wherein each transverse connector is spaced longitudinally from the pixel and each of the plurality of column conductors.

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FIELD EMISSION MICRO-TIP

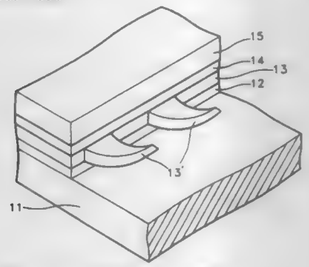
Jong-min Kim, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 31, 1995, Ser. No. 509,057

Claims priority, application Rep. of Korea, Mar. 29, 1995, 95-6888

Int. Cl.[6] H01J *1/02;9/02*

U.S. Cl. 313—336 **10 Claims**



1. A field emission micro-tip, comprising:

a substrate;

an adhesive layer formed of a material etchable in an etching solution at a first etching rate higher than a predetermined rate, and disposed on said substrate;

a cathode formed of a metal having an internal stress greater than a value predetermined in relation to an internal stress of said adhesive layer and having a negligible etching rate in said etching solution, and disposed on said adhesive layer;

a micro-tip extending outwardly from said cathode and formed from a same material as said cathode;

a mask formed of a material etchable in said etching solution at a second etching rate lower than said first etching rate, and disposed on said cathode; and

a metal pattern formed on said mask for supporting said cathode.

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COLOR CATHODE-RAY TUBE WITH NONSPHERICAL CURVED SHADOW MASK

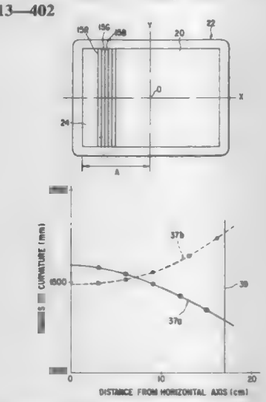
Masatsugu Inoue, Kumagaya, and Takashi Murai, Fukaya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 25, 1994, Ser. No. 328,412

Claims priority, application Japan, Nov. 26, 1993, 5-295800

Int. Cl.[6] H01J *29/07*

U.S. Cl. 313—402 **8 Claims**



1. A color cathode-ray tube comprising:

a substantially rectangular panel having a curved inner surface;

a phosphor screen formed on the inner surface of the panel; and

a shadow mask including a mask body having a substantially rectangular effective surface which includes a plurality of electron beam apertures and which has nonspherical curved surface shape opposing the phosphor screen, and a mask frame attached to a peripheral portion of the mask body,

a tube axis being defined as passing through a center of the main body, a horizontal axis being defined as passing through the center in a direction perpendicular to the tube axis, a vertical axis being defined as passing through the center in a direction perpendicular to the tube axis and the horizontal axis, long sides of the effective surface extending parallel with the horizontal axis, and short sides of the effective surface extending parallel to the vertical axis,

wherein along the vertical axis, a radius of curvature of the effective surface is smaller at portions of the effective surface which are near the long sides than at the central portion of the effective portion, and

wherein along a vertical line that is parallel to the vertical axis and that is offset from the center of the effective surface, the radius of curvature of the effective surface is larger at the portions of the effective surface which are near the long sides than at a portion of the effective surface that is adjacent to the horizontal axis.

5,631,521

ELECTRON GUN FOR COLOR CATHODE RAY TUBE

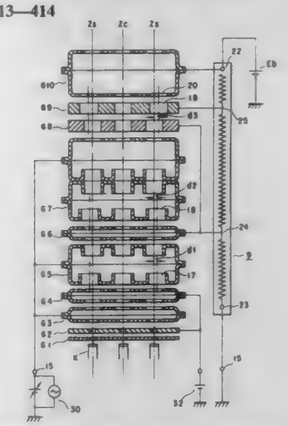
Takahiro Hasegawa, Gyoda; Kazunori Satou, Fukaya, and Shigeo Fukuda, Gunma-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Dec. 14, 1994, Ser. No. 358,617

Claims priority, application Japan, Dec. 14, 1993, 5-312364

Int. Cl.[6] H01J *29/51;29/50*

U.S. Cl. 313—414 **3 Claims**



1. A color cathode ray tube apparatus, comprising:

generating means for generating two side beams and a center beam arranged in one line;

emitting means, to which electron beams are landed, for emitting light rays;

deflecting means for deflecting the electron beams, thereby to scan the emitting means;

voltage generating means for generating a voltage which changes in synchronization with deflection of the electron beams; and

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electron lens means disposed between said beam generating means and said emitting means, (L1, L2, L3, L4) for focusing and converging electron beams from the generating means, including first and second electrodes (G5, G7) operatively coupled to said voltage generating means and applied with a voltage generated by said voltage generating means, which changes in synchronization with deflection of electron beams (7R, 7G, 7B), and a third electrode (G9) operatively coupled to and applied with a voltage via a resistor (9), and electrodes (G4, G6, G8) respectively provided adjacent to the first, second, and third electrodes, said electrodes being disposed in the axial direction of said tube, said first electrode and said electrode (G4) adjacent thereto forming a first eccentric lens (L1) for deflecting the side beams (7B, 7R) in a direction toward the center beam (7G), said second electrode and said electrode (G6) adjacent thereto forming a second eccentric lens (L2) for deflecting the pair of side beams (7R, 7B) in a direction away from the center beam (7G), said first eccentric lens (L1) being formed between said second eccentric lens (L2) and said beam generating means, said third electrode and the electrode (G8) adjacent thereto forming a third eccentric lens (L3) for deflecting the pair of side beams (7R, 7B) in a direction toward the center beam, said third eccentric lens (L3) being formed between said second eccentric lens (L2) and said emitting means, and said electron lens means (L4) being common to the three electron beams (7R, 7G, 7B), and being formed between the second and third eccentric lenses (L2, L3).

5,631,522

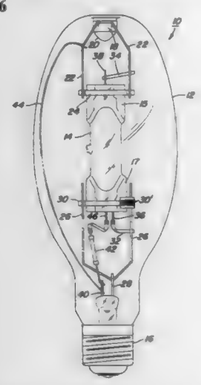
LOW SODIUM PERMEABILITY GLASS

Curtis E. Scott; Mohan Rajaram, both of Mentor, and Joseph A. Shrawder, Solon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 9, 1995, Ser. No. 437,843

Int. Cl.[6] H01J *17/16;61/30*

U.S. Cl. 313—636 **21 Claims**



1. A lamp having a filament or arc discharge light source surrounded by an envelope wherein the improvement comprises said envelope being comprised of SiO_2 containing at least about 10 ppm by weight of a first element selected from the group consisting of aluminum in an amount less than 10,000 ppm, lanthanum, dysprosium, niobium, erbium, and mixtures thereof, and at least one of yttrium and cesium.

5,631,523

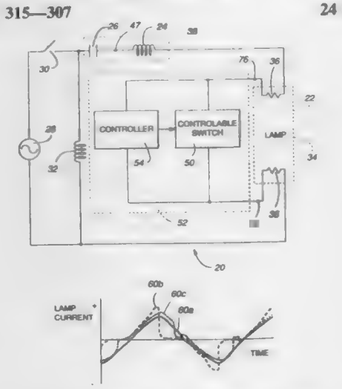
METHOD OF REGULATING LAMP CURRENT THROUGH A FLUORESCENT LAMP BY PULSE ENERGIZING A DRIVING SUPPLY

Dan E. Rothenbuhler, Meridian, and Samuel A. Johnson, Eagle, both of Id., assignors to Beacon Light Products, Inc., Meridian, Id.

Continuation of Ser. No. 530,563, Sep. 19, 1995, and a continuation of Ser. No. 530,673, Sep. 19, 1995. This application Sep. 19, 1995, Ser. No. 531,037

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—307 **24 Claims**



1. A method of regulating an operating current conducted through a plasma between cathodes of a fluorescent lamp while the lamp is continuously lighted by energy supplied from an AC electrical source, the source delivering AC source current at a predetermined source frequency in half-cycles having a periodic half-cycle interval established by the source frequency, said regulating method comprising the steps of:

connecting a resonant circuit including at least one electrical energy storage element in series in a current path through the plasma and the cathodes and the source;

conducting half-cycles of primary source current to the resonant circuit during each entire periodic half-cycle interval;

storing a normal amount of energy in the resonant circuit during each periodic half cycle interval as a result of conducting the primary source current to the resonant circuit;

deriving the operating current from the energy stored in the resonant circuit;

conducting the operating current through the plasma during lamp illumination intervals which occur at the same predetermined frequency as the half-cycles of the primary source current;

during a predetermined conductive time interval of a duration less than the entire periodic half-cycle interval of each half-cycle of primary source current, conducting a charging current in addition to the primary current from the source to the resonant circuit, the charging current storing additional energy in the resonant circuit in a predetermined amount greater than that normal amount of energy stored in the resonant circuit by the primary source current;

releasing the additional stored energy along with the normal stored energy as operating current during a lamp illumination interval occurring after the half cycle in which the charging current was conducted and the additional energy was stored to regulate the operating current delivered to the plasma; and

performing said steps during each half-cycle and lamp illumination interval while the lamp is lighted.

5,631,524

SWITCHING APPARATUS

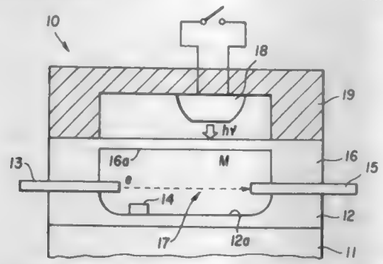
Kazuo Matsuzaki, and Arika Amano, both of Nagano, Japan, assignors to Fuji Electric Co. Ltd., Japan

Filed Jul. 22, 1994, Ser. No. 279,163

Claims priority, application Japan, Jul. 28, 1993, 5-185414

Int. Cl.[6] H01J *11/04*

U.S. Cl. 315—344 **4 Claims**



1. A switching apparatus driven by an optical wave comprising:

an insulation layer, formed on a semiconductor substrate, comprising a recess portion;

a cathode formed on one side of said recess portion on said insulation layer;

an anode formed on another side opposed facing to said one side of said recess portion on said insulation layer;

a control electrode formed on the side of said cathode on said recess portion;

an optically transparent sealing means for enclosing dilute gas in vacuum space enveloping therein said cathode, said anode, and said control electrode; and

an optical irradiation means for intermittently irradiating an optical wave to said vacuum space.

5,631,525

ELECTRON STORAGE RING APPARATUS COMPRISING A BENDING MAGNET UNIT

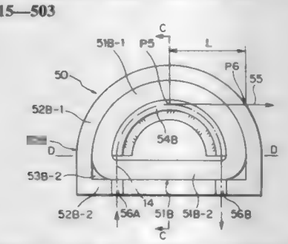
Eijiro Toyota, Tokyo, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 406,588

Claims priority, application Japan, Apr. 14, 1994, 6-075596

Int. Cl.[6] H05H *15/00;7/00;11/00*

U.S. Cl. 315—503 **11 Claims**



1. An electron storage ring apparatus comprising at least two bending magnet units for defining an electron beam orbit of an arc shape, which is characterized in that:

each of said bending magnet units comprises D-shaped upper and lower coil members each of which has an arc-shaped portion and a linear portion and upper and lower yokes which have coil receiving grooves for entirely receiving said D-shaped upper and said D-shaped lower coil members, respectively, said upper and said lower yokes being welded to each other so that said D-shaped upper and said D-shaped lower coil members received in said coil receiving grooves face to each other.

5,631,526

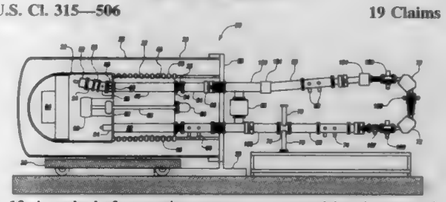
HYDROGEN ION ACCELERATOR

James A. Ferry, Middleton, Wis., assignor to National Electrostatics Corp., Middleton, Wis.

Filed May 15, 1995, Ser. No. 441,457

Int. Cl.[6] H05H *5/04*

U.S. Cl. 315—506 **19 Claims**



10. A method of generating gamma rays comprising the steps of:

a) charging a high voltage electrode from a first source of high voltage current;

b) generating a hydrogen ion beam and passing it through an acceleration tube between the high voltage electrode and a ground plane:

c) bending the hydrogen ion beam through about 180° so it returns to the high voltage electrode;

d) passing the beam through a target before returning the hydrogen ion beam to the high voltage electrode;

e) generating gamma rays of a selected energy through beam interaction with the target; and

f) recovering energy from the beam by decelerating the hydrogen ion beam after it passes through the target by returning the beam to the high voltage electrode thus collecting charge from the beam at the high voltage electrode.

5,631,527

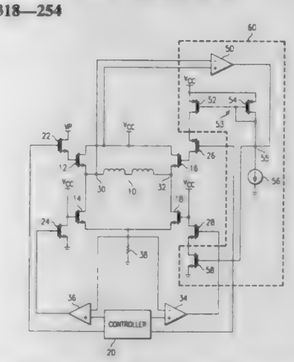
VOICE COIL MOTOR FEEDBACK CONTROL CIRCUIT

Athos Canclini, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 6, 1994, Ser. No. 300,952

Int. Cl.[6] H02K *23/00*

U.S. Cl. 318—254 **10 Claims**



1. A circuit for driving a voice coil motor comprising:

a voice coil motor having first node and having a second node;

an H-bridge circuit comprising;

a first transistor having a current path between a supply voltage and the first node of said voice coil motor, and having a control element;

a second transistor having a current path between the first node of said voice coil motor and a voltage reference, and having a control element;

a third transistor having a current path between the supply voltage and the second node of said voice coil motor, and having a control element; and

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a fourth transistor having a current path between the second node of said voice coil motor and the voltage reference, and having a control element;

a means for controlling said first, second, third and fourth transistors having a first output connected to the control element of said first transistor, having a second output connected to the control element of said second transistor, having a third output connected to the control element of said third transistor, and having a fourth output connected to the control element of said fourth transistor; and

a feedback loop having an input coupled to the first node of said voice coil motor and having an output coupled to the control elements of said third transistor and said fourth transistor for changing the conductivity of said third and fourth transistors responsive to the voltage on the first node of said voice coil.

5,631,528

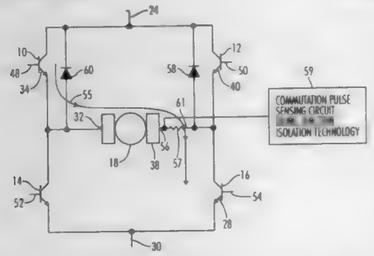
ELIMINATION OF MOTOR NEGATIVE VOLTAGES DURING MOTOR BRAKE

Dan Agiman, Irvine, Calif., assignor to Linfinity Microelectronics, Garden Grove, Calif.

Filed May 4, 1995, Ser. No. 434,764

Int. Cl.[6] H02P *3/12*

U.S. Cl. 318—293 **16 Claims**



1. A method for elimination of motor negative voltages and sensing positive braking during braking of a motor, having a first and a second terminals, by use of a high and a low potential terminals, wherein, in a drive mode, current is driven from the first terminal to the second terminal of the motor, the method comprising the steps of:

coupling the second terminal of the motor to the high potential terminal;

coupling a diode from the first terminal of the motor to the high potential terminal, the diode being connected such that the diode's forward current is from the first terminal of the motor to the high potential terminal; and

coupling a commutation pulse sensing circuit employing junction isolation technology to one of the first and second motor terminals.

5,631,529

ELECTRIC POWER STEERING

Yasuo Shimizu; Yashito Nakamura, and Yoshiki Noro, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 456,527

Claims priority, application Japan, Jun. 6, 1994, 6-123854

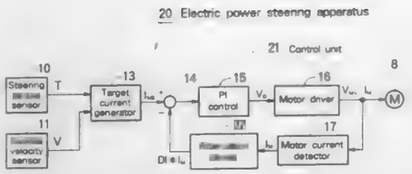
Int. Cl.[6] B62D *5/04*

U.S. Cl. 318—432 **9 Claims**

1. An electric power steering apparatus comprising:

a steering torque sensor for sensing steering torque applied to a steering system;

a motor for providing a steering power assist to the steering system;



target current setting means for determining a target current of said motor on the basis of a steering torque signal output from said steering torque sensor;

motor current detecting means for detecting a motor current flowing through said motor;

control means for controlling energization of said motor on the basis of a deviation between the target current and the motor current, said control means including at least proportional and integral elements, and

attenuation means provided in a path connecting said motor current detecting means and said control means.

5,631,530

KEY ELEMENT FOR THE CONTROL OF ELECTROMOTORS, ESPECIALLY FOR CRANES AND OTHER HOISTING EQUIPMENT

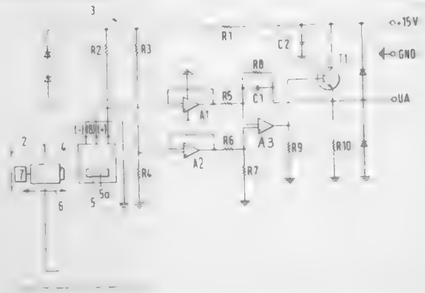
Kurt Hoppe, Breckerfeld; Markus H. Schmalstieg, Hagen; Bernhard Stanski, Recklinghausen, and Anton Münzebrock, Dortmund, all of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Apr. 11, 1995, Ser. No. 420,361

Claims priority, application Germany, Apr. 11, 1994, 44 12 555.0

Int. Cl.[6] G01D *5/12;* **H02P** *7/00;* **B66C** *13/22*

U.S. Cl. 318—551 **8 Claims**



1. A hand-held key element for controlling an electromotor, the key element comprising:

a housing;

a key switch pestle positioned within the housing so as to be axially movable;

a Hall sensor including an active area positioned within the housing in alignment with the key switch pestle and connected to the electromotor for generating a control signal for controlling the electromotor;

a permanent magnet attached to an axial end of the key switch pestle so as to face the Hall sensor and movable with the key switch pestle both towards and away from the Hall sensor with respect to the active area in an axially single pole manner, whereby, as the magnet moves towards the Hall sensor, an increased flux density is sensed by the Hall sensor thereby increasing the voltage of said control signal supplied to said electromotor.

5,631,531

POSITIONING AND CONTROL APPARATUS THAT IS INTERACTIVELY PROGRAMMABLE USING A DISPLAY

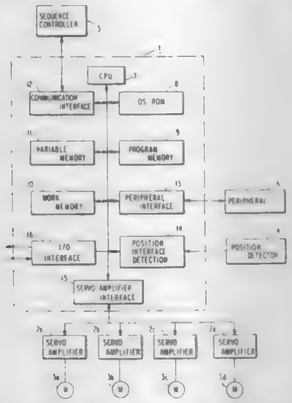
Yoshichika Takizawa; Yasuyuki Suzuki; Misako Okada; Makoto Nishimura; Hidehiko Matsumoto; Yasuharu Kudo, and Tohru Tsujimoto, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 268,109, Jul. 6, 1994, which is a division of Ser. No. 936,841, Aug. 27, 1992, Pat. No. 5,355,062. This application Dec. 29, 1994, Ser. No. 366,120

Claims priority, application Japan, Sep. 13, 1991, 3-234635

Int. Cl.[6] G05B *11/18*

U.S. Cl. 318—560 **12 Claims**



1. A method of operating a drive simulation means in a positioning apparatus for driving and controlling a motor used to move a machine, wherein the drive simulation means is connected to a virtual input axis and a virtual output axis and is responsive to information on an input axis, the method comprising the steps of:

detecting a position of the input axis, generating machine position information based on the detected position of the input axis, and providing said machine position information to the drive simulation means via the virtual input axis;

setting a constant for normalizing said machine position information based on movements of the input axis and information of the virtual output axis, the virtual input axis and the virtual output axis each comprising a data storage area;

generating position address data based on said machine position information and said constant, and outputting the generated position address data to the virtual output axis; and

controlling a motor based on said position address data output in said generating step.

5,631,532

FUEL CELL/BATTERY HYBRID POWER SYSTEM FOR VEHICLE

Ryuji Azuma, Hekinan; Takeshi Hara, Chiryu, and Kenji Kato, Aichi-ken, all of Japan, assignors to Kabushikikaisha Equos Research, and Aisin Aw Co., Ltd, both of Japan

Filed Oct. 31, 1994, Ser. No. 332,818

Claims priority, application Japan, Feb. 24, 1994, 6-053327

Int. Cl.[6] H01M *10/46*

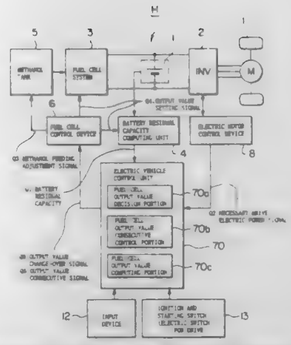
U.S. Cl. 320—5 **9 Claims**

1. A hybrid type power source for an electric vehicle, comprising:

a rechargeable battery for supplying electric power to drive an electric motor;

a fuel cell for generating electric power to charge said battery;

battery residual charge detection means for detecting the residual charge contained in said battery; and



fuel cell output control means for defining a plurality of different ranges of residual battery charge, for determining which one range of the plurality of ranges encompasses the detected residual charge and for commanding the fuel cell to charge the battery at one of a plurality of different power levels corresponding, respectively, to the plurality of different ranges of residual battery charge, each of said power levels serving to charge the battery, which one power level remains constant so long as the detected residual charge remains within said one range.

5,631,533

CHARGING AND DISCHARGING CONTROL DEVICE FOR SECONDARY BATTERY

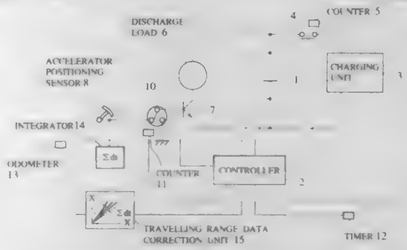
Takashi Imaseki, Zushi, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 15, 1995, Ser. No. 405,054

Claims priority, application Japan, Mar. 15, 1994, 6-070039

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—5 **5 Claims**



1. A charging and discharging control device for a secondary battery, said control device comprising:

discharging control means for stopping discharging of said secondary battery when a voltage thereof becomes less than a predetermined discharge stop voltage during discharging of said secondary battery;

charging control means for stopping charging of said secondary battery when the voltage thereof is in excess of a predetermined charge stop voltage during charging of said secondary battery; and

history estimating means for estimating the charging/discharging history of said secondary battery on the basis of condition thereof;

wherein said discharging control means corrects said predetermined discharge stop voltage so as to be increased corresponding to the charging/discharging history estimated by said history estimating means;

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wherein said charging control means corrects said predetermined charge stop voltage so as to be decreased corresponding to the charging/discharging history estimated by said history estimating means,

wherein said secondary battery consists of a plurality of secondary batteries connected with each other;

wherein said charging control means includes current changing means which, in case that a charging voltage in a specified secondary battery reaches said predetermined charge stop voltage, directs a flow of charging current to the other secondary batteries by a by-pass operation of the flow of charging current; and

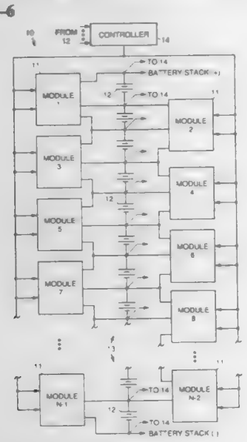
wherein said history estimating means estimates the charging/discharging history of said secondary battery on the basis of a number of said by-pass operations.

5,631,534

BIDIRECTIONAL CURRENT PUMP FOR BATTERY CHARGE BALANCING

Dave Lewis, Torrance, Calif., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Aug. 21, 1995, Ser. No. 517,886
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—6 **7 Claims**



2. A battery balancing system comprising:

a series connected battery array comprising a predetermined number (N) of batteries connected in series;

a predetermined number (N−1) of bidirectional charge balancing modules, and wherein each bidirectional charge balancing module comprises first and second series connected switches coupled across two consecutive batteries, each of the series connected switches having control inputs connected to control outputs of the controller, first and second diodes coupled across respective ones of the first and second series connected switches and an inductor coupled from a point between the first and second series connected switches and a point between the two consecutive batteries;

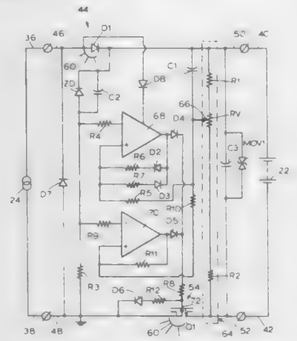
a controller connected to each of the bidirectional charge balancing modules for providing control output signals that turn on and off and control selected bidirectional charge balancing modules to balance charge among batteries.

5,631,535

REGULATOR FOR CHARGING A RECHARGEABLE STORAGE DEVICE FROM A PHOTOVOLTAIC CELL

Lyon van der Merwe, Pretoria North, South Africa, assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Jun. 7, 1995, Ser. No. 478,448
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—9 **27 Claims**



12. A charging system comprising, in combination:

a photovoltaic cell having a pair of cell terminals;

a rechargeable storage device having a pair of device terminals; and

a circuit for regulating charging of the rechargeable storage device by means of the photovoltaic cell, the circuit including:

a pair of input terminals for coupling to the cell terminals;

a pair of output terminals for coupling to the device terminals;

switching means for selectively establishing and breaking an electrical connection between said input terminals and said output terminals;

means coupled to the device terminals for providing a signal proportional to a terminal voltage across the output terminals;

first causing means responsive to the signal and a first voltage limit for causing the switching means to establish an electrical connection thereby permitting a current of a predetermined magnitude to flow between the input terminals and the output terminals when the signal is equal to a first predetermined proportion of the first voltage limit; and

second causing means responsive to the signal and a second voltage limit for causing the switching means to establish an electrical connection between the input terminals and the output terminals when the signal is equal to a second predetermined proportion of the second voltage limit, thereby permitting the current of a predetermined magnitude to flow between the input terminals and the output terminals.

5,631,536

RECHARGEABLE BATTERY VENDING APPARATUS

Ling-yuan Tseng, 13772 Calle Tacuba, Saratoga, Calif. 95070

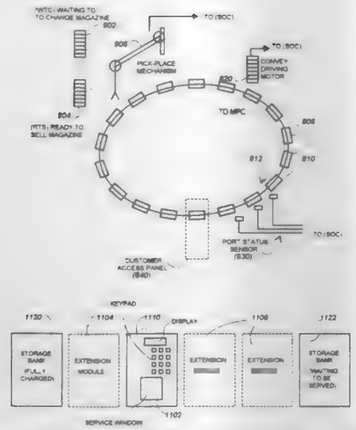
Filed May 16, 1994, Ser. No. 243,346
Int. Cl.[6] H01M *10/42*
U.S. Cl. 320—15 **25 Claims**

1. An apparatus for recharging and dispensing batteries, comprising:

means for physically receiving one or more rechargeable batteries from one or more customers in electrically unconnected form;

a plurality of battery recharging ports, each including means for making electrical contact to the terminals of one of the batteries received;

an input to receive electrical power;



a multiple port charger operative to route power from the input to at least one of the batteries through an associated charging port;

means to receive customer information and battery-related information;

a memory to store the customer information and battery-related information;

a controller connected to the multiple port charger, the memory, and the means to receive customer and battery-identification information, the controller being operative to perform the following functions:

cause the multiple port charger to charge one or more of the batteries through its associated charging port,

store information in the memory relating to batteries received by, and provided, to the customers, and

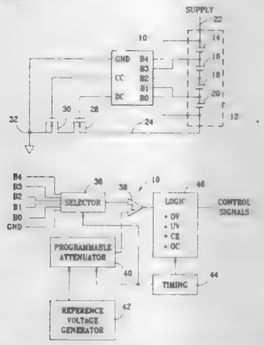
output information relating to an amount due from a customer receiving a recharged battery.

5,631,537

BATTERY CHARGE MANAGEMENT/PROTECTION APPARATUS

Gene Armstrong, Plano, Tex., assignor to Benchmarq Microelectronics, Dallas, Tex.

Filed Oct. 17, 1995, Ser. No. 544,201
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—15 **23 Claims**



1. A battery charger/monitor for charging/monitoring a plurality of series-connected battery cells in a battery pack which can be charged from an external charging supply, comprising:

a package having a finite set of input/output pins, said input/output pins including a plurality of input sense pins arranged in pairs, each pair able to be connected across a battery cell in a battery pack, wherein each of the cells in the battery pack is associated with a separate one of said pairs of sense pins;

a voltage monitor for monitoring the voltage across each of said pairs of sense pins;

a test circuit for performing a plurality of tests on each pair of said sense pins utilizing said associated monitored voltage provided by said voltage monitor, each of said tests determining characteristics of the battery pack by monitoring the voltage on said sense pins and applying a predetermined test algorithm thereto that compares the determined characteristics with predetermined acceptable limits to determine if said monitored characteristics are outside of said acceptable limits;

a no cell circuit for determining if any of said pairs of sense pins has no cell connected thereacross as determined by said monitored voltage output by said monitoring circuit;

a control system for controlling the charging and discharging operation of the battery in accordance with the results determined by said test circuit; and

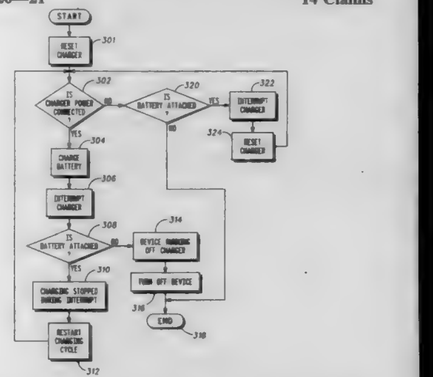
an inhibiting circuit for inhibiting the results of said test circuit from being utilized by said control system that result from the ones of said sense pins determined by said no cell circuit not to have a cell associated therewith.

5,631,538

METHOD AND APPARATUS FOR CHARGING A DETACHABLE BATTERY

Dean M. Komrska, Buffalo Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1996, Ser. No. 628,172
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—21 **14 Claims**



1. A method of charging a detachable battery of an electronic device, said method comprising the steps of:

applying a charging current to said detachable battery of said electronic device;

interrupting the charging current after a predetermined period of time of applying said charging current; and

turning off said electronic device if said detachable battery is detached from said electronic device during said step of interrupting the charging current.

8. A method of charging a detachable battery of an electronic device, said method comprising the steps of:

detecting the presence of a power supply;

applying a charging current from a charging circuit to a detachable battery of said electronic device;

interrupting the charging current after a predetermined period of time of applying said charging current;

detecting the presence of a battery attached to said electronic device at a power contact of the device;

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turning off said electronic device and resetting said charging circuit if said battery is not present; and

reapplying the charging current for said predetermined period of time.

5,631,539

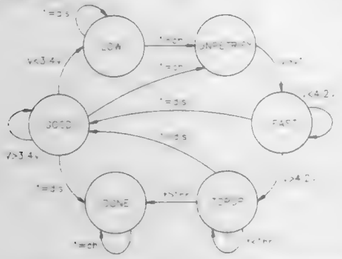
PROCESS AND APPARATUS FOR CHARGING LITHIUM CELLS OR THE LIKE

Paul Beard, Milpitas, Calif., assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Oct. 24, 1994, Ser. No. 328,250

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—22 **11 Claims**



1. A process for charging one or more electrochemical cells wherein one or several of the component parts of said cells are fabricated from lithium or any ion, nuclide, variation, combination, compound or derivative thereof, said cells exhibiting a plurality of characteristics with respect to time while either being charged with or while discharging energy, such process comprising:

(a) an unpetrify charging phase;

(b) a fast charging phase;

(c) a top up charging phase;

(d) a done charging phase;

(e) a good charging phase; and

(f) a low charging phase.

5,631,540

METHOD AND APPARATUS FOR PREDICTING THE REMAINING CAPACITY AND RESERVE TIME OF A BATTERY ON DISCHARGE

Trung V. Nguyen, Lawrence, Kans., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 23, 1994, Ser. No. 344,762

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—30 **15 Claims**

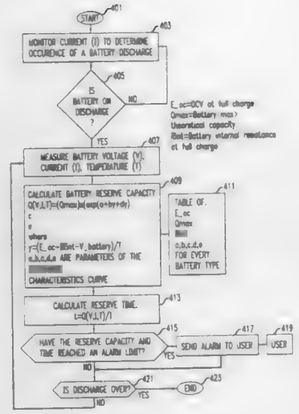
7. A method of predicting a remaining reserve capacity (Q) and a reserve time of a battery, comprising the steps of:

measuring a discharge voltage of the battery, measuring a discharge current of the battery and measuring a temperature of the battery to determine a temperature-corrected battery overvoltage (η) defined as:

$$\eta = \frac{E_{oc} - IR_{int} - V_{battery}}{T}$$

where E_{oc} is the battery open circuit voltage, I is the discharge current of the battery, R_{int} is the internal resistance of the battery, $V_{battery}$ is the discharge voltage of the battery and T is the temperature of the battery;

determining the remaining reserve capacity (Q) using a discharge characteristic curve for the battery, the curve defined by the equation:



$$\frac{Q}{Q_{max}} = \exp^{(a+bη^c-dη^e)},$$

where Q_{max}, a,b,c,d and e are predetermined parameters determined by a discharge characteristic curve of the battery; and

determining the reserve time according to the relation:

$$\text{Reserve Time} = \frac{Q}{I}.$$

5,631,541

ELECTRONIC APPLIANCE, RECHARGING METHOD AND RECHARGING APPARATUS

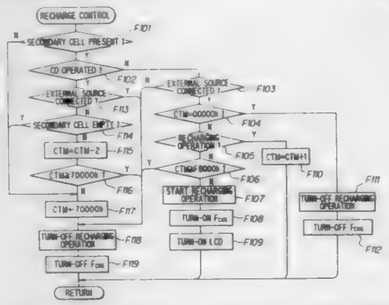
Kenichi Kabasawa, Saitama, Japan; Lau S. Keang; Looi T. Chung, both of Penang, Malaysia, and Shigeho Ogawa, Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 3, 1995, Ser. No. 415,332

Claims priority, application Japan, Apr. 5, 1994, 6-089242

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—31 **16 Claims**



1. A recharging apparatus for recharging a secondary cell which supplies an operation power supply voltage to a load comprising:

recharging means for recharging the secondary cell;

judging means for judging whether a voltage from the secondary cell is applied to the load;

measuring means for measuring a time period during which the voltage is applied from the secondary cell to the load when a judgement result obtained from said judging means indicates that the voltage from the secondary cell is applied to the load; and

control means for setting a recharging time period of said recharging means based on a measured time period of said measuring means and for controlling said recharging means only during said recharging time period, whereby the recharging operation to the secondary cell is carried out by said recharging means, and wherein said control means controls said recharging means so that the recharging operation to the secondary cell is not performed by said recharging means when the measured time period of said measuring means is lower than a predetermined value.

5,631,542

METHOD FOR CONTROLLING THE STRENGTH OF A CHARGING CURRENT

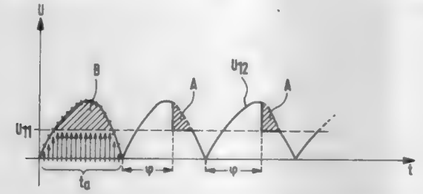
Guenter Lohr; Peter Wolf, both of Leinfelden-Echterdingen, and Alexander Osswald, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 7, 1995, Ser. No. 484,086

Claims priority, application Germany, Jun. 16, 1994, 44 20 957.6

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—49 **10 Claims**



1. A method for controlling a strength of a charging current when charging a battery via an alternating voltage source, comprising the steps of:

rectifying an alternating voltage of the alternating voltage source;

feeding the rectified voltage to the battery via a phase control circuit;

measuring a battery voltage of the battery; and

setting a value of a triggering angle at the phase control circuit as a function of the alternating voltage and of the measured battery voltage, the triggering angle controlling the strength of the charging current, wherein the value of the triggering angle is set such that the strength of the charging current remains approximately constant.

5,631,543

ELECTRONIC VOLTAGE REGULATOR AND IDLE CONTROL CIRCUIT FOR GENERATORS

Christopher L. Watson, Rock Hill, S.C., assignor to Homelite Inc., Charlotte, N.C.

Filed Mar. 21, 1995, Ser. No. 407,647

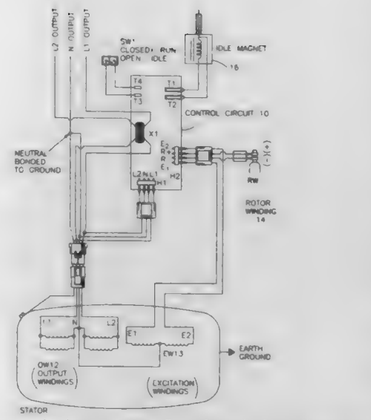
Int. Cl.[6] H02P *9/10*

U.S. Cl. 322—27 **11 Claims**

1. An alternating current electrical generator of the type having a drive engine, a rotor winding, and at least one output winding, comprising:

means for varying a duty cycle of a pulse width modulated signal as a function of an output voltage appearing across said at least one output winding so as to increase the duty cycle as the output voltage decreases and to decrease the duty cycle as the output voltage increases;

means for controlling the current flow within the rotor winding in accordance with the pulse width modulated signal so as to decrease the current flow when the output voltage increases and to increase the current flow when the output voltage decreases;



means for monitoring a current flow through the at least one output winding so as to detect an unloaded condition;

means, responsive to the detection of an unloaded condition, for delaying a first predetermined period of time before initiating an idle condition by slowing the speed of the drive engine; and

means, responsive to the detection of the unloaded condition, for delaying a second predetermined period of time before automatically decreasing the duty cycle of the pulse width modulated signal so as to decrease the current flow within the rotor winding to thereby decrease the output voltage.

5,631,544

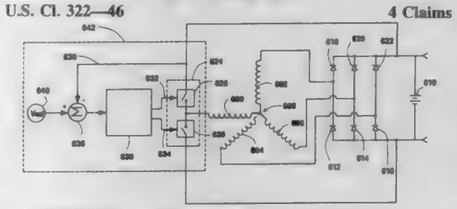
HYBRID ALTERNATOR WITH VOLTAGE REGULATOR

Charles D. Syverson, North Mankato, Minn., and William P. Curtiss, Chelsea, Mass., assignors to Ecoair Corp., New Haven, Conn.

Division of Ser. No. 251,530, Jun. 6, 1994, Pat. No. 5,502,368, which is a continuation-in-part of Ser. No. 77,248, Jun. 14, 1993, Pat. No. 5,397,975. This application Jun. 2, 1995, Ser. No. 459,546

Int. Cl.[6] H02P *9/14*

U.S. Cl. 322—46 **4 Claims**



1. A hybrid alternator comprising:

a stator including a stator winding having a plurality of output ends connected through portions of the stator winding to a common neutral point having a neutral point voltage; and

a rotor including:

a shaft mounted for rotation within the stator,

at least one permanent magnet mounted on the rotor producing a permanent magnetic flux field,

a rotor winding mounted on the shaft and having a first end connected to the neutral point on the stator winding and a second end adapted for connection to a switching circuit in a voltage regulator, the rotor winding producing a rotor magnetic flux field that additively combines with the permanent magnetic flux field when the switching circuit connects the second end to a voltage greater than the neutral point voltage and producing a rotor magnetic flux field that subtractively combines with the permanent magnetic flux

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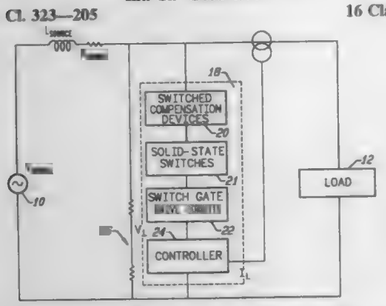
field when the switching circuit connects the second end to a voltage end to a voltage less than the neutral point voltage.

5,631,545

APPARATUS AND METHOD FOR REGULATING A POWER LINE USING FREQUENCY DOMAIN SELF-SYNCHRONIZATION CONTROL

Martin I. Norman, and Ray S. Kemerer, both of Monroeville, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 29, 1994, Ser. No. 268,762
Int. Cl.[6] G05F *1/70*
U.S. Cl. 323—205 16 Claims



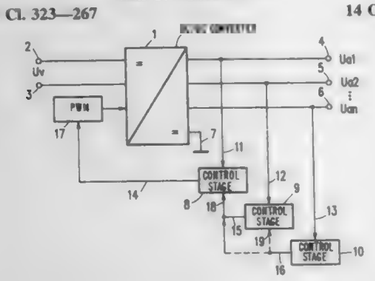
1. A circuit for firing solid state devices, comprising:
a power line output node for connection to a power line carrying a power signal;
a parameter measurement circuit to continuously sample said power signal and obtain a measured power signal;
a power compensation element;
a plurality of solid state devices connected between said power compensation element and said power line output node; and
a self-synchronizing controller connected to said parameter measurement circuit and said plurality of solid state devices to analyze said measured power signal in the frequency domain to identify a frequency domain firing angle and to convert said frequency domain firing angle to a time-domain firing signal command that is applied to said solid state devices to provide selected power conditioning to said power signal.

5,631,546

POWER SUPPLY FOR GENERATING AT LEAST TWO REGULATED INTERDEPENDENT SUPPLY VOLTAGES

Friedhelm Heinke, Heroldsberg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1995, Ser. No. 499,885
Claims priority, application Germany, Jul. 14, 1994, 44 24 [illegible]
Int. Cl.[6] G05F *1/577*
U.S. Cl. 323—267 14 Claims



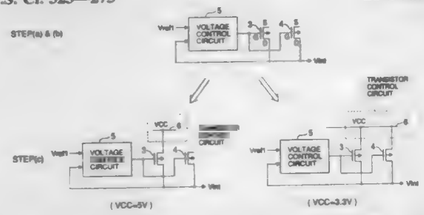
1. A circuit arrangement for generating at least two interdependent supply voltages from an input voltage, the arrangement comprising:
a first control stage for controlling the actual value of a first one of the supply voltages to a first nominal value which is adjustable between a first upper and a first lower tolerance limit, and
at least one further control stage for controlling the actual value of each further one of the supply voltages to a further respective nominal value, which is adjustable within a range between each time a further upper and a further lower tolerance limit, by varying the first nominal value in the range between the first upper and the first lower tolerance limit in response to control signals obtained by a comparison between the actual values of the further supply voltages and the associated further nominal values in the associated control stages.

5,631,547

POWER-SUPPLY-VOLTAGE REDUCTION DEVICE, SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING THE REDUCTION DEVICE AND METHOD OF PRODUCING ELECTRONIC DEVICE INCLUDING SUCH DEVICES

Shin-ya Fujioka, and Masao Taguchi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 24, 1995, Ser. No. 377,588
Claims priority, application Japan, Jan. 26, 1994, 6-007074
Int. Cl.[6] H01L *21/00*
U.S. Cl. 323—273 21 Claims



1. A fabrication method for producing an electronic device including a power-supply-voltage reduction device arranged based on an external power supply voltage comprising the steps of:
(a) forming a plurality of transistors having first current electrodes supplied with the external power supply voltage, control electrodes receiving a control signal, and second current electrodes which are connected together to an output port, the second current electrodes producing a reduced power supply voltage which is generated from said external power supply voltage according to said control signal, at said output port;
(b) forming a voltage control circuit generating said control signal based on a comparison of said reduced power supply voltage and a reference voltage and controlling at least one of said plurality of transistors for maintaining the reduced power supply voltage substantially to a level of the reference voltage; and
(c) forming a transistor control circuit for activating at least one of said plurality of transistors according to a level of said external power supply voltage supplied to a power supply line.

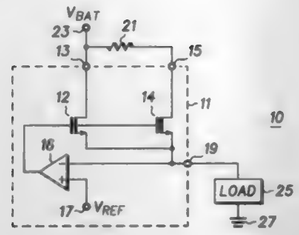
5,631,548

POWER OFF-LOADING CIRCUIT AND METHOD FOR DISSIPATING POWER

David M. Susak, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1995, Ser. No. 550,058
Int. Cl.[6] G05F *1/40*
U.S. Cl. 323—273 17 Claims

1. A power off-loading circuit, comprising:



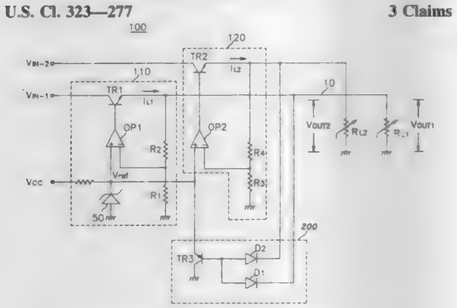
an integrated circuit device having an input pin, a power relief pin, and an output pin, wherein the integrated circuit device includes a switch having a first current conducting electrode coupled to the output pin and a second current conducting electrode coupled to power relief pin; and
a power dissipation resistor having a first electrode coupled to the input pin of the integrated circuit device and a second electrode coupled to the power relief pin of the integrated circuit device.

5,631,549

LINEAR REGULATOR POWER SUPPLY WITH AN OVERCURRENT PROTECTION DEVICE

Jae-Gyoo Hong, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd., Seoul, Rep. of Korea

Filed Feb. 23, 1995, Ser. No. 393,300
Claims priority, application Rep. of Korea, May 31, 1994, 94-12062
Int. Cl.[6] G05F *1/573*
U.S. Cl. 323—277 3 Claims



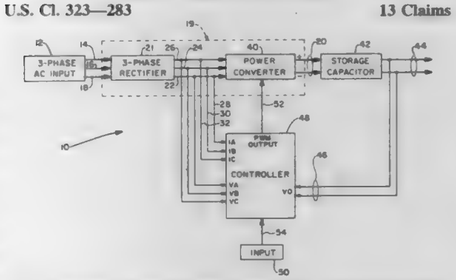
1. A linear regulator power supply comprising:
a plurality of regulation units, each of the regulation units having a switching transistor for providing a regulated voltage to a load connected to an output terminal thereof, means for producing a reference voltage and an operational amplifier for generating a switching signal to activate the switching transistor using a difference between the reference voltage and a comparison voltage; and
means, connected between the load and the operational amplifier, for coupling the reference voltage to ground when there is a drop in the potential level of the regulated voltage due to a short circuiting occurred on the load, thereby making the operational amplifier inactive and the switching transistor inoperable.

5,631,550

DIGITAL CONTROL FOR ACTIVE POWER FACTOR CORRECTION

William D. Castro, Louisville, and Donald F. Zwolsky, Medina, both of Ohio, assignors to Lockheed Martin Tactical Defense Systems, Akron, Ohio

Filed Apr. 25, 1996, Ser. No. 638,970
Int. Cl.[6] G05F *1/40;1/56;5/00*
U.S. Cl. 323—283 13 Claims



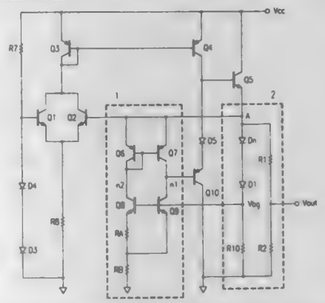
1. A digitally controlled active power factor corrected preregulator, comprising: a reference signal;
a plurality of input signals;
means for conditioning said plurality of input signals to generate a corrected output signal; and
a digital controller for receiving said reference signal, said plurality of input signals and said corrected output signal, said digital controller generating a pulse width modulation signal received by said conditioning means to control the operation thereof.

5,631,551

VOLTAGE REFERENCE WITH LINEAR NEGATIVE TEMPERATURE VARIATION

Salvatore Scaccianoce, Riposto; Sergio Palara, Acitrezza, and Natale Aiello, Catania, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Dec. 1, 1994, Ser. No. 348,030
Claims priority, application European Pat. Off., Dec. 2, 1993, 93830488
Int. Cl.[6] G05F *3/04*
U.S. Cl. 323—313 7 Claims



1. A circuit for generating a reference voltage with a negative temperature coefficient from a bandgap voltage with a positive temperature coefficient as generated by a bandgap reference circuit comprising a bandgap voltage generating network and an amplifier, comprising a network consisting of
at least a Vbe voltage multiplier circuit, functionally connected between an output node of said amplifier and a node at said bandgap voltage of said bandgap voltage generating network,
at least one resistance connected between said node at bandgap voltage and ground, and

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a resistive voltage divider connected between said output node of said amplifier and ground.

5,631,552

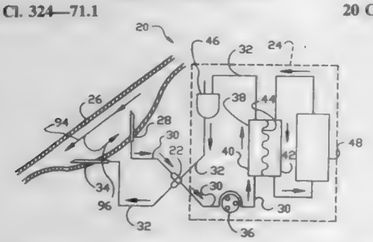
HEMODYNAMIC MONITOR FOR DETECTING AIR BUBBLES

Francis T. Ogawa, Lakewood, and James M. Brugger, Boulder, both of Colo., assignors to COBE Laboratories, Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 332,647, Nov. 1, 1994, Pat. No. 5,510,716, which is a continuation of Ser. No. 954,584, Sep. 30, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 472,268

Int. Cl.[6] G01N *27/06*

U.S. Cl. 324—71.1 **20 Claims**



1. A method for detecting the presence of air bubbles entrained in a liquid flowing through a tube comprising:

flowing liquid through a first conduit, said first conduit comprising a first conductivity cell through which the liquid flows with a continuous path configuration;

inducing a first electrical current in the liquid in the first conductivity cell;

sensing the first electrical current in the liquid in the first conductivity cell; and

interpreting a decrease in the first electrical current as indicative of the presence of an air bubble in the liquid.

5,631,553

HIGH PRECISION RF VECTOR ANALYSIS SYSTEM BASED ON SYNCHRONOUS SAMPLING

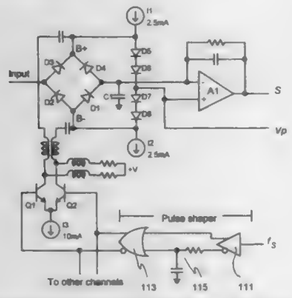
Tapan K. Bose, Trois-Rivières, and Raymond Courteau, Saint-Maurice, both of Canada, assignors to Université Du Québec `A Trois-Rivières, Trois-Rivieres, Canada

Continuation-in-part of Ser. No. 97,221, Jul. 27, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 408,986

Claims priority, application Canada, May 31, 1993, 2097397

Int. Cl.[6] G11C *27/02*

U.S. Cl. 324—76.24 **13 Claims**



12. A sampling gate circuit comprising an RF input, a polarization feedback input, a gate output, a four-diodes sampling bridge gate means whose input side is connected to said RF input, operational amplifier to maintain said output side at the same potential as a voltage applied at the feedback input, a positive input of said amplifier being connected to the polarization feedback input, a negative input of said amplifier being connected to said gate output by a feedback network comprising a capacitor in parallel with a resistor, with the output of said operational amplifier being connected to said gate output and producing a voltage pulse for every sample whose magnitude is proportional to the difference between the sampled RF input and the voltage present at the polarization feedback input.

5,631,554

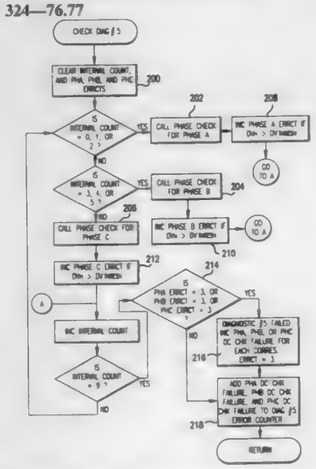
ELECTRONIC METERING DEVICE INCLUDING AUTOMATIC SERVICE SENSING

Forrest W. Briese, Norcross, Ga.; Christophe J. A. Fouquet, Central, S.C.; Coy S. Lowe, Talking Rock, Ga.; Charles C. Hyder, Atlanta, Ga., and John M. Schlarb, Atlanta, Ga., assignors to Schlumberger Industries, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 37,938, Mar. 26, 1993, Pat. No. 5,469,049. This application Jul. 31, 1995, Ser. No. 509,367

Int. Cl.[6] G01R *1/06;21/06*

U.S. Cl. 324—76.77 **12 Claims**



1. An electronic meter checking an electrical system diagnostics package including:

a microprocessor;

storage memory suitably connected to the microprocessor;

logic for automatically periodically performing a preselected test of meter checks and recording any errors detected therefrom;

logic for automatically periodically performing a preselected series of system diagnostics tests and recording any results which exceed predefined thresholds;

display means for displaying error messages identifying one or more errors discovered as a result of the meter checks performed during a predefined period; and

display means for displaying diagnostic messages identifying any errors discovered as a result of the system diagnostics tests performed during a predefined period.

5,631,555

VOLTAGE MEASUREMENT SYSTEM

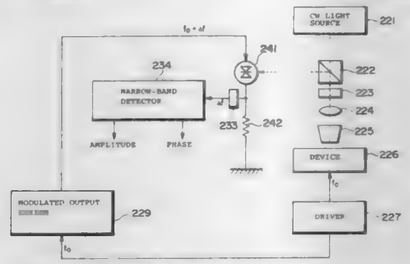
Hironori Takahashi; Musubu Koishi, and Akira Takeshima, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Sep. 28, 1995, Ser. No. 535,669

Claims priority, application Japan, Sep. 29, 1994, 6-235162

Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—96 **12 Claims**



1. A voltage measurement system comprising:

(A) a probe adapted to be arranged near a device to be measured, said probe being comprised of an electro-optic material;

(B) a photodetector for detecting light reflected by said probe; and

(C) a unit for applying a voltage of a frequency $nf_0+\Delta f$ to said photodetector, where,

f_0 is a frequency of a voltage signal to be applied to the device,

n is an integer, and

Δf is a predetermined frequency.

5,631,556

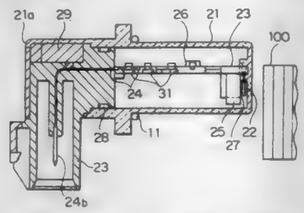
ROTATION SENSOR DEVICE AND METHOD OF MANUFACTURING THE SAME INCLUDING A DOUBLED UP MOUNTING BRACKET FOR ELECTRICAL CONTACT

Harumasa Shibata, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 493,107

Int. Cl.[6] G01P *3/48;* **H01F** *7/06*

U.S. Cl. 324—174 **13 Claims**



1. A rotation sensor device for detecting a rotational state of a rotatable magnetic member, comprising:

a magneto-electric conversion element for detecting change of magnetic flux which takes place as said rotatable magnetic member rotates;

a base made of a resin material for holding at least said magneto-electric conversion element;

a base made of a resin material for holding at least said magneto-electric conversion element;

insert conductors embedded integrally in said base using an insert molding process, said insert conductors being partially exposed on a surface of said base, said magneto-electric conversion element being electrically connected to said insert conductors;

exposed mounting electrodes each formed by bending corresponding ones of said exposed portions of said insert conductors in a doubled-up structure, such that a respective mounting surface of the doubled-up structure of each of said exposed mounting electrodes lies along the surface of said base;

at least one electronic part being mounted on at least one of said exposed mounting electrodes and being electrically connected to said magneto-electric conversion element; and

a connector portion having terminal electrodes formed by end portions of said insert conductors.

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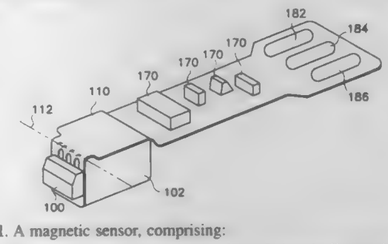
MAGNETIC SENSOR WITH ENCAPSULATED MAGNETICALLY SENSITIVE COMPONENT AND MAGNET

Robert M. Davidson, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 16, 1996, Ser. No. 602,187

Int. Cl.[6] G01P *3/48*

U.S. Cl. 324—174 **5 Claims**



1. A magnetic sensor, comprising:

a flexible substrate having a plurality of electrically conductive runs attached thereto;

a magnetically sensitive component attached to said flexible substrate, said magnetically sensitive component being connected in electrical communication with at least one of said plurality of electrically conductive runs;

a permanent magnet attached in a fixed position relative to said magnetically sensitive component, said magnetically sensitive component being disposed within the magnetic field of said permanent magnet proximate a magnetic pole of said permanent magnet, said flexible substrate being rigidly attached to said permanent magnet independently of the encapsulation provided by said quantity of solidified thermoset material and at a location, relative to said permanent magnet, determined by an active calibration procedure by which said flexible substrate is moved relative to said permanent magnet until said magnetically sensitive component provides a predetermined output signal, said permanent magnet being plated with a material to facilitate said flexible substrate being rigidly attached to said permanent magnet by solder;

a quantity of solidified thermoset material disposed around said permanent magnet, said magnetically sensitive component and a first portion of said plurality of electrically conductive runs, a second portion of said plurality of electrically conductive runs extending from said quantity of solidified thermoset material, said permanent magnet and said magnetically sensitive component being encapsulated within said quantity of solidified thermoset material; and

a hole through said flexible substrate, said solder extending through said hole to a surface of said permanent magnet from a surface of said flexible substrate which is facing away from said permanent magnet.

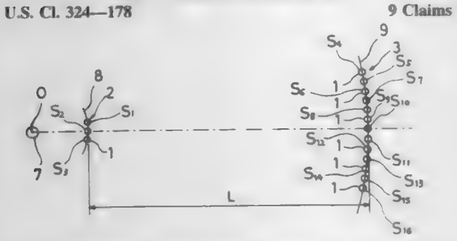
VOL 1198 ISS 3 MY 20 1997 UMI

5,631,558

APPARATUS AND METHOD FOR MEASURING VELOCITY AND INSTANTANEOUS SPATIAL POSITION OF SPHERICAL OBJECT SIULTANEOUSLY

Kazunari Yoshida, Kasai; Shinji Ohshima, Akashi, and Takashi Teraguchi, Kakogawa, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Apr. 14, 1995, Ser. No. 421,792
Claims priority, application Japan, Apr. 18, 1994, 6-104868
Int. Cl.[6] G01P *3/68;* A63B *69/36*
U.S. Cl. 324—178 9 Claims



1. An apparatus for simultaneously measuring velocity and an instantaneous spatial position of a spherical object comprising:

a first group of sensors consisting of a plurality of sensors arranged at first predetermined intervals, wherein each first predetermined interval is less than the radius of the spherical object;

a second group of sensors disposed at a predetermined distance from said first group of sensors and consisting of a plurality of sensors arranged at second predetermined intervals, wherein each second predetermined interval is less than the radius of the spherical object;

an instrumentation means for measuring the times when said spherical object begins to intercept energy beams detected by the sensors of the first and second groups of sensors and the time lengths of the respective interceptions; and

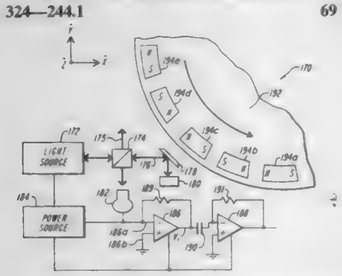
an arithmetic unit for calculating the velocity and instantaneous spatial position of the spherical object on the basis of the times and time lengths measured by said instrumentation means.

5,631,559

METHOD AND APPARATUS FOR PERFORMING MAGNETIC FIELD MEASUREMENTS USING MAGNETO-OPTIC KERR EFFECT SENSORS

Steven A. Oliver, Dedham, and Charles A. DiMarzio, Cambridge, both of Mass., assignors to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 26,589, Mar. 5, 1993, Pat. No. 5,459,220. This application Jun. 7, 1995, Ser. No. 474,692
Int. Cl.[6] G01R *33/032;* G01P *3/36*
U.S. Cl. 324—244.1 69 Claims



1. A magneto-optic Kerr effect magnetic field threshold sensor comprising:

a light source;

a polarizing beamsplitter disposed to intercept incident light provided from said light source, wherein said polarizing beamsplitter provides maximum transmission, along a first direction, of a first polarization vector of said incident light, and substantially reflects, along a second direction, a second polarization vector of said incident light, wherein a relatively small, predetermined component of said second polarization vector, compared to said transmitted first polarization vector, is also transmitted along said first direction, said transmitted second polarization vector being an information-independent second polarization vector component;

a thin-film, magneto-optic Kerr effect magnetic field sensing element, said sensing element comprising a plurality of thin-film layers disposed on a substrate, at least one of said layers being of a reflective metallic ferromagnetic material and having: an in-plane magnetization orientation; a well-defined in-plane uniaxial anisotropy; a predetermined coercive field value; and a known magneto-optic Kerr effect value, wherein said sensing element is disposed such that an in-plane easy axis of said at least one sensing element ferromagnetic material layer lies in the light plane of incidence, collinear to an external magnetic field to be measured, said at least one sensing element ferromagnetic material layer disposed to intercept light transmitted through said polarizing beamsplitter in said first direction and reflect light that is modified by converting a portion of said first polarization vector to said second polarization vector by an amount determined by the orientation of the magnetization of said at least one sensing element ferromagnetic material layer relative to said incident light, the size of said first polarization vector, and a magneto-optic Kerr effect value, said converted light being an information-containing second polarization vector component;

a highly-reflective mirror disposed to intercept light reflected from said sensing element and to reflect said intercepted light back toward said sensing element for reflection of light, modified by converting a further portion of said first polarization vector to said second polarization vector, back to said polarizing beamsplitter, said converted further portion also contributing to said information-containing second polarization vector component, wherein a remaining portion of said first polarization vector is transmitted through said polarizing beamsplitter in a direction opposite said first direction, and said information-containing second polarization vector component and said information-independent second polarization vector component are reflected in a third direction; and

a detector disposed to intercept said reflected information-containing and information-independent second polarization vector components from said polarizing beamsplitter in said third direction, to mix said information-containing and information-independent second polarization vector components, and to output a mixed output signal having an offset component providing an amplitude which is substantially independent of the external magnetic field, and a signal component dependent on the external magnetic field.

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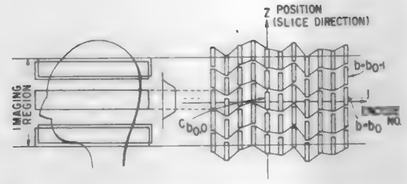
MAGNETIC RESONANCE IMAGING APPARATUS

Yoshio Machida, Tochigi-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Aug. 4, 1995, Ser. No. 511,605
Claims priority, application Japan, Aug. 8, 1994, 6-185910; Jul. 26, 1995, 7-190459
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—309 18 Claims

1. A magnetic resonance imaging apparatus comprising:

acquiring means for acquiring magnetic resonance signals generated from a signal acquisition region while shifting the



signal acquisition region in a predetermined direction to disperse signal acquisition regions in an overall imaging region;

Fourier-transforming means for Fourier-transforming the magnetic resonance signals, acquired by said acquiring means, in the predetermined direction;

arranging means for arranging an output of said Fourier-transforming means in accordance with signal acquisition positions in the predetermined direction; and

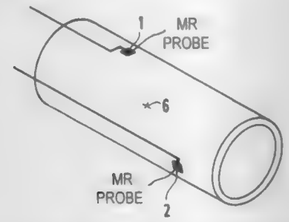
means for performing an image reconstruction operation for the signal components, arranged by said arranging means, in a direction other than the predetermined direction.

5,631,561

ARRANGEMENT FOR MEASURING AND CONTROLLING THE BASIC FIELD OF AN NMR TOMOGRAPHY APPARATUS

Eckart Stetter, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 26, 1995, Ser. No. 451,564
Claims priority, application Germany, May 31, 1994, 44 19 061.1
Int. Cl.[6] G01R *33/28*
U.S. Cl. 324—322 12 Claims



1. A nuclear magnetic resonance tomography apparatus comprising:

a basic field magnet which generates a basic magnetic field in an examination region;

a plurality of gradient coils and means for operating said gradient coils for producing switched magnetic field gradients in said examination region superimposed on said basic magnetic field;

at least one magnetic field probe disposed in said examination region comprising an MR probe, said MR probe generating an output signal dependent on the magnetic field measured at the location of said MR probe; and

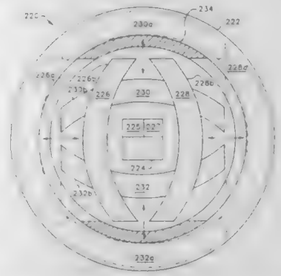
correction means for correcting the influence of said switched gradients on said output signal for producing a measuring value representing the basic magnetic field without contributions of said switched gradients.

5,631,562

TIME DOMAIN ELECTROMAGNETIC WELL LOGGING SENSOR INCLUDING ARCUATE MICROWAVE STRIP LINES

Milton E. Cram, Houston, Tex., and Thomas A. Janes, Tampa, Fla., assignors to Western Atlas International, Inc., Houston, Tex.

Continuation of Ser. No. 220,972, Mar. 31, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,188
Int. Cl.[6] G01V *3/12;* G01R *27/02*
U.S. Cl. 324—333 22 Claims



1. A time domain reflectometer logging tool for measuring the electrical characteristics of the materials along the wall of a borehole having a center axis, comprising:

plurality of transmission lines having first and second ends mounted at an angle with respect to the center axis of the borehole, wherein each transmission line covers an arcuate portion of the circumference of the borehole wall, wherein each arcuate portion covered by one transmission line overlaps arcuate portions covered by adjacent transmission lines, and wherein the entire cylindrical circumference of the borehole wall is covered by said plurality of transmission lines;

an apparatus for mounting and transporting said transmission lines adjacent to the borehole wall; and

electrical circuitry coupled to the first end of each said transmission line, further comprising:

means for applying a voltage on said first end of each said transmission line, wherein said voltage establishes an electric field which interacts with the borehole wall;

means coupled to said first end of each said transmission line for detecting reflection signals on said transmission line over time in response to said voltage; and

means coupled to said detecting means for determining the differential response between said reflection signals in response to said voltage when said transmission lines are adjacent the borehole wall and reflection signals in response to said voltage when said transmission lines are in free space.

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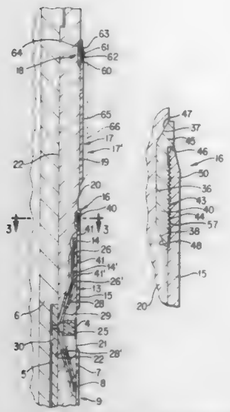
RESISTIVITY ANTENNA SHIELD, WEAR BAND AND STABILIZER ASSEMBLY FOR MEASURING-WHILE-DRILLING TOOL

Keith A. Moriarty, Houston, Tex., assignor to Schlumbreger Technology Corporation, Sugar Land, Tex.

Filed Dec. 20, 1994, Ser. No. 360,099
Int. Cl.[6] G01V *3/18;* F16L *25/00*
U.S. Cl. 324—338 15 Claims

1. A locking assembly for mounting a sleeve on a tubular body, comprising: arcuate recess means in said body; ring segment

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means mounted in said recess means; and co-engaged means on said ring segment means and said sleeve for locking said sleeve against longitudinal and rotational movement on said body.

5,631,564

METHOD AND APPARATUS FOR MONITORING THE IGNITION DEVICE OF AN INTERNAL COMBUSTION ENGINE

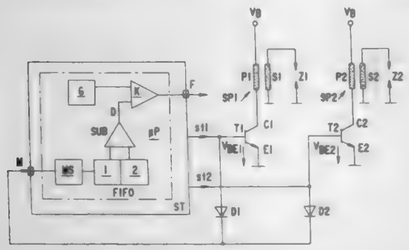
Jörn Heining, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 15, 1995, Ser. No. 404,367

Claims priority, application European Pat. Off., Mar. 18, 1994, 94104420

Int. Cl.[6] F02P *17/00*

U.S. Cl. 324—380 **10 Claims**



1. In a method for monitoring secondary current circuits in an ignition device of an externally ignited internal combustion engine having at least two primary current circuits each being closed and opened by one ignition end stage transistor, the improvement which comprises:

measuring a value of a base-to-emitter voltage of each ignition end stage transistor when the respective primary current circuit is closed, and storing the measured values in a memory;

forming a comparison value from at least two successive measured values and comparing the comparison value with a limit value; and

outputting a failure signal as a function of the comparison.

5,631,565

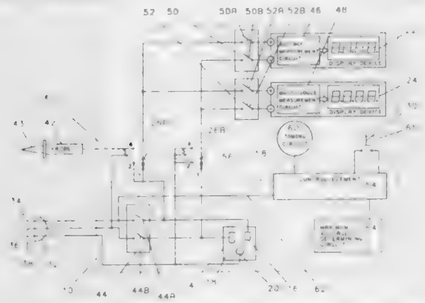
DEVICE FOR MEASURING RESIDUAL VOLTAGE AND ENERGY IN A PIECE OF EQUIPMENT

Robert A. Winter, Sioux Fall, S. Dak., assignor to Bowden's Automated Products, Inc., Viborg, S. Dak.

Filed Jun. 7, 1996, Ser. No. 659,247

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—511 **16 Claims**



15. A device for measuring the voltage and stored electric energy between the contacts of a male connector of a piece of electronic equipment after it has been disconnected from a source of AC power for a given period of time, said male connector having a high voltage contact and a low voltage contact, said device comprising in combination:

female connector means having a high voltage contact and a low voltage contact for receiving a high voltage contact and a low voltage contact of a male connector from a piece of equipment,

means for connecting said device to a source of AC current, said means for connecting including a high voltage connector means and a low voltage connector means,

first switch means for selectively connecting and disconnecting said high voltage connector means to said high voltage contact of said female connector means,

voltage measuring means,

electric energy measuring means,

first circuit means for connecting said voltage measuring means and said electric energy measuring means across said high voltage contact and said low voltage contact of said female connector means,

second circuit means for connecting said voltage measuring means and said electric energy measuring means between said high voltage contact and a safety ground,

third circuit means for connecting said voltage measuring means and said electric energy measuring means between said low voltage contact and a safety ground,

second switch means for selectively connecting one of said first circuit means, said second circuit means and said third circuit means,

relay means between said second switch means and both said voltage measuring means and said electric energy measuring means for selectively connecting and disconnecting said voltage measuring means and said electric energy measuring means to said second switch means,

timing means,

control means responsive to said timing means and said first switch means and connected to said relay means for switching said relay means to connect said voltage measuring means and said electric energy measuring means to said second switch means after said first switch means has disconnected said high voltage connector means from said high voltage contact of said female connector means for a given period of time.

5,631,566

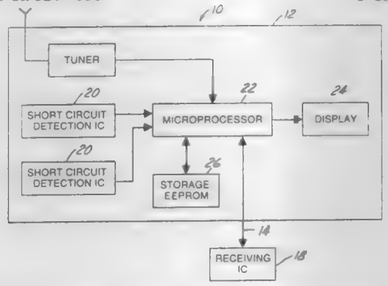
RADIO SPEAKER SHORT CIRCUIT DETECTION SYSTEM

Andrew P. Person, and James P. Muccioli, both of Farmington Hills, Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 155,720, Nov. 22, 1993, abandoned. This application Aug. 16, 1996, Ser. No. 699,184

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—556 **3 Claims**



1. A short circuit detection system for indicating speaker short circuit failure in a vehicle radio including a memory unit, said system comprising:

a short circuit detector for detecting speaker short circuit failure and generating a short circuit signal in response to said detected short circuit failure;

a microprocessor coupled to said short circuit detector for receiving said short circuit signal and generating an error signal thereafter and to said vehicle radio memory unit for storing said short circuit signal;

a receiver adapted to be connected to said microprocessor by a user via a multiplex bus, to retrieve said stored short circuit signal from said memory unit and direct the same to said microprocessor; and

a display unit adapted to be coupled to said microprocessor for receiving said error signal generated in said microprocessor in response to said short circuit signal and indicating short circuit failure in response to said error signal,

wherein said short circuit signal can be retrived from said memory unit irrespective of said radio being in said vehicle.

5,631,567

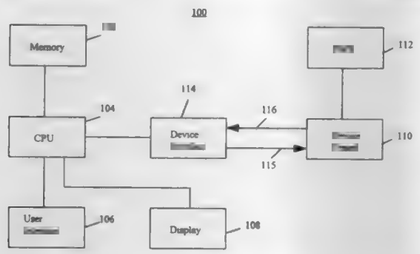
PROCESS FOR PREDICTING PROPAGATION DELAY USING LINEAR INTERPOLATION

Nicholas Sporck, Saratoga, and Chris Day, Mt. View, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 20, 1995, Ser. No. 545,954

Int. Cl.[6] G04F *8/00*

U.S. Cl. 324—617 **12 Claims**



1. A process for use with automatic test equipment ("ATE") for propagation delay testing of a semiconductor circuit, the process comprising:

providing an input signal to the semiconductor device;

receiving an output signal, responsive to the input signal, from the semiconductor device;

measuring a time period between providing the input signal and receiving the output signal to determine an actual propagation delay time;

finding an expected propagation delay time dependant upon a first simulated capacitance, a second simulated capacitance, an ATE capacitance, a first simulated delay time, and a second simulated delay time, the simulated delay times corresponding to the first and second simulated capacitances respectively;

generating a device acceptance signal responsive to the actual propagation delay time and the expected propagation delay time.

5,631,568

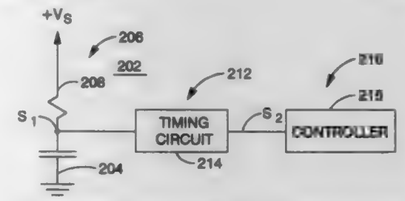
CAPACITIVE OIL LIFE SENSOR

George Codina, North Hollywood, Calif.; Donna J. Murr, Dunlap, and Chandrasekar Ramamoorthy, Normal, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 31, 1995, Ser. No. 522,472

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—690 **4 Claims**



1. An apparatus for determining the life of hydraulic fluid in a hydraulic system having a hydraulic container, comprising:

a pair of electrodes contained within the container and being oppositely spaced, forming a capacitor;

charging means, coupled to said capacitor, for producing a charging current of constant magnitude and charging said capacitor to a predetermined voltage;

timing means, connected to said capacitor, for detecting the time at which said charging means begins to produce said charging current and the time at which said capacitor has been charged to said predetermined voltage, and for producing a pulse width modulated signal, the magnitude of said pulse width modulated signal being indicative of a charging time, said charging time defined as the time between the start of said constant current and the time at which said capacitor has been charged to said predetermined voltage and being indicative of the life of the hydraulic fluid, a magnitude of said charging current chosen to minimize the effects of other parameters on said charging time; and,

controlling means for receiving said pulse width modulated signal and responsively determining the life of the hydraulic fluid.

5,631,569

IMPEDANCE MEASUREMENT IN A HIGH-VOLTAGE POWER SYSTEM

Robert E. Moore, San Jose; Frederic W. Nitz, Boulder Creek, and Michael A. Gipe, Saratoga, all of Calif., assignors to Reliable Power Meters, Inc., Los Gatos, Calif.

Division of Ser. No. 248,280, May 24, 1994, Pat. No. 5,514,969. This application May 26, 1995, Ser. No. 451,851

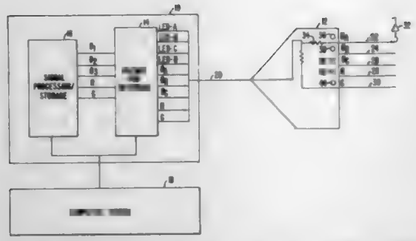
Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—713 **15 Claims**

1. A power monitoring system of comprising:

a power monitoring instrument;

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an electrical measurement pod remote from said power monitoring instrument adapted to couple via a plurality of electrical probes to a plurality of electrical monitoring points;

a connection cable to couple said power monitoring instrument to said electrical measurement pod;

a plurality of indicators mounted on said electrical measurement pod corresponding to said plurality of electrical monitoring points;

a signal detection circuit mounted within said power monitoring instrument and coupled to said electrical probes and to said indicators through said connection cable, for activating each indicator responsive to a detected signal level on said electrical monitoring point to which said indicator corresponds;

a signal processing circuit mounted within said power monitoring instrument and having a plurality of electrical monitoring channels; and

a channel mapping device coupled to said plurality of electrical monitoring channels and to said connection cable for selectably mapping said plurality of electrical probes to said plurality of electrical monitoring channels to correct connection errors.

5,631,570

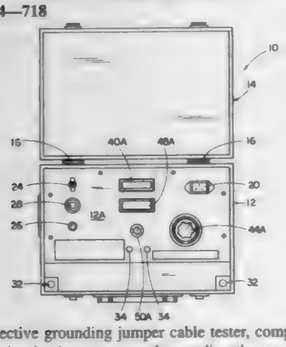
PROTECTIVE GROUNDING JUMPER CABLE TESTER AND TESTING METHOD

Clayton C. King, Centralia, Mo., assignor to Hubbell Incorporated, Orange, Conn.

Filed May 9, 1995, Ser. No. 437,661

Int. Cl.[6] G01R *27/08;31/02*

U.S. Cl. 324—718 **7 Claims**



1. A protective grounding jumper cable tester, comprising:

(a) a housing having a top panel extending thereacross;

(b) a pair of jumper attachment terminals mounted on said top panel of said housing for attachment of a jumper cable therebetween, said jumper attachment terminals including a base member fixedly attached on said housing and a post member having means releasably engageable with complementary engaging means on said base member for temporary attachment of said post member to said base member such that said post member extends outwardly from said top panel of said housing;

(c) a pair of test probe terminals mounted on said top panel of said housing for connection of a pair of test probes thereto;

(d) a current applying circuit disposed in said housing below said top panel and connected to said pair of jumper attachment terminals for applying a direct current through a jumper cable attached between said jumper attachment terminals; and

(e) a resistance sensing circuit disposed in said housing below said top panel and connected to said pair of test probe terminals for sensing resistance of the jumper cable attached between said jumper terminals to the flow of said direct current therethrough by using a pair of test probes connected to said test probe terminals.

5,631,571

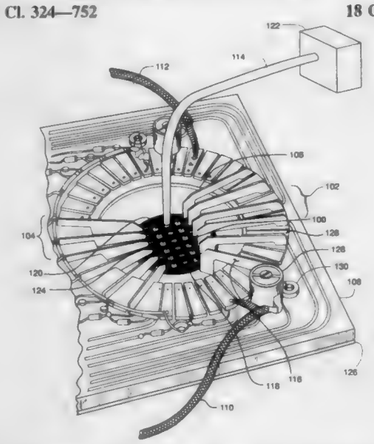
INFRARED RECEIVER WAFER LEVEL PROBE TESTING

Stephen Spaziani, Nashua, N.H.; Kenneth Vaccaro, Acton, and William Waters, Bedford, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 3, 1996, Ser. No. 626,870

Int. Cl.[6] G01R *31/28;31/26;19/00*

U.S. Cl. 324—752 **18 Claims**



1. The method of probe testing integral wafer-contained fiber-optic receiver photodiode inclusive circuit die comprising the steps of:

disposing a to-be-tested integral wafer-contained fiber-optic receiver photodiode inclusive circuit die into engagement with an array of precisely positioned electrical probe elements located around a circuit die-receiving aperture of a probe card test apparatus;

energizing said to be tested circuit die electrically through said array of electrical probe elements as required for functional operation;

supplying electrical input port signals and electrical output port loading to said circuit die through said array of electrical probe elements as needed for functional operation;

disposing an external signal-communicating optical node in a remembered precise physical position location and orientation with respect to said array of electrical probe elements, said circuit die-receiving aperture and a selected optical input port region of said to-be-tested circuit die;

communicating optical energy signals from a testing apparatus-energized external transducer element through a fiber-optic communication path element to said optical node and thence by a short media path to said optical input port region of said to-be-tested circuit die;

controlling an optical signal communicated between said external transducer apparatus and said circuit die optical port from within said testing apparatus;

evaluating electrical signals communicated from said circuit die to said testing apparatus via said array of electrical probe elements, in response to received optical and electrical signals, against expected die performance criteria;

moving said aperture and said wafer with respect to each other until a next to be tested circuit die on said wafer is precisely located within said aperture and in physical registration with said electrical probe elements and said signal-communicating optical node.

5,631,572

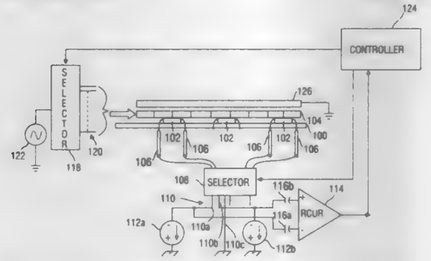
PRINTED CIRCUIT BOARD TESTER USING MAGNETIC INDUCTION

Timothy W. Sheen, Brighton; Jiann-Neng Chen, Newton; Stephen A. Cohen, Andover; Michael A. Baglino, Sharon, and Joseph F. Wrinn, Quincy, all of Mass., assignors to Teradyne, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 123,145, Sep. 17, 1993. This application Apr. 15, 1994, Ser. No. 227,854

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **29 Claims**



1. Apparatus for testing a populated printed circuit board for faults comprising:

a fixture having a plurality of conductive members adapted to make contact to a printed circuit board positioned in the fixture;

an antenna mounted near the fixture;

a bias source connected to one of the plurality of conductive members; and

a receiver connected to the bias source.

5,631,573

PROBE-TYPE TEST HANDLER

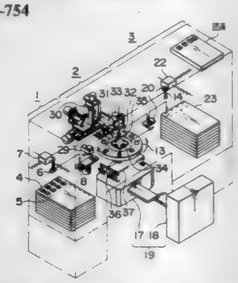
Tosio Ohno, Kumamoto, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 407,369

Claims priority, application Japan, Sep. 20, 1994, 6-225032

Int. Cl.[6] G01R *1/04;31/28*

U.S. Cl. 324—754 **20 Claims**



1. A probe-type test handler comprising:

a measurement module accommodating an electrical circuit for the measurement of electrical characteristics of an IC;

a performance board electrically connected to the electrical circuit in an interchangeable manner that allows the type of the performance board to be selected according to the type of the IC to be measured;

a probe card provided with a probe needle that is formed of a linear portion, a bent portion and a beam portion that continues from the bent portion; and

a pressure mechanism that allows the tip of the linear portion of the probe needle to be pressed into contact with the lead projected out of an IC package near its IC package body.

5,631,574

CONTACT PROBE UNIT

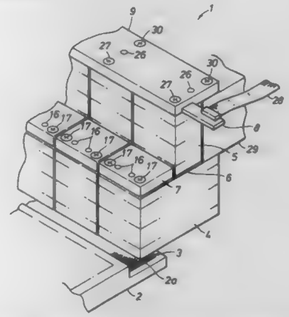
Toshio Kazama, Nagano-ken, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 15, 1994, Ser. No. 358,122

Claims priority, application Japan, Dec. 17, 1993, 5-343791; Apr. 1, 1994, 6-087337

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—761 **13 Claims**



1. A contact probe unit for electrically accessing parts to be tested, comprising:

a first contact unit comprising

a first base having a first surface and an opposite second surface, and

a plurality of first contact modules arranged in said first base,

each of said first contact modules comprising a first needle member and a second needle member projecting from said first and said second surfaces of said first base, respectively, and first spring means for resiliently urging at least one of said first and second needle members in a direction to project from the associated first and second surfaces of said first base, said second needle members being adapted to be contacted with the parts to be electrically accessed;

a second contact unit, stacked and abuttingly secured on said first contact unit, said second contact unit comprising

a second base having a third surface and an opposite fourth surface, and

a plurality of second contact modules arranged in said second base,

each of said second contact modules comprising a third needle member and a fourth needle member projecting from said third and said fourth surfaces of said base, respectively, and second spring means for resiliently urging at least "one of said third and fourth needle members in a direction to project from the associated third and fourth surfaces of said second base;

an electronic device including a sheet member carrying a first array of terminals on a first sheet member surface thereof and a second array of terminals on a second sheet member surface thereof;

means for assembling said first and second contact units one over the other with at least part of said sheet member of said electronic device interposed therebetween in such a manner as to have said sheet number contact said first needle members of said first contact unit with said first array of terminals, and

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contact said fourth needle members of said second contact unit with said second array of terminals;

means for connecting said third needle members of said second contact unit to an external circuit; and

wherein said first base comprises a layered structure including a first insulating plate, an intermediate insulating plate and a second insulating plate, each of said first contact modules being received in a though hole passed through said layered structure.

5,631,575

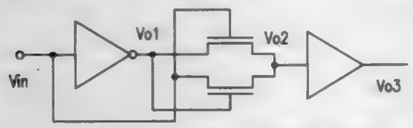
INTERMEDIATE VOLTAGE SENSOR FOR CMOS CIRCUITS

Kuen-Jong Lee, and Jing-Jou Tang, both of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Sep. 7, 1995, Ser. No. 524,848

Int. Cl.[6] H03K *19/0948;19/00*

U.S. Cl. 326—16 **19 Claims**



1. An intermediate voltage sensor for CMOS circuits comprising:

a linear inverter having an output end and an input end which is connected with an input signal under test;

a first voltage control switch provided with a control end which is connected with said input end of said linear inverter, said first voltage control switch further provided with an input end which is connected with said output end of said linear inverter;

a second voltage control switch provided with a control end which is connected with said output end of said linear inverter, said second voltage control switch further provided with an input end which is connected with said input end of said linear inverter; and

a buffer being opposite in characteristic to said linear inverter and having a precipitous switching characteristic, said buffer provided with an input end which is connected with an output end of said first voltage control switch and an output end of said second voltage control switch;

wherein said buffer is capable of giving forth an output voltage having a first logic value when said input signal has a voltage value of logic "0" or logic "1"; and wherein said buffer is capable of giving forth an output voltage having a second logic value when said input signal has a voltage value intermediate between said logic "0" and said logic "1", with said second logic value being different from said first logic value.

5,631,576

PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUIT DEVICES WITH FLEXIBLE CARRY CHAINS

Fung F. Lee, Milpitas, and John Tse, El Cerrito, both of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Sep. 1, 1995, Ser. No. 522,554

Int. Cl.[6] H03K *19/177*

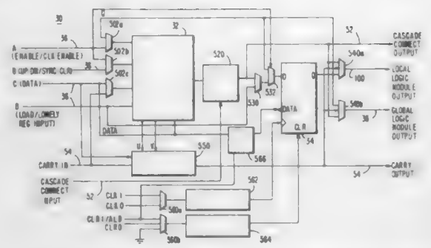
U.S. Cl. 326—39 **5 Claims**

1. A programmable logic array integrated circuit comprising:

a plurality of logic modules, each of which is programmable to produce a sum out signal and a carry out signal indicative of the sum and carry out from addition of two addend signals and a carry in signal applied to that logic module;

a programmable network of interconnection conductors for programmably selectively connecting outputs of said logic modules to inputs of said logic modules;

a carry chain conductor extending between each pair of said logic modules for conducting a carry out signal from one of said logic modules in said pair to the other logic module in said pair for possible use as a carry in signal by said other logic module in said pair;



first programmable logic circuitry associated with each of said logic modules for selectively substituting a signal on one of said inputs to said logic module which is connected to said programmable network of interconnection conductors for the carry in signal received by that logic module via a carry chain conductor; and

second programmable logic circuitry associated with each of said logic modules for selectively applying the carry out signal of said logic module to one of said outputs of said logic module which is connected to said programmable network of interconnection conductors.

5,631,577

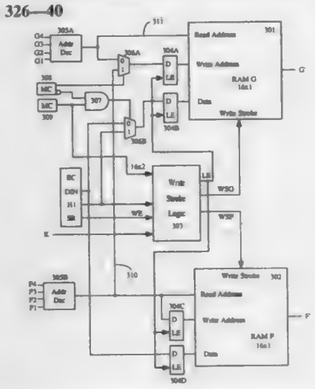
SYNCHRONOUS DUAL PORT RAM

Philip M. Freidin, Sunnyvale; Edmond Y. Cheung, San Jose; Charles R. Erickson, and Tsung-Lu Syu, both of Fremont, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Division of Ser. No. 386,972, Feb. 10, 1995, Pat. No. 5,566,123. This application Jun. 21, 1996, Ser. No. 668,276

Int. Cl.[6] H03K *19/177;* **G11C** *13/00*

U.S. Cl. 326—40 **10 Claims**



1. A structure for a programmable logic device comprising:

a first logic generator having a Read Address terminal and a Write Address Terminal;

a second logic generator having a Read Address terminal and a Write Address Terminal;

addressing circuitry coupled to said Read and Write Address terminals of said first and second logic generators, wherein a control signal provided to said addressing circuitry provides a signal to the Write Address terminals of said first and second logic generators.

5,631,578

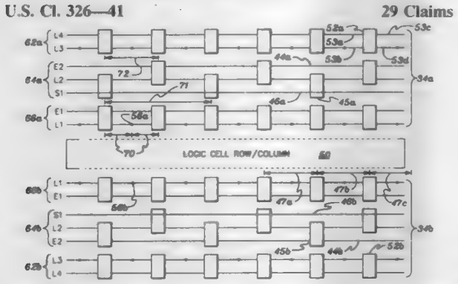
PROGRAMMABLE ARRAY INTERCONNECT NETWORK

Kim P. N. Clinton, Essex Junction; Scott W. Gould, South Burlington; Steven P. Hartman, Jericho; Joseph A. Iadanza, Hinesburg; Frank R. Keyser, III, Colchester, and Eric E. Millham, St. George, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 459,579

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **29 Claims**



10. A programmable interconnect system for a programmable array having a plurality of logic cells arranged therein, the programmable interconnect system having a first plurality of interconnect buses (**34***a*) associated with, and running along, a row/column of logic cells of the plurality of logic cells, the row/column of logic cells being divisible into at least two pluralities of contiguous logic cells, each plurality of the at least two pluralities of contiguous logic cells having a first selected number of logic cells therein, the first selected number of logic cells being greater than one, wherein the first plurality of interconnect buses comprises:

a plurality of local buses, said plurality of local buses being connectable to logic cells of the row/column of logic cells, said plurality of local buses including a first plurality of conductors and a second plurality of conductors, the conductors of the first and second pluralities of conductors being interior conductors, wherein the conductors of the first plurality of conductors of the plurality of local buses have a length less than the first selected number of logic cells, and the conductors of the second plurality of conductors of the plurality of local buses have a length equal to the first selected number of logic cells; and

a plurality of express buses, said plurality of express buses being generally electrically isolated from the logic cells of the row/column of logic cells, said plurality of express buses including a first plurality of conductors and a second plurality of conductors, the conductors of the first and second pluralities of conductors of the plurality of express buses being interior conductors, wherein the conductors of the first plurality of conductors of the plurality of express buses have a length equal to the first selected number of logic cells, and the conductors of the second plurality of conductors of the plurality of express buses have a length greater than the first selected number of logic cells and less than the length of the entire row/column of logic cells.

5,631,579

OUTPUT BUFFER CIRCUIT FOR INTERFACING SEMICONDUCTOR INTEGRATED CIRCUITS OPERATING ON DIFFERENT SUPPLY VOLTAGES

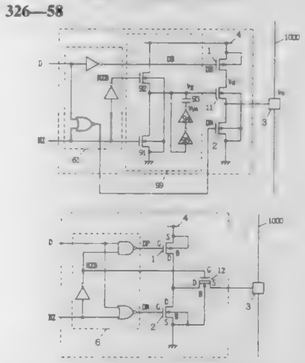
Takahiro Miki; Hiroyuki Kouno, and Yasuyuki Nakamura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 548,066

Claims priority, application Japan, Nov. 21, 1994, 6-286821(P)

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—58 **9 Claims**



1. An output buffer circuit for switching the level of an output signal to one of a first logical level, a second logical level and a high-impedance state in response to an externally supplied data signal and control signal, said output buffer circuit comprising:

a p-channel MOS transistor and a first n-channel MOS transistor connected in series between a first supply potential and a second supply potential and turned on and off in accordance with said externally supplied data and control signal;

a second n-channel MOS transistor inserted in series between said p-channel MOS transistor and said first n-channel MOS transistor and turned on and off in accordance with said externally supplied control signal;

an output node connected to the connection point between said first and said second n-channel MOS transistor; and

voltage converting means for generating a signal having a potential higher than the first supply potential in accordance with said externally supplied control signal, wherein

said second n-channel MOS transistor is an enhancement type transistor, and

the gate of said second n-channel MOS transistor is driven by the signal generated by said voltage converting means.

5,631,580

BICMOS ECL-CMOS LEVEL CONVERTER

Martin Rau, Ulm, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Mar. 17, 1995, Ser. No. 405,643

Claims priority, application Germany, Mar. 18, 1994, 44 09 453.1

Int. Cl.[6] H03K *19/0175*

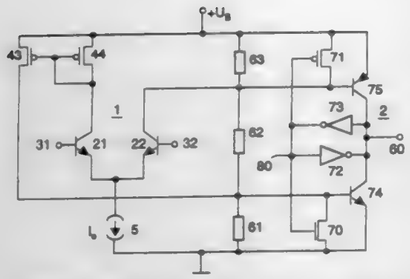
U.S. Cl. 326—66 **4 Claims**

1. A level converter responsive to a digital input signal compatible with emitter-coupled transistor logic for generating an output signal having a larger magnitude compatible with complementary metal oxide semiconductor logic, comprising:

a pair of complementary bipolar output transistors forming a push-pull output stage of said level converter for generating said output signal such that when one of said transistors is conductive the other one is non-conductive, and vice versa; and

a differential amplifier forming an input stage responsive to said input signal for generating in said differential amplifier a

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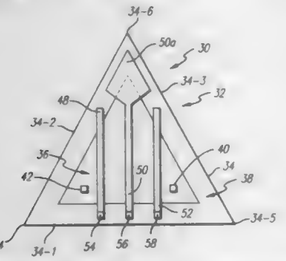
switching current that directly drives one of said pair of transistors when a transition in said switching current occurs.

5,631,581

MICROELECTRONIC INTEGRATED CIRCUIT INCLUDING TRIANGULAR SEMICONDUCTOR "AND" GATE DEVICE

Michael D. Rostoker, Boulder Creek; James S. Koford, Mountain View; Ranko Scepanovic, San Jose; Edwin R. Jones; Gobi R. Padmanahben, both of Sunnyvale; Ashok K. Kapoor, Palo Alto, all of Calif.; Valeriy B. Kudryavtsev, Moscow, Russian Federation; Alexander E. Andreev, Moskovskata Oblast, Russian Federation; Stanislav V. Aleshin, and Alexander S. Podkolzin, both of Moscow, Russian Federation, assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 438,613, May 10, 1995, abandoned.
This application Dec. 6, 1995, Ser. No. 567,952
Int. Cl.[6] H03K *17/093*
U.S. Cl. 326—101 **38 Claims**



1. A microelectronic device formed on a semiconductor substrate, the device having a periphery defined by a triangle and comprising:
- an active area formed within said periphery;
- a first terminal formed in said active area;
- a second terminal which is formed in said active area and spaced from the first terminal;
- a first gate formed between the first terminal and the second terminal: and
- a channel connecting said first and second terminals, the channel being controlled by a voltage applied to said first gate.

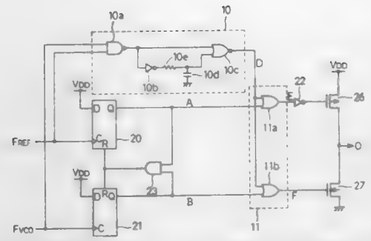
5,631,582

FREQUENCY AND PHASE COMPARATOR

Akio Fujikawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 28, 1995, Ser. No. 508,884
Claims priority, application Japan, Jul. 28, 1994, 6-176316; Jul. 28, 1994, 6-176470
Int. Cl.[6] H03D *13/00;* **G01R** *25/00*
U.S. Cl. 327—12 **5 Claims**

1. A frequency and phase comparator comprising:



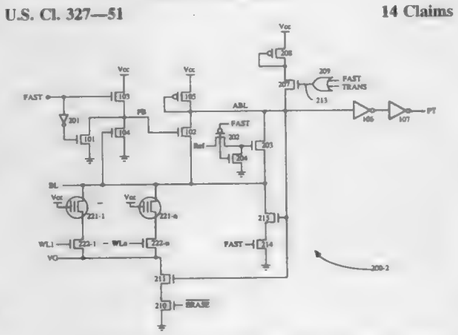
- a first flip-flop having a reset terminal and receiving a first periodic signal at its clock terminal;
- a second flip-flop having a reset terminal and receiving a second periodic signal at its clock terminal:
- a logical circuit performing a logic calculation between an output of the first flip-flop and an output of the second flip-flop, said logical circuit resetting the first and second flip-flops with an output of the logical calculation;
- pulse generating means, having an input connected to only inputs of said first and second flip-flops, for receiving only the first and second periodic signals to output a pulse signal of a predetermined width when logical values of the first and second periodic signals become the same;
- pulse adding means for adding the pulse signal to each of the outputs of the first and second flip-flops; and
- outputting means for combining the pulse-signal-added outputs of the first and second flip-flops and outputting a combined signal.

5,631,583

SENSE AMPLIFIER FOR PROGRAMMABLE LOGIC DEVICE HAVING SELECTABLE POWER MODES

Napoleon W. Lee, Milpitas, and Wei-Yi Ku, San Jose, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 459,066, Jun. 2, 1995, abandoned.
This application Jul. 8, 1996, Ser. No. 676,992
Int. Cl.[6] H03F *3/45*
U.S. Cl. 327—51 **14 Claims**



1. A sense amplifier for a programmable logic device comprising:
- a plurality of memory cells coupled to a bitline;
- an amplified bitline for mirroring signal transitions on said bitline;

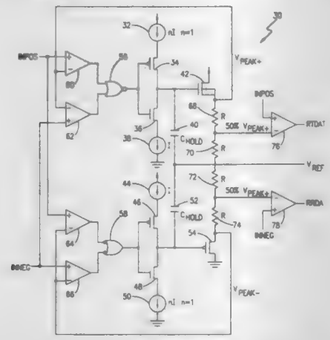
- a selectable current source coupled to said amplified bitline which is activated during a high speed mode and during a low power mode if a low-to-high signal transition occurs on said bitline.

5,631,584

DIFFERENTIAL CROSS COUPLED PEAK DETECTOR

Michael D. Smith, Flower Mound, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Filed Sep. 29, 1995, Ser. No. 537,214
Int. Cl.[6] G01R *19/00;* **H03K** *5/153*
U.S. Cl. 327—62 **16 Claims**



1. A circuit for processing an AC signal having a peak to peak envelope associated therewith, the envelope having an upper edge, a lower edge and an intermediate edge therebetween, said circuit comprising:
- means for detecting the upper edge of the peak to peak envelope of the AC signal, said means for detecting the upper edge including a first comparator, a second comparator, and a NOR gate having two inputs, each of said two inputs of said NOR gate being connected to one of said first and second comparators;
- means for detecting the lower edge of the peak to peak envelope of the AC signal;
- means coupled to said means for detecting the upper edge for detecting the AC signal at a mid range upper point, said mid range upper point occurring between the intermediate edge and the upper edge of the peak to peak envelope, including a first output; and
- means coupled to said means for detecting the lower edge for detecting the AC signal at a mid range lower point, said mid range lower point occurring between the intermediate edge and the lower edge of the peak to peak envelope, including a second output.

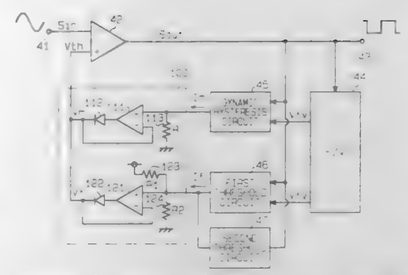
5,631,585

WAVE-SHAPING CIRCUIT

Kenji Kinoshita, Kariya; Katsuhiko Shirai, Okazaki, and Takashi Harada, Hekinan, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 8, 1995, Ser. No. 512,649
Claims priority, application Japan, Sep. 5, 1994, 6-211499
Int. Cl.[6] H03K *5/08*
U.S. Cl. 327—100 **8 Claims**

1. A wave-shaping circuit for an alternating analog output signal from a sensor which detects rotation speed of an engine, said wave-shaping circuit comprising:



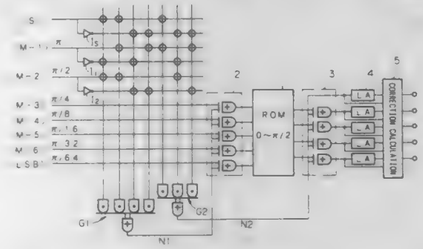
- a comparator for comparing said alternating analog output signal with a comparison reference signal to provide a binary signal corresponding to said alternating analog output signal;
- frequency/voltage converting means for converting said binary signal to a voltage conversion signal which has a voltage value corresponding to a frequency of said binary signal:
- dynamic hysteresis voltage generating means for generating a dynamic hysteresis voltage responsive to said voltage conversion signal, said dynamic hysteresis voltage having a crest value and gradually decreasing over a time interval from said crest value;
- threshold voltage generating means for receiving said voltage conversion signal and generating a threshold voltage whose voltage level changes in proportion to said voltage conversion signal; and
- higher signal selecting means for selecting a higher one of said dynamic hysteresis voltage and said threshold voltage and providing said selected higher voltage to said comparator as said comparison reference signal.

5,631,586

SINE-WAVE GENERATOR CIRCUIT

Akira Sogo, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 4, 1996, Ser. No. 582,671
Claims priority, application Japan, Jan. 6, 1995, 7-016453
Int. Cl.[6] G06F *1/02*
U.S. Cl. 327—106 **7 Claims**



1. A sine-wave generator circuit comprising:
- a memory for storing sine-wave data of a predetermined phase region, the memory being accessed using address data which correspond to low-order bits within input phase data represented by twos complements;
- read-order designation means for designating either a normal order or a reverse order, by which data are read out from the memory based on the address data, in accordance with high-order bits within the input phase data;
- phase adjustment means for performing phase adjustment on data read out from the memory in accordance with the high-order bits of the input phase data; and
- correction calculation means for performing a correction calculation to correct an error of the data read out from the memory by using the high-order bits of the input phase data.

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5,631,587

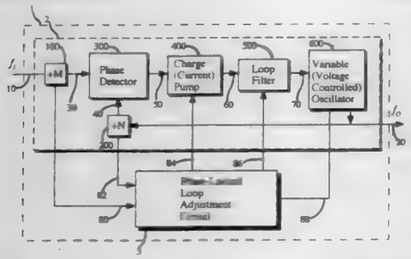
FREQUENCY SYNTHESIZER WITH ADAPTIVE LOOP BANDWIDTH

Ramon S. Co, Trabuco Canyon, and Howard C. Yang, Milpitas, both of Calif., assignors to Pericom Semiconductor Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 237,593, May 3, 1994, abandoned. This application Oct. 11, 1994, Ser. No. 321,430

Int. Cl.° H03L 7/16;7/00

U.S. Cl. 327—107 17 Claims



13. A method for adjusting an output signal of a frequency synthesizer from a first output frequency to a second output frequency, comprising the steps of:

adjusting an output divisor of an output frequency divider in a phase-locked loop from a first divisor associated with the first output frequency to a second divisor associated with the second output frequency; and

adjusting a loop bandwidth, a natural frequency, and a damping factor of said phase-locked loop from values associated with the first output frequency to values associated with the second output frequency in response to said second divisor;

wherein the second output frequency ranges from 0.3 MHz to 165 MHz.

5,631,588

POWER OUTPUT STAGE WITH LIMITED CURRENT ABSORPTION DURING HIGH-IMPEDANCE PHASE

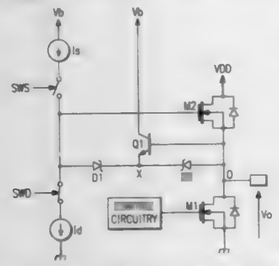
Luca Bertolini, Milan, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Apr. 29, 1994, Ser. No. 236,227

Claims priority, application European Pat. Off., Mar. 29, 1994, 94830148

Int. Cl.° H05B 41/14; H03K 17/687

U.S. Cl. 327—108 64 Claims



1. An integrated driver circuit for driving an N-channel power field-effect transistor which is connected between an output node and a first positive supply voltage, comprising:

a switchable current source connected between the gate of said first transistor and a second positive supply voltage which is higher than said first positive supply voltage, and a switchable current sink connected between the gate of said first transistor and a supply reference voltage;

a string of components, connected to each other at a plurality of nodes, and connected to provide voltage-limiting between the gate of said first transistor and said output node; and

at least one decoupling transistor having a control terminal connected to said output node, a first current-carrying terminal functionally connected to said second positive supply voltage, and a second current-carrying terminal connected to a first node of said string which is not said output node.

5,631,589

TRANSITION CONTROL CIRCUIT FOR DRIVER CIRCUITS

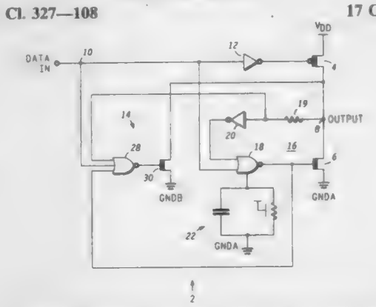
Yachin Afek, Kfar Saba; Claudine Tordjman, Holon, and Ricardo Berger, Raanana, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 14, 1994, Ser. No. 324,073

Claims priority, application United Kingdom, Oct. 16, 1993, 9321396

Int. Cl.° H03B 1/00

U.S. Cl. 327—108 17 Claims



1. A transition control circuit for controlling the transitions of a signal at an output node of a driver circuit, the transition control circuit comprising:

an input node for receiving an input signal having a first logic state or a second logic state, an output signal at the output node being switchable between the first logic state and the second logic state in dependence on the logic state of the input signal;

first means coupled to the output node and the input node, wherein the first means comprises:

a logic circuit having at least one input and at least one output, the at least one output coupled to the driver circuit; and

filter means coupled between the logic circuit and a first supply line for filtering predetermined oscillations from the signal supplied by the first supply line, the first means being enabled when the output signal has the first logic state and the input signal has the second logic state, and being disabled when the output signal has the second logic state or the input signal has the first logic state, the first means once enabled coupling the output node to the first supply line such that the output signal at the output node switches to the second logic state when the voltage at the output node reaches a predetermined level; and

second means coupled to the output node and the input node and being enabled when the output signal has the second logic state and the input signal has the second logic state, and being disabled when the output signal has the first logic state or the input signal has the first logic state, the second means once enabled coupling the output node to a second supply line such that the output signal is held in the second logic state until the next transition of the input signal.

5,631,590

SYNCHRONIZED CLOCK SIGNAL REGENERATING CIRCUIT

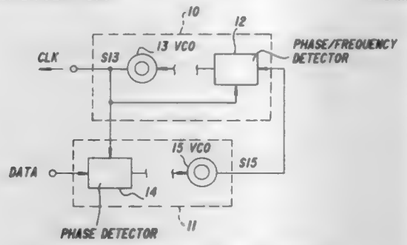
Nobuaki Tomesakai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 25, 1995, Ser. No. 533,210

Claims priority, application Japan, Nov. 4, 1994, 6-270755

Int. Cl.° H03L 7/06

U.S. Cl. 327—156 9 Claims



1. A clock signal regenerating circuit comprising:

a first PLL circuit;

a PLL part circuit connected to an output of said first PLL circuit, said PLL part circuit forming a second PLL circuit, the second PLL circuit performing a phase-synchronizing operation on a clock signal output from said first PLL circuit and a data signal input to said PLL part circuit, the first PLL circuit performing a frequency-synchronizing operation on the clock signal and an output signal of said PLL part circuit, said clock signal being taken as an output of the clock signal regenerating circuit,

the phase-synchronizing operation having a speed lower than that of the frequency-synchronizing operation.

5,631,591

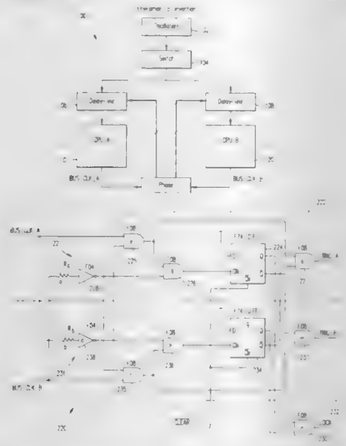
METHOD AND APPARATUS FOR SYNCHRONIZING TIMING SIGNALS OF TWO INTEGRATED CIRCUIT CHIPS

Amir Bar-Niv, Givatayim, Israel, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 30, 1995, Ser. No. 449,478

Int. Cl.° H03K 5/13;5/00

U.S. Cl. 327—158 26 Claims



1. A phase synchronization circuit for synchronizing timing of first and second integrated circuit chips comprising:

a phase comparator coupled to the first integrated circuit chips for receiving a first bus timing signal and coupled to the second integrated circuit chip for receiving a second bus timing signal, the phase comparator generating a signal indicative of a propagation delay of the first and second bus timing signals;

first and second adjustable delay lines coupled to the phase comparator for receiving the signal indicative of the propagation delay and coupled to a system clock line for receiving a system clock signal, the first and second adjustable delay lines respectively generating a first source clock signal for timing the first integrated circuit chip and a second source clock signal for timing the second integrated circuit chip, the first and second delay lines being responsive to the signal indicative of the propagation delay to increase a delay of a signal selected from the first and second source clock signals, the selected signal corresponding to a signal of the first and second bus clock signals having a smaller propagation delay; and

a frequency switch circuit coupled to the first and second adjustable delay lines for switching to a low oscillating frequency when the propagation delay of the first integrated circuit chip and the propagation delay of the second integrated circuit chip are substantially matched.

5,631,592

PULSE GENERATION/SENSING ARRANGEMENT FOR USE IN A MICROPROCESSOR SYSTEM

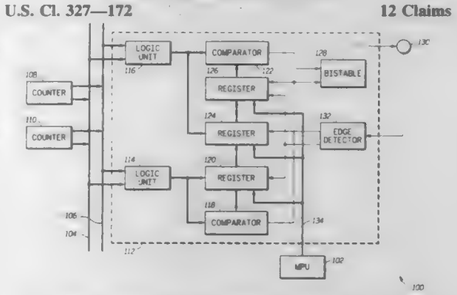
Roland H. Schwarz, Geneva, Switzerland, and William D. Huston, Jr., Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 129,824, Sep. 30, 1993, abandoned. This application Mar. 8, 1996, Ser. No. 611,612

Claims priority, application United Kingdom, Oct. 3, 1992, 9220847

Int. Cl.° H03K 5/04;5/135;7/08

U.S. Cl. 327—172 12 Claims



9. A pulse generation and sensing arrangement for use in a microprocessor system, the arrangement comprising:

an input/output node for receiving thereat an input signal in a first mode of operation and for producing thereat an output signal in a second mode of operation;

edge detection means coupled to the input/output node for sensing pulse edges in the input signal in the first mode of operation;

timer means for producing time values;

register means having a first register, a second register and a third register arranged such that

in the first mode of operation

the first register holds a time value produced by the timer means corresponding to a first edge detected by the edge detection means; the second register holds a time value produced by the timer means corresponding to a second

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edge detected by the edge detection means; and the third register holds the value from the first register while the first register's value is updated; and

in the second mode of operation

the first register holds a value corresponding to a first edge to be generated; the second register holds a value corresponding to a second edge to be generated; and the third register holds the value from the first register while the first register's value is updated;

comparator means for comparing the values held in the output register means in the second mode of operation with time values produced by the timer means; and

bistable means coupled to the output node for generating at the input/output node in the second mode of operation a signal whose state changes in response to the comparator means.

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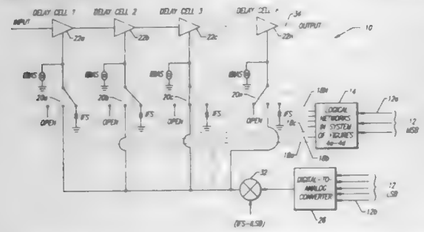
ADJUSTABLE DELAY LINE

Stuart B. Molin, Oceanside, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Continuation of Ser. No. 382,677, Feb. 2, 1995, Pat. No. 5,554,950, which is a continuation of Ser. No. 11,205, Jan. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 830,595, Feb. 4, 1992, abandoned. This application Jun. 25, 1996, Ser. No. 670,397

Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—277 **15 Claims**



1. In combination for providing an adjustable delay in an input signal,

first means for providing a plurality of binary signals of progressive binary significance to indicate the adjustable delay in the input signal,

a plurality of delay elements each operative to provide a delay between minimum and maximum values, the delay elements in the plurality being connected to provide a delay related to the accumulation of the delays provided by the individual ones of the delay elements in the plurality, and

second means responsive to the binary signals for simultaneously producing the maximum delay in first ones, and at times simultaneously at least one additional one (1) dependent upon the pattern of the binary signals of the progressive binary significance in the plurality, of the delay elements in the plurality and the minimum delay in second ones of the delay elements in the plurality and for producing, in a third one of the delay elements in the plurality, a delay, simultaneously with the delays produced in the first and second ones of the delay elements in the plurality, between the minimum and maximum values to provide cumulatively the adjustable delay in the input signal in the delay elements in the plurality.

5,631,594

TUNABLE LOGARITHMIC AMPLIFIER CIRCUIT USING CASCADED TRIPLE-TAIL CELLS

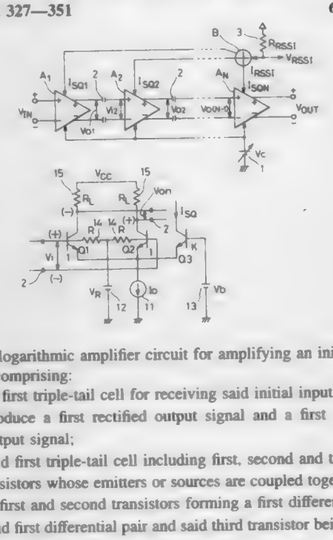
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 629,197

Claims priority, application Japan, Jul. 18, 1995, 7-203831

Int. Cl.[6] G06F *7/556;* **G06G** *7/24*

U.S. Cl. 327—351 **6 Claims**



1. A logarithmic amplifier circuit for amplifying an initial input signal comprising:

(a) a first triple-tail cell for receiving said initial input signal to produce a first rectified output signal and a first amplified output signal;

said first triple-tail cell including first, second and third transistors whose emitters or sources are coupled together, said first and second transistors forming a first differential pair;

said first differential pair and said third transistor being driven by a single tail current;

bases or gates of said first and second transistors forming input ends of said first triple-tail cell to be applied with said initial input signal;

collectors or drains of said first and second transistors forming output ends of said first triple-tail cell from which said first amplified output signal is derived;

said first rectified output signal being outputted through a collector or drain of said third transistor;

a base or gate of said third transistor being applied with a dc tuning voltage;

(b) a second triple-tail cell for receiving said first amplified output signal of said first triple-tail cell to produce a second rectified output signal and a second amplified output signal;

said second triple-tail cell including fourth, fifth and sixth transistors whose emitters or sources are coupled together, said fourth and fifth transistors forming a second differential pair;

said second differential pair and said sixth transistor being driven by a single tail current;

bases or gates of said fourth and fifth transistors forming input ends of said second triple-tail cell to be applied with said first amplified output signal;

collectors or drains of said fourth and fifth transistors forming output ends of said second triple-tail cell from which said second amplified output signal is derived;

said second rectified output signal being outputted through a collector or drain of said sixth transistor;

a base or gate of said sixth transistor being applied with said dc tuning voltage;

(c) an adder for adding said first rectified output signal and said second rectified output signal.

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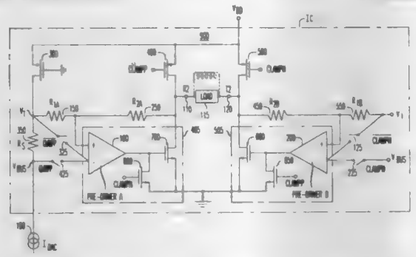
VOLTAGE SIGNAL LINE DRIVER COMPRISING A PUSH-PULL BRIDGE AMPLIFIER

Kadaba R. Lakshmikumar, Wescosville, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 315,723, Sep. 30, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,619

Int. Cl.[6] H03K *17/14;17/687*

U.S. Cl. 327—362 **14 Claims**



1. In an integrated circuit, a balanced line driver has two portions, wherein the two portions are coupled to a load therebetween, each portion having:

a switching transistor, coupled between a power supply rail and an output terminal; and

an amplifier responsive to an input signal applied to an input and having an output coupled to the output terminal;

wherein the balanced line driver is CHARACTERIZED BY:

a sense transistor, connected between the power supply rail and the input of the amplifiers, for compensating for variations in the conductivity of the switching transistors caused by variations in transistor characteristics.

5,631,596

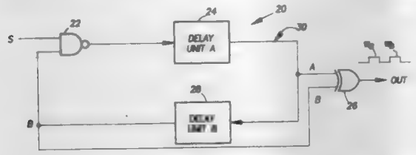
PROCESS MONITOR FOR CMOS INTEGRATED CIRCUITS

Nicholas Sporck, Saratoga, and Teh-Kuin Lee, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 287,653, Aug. 9, 1994, Pat. No. 5,486,786. This application Jul. 25, 1995, Ser. No. 506,821

Int. Cl.[6] H03K *17/14;9/08*

U.S. Cl. 327—378 **22 Claims**



1. A process for evaluating acceptability of a CMOS digital circuit having a first type of circuit element for a first change of state and a second type of circuit element for a second change of state, the process comprising:

generating a first pulse having a first pulse width dependent on circuit elements of the first type with a pulse generation circuit formed on a substrate in common with the digital circuit and having elements of the first and the second type;

generating a second pulse having a second pulse width dependent on circuit elements of the second type with the pulse generation circuit;

determining the width of each pulse;

comparing the width of each pulse to a predetermined value; and

generating an accepted-rejected signal, wherein said generating is dependent upon said comparison.

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NEGATIVE VOLTAGE CIRCUIT FOR A FLASH MEMORY

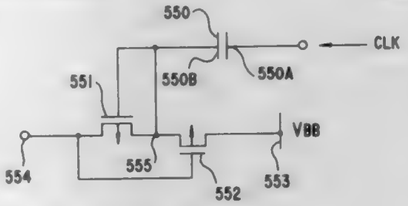
Takao Akaogi; Hiromi Kawashima; Tetsuji Takeguchi; Ryoji Hagiwara; Yasushi Kasa; Kiyoshi Itano; Yasushige Ogawa, and Shouichi Kawamura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 98,406, Aug. 6, 1993, abandoned. This application May 19, 1995, Ser. No. 445,103

Claims priority, application Japan, Dec. 9, 1991, 3-324701; Dec. 27, 1991, 3-346571; Jan. 14, 1992, 4-4678; Mar. 19, 1992, 4-64143; Jun. 5, 1992, 4-145300; Jun. 15, 1992, 4-154958; Sep. 25, 1992, 4-256594; Nov. 10, 1992, 4-299987; Dec. 9, 1992, PCT/JP92/01608

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—536 **5 Claims**



1. A negative-voltage bias circuit comprising:

a capacitor having first and second terminals;

a first p-channel MIS field-effect transistor whose drain is connected to a negative-voltage output terminal and whose gate and source are connected to said first terminal of said capacitor; and

a second p-channel MIS field-effect transistor whose drain is connected to the source of said first p-channel MIS field effect transistor, whose gate is connected to said negative-voltage output terminal, and whose source is provided with a negative voltage;

wherein when a clock pulse is supplied to said second terminal of said capacitor during output of a negative-voltage, a potential of said negative-voltage output terminal is set to that of said negative voltage, and

wherein said first p-channel MIS field-effect transistor is a depletion-type p-channel MIS field-effect transistor.

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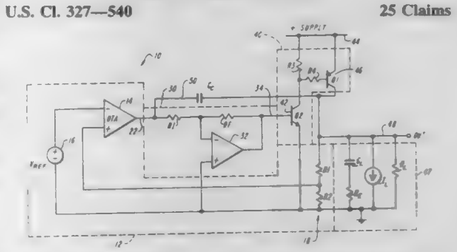
FREQUENCY COMPENSATION FOR A LOW DROP-OUT REGULATOR

Evaldo M. Miranda, San Jose, Calif.; Todd Brooks, Boston, and A. Paul Brokaw, Burlington, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 7, 1995, Ser. No. 488,403

Int. Cl.[6] G05F *1/10;3/02*

U.S. Cl. 327—540 **25 Claims**



20. A regulator for providing a regulated output signal at an output terminal, the regulator comprising:

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a transconductance stage that receives an input voltage signal and a reference voltage signal and provides an amplified error signal based on a difference between the input voltage signal and the reference voltage signal at a transconductance stage output lead, the input voltage signal being derived from the regulated output signal at the output terminal;

an inverting stage that receives the amplified error signal from the transconductance stage and inverts the amplified error signal to provide an inverted amplified error signal;

a first transistor having a control lead that receives the inverted amplified error signal and providing a drive signal;

a second transistor having a control lead that receives the drive signal and coupled to the output terminal to provide the regulated output signal; and

a capacitor coupled between the output terminal and the transconductance stage output lead.

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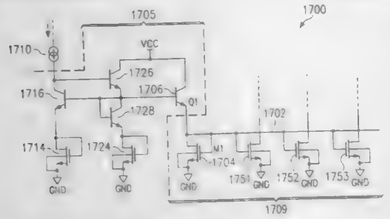
TWO STAGE CURRENT MIRROR

Kantilal Bacrania, Palm Bay, Fla.; Chong I. Chi, Santa Clara, Calif., and Gregory J. Fisher, Indialantic, Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 288,955, Aug. 11, 1994, abandoned, which is a division of Ser. No. 785,325, Oct. 30, 1991, Pat. No. 5,369,309. This application Dec. 13, 1995, Ser. No. 571,693

Int. Cl.° G05F *1/10;3/02*

U.S. Cl. 327—542 **23 Claims**



1. A current mirror, comprising:

(a) a first stage comprising a reference current input for receiving a reference current,

a first bipolar transistor coupled to the reference current input and having an emitter current representative of the reference current;

voltage generating means for generating a voltage proportional to a current, said voltage generating means coupled to the emitter of the first bipolar transistor for generating a voltage proportional to the emitter current of the first bipolar transistor;

a second bipolar transistor coupled to the first bipolar transistor and to the output of the first stage for generating at the emitter of the second bipolar transistor a controlled voltage representative of the reference current;

(b) a second stage with a second stage input coupled to the output of the first stage, said second stage comprising one or more output field effect transistors (FETs) with their gates coupled to the controlled voltage for generating second stage output currents in the output FETs proportional to the controlled voltage of the first stage output and representative of the reference input current.

5,631,600

REFERENCE CURRENT GENERATING CIRCUIT FOR GENERATING A CONSTANT CURRENT

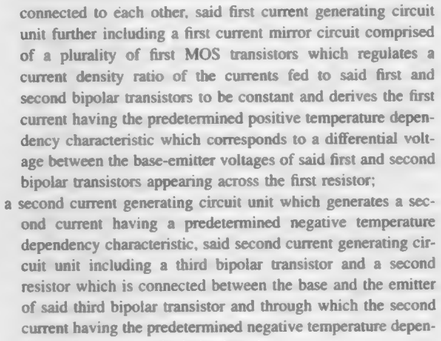
Takashi Akioka, Hitachi; Kinya Mitsumoto, Tamamura-machi, and Yutaka Kobayashi, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 361,722

Claims priority, application Japan, Dec. 27, 1993, 5-331002; Dec. 27, 1993, 5-331034

Int. Cl.° G05F *3/02*

U.S. Cl. 327—543 **4 Claims**



1. A constant current generating circuit comprising:

a first current generating circuit unit which generates a first current having a predetermined positive temperature dependency characteristic, said first current generating circuit unit including a pair of first and second bipolar transistors having bases which are connected to each other and having emitters which are connected to each other via a first resistor, wherein the base and the collector of said second bipolar transistor are connected to each other, said first current generating circuit unit further including a first current mirror circuit comprised of a plurality of first MOS transistors which regulates a current density ratio of the currents fed to said first and second bipolar transistors to be constant and derives the first current having the predetermined positive temperature dependency characteristic which corresponds to a differential voltage between the base-emitter voltages of said first and second bipolar transistors appearing across the first resistor;

a second current generating circuit unit which generates a second current having a predetermined negative temperature dependency characteristic, said second current generating circuit unit including a third bipolar transistor and a second resistor which is connected between the base and the emitter of said third bipolar transistor and through which the second current having the predetermined negative temperature dependency characteristic is derived; and

a summing current generating circuit unit which sums the first current having the predetermined positive temperature dependency characteristic from said first current generating circuit unit and the second current having the predetermined negative temperature dependency characteristic from said second current generating circuit unit and which generates a constant current with substantially no temperature dependency representing the summed current,

wherein said first current generating circuit unit further includes a first circuit means disposed between the pair of said first and second bipolar transistors and said first current mirror circuit for limiting dependency of the currents flowing through said first and second bipolar transistors on a voltage of a power source applied to said first current mirror circuit;

wherein said summing current generating circuit unit includes a second current mirror circuit comprised of a plurality of second MOS transistors which generates the constant current representing the summed current.

5,631,601

FM DEMODULATION WITH A VARIABLE GAIN PHASE LOCKED LOOP

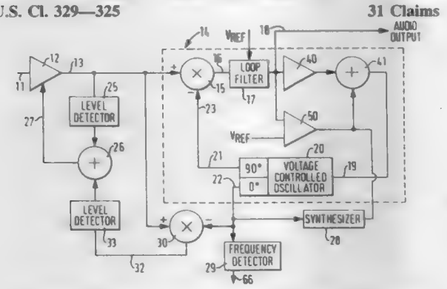
Wayne L. Horsfall, Buckinghamshire, United Kingdom, and Gary Shipton, Chemin due Trincon, France, assignors to SGS-Thomson Microelectronics Limited, United Kingdom

Filed Dec. 30, 1993, Ser. No. 175,976

Claims priority, application United Kingdom, Sep. 29, 1993, 9320067

Int. Cl.° H03D *3/00;* **H03L** *7/08*

U.S. Cl. 329—325 **31 Claims**



1. A method of demodulating an FM carrier wave to generate a demodulated audio signal by use of a phase locked loop circuit in which an FM input signal including said carrier wave is supplied to a first input of a phase detector, the output of the phase detector being filtered by a loop filter and used to generate a signal for use in controlling a voltage controlled oscillator having an output connected to a second input of said phase detector, which method comprises tuning the phase locked loop circuit to a selected carrier wave frequency, said tuning including selecting a variable gain setting of a variable gain circuit in the phase locked loop to select a desired loop gain, wherein said signal for use in controlling the voltage controlled oscillator is varied by said variable gain circuit to alter the amount by which the frequency of the output of the voltage controlled oscillator changes in relation to a given output of the phase detector, the variable gain setting being selected to select a required bandwidth for demodulation, and wherein the filtered output of the phase detector represents said demodulated audio signal.

5,631,602

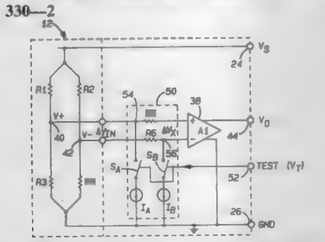
WHEATSTONE BRIDGE AMPLIFIER CIRCUIT WITH INTEGRATED DIAGNOSTIC TESTING

Mark B. Kearney, and Robert H. Obremski, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 7, 1995, Ser. No. 511,769

Int. Cl.° H03F *3/00;* **G01L** *1/20*

U.S. Cl. 330—2 **9 Claims**



1. An amplifier circuit with integrated diagnostic testing, said amplifier circuit comprising:

a balanced circuit for providing a differential output;

an amplifier having a first input and a second input to provide a differential input for receiving and amplifying a differential input signal;

a diagnostic test circuit coupled to the amplifier and balanced circuit, said diagnostic test circuit applying an offset voltage to the differential input of the amplifier when in a diagnostic testing mode, said diagnostic test circuit including a first resistor connected in series to the first input of the amplifier and a second resistor connected in series to the second input of the amplifier, wherein the first and second resistors provide substantially equal resistance;

a test input coupled to the diagnostic test circuit for receiving a test signal for activating the diagnostic testing mode; and

an output coupled to the amplifier output for providing an amplified output signal.

5,631,603

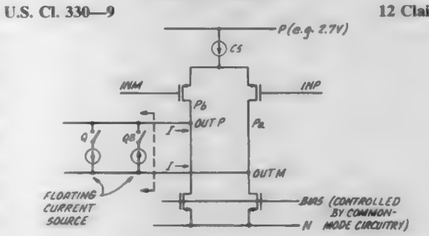
OFFSET CANCELLATION FOR DIFFERENTIAL AMPLIFIERS

Frederic M. Stubbe, Irvine; Edward W. MacRobbie, Lake Forest, and Daryush Shamlou, Laguna Niguel, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 29, 1995, Ser. No. 536,331

Int. Cl.° H03F *3/45*

U.S. Cl. 330—9 **12 Claims**



1. A differential amplifier with offset cancellation, said differential amplifier having a predetermined output voltage offset, comprising:

first current source means connected to a positive supply for providing current through said differential amplifier;

a differential pair comprising source, drain and gate terminals in common source configuration, said common source being coupled to said first current source means;

active load means connected to said drain terminals of said differential pair, and

second current source means coupled to both of said drain terminals of said differential pair for injecting and extracting complementary currents to said drain terminals, respectively to cancel said predetermined offset voltage.

5,631,604

WASTE ENERGY CONTROL AND MANAGEMENT IN POWER AMPLIFIERS

Paul W. Dent, Stehag, Sweden, and Ross W. Lampe, Raleigh, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 179,947, Jan. 11, 1994, Pat. No. 5,574,967. This application Jun. 7, 1995, Ser. No. 475,659

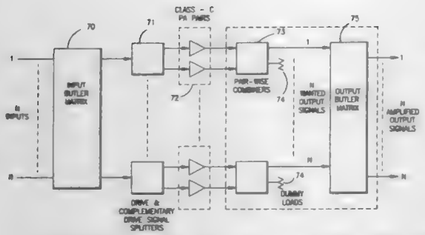
Int. Cl.° H03F *3/68*

U.S. Cl. 330—124 R **3 Claims**

1. An amplifying apparatus for linearly amplifying input signals to desired power levels, comprising:

Butler matrix means for combining a first plurality of input signals and producing a first plurality of output signals which

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are combinations of input signals, wherein said input signals are inputted into said Butler matrix through input ports which are selected so as to provide optimum spacing for said input signals;

a second plurality of coupled, non-linear power amplifier stages for amplifying said combinations of the input signals, wherein the second plurality is larger than the first plurality; and

second Butler matrix means for combining said amplified combinations of the input signals; said second Butler matrix means outputting a first plurality of wanted output signals and a third plurality of unwanted signals, wherein the third plurality is the difference between the second plurality and the first plurality.

5,631,605

POWER AMPLIFIER STAGE SUPPLYING A RECTANGULAR SIGNAL OF CONTROLLED AMPLITUDE

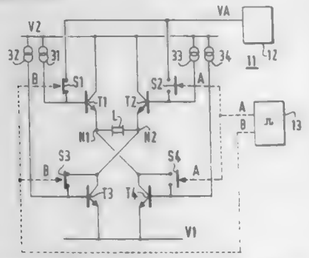
Patrick Bailly, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1995, Ser. No. 544,504

Claims priority, application France, Oct. 19, 1994, 94 12489

Int. Cl.[6] H03F *3/217*

U.S. Cl. 330—146 **3 Claims**



1. A power amplifier stage for producing a rectangular signal across a load by means of a "bridge" type amplifier, said power amplifier stage comprising two pairs of bipolar transistors of the same conductivity type, a first pair of transistors having their respective emitters connected to the terminals of the load and to the respective collectors of the transistors of a second pair of transistors, a plurality of switching devices alternately supplying an amplitude control voltage to the respective bases of the transistors of the first pair and synchronously changing the base bias of the transistors of the second pair, wherein the bases of the four transistors of the amplifier are respectively coupled to four current sources for supplying substantially equal currents and further wherein the transistors of the second pair are alternately connected as diodes by means of two of the switching devices.

5,631,606

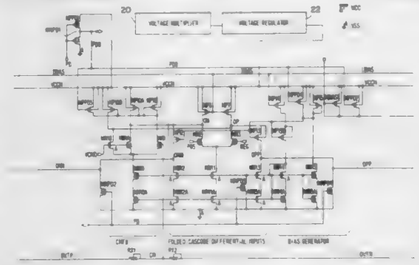
FULLY DIFFERENTIAL OUTPUT CMOS POWER AMPLIFIER

Hieu V. Tran, San Jose, Calif., assignor to Information Storage Devices, Inc., San Jose, Calif.

Filed Aug. 1, 1995, Ser. No. 509,982

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **15 Claims**



1. A differential output CMOS power amplifier for low voltage operation comprising:

a folded cascode differential input stage having native n-MOS devices forming the differential input;

a level shift and gain stage coupled to the differential input stage;

a pair of power output stages coupled to the level shift and gain stage, each power output stage having an output terminal forming one of the differential outputs of the CMOS power amplifier;

a bias generator for providing bias currents to the folded cascode differential input stage, the level shift and gain stage, and the pair of power output stages;

the pair of power output stages having input power terminals for coupling to a low voltage power supply;

the bias generator, the folded cascode differential input stage and the level shift and gain stage having terminals for coupling to a voltage substantially higher than the low voltage power supply.

5,631,607

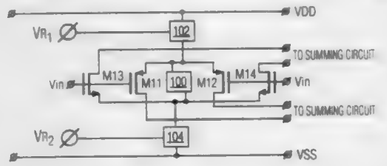
COMPACT GM-CONTROL FOR CMOS RAIL-TO-RAIL INPUT STAGES BY REGULATING THE SUM OF THE GATE-SOURCE VOLTAGES CONSTANT

Johan H. Huijsing, Schipluiden; Ronald Hogervorst, Voorschoten, both of Netherlands, and John Tero, Saratoga, Calif., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Sep. 6, 1995, Ser. No. 523,831

Int. Cl.[6] H03F *3/45;3/16*

U.S. Cl. 330—253 **17 Claims**



1. A circuit for controlling the transconductance (gm) of the rail-to-rail input stage of an operational amplifier (opamp) operating in strong inversion, the input stage having at least an N-channel and a P-channel differential input pair of transistors each having a tail current and a gate-source voltage, one gate of each pair being connected to one input terminal, the other gate of each pair being connected to the other input terminal, the sources of the N-channel pair being connected to the common N-tail, the sources of the P-channel pair being connected to the common P-tail, the opamp

having a common-mode input voltage range including low, intermediate, and high common-mode input voltages, the input voltage range having transition regions between the low and intermediate, and the intermediate and high common-mode input voltage values, the circuit comprising:

control means coupled to the common tails of the differential input stage of the operational amplifier and the positive and negative supply rails for directly maintaining the sum of the gate-source voltages between the tails of the input pairs constant, said control means including active devices so as to provide the tail currents to the differential input pairs.

5,631,608

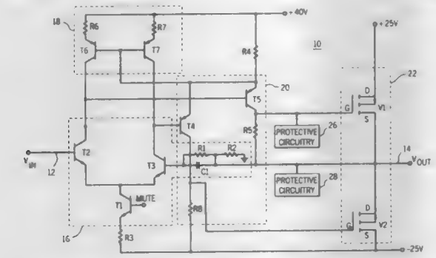
DRIVER FOR N-CHANNEL VFET OUTPUT STAGE OF POWER AMPLIFIER

John J. Pleitz, Tempe, Ariz., assignor to Mitek Corporation, Phoenix, Ariz.

Filed Jul. 24, 1995, Ser. No. 506,412

Int. Cl.[6] H03F *3/26*

U.S. Cl. 330—255 **19 Claims**



1. The input stage of an audio amplifier for use with an output stage having first and second N-channel VFET, the amplifier receiving an audio input signal on an input line and producing an output signal on an output line, the amplifier also providing positive and negative DC voltage sources, each VFET having a gate terminal, the input stage comprising:

a differential amplifier receiving both the audio input signal and the output signal and generating difference signals at first and second nodes;

a current conveyor stage including first and second conveying junction transistors having base, emitter and collector terminals;

a mirror stage including first and second mirror junction transistors having base, emitter and collector terminals; and

first, second, and third biasing resistors;

wherein the bases of the first and second conveying transistors are connected to the differential amplifier at the first and second nodes respectively, the emitters of the first and second conveying transistors are connected to the bases of the first and second mirror transistors respectively and to the positive DC voltage source through the first biasing resistor, the emitters of the first and second mirror transistors are connected to the positive DC voltage source, the collector of the first conveying transistor is connected to the output line through the second biasing resistor, the collector of the second conveying transistor is connected to the negative DC voltage source through the third biasing resistor, and the collectors of the first and second conveying transistors are connected to the gate terminals of the first and second VFETs respectively;

whereby, the first and second mirror transistors lock an emitter to collector current through each of the first and second conveying transistors so as to program gate voltages at the VFET gate terminals into a desired region despite temperature changes.

5,631,609

PIEZOELECTRIC OSCILLATOR, VOLTAGE-CONTROLLED OSCILLATOR AND PRODUCTION METHOD THEREOF

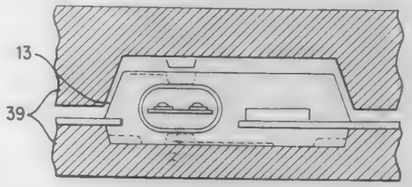
Manabu Oka; Yukari Nakajima; Masayuki Kikushima, and Kazuhiko Shimodaira, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 14, 1996, Ser. No. 601,087

Claims priority, application Japan, Feb. 15, 1995, 7-027170; Oct. 3, 1995, 7-256623; Jan. 10, 1996, 8-002693

Int. Cl.[6] H03B *5/36;* **H01L** *41/08*

U.S. Cl. 331—68 **28 Claims**



1. A piezoelectric oscillator comprising:

a semiconductor integrated circuit mounted on an island of a lead frame, said semiconductor integrated circuit being electrically connected to an inner lead of said lead frame by a wire-bonded wire;

a piezoelectric resonator having a case of a cross-sectional shape in one of an elliptic shape and a track shape, the piezoelectric resonator being disposed adjacent to said semiconductor integrated circuit;

a lead of said piezoelectric resonator being electrically connected to said lead frame;

a signal input lead terminal electrically connecting to said semiconductor integrated circuit, wherein an oscillation frequency is adjusted by applying a signal to the signal input lead terminal; and

resin that molds said semiconductor integrated circuit, said piezoelectric resonator and said lead frame into a single unit so an outer part of said inner lead and said signal input lead terminal are exposed to an outside of the single unit.

5,631,610

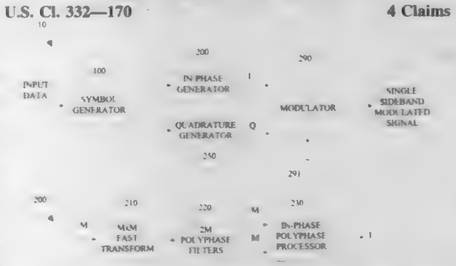
SINGLE SIDE-BAND MODULATION SYSTEM FOR USE IN DIGITALLY IMPLEMENTED MULTICARRIER TRANSMISSION SYSTEMS

Stuart Sandberg, Arlington, and Michael Tzannes, Newton, both of Mass., assignors to Aware, Inc., Bedford, Mass.

Filed Jan. 25, 1996, Ser. No. 591,831

Int. Cl.[6] H03C *1/60;* **H03D** *1/00*

U.S. Cl. 332—170 **4 Claims**



1. A modulation circuit for generating M time-domain signal values from M symbol values, said modulation circuit comprising:

a transform circuit for generating M transformed symbol values by computing a frequency domain to time domain transform of said M symbol values;

a polyphase filter bank having 2M FIR filters, each filter having g taps, where g is greater than 1, each said filter having an

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input and an output, said inputs being connected to said transform circuit such that one of said transformed values is input to each said filter, each said transformed symbol value used as input to two of said filters; and

a polyphase filter processing circuit for combining said outputs of said filters to generate said M time-domain signal values.

3. A demodulation circuit for generating M symbol values from a group of received M time-domain signal values, said demodulation circuit comprising:

means for storing said M time-domain signal values and a previously received group of M signal values;

a polyphase filter bank having 2M FIR filters, each filter having g taps, where g is greater than 1, each said filter having an input and an output, said inputs being connected to said storing means such that one of said received signal values is input to each said filter, each said received signal value being used as input to one of said filters;

a polyphase processor for combining said outputs of said filters to generate M-polyphase values; and

a transform circuit for transforming said polyphase values via a time domain to frequency domain transform to generate M symbol values.

5,631,611

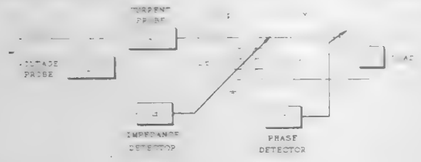
AUTOMATIC MATCHING AND TUNING NETWORK

Ky T. Luu, Halifax, Canada, assignor to Nautel Limited, Tantallon, Canada

Filed Jun. 18, 1996, Ser. No. 666,623

Int. Cl.[6] H03H *7/40*

U.S. Cl. 333—17.3 **10 Claims**



1. A matching and tuning network for connecting a source of RF power to a complex load, the network comprising;

a primary circuit and a secondary circuit;

the primary circuit comprising:

a fixed capacitor connected in series with a primary winding of a coupling transformer connected to said source of RF power;

the secondary circuit comprising:

a series connection of a secondary winding of said coupling transformer and a variable capacitor connected to said load;

the network further comprising:

input voltage sensing means; and

input current sensing means both connect to an impedance detector means; and

a phase detector means;

wherein the impedance detector means controls means for varying the coupling between said primary winding and said secondary winding of said coupling transformer and said phase detector means controls means for varying the capacity of the variable capacitor so as to maintain a constant input impedance and a zero phase shift at the input to the network.

5,631,612

SURFACE ACOUSTIC WAVE FILTER

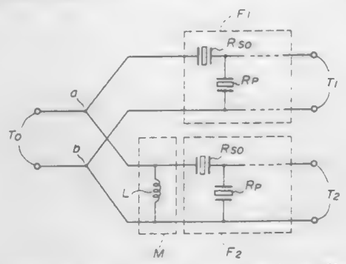
Yoshio Satoh; Osamu Ikata; Tsutomu Miyashita; Takashi Matsuda, and Mitsuo Takamatsu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 965,774, Oct. 23, 1992, Pat. No. 5,559,481. This application Jan. 6, 1995, Ser. No. 369,492

Claims priority, application Japan, Oct. 28, 1991, 3-281694; Feb. 19, 1992, 4-32270

Int. Cl.[6] H03H *9/00*

U.S. Cl. 333—193 **7 Claims**



1. A band-pass filter having a pair of band-pass filter input terminals and plural pairs of band-pass filter output terminals, comprising:

a pair of SAW filters having respective pass bands and comprising a plurality of one-port SAW resonators connected in a ladder structure, each having at least a first stage located at a side of the pair of band-pass filter input terminals and a series-arm resonator located at the first stage, a pair of input terminals and a pair of output terminals;

the pair of band-pass filter input terminals being commonly connected to the respective pairs of input terminals of the pair of SAW filters;

the plurality of pairs of band-pass filter output terminals being connected to the respective pairs of output terminals of the pair of SAW filters; and

an inductance element located between at least one of the SAW filters located at the first stage and the pair of band-pass filter input terminals and directly connected between the respective pair of input terminals of the at least one of the SAW filters and thereby in parallel to said at least one of the SAW filters.

5,631,613

MAGNET SWITCH FOR ENGINE STARTER

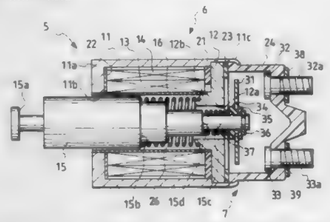
Masami Niimi, and Tsutomu Shiga, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 16, 1995, Ser. No. 559,096

Claims priority, application Japan, Nov. 22, 1994, 6-287810; Aug. 31, 1995, 7-223377

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—126 **3 Claims**



1. A magnet switch for an engine starter, comprising:

a yoke made of magnetic material and having a cylindrical shape with a bottom and an opening:

a coil disposed in the yoke and including an insulated electric wire;

a stationary core being made of magnetic material and closing the opening of the yoke;

a sleeve made of non-magnetic metal and having a cylindrical shape, the sleeve being located between the bottom of the yoke and the stationary core; and

a plunger made of magnetic material and being at least partially located in the sleeve, the plunger being slidable relative to the sleeve in an axial direction;

wherein the insulated electric wire in the coil directly abuts the sleeve, and the coil is compressed and held between the bottom of the yoke and the stationary core.

5,631,614

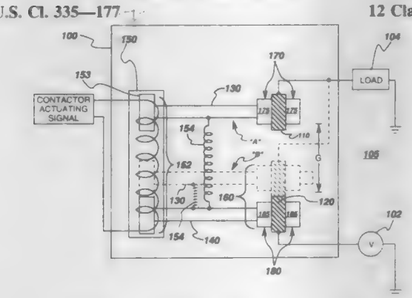
MAGNETIC SELF-LATCHING ELECTRIC CONTACT

George C. Goodman, Niskayuna, and Nelson R. Corby, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 1, 1995, Ser. No. 566,212

Int. Cl.[6] H01H *9/00*

U.S. Cl. 335—177 **12 Claims**



1. A magnetic self-latching contactor device having reduced bounce between contact pads upon closing, the contactor device comprising:

a first contact pad disposed on a first pad carrier,

a second contact pad disposed on a second pad carrier, at least one of said first and second pad carriers being coupled to a contact pad actuating mechanism so as to move in response to a force supplied by said actuating mechanism, said first and second contact pads being movably disposed with respect to the other such that said first and second contact pads are selectively disposed in either a closed position such that both of said contact pads are in physical contact so that electrical current flows between the pads, or in an open position in which said first and second contact pads are physically separated from one another; and

a magnetic latch apparatus having a first magnet assembly and a second magnet assembly disposed so as to magnetically latch said first contact pad and said second contact pad in said closed position, the latching effect of said magnetic latch apparatus being independent from force exerted by said contact pad actuating mechanism;

each of said first and second magnet assemblies comprising a respective assembly latch element that is selected from the group consisting of permanent magnets, electromagnets, and magnetically attracted material.

5,631,615

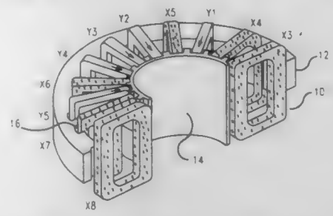
FREE WOUND ELECTROMAGNETIC DEFLECTION YOKE

Scott A. Messick, Pleasant Valley, and Joseph J. Senesi, Poughquag, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 460,419

Int. Cl.[6] H01H *1/00*

U.S. Cl. 335—213 **5 Claims**



1. A free wound electromagnetic yoke, comprising:

an X-axis formed of a first continuous length of wire forming a first plurality of coils, each of said first plurality of coils formed to be an individual solid mass;

a Y-axis formed of a second continuous length of wire forming a second plurality of coils, each of said second plurality of coils being formed to be an individual solid mass;

support means for holding said X-axis and said Y-axis in a toroidal formation.

5,631,616

MAGNETIC FIELD GENERATING DEVICE FOR USE IN MRI

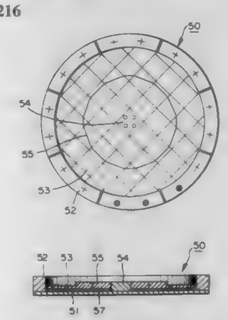
Kimiharu Ohta, Takatsuki; Shigeo Hashimoto, Nishinomiya; Masahiro Yuki, and Hideya Sakurai, both of Osaka, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,037

Claims priority, application Japan, Jul. 8, 1994, 6-180665

Int. Cl.[6] H01F *1/00*

U.S. Cl. 335—216 **24 Claims**



1. A magentic field generating device for use in MRI and having a pair of pole pieces in opposed spaced relation across a gap and generating a magnetic field in the gap. wherein

the pole pieces of the pair of pole pieces have a laminate structure in which a soft ferrite and a magnetic material base are disposed, and

a layer of small magnetic permeability and high electric resistance is interposed between the soft ferrite and the magnetic material base.

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5,631,617

SYSTEM FOR LEVITATING AND GUIDING OBJECT BY ELECTROMAGNETIC ATTRACTIVE FORCE

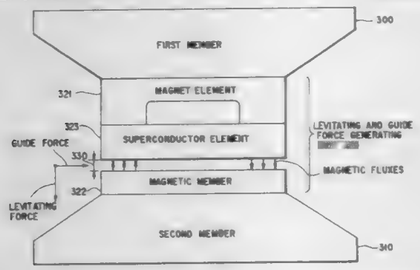
Mimpei Morishita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 111,514, Aug. 24, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 573,874

Claims priority, application Japan, Aug. 25, 1992, 4-225492

Int. Cl.[6] H01F *1/00*; H02K *7/09*; B60L *13/00*

U.S. Cl. 335—216 30 Claims



1. A system for levitating and guiding an object by magnetic force, comprising:

a first member;

a second member situated to face the first member; and

levitating and guide force generating means for generating a levitating and guide force acting between the first member and the second member, said levitating and guide force generating means including a magnetic flux generating unit, disposed on the first member, for generating magnetic fluxes for producing a predetermined magnetic field, an iron member, situated on the second member, for receiving the magnetic fluxes generated by the magnetic flux generating unit, and a superconductor unit, provided on the first member between the magnetic flux generating unit and the iron member, for trapping the magnetic fluxes generated by the magnetic flux generating unit at the time of transition from the normal conduction state to the superconduction state of the superconductor unit.

5,631,618

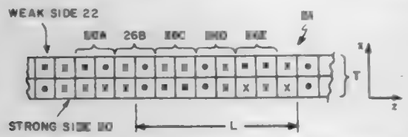
MAGNETIC ARRAYS

David L. Trumper, Plaistow, N.H.; Won-jong Kim, Cambridge, Mass., and Mark E. Williams, Pelham, N.H., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 30, 1994, Ser. No. 316,278

Int. Cl.[6] H01F *5/00*

U.S. Cl. 335—299 16 Claims



1. An electromagnet array which extends in a first direction and has a thickness dimension in a second direction the second direction being normal to the first direction, the array comprising:

a plurality of adjacent electromagnet segments which extend in at least one dimension having a selected winding pattern; and

means for selectively applying varying current to said electromagnet segment windings;

said winding patterns being such that the current density for the segments varies in both the first and second directions.

5,631,619

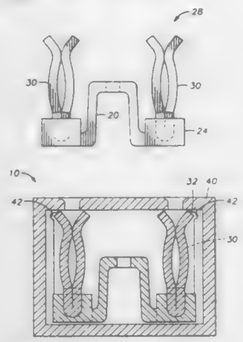
FEMALE AUTOMOTIVE FUSE HAVING FUSE CLIPS ELECTRICALLY CONNECTED TO CONDUCTIVE THERMAL BLOCKS

Terence J. Evans, Bailwin, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 20, 1995, Ser. No. 407,356

Int. Cl.[6] H01H *85/02*

U.S. Cl. 337—198 20 Claims



1. A female fuse comprising:

a fuse link;

a first conductive thermal block and a second conductive thermal block electrically connected to said fuse link;

a first female fuse clip and a second female fuse clip electrically connected respectively to said first and second thermal blocks, wherein said fuse clips are insert molded into said thermal blocks, and wherein said fuse link and said thermal blocks are injection molded as a one piece unit, said fuse clips, thermal blocks, and fuse link comprise a fuse assembly; and

a housing, enclosing said fuse assembly.

5,631,620

FUSIBLE LINK AND METHOD OF ASSEMBLING SAME

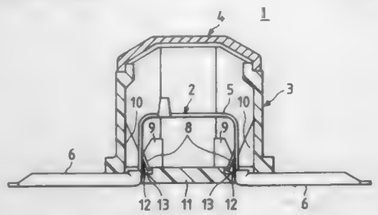
Mitsuhiko Totsuka, and Toshiharu Kudo, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 458,620

Claims priority, application Japan, Jun. 15, 1994, 6-133229

Int. Cl.[6] H01H *85/143*

U.S. Cl. 337—260 5 Claims



1. A fusible link comprising a fuse element including terminal portions, said fuse element having resilient retaining piece portions projecting from a surface of said fuse element; and an insulative housing integrally formed with a terminal spacer and having through holes formed therethrough wherein at least one of said terminal portions extending respectively through said through holes is bent to be disposed parallel to said terminal spacer and abuts a side wall of said housing so as to prevent displacement relative to said side wall, and said bent terminal portion and said resilient retaining piece portion hold said terminal spacer therebetween to thereby retain said fuse element relative to said insulative housing.

5,631,621

CARTRIDGE THERMAL FUSE WITH AN ADHESIVE METAL EXCELLENT IN ADHESION WITH THE MELTED FUSIBLE ALLOY

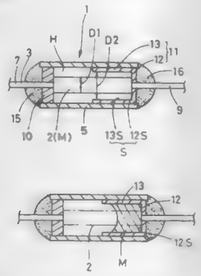
Takuo Nakajima, 13-30, Yamatecho 4-chime, Suita-shi, Osaka-fu, Japan

Filed Dec. 22, 1995, Ser. No. 577,220

Claims priority, application Japan, Dec. 22, 1994, 6-336107; Apr. 18, 1995, 7-117833

Int. Cl.[6] H01H *85/38*

U.S. Cl. 337—280 9 Claims



1. A thermal fuse comprising

a fuse base composed of a wire fuse element made of a fusible alloy melted by heating and lead wires connected to both ends of the wire fuse element and

a cartridge extending between the lead wires in the lengthwise direction thereof, while surrounding the wire fuse element, and of which both ends being fixed and closed at the lead wires so as to form an enclosed space for accommodating the wire fuse element, wherein

the cartridge and lead wires are insulated, and

a sucker having a suction surface composed of an adhesive metal excellent in adhesion with the melted fusible alloy is disposed in the space, while facing the suction surface to the wire fuse element.

5,631,622

STRAIN GAGE AND MEASURING TRANSDUCER AND METHOD OF PRODUCING THE SAME

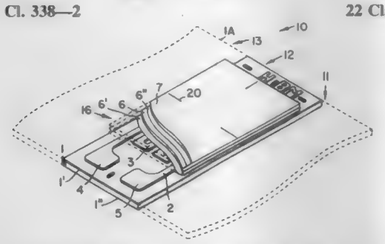
Martin Hauber, Nieder-Beerbach, and Helmut Burfeindt, Rossdorf, both of Germany, assignors to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Germany

Filed Feb. 14, 1995, Ser. No. 388,587

Claims priority, application Germany, Feb. 15, 1994, 44 04 716.9

Int. Cl.[6] G01D *5/16*

U.S. Cl. 338—2 22 Claims



1. A strain gage comprising in order a backing film, a resistor grid, and a cover including an insulating first layer and a metallic foil second layer, wherein said second layer has dimensions in the plane of said cover that are smaller than or equal to corresponding dimensions of said backing film.

5,631,623

CHIP-TYPE VARIABLE RESISTOR

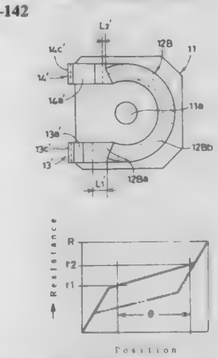
Tamotsu Yoshimura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 233,774, Apr. 26, 1994. This application Mar. 19, 1996, Ser. No. 618,089

Claims priority, application Japan, Apr. 26, 1993, 5-099747; Sep. 13, 1993, 5-227453

Int. Cl.[6] H01C *10/32*

U.S. Cl. 338—142 6 Claims



1. A chip-type variable resistor comprising:

an insulating substrate having a surface formed with a resistor strip, the resistor strip having a first end portion electrically connected to a first extremity electrode terminal, the resistor strip also having a second end portion electrically connected to a second extremity electrode terminal, the resistor strip further having an arcuate adjustable resistance region between, but not including, the first and second end portions;

an intermediate terminal member mounted on the substrate; and

a contact member electrically connected to the intermediate terminal member and rotatably mounted on the substrate in slidable contact with the adjustable resistance region of the resistor strip;

wherein the adjustable resistance region of the resistor strip includes at least one portion having a first area resistivity, the area resistivity being defined as a resistance per unit surface area of the resistor strip;

wherein each of the first and second end portions has a second area resistivity which is higher than said first area resistivity;

wherein the first end portion of the resistor strip differs in length from the second end portion; and

wherein a combined length of the first end portion and the first extremity electrode terminal on said surface of the substrate is equal to a combined length of the second end portion and the second extremity electrode terminal on said surface of the substrate.

5,631,624

DIELECTRIC CERAMICS AND ELECTRONIC PARTS USING THE SAME

Seiji Kanba; Kazuya Kawabata, and Hiroshi Takagi, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 61,510, May 14, 1993, abandoned, which is a continuation of Ser. No. 868,834, Apr. 15, 1992, abandoned. This application Aug. 28, 1995, Ser. No. 519,752

Claims priority, application Japan, Apr. 19, 1991, 3-116917; Feb. 20, 1992, 4-33235

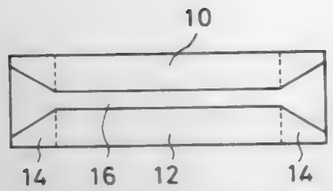
Int. Cl.[6] H01C *1/14*

U.S. Cl. 338—309 19 Claims

1. A dielectric ceramic article comprising:

a dielectric ceramic substrate having a main surface and a pair of end regions at opposite ends of said substrate, and a center region between the end regions; and

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an electrode adhered to said dielectric ceramic substrate extending parallel to said main surface and extending across said end regions and said center region;

wherein each of said end regions has a composition that is different from position to position so that a dielectric constant within each of said end regions is lower toward the end of said dielectric ceramic substrate than toward the center region;

wherein said center region has a substantially uniform dielectric constant; and

wherein within each of said end regions said electrode is narrower near said center region than near the corresponding end of said dielectric substrate.

5,631,625

ELECTRIC CIRCUIT FOR USE WITH A HAZARD WARNING SYSTEM HAVING AN ELEMENT WHICH IS OPERABLE INTERMITTENTLY

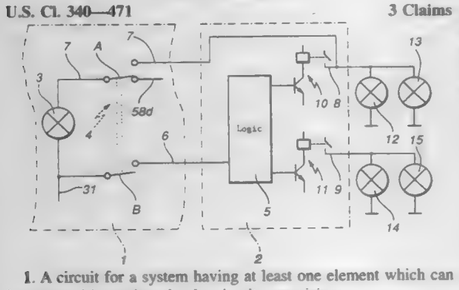
Matthias Moergelin, Boeblingen, and Joachim Engler, Heilbronn, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 16, 1995, Ser. No. 405,183

Claims priority, application Germany, Mar. 16, 1994, 44 08 959.7

Int. Cl.[6] B60Q *1/52*

U.S. Cl. 340—471 **3 Claims**



1. A circuit for a system having at least one element which can be operated intermittently, the circuit comprising:

a control device having a driver output, the at least one element being directly connected to the driver output;

an activation switch coupled to the control device for activating the control device;

a monitoring lamp coupled to the activation switch such that during an active intermittent operating mode of the at least one element, the monitoring lamp is operated by the control device in a first, intermittent state, via a connection line between the monitoring-lamp and the control device, and during a non-activated operating mode of the at least one element, the monitoring lamp is in a second operating state different from said first operating state;

wherein said connection line is connected to the driver output of the control device for the at least one element and said connection line directly connects the monitoring lamp with the driver output of the control device;

wherein the activation switch comprises a multi-level switch having at least two permanent switched positions such that the activation switch is looped with a first switching level (B) into a control line for activating the control device and with a second switching level (A) into the connection line; and

wherein the intermittent operating mode of the at least one element is activated via one of the switched positions of the activation switch via the first switching level, and synchronously therewith a switching connection of the connection line is cancelled via the second switching level.

5,631,626

CIRCUIT FOR TRIGGERING WARNING LAMPS

Michael Zydek, Langgons; Wolfgang Fey, Niedernhausen, and Mario Engelmann, Steinbach, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

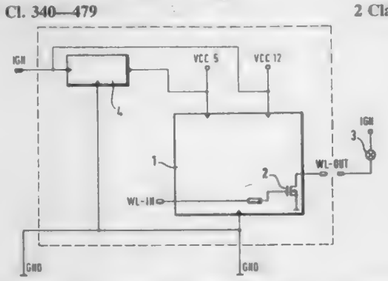
PCT No. PCT/EP94/00771, § 371 Date Oct. 2, 1995, § 102(e) Date Oct. 2, 1995, PCT Pub. No. WO94/22700, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 12, 1994, Ser. No. 530,113

Claims priority, application Germany, Mar. 31, 1993, 43 10 530.0

Int. Cl.[6] B60Q *1/44*

U.S. Cl. 340—479 **2 Claims**



1. A circuit for triggering the warning lamp of an automotive vehicle brake system having electronic anti-lock or traction slip control, of the type including an electronic controller connected to one or a plurality of supply voltages, a power driver through which the warning lamp current flows in the presence of a monitoring signal initiated by malfunction of the controller, comprising:

a self-conductive transistor circuit with a triggering circuit connected to the supply voltages of the controller which, as long as all supply voltages are present, keeps the transistor circuit blocked and, on failure or decline of any of the supply voltages below a threshold value, causes current to flow to the warning lamp to the control terminal of the power driver to trigger or switch on the power driver, wherein the self-conductive transistor circuit includes two serially connected p-channel field effect transistors, the gate terminals of which are interconnected, connected to the outlet of the triggering circuit, and connected to ground by way of a high-ohmic resistor.

5,631,627

CONTROL CIRCUIT FOR CENTER HIGH MOUNTED BRAKE LIGHTS

Yung-kuei Chou, No. 24, Alley 1, Lane 28, Sec. 5, Hsinyi Rd., Taipei, Taiwan

Filed Dec. 12, 1995, Ser. No. 570,780

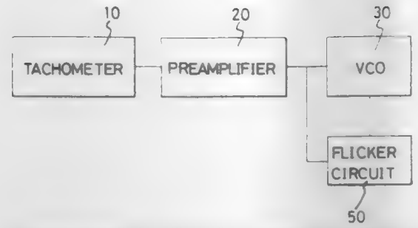
Int. Cl.[6] B60Q *1/44*

U.S. Cl. 340—479 **3 Claims**

1. A control circuit for a center high mounted brake light of an automobile, comprising:

a tachometer for generating a voltage signal in response to a speed of the automobile;

a preamplifier for amplifying the voltage signal from the tachometer to a predetermined voltage range:



a voltage-controlled oscillator for outputting an oscillating signal in proportion to the voltage signal from the preamplifier; and

a flicker circuit having a frequency divider for receiving the oscillating signal from the voltage-controlled oscillator and flickering the brake light in accordance with an output signal of the frequency divider and at a flicker frequency related to the speed of the automobile.

5,631,628

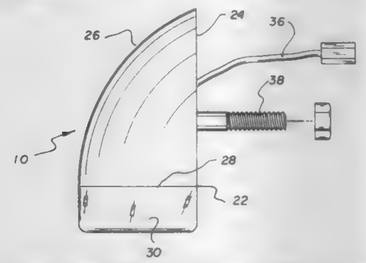
SAFETY BRAKE LIGHT FOR HIGH PROFILE VEHICLE

Rene G. Solis, Jr., P.O. Box 90057, San Bernardino, Calif. 92427

Filed May 28, 1996, Ser. No. 654,087

Int. Cl.[6] B60Q *1/44*

U.S. Cl. 340—479 **1 Claim**



1. A safety brake light for high profile vehicle for providing additional warnings that a vehicle is signaling or stopping comprising, in combination:

a truck having a trailer extending rearwardly therefrom;

a plurality of lights, each of the lights including a housing, the housing having a generally elongated triangular configuration, the housing having a flat interior surface, a curved exterior surface, and an open rear surface, the open rear surface having a cover removably secured thereto, the cover fabricated of a translucent material, the housing including an intermediate wall disposed inwardly of the open rear surface, each of the lights having a plurality of light bulbs secured within the intermediate wall in vertical alignment, the plurality of light bulbs coupled to a central wire extending outwardly of the housing, the central wire coupling with an existing brake light wire of the truck whereby activation of brakes of the truck will illuminate the plurality of light bulbs thereby providing a rearward illumination for viewing by vehicles travelling behind the truck, a pair of securement bolts extending outwardly of the flat interior surface for securement to the trailer of the truck; and

positioning two of the lights on opposing sides of the trailer of the truck at a level consistent with eye level of passenger vehicles and positioning two of the lights on opposing sides of the truck at a level consistent with eye level of trucks and buses.

5,631,629

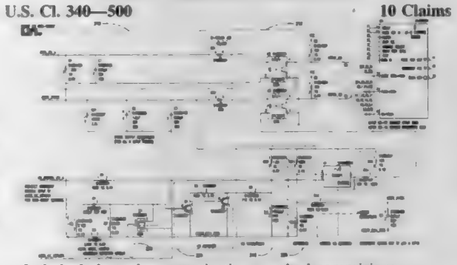
HEARTBEAT COMMUNICATIONS

Elik I. Fooks, Lexington; Patrick J. Delaney, III, Sudbury, and Philip E. Johnson, Worcester, all of Mass., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Feb. 8, 1995, Ser. No. 385,413

Int. Cl.[6] G08B *23/00*; **G06F** *15/00*

U.S. Cl. 340—500 **10 Claims**



1. A dual channel communications method comprising:

(A) providing a control system with a central control station and a remote sensor for sensing a process status, said central control station and said remote sensor being connected by a power supply line and an output line;

(B) impressing a non-periodic high-amplitude process status signal on said output line at said remote sensor so as to transfer status information about said process status to said central control station;

(C) simultaneously impressing a periodic low-amplitude low-frequency diagnostic condition signal on said output line at said remote sensor so as to transfer diagnostic information about an operating condition of said remote sensor to said central control station;

(D) monitoring the electrical state of said output line at said central control station to detect the level of said non-periodic high-amplitude process status signal so as to receive status information about said process status at said central control station; and

(E) monitoring the electrical state of said output line at said central control station to detect the presence of said periodic low-amplitude low-frequency diagnostic condition signal so as to receive diagnostic information about i) said operating condition of said remote sensor, ii) said power supply line and iii) said output line at said central control station.

5,631,630

LOW VOLTAGE POOL SECURITY SYSTEM

Terrance J. McSweeney, 1135 Landers St., Ormond Beach, Fla. 32174

Filed Sep. 18, 1995, Ser. No. 529,533

Int. Cl.[6] G08B *19/00*

U.S. Cl. 340—522 **18 Claims**

1. A low voltage security system devoid of computerized control for securing a backyard swimming pool and exit doors of a home and installable by a homeowner consisting of:

a low voltage electrical circuit containing:

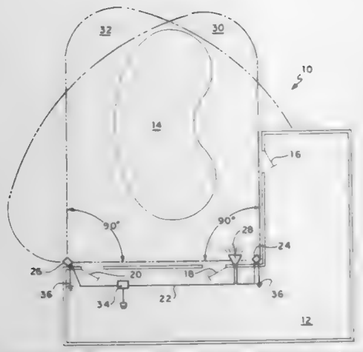
at least two combined passive and active motion detector means positioned to each cover the swimming pool and exit doors of a home leading to said swimming pool with overlapping coverage, wherein at least one said motion detector means is a backup for another said motion detector means;

said at least two combined passive and active motion detector means directly connected to a transformer means which converts alternating current house voltage to a low direct current voltage for energizing said at least two combined passive and active motion detector means;

alarm means; and

a plug means which connects said transformer means to said house voltage; and

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a plurality of photoflood lamps, whereby upon activation by the at least two combined passive and active detectors, illuminate the pool and exit doors;

whereby an intrusion to the backyard swimming pool and exit from exit doors can be detected by said at least two passive and active motion detector means and activates said alarm means and said plurality of photoflood lamps to alert any occupants of the house of the impending danger of intrusion, and said low voltage security system being installable by the homeowner and being devoid of computerized control.

5,631,631

DEVICE FOR USE IN CONVEYING INFORMATION CONCERNING AN ARTICLE OF COMMERCE

Charles L. Deschenes, North Attleboro, Mass., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed Aug. 17, 1994, Ser. No. 292,344

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—572 **16 Claims**



1. A device for use in conveying information concerning an article of commerce, said device comprising:

(a) a fastener, the fastener comprising an elongated unitary member having a first end, a second end, and a flexible filament, said flexible interconnecting said first end and said second end, said first end being shaped to define a cross-bar insertable through an article of commerce using a tagger gun, the tagger gun having a hollow slotted needle, for holding said first end of said fastener for the insertion of said first end through the article of commerce, said second end being sized and shaped to prevent said flexible filament from being pulled completely through the article of commerce; and

(b) electronic means incorporated into said fastener for communicating information concerning the article of commerce to which the fastener is attached.

5,631,632

PRESSURE MONITORING SYSTEM

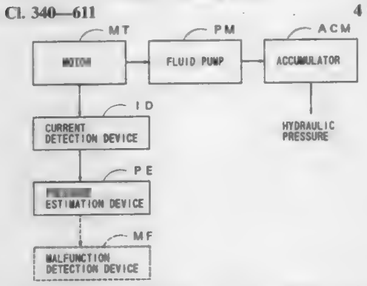
Hiroshi Nakashima, Nishio; Toshiaki Hamada, Okazaki; Tadashi Terazawa, Toyota, and Yuichiro Sakakibara, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 27, 1996, Ser. No. 697,602

Claims priority, application Japan, Aug. 31, 1995, 7-223454

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—611 **4 Claims**



1. A pressure monitoring system for monitoring a hydraulic pressure which is supplied from a fluid pump and accumulated in an accumulator, comprising:

an electric motor for driving said fluid pump to supply the hydraulic pressure in proportion to a current fed to said motor;

current detection means for detecting the current fed to said motor; and

pressure estimation means for estimating the hydraulic pressure accumulated in said accumulator in response to the current detected by said current detection means.

5,631,633

DEVICE FOR DETERMINING AND/OR MONITORING A PREDETERMINED MATERIAL LEVEL IN A CONTAINER

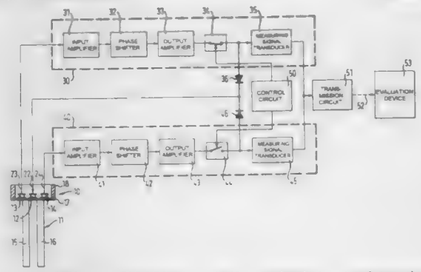
Volker Dreyer, Lörrach, and Bernd Strütt, Steinen, both of Germany, assignors to Endress + Hauser GmbH + Co., Maulburg, Germany

Filed Jun. 2, 1995, Ser. No. 458,796

Claims priority, application Germany, Jun. 3, 1994, 44 19 617.2

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—621 **4 Claims**



1. A device for determining and/or monitoring a predetermined material level in a container, comprising:

a material level sensor which contains a mechanical oscillatory structure, an electromechanical excitation transducer and at least one electromechanical reception transducer, the mechanical oscillatory structure being secured at the height of the predetermined material level for permitting it to come into contact with the material when said material reaches the predetermined material level;

a first and a second circuit channel, each of which contains an amplifier circuit whose input is connected to said reception transducer and whose output is connected to said excitation transducer, said amplifier circuit being designed so that the mechanical oscillatory structure is excited to oscillations with its natural resonance frequency, and each of which circuit channels further contains a measuring signal transducer which receives the output signal of the amplifier circuit of the respective circuit channel and produces a measuring signal containing information about the frequency of said output signal, the measuring signal transducer of each circuit channel being designed for adding to the measuring signal an identifier which is assigned to the respective circuit channel and which is different from the identifier assigned to the other circuit channel;

a control circuit for activating the two circuit channels alternately; and

an evaluation device which receives the output signals of the measuring signal transducers of said two circuit channels for initiating at least one of a display and a switching operation in accordance with the frequency of the output signal of the amplifier circuit of said circuit channel and for detecting faults in the operation of the device with the help of the identifiers contained in said output signals.

5,631,634

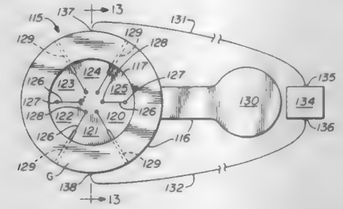
FLOW AND PRESSURE SENSOR

John Strelow, Broken Arrow, Okla., assignor to Oklahoma Safety Equipment Co., Broken Arrow, Okla.

Filed Jan. 11, 1995, Ser. No. 371,427

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—626 **26 Claims**



1. A sensing assembly for use in an enclosed fluid flow system for providing an immediate indication of a predetermined fluid flow pressure differential across said assembly, said sensing assembly comprising:

at least one infragmenting plate formed entirely of electrically conductive material;

at least a portion of said plate enabling said plate to be mounted in said fluid flow system;

first and second electrical terminals integrally formed with said plate, said first and second electrical terminals forming a closed electrical circuit path; and

a weakened portion formed by cutout portion extending through the entire thickness of said plate in said closed electrical circuit path between said first and second terminals having a predetermined break strength for rupturing and opening said closed electrical circuit path if said fluid flow causes said predetermined pressure differential across said plate.

5,631,635

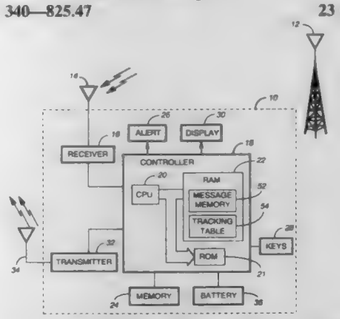
MESSAGE/RESPONSE TRACKING SYSTEM AND METHOD FOR A TWO-WAY SELECTIVE CALL RECEIVING DEVICE

Karen S. Robertson, Boca Raton, and Paula Gabrielle, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 8, 1995, Ser. No. 436,107

Int. Cl.[6] H04Q *7/12*

U.S. Cl. 340—825.47 **23 Claims**



1. A two-way selective call receiving device for disabling a response to a previously stored message, comprising:

a receiver for receiving a message and an identifier associated with said message, said identifier falling within a limited set of possible identifiers that are reusable;

a memory, coupled to the receiver, for storing the message and the identifier associated with said message;

a controller, responsive to a received message having a given identifier, for searching said memory to determine if said memory has a previously stored message associated with an identifier that is the same as said given identifier, said controller preventing a response to said previously stored message from thereafter being transmitted if said controller determines that the previously stored message has been received with an identifier that is the same as said given identifier;

a transmitter, coupled to the controller, for transmitting the response to the received message wherein said response is associated with said given identifier of the received message.

5,631,636

METHOD OF REDUCING POWER CONSUMPTION IN A REMOTE METER READING SYSTEM

Ronald L. Bane, Stone Moutain, Ga., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 205,465, Mar. 4, 1994, abandoned. This application Aug. 14, 1996, Ser. No. 698,217

Int. Cl.[6] G08C *17/02*

U.S. Cl. 340—825.69 **11 Claims**

11. A remotely accessible meter operable in reduced power consumption mode, comprising:

a meter interface unit having a wireless transmitter and having an inactivated mode;

timer means for providing a periodic activation signal to the meter interface unit to place the meter interface unit in an activated mode;

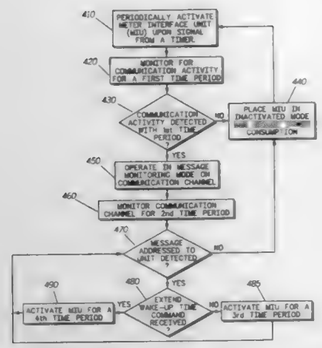
means for monitoring the communication channel for a first time period to detect communication activity when the meter interface unit is in an activated mode;

means for operating in a message monitoring mode when communication activity is detected within the first time period, comprising:

means for monitoring the communication channel for a second time period to detect a message addressed to the meter interface unit;

means for placing the meter interface unit in an activated mode for a third time period to receive communication

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signals when a message addressed to the meter interface unit is detected within the second time period;

means for placing the meter interface unit in an inactivated mode when a message addressed to the meter interface unit is not detected within the second time period; and

means for placing the meter interface unit in an inactivated mode when communication activity is not detected within the first time period;

means for reducing the power consumption of the meter when the meter interface unit is in an inactivated mode.

5,631,637

OUTPUT METHOD FOR DOT DATA AND APPARATUS THEREFOR

Shigeru Ueda, Wako, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 13,735, Feb. 4, 1993, abandoned. This application Oct. 25, 1995, Ser. No. 547,914

Claims priority, application Japan, Feb. 5, 1992, 4-020262

Int. Cl.[6] H04B *7/00*

U.S. Cl. 340—870.28 **44 Claims**

1. A print control apparatus which receives print data from an information processing apparatus over one of a cable communication link and a wireless communication link, and which controls a printer to output image data based on the received print data, the print control apparatus comprising:

input means for inputting designation information for designating over which one of the cable communication link and the wireless communication link the print data is to be received;

determining means for determining which one of the cable communication link and the wireless communication link is designated by the designation information;

selecting means for selecting the print data received over the cable communication link when the determining means determines that the designation information designates the cable communication link, and for selecting the print data received over the wireless communication link when the determining means determines that the designation information designates the wireless communication link; and

generating means for generating image data based on the print data selected by the selecting means.

5,631,638

NFORMATION SYSTEM IN A MOTOR VEHICLE

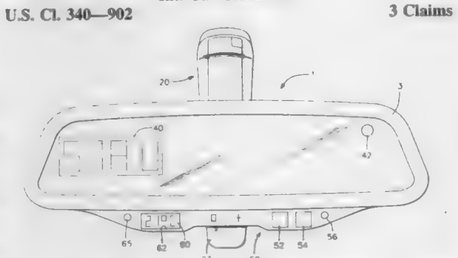
Adolf Kaspar, Collenberg, and Peter Fuerst, Buergstadt, both of Germany, assignors to Hohe GmbH & Co.KG., Collenberg, Germany

Filed Jul. 8, 1994, Ser. No. 271,892

Claims priority, application Germany, Jul. 9, 1993, 43 22 937.9

Int. Cl.[6] G08G *1/00*

U.S. Cl. 340—902 **3 Claims**



1. A rear-view mirror information display system for a motor vehicle having an on-board network for providing information as to various motor vehicle functions, the display system comprising a rear view mirror having a housing, a hollow arm connected with the housing for receiving an electrical cable connectable to the on-board network, a mirror glass having a reflectivity, said mirror glass mounted to the housing, said mirror glass comprising a pair of glass plates having an electrically sensitive substance therebetween for adjusting the reflectivity of the mirror glass, a light emitting display unit having multiple display segments, said light emitting display unit embedded within the mirror glass, each of said display segments being separately controlled by a segment driver to form a plurality of numbers and letters that are visually observable by a vehicle occupant, electrical circuit means mounted within said housing and connected with the electrical cable for receiving information from the on-board network, said electrical circuit means including central processing means, said segment driver, and mirror glass reflection control means for providing voltage to the electrically sensitive substance, said central processing means receiving information from the on-board network and controlling said segment driver to actuate said display segments to display information derived form the on-board network, said central processing means further controlling the mirror glass reflection control means to adjust the voltage applied to the electrically sensitive substance within the mirror glass, and further comprising a microphone within said rear-view mirror, said microphone connected to the onboard network of the vehicle.

5,631,639

COLLISION ALARM SYSTEM FOR AUTOMOTIVE VEHICLE

Katsuhiko Hibino, Toyoake; Noriaki Shirai, Oobu, and Takao Nishimura, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 20, 1995, Ser. No. 425,622

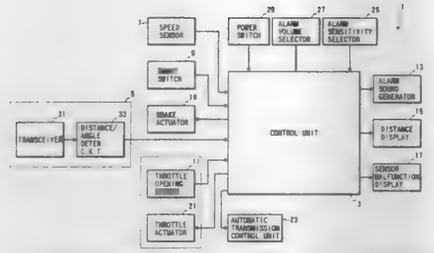
Claims priority, application Japan, Apr. 20, 1994, 6-081719; Apr. 22, 1994, 6-084627

Int. Cl.[6] G08G *1/16*

U.S. Cl. 340—903 **25 Claims**

1. A collision alarm system for an automotive vehicle comprising:

object determining means for determining whether an object falling within a given detection zone is a stationary object or a moving object and for providing a signal indicative thereof



the signal having a first state indicative of a determined stationary object, and a second different state indicative of a determined moving object;

stationary object alarm means, responsive to the signal from said object determining means, for issuing an alarm when a distance between the object determined by said object determining means as the stationary object and said system vehicle equipped with this system falls within a given stationary object warning distance;

moving object alarm means, responsive to the signal from said object determining means, for issuing an alarm when a distance between the object determined by said object determining means as the moving object and the system vehicle falls within a given moving object warning distance; and

alarm inhibiting means operatively connected to said moving object alarm means for inhibiting said moving object alarm means from issuing the alarm for a delay period of time after the object falling within the given detection zone which has been determined by said object determining means as the stationary object, is determined as the moving object.

5,631,640

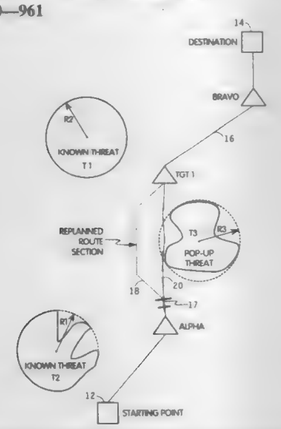
THREAT AVOIDANCE SYSTEM AND METHOD FOR AIRCRAFT

David L. Deis, and Robert M. Gjullin, both of Corrales, N.M., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 182,892, Jan. 18, 1994, abandoned. This application Feb. 21, 1995, Ser. No. 393,513

Int. Cl.[6] G08G *5/04*

U.S. Cl. 340—961 **5 Claims**



1. A computerized method for an airborne aircraft to respond to an unknown threat where the aircraft detects a previously unknown threat, comprising the following steps:

determining a zone of intervisibility for the previously unknown threat;

determining if an aircraft's planned route intersects the zone of intervisibility with the threat;

if not, maintaining the aircraft's planned route;

if intersection of aircraft's planned route with the zone of intervisibility is less than a predetermined distance from the aircraft, automatically executing a lateral route change;

if intersection of aircraft's planned route with the zone of intervisibility is greater than the predetermined distance from the aircraft, notifying an aircraft operator of the threat and checking the threat against set clearance levels to determine if the aircraft's planned route may be followed at another acceptable set clearance level; and

if another acceptable set clearance level is found, permitting the operator to choose between following the aircraft's planned route at said acceptable set clearance level or choosing the lateral route change.

5,631,641

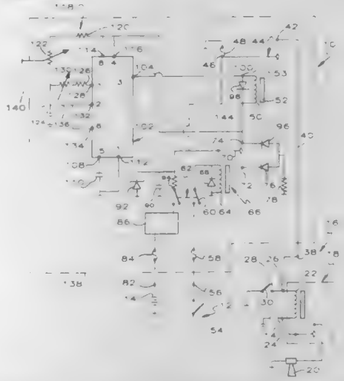
VEHICLE LOCATOR SYSTEM

John V. W. Howe, 325 Helen Marie La., Kingsville, Tex. 78363

Filed Nov. 13, 1995, Ser. No. 555,907

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—988 **15 Claims**



1. A vehicle locator system for indicating the location of a motor vehicle having an engine, a first electrical circuit necessary for continued operation of the engine in its closed circuit state, an electrical power source and an audible alarm, comprising

first means for connection to the electrical power source for energizing the system;

second means for connection to the audible alarm;

third means for connection to the first electrical circuit;

means for sounding the audible alarm including

a second circuit having a normal condition not sounding the alarm and an active condition for sounding the audible alarm;

a delay mechanism allowing selection of a period of time at an end of which the second circuit is activated for sounding the audible alarm; and

means for initiating operation of the delay mechanism in response to opening the first electrical circuit.

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5,631,642
MOBILE OBJECT TRACKING SYSTEMS

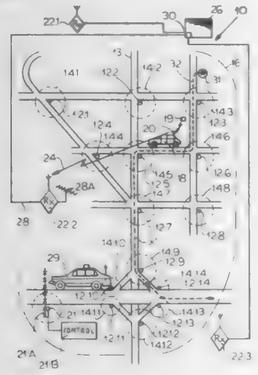
W. Keith Brockelsby; Conrad M. Brownlee-Walker; Micheal L. Hryciuk, all of Edmonton, Canada, and Martin C. Van Breda, The Willows, South Africa, assignors to Austec Electronic Systems Limited, Edmonton, Canada

Filed Mar. 14, 1994, Ser. No. 212,887

Claims priority, application South Africa, Mar. 12, 1993, 93/1786

Int. Cl.[6] G08G 1/123

U.S. Cl. 340—993 8 Claims



1. A vehicle tracking system comprising:

an array of signpost stations distributed strategically and non-uniformly around an area to be monitored, each signpost station being arranged to transmit a signpost identification signal defining a signpost footprint covering at least one route traversed by vehicles, with the signpost footprints of adjacent signpost stations being substantially non-overlapping;

a vehicle-based receiver arranged to receive the signpost identification signal in the event of the vehicle being located within the associated signpost footprint of a signpost station;

a vehicle-based beacon transmitter arranged to transmit a vehicle identification signal and a vehicle location signal derived from the signpost identification signal;

activating means for activating the beacon transmitter in response to unauthorized act being carried out on the vehicle;

a central control station for identifying the vehicle and determining its approximate position on the basis of the vehicle identification and location signals transmitted from the beacon transmitter;

at least one mobile tracking and recovery unit having a position locating unit for homing in on the vehicle once its approximate position has been established; and

a network of receiver stations which is more widespread than the array of signpost stations, each receiver station having receiving means arranged to receive the vehicle identification and location signals originating from the vehicle-based transmitter and transmission means for relaying the signals to the central control station, the receiver stations including position locating means for generating, on the basis of the received vehicle identification signal, and separately of the vehicle location signal, a positional signal relating to the position of the vehicle.

5,631,643
KEY-CODE OUTPUTTING APPARATUS FOR DATA PROCESSOR HAVING AN INTERCHANGEABLE KEYBOARD

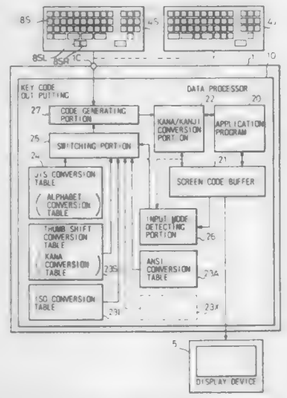
Takashi Hisamori, Inagi, and Shigeo Shiratori, Kawasaki, both of Japan, assignors to Fujitsu Limited, Japan

Filed Jul. 20, 1995, Ser. No. 504,497

Claims priority, application Japan, Jul. 20, 1994, 6-167880; Jul. 17, 1995, 7-180425

Int. Cl.[6] H03K 17/94; H03M 11/00

U.S. Cl. 341—23 28 Claims



1. A key-code outputting apparatus for outputting key information from a keyboard to a data processing means as a key-code, the keyboard having a plurality of different character input modes and a key arrangement of the keyboard is different from a key arrangement assumed by the data processing means of a data processor, comprising:

keyboard kind judging means for judging a kind of key arrangement of the keyboard presently used;

character input mode detection means for detecting a present character input mode set to the data processor;

corresponding code memory means for storing the key information of the keyboard and the key-code corresponding to the key information in the key arrangement assumed by the data processing means in a predetermined character input mode with a corresponding form;

key-code generation means for generating a key-code corresponding to the key information from the keyboard referring to the corresponding code memory when the detected present character input mode is the predetermined character input mode; and

a display apparatus provided for the data processor and the character input mode detection means detecting the character input mode or a shift mode by referring to the information stored in a specific area of a display memory for storing a display data of the display apparatus.

5,631,644
IMAGE ENCODING APPARATUS

Hiroyuki Katata, Ichihara; Hiroshi Kusao, and Yohichi Fujiwara, both of Chiba, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1994, Ser. No. 362,148

Claims priority, application Japan, Dec. 22, 1993, 5-325063

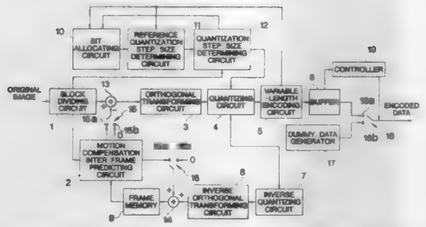
Int. Cl.[6] H03M 7/30

U.S. Cl. 341—67 18 Claims

1. An image encoding apparatus comprising:

quantizing means for quantizing an input image;

variable-length encoding means for performing variable-length encoding on the quantized result of said quantizing means;



temporary storage means for temporarily storing encoded data from said variable-length encoding means, the stored encoded data thereafter being transmitted at a fixed data rate;

encoded data amount control means for calculating a quantization step size of quantizing information to be encoded based upon the encoded result of said variable-length encoding means to control an amount of data encoded by said variable-length encoding means;

dummy data generating means for generating dummy data, eliminatable when decoding the encoded data;

switching means for switching an output of said image encoding apparatus between the encoded data from said temporary storage means and the dummy data from said dummy data generating means; and

control means for monitoring a number of occupied bits of encoded data in said temporary storage means to control switching of said switching means such that the output of the image encoding apparatus is the encoded data from said temporary storage means when the number of occupied bits of encoded data exceeds a predetermined threshold, and such that transmission of encoded data from said temporary storage means is suspended and the output of the image encoding apparatus is the dummy data generated from said dummy data generating means when the number of occupied bits of encoded data is not more than the predetermined threshold, wherein said control means outputs a switching signal to said encoded data amount control means when the number of occupied bits of encoded data is not more than the predetermined threshold, and

said encoded data amount control means initializes parameters which are used for calculation of the quantization step size when the switching signal is output.

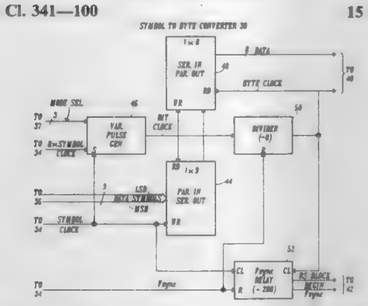
5,631,645
SYMBOL TO BYTE CONVERTER

Mark Fimoff, Hoffman Estates, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 29, 1993, Ser. No. 175,070

Int. Cl.[6] H03M 9/00

U.S. Cl. 341—100 15 Claims



1. A method of converting a series of binary M level symbols received at a constant symbol rate into successive 8 bit data bytes comprising:

identifying M as one of a plurality of selected integer values for use in determining the number of binary bits associated with each of the symbols of said series of M level symbols;

successively writing the bits of each of said M level symbols in parallel into a first register;

serially reading said bits of said M level symbols from said first register;

serially writing said bits into said second register in response to a bit clock generating a number of pulses equal to said determined number, at 8 times the symbol rate;

dividing the pulses from the bit clock by 8; and

reading out the bits in said second register in parallel in groups of 8 bits.

5,631,646
METHOD FOR DETERMINATION OF ERRORS IN ANALOGUE-DIGITAL CONVERSION

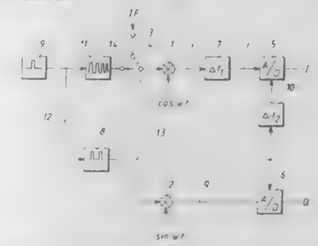
Lars Erhage, Göteborg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 30, 1995, Ser. No. 497,050

Claims priority, application Sweden, Jul. 5, 1994, 9402372

Int. Cl.[6] H03M 11/10

U.S. Cl. 341—120 9 Claims



1. A method for determining time errors in connection with analogue-digital conversion of quadrature detected signals, comprising the steps of:

feeding over a number of time periods a periodically repeated signal, whose frequency is changed during each time period, to a device whose time error is to be determined;

quadrature detecting the signal, whereby two quadrature components are formed;

sampling the quadrature components to obtain samples and converting the samples to digital form, whereby the quadrature components for every time period of the signal are each sampled at at least two different time points;

Fourier transforming the samples associated with one of the different time points from a number of time periods of the periodically repeated signal and Fourier transforming the respective samples for each different time point to form spectra, each of which contain expressions that describe a fundamental tone and that describes an image tone of the signal; and

forming a relationship, for each different time point, between respective fundamental tone and respective image tone based on the expressions of each respective different time point; and

determining the time error based on the formed relationships of at least two different time points.

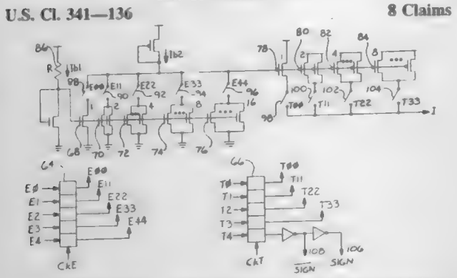
VOL 1198 ISS 3 MY 20 1997 UMI

5,631,647

ANALOG MULTIPLYING TYPE OF DIGITAL/ANALOG CONVERTER CIRCUIT

Chi-Mao Huang, Dou-Liu, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Filed Oct. 12, 1994, Ser. No. 321,713
Int. Cl.[6] H03M *1/66*
U.S. Cl. 341—136 **8 Claims**



1. A digital/analog converter circuit of the analog multiplying type for providing an adjustment for a DC voltage offset, said circuit comprising:

a code converter for obtaining the magnitude and positive/negative sign of a tone data by a decoding method of 2's complement,

an analog multiplying current source wherein an envelope signal is used to determine the DAC bias current,

a tone signal is used to control an output current the magnitude of which is proportional to the product of the envelope signal and the tone signal, and

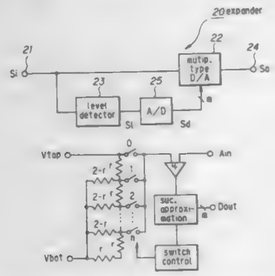
a bridge output circuit which determines a current path depending on the positive or negative sign of the tone signal for driving a speaker output with no direct current component, said bridge output circuit not having a capacitively coupled component.

5,631,648

SIGNAL COMPRESSION OR EXPANSION CIRCUIT FOR MOBILE COMMUNICATION

Takaaki Yamada; Kazuo Kumano, both of Kanagawa, and Kazuhiro Takeda, Nagasaki, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 2,262, Jan. 8, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 353,615
Claims priority, application Japan, Jan. 8, 1992, 4-020541
Int. Cl.[6] H03M *1/88*; H04B *1/64*
U.S. Cl. 341—138 **9 Claims**



1. A signal-processing circuit formed by CMOS processes, comprising:

a logarithmically linear scale multiplication type CMOS digital-to-analog converter having a resistor bank which converts an audio range analog input signal applied to the converter into an analog output signal having an amplitude corresponding to digital control data;

a level detector means for detecting the level of audio range, said level means having a full wave rectifier and an attack and recovery circuit; and

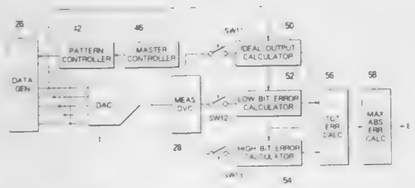
a logarithmically linear scale analog-to-digital converter which digitizes the output signal from the level detector means and supplies the digitized signal as the above-described digital control data to the multiplication type digital-to-analog converter such that a level of an output signal is a square of a level of said analog signal applied to said converter, said analog-to-digital converter being a successive approximation type converter having a plurality of resistors and switches connected to perform an analog to digital conversion, said switches including switches connected between said resistors and switches connected at intermediate points along said resistors to provide fine or coarse adjustments of the steps.

5,631,649

DIGITAL-TO-ANALOG CONVERTER TEST METHOD AND APPARATUS

Yasuyuki Nakamura, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1996, Ser. No. 660,873
Claims priority, application Japan, Dec. 22, 1996, 8-008035
Int. Cl.[6] H03M *1/10*
U.S. Cl. 341—144 **13 Claims**



1. A method of testing the linearity of a digital-to-analog converter that employs equally-weighted signal sources for converting high-order bits of digital input, and unequally-weighted signal sources for converting low-order bits of digital input, comprising the steps of:

supplying a minimum digital input and a maximum digital input to said digital-to-analog converter and measuring a resulting pair of analog outputs;

calculating a linear input-output characteristic having the pair of analog outputs as endpoints;

varying the high-order bits of digital input while holding the low-order bits of digital input constant, measuring resulting analog output values, and calculating deviations from the linear input-output characteristic of the analog output values thus measured, thereby obtaining a first set of deviations;

varying the low-order bits of digital input while holding the high-order bits of digital input constant, measuring resulting analog output values, and calculating deviations from the linear input-output characteristic of the analog output values thus measured, thereby obtaining a second set of deviations; and

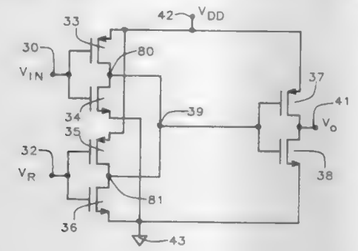
finding, among all total deviations obtainable by adding a deviation in the first set of deviations to a deviation in the second set of deviations, a total deviation of maximum absolute value.

5,631,650

SAMPLE/HOLD FREE MOST SIGNIFICANT BIT COMPARATOR USING BISECTION COMPARATORS

Po-Chin Hsu, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 17, 1995, Ser. No. 405,721
Int. Cl.[6] H03M *1/42*
U.S. Cl. 341—155 **13 Claims**



1. A bisection comparator, comprising:

a V_{DD} voltage supply;

a V_{SS} voltage supply;

a reference voltage supply;

an input voltage;

an output node;

a first node;

a second node;

an intermediate node;

a first P channel MOS field effect transistor having a first gate, a first source, and a first drain wherein said first source is connected to said V_{DD} voltage supply, said first drain is connected to said first node, said first node is connected to said intermediate node, and said first gate is connected to said input voltage;

a second N Channel MOS field effect transistor having a second gate, a second source, and a second drain wherein said second source is connected to said V_{SS} voltage supply, said second drain is connected to said first node, and said second gate is connected to said input voltage;

a third P Channel MOS field effect transistor having a third gate, a third source, and a third drain wherein said third source is connected to said V_{DD} voltage supply, said third drain is connected to said second node, said second node is connected to said intermediate node, and said third gate is connected to said reference voltage supply;

a fourth N Channel MOS field effect transistor having a fourth gate, a fourth source, and a fourth drain wherein said fourth source is connected to said V_{SS} voltage supply, said fourth drain is connected to said second node, and said fourth gate is connected to said reference voltage supply;

a fifth P Channel MOS field effect transistor having a fifth gate, a fifth source, and a fifth drain wherein said fifth source is connected to said V_{DD} voltage supply, said fifth drain is connected to said output node, and said fifth gate is connected to said intermediate node; and

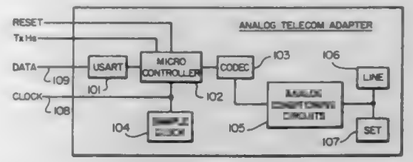
a sixth N Channel MOS field effect transistor having a sixth gate, a sixth source, and a sixth drain wherein said sixth source is connected to said V_{SS} voltage supply, said sixth drain is connected to said output node, and said sixth gate is connected to said intermediate node.

5,631,651

TELECOM ADAPTER FOR INTERFACING COMPUTING DEVICES TO THE ANALOG TELEPHONE NETWORK

James B. Nichols, San Mateo; John Lynch, and Mark Devon, both of San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 78,890, May 10, 1993, Pat. No. 5,495,246. This application Jun. 7, 1995, Ser. No. 477,548
Int. Cl.[6] H03M *1/12*
U.S. Cl. 341—155 **16 Claims**



1. An adapter for inputting to a computer a digital data stream representing a real time continuous analog signal, comprising:

means for receiving an analog signal and converting the analog signal to a voice-rate or greater digital data stream, comprising:

a telephone line connector;

an analog conditioning circuit connected to the telephone line connector; and

a codec connected to the analog conditioning circuit; and

interface means for receiving the digital data stream and inputting the digital data stream to the computer workstation through a communications port of the computer workstation;

wherein the interface means comprises:

a UART;

a microcontroller connected to the UART; and

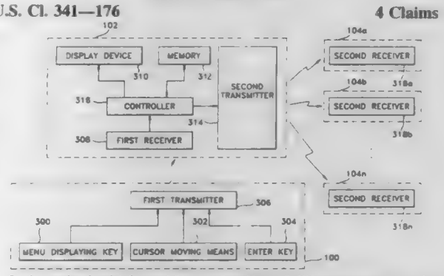
a sample clock connected to the microcontroller.

5,631,652

REMOTE CONTROL METHOD AND SYSTEM USING ONE REMOTE CONTROLLER TO CONTROL MORE THAN ONE APPARATUS

Sang-su Lee, Suwon, Rep. of Koren, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 4, 1995, Ser. No. 433,641
Claims priority, application Rep. of Korea, May 10, 1994, 94-10207
Int. Cl.[6] H04B *3/00*
U.S. Cl. 341—176 **4 Claims**



1. A method which enables a plurality of AV apparatuses to be remotely controlled using only one remote controller, the method comprising the steps of:

(a) storing a menu for controlling said plurality of AV apparatuses, said menu being categorized into a main menu level, a sub menu level and a regulating menu level, and coding a signal corresponding to each of said menu levels;

(b) displaying said main menu level on a predetermined display device;

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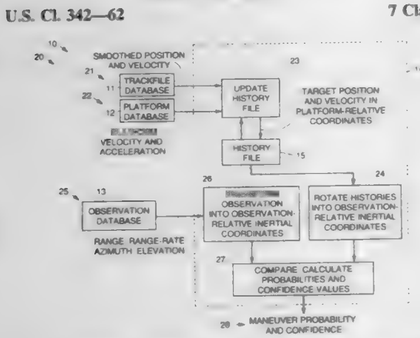
(c) selecting a first menu entry from said main menu level displayed in said step (b);
(d) displaying the sub menu associated with the main menu entry selected in step (c);
(e) selecting a second menu entry from said sub menu displayed in step (d);
(f) displaying the regulating menu associated with the second menu entry selected in step (e);
(g) selecting a third menu entry from said regulating menu displayed in step (f);
(h) transmitting a signal corresponding to the third menu entry selected in said step (g) to a receiver of said one of the plurality of AV apparatuses determined by recognizing the third menu entry selected in said step (g) and generating the code of the corresponding menu entry stored in said step (a); and
(i) executing a function corresponding to the menu entry selected in said step (g) in response to the signal transmitted in said step (h).

5,631,653

DYNAMIC INERTIAL COORDINATE SYSTEM MANEUVER DETECTOR AND PROCESSING METHOD

Robert W. Reedy, Manhattan Beach, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 25, 1996, Ser. No. 637,913
Int. Cl.° G01S *13/72*
U.S. Cl. 342—62 **7 Claims**



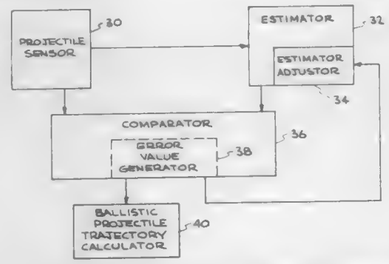
1. A maneuver detection method for use in a target tracking system disposed in a vehicle that is employed to detect a maneuvering target, said method comprising the steps of:
determining time-delayed target position and velocity estimates of a moving target and storing the time-delayed target position and velocity estimates in a history file;
continuously updating the time-delayed target position and velocity estimates by transforming them into an intermediate Cartesian coordinate system and correcting for motion of the vehicle;
for each measurement time, processing the updated time-delayed target position and velocity estimates to predict the position and velocity of the target in an observation-relative inertial coordinate system aligned with the line-of-sight between the aircraft and the target;
calculating an error between the predicted position and velocity of the target and the current observed position and velocity of the target; and
calculating a maneuver probability that is indicative of whether the target is maneuvering using the error and predetermined measurement accuracies of the target tracking system.

5,631,654

BALLISTIC PROJECTILE TRAJECTORY DETERMINING SYSTEM

Thomas J. Karr, Alamo, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Feb. 5, 1996, Ser. No. 595,441
Int. Cl.° G01S *13/58*
U.S. Cl. 342—107 **20 Claims**



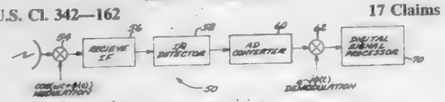
1. A ballistic projectile three-dimensional trajectory determining apparatus comprising:
an estimator communicatively coupled to receive predicted state parameters of a ballistic projectile and for estimating first trajectory characteristics of said ballistic projectile using said predicted state parameters;
a single stationary monocular sensor for observing said first trajectory characteristics of said ballistic projectile;
a comparator coupled to said single stationary monocular sensor and said estimator, said comparator adapted for determining a difference between said observed first trajectory characteristics received from said single stationary monocular sensor and said estimated first trajectory characteristics received from said estimator, and for generating an error based on said difference;
an estimator adjuster for receiving said error value from said comparator provided said error value is above a selected limit, said estimator adjuster further for adjusting said predicted state parameters of said ballistic projectile causing said estimator to re-estimate said first trajectory characteristics of said ballistic projectile using said adjusted predictions of said state parameters; and
a ballistic projectile trajectory calculator coupled to said comparator for determining second trajectory characteristics of said ballistic projectile provided said error value is at or below said selected limit.

5,631,655

SYSTEM AND METHOD FOR RADAR RECEIVER HARMONIC DISTORTION AND SPURIOUS RESPONSE CONTROL

William P. Posey, Palos Verdes Estates, and Howard S. Nussbaum, Los Angeles, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 21, 1995, Ser. No. 576,327
Int. Cl.° G01S *13/52*
U.S. Cl. 342—162 **17 Claims**



1. A radar receive system, comprising:
an antenna for receiving radar return signals;
modulator apparatus for downconverting and modulating the radar return signals with a modulation signal;
intermediate frequency (IF) circuitry for processing the modulated radar return IF signals;
detector circuitry responsive to the IF signals to provide analog detector signals;

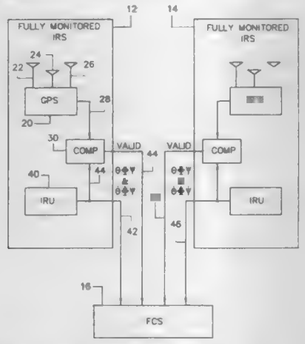
analog-to-digital converter for converting the analog detector signals into digital detector signals;
demodulator for removing said modulation signal from said digital detector signals to provide digital demodulated signals; and
digital signal processor for processing said digital demodulated signals to provide radar output data;
wherein the modulation and demodulation mitigates the effect of nonlinear receiver harmonic distortions and receiver spurious signal responses.

5,631,656

FAIL SAFE SYSTEM WITH COMMON MODE AVOIDANCE

Randolph G. Hartman, Plymouth, Minn., and Robert D. Girts, Mesa, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1995, Ser. No. 397,297
Int. Cl.° G01S *5/02;* **G06F** *19/00;* **A01S** *13/00*
U.S. Cl. 342—357 **7 Claims**



1. A fully monitored system comprising:
a first sensing unit responsive to a first set of variables to produce a first output indicative of a condition;
a second sensing unit responsive to a second set of variables different from the first set of variables to produce a second output indicative of the condition;
comparing means receiving the first and second outputs and producing a valid output only if the first and second outputs are substantially the same.

5,631,657

Patent Not Issued For This Number

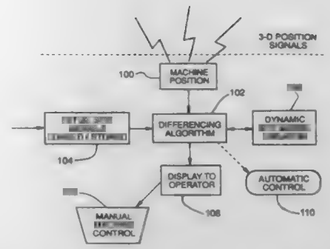
5,631,658

METHOD AND APPARATUS FOR OPERATING GEOGRAPHY-ALTERING MACHINERY RELATIVE TO A WORK SITE

Adam J. Gudat, Edelstein; Daniel E. Henderson, Washington; Gregory R. Harrod, and Karl W. Kleimenhagen, both of Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 527,992, Sep. 13, 1995, and a continuation of Ser. No. 165,126, Dec. 8, 1993, abandoned. This application Feb. 27, 1996, Ser. No. 607,542
Int. Cl.° G06F *19/00;* **G01S** *3/02;5/02*
U.S. Cl. 342—457 **81 Claims**

1. Apparatus for directing the operations of a mobile geography-altering machine comprising:
(a) digital data storage and retrieval means for storing a first three-dimensional geographic site model representing the desired geography of a site and a second three-dimensional geographic site model representing the actual geography of the site;



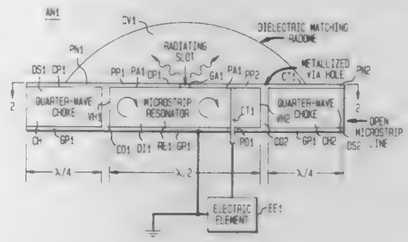
(b) means for generating digital signals representing in real time the instantaneous position in three-dimensional space of at least a portion of the machine as it traverses the site;
(c) means for receiving said signals and for updating the second model in accordance therewith;
(d) means for determining and updating the difference between the first and second models in real time; and
(e) means for directing the operation of said machine in accordance with the difference to bring the updated second model into conformity with the first model.

5,631,659

MICROSTRIP PATCH ANTENNAS WITH RADIATION CONTROL

James G. Evans, Colts Neck; Martin V. Schneider, and Robert W. Wilson, both of Holmdel, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 17, 1995, Ser. No. 406,290
Int. Cl.° H01Q *1/38*
U.S. Cl. 343—700 MS **18 Claims**



1. A microstrip antenna, comprising:
a resonator having
a dielectric substrate,
a conductive ground plane, and
a conductive patch,
said ground plane and said patch sandwiching said dielectric substrate; and
a radiating slot dividing said patch into two separate portions;
said patch having an overall length along one direction, said slot being dimensioned such that each of said portions has a fixed length along the one direction equal substantially to one half the overall length;
said resonator including a pair of ends, one at each portion, and a pair of waveguide forming conductors each shorting an end to the ground plane such that the resonator forms a slotted waveguide; and
a pair of chokes each extending from a respective one of said ends in a direction away from the slot.

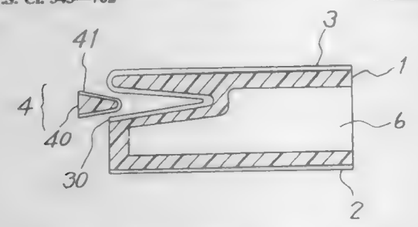
VOL 1198 ISS 3 MY 20 1997 UMI

5,631,660

ANTENNA MODULE FOR A PORTABLE RADIO EQUIPMENT WITH A GROUNDING CONDUCTOR

Yutaka Higashiguchi; Mitsuo Inagaki; Takeyasu Maeda, all of Kawasaki; Kazuyoshi Aoki, Tokyo; Kohichi Kamei, Tokyo, and Toshiaki Amano, Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 226,707, Apr. 12, 1994, abandoned.
This application Nov. 7, 1995, Ser. No. 590,470
Claims priority, application Japan, Aug. 6, 1993, 5-214880
Int. Cl.[6] H01Q 1/24
U.S. Cl. 343—702 8 Claims



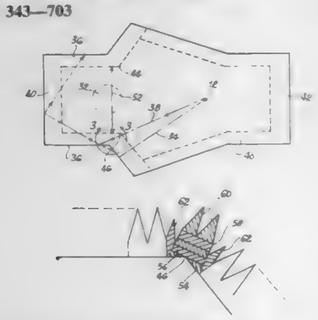
1. An antenna module comprising:
a dielectric substrate molded in a predetermined shape;
a grounding conductor in the form of a sheet provided on one surface of said dielectric substrate;
an antenna element conductor in the form of a sheet provided on an opposite surface to said one surface of said dielectric substrate and having a substantially V-shaped folded end portion; and
an adjusting member inserted into said V-shaped folded end portion,
wherein said adjusting member is composed of a dielectric portion and a conductor in the form of a sheet provided on a surface of said dielectric portion, and said conductor has an electrical contact with said V-shaped folded end portion and has a portion externally protruding from said end portion to effectively extend the length of said antenna element conductor.

5,631,661

GEOMETRICALLY OPTIMIZED ANECHOIC CHAMBER

Gabriel A. Sanchez, P.O. Box 711719, Santee, Calif. 92072-1719

Filed Jun. 30, 1995, Ser. No. 497,536
Int. Cl.[6] G01R 29/08
U.S. Cl. 343—703 6 Claims



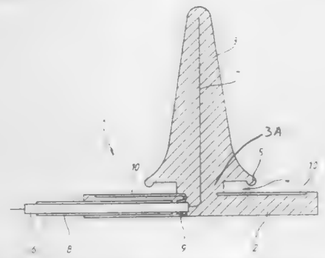
1. An RF anechoic chamber comprising:
(a) an elongated enclosure interiorly lined with electromagnetic wave absorber material;
(b) said enclosure defining an antenna region at one end and a test cubicle at the other end and having a flared central portion having converging walls which meet walls of said test cubicle and define convex discontinuities therewith such that RF radiation passing through an aperture defined by said convex discontinuities is disturbed; and,
(c) an absorber mounted over each of said discontinuities comprising a slab of lossy foam flush against the respective discontinuity covered by a plurality of substantially contiguous and parallel converging laterally extended absorber projections which extend toward the interior of the chamber.

5,631,662

VEHICLE ANTENNA EMBEDDED IN ELASTOMERIC BODY

Norbert Lotterer, Eningen, and Jürgen Deininger, Stuttgart, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Nov. 6, 1995, Ser. No. 554,166
Claims priority, application Germany, Nov. 4, 1994, 44 39 387.3
Int. Cl.[6] H01Q 1/32
U.S. Cl. 343—715 5 Claims



1. Aerial for a motor vehicle, of the type having a capacitive ground coupling and comprising:
a disk shaped aerial base portion which can be positioned inside a vehicle body of said motor vehicle;
an elongated aerial tip portion which extends from said base portion, and which in an installed position of said aerial extends through an opening in said vehicle body and projects away from said vehicle body;
an aerial wire having one end connected to a shielded high frequency line and another end which is integrated into said elongated aerial tip portion and, in an installed position of said aerial, extends outwardly from said vehicle body; and
a contact plate which is embedded in said disk shaped aerial base portion on an upwardly exposed surface thereof and which contacts a shield of said high frequency line for capacitive ground coupling; wherein
said disk shaped aerial base portion and said elongated aerial tip portion comprise a single component elastomer body;
a locking configuration is provided between said disk shaped aerial base portion and said elongated aerial tip portion for locking the elastomer body from inside said vehicle body in said opening therein, whereby said contact plate is electrically coupled with said vehicle body.

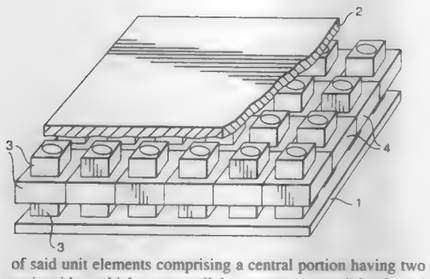
5,631,663

WALL FOR RADOMES, AND RADOMES THUS OBTAINED

Jean-Pierre David, Ermont; Bernard Estang, Chevreuse, and Patrice Bossuet, Herblay, all of France, assignors to Thomson-CSF, Paris, France

Filed Mar. 11, 1988, Ser. No. 172,115
Claims priority, application France, Apr. 14, 1987, 87 05265
Int. Cl.[6] H01Q 1/42
U.S. Cl. 343—872 18 Claims

1. A wall for a radome, comprising:
two end layers of dielectric material;
a plurality of unit elements of dielectric material arranged between said two end layers for forming a central core, each of said unit elements comprising a central portion having two main sides which are parallelograms connected by lateral sides, said central portion made of a first dielectric material having a first equivalent dielectric constant that is substantially equal to that of said dielectric material of said end layers, and two lateral portions arranged on each main side of said central portion between said central portion and said end layers, respectively, and made of a second dielectric material having a second equivalent dielectric constant that is low compared to that of said dielectric material of said end layers.

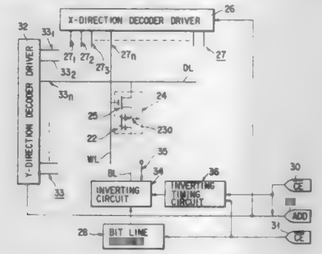


5,631,664

DISPLAY SYSTEM UTILIZING ELECTRON EMISSION BY POLARIZATION REVERSAL OF FERROELECTRIC MATERIAL

Hideo Adachi, and Takashi Mihara, both of Iruma, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 121,501, Sep. 13, 1993, abandoned.
This application Mar. 14, 1995, Ser. No. 404,132
Claims priority, application Japan, Sep. 18, 1992, 4-250151; Mar. 26, 1993, 5-068892; Mar. 26, 1993, 5-068893; Mar. 26, 1993, 5-068894; Jul. 29, 1993, 5-188383
Int. Cl.[6] G09G 3/30
U.S. Cl. 345—74 22 Claims



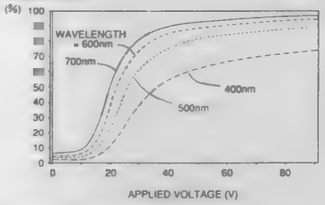
1. An image display apparatus comprising:
a semiconductor substrate;
a plurality of electrical light-emitting surface light source elements arranged in a matrix form on said semiconductor substrate, said plurality of electrical light-emitting surface light source elements each having a ferroelectric capacitor portion and an electrical light-emitting portion, said ferroelectric capacitor portion having a lower electrode formed on said semiconductor substrate, a ferroelectric thin film formed on said lower electrode, and an upper electrode formed on said ferroelectric thin film with an electron emission hole, and said electrical light-emitting portion having a carrier acceleration/multiplication layer formed on said upper electrode by a semiconductor layer, a light-emitting layer formed on said carrier acceleration/multiplication layer, and a transparent electrode formed on said light-emitting layer; and
a plurality of switching elements formed on said semiconductor substrate in correspondence with said plurality of electrical light-emitting surface light source elements;
wherein a voltage applied across said upper and lower electrodes of said ferroelectric capacitor portion of a corresponding one of said plurality of electrical light-emitting surface light source elements in accordance with a drive signal selectively supplied to said plurality of switching elements is inverted, so that electrons emitted from said electron emission hole of said upper electrode by polarization reversal generated in said ferroelectric thin film are injected in the light-emitting portion through said carrier acceleration/multiplication layer of said electrical light-emitting portion to cause said light-emitting portion to selectively emit light, thereby guiding visible light to an outside of said image display apparatus through said transparent electrode.

5,631,665

LIQUID CRYSTAL DEVICE, DRIVING METHOD THEREOF, LIQUID CRYSTAL APPARATUS, AND ILLUMINATION APPARATUS

Kuniharu Takizawa; Hideo Fujikake; Tsunehiro Hirabayashi; Yoshiaki Tanaka, all of Tokyo; Kensaku Takata, Osaka; Satoshi Takano, Osaka, and Tohru Kashiwagi, Osaka, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, and Sumitomo Electric Industries, Ltd., Osaka, both of Japan

PCT No. PCT/JP92/01492, § 371 Date Jun. 28, 1994, § 102(e) Date Jun. 28, 1994, PCT Pub. No. WO94/11775, PCT Pub. Date May 26, 1994
PCT Filed Nov. 16, 1992, Ser. No. 256,259
Claims priority, application Japan, Nov. 13, 1992, 4-303882
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—88 27 Claims



1. An illumination apparatus, comprising:
a light source;
a liquid crystal device disposed in an optical path of light projected from said light source and having a composite film including a liquid crystal material and a film forming a transparent matrix receiving said liquid crystal material, and having substrates including a pair of transparent conductive films sandwiching said composite film therebetween; and
a driving circuit electrically connected to said conductive films and applying thereto an alternating voltage waveform alternately switching between first and second voltage states in which said composite film respectively attains an opaque state and a transparent state, wherein the ratio of the time period (T_{off}) of the opaque state to the time period (T_{on}) of the transparent state of the composite film per unit time period is varied by pulse width modulation of said alternating voltage waveform for changing the time period of both voltage states with an externally applied signal, thereby controlling the power of non-scattered light transmitted through said composite film per unit time period without substantially changing the spectrum of the transmitted light;
and wherein said composite film has a non-uniform distribution of said liquid crystal material therein so that the respective spectrum distributions of the opaque state and the transparent state are substantially equal.

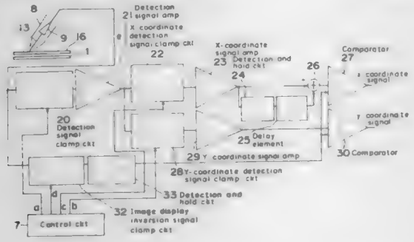
VOL 1198 ISS 3 MAY 20 1997 UMI

5,631,666

DISPLAY-INTEGRATED TYPE TABLET DEVICE

Takao Tagawa, Kashibara; Kengo Takahama, Nara; Kazunari Okamura, Tenri, and Noritoshi Kako, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 65,610, May 21, 1993, Pat. No. 5,410,329.
This application Jan. 13, 1995, Ser. No. 372,660
Claims priority, application Japan, May 22, 1992, 4-130685; Oct. 20, 1992, 4-281559
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—104 6 Claims



1. A display-integrated type tablet device including a display panel which has a display material interposed between segment electrodes and common electrodes crossing each other at right angles and is driven by a duty ratio control type drive method, a detection pen having at a tip of the detection pen an electrode electrostatically coupled with the segment electrodes and the common electrodes of the display panel, a segment electrode drive circuit for driving the segment electrodes, a common electrode drive circuit for driving the common electrodes, a display control circuit for displaying an image on the display panel by controlling the segment electrode drive circuit and the common electrode drive circuit in a period of displaying the image, a detection control circuit for controlling the segment electrode drive circuit to sequentially scan the segment electrodes of the display panel by applying a scanning voltage successively to the segment electrodes and controlling the common electrode drive circuit to sequentially scan the common electrodes by applying a scanning voltage successively to the common electrodes in a coordinate detection period, an x-coordinate detection circuit for detecting an x-coordinate value designated on the display panel by the tip of the detection pen according to an output signal generating timing of the detection pen and a scanning timing of the segment electrodes, and a y-coordinate detection circuit for detecting a y-coordinate value designated on the display panel by the tip of the detection pen according to an output signal generating timing of the detection pen and a scanning timing of the common electrodes,

the display-integrated type tablet device comprising a correction voltage generation means for generating a correction voltage for canceling a voltage induced at an electrode closer to the detection pen and placed in an upper position attributed to a scanning voltage applied to an electrode farther to the detection pen and placed in a lower position, the electrodes being one and the other of the segment electrode and the common electrode,

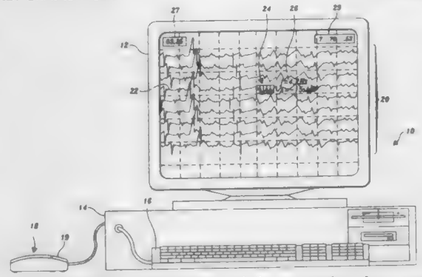
thereby canceling the voltage induced at the electrode placed in the upper position by applying the correction voltage generated by the correction voltage generation means to the electrode placed in the upper position at least in a period when the electrode placed in the lower position is scanned.

5,631,667

FREQUENCY AND AMPLITUDE MEASUREMENT TOOL FOR ELECTRONIC DISPLAYS

John A. Cadwell, Richland, Wash., assignor to Cadwell Industries, Inc., Kennewick, Wash.

Continuation of Ser. No. 164,005, Dec. 8, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 479,568
Int. Cl.[6] G09G 5/36
U.S. Cl. 345—134 12 Claims



1. A frequency measurement tool for measuring the average frequency of several cycles of a plurality of cycles of a variable-frequency, multiple-cycle waveform displayed on an electronic display, said frequency measurement tool including:

(a) an electronic display displaying a plurality of cycles of a variable-frequency, multiple-cycle waveform;

(b) an input device for allowing an operator to select two points on said display located at opposite ends of several cycles of said plurality of cycles of said variable-frequency, multiple-cycle waveform displayed on said electronic display; and

(c) a data processor, coupled to said input device and said electronic display, for:

(i) subdividing the horizontal distance between said two points into a plurality of equi-spaced apart subdivisions,

(ii) drawing a measurement scale over said several cycles of said plurality of cycles between said two points, said measurement scale including a plurality of vertical hash lines that overlie said several cycles of said plurality of cycles and subdivide said horizontal distance between said points into said plurality of equi-spaced apart subdivisions,

(iii) calculating a frequency based upon the number of said plurality of equi-spaced apart subdivisions and said horizontal distance between said two points, and

(iv) displaying said calculated frequency on said electronic display.

5,631,668

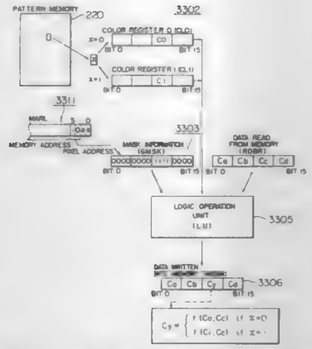
GRAPHIC PATTERN PROCESSING APPARATUS

Koyo Katsura; Hideo Maejima, and Hisashi Kajiwara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Engineering Co., Ltd., Ibaraki-ken, both of Japan

Continuation of Ser. No. 104,572, Aug. 11, 1993, which is a division of Ser. No. 736,786, Jul. 29, 1991, abandoned, which is a division of Ser. No. 350,254, May 11, 1989, Pat. No. 5,043,713, which is a division of Ser. No. 686,039, Dec. 24, 1984, Pat. No. 4,862,150. This application Apr. 28, 1995, Ser. No. 430,853
Claims priority, application Japan, Dec. 26, 1983, 58-246896; Feb. 17, 1984, 59-27155; Jun. 14, 1984, 59-120679
Int. Cl.[6] G09G 5/02
U.S. Cl. 345—155 134 Claims

1. A data processing apparatus comprising:

a data processor for outputting instructions and parameters for processing graphic data, wherein said instructions includes a drawing instruction for extending pattern data having at least one bit to pixel data having a plurality of bits;



a memory for storing said graphic data, said graphic data includes at least one word, each word having a plurality of pixel data, each of said pixel data having a plurality of bits; and

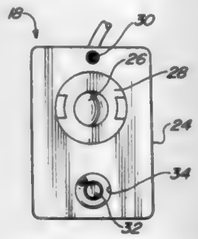
a graphic processor having color registers, each color register having stored therein pixel data having a plurality of bits, wherein said graphic processor, responsive to said drawing instruction from said data processor, accesses said memory in units of words, selects one of said color registers based on pattern data received by said graphic processor and stores data corresponding to said pixel data stored in said selected color register to said memory.

5,631,669

POINTING DEVICE WITH INTEGRAL MICROPHONE

Gregory A. Stobbs, and Beth H. Stobbs, both of 971 Charrington, Bloomfield Hills, Mich. 48301

Continuation of Ser. No. 191,956, Feb. 4, 1994, abandoned.
This application Mar. 29, 1995, Ser. No. 412,594
Int. Cl.[6] G09G 5/08
U.S. Cl. 345—163 62 Claims



1. A multimode computer input device comprising:

a housing sized to be hand held and having an Underside adapted for placement on a horizontal surface;

a pointing device disposed within said housing having mechanism for sensing changes in position of the pointing device with respect to a reference frame and for providing position change signals to a computer;

a microphone disposed within said housing and positioned on said underside for providing audio signals to said computer; and

mechanism coupled to said microphone for automatically inhibiting the providing of said audio signal to said computer when said device is positioned on a substantially horizontal surface for providing position change signals to said computer;

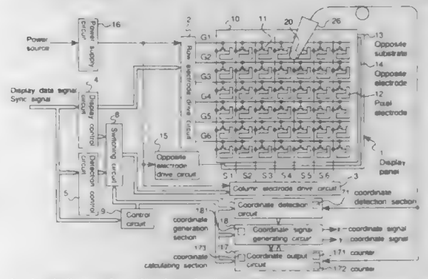
wherein said automatic inhibiting mechanism includes a switch for sensing the angular position of said housing with respect to a fixed reference frame.

5,631,670

INFORMATION DISPLAY DEVICE CAPABLE OF INCREASING DETECTION SPEED AND DETECTION ACCURACY OF INPUT COORDINATES ON DISPLAY SCREEN BY DETECTING MOVEMENT AMOUNT OF ELECTRONIC PEN

Akira Tomiyoshi, Nara; Takafumi Kawaguchi, Yamatotakada, and Makoto Takeda, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 26, 1994, Ser. No. 329,252
Claims priority, application Japan, Oct. 27, 1993, 5-268657
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—173 18 Claims



1. An information display device including an input section, an information display section having an electrode at least for detecting a position, a display control circuit for displaying image information on a display screen of the information display section, and a coordinate detecting section for detecting indication coordinates on the display screen pointed by the input section in accordance with a timing of detecting electrostatic coupling between the input section and a scanned electrode of the information display section, the information display device comprising:

a movement amount detecting section which is provided at a tip end portion of the input section and detects an amount of movement of the input section on the display screen to output a movement amount detection signal;

a coordinate output section which obtains indication coordinates of the input section based on the movement amount detection signal from the movement amount detecting section of the input section and a reference point, and outputs the indication coordinates; and

a coordinate signal generating section which outputs a coordinate signal representing the indication coordinates of the input section based on the indication coordinates detected by the coordinate detecting section and the indication coordinates obtained by the coordinate output section.

5,631,671

GRAPHIC PATTERN PROCESSING APPARATUS FOR PROCESSING PIXELS HAVINGS A NUMBER OF BITS WHICH MAY BE SELECTED

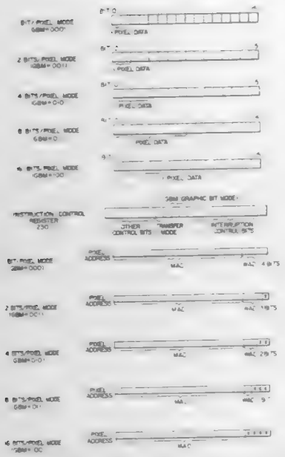
Koyo Katsura; Hideo Maejima, and Hisashi Kajiwara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Engineering Co., Ltd., Ibaraki-ken, both of Japan

Division of Ser. No. 736,786, Jul. 29, 1991, abandoned, which is a division of Ser. No. 350,254, May 11, 1989, Pat. No. 5,043,713, which is a division of Ser. No. 686,039, Dec. 24, 1984, Pat. No. 4,862,150. This application Aug. 11, 1993, Ser. No. 104,572
Claims priority, application Japan, Dec. 26, 1983, 58-246986; Feb. 17, 1984, 59-027155; Jun. 14, 1984, 59-120679
Int. Cl.[6] G09G 5/36
U.S. Cl. 345—200 69 Claims

1. A data processing apparatus comprising:

a memory for storing graphic data, said graphic data including at least one word, each word having a plurality of pixel data, each of said pixel data having a plurality of bits;

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a data processor for outputting instructions and parameters for processing said graphic data; and

a graphic data processor, responsive to an instruction and parameters from said data processor, for accessing said memory in word units, reading out one-word graphic data designated by a memory address from said memory, specifying at least one bit of the read-out one-word graphic data by a pixel address, processing the specified at least one bit in accordance with said instruction, and writing the one-word graphic data containing the processed at least one bit in said memory.

5,631,672

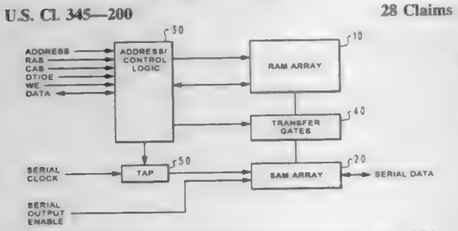
SELF-TIMED REAL-TIME DATA TRANSFER IN VIDEO-RAM

Matthew D. Bates, Austin, Tex., and Roderick M. P. West, Colchester, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 175,874, Dec. 30, 1993, abandoned. This application Jul. 7, 1995, Ser. No. 499,557

Int. Cl.° G09G *5/00*

U.S. Cl. 345—200 **28 Claims**



1. A method of self-timed real-time data transfer within a Video-RAM memory device having a RAM, a serial access memory and a tap pointer, the method comprising the steps of:

performing a data transfer, internally synchronized with a serial clock, from a row in the RAM to the serial access memory during a period that the tap pointer value is equal to a programmable target value, wherein the data transfer is internally timed by the Video-RAM memory device such that external timing signals from an external controller are not required;

reading a row address present at an address input; and

reading a column address present at an address input, wherein the programmable target value is set to a value one less than the column address.

5,631,673

CONTROL DEVICE

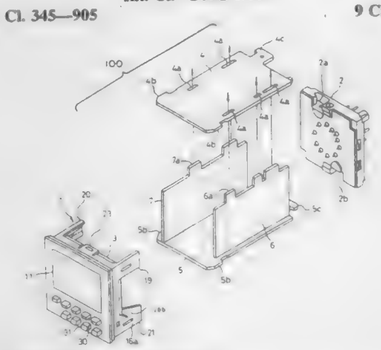
Hiroyuki Yamamoto; Takeshi Wakabayashi, both of Kyoto, and Yoshihisa Nakagawa, Joyo, all of Japan, assignors to Omron Corporation, Japan

Filed Dec. 20, 1993, Ser. No. 169,137

Claims priority, application Japan, Dec. 25, 1992, 4-357843; Feb. 4, 1993, 5-042071; Oct. 18, 1993, 5-284501

Int. Cl.° G09G *5/00*

U.S. Cl. 345—905 **9 Claims**



1. A control device, comprising:

a printed circuit board assembly including a front panel connected to an upper panel, a lower panel and two side panels; and

a display assembly connected to said printed circuit board assembly, said display assembly comprising a casing provided with a pair of top hooks and a pair of bottom hooks extending rearwardly therefrom, said top hooks each having a catch provided by a slot for interconnecting with a respective tab of said upper panel of said printed circuit board assembly, and said bottom hooks each having a pair of catches including a first catch provided by a slot for interconnecting with a respective tab of said lower panel of said printed circuit board assembly and a second catch provided by an oblique member having an edge extending forward from a rearward edge of said second catch, said edge terminating in a forward directed edge interconnecting with a back portion of a respective side tab of said front panel of said printed circuit board assembly.

5,631,674

RECORDING APPARATUS

Yasuyuki Shinada, Yokohama, and Seishi Ejiri, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 864,686, Apr. 7, 1992, abandoned, which is a continuation of Ser. No. 617,642, Nov. 26, 1990, Pat. No. 5,132,711. This application Jan. 24, 1994, Ser. No. 185,224

Claims priority, application Japan, Feb. 23, 1990, 2-41061

Int. Cl.° B41J *2/175*

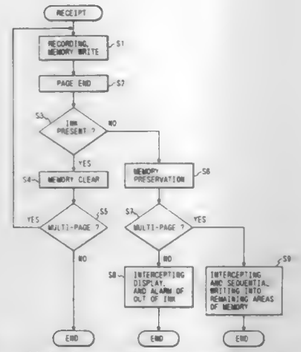
U.S. Cl. 347—37 **36 Claims**

1. A recording apparatus for recording a received image on a recording material using recording means for ejecting ink in accordance with image data, the apparatus comprising:

detection means for detecting presence/absence of ink after completion of recording of a current page of data and before initiation of recording of a next page of data;

storage means for storing received data, said storage means being capable of storing at least a page of data;

control means for controlling said storage means such that storage of the received data in said storage means is performed in parallel with recording of the received data by said recording means, wherein said control means controls said storage means in accordance with an output from said detection means, and wherein when said detection means detects an



absence of ink after completion of recording of a current page of data and before initiation of recording of the next page of data, said control means preserves the received data which has been stored in the storage means and preserves successive received data which is to be stored in said storage means;

informing means for indicating that said detection means has detected an absence of ink; and

instruction means for instructing said control means to read out the image data stored in said storage means.

5,631,675

METHOD AND APPARATUS FOR DRIVING AN INK JET RECORDING HEAD

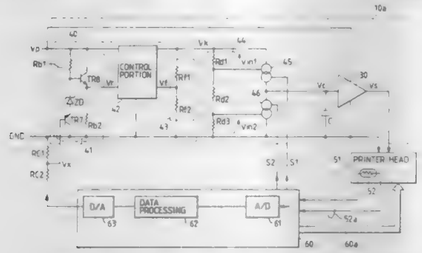
Yoshikiyo Futagawa, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,340

Claims priority, application Japan, Oct. 5, 1993, 5-249576; Jun. 2, 1994, 6-121475

Int. Cl.° B41J *29/38;2/01*

U.S. Cl. 347—10 **15 Claims**



1. An apparatus for generating a driving voltage for driving at least one piezoelectric unit of an ink jet recording head which, when driven, changes the volumetric capacity of an ink chamber of the recording head to jet out ink droplets through a nozzle hole in the recording head, said apparatus comprising:

a constant voltage source for providing an output voltage which varies in accordance with a correcting voltage signal;

a capacitor;

a first constant current source for generating a first constant current in proportion to said output voltage to charge said capacitor so that a voltage of said capacitor increases to a voltage approximately equal to the output voltage within a first constant period of time whose length is unaffected by a variance in a value of the correcting voltage signal;

a second constant current source for providing a second constant current, in proportion to the output voltage, to discharge the capacitor within a second constant period of time whose length is unaffected by the variance in the value of the correcting voltage signal; and

a power amplifier for amplifying the voltage of the capacitor to provide said driving voltage, said driving voltage having a constant rise time which corresponds to said first constant period of time and a constant fall time which corresponds to said second constant period of time, said constant rise time and said constant fall time being unaffected by the variance in the value of the correcting voltage signal.

5,631,676

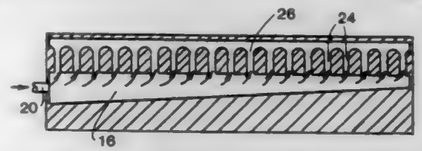
PARALLEL FLOW WATER COOLING SYSTEM FOR PRINTBARS

Robert S. Karz, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1994, Ser. No. 351,095

Int. Cl.° B41J *29/377*

U.S. Cl. 347—18 **14 Claims**



1. A device for cooling an array of print dies using a coolant, the device comprising:

a heat exchange gallery having a length in thermal contact with the array of print dies;

a coolant inlet directing the coolant towards the heat exchange gallery;

a plurality of channel inlets distributed along the length of the heat exchange gallery and connected to channel the coolant in substantially equal amounts through each of the channel inlets into the heat exchange gallery;

means interconnected between the coolant inlet and the plurality of the channel inlets for distributing substantially equally amounts of coolant to each of the channel inlets; and

a coolant outlet directing coolant out of the heat exchange gallery.

5,631,677

PRINTING APPARATUS AND METHOD OF CHARGING BATTERY THEREIN

Hideo Horigome, Tokyo; Junichi Arakawa; Yuichi Kaneko, both of Yokohama; Tetsuhito Ikeda, and Akira Kuribayashi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 115,019, Sep. 2, 1993, abandoned. This application Aug. 20, 1996, Ser. No. 699,932

Claims priority, application Japan, Sep. 8, 1992, 4-239404; Aug. 27, 1993, 5-212714

Int. Cl.° H01M *10/00;* **G06K** *15/00*

U.S. Cl. 347—19 **37 Claims**

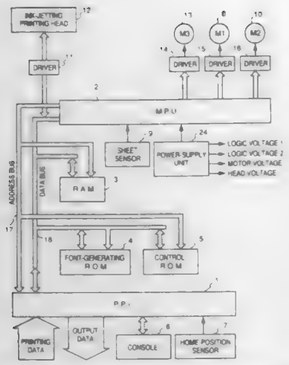
1. A printing apparatus driven by a supply of power from a battery, said apparatus comprising:

detecting means for detecting a remaining capacity of the battery;

a carriage motor for moving, relative to a printing medium, a printing head that prints an image on the printing medium;

a conveyance motor for conveying the printing medium relative to the printing head; and

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drive control means for changing a drive timing of said carriage motor and a drive timing of said conveyance motor based upon results of a detection performed by said detecting means,

wherein when the remaining capacity of the battery detected by said detecting means is not less than a predetermined value, said drive control means commences accelerative driving of one motor, during decelerative driving of the other motor, and when the remaining capacity of the battery detected by said detecting means is less than the predetermined value, said drive control means commences accelerative driving of one of said carriage motor and said conveyance motor, after completion of decelerative driving of the other motor.

5,631,678

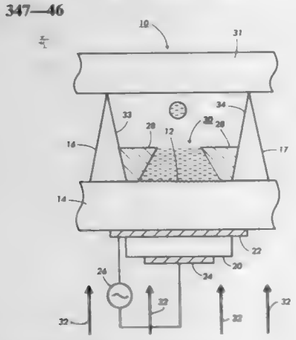
ACOUSTIC PRINTHEADS WITH OPTICAL ALIGNMENT

Babur B. Hadimioglu, Mountain View, and Martin Lim, Union City, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1994, Ser. No. 349,296

Int. Cl.[6] B41J *2/04*

U.S. Cl. 347—46 **1 Claim**



1. An acoustic printhead comprised of:

an optically transparent substrate having a first surface, a second surface, and a first structure at a fixed position, wherein said first structure is an acoustic lens; and

at least two optical lenses on said first surface, said optical lenses for receiving radiant light and for focusing said received radiant light into at least two optical focal areas which are at fixed positions relative to said first structure.

5,631,679

IMAGE FORMING APPARATUS HAVING APERTURE ELECTRODE UNIT INCLUDING INSULATING MEMBER WITH HIGH DIELECTRIC CONSTANT

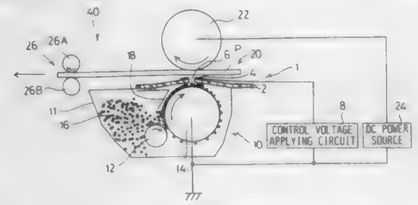
Shigeru Kagayama, Owariasahi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 20, 1994, Ser. No. 262,441

Claims priority, application Japan, Jul. 28, 1993, 5-186112

Int. Cl.[6] B41J *2/385*

U.S. Cl. 347—55 **17 Claims**



1. An image forming apparatus for forming an image on a support comprising:

a toner supply means for supplying charged toner particles to the support for forming the image thereon, the charged toner particles having a first dielectric constant; and

a toner flow control means for controlling a flow of charged toner particles from the toner supply means to the support, the toner flow control means disposed adjacent to and in contact with the toner supply means, wherein the toner flow control means comprises an aperture electrode unit including an insulating member with apertures therein and control electrodes surrounding each aperture that are adapted to be electrically coupled to a voltage source, and wherein the insulating member confronts the toner supply means and has at least a portion with a second dielectric constant that is higher than the first dielectric constant of the charged toner particles.

5,631,680

INK-EJECTING DEVICE AND METHOD OF MANUFACTURE

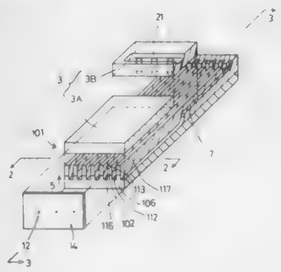
Hiroto Sugahara, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 28, 1994, Ser. No. 348,123

Claims priority, application Japan, Feb. 24, 1994, 6-026458

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—69 **15 Claims**



15. A fluid droplet ejecting device, comprising:

ejecting means for ejecting fluid droplets, said ejecting means including alternating ones of a plurality of grooves;

air channels being defined by remaining ones of said grooves;

conductive means for conducting electricity, said conductive means being disposed at at least bottom portions of said remaining ones of said grooves that define said air channels;

first electrode means for providing electrical connection to the conductive means, the first electrode means being formed on side surfaces of said remaining ones of said grooves that define said air channels, the first electrode means being connected to the conductive means; and

second electrode means for providing electrical connection to the ejecting means to eject fluid droplets.

5,631,681

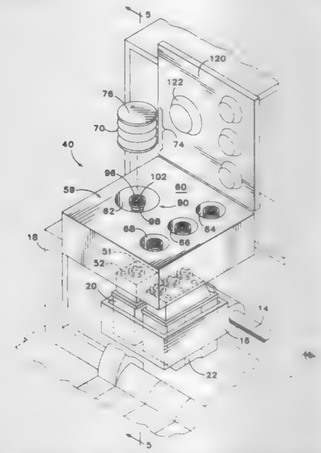
INK REPLENISHING SYSTEM AND METHOD FOR INK-JET PRINTERS

Richard I. Klaus, Barcelona, Spain, and Eric L. Ahlvin, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 29, 1995, Ser. No. 412,647

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—85 **9 Claims**



1. A system for replenishing ink in a printhead ink reservoir of an ink-jet printer, the printhead ink reservoir having a refill port, said system comprising:

an ink supply container containing ink used to replenish the ink in the printhead ink reservoir;

an ink supply container holder for holding said ink supply container;

a hydraulic coupler supported on said ink supply container holder for movement between a coupled position in which said coupler provides a hydraulic connection between said ink supply container and the printhead ink reservoir through the refill port, and a decoupled position in which said hydraulic connection is broken, resupply of ink being effected by selectively moving said coupler to said coupled position and transferring ink from said ink supply container to the printhead ink reservoir by way of said hydraulic connection; and

a hinged cover on said ink supply container holder, said cover being movable in a first direction to overlie said ink supply container holder to operatively contact said ink supply container for exerting force against said ink supply container to move said ink supply container into operative contact with said coupler and for moving said coupler to said coupled position to establish said hydraulic connection between said ink supply container and said coupler when said coupler is in said coupled position, and movable in a second direction to permit insertion of said ink supply container in said ink supply container holder.

5,631,682

PRINTHEAD INK SUPPLY DEVICE

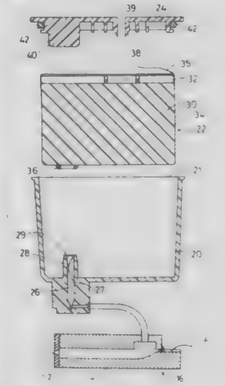
Masayuki Takata, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 28, 1994, Ser. No. 234,004

Claims priority, application Japan, Jul. 6, 1993, 5-166682

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—86 **27 Claims**



1. An ink supply device for supplying ink to a print head, said ink supply device comprising:

a foam unit comprising a porous member impregnated with ink and a film member wrapping said porous member;

a foam storing case having an opening for insertion and removal of said foam unit into and from said foam storing case, wherein said foam storing case has a projecting portion for bursting said film member, said projecting portion projecting inside said case and forming an ink supply passage communicating with the print head,

whereby when said foam unit is inserted into said foam storing case, said foam unit is depressed by said projecting portion, and said film member of said foam unit is burst by said projecting portion to allow the ink contained in said porous member to be supplied through said ink supply passage to said print head; and

a lid removably engaging said opening of said foam storing case.

5,631,683

INK JET CARTRIDGE AND PRINTER USING IT

Atushi Nishioka; Yukihiro Hanaoka; Shigeo Sugimura; Tsutomu Yamazaki, and Kazuhiko Sato, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,612

Claims priority, application Japan, Dec. 28, 1993, 5-335169; Dec. 20, 1994, 6-316987

Int. Cl.[6] B41J *2/175*

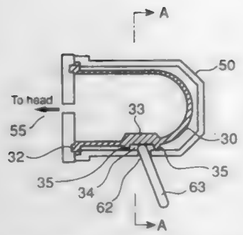
U.S. Cl. 347—87 **9 Claims**

1. An inkjet cartridge comprising:

a recording head having nozzles for ejecting ink in accordance with recording data received from a host processor;

an ink reservoir for accommodating recording ink and having an open end, a closed end, a thick-wall region and a thin-wall region, said ink reservoir being in communication with said recording head so that the ink stored in said ink reservoir is supplied to said nozzles;

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a housing, wherein said ink reservoir and recording head are arranged in said housing;

a through-hole provided in a side of said housing disposed facing the thick wall region for accommodating an end of a pressure rod, the pressure rod for applying pressure to the thick-wall region of said ink reservoir; and

a guide disposed around one of

(1) the thick-wall region of said ink reservoir and

(2) said through-hole

for guiding the end of the pressure rod to the thick-wall region of said ink reservoir.

5,631,684

INK JET TEXTILE PRINTING SYSTEM AND METHOD USING DISPERSE DYES

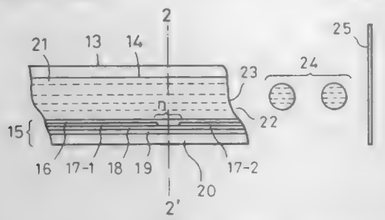
Aya Takaide, Yokohama; Masahiro Haruta, Tokyo; Shoji Koike, Yokohama; Koromo Shirota, Inagi; Tomoya Yamamoto, and Mariko Suzuki, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1994, Ser. No. 265,271

Claims priority, application Japan, Jul. 9, 1993, 5-170474

Int. Cl.[6] B41J *2/21*

U.S. Cl. 347—100 **24 Claims**



1. An ink jet printing method for imparting at least two types of inks, each containing a disperse dye, a compound for dispersing the dye and an aqueous liquid medium, onto a cloth dyeable with a disperse dye, the method comprising the steps of:

imparting the at least two types of inks onto the cloth such that the two types of inks overlap to form a mixed portion;

heat-treating the cloth onto which the inks have been imparted; and

washing the heat-treated cloth, wherein

the dyes in each of the at least two types of inks comprises at least one of dyes selected from a group consisting of C.I. Disperse Yellow **82**, **100**, **124**, **184:1**, **186**, **199**, C.I. Disperse Red **239**, **240**, **277**, **362**, C.I. Disperse Orange **118**, C.I. Disperse Blue **354** and **365**, and the total amount of dyes imparted onto the mixed portion is in a range of from 0.01 to 1 mg/cm^2.

5,631,685

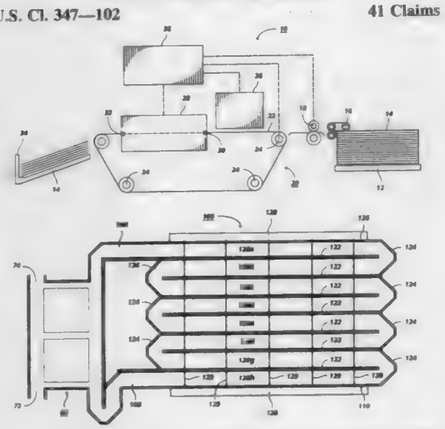
APPARATUS AND METHOD FOR DRYING INK DEPOSITED BY INK JET PRINTING

Arthur M. Gooray; Kenneth C. Peter, both of Penfield, N.Y., and Murray D. Sirkis, Tempe, Ariz., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1993, Ser. No. 159,908

Int. Cl.[6] B41J *2/01;* **H05B** *6/64*

U.S. Cl. 347—102 **41 Claims**



1. An apparatus for drying ink deposited on a cut sheet of paper, said apparatus comprising:

a microwave generating member being adapted to generate microwave energy of a predetermined frequency;

a resonant traveling wave applying member, having a length selected according to an integral number of wavelengths in said member at the predetermined frequency, including a serpentine applicator, connected to said microwave generating member, being adapted to apply microwave energy in the form of resonant traveling waves to the cut sheet of paper having ink deposited thereon; and

a transport member having a low dielectric constant for transporting the cut sheet of paper through said applying member to dry the ink deposited on the cut sheet of paper.

5,631,686

METHOD TO PROVIDE OPTIMUM OPTICAL CONTRAST FOR REGISTRATION MARK DETECTION

Vittorio Castelli, Yorktown Heights, N.Y., and David L. Hecht, Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1993, Ser. No. 168,300

Int. Cl.[6] B41J *2/385;* **G03G** *21/00*

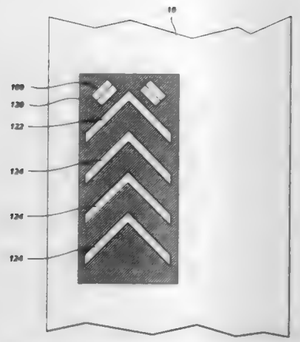
U.S. Cl. 347—133 **4 Claims**

1. A method of achieving optical contrast between an image carrying media having a certain reflectivity value and a plurality of marking materials having a reflectivity value, comprising the steps of:

determining the reflectivity value of the image carrying media;

determining the reflectivity value for each of the plurality of marking materials;

depositing a uniform pattern, based on the determined reflectivity values of the image carrying media and the plurality of marking materials, of at least one of the marking materials having a reflectivity value contrasting from the determined reflectivity values of the image carrying media when not all of the marking materials have a determined reflectivity value different from the image carrying media reflectivity value;



depositing a geometric pattern, based on the determined reflectivity values of the image carrying media and a remaining plurality of marking materials, with the remaining plurality of marking materials having a reflectivity value that does not contrast with the image carrying media reflectivity value, over the uniform pattern of the one contrasting marking material so as to obtain maximum optical contrast;

creating a void, comprising an absence of marking material, in the uniform pattern of the contrasting marking material in a geometric pattern substantially equivalent to the geometric pattern of the plurality of non-contrasting marking materials so that a contrasting mark of high contrast toner and the image carrying media is created.

5,631,687

LASER LIGHT RADIATION DEVICE PROVIDING REDUCED LASER LIGHT SPOT SIZE

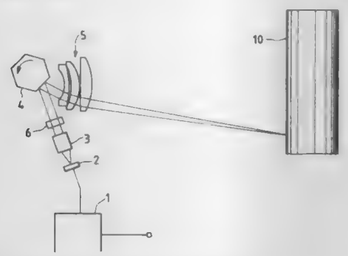
Mamoru Tanaka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1994, Ser. No. 230,116

Claims priority, application Japan, Apr. 23, 1993, 5-120806

Int. Cl.[6] B41J *2/415*

U.S. Cl. 347—134 **9 Claims**



1. A laser light radiation device comprising:

a light source for emitting laser light which is modulated according to an image signal;

a collimator lens for collimating the laser light emitted from said light source; and

deflection means for deflecting laser light emerging from said collimator lens,

wherein said device further comprises a diffraction grating in a laser optical path between said collimator lens and said deflection means, said diffraction grating reducing spot size of said laser light emerging from said collimator lens.

5,631,688

THERMAL TRANSFER PRINTER

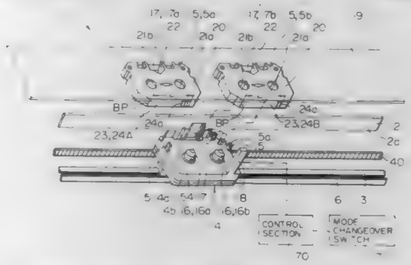
Ikuo Hibino; Hirotoshi Terao; Shinichi Sagawai, and Hiroshi Kobayashi, all of Iwate-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 631,764

Claims priority, application Japan, Apr. 10, 1995, 7-083795; Nov. 13, 1995, 7-294303

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—171 **8 Claims**



1. A thermal transfer printer comprising:

a frame;

a platen fixedly mounted to the frame;

a carriage movably mounted on the frame adjacent the platen;

carriage movement means connected to the carriage for selectively moving the carriage along the platen;

a thermal head movably mounted on the carriage, the thermal head including a plurality of heat generating elements;

a cassette holding section mounted adjacent the platen for detachably holding first and second ribbon cassettes, each of the first and second ribbon cassettes housing an ink ribbon;

cassette delivering means for delivering one of the first ribbon cassette and the second ribbon cassette from the cassette holding section onto the carriage such that the ink ribbon is located between the thermal head and the platen; and

a control section for selectively controlling the carriage movement means and the cassette delivering means in response to first and second mode signals;

wherein when the control section receives the first mode signal, the control section controls the cassette delivery means to mount the first cassette onto the carriage, and to control the carriage movement means such that the carriage moves at a first speed along the platen;

wherein when the control section receives the second mode signal, the control section controls the cassette delivery means to mount the second cassette onto the carriage, and to control the carriage movement means such that the carriage moves at a second speed along the platen; and

wherein the first speed differs from the second speed.

5,631,689

CONTROLLING METHOD FOR HEAT OF THERMAL HEAD

Hiroshi Izumi, Morioka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 938,788, Sep. 1, 1992, abandoned. This application Dec. 27, 1995, Ser. No. 582,040

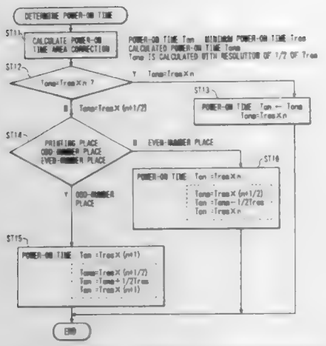
Claims priority, application Japan, Sep. 6, 1991, 3-227312

Int. Cl.[6] B61J *2/355*

U.S. Cl. 347—211 **7 Claims**

1. A method for controlling an amount of heat generated by a thermal head device, the thermal head device including:

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a thermal head having a plurality of heat-generating elements arranged in a row, successive elements of the plurality of heat-generating elements being alternately designated as an odd-number element and an even-number element;

a calculation circuit for generating a power-on time for each heat-generating element of said thermal head;

a plurality of latches, each of the plurality of latches being connected to an associated group of the plurality of heat-generating elements; and

a control circuit for controlling said plurality of latches such that each of the plurality of latches applies power to selected elements of the associated group of heat-generating elements for a duration equal the power-on time output from the calculation circuit

wherein said method comprises the steps of:

(a) calculating a power-on time for a selected element of the plurality of heat-generating elements in units of time shorter than a minimum power-on time, the selected element being connected to a first latch of the plurality of latches;

(b) determining whether the calculated power-on time is equal to an integral multiple of the minimum power-on time or not;

(c) if the calculated power-on time is equal to such an integral multiple:

(i) writing the calculated power-on time directly to said first, latch as the power-on time for said selected element, and

(ii) applying electrical current to the selected element via said first latch for a period equal to said power-on time; and

(d) if the calculated power-on time is not equal to such an integral multiple:

(i) determining whether the selected element is an odd-number element or an even-number element;

(ii) changing the calculated power-on time for the selected element to an integral value obtained by rounding up fractions below a decimal point of the calculated power-on time if the selected element is a first one of an odd-numbered element and an even-number element, and to an integral value obtained by rounding down fractions below a decimal point of the calculated power-on time if the selected element is a second one of an odd-number element and an even-number element;

(iii) writing the changed calculated power-on time directly to said first latch as the power-on time for said selected element; and

(iv) applying electrical current to the selected element via said first latch for a period equal to said power-on time.

5,631,690

RECORDING APPARATUS

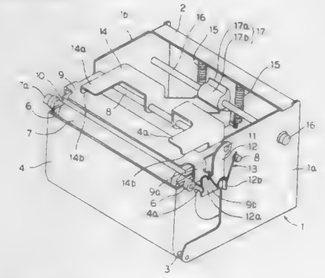
Mitsuo Tashiro, and Kenji Ogawa, both of Tokyo, Japan, assignors to Seikosha Precision Inc., Tokyo, Japan

Filed Jan. 19, 1995, Ser. No. 374,426

Claims priority, application Japan, Feb. 3, 1994, 6-011724; Feb. 3, 1994, 6-011725; Feb. 3, 1994, 6-011726

Int. Cl.[6] B41J *2/32*

U.S. Cl. 347—220 **6 Claims**



1. A recording apparatus comprising:

a head support plate having a front end portion and a rear end portion, said head supporting plate being rotatably engaged at said rear end portion with a clearance relative to a supporting shaft fixed to a supporting frame;

a printing head provided at said front end portion of said head support plate;

an operable member rotatably connected to said supporting frame;

a platen rotatably provided on said operable member and facing said printing head when said operable member is held in a closed position;

a regulating plate integrally formed with said head support plate and provided to be contactable with a shaft of said platen or a bearing provided on said operable member for rotatably supporting said shaft of said platen when said operable member is held in the closed position;

an actuating lever rotatably mounted on said supporting frame and engaging with a part of said head support plate;

a regulating portion provided on said operable member and contactable with said actuating lever when said operable member is held in the closed position; and

a biasing spring laid among said supporting frame, said head support plate and said actuating lever for biasing a spring force in a direction in which said printing head is brought into elastic contact with said platen through said head support plate and in a direction in which said regulating plate is biased toward said shaft of said platen or said bearing when said operable member is held in the closed position, and at the same time for biasing the spring force in a direction in which said printing head is separated away from said platen through said head support plate when said operable member is held in an opened position.

5,631,691

IMAGE FORMING APPARATUS

Hideya Furuta, Yokohama; Yoshihiro Sakai, Tokyo; Kazushige Taguchi, Warabi, and Mitsuru Mamizuka, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,564

Claims priority, application Japan, Jan. 20, 1992, 4-007624

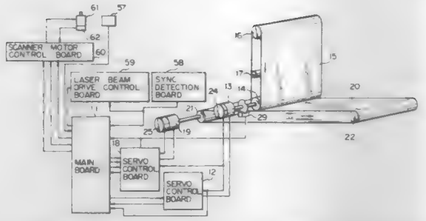
Int. Cl.[6] B41J *2/385;2/47;2/435;* **G03G** *13/04*

U.S. Cl. 347—235 **7 Claims**

1. An image forming apparatus comprising:

reading means for reading an image of a document by scanning said image a plurality of times;

synchronizing signal generating means for generating main scanning line synchronizing signals;



writing means for sequentially writing image data generated by the plurality of times of scanning on a photoconductive element by scanning said photoconductive element in a main scanning direction in synchronism with said main scanning line synchronizing signals, thereby electrostatically forming corresponding latent images;

developing means for developing the latent images sequentially formed on the photoconductive element to produce corresponding visible images;

transfer medium driving means for driving a transfer medium;

transferring means for transferring the visible images in overlapping relationship to said transfer medium being driven by said transfer medium driving means;

sensing means for determining that said reading means has scanned a first edge of the document, said first edge being scanned in a direction parallel to the main scanning direction and perpendicular to a sub-scanning direction; and

control means for causing, by using said main scanning line synchronizing signals and an output signal of said sensing means, at least said writing means to start writing each of the image data and causing said transfer medium driving means to drive said transfer medium for transfer of the visible image, so that starting of writing is synchronized in the sub-scanning direction with sensing of the first edge of the document upon plural scannings of the first edge of the document.

5,631,692

PRINTING APPARATUS WITH LOWER TRANSPORTING SPEED BETWEEN PRINTING OPERATIONS

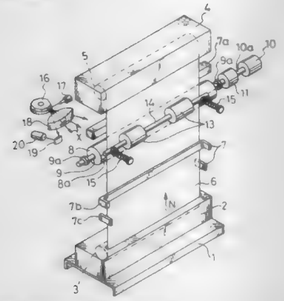
Ichirou Maruyama, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 6, 1994, Ser. No. 271,304

Claims priority, application Japan, Jul. 9, 1993, 5-170087

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—262 **4 Claims**



1. A printing apparatus comprising:

printing data memory means for storing printing data.

printing means for printing based on said printing data received from said printing data memory means,

line sensor means which generates a horizontal synchronous signal of said printing means,

drive means for driving a printing medium forward and backward at a given revolving speed,

stand-by operation memory means for memorizing operation sequences of said drive means in a stand-by state, the stand-by state being followed by a normal operation state wherein said printing medium is transported at a fixed revolution speed in a transporting direction, said printing medium being driven forward and backward at equal lengths in the transporting direction at a lower revolving speed in the stand-by state than in normal operation state,

drive control means for controlling said drive means to revolve the printing medium at a given revolving speed in the normal operation state, and for controlling revolving speed and revolving direction of said drive means in the stand-by state in accordance with operation sequences memorized in said stand-by operation memory means, and

system control means for shifting said drive control means from the normal operation state to the stand-by state when said printing data memory means outputs printing data to be printed out, said system control means shifting said drive control means from the stand-by operation state to the normal operation state when said printing data memory means is ready to print more data, said system control means also controlling said printing means when said printing medium is set at a fixed position.

5,631,693

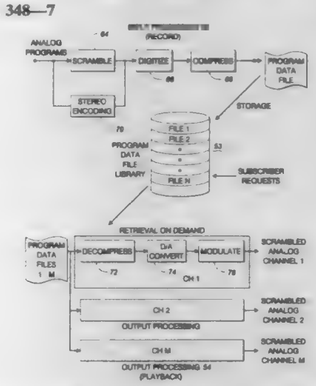
METHOD AND APPARATUS FOR PROVIDING ON DEMAND SERVICES IN A SUBSCRIBER SYSTEM

Richard E. Wunderlich, Alpharetta, and James O. Farmer, Lilburn, both of Ga., assignors to Antec Corporation, Rolling Meadows, Ill.

Filed Oct. 25, 1993, Ser. No. 142,670

Int. Cl.[6] H04N *7/16*

U.S. Cl. 348—7 **54 Claims**



1. An on demand services feature for a subscription system including a plurality of on demand channels which are transmitted over a distribution network to a multiplicity of subscribers, said on demand feature comprising:

a source of analog program information wherein the analog program information has a video component and a stereo audio component;

means for selectively digitizing said analog program information into program data files;

means for encoding the stereo audio component into a BTSC format signal before the program information is digitized;

means for storing said program data files in a memory having a library of said program data files;

means for retrieving a program data file in response to a subscriber request;

means for converting said retrieved program data file into analog program information wherein said conversion means converts said retrieved program data file into analog program information with a BTSC format stereo audio component; and

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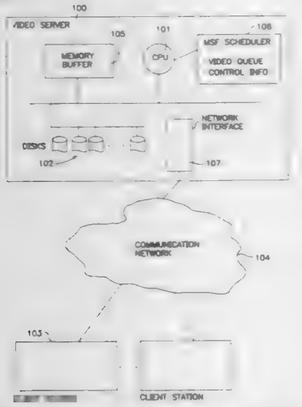
means for modulating said retrieved analog program information onto one of said plurality of on demand channels.

5,631,694

MAXIMUM FACTOR SELECTION POLICY FOR BATCHING VOD REQUESTS

Charu C. Aggarwal, Cambridge, Mass.; Joel L. Wolf, Katonah, and Philip S. L. Yu, Chappagua, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Feb. 1, 1996, Ser. No. 595,313
Int. Cl.[6] H04N *7/173*
U.S. Cl. 348—7 **17 Claims**



10. Video apparatus for scheduling a plurality of video requests, comprising:

means for receiving a plurality of video requests and for maintaining a plurality of queues, each of said queues storing common ones of said requests

means for determining a queue selection factor for each queue based on length of each queue and defections in each queue; and

means for scheduling one of said plurality of video requests based on said queue selection factor of each of said queues.

5,631,695

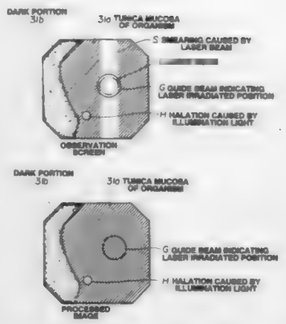
ENDOSCOPE WITH SMEAR EXTRACTION AND CORRECTION

Kazunari Nakamura, Hino, and Keiichi Hiyama, Akishima, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 280,468
Claims priority, application Japan, Oct. 18, 1993, 5-260153
Int. Cl.[6] H04N *7/18*; **A61B** *1/00*
U.S. Cl. 348—65 **31 Claims**

1. An image processing apparatus for an endoscope, comprising:

smearing component extraction means for extracting a smearing component caused by a high luminance light beam from an original image composed of an image signal of a subject to be imaged, wherein said smearing component extraction means takes predetermined correlations with respect to luminance information in respective directions in which smearing occurs in the original image composed of said image signal, removes components having a small correlation value in said directions, and then extracts a smearing component of an image signal output from an imaging means which receives a light beam from a subject and subjects the light beam to photoelectric conversion or a smearing component of an image signal output from image record/reproduction means for recording an output from said imaging means; and



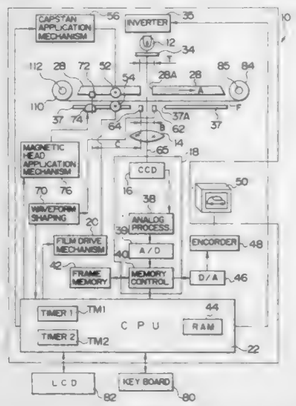
correction means for correcting said original image composed of said image signal by use of the signal of said smearing component extracted by said smearing component extraction means.

5,631,696

FILM IMAGE INPUT METHOD

Hiroshi Tanaka, and Kikuo Otsuka, both of Asaka , Japan, assignors to Fuji Photo Film Co., Ltd., Saitama, Japan

Filed Feb. 1, 1996, Ser. No. 595,210
Claims priority, application Japan, Feb. 10, 1995, 7-022562
Int. Cl.[6] H04N *5/253;9/47*
U.S. Cl. 348—96 **20 Claims**



1. A film image input method comprising the step of transporting a long developed photographic film including a plurality of frames; illuminating an image of each frame by a light source; picking up an illuminated image by a line sensor; and generating an output image signal by the line sensor, the method comprising the steps of:

restricting a width of a illumination light of the light source which is transmitted through the film to be within a distance between frames of the film;

transporting the film up to a position where only an area between frames of the film is illuminated after the image of one frame is picked up by the line sensor; and

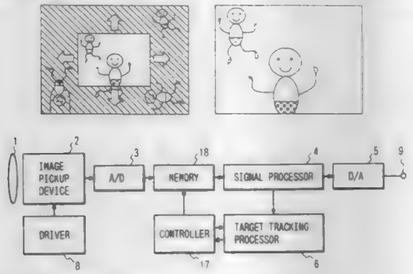
stopping a film transport.

5,631,697

VIDEO CAMERA CAPABLE OF AUTOMATIC TARGET TRACKING

Ryuji Nishimura, Yokohama; Mayuko Oda, Kawasaki, and Takuya Imaide, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 208,628, Mar. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 159,132, Nov. 30, 1993, Pat. No. 5,412,487, which is a continuation-in-part of Ser. No. 940,348, Sep. 3, 1992, Pat. No. 5,347,371, which is a continuation-in-part of Ser. No. 798,892, Nov. 27, 1991, Pat. No. 5,293,255. This application Jun. 2, 1995, Ser. No. 458,682
Claims priority, application Japan, Mar. 10, 1993, 5-049422
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—172 **37 Claims**



1. A video camera comprising:

an image pickup device having a plurality of light receiving elements in a two-dimensional arrangement on an imaging surface thereof for producing an image signal through the photoelectric conversion of an optical image focused on the imaging surface by a lens unit;

a driver which drives the image pickup device to read the image signal from a part of the light receiving elements located in a specified region of the imaging surface;

a signal processor which produces a video signal indicating the luminance and chrominance on the basis of the image signal;

a target tracking processor which processes the video signal on the basis of predetermined conditions and continuously provides a signal representing a current object region; and

a controller which continuously determines a location of the specified region of the imaging surface representing the current object region, so that the object region is located substantially in the center of the specified region, the controller providing an output to the driver for specifying the location of the specified region;

wherein the target tracking processor is provided with an extractor which makes a decision as to whether or not the video signal meets the predetermined conditions and generates an extraction signal representing an extracted region meeting the predetermined conditions; and

wherein the predetermined conditions require that the luminance and chrominance of the video signal are within fixed ranges, respectively.

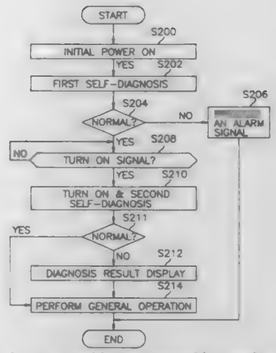
5,631,698

METHOD FOR SELF-DIAGNOSING A TELEVISION RECEIVER

Jang-Hwan Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 13, 1995, Ser. No. 558,134
Claims priority, application Rep. of Korea, Nov. 11, 1994, 94-29533; Nov. 11, 1994, 94-29539
Int. Cl.[6] H04N *17/00*
U.S. Cl. 348—178 **5 Claims**

1. A method for self-diagnosing a television(TV) receiver, wherein the TV receiver has a controller, which includes a central processing unit, a read only memory, a random access memory(RAM) and an erasable-programmable read-only memory (EPROM), for controlling the self-diagnosing, and a power supply unit for producing both an initial power for driving the controller and an operational power for driving other units of the TV receiver except for the controller, which comprises the steps of:



(a) determining whether the initial power is applied;

(b) first self-diagnosing the TV receiver, if the initial power is supplied, so as to determine either to wait for a turn-on signal to turn the TV receiver on or to produce an alarm signal warning an abnormal state;

(c) determining whether the turn-on signal is received; and

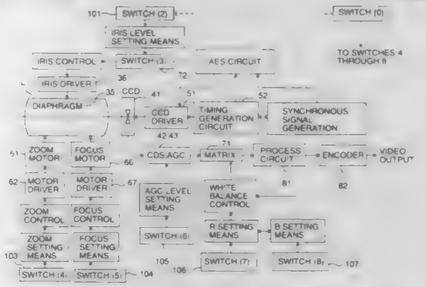
(d) second self-diagnosing the TV receiver while the operational power is activated by the received turn-on signal, to produce a result of the second self-diagnosis onto a screen of the TV receiver.

5,631,699

VIDEO CAMERA SYSTEM FOR USE IN FIXED AND FREE MODES IN WHICH, WHEN COUPLED TO A BASE IN THE FIXED MODE, VIDEO FUNCTIONS ARE AUTOMATICALLY SET BY A CONTROL

Masashi Saito, Hachioji, Japan, assignor to Konica Corporation, Japan

Continuation of Ser. No. 136,457, Oct. 13, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 384,619
Claims priority, application Japan, Oct. 22, 1992, 4-073791 U; Jun. 25, 1993, 5-155269
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—213 **6 Claims**



1. A video camera system comprising:

(a) a video camera for photographing an image of a subject;

(b) a supporting base;

(c) a coupling for coupling said video camera to said supporting base whereby said video camera is releasably mounted thereon;

(d) a trigger for generating a coupling signal when said video camera is coupled to said supporting base;

(e) a memory for storing setting data; and

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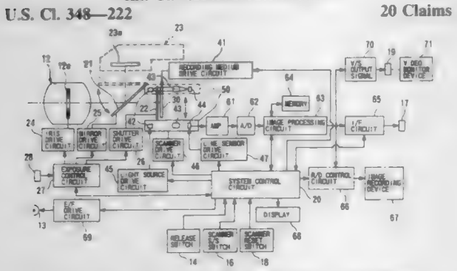
(f) a control for setting said video camera to a rear light compensation mode in accordance with said setting data when said video camera is coupled to said supporting base, and in response to said coupling signal.

5,631,700

CAMERA HAVING PREVIEW FUNCTION

Koichi Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,152
Claims priority, application Japan, Dec. 28, 1994, 6-339362; Jan. 6, 1995, 7-016549
Int. Cl.[6] H04N *3/02:5/30:5/74*
U.S. Cl. 348—222 **20 Claims**



1. An image sensing operation control device, comprising:
an electro-developing recording medium that electronically develops an image formed thereon;
an image sensor for sensing a part of said developed image;
means for moving said image sensor in a scanning direction that is substantially perpendicular to a longitudinal direction of said image sensor to perform a scanning operation, so that said developed image is sensed by said image sensor;
a memory for storing image signals corresponding to said developed image sensed by said image sensor;
means for stopping said scanning operation of said image sensor prior to a completion of said scanning operation so that a partial scan of said developed image is obtained; and
means for indicating said stored image signals on a display device.

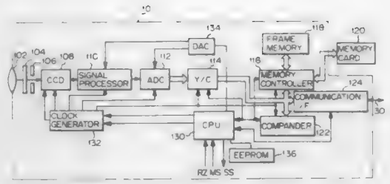
5,631,701

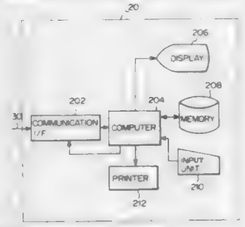
IMAGE DATA TRANSFER SYSTEM OPERABLE WITH AN ELECTRONIC STILL CAMERA

Izumi Miyake, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 9, 1996, Ser. No. 598,917
Claims priority, application Japan, Feb. 14, 1995, 7-025233
Int. Cl.[6] H04N *5/228*
U.S. Cl. 348—222 **20 Claims**

1. In an image data transfer system comprising an electronic still camera for generating an image signal representative of a subject picked up, and recording the image signal in a form of digital image data, and equipment separably connected to said camera and capable of receiving the image data from said camera, said camera comprising:
imaging means for shooting the subject to produce the image signal;
converting means for converting the image signal generated by said imaging means into the digital image data;
data processing means for executing predetermined image processing with the digital image data;
transmitting means for transmitting the image data output from said data processing means to said equipment; and
control means for controlling said transmitting means to thereby control a transfer rate for transferring the image data to said equipment;





said equipment comprising:
receiving means connected to said transmitting means of said camera by a data line for transferring the image data, and a control line for reporting to said camera whether transfer of the image data from said camera to said equipment is permitted or inhibited by using a control signal selectively taking an ON state and an OFF state respectively;
wherein said control means of said camera controls, at the time of transfer of the image data to said equipment, said transmitting means to thereby send a transfer rate set command representative of the transfer rate of the image data to said equipment over said data line, and wherein said receiving means of said equipment reports to said camera whether or not said equipment accepts the transfer rate by varying the ON state and the OFF state of the control signal in a form of pulses.

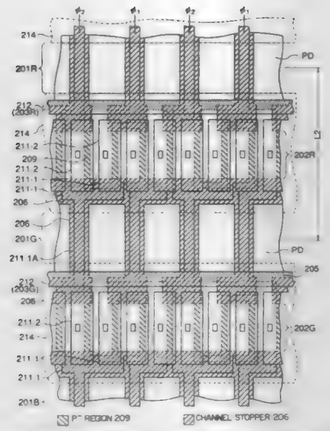
5,631,702

COLOR LINEAR IMAGE SENSOR HAVING A REDUCED DISTANCE BETWEEN PHOTOSENSOR ARRAYS

Kazuo Miwada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 184,929, Jan. 24, 1994, abandoned.
This application Sep. 27, 1995, Ser. No. 534,307
Claims priority, application Japan, Jan. 22, 1993, 5-008727
Int. Cl.[6] H04N *9/04*
U.S. Cl. 348—272 **2 Claims**

1. A color linear image sensor apparatus including three linear image sensors which are integrated in parallel to each other on the same semiconductor chip and which have a color sensitivity different from each other,
each of the linear image sensors including:
a photocell array composed of a plurality of photocells arranged in the form of a single array and channel stoppers which isolate adjacent photocells of each of said linear image sensors from each other;
a CCD register for receiving an electric charge from said photocell array and transferring the received electric charge therethrough, the CCD register being composed of a plurality of alternately located first and second transfer gate electrodes;
an insulating film formed above said first and second transfer gate electrodes and said channel stoppers;
a wiring conductor formed through said insulating film on each of said channel stoppers of said photocell array, said wiring conductor interconnecting the mutually corresponding first transfer gate electrodes of said three linear image sensors, said wiring conductor being formed of a conducting film of the same level as that of said first transfer gate electrode, to thereby form extensions of said first transfer gate electrodes,



wherein said extensions of said first transfer gate electrodes are located above said channel stopper, and said second transfer gate electrodes do not have extensions over said channel stopper which connect said second transfer gate electrodes of said three linear image sensors; and
means for connecting each of said second transfer gate electrodes of each of said linear image sensors to a corresponding first transfer gate electrode that is paired with said each second transfer gate electrode, wherein said linear image sensors are of the single channel type in which one CCD register is arranged at only one side of the photocell array and in the one CCD register, two pairs of first and second transfer electrodes are provided for each one of the photocells, and wherein the first transfer gate electrodes are alternately interconnected to form a C-shaped pattern, and two C-shaped transfer gate electrodes are interdigitated, each of the first two transfer gate electrodes is connected to one wiring conductor formed on a corresponding channel stopper in the photocell array.

5,631,703

PARTICULAR PATTERN OF PIXELS FOR A COLOR FILTER ARRAY WHICH IS USED TO DERIVE LUMINANCE AND CHROMINANCE VALUES

John F. Hamilton, Jr., and James E. Adams, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1996, Ser. No. 655,107
Int. Cl.[6] H04N *9/07*
U.S. Cl. 348—273 **3 Claims**

A	B	C	D
B	A	D	C
D	C	B	A
C	D	A	B

1. A color filter array for an image sensor which has a plurality of pixels, the color filter array comprising:
(a) a plurality of color pixel kernels, with each kernel having the plurality of pixels arranged in the following pattern

A	B	C	■
B	A	D	C
D	C	B	A
C	D	A	■

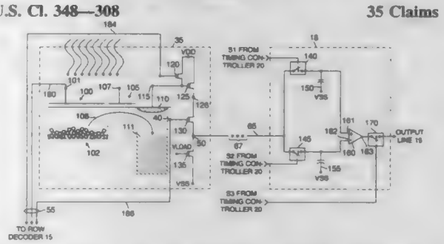
wherein:
A and B are companion colors; and
C and D are companion colors.

5,631,704

ACTIVE PIXEL SENSOR AND IMAGING SYSTEM HAVING DIFFERENTIAL MODE

Alexander G. Dickinson, Neptune; El-Sayed I. Eid, Freehold, and David A. Inglis, Long Branch, all of N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Oct. 14, 1994, Ser. No. 323,203
Int. Cl.[6] H04N *5/335*
U.S. Cl. 348—308 **35 Claims**



19. An imaging system for generating a differential output video signal based on an image focused on the imaging system, the imaging system comprising:
a plurality of active pixel sensors arranged into an array of rows and columns, each active pixel sensor being operable to generate a voltage at a diffusion node corresponding to detected light intensity by the sensor, each active pixel sensor being further operable to buffer the voltage potential present on the diffusion node from other signals generated external to the sensor;
a row decoder having a plurality of control lines connected to the sensor array, each control line being connected to the sensors in a respective column, wherein the row decoder is operable to activate the sensors in a row;
a plurality of differential output circuits, each differential circuit being connected to the respective sensors in a column, each differential circuit being operable to store first and second voltage signals received from the connected sensors and to selectively provide a difference sensor output signal to the common output line; and
a timing controller connected to the row decoder and each differential output circuit, wherein the timing controller is operable to cause each sensor row to be sequentially activated, and to cause the activated sensors to provide a voltage signal corresponding to a previous detected frame to the output circuits and then to provide a voltage signal corresponding to a present detected frame to the output circuits, and wherein the timing controller is further operable to cause the differential output circuits to sequentially provide the difference output signal to the common output line to generate the imaging system differential output signal.

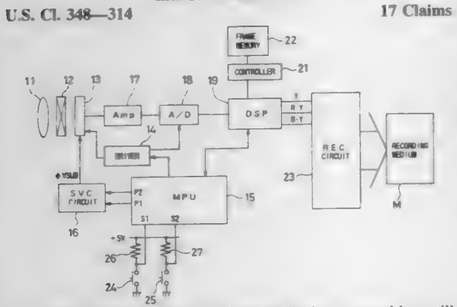
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5,631,705

VIDEO CAMERA HAVING CIRCUIT FOR SETTING EXPOSURE COMPENSATION VALUE

Nobuhiro Tani, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 517,452, Aug. 15, 1995, abandoned, which is a continuation of Ser. No. 105,054, Aug. 12, 1993, abandoned. This application Aug. 1, 1996, Ser. No. 690,999
Claims priority, application Japan, Aug. 13, 1992, 4-236312
Int. Cl.[6] H04N 5/335
U.S. Cl. 348—314 17 Claims



1. A device for controlling an imaging device mounted in a still video camera, the camera obtaining an exposure value by photometry, said device comprising:

setting means for setting an exposure compensation value, from at least three exposure compensation values, for modifying the obtained exposure value, said exposure compensation value being independent of said exposure value obtained by photometry and being set by a user of said still video camera;

control means for controlling a substrate voltage of a substrate of said imaging device in accordance with said exposure compensation value; and

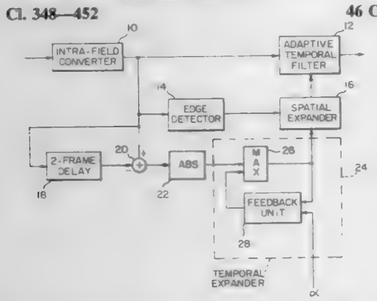
exposure controlling means for controlling a shutter of said imaging device in accordance with said exposure value obtained by photometry.

5,631,706

CONVERTER AND METHOD FOR CONVERTING VIDEO SIGNALS OF INTERLACE FORMAT TO VIDEO SIGNALS OF PROGRESSIVE FORMAT

Kenji Tsunashima, Somerset, N.J., assignor to Mitsubishi Consumer Electronics America, Inc., Somerset, N.J.

Filed Jun. 7, 1995, Ser. No. 476,909
Int. Cl.[6] H04N 7/01
U.S. Cl. 348—452 46 Claims



1. A converter for converting video signals of an interlace format to video signals of a progressive format, comprising:

an intra-field converting means for intra-field converting a video signal of said interlace format into a video signal of said progressive format; and

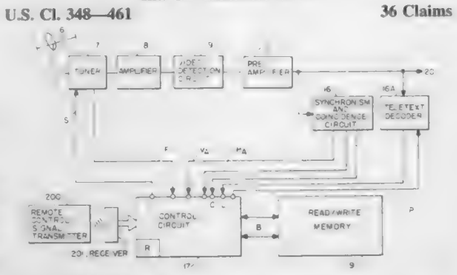
an adaptive temporal filtering means for temporally filtering said video signal of said progressive format such that as a degree of image movement in images represented by said video signal of said progressive format increases, a lesser degree of temporal filtering is performed, and said adaptive temporal filtering means determining a progressive pixel value as a function of a first product of a first temporal coefficient and a pixel value of a current frame of said video signal of said progressive format and a second product of a second temporal coefficient and at least one pixel of at least one previous frame of said video signal of said progressive format.

5,631,707

AUTOMATIC IDENTIFICATION AND MEMORIZATION DEVICE OF TELEVISION STATIONS

Federico D'Errico, Rome, Italy, assignor to Edico S.R.L., Rome, Italy

Filed Feb. 8, 1995, Ser. No. 385,642
Claims priority, application Italy, Feb. 8, 1994, RM94A0057
Int. Cl.[6] H04N 5/50;5/76
U.S. Cl. 348—461 36 Claims



1. A device for identifying and memorizing television stations which respectively transmit television signals, wherein said device comprises:

a receiver for selectively receiving said television signals;

control means for evaluating said television signals to automatically identify said television stations which transmit said television signals and for memorizing said television stations in an established order which is independent from a transmission frequency of said television stations; and

a memory,

wherein a plurality of different rules for identifying said television stations are stored in said memory,

wherein said control means executes a first identification attempt to identify one of said television stations based on one of the received television signals,

wherein said first identification attempt is executed according to a first rule of said plurality of different rules,

wherein said control means executes a second identification attempt to identify said one of said television stations based on the same television signal which provided the basis for said first attempt when said first identification attempt is unsuccessful, and

wherein said second identification attempt is executed according to a second rule of said plurality of different rules.

5,631,708

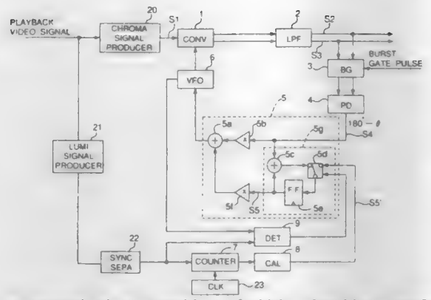
AUTOMATIC PHASE CONTROL APPARATUS

Hirofumi Nakagaki, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 13, 1994, Ser. No. 304,882
Claims priority, application Japan, Sep. 13, 1993, 5-226958
Int. Cl.[6] H04N 1/83
U.S. Cl. 348—500 8 Claims

1. An automatic phase control apparatus comprising:

a horizontal sync separator for producing a horizontal sync signal separated from a reproduced luminance signal;



an automatic phase control loop of which a closed loop transfer function takes a secondary loop form, and which comprises:

(a) a variable frequency oscillator; and

(b) a loop filter comprising an integrating means;

calculation means for calculating an expected value that would be produced from said integrating means using a unit period determined by said horizontal sync signal, said expected value provided to said integrating means when a detected frequency synchronization state of said automatic phase control loop is out of a predetermined range; and

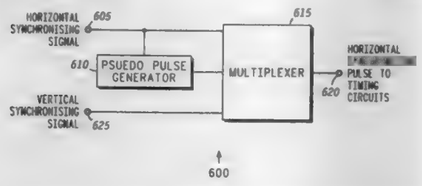
detection means for detecting said detected frequency synchronization state of said automatic phase control loop.

5,631,709

METHOD AND APPARATUS FOR PROCESSING A COMPOSITE SYNCHRONIZING SIGNAL

Kah H. P. Lam; Luen H. Kwok, and Chi M. Lai, all of Hong Kong, Hong Kong, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 15, 1994, Ser. No. 339,841
Int. Cl.[6] H04N 5/08
U.S. Cl. 348—531 5 Claims



3. A method in a video monitor for providing an output sequence of horizontal synchronising pulses, the method comprising the steps of:

(a) providing a sequence of received horizontal synchronising pulses to an output;

(b) receiving an indication that the received horizontal synchronising pulses are terminated;

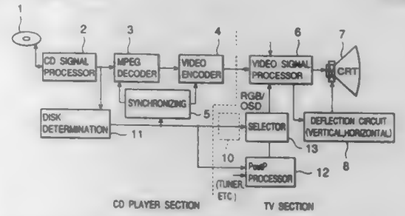
(c) in response to step (b), providing pseudo horizontal synchronising pulses to the output, wherein the pseudo horizontal synchronising pulses are generated from the received horizontal synchronising pulses.

5,631,710

TELEVISION SYSTEM CONTAINING A VIDEO COMPACT DISK REPRODUCER

Kouji Kamogawa; Yasuhiro Yakushiji, and Hisashi Komedashi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,572
Claims priority, application Japan, Apr. 25, 1994, 6-086783
Int. Cl.[6] H04N 5/46
U.S. Cl. 348—555 12 Claims



4. A television system comprising:

a video CD player including a CD signal processor for reading out picture information from a video CD, the picture information compressed to comply with the MPEG standard, a synchronizing means for generating a synchronizing signal, a frequency of the synchronizing means being changed in accordance with the synchronizing signal, a MPEG decoder for performing a decoding process in which the picture information read out by said CD signal processor is extended to comply with the MPEG standard to video data based on said synchronizing signal, and a video encoder for converting the video data to a composite color video signal, for reproducing TV signals from different TV systems on said video CD player, and

a television section including a cathode-ray tube (CRT), a video signal processor for processing the composite color video signal and generating a video signal representing a motion picture, and deflection means for providing a deflection to said video signal based on said synchronizing signal, wherein the deflected video signal is supplied to the display screen of said CRT for displaying a picture,

said television system further comprising:

(a) determination means for extracting rate index information from the picture information read out from the video CD by said signal processor, and determining a standard system of the picture information recorded on the video CD in accordance with said rate index information, said rate index indicating a frequency of fields or frames of the motion picture represented by the picture information; and

(b) deflection control means for controlling said deflection to be provided by said deflection means in accordance with the standard system determined by said determination means.

5,631,711

BACKGROUND-PICTURE COMPENSATING CIRCUIT USING ON-SCREEN DISPLAY SIGNALS

Jae-Mo Yang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

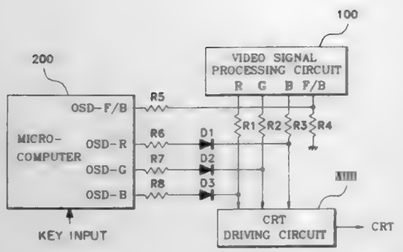
Filed May 3, 1995, Ser. No. 433,058
Claims priority, application Rep. of Korea, Jun. 9, 1994, 94-12948
Int. Cl.[6] H04N 5/445
U.S. Cl. 348—563 2 Claims

1. A background-picture compensating circuit comprising:

CRT driving means for outputting a CRT signal to a CRT;

video signal processing means for differentiating a video signal into R, G and B signals, and for outputting said R, G and B signals to said CRT driving means, said video processing means having a fast blanking terminal;

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computing means for outputting OSD-R, OSD-G and OSD-B signals representing an OSD character, and for outputting a fast blanking signal to said fast blanking terminal, said OSD-R, OSD-G and OSD-B signals and said fast blanking signal being output in response to a key input for displaying the OSD character, said fast blanking signal causing said video signal processing means to rapidly repeat an on/off operation, wherein said on/off operation causes the R, G and B signals to be applied to said CRT driving means when said OSD-R, OSD-G and OSD-B signals are not being output to said CRT driving means so as to establish a background for the OSD character, and said on/off operation causes the R, G and B signals to not be applied to said CRT driving means when said OSD-R, OSD-G and OSD-B signals are being output to said CRT driving means.

5,631,712

CDP-INCORPORATED TELEVISION RECEIVER

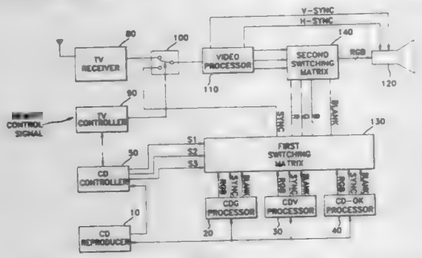
Moon-hwan Suh, Seoul, and Jang-earn Leim, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 468,922

Claims priority, application Rep. of Korea, Mar. 28, 1995, 95-6754

Int. Cl.[6] H04N *5/268*

U.S. Cl. 348—705 **25 Claims**



1. A compact disk player (CDP) incorporated television receiver comprising:

a CD reproducer for reading and processing data from a compact disk and for generating compact disk data signals;

a first processor for extracting subcode data from said compact disk data signals and for generating a first RGB signal, a first synchronization signal, and a first chrominance subcarrier signal, which correspond to a first type of compact disk;

a second processor for receiving said compact disk data signals and for generating a second RGB signal, a second synchronization signal, and a second chrominance subcarrier signal, which correspond to a second type of compact disk;

a CD controller for receiving a data signal from said CD reproducer, for discriminating a type of compact disk currently being reproduced based on said data signal, and for generating a first selection signal corresponding to said type of compact disk;

a switching matrix for selectively outputting, in response to said first selection signal, either said first RGB signal, said first synchronization signal, and said first chrominance subcarrier signal or said second RGB signal, said second synchronization signal, and said second chrominance subcarrier signal as a selected RGB signal, a selected synchronization signal, and a selected chrominance subcarrier signal; and

an encoder for receiving said selected RGB signal, said selected synchronization signal, and said selected chrominance subcarrier signal from said switching matrix and converting said selected RGB signal into a CD video signal.

2. The CDP-incorporated television receiver according to claim 1, further comprising:

a third processor for receiving said compact disk data signals and generating a third RGB signal, a third synchronization signal, and a third chrominance subcarrier signal, which correspond to a third type of compact disk,

wherein said switching matrix selectively outputs, in response to said first selection signal, said first RGB, synchronization, and chrominance subcarrier signals, said second RGB, synchronization, and chrominance subcarrier signals, or said third RGB, synchronization, and chrominance subcarrier signals as said selected RGB, synchronization, and chrominance subcarrier signals.

5,631,713

VIDEO PROCESSOR WITH FIELD MEMORY FOR EXCLUSIVELY STORING PICTURE INFORMATION

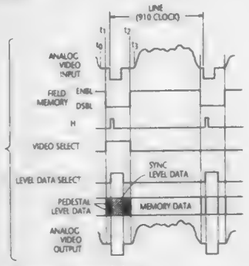
Yasuharu Hoshino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 392,179

Claims priority, application Japan, Feb. 24, 1994, 6-049995

Int. Cl.[6] H04N *5/14*

U.S. Cl. 348—716 **19 Claims**



1. A video processor, comprising:

a field memory; and

means for detecting a blanking interval of an incoming composite video signal and disabling read/write operations of said field memory during said blanking interval and for enabling the read/write operations of the memory at other times so that field picture information of said incoming video signal is exclusively stored into, and read out of, the field memory into an external circuit.

5,631,714

APPARATUS FOR AUTOMATICALLY ADAPTING THE MEAN SOUND LEVEL OF A TELEVISION RECEIVER

Serge Saadoun, 24bis Avenue, du Général de Gaulle, France, assignor to Serge Saadoun, Soissons, France

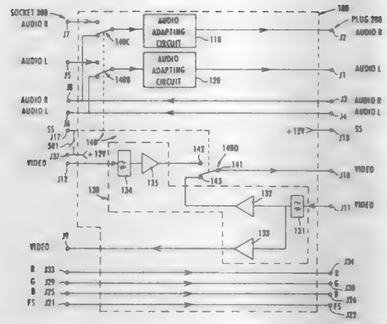
Filed Nov. 22, 1995, Ser. No. 561,737

Claims priority, application WIPO, Nov. 23, 1994, PCT/FR94/01366

Int. Cl.[6] H04N *5/60*

U.S. Cl. 348—738 **17 Claims**

1. A system for automatically adapting the mean sound level of a television receiver fitted both with means for delivering audio



signals detected within at least one sound path of a composite video signal and means for delivering video image signals detected from said composite video signal,

comprising an adapting module comprising both a video adapting circuit comprising at least one additional input highpass filter and fixed-gain video amplifier connected in series and interposed in the video image processing circuits at said means for providing video image signals, and secondly an audio adapting circuit interposed in said sound path at said means for providing audio signals, to detect the mean sound input level, to compare said mean sound level with a pre-established reference mean level, and automatically to adapt the output mean sound level to maintain it at said pre-established reference mean level.

5,631,715

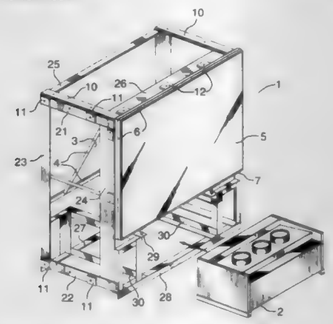
STACKABLE MODULAR PROJECTION TELEVISION DISPLAY SYSTEMS

John R. Kirkpatrick, Kitchener; Ian B. Forbes, Campbellville; Alexander Duthie, Kitchener, and Daryl R. Cober, Baden, all of Canada, assignors to Sure Audio Visual Excellence Inc., Waterloo, Canada

Filed Mar. 31, 1995, Ser. No. 414,737

Int. Cl.[6] H04N *5/64*

U.S. Cl. 348—839 **5 Claims**



1. A video display unit, comprising:

a box defined by peripheral frame members along each edge thereof, said box having front, rear, top, bottom and two side faces;

abutment surfaces on said peripheral frame members along said top and sides, for abutting corresponding abutment surfaces of other such display units;

a video projector mounted in a lower portion of said box, to project an image upwardly;

a mirror mounted in an upper portion of said box, angled to direct said image from said video projector forwardly towards an upper portion of said front face of said box;

three detachable mullions, namely an upper mullion and two side mullions, mounted along top and side edges of said front face and extending slightly forwardly and outwardly therefrom, said mullions having longitudinal channels running the length thereof on opposite sides thereof, said mullions being symmetrical about longitudinal axes, said axes being parallel to said front face and aligned with respective ones of said abutment surfaces;

a rectangular screen mounted across said upper front portion of said front face, to receive said image from said video projector via said mirror, said screen extending across said front face between said mullions and being positioned in said channels; and

a locating and locking channel along a lower edge of said screen, for locating and locking said screen into said channels of said upper and side mullions; said video display units being securable to one or more corresponding video display units positioned with corresponding abutment surfaces abutting each other, upon removal of one of said detachable mullions between each said video display unit, such that abutting video display units share a mullion, the screens of said abutting video display units being accommodated in said channels on opposite sides of said shared mullion.

5,631,716

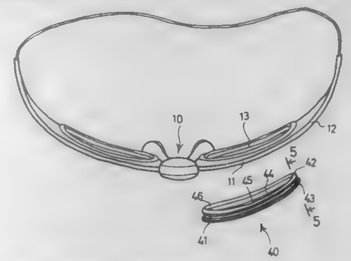
SPORTS GOGGLES HAVING PRESCRIPTION LENS

David Y. Chao, 1120 Green Acre Rd., Towson, Md. 21204

Filed Jun. 26, 1996, Ser. No. 670,606

Int. Cl.[6] G02C *5/00;* **A61F** *9/02*

U.S. Cl. 351—41 **2 Claims**



1. A pair of goggles, comprising:

a frame body including two shields provided therein, said shields each including an outer side portion and each including an opening formed therein and defined by a peripheral wall,

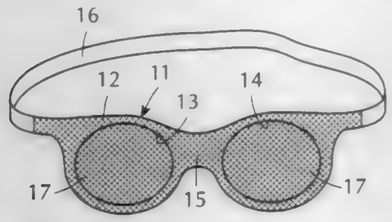
a pair of rings for engaging with said openings of said shields and each including an outer peripheral recess for engaging with said peripheral wall of said opening and each including an outer rear peripheral flange and an outer front peripheral flange for defining said outer peripheral recess, said rings each including an inner peripheral recess and each including an inner rear peripheral flange and an inner front peripheral flange for defining said inner peripheral recess, and

a pair of prescription lenses engaged in said inner peripheral recesses of said rings and engaged with said inner front and said inner rear peripheral flanges,

said outer front peripheral flange of said ring including a height greater than that of said outer rear peripheral flange so as to prevent said ring from moving beyond said shields; and said inner rear peripheral flange of said ring including a height greater than that of said inner front peripheral flange so as to prevent said prescription lens from moving beyond said inner rear peripheral flange.

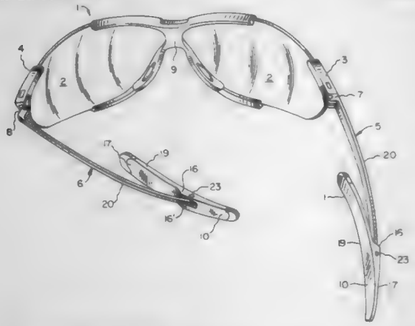
VOL 1198 ISS 3 MY 20 1997 UMI

5,631,717
LENSLESS SAFETY SUNGLASSES
Donald Spector, 380 Mountain Rd., Union City, N.J. 07080
Filed Jul. 24, 1996, Ser. No. 685,410
Int. Cl.[6] G02C *7/10;7/16*
U.S. Cl. 351—44 **9 Claims**



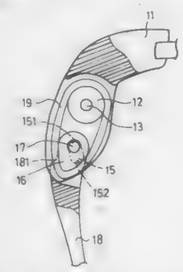
1. Lensless safety sunglasses attachable to the head of a wearer comprising:
A. a frame formed of fabric material having a pair of eye openings and a midsection between the eye openings contoured to fit on a nose bridge of the wearer;
B. a screen covering each eye opening formed of a light-permeable fabric scrim having myriad minute holes which act to reduce the intensity of light passing through the eye opening; and
C. means joined to opposite ends of the frame to secure the sunglasses to the head of the wearer.

5,631,718
TEMPLE FOR EYEWEAR
Aaron M. Markovitz; Henri Brune, and Jeffrey K. Raub, all of Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation of Ser. No. 382,237, Feb. 1, 1995, abandoned. This application Jun. 25, 1996, Ser. No. 668,392
Int. Cl.[6] G02C *5/14*
U.S. Cl. 351—119 **13 Claims**



1. Eyewear comprising:
a front and two temples extending rearwardly from opposed ends of said front, wherein each temple comprises:
a first temple portion for contacting the head of a wearer, said first temple portion having anterior and posterior ends and a centerpoint lying midway said anterior and posterior ends of said first temple portion, and
a second temple portion for interconnecting said first temple portion and said front, said second temple portion including a posterior end and an anterior end, said second temple portion anterior end being pivotally connected to said eyewear front and movable with respect thereto about a first pivot axis, and said second temple portion posterior end being pivotally connected to said first temple portion at a location between said first temple portion centerpoint and said first temple portion posterior end,
said first temple portion being movable with respect to said second temple portion at the point of connection of said posterior end of said second temple portion to said first temple portion about a second pivot axis which extends parallel to said first pivot axis.

5,631,719
SPECTACLE FRAME HAVING RESILIENT COUPLING
David Y. Chao, 1120 Green Acre Rd., Towson, Md. 21204
Filed May 31, 1996, Ser. No. 655,862
The portion of the term of this patent subsequent to Mar. 29, 2016, has been disclaimed.
Int. Cl.[6] G02C *5/22;5/16*
U.S. Cl. 351—153 **6 Claims**

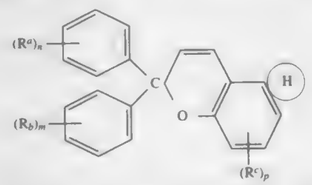


1. A spectacle frame comprising:
a frame body including two side portions each having an extension extended therefrom, said extensions each including a channel laterally formed therein and having a first and a second rotary members rotatably secured therein,
a pair of legs each including a first end secured to said second rotary members as to allow said legs to be rotated in concert with said second rotary member, and
means for coupling said first and said second rotary members together.

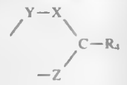
5,631,720
OPHTHALMIC LENSES WITH HETEROCYCLIC CHROMENE COMPOUNDS
Robert Guglielmetti; Jean L. Pozzo, and AndréSamat, all of Marseille, France, assignors to Essilor International (Compagnie Generale d'Optique), Echat, France
Continuation of Ser. No. 33,893, Mar. 19, 1993, Pat. No. 5,527,911. This application Mar. 29, 1996, Ser. No. 625,727
Claims priority, application France, Mar. 19, 1992, 93 03297
Int. Cl.[6] G02C *7/10*
U.S. Cl. 351—163 **8 Claims**

1. An ophthalmic lens comprising a transparent organic polymer material and at least one photochromic compound which is of the original formula:

(I)

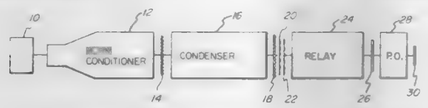


wherein R^a, R^b and R^c denote, independently of each other, a hydrogen atom, an alkyl group, an aryl group, an OR, SR, COR or COOR group, where R denotes a hydrogen atom, an alkyl group or an aryl group, an amino group of formula $NR_1R^2$where R^1 and R^2 denote, independently of each other, a hydrogen atom, an alkyl group, a cycloalkyl group or an aryl group; a halogen atom; a mono- or polyhaloalkyl group; or an NO_2, CN or SCN group; n and m denote integers from 1 to 5; p is equal to 1 or 2; R^a, R^b and R^c may have different meanings when m, n and p are greater than 1; and H is an aromatic heterocycle having the general formula:



wherein:
X, Y and Z represent independently of each other, a CR_8 radical or a nitrogen atom, and one or two of X, Y and Z is a nitrogen atom and R_8 is selected from the group consisting of hydrogen, C_1–C_6 alkyl and phenyl; and R_4 is selected from the group consisting of hydrogen, C_1–C_6 alkyl and phenyl, said at least one photochromic compound being present in a sufficient amount to enable the ophthalmic lens to change color upon exposure to ultraviolet radiation.

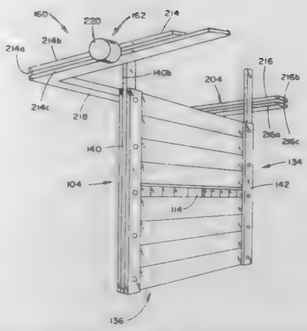
5,631,721
HYBRID ILLUMINATION SYSTEM FOR USE IN PHOTOLITHOGRAPHY
Stuart Stanton, Bridgewater, N.J.; Gregg Gallatin, Newtown, Conn.; Mark Oskotsky, Marmaroneck, N.Y., and Frits Zernike, Norwalk, Conn., assignors to SVG Lithography Systems, Inc., Wilton, Conn.
Filed May 24, 1995, Ser. No. 449,301
Int. Cl.[6] G03B *27/72;* **F21V** *9/04;* **G02B** *5/18*
U.S. Cl. 355—71 **47 Claims**



1. An illumination system comprising:
an illumination source generating a beam of electromagnetic radiation;
a multi-image optical element receiving the beam of electromagnetic radiation from said illumination source, said multi-image optical element having a first numerical aperture; and
an array optical element receiving the beam of electromagnetic radiation from said multi-image optical element and providing an emerging predetermined angular distribution of electromagnetic radiation, said array optical element having a second numerical aperture, the second numerical aperture being larger than the first numerical aperture,
whereby electromagnetic radiation from said illumination source forms an illumination field for projecting an image of a reticle.

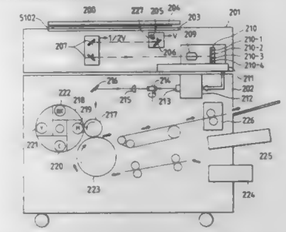
5,631,722
APPARATUS FOR EXPOSING AN ADJUSTABLE AREA OF A FILM
Edward V. Sullivan, Huntington Station, and Don DiMarzio, Northport, both of N.Y., assignors to Grumman Aerospace Corporation, Los Angeles, Calif.
Filed Dec. 28, 1994, Ser. No. 365,090
Int. Cl.[6] G03B *27/28;42/04*
U.S. Cl. 355—74 **21 Claims**

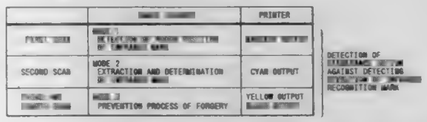
1. Film exposure control apparatus comprising:
a holding assembly for holding a film;
a first support assembly connected to and supporting the holding assembly;



an exposure area control assembly located adjacent the holding assembly and forming an adjustable opening to expose a selected area of the film, the exposure area control assembly including
i) a frame forming a boundary for a given area, and
ii) a multitude of slats movably supported by the frame, wherein said slats form the adjustable opening, are movable to move said opening, and substantially completely cover said given area outside of said opening; and
a second support assembly connected to and supporting the exposure area control assembly.

5,631,723
IMAGE PROCESSING APPARATUS FOR DETERMINING WHETHER AN IMAGE CONTAINS A PARTICULAR PATTERN USING INVISIBLE LIGHT
Shinobu Arimoto, Yokohama; Katsuichi Shimizu, Kawasaki; Yutaka Komiya, Tokyo; Kazuo Yoshinaga, Machida; Toshio Hayashi, Kawasaki; Takehiko Nakai, Tokyo; Tsutomu Utagawa, Yokohama; Tetsuya Nagase, Kawasaki, and Nobuatsu Sasanuma, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 544,151, Oct. 17, 1995, abandoned, which is a division of Ser. No. 139,174, Oct. 21, 1993, Pat. No. 5,481,334. This application May 17, 1996, Ser. No. 649,339
Claims priority, application Japan, Oct. 23, 1992, 4-286350
Int. Cl.[6] G03G *21/04*
U.S. Cl. 355—201 **37 Claims**





1. An image processing apparatus for detecting visible and invisible reflected light detected from an image and for determining whether the image is a particular image in accordance with a detection result, comprising:
visible light detecting means for detecting the visible reflected light from the image;

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invisible light detecting means for detecting invisible reflected light from the image;

determining means for whether there is a predetermined pattern in the image in accordance with the visible and invisible reflected light; and

detecting means for detecting the presence or absence of an interfering operation interfereing with the determining of said determining means in accordance with the invisible reflected light.

5,631,724
CENTRALIZED CONTROL SYSTEM FOR TERMINAL DEVICE

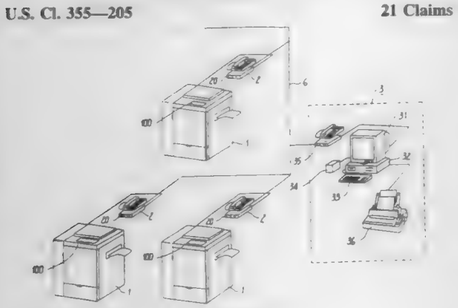
Yoji Sawada, Motosu; Toru Kirimura, Tsushima; Seiji Watanabe, Ogaki; Kazunobu Maekawa, Toyokawa, and Sumiaki Hirata, Hoi, all of Japan, assignors to Sanyo Electric Co., Ltd, Osaka-Fu, and Minolta Camera Kabushiki Kaisha, Oska, both of Japan

Continuation of Ser. No. 905,065, Jun. 24, 1992, abandoned, which is a continuation of Ser. No. 682,511, Apr. 8, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 203,684

Claims priority, application Japan, Apr. 10, 1990, 2-95665; Apr. 10, 1990, 2-95666; Apr. 10, 1990, 2-95667

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—205 **21 Claims**



1. Centralized control system, comprising:

one or more terminal devices;

communicating means, provided for each of said one or more terminal devices, for transmitting information relating to operational condition of each of said terminal devices at a predetermined time; and

controlling means, connected to each of said communicating means through communication lines, for controlling each of said terminal devices in accordance with said information transmitted from each of said communicating means;

said controlling means having:

supervising means for supervising transmission of information at a new predetermined time determined for each of said communicating means;

detecting means for detecting which of said communicating means has not transmitted the information at said predetermined time thereof based on a supervisory result of said supervising means; and

displaying means for displaying information identifying the communicating means detected by said detecting means independent of the operational state of the communicating means or the communication lines.

5,631,725
IMAGE TRANSFER DEVICE FOR AN IMAGE FORMING APPARATUS

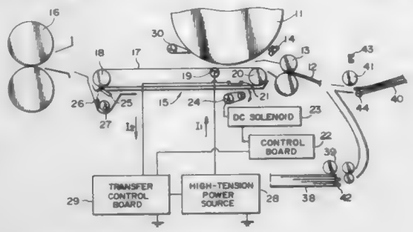
Yuko Harasawa, Hayama-machi; Itaru Matsuda, Yokohama; Satoshi Takano, Tokyo; Akio Kutsuwada, Kawasaki, and Hirokazu Ishii, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 28, 1994, Ser. No. 313,897

Claims priority, application Japan, Sep. 28, 1993, 5-241080; Sep. 2, 1994, 6-210139

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—66 **30 Claims**



1. An image transfer device comprising:

an image carrier for carrying a toner image thereon;

an endless transfer belt for carrying a sheet thereon and transferring the toner image from said image carrier to said sheet;

a first electrode for applying a bias for image transfer to said transfer belt in contact with part of said transfer belt facing said image carrier;

a second electrode contacting said transfer belt;

a power source for applying the bias to said first electrode;

transfer control means for variably controlling, assuming that a current output from said power source is I_1, and a current to flow from said power source to said second electrode via said transfer belt Is I_2, said current I_1, such that $I_1-I_2=I_{out}$ remains at a predetermined target current; and

setting means for setting said target current from one of a plurality of target values, said one of a plurality of target values is determined on the basis of a set condition.

5,631,726
PRINTER DEVICE WITH QUIET OPERATION STRUCTURE

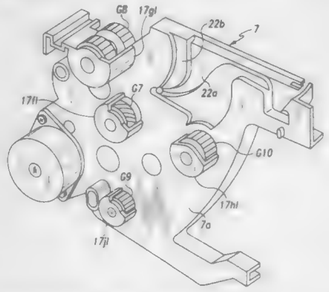
Kenji Sawada, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Apr. 17, 1995, Ser. No. 423,203

Claims priority, application Japan, May 16, 1994, 6-101030

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—111 **28 Claims**



1. An image forming device comprising:

a device body having a contour generally in the form of a box;

a pair of side plate frames provided inside said device body;

an imaging cartridge removably installable in the device body between the pair of side plate frames and having a driven element and a driven gear which transmits a drive force to said driven element;

a plurality of intermediate gears provided in the device body, at least one of said plurality of intermediate gears meshing with said driven gear for transmitting a drive force to said driven gear;

a drive gear connected to a motor for driving said at least one of said plurality of intermediate gears; and

a cover provided inside said device body and disposed inwardly of one of said pair of side plate frames in parallel thereto and joined to said one of said pair of side plate frames to define a confined space region between said cover and said one of said pair of side plate frames, said drive gear being disposed in said confined space region.

5,631,727
IMAGE FORMING APPARATUS HAVING DISCHARGING MEANS USING LIGHT SOURCE ACTUATED PRIOR TO LATENT IMAGE FORMATION

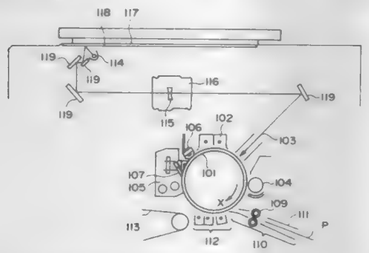
Toshiyuki Ehara; Koji Yamazaki; Shigenori Ueda, and Hitoshi Murayama, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 875,338, Apr. 29, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 210,413

Claims priority, application Japan, Apr. 30, 1991, 3-128371; Apr. 30, 1991, 3-128372

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **12 Claims**



1. An image forming apparatus, comprising:

a photosensitive member including amorphous silicon, movable along an endless path;

charging means for charging said photosensitive member;

optical means for projecting light information onto said photosensitive member to form an electrostatic latent image;

optical charge removing means for removing residual charge from said photosensitive member, said charge removing means having a light source disposed upstream of said charging means with respect to a movement direction of said photosensitive member and actuated through a pulse width modulation system with a reference wave frequency of not more than 10 kHz;

wherein a movement speed (mm/sec) of the photosensitive member divided by said frequency (/sec) is not more than 1 mm.

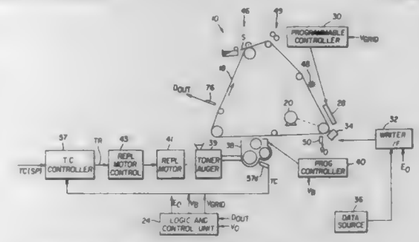
5,631,728
PROCESS CONTROL FOR ELECTROPHOTOGRAPHIC RECORDING

Allen J. Rushing, Webster, and Matthias H. Regelsberger, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1996, Ser. No. 594,955

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—59 **16 Claims**



1. A reproduction apparatus comprising:

an electrostatic recording member for supporting an electrostatic image;

charging means for establishing a primary charge on the member, the primary charge being defined by a parameter V_o;

exposure means for image-wise modulating the primary charge to form an electrostatic image on the recording member and having an exposure parameter E_o;

developer means for developing the electrostatic image; and

control means for controlling adjustments to the parameters E_o and V_o by measuring a density parameter D_{OUT} of an exposed and-developed area that is formed by operation of said charging means, said exposure means and said developer means, said control means including means for calculating an error, ΔD_{OUT}, in the measured density parameter from a density setpoint and multiplying ΔD_{OUT} by first and second constants to obtain respective adjustment values used for adjusting E_o and V_o, and wherein in repeated use of said control means to provide repeated adjustment values used for adjusting E_o and V_o a fixed ratio is maintained between said first and second constants.

5,631,729
IMAGE FORMING APPARATUS

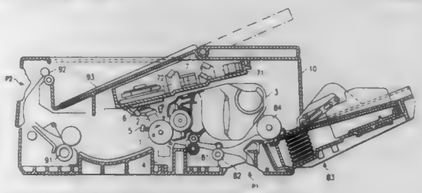
Keiko Nagayasu, Ibaraki, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 13, 1995, Ser. No. 557,297

Claims priority, application Japan, Nov. 11, 1994, 6-277273

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—296 **4 Claims**



1. An image forming apparatus comprising:

a photosensitive member;

a developing device for developing a latent image formed on the photosensitive member, and cleaning a residual toner remaining on the photosensitive member after transferring the developed image, the developing device including a toner satisfying the following conditions:

55° C.≦Tg

80° C.≦Ti≦120° C.

100° C.≦Tm≦135° C.,

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wherein Tg is a glass transition temperature, Ti is a softening point at a moment a plunger of a flow tester starts to drop, and Tm is a softening point at a moment the plunger of the flow tester has dropped 6 mm; and

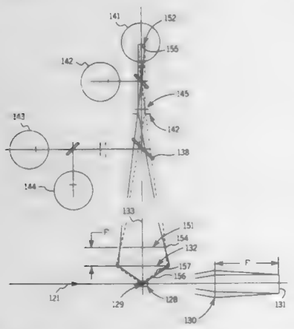
a shaving means for shaving a surface of the photosensitive member within a range of about 2 μm or greater but less than 15 μm, within 7,000 rotations of the photosensitive member.

5,631,730

PSEUDO TELECENTRIC OPTICAL DESIGN FOR FLOW CYTOMETRIC BLOOD CELL ANALYZER

Vernon L. Chupp, Los Altos, and Suresh N. Mehta, Pleasanton, both of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 283,379, Aug. 1, 1994, Ser. No. 482,678, Jun. 7, 1995, and Ser. No. 488,532, Jun. 7, 1995.
This application Jul. 28, 1995, Ser. No. 508,502
Int. Cl.[6] G01N *21/53*
U.S. Cl. 356—73 **34 Claims**



1. A flow cytometric optical system for the simultaneous detection of several characteristics of particles suspended in a flowing medium comprising:

a flowcell through which the particles pass substantially one particle at a time;

a light directing optical system for directing light from a light source onto the flowing particles in the flowcell;

a side angle optical collection system for receiving light from the flowing particles, and for directing the light to one or more of a first set of detectors;

a forward angle collection system for receiving light from the flowing particles, and for directingthe light to one or more of a second set of detectors;

wherein the side angle optical collection system comprises a condenser lens for directing light toward the first set of detectors, an exit pupil of the condenser lens located at the back focal plane of the condenser lens, and a photosensitive surface of one or more of the first set of detectors located at conjugate points of the back focal plane of the condenser lens such that an image of the exit pupil is positioned at the photosensitive surface of the one or more of the first set of detectors; and

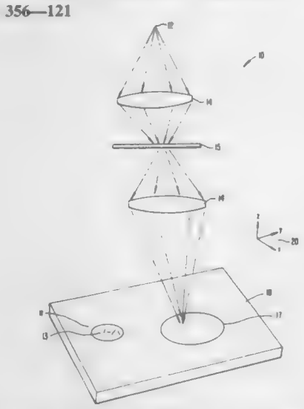
wherein the forward angle optical collection system comprises a collecting lens for directing light toward the second set of detectors, wherein the collecting lens exit pupil located in the back focal plane of the collecting lens, a photosensitive surface of one or more of the second set of detectors located at the back focal plane of the collecting lens.

5,631,731

METHOD AND APPARATUS FOR AERIAL IMAGE ANALYZER

Michael R. Sogard, Menlo Park, Calif., assignor to Nikon Precision, Inc., Belmont, Calif.

Filed Mar. 9, 1994, Ser. No. 209,026
Int. Cl.[6] G01J *1/42;* **G03B** *27/42*
U.S. Cl. 356—121 **38 Claims**



1. A method for optically analyzing the aerial image formed by an optical projection lithography system having a source of light and a light path, comprising:

positioning a slit in a first plane, said first plane proximate an image plane of said optical lithography system, wherein said slit has an equivalent width less than the wavelength of said source of light;

moving said slit across and within said first plane, wherein said movement is in a direction perpendicular to the length of said slit; and

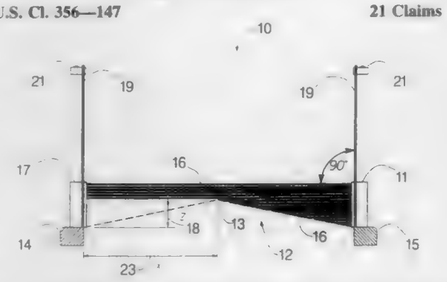
detecting the intensity of said light transmitted through said slit as a function of slit position.

5,631,732

SURVEYOR DEVICE

Paul T. Schrum, Jr., 3104K Calumet Dr., Raleigh, N.C. 27610

Filed Jun. 20, 1995, Ser. No. 492,790
Int. Cl.[6] G01C *1/00*
U.S. Cl. 356—147 **21 Claims**



1. A method of remotely determining roadway crown elevation on a straight roadway wherein said crown is higher in elevation than both edges of said roadway, said method utilizing a laser emitter for projecting a plurality of laser beams and a laser beam receiver comprising:

positioning the laser emitter on one edge of the roadway pavement;

placing the laser receiver on the opposite edge of the roadway pavement at a known elevation in substantial linear and vertical alignment with said laser emitter;

verifying that the laser emitter and the laser receivers are plumb within a specified tolerance;

projecting laser beams horizontally across said roadway toward the laser beam receiver such that a crown point of said roadway partially occludes said laser beams;

detecting the lowest elevation of the laser beams that is transmitted to the laser beam receiver by the laser emitter and

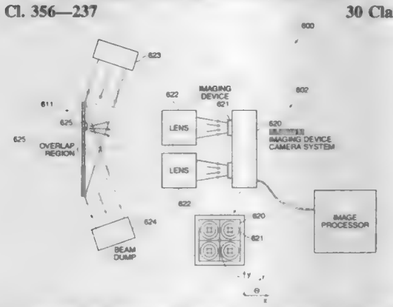
relaying the crown point elevation measurements to a data collector.

5,631,733

LARGE AREA DEFECT MONITOR TOOL FOR MANUFACTURE OF CLEAN SURFACES

Francois J. Henley, Los Gatos, Calif., assignor to Photon Dynamics, Inc., San Jose, Calif.

Filed Jan. 20, 1995, Ser. No. 375,903
Int. Cl.[6] G01N *21/00;* **H04N** *7/18;* **G06K** *9/00*
U.S. Cl. 356—237 **30 Claims**



16. A system for observing defects on a surface by means of optically scattered energy, the system comprising:

means for directing generally collimated illumination from a source at an oblique angle to a surface under inspection (SUS) to produce scattered nonspecular energy substantially normal to said SUS; and

means for observing said scattered nonspecular energy in one of a plurality fractional windows of a viewed image of the SUS via a plurality of focussing elements at a plurality of remote focal planes having a symmetrical detection arrangement, said focal planes being mounted adjacent one another arranged in a symmetrical array arrangement adjacent one another, said symmetrical detection arrangement corresponding to said symmetrical array arrangement, said SUS and said symmetrical array arrangement having substantially no relative motion between said SUS and said symmetrically array arrangement to substantially reduce a possibility of any scanning noise and light source fluctuations.

5,631,734

METHOD AND APPARATUS FOR DETECTION OF FLUORESCENTLY LABELED MATERIALS

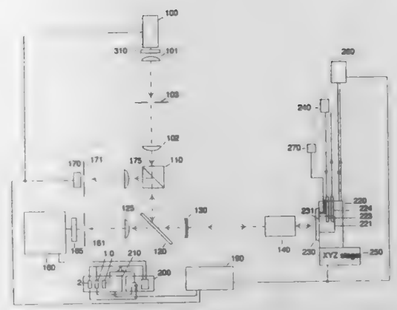
David Stern, Mt. View, and Peter Fiekowsky, Los Altos, both of Calif., assignors to Affymetrix, Inc., Santa Clara, Calif.

Filed Feb. 10, 1994, Ser. No. 195,889
Int. Cl.[6] G01J *3/30*
U.S. Cl. 356—317 **18 Claims**

1. An apparatus for detecting fluorescently marked regions on a first surface of a substrate, said apparatus comprising:

an excitation light source;

an optical train for directing an excitation light from said excitation light source at said substrate, and separating reflected excitation light from said first surface from fluoresced light from said first surface, said optical train comprising a spatial filter having a first lens and a second lens and a confocal pinhole located between said first lens and said second lens, a beam splitter cube, and a dichroic mirror for passing light having a wavelength of about said fluoresced light and reflecting light having a wavelength of about said excitation light, an optical lens and a microscope objective for directing said light at said substrate;



a focusing system for determining a focal plane of said excitation light passing through said optical train, said focusing means providing data for locating said first surface at said focal plane;

a detector for detecting said fluoresced light from said fluorescently marked regions in response to said light;

an x-y-z translation system for translating said substrate from a first position to a second position;

a flow cell mounted on said translation system, said flow cell comprising a mounting surface with a cavity therein, said mounting surface including a means for mounting said substrate thereon, and maintaining a sealed relationship with said substrate, whereby said first surface of said substrate is in fluid communication with said cavity, said cavity having an inlet and an outlet, and said inlet being connected to a pump for transferring materials into said cavity through said inlet and out of said cavity through said outlet; and

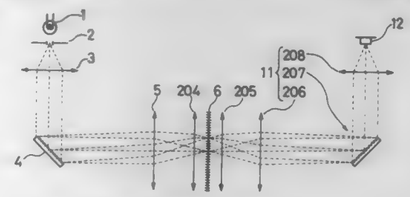
a storage system for storing a set of values representing an intensity of said fluoresced light as a function of the location on said substrate fluorescing said fluoresced light.

5,631,735

SPECTROMETER PROVIDED WITH AN OPTICAL SHUTTER

Yoshiroh Nagai, Osaka, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Division of Ser. No. 518,194, Aug. 23, 1995, Pat. No. 5,510,180, which is a continuation-in-part of Ser. No. 290,231, Aug. 15, 1994, Pat. No. 5,457,530. This application May 16, 1996, Ser. No. 648,616
Claims priority, application Japan, Aug. 27, 1993, 5-213122
Int. Cl.[6] G01J *3/04;3/28;* **G01F** *1/00*
U.S. Cl. 356—330 **21 Claims**



1. An optical switching system comprising:

an optical shutter array member including a plurality of optical shutter elements;

a first lens, provided upstream from said optical shutter array member, for focusing incident rays on a plane of said optical shutter elements;

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a second lens, provided downstream from said optical shutter array member, for collimating the rays focused on the plane of said optical shutter elements;

a third lens, provided between said first lens and said optical shutter array member; and

a fourth lens, provided between said second lens and said optical shutter array member;

a combined principal point of said third and fourth lens being disposed on the plane of said optical shutter elements, and a combination of optical characteristics of said third and fourth lens having a refracting power which makes rays passing through said optical shutter elements laterally symmetric with respect to said optical shutter elements.

5,631,736

ABSOLUTE INTERFEROMETER MEASURING PROCESS AND APPARATUS HAVING A MEASURING INTERFEROMETER, CONTROL INTERFEROMETER AND TUNABLE LASER

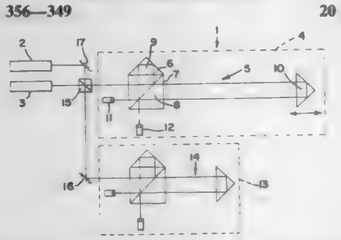
Jürgen Thiel, Aachen; Dieter Michel, Traunstein, and Andreas Franz, Trostberg, all of Germany, assignors to Dr. Johannes heidenhain GmbH, Traunreut, Germany

Continuation of Ser. No. 236,927, May 2, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,334

Claims priority, application Germany, May 3, 1993, 43 14 486.1

Int. Cl.[6] G01B *9/02;11/02*

U.S. Cl. 356—349 **20 Claims**



1. A method for making absolute measurements, said method comprising the steps of:

providing a tunable laser having a variable operating current and an output power, the laser emitting a laser beam having a wavelength;

providing a measuring interferometer having a measuring line of variable length, said measuring interferometer comprising; a beam splitter, a first reflector, a second reflector and at least one detector wherein said beam splitter, said first reflector and said detector are mounted on a first object and said second reflector is mounted on a second object, said second object being displaceable with respect to said first object wherein said measuring line extends from said beam splitter to said reflector;

providing a control interferometer having a control segment of fixed length, said control interferometer comprising; a beam splitter, a first reflector, a second reflector and at least one detector wherein said beam splitter, said first and said second reflectors and said detector are mounted on a first object and said control segment extends from said beam splitter to said second reflector;

directing said laser beam onto said beam splitter of said measuring interferometer and said control interferometer causing interference in said measuring interferometer and control interferometer;

detecting said interference of said control interferometer and adjusting, based on said detected interference, the first wavelength λ_1 until it is free of mode jumps;

deactivating said control interferometer after said laser is adjusted to said first wavelength λ_1;

modulating the wavelength of said laser from said first wavelength λ_1 to a second wavelength λ_2;

detecting said interference of said measuring interferometer;

detecting an integral phase change $\Delta\phi$ of said detected interference;

calculating an absolute length L_{abs} of said measuring line according to equation

$$L_{abs} = \frac{\Delta\phi}{2} \cdot \frac{\lambda_1 \cdot \lambda_2}{\lambda_2 - \lambda_1} ;$$

and

activating said control interferometer when the wavelength of said laser is at said second wavelength λ_2.

5,631,737

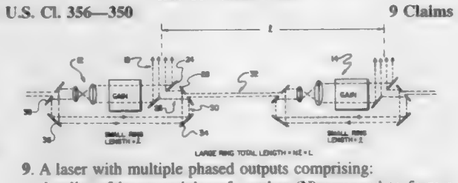
HIGH-ENERGY LASER WITH MULTIPLE PHASED OUTPUTS

Frederic H. White, III, Simi Valley, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 4, 1984, Ser. No. 617,219

Int. Cl.[6] H01S *3/083*

U.S. Cl. 356—350 **9 Claims**



9. A laser with multiple phased outputs comprising:

a plurality of laser modules of number (N) arranged to form a large ring, the output of the last laser module in the series being fed back as the input to the first module,

the laser modules all having substantially the same beam path lengths (l) and the beam path length of the large ring being substantially equal to an integral multiple of the module beam path length,

said large ring of laser modules having at least one other feedback path than that extending from the output of the last module in the series to the input of the first module in the series,

the length of any single feedback path except that from the output to the input of the large ring being equal to the beam path length (l) of an individual laser module.

5,631,738

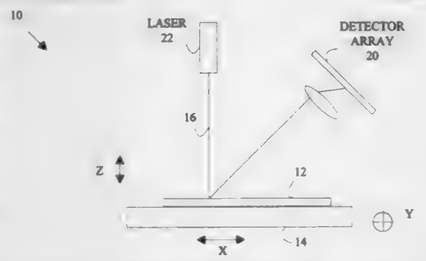
LASER RANGING SYSTEM HAVING REDUCED SENSITIVITY TO SURFACE DEFECTS

Edwin M. C. Childers, San Diego, Calif., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Aug. 30, 1995, Ser. No. 521,561

Int. Cl.[6] G01B *11/14*

U.S. Cl. 356—375 **4 Claims**



1. An apparatus for measuring the distance between a known point and a measurement point on a surface of a component having an imperfection therein, said apparatus comprising:

a light source positioned at a predetermined location with respect to said known point, said light source illuminating said surface of said component with a collimated beam of light;

a detector for receiving light reflected from said surface of said component, said detector generating a signal indicative of said distance between said known point and said surface of said component;

means for moving said component relative to said light source in a plane parallel to the surface of said component in a region containing said measurement point, said motion having an amplitude sufficient to cause said collimated beam to scan an area larger than that occupied by said imperfection; and

means for averaging said signal generated by said detector over said scan area.

5,631,739

VIDEO PRINTER WHICH SWITCHES TO A FIELD A MODE UPON DETERMINING A NON-STANDARD VIDEO SIGNAL AND METHOD THEREOF

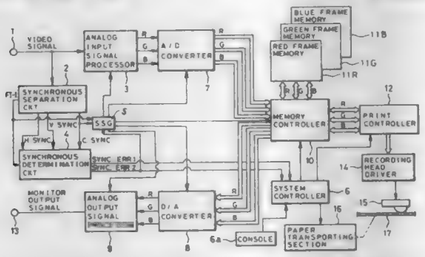
Yoshiki Kawaoka, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 19, 1994, Ser. No. 293,189

Claims priority, application Japan, Aug. 25, 1993, 5-210457

Int. Cl.[6] H04N *1/00;5/76;5/225*

U.S. Cl. 358—296 **10 Claims**



1. A video printer for making a hard copy from a video signal input therein, said video printer being selectably set in one of a frame mode for memorizing and printing an image using one frame of said video signal, and a field mode for memorizing and printing an image using one field of said video signal, said video printer comprising:

a separation circuit for separating synchronizing signals from said video signal;

a determination circuit for determining whether said synchronizing signals are standardized or not; and

a switching section connected to said determination circuit, for switching said video printer to the field mode when said synchronizing signals are determined to be nonstandardized.

5,631,740

TRANSDUCERS WITH CONSTRAINTS MODEL FOR PRINT SCHEDULING

Marc W. Webster, Rochester, N.Y.; Vijay A. Saraswat, Fremont, Calif.; John C. Austin; Daniel L. McCue, III, both of Rochester, N.Y., and Markus P. J. Fromherz, Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 28, 1995, Ser. No. 563,873

Int. Cl.[6] H04N *1/00;1/32;* **G03G** *21/00;* **G06F** *15/00*

U.S. Cl. 358—296 **17 Claims**

1. In an electronic image processing apparatus comprising a controller and a plurality of modules, each of the modules including an associated processor, each of the processors storing data related to operational constraints of the associated module, a bus for interconnecting the processors to the controller for directing the operation of the modules, a method of operation of the image processing apparatus to complete a job requirement comprising the steps of:

receiving from each of the processors the data related to the operational constraints of each associated module,

defining each of the modules as a transducer with input and output work units with said constraints,

interrogating each of the processors to determine the geometrical relationship of the interconnection of the modules, and

responding to the data related to the operational constraints of each of the processors and to the geometrical relationship of the interconnection of the modules for providing a timed sequence of matched inputs and outputs between transducers.

5,631,741

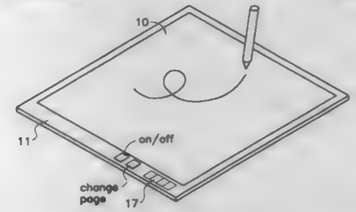
ELECTRONIC CARBON PAPER

Walter S. Matthews, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 29, 1995, Ser. No. 581,279

Int. Cl.[6] H04N *1/00;* **B41B** *1/61*

U.S. Cl. 358—296 **19 Claims**



1. An electronic copying apparatus comprising a touch sensitive surface having a plurality of positions, a non-volatile solid-state memory array having a number of storage positions at least equal to the plurality of positions of the touch sensitive surface, means for detecting signals generated by pressing on the touch sensitive surface and storing those signals as they are generated in the memory array, and means for accessing the signals stored in the memory array.

5,631,742

APPARATUS FOR DECODING EDITED CODED DATA

Kenji Shimoda, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 29, 1993, Ser. No. 128,029

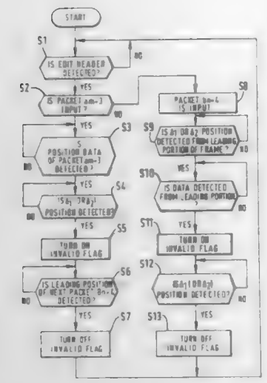
Claims priority, application Japan, Sep. 30, 1992, 4-262518; Feb. 12, 1993, 5-024563

Int. Cl.[6] H04N *5/76;5/93;* **G11B** *27/02*

U.S. Cl. 386—52 **2 Claims**

1. An edited coded data decoding apparatus for decoding an input video signal including a sequence of first and second coded video signals, at least one of the first and second coded video signals before and after the editing point is added with an edit

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header showing a valid data position of the first and second video signals when the first and second coded video signals are edited by the editing signal at a specified editing point, the first and second coded video signals including frames having a fixed word length, the edit header including a frame for specifying an invalid data position of the second coded video signal, comprising:

extracting means for extracting the edit header;

decoding means for decoding the first and second video signals in accordance with the extracted header and for outputting the first and second decoded video signals; and

inhibiting means for inhibiting the decoding operation of the decoding means corresponding to an invalid data portion in accordance with a signal from the extracting means specifying the invalid data portion of the second coded video signal.

5,631,743

BROADCAST RECEPTION METHOD AND APPARATUS WHICH CONTROLS RECORDING OF A BROADCAST VIDEO SIGNAL AND DETECTS A CHANGED RECEPTION CHANNEL WITHOUT USING EXTRA MEMORY

Hiraku Inoue, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 276,640, Jul. 18, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 666,995

Claims priority, application Japan, Jul. 23, 1993, 5-182846

Int. Cl.[6] H04N *9/79;7/084*

U.S. Cl. 386—95 **9 Claims**

1. A reception method in a broadcast reception apparatus including a tuner for receiving a broadcast signal into which a predetermined television program ID is inserted, detecting means for detecting said television program ID, comparing means for comparing a detected ID code, preset means for a reception channel, and channel setting means, comprising the steps of:

a first step of resetting a housed counter when a destination channel determining processing is started;

a second step of detecting a network code of a destination network code;

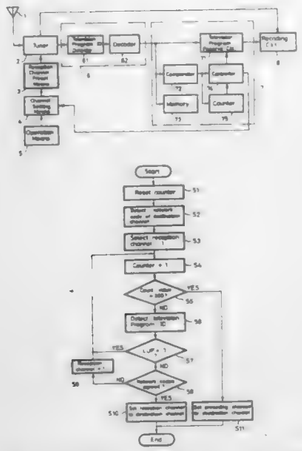
a third step of selecting a reception channel 1 of said preset means;

a fourth step of adding "1" to a count value of said housed counter;

a fifth step of detecting whether or not a counter value of said housed counter becomes larger than a predetermined value;

a sixth step of detecting a television program ID in a received signal when said count value of said housed counter is said predetermined value or smaller;

a seventh step of judging television program change information in said television program ID and returning the processing to said fourth step when said television program ID includes said television program change information;



an eighth step of determining whether or not the network code of said destination channel and the network code of said television program ID are agreed to each other if it is determined that said television program ID has no television program change information;

a ninth step of adding "1" to the reception channel if it is determined in said eighth step that said network codes do not agree and returning the processing to said fourth step and a tenth step of setting the reception channel to the destination channel if it is determined in said eighth step, that said network codes do agree.

5,631,744

CODING APPARATUS

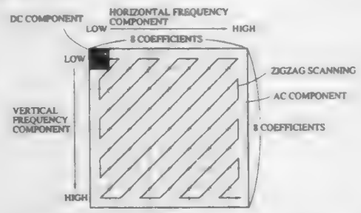
Yoshitaka Takeuchi, Tokyo, and Masahiko Enari, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 170,909, Dec. 21, 1993, abandoned. This application Nov. 28, 1995, Ser. No. 563,348

Claims priority, application Japan, Dec. 28, 1992, 4-360149

Int. Cl.[6] H04N *1/415*

U.S. Cl. 358—432 **15 Claims**



1. A coding apparatus comprising:

blocking means for gathering and blocking sample values of input signals;

output means for selectively outputting data, in a first output mode for outputting a difference signal obtained by subtracting a predicted value from an input signal blocked by said blocking means, and, in a second mode for outputting an input signal blocked by said blocking means, without using the difference signal;

orthogonal-transforming means for orthogonal-transforming data from said output means;

transforming means for constructing a two-dimensionally arraying block by combining a plurality of blocks orthogonal-transformed by said orthogonal-transforming means, and for

transforming the data of the two-dimensionally arraying block into a one-dimensional array; and

coding means for coding the data of the one-dimensional array.

5,631,745

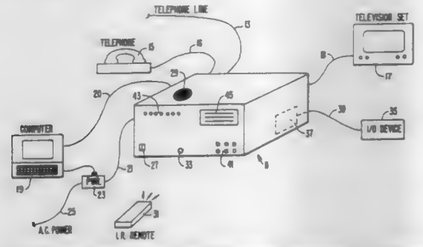
MULTI-FUNCTION TELECOMMUNICATIONS INSTRUMENT

John J. Wong, Atherton, and Paul S. Lui, Saratoga, both of Calif., assignors to Current Logic, San Jose, Calif.

Continuation-in-part of Ser. No. 882,935, May 14, 1992. This application Nov. 7, 1994, Ser. No. 335,443

Int. Cl.[6] H04N *1/00;* **H04M** *11/00*

U.S. Cl. 358—434 **32 Claims**



1. A portable, stand-alone, multi-function apparatus for sending, receiving and storing facsimile data and voice data, said apparatus adapted to be connected to a telephone line, said apparatus being operable in a plurality of modes including a monitor mode, and an idle mode, said idle mode being indicative of a state wherein the telephone line is inactive, wherein said monitor mode allows the apparatus to passively monitor said telephone line in order to detect and respond to a plurality of predefined command signals on the telephone line which are generated from at least one local telephone device, said at least one local telephone device being connected in parallel to said apparatus via said telephone line, said apparatus comprising:

means connectable to said telephone line for receiving facsimile data of a document and storing it in binary form,

means connectable to said telephone line for receiving a voice message and storing it in binary form,

off-hook detector means connectable to said telephone line and operable in said idle mode for causing said apparatus to be in said monitor mode when said at least one local telephone device is detected as being off-hook, said detector means further being operable when no communication link has been established on said telephone line to a remote location; and

remote telephone control means connectable to said telephone line and operable in said monitor mode for remotely controlling said apparatus in response to detection of a particular command signal of said plurality of predefined command signals on said telephone line, said remote control means further being operable when no communication link has been established connecting said telephone line to an outside caller location.

5,631,746

HIGH RESOLUTION SIMULATION PRINTING BY PRINTING ADJOINING PELS

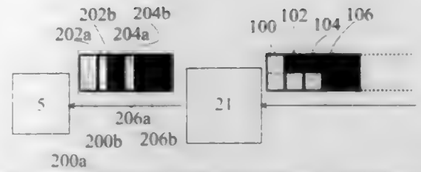
Gary S. Overall, and Phillip B. Wright, both of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Nov. 15, 1994, Ser. No. 340,005

Int. Cl.[6] H04N *1/40;1/21;* **G06F** *15/00*

U.S. Cl. 358—448 **4 Claims**

1. An imaging device assembly comprising logic to monitor a first bit map in a first resolution greater than 600×600 dpi, imaging apparatus to control printing at pel locations in a second bit map in a second resolution of at least 600×at least twice said 600 dpi, said



logic producing signals controlling the printing of said imaging apparatus of said first bit map when data in said first bit map corresponding to the resolution of said second bit map can not be identically printed which locates printing by said imaging apparatus in adjoining pels next to at least one non-printed pel said logic defining adjoining pels by determining the location of printing of the pel adjoining the pels to be printed and assigning the current printing to be on the right of the current group of pels if the adjoining pel is on the right and has printing and otherwise assigning the current printing to be on the left or assigning the current printing to be on the left of the current group of pels if the adjoining pel is on the left and has printing and otherwise assigning the current printing to be on the right.

5,631,747

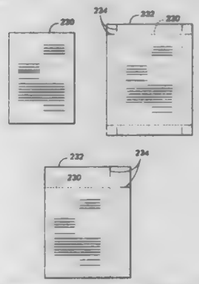
APPARATUS AND METHOD FOR APPLYING TRIM MARKS TO A PRINT MEDIA SHEET

Michael E. Farrell, Ontario, and Louis O. Pepin, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 21, 1995, Ser. No. 517,326

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—448 **9 Claims**



1. In a printing system with an input system and a print engine, a job being provided to the printing system by way of the input system, the job including an image with at least one image edge and an image outline, the image outline including a set of corners and having at least one peripheral edge substantially adjacent the at least one image edge, the image being represented by image data and the image outline corresponding with a first set of dimensions, the image data of the image being associated with an electronic page having both a second set of dimensions and peripheral edges, the image being printed on a substrate corresponding with the second set of dimensions, the first set of dimensions being smaller, in magnitude, than the second set of dimensions, a system for applying trim marks to the electronic page, comprising:

a) a control system for linking the input system with the print engine, said control system,

i) superposing the image outline on the electronic page in such a manner that the at least one peripheral edge of the image outline is substantially justified relative to the at least one peripheral edge,

ii) in a first mode, shifting the image so that the image is spaced from each one of the peripheral edges of the electronic page.

iii) in the first mode, applying sets of trim marks to the electronic page, each set of trim marks being positioned adjacent a corner of the image outline and

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iv) in a second mode, applying just one set of trim marks to the electronic page, the just one set of trim marks being positioned adjacent just one of the corners of the image outline; and

b) a memory for storing a print ready representation, the print ready representation including the image superposed with the electronic page and at least one of the sets of trim marks being applied to the electronic page.

5,631,748

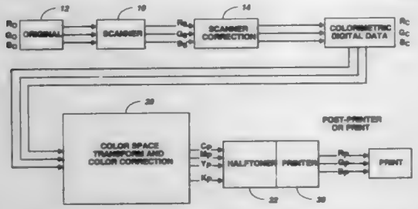
COLOR IMAGES HAVING MULTIPLE SEPARATIONS WITH MINIMALLY OVERLAPPING HALFTONE DOTS AND REDUCED INTERPIXEL CONTRAST

Steven J. Harrington, Holley, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 16, 1995, Ser. No. 559,323

Int. Cl.[6] H04N *1/46*

U.S. Cl. 358—502 **7 Claims**



1. An image processing system for a multicolor printer, including a halftone generator that converts contone separation signals to binary separation signals comprising:

means for receiving a plurality of contone separation signals;

means for producing a halftoning screen, having threshold values at every pixel position to be applied to contone image signals to derive a binary image signal suitable to drive a printer;

means for converting the contone signals for a black separation into black separation binary image signals in accordance with the threshold value corresponding to said signals, said converting means directing those black separation binary image signals to the printer upon completion;

means for converting contone signals for a first non-black separation into first non-black separation binary image signals, in accordance with the threshold value corresponding to said signals, said converting means directing the first non-black separation binary image signals to the printer upon completion, said means including:

offsetting means, adding the magnitude of any corresponding black separation contone signal to the magnitude of the first non-black separation contone signal; and

a logic circuit, having as inputs the corresponding black separation binary signals and the first non-black separation binary image signal, and allowing the first non-black separation binary image signal to pass whenever the black separation binary signal indicates that black will not be printed;

means for converting the contone signals for a second non-black, printable ink with a colorant having a luminance value greater than that of the first non-black separation into second non-black binary signals suitable to drive a printer to print such color separations, said means including:

offsetting means, adding the magnitude of black and said first non-black contone separation signals to the magnitude of the second non-black separation image signal;

a logic circuit, having as inputs the first non-black separation binary signal and the second non-black binary signal, and logically processing said signals so that there is preferably no overlap therebetween;

means for converting the contone signals for a third non-black separation, printable ink with a colorant having a luminanee value greater than the either first or second non-black separations into color binary signals suitable to drive a printer to print such color separations, said means including:

offsetting means, subtracting the magnitude of the third non-black separation image signal the maximum contone value possible.

5,631,749

COLOR IMAGE SIGNAL PROCESSING DEVICE

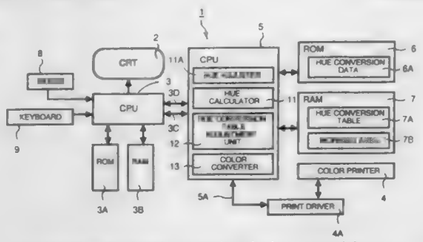
Masashi Ueda, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 15, 1995, Ser. No. 573,488

Claims priority, application Japan, Jan. 12, 1995, 7-021043

Int. Cl.[6] G03F *3/08*

U.S. Cl. 358—520 **20 Claims**



1. A color image signal processing device, comprising:

hue calculation means for calculating a hue value from the color signal of an image for a first device;

hue conversion means for converting the hue value calculated in said hue calculation means to reproduce the image by a second device;

first color selection means for selecting a color of an image for said first device;

second color selection means for selecting a color to be reproduced by said second device; and

conversion characteristic correcting means for correcting a conversion characteristic of said hue conversion means on the basis of the color selected by said first color selection means and the color selected by said second color selection means.

5,631,750

SCATTERING TYPE LIQUID CRYSTAL DEVICE

Nobuo Minoura, Yokohama; Hidetoshi Suzuki, Atsugi; Katsumi Kurematsu, Kawasaki; Kazuo Yoshinaga, Machida, and Hideaki Mitsutake, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 798,517, Nov. 26, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 212,284

Claims priority, application Japan, Nov. 28, 1990, 2-322457; Nov. 28, 1990, 2-322458; Dec. 27, 1990, 2-415012

Int. Cl.[6] G02F *1/1333;1/1335*

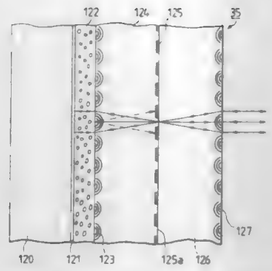
U.S. Cl. 349—110 **15 Claims**

1. A liquid crystal device for controlling scattering of light beams made incident upon a plurality of portions of a liquid crystal layer thereof, said liquid crystal device comprising:

a first lens array having lenses disposed to correspond to said portions of said liquid crystal layer, said lenses causing said light beams transmitted from said corresponding portions of said liquid crystal layer to travel toward a focal plane;

a mask for shielding scattered light transmitted from said first lens array and as well as allowing non-scattered light to pass through, said mask having a plurality of aperture portions which are formed along said focal plane to correspond to said lenses of said first lens array so as to allow non-scattered light transmitted from corresponding lenses to pass through; and

a second lens array having lenses arranged to correspond to said aperture portions of said mask, said lenses substantially collimating said non-scattered light transmitted from corresponding aperture portions of said mask;



wherein said light beams are caused to travel toward said liquid crystal layer via said mask and said first lens array and wherein said liquid crystal device further comprises a reflecting surface for reflecting and returning said light beam, which has passed through said liquid crystal layer, to said liquid crystal layer.

5,631,751

REAR-PROJECTION DISPLAY WITH AUXILIARY MIRROR BETWEEN LIGHT SOURCE AND LIQUID CRYSTAL DISPLAY

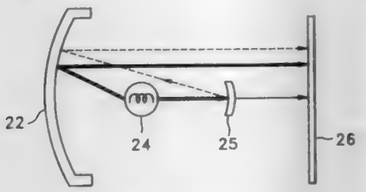
Jung-soo Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 25, 1996, Ser. No. 637,607

Claims priority, application Rep. of Korea, Apr. 25, 1995, 95-9802

Int. Cl.[6] G02F *1/13;1/1335*

U.S. Cl. 349—5 **5 Claims**



1. A rear-projection display device comprising:

a light source;

a main reflection mirror for reflecting light emitted from said light source;

an image display having a predetermined image displayed thereon, said image being projected by incident light reflected from said main reflection mirror;

a magnifier for magnifying said projected image;

a screen positioned in the path of light that has passed through the magnifier for receiving the projected image; and

an auxiliary mirror disposed between said light source and said image display such that only a portion of the light from said light source is incident upon said auxiliary mirror, said auxiliary mirror allowing a portion of incident light from said light source to pass through said auxiliary mirror and reflecting a portion of the incident light to said main reflection mirror.

5,631,752

ANTIFERROELECTRIC LIQUID CRYSTAL DISPLAY ELEMENT EXHIBITING A PRECURSOR TILT PHENOMENON

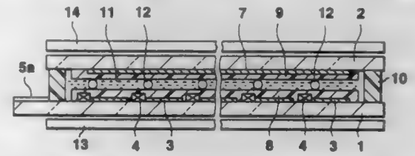
Tomio Tanaka, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1993, Ser. No. 169,578

Claims priority, application Japan, Dec. 24, 1992, 4-343709; Dec. 24, 1992, 4-343980; Dec. 24, 1992, 4-344264

Int. Cl.[6] G02F *1/1343*

U.S. Cl. 349—173 **15 Claims**



1. An antiferroelectric liquid crystal display device of an active matrix type, comprising:

a liquid crystal cell of the active matrix type including one substrate having a plurality of pixel electrodes and a plurality of active elements connected to said pixel electrodes, said pixel electrodes and said active elements being arranged in a matrix form, and the other substrate having a counter electrode opposing said pixel electrodes; and

an antiferroelectric liquid crystal sealed in said liquid crystal cell and having first and second ferroelectric phases in which aligned states of liquid crystal molecules have different directions and an antiferroelectric phase exhibiting an intermediate aligned state between the first and second ferroelectric phases, so that a difference between a voltage for changing the first or second ferroelectric phase to the antiferroelectric phase and a voltage for changing the antiferroelectric phase to the first or second ferroelectric phase is not more than 6V, the liquid crystal exhibiting a precursor tilt phenomenon in which the tilt angle of the liquid crystal molecules with respect to the substrate surface changes with a change in applied voltage.

5,631,753

BLACK MATRIX BASE BOARD AND MANUFACTURING METHOD THEREFOR, AND LIQUID CRYSTAL DISPLAY PANEL AND MANUFACTURING METHOD THEREFOR

Takuya Hamaguchi; Hiroyuki Kusukawa; Yasutomo Teshima; Ryutaro Harada, and Satoshi Mitamura, all of Tokyo-to, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

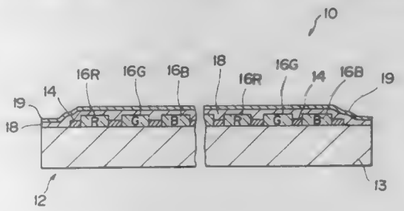
PCT No. PCT/JP92/00812, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO93/00603, PCT Pub. Date Jan. 7, 1993

Continuation of Ser. No. 969,193, Apr. 14, 1993, abandoned. This PCT application Jun. 26, 1992, Ser. No. 416,517

Claims priority, application Japan, Jun. 28, 1991, 3-158902; Oct. 29, 1991, 3-283039; Dec. 10, 1991, 3-325821

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—110 **25 Claims**



1. A black matrix substrate comprising a transparent substrate and a light-shielding layer provided on said transparent substrate and formed of a resin layer containing metallic particles formed

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inside thereof, wherein said resin layer is formed by exposing, to light, a photosensitive resist layer formed on said transparent substrate and containing a hydrophilic resin through a photo mask having a pattern for the light-shielding layer and, thereafter, carrying out an electroless plating process to thereby deposit the metallic particles in the resist layer.

5,631,754

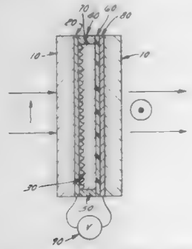
HOLOGRAPHIC HIGH CONTRAST VIEWING SCREEN EMBEDDED IN A LIQUID CRYSTAL DISPLAY

Tomasz P. Jannson, Torrance; Tin M. Aye, Mission Viejo, and Jeremy Lerner, Culver City, all of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Filed Oct. 20, 1995, Ser. No. 546,026

Int. Cl.[6] G02F *1/1335;1/1337;* **G02B** *5/32*

U.S. Cl. 349—64 **18 Claims**



1. A holographic high contrast viewing screen embedded in a liquid crystal display comprising:

a first substrate;

a first electrode connected to said first substrate;

a light shaping holographic surface relief diffuser connected to said first electrode, said light shaping holographic surface relief diffuser having a first orientation and a first refractive index;

a liquid crystal adjacent said light shaping holographic surface relief diffuser, said liquid crystal having a second refractive index that is substantially equal to said first refractive index, in absence of a driving voltage;

an alignment layer adjacent said liquid crystal, said alignment layer having a second orientation that is substantially orthogonal to said first orientation;

a second electrode connected to said alignment layer; and

a second substrate connected to said second electrode,

wherein said second refractive index varies as a function of the driving voltage, said driving voltage being applied between said first electrode and said second electrode.

5,631,755

LAYERED INORGANIC COMPOUND-CONTAINING PHASE RETARDER

Taiichi Sakaya; Toshiya Kuroda; Koji Higashi, all of Takatsuki; Tadashi Shindo, Toyonaka, and Akiko Shimizu, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

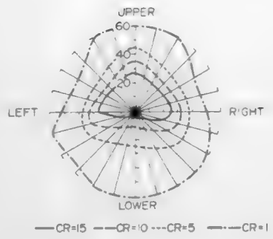
Division of Ser. No. 185,328, Jan. 19, 1994, Pat. No. 5,430,566, which is a continuation of Ser. No. 971,473, Nov. 4, 1992, abandoned. This application Apr. 3, 1995, Ser. No. 415,254

Claims priority, application Japan, Nov. 8, 1991, 3-292804; Mar. 31, 1992, 4-077138

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—117 **22 Claims**

1. A phase retarder comprising a layered inorganic compound-containing sheet or layered inorganic compound-containing film, said inorganic compound being selected from the group consisting



of a clay mineral, a chalcogen compound, a zirconium phosphate compound, an oxyacid salt of a transition metal, a layered polysilicate, a metal oxyhalogenide, and an intercalary decoration thereof intercalated with ions or molecules between crystalline layer units, said inorganic compound having a mean particle size of 5000 nm or less and a stratified structure with a plurality of crystalline layer units wherein the phase retarder has a refractive index in the plane of the phase retarder that is different from a refractive index in the thickness direction of the phase retarder.

5,631,756

DISPLAY APPARATUS WITH CORNER HOLDING PLATES

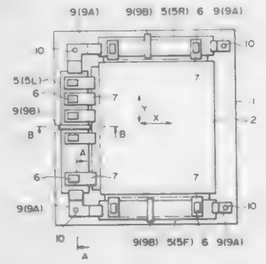
Toshiaki Itazawa, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,666

Claims priority, application Japan, Feb. 18, 1994, 6-045037

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—58 **2 Claims**



1. A display apparatus, comprising:

a display cell having a plurality of electrodes and a plurality of sides;

a cell-supporting member for supporting said display cell;

a plurality of circuit substrates, with one of said circuit substrates disposed along each of at least two sides of said display cell and each carrying a circuit connected to said display cell for driving said display cell; and

supporting means for supporting said circuit substrates,

said supporting means comprising a holding plate for supporting said circuit substrates for limited movement relative to said cell supporting member,

with said holding plate being disposed in proximity to a corner of said display cell and holding one end each of a pair of said circuit substrates disposed along two sides of said display cell.

5,631,757

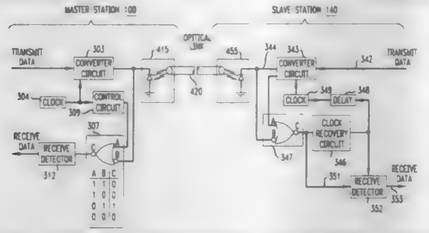
FULL-DUPLEX DATA COMMUNICATION SYSTEM USING DIFFERENT TRANSMIT AND RECEIVE DATA SYMBOL LENGTHS

George E. Bodeep, Lawrenceville, Ga., and Sheryl L. Woodward, Lincroft, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 473,848

Int. Cl.[6] H04B *10/24;10/00*

U.S. Cl. 359—113 **26 Claims**



18. A full-duplex data communication system including a master and a slave transceiver for transmitting and receiving data over a communication link, comprising

at the master transceiver,

first means for transmitting to the slave transceiver data of a first type over the link during a first time period,

second means for receiving from the slave transceiver data of a second type over the link during a second time period which is longer than the first time period and which overlaps a portion of the first time period,

at the slave transceiver,

third means for transmitting to the master transceiver data of the second type over the link during the second time period,

fourth means for receiving from the master transceiver data of the first type over the link during the first time period,

wherein at both the master and slave transceivers, the first and second types of data cannot be separated on the basis of a spectral content of signals representing the first and second types of data.

5,631,758

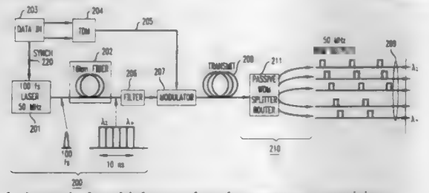
CHIRPED-PULSE MULTIPLE WAVELENGTH TELECOMMUNICATIONS SYSTEM

Wayne H. Knox, Rumson, and Martin C. Nuss, Fair Haven, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 26, 1995, Ser. No. 548,537

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—127 **29 Claims**



1. An optical multiple wavelength apparatus comprising

an optical disperser for receiving short optical pulses at a first rate and forming therefrom a train of chirped optical pulses with each such chirped optical pulse extending over a plurality of time periods, each time period associated with a different optical wavelength channel; and

an optical modulator encoding an optical wavelength channel of one or more of the time periods of selected ones of the chirped optical pulse train using a data signal operating at a second rate equal to or greater than said first rate to form an encoded optical signal.

5,631,759

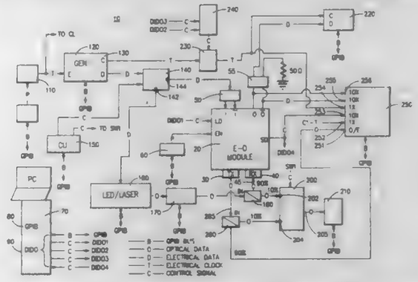
AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR MEASURING RECEIVER PULSE WIDTH DISTORTION OF ELECTRO-OPTIC MODULES

David C. Bogdan, Vestal; Donald L. Pearl, Endwell; David T. Pribula, Port Crane, all of N.Y.; Nancy R. Aulet, Austin, Tex.; Muhammed I. Hussain, Hopewell Junction, and George W. Hutt, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 13,460, Feb. 4, 1993, Pat. No. 5,546,325. This application May 23, 1995, Ser. No. 447,672

Int. Cl.[6] H04B *10/08*

U.S. Cl. 359—189 **10 Claims**



1. A method for testing an electro-optic module which includes an electro-optic receiver, comprising the steps of:

providing an automated test system for testing electro-optic modules that include electro-optic receivers;

connecting an electro-optic module that includes an electro-optic receiver to the automated test system;

automatically measuring a receiver pulse width distortion associated with said electro-optic receiver, wherein the electro-optic receiver receives from the automated test system a digital optical signal having square wave pulses and produces corresponding electrical pulses, and receiver pulse width distortion is defined to be the difference between the width of a positive electrical pulse and the width of a negative electrical pulse produced by the electro-optic receiver, divided by the sum of the positive electrical pulse width and the negative electrical pulse width, where the width of each electrical pulse is measured at a voltage level half-way between the top and bottom of an electrical pulse while the electro-optic receiver is receiving the digital optical signal.

5,631,760

APPARATUS FOR THE OPTICAL HETERODYNE RECEPTION OF SIGNALS

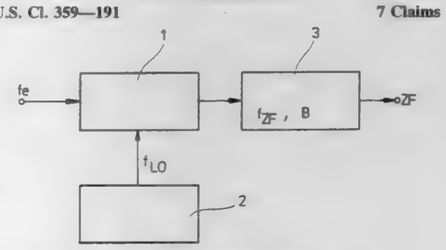
Rolf Heidemann, Tamm, Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Nov. 15, 1991, Ser. No. 792,851

Claims priority, application Germany, Nov. 15, 1990, 40 36 468.2

Int. Cl.[6] H04B *10/06*

U.S. Cl. 359—191 **7 Claims**



1. Optical heterodyne receiver comprising

an optical oscillator for providing an oscillator signal.

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a mixing stage for receiving a received signal as well as the oscillator signal and for providing a difference frequency signal in response thereto, and

an intermediate frequency stage responsive to the difference frequency signal for providing an output signal centered about an intermediate frequency, wherein

the oscillator signal provided by the optical oscillator has an oscillator frequency which is tuneable only discontinuously, in jumps, and

the output signal provided by the intermediate stage has an IF frequency which is tuneable continuously over a predetermined tuning range.

5,631,761

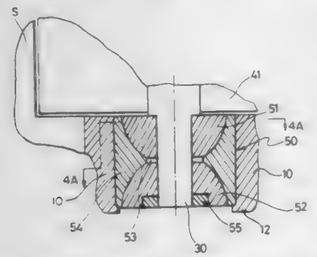
DRIVE MOTOR FOR ROTATING MULTI-FACETED MIRROR

Chang-woo Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,407

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—200 **9 Claims**



1. A drive motor for rotating a multi-faceted mirror, comprising a stator, a rotor, and a bearing disposed between said stator and said rotor for supporting the rotation of said rotor,

wherein said bearing is a hemispherical fluid bearing, said hemispherical fluid bearing comprising an upper inner ring and a lower inner ring which are hemispherical so as to define a lubricating surface and fitted on a shaft fixed to said rotor to face each other, and an outer ring held in said stator and defining a lubricating surface for supporting the rotation of said upper inner ring and said lower inner ring.

5,631,762

MULTI-BEAM GENERATING ELEMENT AND OPTICAL PRINTING APPARATUS THEREWITH

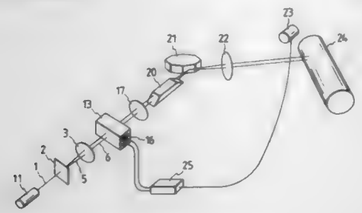
Keiji Kataoka, Katsuta, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed May 27, 1994, Ser. No. 250,579

Claims priority, application Japan, Jun. 4, 1993, 5-134836; Jul. 29, 1993, 5-188408

Int. Cl.[6] G02B *26/08;5/18*

U.S. Cl. 359—204 **7 Claims**



1. An optical printing apparatus comprising:

a multi-beam generating element for generating an even number of diffracted light beams asymmetrically in regard to a 0th order light beam and having a grating formed by a repetitious arrangement of basic phase patterns in a shape not having a symmetric relation;

a multi-channel optical modulator for modulating an intensity of the even number of light beams generated by said multi-beam generating element; and

a light scanning unit for scanning the beams emitted from said multi-channel optical modulator on a photosensitive body.

5,631,763

Fθ LENS SYSTEM IN A LASER SCANNING UNIT

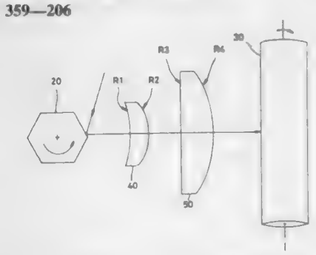
Chang J. Park, Kyunggi-Do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Aug. 30, 1995, Ser. No. 520,691

Claims priority, application Rep. of Korea, Aug. 30, 1994, P 94-21471

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—206 **4 Claims**



1. An fθ lens system in a laser scanning unit having a laser source for emitting a laser beam, a rotary deflector for deflecting said laser beam in a horizontal main scan direction, a scanned face on which said laser beam deflected from said rotary deflector is scanned, said scanned face being rotated such that said laser beam is scanned thereon in a cross scan direction perpendicular to said main scan direction, and a group of two fθ lenses, which are positioned between said rotary deflector and said scanned face, for focusing uniformly said laser beam deflected from said rotary deflector on said scanned face, wherein said group of two fθ lenses comprises a first fθ lens and a second fθ lens sequentially arranged from said deflector towards said scanned face, wherein a refractive index of said first fθ lens is lower than that of said second fθ lens, and incident and emergent faces of said first fθ lens and an incident face of said second fθ lens is shaped into a cylindrical face, and an emergent face of said second fθ lens is shaped into a toric face, wherein the radii of curvature in the cross scan direction of said incident and emergent faces of said first fθ lens are of infinite curvature, and wherein the radii of curvature in the cross scan direction of said incident and emergent faces of said second fθ lens are of negative curvature, wherein the ratio of the radius of curvature in the main direction of said incident face of said first fθ lens versus that of said emergent face of said first fθ lens satisfies the following condition,

1:0.153 to 0.187

and the ratio of the radius of curvature in the main direction of said incident face of said first fθ lens versus that of said emergent face of said second fθ lens satisfies the following condition,

1:0.373 to 0.456.

5,631,764

ELECTRODISPLACIVE ACTUATOR FOR USE IN AN ACTUATED MIRROR ARRAY

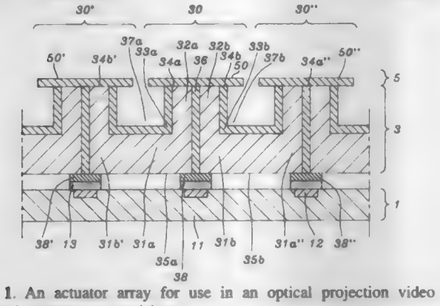
Song Chae, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 23, 1994, Ser. No. 216,757

Claims priority, application Rep. of Korea, Mar. 23, 1993, 93-4504; Mar. 23, 1993, 93-4505

Int. Cl.[6] G02B *5/08;26/00;* **H01L** *41/04*

U.S. Cl. 359—224 **7 Claims**



1. An actuator array for use in an optical projection video display system, comprising:

a substrate with a plurality of first metalizations formed thereon; and

a plurality of actuators,

wherein each of said actuators includes:

a pair of electrodisplacive members, each of said members having a bottom surface, a side surface, a part of a grooved surface and a top surface, the bottom surfaces of said members being bonded on the substrate, the side surfaces of said members being in a facing relationship to each other with a second metalization formed therebetween, said grooved surface being formed between the top surface of each of said members of said each actuator and the top surface of an adjacent electrodisplacive member from an adjacent actuator in the array, said grooved surface being provided with a third metalization thereon, the top surfaces of said members being attached with a mirror mounted thereon, said members further having a polarization selected so that a voltage applied between their respective second metalization and third metalization causes one of said members to vertically expand and the other to vertically contract, thereby tilting the mounted mirror;

a metal layer having predetermined dimensions, provided underneath said second metalization; and

an electrically conductive adhesive paste layer disposed between a respective one of said first metalizations and said metal layer for providing an electrical contact therebetween.

5,631,765

ELECTROCHROMIC LIGHT VALVE AND METHOD OF MANUFACTURING IT AS WELL AS ITS USE

Günter Baur; Peter Schlotter, both of Freiburg; Heinz Strinitz, Waldkirch, and Uta Weinberg, Freiburg, all of Germany, assignors to Fraunhofer-Gesellschaft Zur Forderung der Angewandten Forschung E.V., Munich, Germany

PCT No. PCT/EP92/01015, § 371 Date Nov. 12, 1993, § 102(e) Date Nov. 12, 1993, PCT Pub. No. WO92/21052, PCT Pub. Date Nov. 26, 1992

PCT Filed May 8, 1992, Ser. No. 146,132

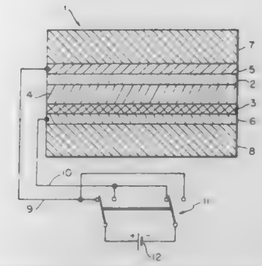
Claims priority, application Germany, May 16, 1991, 41 16 059.2

Int. Cl.[6] G02F *1/01*

U.S. Cl. 359—274 **45 Claims**

1. Electrochromic light valve, comprising

(a) a pair of electrodes, at least one of said electrodes being transparent;



(b) an electrolyte layer arranged between said electrodes;

(c) an active electrochromic layer whose color can change, said active electrochromic layer being interposed between one of said electrodes and said electrolyte layer;

(d) an optically passive and transparent charge storage layer whose transparence remains essentially unchanged, said charge storage layer being interposed between the other of said electrodes and said electrolyte layer;

(e) said active electrochromic layer being arranged and adapted for reversibly changing its coloration by acceptance and donation of electrons from and to said one electrode;

(f) said active electrochromic layer for reversibly changing its coloration further being arranged and adapted for acceptance and donation of ions from and to said electrolyte;

(g) said charge storage layer being arranged and adapted for donating and accepting ions from and to said electrolyte;

(h) said charge storage layer further being arranged and adapted for donating and accepting electrons to and from said other electrode; and

(i) said charge storage layer further being supersaturated with at least one of an element and a compound providing and accepting ions.

5,631,766

OPTICAL COMPONENT AND OPTO-ELECTRONIC DEVICE FOR RAISING THE FREQUENCY OF ELECTROMAGNETIC RADIATION

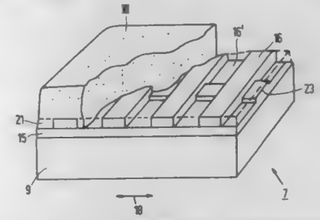
Antonius H. J. Venhuizen; Gerardus L. J. A. Rikken, and Constance J. E. Seppen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1993, Ser. No. 117,906

Claims priority, application European Pat. Off., Sep. 7, 1992, 92202695

Int. Cl.[6] G02F *1/37*

U.S. Cl. 359—328 **11 Claims**



1. An optical component for generating a higher harmonic wave from a fundamental wave of electromagnetic radiation, which component comprises a non-linear optical medium having a refractive index n_1, in which the frequency is raised, and an optical modulation structure, characterized in that a satellite layer of a linear optical material having a refractive index n_2, in which $n_2 > n_1$, is provided proximate to the modulation structure for concentrating the fundamental wave and the generated higher harmonic wave in said satellite layer.

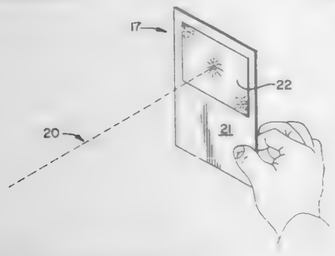
VOL 1198 ISS 3 MY 20 1997 UMI

5,631,767

METHOD AND APPARATUS FOR LASER BEAM MANAGEMENT

Timothy J. Dodge, Pineville; Thomas E. Iradi, Matthews, and Divya C. Patel, Pineville, all of N.C., assignors to Litton Systems, Inc., Charlotte, N.C.

Division of Ser. No. 282,899, Jul. 29, 1994, Pat. No. 5,592,325.
This application Mar. 7, 1996, Ser. No. 610,581
Int. Cl.[6] G02F *1/37*
U.S. Cl. 359—328 13 Claims



12. A laser beam locator comprising:

a substrate selected from the group consisting of metals, polymers, glass, and ceramics; and

a polycrystalline nonlinear frequency converting compound on said substrate, said compound having the formula $MTiO(XO_4)$, and in which the many crystals are at generally random orientation to one another;

wherein M comprises potassium (K), rubidium (Rb), cesium (Cs), or thallium (Tl), or solid solutions thereof; and,

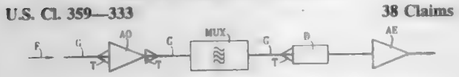
wherein X comprises phosphorous (P), arsenic (As), or solid solutions of phosphorus and arsenic.

5,631,768

TECHNICAL FIELD OF OPTOELECTRONICS

Adrien Bruno, Palaiseau, France, assignor to France Telecom, France

Filed Sep. 22, 1995, Ser. No. 532,174
Claims priority, application France, Sep. 23, 1994, 94 11369
Int. Cl.[6] H01S *3/00;* G02B *6/12*
U.S. Cl. 359—333 38 Claims



1. An optoelectronic device for separating optical signals of different wavelengths arriving from a similar input comprising:

at least one input channel comprising a first wide-mode guide which leads to an optical amplifier,

a first mode adapter provided upstream from said optical amplifier on said first wide-mode guide, a second mode adapter provided downstream from said optical amplifier and which leads to a second wide-mode guide, and

at least one wavelength separator filter capable of separating different wavelengths of a signal, said filter being connected to an output of said second wide-mode guide and comprising two diopters and a series of guides placed facing respective mirrors between the diopters to define optical paths of different lengths, and at least one output channel comprising a guide leading by way of a third mode adapter from the filter to at least one photodetector,

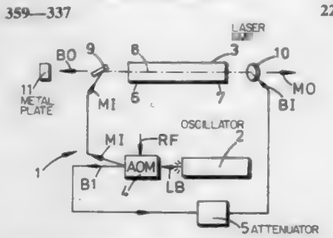
wherein said input channel, said first mode adapter, and said wavelength separator are integrated by deposition in a single epitaxy on a semi-insulating substrate.

5,631,769

HIGH POWER LASER AMPLIFIER

David I. Wheatley, Dundee, United Kingdom, assignor to Moore Limited, Westerly, R.I.

PCT No. PCT/GB94/00914, § 371 Date Dec. 19, 1995, § 102(e) Date Dec. 19, 1995, PCT Pub. No. WO94/26009, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 28, 1995, Ser. No. 545,599
Claims priority, application United Kingdom, Apr. 28, 1993, 9309006
Int. Cl.[6] H01S *3/23*
U.S. Cl. 359—337 22 Claims



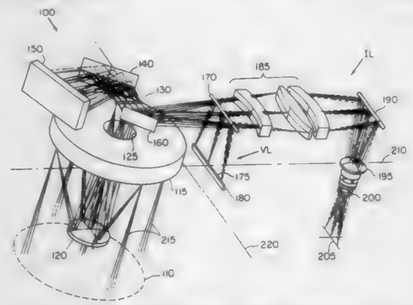
1. A laser amplification system comprising a laser light source for providing a main laser beam, a laser light amplifier for amplifying said main beam, and means for supplying a bleed laser beam to the laser radiation amplifier for amplification thereby at least when the main laser beam has a zero power value to reduce super-radiance.

5,631,770

REFLECTIVE SCANNING TELESCOPIC SYSTEM ON SINGLE OPTICAL BENCH

Paul J. Jarmuz, Nashua, N.H., assignor to Hughes Danbury Optical Systems, Inc., Danbury, Conn.

Filed May 26, 1994, Ser. No. 249,872
Int. Cl.[6] G02B *5/08;5/10;17/00*
U.S. Cl. 359—351 10 Claims



1. A reflective scanning telescopic system, comprising:

a primary curved mirror for collecting incoming light;

a secondary curved mirror for reflecting the light collected by the primary mirror axially through the primary mirror;

a tertiary curved mirror, disposed behind the primary mirror for receiving the light from the secondary curved mirror;

a first fold mirror positioned behind the primary mirror and in front of the secondary mirror to direct light reflected by the secondary mirror towards the tertiary mirror; and

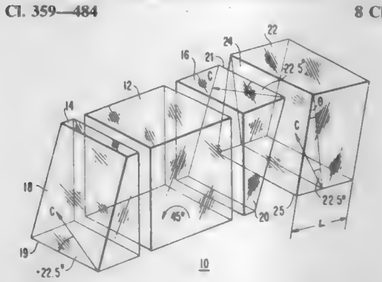
a double bounce fold mirror for directing light reflected from the first fold mirror to the tertiary mirror and for reflecting light from the tertiary mirror past the first fold mirror to a light imaging system.

5,631,771

OPTICAL ISOLATOR WITH POLARIZATION DISPERSION AND DIFFERENTIAL TRANSVERSE DEFLECTION CORRECTION

Clarence B. Swan, Lower Macungie Township, Lehigh County, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 762,665, Sep. 19, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 176,359
Int. Cl.[6] G02B *5/30;27/28;* G02F *1/09*
U.S. Cl. 359—484 8 Claims



1. An optical isolator for isolating an optical signal source from reflected signals, comprising:

main polarization discrimination means for receiving and polarizing an optical signal from the optical signal source such that the optical signal upon entering said main polarization discrimination means is polarized and dispersed into ordinary and extraordinary rays that exhibit differential transverse deflection and differential propagation delay relative to one another while propagating through said main polarization discrimination means; and

auxiliary polarization discrimination means disposed proximate said main polarization discrimination means and through which said ordinary and extraordinary rays from said main polarization discrimination means propagate for refractively adjusting the differential transverse deflection and differential propagation delay of the ordinary and extraordinary rays as said rays propagate through said auxiliary polarization discrimination means so as to minimize the differential transverse deflection and differential propagation delay of the ordinary and extraordinary rays as said rays propagate through said optical isolator, said auxiliary polarization discrimination means being selectively dimensioned so as to predeterminedly adjust the differential propagation delay of said rays as the rays propagate through the auxiliary polarization discrimination means, and said auxiliary polarization discrimination means having surfaces through which said rays propagate and selectively inclined at a selected tilt angle θ relative to a path of propagation of said rays to predeterminedly adjust the differential transverse deflection of said rays as the rays propagate through said auxiliary polarization discrimination means:

wherein said tilt angle θ is defined by

$$\Theta \approx \frac{\Delta Y}{L\left(\frac{1}{\eta_o} - \frac{1}{\eta_e}\right)}$$

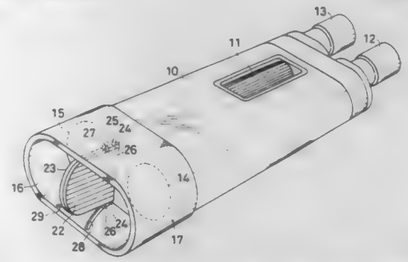
wherein Δy is the differential transverse deflection occurring in said main polarization discrimination means, n_o and n_e are indices of refraction effective in said auxiliary polarization discrimination means for said ordinary and extraordinary rays respectively, and L is an effective thickness of said auxiliary polarization discrimination means.

5,631,772

TELESCOPE PROVIDED WITH AUTOMATICALLY OPENING AND CLOSING COVER

Shigeo Mizukawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Sep. 25, 1995, Ser. No. 533,202
Claims priority, application Japan, Sep. 30, 1994, 6-261042
Int. Cl.[6] G03B *11/04;* G02B *23/00*
U.S. Cl. 359—511 4 Claims



1. A binocular telescope provided with automatically opening and closing lens covers comprising:

a main body comprising a pair of cylinders each having a forward end, a rear end, a central portion, and an outer peripheral portion;

a lens hood slidably disposed along an outer peripheral portion of the main body, said lens hood having an inner surface and an outer surface, and being slidable toward the forward end and the rear end of said main body;

a pair of objective lenses one of which is provided at a forward end of each of said cylinders;

a pair of movable lens covers each having a side surface and disposed to cover in correspondence said objective lenses provided at the forward end of said cylinders, each of said lens covers being axially rotatably supported between said objective lenses;

guide pins attached to said side surfaces of each of said lens covers;

a pair of guide grooves provided on the inner surface of said lens hood into which said guide pins are slidably engaged to cause said lens covers to rotate into a closed position covering said objective lenses when the lens hood is slid toward the rear end of the main body, and into an open postion when the lens hood is slid toward the forward end of the main body, whereby said lens covers are automatically shunted out of the optical path of the central portion of the main body so as to serve as a central parting strip of said lens hood of the binocular telescope by a forward movement of the lens hood, and to automatically cover said objective optical lenses by rearward movement of said lens hood.

5,631,773

IMAGE PROJECTION METHOD AND SEMICONDUCTOR DEVICE MANUFACTURING METHOD USING THE SAME

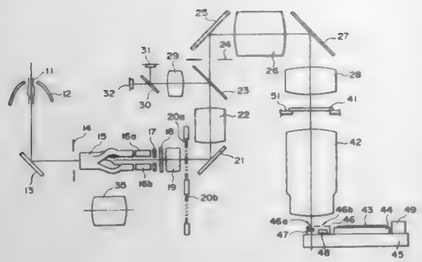
Akiyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 292,174, Aug. 18, 1994, abandoned, which is a continuation of Ser. No. 921,331, Jul. 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,866
Claims priority, application Japan, Aug. 2, 1991, 3-194132
Int. Cl.[6] G02B *5/18;27/46;* G03B *27/42;27/54*
U.S. Cl. 359—562 10 Claims

1. A projection exposure apparatus comprising:

illumination means for illuminating a reticle;

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a projection optical system for projecting a pattern of the reticle onto a wafer:

first detecting means for detecting a light intensity distribution on an image plane of said projection optical system; and

second detecting means for detecting a light intensity distribution on a pupil of said projection optical system.

5,631,774

POLARIZING BEAM SPLITTER AND OPTICAL PICK-UP HEAD COMPRISING THE SAME

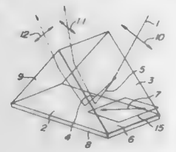
Akihiko Yoshizawa, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

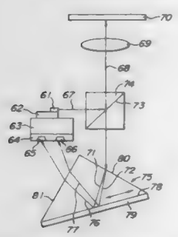
Filed Apr. 27, 1995, Ser. No. 428,487

Claims priority, application Japan, Apr. 28, 1994, 6-092030

Int. Cl.[6] G02B *27/12;* **G11B** *7/00*

U.S. Cl. 359—640 **14 Claims**





1. A polarizing beam splitter comprising:

a main body which is formed by a plane parallel plate, is made of a birefringent material and has an incident surface upon which an incident light beam is made incident and by which the incident light beam is refracted and a reflection surface which reflects the incident light beam transmitted through said incident surface, an optic axis of the birefringent material being on a plane which is parallel with said reflection surface;

a reflecting member provided on said reflection surface of the main body and being made of dielectric materials; and

an anti-reflecting member applied on the incident surface of said main body and formed by a stack of a plurality of dielectric material films.

5,631,775

ZOOM LENS SYSTEM

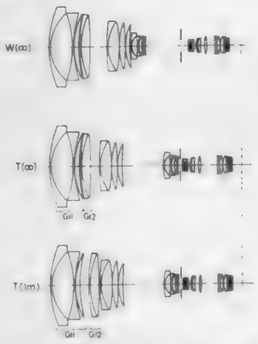
Hironori Shibata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 341,908

Claims priority, application Japan, Nov. 16, 1993, 5-308574

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—683 **6 Claims**



1. A zoom lens system for use in TV cameras comprising, in order from an object side:

a stationary first lens unit which is stationary during zooming of said zoom lens system and has a negative refractive power, said stationary first lens unit consisting of:

a stationary negative front subunit which is stationary during zooming of said zoom lens system, and

a movable positive rear subunit which is movable toward an image side of said zoom lens system for focusing said zoom lens system;

a second lens unit having a positive refractive power, a first airspace being reserved between said stationary first lens unit and said second lens unit, said first airspace being variable in length for zooming said zoom lens system;

a stationary stop disposed to an image side of said second lens unit, said stationary stop being fixed on an optical axis of said zoom lens system; and

an additional lens unit disposed to an image side of said stationary stop.

5,631,776

ZOOM LENS APPARATUS AND BEARING BLOCK ASSEMBLY

John G. Weigand, Churchville; Christopher J. Kralles, Rochester, and Noel L. Reyner, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,177

Int. Cl.[6] G02B *15/14;7/02*

U.S. Cl. 359—694 **15 Claims**

1. A zoom lens apparatus comprising:

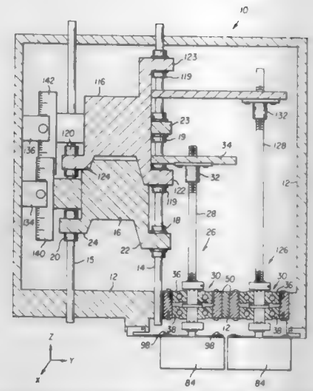
a pair of substantially parallel guide rods;

a first carriage slideably mounted to said pair of parallel guide rods;

a first lens element secured to said first carriage;

a first lead screw having a longitudinal axis, said first lead screw being mounted to said apparatus by a first bearing block assembly such that said longitudinal axis is substantially parallel to said pair of guide rods, said first bearing block assembly constraining the movement of said first lead screw along said longitudinal axis;

a first threaded drive nut coupling which is threadingly engaged to said first lead screw for movement along the axis of said first lead screw, said first threaded drive nut coupling being connected to said first carriage so as to move said first carriage along said first pair of guide rods, said first threaded drive nut coupling providing substantially zero axial play;



a first motor having a drive shaft for driving said first lead screw, said drive shaft of said motor being connected to said first bearing block assembly and is mounted to said apparatus by a flex member;

a second carriage slideably mounted to said first pair of parallel guide rods;

a second lens element secured to said second carriage;

a second lead screw having a longitudinal axis, said second lead screw being mounted to said apparatus by a second bearing block assembly such that said longitudinal axis is substantially parallel to said pair of guide rods, said second bearing block assembly constraining the movement of said second lead screw along said longitudinal axis;

a second threaded drive nut coupling which is threadingly engaged to said second lead screw for movement along the axis of said second lead screw, said second threaded drive nut coupling being connected to said second carriage so as to move said second carriage along said first pair of guide rods, said second threaded drive nut coupling providing substantially zero axial play; and

a second motor having a drive shaft for driving said second lead screw, said shaft of said motor being connected to said second bearing block assembly and is mounted to said apparatus by a flex member.

5,631,777

PHOTOGRAPHING LENS FOR LENS-FITTED FILM UNIT OR FIXED FOCUS LENS CAMERA

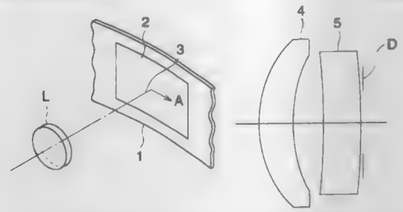
Nobuyoshi Mori, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 457,129

Claims priority, application Japan, Jun. 6, 1994, 6-123932

Int. Cl.[6] G02B *3/02;9/06*

U.S. Cl. 359—717 **9 Claims**



1. A photographic lens for use in a camera having an image plane, the photographic lens comprising:

(a) a first meniscus lens having a positive refracting power and a convex surface facing an object side of the photographic lens; and

(b) a second meniscus lens having a positive refracting power and a concave surface facing the object side of the photographic lens, the second meniscus lens being farther from the object side of the photographic lens than the first meniscus lens,

wherein the following conditions are satisfied:

$$0.60<f/f_1<0.85$$

$$-3.5<(r_4+r_3)/(r_4-r_3)<-1.7$$

and wherein f represents a focal length of the photographic lens, f_1 represents a focal length of the first meniscus lens, r_3 represents a radius of curvature of said concave surface of the second meniscus lens, and r_4 represents a radius of curvature of a surface of the second meniscus lens facing an image plane side of the photographic lens.

5,631,778

PANORAMIC FISH-EYE IMAGING SYSTEM

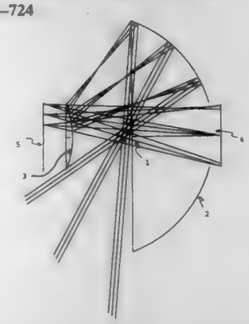
Ian Powell, Gloucester, Canada, assignor to National Research Council of Canda, Ottawa, Canada

Filed Jan. 16, 1996, Ser. No. 585,693

Claims priority, application Canada, Apr. 5, 1995, 2146406

Int. Cl.[6] G02B *13/06;17/00*

U.S. Cl. 359—724 **6 Claims**



1. A panoramic fish-eye imaging system having a rotational axis of symmetry and comprising a first, concave reflecting surface and a second, convex reflecting surface which are disposed along the rotational axis of symmetry and face each other, the first reflective surface having a central hole defining an aperture stop, the system further having an entrance pupil located between said surfaces, the surfaces having an optical power and being disposed such as to enable a light ray bundle to enter through said entrance pupil, to undergo reflection from the first reflective surface, the second reflective surface, and exit through the central hole thereby to produce an annular image from a cylindrical field of view around the rotational axis of symmetry.

5,631,779

OBJECTIVE LENS SYSTEM

Shingo Kashima, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 247,582, May 23, 1994, abandoned. This application Aug. 28, 1996, Ser. No. 704,237

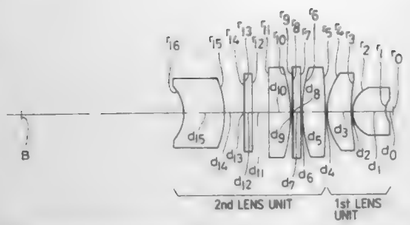
Claims priority, application Japan, May 24, 1993, 5-142513; Jun. 7, 1993, 5-160028

Int. Cl.[6] G02B *3/08*

U.S. Cl. 359—742 **12 Claims**

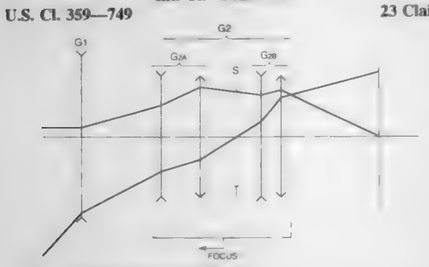
10. An objective lens system comprising two diffractive optical elements and two meniscus lens components having concave surfaces opposed to each other disposed between said two diffractive

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optical elements and wherein said objective lens system comprises a lens component made of fused silica and a plurality of diffractive elements.

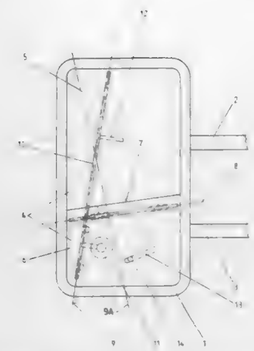
5,631,780
WIDE-ANGLE LENS
Haruo Sato, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jul. 15, 1994, Ser. No. 275,417
Claims priority, application Japan, Jul. 23, 1993, 5-202784
Int. Cl.[6] G02B *13/04*
U.S. Cl. 359—749 **23 Claims**



11. A wide-angle lens comprising:
a first lens group having a negative refracting power with a plurality of lenses and being fixed in a focusing operation; and
a second lens group having a positive refracting power and being moved in the focusing operation, said second lens group having an aperture diaphragm and a plurality of lenses, in the following order from the object side, a first unit with a negative refracting power, a third unit with a negative refracting power and a fourth unit with a positive refracting power, at least one of plural lens surfaces located on the object side with respect to said aperture diaphragm being aspherical, at least one of plural lens surfaces located on the image side with respect to said aperture diaphragm being aspherical.

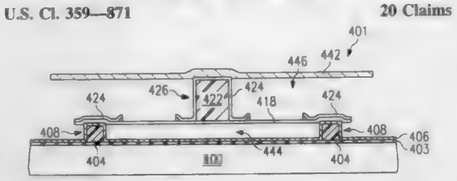
5,631,781
OUTSIDE MIRROR FOR A MOTOR VEHICLE
Helmut Hartmann, Ringstrasse 29, D-36151 Burghaun, Germany
Filed Feb. 14, 1995, Ser. No. 388,036
Claims priority, application Germany, Feb. 14, 1994, 94 02 385 U
Int. Cl.[6] G02B *5/08;7/182;* **B60R** *1/06*
U.S. Cl. 359—865 **13 Claims**

1. An outside mirror for a motor vehicle comprising a mirror glass divided along an approximately horizontally extending separating line into an upper mirror surface and a lower mirror surface in a mirror housing, one of said mirror surfaces being swivellable about an axis which extends approximately vertically the other of said mirror surfaces being swivellable about an axis which extends approximately horizontally in the proximity of the separating line, a shaft rotatably disposed n the mirror housing and defining said approximately vertically extending axis, said shaft operably interacting with each of said mirror surfaces, and a motor operator



operably connected to said shaft for simultaneously swivelling said mirror surfaces about their respective axes.

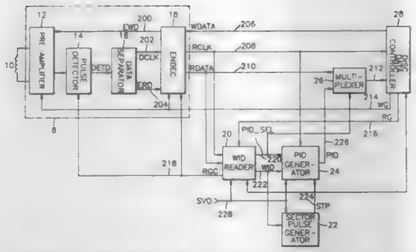
5,631,782
SUPPORT POST ARCHITECTURE FOR MICROMECHANICAL DEVICES
Gregory C. Smith, Carrollton, and Robert M. Boysel, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 333,195, Nov. 2, 1994. This application Jun. 7, 1995, Ser. No. 474,867
Int. Cl.[6] G02B *7/182;26/08;26/00*
U.S. Cl. 359—871 **20 Claims**



1. A micromirror device comprising:
a substrate;
at least one hinge support pillar supported by said substrate, said hinge support pillar comprised of a first pillar material enclosed by a first metal sheath and said substrate;
at least one hinge connected to said hinge support pillar;
at least one mirror support pillar connected to said hinge, said mirror support pillar comprised of a second pillar material enclosed by a second metal sheath and a layer forming said hinge; and
at least one mirror element supported by said mirror support pillar.

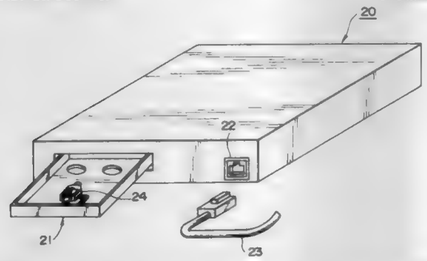
5,631,783
MAGNETIC DISC APPARATUS EMPLOYING CONSTANT-DENSITY RECORDING AND DRIVER ACCESS METHOD WHERE A WEDGE ID FIELD AND A PSEUDO ID FIELD ARE RECORDED
Jung-Il Park, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 31, 1995, Ser. No. 455,025
Claims priority, application Rep. of Korea, Dec. 21, 1994, 35785/1994
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—51 **28 Claims**

22. A method for accessing digital information on a magnetic disc surface employing constant-density recording, said method comprising the steps of:



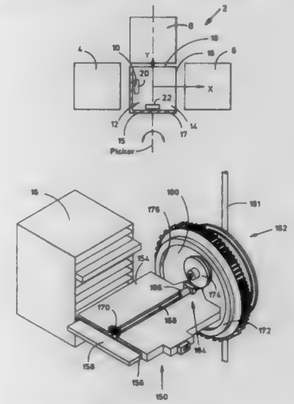
recording first data indicative of locations of data sectors in a data information area on said magnetic disc surface, said first data being recorded in only one interval for said data information area; and
generating second data from said first data, said second data indicative of a location of a corresponding one of said data sectors in said data information area, said second data being used to access said corresponding one of said data sectors in said data information area.

5,631,784
RECORDING AND REPRODUCING APPARATUS AND METHOD OF DUBBING FOR RECORD MEDIUM CASSETTE
Kazuyoshi Suzuki; Akihiro Uetake, both of Tokyo, and Takashi Sawada, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 12, 1993, Ser. No. 151,161
Claims priority, application Japan, Nov. 13, 1992, 4-304020
Int. Cl.[6] G11B *15/18;5/86;5/008;23/02*
U.S. Cl. 360—69 **8 Claims**



1. A recording and reproducing apparatus for a record medium cassette including a circuit board with a memory and a group of electrical terminals fixed thereto, comprising:
a housing;
connection means for making electrical contact with the electrical terminals of the record medium cassette when the record medium cassette is set in the apparatus;
read means connected to said connection means for reading out information stored in said memory of the set record medium cassette and providing said information at the electrical terminals of the set record medium cassette;
communication means connected to said read means for communicating the information read out by said read means to a second recording and reproducing apparatus, wherein said communication means performs said communication through a communication terminal disposed in an outer surface of said housing, said communication terminal being attached to a bus line for connecting the first and second recording and reproducing apparatuses; and
a tray slidably supported by said housing for longitudinal movement from a position within said housing to a position outside of said housing for setting the record medium cassette thereon, wherein said connection means is attached to said tray to be movable with said tray.

5,631,785
AUTOMATED DATA STORAGE LIBRARY EMPLOYING PICKER WITH MULTIPLE ACTION DIRECTIONS
Chi H. Dang, and Chi T. Dang, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 147,228, Nov. 3, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 532,028
Int. Cl.[6] G11B *15/68;5/48*
U.S. Cl. 360—92 **6 Claims**



1. A data storage library comprising:
a picker assembly including:
a picker casing having top and bottom sides which are bounded laterally by right, left, front and back sides, each of the right and left sides being bisected by a horizontally oriented x axis and each of the front and back sides being bisected by a horizontally oriented y axis, the x and y axes being perpendicular with respect to one another so as to define an x-y horizontal plane which is perpendicular to a vertically oriented z axis;
first and second gripper devices mounted in the picker casing wherein each gripper device is capable of gripping a cartridge, the first gripper device reciprocably movable parallel to the x axis and the second gripper device reciprocably movable parallel to the y axis;
one of the front and back sides of the picker casing having a first casing opening for receiving said cartridge within said picker casing and one of the right and left sides of the picker casing having a second casing opening for receiving said cartridge within said picker casing, and
first and second translation means reciprocably moving the first and second gripper devices respectively parallel to the x and y axes respectively in a common plane with respect to one another so that said cartridge can be received or ejected from the picker casing through either the first casing opening or the second casing opening without moving from said common plane;
means for reciprocably moving the picker casing along said z axis;
first, second and third columns of cartridge receptacles, each column having a plurality of vertically stacked cartridge receptacles with openings along a vertical receiving side of the column;
the first column being located adjacent the picker casing with its vertical receiving side facing said first casing opening as the picker casing is moved along said z axis so that said cartridge can be transferred between a receptacle in the first column and the picker casing;
the second and third columns being located adjacent the picker casing with their vertical receiving sides facing the right and left sides respectively of the picker casing as the picker casing is moved along said z axis so that said cartridge can be transferred between a receptacle in either

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of the second and third columns and the picker casing, depending upon the location of said second casing opening;

means for flipping the picker casing about the y axis so that the first gripper device can be positioned to grip said cartridge from a receptacle in either of the second or third columns; and

said first and second translation means including:

one of the top and bottom sides of the picker casing having a first slot which extends parallel to said x axis and the other of the top and bottom sides of the picker casing having a second slot which extends parallel to said y axis;

first and second lead screws rotatably mounted to the picker casing with the first lead screw extending parallel to said x axis opposite said first slot and the second lead screw extending parallel to said y axis opposite said second slot;

first and second nuts connected to the first and second grippers respectively and extending transversely through the first and second slots respectively;

the first nut being threaded to the first lead screw so that upon selective rotation of the first lead screw the first gripper reciprocably moves within the casing parallel to said x axis and adjacent the first slot and the second nut being threaded to the second lead screw so that upon selective rotation of the second lead screw the second gripper reciprocably moves within the casing parallel to said y axis and adjacent the second slot; and

the reciprocable movements of the first and second grippers being within said common plane.

5,631,786

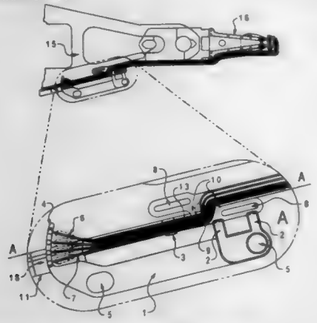
TERMINATION PAD MANIPULATOR FOR A LAMINATED SUSPENSION IN A DATA STORAGE SYSTEM

A. David Erpelding, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 246,025, May 19, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 478,161

Int. Cl.[6] G11B *21/16;17/00*

U.S. Cl. 360—97.01 **16 Claims**



1. An information storage system comprising:

a storage medium having a plurality of tracks for recording of data;

a slider having a read and/or write transducer formed therein and electrical leads terminating at termination pads;

an actuator arm having arm-electronics termination pads;

a multilayered suspension mechanically attached to the actuator arm and having a termination end and a slider end, the suspension maintaining the transducer in a closely spaced position relative to the storage medium during relative movement between the transducer and the storage medium, and further the suspension including:

a conductive lead structure, formed from one or more layers of the multilayered suspension, having a termination end, wherein the conductive lead structure has at least one conductor line contained in a patterned conductive layer formed over one or more layers, and further the conductive lead structure being electrically attached to the electrical leads of the slider at one end, and being electrically attached to the actuator arm on the other end, the at least one conductor line being terminated at the arm-electronics termination pads, and

a fixture, formed from one or more layers, being substantially in the same plane as the termination end of the conductive lead structure and having one or more anchor tabs attached to the conductive lead structure, wherein the fixture aligns the at least one conductor line to at least one termination pad of the arm-electronic termination pads during a termination process by rotating the termination end of the conductive lead structure relative to a slider end of the conductive lead structure along the plane of the termination end of the conductive lead structure;

actuator means coupled to the actuator arm for moving the transducer to selected tracks on the storage medium; and

means coupled to the termination pads for reading signals transmitted by the transducer representative of data bits recorded in the storage medium.

5,631,787

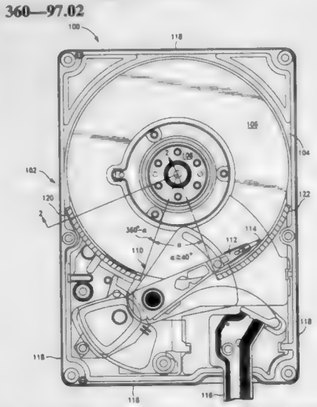
POWER REDUCTION SHROUD FOR A HARD DISK DRIVE

Benjamin Huang, Palo Alto, and Richard G. Ramsdell, Saratoga, both of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 266,729, Jun. 27, 1994, abandoned. This application Jul. 19, 1995, Ser. No. 504,357

Int. Cl.[6] G11B *33/14*

U.S. Cl. 360—97.02 **13 Claims**



1. A power reducing apparatus in a disk drive including a head and disk assembly containing a spindle motor for rotating a spindle hub at a constant angular velocity and a plurality of rotating data storage disks fixedly mounted to said spindle hub and extending radially therefrom, and a rotary voice coil actuator for positioning a stack of data transducer heads at respective data track locations defined on major surfaces of the rotating data storage disks, the power reducing apparatus comprising:

a base supporting said head and disk assembly and including a peripheral sidewall surrounding the base, the peripheral sidewall defining an interior space containing said head and disk assembly;

a cover mounted to the base for enclosing and hermetically sealing said interior space; and

a non-porous shroud means comprising a vertical wall of and within the interior space, the shroud means being spaced from an outer circumference of said disks by a predetermined distance, the shroud means extending continuously for at least approximately 320 mechanical degrees around the data storage disks and defining a gap therein for enabling said rotary voice coil actuator to project through said gap for positioning said stack of said data transducer heads, the shroud means fixedly attached to the base and extending from a floor wall of the base to the cover, the shroud means contacts the base and the cover to confine an air mass interacting with the rotating data storage disks and to reduce power consumption of the spindle motor.

5,631,788

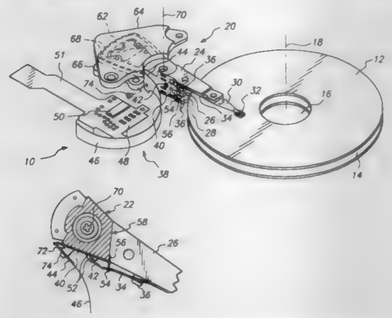
FLEX CIRCUIT FOR HEAD AND DISK ASSEMBLY

Charles D. Richards, San Jose, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Apr. 17, 1992, Ser. No. 870,681

Int. Cl.[6] G11B *5/48;5/55*

U.S. Cl. 360—104 **7 Claims**



1. A flexible circuit construction for connecting stationary electrical components to electrical components of a moving actuator means within a head and disk assembly of a disk drive, integrally formed from a plastic film material carrying a plurality of metal film conductive traces and defining a connecting region having a plurality of connection pads for connecting to head conductor wires, an elongated arcuate portion leading from the connecting region to a fixed substrate portion defining plural connections for mounting a read preamplifier/write driver/head selection integrated circuit device, the connecting region defining at least one edge region thereof a head wire tube engagement portion defining a slotted opening for positioning and securing a head wire tube carrying said head wires, said connecting region including tab means for engaging an adjacent portion of said moving actuator means, whereby when said tab means engages said adjacent portion, the head wire tube engagement portion is deflected into a guiding position for guiding said head wire tube toward said connection pads of said connecting region.

5,631,789

SUSPENSION CLIP RING MOUNT

F. Eugene Dion; Jim Fahey; Charlie Morris, all of Longmont, and Ken Fernalld, Boulder, all of Colo., assignors to Maxtor Corporation, Longmont, Colo.

Continuation of Ser. No. 266,540, Jun. 24, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 416,494

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—106 **18 Claims**

1. An actuator arm that is coupled to a bearing assembly of a hard disk drive, comprising:

an actuator arm that has a pair of opposed fingers that are deflected to apply a biased spring force against the bearing assembly as the sole means to attach said actuator arm to the bearing assembly.

5,631,790

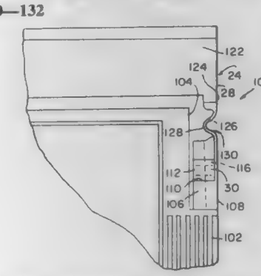
ENERGY ABSORBING VIDEO CASSETTE

Paul J. Gelardi, Kennebunkport; David A. Capotosto, Kennebunk, and James R. Dussault, Kennebunkport, all of Me., assignors to LCV Associates, Kennebunkport, Me.

Filed Sep. 21, 1992, Ser. No. 947,568

Int. Cl.[6] G11B *23/02*

U.S. Cl. 360—132 **12 Claims**



1. A video cassette apparatus comprising a base, a top, rear wall and side walls connected to the base and the top, forming a body having a frontal tape-exposing area, a dust door for covering the tape-exposing area integrally formed living hinges connecting the body and the dust door for permitting the dust door to move between an upward tape-exposing position and a downward tape-covering position, and energy absorption zones positioned near the living hinges for absorbing impact energies and reduce transmission of impact energies between the door and body through the hinges.

5,631,791

DISK CARTRIDGE AND METHOD OF PRODUCING THE SAME

Masayuki Osaki; Akira Nonomura, and Hiromichi Kimbara, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 392,154

Claims priority, application Japan, Feb. 22, 1994, 6-046554

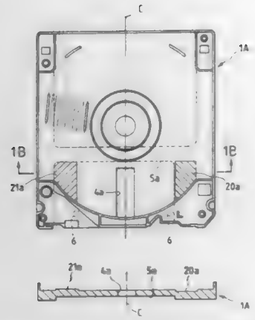
Int. Cl.[6] G11B *23/02;23/03;7/26*

U.S. Cl. 360—133 **11 Claims**

1. A disk cartridge comprising:

upper and lower injection molded shells for rotatably storing a rotary recording medium, said upper and lower injection molded shells each including length, width and thickness dimensions;

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shutter recesses formed in outer surfaces of said shells, said shutter recesses being asymmetric with respect to a center line extending along a center of the width dimension of said shells such that said shutter recesses are located more on one half of each of said upper and lower shells than in another half of each of said upper and lower shells with respect to said center line;

write/read windows formed in said shutter recesses;

a slidable shutter placed on said shutter recesses for opening and closing said write/read windows; and

means for reducing an imbalance of a flow of resin caused by the asymmetry of the shutter recess during injection molding of at least one of said shells, said means for reducing an imbalance of a flow of resin comprising a projection in said one half of said at least one of said upper and lower shells which is located within a first surface area of said at least one of said upper and lower shells which is delimited by a surface area of said shutter recess, and a recess which is located at a second surface area of said at least one of said upper and lower shells which is adjacently outside the surface area of said shutter recess.

5,631,792

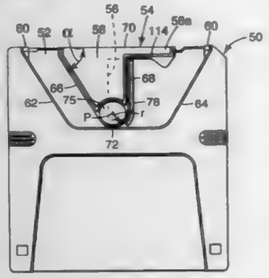
TRIANGLE-SHAPED MOVABLE SHUTTER FOR DATA STORAGE DISKETTE CARTRIDGE

Bruce W. Carlson; Jon R. Clark, both of Minneapolis, and William M. Dunbar, Cottage Grove, all of Minn., assignors to Imation Corp., Oakdale, Minn.

Filed Sep. 13, 1995, Ser. No. 527,490

Int. Cl.[6] G11B *23/03*

U.S. Cl. 360—133 **18 Claims**



1. A cartridge for a disc-shaped recording medium, the cartridge including a cover shell and a base shell which house the disc-shaped medium therebetween, wherein an opening is provided in at least one of the shells to allow a read/write head to access the medium, and wherein a movable shutter is provided along a front edge of the cartridge, the shutter having a substantially planar member for covering the opening when in the closed position, the member being approximately triangular in shape, the shade being defined by three edges: a first edge substantially parallel to a side edge of the cartridge, a second edge adjacent and parallel to the front edge of the cartridge, and a third edge oriented toward the second edge at an angle, α, wherein 40°≦α≦80°.

5,631,793

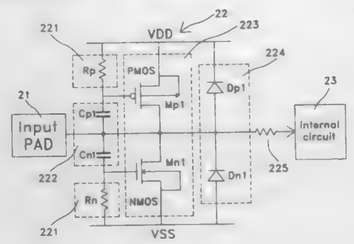
CAPACITOR-COUPLE ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT

Ming-Dou Ker; Chung-Yu Wu, both of Hsin-Chu; Tao Cheng; Chau-Neng Wu, both of Kaohsiung Hsien, and Ta-Lee Yu, Hsin-Chu Hsien, all of Taiwan, assignors to Winbond Electronics Corporation, Taiwan

Filed Sep. 5, 1995, Ser. No. 523,653

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **11 Claims**



1. A capacitor-couple electrostatic discharge (ESD) protection circuit adapted to be used in an integrated circuit (IC) and connected between an input pad and an internal circuit of said IC for protecting said internal circuit from being damaged by an ESD current, said capacitor-couple ESD protection circuit comprising:

an ESD bypass device electrically connected to said internal circuit for protecting said internal circuit by bypassing said ESD current, said device comprising an NMOS transistor having a gate for bypassing said ESD current when an ESD voltage of said ESD current occurring at said input pad is in a first polarity state and a PMOS transistor having a gate for bypassing said ESD current when said ESD voltage occurring at said input pad is in a second polarity state;

a capacitor-couple circuit electrically connected to said ESD bypass device and coupling a portion of said ESD voltage to said gate of said NMOS transistor when said ESD voltage occurring at said input pad is said first polarity, and to said gate of said PMOS transistor when said ESD voltage occurring at said input pad is in said second polarity state; and

a potential leveling device comprising a first diode and a second diode parasitized to said ESD bypass device for keeping said ESD voltage transmitted for said internal circuit at a low potential level and bypassing said ESD voltage via said first diode when said ESD voltage occurring at said input pad is in a third polarity state and via said second diode when said ESD voltage occurring at said input pad is in a fourth polarity state.

5,631,794

DIFFERENTIAL SHUNT-TYPE PROTECTION CIRCUIT

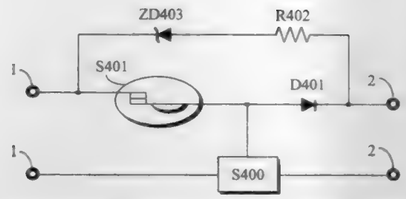
Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town Dzan-Hwa, Taiwan

Filed Oct. 3, 1994, Ser. No. 317,596

Int. Cl.[6] H02H *3/26*

U.S. Cl. 361—60 **3 Claims**

1. In a circuit comprising a thermostatic switch element and shunt components, wherein the shunt components are connected in parallel with the thermostatic switch element and include at least one shunt resistance element and a voltage-regulator component,



the improvement wherein the voltage regulator component forms a means for preventing shunting of current through said resistance element until a terminal voltage across the voltage regulator component exceeds a set point of the voltage regulator component, wherein the resistance element forms a means for shunting the current when the set point is exceeded, and wherein a control input of a power switch is connected between the thermostatic switch and a diode such that the power switch is controlled according to a state of the thermostatic switch.

5,631,795

LINE FAULT MONITORING APPARATUS

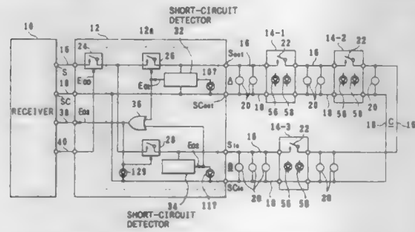
Kiyoaki Koyama, Tokyo, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Continuation of Ser. No. 249,266, Apr. 25, 1994, abandoned. This application Sep. 5, 1996, Ser. No. 708,876

Claims priority, application Japan, May 25, 1993, 5-122213

Int. Cl.[6] H02H *7/26*

U.S. Cl. 361—68 **15 Claims**



1. A line fault monitoring apparatus comprising:

receiving means;

a signal line elongated from said receiving means and connected to said receiving means in a loop form;

power supplying means for supplying power to said signal line;

a plurality of terminals, each of said terminals for monitoring a condition and connected to said signal line for sending information based on the monitoring; and

a plurality of line monitor devices which are disposed along said signal line, each particular one of said line monitor devices including fault indication means for indicating a portion of said signal line, connected to that particular one of said line monitor devices, as having a fault, said fault indication means being located in a corresponding one of said line monitor devices along said signal line;

wherein said plurality of terminals are disposed such that at least one of said terminals is interposed between adjacent ones of said line monitor devices.

5,631,796

ELECTRIC VEHICLE CONTROL SYSTEM

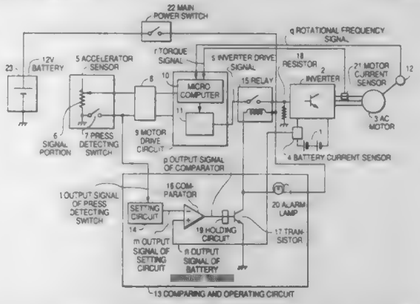
Shigeyuki Yoshihara, Katsuta; Sanshiro Obara, Tokai-mura; Nobunori Matsudaira, Hitachi, and Shotaro Naito, Katsuta, all of Japan, assignors to Hitachi, Ltd., and Hitachi Automotive Engineering Co. Ltd., both of Japan

Continuation of Ser. No. 123,480, Sep. 20, 1993, abandoned. This application Nov. 3, 1995, Ser. No. 552,438

Claims priority, application Japan, Sep. 18, 1992, 4-249138

Int. Cl.[6] H02H *3/18*

U.S. Cl. 361—79 **25 Claims**



1. An apparatus for operating an AC electric motor system having an AC motor, an acceleration pedal, an inverter coupled to provide AC power to said AC motor, a battery coupled to provide a DC electric current to said inverter, and a control unit for controlling said inverter in response to said motor speed command input, said apparatus comprising:

a device comprising first means and second means, said first means generating a first signal having a predetermined constant value when the acceleration pedal is not depressed and a different, higher value when the acceleration pedal is depressed, and said second means generating said motor speed command input according to an acceleration pedal position when said acceleration pedal is depressed;

a sensor for detecting said DC electric current supplied from said battery to said inverter, and for generating a DC electric current signal having a value indicative of magnitude of the DC electric current;

a comparator arrangement for comparing values of said electric current signal and said first signal, and for generating an output signal in response to a determination that said electric current signal is greater than said first signal; and

a switch apparatus for curtailing supply of electric power from said inverter to said AC motor in response to said output signal.

5,631,797

OVERVOLTAGE PROTECTOR

David P. Chabinec, Spring Township, Berks County, and Dean M. Umberger, Stouchsburg, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 24, 1995, Ser. No. 506,287

Int. Cl.[6] H02H *3/20*

U.S. Cl. 361—91 **4 Claims**

1. A overvoltage protection circuit for limiting the voltage on a telephone line, the circuit having first and second terminals for coupling to different wires of the telephone line and another terminal for coupling to a ground, CHARACTERIZED BY:

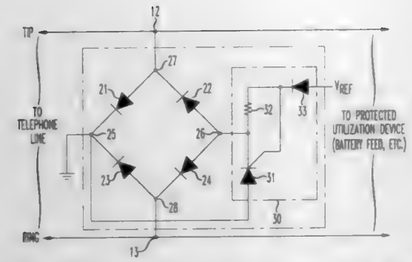
a first diode having an anode connected to the first terminal and a cathode connected to the ground terminal;

a second diode having a cathode connected to the first terminal and an anode connected to an intermediate node;

a third diode having an anode connected to the second terminal and a cathode connected to the ground terminal;

a fourth diode having a cathode connected to the second terminal and an anode connected to the intermediate node;

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a thyristor, having a gate, anode and cathode, the cathode connected to the intermediate node and the anode connected to the ground terminal; and,

an external voltage source, coupling to the gate of the thyristor, for triggering the thyristor when the voltage on the intermediate node exceeds the voltage source.

5,631,798

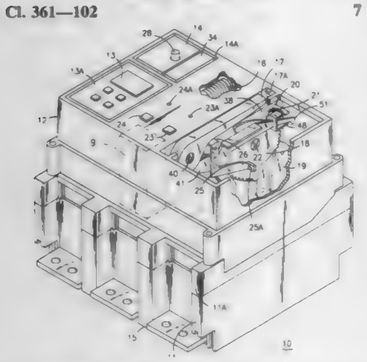
MODULAR ACCESSORY MECHANICAL LOCK-OUT MECHANISM

Raymond K. Seymour, Plainville, and Roger N. Castonguay, Terryville, both of Conn., assignors to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 266,399, Jun. 27, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,084

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—102 **7 Claims**



1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

an insulative base and an insulative cover;

an operating mechanism in said base controlled by an electronic trip unit arranged within said cover, said operating mechanism including operating springs to open and close a pair of contacts; and

an accessory unit arranged within said cover, said accessory unit including reset means to allow manual reset of said accessory unit after said accessory unit has become actuated and interlock means within said cover interacting with said operating mechanism and said accessory unit allowing said operating mechanism to charge said operating springs while preventing said operating mechanism from closing said contacts until said accessory unit is reset, said interlock means includes an interlock lever, an accessory lever subjacent said accessory unit, a sidearm upstanding from said accessory lever and an interlock lever tab interacting with a surface on said accessory lever sidearm.

5,631,799

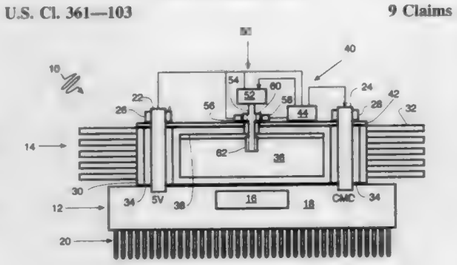
FUSION HEAT SINK FOR INTEGRATED CIRCUIT

Anthony Sayka, San Antonio, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 158,124, Nov. 24, 1993, Pat. No. 5,477,409. This application Sep. 28, 1995, Ser. No. 535,538

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **9 Claims**



1. An integrated circuit system comprising:

an integrated circuit, said integrated circuit having a temperature range within which it can safely operate;

a fusible material that melts from a solid phase to a liquid phase at a temperature within said temperature range;

a heat sink body of body material that does not melt within said temperature range, said body defining a cavity containing and enclosing said fusible material, said body physically separating said fusible material from said integrated circuit, said body thermally coupling said fusible material to said integrated circuit;

phase means for monitoring said fusible material to determine when said fusible material changes from its solid phase to its liquid phase and when said fusible material changes from its liquid phase to its solid phase; and

power reduction means for reducing the power dissipated by said integrated circuit, said power reduction means being coupled to said phase means so that said power reduction means reduces the power dissipated by said integrated circuit in response to a determination by said phase means that said fusible material is in its liquid phase.

5,631,800

APPARATUS FOR DETERMINING OPERATING STATE OF COOLING FAN

Sung-kon Jin, Anyang, and Seung-hwe Hwang, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 31, 1996, Ser. No. 594,441

Claims priority, application Rep. of Korea, Feb. 24, 1995, 95-3701

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **16 Claims**

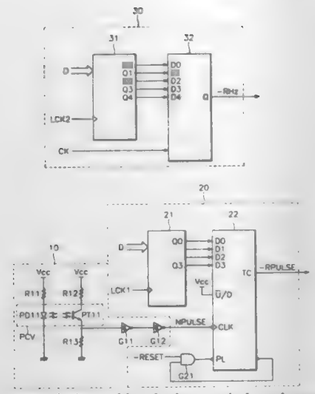
10. An apparatus for determining an operating state of a cooling fan in a computer system, said apparatus comprising:

first means for generating a pulse signal for each revolution of said cooling fan as said cooling fan rotates to expel heat generated by said computer system;

second means for generating signals having a predetermined period;

third means for setting a unit time period for determining said operating state of said cooling fan in accordance with said signals generated by said second means; and

fourth means for determining said operating state of said cooling fan based on outputs of said pulse signal provided from said



first means during said unit time period, and generating an interrupt signal to prevent further operation of said computer system when said operating state of said cooling fan is determined to be abnormal.

5,631,801

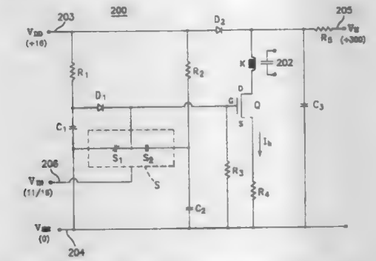
FAST RELAY CONTROL CIRCUIT WITH REDUCED BOUNCE AND LOW POWER CONSUMPTION

Robert P. DuPuy, Cherry Hill, N.J., assignor to General Electric Company, New York, N.Y.

Filed Dec. 28, 1994, Ser. No. 364,965

Int. Cl.[6] H01H *47/10*

U.S. Cl. 361—154 **2 Claims**



1. A relay control circuit for controlling the closure of a coil-operated relay contact in response to an input signal applied to the relay control circuit at a starting time, the relay control circuit comprising:

(a) means for applying a rapidly increasing electrical current to the coil during an initial time period beginning at the starting time in response to the input signal, whereby a rapidly increasing force is applied to the contact to move the contact towards a closed position; means (a) comprising:

(1) a charging capacitor for supplying an initially large energizing potential to the coil during the initial time period, wherein the coil is for applying a force to the contact to move the contact towards the closed position in response to the electrical current conducted therethrough;

(2) means for resisting or conducting the electrical current in response to a control potential; wherein the control potential is applied to a third terminal of the means for resisting or conducting the electrical current and the means for resisting or conducting the electrical current has first and second terminals and is coupled at its first terminal to the coil; and

(3) means for regulating the control potential so that means (a)(2) does not resist the electrical current during the initial time period;

(b) means for decreasing the electrical current applied to the coil after the initial time period and means for maintaining the electrical current above a predetermined minimum magnitude until the contact is closed; means (b) comprising:

(1) the means for resisting or conducting the electrical current in response to the control potential;

(2) means for regulating the control potential so that the means for resisting or conducting the electrical current increasingly resists the electrical current after the initial time period until the electrical current reaches the predetermined minimum magnitude;

(3) means for regulating the control potential so that the means for resisting or conducting the electrical current increasingly conducts the electrical current after the electrical current reaches the predetermined minimum magnitude;

(4) means for decreasing the energizing potential supplied to the coil after the initial time period until the energizing potential reaches a predetermined minimum potential magnitude; and

(5) means for maintaining the energizing potential above the predetermined minimum potential magnitude until the contact is closed;

(c) an input terminal for receiving the input signal;

(d) means for applying means (b)(2) to the third terminal of the means for resisting or conducting the electrical current at the starting time in response to the input signal; and

(e) means for removing means (b)(2) from the third terminal of the means for resisting or conducting the electrical current when the electrical current reaches the predetermined minimum magnitude and for applying means (b)(3) to the third terminal of the means for resisting or conducting the electrical current when the electrical current reaches the predetermined minimum magnitude;

wherein:

the means for resisting or conducting the electrical current comprises a field-effect transistor, wherein the second terminal of the transistor is coupled to a second power-supply terminal through a fourth resistor;

means (d) comprises a second switch coupled to the third terminal of the transistor and to the input terminal and is configured to close when the input signal is received at the starting time;

means (b)(2) comprises a second capacitor and a third resistor, wherein the second capacitor is coupled at its first end through the second switch to the first end of the third resistor and to the third terminal of the transistor, and the second end of the second capacitor and the second end of the third resistor are coupled to the second power-supply terminal, further wherein the second capacitor is coupled at its first end through a second resistor to a first power-supply terminal;

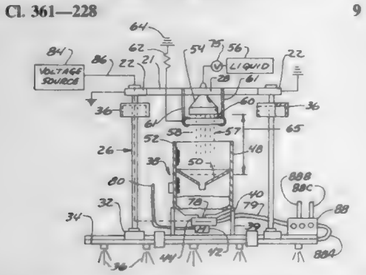
means (b)(3) comprises a first resistor, a first capacitor, a first diode, and a first switch, wherein the first end of the first capacitor and the anode of the first diode are coupled to the first power-supply terminal through the first resistor, the second end of the first capacitor is coupled to the second power-supply terminal, and the cathode of the first diode is coupled to the third terminal of the transistor and through the first switch to the second end of the first capacitor and to the second power-supply terminal, wherein the first switch is coupled to the input terminal and is configured to open when the input signal is received at the starting time;

means (b)(4) comprises the charging capacitor, wherein the charging capacitor is coupled at its first end to the second power-supply terminal, and at its second end to the first end of the coil and through a fifth resistor to a third power-supply terminal; and

means (b)(5) comprises a second diode coupled at its anode to the first power-supply terminal and at its second end to the first end of the coil.

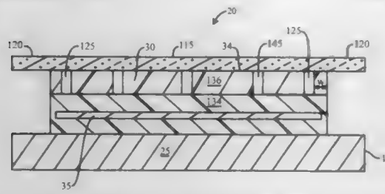
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5,631,802
CONTROL RING FOR INPUT SPRAY IN ELECTROSTATIC SPRAY SYSTEM
Dennis L. Trusty, Bismarck, N. Dak., assignor to Clark Equipment Company, Woodcliff Lake, N.J.
Filed Jan. 13, 1995, Ser. No. 372,564
Int. Cl.[6] B05B *5/025*
U.S. Cl. 361—228 **9 Claims**



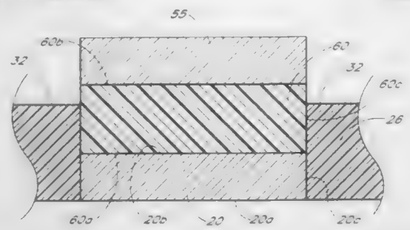
1. An electrostatic spray system device, including a sprinkler head at substantially ground electrical potential transferring a conductive liquid to a container where an electrostatic charge is applied to such liquid, said sprinkler head being above the container and providing a plurality of streams of conductive liquid forming a sprinkler liquid column between the sprinkler head and liquid in the container, a conductive ring of larger size than the sprinkler liquid column surrounding at least a major portion of a periphery of the sprinkler liquid column adjacent to the sprinkler head and spaced above the container, and a resistor connected to the conductive ring at one end thereof and directly to substantially ground potential at the other end thereof to form substantially a ground potential at the ring for limiting current through the ring to ground potential.

5,631,803
EROSION RESISTANT ELECTROSTATIC CHUCK WITH IMPROVED COOLING SYSTEM
John F. Cameron, Los Altos, Calif.; Joseph F. Salfelder, Williston, Vt., and Chandra Deshpandey, Fremont, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Jan. 6, 1995, Ser. No. 369,237
Int. Cl.[6] H02N *13/00*
U.S. Cl. 361—234 **26 Claims**



1. An electrostatic chuck for holding a substrate having a center and a perimeter, the chuck comprising:
(a) a base;
(b) an insulator on the base, the insulator having (i) an electrode embedded therein, (ii) a top surface comprising cooling grooves for holding coolant therein, and (iii) a conformal, resilient, sealing edge between the tips of the cooling grooves and a peripheral edge of the insulator,
wherein the sealing edge comprises a width w sized less than about 7 mm, and sized sufficiently small that the coolant in the tips of the grooves cools the perimeter of the substrate held on the chuck, and
wherein the sealing edge is sufficiently thick that when a substrate is electrostatically held on the chuck and coolant is held in the cooling grooves, the sealing edge of the insulator resiliently conforms to the substrate so that substantially no coolant leaks out from the tips of the cooling grooves, and
whereby during processing of a substrate held on the chuck, the coolant in the cooling grooves is capable of maintaining an average difference in temperatures between the center and perimeter of the substrate of less than about 10° C.

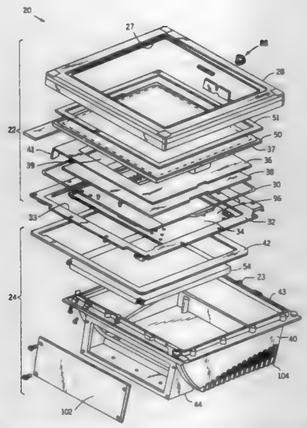
5,631,804
CONTACT FILL CAPACITOR HAVING A SIDEWALL THAT CONNECTS THE UPPER AND LOWER SURFACES OF THE DIELECTRIC AND PARTIALLY SURROUNDS AN INSULATING LAYER
Daryl C. New, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Nov. 13, 1995, Ser. No. 559,186
Int. Cl.[6] H01G *4/06;4/20*
U.S. Cl. 361—312 **8 Claims**



1. A contact fill capacitor formed in an integrated circuit comprising:
a conductive bottom electrode;
an insulating layer having a contact via therethrough, the via at least partially filled with a dielectric material having a dielectric constant of at least 100;
the dielectric material having an upper surface, a lower surface superjacent the bottom electrode, and a sidewall connecting said upper and lower surfaces, at least a part of the sidewall surrounded by the insulating layer; and
a conductive top electrode superjacent and at least extensive with the upper surface of the dielectric material.

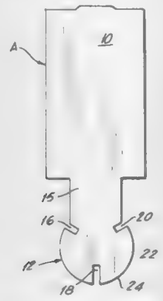
5,631,805
TOUCH SCREEN ENCLOSURE HAVING AN INSERTABLE GRAPHIC SHEET
Glenn D. Bonsall, Vancouver, Canada, assignor to Dynapro Systems, Inc., New Westminster, Canada
Filed Sep. 27, 1995, Ser. No. 534,373
Int. Cl.[6] G06F *1/16;* **H05K** *5/02;7/02*
U.S. Cl. 361—681 **20 Claims**

1. An enclosure system, the enclosure system comprising:
a front enclosure;
a touch screen;
a pan coupled to the front enclosure, the touch screen being located between the pan and the front cover;
a retainer disposed between the pan and the touch screen;
a hinge;
a graphic sheet including printed indicia, the graphic sheet being disposed between the touch screen and the retainer; and



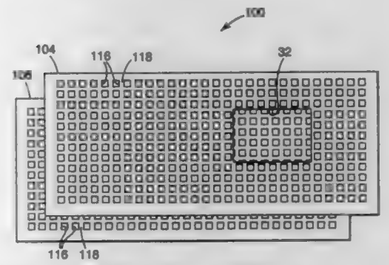
a rear enclosure pivotably coupled to the front enclosure, the rear enclosure being releasably secured to the front enclosure about the hinge, wherein the graphic sheet may be accessed by pivotably opening the front enclosure from the rear enclosure and opening the pan from the front enclosure.

5,631,806
LEAD WITH SLITS FOR REDUCING SOLDER OVERFLOW AND ELIMINATING AIR GAPS IN THE EXECUTION OF SOLDER JOINTS
Robert Fried, 80 Northern Pkwy., West Plainview, N.Y. 11803; Kuo J. Tseng, Twenty Chang Road 3rd Fl. 66-2, Hsin, Taipei, and Hsi Y. Hsiao, 278 Alley 37 Lane, 4th Fl. 10-3, Taipei, both of Taiwan
Filed Jul. 31, 1995, Ser. No. 509,378
Int. Cl.[6] H01L *23/488;* **H05K** *3/34;* **B23K** *35/14;* **H01R** *4/02*
U.S. Cl. 361—773 **18 Claims**



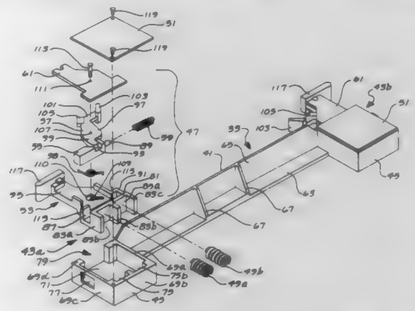
1. A lead to be soldered to an electrical component in a circuit module, said lead comprising a first part adapted to extend beyond the module for external electrical connection and a second part adapted to be joined to the electrical component, said second part of said lead comprising a substantially planar interior solid portion and an edge, and a first slit in said second part extending from said interior portion towards said edge.

5,631,807
ELECTRONIC CIRCUIT STRUCTURE WITH APERTURE SUSPENDED COMPONENT
Michael E. Griffin, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 20, 1995, Ser. No. 376,017
Int. Cl.[6] H05K *1/11;1/18;7/20;7/14*
U.S. Cl. 361—794 **27 Claims**



1. An electronic circuit structure comprising:
a circuit substrate having a first major surface, a second major surface, and a plurality of side surfaces, said circuit substrate including a plurality of conductive surfaces;
an aperture extending through said circuit substrate from said first major surface to said second major surface; and
an electronic component suspended within said aperture, said electronic component including a plurality of conductive leads coupled to one or more of said conductive surfaces,
wherein said circuit substrate includes a voltage plane, a ground plane, and a dielectric plane, said voltage plane and said ground plane being disposed on opposite sides of said dielectric plane, wherein said aperture extends through said voltage plane, said ground plane, and said dielectric plane, and wherein each of said voltage plane and said ground plane includes an array of additional apertures.

5,631,808
CARD RETENTION LATCH
Phillip K. Collins, III, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed May 10, 1995, Ser. No. 438,628
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—801 **24 Claims**



14. In a card file containing at least one daughter card mounted in a slot in said card file, the improvement comprising a retention latch assembly, said retention latch assembly comprising:
(a) latch slots located adjacent one side of both ends of the outer edge of said at least one daughter card; and
(b) two retaining latches, one located on each upper outer corner of said daughter card adjacent said latch slots, each of said retaining latches comprising:

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(1) a latch housing containing a hole in the wall of said housing facing the adjacent latch slot;

(2) a plunger assembly mounted in said housing, said plunger assembly comprising:

(i) a plunger housing including an open-ended chamber having a longitudinal axis that lies orthogonal to the wall of said housing containing said hole, said plunger housing mounted in said latch housing such that the open end of said chamber is alignable with said hole in said wall of said latch housing;

(ii) a latch pin mounted in said chamber;

(iii) first spring means mounted in said chamber for urging said latch pin toward the open end of said chamber; and

(iv) a retraction lever coupled to said latch pin for moving said latch pin away from the open end of said chamber; and

(3) second spring means for urging said plunger housing away from a position where the open end of said chamber is aligned with said hole in said wall of said latch housing.

5,631,809

SEMICONDUCTOR DEVICE FOR ULTRAHIGH FREQUENCY BAND AND SEMICONDUCTOR APPARATUS INCLUDING THE SEMICONDUCTOR DEVICE

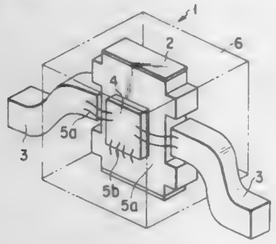
Eiji Takagi, Yokosuka; Yuji Iseki, Yokohama, and Naoko Ono, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1994, Ser. No. 305,397

Claims priority, application Japan, Sep. 17, 1993, 5-231674

Int. Cl.° H05K *9/00;7/02;* **H01L** *23/043;23/552*

U.S. Cl. 361—820 **10 Claims**



1. A semiconductor device comprising:

a semiconductor chip,

a sheet-like metal member electrically connected to the semiconductor chip and serving as a ground electrode for the chip, and

input/output electrodes electrically connected to the semiconductor chip and situated in the same plane as that of the sheet-like metal member;

said chip, said sheet-like metal member, and said input/output electrodes being encapsulated in an electrically insulating member having a bottom surface and adapted to be mounted on a surface of a circuit board,

wherein the sheet-like metal member is brought out from inside of the electrically insulating member without being bent and has first and second end faces, said first end face situated in substantially the same plane as the bottom surface of the electrically insulating member which faces to the surface of the circuit board when the device is mounted on the circuit board, and

wherein the second end face of the sheet-like metal member is brought out from the electrically insulating member of a rectangular parallelepiped.

5,631,810

CONTROL OF SWITCHING DEVICES IN SYNCHRONIZED-RECTIFICATION SYSTEM

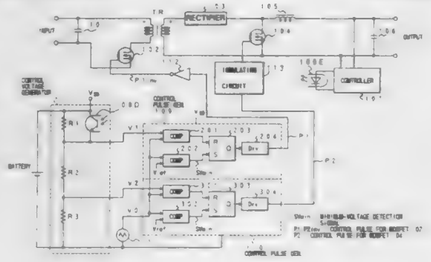
Yoshinori Takano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 28, 1995, Ser. No. 563,687

Claims priority, application Japan, Nov. 28, 1994, 6-317679

Int. Cl.° H02M *3/335*

U.S. Cl. 363—21 **20 Claims**



1. A controller for performing control of a primary switch and a freewheel switch provided in a DC—DC converter, said primary switch connected to the primary of a transformer, and said freewheel switch connected to the secondary of said transformer, said controller comprising:

control voltage generating means for generating a first control voltage and a second control voltage which have a predetermined voltage difference, said first control voltage being associated with said primary switch, and said second control voltage being associated with said freewheel switch;

periodic voltage generating means for generating a periodic varying voltage having a predetermined inclination in voltage;

detecting means for detecting a time instant at which said periodic varying voltage reaches a start voltage selected from a peak voltage and a bottom voltage of said periodic varying voltage;

comparing means for comparing said periodic varying voltage with each of said first control voltage and said second control voltage, generating a first timing signal when said periodic varying voltage reaches said first control voltage from said start voltage, and generating a second timing signal when said periodic varying voltage reaches said second control voltage from said start voltage;

state retaining means for retaining a first output signal and a second output signal at one of an active state and an inactive state based on said time instant, said first timing signal and said second timing signal, said first output signal and said second output signal concurrently changing to said active state and said inactive state at said time instant, respectively, said first output signal changing from said active state to said inactive state when receiving said first timing. signal from said comparing means, and said second output signal changing from said inactive state to said active state when receiving said second timing signal from said comparing means; and

driving means for driving said primary switch and said freewheel switch according to said first output signal and said second output signal, respectively, such that said primary switch is on when said first output signal is active, said freewheel switch is on when said second output signal is active, said primary switch is off when said first output signal is inactive, and said freewheel switch is off when said second output signal is inactive.

5,631,811

AUXILIARY POWER SUPPLY DEVICE

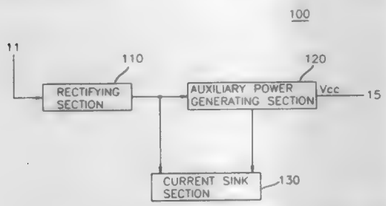
Dong-Young Huh, Kyeonggi-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 14, 1996, Ser. No. 601,521

Claims priority, application Rep. of Korea, Feb. 14, 1995, 1995-2641

Int. Cl.° H02M *3/335*

U.S. Cl. 363—21 **11 Claims**



1. In a main power supply device including a bridge diode for full-wave rectifying an alternating power source inputted from the external, a transformer for smoothing the voltage from the bridge diode and for exciting a secondary winding via a primary winding, a diode and a capacitor for rectifying and smoothing the excited voltage of the transformer and for applying it to a load, a control section for generating a control signal to control the switching operation of a switching transistor according to an output voltage from the capacitor, an auxiliary power supply device for generating an auxiliary power source to drive the control section, and a switching transistor for controlling current flowing through the transformer by means of the control signal from the control section, the auxiliary power supply device comprising:

a rectifying section for half-wave rectifying the alternating power source; and

an auxiliary power generating section for smoothing the output voltage from the rectifying section and generating an auxiliary power source to apply to the control section.

5,631,812

MOTOR DRIVE CONTROL METHOD

Tetsuro Sakano, and Kohei Arimoto, both of Oshino-mura, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

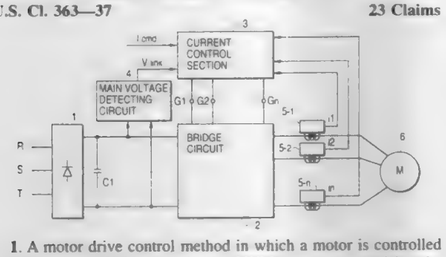
PCT No. PCT/JP93/01439, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO94/08392, PCT Pub. Date Apr. 14, 1994

PCT Filed Oct. 6, 1993, Ser. No. 244,594

Claims priority, application Japan, Oct. 6, 1992, 4-290872

Int. Cl.° H02M *5/45;* **H02P** *3/18*

U.S. Cl. 363—37 **23 Claims**



1. A motor drive control method in which a motor is controlled based on Pulse Width Modulation (PWM) system, comprising the steps of:

obtaining a voltage command by multiplying a current deviation, which is equivalent to a difference between a current command and an actual motor current detected by a current detector, by a gain in a current loop;

obtaining a duty ratio of a PWM signal based on said voltage command and a main voltage equivalent;

outputting the PWM signal of the obtained duty ratio to gates of transistors in a bridge circuit of a power conversion circuit, and then controlling the motor by executing ON/OFF operations on said transistors;

one of detecting an actual main voltage which is applied, as the actual main voltage, to the bridge circuit of said power conversion circuit, and calculating the actual main voltage by detecting a value connected with the actual main voltage; and

one of replacing said main voltage equivalent with said actual main voltage without varying said gain, and without varying said main voltage equivalent changing said gain to equal a result of dividing a value by said actual main voltage.

5,631,813

REGENERATIVE AC/DC/AC POWER CONVERTER FOR A PLURALITY OF MOTORS

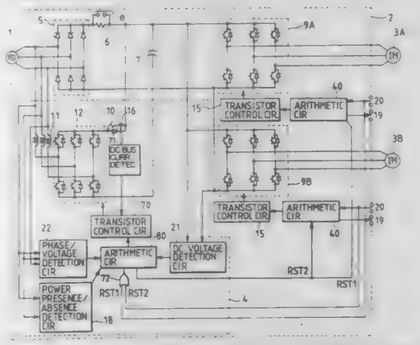
Wataru Ikeshita, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 409,607

Claims priority, application Japan, Aug. 24, 1994, 6-199636

Int. Cl.° H02M *5/458*

U.S. Cl. 363—37 **6 Claims**



1. An inverter apparatus operative with a plurality of motors comprising:

forward converting means for converting an input from an AC power supply on an AC input side into a DC voltage output on a DC output side, said forward converting means including a diode bridge;

regenerative power converting means for inversely converting said DC voltage output from the forward converting means into an AC voltage and returning said AC voltage to the AC power supply, the regenerative power converting means being coupled to said forward converting means and having a plurality of first circuit arms, each first circuit arm comprising a parallel connection of a switching element and a diode, operation of said plurality of first circuit arms being controlled by a controlling means; and

a plurality of inversely converting means, each of which is coupled to said DC output side of said forward converting means and said regenerative power converting means;

said plurality of inversely converting means each having a plurality of second circuit arms, each second circuit arm comprising a parallel connection of a switching element and a diode, and operation of said plurality of inversely converting means each being independently controlled;

said forward converting means designed to permit operation of each of the plurality of inversely converting means under a full motor load;

said regenerative power converting means designed to return power to the AC power supply when the plurality of motors all operate in complete regenerative mode; whereby

said diode bridge and said regenerative power converting means operate as a converter common to said plurality of inversely converting means and said plurality of inversely converting

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means are operative to independently output arbitrary voltages and frequencies, to control said plurality of motors.

5,631,814

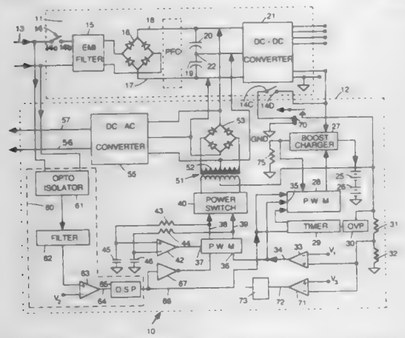
UNINTERRUPTIBLE POWER SUPPLY BASED ON NON-INVASIVE CONNECTION OF BACKUP CIRCUIT TO SWITCH POWER SUPPLY

Alexander Zak, Ashkelon, Israel, assignor to Abraham Lavsky, and Hanan Gazit, both of Tel Aviv, Israel

Filed Jun. 16, 1995, Ser. No. 490,693

Int. Cl.[6] H02M *5/45;5/458;* **H02J** *7/00;9/00*

U.S. Cl. 363—37 **5 Claims**



1. An uninterruptible power supply including a backup power supply for connecting to an off-the-shelf switch power supply adapted for coupling to an AC line voltage for supplying at least DC electrical power to a load without requiring modification to the switch power supply;

the switch power supply comprising:

an EMI filter for coupling to the AC line voltage,

a rectifier coupled to an output of the EMI filter,

at least one holdover capacitor coupled to an output of the rectifier, and

a DC to DC converter coupled to the holdover capacitor; and

the backup power supply comprising:

a DC energy storage device,

DC to DC step up converter means coupled to the DC energy storage device and to the holdover capacitor of the switch power supply,

charging means coupled to an output of the switch power supply and to the energy storage device, and

a detector circuit coupled to the AC power source for detecting a loss of said AC line voltage;

said backup power supply being responsive to a loss of said AC line voltage for supplying DC power from the DC energy storage device to the at least one holdover capacitor of the Switch Power Supply and being responsive to an existence of said AC line voltage for providing charging current to the DC energy storage device.

5,631,815

HIGH VOLTAGE POWER SUPPLY

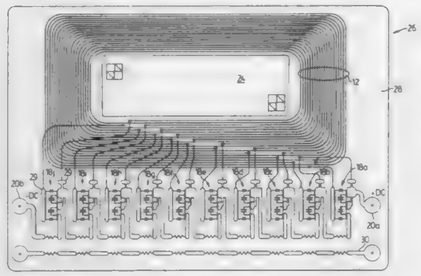
James D. Cross, 41 Allen Street East, Waterloo, Ontario, Canada

Filed Dec. 12, 1995, Ser. No. 570,918

Int. Cl.[6] H02M *3/18;7/00*

U.S. Cl. 363—68 **20 Claims**

1. An apparatus for generating a DC output voltage in an environment subject to inclusion of a gaseous medium having a Paschen minimum voltage level and wherein the DC output voltage is substantially greater than the Paschen minimum voltage for the medium, said apparatus comprising:



(a) a primary winding having an input port for receiving an alternating voltage;

(b) a secondary winding inductively coupled to said primary winding;

(c) induction means coupled to said primary and secondary windings for inducing a voltage in said secondary winding in response to excitation of said primary winding by said alternating voltage;

(d) said secondary winding comprising a plurality of coils and each of said coils having a turns ratio for producing an induced voltage less than the Paschen minimum voltage;

(e) a rectifier element connected to each of said coils for converting said induced voltage into a DC voltage component; and

(f) said rectifier elements being coupled to produce a DC output voltage by summing a plurality of said DC voltage components.

5,631,816

DC VOLTAGE CONVERTER WITH CURRENT LIMITATION

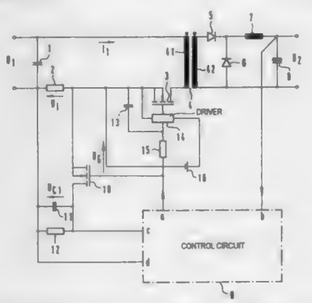
Bogdan Brakus, Stockdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 11, 1995, Ser. No. 500,589

Claims priority, application European Pat. Off., Jul. 18, 1994, 94111189

Int. Cl.[6] H02M *3/24;5/42;7/44*

U.S. Cl. 363—97 **11 Claims**



1. A clocked voltage converter with current limitation, comprising:

a transformer having a primary side at which a main circuit is provided having a voltage input and a secondary side at which an output circuit is provided having a voltage output;

a first electronic switch in series with a precision resistor connected between the input voltage and the primary side of the transformer;

a peak value rectification circuit comprising a second electronic switch connected between the precision resistor and a capacitor;

a discharge circuit connected to discharge said capacitor;

a control circuit having first pulses at an output thereof which are fed to a control input of said second electronic switch and also to an input of a pulse processing circuit, said pulse processing circuit creating second pulses which are different than said first pulses and which are fed to a control input of said first electronic switch;

said control circuit also having an input connected to said voltage output, and another control input connected to said capacitor, and said control circuit providing said first pulses at said output so that said first electronic switch is controlled dependent on an output voltage of said peak value rectification circuit and an output voltage at said voltage output for limiting pulse current flowing in said main circuit; and

said pulse processing circuit producing said second pulses which are different than said first pulses so that the second electronic switch switches into an inhibited condition no later than simultaneously with switching of said first electronic switch into an inhibited condition.

5,631,817

LOAD CURRENT CONTROL OF PULSE WIDTH MODULATED DRIVE SIGNAL INCLUDING CALIBRATION AND CORRECTION COEFFICIENT

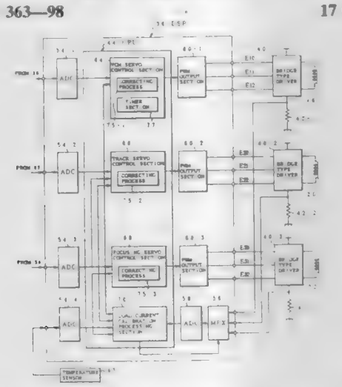
Akira Minami, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Apr. 19, 1995, Ser. No. 424,130

Claims priority, application Japan, Jun. 13, 1994, 6-130071

Int. Cl.[6] H02M *3/24;5/42*

U.S. Cl. 363—98 **17 Claims**



1. An apparatus for controlling a current of a load by modulating a pulse width of a drive pulse signal, comprising:

control means for outputting a current instruction value to control said load;

pulse width modulating means for inputting a current instruction value of said control means and for forming and outputting a pulse signal of a duty ratio according to said current instruction value;

driving means for current driving said load by an output pulse signal of said pulse width modulating means;

calibrating means, when executing a calibrating process, for outputting a reference current instruction value corresponding to a predetermined reference current of said load to said pulse width modulating means, for measuring a current of said load, and when said measurement current does not coincide with said reference current, for adjusting the current instruction value for said pulse width modulating section, for obtaining a current instruction value at which a measurement current that coincides with said reference current is derived, and for deciding a correction coefficient of the current instruction value from said measurement result; and

correcting means for correcting said current instruction value which is outputted from said control means by said correction coefficient obtained by said calibrating means and for outputting to said pulse width modulating means.

5,631,818

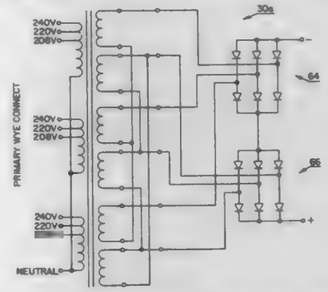
POWER SUPPLY FOR ELECTROSTATIC PRECIPTATOR ELECTRODES

Nathaniel M. Johnson, Laconia; S. Edward Neister, New Durham, both of N.H., and Carl F. Butler, deceased, late of Redmond, Wash., assignors to Zero Emissions Technology Inc., New Durham, N.H.

Filed Feb. 14, 1995, Ser. No. 388,514

Int. Cl.[6] H02M *7/06*

U.S. Cl. 363—126 **22 Claims**



1. A power supply for providing a substantially ripple-free DC voltage to the electrodes of an electrostatic precipitator from a three phase AC power source, said power supply comprising:

a. a three-phase power transformer having three primary windings adapted to be electrically connected with a source of three phase AC power and having six secondary windings, wherein a pair of two secondary windings is associated with a respective one of each of the three primary windings to provide from the secondary windings a plurality of phase displaced AC voltage outputs;

b. a first three-phase, full-wave rectifier array connected with output terminals of a first group of interconnected secondary windings that include a first secondary winding associated with a respective one of each of the primary windings, and a second three-phase, full-wave rectifier array connected with output terminals of a second group of interconnected secondary windings that include a second secondary winding associated with a respective one of each of the primary windings, wherein the first and second rectifier arrays are connected in series to define a rectifier stack that includes a pair of output terminals to provide a substantially ripple-free DC output voltage; and

c. a pair of electrostatic precipitator electrodes connected with respective ones of the rectifier stack output terminals for charging and collecting particulates that pass adjacent the electrodes.

5,631,819

POWER CONVERTER

Ryoso Masaki; Takashi Ikimi, both of Hitachi; Hironori Ohashi, Funabashi; Yuusuke Takamoto, Hitachi; Seiji Ishida, Funabashi, and Sanshiro Obara, Toukai-mura, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 16, 1996, Ser. No. 633,000

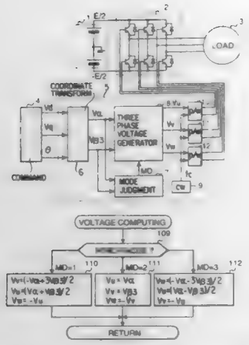
Claims priority, application Japan, Apr. 17, 1995, 7-115057

Int. Cl.[6] H02M *7/537;7/538*

U.S. Cl. 363—132 **14 Claims**

1. A power converter apparatus having a control unit which calculates three phase voltage command values in response to a given voltage command vector, and produces PWM signals based

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on the calculated values, and a power converter circuit having a plurality of switching elements, comprising:

coordinate transformation means for transforming said voltage command vector into an α axis voltage command value and a β axis voltage command value in a stationary coordinate system, the α and β axes being orthogonal to each other;

section determination means for determining which of a plurality of sections of said stationary coordinate system contains said voltage command vector exists;

three phase voltage calculation means for selecting at least a formula for calculating said three phase voltage command values based on which section of said coordinate system is determined to contain said voltage command vector, and for calculating said three phase voltage command values using said α axis voltage command value and β axis voltage command value; and

means for controlling switching of said switching elements in response to said three phase voltage command values.

5,631,820

MULTIPLE DC, SINGLE AC CONVERTER WITH A SWITCHED DC TRANSFORMER

Matthew K. Donnelly, Kennewick, and Donald J. Hammerstrom, West Richland, both of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Sep. 8, 1995, Ser. No. 525,869
Int. Cl.[6] H02M *7/515*
U.S. Cl. 363—135 **13 Claims**

1. A converter having at least two switched DC transformers, said switched DC transformers each having two primary coils connected to at least one DC power line, and having a single secondary coil, wherein said two primary coils of each transformer are in parallel to each other, and said secondary coil of each transformer is in series with an other transformer secondary coil, said converter further having a power injection gate in series with each of said primary coils, wherein the improvement comprises:

(a) only one shorting gate on each transformer; and

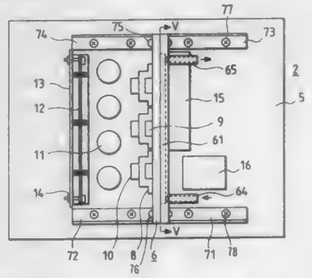
(b) each of said single shorting gates is a single anti-parallel shorting gate, and each power injection gate is an anti-parallel power injection gate.

5,631,821

COOLING SYSTEM FOR ELECTRIC VEHICLE INVERTER SYSTEM

Masanori Muso, Hitachinaka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,674
Claims priority, application Japan, Dec. 27, 1993, 5-331005
Int. Cl.[6] H05K *7/20*
U.S. Cl. 363—141 **11 Claims**



1. A cooling system for an electric vehicle inverter system including an inverter for converting electric power from a battery into alternating current and for supplying the current to a driving motor for driving the vehicle, comprising: a heat sink having a coolant flow passage for conducting a recirculating liquid coolant, said heat sink being vertically supported on a mounting base; and heat generating parts of said inverter placed and fixed on at least one side of said heat sink.

5,631,822

INTEGRATED PLANAR MAGNETICS AND CONNECTOR

Lee I. Silberkleit, Redmond; David R. Perchlik, Bothell, and Jason E. Douglass, North Bend, all of Wash., assignors to Interpoint Corporation, Redmond, Wash.

Filed Aug. 24, 1995, Ser. No. 519,112
Int. Cl.[6] H02M *1/00;* **H01H** *85/02;61/00;71/16*
U.S. Cl. 363—144 **25 Claims**

1. A magnetics assembly for implementing magnetics components, the magnetics components being for use in association with a circuit of a substantially planar first substrate having an upper planar surface and a plurality of terminal pads thereon, each of the plurality of terminal pads being coupled to the first substrate circuit and receiving a conductive offset pin, each conductive offset pin extending orthogonally from its terminal pad, the magnetics assembly comprising:

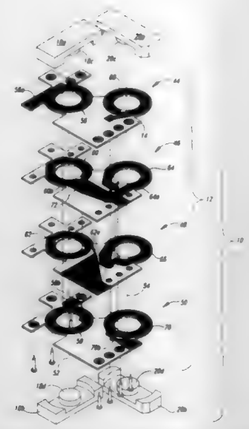
a transformer core;

an inductor core; and

a substantially planar magnetics substrate comprising:

a plurality of layers positioned in a substantially parallel relationship with one another, each layer having upper and lower planar surfaces, the upper planar surface of one of the plurality of layers being an upper planar surface of the magnetics substrate, the lower planar surface of one of the plurality of layers being a lower planar surface of the magnetics substrate;

a primary winding comprising a primary set of one or more planar windings lying on planar surfaces of one or more of the layers and being coupled to one another in series and



positioned to be coaxially aligned with one another along a transformer core axis which is orthogonal to the layers, each primary set planar winding comprising one or more turns and first and second ends, a first terminal of the primary winding being the first end of one of the primary set planar windings, a second terminal of the primary winding being the second end of one of the primary set planar windings;

a secondary winding comprising a secondary set of one or more planar windings lying on planar surfaces of one or more of the layers and being coupled to one another in series and positioned to be coaxially aligned with one another along the transformer core axis, each secondary set planar winding comprising one or more turns and first and second ends, a first terminal of the secondary winding being the first end of one of the secondary set planar windings, a second terminal of the secondary winding being the second end of one of the secondary set planar windings, the primary and secondary set planar windings being magnetically coupled to one another by their magnetic fluxes through the transformer core positioned along the transformer core axis when the turns of the primary and secondary set planar windings conduct current so as to form a transformer;

an inductive set of one or more planar windings lying on planar surfaces of one or more of the layers and being coupled to one another in series and positioned to be coaxially aligned with one another along an inductor core axis which is orthogonal to the layers and is spaced apart from the transformer core axis, each inductive set planar winding comprising one or more turns and first and second ends, the inductive set planar windings being magnetically coupled to one another by their magnetic fluxes through the inductor core positioned along the inductor core axis when the turns of the inductive set planar windings conduct current so as to form an inductor, a first inductor terminal being the first end of one of the inductive set planar windings, a second inductor terminal being the second end of one of the inductive set planar windings;

one or more terminal pads lying on the lower planar surface of the magnetics substrate and being coupled to one or more of the terminals of the inductor and of the primary and secondary windings, each of the terminal pads being constructed to receive one of the conductive offset pins extending orthogonally from one of the terminals pads of the first substrate such that the magnetics substrate and the first substrate are positioned in a spaced-apart parallel relationship with one another, the conductive offset pins thereby coupling the transformer and inductor of the magnetics substrate to the circuit of the first substrate; and

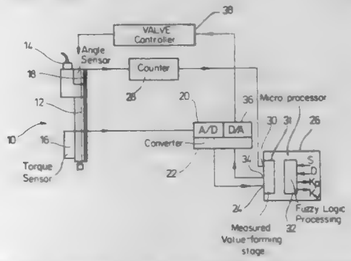
an interconnect coupling the second secondary winding terminal to the first inductor terminal.

5,631,823

METHOD OF MAKING A CONNECTION, PARTICULARY A SCREW CONNECTION

August Layer, Oehringen; Yinzenz Haerle, Neckartenzlingen; Wolfgang Backe, and Egbert Schneider, both of Aachen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 12, 1994, Ser. No. 289,761
Claims priority, application Germany, Sep. 9, 1993, 43 30 481.8
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—148 **10 Claims**



1. Method of making a connection by means of a controllable connection device, said method comprising the steps of:

a) measuring at least two real parameters characteristic of at least one individual connection step during the making of the connection with the connection device to obtain measured values of said at least two real parameters;

b) providing fuzzy-logic means for obtaining controlling output variables from said measured values, said fuzzy-logic means containing at least three association functions for correlation of said measured values with said controlling output variables, said at least three association functions corresponding to at least three operating modes graded according a magnitude of said measured values; and

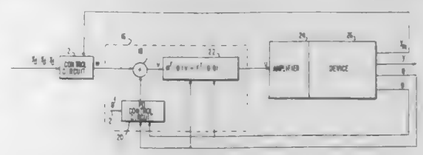
c) analyzing the measured values characteristic of the at least one individual connection step by said fuzzy-logic means using one of said at least three association functions to obtain the controlling output variables and generating at least one adjusting parameter for the connection device from the controlling output variables so as to control the connection device to accurately make the connection.

5,631,824

FEEDBACK CONTROL APPARATUS AND METHOD THEREOF FOR COMPENSATING FOR CHANGES IN STRUCTURAL FREQUENCIES

Farshad Khorrami, Brooklyn, N.Y., assignor to Polytechnic University, and Omnitek Research & Development, Inc., both of Brooklyn, N.Y.

Filed May 26, 1994, Ser. No. 249,865
Int. Cl.[6] G05B *11/01*
U.S. Cl. 364—176 **14 Claims**



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1. An apparatus for providing feedback control of a device having multi-degrees of freedom, said apparatus comprising:

first input means for receiving control signals based upon desired reference inputs and first feedback signals from said device;

second input means for receiving second feedback signals from said device; and

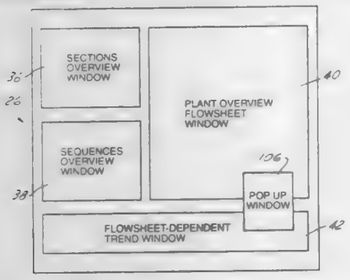
processing means receiving said control signals from said first input means and said second feedback signals from said second input means for determining a compensating signal for supply to said device, said compensating signal compensating for changes in inertial variations of said device due to configuration changes of said device so as to enable said first feedback signals to be substantially independent of variations of structural frequencies of said device.

5,631,825

OPERATOR STATION FOR MANUFACTURING PROCESS CONTROL SYSTEM

Leonardus A. van Weele, Terneuzen; Ronny P. de Bruijn, Jansteen; Roger R. Vermeire, Terneuzen, all of Netherlands; Christo Zemering, Midland, Mich., and Ben Lenting, Auckland, New Zealand, assignors to Dow Benelux N.V., Netherlands

Filed Sep. 29, 1993, Ser. No. 128,988
Int. Cl.° G05B *11/01*
U.S. Cl. 364—188 **16 Claims**



1. An operator station for a manufacturing process control system including at least one dedicated process control computer for monitoring and controlling at least one SECTION and at least one SEQUENCE of the manufacturing process, the operator station comprising:

communication means for two-way communication of process data between the operator station and at least one of the process control computers; and

display means including,

a first window defining a display area including at least one infological object which is a composite derived from selected parameters associated with a SECTION, and

a second window defining a display area including at least one infological object which is a composite derived from selected parameters associated with a SEQUENCE.

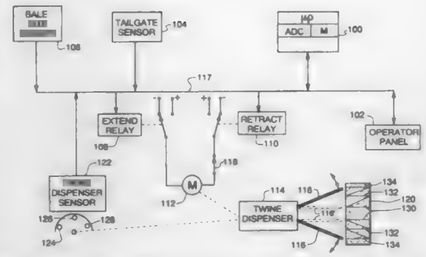
5,631,826

ROUND BALER END WRAP CONTROL

Mark K. Chow, Paoli, Pa., assignor to New Holland North America, Inc., New Holland, Pa.

Filed Jan. 16, 1992, Ser. No. 821,579
Int. Cl.° G05B *11/01*
U.S. Cl. 364—189 **14 Claims**

1. In a round baler having filament dispensing means selectively movable opposite a rotating bale of crop material to wrap the bale with filament, the filament dispensing means being controllable by a controller having control means for executing a factory installed



bale-wrapping program stored in a non-volatile memory to place on a bale a preset number of circular starting wraps, a preset number of circular intermediate wraps and a preset number of circular end wraps as specified in said bale-wrapping program, the improvement comprising:

an addressable storage location for storing a value representing said preset number of end wraps;

manually actuated switch means; and,

modification means responsive to said switch means for modifying said value in said addressable storage location representing said preset number of end wraps specified in said program to obtain a further value representing an operator-specified number of circular end wraps, said preset number of starting wraps and said preset number of end wraps specified in said bale-wrapping program being unchangeable,

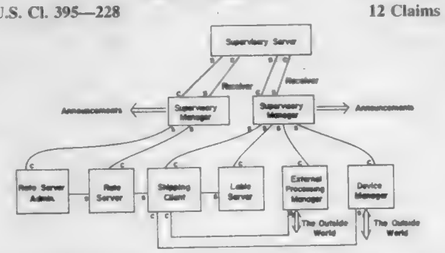
said control means being responsive to a value in said addressable storage location and said program in said non-volatile memory for controlling said filament dispensing means to place on said bale exactly said preset number of circular starting wraps and no more, exactly said preset number of circular intermediate wraps and no more and the number of circular end wraps represented by said further value and no more each time said control means executes said program.

5,631,827

LOGISTICS SYSTEM FOR AUTOMATING TRANSPORTATION OF GOODS

Peter Nicholls; Robert Kinyon; Jeff Skaistis, all of Tulsa; Steve Johnson, Glenpool; Andy Locker, Tulsa; Chris Guzik, Tulsa, and Scott Howard, Tulsa, all of Okla., assignors to TanData Corporation, Tulsa, Okla.

Division of Ser. No. 128,358, Sep. 28, 1993, Pat. No. 5,485,369. This application Jun. 6, 1995, Ser. No. 471,368
Int. Cl.° G06F *17/60*
U.S. Cl. 395—228 **12 Claims**



1. A logistics management tool to facilitate the process of shipping goods by a shipper via a selected one of a plurality of carriers, comprising:

a plurality of rate servers comprising computer-implemented rate storage and calculating means, at least one rate server for each of said plurality of carriers, at least one of said rate servers having message processing means for sending, receiving and handling messages;

at least one of said rate servers having database means for maintaining a record of the rates applicable to a given one of

said carriers and further having an embedded set of predefined methods representing the rate computation rules of said given one of said carriers;

at least one client application comprising computer-implemented input and output means separate from said rate servers and having user interface to permit the shipper to interact with said logistics management tool in order to process the shipment of goods;

at least one of said rate servers having a shipper interface means for defining a set of operations accessible to said client application; the set of operations representing the procedure by which the shipper ships goods to thereby isolate the set of operations by which a shipper ships from the rules by which a carrier transports;

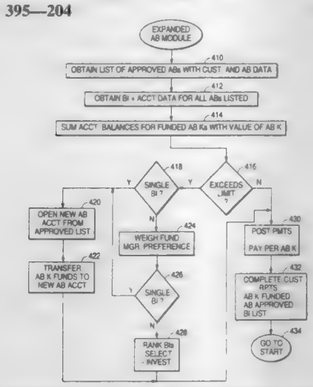
at least one supervisory server for integrating operations of said rate server, and for making said operations accessible to said client application, said supervisory server having message processing means for sending messages to and receiving messages from said rate server and said client application and for handling messages sent and received based upon a predefined set of rules.

5,631,828

METHOD AND SYSTEM FOR PROCESSING FEDERALLY INSURED ANNUITY AND LIFE INSURANCE INVESTMENTS

Bernard P. Hagan, 220 Montgomery St. #966, San Francisco, Calif. 94104

Continuation-in-part of Ser. No. 203,348, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 911,401, Jul. 10, 1992, Pat. No. 5,291,398. This application Jun. 24, 1994, Ser. No. 265,198
Int. Cl.° G06F *17/60*
U.S. Cl. 395—204 **48 Claims**



22. A computer-based system for electronically processing annuity funds to obtain the benefit of depositor's insurance available through a plurality of federally approved banking institutions, said depositor's insurance protecting funds less than a predetermined fund limit, said computer-based system comprising:

means for electronically inputting and storing annuity fund, non-annuity fund and unqualified annuity fund data and associated annuity beneficiary data that includes, for at least one annuity fund, a subset of annuity beneficiary data approved for said one annuity fund, associated customer data, and banking institution data;

means for identifying, electronically labeling and maintaining an electronic list of all banking institutions which hold non-annuity funds and unqualified annuity funds above a predetermined threshold for each annuity beneficiary;

means for electronically determining whether the sum of all annuity funds, identified with a single annuity beneficiary and designated for certificates of deposit issued by one banking institution of said plurality of banking institutions exceeds said predetermined fund limit while taking into account non-annuity funds and unqualified annuity funds above said predetermined threshold;

means for electronically commanding and ordering the transfer of all annuity funds identified with said single annuity beneficiary and designated for said one banking institution in excess of said predetermined fund limit to one of a first deposit instrument issued by another banking institution of said plurality of banking institutions and a second deposit instrument identified with another annuity beneficiary that is part of the approved subset with said single annuity beneficiary and issued by said one banking institution of said plurality of banking institutions; and,

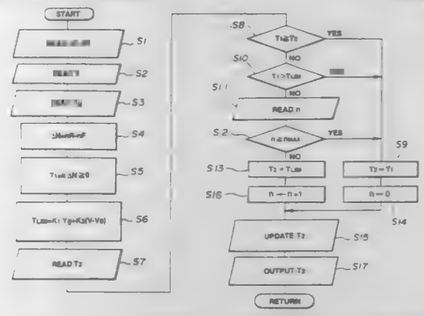
means for electronically determining excess funds over said predetermined fund limit, electronically inputting non-annuity fund and unqualified annuity fund data and related banking institution data, and electronically commanding the transfer of excess annuity funds, for all banking institutions designated to hold certificates of deposit for all annuity beneficiaries to obtain the benefit of said depositor's insurance for qualified annuity funds.

5,631,829

AUTOMOBILE DRIVING TORQUE CONTROL SYSTEM FOR CONTROLLING TORQUE DISTRIBUTION BETWEEN FRONT AND REAR ROAD WHEELS

Toshiharu Takasaki, Sagamihara, and Tomoyuki Hara, Hadano, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 27, 1994, Ser. No. 364,244
Claims priority, application Japan, Dec. 28, 1993, 5-337014
Int. Cl.° B60K *17/346*
U.S. Cl. 364—424.098 **7 Claims**



1. A driving-torque distribution control system of an automotive vehicle for controlling a torque distribution between front and rear road wheels, said system comprising:

a torque-distribution adjustment means responsive to a control signal for adjusting a distribution of driving torque between said front and rear wheels;

a first detection means for detecting a first physical quantity indicative of a rotational condition of said rear wheel;

a second detection means for detecting a second physical quantity indicative of a rotational condition of said front wheel; and

a torque-distribution control means for producing said control signal based on a difference between said first and second physical quantities,

wherein said torque-distribution control means includes a correction means for correcting a value of said control signal, by decreasingly compensating a change in said control signal value when satisfying both a first condition in which said difference decreases to a value below a predetermined threshold and a second condition in which an elapsed time, calculated from a time when said first condition has been satisfied, is less than a predetermined time period.

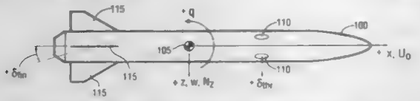
VOL 1198 ISS 3 MAY 20 1997 UMI

5,631,830

DUAL-CONTROL SCHEME FOR IMPROVED MISSLE MANEUVERABILITY

Wayne K. Schroeder, Arlington, Tex., assignor to Loral Vought Systems Corporation, Grand Prairie, Tex.

Filed Feb. 3, 1995, Ser. No. 383,720
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—424.013 **14 Claims**



1. A method for rapidly changing the direction of travel of a missile moving in a fluid medium to a desired new direction, said new direction being measured in the missile's inertial frame of reference, said missile having (i) a forward portion and a forward thruster control device and (ii) an aft portion and an aft fin control device, said method comprising:

(a) actuating (i) said forward thruster control device to generate a forward control force, acting on said forward portion, substantially in the desired new direction and (ii) said aft fin control device to generate an aft fin force, acting on said aft portion, substantially in the desired new direction;

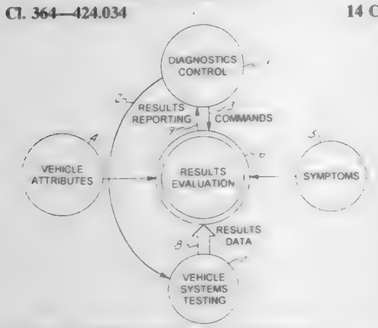
(b) subsequently actuating said aft control device to generate an aft control force acting on said aft portion in a direction substantially opposite the direction of the aft control force in step (a).

5,631,831

DIAGNOSIS METHOD FOR VEHICLE SYSTEMS

John A. Bird, Portabe; Martin P. Franz, Kalamazoo; Harry M. Gilbert, Kalamazoo; Steven F. Johnson, Kalamazoo, and Michael R. Shafer, Portage, all of Mich., assignors to SPX Corporation, Muskegon, Mich.

Continuation of Ser. No. 23,573, Feb. 26, 1993, abandoned. This application Aug. 8, 1995, Ser. No. 548,966
Int. Cl.[6] G06F *17/21*
U.S. Cl. 364—424.034 **14 Claims**



1. A vehicle fault diagnosis system comprising:

a diagnostics control module capable of issuing diagnostic commands;

a vehicle system testing module, coupled to the diagnostic control module and configured to initiate diagnostic tests upon the vehicle in response to test commands received by the vehicle system testing module, the vehicle system testing module producing vehicle test results and test completion status indicators;

at least one data source, the data sources together capable of providing vehicle attributes and symptoms: and

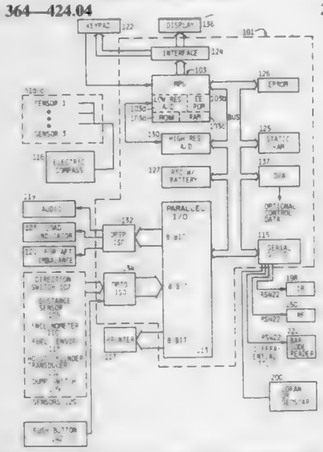
an evaluation module, coupled to the diagnostic control module, the vehicle system testing module and each data source, the evaluation module capable of requesting a first set of information from each data source and the vehicle system testing module in response to a diagnostic command, the evaluation module requesting all necessary information that is particular to determining at least an initial root fault before evaluating any information to determine at least an initial root fault, wherein a root fault is the smallest faulty component or process identifiable by the evaluation module.

5,631,832

APPARATUS AND METHOD RESPONSIVE TO THE ON-BOARD MEASURING OF HAULAGE PARAMETERS OF A VEHICLE

LeRoy G. Hagenbuch, 4602 N. Rosemead Dr., Peoria, Ill. 61614

Continuation of Ser. No. 403,069, Mar. 13, 1995, which is a continuation of Ser. No. 206,531, Mar. 4, 1994, Pat. No. 5,416,706, which is a continuation of Ser. No. 102,531, Aug. 4, 1993, Pat. No. 5,327,347, which is a continuation of Ser. No. 964,126, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 351,179, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 874,273, Jun. 13, 1986, Pat. No. 4,831,539, and Ser. No. 717,042, Apr. 1, 1985, Pat. No. 4,839,835, which is a continuation-in-part of Ser. No. 604,739, Apr. 27, 1984, Pat. No. 4,630,227, said Ser. No. 874,273is a continuation-in-part of Ser. No. 604,739. This application Jun. 7, 1995, Ser. No. 473,751
Int. Cl.[6] G06F *17/40*
U.S. Cl. 364—424.04 **27 Claims**



1. An apparatus for use with a vehicle, the apparatus comprising: a processor in communication with a memory; an input device on board the vehicle for generating information identifying an operator of the vehicle and communicating the information to the processor; a sensor for providing information describing a location of the vehicle and communicating that information to the processor; and, the processor including means for delivering the location and operator identification information to the memory for storage.

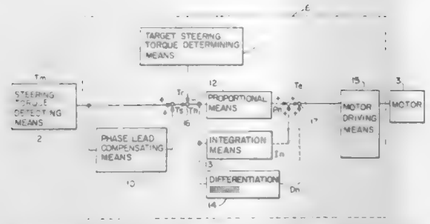
5,631,833

MOTOR-ASSISTED POWER STEERING CONTROL DEVICE

Shunichi Wada; Yasuo Naito; Kazuhisa Nishino, and Masanori Takagi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 51,545, Apr. 26, 1993, Pat. No. 5,467,279. This application Jun. 7, 1995, Ser. No. 474,187
Claims priority, application Japan, Apr. 27, 1992, 4-107452; Apr. 27, 1992, 4-107584
Int. Cl.[6] B62D *5/04*
U.S. Cl. 364—424.052 **1 Claim**

1. A motor-assisted power steering control device which comprises:



a detecting means for detecting a steering torque of a steering wheel,

first stabilizing means for substantially reducing uneven vibrations in the steering wheel, said first stabilizing means comprising a phase lead compensating means for compensating a phase lead of the detected steering torque,

error obtaining means for obtaining an error between the detected steering torque which has been compensated by said phase lead compensating means and a target steering torque,

second stabilizing means for providing smooth steering operation, said second stabilizing means comprising at least one among a proportional, an integration and a differentiation (PID) controller operating on the error, said second stabilizing means receiving said error from said error obtaining means,

a motor for generating an auxiliary steering torque of the steering wheel, and

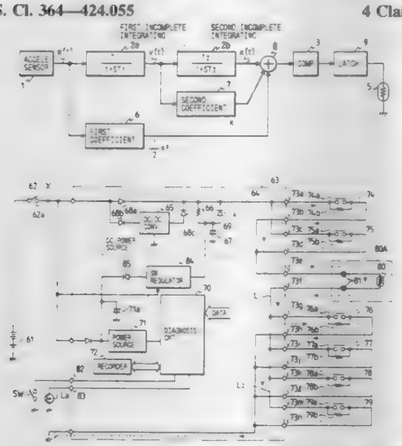
means for controlling the motor in response to said at least one PID controller, wherein uneven vibrations in the steering wheel caused by rapid torque changes are substantially eliminated by the operation of said first and second stabilizing means.

5,631,834

OCCUPANT PROTECTING DEVICE FOR USE IN MOTOR VEHICLES

Shin-ichiro Tsurushima; Satoru Matsumori; Yasuo Saito; Kazuyasu Kon; Kunihiro Kaneko, and Katsushi Ohneda, all of Saitama, Japan, assignors to Kansei Corporation, Saitama, Japan

Division of Ser. No. 63,752, May 20, 1993, Pat. No. 5,506,775. This application Feb. 15, 1996, Ser. No. 601,873
Int. Cl.[6] B60R *21/32;21/16*
U.S. Cl. 364—424.055 **4 Claims**



1. A drive device for a vehicle occupant protecting device comprising:

an auxiliary power source which is charged by a DC power source;

an igniting device;

a switching element connected between a point connecting the DC power source with said auxiliary power source and said igniting device; and

a control circuit for judging a magnitude of a collision based on an acceleration signal supplied from an acceleration sensor to provide a trigger signal to said switching element thereby electrically connecting said auxiliary power source to said ignition device when it is judged that an accident has occurred, said control circuit detecting an output voltage of said auxiliary power source,

wherein said control circuit comprising a pulse-width varying circuit for varying a pulse width of the trigger signal in inverse proportion to the output voltage,

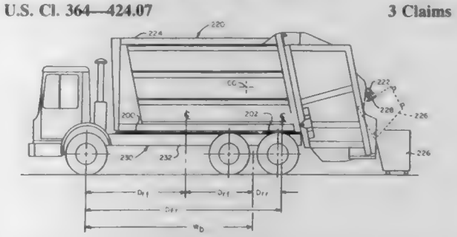
and wherein a predetermined energy necessary to fire said ignition device is determined by said output voltage and said pulse width, and said control circuit varies said pulse width to deliver said predetermined energy to said ignition device.

5,631,835

APPARATUS FOR IDENTIFYING CONTAINERS FROM WHICH REFUSE IS COLLECTED AND COMPILING A HISTORICAL RECORD OF THE CONTAINERS

LeRoy G. Hagenbuch, 4602 N. Rosemead Dr., Peoria, Ill. 61614

Continuation of Ser. No. 403,069, Mar. 13, 1995, which is a continuation of Ser. No. 206,531, Mar. 4, 1994, Pat. No. 5,416,706, which is a continuation of Ser. No. 102,531, Aug. 4, 1993, Pat. No. 5,327,347, which is a continuation of Ser. No. 964,126, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 351,179, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 874,273, Jun. 13, 1996, Pat. No. 4,831,539, and Ser. No. 717,042, Apr. 1, 1985, Pat. No. 4,839,835, which is a continuation-in-part of Ser. No. 604,739, Apr. 27, 1984, Pat. No. 4,630,227, said Ser. No. 874,273is a continuation-in-part of Ser. No. 604,739, Apr. 27, 1984, Pat. No. 4,630,227. This application Jun. 7, 1995, Ser. No. 483,681
Int. Cl.[6] G01G *19/415;19/08*
U.S. Cl. 364—424.07 **3 Claims**



1. An apparatus on-board a haulage vehicle for identifying and recording as an event a change in a load hauled by the vehicle, the apparatus comprising: a first sensor on-board the vehicle for interrogating a device having a machine-readable code and retrieving the code in conjunction with the event; a second sensor on-board the vehicle for sensing the change in the load and generating data indicative thereof; an electronic processor on-board the vehicle responsive to the first and second sensors for (1) collecting the data and the machine-readable code, (2) correlating the data and the code and (3) compiling a historical record of the events for later use; and a memory in communication with the electronic processor for containing the historical record.

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5,631,836

METHOD OF PRODUCING A STRAIGHT-ON TRAVEL SIGNAL

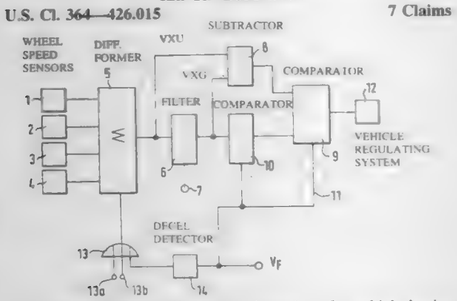
Rüdiger Poggenburg, Vaihingen; Eberhard Sonntag, Gerlingen, both of Germany; Thomas Meier, Le Vandore, France, and Alfred Strehle, Feilbach, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 29, 1994, Ser. No. 346,100

Claims priority, application Germany, Dec. 11, 1993, 43 42 332.9

Int. Cl.[6] B60T *8/72*

U.S. Cl. 364—426.015 **7 Claims**



1. Method for controlling travel dynamics of a vehicle having right side wheels, left side wheels, brakes at said wheels, and an engine, said method comprising measuring the speed of at least one wheel on each side of the vehicle,

determining a difference VXU between the speed of at least one wheel on the left side and the speed of at least one wheel on the right side,

time-filtering said difference VXU to produce a time filtered difference VXG,

forming a difference VXU–VXG,

comparing said difference VXU–VXG to a first threshold, generating a signal indicating straight line travel when said difference VXU–VXG does not exceed said first threshold,

blocking said signal indicating straight line travel upon occurrence of at least one of (a) an ABS is operating, and (b) the vehicle is decelerating, and

controlling the traveling dynamics of the vehicle in accordance with whether or not the signal indicating straight line travel is present.

5,631,837

OUTPUT CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

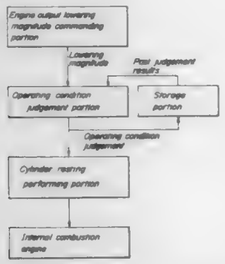
Tomohiro Fukumura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 1, 1994, Ser. No. 283,867

Claims priority, application Japan, Aug. 2, 1993, 5-191333

Int. Cl.[6] F02D *17/02*

U.S. Cl. 364—431.03 **16 Claims**



1. An output control system for an internal combustion engine comprising

engine output lowering magnitude commanding means for outputting an engine output control command indicative of a magnitude to lower the engine output;

engine operating condition judgement means responsive to the engine output control command from the engine output lowering magnitude commanding means and active at every combustion timing, for making judgement whether the cylinder scheduled for next combustion is to be placed into the resting state or not;

cylinder resting performing means for disabling combustion at the combustion timing for which resting is determined by the engine operating condition judgement means;

storage means for storing the results of judgement made by the engine operating condition judgement means for predetermined number of immediately preceding combustion timings,

said engine operating condition judgement means comparing an engine output lowering magnitude commanded by the engine output control command output by the engine output lowering magnitude commanding means and the results of past judgements stored in the storage means to make judgement whether the cylinder scheduled for next combustion is to be placed in resting condition or not on the basis of the result of comparison.

5,631,838

APPARATUS FOR VERIFYING GPS SATELLITE DATA

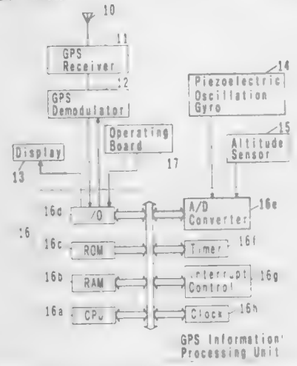
Seiji Ishikawa, Kariya; Yuichi Murakami, Chiryu; Tomio Yasuda, Kariya; Tomohiro Yamamoto, Anjou, and Toshimitsu Oka, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 284,247, Aug. 2, 1994, abandoned. This application Mar. 11, 1996, Ser. No. 614,941

Claims priority, application Japan, Aug. 2, 1993, 5-191190

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—449.9 **11 Claims**



1. An apparatus for verifying global positioning system (GPS) satellite data and registering GPS satellites as verified, comprising:

receiver means for receiving information from a plurality of GPS satellites each of which delivers information relating to its own orbit and timing thereof;

positioning calculation means for calculating the position of a point of reception based on information received by said receiver means from the plurality of GPS satellites;

verified position determining means for determining a verified position of the point of reception based on information from at least three GPS satellites registered as available;

first distance calculating means for calculating a distance between an unverified GPS satellite and the point of reception based on positional information of the unverified GPS satellite which is determined from the received orbital information and from information relating to the verified position of the point of reception determined by said verified position determining means;

second distance calculating means for determining a time delay required for the propagation of information delivered from the unverified GPS satellite to the point of reception based on received timing information and the point in time when such timing information is received, and for calculating a distance between the unverified GPS satellite and the point of reception from such time delay;

first verifying means for verifying data of four or more GPS satellites, registering the four or more GPS satellites as verified and setting a verification flag, wherein said first verification means determines a plurality of positions of the point of reception based on combinations of three of four or more entities of information received from the four or more GPS satellites, said first verification means calculates differences between said plurality of positions, compares the differences with a first predetermined threshold, and registers the four or more satellites as verified and sets the verification flag if the differences are smaller than the first predetermined threshold, wherein said first verifying means operates if the verification flag is not set; and

second verifying means for determining a difference between the distance determined by the first distance calculating means and the distance determined by the second distance calculating means, and for registering the unverified GPS satellite as one which is available for use in the calculation by the positioning calculation means whenever the difference is less than a second predetermined threshold and for registering the unverified GPS satellite as unavailable for use in the calculation by the positioning calculation means whenever the difference is greater than the second predetermined threshold, wherein said second verifying means operates when the verification flag is set.

5,631,839

DEVICE FOR CONTROLLING THE PARAMETERS OF A MANUFACTURING PROCESS

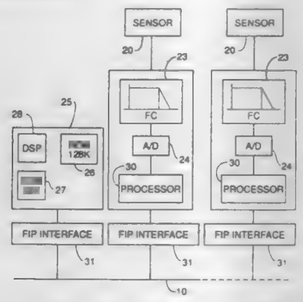
Michel Lemoine, rue des Roses, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 19, 1995, Ser. No. 492,360

Claims priority, application France, Jul. 18, 1994, 9409070

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.15 **8 Claims**



1. Device for continuously controlling a manufacturing process, in order to perceive continuously any transient or perturbational phenomena occurring during this process, a device comprising:

a) a local area network;

b) at least one remote monitor connected to said local area network through a first interface for receiving, in real time, signals in order to control the manufacturing process;

c) a plurality of sensors, each of said sensors measuring a value of one of a plurality of parameters of the manufacturing process and transforming said value so as to produce an analogue signal;

d) a plurality of analogue to digital converters, each of said analogue to digital converters connected to one of said sensors and located proximate thereto, each of said analogue to digital converters receiving one of said analogue signals in order to convert said one of said analogue signals into a sequence of numerical values representing an instantaneous state over time of the corresponding parameter, each of said analogue to digital converters being connected to said local area network through a second interface;

e) processing means connected through a third interface to said local area network for storing and processing said sequences of numerical values and comparing said sequences of numerical values with predetermined reference values in order to generate a plurality of comparison signals, said local area network conveying said comparison signals to said remote monitor and from said analogue to digital converters to said processing means.

5,631,840

METHODS AND APPARATUSES FOR GENERATING SCULPTURED SURFACES

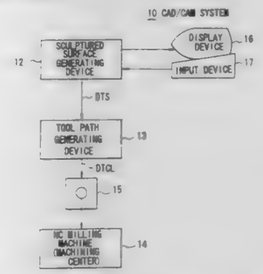
Miwa Ooka, and Tetsuzo Kuragano, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 425,642

Claims priority, application Japan, Apr. 28, 1994, 6-114783

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.24 **6 Claims**



1. A method for generating a sculptured surface corresponding to a track of a sphere rotated between a first and a second free curves in a three-dimensional space, comprising the steps of:

setting a plurality of base points on said first free curve and generating a plurality of planes, each of said planes having each of said base points with a tangent of the first free curve at each of said base points to be a normal to said each plane;

determining a plurality of intersections of said second free curve and said plurality of planes;

generating a plurality of circular arcs of a specified radius on each of said plurality of planes using said base point and said intersection as endpoints; and

generating a sculptured surface based on said first free curve, said second free curve, and said plurality of circular arcs.

5,631,841

CIRCUIT CONNECTION INFORMATION GENERATION THROUGH CIRCUIT ANALYSIS AND COMPONENT REPLACEMENT

Satoru Kishida, Takarazuka, and Yasunori Shibayama, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 392,352

Claims priority, application Japan, Mar. 23, 1994, 6-051841

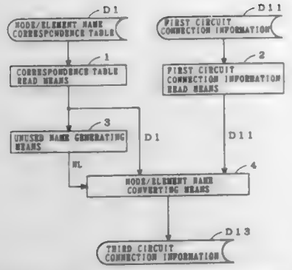
Int. Cl.[6] H05K *7/02*

U.S. Cl. 364—488 **17 Claims**

1. A circuit connection information generating device comprising:

first read means for reading first associated circuit information associated with one of first circuit connection information and

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second circuit connection information, said first circuit connection information specifying elements and element connections provided from layout pattern data, said second circuit connection information specifying elements and element connections provided from a circuit drawing;

second read means for reading second associated circuit information associated with the other of said first circuit connection information and said second circuit connection information; and

circuit connection information generating means for adding element information containing parasitic elements and connection information thereof to said second circuit connection information to automatically generate third circuit connection information on the basis of said first associated circuit information and said second associated circuit information by detecting a correspondence between said first associated circuit information and said second associated circuit information, and replacing said first associated circuit information with corresponding second circuit information when the correspondence is detected.

5,631,842

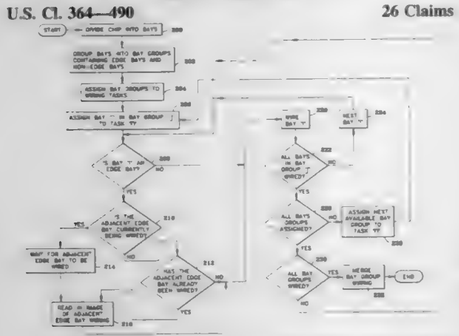
PARALLEL APPROACH TO CHIP WIRING

Rafik R. Habra, Wappingers Falls, and Erich C. Schanzenbach, Dover Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1995, Ser. No. 400,408

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—490 **26 Claims**



1. A method for wiring areas on an integrated circuit chip in parallel, comprising the steps of:

(a) dividing said chip into a plurality of rectangular bays with rough wiring coordinates;

(b) grouping said rectangular bays into a plurality of bay groups, each bay group containing a contiguous group of bays including non-edge bays and at least one edge bay adjacent another bay group;

(c) assigning a different bay group to each wiring task of a plurality of wiring tasks; and

(d) each of said wiring tasks including performing of wiring of said bays in a bay group assigned thereto according to said rough coordinates and performing said wiring in parallel with said other wiring tasks.

(1) if wiring an edge bay, before wiring begins checking whether the adjacent edge bay has been wired, is currently being wired, or has not been wired, and

(i) if said adjacent edge bay has been wired, wiring said edge bay in accordance with said adjacent edge bay wiring, or

(ii) if said adjacent edge bay is currently being wired, waiting for said adjacent edge bay to finish being wired and then wiring said edge bay in accordance with said adjacent edge bay wiring, or

(iii) if said adjacent edge bay has not been wired, wiring said edge bay, otherwise wiring said non-edge bay.

5,631,843

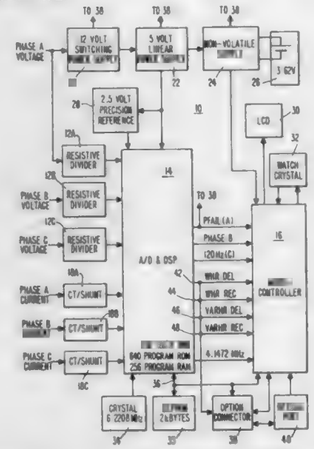
PROGRAMMABLE ELECTRICAL ENERGY METER AND METHODS THEREFOR

Mark L. Munday, and Rodney C. Hemminger, both of Raleigh, N.C., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Division of Ser. No. 534,693, Sep. 27, 1995, Pat. No. 5,555,508, which is a continuation of Ser. No. 259,578, Jun. 14, 1994, abandoned, which is a continuation of Ser. No. 839,182, Feb. 21, 1992, abandoned. This application Jun. 6, 1996, Ser. No. 659,326

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—492 **20 Claims**



1. Apparatus for electronically metering electrical energy, said electrical energy comprising voltage and current characteristics, wherein voltage and current signals representative of said voltage and current characteristics are provided, said apparatus comprising:

a first processor, connected to receive said voltage and current signals, for determining electrical energy from said voltage and current signals and for generating an energy signal representative of the electrical energy determination;

a second processor, connected to said first processor, for receiving said energy signal, for generating an indication signal representative of said energy signal; and

an option connector, connected to said first processor and said second processor, whereby said energy signal is provided to said option connector and a communication connection is provided between said option connector and said second processor.

5,631,844

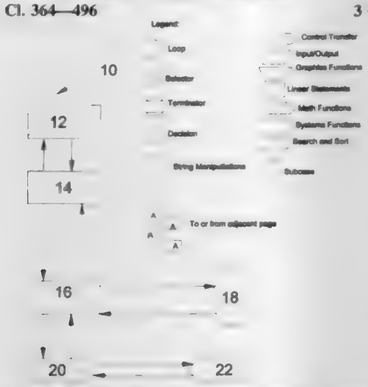
INTERACTIVE REMOTE SAMPLE ANALYSIS SYSTEM

Keith S. Margrey; Robin A. Felder; James C. Boyd, all of Charlottesville; J. William Holman, Earlysville, and John Savory, Keswick, all of Va., assignors to University of Virginia, Charlottesville, Va.

Division of Ser. No. 739,204, Jul. 30, 1991, Pat. No. 5,366,896. This application Nov. 22, 1994, Ser. No. 343,773

Int. Cl.[6] G01N *33/00;35/00*

U.S. Cl. 364—496 **3 Claims**



1. A method of interactively analyzing sample specimens and exchanging the analysis results between a plurality of user initiated remote analytical instruments having dedicated computers and a central laboratory to permit an operator at the laboratory to view and accept or reject the analysis results, said method comprising:

initiating analysis of said specimen at said dedicated computer by said user,

analyzing said specimen,

observing the said analysis results at said central laboratory by said operator,

accepting or rejecting said analysis results by said operator,

observing said acceptance or rejection at said dedicated computer by said user.

5,631,845

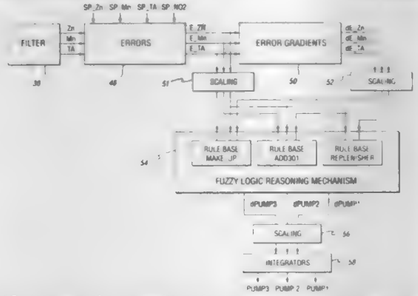
METHOD AND SYSTEM FOR CONTROLLING PHOSPHATE BATH CONSTITUENTS

Dimitre P. Filev, Novi, Mich.; Irena A. Nagisetty, Toledo, Ohio; Alan E. Hyrila, Salem, Mich.; John Huff, Southfield, Mich.; Robert A. Sensoli, Livonia, Mich., and John C. Cooper, Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 10, 1995, Ser. No. 541,387

Int. Cl.[6] G01F *1/00*

U.S. Cl. 364—510 **20 Claims**



18. A system for controlling the content of zinc and manganese and total acid in a phosphate bath by controlling the duty cycle of a first pump that replenishes said bath with a first concentrate containing zinc in accordance with a first rule base, and controlling the duty cycle of a second pump that replenishes said bath with a second concentrate containing manganese in accordance with a second rule base, and controlling the duty cycle of a third pump that replenishes said bath with a third concentrate of acidic solution in accordance with a third rule base, said system comprising:

a detector for continuously sensing the amount of zinc, manganese, and total acid in said bath,

a controller for calculating,

the zinc error between said amount of zinc sensed and a zinc set-point,

the manganese error between said amount of manganese sensed and a manganese set-point,

the total acid error between said amount of total acid sensed and a total acid set-point,

the rate of change of said zinc error, said manganese error, and said total acid error,

a first gradient of output flow rate of said first concentrate based on the output of said first rule base under a fuzzy reasoning mechanism that responds to said zinc error and the gradient of said zinc error,

a second gradient of output flow rate of said second concentrate based on the output of said second rule base under a fuzzy reasoning mechanism that responds to said manganese error, the gradient of said manganese error, and non-negative values of said zinc error,

a third gradient of output flow rate of said third concentrate based on the output of said third rule base under a fuzzy reasoning mechanism that responds to said total acid error, the gradient of said total acid error, and non-negative values of said zinc error,

said controller calculating the flow rate of said first, second and third concentrates by integrating said gradients of output flow rate of said first, second, and third concentrates respectively, and controlling the energization of said first, second, and third pumps in accordance with the flow rate of said first, second, and third concentrates respectively in order to regulate the content of said zinc, manganese, and total acid constituents at said zinc, manganese, and total acid constituent set-points respectively.

5,631,846

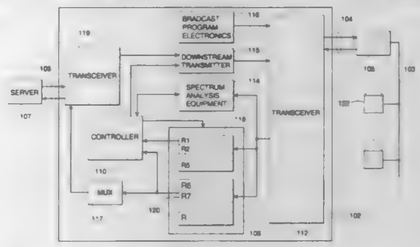
UPSTREAM COMMUNICATIONS FOR INTERACTIVE NETWORKS

Edward S. Szurkowski, Maplewood, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 28, 1995, Ser. No. 396,042

Int. Cl.[6] H04B *15/00*

U.S. Cl. 364—514 B **18 Claims**



1. A method comprising:

(a) receiving an initial upstream signal from a user terminal device at a multiuser interactive processor, the initial upstream signal being associated with a frequency within an upstream spectrum;

(b) based upon a measure of interference associated with at least a portion of the upstream spectrum, selecting an upstream channel, the upstream channel being contained within the upstream spectrum; and

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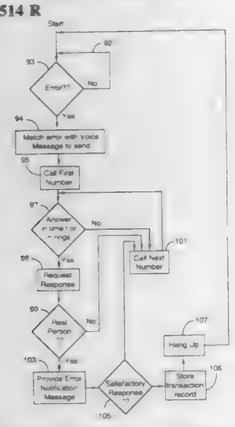
(c) transmitting from the multiuser interactive processor to the user terminal device a second signal representative of the upstream channel.

5,631,847

SYSTEM FOR NETWORK FILE SERVER FAILURE NOTIFICATION

Dan Kikinis, Saratoga, Calif., assignor to Elonex I.P. Holdings, Ltd, London, England

Filed Apr. 27, 1995, Ser. No. 429,802
Int. Cl.° G06F *17/00*
U.S. Cl. 364—514 R **23 Claims**



1. An error notification system for a computer, comprising:

a CPU for managing operations of the error notification system;

a memory;

a telephone modem;

a message device for rendering a message file in audio form and providing the message to the telephone modem;

a communication bus connecting the CPU, the memory, the message device, and the telephone modem;

a communication link adapted for connecting the CPU to the computer;

a list of telephone numbers stored in the memory with each assigned a position in a priority calling sequence;

a pre-programmed response; and

a calling control routine stored in the memory and executable by the CPU;

wherein the calling routine, on detecting an error by the computer, calls the highest priority telephone number, requests the pre-programmed response if the call is answered, hangs up and calls the next number in order in the event that the pre-programmed response is not given in a preset time, and continues to call the telephone numbers in sequence until either the correct response is given or the end of the calling list is reached.

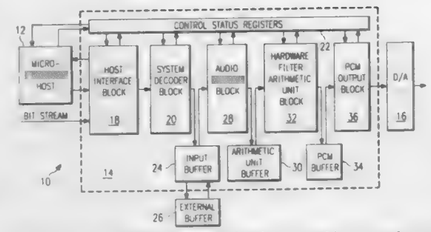
5,631,848

SYSTEM DECODER CIRCUIT AND METHOD OF OPERATION

Frank L. Laczko, Sr., Allen, Tex.; Gerard Benbassat, St. Paul de Vence, France, and Stephen H. Li, Garland, Tex., assignors to Texas Instruments, Dallas, Tex.

Continuation of Ser. No. 54,126, Apr. 26, 1993, which is a continuation-in-part of Ser. No. 21,007, Feb. 22, 1992. This application Jun. 7, 1995, Ser. No. 486,487
Int. Cl.° G06F *19/00*
U.S. Cl. 364—514 R **20 Claims**

1. A data processing system for receiving and processing a bit sequence, comprising:



first in first out (FIFO) register circuitry operable to receive and store the data bits of the received bit sequence in words each comprising a plurality of data bits of the received bit sequence;

shifter circuitry coupled to said FIFO register circuitry and operable to receive said words and to serially output bits within said received words;

detector circuitry coupled to said shifter circuitry and operable to receive said bits output from said shifter circuitry and operable to detect predetermined bit patterns encoded in the bit sequence, said detector circuitry further operable to output in parallel selected groups of bits detected within the bit sequence;

control logic circuitry coupled to said shifter circuitry and said detector circuitry and operable to direct the operation of said shifter and detector circuitries; and

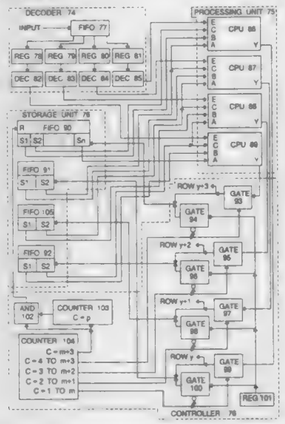
buffer interface circuitry coupled to said detector circuitry and operable to receive said selected groups of bits output by said detector circuitry.

5,631,849

DECOMPRESSOR AND COMPRESSOR FOR SIMULTANEOUSLY DECOMPRESSING AND COMPRESSNG A PLURALITY OF PIXELS IN A PIXEL ARRAY IN A DIGITAL IMAGE DIFFERENTIAL PULSE CODE MODULATION (DPCM) SYSTEM

Gregory K. Wallace, Palo Alto, Calif., assignor to The 3DO Company, Redwood City, Calif.

Filed Nov. 14, 1994, Ser. No. 338,427
Int. Cl.° H04N *11/04*
U.S. Cl. 364—514 R **15 Claims**



1. A digital image differential pulse code modulation decompressor for simultaneously generating, during a cycle of operation of said decompressor, a decompressed pixel value for a plurality of selected pixels located on a diagonal of an array of pixels where said array has x columns and y rows and where said decompressed pixel values are used in generating an image, said decompressor comprising:

a storage means for storing an error value for each selected pixel to be processed during a cycle of operation of said decompressor;

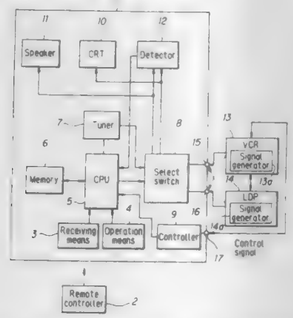
a processing means for simultaneously generating, during said cycle of operation of said decompressor, a decompressed value for each said selected pixel where said decompressed value for a selected pixel is derived from said error value stored in said storage means for said selected pixel and a predicted value generated by said processing means for each selected pixel where said predicted value is derived from a predictor, said predictor being at least a second order, two dimensional predictor.

5,631,850

AUDIO VISUAL EQUIPMENT WITH A DIGITAL BUS SYSTEM AND METHOD FOR INITIALIZING AND CONFIRMING CONNECTION

Shigeo Tanaka; Yasuo Kusagaya, both of Tokyo, and Kenji Nakano, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 17, 1993, Ser. No. 107,365
Claims priority, application Japan, Sep. 11, 1992, 4-269385; Oct. 30, 1992, 4-316304; Dec. 25, 1992, 4-359059
Int. Cl.° G01R *31/00*
U.S. Cl. 364—551.01 **18 Claims**



1. An audio visual equipment with a digital bus system comprising:

a CPU for outputting a control signal;

control means for controlling one or more external apparatuses based on said control signal from said CPU;

switching means for selecting one of said external apparatuses in order to receive an information signal from the selected external apparatus;

detecting means for detecting said information signal received by said switching means; and

displaying means for displaying said information signal received by said switching means,

wherein said control means and said switching means are controlled by said CPU, and

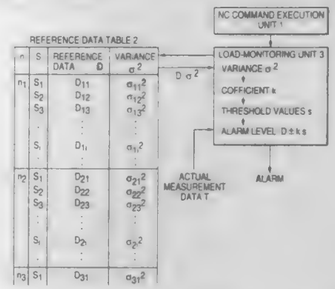
wherein each of said external apparatuses connected to said switching means includes a signal generator for generating test signals.

5,631,851

METHOD OF MONITORING MACHINING LOAD USING VARIABLE ALARM THRESHOLD

Kunio Tanaka, Akishima; Yasushi Onishi, and Koji Sato, both of Yamanashi, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Filed Oct. 31, 1994, Ser. No. 332,402
Claims priority, application Japan, Nov. 2, 1993, 5-297307
Int. Cl.° G06F *19/00*
U.S. Cl. 364—551.01 **10 Claims**



1. A method of monitoring a machining load on a numerically controlled machine tool, comprising the steps of:

(a) determining reference data and variance of said reference data for the machining load from sampling data sets of the machining load obtained at a plurality of sampling times during each of multiple trial cutting operations;

(b) establishing a threshold value according to variations in said sampling data sets, using said variance associated with each of the sampling times;

(c) obtaining actual measurement data during operation of the numerically controlled machine tool; and

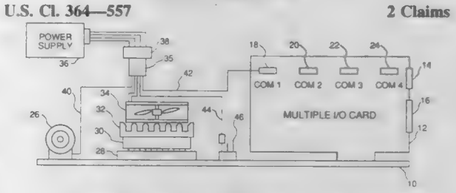
(d) comparing said reference data with said actual measurement data at regular intervals of time as said actual measurement data is obtained in step (c) and sensing when a difference between said reference data and said actual measurement data exceeds said threshold value.

5,631,852

SMART COOLING SECURITY SYSTEM

Steve S. Y. Chen, San Jose, Calif., assignor to ETEQ Microsystems, Inc., Milpitas, Calif.

Filed May 22, 1995, Ser. No. 445,790
Int. Cl.° G01K *7/00*
U.S. Cl. 364—557 **2 Claims**



1. In a computer system, a cooling security system for monitoring at least one cooling fan having an operating condition and generating a signal in response to said operating condition, comprising:

means for detecting a short circuit condition of the cooling fan and generating a first signal in response to said short circuit condition;

means for detecting an open circuit condition of the cooling fan and generating a second signal in response to said open circuit condition;

means for detecting a slow or stopped condition of the cooling fan and generating a third signal in response to said slowed or stopped condition;

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means for responding to said first signal, said second signal, and said third signal to generate a first stage signal;

means for deactivating said first stage signal for a predetermined period of time when said computer system is first turned on;

a NOR gate for processing said first stage signal and a GREEN signal to produce a first output signal;

a NAND gate for processing said first stage signal and said GREEN signal to produce a second output signal; and

an invertor means for inverting said second output signal to produce a third output signal.

5,631,853

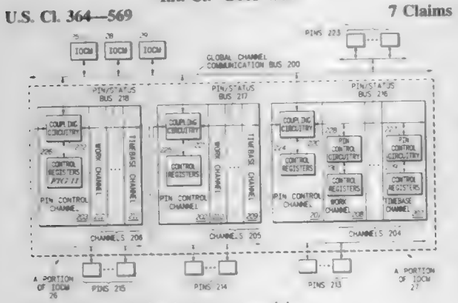
FLEXIBLE CONFIGURATION OF TIMEBASES IN A TIMER SYSTEM

Gary L. Miller, Round Rock; Vernon B. Goler, Austin, and Thomas R. Toms, Round Rock, all of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 13, 1995, Ser. No. 556,474

Int. Cl.[6] G06F *1/04*

U.S. Cl. 364—569 **7 Claims**



1. An integrated circuit timer, comprising:

a first timer channel;

a second timer channel;

timer bus conductor means for transferring a first timebase value during a first time period, and for transferring a second timebase value during a second time period, said timer bus conductor means being coupled to said first and second timer channels; and

tag conductor means for transferring a first tag value which corresponds to the first timebase value, and for transferring a second tag value which corresponds to the second timebase value, said tag conductor means being coupled to said first and second timer channels.

5,631,854

DATA LINK MODULE FOR TIME DIVISION MULTIPLEXING CONTROL SYSTEMS

Robert E. Riley, Jackson, Miss., assignor to Square D Company, Palatine, Ill.

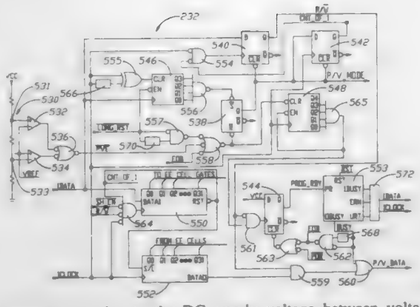
Division of Ser. No. 305,253, Sep. 13, 1994, Pat. No. 5,553,070. This application Nov. 30, 1995, Ser. No. 565,511

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 364—572 **3 Claims**

1. In a data link module having an integrated circuit with a direct current supply input terminal for receiving a direct current voltage between voltage levels V_1 and V_2, where $V_1<V_2$ and circuitry for passing signal data through a data link module in accordance with program information stored in a program storage element, the improvement being a program enabler, comprising:

means on the integrated circuit for activating the signal passing circuitry when the direct current supply voltage is between voltage levels V_1 and V_3, said means on the integrated circuit also activating the signal passing circuitry when the direct current supply voltage is between voltage levels V_4 and V_2, where $V_1<V_3<V_4<V_2$; and



means responsive to the DC supply voltage between voltage levels V_3 and V_4 for enabling the program storage element to accept new program information.

5,631,855

METHODS AND APPARATUS FOR ANALYZING PHYSICAL QUANTITIES AND APPARATUS FOR REDUCING LINE SPECTRUM NOISE

Tomoaki Ueda, Kyola, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

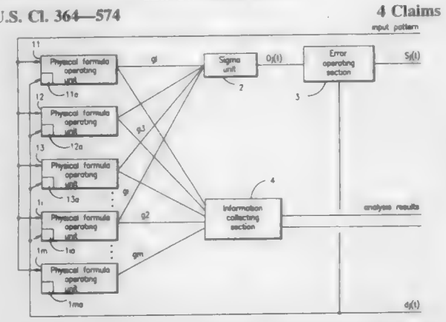
PCT No. PCT/JP92/00991, § 371 Date Feb. 3, 1994, § 102(e) Date Feb. 3, 1994, PCT Pub. No. WO93/03328, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 4, 1992, Ser. No. 190,116

Claims priority, application Japan, Aug. 5, 1991, 1-95581; Nov. 25, 1991, 3-36012

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—574 **4 Claims**



1. A method for analyzing physical quantities measured at predetermined points apart from physical sources, when the physical quantities can be calculated based upon predetermined physical formulae which include variables corresponding to physical characteristics and which satisfies linear addition, the method comprising:

a) operating the physical formulae based upon known information, the physical formulae being determined corresponding to the nature of he physical quantities to be analyzed;

b) measuring a physical quantity to be analyzed;

c) calculating a difference between the measured physical quantity and a sum obtained by cumulatively adding the operation results of the physical formulae,

d) correcting plural variables of the physical formulae based upon the calculated difference; and

outputting the corrected variables included in each physical formula as analysis results of the physical quantities, after repeating steps a through d until the difference has become smaller than a predetermined value.

5,631,856

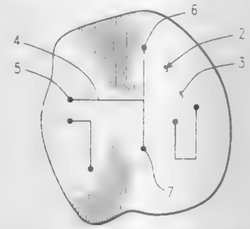
TEST SEQUENCE OPTIMIZATION PROCESS FOR A CIRCUIT TESTER

Steven A. Keller, Coral Springs; Jiann-Chang Lo, Boca Raton, and James C. Mahlbacher, Lake Worth, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,338

Int. Cl.[6] G01R *15/12*

U.S. Cl. 364—578 **24 Claims**



1. A method for optimizing a sequence of test configurations within a circuit tester having structures movable between various of said test configurations, wherein said method comprises the steps of:

reading an input list of said test configurations;

for each test configuration within said input list, establishing each other of said test configurations as a next move candidate, calculating a weighted distance from said test configuration to said next move candidate, wherein said weighted distance reflects a degree of difficulty in movement of said structures within said circuit tester from said test configuration to said next move candidate, and storing an intermediate list having a maximum of a predetermined number of next move candidates, wherein said intermediate list includes said next move candidates with lowest weighted distances from said test configuration, and wherein said predetermined number is less than a total number of test configurations in said input list; and

linking said test configurations into a chain, in a preferred order beginning with an initial said test configuration, wherein each said test configuration following said initial test configuration is chosen from available next move candidates within said intermediate list of a test configuration at an end of said chain, wherein when a said next move candidate is linked, said next move candidate is removed from said available next move candidates, and wherein, until all said test configurations are linked, when said next move candidates have been exhausted from said intermediate list of said test configuration at said end of said chain, an additional said next move candidate is added to said intermediate list of said test configuration at said end of said chain.

5,631,857

MEASURING TEST TOOL EFFECTIVENESS

Walid M. Kobrosly, Round Rock, and Anthony M. Cristofich, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1994, Ser. No. 260,124

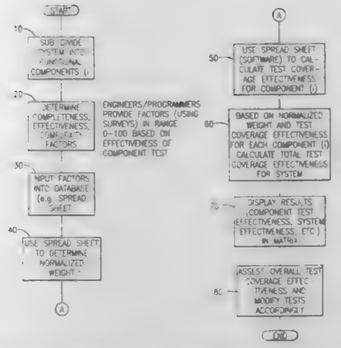
Int. Cl.[6] G06G *7/12*

U.S. Cl. 364—581 **14 Claims**

1. A method for use with a test tool in a digital computer system comprising the steps of:

dividing a data processing system of a machine being designed and tested into a plurality of components for performing unique tasks;

determining normalized component weights for each of said plurality of components;



determining a component test value for indicating test effectiveness of a test tool in testing a component for each said component;

calculating an overall test value of said test tool by weighting said component test values by said normalized component weights;

modifying said test tool to improve said overall test value and to improve said component test values for said machine being designed and tested.

5,631,858

SYSTEM FOR OBTAINING STRICT SOLUTION IN ACCORDANCE WITH ACCURACY OF APPROXIMATE SOLUTIONS

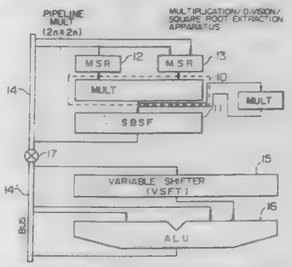
Masahisa Narita; Hisashi Kaziwara; Takeshi Asai; Shigeki Morinaga, all of Hitachi; Hiroyuki Kida, Kokubunji; Mitsuru Watabe, Katsuta; Tetsuaki Nakamikawa, Hitachi; Shunpei Kawasaki, Tokyo; Junichi Tatezaki, Kodaira; Norio Nakagawa, Koganei, all of Japan, and Yugo Kashiwagi, Bloomington, Ind., assignors to Hitachi, Ltd., Tokyo, and Hitachi Engineering Co., Ltd., Ibaraki-ken, both of Japan

Continuation of Ser. No. 536,565, Jul. 3, 1990, Pat. No. 5,293,558. This application Aug. 12, 1993, Ser. No. 89,103

Claims priority, application Japan, Nov. 4, 1988, 63-277242; Nov. 18, 1988, 63-290248; Dec. 9, 1988, 63-309968

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—732 **6 Claims**



1. A hybrid type function calculating system for obtaining a strict solution y of n-bit length to a function f(x) where y equals a root of x, wherein the accuracy of approximate solutions is sufficient and the function f(x) has an inverse function $f^{-1}(y)$ comprising:

a first multiplier for multiplying a value x normalized from an approximate solution y'=g(x) having an error smaller than a value E_n which is smaller than a resolution of said strict

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solution y from said inverse function $f^{-1}(y)$ in a domain of said approximate solution y' with an initial value Xo obtained from a parameter ROM by use of a normalized value x;

a second multiplier for multiplying said initial value x_o with upper n-bits of data obtained through a feed-back path from an output of said first multiplier to obtain said approximate solution y'=g(x) of (n+2)-bit length;

an adder/subtractor for comparing an inverse function $f^{-1}(y')$ with said normalized value x;

first means for determining y" by correcting a bit string of said approximate solution y' in accordance with results from said adder/subtractor; and

second means for determining y"' by correcting a bit string of y" in accordance with results of the comparison of $f^{-1}(y")$ with x and obtaining said strict solution y by rounding y"'.

5,631,859

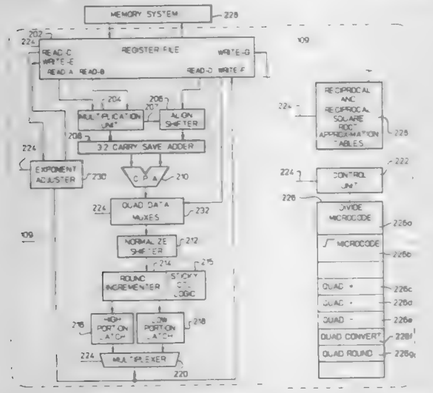
FLOATING POINT ARITHMETIC UNIT HAVING LOGIC FOR QUAD PRECISION ARITHMETIC

Peter Markstein, Woodside, Calif.; Clemens Roothaan, Chicago, Ill., and Dennis Brzezinski, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 27, 1994, Ser. No. 330,391

Int. Cl.[6] G06F *7/00;7/38*

U.S. Cl. 364—748 **21 Claims**



12. An apparatus for performing quad precision arithmetic, comprising:

(a) a memory having double precision word width;

(b) a register file having double-extended word width;

(c) a load unit operable to transfer values from said memory to said register file;

(d) an arithmetic logic unit operable to perform arithmetic operations on double-extended quantities stored in said register file;

(e) a set of muxes connected to said arithmetic logic unit and operable to selectively transfer bits between a quad precision format and a double double-extended format;

(f) a control unit connected to said register file, said arithmetic logic unit, and said muxes; and

(g) a micro code memory connected to said control unit and containing instructions for converting a quad precision quantity into a pair of double-extended quantities.

5,631,860

CARRY SELECTING SYSTEM TYPE ADDER

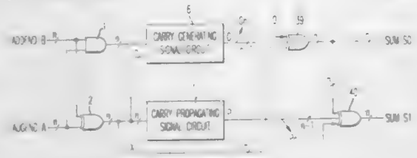
Hiroyuki Morinaka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha System LSI Kaihatsu Kenkyusho, Itami, Japan

Filed Jun. 5, 1995, Ser. No. 461,011

Claims priority, application Japan, Dec. 1, 1994, 6-298460

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—787 **6 Claims**



1. A carry selecting system type adder comprising:

a first exclusive OR device for receiving an augend Ai and an addend Bi and performing an exclusive OR operation on said augend and said addend, i being an integer and ranging from 1 to N;

a second exclusive OR device for receiving an output of said first exclusive OR device;

a carry signal generating circuit for generating a carry generate signal G(i−1), wherein said second exclusive OR device performs an exclusive OR operation on said output of said first exclusive OR device and said carry generate signal to calculate a sum Si0 in a case that a carry input value for each bit of said augend and said addend is "0", and outputting the sum Si0;

a third exclusive OR device for receiving an output of said second exclusive OR device; and

a carry propagate signal circuit for generating a carry propagate signal P(i−1), wherein said third exclusive OR device performs an exclusive OR operation on said output of said second exclusive OR device and said carry propagate signal to calculate a sum Si1 in the case that the carry input value for each bit of said augend and said addend is "1", and outputting the sum Si1.

5,631,861

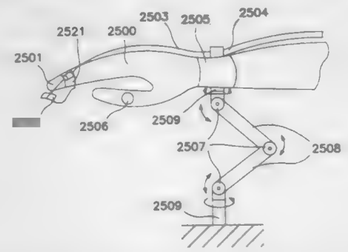
FORCE FEEDBACK AND TEXTURE SIMULATING INTERFACE DEVICE

James F. Kramer, Stanford, Calif., assignor to Virtual Technologies, Inc., Palo Alto, Calif.

Continuation of Ser. No. 929,895, Aug. 10, 1992, which is a continuation-in-part of Ser. No. 474,168, Feb. 2, 1990, Pat. No. 5,184,319. This application Jan. 17, 1995, Ser. No. 373,531

Int. Cl.[6] B25J *3/00*

U.S. Cl. 364—406 **15 Claims**



8. A device for producing a signal at a sensing body part of a body simulating the interaction between an interactive entity and a virtual or physical object, wherein said device operates on a portion of the body which comprises said sensing body part, and further comprises, connected to and spatially removed from said sensing body part, a second body part as a non-sensing body part, said device comprising:

means for generating a force simulating the interaction between said interactive entity and said object; and

positioning means for spatially positioning said second body part in spatial relation to a predetermined reference point; and

at least one of:

(a) first means for applying said generated force between said sensing body part and said second body part; and

(b) second means for applying said generated force to said sensing body part, said applying means comprising an entity displaced from said sensing body part in a first unactivated position and touching said sensing body part in a second activated position.

5,631,862

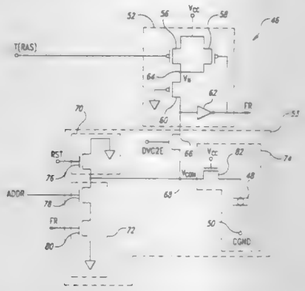
SELF CURRENT LIMITING ANTIFUSE CIRCUIT

Douglas J. Cutter; Kurt D. Beigel, both of Boise, Id.; Adrian E. Ong, Santa Clara, Calif.; Fan Ho; Boise, Id.; Patrick J. Mullarkey, Meridian, Id.; Dien S. Luong, Boise, Id.; Brett Debenham, and Kim M. Pierce, both of Meridian, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 5, 1996, Ser. No. 611,419

Int. Cl.[6] G11C *17/16*

U.S. Cl. 365—96 **18 Claims**



1. An integrated antifuse driving circuit for blowing a plurality of antifuses coupled to a node, comprising:

a voltage source for providing a driving voltage to the antifuses to blow the antifuses;

a plurality of blown antifuse detect circuits each coupled to detect the blown or unblown state of a respective antifuse; and

a plurality of decoupling circuits each coupled to respond to a respective one of the blown antifuse detect circuits to decouple detected blown antifuses, thereby limiting current flow through the blown antifuses.

5,631,863

RANDOM ACCESS MEMORY CELL RESISTANT TO RADIATION INDUCED UPSETS

Paul S. Fechner, Plymouth; Gregor D. Dougal, and Keith W. Golke, both of Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 388,098, Feb. 14, 1995, abandoned. This application Jan. 16, 1996, Ser. No. 587,065

Int. Cl.[6] G11C *11/412*

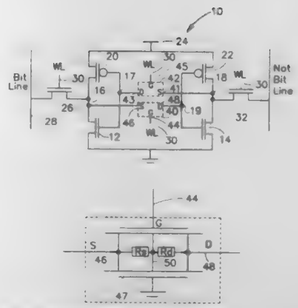
U.S. Cl. 365—156 **9 Claims**

8. A CMOS memory cell comprising:

a first inverter having a first input and a first output, said first output selectively coupled to a first output line;

a second inverter having a second input and a second output, said second output connected to said first input and selectively coupled to a second output line; and

a first transistor having a first terminal connected to a word line signal, a second terminal connected to said first output, a third terminal connected to said second input, and an isolated body,



said first transistor having a first resistive means between said second terminal and said isolated body and a second resistive means between said third terminal and said isolated body.

5,631,864

MEMORY ARRAY HAVING A REDUCED NUMBER OF METAL SOURCE LINES

Michael S. Briner, San Jose, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jul. 28, 1995, Ser. No. 509,036

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—185.05 **29 Claims**

1. A memory array for use in a memory system comprising:

an array of non-volatile memory cells, with each cell including a source, a drain, a channel region intermediate the source and drain, a floating gate disposed over the channel region and insulated from the channel region and a control gate disposed over the floating gate and insulated from the floating gate, with the cells being arranged in a plurality of rows and columns, with the cells located in one of the rows having their control gates connected to a common word line and with the cells located in a particular one of the columns having their drains connected to a common bit line and with all of the cells of the array having their sources connected to a common source connection, with the common source connection including

a plurality of doped semiconductor source lines which connect the sources of the cells located in at least one of the rows together, and

a metal source line structure including a plurality of metal source line column segments disposed generally parallel to the bit lines which connects together the doped source lines, with the metal source line column segments being spaced N number of cell columns apart so as to define a plurality of sub-arrays of the cells, with each sub-array having N number of columns; and

decoder means for accessing at least two cells in one of the sub-arrays at the same time for the purpose of reading the at least two cells.

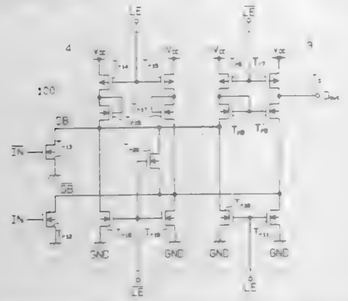
VOL 1198 ISS 3 MY 20 1997 UMI

5,631,865

DATA OUTPUTTING CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE

Akihiro Iwase, and Masaharu Kagohashi, both of Kasugai, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 27, 1995, Ser. No. 562,745
Claims priority, application Japan, Mar. 17, 1995, 7-059438
Int. Cl.° G11C *7/00*
U.S. Cl. 365—189.01 **14 Claims**



1. A semiconductor memory device, provided with a pair of data buses through which cell data is read, said memory device comprising:

a sense amplifier, connected to said pair of data buses, for producing an output data signal in accordance with voltage potentials of transfer signals on said pair of data buses; and

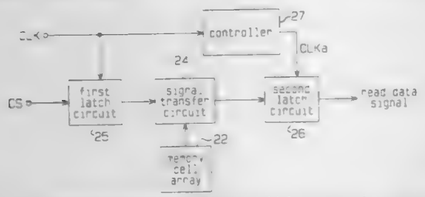
a load circuit, connected to said pair of data buses, for setting said data buses at a predetermined reset voltage potential during a stand-by state of said memory device, wherein said predetermined reset voltage potential is intermediate between different voltage potential levels of said transfer signals on said data buses during a data reading operation of said memory device.

5,631,866

SEMICONDUCTOR MEMORY DEVICE

Tomoharu Oka; Yukinori Kodama, and Katsumi Shigenobu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 19, 1995, Ser. No. 444,579
Claims priority, application Japan, May 31, 1994, 6-118185
Int. Cl.° G11C *7/00;8/00*
U.S. Cl. 365—189.05 **11 Claims**



1. A semiconductor memory device which operates in response to a control signal and a clock signal, said device comprising:

a memory cell array having a plurality of memory cells for storing data;

a first latch circuit responsive to said clock signal for receiving said control signal, and for providing a received control signal as a first received output signal;

a signal transfer circuit coupled to said memory cell array for reading a cell data signal from one of said memory cells in accordance with said first received output signal, and for transferring said read data signal therefrom;

a second latch circuit coupled to said signal transfer circuit for receiving said read data signal transferred from said signal transfer circuit, and for providing the received read data signal as a second received output signal; and

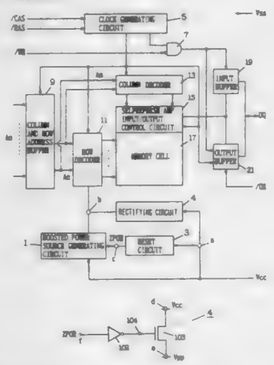
a controller, coupled to said second latch circuit and responsive to said clock signal, for controlling a rate at which said clock signal arrives said second latch circuit according to a period of time from when said first latch circuit receives said control signal to when said read data signal transferred from said signal transfer circuit arrives at said second latch circuit, and for providing a rate controlled clock signal to said second latch circuit, wherein said second latch circuit receives said read signal in response to said rate controlled clock signal.

5,631,867

SEMICONDUCTOR STORAGE DEVICE REQUIRING SHORT TIME FOR PROGRAM VOLTAGE TO RISE

Hiroshi Akamatsu; Yukinobu Adachi; Susumu Tanida, and Tooru Ichimura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 456,328
Claims priority, application Japan, Jun. 23, 1994, 6-141712
Int. Cl.° G11C *7/00*
U.S. Cl. 365—189.09 **16 Claims**



1. A semiconductor storage device for executing a program using a program voltage at a first level, comprising:

means for receiving a power source voltage;

means for detecting the course of rise of the level of said power source voltage;

means for boosting said program voltage while following said course of rise of the level of said power source voltage and providing a program voltage at a second level, less than the first level; and

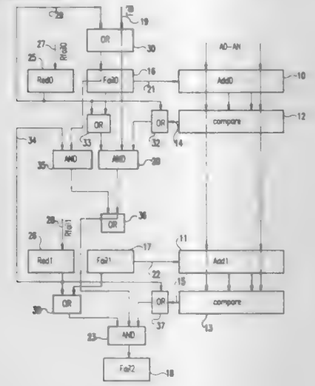
program voltage generating means for boosting said program voltage at said second level to said program voltage at said first level, said program voltage generating means being actuated by a predetermined signal delivered a predetermined period of time after the rise of said power source voltage.

5,631,868

METHOD AND APPARATUS FOR TESTING REDUNDANT WORD AND BIT LINES IN A MEMORY ARRAY

Luigi Termullo, Jr., Colchester; Marcel J. Robillard, Williston; James J. Covino, Essex, and Stuart J. Hall, Underhill Center, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1995, Ser. No. 563,831
Int. Cl.° G11C *7/00;* **G01R** *31/28*
U.S. Cl. 365—200 **4 Claims**



1. An array built-in self-testing (ABIST) circuit for memory arrays having redundant memory elements wherein a testing device tests memory elements in a memory array to determine if there are any failing memory elements, the ABIST circuit comprising:

a plurality of fail storage latches equal in number to the number of redundant memory elements, each fail storage latch, when enabled, being set upon detection of a failed memory element;

a plurality of failed address storage registers each responsive to a corresponding fail storage latch for latching an address of a failed memory element upon the corresponding fail storage latch being set during ABIST testing;

a first logic circuit responsive to a latched address in a failed address storage register and enabling a succeeding fail storage latch;

individual redundant fail storage latches for each redundant memory element in the memory array, said testing device additionally testing each of the redundant elements during ABIST testing, the redundant fail storage latches being latched upon detection of a corresponding failed redundant memory element;

a second logic circuit responsive to setting of any one of said redundant fail storage latches for bypassing a corresponding fail storage latch and enabling a succeeding fail storage latch; and

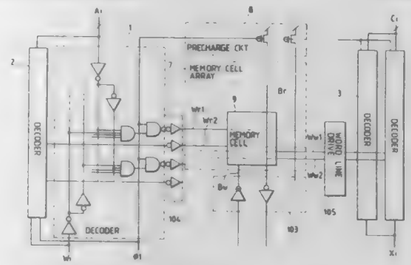
a final fail latch enabled by said first and second logic circuits when a combination of redundant element failures and memory array element failures equals a total number of redundant memory elements, said final fail latch, when set, indicating failure of the memory array being tested.

5,631,869

SEMICONDUCTOR MEMORY UNIT HAVING OVERLAPPING ADDRESSES

Kazuki Ninomiya, and Tomoharu Kawada, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co, Ltd., Osaka, Japan

Division of Ser. No. 235,263, Apr. 29, 1994, Pat. No. 5,422,857, which is a continuation of Ser. No. 612,730, Nov. 14, 1990, abandoned. This application Feb. 28, 1995, Ser. No. 396,297
Claims priority, application Japan, Nov. 21, 1989, 1-302828
Int. Cl.° G11C *7/00*
U.S. Cl. 365—230.06 **12 Claims**



1. A memory unit comprising:

a memory cell array divided into words including overlap words, wherein each of the overlap words is identified by a first address pair including a first address and a first window number and by a second address pair including a second address and a second window number;

first decoding means for decoding an address signal and a window signal into a first word selection signal;

second decoding means for decoding the address signal and the window signal into a second word selection signal; and

means for selecting a particular one of the words of the memory cell array in response to the first word selection signal and the second word selection signal, and executing an access to the selected word;

wherein the first decoding means operates for decoding an address signal and a window signal which designate the first address pair of one of the overlap words, and the second decoding means operates for decoding an address signal and a window signal which designate the second address pair of one of the overlap words.

5,631,870

SEMICONDUCTOR MEMORY

Kazutami Arimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 498,820
Claims priority, application Japan, Sep. 13, 1994, 6-218682
Int. Cl.° G11C *11/34*
U.S. Cl. 365—201 **10 Claims**

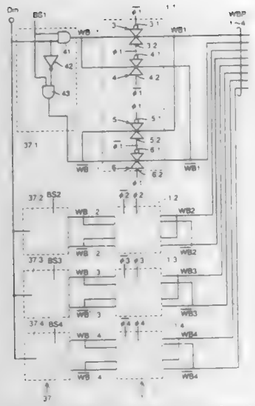
1. A semiconductor memory having a test mode, comprising:

a memory array including a plurality of memory cells arranged in matrix fashion;

selecting means for selecting two memory cells of said memory array in said test mode;

writing means for generating a second signal by inverting an externally applied first signal, and for writing in parallel said first and second signals to the two memory cells selected by said selecting means;

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reading means for reading in parallel two signals from said two memory cells; and

a test circuit for inverting either one of the two signals read by said reading means, and for determining that said two memory cells are normal when logic of the inverted signal coincides with logic of the other signal.

5,631,871

SYSTEM FOR SELECTING ONE OF A PLURALITY OF MEMORY BANKS FOR USE IN AN ACTIVE CYCLE AND ALL OTHER BANKS FOR AN INACTIVE PRECHARGE CYCLE

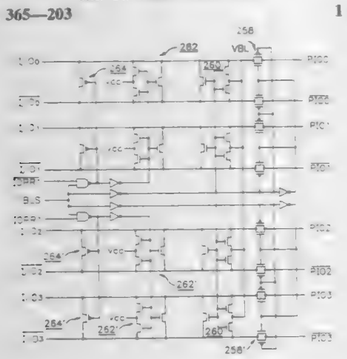
Churoo Park, Suwon; Hyun-Soon Jang, Seoul; Chull-Soo Kim, Suwon; Myung-Ho Kim, Suwon; Seung-Hun Lee, Suwon; Si-Yeol Lee, Kyungki-do; Ho-Cheol Lee; Tae-Jin Kim, both of Seoul, and Yun-Ho Choi, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 130,138, Oct. 4, 1993. This application Dec. 29, 1995, Ser. No. 578,151

Claims priority, application Rep. of Korea, Oct. 2, 1992, 18130; Oct. 2, 1992, 18131; Apr. 27, 1993, 7127

Int. Cl.[6] B01F *7/00;13/00*

U.S. Cl. 365—203 **1 Claim**



1. A dynamic random access memory receiving an external clock comprising:

a plurality of memory banks each including a plurality of memory cells having an address associated therewith and operable in either one of an active cycle and a precharge cycle at any one time;

means for receiving a row address strobe signal and latching a logic level of the row address strobe signal in response to one of a rising edge and a falling edge of said clock;

address input means for receiving a portion of one of said addresses to indicate selection of one of the memory banks; and

means, receiving the latched logic level and the one address portion, for outputting an activation signal to said one selected memory bank and an inactivation signal to unselected memory banks when the latched logic level is at a first logic level, so that said one selected memory bank operates in the active cycle while the unselected memory banks operate in the precharge cycle.

5,631,872

LOW POWER CONSUMPTION SEMICONDUCTOR DYNAMIC RANDOM ACCESS MEMORY DEVICE BY REUSING RESIDUAL ELECTRIC CHARGE ON BIT LINE PAIRS

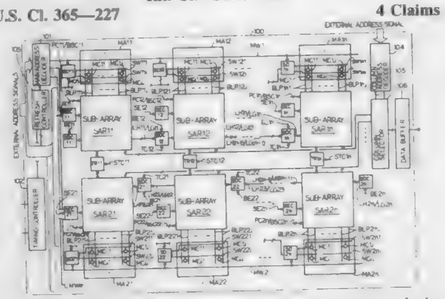
Isao Naritake; Tadahiko Sugibayashi; Satoshi Utsugi, and Tatsunori Murotani, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 4, 1996, Ser. No. 658,210

Claims priority, application Japan, Aug. 14, 1995, 7-206926

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—227 **4 Claims**



1. A semiconductor dynamic random access memory device comprising:

a plurality of memory cell arrays divided into a plurality of memory cell array groups, each of said plurality of memory cell array including a plurality of dynamic random access memory cells arranged in rows and columns and respectively storing data bits in the form of electric charge;

a plurality of bit line pair groups respectively associated with said plurality of memory cell arrays, each of said plurality of bit line pair groups including a plurality of bit line pairs respectively coupled to the columns of dynamic random access memory cells of associated one of said plurality of memory cell arrays for propagating said data bits thereto and therefrom;

a plurality of main word lines respectively associated with said plurality of memory cell array groups, and selectively changed to an active level;

a plurality of sub-word line groups respectively associated with said plurality of memory cell array groups, each of said plurality of sub-word line groups including a plurality of sub-word lines respectively coupled to the rows of dynamic random access memory cells and selectively changed to an active level so as to transfer said data bits between a selected row of dynamic random access memory cells and the associated one of said plurality of bit line pair groups;

a plurality of sub-arrays respectively coupled through said plurality of bit line pair groups to said plurality of memory cell arrays, and divided into a plurality of sub-array groups respectively associated with said plurality of memory cell array groups, each of said plurality of sub-arrays including

a plurality of precharge circuits respectively coupled to the plurality of bit line pairs of associated one of said plurality of bit line groups for charging said plurality of bit line pairs to an intermediate potential level in a first phase,

a plurality of sense amplifiers respectively having pairs of sense nodes connectable to said plurality of bit line pairs in a second phase after said first phase when said data bits are read out from a selected one of said rows of dynamic random access memory cells for generating small potential differences on said plurality of bit line pairs,

a first controlling means for causing said plurality of sense amplifiers to increase said small potential differences at said pairs of sense nodes to large potential differences in a third phase after said second phase,

a plurality of bit line drivers respectively coupled to said plurality of bit line pairs and powered through a power supply means for stepwise increasing said small potential differences on said plurality of bit line pairs to large potential differences in response to said large potential differences at said pairs of sense nodes, and

a second controlling means having a transfer sub-means for coupling said associated one of said plurality of bit line groups through said power supply means to another power supply means of another of said plurality of sub-arrays already increased small potential differences on associated bit line pairs to large potential differences and incorporated in the same sub-array group, thereby causing said plurality of bit line drivers to increase said small potential differences to middle potential differences in a fourth phase after said third phase, said second controlling means further having a power supply sub-means for coupling said power supply means to a source of power voltage, thereby increasing said middle potential differences to said large potential differences in a fifth phase after said fourth phase; and

a charge transfer means coupled between said associated one of said plurality of bit line groups and another of said plurality of bit line groups associated with another of said plurality of memory cell groups for equalizing said another of said plurality of bit line groups to said associated one of said plurality of bit line groups in a sixth phase after said fifth phase when other small potential differences have already taken place on said another of said plurality of bit line groups.

5,631,873

SEMICONDUCTOR MEMORY

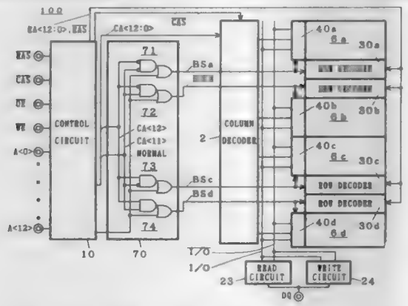
Kiyohiro Furutani, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1995, Ser. No. 567,419

Claims priority, application Japan, May 23, 1995, 7-123879

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **4 Claims**



1. A semiconductor memory device comprising:

m memory cells, where m is an integer;

n address pins, where n is an integer; and

a row decoder for selecting a specific number of said memory cells out of said m memory cells,

wherein said row decoder selects $m/2^k$ as said specific number of said memory cells based on a first signal of p bits, where p is an integer, input to said address pins at a time when a control signal for specifying a beginning and an end of access operation specifies said end of access operation, and a second signal of q bits, where q is an integer, input to said address pins at a time when said control signal specifies said beginning of access operation, and a third signal of k bits composed of said first signal and said second signal, where k is an integer, and a sum of p and q, indicating an address for the memory cells selected by said row decoder.

5,631,874

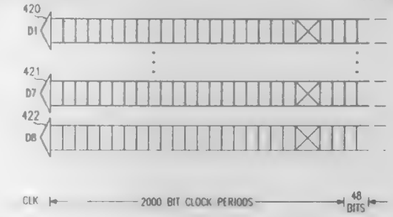
TELEMETRY TRANSMISSION PROTOCOL FOR TOWED HYDROPHONE STREAMER

Robert H. Mastin, Dallas; Deane D. Fletcher, Plano, and John S. Hepp, Irving, all of Tex., assignors to Whitehall Corporation, Dallas, Tex.

Division of Ser. No. 304,605, Sep. 12, 1994, Pat. No. 5,450,369, and a continuation of Ser. No. 125,562, Sep. 23, 1993, abandoned. This application Mar. 14, 1995, Ser. No. 403,478

Int. Cl.[6] G01V *1/22;1/38*

U.S. Cl. 367—15 **10 Claims**



1. A method of adding telemetry data to a data frame transmitted on a data bus within a hydrophone streamer, comprising the steps of:

receiving a portion of the data frame into a data transmission circuit within a particular module of said streamer, said portion of said data frame representing telemetry data derived from an adjacent module, said transmission circuit transmitting said portion of said data frame to a desired destination;

receiving an end-of-data signal into said transmission circuit, said end-of-data signal commanding said transmission circuit to add telemetry data derived from said particular module to said portion of said data frame; and

adding said data derived from said particular module to said portion of said data frame, said data frame thereby transmitted to said destination and including said data derived from said particular module, said telemetry data ordered within said frame as a function of an order of modules within said streamer.

5,631,875

DEVICE FOR MEASURING DISTANCE WITH ULTRASOUND

Roman Romes, Friolzheim, and Karl-Heinz Dambacher, Reutlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 308,843, Sep. 19, 1994, abandoned, which is a continuation of Ser. No. 64,177, Aug. 2, 1993, abandoned. This application Mar. 19, 1996, Ser. No. 618,512

Claims priority, application Germany, Nov. 11, 1991, 41 36 958.0; Mar. 18, 1992, 42 08 595.0

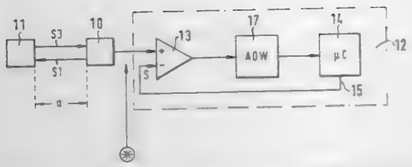
Int. Cl.[6] G01S *15/00;7/52*

U.S. Cl. 367—99 **14 Claims**

1. Device for measuring distance with ultrasound comprising:

transmitter means for emitting a pulse-type ultrasonic signal;

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reflector means positioned relative to said transmitter means so as to produce an echo signal from said pulse-type ultrasonic signal;

receiver means spaced at a distance to be measured from said reflector means so as to receive said echo signal and convert said echo signal into an electrical signal;

evaluation circuit means connected with said receiver means to determine said distance and including a threshold-value switch having a variable threshold, means for registering and evaluating an output signal of the threshold value switch for varying a switching threshold in dependence on previously registered output signals of said threshold value switch, said evaluation circuit including means for measuring a time interval between a start of said pulse-type ultrasonic signal and a time of first transgression of said echo signal across said variable switching threshold for determination of said distance.

5,631,876

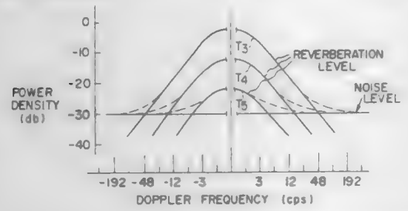
CW SONAR WITH ADAPTIVE NOTCH REVERBERATION FILTER

James H. Donegan, Cupertino, Calif., assignor to Lockheed Martin Corporation, Syracuse, N.Y.

Filed Nov. 27, 1967, Ser. No. 685,944

Int. Cl.[6] G01S *15/00*

U.S. Cl. 367—135 **9 Claims**



1. In a continuous wave sonar receiver for detecting target signal content of a received signal spectrum also containing reverberation and noise, a receiver signal processor comprising:

(a) a doppler comb filter having said received signal transmitted thereto and comprising a plurality of filter teeth spaced over a substantial doppler frequency range including zero doppler;

(b) means for deriving a measure of the reverberation spectrum in said received signal comprising comparator means for generating a control signal in response to difference of signal levels sensed on selected teeth of said comb filter, a first such comb filter tooth being located near the zero doppler frequency and a second comb filter substantially spaced therefrom; and

(c) adaptive notch filter means responsive to said control signal to insert in said received signal as transmitted to said doppler comb filter a notch of form approximating the inverse of the reverberation spectrum as thus measured.

5,631,877

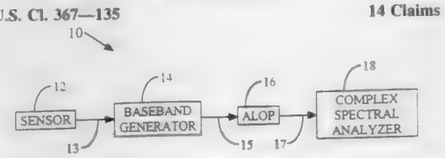
NARROWBAND SIGNAL REVEALER

James W. Bond, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1996, Ser. No. 585,064

Int. Cl.[6] H04B *1/06*

U.S. Cl. 367—135 **14 Claims**



10. An apparatus for revealing a tonal structure of an input signal within a frequency band, wherein said input signal is substantially masked by an interfering signal, comprising:

a basebander operably coupled to said input signal to form a complex signal; and

an adaptive locally optimum processor operably coupled to said complex signal to form a combined signal representative of said tonal structure.

5,631,878

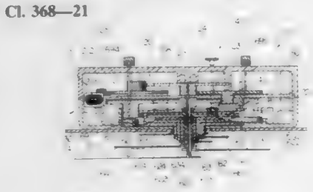
TIME EQUIPMENT

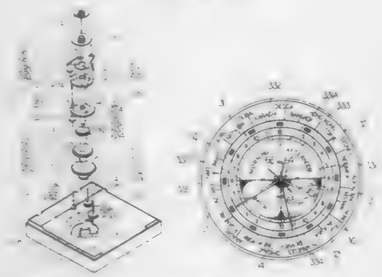
Eddie Z. Chen, 17411 Seco Ct., Rowland Heights, Calif. 91748

Filed Sep. 26, 1995, Ser. No. 533,777

Int. Cl.[6] G04B *19/22*

U.S. Cl. 368—21 **14 Claims**





1. A time equipment, comprising

a case;

a dial installed in said case comprising an hour portion, a minute portion and a period portion, in which said hour portion inscribing two sequences of numeral ordered by increasing value from 1 to 12 that said two sequences of numerals are arranged circularly spaced apart angularly, said first numeral "12" being inscribed in a top position of said hour portion, said second numeral "12" being inscribed in a bottom position of said hour portion, said two numerals "6" being inscribed in a right and a left position of said hour portion respectively, said minute portion being positioned adjacent to said hour portion and inscribing a sequence of numerals ordered by

increasing value from 1 to 60 which are arranged circularly spaced apart angularly, wherein said numeral "60" is inscribed in a top position of said minute portion adjacent to said first numeral "12" of said hour portion, said numeral "30" being inscribed in a bottom position of said minute portion adjacent to said second numeral "12" of said hour portion, said period portion being positioned in a central area of said dial and encircled by said hour portion, in which said period portion has a central cross inscription having a vertical line extending from a top position to a bottom position of said period portion and a horizontal line extending from a left position to a right position of said period portion, so as to divide said period portion into a top-left section, a top-right section, a bottom-left section, and a bottom-right section for representing four different conditions of time, including a morning condition of time, an afternoon condition of time, an evening condition of time, and a night condition of time respectively, moreover, a "day" mark being inscribed on a top part of said vertical line, a "night" mark being inscribed on a bottom part of said vertical line, an "a.m." mark being inscribed on a left part of said horizontal line, a "p.m." being inscribed on a right part of said horizontal line, a "MORNING" mark and an "AFTERNOON" mark being inscribed on a predetermined position of said top-left and top-right sections of said period portion respectively, an "EVENING" mark and a "NIGHT" mark being inscribed on a predetermined position of said bottom-right and bottom left sections of said period portion;

an hour, a minute and a second indicating hands mounted for rotating above said dial;

a movement installed in said case to drive said hour indicating hand to rotate one revolution in 24 hours and to drive said minute and said second indicating hands to rotate one revolution in 60 minutes and 60 seconds respectively;

a time setting device installed in said case for setting said hour, minute and second indicating hands on time; and

a time zone means including a time zone ring coaxially mounted for rotating around a periphery of said dial, said time zone ring having a front surface bearing 24 time zone inscriptions which are arranged in a same order as 24 time zones, thereby when one of said time zone inscriptions, representing a local city, of said time zone ring is aligned with said hour indicating hand, another 23 times of said other 23 time zone inscriptions representing the other 23 time zone cities are simultaneously read according to said corresponding aligned hour numerals inscribed on said hour portion of said dial, said time zone means further comprising a C-shape spring which one end is bent to form a tail, an outer rim of said case forming an outer time zone recess which has a circular rim protrusion protruded outwardly form a vertical outer periphery side of said time zone recess and a hole on a predetermined position on a horizontal periphery surface of said time zone recess, said tail of said spring being inserted into said hole so as to be held on said time zone recess, an inner surface of said time zone ring forming a circular groove so that said time zone ring is rotatably mounted in position on said time zone recess by means of a clipped-fit locking between said circular groove and said circular rim protrusion, a lower portion of said inner surface of said time zone ring further providing a ring of ratchet teeth, on which another free end of said spring is engaged thereto, so that said time zone ring capable of rotating in an anti-clockwise direction while said ratchet teeth acting as a stopping means to prevent said time zone ring to rotate clockwise.

5,631,879

WRIST WATCH WITH INTERCHANGEABLE STRAP

Emile Pequignet, Fournets-Luisans, France, assignor to Montres Pequignet, France

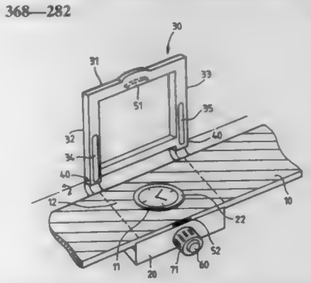
PCT No. PCT/FR94/01035, § 371 Date Mar. 1, 1996, § 102(e) Date Mar. 1, 1996, PCT Pub. No. WO95/06902, PCT Pub. Date Mar. 9, 1995

PCT Filed Sep. 2, 1994, Ser. No. 605,149

Claims priority, application France, Sep. 3, 1993, 93 10539

Int. Cl.[6] A44C *5/00;* **G04B** *37/00*

U.S. Cl. 368—282 **22 Claims**



1. A wrist watch comprising a supporting element (**20**), said supporting element including a body (**21**) and an interchangeable strap (**10**) forming a single unit, said strap having a central slot (**11**) adapted to be fitted about said body (**21**), the invention being characterized in that said wrist watch further comprises a hinged cover (**30**), a hinge (**40**) disposed on the supporting element (**20**) to permit said cover to be folded down on the strap (**10**) by rotation about said hinge (**40**), said cover (**30**) and said supporting element (**20**) having clasp means (**51**, **52**) and opening means (**60**) on the supporting element (**20**) for releasing the clasp means and opening the cover.

5,631,880

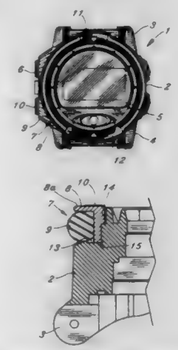
PROTECTIVE INDICATOR RING FOR A WRISTWATCH

John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Mar. 20, 1996, Ser. No. 618,887

Int. Cl.[6] G04B *47/06*

U.S. Cl. 368—287 **8 Claims**



1. An improved protective indicator ring assembly for a wristwatch of the type having a watch case with a bezel, the bezel having an annular ledge portion and a circular wall portion extending upward from the annular ledge portion, and having retaining means for rotatably mounting an indicator ring for rotation above said annular ledge portion and outside of said circular wall portion, the indicator ring comprising:

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a first ring of rigid material adapted to be rotatably mounted and held on the watch bezel by said retaining means, and

a second ring of impact absorbing material having a greater outer diameter than said first ring and disposed thereon, said first and second ring being provided with interlocking portions, whereby the first ring may be rotated by the second ring, and the watch protected by the second ring.

5,631,881

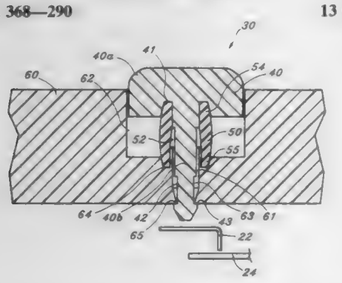
PUSH BUTTON ASSEMBLY FOR AN ELECTRONIC WRIST INSTRUMENT

Claude Pessey, Pirey, and Paul G. Chavin, Besancon, both of France, assignors to Timex Corporation, Middlebury, Conn.

Filed May 1, 1996, Ser. No. 641,670

Int. Cl.[6] G04B *29/00*

U.S. Cl. 368—290 **13 Claims**



1. A push button assembly for an electronic wrist instrument having a case, the case having a contact member and an integrated circuit disposed within, which comprises:

the case having a bore disposed therethrough, the bore including an outer portion, an inner portion having a tapered inner end, and a groove surrounding the inner portion;

a push button member disposed and retained within the bore for slidingly urging contact with the contact member, the push button member comprising a head with an interior surface and a stem with a first end centrally disposed on the interior surface of the head, a tapered second end, and a circumferential groove disposed adjacent to the tapered second end to form an annular ledge at the interface thereof, the interior surface of the head having an annular groove encircling the first end of the stem, where the push button member is retained within the bore by the annular ledge providing a restraining means with respect to the tapered inner end of the bore; and

a resilient, compressible gasket disposed about the stem, a first end of the gasket disposed in the annular groove on the interior surface of the push button member head and a second end of the gasket disposed in the groove surrounding the inner portion of the bore to provide sealing for the push button assembly, whereby when the head of the push button member is depressed, the tapered second end of the stem contacts the contact member to provide a means to operate the integrated circuit, and when the head of the push button member is released, the gasket acts as a spring

means for returning the push button member from its depressed position to its undepressed position.

5,631,882

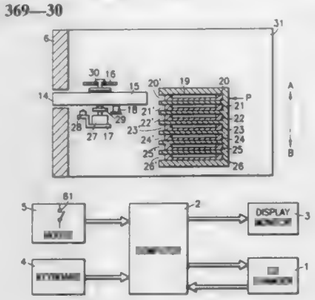
DISK CHANGER DEVICE FOR USE WITH A PERSONAL COMPUTER AND CONTROL METHOD FOR SAME

Stephen Mascenik, Torrance, Calif., assignor to Nakamichi Corporation, Tokyo, Japan

Filed Jun. 17, 1994, Ser. No. 261,990

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—30 **11 Claims**



1. A disk changer system for storing and playing disks comprising:

a disk changer;

said disk changer including a magazine for storing disks at a plurality of disk storage locations within said magazine;

said disk changer including means for reading a selected disk of the disks stored within the magazine when said selected disk is at a playback position;

said disk changer including a transport system for transporting disks between said magazine, said playback position, and an eject position; display means for displaying information;

control means for controlling said disk changer and said display means; said control means including a memory;

means for inputting data to said control means and said memory;

said control means including means for displaying disk storage location symbols, on said display means, wherein the disk storage location symbols each correspond to a respective one of said disk storage locations;

said control means including means, responsive to said means for inputting, for displaying said disk storage location symbols in one of a first state and a second state;

said control means including first loading control means, responsive to said disk storage location symbols in said first state, for actuating said disk changer to accept a disk external to said disk changer at said eject position, read data on said disk, transfer said data to said memory, and store said disk at one of said plurality of disk storage positions corresponding to one of said disk storage location symbols in said first state;

said control means including second loading control means, responsive to said disk storage location symbols in said second state, for actuating said disk changer to store a disk external to said disk changer at said eject position into one of said plurality of disk storage positions, corresponding to said one of said disk storage location symbols in said second state, without reading said disk; and

said control means further including means for displaying a check mark symbol associated with said disk storage location symbols when said storage location symbols are placed in said first state.

5,631,883

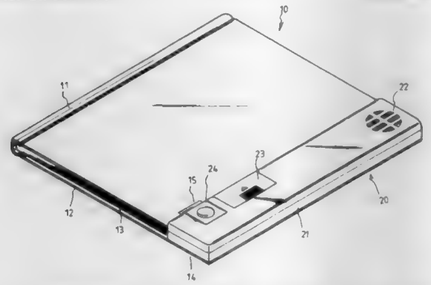
COMBINATION OF BOOK WITH AUDIO DEVICE

Yi-Yang Li, Suite 1, 11F. No. 95-8 Chang Ping Rd. Sec. 1, Taichung, Taiwan

Continuation of Ser. No. 276,420, Jul. 18, 1994, abandoned, which is a continuation of Ser. No. 995,134, Dec. 22, 1992, abandoned. This application Jul. 17, 1995, Ser. No. 503,331

Int. Cl.[6] G11B *17/22;31/00*

U.S. Cl. 369—31 **20 Claims**



1. A combination of a book with an audio device for audibly reproducing predetermined texts printed on a book page, comprising:

a book having a hard back cover extended outward to define an extension, said book further including a plurality of pages, each carrying a printed text and an identification label attached along an end margin of the page, wherein the identification label is composed of an insulation tape having printed thereon an U-shape conductive stripe for identifying the page;

an audio device attached to the extension of said back cover, said audio device including a rectangular housing having a battery chamber, a control circuit, an address generator, a ROM memory, an audio generator and a speaker interrelatedly disposed therein, and a contact plate pivotally secured to a lower inward edge of said audio device, said contact plate arranged to precisely engage with said identification label on said book pages;

wherein a transient engagement of said contact plate with said identification label creates a trigger signal corresponding to an identified address for extracting a spoken message from said ROM memory, wherein the spoken message corresponds to the printed text on said page, said spoken message being then connected to said speaker for audibly reproducing said printed text on said page.

5,631,884

COMPACT-DISC CHANGER USING THE SAME OPTICAL PICKUP DEVICE USED FOR PLAYING DISC FOR SENSING ROULETTE POSITION

Kyu-sam Chun, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 15, 1995, Ser. No. 388,768

Claims priority, application Rep. of Korea, Feb. 16, 1994, 94-2731

Int. Cl.[6] G11B *17/22*

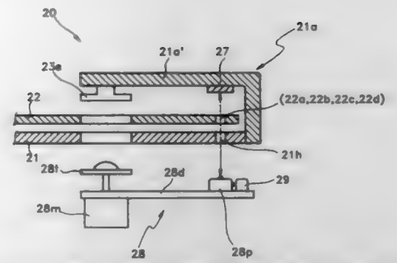
U.S. Cl. 369—37 **4 Claims**

1. A roulette-type disc changer comprising:

a tray;

a roulette rotatably mounted on said tray, said roulette having an upper surface distal from said tray for loading a plurality of discs thereon, having a lower surface opposite its said upper surface and proximate to said tray, and having a rim at a circumference thereof;

a pickup portion installed below said tray and having a deck on which moves an optical pickup for emitting a laser beam and sensing the laser beam reflected back thereto as from one of said plurality of discs, for reproducing information from the discs; and



a reflector positioned above the upper surface of said roulette, wherein a plurality of throughhole groups each having at least one light throughhole therein are formed in a predetermined pattern along a circular path near the circumference of said roulette and separate from where said plurality of disks are loaded, wherein each light throughhole in said throughhole groups extends between the upper and lower surfaces of said roulette at a prescribed distance from its rim, wherein an light throughhole is formed in said tray at a position corresponding to that of the throughholes of said roulette, wherein the deck of said pickup portion is extended such that said optical pickup can move sufficiently close to the rim of said roulette as to be positioned beneath the additional light throughhole in said tray, and wherein said reflector is positioned such that the laser beam emitted from said optical pickup can pass through the additional light throughhole in said tray and one of the groups of throughholes of said roulette and be reflected by said reflector back to said optical pickup, thereby allowing a disc number or a disc stopping position or both to be sensed by said optical pickup.

5,631,885

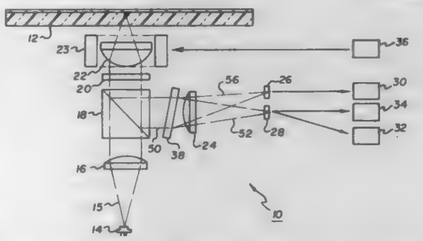
WAVEGUIDE-GRATINGS USED FOR ANALYSIS OF OPTICAL BEAMS CONSTRUCTED AS DUAL-PITCH DOUBLE SURFACE CORRUGATIONS

John C. Brazas, Jr., Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1994, Ser. No. 236,977

Int. Cl.[6] G11B *7/095*

U.S. Cl. 369—44.23 **5 Claims**



1. An optical system for recording or reading out information from an optical disk said system comprising: a focus error detector pair and data and tracking error detector pair, and

an element responsive to a beam of light projected off of the optical disk and having a transparent substrate and a substantially internal reflecting waveguide with gratings formed on the top and bottom surfaces, each waveguide-grating having a predetermined grating period, with the periods being different and selected so that a separate focus error signal beam is projected onto the detector pair for focus error detection, and

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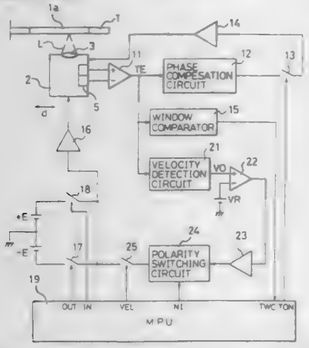
a separate transmitted beam is provided through the element and projected onto the detector pair for data and tracking error detection.

5,631,886

TRACKING CONTROL APPARATUS FOR OPTICAL DISK

Haruyuki Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 915,345, Jul. 17, 1992, abandoned. This application May 3, 1994, Ser. No. 237,956
Claims priority, application Japan, Jul. 18, 1991, 3-202294
Int. Cl.[6] G11B *7/085*
U.S. Cl. 369—44.25 **9 Claims**



1. A tracking control apparatus for an optical disk apparatus having an optical head with an objective lens emitting a light beam on a disk for reading information from a track formed on the disk having a tracking enable region where guide grooves, servo marks or the like are formed and a region outside the tracking enable region both within an optical head moving range, comprising:

optical head moving means for moving the optical head relative to the disk in a radial direction thereof;

tracking error signal detecting means for detecting a tracking error signal based on a reflection light from the disk;

tracking servo means for performing a tracking servo control to position the optical head relative to the track in response to said tracking error signal;

tracking error signal judging means for judging whether said tracking error signal exceeds either one of threshold levels defined by a predetermined range between upper and lower limits; and

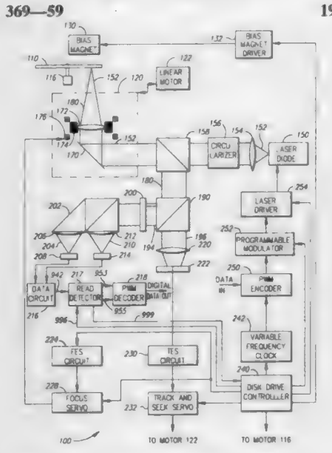
controlling means for controlling said optical head moving means and tracking servo means based on a judgement result by said tracking error signal judging means such that where the tracking error signal does not exceed either one of said predetermined threshold levels at an initial condition before said tracking servo control is activated, said optical head is moved inwardly or outwardly in the radial direction of the disk toward the tracking enable region until the tracking error signal exceeds either one of said predetermined threshold levels, such that where the tracking error signal does not exceed either one of said predetermined threshold levels during a predetermined period at the initial condition, even though the optical head has been moved inwardly or outwardly in the radial direction of the disk, said optical head is moved oppositely in the radial direction of the disk toward the tracking enable region until he tracking error signal exceeds either one of said predetermined threshold levels, and such that where the tracking error signal exceeds either one of said predetermined threshold levels, said tracking servo control is activated to position the optical head relative to the track.

5,631,887

PULSE WIDTH MODULATION OPTICAL DISK DRIVE WITH ADJUSTABLE PULSED LASER WRITE AND PREHEAT PATTERNS

Jerry E. Hurst, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1996, Ser. No. 640,392
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—59 **19 Claims**



1. A pulse width modulation optical disk drive of the type wherein data is run-length-limited (RLL) encoded as mark run-lengths written on the disk by pulsed laser radiation, the disk drive comprising:

an optical disk having a thermally responsive data layer, the disk having recorded on it information representative of a characteristic thermal interference between mark run-lengths formed on the disk by the laser pulses;

a laser for generating a light beam directed to the disk to heat the thermally responsive data layer;

a motor for rotating the disk relative to the light beam;

a laser driver connected to the laser for pulsing the laser at a plurality of power levels above a threshold power level to write data on the disk;

a clock for generating timing signals with a characteristic cycle time;

a pulse width modulation data encoder operable in synchronization with the clock cycles and responsive to an input data stream for generating a data signal to be represented as mark run-lengths made on the disk by the laser pulses and gap run-lengths located between the mark run-lengths, a mark run-length being comprised of a single submark or a series of contiguous or overlapping submarks, each submark being made as a result of the laser being pulsed at one of the power levels;

a programmable modulator connected to the laser driver and responsive to the data signal from the data encoder for timing the laser to pulse according to a first set of write patterns of pulses, each write pattern of pulses in the first set corresponding to a respective mark run-length; and

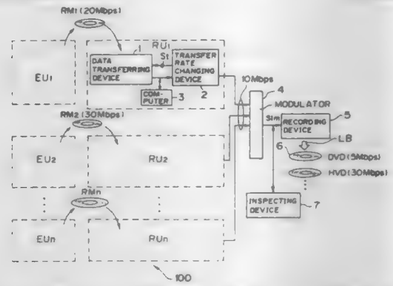
a controller responsive to the recorded characteristic thermal interference information on the disk for programming the modulator to time the laser to pulse according to a second set of write patterns of pulses different from said first set of write patterns, each write pattern of pulses in the second set corresponding to a respective mark run-length.

5,631,888

MASTER DISC RECORDING APPARATUS AND METHOD FOR RECORDING DATA ON DIFFERENT TYPES OF MASTER DISCS

Naoto Itoh, and Minemasa Ohta, both of Yamanashi-ken, Japan, assignors to Pioneer Electronic Corporation, Japan

Filed Apr. 3, 1996, Ser. No. 627,003
Claims priority, application Japan, Apr. 4, 1995, 7-078887
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—60 **14 Claims**



11. A method for recording data divided into a plurality of data blocks on master discs of a plurality of different types, comprising the steps of:

transferring one of said data blocks at a first transfer rate to a memory device;

storing the one data block at the first transfer rate in the memory device;

outputting the stored one data block from the memory device at a second transfer rate, which is different from the first transfer rate;

transferring another one of said data blocks to said memory device when said memory device finishes outputting said one data block which has been transferred to said memory device prior to said another data block; and

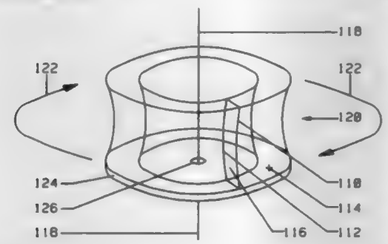
recording the one data block outputted from said memory device onto a data track of one of the master discs at the second transfer rate such that a recording point where the one data block is recorded on the data track is moved in a radial direction of the one master disc by a moving distance per each unit time which is constant regardless of the type of the one master disc.

5,631,889

OPTICAL STORAGE APPARATUS WITH A FOCUSED MASS STORAGE MEDIUM

Ralph S. Lewis, 14122 S. Hindry Ave., Hawthorne, Calif. 90250

Filed Aug. 8, 1995, Ser. No. 512,539
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—114 **6 Claims**



1. An apparatus for the storage of data, comprising:

means for producing a signal;

optical system means for manipulating and directing said signal;

storage medium comprising storage domains having radiant energy-active storage means for storing data;

said storage medium having at least one focal point from whereabouts said signal is directed to and received from said storage medium as said storing data by means of said optical system;

said storage medium further having curvature in at least two directions such as a primary curvature which geometrically defines the focus of said storage medium providing location/s for said focal point, and a secondary curvature generated about a symmetrical axis of said storage medium,

whereby, said secondary curvature geometrically alters angles of reflection from adjacent storage domains of said storage medium from an angle of reflection from a selected storage domain of said storage medium with respect to said focal point and said symmetrical axis during a signal transfer operation;

drive system means for synchronizing the manipulation of said signal from said focal point about said storage medium during a signal transfer operation; and

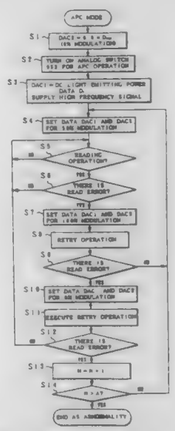
said optical system includes a signal receiving device means for receiving and processing said signal from said storage medium during said signal transfer operation.

5,631,890

LIGHT MODULATION METHOD FOR OPTICAL DISK DRIVE DEVICE

Toru Ikeda; Shigenori Yanagi, and Akira Minami, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Division of Ser. No. 276,863, Jul. 6, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,092
Claims priority, application Japan, Nov. 11, 1993, 5-282345
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—116 **8 Claims**



1. An optical disk apparatus comprising:

laser light emitting means for emitting a reproduction laser beam;

light emission control means for controlling a light emission amount of said laser light emitting means;

modulating means for high frequency modulating a reproduction light of said laser light emitting means; and

control means for changing a modulation amount of said modulating means in the case where an error exceeding an error correcting ability occurs upon reproduction of data, and allowing a retry operation of the data reproduction to be executed.

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5,631,891

DISK REPRODUCING CIRCUIT WITH AUTOMATIC GAIN CONTROL

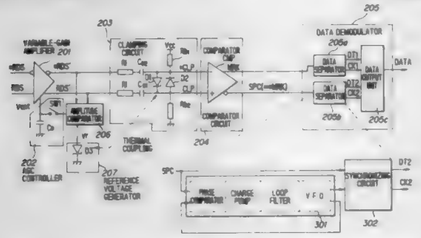
Masaharu Moritsugu, and Shigeyoshi Tanaka, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Oct. 31, 1994, Ser. No. 332,568

Claims priority, application Japan, Jan. 5, 1994, 6-000087; Mar. 17, 1994, 6-047093

Int. Cl.[6] G11B *20/10*

U.S. Cl. 369—124 **17 Claims**



1. An optical disk apparatus having a zero-cross signal generating unit for differentiating a reproduced signal read from an optical disk and outputting a zero-cross signal when the differentiated signal crosses the zero level, and a gate signal generating unit for generating a gate signal using the reproduced signal, wherein a data pulse is outputted when the zero-cross signal is generated while the gate signal is being generated, said apparatus comprising:

a variable-gain amplifier for amplifying the reproduced signal;

a clamping circuit for clamping a peak value of an output signal from said variable-gain amplifier;

a reference voltage generator for generating a reference-voltage level;

an amplitude comparator for comparing amplitude of the clamped signal outputted by said clamping circuit with the reference-voltage level; and

an AGC control unit for controlling gain of said variable-gain amplifier based upon results of comparison and controlling amplitude of the output signal from said clamping circuit;

wherein said gate signal generating unit generating the gate signal upon comparing the clamped signal outputted by said clamping circuit with a prescribed signal level.

5,631,892

OPTICAL STORAGE DISC SCANNER WITH IMPROVED SCANNER POSITIONING

Johannes L. Bakx, Groenewoudseweg 1, Eindhoven, Netherlands

Continuation of Ser. No. 40,056, Mar. 30, 1993, abandoned. This application Jan. 10, 1995, Ser. No. 371,047

Claims priority, application Netherlands, May 6, 1992, 9200508

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—124 **4 Claims**

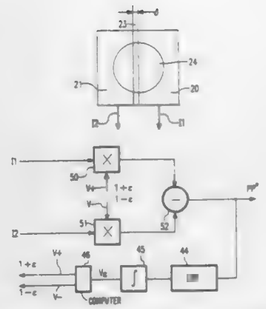
3. An optical scanner for scanning a record carrier having a servo track, comprising:

a radiation source for generating a radiation beam,

a radiation-sensitive detector having first and second portions located on opposite sides of a line corresponding to the servo track direction, and means for deriving a first and a second detection signal which are indicative of the power of radiation impinging on said first and second portions respectively,

an optical system for directing said radiation beam, via said record carrier, onto said detector, said radiation beam producing a radiation spot on said record carrier,

means for causing said radiation spot to scan said servo track on said record carrier, said means for causing comprising a tracking servo which includes means for producing a tracking error signal,



signal combination means for deriving a difference signal indicative of the difference between said first and second detection signals, and

an information regaining circuit for deriving information defined by said difference signal,

characterized in that the signal combination means is independent of said means for causing, and the signal combination means further comprises:

a balancing circuit for weighting the respective contributions of said first and second detection signals to said difference signal according to a weighting ratio,

means for determining the DC component value in the difference signal derived from the weighted first and second detection signals, independent of said tracking error signal and

means, operable while said means for causing is operative, and responsive to the DC component value in the difference signal determined by said means for determining, for setting said weighting ratio to a value at which the DC component value is substantially zero.

5,631,893

MULTI-HEAD DEVICE FOR OPTICAL DISK AND RECORDING/REPRODUCING SYSTEM FOR MULTIPLE USERS UTILIZING THE SAME

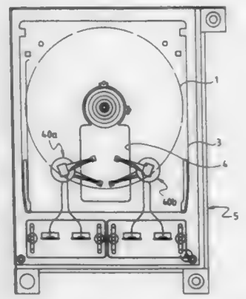
Jin-ku Kang; Sung-han Ha, both of Seoul; Tae-seok Park, Suwon, and Chul-woo Lee, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 365,824

Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15685

Int. Cl.[6] G11B *9/00*

U.S. Cl. 369—126 **21 Claims**



1. A multi-head device for optically reading information from and writing information on a single optical disk, said device comprising:

a plurality of rotating plates rotatably supported about an axis;

a plurality of arm members, each arm member being connected to a respective rotating plate and including, on a front portion, an optical head including an objective lens;

driving means for respectively rotating said rotating plates; and

focusing means for controlling focusing of each of said objective lenses in response to vibrations of the optical disk.

5,631,894

DRIVE UNIT WITH AXIALLY MOVABLE TURNTABLE FOR RECEIVING AN OPTICAL DISK

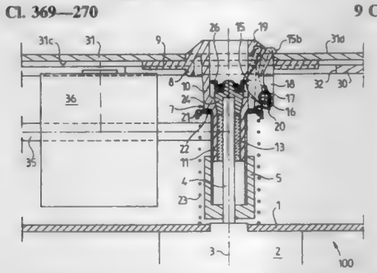
Hiroshi Takahashi, Taikoo Shing, Hong Kong, assignor to Filony Limited- a company of Hong-Kong, Wan Chai, Hong Kong

Filed Nov. 30, 1995, Ser. No. 566,428

Claims priority, application France, Dec. 19, 1994, 94 15260

Int. Cl.[6] G11B *17/028*

U.S. Cl. 369—270 **9 Claims**



1. A drive unit for positioning and rotating a disk having a central hole for purposes selected from reading and writing of information on said disk, comprising:

a support for receiving the disk when the disk is introduced into the drive unit;

a turntable having an axis, the turntable being rotatable about its axis and having a platform for accommodating one region of a first face of the disk adjacent to said central hole;

transfer means for displacing the turntable from an inoperative position in which the platform is remote from said region of the disk when the first face of the disk rests on the support, to an operative position in which the platform is in contact with said region of the disk and keeps the disk remote from the support, the transfer means displacing the turntable in the axial direction of the turntable and including

a rotatably mounted actuation shaft,

a clutch member, fixed with respect to the axial direction of the turntable and integral with the actuation shaft, for cooperating with the turntable to progressively transmit the rotational movement of the actuation shaft to the turntable when the turntable arrives in its operative position, the turntable being axially movable with respect to the clutch member during the axial displacement of the turntable, and

means for keeping the turntable from rotating by friction when the turntable is remote from its operative position, the frictional couple of the turntable with the clutch member becoming greater than the frictional couple with the means for keeping upon the approach of the turntable to its operative position; and

clamping means for firmly securing the disk to the turntable when the turntable is in its operative position and disengaging the disk from the turntable when the turntable is in it inoperative position, the clamping means cooperating with the transfer means and with the turntable, the clamping means including a clamping element which carries out, under the effect of the relative displacement of the turntable with respect to the clutch member, a movement having a radial component with respect to the turntable so as to contact the disk, in the vicinity of the central hole, in order to clamp it firmly onto the platform when the turntable moves towards its operative position.

5,631,895

OPTICAL INFORMATION RECORDING MEDIUM

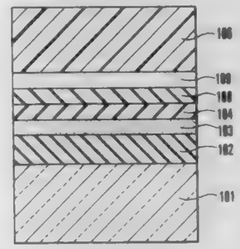
Mitsuya Okada; Tatsunori Ide, and Shuichi Ohkubo, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,452

Claims priority, application Japan, Oct. 18, 1994, 6-251980

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—275.1 **11 Claims**



1. An optical information recording medium, comprising:

a transparent substrate;

a first protection film formed on said transparent substrate;

a recording film, formed on said first protection film, for recording and erasing information by causing a reversible phase change between a crystalline state and an amorphous state upon being irradiated with a laser beam, and reproducing recorded information by detecting a change in optical nature accompanying the phase change in said recording film;

a second protection film, formed on said recording film, for protecting said recording film together with said first protection film;

a dielectric interference film, formed on said second protection film and having a refractive index lower than a refractive index of said transparent substrate, for controlling a reflectance characteristic and an absorption characteristic of said recording film; and

a dielectric reflective film formed on said dielectric interference film and having a refractive index higher than the refractive index of said transparent substrate, for controlling a reflectance of light incident from said transparent substrate.

5,631,896

HITLESS PATH SWITCHING APPARATUS AND METHOD

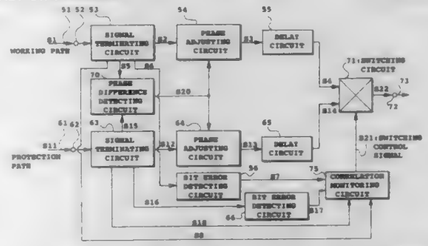
Nobuyuki Kawase, Yokosuka; Yoshiaki Yamabayashi, Yokohama, and Yoshihiko Uematsu, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,087

Claims priority, application Japan, Jul. 18, 1994, 6-165573; Mar. 28, 1995, 7-069997

Int. Cl.[6] H04L *1/22*

U.S. Cl. 370—228 **42 Claims**



1. A hitless path switching apparatus which receives substantially the same line signals incoming through a first path and a

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second path in the form of a stream of data blocks each including an indicator for bit error checking, and supplies one of the line signals to a third path by hitless switching, thereby allotting one of the first path and the second path to a working path and the other to a protection path, said hitless path switching apparatus comprising:

a first signal terminating circuit connected to said first path for receiving one of the substantially the same line signals and outputting a first line signal;

a second signal terminating circuit connected to said second path for receiving the other of the substantially the same line signals and outputting a second line signal;

a first bit error detecting circuit for detecting a bit error of each data block of said first line signal using said indicator for bit error checking;

a second bit error detecting circuit for detecting a bit error of each data block of said second line signal using said indicator for bit error checking;

a first delay circuit for delaying said first line signal by at least one data block interval;

a second delay circuit for delaying said second line signal by at least one data block interval;

a phase difference detecting circuit for detecting a phase difference between said first line signal and said second line signal;

a phase adjusting circuit for adjusting the phase difference detected by said phase difference detecting circuit to match phases of said two line signals, and supplying in-phase data blocks of said first line signal and of said second line signal to said first delay circuit and said second delay circuit, respectively;

a switching circuit for selectively supplying said third path with one of said first line signal outputted from said first delay circuit and said second line signal outputted from said second delay circuit; and

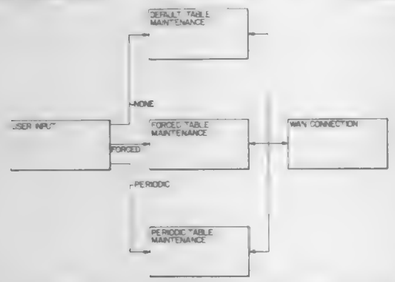
a correlation monitoring circuit for supplying said switching circuit with a switching control signal to make said switching circuit supply said third path with said second line signal outputted from said second delay circuit, if said first bit error detecting circuit detects a bit error in a data block of said first line signal and said second bit error detecting circuit detects no bit error in a corresponding data block of said second line signal when said first path is allotted to said working path and said second path is allotted to said protection path.

5,631,897

APPARATUS AND METHOD FOR INCORPORATING A LARGE NUMBER OF DESTINATIONS OVER CIRCUIT-SWITCHED WIDE AREA NETWORK CONNECTIONS

Mely L. Pacheco, Campbell; Nabil G. Damouny; Abraham R. Matthews, both of Sunnyvale; Gary S. Loitz, Fremont, all of Calif., and Johnathan P. Edney, Reading, England, assignors to NEC America, Inc., Melville, N.Y.

Filed Oct. 1, 1993, Ser. No. 130,456
Int. Cl.[6] H04J *3/02;* **H04L** *12/56*
U.S. Cl. 370—237 **65 Claims**



1. In a system for communicating between hosts, the system including a number of physical ports, an apparatus comprising:

means for maintaining at least one virtual interface, each of said virtual interfaces representing a logical network interface between a local host and one of a plurality of remote hosts;

means for monitoring network traffic demand and deciding, based on network traffic demand, to provide a communications link between the local host and the remote host; and

means to provide the communication link on demand between the local host and the remote host,

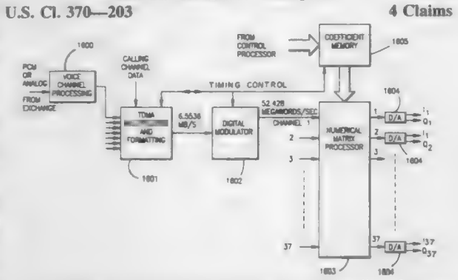
wherein an actual communicative binding to establish the communication link between the local host and the remote host does not take place until the apparatus decides, based on network traffic demand, to cause the binding.

5,631,898

CELLULAR/SATELLITE COMMUNICATIONS SYSTEM WITH IMPROVED FREQUENCY RE-USE

Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 179,953, Jan. 11, 1994. This application May 16, 1995, Ser. No. 442,167
Int. Cl.[6] H04J *3/16;* **H01Q** *3/22*
U.S. Cl. 370—203 **4 Claims**



3. An apparatus for transmitting signals to a plurality of remote units comprising:

means for correlating a signal received from a new remote unit during random access transmission with a plurality of individual antenna beam element signals to determine a new column of coefficients for a receive matrix;

means for determining a new inverse C-matrix for receiving traffic from the new remote unit based on an old inverse C-matrix and the new column;

means for transforming the new column to a new transmit C-matrix row by scaling relative coefficient phase angles using a ratio of up- to down-link frequencies;

means for determining a new transmit inverse C-matrix based on an old transmit inverse C-matrix and the new transmit C-matrix row, and

means for transmitting signals to said remote units using said new transmit inverse C-matrix.

5,631,899

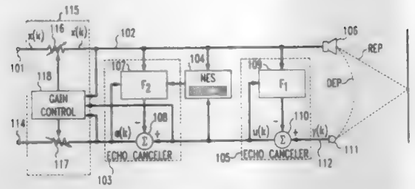
ACOUSTIC ECHO CANCELER

Donald L. Duttweiler, Rumson, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 31, 1995, Ser. No. 455,377
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—291 **7 Claims**

6. An acoustic echo canceler arrangement comprising:

first echo canceler means connected between a receive path and transmit path and having a first impulse response synthesis capability for generating a first error signal and for canceling echo signals in the transmit path, said first echo canceler means includes a first transversal filter configured to generate a first echo estimate of a relatively time invariant echo component of the echo signals in said transmit path and first



algebraic combining means for algebraically subtracting the first echo estimate from a signal supplied to the transmit path;

at least second echo canceler means having a second impulse response synthesis capability comparatively longer than said first impulse response connected in parallel with said first echo canceler means between the receive path and the transmit path, said at least second echo canceler means being supplied with said first error signal and being adaptive to operate simultaneously with said first echo canceler means for further canceling echo signals in said transmit path, said at least second echo canceler means includes an adaptive transversal filter configured to generate a second echo estimate of the time varying echo component in said first error signal in the transmit path and second algebraic combining means for algebraically subtracting the second echo estimate from the first error signal to yield a second error signal, said first and second echo cancelers operating independently of each other; and

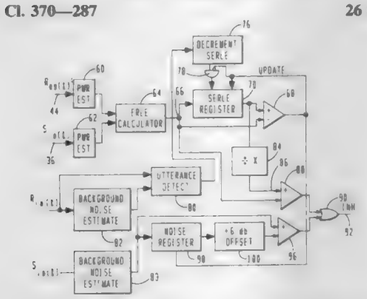
means for controllably adjusting loss in the receive path and the transmit path, said means for controllably adjusting loss being supplied with a signal on the receive path and the second error signal and being responsive to said first error signal for setting the amount of loss in either the receive path or the transmit path.

5,631,900

DOUBLE-TALK DETECTOR FOR ECHO CANCELLER

Shawn R. McCaslin; Nariankadu D. Hemkumar, and Bheeshmar Redheendran, all of Austin, Tex., assignors to Crystal Semiconductor, Austin, Tex.

Filed Sep. 29, 1995, Ser. No. 536,986
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—287 **26 Claims**



1. A double-talk detector for an echo canceller for selectively inhibiting the operation of an adaptive filter with coefficients that are updated and the echo canteller having an Echo Return Loss Enhancement (ERLE) value associated therewith, comprising:

an ERLE processor for calculating the current ERLE of the echo canceller;

a SERLE register for storing an ERLE value as a SERLE value and having a saved ERLE input connected to the output of said ERLE processor and an output;

a comparator for comparing the output of said ERLE processor with a value and, if less, then storing the output of said ERLE processor in said SERLE register; and

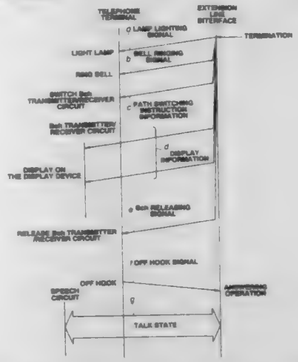
a modification device for modifying the SERLE value stored in said register upon the occurrence of a predetermined event.

5,631,901

METHOD OF TRANSMITTING CONTROL SIGNALS AND PBX SYSTEM

Toshio Nishida, Hino, Japan, assignor to Toshiba Corporation, Kanagawa-ken, Japan

Filed Jul. 10, 1995, Ser. No. 499,926
Claims priority, application Japan, Jul. 15, 1994, 6-163622
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 370—384 **26 Claims**



1. A method for transmitting control signals in a private branch exchange (PBX), wherein control signals are transmitted by a controlling channel and speech signals are transmitted by a speech channel respectively between each of telephone terminals and a different one of corresponding extension circuits, said method comprising the steps of:

sending a path switching instruction information from one of said extension circuits to one of said telephone terminals by said controlling channel;

switching paths of said speech channel in said extension circuit so as to make a control signal processing system within said one extension circuit accessible not only to said controlling channel but also to said speech channel;

switching paths of said speech channel in said telephone terminal in response to a reception of said path switching instruction information so as to make a control signal processing system within said telephone terminal accessible not only to said controlling channel but also to said speech channel;

transmitting and receiving control signals between said one extension circuit and said telephone terminal by said speech channel;

when transmission of control signals by said speech channel is complete, transmitting information from said extension circuit to said telephone terminal; and

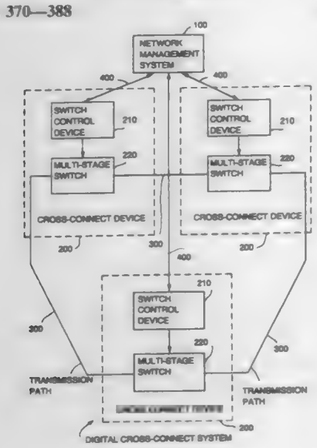
switching said paths of said speech channel to disconnect said speech channel from said control signal processing system within said telephone terminal and to connect said speech channel with said speech signal processing system within said telephone terminal.

VOL 1198 ISS 3 MY 20 1997 UMI

5,631,902
DIGITAL CROSS-CONNECT SYSTEM

Yuuki Yoshifuji, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 28, 1994, Ser. No. 234,387
Claims priority, application Japan, Apr. 28, 1993, 5-103178
Int. Cl.[6] H04J 3/02
U.S. Cl. 370—388 12 Claims



1. A method of controlling connections in a digital cross-connect system for insertion in a transmission path for transmitting digital signals of high-level groups, the digital cross-connect system including a plurality of cross-connect devices each composed of multistage switch means having a plurality of input terminals for being supplied with a plurality of digital signals from the transmission path and a plurality of output terminals for outputting digital signals to the transmission path, for switching connections between said input and output terminals over at least front, intermediate and rear stages, and switch control means responsive to connection request signals for controlling switched connections effected by said multistage switch means between said input and output terminals, and a network management system for applying a one-to-one connection request signal to make a one-to-one connection between said input and output terminals and a one-to-many branch connection request signal to branch and output a digital signal supplied to one of said input terminals to said plurality of output terminals, to each of said cross-connect devices for controlling route switching on said transmission path, said method comprising the steps of:

designating input and output terminals and delivering one-to-one connection and one-to-many branch connection request signals;

designating switch means in the rear stage of said multistage switch means with respect to the one-to-many connection request signal;

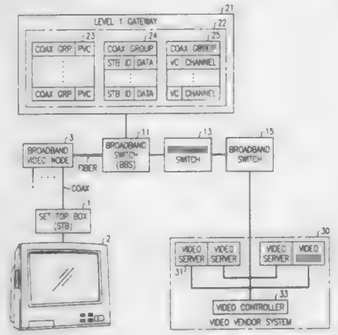
instructing switch means in the front stage of said multistage switch means to make a one-to-one connection only and inhibiting the switch means from making a one-to-many branch connection in response to the one-to-many connection request signal; and

instructing the designated switch means in the rear stage of said multistage switch means to inhibit signals from being supplied from input terminals other than one designated input terminal.

5,631,903
TELECOMMUNICATIONS SIGNALING ARRANGEMENTS FOR TERMINALS WITHOUT SIGNALING CAPABILITY

Robert B. Dianda, Wheaton; Roger E. Libman, Naperville; Suzanne Vondruska, Aurora, and Hsien-Chuen Yu, Naperville, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 235,599, Apr. 29, 1994, abandoned.
This application Nov. 14, 1995, Ser. No. 557,885
Int. Cl.[6] H04L 12/50
U.S. Cl. 370—401 18 Claims



1. A method of establishing a connection in a telecommunications network between a first terminal, said first terminal having no capability for generating telecommunications signaling protocol messages, and a second terminal, comprising the steps of:

in a centralized controller system shared by a plurality of terminals, storing data that when conveyed to the network will identify a path from said network to said first terminal, said data for identifying a path for a connection from said network to said first terminal;

establishing a permanent virtual circuit (PVC) between a set of terminals, said set having at least one member and including said first terminal, and said centralized controller system;

sending a service request message set, said service request message set comprising data for identifying said first terminal and said second terminal, over said PVC from said first terminal to said centralized controller system;

responsive to a receipt of said service request message set, signaling a network controller of said telecommunications network from said centralized controller system, using telecommunications network protocol messages, to establish said requested connection to said second terminal and, using the data stored in said centralized controller system, to said first terminal;

wherein said first terminal lacks a capability for generating telecommunications network protocol messages for requesting said telecommunications network to establish a call;

wherein said centralized controller system is separate from but connected to said network by a data circuit.

5,631,904
METHOD FOR AUTOMATICALLY ESTABLISHING A CONFERENCE CALL

Mark A. Fitser, Stanhope, and Robert M. Rubin, Morristown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 342,969, Nov. 21, 1994, abandoned.
This application Apr. 12, 1996, Ser. No. 631,347
Int. Cl.[6] H04M 3/42
U.S. Cl. 370—261 20 Claims

1. A call processing method comprising the steps of:

receiving in a communications network an initiating telephone call requesting to establish a conference call between a plurality of participants identified from a data record that corresponds to an Automatic Number Identification of a subscriber that placed the initiating telephone call;

responsive to the Automatic Number Identification, automatically originating a call to a plurality of preselected telephone stations each associated with a respective one of the plurality of participants identified in the data record corresponding to the Automatic Number Identification; and

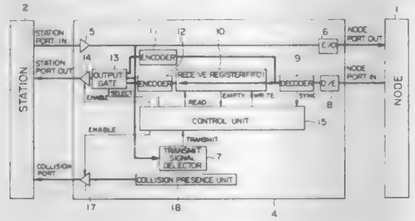
bridging the calls to the plurality of preselected telephone stations.



5,631,905
COMMUNICATIONS NETWORK CONTROL METHOD

Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 891,164, May 29, 1992, Pat. No. 5,535,211. This application Mar. 30, 1995, Ser. No. 414,904
Claims priority, application Japan, May 30, 1991, 3-127070; Dec. 10, 1991, 3-324916; Mar. 13, 1992, 4-54034
Int. Cl.[6] H04L 12/44
U.S. Cl. 370—462 4 Claims



1. A method of controlling a communications network which includes a single node device or a plurality of node devices connected so that a tree-like hierarchical topology is formed, and a plurality of stations,

each of said node devices having a single high-order direction port and a plurality of low-order direction ports,

an input port of said single high-order direction port having priority over all input ports of all the low-order direction ports, and

one of the input ports of the low-order direction ports which has a first arrival input signal having priority over the input ports of the other low-order direction ports,

only one of the input ports of the high-order and low-order direction ports being able to be selected according to said priorities and a signal of the selected input port being transmitted via not-selected ports, so that a signal which first arrives at a highest-order node device among said node devices is able to be broadcasted,

each of the stations transmitting a signal when there is no signal at an input port thereof, and

the low-order direction ports of said node devices being connectable to the high-order direction ports of another of said node devices or the stations, said method comprising the steps of:

(a) selecting, at each of the node devices, a first arrival input port among the low-order direction ports when there is at least one input signal at at least one of the input ports of the low-order direction ports, and transmitting a signal of the first arrival input port via output ports coupled with the other input ports of the low-order direction ports and the input port of the high-order direction port;

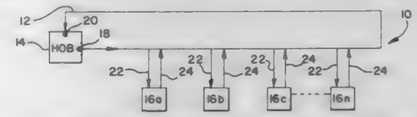
(b) stopping transmitting the signal when a subsequent input signal arrives at the input port of the high-order direction port after transmitting an SFD (Start Frame Delimiter) which is a part subsequent to a preamble of the signal of the first arrival input port, and temporarily storing the signal of the input port of the high-order direction port; and

(c) transmitting the signal temporarily stored at said step (b) via the output ports of the low-order direction ports after a time equal to a minimum packet interval.

5,631,906
MEDIUM ACCESS CONTROL PROTOCOL FOR SINGLE BUS FAIR ACCESS LOCAL AREA NETWORK

Zheng Liu, 6173 Knoll La. Ct., Apt. 102, Willowbrook, Ill. 60514

Continuation-in-part of Ser. No. 29,882, Mar. 11, 1993, Pat. No. 5,402,422. This application Feb. 1, 1994, Ser. No. 190,383
Int. Cl.[6] H04J 3/00
U.S. Cl. 370—455 17 Claims



1. A method of providing priority data transmission utilizing a medium access control protocol with a fair cell-access scheme in a local area network having a unidirectional looped bus and a plurality of network stations coupled to the bus for asynchronous cell transmissions from one network station to other network stations, said method comprising the steps of:

a) continuously generating time slots from a head-of-bus to the bus, each of the time slots including a busy bit, a high priority reserved bit, a low priority reserved bit, a high priority slot reservation bit, and a low priority slot reservation bit;

b) providing each of said plurality of network stations with said time slots to permit transport of high priority cells and low priority cells;

c) permitting delivery of a high priority cell from a given network station to its current time slot when neither the busy bit nor the high priority reserved bit is set in said current time slot, said given network station thereafter setting the busy bit;

d) permitting delivery of a low priority cell from a given network station to its current time slot if: (i) a high priority cell is not being delivered and ii) neither the busy bit nor the low priority reserved bit is set in said current time slot, said given network station thereafter setting the busy bit;

e) setting the high priority slot reservation bit in a current time slot at a given network station to reserve a future time slot from the head-of-bus when the busy bit is set and the high priority slot reservation bit is not set in said current time slot;

f) setting the low priority slot reservation bit in a current time slot at a given network station to reserve a future time slot from the head-of-bus if (i) the high priority slot reservation bit is not being set and (ii) the busy bit is set and the low priority slot reservation bit is not set in said current time slot;

g) said head-of-bus generating a time slot to said bus and setting the high priority reserved bit in said time slot to indicate that a time slot has been reserved for high priority cell transmission when a time slot with the high priority slot reservation bit set is received by said head-of-bus;

h) said head-of bus generating a time slot to said bus and setting the low priority reserved bit in said time slot to indicate that a time slot has been reserved for low priority cell transmission

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when a time slot with the low priority slot reservation bit set is received by said head-of bus;

i) delivering a high priority cell from a given network station to its current time slot if: (i) said network station had recently set the high priority slot reservation bit, (ii) the busy bit is not set and (iii) the high priority reserved bit is set in said current time slot; and

j) delivering a low priority cell from a given network station to its current time slot if: (i) said network station had recently set the low priority slot reservation bit, (ii) the busy bit is not set and (iii) the low priority reserved bit is set in said current time slot.

5,631,907

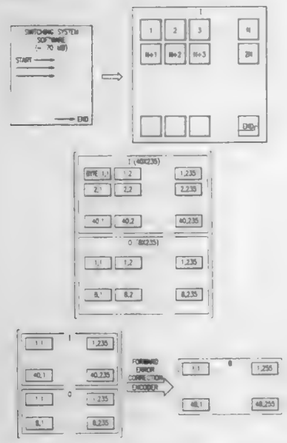
RELIABLE BROADCAST PROTOCOL STRUCTURE FOR ELECTRONIC SOFTWARE DISTRIBUTION

Paul J. Guarneri, Naperville, Ill.; Thomas J. Killian, Westfield, N.J.; Venkata C. Majeti, Naperville, Ill., and Norman L. Schryer, New Providence, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 13, 1995, Ser. No. 572,247

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—474 **20 Claims**



1. A method for packaging data for reliably transporting it from one system to another, said method comprising the steps of:

sequentially transforming a source file into a plurality of blocks, said blocks being sequentially stored in a first matrix;

creating a second matrix from said first matrix by appending a further matrix of blocks containing organizational information regarding said first matrix said second matrix comprising a plurality of rows of blocks and a plurality of columns of blocks;

sequentially transporting each block in said second matrix by transporting one column of data from said column of blocks at a time;

reassembling said transported columns of data into blocks to reform into said second matrix; and

transforming said second matrix into said first matrix, and said blocks in said first matrix into a copy of said source file.

5,631,908

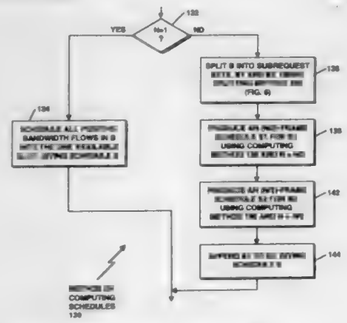
METHOD AND APPARATUS FOR GENERATING AND IMPLEMENTING SMOOTH SCHEDULES FOR FORWARDING DATA FLOWS ACROSS CELL-BASED SWITCHES

James B. Saxe, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 28, 1995, Ser. No. 412,395

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—235 **20 Claims**



1. A network switching system comprising:

A) a switch including a plurality of input ports, a plurality of output ports, and connection means for connecting selectively said input ports to said output ports during each of a plurality of sequential time slots for forwarding a plurality of cells thereacross, said cells being grouped together into a plurality of flows, each said flow including destination information, each said time slot being of a duration sufficient for forwarding at least one of said cells from one of said input ports to one of said output ports, said time slots comprising a plurality of frames, each said frame comprising a number ("N") of said time slots;

B) signal generating means coupled with said switch for generating set-up signals responsive to a plurality of schedules for controlling said switch connection means to connect together a number of pairs of input ports and output ports during said time slots; and

C) processor means coupled with said signal generating means for generating said schedules responsive to a plurality of bandwidth requests, each said bandwidth request corresponding to one of said flows and comprising a request for forwarding of a specified number of cells per frame from a specified input port to a specified output port, said processor generating a plurality of subrequests by dividing each said bandwidth request into a number of subrequests, each said schedule comprising a plurality of sub-schedules for allocating said subrequests to each of N slots in such manner as to provide an approximately uniform temporal distribution, for each said flow, of cells of said flow forwarded across said switch over the duration of each said frame during which said set-up signals are responsive to said schedule.

5,631,909

METHOD AND APPARATUS FOR DETERMINING BURST ERRORS IN AN ERROR PATTERN

Lih-Jyh Weng, Shrewsbury, Mass.; Pak N. Hui, East Brunswick, N.J., and An-Loong Kok, Shrewsbury, Mass., assignors to Quantum Corporation, Milpitas, Calif.

Filed May 31, 1995, Ser. No. 454,959

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—5.1 **16 Claims**

8. A system for correcting errors in a sector of N code words, the system including:



A. means for producing a sector-long error pattern consisting of ones representing erroneous bits and zeros representing non-erroneous bits;

B. a burst counter for maintaining a burst count of burst errors, the counter being initially set to zero;

C. burst detecting means for determining a position in the error pattern of a next bit, b_{FIRST}, with a value of one;

D. means for associating the next L−1 bits in the error pattern with the bit b_{FIRST}, where L is a maximum burst length associated with the system; and

E. means for incrementing the burst count for each bit, b_{FIRST}, located by the burst detecting means,

the burst detecting means determining the position of a next bit b_{FIRST} with a value of one on the bits of the error pattern that follow the L−1 bits that were associated with the previous b_{FIRST} bit.

5,631,910

INFORMATION PROCESSING SYSTEM PROVIDED WITH SELF-DIAGNOSING CIRCUIT AND THE SELF-DIAGNOSING METHOD THEREFOR

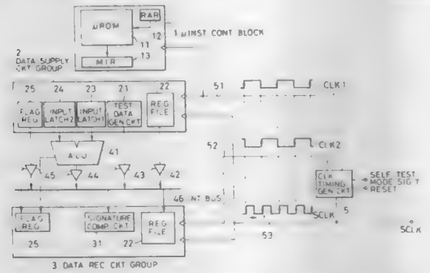
Yasuyuki Nozuyama, Tokyo, and Tsuneaki Kudou, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 717,349, Jun. 18, 1991, abandoned. This application May 16, 1994, Ser. No. 243,517

Claims priority, application Japan, Jun. 18, 1990, 2-157493; Jun. 7, 1991, 3-136285

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.1 **12 Claims**



1. A method of testing an information processing system circuit operable in a normal mode and a test operation mode, comprising:

(a) a first step of reading and decoding testing microinstructions from memory for storing testing microinstructions, in response to a first clock signal in the test operation mode;

(b) a second step of generating test data corresponding to the microinstructions decoded at the first step from a test data generating circuit, then transferring the test data to first type functional blocks to be tested, or outputting data stored in second type functional blocks, in response to a first rising edge of the first clock signal in the test operation mode; and

(c) a third step of reading out test results transferred from the first type functional blocks to be tested into a data compressing circuit in order to compress the test results, or of storing test results derived from the second type functional blocks, in response to a second rising edge of second clock signal in the test operation mode, wherein

(d) a cycle time of a basic clock signal for controlling the operation of the first and second type functional blocks in the normal operation mode being 1/N times (N=2, 3, . . .) as short as the first and second clock signals in the test operation mode, with the second clock signal being out of phase with the first clock signal by a delay of less than one cycle of the first clock signal.

5,631,911

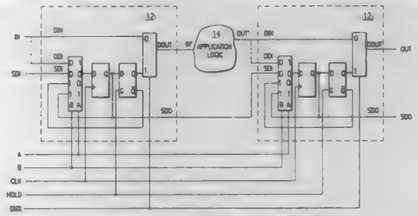
INTEGRATED TEST CIRCUIT

Lee D. Whetsel, Jr., Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 271,384, Jul. 6, 1994, abandoned, which is a continuation of Ser. No. 186,486, Jan. 25, 1994, abandoned, which is a continuation of Ser. No. 87,020, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 970,529, Nov. 2, 1992, abandoned, which is a continuation of Ser. No. 876,694, Apr. 28, 1992, abandoned, which is a continuation of Ser. No. 609,124, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 241,520, Sep. 7, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 476,003

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **16 Claims**



1. A boundary scan test cell comprising, first and second memories and first and second multiplexers, wherein a first one of the inputs of the first multiplexer is connected to a serial data terminal (SDD, the input of the first memory is connected to the output of the first multiplexer, the input of the second memory is connected to an output of the first memory, first and second ones of the inputs of the second multiplexer are connected to an output of the second memory and a circuit data terminal respectively, characterized in that a second one of the inputs of the first multiplexer is connected to a circuit data terminal along a path that does not pass through the second multiplexer, that terminal being either the said circuit data terminal or a different circuit data terminal, and in that a third one of the inputs of the first multiplexer is connected to an inverted output of the second memory along a path that does not pass through the second multiplexer.

5,631,912

HIGH IMPEDANCE TEST MODE FOR JTAG

L. Randall Mote, Jr., Laguna Hills, Calif., assignor to Samsung Electronics Co., Ltd., Seoul, Rep. of Korea

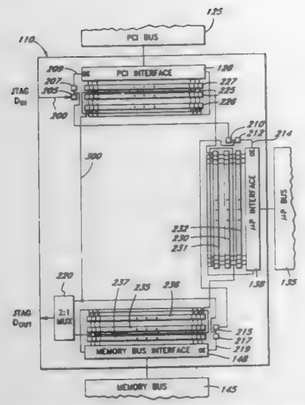
Filed Dec. 19, 1995, Ser. No. 574,593

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **5 Claims**

5. A method of selectively enabling and disabling peripheral connections to an integrated circuit (IC) using a JTAG boundary scan test circuit having a plurality of shift register output enable elements being grouped in close logical proximity within a serial boundary scan shift register so that said shift register output enable bit locations are logically spaced apart by fewer shift register

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elements than the number of data test bit locations enabled by each of a plurality of output enable elements, said method comprising the steps of:

connecting said output enable elements and data test bit elements within said serial boundary scan shift register so that a first path is provided through said output enable elements and data test bit elements and a second path is provided only through said output enable elements, wherein information stored in said output enable elements selectively places a plurality of said peripheral connections in a high impedance mode to selectively disable electrical communication between said data test bit elements and said peripheral connections;

generating a bit stream used for JTAG boundary scan testing;

selecting between said first and second paths; and

shifting said generated bit stream through said serial boundary scan shift register.

5,631,913

TEST CIRCUIT AND TEST METHOD OF INTEGRATED SEMICONDUCTOR DEVICE

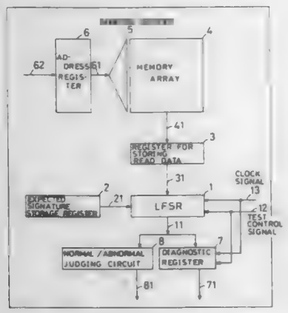
Toshinori Maeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 8, 1995, Ser. No. 385,658

Claims priority, application Japan, Feb. 9, 1994, 6-015030

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.4 **24 Claims**



1. A test circuit for testing an integrated semiconductor device, said test circuit comprising:

means for storing an expected compressed value;

a calculating circuit for compressing sequential sets of parallel data and obtaining a compressed value and also, for comparing said expected compressed value with a compressed value obtained from said sequential sets of parallel data;

an information collecting means for supplying, to said calculating circuit, sequential sets of parallel data obtained from an integrated semiconductor device under test and for supplying to said calculating circuit the compressed valued obtained by said calculating means and the expected compressed value stored in said expected compressed value storing means,

wherein said calculating circuit functions as a comparing means for comparing said obtained compressed value with the expected compressed value, and also for compressing data from said integrated semiconductor device under test during a normal operation of the integrated semiconductor device.

5,631,914

ERROR CORRECTING APPARATUS

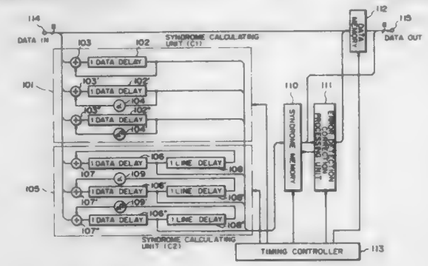
Motokazu Kashida, Musashino; Akihiro Shikakura, Atsugi; Shinichi Yamashita, Yokohama, and Tetsuya Shimizu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 222,368, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 55,785, May 3, 1993, abandoned, which is a continuation of Ser. No. 756,546, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 379,878, Jul. 14, 1989, Pat. No. 5,068,855. This application Feb. 28, 1995, Ser. No. 396,267

Claims priority, application Japan, Jul. 18, 1988, 63-180023; Jul. 29, 1988, 63-189803

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—37.4 **12 Claims**



1. An error correcting apparatus comprising:

syndrome calculating means for calculating first and second syndromes from input data including information codes and error correction check codes;

a data memory which is connected in parallel with said syndrome calculating means for storing the information codes;

a syndrome memory to store syndromes calculated by said syndrome calculating means; and

error correction means for correcting errors of the information codes stored in said data memory by using the first and second syndromes stored in said syndrome memory and for correcting the second syndrome stored in said syndrome memory by using a result of an error correction executed on information codes stored in said data memory by using the first syndrome.

5,631,915

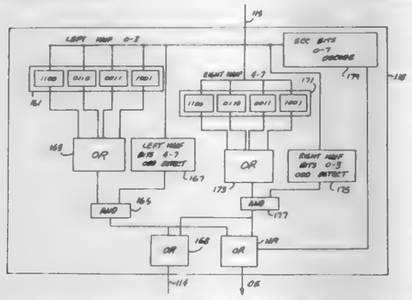
METHOD OF CORRECTING SINGLE ERRORS

Patrick J. Meaney, Poughkeepsie, and Chin-Long Chen, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 414,064, Mar. 31, 1995. This application Jun. 6, 1995, Ser. No. 468,277

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—40.1 **3 Claims**



1. In a data processor receiving a data word and associated error control codes from a memory, a method of correcting single errors, the method comprising the steps of:

defining a set of correctable-error syndromes such that the correctable-error syndromes have a predefined identical combination of ones and zeros in a first set of corresponding bit positions and differing combinations of ones and zeros comprising an odd number of ones in a second set of corresponding bit positions;

decoding the predefined identical combination of ones and zeros in the one subset of corresponding bit positions and detecting an odd number of ones in the other bit positions to detect the presence of correctable errors.

5,631,916

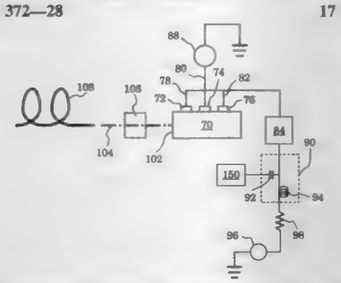
APPARATUS AND METHOD FOR OPTICALLY TRANSMITTING ELECTRICAL SIGNALS IN THE 20-300 GIGAHERTZ FREQUENCY RANGE

John B. Georges, 2117 Rose St., Apt. 5, Berkeley, Calif. 94709, and Kam Y. Lau, 3499 Shadow Creek Dr., Danville, Calif. 94506

Filed May 1, 1995, Ser. No. 432,452

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—28 **17 Claims**



1. An apparatus for optically transmitting a narrow-band electrical signal having a frequency in the 20 to 300 GHz range, said apparatus comprising:

a) a semiconductor laser with a lasing cavity having a length L for sustaining a laser beam, said lasing cavity having a round-trip distance defined by twice said length L, said round-trip distance corresponding to a round-trip resonance frequency;

b) a signal source for generating an electrical modulating signal having a modulation frequency contained in a narrow band, said narrow band comprising said round-trip resonance frequency;

c) an in-coupling means mounted on said semiconductor laser for delivering said electrical modulating signal to said semiconductor laser, thereby producing a sub-carrier modulated optical signal beam whose sub-carrier modulation frequency is comprised within a response band and corresponds approximately to said modulation frequency.

5,631,917

LASER APPARATUS

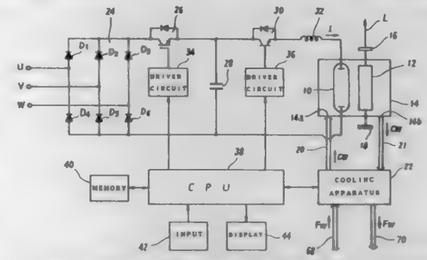
Makoto Ogawa, and Yasushi Matsuda, both of Chiba-ken, Japan, assignors to Miyachi Technos Corporation, Noda, Japan

Filed Feb. 22, 1996, Ser. No. 604,831

Claims priority, application Japan, Feb. 23, 1995, 7-059884

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—35 **5 Claims**



1. A laser apparatus including means for controlling temperature of the secondary cooling water at a desired temperature by a water-cooled heat exchanger providing heat exchange between primary and secondary cooling water, and for supplying the temperature-controlled secondary cooling water to a laser oscillator, said laser apparatus, comprising:

temperature detecting means for detecting temperature of the secondary cooling water;

a solenoid valve disposed in piping which supplies the primary cooling water to the heat exchanger;

temperature control means for comparing a signal from the temperature detecting means indicative of the temperature of the secondary cooling water with a reference value and for selectively opening or closing the solenoid valve depending on the result of the comparing;

duty factor computing means for computing duty factor of open and closed time period of the solenoid valve; and

reference control means for variably controlling the reference value based on the computed duty factor.

5,631,918

LASER DIODE ARRAYS WITH CLOSE BEAM OFFSETS

Gregory J. Kovacs, Sunnyvale; Rose M. Donaldson, Santa Clara; Harlan F. Chung, Castro Valley; William J. Mosby, San Jose; Eva E. Taggart, Saratoga, and Thomas L. Paoli, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 156,222

Int. Cl.[6] H01S *3/02*

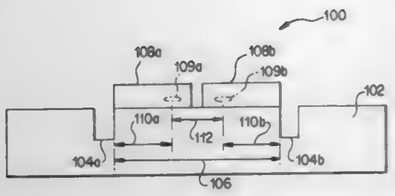
U.S. Cl. 372—36 **13 Claims**

1. An array of laser diodes comprising:

a submount, having at least one substantially planar mounting surface; and

a plurality of laser diodes, each said laser diode having a laser stripe and a detectable feature accurately positioned with respect to said laser stripe, and each said laser diode having a

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substantially planar mounting surface, wherein the substantially planar mounting surface of each said laser diode is mounted on at least one substantially planar mounting surface of said submount such that there is an accurate spacing between the detectable features of at least one pair of laser diodes.

5,631,919

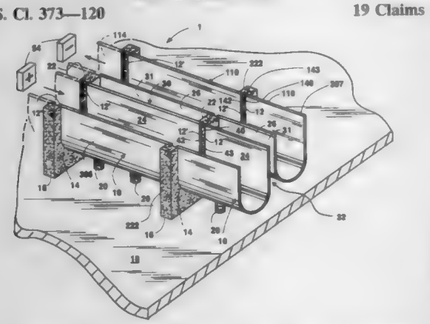
APPARATUS FOR LENGTHWISE GRAPHITIZATION (LWG) OF CARBON ELECTRODE BODIES

Allan W. Intermill, Strongsville; Francis E. Wise, and David A. Lehr, both of Medina, all of Ohio, assignors to UCAR Carbon Technology Corporation, Danbury, Conn.

Filed Nov. 21, 1995, Ser. No. 561,369

Int. Cl.° H05B *3/00*

U.S. Cl. 373—120 **19 Claims**



1. A furnace for the graphitization of carbon bodies comprising:

(a) a plurality of stationary spaced apart electrically non-conductive refractory rib support members resting on an electrically non-conductive, stationary base platform, each said refractory rib support members having a pair of side-by-side open-topped U-shaped apertures which are spaced away from said base platform and separated from each other by a post shaped integral portion of the refractory rib support member, said plurality of spaced apart refractory rib support members being arranged adjacently parallel with their respective U-shaped apertures in register;

(b) a plurality of electrically isolated U-shaped continuous metal furnace sections having outer and inner surfaces and bottom surfaces spaced from the base platform extending between adjacent refractory rib support members and having terminal portions nesting in the U-shaped apertures of the refractory rib support members to form first and second side-by-side parallel rows of continuous metal furnace sections with closely laterally adjacent and opposed side surfaces, each said side-by-side continuous metal furnace sections being separated by a vertical flue which is formed by the post shaped portions of adjacent refractory rib support members, a portion of the base platform and the laterally adjacent and opposed side surfaces of the side-by-side U-shaped metal furnace sections nesting in said refractory rib support members, said vertical flue being open top and bottom, and being venturi-shaped with a bottom opening substantially wider than its top opening for causing ambient air exposed to heat from the bottom surfaces of the metal furnace sections to pass freely upward through the flue at increased velocity from bottom to top to provide cooling of opposed side surfaces of the side-by-side metal furnace sections; and

(c) a column of end-abutting carbon bodies in each of said first and second rows of metal furnace sections, each said column being surrounded by particulate thermal insulation medium contained within and supported by the inner surfaces of the U-shaped metal furnace sections and said column being held in electrical contact with power heads so that electrical current flows in series through said carbon bodies to convert such carbon bodies to graphite by heating due to the Joule effect.

5,631,920

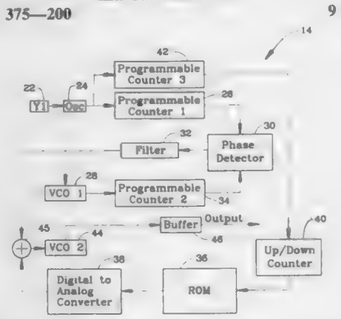
SPREAD SPECTRUM CLOCK GENERATOR

Keith B. Hardin, Lexington, Ky., assignor to Lexmark International, Inc., Lexington, Ky.

Continuation-in-part of Ser. No. 160,077, Nov. 29, 1993, Pat. No. 5,488,627. This application Apr. 20, 1995, Ser. No. 425,832

Int. Cl.° H03D *1/04*

U.S. Cl. 375—200 **9 Claims**



1. A clock controlled electronic device having a clock to provide spread spectrum clock signals to said device, said spread spectrum clock comprising a reference frequency clock, a stored table of digital values, a counter to address said table at different counts of said counter counting signals from said reference frequency clock, a voltage controlled oscillator having a control input, means to receive said stored digital values addressed by said different counts of said counter and to convert said received digital values to control signals to said input of said voltage controlled oscillator, the output of said voltage controlled oscillator providing said spread spectrum clock signals to said device.

5,631,921

ADAPTIVE POWER CONTROL FOR A SPREAD SPECTRUM COMMUNICATIONS SYSTEM AND METHOD

Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corp., Wilmington, Del.

Continuation of Ser. No. 208,895, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 792,869, Nov. 19, 1991, Pat. No. 5,299,226, which is a continuation-in-part of Ser. No. 614,816, Nov. 16, 1990, Pat. No. 5,093,840. This application May 17, 1995, Ser. No. 471,316

Int. Cl.° H04B *1/69;1/76;* **H04Q** *7/22*

U.S. Cl. 375—200 **15 Claims**

1. A method for adaptive-power control of a plurality of spread-spectrum transmitters of a plurality of mobile stations, respectively, operating in a cellular-communications network using spread-spectrum modulation, each of said plurality of mobile stations having a transmitter, wherein a base station transmits a generic spread-spectrum signal, comprising:

transmitting from said base station, on at least one of a continuous basis and a repetitive periodic basis, an adaptive-power control information signal comprising a digital power-level-referencing word having at least three bits, said word corresponding to a threshold having at least eight levels for a transmitter-power level of a mobile station;

acquiring the generic spread-spectrum signal and the adaptive-power control information signal at said mobile station;

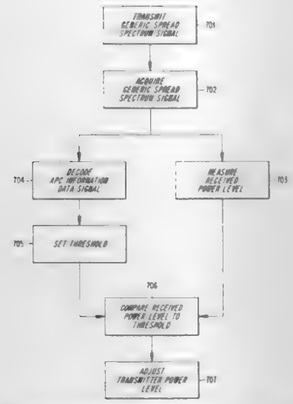
decoding the adaptive-power control information signal as the threshold for the transmitter-power level of said mobile station;

detecting a received power level of the generic spread-spectrum signal at said mobile station;

generating, at said mobile station, a comparison signal by comparing the received power level to said threshold;

adjusting the transmitter-power level of said mobile station transmitter in response to said comparison signal; and

transmitting, from said mobile station, a spread-spectrum signal with the mobile station transmitter.



5,631,922

SPREAD CODE GENERATION DEVICE FOR SPREAD SPECTRUM COMMUNICATION

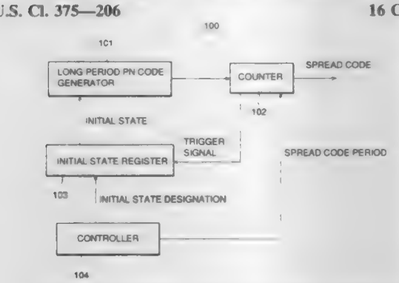
Kiyoki Sekine; Toshio Kato; Manabu Kawabe, and Takuro Sato, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,254

Claims priority, application Japan, Apr. 28, 1994, 6-091912

Int. Cl.° H04B *15/00;* **H04K** *1/00;* **H04L** *27/30*

U.S. Cl. 375—206 **16 Claims**



1. A spread code generation device for spread spectrum communication wherein an input data is modulated so as to be spread by a spread code having a first period, the device comprising:

(a) a long period PN code generator for generating a spread code having a second period longer than the first period;

(b) an initial state register for storing an initial phase of the spread code having the first period output from the long period PN code generator and for outputting the initial phase to the long period PN code generator;

(c) a counter for receiving and computing the spread code output from the long period PN code generator and for outputting a trigger signal to the initial state register when the computed spread code reaches the first period; and

(d) a controller for outputting the spread code having the first period from the counter by designating the initial phase to the initial state register and by designating the first period to the counter; the initial state register outputting the initial phase to the long period PN code generator in response to the trigger signal from the counter; the long period PN code generator being reset to the initial phase when the initial phase is input to the long period PN code generator;

whereby the spread code having the first period is output from the counter.

5,631,923

TWO-WIRE FULL-DUPLEX MODEM

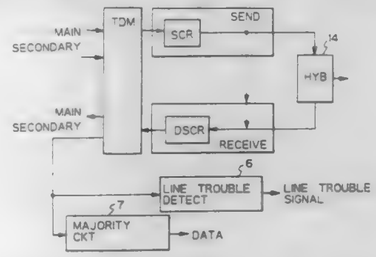
Takashi Kaku, and Toyomi Obikawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 12, 1993, Ser. No. 89,190

Claims priority, application Japan, Aug. 12, 1992, 4-215172

Int. Cl.° H03D *3/24*

U.S. Cl. 375—222 **14 Claims**



1. A two-wire full-duplex modem in which data which are time-divided into a main channel and a secondary channel are scrambled, modulated, and thereafter sent by a 2 W–4 W conversion circuit to a two-wire line, following which an estimated echo component, which is calculated from descrambled data, is subtracted from a signal from the 2 W–4 W conversion circuit and the signal from the 2 W–4 W conversion circuit is demodulated, descrambled and separated into main data and secondary data, the two-wire full-duplex modem comprising:

scrambling generator polynomial for scrambling the data for transmission to the two-wire line;

descrambling generator polynomial for descrambling the data received from the two-wire line; and

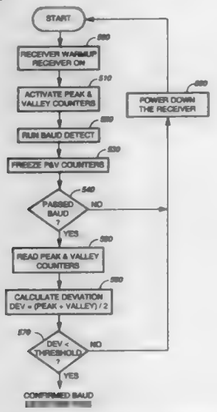
line-trouble detect means, connected to the scrambling generator polynomial and descrambling generator polynomial, for sampling data on the secondary channel by multi-point sampling to obtain the secondary data, thereby detecting a number of inversion points of a signal level in descrambled-secondary channel data per unit time period, and outputting a line-trouble signal which indicates that there is trouble on the line when the number of detected inversion points are more than a predetermined number.

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5,631,924
METHOD AND APPARATUS FOR BAUD RATE DETECTION IN AN FM RECEIVER USING PARAMETERS UNRELATED TO BAUD RATE AS CONFIRMATION

Edgar H. Callaway, Jr., Boca Raton, and Frederick L. Kampe, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 19, 1995, Ser. No. 491,827
Int. Cl.[6] H04B *17/00*
U.S. Cl. 375—225 **19 Claims**



1. A method for determining whether a baud rate of a frequency modulated (FM) signal received by a receiver matches a predetermined baud rate, the method comprising steps of:

preliminarily determining whether a baud rate of the FM signal received by the receiver matches a predetermined baud rate;

determining a parameter unrelated to the baud rate of the FM signal received by the receiver if it is preliminarily determined that its baud rate matches the predetermined baud rate; and

finally determining that the baud rate of the FM signal received by the receiver matches the predetermined baud rate if said parameter satisfies a predetermined criterion.

5,631,925
BIT RATE DETECTION

Ralf Koenzen, Herzogenrath, Germany, assignor to Elsa GmbH, Aachen, Germany

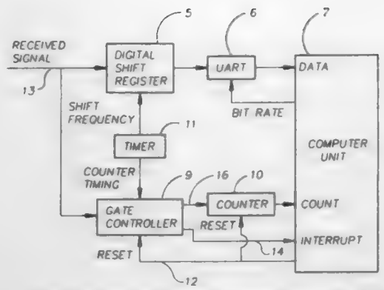
PCT No. PCT/DE94/00237, § 371 Date Oct. 27, 1995, § 102(e) Date Oct. 27, 1995, PCT Pub. No. WO94/22252, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 8, 1994, Ser. No. 513,937
Claims priority, application Germany, Mar. 17, 1993, 43 08 418.4
Int. Cl.[6] H04B *3/46*
U.S. Cl. 375—225 **4 Claims**

1. Process for detecting the bit rates of serial data streams of data terminals, said process comprising

sending a serial data stream of control commands beginning with a uniform binary character to a shift register having a delay time corresponding to a shift frequency which is a multiple of the maximum expected bit rate, each control command beginning with a uniform binary character having a start sequence with a maximum duration;

measuring the duration of the start sequence by activation of a counting circuit during the time in which the data stream is passing through the shift register;

calculating the bit rate from said duration measured by said counting circuit;



programming the bit rate into an integrated component for serial data transmission; said integrated component being a UART;

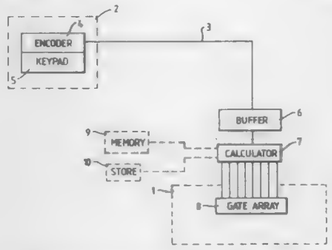
determining the delay time of the shift register according to the maximum duration of the start sequence plus the length of time required to program the bit rate into the integrated component for serial data transmission; and

providing a storage capacity of the shift register which is at least equal to the product of the shift frequency and the maximum duration of the start sequence plus the length of time required to program the bit rate into the integrated component.

5,631,926
APPARATUS FOR COMPRESSING DATA BY PROVIDING A CODED MESSAGE INDICATIVE OF THE DATA AND METHOD OF USING SAME

Peter J. Holness, BAe Defence Ltd, Six Hills Way, Stevenage, Herts, Great Britain

Continuation of Ser. No. 322,458, Oct. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 257,425, Jun. 8, 1994, Pat. No. 5,483,473, which is a continuation of Ser. No. 869,006, Apr. 16, 1992, abandoned. This application Sep. 18, 1996, Ser. No. 715,487
Claims priority, application United Kingdom, Apr. 9, 1991, 9108467; Oct. 15, 1993, 9321367
Int. Cl.[6] H04B *1/66*
U.S. Cl. 375—240 **14 Claims**



1. A data compression apparatus comprising:

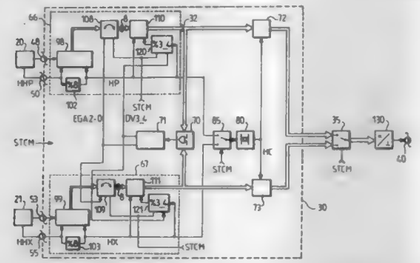
means for generating a message representing a digital bit stream, said message including at least one of a Portmanteau generator equation and a set of values defining an argument for said Portmanteau generator equation; and

digital bit-stream-generating means receiving said message and generating said digital bit stream based on said information contained in said message, said digital bit-stream generating means including processing means having an input and an output, said processing means receiving at said input said Portmanteau generator equation and said set of values defining said argument for said Portmanteau generator equation, said processing means generating a sequence of output values corresponding to a calculated result of said generator equation and said set of values, said sequence of output values defining said digital bit stream.

5,631,927
SHIFTING CIRCUIT FOR A TRANSMISSION SYSTEM WITH MULTIPLE LINKS

Jean-Michel Caia, Brive la Gaillarde, and Alain Dahiot, Ussac, both of France, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 488,538
Claims priority, application France, Jun. 17, 1994, 94 07461
Int. Cl.[6] H04K *1/00*
U.S. Cl. 375—260 **5 Claims**



1. Transmission system comprising at least two transmitter channels for connecting a transmitter and a receiver, in which system there are provided on the side of the transmitter:

means for transmitting data by at least a first and second channel, and on the side of the receiver:

receiving circuits for receiving the data coming from the first and second channels,

a coincidence providing circuit for the data coming from said channels, formed by:

a detection circuit for detecting a shift between data coming from the first channel and data coming from the second channel, to produce shift information,

a shifting circuit for shifting the data of at least one of said channels as a function of said shift information,

a switching circuit for connecting a user circuit to one of said channels, characterized in that the shifting circuit is formed by:

a first deserializing circuit for producing N-bit words based on received data,

a permutation circuit for producing permuted words by permuting the bits of the N-bit words as a function of said shift information,

a plurality of second deserializing circuits producing an M-bit word from each of the N outputs of the permutation circuit as a function of the shift information.

5,631,928
ENHANCED B3ZS DECODER AND METHOD FOR IDENTIFYING TRUE ZERO-SUBSTITUTIONS

Steven E. Hossner, Hillsboro, Oreg., assignor to NEC America, Inc., Melville, N.Y.

Filed May 26, 1995, Ser. No. 451,212
Int. Cl.[6] H04L *25/34*
U.S. Cl. 375—289 **12 Claims**



1. A method for decoding a B3ZS signal and detecting corrupted B3ZS substitutions therein, said method comprising:

examining a pulse train of four bits;

determining whether the first bit of said pulse train is a logic one bit;

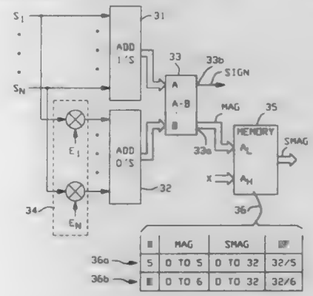
detecting whether said pulse train includes multiple BPVs; and

determining that said pulse train includes a corrupted B3ZS substitution when successive ones of said multiple BPVs are of same polarity and said first bit is of logical one.

5,631,929
ELECTRONIC TRANSMITTER HAVING A DIGITAL COMBINER CIRCUIT FOR TRANSMITTING MULTIPLE DIGITAL INPUT SIGNALS SIMULTANEOUSLY

Delon K. Jones, West Bountiful; Steven T. Barham, and Thomas R. Giallorenzi, both of Salt Lake City, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed May 9, 1995, Ser. No. 437,754
Int. Cl.[6] H04J *13/00*
U.S. Cl. 375—295 **10 Claims**



	MAG	SMAG	
S	0 TO 5	0 TO 32	32/5
B	0 TO 6	0 TO 32	32/6

1. An electronic transmitter for transmitting multiple digital input signals simultaneously; comprising:

an encoding circuit, which encodes each of said digital input signals and thereby generates a respective sequence of "1" and "0" chips for each input signal, with all of said chip sequences being synchronized in parallel;

a digital combiner circuit, coupled to said encoding circuit, that generates a signed multi-bit digital signal which indicates the number of "1" chips minus the number of "0" chips that concurrently occur in said synchronized chip sequences; said digital combiner circuit including a first digital adder circuit which sums concurrent "1" chips in said synchronized chip sequences, a second digital adder circuit which sums concurrent "0" chips in said synchronized chip sequences, a digital subtracter circuit which subtracts the sum formed by said second adder circuit from the sum formed by said first adder circuit, and a control circuit coupled said second adder circuit which inverts all chips in selected sequences and passes all chips in the remaining sequences prior to their summation by said second adder circuit; and,

a modulator circuit, coupled to said digital combiner circuit, which generates a sinusoidal analog signal with a phase and a peak amplitude that respectively indicate the sign and magnitude of said signed multi-bit digital signal.

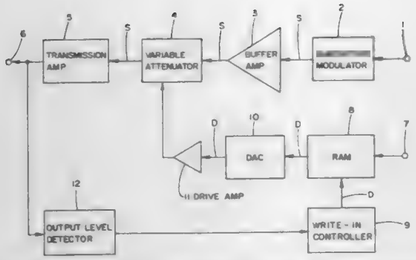
5,631,930
RADIO TRANSMISSION OUTPUT CONTROL CIRCUIT FOR TDMA COMMUNICATION

Yutaka Sasaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 8, 1995, Ser. No. 512,548
Claims priority, application Japan, Aug. 8, 1994, 6-205984
Int. Cl.[6] H04L *1/02;25/03;25/49*
U.S. Cl. 375—296 **6 Claims**

1. A radio transmission output control circuit comprising:

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modulating means for modulating signals to be sequentially transmitted in consecutive time slots at predetermined timings;

control data generating means for generating, when one of the consecutive time slots is being transmitted, control data for controlling an output level of a subsequent time slot, and for outputting said control data in response to a transmission timing assigned to said subsequent time slot, said control data being generated and output prior to the start of said subsequent time slot; and

level control means for controlling said output level of said subsequent time slot on the basis of said control data.

5,631,931

BUS TYPE CLOCK SUPPLYING SYSTEM FOR PROVIDING A CLOCK IN A COMMUNICATION SYSTEM WITH A PLURALITY OF CLOCK BUS LINES

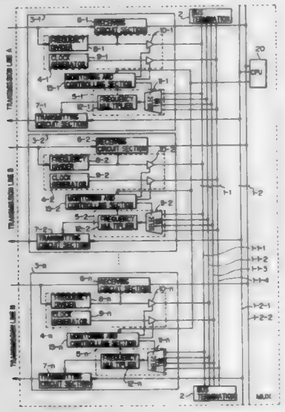
Masataka Takano, and Toshihide Fujio, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Communication Systems, Inc., Yokohama, both of Japan

Filed Mar. 29, 1994, Ser. No. 219,525

Claims priority, application Japan, Mar. 29, 1993, 5-069749

Int. Cl.[6] H04B *7/12*

U.S. Cl. 375—347 **4 Claims**



1. A clock supplying system in a communication system within a digital communication network comprising:

(a) a central processing unit(CPU);

(b) a clock bus having a plurality of clock lines; and

(c) a plurality of communication cards for transmitting and receiving data through transmission lines within said network, each of said communication cards comprising:

means for extracting a clock from one of said transmission lines;

first switching means for connecting said clock extracting means with one of said plurality of clock lines in said clock bus and for breaking connection therebetween;

selecting means, connected with all of said plurality of clock lines, for selecting a clock line from said plurality of clock lines to receive the clock; and

monitoring and controlling means, connected with said selecting means, said first switching means and said CPU, for monitoring said clock and an input/output signal of said selecting means,

wherein when where said monitoring and controlling means in any of said communication cards detects abnormalities in the output signal of said selecting means, said monitoring and controlling means informs said CPU thereof and said CPU issues an instruction for controlling said first switching means and said selecting means in all of said communication cards;

wherein said CPU controls said first switching means of each of said plurality of communication cards such that a single clock is provided to each of the plurality of clock lines; and

wherein when an abnormality is detected by the monitoring and controlling means, the CPU either disconnects a first switching means of a first communication card currently providing the clock to the selected clock line and connects a first switching means of a second communication card to said selected clock line to provide a different clock to the selected clock line or controls the selecting means to select a different clock line.

5,631,932

Patent Not Issued For This Number

5,631,933

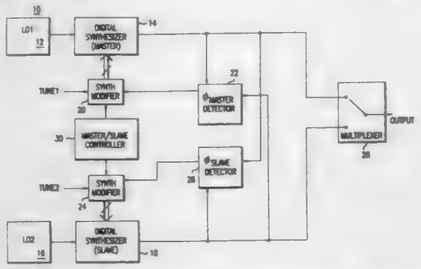
PHASE-LOCKED DIGITAL SYNTHESIZERS

David C. Chu, Woodside, and Jeremy S. Sommer, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 21, 1996, Ser. No. 604,231

Int. Cl.[6] H04L *23/00*

U.S. Cl. 375—354 **4 Claims**



1. A system for synchronizing digital frequency synthesizers comprising:

a first and a second synthesizer system, each system comprising:

a local oscillator,

a digital frequency synthesizer having an output, connecting to the local oscillator,

a synthesizer modifier, connecting to the digital frequency synthesizer,

a phase detector, connecting to the synthesizer modifier and the output of the digital frequency synthesizer, and

the synthesizer modifier being operative to provide a tuning stimulus consistent with both a master and also a slave tracking a master;

wherein the phase detector of the first synthesizer system is connected to the output of the digital frequency synthesizer of the second synthesizer system and the phase detector of the second synthesizer system is connected to the output of the digital frequency synthesizer of the first synthesizer system;

a master/slave controller, connecting to the synthesizer modifiers of the first and the second synthesizer system; and

a switch, connecting to the output of the digital frequency synthesizer of the first and the second synthesizer system.

5,631,934

METHOD FOR ADAPTING DATA FLOWS

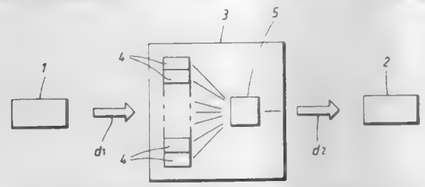
Hans I. Åström, Mölndal, and Kjell T. Magnusson, Askim, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Sep. 15, 1995, Ser. No. 528,837

Claims priority, application Sweden, Sep. 16, 1994, 9403101-0

Int. Cl.[6] H04L *7/00;25/36*

U.S. Cl. 675—372 **7 Claims**



1. In a system in which information in the form of messages with a number of different identities is transferred between a transmitter and a receiver, a method of adapting a transferred amount of messages so that essential information is not lost even if a transfer rate from the transmitter exceeds a possible transfer rate to the receiver, comprising the steps of:

creating a data area in which each identity is allocated one place for storing messages;

storing messages with different identities separately while waiting to be transferred to the receiver;

when a new message with the same identity as a previously stored message is supplied to the data area, replacing the previously stored message with the new message;

scanning messages which are stored in the data area; and

transferring the messages to the receiver at a transfer rate adapted to the possible rate of the receiver.

5,631,935

METHOD AND APPARATUS FOR GOVERNING INFORMATION TRANSFER USING AN EFFICIENT TRANSPORT PROTOCOL

Dror Ginossar, Tel Aviv, Israel, assignor to Run-Rad Unlimited Networking, Ltd., Tel Aviv, Israel

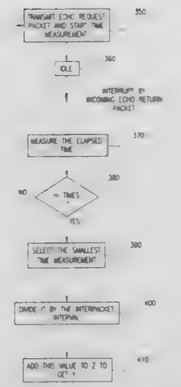
Filed May 6, 1993, Ser. No. 58,975

Int. Cl.[6] H04L *29/08*

U.S. Cl. 375—377 **88 Claims**

51. A data communication method useful with a network comprising a plurality of data utilization elements including a transmitter and a receiver and interconnection apparatus for interconnecting said plurality of data utilization elements and including the step of:

governing an information transfer rate between said transmitter and said receiver according to a rate based transport protocol and including the step of determining the rate of information transmission by said transmitter based at least in part on transmitting a number of packets by said transmitter without regard to whether any feedback from said receiver is received during the transmission of the packets, and measuring the actual rate at which the packets are transmitted.



5,631,936

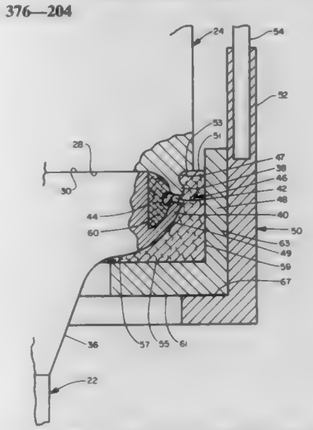
METHOD AND ARRANGEMENT FOR COMPRESSION SEALING AN OMEGA JOINT

John F. Theroux, Westfield, Mass.; Witold R. Blercz, Canton, Conn.; Kenneth A. Martin, Windsor, Conn., and Adrian P. Wivagg, Tolland, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 9, 1994, Ser. No. 208,621

Int. Cl.[6] G21C *13/00*

U.S. Cl. 376—204 **13 Claims**



1. An arrangement for joining an elongated housing to a nuclear reactor vessel nozzle by means of an omega seal, comprising:

a vessel nozzle rigidly extending along a vertical axis from a reactor vessel and having a nozzle upper portion which includes a circumferential lip extending generally obliquely to said axis and defining a substantially upward-facing seal surface;

an elongated housing coaxially situated above and having a housing lower portion resting against, the nozzle upper portion, said housing lower portion including a circumferential lip extending generally obliquely to said axis and defining a substantially downward-facing seal surface in confronting, spaced relation to the seal surface on the nozzle lip;

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whereby said lips form an omega seal structure including a gap between the seal surfaces, an annular cavity situated within the lips, and a compression surface along the outside of the lips;

an omega seat of semi-rigid material substantially filling said cavity;

a seal ring of semi-rigid material having an inner surface in intimate, conforming relation against substantially all of said compression surface, thereby covering said gap;

seal carrier means for supporting the outer surface of the seal ring laterally and below said omega seal structure; and

fixture means connected to the housing, for urging the seal carrier means against the seal ring, thereby compressing the seal ring against said compression surface such that a portion of the seal ring extrudes into said gap to form a seal between said lips.

5,631,937

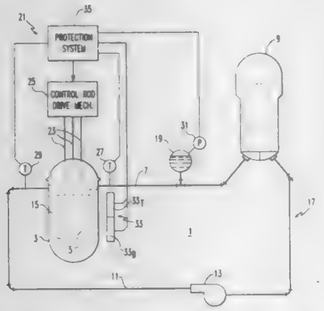
METHOD AND APPARATUS FOR PROTECTING A PWR FROM DEPARTURE FROM NUCLEATE BOILING AND HOT LEG BOILING

Paul W. Robertson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 15, 1995, Ser. No. 559,304

Int. Cl.[6] G21C *7/36*

U.S. Cl. 376—216 **10 Claims**



7. Apparatus for protecting a pressurized water nuclear reactor from departure from nucleate boiling and hot leg boiling, said apparatus comprising:

temperature sensing means measuring temperature of coolant entering and leaving a reactor vessel;

means determining from said temperature sensing means a temperature change in the coolant flowing through said reactor vessel (delta temperature) and an average temperature;

means determining pressure of said coolant;

means generating from said pressure and said average temperature a first set point value for said delta temperature relative to a departure from nucleate boiling core limit;

means generating from said pressure and average temperature a second set point value for said delta temperature relative to a hot leg boiling core limit; and

means tripping said reactor when said delta temperature reaches or exceeds said first said set point value or said second set point value.

5,631,938

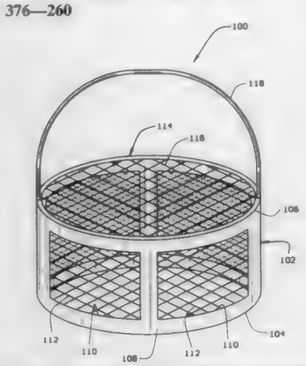
REACTOR INTERNAL PUMP MAINTENANCE COVER

Kirti Kumar, San Jose, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed May 6, 1996, Ser. No. 642,920

Int. Cl.[6] G21C *19/00*

U.S. Cl. 376—260 **16 Claims**



14. A method for preventing objects from falling into the diffuser space in a reactor pressure vessel of a nuclear reactor, the nuclear reactor including a pump deck having at least one pump diffuser opening, the diffuser opening having a first diameter, said method comprising the steps of:

lowering a cover into the reactor pressure vessel, and

positioning the cover in preventive position over the diffuser opening, whereby the lower end of the cover is above the diffuser opening.

5,631,939

INITIAL CORE OF NUCLEAR POWER PLANT

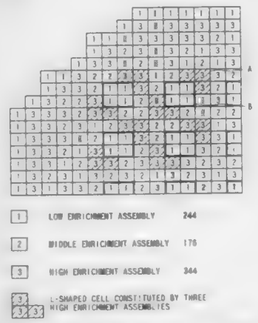
Hiroko Haraguchi; Yoshihiri Iwashita; Toshiro Yoshioka; Junichi Koyama; Akihiro Yamanaka; Mitsunari Nakamura, all of Hitachi, and Katsumasa Haikawa, Jyuou-machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 521,372

Claims priority, application Japan, Sep. 9, 1994, 6-215563

Int. Cl.[6] G21C *5/00*

U.S. Cl. 376—349 **12 Claims**



1. An initial core for a nuclear reactor constituted by various kinds of fuel assemblies having different average enrichments of uranium 235, including at least lowest average enrichment fuel assemblies, and highest average enrichment fuel assemblies and middle enrichment fuel assemblies, and which comprises:

a plurality of square shaped cells each constituted by four lowest average enrichment fuel assemblies; and

a plurality of L-shaped cells each constituted by three highest average enrichment fuel assemblies, each L-shaped cell being arranged at the corner of a square shaped cell so that each fuel assembly of an L-shaped cell adjoins a square shaped cell, the ratio of the number of the assemblies constituting the L-shaped cell to the total number of the fuel assemblies in the initial core being 10% or more.

5,631,940

THIN FILM BOOT STRAP SHIFT REGISTER

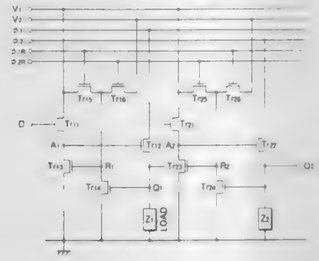
Katsuyuki Fujikura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 1, 1996, Ser. No. 627,317

Claims priority, application Japan, Mar. 31, 1995, 7-075122

Int. Cl.[6] G11C *19/00*

U.S. Cl. 377—64 **6 Claims**



1. A thin film integrated circuit comprising:

a plurality of circuits constituted of thin film elements provided on an insulative substrate;

a shift register constituted of thin film transistors, taking said plurality of circuits as loads, respectively and sequentially and alternately driving said loads depending upon input of a start pulse, said shift register including

a plurality of signal transfer circuits connected in tandem and transferring a signal applied to a signal input point to a signal output point with a shift pulse and driving said loads by output signals thereof,

a driving circuit applying mutually opposite phases of shift pulses to said plurality of signal transfer circuit for driving said load with parallel output signals thus obtained;

said individual signal transfer circuit including

an input transistor taking a gate electrode as a signal input point;

a driving transistor having a gate electrode connected to primary electrodes of said input transistor, taking said primary electrode as a signal output point, to which said load is connected;

a signal transfer portion transferring a pulse signal input to said signal input point to said signal output point by a dynamic action with a boot strap effect on the basis of charge accumulation effect of a capacitance associated with the gate electrode of said driving transistor and application of a shift pulse to the other primary electrode of said driving transistor; and

a resetting portion including a resetting transistor having one primary electrode connected to the gate electrode of said driving transistor and maintaining a shut-off condition while said driving transistor is in shut-off condition, and a gate voltage control means for providing a gate voltage including a voltage of negative polarity to a gate electrode of said resetting transistor.

5,631,941

REGISTER CIRCUIT

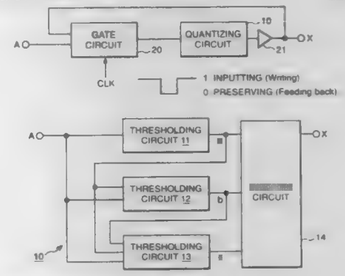
Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Continuation of Ser. No. 261,904, Jun. 15, 1994, abandoned. This application Nov. 16, 1995, Ser. No. 558,418

Claims priority, application Japan, Jun. 15, 1993, 5-168478; Jun. 22, 1993, 5-174712; Sep. 20, 1993, 5-256548; Dec. 28, 1993, 5-351854; Jan. 31, 1994, 6-027493; Apr. 1, 1994, 6-087384

Int. Cl.[6] G11C *19/00*

U.S. Cl. 377—75 **12 Claims**



1. A register circuit comprising:

a quantizing circuit having an input terminal for receiving an analog input voltage and an output terminal for outputting a quantized voltage of said analog input voltage according to predetermined quantizing levels; and

a switching circuit for alternatively connecting at least one of said analog input voltage and an output of said quantizing circuit to said input terminal.

5,631,942

X-RAY DIAGNOSIS APPARATUS AND METHOD THEREOF

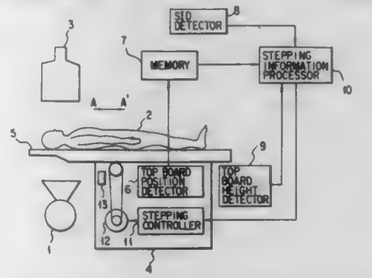
Katsuaki Shinoda, Tochigi-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 221,562, Apr. 1, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 612,481

Claims priority, application Japan, Apr. 1, 1993, 5-075875

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.12 **18 Claims**



1. An X-ray diagnosis apparatus for obtaining plural contiguous X-ray images covering a desired scope of diagnosis for a subject under examination from a first diagnosis position to a second diagnosis position, comprising:

input means for inputting said first and second diagnosis positions and a third diagnosis position within said scope of diagnosis;

X-ray generating means for irradiating said subject with X-rays having a predetermined radiation pattern;

imaging means for obtaining an image of X-rays irradiated by said X-ray generating means and passing through the subject;

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setting means for setting a center-to-center spacing between adjacent X-ray images on the basis of the distance between said first diagnosis position and said third diagnosis position and a size of said predetermined radiation pattern so that plural contiguous X-ray images can be obtained between said first and second diagnosis positions, with one of the contiguous X-ray images centered on said third diagnosis position; and

control means for controlling said X-ray generating means and said imaging means to obtain said plural contiguous X-ray images from said first diagnosis position to said second diagnosis position, including said one of the X-ray images centered on said third diagnosis position, at the spacing set by said setting means.

5,631,943

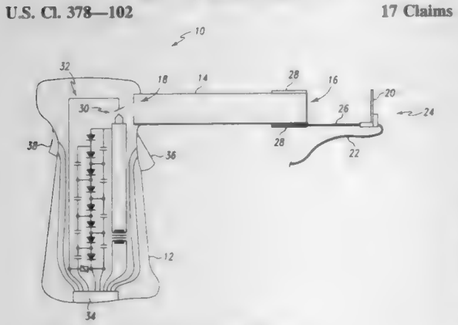
PORTABLE X-RAY DEVICE

Dale A. Miles, 13201 Brookshire Pkwy., Carmel, Ind. 46033

Filed Dec. 19, 1995, Ser. No. 574,768

Int. Cl.[6] H05G *1/10;1/56*

U.S. Cl. 378—102 **17 Claims**



1. A portable X-ray device, comprising:

a handle configured to be held by a single hand;

an X-ray tube mounted within the handle;

a collimated tube mounted to the handle and positioned such that X-rays will be emitted into the collimated tube when the X-ray tube is activated;

wiring extending between an interior of the handle and an exterior of the handle and operative to couple an external power supply to the X-ray tube;

an enable switch mounted to the handle; and

an exposure switch mounted to the handle;

wherein the X-ray tube will only emit X-rays when the enable switch and the exposure switch are both depressed.

9. A portable X-ray device, comprising:

an enclosure;

an X-ray tube mounted within the enclosure;

a collimated tube mounted to the enclosure and positioned such that X-rays will be emitted into the collimated tube when the X-ray tube is activated;

wiring extending between an interior of the enclosure and an exterior of the enclosure and operative to couple an external power supply to the X-ray tube;

power supply circuitry operative to generate a voltage to drive the X-ray tube, wherein the power supply circuitry is not contained within the enclosure and is coupled to the enclosure by the wiring;

whereby a weight of the enclosure is significantly reduced;

control circuitry operative to control an exposure time of the X-ray tube, wherein the control circuitry is not contained within the enclosure and is coupled to the enclosure by the wiring;

a remote control receiver coupled to the power supply and control circuitry; and

a remote control transmitter operable for wireless transmission of an enable signal and an exposure signal to the remote control receiver;

wherein the control circuitry causes a warm-up current to be applied to the X-ray tube when the enable signal is received by the remote control receiver.

15. A method for generating an X-ray image, comprising the steps of:

(a) providing a portable X-ray device, comprising:

a handle configured to be held by a single hand;

an X-ray tube mounted within the handle;

a collimated tube mounted to the handle and positioned such that X-rays will be emitted into the collimated tube when the X-ray tube is activated;

wiring extending between an interior of the handle and an exterior of the handle and operative to couple an external power supply to the X-ray tube;

an enable switch mounted to the handle; and

an exposure switch mounted to the handle;

wherein the X-ray tube will only emit X-rays when the enable switch and the exposure switch are both depressed.

(b) grasping the handle with a single hand;

(c) depressing the enable switch with a first finger of the hand;

(d) aiming the collimated tube at an X-ray image receptor, wherein a structure to be imaged is positioned between the collimated tube and the receptor; and

(e) depressing the exposure switch with a second finger of the hand while holding the enable switch in a depressed position.

5,631,944

ROTARY CATHODE X-RAY TUBE EQUIPMENT

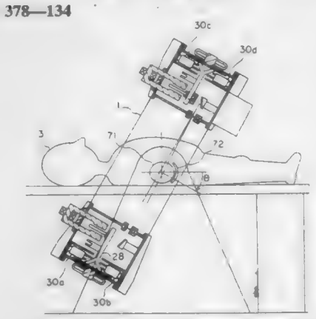
Yutaro Kimura; Tetsuhiko Ikeshima; Hiromichi Tonami, all of Kyoto; Ikuo Konishi, Nara; Hiroshi Horikawa, Kyoto; Akihiro Daikoku, Hyogo; Shigekazu Sakabe, Hyogo; Masao Inoue, Hyogo, and Akinori Yamasaki, Hyogo, all of Japan, assignors to Shimadzu Corporation, Kyoto, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Continuation of Ser. No. 531,873, Sep. 21, 1995, abandoned, which is a division of Ser. No. 434,171, May 3, 1995, Pat. No. 5,481,585, which is a continuation of Ser. No. 79,913, Jun. 23, 1993, abandoned. This application Aug. 28, 1996, Ser. No. 697,682

Claims priority, application Japan, Sep. 18, 1992, 4-249255

Int. Cl.[6] H01J *35/04*

U.S. Cl. 378—134 **5 Claims**



1. Rotary cathode X-ray tube equipment comprising:

a ring-shaped hollow vacuum vessel;

a ring-shaped anode target fixed within said vacuum vessel;

a ring-shaped rotary member rotatably disposed in an opposed relation to said anode target within said vacuum vessel;

at least one cathode portion attached to said rotary member on the side opposed to said anode target, said cathode portion including at least one filament;

an X-ray radiation window for passing the X-ray generated at the anode target therethrough, said X-ray radiation window being mounted to an inner ring of said vacuum vessel;

an electromagnet fixed to said vacuum vessel, said electromagnet comprising a yoke portion, a part of which is arranged in said vacuum vessel and a coil portion which is arranged outside of said vacuum vessel; and

a power generating coil fixed to said rotary member to rotate together therewith and thereby pass across the magnetic field created by said electromagnet for generating electric power to be supplied to said at least one filament.

5,631,945

SLIT RADIOGRAPHY APPARATUS

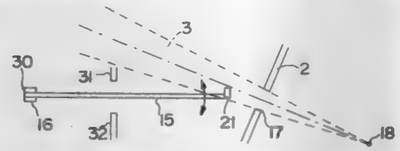
Ronald J. Geluk, Nootdorp, Netherlands, assignor to BV Optische Industrie "De Oude Delft", Netherlands

Continuation of Ser. No. 910,251, Jul. 13, 1992. This application Jul. 31, 1996, Ser. No. 690,726

Claims priority, application Netherlands, Feb. 1, 1990, 9000250

Int. Cl.[6] G21K *5/10*

U.S. Cl. 378—146 **11 Claims**



11. Method for operating a slit radiography apparatus provided with an absorption device (8) which interacts with a slit diaphragm (2) and which comprises electrically controllable piezoelectric tongues (9, 15), each having a fixed end and a free end and a control device (11) which feeds electrical control signals to said tongues (9,15) during operation, said method comprising feeding control signals to said tongues (9, 15) for continuous vibration thereof at a predetermined frequency and changing phases of said control signals characterized in providing stop elements (31, 32; 35, . . . , 40; 40*a*, 41; 50, 51, 56, 57) for limiting maximum deflections of said tongues (9, 15), controlling said control signals to be of such magnitudes that said free ends are limited in their deflections by said stop elements (31, 32; 35, . . . , 40; 40*a*, 41; 50, 51, 56, 57) and in changing phases of said control signals during the time periods that said free ends are deflected against said stop elements (31, 32; 35, . . . , 40; 40*a*, 41; 50, 51, 56, 57).

5,631,946

SYSTEM FOR TRANSFERRING INFORMATION FROM A RF RECEIVER TO A PROCESSOR UNDER CONTROL OF A PROGRAM STORED BY THE PROCESSOR AND METHOD OF OPERATION THEREOF

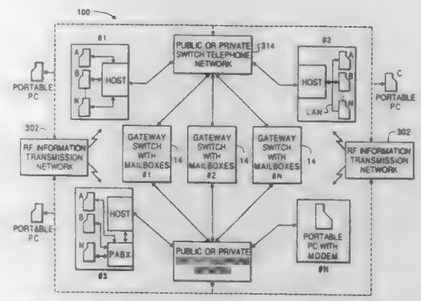
Thomas J. Campana, Jr., Chicago; Michael P. Ponschke, Lockport, and Gary F. Thelen, Palos Park, all of Ill., assignors to NTP, Incorporated, Annandale, Va.

Division of Ser. No. 702,939, May 20, 1991, Pat. No. 5,436,960, Ser. No. 702,938, May 20, 1991, Pat. No. 5,479,472, and Ser. No. 247,466, May 23, 1994, Pat. No. 5,438,611, which is a continuation of Ser. No. 702,319, May 20, 1991, abandoned. This application May 16, 1995, Ser. No. 442,112

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 379—58 **185 Claims**

1. A system for transmitting originated information from one of a plurality of originating processors contained in an electronic mail system to at least one RF receiver with the originated information originating from one of the plurality of originating processors and being transmitted by an RF information transmission network to the at least one RF receiver and for transmitting other originated information originating from one of the originating processors with the electronic mail system without using the RF information transmission network to at least one of a plurality of destination processors comprising:



at least one interface, one of the at least one interface connecting the electronic mail system containing the plurality of originating processors to the RF information transmission network; and wherein

the originated information is transmitted in association with an address of the one interface from the one of the plurality of originating processors to the one interface with the electronic mail system responding to the address of the one interface to direct the originated information from the one of the plurality of originating processors to the one interface; and

the originated information is transmitted from the one of the at least one interface to the RF information transmission network with an address of the at least one RF receiver to receive the originated information being associated with the originated information before transmission of the originated information to the at least one RF receiver.

5,631,947

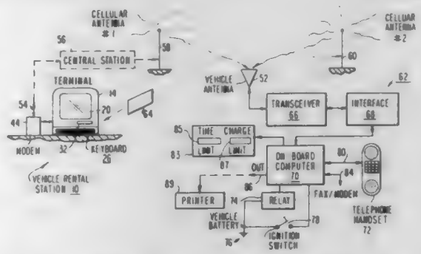
MOBILE TELEPHONE DEVICE FOR STORING A PLURALITY OF CHANGABLE CHARGE RATES AND TIME LIMIT DATA

Alan D. Wittstein, Westport, and Giacomo A. Ciocca, Thomaston, both of Conn., assignors to Megatrend Telecommunications, Inc., Bridgeport, Conn.

Continuation of Ser. No. 235,198, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 673,140, Mar. 4, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 373,509

Int. Cl.[6] H04Q *7/20;7/22;7/24*

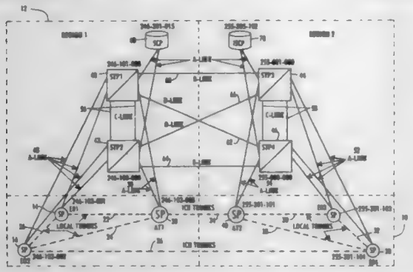
U.S. Cl. 379—59 **23 Claims**



1. A mobile telephone device, said device comprising, in combination, mobile transceiver means for making and receiving telephone calls, registering means for registering data representing a rental time limit, detecting means for detecting when said rental time limit has been reached, and indicating means responsive to said detecting means for developing limit-indicating signals indicating when said time limit has been reached.

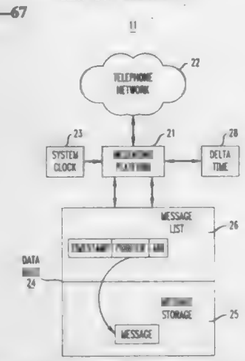
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5,631,948
VOICE MAIL COMMUNICATION WITH CALL BLOCKING
Dale Bartholomew, Vienna, and Robert D. Farris, Sterling, both of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.
Continuation-in-part of Ser. No. 353,281, Dec. 5, 1994. This application Jan. 12, 1995, Ser. No. 371,906
Int. Cl.[6] H04M *3/50;7/00*
U.S. Cl. 379—67 **49 Claims**



1. In a switched communications network comprising:
a first central office switching system connected to subscriber lines connected to subscriber premises terminals including at least one service switching point for selectively providing switched communications between subscriber lines;
a second central office switching system connected to subscriber lines connected to subscriber premises terminals including at least one service switching point for selectively providing switched communications between subscriber lines;
said first and second central office switching systems being connected by trunks;
a network controller arranged separately from said central office switching systems and being connected to at least said service switching points connected to said central office switching systems through at least one service transfer point arranged to convey control data to effect communications between said central office switching systems via said trunks, said network controller storing pre-programmed call processing data associated with subscribers who are associated with said subscriber lines connected to consumer premise terminals connected to said central office switching systems;
a first centralized messaging system for storing messages directed to individual subscribers, said centralized messaging system including addressable storage not associated with individual subscribers;
a second centralized messaging system for storing messages directed to individual subscribers, said centralized messaging system including addressable storage not associated with individual subscribers;
each of said first and second central office switching systems providing selective communications between subscriber lines and said first and second centralized messaging systems, respectively;
a method comprising:
responsive to failure to complete a call to a called party, querying the calling party as to whether it is desired to leave a message;
following an affirmative indication forwarding a message from said calling party to said first centralized messaging system having said addressable storage;
storing said message in said addressable storage in said first centralized messaging system with address information associated with said second centralized messaging system;
forwarding from said addressable storage in said first centralized messaging system to said second centralized messaging system via service switching points and at least one service transfer point digital message information contained in said message stored in said first mentioned centralized messaging system;
storing said forwarded digital message information in said second centralized messaging system; and
notifying the called party of the availability of said message stored in said second messaging system.

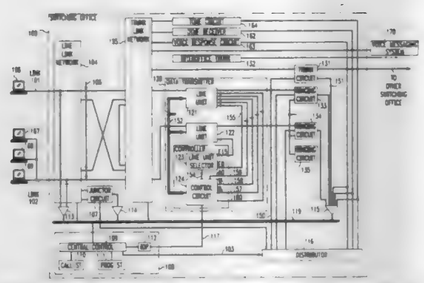
5,631,949
LOCATION INDEPENDENT TIME REPORTING MESSAGE RETRIEVAL SYSTEM
Stephen M. Milton, Freehold, and Gang Yang, Holmdel, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 22, 1995, Ser. No. 445,486
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **11 Claims**



10. A message retrieval system in which a message delivered by a message originator over a telephone network for a subscriber is stored for later retrieval over the telephone network by the subscriber, the system comprising:
storage means for storing the message and an automatic number identification (ANI) information associated with the message originator when the message is delivered to the system;
means for determining the message originator's time zone from the ANI;
means for storing a timestamp associated with the message in said storage means, said timestamp indicating a delivery time of the message to the system;
means for converting the time the subscriber accesses the message for retrieval to an access time in the message originator's time zone; and
means for providing to the subscriber the access time in the message originator's time zone together with a delta time equal to the difference in time between the access time and the delivery time.

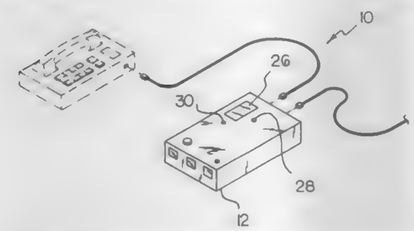
5,631,950
TRANSMISSION OF DATA MESSAGE DURING SILENT INTERVALS OF RINGING FOR SELECTION OF TERMINAL EQUIPMENT
Edwin Z. Brown, Westminster, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jul. 26, 1995, Ser. No. 507,617
Int. Cl.[6] H04M *1/57;3/02;11/00*
U.S. Cl. 379—67 **30 Claims**

17. A method for transmitting a data message by a switching office during the silent intervals of ringing on an analog telephone link for an incoming telephone call from an originating telephone link, the method comprising the steps of:
accepting information from the originating telephone link;
inserting the information into the data message;
transmitting the data message on the analog telephone link during the silent intervals of ringing;



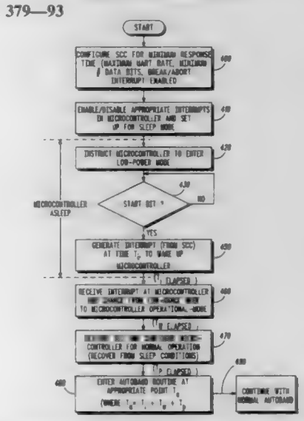
the step of accepting comprises the steps of transmitting a message on the originating telephone link defining that the analog telephone link can accept the data message; and
receiving the information.

5,631,951
APPARATUS FOR PREVENTING UNWANTED TELEPHONE CALLS
Albert Chen, 17 Corwin Ave., New Hyde Park, N.Y. 11040
Filed Mar. 19, 1996, Ser. No. 617,546
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **2 Claims**



2. An apparatus for preventing unwanted telephone calls comprising:
a conventional telephone and an associated telephone line;
an encoder comprising a single input line, four output lines, and a clock, the encoder adapted to generate a four-digit binary representation of an analog signal indicative of a first signal decimal digit upon the receipt thereof via the input line, the encoder further adapted to generate a clock pulse upon the transmission of the binary representation of the analog signal on to the four output lines;
state memory comprising four input lines four output lines, and a clock input line, the input lines connected to corresponding output lines of the encoder and the clock input line connected to the clock of the encoder, whereby the state memory is adapted to maintain the state of each of the output lines thereof identical to those of the encoder upon the receipt of a clock pulse;
password circuitry including a light emitting diode digital display, selection means, and four output lines, the password circuitry allowing a user to select a second decimal digit with the selection means and depict the decimal digit via the display, the password circuitry is adapted to further maintain a binary representation of the second decimal digital on the four output lines thereof;
digital comparator circuitry comprising four exclusive-NOR gates each having inputs coupled to corresponding output lines of both the state memory and password circuitry the digital comparator circuitry adapted to produce an active state on output of each gate upon the matching of the output lines of the state memory and the output lines of the password circuitry; and
switching means connected to the telephone, telephone line, and the output lines of the comparator memory, the switching means adapted to allow communication between the telephone line and telephone upon the activation thereof effected by all of the output lines of the comparator memory being of an active state;
playback means adapted to allow the transmission of a message via the telephone line upon the activation thereof; and
control circuitry connected to the playback means, the telephone line, the telephone, and the input line of the encoder, the control circuitry adapted to activate the playback means and allow the transmission of the message to another party via the telephone line upon the receipt of a call, to allow the transmission to the encoder an analog signal generated by the depression of a digit on a phone of the other party, and afford ringing of the telephone of the user upon the activation of the switching means, thereby allowing communication between the telephone and the telephone line upon the receipt of a proper single digit password.

5,631,952
APPARATUS AND METHOD FOR MODEM WAKE-UP WITH AUTOBAUD FUNCTION
R. Mark O'Barr, Harvest; Lisa R. East, Owens Cross Roads, and Mark Butler, Brownsboro, all of Ala., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 18, 1994, Ser. No. 324,956
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93 **17 Claims**



9. In an arrangement of a data communication device for coupling to a terminal, the terminal having a data line for sending serial data to the data communication device, the terminal further having a terminal baud rate and a terminal baud time T_B, the data communication device having a data communication device operational mode and further having a data communication device sleep mode, a method of transitioning the data communication device from the data communication device operational mode to the data communication device sleep mode, the method comprising:
(a) configuring a serial communications controller for a predetermined response time;
(b) enabling second controller interrupts for incoming signals;
(c) disabling second controller interrupts for non-incoming signals; and
(d) instructing the second controller to enter a low power mode, wherein a total delay time for a transition from the data communication device sleep mode to the data communication device operational mode is less than 1.5 times the terminal baud time T_B.

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5,631,953

CIRCUIT ARRANGEMENT FOR INTEGRATION OF EDP SYSTEMS IN THE UTILIZATION OF TELEPHONE SYSTEMS

Gottfried Thomas, Hückelhoven, and Ulrich Mergemann, Pulheim, both of Germany, assignors to CSB-System Software -Entwicklung & Unternehmungsberatung GmbH, Geilenkirchen, Germany

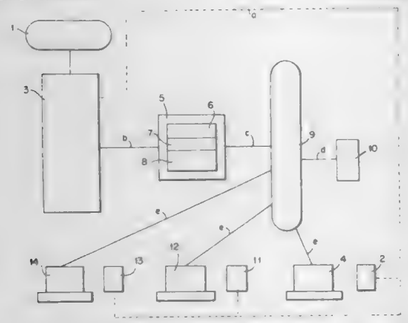
PCT No. PCT/DE94/00229, § 371 Date Aug. 25, 1995, § 102(e) Date Aug. 25, 1995, PCT Pub. No. WO94/21091, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 26, 1994, Ser. No. 522,313

Claims priority, application Germany, Mar. 5, 1993, 9303214 U

Int. Cl.° H04M *11/00*

U.S. Cl. 379—94 8 Claims



1. A circuit arrangement for integration of EDP systems in utilization of telephone systems connected to a public ISDN or Euro ISDN telephone network, the circuit arrangement comprising a plurality of telephone extensions which are directly connectable to a telephone network selected from the group consisting of a public ISDN telephone network and Euro ISDN telephone network; a first line; an intelligent telephone system arranged so that said telephone extensions are connectable with said at least one telephone network through said first line and said intelligent telephone system; a plurality of personal computers: an integration element arranged between said intelligent telephone system and said personal computers, said integration element receiving signals via at least one connection element selected from the group consisting of an SDLC connection element and an ISDN connection element via a second line from said at least one telephone network via said intelligent telephone system and sending back signals to said at least one telephone network, said integration element also sending a data record assigned an appropriate information via a third line, via a LAN connected to a LAN server by a fourth line and via a fifth line to said personal computers and receiving a data record from said personal computers again; a computing system; and a software layer arranged so that a conversion of the signals into a data record and vice versa is carried by said integration element, by said computing system, by said software layer and by said at least one connection element with an internal software.

5,631,954

METHOD AND APPARATUS FOR CONTROLLING A TELEPHONE

Ronald A. Evans; Deborah L. Pinard, both of Kanata; Thomas A. Gray, Carp; Ken Henderson, Kanata, and William Lim, Ottawa, all of Canada, assignors to Mitel Corporation, Kanata, Canada

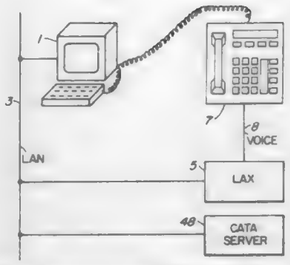
Filed Dec. 27, 1994, Ser. No. 364,620

Int. Cl.° H04M *11/00*

U.S. Cl. 379—201 20 Claims

1. A communication system comprising:

(a) a computer system connected to a local area network (LAN).



(b) a local area communications system (LAX) connected to the LAN including plural line circuits,

(c) plural telephones connected to the LAX via the line circuits, one of which is associated with the computer system,

(d) control means in the computer system for sending messages to the LAX via the LAN for controlling the telephone associated with the computer system, and

(e) an auxiliary keyboard associated with said one telephone associated with the computer system, connected to the computer system for commanding said control means to send messages to the LAX to control said one telephone.

5,631,955

OPTION BUS

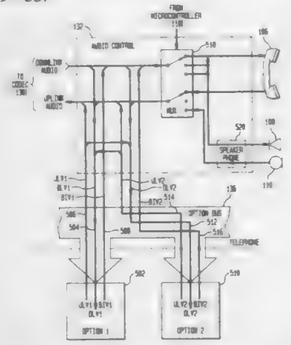
Joel Q. Adams, Pflugerville; David C. Black; William F. Dunn, Jr., both of Austin, all of Tex.; Norman Endick, Munich, Germany; James B. Koehler, Cedar Creek, Tex.; Michael K. Kounnas, Austin, Tex.; John C. Krause, Austin, Tex.; Diep N. Le, Austin, Tex., and Larry A. Stell, Austin, Tex., assignors to Siemens Business Communication Systems, Inc.

Continuation of Ser. No. 916,286, Jul. 17, 1992, abandoned.

This application May 15, 1995, Ser. No. 440,720

Int. Cl.° H04M *1/00*

U.S. Cl. 379—387 21 Claims



1. In a digital telephone having an interface to a telephony communications switch, a microprocessor with an option processor means for distributing messages to option modules, said option modules operating to implement one or more functions related to the operation of said telephone, said functions being designated herein as options, and a base processor means for controlling the base digital telephone included therein and coupled to the switch, and a plurality of ports in said telephone connected to said base and option processor means via an internal bus for coupling the base processor means and the option processor means to one or more of the option modules, a method of communicating between the option modules and the base processor means comprising the steps of:

(a) determining, by the option processor means, a priority for each of the option modules;

(b) receiving, by the option processor means, a message from the switch;

(c) relaying the message, from the option processor means to a highest priority one of the option modules and from said highest priority one of the option modules back to the option processor means;

(d) continuing to relay the message from the option processor means to successive lower priority option modules and from each said successive option module back to the option processor means, in priority order, wherein:

upon receipt of a message from the option processor means by a receiving option module and prior to relaying said message back to the option processor means, said receiving option module is able to recognize said message as being pertinent to a feature which said receiving option module controls, and upon such recognition operates the feature in response to the message and modifies the message so as to generate a modified message; and,

(e) relaying the modified message from a lowest priority one of the option modules to the option processor means and from said option processor means to the base processor means.

5,631,956

HIGH DENSITY TELEPHONE NETWORK INTERFACE UNIT

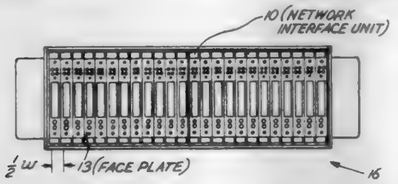
Eric P. Bergstrom, St. Charles; Richard A. Yndestad, Naperville, and John A. Washburn, Aurora, all of Ill., assignors to Teltrend Inc., St. Charles, Ill.

Division of Ser. No. 145,771, Oct. 29, 1993, Pat. No. 5,521,977.

This application May 17, 1996, Ser. No. 649,303

Int. Cl.° H04M *19/00*

U.S. Cl. 379—399 5 Claims



1. A network interface unit for interconnecting incoming and outgoing telephone lines with incoming and outgoing customer premises lines comprising, in combination:

a single, planar circuit board assembly, interconnected to said telephone lines and customer premises lines;

a first relay interconnected to both said incoming telephone and customer lines and mounted on said board;

a second relay interconnected to said outgoing customer and telephone lines and mounted on said board; and

a controller, mounted on said board and having both an application specific integrated circuit and a processor, for monitoring data along said lines, recognizing a loopback signal, and responsively activating said relays to interconnect said incoming and outgoing telephone lines.

5,631,957

BAND-ENERGY NEAR-END ECHO REDUCER FOR TONAL SIGNALLING DETECTORS

Israel Greiss, Raanana; Rami Drucker, Herzlia; Gil Montag; Ophir Shabtay, both of Haifa, and David Almagor, Herzlia B, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

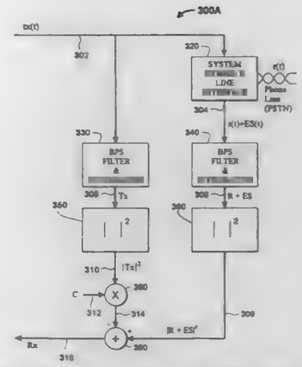
Filed Mar. 9, 1995, Ser. No. 401,176

Int. Cl.° H04M *11/00*

U.S. Cl. 379—406 11 Claims

1. Echo reducer for tonal signalling detectors, comprising:

a transmission line conveying transmit signals to a system hybrid connected to a phone line;



a reception line conveying remote signals from the system hybrid, said remote signals including a near-end echo of the transmit signals;

a first filter bank including a first bandpass filter for filtering and integrating the transmit signals and a first squarer for determining an absolute level of an output of the first bandpass filter, said first filter bank having a first output;

a second filter bank including a second bandpass filter for filtering and integrating the remote signals and a second squarer for determining an absolute level of an output of the second bandpass filter, said second filter bank having a second output;

a multiplier, connected to the first filter bank, for multiplying the first output by a compensator gain coefficient and producing a resultant signal; and

an adder for subtracting the resultant signal from the second output, and producing a receive signal from which the near-end echo has been reduced.

5,631,958

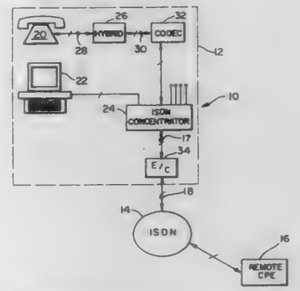
AUTOMATIC ECHO CANCELLATION FOR AN INTEGRATED SERVICES DIGITAL NETWORK INTERFACE

Charles Reese, Harpers Ferry, W. Va., and Barry Bielsker, Vienna, Va., assignors to Coherent Communications Systems Corp., Leesburg, Va.

Filed Oct. 4, 1994, Ser. No. 317,797

Int. Cl.° H04M *9/00*; H04B *3/20*

U.S. Cl. 379—410 22 Claims



1. A method of processing telecommunications signals, comprising the steps of:

detecting a request to establish a call to be conducted on a channel of a communication link having a plurality of channels;

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determining, from the request, whether the requested call is of a predetermined type requiring a signal processing function to be applied to signals communicated during the call; and

applying said signal processing function to signals communicated during said call, when the call is determined to be of the predetermined type;

wherein said detecting step comprises the steps of:

monitoring transmissions conducted on a first channel of said communication link;

identifying, within said first channel, a request message including said request to establish a call upon a second channel of the communication link;

obtaining, from said request message, a first call reference value assigned to the requested call, an information content value identifying the type of information contained in said requested call, and a channel identification value identifying said second channel;

comparing the information content value with a predetermined information content value for which said signal processing function is to be applied; and

storing said call reference value, said channel identification value, and a flag indicating the outcome of said comparing step.

5,631,959

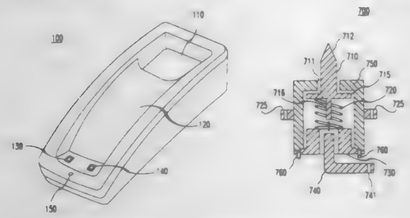
METHOD AND APPARATUS FOR PROTECTING CIRCUITRY ACCESSIBLE THROUGH METALLIC CONTACTS FROM STATIC DISCHARGE DAMAGE

Sebastian J. Messina, Jr., Fredon, and Joseph E. Murphy, Seaside Heights, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 1, 1995, Ser. No. 432,557

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—428 **16 Claims**



1. A switching apparatus for isolating circuitry in a device from static electricity, the apparatus comprising:

a first conducting element having a first contact member for making contact with a second contact member, said first contact member being located in a wireless handset unit and said second contact member being located in a wireless base unit matable with said wireless handset unit;

a second conducting element connected to said circuitry; and

means for connecting said second conducting element to said first conducting element when said first contact member is in contact with said second contact member and for disconnecting said second conducting element from said first conducting element when said first contact member is not in contact with said second contact member, said second conducting element being connected to said first conducting element when said wireless handset unit is mated with said wireless base unit by placing said wireless handset unit in a cradle portion of said wireless base unit and being disconnected from said first conducting element when said wireless handset unit is removed from the cradle portion of said wireless base unit.

5,631,960

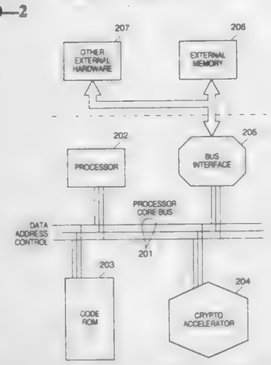
AUTOTEST OF ENCRYPTION ALGORITHMS IN EMBEDDED SECURE ENCRYPTION DEVICES

Thomas H. Likens, Fort Worth, and Thomas M. Norcross, Arlington, both of Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 31, 1995, Ser. No. 521,787

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—2 **22 Claims**



1. A method of testing a cryptographic accelerator that implements a cryptographic function having a state that is either an encryption state or a decryption state, such that the encryption state is an inverse decryption state, and such that the decryption state is an inverse encryption state, implementing the cryptographic function in each of n modes, comprising the steps of:

for integer i equal 1,

performing a first cryptographic operation in a first state in a first mode taking a B-bit cryptographic test block as input and producing a B-bit first intermediate encrypted result;

for i from 2 to n,

performing an ith cryptographic operation in an ith state in an ith mode taking the B-bit $(i-1)^{th}$ intermediate result as input and producing a B-bit i^{th} intermediate encrypted result;

for i from n+1 to 2n−1,

performing an ith cryptographic operation in the inverse $(2n-i+1)^{th}$ state in the $(2n-i+1)^{th}$ mode taking the B-bit $(i-1)^{th}$ intermediate result as input and producing a B-bit i^{th} intermediate encrypted result; and

for i equal 2n,

performing a $2n^{th}$ cryptographic operation in the inverse first state in the first mode taking the B-bit $(i-1)^{th}$ intermediate result as input and producing a B-bit accelerator computed test result.

5,631,961

DEVICE FOR AND METHOD OF CRYPTOGRAPHY THAT ALLOWS THIRD PARTY ACCESS

Robert A. Mills, Gambrills; Mark R. Unkenholz, Eldersburg; Mark W. Wilson, Columbia, and John E. Burroughs, Annapolis, all of Md., assignors to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

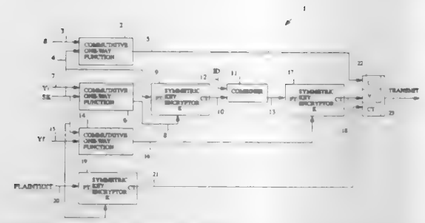
Filed Sep. 15, 1995, Ser. No. 528,966

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—21 **38 Claims**

1. A method of generating and using a public-key law enforcement access field, where a sender and a receiver agree on a session key, comprising the steps of:

(a) forming g^{sk}, where g is an element in a Galois Field, and where sk is the session key;



(b) forming a first temporary key;

(c) encrypting the session key using the first temporary key;

(d) combining an identification number with the result of step (c);

(e) forming a second temporary key;

(f) encrypting the result of step (d) using the second temporary key;

(g) encrypting a plaintext message using the session key;

(h) concatenating the results of steps (a), (f), and (g); and

(i) transmitting the result of step (h) to the receiver.

5,631,962

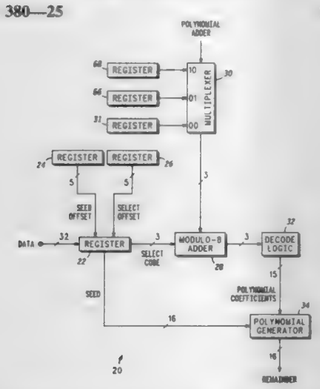
CIRCUIT AND METHOD OF ENCRYPTING KEY VALIDATION

Thomas J. Balph, Mesa, and Steven D. Millman, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1995, Ser. No. 547,005

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—25 **20 Claims**



1. A method of validating a key with a host, comprising the steps of:

configuring a polynomial generator with a first polynomial;

clocking said polynomial generator a first number of cycles based on a first clock count from a starting point to calculate a first remainder in said polynomial generator;

configuring said polynomial generator with a second polynomial; and

clocking said polynomial generator a second number of cycles based on a second clock count from said first remainder to calculate a second remainder in said polynomial generator.

5,631,963

CIRCUIT ARRANGEMENT FOR THE RECOGNITION OF ADJACENT CHANNEL INTERFERENCE

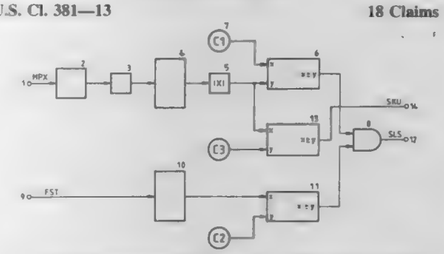
Matthias Herrmann, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Oct. 31, 1994, Ser. No. 331,762

Claims priority, application Germany, Nov. 12, 1993, 43 38 700.4

Int. Cl.[6] H04H *5/00*

U.S. Cl. 381—13 **18 Claims**



1. A circuit arrangement for recognizing adjacent channel interference in a stereo radio receiver in which a stereo multiplex signal is present, comprising a circuit for obtaining an adjacent channel interference signal as a function of a direct voltage portion of the stereo multiplex signal and as a function of spectral components of the stereo multiplex signal above 60 kHz.

5,631,964

AUDIO APPARATUS

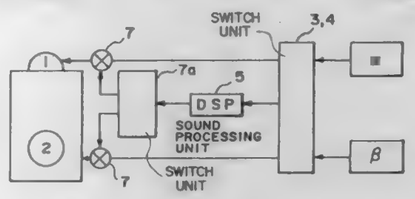
Takeshi Harada, Mitaka, and Eiki Nasu, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo, Japan

Continuation of Ser. No. 237,849, May 4, 1994, abandoned. This application Apr. 12, 1996, Ser. No. 631,910

Claims priority, application Japan, May 7, 1993, 5-131357

Int. Cl.[6] H04R *5/02*

U.S. Cl. 381—74 **4 Claims**



1. An audio apparatus comprising:

L-channel speakers including two speakers respectively having different directivities;

R-channel speakers including two speakers respectively having different directivities;

switching means for designating at least two sources from a plurality of sources;

sound field processing means for processing the sound field of at least one source sound a signal designated by said switching means; and

an adder for adding an output of said sound field processing means to a source sound signal other than said source sound signal processed by said sound field processing means,

wherein a source sound signal obtained by adding a plurality of source sound signals from said two source designated by said switching means, and source sound signals not subjected to addition respectively drive said R-channel speakers of different directivities and said L-channel speakers of different directivities independently.

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5,631,965
HEARING PROTECTOR

Joseph S. Chang, 325 Amess Street, East Brunswick, Victoria, 3057, and Yit C. Tong, 1 Charles Street, Kew, Victoria, 3101, both of Australia

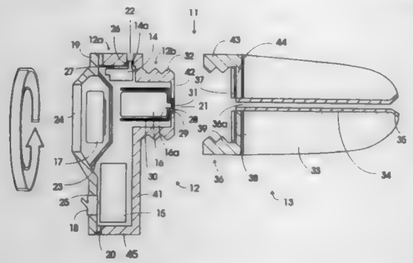
PCT No. PCT/AU93/00295, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/00089, PCT Pub. Date Jun. 6, 1994

PCT Filed Jun. 18, 1993, Ser. No. 356,183

Claims priority, application Australia, Jun. 19, 1992, PL3021/92

Int. Cl.° A61F *11/06*

U.S. Cl. 381—72 **29 Claims**



21. A hearing protector comprising a sound processor for receiving at an input thereof exterior sound and generating therefrom at an output thereof corresponding processed sound limited to intensity not exceeding a predetermined sound pressure level, and an earpiece detachably mounted to said sound processor and having sound channeling means in the form of a tube for passage of said processed sound away from said sound processor, said hearing protector being insertable into an ear canal so as to position said sound processor for receiving at said input said exterior sound, being sound originating exteriorally of said ear canal, and for directing said processed sound, as generated from said exterior sound by said sound processor, to an eardrum via said sound channeling means of said earpiece, said earpiece having first acoustic sealing means formed of a retarded recovery resilient material which is compressible to enable the earpiece to be inserted into the ear canal, but which then recovers to form a tight first acoustic seal between the earpiece and the ear canal, such as to preclude sound from passing from the outer ear through the earpiece to the eardrum via the ear canal otherwise than through the sound channeling means, second acoustic sealing means being provided effective to provide a second acoustic seal between the output of said sound processor and an adjacent input end of the sound channeling means, to preclude sound other than said processed sound from entering the sound channeling means, said retarded recovery resilient material sealingly surrounding said tube to form a third acoustic seal between the ear plug member and the exterior of the sound channeling means, said acoustic seals being effective to preclude direct transmission of said exterior sound to the eardrum.

5,631,966
AUDIO SIGNAL CONVERSION USING FREQUENCY BAND DIVISION

Lawrence F. Heyl, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

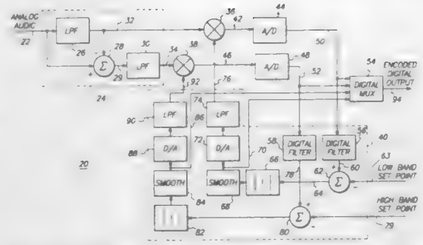
Filed Feb. 10, 1994, Ser. No. 194,237

Int. Cl.° G10L *3/02*

U.S. Cl. 381—77 **25 Claims**

1. A system for encoding an analog audio input signal comprising

analog band splitter means, coupled to said analog audio input signal, for generating a first band audio signal and a second band audio signal,



first gain controlled amplifier means, coupled to said first band audio signal, for generating an amplitude controlled first band signal,

second gain controlled amplifier means, coupled to said second band audio signal for generating an amplitude controlled second band signal,

analog multiplexer means, coupled to said amplitude controlled first band signal and said amplitude controlled second band signal, for generating an analog time division multiplexed signal, and

analog to digital converter means, coupled to said analog time division multiplexed signal, for generating a digitized time division multiplexed signal,

wherein said first and said second gain controlled amplifier means are transconductance cells with a linear transfer characteristic.

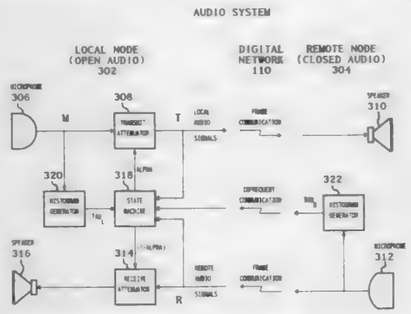
5,631,967
PROCESSING AUDIO SIGNALS USING A STATE VARIABLE

Larry Wagner, Oakland, Calif., and Robert A. Marshall, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 342,270, Nov. 16, 1994, which is a continuation-in-part of Ser. No. 340,172, Nov. 15, 1994, which is a continuation-in-part of Ser. No. 157,694, Nov. 24, 1993. This application Dec. 20, 1994, Ser. No. 359,692

Int. Cl.° H03G *5/00*

U.S. Cl. 381—98 **24 Claims**



1. An apparatus for processing audio signals, comprising:

(a) a transmit attenuator for attenuating local audio signals generated by a local microphone for transmission to a remote node;

(b) a receive attenuator for attenuating remote audio signals received from the remote node for playback at a local speaker; and

(c) a controller for controlling a level of transmit attenuation for the transmit attenuator and a level of receive attenuation for the receive attenuator, the controller comprising a state machine that generates a scalar state variable, wherein the controller uses the scalar state variable to control the level of transmit attenuation and the level of receive attenuation.

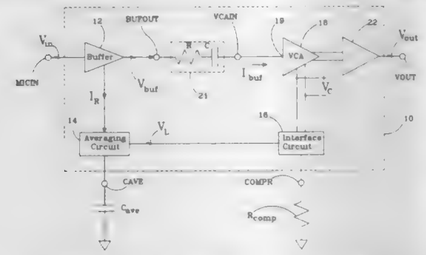
5,631,968
SIGNAL CONDITIONING CIRCUIT FOR COMPRESSING AUDIO SIGNALS

Douglas R. Frey, Bethlehem, Pa., and Patrick Copley, Sunnyvale, Calif., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 6, 1995, Ser. No. 469,440

Int. Cl.° H03G *7/00*

U.S. Cl. 381—106 **36 Claims**



1. An analog circuit for conditioning an input signal in accordance with a compression ratio, comprising:

a single analog input buffer having primary and secondary output terminals, said input buffer responding to an input signal by a) producing a buffer signal at said primary output terminal that follows said input signal and b) directly sensing and rectifying the buffer signal at said primary output terminal to produce a rectified signal at said secondary output terminal that more accurately represents the buffer signal than it does the input signal;

an analog averaging circuit that produces an averaged signal from said rectified signal;

an analog interface circuit that produces a gain signal that is a function of said averaged signal and said compression ratio; and

a voltage controlled amplifier (VCA) connected to amplify the buffer signal by an exponential function of said gain signal to produce a compressed output signal that is more accurate than it would have been if the input signal were directly sensed and rectified to produce the rectified signal.

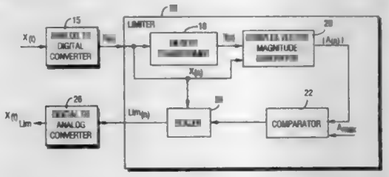
5,631,969
SYSTEM FOR LIMITING THE MAGNITUDE OF SAMPLED DATA

Van E. Hanson, Forest, Va., assignor to Ericsson Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 36,729, Mar. 25, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 399,218

Int. Cl.° H03G *3/00*

U.S. Cl. 381—107 **29 Claims**



1. A method for producing an output signal of limited amplitude from an input signal of variable amplitude, comprising:

transforming the variable amplitude input signal to obtain an in-phase signal from the input signal and a corresponding quadrature signal from the input signal in which desired component frequencies of said quadrature signal are 90-degrees phase rotated relative to corresponding frequency components of said in-phase signal;

determining a magnitude of said variable amplitude input signal by combining said in-phase and quadrature signals obtained from the variable amplitude input signal;

comparing said determined magnitude with a limiting threshold; and

if said determined magnitude exceeds said limiting threshold, scaling at least one of said in-phase or quadrature signals based on said determined magnitude to produce the output signal of limited amplitude, wherein said in-phase and quadrature signals used in said determining step are independent of said output signal.

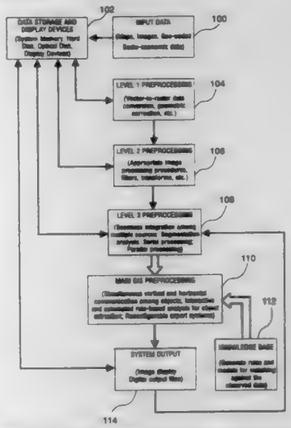
5,631,970
PROCESS FOR IDENTIFYING SIMPLE AND COMPLEX OBJECTS FROM FUSED IMAGES AND MAP DATA

Shin-yi Hsu, 2312 Hemlock La., Vestal, N.Y. 13850

Filed May 21, 1993, Ser. No. 66,691

Int. Cl.° G06K *9/36*

U.S. Cl. 382—113 **5 Claims**



1. A method of analyzing combined image and map data utilizing a processing system that provides total, seamless integration, both vertical and horizontal, between image and map data, in order to recognize and identify objects disposed within said image and map data, said method comprising:

a) transforming a variety of information sources, including maps and imagery, for a predetermined geographical area, into a mutually compatible, extractable format;

b) defining features and regions of said maps and imagery representative of object information, using a multilevel process, wherein said object information within any level of said multilevel process communicates with each other using an object-based segmentation scheme, said segmentation scheme facilitating or discouraging a merger of neighboring regions of said information sources based upon attributes defined by a set of object-based rules, including spatial relationships;

c) identifying and recognizing objects disposed within said information sources by comparing said object information with said object-based rules, said object-based rules being language-definable;

d) obtaining object-based rules from a database; and

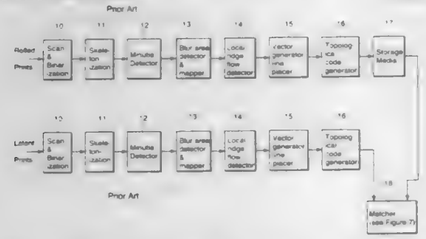
e) recognizing objects by comparing object features of said objects with said obtained object-based rules of known object features and attributes.

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5,631,971
VECTOR BASED TOPOLOGICAL FINGERPRINT MATCHING

Malcolm K. Sparrow, 93 Church St., Winchester, Mass. 01890

Continuation of Ser. No. 248,012, May 24, 1994, abandoned.
This application Jul. 15, 1994, Ser. No. 276,155
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—125 **20 Claims**



1. In a fingerprint recognition method in which images of fingerprints are electronically processed to provide an electronic image of ridge lines and minutiae points, said minutiae points including ridge endings and ridge bifurcations, with the positions of said minutiae points and a sequence of reference numbers being recordable in a storage medium, wherein each reference number (N) is arbitrarily assigned for each minutiae point, each of said ridge lines having a local ridge flow direction, respectively, the improvement comprising:

at each respective minutiae point projecting a generating line at a predetermined angle which is transverse to said local ridge flow direction, said generating line having a length sufficient to span a predetermined number of ridge lines to each side of each said minutiae point, respectively,

for each generating line, from the point of crossing of said projected generating line with ridge lines within said span for said each minutiae point, exploring, in two directions, along any crossed ridge line from said generating line to the first occurring topological event in each of said two directions, respectively, and assigning a type code (T) to each said first occurring topological event, respectively, and

generating one topological event code vector for each respective minutiae point, each topological event code vector being comprised of an ordered sequence of topological type codes (T) and reference numbers (N) for the minutiae points encountered during exploration of each ridge, for all the ridges intersected by said generating line.

5,631,972
HYPERLADDER FINGERPRINT MATCHER

Stephen Ferris, 80 Campbell Ave., Troy, N.Y. 12180; Robert L. Powers, 37 Mansion Dr., Topsfield, Mass. 01983, and Terry Lindh, 428 E. Shore Rd., DeLanson, N.Y. 12053

Filed May 4, 1995, Ser. No. 434,997
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—125 **31 Claims**

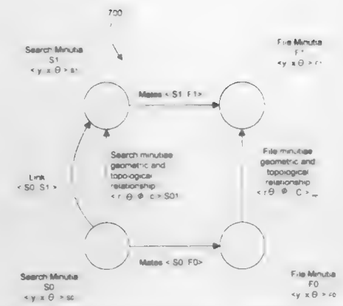
1. An apparatus for determining whether a search fingerprint matches any of a plurality of file fingerprints stored in an electronic database, comprising:

means for convening a fingerprint to a list of minutiae descriptive of the fingerprint;

means for comparing the minutiae of a search fingerprint to the minutiae of one of the plurality of file fingerprints;

means for pairing a first of the minutiae of the search fingerprint to a second of the minutiae of the search fingerprint if the attributes of the first and second search minutiae are related within predetermined limits;

means for pairing a first of the minutiae Of the file fingerprint to a second of the minutiae of the file fingerprint if the attributes of the first and second file minutiae are related within predetermined limits:



means for mating one of the pairs of minutiae of the search fingerprint to one of the pairs of minutiae of the file fingerprint if the attributes of the search pair and the file pair are substantially similar within predetermined limits;

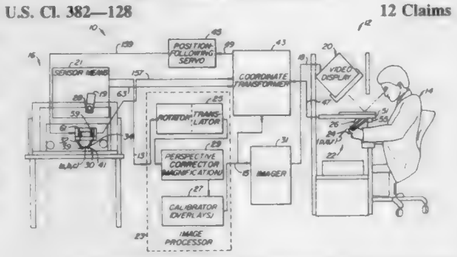
means for linking the mated pairs into a chain; and

means for indicating a match if the number of links in the chain exceeds a predetermined upper threshold value.

5,631,973
METHOD FOR TELEMANIPULATION WITH TELEPRESENCE

Philip S. Green, Redwood City, Calif., assignor to SRI International, Menlo Park, Calif.

Filed May 5, 1994, Ser. No. 239,086
Int. Cl.[6] G06K *9/32;* **A61B** *1/00*
U.S. Cl. 382—128 **12 Claims**



1. In a telemanipulation system for manipulating objects located in a workspace at a remote worksite by a control operator from a control operator station, said telemanipulation system including a manipulator at the worksite with an end effector for manipulation of an object in the workspace, a controller for remote control by the control operator of the manipulator, an image capture device for taking real-time image of the workspace, and an image generator for producing a display for eyes of the control operator, wherein the image capture device is at an angle and a position relative to the end effector which differs from a relative position of eyes of the control operator and the controller, the system further comprising:

an image processing device coupled to the image generator and the image capture device, the image processing device processing the real-time image into a processed image for display to the control operator, wherein the processed image is substantially the same as an image taken by an image capture device located at an angle and position relative to the end effector which is substantially equivalent to a relative angle and position of eyes of the control operator and the controller;

a servo control for controlling position of said manipulator;

a first position sensor disposed to sense a position of said manipulator in said workspace;

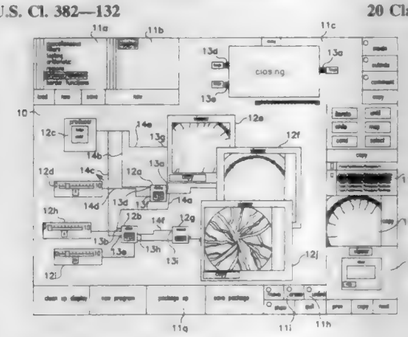
a second position sensor disposed to sense a position of said hand control at the operator station; and

a coordinate transformation device coupled to said image processing device, to said first position sensor and to said second position sensor for transforming information about manipulator position, hand control position and processed image position and into control signals applied to said servo control.

5,631,974
IMAGE PROCESSING

David Lau-Kee, Teddington; Gerhardt P. Otto, Guildford, both of United Kingdom; Yasuo Kozato, Woodside, and Adam Billyard, Tooting, both of England, assignors to Canon Research Centre Europe, Ltd., Surrey, United Kingdom

Continuation of Ser. No. 577,004, Sep. 4, 1990, abandoned.
This application Feb. 13, 1995, Ser. No. 388,188
Claims priority, application United Kingdom, Aug. 31, 1990, 9018996
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—132 **20 Claims**



1. A data processing apparatus comprising:

processing means having a repertoire of basic data processing operations, each basic operation being performable by the processing means to generate processed output data;

output means having a repertoire of at least one basic output operation for presenting data to a user of the apparatus;

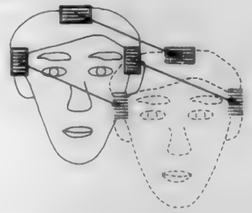
graphical user interface means having display means and user input means permitting a user to select and assemble on a display graphical representations of said basic processing operations and basic output operation, and permitting the user to specify data paths between the assembled operations so as to specify a sequence for execution of the assembled operations in accordance with a desired composite data processing operation;

wherein said basic processing operations can be assembled and represented by said graphical user interface means without the prior execution and without automatic execution of the assembled basic operations, and wherein the processing means is arranged to cause execution of a sequence of basic operations automatically in response to the user selecting said basic output operation and specifying a data path from a data output of one of the assembled basic operations to a data input of said output operation, so as to present to the user data processed in accordance with said composite data processing operation, and wherein the processing means does not automatically execute sequences of basic operations when assembled basic operations do not have data path specified directly or indirectly from a data output thereof to the data input of the basic output operation.

5,631,975
IMAGE SEGMENTATION DEVICE

Philippe Riglet, 22 avenue Descartes, Limeil-Brevannes; Lionel Bouchard, 34 rue Auguste Pégurier, Nice, and Jaques-Ariel Sirat, 22 avenue Descartes, Limeil-Brevannes, all of France

Continuation of Ser. No. 34,314, Mar. 22, 1993, abandoned.
This application Oct. 19, 1994, Ser. No. 326,147
Claims priority, application France, Apr. 14, 1992, 92 04581
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—173 **21 Claims**



1. An apparatus for producing segmentation images of a pattern moving against a background, said images being in the form of digital signals corresponding to luminance or color information for respective pixels along scanned lines, comprising:

means for determining a silhouette of a useful zone, including:

1) means for calculating differences in luminance of pixels of a present image and pixels of at least one image of a sequence of images preceding the present image,

2) means for determining respective comparisons of said differences with a threshold, and

3) means, responsive to the respective comparisons, for generating a binary image wherein each pixel is assigned a respective one of two luminance values, the two luminance values respectively representing said background and said useful zone,

means for suppressing irregularities which may affect said useful zone, including

1) means for determining an inclination of the contour between the useful zone and said background relative to a line being currently scanned,

2) a contour regularizing circuit for suppressing irregularities in a contour of said silhouette by delimiting, for each scanned line crossing said useful zone, a segment belonging to said useful zone, said circuit determining a correlation between the respective inclination for the line being currently scanned and the delimited segment on the line preceding the line being currently scanned, and

3) means for adopting a uniform luminance value inside said segment equal to a predetermined value, and

means, responsive to said silhouette and said means for suppressing irregularities, for forming a segmentation image having a uniform background and a representation of said pattern derived from said present image and said sequence of images.

5,631,976
OBJECT IMAGING SYSTEM

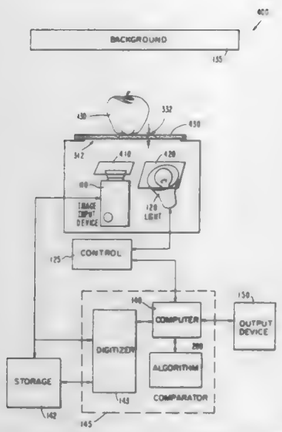
Rudolf M. Bolle, Bedford Hills; Jonathan H. Connell, Cortlandt-Manor; Norman Haas, Mount Kisco, all of N.Y.; Rakesh Mohan, Stamford, Conn., and Gabriel Taubin, Hartsdale, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,064
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—174 **19 Claims**

1. An image processing system for separating one or more objects in a scene from a background of the scene, comprising:

a controllable light source for illuminating the scene, the controllable light source having an on illumination level and a reduced illumination level, the controllable light source positioned at an object distance from the object and a background

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distance from the background, a reflectance of light from the object divided by the square of the object distance being greater than a reflectance of light from the background divided by the square of the background distance when the controllable light source is at the on illumination level and the reduced illumination level;

an image input device taking two or more images of the the scene, a first scene image taken with the controllable light source on and a second scene image taken with the controllable light source at the reduced illumination level, the first scene image having an object image brighter than the object image in the second scene;

a comparator comparing the first and second scene images, one or more pixels being object pixels that are brighter in the first scene image than in the second scene image; and

a comparator designator designating the object pixels as an object image separate from a background image of the background of the scene.

5,631,977

ENCODING DEVICE FOR ENCODING AN IMAGE ALONG AN ORDER DETERMINED BY RESOLUTION TONE LEVEL

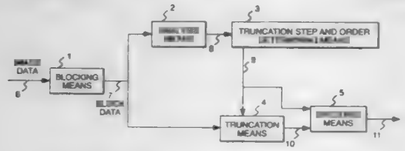
Yutaka Koshi; Shunichi Kimura, and Koh Kamizawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 162,477, Dec. 7, 1993, abandoned. This application Jul. 25, 1995, Ser. No. 506,178

Claims priority, application Japan, Dec. 8, 1992, 4-328265; Jan. 27, 1993, 5-012030

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—239 **14 Claims**



1. An image encoding device comprising:

blocking means for dividing images into input blocks, each input block including a predetermined number of pixels sampled to a predetermined resolution and a predetermined tone level;

analysis means for analyzing an amount of peculiarity of the resolution and tone level of the pixels in each block and for generating an analysis result;

quantizing step determining means for determining approximate points having resolution values and tone levels high enough to decode at less than a present encoding error according to the analysis result;

processing order determining means for determining a processing order as a series of three or more of said approximate points, said three approximate points each having a different tone level which increases the resolution value or tone level beginning from a lower approximate point of resolution and/or tone level;

resolution quantizing means for selecting pixels in the input block of the predetermined resolution according to the resolution value of the approximate points selected by the quantizing step determining means along the processing order;

tone level quantizing means for quantizing the tone level value of the pixels of the predetermined tone level in the input block according to values of the tone level of the approximate points selected by the quantizing step determining means along the processing step order;

encoding means for encoding the results from the resolution quantizing means and the tone level quantizing means; and

amount of encoded data controlling means for permitting the encoding means to encode until the summation of the encoded data reaches a preset allowable amount of data.

5,631,978

METHOD AND APPARATUS FOR SUBBAND CODING IMAGES

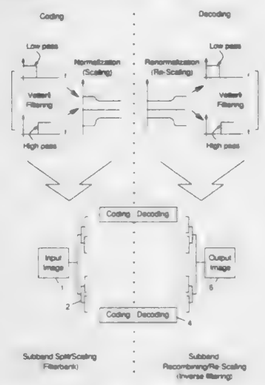
Claude Galand, Cagnes sur Mer; Gilbert Furlan, Roquebrune Cap Martin; Emmanuel Lancon, Nice, and Jean Menez, Cagnes sur Mer, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1992, Ser. No. 880,921

Claims priority, application European Pat. Off., Jul. 11, 1991, 91480104

Int. Cl.[6] G06K *9/36*; **H04N** *7/12*

U.S. Cl. 382—240 **5 Claims**



1. A coding device for coding images using subband coding techniques in an image compression system, said image coding device including:

a tree-shaped filtering means for filtering an image input signal into a plurality of subband image signals, said filtering means including both low-pass filtering means and high-pass filtering means for generating low-pass and high-pass filtered components in each subband respectively;

sub-sampling means for sub-sampling each subband image signal;

means for scaling and normalizing each high-pass and low-pass filtered and sub-sampled subband image signal component to keep the dynamics of said subband image signal component substantially constant throughout each level of the tree-shaped filtering means, said means for scaling and normalizing performing operations according to the following expressions:

$$Lp(i,j) = \left(\left(\sum_{k=0}^{m} CoefL(k) * Image(i,j-k) \right) + ShiftL \right) / NormL$$

and

$$Hp(i,j) = \left(\left(\sum_{k=0}^{n} CoefH(k) * Image(i,j-k) \right) + ShiftH \right) / NormH$$

wherein:

Lp(i,j) and Hp(i,j) are respectively low-pass and high-pass filtered signal component samples,

CoefL and CoefH are respectively predefined low-pass and high-pass filter coefficients,

m and n are predefined numbers of filter coefficients,

Image(i,j) are image pixels located at coordinates i,j wherein i is the row index and j the column index,

ShiftL, ShiftH, NormL and NormH are predefined static scaling factors, derived from the filter coefficients and the original signal swing; and,

entropy coding means for coding each subband image using different context definitions based on each subband being encoded.

5,631,979

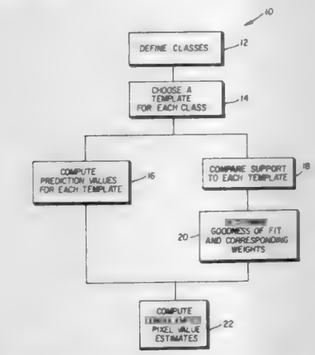
PIXEL VALUE ESTIMATION TECHNIQUE USING NON-LINEAR PREDICTION

David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 965,955, Oct. 26, 1992, abandoned. This application May 26, 1994, Ser. No. 249,645

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—263 **8 Claims**



1. A method for estimating pixel values in an image, comprising the steps of:

(a) defining templates for patterns of pixels, each template corresponding to one of the patterns of pixels;

(b) computing predicted values for a missing pixel in the image for each of the patterns of pixels based on the templates corresponding to the patterns of pixels and on pixel values in a neighborhood of the missing pixel;

(c) determining a closeness of a match between the templates for each of the patterns of pixels and the pixel values in the neighborhood of the missing pixel;

(d) producing a pixel value estimation as a finalized estimate of the missing pixel based upon the predicted values and the closeness of the match for each of the templates; and

(e) using the pixel value estimation as the pixel value of the missing pixel in the image.

5,631,980

IMAGE PROCESSING APPARATUS FOR PROCESSING IMAGE DATA REPRESENTATIVE OF AN IMAGE IN ACCORDANCE WITH THE TYPE OF PROCESSING DESIGNATED BY A DESIGNATING MEANS

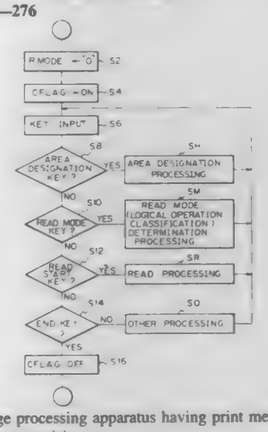
Hiroshi Maruoka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 150,248, Nov. 9, 1993, abandoned, which is a continuation of Ser. No. 898,358, Jun. 12, 1992, abandoned, which is a continuation of Ser. No. 611,441, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 361,704, Jun. 1, 1989, abandoned, which is a continuation of Ser. No. 841,514, Mar. 19, 1986, abandoned. This application Mar. 21, 1995, Ser. No. 408,104

Claims priority, application Japan, Mar. 20, 1985, 60-57206; Mar. 20, 1985, 60-57207; Mar. 20, 1985, 60-57208; Mar. 20, 1985, 60-57209; Mar. 20, 1985, 60-57210; Mar. 20, 1985, 60-57211; Mar. 20, 1985, 60-57212

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—276 **15 Claims**



1. An image processing apparatus having print means for printing an image, comprising:

image reading means on a carriage of said print means for optically reading an original image and for producing image data representing the original image;

designating means for designating a plurality of areas of the original image;

carriage control means for moving said carriage to each of the plurality of areas of the original image designated by said designating means; and

storage control means connected to said image reading means and said designating means for storing image data from said image reading means, said storage control means sequentially reading and storing the designated plurality of areas of the original image read by said image reading means, said storage control means processing the designated plurality of areas of the original image as one block of information, said storage control means comprising a central processing unit.

5,631,981

BITMAP REGISTRATION BY GRADIENT DESCENT

Arun Rao, Novato, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 181,287, Jan. 13, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,446

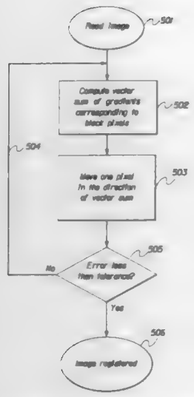
Int. Cl.[6] G06K *9/64*

U.S. Cl. 382—278 **19 Claims**

18. An position adjustment system for aligning an incoming bitmapped representation of an object with a master bitmapped representation of said object, comprising:

(a) registration means including:

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(a1) means for creating a registration gradient template from said master by applying a convolution and gradient operation thereto;

(a2) means for computing the vector sum of all vectors in said registration gradient template at each black pixel on said incoming bitmapped representation of an object; and

(a3) means for shifting the entire position of said entire incoming bitmapped representation of an object by one pixel in the direction of the vector sum computed by said means for computing and said entire image to be registered is shifted so that all portions of said entire image as originally inputted to the image processing system is included in the shifting; and

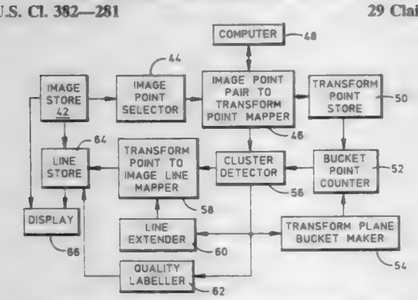
(b) means for terminating the registration process.

5,631,982

SYSTEM USING PARALLEL COORDINATES FOR AUTOMATED LINE DETECTION IN NOISY IMAGES

Alfred Inselberg, Los Angeles; Avijit Chatterjee, Venice, and Bernard Dimsdale, Santa Monica, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 74,901, Jun. 10, 1993, abandoned.
This application Sep. 14, 1994, Ser. No. 306,223
Int. Cl.[6] G06K *9/36;9/00;* **G06F** *17/14*
U.S. Cl. 382—281 **29 Claims**



1. A computer-implemented process comprising the steps of:

(a) receiving an image containing an object and having a plurality of image pixels represented by data distributed over an image plane in X_1 and X_2, and selecting a plurality of pairs of said image pixels;

(b) mapping each said image pixel pair to a transform point in a parallel coordinates transform plane having a plurality of neighborhood buckets;

(c) counting the number of said transform points in each said neighborhood bucket to create a bucket point count for said each neighborhood bucket;

(d) analyzing said bucket point counts to detect at least one cluster of said transform points in said parallel coordinates transform plane;

(e) locating the center point in each of said at least one cluster in said parallel coordinates transform plane;

(f) detecting lines in the image plane by mapping each said center point in said at least one cluster to a corresponding detected line in said image plane;

(g) storing a plurality of data representing said at least one correspond line; and

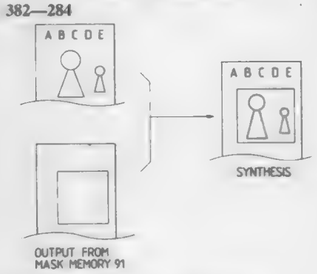
(h) presenting an image of the at least one detected line on a visual display.

5,631,983

IMAGE FORMING SYSTEM FOR SYNTHESIZING COLOR IMAGE DATA WITH BINARY IMAGE DATA WHICH HAS BEEN COLORED WITH A PREDETERMINED COLOR DURING THE SYNTHESIZING OPERATION

Tetsuya Ohnishi; Masanori Sakai, both of Yokohama; Takayuki Komine, Fussa; Toshihiro Kadowaki, Yokohama; Naoto Arakawa, and Toshio Honma, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 76,690, Jun. 15, 1993, abandoned, which is a continuation of Ser. No. 521,675, May 10, 1990, abandoned. This application Mar. 30, 1995, Ser. No. 414,050
Claims priority, application Japan, May 10, 1989, 1-118464; May 10, 1989, 1-118465; May 10, 1989, 1-118468
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—284 **16 Claims**



1. An image processing system comprising:

a) a first color image storing memory for storing a color image data composed by a plurality of color component data;

b) a second image storing memory, arranged in an external device, for storing a binary image data converted from a predetermined code; and

c) synthesizing means for synthesizing a color image data stored in said first color image storing memory with a binary image data stored in said second image storing memory, said synthesizing means including coloring means for coloring the binary image data with a predetermined color during the synthesizing operation,

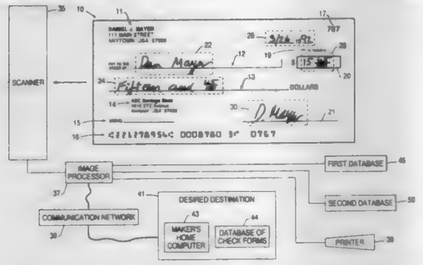
wherein said coloring means includes setting means for setting multi-level values for each of a plurality of color components relating to the predetermined color so as to set any color in a color range which is represented by the multi-level values.

5,631,984

METHOD AND APPARATUS FOR SEPARATING STATIC AND DYNAMIC PORTIONS OF DOCUMENT IMAGES

Hans P. Graf, Lincroft, and Daniel J. Mayer, Warren, both of N.J., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 164,175, Dec. 9, 1993, abandoned.
This application Apr. 7, 1995, Ser. No. 418,917
Int. Cl.[6] G06K *9/20*
U.S. Cl. 382—317 **31 Claims**



1. A method for use in a document image processing system, said system processing digital signals representing electronic images of documents of a type that include both a static form and an added dynamic information, the method comprising the steps of:

receiving a first signal representing an electronic image of a substantially complete document of said type, said first signal including image data for both said static form and said added dynamic information;

automatically identifying a portion of the first signal which corresponds to a portion of the added dynamic information by electronically comparing the first signal to at least one predetermined image feature inherently characteristic of the added dynamic information;

processing the automatically identified portion of the first signal to determine an additional feature of the added dynamic information;

electronically extracting portions of said first signal having the additional feature;

generating a second signal that includes at least a subset of the extracted portions of the first signal; and

storing the second signal such that said first signal representing said image can be substantially reconstructed from said second signal and an image of the form.

5,631,985

OPTICAL CONNECTOR WHEREIN AN ARRANGEMENT PLANE OF POSITIONING PIN HOLES AND OPTICAL FIBERS IS INCLINED WITH RESPECT TO AN ABUTTING DIRECTION

Hiroyuki Yamada; Kenji Suzuki; Koichi Takagi; Takashi Shigematsu; Mikio Ishihara; Jun Yamakawa, all of Tokyo, and Shinji Nagasawa, Mito, all of Japan, assignors to The Furukawa Electric Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,696
Claims priority, application Japan, Oct. 13, 1994, 6-247903
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—59 **4 Claims**

1. An optical connector comprising:

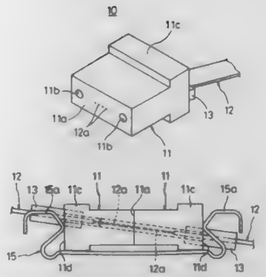
a ferrule having a butt end face at a front portion thereof, and positioning pin holes formed at opposite sides of said ferrule in a widthwise direction of said ferrule; and

a plurality of optical fibers coupled to said ferrule; and

wherein said optical connector is adapted to be abutted against another optical connector in an abutting direction;

wherein said positioning pin holes and said plurality of optical fibers are arranged in parallel with each other at least in the vicinity of the butt end face of said ferrule so that an arrangement plane of said plurality of optical fibers and said positioning pin holes is inclined at an inclination angle of θ with respect to a plane of the abutting direction, and so that a line where said butt end face and said arrangement plane cross each other is orthogonal to each axis of said plurality of optical fibers; and

wherein said ferrule further comprises a rear end portion arranged so that a pressing force is applied in a substantially vertical direction with respect to said butt end face when said optical connector is abutted against another optical connector and pressed in the abutting direction.

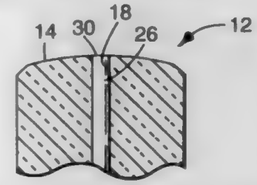


5,631,986

OPTICAL FIBER FERRULE

Robert G. Frey, and Timothy D. Fletcher, both of White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Apr. 29, 1994, Ser. No. 235,169
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—78 **29 Claims**



1. An optical fiber ferrule comprising a ceramic body of $CaTiO_3$, said body comprising:

a) a first, convex end having a predetermined radius of curvature;

b) a second end; and

c) a bore through said body which joins said first and second ends.

5,631,987

LOW COST, MODE-FIELD MATCHED, HIGH PERFORMANCE LASER TRANSMITTER OPTICAL SUBASSEMBLY

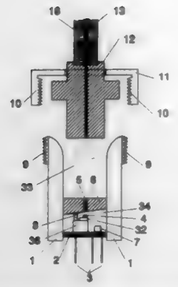
Ronald C. Lasky, Endwell, and Sylvester Johnson, IV, Brooktondale, both of N.Y., assignors to Reliaspeed, Inc., Brooktondale, N.Y.

Filed Jun. 7, 1995, Ser. No. 475,635
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—88 **32 Claims**

1. A transmitter optical subassembly for single mode optical fibers, the optical fibers having mode-field diameters, comprising:

a single mode laser diode having an electric power input, and a light output having an inherent mode-field diameter aligned to

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the single mode optical fiber, such that the light emitted by the single mode laser diode is coupled into the single mode optical fiber;

the inherent mode-field diameter of the single mode laser diode being matched to the mode-field diameter of the single mode optical fiber;

a body having a hollow bore;

an annulus located in the bore, near the lower end thereof;

a single mode light conductor passing entirely through the annulus from its upper surface to its lower surface, aligned with the single mode optical fiber, having a longitudinal axis and having a mode-field diameter related to the mode-field diameter of the single mode optical fiber.

5,631,988

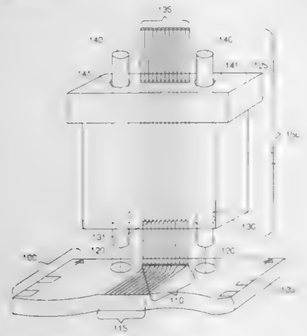
PARALLEL OPTICAL INTERCONNECT

Stanley E. Swirhun, Boulder, and Toshi K. Uchida, Northglenn, both of Colo., assignors to Vixel Corporation, Broomfield, Colo.

Continuation of Ser. No. 392,251, Feb. 22, 1995, abandoned, which is a division of Ser. No. 66,757, May 24, 1993, Pat. No. 5,420,954. This application Jun. 21, 1996, Ser. No. 667,367

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—89 **43 Claims**



1. An optical interconnect comprising:

a multiple optical fiber connector comprising:

a holder having a first planar surface,

a plurality of optical fibers attached to the holder, each fiber having a first end abutting the first surface so as to expose the first end for receiving or transmitting optical radiation, the first ends of the fibers forming a fiber array having a first pattern, and

guiding means disposed in said holder at predetermined positions with respect to the fiber array; and

an optoelectronic board comprising:

an optoelectronic device array monolithically formed on a semiconductor chip, said optoelectronic device array having substantially the same pattern as the first pattern of said fiber array, and

aligning means formed on said chip, said aligning means being disposed at substantially the same predetermined positions with respect to said array of optoelectronic devices as the positions of the guiding means relative to said fiber array, and

said aligning means receiving said guiding means so as to mechanically align said optoelectronic device array with said optical fiber array, whereby each optoelectronic device is aligned to an optical fiber, said optoelectronic device emitting optical radiation into said fiber array or receiving optical radiation from said fiber array.

5,631,989

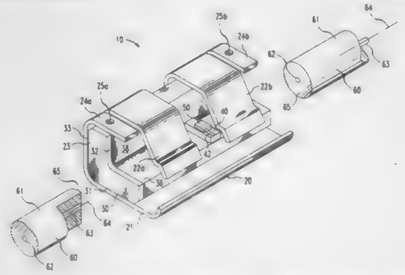
FIBER AND ACTIVE OPTICAL DEVICE INTERCONNECTION ASSEMBLY

Uziel Koren, Fair Haven, N.J.; Henry H. Yaffe, Dunwoody, and Norman R. Lampert, Norcross, both of Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1995, Ser. No. 561,676

Int. Cl.[6] G02B *6/42*

U.S. Cl. 385—91 **18 Claims**



1. An assembly for coupling an optical fiber to an active optical device formed on a sub-mount, comprising:

an alignment block having first and second reference surfaces disposed at an angle to each other, said sub-mount attaching to one of said reference surfaces; and

a sleeve for receiving said alignment block and having a resilient member disposed at an angle to said first and second reference surfaces for biasing a plug against said first and second reference surfaces and for aligning a central axis of said plug with an optical port of said active optical device, said sleeve having an aperture for receiving said sub-mount and said optical fiber extending through a bore formed approximately along said central axis of said plug.

5,631,990

INTEGRATED OPTICAL MODULE FOR COUPLING AN OPTICAL FIBER TO AN OPTICAL DEVICE

Hideki Hashizume, Kanagawa, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan

Filed Aug. 18, 1995, Ser. No. 516,626

Claims priority, application Japan, Aug. 18, 1994, 6-194452

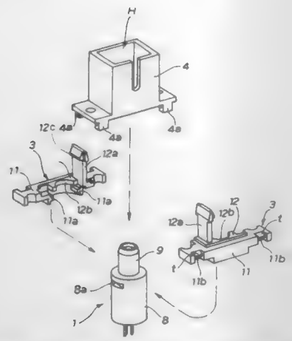
Int. Cl.[6] G02B *6/42*

U.S. Cl. 385—92 **9 Claims**

7. An optical module for receiving a plug connected to an optical fiber, comprising:

a receptacle having an optical device;

a holder composed of a pair of bodies, each of said pair of bodies comprising a recess, said holder having an aperture therethrough to receive said receptacle, a perimeter of said aperture formed by said recesses when said pair of bodies is



assembled, said holder also having an engaging tongue for engaging the plug when the plug is connected to said receptacle; and

a housing having an hole therethrough to receive said receptacle, said engaging tongue and the plug, said housing closely fittable around said holder so as to push said holder into gripping contact with said receptacle.

5,631,991

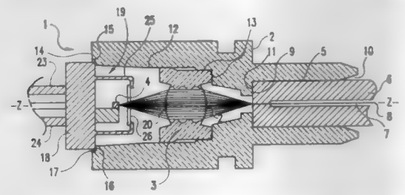
PLASTIC OPTICAL SUBASSEMBLIES FOR LIGHT TRANSFER BETWEEN AN OPTICAL FIBER AND AN OPTOELECTRONIC CONVERTER AND THE FABRICATION OF SUCH PLASTIC OPTICAL SUBASSEMBLIES

Mitchell S. Cohen, Millwood; Glen W. Johnson, Yorktown Heights, and Jeannine M. Trewhella, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 26, 1996, Ser. No. 592,279

Int. Cl.[6] G02B *6/00;6/255*

U.S. Cl. 385—93 **16 Claims**



1. An optical subassembly, receiving a ferrule-held optical fiber, comprising:

a packaged optoelectronic converter, said packaged optoelectronic converter comprising an optoelectronic converter mounted within a cylindrical can mounted on a disk-shaped support;

a housing having a ferrule bore in a first end of said housing to receive said ferrule-held optical fiber, a converter bore in a second, opposite end of said housing to receive said disk-shaped support of said packaged optoelectronic converter, and a lens bore having a smaller diameter than said converter bore, said lens bore communicating between said ferrule bore and said converter bore and into which said cylindrical can of said packaged optoelectronic converter projects, said ferrule bore, converter bore and lens bore having a common axis, said ferrule-held optical fiber and said packaged optoelectronic converter being spatially separated within said housing along said common axis;

a lens made of an optical grade material that is transparent over a range of wavelengths of an optical signal transmitted between said ferrule-held optical fiber and said optoelectronic converter, said lens being positioned in said lens bore of said housing between said ferrule-held optical fiber and said packaged optoelectronic converter on said common axis; and

an adhesive layer contained within said converter bore that attaches said disk-shaped support to said second end of said housing and into which said packaged optoelectronic converter is disposed.

5,631,992

OPTICAL FIBER LED ASSEMBLY

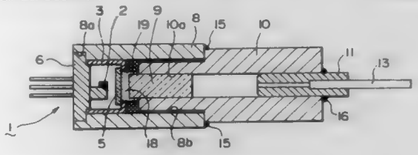
Mitsuo Takahashi; Yuying Wu, and Tomoyuki Mamiya, all of Matsudo, Japan, assignors to Seikoh Giken Co., Ltd., Matsudo, Japan

Filed Sep. 27, 1995, Ser. No. 534,587

Claims priority, application Japan, Mar. 27, 1995, 7-092972

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—94 **5 Claims**



1. An optical fiber LED assembly comprising:

a can-shaped light source element including a can having a transparent aperture-covering plate at one end thereof and a light emitting element located within said can for radiating light through said plate;

a first cylindrical holder supporting said light source element at one end thereof;

a rod lens having a distributed refractive index;

an optical fiber ferrule;

a second cylindrical holder supporting said rod lens at one end thereof, said second cylindrical holder accepting and, supporting the distal end of said optical fiber ferrule at the other end thereof and being inserted and fixed in said first cylindrical holder, said rod lens being directed toward the plate of said light source element;

a seal member inserted within said first holder between said light source element and said second holder; and

a gelled refractive index matching agent hermetically charged in the space formed by said seal member, said plate, and said second holder.

5,631,993

OPTICAL FIBER SPLICE CASE

Randy G. Cloud, Mentor; Jeff M. Gioitta, Lyndhurst; Erwin H. Goetter, Chesterland, and Christopher S. Grubish, Twinsburg, all of Ohio, assignors to Preformed Line Products Company, Mayfield Village, Ohio

Filed Apr. 20, 1995, Ser. No. 426,624

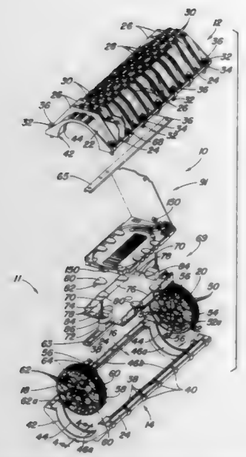
Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—135 **28 Claims**

19. A housing assembly for enclosing and storing cable splices comprising:

first and second end plates of generally circular configuration axially aligned and spaced from one another;

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a first rigid bar member having opposite terminal ends joined to the first and second end plates to hold them in their axially aligned and spaced relationship;

a pair of rod members carried by the first rigid bar member and extending generally parallel to the first and second end plates at locations therebetween and adjacent thereto;

an aligned stack of splice, storage trays extending between the pair of rod members and carried thereby, said trays having end slots which received and guided on the rods; and

a set of housing members releasably clamped to the first and second end plates to sealingly enclose the stack of trays.

5,631,994

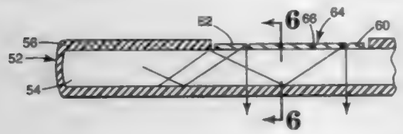
STRUCTURED SURFACE LIGHT EXTRACTION OVERLAY AND ILLUMINATION SYSTEM

Roger H. Appeldorn, White Bear Lake, and David J. Lundin, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 23, 1995, Ser. No. 518,337

Int. Cl.[6] G02B *6/00;* **F21V** *7/04*

U.S. Cl. 385—147 **15 Claims**



1. A light extraction overlay for use with a light guide, comprising:

a substantially optically transparent substrate having a base surface and a structured surface opposite said base surface, said structured surface comprising a plurality of optical elements defined therein, at least one optical element having a first optically smooth surface disposed at an angle relative to said base surface such that a portion of the light incident on the base surface at an incidence angle θ_1 of said overlay is transmitted through said substrate, reflected from said optically smooth surface and exits said overlay from said base surface at an angle θ_2, which is less than θ_1, said structured surface including a coating layer formed from a material which has a refractive index lower than the refractive index of said overlay.

5,631,995

VIDEO RECORDER HAVING CIRCUITRY FOR CAUSING THE TUNER THEREIN TO TUNE TO THE SAME RECEIVED SIGNAL AS THE TUNER IN A TELEVISION RECEIVER CONNECTED TO THE VIDEO RECORDER

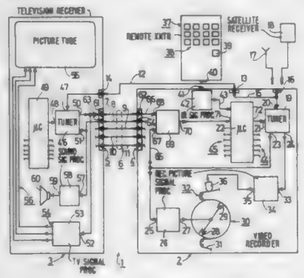
Walter Weissensteiner, Vienna, Austria, and Klaas H. J. Robers, Valkenswaard, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1994, Ser. No. 213,773

Claims priority, application Austria, Apr. 1, 1993, 674/93

Int. Cl.[6] H04N *5/91;9/00;7/00;11/00*

U.S. Cl. 386—1 **16 Claims**



1. A video recorder having an electronically tunable tuner for selectively tuning to any one station of a plurality of stations, said tuner, after being tuned to one of said plurality of stations, supplying a received picture signal and a received sound signal, said video recorder having a connector to which a cable is connectable, said cable also being connectable to a connector of a television receiver, said television receiver also having a tuner for selectively tuning to any one station of a plurality of stations, said tuner in said television receiver, after being tuned to one of said plurality of stations, supplying a received picture signal and a received sound signal, said received picture signal and said received sound signal from said tuner in said television receiver being applied to the connector of said television receiver, characterized in that said video recorder comprises a comparison device connected to the tuner of the video recorder and to the connector of the video recorder for comparing at least one component of one of the received picture signal and the received sound signal supplied by tuner of the the video recorder, with a corresponding component of a corresponding signal of the received picture signal and the received sound signal supplied by the tuner of the television receiver when said video recorder is connected to said television receiver by said cable, said comparison device supplying an inequality signal in the case of inequality of the at least one component and the corresponding component, and supplying an equality signal in the case of equality of the at least one component and the corresponding component; and said video recorder comprises means, coupled to said at least one comparison device, for causing the tuner of the video recorder to successively tune to different stations when said comparison device supplies said inequality signal, and for causing the tuner of the video recorder to remain tuned to a station when said comparison device supplies said equality signal.

5,631,996

NTSC/PAL-M DISCRIMINATION CIRCUIT AND CHROMINANCE SIGNAL REPRODUCING METHOD

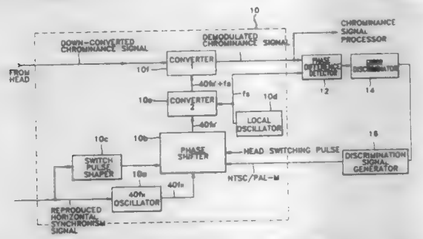
Haeng-seon Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 7, 1995, Ser. No. 568,691

Claims priority, application Rep. of Korea, Dec. 8, 1994, 94-33356

Int. Cl.[6] H04N *9/79*

U.S. Cl. 386—35 **5 Claims**



1. A broadcasting system discrimination circuit for use in a video cassette recorder compatible with at least two different broadcasting systems, said circuit comprising:

a chrominance signal demodulator for demodulating a chrominance signal from a down-converted chrominance signal reproduced by a head, in response to a broadcasting system discrimination signal and a head switching pulse, and producing as an output a demodulated chrominance signal;

a phase difference detector being connected to said chrominance signal demodulator and for detecting a phase difference between said demodulated chrominance signal and a reference chrominance signal;

an error discriminator being connected to said phase difference detector and for generating an error signal indicating the accordance between a broadcasting system which is designated by the broadcasting system discrimination signal and that of the down-converted chrominance signal, by monitoring said phase difference detected by said phase difference detector; and

a broadcasting system discrimination signal generator, connected to said error discriminator, for generating the broadcasting system discrimination signal in response to the error signal generated by said error discriminator.

5,631,997

EQUALIZER USED FOR A VTR

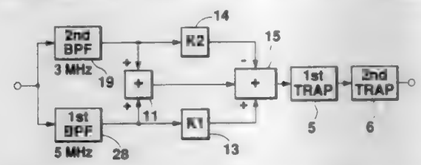
Fukuji Anzai, Gunma-ken, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 23, 1996, Ser. No. 652,751

Claims priority, application Japan, May 25, 1995, 7-126659

Int. Cl.[6] H04N *5/91;7/00;* **G11B** *5/035*

U.S. Cl. 386—46 **5 Claims**



1. An equalizer used for a VTR for reproducing a video signal which has been recorded on a magnetic tape, comprising:

a first BPF for passing a predetermined band of a video signal supplied from a head amplifier;

a second BPF for passing a predetermined band of the video signal supplied from a head amplifier;

a first adder circuit for adding the outputs of the first and second BPFs;

a first coefficient circuit for multiplying the video signal output from the first BPF by a positive coefficient;

a second coefficient circuit for multiplying the video signal output from the second BPF by a negative coefficient; and

a second adder circuit for adding the outputs of the first adding circuit and the first and second coefficient circuits.

5,631,998

METHOD FOR RECORDING AND/OR REPRODUCING DATA USING A DIGITAL VIDEO TAPE

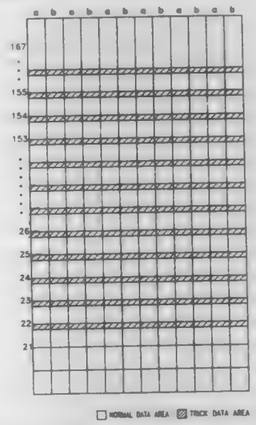
Taek-soo Han, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Oct. 10, 1995, Ser. No. 541,410

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-40131

Int. Cl.[6] H04N *5/91*

U.S. Cl. 386—68 **12 Claims**



1. A method for recording data onto a digital video tape by dividing an ATV signal into normal-play data for performing a normal-play operation and trick-play data for performing a trick-play operation, wherein said ATV signal contains frame data which are supplied in a predetermined interval and can be decoded independently, said method comprising the steps of:

dividing the data area of a sync block forming an audio sector and a video sector of each track of said digital video tape into a first area and a second area;

recording said normal-play data in said first area and said trick-play data in said second area; and

repeatedly recording identical trick-play data in sync blocks of a number of tracks, said number of tracks corresponding to twice a maximum even-multiple speed number among a plurality of even-multiple speeds, when said trick-play data is recorded in said second area.

5,631,999

ADAPTIVE COMPENSATION FOR HARD DISC DRIVE SPINDLE MOTOR MANUFACTURING TOLERANCES

Stanley H. Dinsmore, Concord, Calif., assignor to Seagate Technology Inc., Scotts Valley, Calif.

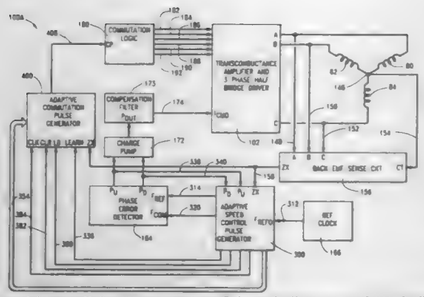
Filed Sep. 6, 1995, Ser. No. 524,342

Int. Cl.[6] H02P *5/06*

U.S. Cl. 388—805 **12 Claims**

1. A motor control circuit for providing commutation timing and speed control to an electrically commutated dc spindle motor, the spindle motor comprising a plurality of windings electrically con

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nected in parallel to a center tap of the spindle motor, the spindle motor further having a predetermined number of reference frequency periods for each mechanical revolution of the spindle motor, the motor control circuit comprising:

frequency generation means for generating a sequence of reference signals at a preselected frequency, the preselected frequency corresponding to the number of reference frequency periods of the spindle motor;

a back emf sense circuit responsive to the spindle motor, the back emf sense circuit generating a sequence of zero crossing signals over each revolution of the spindle motor, the sequence of zero crossing signals generated from voltages of the windings and the center tap, each zero crossing signal generated when the voltage of a selected winding is nominally equal to the voltage of the center tap, the sequence of zero crossing signals defining a corresponding sequence of zero crossing periods, each zero crossing period comprising the duration of time between successive zero crossing signals;

characterization means, responsive to the back emf sense circuit, for identifying systematic variations in operational speed of the spindle motor, the characterization means including:

speed control averaging means for determining an average phase difference for each zero crossing signal in the sequence of zero crossing signals, each average phase difference comprising the average of the phase difference between each zero crossing signal and a selected reference signal from the sequence of reference signals over a plurality of revolutions of the spindle motor; and

commutation timing averaging means for determining an average zero crossing period for each zero crossing period in the sequence of zero crossing periods, each average zero crossing period comprising the average of the zero crossing periods over the plurality of revolutions of the spindle motor; and

compensation means for compensating for the systematic variations in operational speed of the spindle motor, the compensation means including:

speed control compensation means, responsive to the speed control averaging means, for outputting speed control timing signals in response to the average phase differences, the speed control timing signals controlling the speed of the spindle motor; and

commutation timing compensation means, responsive to the commutation timing averaging means, for outputting commutation timing signals in response to the average zero crossing periods, the commutation timing signals controlling the commutation of the spindle motor.

5,632,000

DEVICE FOR OPTIMIZING THE SPEED CONTROL BEHAVIOR OF A SUBFRACTIONAL HORSEPOWER MOTOR

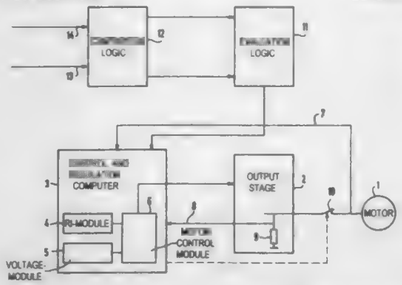
Josef Pabst, Heddesheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 4, 1995, Ser. No. 416,222

Claims priority, application Germany, Apr. 11, 1994, 44 12 413.9

Int. Cl.[6] H02P *5/00*

U.S. Cl. 388—806 **12 Claims**



1. A speed control device for a subfractional horsepower motor comprising a voltage speed regulator for regulating a speed of said motor by voltage control of said motor, said voltage speed regulator generating a first regulation signal; a current-load regulator for regulating said speed of said motor by current-load compensation, said current-load generator generating a second regulation signal, and means for selectively controlling the motor using said first regulation signal or using said second regulation signal dependent on motor data having inputs connected to the first and second regulation signals.

5,632,001

MOBILE COMMUNICATION APPARATUS HAVING RECORDING/REPRODUCING FUNCTION

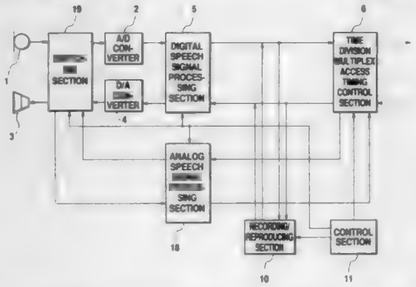
Tohru Terauchi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1994, Ser. No. 226,090

Claims priority, application Japan, Sep. 6, 1993, 5-221105

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.1 **15 Claims**



1. A mobile communication apparatus having a recording/reproducing function comprising:

(a) an A/D conversion means for converting analog speech signals into digital speech signals;

(b) a digital speech signal processing means for compressing said digital speech signals derived from said A/D conversion means and for expanding compressed digital speech data received from a base station;

(c) a D/A conversion means for converting said digital speech data expanded by said speech signal processing means into analog speech signals;

(d) a recording/reproducing means connected to said digital speech signal processing means for recording the digital speech signals compressed by said digital speech signal processing means or compressed digital speech data received from said base station and for reproducing thus recorded compressed digital speech data; and

(e) a control means connected to said digital speech signal processing means and said recording/reproducing means for controlling the recording or the reproduction by said recording/reproducing means;

(f) an analog speech processing means for processing said analog speech signals; and

(g) a switching means for selecting said analog speech processing means when transmitting and receiving said analog speech signals and for selecting said digital speech signal processing means when transmitting and receiving said digital speech data.

5,632,002

SPEECH RECOGNITION INTERFACE SYSTEM SUITABLE FOR WINDOW SYSTEMS AND SPEECH MAIL SYSTEMS

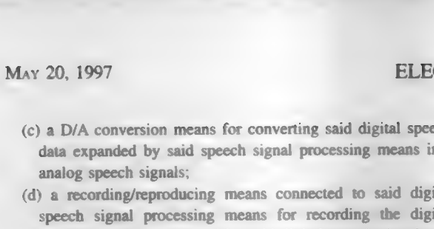
Hideki Hashimoto; Yoshifumi Nagata; Shigenobu Seto; Yoichi Takebayashi; Hideaki Shinchi, all of Kanagawa-ken, and Koji Yamaguchi, Chiba-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki-ken, Japan

Filed Dec. 28, 1993, Ser. No. 178,731

Claims priority, application Japan, Dec. 28, 1992, 4-358597; Mar. 12, 1993, 5-078920; Sep. 20, 1993, 5-256405

Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.4 **56 Claims**



1. A speech recognition interface system for enabling a speech control of a plurality of application programs executed on a computer, comprising:

speech recognition means for carrying out a speech recognition processing for a speech input made by a user to obtain a recognition result;

program management means for managing program management data indicating a speech recognition interface function required by each application program; and

message processing means for exchanging messages with said plurality of application programs in order to specify an appropriate recognition vocabulary to be used in the speech recognition processing of the speech input to the speech recognition means, and to transmit the recognition result for the speech input obtained by the speech recognition means by using the appropriate recognition vocabulary to appropriate ones of said plurality of application programs, according to the program management data managed by the program management means.

5,632,003

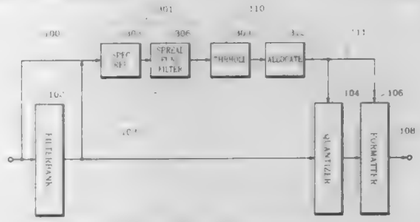
COMPUTATIONALLY EFFICIENT ADAPTIVE BIT ALLOCATION FOR CODING METHOD AND APPARATUS

Grant A. Davidson, Oakland; Craig C. Todd, Mill Valley; Mark F. Davis, Pacifica; Brian D. Link, Oakland, and Louis D. Fielder, Millbrae, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 92,269, Jul. 16, 1993. This application Nov. 1, 1993, Ser. No. 145,975

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.38 **44 Claims**



1. An encoder of an input signal comprising

subband means for generating subband signals representing frequency subbands of said input signal,

excitation means for generating a spectral representation of said input signal and for generating an excitation pattern by applying one or more infinite impulse response filters to said spectral representation,

threshold means for establishing a masking threshold in response to said excitation pattern,

allocation means for allocating respective numbers of bits to said subband signals in accordance with levels of said subband signals relative to said masking threshold,

quantization means for generating quantized information by quantizing said subband signals in accordance with said respective numbers of bits allocated to said subband signals, and

format means for assembling said quantized information into an encoded signal suitable for transmission or storage.

5,632,004

METHOD AND APPARATUS FOR ENCODING/DECODING OF BACKGROUND SOUNDS

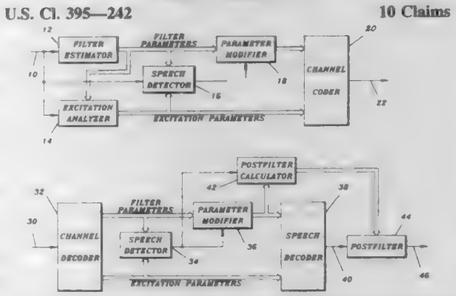
Rolf A. Bergström, Mölndal, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 28, 1994, Ser. No. 187,866

Claims priority, application Sweden, Jan. 29, 1993, 9300290

Int. Cl.[6] G10L *9/18*

U.S. Cl. 395—242 **10 Claims**



1. A method of encoding and/or decoding background sounds in a digital frame based speech encoder and/or decoder including a signal source connected to a filter, said filter being defined by a set of parameters for each frame, for reproducing the signal that is to be encoded and/or decoded, said method comprising the steps of:

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determining estimated filter parameters;

detecting whether the signal that is directed to said encoder/decoder represents primarily speech or background sounds; and

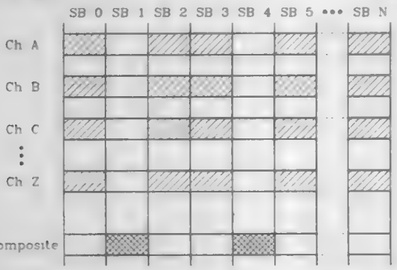
modifying when said signal directed to said encoder/decoder represents primarily background sounds, at least one estimated filter parameter by restricting the temporal variation between consecutive frames and/or the domain of said at least one estimated filter parameter.

5,632,005

ENCODER/DECODER FOR MULTIDIMENSIONAL SOUND FIELDS

Mark F. Davis, Pacifica; Craig C. Todd, Mill Valley, and Ray M. Dolby, San Francisco, all of Calif., assignors to Ray Milton Dolby, and Dolby Laboratories Licensing Corporation, both of San Francisco, Calif.

Filed Jun. 7, 1995, Ser. No. 487,725
Int. Cl.[6] G10L *5/00*
U.S. Cl. 395—2.95 **1 Claim**



1. An encoder for encoding a plurality of input signals, comprising

steering means responsive to said plurality of input signals for generating a composite signal having its frequency spectrum in a plurality of frequency bands, or

one or more individual signals and, under certain conditions, a composite signal, said one or more individual signals and said composite signal having their respective frequency spectra in one frequency band or in a plurality of frequency bands,

control means responsive to said steering means for generating a steering control signal having one or more components relating to said one frequency band of said second-recited composite signal or said plurality of frequency bands of said first or second-recited composite signal, and

formatting means for assembling said composite signal and said steering control signal into a coded signal having a form suitable for transmission or storage.

5,632,006

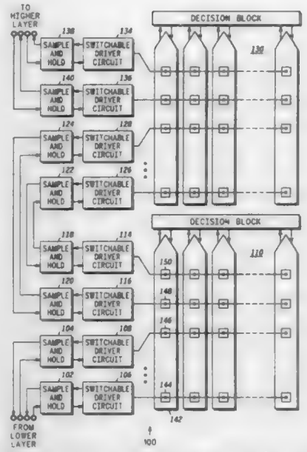
CIRCUIT AND METHOD OF ERROR CORRECTING WITH AN ARTIFICIAL NEURAL NETWORK

William M. Peterson, Chandler, and Sidney C. Garrison, III, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1992, Ser. No. 844,328
Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*
U.S. Cl. 395—24 **16 Claims**

1. A neural network, comprising:

a plurality of neurons each having first I/O terminals and second I/O terminals, said first I/O terminals respectively receiving elements of an input signal vector, said plurality of neurons each including a plurality of bi-directional synapses each with a first terminal coupled for receiving one of said elements of said input signal vector and a second terminal coupled to said second I/O terminals such that a first one of said second I/O terminals provides an output signal in response to said input signal vector; and



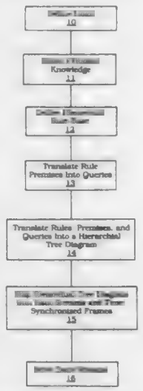
circuit means coupled to said second I/O terminals of said plurality of neurons for monitoring said output signals thereof to select at least one of said output signals of said plurality of neurons having bi-directional synapses with a closest match to said input signal vector, said circuit means providing an output signal to a second one of said second I/O terminals of said selected at least one of said plurality of neurons for processing in a reverse direction through said selected at least one of said plurality of neurons and providing an output signal vector at said first I/O terminals.

5,632,007

INTERACTIVE SYSTEM AND METHOD FOR OFFERING EXPERT BASED INTERACTIVE PROGRAMS

Michael J. Freeman, Kings Point, N.Y., assignor to ACTV, Inc., New York, N.Y.

Filed Sep. 23, 1994, Ser. No. 311,019
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—75 **10 Claims**



1. A method for offering expert based interactive programs to one or more users so that a high level of conversational responsiveness and interactivity is achieved, the method comprising:

defining a decision goal for an interactive scenario;

implementing a set of rules leading to the defined goal, the rules comprising at least one premise and a conclusion whereby the rules are related hierarchically to one another in that a conclusion of at least one of the rules is a premise of another rule;

forming queries, each query corresponding to a premise which requires a user response to determine the existence of the premise;

mapping the queries and rules into a plurality of media independent data streams to generate an interactive program, the plurality of data streams containing frames, the frames being time-synchronized between data streams and containing an information portion and a command portion;

storing the data streams in an interactive storage medium;

retrieving the plurality of data streams from the interactive storage medium; and

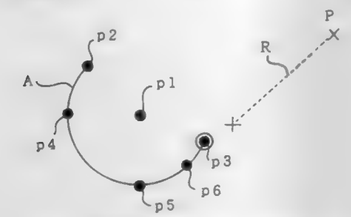
whereby the retrieved data streams offer the expert based interactive programs to the one or more users.

5,632,008

METHOD OF AND APPARATUS FOR NAVIGATION DISPLAY

Hiromi Yokoyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 299,261, Sep. 1, 1994, abandoned. This application Aug. 7, 1996, Ser. No. 693,501
Claims priority, application Japan, Mar. 8, 1994, 6-036654
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—142 **7 Claims**



1. A method of navigation display for displaying on a display screen proposed selection points of a graphic element to aid an operator to perform manual coordinate selection in an interactive CAD system, the method comprising the steps of:

(a) obtaining, from a search range setting table, a search range disposed around a cursor on the display screen of the CAD system for searching for said graphic element having at least a portion thereof contained in the search range;

(b) obtaining a present position of the cursor;

(c) identifying said graphic element which is positioned in said search range that is disposed around the present position of the cursor and obtaining an identifier thereof;

(d) based on said identifier, determining a plurality of all selection points of said graphic element, definitions of said selection points having been predetermined for each type of graphic element so as to include at least points that define the shape of the graphic element;

(e) displaying said plurality of all selection points which have been determined on the display screen with symbols distinguishable from other points displayed on the display screen;

(f) determing one of said all selection points which is closest to said cursor; and

(g) displaying the determined one of said all selection points in emphasis with a symbol distinguishable from the other selection points, thereby prompting the operator to make a selection,

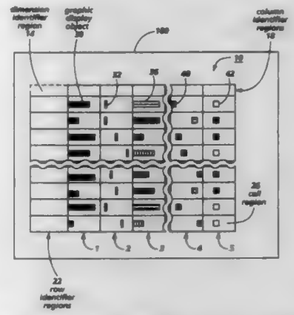
said steps (a) through (g) being repetitively carried out at predetermined intervals while the CAD system is awaiting an indication of selection from the operator.

5,632,009

METHOD AND SYSTEM FOR PRODUCING A TABLE IMAGE SHOWING INDIRECT DATA REPRESENTATIONS

Ramana B. Rao, San Francisco, and Stuart K. Card, Los Alto Hills, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 123,496, Sep. 17, 1993, abandoned. This application Mar. 5, 1996, Ser. No. 611,013
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—770 **26 Claims**



1. A method of operating a machine to present a graphical view of data in a tabular format; the machine including:

output circuitry connected to a display having a display area for presenting images;

a processor connected for providing images to the output circuitry; and

memory for storing data; the data stored in the memory including instruction data indicating instructions the processor executes;

the processor being further connected for accessing the data stored in the memory;

the method comprising:

operating the processor to obtain a plurality of source data items included in an n-dimensional (nD) data array stored in the memory; respective ones of the plurality of source data items in a first dimension of the nD data array each being referred to as a case data item and each indicating a set of source data items in a second dimension of the nD data array; each source data item included in the set of source data items in the second dimension being referred to as a variable data item and indicating variable information about the case data item; the set of variable data items for each case data item being identically ordered with respect to the variable information provided about the case data item such that a first variable data item for a first case data item indicates first variable information about the first case data item and a first variable data item for a second case data item indicates first variable information about the second case data item; each of the plurality of first variable data items indicated by respective ones of the case data items being referred to as a first column data item; each source data item stored in the nD array having a source data value indicating a direct representation of information about the respective source data item;

operating the processor to determine a graphical display object for each respective first column data item; each graphical display object representing an indirect graphical representation of the source data value indicated by the respective first column data item; each graphical display object having display features in common with each other graphical display object representing a first column data item; each graphical display object further having a display feature, referred to as a value display feature, representing the source data value of a respective first column data item; a value display feature of a first graphical display object visually distinguishing the first graphical display object from a second graphical display

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object representing a respective first column data item having a different source data value;

operating the processor to produce image definition data defining an image, referred to as a table image, for presentation in the display area; the table image defining a two-dimensional (2D) region in the display area for displaying the source data values of the plurality of source data items included in the nD array; the table image including a plurality of cell regions arranged in a two-dimensional (2D) grid of horizontally-arranged cell regions referred to as rows and vertically-arranged cell regions referred to as columns; a number of rows in the 2D grid being determined according to the respective case data items in the first dimension of the nD data array; a number of columns in the 2D grid being determined according to a number of the variable data items included in each set of variable data items in the second dimension of the nD data array; each cell region in the table image being paired with a respective source data item in the nD data array;

operating the processor to produce image definition data defining each graphical display object representing a respective one of the plurality of first column data items; each graphical display object having size dimensions suitable for presentation in a respective one of the cell regions in a first column of the table image;

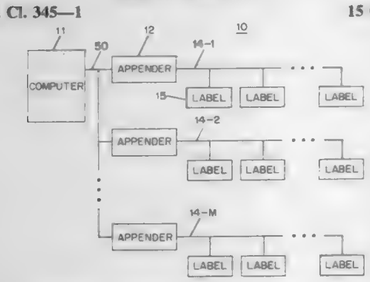
operating the processor to present the table image in the display area and to present the graphical display objects in respective ones of the cell regions in the first column of the table image; the table image showing in the first column indirect representations of the source data values for respectively paired first column data items; the graphical display objects shown in the first column being visually similar as a result of having display features in common with each other graphical display object; the graphical display objects shown in the first column being visually distinguishable from one another as a result of each having a value display feature representing the source data value of the respective first column data item represented by the graphical display object.

5,632,010

TECHNIQUE FOR COMMUNICATING WITH ELECTRONIC LABELS IN AN ELECTRONIC PRICE DISPLAY SYSTEM

George T. Briechle, New Canaan, and David H. Lubowe, Westport, both of Conn., assignors to Electronic Retailing Systems, Inc.

Filed Dec. 22, 1992, Ser. No. 995,048
Int. Cl.° G06F *15/16*
U.S. Cl. 345—1 **15 Claims**



1. A system for displaying information in a store containing merchandise comprising:

control means comprising means for providing messages each including an address, data and an indicator;

a multiplicity of electronic displays;

rails disposed among merchandise in the store, each rail communicatively coupled with the control means, each rail disposed to provide mechanical coupling and communicative coupling with one or more of the electronic displays, each display having a respective address and comprising:

a screen;

at least one memory array comprising a plurality of memory elements, each memory element storing display data;

means operative for reading the memory elements in a predetermined order;

means for displaying on said screen information based on the display data stored in the memory elements read by the reading means;

means for receiving messages provided by the control means;

means for accepting the received messages whose addresses are identical to said respective address;

means for updating the memory elements with data of the accepted messages; and

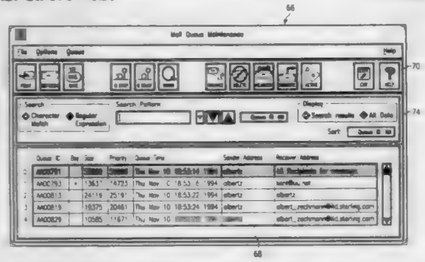
means responsive to the indicator for operating the reading means to stop reading the memory elements when one or more of said memory elements are updated.

5,632,011

ELECTRONIC MAIL MANAGEMENT SYSTEM FOR OPERATION ON A HOST COMPUTER SYSTEM

Kent B. Landfield, Papillion, and Albert J. Zechmann, Omaha, both of Nebr., assignors to Sterling Commerce, Inc., Dallas, Tex.

Filed May 22, 1995, Ser. No. 445,855
Int. Cl.° G06F *17/00*
U.S. Cl. 395—326 **8 Claims**



1. An electronic mail management system for operation on a host computer system including a message queue storage, the management system comprising:

a graphical user interface operable to access the message queue storage facility and to display information associated with each message present in the message queue storage facility;

a mail command region displayed within the graphical user interface and operable to receive commands operable to manipulate selected messages within the message queue storage facility, the mail command region comprising a queue active command operable when activated to display the status of all processes operating in the host computer system that are presently attempting to send/receive messages present within the message queue storage facility; and

a queue command region displayed within the graphical user interface operable to receive commands affecting the operation of the message queue storage facility.

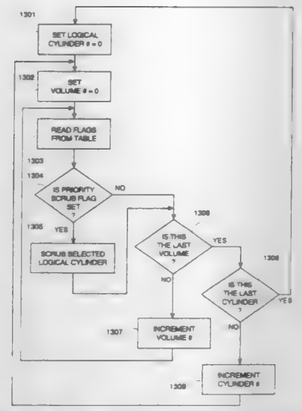
5,632,012

DISK SCRUBBING SYSTEM

Jay S. Belsan, Nederland; Alan R. Permut, Louisville, and George A. Rudeseal, Boulder, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation of Ser. No. 384,446, Feb. 2, 1995, abandoned, which is a continuation of Ser. No. 157,895, Nov. 24, 1993.
This application Mar. 6, 1996, Ser. No. 611,501
Int. Cl.° G06F *11/10*
U.S. Cl. 395—182.04 **36 Claims**

1. A data storage subsystem that receives data from at least one connected data processor and stores said data on a plurality of disk



drives divided into a plurality of logical partitions, said logical partitions comprising dedicated partitions currently storing data and free partitions available to store data, said data storage subsystem comprising:

a memory controller independent of said plurality of disk drives comprising means for identifying said dedicated and said free partitions;

means for reading said memory controller to determine the identity of said dedicated partitions; and

means responsive to said reading of said memory controller for periodically verifying the integrity of data currently stored in each of said identified dedicated partitions, said means for periodically verifying comprising:

means for reading data in each of said identified dedicated partitions;

means responsive to said reading of data from each said identified dedicated partition for generating error check information from said read data;

means responsive to said generation of said error check information for detecting errors in data in each said identified dedicated partition; and

means responsive to said detection of errors for correcting said data containing errors.

5,632,013

MEMORY AND SYSTEM FOR RECOVERY/RESTORATION OF DATA USING A MEMORY CONTROLLER

Matthew A. Krygowski, Hopewell Junction, and Arthur J. Sutton, Cold Spring, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 484,440, Jun. 7, 1995, abandoned.
This application Jul. 11, 1996, Ser. No. 677,161
Int. Cl.° G06F *11/00*
U.S. Cl. 395—182.05 **19 Claims**

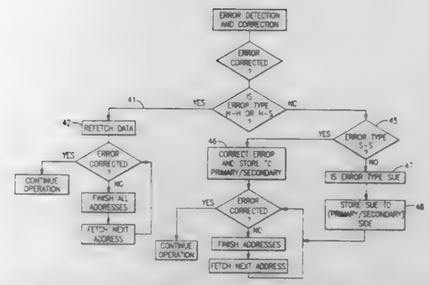
1. In a multiprocessor system with at least one memory unit, having at least two memory controllers and a plurality of processors, each of said processors being defined as a requestor, a method of allowing correction of data errors, comprising the steps of:

designating separate portions of said memory unit so that each of said memory controllers has exclusive control of at least one of said separate memory portions for its use;

storing physical addresses of each of said memory portions in a logic array in said memory unit;

designating one memory controller as primary and allowing said primary memory controller to perform any requested fetch or store command issued by said requestors;

each of said memory controllers sending a response to said requestor upon completion of said fetch and store commands by said primary memory controller;



said requestor detecting an error condition if said requestor does not receive said signal from each of said memory controllers;

said memory controllers determining the type of any said error detected; and

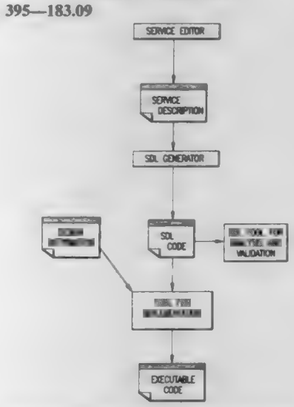
said requestor copying data into said memory portion of said memory controller detecting the error from said other memory controller's storage in order to correct said data causing an error condition.

5,632,014

METHOD AND ARRANGEMENT FOR TESTING SERVICES IN A TELECOMMUNICATIONS SYSTEM

Anders Ek, Malmö, and Lennart Månsson, Hjärup, both of Sweden, assignors to Telia AB, Farsta, Sweden

PCT No. PCT/SE93/00952, § 371 Date Aug. 3, 1995, § 102(e) Date Aug. 3, 1995, PCT Pub. No. WO94/15429, PCT Pub. Date Jul. 7, 1994
PCT Filed Nov. 10, 1993, Ser. No. 454,153
Claims priority, application Sweden, Dec. 18, 1992, 9203817
Int. Cl.° G06F *11/00*
U.S. Cl. 395—183.09 **11 Claims**



1. An arrangement configured to analyze services in a telecommunications system, comprising:

a specification language generator which translates a base system specification and a new service specification into respective descriptions in a specification language;

a linking element which links together the base system specification and the new service descriptions to form a system description of a total resultant system in the specification language; and

a set of analysis aids which analyze the system description.

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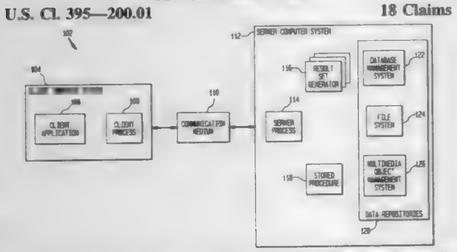
5,632,015
COMPUTER PROGRAM PRODUCT TO EFFICIENTLY PROCESS DIVERSE RESULT SETS RETURNED BY A STORED PROCEDURE

Melvin R. Zimowski, San Jose; Curt L. Cotner, Gilroy, both of Calif., and Peter K. L. Shum, Richmond Hill, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 417,863, Apr. 6, 1995. This application Jun. 7, 1995, Ser. No. 474,111

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—200.01 **18 Claims**



1. A computer program product comprising a computer readable medium having computer program logic recorded thereon for enabling a processor in a server computer system to process diverse result sets, said computer program logic comprising:

client process execution request receiving means for enabling said processor to receive from a client process in a client computer system a client process execution request identifying a stored procedure and specifying constraints on the quantity of response data that said client process is capable of handling;

stored procedure invoking means for enabling said processor to invoke said stored procedure identified by said client process execution request, execution of said stored procedure resulting in the generation of answer set data for a plurality of query result sets;

answer set data obtaining means for enabling said processor to asynchronously obtain answer set data for X of said query result sets, where X is defined by said constraints;

initial response generating means for enabling said processor to generate an initial response containing, for each of said X query result sets, an amount of said obtained answer set data consistent with said constraints; and

initial response transferring means for enabling said processor to transfer said initial response from said server computer system to said client process in said client computer system.

5,632,016
SYSTEM FOR REFORMATTING A RESPONSE PACKET WITH SPEED CODE FROM A SOURCE PACKET USING DMA ENGINE TO RETRIEVE COUNT FIELD AND ADDRESS FROM SOURCE PACKET

Gary B. Hoch, Coral Springs; Timothy V. Lee, Boca Raton; Rex E. McCrary, Boca Raton; Stephanie P. Payne, Boca Raton; Daniel Petkevich, Ft. Lauderdale, and Hai V. Pham, Margate, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

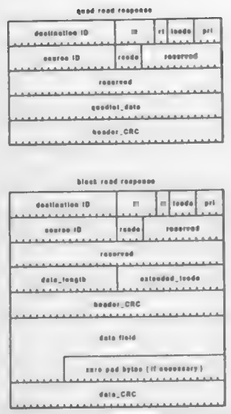
Filed Sep. 27, 1994, Ser. No. 313,490

Int. Cl.[6] G06F *13/14;13/28*

U.S. Cl. 395—200.02 **6 Claims**

1. In a computer system comprising a serial bus operating at a plurality of initially negotiated transmission rates for sending formatted data packets between nodes on said network bus, a method of generating a read response packet upon receipt of a read request packet by a node destination from a node source, the method comprising the steps of:

upon receipt of said read request packet, reformatting a formatted source identifier within said packet to be a destination ID in a reformatted packet;



reformatting a formatted destination ID in said read request packet to be a source identifier in said reformatted packet;

transferring additional packet information from said received packet to said reformatted packet, which step further comprises the steps of:

retrieving said requested data from said destination node by using an address in said read request packet for automatically retrieving said data via a direct memory access engine at said node and using a count field in said read request packet for automatically retrieving said data via said direct memory access engine;

retrieving a speed code from said initially negotiated transmission rate;

adding said speed code to said reformatted packet for allowing said reformatted packet to be transmitted at the same speed as said received packet; and

attaching said requested data to said reformatted packet for transmitting to said source node.

5,632,017
TELECONTROLLABLE COMMUNICATION SYSTEM HAVING A REMOTE TRANSMISSION MODULE

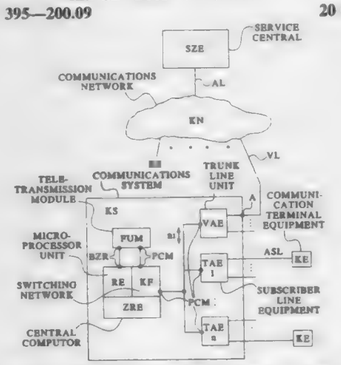
Josef Klein, Dietramszell, and Klaus Stinner, Rohrbach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 24, 1994, Ser. No. 265,141

Claims priority, application Germany, Jun. 28, 1993, 43 21 481.9

Int. Cl.[6] G06F *15/16;15/163*

U.S. Cl. 395—200.09 **20 Claims**



1. A remotecontrollable communication system having a central computer means to which at least one of subscriber line equipment that is connectable to communication terminal equipment and at least one trunk line unit are connected via at least one PCM-oriented system bus interface and, for an information communication for remotecontrol of the communication system, said communication system being connected to a service central via a communication network, comprising:

a remotetransmission module in the communication system for information communication with the service central via a communication network, said remote transmission module being settable to an information transmission specifically associated to the communication network and signaling;

a first computer/bus interface in said remotetransmission module and connected to a second computer/bus interface in the central computer means, useful information and control information being transmitted according to a predetermined protocol via said first and second computer/bus interfaces; and

a first PCM-oriented system/bus interface in said remotetransmission module, said first PCM-oriented system/bus interface being connected to a second PCM-oriented system/bus interface in the central computer means, the useful information and signaling information being communicated via said first and second PCM-oriented system/bus interface.

5,632,018
ELECTRONIC MAIL SYSTEM

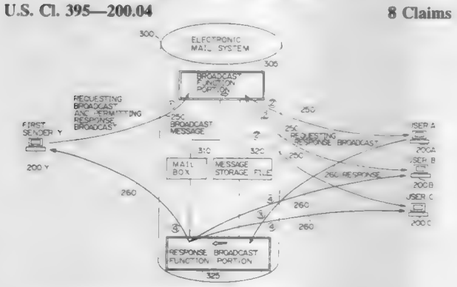
Keiichi Otorii, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 13, 1993, Ser. No. 120,966

Claims priority, application Japan, Jan. 18, 1993, 5-006187

Int. Cl.[6] G06F *13/00;13/38*

U.S. Cl. 395—200.04 **8 Claims**



1. An electronic mail system comprising:

broadcasting means for sending a message with broadcast addresses received from a first user to users with said broadcast addresses;

response receiving means for receiving a response to said message from a second user who received said message from said broadcasting means;

response broadcast function means for sending said broadcast addresses, excluding a broadcast address of said second user, to said second user and for receiving information of a third user selected from among said broadcast addresses by said second user, said second user specifying said third user arbitrarily among users corresponding to said broadcast addresses sent from said response broadcast function means; and

response sending means for sending to said first user and said third user said response received by said response receiving means.

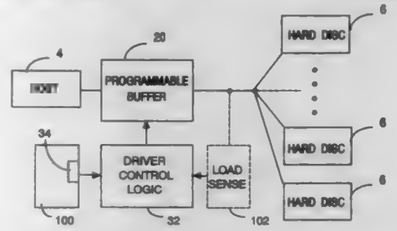
5,632,019
OUTPUT BUFFER WITH DIGITALLY CONTROLLED POWER HANDLING CHARACTERISTICS

John C. Masiewicz, San Jose, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 15, 1994, Ser. No. 276,091

Int. Cl.[6] G06F *13/10*

U.S. Cl. 395—250 **20 Claims**



1. An output buffer with programmable output characteristics for interfacing with a hard disc drive unit, comprising:

a first enableable unit buffer;

a second enableable unit buffer;

wherein each said enableable unit buffer has an input node, an output node, and an enabling node, each said enableable unit buffer input node being coupled together to form an output buffer input node that is coupleable to a data input signal, and each said unit enableable buffer output node being coupled together to form an output buffer output node providing a data output signal coupleable to a load impedance;

wherein each said enableable unit buffer can source and sink at least a portion of output current sourced and sunk by said output buffer; and

computer implemented program means for providing a first enable control signal, coupled to the enabling node on said first enableable unit buffer, and further providing a second enable control signal coupled to the enabling node on said second enableable unit buffer;

wherein said program means causes chosen combinations of said first enableable unit buffer and said second enableable unit buffer to be enabled to vary at least one output characteristic of said output buffer selected from the group consisting of (a) minimizing operating power consumed by said output buffer, (b) reducing current spiking associated with said output buffer, (c) reducing noise radiation associated with said output buffer, (d) reducing voltage overshoot/undershoot associated with said data output signal provided by said output buffer, (e) reducing crosstalk associated with said output buffer, and (f) improving transmission line characteristics associated with said output buffer.

5,632,020
SYSTEM FOR DOCKING A PORTABLE COMPUTER TO A HOST COMPUTER WITHOUT SUSPENDING PROCESSOR OPERATION BY A DOCKING AGENT DRIVING THE BUS INACTIVE DURING DOCKING

Douglas D. Gephardt, Austin, and Scott Swanstrom, Cedar Park, both of Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

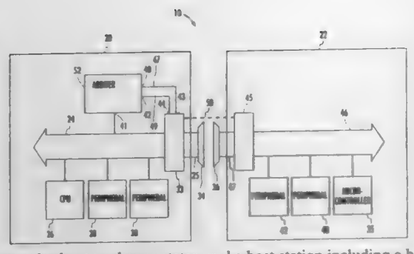
Continuation-in-part of Ser. No. 217,951, Mar. 25, 1994, abandoned. This application Jun. 9, 1994, Ser. No. 255,663

Int. Cl.[6] G06F *13/14;13/20;13/36;13/40*

U.S. Cl. 395—283 **24 Claims**

1. A portable computer for use in a dockable computer system capable of assuming at least two states, a docked state and undocked state, said dockable computer system including a notice circuit for providing a notice signal when said dockable computer

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system is about to change states, and a host station including a host bus communicating with a host connector, said portable computer comprising:

a central processing unit;

a computer connector;

a connector bus coupled to said computer connector;

a computer bus communicating to said computer connector via said connector bus, said central processing unit coupled to said computer bus, said host connector physically coupled with said computer connector when said dockable computer system is in said docked state, said host connector being physically separate from said computer connector when said dockable computer system is in said undocked state;

an in-line docking agent communicating with said computer bus, said docking agent including a QUIET REQUEST output to provide a QUIET REQUEST signal, said docking agent being coupled between said host bus and said computer bus when said system is in the docked state, said docking agent being coupled between said connector bus and said computer bus, said docking agent being capable of providing buffering or driving capabilities for said computer bus; and

a bus arbiter receiving said QUIET REQUEST signal, said bus arbiter granting ownership of said computer bus to said docking agent in response to said QUIET REQUEST signal, wherein said docking agent quiets said computer bus and said connector bus by ensuring that there are no active transfers occurring on said computer bus and said connector bus when said bus arbiter grants ownership of said computer bus to said docking agent, wherein said portable computer remains powered on and said central processing unit remains operational while said portable computer changes between said two states.

5,632,021

COMPUTER SYSTEM WITH CASCADED PERIPHERAL COMPONENT INTERCONNECT (PCI) BUSES

William E. Jennings, Cary, N.C.; Roland G. Chan, Mountain View, and John L. Wong, Belmont, both of Calif., assignors to Cisco Systems Inc., San Jose, Calif.

Filed Oct. 25, 1995, Ser. No. 547,840

Int. Cl.[6] G06F *13/00;13/38;13/42*

U.S. Cl. 395—309 **14 Claims**

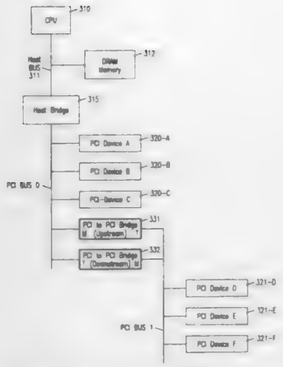
1. A system including

a primary Peripheral Component Interconnect (PCI) bus,

a secondary PCI bus,

a first PCI to PCI bridge connecting said primary PCI bus to said secondary PCI bus, said first PCI to PCI bridge configured to only respond as a master on said primary bus, and as a target on said secondary bus, and

a second PCI to PCI bridge connecting said primary PCI bus to said secondary PCI bus, said second PCI to PCI bridge configured to only respond as a master on said secondary bus and as a target on said primary bus,



whereby said system avoids a livelock situation with respect to transmissions between said primary and said secondary buses.

5,632,022

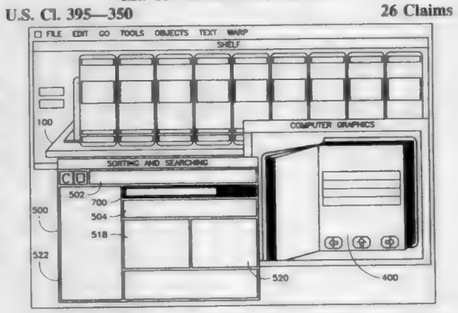
ENCYCLOPEDIA OF SOFTWARE COMPONENTS

Lloyd V. Warren, Pasadena, and Brian C. Beckman, Sunland, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 13, 1991, Ser. No. 792,501

Int. Cl.[6] G06F *15/00;3/00;9/45*

U.S. Cl. 395—350 **26 Claims**



1. A method of facilitating intelligent browsing through a collection of reusable software components using a computer having a video monitor and user input means such as a keyboard or a mouse for transmitting user selections to said computer, said method comprising:

presenting on said monitor a picture of encyclopedia volumes with respective visible labels referring to types of software, in accordance with a metaphor in which each volume includes a page having a list of general topics under the software type of said volume and pages having lists of software components for each one of said general topics;

altering said picture to open one of said volumes in response to an initial user selection specifying said one volume to display on said monitor a picture of the page thereof having said list of general topics and altering said picture to display the page thereof having a list of software components under one of said general topics in response to a next user selection specifying said one general topic; and

presenting on said monitor a picture of a set of different informative plate means for depicting different types of information about one of said software components in response to a further user selection specifying said one component, wherein the set of different informative plate means comprises,

a first plate comprising a graphic display illustrating the operation of said one software component;

a second plate comprising a set of software language statements comprising said software component;

a third plate comprising a text statement describing in detail what said software component is, what said software component does, and what said software component is used for.

5,632,023

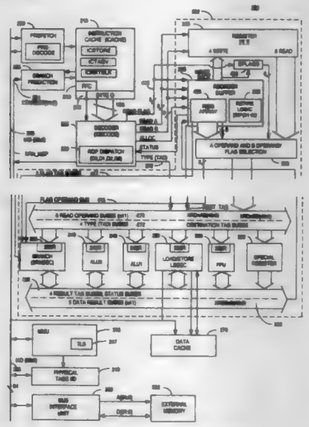
SUPERSCALAR MICROPROCESSOR INCLUDING FLAG OPERAND RENAMING AND FORWARDING APPARATUS

Scott A. White; David S. Christie, and Michael D. Goddard, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 1, 1994, Ser. No. 252,029

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—394 **50 Claims**



1. A superscalar microprocessor comprising:

a decoder for decoding instructions contained in an instruction stream and translating decoded instructions into ROPs;

a reorder buffer, coupled to the decoder, for storing the speculative state of the microprocessor;

a register file, coupled to the reorder buffer, for storing the real state of the microprocessor;

the reorder buffer including a reorder buffer array having a plurality of storage locations which include an integer result portion for storing a speculative integer result and a flag result portion for storing speculative flag information associated with the integer result, the flag result portion and the integer result portion being concatenated to form a floating point storage location which accommodates storage of floating point results which are wider than the integer results; and

a real flags register, coupled to the reorder buffer, for storing flag information which is retired from the reorder buffer.

5,632,024

MICROCOMPUTER EXECUTING COMPRESSED PROGRAM AND GENERATING COMPRESSED BRANCH ADDRESSES

Hiroshi Yajima, Kodaira, and Yugo Kashiwagi, Tokorozawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

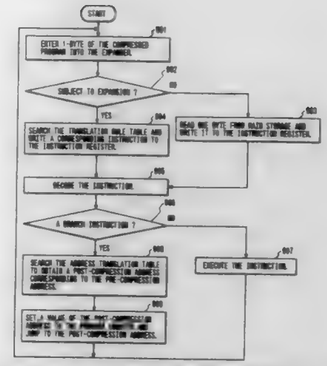
Continuation of Ser. No. 250,065, May 27, 1994, abandoned. This application Aug. 15, 1995, Ser. No. 515,398

Claims priority, application Japan, Jun. 8, 1993, 5-164079

Int. Cl.[6] G06F *9/42*

U.S. Cl. 395—381 **27 Claims**

1. A method of executing compressed program data in a microcomputer, the compressed program data provided by compressing a program having a plurality of instructions and stored in a memory, the compressed program data addressable by a plurality of addresses, comprising the steps of:



fetching data from a predetermined address in said compressed program data stored in the memory, wherein the predetermined address is provided by a program counter;

expanding said fetched data;

decoding said expanded data;

determining whether the decoding indicates a change in compressed program execution sequence;

executing an operation in accordance with the result of said decoding;

generating an address for said compressed data program indicating the next data of said compressed data program to be fetched by incrementing the predetermined address if the decoding does not indicate a change in the compressed program execution sequence; and

generating a branch address for said compressed data program to indicate a destination address in said compressed data program by extracting a compressed branch address from a compressed address translation table if the decoding indicates a change in the compressed program execution sequence.

5,632,025

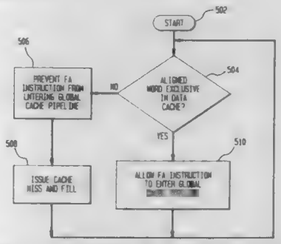
METHOD FOR PREVENTING MULTI-LEVEL CACHE SYSTEM DEADLOCK IN A MULTI-PROCESSOR SYSTEM

Joseph P. Bratt, San Jose; John Brennan, Mountainview; Peter Y. T. Hsu, Freemont; William A. Huffman, Los Gatos; Joseph T. Scanlon, Sunnyvale, all of Calif., and Steve Ciavaglia, Williston, Vt., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Division of Ser. No. 167,005, Dec. 15, 1993, Pat. No. 5,572,704. This application Aug. 14, 1996, Ser. No. 696,788

Int. Cl.[6] G06F *12/14*

U.S. Cl. 395—479 **3 Claims**



1. A method of controlling the execution of cache memory access instructions in a computer system comprising a plurality of processing units each having at least one cache, wherein multiprocessor cache coherency is maintained in the computer system,

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at least one of the processing units including a split-level cache arrangement comprising a first level cache coupled to a second level cache, the first level cache being byte writable and the second level cache being word writable, the split-level cache arrangement supporting an integer store operation which causes data to be stored in both the first level cache and the second level cache, wherein during execution of an integer store operation one or more bytes are read from the first level cache and written to the second level cache along with write data of the integer store operation such that data of word length is written to the second level cache as a result of the integer store operation, such execution of an integer store operation being performed atomically, the method comprising the steps of:

(a) determining whether an aligned multi-byte word in which the write data of an integer store operation is contained is exclusive in the first level cache; and

(b) if it is determined that the aligned word is not exclusive in the first level cache, then preventing the integer store operation from entering a pipeline of the second level cache, and initiating a cache miss and fill operation to cause the aligned word to be exclusive in the first level cache.

wherein interventions to the second level cache are not permitted while an integer store operation is in the second level cache pipeline.

5,632,026

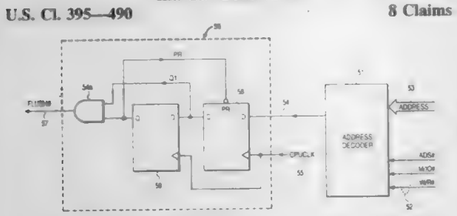
SYSTEM AND METHOD FOR MANAGING THE ROUTINE EXECUTION IN A COMPUTER SYSTEM

Te-Chih Chuang, Maio-Lee Shyuan, Taiwan, assignor to Acer Incorporated, Taiwan

Continuation of Ser. No. 226,512, Dec. 6, 1993, abandoned, which is a continuation of Ser. No. 689,331, Apr. 22, 1991, abandoned. This application Feb. 28, 1995, Ser. No. 396,380

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—490 **8 Claims**



1. A system for caching firmware stored within a ROM, comprising:

a shadow processing device for copying said firmware stored within said ROM to a shadow region of a system memory device;

a cache RAM coupled to said system memory device for storing a portion of said copied firmware, which was stored within said shadow region, for subsequent access therefrom; and

a flush device coupled to said cache RAM, said flush device identifying a write request having an address corresponding to that of said shadow region and generating a flush signal for flushing said cache RAM in response to said write request;

wherein said flush device comprises

an address decoder which has as inputs an address state signal, an "M/IO" signal for distinguishing between memory and input/output operations, and an address signal, said address decoder generating a decoding signal which is active whenever an attempt is made to write into said shadow region, and

a signal adjustment device which has as inputs said decoding signal and a CPU clock signal, said signal adjustment device generating a flush signal that matches timing specifications of a cache control device, for flushing said portion of said copied firmware in said cache RAM; and

wherein said signal adjustment device includes a first flip-flop whose input is said decoding signal, a second flip-flop whose input is an output of said first flip-flop, and an AND gate whose inputs are said output of said first flip-flop and an output of said second flip-flop, said AND gate producing as its output said flush signal.

5,632,027

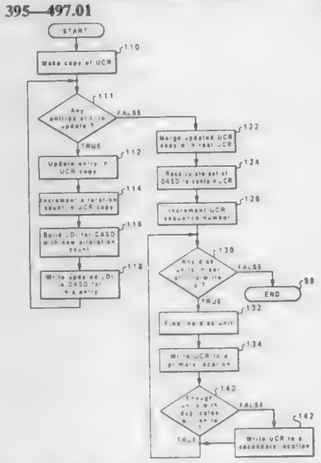
METHOD AND SYSTEM FOR MASS STORAGE DEVICE CONFIGURATION MANAGEMENT

Dennis R. Martin, Rochester, and Michael J. McDermott, Oronoco, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1995, Ser. No. 528,287

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—497.01 **12 Claims**



1. A data processing system which allows mass storage device configuration records to be updated during a configuration change when not all members of a configured set are operational, comprises:

a unit configuration record stored in a system mass storage device, wherein said unit configuration record is unique to said data processing system, said unit configuration record including a configuration identification, a sequence number and an alteration count corresponding to each mass storage device unit within said data processing system;

a logical device identifier stored in each mass storage unit for said data processing system, wherein said logical device identifier is unique to each mass storage device unit, said logical device identifier including said configuration identification, a unit number and said alteration count;

means for creating a temporary copy of said unit configuration record;

means for determining whether or not an update of said unit configuration record is necessary;

means for updating an entry of said temporary copy of said unit configuration record, incrementing said alteration count in said temporary copy of said unit configuration record, building a new logical device identifier with said alteration count, writing said new logical device identifier to a mass storage device that requires update and returning to said determining step, in response to a determination that an update of said unit configuration record is necessary; and

means for incrementing said sequence number in said temporary copy of said unit configuration record, merging said temporary copy of said unit configuration record with a functioning copy of said unit configuration record to form a merged copy of said unit configuration record and writing said merged copy of said unit configuration record to said system mass storage device, in response to a determination that an update of said unit configuration record is not necessary.

5,632,028

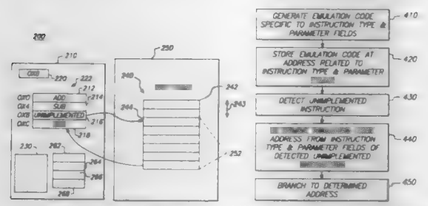
HARDWARE SUPPORT FOR FAST SOFTWARE EMULATION OF UNIMPLEMENTED INSTRUCTIONS

Shalesh Thusoo, Milpitas; Farnad Sajjadian, Sunnyvale; Jaspal Kohli, Sunnyvale, and Niteen A. Patkar, Sunnyvale, all of Calif., assignors to HaL Computer Systems, Inc., Campbell, Calif.

Filed Mar. 3, 1995, Ser. No. 397,911

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—500 **6 Claims**



1. A method for emulating an unimplemented instruction comprising the steps of:

generating a code sequence for emulating the unimplemented instruction which is specific to an instruction-type field, a source field, and a destination field of the unimplemented instruction;

forming an emulation code table having a base address in memory;

forming an offset from the base address with a parameter field of the unimplemented instruction;

storing the code sequence in the emulation code table at a memory address that comprises the combination of the base address and the offset;

when the unimplemented instruction is detected, determining the memory address of the code sequence from the instruction-type field, source field, and destination field;

storing an immediate field of the instruction code in a register accessible to the code sequence; and

transferring control to the memory address of the code sequence in the emulation code table to emulate the unimplemented instruction.

5,632,029

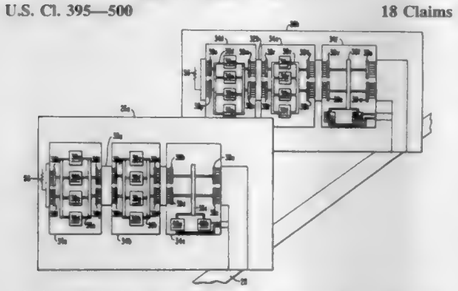
MULTI-SEGMENTED BUS AND METHOD OF OPERATION

Richard H. Bruce, Los Altos; Jean Gastinel, Palo Alto; William F. Gunning, Los Altos Hills, and Michael Overton, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 24,877, Mar. 1, 1993, which is a continuation of Ser. No. 490,113, Mar. 6, 1990, abandoned. This application May 23, 1995, Ser. No. 449,398

Int. Cl.[6] G06F *9/38;13/14*

U.S. Cl. 395—500 **18 Claims**



1. A method of segmented shared bus communication comprising:

providing at least a first-level bus segment, at least first and second second-level bus segments, and a third-level bus segment, wherein two of the first-level, first second-level, and third level bus segments have differing electrical characteristics;

providing a first-level interface chip for connecting said first-level bus segment with said first second-level bus segment;

providing at least first and second second-level interface chips for connecting said first and second second-level bus segments, respectively, with said third-level bus segment;

transmitting data over said first-level bus segment to said first-level interface chip and holding said data in said first-level interface chip, said transmitting and holding occurring during a first bus cycle having a first period;

receiving said data from said first-level interface chip on said first second-level bus segment, transmitting said data over said first second-level bus segment to said first second-level interface chip and holding said data in said first second-level interface chip, said receiving, transmitting and holding occurring during a second bus cycle having a second period substantially equal to said first period; and

receiving said data from said first second-level interface chip on said third-level bus segment, transmitting said data over said third-level bus segment and holding said data in said second second-level interface chip, said receiving, transmitting and holding occurring during a third bus cycle having a third period substantially equal to said first period.

5,632,030

DISPLAY CONTROL SYSTEM CAPABLE OF PROCESSING A PLURALITY OF CONTINUOUS DISPLAY UPDATING COMMAND SIMULTANEOUSLY

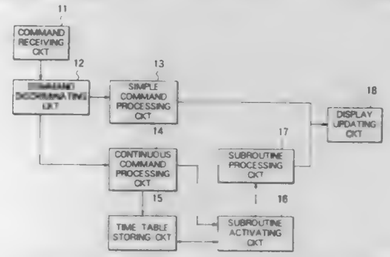
Hajime Takano, and Hiroshi Matsuura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,680

Claims priority, application Japan, Aug. 4, 1994, 6-182685

Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—522 **8 Claims**



1. A display control system for performing a screen display, comprising:

command receiving means for receiving a display updating command from an application software to produce a received display updating command;

command discriminating means connected to said command receiving means for determining whether said received display updating command is a simple command requiring a simple display updating process or a continuous command requiring a continuous display updating process;

simple command processing means connected to said command discriminating means for executing a screen updating process in response to said simple command;

continuous command processing means connected to said command discriminating means and responsive to said continuous command for producing a display processing sequence defining a processing procedure for updating the screen display as required by said continuous command;

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time table storing means connected to said continuous command processing means for storing a time table to be written with said display processing sequence;

subroutine activating means connected to said time table storing means and periodically activated for looking into said time table and activating a subroutine to be activated at that time point;

subroutine processing means connected to said subroutine activating means for executing said subroutine; and

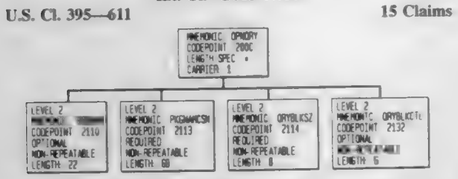
display updating means connected to said simple command processing means, said subroutine processing means, and said the screen display for reflecting a process result of said simple command processing means or said subroutine processing means on said screen display.

5,632,031

METHOD AND MEANS FOR ENCODING STORING AND RETRIEVING HIERARCHICAL DATA PROCESSING INFORMATION FOR A COMPUTER SYSTEM

T. Dora Velissaropoulos, Toronto, and Peter K. Shum, Richmond Hill, both of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1992, Ser. No. 853,062
Claims priority, application Canada, Mar. 28, 1991, 2039365
Int. Cl.° G06F *17/30*
U.S. Cl. 395—611 **15 Claims**



1. A data transmission dictionary, stored in a memory of a computer system for encoding, storing, or retrieving hierarchically related data transmission information comprising:

a plurality of computer searchable definition trees;

each said tree representing a compacted request command, a compacted reply command, or a compacted object command,

each said tree having a root node identifying a specific request command, reply command, or object command,

each said tree having one or more internal or terminal descent nodes, each of said internal or terminal descent nodes representing components of the definition of one of said trees,

wherein each of said trees is a linear, depth-first representation of said root node and the one or more internal or terminal descent nodes associated therewith,

wherein each said tree is used to generate a specific request command, a specific reply command, or a specific object command therefrom, the generated command representing a data stream of information.

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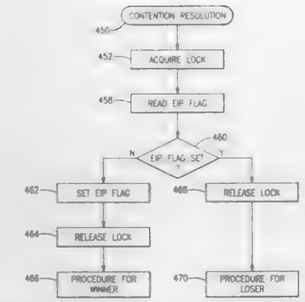
CROSS ADDRESS SPACE THREAD CONTROL IN A MULTITHREADED ENVIRONMENT

Donald F. Ault, Hyde Park; Ernest S. Bender; Jon K. Franks, both of Saugerties, and Steven Walkowiak, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1994, Ser. No. 192,929
Int. Cl.° G06F *9/44;11/00*
U.S. Cl. 395—670 **6 Claims**

1. In a computer system having an application comprising a plurality of threads executing concurrently in a common address space, a method of handling the occurrence of a new event on a first one of said threads while a previous event on a second one of said threads is currently being processed, comprising the steps of:

(a) defining a flag indicating whether a previous event on one of said threads is currently being processed;



(b) defining a deferred event queue containing an entry for each event that cannot be processed immediately, said entry identifying the thread on which a deferred event occurred; and

(c) having said first one of said threads, in response to the occurrence of a new event on said thread:

(1) test said flag to determine whether a previous event is currently being processed;

(2) if said flag indicates that a previous event is not being processed, set said flag and process the new event; and

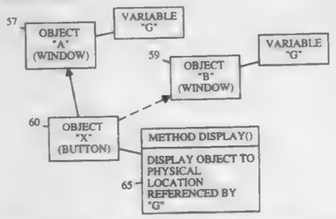
(3) if said flag indicates that a previous event is being processed, add the new event to said queue and suspend its own execution without processing said new event.

5,632,033

VARIABLE RESOLUTION METHOD AND ARRANGEMENT

Juan Guillen, Russell, and James M. Leask, Canata, both of Canada, assignors to Sybase, Inc., Emeryville, Calif.

Filed Jan. 18, 1994, Ser. No. 184,497
Int. Cl.° G06F *9/45*
U.S. Cl. 395—685 **13 Claims**



6. A process of making a variable space linkage between first and second objects and then between said first object and a third object, the first, second, and third objects comprising a predetermined object system, said first object including a selected method definition dependent upon the value of a selected variable, and information contained within said second object and information contained within said third object each being sufficient to independently resolve the value of the selected variable, said process comprising the steps of:

(a) in association with a compilation phase, establishing a link between the variable spaces associated with said first and second objects, said link determining an initial storage location for a value of said selected variable;

(b) in association with a run-time phase after the compilation phase, receiving user input specifying establishing a link between the variable spaces associated with said first and said third object, said link determining a different storage location for a value of said selected variable; and

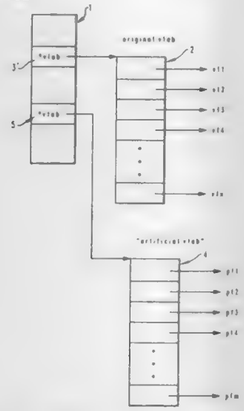
(c) thereafter, invoking the selected method and resolving the value of the selected variable at said different storage location in the variable space associated with said third object, where upon said link between the variable spaces associated with said first and said third object in association with said run-time phase causes said different storage location to provide a value of said selected variable when the selected method is executed.

5,632,034

CONTROLLING METHOD INVOCATION SEQUENCE THROUGH VIRTUAL FUNCTIONS IN AN OBJECT-ORIENTED CLASS LIBRARY

William G. O'Farrell, Don Mills, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 239,192, May 6, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 674,266
Claims priority, application Canada, Jun. 1, 1993, 2097541
Int. Cl.° G06F *9/45*
U.S. Cl. 395—701 **4 Claims**



1. A method for providing concurrent execution capability to an object-oriented computer program compiled under a non-extended compiler, said object-oriented computer program is to be executed in a multi-threaded computing environment, wherein said method comprising the steps of:

constructing a class object having virtual functions from a class library within said object-oriented computer program in a dynamic memory storage;

generating a virtual function table pointer in a first location within said class object, wherein said virtual function table pointer is indexing virtual functions of said class object to a virtual function table;

copying said virtual function table pointer to a second location within said class object;

replacing said virtual function table pointer in said first location within said class object with a protocol function table pointer, wherein said protocol function table pointer is indexing said virtual functions in said class object to a protocol function table for selectively delaying execution of virtual functions invoked through said class object; .and

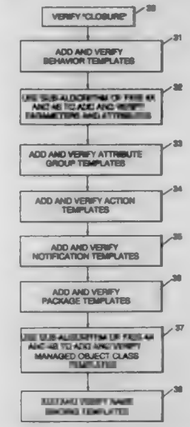
compiling said object-oriented computer program utilizing a non-extended compiler such that concurrent execution capability of said object-oriented computer program can be enabled in said multi-threaded computing environment.

5,632,035

PROCESS FOR VERIFYING GDMO TEMPLATE REFERENCES AND FOR PROVIDING AN ORDERED LIST OF GDMO TEMPLATES

Jeremy P. Goodwin, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1994, Ser. No. 309,224
Int. Cl.° G06F *9/44;9/45*
U.S. Cl. 395—705 **16 Claims**



15. In a computer-related GDMO-process for computer-generating a reference-ordered GDMO-template output-list from a GDMO-template input-list that is not reference-ordered, comprising the steps of;

checking each individual input-list GDMO-template to determine GDMO-referencing specified therein, and

placing each of said individual input-list GDMO-templates in said output-list in a reference-order such that each of said individual output-list GDMO-templates is preceded in said output-list by GDMO-templates that are GDMO-referenced therein.

5,632,036

SYSTEM AND METHOD FOR PROCESSING INTERPROCESS SIGNALS

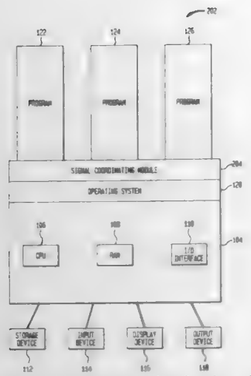
Laurence E. England, Morgan Hill; Tsuneo Horiguchi, San Jose, both of Calif.; Richard Tallman, Saugerties, N.Y., and Lawrence C. Weber, Toronto, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 195,718, Feb. 14, 1994, abandoned. This application Oct. 20, 1995, Ser. No. 546,233
Int. Cl.° G06F *9/46*
U.S. Cl. 395—706 **25 Claims**

1. A method of processing a first type of interprocess signals and a second type of interprocess signals in a computer system, said first type of interprocess signals conforming to a first signal handling standard and said second type of interprocess signals conforming to a second signal handling standard, wherein said first signal handling standard and said second signal handling standard are of a computer programming language standard and an operating system standard respectively, the method comprising the steps of:

(1) determining whether an interprocess signal is a synchronous signal or an asynchronous signal, wherein said interprocess signal originates from a first processing entity and is received by a second processing entity, said second processing entity and said first processing entity executing concurrently when said interprocess signal originates from said first processing entity;

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(2) processing said interprocess signal using signal handling semantics defined by said first signal handling standard if said interprocess signal is an asynchronous signal; and

(3) processing said interprocess signal using signal handling semantics defined by said first and second signal handling standards if said interprocess signal is a synchronous signal.

5,632,037

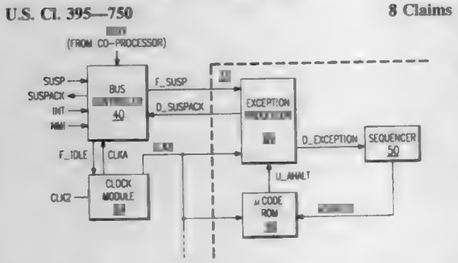
MICROPROCESSOR HAVING POWER MANAGEMENT CIRCUITRY WITH COPROCESSOR SUPPORT

Robert Maher, Carrollton; Raul A. Garibay, Jr., Plano; Margaret R. Herubin, Coppell, and Mark Bluhm, Carrollton, all of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Filed Mar. 27, 1992, Ser. No. 858,858

Int. Cl.[6] G06F *15/02*

U.S. Cl. 395—750 **8 Claims**



1. A microprocessor having power management circuitry with coprocessor support, comprising:

(a) clock generation means for supplying a first and a second clock signal;

(b) core means, coupled to the clock generation means to receive the first clock signal, for executing instructions;

(c) memory management means, coupled to the clock generation means to receive the first clock signal, for managing memory access; and,

(d) bus controller means, coupled to the clock generation means to receive the second clock signal, and to an external source to receive a suspend request signal, and to a coprocessor to receive a busy signal, for disabling the first clock signal in response to the suspend request signal being asserted and the busy signal being de-asserted.

5,632,038

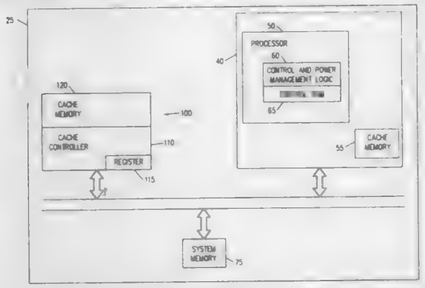
SECONDARY CACHE SYSTEM FOR PORTABLE COMPUTER

Samuel Fuller, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Feb. 22, 1994, Ser. No. 199,915

Int. Cl.[6] G06F *1/26*

U.S. Cl. 395—750 **20 Claims**



1. A power management system for a portable computer, the power management system comprising:

a system memory for storing and accessing dam;

a processor that accesses data from the system memory and which transmits data to the system memory for storage;

a cache electrically connected to said processor and to said system memory for expediting the transfer of data between the processor and the system memory;

said cache including a cache controller and a cache memory;

wherein the cache controller includes a control register with a bit that is variable between a first and a second value and the value of the bit determines whether power is applied to the cache memory; and

control logic electrically connected to said cache for selectively providing power to said cache.

5,632,039

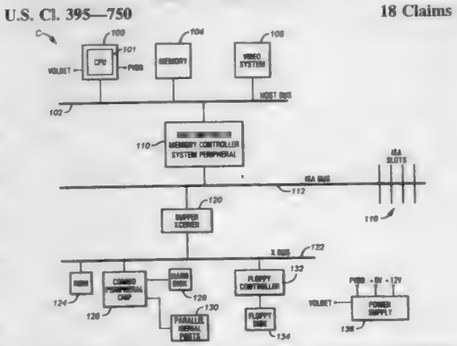
CIRCUIT THAT AUTOMATICALLY SWITCHES BETWEEN SUPPLYING A MICROPROCESSOR WITH A FIRST VOLTAGE AND A SECOND VOLTAGE

Richard E. Walker, The Woodlands, and Kurtis J. Bowman, Cypress, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 24, 1995, Ser. No. 377,151

Int. Cl.[6] G06F *1/26*

U.S. Cl. 395—750 **18 Claims**



1. A circuit for automatically switching a power supply voltage provided to a microprocessor used in a computer system between a first voltage and a second voltage, said first voltage being greater than said second voltage, wherein the computer system includes a power supply having a first power supply output providing the first voltage, and wherein the microprocessor provides a voltage detect sense signal pin for indicating whether the microprocessor requires the power supply voltage at the first voltage or the second voltage, the voltage detect sense signal being at a first state to indicate the first voltage, and the voltage detect sense signal being at a second state to indicate the second voltage, the circuit comprising:

a feedback circuit responsive to the voltage detect sense signal and providing an output signal, said output signal being driven to a third voltage if the voltage detect sense signal is at the first state, and said output signal being driven to a fourth voltage if the voltage detect sense signal is at the second state; and

a field effect transistor having a gate driven by said output signal, a drain connected to the first power supply output, and a source coupled to a microprocessor power supply voltage pin wherein the field effect transistor drives the microprocessor power supply voltage to the first voltage if said output signal is at said third voltage and to the second voltage if said output signal is at said fourth voltage.

5,632,040

MICROCOMPUTER HAVING REDUCED POWER CONSUMPTION THROUGH IMPEDANCE CONTROL AND FREQUENCY REDUCTION

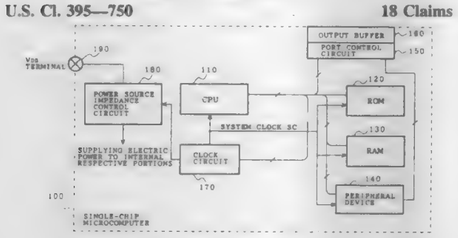
Toyokatsu Nakajima, Hyogo, Japan, assignor to Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Nov. 30, 1995, Ser. No. 564,940

Claims priority, application Japan, Jul. 24, 1995, 7-187255

Int. Cl.[6] G06F *1/26; 1/32*

U.S. Cl. 395—750 **18 Claims**



1. A microcomputer having a plurality of units including a central processing unit operating according to a system clock, the microcomputer comprising:

a power input terminal for inputting electric power from outside of the microcomputer and for providing the electric power to the microcomputer;

pulse signal generating means for generating a plurality of pulse signals, each pulse signal having a different frequency;

means for generating a selection signal;

pulse signal selecting means for selecting a pulse signal from among the plurality of the pulse signals responsive to the selection signal inputted to the pulse signal selecting means and for outputting the selected pulse signal as the system clock; and

power source impedance controlling means for controlling an impedance between the power input terminal and the plurality of units of the microcomputer based on a frequency of the selected pulse signal and for providing the inputted electric power to the plurality of units of the microcomputer.

5,632,041

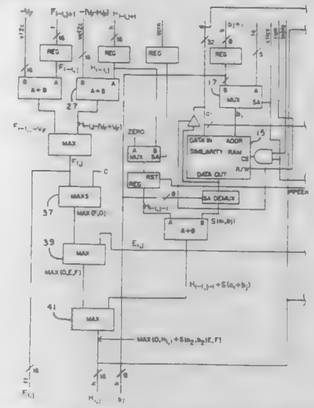
SEQUENCE INFORMATION SIGNAL PROCESSOR FOR LOCAL AND GLOBAL STRING COMPARISONS

John C. Peterson, Alta Loma; Edward T. Chow, San Dimas; Michael S. Waterman, Culver City, and Timothy J. Hunkapillar, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 518,562, May 2, 1990, abandoned. This application Nov. 18, 1993, Ser. No. 154,633

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—800 **48 Claims**



1. A computational apparatus for dynamically comparing against one another a first element sequence having a first number of elements and a second element sequence having a second number of elements by providing a plurality of scores indicative of the degree of similarity of respective segments of the sequences; the apparatus comprising:

a plurality of processors segregated into distinct groups of processors, each such processor having means for generating respective ones of said scores for said segments ending at selected elements of said respective sequences, said means for generating said scores including means for processing responsive to insertion of an additional element into one of said sequences during said dynamic comparison a signal indicative of said additional element insertion:

means for determining the maximum one of said processor-generated scores and the ending elements of segments at which such maximum score occurs; and

means in each of said groups for establishing a threshold score and for ignoring all said scores below said threshold score, the threshold score in each said group being independently selected from the threshold score in all of the remaining groups.

5,632,042

DATA FLOW PROCESSOR AND DATA FLOW PROCESS CHANGING SYSTEM

Tatsuyuki Kuwabara; Masaharu Tomita; Kiyotaka Nagamura; Takao Nakamura, all of Mitaki; Shin'ichi Yoshida, Osaka; Souichi Miyata, Osaka, and Tsuyoshi Muramatsu, Osaka, all of Japan, assignors to Japan Radio Co. Ltd., Tokyo, and Sharp Corporation, Osaka, both of Japan

Filed Jul. 26, 1993, Ser. No. 97,195

Claims priority, application Japan, Jul. 28, 1992, 4-201115; Dec. 28, 1992, 4-348490

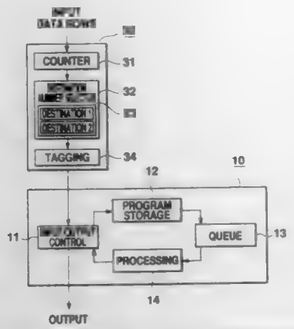
Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—800 **7 Claims**

1. Data processing apparatus comprising:

a data flow process changing system comprising destination number storage means storing a plurality of different destina-

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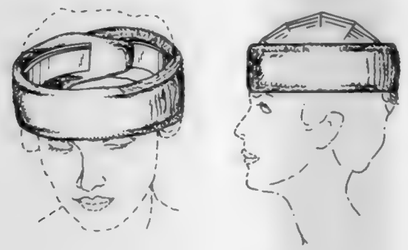
tion numbers, data input means for receiving successive input data units, counter means connected for counting, and assigning a successive count number to, each successive input data unit received by said data input means, with each count number being associated with a selected destination number, means for combining each received input data unit with a respective one of the plurality of destination numbers to form a respective packet, said means for combining being controlled by the count number assigned to each input data unit for combining each input data unit with the selected destination number which is associated with the assigned count number, and output means for outputting each packet, and

a data flow processor comprising packet input means connected to said output means for receiving each packet, a program storage section storing a plurality of programs, each program corresponding to a respective one of the destination numbers stored in said destination number storage means, and a processing section connected to receive the data unit in each packet received by said packet input means and to process the received data unit in each packet under control of that one of the stored programs which corresponds to the destination number in the same packet.

DESIGNS

MAY 20, 1997

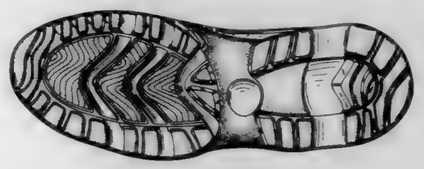
379,257
HEAD BAND
David Leinoff, New York, N.Y., assignor to Fur & Furgery, Inc., New York, N.Y.
Filed Jan. 29, 1996, Ser. No. 49,718
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—894



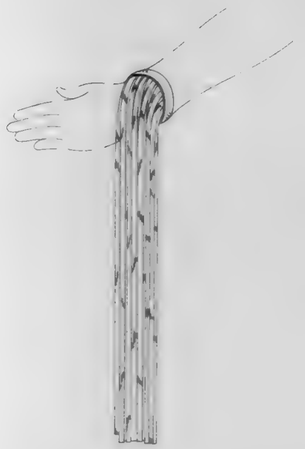
379,258
IN-LINE SKATE BOOT CASING
Ching-Hwo Cheng, 26 Lane 93, Changlwu Road, Changhwa County, Taiwan
Filed Jan. 18, 1996, Ser. No. 49,151
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—904



379,259
SHOE SOLE
Toshikazu Kayano, Irvine, Calif., assignor to Asics Corporation, Kobe, Japan
Filed Apr. 3, 1996, Ser. No. 52,534
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—953

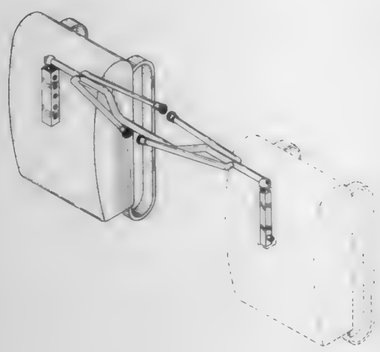


379,260
WRIST BAND
Roberta Levy, P.O. Box 401, Merrick, N.Y. 11566
Filed Sep. 14, 1995, Ser. No. 43,906
Term of patent 14 years
LOC (6) Cl. 02 - *06*
U.S. Cl. D2—610

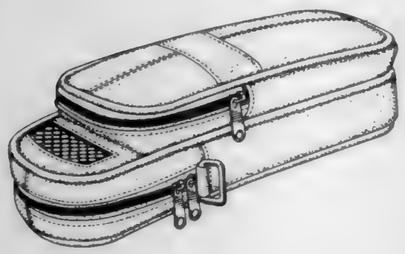


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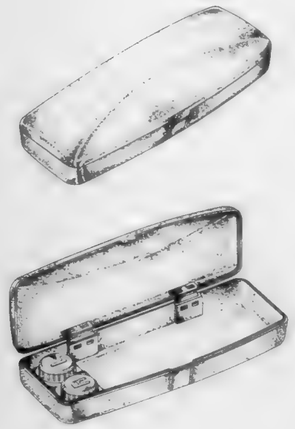
379,261
COMBINATION BACKPACK AND GAME CARRIER
Forrest G. Hardy, 1375 NE. 17th St., Gresham, Oreg. 97030
Filed Sep. 26, 1995, Ser. No. 44,551
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—216



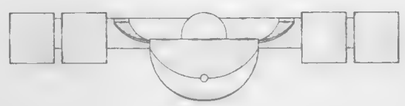
379,262
CELLULAR PHONE CASE
Joel Seigel, Willowdale, Canada, assignor to Gentec, Markham, Canada
Filed Dec. 7, 1995, Ser. No. 47,569
Claims priority, application Canada, Nov. 24, 1995, 1995-2639
Term of patent 14 years
LOC (6) Cl. 01 - *03*
U.S. Cl. D3—218



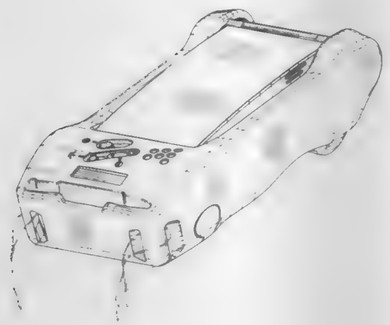
379,263
CASE FOR AN EYEGLASS AND CONTACT LENSES
Mitchell F. Sussman, Inglewood, Calif., assignor to Jobar International, Inc., Inglewood, Calif.
Filed Feb. 16, 1996, Ser. No. 50,399
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—264



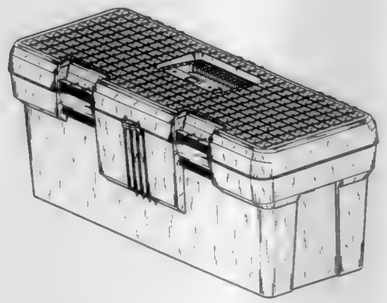
379,264
COMBINED BEVERAGE HOLDER BELT AND FANNY PACK
Robert Micieli, 17 Willis Ave., Keansburg, N.J. 07734
Filed Feb. 22, 1996, Ser. No. 50,514
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—226



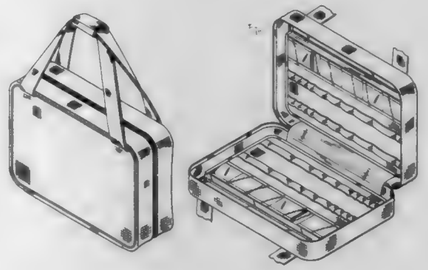
379,265
PORTABLE COMPUTER CARRYING CASE
David T. Wathen, Mission, and John R. Nelson, Leawood, both of Kans., assignors to Harris Corporation, Melbourne, Fla.
Filed Nov. 8, 1995, Ser. No. 47,057
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—269



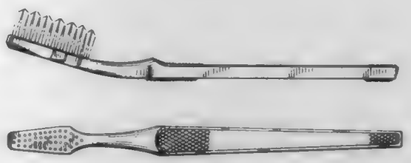
379,266
TOOLBOX ASSEMBLY
Thomas Dickinson, and Bradley D. Gale, both of St. Louis, Mo., assignors to Contico International, Inc., St. Lous, Mo.
Filed Dec. 15, 1995, Ser. No. 47,931
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—281



379,267
MULTIPOCKETED CASE
DeAnna Roegner, 6133 Eagle Lake La., San Ramon, Calif. 94583
Filed Jun. 26, 1995, Ser. No. 41,011
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—285

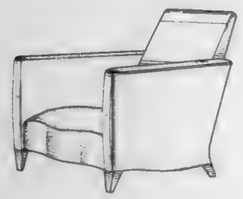


379,268
TOOTHBRUSH HANDLE
Albert Chemtob, Great Neck, N.Y., assignor to Eagle Hygienic Rubber Co., Westbury, N.Y.
Filed Sep. 26, 1994, Ser. No. 28,906
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—104



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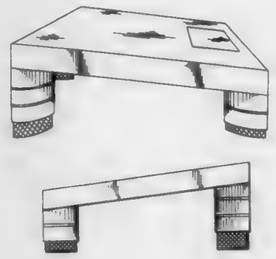
379,269
SERPENTINE CLUB CHAIR
John Hutton, New York, N.Y., assignor to Donghia Furniture, New York, N.Y.
Filed Sep. 26, 1995, Ser. No. 44,582
The portion of the term of this patent subsequent to Sep. 3, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



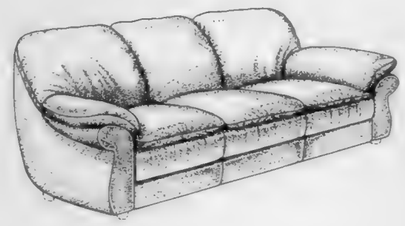
379,270
SWING SUPPORT
Jason M. Voyce, 509 Craven St., New Bern, N.C. 28560
Filed Nov. 20, 1995, Ser. No. 46,898
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—347



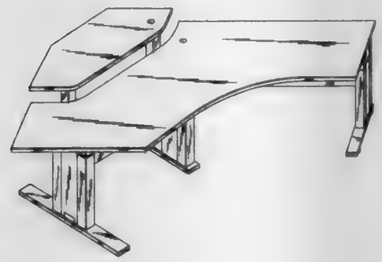
379,271
FOOT REST
Philippe Starck, Paris, France, assignor to Protoned B.V.
Filed Apr. 7, 1995, Ser. No. 37,243
Claims priority, application Switzerland, Oct. 7, 1994, 3029/94
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—349



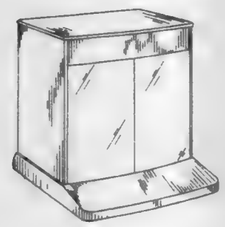
379,272
SEAT
Pasquale Natuzzi, and Raffaella Lucarelli, both of Santeramo In Colle, Italy, assignors to Industrie Natuzzi, Spa, Bari, Italy
Continuation of Ser. No. 25,350, Jun. 30, 1994, abandoned.
This application Nov. 28, 1995, Ser. No. 47,294
The portion of the term of this patent subsequent to Mar. 26, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



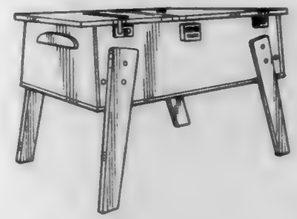
379,273
DESK/WORK TABLE
John Sims, High Wycombe, England, assignor to Ergonomic Workstations Limited, Buckinghamshire, United Kingdom
Continuation of Ser. No. 11,302, Jul. 30, 1993, abandoned.
This application Oct. 12, 1995, Ser. No. 45,192
Claims priority, application United Kingdom, Feb. 5, 1993, 2028927
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—431



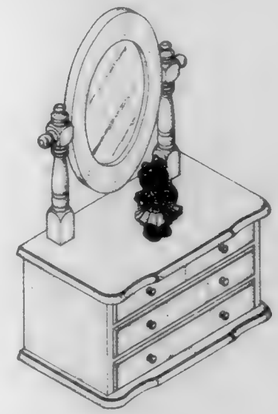
379,274
STAND FOR A VIDEO MONITOR
Babi P. Ati, Plano, Tex.; Peggy R. Devitt, Colonia; Pratod V. Kasbekar, Manalapan, both of N.J.; Michael J. Nuttall, Portola Valley, Calif., and Nick J. Top, Ieper, Belgium, assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jun. 22, 1995, Ser. No. 40,590
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—436



379,275
WORKBENCH
Kimberly J. Cole, 3723 Prairie, Grandville, Mich. 49418
Filed Aug. 16, 1995, Ser. No. 42,651
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—440

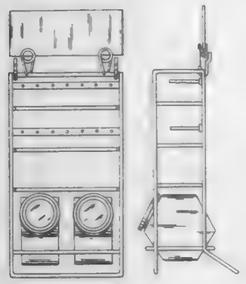


379,276
MUSICAL JEWELRY BOX
Barry Shih, 2F, No. 321, Pateh Rd., Sec. 4, Taipei 10563, Taiwan
Filed Sep. 19, 1995, Ser. No. 44,152
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—444

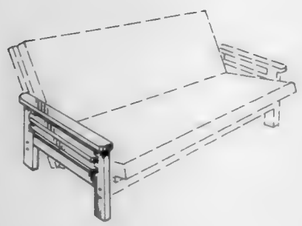


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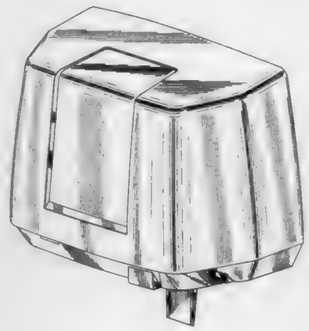
379,277
TUB/CARD DISPLAY RACK
Burton Kozak, 1300 N. Lake Shore Dr., #28C, Chicago, Ill. 60610
Filed Sep. 18, 1995, Ser. No. 44,095
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D6—462



379,278
END FRAME FOR A FUTON
Paul S. Zeinfeld, and Julio Gonzelez, both of Hialeah, Fla., assignors to All Star Industries, Inc., Hialeah, Fla.
Filed Sep. 21, 1994, Ser. No. 28,732
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—492



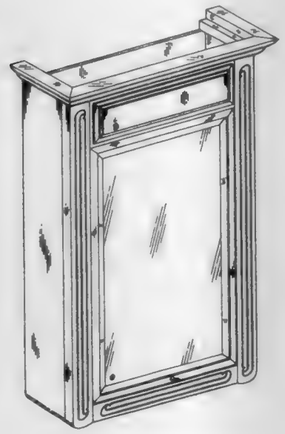
379,279
COMBINED SOAP AND TOWEL DISPENSER
Allen E. Brandenburg, Austin, and John Maldonado, San Antonio, both of Tex., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Nov. 13, 1995, Ser. No. 46,366
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—519



379,280
TOOTHBRUSH HOLDER
C. P. Butler, P.O. Box 870927, Stone Mountain, Ga. 30087, and F. M. Butler, Del Ray Beach, Fla., assignors to C. P. Butler, Stone Mountain, Ga.
Continuation-in-part of Ser. No. 341,359, Nov. 17, 1994, Pat. No. 5,509,168. This application Oct. 2, 1995, Ser. No. 44,835
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—534



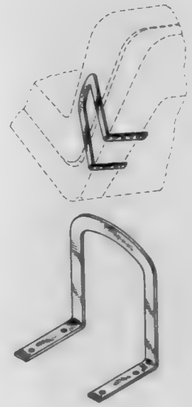
379,281
MIRRORED MEDICINE CABINET
James J. Palka, 22351 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Sep. 21, 1995, Ser. No. 44,237
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—559



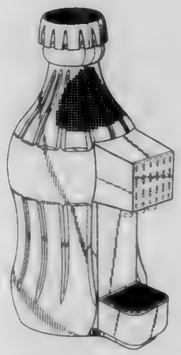
379,282
SEAT CUSHION
Mari Hueneke, 7150 Horizon Dr., Greendale, Wis. 53129
Filed Jul. 25, 1995, Ser. No. 41,806
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



379,283
MATTRESS RETENTION BRACKET FOR ADJUSTABLE BEDS
Santino Antinori, 3615 E. Lake Ave., Tampa, Fla. 33610
Filed Feb. 13, 1995, Ser. No. 34,796
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—606



379,284
HOUSING FOR A BEVERAGE DISPENSER
William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlantn, Ga.
Filed Jun. 5, 1995, Ser. No. 39,734
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—301

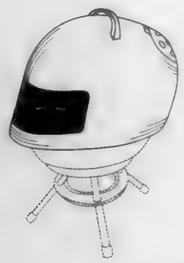


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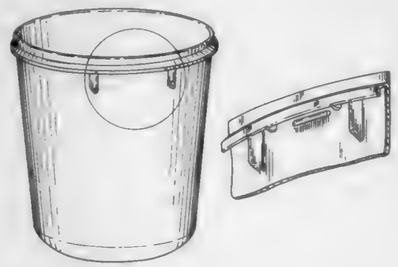
379,285
APPARATUS FOR DISPENSING DRINKS
Lucas A. M. Evers, Bunnik, Netherlands, assignor to Koninklijke Olland Groep B.V., Nieuwegein, Netherlands
Filed Jun. 1, 1994, Ser. No. 23,776
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—311



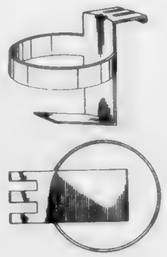
379,286
PORTABLE GRILL LID
Kenneth G. Fincher, 730 Tevis Trail, Hollister, Calif. 95023
Filed Sep. 5, 1995, Ser. No. 43,487
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—334



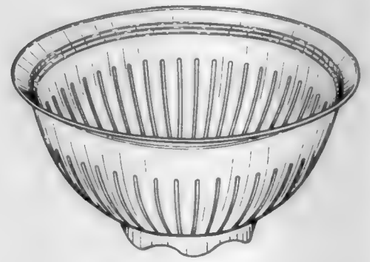
379,287
CONTAINER
Arthur R. Carlson, East Hauthorn, Australia, assignor to The Decor Corporation Pty Ltd, Australia
Filed Jun. 23, 1995, Ser. No. 40,725
Claims priority, application Australia, Dec. 23, 1994, 4319/94
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—602



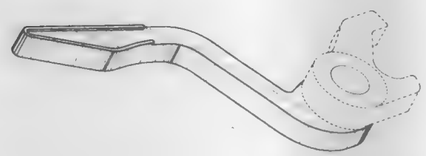
379,288
BEVERAGE CONTAINER HOLDER
Tony Azar, 1038 Lesperance Road, Tecumseh, Ontario, Canada
Filed Mar. 4, 1996, Ser. No. 51,080
Claims priority, application Canada, Sep. 7, 1995, 1995-1994
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—620



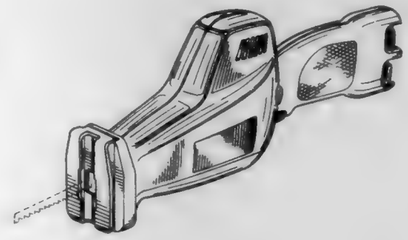
379,289
COLANDER WITH BASE
Hanne D. Jeppesen, Holte; Jakob Heiberg, Charlottenlund, and Stig Lillelund, Gentofte, all of Denmark, assignors to Dart Industries Inc., Orlando, Fla.
Filed Dec. 22, 1995, Ser. No. 48,198
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—667



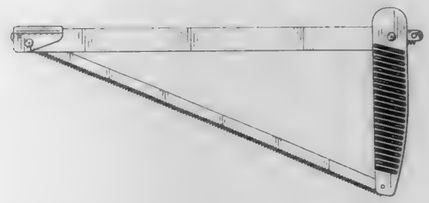
379,290
MODULE INJECT/EJECT LEVER
Arnold L. Joslin, Loveland, Colo., assignor to Hewlett-Packard Co., Palo Alto, Calif.
Filed Feb. 1, 1995, Ser. No. 34,303
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—14



379,291
RECIPROCATING SAW
Roderick F. Bunyea, Westminster; Robert I. Somers, Reisterstown, and Donald W. Vetter, Baltimore, all of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 11, 1995, Ser. No. 42,568
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—64

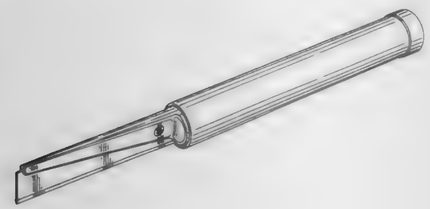


379,292
FOLDABLE SAW
Scott Schaffer, Haysville, and Anthony F. Beugelsdyk, Wichita, both of Kans., assignors to Wescon Products Company, Wichita, Kans.
Filed Apr. 5, 1996, Ser. No. 52,773
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—96



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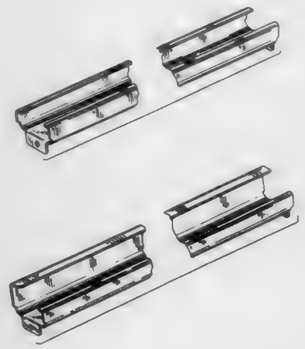
379,293
FIBERGLASS KNIFE
Vincent L. Schultz, 435 W. Seventh Ave., Shakopee, Minn. 55379
Filed Mar. 8, 1996, Ser. No. 51,273
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—98



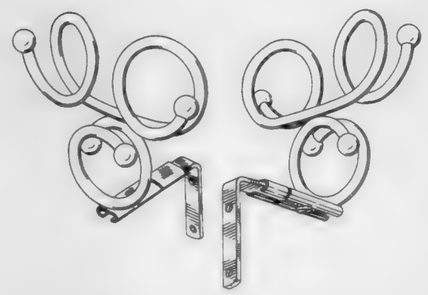
379,294
FOLDING KNIFE
Robert W. Lum, Eugene, Oreg., assignor to Spyderco, Inc., Golden, Colo.
Filed Jan. 26, 1996, Ser. No. 49,486
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—99



379,295
CROSS-MEMBER FOR SUPPORTING AN ITEM OF FURNITURE SUCH AS A BED
Andrew J. Kopish, Green Bay, Wis., assignor to Krueger International, Inc., Green Bay, Wis.
Filed Jun. 9, 1995, Ser. No. 40,069
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—349



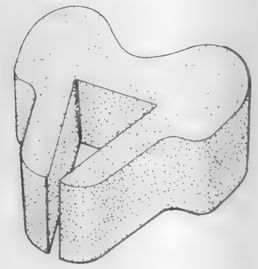
379,296
CURTAIN HANGER
Morris Ferdman, 3 Renoak Drive, Willowdale, Ont., Canada
Division of Ser. No. 8,299, May 13, 1993, Pat. No. Des. 357,624. This application Dec. 20, 1994, Ser. No. 32,479
Claims priority, application Canada, Nov. 13, 1992, 13-11-92-6
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—368



379,297
SHOWER CURTAIN ROD
Robert Shires, 6 Morganton Hwy., Rutherfordton, N.C. 28139
Filed Mar. 21, 1996, Ser. No. 51,993
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—376



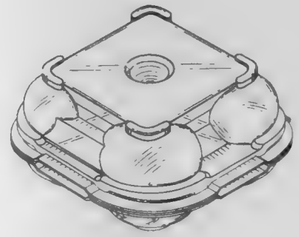
379,298
DOOR EDGE PAD
Walter L. Bowen, and Cynthia L. Bowen, both of 108 Simmons St., Washington, N.C. 27889
Filed Mar. 13, 1996, Ser. No. 51,553
Term of patent 14 years
LOC (6) Cl. 08 - *09*
U.S. Cl. D8—402



379,299
SAFETY DOOR STOP
James Fitzgibbons, 408 Hulse Ave., Brick, N.J. 08724
Filed May 1, 1996, Ser. No. 53,868
Term of patent 14 years
LOC (6) Cl. 08 - *09*
U.S. Cl. D8—402



379,300
FRUIT CONTAINER
Calvin S. Krupa, Medina, and Robert Knoss, Anoka, both of Minn., assignors to Ultra Pac, Inc., Rogers, Minn.
Filed Jun. 30, 1995, Ser. No. 40,985
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—341



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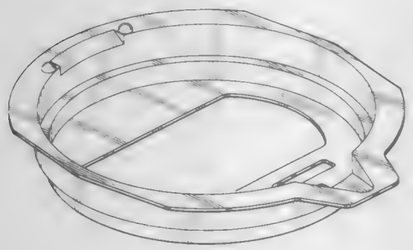
379,301
FOOD PACKAGE
Howard J. Lippincott, Madison, Wis., assignor to Kraft Foods, Inc., Northfield, Ill.
Filed May 26, 1995, Ser. No. 39,352
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—347



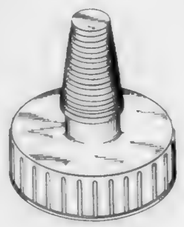
379,303
BOTTLE SLEEVE
Jacques Broye, Champillon, France, assignor to Champagne Pommerly & Greno, Reims, France
Filed Feb. 28, 1996, Ser. No. 50,872
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—444



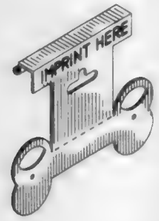
379,302
PAINT CAN COVER AND SPOUT
Wayne G. Rodman, 33026 Driftwood Ct., San Juan Capistrano, Calif. 92675
Filed Dec. 4, 1995, Ser. No. 47,396
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—440



379,304
LIQUID DISPENSER SPOUT AND CAP
Anthony J. Bova, 2039 Cove Cir., Stockton, Calif. 95204
Filed Aug. 15, 1995, Ser. No. 42,638
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—447



379,305
EARRING DISPLAY CARD
Dorothy VanFleet, 5100 6th Ave. N., St. Petersburg, Fla. 33710
Filed Dec. 19, 1995, Ser. No. 48,060
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—457



379,307
COMBINED BOTTLE AND CAP
Keith D. Marriage, Ealing, England, assignor to SmithKline Beecham p.l.c., Brentford, England
Filed Jan. 4, 1996, Ser. No. 48,585
Claims priority, application United Kingdom, Jul. 4, 1995, 2048585
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—503



379,306
BOTTLE
Angelo Peykoff, Santa Ana, Calif., assignor to Rocky Mountain Industries, Inc., Santa Fe Springs, Calif.
Filed Nov. 21, 1995, Ser. No. 47,088
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—502

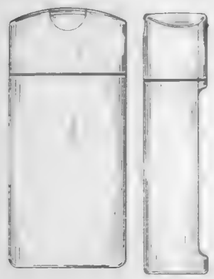


379,308
EXTERIOR SURFACE OF A CONTAINER SIDEWALL
Ted L. Beaver, Roselle, Ill., assignor to Continental Plastic Containers, Inc., Norwalk, Conn.
Filed Nov. 27, 1995, Ser. No. 47,128
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—523



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379,309
COMBINED CONTAINER AND CAP
John C. Crawford, Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 2, 1995, Ser. No. 35,565
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—529



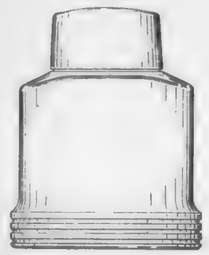
379,310
LIQUID CHEMICAL CONCENTRATE BOTTLE
Eric R. Balz, Eagan, Minn., assignor to Ecolab Inc., St. Paul, Minn.
Filed Mar. 30, 1995, Ser. No. 36,912
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—537



379,311
COMBINED BOTTLE AND CAP
John Crawford, Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 11, 1995, Ser. No. 42,562
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—542



379,312
COMBINED CONTAINER AND CAP
John C. Crawford, Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Dec. 12, 1995, Ser. No. 47,781
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—557



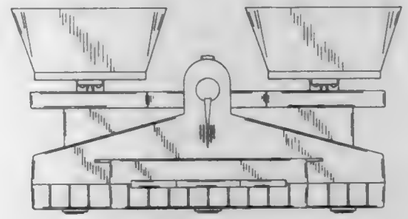
379,313
CASE FOR ANALOG WRISTWATCH
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 1, 1995, Ser. No. 43,345
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



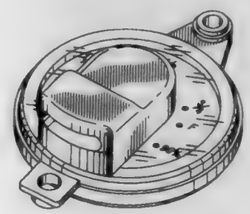
379,314
CASE FOR DIGITAL DIVER WRISTWATCH
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Feb. 28, 1996, Ser. No. 50,873
Term of patent 14 years
LOC (6) Cl. 10 - *07*
U.S. Cl. D10—38



379,315
EDUCATIONAL BALANCE
Richard Woldenberg, 176 Hastings, Highland Park, Ill. 60035; Eric J. Toriumi, 1340 W. Touhy Ave., #407, Chicago, Ill. 60626; Lonnie Pogue, 1736 W. Montecito Way, San Diego, Calif. 92103, and Brian Macowski, 2088 Montgomery Ave., Apt. N, Cardiff By The Sea, Calif. 92007
Filed Dec. 22, 1995, Ser. No. 48,807
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—90

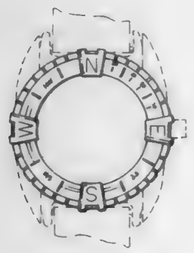


379,316
GAUGE
Cecil M. Williamson, Carrollton, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.
Filed Mar. 14, 1996, Ser. No. 51,619
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—96

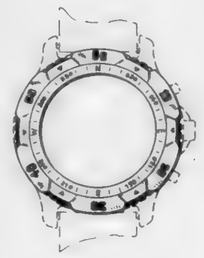


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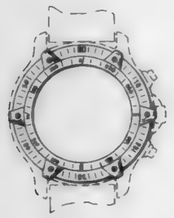
379,317
BEZEL RING FOR ANALOG WRISTWATCH
Nimfa B. Toribio, Mandaue City, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,432
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



379,319
BEZEL RING FOR ANALOG WRISTWATCH
Daniel K. S. Lai, Shatin, Hong Kong, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,434
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



379,318
BEZEL RING FOR ANALOG WRISTWATCH
Daniel K. S. Lai, Shatin, Hong Kong, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,433
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



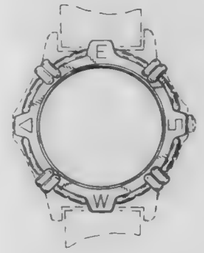
379,320
BEZEL RING FOR ANALOG WRISTWATCH
Rolando R. L. Campilan, Cebu City, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,437
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



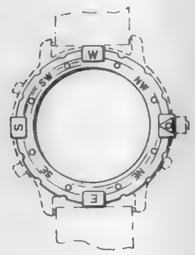
379,321
BEZEL RING FOR ANALOG WRISTWATCH
Mercedes I. B. Navera, Cebu, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,439
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



379,323
BEZEL RING FOR ANALOG WRISTWATCH
Wilfredo E. Mendoza, Mandaue, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,488
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



379,322
BEZEL RING FOR ANALOG WRISTWATCH
Rolando R. L. Campilan, Cebu, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,440
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128

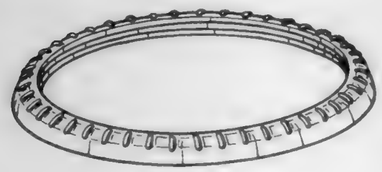


379,324
BEZEL FOR A WATCH
Robert Osit, Rocky Hill, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Apr. 15, 1996, Ser. No. 53,143
Term of patent 14 years
LOC (6) Cl. 10 - *03*
U.S. Cl. D10—128



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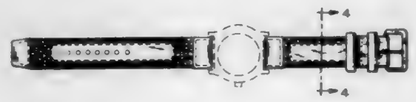
379,325
BEZEL FOR A WATCH
Robert Osit, Rocky Hill, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Apr. 15, 1996, Ser. No. 53,146
Term of patent 14 years
LOC (6) Cl. 10 - *07*
U.S. Cl. D10—128



379,326
BEZEL FOR A WATCH
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Apr. 30, 1996, Ser. No. 53,786
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



379,327
WRISTWATCH STRAP
Mercedes I. B. Navera, Mandaue City, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,487
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—3



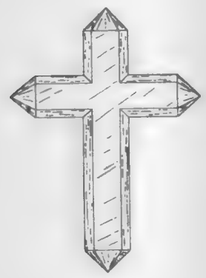
379,328
WATCH BRACELET
Christiane Pandel, Chambesy, Switzerland, assignor to Rolex Watch U.S.A., Inc., New York, N.Y.
Filed Mar. 29, 1996, Ser. No. 52,394
Claims priority, application Switzerland, Oct. 16, 1995, DM/034392
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—16



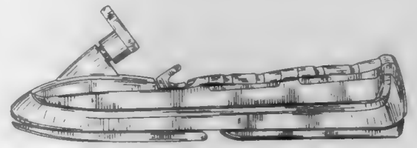
379,329
RING
Christiane Pandel, Chambesy, Switzerland, assignor to Rolex Watch U.S.A., Inc., New York, N.Y.
Filed Mar. 29, 1996, Ser. No. 52,393
Claims priority, application Switzerland, Oct. 16, 1995, DM/034393
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—34



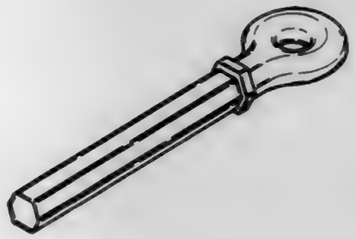
379,330
PENTA-CROSS
Dennis T. Krizan, West Allis, Wis., assignor to John Janoska
Filed Aug. 14, 1995, Ser. No. 42,669
Term of patent 14 years
LOC (6) Cl. 11 - *03*
U.S. Cl. D11—96



379,331
SLEDGE
Leif Hermansen, Spjærøy, Norway, assignor to Hamax AS, Norway
Filed Dec. 12, 1995, Ser. No. 47,747
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—10

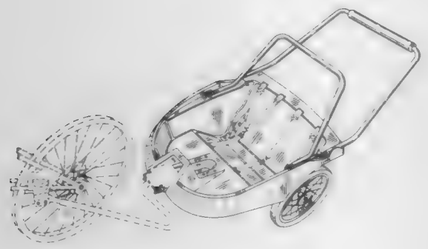


379,332
STREAMER ROD
Ming-Chang Chen, No. 48, Huan Kung Road, Yung Kang Shih, Tainan Hsien, Taiwan
Filed Nov. 3, 1995, Ser. No. 45,983
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—114

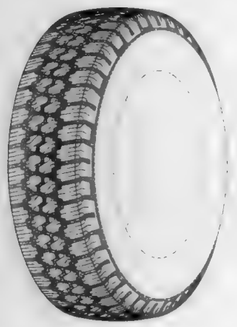


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379,333
FOLDABLE CONVERTIBLE TRAILER AND JOGGING STROLLER FOR TWO CHILDREN
Richard H. Jacobs, Brighton, Minn., assignor to TRI Industries, Inc., Bloomington, Minn.
Continuation-in-part of Ser. No. 114,738, Aug. 30, 1993. This application Jan. 17, 1996, Ser. No. 49,108
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—129



379,334
TIRE TREAD
Efimia E. Rohweder, Uniontown; Frederick W. Miller, Akron; Michael A. Kolowski, Mogadore, and Stephanie C. Brown, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 25, 1995, Ser. No. 44,446
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



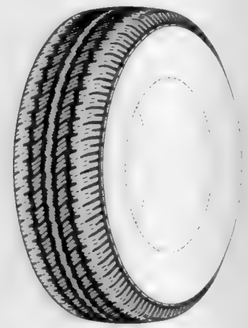
379,335
AUTOMOBILE TIRE
Koichiro Aikawa; Koji Watanabe, and Kazuhito Kimura, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1995, Ser. No. 37,475
Claims priority, application Japan, Oct. 20, 1994, 6-31620
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



379,336
TIRE TREAD
William C. Hanlon, Medina, Ohio; Michael A. Mileski; Kashiwa Maki, both of Oklahoma City, Okla., and Timothy J. Lassan, Kent, Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed May 23, 1995, Ser. No. 39,200
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



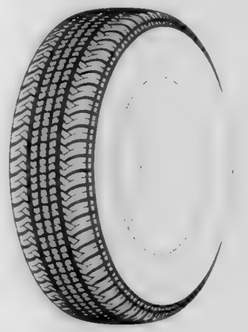
379,337
TIRE TREAD
James G. Guspodin; John J. Regallis, both of Akron, and Timothy F. Robinson, North Canton, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Jun. 7, 1995, Ser. No. 39,907
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



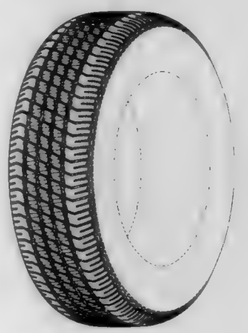
379,338
TIRE TREAD
James G. Guspodin, Akron, and Francis C. Hauz, Wadsworth, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Sep. 22, 1995, Ser. No. 44,350
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



379,339
TIRE TREAD
James G. Guspodin, Akron, and Leonard F. Blankenship, Sterling, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Sep. 22, 1995, Ser. No. 44,354
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147

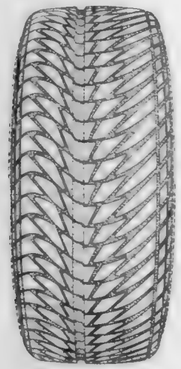


379,340
TIRE TREAD
Rudy E. Consolacion, Akron, and Keith E. Grabo, Brecksville, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 19, 1995, Ser. No. 45,410
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147

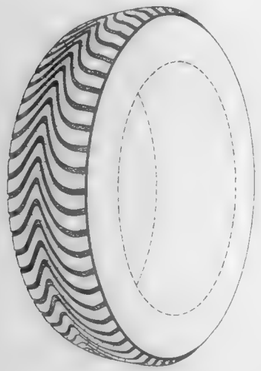


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379,341
TIRE TREAD
Billy J. Ratliff, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 20, 1995, Ser. No. 48,141
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



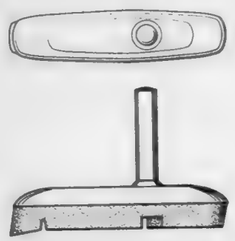
379,342
TIRE TREAD
Billy J. Ratliff, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 20, 1995, Ser. No. 48,142
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151



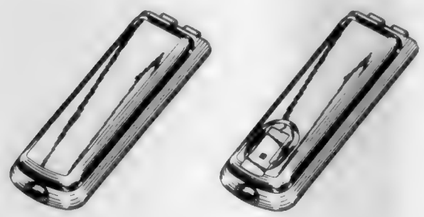
379,343
TRAILER HITCH
David W. Shaw, Saginaw; Gary B. Scott, Midland, and Robert J. Shortland, Bridgeport, all of Mich., assignors to Means Industries, Saginaw, Mich.
Filed Apr. 17, 1995, Ser. No. 37,571
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—162



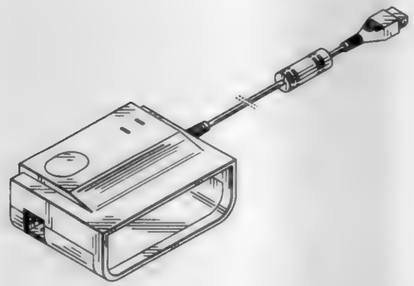
379,344
BICYCLE BRAKE SHOE
Richard C. Everett, 225 Sunshine La., West Linn, Oreg. 97068
Filed Apr. 4, 1996, Ser. No. 52,689
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—180



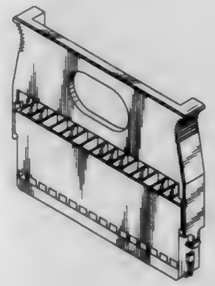
379,345
BATTERY FOR A PORTABLE COMMUNICATION DEVICE
Scott H. Richards, Plantation; Richard A. Ciraldi, Ft. Lauderdale, and Robert Leon, Miami, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 13,875, Oct. 5, 1993, abandoned.
This application Dec. 8, 1995, Ser. No. 48,761
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



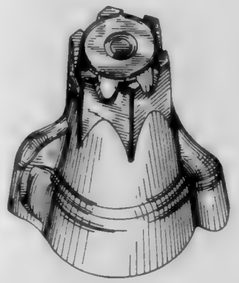
379,346
BATTERY CHARGER
Nariaki Mieki, Yokohama, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 5, 1995, Ser. No. 43,490
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—107



379,347
POSITIVE LATCHING AND DELATCHING CONNECTOR FOR ELECTRICAL CONDUCTORS
Robert F. Traver, Jr., Landenberg, Pa., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Nov. 28, 1995, Ser. No. 47,151
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—154

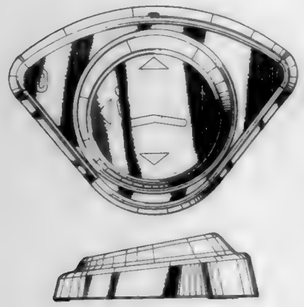


379,348
TWIST-ON WIRE CONNECTOR
Chris W. Korinek, Cedarburg, Wis., assignor to GB Electrical, Inc., Milwaukee, Wis.
Filed Jun. 22, 1995, Ser. No. 41,682
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—150

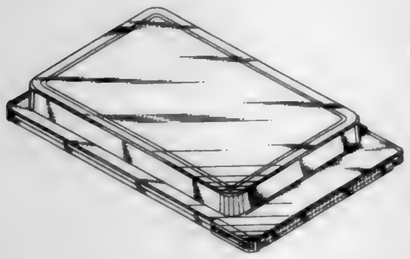


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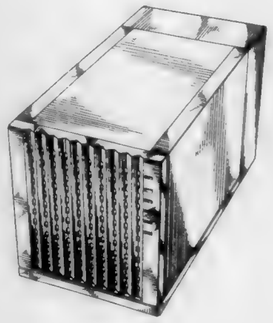
379,349
FOOT SWITCH
Kurt O. Nichols, Bend, Oreg., and Edwin L. Pate, Los Angeles, Calif., assignors to The Schein Dental Equipment Co., Port Washington, N.Y.
Filed Mar. 20, 1996, Ser. No. 51,947
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—167



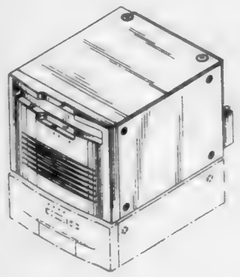
379,350
EXPANDED JACKETTED CIRCUIT CARD
Albert J. Kerklaan, Milton, Canada, assignor to International Business Machines Corporation
Filed Feb. 9, 1994, Ser. No. 18,583
Claims priority, application Canada, Aug. 10, 1993, 1008933
The portion of the term of this patent subsequent to Nov. 26, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—182



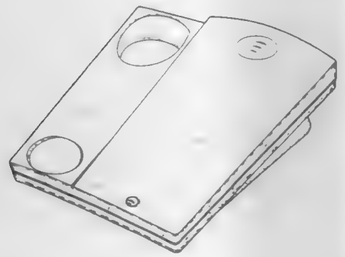
379,351
HOUSING FOR HARD DISK DRIVES
Alison Armstrong; Paul Montgomery, and Herbert Pfeifer, all of San Francisco, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Jan. 26, 1996, Ser. No. 49,490
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—102



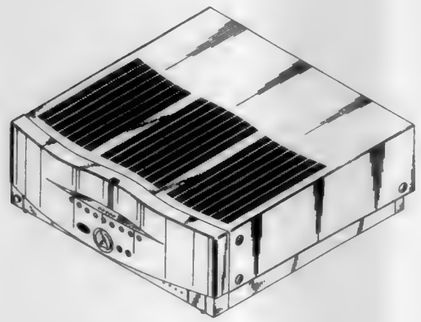
379,352
DATA RECORDER
Takashi Ikenaga, Tokyo, Japan, assignor to Sony Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 15, 1995, Ser. No. 44,049
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



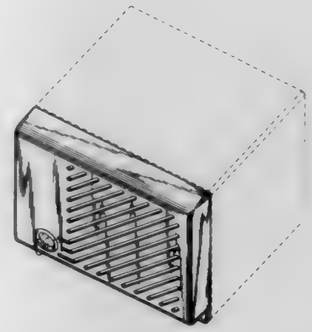
379,353
TELEPHONE STAND
Mark Biasotti, San Jose; Michael J. Nuttall, Portola Valley, both of Calif., and John H. Schaffeld, New Vernon, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,908
The portion of the term of this patent subsequent to Feb. 4, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149



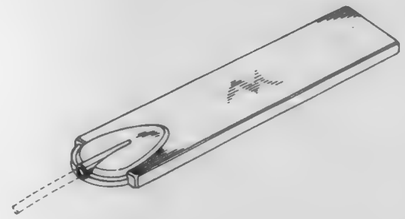
379,354
COMBINED AUDIO AND VIDEO AMPLIFIER
Jan Hippen, Portland, Oreg., assignor to Kenwood Corporation, Tokyo, Japan
Filed Mar. 29, 1996, Ser. No. 52,410
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—188



379,355
SPEAKER FRONT PANEL
Kenneth W. Larson, Elmhurst, and Richard H. Gosch, Westchester, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 21, 1995, Ser. No. 46,928
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—221

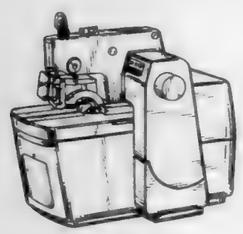


379,356
DECAL PATCH ANTENNA SYSTEM
Diuxian Liu, Dayton, and Martin Heine, Troy, both of Ohio, assignors to Valor Enterprises, Inc., Piqua, Ohio
Filed Jan. 25, 1996, Ser. No. 49,429
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—230

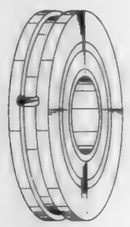


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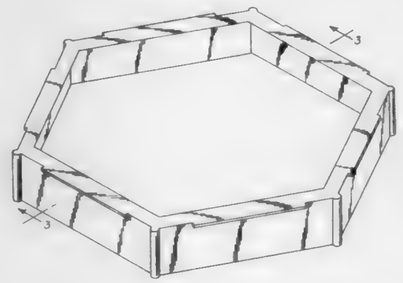
379,357
SEWING MACHINE
Shigemasa Kato, and Shigemi Yamamoto, both of Chofu, Japan, assignors to Juki Corporation, Tokyo, Japan
Filed Oct. 24, 1995, Ser. No. 45,580
Claims priority, application Japan, Apr. 24, 1995, 7-11615
Term of patent 14 years
LOC (6) Cl. 15 - *06*
U.S. Cl. D15—69



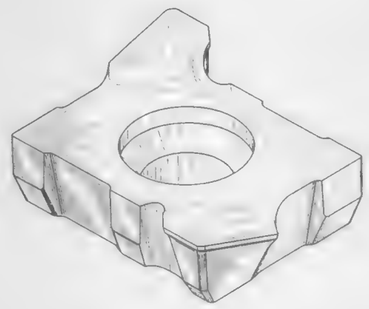
379,358
CLINCHING ROLLER
Kenneth Lennartsson, Torekov, Sweden, assignor to Protol A.G., Glarus, Switzeriand
Filed Mar. 8, 1995, Ser. No. 35,876
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—123



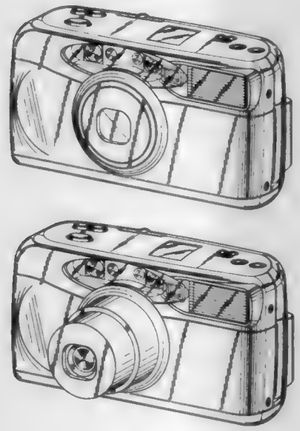
379,359
MOLD FOR FORMING CONCRETE HEXAGONAL STEPPING STONES
Jack T. Hupp, P.O. Box 1206, Richmond, Tex. 77469
Filed Mar. 14, 1996, Ser. No. 51,632
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—136



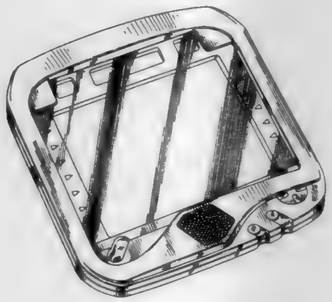
379,360
CUTTING INSERT
Amir Satran, Kfar Vradim, and Rafael Margulis, Karmiel, both of Israel, assignors to Iscar Ltd., Migdal Tefen, Israel
Filed Jan. 16, 1996, Ser. No. 48,892
Claims priority, application Israel, Jul. 19, 1995, 24770
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—139



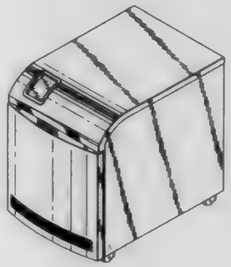
379,361
DEPLOYABLE LENS CAMERA
Bruce A. Leonard, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 12, 1995, Ser. No. 45,183
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



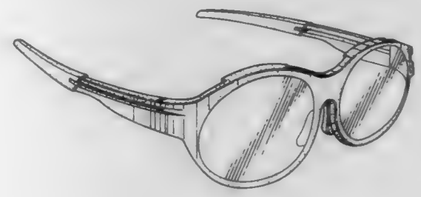
379,362
DISPLAY ACCESSORY FOR OVERHEAD PROJECTOR SYSTEM
Eddie J. Marfori, Long Beach; Damon R. Saddler, Inglewood; Greg B. Bergeron, La Habra, and Brian A. Mehler, Long Beach, all of Calif., assignors to Educational Insights, Inc., Carson, Calif.
Filed Oct. 25, 1995, Ser. No. 45,629
Term of patent 14 years
LOC (6) Cl. 16 - *02*
U.S. Cl. D16—236



379,363
MULTIPLE INPUT MANAGER
Bruce E. Nelson, Minneapolis, and James A. Wilson, North St. Paul, both of Minn., assignors to Imation Corp., St. Paul, Minn.
Filed Nov. 23, 1994, Ser. No. 31,350
Term of patent 14 years
LOC (6) Cl. 16 - *04*
U.S. Cl. D16—247

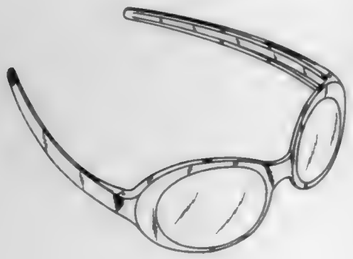


379,364
EYEWARE FRAME
Toshio Totsuka, and Takuro Tsukatani, both of Ann Arbor, Mich., assignors to Ozmix, Inc., Ann Arbor, Mich.
Filed Mar. 29, 1996, Ser. No. 52,703
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—321

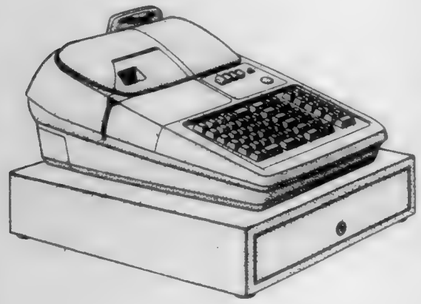


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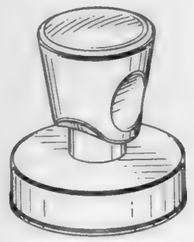
379,365
EYEGLASSES
Kai-Mou Tsai, 4/F., No. 1, Lane 135, Tao-Hsiang Rd., Peitou Dist., Taipei City R.O.C., China
Filed May 14, 1996, Ser. No. 54,410
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



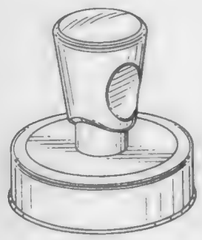
379,366
CASH REGISTER
Manabu Hokazono, Nara-ken, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 13, 1995, Ser. No. 43,821
Claims priority, application Japan, Mar. 13, 1995, 7-6897
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—4



379,367
STAMPER
Dan Harden, Palo Alto, Calif., assignor to Shachihata Inc., Aichi-ken, Japan
Filed Mar. 4, 1996, Ser. No. 51,126
Claims priority, application Japan, Sep. 7, 1995, 7-26521
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D18—15



379,368
STAMPER
Dan Harden, Palo Alto, Calif., assignor to Shachihata Inc., Aichi-ken, Japan
Filed Mar. 4, 1996, Ser. No. 51,128
Claims priority, application Japan, Sep. 7, 1995, Des.26522/1995
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D18—15



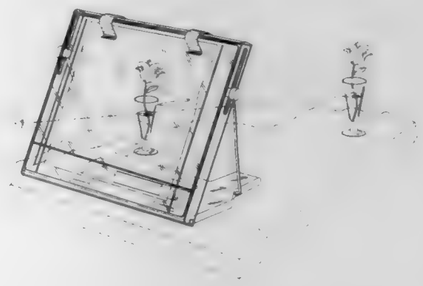
379,369
WIRE MARKER PRINTER KEYBOARD
George C. Triantopoulos, Collierville, Tenn., and Edward A. Fischer, Newton, N.J., assignors to Thomas & Betts Corporation, Memphis, Tenn.
Filed Sep. 1, 1995, Ser. No. 43,455
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—52



379,370
FRONT PANEL FOR A STORAGE POCKET
Fei-Chen Lee, 4th Floor, No. 51, Sec. 2, Chung-Ching South Road, Taipei, Taiwan
Filed Sep. 16, 1994, Ser. No. 28,519
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—33



379,371
PERSPECTIVE DRAWING DEVICE
Danny B. Nicholl, San Juan Capistrano, and James M. Brech, San Clemente, both of Calif., assignors to Drawing Directions, Inc., San Juan Capistrano, Calif.
Filed Apr. 14, 1993, Ser. No. 7,095
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—35

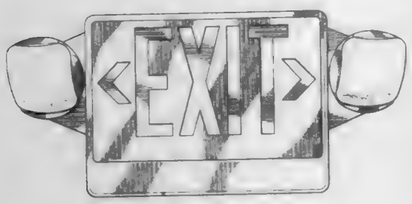


379,372
WRITING INSTRUMENT
Brian Q. Young, P.O. Box 862469 Terminal Annex, Los Angeles, Calif. 90086-2469
Filed Jul. 18, 1994, Ser. No. 26,108
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—49

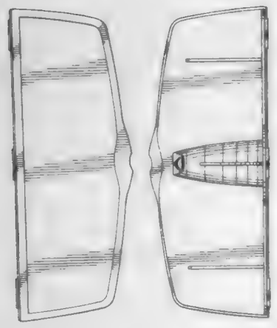


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379,373
COMBINED EXIT SIGN AND EMERGENCY LAMP DEVICE
Mark C. Logan, Doraville; David T. Garza, Conyers; Andrew E. Masters, Lawrenceville, and Edwin L. Hull, Conyers, all of Ga., assignors to National Service Industries, Inc., Atlanta, Ga.
Filed Aug. 10, 1995, Ser. No. 42,858
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D20—10



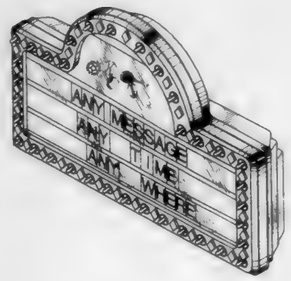
379,374
DISPLAY BOARD
John D. Mason, III, Muskegon, Mich., assignor to Computer Memo Board L.L.C., Muskegon Hts., Mich.
Filed Oct. 25, 1995, Ser. No. 45,625
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D20—10



379,375
INFORMATION KIOSK
Frank Bowman, Elizabeth, Colo., assignor to U S West, Inc., Englewood, Colo.
Filed Feb. 28, 1996, Ser. No. 50,849
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D20—10



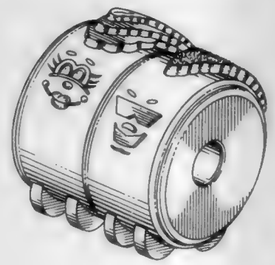
379,376
PORTABLE ILLUMINATED SIGN
Gary C. Bernhardt, 429 Round Hill Rd., East Hills, N.Y. 11577, and Daniel E. Levine, 4209 Esch La., Madison, Wis. 53717-1914
Filed Jan. 6, 1995, Ser. No. 33,233
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D20—37



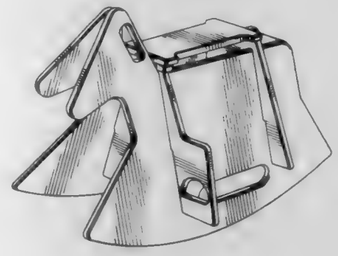
379,377
POST WITH A SIGN
Klaus P. Rath, Vejle, Denmark, assignor to A/S Modulex, Billund, Denmark
Filed Sep. 19, 1995, Ser. No. 44,154
Claims priority, application Denmark, Mar. 31, 1995, MA 287 1995
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41



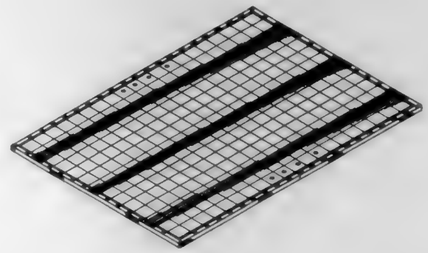
379,378
FREE WHEELING TOY
John Hamlin, Costa Mesa, Calif., assignor to Namkung Promotions Inc., Costa Mesa, Calif.
Filed Nov. 13, 1995, Ser. No. 46,331
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—59



379,379
ROCKING HORSE AMUSEMENT DEVICE
Stephen A. Fahringer, Sr., 4808 W. 1000th South, Cedar City, Utah 84720
Filed Jul. 17, 1995, Ser. No. 42,708
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—70

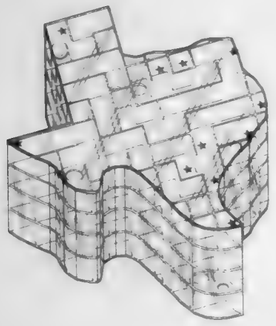


379,380
HOBBY SURFACE
Danielle Delaney, 2005 Dutrisal #408, St. Laurent, Canada
Filed Oct. 23, 1995, Ser. No. 45,556
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



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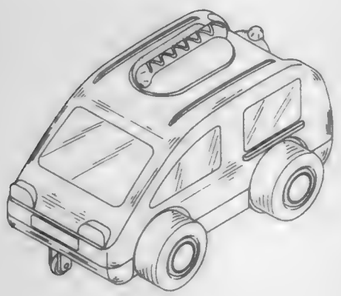
379,381
MULTI-LEVEL MAZE TOY
Glenn Hermes, 9 Moss Rock, New Braunfels, Tex. 78130
Filed Mar. 26, 1996, Ser. No. 52,250
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



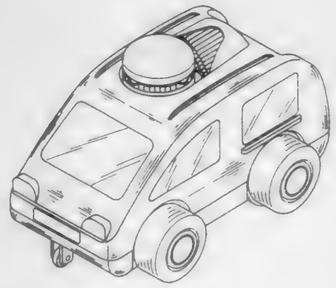
379,382

Patent Not Issued For This Number

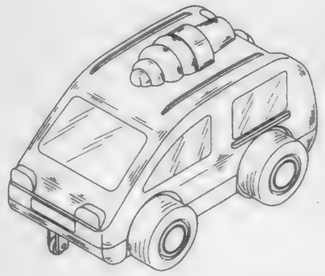
379,383
TOY CAR
Ping-lin Yeh, P.O. Box 90, Tainan 704, Taiwan
Filed Apr. 22, 1996, Ser. No. 53,421
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—136



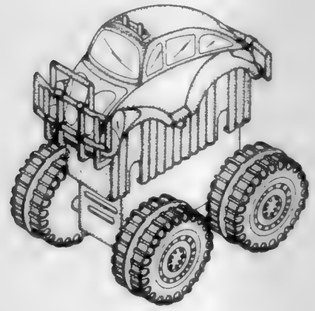
379,384
TOY CAR
Ping-lin Yeh, P.O. Box 90, Tainan, 704, Taiwan
Filed Apr. 22, 1996, Ser. No. 53,422
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—136



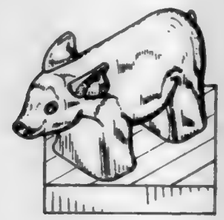
379,385
TOY CAR
Ping-lin Yeh, P.O. Box 90, Tainan 704, Taiwan
Filed Apr. 22, 1996, Ser. No. 53,423
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—136



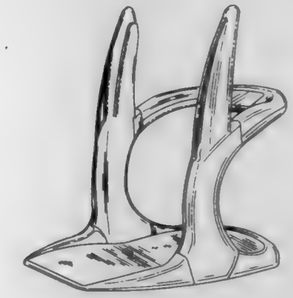
379,386
TOY CAR
Chuan-Tien Chuang, No. 40, Lane 174, Da-Shing Street, Tainan, Taiwan
Filed Mar. 12, 1996, Ser. No. 51,491
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—137



379,387
TOY SUCKING PIG
Christian Stephensen, Hellerup, and Jacob Nielsen, Copenhagen S, both of Denmark, assignors to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,989
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—186



379,388
EXERCISE MACHINE FRAME
Fernando A. Montijo, Newport Beach; Bryan H. Volmer, Trabuco Canyon, and Mark A. West, Laguna Beach, all of Calif., assignors to Sport Specific of America, Inc., Dallas, Tex.
Division of Ser. No. 31,432, Nov. 28, 1994. This application Nov. 24, 1995, Ser. No. 46,991
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—191

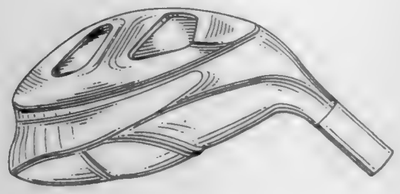


379,389
BILLIARD BALL
Tung Y. Shih, P.O. Box 82-144, Taipei, Taiwan
Filed Jul. 3, 1995, Ser. No. 41,022
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—204

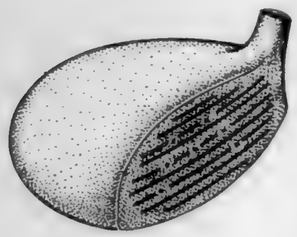


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379,390
GOLF CLUB HEAD
Tomomi Watanabe; Kiyotaka Chaen, both of Osaka, Japan, and Harry Taylor, Norcross, Ga., assignors to Mizuno Corporation, Osaka-fu, Japan
Filed Nov. 13, 1995, Ser. No. 46,352
Claims priority, application Japan, Jun. 16, 1995, 7-17260
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



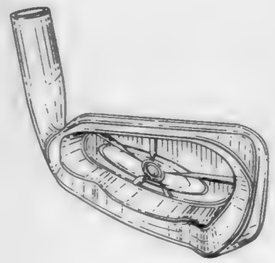
379,391
METALWOOD GOLF CLUB HEAD
James T. Moore, 2003 Foxcroft Dr., LaGrange, Ga. 30240
Filed Apr. 12, 1996, Ser. No. 52,977
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



379,392
GOLF PUTTER HEAD
Gustave M. Fehrer, 7005 Revere Dr., Derby, N.Y. 14047
Filed Mar. 18, 1996, Ser. No. 51,733
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



379,393
GOLF CLUB HEAD
Daniel J. Kubica; John A. Solheim, both of Phoenix, and David E. Wright, Glendale, all of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Dec. 1, 1995, Ser. No. 47,390
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



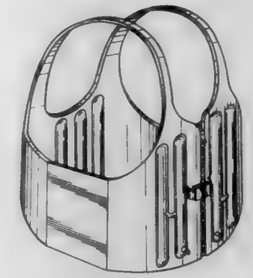
379,394
GOLF CLUB GRIP
J. Gerald Fortis, Chicago, Ill., assignor to Ram Golf Corporation, Melrose Park, Ill.
Filed Jan. 29, 1996, Ser. No. 49,570
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—222



379,395
BUMPER FOR A SKATE BOOT
Frederic Aird, Outremont, Canada, assignor to Sport Maska Inc., Quebec, Canada
Filed Dec. 26, 1995, Ser. No. 48,340
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—225



379,396
BOUYANT VEST FOR SWIMMERS
John D. Rongo, and Patricia Rongo, both of 9 Namoth Rd., Wappinger Falls, N.Y. 12590
Filed Nov. 14, 1995, Ser. No. 46,462
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D21—238

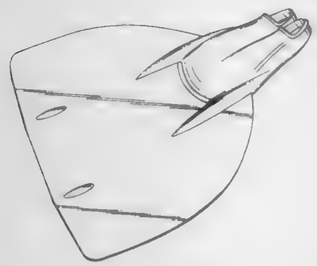


379,397
COMBINATION FLOTATION DEVICE AND SWIMMING AID
Donna McMahon, Stuart, Fla., assignor to Donna McMahon, Inc., Stuart, Fla.
Filed Dec. 18, 1995, Ser. No. 48,014
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D21—238



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379,398
SWIM FIN
Dean Garraffa, 20041 Treasurer Cir.; Douglas Toth, 8422 Dallas Cir., both of Huntington Beach, Calif. 92646, and Robert Applegate, 15950 Robson Ct., Fountain Valley, Calif. 92708
Filed Sep. 27, 1995, Ser. No. 44,579
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—239



379,399
ARCHERY TARGET STAND
Robert A. Reinaker, 123 Orchard Dr., Bloomsburg, Pa. 17815
Filed Nov. 13, 1995, Ser. No. 46,316
Term of patent 14 years
LOC (6) Cl. 22 - *04*
U.S. Cl. D22—113



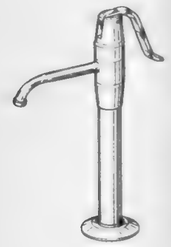
379,400
FISHLINE GUIDE PIPE
Toshihiko Yasui; Seiji Myojo; Yasunori Hosoya, and Hiroshi Hashimoto, all of Osaka, Japan, assignors to Shimano Inc., Osaka, Japan
Filed Oct. 4, 1994, Ser. No. 29,360
Claims priority, application Japan, Apr. 8, 1994, 6-10001; Jun. 17, 1994, 6-17882; Jun. 17, 1994, 6-17883
The portion of the term of this patent subsequent to Sep. 24, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—142



379,401
TELESCOPING POLE
Michael O. Cobb, 3131 Stemmons Freeway, #61, Dallas, Tex. 75247
Filed Apr. 6, 1995, Ser. No. 37,205
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—142



379,402
TAP
Hans W. Paul, Marion, Australia, assignor to Waterways Products (Aust) Pty Ltd, Marion, Australia
Filed Oct. 31, 1995, Ser. No. 45,867
Claims priority, application Australia, May 1, 1995, 1297/95
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—232



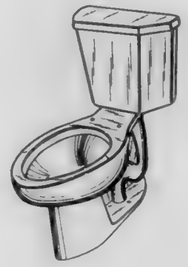
379,403
DRAIN COVER
Sherry L. Jones, London, Ohio, assignor to American Standard Inc., Piscataway, N.J.
Filed Apr. 27, 1995, Ser. No. 38,144
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—261



379,404
WATER SUPPLY TUBE
Harold F. Spelts, P.O. Box 90447, Henderson, Nev. 89009
Filed Jan. 16, 1996, Ser. No. 48,940
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—266



379,405
WATER CLOSET
George E. Shillington, Tampa, Fla., assignor to Briggs Plumbing Products, Inc., Tampa, Fla.
Filed Sep. 25, 1995, Ser. No. 44,452
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—295



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379,406
PYLON
Marc Mimram, Paris, France, assignor to Electricite De France, Paris, France
Filed Sep. 25, 1995, Ser. No. 44,421
Claims priority, application France, Mar. 23, 1995, 95 1745
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—127



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20th DAY OF MAY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB-CAM, L.L.C.: *See—*
Barreca, Jack, 5,630,778, Cl. 482-140.000.
ABA of Sweden AB: *See—*
Eliasson, Roger, 5,630,255, Cl. 24-274.00R.
ABB Flexible Automation AS: *See—*
Anfindsen, Ole A.; and Sunde, Alf, 5,630,552, Cl. 239-708.000.
ABB Power T&D Company Inc.: *See—*
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Yasuda, Tomio: *See*—
Ishikawa, Seiji; Murakami, Yuichi; Yasuda, Tomio; Yamamoto, Tomohiro; and Oka, Toshimitsu, 5,631,838, Cl. 364-449.900.

Yasuda, Yutaka: *See*—
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Yasuike, Madoka: *See*—
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Yeh, Hsu-Chong. Figure having numerous seamless repositionable parts. 5,630,745, Cl. 446-374.000.

Yergenson, Robin P., to Hewlett-Packard Company. Sheet media feeding mechanism having a variable radius feed roller. 5,630,583, Cl. 271-119.000.

Yezrielev, Albert I.; Wellman, William E.; Kowalik, Ralph M.; Knudsen, George A.; and Romanelli, Michael G., to Exxon Chemical Patents, Inc. Process for preparing phenol-functional polymer. 5,631,330, Cl. 525-418.000.

Yin, Rui; Tomalia, Donald A.; Hedstrand, David M.; and Swanson, Douglas R., to Dendritech, Inc. Process for producing hyper-comb-branched polymers. 5,631,329, Cl. 525-417.000.

Yli-Kauppila, Jouko: *See*—
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Yokoyama, Hiromi, to Fujitsu Limited. Method of and apparatus for navigation display. 5,632,008, Cl. 395-142.000.

Yoneoka, Takashi: *See*—
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Yoshida, Daisaku; and Yamano, Katsumi, to Shintomi Golf Co., Ltd.; and Kasco Corporation. Golf-club head. 5,630,888, Cl. 148-325.000.

Yoshida, Kazunari; Ohshima, Shinji; and Teraguchi, Takashi, to Sumitomo Rubber Industries, Ltd. Apparatus and method for measuring velocity and instantaneous spatial position of spherical object siultaneously. 5,631,558, Cl. 324-178.000.

Yoshida, Satoru; Sato, Keiji; Mochizuki, Masamichi; Watanabe, Masashi; and Kato, Takashi, to Hitachi Ltd.; and Hitachi Shimizu Engineering Co., Ltd. Multiple type air conditioner system and address setting method thereof. 5,630,324, Cl. 62-175.000.

Yoshida, Shin'ichi: *See*—
Kuwabara, Tatsuyuki; Tomita, Masaharu; Nagamura, Kiyotaka; Nakamura, Takao; Yoshida, Shin'ichi; Miyata, Souichi; and Muramatsu, Tsuyoshi, 5,632,042, Cl. 395-800.000.
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Yoshifuji, Yuuki, to NEC Corporation. Digital cross-connect system. 5,631,902, Cl. 370-388.000.

Yoshihara, Shigeyuki; Obara, Sanshiro; Matsudaira, Nobunori; and Naito, Shotaro, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co. Ltd. Electric vehicle control system. 5,631,796, Cl. 361-79.000.

Yoshikawa, Haruhiko; Yamamoto, Kazuhisa; Kojima, Yoichi; and Kodama, Yoshihiro, to Honda Giken Kogyo Kabushiki Kaisha. Oil supplying and discharging structure for canceller in hydraulic clutch. 5,630,492, Cl. 192-106.00F.

Yoshimura, Hiroyuki: *See*—
Miyazawa, Shuhei; Hibi, Shigeki; Yoshimura, Hiroyuki; Mori, Takashi; Hoshino, Yorihisa; Nagai, Mitsuo; Kikuchi, Kouichi; Shibata, Hisashi; Hirota, Kazuo; Yamanaka, Takashi; Yamatsu, Isao; and Mizuno, Masanori, 5,631,402, Cl. 562-453.000.

Yoshimura, Tamotsu, to Rohm Co., Ltd. Chip-type variable resistor. 5,631,623, Cl. 338-142.000.

Yoshimura, Yasutsugu; Onose, Mituru; Horii, Kenji; Seki, Koichi; Nishino, Tadashi; Shimogama, Hironori; and Hanzawa, Chukichi, to Hitachi, Ltd. Thin slab continuous casting machine and method. 5,630,467, Cl. 164-486.000.

Yoshinaga, Kazuo: *See*—
Arimoto, Shinobu; Shimizu, Katsuichi; Komiya, Yutaka; Yoshinaga, Kazuo; Hayashi, Toshio; Nakai, Takehiko; Utagawa, Tsutomu; Nagase, Tetsuya; and Sasanuma, Nobuatsu, 5,631,725, Cl. 355-201.000.
Minoura, Nobuo; Suzuki, Hidetoshi; Kuramatsu, Katsumi; Yoshinaga, Kazuo; and Mitsutake, Hideaki, 5,631,750, Cl. 349-110.000.

Yoshino, Akira; Takizawa, Yumiko; Koyama, Akira; Inoue, Katsuhiko; Yamashita, Masataka; Minato, Yasufumi; and Kuribayashi, Isao, to Asahi Kasei Kogyo Kabushiki Kaisha. Secondary battery. 5,631,100, Cl. 429-62.000.

Yoshioka, Toshiro: *See*—
Haraguchi, Hiroko; Iwashita, Yoshihiri; Yoshioka, Toshiro; Koyama, Junichi; Yamanaka, Akihiro; Nakamura, Mitsunari; and Haikawa, Katsumasa, 5,631,939, Cl. 376-349.000.

Yoshizawa, Akihiko, to Olympus Optical Co., Ltd. Polarizing beam splitter and optical pick-up head comprising the same. 5,631,774, Cl. 359-640.000.

Young, Allen R.; Tello, Lucio N.; and Blankinship, Thomas J., to Computalog USA, Inc. Fluid boldup tool and flow meter for deviated wells. 5,631,413, Cl. 73-152.290.

Young, Michael A.: *See*—
Gaudiana, Russell A.; Haddock, Robert W.; Marshall, John L.; Takiff, Larry C.; Telfer, Stephen J.; and Young, Michael A., 5,631,118, Cl. 430-270.100.

Young, Terrill A.; Bavely, Jane L.; Roetker, Timothy C.; and Davis, Maxwell G., to Procter & Gamble Company, The. Dry cleaning process with hydroentangled carrier substrate. 5,630,848, Cl. 8-137.000.

Youngblood, John R.: *See*—
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Yozan Inc.: *See*—
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,631,941, Cl. 377-75.000.

Yu, Chen-Hua; Jang, Syun-Ming; Chen, Lung; and Huang, Yuan-Chang, to Taiwan Semiconductor Manufacturing Company, Ltd. Sacrificial etchback layer for improved spin-on-glass planarization. 5,631,197, Cl. 438-699.000.

Yu, Dong: *See*—
Tan, Weitian; Iyer, Radhakrishnan P.; Jiang, Zhiwei; Yu, Dong; and Agrawal, Sudhir, 5,631,361, Cl. 536-25.330.

Yu, Hsien-Chuen: *See*—
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Yu, Philip S. L.: *See*—
Aggarwal, Charu C.; Wolf, Joel L.; and Yu, Philip S. L., 5,631,694, Cl. 348-7.000.

Yu, Ta-Lee: *See*—
Ker, Ming-Dou; Wu, Chung-Yu; Cheng, Tao; Wu, Chau-Neng; and Yu, Ta-Lee, 5,631,793, Cl. 361-56.000.

Yuan, Jenchieh. Motor-driven screen roller assembly for automobiles. 5,630,460, Cl. 160-310.000.

Yuasa Corporation: *See*—
Shimano, Tadakazu, 5,630,263, Cl. 29-2.000.

Yuasa, Satoshi: *See*—
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Oginaezawa, Takao, 5,630,242, Cl. 7-144.000.

Yuino, Tatsuya; Miyahara, Kazuhiro; and Miyajima, Toyoshiro, to NGK Insulators, Ltd. Process for controlling combustion of burners in furnace and an apparatus therefor. 5,630,714, Cl. 432-36.000.

Yuki, Masahiro: *See*—
Ohta, Kimiharu; Hashimoto, Shigeo; Yuki, Masahiro; and Sakurai, Hideya, 5,631,616, Cl. 335-216.000.

Yuugengaisha B.S.R.: *See*—
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Zacharias, Karl: *See*—
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Zak, Alexander, to Lavsky, Abraham; and Gazit, Hanan. Uninterruptible power supply based on non-invasive connection of backup circuit to switch power supply. 5,631,814, Cl. 363-37.000.

Zakroff, Sandra: *See*—
Lott, Timothy J.; Morrison, Christine J.; Reiss, Errol; Lasker, Brent; and Zakroff, Sandra, 5,631,132, Cl. 435-6.000.

Zalipsky, Samuel; Woodle, Martin C.; Lasic, Danilo D.; and Martin, Francis J., to Sequus Pharmaceuticals, Inc. Lipid-polymer conjugates and liposomes. 5,631,018, Cl. 424-450.000.

Zambrano, Raffaele, to SGS-Thomson Microelectronics, S.r.l.; and Consorzio per la Ricerca sulla Microelecttronica nel Mezzogiorno. Process for manufacturing integrated circuit with power field effect transistors. 5,631,177, Cl. 438-138.000.

Zanakis, Michael F. Diagnostic system for detecting and indicating cranial movements. 5,630,422, Cl. 128-664.000.

Zandona, Nicola, to Solvay (Société Anonyme). Process for the manufacture of a catalytic solid, catalytic solid and process for (co)polymerisation of olefins by means of this catalytic solid. 5,631,334, Cl. 526-113.000.

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Zank, Gregg A.: *See*—
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Zeidler, Bernard. Method to use high temperature pressure roller to make stationary structure covering materials. 5,630,895, Cl. 156-71.000.

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Zeneca Limited: *See*—
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Zero Emissions Technology Inc.: *See*—
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Zest Anchors, Inc.: *See*—
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Zhong, Qiming; and Bonakdarpour, Arman, to Moli Energy (1990) Limited. High voltage insertion compounds for lithium batteries. 5,631,104, Cl. 429-194.000.

Zhou, Hua-ping: *See*—
Fry, Joyce E.; and Zhou, Hua-ping, 5,631,152, Cl. 435-172.300.

Zhu, Xiaodong T.: *See*—
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Zilog, Inc.: *See*—
Gyure, Alex; Berg, John; Carver, Damian; and Manos, Pete, 5,631,180, Cl. 438-275.000.

Zimowski, Melvin R.; Cotner, Curt L.; and Shum, Peter K. L., to International Business Machines Corporation. Computer program product to efficiently process diverse result sets returned by a stored procedure. 5,632,015, Cl. 395-200.010.

Zionts, Andrew: *See*—
Waddell, Charles E.; Zionts, Andrew; King, William L.; Mongeau, Roland E.; and Crumrine, David, 5,630,521, Cl. 190-18.00A.

Zlotsky, Dmitry. Manipulative game. 5,630,587, Cl. 273-155.000.

Zodiac International: *See*—
Lavorata, Marc, 5,630,740, Cl. 441-42.000.

Zorzi, Claudio; and Caeran, Francesco, to Nordica S.p.A. Roller skate with improved comfort. 5,630,598, Cl. 280-11.280.

Zuest, Max; and Zuest, Paul, to Zest Anchors, Inc. Dental implant bar system and method. 5,630,717, Cl. 433-172.000.

Zuest, Paul: *See*—
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Zwick, Joachim: *See*—
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Zwolsky, Donald F.: *See*—
Castro, William D.; and Zwolsky, Donald F., 5,631,550, Cl. 323-283.000.

Zydek, Michael; Fey, Wolfgang; and Engelmann, Mario, to ITT Automotive Europe GmbH. Circuit for triggering warning lamps. 5,631,626, Cl. 340-479.000.

3D Systems, Inc.: *See*—
Hull, Charles W., 5,630,981, Cl. 264-401.000.

3DO Company, The: *See*—
Wallace, Gregory K., 5,631,849, Cl. 364-514.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20th DAY OF MAY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akada, Yasuaki: *See*—
Taniguchi, Nobuyuki; Ishimura, Toshihiko; Ishikawa, Norio; Seki, Reiji; and Akada, Yasuaki, Re. 35,515, Cl. 396-96.000.

Albrecht, Thomas R.; Dovek, Moris-Musa; Kirk, Michael D.; and Park, Sang-Il, to Park Scientific Instruments. Scanning force microscope having aligning and adjusting means. Re. 35,514, Cl. 250-216.000.

Bolger, Michael B.: *See*—
Gee, Kelvin W.; Bolger, Michael B.; and Lan, Nancy C., Re. 35,517, Cl. 514-176.000.

Brasch, William R.: *See*—
Nobel, Fred I.; Brasch, William R.; and Drago, Anthony J., Re. 35,513, Cl. 205-263.000.

Dovek, Moris-Musa: *See*—
Albrecht, Thomas R.; Dovek, Moris-Musa; Kirk, Michael D.; and Park, Sang-Il, Re. 35,514, Cl. 250-216.000.

Drago, Anthony J.: *See*—
Nobel, Fred I.; Brasch, William R.; and Drago, Anthony J., Re. 35,513, Cl. 205-263.000.

Gee, Kelvin W.; Bolger, Michael B.; and Lan, Nancy C., to University of Southern California. Method, compositions, and compounds for modulating brain excitability. Re. 35,517, Cl. 514-176.000.

Henry, Charles H.; Kazarinov, Rudolf F.; and Shani, Yosi, to Lucent Technologies Inc. Adiabatic reflection Y-coupler apparatus. Re. 35,516, Cl. 385-27.000.

Ishikawa, Norio: *See*—
Taniguchi, Nobuyuki; Ishimura, Toshihiko; Ishikawa, Norio; Seki, Reiji; and Akada, Yasuaki, Re. 35,515, Cl. 396-96.000.

Ishimura, Toshihiko: *See*—
Taniguchi, Nobuyuki; Ishimura, Toshihiko; Ishikawa, Norio; Seki, Reiji; and Akada, Yasuaki, Re. 35,515, Cl. 396-96.000.

Kazarinov, Rudolf F.: *See*—
Henry, Charles H.; Kazarinov, Rudolf F.; and Shani, Yosi, Re. 35,516, Cl. 385-27.000.

Kirk, Michael D.: *See*—
Albrecht, Thomas R.; Dovek, Moris-Musa; Kirk, Michael D.; and Park, Sang-Il, Re. 35,514, Cl. 250-216.000.

Lan, Nancy C.: *See*—
Gee, Kelvin W.; Bolger, Michael B.; and Lan, Nancy C., Re. 35,517, Cl. 514-176.000.

Learonal, Inc.: *See*—
Nobel, Fred I.; Brasch, William R.; and Drago, Anthony J., Re. 35,513, Cl. 205-263.000.

Lewis, Thomas E.: *See*—
Nowak, Michael T.; and Lewis, Thomas E., Re. 35,512, Cl. 101-454.000.

Lucent Technologies Inc.: *See*—
Henry, Charles H.; Kazarinov, Rudolf F.; and Shani, Yosi, Re. 35,516, Cl. 385-27.000.

McMurtry, David R., to Renishaw Metrology Limited. Probe head with indexing mechanism. Re. 35,510, Cl. 33-572.000.

Minolta Camera Kabushiki Kaisha: *See*—
Taniguchi, Nobuyuki; Ishimura, Toshihiko; Ishikawa, Norio; Seki, Reiji; and Akada, Yasuaki, Re. 35,515, Cl. 396-96.000.

Nakamura, Azuko. Accessory for earring. Re. 35,511, Cl. 63-14.100.

Nobel, Fred I.; Brasch, William R.; and Drago, Anthony J., to Learonal, Inc. Cyanide-free plating solutions for monovalent metals. Re. 35,513, Cl. 205-263.000.

Nowak, Michael T.; and Lewis, Thomas E., to Presstek, Inc. Lithographic printing members for use with laser-discharge imaging. Re. 35,512, Cl. 101-454.000.

Park, Sang-Il: *See*—
Albrecht, Thomas R.; Dovek, Moris-Musa; Kirk, Michael D.; and Park, Sang-Il, Re. 35,514, Cl. 250-216.000.

Park Scientific Instruments: *See*—
Albrecht, Thomas R.; Dovek, Moris-Musa; Kirk, Michael D.; and Park, Sang-Il, Re. 35,514, Cl. 250-216.000.

Presstek, Inc.: *See*—
Nowak, Michael T.; and Lewis, Thomas E., Re. 35,512, Cl. 101-454.000.

Renishaw Metrology Limited: *See*—
McMurtry, David R., Re. 35,510, Cl. 33-572.000.

Seki, Reiji: *See*—
Taniguchi, Nobuyuki; Ishimura, Toshihiko; Ishikawa, Norio; Seki, Reiji; and Akada, Yasuaki, Re. 35,515, Cl. 396-96.000.

Shani, Yosi: *See*—
Henry, Charles H.; Kazarinov, Rudolf F.; and Shani, Yosi, Re. 35,516, Cl. 385-27.000.

Taniguchi, Nobuyuki; Ishimura, Toshihiko; Ishikawa, Norio; Seki, Reiji; and Akada, Yasuaki, to Minolta Camera Kabushiki Kaisha. Photo signal processing apparatus. Re. 35,515, Cl. 396-96.000.

University of Southern California: *See*—
Gee, Kelvin W.; Bolger, Michael B.; and Lan, Nancy C., Re. 35,517, Cl. 514-176.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Applied Materials, Inc.: *See*—
Demaray, Richard E.; Herrera, Manuel; and Berkstresser, David E., B1 5,433,835, Cl. 204-298.090.

Arnoldt, Peter J., to Ductmate Industries, Inc. Flange type duct joint assembly and seal arrangement therefor. B1 5,022,688, Cl. 285-363.000.

Beltemacchi, Peter P.: *See*—
Sauter, Bruce M.; Short, Kevin G.; and Beltemacchi, Peter P., B1 5,465,749, Cl. 137-359.000.

Berkstresser, David E.: *See*—
Demaray, Richard E.; Herrera, Manuel; and Berkstresser, David E., B1 5,433,835, Cl. 204-298.090.

Demaray, Richard E.; Herrera, Manuel; and Berkstresser, David E., to Applied Materials, Inc. Sputtering device and target with cover to hold cooling fluid. B1 5,433,835, Cl. 204-298.090.

Ductmate Industries, Inc.: *See*—
Arnoldt, Peter J., B1 5,022,688, Cl. 285-363.000.

Furon Company: *See*—
Klein, Gary S.; and Kotian, Vijayraj M., B1 4,500,748, Cl. 174-121.00A.

Greenberg, Norman A., to Sandoz Ltd. Nutritional composition comprising hydrolyzed guar gum. B1 5,260,279, Cl. 514-21.000.

Herrera, Manuel: *See*—
Demaray, Richard E.; Herrera, Manuel; and Berkstresser, David E., B1 5,433,835, Cl. 204-298.090.

Klein, Gary S.; and Kotian, Vijayraj M., to Furon Company. Flame retardant electrical cable. B1 4,500,748, Cl. 174-121.00A.

Kotian, Vijayraj M.: *See*—
Klein, Gary S.; and Kotian, Vijayraj M., B1 4,500,748, Cl. 174-121.00A.

Sandoz Ltd.: *See*—
Greenberg, Norman A., B1 5,260,279, Cl. 514-21.000.

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95 5,630,471
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153 5,630,473
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366 5,630,506
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CLASS 256
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309 5,631,480
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449 5,631,489
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532 5,631,492
551 5,631,493
572 5,631,494
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690 5,631,498
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105 5,630,973
5,630,974
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330 5,630,978
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CLASS 269
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3.15 5,630,579
10.13 5,630,580
23 5,630,581
90 5,630,582
119 5,630,583
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33.993 5,630,599
33.994 5,630,600
40 5,630,601
47.26 5,630,602
407.1 5,630,603
426 5,630,604
432 5,630,605
479.3 5,630,606
489 5,630,607
605 5,630,608
664 5,630,609
728.2 5,630,610
5,630,611
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728.3 5,630,613
730.1 5,630,614
730.2 5,630,615
5,630,616
5,630,617
5,630,618
731 5,630,619
736 5,630,620
741 5,630,621
743.1 5,630,622
753 5,630,623
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809 5,630,626
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CLASS 283
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CLASS 285
24 5,630,628
156 5,630,629
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CLASS 294
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CLASS 313
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432 5,631,529
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560 5,631,531

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5,631,533
6 5,631,534
9 5,631,535
15 5,631,536
5,631,537
21 5,631,538
22 5,631,539
30 5,631,540
31 5,631,541
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CLASS 323
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273 5,631,547
5,631,548
277 5,631,549
283 5,631,550
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CLASS 324
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76.77 5,631,554
96 5,631,555
174 5,631,556
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178 5,631,558
244.1 5,631,559
309 5,631,560
322 5,631,561
333 5,631,562
338 5,631,563
380 5,631,564
511 5,631,565
556 5,631,566
617 5,631,567
690 5,631,568
713 5,631,569
718 5,631,570
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754 5,631,572
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41 5,631,578
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100 5,631,585
106 5,631,586
107 5,631,587
108 5,631,588
5,631,589
156 5,631,590
158 5,631,591
172 5,631,592
277 5,631,593
351 5,631,594
362 5,631,595
378 5,631,596
536 5,631,597
540 5,631,598
542 5,631,599
543 5,631,600

CLASS 329
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CLASS 330
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9 5,631,603
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146 5,631,605
253 5,631,606
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255 5,631,608

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CLASS 332
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CLASS 333
17.3 5,631,611
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CLASS 335
126 5,631,613
177 5,631,614
213 5,631,615
216 5,631,616
5,631,617
299 5,631,618

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198 5,631,619
260 5,631,620
280 5,631,621

CLASS 338
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142 5,631,623
309 5,631,624

CLASS 340
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479 5,631,626
5,631,627
5,631,628
500 5,631,629
522 5,631,630
572 5,631,631
611 5,631,632
621 5,631,633
626 5,631,634
825.47 5,631,635
825.69 5,631,636
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903 5,631,639
961 5,631,640
988 5,631,641
993 5,631,642

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100 5,631,645
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5,631,651
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162 5,631,655
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702 5,631,660
703 5,631,661
715 5,631,662
872 5,631,663

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88 5,631,665
104 5,631,666
134 5,631,667
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173 5,631,670
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46 5,631,678
55 5,631,679
69 5,631,680
85 5,631,681
86 5,631,682
87 5,631,683
100 5,631,684
102 5,631,685
133 5,631,686
134 5,631,687
171 5,631,688
211 5,631,689
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272 5,631,702
273 5,631,703
308 5,631,704
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452 5,631,706
461 5,631,707
500 5,631,708
531 5,631,709
555 5,631,710
563 5,631,711
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716 5,631,713
738 5,631,714
839 5,631,715

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64 5,631,754
110 5,631,750
5,631,753
117 5,631,755
173 5,631,752

CLASS 351
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44 5,631,717
119 5,631,718
153 5,631,719
163 5,631,720

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74 5,631,722
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205 5,631,724
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330 5,631,735
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191 5,631,760
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204 5,631,762
206 5,631,763
224 5,631,764
274 5,631,765
328 5,631,766
5,631,767
333 5,631,768
337 5,631,769
351 5,631,770
484 5,631,771
511 5,631,772
562 5,631,773
640 5,631,774
683 5,631,775
694 5,631,776
717 5,631,777
724 5,631,778
742 5,631,779
749 5,631,780
865 5,631,781
871 5,631,782

CLASS 360
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69 5,631,784
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97.01 5,631,786
97.02 5,631,787
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106 5,631,789
132 5,631,790
133 5,631,791
5,631,792

CLASS 361
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60 5,631,794
68 5,631,795
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102 5,631,798
103 5,631,799
5,631,800
154 5,631,801
228 5,631,802
234 5,631,803
312 5,631,804
681 5,631,805
773 5,631,806
794 5,631,807
801 5,631,808
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CLASS 362
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187 5,630,661
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97 5,631,816
98 5,631,817
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424.055 5,631,834
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424.098 5,631,829
426.015 5,631,836
431.03 5,631,837
449.9 5,631,838
468.15 5,631,839
474.24 5,631,840
488 5,631,841
490 5,631,842
492 5,631,843
496 5,631,844
510 5,631,845
514 B 5,631,846
514 R 5,631,847
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5,631,849
551.01 5,631,850
5,631,851
557 5,631,852
569 5,631,853
572 5,631,854
574 5,631,855
578 5,631,856
581 5,631,857
732 5,631,858
748 5,631,859
787 5,631,860

CLASS 365
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156 5,631,863
185.05 5,631,864
189.01 5,631,865
189.05 5,631,866
189.09 5,631,867
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201 5,631,870
203 5,631,871
227 5,631,872
230.06 5,631,869
5,631,873

CLASS 366
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192 5,630,666

CLASS 367
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99 5,631,875
135 5,631,876
5,631,877

CLASS 368
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287 5,631,880
290 5,631,881

CLASS 369
30 5,631,882
31 5,631,883
37 5,631,884
44.23 5,631,885
44.25 5,631,886
59 5,631,887
60 5,631,888
114 5,631,889
116 5,631,890
124 5,631,891
5,631,892
126 5,631,893
270 5,631,894
275.1 5,631,895

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228 5,631,896
235 5,631,908
237 5,631,897
261 5,631,904
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291 5,631,899
384 5,631,901
388 5,631,902
401 5,631,903
455 5,631,906
462 5,631,905
474 5,631,907

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22.1 5,631,910
22.3 5,631,911
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22.4 5,631,913
37.4 5,631,914
40.1 5,631,915

CLASS 372
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35 5,631,917
36 5,631,918

CLASS 373
120 5,631,919

CLASS 374
57 5,630,667
95 5,631,743

CLASS 375
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5,631,921
206 5,631,922
222 5,631,923
225 5,631,924
5,631,925
240 5,631,926
260 5,631,927
289 5,631,928
295 5,631,929
296 5,631,930
347 5,631,931
354 5,631,933
377 5,631,935

CLASS 376
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216 5,631,937
260 5,631,938
349 5,631,939

CLASS 377
64 5,631,940
75 5,631,941

CLASS 378
98.12 5,631,942
102 5,631,943
134 5,631,944
146 5,631,945

CLASS 379
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59 5,631,947
67 5,631,948
5,631,949
5,631,950
5,631,951
93 5,631,952
94 5,631,953
201 5,631,954
387 5,631,955
399 5,631,956
406 5,631,957
410 5,631,958
428 5,631,959

CLASS 380
2 5,631,960
21 5,631,961
25 5,631,962

CLASS 381
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74 5,631,964
77 5,631,966
98 5,631,967
106 5,631,968
107 5,631,969

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174 5,631,976
239 5,631,977
240 5,631,978
263 5,631,979
276 5,631,980
278 5,631,981
281 5,631,982
284 5,631,983
317 5,631,984

CLASS 384
527 5,630,668
570 5,630,669
606 5,630,670

CLASS 385
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59 5,631,985
78 5,631,986
88 5,631,987
89 5,631,988
91 5,631,989
92 5,631,990
93 5,631,991
94 5,631,992
135 5,631,993
147 5,631,994

CLASS 386
1 5,631,995
35 5,631,996
46 5,631,997
52 5,631,742
68 5,631,998

CLASS 388
805 5,631,999
806 5,632,000

CLASS 395
2 1 5,632,001
2.38 5,632,003
2 4 5,632,002
2 95 5,632,005
24 5,632,006
75 5,632,007
142 5,632,008
182.04 5,632,012
182.05 5,632,013
183.09 5,632,014
200.01 5,632,015
200.02 5,632,016
200.04 5,632,018
200.09 5,632,017
204 5,631,828
228 5,631,827
242 5,632,004
250 5,632,019
283 5,632,020
309 5,632,021
326 5,632,011
350 5,632,022
381 5,632,024
394 5,632,023
479 5,632,025
490 5,632,026
497.01 5,632,027
500 5,632,028
5,632,029
522 5,632,030
611 5,632,031
670 5,632,032
685 5,632,033
701 5,632,034
705 5,632,035
706 5,632,036
750 5,632,037
5,632,038
5,632,039
5,632,040
770 5,632,009
800 5,632,041
5,632,042

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CLASS 399
59 5,631,728
66 5,631,725
111 5,631,726

CLASS 403
28 5,630,671
135 5,630,672
158 5,630,673

CLASS 404
2 5,630,674
6 5,630,675
12 5,630,676
75 5,630,677

CLASS 405
166 5,630,678

CLASS 406
86 5,630,679
155 5,630,680

CLASS 407
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CLASS 408
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269 5,630,707
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322 5,630,709
326 5,630,710
477.9 5,630,711

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CLASS 420
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478 5,630,984

CLASS 422
17 5,630,985
64 5,630,986
82 5,630,987
100 5,630,988
102 5,630,989
186.07 5,630,990

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243.01 5,630,991
268 5,630,992
594 5,630,993
5,630,994
616 5,630,995

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9.363 5,630,997
49 5,630,999
53 5,631,000
58 5,631,001
62 5,631,002
70.31 5,631,003
78.04 5,631,004
5,631,005
93.71 5,631,006
94.61 5,631,007
184.1 5,631,009
235.1 5,631,010
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401 5,631,012
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682 5,631,026

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221 5,631,045
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571 5,631,050

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60 5,631,057
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130 5,631,061
141 5,631,062
5,631,063
143 5,631,064
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195 5,631,066
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213 5,631,067
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5,631,070
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332 5,631,081
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703 5,631,097

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7 5,631,111
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30 5,631,113
[illegible] 5,631,114
108 5,631,116
200 5,631,117
270.1 5,631,118
326 5,631,119
5,631,120
423 5,631,121
[illegible] 5,631,122
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544 5,630,927
566 5,631,125
567 5,631,126

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CLASS 433

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CLASS 442

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364 5,631,073

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CLASS 454

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CLASS 475

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176 5,630,773

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83 5,630,775
104 5,630,776
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CLASS 493

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416 5,630,780
438 5,630,781

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97 5,631,200
152 5,631,201

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152 5,631,203

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282 5,631,210

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58 5,631,250
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179 5,631,255
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321 5,631,273
326 5,631,274
337 5,631,279
345 5,631,280
381 5,631,281
389 5,631,275
397 5,631,276
414 5,631,277
416 5,631,278
419 5,631,282
423 5,631,283
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505 5,631,289
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530 5,631,292
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557 5,631,294
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561 5,631,296
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563 5,631,298
568 5,631,299
5,631,300
570 5,631,301
627 5,631,302
653 5,631,303
665 5,631,304
772.3 5,631,305
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5,631,307
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5,631,311
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789 5,631,320
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307.2 5,631,337

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60 5,631,341
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27.1 5,631,362

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610 5,631,369

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105 5,631,398
155 5,631,399
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CLASS 562

451 5,631,401
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CLASS 564

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90 5,630,820
107 5,630,821
114 5,630,822
128 5,630,823
139 5,630,824
148 5,630,825
170 5,630,826
171 5,630,827
187 5,630,828
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5,630,830
207 5,630,831
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213 5,630,833

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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01	5,630,915	5,630,539	5,631,094	5,631,607	5,632,009		5,631,947
	5,630,974	5,630,549	5,631,097	5,631,628	5,632,015		5,632,010
	5,631,952	5,630,551	5,631,114	5,631,651	5,632,019	10 :	5,631,066
04	5,630,289	5,630,556	5,631,128	5,631,653	5,632,022		5,631,074
	5,630,607	5,630,564	5,631,129	5,631,654	5,632,025		5,631,206
	5,630,627	5,630,577	5,631,133	5,631,655	5,632,028		5,631,210
	5,630,744	5,630,581	5,631,135	5,631,661	5,632,029		5,631,310
	5,630,857	5,630,600	5,631,141	5,631,678	5,632,036		5,631,311
	5,630,932	5,630,624	5,631,147	5,631,730	5,632,041	11 :	5,630,750
	5,631,175	5,630,659	5,631,148	5,631,731	5,433,835	12 :	5,630,235
	5,631,178	5,630,661	5,631,151	5,631,733	08 : 5,630,305		5,630,293
	5,631,187	5,630,664	5,631,165	5,631,734	5,630,337		5,630,344
	5,631,192	5,630,680	5,631,176	5,631,737	5,630,379		5,630,384
	5,631,196	5,630,687	5,631,179	5,631,738	5,630,419		5,630,424
	5,631,230	5,630,688	5,631,180	5,631,741	5,630,446		5,630,436
	5,631,245	5,630,690	5,631,194	5,631,745	5,630,566		5,630,465
	5,631,484	5,630,706	5,631,205	5,631,754	5,630,618		5,630,651
	5,631,518	5,630,709	5,631,226	5,631,786	5,630,652		5,630,764
	5,631,548	5,630,717	5,631,237	5,631,787	5,630,679		5,630,818
	5,631,608	5,630,730	5,631,297	5,631,788	5,630,742		5,630,835
	5,631,785	5,630,754	5,631,337	5,631,803	5,630,778		5,630,912
	5,631,962	5,630,766	5,631,373	5,631,828	5,630,782		5,630,989
	5,632,006	5,630,788	5,631,408	5,631,847	5,630,785		5,631,001
06	Re 35,514	5,630,794	5,631,425	5,631,849	5,631,171		5,631,120
	Re 35,517	5,630,797	5,631,446	5,631,852	5,631,219		5,631,260
	5,630,229	5,630,808	5,631,466	5,631,859	5,631,229		5,631,387
	5,630,243	5,630,813	5,631,470	5,631,861	5,631,359		5,631,500
	5,630,249	5,630,822	5,631,477	5,631,864	5,631,360		5,631,599
	5,630,265	5,630,841	5,631,485	5,631,876	5,631,552		5,631,630
	5,630,292	5,630,862	5,631,503	5,631,877	5,631,789		5,631,635
	5,630,295	5,630,866	5,631,506	5,631,878	5,631,950		5,631,856
	5,630,297	5,630,884	5,631,527	5,631,882	5,631,988		5,631,924
	5,630,304	5,630,891	5,631,528	5,631,887	5,632,012		5,632,016
	5,630,341	5,630,917	5,631,534	5,631,889	09 : 5,630,248	13 :	5,630,281
	5,630,371	5,630,919	5,631,536	5,631,897	5,630,275		5,630,713
	5,630,374	5,630,925	5,631,539	5,631,908	5,630,312		5,630,765
	5,630,415	5,630,926	5,631,567	5,631,912	5,630,332		5,630,936
	5,630,417	5,630,947	5,631,568	5,631,916	5,630,540		5,631,101
	5,630,418	5,630,948	5,631,569	5,631,918	5,630,671		5,631,103
	5,630,425	5,630,958	5,631,576	5,631,933	5,630,784		5,631,132
	5,630,457	5,630,970	5,631,577	5,631,938	5,630,910		5,631,554
	5,630,470	5,630,981	5,631,581	5,631,966	5,631,214		5,631,636
	5,630,477	5,630,988	5,631,583	5,631,967	5,631,235		5,631,693
	5,630,500	5,631,000	5,631,587	5,631,973	5,631,239		5,631,757
	5,630,505	5,631,018	5,631,593	5,631,981	5,631,315	16 :	5,630,583
	5,630,516	5,631,052	5,631,596	5,631,982	5,631,440		5,630,856
	5,630,518	5,631,053	5,631,598	5,631,999	5,631,452		5,631,174
	5,630,520	5,631,058	5,631,603	5,632,003	5,631,798		5,631,523
	5,630,526	5,631,081	5,631,606	5,632,005	5,631,880		5,631,804

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	5,631,862		5,631,716		5,630,381		5,631,721		5,630,496		5,631,242
17	: 5,630,234		5,631,719		5,630,427		5,631,758		5,630,528		5,631,251
	5,630,278		5,631,961		5,630,469		5,631,801		5,630,656		5,631,254
	5,630,299	25	: Re.35,512		5,630,487		5,631,846		5,630,670		5,631,262
	5,630,338		5,630,231		5,630,546		5,631,899		5,630,697		5,631,264
	5,630,393		5,630,257		5,630,547		5,631,904		5,630,905		5,631,280
	5,630,401		5,630,318		5,630,632		5,631,949		5,630,959		5,631,286
	5,630,464		5,630,429		5,630,646		5,631,959		5,631,007		5,631,305
	5,630,476		5,630,481		5,630,648		5,631,984		5,631,156		5,631,327
	5,630,494		5,630,508		5,630,726		5,631,989		5,631,190		5,631,339
	5,630,519		5,630,510		5,630,752	35	: 5,630,345		5,631,381		5,631,368
	5,630,596		5,630,527		5,630,840		5,630,413		5,631,455		5,631,386
	5,630,611		5,630,700		5,630,844		5,630,957		5,631,604		5,631,409
	5,630,622		5,630,780		5,630,902		5,630,994		5,631,732		5,631,545
	5,630,653		5,630,783		5,630,911		5,631,099		5,631,767		5,631,595
	5,630,663		5,630,791		5,630,956		5,631,390		5,631,843		5,631,771
	5,630,673		5,630,798		5,630,972		5,631,423		5,632,021		5,631,797
	5,630,710		5,630,799		5,631,006		5,631,461		5,632,035		5,631,826
	5,630,711		5,630,807		5,631,064		5,631,514	38	: 5,630,665		5,631,937
	5,630,775		5,630,811		5,631,073		5,631,640		5,631,802		5,631,968
	5,630,935		5,630,824		5,631,263	36	: Re.35,513	39	: 5,630,245	44	: 5,630,343
	5,631,025		5,630,826		5,631,267		5,630,258		5,630,319		5,630,434
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	5,631,832		5,631,158	28	: 5,630,439		5,630,739		5,630,658		5,631,072
	5,631,835		5,631,159		5,631,443		5,630,755		5,630,703		5,631,543
	5,631,903		5,631,162		5,631,854		5,630,779		5,630,729	46	: 5,631,565
	5,631,906		5,631,168	29	: 5,630,279		5,630,806		5,630,734	47	: 5,630,252
	5,631,907		5,631,201		5,630,545		5,630,812		5,630,760		5,630,368
	5,631,946		5,631,228		5,630,675		5,630,828		5,630,847		5,630,642
	5,631,956		5,631,324		5,630,762		5,630,895		5,630,848		5,630,792
	5,465,749		5,631,361		5,630,825		5,630,916		5,630,890		5,630,965
18	: 5,630,238		5,631,405		5,630,833		5,630,946		5,630,961		5,631,078
	5,630,302		5,631,436		5,631,042		5,630,951		5,631,022		5,631,432
	5,630,398		5,631,559		5,631,152		5,630,967		5,631,030	48	: 5,630,259
	5,630,461		5,631,572		5,631,570		5,631,019		5,631,061		5,630,310
	5,630,497		5,631,610		5,631,619		5,631,029		5,631,080		5,630,363
	5,630,507		5,631,629	31	: 5,630,352		5,631,034		5,631,086		5,630,380
	5,630,522		5,631,631		5,630,774		5,631,038		5,631,089		5,630,423
	5,630,543		5,631,694		5,630,781		5,631,102		5,631,258		5,630,430
	5,630,685		5,631,909		5,632,011		5,631,126		5,631,268		5,630,479
	5,630,986		5,631,936	32	: 5,630,503		5,631,167		5,631,375		5,630,576
	5,631,155		5,631,971		5,630,586		5,631,231		5,631,426		5,630,605
	5,631,163	26	: 5,630,247		5,630,921		5,631,232		5,631,513		5,630,637
	5,631,247		5,630,269		5,631,435		5,631,240		5,631,522		5,630,666
	5,631,250		5,630,315	33	: 5,630,809		5,631,243		5,631,550		5,630,718
	5,631,265		5,630,334		5,630,909		5,631,252		5,631,919		5,630,719
	5,631,298		5,630,339		5,631,118		5,631,256		5,631,993		5,630,814
	5,631,347		5,630,394		5,631,571		5,631,272		4,500,748		5,630,820
	5,631,369		5,630,463		5,631,618		5,631,292	40	: 5,630,389		5,630,838
	5,631,371		5,630,495		5,631,770		5,631,294		5,630,599		5,630,865
	5,631,374		5,630,571		5,631,818		5,631,295		5,630,728		5,630,874
	5,631,509		5,630,597	34	: Re.35,516		5,631,299		5,630,939		5,630,880
	5,631,602		5,630,615		5,630,268		5,631,372		5,631,203		5,630,964
	5,631,858		5,630,616		5,630,327		5,631,407		5,631,313		5,630,997
	5,631,943		5,630,621		5,630,360		5,631,424		5,631,335		5,631,004
19	: 5,630,489		5,630,623		5,630,372		5,631,473		5,631,634		5,631,005
	5,630,523		5,630,634		5,630,377		5,631,498		5,631,827		5,631,024
	5,630,689		5,630,643		5,630,447		5,631,505	41	: 5,630,296		5,631,059
20	: 5,630,375		5,630,644		5,630,499		5,631,614		5,630,303		5,631,069
	5,630,411		5,630,647		5,630,511		5,631,615		5,630,346		5,631,079
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	5,630,942		5,630,650		5,630,587		5,631,685		5,630,751		5,631,182
	5,631,540		5,630,654		5,630,602		5,631,686		5,630,839		5,631,193
21	: 5,630,478		5,630,672		5,630,745		5,631,703		5,630,949		5,631,202
	5,630,568		5,630,677		5,630,789		5,631,718		5,631,928		5,631,236
	5,630,606		5,630,758		5,630,803		5,631,722	42	: 5,630,232		5,631,287
	5,631,077		5,630,773		5,630,843		5,631,728		5,630,239		5,631,300
	5,631,215		5,630,950		5,630,933		5,631,740		5,630,280		5,631,301
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	5,631,920		5,631,055		5,630,999		5,631,748		5,630,409		5,631,348
22	: 5,630,233		5,631,093		5,631,012		5,631,759		5,630,444		5,631,391
	5,630,291		5,631,106		5,631,013		5,631,776		5,630,468		5,631,400
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	5,630,604		5,631,277		5,631,212		5,631,842		5,630,720		5,631,439
	5,631,047		5,631,329		5,631,270		5,631,885		5,630,725		5,631,460
23	: 5,630,504		5,631,353		5,631,273		5,631,915		5,630,816		5,631,467
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	5,631,790		5,631,419		5,631,282		5,631,951		5,630,852		5,631,537
24	: 5,630,382		5,631,429		5,631,316		5,631,970		5,630,863		5,631,562
	5,630,410		5,631,430		5,631,330		5,631,972		5,630,889		5,631,563
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	5,631,046		5,631,465		5,631,462		5,632,007		5,630,982		5,631,782
	5,631,137		5,631,566		5,631,472		5,632,013		5,630,991		5,631,799
	5,631,169		5,631,669		5,631,490		5,632,032		5,631,026		5,631,830
	5,631,283		5,631,825		5,631,659	37	: 5,630,246		5,631,033		5,631,848
	5,631,406		5,631,831		5,631,704		5,630,270		5,631,160		5,631,853
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	5,631,469	27	: 5,630,336		5,631,717		5,630,437		5,631,216		5,631,874

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	5,632,020		5,631,929		5,630,761		5,630,786		5,631,822		5,630,883
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	5,632,037		5,631,495		5,631,166		5,630,854	55	: 5,630,308		5,631,057
	5,632,038		5,631,578		5,631,844		5,630,894		5,630,361		5,631,328
	5,632,039		5,631,868		5,631,948		5,630,996		5,630,435		5,631,526
49	5,630,459	51	: 5,630,276		5,631,969		5,631,068		5,630,440		

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04	379,393		379,398		379,390		379,310		379,396		379,349
06	379,259	08	: 379,290		379,391		379,333	37	379,270		379,354
	379,263		379,375	17	379,277		379,363		379,297	42	379,347
	379,267	09	: 379,313		379,281	29	: 379,266		379,298		379,399
	379,286		379,314		379,308	32	: 379,404	39	379,334	47	379,369
	379,302		379,324		379,315	34	: 379,264		379,336	48	379,274
	379,304		379,325		379,355		379,299		379,337		379,279
	379,306		379,326		379,394	36	: 379,257		379,338		379,316
	379,351	12	: 379,278	20	379,265		379,260		379,339		379,359
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	379,367		379,345	26	379,275		379,309		379,342	49	379,379
	379,368		379,397		379,343		379,311		379,356	55	379,282
	379,371		379,405		379,364		379,312		379,403		379,295
	379,372	13	: 379,280		379,374		379,361	41	379,261		379,301
	379,378		379,284	27	379,293		379,376		379,294		379,330
	379,388		379,373		379,300		379,392		379,344		379,348

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12	9,901	26	9,895	29	9,896

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Bruce Lehman, *Commissioner*

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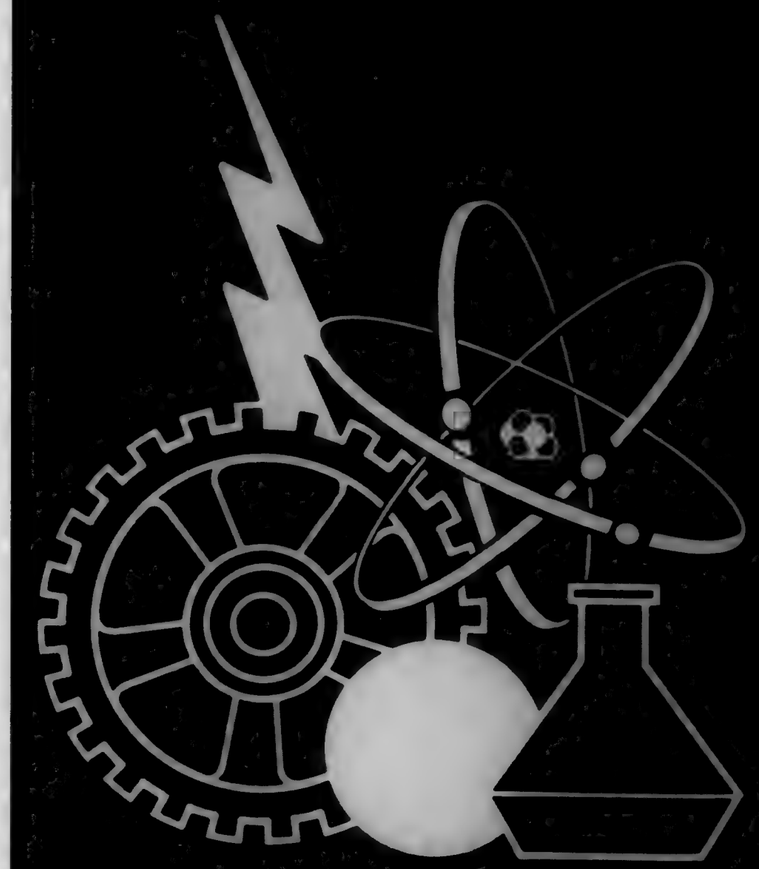
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 27 1997



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on May 24, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,313,665 through 5,315,711
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 22, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,926,501 through 4,928,319
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on May 20, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,589,146 through 4,590,620
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED March 19, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,430	06/838,968	06/02/87
(4,506,004)	(06/364,309)	(03/19/85)
Re. 34,424	06/863,966	10/26/93
(4,504,981)	(06/306,326)	(03/19/85)
4,504,978	06/490,095	03/19/85
4,504,979	06/500,097	03/19/85
4,504,980	06/533,438	03/19/85
4,504,990	06/399,331	03/19/85
4,504,991	06/386,101	03/19/85
4,504,993	06/480,758	03/19/85
4,505,005	06/540,887	03/19/85
4,505,008	06/603,140	03/19/85
4,505,010	06/421,314	03/19/85
4,505,020	06/517,571	03/19/85
4,505,027	06/575,138	03/19/85
4,505,032	06/626,531	03/19/85
4,505,048	06/446,628	03/19/85
4,505,051	06/519,370	03/19/85
4,505,052	06/495,834	03/19/85
4,505,062	06/405,345	03/19/85
4,505,068	06/467,818	03/19/85
4,505,072	06/530,344	03/19/85
4,505,078	06/538,860	03/19/85
4,505,079	06/387,044	03/19/85
4,505,081	06/409,287	03/19/85
4,505,091	06/376,447	03/19/85
4,505,099	06/535,740	03/19/85
4,505,106	06/587,201	03/19/85
4,505,110	06/405,192	03/19/85
4,505,119	06/512,411	03/19/85
4,505,127	06/467,454	03/19/85
4,505,128	06/521,095	03/19/85
4,505,130	06/589,667	03/19/85
4,505,131	06/474,353	03/19/85
4,505,133	06/510,308	03/19/85
4,505,134	06/492,701	03/19/85
4,505,140	06/415,666	03/19/85
4,505,147	06/468,793	03/19/85
4,505,149	06/460,439	03/19/85
4,505,151	06/487,536	03/19/85
4,505,161	06/478,381	03/19/85
4,505,164	06/309,689	03/19/85
4,505,174	06/547,953	03/19/85
4,505,176	06/423,023	03/19/85
4,505,181	06/479,196	03/19/85
4,505,183	06/446,396	03/19/85
4,505,186	06/495,934	03/19/85
4,505,187	06/365,927	03/19/85
4,505,190	06/369,502	03/19/85
4,505,198	06/536,286	03/19/85
4,505,211	06/375,756	03/19/85
4,505,216	06/480,326	03/19/85
4,505,217	06/489,700	03/19/85
4,505,227	06/583,148	03/19/85
4,505,228	06/522,110	03/19/85
4,505,239	06/587,691	03/19/85
4,505,247	06/480,323	03/19/85
4,505,251	06/464,905	03/19/85

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4,505,276	06/504,707	03/19/85
4,505,281	06/399,833	03/19/85
4,505,304	06/471,799	03/19/85
4,505,309	06/514,533	03/19/85
4,505,316	06/399,830	03/19/85
4,505,319	06/352,997	03/19/85
4,505,321	06/461,472	03/19/85
4,505,322	06/547,446	03/19/85
4,505,329	06/337,759	03/19/85
4,505,330	06/512,107	03/19/85
4,505,331	06/440,071	03/19/85
4,505,332	06/435,675	03/19/85
4,505,336	06/470,705	03/19/85
4,505,339	06/388,569	03/19/85
4,505,352	06/455,717	03/19/85
4,505,355	06/460,225	03/19/85
4,505,357	06/520,045	03/19/85
4,505,358	06/549,743	03/19/85
4,505,360	06/472,472	03/19/85
4,505,363	06/436,818	03/19/85
4,505,365	06/499,616	03/19/85
4,505,368	06/417,359	03/19/85
4,505,375	06/397,372	03/19/85
4,505,378	06/450,586	03/19/85
4,505,382	06/457,343	03/19/85
4,505,394	06/431,907	03/19/85
4,505,402	06/505,408	03/19/85
4,505,406	06/348,208	03/19/85
4,505,427	06/539,571	03/19/85
4,505,430	06/443,169	03/19/85
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4,505,442	06/505,815	03/19/85
4,505,443	06/296,710	03/19/85
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4,505,775	06/507,366	03/19/85
4,505,785	06/349,681	03/19/85
4,505,791	06/408,945	03/19/85
4,505,794	06/422,111	03/19/85
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4,506,087	06/538,589	03/19/85
4,506,088	06/488,291	03/19/85
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5,194,779	07/737,012	03/16/93
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5,194,787	07/612,209	03/16/93
5,194,802	07/782,139	03/16/93
5,194,814	07/703,881	03/16/93
5,194,815	07/768,913	03/16/93
5,194,825	07/736,645	03/16/93
5,194,842	07/452,537	03/16/93
5,194,844	07/762,902	03/16/93
5,194,845	07/566,542	03/16/93
5,194,850	07/671,703	03/16/93
5,194,854	07/579,858	03/16/93
5,194,855	07/681,355	03/16/93
5,194,876	07/652,783	03/16/93
5,194,961	07/795,791	03/16/93
5,194,978	07/793,973	03/16/93
5,194,979	07/712,213	03/16/93
5,194,981	07/424,942	03/16/93
5,194,983	07/789,407	03/16/93
5,194,988	07/752,822	03/16/93
5,194,994	07/755,012	03/16/93
5,195,027	07/701,762	03/16/93
5,195,029	07/459,820	03/16/93
5,195,040	07/503,553	03/16/93
5,195,051	07/861,078	03/16/93
5,195,058	07/876,246	03/16/93
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5,195,083	06/708,929	03/16/93
5,195,088	07/628,799	03/16/93
5,195,095	07/635,442	03/16/93
5,195,096	07/849,652	03/16/93
5,195,105	07/720,723	03/16/93
5,195,118	07/728,652	03/16/93
5,195,121	07/823,466	03/16/93
5,195,143	07/708,919	03/16/93
5,195,146	06/561,946	03/16/93
5,195,150	07/826,433	03/16/93
5,195,157	07/929,768	03/16/93
5,195,162	07/232,077	03/16/93
5,195,170	07/744,042	03/16/93
5,195,174	07/557,001	03/16/93

Reissue Application Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,263,960, Re. S.N. 08/517,510, Aug. 21, 1995, Cl. 606/188, INTEGRATED DISPOSABLE EAR PIERCING EARRING AND CLUTCH CARTRIDGE AND EAR PIERCING INSTRUMENT FOR USE THEREWITH, Samuel J. Mann. Owner of Record: *Inverness Corp., Fair Lawn, N.J.*, Attorney or Agent: Steven B. Pokotilow, Ex. Gp.: 3309

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,793,896, Reexam. No. 90/004,603, April 9, 1997, Cl. 156/643.1, METHOD FOR FORMING LOCAL INTERCONNECTS USING CHLORINE BEARING AGENTS, Monte A. Douglas, Owner of Record: *Texas Instruments, Inc., Dallas, Tex.*, Attorney or Agent: Michael K. Skrehot, Dallas, Tex., Ex. Gp.: 1109, Requester: Owner

4,810,156, Reexam. No. 90/004,595, April 7, 1997, Cl. 414/415, BULK BAG UNLOADING STATION, Stevens P. Pendleton, et. al., Owner of Record: *Vac-U-Max, Belleville, N.J.*, Attorney or Agent: Brian L. Wamsky, Londa & Traub, New York, N.Y., Ex. Gp.: 3107, Requester: Owner

4,975,874, Reexam. No. 90/004,600, April 9, 1997, Cl. 365/063, MATRIX INTERCONNECTION SYSTEM WITH DIFFERENT WIDTH CONDUCTORS, Jimmie D. Childers, et. al., Owner of Record: *Texas Intruments Inc., Dallas, Tex.*, Attorney or Agent: Jacqueline C. Garner, Texas Instruments Inc., Dallas, Tex., Ex. Gp.: 2511, Requester: Owner

5,096,607, Reexam. No. 90/004,599, April 9, 1997, Cl. 422/028, METHOD FOR CLEANING AND DISINFECTING CONTACT LENSES, Mary F. Mowrey-McKee, et. al., Owner of Record: *Bausch & Lomb Inc., Patent Law, Rochester, N.Y.*, Attorney or Agent: Denis A. Polyn, Bausch & Lomb, Inc., Rochester, N.Y., Ex. Gp.: 1312, Requester: Alcon Laboratories Inc., Gregge Brown, Fort Worth, Tex.

5,231,951, Reexam. No. 90/004,597, April 8, 1997, Cl. 114/345, INFLATABLE HUMAN SUPPORT STRUCTURE WITH LIQUID SQUIRTER, Leon H. Tager, et. al., Owner of Record: *Poolmaster, Inc., Sacramento, Calif.*, Attorney or Agent: Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 3102, Requester: International Leisure Products, c/o Londa and Traub, New York, N.Y

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5,350,443, Reexam. No. 90/004,605, April 10, 1997, Cl. 096/135, FILTER SHEET MATERIAL FOR PASSENGER CABINS IN MOTOR VEHICLES, Hasso Von Blucher, et. al., Owner of Record: *Hasso Von Blucher, Erkrath, Germany; Ernest de Rwiter, Leverkusen, Germany,* Attorney or Agent: Thomas R. Boland, Boland, Vorys, Satec, Seymour & Pease, Washington, D.C., Ex. Gp.: 1305, Requester: Timothy R. Kroboth, Charlotte, N.C.

5,353,626, Reexam. No. 90/004,596, April 7, 1997, Cl. 074/502.6, MECHANICAL CONTROL CABLE SYSTEM, Daniel F. Davidson, et. al., Owner of Record: *Gore Holdings, Inc., Newark, Del.,* Attorney or Agent: Gore Holdings, Newark, Del., Ex. Gp.: 3502, Requester: Shimano, Inc., c/o James A. Deland, San Ramon, Calif.

5,383,044, Reexam. No. 90/004,601, April 9, 1997, Cl. 359/145, SYSTEMS, METHODS, AND APPARATUS FOR TRANSMITTING RADIO FREQUENCY REMOTE CONTROL SIGNALS, Robert T. Borchardt, et. al., Owner of Record: *Recoton Corp., Lake Mary, Fla.*, Attorney or Agent: Peter L. Berger, Levisohn, Lerner, Berger & Langsam, New York, N.Y., Ex. Gp.: 2607, Requester: Owner

5,418,363, Reexam. No. 90/004,604, April 10, 1997, Cl. 250/306, SCANNING PROBE MICROSCOPE USING STORED DATA FOR VERTICAL PROBE POSITIONING, Virgil B. Elings, et. al., Owner of Record: *Digital Instruments, Inc., Santa Barbara, Calif.,* Attorney or Agent: Patrick F. Bright, Bright & Lorig, Los Angeles, Calif., Ex. Gp.: 2506, Requester: Owner

5,545,782, Reexam. No. 90/004,594, April 4, 1997, Cl. 585.005, METHOD FOR INHIBITING PREMATURE POLYMERIZATION OF VINYL AROMATIC MONOMERS, Roland A. E. Winter, et. al., Owner of Record: *Ciba-Geigy Corp., Tarrytown, N.Y.,* Attorney or Agent: Luther A. R. Hall & Michael Glynn, Ciba-Geigy Corp., Hawthorne, N.Y., Ex. Gp.: 1106, Requester: Raymond D. Thompson, Uniroyal Chemical Co., Middlebury, Conn.

5,554,121, Reexam. No. 90/004,602, April 9, 1997, Cl. 604/096, INTRALUMINAL CATHETER WITH HIGH STRENGTH PROXIMAL SHAFT, Robert D. Ainsworth, et. al., Owner of Record: *Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.,* Attorney or Agent: Edward J. Lynch, Crosby, Heafy, Roach & May, Oakland, Calif., Ex. Gp.: 3306, Requester: David M. Crorepton, Nawrocki, Rooney & Sivertson, Minneapolis, Minn.

5,563,604, Reexam. No. 90/004,598, April 8, 1997, Cl. 342/159, WEATHER RADAR USING SPECTRAL GAUSSIAN ENVELOPE DISCRIMINATION FOR CLUTTER REJECTION, Ruy L. Brandas, et. al., Owner of Record: *Allied Signal, Inc., Morris Township, N.J.,* Attorney or Agent: Jeanne C. Suchodolski, Morristown, N.J., Ex. Gp.: 2201, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
February 24, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
110,399	71/091,396	05/23/1916
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334,891	71/373,854	05/19/1936
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334,944	71/372,813	05/19/1936
334,953	71/372,887	05/19/1936
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335,056	71/372,406	05/19/1936
335,058	71/372,285	05/19/1936
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627,177	71/688,269	05/22/1956
627,180	71/693,500	05/22/1956
627,181	71/680,287	05/22/1956
627,185	71/694,155	05/22/1956
627,186	71/670,852	05/22/1956
627,187	71/680,845	05/22/1956
627,197	71/690,067	05/22/1956
627,200	71/690,419	05/22/1956
627,207	71/683,933	05/22/1956
627,211	71/688,780	05/22/1956
627,215	71/688,786	05/22/1956
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627,221	71/693,639	05/22/1956
627,223	71/696,175	05/22/1956
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627,326	71/695,836	05/22/1956
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627,336	71/698,616	05/22/1956
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627,459	71/698,475	05/22/1956
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627,474	71/674,261	05/22/1956
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1,039,553	73/057,710	05/18/1976
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1,039,614	73/053,572	05/18/1976
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1,039,617	73/061,530	05/18/1976
1,039,620	73/069,954	05/18/1976
1,039,624	73/059,315	05/18/1976
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1,039,632	73/063,023	05/18/1976
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1,039,716	73/032,069	05/18/1976
1,039,719	73/038,958	05/18/1976
1,039,720	73/039,680	05/18/1976
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1,039,723	73/047,419	05/18/1976
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1,039,744	73/031,714	05/18/1976
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1,039,814	73/021,760	05/18/1976
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1,039,863	73/050,422	05/18/1976
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1,039,950	73/049,026	05/18/1976
1,039,954	73/039,925	05/18/1976
1,039,955	73/058,196	05/18/1976
1,039,958	72/458,658	05/18/1976

Errata

"All reference to Patent No. 5,625,016 to Rinaldo S. Schiffino, et. al. of Texas, for HIGH TEMPERATURE SOLUTION POLYMERIZATION PROCESS appearing in the Official Gazette of April 29, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,625,938 to John M. Beakes, et. al. of Ohio, for STATOR MANUFACTURING METHOD appearing in the Official Gazette of May 6, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,626,024 to Tomomi Kaneko, et. al. of Japan, for SELF-CONTAINED COOLING APPARATUS FOR ACHIEVING CRYOGENIC TEMPERATURES appearing in the Official Gazette of May 6, 1997, should be deleted since no patent was granted."

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before July 11, 1997.

Alexander, Vanitha M., 100 Park Blvd., #81D, Cherry Hill, N.J. 08034

Bowers, Courtney A., 6285 Brentcrest Dr., Nashport, Ohio 43830

Hansen, Kenneth J., 9215 Matthew Dr., Manassas Park, Va. 20111

Hix, Lee Thomas, 47 Mistletoe Ln., Southern Shores, N.C. 27949

Larson, Kristin K., 1634 W. Abingdon Dr., #202, Alexandria, Va. 22314

Maiorana, David M., 2873 S. Abingdon St., #B1, Arlington, Va. 22206

McAndrews, Roland G., Jr., 1900 S. Eads St., #203, Arlington, Va. 22202

Peabody, John D., III, 1125 20th Street South, Arlington, Va. 22202

Richman, Howard R., 15312 Baileys Lane, Silver Spring, Md. 20906

Wright, Lee C., 11565 Paramus Dr., Gaithersburg, Md. 20878

May 2, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following person successfully passed the registration examination that was held August 28, 1996, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before July 11, 1997.

Presson, Thomas F., 95 Golden Hill Rd., Trumbull, Conn. 06611

May 2, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following person successfully passed the registration examination that was held November 2, 1994, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before July 11, 1997.

Snapp, Sandra S., 3216 Valley Dr., Alexandria, Va. 22302

May 2, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following person successfully passed the registration examination that was held May 3, 1995, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before July 11, 1997.

Freed, Rachel H., 302 Yale Dr., Alexandria, Va. 22314

May 2, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

"At Cost" Recordation of Assignments and Related Transactions

Background

The Patent and Trademark Office (PTO) offers "expedited local service" for three well-defined products: patent and trademark copies; certified copies of both patent and trademark applications-as-filed; and certified copies of trademark registrations (status and title). Customers can routinely order these expedited services which are specifically identified by separate codes in the Office's fee schedule. The Office's fee schedule does not specifically provide for other expedited service relating to delivery of documents or other products, largely because of the uncertainty and risk involved in promising services for which either the media/papers to satisfy the order or PTO staff support might not be available.

"At Cost" Services for Recording Assignments and Related Transactions

Assignments are processed and recorded on a "first in/first out" basis from the date of receipt in the Assignment Division. While PTO does not routinely and specifically offer expedited service to record assignments, it has recognized that there are situations, such as pending litigation or commercial transactions, which require other than "first in/first out" processing in order to meet a most urgent judicial or contractual deadline. Accordingly, the Office of Public Records (OPR) practice has been to receive and process these requests on a case-by case basis and to assess fees based on the statutory recordation fee (481,482, 581), plus a combination of "Labor Services" (484, 584) and "Other Services at Cost" (485,585). This has been referred to commonly as "at cost" recordation.

Turnaround time for this extraordinary recordation service is dependent on the scope and complexity of the specific request, staff resources which can be diverted, and other priority work in inventory. While every effort will be made to assist all customers, the PTO cannot always guarantee delivery of recorded documents on or before requested dates.

Requests for "at cost recordation" must be hand delivered or sent via overnight courier *directly* to OPR in the North Tower Building:

U.S. Patent and Trademark Office
Office of Public Records
ATTN: "At Cost" Recordation Services
2800 Crystal Drive, 10th Floor Service Counter
Arlington, VA 22202

Do not send requests to the general PTO address; such requests may be significantly delayed before delivery to OPR.

All documents submitted for "at cost" recordation must meet the minimum requirements set forth in 37 CFR Part 3. In addition, there must be a separate letter specifically requesting "at cost" recordation, signed by a principal party to the transaction (owner, inventor) or the attorney of record, stating the specific date the recordation notice must be returned, and describing the reason special service is required. Detailed justification/disclosure of commercial or confidential business information is not required, but there must be a clear urgency in the request.

Based on their review of the specific request, Assignment Division staff will contact the customer to discuss the feasibility of meeting the deadline and the total cost involved. The minimum charge for expedited assignment recordation is $90 (3 hours labor at $30 per hour), plus the established statutory fee per property. Customers will be contacted and asked to approve all charges before work begins. Customers sending requests via overnight delivery services must make payment via PTO deposit account, MasterCard, or Visa. Local "walk up" customers may pay cash at the PTO Office of Finance Cashier in addition to the other methods.

Once recorded, "at cost" assignments must either be picked up/signed for at the Office of Public Records NT Service Counter or sent via Federal Express (next business day service); charges for Federal Express delivery will be added to the total "at cost" bill.

Questions concerning "at cost" recordation services should be directed to the Assignment Division Customer Services Desk at (703) 308-9723.

May 1, 1997 WESLEY H. GEWEHR
Administrator for Information Dissemination

Omission

The following Utility patent was inadvertently omitted from the May 13, 1997 *Official Gazette*.

5,628,849

METHOD FOR IN-SITU ENVIRONMENT SENSITIVE SEALING AND/OR PRODUCT CONTROLLING

Benjamin V. Fasano, New Windsor; Johnathan S. Fish, Watervliet; Gregory M. Johnson, Poughkeepsie, and Subhash L. Shinde, Croton-on-Hudson, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

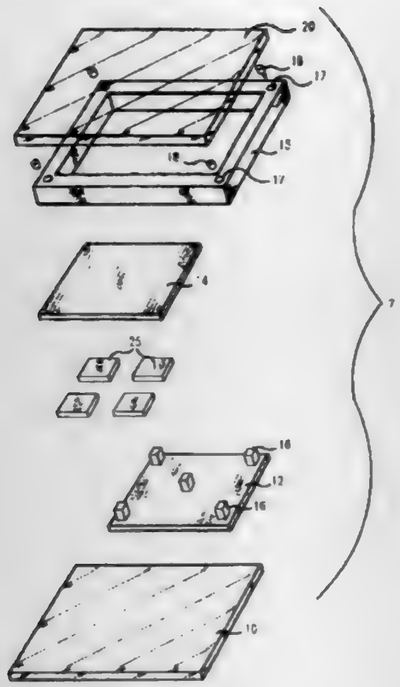
Filed May 26, 1995, Ser. No. 451,933

Int. Cl.[6] **B32B** *9/00;* **C03B** *29/00;* **C04B** *33/34*

U.S. Cl. 264—614 **41 Claims**

1. A method for processing of an electronic product in a high temperature thermal environment comprising the steps of:

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5,543,403	5,566,724	5,585,884	5,598,303
5,543,425	5,567,149	5,586,044	5,598,346
5,543,898	5,567,686	5,586,109	5,598,936
5,543,980	5,567,746	5,586,269	5,600,513
5,544,628	5,567,937	5,586,322	5,600,689
5,544,902	5,568,378	5,586,585	5,601,121
5,544,918	5,569,469	5,586,745	5,601,393
5,545,240	5,569,886	5,587,022	5,601,977
5,545,446	5,570,157	5,587,196	5,602,272
5,545,785	5,571,935	5,588,135	5,602,437
5,545,929	5,572,198	5,589,352	5,602,669
5,546,107	5,572,326	5,589,394	5,602,703
5,547,328	5,574,069	5,589,401	5,603,254
5,547,353	5,574,608	5,589,473	5,603,580
5,548,284	5,575,691	5,589,523	5,603,725
5,549,333	5,575,993	5,590,053	5,603,879
5,551,140	5,576,309	5,590,139	5,604,021
5,551,618	5,576,315	5,590,325	5,604,649
5,552,683	5,576,568	5,590,460	5,605,006
5,553,713	5,576,650	5,591,885	5,606,688
5,554,790	5,576,812	5,594,564	5,606,707
5,556,077	5,577,674	5,594,849	5,606,789
5,556,100	5,578,168	5,595,031	5,607,784
5,558,627	5,578,811	5,595,759	5,607,787
5,559,342	5,579,352	5,595,762	5,608,134
5,560,012	5,579,419	5,595,830	5,610,367
5,562,210	5,579,972	5,595,875	5,610,620
5,562,301	5,581,282	5,596,242	5,611,353
5,563,958	5,581,298	5,596,387	5,611,470
5,564,117	5,581,969	5,596,713	5,611,909
5,564,196	5,583,681	5,597,157	5,611,978
5,564,567	5,584,153	5,597,213	5,611,984
5,565,488	5,584,189	5,597,318	5,612,009
5,565,849	5,584,310	5,597,960	5,612,344
5,566,254	5,584,352	5,598,165	5,615,164

(a) placing said electronic product in a box, wherein said box has a first cover and a frame;
(b) separating said first cover from said frame with at least one spacer comprising a material which reduces in height when exposed to a specific change in said thermal environment;
(c) placing said box in said thermal environment; and
(d) exposing said box to said specific change in said thermal environment whereby said at least one spacer reduces in height when exposed to said change and thereby reduces the distance between said first cover and said frame.

Certificates of Correction
For the Week of May 27, 1997

B1 4,571,669	5,328,377	5,443,979	5,512,216
D. 374,219	5,330,772	5,459,707	5,513,539
D. 375,086	5,334,150	5,460,712	5,513,554
D. 376,483	5,346,491	5,464,448	5,524,981
D. 377,554	5,350,885	5,465,941	5,525,335
D. 378,481	5,363,388	5,467,047	5,525,341
Re. 35,286	5,389,658	5,469,937	5,525,584
4,841,498	5,398,794	5,470,865	5,527,810
4,935,677	5,402,538	5,481,215	5,528,044
4,939,666	5,416,136	5,482,967	5,531,730
4,979,100	5,424,477	5,489,868	5,533,270
5,121,526	5,426,771	5,491,285	5,534,453
5,197,130	5,430,632	5,491,840	5,535,369
5,243,535	5,432,336	5,495,041	5,537,643
5,243,987	5,434,131	5,495,603	5,539,716
5,256,150	5,439,701	5,507,902	5,540,192
5,266,208	5,440,569	5,512,199	5,543,061

DEPARTMENT OF COMMERCE Billing Code: 3510-16-M

Patent and Trademark Office

37 CFR Parts 1 and 2

[Docket No. 970410086-7086-01]

RIN 0651-AA92

Revision of Patent and Trademark Fees for Fiscal Year 1998

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Patent and Trademark Office (PTO) is proposing to amend the rules of practice in patent and trademark cases, Parts 1 and 2 of title 37, Code of Federal Regulations, to adjust certain patent fee and trademark service fee amounts to reflect fluctuations in the Consumer Price Index (CPI) and to recover costs of operation.

DATES: Written comments must be submitted on or before June 11, 1997.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Matthew Lee, Crystal Park 1, Suite 802, or by fax to (703) 305-8007.

Written comments will be available for public inspection in Crystal Park 1, Suite 802, located at 2011 Crystal Drive, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Matthew Lee by telephone at (703) 305-8051, fax at (703) 305-8007, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Office of Finance, Crystal Park 1, Suite 802, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed to adjust PTO fees in accordance with the applicable provisions of title 35, United States Code; section 31 of the Trademark (Lanham) Act of 1946 (15 U.S.C. 1113); and section 10101 of the Omnibus Budget Reconciliation Act of 1990 (as amended by section 8001 of Public Law 103-66), all as amended by the Patent and Trademark Office Authorization Act of 1991 (Public Law 102-204).

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In a notice of proposed rulemaking entitled "Changes to Implement 18-Month Publication of Patent Applications," published in the *Federal Register* at 60 FR 42352 (August 15, 1995), and in the *Official Gazette of the Patent and Trademark Office* at 1177 Off. Gaz. Pat. Office 61 (August 15, 1995), the PTO proposed to increase the filing, issue, and each maintenance fee by $30 to recover the cost of 18-month publication of patent applications. In the event that legislation providing for the 18-month publication of patent applications is enacted, the PTO may further increase the filing, issue, and each maintenance fee to recover the cost of 18-month publication of patent applications in the final rulemaking to implement such legislation.

BACKGROUND:

Statutory Provisions

Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. A fifty percent reduction in the fees paid under 35 U.S.C. 41(a) and (b) by independent inventors, small business concerns, and nonprofit organizations who meet prescribed definitions is required by 35 U.S.C. 41(h).

Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be adjusted on October 1, 1992, and every year thereafter, to reflect fluctuations in the Consumer Price Index (CPI) over the previous twelve months.

Section 10101 of the Omnibus Budget Reconciliation Act of 1990 (amended by section 8001 of Public Law 103-66) provides that there shall be a surcharge on all fees established under 35 U.S.C. 41(a) and (b) to collect $119 million in fiscal year 1998.

Subsection 41(d) of title 35, United States Code, authorizes the Commissioner to establish fees for all other processing, services, or materials related to patents to recover the average cost of providing these services or materials, except for the fees for recording a document affecting title, for each photocopy, and for each black and white copy of a patent.

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty (PCT).

Subsection 41(g) of title 35, United States Code, provides that new fee amounts established by the Commissioner under section 41 may take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office*.

Section 31 of the Trademark (Lanham) Act of 1946, as amended (15 U.S.C. 1113), authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for all other services and materials relating to trademarks and other marks.

Section 31(a) of the Trademark (Lanham) Act of 1946 (15 U.S.C. 1113(a)), as amended, allows trademark fees to be adjusted once each year to reflect, in the aggregate, any fluctuations during the preceding twelve months in the CPI.

Section 31 also allows new trademark fee amounts to take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office*.

Recovery Level Determinations

This proposed rule adjusts patent fees for a planned recovery of $763,391,000 in fiscal year 1998, as proposed in the Administration's budget request to the Congress.

The patent statutory fees established by 35 U.S.C. 41(a) and (b) are proposed to be adjusted on October 1, 1997, to reflect any fluctuations occurring during the previous twelve months in the Consumer Price Index for all urban consumers (CPI-U). In calculating these fluctuations, the Office of Management and Budget (OMB) has determined that the PTO should use CPI-U data as determined by the Secretary of Labor. However, the Department of Labor does not make public the CPI-U until approximately twenty-one days after the end of the month being calculated. Therefore, the latest CPI-U information available is for the month of February 1997. In accordance with previous rulemaking methodology, the PTO uses the Administration's projected CPI-U for the twelve-month period ending September 30, 1997, which is 2.6 percent. Based on this projection, patent statutory fees are proposed to be adjusted by 2.6 percent. Before the final fee schedule is published, the fees may be adjusted slightly based on updated data available from the Department of Labor.

Certain non-statutory patent processing fees established under 35 U.S.C. 41(d) and PCT processing fees established under 35 U.S.C. 376 are proposed to be adjusted to recover their estimated average costs in fiscal year 1998.

Three patent service fees that are set by statute will not be adjusted. The three fees that are not being adjusted are assignment recording fees, printed patent copy fees and photocopy charge fees.

Certain trademark service fees established under 15 U.S.C. 1113 are proposed to be adjusted to recover their estimated average costs in fiscal year 1998.

The proposed fee amounts were rounded by applying standard arithmetic rules so that the amounts rounded would be convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees between $2 and $99 were rounded to an even number so that any comparable small entity fee would be a whole number.

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Workload Projections

Determination of workload varies by fee. Principal workload projection techniques are as follows:

Patent application workloads are projected from statistical regression models using recent application filing trends. Patent issues are projected from an in-house patent production model and reflect examiner production achievements and goals. Patent maintenance fee workloads utilize patents issued 3.5, 7.5 and 11.5 years prior to payment and assume payment rates of 78 percent, 54 percent and 32 percent, respectively. Service fee workloads follow linear trends from prior years' activities.

General Procedures

Any fee amount that is paid on or after the effective date of the proposed fee increase would be subject to the new fees then in effect. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing or Transmission, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the PTO. A Certificate of Mailing or Transmission under Section 1.8 is not proper for items which are specifically excluded from the provisions of Section 1.8. Section 1.8 should be consulted for those items for which a Certificate of Mailing or Transmission is not proper. Such items include, inter alia, the filing of national and international applications for patents and the filing of trademark applications. However, the provisions of 37 CFR 1.10 relating to filing papers and fees using the "Express Mail" service of the United States Postal Service (USPS) do apply to any paper or fee (including patent and trademark applications) to be filed in the PTO. If an application or fee is filed by "Express Mail" with a date of deposit with the USPS (shown by the "date in" on the "Express Mail" mailing label) which is dated on or after the effective date of the rules, as amended, the amount of the fee to be paid would be the fee established by the amended rules.

In order to ensure clarity in the implementation of the new fees, a discussion of specific sections is set forth below.

Discussion of Specific Rules

37 CFR 1.16 National application filing fees.

Section 1.16, paragraphs (a), (b), (d), and (f) through (i), if revised as proposed, would adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.17 Patent application processing fees.

Section 1.17, paragraphs (a), (e) through (g), (m), (r) and (s), if revised as proposed, would adjust fees established therein to reflect fluctuations in the CPI.

Section 1.17, paragraphs (j) and (n) through (p), if revised as proposed, would adjust fees established therein to recover costs.

37 CFR 1.18 Patent issue fees.

Section 1.18, paragraphs (a) through (c), if revised as proposed, would adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.19 Document supply fees.

Section 1.19, paragraphs (a)(2) and (a)(3), if revised as proposed, would adjust fees established therein to recover costs.

37 CFR 1.20 Post-issuance fees.

Section 1.20, paragraphs (c), (i), and (j), if revised as proposed, would adjust fees established therein to recover costs.

Section 1.20, paragraphs (e) through (g), if revised as proposed, would adjust fees established therein to reflect fluctuations in the CPI.

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21, paragraphs (a)(1)(ii), (a)(6) and (j), if revised as proposed, would adjust fees established therein to recover costs.

37 CFR 1.445 International application filing, processing, and search fees.

Section 1.445, paragraph (a), if revised as proposed, would adjust the fees authorized by 35 U.S.C. 376 to recover costs and reflect current business practices.

37 CFR 1.482 International preliminary examination fees.

Section 1.482, paragraphs (a)(1)(i), (a)(1)(ii), and (a)(2)(ii), if revised as proposed, would adjust the fees authorized by 35 U.S.C. 376 to recover costs.

37 CFR 1.492 National stage fees.

Section 1.492, paragraphs (a), (b) and (d), if revised as proposed, would adjust fees established therein to reflect fluctuations in the CPI.

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37 CFR 2.6 Trademark fees.

Section 2.6, paragraphs (b)(4) and (b)(10), if revised as proposed, would adjust fees established therein to recover costs.

Other Considerations

This proposed rulemaking contains no information collection within the meaning of the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq. This proposed rule has been determined to be not significant for purposes of Executive Order 12866. The PTO has determined that this proposed rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule change would not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The proposed rule change increases fees to reflect the change in the CPI as authorized by 35 U.S.C. 41(f). Further, the principal impact of the major patent fees has already been taken into account in 35 U.S.C. 41(h), which provides small entities with a fifty percent reduction in the major patent fees.

A comparison of existing and proposed fee amounts is included as an Appendix to this notice of proposed rulemaking.

Lists of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 2

Administrative practice and procedure, Courts, Lawyers, Trademarks

For the reasons set forth in the preamble, the PTO is proposing to amend title 37 of the Code of Federal Regulations, Parts 1 and 2, as set forth below.

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is proposed to be amended by revising paragraphs (a), (b), (d), and (f) through (i) to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except provisional, design or plant applications:

By a small entity (§ 1.9(f)) $395.00

By other than a small entity $790.00

(b) In addition to the basic filing fee in an original application, except provisional applications, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f)) $41.00

By other than a small entity $82.00

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(d) In addition to the basic filing fee in an original application, except provisional applications, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:
By a small entity (§ 1.9(f)) $135.00
By other than a small entity $270.00

*****

(f) Basic fee for filing each design application:
By a small entity (§ 1.9(f)) $165.00
By other than a small entity $330.00

(g) Basic fee for filing each plant application, except provisional applications:
By a small entity (§ 1.9(f)) $270.00
By other than a small entity $540.00

(h) Basic fee for filing each reissue application:
By a small entity (§ 1.9(f)) $395.00
By other than a small entity $790.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:
By a small entity (§ 1.9(f)) $41.00
By other than a small entity $82.00

*****

3. Section 1.17 is proposed to be amended by revising paragraphs (a), (e) through (g), (j), (m) through (p), (r), and (s) to read as follows:

§ 1.17 Patent application processing fees.

(a) ***
(1) ***
(2) For reply within second month:
By a small entity (§ 1.9(f)) $200.00
By other than a small entity $400.00

(3) For reply within third month:
By a small entity (§ 1.9(f)) $475.00
By other than a small entity $950.00
(4) For reply within fourth month:
By a small entity (§ 1.9(f)) $755.00
By other than a small entity $1,510.00
(5) For reply within fifth month:
By a small entity (§ 1.9(f)) $1,030.00
By other than a small entity $2,060.00

*****

(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:
By a small entity (§ 1.9(f)) $155.00
By other than a small entity $310.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:
By a small entity (§ 1.9 (f)) $155.00
By other than a small entity $310.00

(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in an appeal under 35 U.S.C. 134:
By a small entity (§ 1.9(f)) $135.00
By other than a small entity $270.00

*****

(j) For filing a petition to institute a public use proceeding under § 1.292 ..... $1,510.00

*****

(m) For filing a petition:
(1) For revival of an unintentionally abandoned application, or
(2) For the unintentionally delayed payment of the fee for issuing a patent:
By a small entity (§ 1.9(f)) $660.00
By other than a small entity $1,320.00

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(n) For requesting publication of a statutory invention registration prior to the mailing of the first examiner's action pursuant to § 1.104--$920.00 reduced by the amount of the application basic filing fee paid.

(o) For requesting publication of a statutory invention registration after the mailing of the first examiner's action pursuant to § 1.104--$1,840.00 reduced by the amount of the application basic filing fee paid.

(p) For submission of an information disclosure statement under § 1.97(c).....$240.00

*****

(r) For entry of a submission after final rejection under §1.129(a):
By a small entity (§ 1.9(f)).....$395.00
By other than a small entity.....$790.00

(s) For each additional invention requested to be examined under §1.129(b):
By a small entity (§ 1.9(f)).....$395.00
By other than a small entity.....$790.00

4. Section 1.18 is proposed to be revised to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
By a small entity (§ 1.9(f)).....$660.00
By other than a small entity.....$1,320.00

(b) Issue fee for issuing a design patent:
By a small entity (§ 1.9(f)).....$225.00
By other than a small entity.....$450.00

(c) Issue fee for issuing a plant patent:
By a small entity (§ 1.9(f)).....$335.00
By other than a small entity.....$670.00

5. Section 1.19 is proposed to be amended by revising paragraphs (a)(2) and (a)(3) to read as follows:

§ 1.19 Document supply fees.

(a) ***

(2) Printed copy of a plant patent in color.....$15.00
(3) Copy of a utility patent or statutory invention registration containing color drawing (see §1.84(a)(2)).....$25.00

*****

6. Section 1.20 is proposed to be amended by revising paragraphs (c), (e) through (g), (i)(1), (i)(2), and (j)(1) through (j)(3) to read as follows:

§ 1.20 Post issuance fees.

*****

(c) For filing a request for reexamination (§ 1.510(a)).....$2,520.00

*****

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant:
By a small entity (§ 1.9(f)).....$525.00
By other than a small entity.....$1,050.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant:
By a small entity (§ 1.9(f)).....$1,050.00
By other than a small entity.....$2,100.00

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(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,580.00

By other than a small entity $3,160.00

*****

(i) ***

(1) unavoidable $700.00

(2) unintentional $1,640.00

(j) ***

(1) Application for extension under §1.740 ..... $1,120.00

(2) Initial application for interim extension under §1.790 ..... $420.00

(3) Subsequent application for interim extension under §1.790 ..... $220.00

7. Section 1.21 is proposed to be amended by revising paragraphs (a)(1)(ii), (a)(6) and (j) to read as follows:

§ 1.21 Miscellaneous fees and charges.

(a) ***

(1) ***

(ii) Registration examination fee $310.00

*****

(6) For requesting regrading of an examination under § 10.7(c):

(i) Regrading of morning section (PTO Practice and Procedure) $230.00

(ii) Regrading of afternoon section (Claim Drafting) $540.00

(j) Labor charges for services, per hour or fraction thereof $40.00

*****

8. Section 1.445 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a) The following fees and charges for international applications are established by the Commissioner under the authority of 35 U.S.C. 376:

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) $240.00

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16):

(i) Where a corresponding prior United States National application filed under 35 U.S.C. 111(a) with the filing fee under 37 CFR 1.16(a) has been filed $450.00

(ii) For all situations not provided for in (a)(2)(i) of this section $700.00

(3) A supplemental search fee when required, per additional invention $210.00

*****

9. Section 1.482 is proposed to be amended by revising paragraphs (a)(1)(i), (a)(1)(ii), and (a)(2)(ii) to read as follows:

§ 1.482 International preliminary examination fees.

(a) ***

(1) ***

(i) Where an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority, a preliminary examination fee of $490.00

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office, a preliminary examination fee of $750.00

(2) ***

(ii) Where the International Searching Authority for the international application was an authority other than the United States Patent and Trademark Office $270.00

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10. Section 1.492 is proposed to be amended by revising paragraphs (a), (b) and (d) to read as follows:

§ 1.492 National stage fees.

*****

(a) The basic national fee:

(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:
By a small entity (§ 1.9(f)) $360.00
By other than a small entity $720.00

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:
By a small entity (§ 1.9(f)) $395.00
By other than a small entity $790.00

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:
By a small entity (§ 1.9(f)) $535.00
By other than a small entity $1,070.00

(4) Where an international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33 (1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):
By a small entity (§ 1.9(f)) $49.00
By other than a small entity $98.00

(5) Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office:
By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:
By a small entity (§ 1.9(f)) $41.00
By other than a small entity $82.00

*****

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:
By a small entity (§ 1.9(f)) $135.00
By other than a small entity $270.00

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Part 2 - Rules of Practice in Trademark Cases

1. The authority citation for 37 CFR Part 2 would continue to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.6 is proposed to be amended by revising paragraphs (b)(4) and (b)(10) to read as follows:

§ 2.6 Trademark fees.

*****

(b) Trademark service fees.

*****

(4) Certified copy of a registered mark, showing title and/or status:

(i) Regular service.....$15.00

(ii) Expedited local service.....$30.00

*****

(10) Labor charges for services, per hour or fraction thereof.....$40.00

*****

Date: May 1, 1997

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

NOTE- The following appendix is provided as a courtesy to the public, but is not a substitute for the rules. It will not appear in the Code of Federal Regulations.

Appendix A - Comparison of Existing and Revised Fee Amounts

Page 1

37 CFR Sec.	DESCRIPTION	Pre-Oct 1997	Oct 1997
1.16(a)	Basic Filing Fee	$770	$790
1.16(a)	Basic Filing Fee (Small Entity)	$385	$395
1.16(b)	Independent Claims	$80	$82
1.16(b)	Independent Claims (Small Entity)	$40	$41
1.16(c)	Claims in Excess of 20	$22	---
1.16(c)	Claims in Excess of 20 (Small Entity)	$11	—
1.16(d)	Multiple Dependent Claims	$260	$270
1.16(d)	Multiple Dependent Claims (Small Entity)	$130	$135
1.16(e)	Surcharge - Late Filing Fee	$130	---
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	$65	---
1.16(f)	Design Filing Fee	$320	$330
1.16(f)	Design Filing Fee (Small Entity)	$160	$165
1.16(g)	Plant Filing Fee	$530	$540
1.16(g)	Plant Filing Fee (Small Entity)	$265	$270
1.16(h)	Reissue Filing Fee	$770	$790
1.16(h)	Reissue Filing Fee (Small Entity)	$385	$395
1.16(i)	Reissue Independent Claims	$80	$82
1.16(i)	Reissue Independent Claims (Small Entity)	$40	$41
1.16(j)	Reissue Claims in Excess of 20	$22	---
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	$11	---
1.16(k)	Provisional Application Filing Fee	$150	—
1.16(k)	Provisional Application Filing Fee (Small Entity)	$75	---
1.16(l)	Surcharge - Incomplete Provisional App. Filed	$50	---
1.16(l)	Surcharge - Incomplete Provisional App. Filed (Small Entity)	$25	---
1.17(a)(1)	Extension - First Month	$110	---
1.17(a)(1)	Extension - First Month (Small Entity)	$55	---
1.17(a)(2)	Extension - Second Month	$390	$400
1.17(a)(2)	Extension - Second Month (Small Entity)	$195	$200
1.17(a)(3)	Extension - Third Month	$930	$950
1.17(a)(3)	Extension - Third Month (Small Entity)	$465	$475
1.17(a)(4)	Extension - Fourth Month	$1,470	$1,510
1.17(a)(4)	Extension - Fourth Month (Small Entity)	$735	$755
1.17(a)(5)	Extension - Fifth Month	---	$2,060
1.17(a)(5)	Extension - Fifth Month (Small Entity)	---	$1,030
1.17(e)	Notice of Appeal	$300	$310
1.17(e)	Notice of Appeal (Small Entity)	$150	$155
1.17(f)	Filing a Brief	$300	$310
1.17(f)	Filing a Brief (Small Entity)	$150	$155
1.17(g)	Request for Oral Hearing	$260	$270
1.17(g)	Request for Oral Hearing (Small Entity)	$130	$135
1.17(h)	Petition - Not All Inventors	$130	---
1.17(h)	Petition - Correction of Inventorship	$130	---
1.17(h)	Petition - Decision on Questions	$130	---
1.17(h)	Petition - Suspend Rules	$130	---
1.17(h)	Petition - Expedited License	$130	---
1.17(h)	Petition - Scope of License	$130	---
1.17(h)	Petition - Retroactive License	$130	---
1.17(h)	Petition - Refusing Maintenance Fee	$130	---
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	$130	---
1.17(h)	Petition - Interference	$130	---
1.17(h)	Petition - Reconsider Interference	$130	---

--- These fees are not affected by this rulemaking.

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Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Pre-Oct 1997	Oct 1997
1.17(h)	Petition - Late Filing of Interference	$130	—
1.20(b)	Petition - Correction of Inventorship	$130	—
1.17(h)	Petition - Refusal to Publish SIR	$130	---
1.17(i)	Petition - For Assignment	$130	---
1.17(i)	Petition - For Application	$130	---
1.17(i)	Petition - Late Priority Papers	$130	---
1.17(i)	Petition - Suspend Action	$130	---
1.17(i)	Petition - Divisional Reissues to Issue Separately	$130	---
1.17(i)	Petition - For Interference Agreement	$130	---
1.17(i)	Petition - Amendment After Issue	$130	---
1.17(i)	Petition - Withdrawal After Issue	$130	---
1.17(i)	Petition - Defer Issue	$130	---
1.17(i)	Petition - Issue to Assignee	$130	---
1.17(i)	Petition - Accord a Filing Date Under §1.53	$130	---
1.17(i)	Petition - Accord a Filing Date Under §1.62	$130	---
1.17(i)	Petition - Make Application Special	$130	---
1.17(j)	Petition - Public Use Proceeding	$1,470	$1,510
1.17(k)	Non-English Specification	$130	—
1.17(l)	Petition - Revive Abandoned Appl.	$110	---
1.17(l)	Petition - Revive Abandoned Appl. (Small Entity)	$55	---
1.17(m)	Petition - Revive Unintentionally Abandoned Appl.	$1,290	$1,320
1.17(m)	Petition - Revive Unintent Abandoned Appl. (Small Entity)	$645	$660
1.17(n)	SIR - Prior to Examiner's Action	$900	$920
1.17(o)	SIR - After Examiner's Action	$1,790	$1,840
1.17(p)	Submission of an Information Disclosure Statement (§1.97)	$230	$240
1.17(q)	Petition - Correction of Inventorship (Prov. App.)	$50	---
1.17(q)	Petition - Accord a filing date (Prov. App.)	$50	---
1.17(q)	Petition - Entry of submission after final rejection (Prov. App.)	$50	---
1.17(r)	Filing a submission after final rejection (1.129(a))	$770	$790
1.17(r)	Filing a submission after final rejection (1.129(a)) (Small Entity)	$385	$395
1.17(s)	Per add'l invention to be examined (1.129(b))	$770	$790
1.17(s)	Per add'l invention to be examined (1.129(b)) (Small Entity)	$385	$395
1.18(a)	Issue Fee	$1,290	$1,320
1.18(a)	Issue Fee (Small Entity)	$645	$660
1.18(b)	Design Issue Fee	$440	$450
1.18(b)	Design Issue Fee (Small Entity)	$220	$225
1.18(c)	Plant Issue Fee	$650	$670
1.18(c)	Plant Issue Fee (Small Entity)	$325	$335
1.19(a)(1)(i)	Copy of Patent	$3	---
1.19(a)(1)(ii)	Patent Copy - Overnight delivery to PTO Box or overnight fax	$6	—
1.19(a)(1)(iii)	Patent Copy Ordered by Expedited Mail or Fax - Exp. service	$25	---
1.19(a)(2)	Plant Patent Copy	$12	$15
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	$24	$25
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	$15	---
1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	$30	---
1.19(b)(2)	Cert or Uncert Copy of Patent-Related File Wrapper/Contents	$150	---
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	$25	---
1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	$25	---
1.19(c)	Library Service	$50	---
1.19(d)	List of Patents in Subclass	$3	—
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	$10	---
1.19(f)	Copy of Non-U.S. Patent Document	$25	—
1.19(g)	Comparing and Certifying Copies, Per Document, Per Copy	$25	---
1.19(h)	Duplicate or Corrected Filing Receipt	$25	---

--- These fees are not affected by this rulemaking.

Appendix A - Comparison of Existing and Revised Fee Amounts

37 CFR Sec.	DESCRIPTION	Pre-Oct 1997	Oct 1997
1.20(a)	Certificate of Correction	$100	---
1.20(c)	Reexamination	$2,460	$2,520
1.20(d)	Statutory Disclaimer	$110	---
1.20(d)	Statutory Disclaimer (Small Entity)	$55	---
1.20(e)	Maintenance Fee - 3.5 Years	$1,020	$1,050
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	$510	$525
1.20(f)	Maintenance Fee - 7.5 Years	$2,050	$2,100
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	$1,025	$1,050
1.20(g)	Maintenance Fee - 11.5 Years	$3,080	$3,160
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	$1,540	$1,580
1.20(h)	Surcharge - Maintenance Fee - 6 Months	$130	—
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	$65	---
1.20(i)(1)	Surcharge - Maintenance After Expiration - Unavoidable	$690	$700
1.20(i)(2)	Surcharge - Maintenance After Expiration - Unintentional	$1,600	$1,640
1.20(j)(1)	Extension of Term of Patent Under 1.740	$1,090	$1,120
1.20(j)(2)	Initial Application for Interim Extension Under 1.790	$410	$420
1.20(j)(3)	Subsequent Application for Interim Extension Under 1.790	$210	$220
1.21(a)(1)(i)	Application Fee (non-refundable)	$40	---
1.21(a)(1)(ii)	Registration examination fee	$300	$310
1.21(a)(2)	Registration to Practice	$100	---
1.21(a)(3)	Reinstatement to Practice	$40	---
1.21(a)(4)	Certificate of Good Standing	$10	---
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	$20	---
1.21(a)(5)	Review of Decision of Director, OED	$130	---
1.21(a)(6)(i)	Regrading of A.M. section (PTO Practice and Procedure)	$225	$230
1.21(a)(6)(ii)	Regrading of P.M. section (Claim Drafting)	$530	$540
1.21(b)(1)	Establish Deposit Account	$10	---
1.21(b)(2)	Service Charge Below Minimum Balance	$25	---
1.21(b)(3)	Service Charge Below Minimum Balance	$25	---
1.21(c)	Filing a Disclosure Document	$10	---
1.21(d)	Box Rental	$50	---
1.21(e)	International Type Search Report	$40	---
1.21(g)	Self-Service Copy Charge	$.25	---
1.21(h)	Recording Patent Property	$40	---
1.21(i)	Publication in the OG	$25	---
1.21(j)	Labor Charges for Services	$30	$40
1.21(k)	Unspecified Other Services	Actual Cost	---
1.21(k)	Terminal Use APS-CSIR (per hour)	$50	---
1.21(l)	Retaining abandoned application	$130	---
1.21(m)	Processing Returned Checks	$50	---
1.21(n)	Handling Fee - Incomplete Application	$130	---
1.21(o)	Terminal Use APS-TEXT	$40	—
1.24	Coupons for Patent and Trademark Copies	$3	---
1.296	Handling Fee - Withdrawal SIR	$130	—
1.445(a)(1)	Transmittal Fee	$230	$240
1.445(a)(2)(i)	PCT Search Fee - Prior U.S. Application	$440	$450
1.445(a)(2)(ii)	PCT Search Fee - No U.S. Application	$680	$700
1.445(a)(3)	Supplemental Search	$200	$210
1.482(a)(1)(i)	Preliminary Exam Fee	$480	$490
1.482(a)(1)(ii)	Preliminary Exam Fee	$730	$750
1.482(a)(2)(i)	Additional Invention	$140	—
1.482(a)(2)(ii)	Additional Invention	$260	$270
1.492(a)(1)	Preliminary Examining Authority	$700	$720
1.492(a)(1)	Preliminary Examining Authority (Small Entity)	$350	$360

--- These fees are not affected by this rulemaking.

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37 CFR Sec.	DESCRIPTION	Pre-Oct 1997	Oct 1997
1.492(a)(2)	Searching Authority	$770	$790
1.492(a)(2)	Searching Authority (Small Entity)	$385	$395
1.492(a)(3)	PTO Not ISA nor IPEA	$1.040	$1.070
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	$520	$535
1.492(a)(4)	Claims - IPEA	$96	$98
1.492(a)(4)	Claims - IPEA (Small Entity)	$48	$49
1.492(a)(5)	Filing with EPO/JPO Search Report	$910	$930
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	$455	$465
1.492(b)	Claims - Extra Individual (Over 3)	$80	$82
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	$40	$41
1.492(c)	Claims - Extra Total (Over 20)	$22	---
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	$11	---
1.492(d)	Claims - Multiple Dependents	$260	$270
1.492(d)	Claims - Multiple Dependents (Small Entity)	$130	$135
1.492(e)	Surcharge	$130	---
1.492(e)	Surcharge (Small Entity)	$65	---
1.492(f)	English Translation - After 20 Months	$130	---
2.6(a)(1)	Application for Registration, Per Class	$245	---
2.6(a)(2)	Amendment to Allege Use, Per Class	$100	---
2.6(a)(3)	Statement of Use, Per Class	$100	---
2.6(a)(4)	Extension for Filing Statement of Use, Per Class	$100	---
2.6(a)(5)	Application for Renewal, Per Class	$300	---
2.6(a)(6)	Surcharge for Late Renewal, Per Class	$100	---
2.6(a)(7)	Publication of Mark Under §12(c), Per Class	$100	---
2.6(a)(8)	Issuing New Certificate of Registration	$100	---
2.6(a)(9)	Certificate of Correction of Registrant's Error	$100	---
2.6(a)(10)	Filing Disclaimer to Registration	$100	---
2.6(a)(11)	Filing Amendment to Registration	$100	---
2.6(a)(12)	Filing Affidavit Under Section 8, Per Class	$100	---
2.6(a)(13)	Filing Affidavit Under Section 15, Per Class	$100	---
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	$200	---
2.6(a)(15)	Petitions to the Commissioner	$100	---
2.6(a)(16)	Petition to Cancel, Per Class	$200	---
2.6(a)(17)	Notice of Opposition, Per Class	$200	---
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	$100	---
2.6(a)(19)	Dividing an Application, Per New Application Created	$100	---
2.6(b)(1)(i)	Copy of Registered Mark	$3	---
2.6(b)(1)(ii)	Copy of Registered Mark, overnight delivery to PTO box or fax	$6	---
2.6(b)(1)(iii)	Copy of Reg. Mark Ordered Via Exp. Mail or Fax, Exp. Svc	$25	---
2.6(b)(2)(i)	Certified Copy of TM Application as Filed	$15	---
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	$30	---
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Contents	$50	---
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status	$10	$15
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	$20	$30
2.6(b)(5)	Certified or Uncertified Copy of TM Records	$25	---
2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document	$40	---
2.6(b)(6)	For Second and Subsequent Marks in Same Document	$25	---
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert	$25	---
2.6(b)(8)	Terminal Use X-SEARCH	$40	---
2.6(b)(9)	Self-Service Copy Charge	$0.25	---
2.6(b)(10)	Labor Charges for Services	$30	$40
2.6(b)(11)	Unspecified Other Services	Actual Cost	---

--- These fees are not affected by this rulemaking

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

April 7 - 11, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
4-9	EX	74/566,165	DTR Associates, L. P.	2(d)	Refusal Affirmed		"POWER DRIVER" (and design) [hand tools, namely, mechanical threaded fastener drivers]	"POWER DRIVE" (and design) [metal fasteners, namely, screws]	No
4-11	EX	74/571,156	Quick Clip, Inc.	whether the mark sought to be registered has been used in commerce (as evidenced by the specimens of record) [mutilation]	Refusal Reversed		"Q" (and design) [metal roof tile hold down clips]		No
4-11	EX EX	74/367,211 74/367,213	Sandberg & Sikorski Diamond Corp.	whether the matter asserted for registration functions as a trademark or is, instead, merely ornamental	Refusal Affirmed		configuration of an array of gems on a wrap-type ring comprising two gems on each side of the wrap-type ring, with the larger gem of each two-gem set on the inside and the smaller gem on the outside [rings sold to wholesalers, vendors and retailers]		Yes

(1)EX=EX PARTE APPEAL, OPP=OPPOSITION, CANC=CANCELLATION, CU=CONCURRENT USE, (SJ)=SUMMARY JUDGMENT, (R)=REQ. FOR RECONSIDERATION

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Please address mail as follows:

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Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

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Assistant Commissioner for Trademarks
2900 Crystal Drive
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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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Box Designations	Explanation
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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Alabama	Auburn University Libraries	(334) 844-1747
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Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
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Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
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	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
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	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
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South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
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Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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PATENT EXAMINING CORPS

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	12/11/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	09/18/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—JOHN F. TERAPANE, Director	308-0651	10/03/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/31/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/17/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	04/19/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/24/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-9600	06/29/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	07/07/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/30/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/08/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	04/28/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—MARGARET FOCARINO, Director	308-1113	09/05/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/14/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS, TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/10/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/11/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/09/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of April 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/30/96	01/30/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/08/96	11/13/96
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/04/96	03/17/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/20/96	12/27/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/02/96	12/12/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/16/96	10/28/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	01/13/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/09/96	01/22/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/96	02/03/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	02/21/97	—0—
Renewals (All Classes)	02/10/97	—0—
Section 12(c) Publications (All Classes)	12/05/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

MAY 27, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 33,620 (3203rd)

CONTINUOUSLY VARIABLE CAPACITY REFRIGERATION SYSTEM

Jacob P. Persem, Conyers, Ga., and Walter C. Emery, Somerville, N.J., assignors to Margaux, Inc., Conyers, Ga.

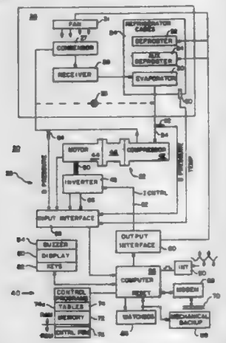
Reexamination Request No. 90/003,420, Apr. 28, 1994.

Reexamination Certificate for Reissue Patent Re. 33,620, issued Jun. 25, 1991, Ser. No. 356,380, May 23, 1989.

Original No. 4,765,150, dated Aug. 23, 1988, Ser. No. 12,578, Feb. 9, 1987.

Int. Cl.[6] F25B *1/00*

U.S. Cl. 62—215



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** and **30–32** is confirmed.

Claims **21**, **24**, **27**, **33** and **36** are determined to be patentable as amended.

Claims **22**, **23**, **25**, **26**, **28**, **29**, **34**, **35**, **37** and **38**, dependent on an amended claim, are determined to be patentable.

1. A single stage compressor system for use in a refrigeration system having one or more refrigerator cases wherein goods are stored said refrigeration system including condensing means for condensing compressed refrigerant from said compressor system, evaporating means for expanding the refrigerant in said condensing means and thereby removing heat from said refrigerator cases, and compressor suction line means for directing expanded compressor system, said compressor system comprising:

a reciprocating compressor coupled to a three phase drive motor in an open direct drive arrangement, said motor having a capacity of at least five horsepower;

inverter means for driving said motor at a speed specified by a motor speed signal, wherein said speed can be varied substantially continuously over a predefined range of speeds;

load sensing means for detecting at least one physical parameter indicative of the load on the refrigeration system selected from the set consisting of the temperature in at least one of said refrigerator cases, and the pressure in said compressor suction line means, and for generating a load differential signal corresponding to the difference between said detected physical parameter and a specified target value;

control means responsive to said load differential signal, for adjusting the capacity of the refrigeration system by adjusting the speed of said motor within said predefined range of speeds, including software means for establishing an initial speed value and for periodically adjusting said speed value so as to minimize said load differential signal, and means for generating a motor speed signal corresponding to sid speed value;

wherein said control means adjusts the capacity of said refrigeration system within a substantially continuous range.

B1 4,971,202 (3204th)

STACKABLE RECYCLING CRATE

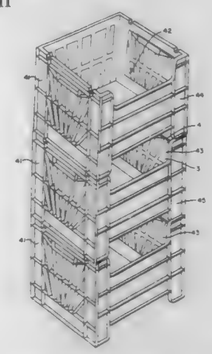
Thomas Box, Shrewsbury, N.J., assignor to Spectrum International, Inc., Tinton Falls, N.J.

Reexamination Request No. 90/003,301, Jan. 7, 1994.

Reexamination Certificate for Patent 4,971,202, issued Nov. 20, 1990, Ser. No. 381,079, Jul. 18, 1989.

Int. Cl.[6] B65D *21/04;1/42*

U.S. Cl. 206—511



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2**, **11**, **14–16** is confirmed.

Claims **1**, **3–10**, **12** and **13** are cancelled.

[1. A stackable crate comprising:

(a) a pair of opposing sidewalls;

(b) a back wall coupled to the sidewalls;

(c) a front wall coupled to the sidewalls and having a first substantially rectangularly shaped opening at the top opening of the front wall and a second substantially rectangularly shaped opening at the bottom portion of the front wall, thereby defining in the front wall a central portion with the bottom edge of the central portion extending to form at each end a lower leg segment and the top edge of the central portion extending to form at each end an upper leg segment; and

(d) a bottom side being planar as the bottom side extends away from the back wall and tapering upwardly to merge with the central portion, wherein the bottom side as joined to the sidewalls and to the back wall to define a storage compartment in the interior of the crate.**]**

2. The stackable crate according to claim **1** wherein the bottom side merges with at least a substantial portion of the bottom edge of the central portion of the front wall.

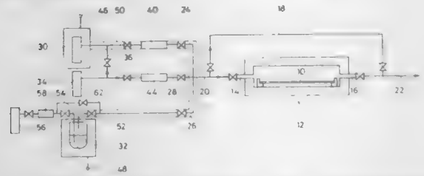
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B1 5,022,961 (3205th)

METHOD FOR REMOVING A FILM ON A SILICON LAYER SURFACE

Akira Izumi; Keiji Toei; Nobuatsu Watanabe, 1-1 Tenjinkita-machi, Teranouchi-Agaru 4-Chome, Horikawa-Dori, Kamikyo-Ku 602, and Yong-Bo Chong, all of Kyoto, Japan, assignors to Dainippon Screen Mfg., Co., Ltd., and Nobuatsu Watanabe, both of Kyoto, Japan

Reexamination Request No. 90/004,193, Mar. 26, 1996.
Reexamination Certificate for Patent 5,022,961, issued Jun. 11, 1991, Ser. No. 557,550, Jul. 24, 1990.
Claims priority, application Japan, Jul. 26, 1989, 1-195764; Oct. 14, 1989, 1-267777; Oct. 14, 1989, 1-267778
Int. Cl.[6] **B44C** *1/22;* **C03C** *15/00;25/06*
U.S. Cl. 156—646.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **10** are determined to be patentable as amended.

Claims **2–9** and **11–20**, dependent on an amended claim, are determined to be patentable.

1. A method for removing a film on a silicon layer formed on a surface of a substrate, comprising the steps of:

(a) placing said substrate in a reaction chamber to be isolated in an airtight manner from the outside air; **[**and**]**

(b) *isolating said reaction chamber from the outside air; and*

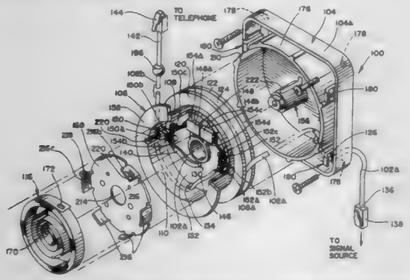
(*c*) feeding anhydrous hydrogen fluoride *gas* and alcohol *vapor* simultaneously into said reaction chamber *to thereby remove said film from said silicon layer by vapor phase contact with said hydrogen fluoride gas and alcohol vapor.*

B1 5,094,396 (3206th)

RETRACTABLE REEL ASSEMBLY FOR TELEPHONE EXTENSION CORD

Paul C. Burke, Lake Forest, Ill., assignor to Telefonix, Inc., Chicago, Ill.

Reexamination Request No. 90/004,353, Sep. 4, 1996.
Reexamination Certificate for Patent 5,094,396, issued Mar. 10, 1992, Ser. No. 541,846, Jun. 21, 1990.
Continuation-in-part of Ser. No. 267,184, Nov. 4, 1988, Pat. No. 4,989,805.
Int. Cl.[5] **B65H** *75/48*
U.S. Cl. 242—378.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **16–32** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2–15**, dependent on an amended claim, are determined to be patentable.

1. A retractable reel assembly for a telephone extension cord, comprising:

a housing adapted to be mounted in proximity to a telephone or telephone jack;

a reel defined by a cylindrical wall journaled for **[**out**]** *rotation about* an axis in said housing;

a spring for biasing said reel for rotation in one direction, said spring being mounted to extend between said housing and said reel;

a ratchet in said housing for selectively restraining rotation of said reel in said one direction;

said reel having a pair of cord-retaining radial walls on one side thereof, said radial walls being disposed in closely spaced adjacent relation, said radial walls defining a radial cord expansion chamber in said housing;

said housing having a first opening disposed about the perimeter thereof and leading to said expansion chamber, said housing having a second opening disposed about the perimeter thereof and leading from said reel;

one of said radial walls of said reel having an axially extending aperture leading from said expansion chamber to a cord interconnection chamber, said cord interconnection chamber being radially inwardly of said cylindrical wall, said cylindrical wall of said reel having a radially extending aperture leading from said cord interconnection chamber to a cord winding surface of said cylindrical wall;

said cord including a flat cord portion normally being wound in a radially confined helical array about said axis of said reel in said expansion chamber;

said flat cord portion being maintained in an axially confined planar helical array by said radial walls of said reel, said flat cord portion having an end extending from said first opening in said housing by a distance sufficient to reach said telephone or telephone jack, said flat cord portion having a connector on said extending end for connection to said telephone or telephone jack;

said flat cord portion having a second end extending through said axially extending aperture in said one of said radial walls into said cord interconnection chamber;

said cord also including a round cord portion normally being substantially entirely wound on said cord winding surface of said cylindrical wall, said round cord portion being of a length to permit withdrawal of at least a portion thereof through said second opening in said housing by pulling on an end of said round cord portion extending through said second opening in said housing to rotate said reel in a direction opposite said one direction to accommodate movement of said telephone or a telephone handset from one location to another, said round cord portion having a connector on said extending end for connection to said telephone or telephone handset;

said round cord portion having a second end extending through said radially extending aperture in said cylindrical wall into said cord interconnection chamber;

means for connecting said flat cord portion to said round cord portion within said cord interconnection chamber;

said spring accommodating retraction of said round cord portion by biasing said reel for rotation in said one direction;

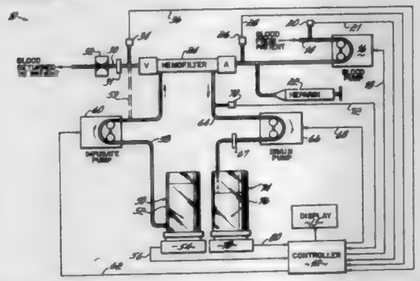
said flat cord portion being repositioned to a radially expanded helical array during withdrawal of said round cord portion and being returned to said radially confined helical array during retraction of said round cord portion.

B1 5,211,849 (3207th)

HEMOFILTRATION SYSTEM AND METHOD

Yuli Kitaevich, Milford; Nat Hemasilpin, Fairfield; J. Gabriel Marchevsky, Cincinnati; John J. Bissler, Cincinnati; George Benzing, III, Cincinnati, and Paul T. McEnery, Cincinnati, all of Ohio, assignors to Children's Hospital Medical Center, Cincinnati, Ohio

Reexamination Request No. 90/003,411, Apr. 15, 1994.
Reexamination Certificate for Patent 5,211,849, issued May 18, 1993, Ser. No. 775,183, Oct. 11, 1991.
Int. Cl.[6] **A61M** *1/34;* **B01D** *61/00;61/18;61/22*
U.S. Cl. 604—4



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** and **9** are determined to be patentable as amended.

Claims **7–8** and **10–11**, dependent on an amended claim, are determined to be patentable.

6. Hemofiltration method for removal of fluid from the blood of a patient, comprising:

pumping blood from a patient through hemofiltration means and back to the patient;

maintaining a supply of infusate in a first reservoir;

pumping the infusate to the hemofiltration means;

monitoring the weight of the infusate and generating *weight data* signals correlated thereto;

pumping drained fluid from the hemofiltration means into a second reservoir;

monitoring the weight of the drained fluid and generating *weight data* signals correlated thereto; *and*

controlling the pumping of the blood, infusate and drained fluid by means of a computer programmed to operate the pumps for infusate and drained fluid only when the blood is being pumped, said computer being responsive to the infusate and drained fluid weight *data* signals;

[said blood pumping operation being responsive to signals generated by said computer to vary the flow rate of the blood through the hemofiltration means; and**]**

said computer

receiving said weight data signals,

determining *from said weight data signals,* at regular intervals, the weight of infusate in the first reservoir and the weight of drained fluid in the second reservoir,

comparing those weights to corresponding predetermined ideal weights, and

[adjusting**]** *generating control signals to adjust and thereby automatically adjusting as necessary on an ongoing basis during hemofiltration* the rates of pumping the infusate, **[**and**]** drained fluid *and blood while the pumps are pumping during hemofiltration* so as to remove a preselected amount of fluid from the blood;

said blood pumping operation being responsive to said control signals generated by said computer to vary the flow rate of the blood through the hemofiltration means.

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REISSUES

MAY 27, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,518

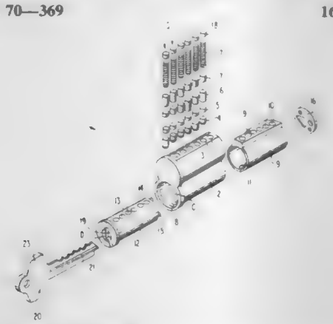
RESTRICTED KEY SYSTEM

Stan J. Sussina, Dumfries, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Original No. 5,176,015, dated Jan. 5, 1993, Ser. No. 683,151, Apr. 10, 1991. Application for reissue Jan. 4, 1995, Ser. No. 368,639

Int. Cl.[6] **E05B** *9/04*

U.S. Cl. 70—369 **16 Claims**



1. A key blank comprising:

a) a bow member adapted to be grasped by fingers of a user, and

b) an elongate blade extending outwardly from the bow member and defining, in transverse cross section,

an upper planar blade portion extending inwardly from one longitudinal edge of the blade, and

a lower planar blade portion extending inwardly from another, opposite longitudinal edge of the blade and adjoining an innermost edge of the upper blade portion in an intermediate *ledge* portion of the blade,

c) wherein:

the plane of the upper blade portion is oriented at a predetermined angle, in a range of 5° to 85° relative to the plane of the lower blade portion to define a general chevron shape therewith.

Re. 35,519

METHOD AND APPARATUS FOR SMOOTH-ROLLING AND DEEP-ROLLING MULTI-STROKE CRANKSHAFTS

Rudolf Winkens, Erkelenz-Gerderath, Germany, assignor to Wilhelm Hegenscheidt GmbH, Erkelenz, Germany

Original No. 5,138,859, dated Aug. 18, 1992, Ser. No. 691,388, Apr. 25, 1991. Application for reissue Aug. 11, 1994, Ser. No. 289,189

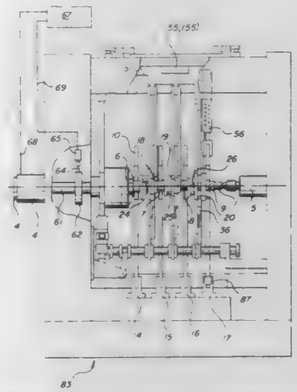
Claims priority, application European Pat. Off., Jun. 15, 1990, 90111303

Int. Cl.[6] **B21K** *1/08*

U.S. Cl. 72—110 **23 Claims**

1. A method for smooth-rolling and deep-rolling a plurality of pins, of a crankshaft *with a single pin rolling machine*, comprising the following steps:

a) dividing said plurality of pins to be rolled into at least two groups of pins,



b) including in each said group non-neighboring pins so that pins of one group are spaced by pins of the other group and vice versa,

c) rolling all of the pins of one group simultaneously in one rolling operation; and

d) rolling successive groups of pins in successive rolling operations.

Re. 35,520

INTERFACING DEVICE FOR A COMPUTER GAMES SYSTEM

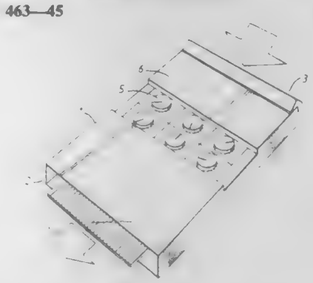
Richard Darling; Edward A. Carron, both of Leamington Spa, and David Darling, Warwickshire, all of England, assignors to Codemasters Software Company Limited, Southam, England

Original No. 5,112,051, dated May 12, 1992, Ser. No. 530,617, May 30, 1990. Application for reissue Dec. 28, 1993, Ser. No. 174,700

Claims priority, application United Kingdom, Jun. 5, 1989, 8912866; Jul. 12, 1989, 8915975

Int. Cl.[6] **A63F** *9/22*

U.S. Cl. 463—45 **38 Claims**



37. An interfacing device for interconnecting a processing unit of a computer games system and an external data storage medium of a kind which is directly connectable to the processing unit, the

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interfacing device being removably connectable to the processing unit and to the external storage data storage medium to enable the processing unit to address, and receive data from, different data storage locations in the external data storage medium, and the interfacing device comprising:

means for conveying addresses from an address output of the processing unit to an address input of the external data storage medium;

recognition means for recognizing a selected address from the processing unit; and

modifications means responsive to recognition of said selected address for causing the processing unit to process different data than the processing unit would process if the external data storage medium is directly connected to the processing unit.

Re. 35,521

BRAZING ALLOY OF COPPER, SILICON, TITANIUM, ALUMINUM

Howard Mizuhara, Hillsborough, Calif., assignor to The Morgan Crucible Company plc, Madeira Walk, United Kingdom

Original No. 5,087,416, dated Feb. 11, 1992, Ser. No. 420,416, Oct. 12, 1989. Application for reissue Feb. 10, 1994, Ser. No. 195,314

Int. Cl.[6] **C22C** *9/00*

U.S. Cl. 420—489 **18 Claims**

1. A brazing alloy for brazing ceramics having the following composition, in weight percent: 94 Cu, 2.75 Si, 1 Al, 2.25 Ti.

PLANT PATENTS

GRANTED MAY 27, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,902

STRAWBERRY PLANT NAMED PS-776

Stephen M. Ackerman, Salinas; Steven D. Nelson; Michael D. Nelson, both of Watsonville; Peter Salm, Capitola, and Daniel T. Schmida, Watsonville, all of Calif., assignors to Plant Sciences, Inc., and Berry Red, Inc., both of Watonsville, Calif.

Filed Jan. 11, 1996, Ser. No. 584,221

Int. Cl.[6] **A01H** *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. A new and distinct variety of strawberry plant designated 'PS-776', as herein described and illustrated.

9,903

STRAWBERRY PLANT NAMED 'PS-592'

Stephen M. Ackerman, Salinas; Steven D. Nelson; Michael D. Nelson, both of Watsonville; Peter Salm, Capitola, and Daniel T. Schmida, Watsonville, all of Calif., assignors to Plant Sciences, Inc., and Berry Red, Inc., both of Watonsville, Calif.

Filed Jan. 11, 1996, Ser. No. 584,324

Int. Cl.[6] **A01H** *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. A new and distinct variety of strawberry plant designated 'PS-592', as herein described and illustrated.

9,904

CHRYSANTHEMUM PLANT NAMED 'BLUSHING CHRISTINE'

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 22, 1996, Ser. No. 605,611

Int. Cl.[6] **A01H** *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Blushing Christine, as described and illustrated.

9,905

BROMELIAD PLANT NAMED 'AECHMEA 212'

Jeffrey C. Kent, Vista, Calif., assignor to Kent's Bromeliad Nursery, Inc., Vista, Calif.

Filed Nov. 27, 1995, Ser. No. 563,012

Int. Cl.[6] **A01H** *5/00*

U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct cultivar of Aechmea plant substantially as herein described and illustrated, characterized particularly as to novelty by its glaucous, silvery leaves and an upright growth habit setting off a vivid pink infloresence.

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PATENTS

GRANTED May 27, 1997

ERRATA

For CLASS	See PATENT NO.
607–002	5,632,267
212–350	5,632,395
215–247	5,632,396
215–382	5,632,397
473–483	5,632,480
473–563	5,632,481
180–332	5,632,500
439–752	5,632,536
602–059	5,632,731
427–125	5,632,833
438–053	5,632,854
438–714	5,632,855
156–089	5,632,942
428–034	5,632,971
428–034	5,632,971
428–034	5,632,971
525–176	5,633,020
438–665	5,633,036
442–187	5,633,075
442–131	5,633,077
117–103	5,633,194
029–827	5,633,205
029–827	5,633,206
437–228	5,633,209
530–311	5,633,263
530–311	5,633,263
204–500	5,633,397
204–500	5,633,297
528–014	5,633,311
528–014	5,633,312
473–365	5,633,322
473–365	5,633,322
524–589	5,633,328
526–064	5,633,329
396–626	5,633,697
399–107	5,633,699

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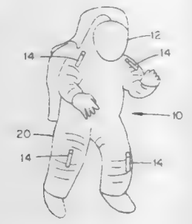
399–073 5,633,700
399–175 5,633,701
399–316 5,633,702
399–315 5,633,703
399–069 5,633,704
356–445 5,633,724
386–070 5,633,726
349–095 5,633,737
349–046 5,633,738
349–106 5,633,739
349–129 5,633,740
364–716 5,634,065
364–608 5,634,120

PATENTS

GRANTED MAY 27, 1997

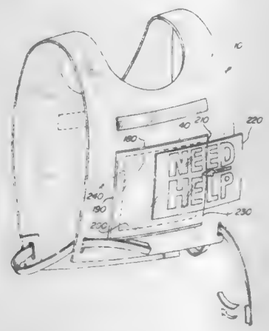
GENERAL AND MECHANICAL

5,632,043
HAZARDOUS MATERIAL PROTECTION SUIT WITH CARRYING HANDLES
Christopher J. Tino, Durham, N.C., assignor to Mitsubishi Semiconductor America Inc., Durham, N.C.
Filed Apr. 13, 1995, Ser. No. 421,348
Int. Cl.[6] A61G *7/14*; A41D *13/00*; A62B *17/00*
U.S. Cl. 2—457 **6 Claims**



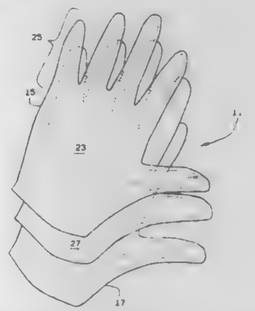
1. A protective garment comprising:
a fabric enclosure fitting over and enclosing a human form, and
grasping means positioned on the garment for enabling manual lifting and/or carrying of the person wearing the protective garment, wherein
the grasping means comprises a plurality of handles,
a handle is positioned at each of the regions for the shoulders and knees of the wearer of the garment, and
each handle is U-shaped with a flat member affixed to both ends, said flat member being secured against an inner surface of the fabric enclosure and the majority of the U-shaped handle extending on an outer surface of the fabric enclosure.

5,632,044
VEST WITH INTERCHANGEABLE MESSAGES
Alexander Sloot, Sugarloaf, Pa., assignor to Printmark Industries, Inc., Hazleton, Pa.
Filed May 18, 1995, Ser. No. 443,489
Int. Cl.[6] A41D *1/04*
U.S. Cl. 2—102 **2 Claims**



1. A signaling vest comprising:
a vest having front and back panels;
a display pouch attached to one of said front and back panels;
a plurality of display boards removably disposed in said pouch, said boards being visible therethrough; and
said pouch being comprised of two layers of transparent thermoplastic material contiguously sealed along a top, bottom and first side edge, said layers also being sealed along a portion of a second side edge, said seal along said second side edge forming a stop to prevent said display boards from sliding along said bottom seal and out of said pouch and forming an opening of said pouch along said second side edge wider than said display boards to allow the insertion of said display boards therethrough.

5,632,045
ANTIVIBRATION GLOVE
David D. Chase, Albuquerque, N.M., and Daniel A. Talonn, University City, Mo., assignors to Chase Ergonomics, Inc., Albuquerque, N.M.
Filed May 8, 1995, Ser. No. 436,655
Int. Cl.[6] A41D *13/10*
U.S. Cl. 2—161.6 **31 Claims**

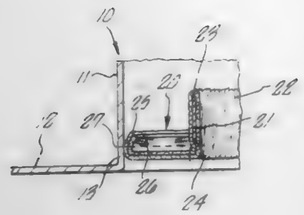


1. An antivibration glove comprising:
a glove body having a glove front and a glove back, said glove front and glove back defining an opening for accepting a human hand and a recess for receiving said hand, said glove front including a palm portion and a finger portion;
a vibration dampener essentially disposed in the glove recess adjacent the glove front, said vibration dampener having at least first and second generally coterminous layers, said first coterminous layer being composed of a viscoelastic material having a Shore 00 durometer of less than 50 and a rebound percentage of less than 20, said second coterminous layer being composed of a foam material.

5,632,046
SELF-ADJUSTING, FABRIC-COVERED SWEAT BAND FOR A HAT
Lawrence Green, and Louise E. Green, both of 1453 12th St., Santa Monica, Calif. 90401
Filed Dec. 27, 1994, Ser. No. 365,359
Int. Cl.[6] A42B *1/22*
U.S. Cl. 2—183 **2 Claims**

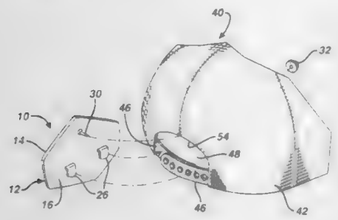
1. A combination self-adjusting, fabric-covered sweat band and hat, said combination self-adjusting, fabric-covered sweat band and hat comprising:
a. a hat including a crown having a base with an inner circumference;
b. an elastic material having a length of a first dimension, which is shorter than said inner circumference of said base of said crown of said hat, and a width of a second dimension, said elastic material having a first edge and a second edge running lengthwise; and
c. a fabric material having a length of a third dimension, which is longer than said inner circumference of said base of said

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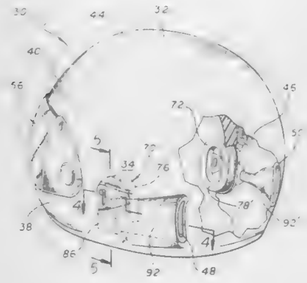
crown of said hat, and a width of a fourth dimension, which is greater than four times said second dimension, whereby said fabric material has been folded over along a lengthwise centerline and whereby said elastic material is encased in said folded over fabric material with said first edge of said elastic material being adjacent and contiguous to said lengthwise centerline and stitches in said fabric material, which are adjacent and contiguous to said second edge of said elastic material, secure said elastic material so that the remainder of said folded over fabric material is stitched to said base of said crown of said hat.

5,632,047
CAP ATTACHMENT
Ernest A. Van Den Heuvel, 4 S. Ridge Rd., Pomona, N.Y. 10970
Filed Jun. 23, 1995, Ser. No. 494,323
Int. Cl.[6] A42B *1/24*
U.S. Cl. 2—209.13 **10 Claims**



1. A combination cap and attachment for the cap comprising:
a cap having a fabric dome;
a headband surrounding the dome;
a pair of straps at the back of the cap for a adjustment of the size of the headband;
an opening in the dome above the straps;
an attachment removably attached to the cap comprising:
a planar member having a first surface, a second surface, a top area and an opposite bottom area; and
indicia means on the first surface for displaying a trademark or logo;
at least one pin means on the top area of the second surface for removably pinning the attachment to the fabric of the dome; and
at least one hook member on the bottom area of the second surface for removably hooking the attachment to the straps;
the planar member is of a size, and the pin means and hook member are arranged on the second surface so that when the hook member is hooked to the straps and the pin means is pinned to the fabric surrounding the opening, the attachment substantially covers the opening in the dome and the indicia means displays the trademark or logo.

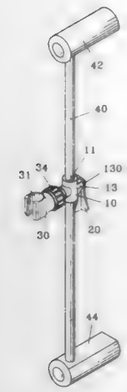
5,632,048
PROTECTOR HEARING HELMET
David Mortell, Malibu; Mark Andersen, Woodland Hills, both of Calif., and Lawrence A. Bernstein, Tucson, Ariz., assignors to Protector Development, Malibu, Calif.
Filed Sep. 20, 1995, Ser. No. 531,111
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—423 **52 Claims**



1. A helmet positionable in an operative position on a user s head, comprising:
a helmet shell having opposite shell sides, an at least partia open shell front, a shell top, a shell rear, and a shell opening said helmet shell defining a shell interior;
wherein when in the operative position, said shell sides extend down over the user's ears and said shell open front defines a user through-viewing area; and
a hearing assembly attached to and supported by and inside of said helmet shell, said hearing assembly including an ear cup defining an enclosed hearing chamber positioned in said shell interior and a hearing conduit passing through said shell interior and communicating said hearing chamber with said shell opening; said conduit extends rearwardly relative said shell:
wherein when in the operative position, said ear cup fits around one of the user's ears and thereby reduces transmission of undesirable wind noises in, on and around said shell to that ear, and said hearing chamber communicates that ear with the outside of said helmet shell through said conduit and said shell opening such that sounds outside of said shell can be transmitted through said shell opening directed via said conduit to be heard by that ear.

5,632,049
HOLDER ASSEMBLY FOR A SHOWER HEAD
Te-Sen Chen, No. 31 Alley 52, Lane 81, Shan-Chung St., Jang-Hua City, Taiwan
Filed Jan. 25, 1996, Ser. No. 591,017
Int. Cl.[6] A47K *7/04*
U.S. Cl. 4—570 **1 Claim**

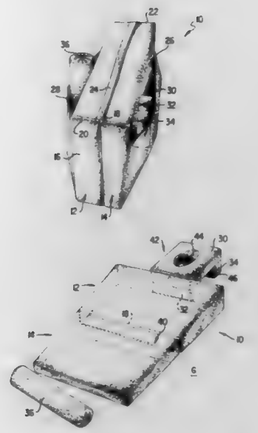
1. A holder assembly for a shower arm of a shower head, comprising:
a positioning body defining a vertical bore therein through which a vertical rod is adapted to extend, which, in turn, is mounted to a wall of a bathroom, the positioning body comprising an opening defined in an outer periphery thereof and in communication with the vertical bore, a pair of lugs being formed on the outer periphery of the positioning body and between which the opening is defined, a lever being pivotally connected to the lugs and including an operative end with an eccentric operative edge, the opening being substantially U-shaped, thereby forming a flexible piece therein; the eccentric operative edge exerts a force on the flexible piece so as to be frictionally held in position on the vertical rod when the lever is in a first, secured position, and the positioning body is movable relative to the vertical rod both in a longitudinal



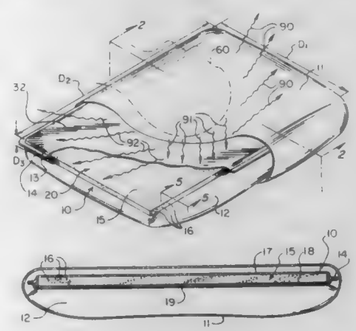
direction of the vertical rod and in an angular direction with respect to the vertical rod when the eccentric operative edge is in a second, released position in which the eccentric operative edge disengages from the flexible piece;
a connecting part extending from the outer periphery of the positioning body and including a ball-like structure;
a shower arm holder comprising a stub having a threaded outer periphery and a holder ring for removably holding a shower arm; and
a means for attaching the shower arm holder to the connecting part of the positioning body, the attaching means including a sleeve having an inwardly-projecting annular edge formed on a first end thereof and an open second end with internal threading and a retainer ring having a diameter slightly smaller than a diameter of the ball-like structure and made of resilient material, said ball-like structure being partially received in the first end of the sleeve and having the retainer ring mounted adjacent to the inwardly-projecting annular edge of said sleeve to prevent the ball-like structure from disengaging from the sleeve, said stub of said shower arm holder being in threaded engagement with the open second end of the sleeve, thereby being attached to the ball-like structure and being universally adjustable relative to the ball-like structure.

5,632,050
BODY AND HEAD SUPPORT PLATFORM
Paul J. Zajas; Mary E. Zajas, both of 58 Merrimack Dr.; Thomas P. Adams, and Paulette Adams, both of 10 Kyle Rd., all of Merrimack, N.H. 03054
Filed Aug. 3, 1995, Ser. No. 511,023
Int. Cl.[6] A47C *20/00;20/08*
U.S. Cl. 5—632 **25 Claims**

1. A body support platform comprising at least one pair of cushion components, a covering for said pair of cushion components, said covering comprising a hinge between said cushion components for folding said cushion components into a folded condition having a predetermined shape for transporting said platform and for holding said cushion components in an operative condition in an unfolded relationship relative to one another, said covering having at least a first pair of overlapping flap portions forming a first pocket in said covering, said flap portions being separate from said hinge and spaced therefrom, a head support cushion detachably affixed to one of said cushion components, said head support cushion comprising at least one cushion component having an opening therethrough for receiving the face of a user, a breathing passage in said head support cushion communicating with said opening for permitting the user to breathe, said head support cushion being detachable from said one cushion component so as to be received in said first pocket for transporting thereof in the folded condition of said pair of cushion components.



5,632,051
COOLING FLUID CONTAINER
Eric D. Stanley, and Kirk A. Stanley, both of 3120 Corona Trail Apt. #101, Boulder, Colo. 80301
Filed Oct. 28, 1994, Ser. No. 331,183
Int. Cl.[6] A47G *9/00*
U.S. Cl. 5—636 **6 Claims**



1. In combination with a conventional pillow and a pillow case covering said conventional pillow, a cooling fluid container, comprising:
an outer membrane having an outer dimension surrounding an inner foam core;
said inner foam core having a dimension substantially similar to said outer dimension of said outer membrane;
a fluid permeating said inner foam core:
wherein said fluid container is located between said pillow and said pillow case and wherein said fluid container further comprises a lower nonsliding surface functioning to stick to a top plane of the conventional pillow.

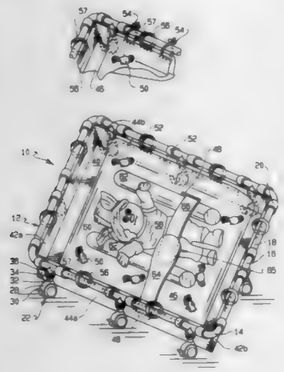
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5,632,052

PORTABLE POSITIONING AND MOBILITY DEVICE FOR DEVELOPMENTALLY CHALLENGED INDIVIDUALS

Jeanine Michel, 82 McNomee St., Oakland, N.J. 07436

Filed Mar. 19, 1996, Ser. No. 620,684
Int. Cl.[6] A47D *7/00;13/08*
U.S. Cl. 5—655 20 Claims



1. A portable positioning and mobility device for providing physical and/or occupational therapy to developmentally or physically challenged individuals, said device comprising:

compartment means configured and adapted for facilitating therapeutic treatment of a patient located therein, said patient selected from the group consisting of infants and young children, said compartment means comprising a base portion and two pairs of oppositely disposed wall means extending upwardly from said base portion, said wall means substantially surrounding the base portion along an outer peripheral portion thereof;

frame means for supporting said compartment means, said frame means comprised of at least two separate elements which, when connected together, form a shape corresponding to that of the exterior of said compartment means, in surrounding relation to said compartment means and secured thereto by connecting means for joining said frame means and said compartment means, said frame means further comprising a plurality of caster means adapted to permit said device to be rolled in substantially any direction in a horizontal plane; and

means attached to said compartment means and securable over or around said patient for substantially preventing said patient from slipping or sliding within said compartment means during treatment.

5,632,053

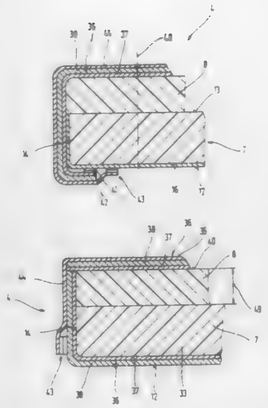
VEHICLE SEAT CUSHION

Rudolf Weingartner, Krems, and Johann Möseneder, Grieskirchen, both of Austria, assignors to C.A. Greiner & Söhne Gesellschaft M.B.H., Kremsmünster, Austria

Continuation of Ser. No. 368,597, Jan. 4, 1995, abandoned, which is a division of Ser. No. 131,709, Oct. 5, 1993, Pat. No. 5,477,572, which is a division of Ser. No. 870,959, Apr. 20, 1992, Pat. No. 5,283,918. This application May 28, 1996, Ser. No. 653,995
Claims priority, application Austria, Apr. 22, 1991, A832/91; Oct. 11, 1991, A2031/91
Int. Cl.[6] A47C *27/14;7/02;* A47G *9/00*
U.S. Cl. 5—655.9 16 Claims

1. An aircraft seat cushion comprising

(a) a supporting body of foamed plastic material, the supporting body consisting of



(1) a lower supporting part having lateral, front and rear edges, and upper and lower surfaces extending therebetween,

(2) an upper sitting part having lateral, front and rear edges, an upper surface remote from the supporting part and a lower surface in contact with the upper surface of the supporting part, the upper and lower surfaces extending between the edges,

(3) the lower surface of the sitting part being detachable from the upper surface of the supporting part, and

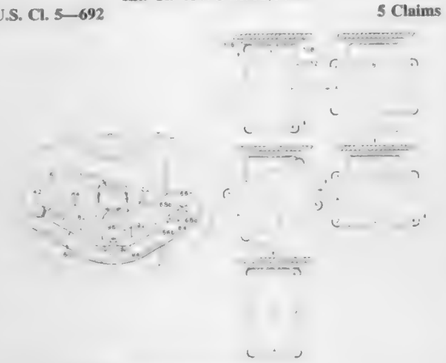
(4) detachable first flameproofing fabric layer means covering the upper surface of the sitting part and the edges of the sitting and supporting parts, and a second flexible flameproof covering material covering the entire lower surface of the supporting part whereby the entire cushion is encapsulated by the first flameproofing fabric layer means and the second flexible flameproof covering material, and the first flameproofing fabric layer means being detachably connected to the second flexible flameproof covering material.

5,632,054

MATTRESS HANDLE STRUCTURE

William B. Hutton, and Deanice B. Hutton, both of 330 Riverside Dr., St. Helens, Oreg. 97051

Filed Jul. 12, 1996, Ser. No. 682,843
Int. Cl.[6] A47C *21/02;31/08*
U.S. Cl. 5—692 5 Claims



1. An article of manufacture comprising:

a mattress having first and second main surfaces and a wall that joins the first and second main surfaces, the mattress having a corner at which two edges of the wall meet,

a handle having first and second end regions attached to the two edges respectively of the wall adjacent said corner and having a medial portion that wraps around said corner,

an elastic cord having first and second end regions attached to the first and second end regions respectively of the handle and having a medial portion that wraps around the corner of the mattress with the medial portion of the handle between the mattress and the medial portion of the cord, and

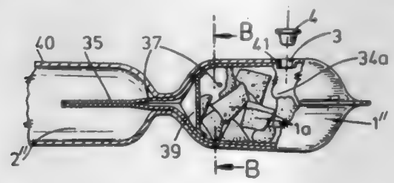
a gripper plate attached to the elastic cord for securing a sheet or blanket to the mattress.

5,632,055

INFLATABLE OBJECT, IN PARTICULAR AN AIR MATTRESS, COMPRISING A SECTION SERVING AS A PUMP AND A SECTION TO BE INFLATED BY THE PUMP

Josef Graf, Sagberg 1, D-83112, Frasdorf, Germany

PCT No. PCT/EP93/01748, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO94/03089, PCT Pub. Date Feb. 17, 1994
PCT Filed Jul. 6, 1993, Ser. No. 379,540
Claims priority, application Germany, Aug. 4, 1992, 9210427 U; Sep. 16, 1992, 9212489 U; Jun. 15, 1993, 9308870 U
Int. Cl.[6] A47C *27/08*
U.S. Cl. 5—706 28 Claims



1. An inflatable object comprising:

at least a first inflatable section and a second inflatable section, the first section forming a pump having an inlet for admitting air into the first section for inflating the second section;

the pump including:

a plurality of compressible particles for compression thereof and subsequent decompression with a concomitant increase in volume upon introduction of air through the inlet;

a one-way valve means for communicating air to the second section from the pump in the first section;

an air permeable wall means between the compressible particles and the valve means for preventing the compressible particles in the pump from entering the valve means while permitting air to be communicated from the pump to the second section; and

back flow means for communicating air from the second section to the first section upon cessation of pumping to equalize pressure in the first and second sections for inflating the first section.

5,632,056

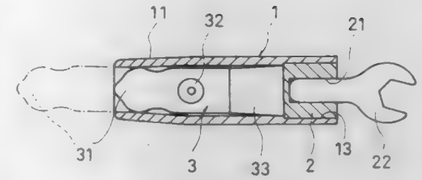
BICYCLE TOOL ASSEMBLY

Chia-Yuan Hsiao, No. 4, Lane 11, Tze-Chiang St., Tu-Cheng City, Taipei Hsien, Taiwan

Filed Mar. 18, 1996, Ser. No. 617,087
Int. Cl.[6] B25B *13/00*
U.S. Cl. 7—138 7 Claims

1. A bicycle tool assembly comprising:

a hollow handle having a first end and a second end, said first end having two longitudinal grooves, said second end defining a tapered hole gradually reducing from said first end toward the outside;



a coupling block fastened to the first end of said hollow handle, said coupling block having two longitudinal tongues at two opposite sides respectively fitted into the longitudinal grooves of the first end of said hollow handle, and a coupling hole at an outer end;

a driving element fastened to the coupling hole of said coupling block and driven by said hollow handle to turn bicycle accessories; and

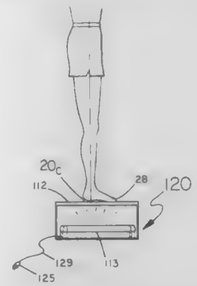
a tire repair tool slidably mounted in the second end of said hollow handle, said tire repair tool comprising a front hook for pulling a bicycle tire out of the rim, a tire pressure releasing pin in the middle for fastening to the valve of the bicycle tire to release the pressure of the inner tube, and a coupling tail engaged with the tapered hole of the second end of said hollow handle to hold said tire repair tool in the operative position.

5,632,057

METHOD OF MAKING LIGHT CURE COMPONENT FOR ARTICLES OF FOOTWEAR

Robert M. Lyden, 16384 SW. Estuary Dr., Apt. #203, Beaverton, Oreg. 97006

Continuation of Ser. No. 275,642, Jul. 14, 1994, abandoned, which is a continuation of Ser. No. 74,771, Jun. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 976,407, Nov. 13, 1992, abandoned, which is a division of Ser. No. 805,596, Dec. 11, 1991, Pat. No. 5,203,793, which is a continuation-in-part of Ser. No. 714,971, Jun. 13, 1991, Pat. No. 5,101,580, which is a continuation of Ser. No. 410,074, Sep. 20, 1989, abandoned. This application Aug. 2, 1995, Ser. No. 510,433
Int. Cl.[6] A43D *1/00;* A43B *7/14*
U.S. Cl. 12—146 B 20 Claims



13. A method for making a conformable device for use with an article of footwear, said method comprising the steps in the following order:

a) placing a conformable device comprising a light cure material which is capable of being cured when exposed to light comprising a wavelength between 280–750 nanometers within an article of footwear which is capable of transmitting said light to a substantial portion of said conformable device;

b) placing a foot of said wearer in functional relation to said conformable device, thereby causing a force application to be made thereupon and causing at least a portion of said con-

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formable device to be formed in conformance with at least a portion of said foot; and

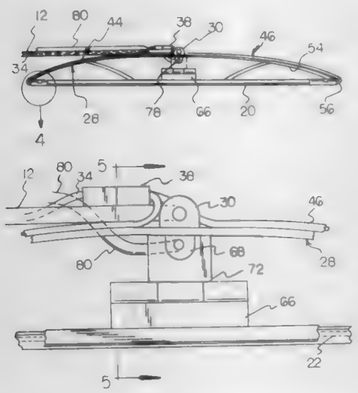
c) exposing said article of footwear including said conformable device to said light to cause the cure of said light cure material, thereby causing the shape imparted to the conformable device to be substantially retained.

5,632,058

HEATED WIPER BLADE WITH A SCRAPER AND FLUID RELEASE NOZZLE ASSEMBLY

Paul Stanak, 67 Waterford Dr., Wheatley Heights, N.Y. 11798

Filed Apr. 29, 1996, Ser. No. 695,702
Int. Cl.[6] B60S *1/46; 1/38*
U.S. Cl. 15—250.04 **11 Claims**



2. A heated wiper blade with a scraper and fluid release nozzle assembly, said blade comprising:

an elongated wiper arm member having first and second ends, said first end for coupling to a wiper shaft of an associated vehicle;

an elongated wiper blade having first heating element embedded therein;

an elongated blade holder member having an upper side and an underside, said blade holder member pivotally mounted on said upper side to said second end of the wiper arm member by a swivel connector, said blade holder coupled to and supporting said wiper blade;

an electrical conductor being coupled to the wiper arm member for communicating with a battery of an associated vehicle;

a heat generating mechanism being in electrical communication with the electrical conductor and the first heating element, the heat generating mechanism being mounted to and extending along the blade holder member and copied to the first heating element of the wiper blade for effecting a melting of ice located proximal thereto;

an elongated scraping blade pivotally coupled to a central bracket attached to the underside of the blade holder and capable of movement away from and into engagement with the windshield; and

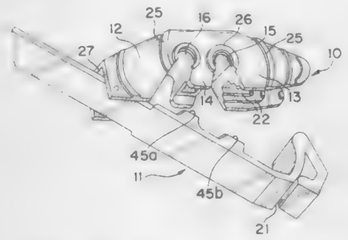
a fluid release nozzle attached to and supported by the central bracket and spaced from the blade holder for spraying a deicing fluid onto the windshield to assist the scraping blade removal of ice from the windshield of the associated vehicle.

5,632,059

WINDSHIELD WIPER FRAME CONNECTOR WHICH ACCOMMODATES DIFFERENT SIZE WIPER ARMS

Albert Lee, Timonium, Md., assignor to Alberee Products, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 118,663, Sep. 10, 1993, abandoned. This application Apr. 13, 1995, Ser. No. 421,029
Int. Cl.[6] B60S *1/40*
U.S. Cl. 15—250.32 **9 Claims**



5. A windshield wiper frame connector for connecting a wiper blade unit to a wiper arm, said connector comprising:

a body member having a first end and a second end, and a pair of laterally spaced sidewalls, each of said sidewalls having a front wing portion at the second end of said body member as an extension of said sidewalls, said front wing portion defining opposing inner surfaces;

a first slot disposed in a lower portion of said body member for rotatably receiving a transverse pin of said wiper blade unit;

a second slot disposed in said lower portion of said body member adjacent to said first slot for rotatably receiving a pin of a pin type wiper arm;

an arc-shaped surface located within said second slot, said arc-shaped surface being provided to engage with a reduced diameter portion of the pin of said pin type wiper arm;

a clasping arm pivotally connected at a first end thereof to the first end of said body member and having a hook portion formed at a second end of said clasping arm corresponding to the second end of said body member, said clasping arm selectively closing openings of each said first and second slots upon pivotal movement thereof; and

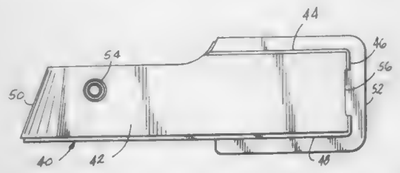
means for selectively engaging the hook portion of said clasping arm between the front wing portions of each of said sidewalls, thereby securely clamping both the transverse pin of said wiper blade unit and the pin of said pin type wiper arm.

5,632,060

VACUUM CLEANER WITH AGITATION MEMBER DRIVE BELT ACCESS PANEL

Gary L. Steinberg, Jenison, Mich., and David I. Oreck, New Orleans, La., assignors to Bissell Inc., Grand Rapids, Mich.

Filed Aug. 4, 1995, Ser. No. 511,377
Int. Cl.[6] A47L *5/30*
U.S. Cl. 15—391 **27 Claims**



1. In an improved vacuum cleaner comprising a housing having an agitation member with a belt receiving portion and rotatably supported in the housing, a drive motor with a drive shaft, a belt interconnecting the belt receiving portion of the agitation member

and the drive shaft, an aperture formed in the housing for servicing the belt, an access panel adapted to be mounted to the housing and to substantially enclose the aperture in an operative position and to be removed from the housing in a service position, the access panel having top, bottom, and opposed side edges and a fastener adapted to secure the access panel to the housing in the operative position, the improvement comprising:

at least one of a flange and slot provided on at least one of the top and bottom edges of the access panel, and

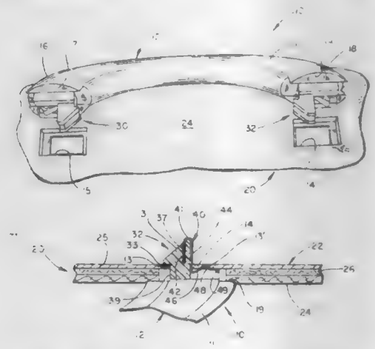
at least one of the other of said flange and slot provided on the housing adjacent the aperture, said at least one flange and said at least one slot being oriented so that the at least one flange is slidably received in the at least one slot by sliding the panel in a direction substantially parallel to said one of the top and bottom edges.

5,632,061

ASSIST STRAP

Niels R. Smith, Holland, and Jerry M. De Jong, West Olive, both of Mich., assignors to Prince Corporation, Holland, Mich.

Continuation of Ser. No. 314,863, Sep. 29, 1994, abandoned. This application Mar. 20, 1996, Ser. No. 619,119
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—110 R **13 Claims**



9. An assist strap for snap fitting into a pair of apertures formed in a support member of a vehicle comprising:

an elongated handle-shaped body having opposed ends;

a locking member extending from each end of said body in opposed facing relationship to increase the holding force of said locking members by urging said locking members toward one another in response to a pulling force on said handle-shaped body, said locking member including a tapered edge for assisting in extending said locking member into a mounting aperture, said tapered edge terminating in a generally horizontal extending locking flange spaced in opposed relationship to a support surface formed on said body; and

a spring extending from said locking member in a direction opposite said locking flange for locking said body in place.

5,632,062

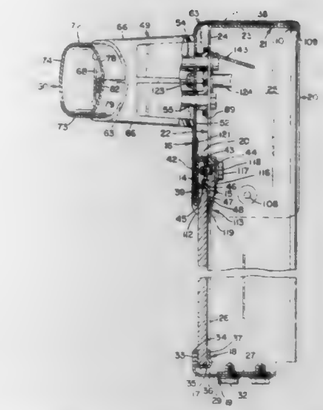
HANDLE ASSEMBLY

Jonathan M. Katz, and Clifford J. Von Hoene, Jr., both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jul. 22, 1993, Ser. No. 96,366
Int. Cl.[6] A47J *45/06*
U.S. Cl. 16—111 R **11 Claims**

1. In combination:

an oven door;



a hollow metal bar for gripping to form a handle gripping portion;

a pair of end caps attached to said door;

each of said end caps having receiving means for receiving an end of said metal hollow bar to support said hollow metal bar therebetween;

said hollow metal bar having an outward bow relative to the plane of said door;

and said hollow metal bar having an asymmetrical cross section with its center of mass closer to a surface of said hollow metal bar the farther from said door

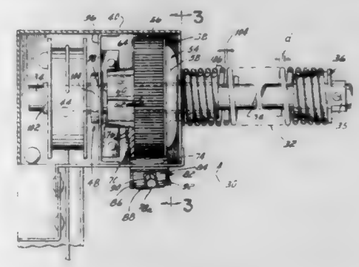
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5,632,063

COUNTERBALANCING MECHANISM FOR AN OVERHEAD DOOR

Kenneth E. Carper, Madeira; Alan R. Leist, Cincinnati; Tony Y. Lin, Mason; George S. Carper, Milford, and Thomas E. Agin, Cincinnati, all of Ohio, assignors to Clopay Building Products Company, Inc., Cincinnati, Ohio

Filed Jun. 16, 1994, Ser. No. 262,135
Int. Cl.[6] E05F *1/08*
U.S. Cl. 16—198 **38 Claims**



1. Counterbalancing apparatus for an overhead door disposed in an opening defined by a door frame structure, said apparatus comprising:

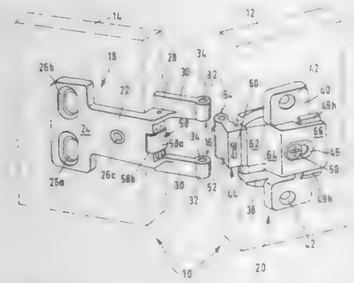
a torsion shaft mounted for rotation between first and second stationary supports;

a torsion spring having a first end fixed to said torsion shaft so as to allow rotation with said torsion shaft and axial movement along said torsion shaft during raising and lowering of said overhead door, said torsion spring having a second end operatively connected to a winding mechanism for winding said second end of said torsion spring with respect to said first end

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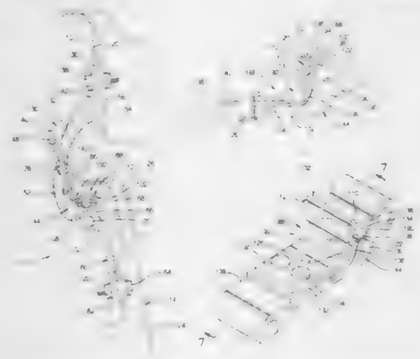
with said door held stationary, said winding mechanism being mounted to said first stationary support.

5,632,064
CABINET HINGE
Reinhard Lautenschläger, Am Mühlberg 20, D-64354 Reinheim, Germany
Filed Jan. 18, 1996, Ser. No. 588,147
Claims priority, application Germany, Feb. 1, 1995, 195 03 476.7; Feb. 27, 1995, 195 06 714.2
Int. Cl.[6] E05D *7/12*
U.S. Cl. 16—272 **30 Claims**



1. A hinge for hanging a door on a cabinet carcase, comprising:
a carcase-related hinge member (**18**) in the form of an elongated supporting arm fastenable on an associated carcase supporting wall (**14**),
a door-related hinge member (**20**) comprising a cup (**38**,**38'**) with lateral walls insertable into a mortise created in the back of a marginal area of the door,
a joint-bearing component insertably connectable into the cup (**38**,**38'**) and having a joint mechanism for connecting the joint-bearing component with the carcase-related hinge member,
wherein the cup with the joint-bearing component inserted therein is fastenable within the mortise at selectable depths determined by a sliding guide formed by two projections (**62***a*) protruding from opposite defining lateral surfaces of the joint-bearing component and forwardly open grooves (**38***c*) for fittedly accepting the projections in lateral walls of the cup, and by a projecting section (**66**) of the joint-bearing component securable against withdrawal by catch means which is releasably operable by a handle accessible from outside the door, said catch means having a locking element (**49**) comprising a spring made from spring metal and having two locking sections connected to the joint-bearing component, and each locking section of the spring being connected with a spring section provided laterally beside the joint-bearing component and brought out of the cup as handles (**49***h*) for the displacement of the locking section from a position extending behind an associated locking edge in the cup, and the locking sections being displaceable toward one another out of locking engagement with the associated lock edge in the cup, and
wherein the locking sections (**49***f*) are formed from two resiliently deformable arms (**49***e*) of flat spring metal located in a space between the lateral defining surfaces of the joint-bearing component (**44**) and confronting defining walls (**39***a*) of the cup (**38**), accomodating the joint-bearing component (**44**) in the vicinity of the catch means, said locking sections being resiliently deformable parallel to the inner side of the door, a window (**49***g*) being provided in each locking section as a locking receiver for an associated catch projection (**39***d*) protruding from the defining walls of the cup, and a handle is provided on a margin of each spring arm, brought up out of a gap between confronting walls of a link-bearing component **44** and the cup.

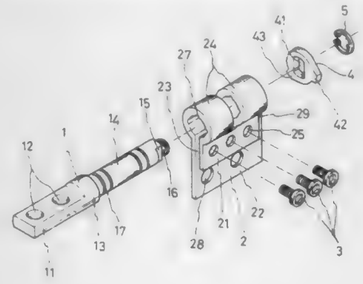
5,632,065
EXTENDED CAB PICKUP TRUCK CONCEALED CARGO DOOR HINGE HAVING A SPRING STOP DETENT
E. Robert Siladke, Sterling Heights, and Kevin D. Lapham, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 279,142, Jul. 22, 1994, Pat. No. 5,491,875. This application Feb. 20, 1996, Ser. No. 603,756
Int. Cl.[6] E05D *3/08*
U.S. Cl. 16—335 **6 Claims**



1. A vehicle door hinge arrangement for mounting a vehicle door to a vehicle opening, the hinge arrangement having at least first and second members, the first member having a first side and the second member being connected to a pin, the vehicle door hinge arrangement further including a spring stop mounted on the first member first side, the spring stop including:
a primary leaf with a base, an arm extending from the base, and the primary leaf having a hand extending from the arm for receiving the pin connected to the second member between the primary leaf and the first member;
a secondary leaf having a base, an arm and a hand adjacent the primary leaf on a side of the primary leaf opposite the first member; and
a reinforcement leaf fixably connected to the primary and secondary leaves, the reinforcement leaf being adjacent the base of the secondary leaf.

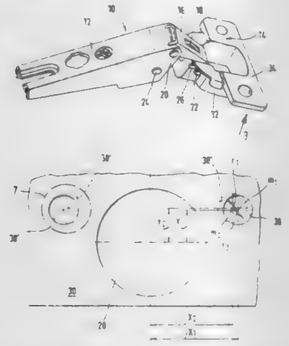
5,632,066
PIVOT HINGE FOR PORTABLE COMPUTERS
Chin-Fu Huong, Taipei Hsien, Taiwan, assignor to Yen Yang Basestrong Co. Ltd, Taipei Hsien, Taiwan
Filed Feb. 13, 1996, Ser. No. 600,527
Int. Cl.[6] E05C *17/64;* **E05D** *11/08*
U.S. Cl. 16—338 **8 Claims**

1. A pivot hinge adapted to be connected between two parts of a



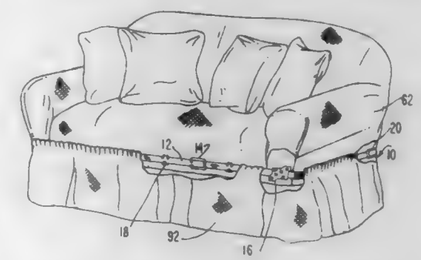
portable computer for permitting the two parts of the portable computer to be turned relative to each other, the pivot hinge comprising:
a female connecting member adapted to be fastened to the first part of the portable computer, said female connecting member comprising a flat mounting base portion, a flat locating strip portion spaced from said flat mounting base portion in a parallel relation by a gap, at least one hollow cylindrical axle housing portion connected between said flat locating strip portion and said flat mounting base portion, a row of first through holes at said flat locating strip portion, a row of second through holes at said flat mounting base portion, a row of third through holes at said flat mounting base portion adapted to be fastened to the first part of the portable computer by fastening elements, and a plurality of fastening elements adapted to be connected between said first through holes and said second through holes for holding said flat locating strip portion and said flat mounting base portion closely together and adjusting the gap between said flat locating strip portion and said flat mounting base portion;
a male connecting member fastened to a second part of the portable computer, said male connecting member comprising a flat mounting section at one end, a plurality of axle holes at said flat mounting section adapted to be fastened to the second part of the portable computer, a neck at an opposite end, a cylindrical pivot rod section longitudinally connected between said neck and said flat mounting section and inserted through the at least one axle housing portion of said female connecting member, a collar connected between said flat mounting section and said cylindrical pivot rod section and disposed outside the at least one axle housing portion of said female connecting member; and
an end member fastened to the neck of said male connecting member to hold said male connecting member and said female connecting member together.

5,632,067
DOOR-RELATED HINGE MEMBER FOR HANGING A CABINET DOOR
Horst Lautenschläger, Reinheim, Germany, assignor to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany
Filed Apr. 4, 1996, Ser. No. 628,573
Claims priority, application Germany, May 3, 1995, 195 16 084.3
Int. Cl.[6] E05D *5/00*
U.S. Cl. 16—383 **3 Claims**



1. A door-related hinge element installable on at least two different doors having different bore patterns, comprising:
a cup-like portion for setting in a substantially circular mortise in the back of either of the doors, an integral flange on an upper free edge of the cup-like portion for lying on the back of either door and at least two centering studs on the integral flange of the cup-like portion for engaging bore holes of the different bore patterns in the back of either of the doors adjacent the mortise, wherein the centering studs are provided in an area of the flange in which the flange covers the bore holes of either door when properly installed, and the centering studs are of such shape and dimensions that their outer periphery is contactable with the walls of the bore holes of either door at least in a linear manner, and wherein the centering studs have a cross section departing from a circular shape, said cross section being defined by at least a first arcuate section having a first radius and a second arcuate section having a second radius, wherein each of the radii of the arcuate sections has a different radius center, such that either of the arcuate sections is contactable with the walls of the bore holes of each of the different bore patterns when properly installed.

5,632,068
DEVICE FOR SHAPING AND MAINTAINING THE POSITION OF SKIRTS AND COVERS ON SEATING AND UPHOLSTERED FURNITURE
Paula Riley, New York, and Kenneth V. Stevens, Brooklyn, both of N.Y., assignors to Prescient Partners, L.P., New York, N.Y.
Filed Apr. 6, 1995, Ser. No. 417,933
Int. Cl.[6] A44B *11/00;21/00;13/00;* **A47G** *9/00*
U.S. Cl. 24—326 **29 Claims**

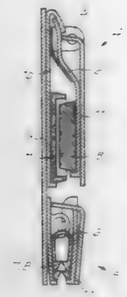


1. A device for maintaining the position of a furniture cover on seating and furniture comprising:
an elongated elastic band, said band being adapted to be placed about said furniture;
a pleating member having means for being affixed to said elongated band, said pleating member having non-piercing clip means for gathering and maintaining the position of material of a furniture cover; and
a band adjusting member connected to said elastic band so that said band will form a closed loop of a predetermined length around the furniture, said band adjusting member having means for adjusting a length of said closed loop.

5,632,069
GARMENT SUPPORT DEVICE
William J. Mievis, Rue Paul Janson 26, 1020 Brussels, Belgium
PCT No. PCT/BE93/00031, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO93/25104, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 2, 1993, Ser. No. 347,339
Claims priority, application Belgium, Jun. 5, 1992, 09200525
Int. Cl.[6] A44B *1/04*
U.S. Cl. 24—337 **6 Claims**

1. A garment support device for securing a first lower body covering garment to a second upper body covering garment normally worn by an individual at a higher position on the body than the first garment, the support device comprising:

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an elongate rigid sheet-like base element having a length less than 15 cm;

a first fastener secured at one end area of the base element, said first fastener including a clamping jaw comprising opposed jaw sides movable towards and away from each other for closing and opening the jaw, said clamping jaw being openable in a longitudinal direction extending towards a first end of the base element so as to permit reception therein of an upper edge area of a first garment in an upward direction in use;

at least one side of the clamping jaw of said first fastener being rigidly associated with the base element; and

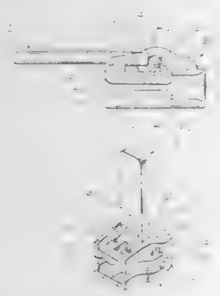
a second fastener secured at the opposite end area of the base element and being located on the base element so as to not to overlie said first fastener, said second fastener being arranged to grip a second garment in use at a location along the base element longitudinally spaced from said first fastener and at a lower position on the base element from the first fastener when the support device is in use with the base element in a generally vertical position, whereby a lower section of an upper garment may be secured to the base element inside a lower garment by the second fastener while the lower garment is secured to the base element by the first fastener.

5,632,070

LOCK SLIDER FOR SLIDE FASTENER

Masao Wakabayashi, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 686,727
Claims priority, application Japan, Jul. 31, 1995, 7-194531
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—419 **9 Claims**



1. A lock slider for a slide fastener, comprising:

(a) a slider body composed of upper and lower wings joined at their front ends by a guide post, said upper wing having on its lower surface a pair of downwardly projecting side flanges and on its upper surface a pair of upwardly projecting lugs disposed with a width of a pull tab, each of the lugs having a horizontal slot and a pivot insertion hole communicating with said horizontal slot, said upper wing also having at least one locking-pawl insertion hole communicating with one of said horizontal slots;

(b) said tab having at its base a pair of lateral pivots to be inserted in the respective pivot insertion holes, said pull tab also having on one surface at least one locking pawl insertable through said locking-pawl insertion hole when said pull tab is pivotally moved about said base to lie flat on the upper surface of the upper wing; and

(c) said slider body and said pull tab being simultaneously molded in an assembled form.

5,632,071

FLEXIBLE HINGE CONNECTOR

Martha Maunder, Box 2990 Fourth Street Station, St. Petersburg, Fla. 33731

Filed Jun. 1, 1995, Ser. No. 456,543
Int. Cl.[6] A41F *1/00;* **A44B** *11/00*
U.S. Cl. 24—573.7 **12 Claims**



1. A flexible connector comprising:

a first flange comprising a section of planar, flexible material;

a first set of loops formed from and integral with said planar, flexible material of said first flange and comprising a first set of strips of planar, flexible material having first and second end portions; and wherein said first and second end portions are fixed in relative positions proximate one another thereby forming said first set of loops;

a second flange comprising a section of planar, flexible material seamlessly attached to said first flange;

a second set of loops formed from and integral with said planar, flexible material of said second flange and comprising a second set of strips of planar, flexible material having first and second end portions; and wherein said first and second end portions are fixed in relative positions proximate one another thereby forming said second set of loops;

a flexible and compressible loop connector disposed through and between said first and second sets of loops and alternately passing through a loop of said first set and then a loop of said second set so as to form a single row of loops in a single plane; and

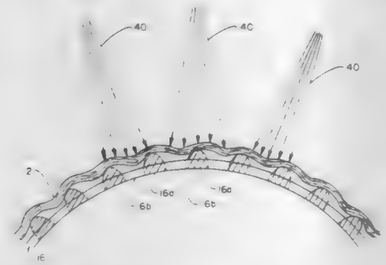
said first flange, said second flange, said first set of loops and said second set of loops being movable with respect to said loop connector.

5,632,072

METHOD FOR HYDROPATTERNING NAPPED FABRIC

Arlene T. Simon, Boston; J. Michael Greenway, Westwood, both of Mass.; Herschel Sternlieb, Brunswick, Me.; Jodie M. Siegel, Sommerville; Timothy J. Connolly, Franklin, both of Mass., and Duane A. Parker, Samers, Conn., assignors to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 190,765, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 660,753, Feb. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 411,491, Jul. 17, 1989, Pat. No. 4,995,151, which is a continuation-in-part of Ser. No. 181,284, Apr. 14, 1988, Pat. No. 4,960,630. This application Jan. 5, 1995, Ser. No. 381,282
Int. Cl.[6] D06B *5/08;* **D06C** *23/00*
U.S. Cl. 26—69 R **4 Claims**



1. A method for hydropatterning a pattern in a fabric comprising the steps of:

conveying a sheet of fabric in a machine direction supported on a support surface which is formed with a pattern of raised or solid areas and lowered or void areas interspersed therein, and

directing a curtain of fluid from a fluid jetting source downwardly to impact on the fabric as it is conveyed on the patterned support surface,

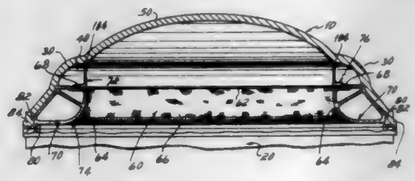
wherein said fabric is a napped fabric comprising fibers bonded or woven into a mat with loose ends of the fibers forming a napped side of said fabric, said napped side being placed in contact against the patterned support surface with an opposite side of said fabric facing away from the patterned support surface toward the fluid jetting source, and said directing step includes directing said fluid curtain against the opposite side of the fabric facing toward the fluid jetting source such that a visual or physical property of the napped side of the fabric in contact with the patterned support surface becomes altered in correspondence to the pattern of raised or solid areas and lowered or void areas of the support surface due to the impact of the curtain of fluid on the fabric against the support surface.

5,632,073

DISH SUPPORT FOR BURIAL CASKET CAP

Christopher W. Foye, Oldenburg, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Jun. 2, 1995, Ser. No. 458,133
Int. Cl.[6] A61G *17/04*
U.S. Cl. 27—19 **24 Claims**



1. A casket cap assembly for a burial casket comprising:

a cap having two sides and two ends defining an interior, having a peripheral edge and having a peripheral groove in said peripheral edge within said interior of said cap;

a pair of cap dish assembly supports positioned in said cap along each said cap side; and

a dish assembly positioned in said cap and supported by said cap dish assembly supports, said dish assembly comprising a rectangular cap panel and four peripheral puffing members attached to the periphery of said cap panel at respective adjacent edges;

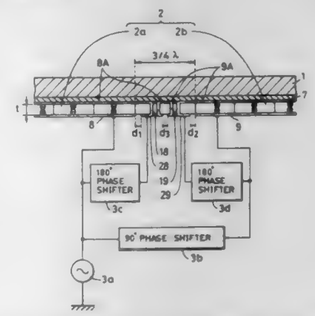
each said support comprising a spacer portion and an arcuate portion separated by a cap dish assembly edge receiving portion, said spacer portion contacting said cap within said interior to space said dish assembly relatively within said cap, said edge receiving portion receiving therein said respective adjacent edges of said cap panel and puffing members, said arcuate portion defining the curvature of said puffing members, said puffing members having free edges disposed in said cap peripheral groove.

5,632,074

VIBRATION WAVE DRIVEN MOTOR

Hajime Kanazawa, Tama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 86,374, Jul. 6, 1993, Pat. No. 5,448,127, which is a continuation of Ser. No. 699,008, May 13, 1991, abandoned. This application May 19, 1995, Ser. No. 446,577
Claims priority, application Japan, May 15, 1990, 2-124710
Int. Cl.[6] H01L *41/22*
U.S. Cl. 29—25.35 **11 Claims**



1. A method of making a vibration member for a vibration wave driven motor comprising the consecutively performed steps of:

forming obverse and reverse electrodes on respective obverse and reverse surfaces of a piezoelectric member;

forming a conductive tab on an edge of the piezoelectric member, the conductive tab being electrically connected to the reverse electrode;

forming a reverse electrode connector on the obverse side of the piezoelectric member;

mounting a vibration member adjacent the reverse surface of the piezoelectric member; and

connecting the obverse-side reverse electrode connector to the conductive tab.

5,632,075

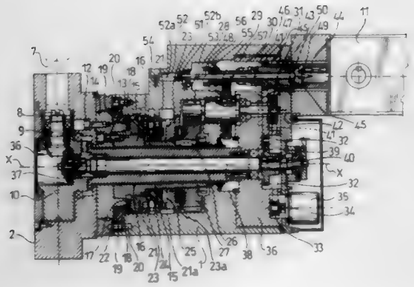
TOOL-CARRIER TURRET

Franco De Bernardi, and Loris Andreoli, both of Varese, Italy, assignors to Duplomatic S.r.L., Varese, Italy

Filed Mar. 9, 1995, Ser. No. 401,383
Int. Cl.[6] B23B *29/32;39/20*
U.S. Cl. 29—40 **7 Claims**

1. In a high speed displaceable tool-carrier turret apparatus, a base body,

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a toolcarrier table supported by the base body and rotatable with respect thereto and non-axially displaceable with respect to said base body,

locking means for locking and releasing the said table from rotation with respect to the said base body,

a plurality of supports for rotating tools positioned on said table, each of said supports for rotary tools including a respective tool drive shaft for rotation of a tool;

a motor,

a first mechanical transmission for coupling said motor and said table to bring a preselected tool support and associated tool into a working position, and

a second mechanical transmission for coupling said motor and one of said tool drive shafts when a rotary tool is located in one of said working positions,

the improvement of means for commuting the said motor alternately between said first and second mechanical transmissions, in synchronism with the said rotatable table locking and releasing means, comprising: a cylindrical tubular element having one end formed as a splined coupling with said motor providing transmission of rotary motion and axial displacement to said cylindrical tubular element,

axially spaced apart first and second sets of gear teeth on and concentric with said tubular element,

hydraulic means comprising an hydraulic cylinder and a piston axially slidable in said cylinder forming first and second hydraulic chambers;

a piston rod, one end of which is connected to the said piston with freedom of rotation and the other end connected to the said tubular element to displace said tubular element axially between a first position in which the said first set of teeth is coupled with the said first mechanical transmission and a second position in which said second set of teeth is coupled with said second mechanical transmission, said hydraulic means effectuating release of said means for locking said table in synchronism with coupling said motor with said first transmission and effectuating engagement of said locking means in synchronism with coupling said motor with said second transmission.

5,632,076

METHOD AND APPARATUS FOR GAPPING A CONTINUOUS ZIPPER CHAIN

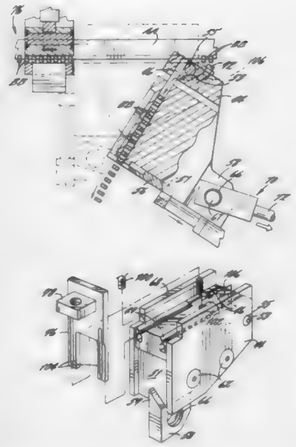
James K. Ervin, Denver, and Elijah Singleton, Gastonia, both of N.C., assignors to Talon, Inc., Stanley, N.C.

Filed Feb. 21, 1996, Ser. No. 604,723

Int. Cl.[6] **A41H** *37/06*; **B21D** *53/50*

U.S. Cl. 29—408 **24 Claims**

1. An apparatus for gapping a zipper having a pair of slide fastener stringers, each fastener stringer having a continuous row of fastener elements secured to an edge thereof, the apparatus comprising:



a support having a substantially flat surface for supporting the pair of slide fastener stringers with the fastener elements thereon in generally parallel alignment;

an indexing wheel cooperating with said support, said indexing wheel having a plurality of serration located along a periphery thereof for engaging the fastener elements of the pair of fastener stringers and for incrementally advancing the pair of fastener stringers a predetermined distance along said support;

a hinged block connected to said support upstream of said indexing wheel, said hinged block having a pair of grooves formed along a surface thereof and positioned in the path of the advancing fastener stringers for respectively receiving the fastener stringers in at least the area to be gapped; and

pivoting means for pivoting said hinged block relative to said support so that the fastener elements positioned in said pair of grooves of said hinged block are removed seriatim from each of the pair of fastener stringers to thereby form a gap in the slide fastener stringers in the region where the fastener elements are removed.

24. A process of gapping a zipper having a pair slide fastener stringers, each fastener stringer having a continuous row of fastener elements secured to an edge thereof, the process steps comprising:

serially engaging a predetermined number of fastener elements by a plurality of serations located on a periphery of an indexing wheel and incrementally advancing the pair of fastener stringers a predetermined distance along a surface of a support thereby positioning the fastener stringers into grooves formed in a hinged block in at least the area to be gapped;

positioning a locator connected to said hinged block between adjacent fastener elements to thereby locate a downstream end of the gap;

clamping at least a portion of each of the pair of fastener stringers to said support adjacent said hinged block for preventing movement thereof;

moving a punch relative to said support so as to remove at least one fastener element from each of the fastener stringers; and

moving said hinged block relative to said support so that the fastener elements are removed seriatim from each of the pair of fastener stringers so as to ensure that fastener elements immediately adjacent a formed gap are undamaged and have an opposed relationship.

5,632,077

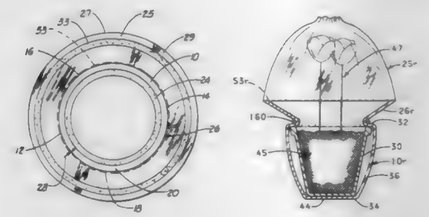
METHOD OF COVERING FOR FLOWER POT AND FLORAL GROUPING

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 37,067, Mar. 25, 1993, Pat. No. 5,542,169, and a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, Ser. No. 1,001, Jan. 6, 1993, Pat. No. 5,307,606, Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, and Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1993, abandoned, said Ser. No. 968,798is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 468,733

Int. Cl.[6] **B21D** *35/00*

U.S. Cl. 29—469.5 **20 Claims**



1. A method for providing a decorative covering and a protective covering comprising:

providing a sheet of material having an upper surface, a lower surface and an outer peripheral edge, a sheet extension being connected to the sheet of material and the sheet extension extending a distance outwardly from the sheet of material and the sheet of material having crimping means attached thereto, and the sheet having detaching means for detaching the sheet extension from the sheet of material and wherein the crimping means is attached to the sheet of material in a position below the detaching means;

providing a flower pot having an upper end, a lower end, an outer peripheral surface and an opening extending through the upper end of the flower pot providing access to a retaining space with the flower pot having an inner peripheral surface encompassing a substantial portion of the retaining space and the flower pot having a bottom formed near the lower end of the flower pot, the flower pot having a floral grouping disposed in the retaining space and extending a distance upwardly beyond the upper end of the flower pot;

forming the sheet of material about the flower pot to a position wherein the sheet of material extends about a substantial portion of the outer peripheral surface of the flower pot to provide the decorative covering and forming the sheet extension about the floral grouping to a position wherein the sheet extension covers a substantial portion of the floral grouping to provide the protective covering; and

crimping that portion of the sheet of material having the crimping means, the crimping means thereby forming a crimped portion in the portion of the sheet of material with the crimping means and with the crimped portion cooperating to hold the sheet of material in the form of the decorative covering extending about the flower pot with the sheet extension extending about the floral grouping and leaving a portion of the sheet of material extending above the upper end of the pot when the sheet extension is detached from the sheet of material.

5,632,078

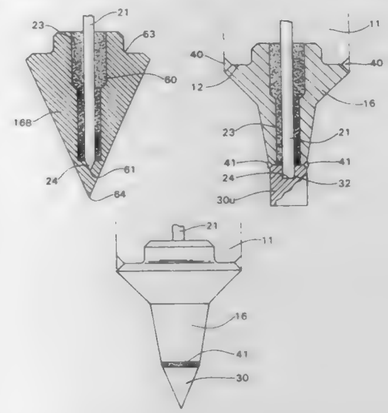
METHODS FOR CONSTRUCTING AND REPAIRING A TIP HEATER FOR A RUNNERLESS INJECTION MOLDING PROBE

Edward J. Potter, R.R. 1, Box 1506, Wilbur Rd., Hop Bottom, Pa. 18824

Division of Ser. No. 255,327, Jun. 7, 1994, Pat. No. 5,527,177. This application Jun. 13, 1996, Ser. No. 663,397

Int. Cl.[6] **H05B** *3/00*; **B23P** *6/00*

U.S. Cl. 29—611 **14 Claims**



7. A method for constructing a heating probe having an attached tip heater for use in runnerless injection molding machines for opening and closing mold gates by ON-OFF switching of the tip heater, said probe having a metal body with a front end, a back end and a longitudinal bore, the method comprising the steps of:

a. disposing a heating wire having a front end and a back end through the longitudinal bore in the metal body;

b. attaching the front end of the wire to a socket in a cap;

c. joining the periphery of the cap to the metal body; and

d. machining the cap to a point.

14. A method for repairing a tip heater attached to a heating probe utilized in runnerless injection molding machines for opening and closing mold gates by ON-OFF switching of the tip heater, said probe having a metal body having a front end, a back end, and a longitudinal bore, said tip heater comprised of a generally conical shaped tip having a recess, a socket, a back end and a pointed front end; a heating wire disposed in said longitudinal bore of said metal body disposed in said tip recess and attached to said tip socket; and an insulating material disposed between said heating wire and said metal body and between said heating wire and said recess, the method comprising:

a.) cutting said tip away from said metal body;

b.) removing said wire and said insulating material from said metal body;

c.) inserting a repair wire into said longitudinal bore of said metal body;

d.) attaching a repair tip to said repair wire;

e.) joining said repair tip to said metal body;

f.) packing insulating material between said metal body and said repair wire and between said recess and said repair wire;

g.) securing said repair wire within said socket of said repair tip.

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5,632,079

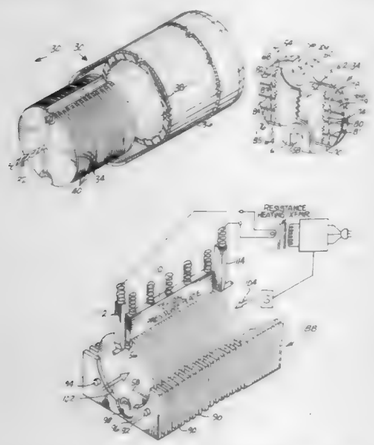
PROCESS FOR MAKING INTEGRATED TERMINATING RESISTOR

David G. Morant, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 173,328, Dec. 23, 1993. This application Jun. 6, 1995, Ser. No. 469,345

Int. Cl.[6] H01C *17/28*

U.S. Cl. 29—619 **5 Claims**



1. A process for making an integrated terminating resistor on a two-conductor data bus, comprising:

making a series of individual resistor elements;

assembling said resistor elements in a stack of parallel, spaced array of elements;

soldering said elements together between end portions of said two conductors of said data bus at both ends thereof to establish a parallel electrical connection and to connect the elements together mechanically in a closely spaced array; and

sealing said array in a shock absorbing and abrasion resistant enclosure.

5,632,080

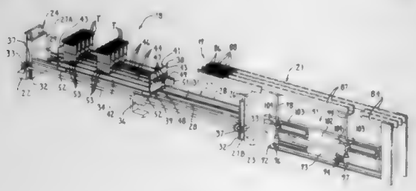
TUBE CUTTER/BENDER TO LACER TRANSFER STATION

Galen B. Harman, La Grange, Ind., and Derrick S. Small, Sturgis, Mich., assignors to Burr Oak Tool & Gauge Company, Inc., Sturgis, Mich.

Filed Jul. 26, 1994, Ser. No. 280,877

Int. Cl.[6] B23P *15/26*

U.S. Cl. 29—726.5 **19 Claims**



17. A tube transfer device, comprising:

a tube working device for producing a plurality of processed tubes, mutually adjacent pairs of said processed tubes extending parallel to one another and being laterally spaced apart a first distance from one another;

tube conveyor means for transporting said processed tubes from an entry location to an exit location thereon, said tube conveyor means including a plurality of first tube holders thereon orienting said processed tubes so that axes thereof will extend parallel to one another and be laterally spaced apart a second distance from one another at said entry location;

movable tube shuttle means and first drive means therefor for shuttling said processed tubes between a first position and a second position, said second position being located adjacent said entry location to said tube conveyor means, said movable tube shuttle means including plural movable second tube holders receiving said processed tubes when at said first position and while maintaining said first distance lateral spacing between said processed tubes;

means on said movable tube shuttle means for varying said lateral spacing between said processed tubes on said plural movable second tube holders from said first distance to said second distance and in response to a movement of said movable tube shuttle means between said first position and said second position so that said processed tubes will be spaced said second distance from one another when said movable tube shuttle means is at said entry location to said tube conveyor means; and

transfer means for effecting a transfer of said processed tubes on said plural movable second tube holders to said first tube holders.

5,632,081

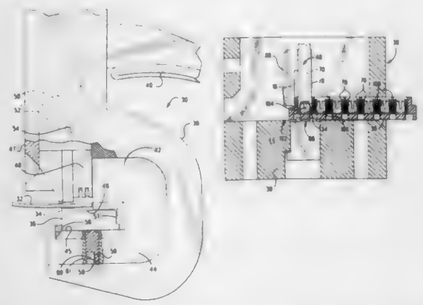
TWO STEP TAB CRIMPER AND WIRE INSERTER

George H. Gerhard, Jr., Laureldale, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 17, 1995, Ser. No. 503,117

Int. Cl.[6] H01R *43/045;43/055*

U.S. Cl. 29—751 **17 Claims**



1. In an apparatus for terminating a plurality of insulated conductors to a plurality of insulation displacement contacts arranged side by side in an insulating connector housing having a wall between each two adjacent contacts, each contact including tabs to be crimped onto the insulation of a respective one of said plurality of insulated conductors thereby forming a strain relief, tooling for performing said termination comprising:

(a) a first member in a first station for at least partially inserting a first insulated conductor of said plurality of insulated conductors into a first contact of said plurality of contacts and for only partially crimping said tabs of said first contact onto the insulation of said first insulated conductor;

(b) means for moving said connector housing so that said first contact and said first insulated conductor are moved to a second station and a second contact of said plurality of contacts and associated second insulated conductor of said plurality of insulated conductors are moved into said first station; and

(c) a second member in said second station for engaging and further crimping said partially crimped tabs of said first contact.

5,632,082

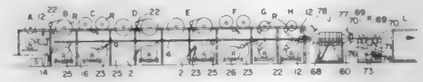
UNIT FOR PRODUCING A TUBE WITH A TUBE WALL COMPOSED OF FLEXIBLE MATERIAL WEBS

Peter Hartmann, General Willestrasse 115, CH-8706 Feldmeilen/Zurich, Switzerland

Filed Sep. 22, 1994, Ser. No. 310,670

Int. Cl.[6] B23P *21/00*

U.S. Cl. 29—782 **15 Claims**



1. A unit for producing a tube with a tube wall composed of flexible material webs which comprises: guide rollers; a core freely mounted on said guide rollers and made of core segments coupled with one another and having a width and an axis; clamping shafts projecting over the width of the core; reels mounted on the clamping shafts including material webs in a plurality of stations over and under the core, wherein said reels are offset with respect to the axis of the core and wherein said core extends through said plurality of stations and wherein said webs are guided around said guide rollers onto said core; and a cylinder downstream of the core being coupled to a front end of the core by a coupling member.

5,632,083

LEAD FRAME FABRICATING METHOD AND LEAD FRAME FABRICATING APPARATUS

Nobuhiko Tada, Ushiku; Naoki Miyanagi, Ibaraki-ken; Yoshiaki Shimomura, Ibaraki-ken; Shigeyuki Sakurai, Ibaraki-ken, and Yoshinari Nagano, Ibaraki-ken, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

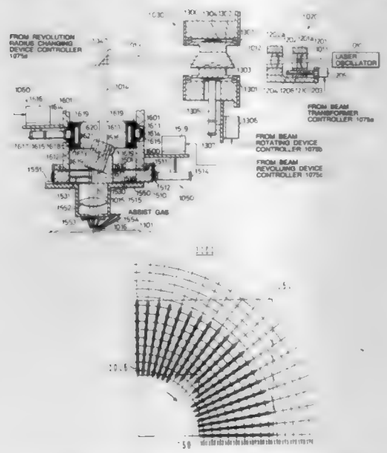
PCT No. PCT/JP94/01292, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995

PCT Filed Aug. 4, 1994, Ser. No. 411,839

Claims priority, application Japan, Aug. 5, 1993, 5-194925; Aug. 5, 1993, 5-194927

Int. Cl.[6] H01K *43/00;* **B23K** *26/00*

U.S. Cl. 29—827 **31 Claims**



1. A lead frame fabricating method wherein when fabricating a lead frame having leads made up by a number of inner leads (**1103**) radially arranged and outer leads (**1104**) positioned outwardly of said inner leads (**1103**) in continuous relation, a pulse-like laser beam (**1015**, **3014**) having an elongate section is irradiated to appropriately cut a thin metal plate (**1101**) to thereby form at least said inner leads (**1103**), said method comprising:

a first step of irradiating said laser beam (**1015**, **3014**) to said metal plate (**1101**) while an optical axis of said laser beam (**1015**, **3014**) is moved relatively in a direction crossing said inner leads to be formed and also rotating a spot (**1016**, **3016**) of said laser beam (**1015**, **3014**) irradiated to said metal plate (**1101**) so that a lengthwise direction of the spot is aligned with a lengthwise direction of each of said inner leads (**1103**) to be formed regardless of the relative relation between the position of said spot (**1016**, **3016**) and the position of said thin metal plate (**1101**), and a second step of moving the optical axis of said laser beam (**1015**, **3014**) relatively in the lengthwise direction of each of said inner leads (**1103**) to be formed such that the spots (**1016**, **3016**) of said laser beams (**1015**, **3014**) are lined up in the radial direction of inner leads (**1103**) to be formed, said inner leads (**1103**) being formed by repeating said first step and said second step.

5,632,084

Patent Not Issued For This Number

5,632,085

METHOD FOR MAKING AN ELECTRICAL CONTACT FOR A VITREOUS CARBON ELECTRODE

Volker Tegeder, Erlangen, Germany, assignor to Pacesetter AB, Solna, Sweden

Filed Nov. 7, 1995, Ser. No. 554,769

Claims priority, application Germany, Nov. 9, 1994, 44 40 001.2

Int. Cl.[6] H01R *43/20*

U.S. Cl. 29—876 **15 Claims**

1. A method for producing an electrical contact for a vitreous carbon electrode comprising the steps of:

producing an electrode blank of a cross-linked artificial resin, said resin having a pyrolyzing temperature associated therewith at which said resin becomes pyrolyzed;

producing a longitudinally extending bore terminating inside said electrode blank, said bore having an inner dimension;

providing a pin composed of biocompatible metal having a melting point higher than said pyrolyzing temperature, and having an outer dimension small than said inner dimension of said bore;

inrdoucing said pin into said bore with a portion of said pin projecting from one side of said electrode blank; and

pyrolyzing said electrode blank with said pin introduced therein at said pyrolying temperature and thereby cross-linking said artificial resin to convert said artificial resin into vitreous carbon and to shrink said electrode blank onto said pin.

5,632,086

JEWELRY WIRE BENDER

Gary L. Helwig, 20213 Sweet Meadow La., Laytonsville, Md. 20882

Filed Aug. 31, 1995, Ser. No. 521,368

Int. Cl.[6] B21L *13/00*

U.S. Cl. 29—896.43 **13 Claims**

1. A wire bending jig kit used to form connectors used in making jewelry comprising:

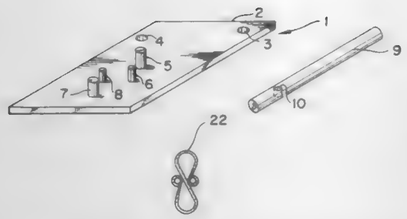
a plate having ends, sides, a top surface and a bottom surface,

said plate having means on said top surface, adjacent one end for attaching said plate to a work surface,

four pins positioned on said top surface adjacent another end of said plate,

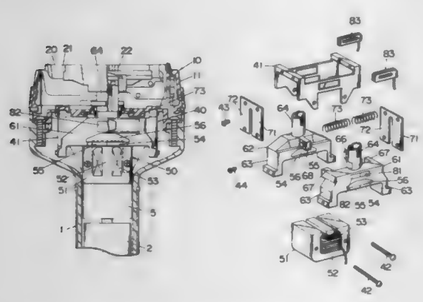
said pins being spaced about an imaginary ellipse with each pin spaced approximately 90° from an adjacent pin, and

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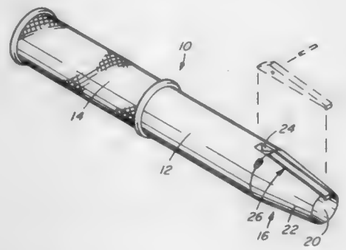
a holding means for aiding in bending wire around said pins, at least one of said four pins being shorter than the remaining pins.

5,632,087
RECIPROCATORY DRY SHAVER
Ryo Motohashi; Masao Tanahashi, both of Hikone, and Rokusaburo Kimura, Kobe, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Mar. 28, 1995, Ser. No. 413,201
Claims priority, application Japan, Mar. 28, 1994, 6-057567; Mar. 28, 1994, 6-057569
Int. Cl.[6] B26B *19/02*
U.S. Cl. 30—43.92 **24 Claims**



1. A reciprocatory dry shaver comprising:
a stationary cutter;
a movable cutter;
a permanent-magnet linear motor having a stator and a reciprocator which is driven by an electric current to reciprocate relative to said stator, said reciprocator carrying said movable cutter to reciprocate said movable cutter in shearing engagement with said stationary cutter; and
a power supply providing an electric power to said motor; wherein a detector is provided to detect a displacement of the movable cutter and give an output indicative of the detected displacement of said movable cutter, and wherein a controller is provided to vary said electric power being fed to said motor in a feedback manner based upon said output from said detector in order to keep an oscillation amplitude of said movable cutter at constant, wherein a plurality of said reciprocators are provided to carry individual ones of a plurality of said movable cutters, two adjacent ones of said reciprocators carrying two adjacent ones of said movable cutters being driven to move in the directions opposed to one another, at least one spring coupling said two adjacent reciprocators to establish an energy transmitting connection therebetween, thereby giving a force constant which determines a natural frequency for an oscillating system of each of the two adjacent ones of said movable cutters.

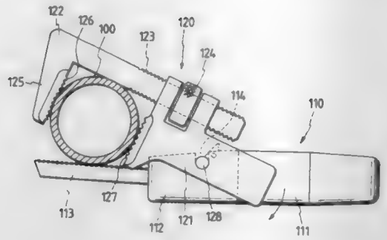
5,632,088
CABLE STRIPPER DEVICE
Dan Naso, 18132 Fraser Hwy., Surrey, British Columbia, Canada, and Lyle D. Sieg, 7690 Vantage Way, RR5 Delta, British Columbia, Canada
Filed May 25, 1995, Ser. No. 450,799
Int. Cl.[6] H02G *1/12*
U.S. Cl. 30—91.2 **7 Claims**



1. A cable stripper, comprising:
a tubular body;
said tubular body having a tapered end portion and a cylindrical passage extending through said tapered end portion;
said cylindrical passage having a first end at said tapered end portion; and
said tapered end portion having a frusto-conical external surface which converges towards said first end of said cylindrical passage;
a slot formed in and extending longitudinally of said tapered end portion;
an elongate cutter in said slot;
said elongate cutter having, at one end thereof, a cutter blade extending transversely of said elongate tuner and projecting radially inwardly of said tubular body; and
a connection between said cutter and said tubular body allowing said cutter to move radially inwardly to within the confines of said slot, into an operative position, so as to cause said cutter blade to penetrate a sheath on the cable;
said cutter having an outer longitudinal surface inclined inwardly of said tubular body along said tapered end portion towards said first end of said cylindrical passage to allow wedging of said cutter into said operative position on insertion of said end portion into a frusto-conical recess in a cable anchor.

5,632,089
SABER SAW ASSEMBLY WITH IMPROVED VISING MECHANISM
Siyouiti Sakamoto; Kazumi Takeishi, both of Katsuta; Hiroaki Orikasa, Nakaminato, and Takahiko Shimada, Ibaraki-ken, all of Japan, assignors to Hitachi Koki Company Ltd., Japan
Filed Aug. 2, 1994, Ser. No. 284,210
Claims priority, application Japan, Aug. 20, 1993, 5-205969; Mar. 4, 1994, 6-034652
Int. Cl.[6] B27B *19/00*
U.S. Cl. 30—92 **8 Claims**

1. A saber saw assembly comprising:
a vice for clamping an object to be cut; and
a saber saw having a saw blade to be operated in reciprocating motion, said saber saw cutting said object with the reciprocating saw blade while said object is clamped by said vice;
wherein said vice is in the form of a pipe wrench;
wherein said vice clamps said object when rotated in a clamping direction and releases said object when rotated in a releasing direction; and

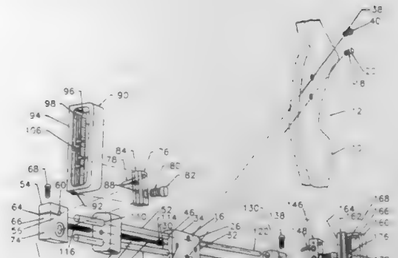


wherein said saber saw is coupled to said vice so as to apply a force to said vice in said clamping direction when said saber saw is displaced relative to said vice for cutting said object.

5,632,090
DEGLAZING HAND TOOL
Richard A. Smith, 38 William Feather Dr., Voorhees, N.J. 08043
Filed Oct. 23, 1995, Ser. No. 546,931
Int. Cl.[6] B26B *3/08;* **A47L** *1/06*
U.S. Cl. 30—319 **6 Claims**

1. A hand tool comprising:
(a) an angular handle having front and rear sections, the front and rear sections of the handle being joined at an angle of about from 95 to 125 degrees;
(b) a circular blade rotatable mounted on the front end of the handle, the blade mounted substantially perpendicular to the axis of the front section of the handle, the center of the blade being recessed from the edges of the blade at least about 1/16 inch, the blade having a thickness of about from 0.025 to 0.125 inch; and
(c) a hand guard for the rear section of the handle extending at least toward the interior of the angle formed by the front and rear sections of the handle.

5,632,091
ARCHERY BOW SIGHT
James Brion, P.O. Box 1476, Hamilton, Mont. 59840, and Tony Hoffman, 411 Linn St., Yankton, S. Dak. 57078
Filed May 30, 1995, Ser. No. 453,456
Int. Cl.[6] F41G *1/467*
U.S. Cl. 33—265 **6 Claims**



1. For use with an archery bow having a bowstring, an arrow rest and handgrip portion, an archery bow sight for attachment to the archery bow, said archery bow sight comprising:
a mounting block, said mounting block for attachment to the archery bow;
a pair of threaded mounting bolts for attachment of said mounting block to the archery bow, said pair of threaded mounting bolts each having a head and being located respectively one each in a pair of mounting holes through said mounting block;
said pair of mounting holes extending through said mounting block from an outside planar surface of said mounting block to an inside planar surface of said mounting block;
said heads of said pair of threaded mounting bolts being countersunk with respect to said outside planar surface of said mounting block;
said mounting block having a pair of vertical slits therethrough, with a first vertical slit of said pair of vertical slits being located on a front side of said mounting block and extending a length of said front side of the mounting block from a top side of said mounting block to a bottom side of said mounting block into said mounting block, and a second vertical slit of said pair of vertical slits being located on a rear side of said mounting block and extending a length of said rear side of said mounting block from said top side of said mounting block to said bottom side of said mounting block into said mounting block;
said mounting block having a pair of threaded securing bolts located respectively one each in a pair of securing bolt holes, said pair of threaded securing bolts adjustably securing a front sight and a rear sight to said mounting block;
said pair of securing bolt holes perpendicularly bisecting one each of said pair of vertical slits and extending between said outside planar surface of said mounting block and said inside planar surface of said mounting block;
said pair of securing bolt holes each having a threaded portion between said vertical slit and said inside planar surface, said threaded portion having threads which threadably engage said pair of threaded securing bolts;
said pair of threaded securing bolts each having a head which is countersunk into said outside planar surface of said mounting block;
said mounting block having a pair of parallel sight support attachment holes therethrough for adjustable attachment of said front sight and said rear sight;
said pair of parallel sight support attachment holes lying horizontally through said mounting block from said vertical slit on said front side of said mounting block to said vertical slit on said rear side of said mounting block, with each of said pair of parallel sight support attachment holes having a diameter on said rear portion of said mounting block and a diameter on said front portion of said mounting block;
a front sight, said front sight being adjustably attached to said mounting block; and,
a rear sight, said rear sight being adjustably attached to said mounting block.

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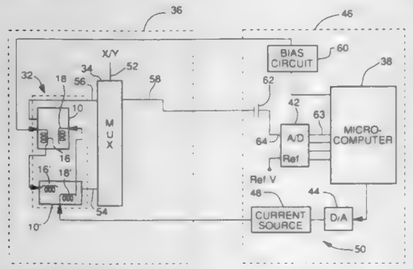
COMPENSATION SYSTEM FOR ELECTRONIC COMPASS

Rodney K. Blank; Richard J. Gahan; Howard J. Haselhuhn, Jr., all of Holland; Kenneth L. Schierbeek, Zeeland, and Kenneth Schofield, Holland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 142,509, Oct. 25, 1993, which is a continuation-in-part of Ser. No. 811,578, Dec. 20, 1991, Pat. No. 5,255,442. This application Jun. 1, 1995, Ser. No. 457,621

Int. Cl.[6] G01C *17/28;* G01R *33/06*

U.S. Cl. 33—361 3 Claims



1. In combination, for use in a vehicle,

an electronic compass comprising first and second magnetoresistive sensors oriented in a predetermined angular relation with each other and in a predetermined angular relation with respective axes of the vehicle, the first and second sensors each having an adjustable offset magnetic field generator for generating an offset magnetic field and being responsive to said offset magnetic field and to an external magnetic field for developing first and second electronic signals, respectively, representative of the combination of said magnetic fields, said external magnetic field being a combination of the earth magnetic field and a deviating field of the vehicle,

an electronic circuit coupled with said sensors for developing signals indicative of the direction of said vehicle,

an electronic display coupled with said circuit for displaying said direction,

said electronic display being disposed for viewing by a driver of said vehicle.

5,632,093

INDUCTIVE SENSOR AND METHOD FOR DETECTING DISPLACEMENT OF A BODY

Sharon A. Elias, 420 E. 72nd St., No. 8-K, New York, N.Y. 10021

Continuation-in-part of Ser. No. 245,156, May 17, 1994, Pat. No. 5,456,013, which is a continuation-in-part of Ser. No. 95,579, Jul. 19, 1993, abandoned. This application Feb. 14, 1995, Ser. No. 359,888

Int. Cl.[6] G01C *9/06*

U.S. Cl. 33—366 12 Claims

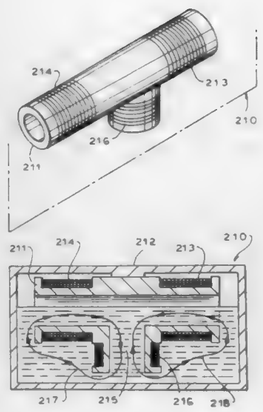
1. A sensor for sensing displacement of a body comprising:

a sealed housing;

at least one current path means disposed in said housing;

means for applying current to said current path means;

variable low reluctance magnetic flux path about said current path means, comprising a hollow non-ferromagnetic frame disposed in said housing, said frame comprising a vertical portion mounted at the center of the inside floor of said housing and at least one pair of horizontal portions disposed at the top of said vertical portion in a plane perpendicular to said vertical portion, said plane being parallel with the longitudinal and latitudinal axes of said housing, about which frame said at least one current path means is disposed, and ferromagnetic fluid disposed in said sealed housing, in which



fluid said frame is partially submerged, the level of said fluid relative to said current path means varying in response to displacement along the axes of said sensor; and

sensing means for measuring the output from said current path means as a function of variations in said variable magnetic flux path.

5,632,094

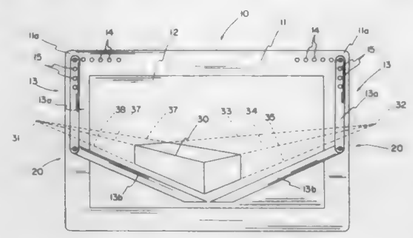
ARTICULATED DRAFTING DEVICE FOR DRAWING PERSPECTIVES

John A. Mills, Rte. 2, Box 265-E, Bounts Creek, N.C. 27814

Filed Aug. 16, 1995, Ser. No. 515,819

Int. Cl.[6] B43L *13/14*

U.S. Cl. 33—432 10 Claims



1. A portable drafting device for drawing perspective lines which originate from a common vanishing point that lies outside the periphery of the drawing surface comprising:

a generally rectangular drawing board having a plurality of arm locating holes located in the upper corner portions thereof, said holes being disposed linearly in both horizontal and vertical directions at regular intervals in parallel, spaced-apart relation to the periphery of said upper corner portions of said drawing board; and

a plurality of articulated arm means, each respective articulated arm means including a primary upper arm member and a straight-edge member, said straight-edge member being provided with a terminal end having a thirty degree angle formed thereon to facilitate visual alignment of said straight-edge member to a standard thirty degree baseline, said primary upper arm member being pivotally coupled at a terminal end to a proximal end of said straight-edge member by adjustable means, said primary upper arm member being pivotally mounted in said holes by pivoting means enabling said straight-edge members to be disposed in a functional relationship with the surface of said drawing board for laying out perspective drawing lines and for selective adjustment of desired vanishing points.

5,632,095

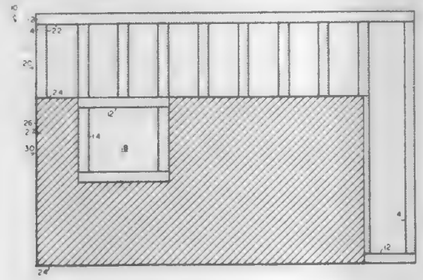
INCREMENTAL MARKED FRAMING LUMBER PRODUCT AND METHOD

James E. Day, 572 Main St., Metuchen, N.J. 08840

Filed May 23, 1995, Ser. No. 447,436

Int. Cl.[6] B43L *7/00*

U.S. Cl. 33—494 13 Claims



1. A framing lumber product, adapted for use in the cutting and assembling of lumber for constructing a building, which lumber product comprises:

a) a piece of lumber of a selected length for use in the construction of a building, the piece of lumber having a first and second end, and a face and back surface and opposite sides;

b) a plurality of visible marking lines and corresponding numerals formed directly on at least one surface of said lumber, and at least a plurality of said lines extending generally substantially across the face or back surface and placed at preselected framing, cutting or assembly intervals in a parallel manner and perpendicular to the length of said lumber and extending each to the sides and spaced apart along the length of said lumber;

c) wherein a plurality of selected visible marking lines and numerals extend across a face or back surface and down at least one side of said piece of lumber; and

d) wherein a plurality of the selected marking lines and corresponding numerals include at least two different colors or designs.

5,632,096

SAW BLADE ALIGNMENT TOOL

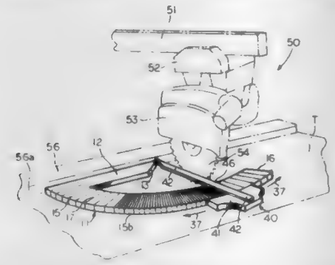
Steve Horvath, 1618 Liberty, Toledo, Ohio 43608

Filed Mar. 27, 1995, Ser. No. 411,262

Int. Cl.[6] B27G *23/00;* G01B *3/56;* B43L *7/00*

U.S. Cl. 33—628 19 Claims

1. A tool/device, for setting/adjusting the cutting angle of the



circular saw blade of a radial, bench-type, power saw comprising, in combination;

a generally flat, truncated protractor member, and at least one cooperating T-square member,

said truncated protractor member comprising a primary elongate/base leg and, connected at one end, a curved leg, defining the arc of a circle, extending at least 90 degrees, but less than 180 degrees from said elongate/base leg, said curved leg having upper and lower surfaces connected by a curved peripheral edge,

said base leg defining/corresponding to the radius of said arc and measuring 14⅝ inches;

said T-square including a head piece having a working edge surface congruent to and movable in slidable relationship with the perimeter of said curved leg.

5,632,097

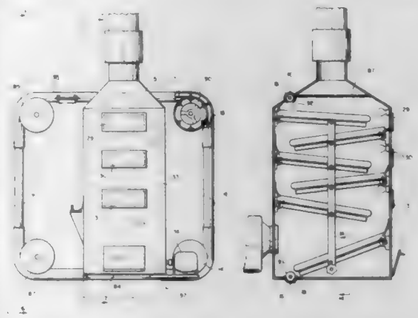
BRINE SHRIMP CYST DRYING DEVICE

William H. Snitchler, 5648 S. 1150 West, Ogden, Utah 84405, and Randall L. Scholl, 4822 S. 3200 West, Roy, Utah 84067

Filed Jun. 28, 1996, Ser. No. 671,159

Int. Cl.[6] F26B *19/00*

U.S. Cl. 34—61 9 Claims



1. An apparatus for drying brine shrimp cysts, comprising:

a generally closed drying chamber having a bottom member with two pairs of spaced apart parallel sidewall members upstanding therefrom, and a top closing member secured to the sidewall members;

at least one warmed air inlet opening to the chamber through a sidewall member;

an air outlet opening through the top closing member;

means introducing cysts to be dried into the chamber at a level above the bottom member; and

means elevating the cysts upwardly from the bottom member of the chamber to a higher level therein to fall under the influence of gravity to said bottom member.

5,632,098

BEAN ROASTING SYSTEM

Timothy S. Finch, 11167 Wood Elves Way, Columbia, Md. 21044

Filed Apr. 4, 1996, Ser. No. 628,005

Int. Cl.[6] F26B *17/00*

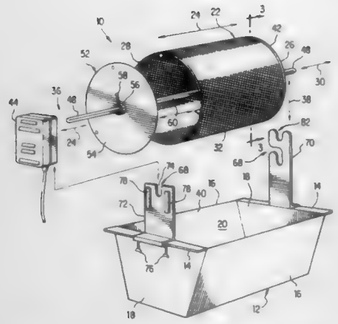
U.S. Cl. 34—63 10 Claims

1. A coffee bean roasting system for adapting a barbecue grill for roasting coffee beans, comprising:

(a) a housing extending in a longitudinal direction, said housing having opposing longitudinally displaced first and second ends;

(b) means for rotating said housing about a longitudinal axis, said means for rotating said housing being coupled to said housing and positionally located adjacent an upper section of the barbecue grill, said means for rotating said housing

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including (1) a rod member extending longitudinally through said housing and secured thereto for rotation therewith, said rod member having opposing first and second ends extending longitudinally beyond respective first and second ends of said housing (2) a motor driving coupled to said first end of said rod member, and (3) a pair of mounting brackets releasably coupled to the barbecue grill, a first of said pair of mounting brackets having a recess formed therein for rotatively supporting said second end of said rod member, a second of said pair of brackets being adapted for releasable securement of said motor thereto; and,

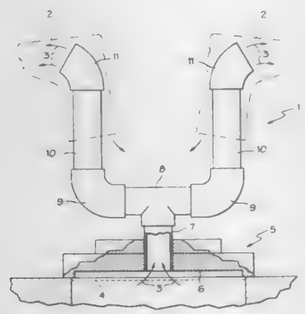
(c) removable closure means releasably coupled to said second end of said housing for capturing the coffee beans within said housing when said housing is rotatively displaced about said longitudinal axis.

5,632,099

APPARATUS FOR DRYING FOOTWEAR

Christopher L. Seifert, and Brian L. Seifert, both of 11905 Bryden Pl., Fishers, Ind. 46088-1415

Filed Jul. 8, 1996, Ser. No. 676,483
Int. Cl.[6] F26B *25/00*
U.S. Cl. 34—106 **5 Claims**



1. Apparatus (1) for drying footwear (2) by means of hot air (3) flowing from a hot air register (4) of a hot air heating system, said hot air register (4) having a frame forming the perimeter of an open area through which said hot air (3) flows, said apparatus (1) comprising:

(a) a base (5) covering the entire frame of said hot air register (4),

(b) a cavity (6) in the bottom surface of said base (5), said cavity (6) being generally coextensive with the open area of said hot air register (4) thereby capturing all hot air (3) flowing through the open area of said hot air register (4),

(c) a main conduit (7) communicating at its lower end with said cavity (6), said main conduit (7) extending upwardly through the center of said base (5), the upper end of said main conduit (7) extending above said base (5),

(d) first and second conduits (10) communicating with the upper end of said main conduit (7) and extending upwardly therefrom, said first and second conduits (10) being horizontally equispaced from the center of said base (5),

(e) first and second curved conduits (11), the lower ends of said curved conduits (11) communicating with the upper ends of said first and second conduits (10) and adapted to extend into the toe regions of footwear (2) to be dried when said footwear (2) is placed over said first and second curved conduits (11) and said first and second conduits (10),

(f) whereby only hot air (3) flowing through the open area of said hot air register (4) is conducted through said main conduit (7), said first and second conduits (10) and said first and second curved conduits (11) to the interior of said footwear (2) including the toe regions of said footwear (2),

(g) whereby hot air (3) carrying with it moisture from the interior of said footwear (2) flows out of said footwear (2) through the annular spaces between said first and second vertical conduits (10) and the tops of said footwear (2),

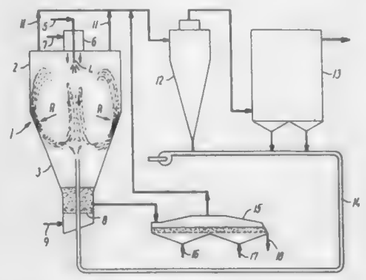
(h) whereby the apparatus (1) is balanced about the center of said base (5).

5,632,100

PROCESS AND A SPRAY DRYING APPARATUS FOR PRODUCING AN AGGLOMERATED POWDER

Ove E. Hansen, AllerØd, Denmark, assignor to Niro Holding A/S, Soborg, Denmark

PCT No. PCT/DK93/00376, § 371 Date May 15, 1996, § 102(e) Date May 15, 1996, PCT Pub. No. WO95/13864, PCT Pub. Date May 26, 1995
PCT Filed Nov. 17, 1993, Ser. No. 646,310
Int. Cl.[6] F26B *7/00*
U.S. Cl. 34—374 **24 Claims**



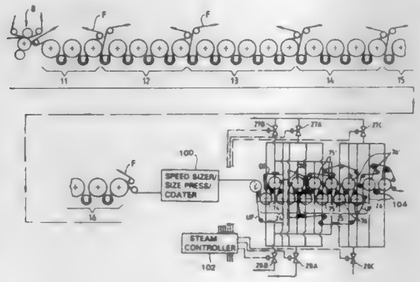
1. A process for producing an agglomerated powder by spray drying a liquid in a drying chamber of which the lower part is formed by a conical downward tapering section, including the steps of atomizing said liquid in the upper part of the chamber into at least one downward first stream of drying gas to produce particles, withdrawing a stream of spent drying gas from at least one non-central location in the upper part of the drying chamber together with entrained fine powder particles, thereby creating a drying gas flow having an outward and upward turning portion in the conical chamber section, collecting said fine powder particles from the thus withdrawn stream of spent drying gas, and recycling them to the drying chamber, and recovering an agglomerated powder product from the bottom of the chamber, characterized in that the recycling of said fine particles to the drying chamber is performed by pneumatic injection thereof from a location in the lower part of the drying chamber and in one or more directions forming an angle of 0°–90° to the upward center axis of the chamber, to utilize said outward and upward turning portion of the drying gas flow to introduce the fine particles evenly in a horizontal, annular zone near the wall of the conical section of the chamber.

5,632,101

ALL TOP-FELTED SINGLE-TIER DRYING SECTION WITH POST DRYING SECTION CURL CONTROL

Markus Oechsle, Bartholomae, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Germany

Continuation-in-part of Ser. No. 344,736, Nov. 23, 1994, Pat. No. 5,557,860. This application Sep. 8, 1995, Ser. No. 526,068
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—445 **13 Claims**



1. A method for drying a paper web in a papermaking machine, the method including the steps of:

guiding the paper web through a main drying section including a plurality of heatable dryers for contacting the paper web, in each of a plurality of successively located dryer groups, in which each of the dryer groups is a single-tier, top-felted dryer group, so that the paper web is dried in the main drying section solely from one side thereof;

moistening the paper web by applying to it a coating material;

guiding the paper web through an after-dryer, double-tier dryer section to heat opposite sides thereof; and

separately controlling steam pressure in an upper-tier of dryers and in a bottom-tier of dryers associated with the double-tier dryer section to control the steam pressure therein in a manner which tends to reduce a curl parameter associated with the paper web.

5,632,102

PROCESS AND APPARATUS FOR THE PRODUCTION AND/OR TREATMENT OF PARTICLES

Bernhard Luy, Sulzburg; Ulf Konig, Karlsruhe, and Matthias Tondar, Hausen i. W., all of Germany, assignors to Glatt GmbH, Binzen, Germany

Filed Apr. 14, 1995, Ser. No. 422,538
Claims priority, application Switzerland, Nov. 14, 1994, 339/94
Int. Cl.[6] F26B *17/00*
U.S. Cl. 34—582 **32 Claims**

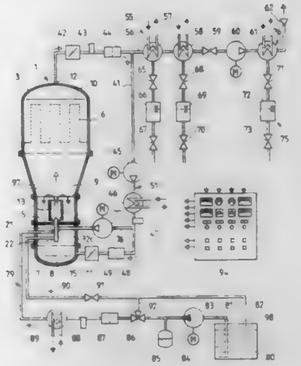
1. A process for at least one of producing and of treating particles within a process chamber, including the steps of circulating gas in a gas circulation that includes a process chamber and a gas circulation device, feeding a liquid, during circulation of gas, at least from time to time to at least one spray nozzle and spraying the liquid into the process chamber through a liquid outlet present in a mouthpiece of the spray nozzle, the process further comprising the steps of,

moving the particles within the process chamber,

withdrawing the gas, at least from time to time, from the gas circulation by a suction device so that the pressure in the process chamber is continuously at a value of at most 50 kPa at least during spraying of liquid;

feeding the liquid to the spray nozzle at a pressure of at least 500 kPa for atomizing the liquid;

wherein, at least during the spraying of liquid, passing gas from the gas circulation to a gas passage of the spray nozzle, said gas passage having a section which, in cross-section surrounds the mouthpiece, and passing the gas into the process chamber through the gas passage, wherein the pressure of the gas fed to the gas passage of the spray nozzle is at most 20 kPa greater than the pressure of the gas present in the process chamber, wherein the gas streaming through the gas passage into the process chamber forms a gas envelope for shielding the spray nozzle at least substantially against contact with the atomized liquid.

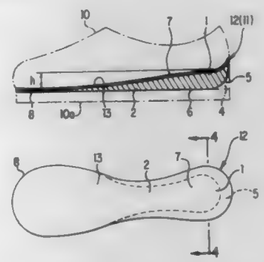


5,632,103

INSOLE OF SHOE

Tatsuhiko Suenaga, 15-21, 2-chome Shimo-Iqusa, Suginami-ku, Tokyo, Japan

Continuation of Ser. No. 361,515, Dec. 22, 1994, abandoned. This application Feb. 26, 1996, Ser. No. 607,203
Int. Cl.[6] A43B *13/18;13/40*
U.S. Cl. 36—28 **9 Claims**

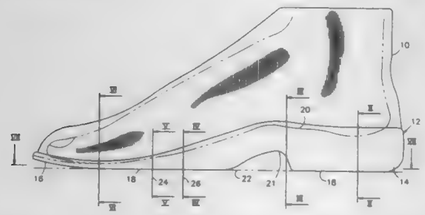


1. A shoe, an insole for insertion in the shoe and a U-shaped cavity around a heel portion between the insole and the shoe when the insole is inserted in the shoe, the insole comprising a resilient substance of foam resin made of ethylene/vinyl acetate copolymer and having fine bubbles therein, wherein a thickness of the insole increases in a longitudinal direction from a front portion of the insole corresponding to an arch of a foot to a rear portion of the insole corresponding to a heel of the foot to give a slope from an uppermost portion of the insole corresponding to the heel to the portion of the insole corresponding to the arch of the foot, the uppermost portion of the insole being between about 15 millimeters and about 35 millimeters higher than a toe portion of the

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insole, a bottom edge of the insole having a cut surface in at least a heel portion of the insole, the shoe and the cut surface of the insole forming the U-shaped cavity around the heel portion and between the insole and the shoe when the insole is inserted into the shoe, a bottom surface of the insole surroundable by the U-shaped cavity, and forming a continuous plane for completely contacting an inner surface of the shoe, the resilient insole deforming into the cavity when pressure is applied to the insole by the foot to absorb shock.

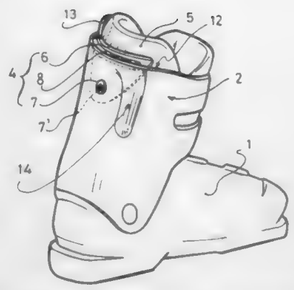
5,632,104
SHOES FOR REDUCING STRESS IN FEET
Itzchak Zohar, 27 Jabotinsky Street, Holon, Israel
Filed Mar. 20, 1995, Ser. No. 407,736
Claims priority, application Italy, Oct. 4, 1994, 111172
Int. Cl.[6] A43B *13/14;7/14*
U.S. Cl. 36—88 **3 Claims**



1. A shoe having a length and a back, said shoe comprising an upper and a sole portion and defining a foot support surface interior of the shoe and an engagement surface exterior of the shoe, a lateral side of a hindfoot portion of the foot support surface being lower than a medial side thereof, —so as to align a hindfoot of a wearer's foot in varus with respect to a tibia axis of said wearer's foot, and wherein the foot support surface is curved to fit the natural shape of a heel of said wearer's foot, and wherein a metatarsal line is defined in the shoe approximately at a location separated from the back of the shoe by a distance equal to two-thirds of the length of the shoe, a medial side of the foot support surface being lower than a lateral side thereof at the metatarsal line so as to align a forefoot of said wearer's foot in valgus with respect to the tibia axis, and wherein the hindfoot portion of the foot support surface is substantially higher than the metatarsal line, the foot support surface being upwardly facing concave in shape from the hindfoot portion along the length of the shoe and gradually sloping towards the metatarsal line, and wherein the foot support surface further gradually slopes under toes of said wearer's foot such that when said wearer is standing erect, articulate extremities of said toes do not nominally touch said foot support surface, thereby allowing said toes to plantarflex and dorsiflex.

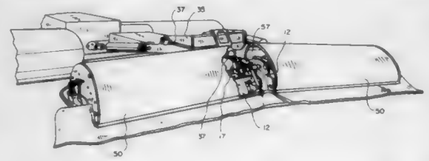
5,632,105
SKI BOOT INCORPORATING ADAPTABLE UPPER
Laurent Bonaventure, Cran-Gevrier, France, assignor to Salomon S.A., Annecy, France
Filed Feb. 2, 1996, Ser. No. 594,657
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—117.1 **8 Claims**

1. Sport boot incorporating a shell base surmounted by a high upper adjustable on the wearer's lower leg (**9**) by means of tightening devices, and comprising a device (**4**) for immobilization of the lower leg in and in relation to said upper by virtue of being interposed between the latter and the lower leg, wherein the immobilization device (**4**) comprises a rotating shim (**6**) which, when fastened to the upper (**2**) by means of a rotating connection pin (**7**), extends in proximity to the upper edge (**12**) of the upper (**2**, **32**), and at least partially on the inner wall (**16**) of said upper, and is adjustable angularly in at least two positions, one of maximum



immobilization and the other of minimum immobilization, and the rotating shim (**6**) is provided with a projection (**8**) which protrudes against the inner wall (**16**) of the upper (**2**) in the maximum angled immobilization position, and which retracts into a corresponding recess (**14**) in the upper (**2**) in the minimum angled immobilization position.

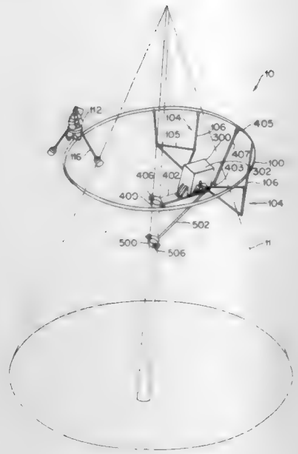
5,632,106
TILLER WITH ADJUSTABLE DEPTH CUTTER AND SNOW COMB ENTRY ANGLE
William B. Sinykin, Smithfield, Utah, assignor to LMC Operating Corp., Logan, Utah
Filed Aug. 8, 1995, Ser. No. 512,289
Int. Cl.[6] E01H *5/04*
U.S. Cl. 37—222 **5 Claims**



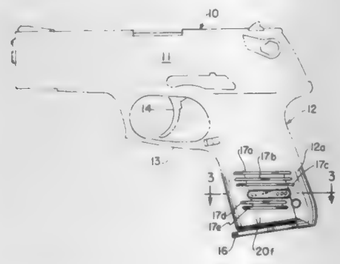
1. A device for tilling the surface of a path of snow along which said device is drawn, comprising;
a rigid unitary frame;
at least one elongate horizontal snow cutter;
an elongate covering structure disposed above and behind the cutter, a rearmost portion thereof extending downwardly and rearwardly to meet a leading edge of a snow surface grooming device affixed rearmost to the tilling device, forming an angle of entry of snow to under the grooming device; and
a means of varying the elevation of the cutter within the covering structure without change in angular or elevational position of the said frame, covering structure and grooming device upon the snow.

5,632,107
DISPLAY WITH UNDULATING RIGID TRACK ON WHICH A BALANCING FIGURE TRAVELS
Huang Meng-Suen; Arthur Liu, both of Kowloon, Hong Kong, and Charles Savard, Collierville, Tenn., assignors to Mr. Christmas, Inc., New York, N.Y.
Filed Oct. 4, 1995, Ser. No. 538,859
Int. Cl.[6] G09F *19/00*
U.S. Cl. 40—430 **27 Claims**

1. A display, comprising:
a rigid, continuous, closed track;
motion-transmitting means for imparting undulating motion to said rigid track, said motion-transmitting means including a compound pivot mechanism producing continuous, simultaneous pivoting motion about a fixed first axis and about a second axis different from said first axis; and
connecting means for connecting said rigid track to said compound pivot mechanism to pivot about the second axis,
wherein continuous simultaneous pivoting motion produced by said compound pivot mechanism about the first and second axes imparts undulating motion to said track.

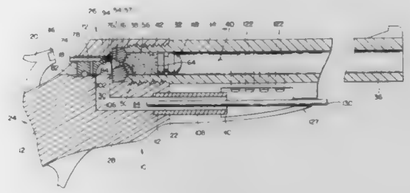


5,632,108
METHOD OF MANUFACTURING OF MOLDED FIREARM PART WITH INSERT AND PART
William B. Ruger, Croydon, N.H., and James McGarry, Prescott, Ariz., assignors to Sturm, Ruger & Company, Inc., Southport, Conn.
Continuation of Ser. No. 233,177, Apr. 26, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,615
Int. Cl.[6] F41C *23/10*
U.S. Cl. 42—1.01 **3 Claims**



1. A firearm part comprising
a molded portion having a first hardness and having an exterior surface, and
an opening in said exterior surface and
an insert portion having a body of a second hardness which second hardness is harder than the first hardness molded into and integral with such molded portion,
said insert portion including
an elongated body surface positioned in said molded portion opening and being substantially the size of said opening and the area of said body surface being substantially flat and visible through said opening;
said insert portion being made of a material for receiving a serial number, and
a serial number on said insert portion.

5,632,109
METHOD AND APPARATUS FOR DIRECTING BACK FLASH IN A FIREARM
Carl E. Caudle, P.O. Box 6, Moses Lake, Wash. 98837
Filed Nov. 13, 1995, Ser. No. 554,973
Int. Cl.[6] F41C *7/00*
U.S. Cl. 42—51 **20 Claims**

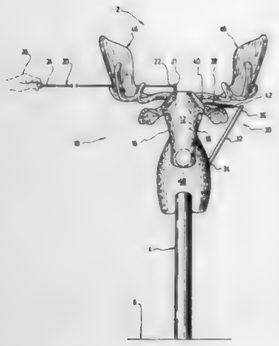


1. A firearm which comprises:
a receiver having a forward end, a rearward end, an upper end, a lower end and an exhaust channel therein;
a barrel having a front end, a rear end and a longitudinal barrel bore therethrough for receiving a projectile, the barrel mounted proximate the rear end thereof to the receiver and extending forwardly therefrom;
a nipple having a rearward face, a forward face and an ignition passageway, the ignition passageway defining an input port on the rearward face and an output port on the forward face, the nipple mountable in the receiver such that the output port of the nipple opens into the exhaust channel of the receiver; and
a flash plate having a front face, a rear face and a flash passageway, the flash passageway defining a front port on the front face and a rear port on the rear face, the flash plate received in the receiver between the rear end of the barrel and the nipple, the front port of the flash plate opening into the barrel bore proximate the rear end of the barrel and the rear port of the flash plate opening into the exhaust channel, the rear port of the flash plate staggered with respect to the output port of the nipple such that the rear port of the flash plate and the output port of the nipple are non-coaxial.

5,632,110
DEER DECOY
Roch Roy, 41, rue Notre-Dame, Cap-Chat, Quebec, Canada
Filed Jun. 26, 1996, Ser. No. 669,095
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—2 **12 Claims**

12. A deer decoy, comprising:
holding means extending upwardly in a substantially vertically position;
pivoting means comprising a rod having a tubular portion and a thin portion, the tubular portion being bent with respect to the thin portion, the rod being mounted on the holding means and extending therefrom in an upwardly and forwardly inclined position with respect to the holding means;
a deer head artifact pivotally mounted on the rod, the deer head having a front part, a rear part, a first side, and a second side, whereby the front part of the deer head is substantially facing an horizon;
a deer chest artifact mounted on the holding means;
a cord having a first end attached to the first side of the deer head, and a second end extending towards a user, said cord being oriented in such a manner that, when the user pulls on the cord, the deer head pivots about the rod in a first direction;

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a hollow tube attached to the holding means, in an upwardly inclined position with respect to the holding means;

supporting means having a first end and a second end, said support means having its first end inserted into the hollow tube and thus extending in an upwardly and forwardly inclined position with respect to said holding means; and

a spring having a first end attached to the second side of the deer head artifact, and a second end attached to the second end of the supporting means;

whereby, when the user releases the cord, the deer head artifact pivots in a second direction opposite to the first direction.

5,632,111

FISHING ROD WITH REEL FASTENER

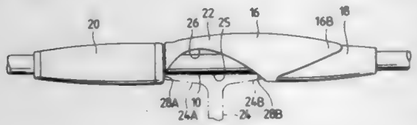
Shinya Takizawa, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 110,708, Aug. 23, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 363,578

Claims priority, application Japan, Sep. 1, 1992, 4-067059 U

Int. Cl.[6] A01K *87/06;87/08*

U.S. Cl. 43—20 **13 Claims**



1. Fastening means for affixing a fishing reel to an elongated fishing rod, said fishing reel having mounting means for engagement with said fastening means and said fishing rod having a longitudinal axis extending from a tip end to a butt end, said fastening means comprising:

a primary body including first securing means for cooperating with said mounting means, said primary body further including a bulge extending radially outward away from said longitudinal axis, an expanded portion circumscribing said fishing rod, and a constriction of relatively reduced cross-section with respect to both said bulge and said expanded portion, said constriction is located between said bulge and said expanded portion as viewed in a plane view, said expanded portion is located between said constriction and said tip end, and said bulge is located between said constriction and said butt end, wherein said bulge is located radially opposite said first securing means with respect to said longitudinal axis; and

a secondary body including second securing means for cooperating with said mounting means, said primary body and said second securing means are relatively rotatable to engage and disengage said mounting means from said first and second securing means.

5,632,112

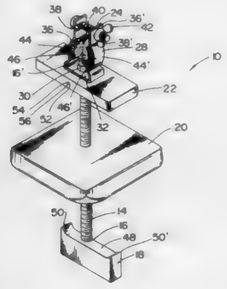
FISHING ROD HOLDER FOR ATTACHMENT TO DOCKS OR PIERS

Jon E. Steinborn, 442 Franklin St., Belvidere, Ill. 61008

Filed Jul. 28, 1995, Ser. No. 508,983

Int. Cl.[6] A01K *97/10*

U.S. Cl. 43—21.2 **15 Claims**



1. A fishing rod holder for attachment to a dock or pier having substantially horizontal planks spaced a first distance apart from each other, said holder comprising:

an externally threaded shaft defining first and second opposed ends and a longitudinal axis;

a bar connected to said first end of said shaft, said bar defining a width less than said first distance and a length greater than said first distance;

a first nut rotatably mounted on said shaft, said nut defining length and width dimensions greater than said first distance;

a handle mounted on said shaft between said first nut and said second end of said shaft; and

rod holding means rotatably mounted on said shaft for rotation around said longitudinal axis between said handle and said second end of said shaft for removably receiving and holding a fishing rod.

5,632,113

FISHING BAIT AND TACKLE ORGANIZER

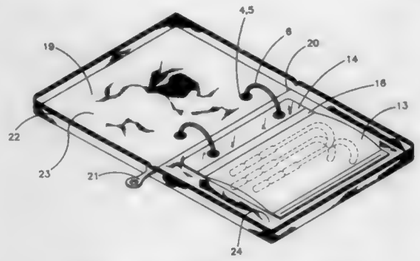
Jeffrey T. Raymond, and Ronald D. Hoover, both of Baton Rouge, La., assignors to Plano Molding Company, Plano, Ill.

Continuation of Ser. No. 65,436, May 24, 1993, Pat. No. 5,394,638. This application Mar. 7, 1995, Ser. No. 399,928

The portion of the term of this patent subsequent to May 24, 2013, has been disclaimed.

Int. Cl.[6] A01K *97/00*

U.S. Cl. 43—54.1 **24 Claims**



1. An organizer for fishing bait and tackle, comprising:

(1) a flexible first casing with a handle attached thereto;

(2) an attachment means for adhesively attaching storage bags to said casing comprising:

a bridge portion removably attachable to said casing;

(ii) a first tab portion, positioned on said bridge portion and having a first adhesive surface for attaching a storage bag.

5,632,114

FISH OR CRUSTACEAN TRAP

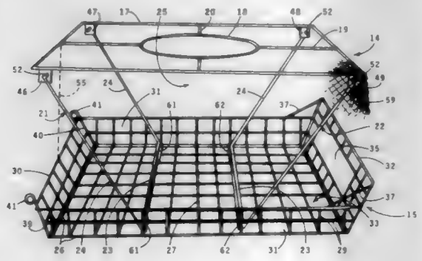
Alan N. McKenzie, Beaconsfield, Australia, assignor to McKenzie's Fishing Co Pty Ltd., Tasmania, Australia

Filed Dec. 12, 1995, Ser. No. 571,264

Claims priority, application Australia, Dec. 16, 1994, PN0096

Int. Cl.[6] A01K *69/10*

U.S. Cl. 43—105 **16 Claims**



1. A collapsible fish, or crustacean trap comprising:

first and second rigid members defining opposing faces of the trap and able to support flexible mesh extending between respective perimeters of the rigid members to form the sides of the trap; and

a plurality of supports each mounted on and able to extend from one other of said rigid members to relatively space the rigid members;

wherein the rigid members and supports are selectively positionable in an erected condition or a collapsed position such that in the erected condition of the trap each support extends from the rigid member on which it is mounted and is releasably engageable with the other rigid member to form a trap having an internal trap volume, and in the collapsed condition of the trap, are positionable to define in a storage position with a smaller internal trap volume such that the first rigid member and the supports lie adjacent and substantially within the perimeter of the second rigid member.

5,632,115

METHOD AND APPARATUS FOR CONTROLLING FIRE ANTS

Lynn B. Heitman, 2000 N. Central Expwy., Ste. 109, Plano, Tex. 75074-5484

Filed Jun. 9, 1995, Ser. No. 488,927

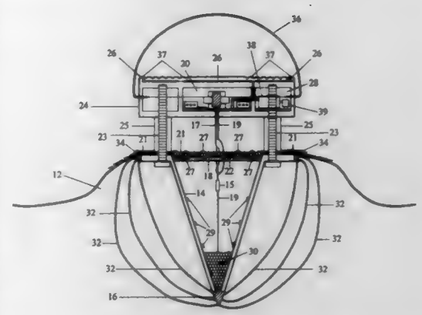
Int. Cl.[6] A01M *1/02*

U.S. Cl. 43—124 **16 Claims**

1. A method for controlling colonies of fire ants in the environment comprising the steps of:

providing a stimulating source that, when activated, will attract and agitate fire ants to a point that ants from a common colony will attack each other; and

activating the stimulating source to cause the fire ants to cluster around the stimulating source and attack each other; and



urging the stimulated fire ants into a tightly confined space to exacerbate the attack reaction.

5,632,116

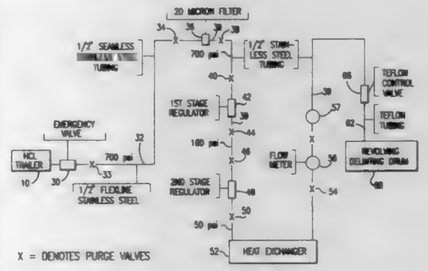
APPARATUS AND METHOD FOR RECOVERY OF COTTONSEED FROM LINT

Charles R. Dismuke, Jr., Greenville, Miss.; Robert F. Motley, Arizona City, and Donald L. Brubaker, Eloy, both of Ariz., assignors to Delta and Pine Land Company, Scott, Miss.

Filed Mar. 9, 1995, Ser. No. 401,249

Int. Cl.[6] A01C *1/00*

U.S. Cl. 47—58 **8 Claims**



1. A method of delinting fuzzy cottonseed using hydrogen chloride gas derived from a source in which hydrogen chloride is stored under high pressure comprising:

(a) removing said hydrogen chloride gas from said source under high pressure;

(b) expanding said hydrogen chloride gas to reduce the pressure thereof;

(c) heating said hydrogen chloride gas to a temperature substantially above 32° F.;

(d) introducing said heated hydrogen chloride gas into a delinting reaction chamber along with cottonseed which is to be delinted without substantial further expansion of said gas which would cause a substantial reduction in the temperature thereof to less than 32° F.;

(e) agitating said cottonseed and said hydrogen chloride gas within said reaction chamber to expose the lint on said seed to said hydrogen chloride gas and to hydrolyze said lint;

(f) removing said seed from said drum and thereafter separating said hydrolyzed lint from said seed.

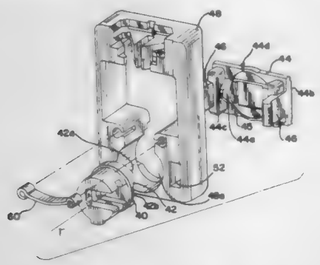
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5,632,117

SASH BALANCE BRAKE ASSEMBLY

James G. Prete, 925 Allmen, Hinsdale, Ill. 60521; Steven E. Schultz, 545 Begonia SE., Unit A, Demontte, Ind. 46310, and Allen D. Polowinczak, 2716 Frank Turk Dr., Plainfield, Ill. 60544

Filed Jan. 13, 1995, Ser. No. 372,563
Int. Cl.[6] E05D *15/22*
U.S. Cl. 49—181 22 Claims



1. For a sash window system including a window frame having a pair of generally parallel tracks, each of said tracks having an outer wall, front and back intermediate walls and front and back inner walls collectively defining a channel, a sash window transversely disposed between said tracks and adapted for slidable movement along said tracks, and a pair of sash balance assemblies for providing a generally upward bias on transverse sides of said sash window, an improved sash balance brake assembly for each of said sash balance assemblies and for placement in a respective one of each of said channels, said improved sash balance brake assembly comprising:

a rotor rotatable about a rotor axis;

a bolt having a generally planar engaging surface and two generally parallel bolt legs; and

a slider body for placement in a respective one of said channels and for coupling to a respective one of said sash balance assemblies, said slider body having a generally circular aperture for receiving and rotatably supporting said rotor along said rotor axis, the slider body further having a pair of slots spaced from said aperture, one of said slots receiving and housing a respective one of said bolt legs within said slider body, said rotor being adjacent said bolt, said rotor and said bolt including cooperative means for converting rotary motion of said rotor into movement of said bolt along said rotor axis, such that said bolt engaging surface selectively engages and disengages said track outer wall.

5,632,118

WINDOW TILT LOCK AND FRICTIONAL POSITIONER SHOE

Ivan Stark, Ada, Mich., assignor to Newell Manufacturing Company, Lowell, Mich.

Filed Nov. 1, 1995, Ser. No. 551,565
Int. Cl.[6] E05D *15/22*
U.S. Cl. 49—181 17 Claims

1. A window having a sliding, pivoting sash, comprising:

a window frame defining a window opening plane, said frame including a pair of jambs at opposite sides thereof;

a jamb liner secured to each of said jambs, each of said jamb liners including a channel;

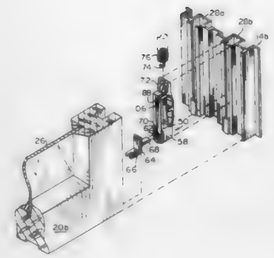
a sash slidable within said jambs;

a frictional positioner shoe including an elongate slidable member disposed within said channel;

a rotatable member disposed within a bore passing through said elongate slidable member, said bore including a larger diameter portion adjacent said jamb, a smaller diameter portion adjacent said sash, and a shoulder defined at the juncture between said larger and smaller bore portions, said shoulder defining an axial camming surface, said rotatable member including a smaller diameter portion received in said smaller diameter portion of said bore, a larger diameter portion of said rotatable member received in said larger diameter portion of said bore, and a shoulder defined at the juncture between said larger and smaller portions of said rotatable member, said shoulder of said rotatable member defining a complementary axial camming surface which engages said axial camming surface of said bore, said rotatable member including a keyway which opens towards said sash;

a pivot shaft projecting from said sash and engaging said keyway to connect said sash to said rotatable member, whereby rotation of said sash out of the plane of the window opening causes rotation of said rotatable member and engagement of said axial camming surface, which results in axial movement of said rotatable member toward and into engagement with a back wall of said channel to provide restraint against vertical movement, and to retard rotational movement, of said sash as it is tilted away from the plane of said window; and

a brake member comprised of an elastomeric polymer integrally secured to said rotatable member for engagement with said back wall of said channel when said sash is pivoted out of the plane of the window opening.

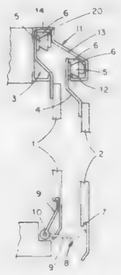


5,632,119

SLIDING DOOR ARRANGEMENT FOR A CONTAINMENT SPACE

Eduardo V. Bruno, Aisina 474, (1642) San Isidro, Buenos Aires, Argentina, assignor to Eduardo V. Bruno, and Jorge Ricardo Lepretre, both of Buenos Aires, Argentina

Continuation-in-part of Ser. No. 205,490, Mar. 4, 1994. This application Jun. 7, 1995, Ser. No. 479,206
Claims priority, application Argentina, Mar. 5, 1993, 324.431
Int. Cl.[6] E05D *15/10*
U.S. Cl. 49—209 7 Claims



1. An arrangement of a plurality of sliding side doors closing an opening in a wall of a containment means, comprising:

at least one door;

support means provided at an upper edge of the opening for supporting said at least one door, said support means comprising a single rail provided along a side of the opening along which said at least one door is guided and slides relative to the opening, said support means also comprising a wheel and a fixed guide lug both mounted to the at least one door and located during use inside the single rail; and

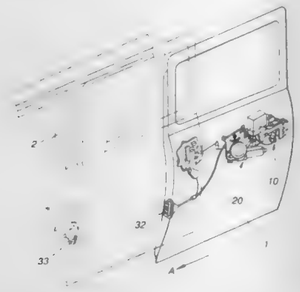
closing means mounted to said wall and arranged at a lower side of the opening to engage a lower portion of said at least one door in a closed position thereof.

5,632,120

POWERED VEHICLE DOOR CLOSING SYSTEM

Kouichi Shigematsu, Yokohama; Osamu Kawanobe, Isehara, and Jun Yamagishi, Yokohama, all of Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Dec. 11, 1995, Ser. No. 570,553
Claims priority, application Japan, Dec. 12, 1994, 06-307637
Int. Cl.[6] E05B *65/08*; E05F *15/00*
U.S. Cl. 49—449 8 Claims



1. A powered vehicle door closing system for producing an auto-closing action to automatically move a latch member from a half-latched position to a fully-latched position, said system comprising:

a reversible motor mechanically linked through a linkage, having a stand by position, to said latch member, for powering a final, low-displacement/high-force movement of a vehicle door;

first detection means for detecting that said latch member reaches said half-latched position to generate a first signal indicating that said half-latched position is reached;

second detection means for detecting that said latch member reaches said fully-latched position during normal rotation of said motor to generate a second signal indicating that said fully-latched position is reached;

third detection means for detecting that said linkage returns to said stand-by position during reverse rotation of said motor to generate a third signal indicating that said stand-by position is recovered;

control means responsive to said first signal for moving said latch member toward said fully-latched position by said normal rotation, and responsive to said second signal for moving said linkage toward said stand-by position by said reverse rotation, and responsive to said third signal for de-energizing said motor;

first prevention means for preventing said normal rotation when said fully-latched position is reached; and

second prevention means for preventing said reverse rotation when said stand-by position is reached,

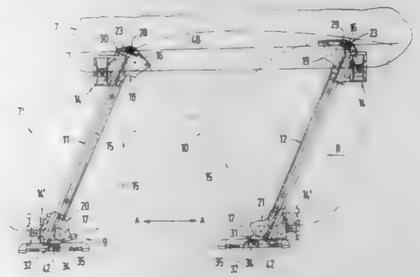
wherein said second detection means includes a first load detection means for detecting changes in load imparted to said motor when said normal rotation is prevented by said first prevention means, and said third detection means includes a second load detection means for detecting changes in load imparted to said motor when said reverse rotation is prevented by said second prevention means.

5,632,121

ADJUSTING DEVICE FOR A DOOR WINDOW PANE, FRAMELESS AND COOPERATING WITH A WINDOW LIFTER, OF A MOTOR VEHICLE

Horst Handte, Heimsheim; Guenter Schaedlich, Weil der Stadt; Helmut Eck, Rutesheim, and Andre Scholz, Wiernsheim, all of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Sep. 29, 1995, Ser. No. 536,752
Claims priority, application Germany, Sep. 30, 1994, 44 35 008.2
Int. Cl.[6] B60J *1/00*
U.S. Cl. 49—502 13 Claims



1. An adjusting device cooperating with a window lifter for a door window pane of a motor vehicle having a car body and a door body, comprising:

at least one guide rail forming a portion of the window lifter, said guide rail extending upright inside the door body and being pivotably mounted around an upper pivot point in a transverse direction of the vehicle;

wherein said guide rail is lockable by the adjusting device engaging a lower area of the guide rail in a position such that a marginal area of the door window pane abuts under pretension an adjoining seal in the car body;

a displacement guide provided on the door body for adjusting said guide rail at its lower end in the transverse direction with respect to a door window pane, said displacement guide comprising a receptacle extending transversely with respect to the door window pane, said lower end of the guide rail resting in a slidable manner on said receptacle; and

fastening elements associated with the displacement guide for securing said guide rail on the receptacle, said fastening elements being accessible from an underside of the door body.

5,632,122

PUMPABLE DESICCATED MASTIC

Anne Spinks, Hugo, Minn., assignor to H.B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Continuation-in-part of Ser. No. 31,602, Mar. 15, 1993, Pat. No. 5,510,416. This application Apr. 2, 1996, Ser. No. 626,839
Int. Cl.[6] E06B *7/12*
U.S. Cl. 52—172 23 Claims

1. A mastic composition, the composition being thermoplastic and being pumpable, whereby when tested as set forth in ASTM D-1238, Procedure B using a 1100 gram load and an 8 gram sample at 190° C., a melt flow time of no more than 60 seconds for a piston travel of 1 inch is obtained, the composition comprising:

a resin component consisting essentially of:

4–75% by weight of the resin component of a film former, the film former consisting essentially of a liquid polybutene polymer, alone or in combination with one or both of a polyisobutylene polymer having a weight average molecular weight of about 35,000 or more, and a butyl rubber having a weight average molecular weight of up to about 500,000, said butyl rubber, if present, representing less than 50% of the film former component;

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25–96% by weight of the resin component of a non-crystalline homopolymer, copolymer, terpolymer or graft copolymer comprising polypropylene; and,

0–20% by weight of the resin component of a low volatile UV stable tackifier compatible with the film former and polypropylene components; and

an adsorbent component comprising:

at least 20 % by weight of the composition of a moisture or moisture and volatile organic chemical adsorbing material; and 0–10% by weight of the composition of an adsorbent of volatile organic compounds,

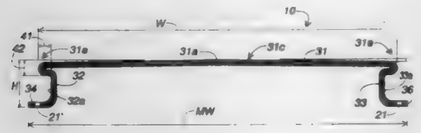
said adsorbent component being present in an amount less than the level which will cause the composition when tested as set forth in ASTM D-1238, Procedure B using a 1100 gram load and an 8 gram sample at 190° C. to provide a melt flow time for a piston travel of 1 inch of more than 60 seconds.

5,632,123

COATED STEEL DECKING PLANK

Ronald D. Erwin, Fayetteville, Ga., assignor to Erwin Industries, Inc., Peachtree City, Ga.

Filed Mar. 19, 1996, Ser. No. 616,527
Int. Cl.[6] E04F *15/06*
U.S. Cl. 52—177 **9 Claims**



1. A decking plank for attachment to a support structure, such as wood deck joists, said decking plank comprising:

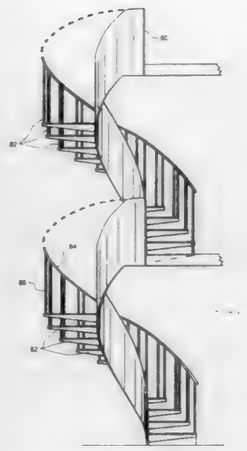
a unitary, elongated steel member including an upper panel, first and second generally upstanding walls for supporting said upper panel, and first and second mounting flanges for mounting said decking plank to the support structure, said mounting flanges extending laterally outwardly from said walls, and wherein an outer surface of said upper panel is provided with a non-slip coating, and wherein said generally upstanding walls are spaced a selected distance from one another and said upper panel has a width exceeding said selected distance so as to create an overhang adjacent each generally upstanding wall for at least partly concealing said mounting flanges upon the installation of multiple ones of said decking plank in adjacent, side-by-side relationship.

5,632,124

CIRCULAR STAIRWAY AND METHOD OF MAKING SAME

David M. Weingarten, and Lucia E. Howard, both of 1150 Estates Dr., Lafayette, Calif. 94549

Filed Feb. 6, 1996, Ser. No. 595,863
Int. Cl.[6] E04F *11/00*
U.S. Cl. 52—187 **16 Claims**



1. A circular staircase comprising:

a helical newel including a ribbon-like member cut from a tube having a longitudinal axis and a diameter of at least 2'6", said ribbon-like member being helical in configuration, rigidly attached to a support structure and having an axis of revolution lying along a vertical line normal to a horizontal base; and

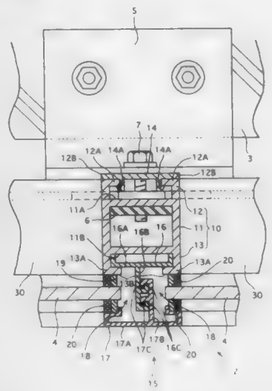
a plurality of stair treads affixed to said ribbon-like member and extending radially outwardly relative to said axis of revolution, said stair treads being disposed at regular increments along said ribbon-like member.

5,632,125

CURTAIN WALL

Masami Osanai, Funabashi, Japan, assignor to YKK Architectural Products Inc., Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 425,803
Claims priority, application Japan, Apr. 21, 1994, 6-083350
Int. Cl.[6] E04B *2/88*
U.S. Cl. 52—235 **14 Claims**



1. A curtain wall, comprising:

a plurality of structural members interconnected to form a plurality of openings, each structural member including a base portion having an interior surface and an exterior surface, a pair of interior attachment portions extending from the interior surface of the base portion and a pair of exterior attachment portions extending from the exterior surface of the base portion, each interior and exterior attachment portion including an engagement section, each structural member being adapted to support a face plate at each of said interior and exterior attachment portions; and

a plurality of face plates positioned into the plurality of openings; and

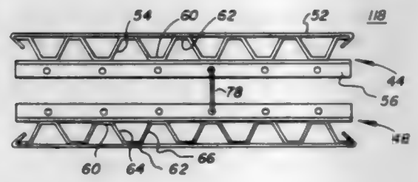
a plurality of face plate supporting means, each face plate supporting means being attached to at least one of (a) the interior attachment portions to support one of said plurality of face plates in an interior position, and (b) the exterior attachment portions to support one of said plurality of face plates in an exterior position.

5,632,126

WALL SYSTEM INVOLVING CORRUGATED PANELS FOR MAKING CONFINEMENT CELLS

Carl F. Agsten, 1539 Bedford Rd., Charleston, W. Va. 25314

Filed Mar. 22, 1995, Ser. No. 408,427
Int. Cl.[6] E04B *2/48*
U.S. Cl. 52—426 **15 Claims**



10. A wall unit comprising:

(a) a first panel having; (a) a face plate; (b) a corrugated sheet having a series of elongated corrugations having apexes; a reinforcement member attached to said apexes; said reinforcement member, attached to said first panel, having a plurality of orifices;

(b) a second corrugated panel having (a) a face plate; (b) a corrugated sheet having a series of elongated corrugation having apexes; a reinforcement member attached to said apexes of said second corrugated panel; said reinforcement member, attached to said first panel, having a plurality of orifices;

(c) means for interconnecting said first panel to said second panel; said interconnecting means having a first finger inserted in an orifice of said reinforcement member attached to said first panel and having a second finger inserted in an orifice of said reinforcement member attached to said second panel.

5,632,127

WALL FRAME SYSTEM

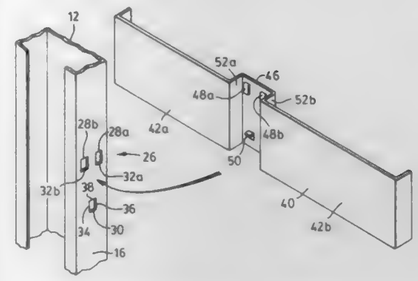
Robert S. Agar; Norman J. Hachey, and Clive W. R. Careford, all of c/o Partition Components Incorporated, 150-14 Ferrier St., Markham, Ontario, Canada

Continuation of Ser. No. 319,877, Oct. 7, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 538,773
Int. Cl.[6] B65B *7/06*
U.S. Cl. 52—481.2 **22 Claims**

1. Apparatus for use in a wall frame comprising:

a longitudinally elongated upstanding stud having a plurality of longitudinally spaced sets of mountable means, each said set comprising a transverse upwardly directed lip and a transverse downwardly directed ledge;

a plurality of wall panel supports, each having a panel supporting wing extending from either side of a central mounting portion, said mounting portion comprising a hook and a spaced tongue, said hook for hooking over said upwardly directed lip of a set of mountable means of said stud and said tongue thereafter receivable under said ledge of said set of mountable means such that, thereafter, said tongue inhibits upward displacement of said support by abutment with said ledge and, therefore, inhibits unhooking of said hook of said wall panel support from said upwardly directed tongue.

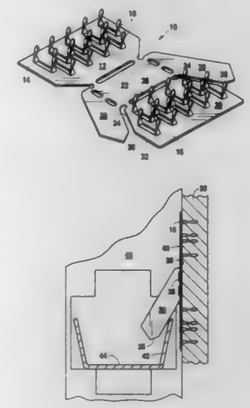


5,632,128

UNITARY SUSPENSION CLIP FOR SUPPORTING DEMOUNTABLE PARTITION WALLS

Robert S. Agar, Markham, Canada, assignor to Gravity Lock Systems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 174,243, Dec. 28, 1993, Pat. No. 5,531,052. This application Jun. 7, 1995, Ser. No. 475,675
Int. Cl.[6] E04B *2/30*
U.S. Cl. 52—489.2 **16 Claims**



8. An article of manufacture for support on a horizontal support member comprising:

a) a plate having a back and a front;

b) two substantially co-planar wings extending outwardly and downwardly from opposite sides of said plate; and

c) a line of weakness between said plate and each of said wings forming a pivot point for rotation of each of said wings from said first substantially co-planar position to a second position projecting downwardly and outwardly from the back of said plate, one edge of each of said wings forming an acute angle relative to the back of said plate and for resting on the horizontal support member for demountably supporting said plate against gravity and drawing said plate toward the horizontal support member.

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5,632,129

JOINT DEVICE FOR JOINING PRETENSIONED BRACE MEMBER TO CONNECTOR NODES IN SPACE TRUSS STRUCTURE

Katsuhiko Imai; Yasuhiro Yamaoka; Nobuyuki Yasui, all of Hyogo, and Masayoshi Kurashige, Kanagawa, all of Japan, assignors to Kawatetsu Kenzai Kabushiki Kaisha, Hyogo, Japan

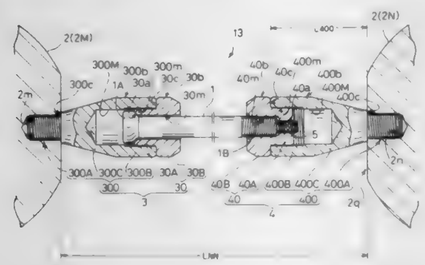
PCT No. PCT/JP95/01343, § 371 Date Feb. 23, 1996, § 102(e) Date Feb. 23, 1996, PCT Pub. No. WO96/02710, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 5, 1995, Ser. No. 601,007

Claims priority, application Japan, Jul. 14, 1994, 6-186577

Int. Cl.[6] E04B *1/19;* **F16B** *7/18*

U.S. Cl. 52—655.1 **4 Claims**



2. A joint device for joining a pretensioned brace member to connector nodes on the diagonal line of a grid formed in a space truss structure assembled by using structural members, comprising:

a brace member having a steel rod providing a swelled portion formed at one end thereof and a threaded connector portion formed on the outer surface of another end thereof, a first joint member for connecting said one end of the steel rod to one connector node, and a second joint member for connecting said another end of the steel rod to another connector node, said first joint member being a first sleeve providing a longitudinal hole formed therein for inserting said steel rod, an end face of which contacts a back surface of said swelled portion so as not to fall off from said steel rod, and a first connecting adapter for joining said first sleeve to one connector node,

said second joint member being a second sleeve providing a longitudinal threaded hole formed therein for inserting said another end of the steel rod, which covers and engages said threaded connector portion, and a second connecting adapter for joining said second sleeve to another connector node,

said first sleeve comprising a first external threaded part formed on the outer surface of a node side thereof, the minor diameter of which is larger than the diameter of said swelled portion, a first polygonal swelled part having torquing surfaces formed on the outer surface thereof to rotate said first sleeve for engagement of said first external threaded part to a longitudinal screw hole inside said first connecting adapter, a first adapter-contact face formed at the boundary between said first polygonal swelled part and said first external threaded part, which contacts said first connecting adapter, and a swelled portion-contact face formed at the end of the node side of the first external threaded part, which contacts a back surface of a counter-node side of said swelled portion,

said first connecting adapter comprising a first joining threaded part formed on the outer surface of a node side thereof, the major diameter of which is smaller than that of said first external threaded part, a first polygonal swelled part having torquing surfaces formed on the outer surface thereof to rotate said first connecting adapter for engagement of said first joining threaded part to said connecting screw hole of the connector node and a longitudinal screw hole for engaging said first external threaded part, and a first conical part formed between said first polygonal swelled part and said first joining threaded part, the diameter of the end of the node side of which is smaller than that of the end of a counter-node side thereof, having a first node-contact face formed at the boundary between itself and said first joining threaded part, which is able to contact the connector node,

said second sleeve comprising a second external threaded part formed on the outer surface of a node side thereof, a second polygonal swelled part having torquing surfaces formed on the outer surface thereof to rotate said second sleeve for engagement of said second external threaded part to a longitudinal screw hole formed inside said second connecting adapter, a second adapter-contact face formed at the boundary between said second polygonal swelled part and said second external threaded part, which contacts said second connecting adapter, an adjusting screw hole formed inside said second external threaded part, which communicates with said longitudinal threaded hole, and an adjusting screw bolt engaging said adjusting screw hole, which regulates the length of engagement of said threaded connector portion with said longitudinal threaded hole in response of the contact with said another end face of the steel rod,

said second connecting adapter comprising a second joining threaded part formed on the outer surface of a node side thereof, the major diameter of which is smaller than that of said second external threaded part, a second polygonal swelled part having torquing surfaces formed on the outer surface thereof to rotate said second connecting adapter for engagement of said second joining threaded part to said connecting screw hole of the connector node and a longitudinal screw hole for engaging said second external threaded part, and a second conical part formed between said second polygonal swelled part and said second joining threaded part, the diameter of the end of the node side of which is smaller than that of the end of a counter-node side thereof, having a second node-contact face formed at the boundary between itself and said second joining threaded part, which is able to contact the connector node,

the depth of the longitudinal groove having a longitudinal screw hole of said first connecting adapter being defined to be equal to or more than the difference of the summation of the length of said first external threaded part, the length of said swelled portion and the length of said second joining threaded part from the length for generating a preferable elongation enough to introduce regulated pretension into the steel rod, and

the spiral direction of said threaded connector portion being selected opposite that of said second joining threaded part.

5,632,130

WRAPPING MATERIAL FOR WRAPPING A FLORAL GROUPING HAVING STAGGERED STRIPS OF ADHESIVE MATERIAL APPLIED THERETO AND METHOD

Donald E. Weder, Highland, Ill., and Franklin J. Craig, Valley Park, Mo., assignors to Southpac Trust International, Inc., Okla. City, Okla.

Division of Ser. No. 243,339, May 16, 1994, which is a continuation of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned. This application May 1, 1995, Ser. No. 432,397

Int. Cl.[6] B65B *51/02;61/06*

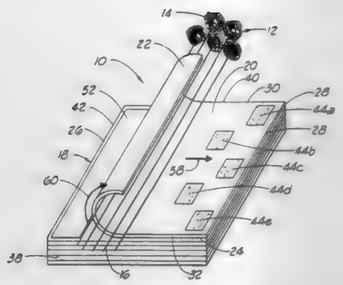
U.S. Cl. 53—397 **28 Claims**

1. A method of wrapping a floral grouping, comprising the steps of:

placing the floral grouping on a pad of wrapping material, the pad of wrapping material comprising a plurality of sheets of material stacked one on top of the other such that the pad of wrapping material is defined as having a top sheet of material, each sheet of material of the pad having an upper surface, a lower surface, and a strip of adhesive disposed on one of the upper and lower surfaces of each sheet of material such that each sheet of material is releasably connected to an adjacent sheet of material via the strip of adhesive, the strip of adhesive being arranged on each sheet of material such that the strip of adhesive is in alternating vertical alignment with the strip of adhesive disposed on the adjacent sheet of material when the sheets of material are stacked;

wrapping at least one of the sheets of material of the pad about the floral grouping so that the sheet of material substantially encompasses the floral grouping; and

disconnecting the sheet of material wrapped about the floral grouping from the pad of wrapping material.



positioning a sheet of material about at least a portion of the outer peripheral surface of the floral grouping;

automatically moving the floral grouping having the sheet of material disposed about at least a portion of the outer peripheral surface of the floral grouping into a predetermined position near the band holder; and

automatically removing at least one of the bands from the band holder and automatically positioning the band about the sheet of material so that the band cooperates in holding the sheet of material about the floral grouping for providing a decorative cover which extends about the outer peripheral surface of the floral grouping such that an upper end of the floral grouping remains substantially uncovered by the decorative cover.

5,632,131

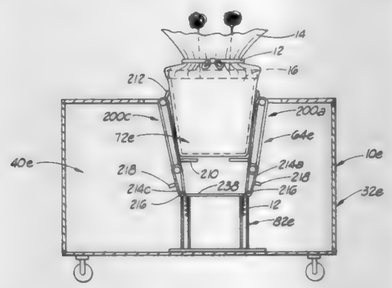
METHOD FOR APPLYING A BAND ABOUT A SHEET MATERIAL AND A POT

Donald E. Weder, 621 Main St., Highland, Ill. 62249; William F. Straeter, 9419 Quarry Rd., Breese, Ill. 62230, and Joseph G. Straeter, 3817 Prairie Rd., Highland, Ill. 62249

Continuation of Ser. No. 202,313, Feb. 25, 1994, Pat. No. 5,465,553, which is a continuation of Ser. No. 934,832, Aug. 24, 1992, Pat. No. 5,426,914, which is a continuation-in-part of Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned, said Ser. No. 934,832is a continuation-in-part of Ser. No. 832,096, Feb. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 19, 1990, abandoned, which is a continuation of Ser. No. 315,169, Feb. 24, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 468,492

Int. Cl.[6] B65B *11/54;25/02;49/00;51/04*

U.S. Cl. 53—399 **33 Claims**



1. A method for placing a band about a floral grouping, comprising:

providing the floral grouping having an outer peripheral surface;

providing a band holder configured to hold a plurality of bands, the band holder being positioned near the floral grouping;

5,632,132

PACKETS AND THEIR MANUFACTURE

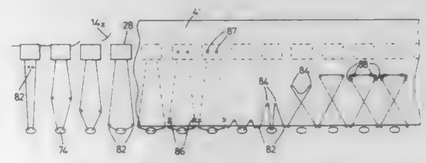
Jan Kuipers, Goudswaard, Netherlands; Simon C. Martin, Meriden; Geoffrey W. Vernon, Kenilworth, both of Great Britain, and Petrus W. Van Der Zon, Zwijndrecht, Netherlands, assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Division of Ser. No. 321,192, Oct. 11, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 456,995

Claims priority, application United Kingdom, Oct. 12, 1993, 9321034; Jan. 19, 1994, 9400977

Int. Cl.[6] B65B *29/04*

U.S. Cl. 53—413 **9 Claims**



1. A method of manufacturing packets containing a flowable material and provided with a length of thread for contracting the packet to squeeze its contents, comprising the steps of forming loops of the thread to lie against successive tags in a row of tags and attaching opposite ends of each loop to its associated tag, placing one face of a web of the packet envelope material against the tags and thread loops with portions of the loops remote from the tags overhanging a side edge of the web, bringing said portions of the thread loops over the opposite face of the web and attaching them thereto, and doubling over the web to a tubular form to locate said loop portions within the tubular form and the attachments of the loops to their tags on the exterior of the tubular form.

5,632,133

METHOD OF PRE-FORMED IN-LINE THERMOFUSING OF MULTILAYER POLYMERIC FILMS TO FORM PACKAGING COMPONENTS

Ihor Wyslotsky, 5050 Newport Dr., Section 7, Rolling Meadows, Ill. 60008

Continuation-in-part of Ser. No. 199,106, Feb. 22, 1994, abandoned. This application Jul. 25, 1994, Ser. No. 222,105

Int. Cl.[6] B65B *31/00;47/00*

U.S. Cl. 53—433 **31 Claims**

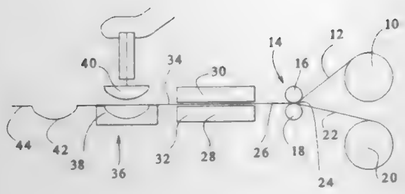
1. A method of in-line thermofusing of multi-layer, laminated polymeric films to form packaging components, said method comprising the steps of:

providing a first essentially clear polymeric roll of first film having defined first properties;

providing at least a second essentially clear polymeric roll of a second film having defined second properties;

providing a tacking station for continuous disposition of at least said first and said second films thereto;

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at said tacking station, tacking the first film to at least the second film by bringing the respective films into contacting array and by applying pressure of at least a first pressure of sufficient pressure to tack the film together to at least a portion thereof to form a continuous strip of pre-laminated joint film;

subjecting said continuous strip of said pre-laminated joint film to the application of sufficient heat and a second pressure sufficient for bonding and thermo-laminating together the films of said pre-laminated joint film into a substantially fully fused laminated joint film and thereby bonding and thermo-laminating together the films of said pre-laminated joint film into a substantially fully fused laminated joint film;

subjecting said continuous strip of said laminated joint film to the application of heat sufficient for thermforming said laminated joint film; and

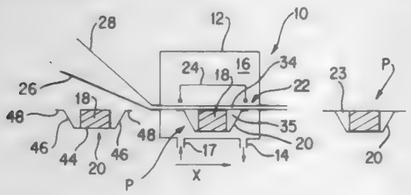
thermoforming said heated portion of said laminated joint film into an essentially clear package component.

5,632,134

METHOD OF PREPARING A PACKAGE HAVING A MULTIPLE-FILM LID

David C. Noel, Greer, and Henry W. Stockley, III, Spartanburg, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Sep. 8, 1995, Ser. No. 526,000
Int. Cl.[6] B65B *31/00*
U.S. Cl. 53—433 **19 Claims**



7. A method of preparing a package having a product enclosed between a support member and a multiple-film lid, comprising the steps of:

providing a support member supporting a product;

providing a multiple-film lid and positioning said multiple-film lid over said product and said support member, said multiple-film lid having a first film for enclosing said product on said support member and a second film over said first film, said first film and said second film defining a first space therebetween and said first film and said support member defining a second space therebetween;

providing a fluid passage in at least one of said first film and said second film;

providing an evacuating and sealing station having a vacuum means for providing a vacuum within said station and having a sealing means for sealing said multiple-film lid to said support member, said sealing means being positioned within said vacuum means, wherein said vacuum means defines a vacuum perimeter and said sealing means defines a sealing perimeter within said vacuum perimeter;

placing said support member supporting the product with said first and second films positioned thereover in said station such that said fluid passage is positioned inside said vacuum perimeter and outside said sealing perimeter;

evacuating said first and second spaces with said vacuum means; and

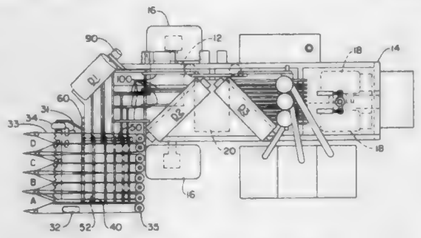
sealing said multiple-film lid to said support member.

5,632,135

THREE-WAY HARVESTER/DECORTICATOR FOR BAST FIBER CROPS WITH INITIAL CHEMICAL PROCESSING IN THE FIELD UTILIZING IMPROVED STAPLING TECHNIQUE

John L. Baker, IV, Naples, and Vernie A. Boots, Tampa, both of Fla., assignors to Ramie International, Inc., Naples, Fla.

Filed Jun. 26, 1995, Ser. No. 494,447
Int. Cl.[6] A01D *45/06;* **A01F** *11/02*
U.S. Cl. 56—14.6 **7 Claims**



1. A bast fiber harvesting mechanism comprising:

a frame;

a means to hold the fiber stock near its top and simultaneously cut it off near its base attached to a front of the frame;

a means to position the cut fiber on to a receiving table on the frame and position the stalk at approximately a 45° relationship to said receiving table while still holding the top, said positioning means in operative connectivity with said means to hold the fiber stock;

a means on the frame to cut the top of the stalk off after the stalk is properly positioned on the receiving table;

a means in operative connectivity to the receiving table to feed approximately the lower one third portion of the stalk into a first decorticating drum on the housing at approximately a 90° relationship to said decorticating drum while holding the end of the stalk;

a means to remove the butt end of the stalk from the first decorticating drum;

a means to grip the stalk by the butt end, said means to grip the stalk in operative connectivity with the first decorticating drum;

a means to align the stalk normal to a second decorticating drum on the housing;

a means in operative connectivity with the second decorticating drum to feed the remainder of the stalk through the second decorticating drum in an approximately 90° feed relationship to the rotational axis of the decorticating drum;

a means to pass the entire stalk in an approximate 90° relationship through a third cleaning drum on the housing, said means to pass the entire stalk in operative connectivity with the third cleaning drum;

a means to wrap the stalk in a helical fashion around a fourth stapling drum on the housing, said means to wrap the stalk in operative connectivity with the fourth stapling drum;

a means to cut the helically wrapped stock wrapped around said stapling drum into short lengths, said means to cut the helically wrapped stock in operative connectivity with the stapling drum; and

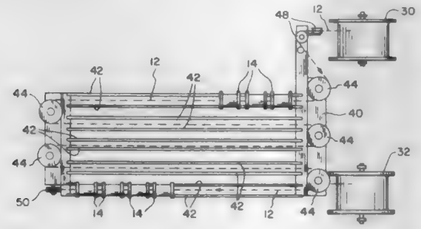
a means to gather the short lengths of fiber stalk cut on the stapling drum, said means to gather in operative connectivity with the stapling drum.

5,632,136

WIRE WINDING APPARATUS

Wayne A. Luchenbill, Leesburg; Danny J. Kelley, Kimmell; David P. Houser, Ligonier, and James A. Horn, North Webster, all of Ind., assignors to Flex-Ohm, Inc., Cromwell, Ind.

Filed Jun. 2, 1995, Ser. No. 460,050
Int. Cl.[6] D02G *3/38*
U.S. Cl. 57—18 **11 Claims**



1. An apparatus for manufacturing a wound wire including a filament core with a wire wound around the filament core, said apparatus comprising:

a plurality of wire supply reels, each said wire supply reel having a flange on each end and an axial bore extending entirely therethrough, each said wire supply reel and said flanges having together a continuous slot in communication with said axial bore, each said wire supply reel carrying a length of the wire, the filament core threaded through each said wire supply reel;

a frame including a plurality of rack members which support said wire supply reels, said rack members being aligned to support rows of said wire supply reels; and

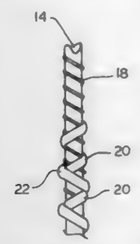
a winding station through which the filament core extends, said winding station being operable to rotate one of said wire supply reels about said filament core so that wire carried on said wire supply reel is wound about the filament core.

5,632,137

COMPOSITE YARNS FOR PROTECTIVE GARMENTS

Nathaniel H. Kolmes, 1740 5th Street Dr. N.W., Hickory, N.C. 28606, and Harold F. Plemmons, 50 Seagate Dr., Unit 1203B, Naples, Fla. 33940, assignors to Nathaniel H. Kolmes, Hickory, N.C., and Harold F. Plemmons, Naples, Fla.

Continuation-in-part of Ser. No. 641,785, Jan. 16, 1991, Pat. No. 5,423,168, which is a continuation-in-part of Ser. No. 366,886, Jun. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 176,075, Mar. 31, 1988, abandoned, and a continuation-in-part of Ser. No. 202,338, Jun. 6, 1988, Pat. No. 4,838,017, said Ser. No. 176,075is a continuation of Ser. No. 766,846, Aug. 16, 1985, abandoned, said Ser. No. 202,338is a continuation of Ser. No. 915,140, Oct. 3, 1986, Pat. No. 4,777,789. This application Dec. 7, 1994, Ser. No. 350,616
Int. Cl.[6] D02G *3/12;3/18*
U.S. Cl. 57—212 **32 Claims**



1. A composite, cut-resistant yarn comprising

(a) a core formed of at least one yarn strand having a denier of from about 100 to about 300:

(b) an outer covering formed of at least one yarn strand having a denier of from about 100 to about 300;

(c) an inner covering strand of stainless steel wire having a diameter of from about 0.0015 to about 0.0030 inch; and

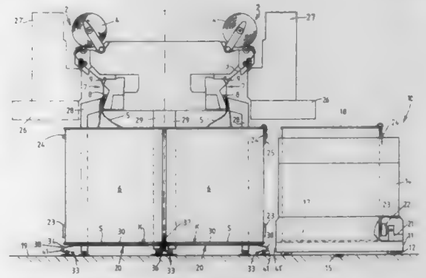
(d) the diameter of the combination of said core strand and said inner and outer covering strands being no greater than 0.017 inch.

5,632,138

STAND FOR RECEIVING SLIVER CANS

Hans-Peter Liedgens, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Aug. 18, 1995, Ser. No. 517,422
Claims priority, application Germany, Aug. 18, 1994, 44 29 254.6
Int. Cl.[6] D01H *9/10;9/14*
U.S. Cl. 57—281 **4 Claims**



1. A sliver can transport system, comprising:

a can vehicle for transporting sliver cans while traveling between a can delivery station, work stations of at least one silver-processing textile machine having machine parts, a discharge station for empty cans, and path locations within the can transport system, wherein each of the can delivery station, the work stations, and the discharge station has respective parking places for the cans;

said can vehicle having parking places for the cans, a loading and unloading device for the cans, and a positioning device for positioning said can vehicle relative to the work stations of the textile machine, such that parking places on the can vehicle are associated with respective parking places at the work stations, at the can delivery station, and at the discharge station, respectively;

at least two spaced-apart can stands each having at least two parking places for sliver cans; said can stands having vertically adjustable floor supports for vertically positioning said can stands, and said can stands being formed with stops being positionable relative to fixed locations defined on at least one of said machine parts, a respectively other of said can stands and said path locations, for horizontal positioning in two degrees of freedom; and

position identifiers each being assigned to a respective one of said can stands for detection by said positioning device.

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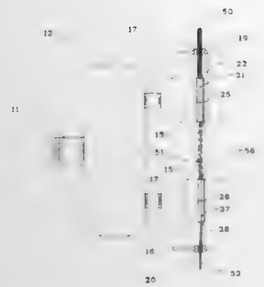
YARN COMMINGLING APPARATUS AND METHOD

John E. Tate, Greensboro, N.C., assignor to Southridge Corporation, Greensboro, N.C.

Filed Apr. 3, 1996, Ser. No. 627,887
Int. Cl.[6] D02G *3/22*
U.S. Cl. 57—351 **17 Claims**

1. Apparatus for commingling yarn, said apparatus comprising: a first fluid jet, a second fluid jet, said first jet spaced from said

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second jet, said first and second jets positioned along a yarn path to direct fluid against yarn passing therealong, said first fluid jet having a fluid outlet disposed at an acute angle relative to the perpendicular of said yarn path, said second fluid jet having a fluid outlet disposed at an acute angle relative to the perpendicular of said yarn path, said first jet fluid outlet angularly disposed in the direction of the passing yarn, and said second jet fluid outlet angularly disposed in an opposite direction to the passing yarn.

5,632,140

METHOD AND DEVICE FOR DIRECTLY MANUFACTURING A TWISTED YARN FROM DISSOLVED FIBER MATERIAL

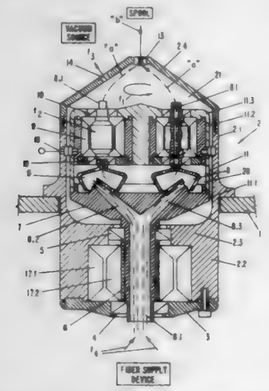
Ulrich Ballhausen, Krefeld; Guido Spix, Kaarst, and Wilfried Rütten, Wegberg, all of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Germany

Filed Aug. 31, 1995, Ser. No. 521,664

Claims priority, application Germany, Aug. 31, 1994, 44 30 917.1

Int. Cl.[6] D01H *4/00; 1/10*

U.S. Cl. 57—409 **6 Claims**



1. A method for manufacturing a twisted yarn, said method comprising the steps of:

positioning in a stationary cylinder housing a rotating spindle rotor;

supporting at least two spinning devices in a receiving chamber of the spindle rotor such that the spinning devices are located adjacent to one another and symmetrical to a central axis of the spindle rotor;

generating a vacuum within the receiving chamber;

supplying dissolved fiber material from a fiber supply device to a hollow spindle axle of the spindle rotor;

feeding by the vacuum within the receiving chamber the dissolved fiber material to the spinning devices via the hollow spindle axle of the spindle rotor and via feed channels connecting the hollow spindle axle to the spinning devices;

spinning from the dissolved fiber material spun yarns in each one of the spinning devices;

gathering the spun yarns at a centering point positioned on an extension of the central axis of the spindle rotor as a twisted yarn; and

winding the twisted yarn onto a spool.

5,632,141

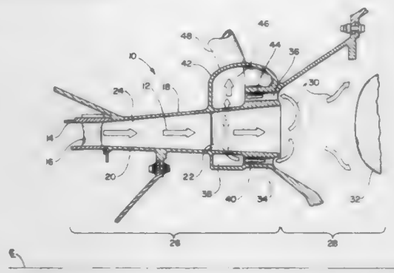
DIFFUSER WITH CONTROLLED DIFFUSED AIR DISCHARGE

Robert V. Sloop, Gainesville, and R. Edward Bailey, Jr., Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 9, 1994, Ser. No. 303,795

Int. Cl.[6] F02C *6/08*

U.S. Cl. 60—39.02 **6 Claims**



5. A method of discharging air from a gas turbine engine and of providing cooling air downstream of the discharge site, the method comprising:

diffusing the compressed air in a first diffuser region so that the air has a higher static pressure relative to the compressed air;

further diffusing the compressed air in a second diffuser region, further decreasing the velocity and increasing the static pressure of the compressed air;

discharging the high static pressure air radially internal of and external of the annular passage flow path into a plurality of discharge orifices;

providing passageways for flowing the discharged air from the discharge orifices to a manifold.

5,632,142

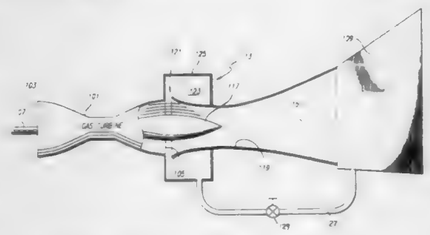
STATIONARY GAS TURBINE POWER SYSTEM AND RELATED METHOD

Robert G. Surette, 2253 Micheltorena St., Los Angeles, Calif. 90039

Filed Feb. 15, 1995, Ser. No. 388,713

Int. Cl.[6] F02C *7/00*

U.S. Cl. 60—39.02 **21 Claims**



1. A stationary gas turbine power system, comprising:

a stationary gas turbine engine having an exhaust plane through which an exhaust stream is expelled;

an ejector that includes an enclosure defining a space that is ported to a region located downstream of the exhaust plane of the gas turbine engine; and

means for developing a sub-atmospheric pressure at the ejector and at the exhaust plane, to reduce the back pressure applied to the gas turbine engine and thereby improve the engine's efficiency.

5,632,143

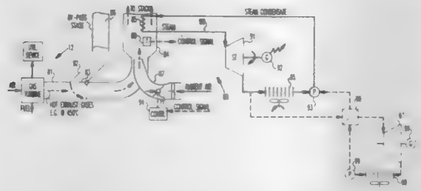
GAS TURBINE SYSTEM AND METHOD USING TEMPERATURE CONTROL OF THE EXHAUST GAS ENTERING THE HEAT RECOVERY CYCLE BY MIXING WITH AMBIENT AIR

Uriyel Fisher, Haifa; Joseph Sinai, Ramat Gan, and Yoel Gilon, Jerusalem, all of Israel, assignors to Ormat Industries Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 261,045, Jun. 14, 1994, abandoned. This application Jun. 20, 1994, Ser. No. 262,503

Int. Cl.[6] F02C *6/00*

U.S. Cl. 60—39.182 **27 Claims**



1. A method for using a gas turbine system that drives a utilization device and produces hot exhaust gases;

a) mixing ambient air with said hot exhaust gases for producing hot gases having a reduced temperature, and transferring heat from the hot gases having a reduced temperature to a working fluid contained in a heat recovery heat exchanger for producing vaporized working fluid and cooled exhaust gases that vent to the atmosphere;

b) expanding said vaporized working fluid in a vapor turbine included in a turbogenerator for generating power and from which expanded vaporized working fluid exits; and

c) condensing said expanded vaporized working fluid and pumping the condensate back to said heat recovery heat exchanger.

8. A gas turbine system with a heat recovery cycle comprising:

a) a gas turbine unit for driving a utilization device and producing hot exhaust gases;

b) a heat recovery heat exchanger containing a working fluid responsive to applied hot gases for producing vaporized working fluid and cooled gases which are vented;

c) a vapor turbine connected to a generator and responsive to said vaporized working fluid for generating power and from which expanded working fluid exits;

d) a condenser for condensing said expanded vaporized working fluid, and a pump for returning working fluid condensate to said heat recovery heat exchanger; and

e) a combiner for combining ambient air with said hot exhaust gases and producing a mixture of hot exhaust gases and ambient air, said combiner being constructed and arranged to apply said mixture to said heat recovery heat exchanger; and

f) a temperature sensor for sensing the temperature of said mixture and producing control signals, said combiner being responsive to said control signals for controlling the ratio of exhaust gases to ambient air in said mixture.

5,632,144

EXHAUST GAS RE-CIRCULATION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

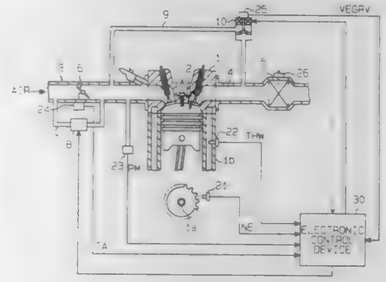
Daiji Isobe, Toyohashi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 28, 1995, Ser. No. 535,937

Claims priority, application Japan, Oct. 31, 1994, 6-267808

Int. Cl.[6] F01N *3/28;* **F02M** *25/06*

U.S. Cl. 60—277 **7 Claims**



1. An exhaust gas re-circulation control device comprising:

a catalytic converter installed in an exhaust system in an internal combustion engine to clean exhaust gas emissions;

an exhaust re-circulation valve which re-circulates a portion of the exhaust gases back to an air intake system;

means for detecting whether the catalytic converter is active or inactive;

means for detecting an engine idling;

means for calculating a target rotational speed while the engine is idling;

idling speed control means for controlling an air intake quantity while the engine is idling to achieve the target idling speed; and

exhaust re-circulation valve control means for controlling the opening of the exhaust re-circulation valve according to a target re-circulation quantity of the exhaust gas which is calculated based on the target idling speed, while the catalytic converter is being detected as inactive by the catalytic converter detecting means and the engine is detected as idling by the idling detecting means.

5,632,145

INTERNAL COMBUSTION ENGINE WITH RIFLED INTAKE AND EXHAUST MANIFOLDS

Robert N. Hunt, 1415 Lafayette La., Marietta, Ga. 30068

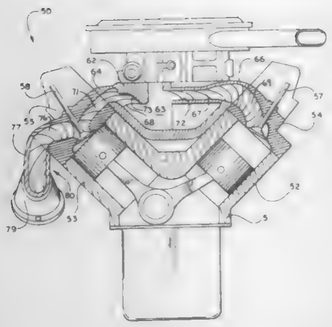
Filed Mar. 13, 1996, Ser. No. 615,679

Int. Cl.[6] F02B *31/00*

U.S. Cl. 60—323 **15 Claims**

1. In a multi-cylinder internal combustion engine of the type having a cylinder head with intake and exhaust ports and having an intake manifold with a common chamber and individual runners leading from the common chamber to the intake ports, the individual runners having outlets adjacent the intake ports, the improvement therein comprising that the individual runners each have interior wall surfaces which are helically rifled to produce a swirling flow as intake gases are moved through the individual

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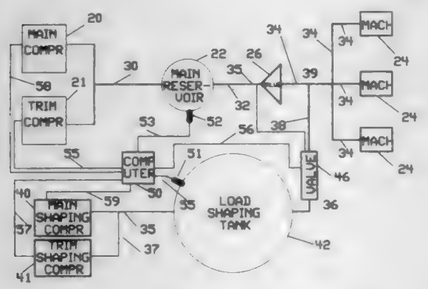
runners to the intake ports of the cylinder head, and wherein said helical rifling is progressively helical, with the helix being tighter near the outlets of the runners than near the common chamber.

5,632,146

LOAD SHAPING COMPRESSED AIR SYSTEM

R. Scot Foss, Charlotte, N.C.; Christopher E. Wagner, Abingden, and Paul J. Glace, Lutherville, both of Md., assignors to APT Incorporated, Annapolis Junction, Md.

Filed Jan. 2, 1996, Ser. No. 582,113
Int. Cl.[6] F16D *31/02;* **E03B** *5/00*
U.S. Cl. 60—410 **13 Claims**



1. A load shaping system for a compressed air system, said compressed air system comprising one or more base compressors for continuous operation in providing compressed air to the main storage reservoir, a trim compressor for intermittent operation in providing compressed air to a main storage reservoir, a main storage reservoir in which compressed air is stored and which provides air to air-powered machinery, piping means connecting said compressors to said main storage reservoir, a demand expander valve for reducing the pressure of compressed air for delivery to said air-powered machinery to a preset pressure lower than that in the main storage reservoir, piping means connecting said main storage reservoir with said demand expander valve, piping means connecting said demand expander valve with said air-powered machinery, sensory means for determining the compressed air pressure in said main storage reservoir, control means for starting said trim compressor in response to the fall of said compressed air pressure level in said main storage reservoir below a preset add level, and control means for stopping said trim compressor in response to the rise of compressed air pressure in said main storage reservoir above a preset delete value, said load shaping system comprising:

a load shaping tank,

at least one load shaping compressor for providing compressed air to said load shaping tank,

piping means connecting said load shaping compressor and said load shaping tank,

control means for maintaining compressed air pressure in said load shaping tank at a pressure greater than the pressure in said piping connecting said demand expander valve with said air-powered machinery,

a load shaping valve for control of delivery of compressed air from said load shaping tank to said piping means connecting said demand expander valve with said air-powered machinery,

piping means connecting said load shaping tank and said load shaping valve,

piping means connecting said load shaping valve and said piping means connecting said demand expander valve with said air-powered machinery,

calculating means for calculating the changes in air pressure within said main storage reservoir, for lowering said add level, and for controlling said load shaping valve,

connector means connecting said primary reservoir sensor means with said calculating means,

connector means connecting said calculating means with said load shaping valve, and

connector means connecting said calculating means with said trim compressor.

13. A process for minimizing the activation of the trim compressor in a compressed air system comprising one or more base compressor and a trim compressor which together provide compressed air to a main storage reservoir, said trim compressor being turned on when the compressed air pressure in said main storage reservoir drops below a preset add level and said trim compressor being turned off when said pressure exceeds a preset delete level, comprising

lowering said add level,

detecting said pressure in said main storage reservoir at a level below said delete level, and

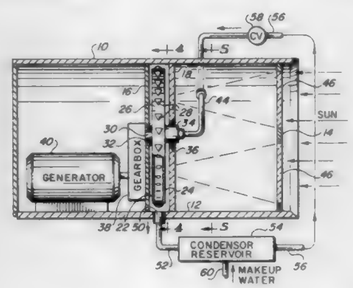
opening a load shaping valve to allow compressed air to flow from a load shaping tank into said compressed air system.

5,632,147

SOLAR POWERED STEAM TURBINE GENERATOR

William Greer, 1811 S. 39th St., #50, Mesa, Ariz. 85206

Filed Apr. 10, 1996, Ser. No. 629,835
Int. Cl.[6] F03G *6/02*
U.S. Cl. 60—641.15 **20 Claims**



1. A system for converting solar radiation to useful energy including in combination:

a housing having at least a first end;

a hollow rotor having a central axis and made of heat conductive material, said rotor mounted for rotation about its axis in said housing, said rotor further having a plurality of outlet jets located about the periphery of said rotor and oriented to cause rotation of said rotor when steam issues from said outlet jets, and said rotor further having an inlet for supplying working fluid to the interior thereof;

a supply of working fluid coupled with the inlet of said rotor; and

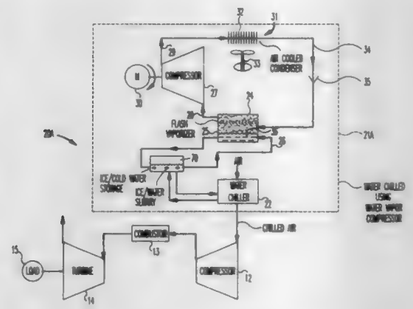
at least one lens mounted in said first end of said housing to focus solar radiation on said rotor to heat the working fluid therein, producing steam within said rotor whereby said steam issues from said outlet jets.

5,632,148

POWER AUGMENTATION OF A GAS TURBINE BY INLET AIR CHILLING

Lucien Y. Bronicki, Yavne, and Uriyel Fisher, Haifa, both of Israel, assignors to Ormat Industries Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 881,763, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 818,123, Jan. 8, 1992, abandoned. This application May 12, 1993, Ser. No. 59,565
Int. Cl.[6] F02C *6/00*
U.S. Cl. 60—728 **13 Claims**



1. Apparatus for augmenting the power produced by a gas turbine system of the type having an air compressor for producing compressed air, a combustor for heating said compressed air and producing hot gases, and a gas turbine responsive to the hot gases for driving said air compressor and a load, and for producing exhaust gases, said apparatus comprising:

a) a heat exchanger interposed between a source of ambient air and the air compressor;

b) a storage containing an ice/water slurry;

c) connections though which water in the slurry is exchanged with the heat exchanger; and

d) a water vapor compressor connected to said storage for producing said slurry.

5,632,149

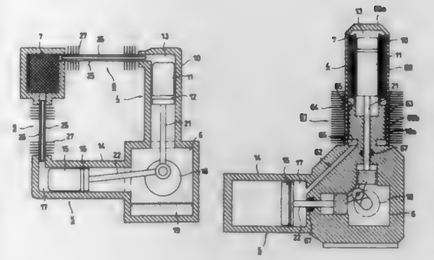
HEAT EXCHANGER FOR A GAS COMPRESSION/EXPANSION APPARATUS AND A METHOD OF MANUFACTURING THEREOF

Naohide Tanigawa, Nara; Tatuya Hirose, Ora-gun; Takashi Morita, Ora-gun; Kazuo Ikegami, Ora-gun, and Kenichi Sato, Ora-gun, all of Japan, assignors to Sanyo Electric Company, Ltd., Moriguchi, Japan

Filed Nov. 27, 1995, Ser. No. 563,053
Claims priority, application Japan, Nov. 28, 1994, 6-316109
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 **11 Claims**

1. A heat exchanger for use in a gas compression/expansion apparatus for transferring heat to/from a compression/expansion space of a compression/expansion cylinder of said apparatus where a working gas is compressed/expanded, said heat exchanger comprising:

a tube connected with said compression/expansion space of said compression/expansion cylinder:



a central cylinder disposed in said tube such that a narrow gap for said working gas is formed only between said central cylinder and said tube, wherein

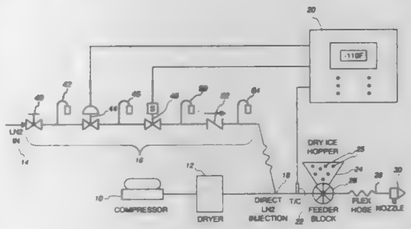
said heat exchanger is adapted to transfer heat between said working gas in said compression/expansion space and an ambient medium surrounding said tube and serve as a low/high temperature heat source.

5,632,150

CARBON DIOXIDE PELLET BLAST AND CARRIER GAS SYSTEM

Gregory W. Henzler, Naperville, Ill., assignor to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Jun. 7, 1995, Ser. No. 480,181
Int. Cl.[6] B24B *49/14;* **B24C** *3/12;* **F17C** *7/02;* **B65B** *63/08*
U.S. Cl. 62—52.1 **28 Claims**



1. A method for pneumatically carrying solid carbon dioxide pellets, said method comprising

(1) providing a stream of carrier gas;

(2) drying the stream of carrier gas;

(3) injecting a cryogen into the dried stream of carrier gas to form a cold carrier gas stream at a predetermined temperature of about 0° to −300° F.;

(4) mixing solid carbon dioxide pellets into the cold carrier gas stream to provide a stream of pneumatically carried carbon dioxide pellets; and

(5) delivering the pneumatically carried carbon dioxide pellets to a desired location.

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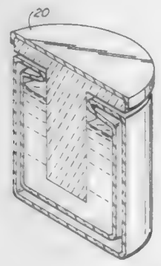
METHOD FOR TRANSPORTING CRYOGEN TO WORKPIECES

Anna L. Baker, and Darryl F. Garrigus, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 404,015, Mar. 13, 1995, which is a division of Ser. No. 124,419, Jul. 28, 1993, Pat. No. 5,441,682, which is a continuation of Ser. No. 527,600, May 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 381,498, Jul. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 698,496, Feb. 5, 1985, Pat. No. 5,041,321, which is a continuation-in-part of Ser. No. 667,508, Nov. 1, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 463,796

Int. Cl.° F25D 17/02

U.S. Cl. 62—64 7 Claims



1. A method for transporting a cryogenic refrigerant from a supply to a work surface, comprising the steps of:

(a) contacting the refrigerant at the supply with a porous felted ceramic mat of ceramic fibers and ceramic microparticles bound with a sol-gel binder; and

(b) transporting the refrigerant to the work surface through the mat.

5,632,152

ARTIFICIAL SNOW IN AN AGGREGATE FORM OF SNOW GRANULES

Yuichiro Miura, Sapporo; Kazuo Hirano, Tokyo; Takayuki Nate, Yokohama; Taiji Kambayashi, Yamatotakada; Masahisa Ohtsuka, and Toshitake Nagai, both of Gunma-ken, all of Japan, assignors to Miura Dolphins Co., Ltd.; Tonen Corporation; Osaka Organic Chemical Industry Co., Ltd.; Tonen Chemical Corporation, all of Tokyo; Sanyo Electric Co., Ltd., Moriguchi, and Masahisa Ohtsuka, Ohizumimachi, all of Japan

Division of Ser. No. 404,318, Mar. 15, 1995, Pat. No. 5,556,671, which is a division of Ser. No. 114,443, Aug. 30, 1993, Pat. No. 5,436,039, which is a division of Ser. No. 648,186, Jan. 31, 1991, Pat. No. 5,266,367. This application May 18, 1995, Ser. No. 443,445

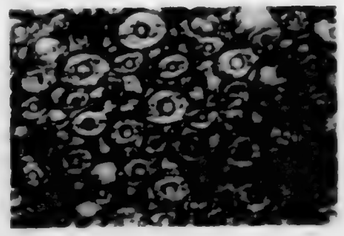
Claims priority, application Japan, Jan. 9, 1990, 2-150729; Feb. 2, 1990, 2-24069; Jun. 9, 1990, 2-150730; Aug. 14, 1990, 2-214697

Int. Cl.° F25C 1/00

U.S. Cl. 62—74 9 Claims

1. A method for making artificial snow in granule form having an average particle size of about 0.05 to 5 mm which comprises the steps of:

(a) absorbing water into a super absorbent polymer in granule form which retains the granule form after absorption of water without sticking to other granules and has a deionized-water absorbability of about 30 to 500 times the weight of the dry polymer and an average particle size of about 20 to 500 μm before water absorption so as to give a water-swollen super absorbent polymer having an average particle size of about 0.05 to 5 mm; and



(b) freezing said water-swollen super absorbent polymer while mixing the polymer with a coolant with stirring.

5,632,153

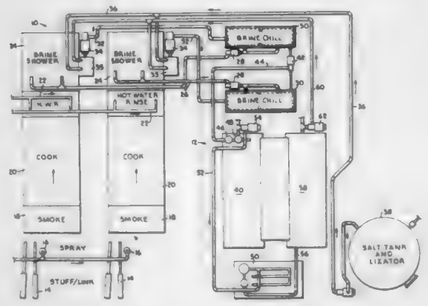
SYSTEM AND PROCESS FOR CLEANSING BRINE IN A FOOD-CHILLING CIRCUIT

Raymond E. Ricklefs, Anamosa, Iowa, and George J. Cocoma, Edmond, Okla., assignors to Foodbrands America, Incorporated, Oklahoma City, Okla.

Filed Aug. 24, 1995, Ser. No. 518,984

Int. Cl.° F25B 47/00

U.S. Cl. 62—85 6 Claims



4. A process for cleansing brine used in a recirculating chilling circuit, the chilling circuit having a brine shower and a brine chiller in fluid communication to allow continuous recirculation of the brine, the process comprising:

removing brine that has been used in the chilling circuit from the chilling circuit;

conveying the brine removed from the chilling circuit to a first storage tank;

filtering the brine from the storage tank in a filtration unit capable of removing particles having a molecular weight of approximately 200 and above;

conveying the filtered brine to a refrigerated storage tank; and

returning the brine from the refrigerated storage tank to the chilling circuit.

5,632,154

FEED FORWARD CONTROL OF EXPANSION VALVE

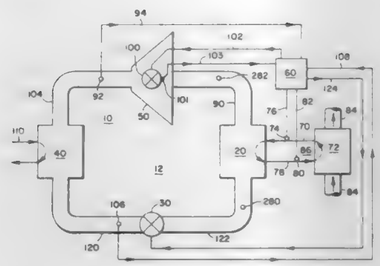
Lee L. Sibik, Onalaska; Daniel C. Leaver, and Craig M. Goshaw, both of La Crosse, all of Wis., assignors to American Standard Inc., Piscataway, N.J.

Filed Feb. 28, 1995, Ser. No. 396,305

Int. Cl.° F25B 41/00; G05B 13/02

U.S. Cl. 62—99 24 Claims

1. A method of controlling an expansion valve in a refrigeration system, the method comprising the steps of:



controlling the modulation of the expansion valve based upon a first feedback control criteria; and also

controlling the modulation of the expansion valve based upon a second feed forward control criteria;

wherein the feedback modulation of the expansion valve is based on conventional PID control and wherein the feed forward modulation of the expansion valve is based on feed forward control strategies; and

wherein the system includes an evaporator providing chilled water where the chilled water has an entering water temperature, a leaving water temperature, and a difference Delta T in temperature between the entering water temperature and the leaving water temperature, and wherein the second criteria is a function of Delta T.

5,632,155

AIR-CONDITIONING APPARATUS WITH AN INDOOR UNIT INCORPORATING A COMPRESSOR

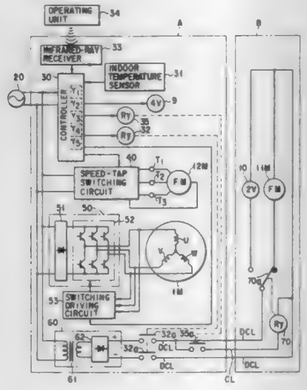
Akihiko Sugiyama, Fuji; Hidenori Ashikawa, Yokohama; Hitoshi Wakatsuki, Numazu, and Kimithuka Ueda, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 29, 1995, Ser. No. 536,527

Claims priority, application Japan, Mar. 31, 1995, 7-076289

Int. Cl.° F24F 11/02

U.S. Cl. 62—179 8 Claims



1. An air-conditioning apparatus comprising:

an outdoor unit having an outdoor heat exchanger, an expansion device, and an outdoor fan for circulating outdoor air via said outdoor heat exchanger;

an indoor unit to be connected to a commercial AC power supply and having a compressor, an indoor heat exchanger, and an indoor fan circulating indoor air via said indoor heat exchanger;

a driving circuit provided in said indoor unit, for applying a voltage lower than a voltage applied from the commercial AC power supply, to drive said outdoor fan; and

a power-supply line for applying the output voltage of the driving circuit to said outdoor unit.

wherein said compressor, said outdoor heat exchanger, said expansion device, and said indoor heat exchanger are connected by pipes, thereby constituting a refrigerating cycle.

5,632,156

AUTOMOTIVE AIR CONDITIONING SYSTEM

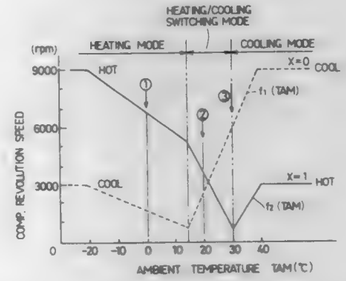
Yuji Takeo, Toyoake; Satoru Kodama, Obu; Eiji Takahashi, Toyohashi; Akira Isaji, Nishio, and Masaya Tanaka, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 25, 1995, Ser. No. 429,219

Claims priority, application Japan, Apr. 25, 1994, 6-086772; Aug. 4, 1994, 6-183422

Int. Cl.° F24F 11/00

U.S. Cl. 62—228.4 14 Claims



1. An automotive air conditioning system comprising:

an air blowing means for generating air flow;

an air flow passage for introducing air from the air blowing means;

a heat exchanger provided within the air flow passage for cooling or heating the air;

a compressor composing a refrigerating cycle with the heat exchanger and driven by a driving power supplied from an external driving power source;

a temperature setting means for setting a temperature of air blown out from the air flow passage into a compartment within a range from a minimum temperature to a maximum temperature;

a revolution speed controlling means for controlling a revolution speed of the compressor based on a setting value set by the temperature setting means;

an ambient temperature detecting means for detecting a temperature of outdoor air; and

a revolution speed regulating means for regulating a first revolution speed of the compressor when the temperature setting means is set to the minimum temperature and a second revolution speed of the compressor when the temperature setting means is set to the maximum temperature based on an ambient temperature detected by the ambient temperature detecting means.

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ELECTRIC AUTOMOBILE

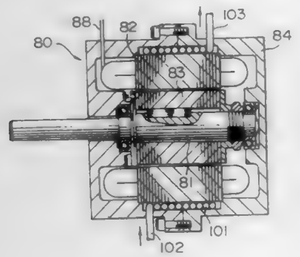
Hirokazu Sekino, and Issei Yamakoshi, both of Suwa, Japan, assignors to Seiko Epson Corporation, Nagano-ken, Japan

Division of Ser. No. 248,770, May 25, 1994, Pat. No. 5,488,837, which is a division of Ser. No. 148,180, Nov. 5, 1993, Pat. No. 5,345,777, which is a continuation of Ser. No. 809,537, Jan. 23, 1992, abandoned. This application Oct. 31, 1995, Ser. No. 550,685

Claims priority, application Japan, May 24, 1990, 2-134642; Nov. 20, 1990, 2-315431; Nov. 20, 1990, 2-315432

Int. Cl.[6] B60H *1/32*

U.S. Cl. 62—244 6 Claims



1. An electric automobile comprising:

a wheel drive motor for respectively driving at least each of a plurality of driving wheels of the electric automobile; and

a refrigerating system in which a refrigerant flows, and which comprises a compressor, an outdoor heat exchanger, an expansion valve, and an indoor heat exchanger connected one after another by refrigerant pipes,

said wheel driving motor being provided within the refrigerating system, whereby the wheel driving motor is cooled directly by the refrigerant,

said wheel driving motor comprising:

a stator supported by a flange, said stator having an outer surface facing said flange in spaced relation,

a rotor provided inside the stator and having a driving shaft, and

a coiled thin pipe disposed on the outer surface of the stator, in which the refrigerant for a refrigerating system flows,

the coiled thin pipe being provided within a space between the flange and the stator.

5,632,158

ELECTRONIC COMPONENT COOLING UNIT

Makoto Tajima, Tokyo, Japan, assignor to Calsonic Corporation, Tokyo, Japan

Filed Mar. 19, 1996, Ser. No. 617,556

Claims priority, application Japan, Mar. 20, 1995, 7-061309

Int. Cl.[6] H01L *23/36*

U.S. Cl. 62—259.2 3 Claims

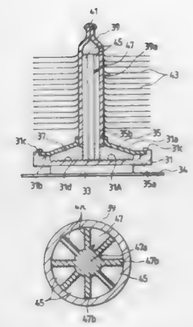
1. An electronic component cooling unit, comprising:

a cold plate, an electronic component being mounted on one surface of said cold plate;

a cover member covering the other surface of said cold plate to constitute a tank section in which a refrigerant is stored;

a container pipe extending from said cover member in such a manner that said container pipe is communicated with said tank section; and

a wick pole being fitted in said container pipe, said wick pole including an axial portion extending along a central longitudinal axis of said container pipe, and a plurality of radial protrusions extending outwardly from said axial portion, so



that a plurality of axial passageways are formed in said container pipe, said tank section and said axial passageways being evacuated into a vacuum.

5,632,159

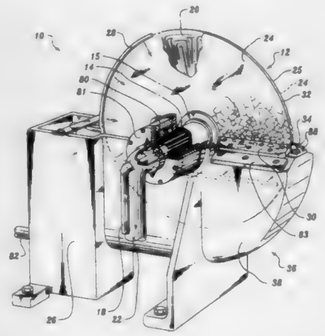
COOLING DISK FOR FLAKE ICE MACHINE

Andrew T. Gall, Seattle, and Don Bartholmey, Bellevue, both of Wash., assignors to North Star Ice Equipment Corporation, Seattle, Wash.

Filed Mar. 29, 1996, Ser. No. 624,944

Int. Cl.[6] F25C *5/12*

U.S. Cl. 62—354 15 Claims



15. A flake ice machine for producing flakes of a frozen material, comprising:

a rotatable cooling disk member having an axial aperture, a circumferential outer perimeter, and first and second side cooling surfaces, the disk member including at least a first internal refrigerant flow passage extending from an inlet port into the interior of the disk member and returning to terminate at an outlet port, each port opening onto the axial aperture, the first passage defining a first radial outflow segment extending radially from the inlet port to a point adjacent the perimeter and the first passage then passing through a turn at the point adjacent the perimeter to define a first radial return segment extending radially back to approach the axial aperture, the first radial outflow and return segments being separated by a first internal wall spoke, the first wall spoke spanning from the first side cooling surface to the second side cooling surface and extending radially from the axial aperture to the point adjacent the perimeter;

a motor to drive rotation of the cooling disk member;

means for cooling the disk member;

a liquid material supply to introduce liquid material to be frozen to the first and second side cooling surfaces of the cooling disk member; and

first and second removal blades disposed adjacent the first and second side cooling surfaces, respectively, of the cooling disk to remove flakes of frozen material.

5,632,160

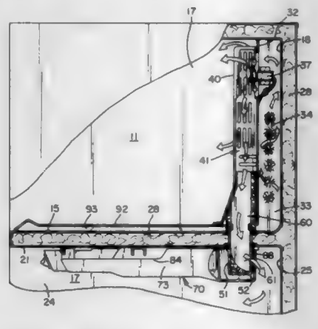
REFRIGERATOR WITH IMPROVED AIR FLOW SYSTEM

Martin J. Harangozo, Louisville, Ky., and Brian S. Palka, Wynantskill, N.Y., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 23, 1995, Ser. No. 518,552

Int. Cl.[6] F25D *17/04;11/02*

U.S. Cl. 62—408 9 Claims



1. A refrigerator comprising:

an upper freezer compartment, a lower fresh food compartment and an insulating partition separating said compartments;

an evaporator chamber separate from said freezer and fresh food compartments and positioned to the rear of said freezer compartment;

a conduit connected to said evaporator chamber for conducting relatively cold air from said evaporator chamber to said fresh food compartment, said conduit at least partially located in said freezer compartment and having at least one opening therein in communication with said freezer compartment so that when cold air from said evaporator flows through said conduit, at least some of the cold air flows from said conduit into said freezer compartment;

a member mounted against said insulating partition to form a duct extending front to rear within said fresh food compartment; and

said duct having at least one opening adjacent the front of said fresh food compartment and said duct communicating with said evaporator chamber for returning relatively warm air to said evaporator chamber.

5,632,161

LAMINATED-TYPE EVAPORATOR

Masahiro Shimoya, Chiryu; Toshiya Nagasawa, Obu; Keiichi Yoshii, and Ryouichi Sanada, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

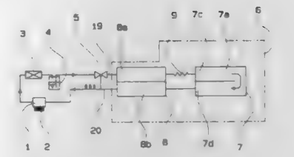
Filed Jun. 26, 1995, Ser. No. 494,397

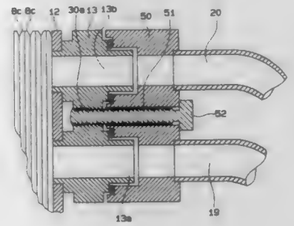
Claims priority, application Japan, Jun. 27, 1994, 6-144509

Int. Cl.[6] F25B *39/02*

U.S. Cl. 62—515 14 Claims

1. A laminated-type evaporator for disposition in a refrigeration system on a downstream side of a pressure reducing means for reducing pressure of a refrigerant in the refrigeration system and





on an intake side of a compressor for evaporating the pressure-reduced refrigerant, said laminated-type evaporator comprising:

a main heat exchanger having a refrigerant passage therein for performing heat exchange between refrigerant flowing within said refrigerant passage and cooled fluid flowing outside said refrigerant passage;

an auxiliary heat exchanger having an inlet-side refrigerant passage for introducing refrigerant from said pressure reducing means toward an inlet of said main heat exchanger refrigerant passage and an outlet-side refrigerant passage for introducing refrigerant from an outlet of said main heat exchanger toward said compressor, said auxiliary heat exchanger performing heat exchange between refrigerant flowing through said inlet-side refrigerant passage and refrigerant flowing through said outlet-side refrigerant passage; and

a connecting member having a first communication hole for connecting with a downstream-side pipe of said pressure reducing means and a second communication hole for connecting with an intake-side pipe of said compressor, said connection member being fixed to said auxiliary heat exchange for communicating said first communication hole and said inlet-side refrigerant passage and communicating said second communication hole and said outlet-side refrigerant passage,

wherein:

said refrigerant passage of said main heat exchanger is formed by an internal space formed by a pair of laminated thin metal plates,

said main heat exchanger is provided with a plurality of said pair of thin metal plates, and fin means for enlarging a thermal-transmission surface area of heat exchange with said cooled fluid is provided between respective pairs of thin metal plates,

said inlet-side refrigerant passage and said outlet-side refrigerant passage of said auxiliary heat exchanger are alternately formed on a front and rear side, respectively of said thin metal plates by lamination of a plurality of metal thin plates to form the inlet-side refrigerant passage and the outlet-side refrigerant passage between alternating pairs of the laminated plurality of thin metal plates,

said connecting member has convexities which contact said auxiliary heat exchanger and which define contact portions in which said connecting member and said auxiliary heat exchanger are in mutual contact and non-contact portions in which a clearance is provided between said connecting member and said auxiliary heat exchanger, said clearance being of at least a predetermined dimension, and

said contact portion has a width of not more than a second predetermined dimension.

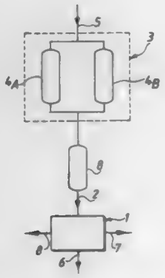
VOL 1198 ISS 4 MY 27 1997 UMI

5,632,162

CARBON MONOXIDE PRODUCTION PLANT INCORPORATING A CRYOGENIC SEPARATION UNIT

Jean Billy, Le Plessis Trevise, France, assignor to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Jun. 10, 1996, Ser. No. 660,751
Claims priority, application France, Jun. 15, 1995, 95 07160
Int. Cl.[6] F25B 3/00
U.S. Cl. 62—636 3 Claims



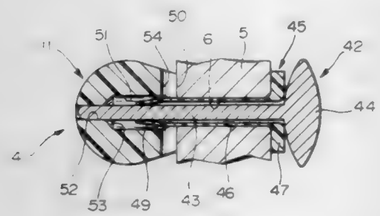
1. In a carbon monoxide production plant, comprising a cryogenic separation unit supplied with a gas mixture containing carbon monoxide via a feed line incorporating a purification unit which adsorbs impurities and comprises at least two adsorbers; the improvement wherein the plant further comprises a tank containing an adsorbent which has an affinity for carbon monoxide, this tank being permanently interposed in the feed line between the purification unit and the separation unit.

5,632,163

PIERCED EARRING HOLE MAINTENANCE DEVICE

Takeo Inoue, 5-23-2-704, Hiroo, Shibuya-ku, Tokyo, Japan, assignor to Kato Spring Works Co., Ltd., and Takeo Inoue, both of Tokyo, Japan

Continuation of Ser. No. 997,078, Dec. 29, 1992, abandoned.
This application Dec. 15, 1994, Ser. No. 357,081
Claims priority, application Japan, Jan. 9, 1992, 4-000422 U; Oct. 20, 1992, 4-073215 U; Dec. 14, 1992, 4-333297
Int. Cl.[6] A44C 7/00
U.S. Cl. 63—12 6 Claims



1. A pierced earring hole maintenance device comprising of a resin material, said pierced earring hole maintenance device further comprising:

a rod portion, suitable for insertion into a small opening formed at a position of attachment of a pierced earring to an earlobe, the rod portion further comprising liquid holding sections for holding a liquid and being formed to the external periphery of said rod, said liquid holding sections constructed of encircling grooves formed about the circumference of said rod, and straight grooves formed along the length of said rod;

a flange portion provided at one end of said rod portion and having a maximum width greater than the size of said rod portion; and

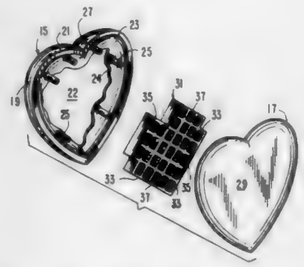
a fastener having an engaging hole into which said rod portion is inserted, said fastener being detachably engaged to the other end of said rod portion, said fastener and said flange being capable of gripping said position of attachment of the pierced earring therebetween, said fastener provided with a whirl back having a roughened surface for preventing rotation of said pierced earring hole maintenance device with respect to the earlobe by holding the earlobe between said roughened surface of said fastener and said flange.

5,632,164

JEWELRY PENDANT ASSEMBLY

Norberto Bergagnini, Garden City, N.Y., assignor to Sandberg & Sikorski Diamond Corp., New York, N.Y.

Filed Jan. 24, 1996, Ser. No. 590,609
Int. Cl.[6] A44C 25/00
U.S. Cl. 63—23 17 Claims



1. A jewelry pendant assembly comprising:

a frame member having an outside edge and an inside edge which defines a window therethrough;

a plurality of interrelated and interconnected jewelry stones mounted together in an array defining an outside border running thereabout, said plurality of stones comprising a first series of stones located adjacent said border defined by said array and a second series of stones about which said first series of stones is at least partially disposed;

wherein said array of jewelry stones is sized so as to fit substantially behind said frame member such that said outside border is completely hidden when viewed through said window of said frame member and is positioned between said inside and outside edges thereof so that said frame inside edge sits substantially over said array of stones inwardly of the outside border thereof such that each stone of said first series of stones is at least partially covered by said frame member and each stone of said second series of stones is not covered at all by said frame member and is completely viewable through said window.

5,632,165

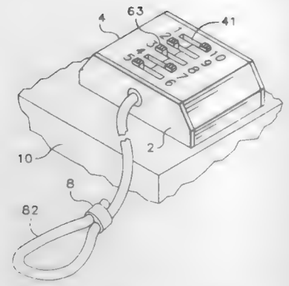
SECURITY ANCHOR FOR LAPTOP COMPUTER

Robert C. Perry, 5755 SW. Willow La., Lake Oswego, Oreg. 97035-5340

Filed Sep. 26, 1995, Ser. No. 533,918
Int. Cl.[6] E05B 73/00
U.S. Cl. 70—30 14 Claims

1. A security anchor for securing a portable article having a generally flat surface against theft, comprising:

a block for attachment to the article, the block having a first face that is substantially flat and is in confronting and contacting relationship with the generally flat surface of the article when the block is attached thereto and also having a second face



and a third face, the block being formed with multiple slots that enter the block at the second face and are separated by webs of the block, and with a bore that enters the block at the third face and passes through the webs,

a shaft that can be inserted in the bore, the shaft having a plurality of first length segments that alternate along the shaft with a plurality of second length segments such that when the shaft is in a fully inserted position in the bore, the first length segments are located in the slots respectively, the first length segments being of smaller cross-sectional area than the second length segments and being connected to the second length segments by shoulder portions of the shaft,

a plurality of sliders fitted in the slots respectively and each of which can slide in a linear path only in its respective slot between a first position and a second position, each slider being formed with an aperture having a first portion that is sized to accept a first length segment of the shaft but is too small to receive a second length segment thereof and a second portion that is large enough to receive a second length segment of the shaft, the sliders can be brought to respective positions such that the shaft can be inserted into and removed from the bore and in other positions of the sliders the shaft cannot be non-destructively removed from the bore, and when the shaft is in the bore, the sliders are retained in their respective slots by virtue of the shaft extending through the respective apertures,

a cover plate attached to the block at the second face thereof, the cover plate being formed with at least one opening through which the sliders are accessible, said opening being sized so that each slider is captive in its respective slot, and

a flexible cable having first and second opposite ends, the shaft being attached to the cable at the first end thereof and the second end of the cable being provided with a means for attaching the cable to a mechanical ground.

5,632,166

LINEAR LOCKING MECHANISM FOR FURNITURE

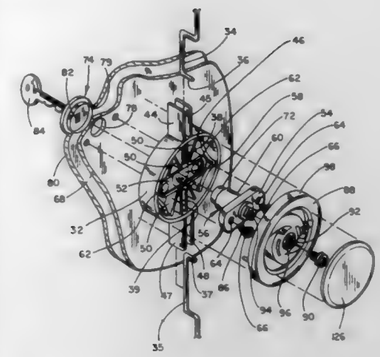
Timothy J. Wiersma, Kentwood, Mich., assignor to Steelcase Inc, Grand Rapids, Mich.

Filed May 8, 1995, Ser. No. 436,879
Int. Cl.[6] E05B 63/14; E05C 9/00
U.S. Cl. 70—120 19 Claims

8. A lockable furniture unit, comprising:

a plurality of stationary wall panels and at least one closure member which together define a substantially continuous storage enclosure; and

a locking mechanism, said locking mechanism including a base mounted onto an interior side of said at least one closure member of the furniture unit, said base including a pair of integral linear guide channels, each guide channel being at least partially defined by spaced sidewalls; a lock rod received in each of said linear guide channels, each of said lock rods having a radially extending projecting engaging said spaced sidewalls; a key lock having a stationary barrel fixedly attached to said base, and a lock tumbler cylinder mounted within said stationary barrel for rotation between a locked



position and an unlocked position; and an actuator fixedly attached to a drive shaft connected to said tumbler cylinder, said actuator including a pair of arcuate channels, each of which is at least partially defined by spaced camming surfaces which engage opposing sides of one of said projections of lock rods, whereby rotation of said actuator urges said rods toward a rotational axis of said tumbler cylinder and counter-rotation of said actuator urges said rods away from the rotational axis of said tumbler cylinder, and

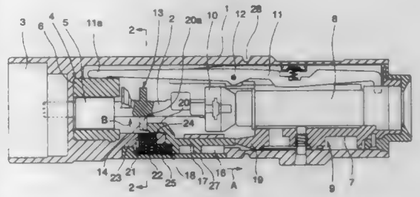
said base further comprising cantilever springs having a stop element disposed thereon, and said actuator further comprising at least one projection which is engaged by one of said springs and by said stop element disposed thereon to maintain the lock in an unlocked or locked position when the tumbler is fully rotated to said unlocked or locked position.

5,632,167

STEERING LOOK APPARATUS

Tomonori Kawachi, and Nobuyoshi Yasuhara, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 3, 1995, Ser. No. 538,698
Claims priority, application Japan, Oct. 6, 1994, 6-242670
Int. Cl.[6] B60R 25/02
U.S. Cl. 70—186 4 Claims



1. A steering lock apparatus, comprising:

a body for mounting on a motor vehicle;

a cam shaft having a cam projection on an outer circumferential portion thereof and being rotatably disposed within the body;

a key cylinder with a key insertion end and a rear end, said key cylinder having a key rotor being rotated by a key, the key cylinder being accommodated in a front portion of the body and being coupled to the cam shaft so that the key rotor integrally rotates with the cam shaft;

a lock member arranged so as to be moved by the cam projection, for locking a steering shaft when the key rotor is rotated to a lock position;

an engagement body integrally formed on the cam shaft, and having an engagement groove;

a first urging member;

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a regulating lever movably disposed in axial directions in the body, and being urged towards the rear end of the key cylinder by the first urging member;

a second urging member;

a block member movably disposed in the body, being urged by the second urging member in such a direction as to engage with the engagement groove, and being regulated by the regulating lever; and

a lock piece movably disposed in the body to lock the block member.

5,632,168

KEY LOCK DEVICE

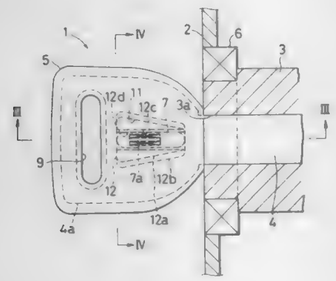
Tsunenori Yano, Miyazaki, Japan, assignor to Honda Lock Mfg. Co., Ltd., Miyazaki, Japan

Filed Mar. 31, 1995, Ser. No. 415,047

Claims priority, application Japan, Apr. 7, 1994, 6-095665; Apr. 7, 1994, 6-095666; Dec. 12, 1994, 6-332128

Int. Cl.[6] E05B *49/04*

U.S. Cl. 70—278 **6 Claims**



1. A key lock device comprising:

a first signal transmitting/receiving means provided on a key having a key shank at one end and a grip portion at an opposite end, said grip portion having an interior chamber, and

a second signal transmitting/receiving means provided on a key cylinder, in which

radiowave signals are transmitted and received between said first and second signal transmitting/receiving means to each other upon insertion of the key into the key cylinder, to determine whether the inserted key is authentic, wherein

the second signal transmitting/receiving means provided on the key cylinder has a coiled antenna wound coaxially around the key cylinder,

the grip portion of the key has a holding member formed integrally at the interior chamber, and the first signal transmitting/receiving means provided on the key is housed within the interior chamber, and wherein

the holding member has a holding aperture formed at the inside chamber thereof, and axial ridges extending in the axial direction of said holding aperture and disposed on the inner circumferential surface of said holding aperture, said axial ridges being spaced apart circumferentially from each other and protruded radially so as to give resilient support to the first signal transmitting/receiving means provided on the key.

5,632,169

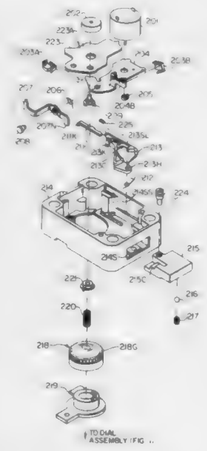
SELF POWERED ELECTRONIC COMBINATION LOCK HAVING COMPREHENSIVE MONITORING OF POWER LEVELS FOR VARIOUS FUNCTIONS

Michael R. Clark, Lexington, Ky., and Christian F. Mascaro, Bowie, Md., assignors to Sargent & Greenleaf, Nicholasville, Ky.

Division of Ser. No. 143,223, Oct. 29, 1993. This application Jun. 6, 1995, Ser. No. 470,272

Int. Cl.[6] E05B *49/00*

U.S. Cl. 70—278 **13 Claims**



1. A self-powered lock, comprising:

a) a bolt capable of being extended from and withdrawn into the lock;

b) means, responsive to entry of a correct combination, for enabling the bolt to be withdrawn into the lock, the enabling means having:

1) an "engage" position in which the bolt can be withdrawn into the lock; and

2) a "disengage" position in which the bolt cannot be withdrawn into the lock;

c) means within the lock for storing energy for operation of certain components of the lock;

d) means for monitoring an energy level of the storing means; and

e) means, responsive to the monitoring means, for preventing the enabling means from moving from the "disengage" position to the "engage" position if the monitored energy level is below a given energy threshold;

wherein the given energy threshold is greater than or equal to an amount of energy required to subsequently move the enabling means from the "engage" position back to the "disengage" position after a predetermined time period.

5,632,170

COMBINATION LOCK PREVENTING MANIPULATION FOR UNAUTHORIZED ACCESS

Walter R. Evans, King, N.C., assignor to Ilco Unican Corporation, Winston-Salem, N.C.

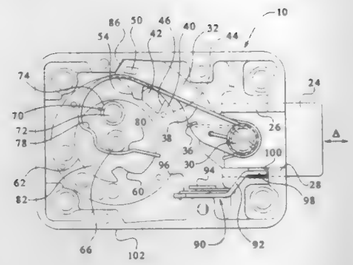
Filed Dec. 20, 1995, Ser. No. 575,593

Int. Cl.[6] E05B *37/08*

U.S. Cl. 70—303 A **21 Claims**

1. A combination lock comprising:

a plurality of tumbler wheels, each having a fence gate formed into an outer perimeter thereof, said tumbler wheels arranged coaxially in stacked arrangement;



a driving cam arranged coaxially with said tumbler wheels, said driving cam having a cam gate formed in a perimeter thereof;

a latch reciprocally mounted in said housing to protrude outwardly thereof;

a fence lever pivotally mounted to said latch at a base end thereof and extending to a distal end approximate said perimeter of said tumbler wheels;

a fence connected to said fence lever and extending laterally thereof;

a dial means for selectively aligning said fence gates of said tumbler wheels below said fence;

a fence lever nose extending toward said driving cam and engageable to said cam gate when said fence is inserted into said fence gates;

a first spring arranged between said fence lever and a stationary portion of said lock assembly for biasing said nose and said fence to an elevated position above said driving cam and said tumbler wheels respectively;

said cam providing a roller extending rearwardly therefrom to orbit upon rotation of said cam; and

a second spring carried by said fence lever and arranged extending from said fence lever to said cam and engageable by said roller to resiliently urge said second spring downwardly to urge said nose and said fence downwardly during an arc portion of each full rotation of said dial means.

5,632,171

IRONING PRESS LAMINAR FLOW LUBRICATION RING

James L. Kunka, Powhatan County, and Donald R. Haulsee, Chesterfield County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Feb. 1, 1996, Ser. No. 595,123

Int. Cl.[6] B21B *45/02*

U.S. Cl. 72—43 **20 Claims**

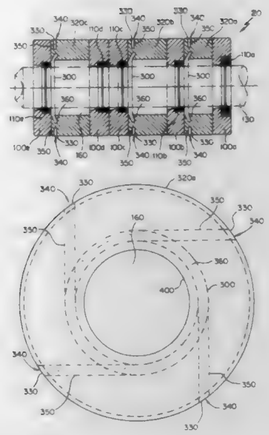
13. An ironing press comprising:

an assembly having a cylindrical main cavity with a substantially horizontal main axis and a plurality of die nibs disposed on a surface of said cavity;

a press for forcing a workpiece through said cavity;

a groove encircling said main cavity and forming a continuous opening in the surface of said cavity; and

a plurality of passages disposed substantially tangential to said groove for introducing a continuous flow of fluid into said groove at a velocity such that said fluid flows in a single radial direction within said groove and a centrifugal force corresponding to said velocity and which exceeds a gravitational force acts on said fluid flowing in said groove;



wherein fluid flowing from said groove opening maintains a substantially laminar flow over said die nib.

5,632,172

METHOD AND DEVICE FOR FORMING SHEET METAL

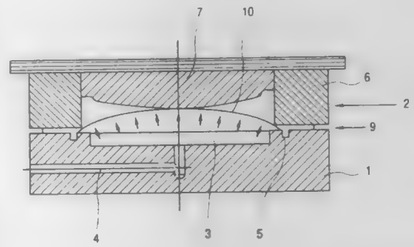
Harald Käsmacher, St. Leon-Rot, Germany, assignor to SMG Suddeutsche Maschinenbau GmbH, Waghausel, and Schuler Werkzeuge GmbH & Co., Goppingen, both of Germany

Filed Sep. 19, 1995, Ser. No. 530,726

Claims priority, application Germany, Sep. 29, 1994, 44 34 799.5

Int. Cl.[6] B21D *22/10*

U.S. Cl. 72—60 **16 Claims**



1. A method of shaping a sheet metal blank clamped in fluid tight fashion in a parting plane between an upper tool and a lower tool with one of the tools having a shaped outline with the sheet metal blank being formed into the shaped outline by a hydraulic pressure medium acting on a side of the sheet metal blank opposite the shaped outline comprising:

initially preforming the sheet metal blank under a controlled hydraulic pressure to produce a stretching of 10–15% beyond initial dimensions of the sheet metal blank; and

with continued hydraulic pressure drawing the sheet metal blank without further stretching until the sheet metal blank has the shaped outline.

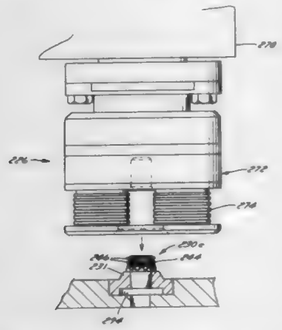
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5,632,173

APPARATUS AND METHOD FOR COLD FORMING A RING ON A LEAD ALLOY BATTERY TERMINAL

Bernard N. Spiegelberg, Germantown, and Dennis J. Brown, Whitefish Bay, both of Wis., assignors to Tulip Corporation, Milwaukee, Wis.

Filed May 17, 1995, Ser. No. 443,905
Int. Cl.[6] B21K *21/16*
U.S. Cl. 72—68 **20 Claims**



1. An apparatus for forming rings on a lead battery terminal including, a head having an outer surface, and a frustum opposite thereto, the apparatus comprising:

a fixture configured to hold the lead battery terminal;

a ring forming head configured to form rings on the outer surface of the head of the lead battery terminal when the terminal and ring forming head are rotated relative to each other; and

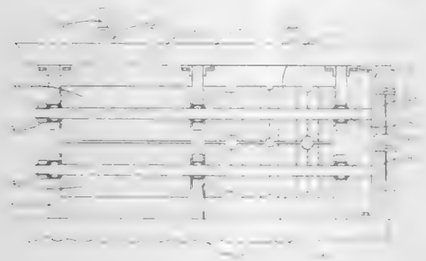
a drive assembly fastened to the fixture and head to rotate the terminal and ring forming head relative to each other.

5,632,174

METAL BENDING MACHINE

Dennis Hunter, 944 W. 53rd St. N., Wichita, Kans. 67204

Filed Aug. 4, 1995, Ser. No. 511,545
Int. Cl.[6] B21D *7/08*
U.S. Cl. 72—129 **9 Claims**



1. A metal bending machine for bending a plurality of metal workpieces having various lower cross-sectional profiles, and having various upper cross-sectional profiles, the plane of each such cross-sectional profile being perpendicular to the longitudinal axis of the workpiece; which metal bending machine comprises:

A lower pinchroller drive shaft having a channel along its length, the channel extending radially inward from the lower pinchroller drive shaft's exterior radial surface, and the midline of the channel being parallel to the lower pinchroller drive shaft's central radial axis;

A means of fixedly and rotatably mounting the lower pinchroller drive shaft so that its central radial axis remains in a fixed position, and so that the lower pinchroller drive shaft may rotate about its central radial axis;

A plurality of lower pinchroller discs, each lower pinchroller disc having a circular aperture therethrough, the central radial axis of the circular aperture coinciding with the central radial axis of the lower pinchroller disc, the diameter of the circular aperture being closely fitted to the diameter of the lower pinchroller drive shaft, the interior radial surface of the circular aperture having a ridge extending radially inward, the midline of the ridge being parallel with the central radial axis of the lower pinchroller disc, and the dimensions of the ridge being fitted to allow the ridge to lie within the channel of the lower pinchroller drive shaft; each lower pinchroller disc being slidably mounted over the lower pinchroller drive shaft so that the lower pinchroller drive shaft passes through the circular apertures of the lower pinchroller discs, so that the ridges within the apertures of the lower pinchroller discs lie within the channel of the lower pinchroller drive shaft, and so that the lower pinchroller discs are stacked in close contact with each other; a plurality of the lower pinchroller discs which are slidably mounted over the lower pinchroller drive shaft having annular channels within their exterior radial surfaces, the radial cross-sectional profiles of each such annular channel being closely fitted to a portion of the lower cross-sectional profile of a workpiece to be bent, so that upon slidable mounting of the lower pinchroller discs over the lower pinchroller drive shaft, a lower pinchroller is formed, the exterior radial surface of the lower pinchroller having annular channels therearound, the radial cross-sectional profiles of the channels being respectively closely fitted to the lower cross-sectional profiles of the workpieces to be bent, at least a pair of adjacent contacting lower pinchroller discs each having an annular channel to define one channel for reception of a lower cross sectional profile of a metal workpiece;

An upper pinchroller drive shaft having a channel along its length, the channel extending radially inward from the exterior radial surface of the upper pinchroller drive shaft, and the midline of the channel being parallel to the central radial axis of the upper pinchroller drive shaft;

A means of vertically adjustably and rotatably mounting the upper pinchroller drive shaft so that it may rotate about its axis, and so that it may travel from a first position wherein it lies above and in close proximity with the lower pinchroller, and wherein it is in alignment with the lower pinchroller, to a second position wherein the upper pinchroller drive shaft is substantially vertically above the first position;

A plurality of upper pinchroller discs, each upper pinchroller disc having a circular aperture therethrough, the central radial axis of the circular aperture coinciding with the central radial axis of the upper pinchroller disc, the diameter of the circular aperture being closely fitted to the diameter of the upper pinchroller drive shaft, the interior radial surface of the circular aperture having a ridge extending radially inward, the midline of the ridge being parallel with the central radial axis of the upper pinchroller disc, and the dimensions of the ridge being fitted to lie within the channel of the upper pinchroller drive shaft; each upper pinchroller disc being slidably mounted over the upper pinchroller drive shaft so that the upper pinchroller drive shaft passes through the circular apertures of the upper pinchroller discs so that the ridges within the apertures of the upper pinchroller discs lie within the channel of the upper pinchroller drive shaft, and so that the upper pinchroller discs are stacked in close contact with each other; a plurality of the upper pinchroller discs which are slidably mounted over the upper pinchroller drive shaft having annular channels within their exterior radial surfaces, the radial cross-sectional profile of each such annular channel being closely fitted to a portion of the upper cross-sectional profile of a workpiece to be bent, so that upon slidable mounting and stacking of the upper pinchroller discs over the upper pinchroller drive shaft an upper pinchroller is formed, the exterior radial surface of the upper pinchroller having annular channels therearound, the radial cross-sectional profiles of the channels being respectively closely fitted to the upper cross-sectional profiles of the workpieces to be bent, at least a pair of adjacent contacting upper pinchroller discs each having an annular channel to define one channel for reception of an upper cross sectional profile of a metal workpiece, each such annular channel being positioned upon the upper pinchroller to overlie the corresponding channel within and around the lower pinchroller, and so that when the upper pinchroller drive shaft is in the first position, the upper and lower pinchrollers form pinch points respectively closely fitted to the upper and lower cross-sectional profiles of the workpieces to be bent;

A means of counter-rotating the upper and lower pinchroller drive shafts and the upper and lower pinchrollers with respect to each other so that, when the upper pinchroller drive shaft is in the first position, and when a metal workpiece is inserted into a pinch point fitted to the workpieces' upper and lower cross-sectional profiles, the workpiece is forcefully driven forward through the pinch point from the front side of the upper and lower pinchrollers to the back side of the upper and lower pinchrollers along a line which is substantially tangent to the lower surface of the upper pinchroller, and to the upper surface of the lower pinchroller;

A radius roller axle;

A means of vertically adjustably mounting the radius roller axle so that the radius roller axle may be positioned at various vertical heights with respect to the back side of the pinch points formed by the upper and lower pinchrollers, the central radial axis of the radius roller axle being substantially parallel to the radial axes of the upper and lower pinchrollers; and,

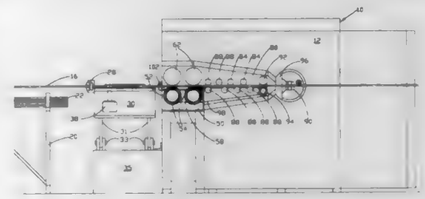
A plurality of radius roller discs, each having a circular aperture therethrough, the central radial axis of the circular aperture coinciding with the central radial axis of the radius roller disc, and the diameter of the circular aperture being closely fitted to the diameter of the radius roller disc; each radius roller disc being slidably mounted over the radius roller axle so that the radius roller axle passes through the circular apertures of the radius roller discs, and so that the radius roller discs are stacked in close contact with each other; a plurality of the radius roller discs which are slidably mounted over the radius roller axle having annular channels within their exterior radial surfaces, the radial cross-sectional profile of each such annular channel being closely fitted to a portion of the lower cross-sectional profile of a workpiece to be bent, so that upon slidable mounting of the radius roller discs over the radius roller axle, a radius roller is formed, the exterior radial surface of the radius roller having annular channels therearound, at least a pair of adjacent contacting radius roller discs each having an annular channel to define one channel for reception of a lower cross sectional profile of a metal workpiece, the channels being positioned upon the radius roller so that the planes containing the central circumferences of the channels of the lower pinchroller also contain the central circumferences of the corresponding channels of the radius roller, the channels of the radius roller being fitted to match the corresponding channels of the lower pinchroller, and so that when the upper pinchroller drive shaft is in the first position, when the radius roller axle is vertically positioned so that the upper surface of the radius roller is situated at an elevation higher than the upper surface of the lower pinchroller, when the upper and lower pinchrollers are counter-rotated by the counter-rotating means, and when a metal workpiece is driven forward through a pinch point formed by the upper and lower pinchrollers, the forward end of the metal workpiece may come into contact with the radius roller within a channel having a radial cross-sectional profile closely fitted to the lower cross-sectional profile of the workpiece, and upon such contact, and upon continuation of such forward driving of the metal workpiece, upward deflection of and progressive bending of the metal workpiece occurs.

5,632,175

REBAR FABRICATING APPARATUS

Paul O. Green; Robin P. Brown; Robert W. Weaver, and Joseph R. Swarowski, all of 5935 Emerald Ave., Las Vegas, Nev. 89122

Filed Oct. 27, 1995, Ser. No. 549,656
Int. Cl.[6] B21D *7/024*
U.S. Cl. 72—130 **10 Claims**



1. A rebar fabricating machine capable of processing either straight rod stock material or coil stock material comprising:

a) a main cabinet;

b) a horizontal straightening module mounted adjacent an upstream end of the main cabinet; the horizontal straightening module including a plurality of adjustable straightening rolls driven by a single first drive motor for straightening the stock material; the straightening rolls being horizontally arranged so that their rotation axes extend vertically; the horizontal straightening module being pivotally mounted on a base so that the horizontal straightening module can be selectively removed from the path of travel of the stock material;

c) a main drive module mounted on the interior of the main cabinet and downstream from the horizontal straightening module for drivingly feeding the stock material, the main drive module including a plurality of upper rolls each having a hydraulic cylinder attached thereto and a plurality of lower driven rolls driven by a second drive motor, the hydraulic cylinders mounted so as to adjust the pressure applied against the stock material between the upper and lower rolls;

d) a vertical straightening module mounted on the interior of the main cabinet and downstream from the main drive module, the vertical straightening module including a plurality of adjustable straightening rolls, the vertical straightening rolls being arranged so that their rotation axes extend horizontally;

e) an exit drive roll and an encoder roll located above the exit drive roll for drivingly feeding the stock material, each mounted on the interior of the main cabinet and downstream from the vertical straightening module, the exit drive roll being driven by the second drive motor;

f) a shear device for shearing the stock material mounted on the interior of the main cabinet and downstream from the exit drive roll; and

g) a bending head for bending the stock material mounted on the interior of the main cabinet and downstream from the shear device.

5,632,176

PROGRAMMABLE PRESSURE CONTROLLED MANDREL EXTRACTOR FOR TUBE BENDING MACHINE

Ajay K. Bhandari, Westlake, Ohio, assignor to Pines Manufacturing, Westlake, Ohio

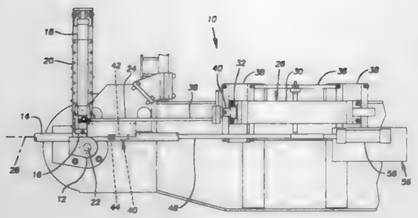
Filed Oct. 6, 1995, Ser. No. 540,065
Int. Cl.[6] B21D *9/05;7/04*
U.S. Cl. 72—150 **20 Claims**

1. A mandrel extractor for a tube bending machine having a rotatable bend die around which a tube is bent, said mandrel extractor system comprising:

a flexible mandrel insertable into the tube to a part of the tube which is bent;

a mandrel rod fixed to a rear end of said flexible mandrel;

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a hydraulic cylinder with a piston connected to said mandrel rod and ports on opposite sides of said piston; and

an electro-hydraulic control system for driving said cylinder in accordance with pre-programmed parameters, said electro-hydraulic control system including a hydraulic pump for providing hydraulic fluid to said cylinder, a directional valve connected to said ports for feeding the hydraulic fluid from said hydraulic pump to each of said ports, a proportional pressure control valve connecting said hydraulic pump to said directional control valve for varying pressure of the hydraulic fluid, and a controller in electrical communication with said proportional pressure control valve for providing control signals to set pressure of the hydraulic fluid to preselected levels, wherein said hydraulic cylinder may drive said mandrel with a choice of at least two pressures in one direction.

5,632,177

SYSTEM AND METHOD FOR MANUFACTURING THIN PLATE BY HOT WORKING

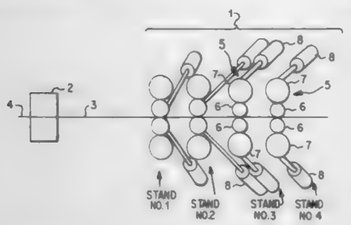
Kenjiro Narita, Hitachi; Ken-ichi Yasuda, Hitachinaka; Yukio Hirama, Mito; Kouji Satou, Hitachi; Ken-ichi Yoshimoto, Hitachi; Tadashi Nishino, Hitachi; Shinichi Kaga, Hitachi, and Yasutsugu Yoshimura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 203,314, Mar. 1, 1994. This application Mar. 20, 1995, Ser. No. 407,871

Claims priority, application Japan, Mar. 18, 1994, 6-048250

Int. Cl.[6] B21B *31/07*

U.S. Cl. 72—249 **74 Claims**



1. A system for manufacturing thin plate comprising:

thin cast slab plate conveying means for conveying a plurality of thin cast slab plates with a thickness of less than 100 mm adjacent one another in a heated condition,

a splicer disposed downstream of the thin cast slab plate supply means in the travel path of the cast slab plates and including splicing means for continuously splicing facing ends of adjacent ones of the slab plates together to thereby form a continuous strip of spliced together slab plates,

and a plurality of hot rolling finishing mill stands for continuous rolling of the continuous strip of spliced together slab plates, at least one of said hot rolling finishing mill stands having only one pair of small diameter working rollers which are driven by respective supporting rollers and are not directly rotatably driven, thereby facilitating high rolling loads at the at least one mill stand with only one pair of small diameter working rollers.

5,632,178

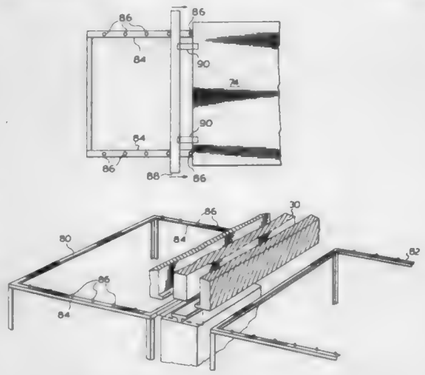
METHOD AND APPARATUS FOR FORMING A T-SHAPED SLOT IN A SHEET MATERIAL

Karl Uhlemann, G2 Nevada Court, Brampton, Ontario, Canada; Walter Rudnisky, R.R. #1, Cookstown, Ontario, Canada, and Peter Chiodo, 5752 Teeswater Road, Malton, Ontario, Canada

Filed Jun. 5, 1995, Ser. No. 462,373

Int. Cl.[6] B21D *5/16*

U.S. Cl. 72—307 **4 Claims**



1. A method of forming a series of uniform T-shaped slots in a sheet of material comprising the steps of

attaching a guide assembly along an edge of a sheet of material, positioning said guide assembly with one of a set of positioning pins,

clamping said sheet of material to a top surface of an arbor having a uniform T-shaped cross section having two undersides of a T-shape,

bending said sheet of material about the arbor forming a T-shaped slot by forming an inverted U-shape in said sheet of material and then conforming said sheet of material to said undersides drawing ends of said sheet material,

withdrawing said arbor from an open end of said T-shaped slot,

releasing said sheet material,

advancing said guide assembly to a next one of said positioning pins, and repeating said clamping, bending, withdrawing and releasing steps.

5,632,179

METHOD OF MANUFACTURING AN ENGAGING ELEMENT FOR ONE WAY CLUTCH IMPROVING SQUARENESS OF CAM FACE RELATIVE TO SIDE SURFACES

Tetsuaki Numata, Kitakatsuragi-gun, and Shigeo Maeda, Nara, both of Japan, assignors to Koyo Seiko Co., Ltd., and Osakaseiko, Limited, both of Osaka, Japan

Filed Dec. 6, 1994, Ser. No. 354,076

Claims priority, application Japan, Dec. 8, 1993, 5-307809; Oct. 20, 1994, 6-255143

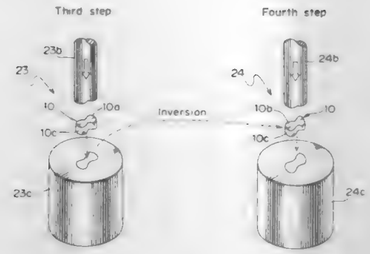
Int. Cl.[6] B21K *1/76*

U.S. Cl. 72—356 **3 Claims**

1. A method of manufacturing an engaging element for a one way clutch, said engaging element being designed to be disposed between an inner ring and an outer ring and having a cam face engageable with the inner and outer rings, said method comprising:

forming a sheared member of a predetermined size by shearing a material by a press; and

cold forging said sheared member by a forging process including placing said sheared member in a die and striking by means of a striking member side surfaces of said sheared member other than a circumferential surface thereof intended to serve as a



cam face, with a surface of said striking member which strikes one side surface of said sheared member being planar and maintained parallel with a planar surface of said die against which is pressed an opposite other side surface of said sheared member, thereby forming said side surfaces to extend parallel to each other and forming said side surfaces and said cam face to respective desired shapes, said forging process comprising the steps of:

placing said sheared member in a first die;

striking said one side surface of said sheared member by said striking member;

removing said sheared member from said first die;

inverting said sheared member and placing said thus inverted sheared member in a second die;

striking said other side surface of said sheared member by another striking member;

at least one said die being so configured that when said sheared member is placed therein and struck on the respective said side surface thereof by the respective said striking member, the opposite said side surface of said sheared member is chamfered edgewise; and

removing said sheared member from said second die, inverting or translating said sheared member for placement in a third die, and striking said other or said one side surface of said sheared member by another striking member.

5,632,180

METHOD OF AND APPARATUS FOR PRODUCING CORRUGATED SHEET WITH PLANE-PARALLEL OUTER EDGE SURFACES

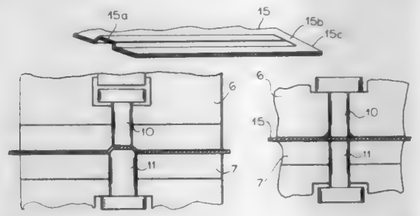
Ingolf Doose, Stade, Germany, assignor to Umformtechnik Stade GmbH, Stade, Germany

Filed Nov. 23, 1994, Ser. No. 344,277

Claims priority, application Germany, Nov. 24, 1993, 43 39 962.2

Int. Cl.[6] B21D *13/02*

U.S. Cl. 72—404 **8 Claims**



7. A method of producing corrugated sheet with plane-parallel outer edge surfaces, comprising the steps of:

(a) pressing a planar sheet workpiece between an upper and a lower press platen having mutually facing complementary formations to deform the sheet workpiece out of a plane thereof to produce a corrugation therein extending over said workpiece to an edge thereof; and

(b) thereafter flattening an end of the corrugation at said edge by pressing said end of the corrugation back into said plane to impart a plane-parallel configuration to a region of said edge.

5,632,181

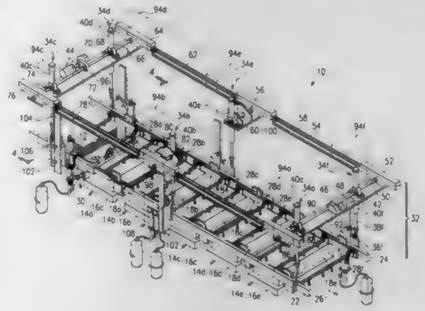
SYSTEM AND METHOD FOR TRANSFERRING A WORK PIECE IN A MULTI-STATION PRESS

Allen J. Vanderzee, St. John, Ind.; Edward J. Brzezniak, and Adam Schwarz, both of Orland Park, Ill., assignors to Verson, A Division of Allied Products Corporation, Chicago, Ill.

Filed Feb. 23, 1995, Ser. No. 393,554

Int. Cl.[6] B21D *43/05*

U.S. Cl. 72—405.1 **26 Claims**



1. A system for transferring a work piece between first and second press stations in a multi-station press having a plurality of associated upper and lower dies, said system comprising:

at least one cross bar assembly extending above the press stations perpendicular to the transfer direction of the press;

a plurality of holding devices coupled to said cross bar assembly for removably engaging a work piece;

said cross bar assembly having a first rest position adjacent to the second press station and a second rest position adjacent to the first press station;

a transfer mechanism for moving said cross bar assembly from said first rest position to the first press station;

said cross bar assembly and holding devices operable to engage a work piece at the first press station and to move and deposit the work piece at the second press station;

said transfer mechanism then operable to move said cross bar assembly to said second rest position; and

said transfer mechanism then retuning said cross bar assembly to said first rest position to prepare for a subsequent work piece transfer.

5,632,182

SERVICEABLE CLIP CORE COUPLING

Michael Reasoner, Ortonville, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 521,125, Aug. 29, 1995, Pat. No. 5,577,415. This application Nov. 21, 1995, Ser. No. 560,803

Int. Cl.[6] F16C *1/14*

U.S. Cl. 74—502.4 **12 Claims**

1. A motion transmitting remote control assembly (**10**) comprising:

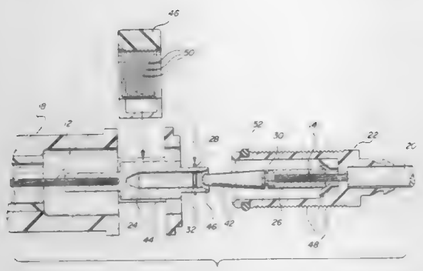
a first core element section (**12**) for transmitting motion;

a first guide length for movably supporting said first core element section (**12**);

a second core element section (**14**) for transmitting motion;

a second guide length for movably supporting said second core element section (**14**);

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connection means for locking said first (**12**) and second (**14**) core element sections together in a locked position mechanically prevented from moving relative to one another axially in either direction; and

characterized by said connection means including a clip (**28**) manually insertable into and manually removable from said locked position mechanically interlocking said core element sections together while moving axially within said guide lengths,

said connection means including a female member (**24**) attached to an end of said first core element section (**12**) and a male member (**26**) defining an end of said second core element section (**14**), said male member (**26**) presenting a male groove (**30**), said female member (**24**) having at least one slot (**32**) extending tangentially therethrough, said clip (**28**) being disposed about said female member (**24**) and extending through said slot (**32**) and into said male groove (**30**) for mechanically interlocking said core element sections together in said locked position.

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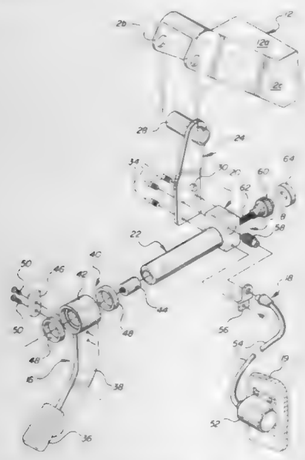
ADJUSTABLE PEDAL ASSEMBLY

Christopher J. Rixon, Tecumseh, Canada, and Christopher Bortolon, Clawson, Mich., assignors to Comfort Pedals, Inc., Warren, Mich.

Filed Aug. 9, 1995, Ser. No. 513,017

Int. Cl.[6] G05G *1/14*

U.S. Cl. 74—512 **15 Claims**



8. An adjustable pedal apparatus for a motor vehicle comprising:

a mounting bracket;

a hollow guide rod;

means pivotally mounting the guide rod on the mounting bracket with the guide rod extending rearwardly;

a pedal structure including an upper hub structure slidably mounted on the guide rod and a pedal arm extending downwardly from the hub structure;

a nut positioned slidably in the hollow of the guide rod;

a screw positioned within the guide rod and threadably engaging the nut;

drive means interconnecting the nut and the pedal structure; and

means for rotating the screw.

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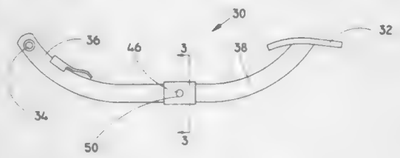
SAFETY PEDAL FOR MOTOR VEHICLES

Allen Callicutt, 2686 N.C. Highway 134, and James Ridge, 1115 E. River Run, both of Asheboro, N.C. 27203

Filed Oct. 30, 1995, Ser. No. 550,408

Int. Cl.[6] G05G *1/14*

U.S. Cl. 74—512 **18 Claims**



16. A vehicle safety pedal apparatus comprising:

a foot engaging portion;

a linkage attachment for attaching the pedal apparatus to a vehicle;

a pedal linkage coupled between said linkage attachment and said foot engaging portion including first and second sub-linkages and a shock absorber coupled between said first and second sub-linkages to absorb shock during a collision of a person's lower extremity with the pedal apparatus during a motor vehicle accident, said shock absorber including a sleeve on said first sub-linkage forming a cavity, and a pin, said sleeve further including through aligned apertures and said second sub-linkage further including an elongated aperture, said apertures of said sleeve aligned with said elongated aperture, and said pin extending through said aligned apertures, thereby providing limited slidable engagement of said sub-linkages, said cavity containing a resilient shock absorbing material that is capable of restoring its shock absorbing capacity after absorbing an initial shock.

5,632,185

AXLE DRIVE FOR DISTRIBUTING TORQUE

Theodor Gassmann, Siegburg, Germany, assignor to GKN Viscodrive GmbH, Lohmar, Germany

Filed Dec. 8, 1995, Ser. No. 569,681

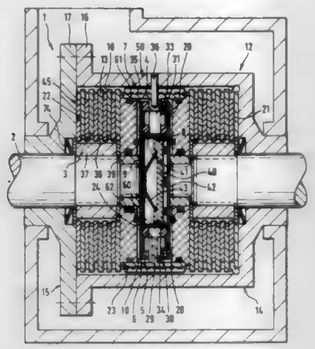
Claims priority, application Germany, Dec. 10, 1994, 44 44 027.8

Int. Cl.[6] F16H *48/12*; **F16D** *25/10*

U.S. Cl. 74—650 **21 Claims**

1. An axle drive for distributing torque from a propeller shaft to two axle shafts, having a coupling housing which is drivable by the propeller shaft and which, in turn, is rotatably supported in a drive housing, having two torque transmitting friction couplings which are provided to drive the axle shafts and which are arranged in the coupling housing, with first friction plates of each coupling being non-rotatably connected to the coupling housing and second friction plates of each coupling being non-rotatably connected to the respective axle shaft, and having two actuating devices for the two friction couplings, including:

a common pump housing which is non-rotatably connected to the coupling housing;



two symmetrically arranged pistons axially movable within the pump housing, each of which delimit one end of a pressure chamber which is filled with a highly viscous fluid and connected to a reservoir;

the pressure chambers each contain pumping and control members which are rotatable to a limited extent relative to the pump housing between two end positions; and that in each of the pressure chambers there are arranged conveying members which are each non-rotatably connected to one of the axle shafts; that respective rotational faces of a conveying member, together with counter faces of a pumping and control member, constitute at least one sealed shear channel which is formed by a groove extending circumferentially between two ends in the pumping and control member, and by a surface of the conveying member covering same;

the reservoir contained in the pump housing being connectable to the respective pressure chamber by means of suction channels and pressure channels arranged in the pump housing and by means of control apertures respectively arranged at the ends of the groove in the pumping and control member in such a way that in both the two end positions of a pumping and control member, the respective control aperture arranged in a direction of relative rotation at a front end of the groove communicates with the reservoir and the control aperture arranged in the direction of relative rotation at a rear end of the groove communicates with the pressure chamber, so that in the shear channel a conveying action takes place from the reservoir to the pressure chamber.

5,632,186

REVERSIBLE SCREWDRIVER

Ching-Chou Lin, No. 150, Sec. 3, Chung Shan Rd., Wu Jin Hsiang, Taichung Hsien, Taiwan

Continuation-in-part of Ser. No. 511,858, Aug. 7, 1995, abandoned. This application Jul. 26, 1996, Ser. No. 690,398

Int. Cl.[6] B25B *13/00*

U.S. Cl. 81—59.1 **4 Claims**

1. A reversible screwdriver comprising:

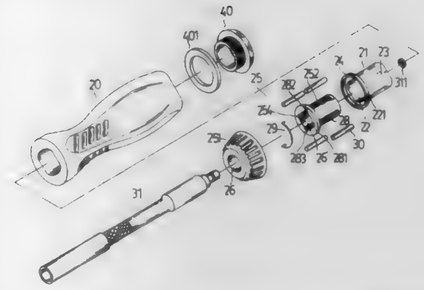
a hollow handle having a first end covered with a screw cap, and a second end;

a socket fastened to the second end of said handle, said socket comprising a substantially rectangular chamber, said rectangular chamber having four angles smoothly chamfered, a bottom center hole, an outward annular flange around said rectangular chamber at one end remote from said handle, and a triangular stop block raised above an inside portion of said outward annular flange;

a rotating knob coupled to said socket, said rotating knob comprising a hand wheel disposed outside said handle and said socket, and a barrel coupled to said hand wheel and inserted into said rectangular chamber of said socket, said hand wheel comprising a longitudinal center through hole, and a plurality of stop rods spaced around the longitudinal center through hole of said hand wheel, said barrel comprising a longitudinal center through hole, four longitudinal slots equiangularly spaced around the periphery in communication with the longitudinal center through hole of said barrel, a block raised around one end of the longitudinal center through hole of said barrel, an outward flange connected to the block of said barrel at an outer side around the longitudinal center through hole of said barrel and received within the outward annular flange of said socket, four equally spaced inside notches respectively and longitudinally aligned with said longitudinal slots and respectively engaged with the stop rods of said hand wheel, an inside longitudinal groove on the outward flange of said barrel corresponding to the triangular stop block of said socket, a locating hole on the outward flange of said barrel opposing said inside longitudinal groove, a substantially arched wire rod having one end fastened to said locating hole and an opposite end fastened to said inside longitudinal groove, and four round rods respectively inserted into said longitudinal slots and revolvably attached to the four angles of the rectangular chamber of said socket; and

a shaft inserted through the longitudinal center through hole of said hand wheel and the longitudinal center through hole of said barrel and fastened to the bottom center hole of said socket by a clamp;

wherein when said hand wheel is turned to move said wire rod to the left side relative to said triangular stop block of said socket, said shaft can be turned clockwise by said handle to drive a workpiece, and said handle will run idle when turned counter-clockwise; when said hand wheel is turned to move said wire rod to the right side relative to said triangular stop block of said socket, said shaft can be turned counter-clockwise by said handle to drive a workpiece, and said handle will run idle when turned clockwise.



5,632,187

PROCESS AND DEVICE FOR CUTTING A WEB OF TEXTILE FABRIC

Francisco Speich, Oberfrick, Switzerland, assignor to Textilma AG, Oberfrick, Switzerland

Continuation of Ser. No. 30,178, Jan. 28, 1994, abandoned. This application May 7, 1996, Ser. No. 643,847

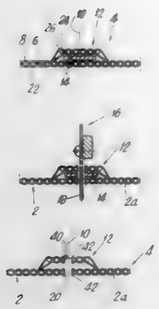
Claims priority, application Switzerland, Jul. 18, 1991, 2142/91

Int. Cl.[6] B26D *7/06*; **D06H** *7/04*

U.S. Cl. 83—16 **9 Claims**

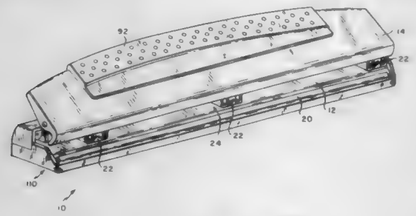
1. A process for cutting a fabric run, the fabric run being manufactured with at least one fabric marker profile having the shape of an elongated hollow space and extending along a predetermined cutting line, the process comprising guiding a sensing tongue of a sensing device in the hollow space of the fabric marker

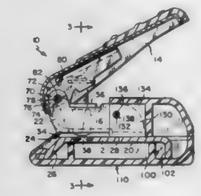
VOL 1198 ISS 4 MY 27 1997 UMI



profile, guiding a cutting device by means of the sensing device, and cutting the fabric run along the predetermined cutting line by means of the cutting device.

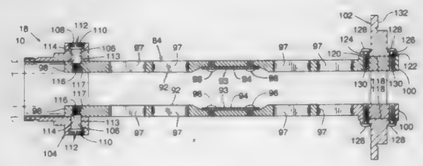
5,632,188
ERGOPUNCH
Robert G. Karlis, Hingham, Mass., assignor to Clix Products, Inc., Natick, Mass.
Filed Feb. 24, 1995, Ser. No. 394,153
Int. Cl.[6] B26F *1/02*
U.S. Cl. 83—167 **11 Claims**





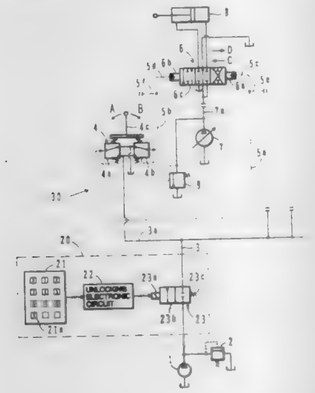
1. An ergonomic paper punch comprising:
(a) a die body having a length and a width, a press body having a length and a width, a plurality of punch heads, and an axis of elongation;
(b) said die body and said press body being pivotally connected along a rocking axis for a rocking motion, said punch heads operating therebetween, and said rocking axis being substantially parallel to said axis of elongation;
(c) said punch having a cross-sectional profile substantially perpendicular to said axis of elongation, said profile having substantially a "V"-shape, said rocking axis being approximately at a vertex of said "V"-shape, and said vertex having an angle of approximately 30°;
(d) said die body providing a die base with die holes, a plurality of brackets with guide holes, and a paper reception region therebetween, said die base having a length, a width, and an upper surface, each of said die holes having an axis, and each of said guide holes having an axis;
(e) said punch heads being constrained by said guide holes for reciprocation along said die hole axes and said guide hole axes;
(f) said press body controlling axial retraction of said punch heads from said paper reception region, and axial projection of said punch heads through said paper reception region and into said die holes;
(g) said die body and said press body each having an inner rigid component and an outer resilient component, said outer resilient components having an outer surface;
(h) a portion of said outer surface of said press body outer resilient component having curved edges and a plurality of raised, smooth bumps;
(i) said die body having a punch-out holding region adjacent to said die holes and opposite said paper reception region;
(j) said die body outer resilient component being a tray, said tray covering said punch-out holding region and having a lower rear edge, a center portion of said lower rear edge being substantially monotonically curved over at least 10% of said die base width;
(k) said tray having an upper portion and a lower portion, said portions being connected by an integral hinge;
(l) said upper portion being attached to said die base upper surface by an attachment means, said hinge being located adjacent to said die base opposite said paper reception region, and said lower portion extending across said punch-out holding region;
(m) said lower portion being removable from said punch-out holding region and remaining attached to said die base by said upper portion via said hinge, whereby, when said tray is removed from said punch-out holding region, said punch-out holding region is emptied; and
(n) said attachment means including ears extending substantially upwardly and perpendicularly from said die base upper surface, walls extending substantially downwardly and vertically from said upper portion of said tray, holes through each of said ears and said upper portion walls, all of said holes being aligned along a common axis, and a rod extending through said die body ear holes and said upper portion wall holes.

5,632,189
SAW SHIFTING APPARATUS
William A. Larson, Portland, Oreg., assignor to New Venture Manufactururing & Service, Inc., Portland, Oreg.
Filed Mar. 14, 1995, Ser. No. 404,162
Int. Cl.[6] B27B *5/34*
U.S. Cl. 83—508.2 **8 Claims**



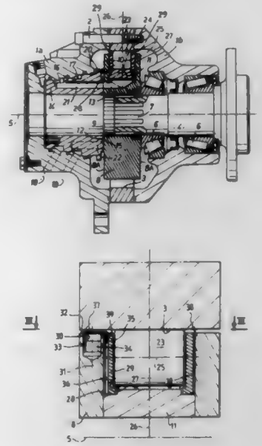
1. In a saw apparatus including an elongate power-driven saw arbor, a circular saw-supporting collar and a shifter, each of the collar and the shifter being slidably mounted on the arbor, and at least one elongated compression-transmitting shifter bar extending axially of the arbor and connected at one end to the shifter and at the opposite end to the saw-supporting collar, the arbor having at least one peripheral channel extending axially thereof, the channel having an exterior portion joining the periphery of the arbor and an interior portion of greater width than the exterior portion, the exterior and interior portions providing the channel with a generally T-shaped configuration, the shifter bar being disposed within the channel,
the improvement comprising:
a recess disposed in an interior side of the shifter bar, the recess being disposed intermediate the ends of the shifter bar, the recess providing an undercut portion in the shifter bar, at least one guide plate attached to the interior side of the shifter bar at the undercut portion thereof, the guide plate thereby being disposed intermediate the ends of the shifter bar, the guide plate having a width greater than the width of the shifter bar and substantially equal to the width of the greater width interior portion of the channel, the length of the guide plate being substantially less than the length of the shifter bar, only the guide plate being adapted to ride in the greater width interior portion of the channel,
whereby the guide plate serves to restrain centrifugal force-induced radial motion of the shifter bar with respect to the arbor during rotation thereof.

5,632,190
BURGLARPROOF DEVICE FOR HYDRAULIC MACHINE
Kazuhiro Sunamura, Tsuchiura; Osamu Tomikawa, Ibaraki-ken; Shigehiro Yoshinaga, Yokohama, and Toichi Hirata, Ushiku, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Filed May 22, 1996, Ser. No. 651,587
Claims priority, application Japan, May 26, 1995, 7-128588; May 26, 1995, 7-128589
Int. Cl.[6] F16D *31/02*
U.S. Cl. 91—459 **20 Claims**



1. A burglarproof device for a hydraulic machine provided with a hydraulic system comprising a main hydraulic system including a main hydraulic pump driven by a prime mover, a plurality of actuators driven by a hydraulic fluid delivered from said main hydraulic pump, and a plurality of main control valves for controlling respective flow rates of the hydraulic fluid supplied from said main hydraulic pump to said plurality of actuators; and a pilot hydraulic circuit including a pilot hydraulic pump driven by said prime mover and controlling said main hydraulic circuit with a pilot primary pressure produced by said pilot hydraulic pump, wherein said burglarproof device comprises:
code input means,
an unlocking electronic circuit for generating an unlock signal when a predetermined code is entered to said code input means, and
lock means disposed in at least one location in said hydraulic system for enabling said hydraulic system to operate when said unlock signal is generated, and disabling the operation of said hydraulic system when said unlock signal is not generated.

5,632,191
PISTON ROLLER ALIGNMENT CONFIGURATION FOR A RADIAL PISTON MECHANISM
Gilles Lemaire, Margny-les-Compiègne, and Alain Noel, Verberie, both of France, assignors to Poclain Hydraulics, France
Filed Nov. 13, 1995, Ser. No. 556,647
Claims priority, application France, Nov. 30, 1994, 94 14361
Int. Cl.[6] F04B *1/107;* **F16J** *1/10*
U.S. Cl. 91—491 **14 Claims**



1. A hydraulic motor or pump mechanism comprising:
a cam;
a cylinder block mounted to rotate relative to the cam about an axis of rotation;
at least one cylinder formed in the cylinder block;
at least as many pistons as there are cylinders, each position being slidably mounted inside a cylinder along a piston slide axis and having a top portion situated opposite to the axis of rotation;
as many piston thrust rollers for rolling on the cam as there are pistons, each roller being axially defined by two transverse end faces and being mounted on a piston via a rotary bearing to rotate about a roller axis perpendicular to the sliding axis of said piston, the roller being suitable for penetrating, at least in part, into the cylinder in which the piston is slidably mounted, an end of the piston in which the rotary bearing is mounted including two recesses each corresponding to at least one space extending between at least a cylindrical surface of the roller, a cylindrical surface of the cylinder in which the piston is slidably mounted, and one of the transverse faces of the roller, said space being open to the top portion of the piston at least in a zone where the cylindrical surface of the roller is disposed projecting beyond the piston; and
two wedging parts for each roller, each of which parts is disposed in one of said two recesses between the corresponding end face of the roller and an inside face of the cylinder on which said wedging parts bears, so as to hold the roller in position axially parallel to it axis of rotation while firstly at least one of the two wedging parts extends on the axis of the piston as far as the bottom portion of the recess so that in the direction of the piston leaving the cylinder it is displaced together with said piston, and secondly said wedging part includes a groove which extends parallel to the axis of the piston and which opens out into a face of said wedging part opposite from the corresponding end face of the roller, a projection that is fixed relative to the cylinder, and that is disposed projecting into said cylinder, being inserted in said groove so as to leave said wedging part free to move in translation relative to the cylinder parallel to the piston slide axis;

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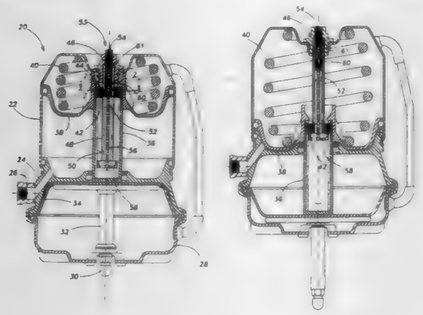
wherein a hole provided in the cylinder block opens out into a peripheral face thereof, while a part that is generally U-shaped having a first branch and a second branch interconnected by a web of the U-shaped part is mounted on the cylinder block by inserting said first branch in said hole and by fixing said first branch relative to the cylinder block by fixing means, said second branch being inserted into the groove included in said wedging part and constituting said projection, said web of the U-shaped part being placed over said periphery of the cylinder block.

5,632,192

SPRING BRAKE ACTUATOR WITH INDICATOR FOR FULLY RELEASED CONDITION

Ronald S. Plantan, Charlotte, and Emmett S. Davis, Gastonia, both of N.C., assignors to Indian Head Industries, Inc., Charlotte, N.C.

Filed Dec. 19, 1995, Ser. No. 574,611
Int. Cl.[6] F01B *25/26;7/00*
U.S. Cl. 92—5 L **20 Claims**



1. A spring brake actuator comprising:
a central housing defining an aperture for passage of a pushrod;
said pushrod selectively extending through said central aperture;
an outer housing connected to said central housing to define an emergency chamber;
an actuator member moving with said pushrod;
a power spring selectively moving said actuator member and said pushrod outwardly of said central aperture;
a release tool for selectively caging said power spring and preventing movement of said power spring to move said pushrod through said aperture, said release tool being moveable between fully caged and fully released positions; and
an indicator movable separately from said push rod for providing an indication of when said release tool is fully released.

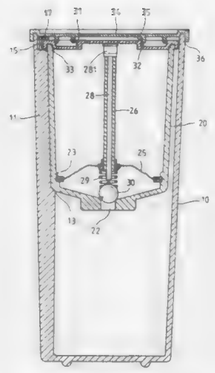
5,632,193

APPARATUS FOR MAKING TEA

Shun-Tsung Shen, P.O. Box 82-144, Taipei, Taiwan

Filed Aug. 28, 1996, Ser. No. 703,996
Int. Cl.[6] A47J *31/00;31/04;31/24;31/42*
U.S. Cl. 99—285 **4 Claims**

1. An apparatus for making tea, comprising:
a tea cup, said tea cup comprising two longitudinal flow guide ribs raised from an inside wall thereof, each of said longitudinal flow guide ribs having a step in the middle, an upright top pin at the top, and a swivel locking plate turned about said upright top pin;
an infusion container supported on the steps of said longitudinal flow guide ribs inside said tea cup and locked in place by said swivel locking plates, said infusion container comprising a drain hole at the center of a bottom wall thereof, a plurality of smoothly curved grooves radially extending from said drain hole, and a plurality of raised portions raised around the bottom wall;
a wire gauze filter installed in said infusion container, covered over said drain hole, and retained in place by said raised portions of said infusion container, having an axle housing at the center;
a ball adapted for controlling the passage of said drain hole;
a return spring retained between said ball and said wire gauze filter;
a pull rod sliding in the axle housing of said wire gauze filter and pulled to lift said ball from said drain hole for permitting tea to flow out of said infusion container into said tea cup, having a bottom end inserted through said return spring and connected to said ball;
a container lid adapted for covering said infusion container, said container lid having a knob raised from a recessed top side thereof, and an annular groove at a bottom side thereof adapted for coupling to said infusion container; and
a tea cup cover adapted for covering said tea cup, said tea cup cover having a downward flange adapted for coupling to the knob of said container lid, and an bottom annular groove adapted for coupling to said tea cup.

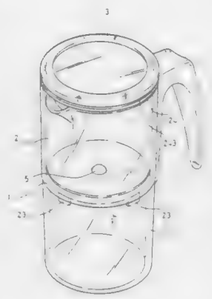


5,632,194

INFUSION MAKER

Yu-Mei Lin, P.O. Box 82-144, Taipei, Taiwan

Filed Oct. 30, 1996, Ser. No. 740,555
Int. Cl.[6] A47J *31/02;31/10;31/18;* **A23F** *3/00*
U.S. Cl. 99—285 **3 Claims**



1. An infusion maker comprising:
a beaker having an inside annular flange raised around an inside wall thereof;

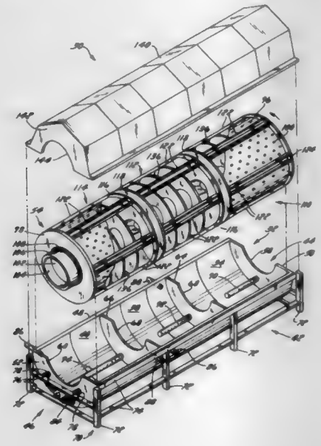
an inner cup adapted for supported on the inside annular flange of said beaker for containing boiling water for steeping tea, said inner cup comprising a top open side, a bottom close side, a bottom center through hole through the center of said bottom close side, a downward annular flange downwardly raised from the periphery of said bottom close side, and a plurality of equiangularly spaced oblong slots at said downward annular flange;
a cap mounted within the downward annular flange of said inner cup, said cap comprising an inner race, an outer race concentrically spaced around said inner race, a plurality of radial ribs connected between said inner race and said outer race, a ball socket suspended within said inner race, and a plurality of equiangularly spaced hooks raised from said outer race and hooked in the oblong slots of the downward annular flange of said inner cup to secure said cap to said inner cup and to let said cap to be moved axially relative to said inner cup within the constraint of the oblong slots of said inner cup; and
a ball mounted in the ball-socket of said cap to close/open the bottom center through hole of said inner cup, said ball being forced into engagement with the bottom center through hole of said inner cup to close its passage when said inner cup with said cap are put in said beaker and supported on the inside annular flange of said beaker, said ball being disengaged from the bottom center through hole of said inner cup to open its passage when said inner cup is lifted from the inside annular flange of said beaker.

5,632,195

FOOD PROCESSING APPARATUS WITH NON-STRAIGHT LIFTING AND AGITATING BAFFLES

David R. Zittel, 155 Oak Grove Dr., Columbus, Wis. 53925

Filed Sep. 13, 1996, Ser. No. 710,177
Int. Cl.[6] A23L *3/00;* **A23N** *12/00;* **A47J** *37/12;* **F25D** *25/02*
U.S. Cl. 99—348 **47 Claims**



1. A food processing apparatus for heating or cooling food product comprising:
a) a tank for receiving food product therein and having an inlet end and an outlet end;
b) a liquid received within the tank;
c) a food transport mechanism received in the tank for urging food product received in the tank toward the outlet end; and
d) at least one baffle of non-straight construction in operable communication with the food transport mechanism for agitating food product to increase heat transfer between the liquid in the tank and the food product.

5,632,196

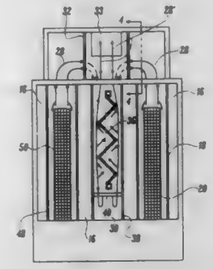
Patent Not Issued For This Number

5,632,197

COMMERCIAL COOKING VESSEL WITH IMPROVED HEAT TRANSFER

Kenneth C. Lubawy, 51343 Gee Ct., South Bend, Ind. 46628, and Farshid Ahmady, 360 Essex Dr., Rochester Hills, Mich. 48307

Continuation of Ser. No. 187,586, Jan. 26, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,559
Int. Cl.[6] A47J *37/12*
U.S. Cl. 99—403 **11 Claims**



1. In combination in a commercial cooking vessel:
a pot for holding a cooking medium;
three horizontally aligned separate heat tubes in said pot, each substantially fully surrounded by said cooking medium;
an infrared combustion burner in each of the outer ones of said three heat tubes;
flue means coupled to the middle one of said three heat tubes for venting combustion products from said combustion burners;
said middle one of said heat tubes receiving the combustion products from each of said outer ones of said heat tubes and passing said combustion products to said flue means; and
means in said middle one of said heat tubes for enhancing heat transfer from said combustion products to said cooking medium, said enhancing means comprising a divider in said middle one of said heat tubes, and baffles on each side of said divider for disrupting the laminar flow and lengthening the path of travel of said combustion products.

5,632,198

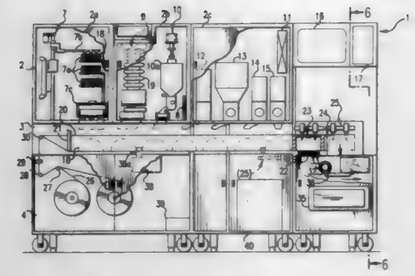
AUTOMATIC COOKING APPARATUS

Yoshimasa Yamada, Mie, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 18, 1996, Ser. No. 683,258
Claims priority, application Japan, Jul. 19, 1995, 7-182390
Int. Cl.[6] A21C *9/00;11/00;* **A23P** *1/00*
U.S. Cl. 99—450.6 **5 Claims**

1. An automatic cooking apparatus, comprising:
a storage and transfer device formed of a storage and transfer section for storing and transferring a foodstuff and a refill section for storing the foodstuff for refilling,
a conveyor disposed under the storage and transfer device,
a master control section connected to the storage and transfer device and the conveyor for controlling the automatic cooking apparatus;
foodstuff detection means attached to the storage and transfer section for detecting a quantity of the foodstuff stored in the storage and transfer section,
refilling means attached to the refill section for supplying the foodstuff for refilling from the refill section to the storage and transfer section,

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transfer means attached to the storage and transfer section for transferring a predetermined amount of the foodstuff from the storage and transfer section onto the conveyor; and

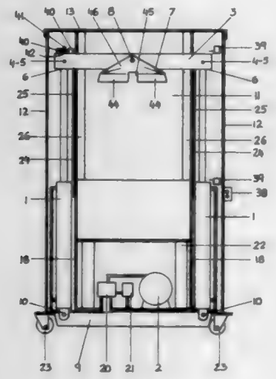
a storage and transfer control section connected to the master control section, said storage and transfer control section actuating the foodstuff detection means to detect a quantity of the foodstuff stored in the storage and transfer section when an instruction for starting the conveyor is received from the master control section, said storage and transfer control section instructing the refilling means to supply a predetermined amount of the foodstuff from the refill section to the storage and transfer section for refilling when an amount detected by the foodstuff detection means is less than a predetermined amount of the foodstuff in the storage and transfer section, and then, said storage and transfer control section instructing the transfer means to transfer the foodstuff when an instruction for starting to transfer the foodstuff is received from the master control section.

5,632,199

COMPACTOR

Joseph Molitorisz, 15326 SE. 43rd Pl., Bellevue, Wash. 98006, and Reuben J. Smith, 23004 Hwy. 9, Woodinville, Wash. 98072

Filed Nov. 24, 1995, Ser. No. 562,572
Int. Cl.[6] B30B *9/30*
U.S. Cl. 100—100 **4 Claims**



1. A compactor for densification and packaging of refuse and waste material into bales, said compactor comprising:

cabinet having an upper opening for receiving waste into the cabinet and a lower opening;

a container-lift assembly removably received within the cabinet through the lower opening for storing the refuse and waste material therein;

a hydraulically activated and automatically-electrically controlled compacting platen bar and platen assembly supported within the cabinet for reciprocating movement for compacting the refuse and waste within the container-lift assembly;

a hydraulic activating means for reciprocating the compacting platen bar and platen assembly;

an automatic-electric control means for controlling the hydraulic activating means in order to control reciprocation of the compacting platen bar and platen assembly;

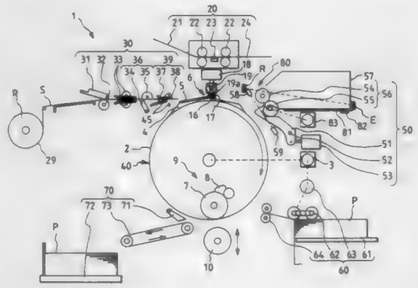
wherein the compacting platen bar and platen assembly further comprises a platen formed from two plates separated by an open slot, the plates being held together by a bridge, the plates having rims which each extend downward at an angle, the platen being attached to the platen bar at the bridge, the platen having an upper surface which extends downward at an angle toward the respective sides of the platen.

5,632,200

STENCIL DISCARDING APPARATUS AND PROCESS ACCOMMODATING DIFFERENT LENGTH STENCILS

Shigeki Fukai, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,837
Claims priority, application Japan, Aug. 25, 1994, 6-200844
Int. Cl.[6] B41L *13/06*
U.S. Cl. 101—116 **8 Claims**



1. In a stencil-making-type printing machine in which plural types of rotary cylindrical drums having printing regions of different sizes can be loaded one at a time, in which a stencil paper provided in the form of a roll is cut according to the printing region of a rotary cylindrical drum loaded therein to form a printing stencil, and a printing operation is carried out with said printing stencil wound on said rotary cylindrical drum, and before a printing operation is carried out for a new original, a used stencil is separated from said rotary cylindrical drum and discarded into a used-stencil accommodating box, the improvement comprising:

drum type detecting means for detecting the type of a rotary cylindrical drum loaded in said machine;

memory means for storing as addition data a numerical value corresponding to the length of a used stencil which is discarded in said used-stencil accommodating box;

control means which adds addition data corresponding to the length of a used stencil which is separated from a rotary cylindrical drum the type of which is detected by said drum type detecting means, to the result of the previous addition, to obtain the latest result of addition, causes said memory means to store the latest result of addition thus obtained, and determines whether or not the latest result of addition reaches a predetermined value; and

notifying means which, when the latest result of addition reaches said predetermined value, makes notification of the fact that said used-stencil accommodating box is filled up with used stencils.

5,632,201

PROCESS AND DEVICE FOR CONTROLLING THE HUMIDITY OF A WEB ON A PRINTING MACHINE

Roger H. Roch, Cossonay-Ville, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed Mar. 15, 1996, Ser. No. 616,821
Claims priority, application Switzerland, Mar. 17, 1995, 00766/95
Int. Cl.[6] B41M *1/14;* **B41F** *5/22*
U.S. Cl. 101—211 **11 Claims**



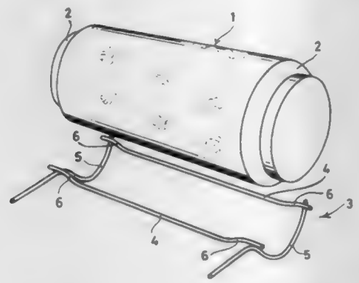
1. A process to control the humidity of a web within a color printing machine, said process comprising the steps of measuring the width of an imprinted image of a first printing station, the width of the imprinted image of the next following printing station, determining the differences between the widths and, if the differences are not equal to zero, generating a primary error signal of correction for applying to one or several parameters of the drying station to create a zero difference between the measurements, and generating a secondary signal of a decreased correction for the same parameter and applying the secondary signal to each drying station following the first drying station.

5,632,202

DEVICE FOR PLACING A CYLINDRICAL SCREEN IN, AND REMOVING IT FROM, A ROTARY SCREEN PRINTING MACHINE

Bernardus A. Robesin, Vierlingsbeek, and Henricus P. J. M. van den Hurk, Veghel, both of Netherlands, assignors to Stork X-Cel B.V., Boxmeer, Netherlands

Filed May 30, 1995, Ser. No. 453,922
Claims priority, application European Pat. Off., May 30, 1994, 94201527
Int. Cl.[6] B41F *5/00*
U.S. Cl. 101—216 **5 Claims**



1. A device for placing a cylindrical printing screen provided with end rings in, and removing it from, a rotary screen printing machine, comprising, in combination:

a screen support for engaging beneath a cylindrical printing screen in a rotary screen printing machine;

lifting mechanism connected to the screen support and operable to raise and lower it for raising and lowering a cylindrical printing screen beneath which the support is disposed;

said screen support having screen supporting guides upon which the cylindrical printing screen rests and along which the screen is moveable in its lengthwise direction; and

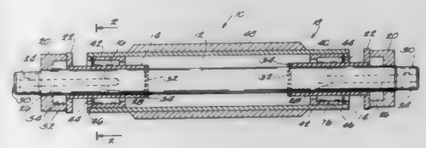
said supporting guides comprising a pair of parallel guide members extending generally horizontally and of a length generally coextensive with the cylindrical screen with end rings, and said pair of guide members disposed spaced apart a distance less than the diameter of the cylindrical screen.

5,632,203

ANTI-GHOSTING ROLLER

Frederick A. Voeltner, Milwaukee, and Nicholas R. Schetter, Rubicon, both of Wis., assignors to Quad Graphics, Inc., Sussex, Wis.

Filed Jun. 14, 1995, Ser. No. 490,156
Int. Cl.[6] B41F *1/46*
U.S. Cl. 101—348 **26 Claims**



1. An offset printing press comprising:

a blanket cylinder;

a plate cylinder in operative association with said blanket cylinder; and

an anti-ghosting roller in operative association with said plate cylinder, said anti-ghosting roller including:

a main shaft;

an inner race mounted on said main shaft;

a rotary bearing having movable bearing elements positioned on said inner race, said bearing elements being rotationally and axially movable relative to said inner race; and

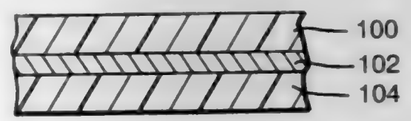
a roller core connected to said rotary bearing.

5,632,204

THIN-METAL LITHOGRAPHIC PRINTING MEMBERS WITH INTEGRAL REFLECTIVE LAYERS

Thomas E. Lewis, E. Hampstead, N.H., assignor to Presstek, Inc., Hudson, N.H.

Filed Jul. 27, 1995, Ser. No. 508,333
Int. Cl.[6] B41N *1/14*
U.S. Cl. 101—453 **11 Claims**



1. A lithographic printing member directly imageable by laser discharge, the member comprising:

a. a topmost first layer; and

b. a titanium layer, disposed thereunder, that ablatively absorbs imaging radiation; and

c. a thermally non-dissipative substrate underlying the second layer, the substrate comprising a material that reflects imaging radiation.

wherein

d. the first layer and the substrate exhibit different affinities for at least one printing liquid selected from the group consisting of ink and an abhesive fluid for ink.

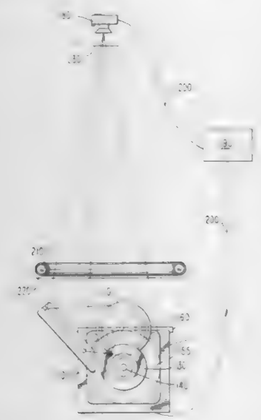
VOL 1198 ISS 4 MY 27 1997 UMI

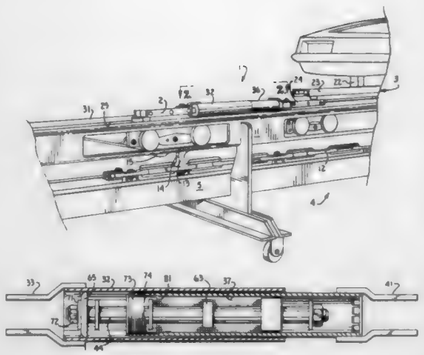
5,632,205

APPARATUS FOR THE SPATIAL ORIENTATION AND MANIPULATION OF A GAME BALL

Steven J. Gordon, Weston, and Peter K. Mansfield, Concord, both of Mass., assignors to Acushnet Company, Fairhaven, Mass.

Filed Jun. 7, 1995, Ser. No. 484,248
Int. Cl.[6] B41F 35/00
U.S. Cl. 101—483 23 Claims





1. An apparatus for the spatial orientation of a spherical object having a center comprising:

i) camera means for gathering an image of the spherical object and its spatial orientation;

ii) computer means communicating with said camera means for processing said image and for computing a required spatial rotation to bring said spherical object into a predetermined spatial orientation;

iii) rotating means contacting said spherical object at respective first and second points on an outer surface of said spherical object and communicating with said computer means for rotating said spherical object through said required spatial rotation to said predetermined spatial orientation without substantially moving said center of said spherical object.

5,632,206

ADJUSTABLE CUSHIONED TOW BAR FOR POWER AND FREE CONVEYOR

Gareth D. Summa, Denver, Mo., and Michael L. Arnst, Kansas City, Kans., assignors to Mid-West Conveyor Company, Inc., Kansas City, Kans.

Filed Jul. 14, 1995, Ser. No. 503,187
Int. Cl.[6] B61B 12/00
U.S. Cl. 104—172.3 8 Claims

1. A cushioned connector connecting a load carrying member in a power and free conveyor system to a driving member, said connector comprising:

a. a damping chamber connected to either said load carrying member or said driving member, said damping chamber comprising a sleeve open at one end and provided with threads;

b. a piston movable within said damping chamber, said piston being connected to the other of said load carrying member or said driving member;

c. a plurality of ball bearings at least partially filling said damping chamber;

d. adjustment means for adjusting the volume of said damping chamber to thereby adjust the percentage of said damping chamber which is filled by said ball bearings, said adjustment means comprising an end cap with threads which mate with the threads in said sleeve such that said end cap is adjustable within said sleeve by rotating said end cap relative to said sleeve;

e. at least one set screw bore extending radially into said sleeve proximate said open end; and

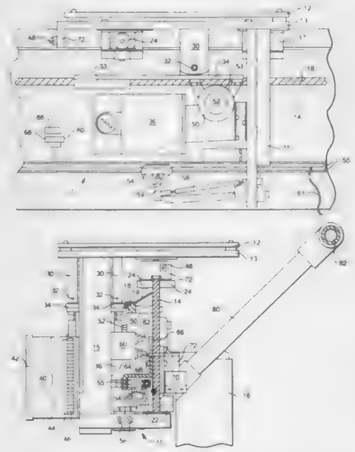
f. at least one set screw extending through said set screw bore and selectively engaging said end cap to thereby retain said end cap in a selected rotation position within said sleeve.

5,632,207

CONVEYING SYSTEM

Charles Roberts; Donald Swallow, both of Evansville, and Randall Wire, Boonville, all of Ind., assignors to Evana Automation, Evansville, Ind.

Continuation-in-part of Ser. No. 153,036, Nov. 17, 1993, Pat. No. 5,421,268. This application Feb. 8, 1995, Ser. No. 385,636
Int. Cl.[6] B60L 5/00
U.S. Cl. 104—288 13 Claims



1. A conveying system for moving an object along a path which may be straight or curvilinear, said conveying system comprising:

a pallet on which the object is conveyed;

a track by which said object is conveyed in a straight line or in curvilinear movement along said track;

mounting means attached to said pallet for mounting said pallet on said track;

bus bar guides mounted on said track;

a drive rail mounted on said track by securing means;

a drive motor;

drive roller mounted on a shaft of said drive motor and rotatable about an axis;

control means for controlling said drive motor,

said control means, said drive roller and said drive motor being attached to said mounting meads such that a radial face of said drive roller contacts said drive rail to drive said pallet along said track by the rotation of said drive roller, said drive motor being mounted to said mounting means via a pivot, whereby said driver roller may be disengaged from said drive rail; and

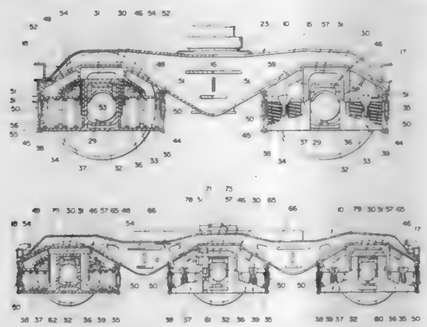
bus bars mounted on said mounting means in slidable engagement with said bus bar guides and electrically connected to said drive motor for providing electrical energy from said bus bar guides to said drive motor.

5,632,208

MULTI-AXLE RAILROAD CAR TRUCK

Hans B. Weber, Rotonda West, Fla., assignor to National Castings Incorporated, Chicago, Ill.

Filed Nov. 13, 1995, Ser. No. 557,709
Int. Cl.[6] B61F 5/00
U.S. Cl. 105—182.1 21 Claims



1. A multi-axle railroad car truck, comprising:

a) a pair of rigid, integral side frames, each of which has a pair of opposing ends, the pair of side frames being equally spaced from a parallel, vertical center plane, when the truck is resting on a horizontal surface;

b) at least one rigid bolster disposed transversely between the side frames, the at least one bolster having a pair of opposing ends which are rigidly secured to the side frames and hold the side frames in parallel relation, the at least one bolster and side frames forming a generally H-shaped rigid truck frame;

c) at least one pair of rigid pedestals carried by each side frame adjacent the opposing ends thereof in coplanar relation therewith, the pedestals of one of the pair of side frames being oppositely and transversely aligned with the pedestals of the other of the pair of side frames;

d) a rigid saddle associated with each pedestal and disposed therein in generally coplanar relation with each associated pedestal, each saddle carrying a bearing;

e) an elongated axle and pair of flanged wheels disposed between each opposing pair of pedestals, each axle having a pair of opposing ends which are rotatable in the bearings carried by the saddles; and

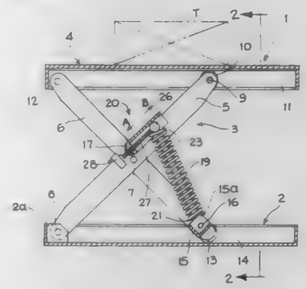
f) means for mounting each axle for limited axial movement in two opposing directions independent of the other axles, said means including means for mounting each saddle for independent swinging motion in and out of coplanar relation with an adjacent, associated pedestal, such that the bearings and axle ends, captured therein, are capable of moving axially of the axles and laterally of the side frames and center plane between them, at least one inch measured in either of two opposing directions from the center plane for an overall reciprocating lateral movement of at least two inches.

5,632,209

LIFT TABLE

Yuuji Sakakibara, Hekinan, Japan, assignor to Bishamon Industries Corporation, Ontario, Calif.

Filed Sep. 1, 1994, Ser. No. 299,353
Claims priority, application Japan, Sep. 2, 1993, 5-047895 U
Int. Cl.[6] A47B 9/00
U.S. Cl. 108—145 13 Claims



1. An adjustable lift table comprising, in combination:

(a) a base;

(b) a support table;

(c) a scissor-link mechanism comprising a first link hingedly attached to said base and slidably attached to said support table and a second link pivotally connected to the first link and hingedly attached to said support table and slidably attached to said base;

(d) a compression spring coupled to said scissor-link mechanism; and

(e) means for providing continuous adjustment to an angular disposition of the compression spring with respect to said scissor-link mechanism consisting of a screw connected to either one of said first and second links and adapted to adjust a position of said compression spring with respect thereto.

5,632,210

HIGH TEMPERATURE INCINERATOR FOR BIO-ACTIVE SOLID WASTES

Dae S. Kim, 49 Floral St., Newton, Mass. 02161

Filed Jan. 6, 1995, Ser. No. 369,656
Int. Cl.[6] F23N 5/18; F23J 15/00; F23G 7/04
U.S. Cl. 110—186 9 Claims

1. An incinerator for bio-active solid wastes comprising:

a. a high temperature combustion zone wherein dry solid components of said wastes are oxidized;

b. a pair of substantially identical heat recuperators, one for preheating an air stream to a preset high temperature before entering said combustion zone and the other for removing a substantial portion of the sensible heat from the exhaust gas stream leaving said combustion zone, alternately;

c. means for controlling flow and direction of said air stream and said exhaust gas stream under a slight vacuum;

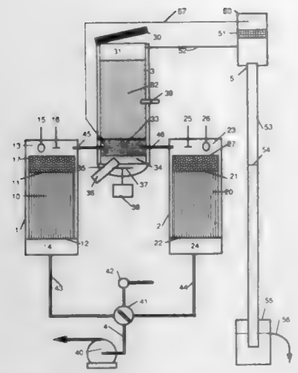
d. means for adjustably supplying said solid wastes to said combustion zone;

e. means for progressively removing the volatile component from said solid wastes away from said combustion zone and said exhaust stream;

f. means for heating said combustion zone and said recuperators for start-up;

g. means for removing ashes from said exhaust gas stream and said combustion zone; and

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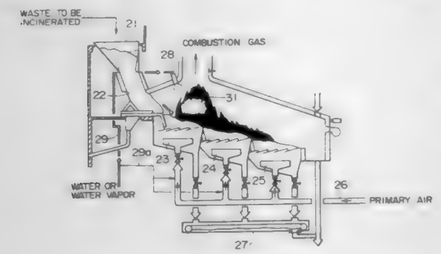


h. means for monitoring said preset temperature and the Oxygen level in said exhaust gas stream.

5,632,211
METHOD AND APPARATUS FOR WASTE INCINERATION

Satoshi Okuno; Hirotami Yamamoto; Susumu Nishikawa; Hiroki Honda, and Yoshinori Terasawa, all of Yokohama, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 968,832, Oct. 29, 1992, Pat. No. 5,400,723. This application Feb. 14, 1995, Ser. No. 388,905
Claims priority, application Japan, Nov. 5, 1991, 3-288583
Int. Cl.[6] B09B *3/00*
U.S. Cl. 110—235 **3 Claims**



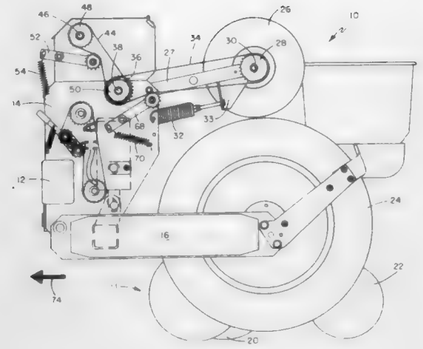
1. A downwardly inclined rotary kiln for incinerating waste having an inlet, an outlet and a gas recombustion chamber adjacent the outlet, characterized in that lines for supplying water vapor or water are provided in communication with the inlet and the gas recombustion chamber of said kiln, the gas recombustion chamber having a main combustion zone comprising upper and lower portions, a line for supplying water vapor or water being provided in the upper portion of the main combustion zone.

5,632,212
DUAL-SPEED CLUTCH FOR AGRICULTURAL PLANTER

Alan F. Barry, Fairfax, Iowa, assignor to Kinze Manufacturing, Inc., Williamsburg, Iowa

Filed Jan. 20, 1995, Ser. No. 375,788
Int. Cl.[6] A01C *7/20*
U.S. Cl. 111—200 **18 Claims**

1. For use in an agricultural planter having a plurality of row units each having a seed meter, apparatus for changing a rate at which the meters are driven, said apparatus comprising:

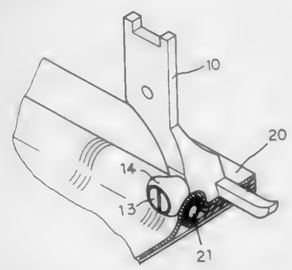


a drive source;
an output drive coupled to the meters;
first drive means for selectively coupling said drive source to said output drive for driving the meters at a first, higher speed;
second drive means for selectively coupling said drive source to said output drive for driving said meters at a second, lower speed;
disconnect means for selectively uncoupling said first and second drive means from said output drive; and
control means coupled to said first and second drives and to said disconnect means and responsive to an operator input for selectively (1) uncoupling said second drive means from said output drive for driving the seed meters at said first speed, (2) uncoupling said first drive means from said output drive for driving the seed meters at said second speed, or (3) actuating said disconnect means for uncoupling said first and second drive means from said output drive and preventing discharge of the seeds by the seed meters.

5,632,213
PRESSER FOOT WITH WORKPIECE GUIDE FOR SEWING MACHINES

Wen-Cheng Ko, No. 69, Lane 35, Chia Hou Road, Ta Chia Chen, Taichung Hsien, Taiwan

Filed Jun. 11, 1996, Ser. No. 661,560
Int. Cl.[6] D05B *29/10*
U.S. Cl. 112—235 **1 Claim**

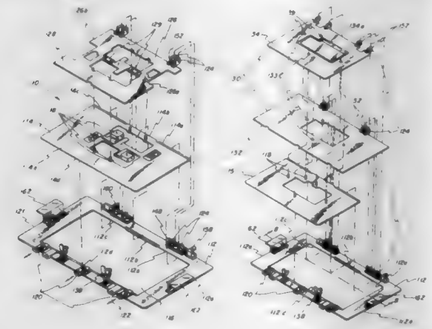


1. A presser foot for sewing machines comprising:
a body portion formed with a recess at a lower end thereof and a threaded hole above said recess; and
a knob having a cylindrical member having a large diameter at a first end and a small diameter at a second end, said knob being formed with a concaved portion between said ends and an axial through hole with a counter sink at said first end, said knob being rotatably mounted on said body portion by a countersunk bolt which extends through said axial through hole into said threaded hole thereby forming a generally semi-circular cavity.

5,632,214
WORKPIECE PALLET HAVING A DETACHABLE WORKPIECE HOLDER

Ralph F. Conley, Jr., Miamisburg, and Richard A. Cefola, Centerville, both of Ohio, assignors to MIM Industries, Inc., Miamisburg, Ohio

Continuation of Ser. No. 944,049, Sep. 11, 1992, Pat. No. 5,421,277, which is a continuation-in-part of Ser. No. 676,798, Mar. 28, 1991, Pat. No. 5,427,043. This application Jun. 6, 1995, Ser. No. 468,714
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.06 **8 Claims**



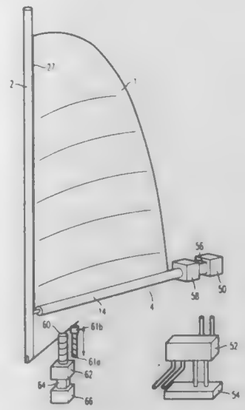
5. A workpiece pallet for use in a programmable sewing machine having a sewing station at which a workpiece is located during a sewing operation and a stored program for determining a predetermined stitch pattern, said workpiece pallet comprising:
a frame for receiving any one or more of said plurality of workpiece holders, each of said one or more of said plurality of workpiece holders having a cutout portion determined by said predetermined stitch pattern;
a fastener for detachably fastening said one or more of said plurality of workpiece holders to the frame, said fastener enabling the workpiece pallet to accommodate workpieces of different shapes and also enabling the workpiece pallet to secure workpieces which are to be sewn with different predetermined stitch patterns;
wherein said fastener includes a yieldable pivotal coupler; and
wherein said yieldable pivotal coupler is a universal coupler.

5,632,215
ROLLER REEFING BOOM SYSTEM

Joerg Moessnang, Beiselestr. 33, D-82327, Tutzing, Germany, and Beat Wildberger, Burgstr. 21, CH-4125, Riehen, Switzerland

Filed Oct. 21, 1994, Ser. No. 326,849
Claims priority, application Germany, Oct. 22, 1993, 9316178 U; European Pat. Off., Aug. 12, 1994, 94112637
Int. Cl.[6] B63H *9/08*
U.S. Cl. 114—104 **21 Claims**

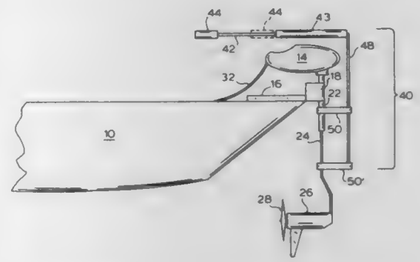
1. A roller reefing boom system, which comprises:
a mainsail;
a mast having the mainsail mounted thereto;
a pivoted boom connected to the mast, said boom reducing the sail area of the mainsail and about which the mainsail is windable upon reefing of the mainsail;
a mast track connected to the mast, the mast track having a slot formed therein wherein the mainsail is guided along a luff in the slot of the mast track;
a tension transmitting mechanism connected to the mainsail wherein a head area of the mainsail is supported on the mast by said tension transmitting mechanism, said tension transmitting mechanism comprises at least one slide connected to the mainsail and guided along said mast track and wherein said slide is windable with said mainsail about the boom during reefing of the mainsail.



5,632,216
EMERGENCY STEERING CONTROL

Miles H. Hair, P.O. Box 1215, Elizabethtown, N.C. 28337

Continuation of Ser. No. 449,366, May 24, 1995, abandoned. This application Sep. 26, 1996, Ser. No. 721,551
Int. Cl.[6] B63H *20/08*
U.S. Cl. 114—146 **3 Claims**



1. An emergency steering controller for use with a trolling motor assembly having an electric drive motor supported on a lower end of a vertically oriented conduit which is supported at its upper end in a manner which enables the conduit to be rotated and the drive motor to be pivoted for controlling the direction of a boat on which the trolling motor assembly is mounted, said steering controller comprising:
(a) a rod having a lower portion laterally spaced from and extending generally parallel to a lower portion of said conduit forming part of said trolling motor assembly;
(b) a first link having a first end secured to said lower portion of said rod and a second end adapted for being secured to said lower portion of said conduit;
(c) a second link vertically spaced from said first link and having a first end secured to said lower portion of said rod and a second end adapted for being assembled to said conduit; and
(d) a handle secured to an upper portion of said rod for causing angular movement of said rod, which angular movement is translated through said first link to rotate said conduit and correspondingly pivot said drive motor in the same angular direction as said rod when said first link second end is secured to said lower portion of said conduit.

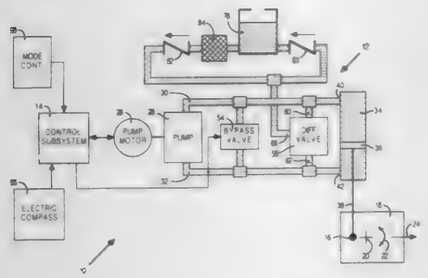
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5,632,217

AUTOMATIC STEERING APPARATUS AND METHOD FOR SMALL WATERCRAFT

Douglas W. Ford, Newport, and Eric K. Juve, Aloha, both of Oreg., assignors to Nautamatic Marine Systems, Inc., Newport, Oreg.

Continuation-in-part of Ser. No. 320,533, Oct. 11, 1994, Pat. No. 5,509,369. This application Apr. 17, 1996, Ser. No. 634,116
Int. Cl.[6] B63H *25/22*
U.S. Cl. 114—150 17 Claims



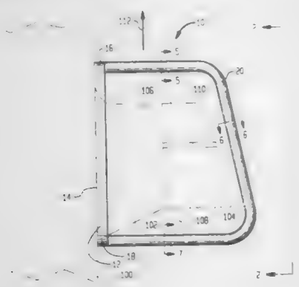
1. In a watercraft having a current heading, a control system having a variable-speed pump pumping hydraulic fluid through a double-acting hydraulic cylinder to move a piston therein that is coupled to a steering actuator that causes the current heading to change to a desired heading, an improvement comprising:
a rate sensor generating a yaw rate signal;
a control subsystem storing the desired heading, determining from the desired heading and the current heading a heading error, and combining the heading error with the yaw rate signal to generate a turning rate signal; and
a hydraulic subsystem causing the piston to move in a direction and at a rate commanded by the turning rate signal.

5,632,218

DEBRIS DEFLECTOR

John J. Vaillancourt, Tiverton; Neil J. Dubois, Cranston, and Stacy J. Hills, Newport, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 5, 1996, Ser. No. 695,843
Int. Cl.[6] B63B *59/02*
U.S. Cl. 114—219 20 Claims



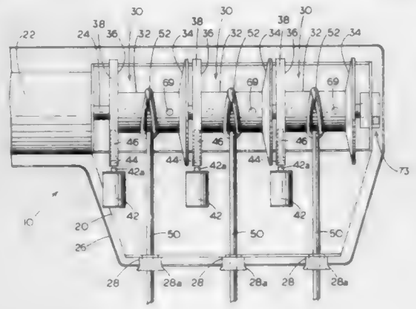
13. A debris deflector for protecting an underwater vehicle's control surface, said debris deflector comprising a bar extending outward from the vehicle to peninsulate the control surface, said bar having a cross-section defined by a wedge shape subtended by an arc, said wedge shape having an apex pointing towards the control surface as said bar peninsulates thereabout.

5,632,219

WATERSKI TOW ROPE RETRIEVER

David S. Fleming, Jr., 1509 Beicher Rd., Garner, N.C. 27529

Filed Jan. 3, 1996, Ser. No. 587,807
Int. Cl.[6] B63B *21/16*
U.S. Cl. 114—254 20 Claims



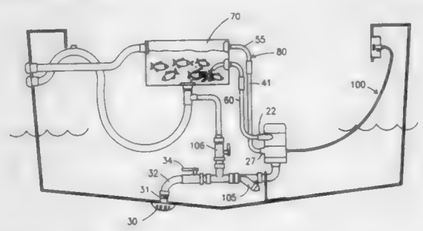
1. A waterski tow rope retriever, comprising:
a) a frame for attachment to a rear section of a waterski boat;
b) a driveshaft rotatably mounted in said frame;
c) a motor operatively connected to said driveshaft;
d) at least one spool for storing, letting out, and reeling in a waterski tow rope attached to each said at least one spool;
e) a fluid drive associated with said at least one spool for transferring rotational power from said driveshaft to said spool;
f) whereby, when said driveshaft rotates, said fluid drive causes said spool to rotate with enough force to reel in the waterski tow rope after it has been released by a waterskier; and
g) whereby, when said driveshaft does not rotate, said fluid drive permits said spool to rotate independently of said driveshaft and thereby let out the waterski tow rope with little effort when a waterskier pulls on the waterski tow rope.

5,632,220

THRU-HULL MOUNTED AERATOR WITH ANTI-VAPOR LOCK MECHANISM AND METHOD FOR AERATION

Thomas J. Vento, 4916 Pelican Dr., New Port Richy, Fla. 34652

Continuation-in-part of Ser. No. 432,966, May 1, 1995, Pat. No. 5,582,777. This application Sep. 11, 1996, Ser. No. 712,067
Int. Cl.[6] B63B *35/26*
U.S. Cl. 114—255 22 Claims



1. A thru-hull aerator device for aerating aquatic organisms, said aerator device comprising:
a boat hull having an internal surface and an external surface and having a water line;
a non-self-priming centrifugal pump;
a first water conduit for communication between the exterior of the boat hull below the water line and said pump;
a second water conduit for communication between said pump and said aquatic organisms;

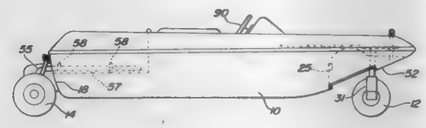
a first air conduit for communication between said pump and a gas containing oxygen;
wherein said pump includes an impeller, an impeller housing containing said impeller, said impeller housing having at least a first inlet and first and second outlets, wherein said first inlet is in communication with said first water conduit, said first outlet is in communication with said second water conduit, and said second outlet is in communication with said first air conduit, and wherein said first inlet and second outlet are provided upstream of said impeller, and said first outlet is provided downstream of said impeller.

5,632,221

AMPHIBIOUS VEHICLE HAVING RETRACTABLE GROUND WHEELS

Myron Trenne, 37888 Turnberry Ct., Farmington Hills, Mich. 48331, and Rodney J. Trenne, 2162 Sandlewood Dr., Shelby Township, MaComb County, Mich. 48316

Filed Apr. 8, 1996, Ser. No. 628,926
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—270 15 Claims



1. An amphibious vehicle comprising a hull having a bow and a stern;
a single front steerable wheel proximate to said bow; support means for shiftably supporting said front wheel for movement between a retractable inactive position within the hull and an exposed operative position located below the hull; said shiftable support means for the front wheel comprises a sleeve pivotally connected to said hull, and a wheel support yoke having a cylindrical shaft extending through said sleeve; said support means further comprised of an anchorage means for locking said sleeve in a fixed upright opposition when the front wheel is in its exposed operative position; said anchorage means comprised of an anchorage plate swingable in a horizontal plane to overlie said sleeve when said sleeve is in its fixed upright position.

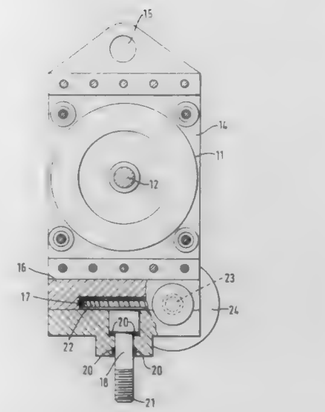
5,632,222

LOAD ORIENTATING DEVICE

Peter M. Fido, Craig-Y-Ceilog Cottage, Craig-Y-Ceilog, Bettws, Newport, Gwent NP9 6AE, United Kingdom

PCT No. PCT/GB93/02277, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/11294, PCT Pub. Date May 26, 1994
PCT Filed Nov. 4, 1993, Ser. No. 433,342
Claims priority, application United Kingdom, Nov. 7, 1992, 9223399
Int. Cl.[6] B63G *8/14*
U.S. Cl. 114—330 9 Claims

1. A load orientating device for a load comprising:
a flywheel
a flywheel housing having a first axis fixed with respect to said housing about which the flywheel is mounted for rotation such that, in use, the flywheel rotates only in a single plane relative to the housing,
a drive means for rotating the flywheel,
a turntable means, connected to said housing for selective rotation about a second axis, for securing the load rotatably relative to the housing, and



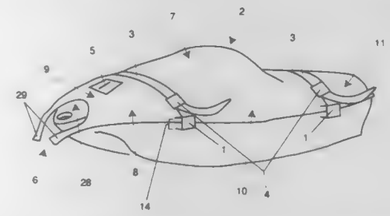
a second drive means fixed relative to the housing for rotating said turntable means.

5,632,223

PROTECTIVE COVERING SYSTEM

Ernest R. Bray, 1129 E. 400 North, Orem, Utah 84057, and Bradley S. Hustead, 1571 S. 400 East, Orem, Utah 84058

Filed Nov. 15, 1994, Ser. No. 339,561
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—361 18 Claims



1. A combination including a protective covering system for covering personal watercraft and a personal watercraft, wherein the protective covering system is adapted to be secured only to the personal watercraft so that the watercraft may be moved with the covering thereon, the protective covering system comprising:
a) a body having a top portion and a bottom edge;
b) at least one means for strapping having two ends, at least one of which is a loose end, the means for strapping extending at least partially over the top portion of the body;
c) a universal clip having two substantially parallel arms and a central portion which connects the arms, and a means for attaching the means for strapping, the arms and the central portion having an inner surface and an outer surface, the inner surface of the arms and the central portion forming an object-receiving portion, the universal clip being attached at the means for strapping; and
d) a means for tightening and securing the means for strapping, which engages the means for strapping, whereby the body is secured tightly over the upper portion of the watercraft.

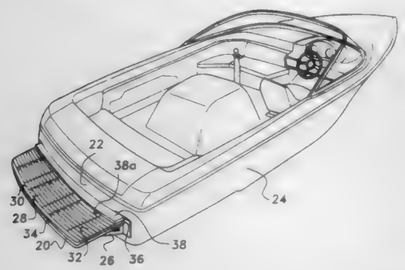
VOL 1198 ISS 4 MY 27 1997 UMI

5,632,224

PLATFORM FOR A BOAT TRANSOM

Benjamin J. Schneider, 11680 Haylock St., Davisburg, Mich. 48350

Filed Feb. 28, 1996, Ser. No. 608,133
Int. Cl.° B63B *17/00*
U.S. Cl. 114—362 10 Claims



1. A platform for attachment to a transom of a boat comprising:

a plurality of brackets secured to said platform wherein said brackets support said platform and attach said platform to said transom;

said platform including an upper surface and front and rear edges, said rear edge being that edge of said platform closest to said transom; and

a stop secured to said upper surface of said platform, said stop comprises a raised portion of the upper surface of said platform, said raised portion defining a stop face, said stop extending along the entire length of the rear edge of said platform adjacent to said transom.

5,632,225

LINE AND PAGE BOOKMARKER

Herbert A. Krasner, 5860 N.W. 44th St., Apt. 215, Lauderhill, Fla. 33319

Filed Apr. 27, 1995, Ser. No. 380,400
Int. Cl.° B42D *9/00*
U.S. Cl. 116—235 1 Claim



1. A bookmark consisting of:

a generally flat body having a first side and a second side opposite the first side, said body having a perimeter including a first edge, a second edge opposite the first edge, a third edge extending between the first and second edges, and a fourth edge opposite the third edge and extending between the first and second edges;

a left page designator immovably affixed to the first side of the body at a location substantially midway between the first and second edges, said left page designator including an arrow pointing toward, and in a direction generally perpendicular to, the third edge of the body, said left page designator also including an alphabetic designation of the left page, said alphabetic designation being in a proper orientation when said first side is viewed with said first edge disposed vertically above said second edge; and

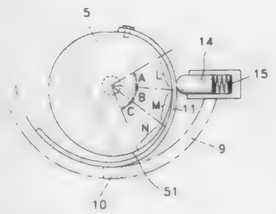
a right page designator immovably affixed to the second side of the body at a location substantially midway between the first and second edges, said right page designator including an arrow pointing toward, and in a direction generally perpendicular to, the fourth edge of the body, said left page designator also including an alphabetic designation of the right page, said alphabetic designation being in a proper orientation when said second side is viewed with said second edge disposed vertically above said first edge.

5,632,226

BICYCLE SPEED INDICATOR

Jack Huang, Tainan; Chan-Hua Feng, Hsinchu, and Chung-Ping Chiang, Kaohsiung, all of Taiwan, assignors to Industrial Technology Resarch Institute, Hsinchu, Taiwan

Filed Sep. 27, 1995, Ser. No. 534,533
Int. Cl.° G01D *13/00*; G09F *9/00*
U.S. Cl. 116—295 14 Claims



1. A bicycle speed indicator for displaying selective engagement of a transmission chain of a bicycle with one of a plurality of gears of a freewheel gear cluster provided on a hub of the bicycle, said speed indicator comprising:

a driving wheel for coupling to a takeup reel of the bicycle for accommodating within a shifting device mounted on a handlebar of the bicycle, said driving wheel for rotating with the takeup reel;

a track having an indicating element and a pre-determined guide path, said track for being fixed onto said handlebar of the bicycle; and

a resilient strip having sign means corresponding to a shifting state of the bicycle, said resilient strip coupled to said driving wheel and being driven thereby, said resilient strip having a first end thereof movably inserted into said track to move along said pre-determined guide path, said sign means and said indicating element capable of alignment to display the shifting state of the bicycle;

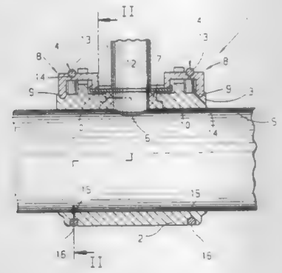
wherein said driving wheel is a cam, said cam has a rim and said resilient strip is fixed onto said rim at a second end of said resilient strip and is urged against by a means such that at least a first part of said resilient strip adheres to said rim, said first part of said resilient strip being spaced apart from said second end.

5,632,227

MILK-LINE VALVE

Heinrich Bücker, Langenberg, Germany, assignor to Westfalia Separator Aktiengesellschaft, Oelde, Germany

PCT No. PCT/EP93/02328, § 371 Date Apr. 25, 1995, § 102(e) Date Apr. 25, 1995, PCT Pub. No. WO94/12017, PCT Pub. Date Jun. 9, 1994
PCT Filed Aug. 28, 1993, Ser. No. 428,465
Claims priority, application Germany, Dec. 2, 1992, 42 40 521.1
Int. Cl.° A01J *5/00*
U.S. Cl. 119—14.01 6 Claims



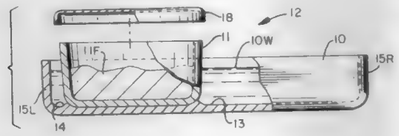
1. A milk line valve comprising a slide, a connector, and a saddle, wherein a port in the saddle opens into the milk line through an annular seal and the slide obstructs the seal, wherein when the connector is inserted, it moves the slide into a position in which it unblocks the port and allows it to communicate with an opening in the connector, and wherein the slide and connector can be forced against the seal by connector guides and by springs that force the guides against the seal with a prescribed force.

5,632,228

WATER PROTECTED FOOD DISH IN A WATER DISH

Bertha M. Ybarra, 3201 Wyndrock Dr., Abilene, Tex. 79606

Filed Oct. 20, 1995, Ser. No. 546,528
Int. Cl.° A01K *5/01*; *7/00*
U.S. Cl. 119—51.5 3 Claims



1. An elongate water dish and food dish combination for pet animals comprising:

an elongate water dish with a first end and a second end and side walls;

a food dish sized and positioned in said elongate water dish to be surrounded by water from all sides within the water dish and having a water space within said elongate water dish for water drinking by a pet animal, said food dish being provided with a cover to protect pet food from flying insects, said cover being removable when a pet is to be fed; and

a position holding means provided on a top surface of said water dish for receiving said food dish, said position holding means having a food dish receptacle rim at one end of the water dish, said water dish having water in a space between the food dish and the first end of said water dish and in a space between the food dish and the side walls of said water dish, the second end of the water dish being spaced widely enough from the food dish for a pet to drink water therefrom, said water dish having a rectangular elongate configuration.

5,632,229

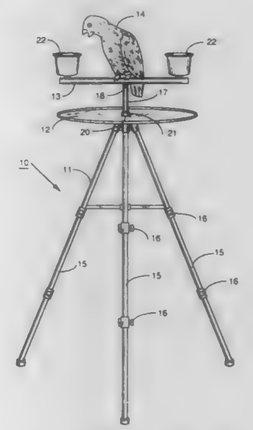
Patent Not Issued For This Number

5,632,230

ANIMAL PERCH AND METHOD OF CONSTRUCTION

Ronald Dornetta, 3717 Linden Ave., Pittsburgh, Pa. 15234

Filed Dec. 6, 1995, Ser. No. 568,119
Int. Cl.° A01K *31/12*
U.S. Cl. 119—537 4 Claims



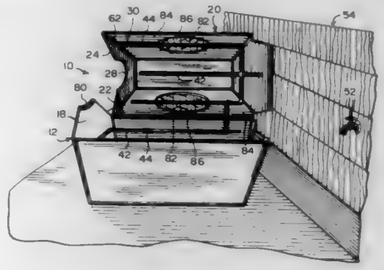
1. An animal perch comprising: a camera tripod having three upwardly converging legs supporting a vertical support post above their point of convergence, said post having an upper end; a litter tray having a central opening sized for passing over said support post and resting on said converging legs for support below said post upper end; and horizontal perch bar means secured to said upper end of said post.

5,632,231

PET SHOWER DEVICE

Brian K. Moore, 9907 Orangevale, Spring, Tex. 77379

Filed Jun. 6, 1995, Ser. No. 483,821
Int. Cl.° A01K *13/00*
U.S. Cl. 119—671 1 Claim



1. A pet shower device comprising:

a) a base sized to receive a body of a pet, with a head of the pet extending outwardly from a front wall of said base, said base having a drain hole;

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b) a cover with side walls hinged at one side to said base, so that when said cover is in a closed position over said base, a front wall of said cover will fit about a neck of the pet in which said front wall of said base in combination with said front wall of said cover will have a yoke opening formed thereabout, said opening having a padded split ring liner for providing a comfortable restraint of the pet, said base having a rear wall with a predominantly vertically extending passageway formed by a bottom and side edges of said rear wall and open at the top, and said cover having a rear wall with an extended portion which closes said passageway when said cover is in a closed position on said base;

c) means carried within said base and said cover, for scattering small drops of water on the body of the pet, so at to clean the body of the pet comprising a sprinkler assembly having a plurality of pipes containing jet nozzles mounted on the interior walls of both the base and cover directed towards top and sides of the body of the pet;

d) means mounted on the rear wall of said cover for connecting said water scattering means to a supply of water comprising a hose connector with a built-in water valve to engage a garden hose from an outdoor water faucet on a building;

e) means fluidly coupled to said water supply connecting means for introducing shampoo and dip into said water scattering means comprising a short pipe extending upwardly from said water supply connecting means downstream of and adjacent to said water valve for receiving shampoo and dip to be deposited into said water scattering means and a cap to fit over said short pipe when not in use;

f) means fluidly coupled to said water scattering means for spraying water, shampoo and dip onto the head of the pet extending outwardly from said yoke opening comprising a shower head handle, a flexible hose passing through said front wall of said cover fluidly connecting said shower head handle to said water scattering means in said cover, and a bolder affixed to said front wall of said cover to secure said shower head handle thereto when not in use;

g) means for holding the neck of the pet stationary when the neck is extending through said yoke opening comprising an adjustable collar clamp pivotally attached at a first end to said front wall of said base below said yoke opening and a second end extending up and engaging a loop on a collar of the pet;

h) said cover having a window formed in each side wall of said cover and a transparent water reflector mounted in each said window to permit a person when said cover is down in the closed position to look through said reflectors and see the water, shampoo and dip being deposited upon the body of the pet; and

i) said retaining means including a pair of side lock clamps spaced apart and affixed to said cover opposite from said hinged side and a pair of side clamp connectors spaced apart and affixed to said base opposite from said hinged side, so that when said cover is placed in the closed position, said side lock clamps will engage with said side clamp connectors to keep said cover down in the closed position and prevent the pet from exiting therefrom.

5,632,232

PET TRAINING SYSTEM

Michael A. Waters, Barrington Hills, Ill., assignor to Waters Research Company, Elgin, Ill.

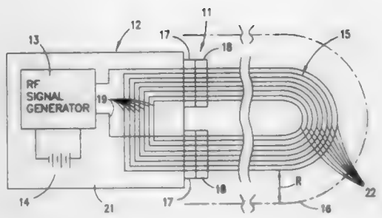
Filed Jan. 23, 1995, Ser. No. 376,754
Int. Cl.° A01K *29/00*
U.S. Cl. 119—720 **8 Claims**

1. A pet training system for training a pet to avoid a designated area having a maximum dimension D, the system including a transmitter comprising:

a radio-frequency generator for generating an RF signal of limited amplitude;

a power supply connected to the RF generator;

a radiation antenna for radiating the RF signal over a limited range around the designated area, the antenna including a



plurality of at least three series-connected conductors each having a length L, such that L≥D;

and connector means for connecting the antenna conductors in series with each other and for connecting the antenna to the RF generator;

the system further including a receiver assembly incorporated in a collar for a pet, the receiver assembly comprising:

a receiving antenna for receiving the RF signal radiated by the radiation antenna;

and alarm means for applying a deterrent to the pet when the pet ventures into the limited range of the radiation antenna.

5,632,233

ADJUSTABLE LENGTH VEHICLE PET TETHER

Tim J. Kovach, 8180 Woodland Shore Dr., Brighton, Mich. 48116

Filed Jun. 5, 1995, Ser. No. 465,536
Int. Cl.° A01K *27/00*
U.S. Cl. 119—771 **2 Claims**



1. An adjustable length vehicle pet tether comprising:

an elongated member having a longitudinal axis directed therethrough;

a mounting means secured to a first end of the elongated member for securing the elongated member to a vehicle such that the elongated member can project substantially laterally of the vehicle;

a leash adapted for coupling to an animal, the leash being secured to the elongated member;

an adjustable coupling means interposed between the leash and the elongated member for coupling the leash to the elongated member such that both a length of the leash from the elongated member and a point of projection of the leash from the elongated member can be selectively adjusted;

mounting means comprising a pair of spaced mounting apertures directed through the elongated member and oriented so as to extend substantially orthogonally relative to the longitudinal axis thereof; a pair of threaded fasteners each being directed through an individual one of the mounting apertures and

cooperating with a pair of securing nuts so as to permit securement of the elongated member to a vehicle; and

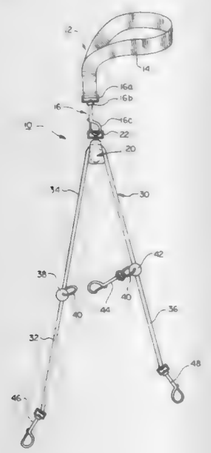
adjustable coupling means comprising an anchor loop fixedly secured to an upper surface of the elongated member and oriented so as to reside between an inner end of the elongated member where the mounting means is positioned and an outer distal end of the elongated member, the elongated member being shaped so as to define a receiving slot directed into the outer distal end of the elongated member and oriented so as to extend substantially parallel to the longitudinal axis of the elongated member; a clip coupled to the leash and removably coupled to the anchor loop so as to secure the leash relative to the elongated member, wherein the leash is adapted to be positioned into the receiving slot to secure the leash in a first configuration wherein the leash may extends a first distance from the elongated member and may projects from the elongated member at first point proximal to the outer directed end thereof, and further wherein the leash is adapted to be removed from the receiving slot so as to reside in a second configuration wherein the leash may extends a second distance from the elongated member and may projects from the elongated member at a second point oriented freely with respect to the elongated member.

5,632,234

TWO-PET LEASH

Gerald C. Parker, 4915 Edinborough Rd., Greensboro, N.C. 27406

Filed Aug. 16, 1995, Ser. No. 515,687
Int. Cl.° A01K *27/00*
U.S. Cl. 119—795 **15 Claims**



1. A two-pet leash, comprising:

(a) a handle;

(b) a pulley attached to said handle; and

(c) an elongated, flexible pet lead including:

i) a first end section having a first pet collar connector for attachment to a first pet;

ii) a second end section having a second pet collar connector for attachment to a second pet;

iii) a middle section between said first and second end sections, said middle section threaded through said pulley and movable back and forth through said pulley;

iv) a first stop interconnected between said first end section and said middle section; and

v) a second stop interconnected between said second end section and said middle section;

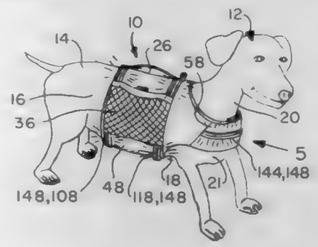
vi) wherein said first and second stops prevent said first and second end sections, respectively, from being pulled through said pulley.

5,632,235

PET FLOTATION AID, WALKER AND METHOD

Kurt D. Larsen, 8 Lamborn Ave., Congers, N.Y. 10920-2008, and Eric K. Larsen, 461 Storms Rd., Valley Cottage, N.Y. 10989

Continuation-in-part of Ser. No. 368,856, Jan. 5, 1995. This application Jul. 8, 1996, Ser. No. 676,942
Int. Cl.° A01K *29/00*
U.S. Cl. 119—856 **32 Claims**



1. A pet flotation aid and walker attachable to a pet, wherein the pet has weight, a back, a right side, a left side, a belly, a neck with a back, a chest with an expanding portion, a right shoulder, a left shoulder, a throat, a diaphragm, a thoracic cage, a right front leg with a back, and a left front leg with a back, comprising:

a) a hollow and rectangular-shaped top panel being positionable on the back of the pet and having a pair of parallel and spaced-apart longitudinal sides with ends, a pair of parallel and spaced-apart lateral sides being perpendicular to, and connecting said ends of, said pair of parallel and spaced-apart longitudinal sides of said hollow and rectangular-shaped top panel, and an outer surface;

b) a first piece of internal foam floatation material being contained in, and generally filling, at least a portion of said hollow and rectangular-shaped top panel;

c) a hollow and trapezoidal-shaped right side panel being generally downwardly bendable from said hollow and rectangular-shaped top panel and being positionable on the right side of the pet; said hollow and trapezoidal-shaped right side panel having a pair of parallel and spaced-apart longitudinal sides with rearmost ends and forwardmost ends, a rear lateral side being perpendicular to, and connecting, said rearmost ends of said pair of parallel and spaced-apart longitudinal sides of said hollow and trapezoidal-shaped right side panel, an outer surface, and a slightly skew front side slanting slightly upwardly and forwardly from said forwardmost end of a lowermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said hollow and trapezoidal-shaped right side panel to said forwardmost end of an uppermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said hollow and trapezoidal-shaped right side panel;

d) a second piece of internal foam floatation material being contained in, and generally filling, at least a portion of said hollow and trapezoidal-shaped right side panel;

e) a trapezoidal-shaped and wide right belly flap being generally inwardly bendable from said hollow and trapezoidal-shaped right side panel and being positionable on the belly of the pet; said trapezoidal-shaped and wide right belly flap having a wide width, a pair of parallel and spaced-apart longitudinal sides with forwardmost ends and rearmost ends, a rear lateral side being perpendicular to, and connecting, said rearmost ends of said pair of parallel and spaced-apart longitudinal sides of said trapezoidal-shaped and wide right belly flap, an outer surface, and a slightly skew front side slanting slightly

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upwardly and forwardly from said forwardmost end of a lowermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said trapezoidal-shaped and wide right belly flap to said forwardmost end of an uppermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said trapezoidal-shaped and wide right belly flap;

f) a generally concavo-convex-shaped right neck flap being generally inwardly bendable from said hollow and trapezoidal-shaped right side panel and being positionable on the neck of the pet and the chest of the pet; said generally concavo-convex-shaped right neck flap having a concave-shaped side with a forwardmost end and a rearmost end, a convex-shaped side with a forwardmost end and a rearmost end and being spaced below, and generally parallel to, said concave-shaped side of said generally concavo-convex-shaped right neck flap, a slightly skew rear lateral side connecting said rearmost end of said convex-shaped side of said generally concavo-convex-shaped right neck flap to said rearmost end of said concave-shaped side of said generally concavo-convex-shaped right neck flap, a slightly skew front lateral side connecting said forwardmost end of said convex-shaped side of said generally concavo-convex-shaped right neck flap to said forwardmost end of said concave-shaped side of said generally concavo-convex-shaped right neck flap and being shorter than, and oppositely slanted from, said slightly skew rear lateral side of said generally concavo-convex-shaped right neck flap, an outer surface, and an inner surface;

g) a third piece of internal foam floatation material being contained in, and generally filling, at least a portion of said generally concavo-convex-shaped right neck flap;

h) a hollow and trapezoidal-shaped left side panel being generally downwardly bendable from said hollow and rectangular-shaped top panel and being positionable on the left side of the pet; said hollow and trapezoidal-shaped left side panel having a pair of parallel and spaced-apart longitudinal sides with rearmost ends and forwardmost ends, a rear lateral side being perpendicular to, and connecting, said rearmost ends of said pair of parallel and spaced-apart longitudinal sides of said hollow and trapezoidal-shaped left side panel, an outer surface, and a slightly skew front side slanting slightly upwardly and forwardly from said forwardmost end of a lowermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said hollow and trapezoidal-shaped left side panel to said forwardmost end of an uppermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said hollow and trapezoidal-shaped left side panel;

i) a fourth piece of internal foam floatation material being contained in, and generally filling, at least a portion of said hollow and trapezoidal-shaped left side panel;

j) a trapezoidal-shaped and wide left belly flap being generally inwardly bendable from said hollow and trapezoidal-shaped left side panel and being positionable on the belly of the pet; said trapezoidal-shaped and wide left belly flap having a wide width, a pair of parallel and spaced-apart longitudinal sides with forwardmost ends and rearmost ends, a rear lateral side being perpendicular to, and connecting said rearmost ends of, said pair of parallel and spaced-apart longitudinal sides of said trapezoidal-shaped and wide left belly flap, an outer surface, and a slightly skew front side slanting slightly upwardly and forwardly from said forwardmost end of a lowermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said trapezoidal-shaped and wide left belly flap to said forwardmost end of an uppermost longitudinal side of said pair of parallel and spaced-apart longitudinal sides of said trapezoidal-shaped and wide left belly flap;

k) a generally concavo-convex-shaped left neck flap being generally inwardly bendable from said hollow and trapezoidal-shaped left side panel and being positionable on the neck of the pet and the chest of the pet; said generally concavo-convex-shaped left neck flap having a concave-shaped side with a forwardmost end and a rearmost end, a convex-shaped side with a forwardmost end and a rearmost end and being spaced below, and generally parallel to, said concave-shaped side of said generally concavo-convex-shaped left neck flap, a slightly skew rear lateral side connecting said rearmost end of said convex-shaped side of said generally concavo-convex-shaped left neck flap to said rearmost end of said concave-shaped side of said generally concavo-convex-shaped left neck flap, a slightly skew front lateral side connecting said forwardmost end of said convex-shaped side of said generally concavo-convex-shaped left neck flap to said forwardmost end of said concave-shaped side of said generally concavo-convex-shaped left neck flap and being shorter than, and oppositely slanted from, said slightly skew rear lateral side of said generally concavo-convex-shaped left neck flap, an outer surface, and a inner surface; said generally concavo-convex-shaped left neck flap being separate and detachable from said generally concavo-convex-shaped right neck flap, so that said pet flotation aid and walker can be easily removed from the chest of said pet without having to lift the pet, especially when the pet is large;

l) a fifth piece of internal foam floatation material being contained in, and generally filling, at least a portion of said generally concavo-convex-shaped left neck flap;

m) neck flap attaching means for releasibly attaching said generally concavo-convex-shaped right neck flap and said generally concavo-convex-shaped left neck flap to each other when said generally concavo-convex-shaped right neck flap and said generally concavo-convex-shaped left neck flap are positioned on the neck of the pet and the chest of the pet, so that said pet floatation aid and walker is releasibly secured around the neck of the pet and the chest of the pet;

n) a first continuous, light-reflective, and adjustable belly strap having a fixed proximal end and a free distal end and extending across said hollow and trapezoidal-shaped left side panel, said hollow and rectangular-shaped top panel, said hollow and trapezoidal-shaped right side panel, said trapezoidal-shaped and wide right belly flap, and being extendable across said trapezoidal-shaped and wide left belly flap;

o) first strap attaching means for releasibly attaching said fixed proximal end of said first continuous, light-reflective, and adjustable belly strap to said free distal end of said first continuous, light-reflective, and adjustable belly strap, so that another portion of said pet floatation aid and walker is releasibly secured around the back of the pet, the right side of the pet, the left side of the pet, and the belly of the pet;

p) a second continuous, light-reflective, and adjustable belly strap having a fixed proximal end and a free distal end and extending across said hollow and trapezoidal-shaped left side panel, said hollow and rectangular-shaped top panel, said hollow and trapezoidal-shaped right side panel, said trapezoidal-shaped and wide right belly flap, and being extendable across said trapezoidal-shaped wide and left belly flap; and

q) second strap attaching means for releasibly attaching said fixed proximal end of said second continuous, light-reflective, and adjustable belly strap to said free distal end of said second continuous, light-reflective, and adjustable belly strap, so that a remaining portion of said pet floatation aid and walker is releasibly secured around the back of the pet, the right side of the pet, the left side of the pet, and the belly of the pet and thereby said pet floatation aid and walker is completely releasibly secured on the pet and can removed from the pet extremely quickly without bother, by simply unfastening said neck flap attaching means, said first strap attaching means, and said second strap attaching means.

5,632,236

GAS-FIRED HEATERS WITH BURNERS WHICH OPERATE WITHOUT SECONDARY AIR AND HAVE A SUBSTANTIALLY SEALED COMBUSTION CHAMBER

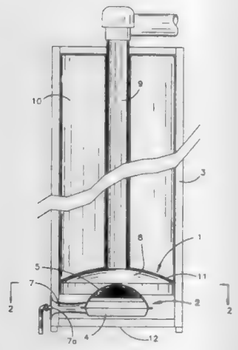
John V. Joyce, Bayview, Australia, assignor to Bowin Technology Pty. Ltd., Brookvale, Australia

Continuation-in-part of Ser. No. 255,092, Jun. 7, 1994, Pat. No. 5,435,716, which is a continuation-in-part of Ser. No. 997,899, Dec. 29, 1992, Pat. No. 5,317,992. This application Jun. 6, 1995, Ser. No. 468,919

Claims priority, application Australia, Dec. 30, 1991, PL0213

Int. Cl.[6] **F22B** *5/00;* **F23D** *14/66;14/02*

U.S. Cl. 122—14 **7 Claims**



1. A room heater comprising a burner having a combustion surface,

a combustion chamber above said combustion surface,

a source of gaseous fuel, air duct means delivering said fuel to said burner and operating in response to flow of said fuel to produce in said burner an air/fuel mixture containing an amount of air in excess of the amount required to cause complete combustion of said fuel,

a bypass air passage separated from said combustion chamber by a wall,

a powered blower producing substantial bypass air flow from an environmental air inlet through said bypass passage to a bypass discharge nozzle and operating to provide a jet of air directed to a heater discharge, said wall providing a heat exchange surface between said combustion chamber and said bypass air passage causing preliminary heating of said bypass air before it reaches said nozzle, said combustion chamber providing an exhaust open to said jet of bypass air, said jet of bypass air entraining sufficient combustion gases to produce a subatmospheric pressure in said combustion chamber and also mixing sufficient bypass air with the combustion gases to cause a safe temperature of the resulting mixture flowing through said heater discharge, said subatmospheric pressure in said combustion chamber resulting in an increase in the pressure drop across said combustion surface causing said air/fuel mixture passing through said burner to be greater than would be provided if said combustion chamber were at or above atmospheric pressure.

5,632,237

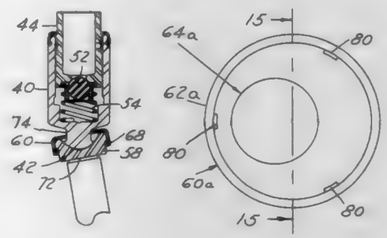
HYDRAULIC LASH COMPENSATING ELEMENT ASSEMBLY

Richard D. Cornell, Muskegon, and Robert C. Roos, Fruitport, both of Mich., assignors to Hy-Lift Division of SPX Corporation, Muskegon, Mich.

Filed Aug. 7, 1995, Ser. No. 511,953

Int. Cl.[6] **F01L** *1/24*

U.S. Cl. 123—90.46 **8 Claims**



1. A hydraulic lash compensating element assembly adapted to be interposed between a valve actuating device and a valve of an automotive engine comprising

a hydraulic lash compensating element which includes an outer housing, an inner housing, spring means interposed between the outer housing and the inner housing,

said outer housing having a spherical protrusion thereon at one end,

said outer housing having a neck portion adjacent said enlarged spherical protrusion,

a swivel foot having a generally complementary surface contacted by said spherical protrusion, and

a retainer attached to said swivel foot for mounting said swivel foot on said spherical protrusion for rotational and angular movement relative to said spherical protrusion and holding said swivel foot against rotation relative to said retainer,

said retainer including a base wall having an opening through which the neck portion of said outer housing extends and a flange and means for attaching said retainer and said swivel foot against relative rotation,

said swivel foot having a contact surface for engaging the end of a valve.

5,632,238

CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH ASSOCIATED DECOMPRESSION DEVICE

Akiyoshi Furukawa; Takao Nishida; Atsushi Kamachi; Michio Suzuki; Kazushi Ogiyama; Yoshiharu Hagiwara, and Kenji Fukuda, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,603

Claims priority, application Japan, Jul. 18, 1994, 6-165224; Nov. 4, 1994, 6-271512

Int. Cl.[6] **F02D** *43/00;* **F02N** *11/08*

U.S. Cl. 123—179.3 **21 Claims**

1. A control system for an engine with an associated decompression device, comprising:

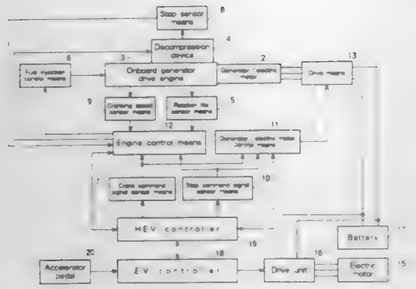
engine speed sensor means for detecting a speed of rotation of the engine;

fuel injection control means for controlling the injection of a fuel in the engine;

means for operating said decompression device in response to the speed of rotation of the engine;

said decompression device being operated during cranking and stopping of the engine; and

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said fuel injection control means being operable to initiate and stop the injection of the fuel in response to the sensed signal from said engine speed sensor means.

5,632,239

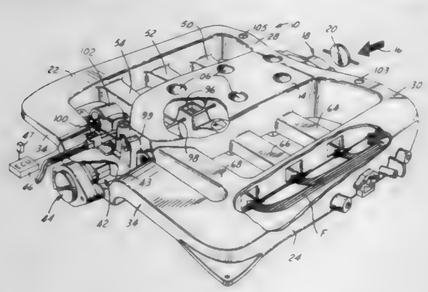
METHOD OF DISTRIBUTING AIR IN AN ENGINE INTAKE MANIFOLD

Michael P. Patyi; William E. Hughes, both of Troy; Mary T. Chappell, West Bloomfield; Frederick B. Hummer, Troy, and Donald H. Kerska, Royal Oak, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Apr. 16, 1996, Ser. No. 639,045

Int. Cl.° F02M *35/10*

U.S. Cl. 123—184.36 **2 Claims**



1. A method of distributing air to the combustion chambers of an internal combustion engine through a multi-plenum air intake manifold having an air intake and a pair of laterally spaced side plenums connected to one another by an acoustic balancing cross-over passage and having a centralized plenum disposed between the side plenums operatively connected to the respective combustion chambers by short runners, said side plenums being connected to the combustion chamber by long runners, said short runners also being connected to the combustion chambers upstream and in series with said long runners comprising the steps of:

a. closing said short runners so that intake air is routed to said combustion chambers through said side plenums and said long runners,

b. closing said acoustic balancing crossover passage so that pressure waves in said side chambers constructively interfere in superposition to effect increased air flow through said long runners for increasing engine torque from idle to a mid-speed range of said engine,

c. subsequently opening said short runner valves so that air flow to said combustion chambers flows primarily through said short runners that provide an increased flow capacity through said manifold to improve combustion in said combustion chambers so that said engine torque is further increased for a higher range of engine speeds.

5,632,240

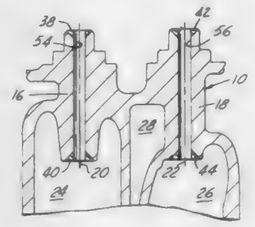
APPARATUS AND METHOD FOR AN ALUMINUM ALLOY CYLINDER HEAD HAVING A VALVE GUIDE BORE WITH SPACED WEAR RESISTANT INTEGRAL SURFACES

Tanas M. Sihon, Monroe, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Division of Ser. No. 362,340, Dec. 22, 1994, Pat. No. 5,564,187. This application Apr. 29, 1996, Ser. No. 639,670

Int. Cl.° F01L *3/02;3/08*

U.S. Cl. 123—188.9 **1 Claim**



1. An improved aluminum alloy cylinder head of relatively soft and readably worn aluminum alloy material having a valve guide bore for supporting a harder stem portion of a valve, the valve guide bore being formed integral with the cylinder head with a pair of harder portions formed at ends of the bore so as to create spaced wear resistant surfaces for enhancing the wear resistance of the bore to rubbing by movement of the harder valve stem against the cylinder head, the improvement comprising: a cylinder head cast from aluminum alloy; a pair of dissimilar metal portions formed at opposed, spaced surfaces of said cylinder head of dissimilar metal of a cooper based alloy which is harder than said aluminum cylinder head; said cylinder head having a valve guide bore extending through the aluminum alloy of said cylinder head and also through the pair of dissimilar metal portions thereby creating opposite end portions of said valve guide bore with a pair of annularly shaped end portions of different metal alloy integral with the aluminum alloy of said cylinder head.

5,632,241

OIL LUBRICATING SYSTEM FOR A TWO-STROKE INTERNAL COMBUSTION ENGINE

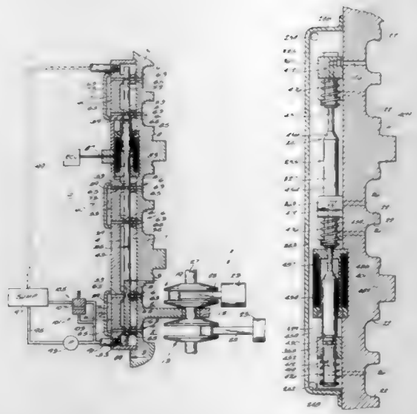
Gregory J. Binversie, Grayslake; Todd D. Craft, Lake Villa, both of Ill.; Jerry A. Hladilek, Kenosha, and Erik Jorgensen, Burlington, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 25, 1995, Ser. No. 507,051

Int. Cl.° F01M *1/00*

U.S. Cl. 123—196 W **29 Claims**

1. A lubricant supply system for a two-stroke internal combustion engine, said system including first and second adjacently located and substantially sealed crankcase chambers which alternately experience high and low pressure conditions which are out of phase with respect to the occurrence thereof, and an oil supply circuit including an oil supply passage including ends respectively communicating with said first and second crankcase chambers, an oil pump, an oil supply chamber adapted to contain oil, communicable with said oil pump for receipt of oil therefrom and communicable with said oil supply passage intermediate said ends for delivery of oil thereto so as to supply the oil to said first and second crankcase chambers, a member moveable independently of said pump and selectively and cyclically in and relative to said oil



chamber for delivering a predetermined amount of oil to said supply passage during each cycle of said member, and means for selectively effecting cyclical movement of said member.

5,632,242

FUEL SYSTEM FOR MOTOR VEHICLES

Bo Harde, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden

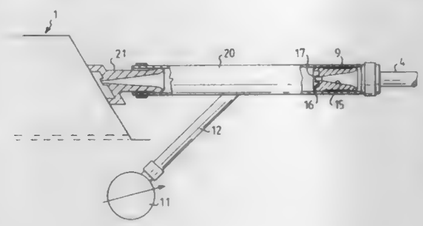
PCT No. PCT/SE93/00409, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/23265, PCT Pub. Date Nov. 25, 1993

PCT Filed May 10, 1993, Ser. No. 335,753

Claims priority, application Sweden, May 12, 1992, 9201500

Int. Cl.° B60K *15/035;* **F02M** *25/08*

U.S. Cl. 123—198 D **6 Claims**



1. In a fuel system for motor vehicles, comprising a fuel tank, a fuel filler pipe with an opening into the tank, a first gas conduit, one end of which is positioned within the tank and whose opening determines the highest fuel level in the tank when filling the tank, and a second gas conduit which extends from an expansion space in the tank above said highest fuel level to a filter device; the improvement wherein the second gas conduit (**4**) includes a restriction device (**9**) which is so arranged that the flow resistance of the gas flow in the direction from the tank (**1**) to the filter device (**8**) is greater than in the opposite direction, and a pressure sensor (**11**) arranged to detect the pressure in a gas volume above a surface (N) of fuel.

5,632,243

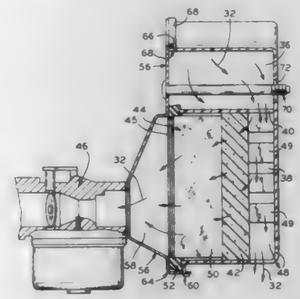
SELF-CLEANING AIR FILTER ASSEMBLY

Brian S. Buchholz, Chilton, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jan. 11, 1996, Ser. No. 583,755

Int. Cl.° F02B *77/00*

U.S. Cl. 123—198 E **14 Claims**



1. In an internal combustion engine having a drive shaft and an air-fuel mixing device, an air supply and filtration system comprising:

a blower which is rotated by the drive shaft and a blower housing surrounding said blower and guiding an air stream produced by rotation of said blower;

a filter housing enclosing a filter compartment and defining an inlet opening, an exit opening and a filter outlet port, said inlet opening being in communication with said blower housing whereby a portion of the air stream is supplied under pressure and at a velocity at said inlet opening; and

a filter medium disposed within the filter compartment between said inlet opening and said filter outlet port and defining with said filter housing a passageway between said inlet opening and said exit opening whereby the supplied air enters said filter compartment through said inlet opening, a portion of said supplied air is filtered by Said filter medium and directed through said filter outlet port to the air-fuel mixing device and a remaining portion of the supplied air is discharged through said exit opening.

5,632,244

SPARK-IGNITION PISTON ENGINE WITH FACILITIES FOR CHANGING THE INLET DIRECTION OF THE FUEL-AIR MIXTURE

Helmut Endres, Herzogenrath; Heinz-Jakob Neusser, Aachen, and Rainer Wurms, Bonn, all of Germany, assignors to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft, Aachen, Germany

PCT No. PCT/EP94/04202, § 371 Date Nov. 9, 1995, § 102(e) Date Nov. 9, 1995, PCT Pub. No. WO95/17589, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 17, 1994, Ser. No. 507,248

Claims priority, application Germany, Dec. 20, 1993, 9319545 U

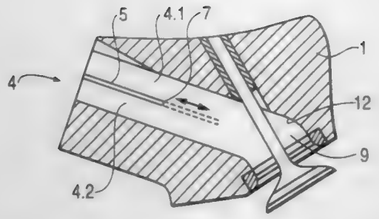
Int. Cl.° F02B *31/00*

U.S. Cl. 123—306 **10 Claims**

1. A spark-ignition reciprocating piston engine having at least one piston cylinder, at least one inlet port arranged at an end of the cylinder, an inlet valve located at the inlet port and being movable to open and close the inlet port, and an inlet conduit leading to the inlet port for feeding a fluid from a fuel feed to an inlet area of the inlet port, said engine comprising:

a partition arranged within the inlet conduit and dividing the inlet conduit into at least two partial conduits over at least a portion of a length of the inlet conduit between the fuel feed and the inlej area, with at least one of the partial conduits

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being connected to the fuel feed, said partial conduits converging directly in front of the inlet port to form the inlet area, said partition being located within a plane that extends essentially transversely to an axis of the cylinder at least in the inlet area, and having an end edge facing the inlet area, said partition further having at least one deflecting portion that is movable to deflect a flow of the fluid on blow-by from the inlet conduit, through the inlet port, and into the cylinder; and

controllable actuation means connected to said partition for changing a distance from the end edge to the inlet port.

5,632,245

ACTUATING DEVICE FOR A THROTTLING MEMBER

Peter Ropertz, Markgröningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

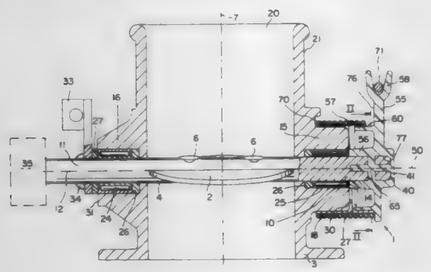
PCT No. PCT/DE94/01167, § 371 Date Mar. 2, 1996, § 102(e) Date Mar. 2, 1996, PCT Pub. No. WO95/09977, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 30, 1994, Ser. No. 617,803

Claims priority, application Germany, Oct. 2, 1993, 43 33 676.0

Int. Cl.[6] F02D *9/08*

U.S. Cl. 123—337 **8 Claims**



1. An actuating device (**1**) for a throttling member (**2**) of an internal combustion engine, the said throttling member being accommodated in a throttle body (**3**), with an adjusting shaft (**4**) which is connected to the throttling member (**2**) and is mounted in the throttle body (**3**), with a plastic actuating member (**55**) which effects a rotation of the adjusting shaft (**4**) and is connected in torsionally rigid fashion to the adjusting shaft (**4**) at one end (**10**) of the adjusting shaft, wherein the adjusting shaft (**4**) has a recess (**41**) which passes through the adjusting shaft radially and, in the axial direction of the adjusting shaft, appears in the form of a slot at the one end (**10**) of the adjusting shaft which projects from the throttle body (**3**) and the actuating member (**55**) is molded onto the one end (**10**) of the adjusting shaft in such a way that the recess (**41**) is filled with plastic.

5,632,246

CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

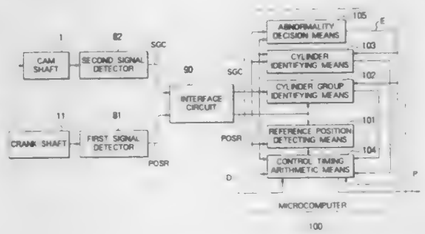
Wataru Fukui, and Yasukazu Koezuka, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1996, Ser. No. 602,354

Claims priority, application Japan, Apr. 17, 1995, 9-090791

Int. Cl.[6] F02P *7/067;11/00*

U.S. Cl. 123—414 **13 Claims**



1. An apparatus for controlling an internal combustion engine, comprising:

a first signal detector for generating a first signal series in synchronism with rotation of a rotating shaft of said internal combustion engine;

a second signal detector for generating a second signal series in synchronism with rotation of said rotating shaft; and

control means for controlling a parameter involved in operation of said internal combustion engine on the basis of said first and second signal series;

said first signal series including an angular position signal generated at every predetermined angular position of said rotating shaft and a constant level signal generated over a predetermined angular range and indicating a reference position corresponding to at least a specific cylinder group of said engine;

said second signal series formed by pulses corresponding to said cylinders, respectively, and containing a cylinder identifying signal for a given one of said cylinders, wherein a pulse form of said cylinder identifying signal for said given one cylinder differs from those for the other engine cylinders;

said cylinder identifying signal having a pulse edge generated at a timing falling within an interval of said constant level signal;

said control means including:

reference position detecting means for detecting said reference position on the basis of said angular position signal contained in said first signal series and generated in succession to a pulse edge contained in said second signal series;

cylinder group identifying means for identifying said cylinder group on the basis of said constant level signal and said second signal series;

cylinder identifying means for discriminatively identifying each of said engine cylinders on the basis of at least said second signal series;

control timing arithmetic means for arithmetically determining control timings for controlling said parameter on the basis of at least the results of the cylinder identification performed by said cylinder identifying means and said second signal series; and

abnormality decision means for generating and supplying an abnormality decision signal to said cylinder identifying means and said control timing arithmetic means upon detection of a fault in said first signal series.

5,632,247

PREIGNITION DETECTING SYSTEM

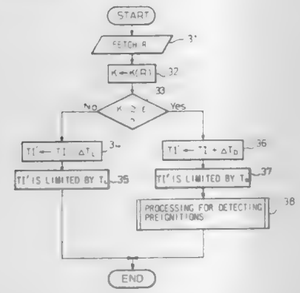
Katsushi Hashizume, and Kazuhisa Mogi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 21, 1996, Ser. No. 620,123

Claims priority, application Japan, Mar. 23, 1995, 7-064163; Oct. 16, 1995, 7-267026

Int. Cl.[6] F02P *5/14*

U.S. Cl. 123—425 **8 Claims**



1. A preignition detecting system comprising:

ignition timing control means for determining an ignition timing depending upon the conditions in which an internal combustion engine is operating;

abnormal vibration determining means for determining that abnormal vibration is occurring when a vibration component within a predetermined frequency range as a result of detecting vibration of the internal combustion engine is larger than a predetermined level or when vibration within a predetermined frequency range occurs more often than a predetermined frequency after the ignition is effected by said ignition timing control means;

abnormal vibration timing detecting means for detecting a timing at which it is determined by said abnormal vibration determining means that abnormal vibration is occurring; and

a preignition determining means for so determining that preignition is occurring depending upon a time difference between the ignition timing determined by said ignition timing control means and the timing of abnormal vibration detected by said abnormal vibration timing detecting means.

5,632,248

ELECTRONICALLY CONTROLLED TYPE FLOATLESS CARBURETOR

Toshio Sugii, Odawara, Japan, assignor to Mikuni Corporation, Japan

Filed Jun. 6, 1995, Ser. No. 468,702

Int. Cl.[6] F02M *7/133;7/20;7/24*

U.S. Cl. 123—438 **15 Claims**

1. A electronically controlled type floatless carburetor wherein fuel is delivered to a fuel regulating chamber by actuation of pumping means, the fuel from said fuel regulating chamber is ejected in a suction passage from a main nozzle via a main fuel passage including a main jet, and moreover, the fuel from said fuel regulating chamber is ejected in said suction passage from a slow system ejection port via a pilot fuel passage including a pilot jet, comprising:

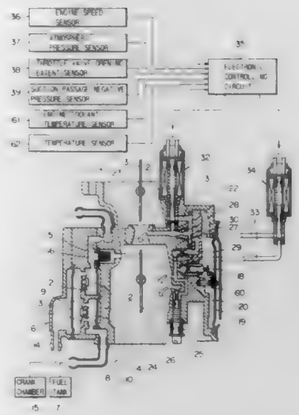
a main bypass passage having a first and a second end, the first end of the main bypass passage being communicated with the main fuel passage at a position located downstream of the main jet, and the second end of the main bypass passage being communicated at a position located upstream of the main jet;

a check valve disposed upstream of the main jet in the main fuel passage to prevent the backflow of air from the suction passage through the main fuel passage and the main bypass passage to the fuel regulating chamber and the pilot fuel passage;

a main solenoid valve disposed at the intermediate position of said main bypass passage to adjust a quantity of fuel passing through said main bypass passage by duty driving; and

an electronic controlling circuit for controlling actuation of said main solenoid valve in response to inputting of one or more parameters,

wherein the quantity of fuel ejected in said suction passage from said main nozzle includes a quantity of fuel adjusted by duty driving while passing through said main bypass passage as said main solenoid valve is actuated and a quantity of fuel passing through said main jet.



5,632,249

AIR FLOW CONTROL DEVICE OF ENGINE

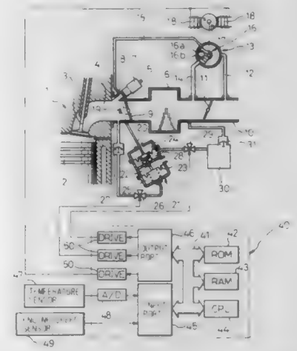
Shinji Sadakane, Susono, and Hiroki Ichinose, Fujinomiya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 20, 1996, Ser. No. 667,253

Claims priority, application Japan, Jun. 22, 1995, 7-155933

Int. Cl.[6] F02M *7/00*

U.S. Cl. 123—442 **21 Claims**



1. An air flow control device of an engine having an intake passage comprising:

a throttle valve arranged in the intake passage;

an air flow control valve arranged in the intake passage downstream of said throttle valve;

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drive means for driving said air flow control valve;

control means for controlling said drive means to retain said air flow control valve in a closed state when the cranking operation of the engine is carried out and to give a valve open signal for said air flow control valve to said drive means when the engine speed exceeds a predetermined speed; said drive means opening said air flow control valve when a predetermined time has elapsed after said valve open signal is given to said drive means, due to the delay of action of said drive means; and

flow area increasing means for increasing a flow area of an air flow passage by which air is fed into the intake passage downstream of said throttle valve until said predetermined time has elapsed after said valve open signal is given to said drive means.

5,632,250

GAS FUEL SUPPLY SYSTEM FOR VEHICLE

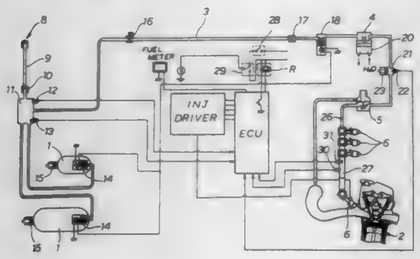
Atsushi Kato; Yoshikazu Ohshima; Eisaku Gosho; Kazuhiro Ueda; Shigeo Hidai; Akira Murakami; Toshiyuki Nishida; Shigeru Aoki; Ryuichi Noseyama; Kenichiro Ishibashi; Katsunori Nakamura, and Nobuo Arai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Sep. 19, 1995, Ser. No. 530,525

Claims priority, application Japan, Sep. 20, 1994, 6-225147; Sep. 20, 1994, 6-225151; Sep. 20, 1994, 6-225208; Sep. 20, 1994, 6-225215; Sep. 20, 1994, 6-225294

Int. Cl.° **F02M** *51/00*

U.S. Cl. 123—490 **16 Claims**



1. A gas fuel supply system of a gas engine vehicle, comprising:

fuel supply stop means for avoiding abnormal combustion caused from improper adjustment of air/fuel ratio due to reduction of fuel pressure in the gas fuel supply system;

fuel shut-off means enabled to detect even slight variation of the fuel pressure by monitoring the fuel pressure in an interval after closing a fuel shut-off valve once opened to re-opening of it;

fuel system abnormal state sensing means for sensing an abnormal state in the fuel system by comparing an accumulated value of amount of injected fuel with a calculated value of consumption of fuel in a tank;

fuel injection valve control means for increasing lift load for a fuel injection valve at starting the engine at a low temperature and for enabling it to control the fuel injection valve open time; and

a first regulator for holding the temperature of a second regulator regulating the fuel gas pressure, and for optimizing its performance by controlling flow rate of cooling water flowing through a water passage provided in the second regulator.

5,632,251

ENGINE FUEL VAPOR TREATING APPARATUS

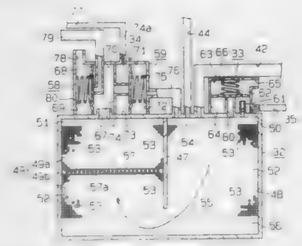
Takashi Ishikawa, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 3, 1996, Ser. No. 582,323

Claims priority, application Japan, Jan. 6, 1995, 7-000877

Int. Cl.° **F02M** *25/08*

U.S. Cl. 123—519 **21 Claims**



1. An apparatus for treating fuel vapor generated in a fuel tank, said apparatus having a canister which has a vapor inlet communicating with the tank, a vapor outlet communicating with an engine by way of a purge line and an air intake passage, a gas outlet communicating with the atmosphere and an adsorbent layer member which has a plurality of adsorbents, wherein the fuel vapor is introduced to the canister through the vapor inlet, fuel components contained in the fuel vapor are collected by the adsorbent layer member and residual gas of the fuel vapor is discharged to the atmosphere through the gas outlet, and wherein the collected fuel components are purged into the air intake passage through the vapor outlet and the purge line during an operation of the engine, said apparatus comprising:

a breather line for introducing the fuel vapor massively generated in the tank when the fuel is supplied to the tank;

a partition means for defining a plurality of chambers in the canister;

said partition means having a plurality of holes for the communication of the chambers with each other;

said adsorbent layer member being divided by the partition means into two separated layers;

each of said holes being in a shape so as to restrict the passage of the adsorbents therethrough; and

said breather line having an area in cross section at most identical to the total area of the holes.

5,632,252

APPARATUS FOR CONTROLLING FUEL EVAPORATED FROM INTERNAL COMBUSTION ENGINE

Yoshihiko Hyodo, and Hiroki Matsuoka, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 9, 1996, Ser. No. 599,214

Claims priority, application Japan, Feb. 13, 1995, 7-023878

Int. Cl.° **F02M** *25/08*

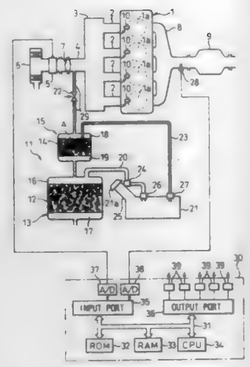
U.S. Cl. 123—520 **2 Claims**

1. An apparatus for controlling evaporated fuel of an internal combustion engine, having first and second canisters for adsorbing evaporated fuel produced in a fuel tank, the first and second canisters being connected in series between an atmospheric hole of the first canister and an intake duct of the engine, air entering the atmospheric hole passing through the first and second canisters and releasing the fuel adsorbed by the first and second canisters, the air and released fuel being purged into the intake duct, comprising:

a first path for guiding evaporated fuel from the fuel tank to the first canister when the fuel tank is replenished with fuel;

a second path for guiding evaporated fuel from the fuel tank into an adsorption material disposed in the second canister during the operation of the engine, wherein the evaporated fuel leaves the second path and enters the adsorption material at a location sufficiently separated from a downstream surface thereof so that the fuel adsorption state of a portion of the adsorption material of the second canister adjacent to an outlet from the second canister to a path for purging air and fuel from the second canister into the intake duck is substantially unchanged between a given purge operation and the next purge operation; and

fuel supply control means for calculating, at a second purge operation, a fuel injection quantity to achieve a target air-fuel ratio according to a concentration of purged fuel of a first purge operation.



5,632,253

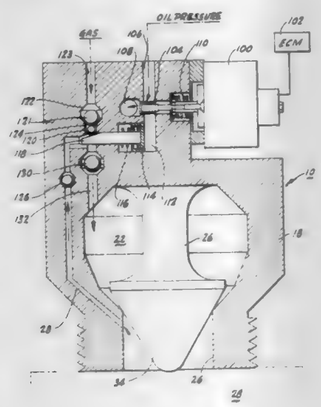
UNIVERSAL COMBUSTION SYSTEM

Marius A. Paul, and Ana Paul, both of 1120 E. Elm Ave., Fullerton, Calif. 92631

Filed Apr. 17, 1996, Ser. No. 633,673

Int. Cl.° **F02M** *23/00*

U.S. Cl. 123—531 **11 Claims**



1. An improved premix and precombustion module for positive-displacement thermal engine having a main combustion chamber and compression means for generating compressed air in the main combustion chamber, the improved premix and precombustion module comprising:

a main body with connection means for connecting the premix and precombustion module to the thermal engine, the main body having an internal premix chamber with a discharge port in communication with the main combustion chamber when the premix and precombustion module is connected to the thermal engine;

a central piston valve displaceable in the main body, the central piston valve having a valve head and the discharge port having a valve seat, wherein the head seats on the valve seat and blocks communication of the premix chamber with the main chamber when the piston valve is displaced toward the discharge port;

actuating means connected to the central piston valve for selectively displacing the valve head into seating engagement with the valve seat wherein the discharge port is closed, and for retracting the valve head from a seating engagement with the valve seat wherein the discharge port is open and the premix chamber communicates with the main combustion chamber;

air passage means between the main combustion chamber and the premix chamber having a passage and a check valve means in the passage for automatic passing of compressed air in the main combustion chamber to the premix chamber when pressure of compressed air exceeds pressure in the premix chamber, the check valve means blocking the passage from the premix chamber to the main combustion chamber when pressure in the premix chamber exceeds the pressure in the main combustion chamber; and,

controlled fuel delivery means for timed delivery of fuel under pressure to the air passage means.

5,632,254

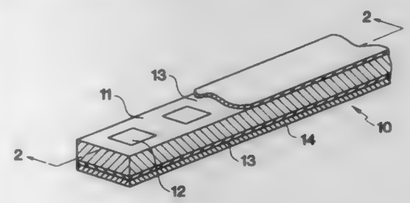
DEVICE FOR ENHANCEMENT OF COMBUSTION

Young S. Kim, 4955 Bramhope La., Ellicott City, Md. 21043

Filed Jul. 31, 1995, Ser. No. 509,287

Int. Cl.° **F02M** *33/00*

U.S. Cl. 123—538 **20 Claims**



1. A combustion enhancement device, comprising:

a housing which defines an interior chamber;

at least one magnet disposed within said interior chamber; and

a far infrared ray generating composition comprising SiO_2, Al_2O_3, CaO, MnO, TiO_2, and Ag or Au disposed within said interior chamber.

5,632,255

REGENERATED ENGINE WITH AN IMPROVED HEATING STROKE

Allan J. Ferrenberg, Rt. 2, Box 394, Swall Meadows, Bishop, Calif. 93514

Filed May 27, 1994, Ser. No. 250,168

Int. Cl.° **F02G** *5/00*

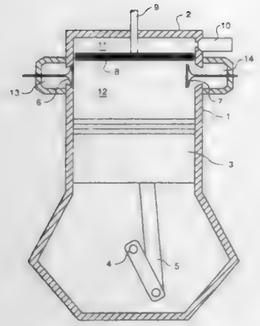
U.S. Cl. 123—543 **29 Claims**

1. An internal combustion, reciprocating, regenerated engine having a number of similar working units, each working unit comprising:

a) a cylinder, closed at one end by a cylinder head and containing a movable piston which moves in a reciprocating manner and is connected to a power output shaft;

b) intake means for permitting the flow of fresh working fluid into said cylinder during a predetermined time during each operating cycle;

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c) exhaust means to permit the flow of exhaust fluid from said cylinder during a second predetermined time during each operating cycle;

d) a thermal regenerator located within said cylinder and between said piston and said cylinder head, said regenerator being an alternating flow heat exchanger which can be moved between said piston and said cylinder head;

the movement of said regenerator including a regenerative heating stroke which begins during the last quarter of said piston's compression stroke and ends after expansion has begun and during the first quarter of said piston's expansion stroke, said regenerative heating stroke also being of sufficient speed and timing so as to maintain, to the greatest extent possible, a flow of working fluid out of said regenerator, through said regenerator's hot surface and into the hot volume, throughout said regenerative heating stroke;

e) means for moving said regenerator during additional predetermined times during the engine's operating cycle; and

f) means for introducing fuel into said cylinder.

5,632,256

INTERNAL COMBUSTION ENGINE WITH AN EXHAUST GAS TURBOCHARGER

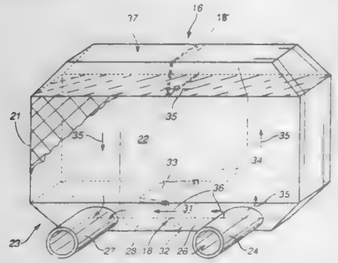
Markus Eibl, Stuttgart, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Feb. 3, 1996, Ser. No. 606,093

Claims priority, application Germany, Mar. 7, 1995, 195 07 961.2

Int. Cl.[6] F02B *29/04*

U.S. Cl. 123—563 **7 Claims**



1. An internal combustion engine with an exhaust gas turbocharger in communication with said engine by a charge air duct for supplying combustion air to said engine, said charge air duct including an intercooler with a housing having a cooling structure for cooling the air compressed by said turbocharger before it is supplied to said engine, an inlet area connected to an upstream section of said charge air duct which is connected to said turbocharger and, adjacent said inlet area, an outlet area connected to a downstream section of said charge air duct for supplying the charge air to said engine, an air flow switch back area provided in said intercooler housing opposite said air inlet and outlet areas, a first air flow control mechanism arranged between said inlet and outlet areas, a second air flow control mechanism disposed in said switch back area and operating means for actuating said air flow control mechanism including temperature sensing means for sensing engine operating temperature for holding said air flow control mechanism open until a predetermined engine operating temperature has been reached to permit the charge air to flow from said inlet area directly to said outlet area as long as said air flow control mechanism is open and to direct said air flow through the cooling structure of said intercooler when said flow control mechanism is closed.

5,632,257

DIAGNOSIS APPARATUS AND METHOD FOR AN EXHAUST GAS RECIRCULATION UNIT OF AN INTERNAL COMBUSTION ENGINE

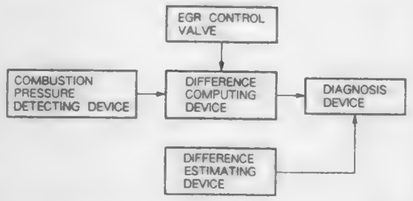
Kenichi Machida, and Hirokazu Shimizu, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Kanagawa-ken, Japan

Filed Feb. 20, 1996, Ser. No. 603,146

Claims priority, application Japan, Feb. 20, 1995, 7-030857

Int. Cl.[6] F02M *25/07*

U.S. Cl. 123—571 **16 Claims**



1. A diagnosis apparatus for an exhaust gas recirculation unit of an internal combustion engine wherein a portion of the engine exhaust gas is recirculated to the engine intake system via an exhaust gas recirculation passage in which is disposed an exhaust gas recirculation control valve, said apparatus comprising:

combustion pressure detecting means for detecting combustion pressure of the engine, difference computing means for computing a difference between a combustion pressure of the engine detected under an open control condition of said exhaust gas recirculation control valve, and a combustion pressure of the engine detected under a close control condition of said exhaust gas recirculation control valve,

difference estimating means for establishing an estimation value for sad difference in accordance with operating conditions, and

diagnosis means for judging the presence or absence of an abnormality in said exhaust gas recirculation unit based on said difference computed by said difference computing means and said estimation value established by said difference estimating means.

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EXHAUST GAS RECIRCULATION CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

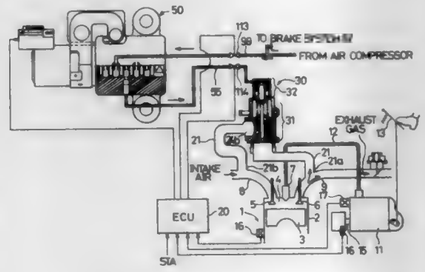
Kunihiro Tsuzuki, Obu; Hiroo Tsujimoto, Kariya; Yukihiko Takeuchi, Handa, and Shiro Maeda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 22, 1996, Ser. No. 605,669

Claims priority, application Japan, Feb. 28, 1995, 7-039834; May 18, 1995, 7-120069; Nov. 10, 1995, 7-293157

Int. Cl.[6] F02M *25/07*

U.S. Cl. 123—571 **15 Claims**



1. An exhaust gas recirculation control apparatus for recirculating a part of exhaust gas into an internal combustion engine comprising:

positive pressure supplying source for generating positive pressure being higher than atmospheric pressure;

a control valve for adjusting said positive pressure of said positive pressure supplying source to a predetermined pressure by mixing atmospheric pressure therewith;

an exhaust gas recirculation valve for controlling an amount of exhaust gas to be recirculated into said internal combustion engine according to said predetermined pressure upon receipt thereof;

a first switching valve for controlling communication between said positive pressure supplying source and said control valve; and

control means for controlling opening or closing of said first switching valve;

wherein said control means controls said first switching valve to be opened only when said predetermined pressure supplied to said exhaust gas recirculation valve is increased and maintained.

5,632,259

IGNITION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Eiichiro Konda, Hitachinaka; Noboru Sugiura, Mito; Kazutoshi Kobayashi, Hitachinaka; Kenichi Katagishi, Hitachinaka; Yoichi Anzo, Hitachinaka; Hidetoshi Oichi, Hitachinaka, and Hiroshi Watanabe, Takahagi, all of Japan, assignors to Hitachi, Ltd., and Hitachi Car Engineering Co., Ltd., both of Japan

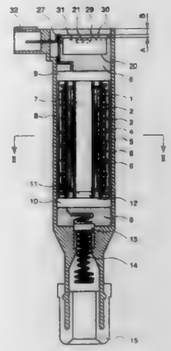
Filed Apr. 22, 1996, Ser. No. 639,105

Claims priority, application Japan, Apr. 21, 1995, 7-096527

Int. Cl.[6] F02P *11/00*

U.S. Cl. 123—634 **15 Claims**

1. A cylindrical type ignition apparatus housed in a plug hole and connected directly to a spark plug, comprising a center core, a primary coil and a secondary each disposed outside the center core, a side core disposed outside those coils, and a core disposed on a lower voltage side, for connecting magnetically said center core and said side core.



5,632,260

CONTROL SYSTEM AND METHOD FOR ENGINE

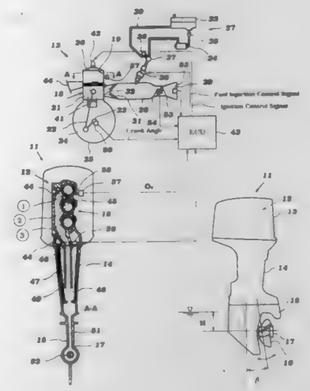
Masahiko Kato, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 4, 1996, Ser. No. 610,641

Claims priority, application Japan, Mar. 3, 1995, 7-044190

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—673 **26 Claims**



1. A fuel-air control system for an internal combustion engine having at least two combustion chambers, a fuel-air introducing system for supplying a fuel-air mixture to each of said combustion chambers, an exhaust system for collecting exhaust gases from said cylinders and discharging them to the atmosphere, an air-fuel ratio sensor associated with only one of said combustion chambers for sensing the air-fuel ratio in that combustion chamber, and feedback control means for adjusting the air-fuel ratio in each of said combustion chambers by adjusting the fuel-air induction system associated therewith, said feedback control system controlling the combustion chamber with which the sensor is associated to provide the target air-fuel ratio and to provide a leaner than target air-fuel ratio for the combustion chamber with which the sensor is not associated.

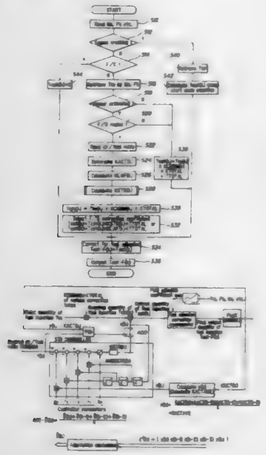
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5,632,261

FUEL METERING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hidetaka Maki, and Shusuke Akazaki, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 581,404
Claims priority, application Japan, Dec. 30, 1994, 6-340026
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—674 **40 Claims**



1. A system for controlling fuel metering for a multi-cylinder internal combustion engine, comprising:
an air/fuel ratio sensor installed at an exhaust system of the engine;
engine operating condition detecting means for detecting engine operating conditions at least including engine speed and engine load;
fuel injection quantity determining means for determining a quantity of fuel injection for individual cylinders at least based on the detected engine operating conditions;
a fuel injector for injecting fuel in the individual cylinders of the engine in response to a corrected quantity of the fuel injection; and
a feedback loop having an adaptive controller and an adaptation mechanism that estimates controller parameters at a convergence speed determined by a gain matrix having diagonal and non-diagonal elements, said adaptive controller correcting the quantity of fuel injection to bring a controlled variable at least obtained based on an output of said air/fuel ratio sensor to a desired value,
wherein said adaptation mechanism estimates the controller parameter independent of the non-diagonal elements of the gain matrix.

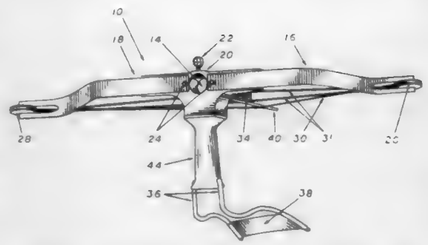
5,632,262

COMPOUND SLING SHOT

Anthony D. Hanson, 1215 N. Main, Aberdeen, S. Dak. 57401

Filed Jan. 11, 1996, Ser. No. 586,936
Int. Cl.[6] F41B *3/02*
U.S. Cl. 124—20.1 **8 Claims**

1. A compound Sling Shot comprising:
a central rigid body having an upper and lower portion, said upper portion having a left and right limb brace and further defining a projectile opening, said lower portion defining a vertical hand grip;
a left and right resilient bow limb;



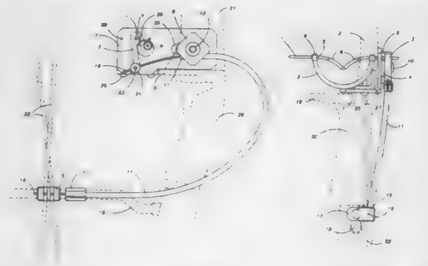
a means of attaching said left and right resilient bow limbs to said respective left and right limb brace so that said resilient bow limbs extend outward in the horizontal plane from said limb braces;
a left and right cam system rotatably attached to said left and right resilient bow limbs opposite of said limb braces;
a tensionable string attached about said cams;
said string having a double separated string portion centered between said cams;
a projectile pouch positioned on said double separated string centered between said cams;
a means of attaching said pouch to said string; and
a forearm brace attached to the bottom of said lower body portion.

5,632,263

AUTOMATIC ARROW POSITIONING DEVICE

John K. Sartain, 22131 Government Springs Rd., Montrose, Colo. 81401

Continuation-in-part of Ser. No. 237,870, May 3, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,796
Int. Cl.[6] F41B *5/22*
U.S. Cl. 124—44.5 **2 Claims**



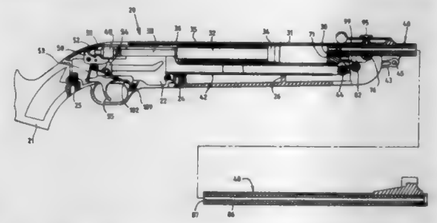
1. An automatic arrow positioning device for attachment to an archery bow having a riser, a bow string, timing cables, and a cable guard bar, said bowstring and riser defining a bow plane along which an arrow is expelled, said arrow positioning device for automatically supporting said arrow in a shooting path in said bow plane when the bow is drawn, comprising:
a housing member, said housing member including two upwardly extending sections, one on each side of said bow plane; a bearing means at the upper end of each upwardly extending section, said bearing means located at approximately the height of said shooting path, and in a plane perpendicular to said bow plane;
a bracket means for attaching said housing member to the bow, said bracket means including a generally vertical plate for attachment to a side of said bow riser, said bracket means including an aperture in line with said bearing means;
an arrow supporting bale means, having a central generally V-shaped section for receiving an arrow, and first and second generally horizontal sections, one on each side of the central section, each horizontal section pivotally supported in a respective bearing means, and said second horizontal section additionally passing through said aperture in said plate;
an activating member having first and second ends, said second horizontal section of said bale means, after passing through said aperture in said plate, anchored to a first end of said activating member;
an actuating cable having first and second ends, a first end of said actuating cable being connected to the second end of said activating means, and a second end of said actuating cable being connected to the timing cables;
whereby, as the bowstring is drawn, the timing cables will move, and such movement will be transmitted through the actuating cable to the bale, causing the V-shaped section to rotate upward to support an arrow in the shooting path, and when the bowstring is released, the V-shaped section will rotate downward to avoid contact with the arrow as it is released.

5,632,264

SPRING AIR GUN WITH PIVOTING BARREL

Kenton H. Barker, Penfield; Michael Cinquino, Livonia, and David C. Snyder, Palmyra, all of N.Y., assignors to Crosman Corporation, East Bloomfield, N.Y.

Filed Jun. 7, 1995, Ser. No. 486,833
Int. Cl.[6] F41B *11/14;11/20*
U.S. Cl. 124—67 **10 Claims**



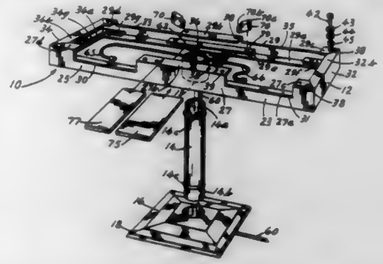
1. A gun comprising:
a frame,
a compression tube mounted on the frame and having front and rear ends,
a fork member mounted on the front end of the compression tube, the fork member including a generally cylindrical body which is inserted into the compression tube and a pair of spaced-apart arms which extend forwardly from the body, the body having a bore which communicates with the compression tube,
a barrel assembly pivotably mounted between the arms and movable between a firing position in which teh barrel assembly is aligned with the bore of the body of the fork member and a cocking position, the barrel assembly including a resilient spring clip which is engageable with the fork member to releasably retain the barrel assembly in the firing position,
the fork member including a stud extending forwardly of the cylindrical body and located between the arms, the stud being engageable with the spring clip of the barrel assembly, the stud being generally cylindrical and the spring clip including a pair of curved spring arms which extend around portions of the stud when the barrel assembly is in the firing position.
3. A gun comprising:
a frame,
a compression tube mounted on the frame and having front and rear ends,
a fork member mounted on the front end of the compression tube, the fork member including a generally cylindrical body which is inserted into the compression tube and pair of spaced-apart arms which extend forwardly from the body, the body having a bore which communicates with the compression tube, and
a barrel assembly pivotably mounted between the arms and movable between a firing position in which the barrel assembly is aligned with the bore of the body of the fork member and a cocking position, the barrel assembly including a resilient spring clip which is engageable with the fork member to releasably retain the barrel assembly in the firing position, each of the arms of the fork member including an attaching portion and the frame includes a butt, the butt being attached to the attaching portions of the arms of the fork member by screws which threadedly engage the attaching portions.
5. A gun comprising:
a frame,
a compression tube mounted on the frame and having front and rear ends,
a fork member mounted on the front end of the compression tube, the fork member including a generally cylindrical body which is inserted into the compression tube and a pair of spaced-apart arms which extend forwardly from the body, the body having a bore which communicates with the compression tube, and
a barrel assembly pivotably mounted between the arms and movable between a firing position in which the barrel assembly is aligned with the bore of the body of the fork member and a cocking position, the barrel assembly including a resilient spring clip which is engageable with the fork member to releasably retain the barrel assembly in the firing position, the front end of the compression tube including a pair of spaced-apart arms which extend forwardly alongside the arms of the fork member.
9. A gun comprising:
a frame,
a compression tube mounted on the frame and having front and rear ends, the front end of the compression tube including a pair of forwardly extending spaced-apart arms, each of the arms of the compression tube having a concave inner surface,
a fork member mounted on the front end of the compression tube, the fork member including a generally cylindrical body which is inserted into the compression tube and a pair of spaced-apart arms which extend forwardly from the body, the body having a bore which communicates with the compression tube, each of the arms of the fork member including a convex outer surface which engages the concave inner surface of one of the arms of the compression tube, and
a barrel pivotably mounted between the arms of the fork member.

5,632,265

GRILL MOUNTING ASSEMBLY

Walter Koziol, Antioch, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Continuation-in-part of Ser. No. 234,199, Apr. 26, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 456,363
Int. Cl.[6] F24B *3/00*
U.S. Cl. 126—30 **23 Claims**



1. An assembly for mounting at least one barbecue grill unit and a cooking related device to a post member comprising:
a support member, said support member including at least one first and second opposing base portion, said base portions including at least one flange member and cut out section

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constructed and arranged to selectively receive and connect barbecue grill units of various sizes on said first base portion and cooking related devices of various sizes or a surface on said second base portion;

at least one of said base portions having a multiplicity of flange members for connection to said barbecue grill units, said flange members having apertures to receive connecting members, said apertures being positioned in one location to receive gas barbecue grill units of one size and in another location of said base portion to receive barbecue grill units of another size; and

means to connect said support member to an essentially vertically disposed support post member between said base portions.

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FRYER

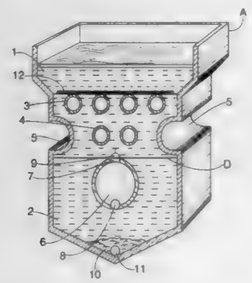
Tadayoshi Sato, 4-32-13 Machiya, Arakawa-ku Tokyo, Japan

Filed May 4, 1995, Ser. No. 434,926

Claims priority, application Japan, May 20, 1994, 6/131033; May 17, 1994, 6/126899; Dec. 9, 1994, 6/331557

Int. Cl.[6] A47J *27/026;27/00*

U.S. Cl. 126—391 **12 Claims**



1. An apparatus for frying food comprising:

(a) a frying vessel having a front wall, a back wall, two side walls, a bottom and an open top which define an interior and an exterior of said frying vessel, said interior of said frying vessel for containing an oil bath in which food is fried and a water bath positioned below said oil bath, said oil bath and water bath interfacing at an oil and water boundary, said oil bath being housed in an upper portion of said frying vessel and said water bath housed in a lower portion of said frying vessel, said lower portion of said frying vessel having a distance between said front wall and said back wall which is shorter than the distance between said front wall and said back wall in said upper portion of said frying vessel;

(b) a heating means for heating oil in said oil bath to a temperature suitable for frying food, said heating means arranged in said oil bath in said upper portion of said frying vessel; and

(c) an air cooling pipe which runs horizontally between said two side walls of said frying vessel and positioned below said heating means in said lower portion of said frying vessel, said cooling pipe being open at both ends to allow air to flow through said cooling pipe.

5,632,267

HEART DEFIBRILLATOR AND DEFIBRILLATION METHOD WHEREIN DEFIBRILLATION IS ACHIEVED BY HIGH-FREQUENCY, LOW-ENERGY PULSES

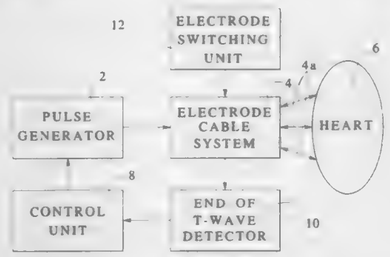
Kurt Högnelid, Bromma, and Kjell Noren, Solna, both of Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Aug. 29, 1995, Ser. No. 521,039

Claims priority, application Sweden, Aug. 29, 1994, 9402865

Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—5 **43 Claims**



1. A heart defibrillator comprising:

a pulse generator which emits electrical pulses each having an amplitude less than or equal to about 5 V;

electrode means adapted for delivering said electrical pulses in vivo to a defibrillating heart;

means for identifying a period of time for making said heart entirely refractory by delivery of said electrical pulses thereto; and

control means for controlling said pulse generator for causing said pulse generator to emit said electrical pulses at a rate faster than or equal to about 5 Hertz for said period of time.

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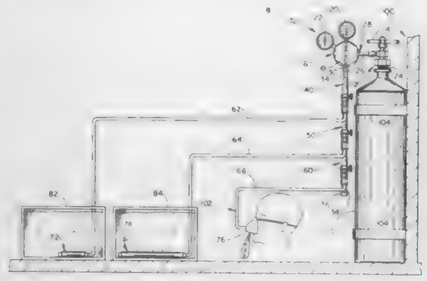
MULTIPLE PURPOSE FIXED OR PORTABLE OXYGEN DELIVERY SYSTEM

Donald L. Ellis, Rte. 3, Box 91; LeRoy J. Ellis, Rte. 3, Box 216, both of Cass Lake, Minn. 56633, and Duane K. Rorie, 1040 Mayowood Rd. SW., Rochester, Minn. 55902

Filed Feb. 2, 1996, Ser. No. 595,744

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.18 **17 Claims**



1. An apparatus, comprising:

oxygen supply means for providing a predetermined supply of pressurized oxygen;

regulation means in fluid communication with said oxygen supply means for selectively dispensing said pressurized oxygen from said oxygen supply means, said regulation means including first metering means and second metering means;

oxygen diffusion means connected to said first metering means for diffusing oxygen within a water bath, said first metering means for selectively adjusting the flow of said pressurized oxygen to said oxygen diffusion means; and

oxygen mask means connected to said second metering means for delivering oxygen to a patient in need of oxygen, said second metering means for selectively adjusting the flow of said pressurized oxygen to said oxygen mask means.

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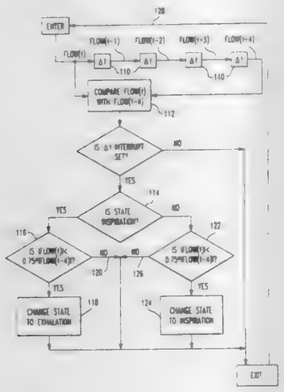
BREATHING GAS DELIVERY METHOD AND APPARATUS

Ronald J. Zdrojkowski, Pittsburgh, Pa., assignor to Respironics Inc., Murrysville, Pa.

Continuation-in-part of Ser. No. 947,156, Sep. 18, 1992, Pat. No. 5,433,193, which is a continuation-in-part of Ser. No. 411,012, Sep. 22, 1989, Pat. No. 5,148,802. This application Dec. 2, 1994, Ser. No. 349,634

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23 **11 Claims**



1. A method of detecting changes in the respiratory state of a patient between inspiration and expiration comprising the steps of:

monitoring the respiratory gas flow of such a patient;

from said monitoring, determining a patient respiratory gas flow characteristic at selected time intervals to provide a plurality of said gas flow characteristics displaced in time from one another;

identifying selected pairs of said respiratory gas flow characteristics from said plurality;

comparing said selected pairs of said respiratory gas flow characteristics; and

from said comparing, identifying changes in the patient's respiratory state between inspiration and expiration.

5,632,270

METHOD AND APPARATUS FOR CONTROL OF LUNG VENTILATOR EXHALATION CIRCUIT

John J. O'Mahony, Galway, Ireland, and Floyd R. Farnham, III, Encinitas, Calif., assignors to Puritan-Bennett Corporation, Overland Park, Kans.

Filed Sep. 12, 1994, Ser. No. 304,048

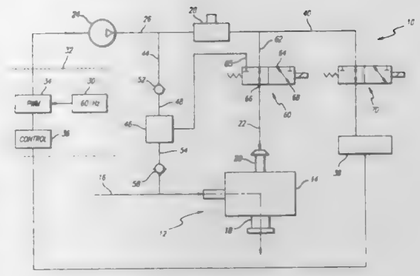
Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.24 **10 Claims**

1. An apparatus for controlling gas flow through an exhalation circuit of a lung ventilator for controlling airway pressure in a patient airway connected to the exhalation circuit, comprising:

a pneumatically operated exhalation valve for controlling flow of gas through said exhalation circuit;

a pump for supplying a first source of pressurized air;



a second source of pressurized air;

a pump control for controlling the pressure of pressurized air supplied by said pump means;

a valve connected to said pump and said second source of pressurized air, said valve having a first position in fluid communication with said pump for receiving pressurized air from said pump, and a second position in fluid communication with said second source of pressurized air for receiving pressurized air from said second source of pressurized air, said valve having an outlet connected to a pilot pressure line in fluid communication with said exhalation valve to deliver pressurized air through said pilot pressure line to said exhalation valve for operation of said exhalation valve; and

a valve control for switching said valve between said first and second positions.

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LARYNGEAL MASK WITH GASTRIC-DRAINAGE FEATURE

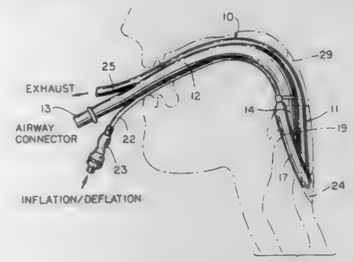
Archibald I. J. Brain, Sandford House, Fan Court Gardens, Longcross Road, Chertsey, Surrey, United Kingdom

Filed Mar. 27, 1996, Ser. No. 622,734

Claims priority, application United Kingdom, Mar. 22, 1996, 9606012

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—207.15 **18 Claims**



1. A laryngeal mask airway system, comprising a generally elliptical inflatable ring of relatively softly compliant elastomeric material, said ring extending from a proximal end to a distal end, said ring being adapted for sealed application to the laryngeal inlet of a patient, and means including a backing-plate member of relatively stiffly compliant material peripherally joined in a geometric plane to the inner periphery of said ring, said backing-plate member being domed to provide a concavity which will face the laryngeal inlet, and said backing-plate member having connection means at its proximal end for airway-tube communication with said concavity, said connection means having a generally proximally directed axis which is at an acute angle to said geometric plane; said ring having an inner cross-sectional area which is substantially constant along an extended continuous arc which includes said proximal end and which further includes continuous

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laterally opposite side passages which extend to a location which is at a predetermined longitudinal offset that is short of said distal end, wherein said predetermined offset is in the order of twice the radial width (R_2–R_1) of said ring within said side passages; and flexible tubular conduit means secured to and tracking the acute-angle inclination of said airway-tube connection means, said conduit means having peripherally sealed connection to said ring at passage through a ring portion near the proximal end of said predetermined offset, and said conduit means having further peripherally sealed connection to said ring at a distal-end location of open-conduit communication distally beyond the distal end of said ring.

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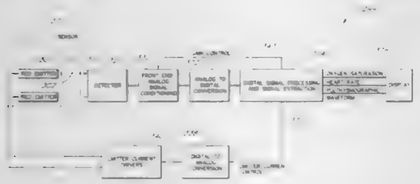
SIGNAL PROCESSING APPARATUS

Mohamed K. Diab; Esmaiel Kiani-Azarbayjany; Ibrahim M. Elfadel, all of Laguna Niguel; Rex J. McCarthy, Mission Viejo; Walter M. Weber, Los Angeles, and Robert A. Smith, Corona, all of Calif., assignors to Masimo Corporation, Mission Viejo, Calif.

Continuation-in-part of Ser. No. 132,812, Oct. 6, 1993, Pat. No. 5,490,505, and a continuation-in-part of Ser. No. 249,690, May 26, 1994, Pat. No. 5,482,036, which is a continuation of Ser. No. 666,060, Mar. 7, 1991, abandoned. This application Oct. 7, 1994, Ser. No. 320,154

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **23 Claims**



1. In a signal processor for processing at least two measured signals S_1 and S_2 each containing a primary signal portion s and a secondary signal portion n, said signals S_1 and S_2 being in accordance with the following relationship:

$$S_1=s_1+n_1$$

$$S_2=s_2+n_2$$

where s_1 and s_2, and n_1 and n_2 are related by:

$s_1=r_a s_2$ and $n_1=r_v n_2$

and where r_a and r_v are coefficients,

a method comprising the steps of:

determining a value for the coefficient r_a which minimizes correlation between s_1 and n_1;

calculating the blood oxygen saturation from said value of r_a; and

displaying the blood oxygen saturation on a display.

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METHOD AND MEANS FOR MEASUREMENT OF BIOCHEMICAL COMPONENTS

Susumu Suzuki, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jul. 5, 1994, Ser. No. 270,986

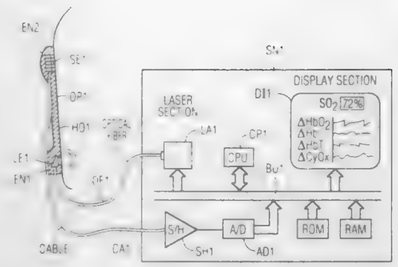
Claims priority, application Japan, Feb. 4, 1994, 6-012653

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **28 Claims**

1. The method, comprising:

directing electromagnetic radiation at one or more wavelengths into a body at one location;



sensing electromagnetic radiation at the wavelengths emerging from the body at a plurality of distances from the one location; and

ascertaining biochemical component characteristics in the body as a function of differences in a negative logarithm of the electromagnetic radiation sensed for the wavelengths at the plurality of distances, and a scattering coefficient relative to the wavelengths at each of the distances.

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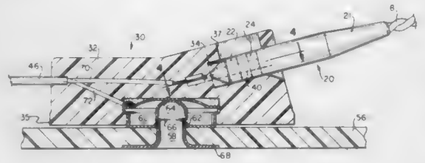
CONNECTION ARRANGEMENT FOR MONITORING FETAL HEART RATE

Phillipp J. Quedens, Berlin; Donald R. Boucher, Wallingford; John T. Shipherd, Madison; Michael J. Malis, Trumbull, and Joseph A. Izzo, New Haven, all of Conn., assignors to Corometrics Medical Systems, Wallingford, Conn.

Division of Ser. No. 201,772, Dec. 24, 1992, Pat. No. 5,373,843. This application Dec. 6, 1994, Ser. No. 349,834

Int. Cl.[6] A61B *5/04*

U.S. Cl. 128—642 **17 Claims**



1. A connector device for use in monitoring fetal heart rate by being adapted for making electrical connection between a remote monitoring device and a connector body having spaced terminals that are in electrical connection with fetal and maternal electrodes, said connector device comprising:

a housing having an elongated opening that extends inwardly of the housing from an entrance so as to define an elongated path for receiving a single connector body having spaced apart terminals, the path extending about a centerline in a direction of elongation of the path;

input means for receiving electrical signals including first and second contacts within the opening and accessible from outside via the entrance said first and second contacts being adjacent said path and being spaced apart in the direction of elongation whereby said first and second contacts will respectively engage one of the spaced terminals of said single conductor body inserted into said opening;

output means supported by the housing and adapted for making electrical connection with a remote device;

a base having ground electrode means accessible from an underside of the base; and

means for electrically connecting the output means with both the input means and the ground electrode means.

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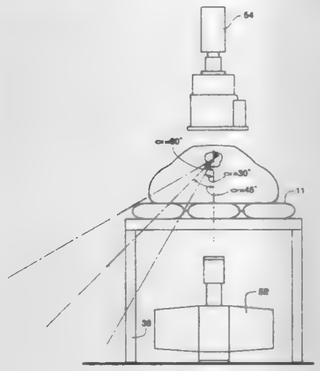
CATHETER LAB TABLE PAD AND METHOD FOR USING THE SAME

Kevin F. Browne, Lakeland, Fla., and Robert M. Scribner, Boulder, Colo., assignors to Scribner-Browne Medical Design Incorporated, Boulder, Colo.

Filed Sep. 16, 1994, Ser. No. 308,099

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 **12 Claims**



1. In a process for performing catheter lab imaging on the heart of a patient utilizing a catheter lab imaging apparatus comprising a catheter lab table, an x-ray transmitter, and an x-ray receiver, the improvement comprising the steps of:

positioning a pneumatic pad on the table, the pad including a radiolucent portion positioned in an imaging region of the table, and the pad further including seams;

inserting gas into the pad to at least partially inflate the pad;

positioning the patient in a reclined position on the pad such that the patient's heart is aligned with the radiolucent portion of the pad;

imaging the heart of the patient while performing a catheter lab procedure, wherein the imaging apparatus images along predetermined imaging axes, wherein said positioning the pad step comprises positioning the seams to avoid interference with the imaging axes;

removing the patient from the pad; and

removing the gas from the pad to deflate the pad.

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MARKERS FOR USE IN SCREENING PATIENTS FOR NERVOUS SYSTEM DYSFUNCTION AND A METHOD AND APPARATUS FOR USING SAME

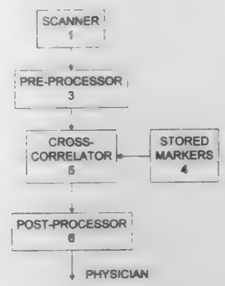
David Eidelberg, 250 E. 87th St., Apt 17-E, New York, N.Y. 10128, and James R. Moeller, 201 Varsity Ave., Princeton, N.J. 08540

Filed Jan. 27, 1995, Ser. No. 379,056

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 **26 Claims**

1. A method for screening patients for nervous system dysfunction, comprising the steps of: producing a patient profile of actual functional activity of a brain of a patient; and comparing the patient profile with at least one marker comprising a profile of predetermined functional activity at a plurality of sets of predetermined coordinates of a given brain geometry.



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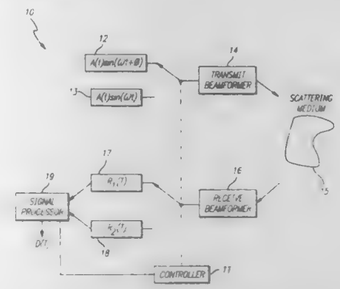
ULTRASOUND IMAGING SYSTEM EMPLOYING PHASE INVERSION SUBTRACTION TO ENHANCE THE IMAGE

Christopher S. Chapman, Redmond, and John C. Lazenby, Fall City, both of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jun. 28, 1996, Ser. No. 672,823

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.07 **2 Claims**



1. In a method for generating an ultrasound image in which ultrasound pulses comprising amplitude modulated harmonic signals are transmitted into a specimen and echos generated by said ultrasound pulses are received, the improvement comprising: transmitting first and second ultrasound pulses into a specimen, said first and second ultrasound pulses, said first ultrasound pulse differing from said second ultrasound pulse by the phase of said harmonic signal; receiving an echo signal, $R_1(t)$, generated by said first ultrasound pulse, said echo signal being determined by the amplitude of an echo received at a transducer as a function of the time, t, after said first ultrasound pulse was transmitted; receiving an echo signal, $R_2(t)$, generated by said second ultrasound pulse, said echo signal being determined by the amplitude of an echo received at said transducer as a function of the time, t after said second ultrasound pulse was transmitted; and combining $R_1(t)$ and $R_2(t)$ to generate an image signal D(t).

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DEVICE FOR AUTOMATICALLY MEASURING THE BLOOD PRESSURE

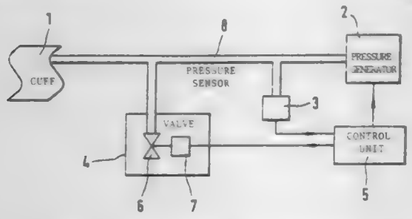
Rainer Rometsch, Wildberg, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 288,662, Aug. 9, 1994, abandoned. This application Jul. 16, 1996, Ser. No. 680,972

Claims priority, application Germany, Sep. 16, 1993, 43 31 450.3

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—672 10 Claims



1. A device for automatically measuring the blood pressure, comprising

a sphygmomanometer cuff,

a pressure generation device for filling the cuff,

a pressure sensor for detecting the cuff pressure,

a valve for controllably venting the cuff, said valve comprising an elastic tube and a squeezing device adapted to be actuated by an electromagnet and used for said elastic tube, and

a control unit for controlling the valve,

wherein said electromagnet has a structural design of such a nature that the gradient of the force with respect to the displacement of its force/displacement characteristic is at each operating point smaller than the gradient of the force with respect to the displacement of the force/displacement characteristic occurring when the elastic tube is squeezed.

5,632,279

METHOD OF INTERFERENCE-TOLERANT TRANSMISSION OF HEARTBEAT SIGNALS

Ilkka Heikkilä , Oulu, Finland, assignor to Polar Electro Oy, Kempele, Finland

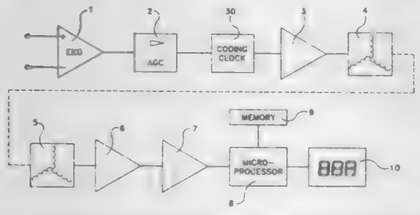
PCT No. PCT/FI94/00494, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO95/12350, PCT Pub. Date May 11, 1995

PCT Filed Nov. 3, 1994, Ser. No. 464,658

Claims priority, application Finland, Nov. 4, 1993, 934877

Int. Cl.[6] A61B *5/0402*

U.S. Cl. 128—696 3 Claims



1. A method of interference-tolerant heartbeat measurement, said method comprising the steps of:

(a) measuring a person's heartbeat signal at a suitable part of said person's body;

(b) forming burst signals corresponding to individual heartbeats of said heartbeat signal;

(c) amplitude-modulating said burst signals with an identifier including at least one of:

(i) a frequency; and

(ii) a frequency sequence which are characteristic of a transmitter/receiver unit;

(d) transmitting said burst signals, at a transmitting interval, from a transmitting means of said transmitter/receiver unit to a receiver of said transmitter/receiver unit by means of telemetric data transmission, said transmitting interval of said burst signals being proportional to a heartbeat rate corresponding to said person's measured heartbeat signal;

(e) receiving said burst signals in said receiver; and

(f) identifying said burst signals as emanating from said transmitting means on the basis of sensing said identifier so that said receiver recognizes those of said burst signals intended for it.

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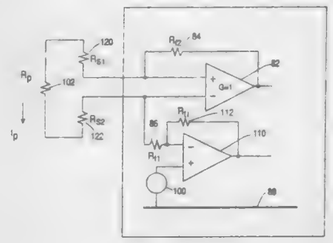
METHOD FOR CIRCUIT FAULT DETECTION IN DIFFERENTIAL SIGNAL DETECTORS

Kent W. Leyde, Redmond; Thomas D. Lyster, Bothell, and Daniel J. Powers, Issaquah, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.

Division of Ser. No. 398,377, Mar. 3, 1995. This application Jul. 25, 1996, Ser. No. 685,999

Int. Cl.[6] A61B *5/04*

U.S. Cl. 128—696 6 Claims



1. In an electrical circuit that detects differential mode signals in an environment where differential mode signals potentially co-exist with common mode signals wherein said circuit comprising,

first and second input leads through which both common mode and differential mode signals are input from at least one signal source,

a differential amplifier block having at least an output lead, an inverting node and a non-inverting node connected to said first and second input leads respectively, said amplifier block having a substantial differential gain of one and such that the signal from said output lead is input into said non-inverting node,

a potential reference,

a voltage source connected to said potential reference and to said inverting node of said amplifier block,

an input lead resistor connected to one of said input leads and its corresponding amplifier block node,

a method for continuous fault detection in said electrical circuit while detecting signals from a patient, the steps of said method comprising:

a) attaching the first and second input leads to the patient;

b) inputting a known voltage signal from said voltage source into the inverting node of the amplifier block;

c) monitoring the voltage signal on the output lead of the amplifier block; and

d) determining if fault conditions exist in the circuit based on the voltage signal received at the output lead.

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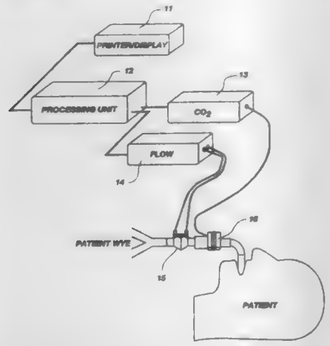
NON-INVASIVE ESTIMATION OF ARTERIAL BLOOD GASES

Daniel B. Rayburn, 14285 Patriarch Ct., Centerville, Va. 22020

Filed Feb. 6, 1995, Ser. No. 384,519

Int. Cl.[6] A61B *5/08*

U.S. Cl. 128—719 21 Claims



1. A non-invasive arterial gas partial pressure determination system, comprising:

expiratory gas sampling means for taking one or more samples of expiratory gases from a patient;

means for assessing a partial pressure and a volumetric rate for said sampled gas;

means for evaluating said sampled gas in terms of said assessed gas partial pressure and volumetric rate iteratively during an exhale cycle to develop a multi-variable relationship in a time domain; and

gas sampling data processing means for receiving data representative of said relationship, normalizing said data and selectively processing said data to determine arterial gas partial pressure values for that patient.

5,632,282

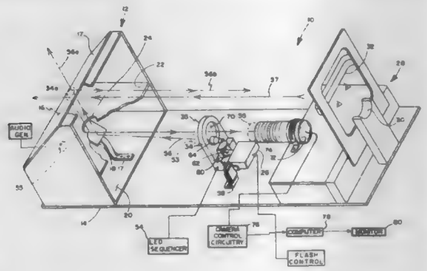
OCULAR DISEASE DETECTION APPARATUS

S. Hutson Hay, 310 Clinton Ave. West, Huntsville, Ala. 35801, and P. John Reiner, 108 Sunscape Dr., Huntsville, Ala. 35806

Continuation-in-part of Ser. No. 93,685, Jul. 20, 1993, Pat. No. 5,355,895. This application Oct. 18, 1994, Ser. No. 324,884

Int. Cl.[6] A61B *13/00*

U.S. Cl. 128—745 23 Claims



1. A method implemented by a data processor for analyzing an optical state of a subject's eyes by analyzing light intensity levels of an image of at least one eye of said eyes, said image generated by directing a beam of light into said eyes and registering a reflection of said eyes by a light intensity detector, and comprising the steps of:

1) locating a pupil of each of said subject's eyes,

2) analyzing light intensity levels of a retinal reflection from each said pupil to determine whether pathologic conditions are present,

3) plotting results of an analysis of each said retinal reflection,

4) displaying a plot of said results.

5,632,283

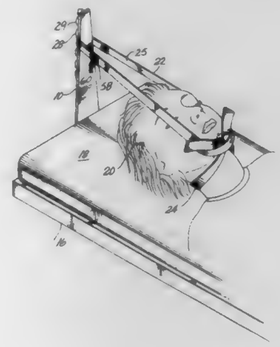
PATIENT CHIN SUPPORT AND METHOD

Edward Carden, 4 Jib St., Unit 14, Marina Del Rey, Calif. 90292

Division of Ser. No. 161,289, Dec. 3, 1993, Pat. No. 5,494,048, which is a continuation-in-part of Ser. No. 999,611, Dec. 31, 1992, abandoned. This application Aug. 14, 1995, Ser. No. 514,776

Int. Cl.[6] A61G *15/00*

U.S. Cl. 128—845 14 Claims



1. A chin support apparatus for unattended positioning of the head of an anesthetized patient on an operating table, the apparatus comprising:

a substantially rigid pylon member structured for releasable and positionally adjustable connection directly to an operating table and to extend substantially fixedly and vertically from the table adjacent a patient's head; and

a flexible tether assembly structured for connection in tension directly between the pylon member and a connection point essentially at the point of the patient's chin and for applying to the chin point a force directed toward the pylon, the tether assembly including adjustable fastener means for defining the connection point.

5,632,284

BARRIER EYE DRAPE AND METHOD OF USING SAME

John M. Graether, 611 Elmwood Dr., Marshalltown, Iowa 50158

Filed May 22, 1996, Ser. No. 651,325

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—849 12 Claims

1. A barrier eye drape, comprising:

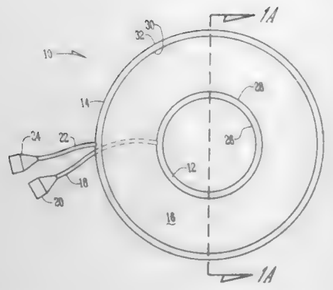
an inner flexible tubular member having a first diameter adapted for insertion underneath the eyelids of a patient's eye and adapted to extend around the eyeball of a patient;

an outer flexible tubular member having a second diameter greater than said first diameter and being adapted to engage the anterior surface of the eyelid of a patient,

a flexible drape of sheet material extending between said inner and outer tubular members; and

means for pumping fluid under pressure into said inner and outer flexible tubular members to inflate said members and draw

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said drape of sheet material into substantial planar contact with the interior and anterior portions of said eyelids.

5,632,285

APPARATUS FOR MAKING FILTER TIPPED SMOKERS' PRODUCTS HAVING A NON-CIRCULAR CROSS-SECTIONAL OUTLINE

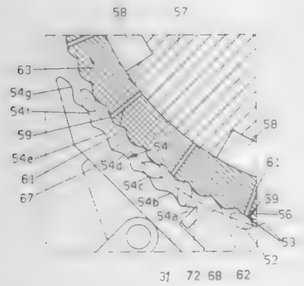
Rolf Dahlgrün, Chaville, France, assignor to Decouflé S.A.R.L., Chilly-Mazarin, France

Filed Feb. 27, 1996, Ser. No. 607,451

Claims priority, application Germany, Mar. 3, 1995, 195 07 395.9

Int. Cl.[6] A24C *5/10;5/47*

U.S. Cl. 131—94 **9 Claims**



1. Apparatus for connecting groups of aligned rod-shaped smokers' articles, having non-circular cross-sectional outlines and including neighboring end portions, by adherent uniting bands which are carried by and are to be convoluted around the neighboring end portions of the articles, comprising a group advancing conveyor rotatable in a predetermined direction about a predetermined axis and having a peripheral rolling surface provided with axially parallel group-receiving flutes, said peripheral surface having a first undulate profile conforming to the outlines of the articles forming said groups; and a rolling member adjacent to and defining with said conveyor a passage wherein the uniting bands carried by the groups are convoluted about the end portions of the respective articles as a result of rolling of the articles along said peripheral surface, said rolling member including a second rolling surface confronting said peripheral rolling surface across said passage and having a second undulate profile also conforming to the outlines of the articles forming said groups.

5,632,286

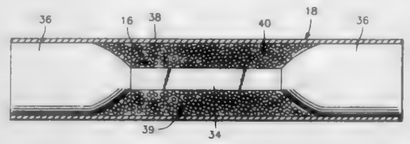
CRIMPED ELEMENTS FOR CIGARETTES AND THE LIKE AND METHODS AND APPARATUS FOR MAKING SAME

Richard M. Berger, Midlothian, and Robert G. Hemsworth, Glen Allen, both of Va., assignors to American Filtrona Corporation, Richmond, Va.

Filed Jun. 21, 1994, Ser. No. 263,436

Int. Cl.[6] A24B *3/12*

U.S. Cl. 131—33 **56 Claims**



1. An elongate rod-like member for use in a cigarette or the like, said member comprising a polymeric material and including spaced bulbous sections of relatively large cross-section alternating lengthwise of the member with connecting sections of relatively small cross-section integrally interconnecting said bulbous sections, said bulbous sections each including intercommunicating passageways defining an air-pervious plug, and said connecting sections having elongate edges substantially free of flashing.

5,632,287

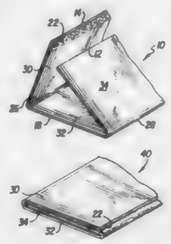
FLAT SMOKING ARTICLE AND METHOD OF MAKING SAME

Roger G. Hayworth, High Point, and Jackie L. White, Pfafftown, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 1, 1995, Ser. No. 567,392

Int. Cl.[6] A24D *1/00;1/02*

U.S. Cl. 131—360 **46 Claims**



1. A sheet of reconstituted tobacco for use in making a smoking article, said sheet having two sides, said sheet having a first fold line defining at least first and second panels, and an adhesive applied to a surface of both the first and second panels on one side of said sheet such that when said sheet is folded upon itself along said first fold line, the adhesive on each panel contacts the surface of the other panel to thereby adhesively secure the panels in direct surface contact with one another to form a substantially flat smoking article.

5,632,288

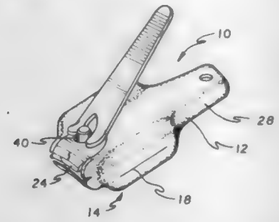
NAIL CLIPPINGS CATCHER

Jack D. Webb, 1025 Dove Run Rd. Suite 104, Lexington, Ky. 40502

Continuation-in-part of Ser. No. 389,395, Feb. 16, 1995, abandoned. This application Mar. 27, 1996, Ser. No. 623,399

Int. Cl.[6] B26B *17/00;* **A45D** *29/02*

U.S. Cl. 132—75.5 **5 Claims**



1. A nail clippings catcher for use with a nail clipper to releasably capture a plurality of nail clippings, said catcher comprising:
a resilient receptacle having a closed narrow end and an open wide end, said receptacle having first and second lateral hollow projections proximate said open wide end, each of said projections having a slit extending substantially therealong.

5,632,289

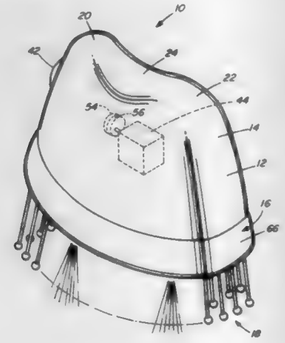
POWDER DISPENSING VIBRATING GROOMING APPARATUS

Steve R. Sharp, Fort McMurray, Canada, assignor to Okanagan House Inc., Penticton, Canada

Filed Sep. 26, 1995, Ser. No. 533,873

Int. Cl.[6] A45D *24/22*

U.S. Cl. 132—116 **8 Claims**



1. An apparatus for grooming hair, the apparatus comprising:
a) a handle portion;
b) a hairbrush having:
i) a container for containing particulate matter, said container including:
a resilient flexible sheet member having first and second surfaces disposed on opposite sides thereof and a perimeter edge; and
a rigid member having a handle mounting portion and a tine mounting portion disposed on opposite sides of said rigid member, said handle mounting portion connecting said handle portion to said rigid member and said tine mounting portion having a holder for holding said perimeter edge of said flexible sheet member such that said first surface is convexly shaped and said second surface is concavely shaped; and
ii) a plurality of tines connected to said flexible sheet member to project generally at right angles to said first surface;
c) a vibrator for vibrating said hairbrush; and
d) an opening in said container, proximate to said tines, for dispensing said particulate matter amongst said tines when said hairbrush is vibrated.

5,632,290

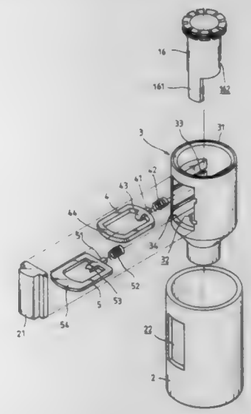
AUTOMATICALLY COLLAPSIBLE UMBRELLAS

Cheng M. Ling Kuo, No. 18, Alley 15, Lane 582, Sea Ta Road, Hsinchu, Taiwan, Taiwan

Filed Aug. 16, 1996, Ser. No. 699,107

Int. Cl.[6] A45B *25/14*

U.S. Cl. 135—24 **1 Claim**



1. An automatically collapsible umbrella, comprising a main function body formed by a combination of all umbrella shall, consisting of an inner tube and all outer tube, a mandrel, a positioning rod, and springs, with an umbrella rib assembly by means of a holding ring and runner; and characterized in that:
(A) insider the umbrella handle is control mechanism comprising
a main body located inside the handle having a rectangular hole formed on one side which is in a position corresponding to a rectangular opening on the umbrella handle that receives a button;
two elongated grooves formed in the main body being perpendicular to the hole on the main body to engage with two corresponding lock plates; the upper ring-shape lock plate having an outward projection being capable of receiving a spring and having the opposite ringside to contact with inner face of the button; an inward tongue formed related to the projection;
the lower lock plate being similar to the upper lock plate having a projection with a spring, a ringside contacting with inner face of the button, and a related tongue with curving face; the ringside being wider than the ringside of the upper lock plate;
(B) the runner having a downward extending plate and an engaging groove on its other side;
when assembling, the inner tube with a sleeve being connected to the control mechanism wherein the tongue of the lower lock plate is inserted into the inner tube and the sleeve.

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5,632,291

CIRCULAR AIR MATTRESS AND TENT

Marinus Botbyl, and Nelly Botbyl, both of 16 Grammar Avenue, St. Catherines, Ontario, Canada

Filed Jun. 12, 1995, Ser. No. 488,168
Int. Cl.[6] E04H *15/56;* A47C *27/08*
U.S. Cl. 135—116 1 Claim



1. A combination tent and circular air mattress comprising:

an upper circular web of flexible and air impermeable construction, the upper circular web comprising a plurality of wedge-shaped webs stitched together;

a lower circular web of flexible and air impermeable construction positioned in a substantially spaced orientation relative to the upper circular web;

a perimeter side wall coupled to an outer peripheral edge of the upper circular web and extending substantially orthogonally therefrom, the perimeter side wall being coupled to an outer peripheral edge of the lower circular web, the perimeter side wall being formed of a plurality of arcuate shaped webs stitched together, the perimeter side wall being shaped so as to define a recessed area formed thereinto;

an air valve directed through the perimeter side wall and permitting a pneumatic inflation of the mattress, whereby pneumatic pressure between the upper circular web and lower circular web as contained by the perimeter side wall extending therebetween can support an individual in a spaced relationship relative to a ground surface, the air valve being mounted within the recess of the perimeter side wall, the air valve comprising a nozzle projecting through an aperture in the perimeter side wall, the nozzle terminating in an outer distal end spaced from the side wall; a plug tethered to the outer distal end of the nozzle and removably inserted thereinto so as to preclude fluid communication through the nozzle, and a check valve positioned within the nozzle;

a plurality of spacing means extending from the lower circular web for supporting the lower circular web in a spaced relationship relative to a ground surface, the spacing means comprising a plurality of elongated ribs which are coupled to and extend in a co-linearly aligned matrix across a bottom of the lower circular web, the elongated ribs each being shaped so as to define a triangular cross-section, the elongated ribs each projecting from the lower circular web and terminating in an engaging apex; and

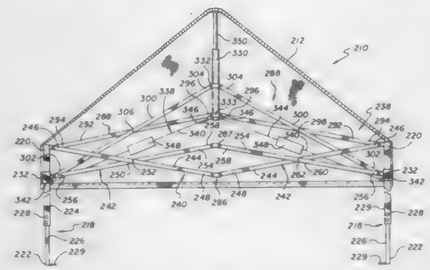
a domed tent having a floor web, the air mattress being positioned within the domed tent, with the lower circular web being shaped so as to be substantially coextensive relative to the floor web of the domed tent, with the spacing means maintaining the lower circular web in a spaced orientation relative to the floor web of the tent.

5,632,292

COLLAPSIBLE SHELTER WITH ELEVATED CANOPY

Mark C. Carter, 10131 Kernwood Ct., Alta Loma, Calif. 91737

Continuation of Ser. No. 279,656, Jul. 25, 1994, Pat. No. 5,485,863, which is a continuation-in-part of Ser. No. 42,996, Apr. 5, 1993, Pat. No. 5,490,533. This application Nov. 2, 1995, Ser. No. 552,091
Int. Cl.[6] E04H *15/50*
U.S. Cl. 135—145 20 Claims



1. A collapsible shelter, comprising:

a canopy having at least three sides and at least three corners;

a leg assembly including at least three vertically disposed legs supporting said canopy, with one of said legs disposed under each of said canopy corners, each of said legs having an upper end and a lower end;

at least two central truss pairs of link members, each of said central truss pairs of link members including first and second link members connected together in a scissors configuration, said first and second link members being pivotally connected together in a scissors configuration so as to be extendable from a first collapsed position to a second extended position, said second links of the central truss pairs being longer than the first links of the central truss pairs, so that in said second extended position of the shelter, the second link extends above the upper ends of the legs; and

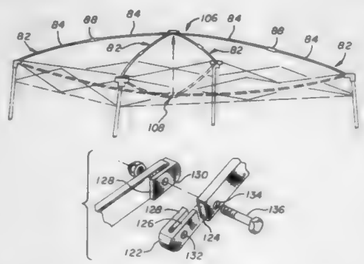
means for mounting said at least two central truss pairs of link members to said leg assembly.

5,632,293

COLLAPSIBLE SHELTER WITH FLEXIBLE, COLLAPSIBLE CANOPY

Mark C. Carter, 10131 Kernwood Ct., Alta Loma, Calif. 91737, assignor to Mark C. Carter

Continuation of Ser. No. 279,476, Jul. 25, 1994, Pat. No. 5,511,572. This application Feb. 23, 1996, Ser. No. 604,801
Int. Cl.[6] E04H *15/50*
U.S. Cl. 135—145 24 Claims



1. A collapsible shelter, comprising:

at least three legs, each of said legs having an upper end and a lower end;

at least two perimeter truss pairs of link members connected to each of said legs, each of said perimeter truss pairs of link members including first and second link members, said first and second link members each having inner ends having a surface defining an opening, a reinforcing plug disposed in said opening of said inner ends of said first and second link members, said inner ends of said first link members on a side of the collapsible shelter being pivotally connected through said reinforcing plugs, and said inner ends of said second link members on a side of the collapsible shelter being pivotally connected through said reinforcing plugs, said first link member having an outer end connected to the upper end of one said leg, and said second link member having an outer end slidably connected to said leg, and said first and second link members being pivotally connected together in a scissors configuration so as to be extendable from a first collapsed position to a second extended position; and

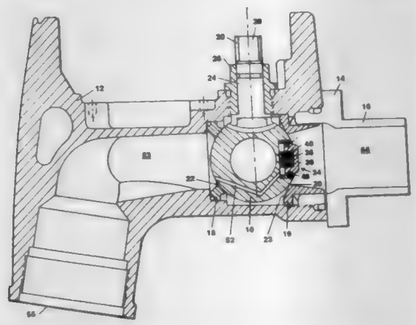
a flexible, collapsible canopy mounted to said upper end of said legs, said flexible, collapsible canopy being movable between a normal raised position and a lowered position when said perimeter truss pairs of link members are in said second extended position, providing said collapsible shelter with a reduced profile when said canopy is in said lowered position.

5,632,294

LOCKING BALL VALVE FOR A FLUID CONDUIT

Frances H. Benton, Harrisville, N.H., assignor to Scully Signal Company, Wilmington, Mass.

Filed Jun. 24, 1996, Ser. No. 669,639
Int. Cl.[6] F16K *5/06;35/00*
U.S. Cl. 137—1 20 Claims



17. A method of transferring fluid through a conduit, the method comprising:

providing a movable valve structure in fluid communication with the conduit, the valve structure having an open position, which permits fluid flow past the valve structure, and a closed position, which prevents fluid flow past the valve structure;

providing a detent having a first position which obstructs movement of the valve structure from the closed position to the open position, and having a second position which permits movement of the valve structure from the closed position to the open position, the detent moving from the first position to the second position in response to a predetermined fluid pressure within the conduit;

increasing fluid pressure within the conduit when the valve structure is in the closed position until the predetermined fluid pressure within the conduit is achieved; and

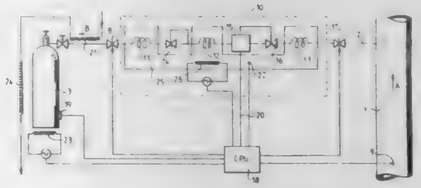
moving the valve structure from the closed position to the open position.

5,632,295

METHOD AND AN APPARATUS FOR ADDING A MELODORANT TO A CONSUMER GAS

Erik Smårs, Rimbo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

PCT No. PCT/SE92/00432, § 371 Date Dec. 8, 1994, § 102(e) Date Dec. 8, 1994, PCT Pub. No. WO93/25638, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 16, 1992, Ser. No. 351,352
Int. Cl.[6] C10J *1/28*
U.S. Cl. 137—3 23 Claims



1. A process for regulating the amount of a master gas supplied to a flowing consumer gas, said master gas being contained in a pressure vessel and comprising a malodorant and a vehicle gas, said master gas being contained in said pressure vessel in both the liquid phase and the vapor phase, said process comprising

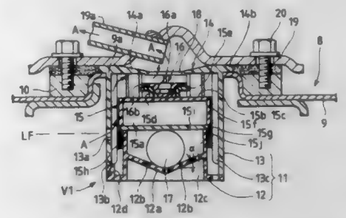
correcting the relationship between the flow of said consumer gas and the flow of said master gas supplied to said consumer gas in response to the increase of concentration of the malodorant in the liquid phase of the master gas that results from the decreasing relationship between the amount of liquid phase and gas phase in the pressure vessel.

5,632,296

FLOAT VALVE FOR FUEL TANK

Joji Kasugai, and Yoshihiro Nagino, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Mar. 27, 1995, Ser. No. 410,743
Claims priority, application Japan, Mar. 28, 1994, 6-057607
Int. Cl.[6] B60K *15/035*
U.S. Cl. 137—43 5 Claims



1. A float valve for a fuel tank constructed and arranged to allow air in a fuel tank to be vented during refueling, said float valve comprising:

a case disposed at an upper portion of a fuel tank about an opening into an air efflux channel, said case including at least a bottom wall and a side wall extending upwardly from a peripheral edge of said bottom wall and connected to said fuel tank, an air hole being formed in said side wall;

a float member accommodated in said case, said float member including a float body, defining a sealed chamber, that generates buoyancy, said chamber being disposed at a position entirely above a center of said air hole, said float member including a skirt extending downwardly from said float body to a position lower than said air hole;

a valve element disposed at an upper portion of said float, and being capable of closing said air efflux channel; and

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an auxiliary member disposed between said bottom wall and said float so as to assist in a valve-closing movement of said float,

wherein said air hole is located at a position generally equal to where the fuel level exists for a full fuel tank.

5,632,297

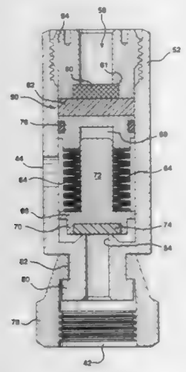
PISTON-TYPE THERMALLY OR PRESSURE ACTIVATED RELIEF DEVICE

Dino V. Sciullo, Pittsburgh; Robin N. Borland, McMurray, and James R. Daniels, McDonald, all of Pa., assignors to Amcast Industrial Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 373,662, Jan. 17, 1995, Pat. No. 5,511,576. This application Sep. 26, 1995, Ser. No. 534,195

Int. Cl.[6] F16K *17/38*

U.S. Cl. 137—73 **24 Claims**



1. A thermally or pressure activated relief device comprising:

a body having an inlet, an outlet, and a fluid flow passage communicating with said inlet and outlet;

said body further including a fluid escape passage having a member therein which is porous to gases and liquids but not to solids;

a plug of a fusible material which melts at a predetermined temperature adjacent to said member;

a first piston positioned in said fluid flow passage, said first piston having first and second ends and being normally biased into a sealing relationship with said inlet; and

a second piston positioned in said fluid escape passage, said second piston being normally biased against and applying a compressive force on said plug.

5,632,298

RESUSCITATION AND INHALATION DEVICE

Hagop Artinian, 81 Mack Avenue, Scarborough, Ontario, Canada

Filed Mar. 17, 1995, Ser. No. 405,957

Int. Cl.[6] A61M *16/00*

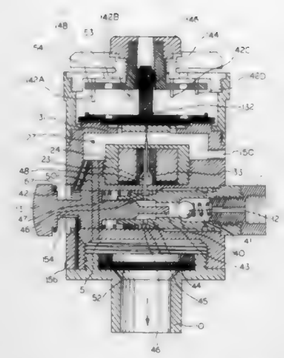
U.S. Cl. 137—102 **16 Claims**

1. A flow control valve apparatus, comprising

a chamber;

selective metering means in said chamber for selectively metering gas pressure in said chamber;

an adjustable valve member reciprocally mounted in said chamber and acted upon by gas pressure in said chamber, said valve including a plurality of apertures one-way flexible member adjacent said apertures for permitting flow of gas through said apertures;



a flow control valve, acted upon by said valve member to an open position;

means for connecting a high pressure source to an inlet of said flow control valve;

means for connecting a variable pressure volume to said chamber;

means for selectively connecting a low pressure volume to said chamber;

a first magnetic member on said valve member;

a second magnetic member in spaced opposition to said first magnetic member;

one of said first and second magnetic members being magnetized, to restrain movement of said valve member by said gas pressure in said chamber;

said valve member being moved against restraint when said variable pressure reaches a predetermined maximum value, to permit closing of said flow control valve, and to permit said connection of said low pressure volume to said chamber; and

said valve member being moved with restraint when said variable pressure reaches a predetermined low value to open said flow control valve.

5,632,299

WATER AND STEAM MIXING DEVICE

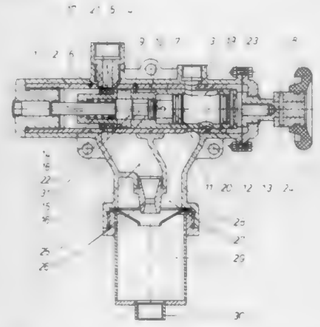
Karl Weinhold, Im Jagdfeld 43, 41464 Neuss, Germany

Filed Feb. 15, 1995, Ser. No. 388,795

Claims priority, application Germany, Feb. 25, 1994, 44 06 222.2

Int. Cl.[6] G05D *11/13*

U.S. Cl. 137—111 **10 Claims**



1. A device for the mixing of water and steam which includes:

a safety valve into which supply lines for water and steam discharge and including a valve in said safety valve which is actuated by cooling water pressure and which interrupts the steam supply when the water supply is absent, and a valve casing having a cylindrical bore containing an axially displaceable piston therein;

a first spigot for steam on said casing and extending transversely of the axis of said bore, and a second spigot for water spaced axially of said first spigot on said casing;

a cylinder in said bore and formed with openings on the steam side and openings on the water side which in an open position are in alignment with openings in the piston on the steam side and openings in the piston on the water side, and which openings in the cylinder and piston respectively do not register with one another in a closed position of the piston;

said piston having an axial bore;

a valve inserted coaxially into said axial bore of the piston and axially displaceable in relation thereto;

a head portion on said valve which is subjected to the water pressure; and

a spring on the end of said piston opposite said head portion which, when the water pressure is absent, pushes the valve into the closed position against an end stop so that the valve cuts off the flow of steam through the openings in the piston, and when the water pressure is present the valve is displaced against the force of the spring into the open position to permit the steam to flow through the piston openings, whereby the piston openings are so arranged that the water-to-steam mixing ratio can be changed.

5,632,300

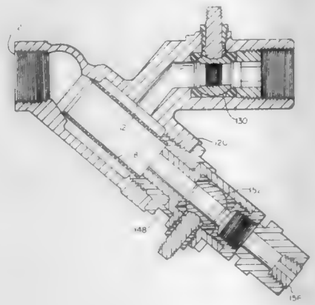
STEAM TRAP

C. Loren Isringhausen, Midlothian, Va., assignor to Steamsphere Inc., Jerseyville, Ill.

Continuation-in-part of Ser. No. 363,059, Dec. 23, 1994, which is a continuation-in-part of Ser. No. 107,982, Aug. 18, 1993, Pat. No. 5,335,686. This application May 19, 1995, Ser. No. 444,766

Int. Cl.[6] F16K *1/00*

U.S. Cl. 137—269 **1 Claim**



1. An offset steam trap for removing condensed water from a horizontal steam pipe having an interior and an end to which the trap is connected, comprising

a body having an inlet adapted to be joined to said pipe end, and

a flow restrictor in said body for permitting limited water flow out of said pipe through the orifice,

said body having a flow barrier comprising an inverted dam extending to a level below the bottom of the steam pipe between said inlet and the flow restrictor, whereby the flow restrictor maintains a water level upstream of the dam at or below the bottom of the pipe so that water does not collect in the pipe.

5,632,301

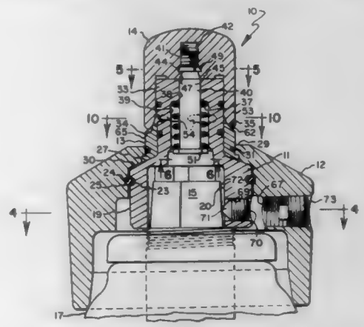
TAMPER RESISTANT CONSTRUCTION FOR HYDRANT

Bradley J. Julicher, Williamsville, N.Y., assignor to McGard, Inc., Orchard Park, N.Y.

Filed Jun. 7, 1996, Ser. No. 652,633

Int. Cl.[6] F16K *35/06*; **E03B** *9/06*

U.S. Cl. 137—296 **22 Claims**



1. A tamper resistant construction for a fire hydrant comprising a hydrant nut actuating body having first and second end portions, a shroud rotatably mounted on said first end portion of said hydrant nut actuating body, a cap rotatably mounted on said second end portion of said hydrant nut actuating body, a wrench-receiving portion on said hydrant nut actuating body, and a spring biasing a portion of said cap along a portion of said hydrant nut actuating body and over said wrench-receiving portion to prevent unauthorized access thereto.

5,632,302

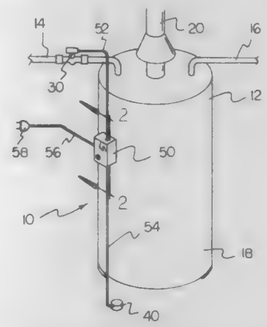
OVERFLOW PROTECTION SHUT-OFF APPARATUS FOR USE WITH A WATER HEATER

Robert M. Lenoir, Jr., 1159 Doe Run, Highland Lakes, N.J. 07422

Filed Dec. 22, 1995, Ser. No. 577,692

Int. Cl.[6] H01H *29/04*; **G08B** *21/00*; **F16K** *31/02*

U.S. Cl. 137—312 **3 Claims**



1. An overflow protection shut-off device for use with a water heater for shutting off a supply of water to the water heater when a leaking condition occurs comprising, in combination:

a resettable stop valve mechanism comprising:

a fitting securable to an input water line of a water heater,

an axially rotatable stem engaged within the fitting and being rotatable to an opened position for allowing water flow within the input line and further being rotatable to a closed position for preventing such flow,

a cam secured to the stem,

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a coil spring coupled to the stem and having a biased orientation for placing the stem in an opened position and an unbiased orientation for placing the stem in the closed position, and

a hand-turnable knob coupled to the stem for allowing the coil spring to be placed in the biased orientation upon discretion of a user;

a switching mechanism comprising:

a hollow rigid housing with a plurality of apertures formed thereon for receiving a flow of water from the water heater when the leaking condition occurs,

a rigid and L-shaped lever having a short arm, a long arm with a hooked outboard end, and a location therebetween that is pivotally coupled to the housing,

a spring coupled between the long arm of the lever and the housing,

a strip of water-soluble material having one end coupled to the housing and another end coupled to the outboard end of the long arm of the lever to thereby place the spring of the switch mechanism in a biased position, and

a cable having a first end held in contact with the cam of the valve mechanism and a second end coupled to the short arm of the lever and with the strip dissolvable when placed in contact with water entering the housing to release the lever and remove the first end of the cable from contact with the cam, thus allowing closure of the stop valve mechanism;

electronic horn means for providing an audible indication of the leaking condition when the cam is released from contact with the first end of the cable;

a battery for supplying electrical energy to the horn; and

a depressible switch coupled between the horn and the battery and having a depressed orientation when placed in contact with the cam for allowing electrical energy to be delivered to the horn means and a released orientation for preventing such delivery.

5,632,303

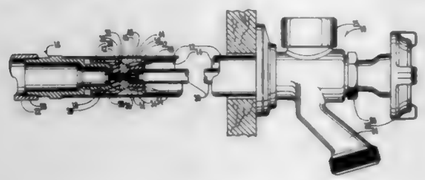
WALL WATER HYDRANT HAVING BACKFLOW AND BACK SIPHONAGE PREVENTOR

Lawrence Almasy; James F. Shuler; Robert J. Vandepas, and William L. Carlson, all of Colorado Springs, Colo., assignors to WCM Industries, Inc., Colorado Springs, Colo.

Continuation of Ser. No. 88,889, Jul. 8, 1993, abandoned. This application May 15, 1996, Ser. No. 648,530

Int. Cl.[6] F16K *15/18*

U.S. Cl. 137—360 **1 Claim**



1. A wall mounted water hydrant, comprising:

an elongated hollow housing having water inlet and outlet ends, and a center axis;

a water inlet valve in said housing adjacent said inlet end, and comprising a valve seat and a valve closure element;

a water outlet port in said housing adjacent said outlet end;

a valve operating rod in said housing having an inner end secured to said valve closure element, and extending along the center axis to the outlet end of said housing, and terminating in an outer end;

a manual means for rotating said outer end of said actuating rod whereby rotation of said rod in one direction will close said valve closure element against said valve seat, and rotation of said rod in an opposite direction will move said valve closure element away from said valve seat, thus providing a valve means through which pressurized water connected to the inlet end of said housing will flow in a downstream direction through said valve means and said housing and outwardly through said outlet port;

a backflow preventor having a base portion surrounding said operating rod;

said backflow preventor having the shape of a hollow bell with flexible side walls extending diagonally outwardly from said base portion and encompassing a hollow interior, and terminating in a cylindrical lip portion surrounding an open end;

said lip portion being cylindrical in shape and normally engaging the inner diameter of said housing;

said lip portion having a first outer surface extending diagonally outwardly from said sidewalls and intersecting a vertical flat planar portion which is in a plane transverse to said center axis to create a pointed sealing edge normally in engagement with the inner diameter of said housing,

said lip comprising a triangular cross sectional shape,

said lip portion having a size and shape to permit it to deflect toward the axis of said housing when water is flowing in a downstream direction through said housing, and to engage the inner diameter of said housing if backpressure urges water to flow in an upstream direction through said housing, thus sealing said housing and said valve means, against upstream flow of water under such backpressure conditions.

5,632,304

EXHAUST BUTTERFLY SYSTEM

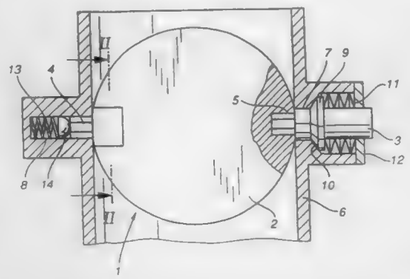
Karl H. Kempka, Esslingen; Dietmar Froese, Landau; Georg Reuther, Hochstadt; Christian Kroeger, Neustadt, and Harald Bressler, Westheim, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jul. 24, 1995, Ser. No. 506,512

Claims priority, application Germany, Jul. 22, 1994, 44 26 028.8

Int. Cl.[6] F16K *1/22*

U.S. Cl. 137—595 **6 Claims**



1. An exhaust butterfly system for use in at least one exhaust line of an internal combustion engine, comprising:

an exhaust butterfly arranged in the exhaust line;

first and second bearing journals, said first and second bearing journals rotatably holding said exhaust butterfly on two opposite sides in the exhaust line via positive plug-in connections;

first and second bearing sleeves, said first and second bearing journals being rotatably mounted in said first and second bearing sleeves, respectively;

an actuating device coupled to said first bearing journal;

a spring arranged so as to preload at least the second bearing journal against said exhaust butterfly, said spring acting in a direction of a pivoting axis of said exhaust butterfly and being supported on a casing for the at least one exhaust line;

wherein the second bearing sleeve assigned to the second bearing journal is formed in a blind hole and on the casing;

wherein the first bearing journal is preloaded against said exhaust butterfly by a second spring acting in the direction of the pivoting axis of the exhaust butterfly and being supported on the casing;

wherein said first and second bearing journals are movably mounted in their respective first and second bearing sleeves such that said first and second bearing journals retract completely into their respective first and second bearing sleeves counter to a force of the respective first and second springs in order to install the exhaust butterfly.

5,632,305

APPARATUS FOR SECURING A PRESSURE VESSEL AGAINST OVER PRESSURE

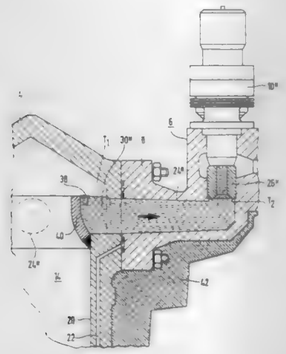
Erwin Laurer, Möhrendorf; Hermann-Josef Conrads, Herzogenaurach, and Rafael Mandl, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 4, 1995, Ser. No. 511,699

Claims priority, application Germany, Feb. 5, 1993, 43 03 440.3

Int. Cl.[6] F16K *13/10*

U.S. Cl. 137—613 **10 Claims**



1. An apparatus for securing a pressure vessel against over pressure, comprising:

a shaped part connected to a pressure vessel; and

a valve assembly disposed on said shaped part, said valve assembly including a housing block, a safety valve having a valve seat disposed in said housing block, a hydraulic seal for said safety valve, and a conduit disposed inside at least one of said housing block and said shaped part for receiving said hydraulic seal.

5,632,306

OPERATING VALVE ASSEMBLY WITH ELECTROMAGNETIC PROPORTIONING PRESSURE REDUCTION VALVE

Keisuke Taka, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Se'sakusho, Tokyo, Japan

PCT No. PCT/JP93/01860, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/15128, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 22, 1993, Ser. No. 448,377

Claims priority, application Japan, Dec. 22, 1992, 4-341979

Int. Cl.[6] F15B *13/043;13/08*

U.S. Cl. 137—625.64 **15 Claims**

1. An operating valve assembly with an electromagnetic proportioning pressure reduction valve, comprising:

an operating valve, including: a spool slidably disposed in a spool bore of the operating valve opening to an end face of a valve body, spring case including a case body having a blind bore and a housing having a spool bore for a pressure reduction valve mounted on said end face in a manner such that said spool bore of the operating valve and said blind bore are matched to each other, and a pressure receiving chamber defined between an interior wall of said blind bore of said spring case and an end portion of said spool; and

an electromagnetic proportioning pressure reduction valve including: a spool for the pressure reduction valve disposed in said spool bore for the pressure reduction valve, and a solenoid for driving said spool for the pressure reduction valve mounted on said housing, an output port of said electromagnetic proportioning pressure reduction valve being in communication with said pressure receiving chamber;

a pump port for the pressure reduction valve and a tank port for the pressure reduction valve being formed opening to front and back side end faces of said valve body, said pump port for the pressure reduction valve being in communication with an inlet port of said housing, said tank port for the pressure reduction valve being open to said spool bore for the pressure reduction valve of said housing.

5,632,307

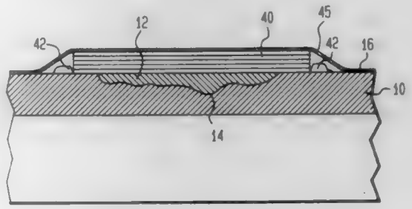
METHODS FOR USING A HIGH TENSILE STRENGTH REINFORCEMENT TO REPAIR SURFACE DEFECTS IN A PIPE

Norman C. Fawley, Long Beach; Justin Schmidt, Seal Beach, both of Calif.; Norm Block, Boston, Mass., and Paul Kelty, Belmont Shores, Calif., assignors to Clock Spring Company, L.P., Long Beach, Calif.

Continuation of Ser. No. 344,513, Nov. 23, 1994, abandoned, which is a continuation of Ser. No. 942,731, Sep. 9, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 472,014

Int. Cl.[6] F16L *55/18*

U.S. Cl. 138—99 **43 Claims**



1. A method for repairing a pipe adapted to carry an internal load directed radially outward therefrom, said pipe having a defective region defined by at least one cavity extending from an outer surface of said pipe toward the center of said pipe but not extending completely through the wall of said pipe, said method comprising the steps of:

providing a filler material having a workable uncured state and a rigid cured state.

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filling said cavity to at least said outer surface of said pipe with said filler material in said workable state,

providing at least one band having a plurality of elastic convolutions of high tensile strength material,

while said filler material is in said workable state, wrapping said plurality of convolutions of said high tensile strength material about said pipe to form a coil overlying stud filler material,

tightening said coil about said pipe so that said filler material completely fills that portion of said cavity underlying said coil,

securing at least one of said convolutions to an adjacent one of said convolutions, and

permitting said filler material to cure to said rigid state, whereby a load carried by said pipe is transferred substantially instantaneously from said pipe to said coil.

5,632,308

METHOD FOR THE METERED INSERTION OF WEFT YARN INTO A SERIES SHED WEAVING MACHINE

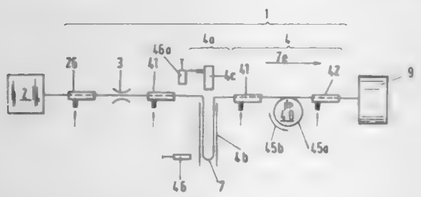
Robert Bucher, Frick, and Ernst Eberhard, Wolfhausen, both of Switzerland, assignors to Sulzer Rueti AG, Rueti, Switzerland

Filed Mar. 31, 1995, Ser. No. 414,414

Claims priority, application European Pat. Off., May 30, 1994, 94810315

Int. Cl.[6] D03D *41/00*

U.S. Cl. 139—28 **18 Claims**



1. A method of inserting weft yarn into a shed formed by a series shed weaving machine comprising the steps of forming a fluid flow into the shed; entraining the weft yarn in the fluid flow to thereby advance the weft yarn into the shed; and controlling a speed with which the weft yarn is inserted into the shed independent of and at a location upstream of the fluid flow so that the weft yarn is inserted into the shed at a controlled speed and is subjected to tension.

5,632,309

GRIPPER PROJECTILE FOR A WEAVING MACHINE

Josef Kaufmann, Elsau, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland

Filed Dec. 15, 1995, Ser. No. 573,473

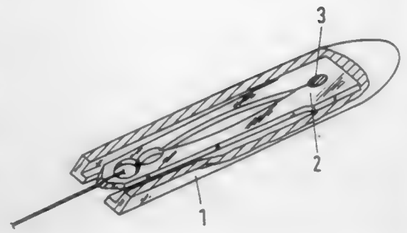
Claims priority, application European Pat. Off., Feb. 1, 1995, 95810064

Int. Cl.[6] D03J *5/06*

U.S. Cl. 139—196.2 **14 Claims**

1. A weaving machine comprising:

a gripper projectile including a housing formed as a hollow body; and a weft yarn clip arranged in the housing, having a line of symmetry, and a connector element connecting the housing to the weft yarn clip so that the weft yarn clip and the housing are prevented from moving relative to each other along the line of symmetry, the weft yarn clip comprising a pair of legs defining between them a jaw for gripping a yarn and having a recess for splaying the jaws, a yoke connecting the legs and unitary protruding portions on the legs, formed identically relative to the line of symmetry, for bringing the clip legs into operative engagement with the housing and



thereby biasing the clip legs toward one another in order to generate a predetermined gripping force at the jaw.

5,632,310

SINGLE LAYER WOVEN FABRIC FOR PAPER-MAKING

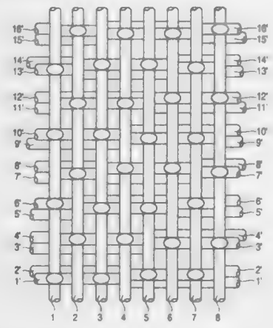
Tatsuhiko Yasuoka, Tokyo, Japan, assignor to Nippon Filcon Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 566,851

Claims priority, application Japan, Dec. 1, 1994, 6-332277

Int. Cl.[6] D03D *23/00*

U.S. Cl. 139—383 A **12 Claims**



1. A single layer woven fabric for paper-making comprising: a paper-making side and a running side and having a repeating units formed by wefts and warps; wherein each of the wefts forms, in the repeating unit, two first and third knuckles on the paper-making side and one second knuckle on the running side by passing over a first warp, passing under a second warp and passing over a third warp, the first warp being adjacent to the second warp and the second warp being adjacent to the third warp, and forms one crimp on the running side bypassing under three or more warps; wherein said wefts form a group of two or three successive wefts which comprises a plain weave structure; and further wherein each of the groups is arranged by shifting for the distance corresponding to an odd number of the warps from an adjacent group.

5,632,311

FENCE REPAIRING TOOL FOR WIRE FENCES

George Raaschou, Box 381 Mayerthorpe, Alberta, Canada

Filed Jun. 8, 1995, Ser. No. 488,737

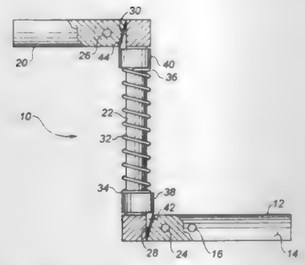
Claims priority, application Canada, Jun. 21, 1994, 2126432

Int. Cl.[6] B21F *9/00*

U.S. Cl. 140—118 **1 Claim**

1. A fence repairing tool for wire fences, comprising:

an elongate ware retaining member having an exterior surface and a transverse passage, such that an end of a wire may be inserted into the transverse passage and the wire retaining



member rotated to wrap wire around the exterior surface of the wire retaining member;

a crank having a handle and a shaft having opposed ends, the wire retaining member being pivotally secured to the shaft at one of the opposed ends by a transverse pivotal connection and pivotally movable between a stored position substantially parallel to the shaft and an operative position resting against said one of the opposed ends substantially perpendicular to the shaft in which position the wire retaining member is rotated by manipulating the handle of the crank, the handle of the crank being pivotally connected the shaft at an other of the opposed ends by a transverse pivotal connection and pivotally movable between a stored position substantially parallel to the shaft and an operative position resting against said other of the opposed ends substantially perpendicular to the shaft, the wire retaining member and the handle each having a transverse locking aperture adjacent the pivotal connection with the shaft; and

a biasing spring wrapped around the shaft of the crank, a collar which telescopically receives the shaft is positioned at each end of the biasing spring, each collar has a locking member projecting axially away from the biasing spring, the locking members extending into the locking apertures of the wire retaining member and the handle when they are in the operative position, thereby locking the wire retaining member and the handle in their respective operative positions.

5,632,312

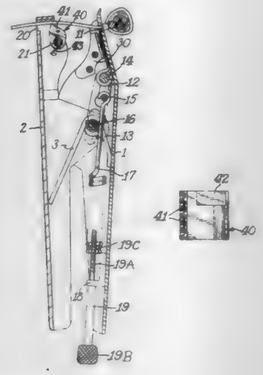
TIE-WRAP TOOL WITH IMPROVED BRACING BLOCK

Richard A. Hoffman, Landenberg, Pa., assignor to Dymetrol Company, Inc., Hockessin, Del.

Filed Apr. 4, 1996, Ser. No. 628,132

Int. Cl.[6] B21F *9/02*

U.S. Cl. 140—123.6 **7 Claims**



1. In a tie-wrap tool adapted to grip and cut a tie-wrap, the tie-wrap tool comprising an actuating handle and a gripping handle pivotally secured together by a rear axle bolt and a torsion spring carried by the rear axle bolt for urging the handles apart, a feed-in hole at a forward portion of the actuating handle, a holding block secured to the actuating handle adjacent to the feed-in hole, the actuating handle having a pair of side panels, each side panel having an upper slotted hole and a lower slotted hole formed therein, a pair of guiding plates, a front axle bolt, a middle axle bolt, each guiding plate being movably mounted to a side panel of the actuating handle by the front and middle axle bolts extending through the upper slotted holes and the rear axle bolt extending through the lower slotted holes, a cutter blade secured to the front axle bolt, a tensioning spring having first and second ends, the first end being secured to the middle axle bolt and means securing the second end to the actuating handle at a rearward portion thereof, the gripping handle having side panels and including a feed-out hole at a forward portion thereof, at least one bracing block rotatably mounted adjacent to the feed-out hole about an axis between the side panels of the gripping handle, and a spring for rotating the bracing block toward the actuating handle and into engagement with a tie-wrap extending through the feed-out hole, the improvement wherein the bracing block comprises:

(a) a single row of a plurality of teeth, each tooth comprising at least three triangular faces joined to form a pyramid with an apex defined by the intersection of the three triangular faces;

(i) wherein the angle of each of the three triangular faces that form the apex of the pyramid is less than about 90°;

(ii) wherein the row of teeth is positioned at a point on the perimeter of the bracing block farthest from the axis of rotation of the bracing block; and

(iii) wherein the row of teeth is perpendicular to the length of a tie-wrap extending through the feed-out hole;

(b) a notch formed in the bracing block; and

(c) at least one restraining pin in the gripping handle positioned to engage the notch formed in the bracing block when, in the absence of a tie-wrap, the bracing block is biased towards the actuating handle, each restraining pin restricting the rotation of the bracing block to prevent the teeth from contacting the gripping handle.

5,632,313

LIQUID CHEMICAL MEASURING AND DISTRIBUTION SYSTEM

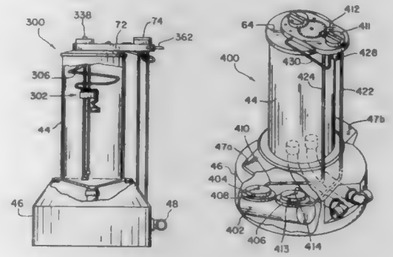
David R. Patterson, Fort Wayne, Ind., assignor to Murray Equipment, Inc., Fort Wayne, Ind.

Division of Ser. No. 162,530, Dec. 3, 1993, Pat. No. 5,450,881.

This application Jun. 6, 1995, Ser. No. 470,444

Int. Cl.[6] B65B *31/00*; **B67C** *3/00*

U.S. Cl. 141—18 **7 Claims**



2. An apparatus for drawing a desired measured volume of liquid chemical from a bulk tank and dispensing the measured volume for mixing with a diluent, the apparatus comprising:

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a measuring vessel of a predetermined volume, said measuring vessel having a fluid inlet adapted for fluid communication with the bulk tank, and a fluid outlet;

an air pump mechanism having a suction inlet connected to an interior of said vessel and a positive pressure outlet connected to the interior of said vessel;

a valve mechanism connected between the vessel interior and said air pump mechanism to selectively connect the vessel interior to either the pump inlet or outlet;

a suction inlet in the vessel connected to said pump inlet through said valve mechanism; and

an adjustable preset shut-off device including a sensing element responsive to liquid level in said vessel, said shut-off device connected to close said suction inlet when actuated, the vertical position of said sensing element in said vessel being adjustable.

5,632,314

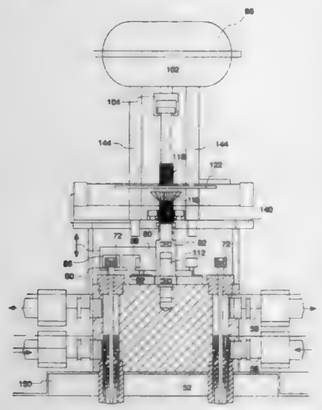
AUTOMATED DISPENSING APPARATUS

Klaus-Dieter Koppe, and Michael Krapalis, both of Norderstedt, Germany, assignors to Fluid Management, Inc., Wheeling, Ill.

Continuation of Ser. No. 403,252, Mar. 10, 1995, abandoned. This application Jun. 28, 1996, Ser. No. 670,838

Int. Cl.[6] B65B *1/04;3/00*

U.S. Cl. 141—104 **23 Claims**



1. Dispensing apparatus, comprising:

a plurality of valves arranged along multiple nested curved lines, the valves having housings with upper ends and coupling means at the upper ends for releasably engaging an arm, the coupling means operating the valves between open and closed positions when moved with respect to the valve housing;

an arm releasably engageable with the valve's coupling means; and

mounting means for mounting the arm for movement across the valves, passing the arm into and out of engagement with the valves it crosses, and said mounting means mounting the arm for movement toward and away from the valves to open and close the valves so as to dispense material from the valves.

5,632,315

LIQUID DISPENSERS

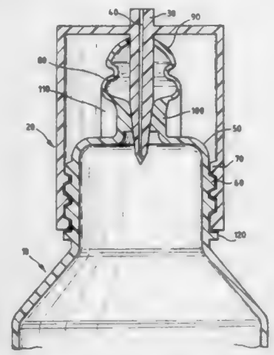
Howard Rose, 73 Fluin Lane, Frodsham, Cheshire WA6 7QT, England

Continuation of Ser. No. 871,974, Apr. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 836,654, Feb. 18, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 352,427

Claims priority, application United Kingdom, Apr. 23, 1991, 9108655

Int. Cl.[6] B65B *1/04*

U.S. Cl. 141—329 **20 Claims**



1. A container for dispensing sterile liquids, said container comprising a reservoir, a dispensing neck having a hermetic seal and a collar, wherein said reservoir, neck, seal and collar are formed together as a one piece unit,

said collar having an aperture and being located within said container and in juxtaposition to said seal,

a cap for said container being locatable over said neck and comprising a piercing member,

wherein said cap and said piercing member are so configured that, when said cap is forcibly fitted over said neck, said piercing member

passes into said neck;

pierces said seal; and

locates in and sealingly engages the aperture in said collar.

5,632,316

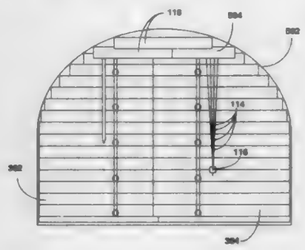
VENETIAN BLIND WITH INDIVIDUALLY ADJUSTABLE SLATS

Leone A. Cohen, 9251 Southampton Pl., Boca Raton, Fla. 33434

Filed Aug. 7, 1995, Ser. No. 511,997

Int. Cl.[6] E06B *9/30*

U.S. Cl. 160—168.1 **20 Claims**



1. An adjustable venetian blind, comprising:

a headrail having a lift cord drive assembly and a tilt cord drive assembly;

lift cords attached to the lift cord drive assembly in the headrail,

tilt cords attached to the tilt cord drive assembly in the headrail, each tilt cord further comprising a front tilt cord, a rear tilt cord and a plurality of cord rungs connecting the front tilt cord and the rear tilt cord; and

a plurality of elongate slats, at least one of which is an independently adjustable slat, each slat comprising:

an elongate slat extension holder having a front side edge and a rear side edge along opposing longitudinal edges of said slat extension holder, the slat extension holder further having edge grips at both side edges;

at least two elongate slat extensions, the slat extensions inserted in the slat extension holder one overlapping another and slidably held by the edge grips, each slat extension independently movable in relation to the other slat extension holder such that the width of the slat can be varied independently of other slats in the venetian blind;

the tilt cords and lift cords extending outside of and adjacent to the side edges of the slats such that each slat rests on at least a pair of cord rungs and neither the tilt cords or the lift cords pass through a slat;

at least one slat extension holder having means to retain a tilt cord,

at least on slat extension holder having means to retain a lift cord;

whereby the width of the independently adjustable slat in the venetian blind can be independently varied from the width of the other slats in the venetian blind.

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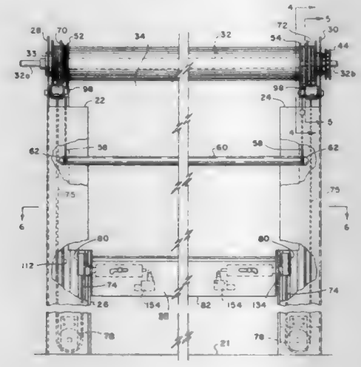
ROLL-UP DOOR

LeRoy G. Krupke, Carrollton; Douglas R. Fuller, Garland; Dennis A. Kalgren, Richardson, and Anthony J. Shelton, Garland, all of Tex., assignors to Overhead Door Corporation, Dallas, Tex.

Filed Mar. 31, 1995, Ser. No. 414,580

Int. Cl.[6] A47G *5/02*

U.S. Cl. 160—265 **44 Claims**



1. A roll-up door for forming a barrier across a doorway comprising:

a rotatable shaft having a flexible closure member mounted thereon and operable to be rolled and unrolled to form a closure for said doorway;

spaced apart guide means disposed generally at opposite sides of said doorway;

a beam disposed at least partially across a bottom edge of said closure member;

opposed latch members supported on said beam, said latch members comprising generally rectangular plate portions having opposed projections disposed along distal edges thereof, respectively;

opposed slide members disposed in said guide means, said slide members each including a slot for receiving said distal edges of said latch members, respectively, said slot including opposed reentrant edge portions for engagement with said projection means on said latch members to retain said latch members engaged with said slide members;

means connected to said slide members for exerting a tensioning effort on said closure member; and

said slide members being mounted on said guide means for limited rotation in response to a force acting on said closure member in a direction generally transverse to the plane of said closure member to cause said latch members to disengage from said slide members, respectively.

5,632,318

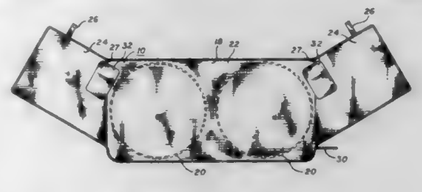
MULTI-WINDOW SUN SHIELD

John Wang, Sylmar, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.

Filed Aug. 4, 1995, Ser. No. 511,461

Int. Cl.[6] B60J *1/20*

U.S. Cl. 160—370.21 **14 Claims**



1. A collapsible sun shield comprising:

at least one spring-like flexible frame forming at least one collapsible closed loop;

a substantially rectangular flexible sheet disposed upon the at least one frame to define a central region;

at least one flexible flap attached to each opposing lateral edge of the central region substantially along the length of the lateral edges, said flap having a central axis, said axis extending at an angle from the lateral edges, such that the central region can shade a first window and the flaps can shade a second window and a third window, the first window and the second window defining at least one substantial angle.

5,632,319

METHOD FOR MANUFACTURING ENVIRONMENTALLY CONSCIOUS FOAMED ALUMINUM MATERIALS

Chin-Chen Yang; Shan-Chang Chueh, both of Taipei; Kou-Chang Su, Kaoshing, and Ting-Huey Chiou, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 4, 1995, Ser. No. 538,883

Int. Cl.[6] B22D *27/00*

U.S. Cl. 164—79 **19 Claims**



1. A process for making high-quality foamed aluminum articles comprising the step of:

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(a) placing a raw aluminum feedstock into a mold, said raw aluminum feed stock contains at least 50 wt % spent aluminum and does not contain any extraneous viscosity enhancing agent;

(b) heating said mold so as to melt said raw aluminum feedstock to form a liquid aluminum mass;

(c) stirring said liquid aluminum mass in open air until its viscosity is increased by a factor of from about 1.3 to 1.8;

(d) adding a foaming agent into said liquid aluminum mass;

(e) continuing stirring said liquid aluminum mass containing said foaming agent so as to generate and uniformly distribute a plurality of gas bubbles inside said liquid aluminum mass; and

(f) cooling and solidifying said liquid aluminum mass to room temperature so as to form a foamed aluminim article, wherein said foamed aluminim article has a porosity of at least 80%, a specific density of no greater than 0.45, and an average pore size between 3 and 6 mm.

5,632,320

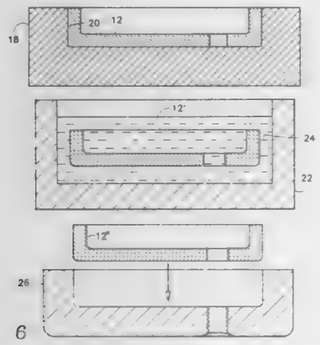
METHODS AND APPARATUS FOR MAKING CERAMIC MATRIX COMPOSITE LINED AUTOMOTIVE PARTS AND FIBER REINFORCED CERAMIC MATRIX COMPOSITE AUTOMOTIVE PARTS

Steven D. Atmur, Riverside, and Thomas E. Strasser, Corona, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Aug. 16, 1995, Ser. No. 515,849

Int. Cl.[6] B22D *19/08;* **C04B** *35/80;* **B05D** *1/36;* **F10N** *7/10*

U.S. Cl. 164—98 **13 Claims**



1. A method of forming a breakage and erosion-resistant ceramic liner for a part comprising the steps of:

a) forming a liner of a cast monolithic ceramic material containing pores;

b) filling the pores with a pre-ceramic polymer resin; and

c) firing the liner filled with the pre-ceramic polymer resin for a time and at a temperature sufficient to convert the polymer resin to a ceramic within the pores thereby forming a reinforced ceramic composite.

5,632,321

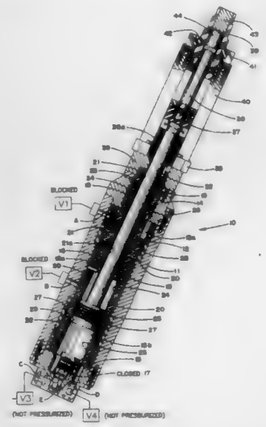
DIE CASTING MACHINE WITH COMPOUND DOCKING/SHOT CYLINDER

Robert W. Hegel, Holland, and Melvin C. Hawke, Norton Shores, both of Mich., assignors to Prince Machine Corporation, Holland, Mich.

Filed Feb. 23, 1996, Ser. No. 606,331

Int. Cl.[6] B22D *17/12*

U.S. Cl. 164—315 **23 Claims**



1. In a die casting apparatus including a die body having a cavity and a sleeve receptacle communicating with said cavity, a shot cylinder assembly having an injection sleeve with a docking/shot assembly for docking said sleeve into communication with said sleeve receptacle for injecting a shot of injectable metal into said cavity, the improvement comprising:

said docking/shot assembly comprising a compound cylinder including a first cylinder having a first chamber;

a docking piston located in said first chamber and having a second cylinder with a second chamber;

a shot piston located in said second chamber;

a source of pressurized fluid; and

valve means for causing said pressurized fluid to first actuate said docking piston in said first chamber to dock said sleeve in said sleeve receptacle and then actuate said shot piston in said second chamber to produce injection of said metal into said cavity.

5,632,322

DIE CASTING APPARATUS FOR CASTING SMALL PARTS FROM MATERIALS THAT EXPAND WHEN TRANSITIONING FROM THE LIQUID TO THE SOLID STATE

Jerry E. Trickel, 5010 Mohawk Ct., Granbury, Tex. 76049, and Lyn O. Trickel, 10816 Camellia, Dallas, Tex. 75230

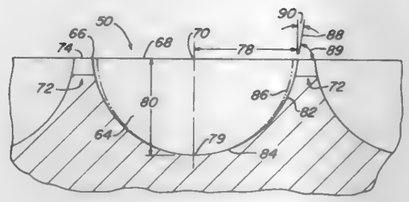
Division of Ser. No. 509,168, Jul. 31, 1995. This application Mar. 15, 1996, Ser. No. 617,485

Int. Cl.[6] B22D *17/04;17/22*

U.S. Cl. 164—316 **12 Claims**

1. A die for die casting substantially spherical objects of a material that expands when transitioning from the liquid to the solid state, the die comprising:

first and second die halves, each die half having a plurality of cavities that, when the die halves are in a closed position, align with the cavities in the other die half, thus defining a plurality of voids that define the objects to be formed; and



each cavity having a slope that is at all points smaller than 90° from a front surface of the die half, thus reducing the sticking of the objects to the die halves.

5,632,323

CASTING EQUIPMENT FOR CASTING METAL

Harald Næss, Jr., and Idar K. Steen, both of Sunndalsøra, Norway, assignors to Norsk Hyro a.s., Oslo, Norway

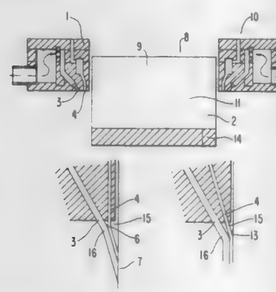
PCT No. PCT/NO94/00080, § 371 Date Dec. 30, 1994, § 102(e) Date Dec. 30, 1994, PCT Pub. No. WO94/25202, PCT Pub. Date Nov. 10, 1994

PCT Filed May 2, 1994, Ser. No. 360,785

Claims priority, application Norway, May 3, 1993, 931597

Int. Cl.[6] B22D *11/124*

U.S. Cl. 164—444 **3 Claims**



1. Casting apparatus for continuous or semi-continuous casting of metal, the apparatus comprising:

a die having an open top end, an open bottom end, and an internal peripheral surface defining a passage for receiving molten metal and passing a solidified metal product, said passage extending between said open top end and said open bottom end;

said die further having:

a first outlet structure, in a bottom portion of said die, for supplying a cooling fluid skirt to a solidified metal product.

a second outlet structure, in a bottom portion of said die, for supplying a deflecting skirt of gas; and

a source of gas connected to said second outlet structure for supplying said deflecting skirt of gas,

wherein said second outlet structure surrounds said die passage and is located between said internal peripheral surface of said die and said first outlet structure so that a fluid skirt emitted from said first outlet structure will be deflected, prior to contacting a solidified metal product, by a gas skirt emitted from said second outlet structure in order to reduce the cooling effect of the fluid.

5,632,324

METHOD OF CONTINUOUSLY CASTING STEELS

Seiko Nara; Akira Idogawa; Nagayasu Bessho, and Tetsuya Fujii, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

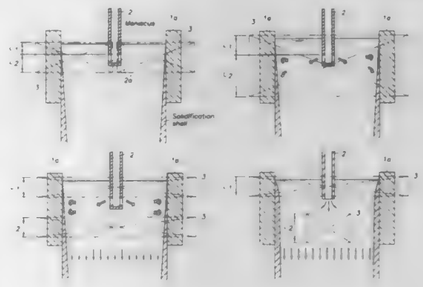
PCT No. PCT/JP95/01405, § 371 Date Mar. 7, 1996, § 102(e) Date Mar. 7, 1996, PCT Pub. No. WO96/02342, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 14, 1995, Ser. No. 602,782

Claims priority, application Japan, Jul. 14, 1994, 6-162103; Jul. 11, 1995, 7-174894

Int. Cl.[6] B22D *17/02;11/00*

U.S. Cl. 164—466 **8 Claims**



1. A method of continuously casting steel by controlling a jet of molten steel fed through an immersion nozzle into a mold for continuous casting while applying a static field between opposed side walls of the mold for the continuous casting, characterized in that molten steel is fed into the mold for the continuous casting at a throughput of not less than 6 t/min, and that an air-core superconducting electromagnet is used to simultaneously apply a static field having a magnetic flux density of greater than 0.5 T to a meniscus portion in the mold for the continuous casting and a static field having a magnetic flux density of greater than 0.5 T to a lower portion of molten steel jetted out from a discharge port of the immersion nozzle.

5,632,325

PROCESS AND APPARATUS FOR STRAND-CASTING NEAR FINAL SIZE CAST FORMATS

Eberhard Fischer, Bütthard; Helmut Maag, Waldbüttelbrunn, and Erling Roller, Essen, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed May 30, 1995, Ser. No. 453,101

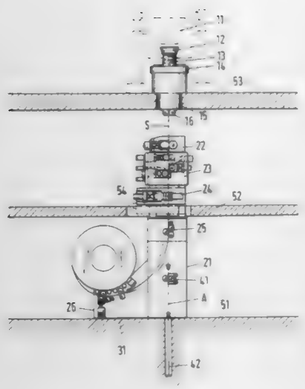
Claims priority, application Germany, May 30, 1994, 44 19 387.4

Int. Cl.[6] B22D *11/04;11/12;11/126*

U.S. Cl. 164—477 **13 Claims**

1. A process for strand-casting near final size cast formats from non-ferrous metals, for further cold working, comprising the steps of: continuously casting a melt in a vertical mold to form a solidified strand; oscillating the vertical mold at high frequency; withdrawing the solidified strand downward from the vertical mold in a centrally guided manner at a uniform speed; directly threading the strand into a surface treatment machine; mechanically removing a surface of the strand to remove defects; bending and coiling

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the strand; weighing the coiled strand; laterally cutting the strand into pieces in a preset manner upon reaching a predetermined coil weight; and removing the cut strand pieces from the machine.

5,632,326

MOULD AND A METHOD FOR THE CASTING OF METALS AND REFRACTORY COMPOSITIONS FOR USE THEREIN

Michael J. Gough, Gnosall, England, assignor to Foseco International Limited, Birmingham, England

PCT No. PCT/GB94/00750, § 371 Date Nov. 28, 1995, § 102(e) Date Nov. 28, 1995, PCT Pub. No. WO94/23865, PCT Pub. Date Oct. 22, 1994

PCT Filed Apr. 8, 1994, Ser. No. 532,633

Claims priority, application United Kingdom, Apr. 22, 1993, 9308363

Int. Cl.[6] B22C *1/00*

U.S. Cl. 164—529 **20 Claims**

1. A bonded refractory composition comprising hollow alumina- and silica-containing microspheres, and a binder, and wherein the microspheres have an alumina content of at least 40% by weight, and the quantity of alumina present in the composition expressed as a percentage of the total alumina plus silica is less than about 55% by weight.

7. A mold for metal casting having therein a bonded refractory composition comprising hollow alumina- and silica-containing microspheres and a binder, and wherein the microspheres have an alumina content of at least 40% by weight and the quantity of alumina present in the composition expressed as a percentage of the total alumina plus silica is less than about 55% by weight.

17. A method of producing a casting in a mold having a mold cavity, comprising the steps of:

(a) locating in operative association with the mold cavity a bonded refractory composition comprising hollow alumina- and silica-containing microspheres, and a binder, wherein the microspheres have an alumina content of at least 40% by weight, and the quantity of alumina present in the composition expressed as a percentage of the total alumina plus silica is less than about 55% by weight;

(b) pouring molten metal into the mold so as to fill the mold cavity; and

(c) allowing the molten metal to solidify.

5,632,327

TEMPERATURE CONTROL

Heimer Andersson, Falkenberg, Sweden, assignor to Energy Ceiling Company Limited

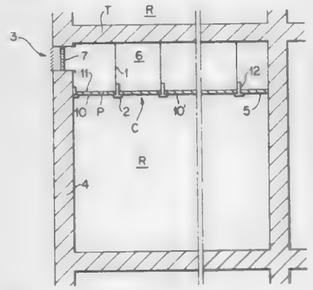
PCT No. PCT/GB93/00588, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO93/19330, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 22, 1993, Ser. No. 338,445

Claims priority, application Sweden, Mar. 20, 1992, 9200859; United Kingdom, Feb. 24, 1993, 9303739

Int. Cl.[6] F24D *19/02*

U.S. Cl. 165—49 **11 Claims**



7. A method of cooling a room in a building, the room including a ceiling suspended by hanger means below a top surface of the room, the ceiling having panels through which a fluid medium is passed, a textured paint finish being present on a lower surface of the panels, said method comprising the step of causing the fluid medium to contact the lower surface of the panels for cooling the room and providing substantially no temperature difference across the lower surface of the panels so that condensation thereon is avoided.

5,632,328

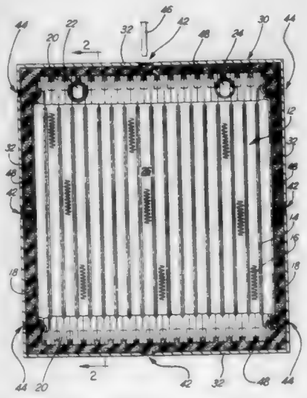
HEAT EXCHANGER ASSEMBLY

Robert S. Sawyer, Farmington Hills; LeRoy E. Schopieray, Canton, and James T. Ferretti, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1995, Ser. No. 567,645

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—69 **16 Claims**



1. A heat exchanger assembly for an automotive vehicle, comprising:

a generally rectangular heat exchanger core defining four generally orthogonal ends;

a housing configured to receive said heat exchanger core therein, said housing having a plurality of walls disposed around the ends of said heat exchanger core, at least two of said walls and at least two of said ends cooperating to define a sealing space therebetween, each of said at least two walls having an injection port provided therein for receiving a seal precursor material into the sealing space; and

a seal formed from said precursor material in the sealing space, said seal substantially filling the space.

5,632,329

AIR COOLED CONDENSER

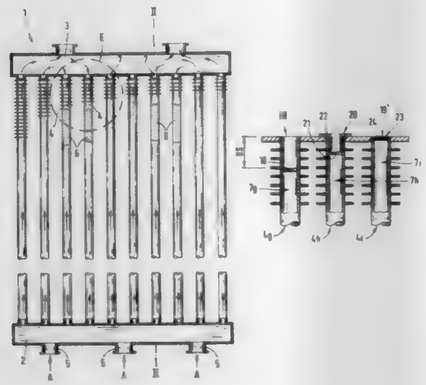
Herman P. R. Fay, Solana Beach, Calif., assignor to GEA Power Cooling Systems, Inc., San Diego, Calif.

Filed Nov. 8, 1995, Ser. No. 555,477

Claims priority, application Germany, Nov. 8, 1995, 44 39 801.8

Int. Cl.[6] F28B *7/00; 1/06*

U.S. Cl. 165—113 **11 Claims**



1. A method for uniformly distributing vapor conducted from a parallel flow condenser of an air cooled condenser into dephlegmator tubes of a countercurrent condenser arranged downstream of the parallel flow condenser, wherein the dephlegmator tubes have ends at a collector side, the method comprising throttling gaseous fluids present at the ends of the dephlegmator tubes near the collector when the gaseous fluids are withdrawn from the dephlegmator tubes.

2. An air cooled direct condenser comprising at least one parallel flow condenser and at least one countercurrent condenser arranged downstream of the parallel flow condenser, the countercurrent condenser having a lower vapor distribution chamber, an upper gas collector and a plurality of dephlegmator tubes connecting the lower vapor distributing chamber and the upper gas collector, wherein the dephlegmator tubes have ends connecting to the gas collector, and wherein at least a predominant majority of the dephlegmator tubes have resistance elements for throttling flow of vapor from the dephlegmator tubes into the upper gas collector, the resistance elements being mounted at or near the ends of the dephlegmator tubes facing the upper gas collector.

5,632,330

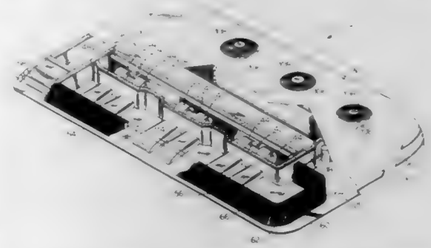
TWICE BENT HEAT EXCHANGER COIL

Alan S. Drucker, Dewitt, N.Y., and Mauricio M. Salgado, Escondido, Mexico, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 20, 1995, Ser. No. 546,486

Int. Cl.[6] F28D *1/04*

U.S. Cl. 165—151 **5 Claims**



1. A heat exchanger of the plate fin and tube type comprising two longitudinally extending sections, said sections each having a planar cross section and together forming a single continuous length, said sections being bent relative to one another with the planar cross sections of the two sections forming an angular relationship therebetween in two different planes.

5,632,331

HEAT EXCHANGER

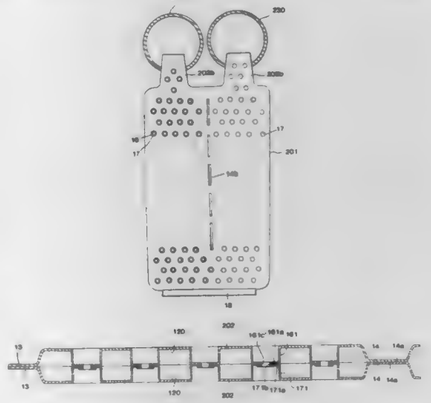
Toshiharu Shinmura, Sawa-gun, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Sep. 14, 1994, Ser. No. 305,783

Claims priority, application Japan, Sep. 30, 1993, 5-245687

Int. Cl.[6] F28D *1/03*

U.S. Cl. 165—153 **8 Claims**



1. A heat exchanger comprising:

a plurality of laminated tube units, each of said tube units including a pair of plates joined together to define therebetween a fluid passageway and at least one fluid communication opening extending from said pair of plates and linked in fluid communication with said fluid passageway;

at least one conduit disposed on an upper surface of said plurality of laminated tube units, said at least one conduit including a plurality of slots for receiving said at least one fluid communication opening in said plurality of laminated tube units;

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each plate in said pair of plates including a shallow depression formed therein, a flange extending about the periphery thereof, and a wall disposed at an intermediate location therein and extending a portion of the length of each of said plate, said wall thereby defining a first side and a second side in said plates; and

a plurality of engaging means formed in at least some of said first and second plates for securing at least some of said first and second plates, said engaging means comprising:

a plurality of first projections formed in said shallow depression of said first plate, said first projections comprising a plurality of cylindrical bulged portions formed in said shallow depression and circular openings comprising through-holes formed at a central region of each of said bulged portions; and

a plurality of second projections formed in said shallow depression of said second plate, said second projections comprising a plurality of cylindrical bulged portions formed in said shallow depression and circular openings comprising through-holes formed at a central region of each of said bulged portions;

wherein said first and second projections, before brazing, are operatively engaged by bending outwardly at least some of said first projections to overlap corresponding said second projections so that said first and second plates are secured from movement in substantially all directions.

5,632,332

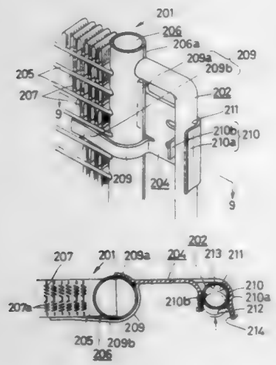
HEAT EXCHANGER HAVING INLET AND OUTLET PIPES FOR A HEAT EXCHANGING MEDIUM AND A METHOD OF MAKING SAME

Tatsuya Hanafusa, Oyamashi, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan

Division of Ser. No. 118,891, Sep. 8, 1993, Pat. No. 5,429,182. This application Apr. 20, 1995, Ser. No. 425,466

Int. Cl.[6] F28F *9/007*

U.S. Cl. 165—178 **10 Claims**



1. A heat exchanger comprising:

an inlet for a heat exchanging medium;

an outlet for a heat exchanging medium;

a heat exchanger body formed with the outlet and the inlet and conducting the exchange of heat between the medium flowing through the body and an ambient air;

at least one joint pipe connected to the inlet and/or outlet and allowing the medium to flow into or out of the heat exchanger body;

at least one clamper for temporarily holding in place the joint pipe on the heat exchanger body, said joint pipe being forcibly fitted to the clamper when a temporary assembly of the heat exchanger body is brazed, with the clamper being constructed such as to fixedly secure the joint pipe to the heat exchanger body once the body is brazed, and the clamper including

at least one pair of clamper fingers spaced on a predetermined distance apart for receiving the pipe joint, one of the fingers having a bulging portion and providing a constriction for locking the pipe joint between the fingers.

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TEMPERATURE AND HUMIDITY ADJUSTING APPARATUS AND CONTROL METHOD THEREFOR

Toshihide Imamura; Kanichi Kadotani, and Katsuyoshi Ito, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

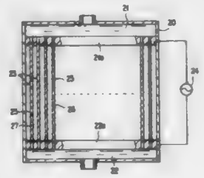
PCT No. PCT/JP93/00569, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/22602, PCT Pub. Date Nov. 11, 1993

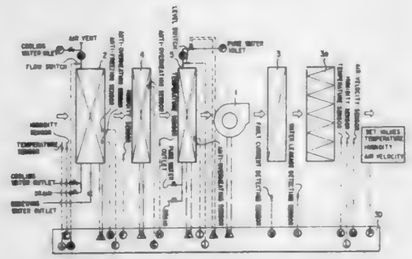
PCT Filed Apr. 28, 1993, Ser. No. 325,428

Claims priority, application Japan, Apr. 30, 1992, 4-135735; Nov. 30, 1992, 4-320341

Int. Cl.[6] F24F *3/14*

U.S. Cl. 165—228 **5 Claims**





1. A temperature and humidity adjusting apparatus comprising an air cooling and dehumidifying device, an air heater, and a humidifier, wherein:

said air cooling and dehumidifying device includes thermoelements that utilize the Peltier effect; and

said humidifier includes:

a plurality of hollow yarn bodies, each said yarn body including a hollow yarn formed from fiber and metal wire that heats when supplied with electrical power, each said yarn body being formed by winding metal wire on an outer periphery of the hollow yarn;

means for supplying water to each of said hollow yarn bodies; and

power supply means for supplying electrical power to said metal wire.

5,632,334

HEAT RECOVERY VENTILATOR WITH ROOM AIR DEFROSTING FEATURE

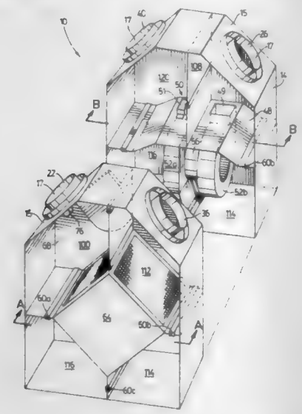
Peter K. Grinbergs, Dorchester, and Grant W. Miles, London, both of Canada, assignors to Nutech Energy Systems Inc., Ontario, Canada

Filed Jun. 2, 1995, Ser. No. 460,197

Claims priority, application Canada, Jan. 13, 1995, 2140232

Int. Cl.[6] F24H *3/02;3/10;* **F24F** *7/08*

U.S. Cl. 165—232 **13 Claims**



1. A heat recovery ventilator for transferring heat between a first airflow and a second airflow comprising:

a housing;

a first airflow path defined between a first inlet and a first outlet;

a second airflow path defined between a second inlet and a second outlet;

a heat transfer means to transfer heat between airflows in said first and second airflow paths;

a blower means to induce said first and second airflows;

a damper means comprising a substantially flat gate movable between a first damper position in which said first and second airflow paths are substantially isolated from one another within said housing and said first and second airflows pass through said heat transfer means and said first and second air paths respectively, and a second damper position wherein said first inlet is blocked and where substantially all of said second airflow air is redirected from said heat transfer means to said first airflow path adjacent said blocked first inlet, said redirected second airflow passing through said heat transfer means to defrost said heat transfer means and then exiting said first outlet; and

a control means to control said damper means.

5,632,335

WELL TUBING AND PUMP ROD PROTECTOR

Wallace R. Campbell, P.O. Box 2005, Universal City, Tex. 78148, and Dennis W. Gilstad, 3522 Hunters Sound, San Antonio, Tex. 78230

Filed Oct. 10, 1995, Ser. No. 541,367

Int. Cl.[6] E21B *17/10;43/00*

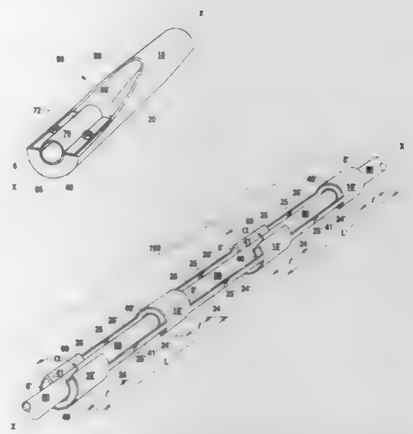
U.S. Cl. 166—105 **27 Claims**

1. A well tubing and pump rod protector, comprising

a substantially hollow outer bearing member having a substantially right circular cylindrical outer bearing surface and having first and second ends, a longitudinal axis, and a length measured along said longitudinal axis between said first and second ends;

first and second rod bearing means spaced apart along said longitudinal axis and fixed substantially coaxially within said outer bearing member surface adjacent said first and second ends respectively, each said rod bearing means comprising a substantially tubular longitudinal bore having a longitudinal rod bearing gap for allowing substantially lateral insertion of a pump rod within each said rod bearing bore, each said rod bearing gap having gap size at each point along said tubular longitudinal rod bearing bore; and

first and second centering means for fixing said first and second rod bearing means respectively substantially coaxially within said outer bearing member surface.



5,632,336

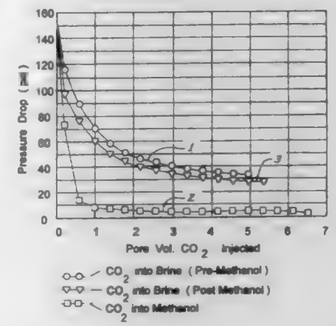
METHOD FOR IMPROVING INJECTIVITY OF FLUIDS IN OIL RESERVOIRS

Phillip K. Notz, Sugar Land; John Prieditis, Houston, and James F. Stevens, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1994, Ser. No. 281,820

Int. Cl.[6] E21B *43/16*

U.S. Cl. 166—402 **7 Claims**



6. A method for increasing the injectivity of a non-aqueous flooding fluid into a well drilled through a subterranean formation containing petroleum, comprising:

injecting through the well an amount of polar liquid miscible with water under conditions in the formation. the polar liquid selected from the group consisting of acetone, ketone, and glycol, the amount being selected to provide a selected radius of treatment around the well; and

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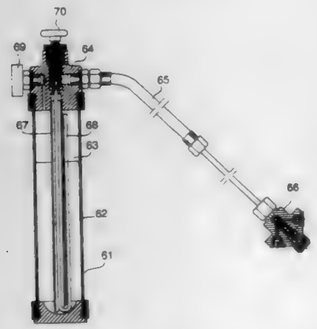
thereafter injecting a non-aqueous flooding fluid to recover petroleum from the formation.

5,632,337

FIRE-FIGHTING EQUIPMENT

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

PCT No. PCT/FI92/00317, § 371 Date May 20, 1994, § 102(e) Date May 20, 1994, PCT Pub. No. WO93/10859, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 25, 1992, Ser. No. 244,213
Claims priority, application Finland, Nov. 26, 1991, 915574; Oct. 20, 1992, 924752
Int. Cl.[6] A62C *13/64*
U.S. Cl. 169—9 7 Claims



1. Fire-fighting equipment, comprising:

at least one hydraulic accumulator means (**61**) for charging to a high initial drive pressure that becomes a reduced drive pressure during use, delivering liquid at the high initial drive pressure and delivering a mixture of liquid and gas at the reduced drive pressure, the hydraulic accumulator means (**61**) comprising a liquid space (**62**) and a gas space (**63**) that communicate with outlet valve means (**64**) and an outlet line (**65**), the outlet valve means (**64**) being responsive to the drive pressures in the liquid space (**62**) for opening a liquid outlet connection (**67***a*-**73**-**65**) only in response to the high drive pressure in the liquid space (**62**) and opening the liquid outlet connection and a gas outlet connection (**68***a*-**80**-**79**-**73**-**65**) in response to the reduced drive pressure in the liquid space (**62**).

5,632,338

LOW PRESSURE, SELF-CONTAINED FIRE SUPPRESSION SYSTEM

Wesley Hunter, Eugene, Oreg., assignor to The Hunter Group Corporation, Eugene, Oreg.

Filed Aug. 31, 1995, Ser. No. 521,620
Int. Cl.[6] A62C *35/02*
U.S. Cl. 169—9 5 Claims

1. A low pressure, self-contained fire suppression apparatus comprising:

at least one gas tank for providing a source of gas under pressure;

at least one water tank for providing a source of water under pressure;

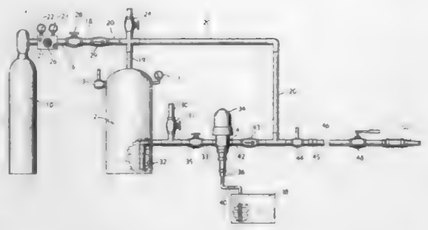
a foam concentrate tank for providing a source of foam concentrate;

a water driven volumetric metering pump having a first inlet port, a second inlet port, and an outlet port; said first inlet port communicating via a water conduit with the water in said water tank; said second inlet port communicating via a concentrate conduit with the foam concentrate in said foam concentrate tank;

a gas conduit communicating said gas tank with the outlet port of said metering pump;

a water pressure control valve in said water conduit and a gas pressure control valve in said gas conduit, said water pressure control valve and said gas pressure control valve providing water and gas at substantially the same pressure; and

a foam conduit communicating said outlet port of said metering pump with a foam dispensing outlet.

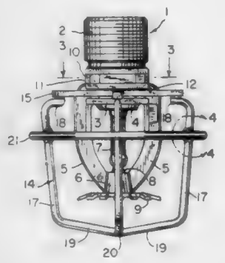


5,632,339

FIRE PROTECTION SPRINKLER HEAD WITH SPACED ZONES FOR MOUNTING A PROTECTIVE GUARD AND FOR CONNECTING THE SPRINKLER HEAD TO A WATER SUPPLY LINE

John W. Fenske, Wauwatosa, and John R. Simons, deceased, late of Milwaukee, both of Wis., assignors to Star Sprinkler Corporation, Milwaukee, Wis.

Filed Feb. 10, 1995, Ser. No. 386,819
Int. Cl.[6] A62C *37/11*
U.S. Cl. 169—37 13 Claims



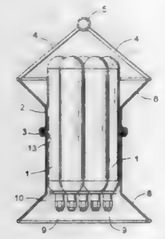
1. A fire protection sprinkler head comprising a body having a first end to be connected to a water supply line and having a second end defining an outlet, a closure to enclose said outlet, a thermally responsive member secured by said body and engaged with said closure to maintain said closure in a closed position, said thermally responsive member being releasable when exposed to a preselected elevated temperature, a first zone on said body, a second zone on said body spaced longitudinally from said first zone and disposed between said first zone and the first end of the body, said second zone having a configuration constructed and arranged to receive a tool to connect said body to said water supply line, and said first zone being configured to engage a base portion of a water permeable protective guard for enclosing said thermally responsive member.

5,632,340

EQUIPMENT FOR FIGHTING FIRE WITH LIQUID FROM HYDRAULIC ACCUMULATORS IN A SUSPENSION STRUCTURE

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

PCT No. PCT/FI94/00172, § 371 Date Nov. 3, 1995, § 102(e) Date Nov. 3, 1995, PCT Pub. No. WO94/25111, PCT Pub. Date Nov. 10, 1994
PCT Filed May 4, 1994, Ser. No. 535,296
Claims priority, application Finland, May 5, 1993, 932038
Int. Cl.[6] B64D *1/16*
U.S. Cl. 169—52 8 Claims



1. Equipment for fighting a fire, said equipment comprising:

a suspension structure (**4**,**5**); and hydraulic accumulators (**1**) in said suspension for movement to within an action range of the fire and including outlet nozzles (**9**) at one end for utilizing a high drive pressure in said hydraulic accumulators to produce, by suction effect, a fog-like penetrating liquid spray;

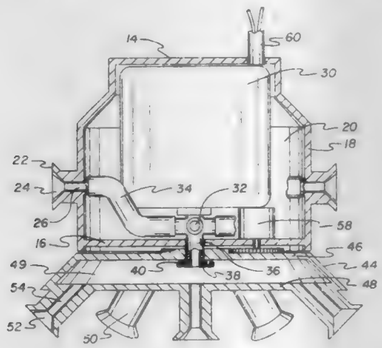
said suspension structure comprising a jacket structure (**2**) for holding together said hydraulic accumulators in such a way that, between said hydraulic accumulators, there are longitudinal air channels (**12**).

5,632,341

CEILING MOUNTED ROTATING FIRE EXTINGUISHING SYSTEM

Derek L. Allen, 1103 Franklin Ave., Apt. #10, Bronx, N.Y. 10456

Filed Nov. 27, 1995, Ser. No. 562,702
Int. Cl.[6] A62C *35/20*
U.S. Cl. 169—52 5 Claims



1. A ceiling mounted rotating fire extinguishing system for spraying a fire retardant liquid throughout a room to extinguish a fire comprising, in combination:

a cylindrical housing having a planar upper surface, a planar lower surface, and a surrounding side wall therebetween, the cylindrical housing having a hollow interior, the surrounding side wall having four heat sensitive sprinkler heads positioned therearound;

a fire retardant liquid container secured within the hollow interior of the cylindrical housing, the liquid container having a five way piping system extending outwardly of a lower portion thereof, the five way piping system having four extensions coupled with the four heat sensitive sprinkler heads in the surrounding side wall of the cylindrical housing, the five way piping system having a downwardly extending pipe extending outwardly of the planar lower surface of the cylindrical housing, the downwardly extending pipe having a flange integral with an end portion thereof, the flange having a bushing coupled to an upper surface thereof;

a spraying housing having a planar upper surface and a planar lower surface, the planar lower surface having a plurality of heat sensitive sprinkler heads extending outwardly thereof, the planar upper surface adapted for rotatable coupling over the flange of the downwardly extending pipe of the fire retardant liquid container;

a motor secured within the hollow interior of the cylindrical housing, the motor having means to rotate the spraying housing with respect to the cylindrical housing, the motor having wiring extending outwardly of the upper planar surface of the cylindrical housing;

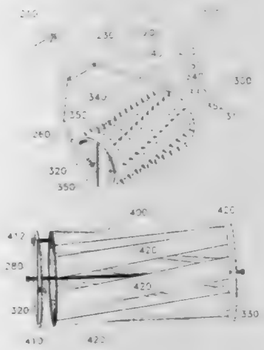
an activation switch secured to a wall adjacent to the system, the activation switch being electrically coupled with the wire of the motor, the activation switch being electrically coupled to an electrical source.

5,632,342

LAWN SEEDER

Bryan N. Knoblich, and Joann Valerani-Knoblich, both of 1917 E. Alaska St., Tucson, Ariz. 85706

Filed Jul. 11, 1995, Ser. No. 500,636
Int. Cl.[6] A01B *45/02*
U.S. Cl. 172—21 13 Claims



1. A device for spreading a granular material on an earthen surface comprising:

a drum having first and second end walls with an exterior surface spanning therebetween;

a handle assembly;

means for mounting said handle assembly to said drum;

a plurality of protuberances extending from said exterior surface, said protuberances indenting the earthen surface upon rotatable movement of said drum along the earthen surface;

a plurality of apertures on said exterior surface, said apertures communicating with a drum interior;

means on said drum for deposit of the granular material into said interior of said drum;

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said drum rotatable upon user exertion on said handle assembly, the granular material in said drum interior for flow through said apertures onto the indentations made by said protuberances,

means for regulating said material flow through said apertures comprising:

a plurality of paddles extending between said end walls of said drum;

means for mounting said paddles within said drum and adjacent said apertures between a first user selectable position with said paddles covering said apertures and a second position with said paddles uncovering said apertures, said paddles at said first position precluding said flow of the granular material through said apertures, said mounting means comprising:

a ring rotatably mounted within said drum about an imaginary longitudinal axis of said drum, an end of each of said paddles connected to said ring;

a lever attached to said ring;

a slot in said drum with said lever extending therethrough, whereupon movement of said lever through said slot rotates said ring and said paddles attached therethrough between said first and second paddle positions.

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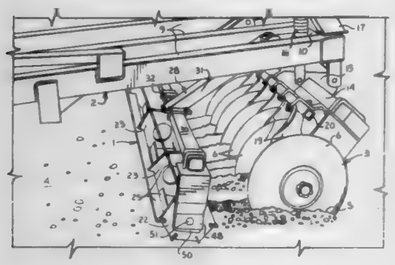
SOIL DEFLECTING AND LEVELING REEL

Allan S. Gengler, Beloit, Kans., assignor to Sunflower Manufacturing Co., Inc., Beloit, Kans.

Filed Nov. 22, 1995, Ser. No. 561,799

Int. Cl.[6] A01B *21/00*

U.S. Cl. 172—552 **20 Claims**



1. A tillage tool apparatus comprising:

(a) a tillage tool frame having a forward direction of travel.

(b) a tillage disc connected to said frame and having a disc axis extending generally transverse to said direction of travel;

(c) a reel assembly including a soil deflecting reel member mounted to enable rotation of said reel member about an axis of rotation,

(d) said reel assembly being connected to said frame to position said reel member immediately behind said disc; and

(e) said reel member rotating during travel of said frame in said forward direction and being positioned at such a distance behind said disc that said reel member engages and deflects to ground soil particles and clods thrown up by engagement of said disc with said soil, thereby minimizing lateral shifting of said soil behind said disc.

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CULTIVATOR

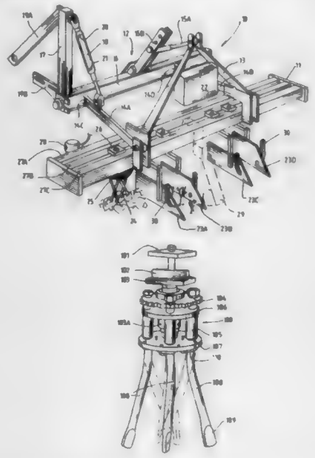
Wolfram M. Fix, RMB 4801, Daylesford, Victoria, Australia

Filed Sep. 29, 1995, Ser. No. 538,500

Claims priority, application Australia, Jul. 5, 1994, PM 6642

Int. Cl.[6] A01C *5/00;* **A01B** *33/00*

U.S. Cl. 172—111 **18 Claims**



1. A cultivator for attachment to a tractor for use in cultivating rows of plants, comprising:

a rotary tine assembly comprising a plurality of substantially vertically-oriented, rotary tine sets for cultivating soil on each side of a row of plants, each rotary tine set including at least one rotary tine;

shield means associated with each row of plants for limiting throwing of soil by said rotary tines;

drive means for rotating the rotary tine sets to cultivate said soil;

support structure means for securing the rotary tine sets, the shield means, and the drive means thereto such that the rotary tine sets are oriented relative to each other in a generally transverse direction to a direction of travel of the tractor, and which is adapted for connection to the tractor;

means for adjustably moving each tine set relative to other ones of said tine sets in said generally transverse direction;

wherein dimensions of and relative adjustments of the tine sets and the shield means are chosen so that a predetermined amount of soil passes between selected shield means, whereby weeds between adjacent rows of plants are uprooted and destroyed and soil is ridged and heaped around the plants and in the rows.

5,632,345

ROTOTILLER SKIRT ASSEMBLY

Frank A. Stahl, 477 Howe Rd., Kent, Ohio 44240

Filed Apr. 29, 1996, Ser. No. 639,443

Int. Cl.[6] A01B *33/00*

U.S. Cl. 172—112 **7 Claims**

1. A skin assembly for use with a cultivator, comprising:

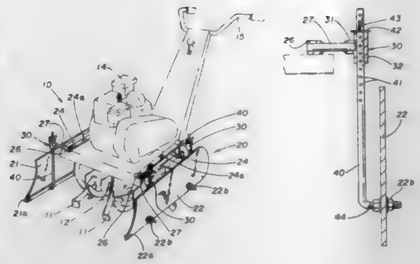
(a) a pair of shields spaced apart and disposed generally parallel to each other;

(b) a pair of strap members spaced apart and disposed generally parallel to each other;

(c) a plurality of shield support members operatively engaging said strap members and projecting therebeyond;

(d) a plurality of adjustable and free-floating suspension members connected to said shield support members and depending therefrom;

(e) said shields being fixed to said suspension members



(1) whereby said shields and said suspension members may move relatively of said strap members; and

(f) means carried by each said suspension member to control the movement of said suspension members relatively of said strap members.

5,632,346

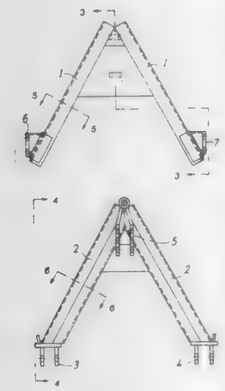
SELF-CENTERING DEVICE FOR QUICK HOOKING AND RELEASE OF FARM TOOLS PROVIDED WITH A HYDRAULIC HOISTER

Armando Bobbi, and Alfredo Bobbi, both of No. 41, Via delle Treie, Narni, Italy

Filed Aug. 3, 1995, Ser. No. 510,843

Int. Cl.[6] A01B *59/043*

U.S. Cl. 172—443 **18 Claims**



1. A device for quick hooking of a tool to a tractor and quick release of the tool from the tractor, comprising:

a first substantially triangular male element;

a second substantially triangular female element;

coupling and releasing means for coupling and releasing the male element with respect to the female element with said coupling and releasing means being positioned so as to be operable by an operator on the tractor;

said male element being designed for securement to the tractor and said triangular female element being designed for attachment to the tool, and said male element having a hexagonal cross-section and said female element having a cross-section which includes an outer wall with first and second wing walls which extend obtusely off from an interior surface of said outer wall such that said male and female elements are slidingly coupable to each other by the effect of the weight of the tool and are self-centering during the coupling.

5,632,347

Patent Not Issued For This Number

5,632,348

FLUID ACTIVATED DETONATING SYSTEM

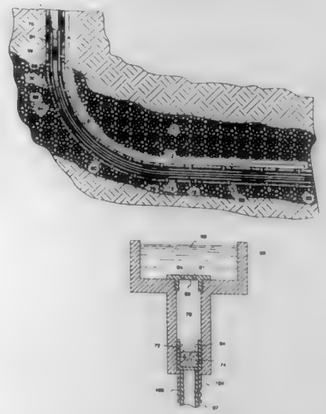
Malak E. Yunan, Boonton Township, N.J., assignor to Conoco Inc., Ponca City, Okla.

PCT No. PCT/US93/09683, § 371 Date Mar. 18, 1996, § 102(e) Date Mar. 18, 1996, PCT Pub. No. WO95/09969, PCT Pub. Date Apr. 13, 1995

PCT Filed Oct. 7, 1993, Ser. No. 343,459

Int. Cl.[6] E21B *43/1185*

U.S. Cl. 175—4.54 **15 Claims**



1. A fluid activated detonating system comprising:

housing means, wherein at least a portion of the housing means is in communication with a fluid environment;

detonator means in said housing, said detonator means being activated in responsive to a pressure pulse;

rupture means closing a portion of said housing which would otherwise communicate said detonator means with the fluid environment; and

explosive means for generating a pressure wave in said fluid environment to rupture said rupture means and thereby expose said detonator means to a pressure pulse.

5,632,349

VORTEX DRILL BIT

Norval R. Dove, 1123 Bomar, Houston, Tex. 77006; Stephen K. Smith, 101 Oakmont Cir., Harker Heights, Tex. 76541, and W. Gerald Lott, 1857 Post Oak Park Dr., Houston, Tex. 77027

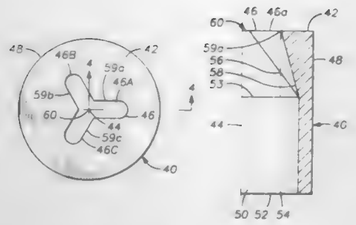
Continuation of Ser. No. 134,085, Oct. 8, 1993, Pat. No. 5,494,124. This application Feb. 26, 1996, Ser. No. 607,325

Int. Cl.[6] E21B *10/60*

U.S. Cl. 175—393 **13 Claims**

1. A drilling bit comprising a housing forming an exterior shell having a pin end and rock cutter end, said pin end including means for connection to a fluid supply, said housing having an inlet at said pin end and an interior cavity extending from said inlet to at least one nozzle in said rock cutter end, said nozzles including a passageway fluidly communicating with said cavity and converging to an outlet at an exterior face, at least one said outlet having a slot configuration therein extending to at least a portion of said passageway convergence, said passageway convergence, reaching a maximum at said slot, and said slot configuration being effective,

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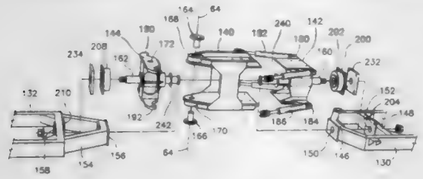
when fluid is forced therethrough under turbulent flow conditions into a fluid environment having a hydrostatic pressure at least equal to the formation pressure at the drilling depth of the rock cutter end, to eject said fluid as a zone of higher hydrostatic pressure having adjacent thereto a zone of hydrostatic pressure lower than said formation hydrostatic pressure.

5,632,350

ARTICULATED VEHICLE

Donald Gauvin, 247 rue du Pecheur, C. P. 388, Lameque, N. B., Canada

Filed Sep. 5, 1995, Ser. No. 523,557
Int. Cl.[6] B60D *1/01*; B62D *11/20*
U.S. Cl. 180—9.44 **20 Claims**



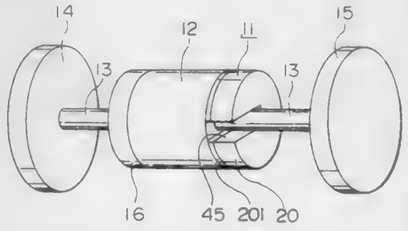
1. An articulated vehicle comprising:
a first vehicle body including a first body frame having a first longitudinal axis, and having ground-engaging means on a first side and on a second side of said first body frame,
a second vehicle body including a second body frame having a second longitudinal axis, and having ground-engaging means on a first side and on a second side of said second body frame,
an articulated joint connecting said first body frame to said second body frame, for allowing relative lateral oscillation of said first vehicle body about said first longitudinal axis, and for allowing lateral oscillation of said second vehicle body about said second longitudinal axis, said articulated joint further allowing relative pivotal movement of said first vehicle body and said second vehicle body about a steering axis perpendicular to said first and to said second longitudinal axes, said articulated joint comprising;
a first articulation member and a first shaft means mounting said first articulation member on said first body frame for relative oscillation of said first articulation member and of said first vehicle body about said first longitudinal axis,
a second articulation member and a second shaft means mounting said second articulation member on said second body frame for relative oscillation of said second articulation member and of said second vehicle body about said second longitudinal axis,
pivot means pivotally joining said first and second articulation members together along said steering axis, and allowing said pivotal movement of said first and second vehicle body while a first movement of said first body frame remains substantially co-planar with a second movement of said second body frame, and
a first restrictively flexible torsion coupling means connected between said first articulation member and said first body frame for flexibly restraining said relative oscillation of said first articulation member and of said first vehicle body about said first longitudinal axis.

5,632,351

POWER CONVERTER AND ELECTRIC CAR DRIVE SYSTEM EMPLOYING THE SAME

Hiroshi Ishiyama, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 17, 1995, Ser. No. 391,493
Claims priority, application Japan, Feb. 18, 1994, 6-020993
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—651 **23 Claims**



1. A power converter for converting electricity to provide operative power to a motor in an electric car drive system having an electrical power source, said converter comprising:
a power converter element;
a housing substantially enclosing said converter element, a surface of said housing defining a cutout recessed radially from an outer peripheral portion of said housing;
a set of input terminals mounted on said housing for electrically connecting said converter element to said electrical power source; and
a set of output terminals for electrically connecting said converter element to said motor to provide operative power;
wherein said converter housing is adapted to be mounted on said motor so that a drive shaft extending from said motor is accommodated in said cutout.

5,632,352

ELECTRIC TRACTION MOTOR VEHICLE

Renë Jeanneret, Merzligen; Thomas Edye, Boudry, and Jacques Müller, Reconvilier, all of Switzerland, assignors to SMH Management Services AG, Switzerland

PCT No. PCT/IB94/00119, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/27837, PCT Pub. Date Dec. 8, 1994
PCT Filed May 24, 1994, Ser. No. 379,474
Claims priority, application France, Jun. 2, 1993, 93 06690
Int. Cl.[6] B60K *1/00;5/08*
U.S. Cl. 180—65.2 **13 Claims**

1. A motor vehicle comprising:
a fuel engine for producing a first mechanical power;
a generator for converting said first mechanical power into a first electrical power;
control means operable by a driver of said vehicle to produce a power setting signal representative of a desired power;
a driving wheel;
motor means for supplying a second mechanical power to said driving wheel from a second electrical power, said motor means including an electric motor mechanically coupled to said driving wheel and a circuit for controlling said electric motor that is responsive to said power setting signal to regulate the value of said second mechanical power to the value of said desired power; and,
regulating means responsive to said power setting signal to regulate the rotational speed of said fuel engine to the value at which said first mechanical power is at least substantially equal, firstly, to said desired power and, secondly, to a set fraction of the maximum mechanical power of said fuel engine, said regulating means including transfer means electrically coupled to said generator and to said motor means to produce said second electrical power from said first electrical power,
wherein said regulating means includes means for producing a measurement signal representative of said rotational speed and means for supplying a comparison signal between said measurement signal and said power setting signal,
wherein said transfer means is arranged to respond to said comparison signal to increase the braking torque exerted by said generator on said fuel engine when said measurement signal is greater than said power setting signal and to decrease said braking torque when said measurement signal is less than said power setting signal,
and wherein said transfer means includes a first regulating element connected across a first terminal and a second terminal of said generator and a second regulating element connected across said first terminal of said generator and a terminal of said control circuit, said first regulating element including a first resistor and a first switch connected in series with said first resistor and responsive to said comparison signal to connect said first resistor across said terminals of said generator when said first measurement signal is greater than said power setting control signal and to disconnect said first resistor from said terminals of said generator when said measurement signal is less than or equal to said power setting signal, and said second regulating element including a second resistor and a second switch connected in parallel with said second resistor and responsive to said comparison signal to connect said second resistor in series across said first terminal of said generator and said terminal of said control circuit when said measurement signal is less than said power setting signal and to directly connect said first terminal of said generator to said terminal of said control circuit when said measurement signal is greater than or equal to said power setting signal.

5,632,353

PEDESTAL ARRANGEMENT FOR MOTOR GRADERS

James E. Kimberley, Goderich, Canada, assignor to Champion Road Machinery Limited, Goderich, Canada

Filed Nov. 30, 1994, Ser. No. 351,124
Claims priority, application Canada, Sep. 30, 1994, 2133364
Int. Cl.[6] B62D *1/02*
U.S. Cl. 180—326 **11 Claims**

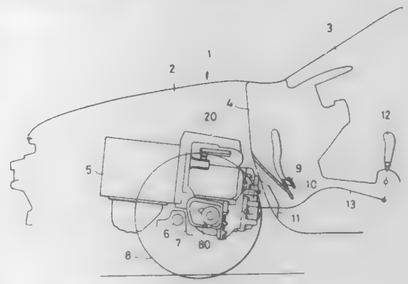
1. A pedestal control console comprising two opposed upright base plates, said opposed base plates having two spaced pivot shafts extending thereacross, one of said pivot shafts pivotally securing a panel member which forms one component of a trapezoidal linkage with the other pivot shaft pivotally securing a back upright support which also forms part of said trapezoidal linkage, said panel member and said back upright support each being pivotally connected at a raised position to a steering head located generally atop said trapezoidal linkage, said steering head including control levers positioned either side thereof and pivotal about a common shaft, each control lever when actuated in either a fore or aft direction driving a first connecting rod, each first connecting rod being connected to a bell crank pivotally secured to said other pivot shaft and located between said opposed base plates, said back upright support being centrally disposed on said other pivot shaft with said bell crank being located to either side of said back upright support, each bell crank being connected to a second connecting rod associated with a valve of a hydraulic control valve block, said first connecting rods being bent to form a transition from a wide spacing thereof adjacent the steering head to a narrow spacing between said base plates, and wherein said console includes an adjustable locking link extending between members of said trapezoidal linkage to lock said trapezoidal linkage when said adjustable link is fixed and to allow said trapezoidal linkage to move various position between a fully upright position and a fully reclined position to accommodate different preferences of different operators When said adjustable locking link is free to adjust.

5,632,354

MOTOR VEHICLE WITH A CONTINUOUSLY VARIABLE TRANSMISSION

Hajime Kashiwase, and Satoru Watanabe, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 297,098
Claims priority, application Japan, Sep. 16, 1993, 5-229930; Dec. 27, 1993, 5-332183
Int. Cl.° B60K *17/04*
U.S. Cl. 180—344 **4 Claims**



1. A motor vehicle comprising:
a continuously variable transmission;
an engine longitudinally mounted on a front side of said motor vehicle for outputting power to drive a wheel via said continuously variable transmission;

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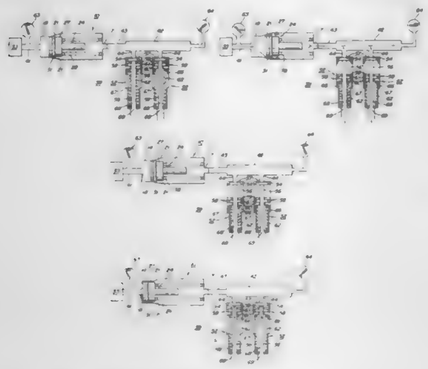
a passenger compartment including foot operational equipment;
an engine compartment on said front side of said motor vehicle;
a toe board partitioning said passenger compartment and said engine compartment;
a starting clutch operatively connected to said engine for engaging and disengaging said power to said wheel;
a changeover apparatus, directly and coaxially interposed between said starting clutch and said continuously variable transmission, for changing a moving direction of said motor vehicle forwardly or rearwardly;
a speed reduction apparatus functionally connected to said continuously variable transmission just under an intermediate position between said changeover apparatus and said continuously variable transmission, for reducing an output shaft speed of said continuously variable transmission and for changing a transmitting direction of said power; and
a front differential, perpendicularly suspended under said speed reduction apparatus such that an axis of said front differential crosses at a right angle to an axis of said speed reduction apparatus and integrally housed in a case with said continuously variable transmission and said speed reduction apparatus, for absorbing a speed difference between left and right wheels,
wherein said continuously variable transmission is mounted in parallel with said engine in front of said toe board in said engine compartment so as to efficiently minimize a size and weight of said motor vehicle and to largely optimize comfortability and an arrangement of said equipment in said motor vehicle.

5,632,355

GREASE LUBRICATING SYSTEM EMPLOYING AN INJECTOR RESET VALVE

Christopher C. Dussault, Bennington, Vt., assignor to Bijur Lubricating Corporation, Bennington, Vt.

Filed Jun. 7, 1995, Ser. No. 487,954
Int. Cl.[6] F16N *27/00*
U.S. Cl. 184—7.4 **22 Claims**



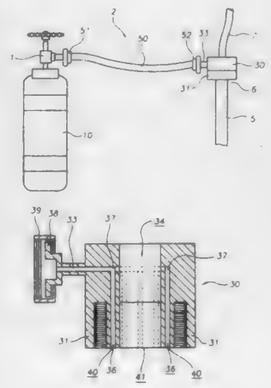
I. A grease lubrication system comprising:
at lease one injector having an injector input port for receiving grease and an injector output port for discharging grease, the injector being actuable between an operative position in which grease may flow from the injector input port to the injector output port and reset position in which grease is prevented from flowing from the injector input port to the injector output port, the injector being actuated to the operative position when the pressure of grease at the injector input port is at least equal to a first predetermined level and being actuated to the reset position when the pressure of grease at the injector input port is no higher than a second predetermined level, lower than the first predetermined level;
a pump for supplying grease, the pump having a pumping cycle including a pressurizing portion and a depressurizing portion; and
common pressure reducing means connected between the pump and the injector input port for reducing the pressure at the injector input port to a level no higher than a second predetermined level during the depressurizing portion of a pump cycle to thereby cause the injector to be actuated to its reset position.

5,632,356

CABLE LUBRICATING DEVICE AND METHOD

Dan W. Sells, 6005 Wittig Ave., Las Vegas, Nev. 89131

Filed Aug. 28, 1995, Ser. No. 508,798
Int. Cl.[6] F16W *7/16*
U.S. Cl. 184—15.2 **4 Claims**



1. A cable lubricating device comprising:
a lubricant supply tank having a refillable internal chamber;
a lubricant dispensing head having an input port, a cable feeding aperture therethrough and a plurality of lubricating ports; and
a flexible lubricant supply hose having a first end and a second and, said first end having a connecting means for connecting to said input port of said dispensing head, said second end being connectable to said internal chamber of said lubricant supply tank;
said lubricant dispensing head including a conduit attachment means for attaching said dispensing head to a conduit, said attachment means forming an attachment to the conduit in a manner such that in use terminal end openings of said lubricating ports are positioned within said conduit and dispense a lubricant within said conduit.

4. A lubricating device comprising:
a lubricant supply tank having a refillable internal chamber;
a lubricant dispensing head having a cable feed aperture formed through the center thereof, an input port, a connecting chamber formed within said lubricant dispensing head in fluid communication with said input port, a plurality of cylindrically shaped lubricating ports in fluid communication with said connecting chamber and spaced uniformly about said cable feed aperture, and an internally threaded attachment collar for connection to a threaded end of a conduit section, said attachment collar, said plurality of lubricating ports and said cable feed aperture terminating in a flush configuration in a manner such that when said attachment collar is threaded onto the threaded end of the section of conduit lubricant exiting said plurality of lubricating ports is dispensed directly within the conduit, said feed aperture and said plurality of lubricating ports having substantially parallel longitudinal axes; and

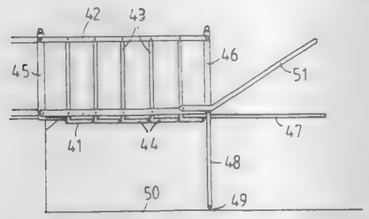
a flexible lubricant supply hose having a first end and a second end, said first end having a connecting means for connecting to said input port of said dispensing head, said second end being connectable to said internal chamber of said lubricant supply tank.

5,632,357

COMBINED STAIRS AND PERSON HOIST

Vigbjørn Matre, Ormerudveien 59A, N-1410, Kolbotn, Norway

PCT No. PCT/NO93/00097, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/00373, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 24, 1993, Ser. No. 360,848
Claims priority, application Norway, Jun. 24, 1992, 922502
Int. Cl.[6] B66B *9/08*
U.S. Cl. 187—200 **10 Claims**



10. A combined stairway and hoist apparatus, comprising:
a stairway which, by a lifting means, may be raised and lowered at least at one end, and which is designed so that steps of said stairway all the time are horizontal during raising and lowering movement;
the stairway, when in a horizontal position, forming a planar surface which is flush with a raisable and lowerable platform;
said platform being interconnected with said stairway at a lower end of said stairway;
said stairway, together with said platform raisable and lowerable by means of parallel stays which, at one end are pivotally connected to a support means provided at an upper end of the stairway, the parallel stays along their length being pivotally connected to a number of additional stays which are connected to respective steps and are essentially vertical in operating position; wherein:
said parallel stays are arranged below said steps;
said support means are constituted by a floor structure at said upper end of said stairway, and said parallel stays are further connected to said platform via a movement-transferring arm system.

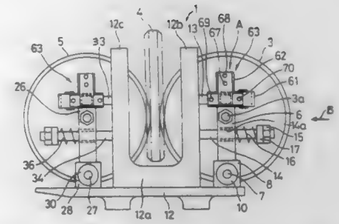
5,632,358

ELEVATOR ROLLER GUIDE

Koichi Maeda, Yokohama, and Yoshito Aoishi, Tama, both of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 28, 1995, Ser. No. 430,917
Claims priority, application Japan, Aug. 3, 1994, 6-182023
Int. Cl.[6] B66B *7/04*
U.S. Cl. 187—410 **7 Claims**

1. An elevator roller guide, comprising:
a platform having a supporting arm portion; a roller; an arm supporting said roller in a freely rotatable manner, said arm being fixed to a support shaft arranged on said platform in a freely rockable manner so that said arm is roackable with said support shaft in rocking directions away from and towards said supporting arm portion; a spring arranged at a side of said arm facing away from said supporting arm portion; an auxiliary arm part arranged on said supporting arm portion at a position separated by certain distance in a horizontal direction from a side of said arm facing toward said supporting arm portion by a certain distance from said spring, and a viscoelastic part arranged between said auxiliary arm part and said arm, wherein said viscoelastic part includes a viscoelastic material, said viscoelastic material being a unitary part having an axis of compression oriented in a direction transversely of a direction in which an axis of compression for said spring is oriented, said axis of compression of said viscoelastic material being oriented also in a direction transversely of said rocking directions and also parallel to said support shaft, so that a movement of said arm in one of said rocking directions deforms said viscoelastic material in only a shear direction which is transversely of said axis of compression of said viscoelastic material.

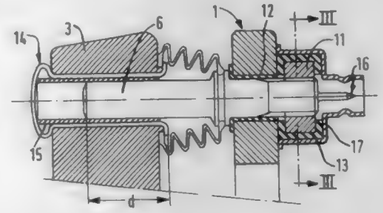


5,632,359

DISK BRAKE WITH STROKE INDICATOR

Josep O. Camps, and Juan S. Bacardit, both of Drancy, France, assignors to Bendix Espana S.A., Barcelone, Spain

PCT No. PCT/FR94/01524, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO95/20109, PCT Pub. Date Jul. 27, 1995
PCT Filed Dec. 22, 1994, Ser. No. 387,770
Claims priority, application France, Jan. 19, 1994, 94 00547
Int. Cl.[6] F16D *66/02*
U.S. Cl. 188—1.11 **3 Claims**



1. A disk brake for a motor vehicle, comprising:
first and second brake elements which can move with respect to one another, said first brake element being a caliper straddling a disk brake, said second brake element being a carrier fixed to the vehicle;
braking means comprising a cylinder secured to said caliper and facing said brake disk, said braking means having an opening closed by a piston;
guide means allowing said caliper to slide with respect to said carrier when said braking means is actuated, said guide means comprising at least one guide pin fitted to one of said first and second brake elements while the other of said first and second brake elements includes a bore in which said guide pin slides;
first and second friction pads, said first friction pad being located between said piston and a first face of said brake disk, said second friction pad being located between as second face of said brake disk and a jaw of said caliper, said first and second friction pad being applied to said brake disk on actuation of said braking means; and

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at least one electrical wear indicator for monitoring the state of wear of at least one of said first and second friction pads, said indicator including first and second parts at least one of which is displaced with respect to the other on actuation of said braking means, said indicator having means for varying an electrical parameter continuously as a function of the relative position occupied by said first and second parts of said indicator, characterized in that said electrical parameter is a capacitance, and that said two parts of said wear indicator constitute respective electrodes and that one of said electrodes is said guide pin and the other is a sleeve secured to said carrier, said first and second electrodes forming said guide means and having a variable overlap area, said disk brake having monitoring means being capable of periodically measuring said variable overlap area to define a current operational output signal and comparing said current operational output signal with at least one predetermined threshold for delivering a failure signal when the results of said comparison differs from a previously recorded normal result.

5,632,360

BRAKING DEVICE FOR A SELF-ORIENTATABLE TWIN-WHEEL

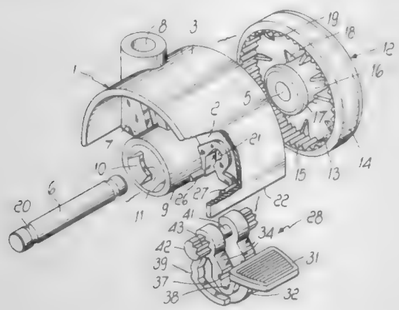
Francescantonio Melara, Bologna, Italy, assignor to Emilsider Meccanica S.p.A., Cadriano Di Granarolo Emilia, Italy

Filed Oct. 31, 1994, Ser. No. 331,827

Claims priority, application Italy, Nov. 3, 1993, B093A0436

Int. Cl.° B60B *33/00*

U.S. Cl. 188—1.12 **20 Claims**



1. Braking device for a self-orientating twin castor comprising:

a spindle;

two wheels which are rotatably mounted at opposite ends of said spindle;

a support defining a seat, said spindle being driven through said seat of said support, said support comprising a semicircular vertical wall that lies between said wheels;

a semicylindrical hood which covers said wheels,

a cylindrical recess formed in said semicircular wall, said recess having a vertical axis extending eccentrically with respect to said spindle, and said recess being open in an upward region for accommodating a pivot for mounting the castor in a piece of furniture;

a disk for each wheel of said wheels and a cylindrical ring protruding concentrically from said disk with respect to said spindle towards said wall;

a lever element of said braking device;

coupling means for coupling said lever element with said support adjacent one end of said hood such that said lever element is pivotable between two positions about an axis extending parallel to said spindle;

a blocking arm of said lever element for locking said wheels and extending between said wheels;

actuation arm of said lever element accessable by a user;

blocking means of said blocking arm for engaging an inner surface of said ring for said each wheel to block the rotation of said wheels when said lever arm is in one of said two positions and to allow rotation of said wheels when said lever arm is in the other one of said two positions; and

retention means for retaining said lever element in said two positions for respectively blocking and allowing rotation of said wheels;

wherein when said lever element is coupled to said support by said coupling means said actuation arm of said lever element extends from below a lower edge of said semicylindrical hood and said blocking arm of said lever element extends from said lower edge underneath said semicylindrical hood; and

wherein said coupling means comprise an elastic snap-together coupling disposed underneath said semicylindrical hood and including complimentarily shaped elastic projection and recess engagement elements for pivotally connecting said lever element to said castor support after said castor support and said at least one wheel are mutually connected.

5,632,361

VIBRATION DAMPER, IN PARTICULAR FOR MOTOR VEHICLES

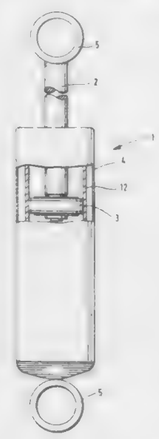
Gunther Wulff, Schweinfurt; Achim Thomä , Bergrheinfeld; Günther Reusing; Stefan Irmscher, both of Niederwerrn, and Wolfgang Herdeg, Höhenkirchen, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Sep. 14, 1995, Ser. No. 527,852

Claims priority, application Germany, Sep. 16, 1994, 44 33 056.1

Int. Cl.° F16F *6/00;9/14;9/53;* **B60G** *13/00*

U.S. Cl. 188—267 **20 Claims**



1. A vibration damper for damping vibrations of a suspension of a motor vehicle, said vibration damper comprising:

a cylinder;

a first end apparatus and a second end apparatus, said cylinder being disposed between said first end apparatus and said second end apparatus;

means, provided at said first end apparatus of said vibration damper, for connecting said vibration damper to the body of a motor vehicle;

means, provided at said second end apparatus of said vibration damper, for connecting said vibration damper to the suspension of a motor vehicle;

damping fluid disposed within said cylinder;

a piston rod projecting into said cylinder, said piston rod being movable axially within said cylinder;

means for sealing said piston rod with respect to the atmosphere;

a piston disposed on said piston rod, said piston dividing said cylinder into a first chamber and a second chamber;

means for providing fluid communication between said first chamber and said second chamber;

said damping fluid comprising a magnetorheological fluid increasing in viscosity in response to the application of at least one magnetic field thereto;

said means for providing fluid communication between said first chamber and said second chamber comprising at least one flow channel;

said at least one flow channel comprising:

a depth in the direction of flow of said damping fluid in said at least one flow channel;

a cross section, said cross section being substantially transverse to the direction of flow of said damping fluid;

said cross section comprising:

a first dimension; and

a second dimension; and

said first dimension of said cross section varies along said second dimension of said cross section; and

means for providing at least one variable magnetic field to said magnetorheological fluid in said cross section to change the viscosity of said magnetorheological fluid in a selected portion of said cross section of said at least one flow channel.

5,632,362

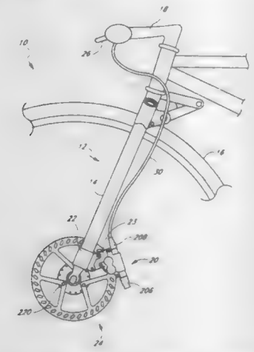
BICYCLE DISC BRAKE

Horst Leitner, Laguna Beach, Calif., assignor to RockShox, Inc., San Jose, Calif.

Filed Aug. 15, 1995, Ser. No. 515,712

Int. Cl.° B62L *3/06;1/10;* **B60T** *11/14*

U.S. Cl. 188—344 **22 Claims**



1. A disc brake assembly for a bicycle, comprising:

a master housing defining a master chamber having a first end and a second end, said master housing adapted to be mounted on a fork of said bicycle;

a reservoir housing defining a reservoir chamber having a first end and a second end;

a compensating body mounted within said reservoir chamber, said compensating body and said reservoir chamber cooperating to form a compensating chamber;

a compensating biasing member distal said compensating body from said second end of said reservoir chamber, said compensating biasing member biasing said compensating body toward said second end of said reservoir chamber;

a first compensating channel defining a first compensating flow path connecting said master chamber and said compensating chamber;

a master piston shaft, said master piston shaft mounted at least partially within said master chamber;

a master piston mounted on said master piston shaft defining a primary chamber between said master piston and said first end of said master chamber;

a seal between said master piston shaft and said master housing, said seal at least partially defining a secondary chamber between said master piston and said second end of said master chamber;

a brake piston housing defining a brake piston chamber;

a brake channel defining a brake flow path connecting said primary chamber with said brake piston chamber;

a brake piston reciprocally mounted within said brake piston chamber, wherein said master piston shaft is movable from a braking position wherein said first flow path is in communication with said secondary chamber and a release position wherein said first flow path is in communication with said primary chamber.

5,632,363

ONE-WAY CLUTCH

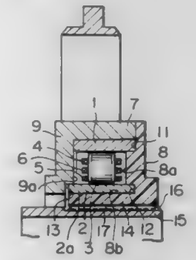
Tomomasa Kubo, Kashiwara; Tetsuaki Numata, Nara-ken, and Yoshihisa Miura, Yamatokoriyama, all of Japan, assignors to Koyo Seiko Co., Ltd., Japan

Filed Apr. 2, 1996, Ser. No. 630,889

Claims priority, application Japan, Apr. 21, 1995, 7-120890; Apr. 21, 1995, 7-120891

Int. Cl.° F16D *41/07*

U.S. Cl. 192—45.1 **8 Claims**



1. A one-way clutch comprising an outer race fitted in a housing member, an inner race, a plurality of engaging members arranged between the outer race and the inner race, a cage for holding the engaging members, a spring for biasing each of the engaging member in one direction, annular members arranged on (the opposite sides) of the outer race so as to close a space between the inner and outer races, said inner race being formed of metal, one of said annular members being formed of synthetic resin, and an integral molding means for integrally forming the inner race and the annular member.

5,632,364

FREE WHEEL HUB FOR CYCLES

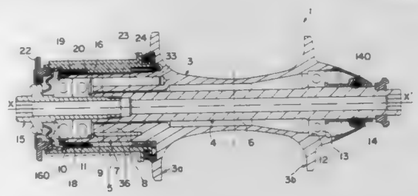
Jean-Pierre Mercat, Chaneins, France, assignor to Mavic S.A., Sur Moignans, France

Filed Sep. 11, 1995, Ser. No. 526,664

Claims priority, application France, Sep. 9, 1994, 94 10931

Int. Cl.° F16D *41/30*

U.S. Cl. 192—64 **12 Claims**



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1. A free wheel hub for cycles, comprising

(a) a hollow shaft;

(b) a cylindrical hub body mounted for free rotation about said hollow shaft, said hub body having two ends each comprising a housing for at least one ball bearing means held in place on said hollow shaft, one end of said hub body having a tubular extension with a cylindrical wall;

(c) a free wheel body mounted for rotation on said tubular extension of said hub body and being configured to receive staged gears on its outer periphery, and having a series of teeth on its inner periphery;

(d) at least one unidirectional connection ratchet moveable between said hub body and said free wheel body, said at least one ratchet having a meshing end operatively engaging in one of said teeth, and a pivoting end;

(e) said cylindrical wall of said tubular extension of said hub body comprising a housing for each said at least one ratchet, said housing having a width corresponding to a width of said at least one ratchet;

(f) resilient means mounted between said tubular extension and said at least one ratchet for moving said meshing end of said at least one ratchet into engagement with one of said teeth of said free wheel body;

(g) said tubular extension comprising, for each said housing, a cylindrical orifice with an axis parallel to an axis of said hub body, said orifice debouching at an end of said tubular extension and passing through a base of said housing, a cylindrical rod shorter than said ratchet being located in said orifice and having two end portions and a central portion located in a said housing, said end portions being engaged in a wall of said tubular extension on each housing side, and said pivoting end being formed by a cylindrical surface complementary to a surface of said central portion of said cylindrical rod and abutting on said central portion.

5,632,365

FRICTION CLUTCH

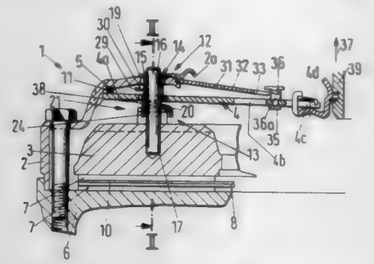
Paul Maucher, Sasbach, Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Germany

Filed Mar. 28, 1995, Ser. No. 413,978

Claims priority, application Germany, Mar. 29, 1994, 44 10 837.0

Int. Cl.[6] **F16D** *13/75*

U.S. Cl. 192—70.25 **56 Claims**



1. An engageable and disengageable friction clutch, comprising a housing rotatable about a predetermined axis; means for rotating said housing including a counterpressure plate rotatable about said axis; a pressure plate coaxial and rotatable with and disposed between said housing and said counterpressure plate and movable in the direction of said axis; a clutch disc coaxial with and disposed between said plates and being subject to wear upon repeated progressing frictional contact and progressing reduction of frictional contact with said plates in response to axial movement of said pressure plate toward and away from said counterpressure plate; means for engaging the clutch including at least one clutch spring arranged to bias said pressure plate against said clutch disc in the engaged condition of the clutch; means for reducing the bias of said at least one spring upon said pressure plate to thus disengage the clutch; at least one at least temporarily stressed energy storing element operative in parallel with said at least one spring to generate forces promoting at least in part the disengagement of the clutch; and means for automatically compensating for wear at least upon said clutch disc.

5,632,366

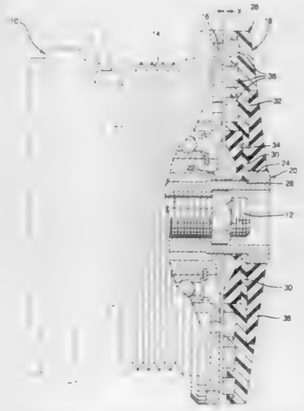
ELECTROMAGNETIC CLUTCH WITH IMPROVED TORQUE CUSHION

Richard S. Mullaney, Franklin, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1996, Ser. No. 615,667

Int. Cl.[6] **F16D** *27/14*

U.S. Cl. 192—84.1 **3 Claims**



1. An electromagnetic clutch assembly in combination with a fluid pumping apparatus having a central drive shaft and a powered rotor supported for free rotation about said drive shaft, said powered rotor having a generally annular friction disk coaxial to said drive shaft and facing in one axial direction relative to said pumping apparatus, said clutch assembly comprising,

a central hub fixed to said drive shaft having a cylindrical bearing surface coaxial to said drive shaft,

a stop member fixed to said central hub adjacent said bearing surface and facing in axially the opposite direction from, and radially and axially spaced relative to, said friction disk,

a generally annular armature support disk comprised of a material that is radially and torsionally stiff, but axially flexible, said armature support having a radially inner edge sized to fit radially closely over said hub bearing surface axially between said hub stop member and said friction disk, said armature support having an outer face facing away from said friction disk and in axial abutment with said hub stop member and an oppositely directed inner face,

a generally annular armature fixed to said armature support and axially spaced from said friction disk by a predetermined gap when said armature support is in an unflexed state and frictionally engageable with said friction disk when pulled electromagnetically theretoward, and,

a torsionally flexible, resilient elastomeric material molded to both faces of said armature support disk inner edge and to said central hub so as to axially capture said armature support inner edge in abutment with said central hub stop member while allowing free rotation of said armature support disk inner edge upon said central hub bearing surface within the limits of said elastomeric material's torsional flexibility,

whereby, when said armature is pulled axially into engagement with said friction disk, said armature support disk may flex inwardly about said axially captured inner edge while, simultaneously, said armature support inner edge is radially confined by, but can turn upon, said hub bearing surface within the limits allowed by said elastomeric material to cushion the shock of engagement between said armature and friction disk.

5,632,367

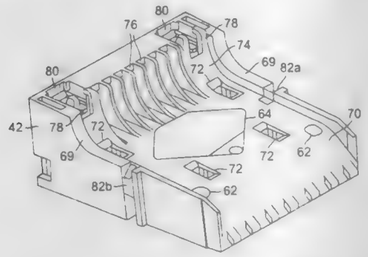
VALIDATION HOUSING FOR A BILL VALIDATOR MADE BY A TWO SHOT MOLDING PROCESS

Alfred F. Bergeron; Thomas E. Shuren, and Scott Hudis, all of Chester County, Pa., assignors to Mars, Incorporated, McLean, Va.

Filed Jan. 23, 1995, Ser. No. 376,809

Int. Cl.[6] **G07F** *7/04*

U.S. Cl. 194—207 **33 Claims**



1. A validation portion of a bill validator comprising:

a first plastic housing having a first portion of a first plastic material and a second portion of a second plastic material, wherein the first and second plastic materials are fused, the second plastic material defining at least one window through the first housing, the window having first and second sides;

the first housing comprising a first surface defining, at least in part, a path for a bill through the validation portion, a second surface on the opposite side of the housing from the first surface, wherein the first surface of the first housing is aligned with the first side of the window and the second surface of the first housing is aligned with the second side of the window; and

a first light source adjacent the second side of the window for emitting light through the window to interact with a bill in the bill path, wherein the second plastic material is transparent to at least the light emitted by the light source.

5,632,368

OPTIMUM CARTON HOLD-DOWN ELEMENT FOR ROTARY FEEDERS

Frank Moncrief, Acworth, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Apr. 21, 1995, Ser. No. 426,333

Int. Cl.[6] **B31B** *5/80*

U.S. Cl. 198—471.1 **20 Claims**

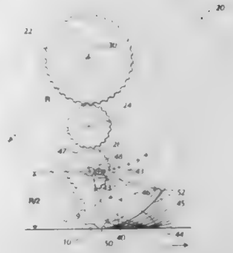
1. A hold-down element for use with a rotary feeder rotating about a central axis, wherein the rotary feeder rotates and expands an expandable article from a first location above a flight conveyor to a second location in a fully expanded state between upstanding lugs on the conveyor and wherein said feeder and conveyor move in opposite directions, said hold-down element for holding down and securing the expanded article against the conveyor between the lugs after the expanded article has been released by the rotary feeder at the second location, said hold-down element comprising:

an elongated member adapted to maintain contact with the expanded article in the second position;

spacing means having a first end attached to the rotary feeder and a second end attached to said elongated member for spacing said elongated member from the rotary feeder, wherein the rotary feeder imparts a rotational motion to said spacing means and said elongated member;

said elongated member having a continuously curved outer surface so that a distance from said outer surface to said rotary feeder continuously increases from one end of said elongated member to an opposite end of said elongated member; and

wherein said elongated member of said hold-down element maintains constant contact with a surface of the article during rotation of said rotary feeder, such that the article surface remains tangent to said continuously curved surface, such that said continuously curved surface consequently holds the article down during said rotation of said rotary feeder, whereby said rotary feeder smoothly disengages from the article surface without dislodging the article from the flight conveyor.



5,632,369

APPARATUS FOR DISTRIBUTING PARTICULATE MATERIAL

Lars G. A. Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Switzerland

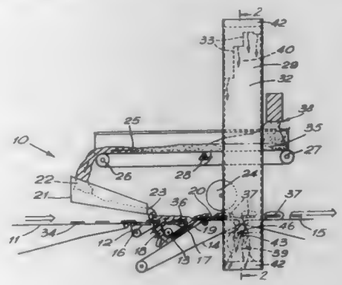
Division of Ser. No. 556,651, Jul. 20, 1990, Pat. No. 5,195,454.

This application Mar. 11, 1993, Ser. No. 30,891

Claims priority, application European Pat. Off., Aug. 1, 1989, 89114154

Int. Cl.[6] **B65G** *47/04*

U.S. Cl. 198—525 **10 Claims**



1. An apparatus for distributing particulate material comprising a rotatable drum having an interior circumferential wall which is positioned to have a horizontal axis and which defines a hollowed drum interior, a first endless belt for conveying particulate material, a second endless belt positioned to extend end-to-end with the first belt so that adjacent ends of the first and second belts terminate within the drum interior and are separated by a gap so that particulate material conveyed on the first belt falls off the end of

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the first belt into the gap, and a guiding device which comprises an oscillable plate which is positioned so that an edge of the plate extends in a direction parallel to the end of the first belt for guiding and distributing particulate material which falls into the gap substantially evenly over an axial width of a portion of the interior wall.

5,632,370

PIVOTING TRANSFER MEANS AT BELT CONVEYOR

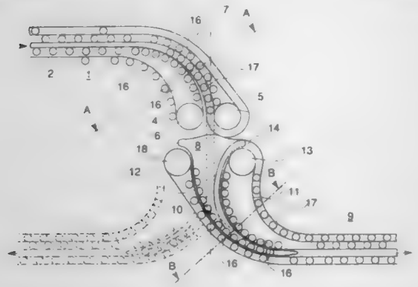
Hartmut Grathoff, Wendelstein, Germany, assignor to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed Mar. 9, 1995, Ser. No. 401,724

Claims priority, application Germany, Mar. 17, 1994, 44 09 152.4

Int. Cl.[6] B65G *21/10*

U.S. Cl. 198—587 **8 Claims**



1. Pivoting transfer device for transfer of bulk material at a transfer area, at least part of the device pivoting around a pivot axis, the device comprising: a first cover belt conveyor with bottom belt with a bottom belt tail pulley and a cover belt with a cover belt tail pulley, said bottom belt tail pulley and said cover belt tail pulley being positioned adjacent to the bulk material transfer area; a second cover belt conveyor including a bottom belt with a tail pulley and a cover belt with a tail pulley, a receiving mouth formed by side walls in said bulk material transfer area, at least a portion of said first cover belt conveyor being deflected in an arc substantially equal to 90° such that a center of gravity line of a jet of raw material leaving said first cover belt conveyor is substantially the same as said pivot axis, said second cover belt conveyor defining an arc substantially equal to 90° in a transition beginning from said receiving mouth, at least one of said first cover belt conveyor and said second cover belt conveyor being pivotable in relation to the other of said first cover belt conveyor and said second cover belt conveyor, around said pivot axis.

5,632,371

EXPANDABLE REDUNDANTLY POWERED CONVEYORS

John W. Best; Bob K. Flippo; James D. Walker, and Gary D. Carter, all of Jonesboro, Ark., assignors to Northstar Industries, Inc., Jonesboro, Ark.

Continuation-in-part of Ser. No. 341,462, Nov. 17, 1994, Pat. No. 5,456,347, which is a continuation of Ser. No. 22,012, Feb. 24, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,544

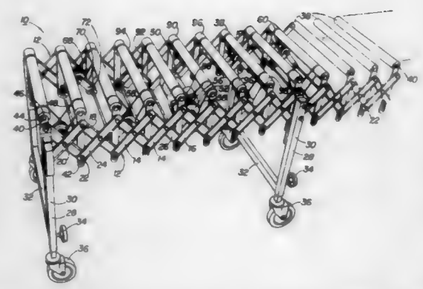
Int. Cl.[6] B65G *13/06*

U.S. Cl. 198—781.1 **33 Claims**

1. A powered conveyor, comprising:

a. a pair of expandable trusses, each truss comprising:

(1) a first set of scissor bars, at least some of which include an upper connection point, a lower connection point and a middle connection point;



(2) a second set of scissor bars, at least some of which include an upper connection point, a lower connection point and a middle connection point, and at least some of which are each pivotally connected to bars of the first set of scissor bars at their upper, lower and middle connection points to form the truss;

b. a plurality of lateral members connected to and spanning connection points of the expandable trusses;

c. a plurality of elongated rollers connected to and spanning the upper connection points of the expandable trusses, at least some of which rollers contain at least one groove around their circumference;

d. a plurality of drive motors, each connected to a drive pulley and supported by at least one of the lateral members so that its drive pulley is substantially coaxial to a middle connection point;

e. a plurality of transfer pulleys, each supported by at least one of the lateral members substantially coaxial to a middle connection point;

f. a plurality of motor drive belts, each connecting a drive pulley to a roller groove; and

g. a plurality of transfer drive belts, each connecting a transfer pulley to a roller groove.

5,632,372

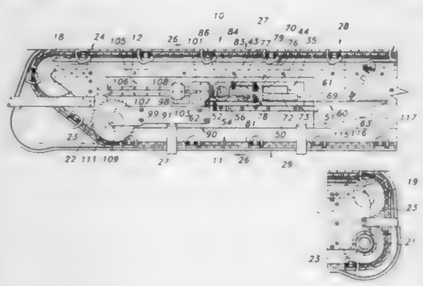
CONVEYOR TENSIONING ASSEMBLY

Herman J. Steinbuchel, IV, Marietta, and Steven Brown, Canton, both of Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Dec. 21, 1995, Ser. No. 576,074

Int. Cl.[6] B65G *23/44*

U.S. Cl. 198—813 **15 Claims**



1. A tensioning assembly for an article conveyor having a conveyor chain passing about a series of sprockets, said tensioning assembly comprising:

a rack;

means for moving said rack in a first direction, said means for moving said rack being positioned adjacent the rack and including a cylinder assembly mounted adjacent said rack and an advancing member connected to said cylinder assembly and engaging said rack so that as said cylinder assembly moves said advancing member in said first direction said advancing member urges said rack in said first direction:

said advancing member including an advancing gear mounted on a one-way clutch so as to be rotatable in one direction while resisting rotation in an opposite direction;

a carrier mounted to a first end of said rack so as to move with said rack and having a take-up sprocket attached thereto for the conveyor chain such that said take-up sprocket is moved with the movement of said rack to take up slack from the conveyor chain; and

holding means mounted along said rack adjacent said means for moving and having a one-way clutch, said holding means adapted to engage said rack and enable said rack to move in said first direction to remove slack from the conveyor chain while retarding movement of said rack in an opposite direction to prevent backlash and slippage of the conveyor chain.

5,632,373

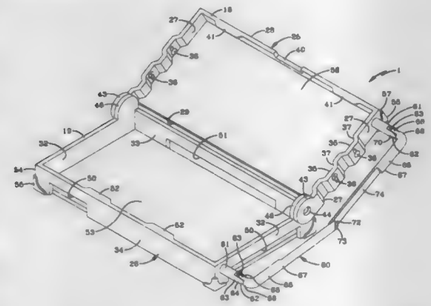
PROTECTIVE CASE FOR PORTABLE COMPUTER

Rajendra Kumar, Akron, and Steven E. Brooks, Canton, both of Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio

Filed Apr. 3, 1995, Ser. No. 415,327

Int. Cl.[6] B65D *43/24*

U.S. Cl. 206—305 **20 Claims**



1. A protective case for a portable computer of the type having a keyboard and a display movable relative to the keyboard, said protective case comprising:

a keyboard case adapted to receive a keyboard;

a display case adapted to receive a display whereby the display case being movable between an open and a closed position relative to the keyboard;

hinge means for hingedly connecting the keyboard case to the display case, said hinge means facilitates the movement of the display case between the open and closed positions relative to the keyboard case;

a handle attached to the display case and the keyboard case whereby the handle is movable between an unlatched position whereby the display case is movable relative to the keyboard case, and a latched position whereby the display case is latched against movement relative to the keyboard case; and

pivot means mounted on the handle for pivoting said handle between the unlatched and latched position, said pivot means latches said display case against movement relative to the keyboard case.

13. In combination, a portable computer of the type having a keyboard and a display movable between an open position and a closed position relative to the keyboard, and a protective case for said portable computer, said protective case comprising:

a keyboard case for receiving the keyboard;

a display case for receiving the display whereby the display case being movable between an open position and a closed position relative to the keyboard case;

hinge means for hingedly connecting the keyboard case to the display case, said hinge means facilitates the movement of the display case between the open and closed positions relative to the keyboard case;

a handle attached to the display case and the keyboard case whereby the handle is movable between an unlatched position whereby the display case is movable relative to the keyboard case, and a latched position whereby the display case is latched against movement relative to the keyboard case; and

pivot means mounted on the handle for pivoting said handle between the unlatched and latched position, said pivot means latches said display case against movement relative to the keyboard case.

19. A protective case for a portable computer of the type having a keyboard and a display movable relative to the keyboard, said protective case comprising:

a keyboard case adapted to receive a keyboard;

a display case adapted to receive a display whereby the display case being movable between an open and a closed position relative to the keyboard;

a pair of mounting studs which extend outwardly from the protective case, one of said mounting studs being attached to the display case and the other of said mounting studs being attached to the keyboard case;

a pair of first pivot pins extending through the mounting studs;

a handle attached to the display case and the keyboard case whereby the handle is movable between an unlatched position whereby the display case is movable relative to the keyboard case, and a latched position whereby the display case is latched against movement relative to the keyboard case, said handle being formed of a pair of handle halves each having an end which is movably mounted to one of said mounting studs and rotatably mounted on one of said first pivot pins; and

articulating means formed on the handle for permitting the handle to articulate between a closed position and an open position, said articulating means including a second pivot pin which extends through each of the handle halves whereby the handle halves may rotate about said second pivot pin relative to each other.

5,632,374

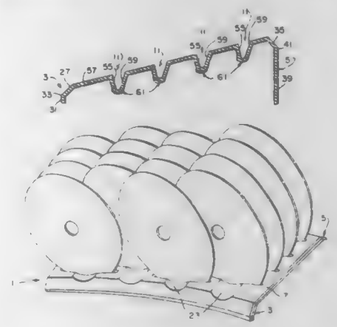
COMPACT DISC TRANSFER STATION

Tyler Fitzsimmons, South Portland, Me.; Steven E. Callahan, Sutton, Mass.; Todd K. Dyment, Leominster, Mass., and Jon Noce, Haverhill, Mass., assignors to Microplas, Inc., Clinton, Mass.

Filed Dec. 7. 1995, Ser. No. 568,819

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **23 Claims**



1. A disc holder apparatus for storing and displaying compact discs comprising a disc-receiving base having a front edge, a back edge, a left edge and a right edge, a support extending downward from the disc-receiving base, and pockets for receiving compact

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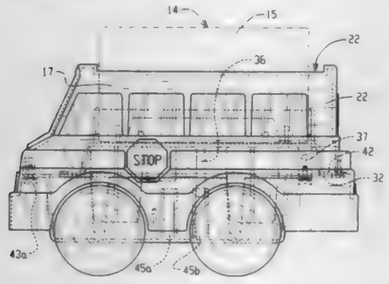
discs positioned in the disc-receiving base, each pocket further comprising a first lead wall extending inward and downward from the disc-receiving base toward a center of the pocket, a second lead wall extending inward and downward from the disc-receiving base toward the center of the pocket, and a trough connected to and positioned between bottoms of the first and second lead walls for receiving lower sides and edges of a disc, the trough having dimensions for contacting non-recorded, flat surfaces of the disc.

5,632,375

COMBINED FUNCTIONAL TOY AND CASSETTE HOLDER

Nina J. Mattikow, Greenwich, Conn., assignor to Great American Audio Corp., New Rochelle, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,583
Int. Cl.[6] B65D *85/575;* **A63H** *3/00*
U.S. Cl. 206—387.1 **2 Claims**



1. A toy in the form of a three dimensional characterization of an object or animal adapted for use as an amusement device and as a receptacle for a cassette, the toy comprising:

a body which defines the exterior form of the toy and a cavity in the body dimensioned to receive and frictionally engage at least one cassette, said cavity having an uncovered opening through which a portion of a cassette protrudes when fully inserted in said cavity of said body,

further comprising a universal cassette receptacle insertable into said cavity of said body and secured to said body, wherein said universal cassette receptacle is attached to said chassis and said body of said toy,and

wherein said universal cassette receptacle further comprises a pin guide and said chassis further comprises pin guide receiving holes for receiving said pin guide, whereby said universal cassette receptacle and said chassis are aligned for attachment and insertion into said body of said toy.

5,632,376

FILM SLIDE STORING DEVICE

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed May 16, 1995, Ser. No. 442,224
Claims priority, application Japan, May 17, 1994, 6-102419; Apr. 26, 1995, 7-102070
Int. Cl.[6] G03B *21/64*
U.S. Cl. 206—456 **9 Claims**

1. A film storing device for storing at least one film assembly including an image bearing film which is attached to a sheet-like mount, said film storing device comprising a pair of translucent sheet materials which are laid one over the other and bonded together along bonding areas defining at least three peripheries of at least one substantially rectangular storing section to form at least one storing pocket between said pair of the translucent sheet materials, one of said sheet materials being formed with at least one cutout for forming an inlet to the storing pocket, a translucent

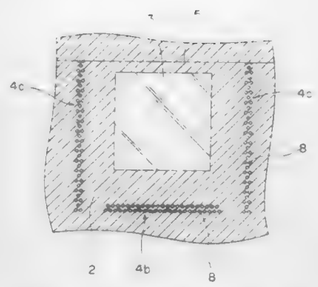


image area being formed in said storing section so that image on the film of the film assembly stored in said storing pocket can be visually observed through the pair of translucent sheet materials, a light transmission preventing region being formed around said image area by a coating, formed on at least one of said pair of translucent sheet materials, of a material which is capable of at least absorbing light passing through said translucent sheet materials, the pair of translucent sheet materials being bonded together in said bonding areas by a pattern of small discontinuous nonelongated bonding points.

4. A film storing device for storing a plurality of film assembly each including an image bearing film which is attached to a sheet-like mount, said film storing device comprising a pair of translucent sheet materials which are laid one over the other and bonded together along bonding areas including a plurality of longitudinally extending bonding areas and a plurality of transversely extending bonding areas defining a plurality of substantially rectangular storing sections to form a storing pocket in each of the storing sections between said pair of the translucent sheet materials, one of said sheet materials being formed with cutouts for forming an inlet to each storing pocket, a translucent image area being formed in each of said storing sections so that image on the film of the film assembly stores in said storing pocket can be visually observed through the pair of translucent sheet materials, a light transmission preventing region being formed around said image area by a coating, formed on at least one of said pair of translucent sheet materials, of a material which is capable of at least absorbing light passing through said translucent sheet materials, the pair of translucent sheet materials being bonded together in said bonding areas by a pattern of small discontinuous nonelongated bonding points.

5,632,377

CONTAINER FOR FOOD PRODUCTS SUCH AS CONFECTIONERY IN THE SHAPE OF A JOINTED TOY

Pietro Ferrero, Genese, Belgium, assignor to Soremartec S.A., Arlon-Schoppach, Belgium

PCT No. PCT/EP93/02177, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/04441, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 16, 1993, Ser. No. 387,748
Claims priority, application Switzerland, Aug. 19, 1992, 2584/92
Int. Cl.[6] B65D *69/00;* **A63H** *3/00*
U.S. Cl. 206—457 **12 Claims**

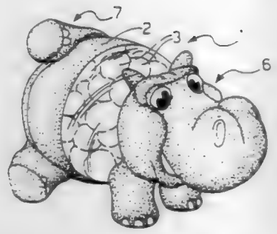
1. A container comprising a casing and at least one associated auxiliary body mounted on the casing, wherein:

the casing has at least a portion with a rounded surface;

the at least one auxiliary body has a portion with a rounded surface complementary to the portion of the casing having said rounded surface and the at least one auxiliary body is mounted on the casing so as to be movable relative to the casing along an arcuate path along the surface of said casing;

connection means are provided between the casing and the at least one auxiliary body for maintaining the at least one auxiliary body mounted on the casing while permitting movement of the at least one auxiliary body relative to the casing along the arcuate path; and

wherein the at least one auxiliary body is also rotatable relative to the casing about an axis extending generally in a direction perpendicular to the surface of the casing, said axis being variable relative to the surface of the casing as a result of the at least one auxiliary body being movable relative to the casing along the arcuate path.

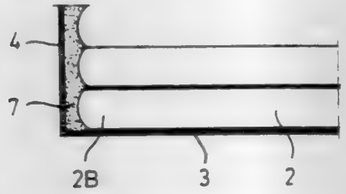


5,632,378

PACKAGE FOR PRODUCTS OF ELONGATE SHAPE, AND THE METHOD OF PRODUCING IT

Jean-Jacques Provost, Barret, France, assignor to CMB Flexible, Barbezieux St Hilaire, France

PCT No. PCT/FR94/01291, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO95/13228, PCT Pub. Date May 18, 1995
PCT Filed Nov. 7, 1994, Ser. No. 495,439
Claims priority, application France, Nov. 8, 1993, 93 13277
Int. Cl.[6] B65D *83/10*
U.S. Cl. 206—460 **9 Claims**



1. A package for a series of products (2) which comprises a pliant wrapper (3) including a folded and sealed sheet, wherein a means (7) of weak adhesion of the products to be packaged is interposed between the wrapper (3) and each of the products in a region of the products that is aligned with a sealed area of the wrapper (3), said sealed area being sealed with strong adhesion means.

5,632,379

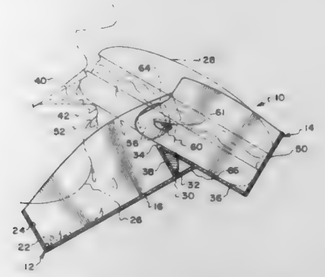
SANDWICH SERVING CONTAINER

John H. Frost, 6900 Canby Ave. - #110, Reseda, Calif. 91335

Filed May 6, 1996, Ser. No. 643,318
Int. Cl.[6] A45C *11/20*
U.S. Cl. 206—541 **10 Claims**

1. A sandwich serving container comprising:

a sheet material tray formed by a front section and a rear section, said front section having a first planer bottom, said rear section having a second planer bottom, said front section having a first peripheral edge, a first upstanding wall attached to said front section at said first peripheral edge, said first upstanding wall being non-enclosing having a first open section, said rear section having a second peripheral edge, a second upstanding wall attached to said rear section at said second peripheral edge, said second upstanding wall being non-enclosing having a second open section, said front section being connected to said rear section with said first open section connecting with said second open section defining a chamber enclosed by said first and second upstanding walls, said chamber being adapted to have located therein a sandwich; and



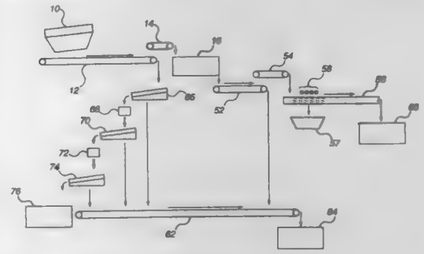
engaging means mounted on said first upstanding wall and said second upstanding wall, said front section being movable relative to said rear section with said engaging means functioning to define the limits of movement of said front section relative to said rear section, said front section being movable between a stored position and a usage position, said stored position locating said first planer bottom substantially parallel to said second planer bottom, said usage position locates said first planer bottom at an inclined angle relative to said second planer bottom, whereby a sandwich is to be storable within said chamber when said front section is in said storage position, when said front section is in said usage position the sandwich is to be located to be consumed with said front section functioning to catch and collect any sandwich drippings that may occur during the consuming procedure.

5,632,380

FERROUS MATERIAL RECOVERY SYSTEM

Paul A. Weick, and Samuel A. Keller, both of Silver Lake, Ohio, assignors to Shaneway, Inc., Akron, Ohio

Filed Oct. 17, 1995, Ser. No. 544,295
Int. Cl.[6] B03B *1/00*
U.S. Cl. 209—7 **18 Claims**



1. A system for recovering ferrous material from waste materials, said system comprising:

first magnetic separating means for separating ferrous metal components from said waste material; and

impacting means for dislodging residual waste material from the surface of ferrous metal components separated by said first magnetic means without comminuting said ferrous metal components, said impacting means comprising a solid wall rotatable drum and means for rotating said drum, said rotatable drum including means for lifting and dropping said

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ferrous metal components during rotation of said drum such that said ferrous metal components impact against an interior surface of said drum to dislodge residual waste material from the surface of said ferrous metal components.

5,632,381

APPARATUS FOR SORTING MATERIALS

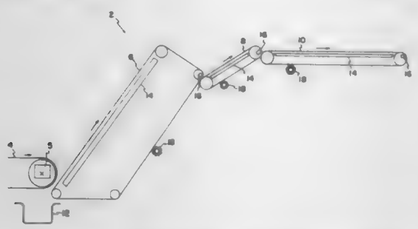
Walter Thust, Achim; Jurgen Kirchhoff, Stuhr; Hans-Dieter Held, and Leo Uelhoff, both of Bremen, all of Germany, assignors to DST Deutsch System-Technik GmbH, Bremen, Germany

Filed May 15, 1995, Ser. No. 441,231

Claims priority, application Germany, May 17, 1994, 44 17 257.5

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—44.1 **39 Claims**



1. Apparatus for detecting material characteristics of material on a conveyor belt, comprising:

a separating mechanism for thinning out the material, the separating mechanism comprising a first perforated conveyor belt, an immediately following second perforated conveyor belt having a speed of conveyance larger than a first speed of conveyance of the first conveyor belt, and first and second suction chambers respectively under upper strands of the first and second conveyor belts to draw air in through perforations in respective conveyor belt; and

a sensing mechanism following behind the separating mechanism to classify the material according to the condition of the material, the sensing mechanism comprising a mechanical striking device to strike against the material at predetermined time intervals, at least one acoustical receiver to detect noise produced by the striking device striking against the material, and an evaluation unit connected to the receiver to determine a type of material in response to detected noise.

5,632,382

HEAVY LIQUID FOR MATERIAL SEPARATIONS

Jennifer M. Patrick, and Vincent A. Patrick, both of 11 Granadilla Street, Duncraig, Western Australia 6023, Australia

PCT No. PCT/AU93/00151, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO93/19849, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 7, 1993, Ser. No. 313,172

Claims priority, application Australia, Apr. 7, 1992, PL 1764

Int. Cl.[6] B03B *5/60*

U.S. Cl. 209—173 **20 Claims**

1. A stable heavy liquid for material separations, said heavy liquid comprising an aqueous solution of a lithium salt and having anionic moieties having the formula $[(a)^{n+}(b)_m O_k]^{s-}$ where (a) is selected from the following:

group IV elements

group V elements

transition metal elements

rare earth elements;

where (b) is one or more transition metal elements having an atomic weight between 50 and 201 inclusive, where O is oxygen, where m is an integer between 6 and 18 inclusive, and where k is an integer between 24 and 62 inclusive;

wherein the pH of said solution is between 1 and 4 and wherein said heavy liquid separates heavy material components from light material components.

5,632,383

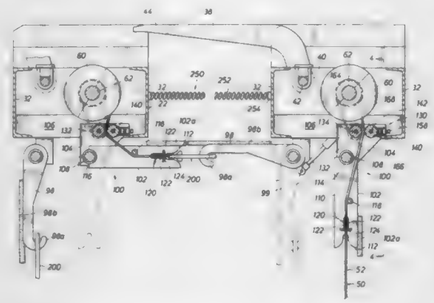
DROP SLING LUMBER SORTER APPARATUS

Warner Bailey, P.O. Box 769, Wells, Tex. 75976

Continuation of Ser. No. 205,888, Mar. 3, 1994, Pat. No. 5,476,355. This application Sep. 15, 1995, Ser. No. 528,691

Int. Cl.[6] B65G *47/34*

U.S. Cl. 209—517 **8 Claims**



1. A drop sling lumber sorter apparatus comprising:

a frame assembly including a plurality of bays for receiving pieces of sorted lumber;

each of said bays comprising:

a rotatable spool drive shaft mounted to said frame assembly;

a plurality of elongated, flexible, laterally spaced slings having a first end and a second end;

means for mounting said first end of each of said slings to said spool drive shaft;

means for selectively capturing and releasing said second end of each of said slings to said frame assembly;

a spool assembly mounted on said spool drive shaft for each of said slings, each said spool assembly capable of guiding said sling onto said rotatable spool drive shaft.

wherein said slings are reeled onto or reeled off of said spool drive shaft as said spool drive shaft rotates; and

means for tensioning said slings as said slings are reeled off of said spool drive shaft, said tensioning means pulls said sling off of said spool drive shaft as said spool drive shaft rotates to reel off said slings.

5,632,384

KEY AND SMALL ARTICLE HOLDER

Edouard Bélanger, 2960, rue St-Laurent, Lévis, Québec, Canada, and Claude Lamontagne, 4, rue de la Gréve-Jolliet, Lévis, Québec, Canada

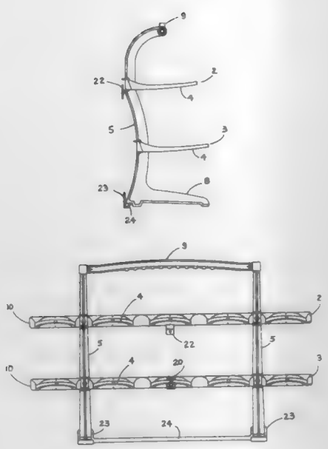
Filed Apr. 10, 1995, Ser. No. 419,402

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—10 **10 Claims**

1. A rack for articles, such rack having a frame means carrying a plurality of split rings, each ring:

(1) having a split interface in the form of a split that is capable of being elastically separated manually to permit the engagement of articles to be hung on such rings; and



(2) being positioned within a row of rings wherein each of said rings within the row is oriented to lie within a generally horizontal plane.

5,632,385

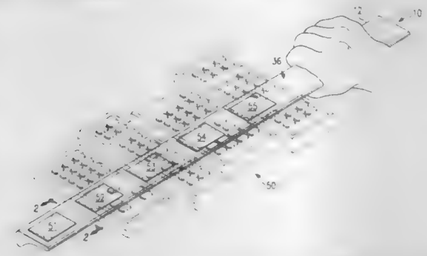
REMOTE CONTROL WAND

Keith M. Mantey, 5826 Sandshell Ct., Dallas, Tex. 75252

Filed Feb. 17, 1995, Ser. No. 390,137

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—26.1 **15 Claims**



1. A remote control wand for holding a plurality of remote control units, comprising:

a long and narrow member having a substantially flat top surface, said long and narrow member having a remote portion and a handle portion, said handle portion having a cross-sectional circumference grippable by a human hand and a substantially kidney-shaped cross-sectional area for facilitating gripping by the human hand; and

fasteners coupled to said top surface of said remote portion of said long and narrow member for attaching to each of said plurality of remote control units.

5,632,386

TABLE TENNIS PADDLE AND BALL CADDY

Thomas S. Gabhart, 415 N. Geiger St., Huntingburg, Ind. 47542

Filed Aug. 2, 1995, Ser. No. 510,164

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—85.7 **10 Claims**

1. A table tennis paddle holder including a horizontally elongated body having upstanding front and rear sides, upper and lower margins and opposite end margins, said body defining opposite end receiver slots formed therethrough, spaced apart longitudinally of said body and opening endwise outwardly through the corresponding end margins and also upwardly and downwardly through said upper and lower margins, respectively, said receiver slots including wide front-to-rear extending upper portions for receiving the handles of inverted table tennis paddle therein and narrow front-to-rear extending lower portions for receiving the head panels of inverted table tennis paddles therein, said receiver slots being adapted to downwardly or horizontally receive inverted table tennis paddles therein with said handles projecting upwardly through said upper margin and said head panels projecting downwardly through said lower margin.

5,632,387

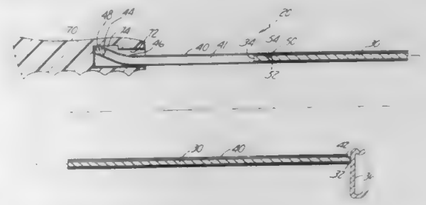
PEG RACKING DEVICE

M. H. (Mert) Johnson, Bloomington, Minn., assignor to DIP Co., Bloomington, Minn.

Continuation-in-part of Ser. No. 277,876, Jul. 20, 1994. This application Oct. 25, 1994, Ser. No. 328,658

Int. Cl.[6] A47F *1/04*

U.S. Cl. 211—59.1 **5 Claims**



1. A peg racking device, comprising:

an elongated shaft having a front end, a rear end and a bent portion from the front end to an intermediate point along the length of the shaft

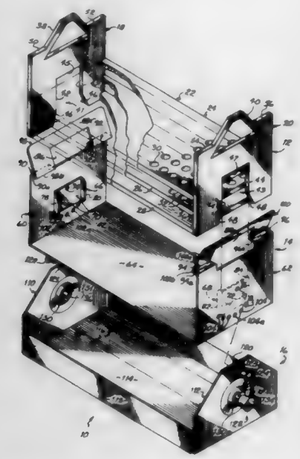
a bracket connected to the rear end of the shaft for removably attaching the shaft to a wall; and

a removable sleeve having a front end, a rear end and an interior wall defining a cavity for receiving the shaft, the sleeve being axially moveable along the shaft at least until the rear end of the sleeve is positioned between the rear end of the shaft and the intermediate point, wherein the shaft frictionally contacts the interior wall of the sleeve to prevent the sleeve from sliding off of the shaft as a package is removed from the peg

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the bracket including lands and the rear end of the sleeve including a notch with interface surfaces, the interface surfaces being engageable with the lands to align the sleeve and prevent rotational movement between the sleeve and the shaft.

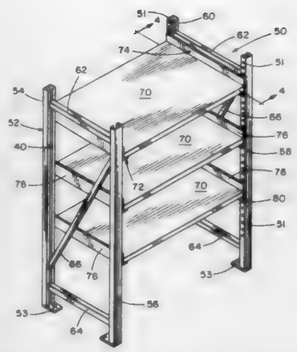
5,632,388
TEST TUBE RACK ASSEMBLY
Charles R. Morrison, Marietta, and Matthew E. Brooker, Beverly, both of Ohio, assignors to Forma Scientific, Inc., Marietta, Ohio
Filed Jan. 30, 1995, Ser. No. 380,059
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—74 **32 Claims**



1. An adjustable test tube rack assembly comprising:
a base having a pair of end supports;
a test tube rack including a pair of end supports and test tube supporting structure extending therebetween;
a pivot connection between said base end supports and said test tube rack end supports, said pivot connection allowing a pivoting motion of said test tube rack with respect to said base about a horizontal axis; and,
a selectively actuable connector affixed to at least one of said base end supports and including a stud selectively engageable with one of a plurality stud receivers associated with said test tube rack and moving therewith during said pivoting motion, wherein each of said stud receivers defines a different angular position of said test tube rack with respect to said base.

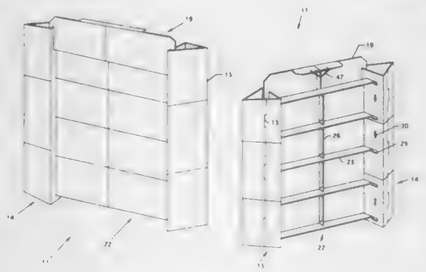
5,632,389
HIGH-DENSITY, ARCHIVE STORAGE-RACK ASSEMBLY
Phillip Rosenband, Hammond, Ind., assignor to Morgan Marshall Industries, Inc., Chicago Heights, Ill.
Filed Aug. 10, 1995, Ser. No. 513,327
Int. Cl.[6] A47B *43/00;47/00;57/00*
U.S. Cl. 211—187 **18 Claims**

1. A storage rack-assembly for mounting at least one shelf, comprising:
a main frame comprising four, upstanding corner-posts; each said corner-post comprising a surface having a plurality of vertically-aligned holes formed therein;
a pair of shelf-clip mounting means for mounting a shelf having corners for support, each one of said pair of shelf-clip mounting means being operatively associated with and mounted by



a separate pair of said corner-posts, so that the ends of the shelf may be supported by the spaced-apart, shelf-clip mounting means;
each one of said pair of shelf-clip mounting means comprising a substantially vertical, main, elongated portion having a first end, a second end, an exterior-facing surface, and an interior-facing surface; each of said first and second ends of said main elongated portion having retaining means projecting from said exterior-facing surface thereof for reception in at least one hole of a respective said corner-post, whereby said shelf-clip mounting means is removably mounted to said pair of corner-posts;
each one of said pair of shelf-clip mounting means further comprising a substantially horizontal, shelf-supporting member having an upper surface projecting from said main, elongated portion upon may be supported an end of the shelf;
each one of said pair of shelf-clip mounting means further comprising a pair of shelf-end clip means for insertion into the corners of the shelf to be supported; each said, shelf-clip mounting means comprising an upstanding member projecting upwardly from a portion of said substantially horizontal, shelf-supporting member and spaced horizontally from said interior-facing surface of said substantially vertical, main, elongated portion.

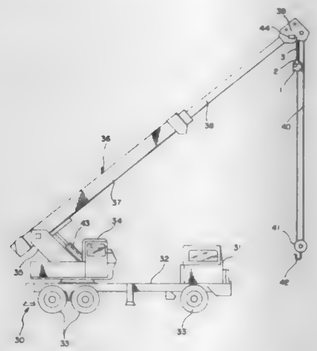
5,632,390
FOLDABLE DISPLAY ASSEMBLY
Jeffrey A. Podergois, 1031 Saddlebrook Trail, Chanhassen, Minn. 55317
Filed Dec. 22, 1995, Ser. No. 577,709
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—195 **22 Claims**



1. A display assembly comprising:
a. a first end column;
b. a second end column;
c. a center wall disposed between the first and second end columns; and

d. a header disposed between the first and second end columns and proximate to an upper portion of the center wall;
wherein the end columns are connected to the center wall by insertion of a center wall end tab into a corresponding column locking door defined by a slit along a periphery of the locking door.

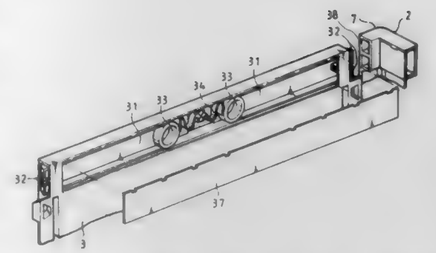
5,632,391
WEIGHT FOR A LIFT-LIMITING SWITCH
Gerd Erdmann, Oldenburg, Germany, assignor to Kidde Industries, Inc., Iselin, N.J.
Filed Apr. 10, 1995, Ser. No. 419,027
Claims priority, application Germany, Apr. 13, 1994, 44 12 579.9
Int. Cl.[6] B66C *23/90*
U.S. Cl. 212—281 **12 Claims**



1. A weight for a lift-limiting switch of a crane having a cable adapted to lift a load, said weight comprising:
two identically cast members of generally U-shaped cross section, each of said members being formed with a channel and having side formations flanking the respective channel;
means forming a hinge between side formations of said members, thereby enabling said members to be fitted around said cable and to receive said cable with clearance in said channels; and
lock means on said members selectively operable to retain said members in a closed position enclosing said cable and enabling said members to be swung about said hinge into an open position for enabling said weight to be placed on and removed from said cable.

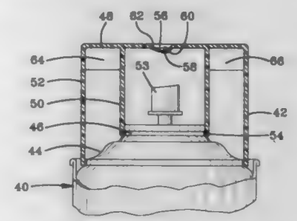
5,632,392
FOLDABLE CONTAINER
Hae Soon Oh, 122-5 Shinhung 2-dong, Sujung-gu, Sungnam city, Kyunggi-do, 461-194, Rep. of Korea
PCT No. PCT/KR94/00185, § 371 Date Nov. 15, 1995, § 102(e) Date Nov. 15, 1995, PCT Pub. No. WO95/18048, PCT Pub. Date Jul. 6, 1995
PCT Filed Dec. 30, 1994, Ser. No. 505,263
Claims priority, application WIPO, Dec. 30, 1993, PCT/KR93/00125
Int. Cl.[6] B65D *25/00*
U.S. Cl. 220—7 **13 Claims**

1. A foldable container comprising:
a base having a substantially rectangular shape;
a first pair of opposing side walls, which are hingedly mounted at one pair of opposing edges of said base to pivot between a folded position lying on said base and a standing-up position;



a second pair of opposing side walls, which are hingedly mounted at one pair of opposing edges of said base to pivot between a folded position lying on said first pair of opposing side walls and a standing-up position and includes flanges extending from both lateral end regions of said second pair of side walls toward said first pair of opposing side walls;
connecting means for providing toothed engagements between said flanges of said second pair of side walls and the corresponding lateral end regions of said first pair of side walls in the standing-up position, said connecting means having protrusions on said first side walls and corresponding receiving recesses formed on said flanges for receiving form fittingly said protrusions in standing-up position, said protrusions and said receiving recesses engaging each other wedge wisely; and
means for locking the engagements between said first pair of side walls and said second pair of side walls in the standing-up position, said locking means comprises a pair of opposing stopper bars supported on said first pair of side walls in a laterally slidable manner and a spring interposed between facing ends of said stopper bars to resiliently urge said stopper bars toward said second pair of side walls having a recess for receiving free ends of said stopper bars respectively.

5,632,393
TAMPER RESISTANT COVER FOR AEROSOL CAN
Kent A. Houser, Akron, Ohio, assignor to Cobra Plastics Inc., Twinsburg, Ohio
Filed Oct. 3, 1995, Ser. No. 539,011
Int. Cl.[6] B65D *17/42;* **B67D** *5/06*
U.S. Cl. 220—277 **1 Claim**

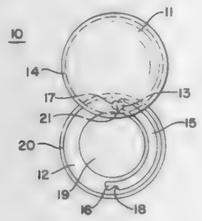


1. An aerosol container having a centrally disposed dispensing valve means at one end enabling detachable physical engagement thereat of a replaceable tamper resistant and tamper evident cover member, the cover member having a cup shape formed with a top wall, an outer side wall and an inner side wall disposed centrally to surround the dispensing valve means, both side walls terminating in an open bottom end with the inner side wall having an inwardly projecting flange disposed at the open bottom end for locking engagement of the cover member to the aerosol container, multiple internal reinforcing rib elements physically connecting the outer surface of the inner wall to the inner surface of the outer wall, the cover member having a recessed area in the surface of the top wall disposed intermediate the inner and outer side walls, said recessed

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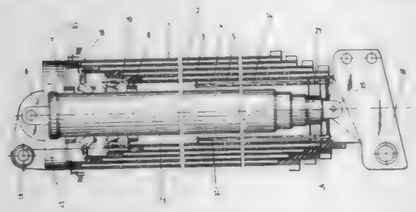
area being covered by a frangible member connected to the top wall, said frangible member being puncturable by an inserted tool to provide leverage to remove the cover member, and downward sloping guide means for tool insertion being disposed in the recessed area of the top wall.

5,632,394
CONTAINER WITH ROTATING MECHANISM FOR PRODUCING AN AUDIBLE CLOSING SOUND
Anna Mecca, Ridgefield, N.J., and John J. Slink, Greenwich, Conn., assignors to Jerhel Plastics, Inc., Bayonne, N.J.
Filed May 16, 1995, Ser. No. 442,410
Int. Cl.[6] B65D *43/08*
U.S. Cl. 220—336 **20 Claims**



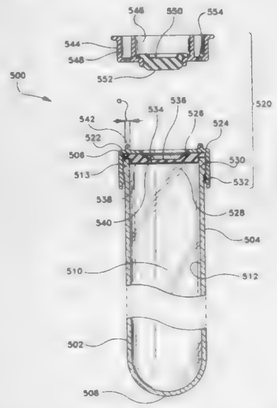
1. A container comprising:
a cover having a member extending perpendicularly from said cover;
a base having a slot, said slot including a flexible resilient object protruding axially therein, said cover being coupled to said base by means of said member being permanently positioned in said slot; and
means for producing an audible signal indicating complete closure of said container, said means being comprised of said member and said flexible resilient object, said signal being produced by frictional engagement between said member and said flexible resilient object.

5,632,395
TELESCOPIC ROD
Horst Zimmermann, Suchardstrasse 23, A-6700 Bludenz, Austria
Filed Feb. 15, 1995, Ser. No. 388,807
Claims priority, application Austria, Feb. 25, 1994, 395/94
Int. Cl.[6] E04H *12/34*
U.S. Cl. 212—350 **16 Claims**
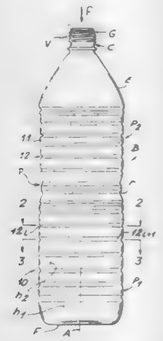


1. A telescopic rod comprising a plurality of rod sections which are mounted so as to be telescopically axially slidable relative to each other between an extended position and a retracted position, the rod sections including a first outermost rod section, a last inner rod section, and at least one rod section between the outermost rod section and the inner rod section, a multistage piston-cylinder unit with a plurality of stages having outer surfaces, the piston-cylinder unit being movable between an extended position and a retracted position, the piston-cylinder unit being connected to the outermost rod section and to the inner rod section, the rod sections having base portions with inner peripheries, a radially adjustable abutment being mounted on the inner periphery of the base portion of the at least one rod section between the outermost rod section and the inner rod section, the radially adjustable abutment being directed toward the outer surfaces of a stage of the piston-cylinder unit when the piston-cylinder unit is in the extended position thereof, so that the radially adjustable abutment contacts the piston-cylinder unit when the piston-cylinder unit yields radially under load, further comprising stationary abutments mounted on the outermost rod section and on the inner rod section, the stationary abutments being located adjacent the outer surfaces of the stages of the piston-cylinder unit when the piston-cylinder unit is in the extended position thereof.

5,632,396
COMBINATION STOPPER-SHIELD CLOSURE
James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation-in-part of Ser. No. 280,621, Jul. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 58,854, May 6, 1993, Pat. No. 5,494,170. This application Sep. 28, 1994, Ser. No. 314,105
Int. Cl.[6] B65D *39/02*
U.S. Cl. 215—247 **1 Claim**



1. A closure for sealing an open end of a body fluid collection tube comprising:
a shield having a top, an opening therethrough and a cavity for receiving the tube;
a sealing element for sealing the tube, said element having a top surface and a lower flange, said top surface being received in said opening;
a gas barrier member bonded to said lower flange of said sealing element to form a primary seal with an inside wall of the tube and a secondary seal at the open end of the tube;
a plug housing having a passage therethrough, said housing having an outside wall;
a resilient plug having a bottom mounted in said passage; and
means for releasably mounting said plug housing on said shield so that said plug bottom contacts said top surface of said sealing element, said means comprising a plurality of posts having a diameter projecting upwardly from said top of said shield and a plurality of ports in said plug housing for receiving said posts, each of said ports including a first portion having a diameter greater than said diameter of said posts and a second portion having a diameter less than said diameter of said posts, so that when said plug housing is positioned on said shield with said first portion of said openings receiving said posts, a rotation of said plug housing with respect to said shield moves said plugs into said second portion of said ports thereby forming an interference fit and releasably retaining said plug housing on said shield.

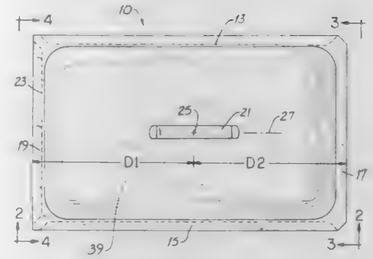
5,632,397
AXIALLY-CRUSHABLE BOTTLE MADE OF PLASTICS MATERIAL, AND TOOLING FOR MANUFACTURING IT
Isabelle Fandeux, Evian-les-Bains, and Jean-Marie Petre, Bons-en-Chablais, both of France, assignors to Societe Anonyme des Eaux Minerales d'Evian, Evian-les-Bains, France
Filed Sep. 13, 1994, Ser. No. 305,033
Claims priority, application France, Sep. 21, 1993, 93 11225; Feb. 17, 1994, 94 01811
Int. Cl.[6] B65D *1/40;23/00*
U.S. Cl. 215—382 **29 Claims**



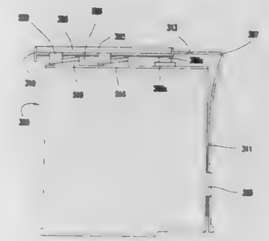
1. An axially crushable bottle made of plastics material, the bottle comprising transverse corrugations over a major portion of its height, said transverse corrugations comprising a cylindrical wall portion and a depressed groove portion, wherein said transverse corrugations have a depth, i.e., a dimension measured towards the axis of the bottle, that varies cyclically around the periphery of said groove portion of said corrugations between a maximum value and a minimum value, and wherein groove portions of successive transverse corrugations are separated by said cylindrical wall portion.

5,632,398
CARRYING COVER FOR A STEAM TABLE PAN
Jerome K. Baltus, Plymouth; Gene H. Jentink, Cedar Grove, and Lee W. Wolf, Sheboygan, all of Wis., assignors to Polar Ware Company, Sheboygan, Wis.
Filed Apr. 19, 1996, Ser. No. 635,036
Int. Cl.[6] B65D *25/28*
U.S. Cl. 220—212.5 **9 Claims**

1. In combination, a steam table pan for keeping food warm and a cover for lifting and carrying the pan, and wherein:
the pan includes a container portion and four edges protruding outwardly from the container portion, each edge being substantially flat and coincident with a plane;
and wherein:
the cover includes plural channels, each for engaging a respective edge of the pan, each channel including (a) an upper member, (b) an edge panel extending downwardly from the upper member, and (c) a lip extending inwardly from the edge panel;
when the cover is mounted on the pan in a pan-carrying position, a separate pan edge is between the upper member and the lip of each channel; and
the dimension between the upper member and the lip is substantially greater than the thickness of the pan edge therebetween.



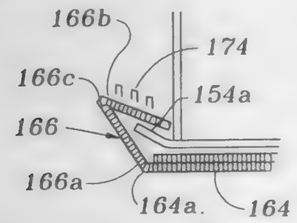
5,632,399
SELF-SEALING REAGENT CONTAINER AND REAGENT CONTAINER SYSTEM
Thomas Palmieri, Paramus, and Arthur L. Babson, Chester, both of N.J., assignors to DPC Cirrus Inc., Randolph, N.J.
Filed Jun. 28, 1996, Ser. No. 670,994
Int. Cl.[6] B65D *51/18*
U.S. Cl. 220—253 **18 Claims**



1. Self-sealing reagent container, comprising:
a vessel having a plurality of separate compartments defined by sidewalls and a cover as an upper surface, each compartment having an opening in said upper surface;
a self-sealing lid attached to the exterior of a sidewall of said vessel, comprising:
a first arm confronting said upper surface of said vessel, said first arm supporting a plurality of caps interspaced by openings extending through said arm, said first arm capable of reciprocal movement over said upper surface of said vessel to permit covering and uncovering of said compartment openings by said caps,
a second arm confronting said exterior sidewall of said vessel, said second arm having a lower end attached to said sidewall of said vessel and an upper end connected to said first arm via a first hinge,
guide means maintaining reciprocal displacement of said first arm along a single horizontal line of movement, and
whereby said first arm of said lid is subject to a normal bias force created by said second arm whereby said plurality of caps normally covers said compartment openings, wherein when a horizontal external force is exerted in opposition to and adequate to exceed said normal bias force said first arm being capable of horizontal displacement adequate to uncover said caps from said compartment openings, and upon removal of said horizontal external force said normal bias force acting on said first arm of said lid to re-cover said compartment openings with said caps.

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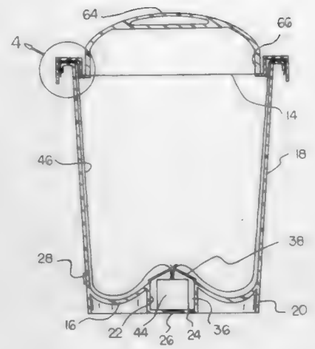
5,632,400
FLOATING HANGING LINER SUPPORT
Victor T. Podd, Sr., 255 Beverley Avenue, Montreal, PQ, Canada; Victor I. Podd, Jr., 1678 SW. 20th Avenue, Boca Raton, Fla. 33486, and Stephen D. Podd, One Lincoln Boulevard, Rouses Point, N.Y. 12979
Division of Ser. No. 990,842, Dec. 14, 1992, abandoned, which is a division of Ser. No. 758,766, Sep. 12, 1991, Pat. No. 5,193,710. This application Mar. 9, 1994, Ser. No. 208,270
Int. Cl.[6] B65D *43/08*
U.S. Cl. 220—403 **7 Claims**



1. A combination liner and bulkhead, comprising:
a flexible and expandable liner including back, and left and right side panels, wherein the back and left side panels form a left back edge and the back and right side panels form a right back edge, the liner including a left back flap connected to and extending outward from said left back edge, and a right back flap connected to and extending outward from said right back edge;
a bulkhead including
i) a main section including left and right edges,
ii) a left flap connected to and extending outward from the left edge of the main section, and
iii) a right flap connected to and extending outward from the right edge of the main section;
wherein the main section of the bulkhead laterally extends substantially completely across the back panel of the liner, between the left and right back edges thereof; and the right flap of the bulkhead extends over and is connected to the right flap of the liner to connect the bulkhead thereto, and the left flap of the bulkhead extends over and is connected to the left flap of the liner to further connect the bulkhead thereto.

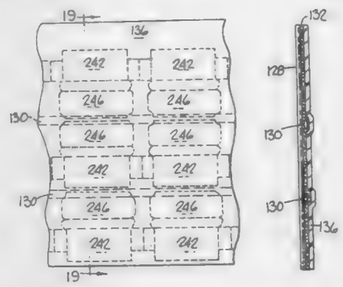
5,632,401
GARBAGE CONTAINER AND LINER DISPENSING SYSTEM
John W. Hurd, 8744 N. Farm Rd. #33, Ash Grove, Mo. 65604
Filed May 13, 1996, Ser. No. 645,296
Int. Cl.[6] B65F *1/06*
U.S. Cl. 220—407 **7 Claims**

1. A garbage container and liner dispensing system for dispensing a continuing supply of garbage liners within a container comprising, in combination:
a cylindrical container having an open upper end, a closed lower end and a cylindrical side wall therebetween, the cylindrical side wall having a lower peripheral edge extending below the closed lower end, the closed lower end having a recess formed therein, a bottom wall of the recess having a drainage aperture therethrough, the cylindrical side wall having a drainage aperture therethrough upwardly of the closed lower end, the open upper end having a peripheral rim extending horizontally therefrom, the peripheral rim having a downturned outer portion;
an internal bag storage compartment formed within the recess in the closed lower end of the cylindrical container by a pair of spring-hinged lids secured to an upper end of the recess;
a plurality of separable trash liners secured within a dispensing box, the dispensing box dimensioned for positioning within



the internal bag storage compartment, a singular liner extendable outwardly of the storage compartment and overlapping the peripheral rim of the cylindrical container;
a bag holding flange comprised of an annular ring having an interior downturned annular portion and an exterior downturned annular portion, the interior downturned annular portion having an inwardly extending annular portion integral with a lower end thereof, the annular ring positioned on the peripheral rim of the cylindrical container thereby covering the overlapping liner; and
a lid having an annular configuration, the lid having a formed handle on an upper portion thereof, the lid having a lower annular portion dimensioned for removable positioning on the inwardly extending annular portion of the bag holding flange.

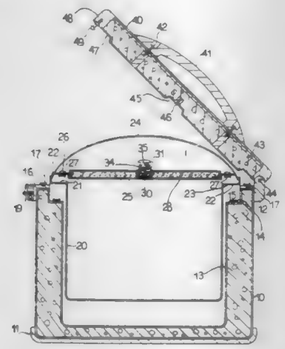
5,632,402
CARTON BLANK AND METHOD FOR FORMING IT
Joseph C. Walsh, and Robert L. Conatser, both of Longmont, Colo., assignors to Graphic Packaging Corporation, Paoli, Pa.
Continuation-in-part of Ser. No. 336,982, Nov. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 51,628, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 994,132, Dec. 21, 1992, abandoned. This application Jan. 17, 1996, Ser. No. 587,753
Int. Cl.[6] B65D *5/56*
U.S. Cl. 220—418 **4 Claims**



1. A carton blank comprising:
a unitary sheet of a relatively rigid material having an inner surface and an outer surface;
said unitary sheet of a relatively rigid material having a left side edge, a right side edge, a top edge and a bottom edge;
said unitary sheet of a relatively rigid material having a plurality of cut and fold lines for dividing said unitary sheet of a relatively rigid material into at least a plurality of sidewall panels, a closure panel, a glue tab panel and end panels;

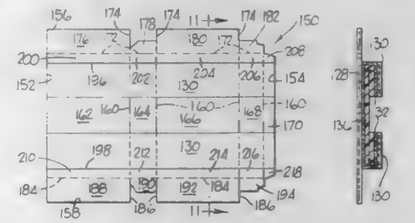
each of said plurality of sidewall panels, said closure panel, said glue tab panel and said end panels having an outer surface; and
a unitary sheet of a relatively flexible fluid impervious material superposed over and secured to said outer surfaces of said at least a plurality of said sidewall panels, said closure panel, said end panels and only a portion of said glue tab panel so that the remaining portion of said outer surface of said glue tab panel portion is exposed for forming an effective seal with the exposed portion of said closure panel of said unitary sheet of a relatively rigid material.

5,632,403
PRESSURE COOKER
Chih-Chiang Deng, No. 86, Lane 267, Section 3, Jien Guo Road, Fong San City, Kaoshiung Hsien, Taiwan
Filed Apr. 11, 1995, Ser. No. 420,733
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—421 **4 Claims**



1. A pressure cooker comprising:
a container including a peripheral wall member and a bottom portion having a hollow space formed therein for engaging with heat insulating materials, said container including an upper surface and including an upper and inner portion having an annular shoulder formed therein,
a pot engaged in said container and including an upper portion having a first annular flange extended radially outward therefrom,
a cap including a peripheral portion having a second annular flange extended radially outward therefrom for engaging with said first annular flange of said pot, said cap including a hollow interior formed therein for engaging with heat insulating materials,
a cover pivotally coupled to said upper portion of said container and including a hollow room formed therein for engaging with heat insulating materials,
means for securing said cover to said container so as to retain said pot in said container, and
means for biasing said cap toward said pot so as to force said cap to enclose said pot, said biasing means including a barrel secured on top of said cap, a spring engaged in said barrel and a slide engaged on the spring, said barrel including a pair of retaining slots oppositely formed therein, said slide including a pair of protections extended outward therefrom for engaging with said retaining slots of said barrel, said cover being engaged with said slide so as to force said spring in order to press said cap to enclose said pot.

5,632,404
CARTON BLANK
Joseph C. Walsh, Longmont, Colo., assignor to Graphic Packaging Corporation, Paoli, Pa.
Continuation-in-part of Ser. No. 352,526, Dec. 9, 1994, abandoned, and Ser. No. 336,982, Nov. 14, 1994, abandoned, each which is a continuation-in-part of Ser. No. 51,628, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 994,132, Dec. 21, 1992, abandoned. This application Jan. 17, 1996, Ser. No. 587,467
Int. Cl.[6] B65P *5/56*
U.S. Cl. 220—462 **23 Claims**

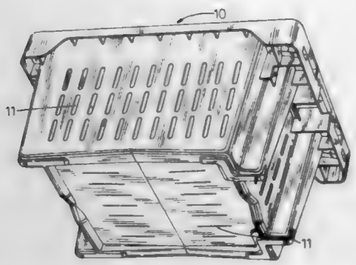


1. A carton blank comprising:
a unitary sheet of a relatively rigid material having an inner surface and an outer surface;
said unitary sheet of a material having a left side edge, a right side edge, a top edge and a bottom edge;
said unitary sheet of a relatively rigid material having a plurality of cut and fold lines for dividing said unitary sheet of relatively rigid material into a plurality of sidewall panel portions, a glue tab panel portion, and top and bottom panel portions extending outwardly from said sidewall panel portions;
each of said plurality of sidewall panel portions, said glue tab panel portion and said top and bottom panel portions having an inner surface;
a first sheet of a relatively flexible material having an inner surface and an outer surface superposed over said inner surface of said top panel portions and portions of said sidewall panel portions adjacent to said fold lines between said sidewall panel portions and said top panel portions and a portion of said inner surface of said glue tab panel portion;
a second sheet of a relatively flexible material having an inner surface and an outer surface superposed over said inner surface of said bottom panel portions, and other portions of said sidewall panel portions adjacent to said fold lines between said sidewall panel portions and said bottom panel portions and another portion of said inner surface of said glue tab panel portion; and
a continuous coating of a plastic material covering said inner surfaces of said first and second sheets of relatively flexible material and the portion of said inner surfaces of said plurality of sidewall panel portions and said glue tab panel portion between said first and second sheets of a relatively flexible material.

5,632,405
CONTAINER FOR LOBSTERS AND THE LIKE
Graham McMath, Tynemouth, England, assignor to Dynoplast Limited, Clwyd, Wales
Filed Mar. 2, 1995, Ser. No. 397,575
Claims priority, application United Kingdom, Mar. 14, 1994, 9404880
Int. Cl.[6] A01K *97/00;97/20;* **B65D** *1/22;43/16*
U.S. Cl. 220—560 **11 Claims**

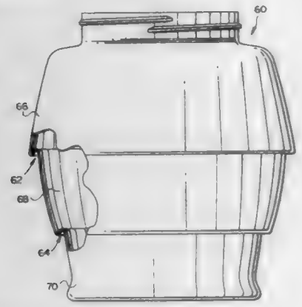
1. A lidded container for aquatic life including lobsters, comprising a container body formed of a synthetic polymeric material and a lid also formed of a synthetic polymeric material, which lid is adapted to be secured to the container to close the container and which lid further has at least one buoyant sealed chamber, the total

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capacity of said sealed chamber or chambers being sufficient to render said lidded container buoyant when filled with aquatic beings including lobsters.

5,632,406
SIDE WALL CONSTRUCTION FOR COLLAPSIBLE CONTAINERS
Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 36661
Filed Oct. 11, 1995, Ser. No. 541,155
Int. Cl.[6] B65D *6/12*
U.S. Cl. 220—666 **11 Claims**



1. A collapsible container comprising:
a peripheral side wall movable between extended and collapsed conditions;
a dosed bottom at a lower end of the peripheral side wall and an opening at an upper end of the peripheral side wall; said peripheral side wall having at least three axial sections, with at least one relatively thin section located axially between upper and lower relatively thick sections; wherein at a transition area between the relatively thin section and at least one of the upper and lower relatively thick sections, the peripheral side wall is shaped to include a sideways oriented, substantially S-shaped cross section when the container is in its extended condition, and wherein said substantially S-shaped cross section includes a first radius and a second radius, and wherein said first and second radii have different wall thicknesses.

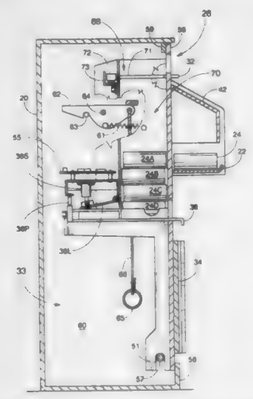
5,632,407
ADAPTER FOR A DRINK CONTAINER
Arthur E. Christensen, 1316 Dulaney Valley Rd., Towson, Md. 21286
Filed Jan. 11, 1996, Ser. No. 584,741
Int. Cl.[6] A47J *19/00*
U.S. Cl. 220—717 **11 Claims**

1. In combination with a squeezable drink container having a container outlet through which a liquid container in the drink



container is dispensed to a user's mouth comprising an adapter attached through attaching means to the container outlet and surrounding said outlet, with the adapter spacing the user's mouth from the container outlet such that the user's mouth can not come into contact with the container outlet, thereby preventing direct contact of the user's mouth with the container outlet, and thereby preventing possible health problems associated with an unsanitary practice of sharing the drink container by several users, said adapter having an upper peripheral edge, spaced from said attaching means which in use is disposed between the user's nose and chin and surrounding the user's mouth, and with the adapter further having circumferentially spaced-apart side openings, such that an excess of the liquid supplied to the user's mouth drains externally of the adapter through said openings.

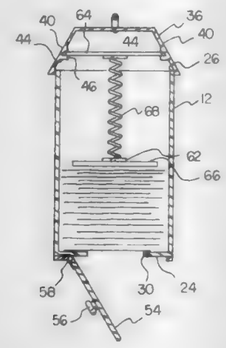
5,632,408
APPARATUS FOR SECURING AND DISPENSING CURRENCY
Jerry B. Mitchell, 3902 Dixie Dr., Garland, Tex. 75041
Filed Nov. 21, 1995, Ser. No. 561,460
Int. Cl.[6] B65B *59/00*; **B65G** *59/06*
U.S. Cl. 221—15 **8 Claims**



1. Limited access currency securing and dispensing apparatus comprising:
a safe box including a front panel and a primary chamber;
a plurality of cylindrical currency containers, each of like dimensions and having a longitudinal axis;
a plurality of container receiving chutes sized to hold said containers, with said axis horizontal, in a single stacked row;
at least two apertures in said front panel, each said aperture being aligned with one said container receiving chute and sized to allow only axial insertion of one said container therethrough at a time;

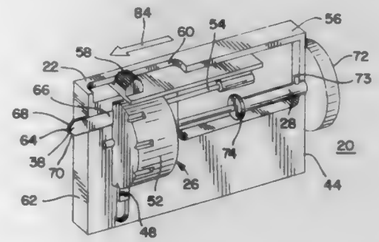
at least one container support bar located to support said one container, as inserted through one said aperture, on at least two points along a line parallel to the longitudinal axis of said one container so as to align said one container with said one container receiving chute; and
means for lateral movement of said support bar so as to drop said supported and aligned one container into said one container receiving chute.

5,632,409
PLASTIC BAG HOLDER
Cheryl J. Raghunanan, 658 W. Front St., Plainfield, N.J. 07060
Filed Oct. 20, 1995, Ser. No. 546,415
Int. Cl.[6] A47K *10/24*
U.S. Cl. 221—45 **4 Claims**



1. A new and improved plastic bag holder comprising, in combination:
a housing formed of a front wall and a parallel back wall with parallel side walls therebetween, each of the walls having upper edges and lower edges and with side edges therebetween, a rectangular bottom wall with side edges coupled to the lower edges of the front and rear and side walls with an open top thereabove, all the walls being formed of a rigid material but with a downwardly extending U-shaped slot in the front wall and a rectangular aperture in the bottom wall, the side walls having outwardly extending projections;
a lid formed with a top wall and linear front and rear and side edges and with trapezoidal side walls extending downwardly at an angle therefrom, the lid having a rectangular shoulder on its interior surface located at an intermediate extent of its side walls and with downwardly extending gripping fingers adjacent to the lower edges thereof, the lid being formed of a elastomeric material with limited resilience, the fingers being selectively positionable over the outwardly extending projections of the housing, the lid also having a handle on the upper surface of its top wall;
a door formed of an elastomeric material of limited resilience with an associated handle on its lower surface with a hinge secured to one edge of the door coupled to the housing adjacent to its lower edge and positionable in a lower orientation for opening the rectangular aperture in the housing and an elevated closed position for closing the aperture in the housing; and
a force-imparting assembly formed of an essentially rigid plate at its upper extent secured at its edges to the lid at its shoulders and having a lower plate positionable at an intermediate extent of the housing with a coil spring therebetween urging the lower plate downwardly to force bags therebeneath in a directions towards the aperture at the bottom of the housing.

5,632,410
MEANS OF HANDLING MULTIPLE SENSORS IN A GLUCOSE MONITORING INSTRUMENT SYSTEM
Joseph L. Moulton, Mishawaka, and Frank W. Wogoman, Granger, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.
Continuation of Ser. No. 423,324, Apr. 17, 1995, abandoned. This application Jul. 12, 1996, Ser. No. 638,971
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—79 **23 Claims**

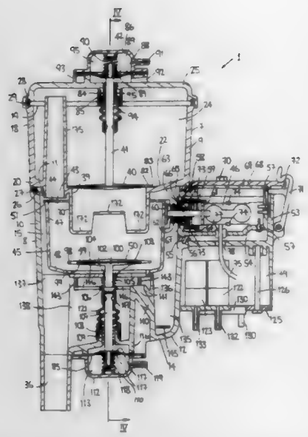


1. A sensor dispensing instrument (**20**) for handling of a plurality of fluid sensors (**38**) comprising:
a housing (**22**) having a magazine opening (**24**);
a sensor magazine (**26**) adapted to be disposed in said magazine opening (**24**), said sensor magazine (**26**) having a plurality of sensor slots (**30A–J**) each of which sensor slots (**30A–J**) is adapted to accommodate one of said plurality of fluid sensors (**38**);
a feed means (**54**);
a pivot means (**28**) for maintaining said sensor magazine (**26**) in said magazine opening (**24**) and permitting said sensor magazine (**26**) to be positioned so that one of said plurality of sensor slots (**30A–J**) is in alignment with said feed means (**54**); and
feed actuator means (**58**) connected to said feed means (**54**) for advancing said feed means (**54**) through said sensor slot (**30A–J**) in alignment with said feed means (**54**) so that said sensor (**38**) in said sensor slot (**30A–J**) is placed into a testing position and for further advancing said feed means (**54**) so that said sensor (**38**) is ejected from said instrument (**20**).

5,632,411
METER AND A METHOD FOR MEASURING QUANTITY OF A FLOWING LIQUID
Edmond P. Harty; Edmond P. Harty, Jr., both of Causeway, and Edmond O'Callaghan, Kilworth, all of Ireland, assignors to Dewvale Limited, Tralee, Ireland
PCT No. PCT/IE93/00034, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO93/25871, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 17, 1993, Ser. No. 360,659
Claims priority, application Ireland, Jun. 17, 1992, 921950; Jul. 1, 1992, 922142
Int. Cl.[6] B67B *7/00*
U.S. Cl. 222—1 **23 Claims**

1. A meter for measuring the quantity by weight of a flowing liquid, the meter (**1**) comprising:
a housing (**7**) defining a buffer chamber (**24**) for receiving and holding the liquid to be weighed, and a weighing chamber (**15**) within which the liquid is weighed, the weighing chamber (**15**) being located below the buffer chamber (**24**),
a first communicating means (**39**) for communicating the buffer chamber (**24**) and the weighing chamber (**15**) for accommodating liquid flow under gravity from the buffer chamber (**24**) to the weighing chamber (**15**),
a main inlet means (**35**) being provided into the buffer chamber (**24**) for the liquid,

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a main outlet means (**36**) being provided from the weighing chamber (**15**) for delivering weighed liquid therefrom,

a weighing means (**45,46**) for sequentially weighing discrete quantities of the liquid, the weighing means (**45,46**) being located in the weighing chamber (**15**) for receiving the liquid from the first communicating means (**39**),

a discharge outlet means (**49**) from the weighing means (**45,46**) for delivering the weighed discrete quantities of the liquid from the weighing means (**45,46**) into the weighing chamber (**15**),

a main valve means (**40**) co-operating with the first communicating means (**39**) for selectively closing the first communicating means (**39**) for isolating the weighing chamber (**15**) from the buffer chamber (**24**) after each discrete quantity of liquid has been delivered into the weighing means (**45,46**),

a secondary valve means (**50**) co-operating with the discharge outlet means (**49**) for closing the discharge outlet means (**49**) and for selectively opening the discharge outlet means (**49**) after each discrete quantity of the liquid has been weighed in the weighing means (**45,46**),

a sampling means (**140**) for collecting samples of the liquid, the sampling means (**140**) being located in the weighing chamber (**15**) beneath the discharge outlet means (**49**) of the weighing means (**45,46**) for collecting a liquid sample from the liquid being discharged from the weighing means (**45,46**) each time a weighed discrete quantity of the liquid is discharged from the weighing means (**45,46**), and

a liquid sample storing means (**135**) communicating with the sampling means (**140**) for storing the liquid samples received from the sampling means (**140**).

22. A method for measuring the quantity by weight of a flowing liquid, the method comprising the steps of

feeding the liquid through a main inlet means (**35**) into a buffer chamber (**24**) formed in a housing (**7**) which also forms a weighing chamber (**15**) which is located beneath the buffer chamber (**24**),

sequentially delivering discrete quantities of the liquid from the buffer chamber (**24**) under gravity through a first communicating means (**39**) into a weighing means (**45,46**) which is located in the weighing chamber (**15**) by opening a main valve means (**40**) located in the first communicating means (**39**),

isolating the weighing means (**45,46**) from the buffer chamber (**24**) after each discrete quantity of liquid has been delivered into the weighing means (**45,46**) by closing the main valve means (**40**),

sequentially determining the weight of the discrete quantities of liquid in the weighing means (**45,46**),

discharging the weighed discrete quantities of liquid from the weighing means (**45,46**) into the weighing chamber (**15**) through a discharge outlet means (**49**) from the weighing means (**45,46**) by opening a secondary valve means (**50**) which cooperates with the discharge outlet means (**49**) for closing the discharge outlet means (**49**) during weighing of each discrete quantity of the liquid for subsequent delivery of the weighed liquid through a main outlet means (**36**) from the weighing chamber (**15**),

taking a liquid sample of each weighed discrete quantity of liquid as the discrete quantity of liquid is being discharged from the weighing means (**45,46**) by a sampling means (**140**) located beneath the discharge outlet means (**49**) from the weighing means (**45,46**), and

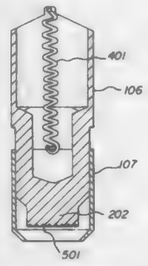
storing the liquid samples in a liquid sample storing means (**135**) which communicates with the sampling means (**140**) for subsequent collection.

5,632,412

VALVE ASSEMBLY AND METHOD FOR DISPENSING GELATINOUS MATERIALS

Clark E. Harris, Fairport; Berle A. Dale, Rochester; Richard M. Fraczek, Brockport, and Karen L. Pond, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1995, Ser. No. 432,394
Int. Cl.[6] B65D *35/30*
U.S. Cl. 222—1 **27 Claims**



18. A method for dispensing a measured quantity of a gelatinous semisolid material from a valve assembly having a known tare mass, which comprises:

(a) introducing a mass of said gelatinous semisolid material into a cylindrical housing included in said valve assembly, said housing having a first end and a second end and a throughbore of circular cross-section, said housing being provided with a piston that is situated in close proximity to said first end and is actuatable by pressure means to move through said throughbore towards said second end; said valve assembly further comprising: a cap attached at said second end of said housing, said cap being provided with a cylindrical sleeve having a throughbore with a cross-section smaller than said cross-section of said throughbore of said housing; a hollow cylindrical valve body mounted within said throughbore of said sleeve and having an external cross-section smaller than said throughbore of said sleeve, said valve body having a first end and a second end, said first end of said valve body being situated within said sleeve and being provided with retaining means for preventing ejection of said valve body from said sleeve by said pressure means; a sealing member connected to said second end of said valve body and comprising an end having a circular cross-section; and a hollow cylindrical barrel mounted within said throughbore of said sleeve and having an external cross-section smaller than said throughbore of said sleeve, said barrel being slidable from a valve closed position to a valve open position, said barrel having a first end and a second end and encompassing said sealing member, said first end of said barrel being situated within said throughbore of said sleeve in close proximity to said second end of said valve body, said second end of said barrel having an orifice with a circular cross-section substantially equal to said circular cross-section of said sealing member, said sealing member being situated within said orifice in a valve closed position, said barrel being connected to said valve body by resilient means;

(b) determining a gross mass comprising said tare mass of said valve assembly and said mass of said gelatinous semisolid material introduced into said housing;

(c) applying pressure by said pressure means to said piston to impel said piston through said throughbore of said housing to said cap, thereby forcing said gelatinous semisolid material through said sleeve and said valve body into said barrel, wherein said material exerts pressure at said orifice, thereby causing said resilient means to be compressed and said orifice to be displaced away from said sealing member to a valve open position, thereby enabling the dispensing of the measured quantity of gelatinous semisolid material from said valve assembly into said receptacle, said orifice returning to said valve closed position by said action of said resilient means after the dispensing of the measured quantity of material into said receptacle;

(d) determining an adjusted tare mass comprising said tare mass of said valve assembly together with said mass of gelatinous semisolid material remaining within said valve assembly; and

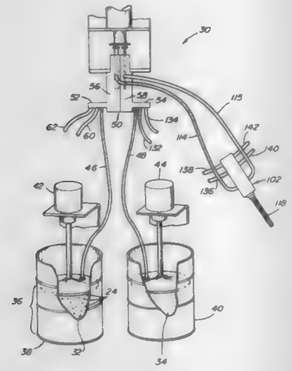
(e) subtracting said adjusted tare mass from said gross mass, thereby verifying the quantity of gelatinous semisolid material that has been dispensed into said receptacle.

5,632,413

ADHESIVE BONDING APPARATUS AND METHOD USING NON-COMPRESSIBLE BEADS

James M. Herring, Jr., Rochester Hills, and Bruce N. Greve, Davisburg, both of Mich., assignors to The Budd Company, Troy, Mich.

Division of Ser. No. 195,746, Feb. 14, 1994, Pat. No. 5,470,416, which is a continuation of Ser. No. 869,649, Apr. 16, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 488,044
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—1 **17 Claims**



7. A metering device for dispensing first and second adhesive fluids, at least one of the adhesive fluids having a plurality of non-compressible beads mixed therein, said metering device comprising:

a first mechanism for dispensing the first fluid, said first mechanism including:

a) a first housing defining a first metering chamber with a first outlet therefrom, said first chamber receiving said first fluid therein;

b) a first displacement member slidably mounted in the first chamber to displace the first fluid therefrom and out of said first outlet;

c) first heat transfer means for cooling the first displacement member to prevent said first fluid from prematurely hardening; and

a second mechanism for dispensing the second fluid, said second mechanism including:

d) a second housing defining a second metering chamber with a second outlet therefrom, said second chamber receiving said second fluid therein;

e) a second displacement member slidably mounted in the second chamber to displace the second fluid therefrom and out of said second outlet;

f) second heat transfer means for cooling the second displacement member to prevent said second fluid from prematurely hardening; and

said second outlet for dispensing said second fluid being located substantially adjacent to said first outlet for dispensing said first fluid.

14. A method of dispensing a fluid adhesive containing a plurality of non-compressible beads, comprising the steps of:

a) filling a first chamber with said fluid;

b) forcing a first displacement rod having a constant cross-section into said chamber at an insertion rate, whereby said fluid is forced out of said chamber at a rate in proportion to the cross-sectional area of said displacement rod; and

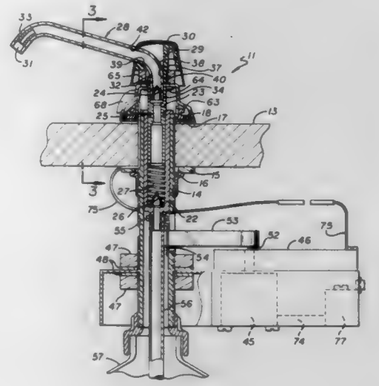
c) cooling said first displacement rod, whereby said fluid adhesive is substantially prevented from hardening and said insertion of said displacement rod is facilitated.

5,632,414

NO-TOUCH FLUID DISPENSER

Frank Merriweather, Jr., Carson, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.

Filed Nov. 30, 1995, Ser. No. 566,117
Int. Cl.[6] B67D *5/08*
U.S. Cl. 222—52 **7 Claims**



1. In a fluid dispenser having a body for mounting in a counter with a spout above the counter, an escutcheon for the upper end of the body, and a pump with cylinder and piston in the body, with the upper end of the piston projecting above the cylinder and connected to the spout and with the lower end of the cylinder including means for connecting to a container below the counter, the improvement comprising:

connector means for fixing said piston and spout to said escutcheon;

an electrical solenoid carried on said body below the counter and having a fixed coil and a moving plunger; and

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drive means for connecting said solenoid plunger to said cylinder for moving said cylinder upward relative to said piston for pumping fluid from the container through the piston and out through the spout.

5,632,415

DISPENSING MACHINE FOR DISPENSING SEMI-SOLID FOOD PRODUCTS

Gary S. McGill, Rochester, England, assignor to Unice International Limited, Coventry, England

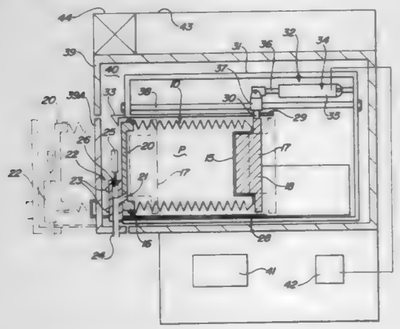
PCT No. PCT/GB93/02651, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/14333, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 23, 1993, Ser. No. 411,604

Claims priority, application United Kingdom, Dec. 29, 1992, 9227028

Int. Cl.[6] B65D *35/30*

U.S. Cl. 222—95 **22 Claims**



1. A dispensing machine for dispensing product from a container of product, comprising

a deformable container for product, the container having one end and an opposite end,

a plunger engageable with said one end to deform the container, said opposite end having an opening through which product is discharged, movement of the plunger when engaged with said one end causing the container to deform and reduce the internal volume of the container whereby product is extruded from said opening,

shut-off valve means controlling discharge of product from the container,

an insulated frame,

a housing for supporting the container movably in said frame, said housing having a seating for the container,

slide means whereby said housing is slidably mounted on said frame for generally horizontal movement relative to the frame between operative and inoperative positions, said housing extending outwards from the frame when in the inoperative position for removal of said container from said housing and, in the operative position of said housing, said container and said valve means being located within said insulated frame,

latch means for releasably latching said housing in the operative position in said frame, discharge of product from said container taking place when said housing is in the operative position, and

refrigeration means for providing a cold environment within the insulated frame.

5,632,416

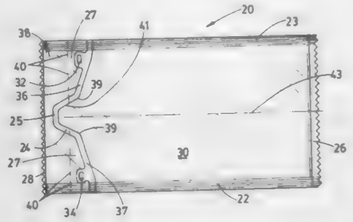
COLLAPSIBLE DISPENSER POUCH

William A. Lane, Jr., Lake Arrowhead, and Steven D. Davis, Yucaipa, both of Calif., assignors to W. A. Lane, Inc., San Bernardino, Calif.

Filed Jan. 29, 1993, Ser. No. 10,766

Int. Cl.[6] B65D *35/56*

U.S. Cl. 222—105 **13 Claims**



13. A collapsible, sanitary dispenser pouch formed from thin films of sheet material for holding between 24 and 30 liquid ounces of viscous product, comprising in combination:

a pair of substantially rectangular heat sealable films having two ends and two sides, heat sealed together along said two sides by substantially straight side seals;

a first of said two ends being heat sealed together so as to form a bottom, substantially straight cross seal;

a portion of the other of said two ends being heat sealed together so as to form a top cross seal having a specifically formed sealed outlet spout portion therein centrally disposed between said substantially straight side seals;

a hollow internal chamber formed between said substantially straight side seals, said bottom substantially straight cross seal and said top cross seal to hold said between 24 and 30 liquid ounces of viscous product therein;

said top cross seal including sealed portions formed between said pair of substantially rectangular heat sealable films adjacent to and angularly disposed between said specifically formed sealed outlet spout portion and said substantially straight side seals to form angled internal walls in said hollow internal chamber extending at angles of approximately 15 degrees with respect to said substantially straight side seals;

said specifically formed sealed outlet spout portion including an outlet tip and sloped internal wall portions which are sloped at an angle of approximately 30 degrees with respect to a centerline of said dispenser pouch, which centerline is disposed parallel to said substantially straight side seals and passes centrally through said dispenser pouch, to form a funnel-shaped interior area in said specifically formed sealed outlet spout portion;

a substantially smooth, rounded edge formed between said angled internal walls and said funnel-shaped interior area;

a pair of openings formed in and passing through said pair of substantially rectangular heat sealable films in a flattened area of said dispenser pouch formed above said sloped internal wall portions and between said specifically formed sealed outlet spout portion and perforations of a tear-off strip, away from said hollow internal chamber, toward said other of said two ends; and

said tear-off strip being formed in said other of said two ends, away from said hollow internal chamber, above said pair of openings, by a plurality of perforations formed therein and extending across said other of said two ends, up to but not across said outlet tip of said specifically formed sealed outlet spout portion, which tear-off strip, when removed will also remove said outlet tip to unseal said specifically formed sealed outlet spout portion and allow controlled dispensing therethrough of said between 24 and 30 liquid ounces of viscous product from said hollow internal chamber, around said substantially smooth, rounded edge and out through said funnel-shaped interior area.

5,632,417

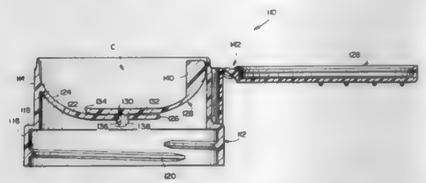
DISPENSING CAP AND RELATED HINGE

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661, and Gregory S. Burcham, Spruce Pine, Ala., assignors to Edward S. Robbins, III, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 352,104, Nov. 30, 1994, Pat. No. 5,542,579, which is a continuation-in-part of Ser. No. 220,530, Mar. 31, 1994, Pat. No. 5,487,494, which is a continuation-in-part of Ser. No. 47,086, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 237,336, May 3, 1994, Pat. No. 5,465,871, which is a continuation of Ser. No. 979,042, Nov. 19, 1992, abandoned. This application Mar. 22, 1995, Ser. No. 408,409

Int. Cl.[6] B67D *5/38*

U.S. Cl. 222—158 **9 Claims**



1. A measuring/dispensing cap adapted for attachment to an open, upper end of a container, the cap comprising:

a lid and a peripheral skirt extending downwardly from said lid, said lid pivotally secured to said skirt; a sifter panel integral with said skirt and separating said skirt into upper and lower sections, the upper section including a measuring chamber and the lower section including means for attaching said cap to the open upper end of the container; and wherein at least said lid is provided with volume indicators; said sifter panel formed to provide a flow opening on one side of a horizontal centerline extending across said cap, said flow opening defined in part by a first edge extending parallel to and spaced from said horizontal centerline; and a rotatable weir dam panel overlying said sifter panel, said weir dam panel having a second edge which is alignable with said first edge to enable substantially free flow of container contents through said flow opening, said lid pivotally secured to an upper edge of the peripheral skirt by an integral hinge assembly including a center tab and a pair of hoops laterally spaced from opposite sides of the center tab.

5,632,418

SOAP DISPENSER FOR SECURE MOUNTING ON WALL PLATE

Danial F. Brown, 2555 Camelot Way, Reno, Nev. 89509

Continuation-in-part of Ser. No. 389,763, Feb. 16, 1995, abandoned. This application Jul. 20, 1995, Ser. No. 504,423

Int. Cl.[6] B67D *5/06*

U.S. Cl. 222—180 **5 Claims**



1. An apparatus for dispensing liquids, comprising:

a. A container, suitable for dispensing liquids, with one or more cavities molded into the container;

b. A plate with one or more arms which detachably engage the cavity or cavities on the container, where the plate can be permanently attached to a wall;

c. A mechanism, attached to the plate, which permits the container to be securely locked to the plate.

5,632,419

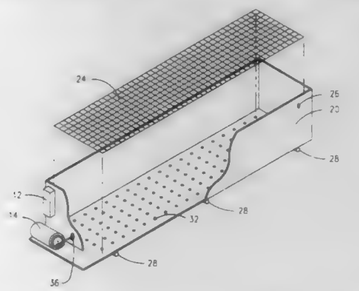
SNOWFALL SIMULATOR WITH AGITATING DISPENSER

Timothy J. Pickens, Lutz, Fla., assignor to Snowmaker Productions, Inc., Lutz, Fla.

Filed Feb. 24, 1995, Ser. No. 394,178

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—189.05 **14 Claims**



9. A dispensing apparatus for artificial snow, comprising:

a housing having at least one sidewall and a horizontal base having plurality of exit holes;

an agitation plate mounted for horizontal movement within the housing above the horizontal base, said agitation plate made of a rigid mesh of a shorter length and a shorter width than the base;

a multiplicity of artificial snow particles contained within said housing, said artificial snow particles having individual sizes smaller than said exit holes, said artificial snow particles being made of shaved polystyrene;

a means for horizontally reciprocating the agitation plate above the horizontal base to dispense said artificial snow particles from said plurality of exit holes.

5,632,420

DISPENSING PACKAGE

Richard D. Lohrman, Grayslake, and Ronny M. Cisliek, Arlington Heights, both of Ill., assignors to Zeller Plastik, Inc., Libertyville, Ill.

Continuation-in-part of Ser. No. 148,202, Nov. 3, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 425,088

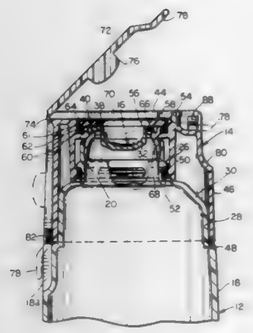
Int. Cl.[6] B65D *37/00*

U.S. Cl. 222—212 **28 Claims**

1. A dispensing package for storing and dispensing a fluid product having a maximum hydraulic head pressure through a discharge orifice in response to manually applied lateral squeezing forces and for automatically ceasing the dispensing operation when the manually applied forces are removed, comprising:

a resiliently deformable bottle for containing the product to be dispersed, said bottle exhibiting a degree of flexibility sufficient to permit deformation thereof in response to manually applied lateral squeezing forces and a degree of resilience sufficient to return automatically to its undeformed condition when the manually applied forces are removed therefrom, said bottle having an interior for the product, a top and bottom and integral sidewall interposed therebetween, the bottom

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being closed and the top having a neck defining an opening into the interior of the bottle;

a self-sealing dispensing valve having a periphery and a central valve head having the discharge orifice which opens at a predetermined threshold pressure which is greater than the maximum hydraulic head pressure of the product in said bottle when the dispensing package is in an inverted position with the discharge orifice facing downwardly, retaining means for retaining and sealing the periphery of the self-sealing dispensing valve across the opening of the neck of the bottle, said valve head having a predetermined inwardly concave configuration while the valve is in an unstressed condition and the valve is sealingly retained across the opening of the neck of the bottle and the bottle is in an undeformed condition, said valve head having at least one slit defining the discharge orifice extending through its thickness from an innermost surface to an outermost surface, said valve exhibiting an ability to undergo movement from a closed, inwardly concave, sealed and leak-resistant position to an open, outwardly convex, unsealed position when said manually applied lateral squeezing forces increase the pressure inside the bottle beyond the threshold opening pressure of said valve, to open the slit and consequently the discharge orifice whereby product is discharged from said bottle through the discharge orifice as long as the manually applied squeezing forces on the bottle maintain an internal pressure exceeding the threshold opening pressure of the valve, said valve also exhibiting an ability to automatically cut-off the product discharge by returning to its closed, inwardly concave, sealed and leak-resistant position whenever the manually applied forces are removed from the bottle;

a valved closure having a base being mounted on the neck of the bottle across the neck opening, the valved closure including a top on the base, the top having an opening across which extends the self-sealing dispensing valve, said top having a circular rib extending around the opening in the top of the valved closure and means for receiving the periphery of the self-sealing dispensing valve, and the retaining means including a circular ring cooperating with the circular rib to secure the valve periphery to the top of the valved closure; and

a one-piece overcap having a top and an outer tubular skirt disposed over the sidewall of the bottle and securement means including interengaging surfaces of the overcap and bottle for securing the overcap to the bottle, the securement means including interengaging surfaces on the bottle sidewall and overcap skirt, a lid hinged at the top of the overcap and pivotal from a closed position at which it is coextensive with the top of the overcap and protects the valve and an open position at which product in the bottle may be dispensed when the package is inverted with the discharge orifice facing downwardly.

5,632,421

AEROSOL METERING VALVES

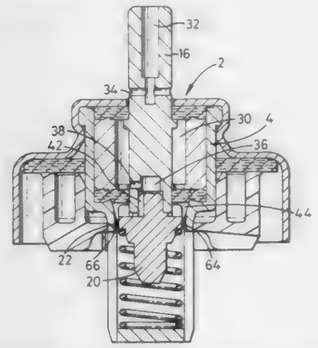
Adriano Colombo, Vercurago, Italy, assignor to Rexam Dispenser S.p.A., Olginate, Italy

Filed Jul. 3, 1995, Ser. No. 498,672

Claims priority, application United Kingdom, Jul. 14, 1994, 9414236

Int. Cl.[6] B65D *83/14*

U.S. Cl. 222—402.2 **4 Claims**



1. A metering valve adapted to be secured to an aerosol container in a fluid-tight manner, said valve comprising a metering chamber of fixed volume, a pair of spaced apart gaskets seated at opposite ends of said metering chamber, a valve rod extending through said gaskets in sealing engagement, a spring seat member movable with said valve rod, a biasing spring engaging said spring seat member, a valve body having part thereof circumscribing said spring seat member when in its valve-closed position, with said valve body and said spring seat member forming an annular passage through which liquid product to be dispensed flows en route to said metering chamber, said annular passage being so narrow that it forms a capillary passage which is able to hold liquid in said metering chamber by surface tension.

5,632,422

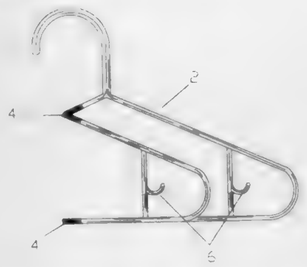
FOLDABLE GARMENT HANGER

Paul J. Csengeri, 5624 Calle De Arboles, Torrance, Calif. 90505

Filed Dec. 1, 1995, Ser. No. 566,079

Int. Cl.[6] A47G *25/14;25/40*

U.S. Cl. 223—89 **1 Claim**



1. An improvement for a prior art foldable garment hanger having a triangular shape with two elongated legs each having opposite ends, one of said opposite ends of each of said legs being connected to a hooking member and each of said legs being connected at the other of said opposite ends to an opposed end of an elongated base member, said prior art foldable garment hanger also having flex points comprising a first flexible device located between two segments of one of said legs and connected to each of said leg segments, and a second flexible device located between two segments of said base member at a point immediately below said first flexible device and connected to each of said base member segments, said leg segments and said base member segments each having a distal end and a connection hole axially positioned within said distal end, said first flexible device being removably inserted into said connection holes in said leg segments, and said second flexible device being removably inserted into said connection holes in said base member segments, said prior art foldable garment hanger also comprising a flexible sleeve overlaying said legs, said first flexible device, said base member, and said second flexible device so as to prevent said first flexible device and said second flexible device from separating from said connection holes during use, wherein said improvement comprises:

said first flexible device having sufficient size and dimension to fit over said distal ends of said leg segments and said second flexible device comprising sufficient size and dimension to fit over said distal ends of said base member segments thereby obviating the need for connection of said first flexible device to said leg segments and said second flexible device to said base member segments by use of said connection holes, and also obviating the need for said flexible sleeve which can restrict function of said first flexible device and said second flexible device thereby making said improved foldable garment hanger easier to use than said prior art foldable garment hanger and allowing said improved garment hanger to support heavier garments since said first flexible device and said second flexible device which fit over said distal ends are larger than said prior art first flexible device and said second prior art flexible device which fit into said connection holes;

said improvement also comprising at least two brackets made from rigid material, one of said brackets positioned between said base member and each of said legs to add structural integrity to said flexible hanger and prevent said base member and said legs from sagging and drooping during use, further enhancing the ability of said improved foldable garment hanger to hold heavy garments; and

said improvement further comprising means to secure said first flexible device to said leg segments and said second flexible device to said base member segments, said means to secure comprising a plurality of ribs on said distal ends of said leg segments and said base member segments sufficient to bind said first flexible device to said distal ends of said leg segment and said second flexible device to said distal ends of said base member segment so that said first flexible device of said improved foldable hanger and said second flexible device of said improved foldable hanger will not separate from said leg segments and said base member segments during use and so that said improved foldable hanger is simpler to manufacture than said prior art foldable hangers, less complex to use, and said first flexible device and said second flexible device of said improved foldable hanger are exposed to view so that the folding function of said improved folding hanger is quickly recognizable to a user.

5,632,423

GARMENT HANGERS

Henry J. Louw, P.O. Box 125, Plumstead 7800, Capetown, South Africa

Filed Jun. 29, 1995, Ser. No. 496,528

Claims priority, application South Africa, Jun. 30, 1994, 94/4702

Int. Cl.[6] A47G *25/48*

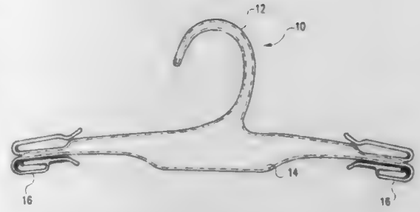
U.S. Cl. 223—91 **17 Claims**

1. A garment hanger, comprising

an elongated bar having two opposite ends,

suspension means for suspending said bar from a support; and

at least one garment support means at each of said opposite ends of the bar for supporting garments from said hanger, wherein each of said garment support means comprises:



a connecting part with a first end and a second end, wherein said connecting part is joined at said first end to and extending from the associated end of said bar;

an arm, wherein said connecting part is joined at said second end onto said arm extending in a direction towards the center of said bar, said arm having a free end disposed so that a space is formed between said arm and said bar;

a carrier element being located at the end of said arm away from said connecting part on the side thereof facing towards said bar;

an elongated pressing member being supported by said carrier element so that said pressing member is biased towards said bar by said arm and so that a part of a garment is receivable in between said pressing member and said bar and wherein each pressing member is in the form of an elongated beam which is substantially centrally and pivotally supported by the free end of the associated carrier element; and

a part of reduced width relative to said connecting part extending on one side of said connecting part facing towards said carrier element, wherein after heating and upon cooling, said part of reduced width causes said arm to bias said carrier element and said pressing member towards said bar.

5,632,424

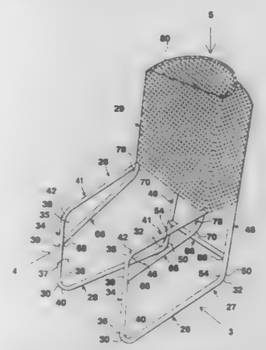
SOCK DONNING ASSIST DEVICE

Manfred Maier, and H. Millicent MacCannell, both of c/o Samtex Inc., 205 E. Erie St., Blauvelt, N.Y. 10913

Filed Feb. 12, 1996, Ser. No. 599,807

Int. Cl.[6] A47G *25/90*

U.S. Cl. 223—112 **16 Claims**

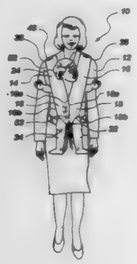


1. A sock donning assist device comprising a hollow rigid substantially L-shaped frame consisting of a plurality of different sized and shaped slender members and having a substantially vertically-oriented portion for retaining a sock during donning wherein the sock has an upper portion and a lower portion, and a horizontally-oriented portion extending forwardly from said substantially vertically-oriented portion of said hollow rigid substantially L-shaped frame for gripping by a user during donning the

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sock, so that prior to donning the sock said substantially-vertically-oriented portion of said hollow rigid substantially L-shaped frame receives the lower portion of the sock and said substantially vertically-oriented portion of said hollow rigid substantially L-shaped frame is received by the upper portion of the sock and during donning said substantially vertically-oriented portion of said hollow rigid substantially L-shaped frame is progressively removed from the upper portion of the sock; said horizontally-oriented portion of said hollow rigid substantially L-shaped frame including a pair of lower side, straight, substantially parallel-disposed, spaced-apart, horizontally-oriented, elongated, and slender members; each of said pair of lower side, straight, substantiality parallel-disposed, spaced-apart, horizontally-oriented, elongated, and slender members of said horizontally-oriented portion of said hollow rigid substantially L-shaped frame having a front end, a back end, and a length.

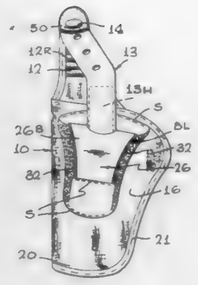
5,632,425
INFANT CARRIER
Julie Hull, 12480 S. Riverton Dr., Riverton, Utah 84065
Filed Jul. 17, 1995, Ser. No. 503,309
Int. Cl.° A61G *1/00*
U.S. Cl. 224—160 **23 Claims**



12. An infant carrier configured to be worn by a wearer, said infant carrier comprising:
a carrying flap having upper and lower portions and being configured and dimensioned to substantially cover a torso of an infant; and
retaining means attached to the flap for retaining said flap upon the wearer and retaining the infant between the flap and the wearer, wherein said retaining means is joined with the lower portion of the flap such that said retaining means intersects with the flap to form a sitting portion with said flap which is configured and dimensioned to enable the infant to sit in suspension upon the intersecting retaining means and flap forming said sitting portion with said infant's legs straddling said sitting portion;
wherein the carrying flap and the complete retaining means collectively comprise a one-piece unitary strip of material.

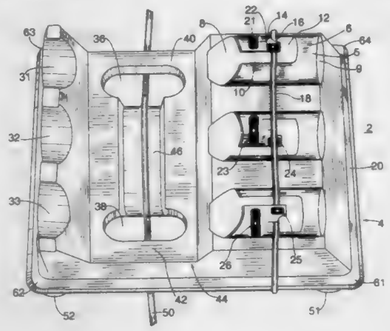
5,632,426
HOLSTER WITH IMPROVED BELT LOOP LOCK AND BROADLY ADJUSTABLE THUMB BREAK STRAP
Robert J. Beletsky, and Anthony G. Lefeber, both of Temecula, Calif., assignors to Bianchi International, Temecula, Calif.
Filed Jan. 18, 1995, Ser. No. 374,928
Int. Cl.[6] F41C *33/04*
U.S. Cl. 224—243 **8 Claims**

1. A holster comprising a body including an outer face formed to conform to an outline of at least a portion of a barrel and body of a handgun to be carried in the holster and an inner face which includes a substantially flat belt loop area;
a belt loop assembly secured to said inner face in said substantially flat area for receiving a belt upon which the holster is to be worn;



said belt loop assembly comprising a pair of arms having a generally "Y" shape, said arms being connected to a base portion which is secured to the holster, said base portion and said pair of arms forming an opening therebetween;
a first strap member extending from the outer face of said body;
a second strap member removably secured to the inner face of said holster;
said second strap extending through the opening formed by said arms and said base portion and positioned to be angularly adjustable within said belt loop assembly and restrained from movement by contact with a belt within said belt loop.

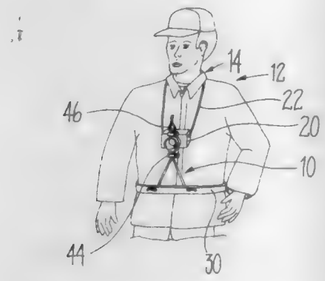
5,632,427
FISHING ROD AND REEL HOLDER
John Gattuso, 16 Sylvia Ln., Plainview, N.Y. 11803, and Ken Garstka, 99 Brooksite Dr., Smithtown, N.Y. 11787
Filed May 17, 1996, Ser. No. 649,279
Int. Cl.° B25H *5/00*; **B60R** *9/08*
U.S. Cl. 224—309 **9 Claims**



1. A fishing rod and reel holder, said reel mounted to the rod by a reel mount, said holder comprising:
a body;
said body comprising means for receiving the rod, said receiver means comprising:
a cylinder having two ends;
said cylinder having openings at both ends of the cylinder;
means for securing the rod and reel in the cylinder, said securing means comprising:
means for accepting the reel mount, said accepting means comprising a J-shaped slot defined in the cylinder, said J-shaped slot having edges defining a stem, a bottom, a curl, and a tip of the curl;
said J-shaped slot communicating with one of the openings;
said J-shaped slot further serving as means for sliding the reel mount from the communicated opening along the stem, across the bottom, up the curl, and against the tip;

elastic tensile means for biasing the reel mount against the tip and thereby securing the rod and reel within the cylinder;
said body comprising means for further supporting the rod, said support means comprising a recess approximately coaxial with the cylinder, and distal from the cylinder;
means for mounting said body securely to a surface.

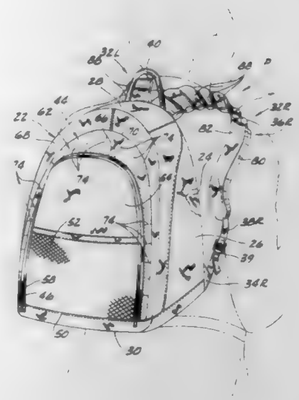
5,632,428
RESTRAINING DEVICE
Fred R. Weiss, 627 N. Brainard Ave., LaGrange Park, Ill. 60525
Continuation-in-part of Ser. No. 448,039, May 23, 1995, abandoned. This application Apr. 22, 1996, Ser. No. 635,675
Int. Cl.° A45F *3/04*
U.S. Cl. 224—623 **30 Claims**



30. A restraining strap for an article suspended by a neck-strap placed about a neck of a user, the restraining strap comprising:
a waistband adapted for circumferentially transversing a waist of the user;
a yoke of flexible webbing having a first length and a second length, each of the first and second lengths further having a proximal end and a distal end, the proximal end of each of the first and second lengths being attached to different locations on the waistband and the first and second lengths secured one to the other at or proximate each of the distal ends of the first and second lengths;
holding means proximate the distal ends of the first and second lengths, the holding means being adapted for receiving the suspended article; and
means for restraining the suspended article within the holding means from motion relative the user.

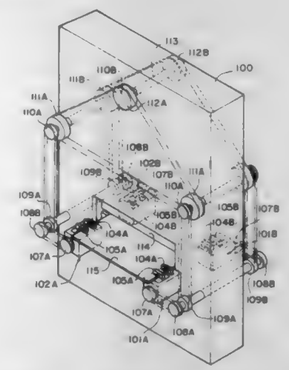
5,632,429
BACKPACK
Robert R. Cantwell, Leslie, Mo., assignor to American Recreation Products, Inc., St. Louis, Mo.
Filed Feb. 28, 1995, Ser. No. 396,910
Int. Cl.[6] A45F *3/04*
U.S. Cl. 224—630 **24 Claims**

1. An article comprising.
panels connected together and arranged for enclosing a volume, at least some of the panels being made of a generally limp material;
an opening in the article which is at least partially bounded by the generally limp panel material;
means for stiffening the generally limp panel material at least partially bounding the opening, said stiffening means biasing a region of the generally limp panel material at least partially bounding the opening to hold open the opening, said stiffening means comprising a resilient member connected to the bounding region of the generally limp panel material;



means associated with the generally limp panel material for holding said resilient member in a configuration displaced from a relaxed configuration of said resilient member.

5,632,430
MATERIAL FEEDING APPARATUS
Heizaburo Kato, Shizuoka-ken, Japan, assignor to Sankyo Seisakusho Co., Tokyo, Japan
Filed Jun. 26, 1995, Ser. No. 494,819
Claims priority, application Japan, Mar. 17, 1995, 7-058763
Int. Cl.° B65H *23/06*; *20/00*
U.S. Cl. 226—149 **5 Claims**



1. A material feeding apparatus for conveying a material having a relatively large width into a working machine intermittently, said apparatus including a pair of gripper feeds which are provided on both the right and left sides of a material introducing portion of the working machine and actuated synchronously,
said gripper feeds each comprising:
first gripper means fixed along the associated right or left side of the material introducing portion and including a stationary gripper and a movable gripper which can clamp and release the material generally along the edge of the material at the associated side;
second gripper means located along the associated right or left side of the material introducing portion and supported for reciprocating movement along a direction of material conveyance towards and away from said first gripper means, said

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second gripper means having a stationary gripper and a movable gripper which can clamp and release the material generally along the edge of the material at the associated side; and

a pair of cam means each operatively associated with one of said first and second gripper means for repeating such operations that, when said second gripper means clamp the material at a conveyance start position, said first gripper means release the material, and when said second gripper means move to a conveyance finish position, said first gripper means clamp the material while the second gripper means release the material and return to the conveyance start position,

said gripper feeds including reciprocating means operable for moving said second gripper means towards and away from said first gripper means, said reciprocating means comprising separately operable structures located on the right and left sides of the material introducing portion of the working machine whereby the area between said gripper feeds at the material introducing portion is generally open.

5,632,431

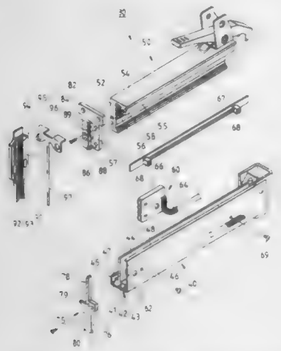
NAIL MAGAZINE OF NAIL STAPLER

Joseph Lin, No. 13-3, Yuh Der Rd., Taichung, Taiwan

Filed Nov. 16, 1995, Ser. No. 559,115

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—109 **4 Claims**



1. A nail magazine of a nail stapler, which comprises:

a main body provided with a rib;

a cap fastened with said main body to form therebetween slots for receiving therein nails;

a nail pushing member disposed in a nail magazine and composed of a nail pushing piece, a resilient element and a roller, said nail pushing piece being disposed on said rib of said main body such that said nail pushing piece is urged by said resilient element;

an end plate member fastened at one end of said nail magazine; and

a cover plate fastened at said one end of said nail magazine;

wherein said main body has a T-shaped cross section, a bottom with said rib extending from said bottom, said bottom provided axially with a left piece and a right piece which are separated from said rib by a predetermined interval and are provided respectively at a top thereof with a connection portion;

wherein said cap has an inverted L-shaped cross section, an upright body and a horizontal body extending from a top of said upright body, said horizontal body having axially a protruded strip forming a space between said protruded strip and an inner side of said upright body, said upright body and said horizontal body provided respectively with an insertion slot;

wherein said main body and said cap are joined together such that said connection portions of said left piece and said right piece of said main body are engaged with said insertion slots of said upright body and said horizontal body of said cap, and that said rib of said main body is located in said space, and further that said rib, said upright body, said horizontal body and said protruded strip form a receiving slot of an inverted U-shaped construction, and still further that said rib and said upright body form therebetween a linear slot;

wherein said roller of said nail pushing member is fastened pivotally with said right piece of said main body such that said roller is separated from said rib by a predetermined distance; and

wherein said linear slot is provided in side walls thereof with a plurality of slots for accommodating nails of various lengths.

5,632,432

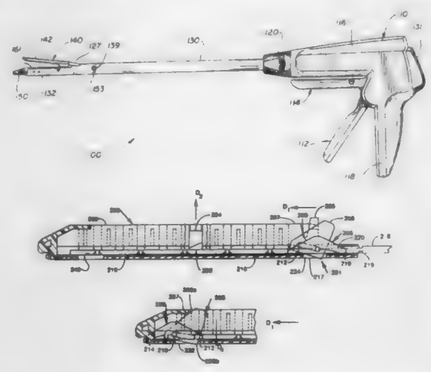
SURGICAL INSTRUMENT

Dale R. Schulze, Lebanon; Joseph Paraschac, Cincinnati; William D. Fox, New Richmond, all of Ohio; Michael E. Setser, Burlington, Ky.; Kenneth S. Wales, Mason, Ohio, and Mark S. Zeiner, Milford, Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Dec. 19, 1994, Ser. No. 359,107

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—176.1 **2 Claims**



1. A surgical instrument for applying one or more surgical fasteners to tissue, comprising a fastener applying assembly, a handle, and a shaft:

said fastener applying assembly including cartridge means for holding one or more surgical fasteners, driver means for driving said surgical fasteners into the tissue, and means for forming said surgical fasteners about the tissue including an anvil assembly, said anvil assembly and cartridge means being closeable with respect to one another in order to clamp said tissue there-between;

said handle including means for closing and opening said anvil and said cartridge means with respect to one another, said handle being mounted to the proximal end of said shaft;

said fastener applying assembly further including tissue cutting means actuable by said driver means, said cartridge means including means for positioning and retaining said tissue cutting means in an unexposed position relative to said cartridge means upon completion of a cutting sequence by said tissue cutting means;

wherein said tissue cutting means includes a knife sled slideably received by said cartridge means during said cutting sequence, said knife sled being coupled to wedge means for driving said surgical fasteners into the tissue, said knife sled and wedge means being actuable by said driver means in performing a tissue cutting;

wherein said knife sled includes means for maintaining said knife sled in said unexposed position until initiation of said cutting sequence, whereupon said knife sled is forced into a cutting orientation; and

wherein said means maintaining said knife sled in said unexposed position includes said means for pivotally coupling said knife sled to said wedge means, said pivot means comprising a pin riding in an inclined slot in said knife sled, said pivot means allowing said knife sled to assume an unexposed position at the initiation of said cutting sequence, and further allowing said knife sled to pivot into a cutting orientation upon said pin reaching a distal end of said inclined slot.

5,632,433

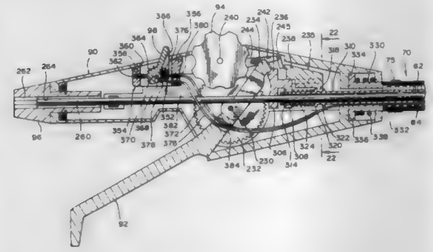
SURGICAL ANASTOMOSIS STAPLING INSTRUMENT WITH FLEXIBLE SUPPORT SHAFT AND ANVIL ADJUSTING MECHANISM

Richard L. Grant, Cincinnati, Ohio; Michael Lang, North Andover, Mass.; Philip J. Churchill, North Potomac, Md., and W. Thompson Lawrence, Lexington, Mass., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 189,346, Feb. 1, 1994, Pat. No. 5,439,156, which is a division of Ser. No. 71,280, Jun. 2, 1993, Pat. No. 5,312,024, which is a division of Ser. No. 832,239, Feb. 7, 1992, Pat. No. 5,234,307. This application Apr. 6, 1995, Ser. No. 417,587

Int. Cl.[6] A61B *17/115*

U.S. Cl. 227—179.1 **6 Claims**



1. A surgical stapling instrument for applying a plurality of surgical staples to tissue, comprising:

a stapling head assembly including a staple holder for receiving a plurality of surgical staples, an anvil for clamping the tissue against said staple holder, and a staple driver for engaging and driving the staples from said staple holder into the tissue and against said anvil;

an actuator handle assembly including first actuator means for adjusting the gap between said anvil and said staple holder and second actuator means for actuating said staple driver; and

a shaft assembly including a flexible support shaft for mounting said stapling head assembly on said actuator handle assembly;

a tension member contained within said support shaft for transmitting tension from said first actuator means to said anvil to resist the forces exerted on said anvil when the staple are formed;

a compression member contained within said support shaft for transmitting a compressive force from said second actuator means to advance said staple driver to drive the staples from said staple holder into the tissue and to form the staple against said anvil; and

said support shaft being flexible in any radial direction relative to its centerline into a curved configuration for insertion into a patient, said flexible support shaft being adapted to support itself in said curved configuration and to resist deflection upon insertion of said support shaft into the patient and actuation of said stapling head assembly; and

means for coupling said support shaft to said actuator handle assembly, said means for coupling comprising means for compensating for differences in deflection of said tension member and said compression member relative to said support shaft.

5,632,434

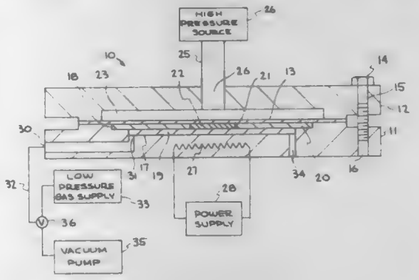
PRESSURE ACTIVATED DIAPHRAGM BONDER

Leland B. Evans, Antioch, and Vincent Malba, Livermore, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jun. 29, 1995, Ser. No. 496,587

Int. Cl.[6] B23K *37/04*

U.S. Cl. 229—44.7 **28 Claims**



24. A pressure activated bonder, comprising:

a first member,

a second member,

a diaphragm located adjacent said first and second members,

means for supplying fluid pressure onto a surface of said diaphragm,

means for retaining an associated first component to be bonded adjacent said diaphragm, and

means for retaining at least another associated component to be bonded adjacent an associated first component to be bonded.

5,632,435

PROCESS FOR THE PRODUCTION OF A SOLDERED JOINT

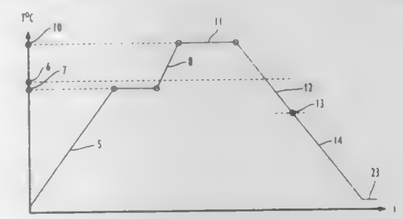
Joachim Schmied, Oberehrendingen, and Karl Allenbach, Kollbrunn, both of Switzerland, assignors to Sulzer-Escher Wyss AG, Winterthur, Switzerland

Continuation-in-part of Ser. No. 54,297, Apr. 30, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,666

Claims priority, application Switzerland, May 27, 1992, 01724/92

Int. Cl.[6] B23K *1/19*

U.S. Cl. 228—121 **18 Claims**



1. A process for the production of a soldered joint between a carbon part, comprising no diamond structures, and a silicon carbide part, via a silver-titanium solder, having a titanium content in the range of 2–6% by weight, wherein the solder is interposed

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between the carbon part and the silicon part in a vacuum furnace, the process comprising:

heating in a first step, a combination, formed of the carbon part, the silicon carbide part and the interposed solder, to a temperature just below the melting temperature of the solder, at a rate of less than 600° C./hour;

further heating, in a second step, the combination to the actual melting temperature of the solder which, depending on the composition of the solder, is in the range between 1000 and 1050° C., at a rate in the range of 200°–1000° C./hour;

further maintaining, in a third step, the combination, at a predetermined soldering temperature between 1000 and 1050° C. for a soldering time between 5 and 20 minutes;

cooling, in a fourth step, the combination, to an intermediate temperature, with the intermediate temperature being below the melting temperature of the solder, at a rate of less than 200° C./hour; and

further cooling, in a fifth step, the combination from the intermediate temperature to ambient temperature, at a rate of less than 400° C./hour.

5,632,436

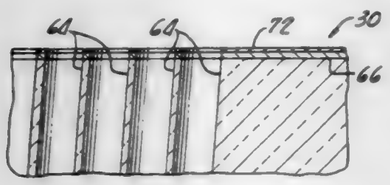
APPARATUS HAVING CASCADED AND INTERBONDED MICROCHANNEL PLATES AND METHOD OF MAKING

Andreas Niewold, Mesa, Ariz., assignor to Litton Systems, Woodland Hills, Calif.

Division of Ser. No. 250,854, May 27, 1994, Pat. No. 5,514,928. This application Oct. 31, 1995, Ser. No. 550,593

Int. Cl.[6] H01J *43/00*

U.S. Cl. 228—121 **15 Claims**



1. A method of making a tube having a cascade of interbonded and electrically connected microchannel plates, said method including the steps of:

providing a microchannel plate having a disk-like substrate of glass defining in a central active area thereof a multitude of microchannels extending between substantially planar opposite faces of said microchannel plate;

providing a respective pair of electrode metallic layers, one on each of the opposite faces of said microchannel plate, for application of an electrostatic charge there across;

providing on at least one of said pair of electrode metallic layers, and covering at least a portion thereof, an interbonding coating for fusing to one of a like interbonding coating or to an electrode layer of an adjacent microchannel plate;

further including the step of disposing said microchannel plate adjacent to and in face-to-face contacting relation with an adjacent microchannel plate of said cascade during manufacturing assembly of said tube, and using a manufacturing operation for said tube which includes exposing said tube to a processing temperature of about 118 degrees Celsius or higher to also simultaneously interbond said microchannel plate to said adjacent microchannel plate.

5,632,437

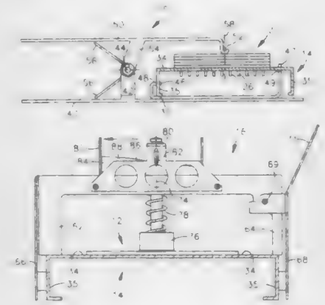
METHOD OF CENTERING A LID SEAL CLIP

Sutee Vongfuangfoo, Sunnyvale; Mirek Boruta, Castro Valley, and Galen Kirkpatrick, Fremont, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 4, 1995, Ser. No. 538,907

Int. Cl.[6] B23K *37/04*

U.S. Cl. 228—177 **13 Claims**



9. A method of packaging an integrated circuit comprising the steps of positioning an integrated circuit containing a package base in an alignment socket element of an assembly boat, positioning a substantially planar lid element over said package base, securing a loading jig to said assembly boat in structurally confined alignment with said alignment socket, rotating a pressure foot about a rotational axis secured to said loading jig and resiliently biasing said pressure foot rotation against said lid element.

5,632,438

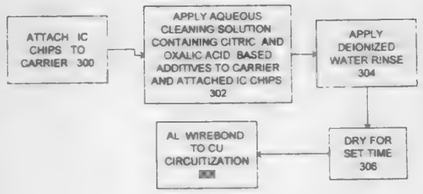
DIRECT CHIP ATTACHMENT PROCESS AND APPARATUS FOR ALUMINUM WIREBONDING ON COPPER CIRCUITIZATION

Mark K. Hoffmeyer; Gregg A. Knotts, both of Rochester, and Connie J. Mathison, Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1995, Ser. No. 541,256

Int. Cl.[6] H01L *21/603*

U.S. Cl. 228—180.5 **15 Claims**



1. A direct chip attachment process for aluminum wirebonding on copper circuitization comprising the steps of:

attaching at least one integrated circuit chip to a carrier;

applying to the carrier and attached integrated circuit chip an aqueous cleaning solution containing citric and oxalic acid based additives;

applying to the carrier and attached integrated circuit chip a rinse; and

wirebonding on copper circuitization carried by the carrier.

5,632,439

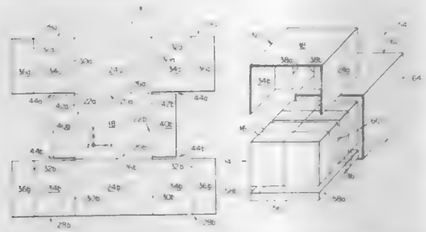
ONE-PIECE BLAND/SHROUD AND DISPLAY CASE

Stephen M. Yucknut, Danbury, Conn., and Panagiotis Kinigakis, Princeton Junction, N.J., assignors to Kraft Foods, Inc., North field, Ill.

Continuation-in-part of Ser. No. 424,952, Apr. 19, 1995, abandoned. This application Jun. 30, 1995, Ser. No. 497,576

Int. Cl.[6] B65D *25/04*

U.S. Cl. 229—120.18 **9 Claims**



1. A one-piece shroud for enclosing a top and two opposed side faces of an array of packages while leaving the other two opposed side faces of the array unenclosed comprising:

(a) a central top panel which is rectangular shaped and which overlays a top of the array of packages, said top panel defining a pair of opposed first sides extending parallel to an x-axis and a pair of opposed second sides extending parallel to a y-axis;

(b) a pair of side panels attached to respective first sides along a respective first hinge line parallel to the x-axis, said side panels being bent along said first hinge lines so that said side panels engage opposed sides of the array of packages; and

(c) a pair of opposed projecting portions for each said side panel extending parallel to the x-axis and beyond an adjacent respective said second side,

each said projecting portion being attached to the associated said side panel along a second hinge line parallel with the y-axis, and

each said projecting portion including a third hinge line therein parallel to the y-axis to define a reinforcing panel and a leg panel, said reinforcing panel extending parallel to the x-axis for a distance less than ½ of a distance that said side panel extends parallel to the x-axis, said reinforcing panels being bent back onto and unmovably secured to said side panels along said second hinge lines and said leg panels being bent perpendicular to said reinforcing panels along said third hinge lines so that said leg panels come together and form a single leg which is inserted laterally into the array of packages.

5,632,440

CONTAINER WITH PLUG-IN CLOSURE UNIT

Paul Tragardh, Formigine, Italy; Elmar Mock, Biel, and Matthias Hell, Bern, both of Switzerland, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed May 9, 1995, Ser. No. 437,715

Claims priority, application Switzerland, Jun. 10, 1994, 01837/94

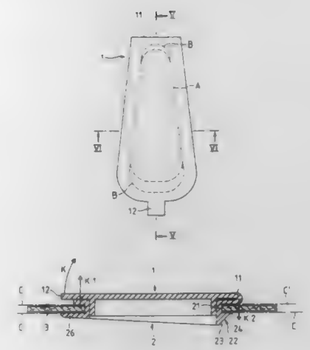
Int. Cl.[6] B65D *5/74*

U.S. Cl. 229—125.15 **15 Claims**

1. A combination of a container and a plug-in closure unit, the container having an interior, an exterior, a wall and an oblong opening in the wall, the opening having a width and a length longer than its width and further defining an edge, the closure unit being adapted to be inserted into the opening, the closure unit further having a closed state and an open state and comprising:

a closure part including an opening lip defining an opening lip region;

a hinge disposed opposite the opening lip of the closure part and defining a hinge region: and



a pouring part connected to the closure part by the hinge, the pouring part including:

an oblong neck adapted to be retained in the opening of the container, the neck having a width and a length longer than its width and further being configured such that an area circumscribed by a circumference of the neck is larger than an area circumscribed by the edge of the opening, wherein a difference between the widths of the opening and the neck is larger than a difference between the lengths of the opening and the neck;

a pouring opening operatively associated with the neck, the closure part being adapted to tightly close the pouring opening by fitting thereupon and further being adapted to open the pouring opening by being removed therefrom for placing the closure unit in its closed state and in its open state, respectively;

an inner retaining means for retaining the neck in the opening by extending beyond the edge of the opening on the interior of the container when the closure unit is inserted into the opening thereby defining an inner retaining plane C, the inner retaining means consisting of:

a first inner retaining means disposed exclusively in the hinge region when the closure unit is inserted into the opening; and

a second inner retaining means disposed exclusively in the opening lip region when the closure unit is inserted into the opening; and

an outer retaining means for retaining the neck in the opening by extending beyond the edge of the opening on the exterior of the container when the closure unit is inserted into the opening, the outer retaining means thereby defining an outer retaining plane C', a portion of the wall of the container being adapted to be retained between the inner retaining means and the outer retaining means between planes C and C'.

5,632,441

ELEVATING MAILBOX

Ferdinand A. Toval, 2001 E. Terra Vista Way, Sandy, Utah 84093

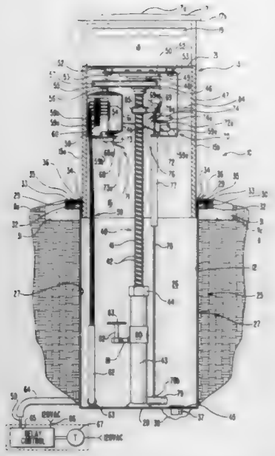
Filed Mar. 11, 1996, Ser. No. 613,689

Int. Cl.[6] B65D *91/00*

U.S. Cl. 232—17 **10 Claims**

1. An elevating mailbox comprising, a housing that is open therethrough and across a lower end with parallel sides and is capped across a top end, includes a mail receiving cavity arranged therein, adjacent to said top end, and is fitted with a ground sleeve; the ground sleeve that is open therethrough and across a top end, and is for receiving said housing telescoped therein, with said ground sleeve for installation in a hole, has parallel sides and is closed across a bottom end; a jack means mounted to said ground sleeve bottom including a screw means that is a straight threaded

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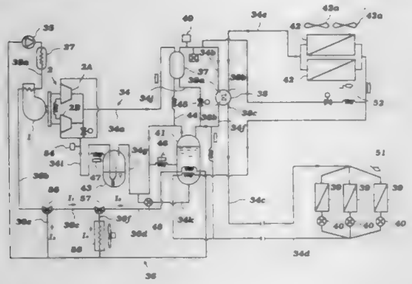
rod fitted for turning through a threaded nut means maintained to a cylinder means having a bottom end connected to said ground sleeve to extend vertically therefrom, and said screw means is connected to said housing means for turning said screw means into and out of said threaded nut means; and means for controlling said means for turning said screw means.

5,632,442

ENGINE-DRIVEN HEAT PUMP APPARATUS AND METHOD FOR STABLE OPERATION OF HEAT PUMP

Makoto Misawa, and Makoto Oguri, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Feb. 8, 1996, Ser. No. 598,373
Int. Cl.[6] F25B *27/00*
U.S. Cl. 237—2 B **13 Claims**



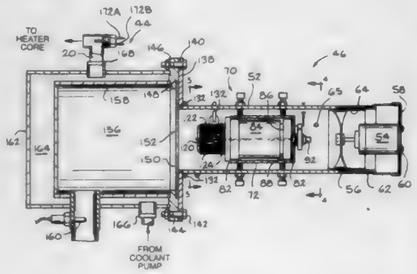
1. An engine-driven heat pump apparatus comprising a refrigerant circulation line through which a refrigerant circulates, said refrigerant circulation line comprising: an engine-driven compressor for circulating said refrigerant; a cooling water circulation line through which a cooling water for cooling said engine circulates; a cooling water-exhaust heat heat-exchanger for exchanging heat between said cooling water and exhaust heat from said engine; a cooling water-refrigerant heat-exchanger for exchanging heat between said cooling water and said refrigerant: an inside heat-exchanger for exchanging heat between said refrigerant and the air inside a room; an outside heat-exchanger for exchanging heat between said refrigerant and the air outside said room; an expansion valve arranged in series with said inside heat-exchanger; a four-way valve for reversing the flow of said refrigerant at said inside heat-exchanger and at said outside heat-exchanger; a pressure-measuring device for measuring the pressure in said refrigerant circulation line downstream of said compressor and upstream of said expansion valve: and an exhaust heat controller for controlling exhaust heat from said engine based on the pressure measured by said pressure-measuring device so as to adjust the temperature of said cooling water via said cooling water-exhaust heat heat-exchanger.

5,632,443

AUXILIARY VEHICLE HEATER

Thomas J. Quarrie, 801 W. Sandusky St., Findlay, Ohio 45840

Filed Jun. 12, 1996, Ser. No. 662,087
Int. Cl.[6] B60H *1/02*
U.S. Cl. 237—12.3 C **8 Claims**



1. An auxiliary vehicle heater comprising, in combination,
an elongate housing,
a fan for moving air through said housing,
a burner assembly disposed in said housing and having a wick,
a driver for rotating said wick,
means for supplying fuel to said wick,
a combustion chamber having a heat exchanger for providing combustion heat to engine coolant, and
an orifice disposed between said burner assembly and said combustion chamber.

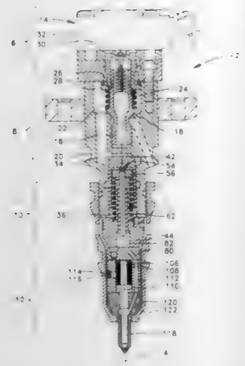
5,632,444

FUEL INJECTION RATE SHAPING APPARATUS FOR A UNIT INJECTOR

Fred A. Camplin, Peoria; Michael A. Flinn, East Peoria, and Lianghe Zuo, Normal, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Apr. 13, 1995, Ser. No. 421,645
Int. Cl.[6] F02M *47/02*
U.S. Cl. 239—88 **12 Claims**

1. A fluid unit injector rate shaping apparatus, comprising:
a housing having a longitudinal bore;
a plunger sleeve having a longitudinal extending bore and being movable within and relative to said housing bore, said housing, said housing bore and said plunger sleeve defining a fluid pump chamber, said plunger sleeve being movable a preselected distance into the pump chamber;
a plunger slidably positioned in said plunger sleeve bore and being movable a preselected distance into the pump chamber, said plunger having an actuating end distally disposed relative to said pump chamber;
first means for moving said plunger in a direction toward the fluid pump chamber, said first means including a moveable member engageable with said actuating end;



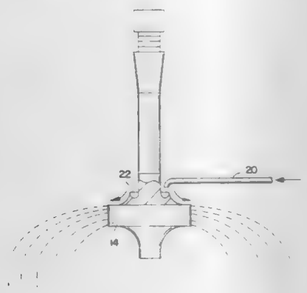
second means for moving said plunger sleeve in a direction toward the fluid pump chamber during movement of said plunger.

5,632,445

ULTRASONIC FLUID SPRAYING DEVICE

Dominique Dubruque, 644 chemin des Farnaises, 74380 Bonne-sur-Menoge, France

PCT No. PCT/FR91/00930, § 371 Date May 21, 1993, § 102(e) Date May 21, 1992, PCT Pub. No. WO92/09373, PCT Pub. Date Jun. 11, 1992
Continuation of Ser. No. 66,022, May 21, 1993, abandoned.
This PCT application Nov. 22, 1991, Ser. No. 386,218
Claims priority, application France, Nov. 22, 1990, 90 14572
Int. Cl.[6] B05B *1/08*
U.S. Cl. 239—102.2 **25 Claims**



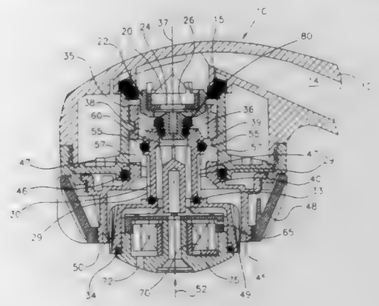
1. A device for the ultrasonic spraying of at least one liquid, comprising:
an electroacoustic converter delivering an axial vibration of given wavelength,
at least one coupling rod element,
a radial sprayer constructed in the shape of a radial collar having a side surface which projects outwards with respect to the coupling rod element with which it is integral and which is constructed at a node of a half-wavelength of the axial vibration, said sprayer being tuned to the wavelength of the vibration of said converter, and
means for introducing said at least one liquid to be sprayed into the immediate vicinity of said side surface of the sprayer, said entire side surface vibrating with a substantially uniform amplitude thereby providing spraying with a compressed spectrum.

5,632,446

SHUT OFF IN SHOWER APPARATUS

Artur Krochek, Tel Aviv, Israel, assignor to Unitrol Amcor Ltd., Rehovot, Israel

Filed Jun. 7, 1995, Ser. No. 487,415
Claims priority, application Israel, Aug. 14, 1994, 110656
Int. Cl.[6] B05B *3/04*
U.S. Cl. 239—381 **2 Claims**



1. Shower apparatus comprising:
a valve having an aperture;
a first packing preform mounted on said valve, located downstream of said valve aperture;
a second packing preform mounted on said valve and located downstream of said first packing preform; and
a stemmed element selectably movable with respect to said valve aperture, said stemmed element being in selectable sealing engagement with said second packing preform, and said stemmed element being operative to selectably press said first packing preform against said valve, thereby substantially sealing said valve aperture;
wherein said stemmed element comprises a packing preform, such that a movement of said stemmed element selectively brings said stemmed element packing preform into substantially sealed engagement with a portion of said shower apparatus,
and comprising a turbine and at least one exit aperture, such that suitable movement of said stemmed element with respect to said valve brings said first packing preform into non-sealed engagement with said valve aperture, said second packing preform into non-sealed engagement with said stemmed element, and said stemmed element packing preform into substantially sealed engagement with said portion of said shower apparatus, such that a flow of water through said shower apparatus is directed to said turbine causing rotation thereof, said flow of water exiting through said at least one exit aperture.

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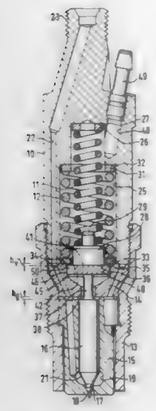
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Wilhelm Christ, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/01386, § 371 Date Aug. 1, 1995, § 102(e) Date Aug. 1, 1995, PCT Pub. No. WO95/15435, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 24, 1994, Ser. No. 500,898
Claims priority, application Germany, Dec. 1, 1993, 43 40 874.5
Int. Cl.[6] F02M *45/00*
U.S. Cl. 239—533.4 **5 Claims**

1. A fuel injection nozzle for preinjection and main injection in internal combustion engines, which comprises a nozzle body (**15**), a valve needle (**16**) displaceably mounted in said nozzle body along an axis of said injection nozzle and said nozzle body is clamped tightly on a nozzle holder (**10**) via an intermediate disk (**14**), a pressure-relieved spring chamber (**25**) is formed within said

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nozzle holder (**10**), said pressure-relieved spring chamber is connected to a leakage oil return line and has the purpose of receiving two coaxially arranged closing springs (**11**, **12**) therein, the first closing spring (**11**) acts continuously on the valve needle (**16**) via a pressure bolt (**28**) and the second closing spring (**12**) presses against a pressure ring (**33**) which surrounds the pressure bolt (**28**) and, in a closed position of the valve needle (**16**), said pressure ring (**33**) is supported on a shoulder (**34**) formed on the intermediate disk (**14**), an opening (**45**) in said intermediate disk near said pressure relieved spring chamber forms a low pressure space which is open to the nozzle body (**15**) and the valve needle (**16**), an intermediate pressure element (**40**) in said opening (**15**), said intermediate pressure element is supported on an end pin (**37**) of the valve needle, said intermediate pressure element can be displaced axially with the valve needle (**16**) in said opening (**45**) in the intermediate disk (**14**), said intermediate pressure element is guided on a circumferential side for contacting said pressure bolt (**28**) after traversing a pretravel axial distance, said intermediate pressure element separates said low pressure space in the intermediate disk (**14**) from the pressure-relieved spring chamber (**25**), at least one channel is provided in said intermediate pressure element which interrupts a portion of an axial contact of the pressure ring (**33**) against an upper surface of the intermediate pressure element (**40**) which permits fluid flow from said low pressure space to said pressure-relieved spring chamber, and with said pressure ring (**33**) against a shoulder (**34**) of said intermediate pressure element, fluid will flow from said low pressure chamber to said pressure-relieved spring chamber, and said channel is disposed in the intermediate element (**40**) such that the low-pressure chamber formed in the opening (**45**) communicates continuously with the spring chamber (**25**).

5,632,448

ROTARY POWDER APPLICATOR

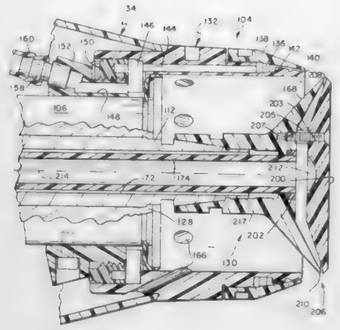
Kevin L. Alexander; Wade H. Hickam, both of Brownsburg; Chris M. Jamison, Indianapolis, and Michael C. Rodgers, Greensburg, all of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Jan. 25, 1995, Ser. No. 377,816

Int. Cl.[6] **B05B** *5/04*

U.S. Cl. 239—703 **7 Claims**

1. An apparatus for dispensing pulverulent coating material entrained in a stream of a bearing gas, the apparatus comprising a dispenser, a motor for rotating the dispenser, the motor having an output shaft, the dispenser being mounted on the output shaft to be rotated thereby, the dispenser having a somewhat bell-shaped interior, the output shaft having a passageway extending lengthwise thereof, means for feeding the pulverulent coating material entrained in bearing gas to an end of the passageway remote from



the dispenser to be supplied through the passageway to the interior as the motor rotates the dispenser, a diffuser and means for mounting the diffuser at an end of the passageway within the interior, an annular discharge slot being defined between the dispenser and an edge of the diffuser, the diffuser having a back side facing the interior and bounded by the edge, the back side including a concavity into which the entrained pulverulent coating material is directed from the passageway.

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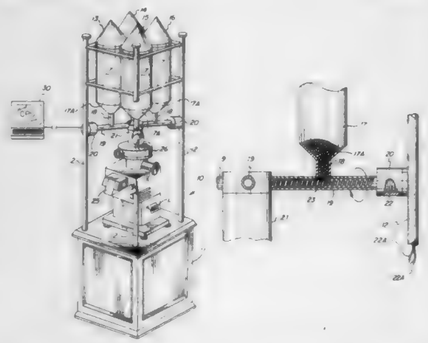
CUSTOMIZED COFFEE BLENDING APPARATUS

Raffael Sandolo, 226 Thayer Pond Rd., Wilton, Conn. 06897

Continuation-in-part of Ser. No. 437,176, May 8, 1995. This application Apr. 10, 1996, Ser. No. 630,357

Int. Cl.[6] **B02C** *19/12*

U.S. Cl. 241—34 **8 Claims**



8. A coffee blending apparatus for individualized blending of several different coffees grown in the various coffee producing regions comprising:

a base,

a plurality of hollow uprights supported on said base,

a plurality of hoppers supported on said uprights,

each of said hoppers having a discharge conduit,

a feed conduit disposed in communication with each of said discharge conduits,

a collector,

each of said feed conduits having one end connected to said collector,

a motor connected to the other end of each of said feed conduits,

a feeder disposed in each of said feed conduits,

said feeder comprising a helical coil having one end connected to its corresponding motor,

said coil extending beyond the intersection of said discharge conduit and feeder conduit for advancing the beans discharged from its corresponding chopper to said collector, when the corresponding motor is actuated,

a grinder connected to said collector,

and a bagging station,

a scale means interposed between said collector and said bagging station,

said scale means including a valve means for selectively directing the coffee beans weighed thereby to either said grinder or bagging station,

a central processing unit for controlling the actuation of said motors to control the type and amount of coffee beans dispensed from each of said hoppers in accordance to the selection made by the purchaser.

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CHOPPER

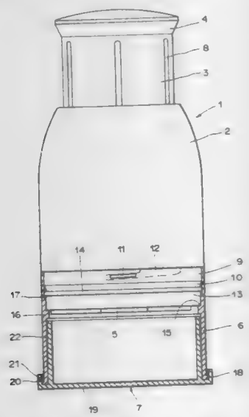
Roland Moor, Lyss, Switzerland, assignor to Zyliss Haushaltwaren AG, Lyss, Switzerland

Filed May 22, 1995, Ser. No. 446,464

Claims priority, application Switzerland, Mar. 15, 1995, 737/95

Int. Cl.[6] **A47J** *43/04*

U.S. Cl. 241—100 **23 Claims**



1. A chopper comprising an upper part, a lower part detachably fastened thereto, and an axially displaceable actuation part connected to at least one blade, wherein the lower part is provided with a one piece removable chopping cup, said chopping cup overlapping an interior of a large part of said lower part.

5,632,451

RADIALLY COMPRESSIBLE COP FOR THE WINDING OF YARN

Roberto Pasini, Assago, Italy, assignor to Mariplast Europa S.r.l., Prato, Italy

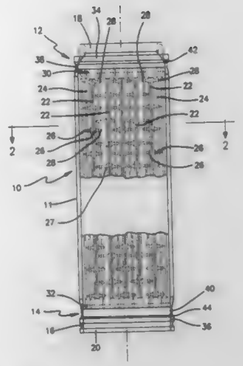
Filed Jan. 24, 1995, Ser. No. 377,252

Claims priority, application Italy, Jan. 28, 1994, MI94A0145

Int. Cl.[6] **B65H** *75/20;* **D06F** *17/00*

U.S. Cl. 242—118.11 **9 Claims**

1. A radially compressible cop for supporting yarns, comprising a tubular body having a longitudinal axis and a lateral cylindrical surface for collecting the yarn, two annular end elements at opposite ends of said tubular body, said tubular body comprising longitudinally extending parallel rods interconnecting said end annular elements, said rods comprising two sets of rods arranged angularly equidistant from each other, the rods of said first set being thicker in a direction peripherally of said tubular body than



the rods of said second set, the rods of said first and second sets being disposed in alternate relation with each other, and transverse stiffening tacks interconnecting each rod of said first set with the rods of said second set that are disposed on opposite sides of each rod of the first set, said tacks being spaced apart longitudinally of each rod of said first set, each rod of said second set being connected to said tacks at longitudinally spaced points along each rod of said second set with said tacks disposed alternately on opposite sides of each rod of said second set, the rods of the second set being more deformable in a direction peripherally of said tubular body than the rods of the first set, whereby the rods of said second set can undergo deformation in alternately opposite peripheral directions lengthwise of the rods of the second set at the same time that the rods of the first set remain free from deformation in a direction peripherally of the tubular body.

5,632,452

PHOTOGRAPHIC FILM CASSETTE, AND APPARATUS AND METHOD OF LOADING AND REMOVING PHOTOGRAPHIC FILM IN ASSOCIATION WITH THE CASSETTE

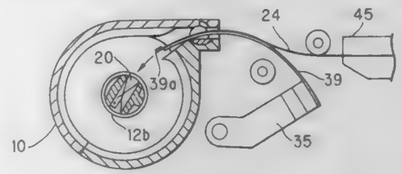
Koichi Takahashi; Tetsuya Takatori; Haruo Ichikawa; Akimasa Kayn, and Tomoyuki Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 91,626, Jul. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,087

Claims priority, application Japan, Jul. 15, 1992, 4-212135

Int. Cl.[6] **B65H** *75/28*

U.S. Cl. 242—332.4 **11 Claims**



9. A method of removing exposed photographic film from a cassette, said cassette including a spool provided with a retaining structure for retaining a trailer of said photographic film and a cassette shell having a spool chamber defined therein for containing said spool in a rotatable manner and a photographic film passage port extending between said spool chamber and an outside of said cassette shell, said photographic film removing method comprising:

drawing said photographic film until said photographic film is substantially unwound so that one convolution of said film or less remains wound on said spool;

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passing a separator jig through said passage port into said cassette shell up to said spool, said separator jig being arcuate and rotatable about a point, rotation of said separator jig about said point causes said separator jig to move through said passage port;

releasing said trailer from retention on said retaining structure by use of said separator jig; and

drawing out said photographic film so as to separate said photographic film from said spool.

5,632,453

WINDING DEVICE FOR MEASURING TAPE

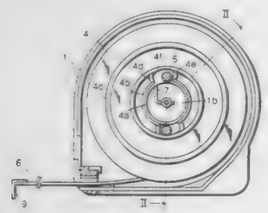
Shuzo Hioki, Kyoto, and Tsutomu Usami, Nara, both of Japan, assignors to Kyoto Measuring Instruments Corp., Kyoto, Japan

Filed Oct. 13, 1995, Ser. No. 542,766

Claims priority, application Japan, Oct. 25, 1994, 6-260784

Int. Cl.[6] B65H *75/48;* **G01B** *3/10*

U.S. Cl. 242—385.1 **7 Claims**



2. A winding device for winding a measuring tape, comprising a winding reel rotatably supported by a supporting shaft, a winding spring, a housing for accommodating the winding reel, the winding reel having a plurality of first recesses each with an inwardly directed opening and the housing having a plurality of second recesses each having an outwardly directed opening and a depth increasing in a winding direction of the winding reel, the first recesses and the second recesses opposing each other at their respectively openings along the cylindrical surface of the winding reel and the housing, a roller movably disposed in the first recesses and operable to be disposed between both the first and second respective recesses by slowly revolving the winding reel in a rewinding direction to lock the winding reel from further rotating, said housing comprises a lower half-housing having, at its inside center, a mounting shaft which has a tapped hole in a top end thereof, said lower half-housing having a base, said supporting shaft having a first part integrally formed at said base, said upper half-housing having an inside center, said supporting shaft having a second part projecting inwardly and integrally formed with said upper half-housing at said inside center, the second part of the supporting shaft of the upper half-housing having at its inside center, a fitting portion for engagement with the mounting shaft of the lower half-housing and has a tapped hole through which a screw is received in the tapped hole of the mounting shaft, the lower half-housing and the upper half-housing being connected with each other by said screw, the second part of the supporting shaft of the upper half-housing having a stepped portion formed at its peripheral end, said plurality of second recesses being formed at the periphery of the stepped portion at a specified angular interval therebetween, each of said second recesses having a depth deeper than the depth of the stepped portion.

5,632,454

CONTINUOUS FILM TAKE-UP APPARATUS

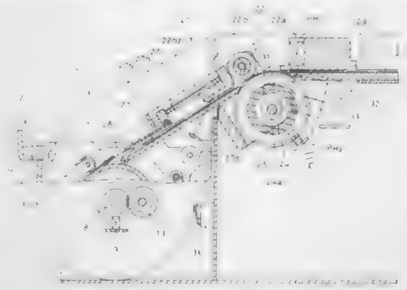
Motoaki Murakami, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Mar. 29, 1995, Ser. No. 412,740

Claims priority, application Japan, Mar. 30, 1994, 6-060691

Int. Cl.[6] B65H *18/10*

U.S. Cl. 242—530.2 **3 Claims**



1. A film take-up apparatus for taking up a plurality of films, said apparatus comprising:

a take-up reel of a film magazine, said reel having a film hold-down plate;

a drive to rotate said reel;

a guide and feed device operable to supply a plurality of films in succession to said reel such that, as said reel is rotated by said drive, the plurality of films are wound in succession on said reel, said guide and feed device including a tilt guide tiltable in a direction toward said reel to an inclined position to place a leading end of a first film under said hold-down plate and to place a leading end of each film other than the first film under a trailing end of a preceding film that has been wound on said reel immediately before such each film, and said tilt guide also being tiltable in a direction away from said reel and operable to lift the trailing end of each film away from said reel to enable the leading end of the next succeeding film to be placed thereunder, an angle of inclination of said tilt guide when in said inclined position thereof changing as the films are wound in succession on said reel; and

means for detecting an amount of the plurality of films wound on said reel as a function of the change in said angle of inclination of said tilt guide when in said inclined position thereof.

5,632,455

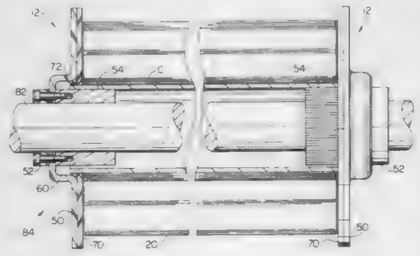
APPARATUS FOR WORKING ON SHEET MATERIAL AND HAVING FRICTION HUB

Darryl C. Stein, Andover, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Jul. 21, 1995, Ser. No. 505,100

Int. Cl.[6] B65H *75/28*

U.S. Cl. 242—538.3 **20 Claims**



1. In an apparatus for working on sheet material and having means defining a work surface, a tool for working on sheet material, means for supporting the tool to move in working relation to material supported on the work surface in response to signals received from a programmable controller and mounting means for supporting a roll of sheet material having a generally cylindrical tubular roll core upon which the sheet material is wound and including a hub assembly having a generally cylindrical hub member and a flange supported at the axially outer end of said hub member and having a generally radially disposed and axially inwardly facing flange surface and a coaxial circular outer peripheral edge, the improvement comprising said hub member having an outside diameter substantially smaller than the inside diameter of the smallest roll core expected to be supported by said hub assembly, said hub member having a rough generally cylindrical hub surface for rolling engagement with a portion of the inner peripheral surface of the roll core.

5,632,456

WINDER FOR WINDING A PAPER WEB INTO A ROLL

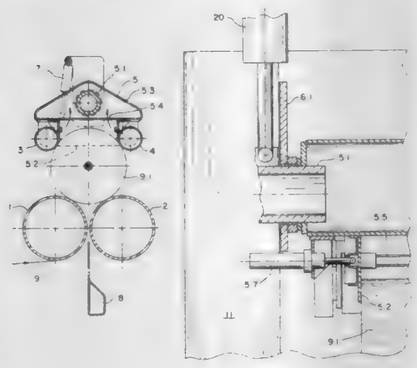
Jens Krüger, Heidenheim, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Apr. 5, 1996, Ser. No. 628,885

Claims priority, application Germany, Apr. 7, 1995, 195 13 143.6

Int. Cl.[6] B65H *18/14;18/26*

U.S. Cl. 242—541.5 **20 Claims**



1. A winder for winding a traveling paper web into a paper roll, comprising:

two support drums having respective longitudinal axes which extend substantially parallel to each other;

two nip rolls having respective longitudinal axes which extend substantially parallel to said longitudinal axes of said support drums;

a support body carrying said two nip rolls;

means for pivoting said two nip rolls when the paper roll has a particular diameter, such that said two nip rolls define an essentially sealed space with said support body and a portion of a shell surface of the paper roll; and

a vacuum port disposed in communication with said sealed space.

5,632,457

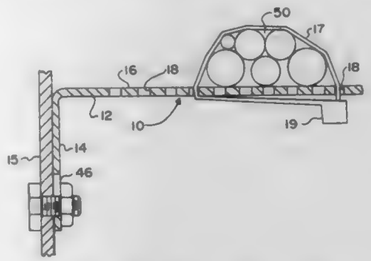
ADJUSTABLE ROUTING CLAMP ASSEMBLY

Robert H. Neely, Jr., Fort Wayne, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Dec. 12, 1994, Ser. No. 354,405

Int. Cl.[6] F16L *3/22*

U.S. Cl. 248—69 **2 Claims**



1. In combination with a vehicle frame and a bundle of elongated members, an adjustable routing clamp assembly securing said bundle to said vehicle frame comprising:

an extension element having a first mounting leg attached to said vehicle frame and a second strap engaging leg extending away from said vehicle frame to an end, the strap engaging leg having a plurality of parallel slots disposed between said mounting leg and said end, said bundle being disposed perpendicular to said extension element and having a side adjacent a first of said slots;

an elongate flexible strap having a plurality of indentations therein along the length thereof, said strap penetrating through said first of said slots in said extension element, wrapping around said bundle, and penetrating a second of said slots disposed adjacent a side of said bundle opposite said side adjacent said first of said slots; and

keeper means operatively associated with said strap for maintaining said strap in a tensioned condition drawing said bundle against said extension element said strap having a stop member at one end thereof which is larger than said extension element slots, said keeper means comprising a keeper element slidingly engaged on said strap engaging leg of said extension element and having a toothed bore therein disposed in alignment with said second of said slots, a tooth disposed within said bore below said second slot for engaging and retaining said strap in said bore.

5,632,458

LOCK BOX AND STAND

Mark Tollerud, 219 Dean Rd., Esko, Minn. 55733

Filed Sep. 9, 1994, Ser. No. 303,658

Int. Cl.[6] A47B *5/04*

U.S. Cl. 248—121 **1 Claim**

1. A stand for a lock box, and lock box, in combination, comprising,

a lock box of substantial length having a back surface of planar shape, and a top surface perpendicular to the back surface,

the stand comprising,

a base,

a standard mounted on the base,

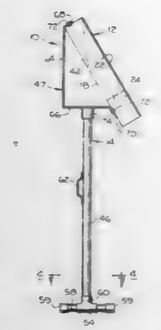
the base being composed essentially entirely of tubular elements including straight elements, tees and caps,

the base being H-shape, having parallel side bars and a cross bar interconnecting them,

the cross bar being made up of a plurality of interengaging tees, including a middle one having a central element directed upwardly,

the parallel side bars each including a tee with straight elements extending therefrom and caps on the extended ends of the tees,

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the standard including an upright tubular element having its lower end connected with the central element of said middle tee in the cross bar, and

an L-shape bracket mounted on the top end of the standard having angularly spaced arms, a lower one of which becomes a lower, horizontal arm when the bracket is so mounted,

the bracket including a tubular element on and extending downwardly from the lower arm and secured to the upper end of the standard,

the arms of the bracket being perpendicular to each other,

the arms having angle strips at their extended ends disposed at acute angles to the main parts of the arms and at a right angle to each other and parallel respectively with the back surface and top surface of the lock box and engaging and secured to those surfaces, the angle strip on the lower arm being located adjacent the lower end of the lock box

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5,632,459

ANGLE HEAD TRIPOD

Kenneth S. Brett, Ambleside, Darrs Lane, Northchurch, Berkhamsted HP4 3TT, England

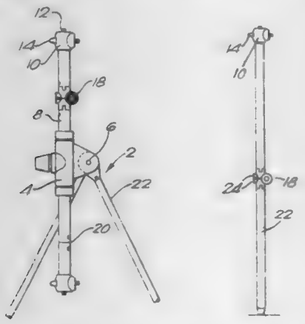
PCT No. PCT/GB93/01580, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO94/02774, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 27, 1993, Ser. No. 374,683

Claims priority, application United Kingdom, Jul. 28, 1992, 9216003

Int. Cl.[6] G03B *17/00*

U.S. Cl. 248—122.1 **19 Claims**



19. A stand for a camera comprising a ground engageable support structure, a pivotally mounted camera mounting pillar supported by said ground engageable support structure, a camera mounting member mounted on an end of said camera mounting pillar to mount a camera, wherein said camera mounting pillar is formed of two tubular members joined by a lockable pivoting joint and wherein said camera mounting member comprises two mutually perpendicular camera engaging screws, one of said screws being disposed parallel to an axis of a portion of said mounting pillar to which said camera mounting member is attached.

5,632,460

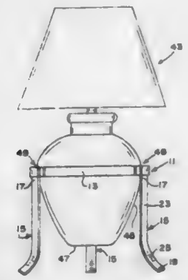
LAMP HOLDER

Jerry D. Strickland, Jonesboro, Ark., assignor to Partner Investments, Inc., West Memphis, Ark.

Filed Apr. 7, 1995, Ser. No. 418,277

Int. Cl.[6] A47G *23/02*

U.S. Cl. 248—146 **4 Claims**



1. A lamp holder for holding a lamp in spaced relationship above a table top or the like comprising:

(a) circular band means for contacting and encircling a lamp below a place on the base of the lamp which is larger than the inside diameter of the circular band means;

(b) a plurality of legs each having an upper end and a lower end, each of said legs including a threaded hole through the upper end thereof;

(c) a corresponding plurality of fastening means for respectively removably fastening the upper ends of each of said legs to said circular band means for supporting said band means in spaced relationship above a table top or the like, said circular band means including a plurality of apertures spaced around the circumference of said band means respectively corresponding to said plurality of said fastening means, each of said fastening means comprising:

i a bracket including an offset center portion,

ii pair of wings respectively fixedly attached to said offset center portion on opposite sides of said center portion and extending outwardly therefrom in opposite directions,

iii means fixedly attaching said wings to said circular band means to establish with said center portion a downwardly opening socket adapted to removably receive the upper end of one of said legs and

iv a screw extending through an aperture in said band and threadedly engaged in a corresponding one of said threaded holes to hold its corresponding leg in place

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5,632,461

MOUNTING BRACKET

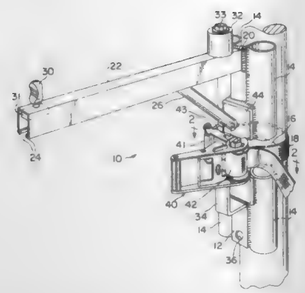
John S. von Helms, Park Ridge, and Ronald H. Steinberg, Itasca, both of Ill., assignors to Rent Com, Inc., Schiller Park, Ill.

Filed Mar. 7, 1995, Ser. No. 399,816

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—218.4 **18 Claims**

1. A bracket for mounting a device to a pole or other upright structure and comprising a channel bar having an open side and a closed side, a plurality of generally cylindrical pads mounted to the outer surface of the channel bar opposite one another, a buckle assembly mounted to the channel bar for securing the bracket to the pole or other structure, a strap operably attached to the buckle assembly and of sufficient length to wrap around the pole or other structure, a cantilever arm extending from the channel bar for receiving the device; the pads being adapted to engage the pole or other structure when the channel bar is positioned against the pole or other structure.



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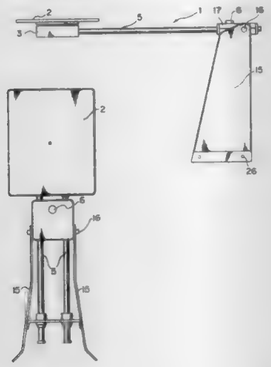
COMPUTER MOUNT RETRACTABLE FOR POLICE VEHICLES

John J. Kallas, 400 Wildwood Dr., S. San Francisco, Calif. 94080

Filed Jan. 18, 1996, Ser. No. 588,399

Int. Cl.[6] E04G *3/00*

U.S. Cl. 248—286.1 **6 Claims**



1. A communication equipment holder comprising:

means for securing said holder to the interior of a vehicle,

a pair of rods secured to said means at one end by a clamping means for allowing an adjustment of the length of said rods and for allowing rotational adjustment of said rods with respect to said means for securing said holder to the interior of said vehicle,

means at another end of said rods for supporting communication equipment on said rods,

said means at another end of said rods including means for rotational adjustment of said communication equipment with respect to said rods.

5,632,463

MONITOR STAND ASSEMBLY

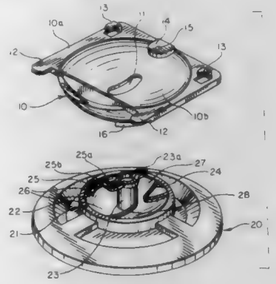
Ki-Hyub Sung, and Sung-Gil Cha, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1995, Ser. No. 489,563

Claims priority, application Rep. of Korea, Jun. 13, 1994, 94-13616; Jun. 13, 1994, 94-13617; Jun. 13, 1994, 94-13618

Int. Cl.[6] F16M *11/00*

U.S. Cl. 248—371 **6 Claims**



1. A monitor stand, for supporting a monitor and adjusting the monitor's position, said monitor stand comprising:

a first part for interlocking engagement on one side with a monitor and having an elongated opening centrally located therein;

a second part having a generally concave surface disposed on an opposite side of said first part, said second part having a position selector means projecting from a surface thereof for insertion within said elongated opening, said position selector means having selector flange means for loose interlocking engagement with said elongated opening to enable rotational movement of said first part with respect to said second part, said second part including first stop means and second stop means for defining a rotation-allowable zone for said first part; and

rotation-stop flange means disposed on said opposite side of said first part and projecting therefrom between said first stop means and second stop means for permitting said rotation of said first part within said rotation-allowable zone, wherein said first stop means is a stop rib and said second stop means is an elastic rib, both said stop rib and said elastic rib being arranged at a given angle on the concave surface of said second part to define said rotation-allowable zone.

5,632,464

GROUND POCKET SUPPORT

Steven C. Aberle, 6820 Orion Ct., Arvada, Colo. 80007

Filed Sep. 5, 1995, Ser. No. 523,347

Int. Cl.[6] F16M *13/00*

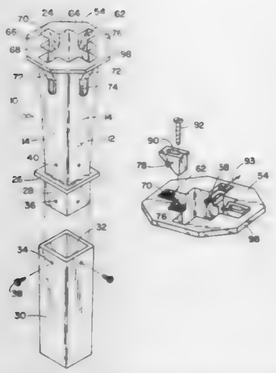
U.S. Cl. 248—530 **28 Claims**

1. A ground pocket support device for removably mounting a post having variable cross-section shape and size, said pocket support device comprising:

an elongate ground engaging member having upper and lower end portions and adapted for placement in the ground, said ground engaging member defining a hollow post-receiving portion for receiving and supporting said post in a substantially upright position and including elongate wall members and post wedging means positioned toward said lower end portion for firmly engaging the lower end of a post inserted therewithin; and

a post-engaging member disposed at the upper end portion of said ground engaging member and including means for removably anchoring a post inserted within said ground engaging member and for adjusting the vertical alignment of

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said post independent of the vertical alignment between the ground engaging member and the ground in which it is placed.

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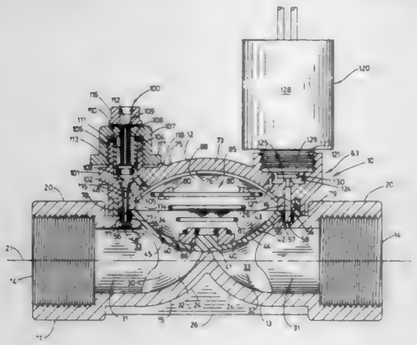
VALVE ASSEMBLY

Paul M. Cordua, 556 S. Mirage, Lindsay, Calif. 93247

Continuation of Ser. No. 935,986, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 604,443, Oct. 29, 1990, abandoned. This application May 7, 1996, Ser. No. 646,056

Int. Cl.[6] F16K *31/385*

U.S. Cl. 251—46 **2 Claims**



1. A valve assembly adapted more precisely to control the flow of fluid therethrough, in a range of attitudes from a fully closed attitude, in which there is substantially no fluid flow therethrough, to a fully opened attitude, in which there is substantially a predetermined maximum fluid flow therethrough, the valve assembly comprising:

A. a valve housing enclosing valve chamber bounded on one side by a concave valve seat defining a substantially hemispherical surface and on an opposite side by a pressure surface;

B. an inlet coupling mounted on the valve housing defining a main inlet passage extending into the valve housing and communicating with the valve chamber through an annulus bounding an inlet opening extending through said valve seat;

C. an outlet coupling mounted on the valve housing defining a main outlet passage opposite said inlet passage extending from the valve housing and communicating with the valve chamber through an annulus bounding an outer opening extending through said valve seat in laterally spaced relation to said inlet opening;

D. a flexible valve member mounted in the valve chamber of the valve housing having, in an at rest condition, a convex substantially hemispherical surface substantially identical to said valve seat and, in said fully closed attitude, disposed in facing engagement with said substantially hemispherical surface of the valve seat in substantially fluid sealing relation to said inlet and outlet openings at said annuluses and having a central portion adapted to involute as the valve member is moved from said fully closed attitude toward said fully opened attitude and wherein the valve member has an upper surface facing said pressure surface of the valve housing and defining, within the valve chamber between said upper surface of the valve member and said pressure surface of the valve housing, a pressure chamber, and

E. a fluid control system communicating with said pressure chamber including

1) an inlet control passage interconnecting said main inlet passage and said pressure chamber of the valve housing having a given maximum volume of fluid flow per period of operation,

2) an outlet control passage interconnecting said pressure chamber of the valve housing and said main outlet passage having a given maximum volume of fluid flow per period of operation which is greater than that of the inlet control passage, and

3) means for selectively controlling the fluid flow through said inlet and outlet control passages selectively to control fluid pressure within the pressure chamber to move the valve member to a selected attitude within said range of attitudes,

whereby said central portion of the convex substantially hemispherical surface of the valve member, in moving from said fully closed attitude to said selected attitude, is involuted to define, with said substantially hemispherical surface of the valve seat, a fluid passage, interconnecting said inlet opening and said outlet opening, of a progressively greater cross sectional area while substantially the remainder of the convex substantially hemispherical surface of the valve member remains in facing engagement with said substantially hemispherical surface of the valve seat as said selected attitude is approached.

5,632,466

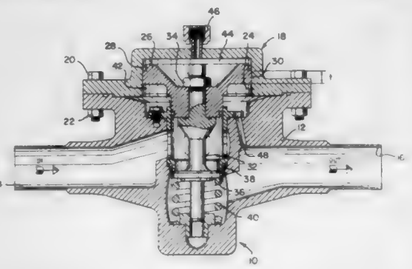
PISTON ACTUATED PRESSURE REDUCING VALVE

Paul Ochs, 19 Tall Timber Dr., Morristown, N.J. 07960

Filed Jun. 30, 1995, Ser. No. 497,533

Int. Cl.[6] F16K *31/143;31/163*

U.S. Cl. 251—63.5 **10 Claims**



1. A valve comprising:

a housing having an inlet and an outlet for the flow of a first fluid therethrough;

a cup-shaped cover dome attached to said housing, said cover dome having a cylindrical bore;

a valve stem having a plug to regulate the flow of said first fluid through said housing;

a piston connected to said valve stem, said piston being reciprocatably received within said cylindrical bore of said cover dome to define a first chamber disposed between said piston and said housing and a second chamber disposed between said piston and said cover dome, said piston having a sliding circumferential surface received in an inner surface of said cylindrical bore, wherein said sliding circumferential surface is made of a material that is adapted to fuse with said inner surface of said bore at a predetermined fused temperature, so that said piston fuses with respect to said cylinder along said sliding circumferential surface thereby effectively creating a fluid-tight permanent closure between said first chamber and said second chamber, thereby preventing said first fluid from escaping from said first chamber into said second chamber.

5,632,467

VALVE NEEDLE FOR AN ELECTROMAGNETICALLY ACTUATED VALVE

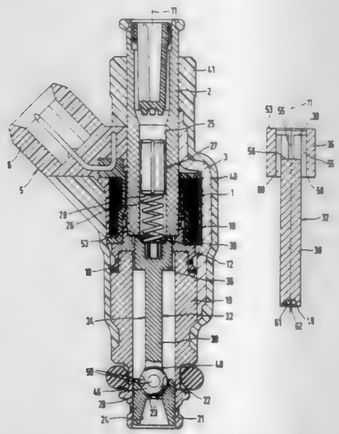
Bernhard Just, Kernen, and Ferdinand Reiter, Markgroeningen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 5, 1995, Ser. No. 436,066

Claims priority, application Germany, May 5, 1994, 44 15 850.5

Int. Cl.[6] F16K *31/06*

U.S. Cl. 251—129.21 **10 Claims**



1. A valve needle for an electromagnetically actuated injection valve for a fuel injection system of an internal combustion engine, the injection valve having a core element and a fixed valve seat, the core element being at least partially surrounded by a magnetic coil, the valve needle comprising:

an armature section having at least two axially extending flow channels inside the armature section and a central inner recess area, wherein an upstream end face of a valve needle section lies in an axial extension area of the armature section, the upstream end face forming a boundary of said central inner recess area facing a valve closing element section and wherein the armature section includes at least two axial grooves directly connected in the armature section to the inner recess;

wherein the valve closing element section cooperates with the fixed valve seat; and

wherein the valve needle section connects the armature section to the valve closing section, the valve needle section having a solid construction, at least one surface of the valve needle section forming a boundary for the at least two axially extending flow channels.

5,632,468

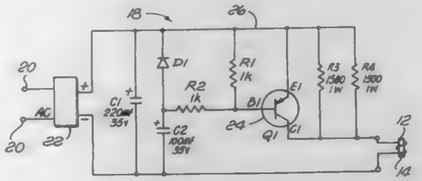
CONTROL CIRCUIT FOR SOLENOID VALVE

Ivar Schoenmeyr, Mission Viejo, Calif., assignor to Aquatec Water Systems, Inc., Anaheim, Calif.

Filed Feb. 24, 1993, Ser. No. 22,724

Int. Cl.[6] F16K *31/04;31/12*

U.S. Cl. 251—129.15 **2 Claims**



1. A solenoid valve, comprising:

a valve adapted to move between a first position and a second position;

a solenoid that moves said valve from said first position to said second position when a first voltage is applied to said solenoid, and maintains said valve in said second position when a second voltage is applied to said solenoid, wherein said first voltage is greater than said second voltage;

a solenoid circuit that initially applies said first voltage to said solenoid to move said valve to said second position and then subsequently applies said second voltage to said solenoid to maintain said valve in said second position, said second voltage being applied to said solenoid a predetermined time interval after application of said first voltage to said solenoid, said solenoid circuit contains a Voltage divider circuit connected to said solenoid, a transistor connected to said voltage divider circuit and said solenoid, a capacitor connected to said transistor, and a single source of power connected to said voltage divider circuit, said transistor and said capacitor, such that said capacitor is initially charged and said transistor is in an active state so that current from the power source by-passes said voltage divider and said first voltage is applied to said solenoid, and said capacitor becomes charged and said transistor is in an inactive state to allow current to flow through said voltage divider circuit so that said second voltage is applied to said solenoid, wherein said predetermined time interval is dependent on a time constant of said capacitor.

5,632,469

ELECTRIC HOIST WITH SPEED CONTROL, A PROTECTIVE HOUSING AND A SWIVELABLE CIRCUIT BOARD IN THE HOUSING

Jürgen Heun, Dortmund; Holger Freitag, Bochum; Anton Müller, Wetter, and Anton Münzebrock, Dortmund, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Sep. 15, 1995, Ser. No. 529,015

Claims priority, application Germany, Sep. 15, 1994, 44 34 373.6

Int. Cl.[6] B66D *1/48*

U.S. Cl. 254—267 **10 Claims**

1. An electric hoist with a motor-speed-regulated lifting speed, comprising:

an electric motor;

a gear unit;

hoisting means for hoisting a load;

a wheel around which the hoisting means is looped;

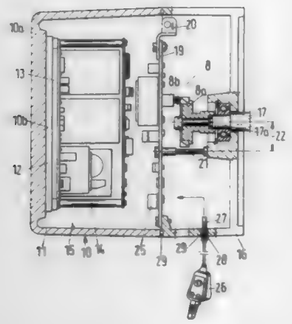
load carrying means connected to the hoisting means for engaging the load, the electric motor, the gear unit, the wheel, the hoisting means and the load carrying means are connected with one another in a drive connection;

electronic control means for controlling the electric motor;

a manual control switch operatively connected with the electric control means;

a gear box in which the gear unit is arranged;

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an external protective housing removably attached to the gear box, the electronic control means including control electronics and speed sensing equipment and being arranged in the external protective housing, the protective housing having an inner side with a base;

a frequency converter having a power semiconductor, and a carrier for the semiconductor attached to the inner side of the base;

a lower casing arranged between the protective housing and the gear box, one of the gear unit and the electric motor having a shaft with a shaft end arranged to project into the lower casing, the speed sensing equipment including a pulse wheel fixed on the shaft end that projects into the lower casing;

a hinge fastened in one of the lower casing and the gear box; and,

an electronic printed circuit board mounted to the hinge so as to be arranged in the lower casing and further so as to be swivelable out about the hinge when the protective housing is removed from the gear box.

5,632,470

WIRE FENCING APPARATUS

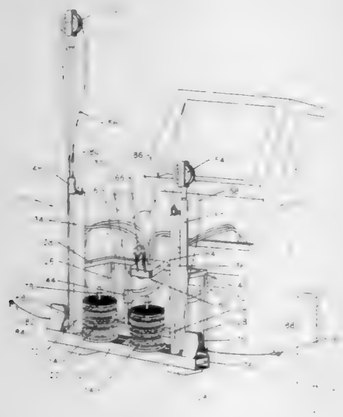
Leonard Leland, Box 112, Ismay, Mont. 59336

Filed Sep. 11, 1995, Ser. No. 525,983

Int. Cl.[6] B66F *1/00*

U.S. Cl. 254—385 **1 Claim**

1. A wire fencing tensioning apparatus for use with a tractor



having a standard three-way hitch and a hydraulic system, said wire fencing tensioning apparatus comprising:

a generally rectangular shaped open frame carriage for attachment to the standard three-way hitch;

said generally rectangular shaped open frame carriage having a plurality of corresponding parallel members joined at ends to form corners, which members and corners define the generally rectangular shaped open frame carriage;

said generally rectangular shaped open frame carriage having a long horizontal top member and a pair of long horizontal bottom members;

a first long horizontal bottom member of the pair of long horizontal bottom members being attached to a second long horizontal bottom member of the pair of long horizontal bottom members by a pair of short horizontal bottom members;

said first long horizontal bottom member of the pair of long horizontal bottom members being attached to said long horizontal top member by a pair of short vertical side members and a pair of short vertical support members;

said generally rectangular shaped open frame carriage having a pair of long vertical side members, said pair of long vertical side members being attached to said long horizontal top member by a pair of short horizontal top members;

said pair of long vertical side members being attached to said second long horizontal bottom member of the pair of long horizontal bottom members;

said long horizontal top member having an attachment brace, said attachment brace attaching to an upper attachment member of the standard three-way hitch;

said pair of short vertical support members each having an attachment brace, said attachment braces attaching one each to each of a pair of lower attachment members of the standard three-way hitch;

said pair of long vertical side members each supporting one each of a pair of extending hydraulic cylinders, said pair of extending hydraulic cylinders adapted to extend vertically from said second long horizontal bottom member of the pair of long horizontal bottom members;

said pair of extending hydraulic cylinders each having a pulley attached to a top of an extending portion or a piston thereof;

a pair of hydraulic control means, said hydraulic control means one each controlling one each of said extending hydraulic cylinders;

said pair of hydraulic control means being attached to the hydraulic system of the tractor;

a pressure measurement gauge being attached to a common hydraulic fluid line between the hydraulic system of the tractor and said pair of hydraulic control means, said pressure measurement gauge measuring the pressure of hydraulic fluid in said common hydraulic fluid line;

said second long horizontal bottom member of the pair of long horizontal bottom members supporting a pair of pulleys as well as at least one spindle for wire dispensing;

said pair of pulleys on said second long horizontal bottom member being attached one each to a first end and a second end of said second long horizontal bottom member, said first end and said second end of said second long horizontal bottom member being external of each of said extending hydraulic cylinders and said pair of long vertical side members;

a pair of pulley-cable systems, said pair of pulley-cable systems supplying tension to the wire;

said pair of pulley-cable systems being provided one each on each of said extending hydraulic cylinders and the corresponding long vertical side member to which one each of said extending hydraulic cylinders is attached;

a first pulley-cable system of the pair of pulley-cable systems having a first cable secured to a top of a first long vertical side member by a first end of said first cable;

said first cable running over said pulley located on the top of the extending portion or piston of said first extending hydraulic cylinder, down the length of said first extending hydraulic cylinder and under a first pulley attached to said second long horizontal bottom member, said first cable then extending outwardly from the first pulley in a direction parallel with a strung fence wire;

a second end of said first cable having a wire clamp for securing the strung fence wire to said first cable;

a second pulley-cable system of the pair of pulley-cable systems having a second cable secured to a top of a second long vertical side member by a first end of said second cable;

said second cable running over said pulley located on the top of the extending portion or piston of said second extending hydraulic cylinder, down the length of said second extending hydraulic cylinder and under a second pulley attached to said second long horizontal bottom member, said second cable then extending outwardly from the second pulley in a direction parallel with the strung fence wire but opposite said direction of said first cable;

a second end of said second cable having a wire clamp for securing the strung fence wire to said second cable;

said pair of pulley-cable systems providing for tensioning of two separate strands of strung fence wire from opposite directions as well as tensioning single strands of strung fence wire from either direction of the wire fencing tensioning apparatus.

5,632,471

AIR SUSPENSION SYSTEM OF A MOTOR VEHICLE WITH AIR SHOCKS OR AIR SPRING WITH A COMPRESSED AIR CONTAINER IN THE AIR SUSPENSION SYSTEM

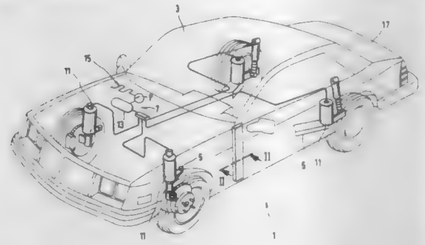
Robert Pradel, Heidenfeld, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Aug. 1, 1995, Ser. No. 509,105

Claims priority, application Germany, Aug. 2, 1994, 44 27 235.9; Mar. 11, 1995, 195 08 854.9

Int. Cl.[6] B60G *17/00;17/08;21/10*

U.S. Cl. 267—64.11 **20 Claims**



1. A suspension system of a motor vehicle, said suspension system comprising:

elastic air springs and at least one compressed air container;

one of said elastic air springs being connected to said at least one compressed air container;

said vehicle having a body and a plurality of wheel suspensions supporting said body;

said plurality of wheel suspensions being connected to said body;

at least one of said elastic air springs having means for connecting to a corresponding one of said wheel suspensions:

said body comprising at least one part;

said at least one part comprising at least one substantially enclosed cavity formed by said at least one part;

said at least one compressed air container being located inside said at least one cavity;

said at least one cavity being disposed a substantial distance away from a substantial portion of said wheel suspensions;

said at least one cavity having at least one wall;

said at least one compressed air container comprising means for contacting said at least one wall of said at least one cavity upon filling of said at least one compressed air container with compressed air;

at least one portion of said at least one wall being disposed to permit the position of said at least one portion to be changed with respect to the rest of said cavity;

said at least one portion comprising an axially movable plate;

a drive mechanism; and

said drive mechanism being connected to said movable plate to permit movement of said movable plate and to change the volume of said at least one cavity.

5,632,472

FLUID-FILLED ELASTIC MOUNT INCLUDING RESONANCE MEMBER DISPOSED IN FLUID CHAMBER AND HAVING FLUID PASSAGES BETWEEN SPACED-APART INNER AND OUTER PORTIONS

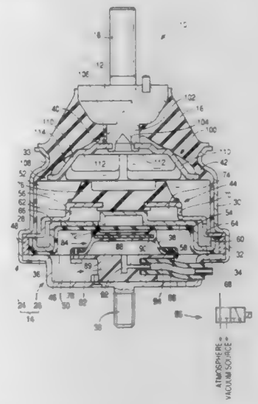
Rentaro Kato, and Takashi Yoshida, both of Kasugai, Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Jan. 23, 1996, Ser. No. 589,103

Claims priority, application Japan, Feb. 6, 1995, 7-017794

Int. Cl.[6] F16M *5/00;* **B60K** *5/12*

U.S. Cl. 267—140.13 **15 Claims**



1. A fluid-filled elastic mount including (a) a first and a second mounting member which are spaced apart from each other in a load-receiving direction in which a vibrational load is primarily applied to the fluid-filled elastic mount, (b) an elastic body which elastically connects said first and second mounting members and which partially defines a fluid-tight space filled with a non-compressible fluid, (c) a resonance member which is supported by said first mounting member and which has an outer portion cooperating with an inner surface of said fluid-tight space to define an annular restricted fluid passage, said resonance member substantially dividing said fluid-tight space into two sections which are arranged in said load-receiving direction and which communicate with each other through said annular restricted fluid passage, and (d) a stop portion provided on said second mounting member such that said outer portion of said resonance member is abuttable on said stop portion to limit an amount of relative displacement of said first and second mounting members in said load-receiving direction, wherein an improvement comprises:

said resonance member comprising an inner portion fixed to said first mounting member, an annular portion as said outer portion abuttable on said stop portion, and an intermediate portion interposed between said inner and annular portions, said intermediate portion including a plurality of connectors connecting said inner and outer portions such that said inner and outer portions are spaced apart from each other in said load-receiving direction; and

said intermediate portion having a surface area which is not smaller than a half of an entire surface area of said resonance member, said intermediate portion having a plurality of windows which are separated from each other by said connectors and which function as fluid passages in addition to said annular restricted fluid passage, said fluid passages which

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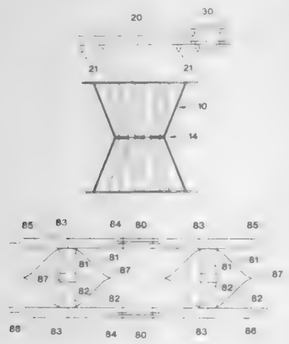
correspond to said windows having a total area of fluid communication therethrough, which total area is not smaller than three quarters of said surface area of said intermediate portion.

5,632,473

ELASTIC SPRING AND SPRING SUPPORT FOR MATTRESS, CHAIR OR UPHOLSTERY

João Dias Magalhaes Queiroz, Quinta das Salinas- Darque, P-4900 Viana do Castelo, Portugal

PCT No. PCT/PT93/00005, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO94/07395, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 29, 1993, Ser. No. 244,576
Claims priority, application Portugal, Oct. 1, 1992, 100923
Int. Cl.[6] A47C 23/02; F16F 1/20
U.S. Cl. 267—164 6 Claims



1. An elastic spring, comprising:

upper and lower elastic elements, each made of plastic and including a base portion integral with two flexible arms, said arms varying in width and thickness along their length and extending in opposite directions to form an arch with flattened ends; and

connecting means for connecting each flexible arm of said upper elastic element to a respective flexible arm of said lower elastic element at said flattened ends so as to form two opposed arches having flattened ends that are connected.

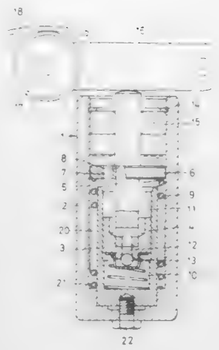
5,632,474

COMPACT HYDRAULIC AUTOTENSIONER WITH RETURN SPRING MOUNTED AROUND A SLEEVE

Hisashi Hayakawa; Kazuki Kawashima; Norio Yamazaki, all of Iwata; Ken Yamamoto, Iwata-gun, and Satoshi Kitano, Hamakita, all of Japan, assignors to NTN Corporation, Osaka, Japan

Continuation of Ser. No. 310,994, Sep. 23, 1994, Pat. No. 5,482,262, which is a continuation of Ser. No. 992,202, Dec. 17, 1992, abandoned. This application Oct. 4, 1995, Ser. No. 539,157
Claims priority, application Japan, Dec. 20, 1991, 3-105486; Nov. 26, 1992, 4-081724
Int. Cl.[6] F16H 7/08
U.S. Cl. 267—226 3 Claims

1. A hydraulic autotensioner comprising a return spring and a dampening means for dampening any increase in belt tension wherein said dampening means comprises a sleeve having a closed bottom end and filled with hydraulic oil, a plunger slidably mounted in said sleeve to define a reservoir chamber and a pressure chamber, said plunger being formed with a passage through which said reservoir chamber and said pressure chamber communicate with each other, and a check valve provided in said passage for closing said passage when the pressure of hydraulic oil in said pressure chamber increases above the pressure of hydraulic oil in said reservoir chambers; and said return spring is mounted in a space defined around an outer periphery of said sleeve.

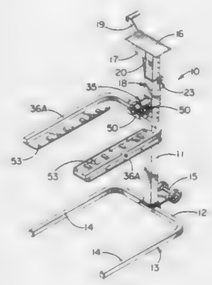


5,632,475

WORK HOLDING APPARATUS

James E. McCanse, Ogle, Ill., assignor to McCanse Engineering Incorporated, Oregon, Ill.

Filed Mar. 2, 1995, Ser. No. 396,491
Int. Cl.[6] B66F 3/00
U.S. Cl. 269—17 13 Claims



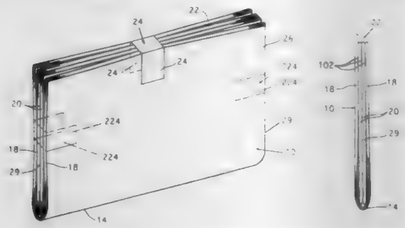
1. Work holding apparatus comprising a main support, a subsupport mounted on said main support to rotate about a predetermined axis, means for releasably holding said subsupport in selected angular positions about said axis, said subsupport comprising first and second side-by-side tubes extending transversely of said axis, each of said tubes being sized to telescopically receive a work holder, at least one work holder having a bar telescoped slidably in one of the tubes, and means for releasably pinning the work holder to each of said tubes so as to prevent the work holder from sliding in the tube as the subsupport is pivoted about the main support.

5,632,476

PROCESS AND APPARATUS FOR PRODUCING MULTIPLE-PART PRINTED PRODUCT UNITS

Hans-Ulrich Stauber, Grut, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jan. 27, 1995, Ser. No. 378,980
Claims priority, application Switzerland, Feb. 4, 1994, 00321/94
Int. Cl.[6] B65H 5/30
U.S. Cl. 270—52.19 14 Claims



1. A process for producing multiple-part printed product units comprising the steps of

providing an outer part which is folded upon itself to define a fold, opposite legs, an open border opposite the fold, and opposite open sides which extend from the fold to the open border,

positioning at least one printed product between the opposite legs of the outer part, and

separably connecting the legs of the outer part to one another indirectly via the at least one printed product located therebetween, and such that the opposite legs of the outer part are separably connected to said at least one printed product.

12. A multiple-part printed product unit comprising an outer part which is folded upon itself to define a fold, opposite legs, an open border opposite the fold, and opposite open sides which extend from the fold to the open border,

at least one printed product positioned between the legs,

the legs of the outer product being separably connected to one another by connecting means indirectly via the at least one printed product located therebetween, and such that the opposite legs of the outer part are separably connected to said at least one printed product

5,632,477

SHEET LOADING DEVICE WITH SHEET POSITION REGULATOR

Kazuyuki Morinaga, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 342,016
Claims priority, application Japan, Nov. 24, 1993, 5-293174; Oct. 25, 1994, 6-260251
Int. Cl.[6] B65H 1/08
U.S. Cl. 271—127 24 Claims

1. A sheet loading device mounted on a body of an apparatus and containing sheets to be fed by sheet feeding means, comprising:

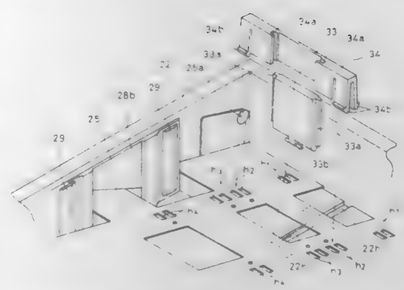
sheet containing means for containing a plurality of sheets;

sheet supporting means, rotatably provided on said sheet containing means, for supporting sheets;

a separation claw for separating, one by one, the sheets supported by said sheet supporting means when the sheets are fed by the sheet feeding means;

trailing end regulating means for regulating the trailing end position of the sheets supported on said sheet supporting means; and

guide means, selectively provided at one of a plurality of predetermined positions on said sheet supporting means, for maintaining said trailing end regulating means at a predetermined angle with respect to a supporting surface of said sheet supporting means while permitting said trailing end regulating means to move in a direction substantially at the predetermined angle with respect to the supporting surface.

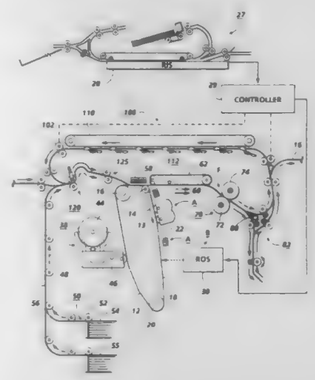


5,632,478

CAM IDLER FOR DESKEW OF LONG SHEETS AND BUCKLE LENGTH LATITUDE

Lisbeth S. Quesnel, Pittsford, and Frank C. Darling, Jr., Wolcott, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 3, 1995, Ser. No. 415,797
Int. Cl.[6] B65H 9/04
U.S. Cl. 271—242 10 Claims



1. An apparatus for registering a sheet in a path, comprising:

a registration nip located in the path;

a drive nip for transporting a sheet, preceding said registration nip in the path, said drive nip being configured so that a normal force applied to a driven sheet in said drive nip varies as the sheet is driven through said drive nip;

a drive member;

a nonuniform idler member, in contact with said drive member to form a nip therebetween; and

a biasing device, cooperating with said nonuniform idler member so that the normal force in the drive nip varies as the sheet is driven through said drive nip.

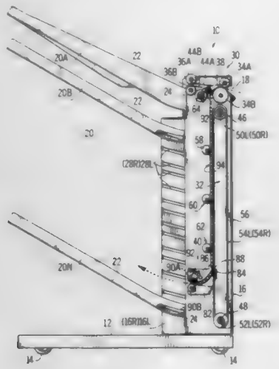
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5,632,479

SORTER

Kazuyuki Kubota, and Yoshikazu Sano, both of Yamanasi-ken, Japan, assignors to Nisca Corporation, Yamanashi-ken, Japan

Filed Jun. 20, 1995, Ser. No. 492,326
Claims priority, application Japan, Jun. 22, 1994, 6-164557
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—296 **27 Claims**



1. A sorter which comprises:

a feed belt for feeding a sheet, which is transferred from a sheet processor, in one direction;

belt drive means for running the feed belt in said one direction;

a plurality of sorting trays, onto which at least one sheet is received, and which are stationary and arranged along said feed belt;

distributing means for distributing the sheet fed upon the running of said feed belt to a predetermined sorting tray, said distributing means being movable along said feed belt to face to said predetermined sorting tray;

press means for pressing the sheet to the feed belt so that the sheet is frictionally engaged with said feed belt, thereby feeding the sheet upon the running of the feed belt, said press means being movable along said feed belt; and

moving means for moving said press means along said feed belt in said one direction or a direction opposite to said one direction selectively wherein said moving means includes an additional belt which is run along said feed belt and engaging means for engaging said press means with said additional belt, thereby moving the press means upon the running of said feed belt.

5,632,480

BASKETBALL GOAL SUPPORT HAVING REMOVABLE BALLAST AND CONTINUOUSLY ADJUSTABLE POLE

Mark E. Davis, Wauwatosa, and Ronald A. White, N. Prairie, both of Wis., assignors to Huffy Corporation, Miamisburg, Ohio

Filed Nov. 14, 1994, Ser. No. 337,884
Int. Cl.[6] F16M *11/00*
U.S. Cl. 473—483 **34 Claims**

24. A basketball goal support comprising:

a base including an upper surface and a pole mount located at a rearward end of said base, a pair of flange portions extending forwardly from said pole mount in a longitudinal direction along opposing sides of said base wherein said pole mount and said flange portions define a ballast receiving area on said upper surface;

a ramp portion extending forwardly and downwardly from said pole mount, said ramp portion including opposing sides and snap openings defined in said opposing sides adjacent to said upper surface;



a ballast tank including a lower planar surface configured to rest on said upper surface in said ballast receiving area of said base, an elongated recess for receiving said ramp portion, a fill spout located adjacent to a rear end of said ballast tank and including a latching collar, and snap tabs extending into said elongated recess for engaging within said snap openings;

said base including means defining a keyhole aperture for receiving said latching collar wherein said means defining said keyhole aperture includes an upper edge for engaging a forward edge of said latching collar to limit forward movement of said ballast tank within said ballast receiving area;

a pole comprising an upper tube and a lower tube, said upper and lower tubes having a rounded triangular cross-sectional shape;

said lower tube including radially extending locking tangs located at a lower end thereof, and an outwardly angled lip at an upper end of said lower tube;

said upper tube including a goal mounting bracket at an upper end thereof, and a plurality of positioning dimples formed at longitudinally spaced locations along the length of said upper tube defining a plurality of predetermined positions along said upper tube,

an elastomeric band extending around said upper tube;

a pole mounting aperture formed in said pole mount and tang openings defined in within said pole mounting aperture for receiving said locking tangs in locking engagement; and

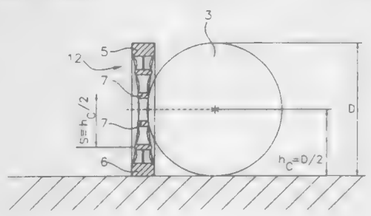
wherein said elastomeric band is movable to an infinite number of positions along said upper tube and is engageable with said lip on said lower tube to maintain said upper tube in a selected position relative to said lower tube.

5,632,481

BLADE FOR AN INDOOR BANDY STICK

Michael Unger, Mäntyharju, Finland, and Jyri Uimonen, Götzi, Austria, assignors to Exel Oy, Finland

Filed Sep. 22, 1995, Ser. No. 532,093
Int. Cl.[6] A63B *59/14*
U.S. Cl. 473—563 **7 Claims**



1. A blade for an indoor bandy stick, comprising:

a top-edge reinforcing rib, a bottom-edge reinforcing rib, and a plurality of intermediate reinforcing ribs therebetween which run the length of the blade and are spaced from each other to define a plurality of open spaces therebetween, a centerline between two of said plurality of intermediated reinforcing ribs located at a distance from said bottom edge reinforcing rib generally equal to a radius of a bandy ball;

a plurality of cross ribs extending angularly to and bracing said reinforcing ribs;

said cross ribs remaining inside a contact surface defined by said reinforcing ribs above and below said centerline, whereby only horizontal reinforcing ribs on both sides of said centerline may contact the ball; and

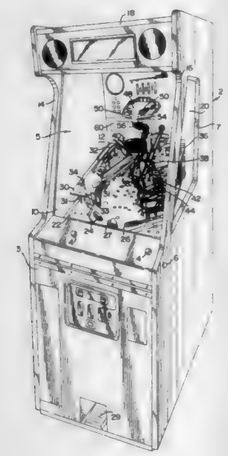
wherein one side of the blade is more concave than the opposite side.

5,632,482

VERTICALLY DISPOSED MULTI-LEVEL PINBALL GAME

Python Anghelo, Chicago, Ill., assignor to Williams Electronics Games, Inc., Chicago, Ill.

Continuation of Ser. No. 180,230, Jan. 12, 1994, abandoned.
This application Oct. 25, 1995, Ser. No. 547,958
Int. Cl.[6] A63F *7/36*
U.S. Cl. 273—121 R **12 Claims**



1. A vertically-oriented multi-level pinball game comprising:

a) an upright cabinet defining an interior space and having a transparent front wall;

b) a main playfield extending a length disposed within said cabinet, for supporting a rolling ball thereon, the main playfield and cabinet defining a play space having a vertical height which is at least equal to the length of the playfield;

c) play features disposed both on the playfield and at various locations above the playfield within said play space;

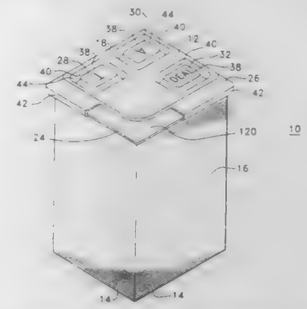
d) means for conveying the ball between the main playfield and the play features disposed thereabove to permit game play in three dimensions.

5,632,483

BLACKJACK SCANNER APPARATUS AND METHOD

John S. Garczynski, Norristown; Robert A. Hollinger, Warrington; Jeffrey C. Hahn, Oreland; Bernard J. McDevitt, Norristown, and John L. Bradshaw, Hatboro, all of Pa., assignors to Peripheral Dynamics, Inc., Plymouth Meeting, Pa.

Filed Jun. 29, 1995, Ser. No. 496,355
Int. Cl.[6] A63F *1/06*
U.S. Cl. 273—148 R **20 Claims**



1. A card scanning module for use with standard playing cards, said module enabling announcement of when a hand having a first standard playing card and a second standard playing card are blackjack, wherein a first of said standard playing cards is dealt face down, comprising:

a. a scanner adapted to scan at least a portion of a first symbol of said first standard playing card dealt face down, said scanner having an array which holds the result of said scan;

b. memory for storing said plurality of references representing respective symbols of said standard playing cards;

c. analyzing means for comparing and determining the hand having the first symbol of said first standard playing card based on a comparison of said array and said reference;

d. inputting means for capturing the identity of a second standard playing card; and

e. announcing means for reporting when the first standard playing card and the second standard playing card comprise blackjack.

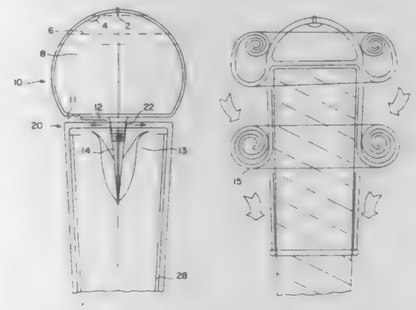
5,632,484

BUBBLE LEVEL DEVICE, ATTACHABLE TO THE GRIP OF A GOLF CLUB

William S. Lambert, 52 Tokalon, Metairie, La. 70001

Filed Aug. 26, 1994, Ser. No. 296,684
Int. Cl.[6] A63B *69/36; 53/14*
U.S. Cl. 473—241 **4 Claims**

1. The combination of a vertical reference device and a golf club



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of the type having a rubber handle grip with a vent hole extending through on an end thereof, said vertical reference device being attachable to the vent hole of the handle grip of the club and further comprising:

a transparent dome vial filled near capacity with a liquid such that an index void is formed within the liquid;

reference indicia inscribed on the dome vial whereby the index moves freely within the liquid and can be orientated with respect to the indicia by varying the position of the golf club; and

a mounting means comprising a protruding stem having at least one barb, said stem projecting at a bottom surface of the dome vial;

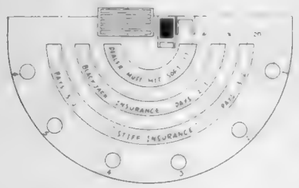
whereby the stem is inserted into the vent hole of the handle grip of the golf club such that the barb resists its removal.

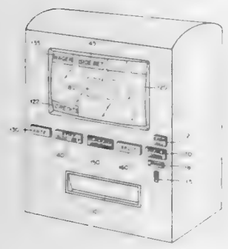
5,632,485

CARD GAME WITH SIDE BET OPTIONS

Bill M. Woodland, and Linda M. Woodland, both of 22 Harvard Pl., Ann Arbor, Mich. 48104

Filed May 30, 1995, Ser. No. 453,748
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **29 Claims**





1. A method of playing a card game comprising the steps of:

providing a deck of cards comprising a plurality of different numerical values;

providing at least one player with the opportunity to place a single wager on whether the first two cards displayed to said player will be one of a predetermined plurality of two-card winning combinations, and wherein said plurality of two-card winning combinations comprises a first winning combination of cards having a cumulative value of twelve and a second winning combination of cards having a cumulative value of thirteen to sixteen

initially displaying two cards to each player; and

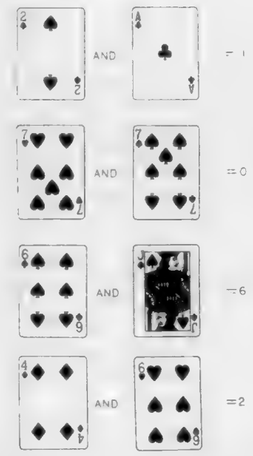
resolving each wager by providing a winning payout to a player who placed a correct wager.

5,632,486

METHOD OF PLAYING A CARD GAME USING CARD NUMBER SUBSTRACTION TECHNIQUES

Vachagan Mkrtchyan, 1502 Maple St. # "B" , Glendale, Calif. 91205

Filed Jan. 30, 1996, Ser. No. 593,518
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **3 Claims**



1. A method of playing a card game, wherein cards in the playing deck are assigned numerical point values;

said method comprising:

removing only the eights, nines and tens cards from a standard deck of fifty two cards, to establish a playing deck of forty cards;

assigning to each numbered card in the playing deck its indicated value, assigning to each face card in the playing deck a value of zero; and assigning to each ace in the playing deck a value of one;

initially dealing two cards to each player, with each player having the option of receiving a third card; and

comparing competing hands to determine a winning hand, with the winning hand being the hand wherein the point value difference between the two cards in the hand is the closest to zero.

5,632,487

METHOD OF PLAYING A CARD GAME WHEREIN RED SUIT OR BLACK SUIT CARDS ARE GIVEN PRIORITY

Son H. Nguyen, 11052 Stonecress, Fountain Valley, Calif. 92708

Continuation-in-part of Ser. No. 574,645, Dec. 19, 1995. This application Mar. 1, 1996, Ser. No. 609,719
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **12 Claims**

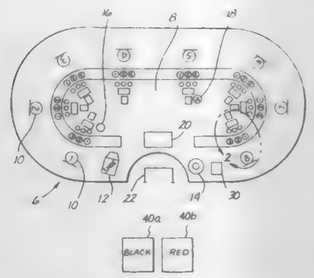
5. A method of playing a card game among a plurality of players arranged in a circular fashion, a dealer being positioned between two of the players, the method comprising the following steps:

providing a composite deck of cards, the composite deck of cards corresponding at least in part to at least one conventional deck of cards having first colored images and second colored images;

placing a wager by each of the players;

a first player among the plurality of players being assigned the title of banker;

determining whether a first colored winning scheme is to be commonly used by all the players and banker or a second winning scheme is to be commonly used by all the players and banker;



providing at least one colored decision piece to the banker, the banker using the decision piece to determine an assignment of an action button;

assigning to a second player among the plurality of players the action button, the assignment of the action button to the second player being based upon a number generated by the use of the decision piece;

dealing by the dealer a first round of at least one card to each of the plurality of players in rotation

determining by each of the players whether zero or at least one additional card is desired;

dealing by the dealer a second round of cards to any player in rotation who wants a card; and

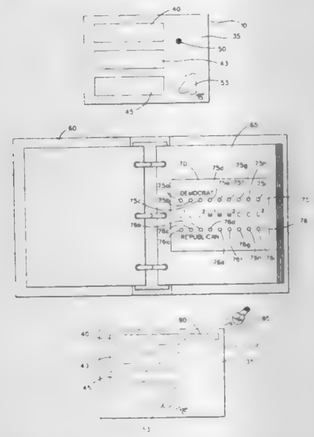
comparing the hands of the banker to each of the players' hands and declaring as winners players having hands that meet the determined winning scheme.

5,632,488

EDUCATIONAL POLITICAL CARD GAME APPARATUS AND METHOD OF PLAY

William C. Sturm, and Cynthia R. Sturm, both of 2777 Madison Ave., Bethlehem, Pa. 18017

Filed Jul. 28, 1995, Ser. No. 508,633
Int. Cl.[6] A63F *1/00;1/10*
U.S. Cl. 273—293 **15 Claims**



1. An educational card game comprising:

(a) a plurality of playing cards, each of the cards having a front surface and a back surface, the front surface having a first picture section bearing the photograph or likeness of a political figure, the front surface also having a name identification section indicating the name of the political figure depicted thereon and a job title section indicating the political office held by the political figure, the back surface having a general information section, a voting record information section, and a political ratings information section, each section corresponding in subject matter to the political figure depicted on the front surface,

(b) the general information section on the back surface of each of the playing cards including the name of the political figure appearing on the front surface, the name of the geographic region that he/she represents, the date that he/she was elected or appointed to office, the political figure's political party affiliation, birth date, religion, employment history, educational history, and committee membership information,

(c) the back surface of each of the playing cards further including a second picture section bearing a photograph or likeness of the political figure depicted on the front surface,

(d) the back surface of each of the playing cards including a map illustrating the geographic region represented by the political figure depicted on the front surface,

(e) each of the playing cards having information indicating the political ideology of the political figure encoded on one of the front surface or the back surface thereof so that the information is not readily decipherable by the casual observer,

(f) means for deciphering the information encoded on each of the playing cards to reveal the political ideology of the political figure depicted thereon,

(g) each of the playing cards including a special mark positioned thereon for encoding information indicating the political ideology of the political figure depicted on the front surface thereof,

(h) the deciphering means comprising a looseleaf-type binder having one or more pages, at least one page having a special pocket, the special pocket having a plurality of cutouts arranged in at least two rows, each row having indicia representing different party affiliation, each cutout in each row having indicia representing a different political ideology in each party affiliation, said special pocket being sized to receive a playing card therein, said special mark on said card being specifically located on the card such that when the card is placed in said special pocket said special mark shows through only one of the cutouts indicating the party affiliation and political ideology of the political figure on said card.

5,632,489

METHOD OF PLAYING A SEVEN AND A HALF CARD GAME

Andrew Rozzi, Sr., and Andrew Rozzi, Jr., both of 307 N. Lafayette St., New Castle, Pa. 16102-1870

Filed Jan. 2, 1996, Ser. No. 582,553
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—304 **1 Claim**

1. The method of playing a casino card game whose object is to beat the dealer by obtaining two cards or less whose face value is greater than that of the dealer's two cards or less providing the player's cards do not have a face value in excess of seven and a half, said method comprising the steps of:

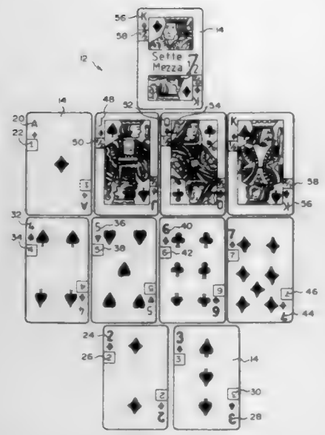
a) arranging around a table in a casino a house dealer and a number of players up to seven;

b) each of the players places an ante bet on the table;

c) the dealer deals out one card down to each of said players and one card open to himself from a deck consisting of cards in each of the hearts, diamonds, clubs and spade suits, bearing the numeric designations one through seven, jack, queen, and king, each numeric card bearing a numeric value equal to its designated number, and each of the jack, queen, and king cards bearing the numeric value of one half, the king of diamonds bearing an alternative face value of 7 ½ when played as the first card;

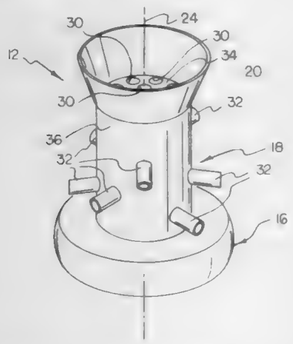
d) each player after looking at his card will either place a final bet on the table and draw only one additional card face up or fold by not placing the final bet and losing his ante bet to the dealer;

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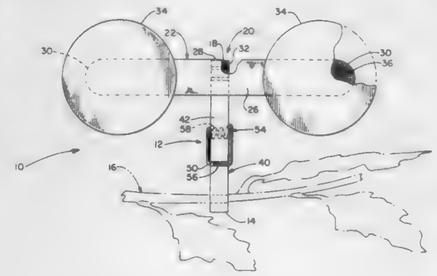
e) the dealer will stand if he has a six and will draw one additional card if he has a five or less;
f) any player who receives a king of diamonds as his down card will turn the card face up and win a predetermined multiple of his ante bet;
g) if the dealer receives the king of diamonds as the first card he immediately wins all of the ante bets; and
h) if a player and dealer have the same total, the hand is a tie and the player receives return of his ante bet.

5,632,490
COLLECTION GAME APPARATUS
Thomas D. Brown, R.D. #1, Box 51D, Dunbar, Pa. 15431
Filed Dec. 1, 1995, Ser. No. 564,679
Int. Cl.[6] F41J *1/00;* **A63F** *7/02;9/00*
U.S. Cl. 273—350 **10 Claims**



1. A collection game apparatus, comprising:
a random selection assembly which includes a base portion, a distributor pipe assembly supported by said base portion, a perimeter wall supported by a top portion of said distributor pipe assembly,
a plurality of objects to be collected, wherein said objects to be collected are randomly distributed by said distributor pipe assembly of said random selection assembly, and
a plurality of containers for storing and carrying objects that are collected,
wherein said distributor pipe assembly includes:
pipe-support body supported by said base portion, wherein said pipe-support body includes a riser portion supported by said base portion and a baffle plate supported by a top part of said riser portion, wherein said baffle plate includes a plurality of pipe-receiving apertures,
a plurality of pipes supported by said pipe-support body, wherein each of said pipes includes a pipe inlet portion and a pipe outlet portion, wherein each pipe inlet portion is elevated above each pipe outlet portion and is fitted into a pipe-receiving aperture in said baffle plate, wherein each pipe outlet portion is positioned with respect to said riser portion for discharge of an object from said pipe outlet portion transverse to said riser portion.

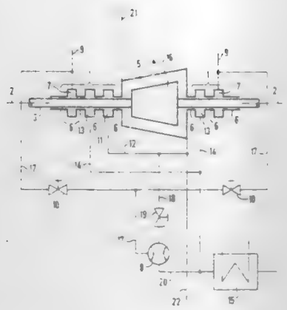
5,632,491
TARGET ATTACHING APPARATUS
Marc R. Hamas, 51792 TR 178, Fresno, Ohio 43824
Filed Mar. 22, 1996, Ser. No. 620,415
Int. Cl.[6] F41J *1/10*
U.S. Cl. 273—407 **14 Claims**



1. A target attaching apparatus, comprising:
a clamp having an attachment end and a handle end, said attachment end attachable to any available structure;
a mounting member carried by said clamp, said mounting member having a cross-piece with at least one end thereof extending from said clamp; and
at least one target secured to said at least one end.

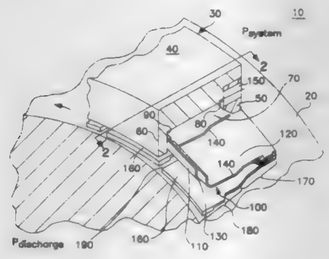
5,632,492
SEALING CONFIGURATION FOR A PASSAGE OF A SHAFT THROUGH A CASING AND METHOD OF OPERATING THE SEALING CONFIGURATION
Wolfgang Lehmann, and Detlef Friebe, both of Görlitz, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Oct. 27, 1995, Ser. No. 549,057
Claims priority, application Germany, Apr. 27, 1993, 43 13 805.5
Int. Cl.[6] F16T *15/16*
U.S. Cl. 277—1 **16 Claims**

13. A method for operating a sealing configuration for a passage of a shaft with an axis through a stationary casing enclosing an inner space to which a fluid is admitted and from which the shaft emerges,
the sealing configuration including a vapor chamber being open to the surroundings, surrounding the shaft and having two sides, seals being adjacent the vapor chamber on both of the sides along the axis for admitting the fluid to the vapor chamber through at least one of the seals, and a suction device connected to the vapor chamber, and



the method comprising extracting the fluid from the vapor chamber with the suction device, except for a residual quantity of the fluid being led away to the surroundings.

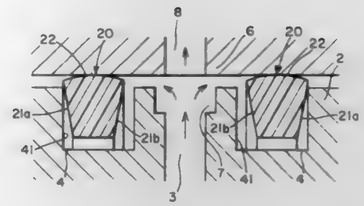
5,632,493
COMPLIANT PRESSURE BALANCED SEAL APPARATUS
James F. Gardner, Exeter, R.I., assignor to EG&G Sealol, Inc., Cranston, R.I.
Filed May 4, 1995, Ser. No. 434,543
Int. Cl.[6] F16J *15/447*
U.S. Cl. 277—27 **52 Claims**



1. A compliant sealing apparatus for sealing a high pressure area from a low pressure area, the sealing apparatus comprising:
a housing including:
a first wall positioned proximate the high pressure area, and
a second wall positioned proximate the low pressure area, said first and second walls positioned adjacent each other with facing inner surfaces of said walls defining, at least in part, a cavity therebetween;
at least one finger extending from proximate the first wall toward the low pressure area, the finger including a free end; and
at least one member extending from an upper surface of the finger into the cavity to form a sealing engagement with the second wall inner surface, the sealing engagement being located closer than the free end to the first wall inner surface.

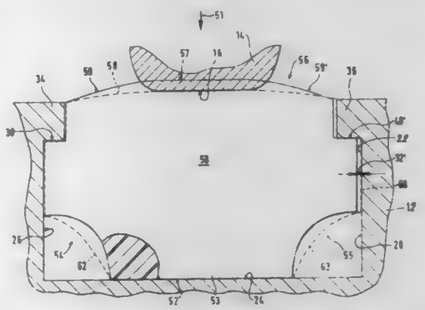
5,632,494
SEAL RING AND SEAL DEVICE
Toshio Oka, Kashiwazaki, Japan, assignor to Kabushiki Kaisha Riken, Tokyo, Japan
Filed Sep. 21, 1995, Ser. No. 531,639
Claims priority, application Japan, Feb. 16, 1995, 7-050348
Int. Cl.[6] F16J *15/40*
U.S. Cl. 277—59 **8 Claims**

1 A seal device comprising:



a shaft having an annular groove which is provided in an outer peripheral surface thereof and in which hydraulic pressure is introduced, and ring grooves each having side wall surfaces and communicating with the annular groove and provided on each side of said annular groove;
a housing having an inner peripheral surface and a working chamber which communicates with the annular groove;
seal rings, each being made of synthetic resin and having side surfaces and an outer circumferential surface, arranged in each ring groove in such a manner that said outer circumferential surface comes into sliding contact with the inner peripheral surface of said housing and one of said side surfaces comes into sliding contact with the side wall surface of said ring groove; and
a piston reciprocated by being acted upon by hydraulic pressure within the working chamber;
the side surfaces of each said seal ring being tapered such that the width of each seal ring on an inner circumferential side thereof is narrower than the width of the seal ring on an outer circumferential side thereof, the side surfaces being tapered at an angle of 2° to 10°, and said outer circumferential surface having an arcuate cross section.

5,632,495
ELASTOMER SEALING RING OF RELATIVELY LARGE DIAMETER
Theodor Speaight, Ernsdorf; Emile Lonardi, Bascharage, and Giovanni Cimenti, Fentange, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg
Continuation of Ser. No. 227,537, Apr. 14, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 639,095
Claims priority, application Luxembourg, Apr. 14, 1993, 88247
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—177 **9 Claims**



1. A sealing seat assembly of an elastomer sealing ring in an annular channel, said sealing ring being annular about an axis, and said channel being open to one side and comprising, as boundary surfaces, a flat annular base surface around and perpendicular to said axis and two mutually opposing cylindrical and coaxial side surfaces, wherein the sealing ring:

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(1) has approximately the same cross-section as said channel,

(2) has an exposed sealing surface, which faces the open side of said channel and can be subjected to a surface load approximately parallel to said axis, said exposed sealing surface being generally convex and having a flat crown forming a contact surface,

(3) forms a central foot, which lies in bearing contact with said base surface of said channel and is radially limited on each side by a concave indentation, and

wherein each one of said concave indentations:

(1) extends radially from said base surface up to one of said two side surfaces of said channel so as to delimit with the corresponding boundary surfaces of said channel a lateral cavity, and

(2) is dimensioned such that, whenever said exposed sealing surface is subjected to said surface load, a substantial part of the elastomer material of the sealing ring is able to yield in both of said lateral cavities without substantially altering the concave configuration of said indentations.

5,632,496

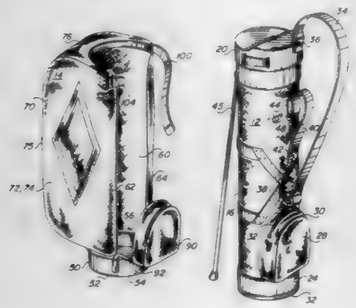
CONVERTIBLE GOLF BAG SYSTEM

Alan F. Nelson, Rte. #3, Box 62, Ft. Dodge, Iowa 50501

Filed Jun. 3, 1994, Ser. No. 253,905

Int. Cl.[6] A63B *55/00*; B62B *1/12*

U.S. Cl. 280—30 **21 Claims**



1. A convertible golf bag comprising:

(a) a carry bag having a generally tubular body with an open upper end for receiving clubs and a bottom;

(b) a staff bag component having a base and an upstanding sleeve extending up from the base substantially the length of the carry bag, said sleeve having an open side with vertical edges to oppositely engage the body of the carry bag;

(c) at least one compartment on said staff bag component; and

(d) cooperating first and second attachment means for selectively securing said staff bag to said carry bag, said first attachment means comprising rigid seat means extending in the area of the base of said staff bag component for receiving the bottom of said carry bag, said second attachment means connected to said staff bag component and securable to extend substantially around the upper end of said carry bag, whereby said carry bag may be positioned adjacent said staff bag component with said bottom engaging said first attachment means and whereby said bag components may be integrally joined by securing said second attachment means to form a combination bag with a portion of the body of the carry bag forming a part of the exterior of the combination bag and whereby said carry bag and staff bag components may be separated by disengaging said first and second attachment means

5,632,497

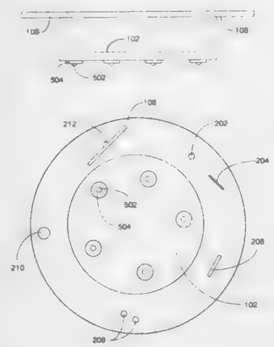
PORTABLE FLOOR LEVEL CART ASSEMBLY

Edward Murray, 19375 Carolina Cir., Boca Raton, Fla. 33434

Filed May 24, 1995, Ser. No. 448,746

Int. Cl.[6] B62B *3/10*

U.S. Cl. 280—47.35 **4 Claims**



1. A portable cart for moving containers used by a flooring installer, comprising:

a low elevation platform having an upper surface and a bottom surface, the low elevation platform further having a plurality of low profile bearing assemblies mounted on the bottom surface such that the low elevation platform can be rollably moved;

a perimeter wall attached to the low elevation platform in substantial proximity to the perimeter of the low elevation platform and projecting upward from the low elevation platform, the perimeter wall having sufficient height to prevent a container placed on the low elevation platform from sliding off of the low elevation platform when the portable cart is moved, the perimeter wall further being sufficiently low to allow access to the container by a flooring installer without requiring the flooring installer to raise up from the work position; and

a raised shelf attached to the perimeter wall and extending outward from the perimeter wall, the raised shelf further having at least one aperture for storage of tools;

whereby a flooring installer can access containers without raising up from the work position.

5,632,498

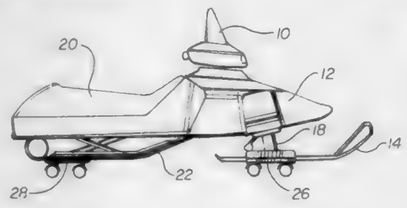
SNOWMOBILE DOLLY SYSTEM

Ernie Beaudet, 6432 Lookout Trail, Stillwater, Minn. 55082, and Mark A. Lamberty, 9634 Heath Ave. S., Cottage Grove, Minn. 55016

Filed Nov. 14, 1994, Ser. No. 338,043

Int. Cl.[6] B62B *1/06*

U.S. Cl. 280—79.11 **12 Claims**



1. A dolly system for snowmobiles, the snowmobiles having a rearward track, a pair of forward elongate skis, each ski having a width, a lower ski surface and a wear bar extending lengthwise and centrally positioned on said lower ski surface, the dolly system comprising:

a) a pair of forward ski dollies for placement under each ski, each ski dolly comprised of a substantially rectangular horizontal base portion having an upper planar surface for contacting the lower ski surface of each ski, a length, a width, and four corners, the upper planar surface having a downwardly extending linear depression extending lengthwise the length of the forward ski dolly, the depression sized for receiving the wear bar, each ski dolly further comprised of a pair of opposing sidewalls adjoining and extending upwardly from the upper planar surface, the opposing sidewalls extending lengthwise on the base portion parallel to the depression, the opposing sidewalls spaced to be greater than the width of the skis whereby the ski may be laterally retained on said upper planar surface by said opposing sidewalls, and four castors, each castor positioned at one of the corners and extending downwardly from the base portion; and

b) a rearward track dolly comprising a planar base piece with four castors attached to and extending downwardly from the base piece.

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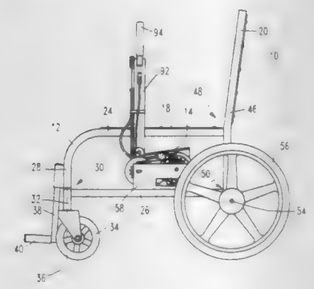
WHEEL CHAIR SYSTEM

Brian K. Hutcherson, Laporte County, and Michael A. Bianco, Porter County, both of Ind., assignors to GTMAX, Inc., Michigan City, Ind.

Filed Jun. 6, 1995, Ser. No. 470,338

Int. Cl.[6] B62M *1/16*

U.S. Cl. 280—246 **16 Claims**



1. A wheelchair comprising:

a frame;

a pair of rotatable drive wheels mounted to said frame;

a pair of levers mounted to said frame for reciprocating generally arcuate motion, each lever supporting a movable grip;

a pair of sprockets associated with each lever for transferring reciprocating generally arcuate motion of each said lever into a sprocket output torque in two rotational directions;

a planetary gear system associated with each said pair of sprockets for receiving said sprocket output torque in two rotational directions and transferring said sprocket output torque into a gear output torque in a single rotational direction, said planetary gear system having a first element and a second element; and

a linkage for transferring each said gear output torque to one of said wheels.

5,632,500

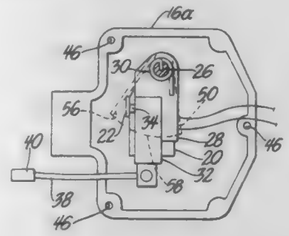
MODIFIED VEHICLE THROTTLE CONTROL

Paul A. Petrovich, Fowlerville; Jack G. Rodgers, Roseville, and John J. Schmitz, St. Clair Shores, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1996, Ser. No. 605,303

Int. Cl.[6] B62D *1/14*

U.S. Cl. 180—332 **10 Claims**



1. A throttle control mechanism converted from manual operation to manually overidable powered operation, the throttle control mechanism comprising:

a throttle control housing element;

a throttle post rotatably mounted to the housing element;

a throttle control lever connected to the post and movableby a manual force;

a first rotor element connected to the lever swingable about an axis of the throttle post;

a second rotor element rotatable by the first rotor element in a first direction about the axis;

a throttle control cable;

means for connecting the cable to the second rotor element;

a return spring biassing the second rotor element in a second direction about the axis toward a closure position where the cable is in a throttle-closed position;

an electrical contact on the second rotor element;

a line electrically communicated to the contact;

means communicated with the contact for stopping fuel flow when the cable defeats bias of the return spring and sticks in a throttle-open position;

a cap removably affixed to the housing element;

the cap defining a cavity open toward the housing element;

an actuator motor demountably secured to the cap, the actuator motor having a backdrive force less than the bias of the return spring;

a shaft of the actuator motor;

a paddle releasably attached to the shaft and rotatable in the first direction and in a second direction with the shaft;

peripheral wall portions of the cavity limiting the rotation of the paddle;

a flange of the paddle engaging a tab of the first rotor element faced away from the second rotor element such that the paddle's rotation in the first direction moves the rotor elements but the paddle's rotation in the second direction exerts no force on the rotor elements.

5,632,501

SELF-LATCHING TRAILER COUPLER

Michael L. Jackson, Evanston, Wyo.; Jared B. Larson, Logan, Utah, and Joseph L. Whiteley, Oakley, Id., assignors to Atwood Industries, Inc., Rockford, Ill.

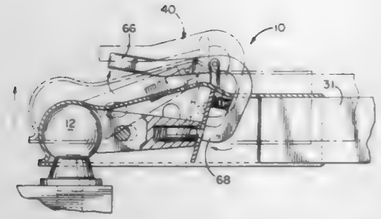
Filed Jun. 12, 1995, Ser. No. 489,386

Int. Cl.[6] B60D *1/06*

U.S. Cl. 280—508 **13 Claims**

1. A self-latching coupler for hitching a trailing vehicle to a ballhead of a towing vehicle comprising, in combination:

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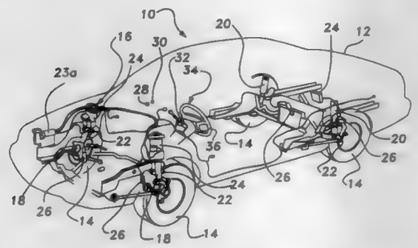


a housing having a forward portion that forms a socket to receive the ballhead, a rear portion of the housing being configured for attachment to a tongue of the trailing vehicle;
a latching member carried in the housing and located to the rear of the socket;
the latching member having a forward end shaped to receive the ballhead when inserted into the housing socket, the latching member also having a rear portion configured to cooperate with the housing to lock the latching member in place;
guide means for mounting the latching member in the housing and providing respective released and latched positions for the latching member;
the latching member in the released position being positioned with the shaped forward end disposed to open the socket and allow insertion of a ballhead, and in the latched position being positioned with the shaped forward end captively engaging the ballhead in the socket;
means for locking the latching member in the latched position, the means being self-actuating upon translation of the latching member to the latched position, the locking means further including a plunger attached to the latching member;
the guide means being arranged so that, with the latching member in the released position, a ballhead inserted into the socket translates the latching member to its latched position, and thereby actuating the locking means;
wherein the housing includes a locking aperture that cooperates with the locking plunger to lock the latching member in place, when the latching member is in the latched position.

5,632,502
ROTARY ACTUATOR SUCH AS A ROTARY ACTUATOR FOR A MOTOR VEHICLE SUSPENSION
Horst Oppitz, Dittelbrunn, and Bernhard Schmitt, Wasserlosen, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Oct. 28, 1994, Ser. No. 331,045
Claims priority, application Germany, Nov. 5, 1993, 43 37 813.7
Int. Cl.[6] B60G *21/00*
U.S. Cl. 280—689 **10 Claims**

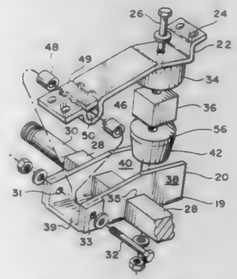
1. A rotary actuator comprising:
housing means;
means for connecting said housing means to a first portion of a motor vehicle suspension;
shaft means, said shaft means defining a longitudinal axis and a circumferential direction disposed circumferentially about the longitudinal axis;
at least a portion of said shaft means being rotatably disposed within said housing means;
means for connecting said shaft means to a second portion of a motor vehicle suspension;
means for rotatably mounting said at least a portion of said shaft means within said housing means for rotation of at least one of said shaft means and said housing means about said longitudinal axis with respect to the other of said shaft means and said housing means;
said shaft means comprising an outer surface disposed towards said housing means;
said housing means comprising an inner surface disposed towards said outer surface of said shaft means, said inner surface of said housing means being spaced apart from said outer surface of said shaft means to define a chamber between said shaft means and said housing means;
at least one of:
said outer surface of said shaft means, and
said inner surface of said housing means, comprising at least one projection extending towards the other of:
said outer surface of said shaft means, and
said inner surface of said housing means;
said at least one projection extending from said first axial end of said chamber to said second axial end of said chamber to axially divide said chamber into a first chamber portion and a second chamber portion;
means for introducing fluid into at least one of:
said first chamber portion, and
said second chamber portion, to provide a pressure on said at least one projection to relatively rotate said housing means and said shaft means;
said at least one projection comprising:
a first side disposed towards said first chamber portion;
a second side disposed opposite to said first side and adjacent said second chamber portion;
a surface disposed between said first side and said second side, said surface being disposed towards the other of:
said outer surface of said shaft means; and
said inner surface of said housing means;
a longitudinal slot disposed in said surface, said longitudinal slot having two spaced apart side surfaces defining a width of said slot in a circumferential direction with respect to said longitudinal axis, said two spaced apart side surfaces extending substantially parallel to said longitudinal axis;
at least one seal means disposed in said longitudinal slot for sealing between said first chamber portion and said second chamber portion to minimize fluid flow from said first chamber portion to said second chamber portion;
said seal means having a width in a circumferential direction with respect to said longitudinal axis;
said width of said seal means being substantially less than said width of said slot to define a space between said seal means and at least one of said side surfaces of said slot to permit flow of fluid between said seal means and said at least one side surface of said slot along at least a substantial portion of said seal means;
said seal means having a first side surface disposed towards one of said side surfaces of said slot and a second side surface disposed towards the other of said side surfaces of said slot;
only one side surface of said seal means at a time being in sealing engagement with its corresponding side surface of said slot during application of fluid pressure on said at least one projection to relatively rotate said housing means and said shaft means;
said longitudinal slot having a base portion and an open end defining a height of said slot in a radial direction with respect to said longitudinal axis and a first end and a second end defining a length of said slot in a direction substantially parallel to said longitudinal axis;
said width of said seal means being configured to permit flow of fluid into said space along at least a substantial portion of the height of said slot and along at least a substantial portion of the length of said slot:
said rotary actuator having a rest configuration with substantially no pressure being applied to said seal means;
said seal means comprising a first edge disposed adjacent said base of said slot, a second edge disposed adjacent the open end of said slot, a first end disposed adjacent said first end of said slot and a second end disposed adjacent said second end of said slot:
said seal means having a radial prestress between said base of said slot and said other of: said inner surface of said housing and said outer surface of said shaft means towards which said projection extends;
said seal means in said rest configuration under said radial prestress having a barrel-shaped cross-section having a first width at said first and second edges thereof, and a second width between said first and second edges thereof, said second width being greater than said first width and less than said width of said slot;
said first and second side surfaces comprising a plurality of axially disposed fluid passages spaced apart from one another and extending between said first and second edges;
said first and second edges comprising at least one longitudinal fluid passage extending between said first and second ends; and
said fluid passages dividing surfaces of said seal means into a plurality of individual sealing surfaces.

5,632,503
METHOD FOR ALLOWING ENHANCED DRIVER SELECTION OF SUSPENSION DAMPING AND STEERING EFFORTS
Joseph M. Raad, Southgate; Steven J. Reimers, Allen Park; Ray A. Sackett, Monroe; Ronald J. Collins, Dearborn, and Christine L. Gordon, Novi, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 19, 1995, Ser. No. 574,483
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—707 **20 Claims**



1. A method for integrating a plurality of vehicle dynamic systems for a motor vehicle, said method comprising the steps of:
providing a plurality of vehicle dynamic systems from a group comprising a suspension damping system, a steering efforts system, a brake system and a traction control system for the motor vehicle;
allowing interaction between the vehicle dynamic systems; and
adjusting at least one of the vehicle dynamic systems based on predetermined conditions of at least another of the vehicle dynamic systems.

5,632,504
TRAILER SPRING
Daniel M. Gallagher, 10351 Hwy. 301 South, Dade City, Fla. 33525
Filed Nov. 21, 1994, Ser. No. 342,830
Int. Cl.[6] B60G *11/22*
U.S. Cl. 280—716 **19 Claims**

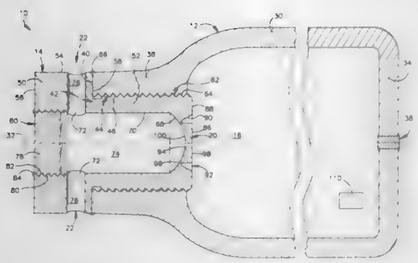


1. A spring for resiliently supporting a load between a chasis and a set of running gear comprising:
a base member having first and second ends which ends incorporates means wherein the base member may be attached to the chasis;
a beam member having a first end and a second end the first end of which is pivotly attached to the first end of said base member; said beam member being provided with an axle which is attached to the beam intermediate of its first and second ends;
a holder which is positioned between said base member and said beam member approximate the second ends of the beam member and base member;
a block of solid deformable material which is positioned in and substantially encased by said holder;
wherein the movement of the second end of the beam in relation to the second end of said base member is restricted by a fastener which passes through said block of solid deformable material and wherein one end of said fastener is secured to said base member and the other end is secured to said beam member.

5,632,505
PRESSURE VESSEL WITH RUPTURABLE CLOSURE WALL
Paul T. Saccone, Rochester Hills, and Pongdet P. Wipasuramonton, Rochester, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Jun. 29, 1995, Ser. No. 496,393
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **15 Claims**

13. Apparatus comprising:
tank means for defining a storage chamber containing fluid at an elevated pressure; and
a unitary part made entirely of a homogeneous material;
said unitary part including means for defining a rupturable closure wall which is normally subjected to said pressure, said closure wall blocking said fluid from exiting said storage chamber and, when ruptured, permitting said fluid to exit said storage chamber through an outlet opening;
said unitary part further including conduit means for defining an outlet conduit, said outlet conduit extending outward from

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said closure wall and directing said fluid to flow outward from said outlet opening when said closure wall is ruptured;

said closure wall having oppositely facing inner and outer side surfaces and means for defining a stress riser, said side surfaces comprising means for normally maintaining said stress riser under stress induced by said pressure, said stress consisting essentially of compressive stress and shear stress;

said closure wall having a central axis, said outer side surface of said closure wall facing axially outward through said outlet conduit and having a concave spherical contour extending continuously across said stress riser and said axis, said inner side surface of said closure wall facing axially inward of said storage chamber.

5,632,506

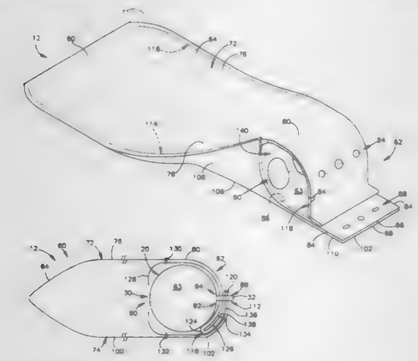
VEHICLE OCCUPANT PROTECTION APPARATUS

Richard E. Shellabarger, Sterling Heights, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jun. 14, 1996, Ser. No. 663,627

Int. Cl.[6] B60R *21/20*

U.S. Cl. 280—743.1 **27 Claims**



1. Apparatus comprising:

an inflator structure with a mounting stud; and

an inflatable vehicle occupant protection device with a panel structure defining a compartment for said inflator structure, said panel structure having a wrapped condition for retaining said inflator structure within said compartment;

said panel structure including a first panel in which a first aperture is formed to communicate with said compartment, said first panel being fixed to a second panel at a seam located between said first aperture and an end of said first panel, said first panel further having a second aperture located between said seam and said end;

said first and second apertures being aligned to receive said mounting stud when said panel structure is in said wrapped condition.

5,632,507

VEHICLE INTERIOR SUPPORT

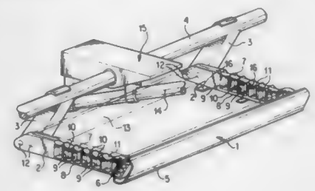
Michael Sinner, Rottenburg; Bernhard Holzapfel, Remshalden, and Friedrich Reiter, Sindelfingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

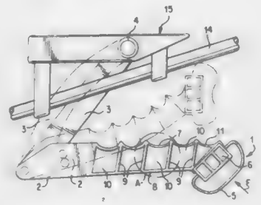
Filed Jan. 25, 1996, Ser. No. 591,404

Claims priority, application Germany, Jan. 25, 1995, 195 02 226.2 U

Int. Cl.[6] B60R *21/04*

U.S. Cl. 280—751 **9 Claims**





1. A support adapted to be arranged in a vehicle interior, comprising at least one support member having one end configured to be fixed on the vehicle interior and another end projecting freely into a passenger compartment of the vehicle interior, the free projecting end being fixed to an impact protector and an upper belt and a lower belt extending in a predetermined flexure direction and spaced from each other with connecting ribs defining hollow spaces therebetween,

wherein

one of the upper and lower belts extends along a straight line, and the other of the upper and lower belts has at least one of protrusions and depressions between adjacent ones of the connecting ribs in a direction toward the one belt.

5,632,508

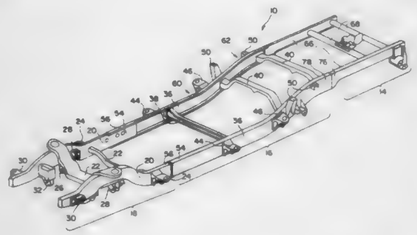
LADDER FRAME ASSEMBLY FOR A MOTOR VEHICLE

Kenneth B. Jacobs, Spring Grove, Pa.; Frank A. Horton, Rochester Hills, Mich., and Howard A. Mayo, III, Airville, Pa., assignors to Cosma International Inc., Markham, Canada

Division of Ser. No. 314,496, Sep. 28, 1994, Pat. No. 5,561,902. This application Apr. 5, 1996, Ser. No. 628,159

Int. Cl.[6] B62D *21/00*

U.S. Cl. 280—781 **12 Claims**



1. A rail frame assembly for a motor vehicle comprising

a rearward frame module comprising a pair of generally parallel rearward frame rail members interconnected by a rearward cross-member assembly;

a central frame module comprising a pair of generally parallel central frame rail members interconnected by a central cross-member assembly, said central frame members each having a generally U-shaped transverse cross-sectional configuration including a vertical base wall portion and a pair of outwardly extending generally parallel horizontal wall portions extending from opposite ends of said base wall portion, said U-shaped central frame members each being bent between two spaced positions thereof, and one of said horizontal wall portions extending from one end of said base wall portion having metallic grains therein substantially stretched at a location between said spaced positions and an opposite one of said horizontal wall portions extending from an opposite end of said base wall portion having metallic grains therein substantially compressed at said location between said spaced positions; and

a forward frame module comprising a pair of generally parallel tubular forward frame rail members interconnected by a forward cross-member assembly.

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TRUCK

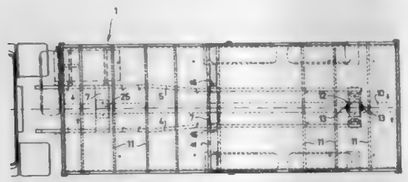
Edgar Reichert, Bergisch-Gladbach, Germany, assignor to Zeppelin-Systemtechnik GmbH, Offenburg, Germany

Filed Aug. 13, 1993, Ser. No. 106,339

Claims priority, application Germany, Aug. 14, 1992, 9210890 U

Int. Cl.[6] B62D *21/02*

U.S. Cl. 280—795 **15 Claims**



1. Vehicle comprising a chassis having flexural strength but being torsionable on which a non-torsionable assembly is arranged above an intermediate frame having horizontal supports, said assembly comprising a central tube having a transverse beam, the central tube being connected to the intermediate frame, wherein the intermediate frame has flexural strength and is torsionable and one single three-point bearing is provided between the intermediate frame and the central tube, said single three-point bearing comprising a rear pivot bearing coupled to the central tube and fixed with respect to axial movement relative to said intermediate frame, as well as two lateral slide bearings at the transverse beam of the central tube, said lateral slide bearings having spherical bearing surfaces that support said central tube.

5,632,510

FOOD PREPARATION FACILITATOR APPARATUS

Arthur Morowitz, Short Hills, N.J., assignor to Evart Enterprises, Inc., New York, N.Y.

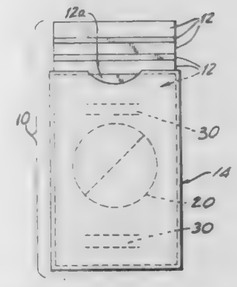
Filed Apr. 25, 1995, Ser. No. 428,273

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—61 **7 Claims**

7. An internationally useful kit for advising a waiter of dietary restrictions, comprising:

(A) a plurality of cards having front and back faces, each of said cards being associated with a respective dietary restriction and containing:



(i) on said front face, the respective dietary restriction in one language and an internationally recognizable graphic representation thereof, at least some of said internationally recognizable graphic representations including a representation of a food product or an image associated therewith, surrounded by a circle with a slash therethrough, whereby said graphic representation consists of an international prohibition symbol with the food product or image representation shown therebeneath; and

(ii) on said back face, translations of the respective dietary restriction into a plurality of languages, and, associated with each translation, a designation of the language thereof, thereby facilitating a user determining the appropriate translation to be indicated to a waiter;

whereby each card identifies a respective dietary restriction both graphically and in a plurality of languages; and

(B) organizer means for releasably receiving and maintaining said plurality of cards in such a manner as to enable different sets of said plurality of cards to be used at different times to advise a waiter of then applicable dietary restrictions, said cards and said organizer means being configured and dimensioned as a conventional business card and business card organizer.

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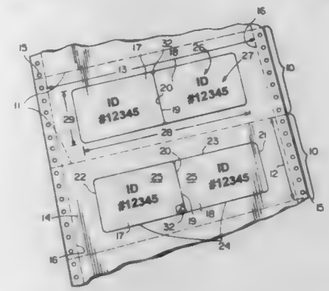
ID CARD-CARRIER COMBINATION PRODUCTION

Andre G. Longtin, Weare, N.H., and Michael D. Wilson, Dubuque, Iowa, assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Oct. 26, 1994, Ser. No. 329,253

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—62 **20 Claims**



1. An identification card-carrier combination, comprising:

a substrate web having first length and width dimensions, and a top face;

first and second identification cards disposed side-by-side and immediately adjacent to each other having a predetermined position with respect to each other, but unconnected directly to each other;

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said identification cards, collectively, having second width and length dimensions much less than said first length and width dimensions; and

an adhesive substrate common to said first and second identification cards affixing said cards to said substrate web top face to hold said cards to said substrate web during printing and mailing while allowing removal of said cards from said substrate web without damage to said cards, said adhesive substrate comprising a piece of double face pressure sensitive adhesive tape having width and length dimensions substantially the same as the combined length and width dimensions of said first and second side-by-side cards.

5,632,512

FASTENING COUPLING FOR A RINGED TUBE

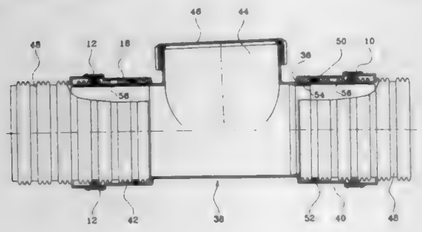
Hans Guitoneau, Grootebroek, Netherlands, assignor to Polva Pipelife B.V., Enkhuizen, Netherlands

Filed Sep. 25, 1995, Ser. No. 533,288

Claims priority, application Belgium, Sep. 23, 1994, 09400866

Int. Cl.[6] F16L *37/088*

U.S. Cl. 285—321 **9 Claims**



1. Fastening coupling for a ringed tube, comprising at least one sleeve having an inside diameter which is at least equal to the largest outside diameter of the ringed tube, one end of the ringed tube adapted to be housed inside said sleeve, and a fastening ring;

said sleeve including at least two circumferentially aligned orifices, each comprising a wide part and a narrow part, the wide part and the narrow part of each orifice being adjacent and intercommunicating;

said ring being circumferentially discontinuous and radially deformable and being provided with at least two tenons projecting radially inwards, each tenon comprising a narrow base;

said ring adapted to be applied around the sleeve so that each tenon passes through the wide part of an orifice and engages in the ringed structure of the tube so as to retain it axially inside the sleeve; whereby upon rotation of the ring the narrow base of each tenon fits into the narrow part of an orifice.

5,632,513

LAP JOINT BETWEEN FLEX HOSE AND RIGID PIPE

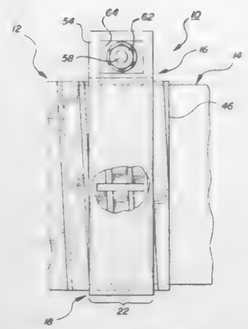
Scott T. Cassel, Birmingham, Mich., assignor to BKS Company, Auburn Hills, Mich.

Continuation of Ser. No. 491,534, Jun. 16, 1995, abandoned, which is a continuation of Ser. No. 186,015, Jan. 24, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,478

Int. Cl.[6] F16L *21/06*

U.S. Cl. 285—322 **7 Claims**

1. A coupling between a rigid pipe and a flex hose, said flex hose being of the type having a cylindrical wall comprising a helical strip with multiple convolutions and an interlock seam between adjacent convolutions which allows circumferential slippage between convolutions, said helical strip having a uniform width portion extending throughout multiple convolutions, said flex hose



terminating at one end in an end-convolution of said strip which diminishes in width toward the free end thereof, said coupling comprising:

the rigid pipe having one end extending inside said one end of the flex hose to provide an overlap region of the ends of the flex hose and the pipe, said overlap region on the flex hose defining plural slots through said wall.

said slots extending generally axially of the flex hose and completely spanning said helical strip at circumferentially spaced locations in a single convolution of said uniform width portion, each slot thereby providing two oppositely disposed free ends of the uniform width portion of said strip which are completely severed from each other and which are spaced apart to allow the convolutions in the vicinity of said slots to be deformed to a reduced circumference by reduction of the spacing between said free ends of said uniform width portion of said strip, said single convolution being inboard of said end-convolution of the flex hose and within the overlap region, the outboard ends of said slots being spaced from said one end of the flex hose, whereby said end-convolution of said non-uniform width portion of said helical strip is of unitary structure,

a clamp band disposed around said flex hose and covering said slot for clamping the flex hose and pipe together and for collapsing the overlap region of said flex hose by circumferential slippage of adjacent convolutions to reduce the circumference of the flex hose and thereby cause close engagement of said flex hose with the pipe and with the clamp band.

5,632,514

JUVENILE SAFETY GATE LATCH FOR SWING GATE

Marvin B. Johnson, Jr., 42 B Werz Industrial Dr., Newnan, Ga. 32063

Filed Mar. 26, 1996, Ser. No. 621,623

Int. Cl.[6] F05C *19/10*

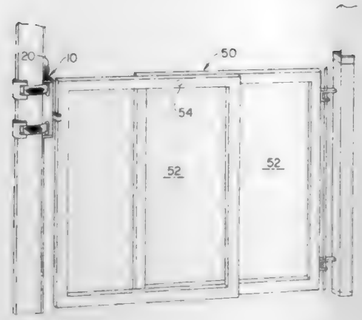
U.S. Cl. 292—95 **4 Claims**

1. A latch for a portable passageway safety gate comprising:

a) a vertically extending U-shaped receiver (**10**) defining a front face (**12**) and wings (**16**), said receiver being anchor attachable to a fixed upright of a passageway, said receiver defining on a front face (**12**) thereof a cutout (**14**) and at least one pair of vertical guides (**18**) defined by wings (**16**) of the receiver;

b) a gate engageable release latch (**20**), mounted upon a reciprocable plunger (**22**), the plunger being moveable within at least one guide tube (**24**) which is fixed to the receiver (**10**), said tube (**24**) defining at an upper end thereof at least one plunger latching slot (**25**), at least one corresponding plunger projection (**23**) which is engageable with said latching slot (**25**); compression means (**26**) urging the plunger downward, and a U-shaped gate engageable latch (**26**) fixed to the plunger for rotation as in opening and closing the gate;

c) at least one web (**30**), each said web terminating at free ends thereof in L-shaped clamps (**32**) and a keeper buckle (**34**) disposed between respective ends of each said web;



d) a web tightener rod (**40**) within the receiver, said tightener rod being compression mounted in the receiver (**10**) by means of a threaded aperture thereon through which an adjustment screw passes to register under a compression spring (**46**) with the receiver (**10**).

5,632,515

LATCH DEVICE FOR USE WITH A VEHICLE TRUNK LID

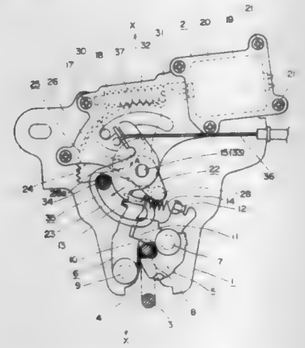
Patrick J. Dowling, Yamanashi-ken, Japan, assignor to Mitsui Kinzoku Kogyo Kabusiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 357,225

Claims priority, application Japan, Dec. 13, 1993, 5-341852

Int. Cl.[6] E05L *3/16*

U.S. Cl. 292—216 **5 Claims**



1. A latch device for use with a vehicle trunk lid, comprising:

a latch adapted to engage with a striker;

a ratchet arranged to engage with the latch for maintaining engagement between the latch and striker;

a cam lever adapted to release the ratchet from the latch;

an output gear for rotating the cam lever when turned by means of a motor;

an open lever connected to a trunk key cylinder; and

a connection shaft supporting the cam lever, the output gear and the open lever

wherein said cam lever and said open lever are secured to the connection shaft; and

said output gear is rotatably mounted to the connection shaft.

5,632,516

MOTOR VEHICLE DOOR HANDLE

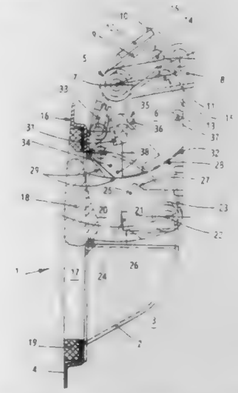
Dittmar Schwab, Rodgau, Germany, assignor to YMOS Aktiengesellschaft Industrieprodukte, Obertshausen, Germany

Filed Jun. 10, 1996, Ser. No. 664,968

Claims priority, application Germany, Jun. 9, 1995, 195 21 082.4

Int. Cl.[6] E05B *3/00*

U.S. Cl. 292—336.3 **9 Claims**



1. Motor vehicle door handle comprising: a base body; a handle flap which in its starting position partially covers an external handle recess in the base body; the handle flap connected to one lever end of each of two swivelling levers which are for pivotal mounting in the interior of a vehicle door so that said lever ends, in response to a corresponding actuating force on said handle flap, are shifted to the outside of the door against the force of a spring; and an actuating part which is coupled to at least one of said swivelling levers for movement therewith when said swivelling levers are moved in response to the actuation force, which is for locating in the interior of the door, and which is connectable to a lock actuator; and wherein

said handle flap is connected to said swivelling levers via respective lever-shaped arms;

each respective lever-shaped arm is mounted to be swivelled around a respective axis, which is located on said end of a respective swivelling lever, against a direction of rotation of the respective swivelling lever into an actuating position which favors gripping; and

said base body has a running guide contour which engages and guides an edge of a respective lever-shaped arm when said handle flap is pulled out of the starting position into a second end position or pull-out position during a stipulated swivelling path segment such that said arm can be swivelled into the actuating position which favors gripping only after reaching the end of the stipulated swivelling path segment.

5,632,517

VEHICLE CLOSURE LATCH

Jiri Paulik; Rita M. Paulik, both of Birmingham; Michael A. Ciavaglia, Dearborn; Eluid D. Carter, Detroit, and Joseph M. Johnson, Huntington Woods, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 21, 1996, Ser. No. 652,017

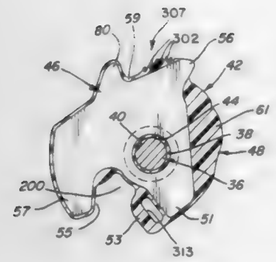
Int. Cl.[6] E05B *15/02*

U.S. Cl. 292—341.12 **7 Claims**

1. A ratchet for a vehicle closure latch that mounts on a vehicle closure so as to engage and retain a striker mounted on a vehicle body when the vehicle closure is closed, the ratchet comprising:

a metal substrate and a plastic covering.

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the metal substrate having a primary latching tooth for engaging a pawl to retain the ratchet in a latched position and a striker tooth for engaging the striker when the ratchet is in an unlatched position, and

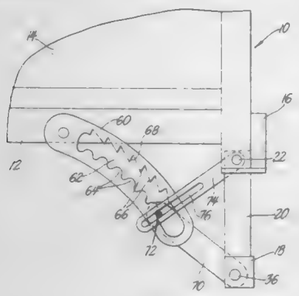
the plastic covering having a bumper with a series of spaced apart cantilevered fingers to reduce noise generated by contact of the ratchet with another portion of the closure latch, the fingers being joined to an integral base and being inclined with respect thereto.

5,632,518

REAR IMPACT TRAILER GUARD

Donald H. Kendall, Almont, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 15, 1996, Ser. No. 636,991
Int. Cl.° B60R *19/56*
U.S. Cl. 293—103 **1 Claim**



1. An improved truck semitrailer safety bumper for use with trailers having a frame supporting a trailer body, to provide additional crash protection to cars and similar smaller vehicles on rear impacts with the trailer including:

a safety bumper extending horizontally across the vehicle body, the safety bumper being of sufficient strength to withstand the force of impact generated by the impact of a vehicle;

a plurality of vertically extending bumper supports located at the rear of the trailer, the bumper supports having a first end rotatably attached to the trailer frame, and a second end mounted to the safety bumper, said vertically extending bumper supports maintaining the bumper about 20–22 inches above the road surface under normal conditions;

a plurality of curved legs having one end firmly attached to the trailer frame, and the other end extending towards the rear of the trailer to a point below the trailer frame, the curved legs having a curved aperture formed therethrough, the curved aperture having a plurality of roller teeth formed on the lower surface thereof and a plurality of detents formed on the upper surface thereof;

a plurality of second arm members corresponding in number to the vertical supports each of the second arm members being associated with a particular curved arm, one end of the second arm member being attached to the safety bumper and a second end extending towards the associated curved arm

a plurality of slotted bars having one end attached to the trailer frame at a point near the rear of the trailer, the slotted bars having a longitudinal slot formed near the end of the slotted bar juxtaposed the curved arm, the slot being coaxially aligned with the slotted bar, and having an unattached end near the curved arm, the slotted bar being disposed on the side of the curved arm opposite the corresponding second arm member;

a plurality of cam pins associated with the second arms, said cam pins having one end firmly mounted in the second end of the second arm, each of the cam pins extending orthogonally to the associated second arm through the curved slot and into the slot in said slotted bar,

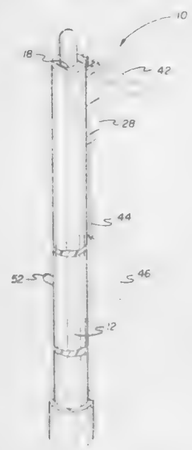
whereby a gentle force on the safety bumper will cause the cam pin to move along the roller teeth allowing the bumper to retract in toward the trailer frame but when the bumper is struck forcefully, the cam pins will move into contact with one of the detents from the impact force preventing the vehicle from submarining under the semi-trailer.

5,632,519

RETRACTABLE POLE FOR HANGING OBJECTS

Richard A. Stock, 638 Blueridge Rd., Pittsburgh, Pa. 15239

Filed Feb. 2, 1996, Ser. No. 595,646
Int. Cl.° A47F *13/06;* **B25J** *1/00*
U.S. Cl. 294—19.1 **9 Claims**



1. A retractable pole for hanging objects for assisting in the hanging of objects from the track of a dropped ceiling comprising in combination:

an elongated cylindrical sleeve having a top end, a bottom end and a circular cross section, the top end of the sleeve having an opening therethrough, the bottom end of the sleeve being sealed, the sleeve having an oblong slot spaced from the bottom end and along one side of the sleeve;

a generally rectangular holder having a pair of sides with a base member interconnecting the sides, the holder being fixedly attached to the sleeve adjacent the top end, the holder positionable on another side of the sleeve at a location other than diametrically opposed from the one side having the slot thereon, the holder being capable of having a hanger with a string inserted therein for lifting of the hanger and string above the head of a user of the sleeve;

an elongated lift rod being slidably positioned within the sleeve, the lift rod having a lever fixedly attached thereto, the lever capable of being positioned through the slot of the sleeve, the lever being capable of moving the lift rod up and down within the sleeve, the lift rod having a top edge being capable of extending beyond the opening of the sleeve when the rod is slid up and down within the sleeve;

a push tip having a bulbous end and being fixedly attached to the top edge of the lift rod, the push tip being capable of lifting a tile of a tile ceiling when the sleeve with the rod therein is raised, the push tip lifting the tile for allowing the positioning of the hanger between a metal track of the tile ceiling, the push tip capable of being retracted within the sleeve when the lever is released for allowing the tile to return to be repositioned against the metal track to hold the hanger thereagainst; and

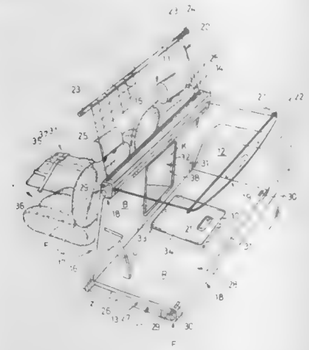
an end cap positionable over the bottom end of the sleeve for grappling by a hand of the user when turning the sleeve for placement of the hanger onto the metal track.

5,632,520

CARGO-RESTRAINING APPARATUS FOR MOTOR VEHICLE

Peter Butz, Langenfeld, Germany, assignor to Peter Butz GmbH & Co. Verwaltungs-KG, Langenfeld, Germany

Filed Oct. 27, 1995, Ser. No. 549,628
Claims priority, application Germany, Nov. 3, 1994, 44 38 910.8
Int. Cl.° B60R *5/04;* **B60P** *7/14*
U.S. Cl. 296—24.1 **8 Claims**



1. In combination with a motor vehicle having a passenger compartment provided with a pair of passenger seats, and a luggage compartment behind the seats having a floor, a cargo-restraining apparatus comprising:

support means defining a horizontal pivot axis fixed at the floor in the luggage compartment immediately behind the seats;

a rigid panel having

an inner edge pivoted at the pivot axis on the support means, an outer edge, and

oppositely directed front and back faces extending between the edges, the panel being movable independently of the seats between an erect position with its faces generally vertical and with its outer edge level with upper ends of the seats and a recumbent position lying on the floor with its front face directed upward and forming a cargo-support surface in the luggage compartment, the front face being rigid and continuous;

latch means on the vehicle offset from the axis for releasably retaining the outer edge of the panel in the erect position thereof;

an elongated housing on the outer edge of the panel;

a flexible retaining sheet having a free end and being normally held in the elongated housing but extensible therefrom to restrain cargo in the luggage compartment; and

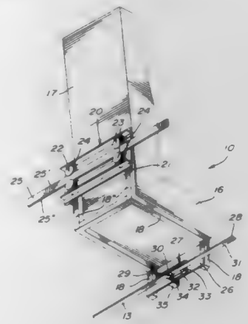
means in the vehicle offset from the outer edge in the erect position of the panel for engaging and retaining the free end of the sheet.

5,632,521

MOBILE SEAT FOR USE IN MOTORIZED VEHICLES

Marc-Antoine Archambault, Montréal; Philippe April; Pascal Octeau, both of St-Eustache, and Viet Pham, Ville St-Laurent, all of Canada, assignors to Flexibülb Inc., Trois-Rivières, Canada

Filed Jun. 30, 1995, Ser. No. 497,423
Int. Cl.° B60N *2/08;2/42*
U.S. Cl. 296—65.1 **22 Claims**



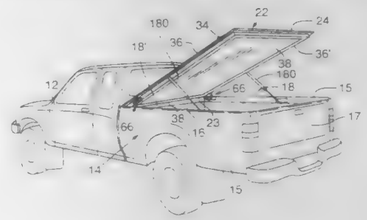
1. A mobile seat for use in a motorized vehicle to permit a user person seated thereon to displace itself to a desired position and wherein said seat is locked and unlocked at said desired position by said user person in a hands-free mode, said seat comprising a seating member displaceably secured between front and rear guide means, pivot connection means rearwardly of said seating member, and arresting means connected to said seating member for displaceable engagement with said front guide means by pivoting motion of said seating member about said pivot connection means, said arresting means being actuable by a position of said user person seated on said seating member whereby to arrest said seating member at said desired position without use of the user person's hands.

5,632,522

HINGE ASSEMBLY FOR A BED COVER OF A TRUCK

Ramiro A. Gaitan, Portland; John B. Ward, Milwaukie, and Daniel G. Willis, Portland, all of Oreg., assignors to Gem Top Manufacturing, Clackamas, Oreg.

Filed Jun. 11, 1996, Ser. No. 662,317
Int. Cl.° B60P *7/02*
U.S. Cl. 296—100 **16 Claims**



1. A hinge assembly for removably mounting a bed cover to a side flange on a truck bed having front, side, and back walls and

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flanges on the tops of said side and front walls, said cover in a closed position extending over said side and front walls, said hinge assembly comprising:

a mounting assembly attachable to said bed flange;

a guide pin attached to said mounting assembly extending, when said mounting assembly is attached to said flange, into said bed; and

a hinge element attachable to said bed cover and configured to receive said guide pin therein and to allow said bed cover to move between said closed position and at least one open position, in which said bed cover slopes upwardly from said front wall,

said hinge element having a guide pin receiving slot therein adapted to engage said pin and restrain movement of said cover either forwardly or rearwardly of said bed in the fully open or fully closed position of said cover, said hinge element defining an opening to said slot on the side thereof facing said front wall to allow removal of said hinge element from around said guide pin by moving said cover into a removal position intermediate said fully open and fully closed positions, in which said guide pin is adjacent said opening, whereby by moving said cover and attached hinge element rearwardly said guide pin passes through said opening in said hinge element, thereby separating said hinge element from said guide pin and thus said bed cover from said bed flange.

5,632,523

DEVICE FOR ADJUSTING THE POSITION OF A SLIDING ROOF COVER

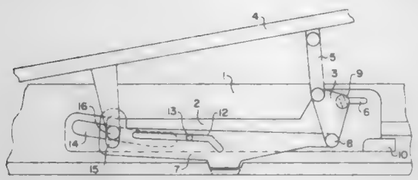
Eckehart Kelm, Gilching, Germany, assignor to Rolf Farmont, Germany

Continuation of Ser. No. 518,389, Aug. 23, 1995, abandoned, which is a continuation of Ser. No. 197,136, Feb. 17, 1994, Pat. No. 5,447,355. This application Jun. 17, 1996, Ser. No. 664,812

Claims priority, application Germany, Feb. 25, 1993, 9302762 U

Int. Cl.[6] B60J *7/047*

U.S. Cl. 296—223 **9 Claims**



1. A device for adjusting the position of a sliding roof cover which can be raised, said cover capable of moving in a sliding motion between a closed position and an opened position relative to an opening in a roof including transportation carriages which permit sliding of said cover on guide rails, said transportation carriages arranged on both sides of the opening in said roof, said device comprising a generally triangular shaped lifting lever having three corners, said lifting lever pivotably mounted at said transportation carriage about a first pivot and pivotably connected to a connecting element at a second pivot, said lifting lever connected to said cover by an intermediate lever, said intermediate lever pivotably mounted to said lifting lever at a third pivot, said transportation carriage and said connecting element move relative to one another between said closed position and said opened position of said cover and said connecting element extending laterally along said transportation carriage, each of said first, second and third pivots generally located at the corners of said triangular shaped lifting lever.

5,632,524

COMBINATION CHAIR

Shigeru Ikeda, Kunitachi; Hisao Matsumoto, Mizuhomachi; Natsuko Hiramatsu, Yokohama; Hideki Iwashita, Koganei; Hisaya Umemoto, Akishima, and Shin Takagi, Sakura, all of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

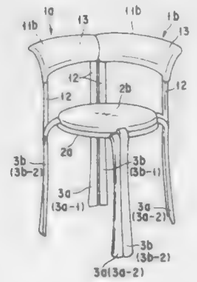
PCT No. PCT/JP94/01467, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO95/10209, PCT Pub. Date Apr. 20, 1995

PCT Filed Jun. 12, 1995, Ser. No. 454,243

Claims priority, application Japan, Oct. 13, 1993, 5-255890; Nov. 16, 1993, 5-286803; Dec. 15, 1993, 5-066885

Int. Cl.[6] A47C *3/04*

U.S. Cl. 297—233 **3 Claims**



1. A combination chair comprising a plurality of chairs, wherein each of said plurality of chairs comprises:

a seat portion supported by legs; and

a backrest provided on the seat portion, the backrests of each of said plurality of chairs being coupled to the seat portion such that when said plurality of chairs are combined so that the seat portions thereof are stacked upon each other in an up-and-down direction, the backrests of said plurality of chairs are adjacent to each other at one side in a width direction of the backrest; and

wherein the legs of each of said plurality of chairs have lengths such that when said plurality of chairs are combined so that the seat portions thereof are stacked upon each other in an up-and-down direction, the legs contact a support surface on which the combination chair is placed.

5,632,525

RECLINING DEVICE FOR VEHICLE SEAT

Hideki Uramichi, Toyota, Japan, assignor to Araco Kabushiki Kaisha, Aichi-ken, Japan

Filed Aug. 8, 1995, Ser. No. 512,433

Claims priority, application Japan, Aug. 11, 1994, 6-189609

Int. Cl.[6] B60N *2/20*

U.S. Cl. 297—367 **5 Claims**

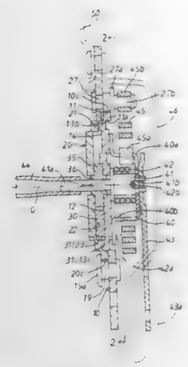
1. A reclining device for a vehicle seat, comprising:

a first arm member for attachment to a frame structure of a seat cushion or a back rest of the vehicle seat;

a second arm member for attachment to a frame structure of the other of the back rest or the seat cushion and connected with said first arm member for relative rotation about a hinge center axis line, said second arm member being formed with an arc shaped internal tooth portion that extends less than 180° and is concentric with the hinge center axis line;

a slide pawl slidably supported within said first arm member to be moved in a radial direction with respect to the hinge center axis line and having an arcuate external tooth portion engageable with the internal tooth portion of said second arm member;

a release shaft rotatably supported on said first arm member coaxially with the hinge center axis line and being loaded by resilient means in a rotational direction;



a release arm integral with one end of said release shaft to rotate said release shaft against the load of said resilient means; and interlocking means provided between said release shaft and said slide pawl to maintain engagement of the external tooth portion of said slide pawl with the internal tooth portion of said second arm member under the load of said resilient means, wherein

said first arm member is formed with an annular protruded portion concentric with the hinge center axis line,

said second arm member is formed with an annular recessed portion coupled with the annular protruded portion of said first arm member for relative rotation about the hinge center axis line,

the internal tooth portion of said second arm member is located radially inside said annular recessed portion, and

said slide pawl and said interlocking means are disposed between said first and second arm members radially inside the internal tooth portion of said second arm member.

5,632,526

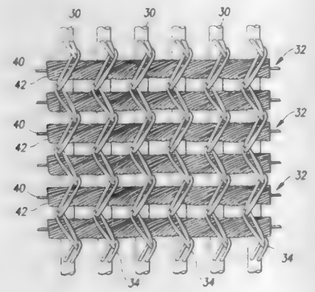
WARP KNIT WEFT-INSERTION ELASTOMERIC FABRIC

George C. McLarty, III, Greenville; Anthony R. Waldrop, Easley, and Kathryn T. Anderson, Greenville, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 339,260, Nov. 10, 1994, Pat. No. 5,533,789. This application Apr. 10, 1996, Ser. No. 630,381

Int. Cl.[6] A47C *7/02*

U.S. Cl. 297—452.64 **9 Claims**



1. A warp knit, weft-insertion elastomeric fabric structure having a performance side and an aesthetic side, the fabric structure comprising: a plurality of elastomeric monofilament yarns running in a first direction, said monofilament yarns lying in a first plane and forming the performance side of said fabric structure; a plurality of elastomeric wrapped filament yarns running in a second direction generally transverse to said first direction, said wrapped filament yarns lying in a second plane substantially parallel to said first plane and forming the aesthetic side of said fabric; and a plurality of knit filament yarns running between said first plane and said second plane and tying said elastomeric monofilament yarns to said elastomeric wrapped filament yarns.

5,632,527

TOOL AND METHOD FOR THE REMOVAL OF FLOOR OR WALL SURFACING

Lorenz Halder, Am See 14, 88636 Illmensee, Germany

PCT No. PCT/DE93/00472, § 371 Date Jan. 31, 1994, § 102(e) Date Jan. 31, 1994, PCT Pub. No. WO93/24282, PCT Pub. Date Sep. 12, 1993

PCT Filed Jun. 1, 1993, Ser. No. 190,048

Claims priority, application Germany, Jun. 2, 1992, 42 18 134.8

Int. Cl.[6] E21B *10/36;* **E01C** *23/12;* **B25D** *17/02*

U.S. Cl. 299—100 **10 Claims**



2. A tool for performing at least one of removing and treating high strength surfacing comprising:

a plurality of cutting spikes including sintered-carbide tips; and

a chisel for transmitting at least one of striking and vibration forces to the cutting spikes, the chisel including a striking pin and a chisel shank merging into the striking pin, the cutting spikes being disposed on the chisel.

5,632,528

VEHICLE WHEEL WITH TIRE

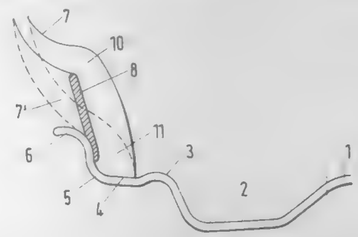
Uwe Gohrbandt, Haan, Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Jan. 24, 1995, Ser. No. 377,447

Claims priority, application Germany, Jan. 24, 1994, 44 02 296.4

Int. Cl.[6] B60B *21/02*

U.S. Cl. 301—37.22 **13 Claims**



1. A combination of a vehicle wheel and a pneumatic tire, the combination comprising: a wheel having an apex diameter and an inner side and an outer side each having a radially outwardly extending terminal clinch; a tire having sidewalls with inwardly directed annular regions that form a tire seat, the walls of the tire

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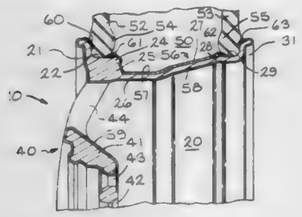
being removably mounted between the clinches of the wheel and defining a natural contour when mounted; and a split rim ring removably arranged between an inner side of one of the clinches of the wheel and the tire sidewall of the tire so as to be angled outwardly at an angle steeper than the natural contour of the tire and to extend the clinch in a radial direction, whereby the rim ring prestresses and inhibits outward bulging of the sidewall of the tire, the rim ring having an inner diameter that is smaller than the apex diameter of the wheel, the split rim ring having two free ends at which complimentary shaped projections are provided whereby the ends are connected together in a positive-locking manner to form the ring.

5,632,529

PLATED VEHICLE WHEEL HAVING NON-PLATED TIRE BEAD SEATS

Daniel C. Wei, Ann Arbor, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Filed Apr. 18, 1995, Ser. No. 423,179
Int. Cl.[6] B60B *21/00*
U.S. Cl. 301—95 **6 Claims**



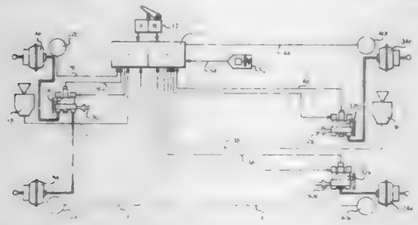
1. A vehicle wheel comprising:
an annular wheel rim defining a wheel rim surface, said wheel rim having annular outboard and inboard tire bead seats formed therein for supporting outboard and inboard tire walls, respectively;
a generally circular wheel disc disposed across said wheel rim and defining a wheel disc surface; and
a layer of metal plating formed on a portion of at least one of said wheel rim and disc surfaces, said portion excluding a portion of at least one of said tire bead seats.

5,632,530

ELECTRONIC BRAKING SYSTEM WITH SYSTEM TEST

Malcolm Brearley, Solihull, England, assignor to Lucas Industries PLC., Solihull, England

Continuation of Ser. No. 265,120, Jun. 24, 1994, abandoned. This application Feb. 7, 1996, Ser. No. 598,073
Claims priority, application United Kingdom, Jun. 26, 1993, 9313218
Int. Cl.[6] B60T *17/22*
U.S. Cl. 303—22.1 **12 Claims**



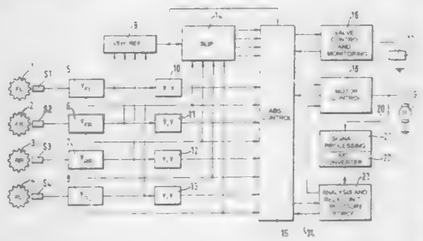
1. An electronic braking system for a multi-axle road vehicle, comprising:
a foot-operable braking transducer for generating electrical braking demand signals respective of a driver's braking demand,
load transducer means for generating electrical load signals representative of the receptor load on different axles of the vehicle,
an electronic controller which receives the braking demand signals and load signals and generates electrical output signals for controlling the operation of braking devices for wheels carried by said axles,
said controller including adaptive load compensation means which act to modify said output signals of said controller to said various braking devices so as to take account of prevailing loads on the said axles, and an adaptive control means which further modifies said output signals of said controller to compensate for other operating disturbances to braking,
test mode control means enabling said system to enter a test mode, and test demand application means for automatically applying to said controller in said test mode and in place of said electrical braking demand signals representative of driver braking demand, a preset standard braking input demand, said test demand application means including compensation suppression control means which, when said test mode is entered, are arranged to suppress all of said other compensations for operation disturbances to braking produced by said adaptive control means to generate for testing purposes load compensated braking pressures which take into account the prevailing values of said axles loads.

5,632,531

METHOD AND CIRCUIT CONFIGURATION FOR DETERMINING THE PEDAL FORCE AS A CONTROL QUANTITY FOR A BRAKE SYSTEM WITH ANTI-LOCK CONTROL

Ivica Batistic, Frankfurt am Main, and Axel Christen, Mühlheim, both of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

PCT No. PCT/EP94/00153, § 371 Date Nov. 8, 1995, § 102(e) Date Nov. 8, 1995, PCT Pub. No. WO94/18041, PCT Pub. Date Aug. 18, 1994
PCT Filed Jan. 21, 1994, Ser. No. 500,848
Claims priority, application Germany, Feb. 4, 1993, 43 03 206
Int. Cl.[6] B60T *8/34*
U.S. Cl. 303—113.4 **16 Claims**



1. A circuit configuration for a brake system of a vehicle having anti-lock control for determining the pedal force as a control quantity during braking of the wheels of the vehicle, said circuit configuration comprising:
sensors for indicating the rotational behavior of the wheels of the vehicle;
an hydraulic pump assembly having a drive motor which serves at least as one of:
(a) a pressure fluid return, and
(b) a source of auxiliary pressure fluid;
an electronic controller circuit for:
(a) evaluating the wheel rotational behavior of the wheels of the vehicle,
(b) generating braking pressure control signals, and

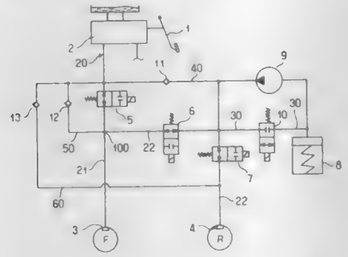
(c) actuating said drive motor; and
a measuring circuit for:
(a) switching said drive motor over to generator operation for a predetermined period of time,
(b) measuring the magnitude and the fade-out behavior of the voltage of said drive motor during said predetermined period of time,
(c) evaluating the magnitude and the fade-out behavior of the voltage of said drive motor during said predetermined period of time for determining an approximate supply pressure, and
(d) supplying an indication of the supply pressure to said electronic controller circuit.

5,632,532

ANTI-SKID CONTROL APPARATUS

Masaki Ohoka, Anjou; Toshiya Morikawa, Kariya, and Takashi Watanabe, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 6, 1995, Ser. No. 554,628
Claims priority, application Japan, Dec. 16, 1994, 6-313628
Int. Cl.[6] B60T *8/48*
U.S. Cl. 303—116.1 **22 Claims**



1. An anti-skid control apparatus comprising:
a master cylinder for generating brake fluid pressure;
a first conduit having first and second branch conduits for supplying said brake fluid pressure from said master cylinder to a first wheel cylinder and a second wheel cylinder;
a cut-off valve between said master cylinder and a junction point of said first and second branch conduits, for selectively supplying and cutting off brake fluid from said master cylinder;
a first control valve in said second branch conduit for controlling brake fluid flow in said second branch conduit;
a second control valve between said first control valve and said second wheel cylinder in said second branch conduit for controlling brake fluid flow in said second branch conduit;
a second conduit extending from a point between said first control valve and said second control valve to a reservoir;
a third control valve in said second conduit for controlling brake fluid flow in said second conduit;
a pump in parallel with said third control valve for pumping up brake fluid from said reservoir and supplying said pumped up brake fluid to said first and second wheel cylinders.

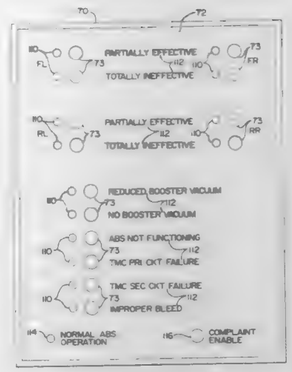
5,632,533

BRAKE SYSTEM FAULT MODE GENERATOR

Bernhard W. Kullmann, Rochester Hills; Joerg Scheibel, Auburn Hills, and Toki Nestorovski, Clinton Township, all of Mich., assignors to ITT Corporation, N.Y.

Filed Nov. 4, 1994, Ser. No. 334,310
Int. Cl.[6] B60T *8/60*
U.S. Cl. 303—122.05 **2 Claims**

2. A brake system comprising:
a master cylinder selectively pressurized by a vehicle operator;



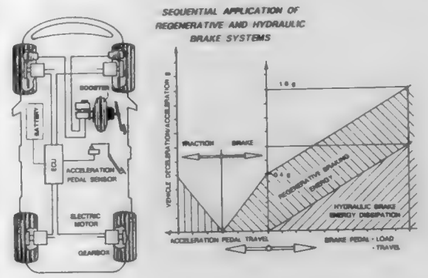
a plurality of vehicle wheel brakes;
a plurality of brake lines fluidly connecting the master cylinder with the vehicle wheel brakes;
a plurality of electrically responsive fluid control valves disposed in the brake lines;
a fault controller connected to an electrical power source and having a plurality of output terminals connected to the fluid control valves, and a plurality of operator selectable switches disposed between the electrical power source and the output terminals wherein the brake system includes an anti-lock brake system controller electrically connected to the fluid control valves further comprising a plurality of electrically responsive fault control valves directly electrically connected to the fault controller and operably disposed in the brake lines between the fluid control valves and the wheel brakes; and
a plurality of proportioning valves fluidly in parallel with the fault control valves and adapted to simulate a decreased coefficient of brake friction at a selected wheel brake when the fault control valve associated with the selected wheel brake is closed.

5,632,534

ELECTRIC VEHICLE HAVING A HYDRAULIC BRAKE SYSTEM

Josef Knechtges, Solihull, England, assignor to Lucas Industries Public Limited Company, West Midlands, England

Filed Oct. 7, 1994, Ser. No. 319,649
Claims priority, application United Kingdom, Oct. 7, 1993, 9320661
Int. Cl.[6] B60L *7/24;* **B60T** *13/57*
U.S. Cl. 303—152 **4 Claims**



1. An electric-powered vehicle having a drive system which comprises:
at least one electric motor which has an electrical supply and is controlled and monitored by an electric control system driving

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at least one vehicle wheel in a drive mode of operation of the motor and also varying the electric torque to selectively provide a contribution to an overall braking torque of the vehicle when controlled by said control system to operate in a braking mode, which also includes a hydraulic braking system which is actuated by a vehicle driver, and which operates on at least front wheels of the vehicle.

a first mechanism adjusting hydraulic braking torque, produced by the vehicle driver by way of the hydraulic braking system in such a manner that, for modulating overall braking torque effective at said wheels, variation of electric torque produced by said motor stays within a regenerative range of operation of the electric motor, said first mechanism comprising an electronically controlled booster enabling a variable booster ratio to be selected electronically

a second mechanism controlling the electrical supply to the electric motor and modulating said overall braking torque for braking in an ABS anti-lock mode such that, if excessive wheel slip occurs, the electric motor torque is reduced; and

a third mechanism allowing control of the braking system when hydraulic brake torque alone exceeds wheel locking torque, by which the electric brake torque produced by said electric motor is removed, and an additional tractive torque is then produced by said electric motor and applied to counteract the hydraulic brake torque.

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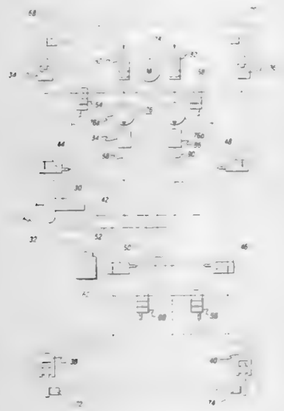
DYNAMIC REAR PROPORTIONING BRAKE SYSTEM

Mark S. Luckevich, Ann Arbor, Mich.; Mark R. Bielek, Wiesbaden, Germany, and Dan Negrin, Windsor, Canada, assignors to Kelsey-Hayes Company, Livonia, Mich.

Filed Aug. 28, 1995, Ser. No. 518,112

Int. Cl.[6] B60T *8/26;8/60;8/34*

U.S. Cl. 303—186 **18 Claims**



1. A brake pressure control method for a vehicle having a front and a rear wheel, and control means for controlling the pressure at said wheels, said method comprising a sequence of the steps of:

calculating a rear proportioning mode activation threshold as a function of predetermined vehicle parameters;

initiating a dynamic rear proportioning (DRP) mode of automatic brake pressure control of said rear wheel if the estimated vehicle speed is above a low speed limit and said activation threshold exceeds a predetermined value;

suspending said dynamic rear proportioning mode and transitioning to an active anti-lock braking (ABS) mode of automatic brake pressure control of said rear wheel upon detection of an incipient skid condition of said rear wheel;

terminating said active anti-lock mode of operation of said rear wheels and transitioning to said dynamic rear proportioning mode upon recovery of said rear wheel from said incipient skid condition;

terminating said dynamic rear proportioning mode when said value is no longer exceeded or a predetermined interval of time after said vehicle speed drops below said low speed limit.

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DOUBLE LOCK TYPE ELECTRICAL CONNECTOR

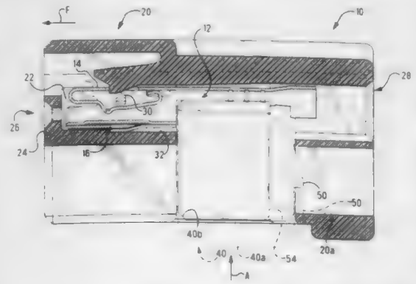
Hiroshi Kitamura, Kawasaki, Japan, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 13, 1994, Ser. No. 304,964

Claims priority, application Japan, Nov. 15, 1993, 5-061234

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **14 Claims**



1. A male electrical connector half for mating with a complimentary female electrical connector half, said male connector half comprising:

an insulating housing having a plurality of contact insertion passages for receiving electrical contacts therein, and said insulating housing includes a double-lock member receiving cavity, said cavity is formed in a first exterior surface of the male connector half;

a plastic double-lock member having contact insertion openings for alignment with the contact insertion passages, said double-lock member is shaped to fit into the double-lock member receiving cavity for locking said electrical contacts in said housing; and

said double lock member further includes at least one guide groove formed in a second exterior surface adjacent said first exterior surface, said double-lock member having at least one end wall and at least one latching member for latching said double lock member into said housing.

5,632,537

CRAWLER BELT FOR CRAWLER MOTOR VEHICLE

Hajime Yoshimura, Tokyo; Kouichi Uchibaba; Takahiro Yamamoto, both of Kawagoe; Koichi Matsumoto, Matsubara; Yoshio Ueno, and Kenichi Sakai, both of Kishiwada, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and The Ohtsu Tire & Rubber Co., Ltd., Izumi-ohtsu, both of Japan

Filed Mar. 22, 1994, Ser. No. 216,167

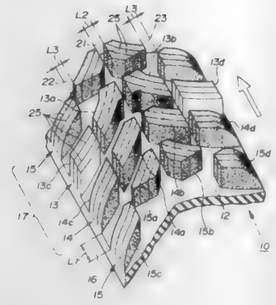
Claims priority, application Japan, Jun. 4, 1993, 5-134902; Jun. 4, 1993, 5-134903; Jun. 7, 1993, 5-136218; Jun. 29, 1993, 5-159107

Int. Cl.[6] B62D *55/26*

U.S. Cl. 305—173 **12 Claims**

1. A crawler belt comprising

(a) an elongate endless belt body extending longitudinally and having a first side for ground contact and a second side



opposite said first side, said belt body being drivable longitudinally in a first direction; and

(b) a plurality of ridges on said first side extending outward therefrom, each of said ridges comprising a plurality of sipes defined therein and extending longitudinally thereof for allowing said ridge to be flexibly deformable in a second direction opposite said first direction;

said ridges formed into groups respectively defining a plurality of at least partial chevron-shapes all pointing in said first direction, said groups successively arranged at predetermined spaced intervals in said first direction, said groups being separated from each other by grooves extending transversely and generally perpendicular of said longitudinal extent of said belt body; and each of said groups is divided into a plurality of sub-groups by at least two transversely spaced grooves extending longitudinally of said belt body, thus forming a left side subgroup, a right side subgroup and central segments disposed between said left and right side subgroups, and wherein each left and right side subgroup comprises at least one first end segment having a generally rectangular cross-section and at least one second end segment having a convex arcuate edge outward of said belt body.

5,632,538

DRIVE SYSTEM FOR A CATERPILLAR TRACK

Hagen-Heinz Wiesner, Solingen; Klaus Spies, and Bernd-Dieter Neubert, both of Remscheid, all of Germany, assignors to Diehl Remscheid GmbH & Co., Remscheid, Germany

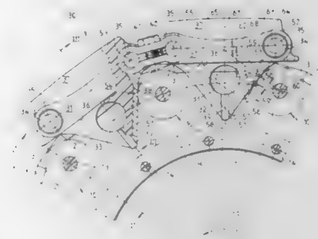
Filed May 22, 1995, Ser. No. 447,015

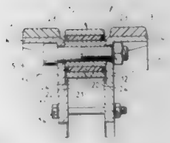
Claims priority, application Germany, Jun. 17, 1994, 44 21 001.9

Int. Cl.[6] B62D *55/08*

U.S. Cl. 305—194 **11 Claims**

1. A drive system for a caterpillar track comprising a plurality of rubber-coated chain link members each having guide teeth; a drive wheel for driving said caterpillar track; bars for driving the guide teeth being arranged on said drive wheel; rubber-mounted drive bodies constituted of metal being arranged on said bars, support surfaces on the drive wheel being equipped with banding means consisting of rubber; mounting bushings of the drive bodies being each fixedly gripped between discs, drive bushings being mounted so as to be movable in radial and axial directions between said discs in recesses formed on opposite sides in the discs, each said drive body comprising one said drive bushing, one said mounting bushing, and a radially prestressed rubber casing for mounting said drive bushing on said mounting bushing, the mounting bushing and the drive bushing having free spaces therebetween at opposite edges thereof for receiving the rubber casing; and said drive wheel comprising two cup-shaped thin-walled essentially L-shaped discs





having annular flanges which include faces interconnected by screw connection at spacings conforming to the width of the drive members, said drive members being mounted on the screw connections.

5,632,539

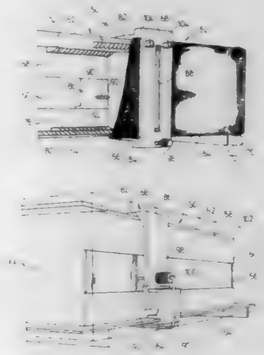
STORAGE DEVICE

Tom Bokstijn, Volendam, Netherlands, assignor to Tombo Trading Internaitonal B.V., Volendam, Netherlands

Continuation-in-part of Ser. No. 189,327, Jan. 31, 1994, Pat. No. 5,445,449, which is a continuation-in-part of Ser. No. 859,404, May 27, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 474,255

Int. Cl.[6] A47B *81/06*

U.S. Cl. 312—9.35 **18 Claims**



1. A storage device for thin, flat objects, comprising:

housing means for supporting the device on a support surface;

a stationary magazine mounted in said housing, said stationary magazine having a plurality of parallelly oriented storage spaces;

wall means for retaining said objects in said storage spaces, said wall means including a wall having an opening, said wall means being at least partially slidable relative to said storage spaces so as to selectively align said opening with a desired storage space for insertion and removal of an object; and

removal means attached to said wall for removing objects from said storage spaces through said opening, wherein said

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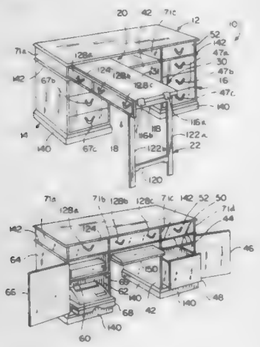
removal means comprises a rod system associated with said wall and having an engaging end for engaging and removing objects, said engaging end being aligned opposite to said opening of said wall and moveable with said wall whereby said engaging end is selectively aligned with said desired storage space.

5,632,540

DESK WITH HIDDEN RETURN

Steven R. Wilcox, Walker, Mich., assignor to Hekman Furniture Company, Grand Rapids, Mich.

Filed Nov. 27, 1995, Ser. No. 561,836
Int. Cl.[6] A47B *17/04*
U.S. Cl. 312—197 **17 Claims**



1. A desk comprising:
a primary work surface;
1 pedestal supporting said primary work surface;
a secondary work surface mounted to said pedestal below said primary work surface; and
a mechanism interconnecting said secondary work surface and said pedestal, said mechanism including pivoting means for allowing said secondary work surface to pivot about a vertical axis between a work position in which said secondary work surface is exposed for use and a hidden position in which said secondary work surface is hidden below said primary work surface, said mechanism further including a pullout means for allowing said secondary work surface to pull out from beneath said primary work surface while said secondary work surface is in said hidden position, said pivoting means carried by said pullout means.

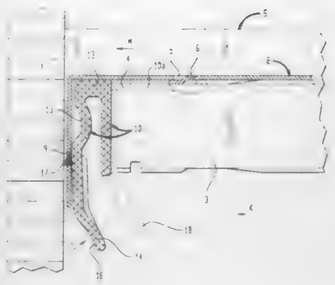
5,632,541

LOCKING DEVICE FOR DRAWERS AND THE LIKE

Detlev Uthoff, Löhne, Germany, assignor to Paul Hettich GmbH & Co., Kirchlengern, Germany

PCT No. PCT/DE94/00736, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO95/02349, PCT Pub. Date Jan. 26, 1995
PCT Filed Jun. 23, 1994, Ser. No. 397,098
Claims priority, application Germany, Jul. 15, 1993, 9310582 U
Int. Cl.[6] A47B *88/04*
U.S. Cl. 312—333 **10 Claims**

1. A drawer slide assembly, comprising:
a support rail attached to an article of furniture;
a guide rail received in the support rail for displacement in a horizontal direction;
a drawer defining an axis and exhibiting a first snap-in opening extending perpendicular to the axis and a second snap-in opening extending parallel to the axis; and



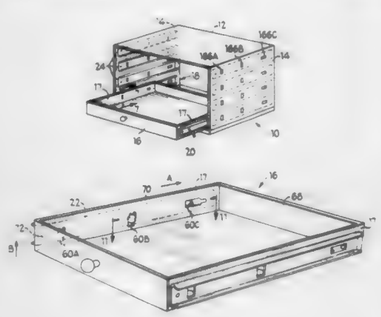
a locking mechanism for detachably securing the drawer to the guide rail assembly, said locking mechanism including first locking means in form of a locking element received in one end of the guide rail and including a spring-elastic actuating arm for engagement in the first snap-in opening of the drawer to secure the drawer in vertical direction, and second locking means for engagement in the second snap-in opening of the drawer for securing the drawer in horizontal direction.

5,632,542

DRAWER SLIDE INTERLOCK APPARATUS

Bert Krivec, Waukesha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Jun. 7, 1995, Ser. No. 474,733
Int. Cl.[6] A47B *89/00*
U.S. Cl. 312—334.7 **20 Claims**



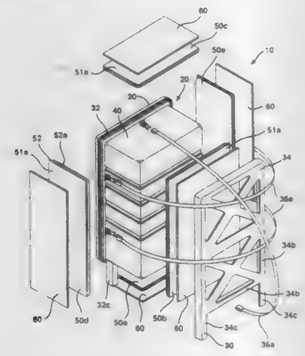
1. Connecting apparatus for connecting a drawer slide member having a planar connecting surface defining a plane to a slide receiving member having first and second substantially parallel surfaces, the apparatus comprising:
a plurality of male interlock members integral with the drawer slide member, each interlock member defining a fixed loop extending out of the plane defined by the planar connecting surface, the fixed loop having a first bearing surface and having first and second sides each connected to the planar connecting surface; and
a plurality of single uninterrupted second bearing surfaces disposed on the slide receiving member, each second bearing surface defining a portion of an aperture, each interlock member extending through an aperture to a mounted condition with the first and second bearing surfaces in contact with each other to connect the drawer slide member to the slide receiving member.

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APPLIANCE CABINET CONSTRUCTION

Ralph D. McGrath, Granville; Bret E. Kline, Columbus, and Dwight S. Musgave, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Jun. 7, 1995, Ser. No. 486,482
Int. Cl.[6] A47B *96/04*
U.S. Cl. 312—406 **15 Claims**



1. An insulated appliance comprising:
a mounting structure including a mounting frame, an inner liner and a door frame; and
a plurality of vacuum insulation panels retained by said mounting structure and positioned relative to one another so as to define a substantially completely enclosed insulation shell,
wherein said mounting frame comprises first and second sections, each of said sections having an insulation receiving portion defined about an outer periphery of each of said sections and securement structure for releasably securing said first and said second sections and said inner liner together, each of said vacuum insulation panels having a flange extending about its outer periphery such that the outer peripheral flange of at least one of said insulation panels is received in one or both of said receiving portions defined in the outer peripheries of said first and second sections.

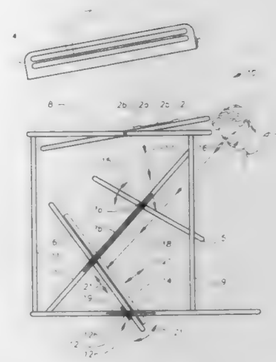
5,632,544

IMAGE TRANSFER APPARATUS

Anthony Dandrea, Jr., 430 Herrick St., Elmira, N.Y. 14904, and Victor W. Gardner, II, 4508 Cotton Hanlon Rd., Montour Falls, N.Y. 14865

Filed Feb. 16, 1995, Ser. No. 389,467
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—28 **17 Claims**

12. An optical apparatus for providing an appearance that the image of an original artwork is projected upon a working surface, said optical apparatus comprising:
a supporting frame being defined by a vertical support axis;
lighting means comprising a source of light, said lighting means capable of projecting an image, with said lighting means being mounted upon said supporting frame;
a first substantially transparent medium being supported upon said supporting frame adjacent said lighting means for supporting an original artwork to be reproduced;
a second substantially transparent medium supported by said supporting frame, said second substantially transparent medium being disposed between said first substantially transparent medium and a working surface, said image reflecting off of said second substantially transparent medium towards a viewer disposed over said second substantially transparent medium and said working surface, a view of said working surface passing through said second substantially transparent medium and melding with said image reflected from said second substantially transparent medium, and thereby appearing as if said image was disposed upon said working surface; and
a lens disposed between said first and second substantially transparent mediums for modifying said image;
whereby the appearance is that said image is projected upon said working surface so that an artist can reproduce said original artwork on said working surface with no visual interference of the artist's hand and tools.

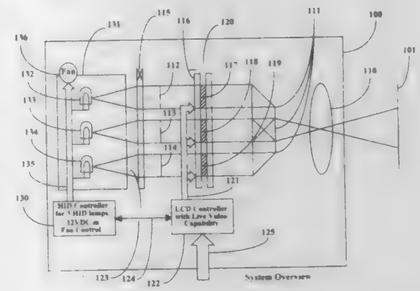


5,632,545

ENHANCED VIDEO PROJECTION SYSTEM

Dan Kikinis, Saratoga, Calif., assignor to Lextron Systems, Inc., Saratoga, Calif.

Filed Jul. 26, 1996, Ser. No. 686,809
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—31 **3 Claims**



1. A video projector system comprising:
individual light sources, one each for each color to be projected, adapted to provide each a separate light beam;
a lens system in the path of the separate light beams, adapted for focusing the beams;
a number of individual color filters equal to the number of beams, in the colors to be projected, and placed one each in each beam path;
a light-shutter matrix system comprising a number of equivalent switching matrices equal to the number of beams and placed one each in the beam paths;
a video controller adapted for controlling the light-shutter matrices; and
an optical combination system adapted for combining the several beams into a single composite beam for projection on a surface to provide a video display;

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wherein each beam passes through a color filter before being processed by a light-switching matrix.

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MULTIPURPOSE PROJECTOR WITH DETACHABLE PROJECTING UNIT

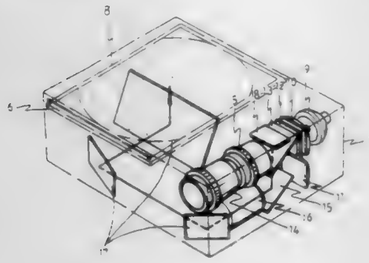
Seung G. Lee, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Dec. 22, 1995, Ser. No. 577,225

Claims priority, application Rep. of Korea, Dec. 24, 1994, 36519/1994

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—122 14 Claims



1. A multipurpose projector having a detachable projecting unit comprising:

a body including,

a sheet of transparent glass at an upper side of the body, and an attaching recess which is formed at one side of an optical system region of the body;

a projecting unit attachable into the attaching recess over the transparent glass by means of a rotatable post attached to the body, in response to a user's option, for diverging and projecting moving pictures;

a liquid crystal display projector part including,

a light source disposed movably in a vertical direction in a rear part of the optical system in the body for emitting light at a predetermined luminous intensity,

a first focusing lens for focusing the light emitted from the light source,

a liquid crystal panel for receiving light focused by the first focusing lens for converting an electrical image received from outside into an optical image, and

a zoom lens for adjusting size of the optical image converted in the liquid crystal panel;

an overhead projector part disposed in the optical system in the body including,

a second focusing lens for focusing the light emitted from the light source,

a plurality of total reflection mirrors for deflecting a path of the light focused by the second focusing lens at a right angle from a horizontal direction to a vertical direction, and

a Fresnel lens detachably disposed in the body for focusing the light deflected into the vertical direction at the total reflection mirrors; and,

an image sensor disposed in the rear part of a projecting lens in the liquid crystal display part for converting a received optical image into an electrical image.

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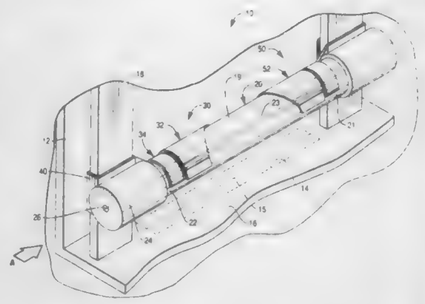
DEVICE FOR CORRECTING BRIGHTNESS ROLL-OFF AT AN END OF A LAMP

Lei Ge, Shanghai, China, and Murray R. Zink, Waterloo, Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 19, 1995, Ser. No. 530,046

Int. Cl.[6] G03B *15/02*

U.S. Cl. 362—16 28 Claims



1. A device connectable between a frame part of a camera and an end of a lamp which provides light for an imaging field of the camera, said device comprising:

a reflector portion for reflecting light from the lamp;

a clip portion extending from said reflector portion and for connecting to the end of the lamp to enable said reflector portion to reflect light from the lamp; and

a hook portion extending from said clip portion and for connecting to the frame part to locate said reflector portion relative to the lamp such that light reflected from said reflector portion cooperates with light from the lamp to gradually correct brightness roll-off at the end of the lamp to produce a uniform illumination of the imaging field of the camera

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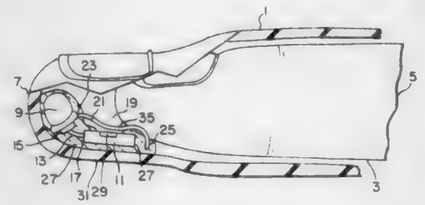
PRESSURE ACTUATED LIGHT WITH DIGIT ACCOMMODATING HOUSING MEANS

Roger C. Mayfarth, 533 Birchwood Rd., Linden, N.J. 07036

Filed Oct. 12, 1995, Ser. No. 543,177

Int. Cl.[6] F21L *15/08*

U.S. Cl. 362—103 20 Claims



1. A pressure actuated light comprising:

1) housing means having an open end into which a human digit can be inserted, and a closed end adapted to transmit light; and

2) an illuminating system located proximally to said closed end, comprising:

a) a light source adjacent said closed end;

b) a battery to provide electrical power to said light source;

c) means for making a permanent electrical connection between one terminal of said light source and a corresponding terminal of said battery; and

d) actuating means comprising: conductor means with one end thereof having a permanent electrical connection to the opposite terminal of said light source, and with the opposite end or intervening portion thereof located proximally to the corresponding opposite terminal of said battery, whereby said conductor means, in cooperation with said inserted human digit and said housing means, is capable of making an intermittent and interruptible electrical connection between said opposite terminal of said light source and said corresponding opposite terminal of said battery.

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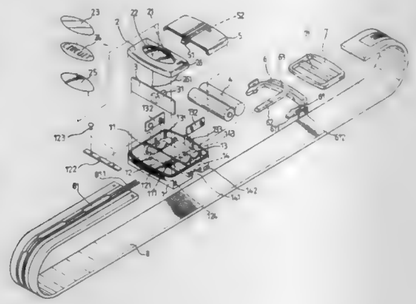
FASTENER FRAME WITH BUTTON SWITCH

Chung-Ho Fang, No. 41, Shin Le Rd., Tainan City, Taiwan

Filed Jul. 18, 1995, Ser. No. 503,878

Int. Cl.[6] F21L *15/08*

U.S. Cl. 362—108 4 Claims



1. A fastener frame comprising:

a plug having a pair of elastic plug rods extending longitudinally from opposing ends of a connecting member and a starting rod extending longitudinally from said connecting member intermediate said pair of plug rods, each of said plug rods having at least one lug formed at a distal end thereof and a push-button longitudinally spaced from said at least one lug, said plug having an elongated slot formed in said connecting member for coupling to one end of a belt; and,

socket means coupled to an opposing end of the belt for releasable coupling with said plug, said socket means including:

a. a case having an open top and being divided into a circuit compartment and a battery compartment by a spacer, said spacer having a through opening formed therein for passage of said starting rod therethrough;

b. a top member overlying said circuit compartment;

c. a battery cover releasably coupled to said case in overlying relationship with said battery compartment;

d. a bell socket disposed below a bottom wall of said battery compartment, said bell socket having a pair of side walls for receiving said pair of plug rods and said starting rod therebetween, each of said side walls having a guide slot formed therein and at least one setting hole formed therethrough for respective receipt of said at least one lug; and

e. a driving circuit module disposed within said circuit compartment and having an output coupled to at least one source of luminosity, said driving circuit including a push-button switch disposed in aligned relationship with said spacer through opening for actuation by said starting rod responsive to insertion of said plug into said bell socket.

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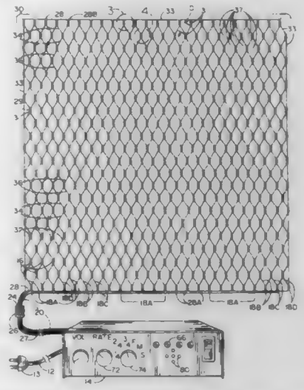
DECORATIVE ARRAY LIGHTING SYSTEM

Ren S. Yeh, 521 South El Paso, El Paso, Tex. 79901

Filed Oct. 3, 1995, Ser. No. 538,247

Int. Cl.[6] F21P *1/02*

U.S. Cl. 362—123 4 Claims



1. A decorative light array system comprising a multiplicity of illuminators, means for connection to a source of electrical power, a wire harness having a plurality of circuit paths for feeding the source of electrical power to the illuminators, the wire harness further having a net portion supporting the illuminators, each of the circuit paths having a plurality of circuit branches extending across the net portion, the net portion having a plurality of net intersections, the net portion further includes net strands extending from each of the illuminators to at least one illuminator of an adjacent circuit branch for forming the net intersections, the wire harness further having a multiplicity of translucent sleeve member, each sleeve member enclosing a corresponding illuminator and a portion of each net strand, each of the circuit paths having a plurality of circuit branches extending across the net portion from spaced peripheral feeder locations thereof, a plurality of the illuminators being spaced apart and series-connected in each of the circuit branches the circuit branches of each circuit path being parallel-connected, adjacent ones of the circuit branches being in different circuit paths.

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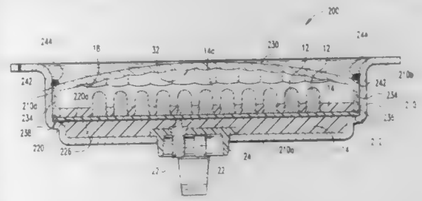
LED VEHICLE LAMP ASSEMBLY

Troy L. Roney, Madison, and Bruce S. Rigsby, Charlestown, both of Ind., assignors to Grote Industries, Inc., Madison, Ind.

Continuation-in-part of Ser. No. 276,199, Jul. 18, 1994, Pat. No. 5,528,474. This application Jun. 18, 1996, Ser. No. 665,388

Int. Cl.[6] F21V *29/00*

U.S. Cl. 362—249 22 Claims



1. A lamp assembly, comprising:

a housing defining an inner surface;

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a light transmissive window on said housing;

at least one light emitting unit mounted to a carrier positioned within said housing, said carrier and said light transmissive window defining a space therebetween, said light emitting unit emitting light toward said light transmissive window; and

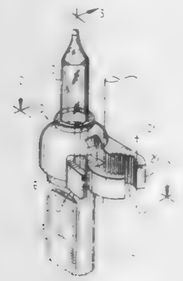
a formable medium located within said housing, said carrier and said light transmissive window at least partially embedded within said medium, said medium bonding to each of said carrier, said light transmissive window and said inner surface of said housing such that said space is hermetic.

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LAMP HOLDER HAVING LOCKABLE CAP WITH INTEGRAL CLAMPING ELEMENTS

Jessica Wang, and Dennis Wang, both of Taipei, Taiwan, assignors to Toyo Electric Manufacturing Co. Ltd., Taipei, Taiwan

Filed Apr. 16, 1996, Ser. No. 633,123
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—396 **7 Claims**



1. A lamp holder assembly adapted for attachment onto an independent structure for providing a decorative light display, comprising:

an electrical bulb element inserted into a base member and having two bare electrical wires extending from the base member lower end;

a socket member having a cylindrical-shaped cavity formed in its upper portion and sized for receiving the base member lower end; the socket member having two electrically insulated wires extending from its lower end, and

an annular-shaped cap member adapted for encircling bulb element and the base member and being interfitted onto the upper end of said socket member, said cap member including a u-shaped clamping element extending radially outwardly from the cap member and adapted for mounting the lamp holder securely onto an independent structure

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FREESTANDING LAMP HAVING MODULAR CONNECTION

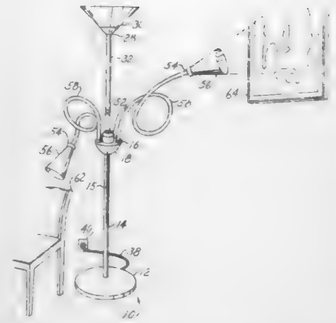
Thomas M. Huang, 5649 N. Peck Rd., Arcadia, Calif. 91006

Filed Feb. 13, 1995, Ser. No. 387,239
Int. Cl.[6] F21S *1/12*
U.S. Cl. 362—410 **16 Claims**

1. A floor lamp comprising

(a) a base

(b) a base electrical connector mounted in a fixed position relative to the base and having at least two recessed contact elements, the contact elements being oriented for receiving



mating contacts, the base electrical connector having electrical conductors extending therefrom for connection to an external source;

(c) a lamp module comprising a module structure, a lamp fixture supported by the structure, a module electrical connector mounted proximate a lower extremity of the structure and having at least two projecting contact elements, the projecting contact elements being oriented for engagement as the mating contacts, and means for electrically connecting the lamp fixture between the projecting contact elements; and

(d) means for supportively securing the fixture module on the base electrical connector for powering the fixture from the external source, comprising a ring member and a support element, wherein the ring member is rotatably retained relative to one of the base and the lamp module, and the support element is fixably located relative to the other of the base and the lamp module, the ring member being secured to the support element by rotational engagement therewith.

5,632,554

SLURRY FORMING PROCESS USING AN INFLATABLE/COLLAPSIBLE BAG WITHIN A MIXING DEVICE

Chih-Chung Wang, Lexington, and Kenneth R. Taylor, Norfolk, both of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Feb. 1, 1995, Ser. No. 384,287
Int. Cl.[6] B01F *9/00*
U.S. Cl. 366—208 **13 Claims**



1. A method of forming a slurry of selected dry and wet component comprising

introducing selected dry slurry components into a flexible, collapsible bag;

inflating and sealing said bag to confine said components therein;

agitating the sealed bag within a mixing device,

so as to blend the confined components;

opening said bag and introducing a wet slurry component into said bag;

collapsing said bag and resealing the bag to confine the wet and dry components therein; and,

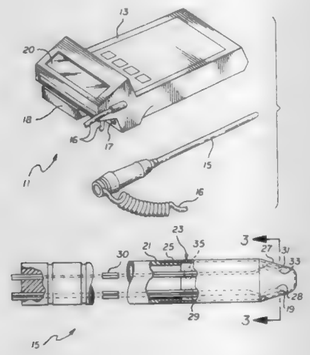
operating the mixing device to knead and blend the confined components into a slurry composition.

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MEDICAL THERMOMETER

Thomas K. Gregory, and John W. Stevenson, both of Carlsbad, Calif., assignors to Diatek, L.P., San Diego, Calif.

Continuation-in-part of Ser. No. 303,344, Sep. 9, 1994, abandoned. This application Nov. 3, 1994, Ser. No. 333,958
Int. Cl.[6] G01K *3/04;7/00;* **A61B** *5/00*
U.S. Cl. 374—102 **13 Claims**



1. A medical thermometer for estimating the temperature of a patient, comprising:

a probe;

a temperature sensor mounted in the probe, for producing a signal indicating the temperature of the probe;

a display;

a sampler for repeatedly sampling the temperature sensor signal, to produce a succession of temperature measurements; and

a processor configured to repeatedly estimate the patient's temperature based on the succession of temperature measurements and to repeatedly determine the stability of the resulting succession of temperature estimates, wherein the processor provides a final estimate of the patient's temperature, for display on the display, when the determined stability of the succession of temperature estimates has a prescribed level of stability, wherein the prescribed level of stability is selected in accordance with the values of the succession of temperature estimates.

11. A method for estimating a patient's temperature using a medical thermometer of the kind having a probe and a sensor that produces a signal indicating the temperature of the probe, comprising:

repeatedly measuring the sensor signal, to produce a succession of temperature measurements;

repeatedly evaluating the succession of temperature measurements using predetermined criteria, to provide a succession of estimates of the patient's temperature;

repeatedly determining the stability of the succession of temperature estimates; and

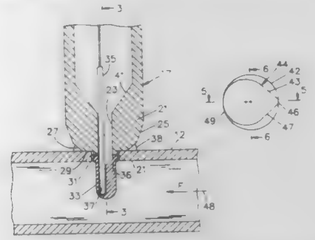
displaying a final estimate of the patient's temperature when the determined stability of the succession of temperature estimates has been determined to have a prescribed level of stability, wherein the prescribed level of stability is selected according to the values of the successive temperature estimates.

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THERMOWELL APPARATUS FOR SENSING TEMPERATURE IN PETROCHEMICAL APPLICATIONS

Robert B. Sivyer, Houston, Tex., assignor to Sivco, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 158,434, Nov. 29, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 357,327
Int. Cl.[6] G01K *1/08;1/14;13/02;7/04*
U.S. Cl. 374—138 **4 Claims**



1. A thermowell apparatus for use in sensing temperature in piping in a cracker furnace including:

a one piece integral unit having a tubular body portion with a portion thereof arranged for use in the cracker furnace and having high temperature erosion resistant characteristics and being compatible for attachment by welding to a pipe in the cracker furnace where said pipe has high temperature resistance characteristics;

said integral unit having a lower tip member where said tip member has a cylindrically shaped section for positioning and welding to a cylindrically shaped opening in the pipe;

said tip member having a depending section from the cylindrically shaped section where said depending section is disposed within the bore of the pipe and is arranged transverse to the flow of fluids in the pipe;

said depending section having a forward, leading edge surface disposed transverse to the central axis of the pipe into the direction of fluid flow in the pipe and having angularly arranged side surfaces connecting to a rearward wall surface;

said body portion having a central bore disposed along a first transverse axis to said central axis, said central bore being sized for receiving a cylindrically shaped thermocouple member;

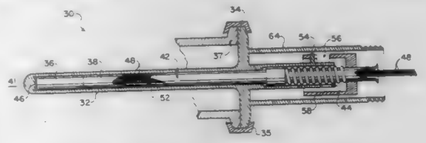
said depending section having a blind bore disposed along a second transverse axis to said central axis, said blind bore being smaller in diameter than said central bore and said second transverse axis offset longitudinally from said first transverse axis along said central axis, said blind bore being sized to receive said thermocouple and said blind bore being disposed closer to the rearward wall surface than to the leading edge surface.

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MODULAR TEMPERATURE SENSING APPARATUS

Robert A. Simons, Austin, Tex., assignor to Weed Instrument Company, Inc., Round Rock, Tex.

Filed Dec. 16, 1994, Ser. No. 358,787
Int. Cl.[6] G01K *13/02;1/08;1/14*
U.S. Cl. 374—148 **9 Claims**



1. A temperature sensing apparatus comprising:

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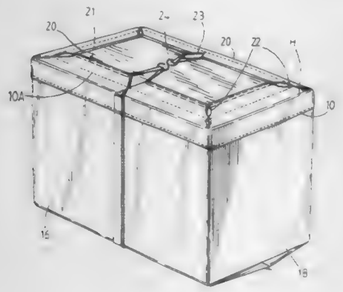
(a) an elongated sheath having a sensor receiving opening extending longitudinally therethrough from an open end to a closed end;
(b) attachment means connected to the sheath for securing the sheath to a structure with the closed end of the sheath extending into a medium to be sensed;
(c) a temperature sensor in a sensor position at the closed end of the sheath, the temperature sensor being adapted to be inserted into the sheath open end and through the length of the sensor receiving opening to the sensor position, and having a plurality of sensor leads connected thereto;
(d) a rigid, elongated sensor positioning member having a cross-sectional shape enabling a first end thereof to be inserted into the sheath open end to an operating position in which the sensor positioning member extends through the sensor receiving opening of the sheath from the temperature sensor in the sensor position to the sheath open end, the sensor positioning member being readily separable from the temperature sensor and, when in the operating position, leaving a continuous and open lead receiving area from the temperature sensor to the sheath open end and within the area defined by the sensor receiving opening of the sheath, the sensor leads extending through the lead receiving area from the temperature sensor to a point beyond the open end of the sheath; and
(e) sensor securing means associated with the sensor positioning member for securing the sensor positioning member in the operating position with a sensor positioning force pressing the sensor positioning member against the temperature sensor in the sensor position.

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CONTAINER FOR COMPRESSED ARTICLES

Barry P. Baker, Co. Down, Ireland, assignor to Gallaher Limited, Weybridge, United Kingdom

PCT No. PCT/GB94/01430, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO95/02545, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 1, 1994, Ser. No. 583,119
Claims priority, application United Kingdom, Jul. 15, 1993, 9314689
Int. Cl.° B65D *30/16;33/28*
U.S. Cl. 383—75 **20 Claims**



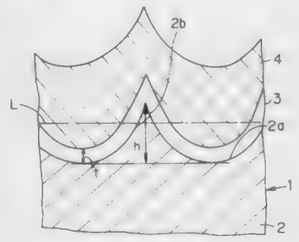
1. A container, for a compressed block of tobacco, the container comprising rectangular bottom, front, rear and two side walls, of which at least the front, rear and side walls are formed of pliable, non-shape sustaining fabric, the front, rear and side walls each having along its upper edge a strip forming a flap which is arranged to be folded inwards to provide a partial top wall, the flaps providing a tubular guide containing at least one drawstring which is exposed at discontinuities in the guide part-way along each of the front and rear walls and at the corners of the partial top wall, whereby said at least one drawstring may be pulled up at at least one of the portions exposed in the front and rear wall discontinuities to pull the flaps inwards, and means for readily connecting the portions exposed in the front and rear wall discontinuities to hold said at least one drawstring pulled up to a predetermined extent.

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SLIDING BEARING

Yoshio Kumada; Katsuyuki Hashizume, and Soji Kamiya, all of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

PCT No. PCT/JP95/00465, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO95/25907, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 17, 1995, Ser. No. 549,726
Claims priority, application Japan, Mar. 18, 1994, 6-073959
Int. Cl.° F16C *33/24*
U.S. Cl. 384—283 **19 Claims**



1. A sliding bearing comprising a bearing alloy layer having a plurality of circumferentially extending and axially spaced annular grooves formed around an inner peripheral surface thereof to define a circumferentially extending peak between a pair of axially adjacent annular grooves, an intermediate layer provided on the surface of the bearing alloy layer and an overlay layer provided on the surface of the intermediate layer, characterized in that the peak has a height h, on an abscissa, and the intermediate layer has a thickness t, on an ordinate, which graphically satisfy the following three requirements:

$$1 \leqq h < 5 \quad (1)$$

$$t \leqq 2h/3+1 \quad (2)$$

$$t \leqq 3 \quad (3)$$

where h and t are denoted in units of μm.

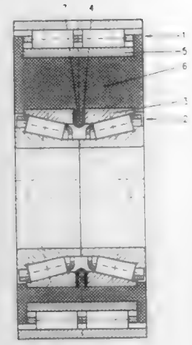
5,632,560

ECCENTRIC BEARING

Thomas Dittenhofer, Dittelbrunn, Germany, assignor to SKF GmbH, Schweinfurt, Germany

Filed Feb. 16, 1996, Ser. No. 602,657
Claims priority, application Germany, Feb. 17, 1995, 295 02 630.8
Int. Cl.° F16C *19/50*
U.S. Cl. 384—447 **2 Claims**

1. An eccentric bearing having three bearing races arranged one over another, of which one with the center ring forms an inner rolling bearing and the other with the center ring forms an outer rolling bearing, characterized in that the center ring in each instance consists of a bearing ring insert for of each of said two



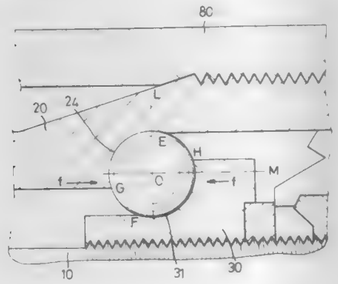
rolling bearings and a supporting ring of castable or injectable plastic between and positioning said bearing ring inserts.

5,632,561

BEARING ASSEMBLY FOR A BOTTOM BRACKET OF A BICYCLE

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Sep. 29, 1994, Ser. No. 314,874
Int. Cl.° F16C *33/58*
U.S. Cl. 384—458 **6 Claims**



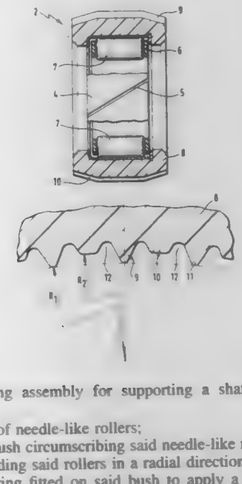
1. A bearing assembly of a bottom bracket for a bicycle, said bottom bracket comprising an axle, at least one bearing, a tube and a housing, said tube engaged in an inner periphery of said housing and said axle rotatably engaged in an inner periphery of said tube by said bearing, said tube having at least one annular recess defined in said inner periphery thereof and said axle having a threaded portion for threadedly engaging to a race which has an annular recess defined in an outer periphery thereof, said bearing being received between said annular recess of said tube and said annular recess of said race;
an abutment between said tube and said bearing defining a first arc on a vertical plane passing through a center of said bearing, said first arc having an upper distal point or a lower distal point, said upper distal point located in the first or the second quadrant of a right-angle coordinate which has an origin of ordinates at said center of said bearing;
an abutment between said race and said bearing defining a second arc on said vertical plane passing through said center of said bearing, said second arc having an upper distal point or a lower distal point, said lower distal point located in the third or the fourth quadrant, respective to the distal points of the first arc, of said vertical plane passing through said center of said bearing.

5,632,562

BEARING ASSEMBLY FOR SUPPORTING A SHAFT WITHOUT PLAY

Dirk Kidzun; Herbert Rost; Herbert Zettner, and Herbert Eberhardt, all of Herzogenaurach, Germany, assignors to INA Wälzlager Schaeffler KG, Herzogenaurach, Germany

Filed Oct. 26, 1995, Ser. No. 548,905
Claims priority, application Germany, Nov. 15, 1994, 44 40 725.4
Int. Cl.° F16C *27/06*
U.S. Cl. 384—536 **7 Claims**



1. A bearing assembly for supporting a shaft without play, comprising:
a plurality of needle-like rollers;
a bearing bush circumscribing said needle-like rollers for elastically loading said rollers in a radial direction; and
an elastic ring fitted on said bush to apply a preload on said bush, said elastic ring having at least one peripheral surface formed with ridges of relatively greater radial dimension and ridges of relatively smaller radial dimension wherein two neighboring ridges define a recess of a depth that corresponds to a portion by which a ridge of relatively greater radial dimension projects beyond a ridge of relatively smaller radial dimension.

5,632,563

RADIAL BEARING PARTICULARLY FOR BRIDGING A RADIAL DESIGN SPACE

Alexander Zernickel, Herzogenaurach, Germany, assignor to Ina Walzlager Schaeffler KG, Germany

Filed Jul. 3, 1995, Ser. No. 497,523
Claims priority, application Germany, Oct. 28, 1994, 44 38 564.1
Int. Cl.° F16C *27/04;33/58*
U.S. Cl. 384—564 **5 Claims**

1. A radial bearing with an outer race ring (1) having an



integrally formed portion (3) bent at an angle of 90° to a bearing

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axis to bridge a radial design space, said portion (3) merging into a portion (4) extending coaxially with the outer race ring (1) so that a structural unit open in one axial direction is formed, a flange (2) pointing towards the center of the bearing being arranged on one end of the outer race ring (1), characterized in that the integrally formed portion (3) comprises punched regions (9) each forming an opening in said integrally formed portion, said punched regions are uniformly spaced over a periphery thereof and inwardly bent towards the center of the bearing to form retaining lugs (8) for retaining rolling elements (6) or a cage (7).

5,632,564

WRITING IMPLEMENT

Cornel Chu, London, England, assignor to Hi-Tech Industries Limited, London, England

Filed Jul. 5, 1994, Ser. No. 270,255

Claims priority, application United Kingdom, Jan. 10, 1994, 9400337; Feb. 24, 1994, 9403543; Jun. 16, 1994, 9412101

Int. Cl.[6] B43K 7/12;24/02

U.S. Cl. 401—104 15 Claims



1. A writing implement comprising:

an elongate body, the body having a length, a width, a thickness, a first end and a second end, wherein the width exceeds the thickness and further comprising an axially disposed bore extending along the length of the elongate body;

a writing mechanism, one end of the writing mechanism movable to a position wherein a first end of the writing mechanism projects beyond the second end of the elongate body; and

a clip, having a first leg and a second leg connected at an end of each leg with a curved portion, the first leg operably connected with the first end and co-operates with the elongate body and the second leg is proximate a side of the elongate body, the clip being movable between a first position in which the second leg abuts a portion of the elongate body and a second position, wherein the combination of a thickness of the body adjacent the clip and a thickness of the second leg has a combined thickness which does not exceed the thickness of a remaining portion of the elongate body.

5,632,565

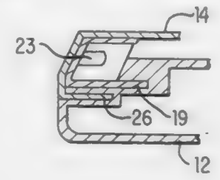
REMOVABLE CAP WITH FLUID PASSAGE

Yasushi Yamaguchi, Tokyo, Japan, assignor to Colleague Iowa, Inc., Mt. Pleasant, Iowa, and Colleague Agencies, Inc., Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,487

Int. Cl.[6] B43K 23/12

U.S. Cl. 401—202 6 Claims



1. A removable cap for an elongated instrument comprising:

an elongated hollow main body having a side wall, a width extending perpendicular to a longitudinal direction of the main body, and an end opening formed at one longitudinal end of the main body, through which said elongated instrument is removably inserted into the hollow main body,

a supporting member formed separately from the main body and fixed to the main body to project laterally outwardly from the side wall of the main body, said supporting member having a width smaller than that of the main body, a bottom opening orienting in a direction as in the end opening, two side openings orienting in a width direction of the supporting member, and a T-shape through hole communicating between the bottom and side openings, and

a clip formed separately from the main body and the support member and fixed to the other longitudinal end of the main body, said clip having a width less than that of the supporting member and projecting from the main body along an outer surface of the supporting member to be supported by the supporting member and to extend substantially along the side wall to form a space between the clip and the main body so that even if the removable cap is retained in a narrow portion, a fluid passage extending through said space, said T-shape through hole and a gap between the narrow portion and the clip adjacent to the support member is established between the cap and the narrow portion.

5,632,566

APPARATUS TO RETAIN AND REINFORCE NOTEBOOK CONTENTS

Bruce P. Korzilius, and Erik V. Korzilius, both of Tallahassee, Fla., assignors to Universal Marketing and Distributing Incorporated, Venice, Fla.

Filed Aug. 21, 1995, Ser. No. 517,386

Int. Cl.[6] B42F 13/00

U.S. Cl. 402—79 8 Claims

1. Apparatus for retaining and reinforcing pages held in a



multi-ring notebook binder, said binder utilizing "C"-ring, "D"-ring, or "Slant"-ring binding technology, the apparatus comprising:

(a) one flat, rectangular anterior backing board and one flat, rectangular posterior backing board, each of said backing boards including slots therein which are positioned to align with the rings of said binder;

(b) the anterior backing board including six hook-type receiving strips affixed thereto, three of said receiving strips disposed in parallel alignment above the horizontal centerline of the anterior backing board, and the other three of said receiving strips disposed in parallel alignment below the horizontal centerline of the anterior backing board; and

(c) the posterior backing board including six binding straps, one end of each of the binding straps being permanently affixed to the posterior backing board and the other end of each of the binding straps being disassociated from and movable relative to said posterior backing board, three of said binding straps affixed to the posterior backing board in parallel alignment above the horizontal centerline of the posterior backing board, and the other three binding straps affixed to the posterior backing board in parallel alignment below the horizontal centerline of the posterior backing board; three hook-type receiving strips permanently affixed to the posterior backing board and located directly above the horizontal centerline of the posterior backing board, and three hook-type receiving strips permanently affixed to the posterior backing board and located directly below the horizontal centerline of the posterior backing board; said one end of each of the binding straps including loop-type fasteners on one side thereof for attachment to a corresponding hook-type receiving strip affixed to the anterior backing board to capture said pages between said anterior and posterior backing boards, and said one end of each of the binding straps further including loop-type fasteners on an opposite side thereof for attachment to a corresponding hook-type receiving strip affixed to the posterior backing board for storing said binding straps when not in use.

5,632,567

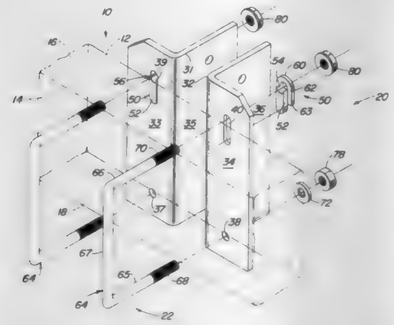
MOUNTING FOR AGRICULTURAL TOOLBARS AND TUBES OF DIFFERING CROSS SECTION

Terry L. Lowe, Ankeny, and James T. Noonan, Johnston, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 4, 1996, Ser. No. 628,045

Int. Cl.[6] F16B 2/02

U.S. Cl. 403—3 11 Claims



1. In an implement including a toolbar having a rectangular cross section with opposed faces and opposite sides, the opposite sides being spaced either a first distance or a second distance apart, the second distance being less than the first distance, adjustable bracket structure adapted for firm mounting against a selected one of the faces regardless of the spacing between the opposite sides being the first or the second distance, the adjustable bracket structure comprising:

a bracket having a flange adapted for positioning against the selected face, the flange including a flange aperture and an elongated slot offset from the flange aperture, the slot having a proximate end nearest the flange aperture and a distal end;

a slot insert including an elongated projection conforming to the elongated slot and having an insert aperture located at an end of the projection;

bracket bolt structure received by the flange aperture and insert aperture for securing the bracket against the face;

wherein the slot insert is positionable within the elongated slot with the insert aperture at either end of the slot, the distance between the insert aperture and the flange aperture being substantially equal to the first distance when the insert aperture is at the distal end and equal to the second distance when the insert aperture is at the proximate end; and

wherein the elongated slot has rounded end portions and the protection has a partial cylindrical surface defining with one of the slot end portions a generally round aperture for receiving a portion of the bolt structure.

5,632,568

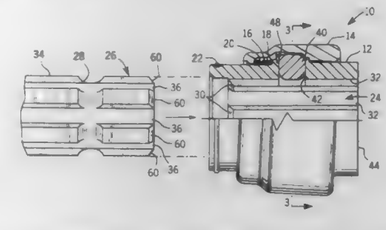
AUTOMATIC UNCOCKING SHAFT SENSING COUPLER

Mark A. Fechter, West Bend, Wis., assignor to Weasler Engineering, Inc., West Bend, Wis.

Filed Jan. 3, 1996, Ser. No. 582,243

Int. Cl.[6] F16B 7/00

U.S. Cl. 403—328 7 Claims



1. In a coupling for axially locking a hub to a shaft of the type having a locking member received in a radially extending slot in the hub for radial sliding movement therein into or out of a recess formed in the shaft and a collar slidable on said hub between a locked position in which said collar prevents radial outward movement of said locking member in said slot and a released position in which said collar permits radial outward movement of said locking member in said slot, said collar being biased into said locking position and having a radially inwardly extending circumferential shoulder, said hub having a radially outwardly extending circumferential ledge so that said collar may be cocked at an angle to engage said shoulder with said ledge to hold said collar in said released position, the improvement wherein:

a plurality of uncocking members are provided in a corresponding plurality of slots in said hub, each said uncocking member being slidable radially in its corresponding slot between a radially inward cocked position and a radially outward uncocked position, wherein radial outward movement of said uncocking members against said collar from said cocked position by engagement with said shaft disengages said shoulder from said ledge.

5,632,569

CEMENT FINISHING HAND TOOL

Les Szmansky, P.O. Box 420529, Summerland Key, Fla. 33042

Filed Jun. 19, 1995, Ser. No. 492,377

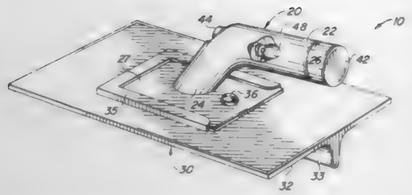
Int. Cl.[6] E01C 19/22;19/38

U.S. Cl. 404—97 4 Claims

1. An improved cement finishing hand tool comprising:

a handle member, said handle member including a gripper shaft, a proximal end, and a distal end.

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said gripper shaft being structured and disposed to be grasped by one hand of a user, said distal end being downwardly angled relative to said gripper shaft,

a plurality of interchangeable, removable blade members structured and disposed for passage over a quantity of wet cement, each of said blade member including an upper surface and a lower surface,

said lower surface of each of said blade members being structured to provide a select finish to the wet cement over which it is passed,

engagement means structured and disposed to securely, yet removably secure said distal end of said handle member with said upper surface of said removable blade member, such that said blade member can be effectively manipulated by said handle member during use and said blade member can be effectively removed from said handle member to facilitate cleaning and storage of said blade member independent of said handle member,

vibration means disposed in said handle member and structured to vibrate said handle member and accordingly said blade member which is secured thereto by said engagement means,

power means structured and disposed to provide power to said vibration means,

switching means structured and disposed to enable the user to turn on said vibration means during use, and

said engagement means comprising:

a guide track disposed on said upper surface of each of said plurality of blade members, said guide track being structured to receive said distal end of said handle member for engagement therein,

a guide panel disposed on said distal end of said handle member and structured for secure, slided engagement into said guide track on said upper surface of each of said blade members, and

lock means structured and disposed to removably secure said guide panel in said guide track, said lock means including a biased, protruding nub structured for securing engagement within a corresponding recess so as to achieve effective interconnection of said guide panel within said guide track.

5,632,570
ELECTRIC ROTARY TROWEL
Curtis Balling, 405 Belmont St., Lakefield, Minn. 56150
Filed Jul. 17, 1995, Ser. No. 502,936
Int. Cl.° E01C *19/22*

U.S. Cl. 404—112 **7 Claims**

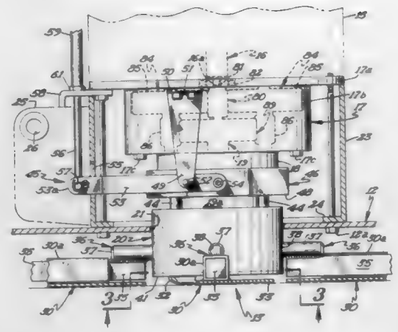
1. A rotary trowel for smoothing and finishing a concrete surface, comprising,

a generally horizontal, imperforate circular shroud having down turned peripheral edge portions and a central opening therein,

an electric motor assembly mounted on said shroud and including a DC electric motor having a vertically disposed output shaft, a speed reduction device drivingly connected to the electric motor output shaft and having an output shaft disposed in axial alignment with the electric motor output shaft,

an elongate handle having one end thereof connected with said electric motor assembly and extending angularly therefrom,

a rotary trowel blade assembly positioned below said shroud and having a hub member connected to the output shaft of the speed reduction device, said rotary trowel blade assembly



including a plurality of trowel blade members each comprising a substantially flat trowel blade element having an upturned leading edge and a trailing edge,

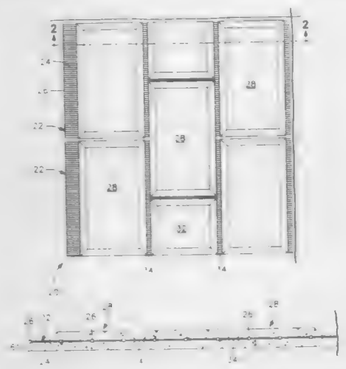
connecting means projecting into and adjustably connecting each of said blade members to said hub member to permit tilting of said blade members about their respective longitudinal axes, said connecting means for each blade member being spaced from the connecting means for the other blade members,

shifting means extending into said hub member and engaging said connecting means for shifting said connecting means to cause movement of said blade members between tilted and non-tilted positions,

an actuating means engaging said shifting means for shifting and retaining said blade members in a tilted position.

5,632,571
CONCRETE GEOMATTRESS
Robert M. Mattox, Fairhope, Ala., assignor to The Tensar Corporation, Atlanta, Ga.
Filed May 31, 1995, Ser. No. 455,684
Int. Cl.° E02B *3/14*

U.S. Cl. 405—19 **35 Claims**



1. A concrete geomattress comprising:

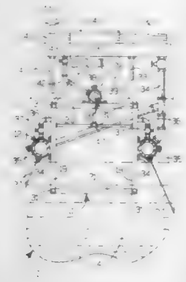
at least one elongated sheet of material extending longitudinally of said geomattress, and

a plurality of longitudinally spaced, transversely extending rows of concrete panels secured to said sheet of material with flexible portions of said sheet of material extending in the gaps defined between juxtaposed panels in at least some of said rows to enable the geomattress to be bent transversely along said flexible portions of said sheet of material,

said sheet of material being a grid-like sheet of material of a uniaxially stretched polymer geogrid having a plurality of molecularly oriented elongated strands interconnected by transversely extending elements, said transversely extending elements being thickened bars, at least one bar being secured to each panel.

5,632,572
GUIDANCE APPARATUS AND METHOD FOR ANADROMOUS FISH
George S. Chicha, S. 5930 Meadow La., Spokane, Wash. 99204
Filed Oct. 11, 1995, Ser. No. 541,108
Int. Cl.° F02B *8/08*

U.S. Cl. 405—81 **6 Claims**



1. A guidance system for anadromous fish that provides a faster moving channel in a slower moving watercourse, comprising in combination:

a plurality of channel stations in spaced sequential adjacency in a portion of the watercourse, each said channel station having

a peripherally defined body frame having a closed internal channel communicating therethrough,

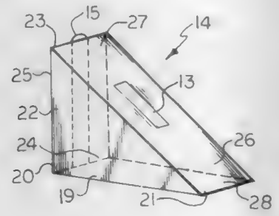
at least one nozzle carried by the body frame and communicating to the internal channel defined therein to direct water flow from the nozzle toward an immediately adjacent downstream body frame, and

means for positionally maintaining each body frame in the watercourse; and

at least one pressurized water supply system communicating with the internal channel of each body frame to supply pressurized water, derived from the watercourse in which the faster moving channel is defined, to the internal channels defined in the body frames.

5,632,573
WALL-LIKE RETAINER SEGMENTS FOR RETAINING LIQUIDS
Leroy O. Baker, 612 Hemlock St., Midland, Mich. 48642-6337
Filed Aug. 31, 1995, Ser. No. 521,779
Int. Cl.° E02B *3/04*

U.S. Cl. 405—111 **7 Claims**



1. A wall-like retainer segment comprising a generally rectangular hollow body having a top wall, bottom wall, front wall having a horizontal median line, back wall, post end wall and an opposite end wall:

said top wall having two, essentially identical openings therethrough, each of said openings being located near each of the said ends;

said bottom wall having two, essentially identical openings therethrough, each said bottom opening being in vertical alignment with one of the top openings;

the post end wall having vertically fixedly attached thereto, a rounded post;

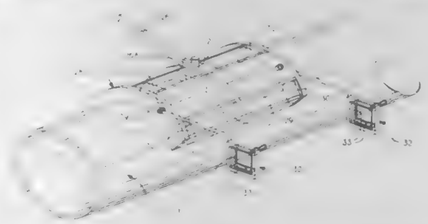
the opposite end wall having a vertically aligned post opening therein;

the front wall having two, essentially identical openings therethrough, said front wall openings located above the front wall horizontal median line;

said back wall having two vertically aligned post openings therein, each said back wall vertically aligned post opening being located between an end wall and the top opening near that end wall.

5,632,574
BACKFILLING DEVICE AND APPARATUS THEREFOR
Edward J. Klaymar, Indiana, Pa.; Alain Lebaigue, Fresnoy en Thelle, and Jean M. Meteye, Puiseux le Hauberger, both of France, assignors to KNI Incorporated, Homer City, Pa.
Filed Oct. 4, 1995, Ser. No. 539,226
Claims priority, application France, Oct. 31, 1994, 94 13032
Int. Cl.° F16L *1/028*

U.S. Cl. 405—179 **22 Claims**



1. An apparatus attachable to a backfilling device for positioning a conduit adjacent a uniform structure within a ditch being backfilled, comprising:

a. an elongated arm attached to the backfilling device;

b. a guide structure coupled with said elongated arm and being configured to follow the uniform structure as the device travels along the ditch; and

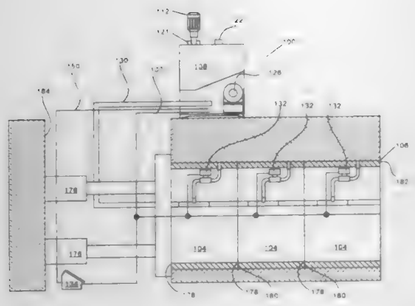
c. at least one guide ring attached to said guide structure and spaced therefrom and said at least one guide ring has an opening therein for allowing the passage of the conduit therethrough.

5,632,575
METHOD AND APPARATUS FOR CONTROLLED PUMPING OF BENTONITE AROUND A PIPE JACKED TUNNEL
Frank J. Lorenzen, 900 4th St. SW., Austin, Minn. 55912, and Mark Guterman, 2015 41st St. NW., Apt. J40, Rochester, Minn. 55901
Filed Aug. 30, 1994, Ser. No. 298,392
Int. Cl.° E21D *11/00*

U.S. Cl. 405—184 **10 Claims**

1. A bentonite distribution system for lubricating a tunnel liner surface with a quantity of bentonite slurry as the tunnel liner is pressed through a tunnel, comprising:

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a tank for holding the bentonite slurry, the tank having a selectively operable mixer mechanism for agitating the bentonite slurry, the tank having an opening for input of a quantity of dry bentonite and an opening with a selectively operable tank valve for input of a quantity of water and an opening with a selectively operable tank valve for output of the agitated bentonite slurry;

a selectively operable pump for drawing the bentonite slurry from the tank, an input for the pump fixedly attached to the output of the tank, an output of the pump fixedly attached to a conduit extending into the tunnel;

a selectively operable tunnel valve, the tunnel valve input fixedly attached to the conduit, the tunnel valve disposed on the tunnel liner, an output of the tunnel valve extending through a wall of the tunnel liner discharging the bentonite slurry to an exterior surface of the tunnel liner; and

a control device, the control device inputs fixedly connected to the tank valve and the tunnel valve and the pump and the mixer mechanism, the control device monitoring each input for status, the control device output selectively controlling the tank valve and the tunnel valve and the pump and the mixer mechanism.

5,632,576

CUTTING PLATE FOR A BALL HEAD MILLER

Helmut Storch, Rothenburg, Germany, assignor to Widia Heinlein GmbH, Lichtenau, Germany

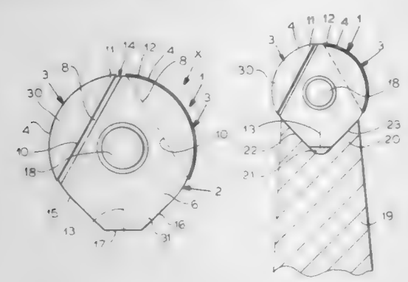
PCT No. PCT/DE94/00400, § 371 Date Oct. 16, 1995, § 102(e) Date Oct. 16, 1995, PCT Pub. No. WO94/23873, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 11, 1994, Ser. No. 535,183

Claims priority, application Germany, Apr. 16, 1993, 43 12 401.1

Int. Cl.[6] B23C *5/14*

U.S. Cl. 407—32 **12 Claims**



1. A cutting plate adapted to be mounted on a ball head miller, the plate comprising:

a support body of hard metal centered on an axis and having a pair of oppositely directed and symmetrically oriented faces each formed with a respective substantially circularly segmental recess of a predetermined depth; and

a pair of substantially identical and substantially circularly segmental cutting inserts each integrally secured to a respective one of the faces in the respective recess and each having a respective cutting layer forming a cutting edge, the inserts and their edges being symmetrical with respect to the axis, the inserts each being of a thickness substantially less than the depth of the respective recess and each forming a chip cavity on the respective face.

5,632,577

DRILL FOR DRILLING RAILS AND TRACK RIGS FOR RAILROAD APPLICATIONS

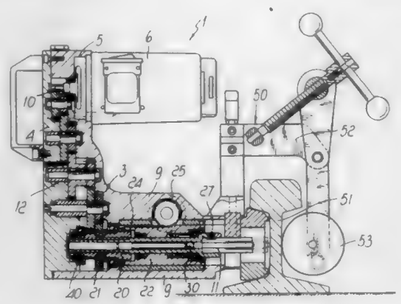
Ennio Peroni, Fiero, Italy, assignor to Cembre S.p.A., Brescia

Continuation-in-part of Ser. No. 300,225, Sep. 6, 1994, abandoned. This application Oct. 2, 1995, Ser. No. 538,429

Claims priority, application Italy, Sep. 21, 1993, MI93A2026

Int. Cl.[6] B23B *41/00*

U.S. Cl. 408—57 **32 Claims**



1. Drill for drilling rails and track rigs, in railroad applications, comprising:

a body;

a reduction unit supported by said body;

a motor for driving a drilling tool of said drill, said motor being supported on said body, and said reduction unit being interposed between said motor and said drilling tool;

translatory motion means for causing translatory motion of said drilling tool with respect to said body, said translatory motion means comprising a hollow shaft forming at an end thereof a supporting spindle for said tool, said shaft being movable to an advanced drilling position along a longitudinal axis of said tool and having a duct extending thereinto along said longitudinal axis up to said tool;

fixing means for removably fixing said body with respect to an element to be drilled; and

a scrap expelling device for expelling drilling scrap, said expelling device comprising an abutment rod, said rod being fixedly supported at an end thereof at said body for extending in said duct inside said hollow shaft with a further free end thereof being arranged proximate to said supporting spindle, said free end of said rod expelling the drilling scrap upon a return movement of said shaft from said advanced position.

5,632,578

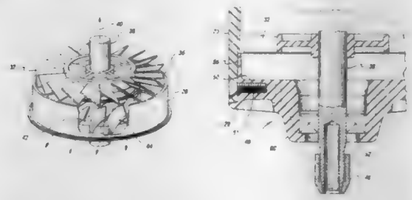
EXHAUST STATOR AND FAN FOR A POWER TOOL

Ronald C. McCurry, West Union, and Paul W. Niemela, Pickens, both of S.C., assignors to Ryobi North America, Easley, S.C.

Filed Feb. 23, 1996, Ser. No. 605,907

Int. Cl.[6] B27C *5/10*, **B23C** *1/20*

U.S. Cl. 409—136 **16 Claims**



1. A power tool comprising:

a motor housing including first and second clam shell halves forming an air inlet and a stator forming an air outlet, said housing having a central axis therethrough;

an electric motor having a rotary armature, an armature shaft and a stationary member fixed with respect to the housing;

an axial fan fixed to the armature shaft and positioned between said rotary armature and said stator for drawing air across said armature and stationary member, said fan having a plurality of radially extending fan blades tilted with respect to said central axis for forcing air in a substantially helical path; and

said stator having a plurality of radially extending air foil shaped stator blades oppositely tilted with respect to said fan blades and said central axis for receiving air moving in a helical path from said fan blades and causing the air to swirl in a predictable manner when leaving said housing; wherein said armature shaft is adapted to support a rotary cutting means outside of said air outlet.

5,632,579

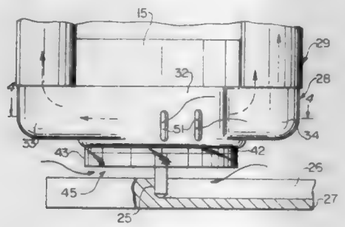
PARTICULATE REMOVAL DEVICE AND SYSTEM FOR ROUTER MACHINES AND THE LIKE

Kenneth J. Susnjara, Santa Claus, Ind., assignor to Thermwood Corporation, Dale, Ind.

Filed Jul. 13, 1994, Ser. No. 274,381

Int. Cl.[6] B23Q *11/00*; **B23B** *47/34*

U.S. Cl. 409—137 **16 Claims**



1. In a machine tool having a workpiece support table and a tool head assembly provided with a tool engageable in cutting relation with a workpiece positioned on said table for removing particulate material from said workpiece, a device for removing said particulate material from the vicinity of said tool and workpiece comprising:

air drawing means for drawing air into a hood member; and

a hood member mountable on said tool head assembly, about said tool, having a lower edge spaced from said workpiece when said device is in an operative position, providing a peripheral air inlet opening at said lower edge communicating with a chamber defined by said hood member, said member having at least one outlet opening for receiving air drawn by said air drawing means through said air inlet opening and swirled in said chamber by the high speed rotation of said tool, causing the entrainment of said particulate material produced by the cutting action of said tool; and wherein the area of said peripheral air inlet opening is substantially equal to the area of said outlet opening.

5,632,580

MILLING MACHINE EXTENSION

Joseph H. Dube, New Bedford, and Steven P. Tobiaz, Fall River, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1995, Ser. No. 414,885

Int. Cl.[6] B23Q *3/152*; **B23C** *9/00*

U.S. Cl. 409—230 **7 Claims**



1. A machine tool extension for joining a machine tool to a spindle on a milling machine comprising:

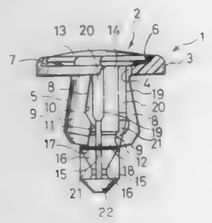
an extension collar having a cavity therethrough, a wide spindle head mouth at a first end for joining with said milling machine and a narrower tool mouth at a second end for joining with said machine tool;

an extension shaft disposed within said extension collar cavity, said extension shaft having a narrow end with a key groove thereon matching a spindle key on said spindle, said extension shaft being provided to transmit power between said spindle and said machine tool; and

an extended draw bar having an elongated body with a wrench head at one end and threading at the distal end thereof, said milling machine spindle having a spindle aperture therethrough, said extension collar having a bar aperture axially therethrough, said extension shaft having an axial bore therethrough, and said machine tool having a threaded draw bar mount aperture therein, said draw bar being inserted through said spindle aperture, through said bar aperture of said collar, and through said extension shaft axial bore into said machine tool draw bar mount aperture to hold said machine tool against said extension collar.

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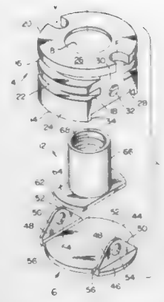
5,632,581
CLIP
Hiroshi Hasada, Chiba, Japan, assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Jun. 7, 1995, Ser. No. 486,674
Claims priority, application Japan, Jun. 20, 1994, 6-160588
Int. Cl.[6] F16B *13/06*
U.S. Cl. 411—48 24 Claims



1. A clip, comprising:
a clip body having a longitudinal axis; and
a pin, having a longitudinal axis substantially coaxial with said longitudinal axis of said clip body, for insertion into said clip body;
said clip body having a flange formed with an insertion hole for receiving said pin; and a substantially cylindrical leg, disposed about said longitudinal axis of said clip body, projecting from a bottom surface portion of said flange, wherein said leg has a hollow interior communicating with said pin insertion hole defined within said flange and is divided, by means of a plurality of axially extending slits formed within peripheral wall portions thereof, into a plurality of segments wherein each segment is formed on the inner side of a tip portion thereof, remote from said flange, with a catch projection, and wherein each one of said plurality of slits is formed relatively wide at the end disposed near said flange and relatively narrow at the end disposed near said tip portion; and
said pin has a head, and a shaft projecting from a bottom surface portion of said head and adapted for insertion into said hollow interior of said leg of said clip body; said shaft being formed with a catch for engaging said catch projections of said leg segments of said clip body and thereby expanding said leg segments of said clip body radially outwardly, and a plurality of axially extending ribs having wide portions extending from said bottom surface portion of said head of said pin toward said catch of said pin, said ribs having width dimensions substantially similar to the width dimensions of said relatively wide portions of said slits of said leg of said clip body for insertion into said relatively wide portions of said slits of said leg of said clip body so as to provide said clip with increased resistance to shearing forces.

5,632,582
INSET PANEL FASTENER WITH TWO-PART STEM
Richard F. Gauron, 9413 - 240th Ave. SE., Issaquah, Wash. 98027
Filed Jul. 10, 1996, Ser. No. 677,983
Int. Cl.[6] F16B *39/02*
U.S. Cl. 411—82 14 Claims

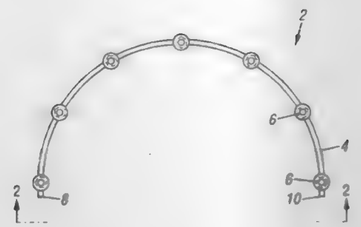
1. For molded-in installation, by use of a binding material, into a cavity in a structure, a fastener element receivable into the cavity and adapted to cooperate with a screw fastener or the like to connect an object to the structure, said fastener element comprising:
a body including a first portion, and a second portion mechanically interlocked with said first portion; said first portion including an integral outer end disk having a fill opening and a vent opening extending through diametrically opposite peripheral portions thereof, and a first stem portion formed integrally with and extending inwardly from said disk; said



second portion including a second stem portion mechanically interlocked with said first stem portion to mechanically interlock said first and second portions of said body; said first and second stem portions together forming a stem; said first and second portions of said body together defining an axial opening that has an outer end opening onto an outer radial surface of said disk and that extends inwardly from said outer end into said stem; and said body having an axially inwardly facing radial shoulder;
said first stem portion including two circumferentially spaced sections that form flow passageways around the stem, reduced diameter axial surfaces positioned circumferentially between said sections and radially inwardly of the fill opening and the vent opening, respectively, and first interlock portions carried by axially inner portions of said axial surfaces; said second stem portion including circumferentially spaced legs positioned and dimensioned to extend axially outwardly along said axial surfaces and to terminate axially inwardly of said disk, and second interlock portions carried by said legs and positioned to interlock with said first interlock portions to mechanically interlock said first and second body portions; and
a floating member positioned in said axial opening; said member including an engagement portion aligned with said outer end of said axial opening for engaging a fastener, and a radial surface positioned to engage said shoulder to transmit forces therebetween and to retain said member in said axial opening;
said floating member and said axial opening being shaped and dimensioned to substantially prevent rotation of said member in said axial opening while permitting radial movement of said member in said axial opening to automatically adjust for misalignments between the structure and said object; and
said first and second stem portions and said disk cooperating to exclude binding material from said axial opening to prevent hindrance of said radial movement by said material.

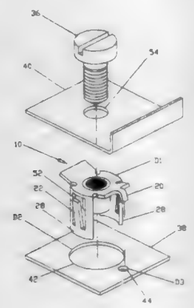
5,632,583
SPLIT BOLT RING
William A. Schneider, 125 Oak Grove La., Conroe, Tex. 77304; Bithel W. Staton, 10 Robin La., Willis, Tex. 77378, and Edward B. Cannan, Jr., 205 Thunderbird, Conroe, Tex. 77304
Filed Jul. 18, 1995, Ser. No. 503,775
Int. Cl.[6] F16B *27/00*
U.S. Cl. 411—84 10 Claims

1. Apparatus comprising:
an arcuate base member having a first end and a second end, said arcuate base member defining a plane and being hand-bendable in said plane, said arcuate base member having a longitudinal axis normal to the plane and a radius of curvature with respect to the longitudinal axis said arcuate base member further having a rectangular cross section having a major axis and a minor axis, wherein said major axis is parallel to the longitudinal axis of said arcuate base member, said arcuate base member spans an arc having an angle in the range of



about 60 degrees to about 180 degrees, said arcuate base member has a first radius of curvature at a mid portion of the arcuate base member and a second radius of curvature which is greater than the first radius of curvature at the first end and the second end; and
a plurality of bolts mounted to the arcuate base member, each bolt of the plurality extending generally longitudinally from the arcuate base member in a first direction.

5,632,584
BLIND SNAP MOUNTED CLIP FASTENER
Martin Acevedo, 77 Warrenr Rd., Ashland, Mass. 01721
Filed Apr. 5, 1996, Ser. No. 628,846
Int. Cl.[6] F16B *19/00; 37/04*
U.S. Cl. 411—182 13 Claims



1. A blind snap mounted clip fastener for inserting into a mounting aperture and an anti-rotate aperture of a work piece to secure a component work piece to the fastener, said fastener comprising:
a base portion having a generally cylindrical sleeve drawn and formed therefrom for receiving a threaded member;
a plurality of threads formed in the interior of said sleeve;
a plurality of mirror image cylinder segments integral with and extending downwardly generally perpendicular to the base portion and parallel and within a diameter that is concentric to said sleeve;
a locking pawl extending respectively from each of said segments outwardly towards a predetermined distance from the base portion and within a diameter concentric to said segments;
a pair of locking arms projecting outwardly from the base portion in a spaced-apart relationship and in a predetermined manner and to a position relative to the base portion;
an anti-rotate tab extending from one of said locking arms, downwardly and generally perpendicular and at a predetermined distance from said sleeve axial center, the anti-rotate tab being dimensioned to extend into the anti-rotate aperture of the workpiece whenever the cylinder segments of the fastener are inserted into the mounting aperture of the workpiece so that the anti-rotate tab and anti-rotate aperture cooperate to prevent rotation of the fastener when a rotational force is applied to the threaded member in securing the component workpiece to the fastener.

5,632,585
ATTACHMENT MEMBER FOR SECURING PLATES OF CONSIDERABLE THICKNESS TO STRUCTURAL MEMBERS
Remo Kluser, Altstätten, Switzerland, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Feb. 21, 1996, Ser. No. 604,596
Claims priority, application Germany, Feb. 21, 1995, 195 05 841.0
Int. Cl.[6] F16B *15/00; 15/02*
U.S. Cl. 411—441 10 Claims

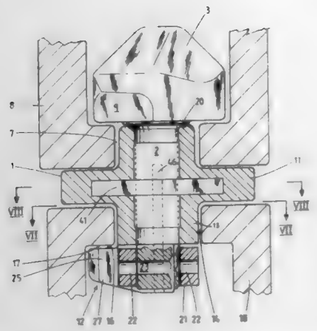


1. Attachment member for securing very thick panels to a receiving material, such as a structural member, comprising an axially elongated cylindrical shank (2) having an axial length (1) and a leading end and a trailing end relative to the receiving material, said shank (2) having an outside diameter (s), said shank having a tip (3) at the leading end and a head (4) at the trailing end with said head projecting laterally outwardly from said shank, a contact pressure element (6) located in a trailing end region of said shank, an axially extending part laterally encircling said shank and being axially deformable for absorbing excess driving energy applied to said attachment member, an axially extending cylindrical sleeve (7) separate from said axially extending part and formed of a high strength material closely laterally enclosing said shank (2) for providing bending resistance for said shank and having an axial length in the range of ¾ to 9/10 of the length of said shank (2) and an outside diameter (a) in the range of 1.4 to 3 times the diameter (s) of said shank, said sleeve (7) having a leading end and a trailing end with the trailing end arranged to support said contact pressure element (6).

5,632,586
AUTOMATIC TWISTLOCK
Ture Nyholm, 37 Seaview Road, Tennyson SA 5022, Australia
Filed Aug. 10, 1995, Ser. No. 513,267
Claims priority, application Australia, Aug. 18, 1994, PM7542
Int. Cl.[6] F16B *21/00*; B25G *3/00*
U.S. Cl. 411—552 16 Claims

1. A twistlock comprising a housing, and a shaft journalled into the housing said shaft having a first end protruding from a top of the housing with a cone formed thereon said cone being elongate

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radially, relative to the shaft, for passing through a first elongate slot of an upper container corner casting,

an upper surface of said cone being beveled so that sides of the first elongate slot can force the cone and shaft to rotate from a locked position to an unlocked position to enable passage through the first elongate slot, and a lower surface of said cone being beveled so that the sides of the first elongate slot can force the cone and shaft to rotate from the locked position to the unlocked position.

means for biasing the shaft, wherein the shaft is biased to the locked position,

the housing comprising a central flat portion to be positioned between the upper container casting and a lower container casting,

a lower protrusion extending from a bottom of the central portion of the housing the protrusion comprising a first part closest to the central portion and being dimensioned to pass through a second elongate slot in the lower container casting and allowing at least some rotation within the second elongate slot axially with respect to the shaft, and a second part of the protrusion further from the central portion including two tongues diagonally opposed, extremities of which tongues are positioned such that the protrusion can fit through said second slot in a first rotational position, the protrusion being so configured, that once the second part has passed through the elongate slot, the housing can be rotated to a second rotational position where a respective upper surface of the two tongues bear against diagonally opposed surfaces of the inside of the casting adjacent said slot.

5,632,587

MACHINE FOR FINISHING PRINTED SHEETS

Luc Coyette, Cortil Noirmont, Belgium, assignor to C.P. Bourg S.A., Belgium

Filed Dec. 7, 1994, Ser. No. 351,644

Claims priority, application France, Apr. 15, 1994, 94 04544

Int. Cl.° B42C *1/00;9/00*

U.S. Cl. 412—11 **14 Claims**

1. A finishing machine for printed sheets individually delivered in rapid succession from a reproduction machine for the production of a brochure, leaflet or booklet, comprising in succession:

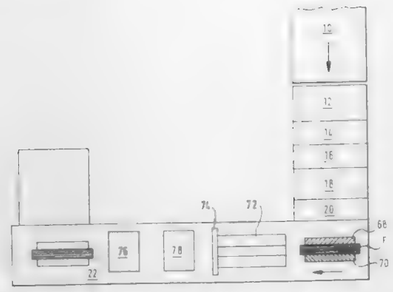
a) a takeover station for taking over delivered sheets;

b) a device for controlled retardation of such sheets received from said takeover station;

c) a stacking station for forming a horizontal stack of such retarded sheets;

d) means for alignment of the sheets in said stack;

e) a gripping device for gripping said stack of aligned sheets;



f) a pivoting device for pivoting of a gripped stack from a horizontal position to an on-edge position; and

g) a gluing device for gluing an edge of said stack.

5,632,588

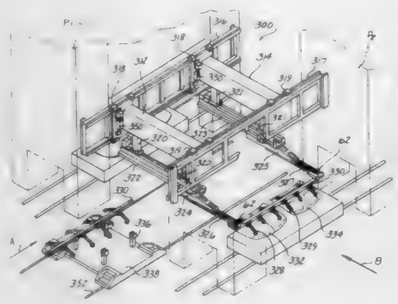
AUTOMATIC TOOL CHANGER

David J. Crorey, Utica, Mich., and Leland D. Blatt, 21 Carrington Pl., Grosse Pointe Farms, Mich. 48236, assignors to Leland D. Blatt, Grosse Pointe Farms, Mich.

Division of Ser. No. 34,565, Mar. 19, 1993, Pat. No. 5,452,981, which is a continuation-in-part of Ser. No. 756,492, Sep. 9, 1991, Pat. No. 5,222,854, and Ser. No. 978,134, Nov. 18, 1992, abandoned, which is a division of Ser. No. 665,029, Mar. 6, 1991, Pat. No. 5,174,709. This application Jan. 4, 1995, Ser. No. 368,428

Int. Cl.° B65G *47/90*

U.S. Cl. 414—225 **5 Claims**



1. A workpiece handling apparatus for transferring workpieces along a transfer path extending from a first work station to a second work station wherein said work stations may be selectively set up to perform work operations on workpieces of a first configuration or on workpieces of a second configuration, said workpiece handling apparatus comprising:

a transfer unit having a carrier member moveable along a plurality of selected paths, one of said selected paths corresponding to at least a portion of said transfer path;

a first workpiece gripping unit adapted to releasably grip and support a workpiece of said first configuration;

a second workpiece gripping unit adapted to releasably grip and support a workpiece of said second configuration;

a first and a second holding unit respectfully mounted at locations spaced from said transfer path, each of said holding units including locating means for releasably supporting either of said first and second gripping units;

first coupling means on said carrier member and second coupling means on each of said first and second gripping units cooperable to releasably couple said carrier member to one of

said first and second gripping units in response to movement of said carrier member relative to said one of said gripping units;

locking means on said carrier member moveable between a locked position and an unlocked position, said locking means being operable in said unlocked position to accommodate relative movement between said carrier member and said one of said gripping units for releasably coupling said carrier member to one of said first and second gripping units and operable in said locked position to releasably lock said carrier member in said one of said gripping units coupled to each other;

lock actuator means operable when said carrier member is coupled with one of said first and second gripping units supported on said first and second holding units, respectively, for selectively actuating said locking means to its locked and unlocked position; and

each of said gripping units having an elongate central frame member having said second coupling means located at one end of said central frame member and a pair of longitudinally spaced vertical bores extending upwardly from the bottom of said central frame member, said locating means having support means for supporting said central frame member in a substantially horizontal position, and a pair of spaced locating pins fixedly secured to and projecting vertically upwardly from said support means and adapted to be received in said vertical bores in said central frame member to retain said central frame member supported on support means against horizontal displacement relative to said support means.

5,632,589

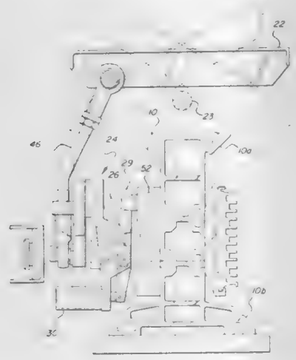
APPARATUS FOR CENTRALIZED MECHANICAL AND SYSTEMS CONTROL IN A MATERIAL HANDLING SYSTEM

Thomas J. Bray, Saline; Kenneth E. Burkhalter, Chelsea, and Ron Cailey, Elk Rapids, all of Mich., assignors to Symorex, Inc., Ann Arbor, Mich.

Filed Jan. 3, 1994, Ser. No. 176,383

Int. Cl.° B65G *47/46*

U.S. Cl. 414—339 **13 Claims**



1. A material handling and transport system for transporting goods between a number of discharge/induction stations and selectively receiving and discharging goods at the stations, comprising:

moving transport means traveling on a defined path between induction and discharge stations;

platform means carried by the moving transport means for receiving goods from induction stations, carrying goods between stations, and discharging goods at discharge stations;

discharge control means on the moving transport means for selectively activating the platform means to discharge goods;

passive discharge actuating means along the path of the moving transport means associated with each discharge station, positioned to be engaged by the discharge control means when the discharge control means are selectively activated;

discharge sensing means on the moving transport means to sense the availability of a discharge station as the transport means approaches; and

local control means on the moving transport means for communicating with the discharge sensing means and the discharge control means and for selectively activating the discharge control means when the transport means approaches a discharge station;

the moving transport means comprising a tug or locomotive unit carrying the local control means and pulling at least one trolley unit, the trolley unit carrying the platform means, the discharge control means, and the discharge sensing means, the path of the transport unit comprising a track with the induction and discharge stations located at spaced locations along the track;

wherein the discharge control means includes at least one tipper arm means, and the passive discharge actuating means comprises tipping ramp means located on the track near a discharge station, the tipper arm means selectively movable between a non-enabled state in which it cannot engage the tipping ramp means, and an enabled state where it engages the tipping ramp means as the train passes.

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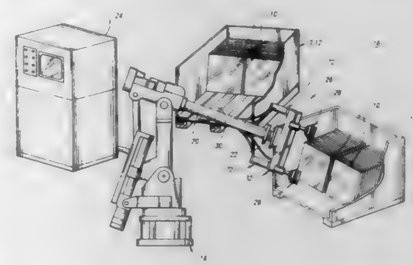
METHOD AND SYSTEM FOR LOADING PANELS INTO SHIPPING CONTAINERS AT A WORK STATION AND END EFFECTOR FOR USE THEREIN

Thomas E. Pearson, Grosse Ile, and James R. Panyard, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 30, 1995, Ser. No. 491,328

Int. Cl.° B65G *59/00*

U.S. Cl. 414—404 **20 Claims**



1. A method for loading a desired number of panels into a shipping container from a storage container at a work station, the work station including a robot controlled by a programmable controller, the robot having an end effector movable with respect to controlled axes, the end effector including a base frame coupled to the robot and at least one material handling device supported on the base frame, the method comprising the steps of:

(a) moving the end effector with respect to the controlled axes to allow the at least one material handling device to pick up at least one panel from the storage container;

(b) moving the end effector with respect to the controlled axes to place the at least one panel in the shipping container;

(c) allowing the at least one material handling device to move relative to the base frame in an upward direction substantially opposite a downward direction of the base frame upon engagement of a bottom edge of the at least one panel with a floor of the shipping container;

(d) moving the at least one material handling device linearly relative to and independent of movement of the base frame in

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a horizontal direction substantially orthogonal to the upward direction in response to a first control signal from the controller until engagement of a side edge of the at least one panel with a side stop of the shipping container;

(e) releasing the at least one panel after steps (c) and (d) so that the at least one panel is supported on the floor at its bottom edge and the side edge of the at least one panel is positioned in a predetermined relationship with respect to the side stop; and

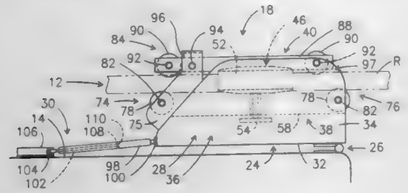
(f) repeating steps (a) through (e) until the desired number of panels are supported at their bottom edges on the floor of the shipping container with substantially no side-to-side variation.

5,632,591

LADDER STORAGE AND TRANSPORT DEVICE

Kenneth R. Henriquez, 4924 N. Chariton Ave., Tampa, Fla. 33603

Filed Jun. 13, 1994, Ser. No. 258,673
Int. Cl.[6] B60P *3/00*
U.S. Cl. 414—462 **30 Claims**



1. A ladder storage and transport device for use with a vehicle to receive and support a ladder thereon comprising a ladder positioning assembly including a support carriage pivotally mounted to a rear portion of the roof of the vehicle to operatively support a ladder positioning means thereon, said ladder positioning means comprises a ladder directional guide means to receive and support the ladder thereon and a positioning drive means to engage the ladder and selectively operate in a retracting mode and an extending mode to selectively move the ladder disposed on said ladder directional guide means to position the ladder in a retracted position relative to the roof of the vehicle for storage and travel when operating in the retracting mode and to position the ladder in an extending position relative to the rear of the vehicle for removal therefrom for use of the ladder when operating in the extending mode.

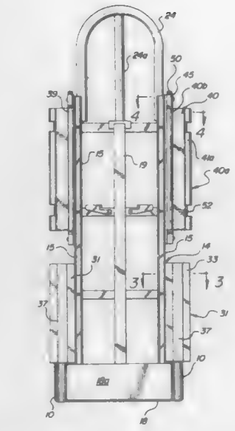
5,632,592

EXTENSOR WING LATCH MECHANISM FOR A TWO-WHEELED HAND TRUCK

Joseph D. Krawczyk, Pinconning, Mich., assignor to Magline, Inc., Pinconning, Mich.

Continuation of Ser. No. 393,177, Feb. 23, 1995, Pat. No. 5,518,356. This application Mar. 1, 1996, Ser. No. 609,532
Int. Cl.[6] B62B *1/04*
U.S. Cl. 414—445 **12 Claims**

1. In a two-wheeled hand truck comprising a pair of laterally spaced axled wheels; a frame with front and rear sides supported by said wheels and adapted for transport in a position of vertical inclination, and having upper and lower ends, said frame including laterally spaced apart side rails with front, rear, and laterally inboard and outboard sides, connected by at least one laterally extending cross rail, and having a surface at its upper end which can be grasped to move the hand truck manually along a supporting surface; a forwardly extending nose projecting from the front side of said lower end of said frame; and at least one vertically extending wing mounted on said frame to pivot from a first operative position in which it extends laterally as generally a



continuation of said front side of one of the side rails to a folded storage position in which it lies laterally inboard of the laterally inboard side of one of said side rails; the improvement wherein;

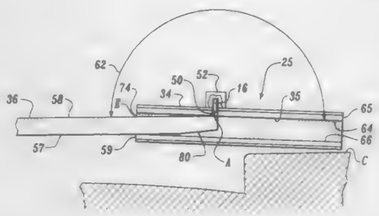
a latch assembly is mounted on said frame for movement from a first position in which a portion of said latch assembly lies rearwardly of the path of movement of said at least one wing, to prevent movement of said at least one wing from a second operative position thereof in which said at least one wing bears on said latch assembly and has a portion which extends at a laterally, forwardly inclined angle, to a displaced position in which said at least one wing is freed to travel to said folded storage position and back to said first position of said latch mechanism to retain said at least one wing in said folded storage position.

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VEHICLE LIFT WITH TAPERED CONTACT SENSOR

Lawrence S. Aoki, Modesto, Calif., assignor to Lift-U, Division of Hogan Mfg., Inc., Escalon, Calif.

Filed Apr. 26, 1996, Ser. No. 639,193
Int. Cl.[6] B60P *1/44*
U.S. Cl. 414—541 **12 Claims**



1. A wheelchair lift designed to be installed in the entryway of a vehicle, the lift comprising:

(a) a carriage attachable to the vehicle and movable between an upper position and a lower position, the carriage including a pair of rails, each rail having a tapered outer portion;

(b) a platform attached to the carriage and movable between the upper and lower positions along with the carriage, the platform including a pair of slides that slide upon and are supported by a pair of rails, the tapered portion of the rails allowing the slides and, thus, the platform to be angularly displaced with respect to the rails when the carriage and platform are in the lowered position;

(c) a mechanism coupled to the carriage to move the carriage and platform between the upper and lower positions; and

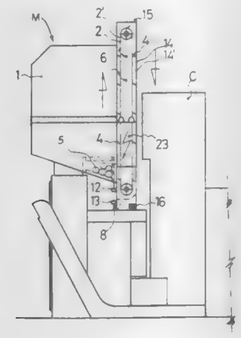
(d) a sensor operatively connected to the platform to detect the angular displacement of the rails with respect to the slides and to provide a control signal indicative of when the platform and carriage are in the lower position when the rails are angularly displaced at a predetermined angle with respect to the slides, wherein the mechanism stops the downward movement of the carriage and platform in response to the control signal.

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MACHINE FOR ORDERING TEXTILE TUBES FOR A CONTINUOUS SPINNING MACHINE

Robert Missing, St. Helier, Channel Islands, assignor to Technological Research Co. Ltd., St. Hellier, Channel Islands

Filed Mar. 16, 1994, Ser. No. 214,815
Claims priority, application Spain, Apr. 14, 1993, P 93 00 758
Int. Cl.[6] B65G *47/34*
U.S. Cl. 414—746.7 **10 Claims**



1. Machine for providing a continuous spinning machine with an ordered sequence of textile tubes, comprising automatic ordering means for automatically ordering textile tubes without manual labor to form said ordered sequence of said textile tubes and means for automatically conducting said ordered sequence of said textile tubes to said continuous spinning machine to a predetermined one of two sides of said continuous spinning machine and means for adjustment of said ordering means for ordering different sized ones of said textile tubes;

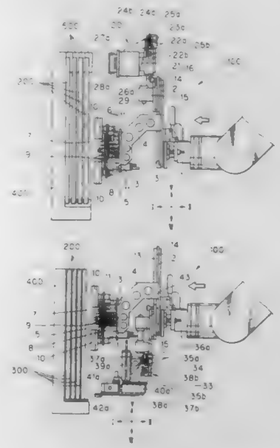
wherein said automatic ordering means has a hopper including means for holding said textile tubes, said hopper having a rear wall; two identical parallel and vertical conveyor belts located at said rear wall of said hopper and each provided with a plurality of textile tube holders spaced from each other along said belt; a separate electric drive means for operating each of said conveyor belts, said electric drive means being operable independently of each other to drive said conveyor belts independently of each other so that, when said conveyor belts are operated by said electric drive means, said textile tubes held in said hopper are received on said textile tube holders and are raised to an end of said conveyor belts remote from said hopper; and wherein said means for automatically conducting includes bottom discharge means for guided discharge of said textile tubes to a distributor of said continuous spinning machine and lateral guides for guiding said textile tubes from said conveyor belts to said bottom discharge means.

5,632,595

GLASS PLATE CONVEYING APPARATUS

Takeshi Mori; Masato Nakamura, and Eiji Nakayama, all of Matsusaka, Japan, assignors to Central Glass Co., Ltd., Japan

Filed Mar. 29, 1995, Ser. No. 413,155
Claims priority, application Japan, Mar. 29, 1994, 6-058988
Int. Cl.[6] B65G *59/00*
U.S. Cl. 414—795.6 **4 Claims**



1. A glass plate conveying apparatus, for separating glass plates from a stack of glass plates having one of guard sheets and spacers inserted between the glass plates, comprising:

a movable robot arm;

first suction means for attracting glass plates, the first suction means being detachably mounted on the robot arm;

second suction means for attracting guard sheets inserted between the glass plates, the second suction means adapted to be selectively detachably mounted on the robot arm; and

means for making a vertical position of said second suction means be adjustable,

wherein the means for making the vertical position of the second suction means be adjustable has a sliding block which is mounted on the robot arm slidably in the vertical direction and provided with a pair of vertical through holes;

wherein the second suction means is provided with a pair of vertical rods adapted to be inserted upwardly into the by which the second suction means is detachably mounted on the sliding block.

5,632,596

LOW PROFILE ROTORS AND STATORS FOR MIXERS AND EMULSIFIERS

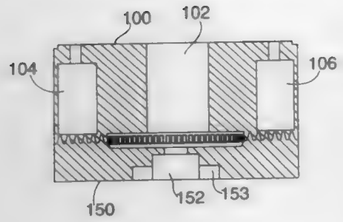
James C. Ross, Ridge, N.Y., assignor to Charles Ross & Son Co., Hauppauge, N.Y.

Filed Jul. 19, 1995, Ser. No. 504,177
Int. Cl.[6] B01F *3/08*
U.S. Cl. 415—83 **12 Claims**

1. A rotor-stator assembly for producing sub-micron droplet size liquid—liquid emulsions, said assembly comprising:

a) a substantially cylindrical stator having a plurality of substantially circular rows of teeth arranged concentrically on a first surface thereof, said teeth having a height which is approximately between one twentieth and one forty-sixth of the diameter of said substantially cylindrical stator, wherein said plurality of rows of teeth are formed by a plurality of concentric vanes and a plurality of grooves which cross said vanes,

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and wherein said grooves are arranged at an angle from radius lines of said cylindrical rotor; and

b) a substantially cylindrical rotor having a plurality of substantially circular rows of teeth arranged concentrically on a first surface thereof, said teeth having a height which is approximately between one twentieth and one forty-sixth of the diameter of said substantially cylindrical rotor, wherein said plurality of rows of teeth are formed by a plurality of concentric vanes and a plurality of grooves which cross said vanes, and wherein said grooves are arranged at an angle from radius lines of said cylindrical rotor.

5,632,597

THREAD GROOVE TYPE VACUUM PUMP

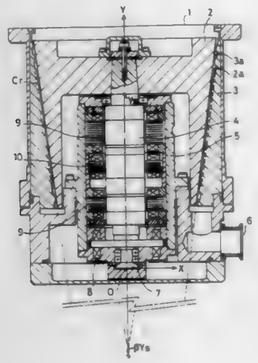
Seiji Hiroki; Tetsuya Abe; Yoshio Murakami; Junichi Nakamura, all of Naka-machi, and Masashi Iguchi, Osaka, all of Japan, assignors to Osaka Vacuum, Ltd., Osaka, Japan

Filed Mar. 28, 1996, Ser. No. 623,014

Claims priority, application Japan, Mar. 31, 1995, 7-099666

Int. Cl.[6] F01D *1/36*

U.S. Cl. 415—90 **4 Claims**



1. A thread groove type vacuum pump, in which a thread groove is formed on either the outer peripheral surface of a rotor or on the inner peripheral surface of a stator, the rotor rotating about a central axis of a rotor shaft within the stator with a gap therebetween, at least part of the outer peripheral surface of the rotor being formed by at least one conical surface and the conical surface of the rotor being formed such that an intersection point of an extension of a generatrix of the conical outer peripheral surface of the rotor and a central axis of the rotor shaft is positioned at a distance $(-\beta \cdot Ys)$ from a reference point on a thrust bearing arranged on the central axis of the shaft, wherein;

$$\beta=(\alpha_s/\alpha_r)\cdot f-1$$

$$f=\Delta Ts/\Delta Tr$$

in which α_s is a coefficient of thermal expansion of the rotor shaft; α_r is a coefficient of thermal expansion of a rotor body; ΔTs is a temperature rise of the shaft from ordinary temperature during the running of the pump; ΔTr is a temperature rise of the rotor from ordinary temperature during the running of the pump; and Ys is a Y-coordinate of a fitted bottom end of the rotor on the shaft when the position Y of the reference point is zero (0) on the axis of the Y-coordinate set on the central axis of the shaft.

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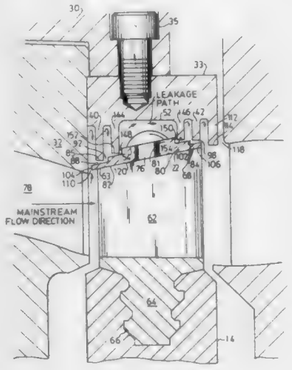
SHROUDED AXIAL FLOW TURBO MACHINE UTILIZING MULTIPLE LABRINTH SEALS

William C. Maier, West Almond, N.Y., assignor to Dresser-Rand, Corning, N.Y.

Filed Jan. 17, 1995, Ser. No. 372,963

Int. Cl.[6] F01D *11/02*

U.S. Cl. 415—173.5 **17 Claims**



1. A turbo machine comprising:

a shaft which extends along and rotates about a central axis;

one or more rotor wheels mounted on and extending radially outward from the central axis to a radially outermost periphery;

a plurality of buckets arrayed circumferentially around each of said rotor wheels at the radially outermost periphery;

a shroud band for each of said rotor wheels having an inner radial surface secured to the radially outermost periphery of each said bucket on each of said rotor wheels, said shroud band having an outer radial surface with a central portion displaced radially outward from first upstream and first downstream portions of said radial outward surface, said central portion having a pair of opposing side surfaces;

one or more diaphragms extending radially inward from an outer casing, said outer casing surrounding said rotor wheels and said diaphragms each of said diaphragms axially spaced from one of said rotor wheels and configured to direct fluid against and effect rotation of said rotor wheel;

an extension for each said shroud band surrounding and radially spaced from said outer radial surface of said shroud band; and

first and second seal teeth each extending radially inward from said extension for each said shroud band and terminating at tips below said outer radial surface of said central portion and adjacent to said opposing side surfaces of said central portion, respectively, and the tips of said first and second seal teeth extending radially inward of and axially spaced from first upstream and downstream portions of said central portion to form first and second non-contact axial seals, respectively.

5,632,599

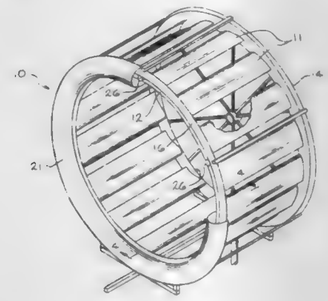
TURBINE WITH CIRCUMFERENTIAL SUPPORT AND STATIONARY PRESSURE RELEASE MEANS

Neal Townsend, deceased, late of Piedmont, Calif., assignor to Prime Energy Corporation, Gardenerville, Nev.

Filed Jun. 3, 1996, Ser. No. 657,169

Int. Cl.[6] F03D *7/04*

U.S. Cl. 416—42 **18 Claims**



1. An air driven turbine comprising a rotor, including a plurality of side-by-side spaced air engaging blades to drive said rotor,

said air engaging blades surrounding and defining an interior of said rotor,

said rotor having a front side and an opposite back side,

said rotor front side having an inlet for receipt of air to said interior for release through spaces between said blades,

said back side comprising a stationary back wall arranged in close proximity with said back side to block air flow from said back side of the rotor and to minimize possibility of undesired air release from said rotor interior,

said stationary back wall including normally closed auxiliary air outlet gates arranged to open to release air from said interior responsive to predetermined excesses in air pressure within said rotor

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5,632,600

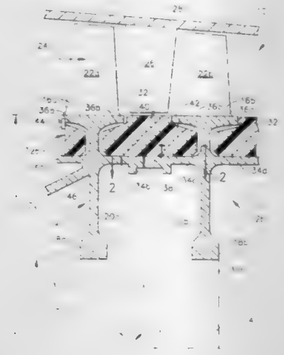
REINFORCED ROTOR DISK ASSEMBLY

Peter R. Hull, Ipswich, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 22, 1995, Ser. No. 577,073

Int. Cl.[6] F01D *1/24*

U.S. Cl. 416—198 A **8 Claims**



1. A gas turbine engine rotor assembly comprising:

a rotor disk including a radially outer rim, a radially inner hub, and a web extending therebetween said web including at least one coaxial annular extension spaced radially inwardly of said rim to define a cavity therebetween;

a plurality of circumferentially spaced apart rotor blades extending radially outwardly from said rim;

a reinforcing ring disposed in said cavity radially around said extension for restraining radial outward growth of said extension to react centrifugal load in said disk upon rotation thereof, and wherein said ring includes a plurality of circumferentially extending structural fibers in a matrix for carrying hoop loads therein; and

means for axially retaining said ring on said extension including a split ring retainer disposed in a complementary slot in said rim and axially abutting said reinforcing ring

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5,632,601

COMPRESSOR

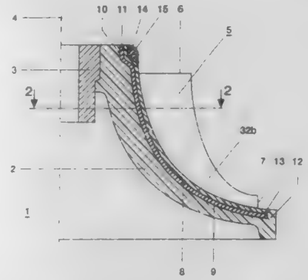
Urs Bodmer, Ennetbaden; Patrick Hain, Baden, and Vishal Mallick, Birmenstorf, all of Switzerland, assignors to ABB Research Ltd., Zurich, Switzerland

Filed Mar. 14, 1996, Ser. No. 615,884

Claims priority, application Germany, Apr. 10, 1995, 195 13 508.3

Int. Cl.[6] F01D *5/14*

U.S. Cl. 416—223 B **10 Claims**



1. A compressor having a compressor impeller comprising a hub of plastic material, a plurality of blades mounted to the hub, a shaft which is connected to the hub and extends along an axis, and a housing which surrounds the compressor impeller, wherein

the hub is formed from a thermoplastic material reinforced with continuous fibers, and

the blades are prefabricated separately from a thermoplastic material reinforced with continuous fibers and are each shaped with a base conforming with a surface shape of the hub

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5,632,602

ROTOR BLADE

Axel S. Herrmann, Lehrte; Volker Krajenski, and Arno E.R.K. Pabsch, both of Braunschweig, all of Germany, assignors to Deutsche Forschungsanstalt fur Luft-und Ramfarht e.V., Cologne, Germany

Division of Ser. No. 323,386, Oct. 14, 1994. This application May 30, 1995, Ser. No. 452,883

Claims priority, application Germany, Oct. 15, 1993, 43 35 221.9

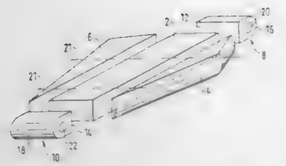
Int. Cl.[6] B64C *27/46*

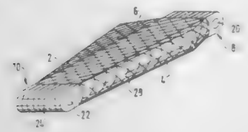
U.S. Cl. 416—226 **4 Claims**

1. A rotor blade having a foot end, said blade being made of fibre-reinforced synthetic resin material and comprising,

a multi-part moulded core having a central spar element having a longitudinal axis, a top and underside, and a front and rear profile element attached to said spar element;

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a unidirectional fibre layer binding arranged at the top and underside in the direction of said longitudinal axis of the spar element. at least part of said unidirectional fibre layer extending over the whole length of said rotor blade;

a metallic fastening element for said rotor blade, arranged at said foot end of said blade, said unidirectional fibre layer binding being placed around said fastening element whereby said spar element is rigidly connected to said fastening element by said unidirectional fibre layer binding;

a first cross-binding lying on said unidirectional fibre layer binding; and

a second cross-binding, arranged over the whole of said moulded core with said spar element and said front and rear profile elements attached thereto, said second cross-binding constituting a rotor blade covering:

wherein a metallic insert is attached into said rotor blade at the tip thereof, and at least part of said unidirectional fibre layer binding is wound over said fastening element at said foot end of said rotor blade and said insert.

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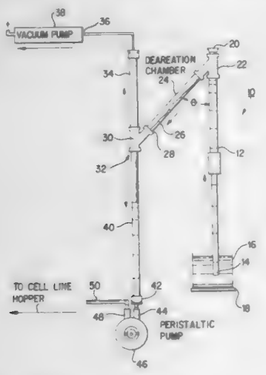
SLURRY TRANSFER AND DENSIFICATION THROUGH VACUUM PUMPING

Kenneth R. Taylor, Norfolk, and Chih-Chung Wang, Lexington, both of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Feb. 1, 1995, Ser. No. 384,286

Int. Cl.[6] **F04B** *23/08;* **B01D** *19/00;* **H01M** *4/04*

U.S. Cl. 417—53 **11 Claims**



2. A vacuum pumping method for the transfer and densifying of a flow of a slurry having a gaseous medium dispersed therein; said method comprising conveying said slurry along a predetermined flow path; subjecting said slurry to a subatmospheric pressure along said flow path for separating said gaseous medium from said slurry; venting said separated gaseous medium; and discharging said flow of degassified and densified slurry for further processing thereof; wherein said degassified and densified slurry is conveyed to a vacuum-assisted peristaltic pump at a discharge end of said flow path.

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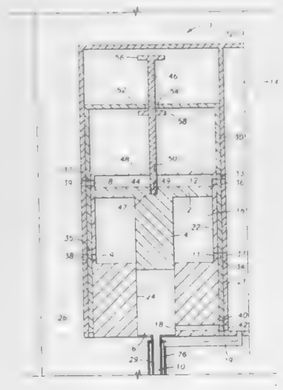
DOWN HOLE PRESSURE PUMP

Sathyanarayanan Poothodiyil, Lubbock, Tex., assignor to Milmac, Lubbock, Tex.

Filed Dec. 14, 1994, Ser. No. 355,833

Int. Cl.[6] **F04B** *17/00*

U.S. Cl. 417—225 **8 Claims**



1. A down hole pressure pump comprising:

a. A container;

b. A first cylinder defined by a cylinder wall, mounted within said container;

c. Upper and lower inlet and outlet ports formed in said first cylinder;

d. Upper and lower inlet and outlet ports formed in said container corresponding to the inlet and outlet ports of said first cylinder;

e. A second cylinder integrally formed below said first cylinder said second cylinder containing an inlet port and an outlet port;

f. A large piston complementary to the interior of said first cylinder affixed to a smaller piston complementary to the interior of said second cylinder; and

g. A chamber with first and second inlet ports and first and second outlet ports said first inlet and outlet ports each communicating to said first cylinder while said second inlet port communicates to said first cylinder so as to allow the chamber to accept and return fluid from said first cylinder and, to accept fluid from said second cylinder and release fluid away from said entire pump through said second outlet;

h. Means for filling said first cylinder with drilling mud so as to force said larger and smaller piston upward and then downward such that the fluid from said chamber is drawn into said second cylinder said fluid being forced out said second cylinder outlet when said drilling mud forces said larger piston downward.

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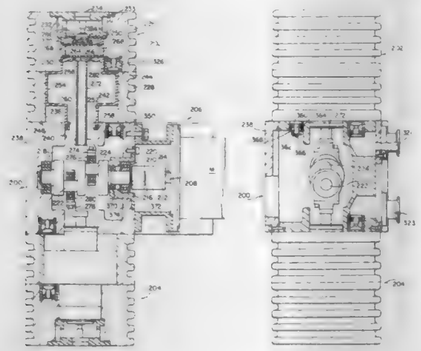
MULTISTAGE VACUUM PUMP

Eckhard Bez, North Chelmsford, Mass., assignor to Commonwealth Scientific and Industrial Research Organisation, Richmond, Australia, and Fuji Seiki Inc., Yokohama, Japan

Division of Ser. No. 116,609, Sep. 7, 1993, Pat. No. 5,482,443, which is a continuation-in-part of Ser. No. 993,860, Dec. 21, 1992, abandoned. This application May 31, 1995, Ser. No. 455,089

Int. Cl.[6] **F04B** *41/06;25/02;3/00*

U.S. Cl. 417—266 **4 Claims**



1. A multistage vacuum pump comprising two identical multistage vacuum pump means and drive means operatively connected to each of said multistage vacuum pump means for driving each pump means, said drive means comprising a housing having a crankshaft rotatably mounted therein, motor means mounted on said housing, said motor means having a drive shaft and coupling means for coupling said drive shaft with said crankshaft, first sealing means between said housing and said crankshaft and second sealing means between each of said pump means and said drive means, piston means operatively connected to said drive shaft and having a hollow interior in communication with an interior portion of said housing and one way valve means interconnecting a stage of said multistage vacuum pump means with said interior portion of said housing for substantially reducing pressure within said piston and said interior of said housing.

5,632,606

VOLUMETRIC PUMP/VALVE

Stephen C. Jacobsen, and Clark C. Davis, both of Salt Lake City, Utah, assignors to Sarcos Group, Salt Lake City, Utah

Filed Nov. 23, 1993, Ser. No. 157,693

Int. Cl.[6] **F04B** *53/12;* **F16J** *15/18*

U.S. Cl. 417—415 **34 Claims**

1. A pump for pumping fluids from a fluid source to a fluid sink comprising

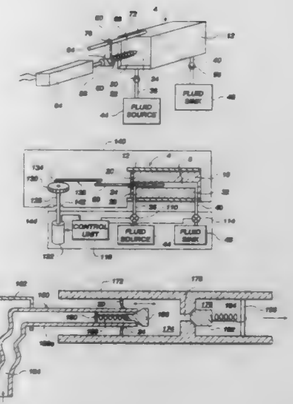
a housing defining an elongate cavity therein, with an opening on one side of the housing adjacent to and in communication with one end of the cavity, the other end being closed,

a resilient sheet of material disposed over the opening in the housing, said sheet including an aperture positioned in alignment with the cavity at said one end thereof,

an elongate shaft slidably disposed in the aperture so that one end of the shaft extends into the cavity and the other end extends out of the housing, said aperture having substantially the same cross-sectional shape as that of the shaft, and the same cross-sectional dimensions or smaller,

inlet means for conveying fluid from the fluid source into the cavity when a negative pressure is produced therein,

outlet means for carrying fluid from the cavity to the fluid sink when a positive pressure is produced in the cavity,



actuation means for causing the shaft to reciprocate longitudinally in the cavity, sliding back and forth in the aperture, to alternately produce a negative pressure and positive pressure in the cavity, and

support means on each side of the sheet of material adjacent the aperture for contacting and preventing distending or collapsing of the sheet of material as the shaft slides through the aperture.

5,632,607

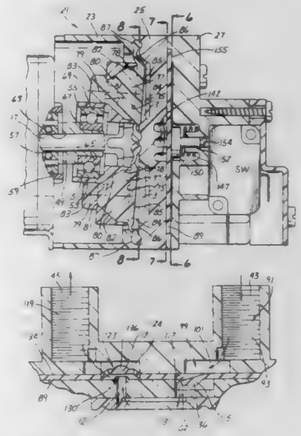
PISTON AND VALVE ARRANGEMENT FOR A WOBBLE PLATE TYPE PUMP

Niculae G. Popescu, Glendora; Christopher J. Taylor-McCune, Mission Viejo, and Michael A. George, Riverside, all of Calif., assignors to Shurflo Pump Manufacturing Co., Santa Ana, Calif.

Filed Nov. 1, 1995, Ser. No. 551,567

Int. Cl.[6] **F04B** *53/10;53/14*

U.S. Cl. 417—415 **19 Claims**



1. A pump comprising:

a housing including first and second housing sections;

a gasket between the first and second housing sections and including a section of flexible material;

at least one fastener for holding the first and second housing sections together;

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said housing having at least a first pumping chamber, an inlet opening, an inlet passage in the housing leading from the inlet opening to the pumping chamber, an outlet opening and an outlet passage in the housing leading from the pumping chamber to the outlet opening;

a first pumping member movable in the first pumping chamber on an intake stroke whereby a fluid from the inlet passage is drawn into the first pumping chamber and a discharge stroke whereby fluid in the first pumping chamber is discharged into the outlet passage;

a drive for moving the pumping member on the intake and discharge strokes;

an inlet check valve in the inlet passage including an inlet valve seat and a movable inlet valve element which is integrally joined to the section of flexible material about a hinge whereby the movable inlet valve element is pivotable between open and closed positions; and

an outlet check valve in the outlet passage including an outlet valve seat and a movable outlet valve element secured to the gasket at at least two spaced apart regions.

5,632,608

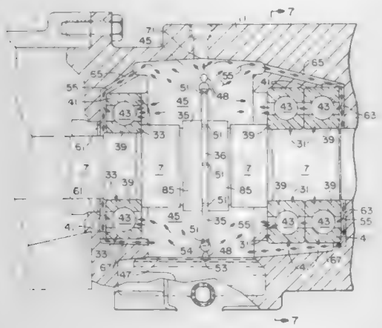
PUMP OIL MISTER WITH REDUCED WINDAGE

Robert E. Rockwood, Windham, N.H., assignor to Environamics Corporation, Hudson, N.H.

Continuation of Ser. No. 320,692, Oct. 11, 1994, Pat. No. 5,513,964. This application Apr. 26, 1996, Ser. No. 635,398

Int. Cl.[6] **F04B** *35/04*

U.S. Cl. 417—423.13 **2 Claims**



1. A method of installing a lubricant dispenser into a lubrication chamber of a centrifugal pump, the method comprising the steps of:

providing a pump including a lubrication chamber defined therein, the pump including an opening adjacent the lubrication chamber through which the lubricant dispenser is to be inserted;

providing the lubricant dispenser having a plurality of pivotally or movably mounted dispensing members attached around the outer periphery thereof for the purpose of misting lubricant throughout the lubrication chamber;

collapsing or pivoting downward the dispensing members prior to insertion of the dispenser into the chamber through the opening;

inserting the dispenser with the collapsed or downward pivoted dispensing members through the opening and into the lubrication chamber; and

operating the pump so that centrifugal force created by rotation of a pump shaft to which the dispenser is attached causes the dispensing members to extend radially outward from the shaft in order to dispense lubricant throughout the chamber so as to lubricate bearings therein.

5,632,609

VALVED DISCHARGE MECHANISM OF A REFRIGERANT COMPRESSOR

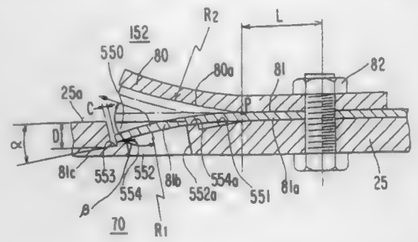
Kenji Hashimoto, Yamada-gun, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Aug. 14, 1995, Ser. No. 514,815

Claims priority, application Japan, Aug. 15, 1994, 6-191523

Int. Cl.[6] **F04B** *53/10*

U.S. Cl. 417—571 **6 Claims**



1. A refrigerant compressor comprising:

a compressor housing divided at least partially by a valve plate into a first chamber and a second chamber, said second chamber comprising a discharge chamber;

a linking means for linking said first chamber to said discharge chamber, said linking means including a conduit providing communication between said first chamber and said discharge chamber, said conduit having an end opening through which a refrigerant gas exits therefrom;

an elastic valve member capable of bending to open and close said end opening of said conduit, said valve member having a predetermined spring constant and positioned, such that said end opening of said conduit remains blocked until a pressure in said first chamber reaches a predetermined value;

a limiting member for limiting bending movement of said valve member in a direction in which said refrigerant gas exits said end opening of said conduit, said limiting member including a retainer member;

a valve seat formed in an end surface of said valve plate and surrounding said end opening of said conduit, said valve seat including a recessed portion offset from the end surface of said valve plate, said recessed portion including an inclined surface portion and a wall portion extending from the inclined surface portion so that said elastic valve member closes said end opening of said conduit without striking the end surface of the valve plate due to an elastic restoring force of the elastic valve member;

wherein said inclined surface portion has a curved cross-section having a radius of curvature, said elastic valve member being in sealing contact with said surface portion when it closes said end opening of said conduit; and

wherein said curved cross-section of said inclined surface portion has a radius of curvature equal to or less than a radius of curvature or said retainer member.

5,632,610

SEALED-TYPE SCROLL COMPRESSOR WITH RELATIVELY SHIFTED SCROLLS BASED ON THERMAL COEFFICIENT OF EXPANSION

Masahiro Tsubokawa; Osamu Aiba, both of Kusatsu; Toshiharu Yasu, Yasu; Shuichi Yamamoto, Otsu; Hideo Hirano; Taisei Kohayakawa, both of Kusatsu, and Shozo Hase, Hikone, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

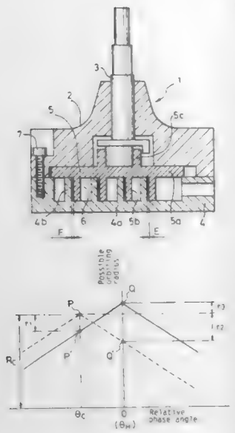
Filed Dec. 22, 1994, Ser. No. 362,679

Claims priority, application Japan, Dec. 24, 1993, 5-329132

Int. Cl.[6] **F04C** *18/04*

U.S. Cl. 418—55.2 **2 Claims**

1. Sealed-type scroll compressor having a compression chamber consisting of a stationary scroll member and an orbiting scroll member, both of which are engaged with each other with inner



faces of respective wraps facing to each other, said stationary scroll member and said orbiting scroll member being made of materials whose coefficients of thermal expansion are different from each other, wherein an improvement is that:

said stationary scroll member and said orbiting scroll member are located in position by relatively shifting one of scroll members having a coefficient of thermal expansion larger than the other scroll member by a predetermined phase angle in a counter-orbiting direction of said orbiting scroll member from a position defined by a predetermined positional relationship between said stationary scroll member and said orbiting scroll member where a possible orbiting radius between said stationary scroll member and said orbiting scroll member is made maximum.

5,632,611

SCROLL TYPE PUMP

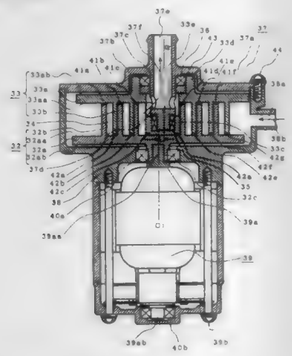
Mutsuo Sekiya, Tokyo, and Katsuyuki Fukuhara, Hyogo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1995, Ser. No. 559,643

Claims priority, application Japan, Jun. 23, 1995, 7-158030

Int. Cl.[6] **F01C** *1/04*

U.S. Cl. 418—55.2 **8 Claims**



1. A scroll type pump comprising:

a housing,

a driving scroll member disposed in said housing and composed of a first disc and a spiral first fluid compressing wall provided on one side surface of the first disc,

a follower scroll member disposed in said housing and composed of a second disc and a spiral second fluid compressing wall provided on one side surface of the second disc to engage with said first fluid compressing wall, said spiral second fluid compressing wall defining an end spaced apart from the one side surface of the second disc, said follower scroll member being driven by said driving scroll member to rotate,

a first bearing mounting part extending from said second disc to a predetermined position located on a side of said end of said spiral second fluid compressing wall with respect to a center of gravity of said follower scroll member,

a first bearing mounted with respect to said first bearing mounting part,

a second bearing mounting part extending from said second disc to a position which is opposed to said first bearing mounting part, with said center of gravity of said follower scroll member being located between said first bearing mounting part and said second bearing mounting part,

a second bearing mounted in said second bearing mounting part, and

a supporting part for supporting rotation of said follower scroll member, said supporting part being fitted to at least said second bearing and being fixed to said housing.

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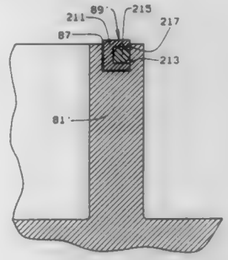
SCROLL COMPRESSOR HAVING A TIP SEAL

Robert Shaffer, Hamilton, Ohio, assignor to Air Squared, Inc., Hamilton, Ohio, and Puritan-Bekkett, Corp., St. Charles, Mo.

Continuation-in-part of Ser. No. 223,039, Apr. 5, 1994, Pat. No. 5,466,134. This application Nov. 13, 1995, Ser. No. 557,407

Int. Cl.[6] **F04C** *18/04;27/00*

U.S. Cl. 418—55.4 **3 Claims**



1. A scroll compressor comprising:

a motor housed in a motor shell and having a motor shaft extending axially from said motor shell;

a compressor housing secured to said motor shell, said housing having a circumferential side wall and a bottom, said bottom defining a boss; said motor shaft being rotatably journaled in said boss and extending through said boss into said housing;

an eccentric mounted on said motor shaft within said housing for rotation with said shaft;

an orbiting scroll member mounted on said eccentric to be orbitally driven by said motor shaft when said motor shaft rotates, said scroll including a plate having an inboard surface and an outboard surface and an involute extending from said inboard surface; said plate being mounted to said eccentric;

a fixed scroll secured to said housing, said fixed scroll including a plate having an inboard surface and an outboard surface and defining an inlet and an outlet and an involute extending from said inboard surface of said fixed scroll plate; said fixed scroll involute meshing with said orbiting scroll involute to define suction zones at outer ends of the involutes and fluid pockets; said fluid pockets being reduced in size as said scroll compressor is operated to compress a fluid;

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at least two idler crank assemblies, each idler crank assembly extending between said fixed and orbiting scrolls and

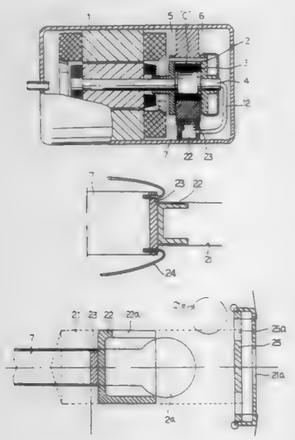
a seal for providing a seal between a tip of one involute and the plate of its opposing scroll member; at least one of said fixed scroll involute and said orbiting scroll involute having a groove in a tip thereof; said seal including a seal body which is received in said involute tip groove, said seal body defining a second groove facing a wall of said involute tip groove, and a compliant cord being received in said second groove, said cord contacting said wall of said involute tip groove to create a positive seal.

5,632,613

LUBRICATING DEVICE FOR HORIZONTAL TYPE HERMETIC COMPRESSOR

Chang J. Shin, Seoul, and Jong D. Moon, Kyungki-Do, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea

Division of Ser. No. 167,322, Dec. 14, 1993, Pat. No. 5,470,214. This application Sep. 18, 1995, Ser. No. 529,750
Claims priority, application Rep. of Korea, Dec. 17, 1992, 24713/1992; Dec. 31, 1992, 27116/1992
Int. Cl.[6] F04C *18/356;29/02*
U.S. Cl. 418—63 **2 Claims**



1. A horizontal type hermetic compressor having a horizontal outer casing which is charged with lubrication oil therein, and a rotating shaft with a roller thereabout positioned between a compression cylinder and a main bearing, comprising:

said compression cylinder having a vane slot, a movable vane in the vane slot and an oil cylinder provided at the back of the movable vane, said oil cylinder having an oil inlet port and an oil outlet port;

an oil piston slidably received in said oil cylinder for suction and delivery of said lubrication oil;

a piston connection member fixedly connected to said oil piston in said oil cylinder;

elastic means for fixedly connecting said oil piston to said movable vane for allowing said oil piston to move together with said movable vane;

an oil valve movably provided under said oil piston for selectively closing said oil inlet port of the oil cylinder in accordance with movement of said oil piston in said oil cylinder;

an oil feed pipe connected between said oil outlet port of the oil cylinder and said rotating shaft of the compressor for feeding said lubrication oil from said oil cylinder to said rotating shaft; and

wherein said oil valve includes an oil inlet hole and has an outer diameter larger than that of said oil cylinder.

2. A horizontal type hermetic compressor having a horizontal outer casing which is charged with lubrication oil therein, and a rotating shaft with a roller thereabout positioned between a compression cylinder and a main bearing, comprising:

said compression cylinder having a vane slot, a movable vane in the vane slot and an oil cylinder provided at the back of the movable vane, said oil cylinder having an oil inlet port and an oil outlet port;

an oil piston slidably received in said oil cylinder for suction and delivery of said lubrication oil;

a piston connection member fixedly connected to said oil piston in said oil cylinder;

elastic means for fixedly connecting said oil piston to said movable vane for allowing said oil piston to move together with said movable vane;

an oil valve movably provided under said oil piston for selectively closing said oil inlet port of the oil cylinder in accordance with movement of said oil piston in said oil cylinder;

an oil feed pipe connected between said oil outlet port of the oil cylinder and said rotating shaft of the compressor for feeding said lubrication oil from said oil cylinder to said rotating shaft; and

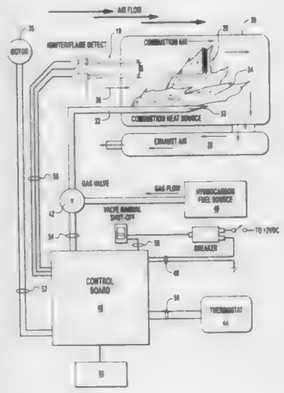
wherein the elastic means comprises a plurality of line springs each having one end connected to said piston connection member of said oil piston and another end connected to the vane.

5,632,614

GAS FIRED APPLIANCE IGNTION AND COMBUSTION MONITORING SYSTEM

Franco Consadori, Salt Lake City; D. George Field, Pleasant Grove; Kevin D. Banta, and Gary S. Nichols, both of Sandy, all of Utah, assignors to Atwood Industries , Inc., Rockford, Ill.

Filed Jul. 7, 1995, Ser. No. 499,420
Int. Cl.[6] F23N *5/08*
U.S. Cl. 431—79 **39 Claims**



33. An appliance fired by a combustible gas mixture producing combustion flames upon ignition, and comprising:

means for supplying said combustible gas mixture;

means having a hot surface for igniting the combustible gas mixture to produce said combustion flames, said hot surface consisting essentially of a metal material; and

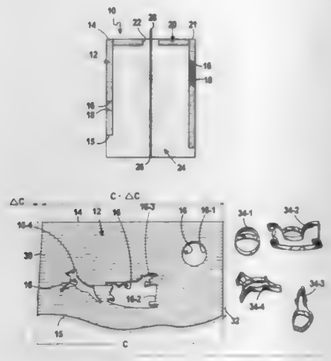
means for shifting said combustion flames away from said hot surface subsequent to ignition of the combustible mixture.

5,632,615

COOKIE CUTTER CANDLE

Billy B. DeGarmo, 532 Court Ave., Weston, W. Va. 26452

Filed Dec. 11, 1995, Ser. No. 570,593
Int. Cl.[6] F23D *3/16*
U.S. Cl. 431—288 **33 Claims**



1. A decorative candle, comprising:

a) an outer wax layer having a color, a first side, a second side, a top with a length, a bottom with a length, an outer surface, and at least one specifically shaped aperture being disposed therethrough;

b) at least one specifically shaped wax inlay having a color different than the color of said outer wax layer, each of said at least one specifically shaped wax inlay being disposed in a respective one of said at least one specifically shaped aperture of said outer wax layer;

c) a wax plug having a perimeter, a centrally disposed throughbore and being disposed at said top of said outer wax layer, said outer wax layer and said wax plug defining a filler chamber;

d) an inner wax filler having a bottom, a centrally longitudinally disposed throughbore, and being disposed within said filler chamber; and

e) a substantially rigid wick being disposed in said centrally longitudinally disposed throughbore of said inner wax filler.

26. A method of making a decorative candle, comprising the steps of:

a) making an outer wax layer of said decorative candle;

b) cutting at least one specifically shaped aperture in said outer wax layer;

c) making an inlay wax layer of said decorative candle;

d) cutting at least one specifically shaped inlay from said inlay wax layer;

e) placing said at least one specifically shaped inlay into a respective one of said at least one specifically shaped aperture in said outer wax layer;

f) kneading said at least one specifically shaped inlay to said outer wax layer;

g) heating said combination of said at least one specifically shaped inlay and said outer wax layer at 120–140 degree F. until soft and bonded;

h) rolling said combination of said at least one specifically shaped inlay and said outer wax layer;

i) placing said combination of said at least one specifically shaped inlay and said outer wax layer into a warmed mold having an open top and a closed bottom;

j) unrolling slowly said combination of said at least one specifically shaped inlay and said outer wax layer;

k) positioning said combination of said at least one specifically shaped inlay and said outer wax layer with a top of said outer wax layer against said closed bottom of the warmed mold and with a tapered first side of said outer wax layer meeting a straight second side of said outer wax layer and forming a hollow frustrum;

l) kneading said tapered first side of said outer wax layer to said straight second side of said outer wax layer to fill any gaps therebetween;

m) placing a wax plug of said decorative candle in the warmed mold against the closed bottom of the warmed mold with a perimeter of said wax plug pressing firmly against said top of said outer wax layer;

n) kneading said perimeter of said wax plug to said top of said outer wax layer to fill any gaps therebetween;

o) placing a L-shaped metal release rod having a longitudinal portion and a transverse portion extending outwardly from the longitudinal portion of the L-shaped metal release into the warmed mold with the longitudinal portion of the L-shaped metal release rod positioned in a centrally disposed throughbore of said wax plug and the transverse portion of the L-shaped metal release rod extending outwardly from the warmed mold open top of the warmed mold;

p) pouring a plurality of irregularly shaped solid translucent wax chunks of said decorative candle into the warmed mold until full and help keep said outer wax layer in place in the warmed mold;

q) pouring hot molten clear wax of said decorative candle, at a temperature of 220–240 degrees F., into the warmed mold surrounding said plurality of irregularly shaped solid translucent wax chunks and the longitudinal portion of the L-shaped metal release rod and entering said centrally disposed throughbore of said wax plug until full;

r) setting said combination of said hot molten clear wax, said plurality of irregularly shaped solid translucent wax chunks, the L-shaped metal release rod, and the warmed mold for 30–45 seconds;

s) placing said combination of said hot molten clear wax, said plurality of irregularly shaped solid translucent wax chunks, the L-shaped metal release rod, and the warmed mold into a water bath to be cooled;

t) making a pair of longitudinally disposed crescent shaped opposing voids in said hot molten clear wax with said pair of longitudinally disposed crescent shaped opposing voids opening into the open top of the warmed mold and extending to a point short of said wax plug, as said hot molten clear wax becomes a mush;

u) pouring additional hot molten clear wax into said pair of longitudinally disposed crescent shaped opposing voids;

v) hardening said additional hot molten clear wax and forming an inner wax filler of the decorative candle;

w) removing said combination of said white inner wax filler, said wax plug, said outer wax layer, said at least one specifically shaped wax inlay, and the L-shaped metal release rod from the warmed mold and inverting so that said wax plug faces upward;

x) removing the L-shaped metal release rod from a centrally longitudinally disposed throughbore of said inner wax filler from a bottom of said white inner wax filler;

y) inserting a warmed substantially rigid wick in said centrally longitudinally disposed throughbore of said inner wax filler;

z) placing said combination of said inner wax filler, said wax plug, said outer wax layer, said substantially rigid wick, and said at least one specifically shaped wax inlay on a hot plate with said bottom of said inner wax filler in contact therewith;

aa) heating the hot plate to a temperature of 225–250 degrees F.; and

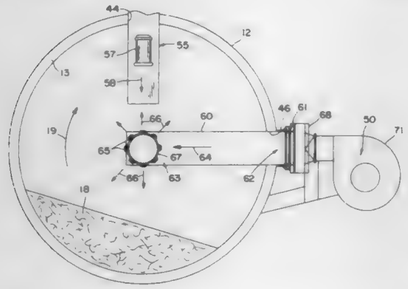
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bb) leveling said bottom of said inner wax filler and securing said substantially rigid wick thereto.

5,632,616
METHOD AND APPARATUS FOR INJECTING AIR INTO LONG CEMENT KILNS

James R. Tutt, Nash, Tex.; Eric R. Hansen, Shawnee, Kans., and Michael P. Heap, Salt Lake City, Utah, assignors to Cadence Environmental Energy, Inc., Michigan City, Ind., and Ash Grove Cement Company, Overland Park, Kans.

Filed Nov. 28, 1994, Ser. No. 345,314
Int. Cl.[6] F27B *7/36*
U.S. Cl. 432—105 **29 Claims**



1. A method for reducing the concentration of nitrogen oxides in the effluent gas emissions during operation of a conventional long rotary cement kiln comprising a rotary vessel having an upper kiln gas exit end with an adjacent mineral drying zone, and opposite fired clinker exit end with an adjacent clinkering zone and an intermediate mineral calcining zone wherein during operation a kiln gas stream flows from said clinkering zone through the calcining zone and out the kiln gas exit end of the rotary vessel and wherein in-process mineral flows from the drying zone through the clinkering zone, said method comprising the steps of:

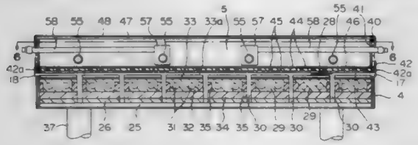
delivering combustible material into the rotary vessel to burn it in contact with the in-process mineral at a point downstream relative to kiln gas flow of the clinkering zone to create a reducing zone extending downstream from the burning combustible material; and

injecting air through at least one port in a wall of the rotary vessel and directing said injected air into the kiln gas stream upstream relative to kiln gas flow of the drying zone at a linear flow rate of at least 100 feet per second.

5,632,617
CURING APPARATUS

Mitsuo Arai, Oume, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,401
Claims priority, application Japan, Nov. 25, 1994, 6-314281
Int. Cl.[6] F27B *9/00*
U.S. Cl. 432—147 **3 Claims**

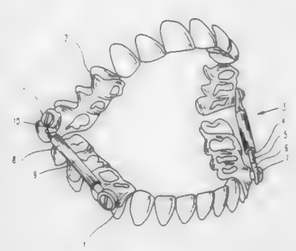


1. A curing apparatus equipped with a plurality of separate heating blocks which are installed, with gaps between each of said plurality of separate heating blocks, in a conveying direction of workpieces in which chips are bonded to lead frames by a paste and which are used to heat said workplaces, said curing apparatus being characterized in that heat-insulating plates are fastened to a lower surface, both side surfaces oriented in said conveying direction of said workplaces and both end surfaces oriented perpendicular to said conveying direction of said workplaces of a main body of each of said plurality of separate heating blocks whereby a temperature of each of said plurality of separate heating blocks can be controlled more accurately and easily.

5,632,618
APPARATUS FOR THE TREATMENT OF OVERBITE

Erling R. Jensen, Ibsgaarden 35, Himmelev, DK-4000 Roskilde, Denmark

PCT No. PCT/DK94/00183, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/26198, PCT Pub. Date Nov. 24, 1994
PCT Filed May 6, 1994, Ser. No. 545,786
Claims priority, application Denmark, May 10, 1993, 0543/93; Mar. 1, 1994, 0241/94
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—19 **13 Claims**



1. An apparatus for correcting an overbite in a patient having front premolars in both their upper and lower jaws, the apparatus comprising:

first and second bands, one of the bands securing the apparatus to the front premolars in the patient's lower jaw and the other band securing the apparatus to the front premolars in the patient's upper jaw;

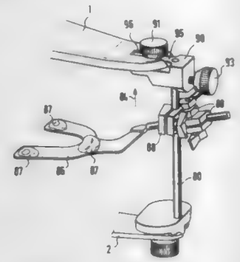
a telescopic component coupled between the first and second bands, the telescopic component including (1) a receiving part having a tube and an arm, and (2) an insertion part including a rod having a first end and a second end, the first end of the rod of the insertion part being slidably disposed in the tube of the receiving part; and,

first and second bushings for pivotably coupling the telescopic component to the first and second bands, each of the bushings defining a bore and including a slot in communication with the bore, each slot being disposed in a side of its respective bushing, the second end of the rod being pivotably secured in the first bushing with the rod extending through the slot of the first bushing, a first end of the arm associated with the receiving part being pivotably secured in the second bushing with the arm extending through the slot of the second bushing, at least one of the bushings being removably secured to its respective band by a pin and a locking ring.

5,632,619
JAW ARTICULATOR AND FACE BOW WITH BITE-FORK COLUMN

Michael H. Polz, Waldmüllerstrasse 12, D-8520 Erlangen, Germany

Continuation of Ser. No. 280,200, Jul. 25, 1994, abandoned, which is a division of Ser. No. 972,499, Feb. 5, 1993, Pat. No. 5,385,470. This application Aug. 27, 1996, Ser. No. 705,074
Claims priority, application Germany, Aug. 8, 1990, 40 25 121.7; WIPO, Aug. 8, 1991, PCT/EP91/01498
Int. Cl.[6] A61C *11/00;19/04*
U.S. Cl. 433—57 **15 Claims**



1. A dental apparatus including a face bow for receiving and transferring a model jaw in the correct spatial orientation relative to a patient's skull and jaw hinge axis to a jaw articulator, the face bow comprising a curved transfer member for surrounding a patient's face and a guide column releasably secured to the transfer member for carrying an adjustable bite fork, the transfer member having an elongate centering groove and the guide column having an adjusting projection, which is perpendicular to the guide column for engagement in the centering groove, the dental apparatus further including an adapter connectable to the bite fork guide column, attachable to a pivoted upper part of the jaw articulator, and having a corresponding elongate centering groove for receiving the adjusting projection and rotationally aligning the guide column when the guide column is removed from the transfer member and mounted to the adapter.

5,632,620
SLOTTED TAP AND LENTULO DRILL FOR DENTAL POST SYSTEM

Barry Musikant, Tenafly, N.J.; Allan S. Deutsch, New York, and Brett I. Cohen, Nanuet, both of N.Y., assignors to Essential Dental Systems, Inc., South Hackensack, N.J.

Continuation of Ser. No. 381,428, Jan. 31, 1995. This application May 13, 1996, Ser. No. 645,263
Int. Cl.[6] A61C *5/02;3/02*
U.S. Cl. 433—102 **2 Claims**

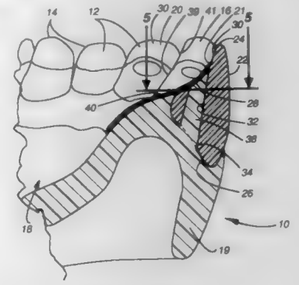


1. A lentulo drill comprising a shaft and a single longitudinal extending spiral wire of substantially uniform dimension in a longitudinal direction with forward and apical ends and having a first portion thereof running from the forward end to a location between said forward and apical ends, said first portion with a spiral configuration in either a clockwise or counterclockwise rotational direction and a second portion thereof running from said location between said forward and apical ends to the apical end said second portion with a reverse spiral configuration opposite that of said first portion such that cement radially sprayed from said second portion when operating said drill does not spray in an apical direction.

5,632,621
DENTURES FOR ANTERIOR TEETH

Sundru M. Moodley, 610 S. Harrison La., Denver, Colo. 80209

Filed Aug. 17, 1995, Ser. No. 516,027
Int. Cl.[6] A61C *13/10*
U.S. Cl. 433—192 **3 Claims**



1. An improved denture, comprising:

at least one anterior artificial tooth having a base surface, an incisal edge, a lingual surface, and a buccal surface, said anterior artificial tooth defining a substantially vertical passageway having a substantially elliptical cross section and extending substantially parallel to said buccal surface from said base surface to intersect said lingual surface at a position adjacent to but spaced from said incisal edge; and

a molded denture plate of dental plate material, wherein said artificial tooth is mounted in said denture plate, said dental plate material integrally extends through said passageway and covers a portion of said lingual surface of said artificial tooth, with at least a portion of said dental plate material covering said portion of said lingual surface in a thickness of approximately 1 millimeter, thereby securely maintaining said artificial tooth in said denture plate.

5,632,622
METHOD AND APPARATUS FOR SIMULATOR CONTROL

Robert L. Bothwell, Fort Worth, Tex., assignor to Lockheed Corporation, Fort Worth, Tex.

Continuation-in-part of Ser. No. 326,709, Oct. 20, 1994. This application Apr. 25, 1995, Ser. No. 428,908
Int. Cl.[6] G09B *9/02;19/16*
U.S. Cl. 434—29 **20 Claims**

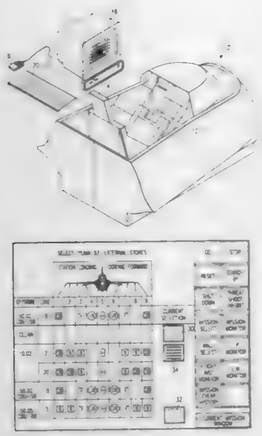
1. A training system for training a trainee by simulating the operation of an avionics system, comprising:

a trainee interface operable to interface the training system with the trainee, the trainee interface further comprising controls with which the trainee can control the training system to simulate the avionics system operation;

a processor coupled to the trainee interface and operable to execute a training program to control the training system; and

a display coupled to the processor, the display operable to display representations of preprogrammed units, each of the

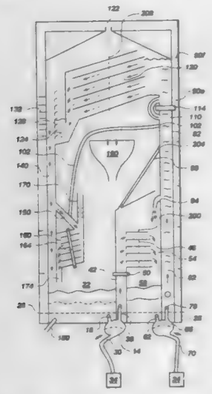
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preprogrammed units including a collection of detailed parameters for simulating operation conditions not controlled by the trainee during operation of the training system, such that selection of one of the representations prior to executing the training program, by using the display, sends instruction to the processor that results in configuring the training system according to the detailed parameters of the unit associated with the selected representation to simulate avionics system operation under the selected parameters.

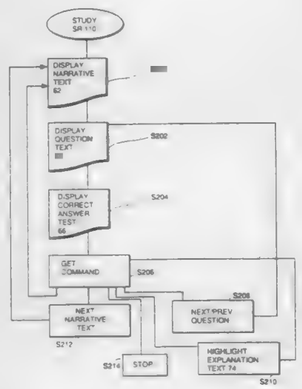
4. The training system of claim **3**, wherein one of the units includes a collection of weapons load parameters.

5,632,623
MOCK CIRCULATION SYSTEM
Willem J. Kolff; N. Dan Bishop; Stephen R. Topaz, and Ban Y. Chiang, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah
Filed Dec. 28, 1994, Ser. No. 364,957
Int. Cl.[6] G09B *23/28*
U.S. Cl. 434—272 **19 Claims**



15. A portable mock circulation system for use in teaching and testing medical devices, the mock circulation system comprising:
a collapsible housing means having a plurality of channels formed therein so as to simulate a human circulation system;
pumping means connected to the housing means means for receiving fluid from the housing and returning fluid to the housing means so as to develop a fluid flow through the channels of the housing means; and
adjustment means disposed along at least one of the plurality of channels of the housing means for selectively restricting fluid flow through one or more of the plurality of channels so as to selectively simulate healthy and pathological circulatory conditions.

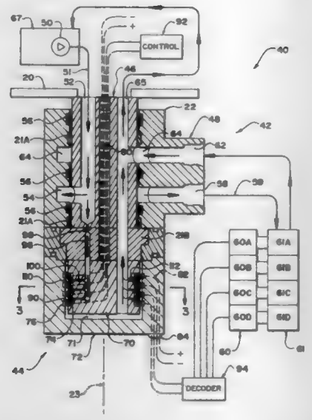
5,632,624
ELECTRONIC STUDY GUIDE
Jeffrey Cameron, Naples, Fla.; Evan H. Sohn, New York, N.Y., and David Maurer, Randolph, N.J., assignors to Brainchild, Inc., Naples, Fla.
Filed Sep. 22, 1993, Ser. No. 125,326
Int. Cl.[6] G09B *3/00*
U.S. Cl. 434—322 **15 Claims**



1. An apparatus comprising:
a housing sized to fit in a hand;
display means supported by said housing for displaying textual material including a narrative text and question text and several answer texts associated with said narrative text, said answer texts consisting of a correct answer text and an incorrect answer text;
a plurality of pushbuttons disposed on said housing, each pushbutton being associated with one of said answer texts; and
analyzing means for analyzing if one pushbutton depressed by a user corresponds to said correct answer text; and
means disposed on said housing for selecting to re-display said narrative text on said display means after the display of the question and answer texts.

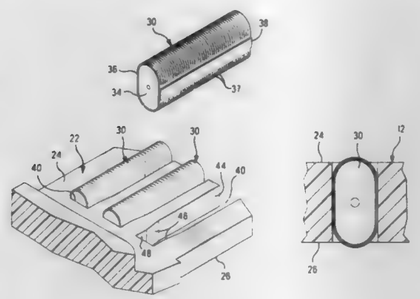
5,632,625
ROTARY ELECTRICAL COUPLING WITH CIRCUMFERENTIAL CONDUCTIVE ELASTOMER BRUSH
Hein-Peter Faust, North Vancouver, Canada, assignor to Apollo Machinery, Ltd., North Vancouver, Canada
Filed May 26, 1995, Ser. No. 451,303
Int. Cl.[6] H01R *39/00*
U.S. Cl. 439—24 **14 Claims**

1. A rotary electrical coupling comprising:
(a) a housing;
(b) a member supported for rotation about an axis within a chamber in said housing;
(c) a first smooth electrically conductive ring centered on said axis in said chamber;



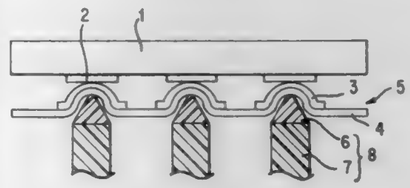
(d) a second smooth electrically conductive ring on said rotatable member inside and concentric with said first electrically conductive ring;
(e) an electrically conductive resilient elastomer member extending circumferentially around said second smooth electrically conductive ring and compressed in a gap between said first and second smooth electrically conductive rings; and,
(f) an electrically non-conducting lubricant in said chamber.

5,632,626
RETENTION OF ELASTOMERIC CONNECTOR IN A HOUSING
Donnie B. Collins, Tobaccoville; Robert D. Irlbeck, Greensboro, and Warren A. Bates, Winston-Salem, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jan. 5, 1996, Ser. No. 583,396
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—66 **10 Claims**



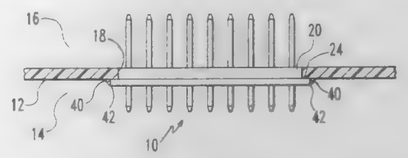
1. An electrical connector comprising:
a dielectric housing having a longitudinally elongated slot and an elastomeric connector disposed in the slot, the elastomeric connector extending for a length between opposite longitudinal ends and having a uniform width, the slot having a primary section with a width dimensioned such that the elastomeric connector is held relatively loosely in the primary section, and the slot having a reduced width section wherein a portion of the length of the elastomeric connector is held relatively securely by an interference fit.

5,632,627
CONNECTION ELECTRODE CONNECTING DEVICE
Nobuo Aoki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Sep. 11, 1995, Ser. No. 526,230
Claims priority, application Japan, Feb. 15, 1995, 7-026805; Jul. 24, 1995, 7-186890
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—67 **15 Claims**



1. A connection electrode connecting device, comprising:
a plurality of opposing electrodes provided on a substrate surface;
connection electrodes which are formed on protrusions of approximately hemispherical shape on a flexible substrate positioned so as to face each of the opposing electrodes;
conical tip portions of an inelastic material which contact the rear of the protrusions on the flexible substrate and apply a pressing force to a rear of the protrusions; and
cylindrical base portions formed of an elastic material which support the tip portions.

5,632,628
HEADER FOR USE IN A PRESSURIZED DISC DRIVE
Douglas L. Wagner, Newbury Park, Calif., assignor to Berg Technology, Inc., Reno, Nev.
Filed Jan. 13, 1995, Ser. No. 372,576
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—78 **9 Claims**



1. A header for use on a disc drive base plate between a more highly pressurized space and a less highly pressurized space comprising a wafer member comprising an insulative molded polymeric material being positioned in and axially aligned with an aperture in said disc drive base plate and said wafer itself having a plurality of transverse apertures, a board member comprising a fiberglass reinforced polymeric material and being superimposed over the wafer member and having a plurality of transverse apertures at least some of said apertures in said board member being axially aligned with one of said apertures in the wafer and said board member having a metallized surface adjacent said apertures; a plurality of conductive pins each of which pins passes through one of the apertures in said board member which is axially aligned with one of said apertures in the wafer member and metallic means for sealing the apertures adjacent the conductive pins in the board member and the conductive pins are fixed to the board member by the metallic means for sealing the apertures in the board means and the conductive pins are retained in the wafer by means of interference fit.

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5,632,629

MOUNT ELECTRICAL CONNECTORS

Janos Legrady, Putnam Valley, N.Y., assignor to Zierick Manufacturing Corporation, Mt. Kisco, N.Y.

Continuation of Ser. No. 121,206, Sep. 14, 1993, abandoned.
This application Nov. 6, 1995, Ser. No. 554,342
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—78 26 Claims



1. A surface mounted connector for surface mounting on a generally flat conductive surface of a printed circuit board, the connector comprising a base defining a plane and forming a generally flat substantially solid surface defining a predetermined area suitable for contact with and attachment to an associated flat conductive surface of the printed circuit board; a contact having at least one portion projecting from said base in a direction substantially normal to said plane defined by said base; at least one bent intermediate connecting portion integrally connecting said contact to said base, said contact, base and at least one bent intermediate connecting portion all being formed of a generally flat sheet of conductive material, said base being provided with aperture means forming spaces defining areas substantially smaller than said predetermined area for promoting flow of solder on the conductive surface of the printed circuit board into said spaces by capillary action upon heating and reflow of the solder.

5,632,630

OPTICAL MODULE WITH TOLERANT WAVE SOLDERED JOINTS

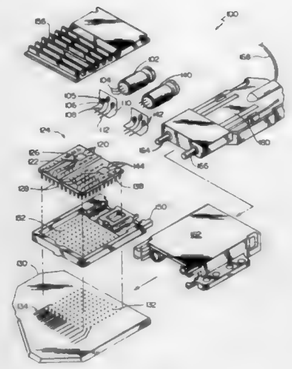
Duane F. Card, Whitney Point, N.Y.; Eberhard S. Dittman, Quebec, Canada, and Mukund K. Saraiya, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 163,202, Dec. 6, 1993, Ser. No. 976,632, Nov. 16, 1992, Pat. No. 5,295,214, said Ser. No. 976,620. This application Oct. 19, 1995, Ser. No. 545,163
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—79 10 Claims

1. An optical module for providing communication with fiber optic means, comprising:

a housing including one or more receptacles for connection to said fiber optic means; one or more optical sub-assemblies having multiple solder-wettable conductive leads for communication with electrical signals, for transmitting between the electrical signals and optical signals and positioned to communicate with said fiber optic means connected in the receptacles for transmitting the optical signals between the optical subassembly and said fiber optic means;

electronic circuit means for processing the electrical signals;



an electrical interconnection member communicating with said housing and adjacent said optical subassemblies at the end of the optical subassemblies from which the leads extend, for electrical interconnection between said optical subassemblies and said electronic circuit means;

a flexible ribbon cable for each said optical subassembly including conductors for transmitting signals between the optical subassembly and said electronic circuit means. said cables further including:

passages at one end of each cable through which respective leads of the respective optical subassembly are inserted;

solder-wettable lands proximate said passages and connected to said conductors of the flexible ribbon cable for soldered connection between the lands and the leads;

soldering bridge means communicating with the lands and the leads for establishing a desired solder joint configuration;

solder joints connecting between said leads and said lands and enclosing said soldering bridge means;

conductors to electrically connect the lands to the distal end of the cables;

a blanket film of dielectric material covering said conductors and having openings at said passages through which said leads are inserted; and

cable connection means at a distal end of each cable for connecting the conductors of the cables to conductors of the electrical interconnection member for said electrical interconnection.

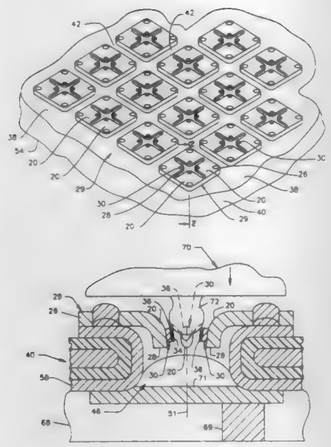
5,632,631

MICROELECTRONIC CONTACTS WITH ASPERITIES AND METHODS OF MAKING SAME

Joseph Fjelstad, Sunnyvale; John W. Smith, Palo Alto; Thomas H. Distefano, Monte Sereno; James Zaccardi, Sunnyvale, and A. Christian Walton, Belmont, all of Calif., assignors to Tessera, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 254,991, Jun. 7, 1994. This application Sep. 14, 1994, Ser. No. 306,205
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—82 13 Claims

1. A contact for a microelectronic device comprising a base portion defining a base surface and one or more asperities integral with said base portion protruding upwardly from said base surface to a height of less than about 40 microns, each said asperity defining a tip surface and a substantially sharp edge bounding said tip surface, said base portion including an anchor region and a plurality of flexible projections, at least one said asperity being disposed on each said projection remote from said anchor region,



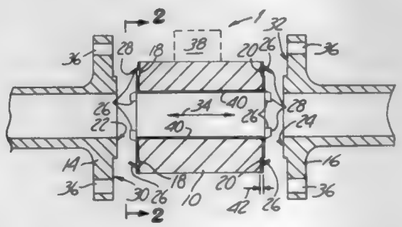
said anchor region being substantially ring-like and defining a center, said plurality of flexible projections extending inwardly from the ring-like anchor region towards said center.

5,632,632

FLOWMETER ALIGNMENT DEVICE

Wendell G. Huotari, Cokato, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 29, 1994, Ser. No. 314,873
Int. Cl.[6] H01R 4/66
U.S. Cl. 439—100 17 Claims



1. A device for aligning a flowmeter with a pipe flange, comprising:

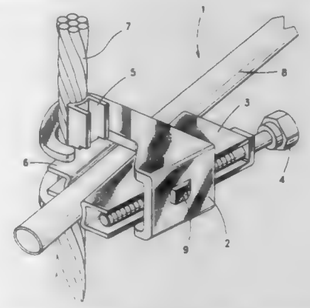
a unitary flat plate having a central hole therein for fluid passage, the plate also having a first set of tabs defined therein and bent outwardly from the plate, the plate also having a second set of tabs defined therein and bent outwardly from the plate in a direction opposite the first set of tabs, wherein the plate has an annular portion proximate the first and second set of tabs, and wherein a thickness of the annular portion is substantially equal to a thickness of at least the first set of tabs.

5,632,633

METHOD OF MANUFACTURING A GROUNDING CONNECTOR AND IMPROVED GROUNDING CONNECTOR

Joannes W. M. Roosdorp, Penha-Braganca Paulista-SP; Wilson M. Yamada, Vila Aparecida-Braganca Paulista-SP, and Alexandre M. Soriano, Pedra Bela-SP-Cep, all of Brazil, assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 363,097, Dec. 22, 1994, abandoned.
This application Aug. 12, 1996, Ser. No. 695,545
Claims priority, application Brazil, Jan. 17, 1994, 9400114-6
Int. Cl.[6] H01R 4/50
U.S. Cl. 439—100 21 Claims



1. An electrical connector for use with an electrical circuit, comprising:

a wedge member;

at least one nest member; and

a body member having a generally hollow inner portion and a window for receiving a fixture block; and

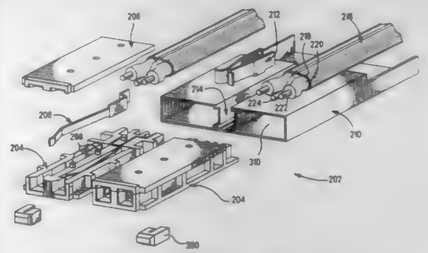
the fixture block is disposed in said window for engaging a tightening bolt.

5,632,634

HIGH FREQUENCY CABLE CONNECTOR

Lucas Soes, Rosmalen, Netherlands, assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 103,468, Aug. 6, 1993, abandoned.
This application Mar. 29, 1995, Ser. No. 412,837
Claims priority, application United Kingdom, Aug. 18, 1992, 9217546; Mar. 26, 1993, 9306399
Int. Cl.[6] H01R 4/66
U.S. Cl. 439—101 52 Claims



1. A high density shielded electrical connector for terminating a shielded cable comprising at least two insulating housings, each insulating housing having signal contacts and being enclosed by a shielding member, a grounding spring clip disposed between said shielding members and being in contact with a wall of said shielding members and being retained therewith, grounding spring clip defines a mating contact open in the same direction as said signal contacts.

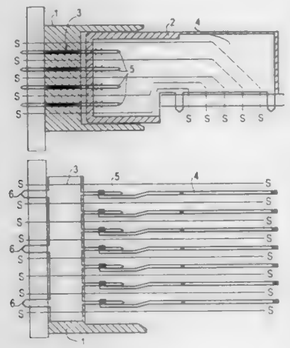
VOL 1198 ISS 4 MY 27 1997 UMI

5,632,635

ELECTRIC CONNECTOR ARRAY

Johan Vanbesien, Izegem, and Jacques Longueville, Oostkamp, both of Belgium, assignors to Siemens Aktiengeselischaft, Munich, Germany

Filed Dec. 22, 1995, Ser. No. 577,563
Claims priority, application Germany, Dec. 22, 1994, 44 46 100.3
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—108 4 Claims



1. In an electric connector array including a knife strip and a spring strip of insulating material each having a plurality of signal contacts being disposed in columns and rows for connection to one another by being plugged together, and each of the signal contacts being shielded on all sides by sheet-metal elements, the improvement comprising:

a) ground strips being disposed in the knife strip, extending over an entire length of the knife strip and being disposed between adjacent signal contact rows;

b) small ground plates being disposed in the spring strip between adjacent signal contact columns; and

c) each of said ground strips having pin-like ground contacts disposed in an intermediate grid relative to the signal contacts, for making a pluggable electrical contact with each of the small ground plates.

5,632,636

TRANSMISSION DEVICE FOR AN IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Toshio Maekawa, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

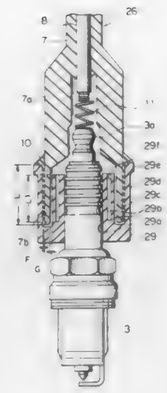
Filed Jan. 3, 1996, Ser. No. 582,443
Claims priority, application Japan, Apr. 13, 1995, 7-088068
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—125 7 Claims

1. A transmission device for an ignition system of an internal combustion engine, comprising:

a) an electrical conduction member for transmitting a high voltage for ignition generated by an ignition coil to a spark plug;

b) an electrically insulating member having a cylindrical terminal portion formed on an end portion thereof, and covering said conductive member to insulate said conductive member from the outside; and

c) a cylindrical terminal member made of an elastic material and having an inner circumference dimensioned to be closely and tightly engaged with one of said ignition coil and said spark plug, and further having a cylindrical engagement portion configured to be inserted in said terminal portion of said insulating member, said cylindrical engagement portion extending radially outwardly from said inner circumference and defining, intermediate a radial thickness thereof, an axially extending open space to accommodate a radially outwardly directed elastic deformation of said tubular portion during an engagement with or a disengagement from one of said ignition coil and said spark plug.

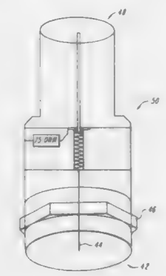


5,632,637

CABLE CONNECTOR

John R. Diener, Wendell, N.C., assignor to Phoenix Network Research, Inc., Wendell, N.C.

Filed Sep. 9, 1994, Ser. No. 304,665
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 15 Claims



1. A male f-type connector for connection to a corresponding female f-type connector, the connector comprising:.

a housing;

a first conductor having a generally axial portion in the housing, wherein the first conductor includes a prong;

a second conductor coaxial to the generally axial portion; and

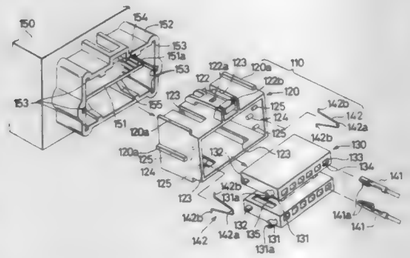
switching means mounted in the housing for selectively coupling the first and second conductors, wherein when the switching means is in a first position, the first conductor is electrically coupled to the second conductor, and when the switching means is in a second position, the first conductor and the second conductor are substantially electrically insulated from each other within the connector, the switching means being switched from the first position to the second position when the male connector and the female connector are connected, and being automatically switched from the second position to the first position when the male connector and the female connector are disconnected so that the connector self-terminates when disconnected, wherein the switching means includes a spring for biasing the prong.

5,632,638

CARD EDGE CONNECTOR

Yasuo Matsushita; Hisashi Konoya, and Mitsuhiro Fujitani, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jun. 23, 1994, Ser. No. 264,373
Claims priority, application Japan, Aug. 6, 1993, 5-215036; Oct. 28, 1993, 5-294018; Oct. 28, 1993, 5-294019
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—260 11 Claims



1. A card edge connector having a plurality of electrically conductive terminals, abutting parts of said terminals being brought into contact with exposed terminals formed on a connecting end portion of a circuit board to be mounted in an electrical connection housing, said card edge connector comprising:

a pair of inner housings defining an upper housing and a lower housing with a space therebetween, each of said housings holding said electrically conductive terminals in such a manner that said abutting parts are protruded to a direction toward said circuit board;

an outer housing having an upper wall, a lower wall, a first end wall and a second end wall, said first end wall having an inserting hole into which said connecting end portion of said circuit board is inserted, and said second end wall having an opening opposite to said first end wall through which said pair of inner housings is inserted into said outer housing, said outer housing accommodating said pair of inner housings therein; and

a spring attached to at least one of said pair of inner housings for urging said upper housing of said pair of inner housings toward said upper wall and for urging said lower housing of said pair of inner housings toward said lower wall of said outer housing to define said space between said pair of inner housings at where said connecting end portion of said circuit board is inserted,

at least one slit hole provided on said upper and lower walls of said outer housing; and

introducing cams of the electrical connection housing capable of being inserted into said at least one slit hole,

wherein said connecting end portion of said circuit board is inserted into said outer housing and said pair of inner housings are moved to each other to close said space by said introduction cams.

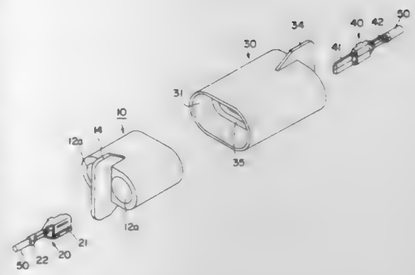
5,632,639

CONNECTOR ASSEMBLY INCLUDING MALE AND FEMALE CONNECTORS HAVING WATER-RESISTANT PLATES TO PREVENT CURRENT LEAKAGE

Hiroyuki Hayashi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Aug. 11, 1994, Ser. No. 289,107
Claims priority, application Japan, Aug. 26, 1993, 5-235590
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—271 7 Claims

1. An electrical connector for use in connecting electrical wires to one another, said connector comprising a housing being of oval shape defining a pair of substantially parallel circular cavities extending axially therethrough, the cavities having ends open at a rear portion of the housing, a partition wall partitioning said cavities from one another within the housing, and a planar leakage-prevention plate protruding at the exterior of the housing from a location between said ends of the cavities, said leakage-prevention plate being of a resin impregnated with an oil whereby a path of least resistance between electrical wiring led out of said cavities will extend around said leakage-prevention plate and the leakage-prevention plate will repel water such that current leaking between electrical wires in the connector is suppressed.

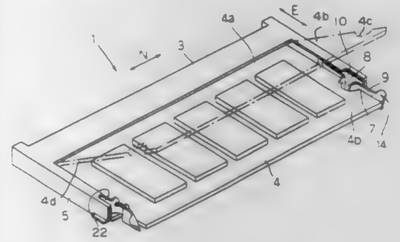


5,632,640

INSERT AND ROTATE CONNECTOR WITH IMPROVED LATCHING MEANS

Atsuhito Noda, Hachioujui, Japan, assignor to Molex Incorporated, Lisle, Ill.

Filed Nov. 20, 1995, Ser. No. 560,606
Claims priority, application Japan, Jan. 20, 1995, 7-000636 U
Int. Cl.[6] H01R *4/38*
U.S. Cl. 439—326 19 Claims



1. In an electrical connector for providing an electrical connection between a plurality of card contacts on a circuit card generally adjacent a first edge thereof and a plurality of board contacts on a circuit board, the circuit card being generally planar and having first and second faces, said first and second faces each having a row of card contacts generally parallel to and adjacent to the circuit card first edge, said connector including an insulative housing having a lower face for positioning adjacent said circuit board, an upper face having a card slot therein for receiving said circuit card first edge and a plurality of contact element receiving cavities spaced along the card slot and in communication therewith, said circuit card being first inserted into said card slot and rotated into engagement with said card slot, the connector further having means to latch said circuit card into engagement with said connector and to release at least a portion of said circuit card from said connector after said circuit card first edge has been rotated into engagement with said card slot, the improvement comprising, in combination:

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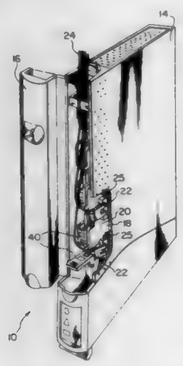
said means to latch and release said circuit card including at least one latch member disposed within one end of said connector housing, the latch member having a pair of interconnected arms separated by an intervening space, the distance between said arms being greater than the dimension of said connector end housing which receives said latch member such that said latch member is preloaded when in said connector housing end, said latch member further being movable between a first operative position wherein said latch member engages said circuit card and a second operative position wherein said latch member does not engage said circuit card, said latch member further including a circuit card-contacting portion stamped and formed in one of said latch member arms, the card-contacting portion extending outwardly from said latch member and having distinct first and second engagement members which engage separate, first and second portions of said circuit card, the circuit card portions lying in separate planes when said circuit card is inserted into said connector housing and rotated within said card slot and said latch member is in said first operative position, said latch member first engagement member including an arcuate projection which is received within a corresponding notch of said circuit card when said latch member is in said first operative position, said latch member second engagement member including at least one circuit card retention arm, the retention arm having two intersecting surfaces, one of said surfaces including a cam surface disposed thereon which guides said circuit card into engagement with said latch member on rotation thereof, said retention arm being separated from said arcuate projection by a blanked slot and overhanging said arcuate projection, the other of said retention arm intersecting surfaces being an abutment surface which opposes said projection.

5,632,641

ELECTRICAL CONNECTOR

Jay R. Sobel, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 9, 1995, Ser. No. 385,939
Int. Cl.[6] H01R *13/62;13/46;13/00*
U.S. Cl. 439—352 **6 Claims**



1. An electrical connector for use in a confined space in an electronic module including a casing for receiving the electrical connector, the connector having:

a connector housing;

a beam latch having two end portions of an intermediate portion between the end portions with the beam latch integrally and resiliently flexibly connected to the connector housing by a lateral neck disposed at the intermediate portion and the beam latch being in a resiliently unstrained position at the lateral neck and in which the latch finger is disposed in a latching position;

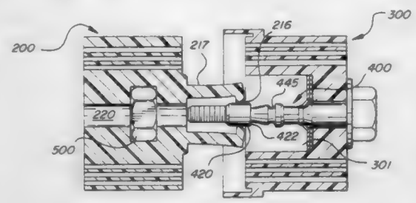
and connector removal means pivotally mounted in a fixed pivotal position to the connector housing and having a handle and a camming element, the handle being movable to pivot the removal means in one direction by a pull on the handle in a specific direction to cause the camming element to actuate the cam and hence flex the beam latch from the unstrained position and remove the latch finger from the latching position, the electrical connector then being removable in the direction of pull upon the handle.

5,632,642

PRE-SET LOCK SYSTEM

Curt M. Briski, Westland, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 546,905
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—364 **17 Claims**



1. A pre-set lock system comprising a rotatable bolt having a bolt shaft, and at least first and second connector members seated in axially-opposing fashion along the longitudinal axis of said bolt shaft, said first connector member including means for threadedly engaging said bolt shaft and moving relative to said longitudinal axis between a first pre-set condition and a second assembled condition, said first connector and said bolt shaft further including complementally engaging elements by which said bolt shaft and said first connector member are engaged in said first pre-set condition.

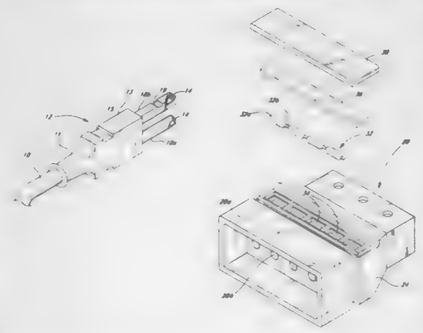
5,632,643

ELECTRONIC CABLE YOKE SOCKET WITH LOCKING MECHANISM

David J. Shepherd, San Clemente; Harald O. Olms, Lake Forest, and Henry G. Rossini, San Clemente, all of Calif., assignors to Tronomed, Inc., San Juan Capistrano, Calif.

Filed Feb. 5, 1996, Ser. No. 596,647
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—368 **17 Claims**

1. A yoke socket for removably retaining lead plugs when lead



plugs are inserted into the yoke socket, the yoke socket comprising:

a yoke socket body having, on a first surface thereof, a row of apertures, each aperture sized to accept a connector of an individual lead plug, when a connector is inserted into one of the apertures and each aperture forming a mouth of a bore penetrating the socket body and sized to accept the connector;

a row of openings on a second surface of the yoke socket body, each opening penetrating the yoke socket body and intersecting one of the bores, each opening disposed to expose a connector surface when a connector is inserted into the bore which the opening intersects;

a beaded rod of alternating straight and bead-like regions, the bead-like regions spaced apart by the straight regions and sized so that the rod can be placed in contact with the yoke socket body with one of the bead-like regions intruding into each opening to lie within a retaining recess on a connector surface when a lead plug is inserted into one of the bores;

a piece of resilient material sized to cover the beaded rod; and

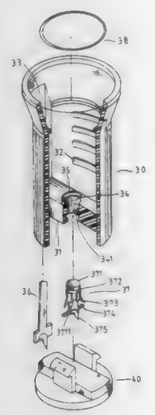
a keeper sized to cover and compress the resilient material, biasing the bead-like sections to provide detents for retaining lead plugs when lead plugs are inserted into the yoke socket.

5,632,644

DECORATIVE LIGHT BULB SOCKET

Mei L. Lin, 56, Min Sheng Street, Fengyuan, Taichung, Taiwan

Filed Jan. 2, 1996, Ser. No. 582,116
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—419 **1 Claim**



1. A decorative light bulb socket comprising:

a main body comprising a large number of inner threads, a longitudinal recess, a bottom plate, a through hole formed on said bottom plate, and a flange which is disposed on top of said bottom plate surrounding a top edge of said through hole;

a first conductor inserted in said longitudinal recess;

a second conductor inserted in said through hole;

two grooves formed in a periphery of said through hole;

said second conductor having a round top, a neck beneath said round top, two slant fins extending from said neck outward, a transverse bar disposed at a bottom of said second conductor, and an end tip disposed at a distal end of said second conductor; and

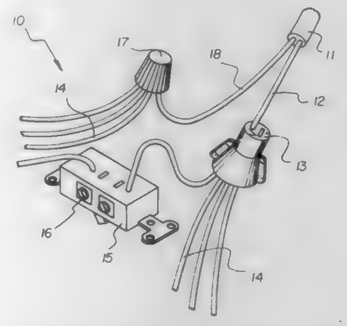
wherein said round top is restrained in said grooves and said transverse bar is blocked by said bottom plate.

5,632,645

WIRE NUT WITH SELF LOCKING HOT WIRE INSERT

William Love, 3230 E. Quartz La., Apt. G4, Fullerton, Calif. 92831

Filed Aug. 8, 1996, Ser. No. 694,037
Int. Cl.[6] H01R *4/26*
U.S. Cl. 439—441 **7 Claims**



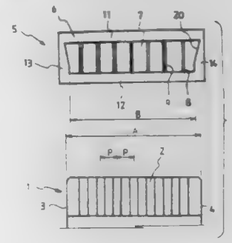
1. A wire nut with self locking hot wire insert comprising: an insert wire socket, a release wire socket, an insulating means, a conductive means, a spring retainer means, and an insulating pad means where the insulating means is a housing which holds the insert wire socket, the release wire socket, the conductive means, and the retainer means and where the insert wire socket, the release wire socket, the conductive means, and the retainer means are all electrically connected to one another and the insulating pad means is fixedly fastened to the retainer means and substantially prevents electrical contact therewith.

5,632,646

ELECTRIC CONNECTOR FOR FLEXIBLE FLAT CABLES

Hidehiro Ii, Koube, and Shinichi Aihara, Ebina, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Nov. 14, 1995, Ser. No. 557,878
Claims priority, application Japan, Dec. 16, 1994, 6-016614 U
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—495 **5 Claims**



1. An electrical connector for connecting a flexible flat cable having a given width to an electrical device, comprising:

a dielectric housing having an insertion space adapted to receive an end of the flexible flat cable through an insertion space opening;

the insertion space defined by a floor wall and an opposed ceiling wall and two opposed symmetrical side walls extending between the floor and ceiling walls;

electrical terminals secured in the floor wall, each terminal having a contact portion extending from the floor wall into the

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insertion space for electrical connection to a respective exposed conductor on the flexible flat cable when the end of the flexible flat cable is positioned in the insertion space;

the insertion space opening defined by edges of the floor and ceiling walls and the opposed symmetrical side walls, the opposed side walls forming a dimension therebetween parallel to the floor wall which increases as the side walls extend from the floor wall to the ceiling wall, the longest dimension between the side walls being less than or equal to the width of the flexible flat cable so that each longitudinal edge of the end of the cable contacts a respective side wall causing the end of the flexible flat cable to form a curve about the longitudinal axis of the cable with an apex of the curve being located closer to the floor wall rather than to the ceiling wall, whereby the end of cable is centered laterally between the opposed side walls causing the exposed conductors of the end of cable to be in alignment with the contact portions of the terminals; and

an actuator mounted to the housing to move from an open position, enabling the end of the cable to be inserted into the insertion space, to a closed position, forcing the end of the cable toward the floor wall creating an aligned engagement between the exposed conductors of the cable and the contact portions of the terminals.

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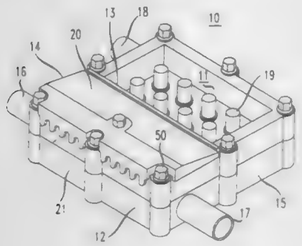
RF/POWER TAP

Donald P. Dobbin, Clark; Theodore E. Kluska, Glen Rock, and Arnold R. Smith, Chester, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 17, 1994, Ser. No. 324,307

Int. Cl.[6] H01R *13/52*

U.S. Cl. 439—521 **9 Claims**



1. An electrical tap unit comprising:

a housing having a first compartment and a second compartment;

port means for receiving a cable transmitting power and RF signals, and means for providing the power and RF signals on separate wires to each of a plurality of customers;

said first compartment housing RF connections;

said second compartment housing a power wire connection;

a bottom portion containing a circuit board for connecting to the power wire connection;

at least one detent formed in a least one wall of the second compartment and aligned with the power wire connection so that the detent receives a wire which is electrically connected to the power wire connection; and

means attached to a top portion of said tap unit for covering the second compartment only so that the RF connections can be repaired while keeping the power wire connections protected from the environment said means including a cover with at least one side which extends beyond said at least one wall of the second compartment and includes at least one scallop aligned with the detent.

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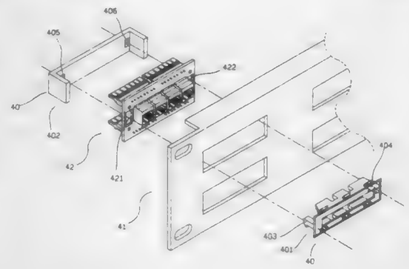
ADAPTER FIXING DEVICE

Danny Liu, Hsin-Tien, Taiwan, assignor to Dan-Chief Enterprise Co., Ltd., Hsin-Tien, Taiwan

Filed Apr. 19, 1995, Ser. No. 425,946

Int. Cl.[6] H01R *13/74*

U.S. Cl. 439—550 **19 Claims**



1. A telephone/computer network adapter panel combination comprising:

a panel;

a telephone/computer network adapter; and

an adapter fixing device fixing said telephone/computer network adapter to said panel and including:

an upper member held attached to said panel and having:

a side plate having a holding section having an engaging piece for being directly fixed to said panel, and

a hole through which a plug is inserted into said adapter;

a lower member coupled with said upper member for fixing therebetween said adapter; and

an engaging device combining together said upper member and said lower member.

5,632,649

HOLD-DOWN DEVICE FOR A BOARD MOUNT CONNECTOR

Todd M. Spangler, Charlotte, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1994, Ser. No. 362,680

Int. Cl.[6] H01R *13/60*

U.S. Cl. 439—567 **15 Claims**



1. A hold-down device adapted to secure an electrical connector assembly to a circuit board, wherein said electrical connector assembly comprises an insulative housing having at least one cavity adapted to receive a respective said hold-down device and having a constriction along said cavity, said hold-down device comprising:

a first portion comprising a pair of stops projecting from opposed side edges thereof and adapted to abut opposed first transverse surfaces of said constriction upon full insertion of said hold-down device into said receiving cavity;

a second portion including a pair of deflectable beams extending from opposed side edges thereof laterally outwardly and toward associated ones of said stops to free ends spaced from said stops a distance corresponding dimensionally to said constriction, each being sized so as to (i) resiliently flex inwardly during insertion of said hold-down device into said receiving cavity and (ii) resiliently flex outwardly upon passing associated second transverse surfaces of said constriction spaced a selected distance from said first transverse surfaces thereof, all so as to trap said constriction between said stops and ends of said beams and thereby fasten said hold-down device to said insulative housing; and

a board-retention section extending from one of said first and second portions upon full insertion of said hold-down device into said receiving cavity and beyond a board-proximate face thereof, and being adapted to become mechanically engaged with a circuit board to secure said connector assembly thereto.

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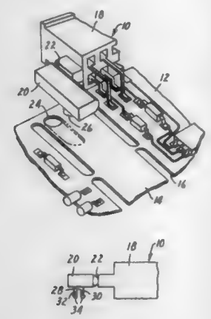
CONNECTOR BREAK-OFF LOCATOR TAB

Clyde W. Boling, Austin, and Charles E. Connoley, Round Rock, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 8, 1995, Ser. No. 554,313

Int. Cl.[6] H01R *13/73*

U.S. Cl. 439—570 **8 Claims**



1. An electronic device for attachment to a panelized circuit board, the device comprising:

a housing intended to remain attached to one of a plurality of printed circuit boards in a panelized circuit board, wherein adjacent printed circuit boards in the plurality of printed circuit boards are separated by a waste area adapted to be removed after assembly of components to the printed circuit board;

at least one locator tab connected to said housing, said locator tab being disposed over the waste area of the panelized circuit board when the housing is positioned on the printed circuit board, the locator tab intended to be removed from said housing with the waste area of the panelized circuit board;

a line of weakening between said housing and said locator tab coinciding with an edge of the panelized circuit board waste area, said line of weakening facilitating separation of said locator tab from said housing as the waste area is removed from the printed circuit board; and

means projecting from said locator tab and into the waste area for orienting said housing with respect to said printed circuit board.

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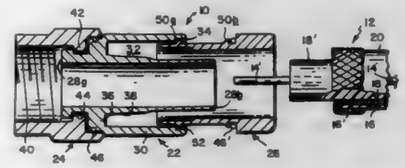
RADIAL COMPRESSION TYPE COAXIAL CABLE END CONNECTOR

Andrew Szegda, Canastota, N.Y., assignor to John Mezzalingua Assoc. Inc., Manlius, N.Y.

Continuation of Ser. No. 304,562, Sep. 12, 1994, Pat. No. 5,470,257. This application Nov. 27, 1995, Ser. No. 562,844

Int. Cl.[6] H01R *9/05*

U.S. Cl. 439—578 **19 Claims**



1. An end connector for connecting a coaxial cable to a system component, said end connector comprising:

a connector body comprising a tubular inner post extending from a front end to a rear end, and including an outer collar surrounding and fixed relative to said inner post at a location disposed rearwardly of said front end, said outer collar cooperating in a radially spaced relationship with said inner post to define an annular chamber with a rear opening;

fastener means at the front end of said inner post for attaching said end connector to said system component;

a tubular locking member; and

engagement means for inseparably coupling said locking member to said connector body at a first position partially inserted through said rear opening into said annular chamber and at which first position said locking member protrudes axially rearwardly from said connector body and overlaps and coacts in a radially spaced relationship with said inner post to accommodate insertion of the rear end of said inner post into an end of said cable, with a central core portion of said cable being received in said inner post through said rear end and an outer annular portion of said cable being received in said annular chamber through said rear opening and between said locking member and said inner post, said engagement means being yieldably releasable in response to an axially directed force to accommodate a further axial insertion of said locking member into said annular chamber to a second position at which said locking member coacts with said inner post to grip the outer annular portion of said cable therebetween.

5,632,652

PLUG-TYPE CONNECTOR FOR BACKPLANE WIRINGS

Karl Zell, Niederpoecking; Juergen Seibold, Baierbrunn, and Peter Seidel, Groebenzell, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 11, 1995, Ser. No. 431,569

Claims priority, application Germany, Apr. 14, 1994, 44 12 950.5

Int. Cl.[6] H01R *9/05*

U.S. Cl. 439—581 **2 Claims**

1. A plug-type connector comprising:

a backplane having a plurality of blades;

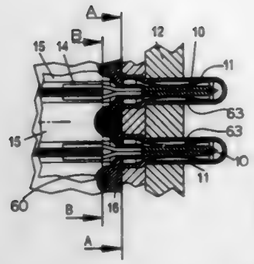
a housing open at one side adapted for plugging onto blades of a wiring backplane;

a plurality of contact springs mounted within said housing, each contact spring being adapted to contactably receive one of said blades of the wiring backplane;

a plurality of electrically conductive tubular shields disposed within said housing such that each of said tubular shields generally surrounds one of said contact springs; and

a plurality of contact pins, the contact pins being secured to the housing and protruding therefrom, each of said contact pins having at least one wire connected thereto within the housing.

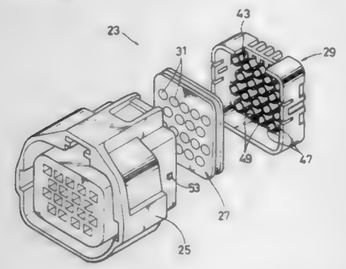
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each wire contacting one of the tubular shields, the contact pins and wires being arranged between the tubular shields such that adjacent tubular shields are interconnected by one of said contact pins and respective wires;

a plurality of tubular bushings disposed in the backplane in a press-fit manner, each bushing having inner inwardly directed springs which, in a plugged condition, receive a respective one of the contact pins, such that a shielding potential applied to the tubular bushings is delivered to the tubular shields through the respective inwardly directed springs, contact pins, and wires.

5,632,653
WATERPROOF CONNECTOR
Yoshitsugu Sawada, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Apr. 4, 1996, Ser. No. 627,279
Claims priority, application Japan, Apr. 6, 1995, 7-081304
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—587 **3 Claims**



1. A waterproof connector comprising:

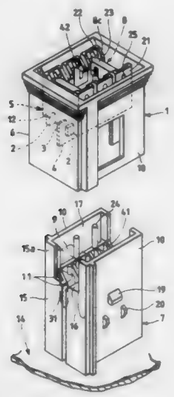
a housing including terminal accommodation chambers for accommodating metal terminals connected to ends of electric wires;

a waterproof cap disposed at the rear end of said housing, through which the electric wires are drawn, and having electric-wire insertion openings through which the drawn electric wires are inserted in such a manner that the electric wires are in close contact with one another; and

a waterproof-cap holder for holding said waterproof cap together with said housing to mount said waterproof cap on the rear end thereof and having electric-wire drawing openings through which the electric wires inserted through the electric-wire insertion openings are drawn, wherein

said waterproof-cap holder has water-discharge-space forming means for forming a space for discharging, to the outside of said waterproof connector, water introduced into a space between said waterproof-cap holder and said waterproof cap through said electric-wire drawing openings, said space being formed between said waterproof-cap holder and said waterproof cap by said water-discharge-space forming means.

5,632,654
FUSE CONNECTION STRUCTURE
Tomohiro Sugiura, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jan. 18, 1996, Ser. No. 588,375
Claims priority, application Japan, Jan. 20, 1995, 7-007660
Int. Cl.[6] H01R *13/64*; **H01H** *85/02*
U.S. Cl. 439—621 **8 Claims**



1. A fuse connection structure, comprising:

a fuse holder for receiving a dark current fuse, said fuse holder including a dark current fuse insertion position holding opposite lateral ends of said dark current fuse with said lateral ends extending in a first direction, a cover portion provided outside of said fuse insertion portion, a flexure prevention member extending in a second direction at a lower portion of said fuse insertion portion and having opposite ends connected to said cover portion, and ribs interconnecting said fuse insertion portion and said cover portion; and

a fuse block body to which said fuse holder is attachable, said fuse block body having connection terminals for connecting with said dark current fuses and having relief portions in opposite first walls thereof for respectively receiving said ribs of said fuse holder;

wherein said ribs extend in the second direction, perpendicular to said first direction, corresponding to a direction of thickness of said dark current fuse, wherein said flexure prevention member operates to restrict movement of said connection terminals, and wherein said fuse block body has protective second walls which are perpendicular to said first walls and which extend in said second direction so as to respectively oppose said lateral ends of said fuse.

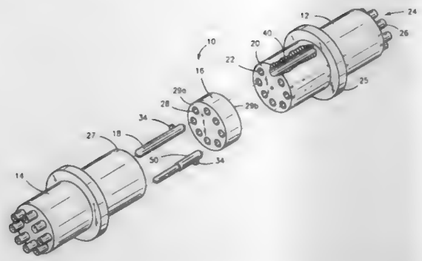
5,632,655
ELECTRICAL CONNECTOR WITH REPLACEABLE MALE PINS
James S. DeMarco, Jr., Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 20, 1995, Ser. No. 408,674
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—655 **19 Claims**

1. An electrical connector, comprising:

a first female insert including at least one socket;

a second female insert including at least one socket and adapted to be in electrical connection with said first female insert;

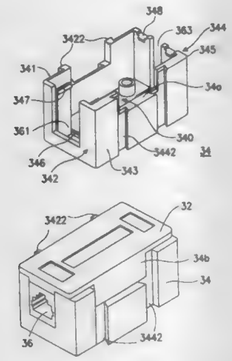
at least one removable connector means configured to slidably fit within said at least one socket of said first female insert and said at least one socket of said second female insert for electrically connecting said first and second female inserts;



said at least one removable connector means having a first end abutting an interior surface of said at least one socket in said first female insert and a second end mating an interior surface of said at least one socket in said second female insert so as to form said electrical connection between said first and second female inserts; and

locking means for locking said at least one removeable connector means in said connector said locking means comprising a spring-biased radial retention element and a cooperating connector recess.

5,632,656
EXPANDABLE SURFACE MOUNT BOX FOR TRANSMISSION LINE CONNECTORS
Jeffrey Lo, 11980 Telegraph Rd., #103, Santa Fe Springs, Calif. 90670
Filed Oct. 30, 1995, Ser. No. 550,539
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—676 **20 Claims**



1. An expandable box for containing a connector port which is connected with a transmission line, said box comprising:

a substrate including:

a rectangular base;

a first side wall on one side of said base, having coupling means on the exterior surface for expansion;

a second side wall connecting with said first side wall on said base, having an opening for receiving said connector port;

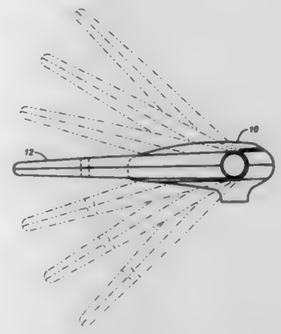
a third side wall, opposite to said first side wall on said base, having coupling means on the exterior surface for expansion; and

a fourth side wall, connecting between said first side wall and said third side wall on said base, having an opening as a passage for said transmission line;

a cover having a number of coupling elements and a plug on a base plate;

wherein said cover is fastened to said substrate by said coupling elements and said plug inserts into said opening of said fourth side wall to confine the transmission line therein.

5,632,657
MULTI-POSITION ADJUSTABLE TROLLING MOTOR TILLER HANDLE
William A. Henderson, Starkville, Miss., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Apr. 2, 1995, Ser. No. 427,292
Int. Cl.[6] B63H *21/17*
U.S. Cl. 440—6 **14 Claims**



1. In combination, an apparatus for controlling a trolling motor, comprising:

a trolling motor assembly further comprising a motorhead, said assembly mountable to a boat in a manner to allow rotation of said motorhead in at least a first plane to effect course changes for the boat;

an adjustable handle extending into said motorhead in at least one location to facilitate said movement of said motorhead in said first plane;

a clutch mechanism mounted between said handle and said motorhead and extending at least in part into said motorhead to facilitate selective placement of the handle in a plurality of positions as desired for control of said motorhead;

said clutch mechanism further comprises an adjustment system to regulate the amount of force required to reposition said handle pivotally with respect to said motorhead;

said handle is adjustable in a second plane different from said first plane;

said second plane is substantially transverse to said first plane;

said handle is pivotally mounted to said motorhead;

said handle is adjustable to include a position in substantial alignment with said motorhead as well as a positive or negative angular misalignment;

said adjustment system comprises a pair of mating elements comprising a first and second member defining a plurality of closely spaced ratchet positions therebetween, one of said pair supported by said motorhead and the other by said handle;

a biased resilient urging mechanism accessible externally to said handle when assembled to said motorhead to selectively regulate the spacing between said mating elements.

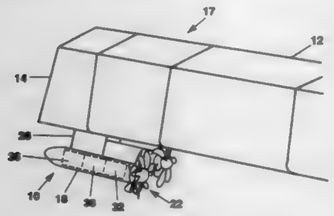
VOL 1198 ISS 4 MY 27 1997 UMI

5,632,658

TRACTOR PODDED PROPULSOR FOR SURFACE SHIPS

Benjamin Y.-H. Chen, and Carol L. Tseng, both of Potomac, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1996, Ser. No. 651,024
Int. Cl.[6] B63H *1/14*
U.S. Cl. 440—49 14 Claims



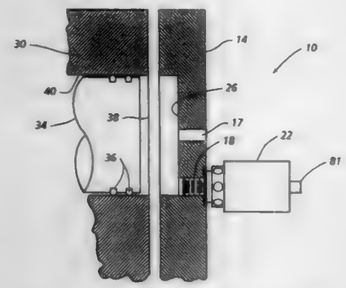
1. A tractor podded propulsor unit for a surface ship comprising:
an axisymmetric pod having a longitudinal centerline associated therewith, said pod having a forward end and a tapered aft end, said pod having mounted therein contrarotating propeller shafts that extends forward of said forward end, shaft seals, thrust bearings, and power means functioning to rotate said contrarotating propeller shafts, said power means including an electric motor and a contrarotating reduction gear;
contrarotating propellers including a forward propeller and an aft propeller mounted to forward ends of said contrarotating propeller shafts wherein said aft propeller has a diameter less than or equal to about 85% of a diameter of said forward propeller; and
a substantially vertically aligned streamlined strut connected at a bottom end to said pod.

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COMBUSTION CHAMBER DRAIN SYSTEM

Shawn K. Martin; William A. Garnett, both of Panama City Beach, and William W. McCrory, Panama City, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1996, Ser. No. 604,143
Int. Cl.[6] B63H *21/14*
U.S. Cl. 440—88 8 Claims



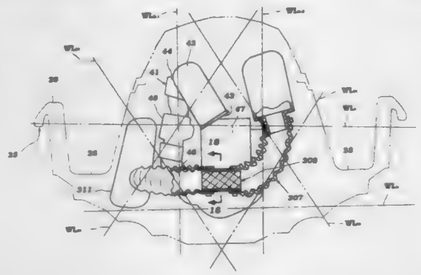
1. A combustion chamber drain system for elimination of water trapped in the combustion chamber of an internal combustion engine having a block, said system comprising:
means for sealing off the engine block to permit combustion in said engine, said means having one combustion chamber portion aligned to join with an opposite combustion chamber portion in said block to create a complete and functional combustion chamber, and having one threaded hole extending through said means to receive a threaded sparkplug, and a second adjacent threaded hole extending through said means to provide a passage between the combustion chamber portion therein and the environment external to said engine;
threaded means for preventing exhaust gas discharge from said engine during engine operation and for providing a sealable passage for releasing water trapped in said engine after said engine is flooded and removed from a flooding environment, said means threadably inserted into said second threaded hole of said block sealing means;
means for operating said engine without combustion therein in order to remove said trapped water through said sealable passage; and
means for powering said preventing and releasing means.

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WATERCRAFT CATALYTIC EXHAUST SYSTEM

Ryoichi Nakase; Shigeyuki Ozawa, and Hiroaki Fujimoto, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 7, 1995, Ser. No. 484,953
Claims priority, application Japan, Feb. 27, 1995, 7-038150; Feb. 27, 1995, 7-038161; Feb. 27, 1995, 7-038168
Int. Cl.[6] B63H *21/32*
U.S. Cl. 440—89 21 Claims



1. A personal watercraft having a hull defining a rider's area sized to accommodate at least one rider, said hull defining an engine compartment containing an internal combustion engine having at least one exhaust port and an output shaft, a propulsion device carried by said hull and driven by said engine output shaft for propelling said watercraft, an exhaust system for conveying exhaust gases from said engine exhaust port to the atmosphere, and a catalyst in said exhaust system for treating the exhaust gases before discharge to the atmosphere, said catalyst being position within said hull so as to be above the water surface level of the body of water in which the watercraft is operated with the hull floating in a normal upright position and in an inverted position.

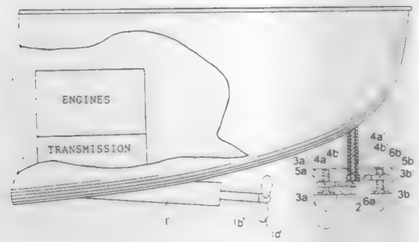
5,632,661

DEVICE, SUCH AS A PROPELLER, FOR SHIPS WHICH IS INDEPENDENT OF THE MAIN PROPELLER PROPULSION SYSTEM AND CAN BE USED AS AN ACTIVE MANEUVERING MECHANISM

Dirk Jürgens, Hamburg, and Christian Thieme, Brunstorf, both of Germany, assignors to Blohm +Voss International GmbH, Hamburg, Germany

Filed Oct. 20, 1995, Ser. No. 546,247
Claims priority, application Germany, Oct. 21, 1994, 44 37 649.9; Dec. 3, 1994, 44 43 100.7
Int. Cl.[6] B63H *1/08*
U.S. Cl. 440—93 20 Claims

1. A ship comprising:
a hull;
said hull being disposed from bow to stern;



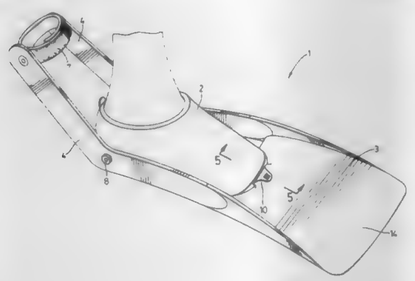
at least one engine disposed within said hull;
a main propulsion system;
means for connecting said main propulsion system to said at least one engine;
an auxiliary maneuvering device;
said auxiliary maneuvering device being independently operable of said main propulsion system;
said auxiliary maneuvering device comprising a body;
at least one blade extending from said body;
said auxiliary maneuvering device comprising means for both providing a rudder system for said ship by aligning said at least one blade with respect to the longitudinal axis of said ship upon use of said main propulsion system and also for propelling said ship;
said body defining a horizontal plane and said body comprising a center;
said body being substantially circular and the plane of said body being disposed substantially horizontally with respect to said ship;
means for rotating said body with respect to said hull;
means for connecting said body to said at least one engine to rotate said body around the center of said body;
said at least one blade defining a vertical axis;
said at least one blade defining a root portion substantially adjacent said body, and a tip portion substantially distal from said body;
said vertical axis of said at least one blade extending from said root portion of said at least one blade to said tip portion of said at least one blade;
means for rotating each of said at least one blade at least 360° about the vertical axis of said at least one blade;
said means for rotating each of said at least one blade at least 360° comprising at least one transmission means;
said at least one transmission means being connected to said at least one engine.

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CENTRALLY ARTICULATED SWIN FIN

Ron Cadorette, 485 Viceroy Road, North Bay, Ontario, Canada

Filed Aug. 26, 1996, Ser. No. 701,795
Int. Cl.[6] A63B *31/08*
U.S. Cl. 441—63 13 Claims



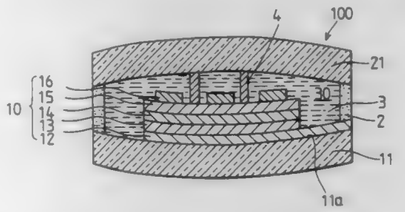
1. A swim fin comprising:
a boot portion to receive the foot of a swimmer;
a web portion;
a pair of side members, each of said side members having upper and lower arms and upper and lower ends, said lower ends of said side members attached to opposite sides of said web portion, said upper ends of said side members attached to leg engaging means; and, pivot means connecting said side members to said boot portion,
said pivot means permitting said side members and said web portion to rotate about said boot portion such that when said leg engaging means is attached to the lower leg of a swimmer said web portion is pivoted to a position approximately parallel to the swimmer's lower leg.

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ELECTROLUMINESCENT DISPLAY HAVING IMPROVED BREAKDOWN CHARACTERISTICS AND MANUFACTURING METHOD THEREOF

Hajime Ishihara, Nagoya; Kazuhiro Inoguchi, Toyota; Nobuei Ito, Chiryu, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 30, 1995, Ser. No. 413,371
Claims priority, application Japan, Mar. 31, 1994, 6-087664; Feb. 3, 1995, 7-017073
Int. Cl.[6] H05B *33/00*
U.S. Cl. 445—25 11 Claims



1. A method of manufacturing an electroluminescent display, said method comprising the steps of:
forming an inlet in one of a first substrate and a second substrate;
laminating a luminescent element on said first substrate;
disposing said second substrate at a predetermined distance away from said first substrate in an environment having a predetermined pressure;
sealing a region of said first substrate away from said luminescent element to a corresponding portion of said second substrate, thereby forming an internal space between said first and second substrates; and
injecting insulating fluid into said internal space from said inlet by utilizing a pressure higher than said predetermined pressure, thereby deforming said first and second substrates into a convex shape.

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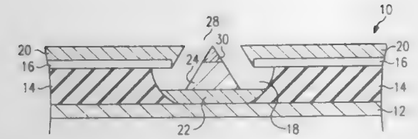
FIELD EMISSION DEVICE CATHODE AND METHOD OF FABRICATION

John W. Scoggan, Southlake, and Edward C. Lee, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 28, 1995, Ser. No. 535,420
Int. Cl.[6] H01J *1/30;9/02*
U.S. Cl. 445—50 16 Claims

1. A method for fabricating a microtip of a field emission device cathode, comprising the steps of:
forming a dielectric layer on a resistive layer;

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forming a gate layer on the dielectric layer;

forming an opening in the gate layer;

forming a microtip cavity in the dielectric layer through the opening in the gate layer that extends to the resistive layer;

forming a conductive opening layer on the gate layer and on the resistive layer within the microtip cavity;

forming a nonrefractory metal layer on the conductive opening layer and on the conductive opening layer within the microtip cavity to produce a microtip within the microtip cavity; and

polishing the field emission device cathode until the microtip is exposed.

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DEVICE FOR PRESSING FRAME FOR APERTURED GRILLS

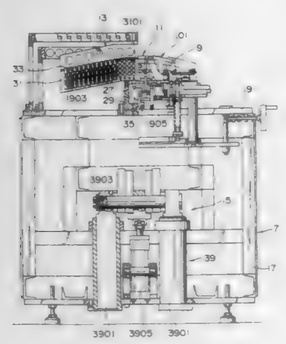
Kunihiko Yanai, Aichi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 25, 1995, Ser. No. 506,873

Claims priority, application Japan, Jul. 26, 1994, 6-194888

Int. Cl.[6] H01J *9/02*

U.S. Cl. 445—68 **12 Claims**



1. A pressure device for pressing a frame for apertured grills, which presses a pair of members facing each other of a frame for apertured grills comprising four members of top, bottom, right and left sides in the direction to bring said pair of members together, having:

a pair of pressure blocks provided movably in the direction to bring the pressure blocks closer to and farther from said pair of members located at the position facing to said pair of members outside said frame,

driving means for moving synchronously each said pressure block in the direction to bring each said pressure block closer to and farther from said pair of members respectively, and

a plurality of pressure tips for contacting with said pair of members and screw adjustably supported toward and away from said pair of members on each said pressure block, respectively.

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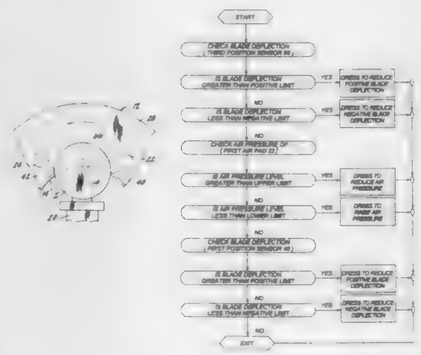
METHOD AND APPARATUS FOR AUTOMATED QUALITY CONTROL IN WAFER SLICING

Andrea Peratello, Barengo, and Fabrizio Leoni, Novara, both of Italy, assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Oct. 28, 1994, Ser. No. 330,906

Int. Cl.[6] B24B *53/07*

U.S. Cl. 451—5 **18 Claims**



1. A method for slicing wafers from an ingot of wafer source material using an internal diameter saw having an annular blade in which at least one process parameter having a direct relationship to wafer quality is measured and automatic adjustments are made in response to the measured process parameter, the method comprising the steps of:

slicing a wafer from the ingot with the internal diameter saw;

detecting during the step of slicing at at least one location a blade location factor including at least one of the position of the blade within the ingot in directions generally perpendicular to the plane of the blade and the force applied to the blade for urging the blade to maintain a zero blade deflection position;

generating at least one signal corresponding to the detected blade location factor;

transmitting the detected blade location factor signal to a control circuit;

determining in the control circuit the deviation of the detected blade location factor from a zero blade deviation factor stored in the control circuit;

comparing in the control circuit the determined blade deviation to a maximum blade deviation limit stored in the control circuit; and

activating by operation of the control circuit a blade dressing device to sharpen the blade if the determined deviation of the blade location factor exceeds the stored maximum blade deviation limit;

counting within the control circuit the number of wafers sliced during which the determined blade deflection exceeded the maximum blade deflection limit since the last blade dressing; and

prohibiting activation of the blade dressing device in the control circuit if the counted number of wafers sliced since the last blade dressing is fewer than a predetermined lower limit stored in the control circuit.

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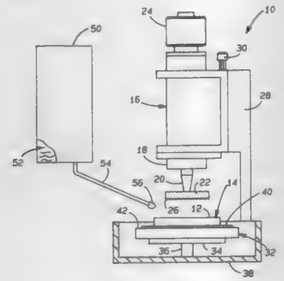
NO COAT BACKSIDE WAFER GRINDING PROCESS

Michael R. Earl; Russell A. Detterich, both of Kokomo, and Robert A. Yancey, Carmel, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 29, 1995, Ser. No. 496,333

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—41 **19 Claims**



1. An apparatus for grinding a backside surface of an integrated circuit wafer, said apparatus comprising:

a grind chuck table, said grind chuck table including a plurality of holes, said grind chuck table further including a cushion pad secured to a surface of the grind chuck table, said cushion pad including a plurality of holes that are aligned with and in vacuum communication with the holes in the grind chuck table, said grind chuck table further including vacuum means for applying vacuum suction through the plurality of holes in the grind chuck table and the cushion pad so as to secure the wafer to the grind chuck table such that a frontside surface of the wafer is positioned against the cushion pad and a backside surface of the wafer is exposed to be grinded, said cushion pad providing cushioning that is effective to prevent damage to integrated circuits on the wafer during a grinding process; and

means for providing a cooling fluid to the grind chuck table, said cooling fluid preventing residue released from the wafer during the grinding process from adhering to the wafer.

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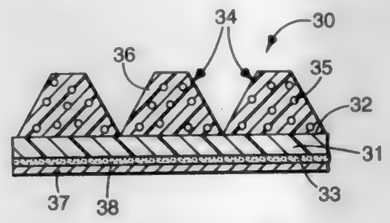
METHOD FOR THE POLISHING AND FINISHING OF OPTICAL LENSES

Gene O. Lindholm, River Falls, Wis., and Robert A. Follensbee, Cottage Grove, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 268,293, Jun. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 145,422, Oct. 29, 1993, abandoned. This application Aug. 12, 1996, Ser. No. 695,511

Int. Cl.[6] B24B *1/00;7/19;7/30*

U.S. Cl. 451—42 **33 Claims**



1. A method for polishing an optical quality surface comprising the step of:

providing an optical quality surface having a first major surface, said first major surface having an initial Rtm value of greater than 0.35 micrometers;

bringing said first major surface into a frictional contacting relationship with an abrasive article, wherein said abrasive article comprises a sheet-like structure having deployed on at least one major surface thereof a plurality of individual abrasive composites, each composite comprising a plurality of abrasive particles dispersed in a binder; and

moving at least one of said contacting first major surface and abrasive article relative to each other in the presence of a liquid essentially free of abrasive particles in a manner and for a time effective to polish said first major surface to provide a finished surface having final Rtm value of 0.30 micrometers or less, the step of moving the first major surface and abrasive article relative to each other to erode the abrasive composites to bring a continuous supply of new abrasive particles in the abrasive composites into engagement with the first major surface; and

removing essentially all abrasive particles eroded from the abrasive composites from an interface between the first major surface and the abrasive article so that polishing is substantially accomplished by the abrasive composites.

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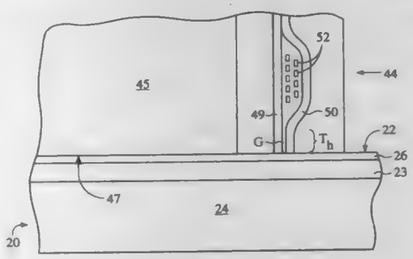
INTERACTIVE METHOD FOR LAPPING TRANSDUCERS

Michael H. Azarian; Michael A. Baldwinson, both of Cupertino; David T. Gutowski, Santa Cruz; Harold J. Hamilton, Santa Clara; James P. Hennessy, Campbell; Mark W. Parcher, Fremont, and Kenneth K. H. Tang, Cupertino, all of Calif., assignors to Censtor Corporation, San Jose, Calif.

Filed May 26, 1995, Ser. No. 452,041

Int. Cl.[6] B24B *49/02;49/10*

U.S. Cl. 451—54 **21 Claims**



1. A method of making a transducer for communication with a medium comprising

providing a partially fabricated transducer, said transducer having an information-transmissive terminal being impeded by a material disposed near said terminal,

removing at least a portion of said material while positioning said transducer adjacent to a body communicating with said transducer,

receiving, by said transducer, a signal from said body, and

monitoring said transducer during said removing for an indication, based upon said signal, that a desired amount of said material has been removed.

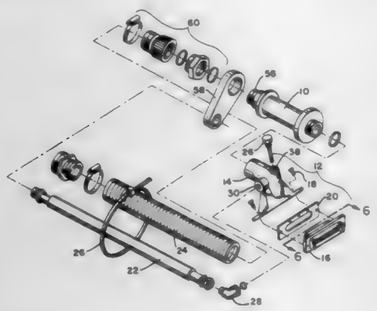
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VACUUM STEAM WAND FOR SANITIZING A CARCASS

Peter Gwyther, Madison, Conn., assignor to Jarvis Products Corporation, Middletown, Conn.

Filed Oct. 26, 1995, Ser. No. 548,594
Int. Cl.° A22B 5/08
U.S. Cl. 452—74 51 Claims



1. A vacuum steam wand for sanitizing a carcass comprising:

a housing including:

a handle portion; and

a vacuum head portion having a wall defining a vacuum region, the wall having an inner wall surface, an outer wall surface and a lip for contacting the carcass during vacuum steam sanitizing;

a vacuum passage within the housing connected to the vacuum region and to a vacuum port adapted for connection to a source of vacuum;

a steam passage within the housing, capable of maintaining and supplying steam at or above a desired sanitizing temperature, the steam passage being connected to a plurality of inner steam nozzles, a plurality of outer steam nozzles and to a steam inlet port adapted for connection to a source of steam, at least a portion of the steam passage being located adjacent to and in thermal contact with the wall;

the plurality of inner steam nozzles being located within the vacuum region adjacent to the inner wall surface;

the plurality of outer steam nozzles being located outside the vacuum region adjacent to the outer wall surface; and

at least some of the inner and outer steam nozzles providing a steam spray partially directed towards the carcass and partially directed towards the wall, the number and location of the inner and outer steam nozzles being sufficient, in combination with the steam passage in thermal contact with the wall, to maintain the wall at or above the desired sanitizing temperature when the wand is in use.

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CONTINUOUS HOG SKINNING METHOD AND APPARATUS

Edward Ochylski, 400 Walnut -Skwalk #1, Des Moines, Iowa 50309

Filed Jul. 2, 1996, Ser. No. 677,458
Int. Cl.° A22B 5/16
U.S. Cl. 452—128 25 Claims

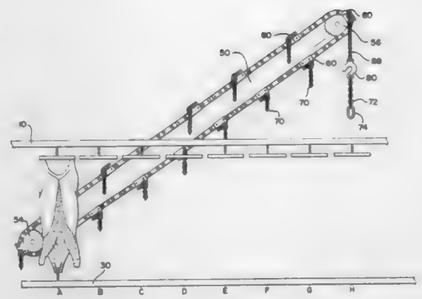
1. A continuous method of skinning an animal carcass comprising the steps of:

a. suspending a carcass in the head-down position;

b. moving said head-down carcass continuously through a skinning station;

c. inserting a jaw hook in the jaw of the carcass;

d. coupling said jaw hook to a jaw hook conveyor, said jaw hook conveyor being synchronized to move through said skinning station at approximately the same speed as the carcass, said jaw hook conveyor being positioned approximately beneath



the carcass at the start of said skinning station and moving laterally away from beneath the carcass as the carcass moves through said skinning station, which lateral movement stretches said carcass taut and tilts said carcass from vertical and into a back-down attitude;

e. freeing the skin on at least a portion of the head of the carcass;

f. grasping the freed skin and coupling said freed skin to a skin puller, said skin puller synchronized to move through said skinning station at the same speed as the carcass, said skin puller being positioned away from the direction of the carcass tilt;

g. pulling said skin upwardly and away from the direction of carcass tilt as the carcass moves through said skinning station; and

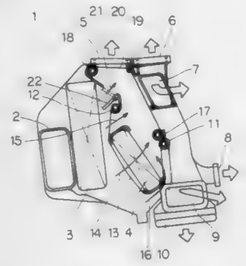
h. separating said skin from said carcass in a direction away from the tilt of the carcass, whereby the contamination of the carcass by debris from the skin is minimized.

5,632,672

AIR CONDITIONING APPARATUS WITH FILM MEMBER

Akihito Higashihara, Chiryu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 6, 1995, Ser. No. 539,526
Claims priority, application Japan, Oct. 6, 1994, 6-242757
Int. Cl.° B60H 1/26
U.S. Cl. 454—121 13 Claims



1. An air conditioning apparatus for a vehicle, said apparatus comprising:

an air conditioning case for leading air to a passenger compartment of a vehicle;

a first air outlet in a downstream side of said case, said first air outlet being for communicating with a side face blow outlet for blowing air toward an upper half body of a passenger who is adjacent to a side glass in said passenger compartment;

a second air outlet in a downstream side of said case, said second air outlet being for communicating with a foot blow outlet for blowing air toward feet of said passenger; and

a flexible film member having first and second opening portions for passing said air and being movably installed in said air

conditioning case so that said first and second opening portions respectively face said first and second air outlets;

wherein a width of said first air outlet in a vertical direction perpendicular to a moving direction of said film member in said case is shorter than a width of said second air outlet in said vertical direction;

an entire length of said first opening portion in said moving direction is shorter than a length of said first air outlet; and

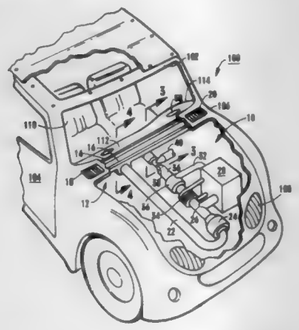
in a foot mode of said air conditioning apparatus, in which said first opening portion opens to said first air outlet and said second opening portion opens to said second air outlet so that most of said air in said air conditioning case is blown off from said second air outlet and the rest of said air is blown off from said first air outlet, an opening area in which said first opening portion opens to said first air outlet is smaller than an opening area in which said second opening portion opens to said second air outlet, and said first opening portion covers said first air outlet completely.

5,632,673

VENTILATION SYSTEM FOR LIGHTWEIGHT AUTOMOBILE

Delbert D. DeRees, Romeo, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 30, 1995, Ser. No. 550,263
Int. Cl.° B60H 1/28
U.S. Cl. 454—121 19 Claims



14. In an automobile having a plastic body and including a passenger compartment, an engine, a plastic hood for covering the engine, and an upper hood cowl, a ventilation system for directing fresh air from the upper hood cowl into the passenger compartment, a portion of the ventilation system being bonded to the hood for providing support to the hood.

5,632,674

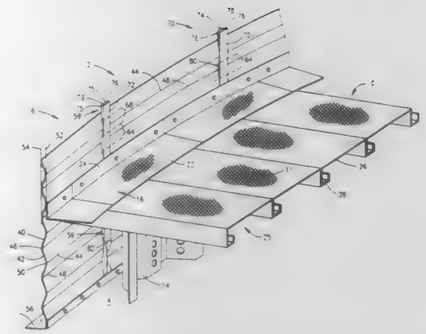
GRAIN BIN WITH SIDE WALLS HAVING INTEGRAL VERTICAL STIFFENERS AND AIR CONDUITS

George E. Miller, Jr., Raytown, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Nov. 2, 1995, Ser. No. 552,081
Int. Cl.° E04H 7/22
U.S. Cl. 454—182 11 Claims

1. In a grain bin for storing and drying grain, having a floor, a roof, and a bin side wall extending therebetween, said improvement comprising:

a bin side wall containing a plurality of horizontally arranged corrugations extending about a circumference of the bin, said horizontal corrugations defining inner and outer circumferential planes of said wall, said side wall further containing a plurality of vertically extending stiffeners integrally formed therein, said stiffeners each containing a vertically recessed



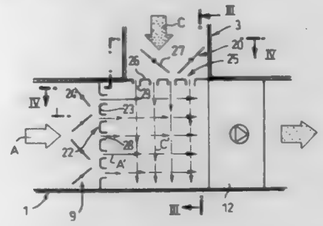
channel which traverses said horizonal corrugations to form passageways upward along said side wall between said inner and outer circumferential planes.

5,632,675

MIXING SECTION FOR SUPPLY AIR AND RETURN AIR IN AN AIR-CONDITIONING APPARATUS

Seppo K. Kanninen, Espoo; Seppo J. Leskinen, Västerskog, and Ingmar E. Rolin, Espoo, all of Finland, assignors to ABB Flakt Oy, Helsinki, Finland

PCT No. PCT/FI94/00153, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO94/25805, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 22, 1994, Ser. No. 537,901
Claims priority, application Finland, Apr. 23, 1993, 931849
Int. Cl.° F24F 13/04
U.S. Cl. 454—264 13 Claims



1. A mixing section for supply air and return air in an air-conditioning apparatus comprising:

a supply device supplying outdoor air into a room and comprising a supply duct between outdoor air and the room for an outdoor air flow, and means for adjusting the outdoor air flow;

an exhaust device passing exhaust air from the room and comprising an exhaust duct from the room for an exhaust air flow, and means for adjusting the exhaust air flow;

a return device for returning exhaust air as return air flow into the room and comprising a return duct between the exhaust duct and the supply duct for the return air flow, and means for adjusting the return air flow, the supply device and the return device having a common mixing space for mixing the outdoor air and return air flows; and

a guide means provided at the side of the mixing space which is at least after one of the adjusting means of the supply device and the adjusting means of the return device, and which forms air flow paths after the one adjusting means for guiding the air flow passing through the one adjusting means into the mixing space through said flow paths in several separate air jets which cross and interlap with the air flow passing through the other adjusting means and into the mixing space.

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5,632,676

USE OF PERACETIC ACID TO SANITIZE PROCESSED FOWL

Lisa M. Kurschner, and George M. Diken, both of Hamilton Square, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 12, 1993, Ser. No. 134,995
Int. Cl.[6] A23L *1/015;1/315*
U.S. Cl. 452—173 8 Claims

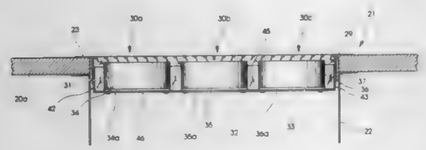
1. A method for sanitizing fowl that has been killed, plucked and eviscerated, comprising contacting the fowl with an aqueous peracetic acid solution, which consists essentially of a sanitizing concentration of at least a100 ppm peracetic acid suitable for sanitizing fowl without adversely affecting the fowl, and maintaining that contact for a time sufficient to sanitize the fowl without adversely affecting the fowl.

5,632,677

FAN-EQUIPPED AIR DELIVERY VENT

Larry V. Elkins, 4950 E. Baseline Rd., Columbus, Ind. 47201

Filed Sep. 15, 1995, Ser. No. 529,097
Int. Cl.[6] F24F *13/075;7/06*
U.S. Cl. 454—329 4 Claims



1. In combination:
a floor portion of a structure defining a substantially rectangular opening;
an air delivery duct extending from below said floor portion in the direction of said opening; and
a modular air delivery vent attached to said floor portion and being disposed in said air delivery duct, said air delivery vent comprising:
a housing member defining an air entry aperture and including an outlet flow register defining a plurality of outlet air flow passageways;
a plurality of fans positioned within said housing member and arranged to increase the air flow rate of air flowing between said air entry aperture and said outlet air flow passageways; and
an enclosing panel attached to said housing member and extending across said air entry aperture, each of said plurality of fans being mounted to said enclosing panel, said enclosing panel defining a plurality of air-entrance apertures, there being one air-entrance aperture aligned with each one of said plurality of fans.

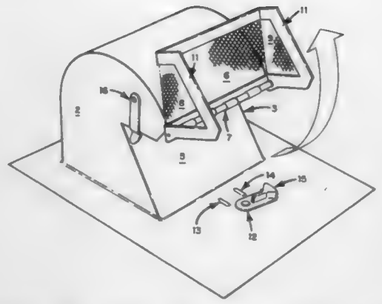
5,632,678

ROOF VENT FOR A CLOTHES DRYER

John G. Doelfel, 103 Kirtland Dr., Naples, Fla. 33942

Filed May 28, 1996, Ser. No. 654,223
Int. Cl.[6] F24F *7/02*
U.S. Cl. 454—366 7 Claims

1. A roof vent for venting a clothes dryer, said vent having a base plate being mounted to a surface of a roof and an upstanding elbow-shaped duct mounted thereon and having an opening facing downwardly toward said plate and forming a space there between, said duct having two side walls and a forward edge between said side walls and normal thereto, the improvement comprising: a



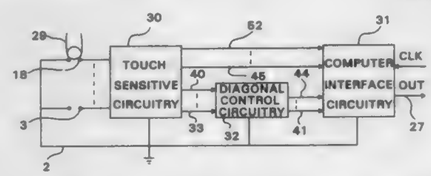
moveable screen mounted on the outside of said duct so that the space between said opening and said plate and said two side walls is completely enclosed.

5,632,679

TOUCH SENSITIVE COMPUTER INTERFACE CONTROLLER

Michael Tremmel, 1136 Luzerne St., Scranton, Pa. 18504

Continuation-in-part of Ser. No. 966,362, Oct. 26, 1992, Pat. No. 5,409,239. This application Dec. 8, 1994, Ser. No. 351,792
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—36 5 Claims



1. A touch sensitive video game controller to be held between the hands of the user, said controller comprising:
an electrically non-conductive top housing and a singularly electrically conductive bottom housing which combine to form an outer housing for said controller, said housing containing touch sensitive circuitry, diagonal control circuitry and interface means;
said top housing having a plurality of singularly electrically conductive first contact points, each first contact point being mounted below said top housing, extending through an aperture in said top housing and projecting above said top housing;
said bottom housing being connected to one end of a supply voltage and forming a second electrically conductive contact point, said second contact point and any one of said plurality of first contact points being bridged by the skin of the user by the holding of said controller and simultaneous touching of any one of said first contact points thereby activating touch sensitive circuitry;
said touch sensitive circuitry comprising a plurality of touch sensitive circuits, each said touch sensitive circuit comprising three resistors arranged in series, with each end of said series being respectively connected to a positive and a negative terminal of the said supply voltage, wherein one of said resistors includes the electrical skin resistance of a user, whereby the electrical resistance of the skin to the passage of electrical current forms a part of said touch sensitive circuit and the simultaneous touching of any of said first contact points and said second contact point completes said circuit;
said diagonal control circuitry comprising a plurality of digital logic switching circuits, each circuit comprising of several digital logic gates monitoring one of the said first contact

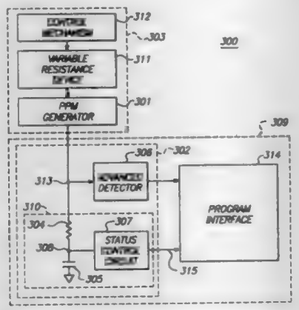
points which control diagonal direction including the two adjacent direction control inputs of the said first contact points through the said touch sensitive circuits, whereby the engagement of said diagonal first contact point results in the simultaneous engagement of the said two adjacent first contact points with a single touch, wherein the engagement of one of the two said single adjacent first contact points results in only the engagement of that single contact point and activates said interface means;
and said interface means including means for outputting a signal representative of said touch, said signal being in a form recognizable as a controller input for use with at least one of a video game computer system and a personal computer system running a video game.

5,632,680

METHOD AND APPARATUS FOR CONTROLLING A COMPUTER GAME

Yau W. Chung, Fremont, Calif., assignor to Quickshot Patent (BVI) Ltd., Wickhams Cay, Virgin Islands (Br.)

Filed Aug. 9, 1995, Ser. No. 512,885
Int. Cl.[6] A63F *09/24*
U.S. Cl. 463—36 21 Claims



1. A computer control interface for coupling an input device to a program interface, the computer control interface comprising:
an input port for coupling to the input device;
a pulse position detector coupled to the input port and having a status data output coupled to the program interface, for generating status data responsive to a received pulsed control signal comprising a plurality of pulses each separated by a time duration; and
a resistance detection circuit coupled to the input port and having a status signal output coupled to the program interface, for generating a status signal responsive to a variable resistance input.

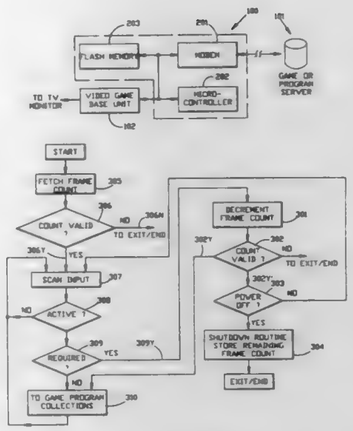
5,632,681

UNIVERSAL ELECTRONIC VIDEO GAME RENTING/ DISTRIBUTING SYSTEM

Halil B. Bakoglu, Ossining; Inching Chen, Wappingers Falls; Andy G. Lean, Merrick; Kiyoshi Maruyama, Chappaqua, and Chung-wai Yue, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1995, Ser. No. 401,484
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—44 11 Claims

1. An apparatus for enabling a user to request and use a program, said apparatus comprising:
a. a receiver for receiving the program and a frame count indicating a number of frames of the program that is authorized for execution by the user;



b. a memory for storing the program and the frame count received by the receiver; and
c. a counter for changing the frame count when the user is actively providing input to the program, wherein the counter ceases to change the count when the user is not providing input to the program, and wherein the user is prevented from continuing use of the program when the counter reaches a predetermined limit.

5,632,682

OUTER JOINT PART FOR A CONSTANT VELOCITY UNIVERSAL JOINT HAVING INSERTS WHICH FORM ITS GUIDING GROOVES

Werner Krude, and Dieter Jost, both of Neunkirchen, Germany, assignors to GKN Automotive AG, Siegburg, Germany

Filed Mar. 27, 1995, Ser. No. 411,015
Claims priority, application Germany, Apr. 2, 1994, 44 11 515.6
Int. Cl.[6] F16D *3/20*
U.S. Cl. 464—111 12 Claims



1. An outer joint part for a constant velocity universal joint, said outer joint comprising:
a casing defining an inner cavity and three circumferentially distributed guiding grooves with a pair of opposed guiding tracks in each guiding groove, said casing having a cylindrical outer circumference; and
a plurality of inserts rigidly connected to said casing, said plurality of inserts forming said guiding tracks disposed within said inner cavity, said casing further defining a plurality of recesses, at least one recess disposed between said outer circumference and one of said plurality of inserts to form an open space of circumferentially closed contour between said casing and said insert, respectively, said recesses extending over the entire length of said casing.

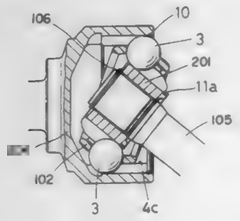
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5,632,683

HOMOKINETIC JOINT HAVING BALL RETAINING STRUCTURE

Yoshikazu Fukumura, Iwata; Shin Tomogami, Shizuoka; Yutaka Tanigaki, and Hiroyuki Matsuoka, both of Iwata, all of Japan, assignors to NTN Corporation, Osaka, Japan

Continuation of Ser. No. 127,602, Sep. 28, 1993, abandoned.
This application Jul. 17, 1996, Ser. No. 680,707
Claims priority, application Japan, Sep. 30, 1992, 4-068086 U; Sep. 30, 1992, 4-068088 U; Mar. 31, 1993, 5-073496
Int. Cl.[6] F16D *3/224*
U.S. Cl. 464—144 1 Claim



1. A non-parallel groove type homokinetic joint comprising an inner ring having grooves formed in the outer surface thereof, at least two balls, one of said at least two balls is received in said grooves in said inner ring, a cage for retaining said balls in said inner ring, an outer ring having an inner surface thereof with grooves formed on said inner surface, said grooves of said outer ring being disposed on a longitudinal axis which crosses a longitudinal axis of said grooves in said inner ring for guiding said balls, said outer ring having an open end thereof, said homokinetic joint further comprising a shaft having one end thereof mounted in and coupled to said inner ring, and a shaft angle limiting means for limiting the angle which said shaft takes with respect to said outer ring to a predetermined angle and for preventing said balls from dropping out of both said grooves in said inner ring and said outer ring, said shaft angle limiting means comprising a first circlip provided on the inner surface of said outer ring near said open end, and a second circlip provided on the outer surface of said inner ring near said open end, said first and second circlips being so positioned that when said shaft takes said predetermined angle with respect to said outer ring, said first and said second circlips come into contact with two of said balls, respectively, to prevent a ball of said two balls in contact with said first circlip from dropping out through said open end and the other ball of said two balls in contact with said second circlip from moving further into said outer ring.

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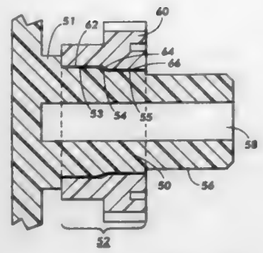
STEPPED SHAFT ASSEMBLY

Ajay Kumar, Webster; Porfirio J. Perez, Walworth; Dhirendra C. Damji, Webster, and Douglas W. Shaffer, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 24, 1995, Ser. No. 547,172
Int. Cl.[6] F16C *3/00*
U.S. Cl. 464—179 19 Claims

13. A gear comprising:

a gear with a hub having a stepped region with a first straight edge hub region and a second straight edge hub region joined by an inclined hub region adapted to fit on a complementary elongated shaft with a shaft functional surface fitted therefore, the first and second straight edge hub regions are parallel to the axis of the hub and the inclined hub region is inclined with respect to the axis of the hub.

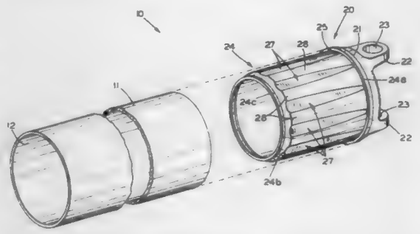


5,632,685

END FITTING FOR DRIVE SHAFT ASSEMBLY AND METHOD OF MANUFACTURING SAME

Gerald L. Myers, Maumee, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 4, 1995, Ser. No. 567,122
Int. Cl.[6] F16C *3/02*
U.S. Cl. 464—183 19 Claims



1. A drive shaft assembly comprising:

a hollow drive shaft tube having an open end and an inner surface defining an inner dimension;

an end fitting including a body and a sleeve portion extending from said body to an end, said sleeve portion having an outer surface defining an outer dimension which is slightly larger than said inner dimension, said outer surface having a recessed area formed therein which extends from a first end located adjacent to said body to a second end located adjacent to said end, said recessed area having a cross sectional shape which varies between said first end and said second end, said sleeve portion being disposed within said drive shaft tube such that regions of said outer surface of said sleeve portion circumferentially adjacent to said recess frictionally engage said inner surface of said drive shaft tube; and

an adhesive material provided in said recessed area to form a permanent adhesive bond between said sleeve portion and said inner surface of said drive shaft tube.

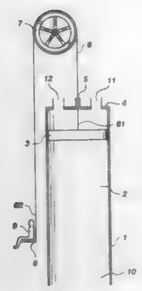
5,632,686

PNEUMATIC DEVICE FOR ACCELERATING AND DECELERATING OBJECTS

Stanley J. Checketts, P.O. Box 55, Providence, Utah 84332

Filed Oct. 17, 1994, Ser. No. 324,759
Int. Cl.[6] A63G *31/10*
U.S. Cl. 472—131 26 Claims

1. A pneumatic device for accelerating and decelerating one or more objects, which comprises:



a housing containing a bore, having an aperture near the first end of said housing, and having the second end of said housing open;

a piston slidably mounted within the bore of said housing;

a cable having the first end of said cable attached to said piston, said cable passing through said aperture before having the second end of said cable connected to the object or objects, and said cable being of such length that the piston will never reach the second end of the housing when the second end of said cable has been attached to the object or objects; and

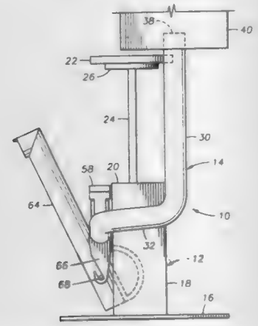
an injection valve, located near the first end of said housing, for introducing compressed gas into the bore, which compressed gas expands to accelerate the piston and, consequently, the object or objects and which compressed gas decelerates the piston and, consequently, the object or objects when the piston moves toward the first end of said housing.

5,632,687

GOLF BALL DISPENSING APPARATUS

John F. Bunyi, 2603 Kelliwood Lakes Dr., Katy, Tex. 77450

Filed Jun. 7, 1995, Ser. No. 478,236
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—137 15 Claims



1. A golf ball dispensing apparatus, comprising:

(a) a base;

(b) a ball dispensing tube mounted on said base, the ball dispensing tube have a transverse slot at a discharge end of the ball dispensing tube;

(c) a ball conveyor tube pivotally connected to said ball dispensing tube, the ball conveyor tube having a fin which rotates upward and advances into the transverse slot in the ball dispensing tube as the ball conveyor tube rotates downward; and

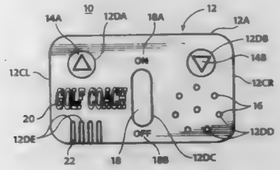
(d) means for sequentially releasing balls from said dispensing tube for placement on a golf tee.

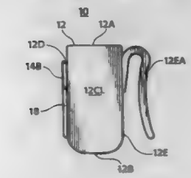
5,632,688

GOLF TIMER CONTROL

Frank L. Blaakman, 132 Cloverland Dr., Rochester, N.Y. 14610

Filed Jul. 5, 1996, Ser. No. 676,033
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—198 4 Claims





1. An improved golf timer control (**10**) which functions to emit an audible signal to a golfer (**26**) after a pre-set time interval after striking a golf ball (**30**) with a golf club (**28**), the improved golf timer control (**10**) comprising:

A) a housing (**12**) which comprises;

I) a housing top (**12A**) having a housing top display opening (**12AA**) therein, and

ii) a housing bottom (**12B**) securely and connected to the housing top (**12A**) by a housing left side (**12CL**), a housing right side (**12CR**), a housing front (**12D**), and a housing rear (**12E**), the housing front (**12D**) having a housing front control UP button opening (**12DA**), a housing front control DOWN button opening (**12DB**), a housing front power button opening (**12DC**), a housing front speaker opening (**12DD**), and a housing front microphone opening (**12DE**) therein, the housing rear (**12E**) having a housing rear clip (**12EA**) securely attached thereto which functions to attach the housing (**12**) onto a user;

B) a microprocessor (**32**) contained within the housing (**12**);

C) a pair of control buttons (**14**) contained within the housing (**12**) and electrically connected to the microprocessor (**32**), the pair of control buttons (**14**) consist of a control UP button (**14A**) and a control DOWN button (**14B**) which function to adjust the pre-set time interval, the control UP button (**14A**) protruding through the housing front control UP button opening (**12DA**), the control DOWN button (**14B**) protruding through the housing front control DOWN button opening (**12DB**);

D) a power button (**18**) contained within the housing (**12**) and electrically connected to the microprocessor (**32**), the power button (**18**) protruding through the housing front power button opening (**12DC**);

E) a speaker (**16**) contained within the housing (**12**) and electrically connected to the microprocessor (**32**), the speaker (**16**) is positioned beneath the housing front speaker opening (**12DD**), the speaker (**16**) functioning to emit the audible sound after the pre-set time interval;

F) a microphone (**22**) contained within the housing (**12**) and electrically connected to the microprocessor (**32**), the microphone (**22**) positioned beneath the housing front microphone opening (**12DE**), the microphone (**22**) functioning to receive an audible sound generated from the golf club (**28**) hitting the golf ball (**30**);

G) a display (**24**) contained within the housing (**12**) and electrically connected to the microprocessor (**32**), the display (**24**) is contained within the housing top display opening (**12AA**), the display (**24**) functioning to visually exhibit the pre-set time to the golfer (**26**);

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H) an electronic circuitry contained within the housing (**12**) and electrically connected to the microprocessor (**32**), the electronic circuitry comprising a transducer (**36**A,**36**B), a trigger generator (**38**) which consists of a trigger generator amplifier (**38**A) and a trigger comparator (**38**B) and a trigger differentiator (**38**C) and a trigger sensitivity control (**38**D), a timer microprocessor (**40**), and a tone output circuit (**42**); and

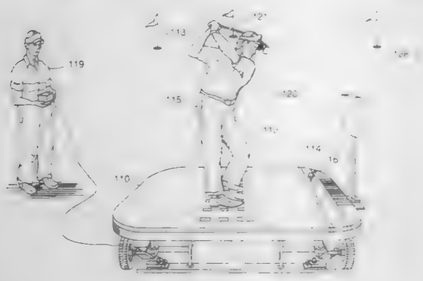
I) a power means (**34**) contained within the housing (**12**) and electrically connected to the microprocessor (**32**).

5,632,689

GOLF TRAINING APPARATUS AND METHOD

Joe Duca, Canon City, Colo., assignor to Golf Training Technologies, Inc., Denver, Colo.

Filed Sep. 7, 1995, Ser. No. 525,930
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—279 **22 Claims**



1. A training apparatus for golfers comprising:

a base and a platform rotatably mounted on said base for supporting a golfer on a top surface of the platform, wherein said platform is rotatably positionable in a plurality of different, rotational orientations relative to said base;

target alignment means disposed on said platform for visual use in aligning said platform with respect to a desired target of said golfer; and

golfer positioning means disposed on said top sur-face of said platform for use in determining the position of said golfer relative to a golf ball on the top surface of said platform, wherein the golfer positioning means is positioned the same relative to the top surface of the platform in each of said rotational orientations.

5,632,690

GOLF CLUB SHAFT PROTECTIVE WRAP

Dennis McConville, 336 Kelly Ave., Brick, N.J. 08724

Filed Aug. 31, 1995, Ser. No. 522,073
Int. Cl.[6] A63B *55/00*
U.S. Cl. 473—282 **2 Claims**

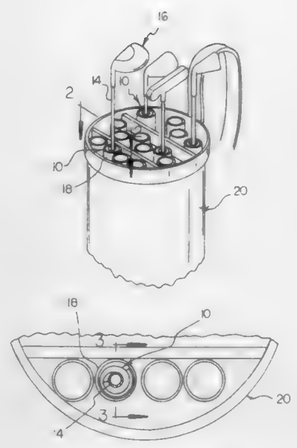
1. A golf club shaft protective wrap comprising:

a golf bag having at least one receiving tube;

a pad means for positioning circumferentially about the shaft of a golf club and between an exterior surface of the shaft and an interior surface of a receiving tube of the golf bag for protecting the shaft from abrasion against an upper interior surface of the receiving tube, the pad means comprising a first pad strip coupled to a second pad strip and including an elongated pad member interposed between the pad strips, the pad strips being stitched to the elongated pad member, wherein the elongated pad member and the pad strips attached thereto are circumferentially extended about the shaft of a golf club so as to reside in an annular configuration thereabout and between the shaft and the receiving tube of the golf bag;

a securing means extending from the pad means for securing the pad means in the annular configuration about the shaft of a golf club, the securing means comprising a first securing strip extending from the pad means, and a second securing strip coupled to the first securing strip, the securing means extending onto a portion of the pad means and being attached to the pad means so as to retain the pad means in the annular configuration; and

the first pad strip being integrally coupled to the first securing strip, the second pad strip being integrally coupled to the second securing strip, the pad strips each including a hook and loop fabric fastening material, the securing strips each including hook and loop fabric fastening material cooperable with the hook and loop fabric fastening material of the pad strips such that the securing strips being positioned into abutting contact with the pad strips to engage the hook and loop fabric fastening materials to retain the pad means in the annular configuration about the shaft of a golf club.



5,632,691

GOLF PUTTER

Richard H. Hannon, Oceanside, and Carl T. Wagner, Encinitas, both of Calif., assignors to Golfology, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 415,137, Mar. 31, 1995, Pat. No. 5,554,078. This application Jan. 22, 1996, Ser. No. 589,499
Int. Cl.[6] A63B *53/00*
U.S. Cl. 473—292 **18 Claims**



1. An improved golf putter comprising:

a shaft having an inner chamber, a butt-end, and a tip;

a grip attached to the butt-end of said shaft;

a weight means along said shaft, said weight means having a predetermined center point, said center point positioned along said shaft between 20 and 71.4 length % from said butt-end relative to an overall length of said improved golf putter; and

a putter head connected to the tip of said shaft, said putter head bearing a weight ratio to said weight means ranging between 0.56:1 and 3.20:1 and a weight ratio to an overall weight of said improved golf putter ranging between 0.30:1 and 0.55:1, which after all elements are connected and attached presents a specific balance point for said improved golf putter ranging between 45.71 and 69.29 length % from said butt-end relative to the overall length of said golf putter and a swingweight between D-6 and negative E-9,

whereby, said putter head and said weight means so ratioed in weight and said weight means so positioned, provides a counterweight to the weight of said putter head of said improved golf putter and provides for some head control when stroking a putt.

5,632,692

GOLF CLUB WITH NON-CIRCULAR SHAFT

Victor B. Lebovici, 29 Farmington Rd., West Newton, Mass. 02165

Filed Sep. 28, 1995, Ser. No. 536,617
Int. Cl.[6] A63B *53/10*
U.S. Cl. 473—317 **4 Claims**



1. A distance golf club for hitting a golf ball in a direction of intended ball travel, comprising:

a shaft having a grip receiving portion, a central portion having a length and a hosel mounting portion, said shaft having an axis extending in the direction of said length;

a golf club head having a hosel and a ball striking portion, said hosel being mounted to said hosel mounting portion of said shaft;

said central portion of said shaft having a non-circular cross section along at least a portion of the length thereof;

said cross section of said shaft having a first dimension at the widest portion of said cross section in the direction of intended ball travel and a second dimension transverse to said direction of intended ball travel at the widest portion of said cross section, wherein said second dimension is greater than said first dimension;

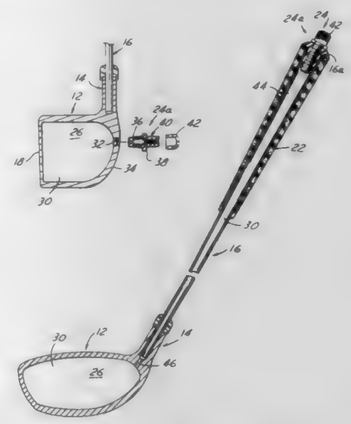
wherein said shaft has a leading edge and a trailing edge and at least one indentation is provided in one of said leading and trailing edges in a plane generally perpendicular to said axis to provide greater shaft flexibility in the vicinity of said indentation.

5,632,693

GOLF CLUB HAVING SELECTIVELY ADJUSTABLE INTERNAL PRESSURE

Paul W. Painter, 38850 Town Hall, Mt. Clemens, Mich. 48045

Filed Nov. 7, 1995, Ser. No. 554,874
Int. Cl.[6] A63B *53/08*
U.S. Cl. 473—318 **17 Claims**



12. A golf club having selectively adjustable internal pressure, comprising:

a head having a face and a neck, said head having a head chamber that provides an air tight hollow space within said head;

a shaft connected with said neck, said shaft having a distal end opposite said neck, said shaft having a shaft chamber that provides an air tight hollow space within said shaft, said shaft chamber extending substantially between said neck and said distal end;

plug means for providing an air tight seal between said head chamber and said shaft chamber so that said head chamber is fluidically isolated from said shaft chamber;

first valve means for providing connection of a source of selectively pressurized gas to said shaft chamber to thereby provide a first gas having a first selected internal pressure in said shaft chamber; and

second valve means for providing connection of a source of selectively pressurized gas to said head chamber to thereby provide a second gas having a second selected internal pressure in said head chamber.

5,632,694

PUTTER

Doo-Pyung Lee, #108-410, Shinsigaji Apartment, 901, Mok6-dong, Yangchun-ku, Seoul, Rep. of Korea

Filed Mar. 12, 1996, Ser. No. 614,109
Claims priority, application Rep. of Korea, Nov. 14, 1995, 33435/1995; Nov. 14, 1995, 33436/1995
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—336 **8 Claims**

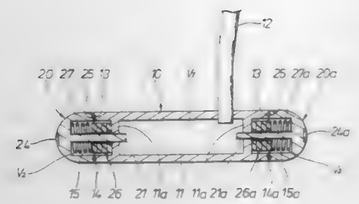
1. A putter comprising:

a head including:

a cylindrical hollow head body having a cavity, said cavity being divided into parts by a pair of circular fixed integral vertical spaced partitions, each partition having a threaded hole;

a pair of hollow caps screw-fitted into both ends of said cylindrical head body thereby closing the cavity of the head body;

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a threaded rod axially extending from the center of an inside surface of each cap and threaded into respective ones of the threaded holes;

at least one weight fitted over each of said rods inside said cavity and between an interior surface of each cap and an outwardly facing surface of a respective spaced partition for adjusting the weight of said head; and

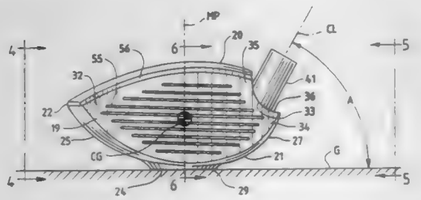
biasing means fitted over said rods in order to prevent said weights from moving inside said cavity.

5,632,695

GOLF CLUBHEAD

Edward A. Hlinka, Carol Stream, Ill.; Dwight J. Niswander, Camarillo, Calif.; Carl E. Scheie, Libertyville, Ill.; Edward A. Schield, Granada Hills, Calif., and James L. Shenoha, Lockport, Ill., assignors to Wilson Sporting Goods Co., Chicago, Ill.

Filed Mar. 1, 1995, Ser. No. 393,061
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—341 **14 Claims**



1. A metal wood type clubhead comprising a face, a sole, a crown, a toe wall, a heel wall, and a hosel portion which form an outer surface of the clubhead, the hosel portion including a recessed portion which extends from the crown and heel wall toward the sole, the recessed portion including a generally concave wall which is generally U-shaped in cross section in a plane which extends generally parallel to the face and which forms a portion of said outer surface of the clubhead.

5,632,696

GOLF TEE SETTER

W. S. Nichols, 18 Cecil Dr.; A. J. Cortez, 33 Lake Dr., both of Woodville, Tex. 75979, and Stanley Simon, Rt. 4, Box 1176, Colmesneil, Tex. 75938

Filed Oct. 16, 1995, Ser. No. 543,635
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—386 **11 Claims**

1. A golf tee setter, comprising;

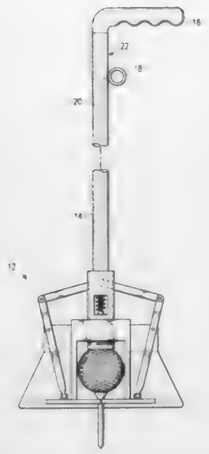
a handle enabling a user to maneuver and apply pressure to a golf ball and a tee;

a casing defining a ball chamber for retaining the golf ball;

a pair of holders slidably connected to the casing to move in a horizontal direction with respect to the casing for securing the tee in a substantially immovable position such that the tee maintains the golf ball in the ball chamber of the casing, the pair of holders defining an opening for receiving the tee;

an extension member connecting the handle to the casing and the tee gripping mechanism for enabling placement of the golf ball and tee by a user in a substantially upright position; and

means for actuating the tee gripping mechanism between a gripping and a non-gripping position.

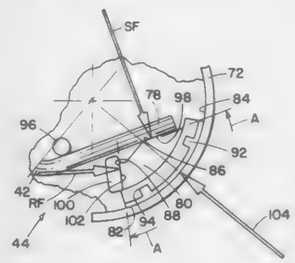


5,632,697

DAMPING MECHANISM FOR A TENSIONER

Alexander Serkh, Windsor, Canada, assignor to The Gates Corporation, Denver, Colo.

Filed Dec. 18, 1995, Ser. No. 573,827
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—109 **5 Claims**



1. A tensioner for tensioning a power transmission belt and of the type with a base; a pivot-arm that rotates about a pivot secured with the base; a pulley attached to the pivot-arm for engaging the belt and receiving a belt load; a torsional spring with one end connected to the pivot-arm and another end interconnecting through the base and generating a spring force operative with a damping means that generates a normal force component to part of a cylindrical member to a cylindrical surface and wherein the improvement to the damping means comprises:

a brake shoe with 1) an outer, arcuate friction surface that engages a complimentary inside surface of the cylindrical member, and 2) first and second oppositely facing, inside ramp surfaces with a space intercept at an apex of an angle defined between the two ramp surfaces;

the base having a complementary ramp surface that slideably engages the first ramp surface of the brake shoe;

the spring end interconnecting through the base having an extension that slideably engages and applies the generated spring force to the second ramp surface of the brake shoe; and

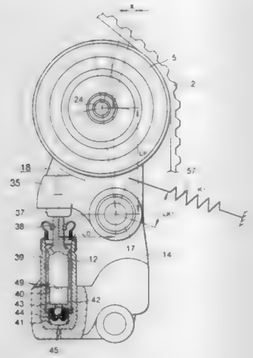
whereby the spring force applied to the second ramp surface in combination with a reactive force at the first ramp surface of the brake shoe generates the normal force.

5,632,698

AUTOTENSIONER

Hiroshi Suzuki, Fujisawa, Japan, assignor to NSK, Ltd., Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 521,722
Claims priority, application Japan, Aug. 31, 1994, 6-206858
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—110 **13 Claims**



1. An autotensioner for applying a proper tension to a timing belt in a vehicle engine, comprising;

a first shaft supported on a fixed portion directly or by way of a fixed member fixed to the fixed portion,

a swinging member freely swinging about the first shaft,

a second shaft provided parallel to the first shaft and on one part of the swinging member separated from the first shaft,

a pulley supported so as to be freely rotatable about the second shaft,

a tensioning spring provided between the fixed portion or the fixed member and the swinging member, for applying a resilient force to the swinging member to press the pulley towards a timing belt, and

a damper unit provided between the fixed portion or fixed member and the swinging member, for providing a resistance to displacement of the swinging member against the resilient force of the tensioning spring,

the damper unit comprising a cylinder in which viscous liquid is sealed, a piston having axial end faces and fitted inside the cylinder so as to be movable in an axial direction thereof, a biasing spring provided between the piston and the cylinder for biasing the piston in one direction, a plunger which protrudes increasingly from the cylinder with displacement of the piston under a resilient force of the biasing spring, an oil passage for communicating both of the axial end faces of the piston with each other, and a check valve provided in series with the oil passage and adapted to open only when the piston is displaced under the resilient force of the biasing spring,

the tensioning spring provided outside of the cylinder,

the autotensioner having the following dimensional relationships wherein

r represents an inner diameter (mm) of the cylinder,

d represents an outer diameter (mm) of the piston,

h represents a leak gap width (mm) between the cylinder and the piston, wherein the width (h) of the leak gap is half the difference between the inner diameter (r) of the cylinder and the outer diameter (d) of the piston, that is h=(r−d)/2,

m_1 represents a total swinging inertial mass (kg) of the swinging member and members which swing together with the swinging member,

m_2 represents a total inertial mass (kg) of the members which move axially inside the cylinder with extension and contraction of the damper unit,

v represents the kinematic viscosity (mm^2/s) of the viscous liquid under operating conditions of the autotensioner,

ρ represents the density (kg/mm^3) of the viscous liquid under the operating conditions of the autotensioner,

L represents an axial length (mm) of the small leak gap existing between the inner peripheral face of the cylinder and the outer peripheral face of the piston,

K_1 represents the spring constant (kg/s^2) of the tensioning spring,

K_2 represents the spring constant (kg/s^2) of the biasing spring.

B_1, B_2, B_4 represent movement direction coefficients for displacement between the pulley and the damper unit, related to the swinging member,

B_3 represents a movement direction coefficient for displacement between the pulley and the tensioning spring, related to the swinging member,

a represents a half amplitude ($kg \cdot mm/s^2$) of fluctuations in the input load to the pulley, accompanying tension fluctuations in the timing belt under operating conditions,

f represents a frequency (Hz) of the oscillations of the timing belt which is most detrimental under operating conditions,

t represents time (s),

x represents displacement (mm) of the pulley accompanying oscillations in the timing belt,

dx/dt represents displacement velocity (mm/s) of the pulley accompanying oscillations in the timing belt,

d^2x/dt^2 represents displacement acceleration (mm/s^2) of the pulley accompanying oscillations in the timing belt,

y represents the amplitude of the pulley displacement (mm) accompanying the oscillations in the timing belt,

h_1 represents the value of h (mm) if (y/2) is 0.7 mm,

h_2 represents the value of h (mm) if (y/2) is 0.05 mm, and

the leak gap width (h) satisfies the following equation:

$$(m_1+B_1m_2)d^2x/dt^2+B_2\{(3\pi v\rho L d^3)/4h^3\}dx/dt+(B_3K_1+B_4K_2)x=a\sin(2\pi ft)$$

and is between (h_1) and (h_2) and equal to or greater than 0.002 mm.

5,632,699

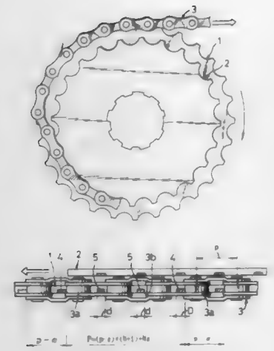
BICYCLE CHAINWHEEL

Yasushi Nakamura, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Aug. 31, 1995, Ser. No. 521,362
Claims priority, application Japan, Sep. 9, 1994, 6-215989
Int. Cl.[6] B62M *9/12*
U.S. Cl. 474—160 **18 Claims**

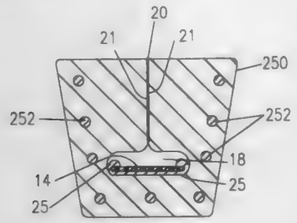
1. A bicycle chainwheel having a plurality of teeth spaced at (p-α) from each other, where p is the chain pitch and α is a real number greater than zero and less than p, and a sum of the pitch P between a first one of the plurality of teeth and a second one of the

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plurality of teeth disposed adjacent thereto on the same chainwheel is greater than $(p-\alpha)\times(N+1)$, where N is an integer greater than zero.

5,632,700
ADJUSTABLE ENDLESS BELT FOR USE IN POWER TRANSMISSION
Paul Beck, 21660 Pacific Coast Hwy., Malibu, Calif. 90265
Continuation of Ser. No. 349,019, Dec. 2, 1994, Pat. No. 5,484,342. This application Dec. 19, 1995, Ser. No. 574,845
Int. Cl.[6] F16G *3/10*
U.S. Cl. 474—254 **6 Claims**



1. An endless belt for use in power transmission comprising an outer length of flexible tear-resistant material having abutting extended ends and forming a closed loop, said length of material defining an outer surface, an inner surface substantially parallel to said outer surface and an endless channel extending longitudinally therethrough, a ribbon of a flexible tear-resistant material disposed within said channel and extending about said loop defined by said outer length of material, said ribbon defining first and second portions, said second portion extending across said abutting ends of said outer length of material and overlapping said first portion of said ribbon within said channel, and an adhesive disposed within said channel securing said second portion of said ribbon to said first portion thereof so as to maintain said outer length of material in said closed loop.

5,632,701
INDUSTRIAL BELT SPLICE ASSEMBLY
David L. Neel, St. Louis, Mo., assignor to Beltservice Corporation, St. Louis, Mo.
Filed Oct. 31, 1995, Ser. No. 550,946
Int. Cl.[6] F16G *3/09*
U.S. Cl. 474—256 **18 Claims**

1. An industrial belt splice assembly comprising:

two industrial belt portions each having opposite faces and an end margin formed to define a splice element, the splice elements each including a knuckle having a transverse bore therein, the knuckles being laterally offset and capable of intermeshing with each other so that the bores are substantially in alignment;

a hinge pin capable of extending through the aligned bores in the knuckles and interlocking the splice elements;

splice guard means mounted on each belt end margin, said splice guard means being formed from a material having a greater surface hardness than that of the industrial belt portions, and comprising opposing side plates in engagement with regions of the belt end margin adjacent to the splice element on opposite faces of the industrial belt portion, and a generally U-shaped section connecting the side plates, the U-shaped section including an open portion and a solid portion, the solid portion extending over and substantially covering the knuckle of the belt end margin on which said splice guard means is mounted, the open portion of the U-shaped section receiving the solid portion of the splice guard mounted on the other industrial belt portion.

5,632,702
CONTINUOUSLY VARIABLE TRANSMISSION
Ned D. Mills, Kennewick, Wash., assignor to Speed Control, Inc., Bellevue, Wash.
Filed Jul. 5, 1995, Ser. No. 498,189
Int. Cl.[6] F16H *3/70*
U.S. Cl. 475—170 **11 Claims**



3. A continuously variable transmission, comprising:

coaxial first and second rotatable members for independent rotation about a central axis;

an eccentric assembly having a cylindrical surface formed about an eccentric axis parallel and radially adjustable relative to the central axis;

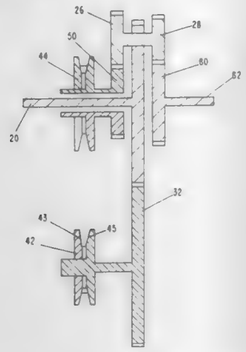
an orbiter rotatably mounted by the cylindrical surface of the eccentric assembly for rotational movement about the eccentric axis;

axially spaced input and output ratchets coaxially positioned about the central axis, the input and output ratchets having oppositely facing circular patterns of internal teeth formed thereon and centered about the central axis;

a plurality of input vanes, the input vanes each having a first end coaxially pivoted about the central axis and a second end including at least one yieldable tooth complementary to and selectively engaging the internal teeth of the input ratchet during a portion of each complete revolution of the eccentric assembly, each input vane being operably interconnected to the orbiter at a location intermediate its first and second ends; and

a plurality of output vanes, the output vanes each having a first end coaxially pivoted about the central axis and a second end including at least one yieldable tooth complementary to and selectively engaging the internal teeth of the output ratchet during a portion of each complete revolution of the eccentric assembly, each output vane being operably interconnected to the orbiter at a location intermediate its first and second ends.

5,632,703
DEVICE FOR ADAPTING CONTINUOUSLY VARIABLE TRANSMISSIONS TO INFINITELY VARIABLE TRANSMISSIONS WITH FORWARD-NEUTRAL-REVERSE CAPABILITIES
Donald F. Wilkes; James W. Purvis, and A. Keith Miller, all of Albuquerque, N.M., assignors to Sandia Corporation, Albuquerque, N.M.
Filed Aug. 4, 1995, Ser. No. 511,599
Int. Cl.[6] F16H *9/26;37/02*
U.S. Cl. 475—211 **12 Claims**



1. A transmission of infinitely varying output speed ratios between a maximum value in one direction and a minimum value in the opposite direction, including a zero output angular velocity value, comprising:

a sun element operable about a first axis at a first angular velocity;

an output element arranged for rotation about a second axis colinear with the first axis of rotation;

at least one orbital set of elements, rotatable about a planetary axis parallel to the first axis of rotation, spaced therefrom, and carried through a path of constant radius by the sun element, the orbital set including a first planetary element having a first radius and a second planetary element having a second radius, the second radius being less than the first radius, and the second planetary element positioned to transmit power to the output element;

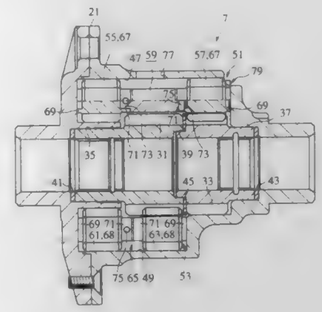
a first auxiliary shaft, parallel to the first axis of rotation, driven by the sun element at an angular velocity oppositely directed to the input angular velocity;

means including an input member, an output member, and a member for transmitting torque therebetween, the means being operable for varying the angular velocity of the of the output member relative to the angular velocity of the input member, wherein the first auxiliary shaft drives the input member;

a second auxiliary shaft, parallel to the first axis of rotation and driven by the output element of the means for varying angular velocity, and arranged so as to drive the first planetary member at an angular velocity determined by the means for varying;

whereby power from the sun element is divided between a first path which carries the orbital element set and a second path including the means for varying, the power from the first and second paths being joined at the orbital element set connected with the output element such that the output element can operate at an angular velocity of zero while the input element is driven at continuous speed.

5,632,704
DIFFERENTIAL APPARATUS
Nobushi Yamazaki, and Isao Hirota, both of Tochigi, Japan, assignors to Tochigi Fuji Sangyo Kabushiki Kaisha, Tochigi-ken, Japan
Filed May 25, 1995, Ser. No. 450,803
Claims priority, application Japan, May 30, 1994, 6-116646
Int. Cl.[6] F16H *48/06*
U.S. Cl. 475—248 **17 Claims**



1. A differential apparatus, comprising:

a differential casing;

a pair of helical side gears arranged at a central portion of said differential casing;

at least one pair of long and short helical pinion gears arranged around said helical side gears within said differential casing, said long helical pinion gear being composed of first and second gear portions and said short helical pinion gear being composed of first and second gear portions, the first gear portion of said long helical pinion gear being in mesh with the first gear portion of said short helical pinion gear, the second gear portion of said long helical pinion gear being in mesh with said second helical side gear and the second gear portion of said short helical pinion gear being in mesh with said first helical side gear; and

gear coupling means for detachably coupling the separate first and second gear portions of at least one of said long and short helical pinion gears so that one of the first or second gear portions may be replaced with another gear portion in order to vary the thrust force of the pinion gear.

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5,632,705

EPICYCLIC ROLLER GEAR INCLUDING TWO RINGS HAVING AN INTERNAL PROFILE AND A ROLLING ELEMENT CAPABLE OF ROLLING ON THE INNER SIDE OF THE RINGS

Vasile Ifrim, and Annedore Ifrim, both of Kehl/Rhein, Germany, assignors to Neugart GmbH & Co., Kippenheim, Germany

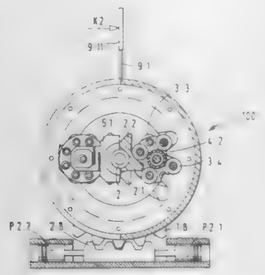
PCT No. PCT/EP93/03163, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/11651, PCT Pub. Date May 26, 1994

PCT Filed Nov. 11, 1993, Ser. No. 428,208

Claims priority, application Germany, Nov. 17, 1992, 42 38 788.4

Int. Cl.[6] F16H *57/08*

U.S. Cl. 475—341 23 Claims



1. An epicyclic roller gear (**100**) comprising first and second rings (**1**, **4**), each ring having an inner side with an internal profile having teeth, wherein the first ring (**1**) is fixed and the second ring (**4**) is coaxial to the first ring (**1**) and is rotatably mounted with respect thereto, the number of internal teeth on the first and second rings (**1**, **4**) is different, at least one rotatable rolling element (**5**) which is capable of rolling on the toothed inner sides of the first and second rings (**1**, **4**) and having alternate external gaps and projections which mesh with the internal profile of both rings, said rolling element (**5**) being engaged with the internal profiles of the rings, wherein the rolling element is rotatably mounted on an arm (**5.1**, **5.2**) which is rotatable about an axis of the rings (**1**, **4**) to drive the rolling element in a circumferential direction along the inner sides of the rings (**1**, **4**) so that, based on the different numbers of teeth on the inner side of each of the two rings (**1**, **4**), the rotatable ring (**4**) is movable relative to the fixed ring (**1**), characterized in that the internal profile on each of the two rings (**1**, **4**) includes at least two internal tooth systems (**1.1**, **1.2**; **4.1**, **4.2**) which are disposed parallel to each other and are offset in the circumferential direction by a fraction of the pitch of the teeth, wherein the internal tooth systems within each ring have the same profile and pitch, and the internal tooth systems of the two rings differ from one another, the alternate external gaps and projections of the rolling element including a plurality of axially adjacent external gaps and projections which are complementary to the internal tooth systems of the rings (**1**, **4**), said complementary gaps and projections being mutually offset in the circumferential direction according to the offset of the internal tooth systems on the rings, each projection of the rolling element engages one internal tooth system of one of the first and second rings and is applied in a forward direction and an axially adjacent projection simultaneously engages the adjacent internal tooth system of the same ring and is applied in an opposite direction, and as the rolling element rolls this engagement of the axially adjacent projections thereof alternates continuously.

5,632,706

MOTOR VEHICLE WITH ELECTRONIC CLUTCH MANAGEMENT SYSTEM

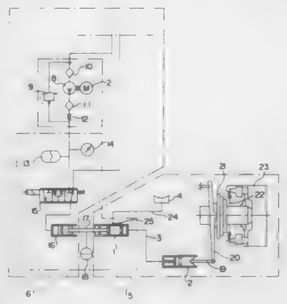
Burkard Kremmling, Renchen; Michael Salecker, Achern, and Martin Zimmermann, Sasbach, all of Germany, assignors to LuK Getriebe-Systeme GmbH, Bühl, Germany

Continuation of Ser. No. 285,546, Aug. 3, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 610,674

Claims priority, application Germany, Aug. 3, 1993, 43 26 053.5

Int. Cl.[6] B60K *41/02;23/02;* F02D *45/00*

U.S. Cl. 477—74 81 Claims



1. A powered vehicle comprising: an engine; means for regulating the speed of said engine by an operator of said vehicle, said regulating means having a plurality of positions including a rest position in which said engine is at idling speed and an operative position in which said engine is above idling speed; a transmission for transferring torque to wheels of said vehicle; a clutch for coupling said engine to said transmission, said clutch being movable in a first direction to engage said transmission and in a second direction to disengage from said transmission, said clutch having a predetermined position in which said clutch engages said transmission at least with a relatively small force such that said vehicle begins to creep; and means for automatically controlling said clutch, said controlling means including means for invariably moving said clutch to said predetermined position under predetermined conditions in which said vehicle is in gear and at least almost at a standstill, said engine in running and said regulating means is in said rest position.

5,632,707

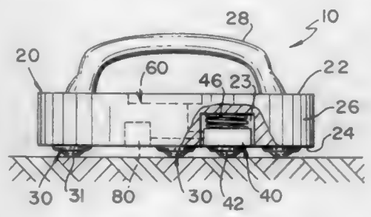
UPPER TORSO EXERCISER

Antonio Daniel, P.O. Box 144948, Coral Gables, and Jesus Sanchelima, 235 SW. Le Jeune Rd., Miami, both of Fla. 33134

Filed Sep. 30, 1996, Ser. No. 723,083

Int. Cl.[6] A63B *26/00*

U.S. Cl. 482—8 5 Claims



1. An exercise device that is moved over a flat surface, comprising:

A) housing means;

B) handle means mounted to said housing means; and

C) wheel means mounted to said housing opposite to said handle means;

D) means for reading the movement of said device over said flat surface; and

E) counter means for displaying the magnitude of the movement of said device.

5,632,708

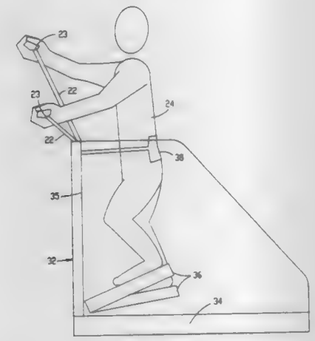
RESISTANCE APPARATUS FOR EXERCISE EQUIPMENT

William T. Wilkinson, P.O. Box 378, Chesapeake City, Md. 21915, and Ford B. Draper, Jr., 909 Nottingham Rd., Wilmington, Del. 19805

Division of Ser. No. 359,345, Dec. 19, 1994, Pat. No. 5,476,431, which is a continuation of Ser. No. 130,776, Oct. 4, 1993, abandoned, which is a division of Ser. No. 818,350, Jan. 9, 1992, abandoned. This application Oct. 30, 1995, Ser. No. 549,917

Int. Cl.[6] A63B *22/00*

U.S. Cl. 482—52 14 Claims



1. A method of performing foot and arm exercises standing on a stepping apparatus comprising a user standing on said stepping apparatus wherein said stepping apparatus comprises a frame, a pair of steps connected to said frame and at least one elastic band, one end of said elastic band being affixed to said stepping apparatus and the other end of said elastic band being free to grasp by a user:

placing the user's feet on said steps whereby said user pushes said steps with said feet to move said steps in an up and down motion; and at the same time said user grips one end of said band with said user's hand and said user pulls upwardly on said band to stretch to a desired length against the resistance of said elastic band and then allows the band to contract back to the original position wherein the band pulls the user's hand toward the end of said band affixed to said stepping apparatus and the user repeats the stretching and contraction of said band and the stepping on the steps until the user has achieved the desired workout.

5,632,709

REMOVABLE SHOE WEIGHT

Dennis Walsh, 1902 Lydia Dr., Lafayette, Colo. 80026

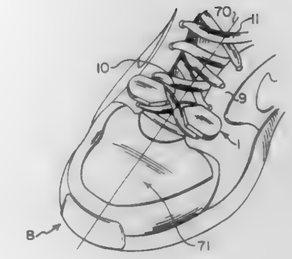
Filed Apr. 28, 1995, Ser. No. 430,479

Int. Cl.[6] A63B *21/065;* A43B *23/00*

U.S. Cl. 482—105 12 Claims

1. A removable shoe weight for working predetermined muscle groups, comprising:

a first and a second mass end;



a reduced central width forming a connecting bar between said first and second mass end functioning to fit securely between a top of a shoe and a cross of a shoelace, thereby working predetermined muscle groups by positioning said shoe weight on a predetermined position on the shoe; and

wherein each mass end has an inner edge that faces the connecting bar and each inner edge is recessed thereby forming an "X" shaped channel for receiving the shoelace.

5,632,710

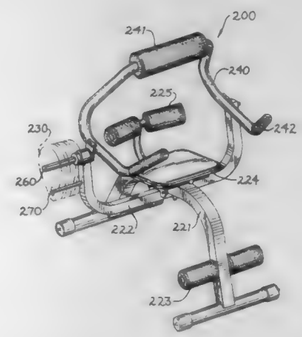
EXERCISE APPARATUS

James L. England, Auburn, Ala.; Gary T. Fox, Winona, Tex.; Randal S. Kretzler; Mark G. Hecox, both of Tyler, Tex., and Richard W. Trevino, Shreveport, La., assignors to Roadmaster Corporation, Olney, Ill.

Continuation-in-part of Ser. No. 140,289, Oct. 20, 1993, Pat. No. 5,456,644, and Ser. No. 41,681, Mar. 1, 1995, which is a continuation of Ser. No. 31,721, Dec. 5, 1994, abandoned. This application May 30, 1995, Ser. No. 452,357

Int. Cl.[6] A63B *21/02*

U.S. Cl. 482—127 24 Claims



1. An exercise apparatus comprising:

a) a frame;

b) at least one torsion member for creating resistance mounted to said frame, said torsion member mounted in a casing containing a plurality of bores;

c) a shaft pivotally mounted to said frame for conveying torque to said torsion member, said shaft being received by one of said bores in the casing of said torsion member;

d) a support arm mounted on said frame for opposing rotation of said torsion member about the axis of said shaft, said support arm being received by another of said bores in the casing of said torsion member, and

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e) a pivot arm mounted on said frame and connected to said shaft such that movement of said pivot arm from a neutral position is resisted by said torsion member.

5,632,711

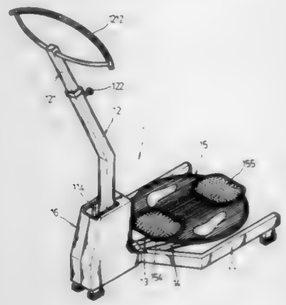
TWISTER

Yu-Yeh Hwang, 5F-23, 70, Fu-Shing Road, Taoyuan, Taiwan

Filed Jul. 2, 1996, Ser. No. 674,547

Int. Cl.[6] A63B *22/14*

U.S. Cl. 482—147 **1 Claim**



1. An improved twister, comprising:

a base frame having a pivot seat at the middle of an intermediate horizontal bar and two parallel, side-by-side upright bars mounted on a raised frame at a front end thereof;

a rocker pivotally disposed between said upright bars to swing therebetween, said rocker having a grip link fitted at a top end thereof and two substantially C-shaped frames at a bottom side thereof, said C-shaped frames being spaced apart from each other near an upper end and a lower end of the bottom side of said rocker;

a hydraulic cylinder pivotally disposed at a front side of said intermediate horizontal bar of said base frame;

said hydraulic cylinder having a shaft that has a pivot head pivotally connected to the C-shaped frame near the upper end of the bottom side of said rocker;

a link having an extended arm with a front end and a rear end both of which are pivotally provided with a movable connector, the movable connector at said rear end being pivotally provided with a retainer plate and the movable connector at said front end being pivotally connected to the C-shaped frame near the lower end of the bottom side of said rocker, said retainer plate having an elongated slot at a central portion thereof; and

a rotatable disk having a pivot shaft at the center of a bottom side thereof, said pivot shaft being pivotally received in said pivot seat of said base frame and capable of free rotation therein, said pivot shaft having a screw pin projecting from a bottom end thereof for insertion into said elongated slot of said retainer plate to be locked with a nut so that said pivot shaft and said retainer plate may be coupled and linked together for driving said rotatable disk to rotate when said rocker swings;

wherein said rotatable disk is rotated by said link when a user, standing on said rotatable disk, holds said grip link and pulls said rocker with both hands to cause said rocker to swing and in turn said link to drive said rotatable disk.

5,632,712

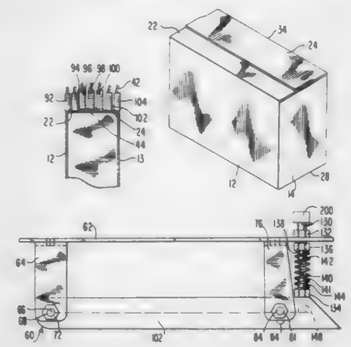
CARTON SEALING APPARATUS AND METHOD

Daniel J. Heinz, Joppa, Md., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 375,081, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 129,796, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 829,103, Jan. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,417, Dec. 31, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 474,843

Int. Cl.[6] B31B *1/62;1/64*

U.S. Cl. 493—142 **15 Claims**



1. A process for sealing a squared carton having at least two major sealing flaps attached to said carton at scorelines which are disposed parallel to each other comprising conveying said carton in a direction parallel to said scorelines past a plurality of sealing bars preadjusted to provide a predetermined amount of pressure to a sealing area comprising said flaps on said squared carton; applying pressure via said plurality of sealing bars to said sealing area wherein the bars are yieldingly biased in applying said pressure to different portions of the flaps, wherein said sealing bars are disposed adjacent each other as determined in a direction transverse to said scorelines; and, independently preadjusting each of said sealing bars by rotating a screw which changes the length of a spring wherein the spring is attached to said sealing bar.

5,632,713

APPARATUS AND METHOD FOR ERECTING BOXES

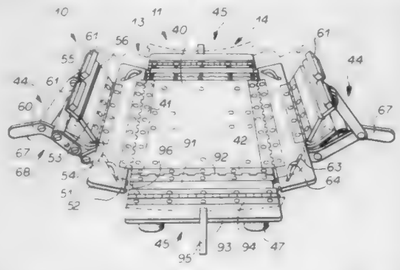
Timothy A. Canning, 5109 Sandlewood Dr., Raleigh, N.C. 27609; Andrew F. Hartman, Elgarstraat 16, 5653 AH Eindhoven, Netherlands; Ken Williams, 3523 Mill Run, Raleigh, N.C. 27612; Harry R. Elliot, 325 Valley Green Rd., Mauldin, S.C. 29662, and Quentin J. Hendricks, 214 Lynnwood Dr., Knightdale, N.C. 27545

Filed Nov. 10, 1994, Ser. No. 336,979

Int. Cl.[6] B31B *1/26*

U.S. Cl. 493—162 **9 Claims**

1. An apparatus for erecting boxes with double wall sides and



base flaps from blanks having opposite side edges, opposite end

edges, and opposite side panels with three spaced apart side score lines, said apparatus comprising:

a base having a top surface, oppositely disposed sides and oppositely disposed ends; and

two side blank folding mechanisms mounted adjacent said base sides, each of said two side blank folding mechanisms having: a proximal side plate mounted for pivotal movement alongside said base; an intermediary side plate mounted for pivotal movement alongside said proximal side plate; a distal side plate including a catch means mounted for pivotal movement alongside said intermediary side plate; and actuating means for pivoting respectively said proximal side plate toward said base top surface, for pivoting said intermediary side plate toward said base top surface and into overlapped configuration with said proximal side plate, and for pivoting said distal side plate away from said intermediary side plate and said base top surface as said intermediary plate nears said proximal side plate,

whereby upon placing the blank upon the base with said side edges captured by the catch means the blank sides are formed through operation of the actuating means by folding the blank along first side score lines as the proximal side plates move toward the base, by folding the blank along second side score lines so as to fold upon the blank portions between the first and second score lines as the intermediary side plates overlap the proximal side plates, and by folding the blank along third score lines to create a base flap as the intermediary side plates pass closely adjacent the base with the blank therebetween.

5,632,714

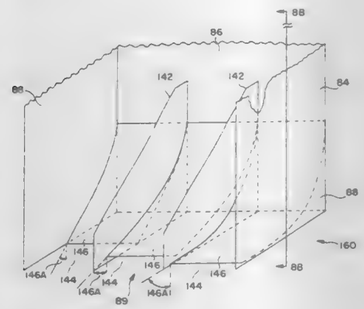
FEED ACCELERATOR SYSTEM INCLUDING ACCELERATING VANE APPARATUS

Woon F. Leung, Norfolk, and Ascher H. Shapiro, Jamaica Plain, both of Mass., assignors to Baker Hughes Inc., Houston, Tex.

Division of Ser. No. 110,324, Aug. 20, 1993, which is a continuation of Ser. No. 815,432, Dec. 31, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 475,866

Int. Cl.[6] B04B *1/20;3/04*

U.S. Cl. 494—53 **7 Claims**



1. A feed accelerator system for use in a centrifuge, the system comprising

a conveyor hub rotatably mounted substantially concentrically within a rotating bowl, the hub including an inside surface and an outside surface,

an accelerator secured within the conveyor hub and including a distributor having a distributor surface,

a feed pipe mounted substantially concentrically within the conveyor hub for delivering a feed slurry to the centrifuge, the feed pipe including a discharge opening positioned proximate to the distributor surface,

at least one feed slurry passageway between the inside surface of conveyor hub and the outside surface of the conveyor hub, and

an overspeeding apparatus associated with the passageway, the apparatus including a baffle extending outwardly from the passageway,

a plurality of partitions extending in a circumferential direction from the baffle so as to form a plurality of discharge channels, and

a flow directing and overspeeding vane disposed within each discharge channel and extending radially and circumferentially from the baffle, each vane having a different forward discharge angle with respect to the direction of rotation.

5,632,715

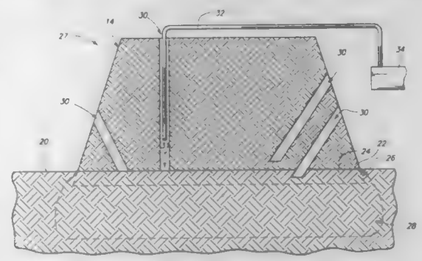
IN SITU IMMOBILIZATION OF METALS IN WASTE STACKS AND WASTE STACK AFFECTED ZONES

Joseph G. Harrington, Moscow; Roger B. Humberger, Pocatello; Michael L. Orr, Pocatello, and Charles H. Schwartz, Pocatello, all of Id., assignors to J. R. Simplot Company, Boise, Id.

Filed Dec. 15, 1995, Ser. No. 573,230

Int. Cl.[6] A62D *3/00;* **B09B** *3/00*

U.S. Cl. 588—256 **56 Claims**



1. A process for in situ immobilization of metals in a waste stack affected zone, the waste stack affected zone including a waste stack and any adjacent boundary zone, the process comprising:

forming at least one treatment passageway which extends within the waste stack affected zone;

injecting a treatment liquid into the treatment passageway; said treatment liquid including at least one microbe nutrient which is capable of sustaining activity of at least one microbe;

providing at least one microbe in sufficient proximity to the treatment passageway to receive treatment liquid therefrom; said at least one microbe being capable of growing in the presence of said treatment liquid; said at least one microbe also being capable of producing microbial sulfides which are sulfide by-products of microbial activity in the waste stack affected zone;

reacting the microbial sulfides in situ with metal ions or metal-containing compounds contained in said waste stack affected zone to form metal sulfides;

reducing solubility of the metal ions or metal-containing compounds contained in the waste stack affected zone as a result of forming the metal sulfides;

inhibiting the migration rate of metal ions or metal-containing compounds within or from the waste stack affected zone.

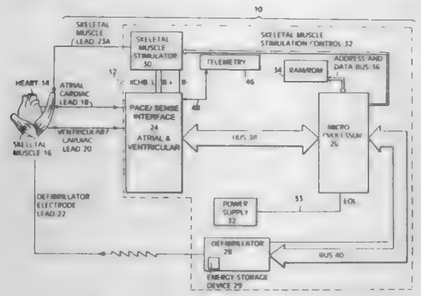
VOL 1198 ISS 4 MY 27 1997 UMI

5,632,716

APPARATUS AND METHOD OF MUSCLE TRAINING IN DYNAMIC CARDIOMYOPLASTY

Tuan Bui, Highlands Ranch, New Zealand; Gordon Jacobs, Norristown, Pa.; Stuart McConchie, Parker; Thomas Fitzgerald, Morrison, both of Colo., and Valerie Chekanov, Milwaukee, Wis., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Jun. 20, 1996, Ser. No. 671,779
Int. Cl.[6] A61N *1/368*
U.S. Cl. 600—16 7 Claims



1. An cardiomyoplasty control device for controlling an implanted muscle arranged and constructed to provide cardiac assistance, said control device comprising:

electrode means for delivering stimulation pulses to said muscle; and

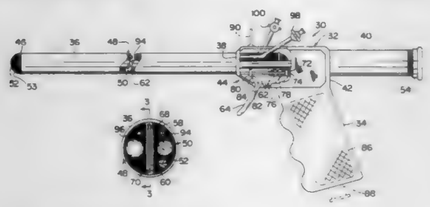
timing means for controlling the timing of said stimulation pulses, said timing means defining a sequence of training periods, each training period including augmentation phases interlaced with training phases, wherein in said training phases said stimulation pulses are applied at a first interval selected to train said muscle; and wherein in said augmentation periods, said stimulation pulses are applied at a second interval selected to augment the cardiac function.

5,632,717

PENETRATING ENDOSCOPE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 320,192, Oct. 7, 1994, abandoned. This application Jan. 3, 1995, Ser. No. 368,215
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—106 29 Claims



1. An endoscope comprising

an endoscope tube;

an illumination system disposed within said endoscope tube;

a viewing system disposed within said endoscope tube and including a viewing window at a distal end;

a penetrating member disposed at least partly within said endoscope tube and having a distal end for penetrating anatomical tissue, wherein said endoscope tube, illumination system and viewing system cooperate to define a blunt distal end of said endoscope with a smooth, rounded configuration and said penetrating member is movable between a retracted position where said distal end of said penetrating member is proximally spaced from said blunt distal end of said endoscope to permit non-traumatic tissue contact with said blunt distal end and an extended position where said distal end of said penetrating member protrudes beyond said blunt distal end of said endoscope to penetrate anatomical tissue, said penetrating member being laterally offset from said viewing window in said retracted position; and

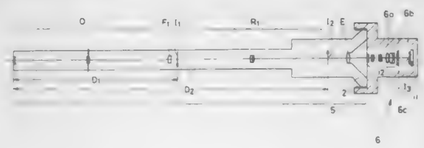
a control mechanism coupled with said penetrating member, said control mechanism being selectively operable to move said penetrating member between said retracted and extended positions.

5,632,718

NON-FLEXIBLE ENDOSCOPE WITH OBJECTIVE LENS SYSTEM AND RELAY LENS SYSTEM

Tsutomu Igarashi, and Noriyuki Tateyama, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 396,428
Claims priority, application Japan, Mar. 11, 1994, 6-066493; Apr. 8, 1994, 6-093920; Sep. 2, 1994, 6-232433
Int. Cl.[6] A61B *1/002*
U.S. Cl. 600—160 16 Claims



1. A non-flexible endoscope comprising: an insert section for insertion from a leading end thereof into cavities of an object to be observed for observing interiors thereof, and a grip section which is to be connected to an end of said insert section located on a side opposite to said leading end and always kept outside the cavities during observation, wherein said insert section comprises an objective lens system having a first surface disposed at said leading end for forming a primary image, and a relay lens system for transmitting said primary image so as to form a secondary image in the vicinity of a connecting position between said insert section and said grip section or in said grip section, wherein said grip section comprises an eyepiece lens system for making said secondary image visible, and wherein said insert section satisfies the following condition (5):

$$0.3<D_1/D_2<0.7 \quad (5)$$

wherein the reference symbol D_1 represents a distance as measured from the first surface of said objective lens system to said primary image and the reference symbol D_2 designates a distance as measured from the first surface of said objective lens system to said secondary image.

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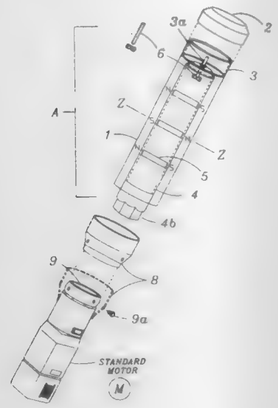
Patent Not Issued For This Number

5,632,720

MAGNETIC MASSAGE WAND

Cheltón R. Kleitz, P.O. Box 2063/301 N. 61st St., Kansas City, Kans. 66110

Filed Mar. 27, 1995, Ser. No. 410,918
Int. Cl.[6] A61N *2/00;2/08*
U.S. Cl. 601—15 4 Claims



1. A motorized, magnetic massage wand for increasing circulation in blood vessels within 18 to 24 inches of said wand, said wand comprising:

a molded solid non-magnetic cylinder having a longitudinal axis and a diameter perpendicular to said axis;

a protective outside stationary shield placed about said solid non-magnetic cylinder, said shield being a hollow transparent cylinder made of non-magnetic synthetic resin having a diameter greater than that of said solid non-magnetic cylinder, one end of said shield housing an end plug with a ball bearing recessed with said plug, a rod having a first end located within said plug and extending through said bearing into said cylinder for stabilizing the movement of said cylinder;

an end cap located at said one end of said protective shield and covering said solid non-magnetic cylinder and said protective shield;

at least two magnetic units located within said solid non-magnetic cylinder, each said magnetic unit having a longitudinal axis, said magnetic units being evenly spaced 1½ inches apart and placed in said solid non-magnetic cylinder such that their longitudinal axes are perpendicular to the longitudinal axis of said solid non-magnetic cylinder and parallel to each other, said magnetic units being positioned so that all magnetic poles are aligned along lines running parallel to the longitudinal axis of said solid non-magnetic cylinder and a transverse axis of each unit is parallel to the longitudinal axis of said solid non-magnetic cylinder; and

a motor contained with said wand and attached to said solid non-magnetic cylinder for rotating the solid non-magnetic cylinder about its longitudinal axis at a rapid and consistent rate to obtain constantly alternating polarity fields about the body;

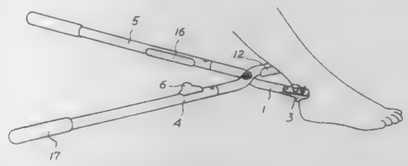
whereby the circulation is increased by waving or holding said massage wand near the human body so that the blood flow in vessels within 18 to 24 inches of the wand is increased.

5,632,721

MASSAGE APPARATUS

Yo mo Kuan, Boun-Ryo 3B, 5-8, Kami-Ohsaki 4-chome, Shinagawa-ku, Tokyo, Japan

Filed Jul. 10, 1995, Ser. No. 500,133
Claims priority, application Japan, Jul. 29, 1994, 6-1780707
Int. Cl.[6] A61H *7/00;23/00*
U.S. Cl. 601—135 6 Claims



1. A massage apparatus comprising:

two rod members, each having a tip end and an other end, which are crossed and pivoted at a pivot;

a massage member rotatably provided at the tip end of one of said rod members, said massage member having at least one convex portion and at least one concave portion;

two splicing rod members detachably mounted on the other ends of said two rod members; and

projections which are disposed at the other end of each of said two rod members, each of said projections being projectable/retractable by a spring catch means for resiliently urging said projection into a recess formed in each of said splicing rod members to thereby make said splicing rod members be detachably mounted to a respective one of said two rod members;

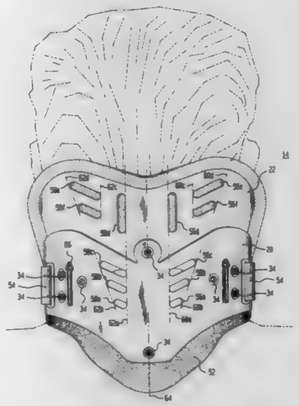
wherein a desired part of a human body may be clamped by the massage member and the other of said rod members.

5,632,722

CERVICAL COLLAR

Lisa A. G. Tweardy, Mt. Laurel, N.J., and George E. Moore, Jeffersontown, Ky., assignors to The Jerome Group Inc., Moorestown, N.J.

Filed May 10, 1995, Ser. No. 438,748
Int. Cl.[6] A61F *5/01*
U.S. Cl. 602—18 15 Claims



1. A cervical collar comprising:

an anterior portion comprising a jaw support contoured to follow the jaw line of a patient, and a sternum brace contoured to

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contact the sternum and upper trapezius of the patient and to support said jaw support;

a posterior portion comprising an occiput support contoured to follow the curve of and to support the occiput, and a posterior support contoured to contact the back of the neck of the patient and to support said occiput support; and

means for connecting said anterior portion to said posterior portion;

wherein:

said posterior support is symmetrical about a vertical axis of symmetry through the center of said posterior support;

said posterior support includes a right group of flexibility-enhancing openings arranged on a right side of said axis of symmetry, and a left group of flexibility-enhancing openings arranged on a left side of said axis of symmetry;

each said right opening is arranged with a first end along a first right vertical group line and extending therefrom away from said axis of symmetry;

each said left opening is arranged with a first end along a first left vertical group line and extending therefrom away from said axis of symmetry; and

said posterior support further includes two vertically arranged elongated flexibility-enhancing openings positioned such that said group lines are between said vertically arranged openings.

5,632,723

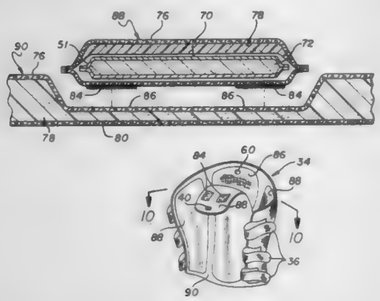
CUSTOM IN SITU FORMABLE BRACE

Tracy E. Grim, Broken Arrow, Okla., assignor to Royce Medical Company, Camarillo, Calif.

Division of Ser. No. 17,817, Feb. 16, 1993, Pat. No. 5,437,614. This application Jun. 2, 1995, Ser. No. 459,463

Int. Cl.[6] A61F *5/02*

U.S. Cl. 602—19 **51 Claims**



25. A custom "in situ" formable back brace, comprising:

a back assembly adapted to wrap around a patient's torso, and having a front torso portion and a back torso portion;

said back assembly including a water impervious sealed first enclosure containing a matrix impregnated with an activatable hardenable material and a water impervious sealed second enclosure containing a matrix impregnated with an activatable hardenable material;

said first enclosure is at said front torso portion and said second enclosure is at said back torso portion; and

a belt assembly for securing said back assembly around the patient's torso.

5,632,724

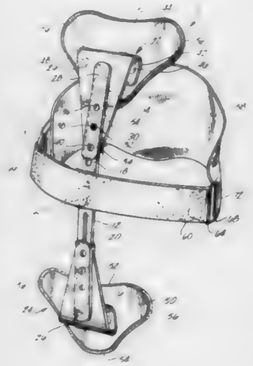
HYPEREXTENSION THORACO-LUMBAR BRACE

Max Lerman, Beverly Hills, and Vick G. Bonessa, Arcadia, both of Calif., assignors to United States Manufacturing Company, Pasadena, Calif.

Filed Feb. 8, 1996, Ser. No. 598,471

Int. Cl.[6] A61F *5/01*

U.S. Cl. 602—19 **19 Claims**



1. A hyperextension brace comprising:

a rigid vertical support frame having an upper end and a lower end;

a sternum pad positioned on the upper end of the support frame;

a pubic pad positioned on the lower end of the support frame;

a self-adjusting connector for pivotally attaching the sternum pad to the upper end of the support frame, the self-adjusting connector comprising a one-piece structure having a generally flat web section integrally molded with and projecting away from an elongated, narrow female portion, the female portion reinforcing the web section and having an open end opening into an internal cavity for slidably receiving the upper end portion of the vertical support frame, the one-piece connector further including a U-shaped flange section integrally molded with and extending away from an end of the female portion opposite from its open end, the flange section having an elongated mounting surface spaced generally parallel to the web section and bendable toward and away from the web section and the female portion; and

fastener means for maintaining the brace in position on a torso of a human body.

5,632,725

POLYCENTRIC VARIABLE AXIS HINGE FOR AN ORTHOPEDIC KNEE BRACE

Daniel M. Silver, Los Angeles, and Russell A. Rothenberg, Santa Monica, both of Calif., assignors to S.R. Orthopedic Laboratories, Inc., Santa Monica, Calif.

Filed Jan. 3, 1995, Ser. No. 368,021

Int. Cl.[6] A61F *5/01*

U.S. Cl. 602—26 **6 Claims**

1. A polycentric variable axis hinge for use in an orthopedic knee brace providing a mechanical joint between the femoral and tibial cuffs of the brace, said hinge including a planar femoral stem attached to the femoral cuff and extending downwardly therefrom and a planar tibial stem attached to the tibial cuff and extending upwardly therefrom, the distal ends of the stems overlapping one another to provide a joint, a plurality of bearing pins extending through said joint for securing said femoral and tibial cuffs together and forming bearings for said joint, and each of the stems having a selected uni-planar angled configuration, with the end portions of each planar stem defining an angle of the order of 30° with respect to one another so as to cause said joint to be displaced



posteriorly from the patella of the knee of the cuff wearer toward the back of the knee by a predetermined amount.

5,632,726

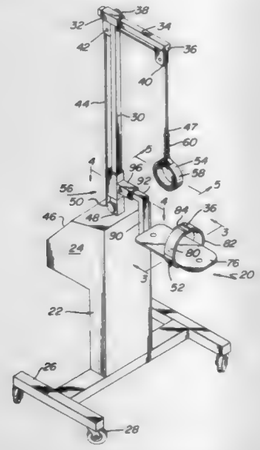
DEVICE FOR USE ON A TRACTION MACHINE TO TREAT CARPAL TUNNEL SYNDROME AND OTHER PROBLEMS OF THE WRIST

Ronald M. Repice, 640 Georgetown Rd., and Ronald M. Repice, II, 299 Stanton Ct., both of Glen Mills, Pa. 19342

Filed Nov. 6, 1995, Ser. No. 554,117

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—36 **10 Claims**



1. A device for use in combination with a traction machine, said device being arranged for mounting onto the traction machine, the traction machine comprising a base portion, an elongated standard extending upward from the base portion, and elongated flexible suspension means suspended vertically downward from the standard and having a free end in the form of connection means for releasable securement to a wrist of a person, the person having an upper arm, and a forearm connected thereto terminating in a hand, the wrist being located between the hand and the forearm, the forearm and upper arm each having a respective longitudinal axis, the suspension means being arranged to apply tension to the wrist along the longitudinal axis of the forearm, said device comprising upper arm support means, wrist engaging means, and adjustable sleeve means, said wrist engaging means comprising a member arranged to be releasably secured about the wrist leaving the hand free, said wrist engaging member being connected to the connection means of the traction machine to be suspended vertically therefrom, said upper arm support means comprising an elongated member for supporting the upper arm in a horizontal orientation wherein the longitudinal axis of the upper arm is horizontal and having means for releasably securing the upper arm in place thereon in said horizontal orientation, said sleeve means being arranged for slidable mounting on the standard and including releasable securement means for releasably securing said sleeve means at any vertical position along the standard, said sleeve means mounting said upper arm support means horizontally with respect to the standard, whereupon said sleeve means can be readily slidably positioned at any vertical position along the standard and secured in place thereat so that the person, when seated, can readily dispose the upper arm in said horizontal orientation on said upper arm support member to be held immobile in that position irrespective of the height of the base portion of the traction machine and with the longitudinal axis of the forearm being oriented vertically upward and with said wrist engaging means being secured to the wrist, whereupon tension can be applied to the wrist but not to the hand by the flexible suspension means in a direction parallel to the longitudinal axis of the forearm and perpendicular to the longitudinal axis of the upper arm.

5,632,727

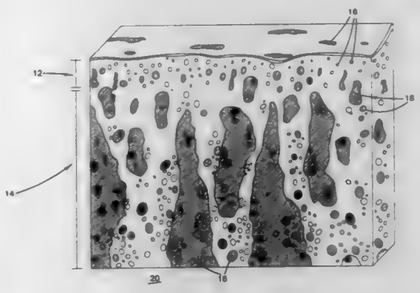
BIODEGRADABLE FILM DRESSING AND METHOD FOR ITS FORMATION

Arthur J. Tipton, Birmingham, Ala.; Shawn M. Fujita, Amsterdam, Netherlands, and Richard L. Dunn, Fort Collins, Colo., assignors to Atrix Laboratories, Inc., Ft. Collins, Colo.

Division of Ser. No. 336,017, Nov. 8, 1994, which is a continuation of Ser. No. 70,499, Jun. 2, 1993, abandoned, which is a continuation of Ser. No. 849,896, Mar. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 788,032, Dec. 23, 1991, Pat. No. 5,340,849, which is a division of Ser. No. 513,782, Apr. 24, 1990, Pat. No. 5,278,201, which is a division of Ser. No. 252,645, Oct. 3, 1988, Pat. No. 4,938,763. This application Jun. 7, 1995, Ser. No. 487,547

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—47 **22 Claims**



1. A biodegradable microporous film dressing comprised of a skin and a core portion, the skin portion having pores with a smaller diameter than pores of the core portion; wherein the film dressing is formed by contacting a composition comprising a biodegradable thermoplastic polymer that is insoluble in aqueous or body fluids, and an organic solvent that is soluble in aqueous or body fluids, with an aqueous or body fluid whereupon the composition coagulates or solidifies to form the microporous film dressing.

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5,632,728

SKIN TESTING AND VACCINATING NEEDLES

Gary L. Hein, Oakley, Ill., assignor to Lincoln Diagnostics, Inc., Decatur, Ill.

Continuation-in-part of Ser. No. 199,099, Feb. 22, 1994, abandoned. This application Nov. 28, 1994, Ser. No. 345,221
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—46 12 Claims



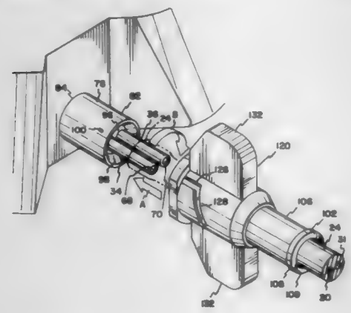
1. A plastic skin testing and vaccinating needle consisting of a straight shaft at least one end of which is bifurcated into two sharp points spaced so as to both pick up by dipping and retention thereon and therebetween a desired quantity of skin testing or vaccinating liquid and upon simultaneous rotation and pressing drill a small hole in the skin so as to achieve epidermal penetration, at least a portion of said shaft having a length and a cross-sectional shape and being large enough in size to facilitate rotation of the needle about its longitudinal axis by rotation between a user's finger and thumb.

5,632,729

CATHETER CONNECTOR

Qingsheng Cai, St. Paul; William L. Beling, New Brighton; Jerald Glantz, Lake Elmo, and Theodore A. Johnson, St. Paul, all of Minn., assignors to SIMS Deltec, Inc., St. Paul, Minn.

Division of Ser. No. 184,655, Jan. 21, 1994, Pat. No. 5,562,618. This application Jun. 6, 1995, Ser. No. 467,183
Int. Cl.[6] A61M *11/00*
U.S. Cl. 604—93 12 Claims



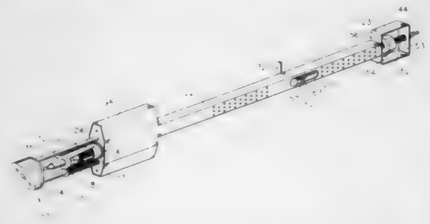
1. A connector for a catheter comprising:
a base arrangement including:
a tube extending from the base arrangement and terminating at an end, the tube sized to be received inside the catheter; and
a concavely shaped surface surrounding the tube, the concavely shaped surface diverging away from the tube in a direction away from the base arrangement, the concavely shaped surface sized to engage an end of the catheter; and
a sleeve arrangement mounted to the base arrangement and engageable with the catheter, the sleeve arrangement defining an inside diameter smaller than an outside diameter of the end of the catheter when the end of the catheter is positioned on the end of the tube.

5,632,730

FLUID INJECTOR

Charles B. Reinert, 701 E. Division St., Alton, Iowa 51003

Filed Oct. 16, 1995, Ser. No. 543,379
Int. Cl.[6] A61M *5/20*
U.S. Cl. 604—137 16 Claims



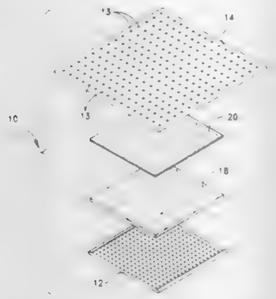
7. A fluid injector to deliver a required dose into an animal or other living creature, comprising:
a hollow cylinder having a forward end and a rear end;
a needle fixed to said cylinder at said forward end and fluidly connected thereto;
a mounting element secured to the rear of said cylinder;
an animal contact pad connected to said mounting element for movement longitudinally of said cylinder, said needle extendable through said pad;
a piston mounted within and cooperating with said cylinder to define a variable volume working space therein;
an elongated hollow delivery tube extended through said mounting element and into a fluid connection with said piston for delivering a supply of fluid through said piston for entry into said cylinder, said piston being longitudinally movable within said cylinder between a rest position defining a minimum volume for said space and a rear cocked position defining a maximum volume for said space, said delivery tube being movable with said piston;
an elongated handle extended alongside said delivery tube;
a first spring engaging said piston for biasing said piston from said cocked position toward said rest position;
a latch movable between a first position retaining said delivery tube in said cocked position and a second position releasing said tube to the bias of said first spring;
a second spring for biasing said latch into said first position; and
a rod unit connected to said pad and extended through said mounting element and operable upon engagement of said pad with an animal to be injected to move longitudinally of said cylinder to a retracted position to move said latch against the bias of said second spring into said second position for releasing said delivery tube from said cocked position for moving said piston to force fluid from within said cylinder and through said needle for discharge therefrom.

5,632,731

NON-ADHERENT WOUND DRESSING

Harish A. Patel, Norfolk, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Nov. 25, 1994, Ser. No. 345,060
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—59 6 Claims



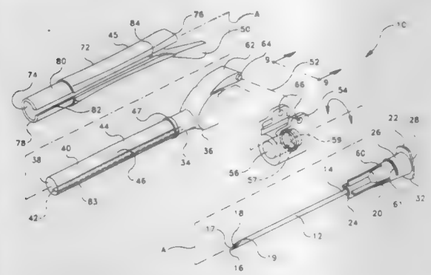
1. In a wound dressing for covering a wound wherein an absorbent material for receiving and retaining wound fluids is sandwiched between opposed first and second perforated non-adherent sheet materials:
the improvement wherein the absorbent material is a multilayer structure comprising first and second absorbent layers, the first layer being a low density absorbent fabric having optimum absorption capacity for receiving wound fluids diffusing from the wound through the first perforated sheet material, the second layer being a high density absorbent fabric exhibiting optimum spreading or wicking characteristics for receiving and retaining wound fluid diffusing through the low density absorbent fabric, whereby to inhibit maceration caused by pooling of wound fluid on the wound surface.

5,632,732

NEEDLE ASSEMBLY HAVING SINGLE HANDEDLY ACTIVATED SHIELD

Sandor Szabo, Elmwood Park, and Robert B. Odell, Franklin Lakes, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 11, 1996, Ser. No. 712,235
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—192 18 Claims



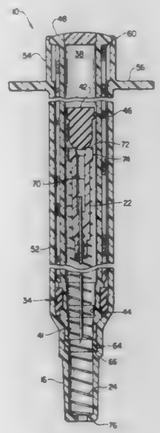
1. A shielded needle assembly comprising:
an elongate needle having a proximal end, a distal end and a passageway therethrough defining a axis;
a needle hub having a proximal end, a distal end and an outside surface, said needle hub having an axial opening therethrough to receive and hold said needle with said distal end of said needle projecting therefrom, said proximal end of said needle hub further including means for releasably mounting said needle hub on a fluid handling device;
an elongate shield having a proximal end, a distal end, a sidewall having an elongate opening from about said distal end to said proximal end, wherein at least a section of said shield is substantially cylindrical with an exterior surface, said shield being movable between an open position, wherein at least said distal point of said needle is exposed for use by passage through said elongate opening, a closed position, wherein said shield substantially obstructs access to said needle, and a latched position, wherein said shield is closed, said elongate opening is substantially obstructed and said shield is substantially prevented from inadvertent movement to said open position;
latch means for substantially preventing inadvertent movement of said shield including a visual indication of said elongate opening being substantially obstructed, said latch means further including an outwardly extending tab, said shield being latched and unlatched in said closed position by a rotational movement of said latch means with respect to said shield; and
hinge means including a mount for retaining said shield onto said needle hub, said mount being sized and shaped to receive at least a portion of said needle hub, said shield movable between said open position and said closed position over said needle by an off-axis pivotal movement about said hinge means.

5,632,733

TAMPERPROOF RETRACTABLE SYRINGE

Thomas J. Shaw, 1510 Hillcrest, Little Elm, Tex. 75068

Continuation-in-part of Ser. No. 438,954, May 11, 1995. This application Sep. 29, 1995, Ser. No. 537,242
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—195 36 Claims



1. A tamperproof retractable syringe for injecting fluid wherein the syringe has a one piece body and a retraction mechanism assembleable from the rear which resists high blowout pressure during an injection but can be retracted with low plunger force after an injection, comprising:
a one piece hollow outer body having a longitudinally extending wall, comprising an elongated barrel and nose, with a transition zone connecting the barrel and nose, the nose having a reduced cross sectional area relative to the barrel and an inwardly facing surface in the wall at the most constricted part of the transition zone where the nose begins;
a plunger assembly disposed partially within the elongated barrel, the plunger having a head in slidable sealed contact with

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the interior of the outer body, a forward portion and a retraction cavity therein for receiving parts of a retraction mechanism;

a retraction mechanism sealingly disposed in the nose, the retraction mechanism having a retractable part comprising a needle holder having an elongated body having a needle holding tip portion in front and a head in back, a passageway defining a fluid path into a variable fluid chamber in the barrel below the plunger, and a spring applying retraction force to the retractable part, said retractable part being configured to be able to retract into the retraction cavity of the plunger when retraction is initiated;

the retraction mechanism further including a nonretractable part comprising a retainer member surrounding the head of the needle holder, the retainer member and said head of the needle holder being removably coupled by a bridging portion between them;

the needle holder and spring being installable into the nose from the rear of the barrel and releaseably installed by sliding engagement of said retainer member and said inwardly facing surface while compressing said spring, said sliding engagement producing a holding force in opposition to the retraction force applied to the needle holder by said spring; and

the plunger being depressible to a first position which comprises the end of an injection cycle whereby fluid previously drawn into the variable chamber is expelled through said fluid path, and a retraction position beyond said first position wherein retraction is initiated by the forward portion of the plunger head moving through the transition zone in the nose to release the needle holder by uncoupling the retainer member and needle holder at said bridging portion thereby reducing the holding force to an amount less than the retraction force on the needle holder to cause retraction of the retractable part into the retraction cavity of the plunger.

5,632,734

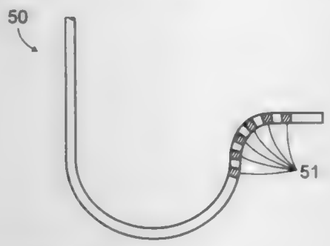
CATHETER SHAPE CONTROL BY COLLAPSIBLE INNER TUBULAR MEMBER

Zev Galel, Los Altos Hills; Cem Kilicci, San Francisco, and Henry Bourang, Campbell, all of Calif., assignors to Guided Medical Systems, Inc., Mountain View, Calif.

Filed Oct. 10, 1995, Ser. No. 541,453

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **15 Claims**



1. A composite catheter comprising:

a catheter body of flexible construction; and

a tubular member having a longitudinal axis and sized to be received inside a lumen of said catheter body in a manner permitting movement of said tubular member relative to said catheter body, said tubular member comprising a plurality of shape-limiting segments each of which is substantially non-collapsible axially, adjacent pairs of said shape-limiting segments joined by connecting segments that are axially collapsible and that thereby permit said tubular member to vary between a compressed configuration in which said connecting segments are collapsed and an extended configuration in which said connecting segments are not collapsed.

5,632,735

INFUSION APPARATUS

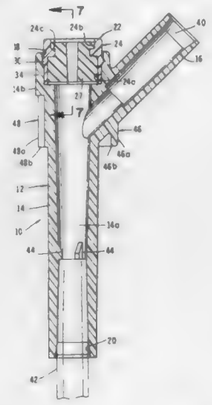
Philip Wyatt, 1018 Marengo Dr., Glendale, Calif. 91206, and Gary Schaeffer, 50 E. Alice, #E, Arcadia, Calif. 91006

Division of Ser. No. 229,627, Apr. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 954,528, Sep. 29, 1992, Pat. No. 5,356,396. This application May 11, 1995, Ser. No. 438,713

The portion of the term of this patent subsequent to Sep. 29, 2012, has been disclaimed.

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—283 **36 Claims**



1. An entry port structure usable with a cannula, comprising:

(a) a tubular body having a central passageway and first and second ports in communication with said central passageway; and

(b) a closure assembly disposed within said first port, said closure assembly comprising:

(i) a generally ring shaped member having an outer wall and an inner wall, said inner wall having a first portion defining a chamber and a second portion sloping outwardly from said first portion and cooperating with said outer wall to define a skirt portion; and

(ii) a septum disposed within said chamber.

5,632,736

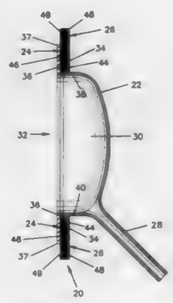
FLUID VOIDING APPARATUS

James C. Block, 4616 Moorland Ave., Edina, Minn. 55424

Filed Feb. 29, 1996, Ser. No. 608,758

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—329 **7 Claims**



1. An extra-labia urine voiding apparatus comprising:

a container sized and shaped to externally cover a vulval region of a female anatomy, the container defining a reservoir and having a generally open side adapted for receiving urine into the reservoir, the container also including a flange forming a perimeter around the open side, the flange having a substantially planar surface constructed and arranged to face and generally surround a periphery of the vulval region;

an extra-labia sealing structure including a pressure sensitive adhesive affixed to the planar surface for providing a primary adhesive seal between the container and external tissue generally surrounding the vulval region, the sealing structure also including a layer of absorbent material affixed to the container generally adjacent to the pressure sensitive adhesive, the layer of absorbent material being arranged so as to extend generally around the perimeter of the open side of the container, wherein the layer of absorbent material is adapted to form a secondary mechanical seal that cooperates with the primary adhesive seal to prevent urine from leaking out of the container; and

a conduit in fluid communication with the reservoir of the container, the conduit being adapted for draining urine from the reservoir.

5,632,737

ABSORBENT FOAMS MADE FROM HIGH INTERNAL PHASE EMULSIONS USEFUL FOR ACQUIRING AND DISTRIBUTING AQUEOUS FLUIDS

Keith J. Stone, Fairfield; Thomas A. DesMarais, Cincinnati; Gary D. LaVon, Middletown; Stephen A. Goldman, and Paul Seiden, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 370,695, Jan. 10, 1995, Pat. No. 5,563,179. This application May 14, 1996, Ser. No. 645,664

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—358 **8 Claims**

1. A diaper useful for absorbing aqueous body fluids discharged by an incontinent individual, said diaper article comprising:

I) a relatively liquid-impervious backing sheet;

II) a relatively liquid-pervious topsheet;

III) an absorbent core positioned between said backing sheet and said topsheet, said absorbent core comprising a polymeric foam material which is capable of acquiring and distributing aqueous fluids, said polymeric foam material comprising a hydrophilic, flexible, nonionic polymeric foam structure of interconnected open cells, which foam structure has:

A) the ability to vertically wick synthetic urine to a height of 5 cm in less than about 120 seconds;

B) a capillary absorption pressure of from about 5 to about 25 cm;

C) a capillary desorption pressure of from about 8 to about 40 cm;

D) a resistance to compression deflection of from about 5 to about 85% when measured under a confining pressure of 0.74 psi;

E) a free absorbent capacity of from about 12 to about 125 g/g;

F) a recovery from wet compression of at least about 60%.

5,632,738

PLASTIC BLOW CONTAINER FOR MEDICAL FLUIDS

Takehiko Sumi, Yamato, and Kazuya Matsumoto, Ayase, both of Japan, assignors to Kewpie Kabushiki Kaisha, Tokyo-to, and Kyoraku Co., Ltd., Kyoto, both of Japan

Continuation of Ser. No. 39,335, May 4, 1993, abandoned. This application Nov. 18, 1994, Ser. No. 345,361

Int. Cl.[6] A61B *19/00*

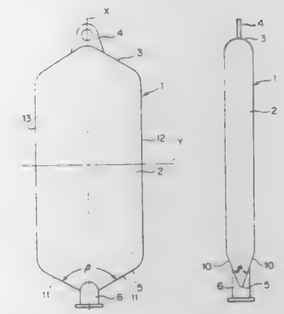
U.S. Cl. 604—408 **2 Claims**

1. A plastic container for medicinal fluids, comprising:

a flat shaped body portion having a cross-sectional shape such that a longer width-wise dimension thereof is more than 2.0 times a shorter width-wise dimension thereof, and having first faces parallel to a longitudinal axis and second faces parallel to a transverse axis which is perpendicular to the longitudinal axis wherein said larger width-wise dimension and shorter width wise dimension terminate at a point of intersection where said first and second faces meet;

a suspension portion formed at an upper end of said flat shaped body portion with a tapered shape extending upwardly; and

said flat shaped body portion having a convex, wedge shaped upper tapered end and a convex wedge, shaped lower tapered funnel end wherein a center portion of said flat shaped body portion has an opening formed therein, the funnel end being defined by first end portions connected to said first parallel faces of said flat shaped body portion on sides along a shorter width-wise axis that converge toward the opening and second end portions connected to said second parallel faces of said flat shaped body portion on sides along a longer width-wise axis that converge toward the opening.



5,632,739

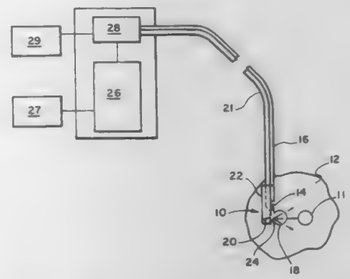
TWO-PULSE, LATERAL TISSUE ILLUMINATOR

Richard R. Anderson, Lexington, and Joseph A. Grocela, Winchester, both of Mass., assignors to The General Hospital Corporation, Mass.

Filed Oct. 13, 1994, Ser. No. 323,295

Int. Cl.[6] A61N *5/06;* **H01S** *3/09*

U.S. Cl. 606—2 **16 Claims**



1. A method of delivering a pulse of optical radiation through a liquid-containing region proximal to a tissue of a patient, and then to the tissue so as to irradiate portions thereof, the method comprising the steps of:

generating first and second optical pulses, wherein the first optical pulse is of sufficient intensity to form a vapor bubble in the liquid-containing region, and the second optical pulse is of sufficient energy, after passing through the vapor bubble, to irradiate portions of the tissue;

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delivering the first optical pulse through a first optical waveguide and into the liquid-containing region so as to form the vapor bubble along a first pathway in the liquid-containing region;

allowing the vapor bubble to expand to displace some of the liquid in the liquid-containing region along the first pathway; and

delivering the second optical pulse (a) through a distal end of a second optical waveguide and along a second pathway substantially orthogonal to the first pathway; (b) through a portion of the vapor bubble; and (c) to the tissue of the patient, said delivery along the second pathway reducing attenuation of the second optical pulse by the liquid, thereby increasing the amount of radiation available for irradiating the tissue.

5,632,740

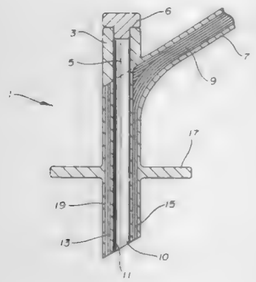
ILLUMINATED LEADING PROBE DEVICE

Frank Koch; Dirk Pawlowski; M. Spitznas, all of Bonn, and Wolfgang Neuberger, Monchen-Gladbach, all of Germany, assignors to Ceram Optec Industries, Inc., East Longmeadow, Mass.

Continuation of Ser. No. 750,114, Aug. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 647,817, Jan. 30, 1991, abandoned. This application Sep. 7, 1994, Ser. No. 302,123

Int. Cl.[6] A61B *1/015*

U.S. Cl. 606—4 **10 Claims**



1. A probe device for use in medical procedures in an eye, comprising:

a generally cylindrical main wall;

a foot plate about an intermediate portion of said main wall;

said foot plate including means for abutting an outer surface of said eye;

a generally cylindrical working channel coaxial with said main wall;

said working channel including a probe leading end;

said probe leading end including means for enabling entry of said probe leading end through an eyeball wall into said eye;

said working channel permitting the passage of at least one of a surgical instrument or an optical device therethrough from outside said eye though said probe leading end to an interior of said eye;

means for permitting plugging of an outer end of said working channel, whereby leakage of a fluid from an interior of said eye is prevented;

a side tube joining said main wall at an angle to an axis thereof;

a bundle of optical fibers passing through said side tube into an interior of said main wall outside said working channel;

said bundle of optical fibers passing through said side tube from outside said side tube into said main wall;

said bundle of optical fibers terminating in a pattern at said probe leading end; and

said pattern being an annulus surrounding said working channel.

5,632,741

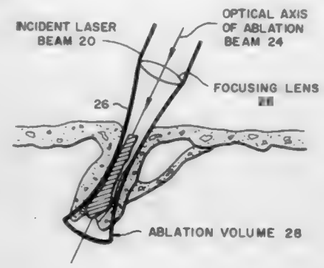
EPILATION SYSTEM

James M. Zavislan, Pittsford, N.Y., and Steven H. Tomson, deceased, late of Cape Elizabeth, Me., assignors to Lucid Technologies, Inc., Henrietta, N.Y.

Filed Jan. 20, 1995, Ser. No. 376,205

Int. Cl.[6] A61N *5/06;* **A61B** *17/00*

U.S. Cl. 606—9 **23 Claims**



1. The method of epilation of hair in skin having an epidermis, dermis and subcutaneous tissue which comprises the steps of generating a laser beam of such wavelength and sufficient fluence to vaporize a hair and root structure of the hair which surrounds and supports the growth of the hair in the epidermis, dermis and subcutaneous tissue of the skin, optically confining said beam to substantially only said root structure by filling an ablation cavity spatially matching said root structure with said beam, thereby delivering laser energy from said beam to expose said hair and root structure progressively inwardly of said skin's surface until said root structure and the hair therein is epilated without substantial damage to tissue surrounding said root structure and without moving said beam.

5,632,742

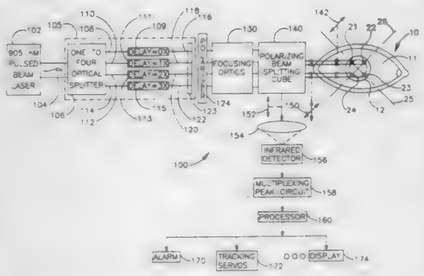
EYE MOVEMENT SENSING METHOD AND SYSTEM

Rudolph W. Frey; John E. McWhirter, both of Orlando; Neil Zepkin, Casselberry, and George R. Downes, Jr., Orlando, all of Fla., assignors to Autonomous Technologies Corp., Orlando, Fla.

Filed Apr. 25, 1994, Ser. No. 232,990

Int. Cl.[6] A61N *5/06*

U.S. Cl. 606—12 **5 Claims**



1. A method for sensing eye movement, comprising the steps of:

providing a single light source for generating a light beam;

providing an optical delivery arrangement including an optical splitter device for converting said light beam into a plurality of separate light spots which are equal energy pulses, said device being a delay means for introducing a unique time delay as a unique identification into each of said plurality of separate light spots;

focusing said plurality of separate light spots on a corresponding plurality of positions located on a boundary whose movement is coincident with that of said eye movement, said boundary defined by two adjoining surfaces having different coefficients of reflection, wherein energy is reflected from each of said plurality of positions;

providing a single detector optical receiving arrangement for detecting said light energy from each of said plurality of positions; and

monitoring said reflected energy from each of said plurality of positions, wherein changes in said reflected energy at one or more of said positions is indicative of eye movement.

5,632,743

METHOD OF THAWING CRYOSURGICAL APPARATUS

Brian K. R. Clarke, Oakwood, England, assignor to Spembly Cryosurgery Limited, Hampshire, England

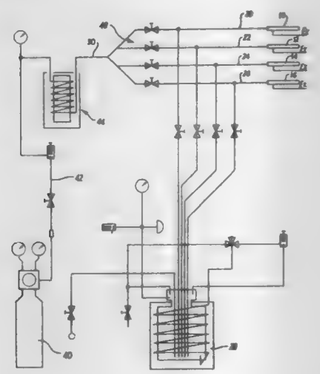
PCT No. PCT/GB92/02030, § 371 Date May 31, 1994, § 102(e) Date May 31, 1994, PCT Pub. No. WO93/08752, PCT Pub. Date May 13, 1993

PCT Filed Nov. 3, 1992, Ser. No. 232,281

Claims priority, application United Kingdom, Nov. 5, 1991, 9123413

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—24 **4 Claims**



1. A method of thawing a cryosurgical apparatus, comprising the steps of:

(a) supplying a liquid cryogen to the apparatus through a first path of an internal circulation system thereof to a tip area to effect cooling thereof by vaporization of the liquid cryogen;

(b) interrupting the supply of cryogen to the apparatus when surgery is complete;

(c) after (b), injecting a heated inert gas of predetermined temperature through the first path of the internal circulation system, and purging the cryogen gas remaining in the apparatus through a second path of the internal circulation system;

(d) circulating the heated inert gas through the first and second paths of the circulation system to effect thawing of the apparatus; and

(e) exhausting the heated inert gas from the apparatus through the second path of the internal circulation system.

5,632,744

SEGMENTAL RIB CARRIAGE INSTRUMENTATION AND ASSOCIATED METHODS

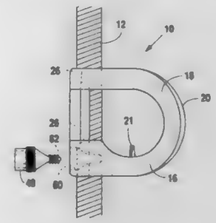
Robert M. Campbell, Jr., 31720 Wild Oak Hill, Fair Oaks Ranch, Tex. 78006

PCT No. PCT/US93/05474, § 371 Date Jan. 16, 1995, § 102(e) Date Jan. 16, 1995, PCT Pub. No. WO94/01785, PCT Pub. Date Jan. 20, 1994

Continuation-in-part of Ser. No. 895,377, Jun. 8, 1992, abandoned. This PCT application Jun. 8, 1993, Ser. No. 356,235

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **5 Claims**



1. An apparatus for manipulating curvature in a human spine comprising:

a first spinal rod, said first spinal rod being contoured to define, in three dimensions, an at least partially corrected dorsal contour for said recipient's ribs within a plane closely adjacent said spine of said recipient; and

a first rib carriage for attachment to said first spinal rod and to a first rib of a recipient of said apparatus, said first rib carriage comprising a loop structure having access means through which a portion of said first rib may be admitted into a rib carriage space defined, at least in part, by said loop structure, said rib carriage space being of a size and shape whereby, when said portion of said first rib lies in said rib carriage space and said apparatus is assembled, said first segment of said first rib is fully encircled by said rib carriage in a close-fitting, but not compressive relationship, said first rib carriage further exhibiting first spinal rod attachment means for securely and rigidly attaching said first rib carriage to said first spinal rod and thereby maintaining a substantially fixed spatial relation between said spinal rod and said first rib.

5,632,745

SURGICAL IMPLANTATION OF CARTILAGE REPAIR UNIT

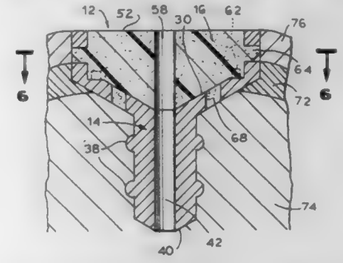
Robert E. Schwartz, Old Westbury, N.Y., assignor to R&D Biologicals, Inc., Manhasset, N.Y.

Filed Feb. 7, 1995, Ser. No. 384,849

Int. Cl.[6] A61B *17/68*

U.S. Cl. 606—75 **21 Claims**

1. A method of surgically implanting, into a site of damaged or



destroyed articular cartilage and cancellous bone, a bio-absorbable cartilage repair system including an assembly, the method comprising the steps of:

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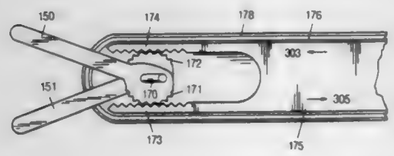
(A) partially preparing the site to receive the assembly by removing at least a portion of the damaged or destroyed articular cartilage;
(B) removably fixing the forward tip of a guide wire in the cancellous bone under the removed articular cartilage;
(C) utilizing the guide wire to further prepare the site to receive the assembly by drilling and countersinking the subchondral cancellous bone,
(D) utilizing the guide wire to seat the assembly into the and countersunk subchondral cancellous bone until the assembly is flush with the surrounding articular surface; and
(E) removing the guide wire.

5,632,746

DEVICE OR APPARATUS FOR MANIPULATING MATTER

Lee M. Middleman, Portola Valley; Walter R. Pyka, Redwood City, both of Calif.; Michael Buhler, St. Rebe, Fla.; Philippe Poncet; Karl van Dyk, both of Fremont, Calif.; James E. Jervis, Atherton, Calif., and Reza Zadno, Newark, Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 774,016, Oct. 9, 1991, Pat. No. 5,486,163, and a continuation-in-part of Ser. No. 594,768, Oct. 9, 1990, abandoned, and a continuation-in-part of Ser. No. 608,117, Nov. 1, 1990, abandoned, and a continuation-in-part of Ser. No. 594,769, Oct. 9, 1990, abandoned, and a continuation-in-part of Ser. No. 608,121, Nov. 1, 1990, abandoned, and a continuation-in-part of Ser. No. 594,871, Oct. 9, 1990, abandoned, and a continuation-in-part of Ser. No. 594,896, Oct. 9, 1990, abandoned, and a continuation-in-part of Ser. No. 594,874, Oct. 9, 1990, abandoned, and a continuation-in-part of Ser. No. 594,873, Oct. 9, 1990, abandoned, and a continuation-in-part of Ser. No. 656,657, Feb. 15, 1991, abandoned, and a continuation-in-part of Ser. No. 608,117, Nov. 1, 1990, abandoned, and a continuation-in-part of Ser. No. 631,809, Dec. 21, 1990, Pat. No. 5,509,923, which is a continuation-in-part of Ser. No. 394,463, Aug. 16, 1989, abandoned. This application Feb. 28, 1992, Ser. No. 843,775
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—78 **47 Claims**



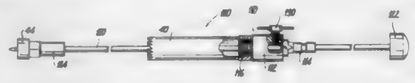
1. A device having a distal end and a proximal end for surgical manipulation of matter within a living body comprising:
(i) manipulator means having a distal end, said distal end at least partly constructed of at least one bent or twisted elongate metallic member having pseudoelasticity at a intended manipulation temperature,
(ii) a hollow housing or cannula which initially holds said distal end in a relatively straightened state, and
(iii) a proximal end and actuating means operable from said proximal end of the device for extending the distal end from the housing to manipulate matter within a living body and for withdrawing the distal end into the housing, wherein the distal end is deformable to bend or twist pseudoelastically in a lateral or helical sense so as to manipulate the matter on extension from the housing at the manipulation temperature, and said distal end becoming relatively straightened on withdrawal into the housing at the said temperature.

5,632,747

BONE DOWEL CUTTER

Nelson Scarborough, Wayside, and John W. Morris, Beachwood, both of N.J., assignors to Osteotech, Inc., Shrewsbury, N.J.

Filed Mar. 15, 1995, Ser. No. 404,255
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—79 **15 Claims**



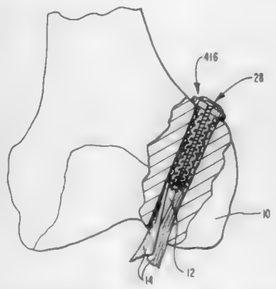
1. A dowel cutting assembly for use with a powered drill which includes an elongated barrel section having a chuck provided at a distal end thereof, comprising:
a) an axial mounting member having a proximal end portion configured for engagement with the chuck and a distal end portion configured to receive a cylindrical cutting blade;
b) an elongated supporting shaft having a distal end portion configured to support a drill guide, said supporting shaft mounted for coaxial movement with respect to said axial mounting member; and
c) securement means integral with said mounting member for releasably maintaining the relative longitudinal orientation of said supporting shaft and said axial mounting member.

5,632,748

ENDOSTEAL ANCHORING DEVICE FOR URGING A LIGAMENT AGAINST A BONE SURFACE

Charles L. Beck, Jr.; E. Paul France, both of Salt Lake City, and Richard L. Ellingson, Draper, all of Utah, assignors to Linvatec Corporation, Largo, Fla.

Continuation of Ser. No. 76,390, Jun. 14, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 361,868
Int. Cl.[6] A61B *17/58;* **A61F** *5/00*
U.S. Cl. 606—89 **16 Claims**



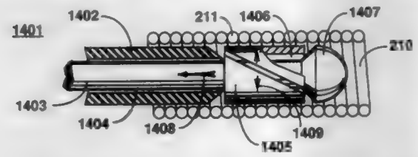
1. An endosteal anchoring system for urging a ligament against a bone surface within a tunnel formed in a bone of a patient, the system comprising:
an anchor device, the anchor device having at least one end and an exterior surface comprising a surface area sufficient for disposing a portion of said ligament, said surface area providing a means for forcibly compressing said portion of the ligament against the bone surface of said tunnel;
said portion of said ligament engageably disposed in relation to the exterior surface of the anchor device being further disposed around said end of the anchor device;
a positioning member engageably disposed in relation to the anchor device, said positioning member providing a means for selectively positioning said anchor device within the tunnel; and
means for securing the anchor device and said portion of the ligament disposed in a loop configuration around said exterior surface of said anchor device within the tunnel, said portion of the ligament being thereby urged directly against the bone surface within said tunnel.

5,632,749

APPARATUS FOR REMOVING AN ELONGATED STRUCTURE IMPLANTED IN BIOLOGICAL TISSUE

Louis Goode, Evans City; Frederick J. Shipko, Spring Church, both of Pa., and Neal E. Fearnot, West Lafayette, Ind., assignors to Cook Pacemaker Corporation, Leechburg, Pa.

Division of Ser. No. 691,706, Apr. 26, 1991, Pat. No. 5,207,683, which is a continuation-in-part of Ser. No. 363,960, Jun. 9, 1989, Pat. No. 4,943,289, which is a continuation-in-part of Ser. No. 347,217, May 3, 1989, Pat. No. 5,011,482, which is a continuation-in-part of Ser. No. 298,100, Jan. 17, 1989, Pat. No. 5,013,310, which is a continuation-in-part of Ser. No. 269,771, Nov. 9, 1988, Pat. No. 4,988,347. This application Apr. 2, 1993, Ser. No. 42,375
Int. Cl.[6] A61B *17/50*
U.S. Cl. 606—108 **15 Claims**



1. Lead removal apparatus for removing an implanted, cardiac lead including a coiled structure having a passageway extending longitudinally therein, comprising:
a tube;
control means for moving said coiled structure when secured to said coiled structure, said control means slidably arranged in said tube, said control means having a distal end that is configured for insertion into said passageway of said coiled structure; and
expandable means other than and separate from said tube positioned proximate said distal end of said control means and having an expanded position in said passageway of said coiled structure for securing said control means to said coiled structure.

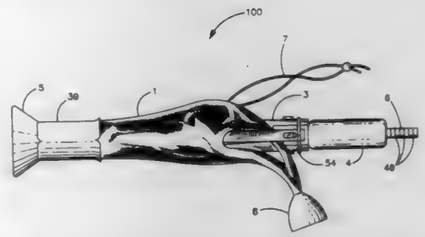
5,632,750

DEVICE FOR ASSISTING CHILDBIRTH

Gary E. Alexander, and Robert L. diBenedetto, both of Baton Rouge, La., assignors to Medisys Technologies, Inc., Baton Rouge, La.

Continuation-in-part of Ser. No. 250,054, May 27, 1994, which is a continuation-in-part of Ser. No. 36,560, Mar. 25, 1993, Pat. No. 5,318,573, which is a continuation-in-part of Ser. No. 982,016, Nov. 24, 1992, Pat. No. 5,217,467, which is a continuation of Ser. No. 851,068, Mar. 13, 1992, which is a continuation-in-part of Ser. No. 522,592, May 14, 1990, Pat. No. 5,122,148. This application Mar. 29, 1995, Ser. No. 413,125
Int. Cl.[6] A61B *17/42*
U.S. Cl. 606—122 **8 Claims**

1. A device for assisting the delivery of a fetus, comprising:
(1) an elongated member having an open first end and a second end connected by a passageway into which the head of a fetus may be fit, said open first end being adapted to receive said head therein so that said open first end surrounds said head;
(2) a plurality of wand sheaths, equidistantly disposed along said elongated member, each said wand sheath having a terminal end and a receiving end, wherein said receiving end is attached to said elongated member;
(3) an insertion wand corresponding to each said wand sheath, each said insertion wand being a semi-rigid member having a proximal end and a distal end and being adapted such that said insertion wand may be received within said receiving end of said sheath;



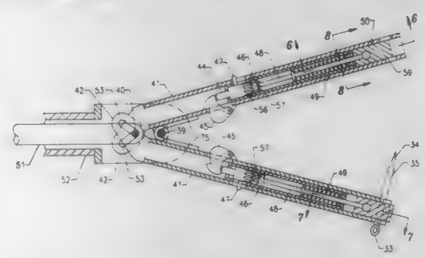
(4) a rigid hollow elongated insertion handle, said insertion handle having a tunnel therethrough and being adapted such that said proximal end of each said insertion wand is removably attached to said insertion handle;
(5) a pliable resilient application cone having an attachment end and an open end, said cone being adapted to fit within said elongated member open first end and said elongated member passageway;
(6) an application rod having a distal end and a proximal end and having a length greater than the connected combination of said insertion wands and said insertion handle, said rod distal end being attached to said cone attachment end, said rod proximal end being adapted to slidably fit through said insertion handle tunnel;
(7) a pliable tubular insertion sleeve, said insertion sleeve being adapted such that said sleeve will fit over said elongated member open first end and constrict said open first end to a size sufficient to allow insertion of said open first end into the birth canal of the mother, said sleeve being further adapted so as to be cut with surgical shears and removed after said insertion of said elongated member open first end; and
(8) restricting means cooperating with said open first end of said elongated member for tightening said open first end about said head.

5,632,751

SURGICAL SUTURING DEVICE

Hadi A. Piraka, 21257 Woodfarm, Northville, Mich. 48167

Filed Jul. 28, 1995, Ser. No. 508,669
Int. Cl.[6] A61B *17/10*
U.S. Cl. 606—139 **9 Claims**



1. A surgical suturing device comprising: a needle having a thread end portion and an opposite pointed end portion; a pair of needle holders including a first elongated needle holder, said first needle holder having an end portion for grasping and releasing said thread end portion of said needle and a second elongated needle holder pivotally connected to said first needle holder and having an end portion for grasping and releasing said opposite pointed end portion of said needle, said needle holders being selectively movable between a closed position wherein said needle holders are adjacent to each other and an open position wherein said needle

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holders are angularly displaced apart from each other; a means actuated by moving said needle holders to said closed position for simultaneously grasping said thread end portion of said needle in said first needle holder and releasing said pointed end portion in said second needle holder and thereafter simultaneously grasping said pointed end portion and releasing said thread end portion; and a pair of handles for selectively moving said needle holders between said closed and said open positions.

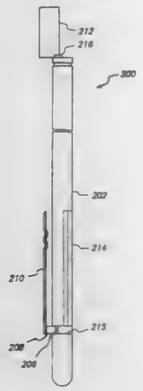
5,632,752

SURGICAL SUTURING DEVICE

Terry Buelna, Laguna Beach, Calif., assignor to Urohealth Systems, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 134,561, Oct. 22, 1993, Pat. No. 5,468,251. This application Jul. 22, 1994, Ser. No. 279,367
Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—144 **26 Claims**



1. A surgical suture device comprising:
an elongate shaft having a proximal end and a distal end;
an inverted needle having a distal end and a sharpened proximal tip;
means located on the needle immediately distal to the sharpened tip for separately securing opposite ends of a length of suture thereto, wherein one end of suture can be removed from the needle without dislodging the other end of suture; and
means for securing the needle near the distal end of the shaft so that the needle can move laterally between a protected position and an exposed position.

5,632,753

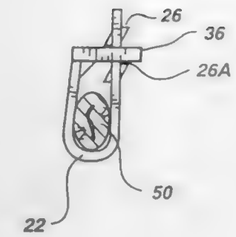
SURGICAL PROCEDURES

Edward A. Loeser, 8646 Oak Valley Dr., Sandy, Utah 84093-2015

Continuation-in-part of Ser. No. 998,950, Dec. 31, 1992, Pat. No. 5,403,346. This application Apr. 4, 1995, Ser. No. 416,217
Int. Cl.[6] A61B *17/08*

U.S. Cl. 606—151 **20 Claims**

1. A process for occluding a vessel selected from the group of vessels consisting of fallopian tubes, vas deferens, veins, cystic ducts of a gall bladder and arteries, said process comprising:
cinching the vessel with a ligature comprising:
a flexible elongate base structure having a longitudinal axis, a needle end, and
a second end,
a collar for receiving a needle and affixed elongate base structure, positioned on said second end, and



a node for interacting with the collar, said node positioned on said elongate base structure, between said needle and second ends, transverse to the longitudinal axis and having a proximal and a distal edge with respect to the needle end of the flexible elongate base structure, a portion of said node's proximal edge relative said needle end of the flexible elongate base structure being perpendicular to the elongate base structure's longitudinal axis.

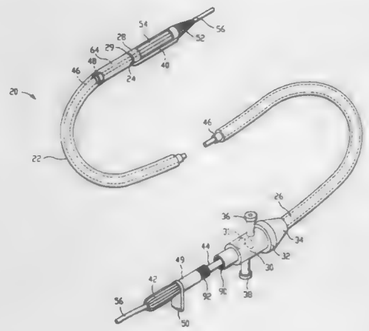
5,632,754

UNIVERSAL CATHETER WITH INTERCHANGEABLE WORK ELEMENT

Brian Farley, Los Altos; Ron R. Hundertmark, San Mateo, and Grace Y. Schulz, San Carlos, all of Calif., assignors to Devices for Vascular Intervention, Santa Clara, Calif.

Filed Dec. 23, 1994, Ser. No. 363,142
Int. Cl.[6] A61D *17/32*

U.S. Cl. 606—159 **26 Claims**



1. An intravascular catheter for use with an interchangeable work element,
the catheter comprising:
a catheter body having a distal end, a proximal end and a lumen extending therebetween; and
a housing having a hollow interior, an aperture on a lateral side thereof and an open proximal end connected to the distal end of the catheter body, the connection defining a junctional region; and
the lumen of the catheter body and the hollow interior of the housing combining to create a receiving space;
a coupling element connecting the distal end of the catheter body and the proximal end of the housing, the coupling element comprising a tubular adapter surrounding the distal end of the catheter body and the proximal end of the housing,
whereby, a work element may be inserted into the receiving space from the proximal end of the catheter body.

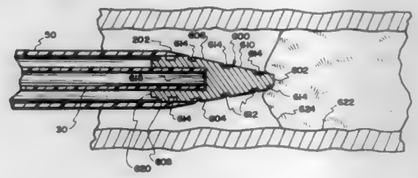
5,632,755

INTRA-ARTERY OBSTRUCTION CLEARING APPARATUS AND METHODS

Gregory N. Nordgren, Wilsonville, and Thomas L. Kelly, West Linn, both of Oreg., assignors to Endo Vascular Intruments, Inc., Vancouver, Wash.

Division of Ser. No. 973,514, Nov. 9, 1992, abandoned. This application Dec. 21, 1995, Ser. No. 576,866
Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—159 **16 Claims**



1. A combination for concentric arterial plaque removal comprising:
a hollow catheter tube comprising a distal end;
a drive cable rotatably passing through the hollow of the catheter tube, the drive cable comprising a distal end;
a coupling comprising a stationary part non-rotatably connected to the distal end of the catheter tube, and a rotatable part non-rotatably connected to the drive cable and rotatable in respect to the stationary part;
a rotatable cutting head for concentric plaque removal to increase blood flow;
the coupling further comprising a site for non-rotatable connection to the head;
whereby rotation of the cable drive rotates the rotatable part in respect to the stationary part and the catheter tube, which rotates the head to cut plaque.

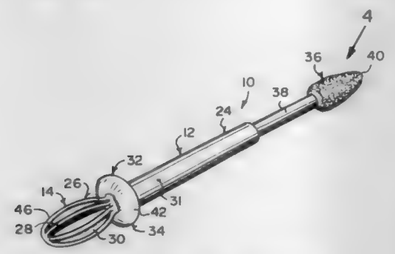
5,632,756

EAR CLEANING DEVICE UTILIZING BULBOUS BANDED CAGE

Kenneth Kruglick, 4217 Austin Blvd., Island Park, N.Y. 11558

Filed Dec. 20, 1994, Ser. No. 360,467
Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—162 **2 Claims**



1. A disposable ear cleaning device comprising:
a) an extended rigid cylindrical handle for grasping and being rotated;
b) means on one end of said handle, for engaging, capturing and extracting ear wax located in an ear canal of a person comprising a malleable uniform bulbous shaped curette head made up of a multiple banded cage extending over the leading edge and the sides thereof having openings therebetween to capture said ear wax for removal;
c) means for controlling a depth of insertion of said multiple banded cage into the ear canal comprising a safety stop shield between said rigid cylindrical member and said multiple banded cage, said handle, multiple banded cage, and safety stop shield being integral and fabricated out of plastic material; and
d) means on a second end of said handle for cleaning the air canal in the ear of the person comprising a cotton swab.

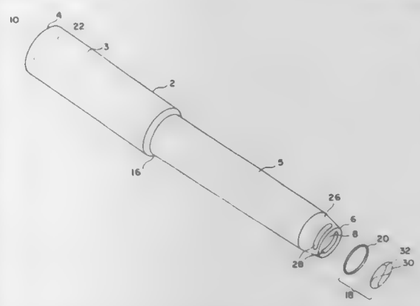
5,632,757

TREPHINE DEVICE FOR REMOVING ANTERIOR EPITHELIAL CELLS FROM CORNEAL SURFACE

Eric J. Arnott, Trottsford Farm, Headley Near Bordon Hampshire, England

Continuation-in-part of Ser. No. 725,349, Jul. 3, 1991, Pat. No. 5,269,795. This application Jul. 14, 1992, Ser. No. 913,148
Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—166 **14 Claims**



1. A trephine device for partially removing or reflecting the anterior epithelium from a corneal surface, the device comprising:
(a) a housing having upper and lower end portions;
(b) cutting means integral to the lower portion of the housing, said cutting means having at least one cutting surface adapted to conform substantially to the shape of the corneal surface, said cutting surface being effective for partially removing or reflecting a substantially circular portion of the epithelium from the corneal surface in such manner as to permit the partially removed or reflected portion to be replaced on a reshaped corneal surface; and
(c) means for activating and deactivating the cutting means, said activating and deactivating means acting cooperatively with pressure-sensing means to activate and deactivate the cutting means.

5,632,758

AUTOMATED SURGICAL INSTRUMENT

Martin J. Sklar, Needham, Mass., assignor to Automated Medical Instruments, Inc., Needham, Mass.

Continuation of Ser. No. 837,352, Feb. 14, 1992, Pat. No. 5,350,355. This application Jul. 5, 1994, Ser. No. 270,821
Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—170 **29 Claims**

1. An automated surgical instrument comprising:
a housing;
a substantially rigid tube having a lumen, a distal end projecting from an end of the housing and a proximal end positioned within the housing;
a drive motor for moving the distal end of the tube toward and away from the housing substantially along a direction of a longitudinal axis of the tube;
a controller that selectively varies a position of the distal end relative to the housing;
a surgical tool positioned at the distal end of the tube; and
an actuator for operating the surgical tool, wherein the actuator includes a linkage positioned through the lumen and con-

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nected to the surgical tool. the linkage being interconnected with a drive element that moves the linkage relative to the tube.

5,632,759

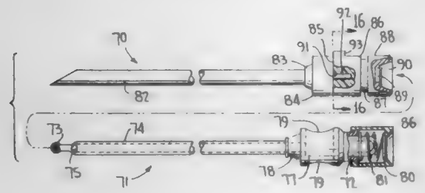
CUTTING BLADE ASSEMBLY FOR AN ARTHROSCOPIC SURGICAL INSTRUMENT DRIVE SYSTEM

Fred Rexroth, Dunedin, Fla., assignor to Linvatec Corporation, Largo, Fla.

Continuation of Ser. No. 437,270, Dec. 4, 1989, Pat. No. 5,269,794, which is a division of Ser. No. 16,140, Feb. 18, 1987, Pat. No. 5,217,478. This application Sep. 10, 1993, Ser. No. 118,851

Int. Cl.[6] A61B *17/32;17/36*

U.S. Cl. 606—180 **24 Claims**



1. A disposable, limited use cutting blade assembly for use with a handpiece having motor means for rotatably driving said cutting blade assembly, the handpiece having bore means for receiving the cutting blade assembly and sensing means disposed adjacent said bore means for sensing a coded representation of a predetermined characteristic of the cutting blade assembly to control an operating parameter of said motor, said cutting blade assembly comprising:

an elongate tubular outer member having a distal end with an opening therein, a proximal end, a plastic hub unremovably secured to said proximal end so as to be a permanent part of said outer member, said hub being configured to be directly received and engaged in said handpiece bore means in a particular orientation relative to the sensing means, and having a coding structure in said hub for identifying the predetermined characteristic of the cutting blade to be sensed by the sensing means; and

an elongate inner member received in said outer member and having a distal cutting end disposed adjacent said opening in said distal end of said outer member, and a proximal end adapted to be received in the handpiece bore means and rotatably driven by the motor means to rotate said inner member in said outer member.

5,632,760

BALLOON CATHETER FOR STENT IMPLANTATION

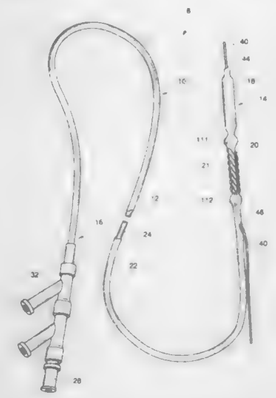
Imad Sheiban, Verona, Italy, and Cornelis P. Nap, Zevenhuizen, Netherlands, assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 546,245, Oct. 20, 1995, abandoned. This application Feb. 1, 1996, Ser. No. 595,336

Claims priority, application Netherlands, Oct. 20, 1994, 94.01744; Oct. 21, 1994, 94.01758; Feb. 15, 1995, 95.00284

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—191 **12 Claims**



1. A catheter comprising: a tube-like basic body having a proximal end, a distal end section, a distal end and at least one balloon mounted on said distal end section close to said distal end; said balloon being connected via a lumen in said basic body to a connecting member which is located at said proximal end of said basic tubular body; two bulges being arranged to said basic body, each bulge being located close to one end of said balloon; and a compressed stent arranged around said balloon and in between said bulges; and, said bulges being arranged inside said balloon.

5,632,761

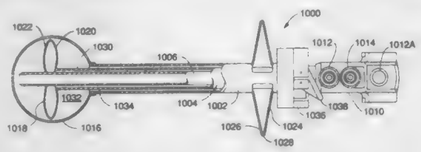
INFLATABLE DEVICES FOR SEPARATING LAYERS OF TISSUE, AND METHODS OF USING

Jeffrey A. Smith, Sunnyvale; Albert K. Chin, Palo Alto, and Frederic H. Moll, San Francisco, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 365,096, Dec. 28, 1994, which is a continuation-in-part of Ser. No. 319,552, Oct. 7, 1994, which is a continuation-in-part of Ser. No. 282,287, Jul. 29, 1994, which is a continuation-in-part of Ser. No. 911,714, Jul. 10, 1992, which is a continuation-in-part of Ser. No. 794,590, Nov. 19, 1991, Pat. No. 5,309,896, which is a continuation-in-part of Ser. No. 706,781, May 29, 1991, abandoned. This application Mar. 16, 1995, Ser. No. 405,284

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—192 **7 Claims**



4. A device for separating tissue layers, comprising:

a conduit having a plurality of independent fluid passages, wherein the conduit comprises a first tube, a second tube translatably mounted within the first tube, and a third tube;

a first balloon coupled to said conduit in fluid communication with one of said passages; and

a second balloon coupled to said conduit in fluid communication with a second one of said fluid passages, said second balloon being disposed within the first balloon, wherein:

the first tube has a first open distal end, the second tube has a second open distal end, and the third tube has a third open distal end;

the first balloon is secured to the first tube and extends over the first open distal end; and

the second balloon is secured between the second tube and the third tube.

5,632,762

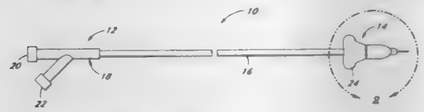
OSTIAL STENT BALLOON

Richard K. Myler, Hillsborough, Calif., assignor to Hemodynamics, Inc., San Clemente, Calif.

Filed Nov. 9, 1995, Ser. No. 555,523

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **15 Claims**



1. A balloon catheter, comprising:

an elongate flexible tubular body, having proximal and distal ends;

an inflatable balloon on the distal end of the body, the inflatable balloon having a total length when inflated;

an inflation lumen extending from the proximal end through the body and in communication with the balloon;

a proximal zone on the balloon; and

a generally cylindrical distal zone on the inflated balloon;

wherein the proximal zone flares radially outward such that the proximal zone has a larger inflated diameter than the distal zone.

5,632,763

BIFURCATED STENT AND METHOD FOR IMPLANTING SAME

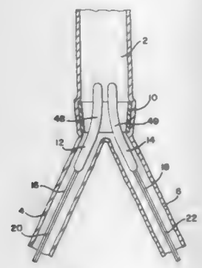
Hendrik Glastra, Enschede, Netherlands, assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Jan. 18, 1996, Ser. No. 588,513

Claims priority, application Netherlands, Jan. 19, 1995, 9500094

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **23 Claims**



1. A bifurcated stent assembly useful for repairing a compromised section of a bifurcated blood vessel, the compromised section of the blood vessel occurring near the bifurcation, said bifurcation including at least two subsidiary blood vessels branching off from said blood vessel, the stent assembly comprising: a primary stent adapted to engage said blood vessel proximate to said bifurcation and at least two secondary stents adapted to engage respective ones of said at least two subsidiary blood vessels, each of the secondary stents having a length sufficient to extend from its respective subsidiary blood vessel into said primary stent and into engagement with at least a portion of an interior surface of said primary stent whereby said secondary stents are held in place within said bifurcation.

5,632,764

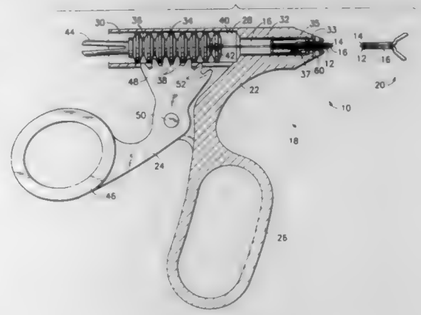
SNAP FIT COLLAR FOR COUPLING THE END OF A FLEXIBLE COIL TO THE ACTUATOR OR CLEVIS OF AN ENDOSCOPIC SURGICAL INSTRUMENT AND AN ENDOSCOPIC SURGICAL INSTRUMENT INCORPORATING THE SAME

Tracie L. Beideman, Pembroke Pines; Gary R. Dill, Lauderhill; Kevin F. Hahnen, Cooper City, and Thomas O. Bales, Coral Gables, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 275,291, Jul. 14, 1994, Pat. No. 5,478,350. This application Feb. 15, 1995, Ser. No. 389,758

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—205 **21 Claims**



1. A snap-fit collar for coupling the end of a flexible coil to a portion of an endoscopic surgical instrument having a throughbore with a protrusion defining a reduced diameter portion of the throughbore, said collar comprising:

a) a first end portion having an interior passage, an exterior stop flange with a first diameter and a resilient exterior tapered locking flange spaced apart from said stop flange and defining a groove lying between said stop flange and said locking flange, said groove having a second diameter which is smaller than said first diameter and being adapted to receive the protrusion, said tapered locking flange being tapered radially inward from a third diameter which is larger than said second diameter and being adapted to move through the reduced diameter portion in one direction only; and

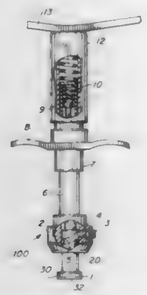
b) a second end portion extending from said first end portion and having a pair of cantilevered legs which diverge as they extend away from said first end portion, each of said legs having a plurality of coil engaging ribs on an inner surface thereof, and said legs defining a space which is in communication with said interior passage, said space and said interior passage being adapted to receive the end of the flexible coil, wherein

when the end of the flexible coil is inserted through said interior passage into said space and said collar with the coil is inserted into the throughbore of the portion of the endoscopic surgical instrument, said legs are pressed toward each other and engage the coil with said ribs, said locking flange passes through the reduced diameter portion and said

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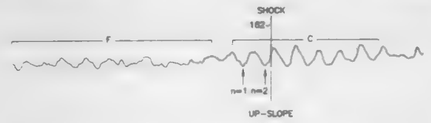
stop flange stops said collar from entering farther into the throughbore of the portion of the endoscopic surgical instrument.

5,632,765
CHIROPRACTIC DEVICE FOR REMOVING A VERTEBRAL SUBLUXATION
Jack M. Holder, 5990 Bird Rd., Miami, Fla. 33155
Filed Feb. 7, 1995, Ser. No. 384,542
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—238 **3 Claims**



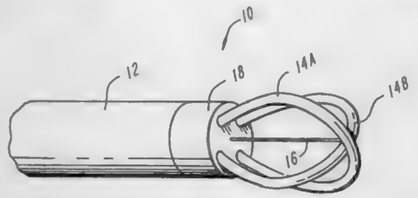
1. An improved chiropractic device comprising:
a tubular housing including a first end and an opposite second end, a central zone, and a longitudinal axis extending through an interior of said housing between said ends,
central handle means movably supported on said housing and exteriorly accessible thereon,
an elongate anvil member coaxially and movably fitted within said interior of said housing and extending outwardly from said first end, and being axially movable relative to said longitudinal axis through a predetermined range, between a retracted, cocked position and an extended, released position, said anvil member including a proximal end zone within said housing interior and a distal end zone including a distal end disposed exteriorly of said housing interior,
latch means operably interconnected to said central handle means for carrying said anvil member to and holding said anvil member in said retracted, cocked position upon moving said central handle means towards said second end of said housing,
release means for operatively disengaging said latch means to cause release of said anvil member from said retracted, cocked position upon application of a predetermined external inwardly directed axial force to said distal end of said anvil member to cause inward axial movement of said anvil member through a predetermined fixed range of movement relative to said housing,
biasing means for exerting an axial force on said latch means and said anvil member to cause rapid movement of said anvil member axially outward from said retracted, cocked position to said extended, released position, upon disengaging said latch means by said release means,
anvil rotation control means for selectively controlling direction of rotation of said distal end zone of said anvil member about said longitudinal axis when moving towards said extended, released position, said anvil rotation control means including a plurality of directional grooves formed on said anvil member and a guide element structured for selective, operable receipt within a selected one of said plurality of directional grooves, said anvil rotation control means being operable to select one of a plurality of directions of rotation of said distal end zone by turning said distal end zone of said anvil member to move said guide element into a selected one of said plurality of directional grooves,
means for selectively varying the axial force exerted on said anvil member by said biasing means, and including a rotating cap threadably attached on said second end of said housing, structured to apply a gradual, progressive compression force or decompression force on said biasing means upon threaded advance or threaded retreat, respectively, on said second end of said housing,
a plurality of impact heads each including an attaching element formed thereon for removably attaching selected ones of said plurality of impact heads to said distal end of said anvil member, and
said distal end of said anvil member including a cavity formed therein being sized and configured for congruent, releasable attached receipt of said attaching element of a selected one of said plurality of impact heads.

5,632,766
VENTRICULAR DEFIBRILLATION BY COORDINATION OF SHOCKS WITH SENSED COARSE VF COMPLEXES
William Hsu, Circle Pines, and Yayun Lin, St. Paul, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.
Filed Aug. 11, 1995, Ser. No. 513,685
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **22 Claims**



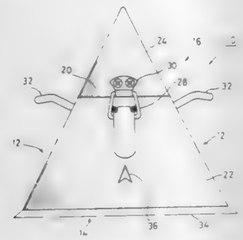
1. A method of treating ventricular fibrillation, comprising the steps of:
a) monitoring a signal representative of ventricular electrical activity during a period of ventricular fibrillation;
b) detecting in the monitored signal, the occurrence of coarse VF complexes;
c) analyzing coarse VF to determine upslope; and
d) delivering a DF shock during the upslope portion of a complex.

5,632,767
LOOP DIFFUSERS FOR DIFFUSION OF OPTICAL RADIATION
Edward L. Sinofsky, Dennis, Mass., assignor to Rare Earth Medical, Inc., West Yarmouth, Mass.
Continuation-in-part of Ser. No. 303,605, Sep. 9, 1994. This application Jun. 6, 1995, Ser. No. 467,414
Int. Cl.[6] A61B *17/36*
U.S. Cl. 607—89 **14 Claims**



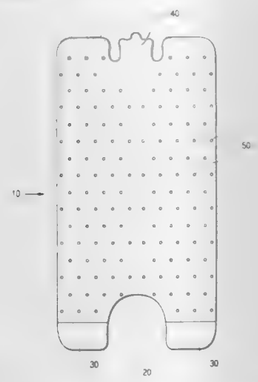
1. A fiber optic transmission and diffusion apparatus comprising:
a plurality of optical fibers having proximal and distal ends, the proximal ends adapted for coupling to a source of phototherapeutic radiation;
wherein each optical fiber has connected to its distal end a tip assembly for directing radiation outward, each tip assembly being arranged in a loop configuration to form a loop diffuser; and
a housing surrounding the optical fibers and each of said loop diffusers, wherein each of said loop diffusers are expandable out of and retractable back into said housing.

5,632,768
MOXA TREATMENT DEVICE
Osamu Shimada, 996, Shima-machi, Kumamoto City, Kumamoto Pref., Japan
Filed Feb. 6, 1995, Ser. No. 384,415
Claims priority, application Japan, Mar. 30, 1994, 6-085744
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—96 **8 Claims**



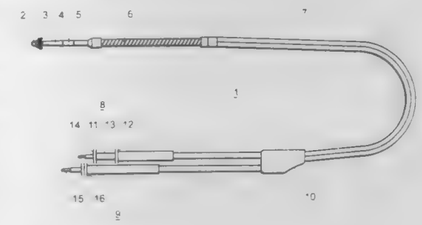
1. A moxa treatment device comprising a hollow structure having the shape of a hollow cone or pyramid, said structure having an open bottom, and a heat generating block installed inside said hollow structure, said heat generating block comprising a heat generator and a porous supporting block for said heat generator, said hollow structure comprising a frustum of a cone or pyramid having a top opening and a cover which is mounted on said top opening in such a way that said cover can be freely opened and closed as desired, and said supporting block being provided inside the frustum of said hollow structure.

5,632,769
WARMING BLANKET FOR PEDIATRIC USE
Thomas F. Kappel, St. Louis; Dennis S. Chivetta; Scott D. Dickerhoff, both of Ballwin, and Philip M. Metzler, St. Charles, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.
Continuation of Ser. No. 187,561, Jan. 26, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 675,373
Int. Cl.[6] A61B *5/00*
U.S. Cl. 607—104 **6 Claims**



1. A blanket for use with a forced air convection system, wherein said blanket consists of:
a first sheet of material;
a second sheet of material having perforations formed therethrough; wherein said first sheet and said second sheet are sealed together around their periphery and also sealed together at multiple welds distributed across interior surface regions of said first sheet and said second sheet to form an inflatable air chamber therebetween;
wherein said perforations are distributed in offset rows across the entire width and along about one half the length of said blanket such that a perforation in any given row occurs midway between adjacent perforations in an adjacent row of perforations.

5,632,770
IMPLANTABLE DEFIBRILLATION SYSTEM WITH LEAD HAVING IMPROVED POROUS SURFACE COATING
Max Schaldach, Erlangen, Germany, assignor to Biotronik Mess-und Therapiegeraete GmbH & Co., Berlin, Germany
PCT No. PCT/DE93/00889, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/06507, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 16, 1993, Ser. No. 403,703
Claims priority, application Germany, Sep. 17, 1992, 42 31 600.6
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—122 **14 Claims**

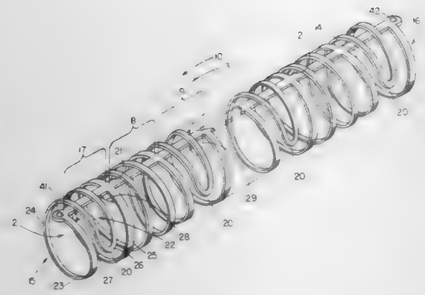


1. An implantable defibrillation system with an intracardial or subcutaneous defibrillation electrode, the improvement wherein the defibrillation electrode includes portions with a porous surface coating comprising one of an inert element, an inert chemical compound, and an inert alloy, the porous surface coating having a fractal three dimensional geometry and an active surface area that is greater by a factor of at least 1000 than a corresponding surface area resulting from the basic geometrical shape of the electrode.

5,632,771
FLEXIBLE STENT HAVING A PATTERN FORMED FROM A SHEET OF MATERIAL
Scott E. Boatman, Bloomington, and Kimberly D. Brummett, Springville, both of Ind., assignors to Cook Incorporated, Bloomington, Ind.
Continuation of Ser. No. 97,392, Jul. 23, 1993, abandoned. This application Jan. 25, 1995, Ser. No. 378,073
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **30 Claims**

14. A flexible, tubular-shaped stent comprising:
a seamless sheet of biocompatible material having a tubular shape and a pattern in a surface of said seamless sheet, said pattern including in said surface of said seamless sheet a reinforcing member extending longitudinally therealong and a plurality of interposed closed cells extending laterally from said reinforcing member, said pattern having an overlapping

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state in which selected of said interposed closed cells only overlap said reinforcing member.

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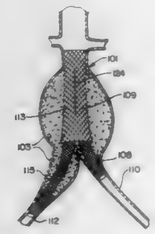
EXPANDABLE SUPPORTIVE BRANCHED ENDOLUMINAL GRAFTS

Rysler Alcime, Miami; Yasushi Kato, P. Pines, and Leonard Pinchuk, Miami, all of Fla., assignors to Corvita Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 140,245, Oct. 21, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 558,028

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **36 Claims**



1. A multiple-component branching expandable supportive endoluminal graft comprising:

a plurality of expandable supportive endoluminal components which are deployed individually at a selected location within a body vessel, each said supportive endoluminal graft component being radially compressible for endoluminal insertion and radially expandable for deployment at a desired location within a body vessel;

one of said expandable supportive endoluminal components is a trunk component, said trunk component being generally tubular and having a first portion with a given diameter and a second portion including a longitudinally disposed indent generally defining at least two leg portions, each with a diameter less than said given diameter, and each said leg portion has a leg opening;

at least one other of said expandable supportive endoluminal components is a generally cylindrical supportive leg component; and

said generally cylindrical supportive leg component and one of said leg portions of the trunk component, when said leg component and trunk component are deployed within the body vessel, are telescopically positioned with respect to each other.

5,632,773

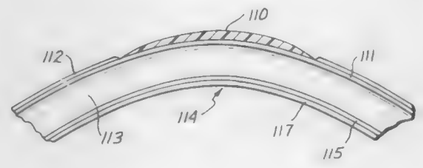
BIOSTABLE CORNEAL IMPLANTS

Richard S. Graham, Irvine, and Crystal M. Cunanan, Mission Viejo, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 237,088, May 3, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 616,786

Int. Cl.[6] A61F *2/14*

U.S. Cl. 623—5 **13 Claims**



8. A corneal implant comprising a lens body which is optically clear and is structured to be surgically attached in or on the cornea of a mammalian eye, said lens body including a hydrogel composition comprising water, a collagen component and a polymeric material covalently bonded to said collagen component, said polymeric material having increased hydrophobicity relative to said collagen component and being derived from a monomeric component having a fractional polarity equal to or less than the fractional polarity of methyl methacrylate, said hydrogel composition having enhanced biostability relative to an identical hydrogel composition without said polymeric material.

5,632,774

IN-THE-SHELL HYDRATION TO MAKE IMPLANT FILLER MATERIAL AND PROSTHESIS EMPLOYING SAME

Hamik Babian, 16820 Tribune St., Granada Hills, Calif. 91344

Continuation-in-part of Ser. No. 373,110, Jan. 17, 1995, abandoned. This application May 14, 1996, Ser. No. 645,749

Int. Cl.[6] A61F *2/12*

U.S. Cl. 623—8 **12 Claims**

1. A non-bleeding surgically implantable prosthesis to reconstruct and augment natural breast tissue in human being comprising an outer flexible envelope forming a sealed shell container, where the volume within the container is occupied with a filler material made of discrete biocompatible mechanically stable water swollen soft enlarged crosslinked 3-dimensional hydrated polymeric hydrogel units having a network of pores within the units and with no free water in-between the hydrated units.

5,632,775

EXTENDED DWELL VOICE PROSTHESIS

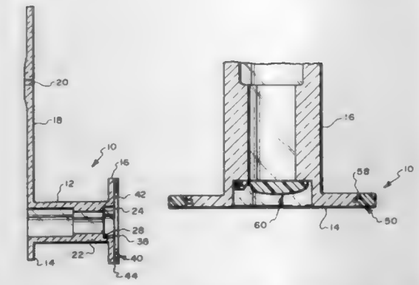
David R. Suding, and Edmund V. Seder, both of Santa Barbara, Calif., assignors to Helix Medical, Inc., Carpinteria, Calif.

Division of Ser. No. 282,277, Jul. 27, 1994, Pat. No. 5,480,432. This application Oct. 16, 1995, Ser. No. 543,282

Int. Cl.[6] A61F *2/20*

U.S. Cl. 623—9 **9 Claims**

1. A method of forming a voice prosthesis that can be viewed when positioned in a tracheoesophageal wall of a patient, said voice prosthesis comprising a hollow, tubular annular body of flexible, medical grade resin, said prosthesis having a front tracheal flange, a rear esophageal flange which is substantially transparent to X-ray radiation and a flapper valve, comprising the steps of:



forming an element containing sufficient pigment to be opaque when radiated by X-ray radiation, said element having a first distinctive image when the rear flange is fully seated on said wall and having a second distinctive image when the rear flange is not fully seated on said wall when said element is imaged by X-ray radiation; and

adhering said element to said rear flange.

5,632,776

IMPLANTATION MATERIALS

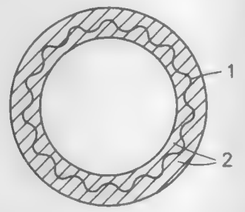
Hajimu Kurumatani; Hiroshi Kataoka, and Kyoko Yamada, all of Kanagawa, Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 867,678, Sep. 22, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,171

Claims priority, application Japan, Nov. 22, 1990, 2-318768

Int. Cl.[6] A61F *2/04;2/06*

U.S. Cl. 623—11 **15 Claims**



1. An anti-thrombogenic implantation material consisting essentially of a layer of a porous substrate made of individual fibers having voids filled with a biodegradable polymer and a layer of an anti-thrombogenic agent formed onto a surface portion formed by said substrate and said biodegradable polymer, wherein said porous substrate has a coefficient of water permeability of 500 to 5,000 ml/cm^2/min. 120 mmHg and said biodegradable polymer has a degradation period that is shorter than that of said anti-thrombogenic agent of said layer.

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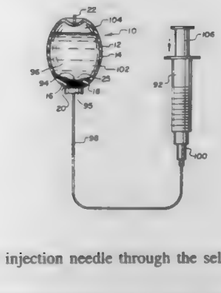
METHOD OF INFLATING A PROSTHESIS

Timothy B. Petrick, 9006 Trinity Gardens North, Brooklyn Park, Minn. 55443

Division of Ser. No. 207,023, Mar. 4, 1994, abandoned. This application May 26, 1995, Ser. No. 452,405

Int. Cl.[6] A61F *2/04*

U.S. Cl. 623—11 **18 Claims**



1. A method for filling a prosthesis having an elastomeric shell and a self-sealing injection site with a fluid using an injection needle having at least one opening, said elastomeric shell defining an interior, said method comprising the steps of:

inserting the injection needle through the self-sealing injection site;

injecting a sufficient quantity of the fluid through the injection needle and the self-sealing injection site to provide excess fluid within the interior of the elastomeric shell so as to expand the elastomeric shell and compress air disposed within the interior;

orienting the prosthesis such that the self-sealing injection site is disposed so as to allow air within the interior of the elastomeric shell to collect in the proximity of the self-sealing injection site; and

withdrawing the air from within the interior of the elastomeric shell through injection needle having the opening aligned proximate to the injection site.

5,632,778

TREATED TISSUE FOR IMPLANTATION AND METHODS OF PREPARATION

Steven Goldstein, Atlanta, Ga., assignor to Cryolife, Inc., Marietta, Ga.

Division of Ser. No. 213,754, Mar. 14, 1994. This application Jun. 5, 1995, Ser. No. 463,643

Int. Cl.[6] A61F *2/02*

U.S. Cl. 623—11 **15 Claims**



1. A process for generating a substantially non-immunogenic tissue matrix suitable for subsequent processing into an implant tissue comprising:

A. eliminating native cells by treating a tissue with components selected from the group consisting enzymes and nucleases effective to inhibit subsequent native cell growth in the treated tissue and effective to limit generation of new immunological sites in the tissue thus producing a tissue matrix;

B. treating the tissue matrix with cellular adhesion factor to promote subsequent attachment of cultured allogeneic or autologous cells to the surfaces of the tissue matrix; and

C. repopulating the tissue matrix throughout the matrix with cultured allogeneic or autologous cells.

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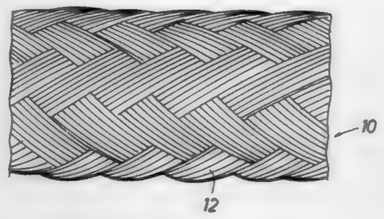
ZIRCONIUM OXIDE AND ZIRCONIUM NITRIDE COATED VASCULAR GRAFTS

James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew, Inc., Memphis, Tenn.

Division of Ser. No. 112,587, Aug. 26, 1993, Pat. No. 5,496,359, which is a continuation-in-part of Ser. No. 919,932, Jul. 27, 1992, Pat. No. 5,282,850, which is a continuation-in-part of Ser. No. 830,720, Feb. 4, 1992, Pat. No. 5,258,022, which is a continuation-in-part of Ser. No. 557,173, Jul. 23, 1990, Pat. No. 5,152,794, which is a continuation-in-part of Ser. No. 385,285, Jul. 25, 1989, Pat. No. 5,037,438. This application Jun. 6, 1995, Ser. No. 467,457

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—12 10 Claims



1. A woven vascular graft for replacing an artery, vein or blood vessel in a living body, said woven vascular graft comprising:

(a) a cylindrical substrate of a woven low elastic modulus metallic composition with a bore therethrough, said substrate having surfaces and sized to replace an artery, vein or blood vessel in a living body; and

(b) a corrosion-resistant, biocompatible, hemocompatible, durable, stable coating selected from the group consisting of essentially zirconium oxides, ranging in color from blue to black, and essentially zirconium nitrides, ranging in color from yellow to orange; said coating disposed on said surfaces of the substrate.

5,632,780

DRY CLEANING AND SPOT REMOVAL PROCES

Michael P. Siklosi, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 413,324, Mar. 30, 1995, abandoned. This application Oct. 17, 1995, Ser. No. 544,228

Int. Cl.[6] D06L *1/04;* C11D *3/37;3/43;7/50*

U.S. Cl. 8—137 7 Claims

1. A method for cleaning soiled fabrics comprising contacting said fabrics with a cleaning composition comprising:

(a) at least about 0.1%, by weight, of 1,2-octanediol;

(b) at least about 4%, by weight, of an organic cleaning solvent;

(c) at least about 60%, by weight, of water;

(d) a polyacrylic acid-based emulsifier; and

(e) a detersive surfactant which is a member selected from the group consisting of ethoxylated alcohols, magnesium alkyl ethoxy sulfates, amine oxides and mixtures thereof.

5,632,781

CATIONIC POLYCONDENSATE DYE FIXING AGENT AND PROCESS OF PREPARING THE SAME

Shinichi Morinaga, Simpsonville, S.C., and Kouji Midori, Fukui, Japan, assignors to NICCA U.S.A., Inc., Fountain Inn, S.C., and NICCA Chemical Co., Ltd, Japan

Filed Sep. 30, 1994, Ser. No. 315,715

Int. Cl.[6] D06P *5/08;1/39;3/60*

U.S. Cl. 8—442 29 Claims

1. A process for the preparation of a cationic polycondensate dye fixing agent for the treatment of dyed materials, said process comprising reacting (a) a polyfunctional amine having at least one reactive —NH or —NH_2 group with (b) ammonium halide, and then further reacting with (c) a polycondensate-forming cyano compound at a temperature of at least about 260° C.

5,632,782

EXHAUST DYEING PROCESS FOR SULPHUR DYES

Mark S. Carlough, Concord, N.C., assignor to Clariant Finance (BVI) Ltd., Virgin Islands (Br.)

Continuation-in-part of Ser. No. 299,763, Sep. 1, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,626

Int. Cl.[6] D06P *1/30;* C09B *49/00*

U.S. Cl. 8—474 39 Claims

1. A process for exhaust dyeing cellulosic fibrous material with a sulfur dye, which process comprises contacting the fibrous material with an aqueous dyebath that contains at least one sulfur dye (S) in at least partially soluble form (S_A) and at least one non-sulfide reducing agent (R), in an atmosphere of reduced oxygen level comprising an inert gas in a closed vessel and then oxidizing by treatment with an oxidizing salt in an oxidizing bath, said atmosphere of reduced oxygen level being maintained during exhaustion of the dyebath.

5,632,783

MIXTURES OF REACTIVE DYES FOR NAVY SHADES

Reinhold Krallmann, Weisenheim, and Manfred Sülflow, Bad Dürkheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

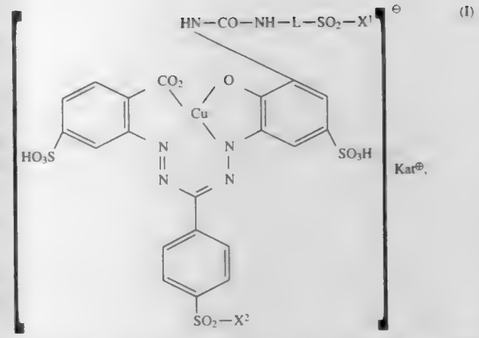
Filed Feb. 28, 1996, Ser. No. 608,175

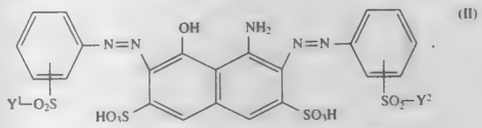
Claims priority, application Germany, Mar. 3, 1995, 195 07 461.0

Int. Cl.[6] D06P *1/10;1/384;3/10;3/66*

U.S. Cl. 8—549 7 Claims

1. Mixtures of reactive dyes, comprising the dyes of the formulae I and II





where $Kat^{\oplus}$ is the equivalent of a cation, L is C_2–C_4-alkylene, and X^1, X^2, Y^1 and Y^2 are each independently of the others vinyl or a radical of the formula C_2H_4-Q, where Q is a group detachable under alkaline reaction conditions, in a weight ratio of from 20:80 to 90:10.

5,632,784

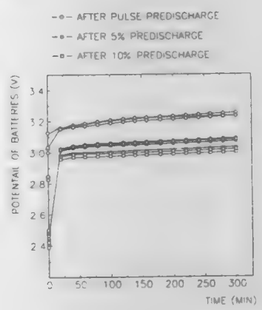
METHOD OF MANUFACTURING A LITHIUM BATTERY

Jae-Gu Yoon, Seoul, Rep. of Korea, assignor to Daewoo Electronics, Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 7, 1996, Ser. No. 691,039

Int. Cl.[6] H01M *10/38*

U.S. Cl. 29—623.1 11 Claims



1. A method of manufacturing a battery comprising the steps of:

assembling a battery which includes a cathode using lithium metal as an active material, an anode using manganese dioxide as a main component of an active material, and an electrolyte including an inorganic electrolyte dissolved in a nonaqueous solvent containing at least propylene carbonate; and

predischarging said battery by using a pulse current.

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FUEL ECONOMY ADDITIVES

Anne M. Culotta, Houston, Tex., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Dec. 1, 1995, Ser. No. 566,457
Int. Cl.° C10L 1/18
U.S. Cl. 44—389 13 Claims

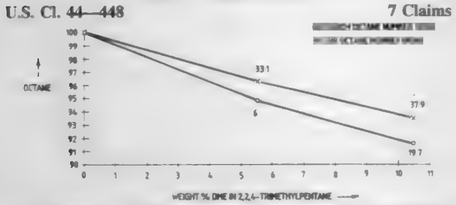
1. A method for reducing fuel consumption in an internal combustion engine which comprises operating said engine on a fuel composition comprising a major amount of fuel to which has been added a minor amount of an additive comprising an ester of a polyhydric polyether, wherein said ester contains ether oxygens and free and esterified hydroxyl groups in the polyhydric polyether backbone portion of said ester.

5,632,786

PROCESS AND FUEL FOR SPARK IGNITION ENGINES

Arunabha Basu, Naperville, Ill.; Theo H. Fleisch, Houston, Tex.; Christopher I. McCarthy, Naperville, and Carl A. Udovich, Joilet, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 14, 1995, Ser. No. 528,119
Int. Cl.° C10L 3/00; 1/18
U.S. Cl. 44—448 7 Claims



1. A method of operating a spark ignition internal combustion engine having a cylinder, which comprises:

withdrawing from a pressurized fuel tank a liquid phase mixture consisting essentially of and propane;

vaporizing the mixture downstream of the fuel tank near the engine, based on the direction of mixture flow, to produce a gaseous fuel within the range of about 10 to about 30 percent by weight dimethyl ether and within the range of about 90 to about 70 percent by weight of propane, based on the total weight;

passing air and the gaseous fuel into a cylinder of a spark ignition internal combustion engine;

igniting the gaseous fuel by a spark; and

operating the engine over a distance of about ten miles with the dimethyl ether-propane mixture as fuel.

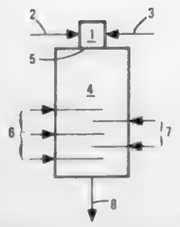
5,632,787

PROCESS AND DEVICE FOR MANUFACTURING SYNTHESIS GAS AND APPLICATION

Pierre Boucot, Ternay; Paul Gateau, Saint Jean de Boiseau; Michel Maute, Les Clayes Sous Bois; Philippe Courty, Houilles, and Jérome Weill, Lyons, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Continuation of Ser. No. 915,232, Jul. 20, 1992, abandoned.
This application Feb. 2, 1995, Ser. No. 382,587
Claims priority, application France, Jul. 18, 1991, 91/09.214
Int. Cl.° C01B 3/24
U.S. Cl. 48—61 6 Claims

1. A process for producing synthesis gas in a single reactor comprising the steps of: providing a single reactor having a single housing, a non-catalytic combustion chamber located within said single housing and equipped with at least one injecting means for injecting fuel and at least one injecting means for injecting an oxidizer to achieve partial combustion of the fuel within said chamber, and at least one catalytic bed, separate from the combustion chamber, located within said housing into which gases from



the combustion chamber discharge, said at least one catalytic bed being equipped with at least one injector means for injecting additional oxidizer into said bed, the combustion chamber having a volume which satisfies the following inequality:

$$V < \frac{0.4D}{P}$$

wherein V is the inner volume of said chamber, expressed in m^3, D is the overall weight flow rate of materials entering the chamber, expressed in kg/s, and P is the pressure, expressed in megapascals, prevailing inside the chamber;

effecting partial combustion of fuel in the non-catalytic combustion chamber under a lack of oxidizer to reduce the formation of soot, the fuel being introduced separately from the oxidizer into said chamber;

introducing steam into the combustion chamber through the means for injecting fuel and/or through the means for introducing oxidizer into the combustion chamber, the supply of steam defined as the number of moles of water to the number of moles of carbon in the fuel, being less than 1.5, said materials entering said chamber consisting of the fuel, the oxidizer and the steam injected into said chamber; and introducing additional oxidizer at a level of the catalytic bed located downstream from a flow of gases discharged from the combustion chamber into said catalytic bed;

the oxidizer supply, defined as being the number of moles of oxygen contained in the oxidizer injected into the reactor to the number of moles of carbon contained in the injected fuel ranging between 0.3 to 0.65 and the same supply relative to the introduction of oxidizer in said combustion chamber ranging between 0.15 and 0.5.

5,632,788

HIGH POROSITY CALCIUM SILICATE MASS FOR STORING ACETYLENE GAS

Michael S. Rabren, Citronelle, Ala., assignor to Worthington Acetylene Cylinder, Inc., Citronelle, Ala.

Filed Jan. 31, 1995, Ser. No. 381,356
Int. Cl.° F17B 1/00; 1/18; B01J 21/16
U.S. Cl. 48—174 19 Claims

1. A process for producing a gas storage cylinder, said process comprising the steps of:

mixing about 8% to 15% by wet weight quicklime with ambient temperature water to form a first mixture;

mixing a slurry containing the following ingredients: ambient temperature water, about 0.002% to 0.010% by wet weight synthetic silica, about 1.5% to 5% by wet weight cellulose fibers and about 8% to 14% by wet weight ground quartz silica to form a second mixture;

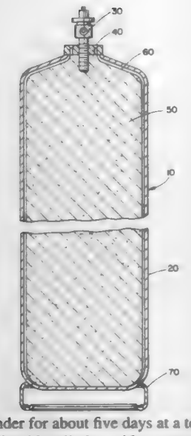
adding the first mixture to the second mixture to form a third mixture;

homogenizing the third mixture by stirring;

dispersing a suspending agent in said third mixture to form a fourth mixture, said suspending agent comprising about 0.002% to 0.010% by wet weight ethyl hydroxyethyl cellulose;

transferring said fourth mixture into a cylinder to be filled;

curing said fourth mixture under saturation steam pressure of about 145 psig for about 25 hours; and,



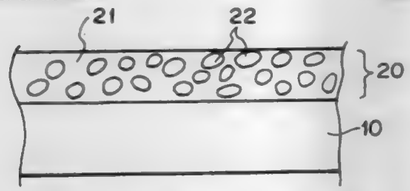
drying said cylinder for about five days at a temperature of about 325° F. to fill said cylinder with a porous calcium silicate mass consisting essentially of cellulose at about 1.5% to 5% total wet weight as a fibrous reenforcing agent; water; ground quartz silica at about 8% to 14% total wet weight; quicklime at about 8% to 15% total wet weight; synthetic silica at about 0.002% to 0.01% total wet weight: and, ethyl hydroxyethyl cellulose at about 0.002% to 0.010% total wet weight as an organic suspending agent, the water being present in an amount of about 2.5 times greater than the amount of solids.

5,632,789

ABRASIVE TAPE

Katsumi Ryoke; Kazuko Hanai, and Masaaki Fujiyama, all of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 19, 1995, Ser. No. 575,017
Claims priority, application Japan, Feb. 16, 1995, 7-028227
Int. Cl.° B24D 3/34
U.S. Cl. 51—295 11 Claims



1. An abrasive tape comprising a substrate and an abrasive layer, said layer overlaid on the substrate and comprising fine abrasive grains and a binder, wherein the abrasive layer contains an alkyl sulfosuccinic acid salt ester.

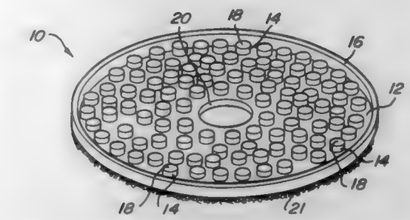
5,632,790

INJECTION MOLDED ABRASIVE ARTICLE AND PROCESS

Ronald C. Wiand, 1494 Heatherwood Dr., Troy, Mich. 48098

Continuation-in-part of Ser. No. 821,953, Jan. 16, 1992, Pat. No. 5,449,388, which is a continuation-in-part of Ser. No. 732,503, Jul. 18, 1991, Pat. No. 5,209,760, which is a continuation-in-part of Ser. No. 526,055, May 21, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 481,797
Int. Cl.° B24D 11/00
U.S. Cl. 51—298 24 Claims

1. An abrasive article comprising:



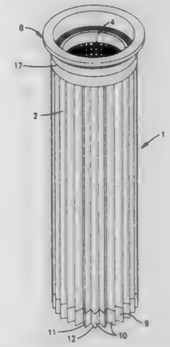
a molded abrading body produced from molded polymer material with a primary abrasive grit material and a secondary filler material interspersed homogeneously therethrough, said abrading body comprising from about 1 to about 20% by volume primary abrasive grit, from about 5 to about 80% by volume secondary fillers and from about 5 to about 90% by volume of a thermoformable polymer selected from the group consisting of thermoplastic polymers having a softening point temperature greater than about 100° C. and less than about 400° C. and thermoset polymers.

5,632,791

UNITARY FILTER CARTRIDGE

Reinout G. Oussoren, Balsthal, Switzerland, and Jack T. Clements, Lee's Summit, Mo., assignors to BHA Group, Inc., Kansas City, Mo.

Filed Dec. 6, 1994, Ser. No. 350,885
Int. Cl.° B01D 50/00
U.S. Cl. 55—486 7 Claims



1. An unitary filter cartridge to be removably received within an opening through a tube sheet separating the clean and dirty plenums of filtration apparatus, said filter cartridge comprising:

a filter sheet formed as a tubular member having an upper rim oriented toward said tube sheet and a bottom rim oriented away from said tube sheet;

a tubular screen positioned interiorly of said filter sheet for structural support thereof, said tubular screen having an upper rim oriented toward said tube sheet and a bottom rim oriented away from said tube sheet;

a bottom end cap permanently secured to said bottom rims of said filter sheet and said tubular screen; and

an unitary tubular sleeve including a lower rim portion, a side wall portion, a peripheral groove portion and an upper ledge portion all integrally formed of flexible material, said lower rim portion of said sleeve permanently securing said upper rims of said filter sheet and said tubular screen beneath said tube sheet, said side wall portion of said sleeve extends from said lower rim portion to said peripheral groove portion, said peripheral groove portion of said sleeve corresponding to said tube sheet opening to effect sealing engagement therewith, and said upper ledge portion of said sleeve overlying said tube

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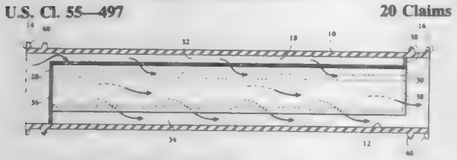
sheet adjacent said opening to suspendingly support the filter cartridge from the tube sheet.

5,632,792

AIR INDUCTION FILTER HOSE ASSEMBLY

Clifford D. Haggard, Fayetteville, N.C., assignor to Purolator Products Company, Tulsa, Okla.

Filed Aug. 16, 1995, Ser. No. 515,728
Int. Cl.[6] B01D *46/10*
U.S. Cl. 55—497 **20 Claims**



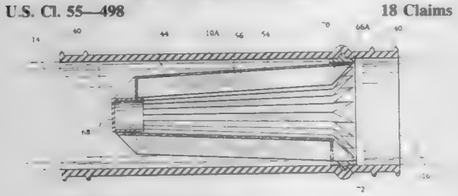
1. A filter assembly comprising:
an impervious elongated tubular housing having an internal substantially circular tubular surface, an inlet end and an outlet end;
an elongated filter member having opposed first and second surfaces, opposed longitudinal edges, and first and second ends, the filter member being of length not greater than said housing, the filter member being positioned within said housing with said opposed longitudinal edges in contact with and sealably secured to said housing internal tubular surface;
a first barrier interposed between said filter member first surface and said housing internal tubular surface adjacent said filter member first end; and
a second separate barrier interposed between said filter member second surface and said housing internal tubular surface adjacent said filter member second end.

5,632,793

FILTER HOSE ASSEMBLY EMPLOYING A CONICAL FILTER ELEMENT

Clifford D. Haggard, Fayetteville, N.C., assignor to Purolator Products Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 515,728, Aug. 16, 1995. This application Nov. 6, 1995, Ser. No. 554,068
Int. Cl.[6] B01D *27/06;46/02*
U.S. Cl. 55—498 **18 Claims**



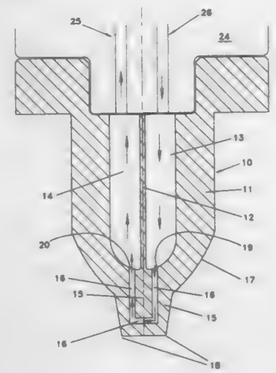
1. A filter assembly comprising:
an elongated tubular housing having an internal tubular surface, an inlet end and an outlet end;
a filter element formed of a sheet of filter material having a first surface and an opposed second surface, opposed first and second ends and opposed first and second side edges, the filter material being longitudinally folded to define a series of longitudinal pleats extending between said first and second ends, said pleats defining pairs of opposed walls providing alternate first channels defined by said first surface and second channels defined by said second surface, each of said first channels at said first end being laterally folded in the direction towards said first surface and each of said second channels at said second end being laterally folded in an opposite direction towards said second surface, said first lateral folds serving to close off said first longitudinal channels in said first surface at said first end and said second lateral folds serving to close off said second longitudinal channels in said second surface at said second end, the filter element being formed into a tubular configuration with said first and second side edges secured to each other; and
means of securing said filter element within said tubular housing with said first surface in closed communication with said housing inlet end and said second surface in closed communication with said housing outlet end.

5,632,794

METHOD AND APPARATUS FOR COOLING A GLASS PRESSING PLUNGER

Zung-Sing Chang, Horseheads; Albert M. Gossie; Katherine W. Hughes, both of Painted Post; Michael W. Matt, Elmira, and Jason S. Watts, Horseheads, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed May 31, 1995, Ser. No. 455,362
Int. Cl.[6] C03B *9/38;11/12*
U.S. Cl. 65—83 **8 Claims**



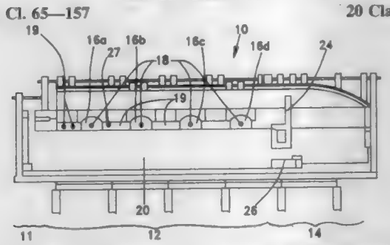
1. Apparatus for forming glass articles from molten glass comprising:
a forming mold;
a neck ring mold;
a plunger head having a coolant inlet passage and a coolant outlet passage;
a plunger having a upper body portion and an integral lower nose portion, each having a glass contacting surface, the upper body portion having a pair of enclosed cooling cavities including an inlet cooling cavity and an outlet cooling cavity separated by a dividing wall and for supplying and returning cooling fluid and connected to the inlet and outlet passages, respectively, the lower nose portion having a cooling passage having an inlet end and outlet end connected to the inlet and outlet cooling cavities, respectively, wherein the shape, location and size of the cooling passage and the inlet and outlet cooling cavities are selected to provide glass contacting surfaces which exhibit a substantially uniform thermal profile.

5,632,795

REDUCTION OF NITROGEN CONTAINING GLASS BATCH MATERIALS USING EXCESS OXYGEN

John T. Brown, Corning, and Arlene K. McMahon, Elmira, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jan. 17, 1995, Ser. No. 372,986
Int. Cl.[6] C03B *5/16*
U.S. Cl. 65—157 **20 Claims**



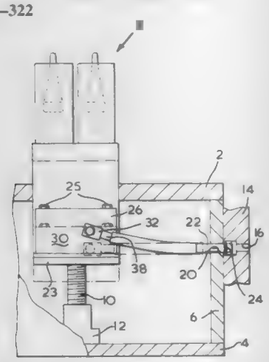
1. A method for reducing the amount of nitrate containing compounds in a batch for a glass making process normally employing such nitrate containing compounds in a batch, comprising:
employing, in a furnace used to melt glass, an amount of a nitrate containing compound in said glass batch which is less than the amount of nitrate containing compound normally utilized in said batch; and
adding excess oxygen into said furnace in an amount which is sufficient to replace at least some of the oxidizing effect which would otherwise be lost by said employing less nitrate step.

5,632,796

PIPING ARRANGEMENT FOR PERMITTING VERTICAL ADJUSTMENT OF A GLASSWARE FORMING MACHINE

Zdenko Kuz, Zug, and Willi Meyer, Effretikon, both of Switzerland, assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Feb. 22, 1995, Ser. No. 392,434
Claims priority, application United Kingdom, Feb. 24, 1994, 9403560
Int. Cl.[6] C03B *11/06*
U.S. Cl. 65—322 **6 Claims**



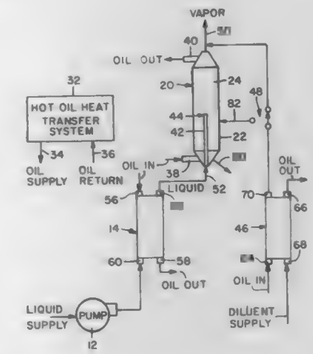
1. A piping arrangement in a glassware forming machine which comprises:
a frame comprising a top plate, a base member and
a lateral frame member;
an operating mechanism mounted in the frame for vertical adjustment relative to the top plate;
an air supply passage formed in the lateral frame member;
a distributor block in fluid communication with the mechanism and comprising operating air passages for the supply of operating air to the mechanism, and a horizontal air passage opening from an outer face of the block to one of said operating air passages;
a right angled connector mounted in said horizontal air passage and freely rotatable about an axis of said horizontal air passage;
flexible pipe means for joining the connector to said air supply passage in the lateral frame member; and
means for permitting a change of length of the flexible pipe means;
so that, on vertical adjustment of the mechanism, the adjustment may be accommodated by rotation of the connector about said axis of said horizontal air passage, flexing of the flexible pipe means and a change of length of the flexible pipe means.

5,632,797

METHOD OF PROVIDING VAPORIZED HALIDE-FREE, SILICON-CONTAINING COMPOUNDS

Richard R. Williams, Wilmington, N.C., assignor to Corning Incorporated, Corning, N.Y.

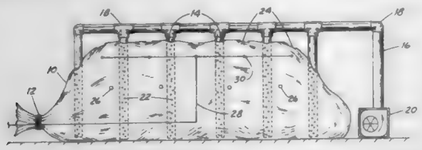
Filed Dec. 30, 1994, Ser. No. 368,318
Int. Cl.[6] C03B *37/014*
U.S. Cl. 65—413 **14 Claims**



1. A method of providing reactant vapors to make a silicon dioxide containing preform by decomposing said reactant vapors to form particles, comprising:
(a) providing a reactant in liquid form, said reactant being polymerizable to form a gel;
(b) providing a vertically-oriented expansion chamber comprising a wall surrounding an internal volume, said internal volume comprising a formed gel collecting zone located at the bottom of the chamber for collecting said formed gel and a second zone located above the formed gel collecting zone;
(c) heating the chamber's wall;
(d) introducing the liquid reactant provided in step (a) into the second zone and projecting the reactant toward the chamber's wall;
(e) vaporizing said liquid reactant;
(f) forming a gel as a byproduct of said vaporization;
(g) collecting said formed gel in said formed gel collecting zone;
(h) removing the vaporized reactant from the chamber's internal volume;
(i) delivering the vaporized reactant to a vapor utilization site;
(j) making said silicon dioxide containing preform by decomposing said delivered vaporized reactant; and
(k) removing said collected formed gel from said formed gel collecting zone.

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5,632,798
METHOD FOR ACCELERATED AEROBIC DECOMPOSITION OF VEGETATIVE ORGANIC WASTE MATERIAL
Harvey D. Funk, Omaha, Nebr., and Donald W. Meyer, Ixonia, Wis., assignors to Compost Technologies, Inc., Omaha, Nebr.
Continuation-in-part of Ser. No. 164,591, Dec. 9, 1993, Pat. No. 5,417,736. This application May 23, 1995, Ser. No. 450,939
Int. Cl.[6] C05F *5/00;9/00;9/04;17/00*
U.S. Cl. 71—9 **20 Claims**

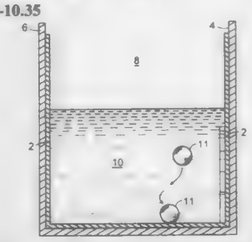


1. A method for aerobically decomposing organic material, comprising:
providing a substantially moisture-retentive container having a plurality of openings, said container connected by at least one of said openings to an air transferor;
packing the container with organic material having a releasable moisture content at pressure of about 0.1–10.0 pounds per square inch, whereby the organic material has a density of about 10–75 pounds per cubic foot such that said material is substantially heat retentive and permits movement of moisture therethrough; and
aerating the material intermittently at a rate of about 200–1500 cubic feet per minute to control and maintain sufficient aerobic decomposition temperatures.

5,632,799
DRIED PARTICULATE, HYDROPHILIC GEL AS MICRONUTRIENT DELIVERY SYSTEM
Allan D. Behel, Jr., Florence, Ala., and John J. Mortvedt, Fort Collins, Colo., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.
Filed Sep. 23, 1994, Ser. No. 311,228
Int. Cl.[6] C05D *9/00;* **C05G** *3/04*
U.S. Cl. 71—63 **11 Claims**

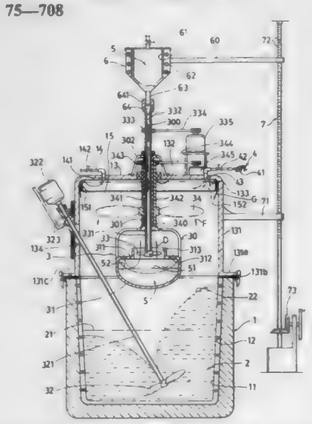
1. A process for providing substantial isolation of water-soluble iron source micronutrient juxtaposed plant growth media to thereby inhibit degradation of said micronutrient; said micronutrient comprising iron sulfate and said process comprising the steps of:
(a) mixing predetermined amounts of aqueous media, iron sulfate, and at least one hydroxy acid selected from the group consisting of citric acid, lactic acid, malic acid, tartaric acid, and mixtures thereof to effect a solution containing by weight between about 1 percent to about 15 percent iron sulfate and between about 5 percent to about 20 percent of said at least one hydroxy acid;
(b) subsequently mixing, with at least a portion of the solution effected in step (a), supra, a predetermined amount of hydrophilic polymer sufficient to effect a resulting solution containing by weight from about 1 percent to about 15 percent of said polymer;
(c) providing sufficient agitation of the solution resulting in step (b), supra, to effect a phase change from a liquid to a gel and thereafter removing at least a portion of the resulting iron sulfate-hydroxy acid containing hydrogel to means for dehydration;
(d) maintaining the gel material introduced into the hydrating means in step (c), supra, for a time and at a temperature to remove therefrom sufficient moisture to effect a resulting friable, dried hydrogel;
(e) removing at least a portion of the resulting friable, dried hydrogel effected in step (d), supra, to comminuting and sizing means wherefrom is removed product material; and
(f) subsequently applying at least a portion of said product material recovered in step (e), supra, to a situs comprising plant growth media whereby is provided effective isolation of said water-soluble iron source micronutrient from the deleterious effects of reaction with said plant growth media.

5,632,800
ACCELERATED DECARBURIZATION OF FE-C METAL ALLOYS
Uday B. Pal, Needham, and Donald R. Sadoway, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Oct. 30, 1995, Ser. No. 550,178
Int. Cl.[6] C21B *11/10*
U.S. Cl. 75—10.35 **18 Claims**



1. In a process for improving the rate of metal production and FeO utilization which contains Fe-C metal alloy droplets submerged in an FeO-containing slag in which a charge build-up occurs in the slag at slag/Fe-C metal alloy interfaces and the charge build-up is discharged by means of an electron conductor, the improvement comprising connecting the electron conductor between the Fe-C metal alloy droplets and a gas at a gas-slag interface, said gas having an oxygen partial pressure of at least about 0.01 atmosphere.

5,632,801
PROCESS FOR MAKING METAL-MATRIX COMPOSITES MIXED WITH REINFORCING MATERIALS BY FORCED DRAFTING
Ching-Bin Lin, Taipei, Taiwan, assignor to Loyalty Founder Enterprise Co., Ltd., Taoyuan, Taiwan
Filed Oct. 11, 1994, Ser. No. 322,455
Int. Cl.[6] C21D *10/00*
U.S. Cl. 75—708 **11 Claims**



1. A process for making metal-matrix composite comprising the steps of:

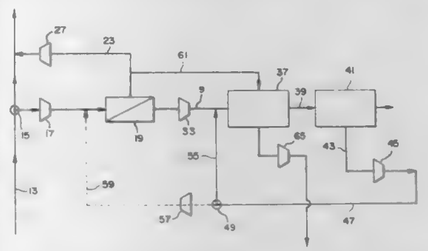
a. providing a closed heating furnace (**1**); remelting a matrix selected from the group consisting of a metal and a metal alloy under heating in said closed heating furnace (**1**) for forming a molten matrix (**2**); providing an inert gas supply means (**4**) connected to said furnace (**1**) for purging the furnace (**1**) by an inert gas from said inert gas supply means (**4**) to form an inert gas protective atmosphere above the molten matrix (**2**) within the furnace (**1**); and mounting a suspending bucket (**31**) in said furnace (**1**);
b. providing a feeding and agitating means (**3**) in said furnace (**1**), and securing a reinforcing-material charger (**6**) to a mounting frame (**7**) for feeding a reinforcing material (**5**) through said reinforcing-material charger (**6**) into said bucket (**31**), suspending said bucket (**31**) above the molten matrix (**2**) for preheating the reinforcing material (**5**) as filled in said bucket (**31**) above the molten matrix (**2**);
c. driving said feeding and agitating means (**3**) for forming a vortex in said molten matrix (**2**), for upwardly drafting the reinforcing material (**5**) from said bucket (**31**) into an upper portion in said furnace (**1**), and for downwardly forcing said reinforcing material (**5**) uprisen from said bucket (**31**) into said molten matrix (**2**) for homogeneously distributing said reinforcing material (**5**) into said molten matrix (**2**) under agitation for obtaining a reinforced metal-matrix composite.

5,632,802
APPARATUS AND METHOD OF REGENERATING ADSORBERS FOR DRYING AIR
George R. Grgich, 208 Loft La., Raleigh, N.C. 27609; Michael S. Cranford, 5228 Deer Chase Trail, Wake Forest, N.C. 27587, and John C. Patton, 5140 Carmel Club Dr., Charlotte, N.C. 28226
Filed Mar. 3, 1995, Ser. No. 398,646
Int. Cl.[6] B01D *53/04*
U.S. Cl. 95—10 **53 Claims**



1. A method of drying atmospheric air prior to compression and regenerating spent desiccant media, comprising the steps of:
providing a first pre-compression tubular desiccant bed adsorption unit adapted for radial air flow therethrough and a second pre-compression tubular desiccant bed adsorption unit having radial flow;
drawing atmospheric air through one of the pre-compression desiccant bed absorption units radially;
conveying dried air from said pre-compression tubular desiccant bed adsorption unit to an inlet of a gas compression machine;
regenerating the other pre-compression desiccant bed adsorption unit by;
generating heated atmospheric air;
conveying heated atmospheric air through the other pre-compression desiccant bed adsorption unit;
drying said other pre-compression desiccant bed with the heated air radially.

5,632,803
ENHANCED HELIUM RECOVERY
Glenn Stoner, Calhan, Colo.; Herbert E. Reingold, III, Annapolis; Joseph S. D'Amico, Linthicum, both of Md., and Kent S. Knaebel, Plain City, Ohio, assignors to Nitrotec Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 326,917, Oct. 21, 1994, Pat. No. 5,542,966. This application Aug. 21, 1995, Ser. No. 517,469
Int. Cl.[6] B01D *53/47;53/22*
U.S. Cl. 95—53 **20 Claims**

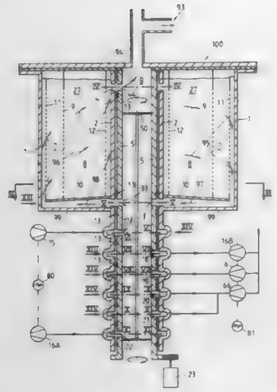


1. A method for the separation of helium from an input gas stream containing helium and other gases comprising feeding said input gas from a source to a membrane separation unit at an elevated pressure, flowing a residue stream from said membrane separation unit, a first portion of said residue gas stream being flowed to the source of said input gas and flowing a permeate gas stream enriched in helium from said membrane separation unit to a first stage of a first stage and a second stage pressure swing adsorption unit and after processing said permeate gas in said first stage of pressure swing adsorption flowing the non-adsorbed portion of said permeate gas from said first stage of pressure swing adsorption to said second stage of pressure swing adsorption, said first stage of pressure swing adsorption and said second stage of pressure swing adsorption each containing a plurality of interconnected adsorbent beds, the first stage of pressure swing adsorption concentrating the helium in said input gas stream to greater than about 50 percent helium by volume and in said second stage of pressure swing adsorption concentrating said input gas stream to greater than about 95 percent helium by volume, a second portion of said residue gas stream being fed to said first stage of pressure swing adsorption as a processing gas.

5,632,804
PROCESS AND APPARATUS FOR SEPARATING CONSTITUENTS OF A GAS MIXTURE BY ADSORPTION
Fernande Schartz, Brussels, Belgium, assignor to Jacques Ribesse, Brussels, Belgium
PCT No. PCT/BE93/00053, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/04249, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 18, 1993, Ser. No. 387,747
Claims priority, application Luxembourg, Aug. 18, 1992, 88160
Int. Cl.[6] B01D *53/047*
U.S. Cl. 95—101 **9 Claims**

1. A process for separating a gas mixture composed of a plurality of gaseous constituents into separate gaseous constituents by adsorption within an enclosure, the enclosure having defined therein a plurality of compartments which are equal in size, sequentially arranged, separated from one another, and gas tight, which are each provided with an adsorbent material preselected as a function of which of the plurality of gaseous constituents is to be separated, and which are each arranged for temporarily allowing introduction of a gas mixture to be separated and for evacuation of at least one preselected gaseous constituent of the gas mixture

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whilst the adsorbent material adsorbs at least one not preselected gaseous constituent of the gas mixture to be separated, the process comprising:

a. as adsorption steps:

(1) introducing the gas mixture to be separated into one of the plurality of compartments until a predetermined pressure is reached while in further compartments of the plurality of compartments, consecutively starting from a compartment which is closest to the compartment where the gas is introduced in step a. (1); and

(2) introducing the gas mixture to be separated into at least one compartment and allowing the at least one preselected constituent to escape therefrom;

b. as desorption steps:

(1) allowing pressure in a next compartment to drop so as to obtain naturally a partial desorption of the at least one not preselected gaseous constituent and optionally subsequently subjecting the next compartment, in view of said partial desorption, to a partial vacuum;

(2) subjecting at least a next additional compartment to a final desorption vacuum which is equal to or stronger than the partial vacuum for the partial desorption; and

(3) injecting a purging fluid into a last compartment to achieve a final desorption of the at least one not preselected constituent and substantially maintaining the final desorption vacuum therein during injection of the purging fluid; and

c. providing between the compartment of step b (3) into which the purging fluid is injected and which is subjected to the final desorption vacuum, and the compartment of step a (1) wherein the gas mixture to be separated is introduced up to a predetermined pressure, an additional compartment wherein the gas mixture to be separated is let in naturally, by natural aspiration, whereby the vacuum prevailing therein after vacuum purging in step b (3) is compensated.

5,632,805

SEMIPERMEABLE MEMBRANE DRYER FOR AIR COMPRESSOR SYSTEM

Michael K. Woodard, Hampton, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Jun. 5, 1995, Ser. No. 463,576

Int. Cl.[6] B01D *53/22*

U.S. Cl. 96—4 **10 Claims**

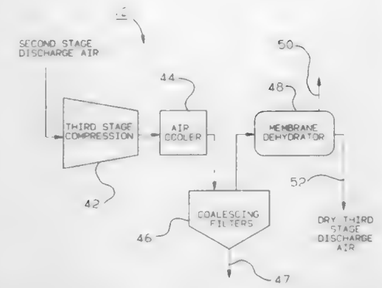
1. An improved system for the production of dry, high pressure air comprising:

a source of wet feed air;

an air compressor having a plurality of compression stages;

a means for dehydrating high pressure air;

said means for dehydrating located between at least two of said plurality of compression stages; and



said means for dehydrating comprising a semipermeable membrane dehydrator capable of permeating moisture in said wet feed air.

5,632,806

INTEGRATED SUCTION HOOD FEATURING AIR DEPOLLUTION

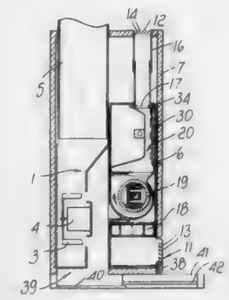
Alvaro Galassi, Purello, Italy, assignor to Faber S.p.A., Fabriano, Italy

Filed Feb. 1, 1996, Ser. No. 595,109

Claims priority, application Italy, Feb. 17, 1995, B095U0027

Int. Cl.[6] B03C *3/016*

U.S. Cl. 96—16 **9 Claims**



1. In an integrated suction hood, an air depollution apparatus comprising: a container being connected to an intake grille in a downward region thereof and to a discharge grille in an upward region thereof; a mechanical filter and an activated-charcoal filter, said mechanical and activated-charcoal filters being mounted side by side on a frame that is inserted inside said container, above said intake grille, said frame being extractable from, and along a horizontal plane that lies transversely to said container; suction means being arranged above said extractable frame, said suction means being adapted to produce a flow of air inside said container; a collection device being arranged above said suction means, said collection device including, in succession, an electrification grid being supplied at a high voltage with negative polarity and arranged on a further horizontal plane lying transversely to said container, a partition being arranged at an angle in front of said electrification grid so as to convey the flow of air toward at least one region having a narrower cross-section, a negatively-charged deflector plate and a positively-charged collector plate, said deflector and collector plates being arranged vertically so as to face each other at a short distance for delimiting said region having a narrower cross-section; and a germicidal lamp being arranged at an opening of said deflector plate, said lamp illuminating said collector plate substantially over its entire length, along a horizontal direction.

5,632,807

DEVICE FOR THE SEPARATION OF ELEMENTS OF A GAS MIXTURE BY ADSORPTION

Shinji Tomita; Shuichi Muruyama, both of Hyogo-gen, Japan, and Marc Wagner, Saint-Maur, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

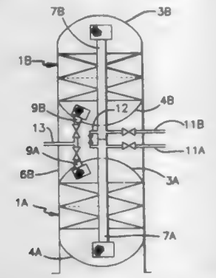
PCT No. PCT/FR94/00645, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO94/29000, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 2, 1994, Ser. No. 374,615

Claims priority, application Japan, Jun. 3, 1993, 5-156363

Int. Cl.[6] B01D *53/04*

U.S. Cl. 96—131 **12 Claims**



1. A device for separating at least one component from a gas mixture, comprising at least a pair of adsorber units, each adsorber unit comprising an envelope defining an inner volume having a lower end zone and an upper end zone, at least one adsorbent layer between the lower and upper end zones, a first conduit means having one end communicating with the lower end zone, and a second conduit means having one end communicating with the upper end zone, wherein the adsorber units of the pairs are superposed and one of the first and second conduit means of each adsorber includes a vertical central tube portion, the vertical central tube portions of the pair of adsorber units being mechanically interconnected in endwise abutting relationship.

5,632,808

CANISTER

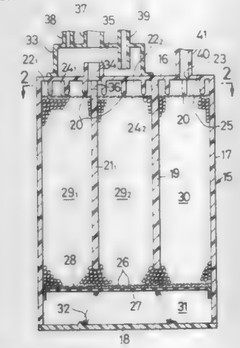
Takeshi Hara; Kazumi Yamazaki; Teruo Wakashiro; Takeaki Nakajima, and Shoichi Hokazono, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 622,834

Claims priority, application Japan, Mar. 30, 1995, 7-072936

Int. Cl.[6] B01D *53/04*

U.S. Cl. 96—137 **13 Claims**



1. A canister, comprising:

a casing including

a casing body formed into a bottomed tubular shape with an end wall at one end thereof, and

a lid member for closing the other end of said casing;

a partition wall which extends toward the lid member, one end of the partition wall connected to said end wall, opposite sides of the partition wall are connected to an inner surface of said casing body;

first and second filters fixedly disposed within said casing body on opposite surfaces of said partition wall, wherein first and second chambers are formed between said first and second filters and said end wall, respectively;

support plate fitted to the other end of said casing body, said support plate has a large number of communication bores permitting a gas to flow therethrough;

a third filter superposed and carried on an inner surface of said support plate, said third filter being disposed at a distance from the other end of said partition wall;

first and second adsorbent layers, formed by adsorbents, are retained between said first and second filters and said third filter, respectively;

a third chamber defined between said support plate and said lid member;

a spring, accommodated with said third chamber, for biasing said support plate in a direction to compress said first and second adsorbent layers; and

an inclination inhibiting portion provided on at least one of said casing body and said partition wall, said inclination inhibiting portion provided on an opposite side from said third chamber with respect to said third filter and said support plate, wherein a distance between said inclination inhibiting portion and said third filter substantially corresponds to a distance between said third filter and said partition wall.

5,632,809

Patent Not Issued For This Number

5,632,810

PIGMENTED MIRROR RESIN COATINGS

Mathew Stephen, Richardson, and Ole G. Torgussen, Carrollton, both of Tex., assignors to Sureguard, Inc., Grand Prairie, Tex.

Continuation-in-part of Ser. No. 754,898, Sep. 4, 1991, abandoned, and Ser. No. 902,206, Jun. 22, 1992, Pat. No. 5,314,532. This application May 24, 1994, Ser. No. 248,088

Int. Cl.[6] C09D *5/08;7/12*

U.S. Cl. 106—253 **13 Claims**

8. A composition for forming a protective coating on a thin metal layer applied to the back of a mirror, said protective coating being formed from an aqueous based coating composition, which comprises the combination of:

(a) an organic resin polymer selected from the group consisting of alkyd resins and acrylic resins, each of said resins being combined with a sufficient amount of a melamine resin to cause cross linking with said alkyd resin or acrylic resin;

(b) a solvent; and

(c) an anti-corrosion amount of an antioxidant scavenger pigment comprising a cyanamide compound of a metal, wherein said metal is selected from the group consisting of zinc, nickel, cobalt, lead, mixtures thereof, and blends of metal cyanides; said coating being formed from an aqueous based coating composition as follow:

COMPONENT	AMOUNT (wt. %)
Alkyd resin or Acrylic Resin and melamine resin	10–45
Solvent	5–25

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COMPONENT	AMOUNT (wt. %)
Pigment	3–65
Water	10–40

and wherein the mixture of melamine resin with said alkyd resin or acrylic resin is effective to form a hard resin backing over said metal which minimizes corrosive effects.

5,632,811

METHOD OF RETAINING MELT OF OXIDE

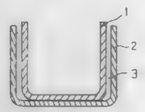
Yasuo Namikawa, Osaka; Yasuji Yamada, Tokyo; Satoshi Koyama, Tokyo; Yuh Shiohara, Tokyo, and Shoji Tanaka, Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., and International Superconductivity Technology Center, both of Japan

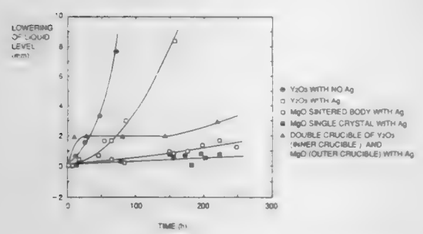
Filed Apr. 12, 1995, Ser. No. 420,519

Claims priority, application Japan, Apr. 14, 1994, 6-075792

Int. Cl.[6] C30B *29/16*

U.S. Cl. 117—1 **11 Claims**





1. A method of retaining an oxide melt, for retaining an oxide-based melt consisting essentially of R (R: yttrium or a lanthanoid element), barium, copper and oxygen at a melt-retention temperature, said method comprising the steps of:

storing said oxide-based melt in a first crucible part consisting essentially of a first material; and

holding said first crucible part in a second crucible part consisting essentially of a second material at least while storing said melt,

said first material consisting essentially of a material being an oxide of at least one element selected from the group consisting of said R, barium, copper, having a melting point being higher by at least 10° C. than said melt-retention temperature and causing no structural phase transition in a temperature between the room temperature and a temperature being higher by 10° C. than said melt-retention temperature,

said second material consisting essentially of a material causing neither melting nor chemical reaction with respect to said oxide-based melt and being capable of retaining said melt more stably than said first material,

movement of said melt being suppressed by said second crucible part.

5,632,812

DIAMOND ELECTRONIC DEVICE AND PROCESS FOR PRODUCING THE SAME

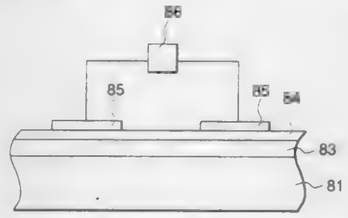
Keiji Hirabayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 207,043, Mar. 8, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,777

Claims priority, application Japan, Mar. 10, 1993, 5-049521

Int. Cl.[6] C30B *29/04*

U.S. Cl. 117—94 **7 Claims**



1. A process for producing a diamond electronic device having a plate shaped diamond crystal formed on a substrate, which comprises forming the plate shaped diamond crystal by vapor phase synthesis (1) by selective deposition on the substrate at a controlled depositing position and at a controlled crystal nucleation density and (2) at a substrate temperature in a range from 400° to 900° C. such that a ratio (h/L) of length (h) of the plate shaped diamond crystal in a direction substantially perpendicular to a face of the substrate to length (L) of the plate shaped diamond crystal in a direction parallel to the face of the substrate is in the range from ¼ to 1/1000, and an upper face of the plate shaped diamond crystal is a {111} plane which makes an angle from substantially 0° to 10° to the face of the substrate; and forming a semiconductor layer and an electrode layer on the plate shaped diamond crystal.

5,632,813

ELECTRODE FORMING APPARATUS FOR CHIP TYPE ELECTRONIC COMPONENTS

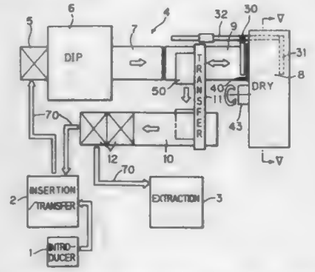
Tadahiro Nakagawa; Shizuma Tazuke; Satoshi Omuro; Kiyoshi Yoshida; Nobuaki Kashiwagi, and Takashi Kimoto, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 25, 1992, Ser. No. 840,838

Claims priority, application Japan, Nov. 8, 1991, 3-321333

Int. Cl.[6] B05C *13/00*

U.S. Cl. 118—58 **32 Claims**



1. An electrode forming apparatus for chip components for forming external electrodes on projected portions of chip components held by a holding plate, said apparatus comprising:

a dipping machine provided with a dipping vessel having a horizontal bottom surface capable of being coated with a thin film of electrode paste, and a chucking portion arranged above said dipping vessel for horizontally engaging a holding plate which is structured and arranged to hold a plurality of chip components having projected portions downwardly directed toward said dipping vessel and for vertically moving said holding plate downward into said dipping vessel to apply electrode paste, when present on said bottom surface of said dipping vessel, to said downwardly projected portions of said chip components to form electrode surfaces on said projected portions;

a drying furnace for receiving said holding plate with the electrode surfaces of said chip components directed downward and for continuously heating and drying said electrode surfaces of said chip components held by said holding plate, said drying furnace having an inlet through which said holding plate can pass into said furnace and an outlet through which said holding plate can pass out of said furnace; and

a conveyor for horizontally transferring said holding plate and said chip components from said dipping machine to said drying furnace, for carrying said holding plate into said drying furnace along a carrying-in path, and for carrying said holding plate out of said drying furnace along a carrying-out path, said carrying-in path and said carrying-out path both being located on a same side of said drying furnace;

said drying furnace comprising a rotor for supporting a plurality of holding plates and being intermittently rotated, a heater for heating and drying said electrode surfaces of said chip components held by said holding plates, and an introduction and extraction device for introducing said holding plates one by one into said rotor, and for extracting said holding plates one by one from said rotor;

wherein said rotor is constructed so as to support and rotate said plurality of holding plates through a 360° rotation.

5,632,814

DEVICE FOR APPLYING A COATING MATERIAL TO A RUNNING WEB

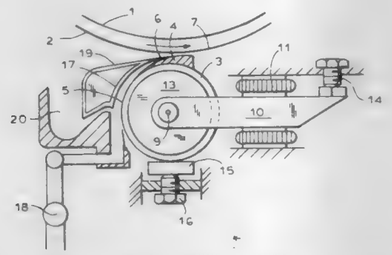
Gerhard Wohlfeil, Monheim, and Herbert Sommer, Düsseldorf, both of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Germany

Continuation of Ser. No. 87,816, Jul. 8, 1993, abandoned. This application Mar. 3, 1995, Ser. No. 400,278

Claims priority, application Germany, Feb. 27, 1992, 42 05 993.3

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—261 **8 Claims**



1. A device for coating a flowable substance onto a traveling web moving in a travel direction, the device comprising:

a backing cylinder having a cylinder surface centered on an axis and over which the web travels in the direction;

an inelastic dosing element spacedly juxtaposed with the cylinder surface and with the web, extending a full working width across the web, and having a dosing surface converging toward the cylinder surface in the direction and defining with the cylinder surface an application gap having a narrowest spacing at a dosing line;

a baffle having a baffle surface radially confronting and spacedly juxtaposed with the dosing surface and forming therewith a feed channel having an upstream end remote from the cylinder surface and a downstream end at the gap;

means for supporting the dosing element for swinging movement of the dosing element about a swing axis parallel to the axis of the cylinder with the dosing element moving substantially only generally parallel to the dosing surface and tangentially of the cylinder surface and not radially of the backing cylinder to change the spacing between the cylinder surface and the dosing surface at the dosing line, the dosing surface being at a radial distance from the swing axis which increases continuously in the travel direction to the dosing line; and

means for feeding the flowable substance to the upstream end of the feed channel and through the channel to the gap.

5,632,815

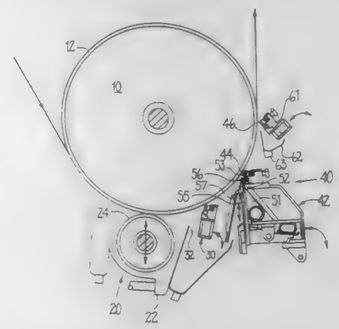
INVERTED BLADE METERING UNIT

Wayne A. Damrau, Wisconsin Rapid, and Michael A. Mayer, Plover, both of Wis., assignors to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Division of Ser. No. 260,488, Jun. 15, 1994, which is a continuation of Ser. No. 881,677, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 648,655, Jan. 31, 1991, Pat. No. 5,112,653, which is a continuation-in-part of Ser. No. 375,241, Jul. 3, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 475,704

Int. Cl.[6] B05C *5/00*

U.S. Cl. 118—410 **6 Claims**



1. An inverted blade metering unit for coating a web backed by a rotatable backing roll with a coating mix, the metering unit comprising:

a support structure;

a coating feeder attached to the support structure, for feeding the coating mix onto the web; and

a blade positioned immediately adjacent the web and downstream of the position at which the coating mix is applied to the web by the coating feeder for doctoring coating mix fed onto the web by the coating feeder;

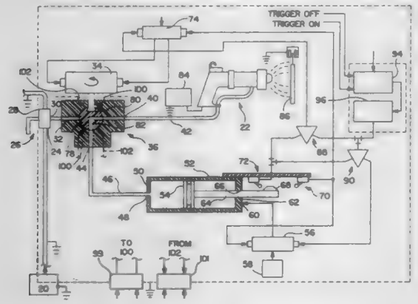
wherein the metering unit is essentially placed below the backing roll;

the blade is a flexible blade with an inclination angle of its tip relative to web; and

the coating feeder has a smooth, elongated channel exiting at a proximal end of the flexible blade in a manner which facilitates a laminar flow of the coating mix to the flexible blade and thereby avoids turbulence of the coating mix.

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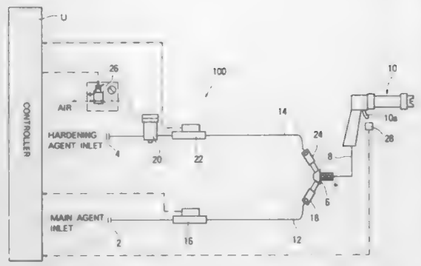
5,632,816
VOLTAGE BLOCK
Harold T. Allen, Indianapolis, Ind.; Edward T. Feldman, Buffalo Grove, Ill.; Varce E. Howe, Zionsville, Ind.; Ghaffar Kazkaz, Mount Prospect; Ghazi M. A. Khattab, Wheeling, both of Ill.; Jerry L. McPherson, Jr., Greenfield, and James A. Scharfenberger, Indianapolis, both of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.
Continuation-in-part of Ser. No. 273,653, Jul. 12, 1994, abandoned. This application May 3, 1995, Ser. No. 429,019
Int. Cl.[6] B05B *5/025*
U.S. Cl. 118—629 **34 Claims**



1. A coating system comprising a source of electrically non-insulative coating material, a dispenser for dispensing the coating material toward an article to be coated thereby, an electrostatic high potential supply for supplying charge to the coating material, means for coupling the high potential supply across the dispenser and the article, a first reservoir, a first valve having a first housing, the first housing providing first, second, third, fourth and fifth ports, and a first component movable within the first housing and having a first passageway to selectively connect the first port to the second port to permit the flow of coating material between the first port and the second port, means for coupling the first port to the coating material source, means for coupling the second port to the first reservoir, means for coupling the third port to the dispenser, the first component being movable within the housing to selectively connect the second port to the third port to permit the flow of coating material between the first reservoir and the dispenser, a source of an electrically non-conductive fluid, the first housing and the first movable component defining between them a second passageway, and means for coupling the source of electrically non-conductive fluid to the fourth port to provide a flow of the electrically non-conductive fluid from the source of electrically non-conductive fluid through the second passageway to flush coating material from surfaces of the first housing and first movable component adjacent the second passageway, at least a portion of the electrically non-conductive fluid flowing through the fourth port also flowing through the fifth port.

5,632,817
DUAL COMPONENTS MIXING SYSTEM FOR COATING
Toshio Hiraga; Masayuki Kuroda; Hidetoshi Kamaru, and Youji Murata, all of Tokyo, Japan, assignors to Ransburg Industrial Finishing K.K., Tokyo, Japan
Filed Sep. 6, 1995, Ser. No. 523,856
Claims priority, application Japan, Sep. 6, 1994, 6-212450
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—663 **20 Claims**

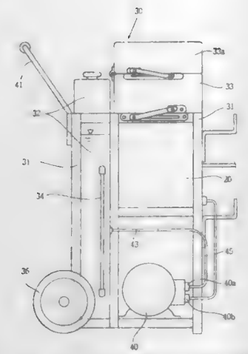
1. A dual component mixing system for mixing together a main agent and a hardening agent, comprising:
a first tank containing a main agent;
a second tank containing a hardening agent diluted with thinner;
a mixer for mixing said main agent and said hardening agent together so as to form a mixture of said main agent and said hardening agent;



a manually operated coating gun operatively connected to said mixer for receiving said mixture of said main agent and said hardening agent;
a main agent conduit operatively interconnecting said first main agent tank to said mixer so as to supply said main agent from said first main agent tank to said mixer;
a hardening agent conduit operatively interconnecting said second hardening agent tank to said mixer so as to supply said hardening agent from said second hardening agent tank to said mixer;
means for detecting the flow rate of said main agent flowing within said main agent conduit;
means for detecting the flow rate of said hardening agent flowing within said hardening agent conduit;
flow regulating means disposed within said hardening agent conduit for regulating the flow of said hardening agent within said hardening agent conduit; and
feedback control means, operatively connected to said means for detecting the flow rate of said main agent and to said means for detecting the flow rate of said hardening agent so as to receive signals from said means for detecting the flow rate of said main agent and from said means for detecting the flow rate of said hardening agent, for controlling said flow regulating means so that the amount of said hardening agent within said mixture of said main agent and said hardening agent comprises a predetermined percentage of the amount of said main agent within said mixture of said main agent and said hardening agent.

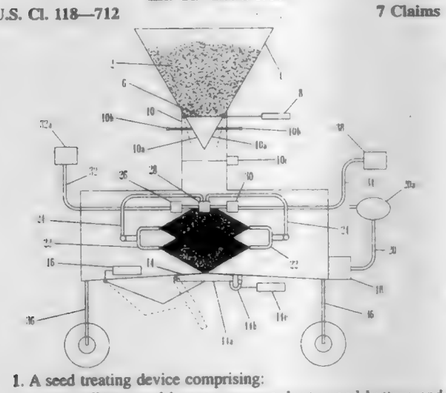
5,632,818
LIQUID INJECTION APPARATUS FOR USE IN A METHOD OF LINING THE INTERNAL SURFACE OF A PIPE
Shigeru Toyoda, Saitama-ken; Shuichi Yagi, and Masaaki Itagaki, both of Kanagawa-ken, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1995, Ser. No. 560,927
Claims priority, application Japan, Nov. 28, 1994, 6-293494; Nov. 28, 1994, 6-293495
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—683 **8 Claims**

1. A liquid injection apparatus for use in a method of lining an internal surface of a pipe, which method including using the liquid injection apparatus to introduce a necessary amount of resin into the pipe through an open end thereof and to cause the resin to move until the front end of the resin reaches an inner end of the pipe, and sucking the resin back from the inner end so as to line the internal surface of the pipe with the resin, said liquid injection apparatus comprising:
a push car having a frame structure;
a liquid tank for storing a necessary amount of liquid to be injected into the pipe;
a liquid pump for pumping the necessary amount of liquid so as to inject the liquid into the pipe: and
a liquid injection controlling device for controlling the pressure of the liquid being supplied through the liquid pump, stopping the liquid injection after a predetermined amount of liquid has



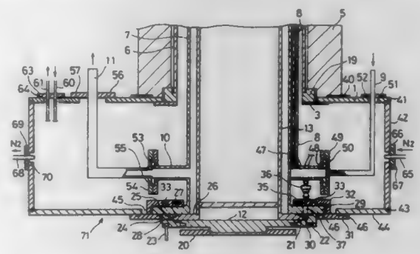
been injected into the pipe, and stopping the liquid injection if the liquid pressure in the pipe changes beyond a predetermined range;
wherein the liquid tank, the liquid pump and the liquid injection controlling device are installed together in the push car so as to be easily movable.

5,632,819
HIGH PRESSURE CHEMICAL SEED TREATER
Robert G. Geissler, P.O. Box 841, Davenport, Wash. 99122
Filed Sep. 29, 1995, Ser. No. 535,969
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—712 **7 Claims**



1. A seed treating device comprising:
a downwardly tapered hopper, open at the top and bottom and having a main gate at a lowermost opening;
a gate assembly positioned below the main gate of the hopper comprising a set of hinged flanges, free ends toward the ground with adjustment knobs and means to vary the distance between the flanges;
a spray chamber positioned below the gate assembly having a substantially convex bottom with a water tight exit aperture at a high point of the convex bottom and sump pump at an outer bottom edge of the spray chamber for collecting accumulated fluid therein;
a hollow member recirculation line connected to said sump pump for allowing fluid to flow from the sump pump to a remote source of fluid;
a hollow member supply line in fluid communication with the remote fluid source on one end and attached to a series of fluid regulation valves mounted or in close proximity to an exterior of the spray chamber at the other end; additional hollow members connected at one end to the fluid regulation valves and at the other end to a series of horizontally disposed high pressure fluid nozzles situated such that the emissions therefrom are opposed to one another and directed toward a midline of the spray chamber; and a hollow member bypass line connected at one end to the fluid regulation valves and at the other end to a storage tank for disposal or recycling of fluid allowed to flow through the bypass line by adjustment of the fluid regulation valves.

5,632,820
THERMAL TREATMENT FURNACE IN A SYSTEM FOR MANUFACTURING SEMICONDUCTORS
Tomoshi Taniyama; Hideki Kaihotsu; Yoshikatsu Kanamori; Kazuhito Ikeda, and Shuji Yonemitsu, all of Tokyo, Japan, assignors to Kokusai Electric Co., Ltd., Japan
Filed Apr. 20, 1995, Ser. No. 425,924
Claims priority, application Japan, Jan. 12, 1995, 7-019758
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—724 **10 Claims**



1. A thermal treatment furnace for use with a semiconductor production system, comprising:
a heater base:
a heater disposed on the heater base;
a reaction tube disposed partially within the heater, the reaction tube having a lower end extending out of the heater; and
a scavenger sealingly enclosing the periphery of the lower end of the reaction tube.

5,632,821
POST TREATMENT METHOD FOR IN-SITU CLEANING
Satoshi Doi, Izumi, Japan, assignor to Anelva Corporation, Japan
Filed Feb. 22, 1996, Ser. No. 603,886
Claims priority, application Japan, Mar. 3, 1995, 7-070911
Int. Cl.[6] B05D *3/00;* **H01L** *21/00*
U.S. Cl. 134—1.1 **14 Claims**

1. A method for performing a post treatment comprising the steps of:
introducing a post treatment gas into a reaction chamber after in-situ cleaning;
applying electric power to the post treatment gas to generate a plasma so that a residual cleaning gas and the post treatment gas react with each other to form a volatile product; and
removing the residual cleaning gas by expelling the volatile product out of the reaction chamber,
wherein the post treatment gas is a reactive gas which contains an element in common with a thin film deposited on a substrate, and which reacts with the cleaning gas to form the volatile product,
where the post treatment gas is introduced into the reaction chamber at a flow rate such that the deposition rate of thin film deposited by the post treatment gas is reaction-limited, and
wherein the plasma is generated by applying electric power to the post treatment gas so that the deposition rate of the thin film formed by the post treatment gas is reaction-limited.

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5,632,822

WATER-BASED FLUSHING FOR PAINTS AND OTHER COATINGS

Richard E. Knipe, Jr., Montebello, N.Y.; Savarimuthu M. Jacob, Edison, and Thomas Mancini, Lincoln Park, both of N.J., assignors to Dalco Industries, Ltd., Spring Valley, N.Y.

Filed Dec. 29, 1995, Ser. No. 581,157
Int. Cl.[6] B08B *9/00;7/00*
U.S. Cl. 134—22.12 16 Claims

1. A method for purging coating equipment, comprising:

diluting a purge concentrate with water, the purge concentrate being a water-based concentrate without volatile organic compounds containing water, a detergent builder and a wetting agent, the diluting step forming a purge solution;

heating the purge solution to a temperature of about 100° F.–160° F.; and

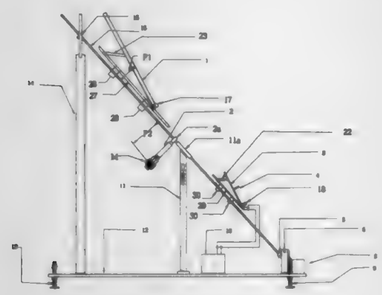
supplying the purge solution to the coating equipment for purging the coating equipment.

5,632,823

SOLAR TRACKING SYSTEM

Anand M. Sharan, 67, Ennis Ave., St-John's, Newfoundland, Canada

Filed Jan. 29, 1996, Ser. No. 593,468
Int. Cl.[6] H01L *31/042*
U.S. Cl. 136—246 14 Claims



1. A solar tracking system for maintaining a solar collector with its responsive surface normal to the sun rays, comprising a shaft; shaft support means rotatably supporting said shaft about a shaft rotation axis parallel to the north-south axis of the earth; shaft rotating means for intermittent rotation of said shaft at a mean rate equal to the earth's rate of rotation; a solar collector securing assembly located on one side of said shaft and including a collector support for fixing thereon a solar collector, a bracket, collar means for securing said bracket to said shaft, pivot means to pivot said support to said bracket about a pivotal axis transverse to said shaft to vary the inclination of said support and consequently of said collector relative to said shaft and stay means between said collector support and said bracket to maintain said collector support at an adjusted inclination relative to said shaft whereby the radial distance of the centre of gravity of said collector support and consequently of said collector from said shaft may vary, and a counterbalancing system including an arm secured to said shaft, extending generally normal to said shaft and away from said assembly and a weight mounted on said arm and radially adjustable relative to said shaft whereby the moment of the mass of said assembly and of a solar collector fixed thereto relative to said shaft can be substantially counter-balanced by said arm and said weight irrespective of the rotational position of said assembly about said shaft and of the inclination of said collector support relative to said shaft.

5,632,824

METHOD OF PREPARING POWDERS FOR HARD MATERIALS FROM COBALT SALTS AND SOLUBLE TUNGSTATE SALTS

Ingmar Grenthe, Österskär; Mamoun Muhammed, Djursholm, and Sverker Wahlberg, Hägersten, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Nov. 14, 1995, Ser. No. 557,579
Claims priority, application Sweden, Nov. 16, 1994, 9403954
Int. Cl.[6] B22F *9/24*
U.S. Cl. 148—237 6 Claims

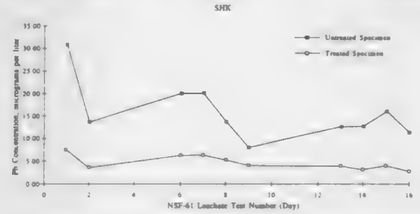
1. A method of preparing a powder containing tungsten and cobalt and/or nickel comprising mixing an aqueous solution of sodium tungstate, and a cobalt and/or nickel salt, adding ammonium acetate to the solution, reacting the mixture at a temperature of from about 70° C. to the boiling point of the solution, cooling the solution whereby a fine green powder, containing ammonium salts of W+Co(Ni) complex ions, precipitates on cooling and removing the precipitate from the solution.

5,632,825

APPARATUS AND METHOD FOR INHIBITING THE LEACHING OF LEAD IN WATER

Enzo L. Coltrinari, Golden; Jerome P. Downey, Parker; Wayne C. Hazen, Denver, and Paul B. Queneau, Golden, all of Colo., assignors to Technology Management Advisors LLC, Englewood, Colo.

Division of Ser. No. 253,746, Jun. 3, 1994, Pat. No. 5,544,859.
This application Feb. 14, 1996, Ser. No. 601,238
Int. Cl.[6] C23C *22/52*
U.S. Cl. 148—269 12 Claims



1. A method for preparing a surface of a copper-containing article, said method comprising the steps of:

providing an article comprising a solid continuous phase comprising copper and a solid noncontinuous phase of dispersoids comprising lead dispersed in said continuous phase, said article having an exposed surface, said continuous phase and a plurality of said dispersoids forming at least a part of said exposed surface; and

reacting at least a portion of said lead in said plurality of dispersoids with a noncontinuous coating phase.

5,632,826

QUASICRYSTALLINE PRECIPITATION HARDENED METAL ALLOY AND METHOD OF MAKING

Anna Hultin-Stigenberg; Jan-Olof Nilsson, and Ping Liu, all of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Oct. 7, 1994, Ser. No. 319,648
Claims priority, application Sweden, Oct. 7, 1993, 9303280
Int. Cl.[6] C22C *38/22;* C21D *6/02*
U.S. Cl. 148—326 11 Claims

1. A precipitation hardened iron-based alloy which has been strengthened by the precipitation of particles wherein the particles have a quasicrystalline structure, said structure being essentially obtained at aging times up to 1000 h and tempering treatments up to 650° C., the strengthening involving an increase in tensile strength of the alloy of at least 200 MPa over said iron-based alloy



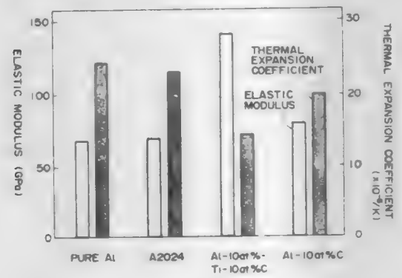
prior to tempering, wherein the alloy contains at least 0.5% by weight of molybdenum and at least 0.5% by weight of chromium.

5,632,827

ALUMINUM ALLOY AND PROCESS FOR PRODUCING THE SAME

Hironori Fujita; Fumio Nonoyama, and Atsushi Danno, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed May 24, 1995, Ser. No. 449,107
Claims priority, application Japan, May 24, 1994, 6-135178; Apr. 3, 1995, 7-102948
Int. Cl.[6] C22C *21/00;32/00*
U.S. Cl. 148—688 18 Claims



1. An aluminum alloy comprising:

an aluminum containing matrix; and

carbon containing particles having an average particle size of 100 nm or less, said carbon containing particles being dispersed in said matrix in an amount of 1 to 40 atomic % with respect to the total atoms constituting the aluminum alloy, said aluminum alloy being in bulk form.

5,632,828

COATING PREPARATION FOR PRETREATING METAL SURFACES, AND METHOD EMPLOYING SAID PREPARATION

Johannes J. H. Verberg, Nieuwerkerk a/d Ijsel, Netherlands, assignor to ADW Chemical Products B.V., Netherlands

Filed Jan. 18, 1996, Ser. No. 588,347
Claims priority, application Netherlands, Feb. 10, 1995, 9500250
Int. Cl.[6] C23C *22/30*
U.S. Cl. 148—251 6 Claims

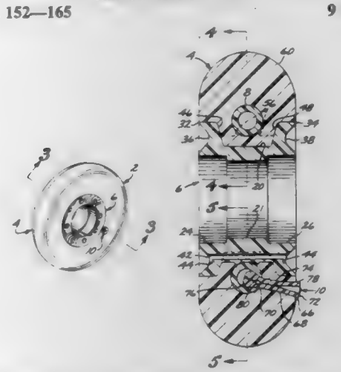
1. Coating preparation for pretreating metal surfaces comprising an acrylic acid polymer or a polymer based on acrylic acid at 2–6% by weight, a hydroxide of a bivalent metal and hexavalent and trivalent chromium ions, and water wherein the bivalent metal is barium and the proportion by weight of the acrylic acid polymer or a polymer based on acrylic acid and barium hydroxide is 1:0.08–0.30.

5,632,829

PNEUMATIC IN-LINE SKATE WHEEL

Tom Peterson, and Neal Piper, both of Huntington Beach, Calif., assignors to The Hyper Corporation, Huntington Beach, Calif.

Continuation-in-part of Ser. No. 354,374, Dec. 12, 1994. This application Jul. 14, 1995, Ser. No. 502,828
Int. Cl.[6] A63C *17/22*
U.S. Cl. 152—165 9 Claims



1. A pneumatic in-line roller skate wheel comprising:

a relatively rigid urethane hub formed with an annular drop-center having axially spaced apart retainer flanges;

stand off ribs disposed in annular spaced relation about said drop center;

an annular bladder surrounding said drop center and stood off from said drop center by said ribs to form an air chamber; and

a relatively soft molded urethane tire body substantially surrounding said bladder and formed with laterally opposite sides bonded to said retainer flanges.

5,632,830

ADJUSTABLE BALLAST SYSTEM FOR A DOUBLE FACER

Carl R. Marschke, Phillips, Wis., assignor to Marquip, Inc., Phillips, Wis.

Continuation-in-part of Ser. No. 292,740, Aug. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 253,647, Jun. 3, 1994, Pat. No. 5,466,329. This application Aug. 14, 1995, Ser. No. 515,109
Int. Cl.[6] B31F *1/20;1/24*
U.S. Cl. 156—64 10 Claims



1. A method for controlling heat applied to a moist web of corrugated paperboard traveling between a series of individually operable heating plates supporting a lower web face of said corrugated paperboard and a moving holddown belt in contact with an upper web face of said paperboard, said method comprising the steps of:

(1) forming a grid pattern of ballast load member segments defining parallel rows extending over the length of the heating plates and parallel tiers, each tier extending transversely of the direction of web movement across the width of the web and generally overlying a heating plate;

(2) mounting said load member segments on vertical actuators operative to independently move each segment between an upper no load position and a lower full ballast load position independently of any other segment and without altering the load imposed by any other segment on the holddown belt;

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(3) monitoring the moisture content of the corrugated web to detect variations in moisture content transversely across the web; and,

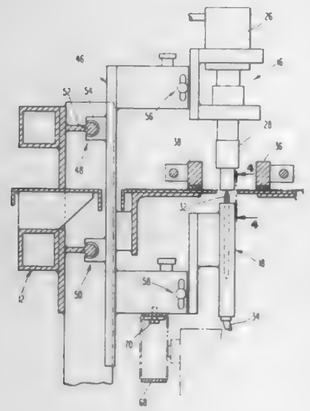
(4) selectively operating the actuators to vary the ballast load applied in selected rows in response to the monitored moisture content.

5,632,831

SYSTEM AND METHOD FOR CUTTING AND SPLICING POLYMERIC WEBS

Robert Stull, Douglassville, Pa., assignor to Superpac, Inc., Southampton, Pa.

Filed Aug. 4, 1994, Ser. No. 286,005
Int. Cl.[6] B32B *31/18*
U.S. Cl. 156—73.3 **10 Claims**



1. A method of removing defective portions from a printed polymeric web having a repeating pattern thereon such as that which is used for packaging consumer paper products, comprising:

(a) identifying a defective portion of the printed polymeric web, thereby defining a feed end portion and a takeup end portion of the printed web to be spliced;

(b) overlapping the feed end portion with respect to the takeup end portion in an inverted relationship so that like surfaces of the feed end portion of said printed web and said takeup end of said printed web are positioned facing each other;

(c) securing said overlapped feed end portion and takeup end portions in a position of registration in which the regular spacing of the repeating pattern is preserved from the feed end portion to the takeup end portion;

(d) welding the secured feed end and takeup end portions together by forming a weld line at which the two portions are fused; and

(e) substantially simultaneously with step (d), cutting through said two web portions at the weld line, whereby the defective portion is cut out of the web and a nearly seamless, registered splice is created between the takeup end portion and the feed end portion.

5,632,832

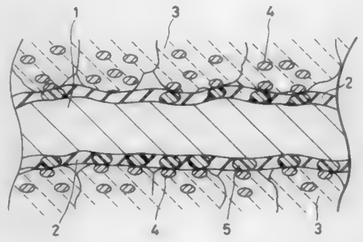
Patent Not Issued For This Number

5,632,833

METHOD OF MANUFACTURING LAMINATED CERAMIC CAPACITOR

Masayuki Kurano, and Masato Shirakata, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 20, 1994, Ser. No. 326,376
Claims priority, application Japan, Oct. 29, 1993, 5-271112
Int. Cl.[6] B32B *31/12;31/26*
U.S. Cl. 427—125 **9 Claims**



1. A method of manufacturing a laminated ceramic capacitor, said method comprising the steps of;

making an unfired laminated ceramic capacitor by forming an electrically conductive paste layer on a green sheet composed of lead system composite perovskite oxide, said paste comprising a solvent in which there are distributed a metal powder including at least silver powder, an organic titanium compound which is one selected from the group consisting of titanium alcoholate and titanate family coupling agent, an organic rhodium compound, and an organic binder, and an amount of titanium in said paste being in the range of 0.02% to 0.09% by weight on the basis of a weight of said metal powder, and wherein an amount of rhodium in said paste being in the range of 0.10% to 0.60% by weight on the basis of a weight of said metal powder; and

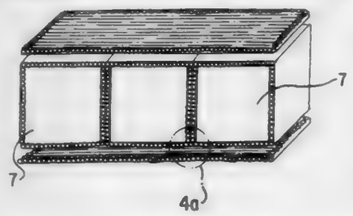
firing said unfired laminated ceramic capacitor.

5,632,834

PROCESS FOR PRODUCING SANDWICH STRUCTURES FROM FIBER-REINFORCED CERAMICS

Rolf Ostertag, Oberuhldingen; Tilman Haug, Markdorf; Richard Renz, Immenstaad, and Wolfgang Zankl, Friedrichshafen, all of Germany, assignors to Dornier GmbH, Germany

Continuation of Ser. No. 766,188, Sep. 27, 1991, abandoned. This application Feb. 10, 1995, Ser. No. 386,657
Claims priority, application Germany, Sep. 27, 1990, 40 30 529.5
Int. Cl.[6] B32B *31/12;31/20*
U.S. Cl. 156—89 **5 Claims**



1. A process for the production of a sandwich structure with facings and a honeycomb core made of fiber-reinforced ceramics comprising the steps of:

impregnating inorganic fibers or wovens with a slip comprising at least a Si-organic polymer and a ceramic or metallic powder;

molding facings;

molding a honeycomb core by placing or winding the impregnated woven or fibers on respective mold cores;

partially cross-linking said at least a Si-organic polymer to form a preceramic matrix, by pressure and temperature treatment of said facings and said honeycomb core;

removing said mold cores from said honeycomb core;

joining said facings and said honeycomb core to form said sandwich structure by complete cross-linking of said Si-organic polymer of said preceramic matrix by means of pressure and temperature treatment;

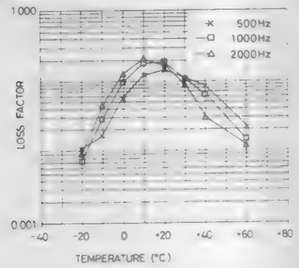
no-pressure pyrolysis for conversion of said preceramic matrix into a ceramic material.

5,632,835

LAMINATED GLASS AND PREPARATION THEREOF

Hideyuki Niwa, Saitama; Yasuhiro Morimura, Tokyo; Hiromi Ohtsuru, Tokyo; Kyoei Yoshida, Tokyo; Itsuo Tanuma, Saitama, and Kazuo Naitoh, Kanagawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,817
Claims priority, application Japan, Jun. 7, 1991, 3-136583; Jun. 7, 1991, 3-136584; Jun. 7, 1991, 3-136585; Jun. 7, 1991, 3-136586
Int. Cl.[6] C03C *27/10*
U.S. Cl. 156—99 **2 Claims**



1. A method for preparing a laminated glass with a thermosetting resin including a copolymer of ethylene-vinyl acetate, 1–100 parts by weight of a hydrocarbon resin based on 100 parts by weight of said copolymer of ethylene-vinyl acetate, and 0.1–5 parts by weight of an organic peroxide based on 100 parts by weight of said copolymer of ethylene-vinyl acetate, said method comprising

mixing a part of said copolymer of ethylene-vinyl acetate with an entire amount of said hydrocarbon resin to form a premixture, a ratio of said copolymer to said hydrocarbon resin being such that said hydrocarbon resin contains 5–200 parts by weight relative to 100 parts by weight of said copolymer, content of vinyl acetate in said copolymer of ethylene-vinyl acetate being 10–50% by weight,

adding a residual amount of said copolymer of ethylene-vinyl acetate to the premixture and mixing together so that an entire amount of said copolymer of ethylene-vinyl acetate is completely mixed together at a short period of time,

adding to the above mixture an entire amount of said organic peroxide and mixing together to form the thermosetting resin, and

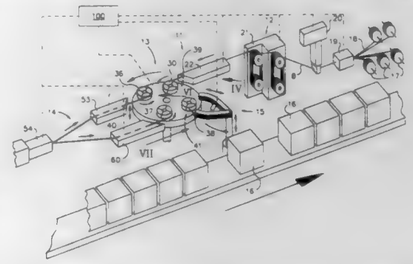
applying the thermosetting resin between two glass plates and curing the same to integrally connect the glass plates and the thermosetting resin.

5,632,836

APPARATUS AND METHOD FOR MANUFACTURING A TIRE BEAD CORE ASSEMBLY

Adri Verschoor, and Rob Franke, both of Losser, Netherlands, assignors to Robert Franke, Losser, Netherlands

Continuation of Ser. No. 30,164, Mar. 26, 1993. This application Apr. 28, 1994, Ser. No. 235,117
Claims priority, application Netherlands, Dec. 21, 1990, 9002848; WIPO, Dec. 20, 1991, PCT/GB91/02298
Int. Cl.[6] B29D *30/48*
U.S. Cl. 156—111 **16 Claims**



1. A method of manufacturing a tire bead core assembly of a bead wire material and a surrounding ring of a filler material having tapered sides extending radially outward from a base, comprising:

coating wire material with rubber at a coating station to form a rubber-coated bead wire material;

feeding the rubber-coated bead wire material in a continuous length from the coating station to a rotatable former;

rotating the former to wind at least one layer of the rubber-coated bead wire material fed thereto onto an annular winding surface of the former to form a bead wire core;

extruding a length of elastomeric filler material to a desired cross-section and supplying it to the former;

without removing the at least one layer of rubber-coated bead wire material from said annular surface of the former, rotating the former to wind the filler material in a single turn directly onto the wound bead wire core and causing the base to be simultaneously pressed against, and securely retained on, the underlying bead wire core to form a bead core assembly consisting of the wound bead wire core and the filler material, wherein the filler material and the bead wire core are held together entirely by the direct adhesion of the filler material to the bead wire core; and

unloading the formed bead core assembly from the former prior to the formation, on a tire building drum, of a tire incorporating said formed bead core assembly.

5. Apparatus for manufacturing a tire bead core assembly, the assembly consisting of a rubber-coated bead wire material and a surrounding ring of elastomeric filler material having tapered sides extending radially outward from an inner base, the apparatus comprising:

mounting means movable between at least first, second and third stations;

coating means for coating wire material with rubber to form a rubber-coated bead wire material;

a former rotatably supported on said mounting means having an annular winding surface and a bead wire material gripping device;

rotating means for rotating the former;

means for feeding said rubber-coated bead wire material in a continuous length from said coating means to said first station;

first means located at said first station including a feeding unit arranged to feed the leading end of the rubber-coated bead wire material to the gripping device so that, when said leading end is gripped by the gripping device and the rotating means are subsequently operated to rotate the former, at least one layer of the rubber-coated bead wire material is wound onto the annular winding surface, and a pressing unit arranged to

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press the bead wire material against the winding surface to form an annular bead wire core on the former;

second means located at said second station including means for receiving the filler material, aligning the filler material with the core so that the filler material is wound directly onto the core, while the core remains on the former, as the former is rotated and pressing the base of the filler material onto the annular bead wire core as the former is rotated to wind the filler material onto the core and simultaneously securely retain the filler material on the formed annular bead wire core to form a tire bead core assembly; and

third means located at said third station for unloading the tire bead core assembly from the former.

5,632,837

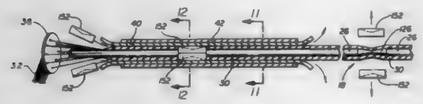
PULTRUSION PROCESS FOR MANUFACTURING COMPOSITE ROD ASSEMBLIES

Joseph A. Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 90210

Continuation-in-part of Ser. No. 45,464, Apr. 8, 1993, Pat. No. 5,421,931, which is a continuation-in-part of Ser. No. 732,042, Jul. 18, 1991, abandoned. This application May 26, 1995, Ser. No. 452,159

Int. Cl.[6] B31C *5/00;* **B29C** *47/00*

U.S. Cl. 156—172 **37 Claims**



1. A process for manufacturing a composite rod assembly that may be used, for example, as a tool handle, the steps comprising:

feeding a core into a pultrusion die tube;

surrounding the core with resin coated fibers;

inserting at least one external mold member having a mold face defining an irregular profile shape into a space between the resin coated fibers and the die tube;

pulling the core through the pultrusion die tube while keeping the core surrounded by the resin coated fibers;

drawing the at least one external mold member through the die tube with the resin coated fibers and the core; and

curing the resin coated fibers around the core to form a fiber-resin jacket having an outer surface conforming to the irregular profile shape of the mold face.

5,632,838

COATING COMPOSITION FOR PULTRUSION/EXTRUSION PROCESS AND METHOD OF APPLICATION

Richard A. Weidner, St. John, Ind., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 287,319, Aug. 8, 1994. This application Aug. 11, 1994, Ser. No. 289,157

Int. Cl.[6] B05C *11/02;3/12*

U.S. Cl. 156—180 **17 Claims**

1. A process for continuously forming a coated fiber reinforced plastic article comprising the steps of:

a. continuously drawing a fiber reinforcing material through an impregnating station;

b. passing a continuous supply of liquid thermoplastic or thermosetting resin material to said impregnating station;

c. impregnating said fiber reinforcing material with said liquid thermoplastic or thermosetting resin at said impregnating station to form a continuous impregnated article;

d. continuously drawing said impregnated article through a forming and hardening die;

e. forming the impregnated article to a finished cross-sectional shape and causing said thermoplastic or thermosetting resin to set to a hardened condition to form a fiber reinforced article;

f. continuously drawing said fiber reinforced article through a coating station;

g. passing a continuous supply of a coating composition to said coating station; and

h. applying said coating composition to at least a predetermined portion of the surface of said fiber reinforced article as said fiber reinforced article continuously passes through said coating station; said coating composition having a viscosity of at least 15,000 cps at 25° C. and a solids content of about 60–90% by weight and comprising:

(i) an isocyanate resin;

(ii) at least one active hydrogen-containing resin; and

(iii) at least one solvent having an evaporation rate equal to or less than about 0.5 and wherein said solvent comprises at least about 60% by weight of the total solvent present.

10. A process for continuously forming a coated extrudate comprising the steps of:

a. forming an extrudate;

b. continuously drawing said extrudate through a coating apparatus;

c. passing a continuous supply of a coating composition to said coating apparatus; and

d. applying said coating composition to at least a predetermined portion of the surface of said extrudate as said extrudate continuously passes through said apparatus; said coating composition having a viscosity of at least 15,000 cps at 25° C. and a solids content of about 60–90% by weight and comprising:

(i) an isocyanate resin,

(ii) at least one active hydrogen-containing resin; and

(iii) at least one solvent having an evaporation rate equal to or less than about 0.5 and wherein said solvent comprises at least about 60

by weight of the total solvent present.

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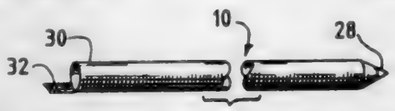
METHOD OF MAKING A SCREEN FOR ANCHORING A FASTENER TO A HOLLOW BLOCK WITH AN ADHESIVE

Frederick A. Kish, Wheeling; Michael A. Rancich, Mundelein; Richard J. Ernst, Palatine, and Mark S. Timmerman, Elgin, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 280,088, Sep. 16, 1994, Pat. No. 5,553,436. This application Sep. 27, 1995, Ser. No. 534,687

Int. Cl.[6] B31C *13/00*

U.S. Cl. 156—194 **31 Claims**



20. A method of making a screen assembly for anchoring a fastener within a wall structure having a bore defined therein, comprising the steps of:

providing a tubular screen member, comprising a plastic material for resisting corrosion, an elongated tubular portion defined about a longitudinal axis, first forward and second rearward open opposite ends, as considered in a direction of insertion of said screen member into and within said bore of said wall structure, and a substantially uniform diameter along its length, said second rearward end of said tubular screen member being open so as to permit adhesive to be deposited into said tubular screen member; and

heating said first forward end of said tubular screen member and disposing said heated first forward end of said tubular screen member within a die so as to provide said first forward end of said tubular screen member with a substantially pointed, closed tip portion disposed along said longitudinal axis of said tubular screen member for facilitating insertion of said tubular screen member into and Within said bore defined within said wall structure, and for preventing axial discharge of said adhesive, disposed within said tubular screen member, from said pointed first forward end of said tubular screen member when a fastener is inserted into said second open rearward end of said tubular screen member such that said adhesive disposed within said tubular screen member will be forcedly discharged radially outwardly through mesh portions of said elongated tubular portion of said tubular screen member so as to fixedly secure said tubular screen member and said fastener within said bore defined within said wall structure.

5,632,840

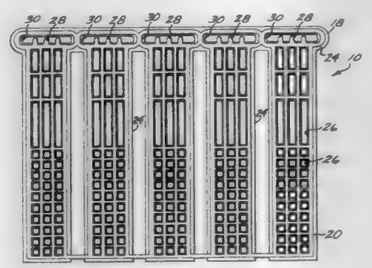
METHOD OF MAKING METAL REINFORCED POLYMER STENT

Patrick K. Campbell, Georgetown, Mass., assignor to Advanced Cardiovascular System, Inc., Santa Clara, Calif.

Division of Ser. No. 310,579, Sep. 22, 1994. This application Jun. 6, 1995, Ser. No. 467,706

Int. Cl.[6] B32B *31/04;31/18*

U.S. Cl. 156—196 **5 Claims**



1. A method of making a stent for use in maintaining the patency of blood vessels, comprising the steps of:

cutting a thin planar sheet of metal in a shape to form a plurality of reinforcement members, each of said reinforcement members including first and second ends, a main body portion between the first and second ends, said first ends being directly connected together and interconnecting tabs joining the second ends, the first end having a surface defining a slot for receiving the second end and the main body portion, the second end and the main body portion being formed to be insertable through said slot so as to form a loop, and means in said slot for releasably engaging the second end and the main body portion;

placing at least one laminating polymeric film capable of absorbing and releasing therapeutic drugs on at least one side of said plurality of reinforcement members;

heating said laminating polymeric film to bond the laminating polymeric film to the surface of the reinforcement members to form a plurality of laminated reinforcement members;

removing said interconnecting tabs; and

rolling said plurality of laminated reinforcement members into a cylindrical configuration whereby the first end overlaps the second end.

5,632,841

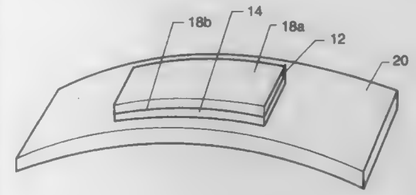
THIN LAYER COMPOSITE UNIMORPH FERROELECTRIC DRIVER AND SENSOR

Richard F. Hellbaum, Hampton; Robert G. Bryant, Poquoson, and Robert L. Fox, Hayes, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 4, 1995, Ser. No. 416,598

Int. Cl.[6] H01L *41/22*

U.S. Cl. 156—245 **8 Claims**



1. A method for producing ferroelectric devices, comprising:

selecting a mold for the device;

placing a prestress layer on the mold;

placing a ferroelectric layer on the prestress layer to create layer structure;

heating the prestress and ferroelectric layers; and

cooling the prestress and ferroelectric layers whereby the heating and cooling steps induce a prestress into the layered structure.

5,632,842

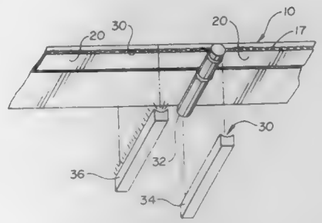
BUSINESS FORM WITH REMOVABLE LABEL AND METHOD OF MAKING SAME

Mark W. Oliver, Schaumburg, and George F. Zehner, Crystal Lake, both of Ill., assignors to Uarco Incorporated, Barrington, Ill.

Filed Sep. 11, 1995, Ser. No. 526,417

Int. Cl.[6] B32B *31/18;* **B42D** *15/10*

U.S. Cl. 156—268 **23 Claims**



1. A method of manufacturing a business form having at least one removable adhesive label, the method including the steps of: (1) adhering a continuous release liner to a portion of one side of a continuous web with a continuous band of pressure sensitive adhesive therebetween, with said band of adhesive having a width less than the width of the web and said release liner having a width substantially equal to the width of said band of adhesive; (2) neutralizing adhesive on the web extending beyond the width of the release liner; (3) die cutting labels in the web in the portion of the web to which the release liner is adhered; and (4) transversely cutting the web and liner to define individual business forms.

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5,632,843

METHOD OF MAKING A MULTILAYER BIAXIALLY STRETCHED FILM AND HEAT SHRUNK MEAT-CONTAINING BAG

Stanley Lustig, Park Forest; Jeffrey M. Schuetz, Woodridge, and Stephen J. Vicik, Darien, all of Ill., assignors to Viskase Corporation, Chicago, Ill.

Division of Ser. No. 395,672, Aug. 18, 1989, Pat. No. 4,997,690, which is a division of Ser. No. 152,715, Feb. 5, 1988, Pat. No. 4,865,780, which is a division of Ser. No. 42,085, Apr. 24, 1987, Pat. No. 4,737,391, which is a continuation of Ser. No. 677,362, Dec. 3, 1984, abandoned. This application Nov. 9, 1990, Ser. No. 610,918

The portion of the term of this patent subsequent to Apr. 12, 2005, has been disclaimed.

Int. Cl.[6] B32B *31/28;31/16;31/26;* B65B *7/02*

U.S. Cl. 156—275.5 3 Claims

1. A process for making a multilayer biaxially stretched film, said process comprising the steps of:

(a) forming a multiple layer film having first and second layers whose compositions comprise ethylene vinyl acetate copolymer and a third layer of vinylidene chloride copolymer disposed between said first and second layers;

(b) heating said multiple layer film to an elevated temperature appropriate for biaxial stretching, and biaxially stretching said multiple layer film; and

(c) after said biaxially stretching of said multiple layer film, subjecting said multiple layer film, containing said first, second and third layers, to irradiation in an amount of at least about 1 megarad, said irradiation after said biaxial stretching comprising an initial irradiation exposure for each of said first, second and third layers.

5,632,844

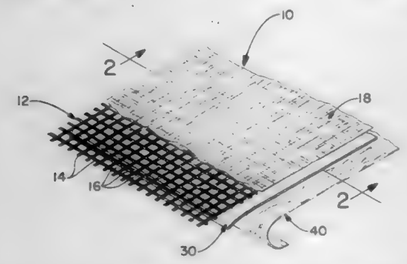
ACOUSTIC LAMINA WALL COVERING

Joseph L. Pate, Columbus, and David L. Fishel, Caledonia, both of Miss., assignors to GenCorp Inc., Fairlawn, Ohio

Division of Ser. No. 13,911, Feb. 5, 1993, Pat. No. 5,364,681. This application May 27, 1994, Ser. No. 250,071

Int. Cl.[6] B32B *31/12;31/20*

U.S. Cl. 156—290 3 Claims



3. A process for fabricating a moisture permeable acoustic lamina comprising the steps of:

providing a thermoplastic layer selected from the group consisting of polyethylene, polypropylene, and polyester between a foraminous woven fabric and a porous fabric backing layer containing woven or non-woven fibers,

heating and pressing said foraminous woven fabric, said thermoplastic layer and said porous fabric backing together and causing said thermoplastic layer to melt and flow into said foraminous woven fabric and said porous fabric backing layer thereby forming a discontinuous thermoplastic layer bonding said foraminous woven fabric to said porous fabric backing layer to form the moisture-permeable acoustical wall covering lamina, and

forming a polyvinyl chloride plastisol coating on said foraminous woven fabric,

wherein the lamina has a moisture permeability of from about 40 to about 500 grams per square meter per hour.

5,632,845

METHOD FOR WELDING TUBULAR PARTS

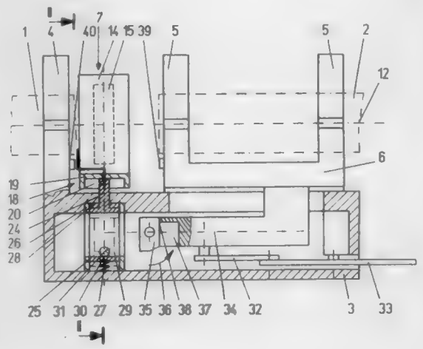
Richard Stehle, Radolfzell, Germany, and Jörg Wermelinger, Schaffhausen, Switzerland, assignors to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland

Continuation of Ser. No. 175,918, Dec. 30, 1993, which is a continuation of Ser. No. 951,476, Sep. 25, 1992, abandoned. This application Apr. 3, 1995, Ser. No. 415,857

Claims priority, application Switzerland, Oct. 4, 1991, 02/935/91

Int. Cl.[6] B32B *31/04;31/12*

U.S. Cl. 156—304.2 10 Claims



1. A method for welding tubular parts made of thermoplastic material, comprising the steps of:

(a) providing a first tubular part and a second tubular part made of thermoplastic material and each having an end face;

(b) determining a desired butt weld length for said first and second tubular parts;

(c) providing clamping means for coaxially clamping said first tubular part and said second tubular part, said clamping means comprising a first clamping device for clamping said first tubular part and a second clamping device for clamping said second tubular part, at least one of said first clamping device and said second clamping device being axially displaceable relative to the other between a tubular part loading position and a butt weld position;

(d) adjusting said butt weld position of said first and second clamping devices to a final butt weld position corresponding to said desired butt weld length;

(e) clamping said first and second tubular parts in said first and second clamping devices when said first and second clamping devices are in said tubular part loading position;

(f) positioning a cutting means between said end faces of said first and second tubular parts;

(g) displacing said at least one of said first and second clamping devices toward said final butt weld position so that said cutting means machines said end faces of said first and second tubular parts so as to provide machined end faces which are spaced to provide said desired butt weld length;

(h) positioning a heating means between said machined end faces of said first and second tubular parts so as to heat said machined end faces to a welding temperature; and

(i) displacing said at least one of said first and second clamping devices toward said final butt weld position so that said machined end faces of said first and second tubular parts contact each other prior to said final butt weld position and are further pressed together to said final butt weld position.

5,632,846

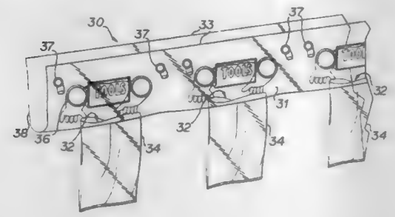
METHOD OF PRODUCING SAFETY GLOVE BAGS

Kurt D. Ross, 195 Pineland Dr., Atlanta, Ga. 30342

Division of Ser. No. 293,187, Aug. 19, 1994, Pat. No. 5,553,933. This application Jun. 7, 1995, Ser. No. 475,224

Int. Cl.[6] B08B *15/00*

U.S. Cl. 156—308.4 8 Claims



1. A method of producing a glove bag for use in removing hazardous material from a pipe, said method comprising the steps of forming a centrally located hole in a generally rectangular sheet of flexible material, mounting gloves to said sheet, and mounting a debris collection and removal bag to the sheet about the hole.

5,632,847

FILM REMOVING METHOD AND FILM REMOVING AGENT

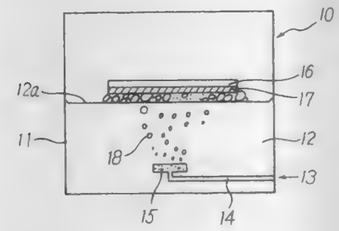
Reiko Ohno, Kitakami, and Terumi Matsuoka, Okayama, both of Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, and Kabushiki Kaisha Toshiba, Kanagawa-ken, both of Japan

Filed Apr. 24, 1995, Ser. No. 427,309

Claims priority, application Japan, Apr. 26, 1994, 6-088551

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—344 6 Claims



1. A method of removing a film from a substrate, comparing the steps of:

supporting the substrate spaced above a surface of an acid aqueous solution so that the film adhering to the substrate is facing the surface of the acid aqueous solution;

injecting ozone into the acid aqueous solution to form bubbles; and

bringing the bubbles into contact with the film adhering to the substrate to remove the film from the substrate.

5,632,848

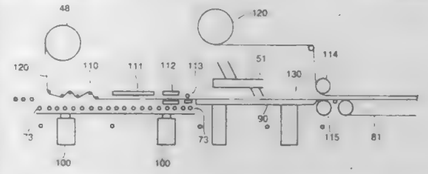
CONTINUOUS PROCESSING EQUIPMENT FOR MAKING FIBERBOARD

Turner W. Richards, Golden Dale, Wash.; Hubert C. Francis, Lithonia; George F. Fowler, Norcross, both of Ga.; Dale R. Greve, Rocky Mountain, Va., and Edward M. Rigby, Salina, Okla., assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 926,339, Aug. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 420,362, Oct. 12, 1989, Pat. No. 5,171,366, and a continuation-in-part of Ser. No. 642,834, Jan. 18, 1991, abandoned. This application Feb. 16, 1995, Ser. No. 391,423

Int. Cl.[6] B29C *31/00;39/42;* B32B *31/06;* D21H *17/66*

U.S. Cl. 156—345 18 Claims



1. An apparatus for use in alternatively and selectively forming wallboard or fiberboard comprising:

means for providing a fiberboard-forming slurry;

means for producing a substantially continuous wet web from said fiberboard-forming slurry;

means for forming a substantially continuous green board from said wet web;

means for dispensing a wallboard-forming gypsum slurry onto a continuously moving wallboard substrate to form a slurry-laden substrate;

means for introducing at least one continuously moving wallboard substrate beneath said dispensing means;

first carrier means located past said dispensing means for carrying said slurry-laden substrate or said green board away from said dispensing means;

second carrier means for receiving said green board and carrying said green board past said dispensing means and to said first carrier means; and

means for selectively introducing and withdrawing said second carrier means from operative association with said first carrier means.

5,632,849

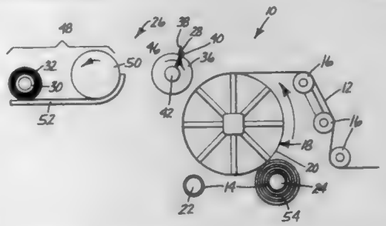
TAB APPLICATOR FOR LOG ROLL WINDERS

Harvey D. Ogren, Dellwood, Minn.; James L. Albrecht, Wahpeton, N. Dak., and Leonard M. Volin, Grant Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing and Company, St. Paul, Minn.

Filed Jan. 21, 1992, Ser. No. 823,379

Int. Cl.[6] B65C *3/12*

U.S. Cl. 156—446 29 Claims



5. A cutting and tabbing assembly for use with a winding system for a web, the assembly comprising:

(a) means for cutting the web;

(b) a tab source;

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(c) a tab bar mounted adjacent the cutting means for receiving a tab from the tab source;

(d) means for moving the tab source from a first position spaced from the cutting means and tab bar to a second position adjacent the cutting means and tab bar to enable the tab bar to receive a tab while the cutting means and tab bar are in a tab-receiving position; and

(e) means for rotating the cutting means and tab bar from the tab-receiving position to a web-cutting position to enable the cutting means to cut the web, and the tab bar to apply the tab onto the web in registration with a cut end of the web.

5,632,850

MACHINE FOR THE MANUFACTURE OF A WEB OF AT LEAST SINGLE-FACE CORRUGATED BOARD

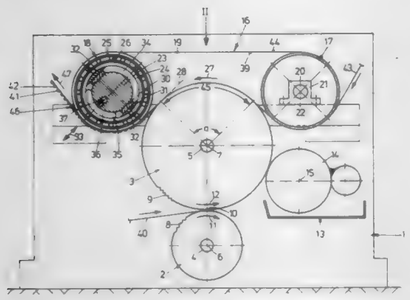
Andreas Knorr, Nürnberg; Hans Mosburger, Weiherhammer, and Gustav A. Gnan, Vilseck, all of Germany, assignors to BHS Corrugated Maschinen- und Anlagenbau GmbH, Weiherhammer, Germany

Filed Jun. 16, 1995, Ser. No. 491,215

Claims priority, application Germany, Jun. 16, 1994, 44 20 726.3

Int. Cl.[6] B31F *1/28*

U.S. Cl. 156—472 **20 Claims**



1. A machine for the manufacture of an at least single-face corrugated board web (**46**) comprising

two fluted rolls (**2**, **3**) for producing a corrugation (**41**) on a paper web (**40**),

a gluing device (**13**) for applying glue to the peaks (**42**) of the corrugations (**41**) of the corrugated paper web (**40**),

a pressing device (**16**) for pressing a liner web (**43**) on the glue on the peaks (**42**) of the corrugated paper web (**40**), which rests on one of the fluted rolls (**3**) along a pressing zone (**45**), the pressing device (**16**) having an endless pressing belt (**19**), which is guided via a deflection pulley (**17**) and a further pulley (**18**, **18'**) and which is pressed against the fluted roll (**3**) along the pressing zone (**45**), and the pressing device (**16**) having a plurality of tensioning devices for the pressing belt (**19**),

wherein over the entire width (d) of the pressing belt (**19**), the pressing device (**16**) has a plurality of tensioning devices,

wherein the pressing belt (**19**) is guided along a plurality of tensioning pulleys (**25**), which are movable at right angles to an axis (**29**) of said tensioning pulleys,

wherein the tensioning pulleys (**25**) are moveably supported on a common stationary pulley carrier (**23**),

wherein the tensioning pulleys (**25**) are movable out of the pressing zone (**45**) about in parallel to the run-off direction (**28**) of the corrugated board web (**46**), and

wherein supporting rings (**24**) are displaceably supported on the pulley carrier (**23**), the tensioning pulleys (**25**) being rotatably supported on the supporting rings (**24**).

5,632,851

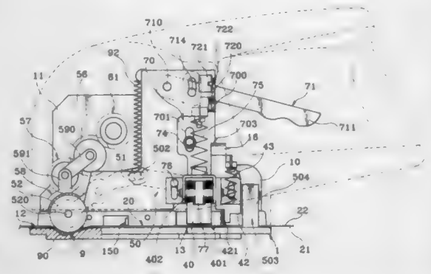
PORTABLE ARTICLE STRAPPING APPARATUS

Michael Young, Taipei, Taiwan, assignor to Pantech International, Inc., Taipei, Taiwan

Continuation-in-part of Ser. No. 416,977, Apr. 5, 1995, abandoned. This application Oct. 2, 1995, Ser. No. 538,287

Int. Cl.[6] B65B *13/32*

U.S. Cl. 156—494 **9 Claims**



1. A portable article strapping apparatus for stretching a thermoplastic strap being wound around an article, then welding the lower strap section and upper strap section of the overlapped part of the thermoplastic strap and simultaneously cutting off the welded overlapped part from said thermoplastic strap, the apparatus comprising a base frame for bearing said overlapped part and for allowing said overlapped part to be loaded into position only in a transverse direction perpendicular to the stretching direction of said thermoplastic strap, a strap take-up mechanism spaced above said overlapped part for taking up said thermoplastic strap, a welding and cutting mechanism disposed above said overlapped part, and a suspension mechanism, wherein:

said welding and cutting mechanism comprises a friction head moved relative to a first position on said overlapped part, a cutting device moved relative to a second position on said overlapped part, and a reciprocating mechanism controlled to reciprocate said friction head in said first position along said transverse direction, said friction head and said cutting device being synchronously moved between the operative position pressed on said overlapped part and the non-operative position away from said overlapped part;

said base frame comprises a toothed portion for holding the lower strap section of said overlapped part from being moved in said transverse direction and the stretching direction of said thermoplastic strap;

said strap take-up mechanism comprises a lever set, a ratchet wheel having a wheel shaft pivoted to said lever set and pressed on said overlapped part and controlled to stretch said thermoplastic strap, and a pressure mechanism coupled to the wheel shaft of said ratchet wheel and controlled to give it a downward pressure when said ratchet wheel is pressed on said overlapped part, said lever set being operated to move said ratchet wheel away from said overlapped part to a release position;

said suspension mechanism comprises a moving part moved relative to said overlapped part between a stop position and an action position, a retainer for holding said moving part in said stop position, and an operating arm for moving said moving part to said stop position and said lever set to said release position simultaneously, said friction head and said cutting device being moved away from said overlapped part by said moving part when said moving part is moved to said stop position, said friction head and said cutting device being pressed on said overlapped part when said moving part is moved to said action position.

5,632,852

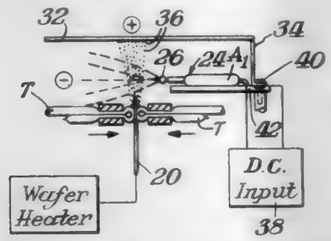
ION GENERATOR IN CONNECT/DISCONNECT OF PLASTIC TUBES

Ivars V. Ivansons, Claymont, and Valdis Ivansons, Wilmington, both of Del., assignors to Denco, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 158,505, Nov. 29, 1993, Pat. No. 5,397,425, which is a continuation-in-part of Ser. No. 965,875, Oct. 23, 1992, Pat. No. 5,279,685. This application Mar. 6, 1995, Ser. No. 398,988

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—503 **11 Claims**



1. A device for the selective connecting and disconnecting of plastic tubes, said device including a housing having a base and a cover selectively movably mounted over said base between open and closed positions, a pair of tube holders mounted to said base, each of said tube holders having a tube receiving area, the closing of said cover causing the clamping and fattening of plastic tubes in said tube receiving areas, said tube holders being disposed toward and spaced away from each other with said tube receiving area of each of said holders in alignment with each other, a heated wafer movably mounted in the space between said holders, an ion generator mounted in said device for electrically charging the aerosol particles created by the heating of the plastic tubes, and a collector being in said device for collecting the electrically charged particles.

5,632,853

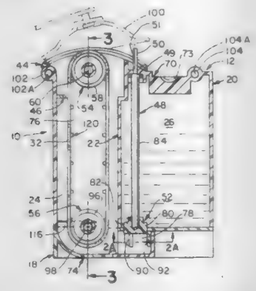
ADHESIVE CARTRIDGE FOR A DESKTOP BOOK BINDER

Eugene N. Montandon, Jr., Minnetonka, and Alan P. Lonneman, Plymouth, both of Minn., assignors to International Binding Corporation, Minnetonka, Minn.

Filed Apr. 26, 1995, Ser. No. 427,857

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—578 **37 Claims**



1. A cartridge for applying adhesive to a stack edge of a stack of bindable material held in a binding machine, the stack edge being defined as a plurality of aligned edges of adjacent sheets of stacked bindable material, the cartridge comprising:

an applicator belt for applying adhesive to the stack edge, the applicator belt having an inner surface with a plurality of notch engaging stubs;

an adhesive application chamber housing the applicator belt therein and including an aperture through which a portion of the applicator belt is exposable;

means for moving adhesive from the adhesive application chamber to the stack edge, the means including a pair of rollers and a sprocket, the pair of rollers affixed within the adhesive application chamber such that the belt is rotatable around the pair of rollers, the rollers further including an arcuate outer surface with a plurality of inwardly cut notches therein for interacting with the notch engaging stubs, and the sprocket coupled to one of the rollers and operable to rotatably drive the applicator belt; and,

an adhesive storage chamber in selective fluid communication via a fluid passageway with the adhesive application chamber.

5,632,854

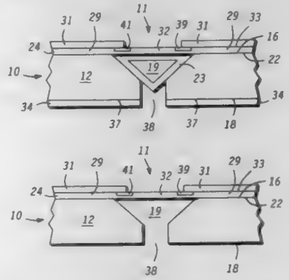
PRESSURE SENSOR METHOD OF FABRICATION

Andy Mirza, Scottsdale, and Ljubisa Ristic, Paradise Valley, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 21, 1995, Ser. No. 517,047

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—53 **21 Claims**



1. A method of fabricating a pressure sensor, the method comprising the steps of:

providing a first substrate having two opposite surfaces, namely a first surface and a second surface;

forming a V-groove in the first surface of the first substrate wherein the V-groove is absent along the second surface of the first substrate;

attaching a second substrate to cover at least a portion of the first surface of the first substrate; and

forming a port into the second surface of the first substrate and towards the first surface of the first substrate, the port connected to the V-groove in the first surface of the first substrate.

5,632,855

THERMAL OXIDE ETCH TECHNIQUE

Stephen A. Jones, and Shyam G. Garg, both of Austin, Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Filed Aug. 29, 1995, Ser. No. 520,377

Int. Cl.[6] H01L *21/3065*

U.S. Cl. 438—714 **17 Claims**

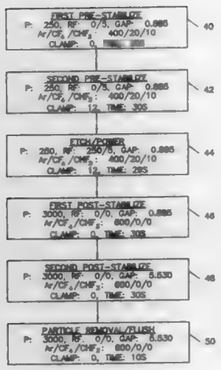
1. A method for removing thermally grown oxide, comprising the steps of:

providing a silicon-based material having thermally grown oxide formed thereon;

placing the oxide-coated silicon-based material in a gap between a pair of electrodes arranged within a parallel electrode reactor;

pressurizing an ambient gas mixture of Ar, CF_4 and CHF_3 inserted into said reactor to a pressure less than 300 mTorr while maintaining said gap to less than 1.0 cm for a first time period, said first time period being a first pre-stabilizing step;

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inserting helium across said silicon-based material to a pressure approximately 12.0 Torr for a second time period, said second time period being a second pre-stabilizing step;

applying approximately 250 watts to one of said electrodes for a third time period, while maintaining the parameters of said first and second pre-stabilizing steps, to remove said thermally grown oxide;

increasing the pressure within said reactor to approximately 3000 mTorr while terminating the flow rates of CF_4 and CHF_3 for a fourth time period, said fourth time period being a first post-stabilizing step;

increasing said gap while maintaining the parameters of said first post-stabilizing step for a fifth time period, said fifth time period being a second post-stabilizing step; and

expelling additional etch products from said reactor while maintaining the parameters of said second post-stabilizing step for a sixth time period, said sixth time period being a particle-removal step.

5,632,857

PROCESS FOR REMOVING WATERBORNE FLEXOGRAPHIC INKS FROM SUBSTRATES

Eric H. Larson, Freehold, N.J., assignor to Rhone-Poulenc Inc., Princeton, N.J.

Filed Apr. 4, 1995, Ser. No. 416,417
Int. Cl.° D21C *5/02*
U.S. Cl. 162—5 **26 Claims**

1. A process for removing waterborne flexographic inks from paper stock comprising the steps of:

(a) forming a slurry by pulping paper containing waterborne flexographic inks in an aqueous medium having a pH of greater than 8 which includes:

(1) one or more basic agents;

(2) one or more nonionic surfactants;

(3) one or more anionic polyelectrolytes; and

(4) an amount of paper different from that being processed which contains inorganic fillers, coatings or mixtures thereof; and

(b) subjecting the slurry produced in step (a) to a flotation cell having an aqueous medium having a pH of greater than 8 which includes:

(1) one or more basic agents;

(2) one or more nonionic surfactants; and

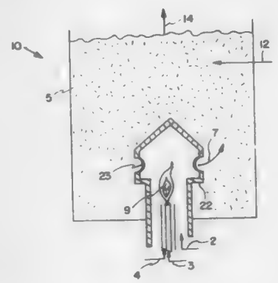
(3) one or more anionic polyelectrolytes.

5,632,858

METHOD FOR GASIFYING CELLULOSIC WASTE LIQUOR USING AN INJECTOR LOCATED WITHIN THE BED OF FLUIDIZED MATERIAL

John B. Kitto, Jr., North Canton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 202,330, Feb. 28, 1994, Pat. No. 5,455,011.
This application Apr. 11, 1995, Ser. No. 419,874
Int. Cl.° D21C *11/12*
U.S. Cl. 162—30.1 **6 Claims**



1. A method for gasifying a carbonaceous or cellulosic waste liquor, the method comprising the steps of:

providing a fluidized bed of material;

providing the carbonaceous or cellulosic waste liquor to the bed of material:

burning a fuel for producing a combustion product;

mixing the combustion product with steam for forming a steam and combustion product mixture; and

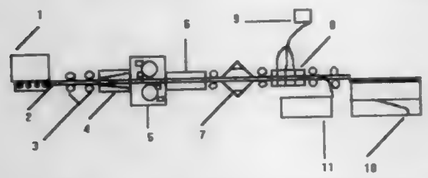
injecting the steam and combustion product mixture into the bed of material in the interior of an injector located within the bed of the fluidized material for gasifying the waste liquor, the injector having at least one bubble cap having at least one hole.

5,632,856

METHOD FOR REMOVING TONER FROM COPY PAPER

Richard B. Buie, 3300 Westminster Ave., Dallas, Tex. 75205

Filed Aug. 1, 1994, Ser. No. 283,505
Int. Cl.° D21B *1/08*
U.S. Cl. 162—4 **1 Claim**



1. A method of removing plastic ink film from a paper sheet consisting essentially of:

(a) heating the paper sheet in a preheating chamber over a period of time sufficient to reduce adhesion of the plastic ink film to the paper sheet,

(b) contacting the heated paper sheet with an adhesive surface by pressing the adhesive surface against the heated paper sheet to remove the plastic ink film from the heated paper sheet,

(c) fusing the plastic ink film to the adhesive surface,

(d) peeling the heated paper sheet away from the adhesive surface to form a paper sheet with removed ink film, and

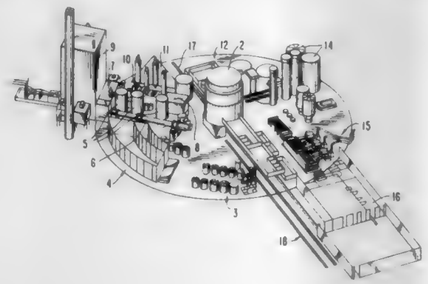
(e) removing the fused plastic ink film from the adhesive surface by cleaning.

5,632,859

INTERGRAL PULP MILL AND METHOD OF CONSTRUCTING AN INTEGRAL MILL

Pertti Heitto, Espoo; Vesa Junttila, Kouvola; Erkki Kiiskilä, Karhula, and Tarmo Sulander, Kauniainen, all of Finland, assignors to Ahlstrom Machinery Oy, Helsinki, Finland

Filed Jun. 4, 1991, Ser. No. 710,071
Claims priority, application Finland, Jun. 7, 1990, 902857
Int. Cl.° D21C *7/12;* **D21F** *7/06*
U.S. Cl. 162—49 **17 Claims**



1. A mill for the processing and production of wood pulp, comprising:

a single, integral structure defining a unitarily-covered space substantially bounding and enclosing the mill;

a main control station for overall monitoring and control of pulp processing operations in the mill, said control station being disposed substantially centrally within said covered space; and

a plurality of processing stations at which various respective pulp processing operations substantially sequentially take place, said plural processing stations being disposed within said covered space and radially outwardly from said main control station, individual ones of said processing stations being arranged and located in said space relative to others of said processing stations so that as the pulp undergoes said sequential processing operations at said plural processing stations the pulp proceeds substantially circumferentially about said main control station between and among said individual processing stations in said unitarily-covered space.

17. A method of constructing a pulp mill, comprising the steps of:

constructing a single, integral structure defining a unitarily-covered space substantially bounding and enclosing the mill;

locating a main control station, for overall monitoring and control of pulp processing operations in the mill, substantially centrally within said covered space; and

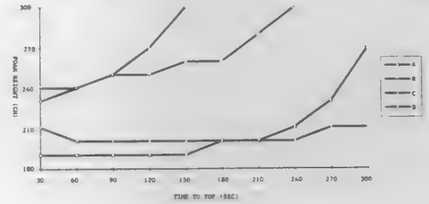
locating a plurality of processing stations, at which various respective pulp processing operations substantially sequentially take place, within said covered space and radially outwardly from the main control station, said step of locating the plurality of processing stations further comprising locating individual ones of the plural processing stations relative to others of the processing stations such that as the pulp undergoes said sequential processing operations at the plural processing stations the pulp proceeds substantially circumferentially about the main control station between and among the individual processing stations in the unitarily-covered space.

5,632,860

METHOD OF CONTROLLING FOAM IN AQUEOUS SYSTEMS

William A. Hendriks, and Daniel J. Barnett, both of Jacksonville, Fla., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jul. 5, 1995, Ser. No. 498,326
Int. Cl.° D21H *21/12;17/06;* **B01D** *19/04*
U.S. Cl. 162—177 **6 Claims**



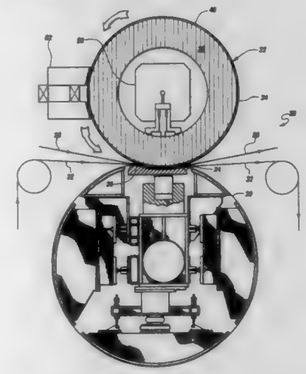
1. A process for controlling foam in the wet end of a papermaking system at temperatures above about 120° F. consisting essentially of adding to the system a sufficient amount for the purpose of a defoaming agent of from about 10–90%, by weight, of a polyether surfactant and from about 10–50%, by weight, of a polyethoxylated sorbitol hexaoleate.

5,632,861

ALLOY COATING FOR WET AND HIGH TEMPERATURE PRESSING ROLL

Jere W. Crouse, Beloit, Wis., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Jun. 8, 1995, Ser. No. 488,988
Int. Cl.° D21F *3/08;* **C22C** *38/22*
U.S. Cl. 162—358.1 **1 Claim**



1. A roll in a papermaking machine comprising;

a roll formed of a first metal, said roll defining an outermost cylindrical surface;

a metal alloy layer coated on said outermost cylindrical surface of the roll;

said metal alloy layer consisting essentially of:

14 to 16 percent molybdenum;

28 to 30 percent nickel;

30 to 34 percent chromium;

1.2 to 1.8 percent silicon;

4 to 4.5 percent boron;

0.2 to 0 percent carbon;

3 to 3.8 percent copper;

with the balance being iron; and

said metal alloy inhibiting sticking of a paper web on said roll.

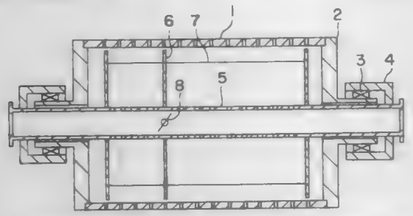
VOL 1198 ISS 4 MY 27 1997 UMI

5,632,862

ROLL FOR PAPER-MAKING MACHINE

Kazuhito Ohira; Setsuo Suzuki; Mitsuo Yamamoto, all of Mihara; Shunji Kasuga, and Katsuhiko Yamada, both of Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,817
Claims priority, application Japan, Mar. 1, 1994, 6-031038
Int. Cl.[6] D21F *3/10*
U.S. Cl. 162—368 18 Claims



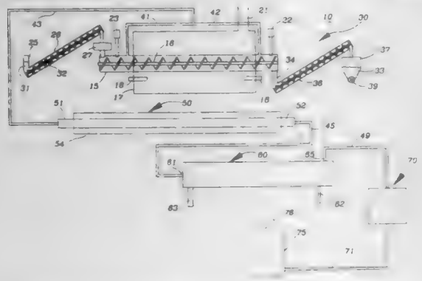
1. A hollow perforated roll for a paper making machine rotatably mounted on a bearing housing, said hollow perforated roll comprising:
a hollow interior, an inner circumferential surface and a center;
a cylindrical stationary center shaft extending in an axial direction through said center of said hollow perforated roll, said cylindrical stationary center shaft having a perforated outer circumferential surface;
at least two fins extending in said axial direction and mounted on said outer circumferential surface of said cylindrical stationary center shaft, said at least two fins having outer edges spaced from said inner circumferential surface of said perforated roll;
wherein said center shaft has a hollow interior communicating with said outer circumferential surface thereof;
radially extending disc-shaped fins mounted on said outer circumferential surface of said center shaft perpendicular to the axis of said center shaft, said disc-shaped fins having outer circumferential edges spaced from said inner circumferential surface of said hollow perforated roll; and
a damper provided within said hollow interior of said center shaft.

5,632,863

BATTERY PYROLYSIS PROCESS

W. R. Meador, P.O. Box 571, Pecos, Tex. 79772

Filed Nov. 22, 1994, Ser. No. 344,092
Int. Cl.[6] C10B *51/00*
U.S. Cl. 201—25 5 Claims



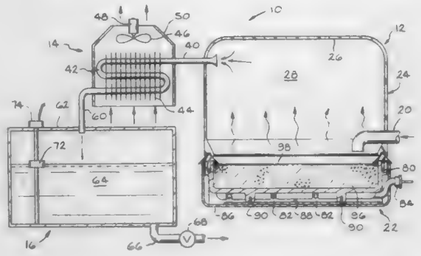
1. A process for reclamation and recovery of battery components from used non-lead acid batteries for reuse or environmentally safe disposal comprising:
transferring non-lead acid batteries from a hopper by a feed screw conveyor into a crusher wherein the batteries are crushed and delivered into a pyrolysis chamber;
maintaining a liquid in the hopper and screw conveyor to exclude the atmosphere from passing through the feed screw conveyor, the crusher and into the pyrolysis chamber;
transferring said crushed batteries with an auger through said pyrolysis chamber;
heating the crushed batteries to a temperature sufficient to decompose the crushed batteries in the pyrolysis chamber;
discharging the resulting solid materials from the pyrolysis chamber through a recovery screw conveyor system into a recovery bin;
excluding the atmosphere from passing through the recovery bin, the recovery screen conveyor and into the pyrolysis chamber;
maintaining a vacuum in said pyrolysis chamber sufficient to remove vapors during said decomposition;
condensing said vapors in a heat exchanger to obtain liquid and gaseous material;
separating said liquid from said gaseous material in a liquid/gas separator;
withdrawing said liquids from said liquid/gas separator;
removing said vapors from said liquid/gas separator through a vacuum system and treating said gaseous vapors for recovery;
transferring said solid material from said bin to a screen separator; and
separating said solid material into the various battery components.

5,632,864

SPLASH SHIELD FOR DISTILLATION UNIT

Brian J. Enneper, Perrysburg, Ohio, assignor to Kuss Corporation, Findlay, Ohio

Filed Jul. 6, 1995, Ser. No. 499,031
Int. Cl.[6] B01D *3/00*
U.S. Cl. 202—197 16 Claims



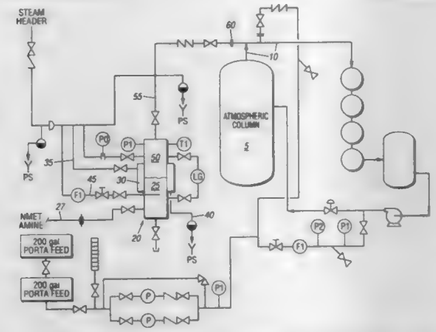
1. A splash inhibitor of porous media for use in a distillation apparatus comprising, in combination,
a body of open cell foam, said foam having an upper surface, and
a layer of screen disposed on said upper surface, said screen having a periphery and a pore size in the range of about 200 microns to 1000 microns,
a boiler,
means for providing heat to the boiler,
an upper boiler housing, and
a gasket disposed between said boiler and said upper boiler housing,
wherein said body of foam and said layer of screen are disposed in the boiler of the distillation apparatus.

5,632,865

METHOD FOR INTRODUCTION OF AGGRESSIVE LIQUID ADDITIVES

Louis E. Stein, and Philip C. Lewellen, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 27, 1994, Ser. No. 265,993
Int. Cl.[6] B01D *3/34;* C10G *9/12*
U.S. Cl. 203—6 18 Claims



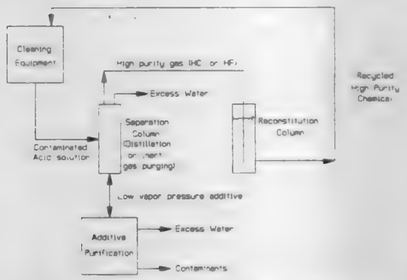
1. A method of introducing an aggressive liquid additive into a vapor-containing process stream comprising
(a) heating said aggressive liquid additive by a heating means thereby producing a heated aggressive liquid additive;
(b) passing said heated aggressive liquid additive to an injection quill in fluid communication with said vapor-containing process stream; and
(c) passing said heated aggressive liquid additive from said injection quill into said vapor-containing process stream.

5,632,866

POINT-OF-USE RECYCLING OF WAFER CLEANING SUBSTANCES

Donald C. Grant, Excelsior, Minn., assignor to FSI International, Inc., Chaska, Minn.

Filed Jan. 12, 1994, Ser. No. 180,546
Int. Cl.[6] B01D *3/34;* C01B *17/90*
U.S. Cl. 203—12 13 Claims



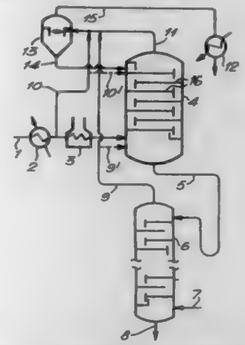
1. A closed loop process involving use, purification, recovery and reuse of an acid in a wafer surface conditioning process, comprising:
(a) conditioning the surface of a wafer with an acid selected from the group consisting of hydrochloric acid, hydrofluoric acid, hydrobromic acid, nitric acid, whereby the acid is contaminated with matter removed from the surface of the wafer;
(b) adding a low vapor pressure liquid adjuvant to an azeotrope forming aqueous solution of the contaminated acid at a volumetric ratio of adjuvant to contaminated aqueous solution of about 0.4:1 to 2:1 to form a reaction mixture whereby the azeotrope forming attribute of the contaminated solution is broken;
(c) separating the reaction mixture to form a primary acid-depleted adjuvant-containing contaminated aqueous liquid phase and a primary acid-enriched, adjuvant-depleted, substantially contaminant free, water vapor containing gaseous phase;
(d) separating the contaminated primary liquid phase into a secondary adjuvant-depleted, contaminated aqueous liquid phase and a secondary adjuvant-enriched, substantially contaminant free, water vapor containing gaseous phase;
(e) reconstituting the primary gaseous phase to form a purified acid with a purity effective for use in a wafer surface conditioning process; and
(f) conditioning the surface of a wafer with the purified acid.

5,632,867

RECOVERING A RELATIVELY VOLATILE COMPONENT OF A SOLUTION FROM A LESS VOLATILE COMPONENT, E.G. AS IN SOLVENT RECOVERY

Michael B. Davis, Morristown, N.J.; John J. Dugan, Sarnia, Canada; James D. Eagan, Woking, England, and Adrianus Welmers, Mendham, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

PCT No. PCT/US93/04724, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO93/23131, PCT Pub. Date Nov. 25, 1993
PCT Filed May 18, 1993, Ser. No. 325,456
Claims priority, application United Kingdom, May 19, 1992, 9210620
Int. Cl.[6] B01D *3/00*
U.S. Cl. 203—78 5 Claims



1. Apparatus for recovering a first component of an extract solution from a solvent extraction process from at least one second component of the solution, said second component being less volatile than said first component,
which apparatus comprises in combination:
a distillation tower for recovering a majority of the second component from the tower as a liquid bottoms product and for recovering the first component from the tower as an overhead product comprising gaseous phase of the first component and a residual amount of liquid phase oft he second component;
an isothermal separator; an overhead line from the tower to the isothermal separator to conduct said overhead product from the tower to the separator for separation therein of the residual amount of liquid phase in the overhead product;
a return line from the separator to the tower for returning the separated liquid from the separator to the tower as a liquid reflux therein;
a feed line for receiving the solution and for feeding a portion thereof to a lower region of the tower, and a heater in said feed line for preheating said portion so that a majority of it enters the tower in the vapor phase;
a branch line in the feed line, said branch line being located upstream of the heater and connecting the feed line to said overhead line between the tower and the separator, for feeding of a branched-off portion of the solution in the feed line to

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said overhead line to reduce the temperature of the overhead product therein substantially to the first component dew point.

4. A method for recovering in a distillation tower a first component of an extract solution from a solvent extraction process from at least one second component of the solution, said second component being less volatile than the first component,

which process comprises the steps of:

(a) preheating a portion of the solution so as to vaporize a majority of said portion of the solution before it is introduced into the tower;

(b) feeding the preheated portion to the tower, in which the vapor ascends;

(c) contacting the hot ascending vapor with cooler descending liquid under conditions in the tower such that a majority of the second component is recovered as a liquid bottoms product and the first component is recovered overhead in an overhead product comprising gaseous phase of the first component and a residual mount of liquid phase of the second component;

(d) conducting another portion of the solution, before the solution is preheated, to a mixing location with the overhead product recovered in step (c), the temperature of the another portion of solution being below that of the overhead product so that the temperature of the overhead product after the liquid therein has been removed therefrom is essentially at the first component dew point;

(e) separating the residual mount of liquid phase of the second component from the gaseous phase of the first component in an isothermal separation process, so that substantially no liquid phase remains in the overhead product; and

(f) retaining said separated residual liquid to the tower as reflux.

5,632,868

METHOD AND APPARATUS FOR GENERATING OZONE AND METHODS OF ITS USE

Minoru Harada; Ryoichi Shinjo; Manabu Tsujimura; Rempei Nakata, all of Kanagawa-ken; Kunihiro Miyazaki, Tokyo; Naruhiko Kaji, Kanagawa-ken, and Yutaka Nakano, Chiba-ken, all of Japan, assignors to Ebara Corporation, Kawasaki, Japan

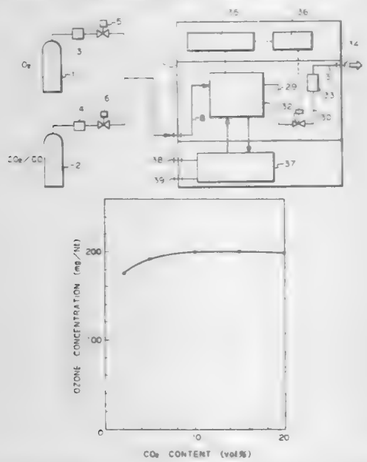
Filed Aug. 23, 1995, Ser. No. 518,418

Claims priority, application Japan, Aug. 24, 1994, 6-224151; Nov. 9, 1994, 6-299092

Int. Cl.[6] C01B *13/10*

U.S. Cl. 204—176 **1 Claim**

1. A method for generating ozone comprising providing a feed



gas consisting of oxygen gas supplemented with 12–20 vol % of carbon dioxide, carbon monoxide or a mixture thereof, and applying a voltage to the feed gas to generate an ozone-containing gas, said carbon dioxide, carbon monoxide or mixture thereof inhibiting contamination of the ozone-containing gas with chromium compounds.

5,632,869

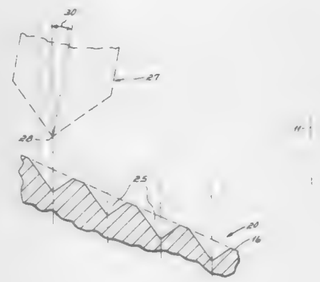
METHOD OF PRETEXTURING A CATHODE SPUTTERING TARGET AND SPUTTER COATING AN ARTICLE THEREWITH

Steven D. Hurwitt, Park Ridge, N.J., and Charles Van Nutt, Monroe, N.Y., assignors to Sony Corporation, Tokyo, Japan, and Materials Research Corporation, Gilbert, Ariz.

Continuation of Ser. No. 575,328, Aug. 30, 1990, abandoned. This application Mar. 3, 1992, Ser. No. 845,854

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.12 **12 Claims**



1. A method of limiting the variation of the voltage of a sputtering target, and of limiting the sputter burn-in time of a sputtering target that is necessary before operating the target at an operating voltage and using the target in a sputter coating process in a vacuum processing chamber of a cathode sputtering apparatus for the productive deposition of a film onto semiconductor wafers, said method comprising the steps of:

fabricating a sputtering target while maintaining the target in an atmospheric pressure environment by:

forming the target from sputtering material to provide a sputtering surface thereon having a predetermined macroscopic shape, and

after forming the target and before exposing the target to a sputtering process, roughening the sputtering surface to create a microtexture thereon sufficiently smooth to avoid altering the macroscopic shape of the sputtering surface and having width and depth dimensions of at least approximately 0.05 millimeters;

after the fabricating of the target, maintaining the sputtering surface of the target in unsputtered condition, and, before sputtering therefrom, mounting and sealing the target in a sputter coating chamber of a sputter coating apparatus and maintaining a gas at a vacuum pressure level into the chamber;

energizing the unsputtered target so mounted and sealed in said chamber to a preconditioning voltage that is higher than the operating voltage but is not more than approximately 140% of the operating voltage during the first three hours of productive deposition of a film onto semiconductor wafers, and sputtering the target for not more than approximately one hour before introducing a wafer into the chamber and sputtering a commercially useful film onto a wafer from the target; then

after not more than approximately one hour of sputtering at the preconditioning voltage, introducing a wafer into the chamber and energizing the target to the operating voltage, and sputtering a film onto the wafer from the sputtering target.

5,632,870

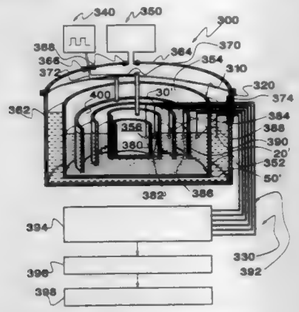
ENERGY GENERATION APPARATUS

Yan R. Kucherov, 5272 Cobble Creek Rd. #12J, Salt Lake City, Utah 84117

Continuation-in-part of Ser. No. 242,572, May 13, 1994, abandoned. This application Apr. 27, 1995, Ser. No. 430,088

Int. Cl.[6] C25B *9/00;11/08;11/10;13/00*

U.S. Cl. 204—241 **30 Claims**



1. An energy generation apparatus comprising:

an electrolytic cell having at least one anode, at least one cathode and an electrolyte comprising hydrogen adapted to be interposed between said at least one anode and said at least one cathode, said at least one cathode including a surface for communication with said electrolyte;

means for applying pulsed electrical voltage between said at least one anode and said at least one cathode;

means for collecting hydrogen gas emitted from said electrolytic cell and extracting energy through oxidation of said hydrogen gas;

a housing comprising at least one thermal conducting side exposed to a source of thermal energy externally disposed to said housing, said electrolytic cell disposed in said housing and said at least one anode being in thermal communication with said at least one thermal conducting side, said at least one anode comprising means for catalytically dissociating the electrolyte into a plurality of ionic products;

means for reducing voltage barrier potential of said electrolyte communicating surface; and

means for reducing electrical resistance between said at least one anode and said at least one cathode.

15. An apparatus according to claim 1, further comprising a means for removing heat energy from said at least one cathode.

5,632,871

SYSTEM AND ELECTROLYTIC CELL HAVING PURE METAL CATALYTIC ELEMENTS FOR HEATING A LIQUID ELECTROLYTE

James A. Patterson, 2074 20th St., Sarasota, Fla. 34234

Filed Jan. 25, 1996, Ser. No. 591,277

Int. Cl.[6] C25B *15/08*

U.S. Cl. 204—275 **21 Claims**

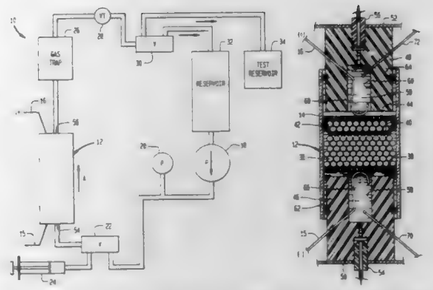
1. A system for heating of a liquid electrolyte comprising:

an electrolytic cell including a non-conductive housing and an inlet and an outlet;

a first conductive foraminous grid positioned within said housing adjacent to said inlet;

a second conductive foraminous grid positioned within said housing spaced from said first conductive grid and adjacent to said outlet;

a plurality of conductive particles each formed of a conductive metal which will combine with hydrogen or an isotope of hydrogen to form a metallic hydride or deuteride, said plurality of conductive particles positioned between said first and second grids in electrical communication with said first grid and electrically isolated from said second grid;



means for pumping said liquid electrolyte into said electrolytic cell through said inlet, said electrolyte having a conductive salt in solution with water;

means operably connected to said first and second grids for maintaining an electrical current flow between said first and second grids when said system is in operation.

5,632,872

COMPOSITE ELECTRICAL ELECTRODE AND A METHOD FOR FORMING THE SAME

Marion Dattilo, 17601 Road 8220, Rolla, Mo. 65401, assignor to Marion Dattilo, Rolla, Mo.

Filed Jun. 21, 1995, Ser. No. 493,023

Int. Cl.[6] C25B *11/00*

U.S. Cl. 204—290 R **8 Claims**

1. A composite electrode for supporting an electrochemical reaction, comprising:

(a) a mixture composed of between 90 and 95 weight percent of an electrically conductive metal compound powder and between 5 and 10 weight percent of a polyethylene blended with said metal compound powder;

(b) said mixture being pressed to form said composite electrode in a monolithic structure having a substantially uniform composition at ambient temperature to bond the components of said mixture together.

5,632,873

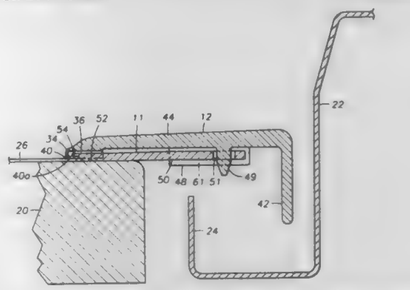
TWO PIECE ANTI-STICK CLAMP RING

Joseph J. Stevens, 5653 Enning Ave., San Jose, Calif. 95123; Roy J. Edwards, 215 Mont Clair Rd., Los Gatos, Calif. 95030, and Avi Tepman, 21610 Rainbow Dr., Cupertino, Calif. 95014

Filed May 22, 1995, Ser. No. 446,396

Int. Cl.[6] C23C *14/34;14/50;16/04;* **B05C** *13/00*

U.S. Cl. 204—298.15 **43 Claims**



11. An apparatus for shielding the edge of a semiconductor substrate from a deposition environment maintainable within a chamber, comprising:

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a first annular member positionable on said substrate to overhang the edge of a substrate received on said support member; and

a second annular member translatably positioned adjacent the first annular member to ensure separation of the substrate from the first annular member after the formation of a deposition layer on the substrate, said second annular member positionable in a first, shield supported position and a second, substrate support member supported position.

5,632,874

ION SELECTIVE CERAMIC MEMBRANE

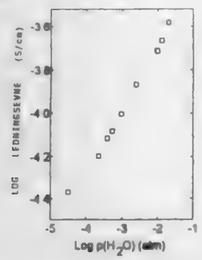
Niels Christiansen, Gentofte, Denmark, assignor to Haldor Topsoe A/S, Denmark

Filed Aug. 9, 1995, Ser. No. 513,048

Claims priority, application Denmark, Aug. 17, 1994, 0953/94

Int. Cl.[6] G01N *27/333*

U.S. Cl. 204—419 6 Claims



1. An ion selective ceramic membrane with high proton conductivity formed of lanthanide phosphate with monoazite structure and doped with at least one metal Me of Group IIA of the Periodic Table, and having a composition:

$Ln_{1-x}Me_xPO_4$ wherein Ln is at least one member of the group consisting of lanthanum, cerium, praseodymium, neodymium, samarium, europium and gadolinium; and

$0<x\leq 0.5$.

5,632,875

ELECTROCHEMICAL GAS SENSOR ASSEMBLY

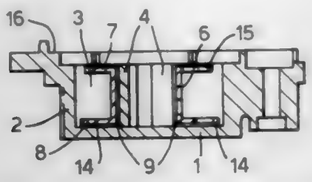
John Chapples, Hants, and Peter J. Sewell, Hampshire, both of Great Britain, assignors to City Technology Limited, Portsmouth, Great Britain

Filed Jun. 26, 1996, Ser. No. 673,727

Claims priority, application United Kingdom, Aug. 29, 1995, 9517620

Int. Cl.[6] G01N *27/401*

U.S. Cl. 204—431 16 Claims



1. An electrochemical gas sensor assembly comprising an electrochemical gas sensor having sensing and counter electrodes; an electrolyte reservoir; and at least one capillary defined by substantially rigid, non-porous walls for conveying electrolyte between said reservoir and said gas sensor, wherein said reservoir includes an upstanding wall, said sensor further including a substantially rigid non-porous body having an aperture into which said upstanding wall is positioned so that said at least one capillary is defined between the upstanding wall and the body.

5,632,876

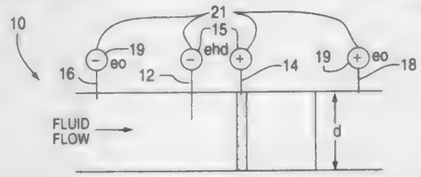
APPARATUS AND METHODS FOR CONTROLLING FLUID FLOW IN MICROCHANNELS

Peter J. Zanzucchi, Lawrenceville; Charlotte A. Burton, Brick, and Satyam C. Cherukuri, Cranbury, all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Jun. 6, 1995, Ser. No. 469,238

Int. Cl.[6] B01D *61/42*; F04F *11/00*

U.S. Cl. 204—600 11 Claims



1. A pumping device in a microchannel comprising electrodes situated alone the length of the microchannel, two of which are separated by a first length of microchannel and can be operated together to form an electrohydrodynamic pump and two of which are separated by a second length of microchannel and can be operated together to form an electro-osmotic pump, wherein the second length is greater than the first length.

5,632,877

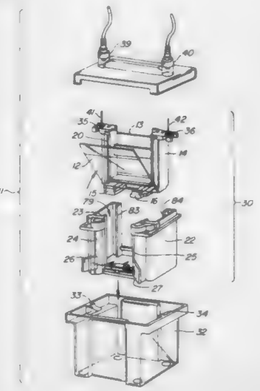
RAPID ASSEMBLY ELECTROPHORESIS CELL FOR SLAB GELS

Daniel L. Van Atta, Clayton, Calif., assignor to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed May 20, 1996, Ser. No. 650,388

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—618 10 Claims



1. Apparatus for securing a parallel plate gel enclosure to a frame to form a liquid-retaining chamber for an electrophoresis buffer, said apparatus comprising:

a gasket between said frame and said gel enclosure;

a housing;

a pressure plate movably received inside said housing, said pressure plate defining a cavity within said housing to receive said gel enclosure and frame;

a pair of cams rotatably mounted to said housing in engagement with said pressure plate; and

means for rotating said cams to urge said pressure plate toward said cavity, such that when said gel enclosure, gasket and frame are received in said cavity, said gel enclosure is pressed against said gasket and frame to form a fluid-tight seal.

10. Apparatus in accordance with claim 1 in which said gasket is defined as a first gasket, said apparatus further comprises a second gasket, and said frame comprises first and second faces with grooves on each face to receive one of said gaskets, said apparatus thereby capable of receiving two gel enclosures, one on each side of said frame.

5,632,878

METHOD FOR MANUFACTURING AN ELECTROFORMING MOLD

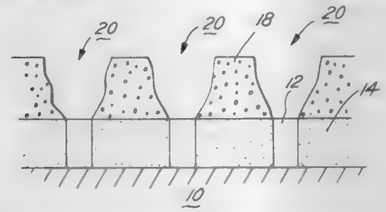
Minoru Kitano, Nagoga, Japan, assignor to FET Engineering, Inc., Bardstown, Ky.

Continuation of Ser. No. 249,018, May 26, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 547,677

Claims priority, application Japan, Feb. 1, 1994, 6-010585

Int. Cl.[6] C25D *1/10*

U.S. Cl. 205—70 5 Claims



1. A method of manufacturing a porous electroformed tool in which a metal deposited layer is formed by depositing metal on a base by electroforming, characterized by using electroforming solution comprising nickel sulfamate, in the range of 300–400 g/L, nickel chloride in the range of 5–10 g/L, and boric acid in the range of 30–40 g/L, to which is added a non-leveling agent consisting of benzene sulfonic acid or a carboxylic acid or nicotinic acid or methyl-pentynol in the range of 0.05–0.8 g/L in the process of depositing metal on the base to form a porous electroformed tool having about 70 holes of 10–20 μm per dm^2.

5,632,879

PROCESS FOR FORMING INORGANIC SKIN FILM

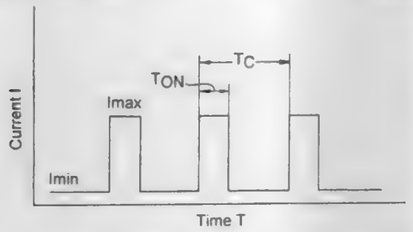
Masamune Tabata; Yoshikazu Fujisawa; Kenji Dosaka, and Takahiro Gunji, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 236,901, Apr. 29, 1994, Pat. No. 5,503,942. This application Jun. 7, 1995, Ser. No. 476,819

Claims priority, application Japan, Apr. 30, 1993, 5-127834; Oct. 15, 1993, 5-281874

Int. Cl.[6] C25D *5/18*

U.S. Cl. 205—104 43 Claims



1. A process for forming an inorganic skin film using a plating process selected from the group consisting of electrolytic plating, chemical vapor deposition, and sputtering, said inorganic skin film being formed of an aggregate of crystals, said aggregate including at least one of a plurality of hexangular pyramid-shaped crystals or a plurality of truncated hexangular pyramid-shaped crystals in a surface of said skin film, said process comprising the steps of:

controlling the output of a plating energy source to produce a pulse waveform such that said output is increased from a minimum value to reach a maximum value and then is reduced to said minimum value; and

setting a ratio T_{ON}/T_C of an output time T_{ON} to a cycle time T_C within a range of $T_{ON}/T_C \leq 0.45$, wherein said output time T_{ON} is from a start point of increasing said output to a start point of reducing said output, and said cycle time T_C is the time required for one cycle from an increasing-start point to a next increasing-start point of said output.

5,632,880

PROCESS FOR GALVANIC CHROMIUM PLATING

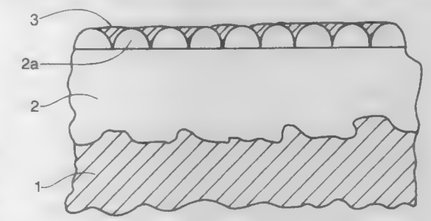
Marco Santini, Severin-Kern-Strasse 44, D-78052 Villingen-Schwenningen, Germany

Filed Aug. 9, 1996, Ser. No. 694,738

Claims priority, application Germany, Aug. 12, 1995, 195 29 843.8

Int. Cl.[6] C25D *5/34*

U.S. Cl. 205—210 12 Claims



1. A process for galvanic deposition chromium coatings on a metallic base material, comprising cleaning the base material, exposing the cleaned base material to a galvanic chromium-plating bath to form a hard chromium coating having a hardness of at least 600 HV with beaded surface structure, and galvanically applying a black chromium coating on the hard chromium coating to fill and smooth the beaded surface structure.

5,632,881

MEASURING MAGNESIUM CONCENTRATIONS IN MOLTEN METAL ALLOYS

Stephen A. Gabelich, Long Beach, and John McHardy, Westlake Village, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 225,629, Apr. 11, 1994, abandoned. This application Jun. 16, 1995, Ser. No. 491,139

Int. Cl.[6] G01N *27/416*

U.S. Cl. 205—781.5 15 Claims

8. A method of measuring magnesium concentration in molten aluminum during a process for reducing magnesium content in said molten aluminum, said process including forming a molten salt layer on said molten aluminum and passing a current through an anode immersed in said molten aluminum and a cathode immersed in said molten salt layer so as to ionize and collect said magnesium from said molten aluminum, said method comprising;

(a) providing a sensor probe comprising

(1) first and second electrodes chemically inert with respect to molten magnesium and to molten aluminum, each electrode having two ends, with one end of each electrode provided with an electrical connection and the other end of each electrode adapted for immersion into said molten aluminum;

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(2) readout means connected to each said electrical connection of each said electrode for detecting a change in electromotive potential between said other ends of each said electrode;

(3) said first electrode comprising an outer housing having a top and a bottom, a magnesium reference material, a support cup located within said outer housing and being open at one end for containing said magnesium reference material, and a first fibrous ceramic wick comprising yttrium oxide, wherein said first fibrous ceramic wick is positioned at said open end of said support cup in contact with said magnesium reference material to thereby retain said magnesium reference material in said support cup, said open end of said support cup comprising said other end of said first electrode and being adapted for receiving said molten salt therein, said sensor probe adapted to provide an electrochemical cell comprising

$$[Mg(l)]\|[MgCl_2\ CaCl_2(l)]\|[Mg\text{ in Al }(l)],$$

where "l" refers to liquid;

(b) first immersing said sensor probe into said molten salt layer to wet said first fibrous ceramic wick with said molten salt wherein said molten salt remains trapped in said first wick;

(c) then immersing said sensor probe into said molten aluminum layer to contact said molten salt in said first fibrous ceramic wick with said molten aluminum; and

(d) measuring change in potential as a function of time, said change in potential related to said magnesium concentration.

5,632,882

ELECTROLYTES FOR INHIBITING SILVER DEPOSITION ON OXYGEN SENSOR CATHODES AND METHODS OF USE OF SAME

Huan P. Wu, Beavercreek, Ohio, assignor to YSI Incorporated, Yellow Springs, Ohio

Filed Jul. 29, 1996, Ser. No. 681,657

Int. Cl.[6] G01N *27/404*

U.S. Cl. 205—783 **21 Claims**

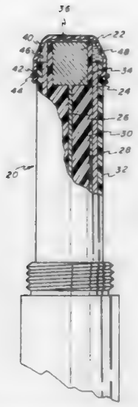
1. Apparatus for detecting a gas dissolved in a liquid medium comprising:

an aqueous electrolyte solution;

an enclosure defining a cavity for containing the aqueous electrolyte solution, the enclosure being permeable to the gas and substantially impermeable to the liquid medium; and

a plurality of spaced electrodes in electrical communication with the aqueous electrolyte solution, said electrodes comprising a reference electrode and a sensor electrode;

wherein said reference electrode of the plurality of spaced electrodes includes a material selected from the group consisting of silver, silver chloride and alloys thereof, and the aqueous electrolyte solution includes approximately 1 mM to 1.5M of a chloride salt and 10 mM to 2M of a sulphate salt.



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METHOD AND A DEVICE FOR DETECTING THE OXYGEN CONTENT IN GASES

Gerhard Hoetzel, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

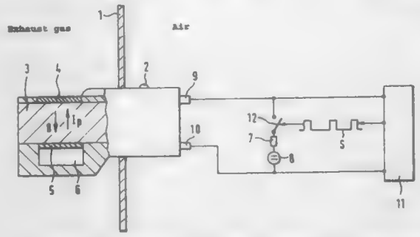
PCT No. PCT/DE95/00258, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO95/24643, PCT Pub. Date Sep. 14, 1995

PCT Filed Feb. 28, 1995, Ser. No. 545,848

Claims priority, application Germany, Mar. 10, 1994, 44 08 021.2

Int. Cl.[6] G01N *27/407*

U.S. Cl. 205—784.5 **3 Claims**



2. A method for detecting the oxygen content in the exhaust gas of an internal combustion engine utilizing a device which includes a concentration measuring cell operating pursuant to the Nernst principle and including: a solid electrolyte; a measuring electrode arranged on said solid electrolyte and exposed to said exhaust gas, said exhaust gas containing gas particles; a reference electrode arranged on said electrolyte and being connected to said measuring electrode through said solid electrolyte; said solid electrolyte including holding means for holding a volume of reference gas separated from ambient air and in contact with said reference electrode and said reference gas containing gas particles; means for separating said reference gas volume from said exhaust gas containing gas particles so that an exchange of particles between said reference gas volume and said exhaust gas is impeded; and, said concentration measuring cell having an output voltage across said measuring and reference electrodes and said output voltage defining a measure for the difference of the oxygen concentration in said exhaust gas and said reference gas volume; and, the device further including a current source for supplying a pump current having a predetermined magnitude; switching means connected to said current source and being switchable between a first position wherein said current source is connected between said measuring and reference electrodes to provide a current flow directed to cause oxygen to be transported in said solid electrolyte from said measuring electrode to said reference electrode and a second position wherein said current source is disconnected from said concentration cell and said pump current is interrupted whereby said output voltage between said measuring and reference electrodes is unaffected by said current source; the method comprising the steps of:

effecting the first position of the switch means for a first time duration to cause oxygen to be transported to the reference electrode;

effecting the second position of the switch means for a second time duration to disconnect the current source from the electrodes with said first and second time durations defining a time ratio;

measuring the voltage between the electrodes as an indication of the oxygen content in the exhaust gas while the current source is disconnected; and,

selecting said time ratio and said magnitudes of said pump current so that the flow of oxygen to said reference gas volume during said first time duration exceeds, in time average, a flow of oxygen out of said reference gas volume during said second time duration.

5,632,884

ASPHALT COMPOSITIONS, METHOD OF PREPARATION, AND USE

Didier Jamois, Sainte Adresse; Yannick Jolivet, Le Havre; Pierre Le Perchec, Lyon, and Bernard Fixari, Vienne, all of France, assignors to Total Raffinage Distribution S.A., Puteaux, France

Filed Dec. 30, 1994, Ser. No. 367,096

Claims priority, application France, Dec. 30, 1993, 93 15890

Int. Cl.[6] C10C *3/00;3/02*

U.S. Cl. 208—44 **19 Claims**

1. A modified asphalt composition, said composition having been obtained by a process consisting essentially of treating at least one asphalt base with an acid-derived compound containing at least two functional groups capable of being grafted, respectively, onto one or more sites located on two or more different aromatic entities of the asphalt base, so as to effect grafting of such functional groups at such sites and thereby to link said entities by bridging through said acid-derived compound and thus modify the asphalt base and obtain the modified asphalt composition, wherein the acid-derived compound is selected from the group consisting of a dianhydride and an acid dihalide.

5,632,885

HYDROGEN PEROXIDE REMOVAL EQUIPMENT CAPABLE OF TREATING BOTH WASTE WATER AND WASTE GAS

Kazuyuki Yamasaki, Hiroshima, and Atsushi Yokotani, Fukuyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1996, Ser. No. 684,238

Claims priority, application Japan, Aug. 1, 1995, 7-196439

Int. Cl.[6] C02F *1/58*

U.S. Cl. 210—96.1 **11 Claims**

1. A hydrogen peroxide removal equipment which introduces a waste water through a supply port into a tank, decomposes hydrogen peroxide in the introduced waste water inside the tank, and discharges the waste water through an outlet port, comprising:

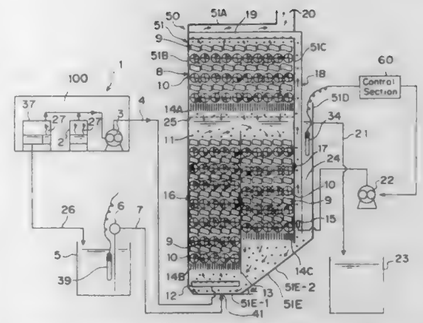
a first decomposition section, a second decomposition section and a third decomposition section constituted by combining a charcoal and a plastic material having a void for allowing water and gas to pass therethrough inside the tank, wherein

the first decomposition section and the second decomposition section are provided below a water surface level of the waste water introduced into the tank and are arranged on both sides of a vertical partition plate located apart from a bottom plate of the tank, and

the third decomposition section is provided above the water surface level of the waste water and is arranged above the first decomposition section and the second decomposition section;

a gas discharging section which upwardly discharges a gas from below the first decomposition section to generate in the waste water introduced into the tank a circulating current which flows over an upper end of the partition plate to reach the second decomposition section from the first decomposition section and returns from the second decomposition section to flow under a lower end of the partition plate to the first decomposition section; and

a water sprinkling means for pumping up the waste water inside the tank and sprinkling the waste water on the third decomposition section.



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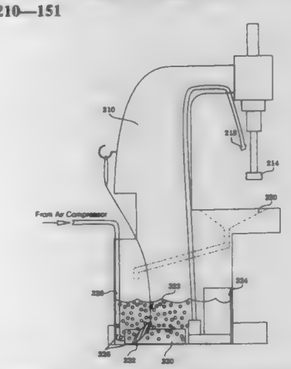
CUTTING OIL TREATMENT APPARATUS

Robert Staniec, San Pedro, Calif., assignor to Harvey Universal, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 91,897, Jul. 15, 1993, abandoned, and Ser. No. 205,944, Mar. 1, 1994, Pat. No. 5,462,656, which is a division of Ser. No. 42,120, Apr. 2, 1993, Pat. No. 5,314,620, said Ser. No. 91,897is a continuation-in-part of Ser. No. 42,120. This application May 26, 1995, Ser. No. 450,479

Int. Cl.[6] C02F *3/10*

U.S. Cl. 210—151 **13 Claims**



1. An apparatus for the remediation of an anaerobically fouled cutting oil, said apparatus comprising:

(a) a housing comprising two chambers which is removably insertable into said cutting oil, said housing comprising:

(i) an aeration chamber, said aeration chamber having a plurality of openings for the escape of air bubbles into the surrounding cutting oil; and

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(ii) a bacterial support chamber, said chamber supporting cultured aerobic bacteria on an inorganic particulate substrate therein, and said chamber permitting flow of the surrounding cutting oil into and out of the bacterial support chamber; and

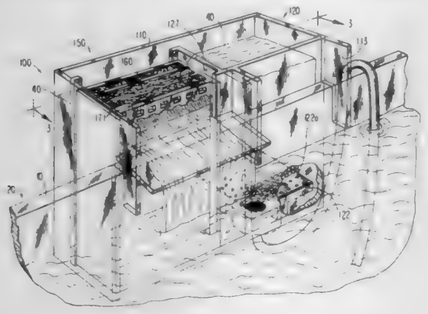
(b) an air compressor means for continuously providing air to said aeration chamber.

5,632,887

FLUIDIZED BED AQUARIUM FILTER

Joseph E. Gargas, Apollo Beach, Fla., and Robert H. Hyde, Budd Lake, N.J., assignors to The Wardley Corporation, Seaucus, N.J.

Filed Jun. 7, 1995, Ser. No. 481,729
Int. Cl.[6] A01K *63/04;* **C02F** *3/06*
U.S. Cl. 210—151 **28 Claims**



1. An aquarium filter comprising:

a housing;

a column having an interior, a top and a bottom within the housing and an inlet substantially at the bottom of the column and an outlet substantially at the top of the column;

a perforated plate across the interior of the column, located between the inlet and the outlet, the plate having holes defined by walls extending completely through the thickness of the plate, the holes arranged in a pattern;

a fluidized bed of particulate material within the column, located between the plate and the outlet, the fluidized bed of particles having a volume greater than the volume of the particles at rest when water is not fluidizing the bed as it flows through the column; and

water flowing from the inlet, through the perforated plate, through the fluidized bed and out the outlet of the column, the pattern of holes in the perforated plate effective for promoting a substantially uniform flow profile for the water flowing through the column.

5,632,888

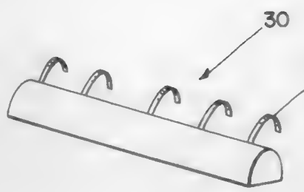
ENVIRONMENTAL FILTER

Andrew W. Chinn; Daniel M. Strawser, Sr., both of Grove City, and Geralde M. Chinn, Columbus, all of Ohio, assignors to Dandy Enterprises Limited, Grove City, Ohio

Filed May 11, 1995, Ser. No. 439,361
Int. Cl.[6] E03F *5/14*
U.S. Cl. 210—163 **7 Claims**

1. An environmental filter system, comprising:

a curb inlet and an environmental filter in combination, said environmental filter including an elongated porous material for substantially covering a mouth of said curb inlet, said curb inlet in a plane having a vertical component, such that water will pass through said porous material while sediment and other solids will be substantially blocked from passing through said porous material; and



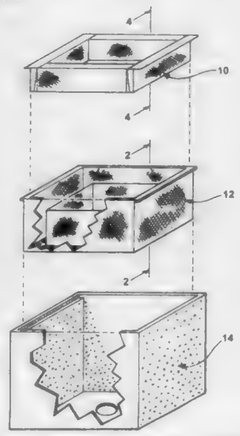
a permeable body portion enclosed within said porous material, said permeable body portion providing a degree of rigidity and form to said elongated porous material whereby debris is substantially prevented from entering said curb inlet.

5,632,889

FILTER CARTRIDGE FOR SEPARATING LIQUID HYDROCARBONS FROM WATER

Gary D. Tharp, 12250 San Antonio Rd., Atascadero, Calif. 93422

Filed Jun. 9, 1995, Ser. No. 488,931
Int. Cl.[6] C02F *1/28*
U.S. Cl. 210—165 **2 Claims**



1. Apparatus for installation in a hollow catch basin for separating liquid hydrocarbons from water flowing into the catch basin, the catch basin having an upper edge over which the water falls and having a substantially vertical wall extending downward from the upper edge of said catch basin, said apparatus comprising:

an insert extending down into and around the inner periphery of said hollow catch basin, said insert having a central hollow conduit, a bottom portion, an outer wall, an inner wall spaced from said outer wall, and a trough disposed in said bottom portion of said insert between said inner and said outer walls so that water falling from the upper edge of the catch basin will fall into said trough, said outer wall having an outwardly directed flange resting on the upper edge of said catch basin for supporting said insert, said outer wall of said insert extending downward along the wall of said catch basin, said inner wall surrounding said central hollow conduit and having an upper edge disposed at a height lower than said outwardly directed flange of said outer wall, said upper edge of said inner wall defining a weir, said trough including a lower portion having perforations to permit water to drain from the trough; and

a cartridge telescopically received within and extending along the lower portion of the trough of said insert, said cartridge including a perforated bottom to permit water to drain from said cartridge and having a perforated lid for distributing

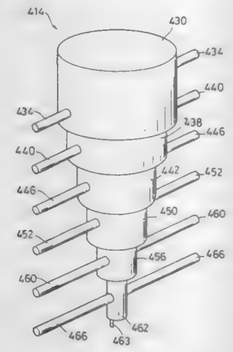
incident water substantially uniformly over the lid, said cartridge further including an absorbent particulate material contained therein, said absorbent particulate material defining means for absorbing liquid hydrocarbons.

5,632,890

CERAMIC FILTER FILTRATION APPARATUS FOR PURIFYING SWIMMING POOL WATER

Akitoshi Sugimoto, 244, Mama, Kochi-shi, Kochi, Japan

Division of Ser. No. 300,197, Aug. 29, 1994, which is a division of Ser. No. 59,989, May 12, 1993, Pat. No. 5,370,793, which is a division of Ser. No. 721,087, Jun. 25, 1991, Pat. No. 5,244,585. This application Jun. 7, 1995, Ser. No. 475,508
Claims priority, application Japan, Jan. 11, 1991, 3-2273; May 28, 1991, 3-34589
Int. Cl.[6] B01D *29/00*
U.S. Cl. 210—169 **20 Claims**



1. A ceramic filter filtration apparatus for purifying swimming pool water, comprising a plurality of concentric cylindrical housings nested within each other, each housing having an outer and an inner cylindrical wall and two annular end walls closing spaces between the outer and inner walls, and each housing having an outlet conduit in fluid communication externally of a respective said cylindrical housing, said plurality of housings comprising a first radially outermost housing, a second housing nested within the first housing, a third housing nested within the second housing, and a fourth housing nested within the third housing, a cylindrical porous ceramic filter through which said first and second housings fluidly communicate with each other, one of a disinfection means for the pool water and an adsorption means for adsorbing impurities from the pool water being disposed in said third housing, said third and fourth housing in fluid communication with each other through an outer wall of said fourth housing.

5,632,891

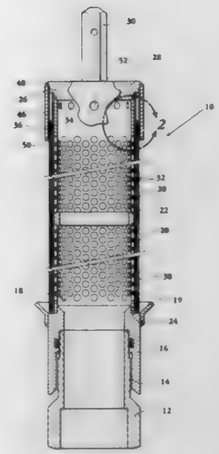
SELF VENTING SEPTUMS FOR USE IN A LIQUID FILTRATION SYSTEM

Stephen Krasicky, Jr., Greensboro, N.C., assignor to Purolator Products Company, Tulsa, Okla.

Filed Nov. 17, 1995, Ser. No. 559,228
Int. Cl.[6] B01D *29/15*
U.S. Cl. 210—193 **12 Claims**

1. A septum adapted to be pre-coated with a filter and/or chemical treatment composition comprising:

a tubular core member having a top end and a bottom end, having a plurality of top openings therein immediately adjacent said top end, having a short axial length impervious portion adjacent said plurality of top openings and a perforated portion from said impervious portion to said bottom end;



a multi-layer filter screen positioned about the exterior of said tubular core;

a tubular air release shield positioned on said filter screen having a tubular sidewall with at least one opening therethrough, the sidewall extending from said tubular core top towards said tubular core bottom of a length sufficient to at least substantially encompass said tubular core impervious portion; and

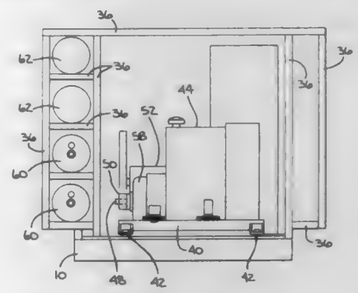
an end fitting closing said top end of said tubular core whereby at least a substantial portion of gas entrapped in the septum is vented through said tubular core top openings and said air release shield at least one opening.

5,632,892

PORTABLE REVERSE OSMOSIS WATER PURIFICATION PLANT

Kim C. Klein, Hammond, La., assignor to Mechanical Equipment Company, Inc., New Orleans, La.

Filed Oct. 19, 1995, Ser. No. 545,305
Int. Cl.[6] B01D *63/00*
U.S. Cl. 210—257.2 **9 Claims**



1. A portable reverse osmosis water purification plant comprising:

a frame;

a housing on said frame;

a storage area in said housing adapted to receive feed water and product water pumps, and internal combustion engines therefor;

a diesel engine in said housing;

a high pressure pump within said housing and mechanically coupled to said diesel engine to be driven thereby;

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a primary filter in said housing, said primary filter being a backwashable filter and being connectable to said feed water pump to receive water to be purified therefrom;

a secondary filter in said housing, said secondary filter being a cartridge filter and being connected to said primary filter to receive water to be purified therefrom and to said high pressure pump to provide the water to be purified thereto;

a membrane/pressure vessel having a reverse osmosis membrane and located in said housing and having an inlet connected to said high pressure pump to receive, under high pressure, the water to be purified, and an outlet to discharge purified water; said outlet adapted to be connected to said product water pump;

at least two treatment reservoirs in said housing; and

an electrically operated injection pump for each of said reservoirs.

5,632,893

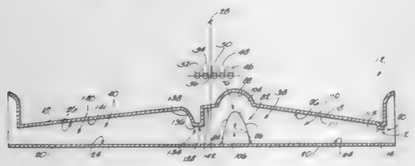
ENHANCED YIELD BLOOD PROCESSING SYSTEMS WITH ANGLED INTERFACE CONTROL SURFACE

Richard I. Brown, Northbrook; John T. Foley, Wheeling, and Dale R. Ellis, Grays Lake, all of Ill., assignors to Baxter Internatinoal Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 814,403, Dec. 23, 1991, abandoned, and Ser. No. 748,244, Aug. 21, 1991, Pat. No. 5,322,620, which is a continuation of Ser. No. 514,995, May 26, 1989, Pat. No. 5,104,526, which is a continuation of Ser. No. 9,179, Jan. 30, 1987, Pat. No. 4,834,890. This application Jun. 7, 1995, Ser. No. 472,561

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—380.1 **6 Claims**



1. A chamber for rotation about a rotational axis to separate blood components comprising

first and second spaced apart side walls forming a separation zone, the second wall being farther from to the rotational axis than the first wall,

an inlet passage to convey blood into the separation zone for separation into a first region of cellular components along the second wall, a second region of plasma along the first wall, and an interface region between the first and second regions,

an outlet passage to convey the second region of plasma from the separation zone, the outlet passage having an axis, and

an interior wall extending from the second wall into the separation zone including a first surface spaced from the first wall adjacent the outlet passage, the space between the first surface and the first wall comprising a constricted passage in fluid communication with the outlet passage, the interior wall including a second surface that tapers from the first surface away from the outlet passage to permit passage of the second region of plasma through the constructed passage to the outlet passage while retarding passage of the interface region and the first region of cellular components through the constricted passage, the tapered second surface having a major axis that is oriented at a non-parallel angle with respect to the axis of the outlet passage.

5,632,894

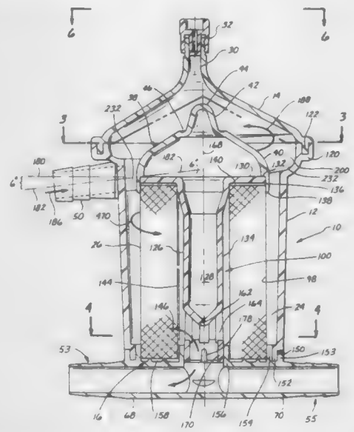
ARTERIAL BLOOD FILTER WITH UPWARDLY INCLINING DELIVERY INLET CONDUIT

George W. White, Lake Forest; Kenneth Galt, Seal Beach; Tichakorn Chaikumnerd, Huntington Beach, and Jack W. Brown, Santa Ana, all of Calif., assignors to Gish Biomedical, Inc., Irvine, Calif.

Filed Jun. 24, 1994, Ser. No. 265,243

Int. Cl.[6] B01D *19/00;35/30*

U.S. Cl. 210—436 **14 Claims**



5. A filter for filtering blood under pressure in a circuit flowing partially outside of a human body comprising:

a filter container formed by side walls, a bottom wall connected to said side walls, said bottom wall having an outlet conduit, and a top lid defining an axis, wherein said top lid has a centrally offset air vent allowing the release of air therefrom;

wherein said centrally offset air vent is in generally overlying relationship to an area wherein a vortex is established by blood flowing into said filter for release of air directly toward said air vent;

a filter element disposed between said side walls having a filter cap thereover;

said filter cap having a rounded dome with a rounded peak extending above said rounded dome and wherein said filter cap and peak are within at least a portion of the axis of said filter, said filter cap further having a skirt extending over said filter with a chamfered edge; and

a delivery conduit connected to the interior of said filter for delivery of blood to said filter having an axis at an angle extending upwardly away from a plane which is perpendicular to the axis of said filter so that the flow of blood is delivered upwardly toward the lid of said filter and over said filter cap.

5,632,895

SERUM SEPARATING DEVICE AND APPARATUS FOR SERUM SEPARATION

Youichi Tsukagoshi, Tokyo, and Toshimasa Yamamoto, Kawasaki, both of Japan, assignors to Nigata Engineering Co., Ltd., Tokyo, Japan

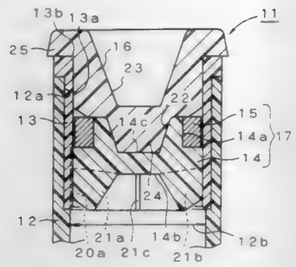
Filed Aug. 11, 1994, Ser. No. 288,997

Claims priority, application Japan, Aug. 13, 1993, 5-201664; Nov. 10, 1993, 5-281519

Int. Cl.[6] B01D *21/26;17/038*

U.S. Cl. 210—518 **23 Claims**

1. A serum separating device for separating the serum and the clot of blood by centrifugal separation, and serum separating device comprising:



a cylindrical member, which fits to an opening of a blood collection tube and which has an inner diameter which is slightly smaller than an inner diameter of said opening, and

a movable member, said movable member comprising;

a member main portion which is inserted into said cylindrical member and which presses; against inner walls of said cylindrical member, and

an annular isolating member which is annular-shaped and fits to an outer circumferential portion of said member main portion;

wherein;

said movable member has a specific gravity between that of serum and that of clot; and

said annular isolating member comprises:

a material possessing elasticity, liquid permeability, and the quality swelling in response to immersion in liquid.

5,632,896

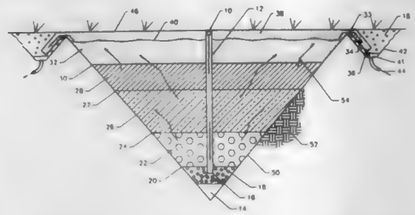
METHOD FOR TREATING SEWAGE AND OTHER LIQUIDS

Don M. Vandervelde, 5409 Huntwick Dr. NW., Gig Harbor, Wash. 98335, and Glenn J. Helm, 1616 Dawn Rd., Bremerton, Wash. 98310

Continuation of Ser. No. 156,085, Nov. 22, 1993, abandoned, which is a division of Ser. No. 711,560, May 30, 1991, Pat. No. 5,281,332, which is a continuation of Ser. No. 467,141, Jan. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 404,894, Sep. 8, 1989, Pat. No. 4,997,568. This application Jun. 29, 1995, Ser. No. 496,658

Int. Cl.[6] C02F *3/06*

U.S. Cl. 210—617 **29 Claims**



1. A method for treatment of wastewater, said wastewater of the type comprising organic matter and dissolved gases, said method comprising:

(a) providing a granular or porous filter medium having interstitial pores, said granular or porous filter medium further comprising

(i) two or more preselected media portions, said two or more preselected media portions comprising at least (A) a first media portion, and (B) a final media portion, said final media portion being finer in size than said first media portion, said final media portion having a larger surface layer area than said first media portion,

(ii) a downward media leg having a lower tip portion.

(b) providing a common container for said two or more preselected media portions, said common container having an edge portion, and said downward media leg adjacent said edge portion;

(c) directing said wastewater into said first media portion;

(d) allowing said wastewater to flow by hydraulic action from said first media portion to said final media portion, without saturating all of said final media portion with said wastewater;

(e) allowing said wastewater to flow by hydrophilic action from said final media portion to said downward media leg;

(f) wherein said wastewater flows in a thin film through said final media portion and thence into said downward leg portion, whereby said wastewater is effectively treated for removal of organic matter, so as to provide a treated wastewater effluent.

5,632,897

METHOD FOR REMOVING ALUMINUM IONS FROM BLOOD

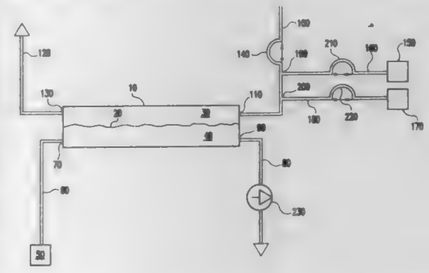
Bernd Mathieu, Spiesen-Elversberg, Germany, assignor to Fresenius AG, Bad Homburg, Germany

Division of Ser. No. 119,908, Sep. 10, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,568

Claims priority, application Germany, Sep. 11, 1992, 42 30 513.6

Int. Cl.[6] B01D *61/24;21/01;* **A61M** *1/14*

U.S. Cl. 210—645 **11 Claims**



10. A method for removing aluminum from blood, comprising the steps of:

adding at least one non-citrate compound to blood in an amount effective in preventing coagulation of blood and capable of complexing aluminum;

allowing said at least one non-citrate compound to intermingle with said blood and complex with aluminum present in said blood;

separating complexes of said at least one non-citrate compound being capable of complexing aluminum and aluminum present in said blood from said blood through a semi-permeable membrane; and

recovering said blood.

5,632,898

METHOD FOR REMOVING UNREACTED ELECTROPHILES FROM A REACTION MIXTURE

Michael E. Jung, Los Angeles; Phillip D. Cook, Vista, and Andrew M. Kawasaki, Oceanside, all of Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Filed Aug. 13, 1996, Ser. No. 696,054

Int. Cl.[6] C02F *1/42*

U.S. Cl. 210—656 **14 Claims**

1. A method for scavenging an electrophile from a reaction mixture comprising:

adding to said reaction mixture a compound having the formula:

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$$Q—R_1—Z(O)_nO—M_1$$

wherein

n is 1. 2 or 3;

Q is a nucleophile;

Z is C. P or S;

M_1 is hydrogen or a metal ion selected such that said compound is water soluble at room temperature; and

R_1 is C_1–C_{10} hydrocarbyl;

in an amount sufficient to react with said electrophile in said reaction mixture to form an addition compound; and

separating said addition compound from the reaction mixture.

5,632,899

DETOXIFICATION OF ALKYLTHIOALKYLAMINES WITH SWELLING TYPE NATURAL OR SYNTHETIC CLAYS

Joseph C. Petrille, III, North Wales; Michael W. Werner, Warrington, and Wilson K. Whitekettle, Jamison, all of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jul. 20, 1995, Ser. No. 504,636

Int. Cl.° C02F *1/28*

U.S. Cl. 210—691 **4 Claims**

1. A method of detoxifying water containing alkylthioalkylamines toxic to aquatic organisms comprising adding thereto at least a neutralizing amount of a swelling type natural or synthetic clay, wherein said swelling type natural or synthetic clay is added to said water in a ratio of swelling type natural or synthetic clay to alkylthioalkylamine of from about 60 to 1 to about 160 to 1.

5,632,900

WET OXIDATION METHOD OF TREATING CHELATE BEARING WASTE SOLUTIONS

John M. Jevec, Uniontown, and Carl J. Lenore, North Benton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 19, 1995, Ser. No. 424,834

Int. Cl.° C02F *1/72*

U.S. Cl. 210—721 **3 Claims**

1. A method for treating a chelate metal bearing waste solution from a chemical cleaning solution for a steam generator, comprising the steps of:

elevating the pH of the chelate bearing waste solution from a chemical cleaning solution for a steam generator to a pH of greater than about 10.0 for separating a metal from the chelate bearing waste solution as a precipitate;

filtering the chelate bearing waste solution after precipitation to remove the metal precipitate; and

oxidizing the chelate bearing waste solution to destroy any remaining free chelates.

5,632,901

PROCESS FOR THE ELIMINATION OF HEAVY METALS

Bengt T. Engström, Vallåkra, Sweden, assignor to Kemira Kemi Aktiebolag, Helsingborg, Sweden

Filed Feb. 16, 1995, Ser. No. 389,407

Claims priority, application Sweden, Feb. 21, 1994, 9400585

Int. Cl.° C02F *1/52;1/62*

U.S. Cl. 210—724 **6 Claims**

1. A process for elimination of resins and heavy metals from white water comprising adjusting the pH of white water to between greater than 7 and 11, and subsequently adding a flocculation agent, thereby causing simultaneous precipitation of resins and heavy metals.

5,632,902

FILTERING METHOD AND APPARATUS INCLUDING VALVES WITH VALVE PLUGS OF A COOLED FLUID SUBSTANCE

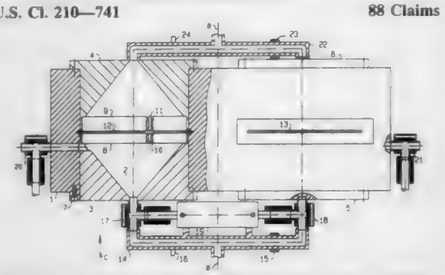
Peter G. Kalman, 69 Hillway, Holly Lodge Estate, Highgate, London N6 6AB, England

Filed Nov. 13, 1991, Ser. No. 791,831

Claims priority, application United Kingdom, Nov. 16, 1990, 902493804

Int. Cl.° B01D *35/12*

U.S. Cl. 210—741 **88 Claims**



40. A process for filtering a flowable substance using apparatus including at least one filter carrying passage conduit with an inlet and outlet where a filter part is disposed across the passage conduit between the inlet and outlet and such apparatus having at least one non-filter carrying conduit through which conduit such material flows comprising the step of providing flow control means for at least one of such conduits and having the additional steps of

(a) providing a side passage extending laterally from and in flow communication with a conduit having such flow control means;

(b) cooling each such side passage to form therein a valve plug of solidified substance which valve plug when moved into said conduit is capable of stopping flow therein; and

(c) moving the valve plug from the side passage into said conduit to stop the flow of the material therethrough.

5,632,903

HIGH VOLUME SELF-CLEANING FILTER

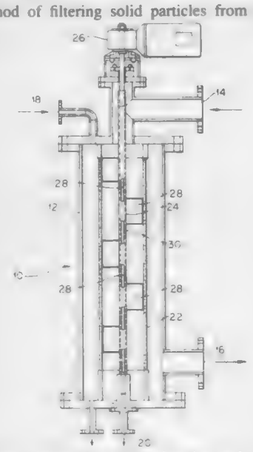
Louis D. Caracciolo, Jr., Atco, N.J., assignor to Infinity Research and Development, Lenexa, Kans.

Filed Jun. 7, 1995, Ser. No. 475,645

Int. Cl.° B01D *29/66*

U.S. Cl. 210—741 **22 Claims**

19. A method of filtering solid particles from liquid using a



cylindrical filter element having an interior and an exterior, the method comprising the steps of:

passing liquid carrying solid particles into the interior of the cylindrical filter element disposed in a housing;

filtering the solid particles from the liquid while allowing the liquid to pass through the filter element to the exterior of the filter element:

removing the filtered liquid from the housing;

flowing cleansing fluid into a space defined between the filter element and the housing and through said filter element from the exterior of the filter element to the interior of the filter element so that the cleansing fluid flushes particles from the filter element:

rotating at least one of the filter element and a conduit disposed in the cylindrical filter element, the conduit having a plurality of cleansing members extending therefrom along its length, each of the cleansing members having an aperture to allow flow of the cleansing fluid into the conduit; and

draining the cleansing fluid and flushed particles through the plurality of cleansing members and the conduit during the rotating step.

22. The method of claim **19** further comprising the steps of sensing the amount of solid particles filtered by the filter element, and controlling flow of cleansing fluid according to the sensed amount of filtered solid particles.

5,632,904

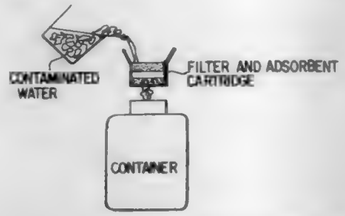
WATER DISINFECTION METHOD USING METAL-LIGAND COMPLEXES

Nidal A. Samad, Palm Bay, and Dwight D. Back, Melbourne, both of Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.

Filed Apr. 6, 1995, Ser. No. 417,988

Int. Cl.° C02F *1/50*

U.S. Cl. 210—764 **8 Claims**



1. A method for disinfecting contaminated natural water, comprising the steps of formulating a solution comprising at least one biocide metal bound to at least one complexing agent taking into account competition between other known cations and anions in the contaminated natural water and the at least one biocide metal, adding the solution to the contaminated natural water such that the at least one biocide metal remains in solution, and obtaining potable water from the contaminated natural water to which the solution has been added.

5,632,905

METHOD AND APPARATUS FOR SEPARATING FORMED AND UNFORMED COMPONENTS

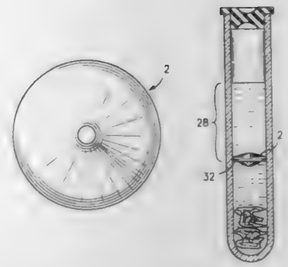
John L. Haynes, 20 Kendall Dr., Chapel Hill, N.C. 27514-5644

Filed Aug. 7, 1995, Ser. No. 512,123

Int. Cl.° B01D *21/26*

U.S. Cl. 210—782 **9 Claims**

1. A separator body for separating a formed phase from an unformed phase in a centrifuged sample of a multi-phase material in a test tube, said separator body being sized to fit snugly in said test tube and being generally disc-shaped and having an axis of symmetry which is disposed perpendicular to its circumference, and said separator body having a center of mass (Cm) and a center of buoyancy (Cb) which are spaced apart from each along said axis



of symmetry of the body so as to impart to the body a first side having a higher specific gravity, and a second opposite side having a lower specific gravity.

6. A method for gravimetrically separating a formed phase from an unformed phase in a centrifuged sample of a mult-phase material in an assembly which comprises a tube having a bore with an axis of elongation, a generally disc-shaped separator body having an axis of symmetry which is disposed perpendicular to its circumference and having a center of mass (Cm) and a center of buoyancy (Cb) which are spaced apart from each along said axis of symmetry so as to impart to the body a first side having a higher specific gravity, and a second opposite side having a lower specific gravity, which body is positioned in said tube bore with the axis of symmetry of said body being disposed at essentially a 90° angle relative to the axis of elongation of the tube bore so as to open the tube bore for admission of the sample into the tube, said method comprising the steps of:

a) drawing the sample of the multi-phase material into the tube;

b) centrifuging the multi-phase material sample at G forces which will separate the formed phase from the unformed phase and will cause the separator body to tumble in the tube to a barrier position wherein the axis of symmetry of the separator body coincides with the axis of elongation of the tube bore; and

c) causing the separator body to gravitate onto an interface between the formed and unformed phases of the material sample during said centrifuging step so as to form a barrier between the formed and unformed phases in the sample.

5,632,906

APPARATUS AND METHOD FOR TRANSFERRING SEPARATED COMPONENT IN LIQUID FROM A FLEXIBLE BAG IN A CENTRIFUGAL CONTAINER

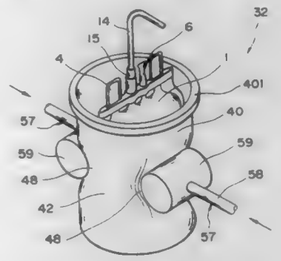
Noboru Ishida, Shizuoka-ken; Atsuo Nakamura, deceased, late of Kyoto, and Norio Hosono, Shizuoka-ken, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 83,297

Claims priority, application Japan, Jun. 30, 1992, 4-197898

Int. Cl.° B01D *21/26;* **B65D** *35/28*

U.S. Cl. 210—787 **8 Claims**



7. A method of transferring a separated component in a liquid contained in a flexible bag under airtight condition, which comprises the steps of:

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accommodating the flexible bag in which the liquid is contained under airtight condition into a centrifugal container which is to be removable attached to a centrifugal separator, said centrifugal container having a soft material part formed in at least one portion thereof;

centrifuging the flexible bag accommodated in said centrifugal container using the centrifugal separator to separate the liquid in the flexible bag into the components thereof;

removing said centrifugal container from the centrifugal separator together with the flexible bag put therein and then fixing the centrifugal container to a fixing means;

pressing the soft material part of said centrifugal container under the condition that the flexible bag is put in said centrifugal container to increase inner pressure of said flexible bag while releasing the airtight condition thereof, to take out a predetermined component in the liquid which has been separated by the centrifugation outside said flexible bag; and

wherein said centrifugal container includes an annular frame portion and a cylindrical portion coupled to said frame portion, and said cylindrical portion constitutes said soft material part of said centrifugal container.

5,632,907

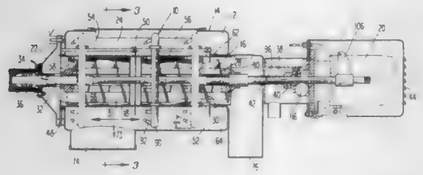
TRAVELING BACKWASH MANIFOLD FOR A CENTRIFUGE

Fritz Norbury, Rte. 4, Box 429-A, Carthage, Mo. 64836

Filed Dec. 26, 1995, Ser. No. 578,765

Int. Cl.[6] B01D *21/26;29/68*

U.S. Cl. 210—787 **14 Claims**



1. A centrifuge adapted for filtering a liquid from a liquid/solid mixture, the centrifuge comprising

a conveyor having a hub and flights for imparting a centrifugal motion to the liquid/solid mixture;

a casing, the casing defining a tank for receiving the conveyor, the casing having support means for supporting the conveyor;

a drive means coupled to the conveyor for rotating the conveyor relative to the casing for creating rotation of the conveyor for imparting the centrifugal motion;

a filter contained within the tank and encircling the conveyor including the flights, the filter for filtering the liquid from the liquid/solid mixture; and

a toroidal backwash system having a tube having a toroidally arranged series of angled nozzles positioned for spraying a fluid at the filter in a narrow band which circumscribes the filter, a drive means for moving the series of nozzles longitudinally along the filter for spraying the liquid against the filter in a narrow band distinct from the first narrow band by the relative movement of the nozzles to the filter.

5,632,908

METHOD FOR MAKING ALIGNED FEATURES

Muhammed A. Shahid, Ewing Township, Mercer County, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

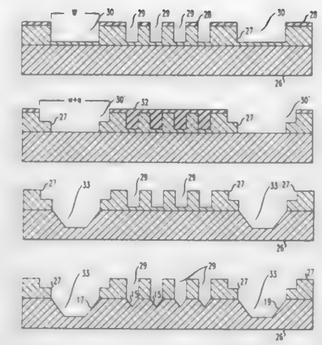
Filed Feb. 1, 1995, Ser. No. 382,106

Int. Cl.[6] G02B *6/00*

U.S. Cl. 216—2 **21 Claims**

1. A method for making an optical fiber support member comprising the steps of:

forming on a substrate member a first mask layer;



simultaneously masking and etching to a first depth in the first mask layer a pattern of first and second features, the first features defining locations of optical fiber support grooves, and the second features defining the locations of support member reference surfaces;

masking and etching only the second features to a second depth deeper than the first depth;

and simultaneously etching into said substrate the first and second features such that the second features are etched to a greater depth than the first features.

5,632,909

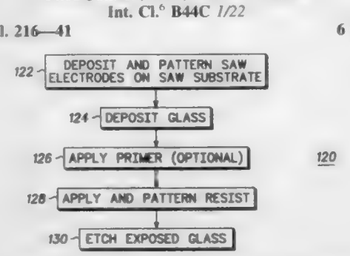
FILTER

Donald E. Allen, Gilbert; Philip P. Kwan, Tempe, and David P. Stumbo, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 19, 1995, Ser. No. 491,824

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—41 **6 Claims**



1. A method for making a SAW filter having asymmetric frequency characteristics, said method comprising steps of:

forming on a substrate a combination of series coupled and parallel coupled SAW resonators; and

disposing a dielectric layer on a portion of either but not both of said series and parallel coupled SAW resonators.

5,632,910

MULTILAYER RESIST PATTERN FORMING METHOD

Tetsuji Nagayama, and Tetsuo Gocho, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,587

Claims priority, application Japan, Dec. 24, 1993, 5-327411

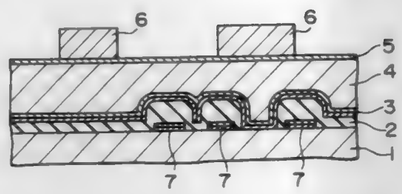
Int. Cl.[6] H01L *21/302*

U.S. Cl. 216—47 **12 Claims**

1. A pattern forming method employing a multilayer resist, said method comprising the steps of:

providing a substrate having a surface;

forming a lower resist layer of an organic material on said surface, said lower resist layer having a thickness large



enough to absorb irregularities in said substrate surface and provide a flat surface on said lower resist layer opposite sad substrate;

forming an intermediate resist layer having a thickness of about 0.2 μm and comprising SiO_2, Si_3N_4, Al_2O_2, SnO_2, In_2O_3 or ITO on the lower resist layer by a high density plasma processing at a plasma density of between about $1\times10^{11}/cm^3$ and $1\times10^{14}/cm^3$ while maintaining the substrate at a temperature of between about 20° C. to about 200° C. to provide intermediate resist layer having a film density sufficient to be resistant to ion bombardment, said forming an intermediate resist layer is carrier out using a plasma processing system selected from the group consisting of inductive coil plasma CVD and helicon wave plasma CVD;

forming an upp resist layer on said intermediate resist layer;

exposing the upper resist layer to laser light and developing the exposed upper resist layer to define an upper resist pattern;

etching the intermediate resist layer by reactive ion etching methods using the upper resist pattern as a mask to define an intermediate resist pattern;

anistropically etching the lower resist layer at a high selective etching ratio using the upper resist pattern and intermediate resist pattern as a mask to define a substantially critically-dimensioned lower resist pattern useful for further pattern processing, the etching of the lower resist pattern being carried out using an etching gas selected from CO_2 and a mixture of O_2 and a sulfur halide, the etching of the lower resist pattern being carried out without contraction or reduction of the intermediate resist pattern.

5,632,911

APPARATUS FOR AIDING IN THE MANIPULATION OF A TOOL

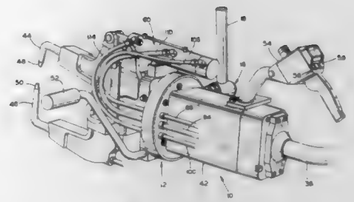
Robert L. Wigle, Lasalle, and Edward J. Grondin, Tecumseh, both of Canada, assignors to Doben Limited, Windsor, Canada

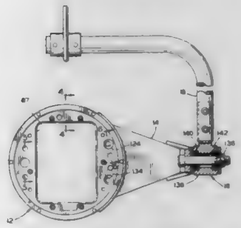
Filed Mar. 17, 1995, Ser. No. 406,166

Int. Cl.[6] B23K *11/11;37/02;* **F16C** *11/02;11/06*

U.S. Cl. 219—89 **13 Claims**

1. Apparatus for aiding in the manipulation of a tool by supporting the weight thereof, said apparatus comprising an overhead support, a curved bar hanging below said overhead support, a trunnion connected to a lower end of said curved bar, a generally horizontal arm rotatably held by and extending out from said trunnion, a bail having a circular frame affixed to an outer end of said generally horizontal arm, a disc-shaped front plate and a disc-shaped back plate, means affixing said disc-shaped front plate and said disc-shaped back plate together in parallel relationship, said disc-shaped front plate and said disc-shaped back plate being rotatably carried by said circular frame in a central plane defined by said circular frame, said disc-shaped front and back plates having coincident central openings to receive the tool, rand said





disc-shaped front and back plates having holes spaced around the openings to receive fittings to aid in operating the tool.

5,632,912

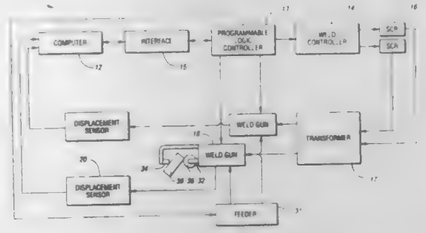
RESISTANCE PROJECTION WELDING SYSTEM AND METHOD FOR WELDING A PROJECTION WELD NUT TO A WORKPIECE

Dimitrios G. Cecil, 1277 Ashover Dr., Bloomfield Hills, Mich. 48304

Filed Jun. 16, 1995, Ser. No. 491,228

Int. Cl.[6] B23K *11/24*

U.S. Cl. 219—110 **24 Claims**



1. A resistance projection welding system for welding a projection weld nut to a workpiece, wherein said projection weld nut has a first face provided with at least one projection and an opposed second face, said welding system comprising:

a weld power source for supplying power;

a weld gun having a welding electrode coupled to said weld power source, said welding electrode being moveable between a closed welding position for electrical welding contact between said projection weld nut and said workpiece, and an opened position for receiving and removing said projection weld nut and said workpiece;

a displacement sensor coupled to said weld gun for generating a signal responsive to an orientation of said welding electrode relative to said workpiece; and

a computer coupled to said weld power source and to said displacement sensor, said computer processes said displacement sensor signal to determine which face of said projection weld nut engages said workpiece, wherein said computer transmits a control signal to said weld power source which prevents the initiation of power if said second face of said projection weld nut engages said workpiece.

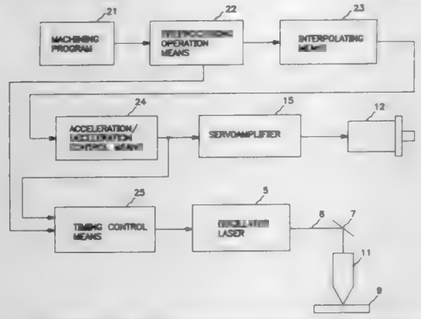
VOL 11 98 ISS 4 MY 27 1997 UMI

5,632,913

NC LASER SYSTEM

Atsushi Mori, Minamitsuru-gun, Japan, assignor to Fanuc Ltd., Japan

Continuation of Ser. No. 312,045, Sep. 23, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 609,179
Claims priority, application Japan, Oct. 15, 1993, 5-257884
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.6 2 Claims



1. A numerical control (NC) laser system including a laser beam machine and a numerical control system, comprising:

a laser oscillator to output a laser beam to a machining head for cutting a workpiece on a table;

preprocessing operation unit for decoding a machining program and for outputting (a) a move command for positioning a plurality of servomotors to move said table and to move said machining head and (b) an ON-OFF command for turning one of on and off of said laser oscillator;

interpolating unit, responsive to said move command, for executing an interpolation processing to generate a plurality of interpolation pulses;

acceleration/deceleration control unit for controlling said plurality of interpolation pulses for acceleration and deceleration of said servomotors and for outputting a deceleration-starting signal indicating a time to start deceleration of said servomotors and a deceleration-terminating signal indicating a time to terminate deceleration of said servomotors; and

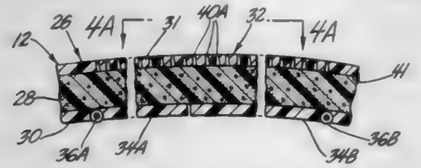
timing control means, responsive to said ON-OFF command, said deceleration-starting signal and said deceleration-terminating signal, for outputting an ON-OFF signal to said laser oscillator for turning one of on and off of said laser oscillator at a predetermined time.

5,632,914

MOTOR VEHICLE AIR BAG COVER HAVING A SKIN WITH A VIRTUALLY INVISIBLE TEAR SEAM FORMED BY MINIATURE HOLES

Paul Hagenow, Dover; John D. Gray, Union, and Colin Frost, Dover, all of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed May 24, 1995, Ser. No. 448,898
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.71 17 Claims



9. A method of forming a virtually invisible tear seam in an elastic plastic skin of a cover for an air bag wherein the tear seam is adapted to be torn by the force of the air bag on air bag inflation to form an opening in the skin for deployment of the air bag, said method comprising the steps of:

prescribing a tear seam pattern for the skin; and

laser machining an array of miniature penetrating holes in the skin in the prescribed tear seam pattern having a maximum hole size dimension at the outer side of the skin that does not exceed about 0.0005 inches and in a number and with spacing therebetween that reduces the tensile strength of the skin along the tear seam pattern by not more than about 50 percent to thereby form a virtually invisible tear seam in the skin;

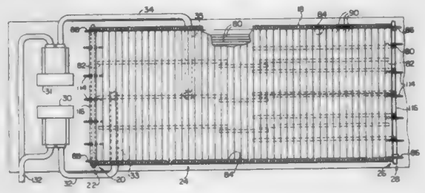
the holes being formed by laser machining from a backside of the skin whereby the holes resultantly taper from a smallest hole size dimension located at the outer side of the skin to a largest hole size dimension located at the backside of the skin, and spacing the tapered holes so that one hole intersects with an adjacent hole at the backside of the skin but not with another hole at the outer side of the skin.

5,632,915

LASER MATERIAL PROCESSING APPARATUS AND A WORK TABLE THEREFOR

John F. Schnetzer, Bolton; Mitchell L. Shaney, North Windham, both of Conn.; Michael A. Centracchio, Springfield, Mass., and Richard S. Szewczyk, Madison, Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Aug. 29, 1994, Ser. No. 297,599
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.82 10 Claims



7. A work table for supporting sheet material during a work operation, said table comprising:

a closed loop conveyor mounted on the work table and including a plurality of flexible slats defining a plurality of airflow passages therethrough, at least some of the slats defining an upper run of the conveyor, the upper run being engageable with a plurality of rigid support rails mounted on the work table below the upper run of the conveyor, the slats and the support rails cooperating when engaged to define the support surface;

a vacuum plenum arranged along the conveyor in fluid communication with the airflow passages; and

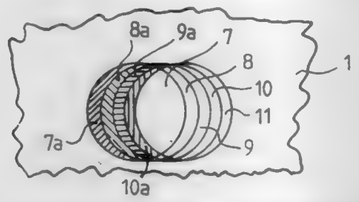
evacuating means mounted on the table in fluid communication with the plenum to evacuate the plenum and cause the slats defining the support surface to engage the rails and the sheet material supported on the surface to be held flat against the support surface.

5,632,916

LASER MARKING METHOD AND A METAL SURFACE MARKED BY THIS METHOD

Reijo Lappalainen, Helsinki; Sten Siren, Parainen; Teijo Salmi, Järvenpää, and Pertti Helle, Parainen, all of Finland, assignors to Partek Cargotec Oy, Finland

PCT No. PCT/FI93/00433, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO94/11146, PCT Pub. Date May 26, 1994
PCT Filed Oct. 22, 1993, Ser. No. 428,145
Claims priority, application Finland, Nov. 9, 1992, 925076
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.85 10 Claims



1. A method for producing marks on a metal surface, comprising:

exposing the metal surface to a series of successive pulses of a pulsed laser beam, the laser beam having an energy between 1 and 10 J/cm^2, and each of the pulses forming a spot of impact on the metal surface; and

moving the spots of impact on the metal surface, including the steps of

(i) partially overlapping the spots of impact formed by each pair of immediately successive pulses, and

(ii) for each pair of first and second spots of impact formed by immediately successive pulses, leaving a portion of the first spot of impact uncovered by the second spot of impact, wherein said uncovered portion becomes a color contrasting with the metal surface, and the spots of impact formed by said series of pulses form a mark on the metal surface.

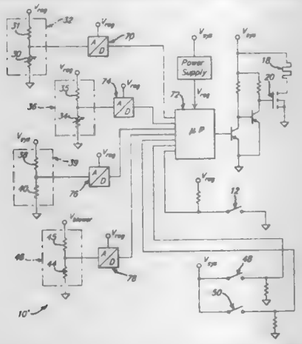
5,632,917

ELECTRIC WINDSHIELD DEFROSTER

James M. Cummins; Gene R. Burnham, both of Dearborn; William A. Oestreich, Westland, and James D. Boka, Walled Lake, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 8, 1994, Ser. No. 285,538
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—497 9 Claims

1. A windshield heating apparatus for a motor vehicle having an



engine with engine coolant, at least one air duct and a heater core adapted to heat air passing within said air duct, said apparatus comprising:

an electrical heating element located within said air duct;

an electrical driver coupled to said electrical heating element and adapted to provide electric current through said electrical heating element;

means for sensing a temperature of said heater core or of said engine coolant;

first modulating means coupled to said temperature sensing means and to said electrical driver for modulating said electric current through said electrical heating element in response to said temperature sensing means;

means for sensing a system voltage of said vehicle;

second modulating means coupled to said system voltage sensing means and to said electrical driver for modulating said electric current through said electrical heating element in response to said system voltage sensing means;

a temperature sensor mounted in proximity with said electrical heating element to measure the temperature of said electrical heating element; and

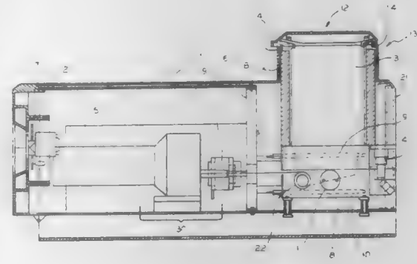
third modulating means coupled to said temperature sensor and to said electrical driver for modulating said electric current through said electrical heating element in response to said temperature sensor.

5,632,918

HEAT DISSIPATING CHIMNEY FOR ADHESIVE SUPPLY UNIT

Jon C. Zook, and Chris M. Jamison, both of Hendersonville, Tenn., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed May 15, 1995, Ser. No. 440,649
Int. Cl.[6] F27B *14/00*
U.S. Cl. 219—420 4 Claims



1. An apparatus for melting solid and quasi-solid material, and for dispensing the same, comprising:

a material receiving and melting means having at least one heat source for melting said material;

means for transporting melted material to a delivery point, said means in communication with said receiving and melting means,

wherein the means for transporting melted material comprises a pumping means and a prime mover means for driving the pumping means, the means for transporting melted material dissipating heat therefrom so as to create another heat source;

electronic power and control circuitry arranged and constructed to provide and control electrical power and signals for the apparatus, the electronic controls and integration circuitry dissipating heat therefrom so as to create at least a third and a fourth heat source; and

a cabinet for holding said receiving and melting means, said transporting means, and said electronic power and control circuitry, said cabinet including a venting means wherein air that is contained therein and cummulatively heated by each of the heating sources is directed through the cabinet and exhausted through at least one exhaust aperture therein.

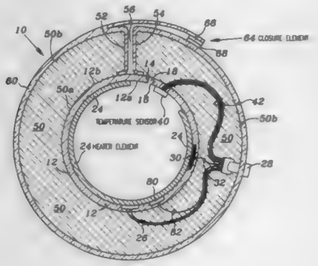
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5,632,919

TEMPERATURE CONTROLLED INSULATION SYSTEM

Thomas G. MacCracken; Janet MacCracken, both of Van Alstyne; Richard E. MacCracken, Dallas, and Millard B. Rice, Plano, all of Tex., assignors to T.G.M., Inc., Gunter, Tex.

Filed Jan. 25, 1996, Ser. No. 591,356
Int. Cl.[6] H05B *3/58;1/02*
U.S. Cl. 219—494 5 Claims



1. An insulation system for providing temperature control for a pipe having a surface comprising:

a heating element adapted to conform to the surface of a pipe, said heating element having first and second ends and an area substantially in contact with the surface of the pipe when said heating element is positioned adjacent to the pipe;

a first layer of insulating material integrally attached to said heating element, said first layer of insulating material having first and second ends disposed adjacent to one another to form a first seam;

a second layer of insulating material integrally attached to said first layer of insulating material, said second layer of insulating material having first and second ends disposed adjacent to one another to form a second seam;

an exterior layer of insulating material integrally attached to said second layer of insulating material and including a portion to selectively overlap said first and second ends of said second layer of insulating material, said exterior layer of insulating material further including means for selectively locking said second layer of insulating material first and second ends together to prevent opening of said second seam;

means attached to said first layer of insulating material and disposed between and spaced apart from said first and second ends of said heating element and adapted to contact the surface of the pipe for sensing the temperature of the surface of the pipe; and

means connected to said temperature sensing means and said heating element for monitoring the temperature of the surface of the pipe and for selectively controlling the temperature of said heating element to thereby maintain the temperature of the surface of the pipe at a desired temperature.

5,632,920

METHOD FOR CONTROLLING READ-TIME OF A HUMIDITY SENSOR IN A MICROWAVE OVEN

Seong J. Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

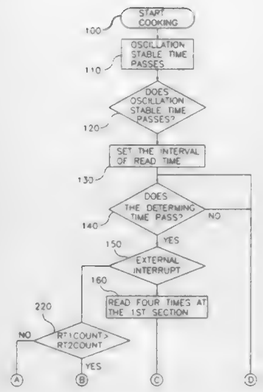
Filed Aug. 16, 1995, Ser. No. 515,966
Claims priority, application Rep. of Korea, Aug. 16, 1994, 1994-20168
Int. Cl.[6] H05B *6/80*
U.S. Cl. 219—707 4 Claims

1. A method of controlling read-time of humidity sensor of a microwave oven for cooking food using an oscillation of a magnetron, the method comprising the steps of:

(a) dividing one period of a frequency of a power source of the microwave oven into a first section and a second section according to an external interrupt signal generated in a zero-crossing point of a frequency signal of the power source, the first section and the second section having the same period;

(b) sensing humidities repeatedly and respectively in the first section and the second section, and then increasing a noise count in the first section and the second section when a difference between a maximum value and a minimum value in each section is larger than a predetermined reference value; and

(c) comparing noise counts obtained in step (b) with each other, and then determining one of the first and the second sections as a humidity sensing read time section when the count of said one section has less noise count than that of other section.

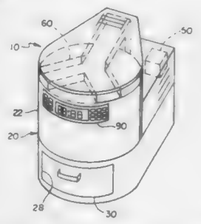


5,632,921

CYLINDRICAL MICROWAVE HEATING APPLICATOR WITH ONLY TWO MODES

Per O. Risman, Harryda, Sweden, and Charles R. Buffler, Marlborough, N.H., assignors to The Rubbright Group, Inc., Eagan, Minn.

Filed Jun. 5, 1995, Ser. No. 463,217
Int. Cl.[6] H05B *6/72*
U.S. Cl. 219—750 39 Claims



1. A microwave applicator for heating a load, the applicator comprising:

a) a microwave containment chamber to contain microwaves, the chamber having a top wall, a bottom wall and a generally cylindrical side wall, the side wall connected to the top wall, the containment chamber having an interior diameter;

b) a microwave energy source for generating microwaves at a predetermined frequency; and

c) a feed structure connected between the microwave energy source and the containment chamber for coupling microwaves from the energy source to the containment chamber

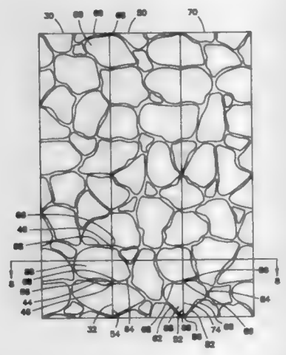
wherein the diameter of the containment chamber is sized to support a microwave field having only first and second transverse magnetic modes, each mode having a respective guide wavelength, and wherein the guide wavelength of the first mode is substantially equal to twice the guide wavelength of the second mode.

5,632,922

FORM LINER

Peter A. Nasvik, West St. Paul, Minn., and Paul C. Nasvik, Hudson, Wis., assignors to Concrete Design Specialties, Inc., St. Paul, Minn.

Division of Ser. No. 652,886, Feb. 8, 1991, Pat. No. 5,225,134.
This application Jun. 30, 1993, Ser. No. 85,396
Int. Cl.[6] B28B *7/36*
U.S. Cl. 249—16 46 Claims



36. A gang form liner for use in forming a wall having a natural stone wall contour from hardenable construction material comprising:

a) first and second form liners each having:

i) a lateral relief mold face including:

A) a plurality of recessed portions, each recessed portion having a three-dimensional contour of a portion of a natural stone for forming a stone region having a three-dimensional contour of a natural stone wall; and

B) a latticework interlocking portion surrounding at least a portion of a perimeter of each of said recessed portions for forming a mortar region that lies between said stone regions of the natural stone wall; and

ii) a mating edge along a perimeter of said lateral relief mold face, said mating edge comprising four sides, said four sides arranged to define two sets of opposed sides, said interlocking portion intersecting said mating edge at a plurality of mating alignment points, a first plurality of said recessed portions positioned along said mating edge between said mating alignment points, said first plurality of recessed portions contiguous with and forming a part of said mating edge, one of said mating alignment points on each side of each of said first plurality of recessed portions positioned along said mating edge, said mating alignment points on each side of each of said first plurality of recessed portions being equally spaced apart for each recessed portion and defining a mating alignment unit, at least one set of opposed sides of said mating edge having a mating alignment unit on both of said opposed sides, said form liner being adapted to mate with another form liner along said mating edge in a plurality of mating configurations;

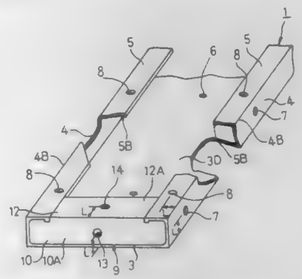
b) a support structure mounting each of said form liners adjacent to one another to form a gang form liner wherein said mating edge of said first liner and said mating edge of said second liner are mated, wherein at least two of said mating alignment points of said first form liner are aligned with at least two of said mating alignment points of said second form liner, and wherein at least one of said first plurality of recessed portions between said aligned mating alignment points of said first form liner is aligned with at least one of said first plurality of recessed portions between said aligned mating alignment points of said second form liner to form at least one continuous stone-forming recessed portion.

5,632,923

CONCRETE MOLDING FORM MEMBER

Yoshiyuki Hayakawa, 2-5, Hiraoka 10-jo 1-chome, Toyohira-ku, Sapporo-shi, Hokkaido, Japan

Filed Apr. 11, 1995, Ser. No. 420,167
Claims priority, application Japan, Apr. 28, 1994, 6-113962; Oct. 6, 1994, 6-242874
Int. Cl.[6] E04G *11/00*
U.S. Cl. 249—47 6 Claims



1. A concrete molding form member comprising:

a strip front plate portion being flat at least on its surface;

a horizontal pair of strip side plate portions extending from both side ends of said front plate portion toward a back surface thereof perpendicularly to said front plate portion; and

a horizontal pair of strip rear plate portions inwardly extending from rear ends of said side plate portions perpendicularly to said side plate portions, to be opposed to said back surface of said front plate portion,

each of said front plate portion, said side plate portions and said rear plate portions being provided with a plurality of mounting holes on the same positions in relation to the longitudinal direction at prescribed intervals along the longitudinal direction, wherein

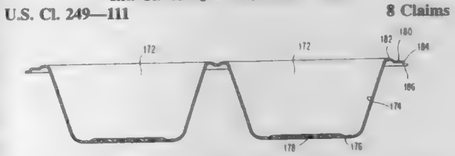
the distance (L_1) between the center of each mounting hole in said side plate portions and an edge of said front plate portion is substantially equal to the distance (L_2) between the center of each mounting hole in said rear plate portions and the intersection of said side plate portions with said rear plate portions, and the width of each side plate portion is substantially equal to the width of each rear plate portion.

5,632,924

MUFFIN TRAY AND PROCESS FOR BAKING MUFFINS

Paul W. Gics, Sewickley Heights, Pa.; Karen A. Parucki, Angola, N.Y.; Steven J. White, Turnersville, and Larry L. Wuethrich, Vincentown, both of N.J., assignors to H.J. Heinz Company, Pittsburgh, Pa.

Filed Oct. 26, 1994, Ser. No. 329,477
Int. Cl.[6] A47J *27/00;* A21C *11/00*
U.S. Cl. 249—111 8 Claims



1. A tray for baking, distribution, and merchandising, comprising: a generally planar top portion having a first side, a second side, and a plurality of baking wells

commonly spaced from one another in the top portion, each baking well extending from the first side and having:

a closed end;

a generally frustoconical wall with an open end having a larger diameter than the closed end, the open end being joined to the planar top portion with a heat seal surface formed as a curved

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protrusion completely encircling the frustoconical wall and extending from the second side; and

heat transfer reducing means at the closed end for reducing the heat transferred during baking to the closed end of the baking well in comparison to the frustoconical wall:

the tray portion and the baking wells being integrally formed from crystalline polyethylene terephthalate.

5,632,925

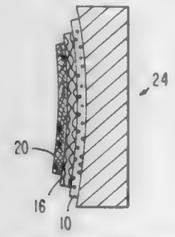
CERAMIC OR MODIFIED SILICONE FILLED MOLDING TOOLS FOR HIGH TEMPERATURE PROCESSING

Richard Moulton, Benicia; Doyle Dixon, Vallejo; Robert L. Stevens; Gregg Siewert, both of San Diego, all of Calif., and Gary D. MacDougall, Auckland, New Zealand, assignors to Logic Tools L.L.C., Durham, N.C.

Filed Jan. 10, 1995, Ser. No. 370,686

Int. Cl.[6] B29C *33/38*

U.S. Cl. 249—115 **27 Claims**



1. A thermoset mold prepared in accordance with a method which comprises the steps of:

(a) forming a multi-ply, preform composite comprising,

i) a pre-ceramic polymeric resin matrix,

ii) a heat resistant, reinforcing, fabric substrate, and

iii) at least one binder; and

(b) curing the multi-ply composite pre-form of step (a) at a temperature in the range of from about ambient temperature to about 350° F. on a plug to form a thermoset mold.

5,632,926

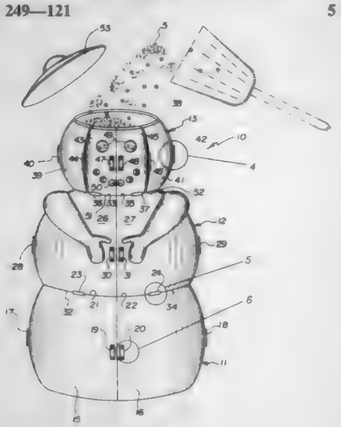
SNOWMAN MOLD

Artega C. Dyer, Jr., 7 Giard Dr., Apt. 8, Baltimore, Md. 21207

Filed May 10, 1995, Ser. No. 438,760

Int. Cl.[6] B29C *33/26;33/44*

U.S. Cl. 249—121 **5 Claims**



1. A snowman mold comprising,

a base member, a torso member, and a head member, with the base member, torso member, and head member integral relative to one another, with the base member having a base member rear wall, the torso member having a torso member rear wall integral with the base member rear wall and the head member having a head member rear wall integral with the torso member rear wall, and

the base member having first door means pivotally mounted to the base member rear wall for opening for access within the base member, the first door means including a first door and a second door hingedly mounted to opposed sides of the base member rear wall about respective first and second hinges, the torso member having second door means pivotally mounted to the torso member rear wall for opening for access within the torso member, the second door means including a third door and a fourth door hingedly mounted to opposed sides of the torso member rear wall about respective third and fourth hinges, and the head member having third door means pivotally mounted to the head member rear wall for opening for access within the head member, the third door means including a fifth door and a sixth door hingedly mounted to opposed sides of the head member rear wall about respective fifth and sixth hinges, wherein the base member, the torso member, and the head member define a mold cavity which defines a snowman shape when the first door means, the second door means, and the third door means are in a closed configuration, the door means configured to permit ease of removal of the mold relative to snow deposited within the mold cavity when the door means are in an open configuration.

5,632,927

PROCESS FOR PREPARING A NON-CONDUCTIVE SUBSTRATE FOR ELECTROPLATING

Donald Ferrier, Thomaston; Rosa Martinez, and Eric Yakobson, both of Waterbury, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Division of Ser. No. 386,755, Feb. 10, 1995, Pat. No. 5,536,386. This application Feb. 21, 1996, Ser. No. 603,606

Int. Cl.[6] H01B *1/04;1/06;* **C09C** *1/44;* **C25D** *5/02*

U.S. Cl. 252—62.2 **12 Claims**

1. A liquid dispersion for use in enhancing the electroplating of a non-conductive surface said dispersion comprising:

(a) carbon particles which have been surface modified by being contacted with a dye, said carbon particles having an average diameter of less than 3.0 microns in said dispersion;

(b) a dispersant; and

(c) an aqueous liquid dispersion medium;

wherein the concentration of the carbon particles in the liquid dispersion is less than 5 percent by weight of said dispersion.

5,632,928

AZEOTROPE (LIKE) COMPOSITIONS WITH OCTAFLUOROBUTANE, OPTIONALLY CHLORINATED, AND EITHER PERFLUORODIMETHYLCYCLOBUTANE OR PERFLUOROHEXANE

Scott C. Jackson, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 31, 1995, Ser. No. 454,767

Int. Cl.[6] C09K *5/04;* **C23G** *5/028;* **C11D** *7/50;* **B01D** *3/36*

U.S. Cl. 252—67 **2 Claims**

1. Azeotrope or azeotrope-like compsitions consisting essentially of 1-chloro-1,1,2,2,3,3,4,4-octafluorobutane with perfluorodimethylcyclobutane or perfluorohexane in a mole fraction of 0.1 to 0.4 and 0.6–0.95, respectively, at 49.4° C. and 17.7 psia and 14.9 psis, respectively.

5,632,929

LIQUID CRYSTAL POLYMERS

Mark A. Verrall; Owain L. Parri, and David Coates, all of Poole, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

PCT No. PCT/GB93/01017, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO93/25633, PCT Pub. Date Dec. 23, 1993

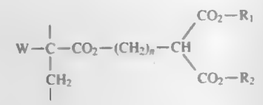
PCT Filed May 19, 1993, Ser. No. 347,373

Claims priority, application United Kingdom, Jun. 5, 1992, 9212013

Int. Cl.[6] C09K *19/52;19/12*

U.S. Cl. 252—299.01 **2 Claims**

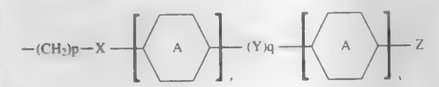
1. A LCP material based on forked side chain acrylates of the formula I;

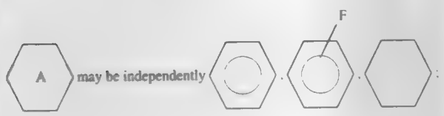


wherein W is H, CH_3 or Cl;

n is 0 to 14;

R_1 and R_2may or may not be the same and have the following structure:





p is 2 to 14;

q is 0 to 1;

r is 1 or 2;

s is 1 or 2;

X is O, CO_2, O_2C or CH_2;

Y is C_2H_4, O, CO_2 or O_2C; and

Z is CN, halogen, R, CO_2R, OR or O_2CR, wherein R contains from 1 to 20 carbon atoms and may be branched or straight chain alkyl.

5,632,930

CLASS OF STABILIZING COMPOUNDS FOR PHOSPHOR SCREENS

Paul Leblans, Kontich; Paul Lardon, Wijnegem, and Jean-Marie Dewanckele, Drongen, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed May 29, 1996, Ser. No. 654,612

Claims priority, application European Pat. Off., Jun. 1, 1995, 95201434

Int. Cl.[6] C09K *11/61;* **G01T** *1/10*

U.S. Cl. 252—301.36 **7 Claims**

1. A phosphor screen, characterised in that said screen comprises at least one organozinc compound corresponding to the following general formula I:



wherein:

A=either carbon or phosphorus

Y=—OR^6, —NR^7R^8, alkyl or aryl, wherein R^6, R^7 and R^8 each independently represent a substituted or unsubstituted alkyl- or aryl group, or wherein R^7 and R^8 together form a ringstructure

n=1 when A is carbon

n=2 when A is phosphorus.

5,632,931

BLOATED MINERAL OXIDE CARRIER FOR PACKED-BED FLUID STREAM CHEMICAL PROCESSES

Irwin Fox, deceased, late of Chesterfield, Mo., and Alvin Samuels, New Orleans, La., assignors to Gas Sweetener Associates, Inc., Chesterfield, Mo.

Continuation-in-part of Ser. No. 253,976, Jun. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 69,073, May 28, 1993, Pat. No. 5,320,992, which is a continuation-in-part of Ser. No. 878,031, May 4, 1992, Pat. No. 5,264,194. This application Aug. 24, 1995, Ser. No. 518,645

Int. Cl.[6] B01J *32/00*

U.S. Cl. 252—378 R **1 Claim**

1. A method for the preparation of a material for use in a reaction bed in a packed bed fluid stream chemical process, said material comprising an inert carder intermixed with a particulate chemical reactant or catalyst and said method comprising the steps of:

selecting a mineral selected from the group consisting of shale or slate which will bloat upon heating to form cells which solidify on cooling to ambient temperature and are of sufficient crush strength to support an overlaying bed thereof ten feet deep;

heating said mineral to cause bloating;

cooling said mineral to ambient temperature;

fracturing the cooled mineral into particles to include particles having surfaces of broken cells;

classifying those particles into various size ranges;

wetting the surfaces of the particles of a selected size range and draining off the excess liquid;

mixing the wetted particles with particulate reactant or catalyst while the wetted particles are still moist and wherein the moisture remaining on the particles retains said particulate reactant or catalyst, and

packing said reactant bed with the particles resulting from the mixing step.

5,632,932

DISTRIBUTION OF FINE BUBBLES OR DROPLETS IN A LIQUID

Ralph Harris, Westmount; Ruiqing Li, Pointe Claire, both of Canada, and Albert E. Wraith, Northumberland, Great Britain, assignors to Martinex R & D Inc., Montreal, Canada

PCT No. PCT/CA94/00478, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/06516, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 31, 1994, Ser. No. 605,055

Claims priority, application United Kingdom, Sep. 2, 1993, 9318241

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—18.1 **10 Claims**

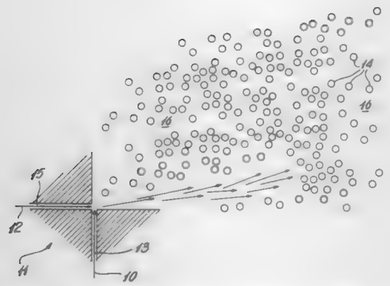
1. A method of dispersing fine bubbles or droplets of a first fluid in a liquid comprising:

providing a body of liquid,

injecting a stream of a first fluid into said body of liquid, under pressure, said stream being developed at a first slot having a ratio of slot length: slot width of 300:1 to 6,000:1,

injecting a stream of a second fluid through a second slot into said body of liquid, adjacent said stream of first fluid, under a pressure effective for penetration of said body of liquid to a depth remote from said second slot,

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said second slot having a ratio of slot length: slot width of 25:1 to 600:1,

the injecting of the streams being such that an interfacial contact area is established between the stream of first fluid and the stream of second fluid, remote from the slot, said interfacial contact area comprising bubbles or droplets of said first fluid having a diameter less than 2 mm,

at least said second fluid being a liquid.

5,632,933

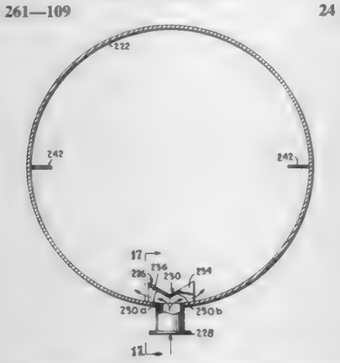
METHOD AND APPARATUS USING GUIDE VANES FOR VAPOR DISTRIBUTION IN MASS TRANSFER AND HEAT EXCHANGE COLUMNS

Neil Yeoman, Nassau, N.Y.; Chang-Li Hsieh, Carlisle, Mass.; Andrew M. Marcinkowski, Derry, N.H., and O. Jeffrey Berven, Wichita, Kans., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Continuation-in-part of Ser. No. 195,533, Feb. 14, 1994, Pat. No. 5,516,465, which is a continuation-in-part of Ser. No. 101,924, Aug. 4, 1993, abandoned. This application Feb. 12, 1996, Ser. No. 599,795

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—109 **24 Claims**



1. A mass transfer or heat exchange column comprising:

a shell presenting an open internal volume and having a generally vertical center axis;

a vapor inlet nozzle extending through said shell for directing a vapor stream into said open internal volume in a generally radial direction;

a distributor comprising a generally upright deflecting surface within said shell and spaced radially inwardly from said vapor inlet nozzle for redirecting the vapor stream from said generally radial direction to a flow path directed about an inner periphery of the column shell, said distributor extending along less than about one-half of an inner circumference of the shell and including a top plate extending between the deflecting surface and the shell to substantially block upward deflection of the vapor stream; and

a guide vane extending inwardly from said shell and circumferentially spaced from the distributor, said guide vane being positioned in said vapor stream flow path to redirect at least a portion of said vapor stream toward said center axis from said flow path about the inner periphery of the column shell to cause a more uniform distribution of the vapor stream across a horizontal cross section of the column.

5,632,934

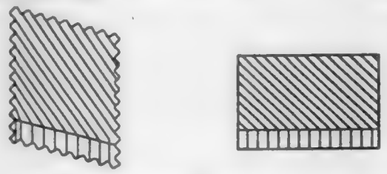
PACKING WITH IMPROVED CAPACITY FOR RECTIFICATION SYSTEMS

John F. Billingham, Tonawanda, and Michael J. Lockett, Grand Island, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Continuation of Ser. No. 317,499, Oct. 4, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 620,202

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—112.2 **17 Claims**



1. A packing section comprising a plurality of vertically oriented diagonally cross corrugated packing sheets defining a section height, said section having a base region comprising up to the lower 50 percent of the section height, and a bulk region comprising at least some of the remainder of the section height, wherein the crimp height of the packing sheets in the base region is less than the crimp height of the packing sheets in the bulk region such that the resistance to gas flow between the sheets in the base region is less than the resistance to gas flow between the sheets in the bulk region.

5,632,935

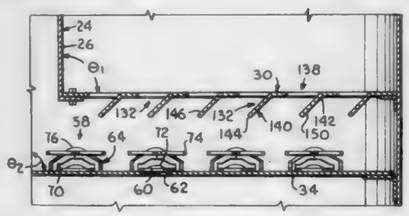
VAPOR-LIQUID CONTACT TRAY AND DOWNCOMER ASSEMBLY AND METHOD EMPLOYING SAME

Neil Yeoman, Merrick, N.Y.; Verne E. Griffith, Wichita, Kans., and Chang-Li Hsieh, Carlisle, Mass., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Continuation-in-part of Ser. No. 234,188, Apr. 28, 1994, Pat. No. 5,480,595. This application Dec. 28, 1995, Ser. No. 580,466

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—114.1 **20 Claims**



1. A mass transfer column comprising:

an external shell defining an interior region open to the flow of vapor and liquid streams;

a plurality of generally horizontally disposed and vertically spaced apart trays positioned in said open interior region to facilitate contact between the vapor and liquid streams when flowing in the interior region of the column, said trays having an upper surface along which the liquid stream can flow;

at least one downcomer associated with each of said trays and extending downwardly toward an underlying tray to deliver liquid from the associated tray to the underlying tray, said downcomer having an inlet region through which liquid enters the downcomer and an outlet region through which liquid exits the downcomer, said outlet region of the downcomer being positioned above a liquid receiving area of the underlying tray;

a bottom plate closing the outlet region of the downcomer and having a plurality of openings through which liquid may flow to exit the downcomer;

a plurality of spaced apart ramps extending below said downcomer bottom plate in the path of said liquid exiting the downcomer, said ramps comprising a main wall inclined at an angle to a vertical axis of the column and positioned to redirect said liquid exiting the downcomer and impart an at least partially horizontal momentum to the redirected liquid, thereby reducing a vertically downward force with which the redirected liquid impacts the liquid receiving area of the underlying tray;

a plurality of apertures in said trays through which ascending vapor may flow to interact with the liquid stream flowing across the upper surface of the trays;

a plurality of valves positioned on and extending above the liquid receiving area of the trays, at least some of said valves comprising an aperture extending through the liquid receiving area of the tray, a frame extending above the liquid receiving area of the tray, and a floating cap moveable within the frame in response to the upward force of vapor flow into the aperture between a lower position covering said aperture to resist liquid entry therein and a raised position spaced above the tray to permit vapor flow through the aperture.

5,632,936

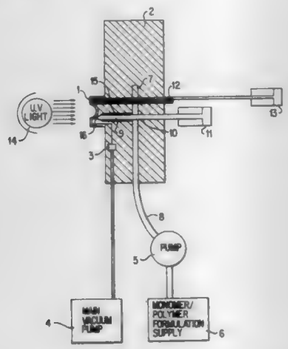
METHOD AND APPARATUS FOR MOLDING OPHTHALMIC LENSES USING VACUUM INJECTION

Kai C. Su; Jack C. White, both of Alpharetta, Ga., and Hans U. Schlapfer, Seattle, Wash., assignors to Ciba-Geigy AG, Basel, Switzerland

Filed May 4, 1994, Ser. No. 237,875

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—2.5 **22 Claims**



1. A method of making a molded ophthalmic lens comprising:

forming a lens mold cavity having a configuration conforming to the opthalmic lens to be molded;

evacuating the lens mold cavity to create a vacuum within the lens mold cavity;

introducing a liquid lens material into the evacuated lens mold cavity by opening a valve having a valve opening at the lens mold cavity, wherein the vacuum within the lens cavity draws the liquid lens material into the lens mold cavity through the valve opening to fill the lens cavity; and,

curing the lens material within the lens mold cavity to obtain the molded opthalmic lens.

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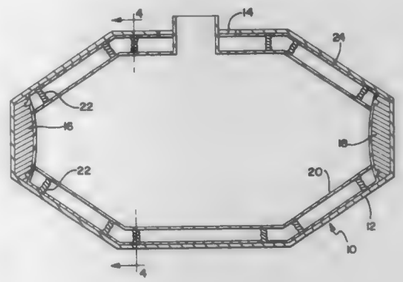
METHOD OF INSTALLING A REFRACTORY LINING

Madjid Soofi, St. Charles, Ill.; James S. Irwin, Hinckley, Ohio, and Charles W. Connors, Jr., Bloomingdale, Ill., assignors to Magneco/Metrel, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 173,655, Dec. 27, 1993, abandoned, which is a continuation of Ser. No. 116,027, Sep. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 893,377, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 673,954, Mar. 22, 1991, abandoned. This application May 22, 1995, Ser. No. 446,436

Int. Cl.[6] B32B *35/00;* **F27D** *1/16*

U.S. Cl. 264—30 **24 Claims**



1. A method of assembling in situ a mold and installing a refractory lining in a torpedo vessel, comprising the steps of:

providing a torpedo vessel having an inside diameter and a main opening, the main opening having a diameter which is less than the inside diameter of the torpedo vessel;

installing an outer support mechanism inside the torpedo vessel;

installing a form inside the torpedo vessel at a distance from an inner wall of the torpedo vessel, with the outer support mechanism maintaining the distance between the form and the inner wall;

installing a hollow inner support mechanism on a side of the form which faces away from the inner wall;

pumping a refractory composition between the form and the inner wall; and

hardening the refractory composition.

5,632,938

MELTBLOWING DIE HAVING PRESETTABLE AIR-GAP AND SET-BACK AND METHOD OF USE THEREOF

Peter G. Buehning, Sr., Short Hills, N.J., assignor to Accurate Products Company, Hillside, N.J.

PCT No. PCT/US93/01296, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/15895, PCT Pub. Date Aug. 19, 1993

Continuation-in-part of Ser. No. 835,190, Feb. 13, 1992, abandoned. This PCT application Feb. 12, 1993, Ser. No. 284,549

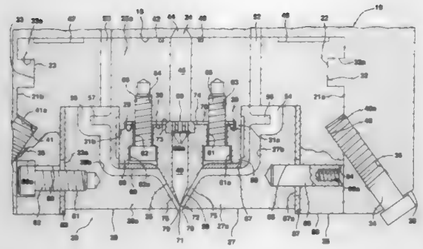
Int. Cl.[6] D01D *5/14*

U.S. Cl. 264—39 **22 Claims**

1. A meltblowing process including the step of replacing a die tip assembly in use with a preadjusted die tip assembly, comprising the steps of:

providing a meltblowing machine, comprising in use:

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(i) an elongated die body having a coathanger-shaped polymer flow passage formed therein, an upper inlet end of said coathanger-shaped polymer flow passage being connected to a source of polymer to be meltblown, and a lower discharge end of said coathanger-shaped polymer flow passage forming an elongate polymer flow port in a lower surface of said die body, said die body further having air flow passages disposed on either side of said polymer flow passage, and said die body being adapted to receive heaters for heating said polymer and air, and

(ii) a die tip assembly,

the machine further comprising a replacement die tip assembly, said die tip assembly in use and said replacement die tip assembly each comprising:

(a) an elongated mounting block having an upper surface for mating with and being secured to said lower surface of said die body, such that polymer and air flow passages formed in said mounting block mate with said polymer and air flow passages formed in said die body,

(b) a die tip mounted to the mounting block, having a downwardly extending elongate nosepiece of generally triangular cross-section terminating at an apex, an elongated polymer channel within said die tip,and a plurality of small-diameter polymer orifices extending through said nosepiece into said channel, said polymer channel mating with said polymer passage formed in said mounting block, and

(c) elongated air plates mounted to said mounting block on either side of said die tip by mounting means allowing selection of the position of the air plates with respect to the die tip, defining converging air flow channels between the die tip and the air plates between the nosepiece and the air plates, and setback of the air plates with respect to the apex of the nosepiece said air flow channels mating with said air flow passages formed in said mounting block;

extruding a molten polymer through the orifices of the die tip in use at a meltblowing operating temperature;

preadjusting said replacement die tip assembly, by assembling said replacement die tip and air plates to said replacement mounting block, such that the replacement die tip assembly exhibits desired values for the air-gap and setback; and

when it is desired to replace the die tip assembly in use with the replacement die tip assembly:

discontinuing the extrusion of the molten polymer;

removing the die tip assembly in use from the die body;

moving the replacement die tip assembly into the position previously occupied by the removed die tip assembly; and securing said replacement die tip assembly to the die body; and

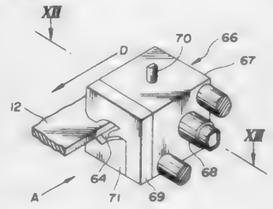
recommencing extruding the polymer through the orifices of the die tip of said replacement die tip assembly.

5,632,939

METHOD OF FORMING MOLDING ON PLATELIKE ARTICLE USING EXTRUSION DIE

Tosikazu Ito, Obu; Yutaka Yamauchi, Matsusaka, and Takashi Araki, Obu, all of Japan, assignors to Central Glass Company, Ltd., Ube, and Tokai Kogyo Kabushiki Kaisha, Obu, both of Japan

Filed Feb. 28, 1995, Ser. No. 395,347
Claims priority, application Japan, Feb. 28, 1994, 6-030474
Int. Cl.[6] B29C *47/02;47/92*
U.S. Cl. 264—40.5 **26 Claims**



1. A method of producing a platelike article having a molding formed on a peripheral edge of the platelike article, using an extrusion die having a cavity for supplying first and second thermoplastic molding materials to the peripheral edge, the peripheral edge having a straight portion and a curved corner portion, the cavity having an orifice of a certain shape for imparting the certain shape to the first and second thermoplastic molding materials, the cavity having first and second cavity portions, the method comprising the steps of:

(a) inserting the peripheral edge of the platelike article into the cavity of the extrusion die such that the first cavity portion is occupied by the peripheral edge;

(b) supplying the first and second thermoplastic molding materials to the second cavity portion;

(c) moving the extrusion die relative to the platelike article, with a moving speed of "Vs" at the straight portion and with a moving speed of "Vc" at the curved corner portion, while the peripheral edge is kept inserted in the cavity; and

(d) extruding the first and second thermoplastic molding materials substantially simultaneously from the second cavity portion through the orifice onto the peripheral edge so as to respectively form first and second molding portions of the molding on the peripheral edge, with an extrusion rate of "Ms" at the straight portion and with an extrusion rate of "Mc" at the curved corner portion, while the steps (b) and (c) are conducted, the first and second molding portions bordering on each other,

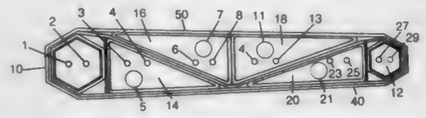
wherein the steps of (b), (c) and (d) are respectively controlled in accordance with a radius of curvature of the curved corner portion and/or with a sectional shape of the molding such that Mc/Vc becomes different from Ms/Vs.

5,632,940

METHOD OF MAKING AN INTEGRALLY STIFFENED ARTICLE

Bradford L. Whatley, 161 Ward Ct., Lakewood, Colo. 80228

Filed Mar. 29, 1994, Ser. No. 219,647
Int. Cl.[6] B29C *70/44*
U.S. Cl. 264—46.4 **30 Claims**



1. A method of making an integrally stiffened article, comprising the steps of:

providing at least two elongated mandrels;

individually wrapping each of said at least two mandrels with a first layer of a reinforced polymer composite material extending at least once around each of said at least two mandrels;

disposing said at least two mandrels in a predetermined adjacent orientation;

overwrapping a second layer of a reinforced polymer composite material at least once around said at least two mandrels to form a subassembly;

providing at least one additional elongated mandrel;

individually wrapping said at least one additional mandrel with a first layer of a reinforced polymer composite material extending at least once around said at least one additional mandrel;

disposing said at least one additional mandrel in adjacent relation with said subassembly;

overwrapping a third layer of reinforced polymer composite material around said subassembly and said at least one additional mandrel to form an assembly; and

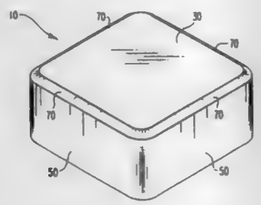
curing said assembly to form an article having a plurality of internal integral stiffeners having common fiber reinforcement, with each of said internal integral stiffeners having fiber reinforcement common to said third layer of reinforced polymer composite material.

5,632,941

GROUP IVB BORIDE BASED ARTICLES, ARTICLES, CUTTING TOOLS, METHODS OF MAKING, AND METHOD OF MACHINING GROUP IVB BASED MATERIALS

Pankaj K. Mehrotra; Deepak P. Ahuja, both of Greensburg, Pa., and Holly S. Brooks, Morges, Switzerland, assignors to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 60,772, May 10, 1993, Pat. No. 5,427,987.
This application Apr. 20, 1995, Ser. No. 425,163
Int. Cl.[6] C04B *33/02*
U.S. Cl. 264—656 **3 Claims**



1. A method of fabricating a titanium boride based article of manufacture comprising the steps of:

adding 3.0–12 w/o of the sum of WC+Co and an effective amount of a grain growth inhibitor to TiB_2 powder and mixing the TiB_2, WC, Co, and said grain growth inhibitor together to form a mixture;

pressing the mixture to form a compact;

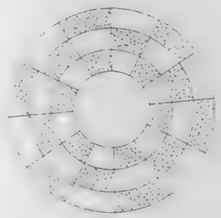
then sintering the compact at a pressure of up to 30,000 psi to produce a substantially dense article of manufacture having an average grain size of 8 μm or less.

5,632,942

METHOD FOR PREPARING MULTILAYER CERAMIC/GLASS SUBSTRATES WITH ELECTROMAGNETIC SHIELDING

Tsung-Shou Yeh, Hsinchu; Shiang-Po Hwang, Tainan; Chien-Min Wang, and Chung-Yu Ting, both of Hsinchu, all of Taiwan, assignors to Industrial Technoology Research Institute, Hsinchu, Taiwan

Filed May 24, 1993, Ser. No. 67,359
Int. Cl.[6] B29C *37/00*
U.S. Cl. 156—89 **20 Claims**



1. A method for preparing multilayer ceramic or glass substrates with electromagnetic shielding for use in making computer hard discs, said method comprising the steps

(a) preparing a slurry composition comprising at least one member selected from the group consisting of ceramic powders and glass powders, an aqueous or organic solvent, a polymeric binder resin, and a plasticizer;

(b) blending and milling said slurry composition to form a homogeneous slurry;

(c) preparing a plurality of precursory ceramic or glass matrixes from said slurry;

(d) cutting each of said precursory ceramic or glass matrixes into a predetermined shape and size;

(e) applying a conductive metal coating layer on at least two of said precursory ceramic or glass matrixes to form at least two metal-coated precursory ceramic or glass matrix, each of said metal coating layers having a predetermined coated/uncoated pattern such that collectively said at least two of said metal coating layers are capable of providing a ubiquitous areal coverage for said substrate;

(f) stacking at least an uncoated said precursory ceramic or glass matrix and said at least two of said metal-coated precursory matrixes together in a head-to-tail manner to form a stacked multilayer precursory substrate, wherein said metal-coated matrixes are arranged in such a manner that the metal-coated portions thereof collectively provide a ubiquitous areal shield to protect said ceramic/glass matrix against magnetic interference;

(g) laminating said stacked multilayer precursory substrate under a predetermined temperature and pressure to form a laminated precursory substrate;

(h) sintering said laminated precursory substrates in a furnace to form a sintered substrate, wherein said sintering procedure causing said ceramic matrixes to grow through said uncoated portions of said metal-coated matrixes and into each other so as to allow said metal coating layers to be firmly laminated with the ceramic or glass layers to form an integrated ceramic or glass substrate with magnetic shield; and

(i) trimming and polishing said sintered substrate to obtain a predetermined size, shape, flatness and roughness.

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5,632,943

METHOD FOR MANUFACTURING A DIAPHRAGM OF A SPEAKER

Po-tsung Lin, No. 43, Shanshe Rd., Shenkang Hsiang, Taichung Hsien, Taiwan

Filed Mar. 20, 1995, Ser. No. 407,295
Int. Cl.[6] B29C *70/02;70/46*
U.S. Cl. 264—103 6 Claims



1. A method of manufacturing a diaphragm of a speaker and comprising the following steps:
1. weaving a plurality of fibers to be a fiber sheet;
2. immersing said fiber sheet into resins;
3. spraying or inserting an enforcement material to said fiber sheet to form a combination sheet;
4. rolling said combination sheet to create a tension therein;
5. drying said combination sheet,
6. putting said combination sheet into a mold and applying a high temperature thereto under a high pressure to form a cup-like configuration, and
7. cutting said combination sheet into a diaphragm with a desired configuration.

5,632,944

PROCESS OF MAKING MUTLICOMPONENT FIBERS

Robert H. Blackwell, Candler, N.C., assignor to BASF Corporation, Mt. Olive, N.J.

Filed Nov. 20, 1995, Ser. No. 561,507
Int. Cl.[6] D01F *1/02;8/04*
U.S. Cl. 264—72.15 16 Claims

1. A process for producing multicomponent fibers comprising:
(a) providing a dispersion of a particulate additive or chemical compound in a nonaqueous liquid carrier;
(b) forming a blend of a first thermoplastic polymer and the dispersion by injecting the dispersion into an extruder which is part of a fiber extrusion apparatus and which extruder is extruding the first thermoplastic polymer thereby forming a blend of the additive or chemical component in the first thermoplastic polymer;
(c) providing a second thermoplastic polymer to the fiber extrusion apparatus;
(d) in the fiber extrusion apparatus, arranging the blend and the second thermoplastic polymer in a preselected, mutually separated relative arrangement;
(e) directing the arrangement of blend and the second thermoplastic polymer to a spinneret which is a part of the fiber extrusion apparatus while maintaining the preselected, mutually separated relative arrangement;
(f) extruding the directed arrangement of the blend and the second molten polymer through the spinneret to form multicomponent fibers; and
(g) solidifying the multicomponent fibers.

5,632,945

METHOD FOR REFORMING A LIQUID CRYSTAL RESIN COMPOSITE

Keita Sasaki, Hiroshima; Masao Hara, Higashi Hiroshima; Takashi Tomita, Hiroshima, and Masatoshi Shinomori, Hatsukaichi, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Continuation of Ser. No. 919,427, Jul. 27, 1992, abandoned. This application Mar. 3, 1995, Ser. No. 400,386
Claims priority, application Japan, Jul. 26, 1991, 3-187914; Sep. 30, 1991, 3-252211
Int. Cl.[6] B29C *47/00*
U.S. Cl. 264—210.2 12 Claims

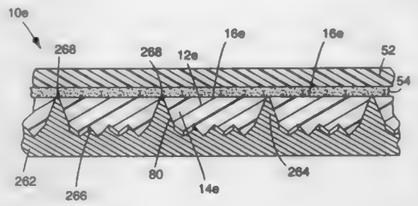
1. A method for remanufacturing a composite resin of liquid crystal polymer and thermoplastic resin, comprising the steps of:
providing a used molding product of a composite resin of thermoplastic resin and liquid crystal polymer having a crystal transition temperature higher than a minimum moldable temperature of the thermoplastic resin;
crushing said used molding product into particles or pieces;
heating said particles or pieces at a temperature higher than a phase transition temperature of said liquid crystal polymer to obtain a molten composite resin;
extruding said molten composite resin at a temperature higher than the phase transition temperature of the liquid crystal polymer to obtain a new moldable composite material; and
forming the new moldable composite material into a molding product in a given shape at a temperature lower than the phase transition temperature of the liquid crystal polymer.

5,632,946

METHODS OF MAKING A CONFORMABLE CUBE CORNER RETROREFLECTIVE SHEETING

Chester A. Bacon, Jr., Oakdale, and Gerald M. Benson, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 139,914, Oct. 20, 1993, Pat. No. 5,614,286. This application Jun. 7, 1995, Ser. No. 474,287
Int. Cl.[6] B29D *7/00*
U.S. Cl. 264—212 7 Claims



1. A method for making a conformable cube corner retroreflective sheeting, comprising:
a) providing a tool having a molding surface which comprises a plurality of raised protrusions and retroreflective element-forming cavities adapted for molding a plurality of discrete, adjacent cube corner segments, each cube corner segment comprising a body portion having a substantially planar front major surface and at least one cube corner retroreflective element projecting rearwardly therefrom to define a cube corner point side of said cube corner segment;
b) depositing a hardenable molding material on the molding surface of the tool, the molding material being sufficient in amount and fluidity to essentially completely fill the cavities to form discrete, adjacent cube corner segments;
c) applying a conformable carrier layer to the molding material on the molding surface under sufficient pressure to effect contact between the carrier layer, the raised protrusions of the tool, and the molding material;

d) effecting substantial solidification of the molding material and bonding of the molding material to the carrier layer to form said conformable sheeting; and
e) removing the conformable sheeting from the molding surface.

5,632,947

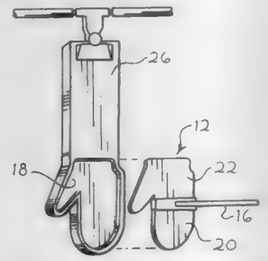
Patent Not Issued For This Number

5,632,948

METHOD OF MANUFACTURING HAND COVERING WITH ATTACHED PAD

Barrett H. Moore, Glencoe, Ill., assignor to Megladon Industries, Cayman Islands

Filed Dec. 20, 1995, Ser. No. 575,218
Int. Cl.[6] B28B *1/30*
U.S. Cl. 264—243 15 Claims



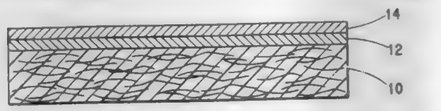
1. A method of manufacturing a hand covering with a pad attached thereto comprising:
providing a pad;
providing a former having a recess therein shaped to receive said pad;
placing said pad in said recess in said former;
applying to said former and said pad a precursor material which is capable of forming a flexible elastic material, while maintaining said pad in said recess;
curing said material and bonding said material to said pad to form a hand covering with said pad attached thereto;
removing said hand covering with said pad attached thereto from said former; and
everting said hand covering with said pad attached thereto so that said pad is disposed on the exterior of said hand covering.

5,632,949

RECYCLABLE MOLDED HIGH MODULUS FIBER REINFORCED THERMOPLASTIC STRUCTURES AND PROCESS FOR PREPARING THE SAME

John M. Fisher, Newark, and Edward Hatchadoorian, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 284,468, Aug. 16, 1994, abandoned. This application Jan. 24, 1996, Ser. No. 590,959
Int. Cl.[6] B28B *7/22*
U.S. Cl. 264—255 4 Claims



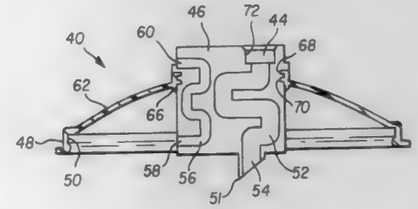
1. A process for preparing a recyclable reinforced composite structure having enhanced surface appearance comprising
a) heating a bait comprised of a plurality of layers of a self-supporting porous web comprised of randomly dispersed high modulus reinforcing fiber held together by solidified thermoplastic resin to convert the bait into a moldable form;
b) placing the moldable form into a heated mold and flowing said moldable form under pressure to substantially crystallize the thermoplastic resin component;
c) introducing a thermosetting resin-containing coating material into the mold adjacent at least one surface of the crystallized structure by separating the sections of said mold and closing said heated mold under pressure to provide a substantially uniform coating on said one surface,
d) dwelling the coated structure in the mold for a time sufficient to set said coating material, and
e) recovering a molded pan having an enhanced surface appearance.

5,632,950

METHOD OF MAKING A LIGHT-SEALING CAP WITH FEATURE FOR ADDITION OF MATERIALS

Michael E. Couch, Rochester; William H. Mullen, Brockport, and Edward J. Verdouw, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 107,352, Aug. 13, 1993, Pat. No. 5,402,905. This application Jan. 24, 1995, Ser. No. 378,038
Int. Cl.[6] B29C *43/28;45/14*
U.S. Cl. 264—274 8 Claims



1. A method of forming a light-lock cap having a shell and means to seal said shell to a container, comprising:
providing a fluid-handling insert comprising means to allow passage of liquids through said cap into the container covered by said cap;
said insert comprising means for liquid passage including a labyrinth passage for liquids with an upward facing inlet and downward facing outlet, said passage for liquids contained in said fluid-handling insert, the inlet for said labyrinth passage for liquids being on an upper surface of said cap and the outlet for said labyrinth passage for liquids being on a lower surface of said cap,
said insert further comprising means to allow gases to exit said container covered by said cap including a labyrinth passage for gases with a side facing inlet and side facing outlet, said passage contained in said fluid-handling insert, said labyrinth passage for gases having a side facing orifice on the interior of said cap and a side facing orifice on the exterior of said cap.
said fluid-handling insert further comprising grooves on an outside of said insert,
placing said insert into a mold cavity,
and molding the cap around said insert with the cap joining the insert at said grooves;
wherein said cap and said insert are formed of the same polymer.

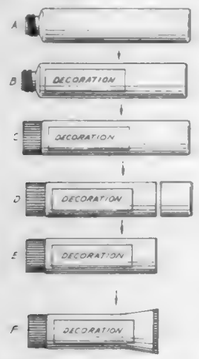
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5,632,951

METHOD OF MAKING A FLEXIBLE PLASTIC TUBE

Roger P. Smith, Napoleon, and Thomas J. Krall, Toledo, both of Ohio, assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Apr. 15, 1994, Ser. No. 228,048
Int. Cl.° B29C *49/04;49/06;49/24*
U.S. Cl. 264—509 15 Claims



1. The method of forming a flexible plastic tube for use in dispensing a viscous product which comprises,

injection molding a neck finish having a shoulder portion and an opening in said neck finish,

extruding a tube portion integrally with the neck finish by relative movement of the neck finish with respect to an extruder.

moving the neck finish axially away from the extruder while continuing continuously extruding said tube portion.

closing a blow mold about the extruded tube,

blowing said tube portion into an integral container body having a closed bottom,

opening the molds to provide an integral container having an integral neck finish, a shoulder portion, a tubular body portion and a closed bottom,

decorating the body portion with indicia,

said step of decorating comprising engaging the neck finish and bottom, and then rotating said container about the longitudinal axis of the container while engaging the neck finish and bottom, and

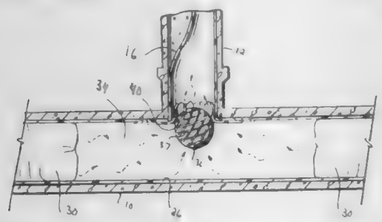
thereafter cutting the closed bottom of the container leaving a flexible plastic tube having a finish, a shoulder portion and a flexible tube portion having an open end.

5,632,952

METHOD FOR LINING LATERAL AND MAIN PIPES

Ivan C. Mandich, 356 Audubon St., New Orleans, La. 70118

Filed Dec. 9, 1994, Ser. No. 353,567
Int. Cl.° B29C *63/34;65/70*
U.S. Cl. 264—516 3 Claims



1. A method of forming in situ an opening through a side wall portion of an elongated liner disposed in a main pipe wherein the side wall portion lies in registry with a lateral pipe adjoining the lined main pipe to provide communication through the opening between the lined main pipe and the lateral pipe, comprising the steps of:

substantially sealing the elongated liner on opposite sides of the juncture between the lined main pipe and the lateral pipe to define a substantially closed region within the liner;

flowing a fluid under pressure and at a predetermined temperature into the closed region of the liner to burst the side wall portion of the liner to form said opening;

disposing a liner in the lateral pipe and sealing an end of the lateral pipe liner adjacent said opening to marginal portions of the liner of the main pipe about said opening;

wherein said liners are formed of a plastic material, wherein the step of sealing includes fusing the end of the lateral pipe liner and the marginal portions of the liner of the main pipe about said opening, and

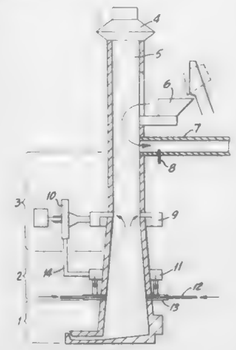
further comprising the step of disposing a member in said closed region for disposition about said opening, using said member to direct the fluid to fuse the end of the lateral pipe liner and the marginal portions of the liner of the main pipe about said opening.

5,632,953

PROCESS AND DEVICE FOR MELTING IRON METALLURGICAL MATERIALS IN A COKE-FIRED CUPOLA

Hans U. Feustel, An der Märchenwiese 72; Joachim Mallon, Krokerstrasse 3, both of Leipzig; Michael Schaaf, Ernst-Thälmann-Str. 5, Rückmarsdorf; Edmund Wilms, Ahrensbök; Gerhard Neumann, Freiberg; Karl-Heinz Köhler, Elsterberg, and Ludwig Ruschitzka, Halsbrücke, all of Germany, assignors to Hans U. Feustel; Joachim Mallon, both of Leipzig, and Michael Schaaf, Rückmarsdorf, all of Germany

PCT No. PCT/EP94/00108, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO94/17352, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 18, 1994, Ser. No. 492,016
Claims priority, application Germany, Jan. 20, 1993, 43 01 322.8
Int. Cl.° C21B *11/02*
U.S. Cl. 266—156 13 Claims



1. A coke-fired cupola, comprising:

a furnace shaft having a well at one end;

a charging device connected to the shaft;

a lower-mouth exhaust connected to the shaft below the charging device;

a furnace gas exhaust ring arranged at the shaft below the charging device and the lower-mouth exhaust;

at least one nozzle connected to the shaft below the furnace gas exhaust ring and above the well, the at least one nozzle having a centrally run oxygen lance; and

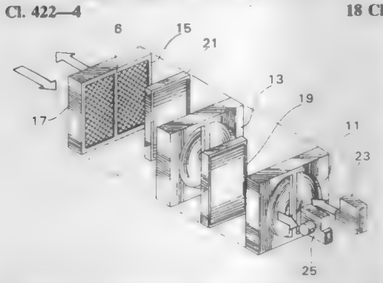
gas recirculating means for connecting the furnace gas exhaust ring to the at least one nozzle, the gas recirculating means including an exhaust device connected to the furnace gas exhaust ring, a recirculating gas ring connected to the at least one nozzle and a recirculating gas duct connected between the exhaust device and the recirculating gas ring.

5,632,954

METHOD FOR KILLING MICROORGANISMS

James A. Coellner, and Henry Mark, both of Philadelphia, Pa., assignors to Engelhard/ICC, Philadelphia, Pa.

Continuation of Ser. No. 261,787, Jun. 20, 1994, abandoned.
This application May 13, 1996, Ser. No. 647,278
Int. Cl.° A61L *9/00;* B01D *19/00*
U.S. Cl. 422—4 18 Claims



1. A method for substantially reducing a concentration of microorganisms in air comprising passing air having the concentration of microorganisms through a desiccant air conditioning system having an inlet path, an outlet path and a moisture transfer wheel comprising zeolite, the moisture transfer wheel being positioned in the inlet and outlet paths and being movable such that the desiccant zones move between the inlet and outlet paths to degenerate and regenerate the zeolite, wherein the zeolite is regenerated at a temperature of not greater than about 190° F., and wherein the zeolite is a crystalline titaniumsilicate molecular sieve zeolite having a pore size of approximately 8 Angstrom units and a composition in terms of mole ratios of oxides as follows:

$1.0\pm0.25\ M_{2/n}O: TiO_2: y\ SiO_2: z\ H_2O$

wherein M is a least one cation having a valence of n, y is from 2.5 to 25, and z is from 0 to 100, the zeolite being characterized by an X-ray powder diffraction pattern having the lines and relative intensities as set forth in the following Table 1:

TABLE 1

XRD POWDER PATTERN OF ETS-10 (0–40° 2 theta)	
SIGNIFICANT d-SPACING (ANGS.)	I/I_o
14.7 = .35	W–M
7.20 = .15	W–M
4.41 = .10	W–M
3.60 = .05	VS
3.28 = .05	W–M

where VS = 60–100; S = 40–60; M = 20–40, and W = 5–20.

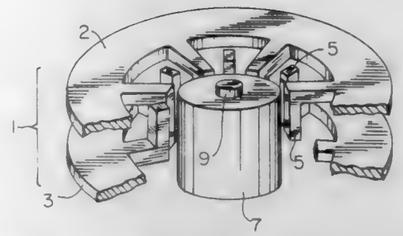
5,632,955

MICROWAVE STERILIZER FOR METAL OBJECTS

Eran Gabbai, Petach Tikuch, Israel, assignor to Vibrenergy Ltd., Jerusalem, Israel

Filed Jul. 6, 1995, Ser. No. 498,615
Int. Cl.° A61L *2/12*
U.S. Cl. 422—21 2 Claims

1. A method for sterilization of metal instruments comprising placing said instruments within a microwave field comprising separate microwave fields 180° out of phase at least one location on said instrument, said separate fields emerging from wave guide means within a container free from the presence of bulk water.

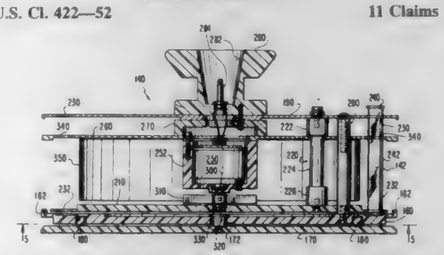


5,632,956

APPARATUS AND METHODS FOR CARRYING OUT ELECTROCHEMILUMINESCENCE TEST MEASUREMENTS

Ali Ghaed, Bethesda; Jonathan K. Leland, Silver Spring, both of Md.; Glenn D. Zoski, Vienna; Jack E. Goodman, Arlington, both of Va., and John T. Grosser, Derry, N.H., assignors to IGEN, Inc., Rockville, Md.

Division of Ser. No. 61,676, May 14, 1993, Pat. No. 5,466,416.
This application Jun. 5, 1995, Ser. No. 461,257
Int. Cl.° G01N *21/76*
U.S. Cl. 422—52 11 Claims



11. An apparatus for use in carrying out electrochemiluminescence test measurements of a test sample in a sample container, comprising:

means for agitating the test sample;

cell means for containing the test sample;

sample transport means for transporting the test sample from the sample container to the cell means;

means for applying electrical energy to the sample contained by the cell means to induce electrochemiluminescence by the sample; and

output signal producing means for producing an output signal representing light emitted by the sample through electrochemiluminescence.

5,632,957

MOLECULAR BIOLOGICAL DIAGNOSTIC SYSTEMS INCLUDING ELECTRODES

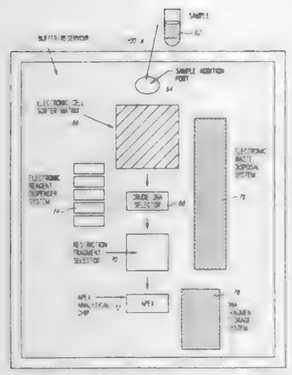
Michael J. Heller, Encinitas; Eugene Tu, San Diego, and William F. Butler, Carlsbad, all of Calif., assignors to Nanogen, San Diego, Calif.

Continuation-in-part of Ser. No. 271,882, Jul. 7, 1994, which is a continuation-in-part of Ser. No. 146,504, Nov. 1, 1993.
This application Sep. 9, 1994, Ser. No. 304,657
Int. Cl.° C12M *1/34;1/42;* C12Q *1/68*
U.S. Cl. 422—68.1 60 Claims

1. An electronic device adapted for performing molecular biological processes comprising:

a support having a first generally planar surface,

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a plurality of microlocations, the microlocations including an electrode disposed on the first surface of the support and a permeation layer disposed above the electrode,

individual electrical connections to the electrodes, and

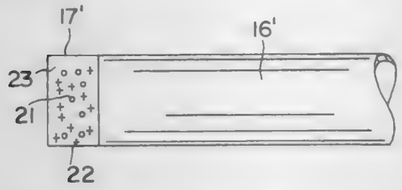
an optical access to the electrodes.

5,632,958

INDICATOR CONTAINING PERFLUORINATED POLYURETHANE MEMBRANES FOR USE IN OPTICAL OXYGEN SENSORS

James Kane, N. Brunswick, N.J.; Roy Martin, Maple Grove, and Anne Schilling, Mahtomedi, both of Minn., assignors to Optical Sensors Incorporated, Minneapolis, Minn.

Division of Ser. No. 120,593, Sep. 13, 1993, Pat. No. 5,462,880.
This application May 24, 1995, Ser. No. 449,356
Int. Cl.[6] **G01N** *21/64;* **G02B** *1/08*
U.S. Cl. 422—82.07 **10 Claims**



1. A cross-linked oxygen permeable membrane, comprising a polymeric matrix of a cured perfluorinated urethane polymer, and, incorporated therein, an indicator composition of an oxygen indicator and a reference dye, wherein the oxygen indicator provides for an oxygen-sensitive fluorescence emission signal, and wherein the reference dye provides for an oxygen-insensitive fluorescence emission signal.

5,632,959

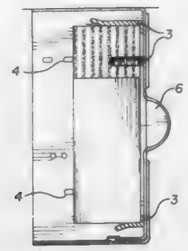
COMBINATION HOLDER FOR SPECIMEN SLIDE

Reza S. Mohajer, 1565 W. Big Beaver Rd., Building F, Troy, Mich. 48084

Filed Aug. 14, 1995, Ser. No. 514,557
Int. Cl.[6] **B01L** *9/00;* **B65D** *85/48*
U.S. Cl. 422—104 **10 Claims**

1. A holder for a slide comprising:

a base, sized to accommodate said slide on a portion of its area and having an integrated hinge that permits a portion of said base to fold over itself and thereby cover said slide;



at least three retaining clips affixed to said base and positioned to contact said slide and hold said slide flush against said base, said at least three retaining clips sized to maintain said portion of said base that covers said slide at a uniform distance from said slide such that said portion of said base is prevented from contacting said slide;

a tab formed as part of said base and flush with the bottom of said base and positioned to permit immobilization of said holder on a horizontal surface; and

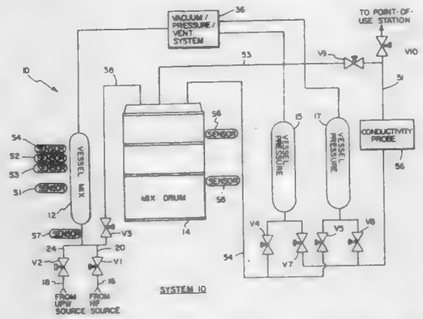
a clasp positioned on said base to keep said base folded over itself.

5,632,960

TWO-STAGE CHEMICAL MIXING SYSTEM

Edward T. Ferri, Jr., Gilroy, Calif.; J. Tobin Geatz, Wrightsville Beach, N.C., and Randall L. Green, Watsonville, Calif., assignors to Applied Chemical Solutions, Inc., Hollister, Calif.

Filed Nov. 7, 1995, Ser. No. 554,787
Int. Cl.[6] **G05D** *9/00*
U.S. Cl. 422—106 **10 Claims**



1. A chemical mixing system for mixing at least first and second chemical constituents to obtain mixed chemical having a desired concentration within a qualification range, including:

a first constituent inlet for receiving a first chemical constituent;

a second constituent inlet for receiving a second chemical constituent;

a mix vessel for mixing mix vessel batches of the first and second chemical constituent;

a first line for fluidly coupling the first constituent inlet to the mix vessel, and including a first line valve for controlling the flow of the first chemical constituent through the first line;

a second line for fluidly coupling the second constituent inlet to the mix vessel, and including a second line valve for controlling the flow of the second chemical constituent through the second line;

first mix vessel level sensing means for providing first vessel level signals when the mix vessel is filled to a first level, wherein the first level corresponds approximately to the volume of the first chemical constituent that will provide mix vessel batches having the desired concentration;

second mix vessel level sensing means for providing second vessel level signals when the mix vessel is filled to a second level, wherein the second level is a level greater than the first level by an amount which corresponds approximately to the volume of the second chemical constituent that will provide mix vessel batches having the desired concentration;

third mix vessel level sensing means for providing third vessel level signals when the mix vessel is filled to a third level which is greater than the first level and less than the second level;

fourth mix vessel level sensing means for providing fourth vessel level signals when the mix vessel is filled to a fourth level which is greater than the second level;

a mix drum for holding and mixing a plurality of mix vessel batches of the mixed chemical;

a mix drum line for fluidly coupling the mix vessel to the mix drum, and including a drum line valve for controlling the flow of the mixed chemical through the mix drum line;

a concentration monitor for providing concentration signals representative of the concentration of mixed chemical within the mix drum; and

a control system coupled to the first line, second line and drum line valves, the first second, third and fourth mix vessel level sensing means and the concentration monitor, for controlling the mixing of the chemical constituents in the mix vessel and the transfer of the mix vessel batches to the mix drum, including:

first control means for actuating the first line valve to fill the mix vessel to the first level with the first chemical constituent;

second control means for actuating the second line valve to fill the mix vessel from the first level to the second level with the second chemical constituent if the concentration of the blended chemical within the mix drum is within the qualification range;

third control means for actuating the second line valve to fill the mix vessel from the first level to the third level with the second chemical constituent if the concentration of the blended chemical within the mix drum is greater than the qualification range;

fourth control means for actuating the second line valve to fill the mix vessel from the first level to the fourth level with the second chemical constituent if the concentration of the blended chemical within the mix drum is less than the qualification range; and

fifth control means for actuating the drum line valve to transfer the mix vessel batch of mixed chemical to the mix tank.

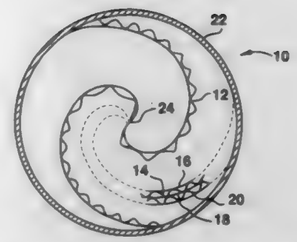
5,632,961

REINFORCING WEB FOR A MULTICELLULAR CONVERTER

David T. Sheller, Garrettsville, Ohio, assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 370,643, Jan. 10, 1995, abandoned.
This application Jun. 5, 1995, Ser. No. 461,918
Int. Cl.[6] **B01D** *53/34;* **F01N** *3/10*
U.S. Cl. 422—180 **15 Claims**

1. A multicellular honeycomb converter body comprising (a) a tubular housing; (b) a plurality of corrugated thin metal strips, said corrugated thin metal strips having corrugations defined by peaks and valleys, (c) a plurality of flat thin metal strips, said flat thin metal strips and said corrugated thin metal strips being in alternating relation forming a stack, said stack being spirally wound and contained in said tubular housing, said corrugated thin metal strips and said flat thin metal strips being precoated with a refractory metal oxide coating, and (d) at least one spirally wound reinforcing web within said stack comprising at least one flat thin metal strip having free distal ends and at least one corrugated thin metal strip having free distal ends and having peaks and valleys, and said at least one flat thin metal strip and said at least one corrugated thin metal strip being free of refractory metal oxide coating, said at least one corrugated thin metal strip being one half the length of said at least one flat thin metal strip and said at least one flat thin metal strip being reversed folded over said at least one corrugated thin metal strip, and said at least one flat thin metal strip and said at least one corrugated thin metal strip of said at least one reinforcing web being disposed in contiguous relation and physically joined to each other by fused metal along the lines of contact, and said reinforcing web having a central portion.

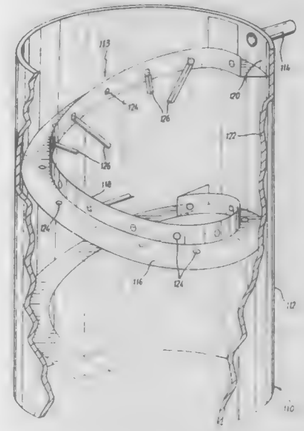


5,632,962

PROCESS VESSEL

Salah A. Baker, Old, and Brian Waldie, Biggar, both of Scotland, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB93/02536, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/13398, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 13, 1993, Ser. No. 454,226
Claims priority, application United Kingdom, Dec. 15, 1992, 9226129
Int. Cl.[6] **B01J** *19/24;10/02;* **B01D** *53/18;3/00*
U.S. Cl. 422—211 **17 Claims**



1. A process vessel for achieving contact between at least one fluid passing through the vessel and a packing material contained therein, the process vessel comprising a peripheral wall disposed around a longitudinal axis and having an inlet for permitting entry of fluid into the vessel and an outlet for permitting exit of fluid from the vessel, the vessel including a redistributor connected to the inside surface of the peripheral wall, and in which the locus of the connection between the redistributor and the peripheral wall is neither perpendicular nor parallel to the longitudinal axis,

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wherein, on any plane drawn at a right angle to the longitudinal axis, a cross-sectional area of the redistributor on the plane is less than 5% of a cross-sectional area of the process vessel on the plane.

5,632,963

PROCESS FOR THE REMOVAL OF IMPURITY ELEMENTS FROM SOLUTIONS OF VALUABLE METALS

Werner Schwab, Monheim, and Ralf Kehl, Duesseldorf, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

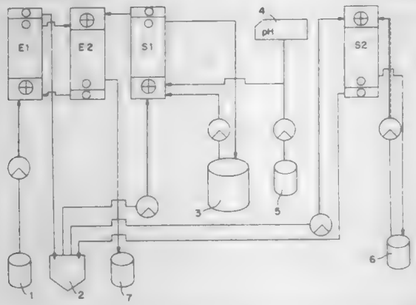
PCT No. PCT/EP93/00322, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO93/17134, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 10, 1993, Ser. No. 290,847

Claims priority, application Germany, Feb. 19, 1992, 42 04 994.6

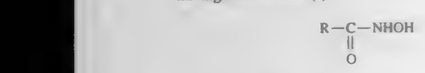
Int. Cl.[6] C22B *3/26*

U.S. Cl. 423—24 **33 Claims**



1. A process for removing impurity elements selected from the group consisting of arsenic, antimony, iron, bismuth and mixtures thereof, from valuable metal containing aqueous acid solutions comprising:

(a) contacting the valuable metal containing aqueous acid solution with an organic solvent solution of a hydroxamic acid having the formula (I)



in which R is an alkyl and/or alkenyl radical containing 6 to 22 carbon atoms, a cyclo-alkyl radical or an aryl radical containing up to 19 carbon atoms for a sufficient time to transfer said impurity elements and the valuable metal from the valuable metal containing aqueous acid solution to said organic solvent solution of the hydroxamic acid, which forms an aqueous phase and an organic phase containing the impurity elements and the valuable metal;

(b) separating the organic phase from the aqueous phase; and

(c) contacting the organic phase from step (b) with an aqueous solution to strip the impurity elements from the organic phase, wherein the aqueous solution to strip the impurity metal elements selected from the group consisting of antimony, iron and bismuth comprises an aqueous solution of a complexing acid which complexes with one or more of the antimony, iron or bismuth impurity elements to remove the antimony, iron or bismuth from the organic phase and wherein the aqueous solution to strip any arsenic impurity element from the organic phase comprises an aqueous valuable metal containing solution having a higher pH value relative to the aqueous acid solution in stage (a) containing a valuable metal to remove the arsenic from the organic phase, in which the removal of the arsenic impurity element is carried out simultaneously with or subsequent to the removal of the metal elements of antimony, iron or bismuth;

(d) recovering the impurity elements from the aqueous stripping solutions of step (c) after separation of the stripping solution from the organic phase; and

(e) recovering the valuable metal from the organic phase.

5,632,964

CLEANING METHOD FOR EXHAUST GAS CONTAINING AMMONIA AND SILANE

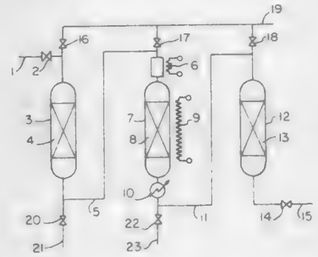
Yasu Ishii, and Noboru Akita, both of Kanagawa, Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,134

Claims priority, application Japan, Jun. 13, 1994, 6-155316

Int. Cl.[6] B01D *53/58;53/64;53/72;53/04*

U.S. Cl. 423—210 **21 Claims**



1. A cleaning method for an exhaust gas containing ammonia, silanes, and organometallic compounds, which comprises contacting the exhaust gas with a cleaning agent A comprising soda lime or soda lime having provided thereon a copper(II) compound to remove the silanes and the organometallic compounds, contacting the exhaust gas thus treated with an ammonia decomposition catalyst comprising an inorganic carrier having provided thereon at least one kind of a metal selected from the group consisting of nickel, iron, and palladium to decompose ammonia in the exhaust gas into hydrogen and nitrogen, and then contacting the remaining exhaust gas with a cleaning agent B comprising an active carbon having provided thereon copper sulfate, or an inorganic carrier having provided thereon a copper(II) salt to remove undecomposed ammonia, thereby resulting in a cleaned exhaust gas containing about 25 ppm or less of ammonia.

5,632,965

METHOD FOR THE PREPARATION OF STABILIZED SODIUM PERCARBONATE

Claas-Juergen Klasen, Freigericht; Birgit Bertsch-Frank, Rheinfelden; Thomas Lieser, Hanau; Peter Schubert, Grenzach-Wyhlen, and Klaus Mueller, Hasselroth, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP94/00422, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO94/20413, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 15, 1994, Ser. No. 507,279

Claims priority, application Germany, Mar. 2, 1993, 43 06 399.3

Int. Cl.[6] C01B *31/24*

U.S. Cl. 423—274 **19 Claims**

1. A method for the preparation of stabilized sodium percarbonate formed of a sodium percarbonate core and a coating containing sodium perborate of the formula $NaBO2.H_2O_2.nH_2O$, wherein n is 0, 1, 2 or 3 comprising spraying a wet sodium percarbonate salt with 5 to 100 l of the solution or suspension containing sodium perborate per 100 kg of the wet salt, the sodium perborate content of which, expressed as $NaBO_2.H_2O_2$ is from 15 to 450 g/l, and separating excess solution or suspension simultaneously or subsequently from solid.

5,632,966

PROCESS FOR HYDROGEN FLUORIDE SEPARATION

Michael Van Der Puy, Amherst, and Mathew H. Luly, Lancaster, both of N.Y., assignors to AlliedSignal Inc., Morris County, N.J.

Filed Mar. 7, 1996, Ser. No. 612,048

Int. Cl.[6] C01B *7/19*

U.S. Cl. 423—484 **19 Claims**

1. A process for separating hydrogen fluoride from a chemical mixture containing hydrogen fluoride and at least one organic material comprising the steps of:

(A) contacting the chemical mixture with a hydrogen fluoride binder, comprising hydrogen fluoride and an acid salt, under conditions suitable to produce a mixture having (i) a binder phase comprising hydrogen fluoride extracted from the chemical mixture and the hydrogen fluoride binder and (ii) an organic phase;

(B) separating the binder phase from the mixture produced in step (A); and

(C) recovering the hydrogen fluoride extracted from the chemical mixture from the binder phase.

5,632,967

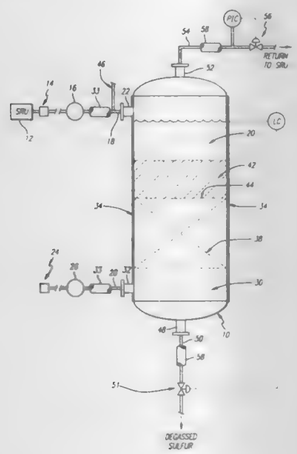
PROCESS FOR THE HIGH PRESSURE DEGASSING OF HYDROGEN SULFIDE FROM LIQUID SULFUR

Elmo Nasato, Tyler, Tex., assignor to Goar, Allison & Associates, Inc., Tyler, Tex.

Filed Sep. 19, 1995, Ser. No. 531,186

Int. Cl.[6] C01B *17/02*

U.S. Cl. 423—578.1 **37 Claims**



1. A process for degassing liquid sulfur containing polysulfides and hydrogen sulfide comprising the steps of:

introducing under pressure a stream of liquid sulfur containing polysulfides and hydrogen sulfide and a stream of an oxidizing gas into a vessel;

mixing the liquid stream and the gas stream to provide intimate contact between the two streams;

passing the two streams while in intimate contact with one another through the vessel while maintaining a pressure of at least about 40 psig, at a temperature and for a treatment time sufficient to remove substantially all of the polysulfides and hydrogen sulfide from the liquid sulfur and to produce a stream of degassed liquid sulfur and a stream of gas; and

discharging the thus degassed liquid sulfur from the vessel.

5,632,968

DETECTION OF CARDIOVASCULAR LESIONS

David M. Goldenberg, Short Hills, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Continuation of Ser. No. 694,977, May 6, 1991, Pat. No. 5,364,612. This application Nov. 9, 1994, Ser. No. 338,100

Int. Cl.[6] A61K *51/10;* **A61B** *5/055*

U.S. Cl. 424—1.49 **8 Claims**

1. A method for detecting and imaging atherosclerotic plaque in the absence of inflammation, which comprises insecting a mammal intravenously or intraarterially with an effective amount for detecting and imaging of a monospecific conjugate comprising an imaging agent conjugated to an antibody or antibody fragment which binds specifically to a monocyte, and obtaining an image of atherosclerotic plaque after sufficient time for said conjugate to bind to said plaque and for unbound conjugate to clear.

5,632,969

N_2S_2 CHELATING LIGANDS OPTIONALLY RADIOLABELLED WITH TC OR RE, USEFUL FOR DIAGNOSTIC OR THERAPEUTIC APPLICATIONS

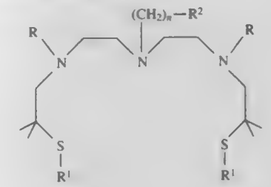
Richard J. Flanagan, St. Lazare; Jean-Marc Dufour, Pierrefonds, and Keith T. Hogan, Dorval, all of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 13, 1994, Ser. No. 322,881

Int. Cl.[6] A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.69 **10 Claims**

1. A compound of the formula:



wherein:

R is selected from the group consisting of:

hydrogen,

loweralkyl of 1–4 carbon atoms, and

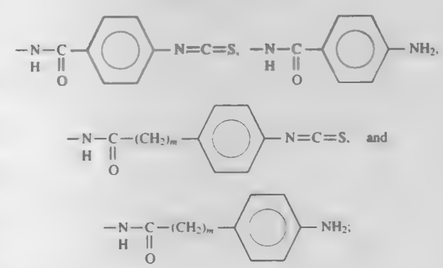
loweralkyl carboxyl, wherein loweralkyl is 1–4 carbon atoms;

R^1 is selected from the group consisting of:

hydrogen, a sulfur protecting group, or where the two R^1 groups are replaced by a disulfide linkage;

R^2 is selected from the group consisting of:

$-N=C=S$, $-NH_2$,



n and m are independently an integer from 1–4;

with the proviso that if R^2 is -N=C=S or $-NH_2$, and R is hydrogen or loweralkyl carboxyl, then the two R^1 groups are replaced by a disulfide linkage.

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5,632,970

FLUORESENCE DETECTION USING TEXAPHYRINS

Jonathan L. Sessler, Austin, Tex.; Tarak D. Mody; Gregory W. Hemmi, both of Sunnyvale, Calif.; Vladimir A. Král, Austin, Tex., and Darren Magda, Cupertino, Calif., assignors to Board of Regents, The University of Texas, Austin, Tex., and Pharmacyclics, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 437,968, May 10, 1995, which is a continuation-in-part of Ser. No. 135,118, Oct. 23, 1993, Pat. No. 5,457,183, which is a continuation-in-part of Ser. No. 75,123, Jun. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 822,064, Jan. 21, 1992, Pat. No. 5,252,720. This application Jun. 7, 1995, Ser. No. 486,967

Int. Cl.° A61K *31/555*

U.S. Cl. 424—9.61 **42 Claims**

1. A method of determining the localization site of a water-soluble detectable texaphyrin, the method comprising the step of observing fluorescence of the texaphyrin wherein fluorescence indicates the presence of the texaphyrin.

5,632,971

EMPTY MEDICINAL AND FOOD CAPSULE

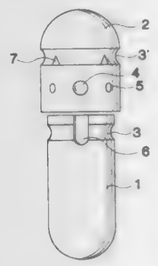
Joo H. Yang, Seoul, Rep. of Korea, assignor to Su Heung Capsule Co., Ltd., Kyong gi-do, Rep. of Korea

Filed Jan. 19, 1996, Ser. No. 587,705

Claims priority, application Rep. of Korea, Sep. 23, 1995, 1995-26161

Int. Cl.° A61K *9/48*

U.S. Cl. 428—34.1 **7 Claims**



1. A medicinal and food capsule having inside and outside surfaces, thereof, said capsule comprising:

a body member and a cap member, said cap member being adapted to slidably fit over said body member to form a completed capsule,

said body member containing a body circumferential slot formed on said outside surface of the upper portion thereof,

said cap member containing a cap circumferential slot formed on said outside surface thereof,

a plurality of projections formed on said inside surface of the cap member at the cap circumferential slot and extending inwardly for engaging an upper end of the body member above the body circumferential slot to form a prelocking state, and for tightly braising said body circumferential slot in a final locking state, and

a plurality of raised members disposed on the lower portion of said cap member and extending inwardly from the inside surface of said cap member, whereby the body member and cap member are preliminarily locked prior to final locking, the medicinal and food capsule is not deformed, and the cap member is not separated from the body member.

5,632,972

METHOD FOR TREATING GINGIVAL AND PERIODONTAL TISSUES

David R. Williams, Monroe; Christine W. Ryles, Milford, and Stephen R. Barrow, Trumbull, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 30, 1994, Ser. No. 269,429

Int. Cl.° A61K *7/16;7/18;7/20;33/40*

U.S. Cl. 424—49 **7 Claims**

1. A method for inhibiting gingival bleeding and improving texture and consistency of gingival and periodontal tissues which comprises:

(i) delivering a first liquid composition to a receptacle, the first liquid composition comprising from about 0.1 to about 10% by weight of zinc salt and from about 0.1% to about 10% by weight of peroxygen compound in a pharmaceutically acceptable carrier;

(ii) delivering a second liquid composition to the receptacle, the second liquid composition comprising from about 1 to about 80% by weight of a bicarbonate salt in a pharmaceutically acceptable carrier;

(iii) transferring from the receptacle into the mouth a combination of the first and second liquid compositions within five minutes of their delivery to the receptacle; and

(iv) agitating the combination of first and second liquid compositions within the mouth against the gingival and periodontal tissues.

5,632,973

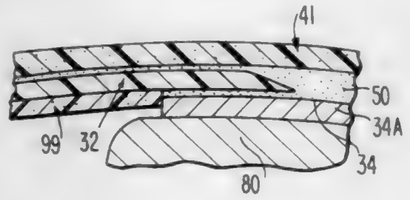
ARTIFICIAL FINGERNAIL METHOD AND COMPOSITION

Alexander M. L. Keller, 130 Oxford St., Brooklyn, N.Y. 11235

Filed Sep. 19, 1995, Ser. No. 530,886

Int. Cl.° A61K *7/04*

U.S. Cl. 424—61 **38 Claims**



1. A method of forming an artificial fingernail on a natural fingernail, comprising the steps of:

a. adhering a vinyl fingernail extension to a top surface of a free end of the natural fingernail;

b. applying a coating of cyanoacrylate adhesive to the top surface of the natural fingernail and to a top surface of the vinyl fingernail extension;

c. applying a layer of a pink mixture in powder form of between 8 and 12 parts by volume acrylic ester polymers and 1 part sodium bicarbonate to the top surface of the natural fingernail and to the top surface of the vinyl fingernail extension on the adhesive coating while said adhesive coating is still wet to cause instant hardening;

d. repeating steps b. and c. three times after brushing off excess powder before each repetition; and

e. shaping and filing a resulting fingernail surface.

5,632,974

ANTIPERSPIRANT DEODORANT COMPOSITIONS

Ramiro Galleguillos, Glendale Heights; Maximo M. Panitch, Skokie, and Anjana K. Jadav, Chicago, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Continuation of Ser. No. 355,636, Dec. 14, 1994, Pat. No. 5,549,887, which is a continuation-in-part of Ser. No. 199,763, Feb. 22, 1994, abandoned. This application Jun. 6, 1996, Ser. No. 658,320

Int. Cl.° A61K *7/34;7/38*

U.S. Cl. 424—66 **29 Claims**

1. A gelled or solid antiperspirant composition comprising:

(a) about 1% to about 40% by weight of an antiperspirant compound;

(b) about 0.5% to about 10% by weight of a borate crosslinker;

(c) about 0.005% to about 10% by weight of a hydrophilic polymeric binder selected from the group consisting of a hydrophilic polyurethane having a weight average molecular weight of at least about 5,000; and

(d) a carrier selected from the group consisting of water, a water-soluble solvent, and mixtures thereof;

wherein the antiperspirant composition has a pH of about 2 to about 6.

5,632,975

COMPOSITION AND METHOD FOR TREATMENT OF DERMATITIS ON THE SCALP

R. Martin Earles, 1328 Plymouth Ct., Chicago, Ill. 60605

Filed Mar. 9, 1995, Ser. No. 401,346

Int. Cl.° A61K *7/06*

U.S. Cl. 424—701 **2 Claims**

1. A scalp medicament blend for topical application to the scalp, the blend consisting essentially of:

from about 0.5 to about 2–5 weight percent, based upon the weight of the blend, hydrocortisone;

from about 2.5 to about 7.5 weight percent, based upon the weight of the blend, sulfur;

from about 2 to about 5 weight percent, based upon the weight of the blend glycerin;

propylene glycol in a ratio in the range of from about one part sulfur to about 1.0 part to about 1.5 parts propylene glycol;

from about 90 to about 97 weight percent, based upon the weight of the blend, of an active vehicle comprising of hydrocarbon jelly and from about 0.2 to about 0.4 weight percent carboxypolymethylene, based upon the weight of the blend.

the carboxypolymethylene gelled with water, the water being in an amount effective for gelling the carboxypolymethylene and providing water to the scalp, the gelled carboxypolymethylene in an amount effective for reducing greasy appearance in human hair which is caused by the hydrocarbon jelly.

5,632,976

SOLUTION POLYMERIZATION OF VINYL MONOMERS WITH WATER SOLUBLE INITIATORS IN SUBSTANTIALLY NON-AQUEOUS MEDIA

Rama S. Chandran, Bound Brook, and George Gallaway, Asbury, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 281,895, Jul. 28, 1994, Pat. No. 5,576,403. This application Aug. 27, 1996, Ser. No. 703,758

Int. Cl.° A61K *7/06*

U.S. Cl. 424—70.16 **3 Claims**

1. A hair fixing composition containing low residual levels of residual monomer, the composition comprising a solvent selected from a group consisting of 1,1,1-trichloromethane, methylene chloride, ethanol, isopropanol, and water, and from 0.25 to 7%, by weight, of an interpolymer of 30 to 60% of a comonomer selected from the group consisting of N-alkyl acrylamide and N-alkyl methacrylamide wherein the alkyl group hereof contains from 2 to 12 carbon atoms; 12 to 18% of an acidic copolymerizable comonomer selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, itaconic acid, maleic acid, fumaric acid, and the $(C_1–C_4)$ alkyl half esters of maleic and fumaric acids; and 20 to 55% of at least one copolymerizable comonomer selected from the group consisting of $(C_1–C_{12})$ alkyl acrylates, $(C_1–C_{12})$ alkyl methacrylates, $(C_2–C_4)$ hydroxyalkyl acrylates, hydroxystearyl acrylate, hydroxyalkyl methacrylates, hydroxystearyl methacrylate, $(C_1–C_4)$ alkyl $(C_2–C_4)$ amino alkyl acrylates, $(C_2–C_4)$alkyl $(c_2–C_4)$ aminoalkyl methacrylates, vinyl acetate, vinyl propionate, diacetone acrylamide, styrene,and alpha-methyl styrene; said interpolymer being sufficiently neutralized with an alkaline reagent to effect its solubility in water, wherein said polymer is prepared in homogeneous form in the presence of an organic solvent using, the solvent containing at least 40% ethanol as the polymerization initiator, a water soluble initiator in sufficient water to dissolve the initiator, the amount of water comprising 5 to 25% by weight of the total solvent.

5,632,977

HAIR CARE COMPOSITIONS CONTAINING POLYMERIC N-VINYL FORMAMIDE AND METHODS OF TREATING HAIR

Rama S. Chandran, Bridgewater; Jean-Pierre Leblanc, Somerville; John C. Leighton, Flanders, and Gary T. Martino, Plainsboro, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 286,850, Aug. 5, 1994, Pat. No. 5,478,553, and a continuation-in-part of Ser. No. 417,358, Apr. 5, 1995, and a continuation-in-part of Ser. No. 417,369, Apr. 5, 1995, Pat. No. 5,609,857. This application Aug. 3, 1995, Ser. No. 510,987

Int. Cl.° A61K *7/075*

U.S. Cl. 424—70.17 **22 Claims**

1. A hair care composition, comprising:

from about 0.1 to about 15 weight percent of a polymer which is prepared via free-radical initiated polymerization, wherein the polymer is selected from the group consisting of a homopolymer prepared from N-vinyl formamide monomer and an interpolymer prepared from at least 10 weight percent N-vinyl formamide monomer, and a vinyl monomer; and

an ingredient selected from the group consisting of a conditioning agent, an emulsifier, a surfactant, a viscosity modifier, a gelling agent, an opacifier, a stabilizer, a preservative, a sequestering agent, a chelating agent, a pearling agent, a clarifying agent, a fragrance, a colorant, a propellant, an organic solvent and water.

5,632,978

MILD SHOWER GEL COMPOSITION COMPRISING FATTY ALCOHOL WHICH IMPARTS IMPROVED LATHERING AND THICKENING PROPERTIES

Christine J. Moore; Everett J. Inman, both of Cincinnati, and Charles K. Schell, Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 24, 1994, Ser. No. 295,298

Int. Cl.° A61K *7/48;7/50*

U.S. Cl. 510—159 **2 Claims**

1. A mild liquid personal cleansing composition having a viscosity ranging from 5,000 to 11,000 centipoise, which composition comprises:

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	Parts by weight, based on 100 total parts
Cocamidopropyl Betaine	4–6
Sodium Laureth Sulfate	5–7
Sodium Lauroyl Sarcosinate	0.3–0.7
Polyquaternium 10	0.05–0.2
C12–C14 Fatty Alcohol	0.25–0.75
Sodium Sulfate	0.05–3.0
Citric Acid	0.05–0.2
Fragrance	0.2–1.0
Water	Q.S.

5,632,979

METHOD AND COMPOSITION FOR PREVENTING SURGICAL ADHESIONS

Eugene P. Goldberg, and Yoseph Yaacobi, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

Division of Ser. No. 210,454, Mar. 21, 1994, which is a division of Ser. No. 26,125, Mar. 3, 1993, Pat. No. 5,350,573, which is a continuation of Ser. No. 818,125, Jan. 8, 1992, abandoned, which is a division of Ser. No. 696,960, May 8, 1991, Pat. No. 5,140,016, which is a continuation of Ser. No. 555,377, Jul. 19, 1990, Pat. No. 5,080,893, which is a continuation of Ser. No. 199,687, May 31, 1988, abandoned. This application Mar. 29, 1995, Ser. No. 412,568

Int. Cl.[6] A61K *38/16*

U.S. Cl. 424—78.05 **4 Claims**

1. In a method of preventing surgical adhesions of tissue in surgery comprising coating surfaces involved in said surgery with an aqueous solution of a hydrophilic, polymeric material prior to manipulation of tissue involved in said surgery wherein said polymeric material is a member selected from the group consisting of water-soluble, biocompatible, pharmaceutically acceptable, non-toxic, non-immunogenic polypeptides, salts and complexes thereof and mixtures thereof, the improvement wherein said hydrophilic, polymeric material (1) has a molecular weight of about 500,000 or above, and (2) has a concentration in said aqueous solution in the range of from about 0.01% to about 15%, by weight.

5,632,980

AIDS THERAPEUTIC AGENTS COMPRISING POLYMERS FORMED FROM CINNAMIC ACID DERIVATIVES

Kunio Konno, 1-33-3, Kakinokizaka, Meguro-ku, Tokyo; Hiroshi Sakagami, Chigusadai Danchi 246, 33, Chigusadai, Midori-ku, Yokohama-shi, Kanagawa-ken; Yutaka Kawazoe, 5-14-14, Shimomeguro, Meguro-ku, Tokyo, and Naoki Yamamoto, Haramachi Jutaku 501, 3-11, Ebisu Minami, Shibuya-ku, Tokyo, all of Japan

Filed Nov. 27, 1992, Ser. No. 982,463

Claims priority, application Japan, Nov. 27, 1991, 3-337796

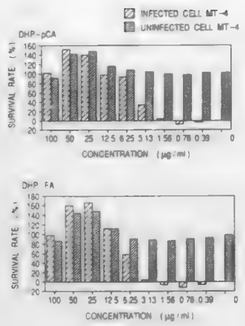
Int. Cl.[6] C08F *20/62;* **A61K** *31/765*

U.S. Cl. 424—78.31 **35 Claims**

1. An AIDS therapeutic agent comprising:

a pharmaceutically effective amount of a polymer shown to be effective against HIV-1 and 2 viruses in MT-4 cell tests obtained by polymerizing in the presence of hydrogen peroxide and peroxidase or its pharmaceutically acceptable salt a cinnamic acid derivative represented by the formula:

R—CH=CH—COOH



where R is a phenyl substituted with at least one hydroxyl group; and

a pharmaceutically effective carrier.

5,632,981

BIOPOLYMER-BOUND NITRIC OXIDE-RELEASING COMPOSITIONS, PHARMACEUTICAL COMPOSITIONS INCORPORATING SAME AND METHODS OF TREATING BIOLOGICAL DISORDERS USING SAME

Joseph E. Saavedra, Thurmont; Larry K. Keefer, Bethesda; Peter P. Roller, and Miki Akamatsu, both of Rockville, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 121,169, Sep. 14, 1993, Pat. No. 5,525,357, which is a continuation-in-part of Ser. No. 935,565, Aug. 24, 1992. This application Nov. 22, 1994, Ser. No. 344,157

Int. Cl.[6] A61K *31/785;38/00*

U.S. Cl. 424—78.08 **28 Claims**

1. A polymeric composition capable of releasing nitric oxide, said composition comprising a biopolymeric backbone wherein said backbone is of a protein, and at least one nitric oxide-releasing $N_2O_2^-$ function group selected from the group consisting of X—N(O)NO] or [N(O)NO—X, wherein X is an organic moiety, covalently bonded to said [N_2O_2], and wherein the [N_2O_2] group is covalently bonded in said polymeric composition through said organic moiety X.

5,632,982

CYTOTOXIC ENHANCEMENT OF TNF WITH COPPER

Howard H. Sussman, Menlo Park; H. Garrett Wada, Atherton, and Katherine S. Fok, Mountain View, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Jun. 7, 1994, Ser. No. 255,265

Int. Cl.[6] A61K *38/19;33/34;39/00*

U.S. Cl. 424—85.1 **12 Claims**

1. A method for killing target cells, said method comprising:

combining said target cells with a source of cuprous ion in a form capable of binding to a surface membrane protein receptor, said source being other than cupric o-phenanthroline in the absence of a reducing agent, and an agent which binds to said surface membrane protein receptor and induces the internalization of said surface membrane protein receptor in an amount to provide a cytotoxic amount of cuprous ion internalized within said cells, wherein each component is administered in an amount below its individual cytotoxic amount;

whereby said target cells are killed.

5,632,983

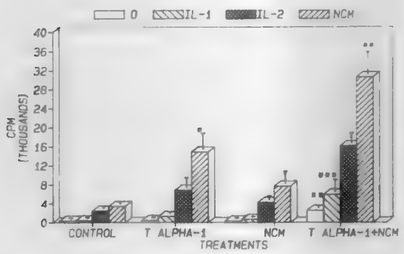
METHOD FOR TREATING SECONDARY IMMUNODEFICIENCY

John W. Hadden, Tampa, Fla., assignor to University of South Florida, Tampa, Fla.

Filed Nov. 17, 1994, Ser. No. 341,424

Int. Cl.[6] A61K *38/19;45/05*

U.S. Cl. 424—85.1 **2 Claims**



1. A method of improving cellular immune response in a patient comprising

coadministering to the patient an effective amount of a peptide selected from the group consisting of Thymosin α_1, Thymosin α_1 analogs and Thymosin α_1 fragments and an effective amount of a cellularly-produced nonrecombinant cytokine preparation wherein the nonrecombinant cytokine preparation contains a cytokine profile of IL-1 at 10–2000 pg/ml, IL-2 at 100–500 units/ml, IL-6 at 250–10,000 pg/ml, IL-8 at 12,000–100,000 pg/ml, IL-12 at 100–10,000 pg/ml, IFN-γ at 50–15,000 pg/ml, TNF-γ at 50–15,000 pg/ml, CSF-GM at 10–1560 pg/ml, and IL-3, IL-4, IL-7 present in trace amounts.

5,632,984

METHOD OF TREATMENT OF MACULAR DEGENERATION

Vernon G. Wong, Rockville, Md.; King Y. Lee, Mission, Kans., and Jerry B. Gin, Sunnyvale, Calif., assignors to Oculex Pharmaceuticals, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 95,735, Jul. 22, 1993, abandoned. This application Sep. 28, 1994, Ser. No. 314,534

Int. Cl.[6] A61K *38/21*

U.S. Cl. 424—85.4 **9 Claims**

1. A method of treatment of macular degeneration associated with subretinal neovascularization in a mammalian host, said method comprising the steps of:

administering intraocularly interferon to said host in an amount sufficient to elicit a decrease in hemorrhage or leakage associated with said subretinal neovascularization wherein said administering is by at least 3 injections at intervals from about three to 42 days.

5,632,985

Patent Not Issued For This Number

5,632,986

PHOSPHOLIPID-TARGETED THROMBOLYTIC AGENTS

Jonathan F. Tait, and Kazuo Fujikawa, both of Seattle, Wash., assignors to The University of Washington, Seattle, Wash.

Continuation of Ser. No. 934,651, Jan. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 697,364, May 9, 1991, abandoned. This application May 15, 1995, Ser. No. 441,006

Int. Cl.[6] A61K *38/17;38/49;* **C07K** *14/435;* **C12N** *9/72*

U.S. Cl. 424—94.64 **3 Claims**

1. A conjugate comprising:

(a) an annexin covalently linked to

(b) urokinase.

5,632,987

BACILLUS THURINGIENSIS TOXINS ACTIVE AGAINST CORN ROOTWORM LARVAE

Jewel Payne, Davis, and Kenneth E. Narva, San Diego, both of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Division of Ser. No. 176,403, Dec. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 999,053, Dec. 31, 1992, abandoned. This application Dec. 16, 1994, Ser. No. 357,698

Int. Cl.[6] A01N *63/00*

U.S. Cl. 424—93.461 **11 Claims**

1. A method for controlling corn rootworms comprising contacting said corn rootworms with a corn rootworm-controlling amount of a *Bacillus thuringiensis* isolate, or a toxin of said *Bacillus thuringiensis* isolate, wherein said isolate is selected from the group consisting of PS80JJ1, having the identifying characteristics of NRRL B-18679; PS158D5, having the identifying characteristics of NRRL B-18680; PS167P, having the identifying characteristics of NRRL B-18681; PS169E, having the identifying characteristics of NRRL B-18682; PS177F1, having the identifying characteristics of NRRL B-18683; PS177G, having the identifying characteristics of NRRL B-18684; PS204G4, having the identifying characteristics of NRRL B-18685; and PS204G6, having the

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identifying characteristics of NRRL B-18686; and mutants thereof which retain activity against corn rootworms.

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POLYPEPTIDE INHIBITORS OF GAMMA INTERFERON

Richard Ingram, Scotch Plains; Hung V. Le, Rockaway, and Lata Ramanathan, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US90/05908, § 371 Date Apr. 7, 1992, § 102(e) Date Apr. 7, 1992

Continuation-in-part of Ser. No. 425,543, Oct. 23, 1989, abandoned. This PCT application Oct. 19, 1990, Ser. No. 859,292

Int. Cl.[6] A61K *39/00;38/00;* **C07K** *5/00;16/00*

U.S. Cl. 424—185.1 **4 Claims**

1. A polypeptide selected from the group consisting of

Arg-Arg-Lys-Trp-Gln,

Lys-Lys-Tyr-Met-Ala-Arg-Arg-Lys-Trp-Gln,

Arg-Met-Lys-Lys-Tyr-Met-Ala-Arg-Arg-Lys-Trp-Gln, and

Lys-Lys-Tyr-Met-Ala-Arg-Arg-Lys-Trp-Gln-Lys-Thr-Gly-His-Ala-Val.

5,632,989

ATTENUATED, LIVE VACCINE FOR DELAWARE STRAIN IBDV

David B. Snyder; Vikram Vakharia, both of Bowie, Md., and Heinrich D. Luetticken, Boxmeer, Netherlands, assignors to University of Maryland, College Park, Md.

Continuation-in-part of Ser. No. 423,758, Oct. 18, 1989, abandoned. This application Sep. 15, 1992, Ser. No. 944,525

Int. Cl.[6] A61K *39/42;39/12;* **C12N** *7/04;5/18*

U.S. Cl. 424—139.1 **8 Claims**

1. A live, attenuated infectious bursal disease virus (IBDV) capable of inducing antibodies to wild-type Delaware IBDV in poultry when administered thereto, but sufficiently attenuated so as not to induce infectious bursal disease in said treated poultry, said live, attenuated virus bearing a BK9 monoclonal antibody marker.

5. A monoclonal antibody which neutralizes wild-type Delaware IBDV, designated Mab 67.

5,632,990

TREATMENT FOR TUMORS COMPRISING CONJUGATED ANTIBODY A5B7 AND A PRODRUG

Kenneth D. Bagshawe; Gordon T. Rogers, and Surinder K. Sharma, all of London, United Kingdom, assignors to Cancer Research Campaign Tech. Ltd., and Zeneca Ltd., both of London, England

Division of Ser. No. 642,301, Dec. 21, 1990, abandoned. This application Sep. 28, 1994, Ser. No. 313,866

Claims priority, application United Kingdom, Apr. 22, 1988, 8809616

Int. Cl.[6] C12N *15/00;* **C12P** *21/00;* **A61K** *39/395*

U.S. Cl. 424—178.1 **24 Claims**

1. A conjugate comprising A5B7 antibody and an enzyme selected from the group consisting of carboxypeptidase G2 enzyme and nitroreductase.

5,632,991

ANTIBODIES SPECIFIC FOR E-SELECTIN AND THE USES THEREOF

Michael A. Gimbrone, Jr., Jamaica Plain, Mass., assignor to Brigham & Women's Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 102,510, Aug. 5, 1993, Pat. No. 5,403,713, which is a continuation of Ser. No. 850,802, Mar. 13, 1992, abandoned, which is a division of Ser. No. 270,860, Nov. 14, 1988, abandoned. This application Dec. 29, 1994, Ser. No. 365,470

Int. Cl.[6] A61K *39/395;39/44;* **C07K** *16/28*

U.S. Cl. 424—178.1 **15 Claims**

1. A method for selectively targeting a therapeutic agent to activated endothelium expressing E-selectin, comprising administering to a patient a pharmaceutical composition comprising a therapeutically effective amount of an immunoconjugate comprising monoclonal antibody H18/7, or a fragment of said antibody which binds to E-selectin, conjugated to a therapeutic agent, and a pharmaceutically acceptable carrier.

5,632,992

PROCESS FOR THE EXPRESSION OF HERPES SIMPLEX VIRUS TYPE 1 GLYCOPROTEIN E AND METHOD OF USE

Anthony B. Nesburn, Malibu; Steven L. Wechsler, Westlake Village, and Homayon Ghiasi, Los Angeles, all of Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Continuation of Ser. No. 845,920, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 829,947, Feb. 3, 1992. This application Dec. 9, 1994, Ser. No. 353,948

Int. Cl.[6] A61K *39/245;* **C12N** *15/00*

U.S. Cl. 424—186.1 **21 Claims**

1. A vaccine against Herpes Simplex Virus-1 infection, comprising Herpes Simplex Virus Type 1 (HSV-1) gE produced by the expression of a recombinant baculovirus having a genetic construct which comprises:

a) a gene sequence encoding at least one of a full length HSV-1 gE (SEQ ID No. 1) and HSV-1 gE truncated by removal of a fragment encoding the transmembrane anchor sequence; and

b) a promoter sequence wherein said gE gene sequence is functionally linked to the regulatory elements of said promoter, and wherein said promoter is Operative in a baculovirus expression system.

5,632,993

IMMUNOGENS AND THE USE THEREOF FOR OBTAINING ANTIBODIES AGAINST HBA_{1C}

Christian Klein, Weilheim; Christa Hübner-Parajsz; Hans-Georg Batz, both of Tutzing; Wolfgang Rollinger, Weilheim; Ulrich Essig, Planegg, and Lorenz Kerscher, Penzberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Division of Ser. No. 290,342, Aug. 15, 1994, which is a continuation of Ser. No. 61,830, May 14, 1993, abandoned, which is a continuation of Ser. No. 873,663, Apr. 23, 1992, abandoned, which is a continuation of Ser. No. 304,808, Jan. 31, 1989, abandoned. This application May 16, 1995, Ser. No. 442,128

Claims priority, application Germany, Feb. 4, 1988, 38 03 330.5; Feb. 26, 1988, 38 06 198.8

Int. Cl.[6] A61K *39/385;38/14;* **C07K** *14/805*

U.S. Cl. 424—194.1 **6 Claims**

1. Immunogen of formula:

$$(\text{Fructose-Val-His-Leu-Thr-A})_m\text{-T}$$

wherein

m is a number from 1 to 40;

A is a spacer molecule which has a chain length of from 10 to 20 atoms and is of formula:

$$-\text{HN}-\underset{\underset{\text{COOH}}{|}}{\text{CH}}-(\text{CH}_2)_n-\text{X}-\text{B}$$

wherein

X is a sulfur atom or an amide group,

n is a whole number from 1 to 4,

B comprises a succinimide group, and;

T is a carrier protein.

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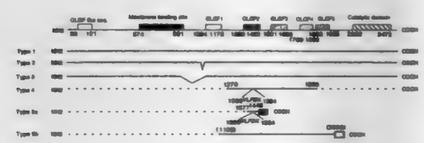
FAS ASSOCIATED PROTEINS

John C. Reed, Carlsbad, and Takaaki Sato, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 259,514, Jun. 14, 1994. This application Mar. 27, 1995, Ser. No. 410,804

Int. Cl.[6] A61K *39/00;* **G01N** *33/53;* **C07K** *16/00*

U.S. Cl. 424—198.1 **3 Claims**



1. A substantially purified human PTP-BAS type 4, comprising the amino acid sequence as shown in FIG. **12** (SEQ ID NO: 1).

5,632,995

METHOD FOR STIMULATION OF REPRODUCTIVE PERFORMANCE

Jose M. Wade, Celbridge, Ireland, and Stanley J. Alkemade, Seaforth, Canada, assignors to Vetrepharm, Inc., Canada

Continuation of Ser. No. 112,602, Aug. 27, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,061

Int. Cl.[6] A61K *39/04;35/74*

U.S. Cl. 424—282.1 **5 Claims**

1. A method of increasing reproductive performance in a human or animal comprising administering to the human or animal an amount of a nonspecific immunostimulant prepared from a bacterial cell wall extract effective to increase the reproductive performance of the human or animal, wherein the bacterial cell wall extract is administered prior to ovulation.

5,632,996

BENZOYL PEROXIDE AND BENZOATE ESTER CONTAINING COMPOSITIONS SUITABLE FOR CONTACT WITH SKIN

Jose E. Ramirez, Trumbull, and Mohan Vishnupad, Monroe, both of Conn., assignors to Imaginative Research Associates, Inc., Milford, Conn.

Filed Apr. 14, 1995, Ser. No. 422,428

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **25 Claims**

1. A composition for contact with skin comprising:

benzoyl peroxide; and

a mixture of non-irritating long chain alkyl benzoates, the composition being substantially anhydrous.

5,632,997

METHOD OF TREATING LIVER DISFUNCTION IN MAMMALS, USING ACTIVE PRINCIPLE ISOLATED FROM SHARK TISSUE

Takuo Kosuge; Kuniro Tsuji; Hitoshi Ishida, and Yoshiki Kosuge, all of Shizuoka, Japan, assignors to J. W. Broadbent Nominees Pty. Ltd., Melbourne, Australia

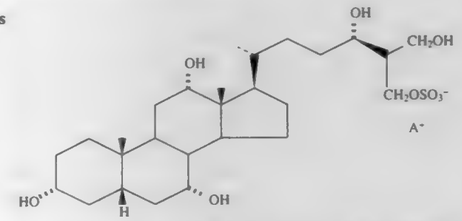
Division of Ser. No. 169,761, Dec. 20, 1993, Pat. No. 5,470,574, which is a continuation of Ser. No. 818,470, Jan. 6, 1992, abandoned, which is a continuation of Ser. No. 622,013, Jan. 14, 1991, abandoned, which is a division of Ser. No. 328,040, Mar. 29, 1989, Pat. No. 5,026,883. This application Jun. 6, 1995, Ser. No. 468,977

Claims priority, application Australia, Aug. 21, 1986, PH7614/86

Int. Cl.[6] A61K *9/48;35/60*

U.S. Cl. 424—401 **6 Claims**

1. A method of treating liver dysfunction, comprising administering to a mammal in need of such treatment a purified form of a compound of the general formula I



wherein A is a cation selected from the group consisting of sodium, potassium, calcium, ammonium or an organic amine; said purified form of said compound producing a single peak upon chromatographic analysis, and said compound being administered in an amount sufficient to effect said treatment.

5,632,998

PERSONAL CARE COMPOSITIONS CONTAINING HYDROPHOBIC GRAFT COPOLYMER AND HYDROPHOBIC, VOLATILE SOLVENT

Sanjeev Midha, Blue Ash, and Raymond E. Bolich, Jr., Maineville, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 15, 1996, Ser. No. 616,847

Int. Cl.[6] A61K *7/075;7/11;7/08*

U.S. Cl. 424—401 **22 Claims**

1. A hair care composition comprising:

(A) a graft copolymer having a polymeric backbone and a hydrophobic polymeric side chain grafted to said backbone, said copolymer formed from the copolymerization of randomly repeating A monomer units and at least one B macromonomer unit wherein said copolymer comprises:

(i) from about 30% to about 95% by weight of said A monomer units, wherein said A monomer units are monomer units copolymerizable with said B macromonomer units; and

(ii) from about 5% to about 70% by weight of said B macromonomer units, wherein said B macromonomer units are hydrophobic macromonomer units having a polymeric portion and a moiety copolymerizable with said A monomer units; and

wherein said A monomer units, in conjunction with said copolymerizable moieties of said B macromonomer units, form said backbone, the T_g corresponding to said backbone having a value of at least about 25° C.;

wherein said polymeric portion of said B macromonomer unit forms said hydrophobic side chain, the T_g corresponding to said side chain having a value of less than about 10° C.;

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wherein said copolymer has a weight averagé molecular weight greater than about 10,000; and

(B) a hydrophobic, volatile solvent for said copolymer, said solvent selected from the group consisting of branched hydrocarbons, silicones and combinations thereof.

5,632,999

SUSTAINED RELEASE PYRIPROXIFEN COMPOSITIONS FOR PARASITE CONTROL

Thomas A. Miller, Fort Worth, Tex., assignor to Virbac, Inc., Fort Worth, Tex.

Filed Aug. 18, 1993, Ser. No. 108,909

Int. Cl.[6] A01N *25/34*

U.S. Cl. 424—411 **30 Claims**

1. A method of controlling fleas which comprises continuously administering to the haircoat of a homeothermic animal an ovicidally effective amount of 2-(1-methyl-2-(4-phenoxyphenoxy)ethoxy)pyridine (pyriproxifen) from a sustained release matrix at an average rate of 0.01 mcg/kg/day to 5 mcg/kg/day.

5,633,000

SUBCUTANEOUS IMPLANT

Stuart A. Grossman, Towson; Kam W. Leong, Ellicott City; Glenn J. Lesser, and Hungnan Lo, both of Baltimore, all of Md., assignors to Axxia Technologies, Bethesda, Md.

Filed Jun. 23, 1994, Ser. No. 264,689

Int. Cl.[6] A61K *9/00;9/22;9/24*

U.S. Cl. 424—422 **15 Claims**

1. A method of providing prolonged relief of pain in a mammal suffering from pain comprising subcutaneously administering a delivery system comprising:

i) a matrix comprising poly(ethylene-vinyl acetate),

ii) hydromorphone embedded homogeneously in said matrix,

iii) poly(methyl methacrylate) coating said matrix,

wherein said delivery system is adapted to deliver said hydromorphone at a rate of plus or minus 500% of the target delivery rate, to said mammal, and wherein said delivery system has a geometry such that there is an external coated wall and an internal uncoated wall and the distance between the uncoated wall and the coated wall opposite the uncoated wall is substantially constant throughout the delivery system.

5,633,001

COMPOSITION AND A METHOD FOR TISSUE AUGMENTATION

Bengt Ågerup, Uppsala, Sweden, assignor to Medinvent, Uppsala, Sweden

PCT No. PCT/SE94/00060, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995, PCT Pub. No. WO94/21299, PCT Pub. Date Sep. 29, 1994

PCT Filed Jan. 27, 1994, Ser. No. 525,558

Int. Cl.[6] A61F *2/02;* **A61K** *47/30*

U.S. Cl. 424—423 **21 Claims**

1. A biocompatible composition which provides for tissue augmentation, which comprises

(i) a pseudoplastic polymer carrier 0.05–50% (w/w) of the total composition; and

(ii) a water insoluble, biocompatible and biodegradable tissue augmenting substance comprising a dextranomer.

5,633,002

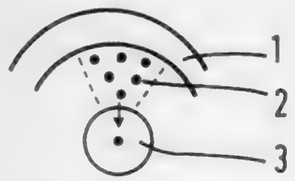
IMPLANTABLE, BIODEGRADABLE SYSTEM FOR RELEASING ACTIVE SUBSTANCE

Herbert Stricker, Neckargemund; Gunther Entenmann, Ingelheim am Rhein; Otto Kern, Ingelheim am Rhein; Michel Mikhail, Ingelheim am Rhein, and Bernd Zierenberg, Bingen, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Continuation of Ser. No. 154,843, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 881,018, May 8, 1992, abandoned, which is a continuation of Ser. No. 700,721, May 15, 1991, abandoned, which is a continuation of Ser. No. 488,193, Mar. 5, 1990, abandoned, which is a continuation of Ser. No. 253,157, Oct. 4, 1988, abandoned. This application May 4, 1995, Ser. No. 434,828

Int. Cl.[6] A61F *2/00*

U.S. Cl. 424—426 **16 Claims**



1. An implantable, biodegradable system for releasing an active substance, said system comprising a carrier material based on biodegradable poly-D,L-lactide and an active substance incorporated therein, wherein the carrier material contains from 1 to 10% by weight of a physiologically harmless ester of acetic acid, and wherein said active substance is released by biodegradation of the carrier.

5,633,003

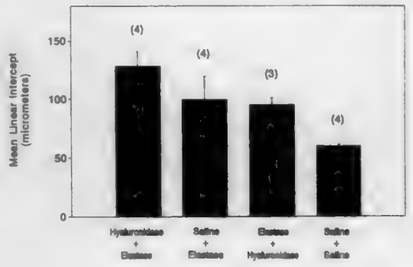
USE OF INTRATRACHEALLY ADMINISTERED HYALURONIC ACID TO AMELIORATE EMPHYSEMA

Jerome O. Cantor, 5900 Arlington Ave., Apt. 4H, Riverdale, N.Y. 10471

Filed Mar. 31, 1994, Ser. No. 221,866

Int. Cl.[6] A61K *31/715;* **A01N** *43/04*

U.S. Cl. 424—434 **14 Claims**



1. A method of treating a respiratory disorder, wherein the respiratory disorder is selected from the consisting of emphysema, chronic bronchitis, asthma, pulmonary edema, acute respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary fibrosis, and pulmonary atelectasis, which comprises intratracheally administering to a mammal an effective amount of a hyaluronic acid so as to treat the respiratory disorder.

5,633,004

GRANULAR AGENT FOR RUMINANTS AND PROCESS FOR PRODUCING THE SAME

Kunio Nishimura, and Toshio Morita, both of Kawasaki, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 223,178, Apr. 5, 1994, Pat. No. 5,571,527, which is a continuation-in-part of Ser. No. 219,699, Mar. 30, 1994, abandoned, which is a continuation of Ser. No. 856,728, Mar. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,033

Claims priority, application Japan, Mar. 25, 1991, 84778/91

Int. Cl.[6] A23K *1//18*

U.S. Cl. 424—438 **21 Claims**



1. A granular agent for ruminants, comprising a core granular agent containing a physiologically active substance coated with a coating layer comprising:

(a) a first coating material composed of one or more substances selected from the group consisting of a fatty acid having 12 to 22 carbon atoms or ester thereof, an animal or vegetable fat and fatty oil or a hardened animal or vegetable fat and fatty oil, having a melting point of 40° C. or higher, and a wax having a melting point of 40° C. or higher, and

(b) a second coating material composed of tabular crystals of a substance which is sparingly water-soluble under a neutral condition but is readily water-soluble under an acidic condition and which has an average particle size of 5 to 30 μm, wherein said second coating material is at least one substance selected from the group consisting of isoleucine, cystine, methionine and secondary calcium phosphate dihydrate,

wherein said coating layer has a laminar structure in which said tabular crystals are arranged in a laminated state,

wherein said first coating material and said second coating material are in proportion of 3:2 to 1:3 by weight, and

wherein said coating layer is present in a coating ratio of 5% by weight or more and 50% by weight or less, based on the total weight of the granular agent.

5,633,005

DIMETICON PASTILLES

Faruk Imer, Cologne, Germany, assignor to Bolder Arzneimittel GmbH, Cologne, Germany

Continuation of Ser. No. 244,625, Jun. 3, 1994, abandoned. This application Dec. 11, 1995, Ser. No. 570,206

Claims priority, application Germany, Dec. 5, 1991, 41 40 116.6

Int. Cl.[6] A61K *9/68*

U.S. Cl. 424—440 **11 Claims**

1. Pastilles comprising at least partially water-soluble natural or synthetic polymers selected from the group consisting of gums, alginates, carrageen, pectin and gelatin, wherein the polymers form gels or viscous solutions in aqueous systems, the pastilles containing from 1 to 20% by weight poly(dimethylsiloxane) (Dimeticon).

5,633,006

TASTE-MASKING COMPOSITION OF BITTER PHARMACEUTICAL AGENTS

Joseph S. Catania, Gales Ferry, and Alton D. Johnson, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 922,262, Jul. 30, 1992, abandoned. This application Oct. 24, 1994, Ser. No. 328,977

Int. Cl.[6] A61K *9/20;47/02*

U.S. Cl. 424—441 **17 Claims**

1. A chewable tablet or liquid suspension pharmaceutical composition having reduced bitterness comprising azithromycin, an alkaline earth oxide and a pharmaceutically acceptable carrier.

5,633,007

SURGICAL DRESSING

Julian Webb, Clifton; Christopher I. Reed, Southbank; Mark F. Smith, Huby; David F. Farrar, Fulford; Patrick L. Blott, Hull Road; David Houldridge, Badger Hill; Anna F. MacFarlane, York, and Selvarajah Sivshanker, Holgate, all of United Kingdom, assignors to Smith & Nephew PLC, London, United Kingdom

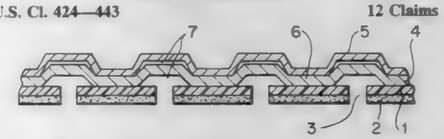
PCT No. PCT/GB94/01573, § 371 Date Mar. 2, 1995, § 102(e) Date Mar. 2, 1995, PCT Pub. No. WO95/03018, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 20, 1994, Ser. No. 284,415

Claims priority, application United Kingdom, Jul. 21, 1993, 9315110; Jul. 21, 1993, 9315138

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—443 **12 Claims**



1. An adhesive dressing comprising a first comprising a substrate having a layer of adhesive on a wound facing surface and a second layer comprising a moisture vapour permeable continuous film, said second layer being attached to the non-wound facing surface of the first layer at spaced apart intervals thereby to form a plurality of discrete cellular voids between said first and second layers, wherein each cellular void is surrounded by a peripheral seal area, which seal area prevents liquid from directly entering an adjacent cellular void, wherein the first layer has apertures therein to allow the passage of liquids therethrough into the cellular voids and wherein the total area defined by the cellular voids is from 20 to 80% of the total operable area of the dressing.

5,633,008

METHOD OF ADMINISTERING NICOTINE TRANSDERMALLY

James L. Osborne, 2365 Thompson Ct., Mountain View, Calif. 94043; Melinda K. Nelson, 1127 Hollenbeck, Sunnyvale, Calif. 94087; David J. Enscore, 18291 Montpere Way, Saratoga, Calif. 95070; Su I. Yum, 1021 Runnymead Ct., Los Altos, Calif. 94022; Robert M. Gale, 1276 Russell Ave., Los Altos, Calif. 94022, and Donna D. Causey, 1286 Calle Aurora, Camarillo, Calif. 93010

Continuation of Ser. No. 662,857, Mar. 1, 1991, which is a continuation of Ser. No. 537,672, Jun. 14, 1990, Pat. No. 5,004,610, which is a continuation of Ser. No. 206,546, Jun. 14, 1988, abandoned. This application Aug. 12, 1993, Ser. No. 105,262

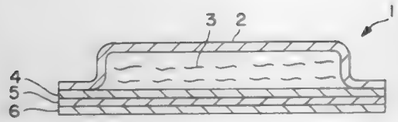
Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—448 **9 Claims**

1. A method for administering nicotine to an individual in need of such administration comprising:

a) applying to the skin of said individual upon waking, a transdermal device comprising a nicotine reservoir containing

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a sufficient quantity of nicotine to maintain a useful transdermal flux of nicotine from said device for a total time period of at least 16 hours;

b) maintaining said device in nicotine transmitting relationship to the skin during waking hours;

c) removing said device prior to sleep.

5,633,009

TRANSDERMAL ADMINISTRATION OF AZAPIRONES

James N. Kenealy, Miami, and Cheryl M. Gentile, Plantation, both of Fla., assignors to Sano Corporation, Miramar, Fla.

Continuation of Ser. No. 919,603, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 841,869, Feb. 26, 1992, abandoned, which is a continuation of Ser. No. 620,064, Nov. 28, 1990, abandoned. This application Nov. 12, 1993, Ser. No. 152,258

Int. Cl.[6] A61K *9/70*

U.S. Cl. 424—448 **16 Claims**

1. A method of administering a therapeutically effective amount of buspirone to a warm-blooded animal in need of such administration, comprising applying to the skin of the warm-blooded animal a composition comprising:

a. a polyisobutylene pressure-sensitive adhesive layer containing the buspirone and an amount of isocetyl alcohol effective to inhibit recrystallization of the buspirone within the polyisobutylene pressure-sensitive adhesive layer, the polyisobutylene pressure-sensitive adhesive layer having a first face and a second face; and

b. a backing layer substantially impermeable to the buspirone and contacting the first face of the polyisobutylene pressure-sensitive adhesive layer.

5,633,010

ADHESIVE COMPOSITIONS, WOUND DRESSINGS AND METHODS

Yen-Lane Chen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 351,890, Dec. 8, 1994, which is a continuation of Ser. No. 956,616, Oct. 5, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 469,023

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 **17 Claims**

1. A pressure sensitive hydrocolloid adhesive composition consisting essentially of i) about 20–50 percent by weight of a hydrophobic, unsaturated, elastomeric homopolymer, ii) about 20–60 percent by weight of a tackifier selected from the group consisting of polyisobutylene, synthetic polyterpene tackifiers and combinations thereof and iii) about 5–60 percent by weight of a hydrocolloid absorbent selected from the group consisting of a natural hydrocolloid, a semi-synthetic hydrocolloid, a synthetic hydrocolloid, and combinations thereof, wherein the homopolymer is cross-linked by 5–200 kGy gamma radiation to provide the composition with a cross-linked matrix having a wet integrity value of at least about eighty percent, a shear hold value of at least 500 min/500 g and a dry cohesive strength which prevents adhesive composition breakage or delamination when a 1×6 cm strip of the adhesive composition is slowly peeled off a polyester adhesive tape at a 90 degree angle and at a speed of 10 mm/minute.

5,633,011

PROGESTERONE REPLACEMENT THERAPY

Liang C. Dong, Mountain View; Patrick S.-L. Wong, Palo Alto, and Steven Espinal, Sunnyvale, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Aug. 4, 1994, Ser. No. 286,125

Int. Cl.[6] A61K *9/48;9/36;31/56*

U.S. Cl. 424—451 **9 Claims**

1. An article of manufacture for hormone replacement comprising a drug layer comprising 10 ng to 1200 mg of a progestin, 1 mg to 30 mg of a surfactant, 5 mg to 225 mg of an alkali carboxymethylcellulose possessing a 75,000 to 350,000 molecular weight, 0.05 mg to 20 mg of a disintegrant and 0.5 mg to 75 mg of an osmagent; a displayment layer comprising 50 mg to 200 mg of an alkali carboxymethylcellulose of 500,000 to 1,000,000 molecular weight, 1 mg to 20 mg of a hydroxypropylmethylcellulose of 9,000 to 150,000 molecular weight, and 0.5 mg to 100 mg of an osmagent; and wherein the drug layer and the displacement layer are encased by hydroxypropylcellulose.

5,633,012

MICRO-ENCAPSULATED LACTOBACILLI FOR MEDICAL APPLICATIONS

Larry C. Ford, Irvine, Calif., assignor to Lafor Laboratories Limited, Newport Beach, Calif.

Continuation of Ser. No. 614,499, Mar. 13, 1996, which is a division of Ser. No. 459,058, Jun. 2, 1995, which is a continuation-in-part of Ser. No. 301,966, Sep. 7, 1994, Pat. No. 5,466,463, which is a continuation of Ser. No. 161,659, Dec. 3, 1993, abandoned. This application Apr. 5, 1996, Ser. No. 627,358

Int. Cl.[6] A61K *9/48;9/20;9/70*

U.S. Cl. 424—451 **4 Claims**

1. A method of treating or preventing antibiotic associated or other acute or chronic diarrhea in a mammal, including a human being, by orally administering to said mammal in need thereof a pharmaceutical composition comprising in a unit dose thereof a therapeutically effective amount of lactobacilli bacteria sufficient to treat or prevent said diarrhea in said mammal in need thereof, said therapeutically effective amount comprising at least approximately 10^3 viable lactobacilli bacteria, said bacteria being micro-encapsulated whereby the bacteria stay viable during storage of the composition, the substance providing the encapsulating coating for the bacteria being such that after ingestion by the mammal it primarily releases bacteria in the lower intestines.

5,633,013

Patent Not Issued For This Number

5,633,014

INJECTABLE PHARMACEUTICAL COMPOSITION

Josue Garza Flores; Laura P. Laiseca Soto, both of Mexico D.F., Mexico; Jose Guillen Pichardo, Dominican Republic, Dominican Rep., and Juan Angeles Uribe, Mexico D.F., Mexico, assignors to Aplicaciones Farmaceuticas S.A. de C.V., Mexico City, Mexico

Continuation of Ser. No. 243,823, May 17, 1994, Pat. No. 5,512,303, which is a division of Ser. No. 714,583, Jun. 13, 1991, Pat. No. 5,360,616. This application Apr. 15, 1996, Ser. No. 632,616

Claims priority, application France, Jun. 14, 1990, 9007416

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 **1 Claim**

1. Solid, non-porous microspheres for administration to a receiving organism said microspheres having a diameter in the range of 1–300 μm, and consisting essentially of:



an injectable analgesic that undergoes a decomposition reaction below the melting temperature of said analgesic; and

an adjuvant not active on the receiving organism but which, when mixed with the analgesic, decreases the melting point of the analgesic below its decomposition temperature

and wherein said microspheres are obtained by spraying a mixture of said analgesic and adjuvant in the melted state to form droplets and rapidly freezing said droplets.

5,633,015

BEADS HAVING A CORE COATED WITH AN ANTIFUNGAL AND A POLYMER

Paul M. V. Gilis, Schransdriesstraat 14, B-2340-Beerse; Valentin F. V. De Condé , Kolonie 57, B-3920-Lommel, and Roger P. G. Vandecruys, Langstraat 108, B-2260-Westerlo, all of Belgium

PCT No. PCT/EP93/02327, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/05263, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 27, 1993, Ser. No. 432,188

Claims priority, application European Pat. Off., Sep. 3, 1992, 92202664.6

Int. Cl.[6] A61K *9/16;9/50*

U.S. Cl. 424—490 **18 Claims**

1. A bead comprising:

a) a central, rounded or spherical core;

b) a coating film of a hydrophilic polymer and an antifungal agent selected from the group consisting of itraconazole and saperconazole, and

c) a seal-coating polymer layer, characterized in that the core has a diameter of from about 600 to about 700 μm (25–30 mesh).

5,633,016

COMBINATION CHEMOTHERAPY

Randall K. Johnson, Ardmore, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 240,648, May 13, 1994, abandoned. This application May 1, 1995, Ser. No. 434,897

Int. Cl.[6] A61K *33/24;31/44*

U.S. Cl. 424—649 **8 Claims**

1. A method of inhibiting the growth of tumor cells sensitive to a synergistic effective amount of topotecan in combination with a synergistic effective amount of cisplatin, in a human afflicted therewith, which comprises administering to such human an effective amount of topotecan in combination with an effective amount of cisplatin sufficient to achieve synergistic tumor growth inhibition.

5,633,017

DEVICE FOR MANUFACTURING CUSHION OR MATTRESS ELEMENTS IN SUPPLE CELLULAR MATERIAL

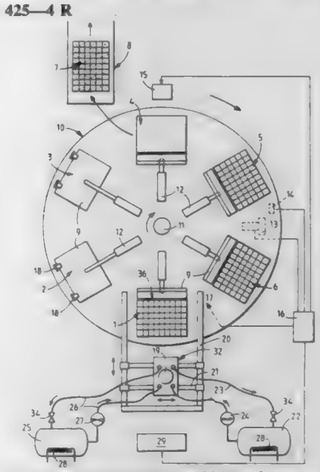
Albert Sebag, and Paul Benguigui, both of Nimes, France, assignors to Askle, Nimes, France

Filed Jan. 27, 1995, Ser. No. 379,178

Claims priority, application France, Feb. 4, 1994, 94 01538

Int. Cl.[6] B28B *1/50*

U.S. Cl. 425—4 R **5 Claims**



1. A device for manufacturing cushion and mattress elements made of supple, open-cell cellular matter obtained by casting a mixture of at least two basic components in a mould, the device comprising:

a head and a mechanical means for displacing said head above said mould and ensuring said mixture and said casting of the product thus formed, which, by reaction of its components, expands and fills the whole volume of said mould for constituting said cellular matter, and a means for transferring said mould between a preparation station and a casting station located beneath said head, and means for maneuvering a cover to close it on the mould, maintain it fixed for a time greater than that of maturing of the cellular matter obtained, and then for re-opening it, said device further comprising:

a circular mould-transfer carrousel rotatable about a vertical central pin and comprising at least five mould locations for a plurality of moulds, said moulds comprising a plurality of hollow recesses opening out in their upper part in a common volume constituting a continuous sole of said cushions and mattresses, said carrousel ensuring displacement of said moulds between at least the product casting station, a station where the cushion and mattress element produced is removed from the mould and a preparation station where a demoulding agent is projected over the whole surface of the mould, said moulds are disposed regularly in a ring to occupy at the same time at least all the stations, then one after the other, upon each step of rotation of the carrousel;

said mechanical means capable of displacing said head along a continuous path covering at least all the recesses of the mould and at a speed ensuring, on the one hand, for a given flowrate of casting of the product, a desired distribution thereof, and, on the other hand, a total time of passage over the path less than the maximum expansion time of the product projected at the beginning of said path, said device further comprising:

property and positioning sensors associated with the mould-transfer carrousel and mechanical means for sensing a physical property and position of at least one of the mould-transfer carrousel and mechanical means, and at least one automat means responsive to the physical property and positioning sensors for controlling at least one of the mould-transfer carrousel and mechanical means.

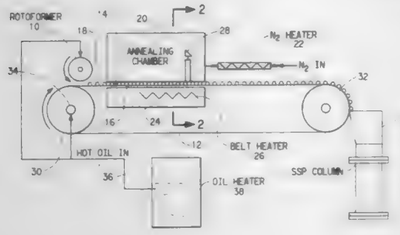
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5,633,018

APPARATUS FOR FORMING CRYSTALLINE POLYMER PELLETS

Jan M. Stouffer, Hockessin; Elwood N. Blanchard, Wilmington, both of Del., and Kenneth W. Leffew, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 20, 1995, Ser. No. 376,599
Int. Cl.[6] B01J *4/02*
U.S. Cl. 425—8 20 Claims



1. An apparatus for producing pellets of a polymer from its polymer melt, comprising:

(a) a pellet former comprising a rotatable container having a plurality of outlets, defining openings each having a maximum cross-sectional dimension in the range of about 0.5 mm to about 5 mm, for metering a polymer melt onto the surface of a conveyor;

(b) a conveyor comprising for receiving, from the pellet former, the polymer melt in the form of a plurality of droplets or crystallizing pellets, which conveyor comprises a surface which is adapted for movement relative to the pellet former and for conveying the pellets through a crystallization section; and

(c) a crystallization section extending from the point at which the pellets are received onto the surface of the conveyor and along a portion of the conveyor,

the crystallization section further comprising a means for adding or removing heat for controlling the temperature of the surface above 50° C. within a predetermined temperature range as the surface passes through the crystallization section.

5,633,019

ENCAPSULATED TRANSFORMER, METHOD OF MAKING ENCAPSULATED TRANSFORMER AND APPARATUS FOR MAKING ENCAPSULATED TRANSFORMER

William A. Clark; Carl C. Strickland, Jr., both of Kinston, and Mark C. Newman, LaGrange, all of N.C., assignors to Cooper Industries, Inc., Houston, Tex.

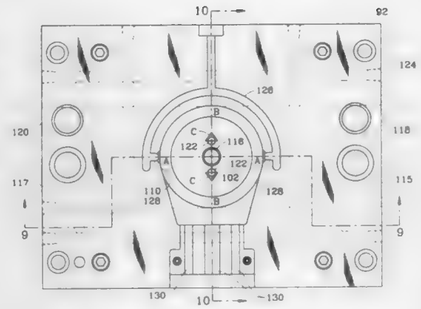
Division of Ser. No. 289,534, Aug. 12, 1994, Pat. No. 5,589,808, which is a division of Ser. No. 104,484, Jul. 28, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,043
Int. Cl.[6] B29C *45/14;45/34*
U.S. Cl. 425—116 11 Claims

10. A mold for completely encapsulating a transformer coil assembly in a casing of thermoplastic rubber, comprising:

a bottom mold portion having a bottom surface and a mold cavity formed therein, said mold cavity sized and configured to receive a transformer coil assembly so that a space exists between an outer periphery of the transformer coil assembly and an inner surface of the mold cavity;

gates formed in the mold for allowing thermoplastic rubber to be injected into the mold cavity;

an upstanding pin positioned centrally within the mold cavity and extending upwardly from said bottom surface of the mold cavity for receiving a core insert;



a movable mold cover for opening and closing the mold cavity; and

vent means positioned in the bottom surface of the bottom mold portion for venting gas from within the mold cavity to an exterior of the mold through said vent means during injection of thermoplastic rubber into the mold cavity, said vent means being positioned adjacent to the upstanding pin and communicating the mold cavity with the exterior of the mold; and

wherein said gates include two gates positioned at diametrically opposite sides of the mold cavity, said vent means being located at diametrically opposite sides of the upstanding pin and being located at positions spaced about 90° from the gates.

5,633,020

COATING COMPOSITION OF NON-CYCLIC POLYANHYDRIDE AND CO-REACTANT RESIN

Michael L. Gould; David A. Grilli; Marvin L. Dettloff; Richard A. Hickner, all of Lake Jackson, and James A. Rabon, West Columbia, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 396,458, Feb. 28, 1995, Division of Ser. No. 194,785, Feb. 10, 1994, Pat. No. 5,428,082, which is a division of Ser. No. 974,569, Nov. 12, 1992, abandoned. This application Oct. 4, 1995, Ser. No. 539,138
Int. Cl.[6] C08L *33/14;63/00;73/02*
U.S. Cl. 525—176 9 Claims

1. A curable coating composition comprising organic solvent and:

(a) a polyanhydride having a molecular weight of no more than about 1,500 that contains:

(a) a polyvalent organic moiety,

(b) a plurality of ester linkages bonded to the polyvalent organic moiety,

(c) divalent organic moieties bonded to the ester linkages and

(d) non-cyclic anhydride moieties bonded to the divalent organic moieties

(b) a co-reactant resin having a weight average molecular weight of about from 2,000 to 20,000 and comprising about 30 to about 70 weight percent glycidyl acrylate or glycidyl methacrylate; and

(c) a functional amount of at least one latent catalyst,

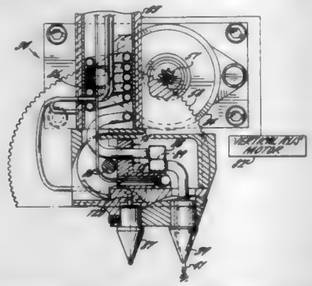
wherein the composition has a solids content of at least about 65 weight percent and wherein the equivalent ratio of epoxy to anhydride is about from 0.8:1 to 1.3:1.

5,633,021

APPARATUS FOR MAKING A THREE-DIMENSIONAL ARTICLE

Robert B. Brown, Duncan, and Charles F. Kirschman, Central, both of S.C., assignors to BPM Technology, Inc., Greenville, S.C.

Filed Oct. 19, 1994, Ser. No. 326,004
Int. Cl.[6] B28B *1/30;* G05B *19/19;* B29C *41/02*
U.S. Cl. 425—375 31 Claims



1. An apparatus for making a three-dimensional article based upon article defining data, said apparatus comprising:

a platform;

build material dispensing means positioned adjacent said platform for dispensing a plurality of droplets of build material toward target landing points; and

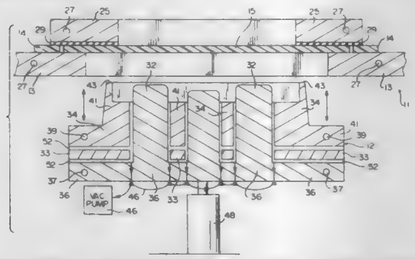
a processor operatively connected to said dispensing means for constructing an article based upon the article defining data, said processor comprising target landing point enhancing means for operating said dispensing means for constructing an enlarged surface contiguous with a first article portion to define an enhanced target landing point area for dispensed droplets of build material for constructing a second article portion adjacent the first article portion.

5,633,022

DIFFERENTIAL TEMPERATURE VACUUM-FORMING TOOL

Donald G. Myers, Baltimore, Md., assignor to Old Line Plastics, Inc., Forest Hill, Md.

Filed Jun. 8, 1995, Ser. No. 488,478
Int. Cl.[6] B29C *51/10;51/42*
U.S. Cl. 425—384 6 Claims



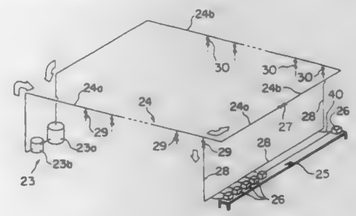
1. A differential temperature vacuum forming tool for vacuum forming a moldable sheet comprising a cooled upwardly projecting male portion, a heated recessed portion separated from and surrounding said projecting male portion, wherein said heated recessed portion includes a sealing surface above said male portion, means for holding a moldable sheet above said projecting male portion and said recessed portion, means for heating said moldable sheet, means for bringing said heated moldable sheet into sealing contact with said sealing surface, and means for creating a vacuum to draw the heated moldable sheet into forming contact with said male portion when said heated moldable sheet is in sealing contact with said sealing surface and such that when an indicia bearing moldable sheet is applied over said cooled projecting male portion and heated separated recessed portion and a vacuum applied to the moldable sheet, a deep button insert is formed around the projecting male portion of the vacuum forming tool without distortion of said indicia.

5,633,023

SLIP SUPPLY SYSTEM

Yasuto Ihara; Hidemi Kotou; Suetomo Uchida, and Taiichi Aso, all of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka-Ken, Japan

Filed Jun. 6, 1995, Ser. No. 470,276
Claims priority, application Japan, Jun. 8, 1994, 6-126190
Int. Cl.[6] B28B *13/00*
U.S. Cl. 425—447 8 Claims



1. A slip supply system comprising:

a slip supply means;

casting facilities;

an annular slip supply pipe for supplying slip from said slip supply means to said casting facilities and for recovering slip from said casting facilities to said slip supply means;

a shut-off valve operatively connected to said annular slip supply pipe; and

one or more slip pouring pipes in said casting facilities being connected at one end thereof to the supply pipe at the upstream side of said shut-off valve and being connected at the other end thereof to the supply pipe at the downstream side of said shut-off valve;

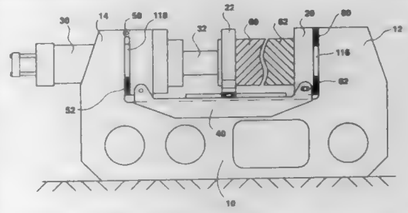
said shut-off valve being opened when slip from said slip supply means is supplied to said annular slip supply pipe to displace the slip therein, and being closed when slip from said slip supply means is supplied to said slip pouring pipes to displace the slip therein.

5,633,024

CLAMPING ASSEMBLY FOR INJECTION MOLDING APPARATUS

Amir Ziv-Av, 3 Hanasi, Kiryat Ono, Israel

Filed Dec. 7, 1995, Ser. No. 568,906
Int. Cl.[6] B29C *45/64*
U.S. Cl. 425—589 19 Claims



6. A clamping assembly for injection molding apparatus, comprising:

(a) a base frame having a first end and a second end;

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(b) a first support post connected to, or integrally formed with, said first end of said base frame;
(c) a fixed platen connected to, or integrally formed with, said first support post;
(d) a second support post connected to, or integrally formed with said second end of said base frame;
(e) a movable platen movably connected to said second support post; and
(f) a support structure for slidably supporting said movable platen, said support structure being a floating support connected to said first and second support posts via a first and second floating support connections, respectively.

5,633,025

BIOACTIVE COATING FOR HARVESTED COMMODITIES

Ahmed El Ghaouth, and Charles L. Wilson, both of Frederick, Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 7, 1994, Ser. No. 336,079
Int. Cl.[6] A23L *3/00*
U.S. Cl. 426—62 **10 Claims**

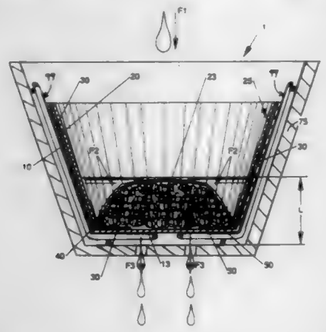
1. A bioactive coating for agricultural commodities, said coating comprising amounts effective for biocontrol activity of a modified chitosan, at least one antagonistic yeast effective for the biocontrol of postharvest diseases and glucose, wherein said modified chitosan is glycolchitosan or carboxymethylchitosan.

5,633,026

TEA FILTER PACK FOR AUTOMATIC BREWERS

Dana P. Gruenbacher, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 84,051, Jun. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 907,761, Jun. 30, 1992, Pat. No. 5,298,267, which is a continuation-in-part of Ser. No. 726,429, Jul. 5, 1991, abandoned. This application Jul. 31, 1995, Ser. No. 509,247
Int. Cl.[6] B65D *85/00;30/04;* A47G *19/16*
U.S. Cl. 426—77 **11 Claims**



1. A conformable, high extraction efficiency, tea filter pack containing a predetermined volume V_1 of dry tea leaves having extractable flavor solids therein, said tea filter pack being suitable for use in combination with a coffee maker having a porous means for supporting said conformable filter pack in an upwardly concave configuration and means for delivering a predetermined volume V_2 of hot water into said upwardly concave tea filter pack at a predetermined water delivery flow rate F_1 to produce a brewed tea product of substantially consistent brew strength from one pot to the next, said tea filter pack comprising:
(a) a bottom layer comprised of a flexible material, said bottom layer having inner and outer faces;
(b) a top layer comprised of a flexible material, said top layer having inner and outer faces, said inner face of said top layer being centered and continuously secured to said bottom layer about said top layer's outer perimeter, thereby defining a brew chamber between their centrally located non-joined areas, said brew chamber containing said predetermined volume V_1 of dry tea leaves, said brew chamber having a maximum volume V_3 that is larger than the volume V_1 of said dry tea leaves;
(c) a conformable side wall defined by the portions of said top and bottom layers extending outwardly from the outer perimeter of said brew chamber, said filter pack further including a means for making said side wall substantially impervious to the passage of water, said side wall, upon insertion into said support means in said coffee maker, being substantially vertically oriented about its entire periphery so as to retain incoming hot water from the coffee maker therein, the vertical height of said substantially water impervious vertically extending side wall being at least sufficient to retain enough incoming hot water to totally immerse said brew chamber when said brew chamber is in its flooded and fully expanded condition;
(d) a porous inlet orifice in said top layer of said brew chamber to prevent the passage of tea leaves therethrough yet allow incoming hot water, which is retained by said substantially vertically oriented substantially water impervious side wall, to pass therethrough at a predetermined flow rate F_2 at least until a substantially steady state brewing condition is reached inside said brew chamber; and
(e) a porous discharge outlet orifice in said bottom layer of said brew chamber to prevent the passage of tea leaves therethrough yet allow brewed tea to pass therethrough at a predetermined maximum outlet flow rate F_3 once a steady state brewing condition is reached inside said brew chamber, said porous inlet orifice in said top layer being of larger area than said porous discharge outlet orifice in said bottom layer such that said maximum outlet flow rate F_3 is less than said flow rate F_1 of said incoming hot water from said coffee maker and less than said inlet flow rate F_2 into said brew chamber, the difference between said inlet flow rate F_2 and said outlet flow rate F_3 being sufficiently great that said brew chamber becomes flooded to produce a steady state brewing condition wherein the combined volume of the water and the tea leaves contained in said brew chamber are substantially equal to the maximum volume V_3 of said brew chamber before a significant portion of the total volume V_2 of incoming hot water has exited said brew chamber, said maximum volume V_3 of said brew chamber being sufficient to allow said tea leaves to expand and float within said brew chamber during said steady state brewing condition, and wherein said means for making said side wall substantially impervious to the passage of water extends onto the inner face of said bottom layer in said brew chamber.

5,633,027

CONFECTIONERIES CONTAINING STABILIZED HIGHLY ODOROUS FLAVOR COMPONENT DELIVERY SYSTEMS

Subraman R. Cherukuri, Towaco, N.J.; Gerald E. Battist, Reston, and Jose F. Zamudio-Tena, Vienna, both of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Division of Ser. No. 286,286, Aug. 5, 1994, Pat. No. 5,556,652. This application Jun. 7, 1995, Ser. No. 475,963
Int. Cl.[6] A23L *1/221;* A23G *3/00*
U.S. Cl. 426—96 **14 Claims**

1. A confectionery composition comprising:
(i) a saccharide-based matrix; and
(ii) a highly odorous flavor component delivery system comprising a non-fat solid substrate having imbibed therein or coated thereon a mixture of a highly odorous flavor oil component and a medium chain triglyceride.

5,633,028

FAST HYDRATING DUST-FREE XANTHAN GUM

Philip Wong, Kendall Park, N.J., assignor to Rhone-Poulenc Inc., Cranbury, N.J.

Continuation of Ser. No. 168,264, Dec. 14, 1993, abandoned. This application May 10, 1996, Ser. No. 644,595
Int. Cl.[6] A23L *1/054*
U.S. Cl. 426—99 **13 Claims**

1. A composition comprising a mixture of xanthan gum and a surfactant wherein said surfactant is present in an amount of from about 0.1% to about 3.0% by weight of the total weight of the composition and wherein the xanthan gum is characterized by having jagged, rough edges and irregular surfaces.

5,633,029

PREPARATION OF CONFECTIONS

David R. Cox, Bedford, and Stephen R. Moore, Thrapston, both of United Kingdom, assignors to Good Humor-Breyers Ice Cream, Division of Conopco, Inc., Green Bay, Wis.

Filed Nov. 30, 1995, Ser. No. 565,513
Claims priority, application European Pat. Off., Nov. 30, 1994, 94308835
Int. Cl.[6] A23G *9/04*
U.S. Cl. 426—565 **9 Claims**

1. A method of preparing a suspension comprising ice crystals in a sugar solution, said method comprising:
(i) cooling a first solution of concentrated sugar to a temperature of from just above the metastable limit temperature of the solution to just above the melting point of the solution;
(ii) cooling a second solution of less concentrated sugar or water to a temperature of from just above the metastable limit temperature of the solution to just above the melting point of the solution;
(iii) mixing the cooled solutions obtained in steps (i) and (ii) to form a suspension comprising ice crystals in a sugar solution; providing that if one or both of the solutions of steps (i) and (ii) is cooled to a temperature of from just above the metastable limit temperature of the respective solution to below the melting point of the respective solution, the respective solution is supercooled.

5,633,030

XANTHAN GELLING AGENTS

William M. Marrs, Horsham, and Iain C. Mutter Dea, Guilford, both of United Kingdom, assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 169,692, Dec. 17, 1993. This application Jun. 1, 1995, Ser. No. 457,368
Claims priority, application United Kingdom, Dec. 18, 1992, 9226391
Int. Cl.[6] A23L *1/0526;1/054*
U.S. Cl. 426—573 **15 Claims**

1. A gelled comestible product having a gel melting point of from 0° C. to 45° C. comprising a gelling agent composition consisting essentially of xanthan and depolymerized guar.

5,633,031

COMPOSITION AND METHOD FOR BEVERAGES USING POSITIVELY CHARGED CARAMEL

Linda J. Zablocki, Mt. Prospect, and Allison D. Vevang, Glenview, both of Ill., assignors to The NutraSweet Company, Deerfield, Ill.

Filed Sep. 8, 1995, Ser. No. 525,327
Int. Cl.[6] A23L *1/27*
U.S. Cl. 426—590 **11 Claims**

1. A beverage selected from the group consisting of carbonated soft drinks, powdered soft drinks and ready-to-drink beverages wherein said beverage comprises aspartame as a sweetening agent and a positively charged caramel in an amount of from about 50 to about 1000 ppm by weight of the total weight of said beverage.

5,633,032

PROCESS OF PREPARING CEREAL EXTRACTS

Roderick N. Greenshields, Swansea, Great Britain, and Artis L. Rees, Port Talbot, Wales, assignors to CPC International Inc, Englewood Cliffs, N.J.

PCT No. PCT/GB92/02122, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO93/10157, PCT Pub. Date May 27, 1993
PCT Filed Nov. 16, 1992, Ser. No. 244,036
Claims priority, application United Kingdom, Nov. 16, 1991, 9124427; Mar. 12, 1992, 9205406; Apr. 27, 1992, 9209094; Nov. 16, 1992, 9214392
Int. Cl.[6] A23L *1/28*
U.S. Cl. 426—618 **2 Claims**

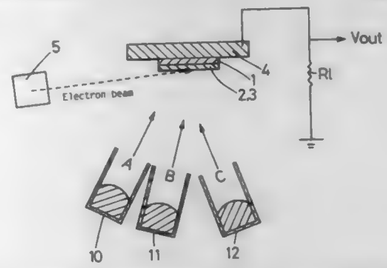
1. A method of producing a cellulose-containing cereal extract comprising the steps of:
(i) milling cereal material;
(ii) suspending the milled cereal material in an aqueous liquid;
(iii) treating the resulting suspension with an alkali for a period of from 1.5 to 2.5 hours at a temperature from 70° to 80° C.;
(iv) lowering the pH of the treated suspension to from 5 to 7;
(v) separating the solids and the liquid in the resulting suspension;
(vi) treating the solids with hydrogen peroxide;
(vii) washing the treated solids; and
(viii) optionally drying the washed solids.

5,633,033

METHOD FOR MANUFACTURING CHALCOPYRITE FILM

Mikihiko Nishitani, Nara; Takayuki Negami, Katano, and Takahiro Wada, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 11, 1995, Ser. No. 420,183
Claims priority, application Japan, Apr. 18, 1994, 6-078720
Int. Cl.[6] C23C *16/52;16/06*
U.S. Cl. 427—8 **5 Claims**



1. A method for manufacturing an ABC_2 chalcopyrite thin film layer, A representing Cu or Ag, B representing In, Ga or Al, and C representing S, Se or Te, the method comprising the steps of:
(a) forming a thin film layer containing element A, element B and element C on a heated substrate, wherein the content of element A exceeds the stoichiometric composition ratio represented by the formula ABC_2,
(b) exposing the thin film layer formed in step (a) to a flux or gas containing element B and element C, or to a gas or flux containing element A, element B and element C but containing element B in excess, and
(c) monitoring a physical property of said thin film layer which changes in correspondence with a change in an A/B ratio of element A to element B in said thin film layer, said physical property selected from the group consisting of an electrical

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resistance of said thin film, an intensity of light reflected from said thin film layer, and an intensity of an infrared ray transmitted through said thin film layer,

wherein said physical property of said thin film layer specifically changes at a first time point when the A/B ratio in said thin film layer changes from an element A-excessive state to the stoichiometric composition ratio of the ABC_2, and demonstrates a stable value at a second time point when the A/B ratio becomes an element B-excessive state, the second time point occurring after the stable value persists for a substantial time period, and

wherein step (b) is terminated at said second time point.

5,633,034

PROCESS FOR FORMING A CIRCUIT ASSEMBLY

Kenneth R. Carter; Richard A. DiPietro, both of San Jose; James L. Hedrick, Pleasanton, all of Calif.; John P. Hummel, Millbrook, N.Y.; Robert D. Miller, San Jose, Calif.; Martha I. Sanchez, Menlo Park, Calif.; Willi Volksen, San Jose, Calif., and Do Y. Yoon, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

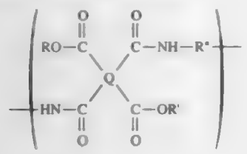
Filed May 9, 1996, Ser. No. 645,019

Int. Cl.[6] B05D *5/12;* **C08G** *69/14*

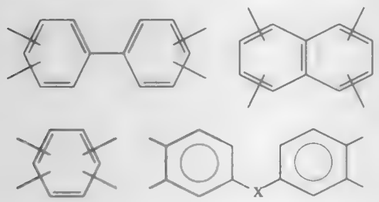
U.S. Cl. 427—96 **3 Claims**

1. A process for forming a circuit assembly comprising

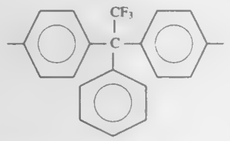
(i) coating a layer of polyamic ester onto a substrate, the polyamic ester having the repeat unit:



wherein Q is selected from:



where X is selected from oxygen, carbonyl or $C(CF_3)_2$; R" is:



and R and R' are alkyl or haloalkyl;

(ii) heating the layer to imidize the polyamic ester and form a layer of polyimide; and

(iii) forming circuit lines on the surface of the layer of polyimide.

5,633,035

THIN-FILM RESISTOR AND PROCESS FOR PRODUCING THE SAME

Kazuo Baba; Yoshiyuki Shiratsuki, and Kumiko Takahashi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 220,463, Mar. 31, 1994, abandoned, which is a continuation of Ser. No. 463,123, Jan. 10, 1990, abandoned, which is a division of Ser. No. 347,698, May 5, 1989, abandoned. This application Apr. 25, 1995, Ser. No. 428,835

Claims priority, application Japan, May 13, 1988, 63-116444

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—101 **4 Claims**

1. A process of forming a thin-film resistor comprising rhodium (Rh) oxide as a resistive material, comprising the steps of:

preparing a solution of ethyl cellulose, an organic solvent, an organometallic material containing rhodium (Rh), and an organometallic material containing at least one element selected from the group consisting of silicon (Si), lead (Pb), bismuth (Bi), zirconium (Zr), barium (Ba), aluminum (Al), boron (B), tin (Sn), and titanium (Ti), wherein the ratio of the total number of metal atoms other than rhodium (Rh) atom (M) to that of rhodium (Rh) atoms (M/Rh), is in the range of 0.3 to 3.0;

applying onto a substrate a coating consisting essentially of said solution;

drying said solution coated on said substrate; and

firing, in air, said solution coated on said substrate after drying to form on said substrate a thin-film resistor formed of a homogeneous structure of oxides of said at least one element and rhodium oxide.

5,633,036

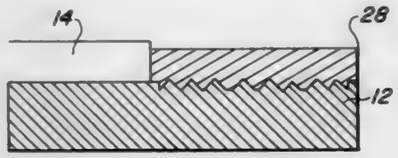
SELECTIVE LOW TEMPERATURE CHEMICAL VAPOR DEPOSITION OF TITANIUM DISILICIDE ONTO SILICON REGIONS

Edmund G. Seebauer, Urbana, Ill., and Michael A. Mendicino, Austin, Tex., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Apr. 21, 1995, Ser. No. 426,508

Int. Cl.[6] B05D *5/12*

U.S. Cl. 438—665 **12 Claims**



1. A process for selective chemical vapor deposition of titanium disilicide onto a silicon substrate having a silicon region and a silicon dioxide region comprising the steps of:

heating the silicon substrate in a growth reactor to a low growth temperature of approximately 750° C. or less;

forming silicon nuclei primarily on the silicon region through introduction of a silicon source gas at a low supply pressure in the approximate range of 0.5 to 5 mTorr;

converting said silicon nuclei to titanium disilicide;

etching the titanium disilicide formed from said convening to remove any titanium disilicide formed upon the silicon dioxide region and the silicon region, and to prepare the silicon region for growth of titanium disilicide; and

selectively growing a layer of titanium disilicide on the silicon region through introduction of said silicon source .gas at said low supply pressure along with a titanium source gas, wherein the pressure ratio of said silicon source gas to said titanium source gas is in the approximate range of 20–100, and said selective growing is accomplished with a silicon substrate consumption rate of approximately 10% or less.

5,633,037

MULTICOAT REFINISHING PROCESS

Bernd Mayer, Münster, Germany, assignor to BASF Lacke + Farben, AG, Muenster-Hiltrup, Germany

PCT No. PCT/EP91/00416, § 371 Date Apr. 22, 1994, § 102(e) Date Apr. 22, 1994, PCT Pub. No. WO91/14513, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 6, 1991, Ser. No. 956,765

Claims priority, application Germany, Mar. 21, 1990, 40 09 000.0

Int. Cl.[6] B32B *35/00;* **B05D** *1/36*

U.S. Cl. 427—140 **19 Claims**

10. A multicoat refinishing process for repairing an area of damage of an original finish, wherein

A) the area of damage is prepared for the application of a refinish paint system by cleaning, sanding, and, if necessary, applying a surfacer and/or body filler,

B) a first coating material is applied to the prepared area of damage and to adjacent original finish areas until a boundary of the original finish is reached,

C) a first coating film, having a dry film thickness of between 2 and 50 μm in the area of damage, is formed from the first coating material,

D) a basecoat composition containing metallic and/or special-effect pigments is applied to the first coating film,

E) a basecoat film is formed from the basecoat composition,

F) a transparent topcoat composition is applied to the basecoat film, and then

G) a topcoat film is formed from the topcoat composition and the topcoat, basecoat, and first coating layers are dried together at a temperature between room temperature and 140° C.,

wherein

I) the first coating material is aqueous and comprises

a) 5 to 50% by weight, based on the total weight of the coating material, of at least one water-thinnable or water-dispersible film-former,

b) 0 to 20% by weight, based on the total weight of the coating material, of at least one organic solvent, and

II) the basecoat composition is aqueous.

5,633,038

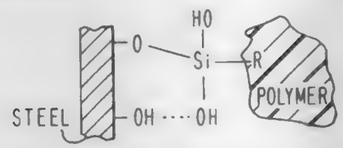
METHOD OF TREATMENT OF PIPELINES AND OTHER STEEL SURFACES FOR IMPROVED COATING ADHESION

Gregory R. Ruschau, Garland, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 25, 1994, Ser. No. 328,729

Int. Cl.[6] B05D *7/22*

U.S. Cl. 427—239 **18 Claims**



1. A method for applying a protective coating to a steel surface to minimize corrosion of said surface comprising the steps of:

cleaning a steel surface to remove at least one of corrosion particles and hydrocarbons from said surface and providing said surface with a roughness of at least 0.50 mils;

applying a film of coupling agent to said surface said coupling agent comprising an organosilane having at least two functionalities, one of said functionalities providing a bond between said surface and silicon in said organosilane, the other functionality comprising a non-hydrolyzable organic radical providing a bond with a polymeric coating;

and

applying said polymeric coating to said surface over said film, said polymeric coating being selected from a group consisting of epoxies, polyamines, polyamides and vinyl esters.

5,633,039

HIGHLY SELECTIVE ASYMMETRIC MEMBRANES FOR GAS SEPARATION AND METHOD FOR THE MANUFACTURE THEREOF

Rene Avrillon, Maisons Laffitte, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Division of Ser. No. 311,816, Sep. 26, 1994. This application Dec. 19, 1995, Ser. No. 574,700

Claims priority, application France, Sep. 27, 1993, 93 11549

Int. Cl.[6] B05D *1/38;3/10;3/02*

U.S. Cl. 427—246 **10 Claims**

1. A method for the manufacture of an asymmetric polyimide or copolyimide polymer membrane for gas separation, said polyimide or copolyimide being derived from diphenyldi(trifluoromethyl-)methane 3,4,3',4'-tetracarboxylic acid dianhydride and either a monoaromatic metadiamine or a mixture of monoaromatic metadiamines, said method comprising the following steps:

(a) dissolving said polyimide or copolyimide in a volatile solvent containing at least 85% by weight of 1,4 dioxane and 0 to 15% by weight of N-methyl 2-pyrrolidone, N,N-dimethylacetamide and/or gamma-butyrolactone,

(b) applying a film of a solution of polyimide or copolyimide of step (a) to a support or extruding a tube of a solution of polyimide or copolyimide of step (a),

(c) partially evaporating the solvent from the film or tube,

(d) bringing the film or tube into contact with a liquid coagulant comprising a mixture of between 15 and 99% by weight of acetic acid and between 1 and 85% by weight of water, and

(e) drying the coagulated film or tube.

5,633,040

METHOD AND APPARATUS FOR TREATING FILM COATED ON SUBSTRATE

Takayuki Toshima, Nirasaki, and Tohru Aoyama, Yamanashi-ken, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,817

Claims priority, application Japan, May 20, 1993, 5-118089

Int. Cl.[6] B05D *3/02;3/12*

U.S. Cl. 427—335 **13 Claims**

1. A film treating method for treating a resist film which is formed on a substrate by spin coating, comprising:

a step of coating a resist composition containing a solvent on the substrate to form the resist film;

a step of mounting the substrate coated with the resist film on a mount table;

a step of covering the substrate coated with the resist film with a cover so as to define a sealed small-volume space, whereby an atmosphere of a saturated vapor or a super-saturated vapor of the solvent is formed in said sealed small-volume space before solvent included in the resist film is lost;

a step of executing a first heating process in said sealed space wherein the substrate coated with the resist film is heated at a temperature which lowers the viscosity of the resist film and permits solvent to remain in the resist film in an amount sufficient to maintain the fluidity of the resist film;

a step of removing the cover so as to change said sealed small-volume space to a non-sealed space surrounding the substrate coated with the resist film; and

a step of executing a second heating process in said non-sealed space wherein the substrate coated with the resist film is

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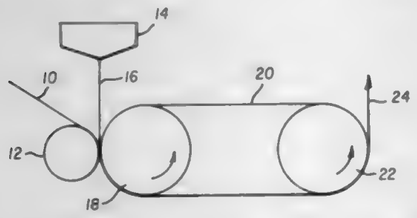
heated at a temperature higher than that of the first heating process, thereby permitting the solvent to evaporate from the resist film.

5,633,041

METHOD OF MAKING PHOTOGRAPHIC PAPER

Eric E. Arrington, Farmington, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 10, 1996, Ser. No. 644,558
Int. Cl.[6] B05D 3/00
U.S. Cl. 427—361 10 Claims



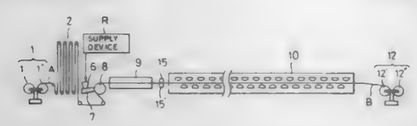
1. A method of making thermoplastic resin-coated paper which comprises coating a paper sheet with a liquid thermoplastic resin, passing the thermoplastic resin-coated paper sheet through a nip of a pressure roll and a thermally conductive medium to form a resin-medium interface, heating the interface to a temperature of from 35° C. to 350° C. for a nip time period of from 0.002 to 10 seconds and a pressure of from 17,500 to 1,750,000 Pa-m, cooling the interface to a temperature of −73° to 32° C. for a cooling time period of from 0.001 to 100 seconds, and separating the thermoplastic resin-coated paper from the medium.

5,633,042

PROCESS FOR MANUFACTURING PREPREGS FOR USE AS ELECTRIC INSULATING MATERIAL

Yoshihiko Nakamura, Nishinomiya; Masahiro Matsumura, Katano; Yasuo Fukuhara, Osaka; Yukio Hatta, Minoo; Masaharu Yamamoto, Nagoya; Makizi Miyao, Kawagoe; Kiyohiro Nagao, Hiki-gun; Takayuki Fukuda, Kawachi-gun; Hiroshi Toshima, Iruma-gun; Shigekazu Takanohashi, Kawagoe, and Akihiro Atsumi, Yokohama, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 28, 1996, Ser. No. 654,168
Int. Cl.[6] B05D 3/02
U.S. Cl. 427—386 14 Claims



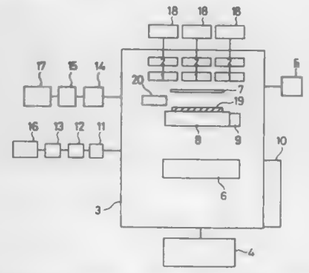
1. A process for continuously manufacturing a prepreg for use as an electrically insulating material consisting of a composite material of a fibrous sheet-shaped reinforcing substrate impregnated with a thermosetting resin, the process comprising the steps of coating uniformly one surface of a fibrous sheet-shaped reinforcing substrate with a matrix thermosetting resin substantially containing no solvent and in molten state by means of a die coater, heating the fibrous sheet-shaped reinforcing substrate coated with the matrix thermosetting resin by means of a non-contact type heating unit to semi-harden the matrix resin, and at least one of the steps of cutting a composite sheet material of the sheet-shaped reinforcing substrate with the semi-hardened matrix resin into pieces of a fixed length, and of reeling the composite sheet material without the cutting, the respective steps being made continuous.

5,633,043

PROCESS FOR FABRICATING THIN FILMS

Takashi Hiraga, and Tetsuo Moriya, both of Ibaraki, Japan, assignors to Research Development Corporation of Japan, Saitama, and Agency of Industrial Science and Technology, Tokyo, both of Japan

Filed Dec. 30, 1994, Ser. No. 366,766
Claims priority, application Japan, Mar. 9, 1994, 6-066706
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—421 16 Claims



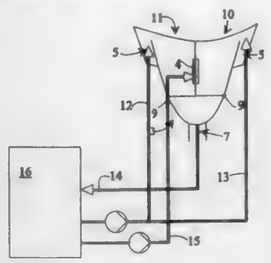
1. A process for producing a film, said process comprising:
forming a solution or dispersion of film material;
spraying said solution or dispersion of said film material from a spray nozzle onto a substrate within a vacuum vessel while maintaining the interior of said vessel under a vacuum, said maintaining comprising evacuating said interior to a pressure not greater than 1×10^{-4} Pa;
allowing the thus sprayed film material to deposit on said substrate; and
after deposition of said film material on said substrate, heating the thus deposited film material.

5,633,044

METHOD AND APPARATUS FOR SPRAY-COATING A PAPER OR BOARD WEB

Pekka Linnonmaa, Helsinki, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Jun. 26, 1995, Ser. No. 494,376
Claims priority, application Finland, Jul. 1, 1994, 943191
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—421 12 Claims



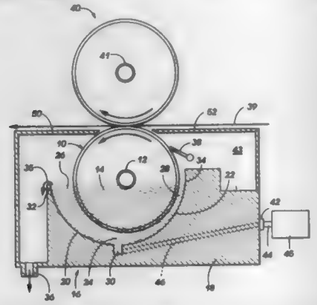
1. A method for applying a coating mix onto a moving paper or board web comprising:
spraying an aerosol of a coating mix onto a surface of a web within a chamber extending across a width of the web; and
supplying a flowing stream of the coating mix to an inner wall of the chamber, the flowing stream of the coating mix flowing sufficiently proximate the surface of the web so as to substantially prevent the aerosol of the coating mix from escaping from the chamber between the stream of the coating mix and the web.

5,633,045

APPARATUS AND PROCESS FOR COATING WEBS USING A CYLINDRICAL APPLICATOR

Warren R. Smith, Webster; Gary W. Smallman, Fairport; Kenneth A. Donahue, Webster, all of N.Y., and Mark Muscato, Yukon, Okla., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1995, Ser. No. 521,897
Int. Cl.[6] B05D 1/28; B05C 1/08
U.S. Cl. 427—428 18 Claims



1. A process for applying a coating to a moving web comprising providing an elongated trough, rotating a cylindrical applicator about its axis in contact with coating liquid having a viscosity of between about 1 centipoise and about 1,000 centipoises within said trough, said rotating being in a direction from upstream to downstream, said applicator having an upper surface and a lower surface, said cylindrical applicator being below and in contact with said web to carry coating liquid from said trough to said web, said trough having an arcuate upstream liquid retaining surface and an arcuate downstream liquid retaining surface substantially parallel to and spaced from the lower surface of said cylindrical applicator to define an arcuate coating zone which progressively narrows in the downstream direction, said arcuate upstream liquid retaining surface and said arcuate downstream liquid retaining surface being separated by a manifold extending substantially parallel to the axis of said cylindrical applicator, said arcuate downstream liquid retaining surface and said arcuate upstream liquid retaining surface extending from said manifold upwardly a sufficient distance along the periphery of said cylindrical applicator to retain most of said liquid in said coating zone, said arcuate downstream liquid retaining surface extending upwardly a greater distance than said arcuate upstream liquid retaining surface to compensate for a pumping action due to rotation of said cylindrical applicator spaced from said arcuate downstream liquid retaining surface, continuously supplying sufficient coating liquid to said arcuate applicator coating zone whereby said coating liquid coats the entire length of the lower surface of said cylindrical applicator and overflows out of the arcuate coating zone, and continuously introducing fresh coating liquid into said manifold at a rate greater than the rate at which said coating liquid is applied to said web.

5,633,046

MULTIPLE DIP COATING METHOD

Mark C. Petropoulos, Ontario; Geoffrey M. T. Foley, Fairport; Robert W. Hedrick, Spencerport, and Richard H. Nealey, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 22, 1995, Ser. No. 447,138
Int. Cl.[6] B05D 7/00
U.S. Cl. 427—430.1 12 Claims

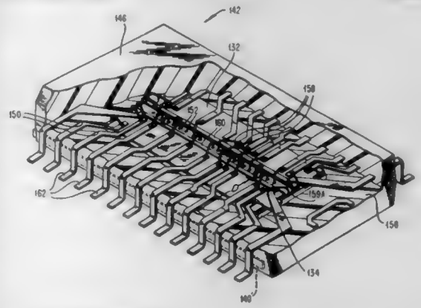
1. A dip coating method for fabricating a photosensitive member comprising:
(a) dipping a substrate into a coating solution comprised of a photosensitive material and raising the substrate, thereby depositing a coating of the photosensitive material on the substrate; and
(b) dipping the substrate in the same coating solution and raising the substrate, thereby increasing the thickness of the coating.

5,633,047

ELECTRONIC DEVICES HAVING METALLURGIES CONTAINING COPPER-SEMICONDUCTOR COMPOUNDS

Michael J. Brady; Curtis E. Farrell, both of Brewster; Sung K. Kang, Chappaqua; Jeffrey R. Marino, Clifton Park; Donald J. Mikalsen, Carmel; Paul A. Moskowitz, Yorktown Heights; Eugene J. O'Sullivan, Upper Nyack; Terrence R. O'Toole, Hopewell Junction; Sampath Purushothaman, Yorktown Heights, all of N.Y.; Sheldon C. Rieley, Burlington, Vt., and George F. Walker, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 200,811, Feb. 22, 1994. This application May 24, 1995, Ser. No. 449,196
Int. Cl.[6] B05D 1/18
U.S. Cl. 427—437 3 Claims



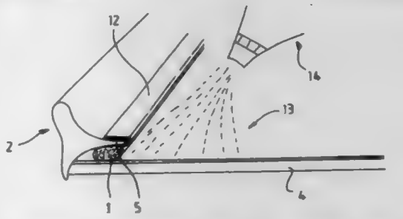
1. A method comprising:
electroless deposition of a Ni_3Ge containing material on a surface.

5,633,048

HAND HELD DISPENSER FOR LAYING A STRIP OF FLEXIBLE MATERIAL UNDER A SEAL, LAYING METHOD THEREFOR, AND USES OF SAID STRIP

Pierre Bodin, 76 route de Strabourg, Illkirch Graffenstaden, France

PCT No. PCT/FR93/00259, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO93/18862, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 16, 1993, Ser. No. 295,799
Claims priority, application France, Mar. 17, 1992, 92 03337
Int. Cl.[6] B05D 3/00
U.S. Cl. 427—444 18 Claims



1. A method for inserting a strip of compressible material, having a non-compressed predetermined cross-sectional diametrical extent, beneath a perimeter seal member, interposed between two components and having a lip portion for engaging one of said two components, so as to permit a region of one of said two

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components, normally disposed beneath said seal member lip portion, to be spray painted in order to facilitate the continuity of the spray paint coating spray painted upon said one of said two components, comprising the steps of:

raising said lip portion of said seal member away from said one of said two components which is normally engaged by said lip portion of said seal member so as to define a space between said lip portion of said seal member and said one of said two components normally engaged by said lip portion of said seal member;

pre-compressing a leading end portion of said strip of compressible material by a dispensing means, such that the diametrical extent of said compressed leading end portion of said strip of compressible material is less than said non-compressed cross-sectional diametrical extent, prior to insertion of said leading end portion of said strip of compressible material into said space defined between said raised lip portion of said seal member and said one of said two components normally engaged by said lip portion of said seal member so as to facilitate insertion of said strip of compressible material into said space defined between said raised lip portion of said seal member and said one of said two components normally engaged by said lip portion of said seal member; and

inserting said compressed leading end portion of said strip of compressible material into said space defined between said raised lip portion of said seal member and said one of said two components normally engaged by said lip portion of said seal member and permitting said compressed leading end portion of said strip of compressible material to expand toward said non-compressed cross-sectional diametrical extent so as to maintain said lip portion of said seal member in said raised state with respect to said one of said two components with which said lip portion of said seal member is normally engaged and thereby facilitate subsequent spray painting of a region of said one of said two components normally disposed beneath said lip portion of said seal member.

5,633,049

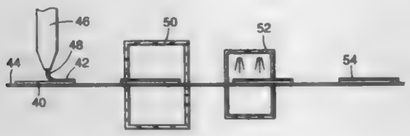
METHOD OF MAKING PROTECTIVE COATING FOR THERMOPLASTIC TRANSPARENCIES

Zayn Bilkadi, Mahtomedi, and Thomas W. Rambosek, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 426,495, Apr. 20, 1995, abandoned. This application Sep. 8, 1995, Ser. No. 526,009

Int. Cl.[6] C08F *2/46*

U.S. Cl. 427—487 **9 Claims**



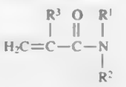
1. A method for preparing an acid-resistant and abrasion-resistant aircraft transparency, the method comprising:

(a) providing an aircraft transparency;

(b) applying a silica-free protective coating precursor composition to at least one surface of the aircraft transparency, wherein the silica-free protective coating precursor composition comprises:

(i) a multifunctional ethylenically unsaturated ester of acrylic acid, a multifunctional ethylenically unsaturated ester of methacrylic acid, or a combination thereof; and

(ii) an acrylamide of the formula:



wherein:

(A) R^1 and R^2 are each independently hydrogen, a (C_1–C_8) alkyl group optionally having hydroxy, halide, carbonyl, and amido functionalities, a (C_1–C_8)alkylene group optionally having carbonyl and amido functionalities, a (C_1–C_4)alkoxymethyl group, a (C_4–C_{18}) aryl group, a (C_1–C_3)alk(C_4–C_8)aryl group, and a (C_4–C_{18})heteroaryl group; with the proviso that only one of R^1 and R^2 is hydrogen; and

(B) R^3 is hydrogen, a halogen, or a methyl group; and

(c) exposing the protective coating precursor composition to conditions to cure the composition and form a protective coating on at least one surface of the thermoplastic transparency.

5,633,050

METHOD FOR PRODUCING A MAGNETIC RECORDING MEDIUM INCLUDING WET ORIENTATION WITHOUT AGGLOMERATION OF MAGNETIC PARTICLES

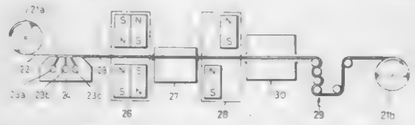
Norio Shibata, and Shinsuke Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 233,984, Apr. 28, 1994, abandoned. This application Jul. 11, 1995, Ser. No. 500,556

Claims priority, application Japan, Apr. 27, 1993, 5-122133

Int. Cl.[6] H01F *1/00*

U.S. Cl. 427—548 **9 Claims**



1. A method for producing a magnetic recording medium comprising a non-magnetic support having thereon, in order, a lower non-magnetic layer and an upper magnetic layer having a thickness of not greater than 1 μm when dry and containing magnetic powders, comprising the steps of, in order:

applying a solvent containing solution for the lower nonmagnetic layer and a solvent containing solution for the upper magnetic layer to the support sequentially or simultaneously to form solvent-solution layers thereon;

subjecting the magnetizable axes of the magnetic powders to a horizontal orientation;

subjecting the magnetizable axes of the magnetic powders to an oblique or perpendicular orientation while a residual amount of the solvent in the solvent containing solution layer for the upper magnetic layer is in a range from 40 to 80% by weight based on the total weight of the solvent in the solvent-solution for the upper magnetic layer; and

drying the solvent containing solution layers.

5,633,051

Patent Not Issued For This Number

5,633,052

Patent Not Issued For This Number

5,633,053

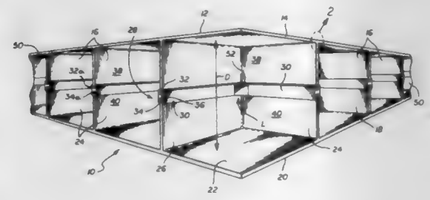
STRUCTURAL ELEMENT WITH INTERMEDIATE RIBBING SUPPORT

James J. Lockshaw; Stephen Kelly; Randall Walker, and John Kaiser, Jr., all of 18341 Jamboree Rd., Irvine, Calif. 92715-1073

Continuation-in-part of Ser. No. 173,611, Dec. 27, 1993, Pat. No. 5,487,930, which is a continuation-in-part of Ser. No. 771,009, Oct. 3, 1991, Pat. No. 5,273,806, and Ser. No. 332,516, Oct. 31, 1994. This application May 15, 1995, Ser. No. 440,622

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—33 **37 Claims**



1. Structural element comprising first and second laterally and longitudinally extended surface structures spaced apart a predetermined distance, said surface structures defining respectively first and second opposed closed figure patterns of ribbing including rib segments extending vertically a combined distance less than said predetermined distance, and a laterally and longitudinally disposed series of junctions connecting said rib segments in predetermined distance bridging relation.

5,633,054

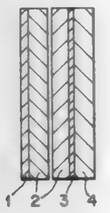
ARCHIVAL MATERIALS AND PACKAGING

William K. Hollinger, Jr., McLean, Va., assignor to Conservation Resources International, Inc., Springfield, Va.

Filed Mar. 30, 1992, Ser. No. 860,078

Int. Cl.[6] B32B *29/00*

U.S. Cl. 428—34.2 **27 Claims**



1. A layered archival preservation material for the preservation of archival documents and objects, said layered material comprising:

a first layer comprising an alkaline buffer or a deacidifying agent;

a second layer comprising an alkaline buffer or a deacidifying agent;

a vapor barrier positioned between said first layer and said second layer, wherein said vapor barrier prevents the passage of vapor through said layered archival preservation material, and wherein either said first layer or said second layer additionally contains an adsorbent.

5,633,055

ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,736

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **51 Claims**

1. A hat made by forming at least one sheet of material into a predetermined shape wherein the hat comprises a base having a closed end and an open end having an opening extending therethrough, wherein the sheet of material is a flexible and substantially non-shape-sustaining material, wherein the formed hat is flexible and may be substantially flattened and unflattened to assume the original shape of the formed hat without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed hat, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the hat and for cooperating to retain the hat in the formed shape, the hat having at least a portion of a decorative border extending outwardly from the open end.

5,633,056

ARTICLE FORMING SYSTEM

Donald E. Weder; E. H. Weder, both of Highland, Ill.; R. E. Jack Dunn, St. Louis, and Franklin J. Craig, Valley Park, both of Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 30, 1995, Ser. No. 452,909

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **53 Claims**

1. A candy container made by forming at least one sheet of material into a predetermined shape for receiving an object, wherein the candy container comprises a base having a closed lower end and an open upper end with an object opening extending therethrough, wherein the sheet of material is a polymer film which normally is flexible and substantially non-shape-sustaining, wherein the formed candy container is flexible and may be substantially flattened and unflattened to assume the original shape of the formed candy container without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed candy container, wherein the forming of the sheet of material is accomplished by substantially permanently fixing a portion of the sheet of material into a plurality of folds to form the base of the candy container and for cooperating to retain the candy container in the formed shape.

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5,633,057

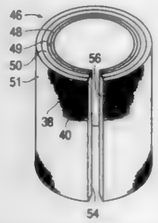
COMPOSITE REINFORCEMENT FOR SUPPORT COLUMNS

Norman C. Fawley, 5701 Seaside Walk, Long Beach, Calif. 90803

Division of Ser. No. 205,502, Mar. 4, 1994. This application May 31, 1995, Ser. No. 455,401

Int. Cl.[6] B29D 22/00

U.S. Cl. 428—36.1 5 Claims



3. A transportable assembly of composite reinforcing sleeves for reinforcing support column, comprising:

a plurality of sleeves each terminating in lateral edges, defining discontinuity at the lateral edges, and comprising a plurality of first high tensile strength filaments extending parallel to one another, a plurality of second high tensile strength filaments extending parallel to one another at an angle to the first filaments, and a matrix of fully cured resin in which the first and second filaments are embedded;

each of said sleeves being generally cylindrical and defining an inner diameter, an outer diameter and a longitudinal axis, the longitudinal axis dimensions of the sleeves being substantially equal to one another, said sleeves being arranged concentrically, said sleeves including an innermost sleeve having an outer diameter substantially equal to the inner diameter of an adjacent sleeve and an outermost sleeve having an inner diameter substantially equal to the outer diameter of an adjacent sleeve;

means for holding said sleeves to one another, said fully cured resin matrix comprising said holding means; and

a release film interposed between adjacent sleeves.

5,633,058

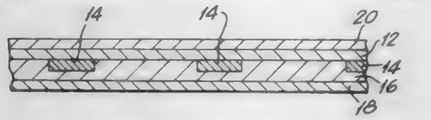
MESSAGE-INDICATING SELF-WOUND TAPE AND METHOD OF MAKING SAME

Erik Hoffer, 2048 Amwell Rd., Somerset, N.J. 08873, and Stephen G. Sobel, 45 Krakow St., Garfield, N.J. 07026

Filed Sep. 5, 1995, Ser. No. 523,635

Int. Cl.[6] B65D 55/00; B42D 15/00

U.S. Cl. 428—40.1 12 Claims



1. A message-indicating self-wound elongated composite tape comprising a backing sheet having upper and lower surfaces, a first release coating on said lower surface covering only a portion of said lower surface in a pattern which when viewed conveys certain intelligence, a printed layer covering at least portions of said first release coating and said lower surface of said backing sheet not covered by said first release coating, and an adhesive layer substantially covering and exposed at the lower surface of said composite tape, said printed layer where it engages said backing sheet adhering more strongly to said backing sheet than to said adhesive layer, said first release coating ensuring that said printed layer where it engages said first release coating adheres more strongly to said adhesive layer than to said backing sheet, and a second release coating on said upper surface, said tape being wound on itself to form a multi-turn roll in which said second release coating of one turn directly engages said adhesive layer of the adjacent turn.

5,633,059

VENEER FOR CURVED SURFACES UTILIZING ADHESIVE WITH SELECTIVE FLEXIBILITY OUTSIDE THE JOINT SEAM REGION

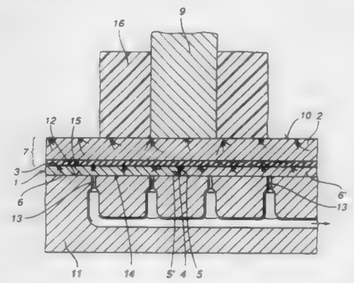
Rolf Schumacher, Sindelfingen; Klemens Barth, and Kaspar Worms, both of Boeblingen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 21, 1995, Ser. No. 408,008

Claims priority, application Germany, Mar. 21, 1994, 44 09 572.4

Int. Cl.[6] B32B 3/00

U.S. Cl. 428—58 3 Claims



1. Veneer for curved surfaces, comprising individual visible-side face, thin veneer sheets suitably configured to be bent and adhesively bonded along edges thereof so as to be butted flush against one another in a joint region and, on a side opposite the visible-side face, to a carrier material arranged thereunder, and an adhesive coated on underneath the veneer sheets and having setting reaction which is differentially reactive over a predetermined timespan, wherein the carrier material is mock veneer extending entirely over the face veneer, and the differentiable setting reaction is such that the adhesive in the joint region of the adjacent edges of the veneer sheets is selected to set at least reactivatably with sufficient bonding between the veneer sheets and the carrier material, while the adhesive over the remaining surface of the veneer sheets is unset so as to remain flexible and reactive to permit relative motion between the veneer sheets and the carrier material outside the joint region.

5,633,060

OPTICAL DISK SUBSTRATE, OPTICAL DISK AND AROMATIC POLYCARBONATE RESIN

Toshimasa Tokuda, Iyo; Kuniyuki Hayashi, Matsuyama, and Tatsumi Horie, Iyo, all of Japan, assignors to Teijin Chemicals, Ltd., Tokyo, Japan

Filed Jun. 16, 1995, Ser. No. 491,579

Claims priority, application Japan, Jul. 8, 1994, 6-157726; Jul. 12, 1994, 6-160043; Mar. 8, 1995, 7-048779; Mar. 8, 1995, 7-048780; Apr. 21, 1995, 7-097085

Int. Cl.[6] B32B 3/00

U.S. Cl. 428—64.1 34 Claims

1. An optical disk substrate formed substantially of an aromatic polycarbonate resin from an aromatic dihydroxy component containing at least 20 mol % of 1,1-bis(4-hydroxyphenyl)-3,3,5-trimethylcyclohexane,

wherein:

(A) the aromatic polycarbonate resin has a specific viscosity of 0.2 to 0.5 when measured in a solution of 0.7 g of the aromatic polycarbonate resin in 100 ml of methylene chloride at 20° C.,

(B) the aromatic polycarbonate resin shows a water absorption percentage, defined in the present specification, of 0.2% by weight or less,

(C) the aromatic polycarbonate resin has an oligomer content, measured by the method defined in the present specification, of 10% or less, and

(D) the number of undissolved particles having a diameter of 0.5 μm or greater is 25,000 pieces or less per g of the polycarbonate resin, and the number of undissolved particles having a diameter of 1 μm or greater is 500 pieces or less per g of the polycarbonate resin when the aromatic polycarbonate is measured in a methylene chloride solution.

5,633,061

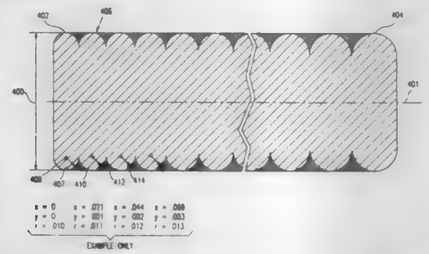
MEDIUM FOR A COLOR CHANGER

William E. Hewlett, Pasadena, Calif., assignor to Light & Sound Design, Ltd., United Kingdom

Filed Aug. 8, 1994, Ser. No. 286,969

Int. Cl.[6] B32B 3/02; B41F 5/00

U.S. Cl. 428—66.6 6 Claims



1. A Meyer Rod comprising a rod with a central axis, said rod including a plurality of sections collectively defining an outermost surface which has a substantially constant diameter defining a cylindrical shape, each said section having the shape of a portion of a circle, each said section having a radius, areas defined between adjacent ones of said sections defining fluid material holding surfaces and a first section of said Meyer Rod having a first radius and a second section of said Meyer Rod having a second radius different than said first radius, each of said first and second sections also having an outermost point where the section extends furthest away from the central axis, a distance between said outermost point of said first section and said central axis being the same as a distance between said outermost point of said second section and said central axis such that an overall diameter of said Meyer Rod remains constant, but diameters of said section vary in a way such that an ink holding surface at said first section is of different volume than an fluid material holding surface at said second section.

5,633,062

METHOD OF MANUFACTURING ROTATION SENSOR AND STRUCTURE OF ROTATION SENSOR

Hidetoshi Saito, and Masahiro Kume, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 8, 1994, Ser. No. 287,196

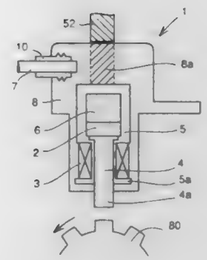
Claims priority, application Japan, Sep. 1, 1993, 5-217648

Int. Cl.[6] G01P 3/42

U.S. Cl. 428—68 17 Claims

1. A rotation sensor, comprising:

a sensor element including a magnet, a magnetic pole piece extending from said magnet, a bobbin arranged to enclose said magnet, and a coil arranged around said magnetic pole piece;



a resin portion enclosing and sealing the periphery of said sensor element excluding a forward end of said magnetic pole piece; and

a metal mounting support provided to facilitate external mounting of said rotation sensor;

wherein said metal mounting support is partly embedded in said resin portion at a spacing distance from said sensor element, with a clearance between said metal mounting support and said sensor element being filled with resin of said resin portion.

5,633,063

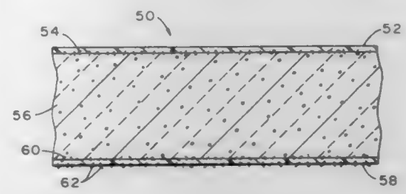
LAMINATED BUILDING PANEL AND METHOD FOR ITS PRODUCTION

Herb Lause; Sylvia Moore, both of Sidney, Ohio; Clif Seltzer, Evansville, Ind.; Cliff Taylor, and Dan King, both of Sidney, Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 177,437, Jan. 5, 1994, Pat. No. 5,466,317, which is a continuation-in-part of Ser. No. 52,951, Apr. 23, 1993, abandoned. This application Aug. 3, 1995, Ser. No. 511,082

Int. Cl.[6] B32B 5/28; 33/00

U.S. Cl. 428—71 14 Claims



1. A laminated panel comprising;

an extruded, outer, thermoplastic, facing sheet having a fibrous material embedded in an interior face thereof with fibrous material projecting from such face, and

a rigid foam layer contiguous to said interior face with said projecting fibrous material projecting into and entrapped in said foam layer to mechanically join said layer to said outer facing sheet.

12. An extruded thermoplastic sheet having a fiberglass mat with fibers randomly oriented therein on at least one face thereof with fibers in said mat projecting both into said sheet and away from said sheet.

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5,633,064

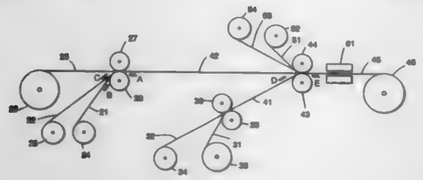
HEAT BARRIER LAMINATE

G. William Ragland, Dunwoody, Ga.; Boyd A. Barnard, and William M. Sheridan, both of St. Louis, Mo., assignors to ATD Corporation, St. Louis, Mo.

Continuation of Ser. No. 899,948, Jun. 17, 1992, which is a continuation of Ser. No. 395,399, Aug. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 360,835, May 30, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 478,968

Int. Cl.[6] B32B *3/02;7/02*

U.S. Cl. 428—95 12 Claims



1. A lightweight and resilient heat barrier and sound and vibration damping laminate having a density less than about 5 lb/ft^3 and a total thickness of no greater than about 1 inch, the laminate comprising a first metal foil having high heat conductivity; a first batt of insulating nonwoven fiber material having a thickness of at least about 0.03 inch and comprising an outermost layer of the laminate adhesively bonded to a first side of the first metal foil; a second batt of insulating nonwoven fiber material different from the material of the first batt and having a thickness of at least twice as thick as the first batt and adhesively bonded to a second side of the first metal foil; and a second metal foil comprising an outermost layer of the laminate and having high heat conductivity in contact with said second batt of insulating material, and the second metal foil being in contact with a carpet.

5,633,065

LAMINATE RESIN PRODUCT

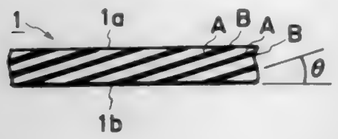
Yoshihiro Matsukura, and Takahisa Ueyama, both of Niihari-gun, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,065

Claims priority, application Japan, Sep. 21, 1994, 6-251629

Int. Cl.[6] B32B *5/12*

U.S. Cl. 428—112 13 Claims



1. An extruded resin laminate, comprising a plurality of resin species and having two major surfaces and a thickness defined between the two major surfaces,

wherein layers of said plurality of resin species are laminated parallel to the major surfaces in a section across the thickness in an extruded machine direction and laminated obliquely at an inclination angle of at most 4 degrees with respect to the major surfaces in a section across the thickness in a transverse direction perpendicular to the extruded machine direction, and

each layer of said plurality of resin species is exposed to the two major surfaces to form a pattern of surface stripes of said plurality of resin species running parallel to the extruded machine direction.

5,633,066

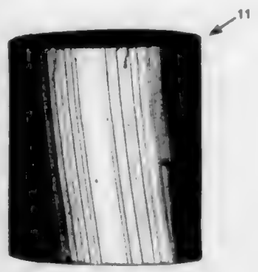
HONEYCOMB STRUCTURES HAVING NON-PARALLEL CELLS AND METHOD OF MAKING

G. Daniel Lipp, Painted Post, and Mallanagouda D. Patil, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 21, 1994, Ser. No. 215,294

Int. Cl.[6] B32B *3/12*

U.S. Cl. 428—116 5 Claims



1. An extruded honeycomb structure having two opposing faces and a matrix of cell walls defining a plurality of cells or channels, wherein at least portions of the cells are twisted to provide a honeycomb structure which is rotationally displaced.

5,633,067

ENGINE COMPARTMENT CASING ELEMENT WITH PERFORATED FOAM LAYER

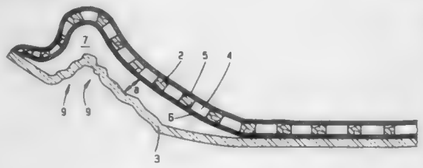
Michael Illbruck, Leverkusen; Albert Kallenberg, Hürth; Günter Arnold, and Uwe Etterer, both of Leichlingen, all of Germany, assignors to Illbruck Production S.A., Courgenay, Switzerland

Continuation of Ser. No. 936,184, Aug. 26, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,219

Claims priority, application Germany, Aug. 26, 1991, 9110552 U

Int. Cl.[6] B60R *13/08;* B32B *3/24;* E04B *1/86*

U.S. Cl. 428—138 21 Claims



1. An engine compartment casing element for sound absorption, comprising

a wall element,

a sound absorbing laminate supported by said wall element,

wherein said laminate comprises a foamed material element having perforations extending through said foamed material element from each side thereof to the opposite side thereof, cross sectional dimensions of respective ones of said perforations being greater than or approximately equal to the depths of the respective perforations,

said laminate further comprises continuous air-impermeable foils disposed on and contacting opposite sides respectively of said foamed material element, said foils covering said perforations in the foamed material element, and

within said engine compartment, a region of said laminate extends continuously spaced apart from the wall element, and has a rigid curvature providing contact between a periphery of the laminate region and the wall element.

5,633,068

ABRASIVE TAPE HAVING AN INTERLAYER FOR MAGNETIC HEAD CLEANING AND POLISHING

Katsumi Ryoke; Masaaki Fujiyama, and Keisuke Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 8, 1995, Ser. No. 525,158

Claims priority, application Japan, Oct. 14, 1994, 6-274288

Int. Cl.[6] B24D *11/02;* G11B *5/41*

U.S. Cl. 428—143 6 Claims

1. An abrasive tape for a thin film head or a narrow head consisting of an amorphous head, a laminate head, an MIG head and an MR head for high density recording, comprising a flexible support having thereon an abrasive layer, the abrasive layer comprising abrasive particles and a binder resin, wherein said abrasive layer has a thickness of from 0.3 to 10.0 μm, and an interlayer is provided between said abrasive layer and said flexible support, the thickness of said interlayer being 1 μm or more, 30% or more of the thickness of said flexible support and larger than the thickness of said abrasive layer, said interlayer having a Young's modulus of from 10 to 150 Kg/mm^2.

5,633,069

MULTILAYER PRINTED-CIRCUIT SUBSTRATE, WIRING SUBSTRATE AND PROCESS OF PRODUCING THE SAME

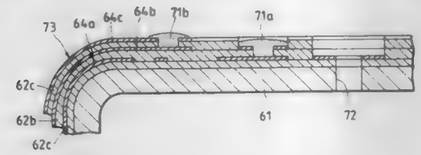
Masakazu Shimizu; Hiroshi Shimamura, and Hidetaka Kumota, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 482,921, Feb. 22, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 460,878

Claims priority, application Japan, Feb. 23, 1989, 1-44975; Mar. 30, 1989, 1-76635; Sep. 29, 1989, 1-252175

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—192 6 Claims



1. A multilayer printed-circuit device, comprising:

a flexible first substrate including:

a first insulating resin layer having a first throughhole and having first and second surfaces, said second surface becoming adherent under application of heat and pressure, and

a first metallic layer provided on the first surface of said first insulating resin layer and formed into a predetermined circuit pattern;

a second substrate including:

a second insulating resin layer,

a second metallic layer provided on a surface of said second insulating resin layer and formed into a predetermined circuit pattern; and

a blackening-treated film provided on a surface of said second metallic layer; and

an electrically conductive material filled in said first throughhole of said first insulating resin layer to electrically connect said first metallic layer to said second metallic layer;

wherein the second surface opposite said first surface of said first insulating resin layer, upon application of heat and pressure, adheres to said blackening-treated film of said second substrate; and

wherein said blackening-treated film is omitted from a portion of said second metallic layer surface exposed to said first throughhole of said first insulating resin layer.

5,633,070

ADHESIVE FILM FOR ADHESIVE BANDAGE AND ADHESIVE BANDAGE USING SAID ADHESIVE FILM

Etsuo Murayama, Kohriyama, and Toshikazu Saito, Sukagawa, both of Japan, assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Filed Mar. 14, 1995, Ser. No. 403,618

Claims priority, application Japan, Mar. 14, 1994, 6-068209

Int. Cl.[6] B32B *23/02*

U.S. Cl. 428—194 11 Claims

1. An adhesive film for an adhesive bandage, said adhesive film comprising an elastic, air permeable nonwoven fabric, one surface of said nonwoven fabric being coated with a water vapor permeable adhesive, the other surface of said nonwoven fabric having laminated thereto a water impermeable, water vapor permeable film, said nonwoven fabric comprising elastomeric filaments comprising a styrene-isoprene-styrene block copolymer.

5,633,071

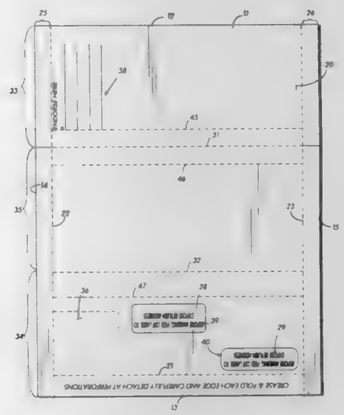
INTEGRATED LABEL MAILER

Sharon M. Murphy, Northbrook, Ill., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 28, 1995, Ser. No. 519,978

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 23 Claims



1. An intermediate of a mailer-type business form comprising:

a substantially quadrate sheet of paper having first and second substantially parallel end edges, and third and fourth substantially parallel side edges, and first and second faces;

a pressure sensitive adhesive covering an area of at least about 50% of said first face between said third and fourth edges, and from said second edge toward said first edges, in a substantially quadrate configuration;

a release sheet having an inner face substantially covering said adhesive and having an outer face not engaging said adhesive;

a first line of weakness substantially parallel to and adjacent said second edge, and second and third lines of weakness substantially parallel to and adjacent said third and fourth edges, respectively, to define tear-off edge portions in both said paper sheet and release sheet; and

a first removable portion of said paper sheet closer to said second edge than said first edge and substantially completely within the area of said paper sheet covered by said adhesive and release sheet.

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5,633,072

METHOD OF MANUFACTURING A MULTILAYER PRINTED WIRE BOARD

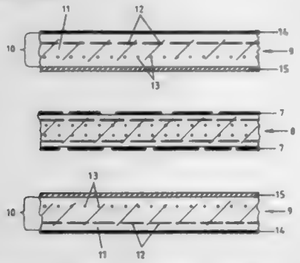
Erik Middelman, Arnhem, and Pieter H. Zuuring, Nijmegen, both of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Division of Ser. No. 157,077, Dec. 3, 1993. This application Jun. 7, 1995, Ser. No. 483,427

Claims priority, application Netherlands, Jun. 4, 1991, 9100958

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 34 Claims



1. A multilayer printed wire board obtainable by a method comprising lamination bonding at least one hard base substrate comprising conductive traces on both sides and at least one intermediate substrate comprising a hard core layer comprising a flowable adhesive layer on at least a side thereof facing the conductive traces of the base substrate, the lamination being conducted under a pressure sufficiently high so as to bring the core layer of the intermediate substrate at least substantially into contact with the conductive traces of the base substrate with the adhesive filling the voids between the traces, and wherein the base substrate and the intermediate substrate comprising a fiber-reinforced matrix material, the reinforcement being in the form of a crosswise arrangement of layers of unidirectionally (UD) oriented fibers, and wherein the substrates are balanced and mid-plane symmetric crossply laminates exhibiting thermal coefficients of expansion in the X and Y directions about equal to those of the electrically conductive material employed.

5,633,073

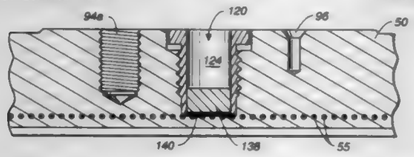
CERAMIC SUSCEPTOR WITH EMBEDDED METAL ELECTRODE AND EUTECTIC CONNECTION

David W. Cheung, Foster City; Mark A. Fodor, Los Gatos; Christopher Lane, Sunnyvale, and Harold H. Mortensen, Carlsbad, all of Calif., assignors to Applied Materials, Inc., Santa Clara, and Cercom, Inc, Vista, both of Calif.

Filed Jul. 14, 1995, Ser. No. 502,585

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 5 Claims



2. A susceptor for supporting a substrate during a deposition process, comprising:

a ceramic member;

a high melting-point conductive metallic layer having a plurality of holes therein embedded in said ceramic member;

an opening from a surface of said ceramic member to said metal layer;

a conductive connector secured in said opening; and

an eutectic layer disposed between said conductive connector and said metal layer to form an electrical connection between said metal layer and said conductive connector and to protect said metal layer from an environment in a chamber containing said susceptor.

5,633,074

PREPREG AVAILABLE FOR FIBER REINFORCED THERMOPLASTIC RESIN AND PROCESS OF PRODUCING SPORTING GOODS USING THE SAME

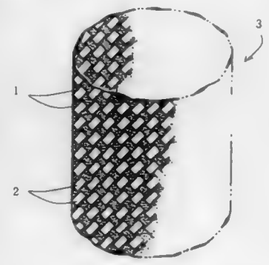
Kunimasa Muroi; Toshiharu Fukushima, and Kunio Hiyama, all of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Jun. 3, 1994, Ser. No. 253,420

Claims priority, application Japan, Jun. 7, 1993, 5-136277; Jun. 25, 1993, 5-155879; Jun. 25, 1993, 5-155880

Int. Cl.[6] B32B *1/08;17/04;27/02;27/04*

U.S. Cl. 428—213 9 Claims



1. A prepreg for a product of fiber reinforced thermoplastic resin, comprising:

a plurality of first thread means fusible under application of heat for forming a matrix of said fiber reinforced thermoplastic resin; and

a plurality of second thread means providing reinforcing fibers of said fiber reinforced thermoplastic resin, each of said plurality of second thread means being a ribbon-shaped reinforcing fiber tow, said plurality of first thread means and said plurality of second thread means being woven into said prepreg, said ribbon-shaped reinforcing fiber tow being equal in thickness to or less than 0.5 millimeter, and the width of said ribbon-shaped reinforcing fiber tow being at least ten times larger than the thickness thereof.

5,633,075

COMPOSITE MATERIAL

George B. Park; Frank J. Lowe; George M. J. Ganbuehler; Norman Hutt; Stephen A. Webb, all of Swindon, England, and Hendrick Graulus, Herent, Belgium, assignors to Raychem Limited, Swindon, England

Continuation of Ser. No. 985,540, Dec. 4, 1992, abandoned, which is a division of Ser. No. 552,370, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 296,480, Jan. 12, 1989, abandoned. This application Jul. 7, 1994, Ser. No. 271,537

Claims priority, application United Kingdom, Jan. 12, 1988, 8800625; Aug. 11, 1988, 8819134; Aug. 22, 1988, 8819896

Int. Cl.[6] D03D *3/00;* B32B *17/02;5/06;* D02G *3/00*

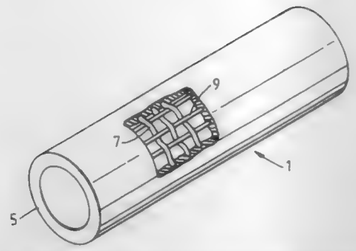
U.S. Cl. 442—187 4 Claims

1. A dimensionally-recoverable composite material comprising:

multifilament fibers and a matrix material, the material being recoverable by virtue of recoverable fibres thereof,

means that, at least after recovery, prevents or hinders passage of fluid longitudinally along interstices of the fibres and/or along outer surfaces of the fibres between the fibres and the matrix material, and hybrid fibres comprising:

(a) strength fibres,



(b) said means in the form of or formed from heat-softenable fibres that on heating and/or compression and/or irradiation of the composite material will block said interstices of the fibres, and

(c) the hybrid fibres comprising or formed from core-spun continuous strength fibres and surrounding heat-softenable fibres, the resulting hybrid fibres having been heat-treated before combination with the matrix material.

5,633,076

METHOD OF PRODUCING A TRANSGENIC BOVINE OR TRANSGENIC BOVINE EMBRYO

Herman A. DeBoer, Roelofarendsveen; Rein Strijker, Oegstgeest, both of Netherlands; Herbert L. Heyneker, Hillsborough, Calif.; Gerard Platenburg, Voorschoten, Netherlands; Sang H. Lee, Leiden, Netherlands; Frank Pieper, Utrecht, Netherlands, and Paul J. A. Krimpenfort, Heemstede, Netherlands, assignors to Pharming BV, Lieden, Netherlands

Continuation-in-part of Ser. No. 77,788, Jun. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 898,956, Jun. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 619,131, Nov. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 444,745, Dec. 1, 1989, abandoned. This application Nov. 16, 1993, Ser. No. 154,019

Int. Cl.[6] C12N *15/00;5/00*

U.S. Cl. 435—172.3 29 Claims

1. A method of producing a transgenic bovine, the method comprising:

obtaining an ovum from bovine ovaries;

maturing the ovum in vitro;

fertilizing the mature ovum in vitro to form a zygote;

introducing a transgene into the zygote in vitro;

maturing the zygote to a preimplantation stage embryo in vitro; and

transplanting the embryo into a recipient female bovine, wherein the female bovine gestates the embryo to produce a transgenic bovine.

5,633,077

INFRARED RADIATION BLOCKING INSULATION PRODUCT

John L. Olinger, Newark, Ohio, assignor to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Feb. 24, 1995, Ser. No. 393,789

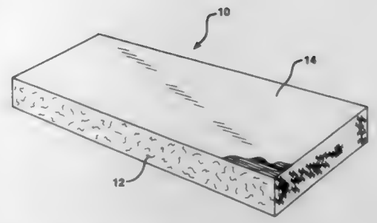
Int. Cl.[6] D04H *1/58*

U.S. Cl. 442—131 9 Claims

1. A thermal insulation product comprising:

an insulating fiber batt containing fibers selected from the group consisting of mineral fibers, synthetic polymer fibers, cellulose fibers, and mixtures thereof; and

an infrared radiation blocking material consisting essentially of a chiral polymer selected from polyphosphazenes, wherein the chiral polymer has a chain length of from about 0.7 to about 300 microns and has from about 10,000 to about 500,000 molecules in a backbone chain, and wherein the thermal insulation product is capable of scattering, reflecting or absorbing infrared radiation with a wave number of 200 to 4500 and a wavelength of from about 0.7 to about 300 microns.



5,633,078

DECORATIVE FILM HAVING FOAMING LAYER

Keiju Kamiyama, Yamagata, Japan, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 411,823, Jun. 6, 1995, abandoned. This application Aug. 19, 1996, Ser. No. 690,458

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—317.3 19 Claims

1. A decorative film comprising a decorative layer, an intermediate layer and a pressure sensitive adhesive layer, wherein said intermediate layer comprises a foaming layer and two sides, and an expansion ratio on the side of said decorative layer is made higher than an expansion ratio on the side of said pressure sensitive adhesive layer.

5,633,079

HARD COAT FILM HAVING AN EASILY SLIPPING PROPERTY AND PROCESS FOR PRODUCING THE SAME

Satoru Shoshi; Shunpei Watanabe, and Takanori Saito, all of Saitama-ken, Japan, assignors to Lintec Corporation, Tokyo, Japan

Filed Mar. 6, 1995, Ser. No. 398,999

Claims priority, application Japan, May 25, 1994, 6-135074

Int. Cl.[6] C08L *67/02;33/02;33/08*

U.S. Cl. 428—323 10 Claims

1. A hard coat film having an easily slipping property which comprises a plastic film having a glass transition temperature of at least 20° C., and a hard coating layer of 1 to 15 μm thickness made from a photo-polymerization initiator-containing ultraviolet light curable acrylic resin on the plastic film, wherein the hard coating layer contains particles of a polyester resin having a weight average molecular weight of at least 5,000 dispersed therein, and the surface of the hard coating layer is provided with 3 to 200 protrusions of a diameter of 0.05 to 3 μm and a height of 0.01 to 2 μm per 100 μm^2 of the surface.

5,633,080

POLYESTER FILMS CONTAINING GLASS SPHERES AND CALCINED CHINA CLAY

Junaid A. Siddiqui, Richmond, Va., and Paul D. A. Mills, Darlington, England, assignors to Imperial Chemical Industries PLC, United Kingdom, and ICI Americas Inc.

Continuation of Ser. No. 93,241, Jul. 16, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 465,398

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—325 15 Claims

1. A polyester film comprising a polyester polymer having incorporated therein a combination of (a) solid glass spheres having an average particle size of between 1 and 8 microns present in

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an amount ranging between 25 ppm and 350 ppm by weight based on the weight of the polymer and (b) calcined clay having an average particle size of less than 1 micron present in an amount not exceeding 10,000 ppm by weight based on the weight of the polymer.

5,633,081

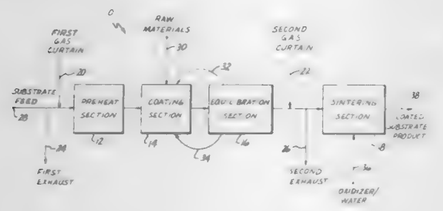
COATED POROUS SUBSTRATES

Thomas J. Clough, Grover Beaach; Victor L. Grosvenor, Topanga, and Naum Pinsky, Thousand Oaks, all of Calif., assignors to Ensci Inc., Pismo Beach, Calif.

Continuation-in-part of Ser. No. 874,178, Apr. 24, 1992, abandoned, and Ser. No. 293,699, Aug. 19, 1994, which is a division of Ser. No. 874,178, which is a continuation-in-part of Ser. No. 770,557, Oct. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, Ser. No. 348,787, May 8, 1989, abandoned, and Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, said Ser. No. 348,789Ser. No. 348,788, Ser. No. 348,787, and Ser. No. 348,786, , each is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and Ser. No. 272,539, Nov. 17, 1988, abandoned, said Ser. No. 272,517and Ser. No. 272,539, , each is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Nov. 25, 1994, Ser. No. 345,232

Int. Cl.[6] B05D *1/40*

U.S. Cl. 428—331 **24 Claims**



1. An article comprising a three dimensional inorganic, porous substrate other than electrically conductive tin oxide having an outer surface area and an internal pore surface area and having a coating containing electrically conductive tin oxide on at least a majority portion of the outer surface area of all three dimensions thereof and a limited coating of at least about 10 percent non coated internal pore surface area of said substrate, said porous substrate having a total surface area of from about 0.01 to about 700 m^2/gram.

5,633,082

POLYETHYLENE TEREPHTHALATE SHEATH/ THERMOPLASTIC POLYMER CORE BICOMPONENT FIBERS, METHOD OF MAKING SAME AND PRODUCTS FORMED THEREFROM

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 470,594, Jun. 6, 1995, Pat. No. 5,607,766. This application Jul. 29, 1996, Ser. No. 688,213

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—365 **16 Claims**

1. Continuous bicomponent fibers comprising a core of a thermoplastic polymer material substantially totally surrounded by a sheath of polymer material selected from the group consisting of polyethylene terephthalate and copolymers thereof wherein the polymer material of the sheath has a higher melting temperature than the thermoplastic core material.

5,633,083

TOOTHBRUSH

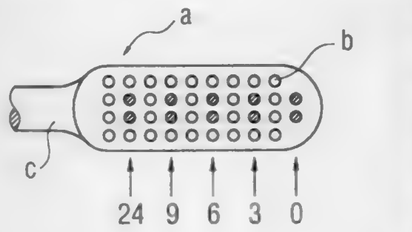
Tatsuaki Iwai, Takatsuki; Katsushi Ebisudani, Osaka, and Naomi Yokosuka, Daito, all of Japan, assignors to Sunstar Kabushiki, Takatsuki, and Toray Monofilament Co., Ltd., Okazaki, both of Japan

Continuation-in-part of Ser. No. 936,725, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 601,713, Oct. 30, 1990, abandoned. This application Jul. 18, 1994, Ser. No. 276,668

Claims priority, application Japan, Mar. 14, 1989, 1-62867

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—378 **3 Claims**



1. A toothbrush comprising:
a plurality of filaments;
a bactericidal coating on said filaments for inhibiting bacterial growth, wherein said bactericidal coating includes a complex of bactericide with a polymer capable of cation exchange and a cross-linking agent,
wherein said bactericide is selected from the group consisting of chlorhexidine, cetylpyridinium, benzalkonium and benzethonium,
wherein said polymer is selected from the group consisting of vinyl chloride, vinylidene chloride, vinyl acetate, acrylic ester, acrylonitrile, styrene, ethylene, propylene, acrylamide, methacrylic ester, methacrylamide and a copolymer thereof,
wherein said polymer has an anionic substituent selected from sulfonic group;
wherein said bactericidal coating is from 0.1 to 10 μm thick; and
wherein said plurality of filaments are made of a material selected from the group consisting of nylon, polyester, propylene and polyvinylidene chloride.

5,633,084

COATED FUSED ALUMINA PARTICLES AND PRODUCTION PROCESS THEREOF

Tadashi Hiraiwa, and Fumiyoshi Ono, both of Shiojiri, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 233,897

Claims priority, application Japan, Apr. 28, 1993, 5-103224; Sep. 24, 1993, 5-238413

Int. Cl.[6] B32B *5/16;* **B24D** *3/02;* **C04B** *35/44*

U.S. Cl. 428—403 **13 Claims**

1. Coated fused alumina particles in which fused alumina particles are covered with a coating comprising aluminum titanate as a major component wherein the coated fused alumina particles are formed by adding a titanium-containing compound containing an amount of 0.03 to 3.0 parts by weight of titanium dioxide per 100 parts by weight of said fused alumina particles to said fused alumina particles.

5,633,085

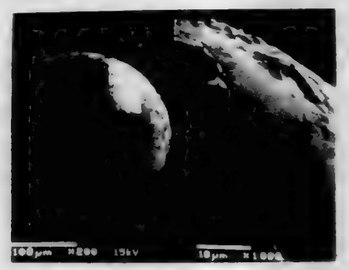
DURABLE COMPOSITE PARTICLE AND METHOD OF MAKING SAME

Robert A. Schleifstein, Edison, N.J., assignor to Potters Industries Inc., Carlstadt, N.J.

Filed Jun. 10, 1994, Ser. No. 257,909

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 **11 Claims**



1. As an article of manufacture, a substantially free-flowing composite which consists essentially of, in combination:
a glass bead; and
a multifunctional polymeric substance deposited on said glass bead, said substance having a first functionality capable of interacting with a species, wherein said first functionality is a moiety selected from the group consisting of sulfonate and carboxylate, and a second functionality interacted with said glass bead to form hydrophobic bonds which adhere the substance to the glass, wherein said second functionality is a moiety selected from the group consisting of epoxy radicals, N-methyol and silanol.

5,633,086

FRICTION AND WEAR RESISTANT COATING FOR TITANIUM AND ITS ALLOYS

Stephen M. Hsu, Germantown, and Jia-Ming Gu, Adelphia, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed May 31, 1995, Ser. No. 455,212

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—404 **19 Claims**

1. A friction and wear resistant coated titanium or titanium alloy which comprises:
(a) a titanium or titanium alloy substrate;
(b) a first layer of Ti_xO_y, wherein x is from 1–2 and y is from 1–3, bonded to a surface of said titanium or titanium alloy substrate; and
(c) a second layer comprising a cured epoxy resin bonded to said first layer.

5,633,087

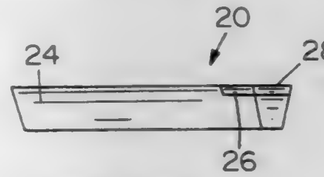
SYNTHETIC DIAMOND WEAR COMPONENT AND METHOD

Matthew Simpson, Arlington, Mass., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 308,374, Sep. 19, 1994, which is a continuation of Ser. No. 773,465, Oct. 9, 1991, Pat. No. 5,411,758. This application May 12, 1995, Ser. No. 440,086

Int. Cl.[6] B24B *1/00*

U.S. Cl. 428—408 **7 Claims**



1. A wear component, comprising:
a base surface;
a synthetic diamond film disposed on said surface, said diamond film having a thickness of at least 20 microns and an equivalent strain of at least 0.08 percent.

5,633,088

DIAMOND FILM AND SOLID PARTICLE COMPOSITE STRUCTURE AND METHODS FOR FABRICATING SAME

John M. Pinneo, Redwoodcity, Calif., assignor to Crystallume, Santa Clara, Calif.

Continuation of Ser. No. 704,997, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 413,114, Sep. 27, 1989, Pat. No. 5,075,095, which is a continuation of Ser. No. 204,058, Jun. 7, 1988, Pat. No. 4,882,138, which is a continuation of Ser. No. 32,169, Mar. 30, 1987, abandoned. This application Aug. 10, 1995, Ser. No. 513,313

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—408 **4 Claims**



1. An article comprising:
a plurality of diamond particles preformed into a desired shape, each of said particles having first surface regions in contact with immediately adjacent other ones of said particles, each of said particles further having second surface regions spaced apart from said immediately adjacent other ones of said particles, said second surface regions of said particles defining boundaries of inter-particle voids between said immediately adjacent ones of said particles;
infiltrated CVD material consisting essentially Of diamond material continuously coating said second surface regions of said particles and comprising merged growth fronts from said second surface regions of individual immediately adjacent ones of said particles into said inter-particle voids.

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5,633,089

SORBITAN ESTER LUBRICANT AND MAGNETIC RECORDING MEDIUM EMPLOYING THE SAME

Hirofumi Kondo, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,878

Claims priority, application Japan, Sep. 28, 1994, 6-233100; Nov. 22, 1994, 6-288259

Int. Cl.[6] G11B *5/71*

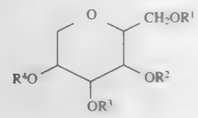
U.S. Cl. 428—421 7 Claims

1. A magnetic recording medium comprising:

a non-magnetic substrate having a surface:

a magnetic recording layer disposed on the surface; and

a lubricating layer disposed on the magnetic recording layer, said lubricating layer comprising a sorbitan polyester having the formula:



wherein at least one of R^1, R^2, R^3 and R^4 is acyl-terminated residue of a carboxyl-terminated perfluoropolyether compound, at least one of R^1, R^2, R^3 and R^4 is an acyl terminated residue of a carboxyl-terminated hydrocarbon and any remaining R^1, R^2, R^3 and R^4 groups are hydrogen.

5,633,090

LEAD-AND CADMIUM-FREE GLASS COMPOSITION FOR GLAZING, ENAMELING AND DECORATING GLASS

Erich Rodek; Werner Kiefer, and Friedrich Siebers, all of Mainz, Germany, assignors to Schott Glaswerke, Mainz, Germany

Continuation of Ser. No. 29,364, Mar. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 2,351, Jan. 21, 1993, abandoned. This application Jun. 27, 1994, Ser. No. 265,989

Int. Cl.[6] C03C *8/02*

U.S. Cl. 428—428 25 Claims

1. An article of manufacture comprising a glass ceramic or glass substrate having a thermal expansion of less than $5.0 \cdot 10^{-6}$/K, and coated thereon a lead- and cadmium-free glaze consisting essentially of, in percent by weight, the following components:

Li_2O	0–12
MgO	0–10
CaO	3–18
B_2O_3	5–25
Al_2O_3	3–18
Na_2O	3–18
K_2O	3–18
BaO	0–12
SiO_2	25–55
TiO_2	0–5
ZrO_2	0–<3

with up to 30% by weight of a pigment stable at the baking temperature.

5,633,091

GRAFT COPOLYMERS HAVING ANHYDRIDE FUNCTIONALITY

Rodney M. Harris, Chicago; Mohamad D. Shalati, Homewood, and Joyce A. Bibeau, Richton Park, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 583,580, Jan. 5, 1996, Pat. No. 5,550,195, which is a continuation of Ser. No. 176,629, Jan. 3, 1994, abandoned. This application Aug. 26, 1996, Ser. No. 704,347

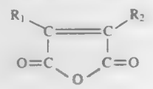
Int. Cl.[6] C08F *267/04;* B32B *27/00*

U.S. Cl. 428—500 92 Claims

1. A curable composition which comprises (a) an anhydride-functional polymer and (b) a compound having an average of at least two functional groups per molecule which are reactive with anhydride groups; wherein the anhydride-functional polymer is obtained by reacting under graft copolymerization conditions,

(A) an unsaturated polymer which was obtained by reacting under ene reaction conditions a mixture of reactants comprising:

(i) 20 to 70 percent by weight of an unsaturated anhydride having the structure:



wherein R_1 and R_2 are each independently hydrogen, alkyl of 1 to about 6 carbons, or alkoxy of 1 to about 6 carbons, or a halogen; and

(ii) 30 to 80 percent by weight of at least one polyolefin having at least two carbon-carbon double bonds in the polyolefin backbone and having an average of at least three carbon atoms in the polyolefin backbone between the carbon-carbon double bonds; and

(B) at least one ethylenically unsaturated monomer which is copolymerizable with the unsaturated polymer.

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MAGNETOSTRICTIVE MATERIAL

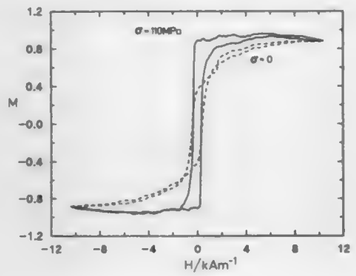
Michael R. J. Gibbs, Sheffield, England, assignor to British Technology Group Ltd., London, England

Continuation of Ser. No. 244,755, Jun. 9, 1994, abandoned. This application May 16, 1995, Ser. No. 442,297

Claims priority, application United Kingdom, Dec. 10, 1991, 9126207

Int. Cl.[6] B32B *15/01*

U.S. Cl. 428—611 38 Claims



1. A magnetic material comprising:

a first component layer having a first atomic structure; and

a second component layer on said first component layer and having a second atomic structure which is non-homogeneous with said first atomic structure of said first component;

a first surface of said first component layer being contiguous with a first surface of said second component layer;

a lattice structure of said first component layer at least where said first surface of said first component layer is contiguous with said first surface of said second component layer being modified by said second component layer whereby a magnetostrictive property of said magnetic material is increased.

5,633,093

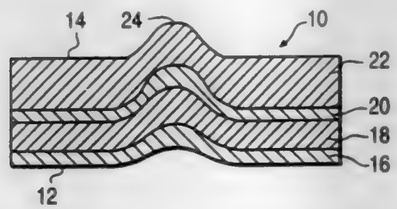
COUNTERWEIGHT ATTACHMENT TECHNIQUE

Donald A. Rhoda; Jeffrey A. Dutkiewicz, both of Toledo; Jerry E. Gould, Columbus, all of Ohio; Anthony M. Cox, Rochester, N.Y., and James T. Reynolds, Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 111,492, Aug. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 22,757, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 720,225, Jun. 25, 1991, abandoned. This application Aug. 19, 1994, Ser. No. 293,179

Int. Cl.[6] F16C *3/02;* B23K *11/14;11/20*

U.S. Cl. 428—653 61 Claims



1. A method of attaching a steel counterweight to a tubular aluminum drive shaft, the steel counterweight having an inner surface and an outer surface, and the aluminum drive shaft having an outer surface facing radially away from an axis about which the aluminum drive shaft rotates, the method comprising the steps of:

disposing a transition material between the outer surface of the aluminum drive shaft and the inner surface of the steel counterweight, the transition material having a first surface adjacent to the inner surface of the steel counterweight and a second surface adjacent to the outer surface of the aluminum drive shaft, the first surface being steel and having an outward projection thereon and the second surface being aluminum without outward projections in an area to be welded; and

resistance welding the counterweight to the aluminum drive shaft by passing an electrical current through the counterweight, the transition material, and the aluminum drive shaft while maintaining pressure on the outer surface of the counterweight against the drive shaft, thereby creating a steel-steel bond between the inner surface of the counterweight and the first surface of the transition material and an aluminum-aluminum bond between the second surface of the transition material and the outer surface of the aluminum drive shaft.

5,633,094

VALVE HAVING FACING LAYERS OF CO-FREE NI-BASE ALLOY

Kikuo Takeshima, Hitachi; Shin Kumagai, Ibaraki-ken; Masato Koshiishi, Takahagi, and Yositeru Chiba, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Kyowa Kogyo Co., Ltd., Ibaraki-ken, both of Japan

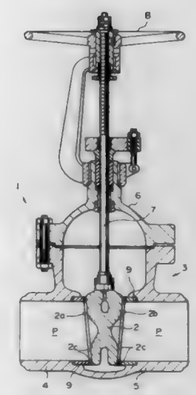
Filed Oct. 26, 1995, Ser. No. 548,758

Claims priority, application Japan, Oct. 28, 1994, 6-264839

Int. Cl.[6] B32B *15/04;* F16K *25/04*

U.S. Cl. 428—679 8 Claims

1. A valve apparatus comprising a valve body and a valve box which have hard facing layers provided on engagement portions thereof,



wherein said hard facing layers on the engagement portions of the valve body and the engagement portions of the valve box consist of cobalt-free Ni-base alloys,

one of said Ni-base alloys for the hard facing layers comprises not more than 15% Fe and less than 2% W (tungsten), and

the other of said Ni-base alloys for the hard facing layers comprises more than 15% Fe.

5,633,095

BATTERY HOLDING STRUCTURE

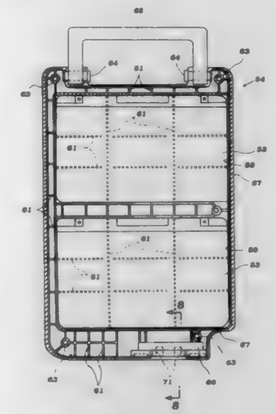
Satoshi Ishikawa; Kazuaki Iwami, and Masaru Ohira, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 20, 1995, Ser. No. 559,624

Claims priority, application Japan, Nov. 18, 1994, 6-285182; Dec. 28, 1994, 6-339033

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—1 17 Claims



1. A rechargeable battery assembly for an electric motor equipped vehicle having a body, an outer battery box carried by said body and containing a terminal internally therein and which terminal is connected externally to the electric motor for powering the electrical motor, said outer battery box defining a sealed internal volume containing said terminal, and an inner battery box adapted to contain at least one rechargeable battery and detachably positioned within said outer battery box, said inner battery box having an external terminal portion cooperable with said outer

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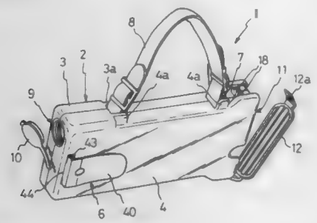
battery box terminal when positioned within said outer battery box for providing electrical power to said terminal for said vehicle electric motor.

5,633,096

BATTERY HOLDER FOR POWER DRIVEN-TOOLS

Noriyasu Hattori, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan

Filed Jan. 19, 1996, Ser. No. 588,739
Claims priority, application Japan, Jan. 20, 1995, 7-007463
Int. Cl.[6] H01M *14/00*
U.S. Cl. 429—7 **4 Claims**



1. A battery holder comprising

a housing,

an accommodation space for receiving a battery pack detachably attached to a power-driven tool or another electrical appliance;

connector means for electrically connecting with said battery pack received in said accommodation space, and

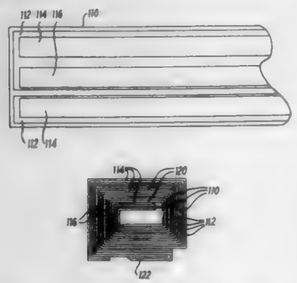
socket means connectable with a cigar lighter plug for a portable power-driven tool using a car battery as a power source, said connector means being connectable with the cigar lighter plug via said socket means.

5,633,097

ELECTROCHEMICAL CELLS

William B. Miller, Whiteleys, Alloway, Ayr., United Kingdom

PCT No. PCT/GB94/00735, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO94/23465, PCT Pub. Date Oct. 13, 1994
PCT Filed Apr. 6, 1994, Ser. No. 532,689
Claims priority, application United Kingdom, Apr. 7, 1993, 9307298; Jul. 16, 1993, 9314760
Int. Cl.[6] H01M *6/10;6/46*
U.S. Cl. 429—94 **7 Claims**



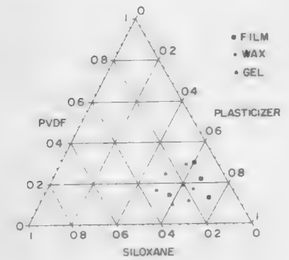
1. An array of electrochemical cells comprising first and second surfaces having respective arrays of anodes and cathodes formed thereon, the anodes and cathodes of each array being electrically connected by patterns of electrically conductive material applied to said surfaces, and said surfaces being assembled together with respective anodes and cathodes thereof disposed opposite one another with an electrolyte interposed therebetween; wherein the respective surfaces to which the respective patterns of materials are applied are opposite surfaces of a common substrate, the cells being formed by rolling up the substrate so that areas of anode material on one side are aligned with areas of cathode material on the other side, with electrolyte therebetween; and wherein the substrate is an elongate strip with continuous anodes and cathodes disposed side by side and extending along its length, such that a plurality of cells are formed connected in series across the width of the roll.

5,633,098

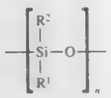
BATTERIES CONTAINING SINGLE-ION CONDUCTING SOLID POLYMER ELECTROLYTES

Subhash C. Narang, Redwood City, and Susanna C. Ventura, Los Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

Division of Ser. No. 372,216, Nov. 13, 1995, Pat. No. 5,548,055. This application May 10, 1996, Ser. No. 644,378
Int. Cl.[6] H01M *4/36*
U.S. Cl. 429—104 **16 Claims**



1. A solid-state battery comprising a positive electrode, a negative electrode, and a polymer having the structure


(I)

wherein:

R^1 and R^2 are individually selected from the group consisting of moieties having the structure

$$—(CH_2)_{x1}(OCH_2CH_2)_{y1}(OCF_2CF_2)_{z1}SO_2R^3$$

in which R^3 is —OM, $—N(M)SO_2CF_3$ or $—C(M)(SO_2CF_3)_2$and M is an alkali metal, or wherein one of R^1 and R^2 has the structure

$$—(CH_2)_{x1}(OCH_2CH_2)_{y1}(OCF_2CF_2)_{z1}SO_2R^3$$

and the other is selected from the group consisting of hydrogen, lower alkyl, fluorinated lower alkyl, lower alkenyl, fluorinated lower alkenyl, aryl, and aralkylene;

x1 and z1 may be the same or different and are integers in the range of 1 to 100 inclusive;

y1 is an integer in the range of 0 to 100 inclusive; and

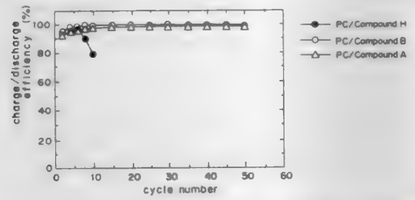
n is an integer indicating the number of mer units in the polymer.

5,633,099

CARBONATE COMPOUNDS, NON-AQUEOUS ELECTROLYTIC SOLUTIONS AND BATTERIES COMPRISING NON-AQUEOUS ELECTROLYTIC SOLUTIONS

Keiichi Yokoyama; Akio Hiwara, both of Sodegaura; Shigeru Fujita, Kitashinagawa, and Atsuo Omaru, Koriyama, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., and Sony Corporation, both of Tokyo, Japan

Division of Ser. No. 153,429, Nov. 16, 1993. This application Jun. 5, 1995, Ser. No. 461,419
Claims priority, application Japan, Nov. 18, 1992, 4-309041; Nov. 18, 1992, 4-309042
Int. Cl.[6] H01M *10/40*
U.S. Cl. 429—194 **24 Claims**



1. A non-aqueous electrolytic solution comprising a carbonate compound represented by the general formula (II):

$$R^3\text{-O-CO-O-}R^4 \quad \text{(II)}$$

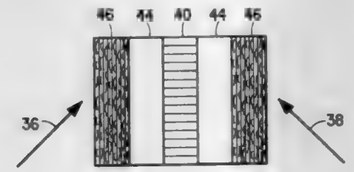
wherein R^3 represents an alkyl group or an alkyl group substituted by one or more halogen atoms, and R^4 represents an alkyl group having β-positioned carbon, and having no hydrogen atom at the β-position thereof or an alkyl group substituted by one or more halogen atoms and having no hydrogen atom at the β-position thereof.

5,633,100

HOLOGRAPHIC IMAGING USING FILTERS

Daniel J. Mickish, Wilmington; Steven R. MacKara, New Castle, and Torence J. Trout, Yorklyn, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 27, 1991, Ser. No. 799,138
Int. Cl.[6] G03H *1/02*
U.S. Cl. 430—1 **11 Claims**



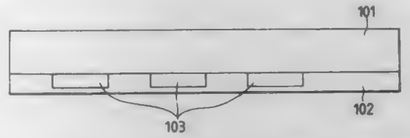
1. In a process for recording a reflection hologram wherein an object beam and a reference beam are incident on opposing surfaces of a photosensitive element to form a volume hologram therein, the improvement wherein formation of secondary holograms is suppressed by placement of a dimensionally stable index matched filter contiguous to a first one of the opposing surfaces of the photosensitive element during formation of the hologram, said filter being effective to absorb approximately 25 to 99% of the beam of radiation incident on the first surface that passes through the photosensitive element, measured at normal incidence, and pass a sufficient remainder of the beam into the photosensitive element to interact with the beam incident on a second one of the opposing surfaces to form a refection hologram in the photosensitive element.

5,633,101

MASK AND PROJECTION EXPOSURE METHOD

Yuji Imai, Ohmiya, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 9, 1994, Ser. No. 303,667
Claims priority, application Japan, Sep. 14, 1993, 5-252386
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **11 Claims**



1. In a projection exposure apparatus having an illumination optical system for illuminating a mask, formed with a pattern, with illuminating light of a predetermined wavelength region, and a projection optical system for forming an image of the pattern onto a substrate to be subjected to exposure, the improvement wherein:

said mask comprises a glass substrate, and a heat conductive film transmissive to the illuminating light and having a thermal conductivity higher than that of said glass substrate;

said heat conductive film is so formed as to cover substantially an entire surface of said glass substrate, and said pattern is so formed as to cover a portion of said surface and to be in contact with said heat conductive film, said heat conductive film producing an isotropic temperature distribution within said mask such that thermal deformation of said mask due to absorption of said illuminating light becomes isotropic; and

a correction system is provided that corrects for variation of an imaging characteristic of said projection optical system due to said thermal deformation of said mask.

5,633,102

LITHOGRAPHY USING A NEW PHASE-SHIFTING RETICLE

Kenny K. H. Toh, Sunnyvale; Giang T. Dao, Fremont; Eng T. Gaw, San Jose, and Rajeev R. Singh, Santa Clara, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 81,854, Jun. 23, 1993, abandoned, which is a continuation of Ser. No. 748,848, Aug. 23, 1991, abandoned. This application Mar. 1, 1995, Ser. No. 396,926
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **22 Claims**

1. A reticle for use in patterning a radiation sensitive layer on a printer, said printer having a numerical aperture (NA), an image reduction factor (IRF), and a wavelength (λ) of exposing radiation, said reticle comprising:

at least one first region and at least one second region, said first and said second regions transmitting an approximately equal intensity of said radiation incident thereon, wherein said radiation transmitted through said first region is phase-shifted approximately 180° relative to said radiation transmitted through said second region;

a first area comprising one of said first regions between and adjacent to two of said second regions, wherein intensity of said radiation at the surface of said radiation sensitive layer is insufficient to substantially expose said radiation sensitive layer beneath portions of said first area approximately where said first region and said second regions are adjacent to one another due to destructive interference, and wherein said first region and said second regions in said first area have a width such that intensity of said radiation at the surface of said

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radiation sensitive layer is sufficient to substantially expose said radiation sensitive layer beneath center portions of said first region and said second regions in said first area.

5,633,103

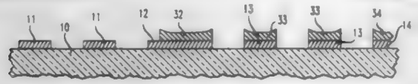
SELF-ALIGNED ALIGNMENT MARKS FOR PHASE-SHIFTING MASKS

John J. DeMarco, East Brunswick, N.J., and Christophe Pierrat, Boise, Id., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 331,308, Oct. 28, 1994, abandoned. This application Jul. 11, 1995, Ser. No. 500,729

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **20 Claims**



1. An optical lithographic mask comprising:

(a) a substrate that is transparent to optical radiation of wavelength

(b) a patterned layer of elements each of which comprises a layer of a first material that is partially transparent to the optical radiation of wavelength λ and is located on a top major surface of the substrate;

(c) one or more reinforced alignment marks located on the top major surface of the substrate, each of the alignment marks comprising a layer of the first material having a top major surface that is entirely overlain with a layer of second material that is chemically different from that of the first material, a lateral space thereby being defined between one of the alignment marks and an adjacent one of the elements, each of the reinforced marks being opaque with respect to the optical radiation of wavelength λ;

(d) a reinforced alignment shutter layer comprising a first layer of the first material having only a portion of a top major surface thereof overlain with a second layer of the second material,

neither the lateral space nor any of the elements being overlain with any of the second material, and

the thicknesses of the layers of the first material in the patterned layer of elements, in the reinforced alignment marks, and in the reinforced alignment shutter layer being mutually substantially equal, and

the thicknesses of the layers of the second material in the reinforced alignment marks and in the reinforced alignment shutter layer being mutually substantially equal.

5,633,104

METHOD FOR MANUFACTURING COLOR FILTER

Tsutomu Watanabe, Itami; Jun-ichi Yasukawa, Chigasaki; Toshiaki Ota, Narashino; Nobuhiko Nishihara, Narashino, and Tsuyoshi Tokuda, Narashino, all of Japan, assignors to Shinto Paint Co., Ltd., Hyogo-Ken, Japan

Filed Dec. 11, 1995, Ser. No. 570,416

Claims priority, application Japan, Dec. 26, 1994, 6-322897

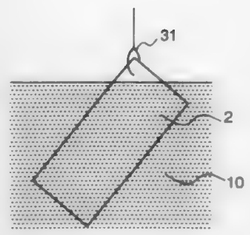
Int. Cl.[6] G02B *5/20*

U.S. Cl. 430—7 **10 Claims**

1. A method for manufacturing a color filter, which comprises the steps of:

(a) preparing a substrate in a tetragonal form, which carries an electroconductive transparent thin layer on its surface,

(b) holding the substrate prepared in step (a) which functions as an electrode and an electroconductor which functions as a counter electrode in an electrodeposition bath in such a way that they are spaced apart and in parallel to each other, the substrate being suspended in an inclined state in a manner such that one of the apexes of the tetragonal substrate is located lower than any of its other apexes by holding an apex



opposite to the said lower-located apex with a holding means, so that two sides adjacent to the said lower-located apex are inclined relative to the vertical line,

(c) effecting electrodeposition by applying a given voltage to the electrodes which results in an electric current, and

(d) removing the substrate obtained in step (c) from the electrodeposition bath, while maintaining the inclined state of step (b).

5,633,105

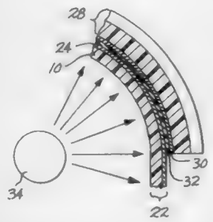
PRECISION RADOME MADE USING CONFORMAL PHOTOLITHOGRAPHY TO PATTERN CURVED SURFACES

David G. Jensen, Auburn, and Daniel R. Tichenor, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 315,993, Sep. 30, 1994, Pat. No. 5,552,249, which is a division of Ser. No. 978,322, Nov. 18, 1992, Pat. No. 5,395,718. This application Jun. 5, 1995, Ser. No. 464,232

Int. Cl.[6] G03C *3/00*

U.S. Cl. 430—18 **14 Claims**



1. A patterned metalized part made by the process of:

(a) forming a part body from a selected material, the body having a predetermined curvature;

(b) applying a metalized coating in a multicurved thin film over the body on at least one side;

(c) applying photosensitive material over at least a portion of the coating;

(d) mating a patterned mask over the photosensitive material, the mask having portions corresponding to area on the metalized coating where the metal is to be removed to form a pattern, the mask having at least a curved portion of the pattern on a curved portion of the part body;

(e) exposing the photosensitive material through the patterned mask;

(f) removing the mask;

(g) removing the exposed photosensitive material to leave a patterned photosensitive material;

(h) removing areas of the metalized coating corresponding to the pattern prepared in the photosensitive material; and

(i) removing the unexposed patterned photosensitive material to yield a part surface having a patterned metalized coating on a supporting part body.

5,633,106

OPTICAL RECORDING MEDIA AND A METHOD OF RECORDING AND REPRODUCING INFORMATION

Shin Aihara; Hideki Umehara, both of Yokohama; Masatoshi Yanagimachi, Funabashi; Yoshiteru Taniguchi, and Sumio Hirose, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 4, 1995, Ser. No. 416,365

Claims priority, application Japan, Apr. 8, 1994, 6-070346; May 13, 1994, 6-100035; Nov. 24, 1994, 6-289705

Int. Cl.[6] G11B *7/24; 7/00*

U.S. Cl. 430—21 **18 Claims**

1. An optical recording medium recordable and reproducible with a laser beam having longer wavelength and reproducible with a laser beam having shorter wavelength, which optical recording medium has at least a dye-containing recording layer laminated on a transparent substrate and a reflective layer deposited directly on the recording layer, the medium having a reflectance of 65% or higher, measured through the substrate to a light beam having a selected wavelength (λ1) of from 770 to 830 nm and having a reflectance of 15% or higher, measured through the substrate to a light beam having a selected wavelength (λ2) of from 630 to 690 nm, the medium thereby being recordable and reproducible with a laser beam having the wavelength of λ1 and being reproducible with a laser beam having the wavelength of λ2, wherein the following relationships hold:

$n1 \geqq 1.8$,

$0.04 \leqq k1 \leqq 0.15$,

$n2 \geqq 1.6$, and

$0.04 \leqq k2 \leqq 0.4$,

wherein n1 is a value of the real part of the complex refractive index of the recording layer to a light beam having a wavelength of λ1, k1 is an absolute value of the imaginary part of the complex refractive index of the recording layer to a light beam of λ1, n2 is a value of the real part of the complex refractive index of the recording layer to a light beam having a wavelength of λ2, and k2 is an absolute value of the imaginary part of the complex refractive index of the recording layer to a light beam of λ2.

5,633,107

DEVELOPER FOR DEVELOPING LATENT ELECTROSTATIC IMAGES AND METHOD OF FORMING IMAGES BY USING THE DEVELOPER

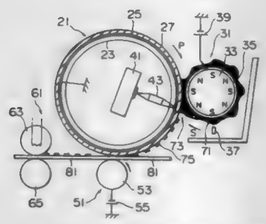
Yoshio Ozawa, Mie; Hisashi Mukataka; Ryushi Imoo, both of Tokyo, and Satoshi Nishida, Saitama, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Division of Ser. No. 76,919, Jun. 14, 1993, Pat. No. 5,554,477. This application Jun. 12, 1996, Ser. No. 661,882

Claims priority, application Japan, Jun. 15, 1992, 4-180313; Dec. 28, 1992, 4-361689

Int. Cl.[6] G03G *13/09*

U.S. Cl. 430—102 **13 Claims**



1. An image formation method of forming a toner image corresponding to a light image on a photoconductor by use of (i) a photoconductor which comprises a light-transmitting support, and at least a light-transmitting electroconductive layer and a photoconductive layer which are successively overlaid on said light-transmitting support, (ii) a developer comprising an electroconductive magnetic carrier which comprises electroconductive magnetic carrier particles, each carrier particle comprising a magnetic base particle and an electroconductive layer formed on the surface of said magnetic base particle, a magnetic high-resistivity carrier, and an electrically insulating toner, (iii) development means which is disposed on the side of said photoconductive layer of said photoconductor and supplies said developer onto the surface of said photoconductor, (iv) voltage application means for applying a voltage across said light-transmitting electroconductive layer of said photoconductor and said development means, and (v) exposure means which is disposed on the side of said light-transmitting support of said photoconductor in such a configuration as to be directed toward said development means, comprising the steps of:

bringing said developer into contact with the surface of said photoconductor; and

applying a light image to said photoconductive layer located near a position where said light-transmitting support and said development means are mutually directed, from the side of said light-transmitting support, under the application of a voltage across said light-transmitting electroconductive layer and said development means.

5,633,108

MONOCOMPONENT RESISTIVE TONER FOR FIELD CHARGING

Orrin D. Christy, North Tonawanda; John E. Pickett, E. Amherst; Leo Swanson, Niagara Falls, and Kevin J. Hook, Grand Island, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 29, 1995, Ser. No. 536,050

Int. Cl.[6] G03G *9/08*

U.S. Cl. 430—110 **22 Claims**

1. A toner composition for developing an electrostatic latent image comprising a base toner including a blend of a polymeric resin and a colorant, wherein the base toner composition has a particle size distribution with a mean particle diameter (D_{50}) ranging from about 7 to about 18 microns and a bulk resistivity of greater than about 10^{12} ohm-cm.

5,633,109

INK COMPOSITIONS WITH LIPOSOMES CONTAINING PHOTOCHROMIC COMPOUNDS

Carol A. Jennings, Etobicoke; Marcel P. Breton; MaryAnna Isabella, both of Mississauga, all of Canada; Eric G. Johnson, Plant City, Fla.; Trevor I. Martin, Burlington, and John F. Oliver, Calgary, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1995, Ser. No. 567,637

Int. Cl.[6] C09D *11/06;* **G03G** *9/135*

U.S. Cl. 430—115 **31 Claims**

1. An ink composition which comprises an aqueous liquid vehicle, a photochromic material, and a vesicle-forming lipid, wherein vesicles of the lipid are present in the ink.

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5,633,110

DRY TONER FOR DIRECT ELECTROSTATIC PRINTING (DEP)

Guido Desie, Herent, and Serge Tavernier, Lint, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 7, 1995, Ser. No. 554,857

Claims priority, application European Pat. Off., Nov. 29, 1994, 94203464

Int. Cl.[6] G03G *15/06;* **G01D** *15/06*

U.S. Cl. 430—120 **7 Claims**

1. A method for direct electrostatographic printing (DEP) on an intermediate substrate or on a final substrate, using a device that comprises a back electrode, a printhead structure comprising a control electrode in combination with apertures, and a toner delivery means for presenting a cloud of dry toner particles in the vicinity of said apertures, wherein

(i) said toner particles are such that the ratio of the length of the long axis of the projected microscopic image of said particles to the length of the short axis is between 1.00 and 1.40, said ratio being the average of the ratios measured on at least 20 different toner particles

(ii) said toner particles after addition of 0.5% by weight of fumed hydrophobic silica having a specific surface area of 260 m^2/g show a ratio of apparent density (ρ_{app}) over real density (ρ_{real})

$$\frac{\rho_{app}}{\rho_{real}} > 0.52$$

(iii) said toner particles having a ratio between measured BET (BET_{meas}) and calculated BET (BET_{calc}) of

$$1.00 \leqq \frac{BET_{meas}}{BET_{calc}} \leqq 2.00$$

5,633,111

PHOTORESIST COMPOSITION AND ARTICLE CONTAINING 1,2-QUINONEDIAZIDE AND AN ORGANIC PHOSPHOROUS ACID COMPOUND

Hiroshi Yoshimoto, and Kesanao Kobayashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 30, 1992, Ser. No. 969,565

Claims priority, application Japan, Nov. 1, 1991, 3-287899; Jan. 31, 1992, 4-016232

Int. Cl.[6] G03F *7/023;* **G03C** *1/61*

U.S. Cl. 430—165 **21 Claims**

11. A photoresist comprising a substrate having coated on the surface thereof a photoresist composition comprising in admixture:

(a) an alkali soluble resin or a resin having anti-alkali dissolution groups in the molecules thereof,

(b) a 1,2-quinonediazide light-sensitive compound, and

(c) at least one organic compound selected from the group consisting of organic phosphorus acid compounds and esters thereof in an amount of 0.001 to 10% by weight based on the weight of the resin,

wherein said organic compound (c) is selected from the group consisting of compounds represented by formulae (I) and (II):

$$R^1-Y-P(ZR^2)_n(ZH)_{2-n} \quad (I)$$

$$R^1-Y-P(ZR^2)R^3 \quad (II)$$

wherein n represents 1 or 2, R^1 represents an alkyl group, an alkoxyl group, an aryl group, an aryloxy group, an acyl group, or an acyloxy group,

R^2 and R^3 each represents a hydrogen atom or an alkyl group, an aryl group, or an acyl group,

Y represents a single bond, an oxygen atom or a sulfur atom, and

Z represents an oxygen atom or a sulfur atom,

and said organic compound may be a salt of a metal or ammonium.

5,633,112

PHOTOSENSITIVE RESIN COMPOSITION CONTAINING A CARBOXYLIC ACID POLYMER, PHOTOACID GENERATOR AND SECONDARY OR TERTIARY ALIPHATIC AMINE

Takao Miwa, Katsuta; Yoshiaki Okabe; Mina Ishida, both of Hitachi; Akio Takahashi, Hitachiota, and Shunichi Numata, Hitachi, all of Japan, assignors to Hitachi, Ltd., and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,788

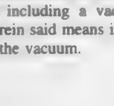
Claims priority, application Japan, Oct. 8, 1993, 5-252785

Int. Cl.[6] G03F *7/021*

U.S. Cl. 430—176 **8 Claims**

1. A photosensitive resin composition comprising

(a) a carboxylic acid polymer having repeating units represented by the formula (1):



(1)

wherein A is an organic group having 2 or more carbon atoms; n is a positive integer between 10 and 200,00; and R_1 is an organic group having 1 or more carbon atoms, a hydrogen atom or a halogen atom, the amount of said polymer being 20% or more by weight based on the total amount of the resin in the composition;

(b) a photoacid generator which is capable of generating an acid upon application of electromagnetic waves, the amount of said acid being 0.2 to 2.0 molar equivalents per mole of the carboxyl group in said carboxylic acid polymer; and

(c) a secondary or tertiary aliphatic amine having 12 or less carbon atoms in an amount of 0.2 to 2.0 molar equivalents per mole of the carboxyl group in said carboxylic acid polymer.

5,633,113

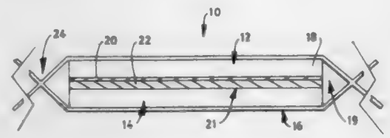
MASS TRANSFER IMAGING MEDIA AND METHODS OF MAKING AND USING THE SAME

Ernest W. Ellis, Harvard, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 14, 1995, Ser. No. 421,757

Int. Cl.[6] G03C *8/52;* **G03F** *7/115*

U.S. Cl. 430—201 **19 Claims**



1. An image media assembly comprising: a donor element, a receptor element, and means for maintaining at least the elements in a predetermined position wherein one element overlies the other element, said means including a vacuum present between the elements, further wherein said means includes a seal between said elements to maintain the vacuum.

5,633,114

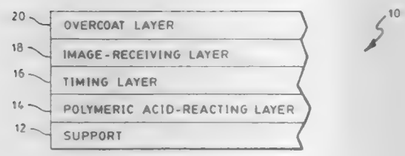
IMAGE-RECEIVING ELEMENT WITH PARTICLE CONTAINING OVERCOAT FOR DIFFUSION TRANSFER FILM PRODUCTS

Kenneth C. Waterman, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 382,880, Feb. 2, 1995, abandoned, which is a continuation-in-part of Ser. No. 132,534, Oct. 6, 1993, Pat. No. 5,415,969. This application Jun. 28, 1996, Ser. No. 672,499

Int. Cl.[6] G03C *8/40;8/52;8/50;1/805*

U.S. Cl. 430—203 **15 Claims**



1. An image-receiving element for use in a photographic or photothermographic diffusion transfer film unit wherein an image-receiving element is adapted to be separated from a photosensitive element after photoexposure and photographic processing, said image-receiving element comprising, in sequence:

a support;

an image receiving layer;

an overcoat layer residing on said image-receiving layer, said overcoat layer comprising a major amount by dry weight of water-insoluble particles and a minor amount by dry weight of a water-insoluble polymeric latex binder material, wherein said water-insoluble particles are selected from the group consisting of inorganic particles, organic polymeric latex particles having a minimum film-forming temperature of from about 10° C. to about 40° C. and a glass transition temperature of at least 10° C. greater than their minimum film-forming temperature and mixtures thereof; and

an optional strip-coat layer comprising a hydrophilic colloid residing on said overcoat layer, wherein said overcoat layer is the outermost layer of said image-receiving element when said strip-coat layer is not present or said strip-coat layer, when present, is the outermost layer of said image-receiving element.

5,633,115

METHOD FOR PREPARING AN ALUMINIUM FOIL FOR USE AS A SUPPORT IN LITHOGRAPHIC PRINTING PLATES

Nikolaas de Jaeger, Hove; Walter Verdyck, Schoten, and Augustin Meisters, Gentbrugge, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 29, 1996, Ser. No. 609,998

Claims priority, application European Pat. Off., Mar. 1, 1995, 95200502

Int. Cl.[6] G03C *8/28;* **G03F** *7/07*

U.S. Cl. 430—231 **9 Claims**

1. A method for preparing an image receiving element comprising an aluminum foil as support comprising the steps of roughening and anodizing said aluminum foil and applying an image receiving layer containing physical development nuclei on said aluminum foil characterized in that said roughened and anodized aluminum foil is posttreated with an aqueous solution containing one or more organic compounds having at least one cationic group before the image receiving layer comprising physical development nuclei is applied to said roughened and anodized aluminum foil.

5,633,116

METHOD FOR PREPARING PREPRESS COLOR PROOF AND INTERMEDIATE RECEIVER ELEMENT AND CARRIER PLATE USEFUL THEREIN

Richard J. Kapusniak, Webster; Colin C. Campbell, Rochester, both of N.Y.; Lawrence P. Pate, Buckinghamshire, United Kingdom, and David A. Niemeyer, Rochester, N.Y., assignors to Eastman Kokak Company, Rochester, N.Y.

Filed Feb. 8, 1996, Ser. No. 598,448

Int. Cl.[6] G03F *7/34*

U.S. Cl. 430—254 **21 Claims**

1. A method for preparing a prepress color proof in which colored images are successively transferred from donor elements to an intermediate receiver element by a process of lamination so as to form a multicolor image on said intermediate receiver element, said method comprising the steps of:

A) providing an intermediate receiver element,

B) providing at least two multilayer donor elements, each of which comprises:

a support, and

one or more layers on said support, at least one layer being a photosensitive imaging layer comprised of a photohardenable or phototackifiable composition whose tackifying temperature is selectively changeable by imagewise exposure of said donor element to activating radiation,

each of said donor elements having dispersed throughout one or more of its layers, a colorant that undergoes imagewise transfer to said intermediate receiver element,

C) imagewise exposing each of said donor elements to activating radiation, and

D) transferring a color image in either exposed or unexposed areas of each of said donor elements, by:

laminating at selected lamination temperature and pressure, in succession and register, each of said donor elements to said intermediate receiver element in a laminating device,

followed by peeling each of said laminated donor elements from said intermediate receiver element,

wherein said intermediate receiver element comprises a support, and an image receiving layer overlaying said support, said image receiving layer having a roughened outer surface characterized by a sufficient degree of roughness to impede flow of said transferred color image during lamination of each of said donor elements to said intermediate receiver element, thereby providing improved image resolution in said transferred color image,

and wherein each of said donor elements and said intermediate receiver element are carried through said laminating device with a carrier plate,

said carrier plate comprising a metallic, polymeric sheet, formica laminate or paper card stock substrate having on one surface thereof a thermoplastic adhesive coating, said adhesive coating having a glass transition temperature that is less than said lamination temperature but is sufficiently high to provide low surface tackiness at room temperature, and said adhesive coating also exhibiting sufficient surface tackiness at said lamination temperature to prevent irreversible dimensional change of said intermediate receiver element during said laminating step.

5,633,117

PROVIDING IMAGEWISE VARIATION IN GLOSSINESS TO A RECEPTOR

Hamid Barjesteh, Woodbury, and Michael B. Heller, Grove Heights, both of Minn., assignors to Imation Corp., St. Paul, Minn.

Filed Apr. 27, 1995, Ser. No. 429,928

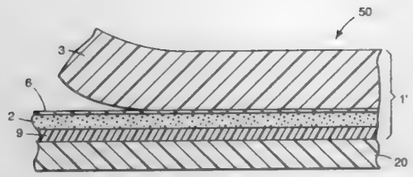
Int. Cl.[6] G03F *7/30*

U.S. Cl. 430—256 **6 Claims**

1. A method of creating a receptor having imagewise variation in glossiness comprising the steps of:

a) providing a surface modifying sheet which comprises

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a carrier substrate, and, on one side of the carrier substrate, a colorless photosensitive layer having a thickness from 0.3 to 5 μm and comprising (i) particulates having sizes smaller than the thickness of the photosensitive layer and (ii) a binder selected from the group consisting of photopolymerizable binders and photosolubilizable binders;

b) applying the surface modifying sheet to the receptor in a manner so that the photosensitive layer is between the receptor and the carrier substrate;

c) removing the carrier substrate;

d) image-wise exposing the photosensitive layer to actinic radiation; and

e) developing the imagewise exposed photosensitive layer, wherein the photosensitive layer may be exposed to actinic radiation before the application of the surface modifying sheet to the receptor, after the application of the surface modifying sheet to the receptor and before removal of the carrier substrate, or after the removal of the carrier substrate.

5,633,118

LASER ABLATIVE IMAGING METHOD

Mitchell S. Burberry; Lee W. Tutt, and Sharon W. Weber, all of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1996, Ser. No. 620,696

Int. Cl.[6] G03C *1/73;* **G03F** *7/12;7/36;7/40*

U.S. Cl. 430—292 **9 Claims**

1. A process of forming a single color image comprising:

a) imagewise exposing, by means of a laser, a dye-ablative recording element comprising a support having thereon, in order, a hydrophilic dye-receiving layer, a hydrophobic dye-barrier layer, and a hydrophilic, water-soluble, infrared-absorbing layer containing an infrared-absorbing material which absorbs at a given wavelength of said laser used to expose said element, thereby imagewise heating said hydrophilic, water-soluble, infrared-absorbing layer and said dye-barrier layer, causing them to ablate;

b) removing the ablated hydrophilic, water-soluble, infrared-absorbing layer and dye-barrier layer material;

c) contacting said imagewise-exposed element with an aqueous ink solution and thereby removing the remaining hydrophilic, water-soluble, infrared-absorbing layer; and

d) drying said element to obtain a single color image in said ablative recording element.

5,633,119

LASER ABLATIVE IMAGING METHOD

Mitchell S. Burberry, and Lee W. Tutt, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1996, Ser. No. 620,715

Int. Cl.[6] G03C *1/73;* **G03F** *7/12;7/36;7/40*

U.S. Cl. 430—292 **7 Claims**

1. A process of forming a single color image comprising:

a) imagewise exposing, by means of a laser, a dye-ablative recording element comprising a support having thereon, in order, a hydrophilic dye-receiving layer and a hydrophobic dye-barrier layer, at least one of said dye-receiving layer and said dye-barrier layer having an infrared-absorbing material therein or in a layer therebetween to absorb at a given wavelength of said laser used to expose said element, thereby imagewise heating said dye-barrier layer and causing it to ablate;

b) removing the ablated dye-barrier layer material;

c) contacting said imagewise-exposed element with an aqueous ink solution; and

d) drying said element to obtain a single color image in said ablative recording element.

5,633,120

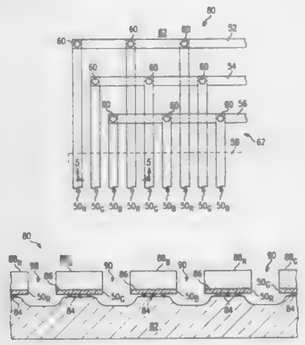
METHOD FOR ACHIEVING ANODE STRIPE DELINEATION FROM AN INTERLEVEL DIELECTRIC ETCH IN A FIELD EMISSION DEVICE

Kenneth G. Vickers, Whitesboro, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Filed May 22, 1995, Ser. No. 445,614

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—313 **7 Claims**



1. A method of fabricating an anode plate for use in a field emission device, said method comprising the steps of:

providing a transparent substrate having an active region and a bus region on a surface thereof;

providing spaced-apart, electrically conductive regions on said surface thereof, said conductive regions spanning said active region and said bus region;

coating said surface with an electrically insulating material;

removing said electrically insulating material from selected portions of said bus region and from said active region, and also removing portions of said transparent substrate in said active region in spaces between said electrically conductive regions;

depositing a conductive layer and forming therefrom a first bus in said bus region electrically connected to a first series of said conductive regions, a second bus in said bus region electrically connected to a second series of said conductive regions, and a third bus in said bus region electrically connected to a third series of said conductive regions;

applying luminescent material of a first color on said first series of conductive regions in said active region;

applying luminescent material of a second color on said second series of conductive regions in said active region; and

applying luminescent material of a third color on said third series of conductive regions in said active region.

5,633,121

METHOD FOR EXAMINING SURFACE OF COPPER LAYER IN CIRCUIT BOARD AND PROCESS FOR PRODUCING CIRCUIT BOARD

Takahisa Namiki; Yasuo Yamagishi, and Ei Yano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 520,734, Aug. 29, 1995, abandoned, which is a continuation of Ser. No. 202,657, Feb. 28, 1994, abandoned. This application Jun. 12, 1996, Ser. No. 662,299

Claims priority, application Japan, Apr. 21, 1993, 5-094280

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—313 **15 Claims**

1. A process for preparing a circuit board comprising:

coating a resist on a copper layer;

patterning the resist;

selectively etching or plating the copper layer using the patterned resist as a mask to thereby form a copper circuit to be used as a part of a circuit board;

measuring a degree of oxidation of said copper layer to thereby determine the presence of an excessive degree of said oxidation equal to or greater than about 10 nm on said copper layer, said measuring being accomplished prior to coating the resist on the copper layer by irradiating a surface of the copper layer with an irradiation beam so that at least a portion of the irradiation beam is reflected from the surface as a reflected beam and evaluating a characteristic of said reflected beam as a measure of the degree of oxidation of said copper layer; and

after an excessive degree of oxidation has been determined, either removing at least a portion of the oxidized copper or covering the oxidized copper with a copper cladding prior to said coating of the copper layer with said resist.

5,633,122

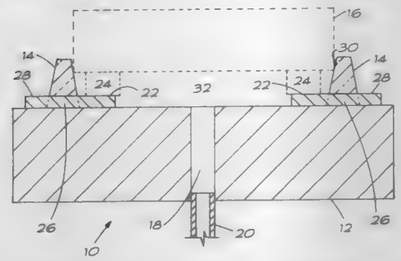
TEST FIXTURE AND METHOD FOR PRODUCING A TEST FIXTURE FOR TESTING UNPACKAGED SEMICONDUCTOR DIE

Mark E. Tuttle, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 271,434, Jul. 7, 1994, abandoned, which is a division of Ser. No. 107,212, Aug. 16, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,217

Int. Cl.[6] G01R *31/26*

U.S. Cl. 430—317 **30 Claims**



1. A method for forming a test fixture for testing an unpackaged semiconductor die comprising:

forming a base;

forming a contact structure on the base configured to establish electrical communication between a contact location on the die and test circuitry;

forming an alignment layer on the base;

forming an alignment opening through the alignment layer to the base, said alignment opening configured to contact an outer periphery of the die to form a space between the die and base; and

forming a vacuum opening on the base in flow communication with the space.

5,633,123

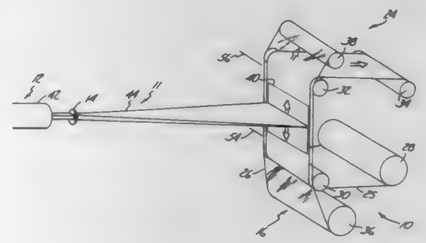
SYSTEM FOR ABLATIVE IMAGING BY PROXIMITY LITHOGRAPHY

Jeffrey B. Hill, Stillwater; Andrew J. Ouderkirk, Woodbury; Daniel P. Stubbs, May Township, Washington County; Robert S. Jackson, Little Canada, and Douglas S. Dunn, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 381,022, Jan. 31, 1995, Pat. No. 5,501,944, which is a continuation of Ser. No. 169,504, Dec. 17, 1993, abandoned. This application Dec. 20, 1995, Ser. No. 575,242

Int. Cl.[6] B23K *26/16*

U.S. Cl. 430—347 **16 Claims**



1. A system for prolonging the useful life of a mask while ablating a pattern into a workpiece, comprising:

a workpiece;

a debris-blocking layer, in contact with the workpiece, which is substantially transparent to ultraviolet radiation;

a mask in contact with a side of the debris-blocking layer opposite the workpiece;

means for positioning the debris-blocking layer in contact with the workpiece and for positioning the mask in contact with the debris-blocking layer;

means for separating the debris-blocking layer and mask from the workpiece; and

a high energy source of ultraviolet radiation capable of ablating the workpiece;

whereby a pattern corresponding to the mask may be ablated into the workpiece by the high energy source while the debris-blocking layer minimizes degradation of the mask, thereby minimizing the need to clean the mask and prolonging the useful life of the mask.

5,633,124

ACCELERATION OF SILVER REMOVAL BY THIOETHER COMPOUNDS

Eric R. Schmittou, Rochester; Jacob J. Hastreiter, Jr., Spencerport, and Stuart T. Gordon, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 880,423, May 8, 1992, abandoned. This application Oct. 20, 1994, Ser. No. 326,558

Int. Cl.[6] G03C *11/00;5/18;5/26;5/38*

U.S. Cl. 430—372 **21 Claims**

1. A process for fixing an exposed and developed silver halide-based color photographic material,

said process comprising fixing said material with a fixer comprising thiosulfate and a fix rate-accelerating amount of a thioether compound, said process being characterized by being conducted:

a) in the presence of a fix rate-retarding amount of iodide, and

b) in the substantial absence of an iron chelate bleaching agent;

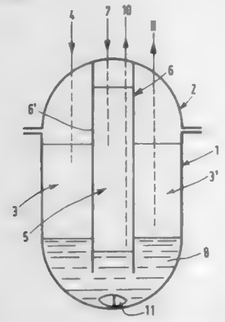
wherein the ammonium concentration in said fixer is less than 0.9 mole per liter.

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5,633,125
PROCESS FOR EXTRACTING HALIDE IONS FROM FIXING BATHS USED IN PHOTOGRAPHY

Didier J. Martin, Givry, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1996, Ser. No. 597,305
Claims priority, application France, Mar. 2, 1995, 95 02669
Int. Cl.[6] G03C *5/395*
U.S. Cl. 430—398 **8 Claims**



1. Process for the selective extraction of the halide ions from photographic fixing solutions, in which

a) the photographic fixing solution is brought into contact with a liquid membrane comprising a macrocyclic compound in solution in an organic solvent, so that the halide ions are transported from the photographic fixing solution in the liquid membrane, and

b) the halide ions carried in the liquid membrane are extracted by bringing the membrane into contact with an aqueous solution, separate from the photographic fixing solution characterized in that the macrocyclic compound is a crown-ether compound which comprises at least six oxygen atoms and possibly sulfur or nitrogen atoms, in which two adjacent oxygen, sulfur or nitrogen atoms are separated by an alkylene group of at least two carbon atoms.

5,633,126
FILMS FOR REPRODUCING DIGITALLY STORED MEDICAL DIAGNOSTIC IMAGES AND INTEGRATING NON-IMAGE INFORMATION

Robert E. Dickerson, Hamlin; Mridula Nair, Penfield; George L. Oltean, Rochester, and Lloyd A. Lobo, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1995, Ser. No. 574,509
Int. Cl.[6] G03C *1/76; 1/005*
U.S. Cl. 430—496 **10 Claims**

1. A radiation-sensitive silver halide film for reproducing digitally stored medical diagnostic images through a series of laterally offset exposures by a controlled radiation source followed by processing in 90 seconds or less, including development, fixing and drying, comprised of

a transparent film support having front and back major faces,

a front hydrophilic colloid layer unit containing an emulsion layer coated on the front face of the support, and

a back hydrophilic colloid layer unit coated on the back face of the support,

wherein

(A) the film exhibits an average contrast in the range of from 1.5 to 2.0, measured over a density above fog of from 0.25 to 2.0,

(B) the emulsion layer

(1) contains silver bromochloride grains including grain faces lying in {100} crystal planes

(a) comprised of from 20 to 40 mole percent bromide, based on total silver,

(b) having a mean equivalent circular diameter of less than 0.40 μm,

(c) exhibiting an average aspect ratio of less than 1.3, and

(d) coated at a silver coverage of less than mg/dm^2, and

(2) has adsorbed to the surfaces of the silver bromochloride grains at least one spectral sensitizing dye having an absorption half peak bandwidth in the spectral region of exposure by the controlled radiation source,

(C) the back hydrophilic colloid layer unit contains a magnetic recording layer, and

(D) the film contains an infrared opacifying dye that is capable of reducing specular transmission through the film before, during and after processing to less than 50 percent, measured at a wavelength within the spectral region of from 850 to 1100 nm.

5,633,127
IMAGING ELEMENTS CAPABLE OF PROVIDING IN A SINGLE LAYER AN IMAGE AND AN INDEPENDENT MAGNETIC RECORD

Mridula Nair, Penfield, and George L. Oltean, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1996, Ser. No. 626,228
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—496 **17 Claims**

1. An imaging element comprised of

a support and, coated on the support,

at least one radiation-sensitive emulsion layer containing

(a) radiation-sensitive silver halide grains and

(b) an aqueous processing solution permeable vehicle,

wherein the radiation-sensitive emulsion layer additionally contains

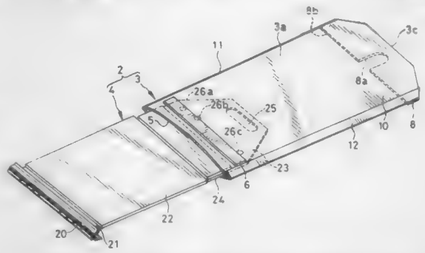
(c) from 0.1 to 10 mg/dm^2 of magnetic particles having a major axis less than 1 μm and

(d) based on the weight of the magnetic particles, from 10 to 200 percent of an amphipathic dispersant for the magnetic particles having a hydrophilic/lipophilic balance number of at least 8.

5,633,128
SHEET FILM PACKAGE

Katsumi Tashiro; Hitoshi Komiyama, and Yoshio Hara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 581,483, Dec. 29, 1995, abandoned. This application Jun. 12, 1996, Ser. No. 660,959
Claims priority, application Japan, Jan. 4, 1995, 7-000074
Int. Cl.[6] G03C *3/00;* **G03D** *13/08;* **G03B** *17/26*
U.S. Cl. 430—496 **15 Claims**

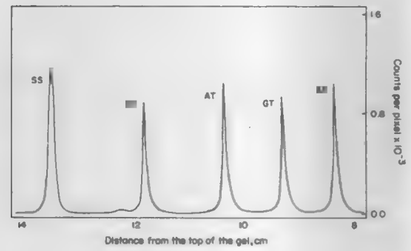


1. In a sheet film package comprising a light-shielding envelope having an open end, and a sheet fill unit movable into and out of said light-shielding envelope through said open end, said sheet film unit comprising a sheet of photographic film and a sealing clip for openably sealing said open end of said light-shielding envelope in a light-tight fashion when said sheet fill unit is contained in said light-shielding envelope, the improvement wherein: said light-shielding envelope is formed by folding a sheet of light-tight material in half to provide a folded side and securely sealing joints of said folded sheet along a side opposite to said folded side and in an end opposite to said open end, said folded side having a larger folding angle in a middle portion thereof compared with end portions of said folded side.

5,633,129
ELECTROPHORETIC DETECTION AND SEPARATION OF MUTANT DNA USING REPLACEABLE POLYMER MATRICES

Barry L. Karger, Newton; William G. Thilly, Winchester; Frantisek Foret, Malden; Konstaintin Khrapko, Brookline, all of Mass.; Phouthone Kochavong, Pittsburgh, Pa.; Aharon S. Cohen, Newton, and Roger W. Giese, Quincy, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, and Northeastern University, Boston, both of Mass.

Continuation-in-part of Ser. No. 709,710, Jun. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 379,087, Jul. 13, 1989, Pat. No. 5,045,450. This application Feb. 3, 1994, Ser. No. 190,919
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **51 Claims**



1. A method of resolving mutant DNA from non-mutant DNA in a DNA sample which, as obtained or modified, contains double stranded mutant DNA and double stranded non-mutant DNA, each with two iso-melting domains, a first iso-melting domain referred to as a low temperature iso-melting domain, which melts at a first temperature and a second iso-melting domain, referred to as a high temperature iso-melting domain, which melts at a second, higher temperature, wherein the mutant DNA contains a mutation of interest in the low temperature iso-melting domain, comprising the steps of:

a) isolating the DNA sample from a biological source;

b) fragmenting DNA in the DNA sample isolated in a) to obtain fragmented double-stranded DNA of interest;

c) melting and reannealing the fragmented double-stranded DNA of interest obtained in step b) under conditions appropriate to form duplexed DNA, thereby producing a mixture of DNA heteroduplexes and DNA homoduplexes;

d) introducing the mixture produced in step c) into a replaceable polymer matrix contained within a capillary column, thereby producing a replaceable polymer matrix containing the mixture of DNA heteroduplexes and DNA homoduplexes;

e) subjecting the replaceable polymer matrix containing the mixture of DNA heteroduplexes and DNA homoduplexes to a high electrical field and partially denaturing conditions, wherein the partially denaturing conditions are constant denaturing conditions, whereby the DNA heteroduplexes partially melt and the DNA homoduplexes do not melt and the DNA heteroduplexes migrate at a slower velocity in the replaceable polymer matrix then the DNA homoduplexes, resulting in the separation of DNA heteroduplexes from DNA homoduplexes.

5,633,130
BUFFER SYSTEM FOR INCREASING SEROCONVERSION EFFICIENCY

Daniel S. Smith, and John C. Walker, both of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Sep. 8, 1994, Ser. No. 303,156
Int. Cl.[6] C12Q *1/00;* **C07K** *1/00;* **C12N** *9/2440;* **C12P** *21/04*
U.S. Cl. 435—4 **7 Claims**

1. A method of preparing deantigenated erythrocytes including the steps of

isolating erythrocytes of a defined blood type;

suspending the isolated erythrocytes in zwitterionic buffer wherein the zwitterionic buffer consists essentially of 0.1 to 20 mM Na titrate, 220 to 440 mM glycine or alanine and 0.01 to 30 mg ml^{-1} albumin at pH 5.8;

adding a multimeric eucaryotic exoglycosidase with multiple subunits selected to act on the isolated erythrocytes;

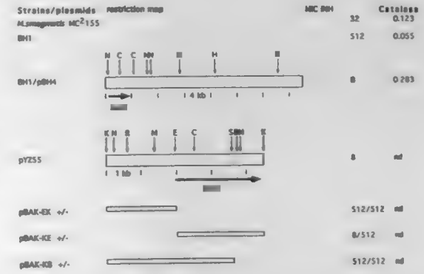
incubating at 24° C. for between one and two hours; and

washing in phosphate buffered saline.

5,633,131
RAPID DETECTION OF ISONIAZID RESISTANCE IN *MYCOBACTERIUM TUBERCULOSIS* PROBES FOR SELECTING NUCLEIC ACID ENCODING ISONIAZID RESISTANCE, AND METHODS AND KITS

Beate Heym, Paris; Stewart T. Cole, Clamart, both of France; Douglas B. Young, Middlesex, United Kingdom, and Ying Zhang, London, England, assignors to Institut Pasteur, Paris, France; Medical Research Council, London, United Kingdom; Assistance Publique, and Universite Paris VI, both of Paris, France

Continuation-in-part of Ser. No. 875,940, Apr. 30, 1992, abandoned. This application Aug. 14, 1992, Ser. No. 929,206
Int. Cl.[6] C12Q *1/68;* **C07H** *21/04*
U.S. Cl. 435—6 **22 Claims**



1. A process for detecting in vitro the presence of nucleic acids of a *Mycobacterium tuberculosis* which is resistant to isoniazid, wherein the process comprises the steps of:

(A) depositing and fixing nucleic acids of *Mycobacterium tuberculosis* on a solid support, so as to make the nucleic acids accessible to a probe;

(B) contacting said fixed nucleic acids from step (A) with the probe under conditions permitting selective hybridization;

(C) washing said solid support resulting from step (B), so as to eliminate any non-hybridized probe; and then

(D) detecting any hybridized probe on said washed solid support resulting from step (C) as an indication of the presence of nucleic acids of a *Mycobacterium tuberculosis* which is resistant to isoniazid;

wherein said probe comprises a nucleic acid, which is 2.5 kb EcoRV-KpnI fragment of plasmid pYZ55, and wherein said fragment contains a BamHI cleavage site.

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5,633,132

DETERMINATION OF THE PRESENCE OF AN ANTIGEN, PARTICULARLY HLA-B27 ANTIGEN, AT THE SURFACE OF A CELL, PARTICULARLY LYMPHOCYTES, BY CYTOTOXICITY TEST COMBINED WITH FLUORESCENT STAINING

Raynald Roy, Ste-Foy, and Jacques Hebert, Cap-Rouge, both of Canada, assignors to Immunova Ltee, Quebec, Canada

Filed Apr. 28, 1994, Ser. No. 234,394

Int. Cl.[6] G01N *33/554*

U.S. Cl. 435—6 **23 Claims**

1. A method of detecting the presence of an antigen at the surface of the cell membrane of cells contained in a test sample, which comprises the following steps:

(a) placing said cells in the presence of an antibody which specifically binds said antigen;

(b) allowing immune complexes to be formed between said antigen and antibody;

(c) placing said immune complexes in the presence of complement;

(d) allowing the constant region of the antibody of said immune complexes to fix the complement this fixation leading to the disruption of said cell membrane;

(e) placing said cells, the cell membrane of which is disrupted in the presence of a dye reagent which specifically binds intracellular components;

steps (a) to (e) being simultaneous; and

(f) detecting the presence of dyed cells as an indication of the presence of said antigen at the surface of their cell membrane.

5,633,133

LIGATION WITH HAMMERHEAD RIBOZYMES

David M. Long; Olke C. Uhlenbeck, both of Department of Chemistry & Biochemistry, University of Colorado, Campus Box 215, Boulder, Colo. 80309-0215, and Klemens J. Hertel, 70 Canal St., Medford, Mass. 02155

Filed Jul. 14, 1994, Ser. No. 275,156

Int. Cl.[6] C12Q *1/68;* **C12N** *15/11;* **C07H** *21/04*

U.S. Cl. 435—6 **15 Claims**

1. A method for ligation of an enzymatic nucleic acid molecule having a hammerhead motif to an RNA molecule, comprising the steps of:

contacting in a reaction mixture said enzymatic nucleic acid molecule with said RNA molecule wherein said reaction mixture contains an ion selected from the group consisting of: cobalt, manganese, cadmium, zinc, copper, and nickel ions, in which ligation is enhanced at least two fold over that observed in a medium containing only Mg^{2+} as a divalent cation at 20° C.

5,633,134

METHOD FOR SIMULTANEOUSLY DETECTING MULTIPLE MUTATIONS IN A DNA SAMPLE

Tony Shuber, Milford, Mass., assignor to IG Laboratories, Inc., Framingham, Mass.

Continuation of Ser. No. 957,205, Oct. 6, 1992, abandoned. This application Sep. 19, 1994, Ser. No. 308,638

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **20 Claims**

1. A method of screening to simultaneously detect multiple target sequences of interest in genomic DNA, the method comprising:

(a) immobilizing on a single solid support a sample of genomic DNA to be screened for said multiple target sequences of interest,

(b) contacting said support with a pool of oligonucleotide probes of approximately the same length under stringent conditions in the presence of a concentration of about 2–5 M of a quaternary ammonium salt that allows the hybridization of said probes to DNA under said stringent conditions,

wherein said pool comprises individual allele-specific oligonucleotide (ASO) probes, each ASO complementary to and specific for one of said multiple target sequences of interest suspected to be present in said DNA;

(c) removing probes that do not hybridize to said DNA under said stringent conditions; and

(d) detecting hybridization, wherein said hybridization indicates the presence of at least one of said multiple target sequences of interest in said DNA.

5,633,135

CHIMERIC NUCLEIC ACIDS AND PROTEINS RESULTING FROM ALL-1 REGION CHROMOSOME ABNORMALITIES

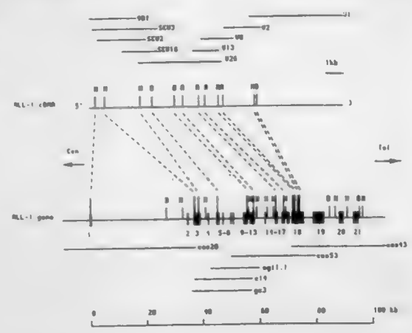
Carlo Croce, Philadelphia, and Eli Canaani, Glenside, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 62,443, May 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 971,094, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 888,839, May 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 805,093, Dec. 11, 1991, abandoned. This application Oct. 11, 1994, Ser. No. 320,559

Claims priority, application WIPO, Dec. 9, 1992, PCT/US92/10930

Int. Cl.[6] C07H *21/04;* **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **8 Claims**



1. A method of identifying a t(9;11) translocation in a patient comprising:

providing a tissue sample containing hematopoietic cells from said patient;

isolating RNA from said sample;

generating cDNA from said RNA;

amplifying a nucleotide sequence of a chimeric gene in said cDNA using a set of PCR primers selected from the group consisting of SEQ ID NO:39 and SEQ ID NO:41; SEQ ID NO:40 and SEQ ID NO:42; are SEQ ID NO:43 and SEQ ID NO:44, if said chimeric gene is present and wherein said chimeric gene results from said translocation; and

detecting the presence of amplified DNA as indicative of the presence of a t(9;11) translocation.

5,633,136

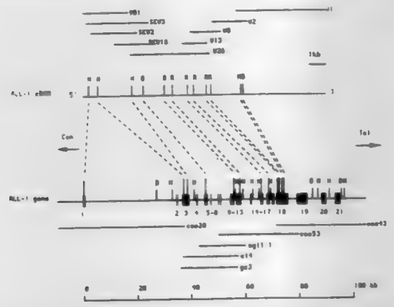
ALL-1 POLYNUCLEOTIDES FOR LEUKEMIA DETECTION AND TREATMENT

Carlo Croce, Philadelphia, and Eli Canaani, Glenside, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 971,094, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 888,839, May 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 805,093, Dec. 11, 1991, abandoned. This application Oct. 19, 1994, Ser. No. 327,392

Int. Cl.[6] C12Q *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **16 Claims**



1. A DNA molecule comprising human genomic DNA nucleotide sequences consisting of the human genomic DNA insert in cos 20, cos 43, cos 53, phage mg 11.1, phage c14, or phage gc3, or a fragment of said human genomic DNA insert having at least 15 nucleotides.

5,633,137

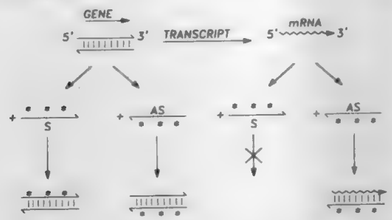
METHOD FOR MEASURING SPECIFIC GENE EXPRESSION: TRANSCRIPTIONAL ACTIVITY PER GENE DOSE

John H. Paul, and Scott L. Pichard, both of St. Pete, Fla., assignors to The University of South Florida, Tampa, Fla.

Continuation of Ser. No. 156,868, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 984,094, Dec. 1, 1992, abandoned. This application Jan. 19, 1995, Ser. No. 375,259

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **8 Claims**



1. A method of determining the level of transcription of a specific gene comprising the steps of:

(a) isolating mRNA from a population of microorganisms;

(b) isolating DNA from the population of microorganisms;

(c) quantifying the amount of a specific target mRNA in the isolated mRNA;

(d) quantifying the amount of a specific target DNA in the isolated DNA, the specific target DNA being the DNA from which the target mRNA is transcribed; and

(e) dividing the amount of target mRNA by the amount of target DNA to determine the level of transcription of the target DNA as a measure of specific gene expression per gene dosage.

5,633,138

THERMOSTABLE ALKALINE PHOSPHATASE OF THERMUS THERMOPHILUS

Maria Davis, Twinsburg, and Joseph Szasz, Chesterland, both of Ohio, assignors to Amersham Life Science, Inc., Cleveland, Ohio

Division of Ser. No. 240,158, May 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 229,329, Apr. 18, 1994, abandoned. This application May 30, 1995, Ser. No. 452,988

Int. Cl.[6] C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **1 Claim**

1. Method for detecting nucleic acid in a sample comprising the step of providing a nucleic acid probe labelled with a thermostable alkaline phosphatase isolated from *Thermus thermophilus*; contacting the sample with said labelled nucleic acid; and detecting said nucleic acid in said sample by means of said thermostable alkaline phosphatase.

5,633,139

TOXOPLASMA GONDII P28 GENE AND METHODS FOR ITS USE

Jeffrey B. Prince, Mountain View; Fausto G. De Araujo, Palo Alto; Somesh D. Sharma, Los Altos, and Jack S. Remington, Menlo Park, all of Calif., assignors to Research Institute of Palo Alto Medical Foundation, Palo Alto, Calif.

Continuation of Ser. No. 264,951, Feb. 3, 1992, which is a continuation of Ser. No. 431,578, Nov. 3, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 477,357

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **16 Claims**

1. An isolated DNA or RNA molecule, which comprises a nucleotide sequence coding for a P28 protein of *Toxoplasma gondii* or a peptide fragment of said P28 protein which is immunologically reactive with an antibody against *Toxoplasma gondii* or induces formation of an antibody or cell-mediated immune response against *T. gondii*.

5,633,140

REACTION VESSEL FOR IMMUNOLOGICAL ANALYSIS OF AEROSOLS

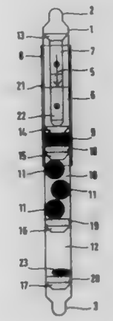
Kerstin Wex, Lübeck; Thomas Wuske, Malente, and Andreas Manns, Lübeck, all of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Dec. 22, 1994, Ser. No. 362,209

Claims priority, application Germany, Dec. 22, 1993, 43 43 842.3

Int. Cl.[6] G01N 33/53

U.S. Cl. 435—7.1 **20 Claims**



1. A reaction vessel for determining a toxic substance adhering to aerosols in an air sample, the reaction vessel comprising:

an elongated body having proximal and distal ends and enclosing a space defining at least a collection chamber, a reaction

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chamber and a measurement chamber in a sequential through-flow direction obtainable by attachment of a vacuum source to said distal end, wherein:

(a) said collection chamber contains

at least a first breakable ampule filled with a liquid reagent for solubilizing and separating said toxic substance from said aerosols in order to transport said toxic substances into said reaction chamber;

a collecting layer comprising a semi-permeable means where said toxic substance adhered to said aerosols is deposited, arranged downstream from said first ampule, said semi-permeable means being permeable to said solubilized and separated toxic substance but impermeable to said aerosols; and,

a first flow barrier disposed between said collecting layer and said reaction chamber for delaying liquid transport until said vacuum source is applied to pull said solublized and separated toxic substance therethrough into said reaction chamber;

(b) said reaction chamber contains

an immunoreactive charge comprising

a predetermined amount of a labelled reagent comprising a detectable label conjugated to said toxic substance or an analog thereof, said labelled reagent being complexed with

(ii) a solid phase carrier material having immobilized thereon an immunoreactant which specifically binds to said toxic substance and said labelled reagent, such that any said solubilized and separated toxic substance entering said reaction chamber displaces said labelled reagent from said particles in proportion to the amount of said toxic substance present in said air sample; and,

a second flow barrier disposed between said reaction chamber and said measurement chamber for delaying liquid transport from said reaction chamber for a defined reaction time until said vacuum source is applied to pull any displaced labelled reagent into said measurement chamber; and.

(c) said measurement chamber contains a color generating system which reacts with said displaced labelled reagent to produce a colored product in proportion to the concentration of said toxic substance in said air sample.

5,633,141

HUMAN IL-8 RECEPTOR BINDING ASSAY

James Lee, San Bruno; William E. Holmes, Pacifica, and William I. Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 234,494, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 677,211, Mar. 29, 1991, abandoned. This application Apr. 7, 1995, Ser. No. 418,919

Int. Cl.[6] C12N *15/24;* **C07K** *14/54*

U.S. Cl. 435—7.2 **2 Claims**

1. A method for determining whether an IL-8 variant binds to an IL-8 receptor having the amino acid sequence of SEQ ID NO.1 comprising transfecting a host cell with DNA encoding the IL-8 receptor having the amino acid sequence of SEQ ID NO. 1, culturing the host cell to express the receptor on its surface, harvesting the cells, contacting the cells with an IL-8 variant and determining the binding of the variant to the receptor.

5,633,142

WT1 MONOCLONAL ANTIBODIES AND METHODS OF USE THEREFOR

Meenhard Herlyn, Wynnewood, Pa.; Jennifer Morris, Brookfield, Wis.; Frank J. Rauscher, III, Cranbury, N.J., and Ulrich Rodeck, Philadelphia, Pa., assignors to The Wistar Institute of Anatomy and Biology, Philadelphia, Pa.

Continuation-in-part of Ser. No. 234,783, Apr. 28, 1994. This application Jun. 1, 1995, Ser. No. 456,907

Int. Cl.[6] G01N *33/547;33/53;* **C07K** *16/30;16/18*

U.S. Cl. 435—7.23 **4 Claims**

1. A method for diagnosing a disease condition characterized by WT1 expression comprising the steps of:

a) providing a biological sample from a patient having the clinical symptoms associated with mesothelioma;

b) providing a monoclonal antibody selected from the group consisting of H2 which is secreted by hybridoma cell line ATCC No. 11598, H7 which is secreted by hybridoma cell line ATCC No. 11599, HC17 which is secreted by hybridoma cell line ATCC No. 11600, and a cocktail of any combination of the H2, H7 and HC17 antibodies;

c) contacting said sample with said monoclonal antibody; and

d) detecting the presence of binding of said monoclonal antibody to said biological sample, wherein the presence of such binding indicates the presence of said disease condition.

5,633,143

METHOD FOR THE QUANTITATIVE DETERMINATION OF D-3-HYDROXYBUTYRIC ACID AND ACETOACETIC ACID, AND ANALYTICAL REAGENT THEREFOR

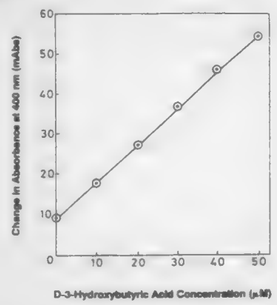
Shigeru Ueda; Hideo Misaki; Shigeru Ikuta, all of Tagata-gun, and Mamoru Takahashi, Sunto-gun, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/01706, § 371 Date May 26, 1994, § 102(e) Date May 26, 1994, PCT Pub. No. WO93/12254, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 12, 1991, Ser. No. 244,450

Int. Cl.[6] C12Q *1/32;1/52;* **G01N** *33/53;31/00*

U.S. Cl. 435—26 **26 Claims**



1. A method for the quantitative determination of at least one ketone body selected from the group consisting of D-3-hydroxybutyric acid and acetoacetic acid, which consists essentially of:

reacting a biological sample containing at least one ketone body selected from the group consisting of D-3-hydroxybutyric acid and acetoacetic acid with a reagent comprising:

(1) a D-3-hydroxybutyrate dehydrogenase which utilizes the following coenzymes (i) and (ii):

(i) a first coenzyme selected from the group consisting of thionicotinamide adenine dinucleotide phosphate or its analog (thio-NADP compound) and thionicotinamide adenine dinucleotide or its analog (thio-NAD compound), and

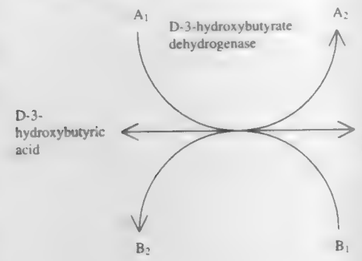
(ii) a second coenzyme selected from the group consisting of nicotinamide adenine dinucleotide phosphate or its analog (NADP compound) and nicotinamide adenine dinucleotide or its analog (NAD compound),

and catalyzes the reversible reaction producing acetoacetic acid from D-3-hydroxybutyric acid as a substrate;

(2) A_1; and

(3) B_1;

said components (1), (2) and (3) participating in the following cycling reaction:



wherein A_1 is a thio-NADP compound, a thio-NAD compound, an NADP compound or an NAD compound; A_2 is a reduced form of A_1; B_1 is a reduced NADP compound or a reduced NAD compound when A_1 is a thio-NADP compound or a thio-NAD compound, or a reduced thio-NADP compound or a reduced thio-NAD compound when A_1 is an NADP compound or an NAD compound; and B_2 is an oxidized form of B_1, wherein the reaction of said biological sample with said reagent is conducted under conditions adapted for the enzymatically catalytic and cycling reaction, thereby effecting said cycling reaction; and

measuring and correlating a change in the amount of A_2 or B_1 to the quantity of said at least one ketone body.

5,633,144

ASSAY PAD AND METHOD FOR DETERMINATION OF THE PRESENCE OF TOTAL COLIFORMS

Gabriel Bitton, and Ben Koopman, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation of Ser. No. 188,343, Jan. 27, 1994, abandoned, which is a continuation of Ser. No. 946,973, Sep. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 518,686, May 3, 1990, Pat. No. 5,149,656. This application Jul. 19, 1994, Ser. No. 277,126

Int. Cl.[6] C12Q *1/10*

U.S. Cl. 435—38 **2 Claims**

1. A method for detecting bacteria in an environmental sample, said method comprising the following steps:

(a) incubating, in an enrichment broth, an environmental sample suspected of containing coliform bacteria;

(b) contacting the incubated environmental sample with an assay pad consisting essentially of the enzyme substrates chlorophenol red-β-D-galactopyranoside and 4-methylumbelliferone glucuronide, wherein said chlorophenol red-β-D-galactopyranoside is present at a concentration of about 100 ppm and said 4-methylumbelliferone glucuronide is present at a concentration of about 100 mg/L, and wherein said substrates are converted to a reaction product by an enzyme produced by said coliform bacteria; and

(c) detecting said reaction product to determine the presence of coliform bacteria by observing a change in color or fluorescence upon said assay pad.

5,633,145

TNFα RECEPTOR-DERIVED BINDING PROTEIN

Marc Feldmann, Hammersmith, United Kingdom; Patrick W. Gray, Bothell, Wash.; Martin J. C. Turner, Ann Arbor, Mich., and Fionula M. Brennan, Hammersmith, United Kingdom, assignors to The Mathilda and Terence Kennedy Institute of Rheumatology, London, England

PCT No. PCT/GB91/01826, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/07076, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 18, 1991, Ser. No. 50,319

Claims priority, application United Kingdom, Oct. 18, 1990, 9023648

Int. Cl.[6] C12N *5/10;15/12*

U.S. Cl. 435—69.1 **9 Claims**

1. A polypeptide which is capable of binding human TNFα and which has the first three cysteine-rich subdomains, but not the fourth cysteine-rich subdomain, of the extracellular binding domain of a receptor selected from the group consisting of the 55 kD and 75 kD receptors for human TNFα.

5,633,146

METHOD FOR PRODUCING RECOMBINANT PROTEINS AND HOST CELLS USED THEREIN

Reinhard Fleer, Bures sur Yvette; Alain Fournier, Chatenay Malabry, and Patrice Yeh, Paris, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

Continuation of Ser. No. 175,417, Jun. 30, 1992, abandoned. This application May 31, 1995, Ser. No. 454,778

Claims priority, application France, Jul. 2, 1991, 91 08217

Int. Cl.[6] C12N *1/106;1/19;15/63;15/81*

U.S. Cl. 435—69.1 **19 Claims**

1. Host cell for the production of recombinant proteins, characterised in that the said host cell is the yeast *K. lactis* CBS293.91 or a derivative or mutant thereof which produces substantially equivalent levels of recombinant proteins, containing a heterologous DNA fragment comprising a structural gene and signals permitting its expression.

5,633,147

TRANSFORMING GROWTH FACTOR αH1

Paul S. Meissner; Rebecca A. Fuldner, both of Barnesville, and Mark D. Adams, N. Potomac, all of Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Filed Mar. 8, 1994, Ser. No. 208,008

Int. Cl.[6] C12N *15/63;15/12*

U.S. Cl. 435—69.1 **36 Claims**

1. An isolated polynucleotide comprising a polynucleotide having at least a 95% identity to a member selected from the group consisting of:

(a) a polynucleotide encoding a polypeptide comprising the amino acid sequence as set forth in SEQ ID NO:2; and

(b) a polynucleotide which is complementary to the polynucleotide of (a).

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5,633,148

UNIQUE LECTINS

Glenn Nedwin, Half Moon Bay; Tim Bringman, Burlingame, and Pierre-Olivier Couraud, Foster City, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Continuation of Ser. No. 263,734, Oct. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 181,747, Apr. 14, 1988, abandoned. This application Dec. 6, 1995, Ser. No. 568,148

Int. Cl.[6] C12N *15/00;5/00;* C12P *21/06;* C07H *21/02*

U.S. Cl. 435—69.1 7 Claims

1. A recombinant DNA molecule in isolated and purified form encoding the lectin "having the amino acid sequence of from positions 2–135 as set forth in FIG. 1A".

5,633,149

POLYNUCLEOTIDE ENCODING NOVEL CHEMOKINE EXPRESSED IN INFLAMED ADENOID

Karl J. Guegler, Menlo Park; Phillip R. Hawkins, Mountain View; Craig G. Wilde, Sunnyvale, and Jeffrey J. Seilhamer, Los Altos Hills, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Dec. 7, 1994, Ser. No. 352,324

Int. Cl.[6] C07K *14/52;* C12N *15/19*

U.S. Cl. 435—69.5 8 Claims

1. A purified polynucleotide comprising a polynucleotide sequence encoding an adenoid expressed chemokine polypeptide having the sequence as depicted in SEQ ID NO: 2, or its complement.

5,633,150

PREPARATION OF FUNCTIONAL HUMAN FACTOR VIII

William I. Wood; Daniel J. Capon, both of San Mateo; Richard M. Lawn, San Francisco, and Gordon A. Vehar, San Carlos, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 83,758, Aug. 7, 1987, Pat. No. 4,965,199, which is a continuation of Ser. No. 602,312, Apr. 20, 1984, abandoned. This application Oct. 9, 1990, Ser. No. 595,481

Int. Cl.[6] C12N *5/10;15/12;* C07K *14/755;* A61K *38/37*

U.S. Cl. 435—69.6 6 Claims

1. Isolated DNA comprising a sequence encoding functional human factor VIII.

5,633,151

ENZYMATIC PROCESS FOR THE ISOLATION OF ERUCIC ACID FROM VEGETABLE OILS

Gerald P. McNeill, Glenside, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 334,089, Nov. 4, 1994. This application Mar. 20, 1995, Ser. No. 406,829

Int. Cl.[6] C12P *7/40;7/64;* C12N *9/20*

U.S. Cl. 435—134 10 Claims

1. A method for the enzymatic production of a glyceride consisting essentially of erucic acid, said method comprising

a) dissolving lipase in water or buffer,

b) adding the dissolved lipase to an erucic acid-containing sample, with stirring, to form a reaction mixture,

c) incubating the reaction mixture for a time sufficient for the hydrolysis of fatty acids other than erucic acid to occur, thereby forming a glyceride fraction consisting essentially of erucic acid and a free fatty acid fraction,

d) separating the glyceride fraction from the free fatty acid fraction,

wherein the glyceride is dierucin or monoerucin,

wherein the lipase is *Geotrichum candidum* lipase or *Candida rugosa* lipase, and

wherein the reaction is carried out at a temperature of from about 10° C. to less than about 20° C. when the lipase is *Candida rugosa.*

5,633,152

METHOD OF CONTROLLING VIRAL GROWTH

Steven L. McKnight, Baltimore, Md., assignor to Carnegie Institution of Washington, Washington, D.C.

Continuation of Ser. No. 210,904, Jun. 24, 1988, abandoned, which is a continuation of Ser. No. 963,015, Oct. 19, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 280,247

Int. Cl.[6] C12N *7/01;15/38*

U.S. Cl. 435—172.3 3 Claims

1. A method of specifically inhibiting growth of a virus, that is a member of the family Herpesviridae, in a permissive mammalian host cell comprising:

i) introducing into said cell a gene encoding a carboxyl-terminal truncated form of VP16 lacking activation function; and

ii) causing expression of said gene and thereby production of said form of VP16 so that growth of said virus is inhibited.

5,633,153

ALDEHYDE DEHYDROGENASE SELECTABLE MARKERS FOR PLANT TRANSFORMATION

Virginia M. Ursin, Davis, Calif., assignor to Calgene, Inc., Davis, Calif.

Filed Oct. 14, 1994, Ser. No. 324,130

Int. Cl.[6] C12N *15/00;5/04;15/82;* A01H *5/00*

U.S. Cl. 435—172.3 21 Claims

1. A method of plant cell transformation, wherein said method comprises:

introducing into cells of a plant species sensitive to growth inhibition by a phytotoxic aldehyde, a DNA construct comprising as operably linked components, a promoter functional in said plant cells, a DNA sequence encoding an aldehyde dehydrogenase capable of detoxifying said phytotoxic aldehyde, and a transcription termination region functional in said plant cells,

culturing said plant cells in a plant growth medium comprising said phytotoxic aldehyde, and selecting transformed plant cells demonstrating resistance to said phytotoxic aldehyde.

5,633,154

METHOD FOR LOCATION OF INSERTION ELEMENTS

Andreas Schaefer; Anna-Hildegard Seep-Feldhaus; Wolfgang Jaeger; Joern Kalinowski; Wolfgang Wohlleben, and Alfred Puehler, all of Bielefeld, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 33,320, Mar. 18, 1993, Pat. No. 5,380,657. This application Nov. 4, 1994, Ser. No. 336,069

Claims priority, application Germany, Mar. 19, 1992, 42 08 785.6

Int. Cl.[6] C12N *15/77;1/21*

U.S. Cl. 435—172.3 2 Claims

1. A process of mutagenizing coryneform bacteria comprising

(a) constructing a non-self-transferrable vector which can be mobilized from an *E. coli* mobilizer strain, said vector comprising

(1) a DNA segment containing a replicon functional in *E. coli,*

(2) a second DNA segment containing the DNA fragment coding for the Mob site containing the oriT,

(3) a third DNA segment which recombines homologously in Gram-positive bacteria, or contains a replicon functional in coryneform bacteria, or recombines homologously in Gram-positive bacteria and contains a replicon functional in coryneform bacteria, and

(4) a DNA segment containing an IS element, wherein said insertion element is (i) ISCg1 from *C. glutamicum, C. fascians, C. herculis* and *B. flavum*, comprising approximately 1.45 kb and with inversely repetitive ends with a length of approximately 24 bp, (ii) ISB11 from *B. lactofermentum* comprising approximately 1.45 kb and with inversely repetitive ends approximately 26 bp long, or (iii) ISRF1 from *C. fascians*, comprising approximately 1.3 kb and with inversely repetitive ends approximately 18 bp long,

(b) transferring said vector by means of conjugative transfer into a coryneform recipient strain to form transconjugants, and

(c) cultivating said transconjugants.

5,633,155

EXPRESSION VECTOR FOR PHYTOLACCA ANTIVIRAL PROTEIN AND PROCESS FOR PREPARING TRANSGENIC PLANT TRANSFORMED THEREWITH

Man-Keun Kim; Kwan-Ho Lee, both of Seoul; Byeong-Kook Na, Incheon; Han-Seung Jeong; Kyu-Whan Choi, both of Seoul; Young-Ho Moon, Kuri, and Hong-Seob Jeon, Seoul, all of Rep. of Korea, assignors to Jinro Limited, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 49,075, Apr. 20, 1993, abandoned. This application Jan. 18, 1995, Ser. No. 373,858

Claims priority, application Rep. of Korea, Aug. 19, 1992, 92-14895

Int. Cl.[6] C12N *1/00;15/09;15/29;15/82*

U.S. Cl. 435—172.3 2 Claims

2. A process for preparing virus-resistant transgenic plant which comprises the step of transforming a plant with *Agrobacterium tumefaciens* that has been transformed with the recombinant DNA pJRM100, which is capable of expressing *Phytolacca americana* antiviral protein.

5,633,156

METHODS FOR CALCIUM PHOSPHATE TRANSFECTION

Florian M. Wurm, Redwood City, and Martin Jordan, San Bruno, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 303,245, Sep. 8, 1994, Pat. No. 5,484,720. This application Jul. 14, 1995, Ser. No. 502,445

Int. Cl.[6] C12N *15/64*

U.S. Cl. 435—172.3 12 Claims

1. A method for introducing a desired nucleic acid into a eukeryotic host cell, comprising

(a) admixing Ca^{2+}, PO_4^{3-} and the desired nucleic acid to form a precipitation mixture;

(b) incubating the precipitation mixture to form particles comprising calcium phosphate and the desired nucleic acid, and allowing the particles to grow to an average length of up to about 300 nm;

(c) performing a step selected from the group consisting of: (1) diluting the precipitation mixture and simultaneously admixing the precipitation mixture with a eukaryotic host cell lacking a cell wall to form a transfection mixture; and (2) diluting the precipitation mixture to form a diluted precipitation mixture, and thereafter admixing the diluted precipitation mixture with a eukaryotic host cell lacking a cell wall to form a transfection mixture; and

(d) incubating the transfection mixture to allow the eukaryoric host cell to take up the particles to form a transfected cell.

5,633,157

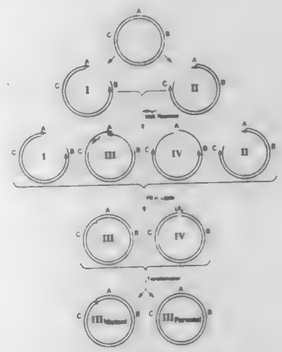
SIMPLE AND EFFICIENT METHOD FOR SITE-DIRECTED MUTAGENEIS WITH DOUBLE-STRANDED PLASMID DNA

Sidney Pestka, North Caldwell; Derhsing Lai, East Brunswick, and Xueli Zhu, Iselin, all of N.J., assignors to University of Medicine & Dentistry of New Jersey, Newark, N.J.

Continuation of Ser. No. 503,787, Jul. 18, 1995, abandoned, which is a continuation of Ser. No. 145,329, Oct. 29, 1993, abandoned. This application Feb. 15, 1996, Ser. No. 601,698

Int. Cl.[6] C12N *15/09;15/01*

U.S. Cl. 435—172.3 6 Claims



1. A method for preparing site-specific mutations in double-stranded plasmid DNA which comprises the steps of:

(a) double digesting a plasmid having a restriction site A, which contains a target sequence, and restriction sites B and C, which flank restriction site A, with restriction endonucleases A and B to produce fragment I and with restriction endonucleases A and C to produce fragment II, wherein restriction endonuclease A produces a 3' overhang;

(b) denaturating fragments I and II to form a mixture;

(c) annealing the mixture from step (b) to produce parental homoduplex fragments I and II having a 3'-overhang and a 5'-overhang, heteroduplex fragment III, and heteroduplex fragment IV;

(d) providing an oligonucleotide primer that can hybridize with the single-stranded region of the heteroduplex fragment III and that has a sequence that directs mutagenesis;

(e) extending the 3' ends of heteroduplex fragment III; and

(f) ligating heteroduplex fragment III to produce the double-stranded plasmid DNA mutant.

5,633,158

BACTERIAL NITROREDUCTASE FOR THE REDUCTION OF CB 1954 AND ANALOGUES THEREOF TO A CYTOTOXIC FORM

Gillian Anlezark; Roger Melton; Roger Sherwood, all of Salisbury; Thomas Connors, Carshalton; Frank Friedlos, Sutton; Michael Jarman, Sutton; Richard Knox, Sutton, and Anthony Mauger, Sutton, all of United Kingdom, assignors to Cancer Research Campaign Technology Limited, London, United Kingdom

PCT No. PCT/GB92/01947, § 371 Date Jul. 27, 1994, § 102(e) Date Jul. 27, 1994, PCT Pub. No. WO93/08288, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 23, 1992, Ser. No. 232,018

Claims priority, application United Kingdom, Oct. 23, 1991, 9122464; Oct. 23, 1991, 9122496

Int. Cl.[6] C12N *9/02;1/20;* C07H *21/04*

U.S. Cl. 435—189 13 Claims

1. An isolated nitroreductase comprising the amino acid sequence of Seq. ID No. 2.

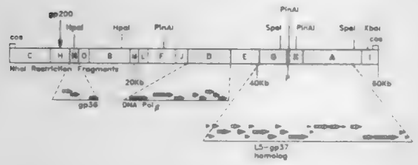
VOL 1198 ISS 4 MY 27 1997 UMI

5,633,159

DNA POLYMERASE III β-SUBUNIT FROM MYCOBACTERIOPHAGE DS6A

Robert E. Pearson, Durham; Julie A. Dickson, Raleigh; Paul T. Hamilton, Cary; Michael C. Little, Raleigh, and Wayne F. Beyer, Jr., Bahama, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 10, 1995, Ser. No. 402,068
Int. Cl.[6] C12N *9/12*
U.S. Cl. 435—194 2 Claims



1. Recombinant DNA polymerase III, β subunit, of mycobacteriophage DS6A.

5,633,160

Patent Not Issued For This Number

5,633,161

MURINE GENE FOMY030 CODING FOR TUMOR PROGRESSION INHIBITOR

Andrew W. Shyjan, Brookline, Mass., assignor to Millennium Pharmaceuticals, Inc., Cambridge, Mass.

Filed Mar. 29, 1995, Ser. No. 412,431
Int. Cl.[6] C12N *5/16;15/12;15/63;15/85*
U.S. Cl. 435—325 12 Claims

1. An isolated nucleic acid comprising the nucleotide sequence of SEQ ID NO:2, as depicted in FIG. 3.

5,633,162

METHOD FOR CULTURING CHINESE HAMSTER OVARY CELLS

Michael J. Keen, and Nicholas T. Rapson, both of Beckenham, England, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 991,717, Dec. 18, 1992, Pat. No. 5,316,938, which is a continuation of Ser. No. 777,729, Oct. 16, 1991, abandoned. This application Mar. 4, 1994, Ser. No. 205,379
Claims priority, application United Kingdom, Oct. 17, 1990, 9022545
Int. Cl.[6] C12N *5/00*
U.S. Cl. 435—384 18 Claims

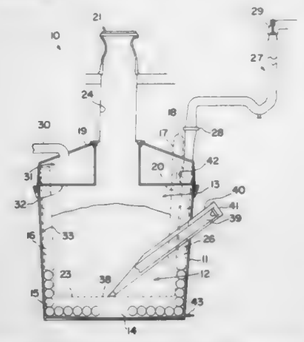
1. A method for growing CHO cells which comprises culturing CHO cells under cell growing conditions in the absence of serum in a medium comprising water, an osmolality regulator, a buffer, an energy source, L-glutamine and at least one additional amino acid, an inorganic, organic or recombinant iron source and a recombinant or synthetic growth factor wherein each component of said medium is obtained from a source other than directly from an animal source.

5,633,163

METHOD FOR TREATING WASTEWATER AND SOLID ORGANIC WASTE

Dean O. Cameron, Maleny, Australia, assignor to Dowmus Pty Ltd, Nambour, Australia

PCT No. PCT/AU93/00470, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/06734, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 13, 1993, Ser. No. 403,756
Claims priority, application Australia, Sep. 14, 1992, PL4705
Int. Cl.[6] B01J *8/00;* C05F *17/00*
U.S. Cl. 435—262 8 Claims



1. A method for simultaneously treating wastewater and solid organic waste within a common filter bed having a top, a bottom, and a continuum of layers of decomposing and decomposed solid organic waste, wherein a degree of decomposition of the solid organic waste in the filter bed increases from the top of the filter to the bottom, where at said bottom there is complete decomposition of said solid organic waste, said filter bed incorporating a supply of living organisms which maintain the filter bed in an air and liquid permeable condition, said method comprising the steps of:

applying wastewater and solid organic waste to the upper layer of the filter bed in such a manner so as to confine the wastewater to percolation through the filter bed;

maintaining the filter bed in an aerobic condition;

removing wastewater from the bottom of the filter bed in a substantially purified state; and

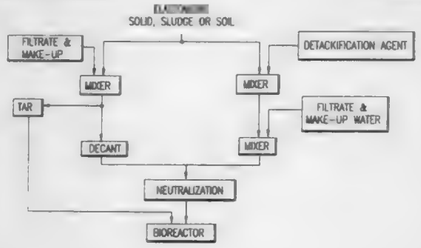
removing solid organic waste from the filter bed in a decomposed state.

5,633,164

METHODS FOR FLUID PHASE BIODEGRADATION

George E. Pierce, Lebanon, N.J., and Christopher V. Smith, Rising Sun, Md., assignors to Cytec Technology Corporaton, Wilmington, Del.

Filed Dec. 16, 1994, Ser. No. 357,686
The portion of the term of this patent subsequent to Dec. 16, 2014, has been disclaimed.
Int. Cl.[6] A61L *9/01;* D06M *16/00*
U.S. Cl. 435—266 64 Claims



1. A method for the bioremediation of a slurry containing at least one compound selected from the group consisting of aromatic, nitroaromatic, halo-aromatic, aliphatic, and halo-aliphatic compounds comprising:

(a) adjusting the pH of the slurry, if acidic or alkaline, to form a neutral slurry at pH 6–8; and

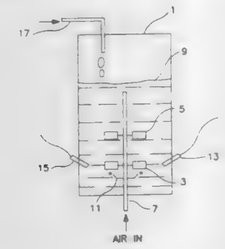
(b) contacting said neutral slurry with a microorganism, said microorganism being a member of the group consisting of microorganisms having ATCC Accession Nos. 55641, 55642, 55643, 55644, 55645, 55646, 55647, 55648, and 55649.

5,633,165

FERMENTOR WITH VERTICAL SHAFT

James R. Swartz, Menlo Park, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 240,121, May 9, 1994, Pat. No. 5,487,980, which is a division of Ser. No. 989,844, Nov. 23, 1992, Pat. No. 5,342,763. This application May 25, 1995, Ser. No. 451,241
Int. Cl.[6] C12M *1/06*
U.S. Cl. 435—287.1 2 Claims



1. A small scale fermentation apparatus that reproduces oxygen instability of large scale fermentation, comprising:

a vessel having a small volumetric capacity adapted to hold a liquid culture medium and microorganisms to be cultured therein;

a vertical shaft disposed in the center of the vessel;

two impellers connected to the vertical shaft, a top impeller and a bottom impeller, the top impeller located a distance above the bottom impeller and located sufficiently below the surface level of the liquid culture medium to provide inadequately mixed dissolved oxygen in the liquid culture medium;

a gas inlet disposed at the bottom of the vessel;

a probe for dissolved oxygen connected to the vessel in close proximity to the bottom impeller:

a redox probe connected to the vessel in close proximity to the bottom impeller; and

a liquid inlet disposed at the top of the vessel through which a feed rate can be controlled to facilitate production of dissolved oxygen instabilities.

5,633,166

METHOD OF ANALYZING MEDICAL SPECIMENS WITH IMPROVED LENGTH OF ANALYTICAL RUN DETERMINATION

James O. Westgard, Madison, Wis., and Paul Mountain, Hamilton, Canada, assignors to MDS Health Group Limited, Etobicoke, Canada

Filed Jan. 19, 1995, Ser. No. 374,917
Int. Cl.[6] G01N *31/00*
U.S. Cl. 436—8 9 Claims

1. A method of controlling analyzing patient medical specimens in an analytical run, each specimen having a selected characteristic and a number representative of said characteristic, said method comprising:

(a) analyzing, on an analyzer, a plurality of said patient medical specimens to obtain, for each specimen, the number representative of said selected characteristic of said specimen;

(b) determining a size shift to be detected in said number, said size shift being a target value shift;

(c) determining a mean from at least some of said numbers;

(d) determining a size shift to be detected in said mean in order to detect said target value shift, said size sift in said mean being a preselected amount;

(e) determining whether said mean shifts by said preselected amount;

(f) providing a control material containing said selected characteristic and being of known properties;

(g) determining expected control values for said control material when said control material is analyzed on said analyzer;

(h) ending said analytical run if said mean shifts by said preselected amount, by inserting said control material into said analyzer, and analyzing said control material therein;

(i) determining, from the analysis of said control material, whether said selected characteristic of said control material deviates from said expected control values by more than said predetermined amount; and

(j) determining, when said control material is analyzed on said analyzer and when such analysis indicates that the selected characteristic of said control material deviates from said expected control values by more than a predetermined amount, that said analyzer is incapable of detecting said target value.

5,633,167

REAGENT COMPOSITIONS FOR USE IN SPHERING CELLS

Sophie S. Fan, Millwood; Daniel Ben-David, Shrub Oak; Albert Cupo, Scarsdale, all of N.Y.; Gena Fischer, Harrington Park, N.J.; Grace E. Martin, Mount Kisco; Leonard Ornstein, White Plains, both of N.Y., and Gregory M. Colella, Bloomfield, N.J., assignors to Bayer Corporation, and Mt. Sinai School of Medicine of the City Univ. of New York, both of N.Y.

Continuation of Ser. No. 16,323, Feb. 11, 1993, abandoned, which is a division of Ser. No. 802,674, Dec. 5, 1991, Pat. No. 5,284,771. This application Dec. 22, 1994, Ser. No. 362,744
Int. Cl.[6] G01N *33/50*
U.S. Cl. 436—17 10 Claims

1. A reagent composition for treating mammalian red blood cells in an anticoagulated whole blood sample which can be subsequently effectively measured electrooptically, said reagent composition comprising a zwitterionic surfactant as the sole surfactant which is a sphering agent that eliminates orientational noise when said sample is mixed with said reagent composition and is subsequently subjected to flow cytometric measurement, said surfactant present at a concentration effective to substantially sphere the mature erythrocytes and the reticulocytes in said whole blood sample without inducing cell lysis after mixing with said sample for at least 2 minutes; wherein said reagent composition does not include protein buffering or fixative; wherein the pH of the reagent composition is about 6 to about 9; and further wherein said reagent composition provides detection and discrimination of red blood cells and reticulocytes in said whole blood sample simultaneous with determination and measurement of hemoglobin content and concentration on a cell-by-cell basis.

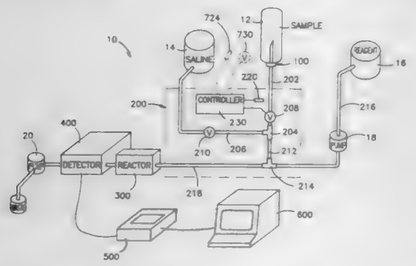
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5,633,168

CONTROLLED DISPERSION FLOW ANALYSIS SYSTEM

Larry M. Glasscock, 801 Second Ave., Cullman, Ala. 35055; Alice Glasscock, 3224 No. 3 Country Club Rd., Birmingham, Ala. 35213; Krishnaji R. Kulkarni, 1015-C Beacon Pkwy. E., Birmingham, and David W. Garber, 1621 Valley Ave., Apt. 3E, Homewood, both of Ala. 35209

Filed Jun. 7, 1995, Ser. No. 487,839
Int. Cl.[6] G01N *35/08*
U.S. Cl. 436—52 21 Claims



21. A flow analysis method for measuring, in a blood sample containing a plurality of lipoprotein classes, the distribution of cholesterol among said lipoprotein classes, comprising:

a) separating the blood sample in a sample container into two or more fractions representing different lipoprotein classes to form a gradient;

b) receiving and holding the sample container in a fixture;

c) providing a continuous, non-segmented stream of reagent which continuously flows from a reagent source to a detector;

d) detecting the presence of the sample container In the fixture;

e) upon detecting the presence of the sample container in the fixture, automatically and sequentially introducing each sample fraction in the gradient into a reagent stream, comprising programming a controller to open a first inlet line connected to said sample container wherein said first inlet line feed the blood sample into the reagent stream in a continuous succession upstream from the detector;

f) reacting each sample fraction with the reagent as the sample fractions flow from a reaction tube toward the detector to produce a measurable reaction signal indicative of the cholesterol concentration in each sample fraction of the gradient while controlling dispersion of the sample fractions within the reagent stream;

g) detecting the end of the sample with a meniscus detector disposed in the first inlet line before introduction of the sample into the reagent stream;

h) backflushing said inlet line with a wash solution in response to detection of the end of the sample by said meniscus detector, comprising programming said controller to open a second inlet line connected to a source of said wash solution while said first inlet line remains open and close said first inlet line containing said sample a predetermined time period after the second inlet line is open, wherein said second inlet line remains open to deliver said wash solution to said reaction tube.

5,633,169

MEASUREMENT OF CARBON DIOXIDE IN BLOOD

Chung C. Young, Weston, and Jeffrey Chien, Ashland, both of Mass., assignors to Nova Biomedical Corporation, Waltham, Mass.

Filed Oct. 27, 1995, Ser. No. 549,028
Int. Cl.[6] G01N *33/50*
U.S. Cl. 436—68 8 Claims

1. A method of determining the total CO_2 concentration in plasma of a whole blood sample, said whole blood sample containing red blood cells and plasma, wherein the fractional volume of said plasma in said whole blood sample comprises a volume dilution factor of said whole blood sample, said method comprising:

(a) loading an uncentrifuged whole blood sample containing red blood cells and plasma into a blood chemistry analyzer including a CO_2 sensor and a hematocrit-measuring station;

(b) measuring the total CO_2 concentration of said uncentrifuged whole blood sample containing red blood cells and plasma with said CO_2 sensor;

(c) measuring the hematocrit of said uncentrifuged whole blood sample containing red blood cells and plasma at said hematocrit-measuring station;

(d) generating the volume dilution factor of said uncentrifuged whole blood sample containing red blood cells and plasma from said hematocrit; and

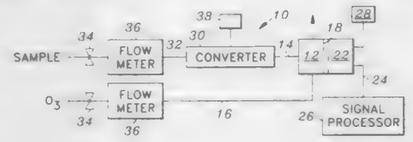
(e) adjusting the total CO_2 concentration of said uncentrifuged whole blood sample containing red blood cells and plasma using said volume dilution factor to provide the total CO_2 concentration in plasma of said uncentrifuged whole blood sample.

5,633,170

METHOD AND APPARATUS FOR NITROGEN OXIDE ANALYSIS

Radhakrishna M. Neti, 18561 Flora Dr., Yorba Linda, Calif. 92686

Filed Mar. 14, 1995, Ser. No. 403,494
Int. Cl.[6] G01N *21/76*
U.S. Cl. 436—116 4 Claims



1. In a method for the determination of the concentration of NO_x in a gas stream by the catalytic conversion of NO_x to NO, mixing the NO with ozone in a reaction chamber to cause a chemiluminescent reaction therebetween and determining the light output of said reaction as a measure of the concentration of the NO_x in said sample, the invention comprising the steps of:

a. preconditioning a catalyst comprising vitreous carbon by heating said vitreous carbon to a temperature in excess of 300° C. for at least two hours;

b. forming a converter comprising a housing and a bed of said preconditioned vitreous carbon and heating said bed of vitreous carbon to a temperature effective to convert NO_x to NO and less than 200° C.; and

c. passing said gas stream through said converter to convert a major portion of the NO_x concentration thereof to NO.

5,633,171

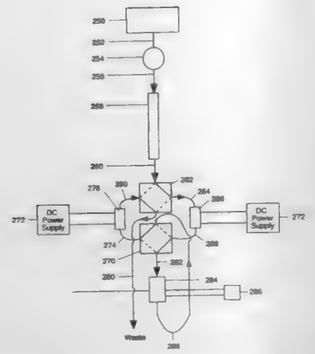
INTERMITTENT ELECTROLYTIC PACKED BED SUPPRESSOR REGENERATION FOR ION CHROMATOGRAPHY

Hamish Small, Leland, Mich.; John M. Riviello, Santa Cruz, and Steven B. Rabin, Mountain View, both of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Filed Mar. 3, 1995, Ser. No. 397,998
Int. Cl.[6] G01N *30/02*
U.S. Cl. 436—161 10 Claims

1. A method of anion or cation analysis by ion chromatography using periodic electrolytic chemical regeneration of a packed bed suppressor, said method comprising

(a) chromatographically separating ionic species in a first liquid sample in a water-containing first eluent solution comprising



electrolyte, to form a first chromatography effluent including separated ionic species,

(b) flowing said first chromatography effluent through a first packed bed suppressor including first suppressor ion exchange resin with first exchangeable ions to convert said electrolyte to weakly ionized form during suppression, thereby depleting at least some of said first exchangeable ions on said first suppressor ion exchange resin, said first chromatography effluent exiting as a first suppressor effluent,

(c) flowing the first suppressor effluent including the separated ionic species from said first packed bed suppressor through a first detector in which the separated ionic species are detected to form a detector effluent,

(d) applying an electrical potential through said first packed resin bed suppressor while flowing an aqueous liquid stream therethrough to electrolyze water in said aqueous liquid stream and thereby regenerate the first exchangeable ions on said first suppressor ion exchange resin, the application of said electrical potential being discontinued during steps (a), (b) and (c),

(e) after termination of steps (a), (b) and (c), chromatographically separating a second liquid sample comprising ionic species in a second eluent comprising a second electrolyte to form a second chromatography effluent including separated ionic species,

(f) flowing said second chromatography effluent through a second packed bed suppressor comprising second suppressor ion exchange resin with second exchangeable ions to convert said electrolyte to weakly ionized form during suppression, thereby depleting at least some of said second exchangeable ions on said second suppressor ion exchange resin, said second chromatography effluent exiting as a second suppressor effluent,

(g) flowing said second suppressor effluent through said detector to detect said second liquid sample separated ionic species and form a second detector effluent, and

(h) flowing said second detector effluent through said first packed bed suppressor, said second detector effluent comprising said aqueous liquid stream in step (d).

5,633,172

METHOD FOR ANALYING AN IMPURITY ON A SEMICONDUCTOR SUBSTRATE

Ayako Shimazaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 7, 1994, Ser. No. 350,618
Claims priority, application Japan, Dec. 9, 1993, 5-308997
Int. Cl.[6] G01N *31/00*
U.S. Cl. 436—177 90 Claims

1. A method for analyzing an impurity on a semiconductor substrate, comprising the steps of:

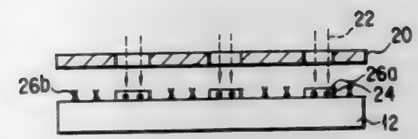
forming oxide films on one or more to-be-measured areas on a surface of a semiconductor substrate and trapping an impurity in the oxide film at each to-be-measured area of the semiconductor substrate, and wherein the to-be-measured areas are independent and distinct from each other;

removing an impurity from other than the to-be-measured areas on the surface of the semiconductor substrate;

dissolving the oxide films on the to-be-measured areas into droplets;

collecting the droplets into a drop; and

measuring an amount of impurity in the drop.

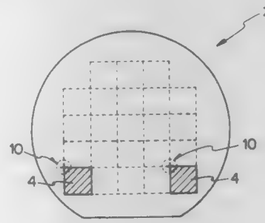


5,633,173

METHOD FOR DETECTING WAFER DEFECTS

Sang M. Bae, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Jul. 13, 1995, Ser. No. 502,178
Claims priority, application Rep. of Korea, Jul. 14, 1994, 94-16959
Int. Cl.[6] H01L *21/66*
U.S. Cl. 438—16 5 Claims



1. A method for detecting wafer defects, comprising the steps of:

forming dummy dies at edge portions of a flat wafer containing no pattern die;

performing a first step of inspecting defects on a surface of the wafer containing no pattern die;

determining the coordinates of the defects, using said dummy dies as reference marks;

performing a pattern die forming step;

performing a second step of inspecting defects on a surface of the wafer after said die forming step; and

comparing the defect coordinates and characteristics from said first and said second defect inspecting steps.

5,633,174

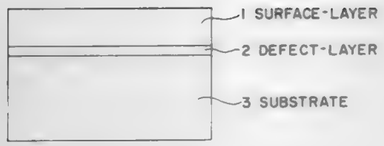
TYPE SILICON MATERIAL WITH ENHANCED SURFACE MOBILITY

Jianming Li, Upton, N.Y., assignor to Biota Corp., Locust Valley, N.Y.

Continuation of Ser. No. 587,227, Sep. 24, 1990, Pat. No. 5,198,371. This application Nov. 20, 1992, Ser. No. 979,365
Int. Cl.[6] H01L *21/322*
U.S. Cl. 438—475 9 Claims

1. A method of forming a buried high resistivity layer comprising hydrogen bubbles beneath a surface portion of a silicon substrate having a crystal orientation, said method comprising:

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irradiating said region beneath said surface portion of said silicon substrate with a beam comprising hydrogen ions at a rate to implant a dose of hydrogen ions in a boundary layer of the irradiated region,

applying photon energy through said surface portion to raise the temperature of said irradiated region for a period of time, and

controlling said rate and said dose of hydrogen ions and said temperature of said surface portion over said period of time to order to convert said dose of hydrogen ions in said boundary layer into an insulating layer comprising hydrogen bubbles.

5,633,175

PROCESS FOR STRIPPING PHOTORESIST WHILE PRODUCING LIQUID CRYSTAL DISPLAY DEVICE

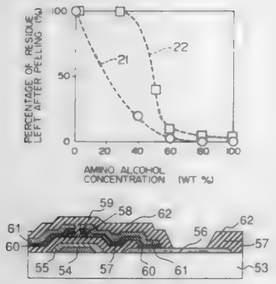
Hiroshi Kikuchi, Zushi; Yasushi Sano, Yokohama; Satoru Todoroki, Yokohama; Hitoshi Oka, Yokohama; Toshiyuki Koshita, Mobara; Masato Kikuchi, Mobara; Mitsuo Nakatani, Mobara, and Michio Tsukii, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 986,683, Dec. 8, 1992, Pat. No. 5,399,202. This application Jan. 17, 1995, Ser. No. 373,769

Claims priority, application Japan, Dec. 19, 1991, 3-336600

Int. Cl.[6] **B08B** *3/08;3/10;* **H01L** *21/335*

U.S. Cl. 438—30 **12 Claims**



1. A process for producing a liquid crystal display device which comprises the steps of:

(A) forming gate electrodes on a substrate,

(B) forming transparent electrodes on the substrate obtained in step (A),

(C) forming a gate-insulating film and amorphous silicon islands on the substrate obtained in step (B),

(D) forming source and drain electrodes on the substrate obtained in step (C), and

(E) forming a passivation film on the substrate obtained in step (D), characterized in that the resist-peeling in at least one of steps (A) to (E) is effected by a method comprising the steps of:

(a) changing the quality of a novolak positive resist layer on a substrate by an oxidative wet etching solution of metallic chromium, dry etching of silicon or aluminum, dry etching using oxygen plasma or ion implantation,

(b) contacting the changed resist of step (a) with a liquid comprising 80% by weight or more of 2-amino-1-ethanol, and

(c) removing the liquid containing the thus peeled resist from the surface of the etched resist.

5,633,176

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE FOR A LIGHT VALVE

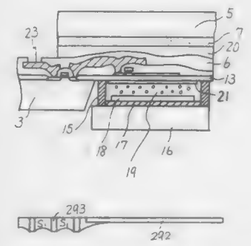
Hiroaki Takasu; Yoshikazu Kojima; Kunihiro Takahashi; Tsuneo Yamazaki, and Tadao Iwaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Division of Ser. No. 308,564, Sep. 19, 1994, which is a division of Ser. No. 106,418, Aug. 13, 1993, Pat. No. 5,434,433. This application Jun. 5, 1995, Ser. No. 463,687

Claims priority, application Japan, Aug. 19, 1992, 4-220504

Int. Cl.[6] **H01L** *21/84;21/304*

U.S. Cl. 438—23 **10 Claims**



1. A method of producing a semiconductor device for a light valve, comprising the steps: forming a pixel array and a drive circuit on a major face of a semiconductor substrate, the forming step comprising forming an underlying stopper film on the major face of the semiconductor substrate in registration with the pixel array, and embedding at least one silicon oxide post into the major face of the semiconductor substrate over a portion outside the stopper film containing the drive circuit; laminating a transparent support substrate on the major face of the semiconductor substrate; and selectively removing a thickness of the semiconductor substrate from a back face opposite to the major face thereof over a portion which includes the pixel array, the removing step comprising etching the back face of the semiconductor substrate by chemical mechanical polishing to remove the thickness thereof to reach the stopper film.

5,633,177

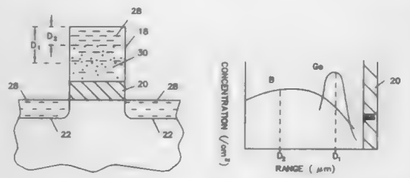
METHOD FOR PRODUCING A SEMICONDUCTOR GATE CONDUCTOR HAVING AN IMPURITY MIGRATION BARRIER

Mohammed Anjum, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 8, 1993, Ser. No. 194,985

Int. Cl.[6] **H01L** *21/265*

U.S. Cl. 438—301 **15 Claims**



1. A method for reducing diffusion of dopant from a patterned semiconductor gate conductor to an underlying channel region, the method comprising the steps of:

providing a semiconductor substrate and a first layer of dielectric material across one surface of the substrate;

providing a conductive material across the dielectric material, said conductive material having an upper and lower surface wherein the upper surface is exposed and the lower surface is adjacent the dielectric material;

implanting germanium into the conductive material to a concentration peak density at a first depth relative to the upper surface of said conductive material;

selectively removing a portion of the conductive material to present a patterned gate conductor, a source region and a drain region, said source and drain regions are spaced apart within said substrate by a channel region underlying the patterned gate conductor;

implanting a dopant material into the source and drain regions simultaneous with implanting dopant material into the patterned gate conductor to a concentration peak density at a second depth within said gate conductor, wherein the second depth is shallower than said first depth;

applying metal to said patterned gate conductor and said source and drain regions;

depositing in liquid form a second layer of dielectric material across the metal and the patterned gate conductor; and

curing the second layer of dielectric material at a temperature sufficient to reflow the second layer of dielectric simultaneous with an anneal of the patterned gate conductor and the source and drain regions.

5,633,178

METHOD OF MAKING VOLATILE MEMORY CELL WITH INTERFACE CHARGE TRAPS

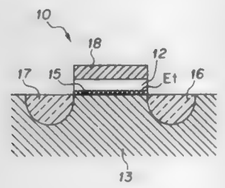
Alexander Kalnitsky, Grenoble, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Division of Ser. No. 343,016, Nov. 21, 1994. This application Jun. 7, 1995, Ser. No. 487,835

Claims priority, application European Pat. Off., Nov. 29, 1993, 93420474

Int. Cl.[6] **H01L** *21/266*

U.S. Cl. 438—288 **8 Claims**



1. A method of manufacturing a volatile memory cell including the steps of:

forming a layer of silicon dioxide on a p-type monocrystalline silicon substrate;

covering the silicon dioxide layer with a layer of conductive material and forming a gate electrode of the volatile memory cell; and

implanting silicon ions into the silicon dioxide layer so that substantially all of said ions in the silicon dioxide layer are located within approximately 1.0 nm of an interface between the silicon dioxide layer and the silicon substrate.

5,633,179

METHOD OF FORMING SILICON/SILICON-GERMANIUM HETEROJUNCTION BIPOLAR TRANSISTOR

Theodore I. Kamins, 4132 Thain Way, Palo Alto, Calif. 94306, and Albert Wang, 14369 Saddle Mount Dr., Los Altos, Calif. 94022

Continuation of Ser. No. 74,186, Jun. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 809,853, Dec. 18, 1991, abandoned, which is a continuation of Ser. No. 444,586, Dec. 1, 1989, abandoned. This application Oct. 11, 1994, Ser. No. 320,815

Int. Cl.[6] **H01L** *21/265*

U.S. Cl. 438—318 **12 Claims**



1. A method for producing a low capacitance, high speed, heterojunction transistor, the method comprising the steps of:

a. initially processing a p type Si substrate having a surface, including:

(1) creating a n type collector region on said surface by forming an n^+ Si layer on said surface and depositing an n^- Si layer over said n^+ Si layer;

(2) growing a field oxide layer over said top surface and said collector region, depositing a first p^+-type polycrystalline Si layer over said field oxide layer, growing a SiO_2 layer over said first p^+ type polycrystalline Si layer, wherein a window is defined through each of said field oxide, said first p^+ type polycrystalline Si and said SiO_2 layers to expose an active region of the transistor over a portion of said collector region;

b. non-selectively depositing a p type SiGe layer over said field oxide layer and into said window;

c. non-selectively depositing an n type Si layer over said p type SiGe layer;

d. depositing a dielectric layer over said n type Si layer;

e. opening at least first, second, and third contact windows through said dielectric layer, said first window defining an emitter contact window exposing said n type Si layer said second window defining a base contact exposing said p type SiGe layer, and said third contact window exposing said collector region; and

f. metalizing contacts in said first, second and third windows;

g. non-selectively depositing a second p type polycrystalline Si layer over said SiO_2 layer and into said active region prior to commencing step b; and

h. removing said second polycrystalline Si layer of step g. from a bottom part of said window in said active region, and said second polycrystalline Si layer of step g. and said SiO_2 layer from a region overlying said first p^+-type polycrystalline Si layer, prior to commencing step b.

5,633,180

METHOD OF FORMING P-TYPE ISLANDS OVER P-TYPE BURIED LAYER

George Bajor, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 1, 1995, Ser. No. 456,727

Int. Cl.[6] **H01L** *21/265*

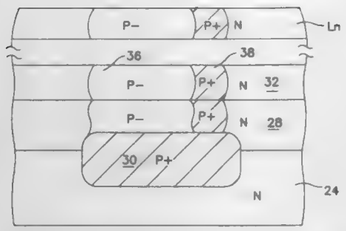
U.S. Cl. 438—358 **19 Claims**

1. A method of fabricating a vertical conductive region in a semiconductor device, the method comprising the steps of:

(a) growing a first epitaxial layer of a first conductivity type on a substrate having a first region therein of a second conductivity type;

(b) implanting a dopant of the second conductivity type into the first epitaxial layer over the first region so that together with an up-diffusion from the first region, the first region is extended vertically to a top of the first epitaxial layer;

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(c) growing plural second epitaxial layers of the first conductivity type atop the first layer; and

(d) implanting a dopant of the second conductivity type into each of the second layers over the first region before a next one of the second layers is grown so that the first region is extended vertically to a top of the second layers,

whereby the vertically extended first region forms a unitary vertical conductive region in the semiconductor device.

5,633,181

FABRICATION METHOD OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING CAPACITORS, BIPOLAR TRANSISTORS AND IGFETS

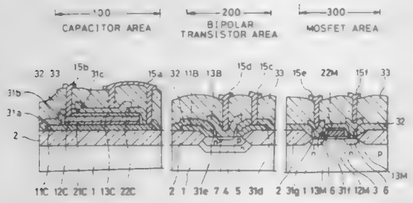
Shigeru Hayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,836

Claims priority, application Japan, Sep. 29, 1994, 6-235155

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—234 **11 Claims**



1. In a fabrication method of a semiconductor device containing capacitors, bipolar transistors and IGFETs on or over a semiconductor substrate, said capacitors being placed in capacitor areas, said bipolar transistors being placed in bipolar transistor areas, and said IGFETs being placed in IGFET areas;

each of said capacitors having a multi-layer structure of a first capacitor electrode located at a nearest level to said substrate, a first dielectric formed on said first capacitor electrode, a second capacitor electrode formed on said first dielectric, a second dielectric formed on said second capacitor electrode, and a third capacitor electrode formed on said second dielectric;

each of said bipolar transistors having a base electrode contacted with a base region formed in said substrate, and an emitter electrode contacted with an emitter region formed in said substrate;

each of said IGFETs having a gate insulator film formed on said substrate, and a gate electrode formed on said gate insulator film;

said method comprising the steps of:

(a) forming a first patterned conductor film to be contacted with said substrate in said bipolar transistor areas, said first conductor film having contours of said first capacitor electrodes in said capacitor areas and contours of said base electrodes in said bipolar transistor areas;

(b) forming a first patterned insulator film on said first capacitor electrodes to produce said first dielectric;

(c) forming a second patterned conductor film on said first capacitor electrodes and a gate insulator film formed on said substrate in said IGFET areas, said second conductor film having contours of said second capacitor electrodes in said capacitor areas and contours of aid gate electrodes in said IGFET areas;

(d) forming a second patterned insulator film on said second capacitor electrodes to produce said second dielectric;

(e) forming a third patterned conductor film on said second dielectric, said base regions and source/drain regions formed in said substrate in said IGFET areas, said third conductor film having contours of said third capacitor electrodes in said capacitor areas and contours of said emitter electrodes in said bipolar transistor areas.

5,633,182

METHOD OF MANUFACTURING AN IMAGE DISPLAY DEVICE WITH REDUCED CELL GAP VARIATION

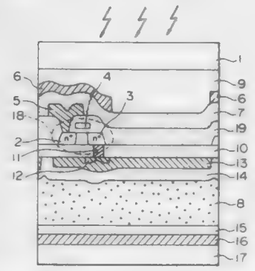
Mamoru Miyawaki, Isehara; Shigeki Kondo, Hiratsuka; Yoshio Nakamura, Atsugi, and Tetsunobu Kouchi, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 235,787, Apr. 29, 1994, which is a division of Ser. No. 984,099, Dec. 1, 1992, Pat. No. 5,317,433. This application Dec. 12, 1995, Ser. No. 570,809

Claims priority, application Japan, Dec. 2, 1991, 3-341761; Nov. 13, 1992, 4-327570

Int. Cl.[6] H01L *21/84*

U.S. Cl. 438—30 **12 Claims**



1. A method of manufacturing an image display device, comprising the steps of:

preparing a first substrate comprising a first substrate base and a second substrate base, said first substrate base prepared by forming a porous layer by anodizing single crystal silicon, forming an epitaxial layer of single crystal silicon on said porous layer, and forming a silicon oxide film on said epitaxial layer;

preparing said second substrate base by forming on single crystal silicon a nitrogen-containing silicon film and then by forming a silicon oxide film on said nitrogen-containing silicon film;

opposing said silicon oxide films of said first and second substrate bases and then heat coupling said first and second substrate bases to each other;

removing at least said porous layer of said first substrate base;

removing a portion of said epitaxial layer of said first base;

forming a transistor in a remaining portion of said epitaxial layer;

removing the single crystal silicon on said second substrate base;

forming an opening in said silicon film containing nitrogen and said silicon oxide films of said second substrate base;

providing an interconnection electrically connecting said transistor in at least said opening;

forming on said nitrogen-containing silicon film an electrode layer electrically connected to said interconnection;

forming an insulating layer on said electrode layer;

preparing a second substrate having an electrode;

orienting said first and second substrates such that the electrode on said second substrate is opposed to said electrode layer; and

providing a liquid crystal layer between said first and second substrates.

5,633,183

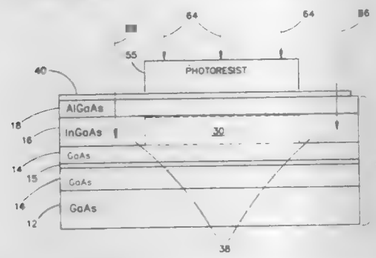
FET HAVING MINIMIZED PARASITIC GATE CAPACITANCE

Stanley E. Swirhun, Boulder, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 176,599, Jan. 3, 1994, Pat. No. 5,461,244. This application Jul. 12, 1995, Ser. No. 500,649

Int. Cl.[6] H01L *21/265;21/20*

U.S. Cl. 438—285 **2 Claims**



1. A method for fabricating a field effect transistor, having minimal parasitic gate capacitance, comprising:

forming a buffer layer having a pulse doped layer inserted into said buffer layer, on a substrate;

forming a channel layer with an active region for a source, gate and drain, on said buffer layer;

forming a gate insulator layer on said channel layer;

forming a first layer of gate metal on said gate insulator layer;

forming a photoresist layer on said first layer of gate metal, over the active region of the channel layer;

ion implanting through a portion of said first layer of gate metal, gate insulator layer and channel layer, resulting in a non conducting channel layer around the active region, the active region of the channel layer remaining conducting;

removing said photoresist layer;

forming a second gate metal layer on said first gate metal layer; and

etching portions of the second and first gate metal layers according to a pattern that results in a metal gate pad over the non conducting channel layer and at least one metal gate finger formed from the second and first gate metal layers over the active region of the conducting channel layer.

5,633,184

METHOD OF MAKING SEMICONDUCTOR DEVICE WITH FLOATING BATE

Katsuhiko Tamura; Yukari Imai, and Naoko Otani, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

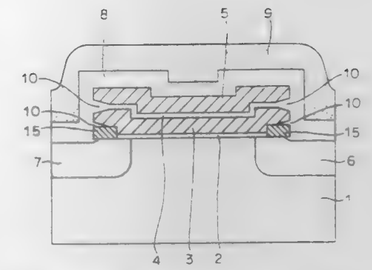
Division of Ser. No. 114,274, Aug. 31, 1993, Pat. No. 5,434,813. This application Feb. 9, 1995, Ser. No. 386,367

Claims priority, application Japan, Sep. 2, 1992, 4-234757; Aug. 5, 1993, 5-194881

Int. Cl.[6] H01C *21/8247;21/265*

U.S. Cl. 438—264 **20 Claims**

1. A manufacturing method of a semiconductor memory device including a semiconductor substrate of a first conductivity type having a main surface, a pair of impurity regions of a second conductivity type formed on said main surface of said semiconductor substrate and spaced from each other by a distance with a channel region therebetween, a charge accumulating electrode, and a control electrode, comprising the steps of:



forming a first insulating layer having a first thickness and formed at least on that region of said main surface of said semiconductor substrate on which said channel region is formed;

forming a second insulating layer having a second thickness larger than said first thickness at least on a region, on which one of said impurity regions is formed, of said main surface of said semiconductor substrate;

forming a charge accumulating electrode layer on said first insulating layer and said second insulating layer;

forming a control electrode layer on said charge accumulating electrode layer with a third insulating layer therebetween;

patterning said control electrode layer, said third insulating layer, said charge accumulating electrode layer and said second insulating layer to form said control electrode and said charge accumulating electrode; and

implanting impurity into said semiconductor substrate, using said control electrode and said charge accumulating electrode as a mask, to form said pair of impurity regions of said second conductivity type.

5,633,185

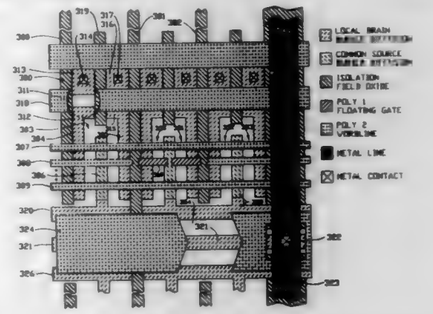
METHOD OF MAKING A NON-VOLATILE MEMORY CELL

Tom Dang-Hsing Yiu, Milpitas, Calif.; Fuchia Shone, Hsinchu, Taiwan; Tien-Ler Lin, Cupertino, and Ling Chen, Sunnyvale, both of Calif., assignors to Macronix International Co., Ltd., Hsinchu, Taiwan

Continuation of Ser. No. 67,519, May 25, 1993, Pat. No. 5,453,391, which is a division of Ser. No. 823,882, Jan. 22, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 390,775

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 438—258 **15 Claims**



1. A method for fabricating an array of contactless floating gate memory devices on a substrate, comprising:

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establishing first insulating material over the substrate at least in elongated channel regions;

establishing a floating gate conductive material over the first insulating material at least in the elongated channel regions;

establishing a control gate insulating material over the floating gate conductive material;

removing the control gate insulating material and the floating gate conductive material in a pattern to form a plurality of lines of floating gate conductive material with control gate insulating material over the lines and to expose elongated source diffusion regions and drain diffusion regions in the substrate extending along the substrate between the plurality of lines, the source diffusion regions and drain diffusion regions aligned on at least one side with the lines, the drain diffusion regions extending at one end past the source diffusion regions in one direction, the drain diffusion regions being widened at the one end to form a drain region of a first set of select transistors, the source diffusion regions being formed to couple to a second plurality of drain diffusion regions, the second plurality of drain diffusion regions being elongated in a direction substantially orthogonal to the direction of the plurality of lines, the second drain diffusion regions to form the drains of a second set of select transistors, each second drain diffusion region being coupled to at least two of said source diffusion regions;

doping the drain diffusion regions and the second drain diffusion regions;

doping the source diffusion regions;

growing an insulating layer over the source and drain diffusion regions and exposed portions of said floating gate conductive material on sides of the lines;

establishing a control gate conductive material over the control gate insulating material and the insulating layer; and

removing the control gate conductive material, and portions of the control gate insulating material over the lines and the floating gate conductive material in a pattern to form wordlines over the substrate and substantially perpendicular to the elongated source and drain diffusion regions, and to form floating gates under the wordlines, so that a plurality of columns of contactless floating gate transistors is formed, and the drains of the contactless floating gate transistors in each column are formed in one of the drain diffusion regions and the sources of the contactless floating gate transistors in each column are formed in one of the source diffusion regions.

5,633,186

PROCESS FOR FABRICATING A NON-VOLATILE MEMORY CELL IN A SEMICONDUCTOR DEVICE

Danny P. C. Shum; Ko-Min Chang, and William J. Taylor, Jr., all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 14, 1995, Ser. No. 515,077
Int. Cl.[6] H01L *21/8247;21/265*
U.S. Cl. 438—264 **9 Claims**

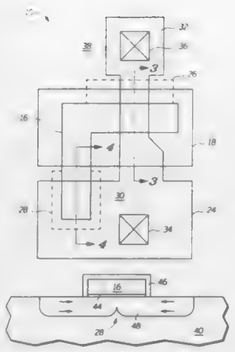
3. A process for fabricating a non-volatile memory cell in a semiconductor device comprising the steps of:

providing a semiconductor substrate of a first conductivity type;

forming a dielectric layer overlying the semiconductor substrate, the dielectric layer having a thickness sufficient to allow transportation of electrical charge therethrough;

forming a gate electrode overlying the dielectric layer;

introducing dopant atoms of a second conductivity type into the semiconductor substrate on either side of the gate electrode to form two separate doped regions; and



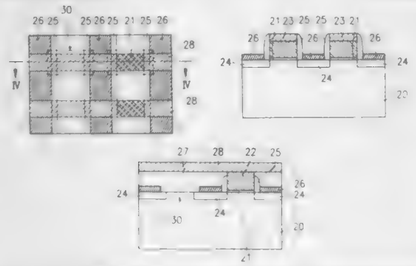
applying thermal energy to the semiconductor substrate to laterally diffuse the dopant atoms from each doped region, such that a continuous doped region is formed underlying the gate electrode.

5,633,187

PROCESS FOR FABRICATING READ-ONLY MEMORY CELLS

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 22, 1995, Ser. No. 532,305
Int. Cl.[6] H01L *21/265;21/70;27/00;21/44*
U.S. Cl. 438—275 **17 Claims**



1. A process for fabricating memory cells of a read-only memory device comprising steps of:

forming a gate oxide layer, a first polysilicon layer, and a first silicide layer on a surface of a silicon substrate, and patterning the gate oxide layer, the first polysilicon layer and the first silicide layer to form parallel strip-shaped configurations extending along a first direction on the surface of said silicon substrate;

implanting impurities into said silicon substrate within areas between said parallel strip-shaped configurations, thereby constituting buried bit lines of said memory cells;

forming sidewall spacers on sidewalls of said parallel strip-shaped configurations;

forming a second silicide layer on a surface of said buried bit lines in a self-aligned process to improve electrical conductivity of said buried bit lines;

removing portions of said first silicide layer and said first polysilicon layer to form a coding region of said read-only memory device;

forming an insulating layer to fill said coding region and cover the surface of said silicon substrate;

polishing a surface of said insulating layer to an extent revealing a surface of said first polysilicon layer;

forming a second polysilicon layer on said silicon substrate covering the surface of said insulating layer and said first polysilicon layer; and

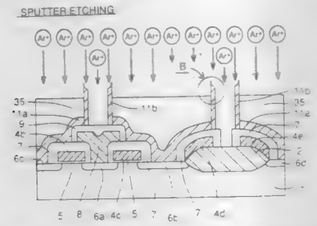
etching said second polysilicon layer to form parallel strip-shaped word lines that extend in a second direction on a plane of said silicon substrate, said second direction being substantially orthogonal to said first direction, wherein portions of said first polysilicon layer not being covered by said word lines are also removed in said step of etching.

5,633,188

METHOD OF MANUFACTURING A SEMICONDUCTOR MEMORY DEVICE HAVING A CAPACITOR

Toshiaki Ogawa, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 63,820, May 20, 1993, Pat. No. 5,481,127.
This application Oct. 25, 1995, Ser. No. 548,069
Claims priority, application Japan, Nov. 4, 1992, 4-294988
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—396 **18 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first insulating layer located on a major surface of a semiconductor substrate and having an opening reaching said major surface of said semiconductor substrate;

forming a first conductive layer located in said opening and being in contact with a surface of said first insulating layer;

forming a second insulating layer on a region of said first conductive layer;

forming a second conductive layer covering at least said second insulating layer;

removing said second conductive layer at least from an upper surface of said second insulating layer, thereby exposing said upper surface of said second insulating layer;

etching said exposed second insulating layer to remove a portion of said second insulating layer leaving a residual portion of said second insulating layer;

sputter-etching with inert gas said second conductive layer to substantially round a tip end of said second conductive layer and flatten a side surface of said second conductive layer;

forming a capacitor insulating layer covering said second conductive layer after removing the residual second insulating layer; and

forming a third conductive layer covering said capacitor insulating layer.

5,633,189

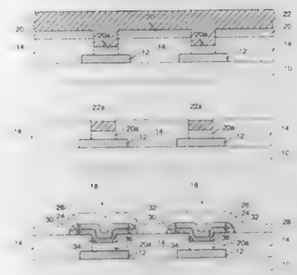
METHOD OF MAKING METAL TO METAL ANTIFUSE

Yeouchung Yen, San Jose, and Shih-Oh Chen, Los Altos, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Division of Ser. No. 328,247, Oct. 24, 1994, Pat. No. 5,543,656, which is a continuation-in-part of Ser. No. 284,054, Aug. 1, 1994, and Ser. No. 319,170, Oct. 6, 1994, Pat. No. 5,541,441.
This application Apr. 18, 1995, Ser. No. 425,122
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—600 **4 Claims**

1. A process for fabricating a metal-to-metal antifuse comprising the following steps:

a) forming a bottom electrode having an upper surface over an insulating portion of a microcircuit structure;



b) forming an interlayer dielectric layer over said bottom electrode;

c) etching an antifuse cell opening in and through said interlayer dielectric layer so as to expose a portion of said upper surface of said bottom electrode;

d) depositing a first barrier metal layer having a first portion over said interlayer dielectric layer and a second flat portion separated from said first portion and in said antifuse cell opening and over and in physical and electrical contact with said bottom electrode using the technique of collimated sputter deposition;

e) spin coating a layer of photoresist over said first barrier metal layer;

f) etching back said layer of photoresist and said first barrier metal layer so as to leave only a portion of said layer of photoresist in said antifuse cell opening over said second flat portion of said first barrier metal layer

g) stripping said portion of said layer of photoresist from within said antifuse cell opening;

h) depositing an antifuse material layer over said flat portion of said first barrier metal layer and over said interlayer dielectric layer;

i) depositing a second barrier metal layer over said antifuse material layer;

j) patterning and etching said antifuse material layer and said second barrier metal layer; and

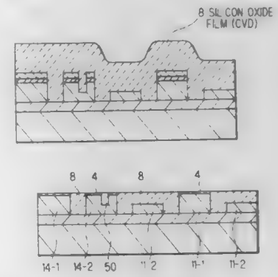
k) forming a top electrode over said second barrier metal layer.

5,633,190

SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

Mitsuhiro Sugiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 526,177, Sep. 11, 1995, Pat. No. 5,587,612.
This application Sep. 11, 1996, Ser. No. 711,926
Claims priority, application Japan, Sep. 9, 1994, 6-215924
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—404 **3 Claims**



2. A method for making a semiconductor device, comprising the steps of:

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forming a plurality of island semiconductor regions, a first dummy semiconductor region which has a height nearly equal to said island semiconductor regions and a second dummy semiconductor region which is lower than said first dummy semiconductor region by partially removing a semiconductor layer on a insulating layer;

depositing an insulator on the entire surface of said insulator layer including said island semiconductor regions, said first and second dummy semiconductor regions to a height higher than said island semiconductor regions; and

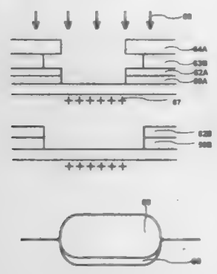
polishing said insulator near to the top surfaces of said island semiconductor regions.

5,633,191

PROCESS FOR MINIMIZING ENCROACHMENT EFFECT OF FIELD ISOLATION STRUCTURE

Fang-Ching Chao, Hsinchu, Taiwan, assignor to United Microelectronics, Corp., Hsinchu, Taiwan

Filed Aug. 19, 1996, Ser. No. 699,608
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—448 **30 Claims**



1. A process for forming isolation regions on a semiconductor substrate, the process comprising:

forming a polysilicon layer on a laminate comprising a substrate having thereon a pad oxide, and stacked layers on the pad oxide;

forming an overhang layer on the polysilicon layer;

forming an active region photo-resist mask on the overhang layer;

removing unmasked portions of the overhang layer and the polysilicon layer;

isotropically etching the polysilicon layer under the overhang layer so as to form an overhang of said overhang layer over said polysilicon layer;

removing the photo-resist mask;

anisotropically etching the stacked layers to remove portions thereof not covered by the overhang layer to expose a portion of the pad oxide;

implanting ions into a portion of the substrate, wherein the overhang layer serving as an implant mask;

removing the overhang layer;

anisotropically etching the stacked layers, wherein the polysilicon layer serving as an etching mask; and

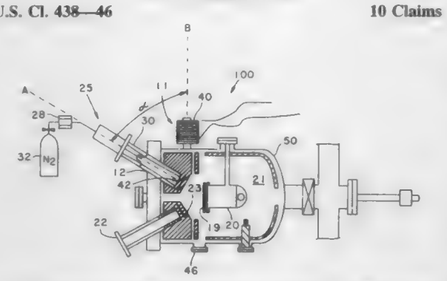
oxidation so as to form the isolation regions.

5,633,192

METHOD FOR EPITAXIALLY GROWING GALLIUM NITRIDE LAYERS

Theodore D. Moustakas, Dover, and Richard J. Molnar, Medford, both of Mass., assignors to Boston University, Boston, Mass.

Continuation-in-part of Ser. No. 113,964, Aug. 30, 1993, Pat. No. 5,385,862, which is a continuation of Ser. No. 670,692, Mar. 18, 1991, abandoned. This application Jan. 13, 1995, Ser. No. 371,708
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—46 **10 Claims**



1. A method for epitaxially growing GaN layers comprising the steps of:

providing a substrate within an epitaxial growth chamber;

introducing molecular gallium into the growth chamber and directing the molecular gallium toward the substrate;

introducing activated nitrogen from a nitrogen source into the growth chamber and directing the activated nitrogen toward the substrate, the activated nitrogen comprising ionic and neutral excited species, wherein the neutral excited species comprise atomic species and excited molecular species;

controlling the ratio of the neutral excited species versus the ionic nitrogen species by varying the diameter of an exit aperture of the nitrogen source; and

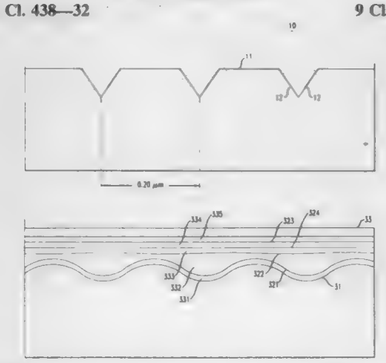
growing a GaN layer on the substrate.

5,633,193

METHOD OF MAKING AN INP-BASED DEVICE COMPRISING SEMICONDUCTOR GROWTH ON A NON-PLANAR SURFACE

James N. Baillargeon, Springfield; Alfred Y. Cho, Summit; Sung-Nee G. Chu, Murray Hill, and Wen-Yen Hwang, Westfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 22, 1996, Ser. No. 652,285
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—32 **9 Claims**



1. Method of making an indium phosphide-based III/V semiconductor device comprising

a) providing a III/V semiconductor body having a major surface;

b) patterning the major surface such that non-planar surface features are formed;

c) growing a phosphorus-containing III/V semiconductor material on the patterned major surface; and

d) carrying out one or more further steps towards completion of the device;

CHARACTERIZED IN THAT the method further comprises

e) heating, in a substantially evacuated chamber, the semiconductor body to a mass-transport temperature and exposing, in the substantially evacuated chamber, the patterned major surface to a flux of at least phosphorus from a solid phosphorus flux source for a time effective for providing a shape change of the non-planar surface features by mass-transport; and

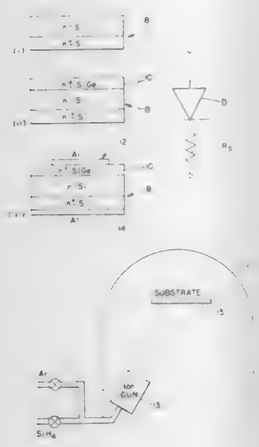
f) carrying out step c) without exposing the semiconductor body to an ambient atmosphere, with the semiconductor body being at a first growth temperature not larger than said mass-transport temperature during at least an initial portion of step c).

5,633,194

LOW TEMPERATURE ION-BEAM ASSISTED DEPOSITION METHODS FOR REALIZING SIGE/SI HETEROSTRUCTURE

C. R. Selvakumar; S. Mohajerzadeh, and D. E. Brodie, all of Waterloo, Canada, assignors to The University of Waterloo, Ontario, Canada

Filed Apr. 19, 1995, Ser. No. 424,208
Int. Cl.[6] H01L *21/20*
U.S. Cl. 117—103 **20 Claims**



1. A low temperature ion-beam deposition process, comprising the steps of:

a) cleaning at least one substrate;

b) subjecting said at least one substrate to a vacuum of at least 2×10^{-4} Torr;

c) heating said at least one substrate to a temperature of 280° C.;

d) generating an ion beam at an energy of approximately 50 eV and a current of approximately 13 mA; and,

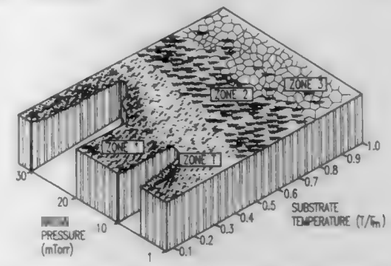
e) directing an ion beam at an angle of approximately 20° toward said at least one substrate, said ion beam comprising ion-dissociated gas molecules of an element, thereby growing a thin epitaxial film of germanium on said at least one substrate.

5,633,195

LASER PLANARIZATION OF ZONE 1 DEPOSITED METAL FILMS FOR SUBMICRON METAL INTERCONNECTS

William L. Guthrie, Hopewell Junction, and Naftali E. Lustig, Croton on Hudson, both of N.Y., assignors to International Business Machines, Corp., Hopewell Junction, N.Y.

Continuation of Ser. No. 298,681, Aug. 31, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,376
Int. Cl.[6] H01L *21/26*
U.S. Cl. 438—662 **9 Claims**



1. A method of laser planarizing metallic films consisting essentially of the steps of:

forming a metallic film under zone 1 deposition conditions by depositing a metallic film on a substrate at a working gas pressure sufficiently high to produce a metallic film having a columnar morphology and a textured surface on the film, the textured film having a lower optical reflectivity and higher absorption of laser radiation of a range of wavelengths than said metallic film as formed with a smooth surface under other than zone 1 deposition conditions; and

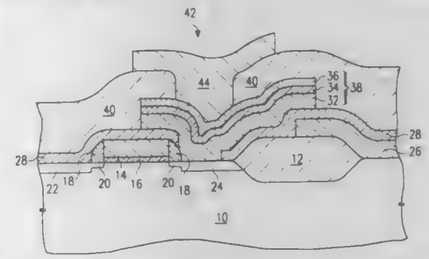
heating the textured film by means of laser radiation of said range of wavelengths to melt the film, whereby a lower minimum fluence of the laser radiation is required to melt or nearly melt the film than required for said smooth metallic film.

5,633,196

METHOD OF FORMING A BARRIER AND LANDING PAD STRUCTURE IN AN INTEGRATED CIRCUIT

Mehdi Zamanian, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 31, 1994, Ser. No. 251,025
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—653 **18 Claims**



1. A method of forming a portion of a semiconductor integrated circuit; comprising the steps of:

forming an active region on a substrate;

forming a first dielectric layer having a first opening therethrough exposing a portion of the active region;

forming a landing pad over the exposed portion of the active region and a portion of the first dielectric layer wherein the landing pad comprises a metal silicide/metal composite bilayer overlying a polysilicon layer;

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forming a second dielectric layer over the landing pad and a portion of the first dielectric layer, wherein the second dielectric layer has a second opening therethrough exposing a portion of the landing pad; and

forming a conductive layer in the second opening and over a portion of the second dielectric layer.

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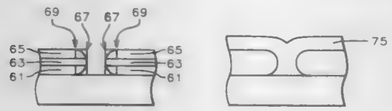
METALLIZATION TO IMPROVE ELECTROMIGRATION RESISTANCE BY ETCHING CONCAVO-CONCAVE OPENING

Water Lur, Taipei, and Jiun Y. Wu, Dou-Lio, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 241,005, May 11, 1994, Pat. No. 5,464,794. This application Sep. 29, 1995, Ser. No. 536,858

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—668 **3 Claims**



1. A method of forming contact openings having concavo-concave profiles in the fabrication of an integrated circuit, the method comprising:

providing a first undoped layer of tetraethoxysilane (TEOS) oxide over the surface of a semiconductor substrate;

depositing a doped layer of TEOS oxide over said first undoped TEOS oxide layer;

depositing a second undoped layer of TEOS oxide over said doped TEOS oxide layer;

anisotropically etching through said three TEOS oxide layers to provide a contact opening with vertical sidewalls;

wet etching said three TEOS oxide layers wherein said first and second undoped TEOS oxide layers etch faster than said doped TEOS oxide layer, wherein each said vertical sidewall is transformed into a concave shape and wherein said contact opening will have a concavo-concave shape; and

filling said contact openings with conductive material.

5,633,198

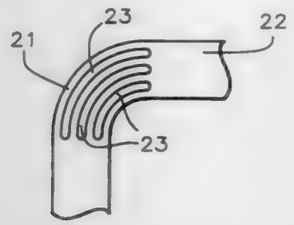
METHOD OF FORMING WIRING WITH GAPS IN BEND TO IMPROVE ELECTROMIGRATION RESISTANCE

Water Lur, Taipei, and Jiun Y. Wu, Dou-Lio, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 241,005, May 11, 1994, Pat. No. 5,464,794. This application Sep. 29, 1995, Ser. No. 536,859

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—618 **5 Claims**



1. The method of forming gaps within metal lines in the fabrication of an integrated circuit wherein current density of said integrated circuit is lower than the current density of an integrated circuit having no gaps within said lines comprising:

etching openings to form gaps within said metal lines where said metal lines bend wherein said gaps act to split the flow of said high current so that said flow is uniform through the width of said metal lines thereby reducing said current density at the critical region where said metal lines bend; and

filling said gaps formed at the region where said metal lines bend with silicon dioxide wherein voids are formed within said silicon dioxide and wherein said voids act to reduce system stress.

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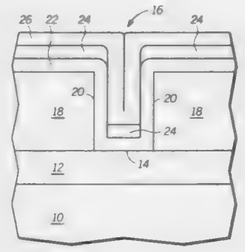
PROCESS FOR FABRICATING A METALLIZED INTERCONNECT STRUCTURE IN A SEMICONDUCTOR DEVICE

Robert W. Fiordalice, and Roc Blumenthal, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 2, 1995, Ser. No. 556,787

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—642 **7 Claims**



1. A process for fabricating a metallized interconnect structure in a semiconductor device comprising the steps of:

providing a dielectric layer having a via opening therein, wherein the via opening is characterized by substantially vertical sidewalls and a bottom surface;

chemical vapor depositing a first aluminum layer to overlie the substantially vertical sidewalls and the bottom surface;

forming a doping layer comprising chrome overlying the first aluminum layer,

wherein the doping layer within the via opening is confined to a portion of the first aluminum layer overlying the bottom surface; and

chemical vapor depositing a second aluminum layer to overlie the doping layer and to fill the via.

5,633,200

PROCESS FOR MANUFACTURING A LARGE GRAIN TUNGSTEN NITRIDE FILM AND PROCESS FOR MANUFACTURING A LIGHTLY NITRIDED TITANIUM SALICIDE DIFFUSION BARRIER WITH A LARGE GRAIN TUNGSTEN NITRIDE COVER LAYER

Yongjun Hu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

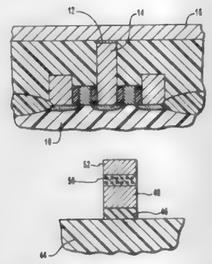
Filed May 24, 1996, Ser. No. 653,428

Int. Cl.[6] H01L *21/283*

U.S. Cl. 438—653 **33 Claims**

32. A process for forming a titanium salicide stack with a tungsten nitride cover layer, the process comprising:

(a) forming a light nitridation on a polysilicon surface layer located on a semiconductor wafer by implanting nitrogen into the polysilicon surface layer at a power of approximately 10 KeV with a dosage of about 10^{13} nitrogen atoms per square centimeter of polysilicon surface layer;



(b) depositing a layer of titanium on the polysilicon surface layer with physical vapor deposition in a physical vapor deposition chamber having an environment of a carrier gas and a volume of gaseous nitrogen in the range of between zero and three percent;

(c) annealing the layer of titanium in an environment of gaseous nitrogen to form a layer of titanium silicide;

(d) creating an environment comprising an inert gas and a variable gaseous nitrogen content in a physical vapor deposition chamber;

(e) depositing a layer of tungsten on the layer of titanium silicide with physical vapor deposition within the physical vapor deposition chamber in the environment comprising an inert gas and a variable gaseous nitrogen content, with the variable gaseous nitrogen content of the environment comprising an inert gas and a gaseous nitrogen content selected such that a light nucleation of tungsten nitride nuclei are incorporated into the layer of tungsten, the tungsten nitride nuclei being substantially uniformly dispersed throughout the tungsten layer with substantially no grain growth occurring while the layer tungsten is deposited; and

(f) growing tungsten nitride grains in the tungsten layer in an environment of gaseous nitrogen at a temperature of between about 400° C. and 700° C. to form a substantially smooth layer of tungsten nitride with a large grain crystalline structure.

5,633,201

METHOD FOR FORMING TUNGSTEN PLUGS IN CONTACT HOLES OF A SEMICONDUCTOR DEVICE

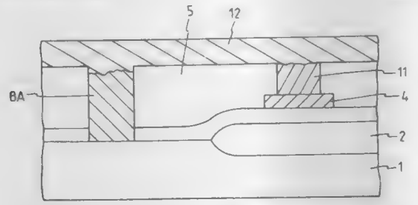
Kyeong K. Choi, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries, Co., Ltd., Kyoungki-do, Rep. of Korea

Continuation-in-part of Ser. No. 422,771, Apr. 14, 1995, abandoned, which is a continuation of Ser. No. 159,236, Nov. 30, 1993, abandoned. This application Oct. 3, 1995, Ser. No. 538,466

Claims priority, application Rep. of Korea, Nov. 30, 1992, 92-22796

Int. Cl.[6] H01L *21/283*

U.S. Cl. 438—620 **4 Claims**



1. A method for fully burying tungsten plugs in contact holes having different depths, wherein said contact holes are in a semiconductor device which is made up of a substrate, a first insulating layer disposed over said substrate, a second insulating layer disposed over said first insulating layer, and a conductive wire atop a field oxide film said conductive wire disposed under said second insulating film, and having a photosensitive film disposed over said second insulating film; said method comprising the steps of:

forming a deep, first contact hole by etching through the photosensitive film, the second insulating layer and the first insulating layer to an active region of the substrate;

depositing tungsten on said active region to form a first contact plug filling said first contact hole completely;

chemically treating the upper surface of said first tungsten plug with a mixture of BCl_3, Cl_2, and HF in an argon carrier, in a plasma reactor so as to prevent further growth of said first contact plug;

forming a second photosensitive film on said second insulating layer;

forming a second, shallow, contact hole by etching through said second photosensitive film and through said second insulating layer to the conductive wire, wherein said conductive wire is positioned atop a field oxide film;

depositing tungsten under conditions that prevent growth of said first contact plug, to form a second contact plug filling said second contact hole completely.

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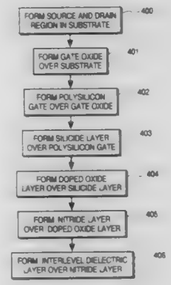
HIGH TENSILE NITRIDE LAYER

Lawrence N. Brigham, Beaverton, Oreg.; Yung-Huei Lee, Sunnyvale, Calif.; Robert S. Chau, and Raymond E. Cotner, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 269,436, Sep. 30, 1994, abandoned. This application Jun. 6, 1996, Ser. No. 660,734

Int. Cl.[6] H01L *21/44;21/02*

U.S. Cl. 438—763 **11 Claims**



1. A method of forming a semiconductor device, said method comprising the steps of:

forming a transistor on said semiconductor substrate, said transistor having at least one silicide region;

forming a doped oxide layer on said transistor including said silicide layer;

forming a nitride layer having a tensile stress over said doped oxide layer; and

forming an interlayer dielectric on said nitride layer.

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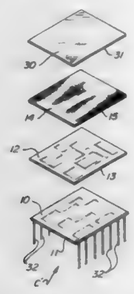
METHOD OF MAKING A MINIATURIZED ELECTRONIC IMAGING CHIP FROM A STANDARD IMAGING CHIP

Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104

Division of Ser. No. 155,996, Nov. 23, 1993, Pat. No. 5,495,114, which is a continuation-in-part of Ser. No. 954,550, Sep. 30, 1992, abandoned. This application May 5, 1995, Ser. No. 435,997

Int. Cl.[6] H01L *31/0203;31/18;21/60*

U.S. Cl. 438—66 2 Claims



1. A method of forming a miniaturized electronic imaging chip from a standard imaging chip, the standard imaging chip having a substrate with a first peripheral edge defining a first area, and having stratified layers which include at least one interconnect layer, through which an image is normally projected, a pixel layer for receiving the image, a silicon layer having a second peripheral edge defining a second area which is smaller than the first area, the substrate being connected to first ends of connector pins, and having electrical leads connected between the interconnect layer and electrical contacts on the substrate to which the first ends of the connector pins are attached, the connector pins having second ends attached to circuitry which incorporates the standard imaging chip, said method comprising the steps of:

removing the electrical leads;

removing the at least one interconnect layer, pixel layer, and silicon layer from the substrate;

shaving the silicon layer to a thickness which allows passage of a light image therethrough;

bump bonding new lead to the interconnect layer within the second area of the shaved silicon layer; and

reversing the chip so that a light image is projectable through the shaved silicon layer, the new leads being directly attachable to the circuitry.

5,633,204

METHOD AND APPARATUS FOR FORMING BUMP STRUCTURE USED FOR FLIP-CHIP MOUNTING, THE BUMP STRUCTURE AND THE FLIP-CHIP

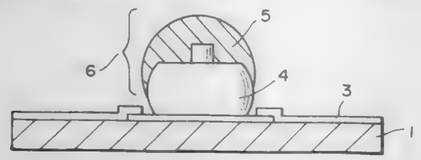
Masamoto Tago, and Kei Tanaka, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 339,680, Nov. 14, 1994, Pat. No. 5,508,561. This application Jun. 6, 1995, Ser. No. 467,386

Claims priority, application Japan, Nov. 15, 1993, 5-283797; Dec. 17, 1993, 5-317587

Int. Cl.[6] H01L *21/60*

U.S. Cl. 438—614 5 Claims



1. A method of forming a bump comprising the steps of:

forming a ball made of a first conductive material, at a tip of a wire passing through a hole of a capillary;

forming a first bump by causing said capillary to press said ball to an electrode of a substrate, said first bump being substantially spherical and having its lower portion fixed to said electrode, and having a projected portion at a center portion on an upper surface thereof;

cutting off said wire from said first bump by causing said capillary to move away once from said first bump and a tip of said projected portion to be pressed at an end face of a tip of said capillary; and

supplying a second conductive material on said first bump, said second conductive material being melt and solidified,

whereby a second bump made of said second conductive material is formed in a semi-spherical form such that said first bump is covered but said electrode is not touched thereby.

5,633,205

LEAD FRAME AND PROCESS OF PRODUCING SUCH A FRAME

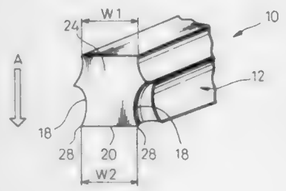
Kenichiro Tsuchiya; Toshiaki Ishizaki, and Masahiro Iwabuchi, all of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Aug. 11, 1995, Ser. No. 514,178

Claims priority, application Japan, Aug. 11, 1994, 6-189250

Int. Cl.[6] H01L *21/60*

U.S. Cl. 29—827 5 Claims



1. A process for making a lead frame used in a semiconductor device, comprising the steps of:

etching a metal foil, having a first surface and a second surface opposed to said first surface, to form a lead frame body comprising a plurality of inner leads, each of said inner leads having at least one bonding area on said first surface and two opposed side surfaces, and a connecting part connecting tip ends of said plurality of inner leads so as to be arranged side by side with respect to each other;

forming at least one recess, which reduces a width of the inner lead, on at least one of said two side surfaces at a position, between said boding area and said connecting part, on a cutting line, said recess forming step being simultaneously conducted with said etching step; and

cutting said lead frame body along said cutting line to separate said plurality of the tips of the inner leads into individual inner leads.

5,633,206

PROCESS FOR MANUFACTURING LEAD FRAME FOR SEMICONDUCTOR PACKAGE

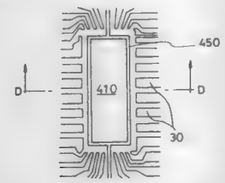
Sang H. Kim; Sung M. Sim; In P. Hong, all of Suwon, and Sang G. Lee, Cheonan, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 14, 1995, Ser. No. 557,540

Claims priority, application Rep. of Korea, Jul. 31, 1995, 1995-23471

Int. Cl.[6] H01L *21/60*

U.S. Cl. 29—827 5 Claims



1. A process for manufacturing lead frame, which comprises the steps of:

providing a lead frame comprising a pad having a back surface, inner leads, outer leads and dambars;

placing a layer of polyamic acid film on said back surface of said pad so that the polyamic acid film adheres to the back surface of the pad without using any other adhesive; and

thermally compressing said film by using a heat-generator to form polyimide film from said polyamic acid film and at the same time to cause the polyimide film to adhere to said back surface of said pad.

5,633,207

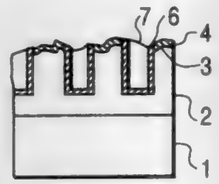
METHOD OF FORMING A WIRING LAYER FOR A SEMICONDUCTOR DEVICE

Hiroyuki Yano, Wappingers Falls, and Katsuya Okumura, Poughkeepsie, both of N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 14, 1994, Ser. No. 321,897

Int. Cl.[6] H01L *21/465;* B44L *1/22;* C03C *15/00;* C23F *1/00*

U.S. Cl. 438—645 10 Claims



1. A method of forming a wiring layer on a substrate for a semiconductor device, said method comprising the steps of:

forming a dielectric film on said substrate;

forming a first layer on said dielectric film;

selectively etching said first layer and said dielectric film to form a trench ending in said dielectric film;

forming a second layer on said dielectric film and said first layer wherein the hardness of said second layer is less than the hardness of said first layer;

polishing said second layer using said first layer as a polish stop;

selectively depositing a conductive layer on said second layer, but not on said first layer;

polishing said conductive layer using said first layer as a polish stop; and

removing said first layer.

5,633,208

PLANARIZATION OF INSULATION FILM USING LOW WETTINGNESS SURFACE

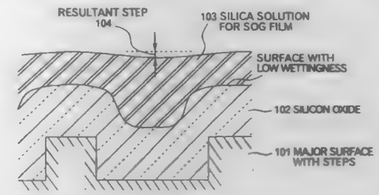
Hiraku Ishikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 1, 1994, Ser. No. 352,155

Claims priority, application Japan, Dec. 1, 1993, 5-301388

Int. Cl.[6] H01L *21/465*

U.S. Cl. 438—699 11 Claims



1. A method for planarizing an insulation film formed on an uneven surface, comprising:

a first step of forming said insulation film on said uneven surface, said insulation film having a lowered wettingness at least on a surface of said insulation film;

a second step of coating a hydrophilic hardenable solution on said insulation film formed by the first step;

a third step of hardening said hydrophilic hardenable solution to form a hardened film on said insulation film; and

a fourth step of etching back said hardened film toward said insulation film.

6. A method for planarizing an insulation film formed on an uneven surface, comprising:

a first step of forming a silicon oxide film on said uneven surface, said silicon oxide film having a lowered wettingness at least on the surface of said silicon oxide film;

a second step of coating a hydrophilic silica solution on said silicon oxide film;

a third step of hardening said silica solution to form a hardened film on said silicon oxide film; and

a fourth step of etching back said hardened film toward said silicon oxide film until said hardened film is completely removed.

5,633,209

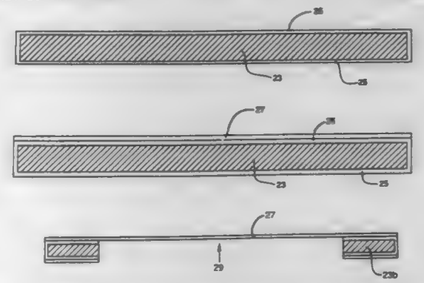
METHOD OF FORMING A CIRCUIT MEMBRANE WITH A POLYSILICON FILM

Glenn J. Leedy, Montecito, Calif., assignor to ELM Technology Corporation, Jackson, Wyo.

Continuation of Ser. No. 315,905, Sep. 30, 1994, which is a division of Ser. No. 865,412, Apr. 8, 1992, Pat. No. 5,354,695. This application Jun. 7, 1995, Ser. No. 474,448

Int. Cl.[6] H01L *21/465*

U.S. Cl. 435—228 H 1 Claim



1. A method of forming a circuit membrane comprising the steps of:

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providing a substrate having a principal surface and an opposing back surface;

forming a tensile film of polysilicon on both the principal and back surfaces;

depositing a low stress insulating membrane over the tensile film on the principal surface; and

etching away a central portion of the film on the back surface, and etching away the underlying portion of the substrate.

5,633,210

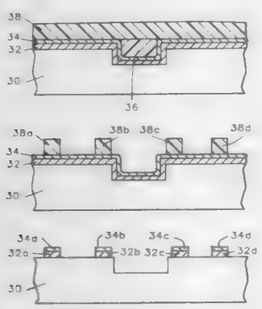
METHOD FOR FORMING DAMAGE FREE PATTERNED LAYERS ADJOINING THE EDGES OF HIGH STEP HEIGHT APERTURES

Bao R. Yang, I-Lan; Sen F. Chen, Taipei; Wen C. Chang, Tao Yuan, and Po-Tau Chu, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsinchu, Taiwan

Filed Apr. 29, 1996, Ser. No. 638,672

Int. Cl.[6] H01L *21/465*

U.S. Cl. 438—669 **23 Claims**



14. A method for forming a patterned final conductor layer comprising:

providing a semiconductor substrate, the semiconductor substrate having a kerf formed therein;

forming upon the semiconductor substrate and into the kerf a blanket final conductor layer, the blanket final conductor layer having a blanket conformal Anti-Reflective Coating (ARC) layer formed thereon, the blanket conformal Anti-Reflective Coating (ARC) layer having an aperture formed therein where the blanket final conductor layer is formed into the kerf;

forming a buffer layer into the aperture, the buffer layer substantially planarizing the blanket conformal Anti-Reflective Coating (ARC) layer;

forming then a blanket photoresist layer upon the semiconductor substrate; and,

patterning sequentially the blanket photoresist layer, the blanket Anti-Reflective Coating (ARC) layer and the blanket final conductor layer to form a patterned photoresist layer, a patterned Anti-Reflective Coating (ARC) layer and a patterned final conductor layer.

5,633,211

SEMICONDUCTOR DEVICE AND PROCESS

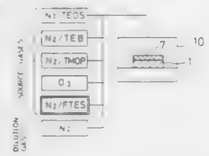
Shinichi Imai; Yuka Terai; Masanori Fukumoto; Kousaku Yano; Hiroyuki Umimoto; Shinji Odanaka, and Yasuo Mizuno, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ld., Osaka, Japan

Division of Ser. No. 37,450, Mar. 26, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 347,114

Claims priority, application Japan, Mar. 27, 1992, 4-070753; Apr. 15, 1992, 4-095040

Int. Cl.[6] H01L *21/02*

U.S. Cl. 438—760 **14 Claims**





1. A method of fabricating a semiconductor comprising a silicon oxide film having a matrix network on a semiconductor substrate, the method comprising the steps of:

depositing a solidified substance of a source gas onto the semiconductor substrate by means of a CVD process wherein the source gas comprises a main gas for forming the silicon oxide film and an additive gas obtained by substituting at least one of hydrogen in monosilane by fluorine; and

subjecting the solidified substance to thermal processing;

whereby the silicon oxide film is formed on the semiconductor substrate in which the matrix network is partially cut off by substitution of oxygen by fluorine.

5,633,212

PYROGENIC WET THERMAL OXIDATION OF SEMICONDUCTOR WAFERS

Tomohiro Yuuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

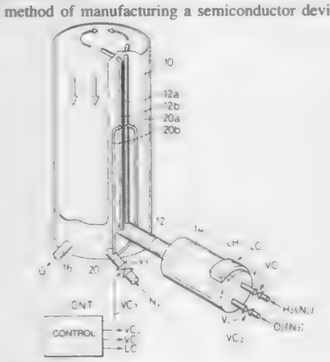
Filed Jul. 22, 1994, Ser. No. 279,738

Claims priority, application Japan, Jul. 24, 1993, 5-044645 U

Int. Cl.[6] H01L *21/316*

U.S. Cl. 438—773 **26 Claims**

1. A method of manufacturing a semiconductor device using a



furnace system including a main furnace chamber and an external

combustion chamber connected to the main furnace chamber upstream of the main furnace chamber, the method comprising the steps of:

(a) purging the furnace system with an inert gas;

(b) loading semiconductor wafers into the main furnace chamber;

(c) activating heating of the external combustion chamber;

(d) introducing oxygen into the furnace system;

(e) stopping the purging with the inert gas while providing dilute gas into the main furnace chamber without the dilute gas passing through the external combustion chamber;

(f) introducing hydrogen into the furnace system while maintaining the introduction of oxygen;

(g) stopping the heating of the external combustion chamber; and

(h) raising flow rates of the oxygen and the hydrogen to a desired level while stopping the provision of the dilute gas.

5,633,213

METHOD FOR IN SITU TAILORING THE COMPONENT OF CERAMIC ARTICLES

Michael K. Aghajanian; Marc S. Newkirk; Christopher R. Kennedy; Robert C. Kantner, all of Newark, Del.; Michael A. Rocazella, Oxford, Pa.; Jerry G. Weinstein, Newark, Del.; Danny R. White, Elkton, Md.; Gerhard H. Schiroky, Hockessin, and William B. Johnson, Newark, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

PCT No. PCT/US93/06064, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/00399, PCT Pub. Date Jan. 6, 1994

Continuation-in-part of Ser. No. 904,739, Jun. 26, 1992, Pat. No. 5,268,339, which is a continuation-in-part of Ser. No. 793,933, Nov. 14, 1991, Pat. No. 5,185,303, which is a continuation of Ser. No. 568,618, Aug. 16, 1990, Pat. No. 5,066,618, which is a continuation of Ser. No. 269,152, Nov. 9, 1988, abandoned, which is a continuation of Ser. No. 152,518, Feb. 5, 1988, Pat. No. 4,818,734, which is a continuation of Ser. No. 908,454, Sep. 17, 1986, abandoned. This PCT application Jun. 25, 1993, Ser. No. 356,335

Int. Cl.[6] C04B *35/65*

U.S. Cl. 501—87 **21 Claims**

1. A method for producing a ceramic body comprising infiltrating a permeable mass with an oxidation reaction product obtained by oxidation of a precursor metal comprising aluminum to form a polycrystalline material comprising (i) the oxidation reaction product of said precursor metal with a vapor-phase oxidant, and (ii) a metallic phase, said method comprising the steps of:

(a) forming a permeable mass comprising a filler material and at least one second material selected from the group consisting of boron carbide and silicon nitride or a preform of filler material and at least one second material selected from the group consisting of boron carbide and silicon nitride;

(b) orienting said permeable mass and a source of said precursor metal relative to each other so that formation of said oxidation reaction product of said precursor metal will occur into said permeable mass and towards said oxidant;

(c) heating said source of precursor metal and said permeable mass in the presence of said oxidant to a temperature above the melting point of said precursor metal but below the melting point of said oxidation reaction product to form a body of molten precursor metal;

(d) reacting said body of molten precursor metal with said oxidant at said temperature to permit said oxidation reaction product to form;

(e) maintaining at least a portion of said oxidation reaction product in contact with and between said molten precursor metal and said oxidant at said temperature to progressively draw molten precursor metal through said oxidation reaction product towards said oxidant to permit fresh oxidation reaction product to continue to form at an interface between said oxidant and previously formed oxidation reaction product that has infiltrated said permeable mass, and reacting said molten precursor metal with said at least one second material in said permeable mass, thereby forming at least one reaction product; and

(f) continuing step (e) at said temperature for a time sufficient to infiltrate at least a portion of said permeable mass with said polycrystalline material, thereby forming said ceramic body comprising (a) said oxidation reaction product; and (b) a metallic constituent comprising unreacted precursor metal and (c) at least one reaction product, wherein said at least one reaction product has a specific volume greater than the specific volume of said at least second material.

5,633,214

BORON NITRIDE-CONTAINING MATERIAL AND METHOD THEREOF

Hiroaki Nishio, and Hiroyuki Yoshida, both of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,959

Claims priority, application Japan, Jun. 30, 1994, 6-149669

Int. Cl.[6] C04B *35/583*

U.S. Cl. 501—96.4 **25 Claims**

1. A method for producing boron nitride containing material comprising the steps of:

preparing a mixed powder including a first boride and a first oxide, the boride consisting of boron and another element the first oxide being at least one oxide selected from the group consisting of TiO_2, ZrO_2, Cr_2O_3, Al_2O_3 and SiO_2;

heating the mixed powder in a nitriding atmosphere to reduce the first oxide by said another element in the boride, to a boron nitride and at least one selected from the group consisting of a second oxide having less bonded oxygen than the first oxide, an oxynitride, a nitride, a carbide and a second boride, resulting in a boron nitride containing material.

5,633,215

DIELECTRIC PORCELAIN COMPOSITION HAVING A HIGH DIELECTRIC CONSTANT AND A LOW SINTERING TEMPERATURE

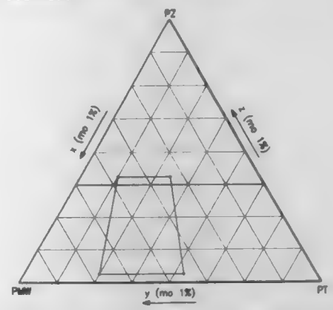
Toru Mori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 14, 1996, Ser. No. 601,586

Claims priority, application Japan, Feb. 20, 1995, 7-055088; Dec. 4, 1995, 7-315559

Int. Cl.[6] C04B *35/46;35/472*

U.S. Cl. 501—136 **5 Claims**



1. A dielectric porcelain composition including lead magnesium tungstate ($Pb(Mg_{1/2}W_{1/2})O_3$), lead titanate ($PbTiO_3$) and lead zirconate ($PbZrO_3$) as main components and in relative proportions within a region bounded by four straight line segments defined by four points of (0.725, 0.25, 0.025), (0.45, 0.525, 0.025), (0.30, 0.30, 0.40) and (0.475, 0.125, 0.40) in the ternary phase diagram of FIG. **1**, and wherein said main components are added with at least one rare earth oxide at a molar ratio in the range of 0.1–5.0 mol %.

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5,633,216

PROCESS FOR SWEETENING PETROLEUM CUTS WITHOUT REGULAR ADDITION OF ALKALINE SOLUTION USING A BASIC SOLID CATALYST

Christian Marcilly, Houilles; Serge Leporq, Mantes La Ville, and Philippe Courty, Houilles, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Division of Ser. No. 105,998, Aug. 13, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,767

Claims priority, application France, Mar. 3, 1992, 92 02765

Int. Cl.[6] B01J *29/072*

U.S. Cl. 502—66 **15 Claims**

1. A catalyst for use in a process for sweetening petroleum cuts containing mercaptans, said catalyst comprising 10 to 98% by weight of at least one solid mineral phase constituted of an alkaline zeolite or tectosilicate with an Si/Al atomic ratio which is less than or equal to 5, 1 to 60% by weight active carbon, 0.02 to 2% by weight of at least one metal chelate and 0 to 20% by weight of at least one mineral or organic binding agent, has a basicity determined according to the ASTM 2896 standard which is at least 70 mg of potash per gram, a total BET surface area which is greater than 10 m^2g^{-1}, and inside its pore structure a hydration rate of 0.1 to 40% by weight of dry catalyst.

5,633,217

METHOD OF MAKING A HIGH STRENGTH CATALYST, CATALYST SUPPORT OR ADSORBER

Merrill Lynn, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 304,157, Sep. 12, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,477

Int. Cl.[6] B01J *21/04;20/00;29/00*

U.S. Cl. 502—439 **11 Claims**

1. A method of making a catalyst, catalyst support, or adsorber, the method comprising:

a) forming a mixture of raw material selected from the group consisting of ceramic, molecular sieve, and combinations thereof, permanent binder comprising silicone resin, dibasic ester as a solvent for the silicone resin, temporary binder comprising an organic binder selected from the group consisting of cellulose ethers, cellulose ether derivatives, and combinations thereof, and water;

b) shaping the mixture into a green body;

c) drying the green body; and

d) heating the green body to develop strength in the body and form a catalyst, a catalyst support, or an adsorber.

5,633,218

HERBICIDAL BENZODIOXOLES AND BENZODIOXANES

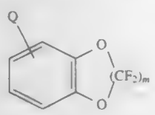
Donna L. Spedding, Bear, and Thomas M. Stevenson, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1995, Ser. No. 450,768

Int. Cl.[6] A01N *43/54;43/30;* **C07D** *239/70;239/94*

U.S. Cl. 504—228 **7 Claims**

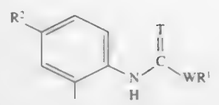
1. A compound selected from Formula I, an N-oxide and an agriculturally-suitable salt thereof,



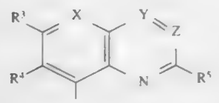
I

wherein:

Q is



Q-1



Q-2

T is O or S;

W is a single bond, O, S or NR^6;

X is N or CH;

Y is N or CH;

Z is N or CR^7 provided that when Z is CR^7, then Y is N;

R^1 is C_1–C_5 alkyl optionally substituted with C_1–C_2 alkoxy, OH, 1–3 halogens, or C_1–C_2 alkylthio; $CH_2(C_3$–C_4 cycloalkyl); C_3–C_4 cycloalkyl optionally substituted with 1–3 methyl groups; C_2–C_4 alkenyl; C_2–C_4 haloalkenyl; or phenyl optionally substituted with halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, nitro or cyano;

R^2 is H, chlorine, bromine, C_1–C_2 alkyl, C_1–C_2 alkoxy, C_1–C_2 alkylthio, C_2–C_3 alkoxyalkyl, C_2–C_3 alkylthioalkyl, cyano, nitro, $NH(C_1$–C_2 alkyl) or $N(C_1$–C_2 alkyl)$_2$;

R^3 is C_1–C_4 alkyl, C_2–C_4 alkoxyalkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_3 alkylamino or $N(C_1$–C_3 alkyl)$(C_1$–C_3 alkyl);

R^4 is H or F;

R^5 is H, CN, C_1–C_3 alkyl, C_1–C_4 haloalkyl, C_3–C_4 halocycloalkyl, C_2–C_4 haloalkenyl, C_3–C_4 haloalkynyl, OR^8, $S(O)_nR^9$ or halogen;

R^6 is H, CH_3 or OCH_3;

R^7 is H, CN, C_1–C_3 alkyl, C_1–C_4 haloalkyl, C_3–C_4 halocycloalkyl, C_2–C_4 haloalkenyl, C_3–C_4 haloalkynyl, OR^{10}, $S(O)_pR^{11}$ or halogen;

R^8 and R^{10} are each independently C_1–C_4 alkyl, C3-C_4 alkenyl, C_3–C_4 alkynyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl or C_3–C_4 haloalkynyl;

R^9 and R^{11} are each independently C_1–C_2 alkyl or C_1–C_2 haloalkyl;

m is 1 or 2; and

n and p are each independently 0, 1 or 2;

provided that when Z is CR^7, then exactly one of R^5 and R^7 is H.

5,633,219

5H-PYRROLO(3',4':5,6)(1,4)DITHIINO(2,3-C)(1,2,5)THIADIAZOLE-5,7(6H)-DIONE, COMPOSITIONS CONTAINING THEM AND THEIR USE AS ANTIMICROBIAL AND MARINE ANTIFOULING AGENTS

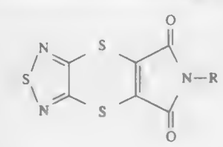
Ravi B. Shankar; R. Garth Pews, and Duane R. Romer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 10, 1996, Ser. No. 676,618

Int. Cl.[6] A01N *43/82;* **A61K** *31/41;* **C07D** *271/12*

U.S. Cl. 504—261 **28 Claims**

1. A 5H-pyrrolo(3',4':5,6)(1,4)dithiino-(2,3-C)-(1,2,5)thiadiazole-5,7(6H)-dione corresponding to the formula



wherein R represents —H, benzyl, phenethyl, a C_1–C_{10} straight or branched chain alkyl radical, a C_3–C_{10} cycloalkyl radical, a C_1–C_{10} straight or branched chain alkoxy radical, a C_3–C_{10}-cycloalkoxy, an ester of the formula $—CH_2CH_2O—C(O)—R^1$, wherein R^1 represents a C_1–C_6 straight or branched chain alkyl radical or a C_3–C_6 cycloalkyl radical or R represents phenyl substituted with from 0–5 halo, C_1–C_6 straight or branched chain alkyl, cyano, nitro groups, or an ester of the formula $—OC(O)—R^1$, wherein R^1 represents a C_1–C_6 straight or branched chain alkyl radical or a C_3–C_6 cycloalkyl radical or an amide of the formula $—C(O)—N(R^2)_2$, wherein each R^2 independently represents a C_1–C_6 straight or branched chain alkyl radical or a C_3–C_6 cycloalkyl radical.

5,633,220

HIGH INTERNAL PHASE RATIO WATER-IN-OIL EMULSION FRACTURING FLUID

Kay E. Cawiezel, Longview, Tex., and Richard Hodge, Ponca City, Okla., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 2, 1994, Ser. No. 300,256

Int. Cl.[6] C09K *3/00*

U.S. Cl. 507—117 **21 Claims**

1. A fracturing fluid for fracturing of subterranean formations comprising a high internal phase invert oil-based emulsion wherein the aqueous internal phase comprises at least seventy five percent of the emulsion and an external oil phase including an emulsifying agent for emulsifying the aqueous phase in the oil phase is selected from a group consisting of (a) an effective amount of a block or graft copolymer having the general formula $(A\text{-}COO)_mB$, wherein m is an integer of at least 2, A is a polymeric component having a molecular weight of at least five hundred and is the residue of an oil-soluble complex monocarboxylic acid and B is a polymeric component having a molecular weight of at least five hundred and comprises a water soluble polyalkylene glycol, (b) a reaction product of a polyalk(en)yl succinic anhydride and a polar compound having at least one hydroxyl or amino group and (c) mixtures thereof.

5,633,221

SILICONE CONTAINING IMIDAZOLINE COMPOSITIONS

Dennis L. Fost, Ridgewood, and Abe Berger, Summit, both of N.J., assignors to Mona Industries, Inc., Paterson, N.J.

Division of Ser. No. 304,563, Sep. 12, 1994, Pat. No. 5,496,478. This application Mar. 5, 1996, Ser. No. 611,068

Int. Cl.[6] C10M *105/08;* **C07D** *231/10*

U.S. Cl. 508—210 **7 Claims**

1. A method for readily preparing silicone-containing imidazoline compositions having effective surface active, substantively, corrosion inhibition and lubrication properties which comprises reacting an organosilicone fluid or composition having at least one terminal, lateral or combination of terminal and lateral carboxyl functional groups with at least a stoichiometric amount of an alkyl, hydroxyalkyl, and/or aminoalkyl ethylene diamine compound at an elevated temperature, for a time necessary to react the carboxyl functional group and provide for the cyclization of the reaction product.

5,633,222

USE OF A SECONDARY AMINE AS A CORROSION INHIBITING AND ANTIMICROBIAL AGENT AND AN AQUEOUS ALKALINE INDUSTRIAL FLUID CONTAINING SAID AMINE

Rolf Sköld, Stenungsund, Sweden, and Patrick J. Ruane, Newbury, Great Britain, assignors to Berol Nobel AB, Stenungsund, Sweden, and Castrol Limited, Wiltshire, Great Britain

PCT No. PCT/SE93/01060, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO94/13765, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 8, 1993, Ser. No. 454,277

Claims priority, application Sweden, Dec. 17, 1992, 9203798

Int. Cl.[6] C10M *173/02;133/08*

U.S. Cl. 508—562 **13 Claims**

1. A process for providing a composition with a corrosion inhibiting and antimicrobial agent, comprising:

incorporating into the composition an effective amount of a corrosion inhibiting and antimicrobial agent comprised of a secondary amine having a formula:

$$R(Y)_sNHX \quad (I),$$

wherein:

R is an hydrocarbon group having 2–12 carbon atoms,

Y is a group selected from the group consisting of $—CH(OH)CH_2—$, $—OCH_2CH(OH)CH_2—$, and $—O(CH_2)_3—$,

X is an alkyl group having 2–3 carbon atoms and being substituted by hydroxyl groups in one of the 2-position or the 2- and 3-positions, and

s is 0 or 1 provided that when s is 0, then X is one of an alkyl group substituted in the 2- and 3-positions or a salt thereof.

5,633,223

HEAVY DUTY LIQUID COMPOSITIONS COMPRISING STRUCTURING SOLIDS OF DEFINED DIMENSION AND MORPHOLOGY

Tirucherai V. Vasudevan, West Orange, and John Gormley, Midland Park, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Aug. 30, 1995, Ser. No. 520,797

Int. Cl.[6] C11D *3/37;3/395*

U.S. Cl. 510—303 **5 Claims**

1. A structured heavy duty liquid composition comprising:

(a) more than about 20% by wt. of a surfactant selected from the group consisting of anionics, nonionics, cationics, zwitterionics, amphoterics and mixtures thereof;

(b) 1 to 25% by wt. of a solid particle wherein said particle or particles is selected from the group consisting of calcium citrate, calcium chloride, strontium chloride, gypsum, and N,N'-terephthaloyl-di-6-aminocaproic peracid and mixtures thereof or mixture of solid particles added directly or formed in situ, wherein the length of the solid particle or particles is from about 3 to 25 microns and is at least 3 times to 20 times the width of the particle or particles;

(c) 0.1–60% by wt. electrolyte; and

(d) 0.1–5% by wt. deflocculating polymer wherein said deflocculating polymer is a copolymer of acrylate and lauryl methacrylate;

wherein said compositions are capable of suspending solid particles up to about 1000 microns in size.

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5,633,224

LOW PH GRANULAR DETERGENT COMPOSITION

Terrence J. Porter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 274,873, Jul. 14, 1994, abandoned. This application Jun. 22, 1995, Ser. No. 465,175

Int. Cl.^{6} C11D *3/065*

U.S. Cl. 510—444 **7 Claims**

1. A granular detergent composition having a density of 600 gm/liter or above, and having a pH (1% in distilled water) of from about 9.0 to about 10, comprising by weight:

(i) from 13.2% to about 50% detergent anionic surfactant;

(ii) from about 3% to about 40% acid pyrophosphate; and

(iii) less than about 1% of citric acid or salt thereof; and

(iv) less than about 2% of alkali metal silicate;

(v) an inorganic alkaline material

wherein said detergent composition is formed by agglomeration of said acid pyrophosphate, said inorganic alkaline material and a portion of said detergent surfactant and there is substantially no alkali metal silicate present during said agglomeration.

5,633,225

DETERGENT COMPOSITIONS INHIBITING DYE TRANSFER

Abdennaceur Fredj, Brussels, Belgium; James P. Johnston, Overijse, Great Britain; Christiaan A. J. Thoen, Haasdonk, Belgium; Finlay MacCorquodale, Edinburgh, Scotland; Alfred Busch, Londerzeel, Belgium; Frederick E. Hardy, Ponteland, United Kingdom, and Alan D. Willey, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/06222, § 371 Date Jan. 25, 1996, § 102(e) Date Jan. 25, 1996, PCT Pub. No. WO94/02579, PCT Pub. Date Feb. 3, 1994

PCT Filed Jun. 30, 1993, Ser. No. 373,259

Claims priority, application European Pat. Off., Jul. 15, 1992, 92202168; Apr. 26, 1993, 93201198

Int. Cl.^{6} C11D *3/37;1/00;3/39;3/395*

U.S. Cl. 510—475 **3 Claims**

1. A dye transfer inhibiting detergent composition comprising

a) 0.0001% to 10% by weight of a dye transfer inhibitor having a ratio of amine to amine N-oxide of from about 2:3 to about 1:1,000,000 selected from the group consisting of poly(2-vinylpyridine-N-oxide), poly- 2-(dimethylamino)-ethylmethacrylate-N-oxide and poly- 1-vinylimidazole-N-oxide; and

b) a detersive effective amount of a surfactant; and

c) a detersive effective amount of a builder.

5,633,226

CONVERTIBLE MICROEMULSION FORMULATIONS

Albert J. Owen, West Chester, Pa., and Seang H. Yiv, Wilmington, Del., assignors to LDS Technologies, Inc., Boothwyn, Pa.

Continuation of Ser. No. 885,202, May 20, 1992, Pat. No. 5,444,041, which is a continuation-in-part of Ser. No. 841,931, Feb. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 837,347, Feb. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,691, Apr. 19, 1991, abandoned. This application Apr. 20, 1995, Ser. No. 425,787

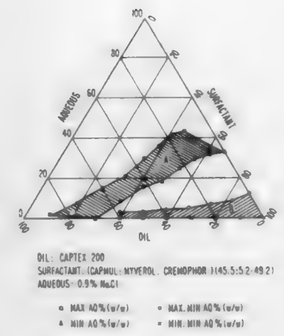
Claims priority, application WIPO, Apr. 15, 1992, PCT/US92/03086

Int. Cl.^{6} A61K *9/107;38/00;38/16;39/00*

U.S. Cl. 514—2 **20 Claims**

1. A biologically compatible water-in-oil microemulsion composition that converts to an oil-in-water emulsion by the addition of water, comprising:

(a) up to about 60 volume percent of an internal dispersed aqueous phase comprising an effective amount of a biologically active material that is water soluble;



(b) from about 5 to 99 volume percent of a continuous oil phase comprising at least one pharmaceutically-acceptable oil comprising a C_{9-83} triglyceride, a C_{7-55} diester of propylene glycol, or mixtures thereof; and

(c) from about 1 to about 70 volume percent of a surfactant or surfactant mixture comprising a C_8 fatty acid salt, wherein the surfactant or surfactant mixture has an HLB value of at least 7.

5,633,227

SECRETORY LEUKOCYTE PROTEASE INHIBITOR AS AN INHIBITOR OF TRYPTASE

Daniel K. Muller, Orange; Elise Brownell, Woodbridge, and Katherine A. Delaria, West Haven, all of Conn., assignors to Miles, Inc., West Haven, Conn.

Filed Sep. 12, 1994, Ser. No. 304,051

Int. Cl.^{6} A61K *38/57;* **C07K** *14/81;* **C12N** *9/64*

U.S. Cl. 514—12 **6 Claims**



1. A method of treating a mast cell-mediated condition in a mammal, which comprises administering to said mammal an amount of a pharmacologically active fragment of SLPI or mutein thereof which is effective to treat said condition, said fragment or mutein being selected from the group consisting of; the amino acid sequences 57-102 and 5-49 of human SLPI; the Leu-72-Arg and Leu-72-Lys muteins of the 57-107 and 57-102 sequences of human SLPI; the Leu-19-Arg and Leu-19-Lys muteins of the 5-49 sequence of human SLPI; the 5-102 sequence of human SLPI and muteins thereof; and muteins of a fragment of human SLPI wherein said mutein has the amino acid sequence Ser-Gly-Lys-Ser-Phe-Lys-Ala-Gly-Val-Cys-Pro Lys-Lys-Ser-Ala-Gln-Cys-Xaa-Leu-Arg-Tyr-Lys-Lys-Pro-Glu-Cys-Gln-Ser-Asp-Trp- Gln-Cys-Pro-Gly-Lys-Lys-Arg-Cys-Cys-Pro-Asp-Thr-Cys-Gly-Ile-Lys-Cys-Leu-Asp wherein Xaa is Arg or Lys.

5,633,228

PREVENTION AND TREATMENT OF PERIPHERAL NEUROPATHY

Michael E. Lewis, West Chester, Pa.; Stuart C. Apfel, West Hempstead, N.Y., and John A. Kessler, New Canaan, Conn., assignors to Cephalon, Inc.,, West Chester, Pa., and Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 51,191, Apr. 16, 1993, Pat. No. 5,420,112, which is a continuation-in-part of Ser. No. 899,070, Jun. 12, 1992, abandoned. This application Dec. 29, 1994, Ser. No. 366,049

Int. Cl.^{6} A61K *38/00;38/27*

U.S. Cl. 514—12 **3 Claims**

1. A method for the therapeutic reduction of a peripheral neuropathy in a mammal that results from post-polio syndrome, said method comprising administering an insulin-like growth factor selected from the group consisting of insulin-like growth factor-I and insulin-like growth factor-III to said mammal.

5,633,229

METHOD OF USING PROPHENINS-ANTIBIOTIC PEPTIDES

Vladimir N. Kokryakov, Los Angeles; Sylvia S. L. Harwig, Woodland Hills, and Robert I. Lehrer, Santa Monica, all of Calif., assignors to University of California, Los Angeles, Calif.

Continuation of Ser. No. 222,798, Apr. 5, 1994. This application Jun. 7, 1995, Ser. No. 487,359

Int. Cl.^{6} A61K *38/17;38/08*

U.S. Cl. 514—12 **5 Claims**

1. A method to inhibit the growth of a microbe which method comprises contacting a composition which supports the growth of said microbe with a peptide comprising the amino acid sequence

AFPPPNVPGPR
FPPPNFPGPR
FPPPNFPGPR
FPPPNFPGPR
FPPPNFPGPP
FPPPIFPGPW
FPPPPPFRPP
PFGPPRFP SEQ ID NO: 1

or antimicrobial fragments thereof comprising at least 10 contiguous amino acid residues in an amount effective to prevent said growth.

5,633,230

TREATMENT OF CYTOMEGALOVIRUS INFECTION

Michael Twist, deceased, late of Toronto, and Martin Sumner-Smith, Bolton, both of Canada, assignors to Allelix Biopharmaceuticals, Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 139,757, Oct. 22, 1993, abandoned, and Ser. No. 995,742, Dec. 22, 1993, abandoned, each which is a continuation-in-part of Ser. No. 872,398, Apr. 23, 1992, abandoned, said Ser. No. 139,757is a continuation-in-part of Ser. No. 779,735, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 602,953, Oct. 24, 1990, abandoned. This application Oct. 31, 1994, Ser. No. 332,518

Int. Cl.^{6} A61K *38/03;38/08;38/10;* **C07K** *7/06*

U.S. Cl. 514—15 **15 Claims**

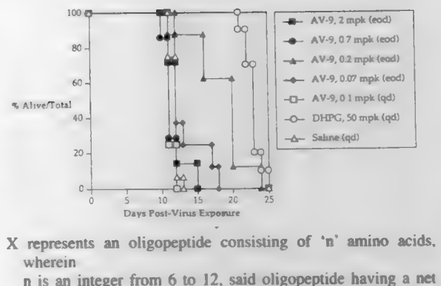
1. A method for treating a mammal having a cytomegaloviral infection, comprising the step of administering to said mammal a therapeutically effective amount of a peptide of the formula:

R1—{X}—R2

wherein

R1 is H or an N-terminal protecting group;

R2 is OH or a C-terminal protecting group; and



X represents an oligopeptide consisting of 'n' amino acids, wherein

n is an integer from 6 to 12, said oligopeptide having a net positive charge of 'n', 'n−1' or 'n−2', wherein said oligopeptide comprises at least six arginine residues and no less than n−3 arginine residues and consists essentially of D-amino acids.

5,633,231

VALINE-CONTAINING PSEUDOPEPTIDES WITH ANTIVIRAL ACTIVITY

Dieter Häbich, Wuppertal; Thomas J. Schulze, Köln; Jürgen Reefschläger; Jutta Hansen, both of Wuppertal; Rainer Neumann, Köln; Gert Streissle, Wuppertal, and Arnold Paessens, Haan, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

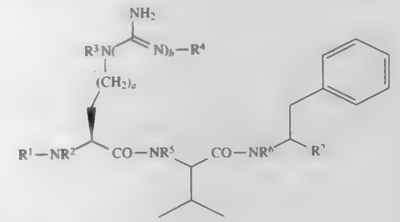
Filed Sep. 7, 1994, Ser. No. 301,506

Claims priority, application Germany, Sep. 14, 1993, 43 31 135.0

Int. Cl.^{6} C07D *241/04;211/06*

U.S. Cl. 514—18 **8 Claims**

1. A valine-containing, substituted pseudopeptide of the formula



(I)

in which

a represents a number 2 or 3,

b represents a number 0 or 1,

R^1 represents hydrogen, or represents a radical of the formula R^8—NR^9—CO—, R^{10}—$(CH_2)_c$—CO—, R^{11}—$(CH_2)_d$—O—CO, or represents a radical of the formula —SO_2—R^{12},

in which

R^8 denotes cycloalkyl having 3 to 6 carbon atoms; or denotes optionally substituted straight-chain or branched alkyl having up to 18 carbon atoms wherein the substituents are hydroxyl, straight-chain or branched alkoxy having up to 4 carbon atoms, halogen, trifluoromethyl, trifluoromethoxy, cycloalkyl having 3 to 6 carbon atoms, aryl having 6 to 10 carbon atoms which is optionally substituted identically or differently up to two times wherein the substituents are carboxyl, cyano, hydroxyl, halogen, C_1–C_5 perhalogenoalkyl straight-chain or branched C_1–C_6 acyl, straight-chain or branched C_1–C_6 alkoxy, straight-chain or branched C_1–C_6 alkoxycarbonyl or alkyl which is optionally substituted by a group of the formula —CO_2R^{13}

in which

R^{13} denotes hydrogen, or straight-chain or branched alkyl or alkenyl having in each case up to 8 carbon atoms which are optionally substituted by phenyl,

or

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R^8 denotes aryl having 6 to 10 carbon atoms which is optionally substituted identical or differently up to three times by carboxyl, amino, halogen, hydroxyl, cyano, C_1–C_5 perhalogenoalkyl straight-chain or branched C_1–C_6 acyl, straight-chain or branched C_1–C_6 alkoxy, vinyl-C_1–C_6-alkoxycarbonyl, straight-chain or branched alkoxycarbonyl, or

denotes an amino acid radical of the formula,



in which

R^{14} and R^{15} are identical or different and denote hydrogen or methyl, or

R^{14} and R^{15} together form a 5- or 6-membered saturated carbocyclic ring,

or

R^{14} denotes hydrogen or methyl,

and

R^{15} denotes cycloalkyl having 3 to 8 carbon atoms, aryl having 6 to 10 carbon atoms, or hydrogen; or denotes straight-chain or branched alkyl having up to 8 carbon atoms, where the alkyl is optionally substituted bymethylthio, hydroxyl, mercapto, guanidyl, or by a group of the formula $—NR^{17}R^{18}$ or $R^{19}—OC—$,

in which

R^{17} and R^{18}, independently of each other, denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, or phenyl,

and

R^{19} denotes hydroxyl, benzyloxy, alkoxy having up to 6 carbon atoms, or the above-listed group $—NR^{17}R^{18}$,

R^{16} denotes straight-chain or branched alkyl having up to 8 carbon atoms which is optionally substituted by hydroxyl or by straight-chain or branched alkoxy having up to 6 carbon atoms; or denotes carboxyl, allyloxycarbonyl, straight-chain or branched alkoxycarbonyl having up to 8 carbon atoms, or benzyloxycarbonyl;

or the alkyl is optionally substituted by cycloalkyl having 3 to 8 carbon atoms or by optionally substituted aryl having 6 to 10 carbon atoms wherein the substituents are hydroxyl, halogen, nitro, C_1–C_8 alkoxy or by the group $—NR^{17}R^{18}$,

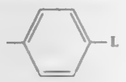
in which

R^{17} and R^{18} have the abovementioned meanings;

or the alkyl group is optionally substituted by a 5- to 6-membered nitrogen-containing heterocycle or indolyl in which the corresponding —NH-functions are optionally protected by alkyl having up to 6 carbon atoms by an amino protecting group,

or

R^8 denotes a radical of the formula



in which

L denotes phenyl or pyridyl,

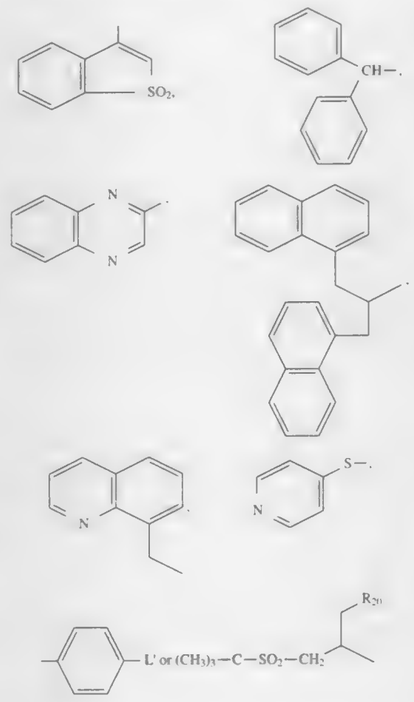
R^9 denotes hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, or an amino protecting group,

R^{10} denotes straight-chain or branched alkyl having up to 8 carbon atoms, C_6–C_{10}-aryloxy, C_6–C_{10} aryl, indolyl, quinolyl, quinoxalinyl, isoquinolyl or a 5- to 7-membered, saturated or unsaturated heterocycle having up to 3 heteroatoms selected from the group consisting of S, N or O, wherein said aryloxy, aryl and heterocyclic rings are optionally substituted identically or differently up to 3 times by carboxyl, cyano, hydroxyl, halogen, amino, nitro, methylamino, C_1–C_5 perhalogenoalkyl, straight-chain or branched C_1–C_6 alkyl, straight-chain or branched C_1–C_5 acyl, straight-chain or branched C_1–C_6 alkoxy or straight-chain or branched C_1–C_6 alkoxycarbonyl,

and additionally said aryl group is also optionally substituted by an optionally phenyl substituted 5- to 7-membered, saturated or unsaturated heterocycle having up to 3 heteroatoms selected from the group consisting of S, N or O,

or

R^{10} denotes a radical of the formula



in which

L' has the abovementioned meaning of L and is identical to our different from the latter.

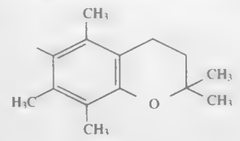
R^{20} denotes phenyl or naphthyl,

c denotes a number 0, 1, 2 or 3,

d denotes a number 0, 1, 2 or 3,

R^{11} has the abovementioned meaning of R^{10} and is identical to or different from the latter,

R^{12} denotes methyl, phenyl or naphthyl which is optionally substituted identically or differently up to 4 times by methyl or methoxy; or denotes a radical of the formula



R^2, R^3, R^5 and R^6 are identical or different and represent hydrogen, straight-chain or branched alkyl having up to 4 carbon atoms, or represent an amino protecting group,

R^4 represents nitro, an amino protecting group, or radical of the formula $—SO_2R^{21}$,

in which

R^{21} has the abovementioned meaning of R^{12} and is identical to or different from the latter,

R^7 represents formyl or carboxyl, or represents straight-chain or branched alkoxycarbonyl having up to 8 carbon atoms, or represents a radical of the formula $—CH_2—OR^{22}$ or $—CH(OR^{23})_2$,

in which

R^{22} and R^{23} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, or a hydroxyl protecting group, wherein said hydroxyl protecting group is selected from the group consisting of tert-butoxydiphenylsily, trimethylsilyl, triethylsilyl, triisopropylsilyl, tert-butyl-dimethylsilyl, tert-butyldiphenylsilyl, triphenylsilyl, trimethylsilylethoxycarbonyl, benzyl, benzyloxycarbonyl, 2-nitrobenzyl, 4-nitrobenzyl, 2-nitrobenzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, tert-butyloxycarbonyl, allyloxycarbonyl, 4-methoxybenzyl, 4-methoxybenzyloxycarbonyl, formyl, acetyl, trichloroacetyl, 2,2,2-trichloroethoxycarbonyl, 2,4-dimethoxybenzyl, 2,4-dimethoxybenzyloxycarbonyl, methylthiomethyl, methoxyethoxymethyl, [2-(trimethylsilyl)ethoxy]methyl, 2-(methylthiomethoxy)ethoxycarbonyl, benzoyl, 4-methylbenzoyl, 4-nitrobenzoyl, 4-fluorobenzoyl, 4-chlorobenzoyl or 4-methoxybenzoyl

or a salt thereof, and

wherein said amino protecting groups are selected from the group consisting of benzyloxycarbonyl 3,4-dimethoxybenzyloxycarbonyl, 3,5-dimethoxybenzyloxycarbonyl, 2,4-dimethoxybenzyloxycarbonyl, 4-methoxybenzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, 2-nitrobenzyloxycarbonyl, 2-nitro-4,5-dimethoxybenzyloxycarbonyl, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, isobutoxycarbonyl, tert-butoxycarbonyl, allyloxycarbonyl, vinyloxycarbonyl, 2-nitrobenzyloxycarbonyl, 3,4,5-trimethoxybenzyloxycarbonyl, cyclohexyloxycarbonyl, 1,1-dimethylethoxycarbonyl, adamantylcarbonyl, phthaloyl, 2,2,2-trichloroethoxycarbonyl, 2,2,2-trichloro-tert-butoxycarbonyl, menthyloxycarbonyl, phenoxycarbonyl, 4-nitrophenoxycarbonyl, fluorenyl-9-methoxycarbonyl, formyl, acetyl, propionyl, pivaloyl, 2-chloroacetyl, 2-bromoacetyl, 2,2,2-trifluoroacetyl, 2,2,2-trichloroacetyl, benzoyl, 4-chlorobenzoyl, 4-bromobenzoyl, 4-nitrobenzoyl, phthalimido, isovaleroyl, or benzyloxymethylene, 4-nitrobenzyl, 2,4-dinitrobenzyl or 4-nitrophenyl.

with the proviso that if a represents the number 2, b represents the number 1 and R^5 represents hydrogen, R^1 may not denote the radical of the formula $R^8—NH—CO—$.

5,633,232

TACHYKININ ANTAGONIST DIPEPTIDES

Masaaki Matsuo, Toyonaka; Daijiro Hagiwara, Moriguchi, and Hiroshi Miyake, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

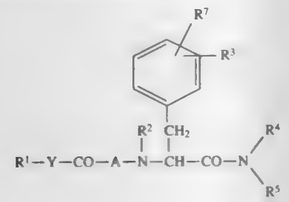
Continuation of Ser. No. 871,723, Apr. 21, 1992, Pat. No. 5,420,297, which is a continuation-in-part of Ser. No. 770,866, Oct. 4, 1991, abandoned. This application Jun. 10, 1994, Ser. No. 258,456

Claims priority, application United Kingdom, Oct. 24, 1990, 9023116

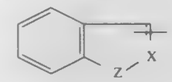
Int. Cl.[6] A61K *38/05*

U.S. Cl. 514—19 **14 Claims**

1. A compound of the formula:



wherein R^1 is a group of the formula



wherein the symbol of a line and a dotted line represent a single bond and X is CH_2 or NH, or said line and dotted line represent a double bond and X is CH or N,

Z is O, S or N—R^6,

wherein R^6 is hydrogen, lower alkyl, or N,N-di(lower)alkylamino(lower)alkyl;

R^2 is hydrogen or lower alkyl;

R^3 is lower alkyl, carboxy(lower)alkyl, esterified carboxy(lower)alkyl, carbamoyl(lower)alkyl, lower alkylamino(lower)alkyl, hydroxy(lower)alkyl, acyloxy(lower)alkyl, halo(lower)alkyl, carboxy(lower)alkoxy, esterified carboxy(lower)alkoxy, halogen, lower alkoxy, nitro, amino, or an acylated amino group;

R^4 is lower alkyl, carboxy(lower)alkyl or esterified carboxy(lower)alkyl, and

R^5 is ar(lower)alkyl selected from the group consisting of mono-, di- and triphenyl(lower)alkyl or pyridyl(lower)alkyl, or



represents a heterocyclic moiety selected from the group consisting of 1-indolinyl, 2-isoindolinyl, 1, 2, 3, 4-tetrahydroquinolin-1-yl and 1, 2, 3, 4-tetrahydroisoquinolin-2-yl;

R^7 is hydrogen, lower alkyl, carboxy(lower)alkyl, esterified carboxy(lower)alkyl, carbamoyl(lower)alkyl, lower alkylamino(lower)alkyl, hydroxy(lower)alkyl, acyloxy(lower)alkyl, halo(lower)alkyl carboxy(lower)alkoxy, esterified carboxy-(lower)alkoxy, halogen, lower alkoxy, nitro, amino, or an acylated amino group;

A represents an amino acid residue, wherein said amino acid is selected from the group consisting of D- or L-proline, D- or L-didehydroproline, D- or L-hydroxyproline, and D- or L-mercaptoproline,

wherein if said amino acid is hydroxyproline or mercaptoproline, the amino acid side chain is optionally substituted with a moiety selected from the group consisting of lower alkanoyl, lower alkoxycarbonyl, trihalo(lower)alkoxy-carbonyl, C_6-C_{10}ar(lower)alkoxycarbonyl, lower alkylsulfonyl, lower alkoxyalyl, C_6-C_{10}arylsulfonyl, halo C_6-C_{10}ar(lower)-alkoxycarbonyl, carboxy(lower)alkanoyl, glycyl, β-alanyl, N-lower alkoxycarbonylglycyl, N-lower alkoxycarbonyl-β-alanyl, N,N-di(lower)alkylamino-(lower)alkanoyl, carboxyalyl, morpholino-carbonyl, amino(lower)alkanoyl, N-C_6-C_{10}ar(lower)alkoxycarbonyl-amino(lower)alkanoyl, threonyl, N-lower alkoxycarbonyl-threonyl, N-lower alkanoylthreonyl, N-lower alkoxycarbonyl(lower)alkyl-N-lower alkoxycarbonylamino-(lower)alkanoyl, α-glutamyl, N-C 6-C_{10}ar(lower)alkoxycarbonyl-O-C_6-C_{10}ar(lower)alkyl-γ-glutamyl, lower alkyl, carboxy(lower)alkyl, esterified carboxy(lower)alkyl, morpholino, glycino amide, threonino amide, N'-glutamylamino, N-lower alkylamide, di(lower-)alkylamino, C_6-C_{10}ar(lower)alkyl, trihalo(lower)alkyl and lower alkoxycarbonyl(lower)alkyl; and

Y is a valence bond, lower alkylene or lower alkenylene; or a pharmaceutically acceptable salt thereof.

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5,633,233

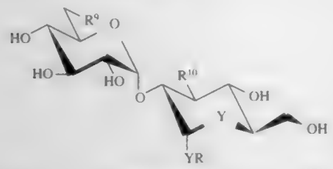
MODIFIED KOJIBIOSIDES ANALOGUES

Om Srivastava; Roman Szweda, both of Edmonton, Canada, and Ulrike Spohr, Boulder, Colo., assignors to Alberta Research Council, Edmonton, Canada

Filed Jun. 7, 1995, Ser. No. 481,645
Int. Cl.[6] A61K *31/70;* **C07H** *15/00*
U.S. Cl. 514—25 **26 Claims**

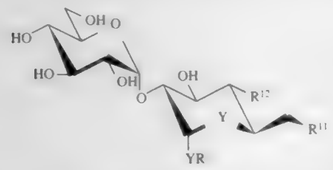
14. A compound useful as an α-glucosidase I inhibitor or as an intermediate in the production of α-glucosidase I inhibitor selected from the group consisting of compounds represented by formulas V, VI, IX, X, XI, XII and XIII:

V



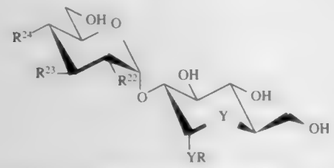
wherein each Y is independently —O— or —NH—, R is an aglycon of from 1–20 carbon atoms, R^9 is selected from the group consisting of —O-mesityl, $—N_3$, $—NH_2$, —Cl, —F, —H, —OH. and —O-methyl and R^{10} is selected from the group consisting of —OH, —H and —O-methyl, with the proviso that when each Y is —O— and R^9 is hydroxyl, then R^{10} is not hydroxyl;

VI



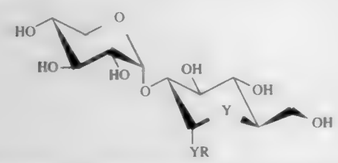
wherein each Y is independently —O— or —NH—, R is an aglycon of from 1–20 carbon atoms, R^{11} is selected from the group consisting of —O-mesityl, $—N_3$, $—NH_2$, —Cl, —F, —H, —OH and —O-methyl and R^{12} is selected from the group consisting of —OH, —H and —O-methyl with the proviso that when each Y is —O— and R^{11} is hydroxyl, then R^{12} is not hydroxyl;

IX



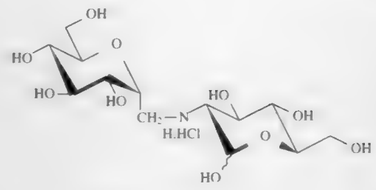
wherein each Y is independently selected from —O— or —NH—, R is an aglycon of from 1–20 carbon atoms, R^{22} is selected from the group consisting of —F, $—N_3$, $—NH_2$, —O-methyl, —H and —OH; and R^{23} and R^{24} are selected from the group consisting of —OH, —H and —O-methyl with the proviso that when each Y is —O—, R^{22} is hydroxyl and R^{23} is hydroxyl, then R^{24} is not hydroxyl;

X

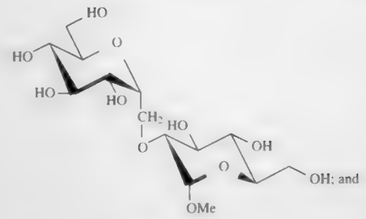


wherein each Y is independently —O— or —NH— and R is an aglycon of from 1–20 carbon atoms;

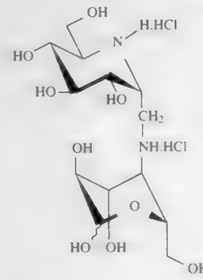
XI



XII



XIII



26. A pharmaceutical composition comprising a pharmaceutically inert carrier and from 0.1 to 95 weight percent of a compound of claim **14**.

5,633,234

LYSOSOMAL TARGETING OF IMMUNOGENS

J. Thomas August; Drew M. Pardoll, and Frank G. Guarnieri, all of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jan. 22, 1993, Ser. No. 6,845
Int. Cl.[6] A61K *31/70;* **C12N** *15/62*
U.S. Cl. 514—44 **20 Claims**

1. A composition for eliciting an immune response in an animal to an antigen, comprising an antigen presenting cell expressing:

(a) a chimeric DNA segment encoding (1) an N-terminal domain containing a sequence encoding at least one epitope of said antigen, (2) a transmembrane domain, and (3) a cytoplasmic domain containing an endosomal/lysosomal targeting signal comprising the tetrapeptide sequence Tyr-Xaa-Xaa-Xbb, wherein Xaa is any amino acid and Xbb is a hydrophobic amino acid, wherein said targeting signal directs a protein expressed from said DNA sequence to the endosomal/lysosomal compartment; and

(b) a major histocompatibility (MHC) class II molecule.

5,633,235

TRICIRIBINE AND ANALOGS AS ANTIVIRAL DRUGS

Leroy B. Townsend; John C. Drach, both of Ann Arbor, Mich., and Louis S. Kucera, Pfaff Town, N.C., assignors to Regents of the University of Michigan, Ann Arbor, Mich., and Wake Forest University, Winston-Salem, N.C.

Continuation of Ser. No. 16,302, Feb. 11, 1993, abandoned, which is a continuation of Ser. No. 687,579, Apr. 19, 1991, abandoned. This application Jul. 5, 1994, Ser. No. 266,847
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—49 **1 Claim**

1. A method for treating HCMV infection, comprising administering an effective amount of triciribine, triciribine DMF adduct, triciribine 5'-phosphate or a pharmaceutically acceptable salt thereof to a patient in need thereof.

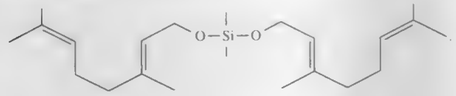
5,633,236

INSECT REPELLENT COMPOSITIONS AND METHODS FOR USING SAME

Craig B. Warren, Rumson, N.J.; Jerry F. Butler, Gainesville, Fla.; Richard A. Wilson, Westfield, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Leslie C. Smith, Jamesburg, N.J.; Anna B. Marin, Long Branch, N.J.; Anubhav P. S. Narula, Hazlet, N.J., and Richard M. Boden, Ocean, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y., and The University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 948,142, Sep. 18, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 265,219
Int. Cl.[6] A01N *55/10;25/00;25/08;25/34*
U.S. Cl. 514—63 **7 Claims**

1. A method of repelling at least one of the species of insects:
Musca domestica L. (Diptera:Muscidae);
Aedes aegypti;
Culex nigripalpus;
Aedes atlanticus;
Culex salinarius;
Aedes Vexans;
Culex spp.;
Simulium spp.;
Psoroferia ferox;
Aedes infirmatus;
Drosophila melanogaster;
Coccinellidae;
Anopheles crucians;
Psoroferia columbiae;
Culicoides spp.; and
Aedes spp.
for a finite period of time from a three-dimensional space inhabitable by at least one of said insect species consisting essentially of the step of exposing said three-dimensional space to an effective insect species-repelling concentration and quantity of a substituted silane having the structure:



which structure represents digeranyloxydimethylsilane.

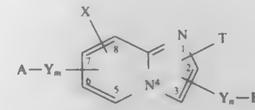
5,633,237

IMIDAZO[1,2-A]PYRIDINYLALKYL PHOSPHONIC ACID COMPOUNDS FOR TREATMENT OF NEUROTOXIC INJURY

Donald W. Hansen, Jr., Skokie, Ill.; Gilbert W. Adelstein, Morristown, N.J.; Karen B. Peterson, Vernon Hills, and Sofya Tsymbalov, Des Plaines, both of Ill., assignors to G.D. Searle & Co., Skokie, Ill.

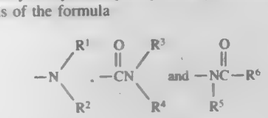
Division of Ser. No. 871,995, Dec. 9, 1991, Pat. No. 5,360,796, which is a continuation of Ser. No. 445,228, Dec. 4, 1989, abandoned. This application Jul. 6, 1994, Ser. No. 271,395
Int. Cl.[6] A61K *31/44;* **C07D** *471/04*
U.S. Cl. 514—80 **23 Claims**

1. A method to prevent excitatory amino acid induced neurotoxic injury in a subject, which method comprises administering to said subject a therapeutically effective amount of a compound of the formula:



wherein each of A and B is an acidic moiety selected to contain at least one acidic hydrogen atom and wherein said acidic moiety is independently selected from carboxylic acid, phosphorus oxo acids, sulfur acids, thiophosphorus oxo acids and the amide, ester and salt derivatives of said acids;

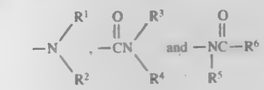
wherein each of Y_m and Y_n is a group independently selected from one or more of alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, sulfinyl, sulfonyl, aryl, and aralkyl, any one of which groups may be substituted at any substitutable position with one or more groups selected from alkyl, cycloalkyl, cycloalkylalkyl, oxo, halo, haloalkyl, alkenyl, cycloalkenyl, alkynyl, aryl, aralkyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, alkoxyalkyl, aralkoxy, aralkylthio, cyano, cyanoamino, nitro, alkanoyl, aroyl, mercapto, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl and amino and amido radicals of the formula



wherein each of R^1, R^2, R^3, R^4, R^5 and R^6 is independently selected from hydrido, alkyl, cycloalkyl, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl; wherein R^1 and R^2 taken together, R^3 and R^4 taken together and R^5 and R^6 taken together may form a heterocyclic group having five to seven ring members including the nitrogen atom of said amino or amido radical and which heterocyclic group may be saturated or partially unsaturated;

wherein R^1 and R^2 taken together and R^3 and R^4 taken together may form an aromatic heterocyclic group having five ring members including the nitrogen atom of said amino or amido radical; wherein each of m and n is a number independently selected from zero to five, inclusive;

wherein each x and T is one or more groups independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, oxo, halo, haloalkyl, alkenyl, cycloalkenyl, alkynyl, aryl, aralkyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, alkoxyalkyl, aralkoxy, aralkylthio, cyano, cyanoamino, nitro, alkanoyl, mercapto, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl and amino and amido radicals of the formula



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wherein each of R^1, R^2, R^3, R^4, R^5 and R^6 is independently selected from hydrido, alkyl, cycloalkyl, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl; and wherein R^1 and R^2 taken together, R^3 and R^4 taken together and R^5 and R^6 taken together may form a heterocyclic group having five to seven ring members including the nitrogen atom of said amino or amido radical and which heterocyclic group may be saturated or partially unsaturated; wherein R^1 and R^2 taken together and R^3 and R^4 taken together may form an aromatic heterocyclic group having five ring members including the nitrogen atom of said amino or amido radical;

provided A is a phosphorous oxo acid, and the amide, ester and salt derivatives thereof, when B is a carboxylic acid, and the alkyl ester and salt derivatives thereof;

or a pharmaceutically-acceptable salt thereof.

5,633,238

METHOD FOR THE TREATMENT OF SCHIZOPHRENIA

Ernir Snorrason, Stigahlid 80, 105 Reykjavík, Iceland

Division of Ser. No. 292,230, Aug. 22, 1994, which is a continuation of Ser. No. 883,037, May 14, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,849

Claims priority, application Iceland, May 14, 1991, 3706/91; Denmark, Feb. 13, 1992, 182/92

Int. Cl.[6] A01N *57/00*

U.S. Cl. 514—80 **24 Claims**

1. A method for treating schizophrenia, in particular affective or schizoaffective type schizophrenia comprising administering, to a patient in need thereof, an effective amount of galanthamine or galanthamine salt or a galanthamine derivative.

5,633,239

SUBSTITUTED BENZENESULFONYLUREAS AND -THIOUREAS, PROCESSES FOR THEIR PREPARATION, THEIR USE FOR THE PRODUCTION OF PHARMACEUTICAL PREPARATIONS, AND MEDICAMENTS CONTAINING THEM

Heinrich Englert, Hofheim; Uwe Gerlach, Hattersheim; Dieter Mania, Königstein; Heinz Gögelein, and Joachim Kaiser, both of Frankfurt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

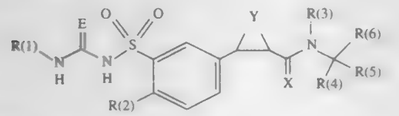
Filed Feb. 16, 1996, Ser. No. 601,109

Claims priority, application Germany, Feb. 21, 1995, 195 05 910.7

Int. Cl.[6] A61K *31/395;* **C07D** *203/12*

U.S. Cl. 514—83 **17 Claims**

1. A substituted benzenesulfonylurea or benzenesulfonylthiourea of the formula I



I

in which:

R(1) is hydrogen, alkyl having 1, 2, 3, 4, 5, 6 or 7 carbon atoms or cycloalkyl having 3, 4, 5, 6 or 7 carbon atoms;

R(2) is hydrogen, F, Cl, alkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, alkoxy having 1, 2, 3, 4, 5 or 6 carbon atoms, fluoroalkoxy having 1, 2, 3, 4, 5 or 6 carbon atoms, mercaptoalkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, cycloalkyl having 3, 4, 5 or 6 carbon atoms or a C_bH_{2b+1} group in which one or more CH_2 groups can be replaced by O, NH or S;

wherein b is 1, 2, 3, 4, 5, 6, 7 or 8;

R(3) is H, alkyl having 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12 carbon atoms, cycloalkyl having 3, 4, 5, 6, 7, 8, 9 or 10 carbon atoms, fluoroalkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, fluorocycloalkyl having 3, 4, 5 or 6 carbon atoms, or a (C_aH_{2a+1}) group in which one or more CH_2 groups are replaced by O, NH or S;

wherein a is 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10;

R(4) is H, aryl, alkyl having 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12 carbon atoms, cycloalkyl having 3, 4, 5, 6, 7, 8, 9 or 10 carbon atoms, fluoroalkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, fluorocycloalkyl having 3, 4, 5 or 6 carbon atoms, or a C_aH_{2a+1} group in which one or more CH_2 groups are replaced by O, NH or S;

wherein a is 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10;

or

R(3) and R(4) together are a C_aH_{2b} group, in which one or more of the CH_2 groups can be replaced by O, S or N;

wherein b is 1, 2, 3, 4, 5, 6, 7 or 8;

R(5) is H, aryl, alkyl having 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12 carbon atoms, cycloalkyl having 3, 4, 5, 6, 7, 8, 9 or 10 carbon atoms, fluoroalkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, fluorocycloalkyl having 3, 4, 5 or 6 carbon atoms, or a (C_aH_{2a+1}) group in which one or more CH_2 groups are replaced by O, N or S;

wherein a is 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10;

R(6) is H, aryl, alkyl having 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12 carbon atoms, cycloalkyl having 3, 4, 5, 6, 7, 8, 9 or 10 carbon atoms, fluoroalkyl having 1, 2, 3, 4, 5 or 6 carbon atoms, fluorocycloalkyl having 3, 4, 5 or 6 carbon atoms or a C_aH_{2a+1} group, in which one or more CH_2 groups are replaced by O, NH or S;

wherein a is 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10;

E is oxygen or sulfur;

X is oxygen or sulfur;

Y is $[CR(7)_2]_{1-4}$, O, S or NH;

R(7) is hydrogen, alkyl having 1, 2, 3 or 4 carbon atoms, F, Cl or Br;

and their pharmaceutically acceptable salts.

5,633,240

PARENTERAL SOLUTIONS CONTAINING METOLAZONE

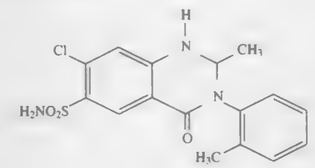
Vasant Ranade, Libertyville, Ill., assignor to Academic Pharmaceuticals, Lake Bluff, Ill.

Continuation-in-part of Ser. No. 299,493, Sep. 1, 1994. This application Feb. 13, 1995, Ser. No. 387,477

Int. Cl.[6] A61K *31/63;31/505*

U.S. Cl. 514—155 **7 Claims**

1. A solution suitable for parenteral administration comprising a compound of the formula



dissolved in an aqueous Tris buffer system having a pH of from about 10.5 to 12.5.

5,633,241

19-NOR-VITAMIN D COMPOUNDS

Hector F. DeLuca, Deerfield; Heinrich K. Schnoes; Kato L. Perlman, both of Madison, all of Wis.; Rafal R. Sicinski, Warsaw, Poland, and Jean M. Prahl, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

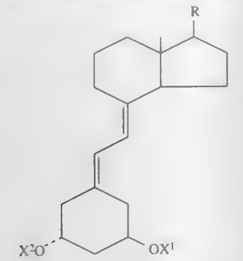
Division of Ser. No. 281,261, Jul. 27, 1994, which is a division of Ser. No. 123,485, Sep. 17, 1993, Pat. No. 5,342,975, which is a division of Ser. No. 960,241, Oct. 13, 1992, Pat. No. 5,246,925, which is a continuation of Ser. No. 879,706, May 5, 1992, abandoned, which is a continuation of Ser. No. 557,400, Jul. 23, 1990, abandoned, which is a division of Ser. No. 481,354, Feb. 16, 1990, Pat. No. 5,237,110, which is a continuation-in-part of Ser. No. 321,030, Mar. 9, 1989, abandoned. This application May 16, 1995, Ser. No. 442,488

The portion of the term of this patent subsequent to May 16, 2015, has been disclaimed.

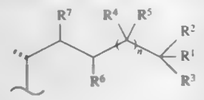
Int. Cl.[6] A61K *31/59;31/695*

U.S. Cl. 514—167 **11 Claims**

1. A method for treating leukemia which comprises administering to a patient having leukemia at least one 19-nor-vitamin D compound in an amount sufficient to induce the differentiation of the malignant cells characteristic of leukemia to non-malignant macrophages, said 19-nor-vitamin D compound having the formula



where X^1 and X^2 are each selected from hydrogen, acyl, alkylsilyl and alkoxyalkyl, and where R is selected from alkyl, hydrogen, hydroxyalkyl, fluoroalkyl and a side chain of the formula



wherein R^1 represents hydrogen, hydroxy or O-acyl, R^2 and R^3 are each selected from alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group—$(CH_2)_m$—where m is an integer having a value of from 2 to 5, R^4 is selected from hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or R^4 and R^5 taken together represent double-bonded oxygen, R^6 and R^7 are each selected from hydrogen, hydroxy, O-acyl, fluorine and alkyl, or, R^6 and R^7 taken together form a carbon-carbon double bond, and wherein n is an integer having a value of from 1 to 5 and wherein any of the groups —$CH(CH_3)$—, —$CH(R^7)$—, or —$CH(R^6)$— at positions 20, 22 and 23, respectively, may be replaced by an oxygen atom, with the proviso that when n is 2 to 5 each R^4 is independently selected from hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, and each R^5 is independently selected from hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl.

5,633,242

PHARMACEUTICALS FOR CONTRACEPTION/ HORMONE SUBSTITUTION CONTAINING A BIOGENOUS ESTROGEN COMPONENT

Michael Oettel, Beethovenstrasse 30, 07743 Jena; Hermann Osterwald, Rasenweg 14, 37120 Bovenden; Claudia Moore, Novalisstrasse 23, 07747 Jena, and Thomas Gräser, Heinrich-Hertz-Strasse 7, 99097 Erfurt, all of Germany

Filed Aug. 3, 1995, Ser. No. 511,026

Claims priority, application Germany, Aug. 12, 1994, 44 29 374.7

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—170 **6 Claims**

1. A method of contraception or hormone replacement beginning on the first day of menses consisting of the steps of:

(1) administering 3 or 4 daily doses of a preparation in which the active ingredient comprises at least one biogenous estrogen component;

(2) administering 20 to 22 daily doses of a preparation in which the active ingredients comprise at least one biogenous estrogen and one gestagen component; and

(3) administering 3 or 4 daily doses of a preparation in which the active ingredient comprises at lease one biogenous estrogen component,

wherein the total daily doses of steps (1), (2) and (3) is 28.

5,633,243

ANTI-TUMOR PLATINUM COMPLEXES, THEIR PREPARATION AND THEIR THERAPEUTIC USE

Yukio Sugimura; Tomoyuki Shibata; Yukiko Kameyama; Kimio Iino; Shigeki Muramatsu; Tomowo Kobayashi, and Toshihiko Hashimoto, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 341,702, Nov. 18, 1994, Pat. No. 5,527,905, which is a continuation of Ser. No. 148,174, Nov. 4, 1993, abandoned, which is a continuation of Ser. No. 908,827, Jul. 2, 1992, abandoned, which is a continuation of Ser. No. 782,895, Oct. 23, 1991, abandoned, which is a continuation of Ser. No. 597,117, Oct. 12, 1990, abandoned, which is a continuation of Ser. No. 485,864, Feb. 23, 1990, abandoned, which is a continuation of Ser. No. 189,524, May 3, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 472,128

Claims priority, application Japan, May 8, 1987, 62-112181; May 13, 1987, 62-114500

Int. Cl.[6] A61K *31/555;* **C07F** *15/00;* **C07D** *205/08;207/277*

U.S. Cl. 514—184 **11 Claims**

1. A compound selected from the group consisting of:

1,2-diaminocyclohexaneplatinum(II) 3-[1-(methoxymethoxy)ethyl]- 2-oxoazetidin-4-ylacetate;

1,2-diaminocyclohexaneplatinum(II) 3-[1-(2-methoxyethoxymethoxy)ethyl]- 2-oxoazetidin-4-ylacetate;

1,2-diaminocyclohexaneplatinum(II) 3-(1-octanoyloxyethyl)-2-oxoazetidin-4-ylcarboxylate;

1,2-diaminocyclohexaneplatinum(II) 3-(1-t-butyldimethylsilyloxyethyl)- 2-oxoazetidin-4-ylcarboxylate;

cis-[trans-(l)-1,2-diaminocyclohexane]platinum(II) {(3S, 4R)-3-[(R)-1-(methoxymethoxy)ethyl]-2-oxoazetidin- 4-yl}acetate;

cis-[trans-(l)-1,2-diaminocyclohexane]platinum(II) {(3S, 4R)-3-[(R)-1-(2-methoxyethoxymethoxy)ethyl]-2-oxoazetidin-4-yl}acetate;

cis-[trans-(l)-1,2-diaminocyclohexane]platinum(II) {(3S, 4S)-3-[(R)-1-octanoyloxyethyl]-2-oxoazetidin- 4-yl}carboxylate; and

cis-[trans-(l)-1,2-diaminocyclohexane]platinum(II) {(3S, 4S)-3-[(R)-1-t-butyldimethylsilyloxyethyl]-2-oxoazetidin-4-yl}carboxylate.

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5,633,244

SYNERGISTIC COMBINATION OF A SUBSTANCE WITH GASTRIC ACID SECRETION INHIBITING EFFECT AND AN ACID DEGRADABLE ANTIBIOTIC

Arne T. Eek, Trosa, and Sven E. Sjöstrand, Södertälje, both of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 51,722, Apr. 22, 1993. This application May 16, 1995, Ser. No. 442,382

Claims priority, application Sweden, Apr. 24, 1992, 9201297; Jan. 8, 1993, 9300029

Int. Cl.[6] A61K *31/43;31/335;31/415;31/34*

U.S. Cl. 514—199 **13 Claims**

1. A pharmaceutical composition for the treatment of gastritis and peptic ulcer, comprising a therapeutically effective amount of a histamine-H_2 receptor blocking compound which increases intragastric pH and a therapeutically effective amount of an acid degradable antibacterial compound.

5,633,245

INHIBITION OF EXPRESSION OF BETA-LACTAMASE USING ESTERS OF FATTY ACID ALCOHOLS

Susan Brown-Skrobot, Hamilton, N.J.; Richard P. Novick, and Steven J. Projan, both of New York, N.Y., assignors to Public Health Research Institute, New York, N.Y.

Continuation of Ser. No. 61,222, May 13, 1993, Pat. No. 5,466,685. This application Jun. 6, 1995, Ser. No. 470,997

Int. Cl.[6] A61K *31/545;31/22;31/225;31/20*

U.S. Cl. 514—199 **3 Claims**

1. A composition for inhibiting beta-lactamase expression in bacteria, comprising a fatty acid selected from the group consisting of caprylic acid, capric acid, myristic acid, palmitic acid, stearic acid and oleic acid and a polyhydric aliphatic alcohol selected from the group consisting of 1,2-ethanediol, 1,3-propanediol, 1,4-butanediol and 1,2,4-butanetriol, in an amount effective to inhibit beta-lactamase expression by said bacteria, and a pharmaceutically acceptable carrier, wherein said carrier further comprises an antibiotic selected from the group consisting of amoxicillin, ampicillin, methicillin, penicillin and cephalosporin, and wherein the final effective concentration of said composition is 3–30 μg/ml and the dose of said antibiotic is 500–4000 mg.

5,633,246

SULFUR-SUBSTITUTED AZETIDINONE COMPOUNDS USEFUL AS HYPOCHOLESTEROLEMIC AGENTS

Brian A. McKittrick, Bloomfield; Sundeep Dugar, Bridgewater, and Duane A. Burnett, Fanwood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

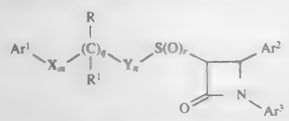
Continuation-in-part of Ser. No. 342,197, Nov. 18, 1994. This application Jun. 5, 1995, Ser. No. 463,619

Int. Cl.[6] C07D *205/08;401/12;409/12;* **A61K** *31/395*

U.S. Cl. 514—210 **15 Claims**

1. A compound represented by the formula

I



or a pharmaceutically acceptable salt thereof, wherein:

Ar^1 is heteroaryl;

Ar^2 is aryl or R^4-substituted aryl;

Ar^3 is aryl or R^5-substituted aryl;

X and Y are independently selected from the group consisting of $—CH_2—$, —CH(lower alkyl)— and —C(dilower alkyl)—;

R is $—OR^6$, $—O(CO)R^6$, $—O(CO)OR^9$ or $—O(CO)NR^6R^7$; R^1 is hydrogen, lower alkyl or aryl; or R and R^1 together are =O;

q is 0 or 1;

r is 0, 1 or 2;

m and n are independently 0, 1, 2, 3, 4 or 5; provided that the sum of m, n and q is 1, 2, 3, 4 or 5;

R^4 is 1–5 substituents independently selected from the group consisting of lower alkyl, $—OR^6$, $—O(CO)R^6$, $—O(CO)OR^9$, $—O(CH_2)_{1-5}OR^6$, $—O(CO)NR^6R^7$, $—NR^6R^7$, $—NR^6(CO)R^7$, $—NR^6(CO)OR^9$, $—NR^6(CO)NR^7R^8$, $—NR^6SO_2R^9$, $—COOR^6$, $—CONR^6R^7$, $—COR^6$, $—SO_2NR^6R^7$, $S(O)_{0-2}R^9$, $—O(CH_2)_{1-10}—COOR^6$, $—O(CH_2)_{1-10}CONR^6R^7$, —(lower alkylene)$COOR^6$ and —CH=CH—$COOR^6$;

R^5 is 1–5 substituents independently selected from the group consisting of $—OR^6$, $—O(CO)R^6$, $—O(CO)OR^9$, $—O(CH_2)_{1-5}OR^6$, $—O(CO)NR^6R^7$, $—NR^6R^7$, $—NR^6(CO)R^7$, $—NR^6(CO)OR^9$, $—NR^6(CO)NR^7R^8$, $—NR^6SO_2R^9$, $—COOR^6$, $—CONR^6R^7$, $—COR^6$, $—SO_2NR^6R^7$, $S(O)_{0-2}R^9$, $—O(CH_2)_{1-10}—COOR^6$, $—O(CH_2)_{1-10}CONR^6R^7$, $—CF_3$, —CN, $—NO_2$, halogen, —(lower alkylene)$COOR^6$ and —CH=CH—$COOR^6$;

R^6, R^7 and R^8 are independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl-substituted lower alkyl;

R^9 is lower alkyl, aryl or aryl-substituted lower alkyl; and

R^{10} is 1–5 substituents independently selected from the group consisting of lower alkyl, $—OR^6$, $—O(CO)R^6$, $—O(CO)OR^9$, $—O(CH_2)_{1-5}OR^6$, $—O(CO)NR^6R^7$, $—NR^6R^7$, $—NR^6(CO)R^7$, $—NR^6(CO)OR^9$, $—NR^6(CO)NR^7R^8$, $—NR^6SO_2R^9$, $—COOR^6$, $—CONR^6R^7$, $—COR^6$, $—SO_2NR^6R^7$, $S(O)_{0-2}R^9$, $—O(CH_2)_{1-10}—COOR^6$, $—O(CH_2)_{1-10}CONR^6R^7$, $—CF_3$, —CN, $—NO_2$ and halogen.

5,633,247

NITROGEN-CONTAINING SPIROCYCLES

John J. Baldwin, Gwyned Valley; David A. Claremon, Audubon; Jason M. Elliott, Blue Bell; Gerald S. Ponticello, Lansdale; David C. Remy, North Wales, and Harold G. Selnick, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

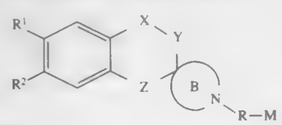
Continuation of Ser. No. 998,321, Dec. 30, 1992, abandoned, which is a division of Ser. No. 709,686, Jun. 3, 1991, Pat. No. 5,206,240, which is a continuation-in-part of Ser. No. 612,091, Nov. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 447,950, Dec. 8, 1989, abandoned. This application Jul. 5, 1995, Ser. No. 498,525

Int. Cl.[6] A61K *31/395;* **C07D** *401/00*

U.S. Cl. 514—210 **10 Claims**

1. A compound of structural formula I:

I

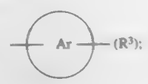


wherein:

X and Y are independently —O—, CHOH, $—(CH_2)—$;

Z is —O—;

M is



R is C_{1-6} alkyl;

R^1, R^2 and R^3 are independently H, $—NHSO_2(C_{1-6}$ alkyl), —CN;

B is a ring of 5 to 8 members; and

Ar is a single or fused ring carbocyclic or heterocyclic ring system containing up to 4 heteroatoms;

or a pharmaceutically acceptable salt thereof.

5,633,248

AMINE COMPOUNDS, THEIR PRODUCTION AND USE

Kaneyoshi Kato, Hyogo; Yoshihiro Sugiura, Nara, and Koichi Kato, Ibaraki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

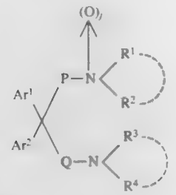
Filed Nov. 21, 1995, Ser. No. 561,282

Claims priority, application Japan, Nov. 21, 1994, 6-286245

Int. Cl.[6] C07D *221/00;211/00;295/00;241/00:* **A61K** *31/44;31/47:31/40;31/41*

U.S. Cl. 514—212 **18 Claims**

1. A compound of the formula:



wherein

Ar^1 and Ar^2 independently represent an optionally substituted aromatic group;

P and Q independently represent a divalent aliphatic hydrocarbon group having at least 2 carbon atoms, which may have either oxygen or sulfur within the carbon chain;

R^1 and R^3 independently represent i) an acyl group of —CO—R or —CONH—R wherein R represents an optionally substituted hydrocarbon group or an optionally substituted heterocyclic group, or ii) an optionally substituted hydrocarbon group;

R^2 and R^4 independently represent hydrogen or an optionally substituted alkyl group;

R^1 and R^2 or R^3 and R^4, taken together with the adjacent nitrogen atom, may form an optionally substituted nitrogen-containing heterocyclic group; and

j represents 0 or 1, or a salt thereof.

5,633,249

Patent Not Issued For This Number

5,633,250

IMIDAZOYLALKYL SUBSTITUTED WITH A SIX OR SEVEN MEMBERED HETEROCYCLIC RING CONTAINING TWO NITROGEN ATOMS

Neng-Yang Shih, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

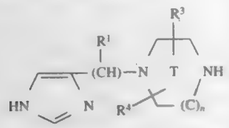
Continuation of Ser. No. 244,813, Jun. 10, 1994, which is a continuation-in-part of Ser. No. 810,642, Dec. 18, 1991, abandoned. This application May 31, 1995, Ser. No. 460,825

Int. Cl.[6] A61K *31/55;31/495;* **C07D** *403/06*

U.S. Cl. 514—218 **9 Claims**

1. A compound of the formula:

(1.0)



or a pharmaceutically acceptable salt or solvate thereof, wherein:

(A) n is 2, such that ring T is a seven membered ring;

(B) R^1 is selected from the group consisting of:

(1) H;

(2) C_1 to C_6 alkyl;

(3) allyl; and

(4) propargyl;

(C) R^3 and R^4 are independently selected from the group consisting of:

(1) H;

(2) C_1 to C_6 alkyl;

(3) allyl;

(4) propargyl; and

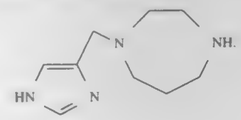
(5) $—(CH_2)_q—R^5$ wherein q is an integer of: 1 to 7, and R^5 is selected from the group consisting of: phenyl, substituted phenyl, $—OR^6$, $—C(O)OR^6$, $—C(O)R^6$, $—OC(O)R^6$, $—C(O)NR^6R^7$, CN and $—SR^6$ wherein R^6 and R^7 are as defined below, and wherein the substituents on said substituted phenyl are each independently selected from the group consisting of: —OH, —, O—(C_1 to C_6)alkyl, halogen, C_1 to C_6 alkyl, $—CF_3$, —CN, and $—NO_2$, and wherein said substituted phenyl contains from 1 to 3 substituents;

(D) R^6 and R^7 are each independently selected from the group consisting of: H and C_1 to C_6 alkyl; and

(E) R^3 and R^4 are each independently bound to the same or different carbon atom of ring T.

8. A compound having the formula:

(4.1)



5,633,251

N-2,3-DIHYDRO-1-(2-PROPYL)-2-OXO-5-PHENYL-1H-1,4-BENZODIAZEPINES

David A. Claremon, Maple Glen; Nigel Liverton, Harleyville, and Harold G. Selnick, Ambler, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

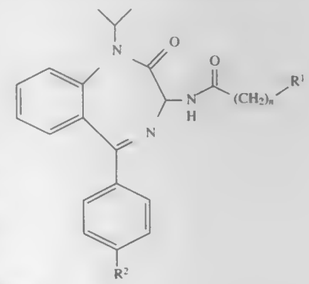
Continuation-in-part of Ser. No. 292,449, Aug. 18, 1994, abandoned. This application Aug. 17, 1995, Ser. No. 516,467

Int. Cl.[6] C07D *243/24;* **A61K** *31/395*

U.S. Cl. 514—221 **11 Claims**

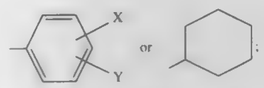
1. A compound of the structural formula I

FORMULA I



where

R^1 is



X and Y are independently hydrogen, fluoro, chloro, bromo, iodo, or trifluoromethyl;

n is 0, 1 or 2; and

R^2 is hydrogen, fluoro, chloro, bromo, iodo, or trifluoromethyl, methyl, or methoxy;

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as the racemates, mixtures of enantiomers, individual diastereomers or individual enantiomers, and pharmaceutically acceptable crystal forms, salts, or hydrates thereof.

5,633,252

Patent Not Issued For This Number

5,633,253

SUBSTITUTED THIOSEMICARBAZONIC ACID ESTERS

Martin Missbach, Rheinfelden, Switzerland, assignor to Ciby-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/03779, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO95/14687, PCT Pub. Date Jun. 1, 1995

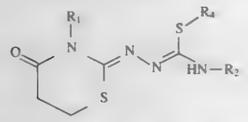
PCT Filed Nov. 15, 1994, Ser. No. 500,988

Claims priority, application Switzerland, Nov. 25, 1993, 3523/93; Dec. 3, 1993, 3616/93

Int. Cl.[6] A61K *31/54;* **C07D** *279/06*

U.S. Cl. 514—228.8 **11 Claims**

1. A compound of formula I



(I)

wherein R_1 is lower alkyl, lower alk-2-en-1-yl, lower alk-2-yn-1-yl, or aryl-lower alkyl, R_2 is hydrogen, lower alkyl, aryl, aryl-lower alkyl, lower alk-2-en-1-yl, lower alk-2-yn-1-yl, unsaturated or saturated heterocycly-lower alkyl, lower alkoxycarbonyl-lower alkyl or the group —C(=O)-R_3, wherein R_3 is lower alkyl, aryl, aryl-lower alkyl, aryl-lower alkenyl, heteroaryl (hetaryl), aryloxy, aryl-lower alkoxy or lower alk-2-en-1-yloxy, and R_4 is lower alkyl, lower alkoxy, lower alk-2-en-1-yl, lower alk-2-yn-1-yl, aryl-lower alkyl, aryl-lower alkenyl, or also lower alkoxycarbonyl-lower alkyl, or a salt thereof.

5,633,254

SYNERGISTIC FUNGICIDAL MIXTURES FOR THE CONTROL OF PLANT DISEASES

Yigal Cohen, Kiryat Ono, Israel, assignor to Agrogene Ltd., and C.T.S. Ltd., both of Israel

Filed Jan. 11, 1996, Ser. No. 583,909

Int. Cl.[6] A01N *37/34;43/38;47/10;* **A61K** *31/535*

U.S. Cl. 514—237.5 **13 Claims**

1. A method of combatting phytophogenic fungi which comprises applying to the plants cymoxanil and dimethomorph in a synergistic fungicidally effective aggregate amount wherein the weight ratio of cymoxanil to dimethomorph is about 1.5:1, and the aggregate amount of cymoxanil and dimethomorph lies in the range of from about 550 to about 1000 g per hectare of crop locus.

5,633,255

1,2-DIHYDRO-2-OXO-3-AMINOQUINOXALINE DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Dennis Bigg; Jean-Francois Patoiseau, both of Castres; Jean-Marie Autin, Labruguiere, and Jean-Pierre Tarayre, Valdurenque, all of France, assignors to Pierre Fabre Medicament, Boulogne, France

PCT No. PCT/FR93/00991, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO94/07870, PCT Pub. Date Apr. 14, 1994

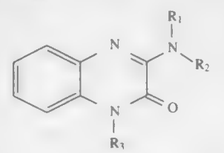
PCT Filed Oct. 7, 1993, Ser. No. 411,594

Claims priority, application France, Oct. 7, 1992, 92 11878

Int. Cl.[6] A61K *31/495;* **C07D** *241/44*

U.S. Cl. 514—255 **10 Claims**

1. A 1,2-Dihydro-2-oxo-3-aminoquinoxaline compound selected from those of formula I



I

in which

R_1 and R_2represent, independently of each other, hydrogen or a linear or branched C_1–C_4 alkyl radical,

R_3 represents a linear or branched C_3–C_6 alkyl, C_3–C_6 alkenyl or C_3–C_6 hydroxyalkyl group,

and a pharmaceutically, acceptable acid addition salt thereof.

5,633,256

CERTAIN PYRIMIDINYLOXY-PHENYL ACRYLATES, DERIVATIVES THEREOF AND THEIR FUNGICIDAL USE

Vivienne M. Anthony, Maidenhead; John M. Clough, Marlow; Paul DeFraine, Wokingham, and Christopher R. A. Godfrey, Bracknell, all of England, assignors to Zeneca Limited, London, England

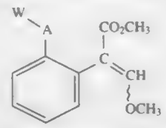
Continuation of Ser. No. 239,845, May 9, 1994, Pat. No. 5,470,819, which is a continuation of Ser. No. 738,311, Jul. 31, 1991, abandoned, which is a division of Ser. No. 465,526, Jan. 17, 1990, Pat. No. 5,057,146, which is a continuation of Ser. No. 39,252, Apr. 17, 1987, abandoned. This application Mar. 29, 1995, Ser. No. 412,449

Claims priority, application United Kingdom, Apr. 17, 1986, 8609454; Dec. 23, 1986, 8630825

Int. Cl.[6] A01N *43/54;* **C07D** *239/34*

U.S. Cl. 514—256 **7 Claims**

1. A compound having the formula (Ia):



(Ia)

or a stereoisomer thereof, wherein A is $S(O)_n$ in which n is 0, 1 or 2, or an oxygen atom; W is a pyrimidinyl ring linked to A by any one of its carbon atoms and substituted by one or more substituents selected from the group comprising halogen, hydroxy, C_{1-6} alkyl, C_{2-6} alkenyl optionally substituted with phenyl, C_{2-6} alkynyl, C_{1-6} alkoxy, phenoxy, phenyl, —COR', —NR'R", —NHCOR', nitro, cyano, —CO_2R^3, —$CONR^4R^5$, —COR^6 or —$S(O)_mR^7$, wherein R' and R" are as defined below, R^3, R^4, R^5, R^6 and R^7, which are the same or different, are hydrogen, C_{1-6} alkyl, cycloalkyl, C_{3-6} cycloalkyl (C_{1-4})alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, phenyl or phenyl (C_{1-6})alkyl and m is 0, 1 or 2, any of the foregoing alkyl and alkoxy moieties being optionally substituted with halogen, hydroxy, C_{1-6}, alkoxy, phenyl or phenoxy, any of the foregoing phenyl moieties being optionally substituted with halogen, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy C_{1-4} alkylthio, C_{1-4} alkoxy(C_{1-6})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl, phenoxy, phenyl(C_{1-4})alkyl, phenyl(C_{1-4})alkoxy, phenoxy(C_{1-4})alkyl, cyano, thiocyanato, nitro, —NR'R", —NHCOR', —NHCONR'R", —CONR'R". —COOR', —OSO_2R', —SO_2R', —COR', OCOR', —CR'=NR" or N=CR'R", wherein R' and R" are independently hydrogen, C_{1-4} hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkythio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl or benzyl, the phenyl and benzyl groups being optionally substituted with halogen, C_{1-4} alkyl, or C_{1-4} alkoxy.

5,633,257

CYCLO(ALKYL AND ALKENYL)PHENYL-ALKENYLYL(ARYL AND HETEROARYL)COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Graham J. Warrellow, Northwood; Valerie A. Cole, Burnham, and Rikki P. Alexander, High Wycombe, all of United Kingdom, assignors to Celltech Therapeutics Limited, Berkshire, United Kingdom

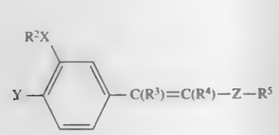
Filed Mar. 9, 1994, Ser. No. 209,419

Claims priority, application Germany, Mar. 10, 1993, 9304919.5

Int. Cl.[6] A61K *31/44;* **C07D** *213/02*

U.S. Cl. 514—277 **26 Claims**

1. A compound of the formula



wherein

Y is halogen or —OR^1, where R^1 is substituted or unsubstituted C_{1-6}alkyl, said R^1 substituent being halogen;

X is —O—, —S— or —$N(R^6)$—;

Z is —$(CH_2)_n$—, where n is an integer of 0 to 3;

R^2 is substituted or unsubstituted C_{3-8}cycloalkyl or substituted or unsubstituted C_{3-8}cycloalkenyl, said R^2 substituents being halogen, C_{1-6}alkyl, hydroxyl or C_{1-6}alkoxy;

each of R^3 and R^4 is independently hydrogen, substituted or unsubstituted C_{1-6}alkyl, said C_{1-6}alkyl substituents being halogen, hydroxyl, C_{1-6}alkoxy, thiol or C_{1-6}alkylthio, —CO_2R^7, —$CONR^8R^9$, —$CSNR^8R^9$, —CN or CH_2CN;

R^5 is substituted or unsubstituted pyridyl, said R^5 substituent being R^{10};

R^6 is hydrogen or C_{1-6}alkyl;

each of R^7, R^8 and R^9 is independently hydrogen, substituted or unsubstituted C_{1-3}alkyl, substituted or unsubstituted C_{6-12}arylC_{1-3}alkyl or substituted or unsubstituted C_{6-1}aryl;

R^{10} is R^{11} or —$Alk^1(R^{11})_m$, wherein m is an integer of 0 to 3 and Alk^1 is straight or branched C_{1-6}alkylene, C_{2-6}alkenylene or C_{2-6}alkynylene, said Alk^1 group is optionally interrupted by one to three —O—, —S—, —$N(R^6)$— or —$S(O)_p$— groups, where p is 1 or 2; and

R^{11} is halogen, amino (—NH_2), substituted amino, nitro, cyano, hydroxyl (—OH), substituted hydroxyl, cycloalkoxy, formyl (HC(O)—), carboxyl (—CO_2H), esterified carboxyl, thiol (—SH), substituted thiol, —C(O)R^7, —SO_3H, —SO_2R^7, —$SO_2N(R^7R^8)$, —$CON(R^7R^8)$, —$NHSO_2R^7$, —$N(SO_2R^7)_2$, —$NHSO_2N(R^7R^8)$, —NHC(O)R^7 or —NHC(O)OR^7;

or a salt, solvate, hydrate, prodrug or N-oxide thereof.

5,633,258

PYRIDINE COMPOUNDS FOR TREATING LEUKOTRIENE-RELATED DISEASES

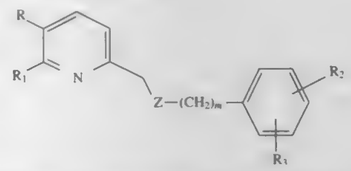
Pamela A. Chambers, King of Prussia; Robert A. Daines, Lansdale; Dalia R. Jakas, Norristown; William D. Kingsbury, Wayne, and Israil Pendrak, Norristown, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 211,063, Jul. 18, 1994, abandoned. This application May 11, 1995, Ser. No. 439,537

Int. Cl.[6] A61K *31/44;* **C07D** *401/12;213/64;213/65*

U.S. Cl. 514—277 **4 Claims**

1. A compound of formula I



I

or an N-oxide, or a pharmaceutically acceptable salt where

Z is NH, or NCH_3,

m is 0–5;

R is C_1 to C_{20}-aliphatic, unsubstituted or substituted phenyl C_1 to C_{10}-aliphatic where substituted phenyl has one or more radicals selected from the group consisting of lower alkoxy, lower alkyl, trihalomethyl, and halo, or R is C_1 to C_{20}-aliphatic-O—, or R is unsubstituted or substituted phenyl C_1 to C_{10}-aliphatic-O— where substituted phenyl has one or more radicals selected from the group consisting of lower alkoxy, lower alkyl, trihalomethyl, and halo;

R_1 is -(C_1 to C_5 aliphatic)R_4,-(C_1 to C_5 aliphatic)CHO, -(C_1 to C_5 aliphatic)CH_2OR_8,—R_4, —CH_2OH. or CHO;

R_2 is H, halo, lower alkyl, lower alkoxy, —CN, —$(CH_2)_nR_4$. —$CH(NH_2)(R_4)$, or —$(CH_2)_n$ R_9 where n is 0–5 and where R_9 is —$N(R_7)_2$ where each R_7 is independently H, or an aliphatic group of 1 to 10 carbon atoms, or acyl of 1–6 carbon atoms, or a cycloalkyl-$(CH_2)_n$-group of 4 to 10 carbons where n is 0–3, or both R_7 groups form a ring having 4 to 6 carbons; or

R_3 is hydrogen, lower alkyl, lower alkoxy, halo, —CN, R_4. $NHCONH_2$, or OH;

each R_4 group is independently —COR_5 where R_5 is —OH, a pharmaceutically acceptable ester-forming group —OR_6, or —OX where X is a pharmaceutically acceptable cation, or R_5 is —$N(R_7)_2$ where each R_7 is independently H, or an aliphatic group of 1 to 10 carbon atoms, or a cycloalkyl-$(CH_2)_n$- group of 4 to 10 carbons where n is 0–3, or both R_7 groups form a ring having 4 to 6 carbons, or R_4 is a sulfonamide, or tetrazol-5-yl; and

R_8 is hydrogen, C_1 to C_6 alkyl, or C_1 to C_6-acyl,

excluding those compounds where R_2 and R_3 are other than hydrogen and are substituted in the 2 and 6 positions.

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5,633,259

METHOD FOR IDENTIFICATION OF LOW/NON-ADDICTIVE OPIOID ANALGESICS AND THE USE OF SAID ANALGESICS FOR TREATMENT OF OPIOID ADDICTION

Bo-yi Qin; Xiong-qi Gong; Mao Huang; Li-Jun Sha, all of Beijing, China, and Chang Yi Wang, Cold Spring Harbor, N.Y., assignors to United Biomedical, Inc., Hauppauge, N.Y.

Continuation of Ser. No. 88,503, Jul. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 977,332, Nov. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 947,690, Sep. 21, 1992, abandoned. This application Feb. 13, 1995, Ser. No. 387,679

Int. Cl.[6] **A61K** *31/44:31/135*

U.S. Cl. 514—282 **6 Claims**

1. A method of treating opioid addiction which comprises administering sublingually, intramuscularly or intravenously an effective amount of a non-addictive opioid analgesic selected from the group consisting of etorphine and dihydroetorphine, to a patient for a first time sufficient for immediate relief or suppression of withdrawal symptoms due to said opioid addiction; administering an effective amount of an replacement opioid for a second time sufficient to maintain said relief or said suppression; followed by administering decreasing amounts of said non-addictive opioid analgesic for a third time sufficient to wean said patient from said analgesic.

5,633,260

11,7 SUBSTITUTED CAMPTOTHECIN DERIVATIVES AND FORMULATIONS OF 11,7 SUBSTITUTED CAMPTOTHECIN DERIVATIVES AND METHODS FOR USES THEREOF

Frederick H. Hausheer, San Antonio, and Kochat Haridas, Houston, both of Tex., assignors to BioNumerik Pharmaceuticals, Inc., San Antonio, Tex.

Division of Ser. No. 229,527, Apr. 19, 1994, Pat. No. 5,468,754. This application Aug. 24, 1995, Ser. No. 518,644

Int. Cl.[6] **A61K** *31/475*

U.S. Cl. 514—283 **42 Claims**

1. An 11-hydroxy-7-ethyl camptothecin solution consisting essentially of 11-hydroxy-7-ethyl camptothecin dissolved in dimethylisosorbide and a pharmaceutically acceptable acid wherein said acid is an organic carboxylic acid selected from the group consisting of citric acid and taurocholic acid in an admixture with citric acid.

5,633,261

IMMUNOSTIMULATING SWAINSONINE ANALOGS

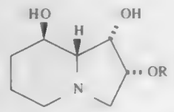
David Dime, Toronto, Canada, assignor to Toronto Research Chemicals, Inc., Downsview, Canada

Division of Ser. No. 232,231, Jul. 12, 1994, Pat. No. 5,466,809, which is a continuation-in-part of Ser. No. 788,583, Nov. 6, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 457,981

Int. Cl.[6] **A61K** *31/435:* **C07D** *471/04*

U.S. Cl. 514—299 **7 Claims**

1. A swainsonine compound for use as an inhibitor of Golgi alpha-manosidase II and an immunostimulator having the formula illustrated below.



or a salt of said compound, where R is selected from the group consisting of $C{=}O(CH_2)_2CH_3$, $Si(CH_3)_3$, $C{=}OC_6H_5$, $C{=}O(CH_2)_6CH_3$, $C{=}O(CH_2)_2COOH$, $Si(C_6H_5)_2C(CH_3)3$, $Si(CH_3)_2C(CH_3)3$, $C{=}O(CH_2)_{16}CH_3$, $C{=}O(CH_2)_{14}CH_3$, $C{=}O(CH_2)_{12}CH_3$, $C{=}OC_6H_5$, 2-furoyl, m-toluoyl, p-toluoyl, p-nitrobenzoyl, p-bromobenzoyl, benzyl, allyl, 4-methoxytrityl, triphenylmethyl, butyl, pentyl, hexyl, heptyl, octyl, dodecyl, hexadecyl, octadecyl, acetyl, propionyl, pivaloyl, phenoxypropionyl, imadazolyl, imadazoylthiocarbonyl, 2,3,4,6-tetra-O-acetyl-β-D-glucopyranosyl, β-D-glucopyranosyl, 2,3,4,6-tetra-O-acetyl-alpha-D-mannopyranosyl, alpha-D-mannopyranosyl, 2,3,4,6-tetra-O-acetyl-β-D-mannopyranosyl, β-D-mannopyranosyl, 2-acetamido-2-deoxy-3,4,6-tri-O-acetyl-β-D-glucopyranosyl, 2-acetamido-2-deoxy-β-D-glucopyranosyl, 2,3,4-tri-O-benzyl-alpha-L-fucopyranosyl, alpha-L-fucopyranosyl, 2,3,4,6-tetra-O-acetyl-β-D-galactopyranosyl, β-D-glactopyranosyl, 2-acetamido-2-deoxy-3,4,6-tri-O-acetyl-β-D-galactopyranosyl, 2-acetamido-2-deoxy-β-D-galactopyranosyl, 2-acetamido-2-deoxy-3,4,6-tri-O-acetyl-alpha-D-galactopyranosyl, 2-acetamido-2deoxy-alpha-D-galactopyranosyl, N-acetylneuraminyl, lactosaminyl, and β-D-glucuronyl.

5,633,262

QUINOLINE CARBOXYLIC ACID DERIVATIVES HAVING 7-(4-AMINO-METHYL-3-OXIME) PYRROLIDINE SUBSTITUENT AND PROCESSES FOR PREPARING THEREOF

Chang Y. Hong, Daejeon; Young K. Kim, Kyungki-do; Jay H. Chang, Daejeon; Se H. Kim, Seoul; Hoon Choi, Daejeon; Do H. Nam, Daejeon; Jin H. Kwak, Daejeon; Yi N. Jeong, Daejeon; Jeong I. Oh, Daejeon, and Mu Y. Kim, Daejeon, all of Rep. of Korea, assignors to LG Chemical Ltd., Seoul, Rep. of Korea

Filed Jun. 15, 1995, Ser. No. 490,978

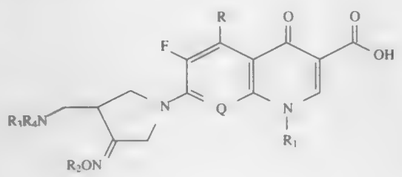
Claims priority, application Rep. of Korea, Jun. 16, 1994, 94-13604; Dec. 30, 1994, 94-39915; Dec. 30, 1994, 94-39930

Int. Cl.[6] **A61K** *31/44;* **C07D** *471/02*

U.S. Cl. 514—300 **6 Claims**

1. A naphthyridine carboxylic acid compound represented by the following formula (I) :

(I)



and its pharmaceutically acceptable non-toxic salt, its physiologically hydrolyzable ester, solvate and isomer, in which

R represents hydrogen, methyl or amino;

Q represents N;

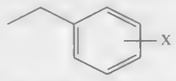
R_1 represents cyclopropyl, ethyl, or phenyl which is substituted with one or more fluorine atom(s);

R_2 represents one of the following a) through e):

a) hydrogen, straight or branched C_1–C_4 alkyl, cyclopropyl, cyclopropylmethyl, C_3–C_6 alkynyl, 2-haloethyl, methoxymethyl, methoxycarbonylmethyl, aryl or allyl,

b) a group of the following formula (1),

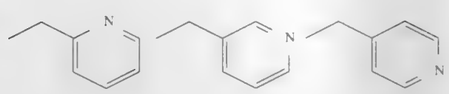
(1)



wherein X represents hydrogen, 2, 3 or 4-fluoro, cyano, nitro, methoxy, C_1–C_4 alkyl, or 2,4-difluoro.

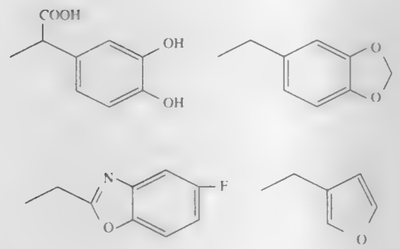
c) a group of the following formula (2).

(2)



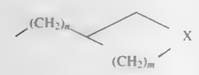
d) a heteroarylmethyl of the following formula (3).

(3)



e) a group of the following formula (4).

(4)



wherein n denotes 0 or 1, m denotes 0, 1 or 2 and X represents methylene, O or N, and

R_3 and R_4 independently of one another represent hydrogen or C_1–C_3 alkyl or R_3 and R_4 together with a nitrogen atom to which they are attached can form a ring.

5,633,263

LINEAR SOMATOSTATIN ANALOGS

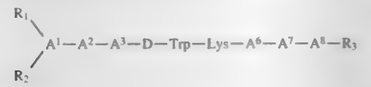
David H. Coy, New Orleans, and William A. Murphy, Slidell, both of La., assignors to The Administrators of the Tulane Educational Fund, New Orleans, La.

Continuation-in-part of Ser. No. 839,734, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 343,325, Apr. 26, 1989, abandoned. This application Aug. 15, 1994, Ser. No. 291,193

Int. Cl.[6] **C07K** *14/655;* **A61K** *38/31*

U.S. Cl. 530—311 **16 Claims**

1. An octapeptide of the formula:



wherein

A^1 is a D-isomer of β-Nal, Phe, 2,4-dichloro-Phe, pentafluoro-Phe, p-X-Phe, or o-X-Phe, wherein X is CH_3, Cl, Br, F, OH, OCH_3, or NO_2;

A^2 is Ala, Phe, β-Nal, 2,4-dichloro-Phe, pentafluoro-Phe, o-X-Phe, or p-X-Phe, wherein X is CH_3, Cl, Br, F, OH, OCH_3, or NO_2;

A^3 is Phe, β-Nal, Trp, 2,4-dichloro-Phe, pentafluoro-Phe, o-X-Phe, or p-X-Phe, wherein X is CH_3, Cl, Br, F, OH, OCH_3, or NO_2;

A^6 is Val, Ala, Leu, Ile, Nle, Thr, or Ser;

A^7 is Ala, Phe, β-Nal, 2,4-dichloro-Phe, Pentafluoro-Phe, o-X-Phe, or p-X-Phe, wherein X is CH_3, Cl, Br, F, OH, OCH_3, or NO_2;

A^8 is a D- or L-isomer of Thr, Ser, Phe, β-Nal, [pyridyl-Ala, Trp,]2,4-dichloro-Phe, pentafluoro-Phe, p-X-Phe, or o-X-Phe, wherein X is CH_3, Cl, Br, F, OH, OCH_3, or NO_2;

each R_1 and R^2, independently, is H, C_{1-5} acyl or C_{1-5} alkyl; and R_3 is OH or NH_2; provided that at least one of A^1 and A^2 and one of A^7 and A^8 must be one of the aromatic amino acid assigned thereto; and further provided that each of A^1, A^2, A^7, and A^8 cannot all be one of the aromatic amino acids assigned thereto; or a pharmaceutically acceptable salt thereof.

5,633,264

INDIVIDUAL STEREOISOMERS OF 7-[3-(1-AMINOALKYL)-1-PYRROLIDINYL]-QUINOLONES AND NAPHTHYRIDONES AS ANTIBACTERIAL AGENTS

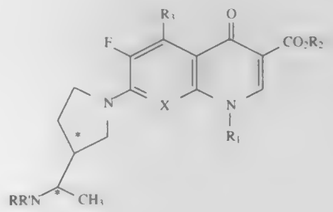
John M. Domagala, Canton; John S. Kiely, Ann Arbor, and Mel C. Schroeder, Dexter, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 434,433, May 3, 1995, Pat. No. 5,563,155, which is a division of Ser. No. 221,146, Mar. 30, 1994, Pat. No. 5,461,165, which is a division of Ser. No. 84,044, Jun. 28, 1993, Pat. No. 5,344,940, which is a division of Ser. No. 966,651, Oct. 26, 1992, Pat. No. 5,258,528, which is a division of Ser. No. 731,825, Jul. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,201, Nov. 30, 1990, abandoned. This application May 19, 1995, Ser. No. 444,247

Int. Cl.[6] **A61K** *31/47;* **C07D** *215/56*

U.S. Cl. 514—312 **11 Claims**

1. A 3S,1R stereoisomer of a compound of the formula



wherein

* denotes an asymmetric carbon atom;

X is C-CF_3;

R_1 is ethyl, cyclopropyl, or 2,4-difluorophenyl;

R_2 is hydrogen, alkyl of 1–4 carbon atoms or a cation;

R_3 is hydrogen, amino, or methyl;

R and R' are each independently hydrogen or alkyl of 1–3 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

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5,633,265

HETEROARYLPIPERIDINES, PYRROLIDINES AND PIPERAZINES AND THEIR USE AS ANTIPSYCHOTICS AND ANALGETICS HETEROARYLPIPERIDINES AND THEIR USE AS ANTIPSYCHOTICS AND ANALGESICS

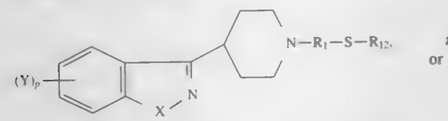
Joseph T. Strupczewski, Flemington; Grover C. Helsley, Stockton; Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 468,993

Int. Cl.[6] **A61K** *31/495;31/55;31/505;31/44;* **C07D** *401/04;403/04:417/04;419/04;221/04;275/04;239/02*

U.S. Cl. 514—316 **16 Claims**

1. A compound of the formula



wherein, X is —O—, —S—, —NH—, or —N(R_2)—;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenysulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is —$CR_{24}R_{27}$—$(CR_{23}R_{24})_n$—$CR_{24}R_{27}$— where n is 0, 1, 2, or 3; or

—CHR_{24}—CH═CH—CHR_{24}—,

—CHR_{24}—C≡C—CHR_{24}—,

—CHR_{24}—CH═CH—$CR_{23}R_{24}$—CHR_{24}—,

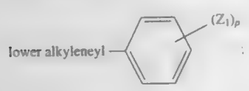
—CHR_{24}—$CR_{23}R_{24}$—CH═CH—CHR_{24}—,

—CHR_{24}—C≡C—$CR_{23}R_{24}$—CHR_{24}—, or

—CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24}—,

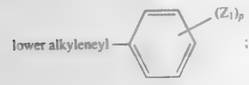
the —CH═CH— bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy, (C_1–C_{18}) alkoxy, aryloxy, aryl (C_1–C_{18}) alkyloxy, (C_1–C_{18}) alkanoyloxy, hydroxy (C_1–C_6) alkyl, (C_1–C_{18}) alkoxy (C_1–C_6) alkyl, phenyl (C_1–C_6) alkoxy, aryl (C_1–C_{18}) alkyloxy (C_1–C_6) alkyl, (C_1–C_{18}) alkanoyloxy (C_1–C_6) alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2, or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy (C_1–C_6) alkyl, (C_1–C_{18}) alkoxy (C_1–C_6) alkyl, phenyl (C_1–C_6) alkyloxy, aryl (C_1–C_{18}) alkyloxy (C_1–C_6) alkyl, (C_1–C_{18}) alkanoyloxy (C_1–C_6) alkyl, or



where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S;

R_{12} is selected from the group consisting of: hydrogen, alkyl,

—C (═O)—(C_1–C_{18}) straight chain or branched) alkyl,

—C (═O)—$NR_{13}R_{14}$,

—C (═O)—$NR_{15}R_{16}$, and

—S (═O)$_2$—R_{17};

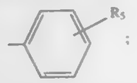
where R_{13} is selected from the group consisting of hydrogen and (C_1–C_{18}) alkyl groups;

where R_{14} is selected from the group consisting of hydrogen and (C_1–C_{18}) alkyl groups;

where $NR_{15}R_{16}$ taken together form a ring structure selected from the group consisting of piperidinyl, morpholinyl, and piperazinyl;

where R_{17} is selected from the group consisting of (C_1–C_{18}) alkyl and aryl groups;

in which aryl is phenyl or



where R_5 is hydrogen, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

all geometric, optical, and stereoisomers thereof;

or a pharmaceutically acceptable acid addition salt thereof.

5,633,266

AZACYCLIC COMPOUNDS COMPOSITIONS CONTAINING THEM AND THEIR USE AS TACHYKININ ANTAGONISTS

Raymond Baker; Christopher J. Swain, and Brian J. Williams, all of Harlow, United Kingdom, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/EP94/00412, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/19323, PCT Pub. Date Sep. 1, 1994

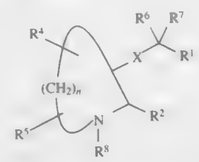
PCT Filed Feb. 10, 1994, Ser. No. 495,429

Claims priority, application United Kingdom, Feb. 18, 1993, 9303243; Oct. 27, 1993, 9322150

Int. Cl.[6] **A61K** *31/445;* **C07D** *211/42*

U.S. Cl. 514—327 **17 Claims**

1. A compound of formula (I), or a salt thereof:



(I)

wherein

n is 3 and where any carbon atom of $(CH_2)_n$ may be substituted by R^4 and/or R^5;

X represents O or S;

R^1 represents $(CH_2)_q$phenyl, wherein q is 0, 1, 2 or 3, which may be optionally substituted in the phenyl ring by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6} alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a and —$CONR^aR^b$;

R^2 represents aryl selected from phenyl and naphthyl; heteroaryl selected from indazolyl, thienyl, furyl, pyridyl, thiazolyl, tetrazolyl and quinolyl; moiety may be substituted by C_{1-6}alkyl, C_{1-6}alkoxy halo benzhydryl; or benzyl; wherein each aryl or heteroaryl or trifluoromethyl;

R^4 and R^5 each independently represent H, halo, C_{1-6}alkyl, CO_2R^aor $CONR^aR^b$or R^4 and R^5 together form an oxo;

R^6 represents H or C_{1-6}alkyl;

R^7 represents C_{1-6}alkyl or phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a and —$CONR^aR^b$;

R^8 represents H, —COR^a, —CO_2R^a, —$COCONR^aR^b$, —$COCO_2R^a$, C_{1-6}alkyl optionally substituted by a group selected from —$(CO_2R^a$, —$CONR^aR^b$, hydroxy, cyano, —COR^a, —NR^aR^b, —C(NOH)NR^aR^b, —CONHphenyl(C_{1-4}alkyl), —$COCO_2{}^{Ra}$, —CONRHNR$^aR^b$, —C(S)NR^aR^b, —$CONR^aC_{1-6}$alkylR^{12}, —$CONR^{13}C_{2-6}$alkynyl, —$CONR^{13}C_{2-6}$alkenyl, —$COCONR^aR^b$, —$CONR^aC(NR^b)NR^aR^b$, —$CONR^a$heteroaryl, wherein heteroaryl is defined above, and phenyl optionally substituted by one or more substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl) or C_{1-6}alkyl, optionally substituted by oxo, substituted by an aromatic heterocyclic group selected from thienyl, furyl, pyrrolyl, pyridyl, pyrazolyl, triazolyl, tetrazolyl, thiazolyl, pyrazinyl, pyridazinyl, oxazolyl, oxadiazolyl, thiadiazolyl, isoxazolyl, quinolyl, isothiazolyl, imidazolyl, benzimidazolyl, benzoxazolyl, benzothiophenyl, benzofuranyl and indolyl, which group is optionally substituted by C_{1-6}alkyl, C_{1-6}alkxy, oxo, thioxo, halo, trifluoromethyl, $N^{Ra}R^b$, NR^aCOR^b, $CONR^aR^b$, CO_2R^a, SO_2R^a and CH_2OR^a, where R^a and R^b are as previously defined;

R^a and R^b each independently represent H, C_{1-6}alkyl, trifluoromethyl or phenyl optionally substituted by C_{1-6}alkyl, halo or trifluoromethyl;

R^{12} represents OR^a, $CONR^aR^b$ or heteroaryl; and

R^{13} represents H or C_{1-6}alkyl.

5,633,267

PYRIDYL-1,2,4-THIADIAZOLES AS PEST-CONTROL AGENTS

Ulrich Heinemann, Leichlingen; Ralf Tiemann, Leverkusen, and Heinz-Wilhelm Dehne, Bonn, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP93/03198, § 371 Date May 19, 1995, § 102(e) Date May 19, 1995, PCT Pub. No. WO94/12496, PCT Pub. Date Jun. 9, 1994

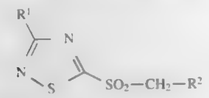
PCT Filed Nov. 15, 1993, Ser. No. 433,414

Claims priority, application Germany, Nov. 26, 1992, 42 39 727.8

Int. Cl.[6] **C07D** *417/04;* **G01N** *43/40*

U.S. Cl. 514—342 **1 Claim**

1. A method of combating fungi which comprises applying to such fungi or to a locus from which it is desired to exclude such fungi a fungicidally effective amount of a compound or salt of a pyridyl-1,2,4-thiadiazole of the formula



(I)

in which

R^1 represents 2-pyridyl, 3-pyridyl or 4-pyridyl, it being possible for each of these radicals to be monosubstituted to tetrasubstituted by identical or different substituents consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylsulphonyl having in each case 1 to 6 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylsulphonyl having in each case 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl having 1 to 6 carbon atoms in the alkoxy group, straight-chain or branched alkoximinoalkyl having 1 to 6 carbon atoms in the alkoxy moiety and 1 to 6 carbon atoms in the alkyl moiety, and of phenyl which in turn may be monosubstituted to tetrasubstituted by identical or different substituents consisting of halogen and/or straight-chain or branched alkyl or alkoxy having in each case 1 to 6 carbon atoms and/or straight-chain or branched halogenoalkyl or halogenoalkoxy having in each case 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, and

R^2 represents aryl having 6 to 10 carbon atoms, it being possible for each of these radicals to be monosubstituted to pentasubstituted by identical or different substituents consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylsulphonyl having in each case 1 to 6 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylsulphonyl having in each case 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl having 1 to 6 carbon atoms in the alkoxy group, straight-chain or branched alkoximinoalkyl having 1 to 6 carbon atoms in the alkoxy moiety and 1 to 6 carbon atoms in the alkyl moiety, and of phenyl which in turn may be monosubstituted to pentasubstituted by identical or different substituents consisting of halogen and/or straight-chain or branched alkyl or alkoxy having in each case 1 to 6 carbon atoms and/or straight-chain or branched halogenoalkyl or halogenoalkoxy having in each case 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms.

5,633,268

SUBSTITUTED ORTHO-ETHENYLPHENYLACETIC ACID DERIVATIVES

Reinhard Kirstgen, Neustadt; Hans Theobald, Limburgerhof; Klaus Oberdorf, Heidelberg; Reinhard Doetzer, Weinheim; Ralf Klintz, Dannstadt-Schauernheim; Bernd Schaefer, Dierbach; Volker Harries, Frankenthal; Uwe Kardorff, Mannheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03067, § 371 Date May 12, 1995, § 102(e) Date May 12, 1995, PCT Pub. No. WO94/11334, PCT Pub. Date May 26, 1994

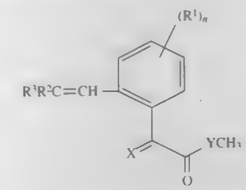
PCT Filed Nov. 12, 1993, Ser. No. 433,515

Claims priority, application Germany, Nov. 12, 1992, 42 38 260.2

Int. Cl.[6] **C07D** *285/08;* **A61K** *31/41*

U.S. Cl. 514—363 **19 Claims**

1. A compound of the formula I



where the index and the substituents have the following meanings:

n is 0, 1, 2, 3 or 4, where the radicals R^1 can be different if n>1;

X is $CHOCH_3$, $CHCH_3$ or $NOCH_3$;

Y is O or NH;

R^1 is halogen; C_1–C_4-alkyl; C_1–C_4-haloalkyl; C_1–C_4-alkoxy; C_1–C_4-haloalkoxy; C_1– or, if n>1, R is a 1,3-butadiene-1,4-diyl group bonded to two adjacent C atoms of the parent structure, which group can carry one to four halogen and/or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and C_1–C_4-alkylthio;

R^2 is nitro, cyano, halogen, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonylamino, C_1–C_4-alkoxycarbonylamino or benzylcarbonylamino;

R^3 if X is $CHOCH_3$ or $NOCH_3$ and R^2 is halogen, is phenyl, 1-naphthyl, 2-naphthyl, 5-isoxazolyl, 4-oxazolyl, 1,2,4-

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oxadiazol-5-yl, 1,3,4-thiadiazol-2-yl, 3-pyridinyl or 4-pyridinyl, where the aromatic rings may be unsubstituted or substituted;

or is a group R^4—T—C(=Z^1)— or R^5—C(=Z^2)—, where

=Z^1 is =O, =S or =NOR^4;

=Z^2 is =O, =NOR^4, =N—NR^7R^8, =NO—C(=O)—R^4, =NO—C(=O)—NR^7R^8 or =N—NR^7—C(=O)—R^4;

—T— is —O—, —S—, —NR^7—, —NR^7—NR^8—, —NOR^7— or —NR^7O—;

R^4 is hydrogen; unsubstituted or substituted alkyl, alkenyl or alkynyl; cyclopropyl, cyclopentyl, cyclohexyl, cyclopent-2-enyl, cyclohex-2-enyl, 2-tetrahydrofuranyl, 2-tetrahydrothienyl, 2-pyrrolidinyl, 3-isoxazolidinyl, 3-isothiazolidinyl, 1,3,4-oxazolidin-2-yl, 2,3-dihydrothien-2-yl, 4,5-isoxazolin-3-yl, 3-piperidinyl, 1,3-dioxan-5-yl, 4-piperidinyl, 2-tetrahydropyranyl or 4-tetrahydropyranyl, where the cyclic radicals may be unsubstituted or substituted; phenyl, 1-naphthyl, 2-naphthyl, 2-imidazolyl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, 3-isoxazolyl, 2-oxazolyl, 1,2,4-oxadiazol-3-yl, 1,2,4-triazol-3-yl, 3-pyridinyl, 2-pyridinyl, 2-pyrimidinyl, 4-pyrimidinyl or 1,3,5-triazin-2-yl, where the aromatic radicals may be unsubstituted or substituted;

R^5 is hydrogen; cyano; halogen; unsubstituted or substituted alkyl or alkoxy; cyclopropyl, cyclopentyl, cyclohexyl, 2-tetrahydrofuranyl, 3-tetrahydrofuranyl, 2-tetrahydrothienyl, 2-oxazolidinyl or 2-thiazolidinyl, where the cyclic radicals may be unsubstituted or substituted; phenyl, 1-naphthyl, 2-naphthyl, 2-furyl, 2-thienyl, 2-oxazolyl, 2 -thiazolyl, 1-imidazolyl, 1-pyrrolyl, 1-pyrazolyl, 3-pyridinyl or 4-pyridinyl, where the aromatic radicals may be unsubstituted or substituted;

R^6 is hydrogen or C_1–C_4 alkyl;

R^7 is hydrogen;

R^8 is hydrogen, C_1–C_4-alkyl or COR^7.

5,633,269

Patent Not Issued For This Number

5,633,270

THIAZOLIDINE DERIVATIVES, PREPARATION THEREOF AND DRUGS CONTAINING SAMEM

Marie-Christine Dubroeucq, Enghein les Bains, and Franco Manfre, Limeil-Brevannes, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR94/00007, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/15955, PCT Pub. Date Jul. 21, 1994

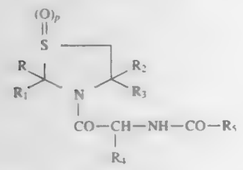
PCT Filed Jan. 3, 1994, Ser. No. 446,745

Claims priority, application France, Jan. 7, 1993, 93 00076

Int. Cl.[6] C07D *277/06;* **A61K** *31/425*

U.S. Cl. 514—365 **8 Claims**

1. A compound of formula:



(I)

in which

R represents an unbranched- or branched-chain alkyl radical containing 1 to 12 carbon atoms and optionally mono- or polyunsaturated, a cycloalkyl radical containing 3 to 12 carbon atoms and optionally mono- or polyunsaturated, a polycycloalkyl radical containing 6 to 12 carbon atoms and optionally mono- or polyunsaturated, a phenylalkyl radical in which the phenyl ring is optionally substituted with at least one substituent selected from alkyl and alkoxy radicals or halogen atoms, a diphenylalkyl or cinnamyl radical, a pyridyl radical optionally substituted with at least one alkyl radical, a furyl radical optionally substituted with at least one alkyl radical, a thienyl radical optionally substituted with one or more alkyl radicals, a quinolyl radical optionally substituted with at least one alkyl radical, a naphthyl radical optionally substituted with at least one alkyl radical, an indolyl radical optionally substituted with at least one alkyl radical, a 2-oxopiperidyl or quinuclidinyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy, hydroxyl, nitro, amine, monoalkylamino, dialkylamino, alkoxycarbonyl, —CO—NR_7R_8, —NH— CO—CH_3, trifluoromethyl, phenyl or trifluoromethoxy radicals,

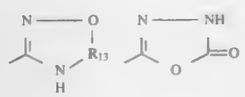
R_1 represents an hydrogen atom, an alkyl, cycloalkyl or phenylalkyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl and alkoxy radicals,

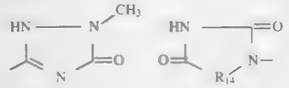
R_2 represents a chain —$(CH_2)_n$—CO—R_6, —$(CH_2)_m$—O—CO—R''_6 or —$(CH_2)_m$— NR_9R_{10}, an oxazolinyl radical optionally substituted with at least one alkyl radical or a 3-alkyloxadiazolyl radical,

R_3 represents a hydrogen atom, an alkyl, cycloalkyl or phenylalkyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl and alkoxy radicals,

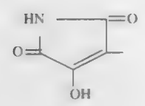
R_4 represents a hydrogen atom or an alkyl radical,

R_5 represents a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy and alkylthio radicals, a naphthyl, indolyl or quinolyl radical or a phenylamino radical in which the phenyl ring is optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy, alkylthio, trifluoromethyl, carboxyl, alkoxycarbonyl, hydroxyl, nitro, amino, acyl, cyano, sulphamoyl, carbamoyl, hydroxyiminoalkyl, alkoxyiminoalkyl, hydroxyaminocarbonyl, alkoxyaminocarbonyl, 5-tetrazolyl, 5-tetrazolylalkyl, trifluoromethylsulphonamido, alkylsulphinyl, mono- or polyhydroxyalkyl, sulpho, —alk—O—CO—alk, —alk—COOX, —alk—O—alk, —alk'—COOX, —O—alk—COOX, —CH=CH—COOX, —CO—COOX, —alk—SO_3H (in salt form), —CH=CH—alk', —C(=NOH)—COOX, —S—alk—COOX, —SO—alk—COOX, —SO_2—alk—COOX, —O—CH_2—alk'—COOX, —CX=N—O—alk—COOX, —alk—N(OH) —CO—alk, —alk—SO_2H, —SO_2—NH—CO—R_{11}, —SO_2—NH—SO—R_{11}, —CO—NH—CO—R_{11}, —CO—NH—SO_2—R_{11}, —$B(OH)_2$, —C(NH_2)=NOH, —SO_2—NH—R_{12}, —CO—NH—R_{12},





-continued



or 2,2-dimethyl-4,6-dioxo-1,3-dioxan-5-yl radicals,

R6represents a hydroxyl, alkoxy, cycloalkyloxy, cycloalkylalkyloxy or phenyl radical or a radical —NR_9R_{10},

R"$_6$ represents an alkoxy, cycloalkyloxy, cycloalkylalkyloxy or phenyl radical or a radical —NR_9R_{10},

R_7 represents a hydrogen atom, an alkyl or phenylalkyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy and alkylthio radicals,

R_8 represents an alkyl or phenylalkyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy and alkylthio radicals,

or alternatively R_7 and R_8, with the nitrogen atom to which they are attached, form a saturated or unsaturated mono- or polycyclic heterocycle containing 4 to 9 carbon atoms and at least one hetero atom including O or N and optionally substituted with at least one alkyl radical,

R_9 represents a hydrogen atom, an alkyl, cycloalkylalkyl, cycloalkyl or phenylalkyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy and alkylthio radicals,

R_{10}, represents an alkyl, cycloalkylalkyl, cycloalkyl or phenylalkyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy and alkylthio radicals, or alternatively R_9 and R_{10}, together with the nitrogen atom to which they are attached, form a saturated or unsaturated mono- or polycyclic heterocycle containing 4 to 9 carbon atoms and at least one hetero atom including O, N or S and optionally substituted with at least one alkyl radical,

R_{11} represents an alkyl, cycloalkyl or trifluoromethyl radical or a phenyl radical optionally substituted with at least one substituent selected from cyano, alkoxy, nitro and amino radicals and halogen atoms,

R_{12} represents a 5-tetrazolyl radical,

R_{13} represents C=O or S=O,

R_{14} represents O or C=O,

p is equal to 0, 1 or 2,

n is equal to 0, 1 or 2,

m is equal to 1 or 2,

X represents a hydrogen atom or an alkyl or phenylalkyl radical,

alk represents an alkyl or alkylene radical,

alk' represents a hydroxyalkyl, hydroxyalkylene, alkoxyalkyl or alkoxyalkylene radical,

n is other than 0 when R_1 and R_3 each represent a hydrogen atom and R represents a pyridyl radical optionally substituted with at least one alkyl radical, a furyl radical optionally substituted with at least one alkyl radical, a thienyl radical optionally substituted with at least one alkyl radical, a quinolyl radical optionally substituted with at least one alkyl radical, a naphthyl radical optionally substituted with at least one alkyl radical, an indolyl radical optionally substituted with at least one alkyl radical or a phenyl radical optionally substituted with at least one substituent selected from halogen atoms and alkyl, alkoxy, hydroxyl, nitro, amino, monoalkylamino, dialkylamino, alkoxycarbonyl, —CO—NR_7R_8, —NH—CO—CH], trifluoromethyl or trifluoromethoxy radicals, and except where otherwise stated, the alkyl, alkylene and alkoxy radicals and the alkyl, alkylene and alkoxy portions contain 1 to 4 carbon atoms in an unbranched or branched chain, the acyl radicals and portions contain 2 to 4 carbon atoms and the cycloalkyl radicals and portions contain 3 to 6 carbon atoms, a salt thereof or an isomer thereof when said compound contains at least one asymmetric center.

5,633,271

ARTHROPODICIDAL OXAZOLINES AND THIAZOLINES

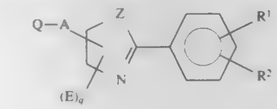
Victor E. Amoo; George P. Lahm, both of Wilmington, and Thomas M. Stevenson, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 338,500, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 24,576, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 956,927, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 889,026, May 26, 1992, abandoned. This application Jan. 16, 1996, Ser. No. 585,970

Int. Cl.[6] A61K *31/42;31/425;* **C07D** *263/10;277/10*

U.S. Cl. 514—365 **11 Claims**

1. A compound of the formula



wherein:

A is selected from the group a direct bond and C_1–C_3 straight or branched chain alkylene;

E is selected from the group C_1–C_4 alkyl and C_1–C_4 haloalkyl;

Z is selected from the group O and S;

q is 0, 1, 2 or 3;

Q is a 5- to 16- membered aromatic ring system selected from the group:

(i) monocylic aromatic ring containing 1 to 4 heteroatoms independently selected from the group 0–4 nitrogen, 0–1 oxygen, and 0–1 sulfur;

(ii) fused carbobicyclic ring containing 8 to 12 carbons, with the proviso that when the ring is naphthyl and is on the oxazoline ring carbon adjacent to the oxazoline ring oxygen, and when E is CH_3 and q is 1, then R^1 is other than H;

(iii) fused carbotricyclic ring containing 12 to 16 carbons;

(iv) fused bicylic ring containing 1 to 4 heteroatoms independently selected from the group 0–4 nitrogen, 0–2 oxygen, and 0–2 sulfur;

(v) fused tricylic ring containing 1 to 6 heteroatoms independently selected from the group 0–4 nitrogen, 0–2 oxygen, and 0–2 sulfur; and

(vi) phenyl substituted with M-J^1;

Q being substituted with 1 to 6 substituents selected independently from the group R^3, R^4, (R^5) and (R^6)$_m$;

R^1 and R^2 are independently selected from the group H, halogen, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy, C_1–C_6 alkylthio, CN and NO_2;

R^3 and R^5 are independently selected from the group H, halogen, C_1–C_{16} alkyl, C_1–C_{16} haloalkyl, C_3–C_7 cycloalkyl, C_4–C_{16} cycloalkylalkyl, C_2–C_{16} alkenyl, C_2–C_{16} haloalkenyl, C_2–C_{16} alkynyl, C_2–C_{16} haloalkynyl, C_2–C_{16} alkoxyalkoxy, OR^7, $R^7OC(O)$—, $R^7C(O)$—, $Si(R^{13})(R^{14})R^{15}$ and M-J;

R^4 is selected from the group H, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl and C_1–C_6 haloalkoxy;

R^6 is selected from the group H, halogen, C_1–C_{10} alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy; and phenyl optionally substituted with R^8;

R^7 is selected from the group C_3–C_7 cycloalkyl, C_4–C_7 cycloalkylalkyl, C_1–C_{16} alkyl, C_1–C_{16} haloalkyl, C_2–C_{16} alkenyl, C_2–C_{16} haloalkenyl, C_2–C_{16} alkynyl and C_2–C_{16} haloalkynyl;

R^8 is selected from the group halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy and $Si(R^9)(R^{10})R^{11}$;

R^9, R^{10} and R^{11} are independently C_1–C_{12} alkyl;

M is selected from the group a direct bond, S, O, C(=O), C(=O)O—C_1–C_2 alkylene, C_1–C_4 alkylene, O—C_1–C_4 alkylene and O—C_2–C_4 alkenylene, wherein when M is O—C_1–C_4 alkylene or O—C_2–C_4 alkenylene, the oxygen atom is attached to either ring and when M is C(=O)O—C_1–C_2, the C(=O) is attached to either ring;

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J is selected from the group phenyl optionally substituted with independently selected substituents $(R^{12})_n$; and a 5-or 6-membered aromatic ring, attached through carbon or nitrogen, containing 1 to 4 heteroatoms independently selected from the group 0–4 nitrogen, 0–1 oxygen, and 0–1 sulfur, the ring optionally substituted with independently selected substituents $(R^{12})_n$;

J^1 is selected from the group a 5- membered aromatic ring, attached through carbon or nitrogen, containing 1 to 4 heteroatoms independently selected from the group 0–4 nitrogen, 0–1 oxygen, and 0–1 sulfur, and a 6-membered ring containing 2 to 4 nitrogen atoms each ring optionally substituted with independently selected substituents $(R^{12})_n$;

R^{12} is selected from the group halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl, C_1–C_6 haloalkoxy and $Si(R^{13})(R^{14})R^{15}$;

R^{13}, R^{14} and R^{15} are independently C_1–C_{12} alkyl;

m and n are integers independently selected from 1 to 4; and

p is 1 or 2.

5,633,272

SUBSTITUTED ISOXAZOLES FOR THE TREATMENT OF INFLAMMATION

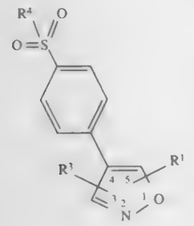
John J. Talley, 8772 Pine Ave., Brentwood, Mo. 63144; David L. Brown, 15504 Twingate, Chesterfield, Mo. 63017; Srinivasan Nagarajan, 16209 Forest Meadows Dr., Chesterfield, Mo. 63017; Jeffery S. Carter, 15321 Grantley Dr., Chesterfield, Mo. 63017; Richard M. Weier, 240 Hickory Ct., Lake Bluff, Ill. 60044; Michael A. Stealey, 502 Juniper Pkwy., Libertyville, Ill. 60048; Paul W. Collins, 1557 Hawthorne Pl., Deerfield, Ill. 60015; Roland S. Rogers, deceased, late of Richmond Heights, Mo. 63117, and Karen Seibert, 11930 Greenwalk Dr., St. Louis, Mo. 63146

Continuation-in-part of Ser. No. 387,680, Feb. 13, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 473,884

Int. Cl.[6] C07D *261/06;261/10;261/12;261/14;* **A61K** *31/42*

U.S. Cl. 514—378 **29 Claims**

1. A compound of Formula II



wherein R^1 is selected from alkyl, carboxyalkyl, alkoxycarbonyl, aminocarbonyl, aminocarbonylalkyl, alkoxycarbonylalkyl, carboxyl, alkoxy, haloalkoxy, aralkoxy, cycloalkylalkoxy, alkylthio, aralkylthio, cycloalkylalkylthio, alkoxyalkyl, aralkoxyalkyl, alkylthioalkyl, aralkylthioalkyl, alkylaminoalkyl, aryloxyalkyl, arylthioalkyl, hydroxyl, amino, hydroxyalkyl, haloalkyl, cycloalkyl, cycloalkylalkyl, aralkyl, halo, alkylamino, aralkylamino, N-alkyl-N-aralkylamino, N-alkyl-N-cycloalkylalkylamino, arylcarbonyloxyalkyl, arylcarbonylthio, alkoxycarbonyloxyalkyl, alkylaminocarbonyloxyalkyl, alkoxycarbonylthioalkyl, and alkylaminocarbonylthioalkyl;

wherein R^3 is selected from cycloalkyl, cycloalkenyl, and aryl; wherein R^3 is optionally substituted at a substitutable position with one or more radicals independently selected from alkyl, cyano, carboxyl, alkoxycarbonyl, haloalkyl, hydroxyl, hydroxyalkyl, haloalkoxy, amino, alkylamino, arylamino, aminoalkyl, nitro, alkoxyalkyl, alkylsulfinyl, alkylsulfonyl, aminosulfonyl, halo, alkoxy and alkylthio; and

wherein R^4 is selected from lower alkyl, hydroxyl, and amino; or a pharmaceutically-acceptable salt thereof.

5,633,273

6-HETEROCYCLIC-4-AMINO-1,2,2A,3,4,5-HEXAHYDROBENZ[CD] INDOLES

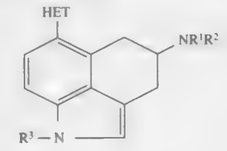
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Michael J. Martinelli; Charles J. Paget, Jr., both of Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 263,910, Jun. 20, 1994, which is a division of Ser. No. 954,171, Sep. 20, 1992, Pat. No. 5,347,013, which is a continuation-in-part of Ser. No. 676,679, Mar. 28, 1991, Pat. No. 5,244,911. This application Jun. 2, 1995, Ser. No. 460,323

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—381 **9 Claims**

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_{3-C4} alkenyl, cyclopropylmethyl, phenyl (C_1–C_4), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, $—(CH_2)_nS(C_1$–C_4 alkyl), $—C(O)R^4$, or $—(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4alkenyl;

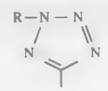
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring group of the formula



where R is independently hydrogen, C_1–C_3 alkyl or phenyl; or pharmaceutically acceptable salts thereof.

5,633,274

CANCER TREATMENTS

Jose Halperin, Brookline, and Carlo Brugnara, Newton Highlands, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 18, 1993, Ser. No. 18,828

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—405 **26 Claims**

1. A method for treating cancer sensitive to treatment with the compounds set forth herein comprising,

administering to a subject that has a nonsteroid-hormone dependent cancer an effective amount of an imidazole selected from the group consisting of clotrimazole, miconazole and econazole.

5,633,275

PHOTOCHEMOTHERAPEUTICAL OBSTRUCTION OF NEWLY-FORMED BLOOD VESSELS

Keisuke Mori; Masataka Ohta; Shigeru Mori; Shin Yoneya; Naoki Hayashi, and Masaru Sonoda, all of Saitama-ken, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

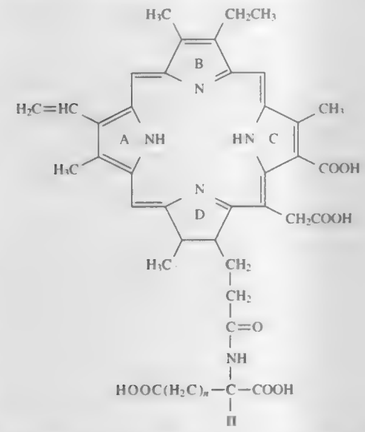
Filed Mar. 15, 1996, Ser. No. 616,177

Claims priority, application Japan, Sep. 6, 1995, 7-228760

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—410 **2 Claims**

1. A method for photochemotherapeutically obstructing neovascular vessels as foraged in a patient having the neovascular vessels, which comprises administering orally or parenterally to the patient an amount of a compound having the formula (I):



(I)

where n stands for an integer of 1 or 2, or a pharmaceutically acceptable salt thereof, allowing said compound administered to accumulate in the neovascular vessels to be obstructed after the administration of said compound to the patient, irradiating a part or all or some parts of the neovascular vessels to be obstructed, with a laser beam until the compound accumulated in the neovascular vessels has been elicited photochemically, terminating the irradiation of the laser beam, and then allowing the laser beam-irradiated part or parts of the neovascular vessels to be obstructed.

5,633,276

INDOLINE DERIVATIVES, METHOD OF PREPARATION AND USE

Peter C. North, and Malcolm C. Carter, both of Stevenage, United Kingdom, assignors to Glaxo Group Limited, London, England

PCT No. PCT/EP94/04220, § 371 Date Jun. 14, 1996, § 102(e) Date Jun. 14, 1996, PCT Pub. No. WO95/17405, PCT Pub. Date Jun. 29, 1995

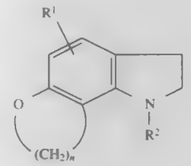
PCT Filed Dec. 20, 1994, Ser. No. 652,460

Claims priority, application United Kingdom, Dec. 22, 1993, 9326192

Int. Cl.[6] A61K *31/40;* **C07D** *491/048*

U.S. Cl. 514—411 **17 Claims**

1. A compound of formula (I)



(I)

wherein

R^1 is hydrogen, halogen or C_{1-6} alkyl;

R^2 is a group of formula $—CR^3R^4(CH_2)_pNR^5COR^6$;

R^3, R^4 and R^5, which may be the same or different, are hydrogen or C_{1-6} alkyl;

R^6 is C_{1-6} alkyl or C_{3-7} cycloalkyl;

n is an integer of 2, 3 or 4;

p is an integer of 1, 2, 3 or 4;

and pharmaceutically acceptable salts and solvates thereof.

5,633,277

SULFONAMIDE AMINOMETHYLENE DERIVATIVES AS IMMUNOSUPPRESSANTS

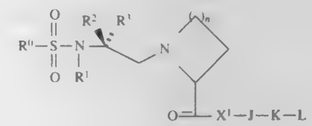
Richard D. Connell, New Haven; David G. Osterman, Glastonbury; Michael E. Katz, Wallingford, and Robert D. Daily, Branford, all of Conn., assignors to Miles Inc., West Haven, Conn.

Continuation of Ser. No. 15,502, Feb. 9, 1993, abandoned. This application Sep. 26, 1995, Ser. No. 535,507

Int. Cl.[6] A61K *3/40;* **C07D** *207/00;405/02*

U.S. Cl. 514—428 **12 Claims**

1. A compound having the structure:



where

R^0 is straight or branched (C_1–C_{10})alkyl, (C_3–C_{10})cycloalkyl, (C_5–C_{12})bicycloalkyl, or (C_7–C_{14})tricycloalkyl, each of which is optionally substituted with a straight or branched (C_1–C_3)alkoxy, cyano, straight or branched carbo(C_1–C_6)alkoxy, (C_1–C_5)alkylsulfonyl, one to three fluoro groups, or with a doubly bonded oxygen atom to form

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a ketone; or R^0 is styryl, or a phenyl group optionally substituted up to three times with a straight or branched $(C_1–C_6)$alkyl;

R^1 is hydrogen or methyl;

one of R^2 and R^3 is hydrogen and the other is straight or branched $(C_1–C_6)$alkyl optionally substituted with C_6 cycloalkyl, hydroxy, straight or branched $(C_1–C_4)$alkoxy, benzyloxy, or aryl optionally substituted with hydroxy or methoxy;

n is the integer 2;

X^1 is NR^4, where R^4 is hydrogen or methyl;

J is the divalent fragment



where R^5 is hydrogen, or straight or branched $(C_1–C_8)$alkyl optionally substituted with hydroxy, straight or branched $(C_1–C_6)$alkoxy, benzyloxy, C_6 cycloalkyl or phenyl;

K is one of the fragments

—HC═CH— or $—(CH_2)_p—$

where;

p is the integer 1, 2, 3 or 4; and

L is hydrogen, phenyl, or straight or branched $(C_1–C_8)$alkyl optionally substituted with phenyl optionally substituted by straight or branched $(C_1–C_5)$alkoxy, hydroxy, or amino, which amino is optionally substituted by a straight or branched $(C_1–C_6)$alkyl, acetyl, or both.

5,633,278

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS CONTAINING METHYLENE-BIS (THIOCYANATE) AND AN ORGANIC ACID

David Oppong, and Vanja M. King, both of Memphis, Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Division of Ser. No. 468,664, Jun. 6, 1995, Pat. No. 5,530,024, which is a division of Ser. No. 187,075, Jan. 27, 1994, Pat. No. 5,441,979. This application Jun. 21, 1996, Ser. No. 668,227

Int. Cl.[6] A01N *37/00;43/16;47/48*

U.S. Cl. 514—460 **34 Claims**

1. A composition to control the growth of at least one microorganism selected from the group consisting of bacteria, fungi, and mixtures thereof comprising a synergistic microbicidally effective mixture of (A) a methylene-bis(thiocyanate) and (B) at least one organic acid selected from the group consisting of nonanoic acid, dehydroacetic acid, octanoic acid, sorbic acid, their respective salts potassium sorbate, and mixtures thereof.

5,633,279

5-SUBSTITUTED DERIVATIVES OF MYCOPHENOLIC ACID

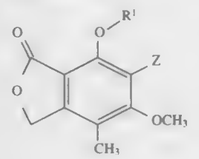
David Morgans, Jr., Sunnyvale; David B. Smith, San Bruno, both of Calif.; Francisco X. Talamás, Cuernavaca, Mexico; Dean R. Artis, Menlo Park, Calif.; Alicia Cervantes, Col. Campestre Churubusco, Mexico; Todd R. Elworthy, Palo Alto, Calif.; Mario Fernández, Cuernavaca; Fidencio Franco, San Pedro Xalpa, both of Mexico; Ronald C. Hawley, Woodside, Calif.; Teresa Lara, Toluca, Mexico; David G. Loughhead, Belmont, Calif.; Peter H. Nelson, Los Altos, Calif.; John W. Patterson, Mountain View, Calif.; John C. Rohloff, Mountain View, Calif.; Eric B. Sjogren, Mountain View, Calif.; Alejandra Trejo, Col. Reforma, Mexico; Ann M. Waltos, San Ramon, and Robert J. Weikert, Woodside, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 198,749, Feb. 18, 1994, Pat. No. 5,493,030. This application Jun. 6, 1995, Ser. No. 483,042

Int. Cl.[6] A61K *31/34;31/38;31/445;31/535*

U.S. Cl. 514—468 **44 Claims**

1. A compound of the formula:

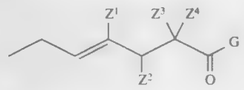


wherein:

R^1 is H or $C(O)R^{10}$, where R^{10} is lower alkyl, aryl or NH—aryl; and

Z is selected from Formulae ZA, ZB, ZC, ZD, ZE, ZF, ZG and ZH:

Formula ZA



wherein:

Z^1 is H, lower alkyl, halo or CF_3;

Z^2 is H, OH, lower alkyl, lower alkoxy, aryl, or $CH_2—Z^{13}$, where

Z^{13} is halo, CN, aryl or heteroaryl;

Z^3 is H, OH, lower alkyl, lower alkenyl, lower alkoxy, halo, phenyl, $P(O)(OCH_3)_2$, $P(O)(OH)(OCH_3)$, NHZ^{11}, SH or $S(O)_mZ^{12}$, where

Z^{11} is H, alkyl, acyl, or lower alkyl sulfonyl,

Z^{12} is lower alkyl, and

m is 0, 1 or 2;

Z^4 is H, OH, lower alkyl, halo, or phenyl,

provided, however that Z^4 is not OH or halo when Z^3 is OH, halo, $P(O)(OCH_3)_2$, $P(O)(OH)(OCH_3)$, NHZ^{11}, or SZ^{12};

or Z^3 and Z^4 taken together with the carbon to which they are attached form cycloalkyl of three to five carbon atoms; and

G is OH, lower alkoxy, lower thioalkyl, NG^1G^2, $O—(CH_2)_n—NG^1G^2$, or $O—(CH_2)_n—N═G^3$, where

n is an integer from 1 to 6,

G^1 is H or lower alkyl,

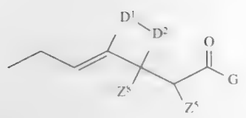
G^2 is H or lower alkyl, and

$═G^3$ is lower alkylene of four to six carbon atoms, or lower alkylene of three to five carbon atoms plus one member that is —O—, —S—, or $—N(G^4)—$ where G^4 is H or lower alkyl;

provided that when Z^1 is methyl, Z^2, Z^3 and Z^4 are not all H, and

provided that when R^1, Z^3 and Z^4 are all H and Z^1 is methyl, Z^2 is not H or OH; or

Formula ZB



wherein:

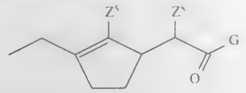
Z^5 is H or lower alkyl;

Z^8 is H, lower alkyl or forms a double bond with D^2;

D^1 and D^2 together with their adjacent carbon atoms form an optionally substituted, saturated or unsaturated carbocyclic or heterocyclic ring of 3 to 7 atoms; and

G is as defined above; or

Formula ZC

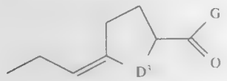


wherein:

Z^8 is H or lower alkyl; and

Z^5 and G are as defined above; or

Formula ZD

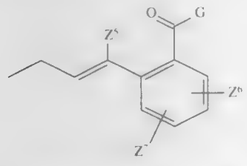


wherein:

D^3 is $—CH_2—$ or $—CH_2—CH_2—$; and

G is as defined above; or

Formula ZE



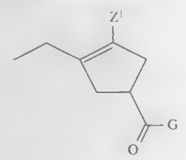
wherein:

Z^6 is H, lower alkyl, lower alkoxy, COOH, NH_2, azido or halo;

Z^7 is H, lower alkyl, lower alkoxy or halo; and

Z^5 and G are as defined above; or

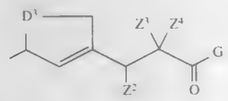
Formula ZF



wherein:

Z^1 and G are as defined above; or

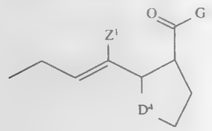
Formula ZG



wherein:

D^3, Z^2, Z^3, Z^4 and G are as defined above; or

Formula ZH



wherein:

D^4 is $—CH_2—$, $—CH_2—CH_2—$, $—CH_2—CH_2—CH_2—$, —O—, or $—O—CH_2—$; and

Z^1 and G are as defined above;

or a pharmaceutically acceptable salt thereof.

5,633,280

URETHANES AND UREAS THAT INDUCE CYTOKINE PRODUCTION

Semiramis Ayral-Kaloustian, Tarrytown; Steven R. Schow, Washingtonville; Mila T. Du, Suffern, all of N.Y., and James J. Gibbons, Jr., Westwood, N.J., assignors to American Cyanamid Company, Madison, N.J.

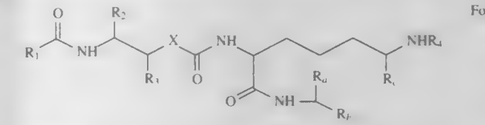
Division of Ser. No. 213,303, Mar. 14, 1994, Pat. No. 5,545,662, which is a division of Ser. No. 63,174, May 12, 1993, Pat. No. 5,312,831. This application May 25, 1995, Ser. No. 451,085

Int. Cl.[6] A61K *31/27*

U.S. Cl. 514—478 **3 Claims**

1. A method of inducing IL-6 production in a mammal in need thereof which comprises administering to said mammal an effective amount of a compound having the structure

Formula I



wherein:

R_1 is selected from the group consisting of hydrogen, a substituted or unsubstituted $(C_1–C_{20})$ alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted cycloalkylalkyl group, a vinyl group, an acetylene group, a substituted or unsubstituted amino group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkoxyaryl group, a substituted or unsubstituted alkoxyaralkyl group and a substituted or unsubstituted monocyclic or bicyclic heterocyclic group containing from 1 to 4 hetero atoms selected from the group consisting of nitrogen, sulfur and oxygen atoms; R_2 and R_3 are independently selected from hydrogen, substituted or unsubstituted $(C_1–C_6)$ alkyl, substituted or unsubstituted alkoxyalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted cycloalkylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl, substituted or unsubstituted alkoxyaralkyl, vinyl, acetylene and a substituted or unsubstituted monocyclic or bicyclic heterocycle containing from 1 to 4 heteroatoms selected from the group consisting of nitrogen, sulfur and oxygen atoms provided that, in the case of R_3, the hetero atoms in said heterocycle are not directly bonded to the —CH— group of the —CH—X— moiety; and R_2, R_b and R_c are independently selected from carboxy or protected carboxy, carboxy or protected carboxyloweralkyl and carboxyamide; X is oxygen or nitrogen; and R_4 is H or an amino protecting group; wherein the substituents in the aforementioned substituted alkyl, cycloalkyl, cycloakylalkyl, amino, acylamino, aryl, aralkyl, aryloxy, alkoxyaryl, alkoxyaralkyl and heterocyclic groups are selected from the group consisting of halogen, hydroxyl, lower alkyl, lower alkoxy, aryloxy, aralkyloxy, amino, mono- or di-lower alkylamino, arylamino, aralkylamino, carboxyl, formyl, lower alkoxycarbonyl, aryloxycarbonyl, aralkyloxycarbonyl, lower alkylthio, arylthio, aralkylthio, arylsulfinyl, aralkylsulfinyl, lower alkylsulfonyl, arylsulfonyl, aralkylsulfonyl and a monocyclic or bicyclic heterocyclic group having 1–4 hetero atoms selected from nitrogen, sulfur and oxygen; or a pharmaceutically acceptable salt thereof.

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5,633,281

3,3-DIPHENYL PROP-2-YL AMINO ACID DERIVATIVES AND THEIR USE AS TACHYKININ ANTAGONISTS

Martin R. Teall, Stanstead, and Brian J. Williams, Great Dunmow, both of United Kingdom, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB93/02592, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO94/15903, PCT Pub. Date Jul. 21, 1994

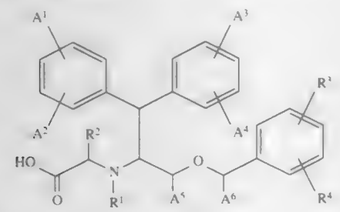
PCT Filed Dec. 17, 1993, Ser. No. 492,067

Claims priority, application United Kingdom, Jan. 4, 1993, 9300051

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—567 **8 Claims**

1. A compound of formula (I) as a pharmaceutically acceptable salt or prodrug thereof:



(I)

wherein

R^1 represents H, C_{1-4}alkyl or CH_2COOH;

R^2 represents H or C_{1-4}alkyl, with the proviso that R^1 and R^2 are not both H;

R^3 and R^4 each independently represent H, C_{1-6}alkyl, C_{2-6}alkenyl, C_{1-6}alkoxy, halo or trifluoromethyl;

A^1, A^2 A^3 and A^4 each independently represent H, C_{1-6} alkyl, C_{1-6} alkenyl, C_{1-6} alkoxy, halo or trifluoromethyl; and A^5 and A^6 each independently represent H or C_{1-4}alkyl.

5,633,282

INHIBITION OF VIRAL INFECTION

Mary K. L. Collins; Farzin Farzaneh, both of London; Sydney Shall, Lewes, and Manoochehr Tavassoli, Furze Hill, all of England, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 955,721, Dec. 21, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 303,203

Claims priority, application United Kingdom, May 25, 1990, 9011833

Int. Cl.[6] A61K *31/165;31/47*

U.S. Cl. 514—622 **13 Claims**

1. A method of treatment of a subject against a virus in which integration of viral or proviral DNA into the subject's chromosome or chromosomes is inhibited, said method comprising treating said subject with a therapeutically effective amount of an inhibitor of the enzyme poly(ADP-ribose) polymerase.

5,633,283

METHOD FOR TREATING MULTIPLE SCLEROSIS

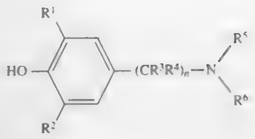
Ann E. Kingston, Camberley, United Kingdom, and Jill A. Panetta, Zionsville, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 23, 1995, Ser. No. 376,619

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—653 **15 Claims**

1. A method of treating multiple sclerosis in a mammal in need of such treatment which comprises administering to said mammal a therapeutically effective amount of a compound, or a pharmaceutically acceptable salt thereof, of formula (I)



(I)

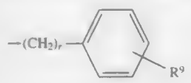
wherein:

R^1 and R^2 are each independently hydrogen, C_3–C_6 alkyl, C_1–C_6 alkoxy or

R^3 and R^4 are each independently hydrogen or C_1–C_4 alkyl;

n is an integer from 0 to 4, both inclusive; and

R^5 and R^6 are each independently hydrogen, C_1–C_8 alkyl, C_3–C_8 cycloalkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, $-(CH_2)_qOR^7$, $-(CH_2)_qN(R^7R^8)$, $-(CH_2)_qSR^7$, $-(CH_2)_r$ naphthyl or



where q is an integer from 1 to 6, both inclusive, R^7 and R^8 are each independently hydrogen or C_1–C_4 alkyl, R^9 is hydrogen, halo, C_1–C_4 alkyl, trifluoromethyl, hydroxy, amino, C_1–C_4 alkylamino, di(C_1–C_4 alkyl)amino, phenylamino or diphenylamino, and r is an integer from 0 to 4, both inclusive.

5,633,284

NITROUS OXIDE CONTAINING DERMATOLOGICAL COMPOSITION

Petrus J. Meyer, Randburg, South Africa, assignor to Pitmy International N.V., Netherlands

PCT No. PCT/EP93/01405, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO93/25213, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 3, 1993, Ser. No. 318,626

Claims priority, application South Africa, Jun. 8, 1992, 92/4153

Int. Cl.[6] A61K *31/075;31/20*

U.S. Cl. 514—718 **13 Claims**

1. A topical composition, comprising as active ingredients, nitrous oxide and at least one essential fatty acid or lower alkyl ester thereof, selected from the group consisting of linoleic acid, arachidonic acid, linolenic acid and gamma-linolenic acid, in combination with a dermatologically acceptable carrier.

5,633,285

CYTOPROTECTIVE WOUND HEALING COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME

Alain Martin, Ringoes, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 312,841, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 841,342, Feb. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 663,500, Mar. 1, 1991, abandoned. This application May 22, 1995, Ser. No. 446,962

Int. Cl.[6] A61K *31/045;31/07;31/355*

U.S. Cl. 514—724 **20 Claims**

1. A therapeutic cytoprotective-wound healing composition for protecting and reducing injury to mammalian cells which comprises a therapeutically effective amount of a cytotoxic agent and a wound healing composition, wherein the wound healing composition comprises:

(a) pyruvate selected from the group consisting of pyruvic acid, pharmaceutically acceptable salts of pyruvic acid, and mixtures thereof;

(b) an antioxidant; and

(c) a mixture of saturated and unsaturated fatty acids wherein the fatty acids are those fatty acids required for the resuscitation of injured mammalian cells; wherein components a, b, and c are present in amounts sufficient to synergistically enhance wound healing.

5,633,286

GELATINOUS ELASTOMER ARTICLES

John Y. Chen, Pacifica, Calif., assignor to Applied Elastomerics, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 957,290, Oct. 6, 1992, Pat. No. 5,334,646, Ser. No. 152,734, Nov. 15, 1993, Pat. No. 5,624,294, Ser. No. 152,735, Nov. 15, 1993, Pat. No. 5,508,334, and Ser. No. 114,688, Aug. 30, 1993, Pat. No. 5,475,890, which is a continuation-in-part of Ser. No. 934,027, Aug. 24, 1992, Pat. No. 5,239,723, and Ser. No. 935,540, Aug. 24, 1992, Pat. No. 5,336,708, which is a continuation-in-part of Ser. No. 705,711, May 23, 1991, Pat. No. 5,262,468, Ser. No. 876,118, Apr. 29, 1992, Pat. No. 5,324,222, and Ser. No. 705,096, May 23, 1991, said Ser. No. 876,118and Ser. No. 705,096, , each is a continuation-in-part of Ser. No. 527,058, May 21, 1990, abandoned, said Ser. No. 705,711and Ser. No. 527,058, , each is a continuation-in-part of Ser. No. 211,426, Jun. 24, 1988, Pat. No. 5,153,254, which is a continuation-in-part of Ser. No. 921,752, Oct. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 572,172, Jan. 18, 1984, Pat. No. 4,618,213, which is a continuation-in-part of Ser. No. 458,703, Jan. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 134,977, Mar. 28, 1980, Pat. No. 4,369,284, which is a continuation-in-part of Ser. No. 916,731, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 815,315, Jul. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 778,343, Mar. 17, 1977, abandoned. This application Aug. 11, 1994, Ser. No. 288,690

Int. Cl.[6] C08K *5/00;5/01;* **A42B** *3/00;* **C08L** *3/00*

U.S. Cl. 524—474 **8 Claims**

1. A composite article comprising of a thermoplastic, heat formable and heat reversible gelatinous elastomer composition, G, which is physically interlocked with a selected material M, said gelatinous elastomer composition formed from (a) 100 parts by weight of a high viscosity triblock copolymer; (b) from about 300 to about 1,600 parts by weight of a plasticizing oil; said composition characterized by a gel rigidity of from about 20 to about 800 gram Bloom; said composite formed of the combination GnMnGn, GnGnMnGn, GnGnGnMnGnGn, GnMn, MnGnMn, MnGnGn, GnGnMn, MnMnGn, MnGnGnMn, GnMnGnMn, MnGnGnGn, MnMnMnGn, MnGnMnMn, MnGnMnGn, GnMnGnGn, GnMnMnGn, GnGnMnMn, GnGnGnMnGn, GnMnGnMnMn, GnMnGnMnGn, GnGnGnMnMn, MnGnGnMnGn, MnGnMnMnGn, GnGnMnMnMn, GnMnMnGnMnGn, GnGnMnGnMnGn, GnMnGnMnGnMn, GnMnMnGnGnMn, MnGnGnMnMnGn, GnGnMnMnGnGn, MnMnGnGnMnMn, MnGnGnMnGnGn, GnGnMnGnGnMn, GnMnGnMnGn, MnMnMnGnMnMnMn MnGnMnGnGnMn, GnMnGnMnGnMnGn, MnGnMnGnMnMnGn, GnMnMnGnMnGn, MnGnGnMnGnMnGn, GnGnMnGnGnMnGnGn, GnMnGnGnMnGnGnMn, GnGnMnGnGnMnGnGn, GnMnGnGnMnGnMnGnGn, GnGnMnGnGnMnGnGnGn, GnMnGnGnMnGnGnMnGn, GnGnMnGnGnMnGnGnGnGn, or any permutations of said combination, wherein when n is a subscript of M, n is the same or different selected from the group consisting of foam, plastic, fabric, metal, concrete, wood, glass, ceramics, synthetic resin, synthetic fibers or refractory materials; wherein when n is a subscript of G, n denotes the same or a different rigidity gel, an oriented (optically birefringent) gel, a non-oriented gel, a tacky gel or a non-tacky gel; said triblock copolymer is a linear, multi-arm, branched, or star shaped copolymer of the general configuration poly(styrene-ethylene-butylene-styrene), poly(styrene-ethylene-propylene-styrene), or a mixture thereof and optionally in combination with a selected amount of at least one polymer or copolymer selected from the group consisting of poly(styrene-butadiene-styrene), poly(styrene-butadiene), poly(styrene-isoprene-styrene), poly(styrene-isoprene), poly(styrene-ethylene-propylene), low viscosity poly(styrene-ethylene-propylene-styrene), low viscosity poly(styrene-ethylene-butylene-styrene), poly(styrene-ethylene-butylene), polystyrene, polybutylene, poly(ethylene-propylene), poly(ethylene-butylene), polypropylene, or polyethylene, wherein said selected copolymer is a linear, branched, multiarm, or star shaped copolymer.

5,633,287

N-ACYL SULFAMIC ACID ESTERS (OR THIOESTERS), N-ACYL SULFONAMIDES, AND N-SULFONYL CARBAMIC ACID ESTERS (OR THIOESTERS) AS HYPERCHOLESTEROLEMIC AGENTS

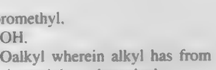
Helen T. Lee, Ann Arbor; Joseph A. Picard; Drago R. Sliskovic, both of Ypsilanti, and Wendell Wierenga, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 223,932, Apr. 13, 1994, Pat. No. 5,491,172, which is a continuation-in-part of Ser. No. 62,515, May 14, 1993, abandoned. This application Oct. 23, 1995, Ser. No. 546,967

Int. Cl.[6] A61K *31/18*

U.S. Cl. 514—602 **2 Claims**

1. A method of treating hypercholesterolemia comprising administering to a patient a therapeutically effective amount of a compound of formula



I

or a pharmaceutically acceptable salt thereof wherein:

X is sulfur or $(CR'R'')_n$;

Y is sulfur or $(CR'R'')_n$;

n is an integer of from 1–4 and R' and R" are each independently hydrogen, alkyl, alkoxy, halogen, hydroxy, acyloxy, cycloalkyl, phenyl optionally substituted or R' and R" together form a spirocycloalkyl or a carbonyl;

R is hydrogen, a straight or branched alkyl of from 1 to 8 carbon atoms or benzyl;

R_1 and R_2 are each independently selected from

(a) phenyl or phenoxy each of which is unsubstituted or is substituted with 1 to 5 substituents selected from

phenyl,

an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,

an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched,

phenoxy,

hydroxy,

fluorine,

chlorine,

bromine,

nitro,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,

$-(CH_2)_pNR_3R_4$ wherein p is zero or one, and each of R_3 and R_4 is selected from hydrogen or a straight or branched alkyl group having 1 to 4 carbon atoms;

(b) 1- or 2-naphthyl unsubstituted or substituted with from 1 to 3 substituents selected from

phenyl,

an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,

an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched;

hydroxy,

phenoxy,

fluorine,

chlorine,

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bromine,
nitro,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,
—$(CH_2)_pNR_3R_4$ wherein p, R_3, and R_4 have meanings defined above;
(c) arylalkyl;
(d) a straight or branched alkyl chain having from 1 to 20 carbon atoms and which is saturated or contains from 1 to 3 double bonds; and
(e) adamantyl or a cycloalkyl group wherein the cycloalkyl moiety has from 3 to 6 carbon atoms.

5,633,288

TRI (LOWER ALKOXY) BENZENE DERIVATIVES

Hiromu Hara, Abiko; Tatsuya Maruyama; Munetoshi Saito, both of Tsukuba, and Toshiyasu Mase, Matsudo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 314,057, Sep. 28, 1994, Pat. No. 5,498,635, which is a division of Ser. No. 50,002, Dec. 22, 1993, Pat. No. 5,401,775. This application Nov. 22, 1995, Ser. No. 562,298

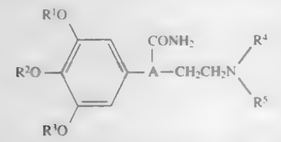
Claims priority, application Japan, Oct. 25, 1990, 2-287973

Int. Cl.[6] **A61K** *31/165;* **C07C** *233/05;231/06*

U.S. Cl. 514—620 **5 Claims**

1. A tri(lower alkoxy)benzene derivative represented by the general formula (I), or a salt, optical isomer or solvate thereof:

(I)



wherein R^1, R^2 and R^3, which are the same or different, each represents a lower alkyl group; A represents a group of the formula



and R^4 and R^5, which are the same or different, each represents a lower alkyl group, an aralkyl group or an aryl group.

5,633,289

PROCESS FOR MOLDING AN INTEGRAL SKIN FOAM AND A POLYURETHANE MATERIAL FOR MOLDING THE SAME

Michihiko Nakamura; Masanao Ishikake; Yukio Kawakita; Akira Mabuchi, and Osamu Yamanaka, all of Aichi-ken, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

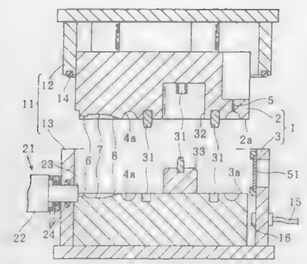
Filed Mar. 14, 1994, Ser. No. 213,014

Claims priority, application Japan, Mar. 16, 1993, 5-082660; Mar. 16, 1993, 5-082661

Int. Cl.[6] **C08J** *9/34*

U.S. Cl. 521—51 **11 Claims**

1. A process for molding a semi-rigid foam, having an integral skin comprising the steps of:
evacuating a mold cavity to reduce the pressure thereof below atmospheric pressure;
injecting into said mold cavity a polyurethane material consisting essentially of a polyol component and an isocyanate component and containing 0.5 to 5 parts by weight of a solvent for restricting initial increase in viscosity of the polyurethane material for 100 parts by weight of said polyol



component, such that said polyurethane material is substantially free of freon; and
expanding said material in said mold cavity such that said integral skin foam is formed due to foaming of gases absorbed in said material.

5,633,290

PORE-SIZE SELECTIVE MODIFICATION OF POROUS MATERIALS

Jean M. J. Frechet, and Frantisek Svec, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 388,721, Feb. 15, 1995, which is a continuation-in-part of Ser. No. 964,405, Oct. 21, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,539

Int. Cl.[6] **C08J** *9/00*

U.S. Cl. 521—54 **14 Claims**

1. A selectively modified material comprising a porous material having pores of at least two different size ranges, with the pores of one size range having surface groups of one functionality and the pores of another size range having surface groups of a different functionality wherein the pores are substantially homogeneously distributed throughout the material.

5,633,291

USE OF FOAM MATERIALS DERIVED FROM HIGH INTERNAL PHASE EMULSIONS FOR INSULATION

John C. Dyer, and Thomas A. DesMarais, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 7, 1995, Ser. No. 472,447

Int. Cl.[6] **C08J** *9/28*

U.S. Cl. 521—64 **11 Claims**

1. A method of insulating an object, comprising locating a polymeric foam material proximate to the object, wherein the polymeric foam material has:
A) s specific surface area per foam volume of at least about 0.01 m/cc;
B) a dry density of less than about 0.05 g/cc; and
C) a glass transition temperature (Tg) of between about −20° and 90° C.;
and wherein the polymeric foam material is prepared by the process comprising the steps of
(A) forming a water-in-oil emulsion at a temperature of about 30° C. or higher and under low shear mixing from:
(1) an oil phase comprising:
(a) from about 80% to about 98% by weight of a monomer component capable of forming a copolymer having a Tg value of from about −20° C. to about 90° C., said monomer component comprising:
(i) from about 10% to about 70% by weight of a substantially water-insoluble, monofunctional monomer capable of forming a homopolymer having a Tg of about 35° C. or less;
(ii) from about 10% to about 70% by weight of a substantially water-insoluble, monofunctional comonomer capable of imparting toughness about equivalent to that provided by styrene;
(iii) from about 2% to about 50% of a first substantially water-insoluble, polyfunctional crosslinking agent selected from the group consisting of divinyl benzene and analogs thereof; and
(iv) from about 0% to about 15% of a second substantially water-insoluble, polyfunctional crosslinking agent selected from the group consisting of diacrylates of diols and analogs thereof; and
(b) from about 2% to about 20% by weight of an emulsifier component which is soluble in the oil phase and which is suitable for forming a stable water-in-oil emulsion;
(2) a water phase comprising from about 0.1% to about 20% by weight of a water-soluble electrolyte; and
(3) a volume to weight ratio of water phase to oil phase in the range of from about 12:1 to about 250:1; and
(B) polymerizing the monomer component in the oil phase of the water-in-oil emulsion to form the polymeric foam material.

5,633,292

METHOD FOR PRODUCING COLD POLYURETHANE FOAMS

Anette Brüne; Georg Burkhart, both of Essen, and Volker Zellmer, Bottrop, all of Germany, assignors to Th. Goldschmidt AG., Essen, Germany

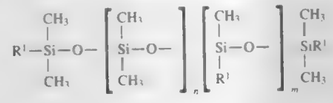
Filed Dec. 7, 1995, Ser. No. 568,888

Claims priority, application Germany, Dec. 16, 1994, 44 44 898.8

Int. Cl.[6] **C08G** *18/24;18/61*

U.S. Cl. 521—112 **2 Claims**

1. A method for the production of high resilience polyurethane foams by reacting a mixture of polyols, having a weight average molecular weight of between about 4800 and 6500 g/mole and at least 70% primary hydroxyl groups, and optionally fillers, polyfunctional isocyanates, amine activators, cross-linking agents, tin catalysts, blowing agents and stabilizers, comprising the steps of adding, as a stabilizer, a compound of a general formula



in which
R^1 is same or different in an average molecule and represents a methyl group or a group of general formula —CH_2—CH_2—$(CH_2)_a$—$C_6H_3(R^2)_2$ (a=0 or 1; R^2=—O—CH_3), with the proviso that at least one R^1 group is a group having the formula —CH_2—CH_2—$(CH_2)_a$—$C_6H_3(R^2)_2$,
n has an average numerical value of 2 to 11,
m has an average numerical value of 1 to 6,
with the proviso that the quotient p=(n+m+2)/m is 1.66 to 12.

5,633,293

HYDROXY-FUNCTIONAL TRIAMINE CATALYST COMPOSITIONS FOR POLYURETHANE PRODUCTION

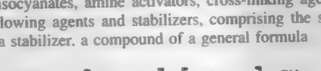
Richard Van Court Carr, Allentown; Mark L. Listemann, Whitehall, and Ann C. L. Savoca, Bernville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 30, 1995, Ser. No. 565,518

Int. Cl.[6] **C08J** *9/00;* **C08G** *18/00*

U.S. Cl. 521—118 **21 Claims**

1. In a method for preparing a polyurethane foam which comprises reacting an organic polyisocyanate and a polyol in the presence of water as a blowing agent, a cell stabilizer and a catalyst composition, the improvement which comprises employing a catalyst composition consisting essentially of 0 to 50 mole % of a compound of formula I and 50 to 100 mole % of a compound of formula II:



wherein
R is hydrogen, a C_1–C_4 alkyl, C_6–C_8 aryl, or C_7–C_9 aralkyl group; and
n is an integer from 2 to 8.

5,633,294

Patent Not Issued For This Number

5,633,295

COATED FILLER FOR A THERMOPLASTIC COMPOSITION

Robert P. Higgs, St. Austell, United Kingdom, assignor to ECC International Limited, United Kingdom

Continuation of Ser. No. 219,393, Mar. 29, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 543,125

Claims priority, application United Kingdom, Mar. 31, 1993, 9306683

Int. Cl.[6] **C08K** *9/04;* **B32B** *19/00;* **B05D** *1/00*

U.S. Cl. 523—205 **8 Claims**

1. A process for preparing a coated particulate inorganic material for incorporation in a thermoplastics composition which comprises the steps of (a) combining in aqueous suspension, a particulate inorganic material, a wax and a natural or synthetic latex composition in an amount such as to provide a coating on the particles of the inorganic material of from 1% to 10% by weight of latex solids, based on the weight of dry inorganic material; and (b) dewatering and drying the suspension.

5,633,296

METHOD FOR THE PRODUCTION OF RUBBER MIXTURES

Julius Peter, Dommayergasse 7, A-1130 Vienna, Austria, assignor to Julius Peter, Vienna, Austria, and Continental Aktiengesellschaft, Hanover, Germany

Filed Jun. 14, 1995, Ser. No. 490,127

Claims priority, application Germany, Jun. 14, 1994, 44 20 543.0

Int. Cl.[6] **C08J** *3/20*

U.S. Cl. 523—344 **8 Claims**

1. A method for manufacturing rubber mixtures, said method comprising the steps of:
plasticizing batchwise rubber in a first inner kneader to produce a batch of plasticized rubber;
transporting the batch of plasticized rubber, while still hot, into a second inner kneader; and
in the second kneader mixing into the batch of plasticized rubber nonreactive additives without allowing the batch of plasticized rubber to cool before mixing.

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5,633,297

CATIONIC RESIN CONTAINING CAPPED ISOCYANATE GROUPS SUITABLE FOR USE IN ELECTRODEPOSITION

Joseph T. Valko, Pittsburgh, and Richard F. Karabin, Ruffs Dale, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 4, 1994, Ser. No. 334,711
Int. Cl.[6] C08L *63/00*
U.S. Cl. 204—500 **22 Claims**

1. An electrodepositable composition comprising a non-gelled cationic water-dispersible resin electrodepositable on a cathode which is derived from a polyepoxide and which contains in the resin molecule:

from about 0.1 to 3.0 milliequivalents of cationic salt groups,

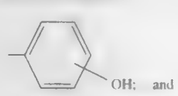
from 0.20 to 0.60 milliequivalents of beta-hydroxy ester groups calculated as



where the beta-hydroxy ester groups are incorporated into the resin by reacting the polyepoxide with a carboxylic acid;

from 1.7 to 10 milliequivalents of active hydrogen groups selected from the group consisting of aliphatic hydroxyl groups and primary and secondary amines calculated as aliphatic hydroxyl, primary amine and/or secondary amine, including mixtures thereof,

phenolic hydroxyl groups where the phenolic hydroxyl groups are incorporated into the resin by reacting the polyepoxide with a polyhydric phenol such that there are unreacted phenolic hydroxyl groups remaining in an amount from 0.02 to 0.33 milliequivalents calculated as



from 0.3 to 2.9 milliequivalents of capped isocyanate groups calculated as



where the capped isocyanate groups are incorporated into the resin by reacting a partially capped isocyanate containing free isocyanate groups with a portion of the active hydrogen groups;

where all of the milliequivalents are on a per gram of resin solids basis; and

wherein the composition is free of lead.

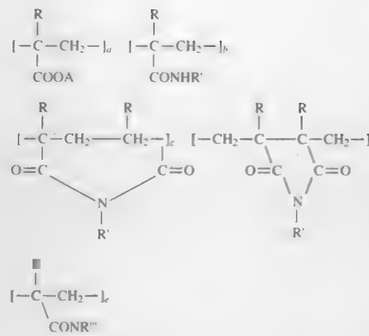
5,633,298

CEMENT ADMIXTURE PRODUCT HAVING IMPROVED RHEOLOGICAL PROPERTIES AND PROCESS OF FORMING SAME

Ahmad Arfaei, Chelmsford, Mass.; David C. Darwin, Columbia, Md.; Ellis M. Gartner, Silver Spring, Md.; Byong-Wa Chun, Columbia, Md.; Hideo Koyata, Waltham, Mass., and Lawrence L. Kuo, Columbia, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 299,028, Sep. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 128,939, Sep. 29, 1993, Pat. No. 5,393,343. This application Jun. 6, 1995, Ser. No. 468,294
Int. Cl.[6] C08F *8/34;* **C08K** *3/00*
U.S. Cl. 524—5 **10 Claims**

1. An imidized acrylic polymer composed of units represented by the structural formulae:



wherein each R independently represents hydrogen atom or a methyl (CH_3—) group; R' represents a (i) hydrogen atom, (ii) a C_2–C_{10} oxyalkylene group represented by $(BO)_nR''$ in which O represents an oxygen atom, B represents a C_2–C_{10} alkylene group or mixtures thereof, R'' represents a C_1–C_{10} alkyl and n represents an integer of from 1–200, or (iii) mixtures thereof; A represents a C_1–C_{10} alkyl group, R', an alkali metal cation or mixtures thereof; NR''' represents a heterocyclic group of which N is a part thereof; and a, b, c, and d are numerical values representing molar percentage of the polymers structure such that a is a value of about 50 to 70; the sum of c+d is a value of from about 2 to about 10; and b is a remainder value of {100–(a+c+d+e)}; and e is a value greater than 0 and up to or equal to 10.

5,633,299

WOOD COMPOSITE

Martinus L. Van Druten; Herman P. Ruyter; Aletta A. Ten Hoeve; Evert Van Der Heide, and Gerrit Vietje, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 24, 1995, Ser. No. 547,637
Claims priority, application European Pat. Off., Nov. 1, 1994, 94203170
Int. Cl.[6] C08L *1/02*
U.S. Cl. 524—14 **12 Claims**

1. A wood composite composition comprising, wood, and as a binder, a cured resin composition, wherein the resin composition, prior to curing, comprises a copolymer of carbon monoxide with an olefinically unsaturated compound and a curing agent.

5,633,300

ENHANCEMENT OF PAPER DRY STRENGTH BY ANIONIC AND CATIONIC GUAR COMBINATION

Sunil P. Dasgupta, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 202,417, Feb. 28, 1994, Pat. No. 5,502,091, and a continuation-in-part of Ser. No. 812,534, Dec. 23, 1991, Pat. No. 5,338,407. This application Jun. 7, 1995, Ser. No. 483,616
Int. Cl.[6] C08L *5/00;* **D21H** *17/32*
U.S. Cl. 524—55 **17 Claims**

1. A composition comprising:

(1) an anionic polymeric component selected from the group of polymers consisting of carboxymethyl guar, carboxymethyl bean gum, carboxymethyl hydroxyethyl guar, and a carboxymethyl hydroxypropyl guar, end (2) a cationic polymeric component selected from the group of polymers consisting of cationic wet strength resin and cationic wet strength rein combined with additional cationic polymer selected from the group consisting of cationic guar, a cationic acrylamide copolymer, and a cationic bean gum, the cationic wet strength resin being an amine polymer-epichlorohydrin resin selected from the group consisting of a polyamide-epichlorohydrin (PAE) resin, a polyalkylenepolyamine-epichlorohydrin (PAPAE) resin, and an amine polymer-epichlorohydrin (APE) resin, in which amine groups have been alkylated with epichlorohydrin to produce a polyamine-epichlorohydrin resin that has azetidinium or epoxide functionality.

5,633,301

FLAME RETARDANT POLYKETONE COMPOSITION

Paul Y. Moy, Fishkill, N.Y., and Gerald R. Alessio, Emerson, N.J., assignors to Akzo Nobel NV, Arnhem, Netherlands

Filed May 23, 1996, Ser. No. 652,393
Int. Cl.[6] C08K *5/527;5/5357*
U.S. Cl. 524—100 **12 Claims**

1. A flame retardant polyketone composition which comprises: (1) a linear, alternating polyketone polymer formed by the polymerization of carbon monoxide and at least one olefin; and a (2) a flame retardant which comprises (a) a bicyclic, pentaerythritol phosphate alcohol-derived phosphorus flame retardant compound; (b) an intumescent flame retardant compound containing nitrogen and phosphorus; and (c), optionally, an aryl group-containing monophosphate ester compound to enhance the processability of the composition in the polymer substrate.

5,633,302

METHOD FOR THE PREPARATION OF ONE-PACKAGE ROOM-TEMPERATURE-VULCANIZABLE SILICONE ELASTOMER COMPOSITIONS

Hiroshi Adachi, and Toshio Saruyama, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 590,265
Claims priority, application Japan, Nov. 24, 1994, 6-314182
Int. Cl.[6] C08K *5/24*
U.S. Cl. 524—262 **3 Claims**

1. A method for the preparation of a one-package, room-temperature-vulcanizable silicone elastomer compositions comprising

(1) mixing

(a) 100 parts by weight of a silanol-endblocked polydiorganosiloxane having a viscosity at 25° C. of 0.0005 to 0.3 m^2/s and

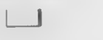
(b) 5 to 200 parts by weight per 100 parts by weight of (a) of inorganic filler,

(2) admixing into the product obtained from (1)

(c) 0.5 to 7 parts by weight per 100 parts by weight of (a) of vinyltrioximosilane with the following formula

$CH_2{=}CHSi(OX)_3$

wherein each X is an organic radical with the formula $-N{=}CR^1R^2$ where R^1 and R^2 both represent a monovalent hydrocarbon radicals having no more than 6 carbon atoms per radical; an organic radical with the formula



where R^3 represents divalent hydrocarbon radicals having no more than 10 carbon atoms; or a C_1 to C_4 monovalent hydrocarbon radical with the proviso that C_1 to C_4 monovalent hydrocarbon radicals constitute no more than 30 mole % of X; and allowing at least 30 seconds to elapse from the end of step (2) to the beginning of step (3);

(3) admixing into the product obtained in (2)

(d) 1 to 10 parts per 100 parts by weight of (a) by weight organosilane with the following formula

$R^4Si(OX)_3$

wherein R^4 represents a saturated monovalent hydrocarbon radicals having no more than 6 carbon atoms and X is defined as above.

5,633,303

ORGANOPOLYSILOXANE GUM EMULSION

Hidetoshi Kondo; Tadashi Hamachi; Hidehiko Hosokawa; Fumitaka Suto, and Junichi Maeshima, all of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 586,507
Claims priority, application Japan, Jan. 12, 1995, 7-019798; Jul. 28, 1995, 7-212669
Int. Cl.[6] C08K *3/20*
U.S. Cl. 524—268 **12 Claims**

1. An emulsion comprising (A) 100 parts by weight of an organopolysiloxane gum with a plasticity value at 25° C. of at least 0.75 mm, the value being determined according to Japanese Industrial Standard JIS C 2123-1986; (B) 1–100 parts by weight of an emulsifying agent per 100 parts by weight of the gum; and (C) 3–800 parts by weight of water per 100 parts by weight of the gum; the emulsion being made by emulsifying the gum in water with the emulsifying agent, with the proviso that at least 11 percent of the gum is present in the emulsion.

5,633,304

AGGLOMERATION OF LATICES BY ORGANIC ACID—ANHYDRIDE MIXTURES

Donald M. Kulich, Marietta, Ohio, assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 274,595, Jul. 13, 1994, Pat. No. 5,468,788, which is a continuation of Ser. No. 60,392, May 11, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 540,358
Int. Cl.[6] C08K *5/09;* **C08F** *279/00*
U.S. Cl. 524—284 **2 Claims**

1. A process for preparing rubber modified graft copolymers by grafting large diene rubber particles with alkenyl aromatic and alkenyl nitrile monomers comprising:

A) forming an aqueous latex containing water and diene rubber solids, said rubber being dispersed in said latex by a surfactant as particles having a weight average particle size diameter of about 0.05 to 0.20 microns;

B) adding a water soluble organic acid and a water soluble organic anhydride to said aqueous latex;

C) agglomerating said rubber particles contained in said latex to larger agglomerated particles having a weight average particle size of between 0.30 to 1.0 microns, said larger agglomerated particles comprising less than 2 percent by weight coagulum having a weight average diameter of greater than 0.42 microns;

D) stabilizing said larger agglomerated rubber particles in said latex by the addition to said latex of a sufficient amount of an ingredient selected from surfactants and bases;

E) polymerizing a mixture of alkenyl aromatic and alkenyl nitrile monomers in the presence of said stabilized latex to graft said agglomerated rubber particles with at least a portion of said monomers and to form an ungrafted alkenyl aromatic alkenyl nitrile matrix polymer, thereby forming a latex containing said grafted rubber particles and said matrix polymer; and

F) separating said matrix polymers having said grafted diene rubber particle from said water.

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5,633,305

COATING COMPOSITION WITH HEAT-CURING FILM FORMATION AND ITS USE

Karl Wesch, Waldbrunn; Dieter Stamm, Ladenburg; Dirk Reitenbach, Eppelheim, and Winfried Schwittay, Wildberg, all of Germany, assignors to Teroson GmbH, Heidelberg, Germany

PCT No. PCT/EP93/03316, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/13744, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 26, 1993, Ser. No. 448,449

Claims priority, application Germany, Dec. 4, 1992, 42 40 810.5

Int. Cl.[6] C08K *5/10*

U.S. Cl. 524—296 28 Claims

1. A cavity sealing composition comprising: (a) a film forming composition and (b) a gelling additive which gels at elevated temperatures, wherein the gelling additive comprises a fine polymer powder and a plasticizer for the fine polymer powder and wherein the polymer powder comprises from 0.1% to 15% by weigh of the sealing composition and the plasticizer comprises from 0.1% to 15% by weight of the sealing composition.

5,633,306

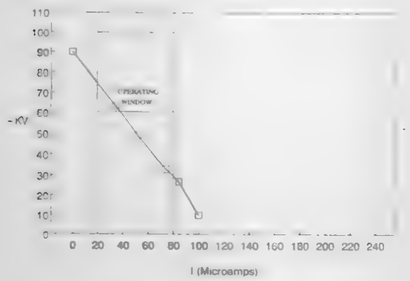
NONINCENDIVE ROTARY ATOMIZER

Varce E. Howe, Zionsville; David R. Huff, Indianapolis; Jerry L. McPherson, Jr., Greenfield, and James A. Scharfenberger, Indianapolis, all of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Continuation of Ser. No. 181,654, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 985,613, Dec. 3, 1992, Pat. No. 5,433,387. This application May 8, 1995, Ser. No. 437,218

Int. Cl.[6] C08J *5/10*; C08K *3/10*; C08L *61/10*

U.S. Cl. 524—409 8 Claims



1. In combination: an electrically non-conductive rotary atomizer having a surface which is to be rendered electrically non-insulative; and a coating for rendering the surface electrically non-insulative, the coating comprising short oil alkyds, phenolic and a powdered mixture of oxides of antimony and tin, the coating comprising, by combined weight of the short oil alkyds, phenolic and powdered mixture of oxides of antimony and tin, about one-seventh to about one-tenth short oil alkyds, about one-third to about one-fourth phenolic, and about one-half to about two-thirds powdered mixture of oxides of antimony and tin, after the evaporation of solvent.

5,633,307

AMBIENT TEMPERATURE CURING AQUEOUS COATING COMPOSITION BASED ON POLYUREA RESINS

Suryya K. Das, Fox Chapel Borough; Soner Kilic, Hampton Township, Allegheny County; Robert E. Jennings, New Sewickley Township, Beaver County; Stephen J. Thomas, Aspinwall Borough, and Joseph M. Carney, Reserve Township, Allegheny County, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 16, 1994, Ser. No. 357,488

Int. Cl.[6] C08F *8/30*; C08L *75/00*

U.S. Cl. 524—460 19 Claims

1. A two-component coating composition wherein the binder components comprise:

(a) an aqueous dispersion of at least one polyacrylate, said polyacrylate containing amino groups at least partially neutralized with fugitive acid in a quantity sufficient to make said polyacrylate dispersible in water, said amino groups being present in sufficient quantity to serve as the primary reaction sites for crosslinking; and

(b) a polyisocyanate crosslinking component containing free isocyanate groups;

wherein components (a) and (b) are present in quantities corresponding to an NCO:NH equivalent ratio of0.5:1 to 5:1, based on free NCO groups, and component (b) is present in emulsified form in component (a).

5,633,308

POLYESTER-RESIN COATING AND DRUM LINER MADE THEREFROM

Vishnu Gor, Orland Park, Ill., assignor to Gor Corporation, Chicago, Ill.

Continuation of Ser. No. 18,070, Feb. 16, 1993, abandoned. This application May 8, 1995, Ser. No. 437,651

Int. Cl.[6] C08K *3/10*

U.S. Cl. 524—537 6 Claims

1. A steel-drum coating composition for lining the interior of steel drums and pails, comprising:

a polyester-resin coating; and solvent;

said polyester-resin coating comprising:

a polyester-resin composition; said coating further comprising crosslinking agent, and phenolic resin;

said solvent comprising water in the range of between approximately 20.0%–77.0% by weight of the total coating composition;

said solvent further comprising a small amount by weight of organic solvent;

said phenolic resin comprising, at least in part, water-dispersible phenol-formaldehyde condensate containing Bisphenol A, said Bisphenol A being provided in the range of between 30.0% and 50.0% by weight of the total coating composition.

5,633,309

CREPING ADHESIVES CONTAINING OXAZOLINE POLYMERS

Joseph F. Warchol, West Norriton, and Cynthia D. Walton-Bongers, London Grove, both of Pa., assignors to Houghton International, Inc., Valley Forge, Pa.

Continuation of Ser. No. 352,371, Dec. 8, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 595,939

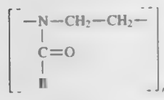
Int. Cl.[6] C08L *77/00*

U.S. Cl. 524—538 17 Claims

1. A creping adhesive concentrate comprising:

(a) about 35 percent by weight of aqueous polyamide-epichlorohydrin resin, said resin being the reaction product of about 5 percent by weight epichlorohydrin and about 20 percent by weight of the aqueous polyamide produced from a reaction of about 18 percent by weight caprolactam, 30 percent by weight carboxylic acid, about 25 percent by weight of an amine, and water;

(b) between about 1 percent by weight and 25 percent by weight of an oxazoline polymer of the structure:



where R is selected from the group consisting of an aryl group containing from 6 to 11 carbon atoms or an alkyl group containing from 1 to 11 carbon atoms, and n is an integer which provides said polymer with a molecular weight of from about 5000 to about 1,000,000; and

(c) the balance water.

5,633,310

WATER-SOLUBLE COPOLYMERS OF VINYLACETATE AND MALEAMIC ACIDS AND USE AS FLUIDIZERS HIGH-RANGE WATER-REDUCERS FOR AQUEOUS SUSPENSIONS

Ueli Sulser, Oberengstringen; Anna Huber, Langnau, and Jürg Widmer, Zürich, all of Switzerland, assignors to Sika AG, vorm. Kaspar Winkler & Co., Switzerland

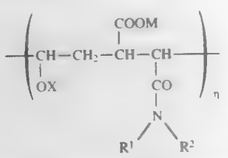
Filed Dec. 28, 1993, Ser. No. 174,057

Claims priority, application European Pat. Off., Dec. 28, 1992, 92122027

Int. Cl.[6] C08K *3/34*; C08L *33/24*; C08F *22/38*

U.S. Cl. 524—555 17 Claims

1. A dispersing agent or fluidizer for aqueous suspensions of an effective dispersing or fluidizing amount of a substantially water soluble linear copolymer of monomeric units selected from vinyl acetate and vinyl alcohol with monomeric units of N-substituted maleamic acids in a molar ratio of 1:1, said copolymer represented by Formula (A)



(A)

wherein R^1 is hydrogen, R^2 is an unsubstituted C1 to C4-alkyl residue, a C1 to C10-alkyl residue which comprises an alkali metal carboxylate or alkaline earth metal carboxylate group, or a hydroxy or amino group, an aromatic residue which comprises carboxylic acid or sulfonic acid groups or alkali metal carboxylate or sulfonate or alkaline earth metal carboxylate or sulfonate groups, or may together with the nitrogen atom to which they bond, form a morpholine ring; X represents a hydrogen atom or the group—$COCH_3$; and M represents a hydrogen atom, a monovalent or divalent metal ion, or a substituted or unsubstituted ammonium group.

5,633,311

METHOD OF PRODUCING ORGANOPOLYSILOXANES CONTAINING HYDROLYZABLE FUNCTIONAL GROUPS, AND CURABLE RESIN COMPOSITION USING SAID ORGANOPOLYSILOXANES

Kenji Yamamoto; Kouichi Tanaka; Yuji Yoshikawa, and Masaaki Yamaya, all of Usui-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 498,917

Claims priority, application Japan, Jul. 6, 1994, 6-177524

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—14 8 Claims

1. A method of producing a curable resin composition containing as the main component an organopolysiloxane having hydrolyzable functional groups, said method comprising:

a) producing an organopolysiloxane by hydrolytic condensation of organoalkoxysilanes and/or organoalkoxysiloxanes in the presence of water and a hydrolysis catalyst, wherein at least 50% by weight of said organoalkoxysilanes and/or organoalkoxysiloxanes are represented by an average compositional formula (A):

$$R^1_aSiX_bY_cO_{(4-a-b-c)/2} \quad (A)$$

wherein

each R^1 independently represents an unsubstituted alkyl, alkenyl or aryl group or chloro, fluoro, glycidyl, amino, mercaptyl, methacryloxy or acryloxy, substituted alkyl, alkenyl or aryl group;

X represents an alkoxy group containing 1–10 carbon atoms;

Y represents an alkoxy group containing 2–10 carbon atoms which is different from the alkoxy group represented by X, has a hydrolysis rate lower than that of X and appears on the same silicon atom as X;

a is a real number of from 0 to 2;

b and c are each a real number from 0.1 to 3, provided that $a+b+c$ is$\leqq 4$;

said organopolysiloxane containing silanol groups and alkoxy groups represented by Y and having a degree of dispersion, Mw/Mn, below 2.5, wherein Mw is weight average molecular weight and Mn is number average molecular weight; and

(b) subjecting said organopolysiloxane produced to

an ester exchange reaction and a hydrolytic condensation reaction, in the presence or absence of a catalyst, with an organosilane containing at least two hydrolyzable functional groups to introduce hydrolyzable functional groups to said organopolysiloxane,

wherein the ester exchange takes place between silanol groups in said organopolysiloxane and hydrolyzable functional groups in said organosilane as well as between unhydrolyzed alkoxy groups remaining in the organopolysiloxane and hydrolyzable functional groups in said organosilane.

5,633,312

PROCESS FOR PREPARING POLYORGANOSILANE

Keiji Kabeta; Sigeru Wakamatsu, and Takafumi Imai, all of Tokyo, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 394,509, Feb. 27, 1995, abandoned. This application Apr. 1, 1996, Ser. No. 625,093

Claims priority, application Japan, Feb. 28, 1994, 6-029306; Aug. 5, 1994, 6-184834

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—14 14 Claims

1. A process for preparing a polyorganosilane which comprises subjecting a disilane compound having at least two substituted or unsubstituted hydrocarbyloxy groups in one molecule to disproportionation reaction in the presence of a catalyst comprising a reaction product of an organic alkali metal compound represented by the formula (I):

RM (I)

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wherein R represents a substituted or unsubstituted monovalent hydrocarbon group; and M represents an alkali metal.

and at least one of a disilane compound or a silane compound both of which have one or more substituted or unsubstituted hydrocarbyloxy groups.

5,633,313

METHOD AND APPARATUS FOR IN SITU, NON-INVASIVE POLYMER CURE DETERMINATION

Gary J. Blanchard, Okemos; Julie L. Jessop, Lansing, and Alec B. Scranton, East Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Apr. 24, 1995, Ser. No. 427,454

Int. Cl.[6] **G01N** *21/64;* **C08J** *3/24;* **C08K** *5/35;* **B29C** *35/02*

U.S. Cl. 524—719 **20 Claims**

1. A method for determining a degree of curing of a liquid polymerizable composition to a cured polymer which comprises:

(a) providing a solvatochromic probe molecule which is a polycyclic aromatic compound in an amount up to about 10^{-3} weight percent of the polymerizable composition in a reaction mixture with the liquid polymerizable composition which is curable to the cured polymer, the probe molecule having a first fluorescence emission spectrum in the reaction mixture;

(b) curing the fluid reaction mixture to produce the cured polymer with measurement of the emission spectrum fluorescence, wherein during the curing to produce the polymer the reaction mixture exhibits a shift in the first fluorescence emission spectrum to a second fluorescence emission spectrum because of the probe molecule; and

(c) determining the degree of curing of the cured polymer, wherein the shift in the fluorescence is detected beyond a gel point of the polymer.

5,633,314

AQUEOUS FAST DRYING AEROSOL COATING COMPOSITION

Homayoun Jamasbi, Blue Bell, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 278,468, Jul. 21, 1994, Pat. No. 5,451,627. This application Jun. 6, 1995, Ser. No. 471,944

Int. Cl.[6] **C08K** *3/20*

U.S. Cl. 524—767 **8 Claims**

1. An aqueous aerosol coating composition comprising a thermoplastic acrylic polymer solubilized in an aqueous solution of a monohydric alcohol to form a solubilized acrylic solution, said thermoplastic acrylic polymer having a weight average molecular weight in the range of 105,000 to 200,000 and a Tg in the range of 35° C. to 105° C.

5,633,315

THERMOSETS FROM WATER-EXTENDED POLYETHERESTER EMULSIONS

Gangfeng Cai, West Chester; Shau-Hua Guo, West Goshen, both of Pa., and Lau S. Yang, Wilmington, Del., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed May 8, 1995, Ser. No. 436,917

Int. Cl.[6] **C08L** *67/06;71/00*

U.S. Cl. 524—801 **23 Claims**

1. A water-extended polyetherester thermoset which comprises the reaction product of:

(a) a stable water-in-resin emulsion which comprises a continuous phase and water droplets emulsified within the continuous phase; wherein the continuous phase includes from about 20 to about 80 wt. % of a vinyl monomer, and from about 20 to about 80 wt. % of an unsaturated polyetherester resin, both amounts based on the amount of continuous phase; wherein the unsaturated polyetherester resin is made by reacting a polyether and an anhydride or dicarboxylic acid in the presence of a catalyst effective to promote insertion of the anhydride or dicarboxylic acid into carbon-oxygen bonds of the polyether to produce the unsaturated polyetherester resin; and wherein the water droplets comprise from about 20 to about 70 wt. % of the emulsion; and

(b) a catalyst system which comprises a free-radical initiator and a transition-metal catalyst.

5,633,316

SURFACE CROSSLINKED AND SURFACTANT COATED ABSORBENT RESIN PARTICLES AND METHOD OF PREPARATION

Herbert Gartner, Baden-Baden, and Josef Burgert, Achern-Fautenbach, both of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 10, 1992, Ser. No. 866,628

Claims priority, application United Kingdom, Apr. 15, 1991, 9107952

Int. Cl.[6] **C08B** *30/00;* **C08F** *6/00*

U.S. Cl. 525—54.32 **5 Claims**

1. Surface crosslinked particles of water-absorbent resin comprising a crosslinked carboxyl containing, solution polymerized, water-absorbent resin wherein the resin comprises a polymer of acrylic or methacrylic acid in which from about 50 to about 99 percent of the carboxyl moieties are neutralized; wherein the crosslinked carboxyl containing water-absorbent resin is crosslinked at or near the particle surface by a nonionic surfactant which is a polyethoxylated sorbitol-lanolin derivative having an HLB of from 3 to 10, in the presence of from about 0.01 to about 10 parts by weight of a polyhydroxy compound based on 100 parts of the water-absorbent resin, the polyhydroxy compound being capable of reacting with the carboxyl moieties which is glycerol or sorbitol and the water-absorbent resin particles have coated or bound on their surface from about 0.01 to about 2.0 parts by weight of the surfactant based on 100 parts of the water-absorbent resin the nonionic surfactant.

5,633,317

ISOCYANATE RESIN COMPOSITIONS AND HOT MELT AND PRESSURE SENSITIVE ADHESIVES BASED THEREON

Eiichi Kawasaki, Kanagawa-ken; Kiyoto Doi, Yamaguchi-ken; Tadashi Kitamura, Kanagawa-ken; Kousuke Suewaka, Kanagawa-ken, and Kazuya Shinkoda, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 2,870, Jan. 15, 1993, Pat. No. 5,418,288, which is a continuation-in-part of Ser. No. 914,342, Jul. 17, 1992, abandoned. This application Sep. 7, 1994, Ser. No. 301,934

Claims priority, application Japan, Jul. 18, 1991, 3-178272; Nov. 1, 1991, 3-287667; Feb. 4, 1992, 4-47964; Nov. 27, 1992, 4-318820; Nov. 27, 1992, 4-318821

Int. Cl.[6] **C08L** *51/00;75/04*

U.S. Cl. 525—66 **16 Claims**

1. A resin composition which comprises 10 to 90 parts by weight of at least one polymer selected from the group consisting of graft copolymer A_1, graft copolymer A_2, graft copolymer A_3, graft copolymer A_4 and graft copolymer A_5, shown below, having at least one isocyanate group and a number-average molecular weight of 10,000 to 200,000, and 90 to 10 parts by weight of at least one low molecular weight polymer selected from the group consisting of low molecular weight polymer E_1, low molecular weight polymer E_2 and low molecular weight polymer E_3, shown below, having at least one isocyanate group and a number-average molecular weight of 500 to 8,000:

1) graft copolymers A_1 to A_5;

1-1) graft copolymer A_1 having at least one isocyanate group prepared by graft polymerizing a monomer (c) having a vinyl group and an isocyanate group in the molecule on a thermoplastic resin (f);

1-2) graft copolymer A_2 having at least one isocyanate group prepared by copolymerizing a monomer (c) having a vinyl group and an isocyanate group in the molecule, a macromer (a) having a vinyl group at the end of the molecule having a number-average molecular weight of more than 2,000 and a glass transition temperature above 20° C., and an alkyl (meth)acrylate (b) having an alkyl group of 1 to 12 carbon atoms, and having a glass transition temperature of −75° C. to −20° C. for the alkyl (meth)acrylate portion;

1-3) graft copolymer A_3 having at least one isocyanate group prepared by copolymerizing a monomer (h) having a vinyl group and an active hydrogen in the molecule, above described macromer (a), and alkyl (meth)acrylate (b) having an alkyl group of 1 to 12 carbon atoms, and further reacting with a polyisocyanate (d), and having a glass transition temperature of −75° C. to −20° C. for the alkyl (meth)acrylate portion;

1-4) graft copolymer A_4 having at least one isocyanate group prepared by copolymerizing a monomer (c) having a vinyl group and an isocyanate group in the molecule and alkyl (meth)acrylate (b) having an alkyl group of 1 to 12 carbon atoms, in the presence of a thermoplastic resin (f), and having a glass transition temperature of −75° C. to −20° C. for the alkyl (meth)acrylate portion;

1-5) graft copolymer A_5 having at least one isocyanate group prepared by copolymerizing a monomer (h) having a vinyl group and active hydrogen in the molecule and alkyl (meth)acrylate (b) having an alkyl group of 1 to 12 carbon atoms, in the presence of said thermoplastic resin (f), and further reacting with a polyisocyanate (d), and having a glass transition temperature of −75° C. to −20° C. for the alkyl (meth)acrylate portion;

2) low-molecular-weight polymers E_1 to E_3;

2-1) low-molecular-weight polymer E_1 having at least one isocyanate group prepared by reacting the above-described monomer (c), at least one monomer (g) selected from the group consisting of vinyl acetate, and alkyl (meth)acrylate (b) having an alkyl group of 1 to 12 carbon atoms and having a glass transition temperature of −40° C. to 100° C.;

2-2) low-molecular-weight polymer E_2 having at least one isocyanate group prepared by graft polymerizing the above-described monomer (c) on a petroleum resin, hydrogenated petroleum resin, terpene resin or hydrogenated terpene resin, and having a glass transition temperature of −20° C. to 100° C.;

2-3) low-molecular-weight polymer E_3 having at least one isocyanate group prepared by copolymerizing the above-described monomer (b) and at least one monomer (g) selected from the group consisting of vinyl acetate and above-described monomer (b), and then reacting this copolymer with polyisocyanate (d), and having a glass transition temperature of −40° C. to 100° C.;

and further comprising a urethane prepolymer (B), prepared by reacting a polyol (e) and a polyisocyanate (d) in an NCO/OH equivalent ratio of 1.4 to 5.0, present in an amount of less than 50% by weight of the resin composition.

5,633,318

SYTRENIC POLYMER RESINS ACHIEVING IMPROVED GLOSS AND IMPACT RESISTANCE

Kenneth E. Bowen, Belpre, Ohio, assignor to Chevron Chemical Company, San Ramon, Calif.

Continuation of Ser. No. 347,773, Nov. 30, 1994, abandoned. This application Oct. 8, 1996, Ser. No. 727,867

Int. Cl.[6] **C08L** *51/04;53/02*

U.S. Cl. 525—71 **12 Claims**

1. A polystyrene based composition having high impact strength and high gloss, comprising:

(a) a first resin comprising polystyrene and particles containing polybutadiene, wherein the particles have an average size less than 1.0 micron, and the polybutadiene content in the first resin is between 5 to 15 weight percent of the first resin;

(b) a second resin comprising polystyrene and polybutadiene particles having an average particle size greater than 1.0 micron, and the amount of polybutadiene in the second resin is between 3 to 12 weight percent of the second resin; and

(c) a third resin comprising a block copolymer of styrene and butadiene having a butadiene content of 65 to 80 weight percent.

5,633,319

COMPATIBILIZED BLENDS OF POLYETHERIMIDES AND LIQUID CRYSTALLINE POLYESTERS

Norberto Silvi, Clifton Park; Sterling B. Brown, Niskayuna; Mark H. Giammattei, Selkirk, all of N.Y., and King L. Howe, Wilmington, Del., assignors to General Electric Company, Schenectady, N.Y., and E. I. Du pont de Nemours & Company, Wilmington, Del.

Filed Jan. 16, 1996, Ser. No. 587,055

Int. Cl.[6] **C08L** *79/08*

U.S. Cl. 525—133 **17 Claims**

1. A non-delaminating resinous composition comprising the following and any reaction products thereof:

(A) a major proportion of at least one polyetherimide,

(B) a minor proportion, effective to provide an apparent viscosity in said composition, at 350° C. and a shear rate of 1000 sec^{-1}, lower than that of said polyetherimide, of at least one liquid crystalline polyester, and

(C) a minor proportion, effective to compatibilize components (A) and (B) and suppress delamination in said composition, of at least one polyepoxy compound.

5,633,320

THERMOPLASTIC POLYESTER RESIN COMPOSITION

Yasuo Tanaka, and Yohji Hayakawa, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP95/01346, § 371 Date May 7, 1996, § 102(e) Date May 7, 1996, PCT Pub. No. WO96/01873, PCT Pub. Date Jan. 25, 1996

PCT Filed Jul. 6, 1995, Ser. No. 612,876

Claims priority, application Japan, Jul. 8, 1994, 6-157729

Int. Cl.[6] **C08F** *8/00*

U.S. Cl. 525—168 **9 Claims**

1. A thermoplastic polyester resin composition comprising a thermoplastic polyester resin (A) and a graft modified mixture of ethylene.1-butene copolymers (B) in a weight ratio of 95/5 to 50/50, wherein

(1) the graft modified mixture (B) is essentially composed of

(i) an ethylene.1-butene random copolymer (C) which contains units derived from 1-butene in an amount of 5 to 15 mol % and has an intrinsic viscosity [η], measured at 135° C. in a decalin solvent, of 0.5 to 3.5 dl/g, a glass transition temperature (Tg), measured by a DSC method, of −50° C. or less and a crystallinity, measured by an X-ray diffraction method, of less than 40%,

(ii) an ethylene.1-butene random copolymer (D) which contains units derived from 1-butene in an amount of 16 to 25 mol % and has an intrinsic viscosity [η], measured at 135° C. in a decalin solvent, of 0.5 to 3.5 dl/g, a glass transition temperature (Tg), measured by a DSC method, of −50° C. or less and a crystallinity, measured by an X-ray diffraction method, of less than 15%, and

(iii) graft units derived from at least one monomer selected from unsaturated carboxylic acids and derivatives thereof and bonded to at least one of the two copolymers, and

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(iv) the graft modified mixture (B) contains units derived from 1-butene in an amount of 11 to 19 mol % based on the total of units derived from ethylene and 1-butene and has an intrinsic viscosity [η], measured by the above method, of 0.5 to 3.5 dl/g, a glass transition temperature, measured by the above method, of −50° C. or less, and a crystallinity, measured by the above method, of less than 10%,

(2) the amount of the above graft units is 0.01 to 10% by weight based on the total amount of the copolymer (C) and the copolymer (D), and

(3) the weight ratio ((C)/(D)) of the copolymer (C) to the copolymer (D) is 10/90 to 95/5.

5,633,321

METHOD FOR PRODUCING COMPATIBILIZED RUBBER BLENDS OF A HYDROXY ALKYLTHIOETHENE OR HYDROXY-ALKYLAMINE FUNCTIONALIZED ISOOLEFIN/PARA-ALKYLSTYRENE COPOLYMER WITH A DISSIMILAR POLYMER

Palanisamy Arjunan, Houston, Tex., assignor to Exxon Chemical Patents Inc., Wilmington, Del.

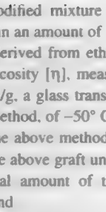
Division of Ser. No. 43,777, Apr. 6, 1993, Pat. No. 5,461,188. This application Mar. 28, 1995, Ser. No. 413,039

Int. Cl.[6] C08L *11/00;9/02*

U.S. Cl. 525—197 **5 Claims**

1. A method for producing a compatibilized rubber composition comprising:

blending (i) at least one polymer comprising an isoolefin having from 4–7 carbon atoms, and para-alkylstyrene monomers represented by the formulae:



(c)

and



(d)

wherein each R and R' are independently hydrogen or a lower alkyl, Z is a halogen or S—$R_2(OH)_n$, R^2 is a hydrocarbyl radical containing 1 to 6 carbon atoms, and n is an integer of from 1 to 10; with

(ii) at least one dissimilar rubber containing halide or carboxyl functionality in the polymer backbone.

5,633,322

GOLF BALL

Yoshikazu Yabuki, and Yoshinori Sano, both of Akashi, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Feb. 28, 1995, Ser. No. 395,887

Claims priority, application Japan, Feb. 28, 1994, 6-055039

Int. Cl.[6] C08L *33/02;* **A63B** *37/06;37/12*

U.S. Cl. 473—365 **7 Claims**

1. A golf ball having a core and a cover for covering the core, wherein the base resin of said cover comprises a mixture of the following three resins (A), (B) and (C) in a mixing weight ratio of 20 to 60, 10, to 60, and 5 to 50, respectively, and said cover having a stiffness modulus of 130 to 300 MPa and a Shore D hardness of 43 to 58, wherein

Resin (A) is a high rigid ionomer resin or a resin mixture having a stiffness modulus of 300 to 500 MPa and a Shore D hardness of 60 to 70, obtained by neutralizing at least a part of carboxyl groups in a copolymer of an α-olefin and an α,β-unsaturated carboxylic acid having 3 to 8 carbon atoms with a metal ion or a mixture thereof;

Resin (B) is a moderate rigid ionomer resin or a resin mixture having a stiffness modulus of 65 to 150 MPa and a Shore D hardness of 50 to 60, obtained by neutralizing at least a part of carboxyl groups in a terpolymer of an α-olefin, an α,β-unsaturated carboxylic acid having 3 to 8 carbon atoms and an α,β-unsaturated carboxylic ester with a metal ion; and

Resin (C) is a low rigid copolymer resin having a stiffness modulus of 1 to 50 MPa and a Shore D hardness of 5 to 30, comprising an α-olefin, an α,β-unsaturated carboxylic ester having 3 to 8 carbon atoms and a polymerizable monomer containing a carboxyl group or a carboxylic anhydride group.

5,633,323

MULTIFUNCTIONAL INITIATOR FOR OBTAINING STAR-SHAPED POLYMERS BY AN ANIONIC ROUTE, PROCESS FOR ITS MANUFACTURE AND CORRESPONDING STAR-SHAPED POLYMERS, PROCESS FOR THEIR MANUFACTURE AND THEIR APPLICATIONS

Pierre Lutz, Bischeim; Paul Rempp, Strasbourg, both of France; David Rein, Providence, R.I.; Philippe Heim, Pau, France; Pascal Nicol, Pau, France, and Bruno Vuillemin, Pau, France, assignors to Elf Atochem S.A., Puteaux, France

Filed Aug. 25, 1995, Ser. No. 519,616

Claims priority, application France, Aug. 25, 1994, 94 10287

Int. Cl.[6] C08F *297/02;4/46*

U.S. Cl. 525—271 **12 Claims**

1. A multifunctional anionic polymerization initiator which is in the form of a star-shaped polymer and is soluble in an apolar medium, said initiator being denoted by the formula (I):

$$(PA)_aN^{n-}nLi^+ \qquad (I)$$

in which:

PA denotes a polymer block originating from at least one monomer A chosen from vinylaromatic or diene monomers;

a denotes the number of arms of the PA block and is between 3 and 15;

N denotes a crosslinked core substantially free of residual double bonds, which has the formula:

$$(PMc)(RLi)_p$$

in which:

Mc is a monomer containing at least two polymerizable double bonds per molecule;

PMc is a core comprising a crosslinked polymerized monomer Mc, and containing 3 to 30% of residual double bonds in relation to the initial double bonds originating from the monomer Mc;

R is an alkyl radical with a linear or branched chain having 1 to 6 carbon atoms, an aryl radical with one or a number of

ring(s), an arylalkyl or alkylaryl radical in which the alkyl group has from 1 to 6 carbon atoms, a cycloalkyl radical and a C_2–C_6 alkenyl radical substituted by an aryl or alkylaryl group; and

p is the number of anionic sites resulting from the neutralization of the residual double bonds in PMc by RLi; and

n is the number of anionic sites present in the crosslinked core N; n is equal to a'+ p or to p, p having the above meaning and a' being the number of anionic sites present in the crosslinked PMc core and corresponding to the number (a) of arms of the PA block.

5,633,324

BLOCK COPOLYMER OF POLYALKYLENE AND HALOGENATED POLY (VINYL AROMATIC)

Ronald J. Hoxmeier, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 349,705, Dec. 5, 1994, Pat. No. 5,527,399, which is a continuation of Ser. No. 574,170, Aug. 27, 1990, abandoned. This application Feb. 17, 1995, Ser. No. 394,529

Int. Cl.[6] C08F *297/04*

U.S. Cl. 525—314 **5 Claims**

1. A block copolymer of hydrogenated poly(conjugated diolefin) and halogenated poly(vinyl aromatic) which comprises:

$$S'—A—(A—S')_m$$

in which m is 0, 1, 2, 3 or 4, A is a hydrogenated poly(conjugated diolefin) which is substantially free of halogen as shown by the absence of aliphatic or benzylic halogen as detected by ^{13}C NMR, and S' is a nuclear brominated poly(vinyl aromatic) having, on the average, from about 0.5 to about 5 halogens per aromatic ring.

5,633,325

POLYMETHACRYLATE ESTERS, THE ESTER GROUPS OF WHICH IN THE α AND OPTIONALLY ALSO IN THE ω POSITION DIFFER FROM THE ESTER GROUPS IN THE CHAIN

Eberhard Esselborn, Essen, and Jürgen Fock, Düsseldorf, both of Germany, assignors to Th. Goldschmidt AG., Essen, Germany

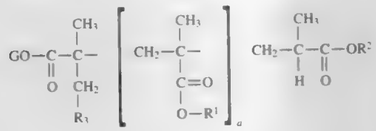
Division of Ser. No. 501,591, Jul. 12, 1995, Pat. No. 5,583,184, which is a continuation of Ser. No. 187,978, Jan. 28, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,768

Claims priority, application Germany, Mar. 3, 1993, 43 06 537.6

Int. Cl.[6] C08F *8/34*

U.S. Cl. 525—326.2 **6 Claims**

1. A polymethacrylate ester of the general formula



wherein

R^1 are the same or different and represent alkyl groups with 1 to 8 carbon atoms,

R^2 represents a C_2–C_{30} alkyl group, an —R^4OH group, wherein R^4 is a divalent aliphatic carbon group with 2 to 20 carbon atoms, or a —$(CH_nH_{2n}O—)_bR^5$ group, wherein R^5 is a hydrogen, alkyl or an alkaryl group,

n is a number from 2 to 18 and b is a number not less than 1,

G represents the R^1 groups or R^2 groups,

R^3 represents the group of a known chain regulator, the R^3 group being free of active hydrogen atoms, and

a is a number which, on the average, is not less than 4, with the proviso that the boiling point of the R^2OH alcohol is higher than that of the R^1OH alcohol.

5,633,326

POLYOLEFIN-SUBSTITUTED AMINES GRAFTED WITH POLY(AROMATIC-N-MONOMERS) FOR OLEAGINOUS COMPOSITIONS

Abhimanyu O. Patil, Westfield; Robert D. Lundberg, Bridgewater, and Antonio Gutierrez, Mercerville, all of N.J., assignors to Exxon Chemical Patents Inc.

Continuation of Ser. No. 997,631, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 450,036, Dec. 13, 1989, abandoned. This application Jun. 26, 1996, Ser. No. 668,313

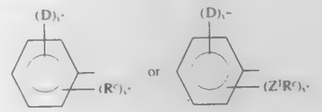
Int. Cl.[6] C08F *8/32*

U.S. Cl. 525—327.6 **10 Claims**

1. An oil-soluble dispersant and antioxidant additive which comprises an N-containing polymer adduct comprising the reaction product of a polyalkylene polyamine with a polymer substituted with mono- or dicarboxylic acid, anhydride or ester groups, wherein said N-containing polymer adduct has been grafted in the presence of an effective amount of an oxidizing agent, by polymerizing thereon at least one aromatic N-monomer represented by the formula:

$$Ar'[NH(R^b)]y'$$

wherein Ar' is



wherein R^c in each instance in which it appears is independently C_1 to C_{12} alkyl, y' is an integer of from 1 to 4, y" is an integer of from 0 to 4, y"' is an integer of from 0 to 4, D in each instance in which it appears is independently Cl, Br or I, R^b is hydrogen or C_1 to C_{20} alkyl, and Z^1 is a branched or straight chain alkylene group which can contain one or more —O— or —S— chain atoms, with the proviso that the sum of y'+y"+y"' is from 1 to 5.

5,633,327

STYRENE-BASED DICARBOXYLIC ACID-FUNCTIONAL MONOMERS AND POLYMERS PREPARED FROM SAME

Rodney M. Harris, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 424,685, Apr. 18, 1995, Pat. No. 5,510,440, which is a division of Ser. No. 176,606, Jan. 3, 1994, Pat. No. 5,410,078. This application Apr. 22, 1996, Ser. No. 636,108

Int. Cl.[6] C08F *222/02;8/46;8/08;8/14*

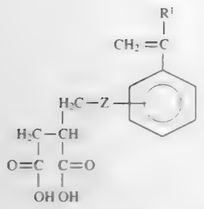
U.S. Cl. 525—329.6 **27 Claims**

1. A curable composition comprising:

(i) an acid-functional polymer comprising the free radical addition polymerization product of a mixture of monomers comprising:

(a) 5% to 30% by weight of an unsaturated acid-functional monomer having the structure:

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wherein R^1 is hydrogen or methyl and Z is nothing or is a divalent radical of 1 to about 20 carbons; and

(b) 10% to about 40% by weight of a copolymerizable hydroxy-functional monomer; and

(c) 30% to about 85% by weight of at least one other copolymerizable monomer

(ii) a crosslinker reactive with hydroxyl groups.

5,633,328

RELEASE COATING COMPOSITION AND RELEASE SHEET

Koji Tsujinaka, and Ichimoto Akasaki, both of Kanagawa, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation of Ser. No. 82,392, Jun. 28, 1993, abandoned. This application Mar. 14, 1995, Ser. No. 404,129

Claims priority, application Japan, Jul. 6, 1992, 4-178308; Oct. 16, 1992, 4-279002

Int. Cl.[6] C08L *75/00*

U.S. Cl. 524—589 **30 Claims**

1. A release coating composition comprising compound (A), compound (B) and diluent (C), wherein

compound (A) is an alkyl addition compound which is a product from an additive reaction between a polyamine compound (a1) and a monoisocyanate compound (a2), said polyamine compound (a1) having at least two active hydrogen-containing amino groups per one molecule and being selected from the group consisting of polyalkyleneimines, polyalkylenepolyamines, polyvinylamines, polyallylamines and modified compounds of polyvinylamine or polyallylamine using as a copolymerizable monomer at least one selected from the group consisting of olefins, (meth)acrylamide, N,N-dimethyl (meth)acrylamide, unsaturated carboxylic acids, esters or anhydrides thereof, vinyl sulfonic acid, dimethylaminoethyl (meth)acrylate, vinylimidazole, vinylpyridine and vinylsuccinimide, and said monoisocyanate compound (a2) being an alkyl monoisocyanate having an alkyl group of 8 or more in carbon number;

compound (B) has, per one molecule, at least two functional groups capable of reacting with an active hydrogen of the amino group, and is at least one member selected from the group consisting of a polyvalent isocyanate compound having at least two isocyanate groups, a polyvalent epoxy compound having at least two epoxy groups, a polyvalent (meth)acryloyl compound having at least two (meth)acryloyl groups, a polyvalent carbonyl compound having at least two carbonyl groups, a polyvalent active ester compound having at least two active ester groups, a polyvalent methylol compound having at least two methylol groups, and a polyvalent aziridinyl compound having at least two aziridinyl groups; and

the diluent (C) is at least one selected from the group consisting of an organic solvent and water.

5,633,329

PREPARATION OF HIGH MOLECULAR WEIGHT POLYMERS

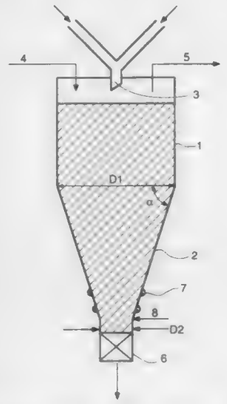
Hans-Joachim Hähnle, Ludwigshafen; Eckhard Neufeld, Limburgerhof; Gunnar Schornick, Neuleiningen; Roland Minges, Grünstadt; Thomas Anstock, Weisenheim; Jürgen Tropsch, Römerberg, and Hans-Jürgen Krauss, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 25, 1996, Ser. No. 591,315

Claims priority, application Germany, Jan. 31, 1995, 195 02 939.9

Int. Cl.[6] C08F *2/18*

U.S. Cl. 526—64 **7 Claims**



1. A process for preparing high molecular weight polymers, which comprises polymerizing water-soluble, monoethylenically unsaturated monomers and, if desired, crosslinkers which contain at least two nonconjugated, ethylenically unsaturated double bonds in the molecule, and, if desired, water-insoluble monoethylenically unsaturated monomers in aqueous solution in the presence of polymerization initiators in a tubular reactor which has a conical taper at the end, the ratio of the diameter of the reactor (D1) to the diameter at the end of the conical taper of the reactor (D2) being from 2:1 to 25:1 and the angle between D1 at the start of the conical taper and the inner cone wall being >45° and <90°, and removing the gelatinous reaction mixture by injection of an inert gas.

5,633,330

COATING COMPOSITION OF NON-CYCLIC POLYANHYDRIDE AND GLYCIDYL OLIGOMER

Michael L. Gould; David A. Grilli; Marvin L. Dettloff; Richard A. Hickner, all of Lake Jackson, and James A. Rabon, West Columbia, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 396,458, Feb. 28, 1995, which is a division of Ser. No. 194,785, Feb. 10, 1994, Pat. No. 5,428,082, which is a continuation of Ser. No. 974,569, Nov. 12, 1992, abandoned. This application Oct. 4, 1995, Ser. No. 539,137

Int. Cl.[6] C08L *63/00;73/02*

U.S. Cl. 525—438 **9 Claims**

1. A curable coating composition comprising organic solvent and:

(a) a polyanhydride having a molecular weight of no more than about 1,500 that contains:

(a) a polyvalent organic moiety,

(b) a plurality of ester linkages bonded to the polyvalent organic moiety,

(c) divalent organic moieties bonded to the ester linkages and

(d) non-cyclic anhydride moieties bonded to the divalent organic moieties;

(b) an oligomer containing at least two glycidyl groups and having an epoxy equivalent weight of no more than about 1,500;

(c) a functional amount of at least one catalyst; and

(d) at least one surfactant or flow-control agent,

wherein the composition has a solids content of at least about 65 weight percent and wherein the eqivalent ratio of epoxy to anhydride is about from 0.8 to 1.3.

5,633,331

BLENDS OF POLYSULFONE WITH DIARYL FLUORENE CARBONATE POLYMER

Kevin L. Nichols, Lake Jackson, Tex.; Paul J. Moses, Midland, Mich.; Mark F. Sonnenschein, Midland, Mich., and Deborah E. Plaver, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1996, Ser. No. 641,984

Int. Cl.[6] C08L *69/00;81/06*

U.S. Cl. 525—462 **16 Claims**

1. A polymer blend composition comprising, in admixture, (a) a diaryl fluorene carbonate polymer and (b) a polysulfone comprising repeating units according to the formula

$$\{Ar(E)_4-SO_2-Ar(E)_4-O\}\{Ar(E)_4\}_n D-Ar(E)_4\}_m O\}_p O\}_p$$

wherein Ar is a 6 to 20 carbon divalent aromatic radical; D is a single bond or a divalent hydrocarbyl radical composed of 1–10 carbon atoms, each E is independently hydrogen, a halogen, a C_1–C_8 alkyl, alkaryl, aralkyl, or aryl radical; m is 0 or 1; n is from 0 to about 3, and p is from about 1 to about 500, which polysulfone is different from the carbonate polymer (a) and does not contain carbonate moieties.

5,633,332

POLYMERS BASED ON POLYARYLENE SILOXANES AND FREERADICAL-POLYMERIZABLE MONOMERS

Horst-Tore Land, Frankfurt am Main; Walter Schubert, Wuppertal, and Reinhardt Kalus, St. Katharinen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP93/02854, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/10218, PCT Pub. Date May 11, 1994

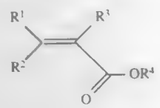
PCT Filed Oct. 15, 1993, Ser. No. 428,066

Claims priority, application Germany, Oct. 28, 1992, 42 36 303.9; Mar. 27, 1993, 43 10 089.9

Int. Cl.[6] C08F *283/12*

U.S. Cl. 525—479 **15 Claims**

1. A polymer obtained by free-radical polymerization of free-radical-polymerizable monomers in the presence of a polysiloxane dissolved in a solvent, where the free-radical-polymerizable monomers used are at least one compound of the formula I,



(I)

where

R^1 and R^2 are, independently of one another, hydrogen, COOH, C_1–C_{18}-alkyl, cyclohexyl, C_1–C_4-alkylcyclohexyl, C_6–C_{10}-bicycloalkyl, or C_6–C_{18}-tricycloalkyl,

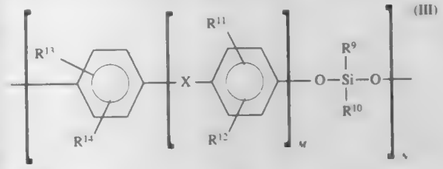
R^3 is hydrogen or methyl,

R^4 is hydrogen, (C_1–C_{20})-alkyl, 2-hydroxypropyl, glycidyl, —$[CH_2CH_2—O]_n$H, having n=1 to 5, —$[CH_2]_m$—OH, having m=3 to 18, —$[CH_2]_2O$—$[CO—(CH_2)_5]_x$OH, where x=a number from 1 to 3,

or

—$[CH_2CHOHCH_2]$—O—(CO)R,

where R is a C_1 to C_{18}-alkyl radical and the polysiloxane used is at least one aromatic polyarylene siloxane of the formula III,



(III)

where

R^9 and R^{10} are identical or different and are, independently of one another, a C_1–C_{12}-alkyl radical, a C_6–C_{14}-aryl radical, or an unsubstituted or substituted vinyl radical, and

R^{11}, R^{12}, R^{13} and R^{14} are identical or different and are, independently of one another, hydrogen, a C_1–C_3-alkyl radical or a substituted or unsubstituted C_6–C_{14}-aryl radical and

—X—is a group —$C(CH_3)_2$—, —$C(CF_3)_2$—, —S—, —SO_2—, —CH_2— or a cyclohexylidene group which can be unsubstituted or substituted, or is a chemical bond and

M is equal to 0 or 1 and N is a number from 2 to 500.

5,633,333

PROCESS FOR POLYMERIZING OLEFIN IN GAS PHASE

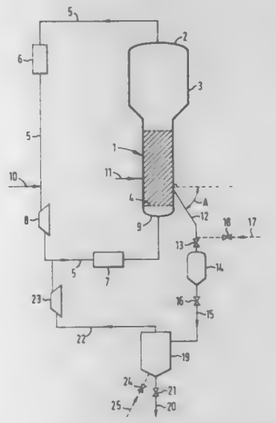
Jean-Claude Chinh, Martigues, France, assignor to BP Chemicals Limited, London, England

Filed Feb. 12, 1996, Ser. No. 599,709

Claims priority, application France, Feb. 24, 1995, 95 02447

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—65 **10 Claims**



1. Process for continuous gas-phase polymerization of olefin(s) in a reactor containing a fluidized and/or mechanically stirred bed including a solid polymer, a catalyst and a reaction gas mixture containing the olefin(s) to be polymerized and passing through the reactor at a pressure higher than atmospheric pressure, a process characterized in that it comprises a stage of drawing off the polymer out of the reactor, in which stage a portion of the fluidized and/or mechanically stirred bed is transferred into a lock hopper by bringing the reactor into communication with the lock hopper, and is then isolated in the lock hopper for a period of 5 to 120 seconds, so that a substantial quantity of the olefin(s) present in the said

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transferred portion polymerizes, before the polymer thus isolated in the said transferred portion is discharged out of the lock hopper.

5,633,334

ETHYLENE-VINYL ACETATE EMULSIONS WITH AN IMPROVED BALANCE OF ADHESIVE PROPERTIES

James L. Walker, Whitehouse Station; Paul R. Mudge, Belle Mead, and Josephine M. Rosenski, N. Plainfield, all of N.J., assignors to National Starch and Chemical Investment Holidng Corporation, Wilmington, Del.

Continuation of Ser. No. 299,136, Aug. 31, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,976

Int. Cl.[6] C08F *2/00:218/04:210/02*

U.S. Cl. 526—202 14 Claims

1. A process for the preparation of emulsion polymers comprising 70 to 95% by weight of a vinyl ester and 5 to 30% by weight ethylene, the polymerization being carried out in the presence of 2 to 8% by weight of a protective colloid consisting of a blend of 1 to 3 percent by weight of 80% hydrolyzed polyvinyl alcohol, 0 to 2 percent by weight of 88% hydrolyzed polyvinyl alcohol and 1 to 3 percent by weight of 96% hydrolvzed polyvinyl alcohol, the blend having an average level of hydrolysis of 85 to 88%.

5,633,335

COPOLYMER OF SILICONE MACROMONOMER AND ALICYCLIC EPOXY MONOMER

Ryuko Manzouji, and Tadashi Okawa, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1996, Ser. No. 607,907

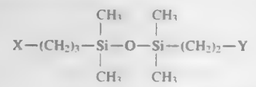
Int. Cl.[6] C08F *220/32:230/08*

U.S. Cl. 526—273 10 Claims

1. A silicone-grafted, alicyclic epoxy-functional vinyl polymer prepared by copolymerizing

(A) 1 to 80 weight % of a silicone macromonomer which bears a vinyl-polymerizable group at one molecular chain terminal;

(B) 5 to 90 weight % of a vinyl-polymerizable, alicyclic epoxy-functional monomer of the formula



wherein X is a vinyl-polymerizable group and Y is an alicyclic epoxy group; and

(C) 0.01 to 94 weight % of a vinyl-polymerizable non-silicone monomer that is free of alicyclic epoxy functionality, the total weight percent of components (A), (B) and (C) being 100.

5,633,336

POLYAMINES CONTAINING UREA GROUPS AND PROCESS FOR THEIR PREPARATION

Rainer Gras, Bochum, and Elmar Wolf, Recklinghausen, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Nov. 6, 1995, Ser. No. 554,569

Claims priority, application Germany, Nov. 4, 1994, 44 39 421.7

Int. Cl.[6] C08G *18/32*

U.S. Cl. 528—68 11 Claims

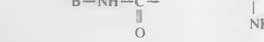
1. A low-viscosity (cyclo)aliphatic polyamine containing urea groups and having more than two amino groups, obtained by reacting a diamine of the formula (I):



(I)

wherein A is a (cyclo)aliphatic hydrocarbon radical having 2–16 carbon atoms which is optionally C_{1-4}-alkyl-substituted, R^1 and R^2 are H or a radical of the formula

wherein R^3 is a (cyclo)aliphatic hydrocarbon radical having 1–12 carbon atoms, which is optionally branched, with polyisocyanates containing isocyanurate and/or biuret groups and of the formula (II):



(IIa)

and



(IIb),

wherein B is

$[X]_n$ is:

and n is 1–4,

the weight ratio of (IIa) to (IIb) is (100 to 20) to (0 to 80) and 1 to 5 moles of the diamine (I) are reacted per the total moles of NCO groups in the compounds of formulae (IIa) and (IIb).

5,633,337

AROMATIC BENZOBISAZOLE POLYMERS AND COPOLYMERS INCORPORATING DIPHENYLAMINO MOIETIES

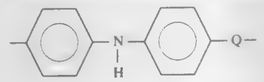
Loon-Seng Tan, Centerville, Ohio, and Kasturi R. Srinivasan, Niwot, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 380,175, Jan. 26, 1995, Pat. No. 5,536,866. This application Feb. 23, 1996, Ser. No. 613,787

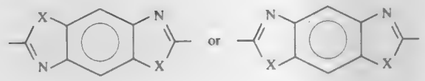
Int. Cl.[6] C08G *75/32*

U.S. Cl. 528—183 8 Claims

1. A polymer having repeating units of the formula:



wherein Q is



wherein X is —NH—, —S— or —O—.

5,633,338

Patent Not Issued For This Number

5,633,339

USE OF TERTIARY ALIPHATIC MONOCARBOXYLIC ACIDS AS CHAIN TERMINATORS FOR THE PREPARATION OF POLYCARBONATES AND OF POLYESTER CARBONATES

Burkhard Köhler; Wolfgang Ebert, both of Krefeld; Klaus Horn, Dormagen; Walter Schäfer, Leichlingen; Jürgen Kirsch, Leverkusen, and Rolf Dhein, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

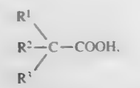
Filed May 10, 1995, Ser. No. 438,519

Claims priority, application Germany, May 20, 1994, 44 17 761.8

Int. Cl.[6] C08G *65/38*

U.S. Cl. 528—219 16 Claims

1. A process of preparing polycarbonates from diphenyls, chain terminators, phosgene and optionally branching agents, by the two-phase boundary process, characterized in that tertiary aliphatic monocarboxylic acids are used as the chain terminators in amounts from 0.6 mole % to 10 mole %, based on the moles of diphenyls, wherein the tertiary aliphatic monocarboxylic acids have the formula:



(I)

wherein R^1, R^2 and R^3 independently represent C_1–C_{12} alkyl radicals.

5,633,340

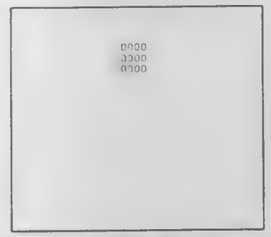
POLYESTER MOLDING COMPOSITIONS

Douglas C. Hoffman; Thomas J. Pecorini; James P. Dickerson, all of Kingsport, and Joseph A. DeLoach, Jonesborough, all of Tenn., assignors to Eastman Chemical Company, Kingport, Tenn.

Filed Sep. 21, 1995, Ser. No. 531,495

Int. Cl.[6] C08G *63/02*

U.S. Cl. 528—272 39 Claims



1. A molded object prepared from a copolyester having an inherent viscosity of 0.4 to, 1.1 dL/g,

wherein the acid component comprises repeat units from 90 to 40 mole % terephthalic acid and from 10 to 60 mole % of one or more additional dibasic acids selected from the group consisting of isophthalic acid, cyclohexanedicarboxylic acid, naphthalenedicarboxylic acid, diphenyldicarboxylic acid, and stilbenedicarboxylic acid;

wherein the glycol component comprises repeat units from 1,4-cyclohexanedimethanol.

5,633,341

AT ROOM TEMPERATURE CROSSLINKABLE COMPOSITIONS, AND METHODS OF THEIR MANUFACTURE AND USE

Thomas P. Abend, St. Gallen, Switzerland, assignor to Ciba Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/CH93/00182, § 371 Date Mar. 30, 1994, § 102(e) Date Mar. 30, 1994, PCT Pub. No. WO94/04624, PCT Pub. Date Mar. 3, 1994

PCT Filed Jul. 19, 1993, Ser. No. 211,297

Claims priority, application Switzerland, Aug. 17, 1992, 02553/92; Apr. 2, 1993, 01010/93

Int. Cl.[6] C08G *69/26*

U.S. Cl. 528—335 21 Claims

1. Crosslinkable, two component composition based on liquid polymers as binders, said liquid polymers containing acid anhydride groups, characterized in that said composition contains as a crosslinker at least one sterically hindered aromatic amine.

5,633,342

METHOD FOR THE SYNTHESIS OF ENVIRONMENTALLY DEGRADABLE BLOCK COPOLYMERS

Dan W. Verser, Golden; Kevin H. Schilling, and Xiaomao Chen, both of Arvada, all of Colo., assignors to Chronopol, Inc., Golden, Colo.

Filed Oct. 27, 1995, Ser. No. 549,567

Int. Cl.[6] C07K *1/00*

U.S. Cl. 528—355 51 Claims

1. A method for synthesizing an environmentally degradable block copolymer, the method comprising the steps of:

(a) polymerizing a first polymer-forming material selected from the group consisting of lactones, cyclic esters of hydroxycarboxylic acids, trimethylene carbonates, alkylene oxides and mixtures thereof, in the presence of a first polymerization accelerant and a first catalyst to form a first polymer;

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(b) combining said first polymer with a second polymer-forming material selected from the group consisting of cyclic esters of hydroxycarboxylic acids and mixtures thereof and a second polymerization accelerant, which can be the same as or different from said first polymerization accelerant, and a second catalyst, which can be the same as or different from said first catalyst; and

(c) polymerizing said second polymer-forming material to form said environmentally degradable block copolymer.

5,633,343

HIGH STRENGTH, FAST ABSORBING, MELT PROCESSABLE, GYCOLIDE-RICH, POLY(GLYCOLIDE-CO-P-DIOXANONE) COPOLYMERS

Rao S. Bezwada, Whitehouse Station; Kevin Cooper, Warren; Dennis D. Jamiolkowski, Long Valley, and Hugh D. Newman, Jr., Chester, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jun. 30, 1995, Ser. No. 497,127

Int. Cl.[6] C08G *63/06*

U.S. Cl. 528—361 **20 Claims**

1. An absorbable, biocompatible segmented copolymer comprising:

a major component comprising about 30 mole percent to about 95 mole percent of repeating units of glycolide; and,

a minor component comprising about 70 mole percent to about 5 mole percent of repeating units of p-dioxanone, wherein the polymer bas a weight average molecular weight of about 10,000 grams to about 300,000 grams per mole and an inherent viscosity of about 0.5 to about 4.0 deciliters per gram.

5,633,344

CROSSLINKED POLYMERIC AMMONIUM SALTS

Garret D. Figuly, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

PCT No. PCT/US93/07647, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/04596, PCT Pub. Date Mar. 3, 1994

Continuation-in-part of Ser. No. 932,449, Aug. 20, 1992, abandoned. This PCT application Aug. 18, 1993, Ser. No. 381,876

Int. Cl.[6] C08G *61/00;* **A61K** *31/74*

U.S. Cl. 528—397 **17 Claims**

1. A crosslinked polymeric ammonium salt, wherein in said salt:

about 25% or more of the groups which link ammonium nitrogen atoms are group Y wherein Y is an n-alkylene group or alkyl substituted n-alkylene group, wherein said n-alkylene group has 7 to about 20 carbon atoms;

zero to about 75% of the groups which link ammonium nitrogen atoms are group Z wherein Z is a hydrocarbylene radical containing 2 or more carbon atoms, said hydrocarbylene radical optionally containing one or more hydroxyl, ether, amino, thioether, keto, silyl groups or heterocyclic rings; and

wherein about 25% or more of the ammonium nitrogen atoms are secondary ammonium nitrogen atoms.

5,633,345

CYCLIC PEPTIDES

Toru Kurome, Otsu; Kazutoh Takesako, Kusatsu; Ikunoshin Kato, Uji; Kaoru Inami, Minoh, and Tetsuo Shiba, Toyonaka, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Division of Ser. No. 67,018, May 26, 1993, abandoned. This application May 3, 1995, Ser. No. 433,067

Claims priority, application Japan, Jun. 19, 1992, 4-184661; Oct. 16, 1992, 4-303177

Int. Cl.[6] A61K *38/12*

U.S. Cl. 530—317 **1 Claim**

1. A cyclic peptide represented by the following formula (III):



(III)

wherein D-Hmp represents 2(R)-hydroxy-3(R)-methylpentanoate; and the dotted lines represent intramolecular hydrogen bonds.

5,633,346

PROCESS FOR SYSTHESIZING CYCLIC PEPTIDES

Toru Kurome, Otsu; Kazutoh Takesako, Kusatsu; Ikunoshin Kato, Uji; Kaoru Inami, Minoh, and Tetsuo Shiba, Toyonaka, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

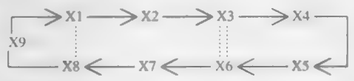
Continuation of Ser. No. 67,018, May 26, 1993, abandoned. This application May 25, 1995, Ser. No. 450,539

Claims priority, application Japan, Jun. 19, 1992, 4-184661; Oct. 16, 1992, 4-303177

Int. Cl.[6] A61K *38/12*

U.S. Cl. 530—317 **19 Claims**

1. A process for synthesizing a cyclic peptide represented by the following formula I:



(I)

wherein

X1 is 2-hydroxy-3-methylpentanoate, 2-hydroxy-3-methylbutanoate or 2,4-dihydroxy-3-methylpentanoate;

X2 is MeVal;

X3 is Phe or oFPhe;

X4 is MePhe, oFMePhe, MeGly, MeTyr, βHOMePhe, or $\beta R_1OMePhe$, in which R_1 is $CO(CH_2)_3COOH$, $COCH_3$ or $CO(CH_2)_2NHCOCH_3$;

X5 is Pro, 4Hyp or SPro;

X6 is alle, Leu, Val, Nle, $GluOR_2$, in which R_2 is benzyl, C1–12 alkyl or C1–12 alkenyl, HONva or R_3ONva, in which R_3 is n-hexanoyl;

X7 is MeVal, Mealle, MeLeu, 2-hydroxy-3-methylbutanoate, HOMeNva or $R_4OMeNva$, in which R_4 is benzyl;

X8 is Leu, Nva, Alle, HONva or $GluOR_5$, in which R_5 is cHex;

X9 is βHOMeVal or MeThr;

and the dotted lines represent intramolecular hydrogen bonds;

which process comprises:

(a) cyclizing a linear peptide having a sequence represented by the following formula II:

X6→X7→X8→X9→X1→X2→X3→X4→X5 II

wherein

X1 is 2-hydroxy-3-methylpentanoate, 2-hydroxy-3-methylbutanoate or 2,4-dihydroxy-3-methylpentanoate;

X2 is MeVal;

X3 is Phe or oFPhe;

X4 is MePhe, oFMePhe, MeGly, O-protected MeTyr, O-protected βHOMePhe or $\beta R_1OMePhe$, in which R_1 is $CO(CH_2)_3COOH$, $COCH_3$ or $CO(CH_2)_2NHCOCH_3$;

X5 is Pro, O-protected 4Hyp, SPro or a reactive derivative having a activated carboxyl group thereof;

X6 is alle, Leu, Val, Nle, $GluOR_2$, in which R_2 is benzyl, C1–12 alkyl or C1–12 alkenyl, O-protected HONva or R_3ONva, in which R_3 is n-hexanoyl;

X7 is MeVal, Mealle, MeLeu, 2-hydroxy-3-methylbutanoate, O-protected HOMeNva or $R_4OMeNva$, in which R_4 is benzyl;

X8 is Leu, Nva, alle, O-protected HONva or $GluOR_5$, in which R_5 is cHex;

X9 is βHOMeVal, O-protected γHOMeVal or O-protected MeThr; and

(b) deprotecting the O-protected cyclic peptide obtained in step (a), if the cyclic peptide contains an O-protected amino acid.

5,633,347

CONOTOXIN PEPTIDES

Baldomero M. Olivera; Lourdes J. Cruz; David R. Hillyard; J. Michael McIntosh, all of Salt Lake City, Utah, and Ameurfino O. Santos, Quezon City, Philippines, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 137,800, Oct. 19, 1993, Pat. No. 5,514,774, which is a continuation-in-part of Ser. No. 84,848, Jun. 29, 1993, Pat. No. 5,432,155. This application Jun. 7, 1995, Ser. No. 480,750

Int. Cl.[6] C07K *14/435*

U.S. Cl. 530—324 **11 Claims**

1. A substanially pure κ-conotoxin peptide selected from the group consisting of:

Gln-Lys-Glu-Leu-Val-Pro-Ser-Val-Ile-Thr-Thr-Cys-Cys-Gly-Tyr-Asp-Pro-Gly-Thr-Met- Cys-Pro-Pro-Cys-Arg-Cys-Thr-Asn-Ser-Cys-Pro-Thr-Lys-Pro-Lys-Lys-Pro-Xaa_1 (SEQ ID NO:25), wherein Xaa_1 is des-Xaa_1 or Gly-Arg-Arg-Asn-Asp (SEQ ID NO:26);

Ala-Pro-Xaa_1-Leu-Val-Val-Thr-Ala-Thr-Thr-Asn-Cys-Cys-Gly-Tyr-Asn-Pro-Met-Thr-Ile- Cys-Pro-Pro-Cys-Met-Cys-Thr-Tyr-Ser-Cys-Pro-Pro-Lys-Arg-Lys-Pro-Xaa_2 (SEQ ID NO:27), wherein Xaa_1 is Glu or γ-carboxyglutamate and Xaa_2 is des-Xaa_1 or Gly-Arg-Arg-Asn-Asp (SEQ ID NO:26);

Glx-Thr-Trp-Leu-Val-Pro-Ser-Thr-Ile-Thr-Thr-Cys-Cys-Gly-Tyr-Asp-Pro-Gly-Thr-Met- Cys-Pro-Thr-Cys-Met-Cys-Asp-Asn-Thr-Cys-Lys-Pro-Lys-Pro-Lys-Lys-Ser-Xaa_1 (SEQ ID NO:28), wherein Xaa_1 is des-Xaa_1 or Gly-Arg-Arg-Asn-Asp (SEQ ID NO:26);

Ala-Pro-Trp-Leu-Val-Pro-Ser-Thr-Ile-Thr-Thr-Cys-Cys-Gly-Tyr-Asp-Pro-Gly-Ser-Met- Cys-Pro-Pro-Cys-Met-Cys-Asn-Asn-Thr-Cys-Lys-Pro-Lys-Pro-Lys-Lys-Ser-Xaa_1 (SEQ ID NO:29), wherein Xaa_1 is des-Xaa_1 or Gly-Arg-Arg-Asn-His (SEQ ID NO:30); and,

Gly-Cys-Cys-Gly-Pro-Tyr-Xaa_1-Asn-Ala-Ala-Cys-His-Xaa_2-Cys-Gly-Cys-Lys-Val-Gly- Arg-Xaa_3-Xaa_4-Tyr-Cys-Asp-Arg-Xaa_5-Ser-Gly-Gly (SEQ ID NO:33), wherein Xaa_1, Xaa_2, Xaa_3, Xaa_4 and Xaa_5 are independently Pro or hydroxy-Pro.

5,633,348

AMPHOTROPIC VIRUS RECEPTOR

Stephen V. Johann, Pearl River; Marja van Zeijl, Cornwall, and Bryan M. O'Hara, Pearl River, all of N.Y., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 50,684, Apr. 16, 1993, Pat. No. 5,550,221. This application Jan. 4, 1996, Ser. No. 582,719

Int. Cl.[6] C07K *14/435;* **C12N** *15/12*

U.S. Cl. 530—350 **2 Claims**

1. A recombinantly produced amphotropic virus receptor protein comprising the amino acid sequence as set forth in SEQ ID NO: 2.

5,633,349

METHOD OF INACTIVATING PRIONS (SLOW VIRUSES) CONVENTIONAL VIRUSES AND OTHER INFECTIONS AGENTS IN BIOLOGICAL MATERIAL

Herwig Reichl, Lagergasse 158, A-8020 Graz, Austria

Continuation of Ser. No. 931,926, Aug. 18, 1992, abandoned. This application Sep. 2, 1994, Ser. No. 300,596

Claims priority, application Austria, Aug. 19, 1991, 1629/91

Int. Cl.[6] C07K *14/435;* **G12N** *7/06*

U.S. Cl. 530—364 **11 Claims**

1. In a process for treating a biological or biogenic material derived from serum or plasma and containing an infectious agent, the improvement which comprises destroying prions in said biological or biogenic material by treating the biological or biogenic material with urea or a thiocyanate as a chaotropic agent for a minimum of 12 hours at a temperature of 20° to 25° C. and removing the chaotropic agent from the biological or biogenic material following the treatment.

5,633,350

METHOD FOR THE ISOLATION AND PURIFICATION OF VITAMIN K-DEPENDENT PROTEINS

Bernhard Fischer, Vienna; Artur Mitterer, Orth/Donau, and Friedrich Dorner, Vienna, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Feb. 27, 1995, Ser. No. 394,508

Claims priority, application Germany, Feb. 28, 1994, 44 06 515.9

Int. Cl.[6] A61K *35/14*

U.S. Cl. 530—381 **17 Claims**

1. Method for the separation of a vitamin K-dependent protein from non-vitamin K-dependent accompanying proteins from a protein-containing solution, characterized in that calcium ions are added to this solution and the calcium-containing solution is brought in contact with an anion exchanger under conditions in which the accompanying proteins, but not the vitamin K-dependent protein, are adsorbed.

5,633,351

TARGETING PROTEIN-DIAGNOSTIC/THERAPEUTIC AGENT CONJUGATES HAVING SCHIFF BASE LINKAGES

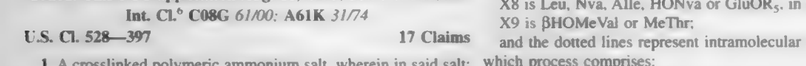
Michael W. Reed, Seattle, Wash., assignor to NeoRx Corporation, Seattle, Wash.

Continuation of Ser. No. 13,484, Feb. 1, 1993, abandoned, which is a continuation of Ser. No. 621,709, Dec. 4, 1990, abandoned, which is a division of Ser. No. 252,298, Sep. 30, 1988, abandoned. This application Nov. 1, 1994, Ser. No. 332,045

Int. Cl.[6] A61K *51/00;* **C07K** *16/00*

U.S. Cl. 530—391.1 **7 Claims**

1. A targeting protein conjugated to a radionuclide by a Schiff base linker and having the formula:



wherein etc.

"Ar" is a substituted or unsubstituted aryl group;

"N" is a nitrogen atom;

"C" is a carbon atom;

"R" is H or an alkyl, aryl or heteroaryl substituent; and

"Z" comprises a radionuclide selected from the group consisting of ^{123}I, ^{125}I, ^{130}I, ^{131}I, ^{133}I, ^{135}I, ^{47}Sc, ^{72}Se, ^{90}Y, ^{88}Y, ^{97}Ru, ^{119}Sb, ^{197}Hg, ^{211}At, ^{212}Bi, ^{212}Pb, ^{111}In, ^{67}Ga, ^{68}Ga, ^{67}Cu, ^{75}Br, ^{76}Br, ^{99m}Tc, ^{18}F, ^{188}Re, ^{186}Re, ^{203}Pb, ^{64}Cu, ^{105}Rh, ^{198}Au and ^{199}Au,

and wherein the substituent of Ar, if present, is an electron-withdrawing group or an electron-donating group capable of modi-

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fying unreduced imine bond stability of the Schiff base linker, and wherein the Schiff base is formed by a process which comprises:

reacting a non-oxidized and native amine-bearing or amine-derivatized targeting protein with aromatic aldehyde or ketone, wherein the aromatic aldehyde or ketone is directly conjugated to Z or indirectly conjugated to Z via a chelating ligand, to form a stabilized Schiff base linker, absent a subsequent stabilizing step with respect to the C=N bond,

wherein antibody antigen binding antibody fragment carbohydrate content is not determinative of maximum possible aromatic aldehyde or ketone conjugation to the antibody or antigen binding antibody fragment.

5,633,352

BIOSYNTHETIC HUMAN GROWTH HORMONE

Henrik Dalbøge, Virum; John Pedersen, Kokkedal; Thorkild Christensen, Allerød; Jørli W. Ringsted, Brøndby, and Torben E. Jessen, Holbaek, all of Denmark, assignors to Novo Nordisk A/S, Denmark

Continuation of Ser. No. 372,692, Jan. 13, 1995, which is a continuation of Ser. No. 959,856, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 759,106, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 215,602, Jul. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 910,230, Oct. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 640,081, Aug. 8, 1984, abandoned. This application Mar. 10, 1995, Ser. No. 402,286

Claims priority, application Denmark, Dec. 10, 1982, 5493/82; Feb. 7, 1985, 556/85

Int. Cl.[6] C07K *14/61*

U.S. Cl. 530—399 **2 Claims**

1. Biosynthetic ripe human growth hormone free of contaminants from pituitary derived human growth hormone.

5,633,353

HALOGENATED ORGANOMETALLIC COMPLEXES AND THEIR USE IN THE POLYMERIZATION OF UNSATURATED MONOMERS

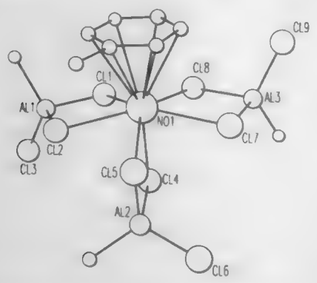
Fabio Garbassi; Paolo Biagini, both of Novara; Piero Andreussi, Milan, and Gabriele Lugli, S. Donato Milanese, all of Italy, assignors to Enichem Elastomeri S.r.l., Milan, Italy

Filed Aug. 1, 1994, Ser. No. 283,258

Claims priority, application Italy, Aug. 6, 1993, MI93A1794

Int. Cl.[6] C07F *5/00*

U.S. Cl. 534—15 **9 Claims**



1. Organometallic complexes comprising lanthanides, which can be represented with the general formula,

$$Me(Ar)(AlX_3R)_3 \quad (I)$$

wherein:

Me represents a metal of the group IIIA, having atomic number 21, 39, or an atomic number of between 57 and 71,

Ar represents benzene or a benzene substituted with from 1 to 3 alkyl groups containing from 1 to 10 carbon atoms,

X is a halogen atom, whereas,

R is a linear, cyclic or branched alkyl radical containing from 1 to 12 carbon atoms.

5,633,354

PHOSPHORAMIDITE DERIVATIVES OF TEXAPHYRINS

Darren Magda, Cupertino, Calif.; Jonathan L. Sessler, Austin, Tex.; Brent L. Iverson, Austin, Tex.; Petra I. Sansom, Austin, Tex., and Shaun P. Crofts, Campbell, Calif., assignors to Pharmacyclics, Inc., Sunnyvale, Calif., and Board of Regents, The University of Texas, Austin, Tex.

Continuation of Ser. No. 487,722, Jun. 7, 1995, Pat. No. 5,565,552, which is a continuation-in-part of Ser. No. 310,501, Sep. 21, 1994, Pat. No. 5,567,687. This application Mar. 13, 1996, Ser. No. 614,638

Int. Cl.[6] C07F *7/00;9/6524;* **C07D** *187/22*

U.S. Cl. 534—15 **18 Claims**

1. A phosphoramidite derivative of a texaphyrin metal complex.

5,633,355

MONOAZO DISPERSE DYES FROM SELECTED (AROMATIC AMINO)PROPIONATES OR SELECTED (AROMATIC AMINO)BUTYRATES

Ruedi Altermatt, Buckten, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

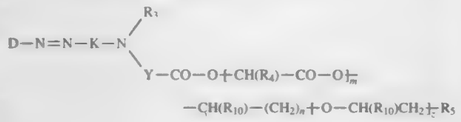
Continuation of Ser. No. 373,171, Jan. 17, 1995, abandoned. This application Nov. 7, 1995, Ser. No. 554,687

Claims priority, application Germany, Jan. 17, 1994, 44 01 096.6

Int. Cl.[6] C09B *29/08;* **D06P** *1/18;3/40;3/52*

U.S. Cl. 534—761 **14 Claims**

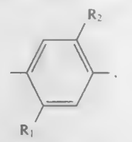
1. The disperse dye of the general formula I



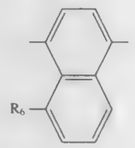
wherein

D signifies a diazo component which is usual with disperse dyes,

K signifies an aromatic radical of formula



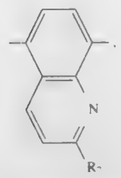
(a)



(b)

or

-continued



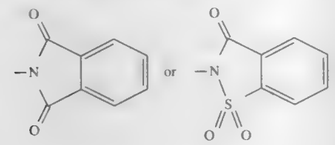
R_1 signifies hydrogen, chlorine, C_{1-2}-alkyl, C_{1-2}-alkoxy or acylamino,

R_2 signifies hydrogen, C_{1-4}-alkoxy, C_{1-2}-alkoxyethoxy, chlorine, bromine, or together with R_3 signifies a group of formula —*$CH(CH_3)CH_2C(CH_3)_2$— (*bonded to the nucleus).

R_3 signifies hydrogen, C_{1-6}-alkyl, C_{3-4}-alkenyl, chloro- or bromo-C_{3-4}-alkenyl, C_{3-4}-alkinyl, phenyl-C_{1-3}-alkyl, C_{1-4}-alkoxycarbonyl-C_{1-3}-alkyl, C_{3-4} -alkenyloxycarbonyl-C_{1-3}-alkyl, C_{3-4}-alkinyloxycarbonyl-C_{1-3}-alkyl, phenoxy-C_{2-4}-alkyl; C_{2-4}-alkyl substituted by halogen, cyano, C_{1-4}-alkoxy, C_{1-4} -alkylcarbonyloxy or C_{1-4}-alkoxycarbonyloxy; or a group of formula —CH_2— $CH(R_8)CH_2$—R_9,

R_4 signifies hydrogen, phenyl or C_{1-2}-alkyl,

R_5 signifies a radical of formula



R_7 signifies hydrogen or C_{1-4}-alkyl,

R_8 signifies hydroxyl, C_{1-4}-alkylcarbonyloxy or C_{1-4}-alkylcarbonyloxy,

R_9 signifies chlorine, C_{1-4}-alkoxy, phenoxy, allyloxy or C_{1-4}-alkylcarbonyloxy,

R_{10} signifies hydrogen or C_{1-4}-alkyl,

Y signifies C_{2-3}-alkylene,

m and z independently signify zero or 1 and

n signifies a number from 1 to 5,

whereby, if K is a radical of formula b or c, R_3 only signifies hydrogen, provided that when Y=—$CH(CH_3)CH_2$—, m=1.

5,633,356

3-DEOXYGLUCOSONE DERIVATIVES

Toshimitsu Niwa, Kounan; Koichi Niimura, Warabi; Minoru Ohara, Tokyo, and Sigemi Tomiyama, Matsudo, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

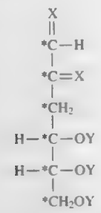
Filed Sep. 29, 1994, Ser. No. 314,687

Claims priority, application Japan, Sep. 29, 1993, 5-264092

Int. Cl.[6] C07H *3/00;3/02*

U.S. Cl. 536—1.11 **6 Claims**

1. A ^{13}C- or ^{14}C-labelled 3-deoxyglucosone derivative represented by the formula (I):



(I)

wherein *C is C or C, X is O or N—OR wherein R is Me, Et or H, and Y is $SiMe_3$ or $SiMe_2tBu$.

174-426 O.G.-97-16: QL3

5,633,357

SYNTHESIS OF CARBOXYLIC ACID GLUCURONIDES

Marcus A. Tius, Kailua, and Mark R. Hagadone, Honolulu, both of Hi., assignors to Synthetic Technology Corporation, Honolulu, Hi.

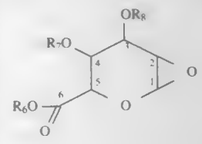
Division of Ser. No. 800,501, Nov. 27, 1991, Pat. No. 5,292,899. This application Mar. 4, 1994, Ser. No. 206,019

Int. Cl.[6] C07H *1/00*

U.S. Cl. 536—18.5 **5 Claims**

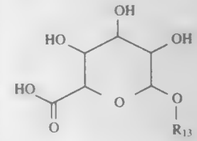
1. A method of producing a carboxylic acid glucuronide comprising

reacting a carboxylic acid precursor with a dual-blocked sugar epoxide precursor of the formula:



wherein R_6 is a first protective agent, and R_7 and R_8 are a second protective agent, to obtain a dual-blocked carboxylic acid glucuronide precursor; and then

removing the first and the second protective agents from the dual-blocked sugar epoxide precursor to obtain a carboxylic acid glucuronide of the formula:



wherein R_{13} is the acyl residue of said carboxylic acid precursor.

5,633,358

PROCESS FOR BLEACHING AQUEOUS SURFACTANT SOLUTIONS

Juergen Gruetzke, Bochum; Stefan Schmidt; Gerda Grund, both of Haltern, and Uwe Tanger, Bochum, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Sep. 14, 1995, Ser. No. 527,897

Claims priority, application Germany, Sep. 14, 1994, 44 32 623.8

Int. Cl.[6] C07G *3/00;* **C07H** *15/04;1/06*

U.S. Cl. 536—18.5 **10 Claims**

1. A process for bleaching an aqueous, concentrated surfactant solution comprising

(1) in a first step adding a bleaching composition to said solution to bleach said surfactant solution at an alkaline pH, wherein the composition comprises hydrogen peroxide in the presence of an inorganic hydrogen peroxide decomposition inhibitor, and

(2) in a second subsequent step decomposing unreacted hydrogen peroxide and/or oxidizing secondary products formed therefrom in the presence of the decomposition inhibitor by the step consisting essentially of contacting the solution resulting from said first step with a transition metal and/or compound thereof.

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5,633,359

METHOD FOR MAKING ALKYL POLYGLYCOSIDES

James D. Beaulieu, West Chester, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 179,453, Jan. 10, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 502,878

Int. Cl.[6] C07G *3/00;* C07H *1/00;15/04*

U.S. Cl. 536—18.6 9 Claims

1. A process for the production of an alkyl polyglycoside comprising the steps of (1) reacting a reducing saccharide with excess alcohol to obtain an alkyl polyglycoside reaction product containing unreacted alcohol; (2) forming a thin film by introducing said alkyl polyglycoside reaction product as a liquid into the input end of a thin film evaporation zone having an input end and a discharge end, wherein the pressure inside the thin film evaporation zone is less than about 20 mm Hg and the temperature is from about 300° F. to about 450° F.; (3) contacting the portion of said film nearest to the discharge end of said zone with liquid water thereby converting the water to steam and cooling the portion of the film nearest to said discharge end to reduce its temperature by from about 20° to about 50° F. and (4) contacting the uncooled portion of the film in said zone with said steam to strip the excess alcohol from the alkyl polyglycoside product.

5,633,360

OLIGONUCLEOTIDE ANALOGS CAPABLE OF PASSIVE CELL MEMBRANE PERMEATION

Norbert Bischofberger, San Carlos; Ken Kent, Mountain View; Rick Wagner, Burlingame; Chris Buhr, Daly City, and Kuei-Ying Lin, Fremont, all of Calif., assignors to Gilead Sciences, Inc., Foster City, Calif.

Filed Apr. 14, 1992, Ser. No. 868,487

Int. Cl.[6] C07H *21/00;21/02;21/04;* A61K *31/70*

U.S. Cl. 536—22.1 12 Claims

1. An oligonucleotide capable of passive diffusion into a cell or a salt thereof wherein said oligonucleotide contains at least two nucleoside residues and wherein said oligonucleotide contains internucleotide linkages selected from the group consisting of phosphodiester, phosphorothioate, phosphorodithioate, formacetal, 3'-thioformacetal, riboacetal, a phosphotriester having a pseudohydrocarbyl substituent (3–20C) and a phosphothiotriester having a pseudohydrocarbyl substituent (3–20C), and further wherein said oligonucleotide is modified such that:

at least 60% of the internucleotide linkages are non-ionic internucleotide linkages selected from the group consisting of formacetal, 3'-thioformacetal, riboacetal, a phosphotriester having a pseudohydrocarbyl substituent (3–20C) and a phosphothiotriester having a pseudohydrocarbyl substituent (3–20C);

at least 60% of the bases included in said oligonucleotide contain a lipophilic substitution, wherein the lipophilic substitution is at the C5 position of a pyrimidine base or the O4 position of thymine; or

the percent non-ionic nucleotide linkage and the percent bases containing lipophilic substitutions sum to at least 60%; said oligonucleotide being characterized by having an log P_{oct} value of about 0.0–2.5 and a solubility in water of at least 0.001 μg/mL.

5,633,361

METHOD FOR PALLADIUM CATALYZED CARBON-CARBON COUPLING AND PRODUCTS

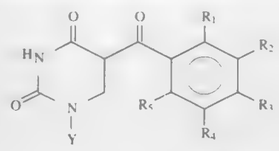
Bruce Eaton, Pullman, Wash., assignor to Washington State University Research Foundation, Pullman, Wash.

Division of Ser. No. 76,735, Jun. 4, 1993, Pat. No. 5,428,149. This application Mar. 21, 1995, Ser. No. 407,893

Int. Cl.[6] C07H *21/00*

U.S. Cl. 536—23.1 8 Claims

1. An oligonucleotide comprising a compound of the formula:



wherein R_1, R_2, R_3, R_4, and R_5 are independently halo, H, alkyl, alkynyl, alkoxy, or phenyl, and Y is ribose or deoxyribose.

5,633,362

PRODUCTION OF 1,3-PROPANEDIOL FROM GLYCEROL BY RECOMBINANT BACTERIA EXPRESSING RECOMBINANT DIOL DEHYDRATASE

Vasantha Nagarajan, Wilmington, and Charles E. Nakamura, Claymont, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 12, 1995, Ser. No. 440,377

Int. Cl.[6] C07H *21/02;21/04;* C12N *1/21*

U.S. Cl. 536—23.1 10 Claims

1. A cosmid comprising a DNA fragment of about 35 kb isolated from *Klebsiella pneumoniae* wherein said fragment encodes an active diol dehydratase enzyme having the restriction digest in FIG. 5, columns numbered 4, said cosmid contained within a transformed *E. coli* deposited with the American Type Culture Collection under accession number ATCC 69790.

5,633,363

ROOT PREFERENTIAL PROMOTER

James T. Colbert; Bruce M. Held; Eve S. Wurtele, all of Ames, Iowa, and Paul S. Dietrich, Palo Alto, Calif., assignors to Iowa State University, Research Foundation In, Ames, Iowa

Filed Jun. 3, 1994, Ser. No. 253,785

Int. Cl.[6] C12N *15/11;15/29;15/82;* A01H *5/00*

U.S. Cl. 536—24.1 19 Claims

1. An isolated DNA fragment comprising, the nucleotide sequence located at positions 1633 to 2633 of SEQ ID No. 1 or a nucleotide sequence having 85% sequence identity to positions 1633 to 2633 of SEQ ID No. 1, the complement of which hybridizes under stringent hybridizing conditions to said positions, and wherein said isolated DNA fragment controls transcription preferentially in plant roots.

5,633,364

N[4]-SUBSTITUTED 2'-DEOXYCYTIDINE COMPOUNDS, OLIGONUCLEOTIDES INCLUDING N[4]-LABELED 2'-DEOXYCYTIDINES, AND A PROCESS FOR MAKING OLIGONUCLEOTIDES WITH N-MODIFIED 2'-DEOXYCYTIDINES

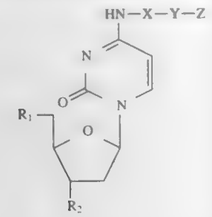
Graham A. Mock, Northborough, and Douglas H. Lovern, Milford, both of Mass., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 529,953, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 108,843, Oct. 9, 1987, Pat. No. 5,405,950, which is a continuation of Ser. No. 734,323, May 15, 1985, abandoned. This application Sep. 17, 1992, Ser. No. 946,804

Int. Cl.[6] C07H *21/04;21/00;19/06*

U.S. Cl. 536—24.3 23 Claims

1. A modified cytidine having the formula



in which

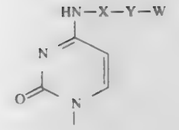
X is a linker containing between 1 and 18 carbon atoms inclusive;

Y is —NH—;

Z is N-formyl, N-acetyl, N-o-nitrophenylacetyl, N-o-nitrophenoxyacetyl, N-acetoacetyl, N-3-phenylpropionyl, N-3(p-hydroxyphenyl)propionyl, N-2-methyl-2-(o-nitrophenoxy)propionyl, N-2-methyl-2-(o-phenylazophenoxy)propionyl, N-4-chlorobutyryl, N-o-nitrocinnamoyl, N-picolinoyl, N-(N'-acetylmethionyl), N-benzoyl, N-phthaloyl, N-dithiasuccinoyl; N-methoxy carbamyl, N-9-fluorenylmethoxy carbamyl, N-2,2,2-trichloroethoxy carbamyl, N-2-trimethylsilylethoxy carbamyl, N-1,1-dimethylpropynoxy carbamyl, N-1-methyl-1-phenylethoxy carbamyl, N-1-ethyl-1-(4-biphenylyl)ethoxy carbamyl, N-1-1-dimethyl-2-haloethoxy carbamyl, N-1-1-dimethyl-2-cyanoethoxy carbamyl, N-t-butoxy carbamyl, N-cyclobutoxy carbamyl, N-1-methylcyclobutoxy carbamyl, N-1-adamantyloxy carbamyl, N-vinyloxy carbamyl, N-allyloxy carbamyl, N-cinnamyloxy carbamyl, N-8-quinolyl carbamyl, N-hydroxypiperidinyloxy carbamyl, N-4,5-diphenyl-3-oxazolin-2-one, N-benzyloxy carbamyl, N-p-nitrobenzyloxy carbamyl, N-3,4-dimethoxy-6-nitrobenzyloxy carbamyl, N-2-4-dichlorobenzyloxy carbamyl, N-5-benzisoxazolylmethoxy carbamyl, N-9-anthrymethoxy carbamyl, N-diphenylmethoxy carbamyl, N-isonicotinyloxy carbamyl, N-S-benzylthio carbamyl, N-(N'-phenylaminothiocarbonyl); N-allyl, N-phenacyl, N-3-acetoxypropyl, N-methoxymethyl, N-benzyloxymethyl, N-pivaloyloxymethyl, N-tetrahydropyranyl, N-2,4-dinitrophenyl, N-benzyl, N-o-nitrobenzyl, N-di(p-methoxyphenyl)methyl, N-triphenylmethyl, N-(p-methoxyphenyl) diphenylmethyl, N-diphenyl-4-pyridylmethyl, N-2-picolyl, N-isopropylidene, N-benzylidene, N-p-nitrobenzylidene, N-salicylidene, N-(5,5-dimethyl-3-oxo-1-cyclohexenyl), N-NO_2 N-diphenylphosphinyl, N-dimethylthiophosphinyl, N-benzenesulfenyl, N-o-nitrobenzenesulfenyl, N-2,4,6-trimethylbenzenesulfonyl, N-toluenesulfonyl, N-benzylsulfonyl, N-trifluoromethylsulfonyl, and N-phenacylsulfonyl; and

each R_1 and R_2 is —OH, —SH, or —H; provided that at least one of R_1 and R_2 must be —OH or —SH.

5. An oligonucleotide containing at least one modified nucleotide with a base of the formula:



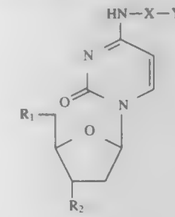
in which

X is a linker containing between 1 and 18 carbon atoms inclusive;

Y is —NH—; and

W is a detectable reporter group with the proviso that the reporter group is not fluorescein.

13. A process for synthesizing an oligonucleotide which includes the repeated steps of joining a predetermined number of nucleoside via a phosphate bridge between their sugar moieties, wherein the improvement comprises using a modified nucleoside in at least one of the joining steps, said modified nucleoside having the formula



in which

X is a linker containing between 1 and 18 carbon atoms inclusive;

Y is —NH—or N=;

Z is N-formyl, N-acetyl, N-trichloroacetyl, N-trifluoroacetyl, N-o-nitrophenylacetyl, N-o-nitrophenoxyacetyl, N-acetoacetyl, N-3-phenylpropionyl, N-3(p-hydroxyphenyl)propionyl, N-2-methyl-2-(o-nitrophenoxy)propionyl, N-2-methyl-2-o-phenylazophenoxy)propionyl, N-4-chlorobutyryl, N-o-nitrocinnamoyl, N-picolinoyl, N-(N'-acetylmethionyl), N-benzoyl, N-phthaloyl, N-dithiasuccinoyl; N-methoxy carbamyl, N-9-fluorenylmethoxy carbamyl, N-2,2,2-trichloroethoxy carbamyl, N-2-trimethylsilylethoxy carbamyl, N-1,1-dimethylpropynoxy carbamyl, N-1-methyl-1-phenylethoxy carbamyl, N-1-ethyl-1-(4-biphenylyl)ethoxy carbamyl, N-1-1-dimethyl-2-haloethoxy carbamyl, N-1-1-dimethyl-2-cyanoethoxy carbamyl, N-t-butoxy carbamyl, cyclobutoxy carbamyl, N-1-methylcyclobutoxy carbamyl, N-1-adamantyloxy carbamyl, N-vinyloxy carbamyl, N-allyloxy carbamyl, N-cinnamyloxy carbamyl, N-8-quinolyloxy carbamyl, N-hydroxypiperidinyloxy carbamyl, N-4,5-diphenyl-3-oxazolin-2-one, N-benzyloxy carbamyl, N-p-nitrobenzyloxy carbamyl, N-3,4-dimethoxy-6-nitrobenzyloxy carbamyl, N-2-4-dichlorobenzyloxy carbamyl, N-5-benzisoxazolylmethoxy carbamyl, N-9-anthrymethoxy carbamyl, N-diphenylmethoxy carbamyl, N-isonicotinyloxy carbamyl, N-S-benzylthio carbamyl, N-(N'-phenylaminothiocarbonyl); N-allyl, N-phenacyl, N-3-acetoxypropyl, N-methoxymethyl, N-benzyloxymethyl, N-pivaloyloxymethyl, N-tetrahydropyranyl, N-2,4-dinitrophenyl, N-benzyl, N-o-nitrobenzyl, N-di(p-methoxyphenyl)methyl, N-triphenylmethyl, N-(p-methoxyphenyl) diphenylmethyl, N-diphenyl-4-pyridylmethyl, N-2-picolyl, N-isopropylidene, N-benzylidene, N-p-nitrobenzylidene, N-salicylidene, N-(5,5-dimethyl-3-oxo-1-cyclohexenyl), N-NO_2, N-diphenylphosphinyl, N-dimethylthiophosphinyl, N-benzenesulfenyl, N-o-nitrobenzenesulfenyl, N-2,4,6-trimethylbenzenesulfonyl, N-toluenesulfonyl, N-benzylsulfonyl, N-trifluoromethylsulfonyl, and N-phenacylsulfonyl; and

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each R_1 and R_2 is —OH, —SH, or —H; provided that at least one of R_1 and R_2 must be —OH or —SH.

5,633,365

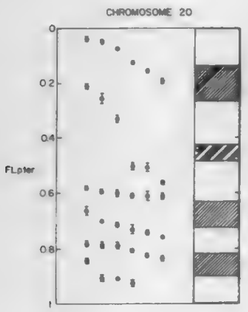
DETECTION OF AMPLIFIED OR DELETED CHROMOSOMAL REGIONS

Trond Stokke, San Fransisco; Daniel Pinkel, Walnut Creek, and Joe W. Gray, San Fransisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 132,808, Oct. 6, 1993, Pat. No. 5,472,842. This application Apr. 28, 1995, Ser. No. 430,984

Int. Cl.[6] C07H *21/04;* **C12Q** *1/68*

U.S. Cl. 536—24.31 **11 Claims**



7. A composition consisting essentially of one or more nucleic acid probes, each of which binds selectively to a target polynucleotide sequence at about FLpter 0.85 on human chromosome 20.

5,633,366

PYRIMIDINE NUCLEOSIDE DERIVATIVES AND METHODS FOR PRODUCING THEM

Satoshi Takamatsu; Hiroshi Shiragami; Yumiko Uchida, and Kunisuke Izawa, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

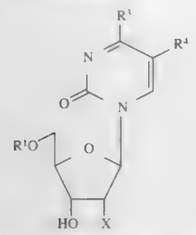
Filed Aug. 4, 1994, Ser. No. 285,697

Claims priority, application Japan, Aug. 4, 1993, 5-193332; Aug. 1, 1994, 6-180109

Int. Cl.[6] C07H *1/00;19/067;19/073*

U.S. Cl. 536—28.4 **5 Claims**

1. A compound of formula (I):



(I)

wherein X represents a halogen atom; R^1 represents an acyl group having 1 to 7 carbon atoms R^3 represents a hydroxyl group, a protected hydroxyl group, amino group, or a protected amino group; and represents a hydrocarbon group having 1 to 12 carbon atoms, a hydrogen atom or a halogen atom.

5,633,367

PROCESS FOR THE PREPARATION OF A 2-SUBSTITUTED 3,3-DIFLUOROFURAN

Douglas P. Kjell, West Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

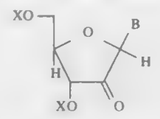
Filed Mar. 24, 1995, Ser. No. 410,258

Int. Cl.[6] C07H *19/06*

U.S. Cl. 536—28.5 **6 Claims**

1. A process for the preparation of a 2',2'-difluoronucleoside which comprises:

reacting a 2-ketonucleoside of the formula



with diethylammonium sulfur trifluoride (DAST) in the presence of a catalytic amount of pyridine hydrofluoride and a non-reactive halogenated hydrocarbon solvent at a temperature which produces the 2',2'-difluoronucleoside, wherein x is a non-interfering, non-reactive hydroxy protectinq group selected from the group consisting of acetyl, formyl, 2-chloroacetyl, benzyl, diphenylmethyl, triphenylmethyl, 4-nitrobenzyl, phenoxycarbonyl, t-butyl, methoxymethyl, tetra-hydropyranyl, allyl, tetrahydrothienyl, 2-methoxyethoxymethyl, methoxyacetyl, phenoxyacetyl, isobutyryl, ethoxycarbonyl, end benzyloxycarbonyl, and B is a N-linked nucleobase.

5,633,368

PARTIALLY ACYLATED β-CYCLODEXTRINS

Rolf Hirsenkorn, München, Germany, assignor to Consortium für elektrochemische Industrie GmbH, Munich, Germany

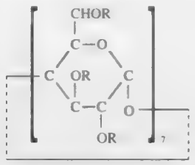
Filed Apr. 18, 1995, Ser. No. 423,887

Claims priority, application Germany, Apr. 22, 1994, 44 14 128.9

Int. Cl.[6] C08B *37/16;* **A61K** *31/715*

U.S. Cl. 536—103 **8 Claims**

1. A mixture of acylated cyclodextrins of formula I:



(I)

wherein R denotes hydrogen or R1,

wherein R1 can be identical or different and denotes acetyl, propionyl, butyryl, 2-alkoxyacetyl, 2-chloroacetyl, 2-fluoroacetyl, 2-N-acetylaminoacetyl, methacryloyl, or acryloyl, and the degree of substitution (DS) for R1, measured by means of ^1H nuclear magnetic resonance (NMR) spectroscopy, is between 0.8 and 1.20,

wherein the hydroxyl groups in the 6-position of the glucoses are less than 85% substituted, and

wherein the seven glucopyranose rings of formula (I) need not be identically substituted.

5,633,369

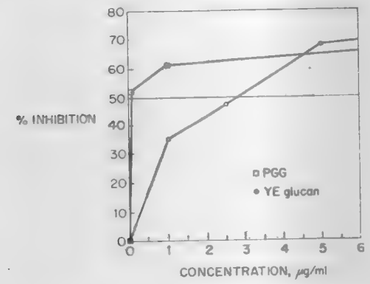
METHOD FOR PRODUCING SOLUBLE GLUCANS

Spiros Jamas, Boston; D. Davidson Easson, Jr., Shrewsbury, and Gary R. Ostroff, Worcester, all of Mass., assignors to Alpha-Beta Technology, Inc., Worcester, Mass.

Continuation of Ser. No. 432,303, May 2, 1995, which is a continuation of Ser. No. 838,288, May 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 404,738, Sep. 8, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 464,528

Int. Cl.[6] C07H *1/00;1/06;* **C08B** *37/00;* **A61K** *31/715*

U.S. Cl. 536—123.1 **24 Claims**



1. A process for producing underivatized, aqueous soluble β(1-3) glucan having immunostimulating properties, comprising the steps of:

a. contacting a suspension of aqueous insoluble β(1-3) glucan with an organic acid to solubilize said glucan thereby forming an acid-soluble and acid-insoluble glucan mixture;

b. contacting the acid-soluble or acid insoluble portion of the glucans with an alkali solution to dissolve alkali-soluble glucan;

c. removing alkali-insoluble glucans from the solution of step (b); and

d. neutralizing the solution containing the alkali-soluble β(1-3) glucan obtained from step (c).

5,633,370

NAPHTHALOCYANINE COMPOUNDS, NAPHTHALOCYANINE POLYMERS AND METHOD FOR MAKING

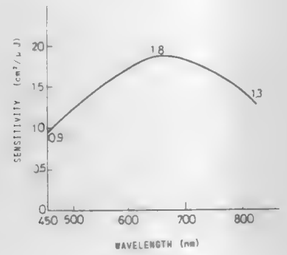
Hirofusa Shirai, 2496, Nagase, Maruko-cho, Chiisagata-gun, Nagano; Mutsumi Kimura, Uedo, and Yuichi Kubota, Chiba, all of Japan, assignors to Hirofusa Shirai, Nagano, and TDK Corporation, Tokyo, both of Japan

Filed Oct. 21, 1994, Ser. No. 326,918

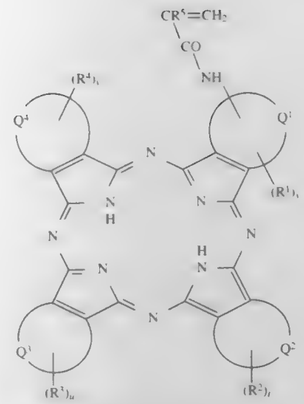
Claims priority, application Japan, Oct. 22, 1993, 5-287483

Int. Cl.[6] C07D *487/22*

U.S. Cl. 540—139 **3 Claims**



1. A vinyl-containing naphthalocyanine compound of the following formula (4):



(4)

wherein each of Q^1, Q^2, Q^3, and Q^4 is a group of atoms to form a benzene ring or naphthalene ring fused to the adjacent pyrrole ring, at least one of the rings formed by Q^1, Q^2, Q^3, and Q^4 being a naphthalene ring,

each of R^1, R^2, R^3, and R^4, which may be identical or different, is nitro, amino, alkyl or alkoxy group.

s is 0 or an integer of 1 to 3 when Q^1 forms a benzene ring, or 0 or an integer of 1 to 5 when Q^1 forms a naphthalene ring,

t is 0 or an integer of 1 to 4 when Q^2 forms a benzene ring, or 0 or an integer of 1 to 6 when Q^2 forms a naphthalene ring,

u is 0 or an integer of 1 to 4 when Q^3 forms a benzene ring, or 0 or an integer of 1 to 6 when Q^3 forms a naphthalene ring,

v is 0 or an integer of 1 to 4 when Q^4 forms a benzene ring, or 0 or an integer of 1 to 6 when Q^4 forms a naphthalene ring,

with the proviso that s, t, u and v are not equal to 0 at the same time and the sum of s+t+u+v is an integer of at least 1,

where s, t, u, and v are more than one, the corresponding R^1, R^2, R^3, and R^4 groups may be identical or different, and

R^5 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms.

5,633,371

CATECHOL DERIVATIVES

Karl Bernauer, Oberwil; Janos Borgulya, Basel; Hans Bruderer, Biel-Benken; Mosé Da Prada, Riehen, and Gerhard Zürcher, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

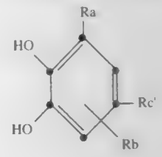
Division of Ser. No. 327,160, Oct. 21, 1994, Pat. No. 5,467,875, which is a division of Ser. No. 48,685, Apr. 16, 1993, Pat. No. 5,389,653, which is a continuation of Ser. No. 686,210, Apr. 16, 1991, Pat. No. 5,236,952, which is a continuation of Ser. No. 395,110, Aug. 16, 1989, abandoned, which is a continuation of Ser. No. 22,891, Mar. 6, 1987, abandoned. This application Sep. 15, 1995, Ser. No. 528,588

Claims priority, application Switzerland, Mar. 11, 1986, 980/86; Jan. 9, 1987, 62/87

Int. Cl.[6] C07D *213/02;498/02*

U.S. Cl. 544—105 **10 Claims**

1. A compound of the formula



Ib

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wherein Ra is nitro or cyano, Rb is hydrogen or halogen, Rc' is a substituted or unsubstituted aromatic or partially unsaturated heterocyclic group attached via a carbon atom or an ester or ether derivative thereof which is hydrolyzable under physiological conditions or a pharmaceutically acceptable salt thereof.

5,633,372

HETEROCYCLE BASED NITROGEN SULFUR LIGANDS USEFUL IN RADIOGRAPHIC IMAGING AGENTS

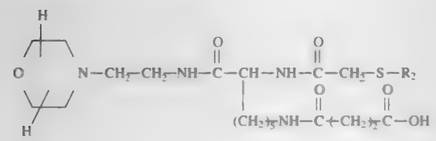
Raghavan Rajagopalan, Maryland Heights, and Ananthachari Srinivasan, St. Charles, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation of Ser. No. 31,762, Mar. 15, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 420,611

Int. Cl.[6] C07D *265/30;295/00;* **A61K** *51/04*

U.S. Cl. 544—159 **2 Claims**

1. A ligand useful in forming radionuclide complexes, said ligand having the general formula:



wherein R^1 is a suitable sulfur protecting group selected form the group consisting of benzoyl and tetrahydropranyl.

5,633,373

ENANTIOSELECTIVE SYNTHESIS OF ANTIFOLATES

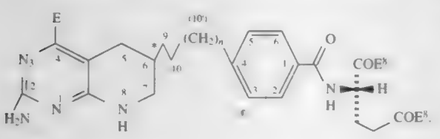
Charles J. Barnett, and Thomas M. Wilson, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 304,751, Sep. 12, 1994, Pat. No. 5,516,776, which is a division of Ser. No. 146,252, Nov. 1, 1993, abandoned, which is a division of Ser. No. 923,672, Aug. 3, 1992, abandoned, which is a division of Ser. No. 641,969, Jan. 16, 1991, Pat. No. 5,159,090, which is a division of Ser. No. 377,021, Jul. 7, 1989, Pat. No. 5,008,391. This application May 22, 1995, Ser. No. 445,818

Int. Cl.[6] C07D *401/02*

U.S. Cl. 544—279 **3 Claims**

1. A process for preparing a compound of the formula



wherein

E is hydroxy or amino;

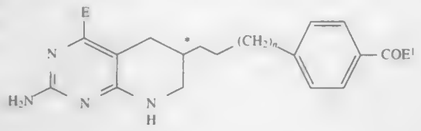
n is 0 or 1;

E^8 is a carboxy-protecting group;

and the carbon marked * is substantially pure R or S configuration;

comprising reacting a compound of the formula

II

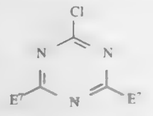


wherein

E^1 is hydroxy;

with a triazine of the formula

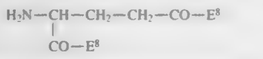
VIII



wherein

the E^7 groups independently are chloro, methoxy or phenoxy; and then with a L-glutamate of the formula

IX



in the presence of N-methylmorpholine.

5,633,374

PYRIMIDINE, CYANOGUANIDINES AS K-CHANNEL BLOCKERS

Stephen J. Humphrey; Kaushik D. Meisheri; James H. Ludens, all of Kalamazoo, and Jackson B. Hester, Jr., Galesburg, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

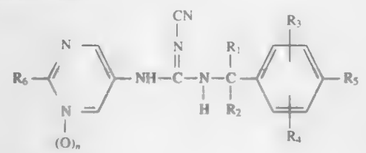
PCT No. PCT/US93/11332, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO94/29280, PCT Pub. Date Dec. 22, 1994

PCT Filed Jul. 21, 1993, Ser. No. 553,308

Int. Cl.[6] C07D *239/42;239/48*

U.S. Cl. 544—322 **5 Claims**

1. A compound of Formula I and its pharmaceutically acceptable acid addition salts



wherein

I

R_1 is hydrogen or methyl;

R_2 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_5 cycloalkyl, C_3–C_5 cycloalkenyl, hydroxy methyl, methoxy-C_1–C_5 alkyl, or R_1 and R_2 are combined to form a C_3–C_6 carbocyclic ring;

R_3 and R_4 are each independently selected to be hydrogen, C_1–C_4 alkyl, F, Cl, Br, I or CF_3;

R_5 is hydrogen, F or Cl;

R_6 is hydrogen, —NH_2, —$NHCH_3$, —NHC_2H_5, —$NHCH(CH_3)_2$, —$N(CH_3)_2$, —$N(C_2H_5)_2$, $NH(CH_2)_m$—OC_1—C_3 alkyl, (where m is 2 or 3), —NHC(O)C_1–C_3 alkyil, Cl or Br, and n is 0 or 1.

5,633,375

GUANIDINE DERIVATIVES THEIR PRODUCTION AND INSECTICIDES

Hideki Uneme, Osaka; Koichi Iwanaga, Ikeda; Noriko Higuchi, Matsubara; Isao Minamida, Kawabe-gun, and Tetsuo Okauchi, Hirakata, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 91,744, Jul. 15, 1993, Pat. No. 5,489,603, which is a continuation of Ser. No. 707,916, May 30, 1991, abandoned, which is a division of Ser. No. 456,863, Dec. 27, 1989, Pat. No. 5,034,404. This application Jun. 7, 1995, Ser. No. 481,136

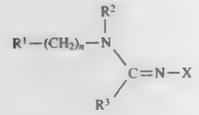
Claims priority, application Japan, Dec. 27, 1988, 63-332192; Jan. 31, 1989, 1-023589; Jul. 19, 1989, 1-187789

Int. Cl.[6] A01N *43/40;* **C07D** *213/24*

U.S. Cl. 544—336 **22 Claims**

1. An insecticidal composition comprising a guanidine derivative of the formula (I):

(I)



wherein R^1 is an optionally substituted homocyclic or heterocyclic ring selected from the group consisting of C_{3-8} cycloalkyl, C_{3-8} cycloalkenyl, C_{6-14} aryl, 2- or 3-thienyl, 2- or 3-furyl, 2- or 3-pyrrolyl, 2-, 3- or 4-pyridyl, 2-, 4- or 5-oxazolyl, 2-, 4- or 5-thiazolyl, 3-, 4- or 5-pyrazolyl, 2-, 4- or 5-imidazolyl, 3-, 4- or 5-isoxazolyl, 3-, 4- or 5-isothiazolyl, 3- or 5-(1,2,4-oxadiazolyl), 1,3,4-oxadiazolyl, 3- or 5-(1,2,4-thiadiazolyl), 1,3,4-thiadiazolyl, 4- or 5-(1,2,3-thiadiazolyl), 1,2,5-thiadiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1H- or 2H-tetrazolyl, N-oxido-2-, 3- or 4- pyridyl, 2-, 4- or 5-pyrimidinyl, N-oxido-2-, 4- or 5-pyrimidinyl, 3- or 4-pyridazinyl, pyrazinyl, N-oxido-3- or 4-pyridazinyl, benzofuryl, benzothiazolyl, benzoxazolyl, triazinyl, oxotriazinyl, tetrazolo(1,5-b)pyridazinyl, triazolo(4,5-b)pyridazinyl, oxoimidazinyl, dioxotriazinyl, pyrrolidinyl, piperidinyl, pyranyl, thiopyranyl, 1,4-oxazinyl, morpholinyl, 1,4-thiazinyl, 1,3-thiazinyl, piperazinyl, benzoimidazolyl, quinolyl, isoquinolyl, cinnolinyl, phthalazinyl, quinazolinyl, quinoxalinyl, indolizinyl, quinolizinyl, 1,8-naphthyridinyl, purinyl, pteridinyl, dibenzofuranyl, carbazolyl, acridinyl, phenanthridinyl, phenazinyl, phenothiazinyl and phenoxazinyl, the homocyclic and the heterocyclic rings optionally being substituted with up to 5 substituents selected from the group consisting of C_{1-15} alkyl, C_{3-10} cycloalkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-10} cycloalkenyl, C_{6-10} aryl, C_{7-10} aralkyl, nitro, hydroxy, mercapto, oxo, thioxo, cyano, carbamoyl, carboxyl, C_{1-4} alkoxycarbonyl, sulfo, halogen, C_{1-4} alkoxy, C_{6-10} aryloxy, C_{1-4} alkylthio, C_{6-10} arylthio, C_{1-4} alkylsulfinyl, C_{6-10} arylsulfinyl, C_{1-4} alkylsulfonyl, C_{6-10} arylsulfonyl, amino, C_{2-6} acylamino, mono- or di-C_{1-4} alkylamino, C_{3-6} cycloalkylamino, C_{6-10} arylamino, C_{2-4} acyl, C_{6-10} arylcarbonyl, and a 5- or 6-membered heterocyclic group having 1 to 4 heteroatoms selected from oxygen, sulfur and nitrogen, wherein when the substituent is the C_{6-10} aryl, C_{7-10} aralkyl, C_{3-10} cycloalkyl, C_{3-10} cycloalkenyl, C_{6-10} aryloxy, C_{6-10} arylthio, C_{6-10} arylsulfinyl, C_{6-10} arylsulfonyl, C_{6-10} arylamino or heterocyclic group, the substituent may be further substituted by 1 to 5 of halogen, hydroxy, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{6-10} aryl, C_{1-4} alkoxy, phenoxy, C_{1-4} alkylthio, or phenylthio, and when the substituent is C_{1-15} alkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{1-4} alkylsulfinyl, C_{1-4} alkylsulfonyl, amino, mono- or di-C_{1-4} alkylamino, C_{3-6} cycloalkylamino or C_{6-10} arylamino, the substituent may be further substituted by 1 to 5 of halogen, hydroxy, C_{1-4} alkoxy or C_{1-4} alkylthio,

R^2 is hydrogen or an optionally substituted hydrocarbon selected from the group consisting of C_{1-15} alkyl, C_{3-10} cycloalkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-10} cycloalkenyl, C_{6-10} aryl or C_{7-10} aralkyl, each of which may be unsubstituted or substituted by one to five of the groups mentioned as substituents of R^1,

R^3 is an amino group represented by the formula:



wherein R^4 and R^5 are, the same or different, a hydrogen atom or an optionally substituted hydrocarbon group or both R^4 and R^5 are combined with the adjacent nitrogen atom to form a cyclic amino group, the hydrocarbon group being selected from the group consisting of C_{1-15} alkyl, C_{3-10} cycloalkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-10} cycloalkenyl, C_{6-10} aryl and C_{7-10} aralkyl, the substituent of the hydrocarbon group being selected from the group consisting of those mentioned in said substituents of R^1, and the cyclic amino group being selected from the group consisting of aziridino, azetidino, pyrrolidino, morpholino and thiomorpholino,

n is 0 or 1, and

X is nitro, cyano or trifluoroacetyl,

provided that when n is 0, R^1 is an optionally substituted heterocyclic group, or

provided that when X is nitro, R^1 is an optionally substituted homocyclic or heterocyclic group as defined above, n is 0 or 1, R^2 is a substituted C_{1-4} alkyl or optionally substituted C_{5-15} alkyl, C_{3-10} cycloalkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-10} cycloalkenyl, C_{6-10} aryl or C_{7-10} aralkyl group, the substituents of group R^2 being selected from the group consisting of those mentioned as substituents of R^2 above, and R^3 is as defined above, or

provided that when X is nitro, R^1 is an optionally substituted homocyclic or heterocyclic group as defined above, n is 0 or 1, R^2 is a hydrogen atom or C_{1-4} alkyl, R^3 is a group represented by the formula:



wherein one of R^4 and R^5 is a hydrogen atom or an optionally substituted hydrocarbon group selected from the group consisting of C_{1-15} alkyl, C_{3-10} cycloalkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-10} cycloalkenyl, C_{6-10} aryl and C_{7-10} aralkyl, the substituent of the hydrocarbon group being selected from the group consisting of those mentioned as substituents of R^1, and the other is a substituted C_{1-4} alkyl or an optionally substituted hydrocarbon group selected from the group consisting of C_{5-15} alkyl, C_{3-10} cycloalkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-10} cycloalkenyl, C_{6-10} aryl and C_{7-10} aralkyl, the substituent of the C_{1-4} alkyl and of the hydrocarbon group being selected from the group consisting of those mentioned as substituents of R^1, or both R^4 and R^5 are combined with the adjacent nitrogen atom to form a cyclic amino group selected from the group consisting of aziridino, azetidino, pyrrolidino, morpholino and thiomorpholino, or

provided that when X is cyano, R^1 is 2-chloro-5-thiazolyl, n is 1, R^2 is hydrogen, and R^3 is methylamino,

or a salt thereof, and a carrier or diluent.

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5,633,376

CERTAIN AMINOMETHYL PHENYLIMIDAZOLE DERIVATIVES; AND 4-ARYL SUBSTITUTED PIPERAZINYL AND PIPERIDINYLMETHYL PHENYLIMIDAZOLE DERIVATIVES; A NEW CLASS OF DOPAMINE RECEPTOR SUBTYPE LIGANDS

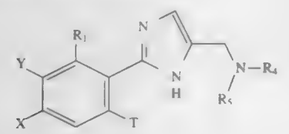
Andrew Thurkauf, Branford, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation-in-part of Ser. No. 81,317, Nov. 8, 1993, Pat. No. 5,428,164, which is a continuation-in-part of Ser. No. 635,256, Dec. 28, 1990, Pat. No. 5,159,083. This application Sep. 27, 1994, Ser. No. 313,435

Int. Cl.[6] C07D *403/06;403/04;401/06;401/04;233/64;* **A61K** *31/415*

U.S. Cl. 544—360 **25 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable non-toxic alts thereof wherein:

R_1 and T are the same or different and represent hydrogen, halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

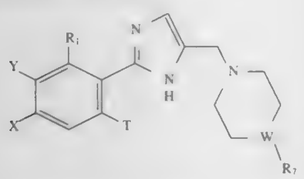
X represents hydrogen, halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

Y is hydrogen, halogen, amino, or straight or branched chain lower alkyl having 1–6 carbon atoms; and

R_4 and R_5 independently represent straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkyl where each alkyl is straight or branched chain alkyl having 1–6 carbon atoms and the phenyl group is unsubstituted or substituted with halogen or alkoxy, provided that not both R_4 and R_5 represent phenylalkyl; or

NR_4R_5 represents 2-(1,2,3,4-tetrahydroisoquinolinyl) unsubstituted or mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms.

2. A compound of the formula:



or the pharmaceutically acceptable non-toxic alts thereof wherein:

W is CH or N;

R_1 and T are the same or different and represent hydrogen, halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

X represents hydrogen, halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

Y is hydrogen, halogen, amino, or straight or branched chain lower alkyl having 1–6 carbon atoms; and

R_7 represents hydrogen, or phenyl or benzyl where the phenyl group of each is unsubstituted or substituted with halogen, alkoxy, or alkyl.

5,633,377

4-PIPERIDINO- AND PIPERAZINOMETHYL-2-CYCLOHEXYL IMIDAZOLE DERIVATIVES; DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

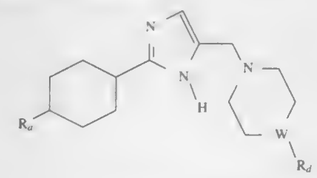
Andrew Thurkauf, Danbury; Raymond F. Horvath, North Branford; Jun Yuan, Clinton, and John M. Peterson, New Haven, all of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 344,154, Nov. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 81,317, Nov. 8, 1993, Pat. No. 5,428,164, which is a continuation-in-part of Ser. No. 635,256, Dec. 28, 1990, Pat. No. 5,159,083. This application Jun. 5, 1995, Ser. No. 462,833

Int. Cl.[6] C07D *403/06;403/04;401/06;401/04;233/64*

U.S. Cl. 544—370 **4 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein

W is nitrogen or CH;

R_a is hydrogen or lower alkyl; and

R_d is pyridyl, pyrimidinyl, phenylalkyl, or phenyl, each of which is unsubstituted or substituted with halogen, hydroxy, lower alkyl or lower alkoxy.

5,633,378

POLYALKYLPIPERIDINE COMPOUNDS

Karl Gaa, Burtenbach; Matthias Zäh, Gersthofen, and Josef Wiedemann, Zusmarshausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

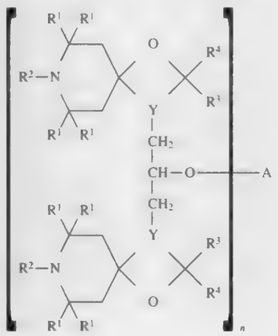
Filed Jun. 29, 1995, Ser. No. 496,605

Claims priority, application Germany, Jul. 1, 1994, 44 23 055.9

Int. Cl.[6] C07D *221/20*

U.S. Cl. 546—16 **3 Claims**

1. A polyalkylpiperidine compound of the formula I



(I)

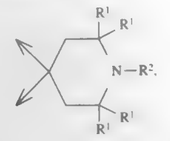
in which Y is the group



R^1 is a hydrogen atom or an alkyl group,

R^2 is a group of the formula R^{17}—O— or R^{18}—CO— (acyl),

R^3 and R^4 are identical or different and are a hydrogen atom or an alkyl group, or R^5 and R^4, together with the carbon atom connecting them, form a ring having 5 to 12 ring members or a group of the formula



n is 1, 2 or 3, and

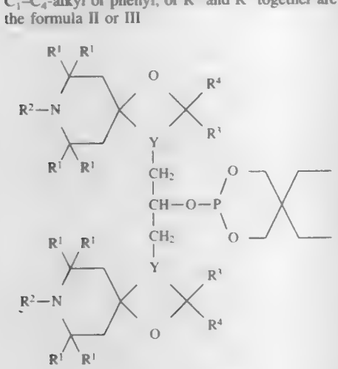
A, in the case where n=1, is a hydrogen atom, R^5—, R^5—CO—, R^5—NH—CO— (urethane), —$COOR^5$, —$P(OR^6)$ (OR^7), —$Si(OR^5)$ (OR^5) (OR^5), or —$SiR^5R^5R^5$

A. in the case where n=2, is —R^{11}—, —CO—R^{12}—CO—, —CO—NH—R^{13}—NH—CO—, —CO—, =POR^5, =$Si(OR^5)$ (OR^5), or =SiR^5R^5

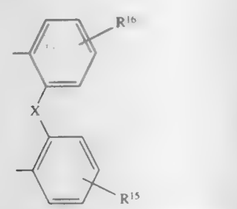
A. in the case where n=3, is R^{14}≡, $R^{15}(CO—)_3$, $R^{16}(NH—CO—)_3$, ≡$Si(OR^5)$, ≡SiR^5 R^5 is a C_1–C_{18}alkyl group, a C_2–C_{18}-alkenyl group, a C_2–C_{18}-alkynyl group, a C_5–C_{12}-cycloalkyl group, a C_6–C_{10}-bicycloalkyl group, a C_5–C_8-cycloalkenyl group, a C_6–C_{10}-aryl group, a C_7–C_9aralkyl group, a C_7–C_9-alkaryl group, unsubstituted or substituted by C_1–C_4-alkyl or phenyl, where a plurality of radicals

R^5 may be identical or different,

R^6 and R^7 are identical or different and are a C_1–C_{18}-alkyl group, a C_2–C_{18}-alkenyl group, a C_2–C_{18}-alkynyl group, a C_5–C_{12}-cycloalkyl group, a C_6–C_{10}-bicycloalkyl group, a C_5–C_8-cycloalkenyl group, a C_6–C_{10}-aryl group, a C_7–C_9-aralkyl group or a C_7–C_9-aralkyl group, substituted by C_1–C_4-alkyl or phenyl, or R^6 and R^7 together are a radical of the formula II or III



(II)



(III)

in which R^1, R^2, R^3, R^4 and R^5 are as defined above, and X is a direct bond or methylene group or a 1,1-alkylidene group having 2 to 5 carbon atoms, R^{11}, R^{12} and R^{13} are identical or different and are a C_1–C_{12}-alkylene group, a C_5–C_7-cycloalkylene group, a C_8–C_{10}-bicycloalkylene group, a C_6–C_{10}-arylene group, a C_7–C_9-aralkylene group or C_7–C_9-arylene group, substituted by C_1–C_4-alkyl or phenyl, R^{14}, R^{15} and R^{16} are identical or different and are a trifunctional C_3–C_{18}-alkyl radical, C_5–C_7-cycloalkyl radical, C_6–C_{10}-aryl radical or C_6–C_{10}-aryl radical which is substituted by C_1–C_4-alkyl or phenyl,

R^{17} and R^{18} are identical or different and are a C_1–C_{10}-alkyl group, a C_5–C_7-cycloalkyl group or a C_6–C_{10}-aryl group.

5,633,379

3-HETEROALIPHATYL- AND 3-HETERO(ARYL)ALIPHATYL-2(1H)-QUINOLONE DERIVATIVES

Hans Allgeier, Lörrach, Germany, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

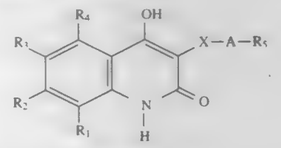
Filed Jun. 1, 1995, Ser. No. 456,358

Claims priority, application Switzerland, Jun. 2, 1994, 1732/94

Int. Cl.[6] A61K *31/47;* **C07D** *215/227;215/20;215/36*

U.S. Cl. 546—155 **6 Claims**

1. A compound of formula I:



(I)

wherein R_1 and R_3 are hydrogen,

R_2 is halogen having an atomic number of up to and including 35,

R_4 is hydrogen, halogen having an atomic number of up to and including 35, C_1–C_4alkyl or nitro,

X is thio,

A is straight-chain C_1–C_4alkylene, and

R_5 is phenyl, pyrimidinyl, chromanyl, 1,4-benzodioxanyl, thienyl or 1,2,3,4-tetrahydronaphth-2-yl each of which is unsubstituted or mono- or di-substituted by one or more of halogen having an atomic number of up to and including 35, cyano, carboxy, C_1–C_4alkoxycarbonyl, N-C_1– C_4alkylcarbamoyl, N-phenyl-N-C_1–C_4alkylcarbamoyl, hydroxy, C_1–C_4alkanoyl and C_1–C_4alkyl; carboxy, C_1–C_4alkoxycarbonyl or N-C_1–C_4alkylcarbamoyl, or a tautomer or salt thereof.

5,633,380

SUBSTITUTED QUINOLINE HERBICIDE INTERMEDIATES AND PROCESS

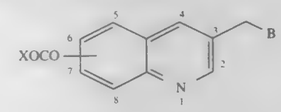
Wen-Xue Wu, Mercer, N.J., assignor to American Cyanamid Company, Madison, N.J.

Filed Jun. 5, 1995, Ser. No. 461,786

Int. Cl.[6] C07D *215/12;215/14;215/38*

U.S. Cl. 546—174 **15 Claims**

1. A compound of the formula



wherein X is straight or branched C_1–C_6 alkyl, phenyl, —O—C_1–C_4 straight or branched alkyl



wherein Y and z are independently H, straight or branched C_1–C_6 alkyl or phenyl and

B is halogen, or a quaternary ammonium halide.

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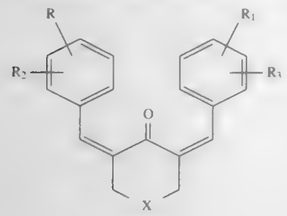
(Z,Z), (Z,E) AND (E,Z) ISOMERS OF SUBSTITUTED BIS(PHENYLMETHYLENE)CYCLOKETONES

Jerry L. Dallas, Napa; William J. Guilford, San Leandro; Sunil K. Koovakkat, Hercules; Michael M. Morrissey, Danville, and Kenneth J. Shaw, San Rafael, all of Calif., assignors to Berlex Laboratories, Inc.

Filed Jul. 5, 1994, Ser. No. 270,288
Int. Cl.[6] A61K *31/445;* **C07D** *211/30*
U.S. Cl. 546—189 **23 Claims**

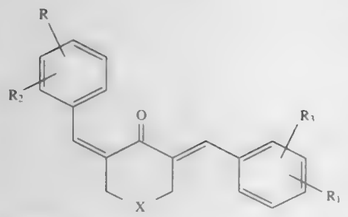
1. A compound of one of the following formulae:

I (ZZ)



and

II (ZE and EZ)



wherein

R, R_1 are the same or independently

$-CON(R_4)_2$ or $-C(=NH)-N(R_5)_2$;

R_2, R_3 are the same or independently hydrogen, loweralkyl or halogen;

R_4 are the same or independently hydrogen, loweralkyl, aryl or arylloweralkyl;

R_5 are the same or independently hydrogen, loweralkyl, aryl, arylloweralkyl

$-C(=O)-R_6$;

R_6 is loweralkyl, aryl or arylloweralkyl;

X is $(CHR_7)_n$ O, S, SO, SO_2 or NR_8;

R_7 is independently hydrogen, —COOH or $(-CH_2)_p$—COOH;

R_8 is hydrogen, loweralkyl, arylloweralkyl or

$-C(=O)-Y$;

Y is loweralkyl or aryl;

n is the integers 1, 2, 3, 4 or 5;

p is the integers 1, 2, 3 or 4 and the pharmaceutically acceptable salts thereof;

with the provisos:

a) both R and R_1 must be in the meta or para positions,

b) R and R_1 cannot both be $-CON(R_4)_2$,

c) only one of R_5 can be

$-C(=O)-R_6$

and

d) only one of R_7 can be —COOH or $(-CH_2)_p$—COOH.

5,633,382

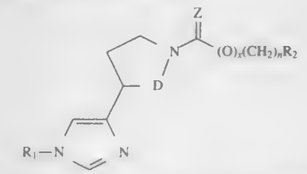
HISTAMINE H_3-RECEPTOR ANTAGONISTS AND THERAPEUTIC USES THEREOF

Graham J. Durant, and Amin M. Khan, both of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

Continuation of Ser. No. 862,657, Apr. 1, 1992, abandoned. This application Jun. 15, 1994, Ser. No. 259,926
Int. Cl.[6] C07D *411/00*
U.S. Cl. 546—210 **26 Claims**

1. A compound of the formula:

I



wherein R_1 represents hydrogen or an in vivo hydrolyzable group; D is CH_2CH_2; Z is S or O; x is 0 or 1; n is an integer from 0 to 6; and R_2 represents a substituted or unsubstituted linear or branched chain alkyl group of up to about 20 carbon atoms, a substituted or unsubstituted carbocyclic group of up to about 20 atoms, or a substituted or unsubstituted aryl group of up to about 20 carbon atoms, and salts thereof, with the provisos that if R_2 is tert-butyl, cyclohexyl, or dicyclohexylmethyl, x or n must not be 0; and if R_2 is adamantane, the sum of x and n must be greater than 1.

5,633,383

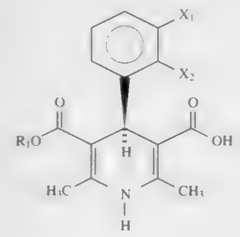
PROCESS FOR PRODUCING OPTICALLY PURE 1,4-DIHYDROPYRIDINES

Philippe Laurent, Oulins, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

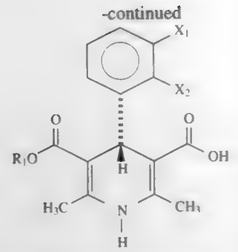
Filed Apr. 27, 1995, Ser. No. 429,688
Claims priority, application France, May 5, 1994, 94 05548
Int. Cl.[6] C07D *211/86*
U.S. Cl. 546—321 **4 Claims**

1. Process for producing a 1,4-dihydropyridine of formula Ia or Ib

Ia

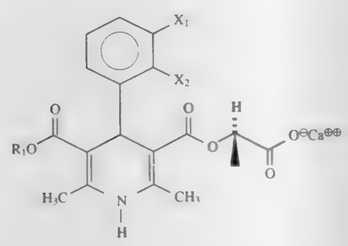


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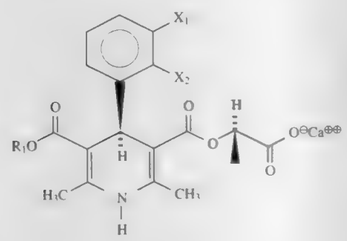
in which R^1 is a C_1–C_4 alkyl group, and one of the groups X_1 and X_2 represents a nitro, fluoro, chloro or trifluoromethyl group and the other represents a hydrogen atom, or X_1 and X_2 both represent a chloro group, which comprises the crystallization of a calcium salt of a lactic acid esterified with a racemic 1,4-dihydropyridine, of formula

II



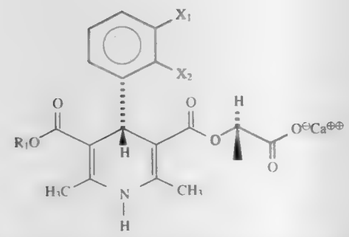
so as to separate out calcium salt crystals of formula:

IIIa



or

IIIb



and hydrolysis of the crystallized salt IIIa or IIIb in order to obtain a 1,4-dihydropyridine of formula Ia or Ib respectively.

5,633,384

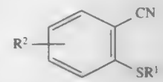
(Ib) METHOD FOR PRODUCING 1,2-BENZISOTHIAZOL-3-ONES

Hirokazu Kagano; Hiroshi Goda; Katsuhiko Yoshida; Mikio Yamamoto, and Shigeki Sakaue, all of Hyogo-ken, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo-ken, Japan

Filed Jun. 6, 1995, Ser. No. 467,829
Claims priority, application Japan, Jul. 5, 1994, 6-177499; Jul. 18, 1994, 6-188883; Nov. 9, 1994, 6-301348
Int. Cl.[6] C07D *275/04*
U.S. Cl. 548—209 **4 Claims**

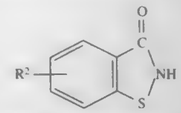
1. A method for producing a 1,2 -benzisothiazol-3-one represented by the formula (III), comprising carrying out a reaction of a 2-(alkylthio)benzonitrile represented by the following formula (IV):

(IV)



wherein R^1 represents an alkyl group having 1 to 4 carbon atoms, and R^2 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a nitro group, a carboxyl group, methoxy carboxyl, ethoxylcarboxyl, propoxycarboxyl, butoxycarboxyl, or a halogen atom, with a halogenating agent selected from the group consisting of chlorine, bromine, sulfuryl chloride and sulfuryl bromide in the presence of water to give a 1,2-benzisothiazol-3-one represented by the following general formula (III):

(III)



wherein R^2 is defined as above.

5,633,385

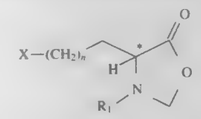
OPTICALLY ACTIVE ω-HALO-2-AMINO-ALKANECARBOXYLIC ACID DERIVATIVES, PROCESS FOR THE PREPARATION THEREOF AND THEIR USE FOR THE PREPARATION OF OPTICALLY ACTIVE PHOSPHORUS-CONTAINING α-AMINO ACIDS

Hans-Joachim Zeiss, Sulzbach/Taunus, Germany, assignor to Hoechst Schering AgrEvo GmbH, Berlin, Germany

Division of Ser. No. 337,322, Nov. 10, 1994, abandoned, which is a continuation of Ser. No. 924,342, Jul. 31, 1992. This application Jun. 5, 1995, Ser. No. 465,433
Claims priority, application Germany, Aug. 3, 1991, 41 25 753.7
Int. Cl.[6] C07D *263/06*
U.S. Cl. 548—228 **4 Claims**

1. An optically active compound of the formula I.

(I)



in which

R_1 is $(C_1$–$C_6)$alkyl which is unsubstituted or is substituted by one or more radicals selected from the group consisting of hydroxyl, $(C_1$–$C_4)$alkoxy, $[(C_1$– $C_4)$alkyl]carbonyl and $[(C_1$–$C_4)$alkoxy]carbonyl; or is $(C_2$–$C_6)$alkenyl, $(C_2$– $C_4)$alkynyl or a group of the formula R_2—CO— or R_3—SO_2—,

R_2 is $(C_1$–$C_{11})$alkyl, $(C_6$–$C_{13})$aryl or substituted $(C_6$–$C_{13})$aryl, $(C_1$–$C_6)$alkoxy, which is unsubstituted or substituted by one or more radicals, selected from the group consisting of $(C_6$–$C_{13})$aryl and substituted $(C_6$–$C_{13})$aryl,

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R_3 is (C_1–C_4)alkyl, phenyl or substituted phenyl,
X is halogen, and
n is zero or one, except for the compound of the formula I in which
R_1=benzyloxycarbonyl, X=bromo or iodo and n=1.

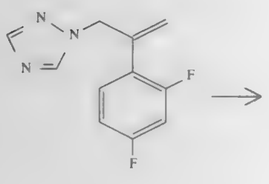
5,633,386

COMMERCIAL PROCESS FOR THE MANUFACTURE OF FLUCONAZOLE AND INTERMEDIATES USEFUL IN THE MANUFACTURE THEREOF

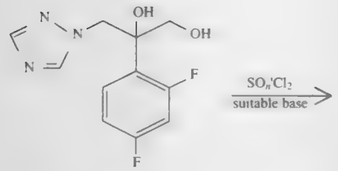
Keshava Murthy; Gamini Weeratunga, both of Brantford; Derek J. Norris, Oakville; Stephen Horne, Burlington, and Derrick L. J. Clive, Edmonton, all of Canada, assignors to ACIC (Canada) Inc., Brantford, Canada

Filed Jun. 6, 1995, Ser. No. 470,636
Claims priority, application Canada, Dec. 23, 1994, 2139079
Int. Cl.[6] C07D *403/10*
U.S. Cl. 548—266.6 **7 Claims**

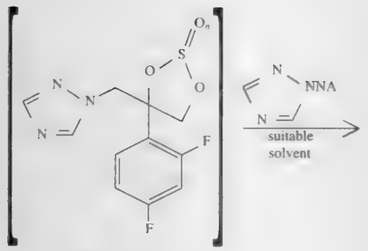
1. A process for making Fluconazole comprising the following scheme:



5

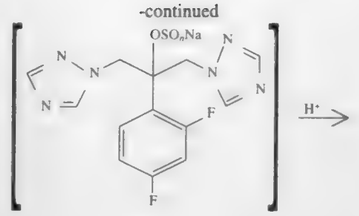


6

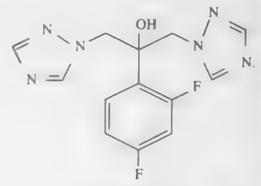


7 where n' = 1
8 where n' = 2

-continued



9 n = 2
10 n = 3



Fluconazole

5,633,387

PROCESS FOR PRODUCING 1-(2-CHLOROPHENYL)-5(4H)-TETRAZOLINONE

Fritz Maurer, Tochigi, Japan, assignor to Nihon Bayer Agrochem K.K., Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 631,316
Claims priority, application Japan, Apr. 17, 1995, 7-114049
Int. Cl.[6] C07D *257/04*
U.S. Cl. 548—251 **6 Claims**

1. A process for producing 1-(2-chlorophenyl)-5(4H)-tetrazolinone which comprises hydrolyzing 1-(2-chlorophenyl)-5-chlorotetrazole, in the presence of a base and an inert solvent.

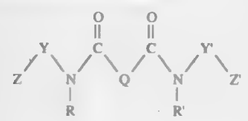
5,633,388

COMPOUNDS, COMPOSITIONS AND METHODS FOR TREATMENT OF HEPATITIS C

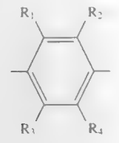
Guy D. Diana, Pottstown, and Thomas R. Bailey, Phoenixville, both of Pa., assignors to Viropharma Incorporated, Malvern, Pa.

Filed Mar. 29, 1996, Ser. No. 625,717
Int. Cl.[6] C07D *403/12;* **A61K** *31/415*
U.S. Cl. 548—305.7 **23 Claims**

1. A compound having the formula:

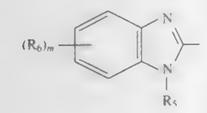


wherein Q is an arylene moiety of the formula:



wherein R_1, R_2, R_3 and R_4 are the same or different and represent substituents selected from the group consisting of hydrogen, alkyl (C_1–C_6), halogen, hydroxy, alkoxy, carboxy, carbalkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, amino, acetamido, sulfonamido, alkylamino, dialkylamino and NO_2; R and R' are the same or different and represent hydrogen or an alkyl (C_1–C_6) group; Y and Y' represent the same or different divalent moieties selected from the group consisting of alkylene (C_3–C_5) and phenylene, said Y and Y' moieties being unsubstituted or substituted with at least one alkyl group (C_1–C_6); Z and Z' represent the same or different substituent having the formula:

(i)



wherein R_5 represents a substituent selected from the group consisting of hydrogen, alkyl (C_1–C_6) and acyl, and each R_6 is the same or different and represents a substituent selected from the group consisting of hydrogen, alkyl (C_1–C_6), halogen, hydroxy, alkoxy, carboxy, carbalkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, amino, acetamido, sulfonamido, alkylamino, dialkylamino and NO_2, with m being 1–4, and the isomers and pharmaceutically acceptable salts of said compound.

5,633,389

THERMOREVERSIBLE COATING AND A PROCESS FOR ITS MANUFACTURE

Erik H. Jonsson, Coraopolis; Philip E. Yeske, Pittsburgh; Douglas A. Wicks, Mt. Lebanon, all of Pa., and Harald Pielartzik, Krefeld, Germany, assignors to Bayer Corporation, Pittsburgh, Pa.

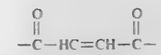
Filed May 24, 1995, Ser. No. 448,847
Int. Cl.[6] C07D *233/78;233/72;* **C08G** *18/46;* **C09D** *175/02*
U.S. Cl. 548—318.5 **10 Claims**

1. A thermoreversible process for the preparation of a hydantoin comprising

(a) reacting an unsaturated polyester with a monofunctional amine to yield a poly(ester aspartate), and

(b) reacting said poly(ester aspartate) with an isocyanate to produce a poly(ester urea), and

(c) heating said poly(ester urea) to form a hydantoin compound, wherein said unsaturated polyester is the product of a reaction of a compound containing a structural unit conforming to



and at least one diol.

5,633,390

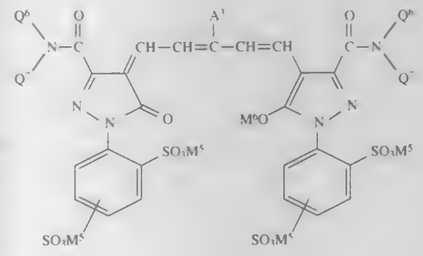
SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING PYRAZOLONE-PENTAMETHINE OXONOL DYE

Tetsuo Nakamura; Shigeru Ohno, and Kiyoshi Kawai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 516,402, Aug. 17, 1995, Pat. No. 5,563,028. This application Jul. 15, 1996, Ser. No. 679,907
Claims priority, application Japan, Aug. 17, 1994, 6-214314
Int. Cl.[6] C07D *231/24*
U.S. Cl. 548—365.4 **5 Claims**

1. A pyrazolone-pentamethine oxonol compound represented by the formula (Ib):

(Ib)



in which A^3 is methyl, ethyl or sulfoethyl; each of Q^6 and Q^7 independently is hydrogen, methyl, ethyl or sulfoethyl; M^5 is sodium or potassium; and M^6 is hydrogen, sodium or potassium.

5,633,391

METHYLTRIOXORHENIUM-BIS(TRIMETHYLSILYL)PEROXIDE EPOXIDATION OF OLEFINS

Steven P. Fenelli, Hillsborough, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Apr. 12, 1996, Ser. No. 631,389
Int. Cl.[6] C07D *301/14*
U.S. Cl. 549—525 **3 Claims**

1. A process for the epoxidation of olefins comprising contacting the olefin with bis(trimethylsilyl)peroxide in the presence of a rhenium oxide catalyst in an organic solvent.

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5,633,392

ESTRENES FOR INDUCING HYPOTHALAMIC EFFECTS

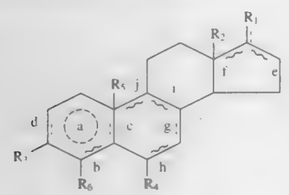
David L. Berliner, Atherton, Calif.; Nathan W. Adams, and Clive L. Jennings-White, both of Salt Lake City, Utah, assignors to Pherin Corporation, Menlo Park, Calif.

Division of Ser. No. 316,050, Sep. 29, 1994, which is a continuation-in-part of Ser. No. 127,980, Sep. 28, 1993, which is a continuation-in-part of Ser. No. 903,525, Jun. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 707,862, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,743, Jan. 7, 1991, abandoned. This application May 31, 1995, Ser. No. 454,917

Int. Cl.[6] C07J *13/00*

U.S. Cl. 552—530 **8 Claims**

1. A steroid compound of the formula



wherein R_1 is methylene; R_2 is absent or is hydrogen or methyl; R_3 is oxo, hydroxy, lower alkoxy, lower acyloxy, benzoyl, cypionyl, glucuronide or sulfonyl; R_4 is hydrogen, hydroxy, lower alkoxy, lower acyloxy, oxo or halo; R_5 is absent or is hydrogen, hydroxy, lower alkoxy or lower acyloxy; R_6 is a hydrogen or a halo; and "a" represents optional aromatic unsaturation of ring A of said steroid, or "b", "c", and "d" are each optional double bonds; and "e", "f", "g", "h", "i" and "j" are each optional double bonds; with the proviso that:

when "a" is present, "j", "i", "e", "f" and "g" are all absent, R_2 is methyl, "h" is present or absent, then R_3 cannot be hydroxy.

5,633,393

ESTRADIOL DERIVATIVE-ALKYLATING AGENT CONJUGATE WITH REDUCED HORMONAL ACTIVITY, PROCESS FOR PREPARING THE SAME, COMPOUNDS USEFUL FOR THE PREPARATION THEREOF, AND GROWTH INHIBITING COMPOSITON CONTAINING THE CONJUGATE OR ESTRADIOL DERIVATIVE.

Koichi Niimura, Warabi; Takako Kawabe, Hasuda; Tsutomu Wada, Fuchu; Tsuyoshi Saitoh, Toride, and Kenji Bannai, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

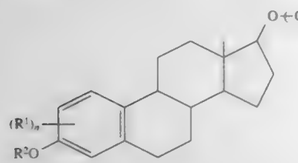
Continuation of Ser. No. 408,392, Mar. 22, 1995, abandoned, which is a division of Ser. No. 317,644, Sep. 26, 1994, Pat. No. 5,478,818. This application Aug. 5, 1996, Ser. No. 692,154

Claims priority, application Japan, Oct. 5, 1993, 5-273014

Int. Cl.[6] C07J *75/00*

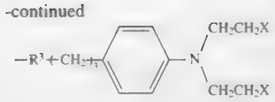
U.S. Cl. 552—613 **1 Claim**

1. A process for preparing the conjugate represented by the formula (I):



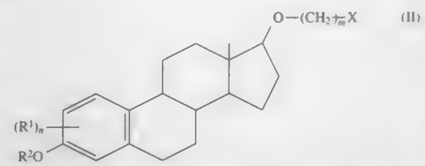
(I)

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wherein R^1 is C_{1-4} alkyl or C_{1-4} alkoxy; R^2 is acyl or benzyl; R^3 is methylene; m is an integer of 1 to 3; n is an integer of 0 to 3; and X is hydroxy or halogen,

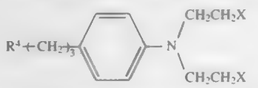
which comprises (a) reacting an estradiol derivative of the formula (II):



(II)

wherein R^1 is C_{1-4} alkyl or C_{1-4} alkoxy; R^2 is acyl or benzyl; m is an integer of 1 to 3; n is an integer of 0 to 3; and X is hydroxy,

with a compound of the formula (III):



(III)

wherein R^4 is methyl halide group and X is halogen or hydroxy, in the presence of metal hydride at a temperature of −30° to 150° C. for 3 minutes to 48 hours, and (b) recovering and purifying the conjugate of formula (I).

5,633,394

CATALYST COMPOUNDS FOR OLEFIN POLYMERIZATION

Howard C. Welborn, Jr., and John A. Ewen, both of Houston, Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Division of Ser. No. 752,415, Aug. 30, 1991, Pat. No. 5,324,800, which is a continuation of Ser. No. 455,484, Dec. 22, 1989, abandoned, which is a continuation of Ser. No. 728,111, Apr. 29, 1985, abandoned, which is a continuation of Ser. No. 501,688, Jun. 6, 1983, abandoned. This application May 3, 1994, Ser. No. 237,464

Int. Cl.[6] C07F *17/00;7/08;7/00*

U.S. Cl. 556—11 **8 Claims**

1. A catalyst component for olefin polymerization represented by one of the formulas:

$$(C_5R'_m)_pR''_s(C_5R'_m)MeQ_{3-p}$$

and

$$R'''_s(C_5R'_m)_2MeQ'$$

wherein Me is Zr or Hf, $(C_5R'_m)$ is a cyclopentadienyl or substituted cyclopentadienyl, each R', which can be the same or different, is hydrogen, an alkyl, alkenyl, aryl, alkylaryl, or arylalkyl radical having from 1 to 20 carbon atoms or two adjacent carbon atoms are joined together to form a C_4–C_6 ring, R" is a dialkyl germanium or silicon, or an alkyl phosphine or amine radical bridging two $(C_5$–$R'_m)$ rings, each Q which can be the same or different is aryl, alkyl, alkenyl, alkylaryl, or arylalkyl radical having from 1 to 20 carbon atoms or halogen, Q' is an alkylidene radical having from 1 to 20 carbon atoms, s is 1, p is 1, m is 4; and at least one R' is a hydrocarbyl radical when at least one Q is an alkyl radical or halogen.

2. A compound represented by one of the formulas:

$$(C_5R'_4)R''(C_5R'_4)MeQ_2$$

and

$$R''(C_5R'_4)_2MeQ'$$

wherein Me is Zr or Hf, $(C_5R'_4)$ is a substituted cyclopentadienyl, each R', which can be the same or different, is selected from hydrogen, an alkyl, alkenyl, aryl, alkylaryl or arylalkyl radical having from 1 to 20 carbon atoms or two adjacent carbon atoms are joined together to form a C_4–C_6 ring, at least one R' is other than hydrogen on at least one $(C_5R'_4)$, R" is a germanium, silicon, phosphine or amine radical substituting on and bridging two $(C_5R'_4)$ rings, each Q which can be the same or different is an aryl, alkyl, alkenyl, alkylaryl, or arylalkyl radical having from 1 to 20 carbon atoms or halogen, and Q' is an alkylidene radical having from 1–20 carbon atoms.

5. A compound represented by one of the formulas:

$$(C_5R'_4)R''(C_5R'_4)MeQ_2$$

and

$$R''(C_5R'_4)_2MeQ'$$

wherein Me is Zr or Hf, $(C_5R'_4)$ is a substituted cyclopentadienyl, each R', which can be the same or different, is selected from hydrogen, an alkyl, alkenyl, aryl, alkylaryl or arylalkyl radical having from 1 to 20 carbon atoms or two adjacent carbon atoms are joined together to form a C_4–C_6 ring, at least one R' is other than hydrogen on at least one $(C_5R'_4)$, R" is a phosphine or amine radical substituting on and bridging two $(C_5R'_4)$ rings, each Q, which can be the same or different is an aryl, alkyl, alkenyl, alkylaryl, or arylalkyl radical having from 1 to 20 carbon atoms or halogen, and Q' is an alkylidene radical having from 1–20 carbon atoms.

5,633,395

CHEMICALLY-DEFINED NON-POLYMERIC VALENCY PLATFORM MOLECULES AND CONJUGATES THEREOF

Stephen M. Coutts, Rancho Santa Fe; David S. Jones, San Diego; Douglas A. Livingston, San Diego, and Lin Yu, San Diego, all of Calif., assignors to La Jolla Pharmaceutical Company, San Diego, Calif.

Continuation of Ser. No. 152,506, Nov. 15, 1993, Pat. No. 5,552,391, which is a continuation-in-part of Ser. No. 914,869, Jul. 15, 1992, Pat. No. 5,276,013, which is a continuation-in-part of Ser. No. 494,118, Mar. 13, 1990, Pat. No. 5,162,515, which is a continuation-in-part of Ser. No. 466,138, Jan. 16, 1990, abandoned, and Ser. No. 118,055, Sep. 8, 1993, which is a continuation-in-part of Ser. No. 652,648, Feb. 8, 1991, Pat. No. 5,268,454. This application May 30, 1995, Ser. No. 453,452

Int. Cl.[6] C07F *9/02*

U.S. Cl. 558—159 **1 Claim**

1. A chemically-defined, non-polymeric valency platform molecule of the formula:

$$G^{[7]}\{O-C(=O)-N(Q^{[7]}(T^{[7]})_{p^{[7]}/2})_2\}_{n^{[7]}} \qquad \text{Formula 7}$$

wherein

$G^{[7]}$ is $—CH_2CH_2—O—CH_2CH_2—O—CH_2CH_2—$;

$Q^{[7]}$ is $—CH_2CH_2—NH—C(=O)—(CH_2)_5—NH—C(=O)—$;

each of the $(p^{[7]} \times n^{[7]})$ moieties shown as $T^{[7]}$ is $R^{ALK}X$;

each X is independently a halogen of atomic number greater than 16 and less than 54 or other good leaving group;

each R^{ALK} is independently a linear, branched, or cyclic alkyl (1–20C) group;

$n^{[7]}=2$; and

$p^{[7]}=2$.

5,633,396

PROCESS FOR PREPARING TRIISOCYANATES

Eric Bischof, Leichlingen; Jürgen Dahmer, Köln; Andreas Flink, Dormagen; Wolfgang Krohn, Köln, and Attila Molnar, Odenthal, all of Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Germany

Filed Jun. 17, 1996, Ser. No. 666,725

Claims priority, application Germany, Jun. 23, 1995, 195 23 385.9

Int. Cl.[6] C07C *263/10*

U.S. Cl. 560—347 **6 Claims**

1. A process for producing a triisocyanate represented by the general formula



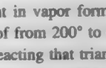
in which

R represents a (cyclo)aliphatic hydrocarbon group having from 1 to 22 carbon atoms,

comprising

a) phosgenating

(1) a triamine represented by the general formula



which is present in vapor form and has been heated to a temperature of from 200° to 600° C.

by continuously reacting that triamine with

(2) phosgene heated to from 200° to 600° C.

in a cylindrical reaction chamber heated to 200° to 600° C., without any moving parts, while maintaining a rate of flow in the reaction chamber of at least 3 m/s,

b) cooling the gas mixture continuously leaving the reaction chamber with an inert, liquid solvent which is held at a temperature above the decomposition temperature of carbamic acid chloride corresponding to the triamine to recover a solution of the triisocyanate in the solvent and

c) recovering the triisocyanate which is dissolved in the inert solvent.

5,633,397

PREPARATION OF AMMONIUM GLYPHOSATE VIA A GAS-SOLID REACTION SYSTEM

Jane L. Gillespie, University City; Thomas M. Day, Creve Coeur, and Richard M. Kramer, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 485,316

Int. Cl.[6] C07F *9/38*

U.S. Cl. 562—17 **34 Claims**

1. A method for preparing a phytoactive ammonium glyphosate comprising introducing anhydrous ammonia gas to a glyphosate acid medium to cause a reaction therebetween in a manner such that said gas is uniformly dispersed with said acid and such that the transfer of heat away from said reaction is controlled to produce a free-flowing, powdered product.

5,633,398

Patent Not Issued For This Number

VOL 1198 ISS 4 MAY 27 1997 UMI

5,633,399

PROCESS FOR THE PREPARATION OF FLUORINATED BENZOIC ACIDS

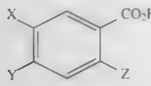
Xiu C. Wang, Park City, Ill.; Panos Kalaritis, New Providence, N.J., and Michelle L. Chang, Vernon Hills, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 232,117, May 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 785,851, Oct. 31, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 463,410

Int. Cl.[6] C07C *51/27;51/305*

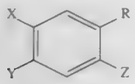
U.S. Cl. 562—410 9 Claims

1. A method for preparing a compound having the formula



(IV)

wherein X is chloro or fluoro; one of Y and Z is chloro and the other of Y and Z is nitro, comprising reacting a nitrobenzene having the formula



(III)

wherein R is a radical selected from the group consisting of $—CCl_3$, $—CH_2NO_2$, $—CH(NO_2)R^1$, $—CH(CO_2R^1)_2$, $—CH(C(O)R^2)_2$, $—CH(CN)CO_2R^1$, $—CH(CO2R^1)COR^2$ and $—COR^2$ where R^1 is alkyl or arylalkyl and R^2 is alkyl, aryl or arylalkyl and, where appearing more than once in such a radical, R^1 and R^2 may be the same or different at each occurrence, with nitric or sulfuric acid.

5,633,400

PROCESS FOR THE PREPARATION OF BIPHENYL DERIVATIVES

Adalbert Wagner, Hattersheim/Main, Germany; Neerja Bhatnagar, Savigny Sur Orge, France; Jean Buendia, Le Perreux Sur Marne, France, and Christine Griffoul, Rosny Sous Bois, France, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

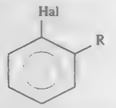
Division of Ser. No. 177,314, Jan. 4, 1994, abandoned. This application May 24, 1995, Ser. No. 449,389

Claims priority, application Germany, Jan. 6, 1993, 43 00 137.8

Int. Cl.[6] C07C *317/00;303/00:229/00*

U.S. Cl. 562—430 7 Claims

1. A compound of the formula (III)



(III)

in which the substituents have the following meanings.

Hal is bromide or iodide

R is $—SO_2NH—COOR^3$. $—SO_2NH—SO_2—R^3$

where

R^3 is hydrogen, $(C_1–C_6)$-alkyl, $(C_3–C_6$—cycloalkyl or $(C_1–C_6)$-alkyl-$(C_3–C_6)$-cycloalkyl.

5,633,401

PROCESS FOR DECOLORIZING CYCLOPROPANECARBOXYLIC ACID

Shaowo Liang, Kingsport, and Timothy W. Price, Church Hill, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Apr. 1, 1996, Ser. No. 627,668

Int. Cl.[6] C07C *61/04*

U.S. Cl. 562—506 5 Claims

1. Process for the conversion of off-color cyclopropanecarboxylic acid (CPC-Acid) to CPC-Acid having a platinum-cobalt scale (PCS) color value of less than about 10 by the steps of:

(1) heating off-color CPC-Acid produced by the oxidation of cyclopropanecarboxaldehyde with molecular oxygen with a strong acid; and

(2) distilling the mixture of step (1) to obtain CPC-Acid having a color value of less than about 10 PCS as the distillate product;

wherein the color values are measured by ASTM Procedure D 1209.

5,633,402

SEPARATION OF FORMIC ACID FROM ACETIC ACID BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg

Filed Sep. 1, 1995, Ser. No. 522,546

Int. Cl.[6] C07C *51/42*

U.S. Cl. 562—608 2 Claims

1. A method for recovering formic acid from a mixture of formic acid and acetic acid which comprises distilling a mixture of formic acid and acetic acid in the presence of an azeotrope forming agent, recovering the formic acid and the azeotrope forming agent as overhead product and obtaining the acetic acid from the stillpot, wherein said azeotrope forming agent is one material selected from the group consisting or 2,2-dimethoxypropane and methyl formate.

5,633,403

SUBSTANTIVE WATER-SOLUBLE CATIONIC UV-ABSORBING COMPOUNDS

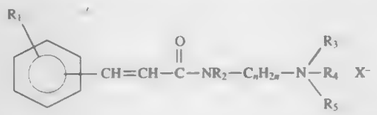
Kevin F. Gallagher, Lincrest, and Abel G. Pereira, Belleville, both of N.J., assignors to Croda, Inc., Parsippany, N.J.

Division of Ser. No. 283,575, Aug. 1, 1994. This application Jun. 6, 1995, Ser. No. 469,499

Int. Cl.[6] C07C *233/36*

U.S. Cl. 564—157 10 Claims

1. A cinnamido amine cationic quaternary salt having the formula:



wherein

R_1 is selected from the group consisting of hydrogen, halogen, alkyl groups containing up to 22 carbon atoms, alkoxy groups containing up to 22 carbon atoms, NO_2, NH_2, alkylamino groups containing up to 22 carbon atoms, OH, thioalkyl groups containing up to 22 carbon atoms, alkyl sulfonate groups containing up to 22 carbon atoms and N,N'-dialkyl alkylamines containing up to 22 carbon atoms;

R_2 is selected from the group consisting of hydrogen, $—R_6—$OH and alkyl groups containing up to 18 carbon atoms, and R_3 and $R_4$are independently selected from the group consisting of—R_6—OH and alkyl groups containing up to 18 carbon atoms, wherein R_6 is a polyalkylene oxide containing up to 20 moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof;

R_5 is a substituent derived from an epoxide quaternizing agent;

n is an integer between 1 and 18, inclusive; and $X^-$is an anion.

5,633,404

N-((R)-α-METHYL-3-METHOXYBENZYL)-3-(2-CHLOROBENZENE)PROPANAMIDE

Bradford C. VanWagenen, Salt Lake City, Utah; Steven R. Duff, De Soto, and William A. Nelson, Lawrence, both of Kans., assignors to NPS Pharmaceuticals, Inc., Salt Lake City, Utah

Division of Ser. No. 446,491, May 22, 1995, which is a division of Ser. No. 276,214, Jul. 15, 1994, Pat. No. 5,504,253. This application Apr. 19, 1996, Ser. No. 639,935

Int. Cl.[6] C07C *233/22*

U.S. Cl. 564—182 1 Claim

1. The compound N-(R)-α-methyl-3-methoxybenzyl) - 3-(2-chlorobenzene)propanamide.

5,633,405

ASYMMETRIC SYNTHESIS OF (−)-6-CHLORO-4-CYCLOPROPYL-ETHYNYL-4-TRIFLUOROMETHYL-1,4-DIHYDRO-2H-3,1-BENZOXANZIN-2-ONE

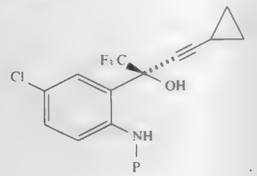
Andrew S. Thompson, Mountainside; Edward G. Corley, Old Bridge; Edward J.J. Grabowski, Westfield, and Nobuyoshi Yasuda, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 25, 1995, Ser. No. 450,330

Int. Cl.[6] C07C *211/00;51/16*

U.S. Cl. 564—321 6 Claims

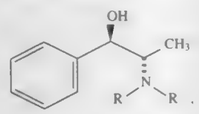
1. A process for the asymmetric synthesis of the chiral compound of the structure



wherein P is an amino protecting group;

comprising the steps of:

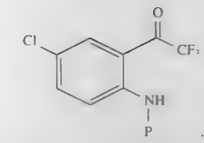
(a) providing a mixture of excess (1R,2S)-N-substituted norephedrine, of the structure



wherein R is C_{1-4} alkyl, or $—NR_2$ forms pyrrolidinyl or piperidinyl;

with an excess of cyclopropylacetylene and an excess of a lithiating agent selected from n-butyllithium or sec-butyllithium or tert-butyllithium, at a temperature of between about −78° C. and about 10° C., in aprotic solvent;

(b) mixing with the mixture of Step (a) about one equivalent of reactant of the structure



wherein P is an amino protecting group; and maintaining the resulting reaction mixture at a temperature between about −78° C. and about −20° C.;

(c) quenching by adding a proton source;

(d) to give the desired compound.

5,633,406

VICARIOUS NUCLEOPHILIC SUBSTITUTION USING 4-AMINO-1,2,4-TRIAZOLE, HYDROXYLAMINE OR O-ALKYLHYDROXYLAMINE TO PREPARE 1,3-DIAMINO-2,4,6-TRINITROBENZENE OR 1,3,5-TRIAMINO-2,4,6-TRINITROBENZENE

Alexander R. Mitchell; Philip F. Pagoria, and Robert D. Schmidt, all of Livermore, Calif., assignors to The Regents of the University of California, Oakland, Calif.

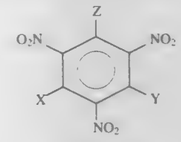
Filed May 12, 1995, Ser. No. 440,024

Int. Cl.[6] C07C *209/02*

U.S. Cl. 564—395 20 Claims

1. A process to produce 1,3,5-triamino-2,4,6,-trinitrobenzene (TATB), which process comprises:

(a) reacting at ambient pressure and a temperature of between about 0° and 30° C. for between about 0.1 and 24 hr, a trinitroaromatic starting material compound of the structure:



(V)

wherein

X, Y, and Z are each independently selected from the group consisting of —H and $—NH_2$, with the proviso that at least 1 of X, Y, and Z is hydrogen;

with an effective amount of 4-amino-1,2,4-triazole;

in the presence of a strong base selected from sodium butoxide, potassium butoxide, potassium propoxide, sodium propoxide, sodium ethoxide, potassium ethoxide, sodium methoxide, potassium methoxide, or combinations thereof;

in a solvent selected from the group consisting of dimethylsulphoxide, N-methylpyrrolidone, hexamethylphosphoramide, dimethylformamide, dimethylacetamide and mixtures thereof; and

(b) isolating the TATB produced.

5,633,407

PROCESS FOR PREPARING SUBSTITUTED AROMATIC AMINES

Michael K. Stern, University City, and Brian K-M Cheng, St. Charles, both of Mo., assignors to Flexsys America L. P., Akron, Ohio

Division of Ser. No. 38,047, Apr. 6, 1993, Pat. No. 5,552,531, which is a continuation-in-part of Ser. No. 887,060, May 22, 1992, abandoned. This application May 18, 1995, Ser. No. 444,325

Int. Cl.[6] C07C *209/22*

U.S. Cl. 564—415 33 Claims

1. A process for preparing 4-aminodiphenylamine (4-ADPA) or substituted derivatives thereof comprising:

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(a) contacting aniline or substituted aniline derivatives and azobenzene or substituted azobenzene derivatives or azoxy or hydrazo derivatives thereof in the presence of a suitable solvent system,

(b) reacting the aniline or substituted aniline derivatives and azobenzene or substituted azobenzene derivatives in the presence of a suitable base and a controlled amount of protic material at a reaction temperature of about 10° C. to about 150° C. in a confined reaction zone, wherein the molar ratio of protic material to base is 0:1 to about 5:1, and

(c) reacting the product of (b) with aniline or substituted aniline derivative in the presence of a suitable solvent system, a suitable base and a controlled amount of protic material at a reaction temperature of about 70° C. to about 200° C. in a confined reaction zone, wherein the molar ratio of protic material to base is 0:1 to about 5:1.

5,633,408

PROCESS FOR PREPARING ALKANOLAMINES

Hiroyoshi Watanabe; Mutsuo Matsumura; Takashi Ohkawa, and Kenji Suzuki, all of Osaka-fu, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,804

Claims priority, application Japan, Jun. 28, 1994, 6-146739; Jun. 28, 1994, 6-146740; Jun. 28, 1994, 6-146741

Int. Cl.[6] C07C *209/02*

U.S. Cl. 564—475 **21 Claims**

1. A process for preparing alkanolamines which comprises

a) a step of reacting ammonia with an alkylene oxide in the presence of a carbonate of ammonia to obtain a crude alkanolamine solution,

b) a step of distilling off ammonia, carbon dioxide and water to regulate the content of carbon dioxide in the crude alkanolamine solution to 1% by weight or less, and

c) a step of distilling the crude alkanolamine solution to separate and collect the alkanolamines.

5,633,409

TRISTERTBUTOXYPHENYL SULFONIUM TOSYLATE COMPOUND

Satoshi Watanabe; Youichi Ohsawa; Toshinobu Ishihara; Kazumasa Maruyama; Yoshibumi Takeda; Junji Shimada, all of Nakakubiki-gun; Fujio Yagihashi, Kawasaki, and Katsuya Takemura, Nakakubiki-gun, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

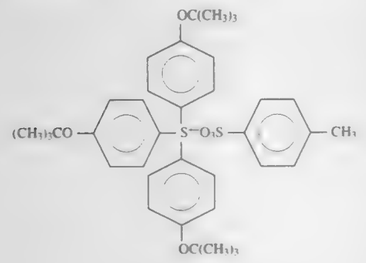
Filed Jan. 27, 1995, Ser. No. 379,986

Claims priority, application Japan, Jan. 28, 1994, 6-026171; Mar. 29, 1994, 6-082359; Apr. 8, 1994, 6-095560; Nov. 28, 1994, 6-317626

Int. Cl.[6] C07C *319/00*

U.S. Cl. 568—49 **1 Claim**

1. A sulfonium salt of the following general formula (1):



5,633,410

PROCESS FOR THE CONVERSION OF 2,3-DIHYDROFURAN TO CYCLOPROPANECARBOXALDEHYDE

Shaowo Liang, Kingsport, and Timothy W. Price, Church Hill, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 30, 1996, Ser. No. 706,157

Int. Cl.[6] C07C *47/293*

U.S. Cl. 568—443 **7 Claims**

1. Process for the preparation of cyclopropanecarbox-aldehyde which comprises heating 2,3-dihydrofuran at a temperature of about 180° C. to 430° C. in the presence of a catalyst selected from alumina, silica-alumina, silica, zirconia, titania and mixtures thereof, wherein the nitrogen BET surface area of the catalyst is in the range of about 10 to 350 square meters per gram and from about 3 to 30 mole percent of the 2,3-DHF is converted to CPCA per pass over the catalyst.

5,633,411

METHOD FOR PRODUCTION OF ALLYLOXYSTYRENE COMPOUNDS

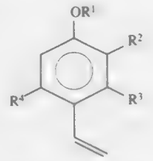
John G. Woods, Farmington, and Maria Masterson, Cromwell, both of Conn., assignors to Loctite Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 482,441, Jun. 7, 1995, abandoned. This application May 28, 1996, Ser. No. 654,404

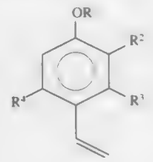
Int. Cl.[6] C07C *41/00;43/02*

U.S. Cl. 568—654 **27 Claims**

1. A method for the synthesis of allylic styrene ether compounds of the formula:



where R^1 is an, optionally substituted, allylic or propargyl hydrocarbon group, and R^2, R^3, and R^4 are independently H, C_{1-6} hydrocarbon or C_6 hydrocarbonoxy groups, the method comprising reacting a 4-acyloxystyrene of the formula



where R is an acyl group, with at least one mole of a base, which can readily saponify or hydrolyze the phenolic ester bond, per mole of acyloxystyrene, and then

adding to the reaction mixture an alkylating agent of the formula R^1X, where R^1 is as previously defined and X is chloride, bromide, iodide, a sulfonic ester or a hydrocarbon sulfate group, to form said allylic styrene ether compound.

5,633,412

SYNTHESES OF D-CHIRO-3-INOSOSE AND (+)-D-CHIRO INOSITOL

Tomas Hudlicky, and Martin Mandel, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Blacksburg, Va.

Division of Ser. No. 974,057, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 956,522, Oct. 5, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 410,269

Int. Cl.[6] C07C *35/14*

U.S. Cl. 568—833 **1 Claim**

1. A process for the preparation of allo-inositol 3; the process comprising reducing D-chiro-inosose 10 with H_2 in the presence of raney nickel at a temperature between about −10° C. to about 110° C. in an appropriate solvent.

5,633,413

CONTINUOUS PROCESS FOR THE PRODUCTION OF VINYLIDENE CHLORIDE TELOMERS

Michael Van Der Puy, Amherst; Timothy R. Demmin, Grand Island, and David E. Bradley, Buffalo, all of N.Y., assignors to AlliedSignal Inc., Morris County, N.J.

Filed Aug. 8, 1995, Ser. No. 512,575

Int. Cl.[6] C07C *17/08;17/266;17/275*

U.S. Cl. 570—257 **14 Claims**

1. A method for the continuous production of compounds having the formula:

$$CCl_3(CH_2CCl_2)_nCl$$

wherein n=2 or 3, which comprises

(a) continuously feeding into a reactor sufficient amounts of CCl_4 and $CH_2{=}CCl_2$, in the presence of a sufficient amount of at least one solvent and at least one catalyst to drive the reaction to form $CCl_3(CH_2CCl_2)Cl$ wherein the reaction rate constant is k_1; and

(b) if n=2, after continuous removal of $CCl_3(CH_2CCl_2)Cl$ from the reactor, reacting the removed $CCl_3(CH_2CCl_2)Cl$ in a second reactor with sufficient amounts of CCl_4 and $CH_2{=}CCl_2$, in the presence of a sufficient amount of at least one solvent and at least one catalyst to drive the reaction to form $CCl_3(CH_2CCl_2)_2Cl$ wherein the reaction rate constant is k_2, wherein the ratio of the molar amounts of CCl_4 to $CCl_3(CH_2CCl_2)Cl$ reacted is greater than the ratio k_2/k_1; and then continuously removing $CCl_3(CH_2CCl_2)_2Cl$ from the second reactor; and

(c) if n=3, after continuous removal of $CCl_3(CH_2CCl_2)_2Cl$ from the second reactor, reacting the removed $CCl_3(CH_2CCl_2)_2Cl$ in a third reactor with sufficient amounts of CCl_4 and $CH_2{=}CCl_2$, in the presence of a sufficient amount of at least one solvent and at least one catalyst to drive the reaction to form $CCl_3(CH_2CCl_2)_3Cl$ wherein the reaction rate constant is k_3, wherein the ratio of the molar amounts of CCl_4 to $CCl_3(CH_2CCl_2)_2Cl$ reacted is greater than the ratio k_3/k_2 and then continuously removing $CCl_3(CH_2CCl_2)_3Cl$ from the third reactor.

5,633,414

PREPARATION OF TETRAFLUOROETHYLENE

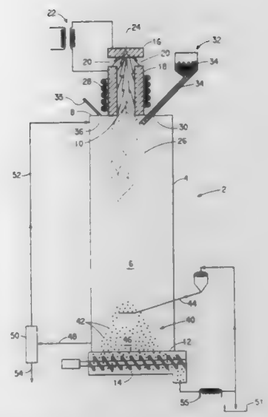
James L. Webster, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 414,878, Mar. 31, 1995, abandoned. This application Mar. 25, 1996, Ser. No. 622,480

Int. Cl.[6] C07C *51/14*

U.S. Cl. 570—150 **21 Claims**

1. The process for the manufacture of tetrafluoroethylene (TFE) comprising forming an extended turbulent plasma having an undefined portion, dissociating non-carbonaceous metal fluoride into a gaseous mixture of metal and reactive fluorine in the presence of carbon in the unconfined portion of said plasma to form a precursor to TFE, and quenching said precursor to obtain as a result thereof said TFE, said dissociating being carried out in the absence of halogen other than fluorine.



5,633,415

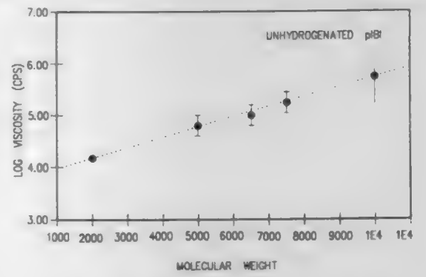
DISPERSANTS AND DISPERSANT VISCOSITY INDEX IMPROVERS FROM SELECTIVELY HYDROGENATED POLYMERS

Ellen B. Brandes, Plainsboro, N.J., and Frederick C. Loveless, Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 382,814, Feb. 3, 1995, Pat. No. 5,545,783, which is a division of Ser. No. 179,051, Jan. 7, 1994, Pat. No. 5,387,730, which is a division of Ser. No. 992,341, Dec. 17, 1992, Pat. No. 5,288,937, which is a continuation of Ser. No. 907,959, Aug. 6, 1992, Pat. No. 5,210,359, which is a division of Ser. No. 466,135, Jan. 16, 1990, Pat. No. 5,149,895. This application Jun. 7, 1995, Ser. No. 488,046

Int. Cl.[6] C10M *143/10;143/12;* **C08F** *236/00*

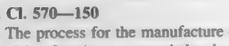
U.S. Cl. 585—12 **54 Claims**



1. A dispersant substance for modifying the dispersancy or viscometric properties of a fluid, comprising:

a copolymer of a first conjugated diene and a second conjugated diene, wherein:

said first conjugated diene comprises at least one relatively more substituted conjugated diene having at least five carbon atoms and the formula:

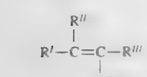


(1)

wherein R^1–R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1–R^6 is a hydrocarbyl group, provided that after polymerization, the unsaturation of the

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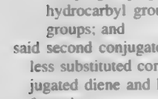
polymerized conjugated diene of formula (1) has the formula:



(2)

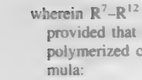
wherein R^{I}, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^{I} and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups; and

said second conjugated diene comprises at least one relatively less substituted conjugated diene different from the first conjugated diene and having at least four carbon atoms and the formula:



(3)

wherein R^{7}–R^{12} are each hydrogen or a hydrocarbyl group, provided that after polymerization, the unsaturation of the polymerized conjugated diene of formula (3) has the formula:



(4)

wherein R^{V}, R^{VI}, R^{VII} and R^{VIII} are each hydrogen or a hydrocarbyl group, provided that one of R^{V} or R^{VI} is hydrogen, one of R^{VII} or R^{VIII} is hydrogen, and at least one of R^{V}, R^{VI}, R^{VII} and R^{VIII} is a hydrocarbyl group; and

wherein said copolymer has been functionalized by a method comprising:

selectively hydrogenating said copolymer to provide a selectively hydrogenated copolymer; and

functionalizing said selectively hydrogenated copolymer to provide a functionalized copolymer having at least one polar functional group.

5,633,416

FUEL PRODUCED BY A PROCESS COMPRISING ETHERIFICATION OF A HYDROCARBON FRACTION COMPRISING OLEFINS CONTAINING 5 TO 8 CARBON ATOMS

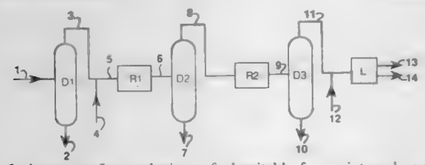
Yves Chauvin, Le Pecq; Alain Forestiere, Vernaison; Marie-Claire Marion, Villeurbanne; Hélène Olivier, Rueil Malmaison; Patrick Sarrazin, Rueil Malmaison, and Jean-Luc Nocca, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 251,685, May 31, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,691

Claims priority, application France, May 28, 1993, 92 06474

Int. Cl.[6] C07C *5/22;5/27;41/00*

U.S. Cl. 585—324 **8 Claims**



1. A process for producing a fuel suitable for an internal combustion engine, produced from a hydrocarbon mixture comprising etherifiable and non-etherifiable hydrocarbons containing 5 to 8 carbon atoms, said process comprising:

distilling said hydrocarbon mixture to obtain a top fraction enriched in C_6 hydrocarbons and a bottom fraction enriched in hydrocarbons containing more than 6 carbon atoms, said top fraction containing etherifiable and non-etherifiable olefins;

subjecting said top fraction to an isomerization step to convert said non-etherifiable olefins to etherifiable olefins;

catalytically etherifying at least a portion of the etherifiable olefins contained in the resultant produce from the isomerization step with at least one alcohol containing 1 to 4 carbon atoms, said alcohol being employed at an alcohol: etherifiable olefin molar ratio of at least 1:1; and

washing at least a portion of the resultant ether containing product with water.

5,633,417

ENHANCED SHAPE SELECTIVE APPLICATIONS AND METHODS TO INCREASE THE ACTIVITY THEREOF

Jeffrey S. Beck, Princeton; David H. Olson, Pennington, both of N.J., and Sharon B. McCullen, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 69,251, May 28, 1993, Pat. No. 5,476,823. This application May 30, 1995, Ser. No. 453,042

Int. Cl.[6] C07C *5/52*

U.S. Cl. 585—475 **37 Claims**

1. A process for enhanced shape selective hydrocarbon conversion comprising:

contacting a reaction stream comprising hydrocarbon to be converted, under conversion conditions, with a catalytic molecular sieve which has been modified by being exposed to at least two ex situ selectivation sequences, wherein the ex situ selectivation sequence includes the steps of contacting the catalytic molecular sieve with a silicon containing selectivating agent in an organic carrier and subsequently calcining the catalytic molecular sieve.

5,633,418

METHOD FOR DIMERIZING AN OLEFIN

Keiichi Sato; Yuji Kawaragi, and Yasuko Higashino, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

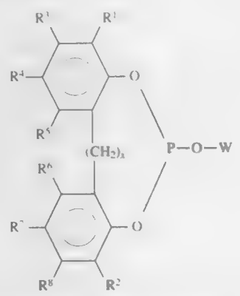
Filed Jul. 17, 1995, Ser. No. 502,888

Claims priority, application Japan, Jul. 18, 1994, 6-165489

Int. Cl.[6] C07C *2/22;2/30*

U.S. Cl. 585—513 **11 Claims**

1. A method for dimerizing an olefin, which comprises dimerizing an olefin in the presence of a catalyst, wherein a nickel compound, an organic aluminum compound and a phosphite compound of the formula (I):



(I)

wherein each of R^1 and R^2 which may be the same or different, is a hydrocarbon group, each of R^3 to R^8 which may be the same or different, is a substituent containing no oxygen atom, or a hydrogen atom, W is a substituted or unsubstituted aromatic hydrocarbon group, and x is 0 or 1, are used as the catalyst.

5,633,419

POLYMERIZATION OF OLEFINS IN THE PRESENCE OF A SUPPORTED CATALYST

Lee Spencer, Pearland, and Marc A. Springs, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 289,992, Aug. 12, 1994. This application Jun. 6, 1995, Ser. No. 469,117

Int. Cl.[6] C07C *2/02;* **C08F** *4/44*

U.S. Cl. 585—522 **26 Claims**

1. An olefin polymerization process comprising contacting one or more olefins under olefin polymerization conditions with an olefin polymerization catalyst composition comprising

a supported catalyst component consisting essentially of (A) a solid particulate support having (i) a specific surface area of from 100 to 1000 m^2/g, (ii) a surface hydroxyl content of not more than 5 mmol hydroxyl groups per g of solid support, (iii) a pore volume of from 0.3 to 3.0 cc/g, (iv) a median particle size of 1 to 200 μm, and (v) a majority of particles of the solid particulate support in the form of an agglomerate of subparticles, (B) a magnesium halide, said magnesium halide (B) being obtained by the method consisting essentially of impregnating the solid particulate support (A) with a solution of a magnesium compound (B'), followed by halogenating the magnesium compound (B') with hydrogen halide as a halogenating agent (C) to transform the magnesium compound (B') to magnesium halide (B), (D) a Group 4 or 5 transition metal compound, (E) a Group 2 or 13 organometal compound, and, optionally, an electron-donor (F), and

a cocatalyst selected from the group consisting of alumoxanes and compounds corresponding to the formula $R''_zGX''_{3-z}$, wherein G is aluminum or boron, R'' independently each occurrence is hydrocarbyl, X'' independently each occurrence is halide or hydrocarbyloxide, and z is a number from 1 to 3.

5,633,420

OLEFIN OLIGOMERIZATION PROCESS

Kevin J. Theriot, Baton Route, and Robert G. Irwin, Prairieville, both of La., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 22, 1995, Ser. No. 532,953

Int. Cl.[6] C07C *2/08*

U.S. Cl. 585—525 **33 Claims**

1. A process of preparing alpha-olefin oligomer which comprises contacting an oligomerizable olefin monomer with a catalyst system comprising a catalytic amount of boron trifluoride, a protic promoter employed in an oligomerization promoting amount, an organic modifier selected from the group consisting of phosphate, phosphine oxide, and phosphine sulfide at a pressure from about atmospheric to about 1000 psig, a temperature of about 0° C. to about 200° C., and a molar ratio in the range of about 0.1 moles to about 10 moles of modifier per mole of promoter wherein the olefin monomer is a C_6 to C_{20} linear olefin comprising at least 50 mole % alpha olefin.

5,633,421

PROCESS FOR DEHYDROGENATING LIGHT PARAFFINS IN A FLUIDIZED BED REACTOR

Rodolfo Iezzi, and Andrea Bartolini, both of San Donato Milanese, Italy, assignors to Enitricerche S.p.A., and Snamprogetti S.p.A., both of Milan, Italy

Continuation of Ser. No. 76,644, Jun. 15, 1993, abandoned. This application Feb. 22, 1995, Ser. No. 392,616

Claims priority, application Italy, Jun. 23, 1992, MI92A1535

Int. Cl.[6] C07C *5/327;5/333*

U.S. Cl. 585—660 **10 Claims**

1. A process for dehydrogenating C_2–C_5 paraffins to obtain in corresponding olefins, comprising reacting said paraffins with a catalytic system containing platinum, tin, an element of the lanthanide group and an alumina support in a fluidized bed reactor, where the heat required for the reaction is provided by said catalytic system as sensible heat, operating at a temperature of between 500° and 700° C. and at a pressure of between 1 and 2 kg/cm^2, and regenerating said catalytic system by burning coke which has deposited on a surface of catalytic system, wherein the regeneration is conducted in air, optionally by increasing the temperature of the catalytic system, followed by reduction of said catalytic system with a reducing agent and wherein said catalytic system consists of:

0.05–1% by wt. platinum, 0.2–3% by wt. tin, 3–25% by wt. of an element of the lanthanide group, the remainder being alumina and, optionally, up to 5% by wt. silica and up to less than 1% by wt. chlorides.

4. A process for dehydrogenating C_2–C_5 paraffins to obtain corresponding olefins, comprising reacting said paraffins with a catalytic system containing platinum, tin, a lanthanide and an alumina support in a fluidized bed reactor, where the heat required for the reaction is provided by said catalytic system as sensible heat, operating at a temperature of between 500° and 700° C. and at a pressure of between 1 and 2 kg/cm^2, and regenerating said catalytic system by burning coke which has deposited on a surface of the catalytic system, wherein the regeneration is conducted in air, optionally by increasing the temperature of the catalytic system, followed by reduction of said catalytic system with a reducing agent and wherein said catalytic system consists of:

0.05–1% by weight platinum, 0.2–3% by weight tin, 3–25% by weight of an element of the lanthanide group, 0.05 to 2% by weight potassium, the remainder being alumina.

5,633,422

PROCESS FOR ISOMERIZING LINEAR OLEFINS TO ISOOLEFINS

Brendan D. Murray, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 175,004, Dec. 29, 1993, Pat. No. 5,510,306. This application Jun. 6, 1995, Ser. No. 465,999

Int. Cl.[6] C07C *5/27*

U.S. Cl. 585—671 **14 Claims**

1. A process for structurally isomerizing a linear olefin of at least 4 carbon atoms to its corresponding methyl branched isoolefin comprising contacting at a temperature of from about 200° C. to about 650° C. a hydrocarbon feed stream containing at least one said linear olefin with an isomerizing catalyst produced by the process which comprises:

(a) mixing

(i) a zeolite powder comprising at least one zeolite with at least one one-dimensional pore structure having a pore size greater than about 0.42 nm to less than about 0.7 nm,

(ii) an alumina-containing binder,

(iii) water,

(iv) from about 0.1 weight percent to about 6 weight percent, based on (i) and (ii), of at least one acid selected from the group consisting of monocarboxylic acids and inorganic acids, and

(v) from about 0.1 weight percent to about 6 weight percent, based on (i) and (ii), of at least one polycarboxylic acid thereby producing a mixture;

(b) forming a pellet of said mixture; and

(c) calcining said pellet at a temperature of from about 200° C. to about 700° C.

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5,633,423

CONSUMABLE ANODE, ELECTRODISSOLUTION PROCESS APPLIED TO THE DECONTAMINATION OF SLIGHTLY RADIOACTIVE LIQUID EFFLUENTS AND APPARATUS FOR PERFORMING THE PROCESS

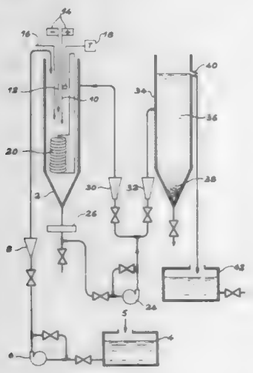
Véronique Federici, Ramosque; Eric Tronche, Aix en Provence, and Germain Lacoste, Tournefeutille, all of France, assignors to Campagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

Filed Jun. 12, 1995, Ser. No. 489,553

Claims priority, application France, Jun. 14, 1994, 94 07249

Int. Cl.° G21F *9/06;* **C02F** *1/469*

U.S. Cl. 588—204 **15 Claims**



1. A process for decontamination of radioactive liquid effluents, comprising the steps of placing a consumable anode and a cathode in the liquid effluent in a reactor, bringing the pH of the effluent to a value equal to or above 1, and establishing a direct current between the electrodes while maintaining the potential of the anode at a value equal to or above 2 V/NHE until the consumed electricity quantity is equal to or above 8 coulombs/milliliter, wherein said consumable anode is constituted by a metal alloy comprising between 20 and 70 wt. % iron, between 20 and 40 wt. % cobalt and between 5 and 30 wt. % aluminum, the total sum of the weight percentages of these three elements being equal to or below 100.

5,633,424

DEVICE AND METHODS FOR PLASMA STERILIZATION

Clinton G. Graves, and Clinton G. Graves, II, both of 241 Heather Pl., Danville, Calif. 94566

Filed Dec. 29, 1994, Ser. No. 365,666

Int. Cl.° A62D *3/00*

U.S. Cl. 588—227 **19 Claims**

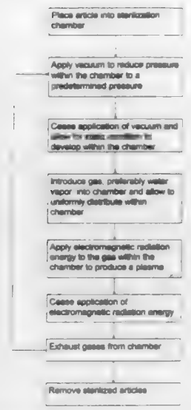
1. A method for sterilizing articles, comprising:

placing at least one article into a chamber;

applying a vacuum to the chamber;

ceasing application of the vacuum and allowing a static condition to develop within the chamber where the pressure throughout the chamber is essentially equal and constant;

after the static condition has developed, introducing an amount of water vapor into the chamber and allowing the water vapor to uniformly distribute within the chamber; and



applying electromagnetic radiation energy to the chamber after the water vapor has become uniformly distributed within the chamber to produce a substantially uniformly distributed plasma within the chamber.

5,633,425

TRANSGENIC NON-HUMAN ANIMALS CAPABLE OF PRODUCING HETEROLOGOUS ANTIBODIES

Nils Lonberg, and Robert M. Kay, both of San Francisco, Calif., assignors to GenPharm International, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 575,962, Aug. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 574,448, Aug. 29, 1990, abandoned. This application Feb. 5, 1992, Ser. No. 834,539

Int. Cl.° C12N *15/00;* **C07H** *21/04*

U.S. Cl. 800—2 **7 Claims**

1. A transgenic mouse having DNA segments from a human immunoglobulin heavy chain gene locus incorporated into its germline DNA to form a heavy chain immunoglobulin mini-locus such that upon antigenic stimulation the transgenic mouse develops primary response B cells expressing IgM having a mu chain encoded by a rearranged human mini-locus and secondary response B cells expressing somatically mutated IgG having a gamma chain encoded by the rearranged human mini-locus, the germline DNA of said transgenic mouse comprises:

an unrearranged human immunoglobulin mini-locus comprising a plurality of human heavy chain V gene segments, a plurality of human heavy chain D gene segments, a plurality of human heavy chain J gene segments, a mu constant region comprised of a μ switch region located upstream from a μ coding segment, and a gamma constant region comprised of a γ switch region located upstream from a human γ coding segment, wherein the γ constant region is in closer proximity to the μ constant region that in the human immunoglobulin heavy chain gene locus;

said primary response B cells wherein after said antigenitic expressing IgM stimulation have chromosomal DNA comprised of said mu constant region and said human gamma constant and a rearranged variable region which is comprised of a VDJ rearrangement of said unrearranged human immunoglobulin minilocus, said rearranged variable region having N-region nucleotides at recombination joints between said human heavy chain V gene segments and human D gene segments and between said human D gene segments and said human heavy chain J segments, and wherein FR1, FR2, FR3, CDR1, and CDR2 portions of said rearranged variable region have DNA sequences from said human heavy chain V gene segments of said unrearranged human immunoglobulin mini-locus;

and wherein said secondary response B cells have chromosomal DNA exhibiting a class switch recombination from said mu constant region to said gamma constant region operably linked to said rearranged variable region; wherein the sequence spanning the FR1, FR2, FR3, CDR1 and CDR2 portions includes a plurality of DNA sequences not identical to corresponding sequences from said unrearranged human immunoglobulin mini-locus.

5,633,426

IN VIVO USE OF HUMAN BONE MARROW FOR INVESTIGATION AND PRODUCTION

Reiko Namikawa, Palo Alto, Calif.; Seishi Kyoizumi, Hiroshima, Japan; Joseph M. McCune, San Francisco, and Hideto Kaneshima, Palo Alto, both of Calif., assignors to Systemix, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 904,886, Jun. 25, 1992, abandoned, and Ser. No. 90,571, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 599,649, Oct. 18, 1990, abandoned, said Ser. No. 904,886is a continuation of Ser. No. 529,217, May 25, 1990, abandoned. This application Feb. 10, 1994, Ser. No. 194,717

Int. Cl.° A61K *49/00;48/00*

U.S. Cl. 800—2 **20 Claims**

1. A chimeric immunocompromised mouse, said mouse comprising:

an immunodeficient mouse host lacking functional syngeneic lymphocytes as a result of a genetic defect in immunoglobulin and T cell receptor gene rearrangement; and

vascularized normal human fetal bone marrow and human fetal stroma resulting from the implantation of a human fetal bone or fragment thereof grown in said immunodeficient mouse host for a period of at least four weeks.

7. A method of determining the effect of an agent on hematopoiesis of human fetal bone marrow, said method comprising:

subjecting a chimeric mouse according to claim **1** to said agent; and

determining the effect of said agent on hematopoiesis by measuring at least one cell type in said bone marrow or in the peripheral blood of said mouse.

5,633,427

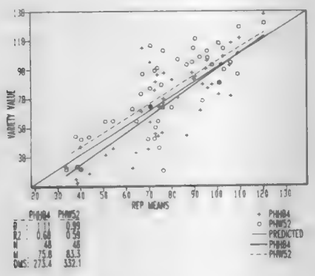
INBRED CORN LINE PHHB

Stephen W. Noble, Jr., Johnston, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 189,004, Jan. 24, 1994, Pat. No. 5,444,178. This application Jul. 10, 1995, Ser. No. 500,285

Int. Cl.° A01H *5/00;1/00*

U.S. Cl. 800—200 **2 Claims**



1. Parts of a plant produced by a seed designated PHHB4 and having ATCC accession number 97048.

5,633,428

INBREDCORN LINE LH262

Gary D. Arthur, Iowa City, Iowa, assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Sep. 26, 1995, Ser. No. 533,887

Int. Cl.° A01H *5/00;4/00;1/00;* **C12N** *5/04*

U.S. Cl. 800—200 **9 Claims**

1. Inbred corn seed designated LH262 having ATCC accession No. 97288.

5,633,429

INBRED CORN LINE LH227

Scott A. Bergemann, Stanton, Minn., assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Dec. 4, 1995, Ser. No. 567,363

Int. Cl.° A01H *5/00;4/00;1/00;* **C12N** *5/04*

U.S. Cl. 800—200 **9 Claims**

1. Inbred corn seed designated LH227 having ATCC accession No. 97360.

5,633,430

SOYBEAN CULTIVAR A3134

E. Hamer Paschal, II, Battleground, Ind., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed Dec. 4, 1995, Ser. No. 567,365

Int. Cl.° A01H *5/00;5/10;* **C12N** *5/04*

U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated A3134, deposited as ATCC Accession Number 97760.

5,633,431

SOYBEAN CULTIVAR 9142105423

Kevin W. Matson, Ames, Iowa; E. Hamer Paschal, II, Battleground, Ind.; Yolanda I. Otero-Ortiz, Aguadille, Puerto Rico, and Craig K. Moots, Taylorville, Ill., assignors to Asgrow Seed Company, Kalamazoo, Mich.

Filed Dec. 4, 1995, Ser. No. 567,366

Int. Cl.° A01H *5/00;5/10;* **C12N** *5/04*

U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated 9142105423, deposited as ATCC Accession Number 97718.

5,633,432

Patent Not Issued For This Number

5,633,433

RUBBER PARTICLE PROTEIN GENE FROM GUAYULE

Ralph A. Backhaus, Mesa, and Zhiqiang Pan, Tempe, both of Ariz., assignors to Arizona Board of Regents, a body corporate of the State of Arizona, acting for and on behalf of Arizona State University, Tempe, Ariz.

Continuation of Ser. No. 872, Jan. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 687,456, Apr. 17, 1991, abandoned. This application May 9, 1994, Ser. No. 240,012

Int. Cl.° C12N *15/29;15/63;* **A01H** *1/00;5/00*

U.S. Cl. 800—205 **21 Claims**

1. An isolated nucleic acid molecule encoding a guayule rubber particle protein.

16. A transgenic plant containing, as a transgene, the nucleic acid of claim **1**.

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5,633,434

TRANSGENIC PLANTS DISPLAYING VIRUS AND PHOSPHINOTHRICIN RESISTANCE

Rudolf Schneider, Kelkheim/Taunus; Günter Donn, Hofheim am Taunus, and Hubert Müllner, Kelkheim/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 123,699, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 910,329, Aug. 20, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,706

Claims priority, application Germany, Feb. 2, 1990, 4003045

Int. Cl.[6] C12N *5/10;15/11;15/33;* **A01H** *5/00*

U.S. Cl. 800—205 **19 Claims**

1. An isolated DNA molecule consisting of a nucleotide sequence coding region for a phosphinothricin acetyl transferase protein which confers phosphinothricin resistance and a nucleotide sequence coding region for a virus coat protein which confers virus resistance.

2. An isolated DNA molecule as claimed in claim **1**, wherein the nucleotide coding region for the virus coat protein which confers virus resistance is obtained by cDNA cloning starting from RNA of cucumber mosaic virus, alfalfa mosaic virus or brome mosaic virus.

6. Plants, plant cells, or seeds of plants containing the isolated DNA molecule as claimed in any of claims **1** or **2**, and which express the proteins.

5,633,435

GLYPHOSATE-TOLERANT 5-ENOLPYRUVYLSHIKIMATE-3-PHOSPHATE SYNTHASES

Gerard F. Barry, St. Louis; Ganesh M. Kishore, Chesterfield; Stephen R. Padgette, Grover, and William C. Stallings, Glencoe, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 749,611, Aug. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 576,537, Aug. 31, 1990, abandoned. This application Sep. 13, 1994, Ser. No. 306,063

Int. Cl.[6] A01H *4/00;* **C12N** *15/82*

U.S. Cl. 800—205 **87 Claims**

4. A recombinant, double-stranded DNA molecule comprising in sequence:

a) a promoter which functions in plant cells to cause the production of an RNA sequence;

b) a structural DNA sequence that causes the production of an RNA sequence which encodes a EPSPS enzyme having the sequence domains:

-R-X_1-H-X_2-E-(SEQ ID NO:37), in which
X_1 is G, S, T, C, Y, N, Q, D or E;
X_2 is S or T; and

-G-D-K-X_3-(SEQ ID NO:38), in which
X_3 is S or T; and

-S-A-Q-X_4-K-(SEQ ID NO:39), in which
$X_4$is A, R, N, D, C, Q, E, G, H, I, L, K, M, F, P, S, T, W, Y or V; and

-N-X_5-T-R-(SEQ ID NO:40), in which
X_5 is A, R, N, D, C, Q, E, G, H, I, L, K, M, F, P, S, T, W, Y or V; and

c) a 3' non-translated region which functions in plant cells to cause the addition of a stretch of polyadenyl nucleotides to the 3' end of the RNA sequence;

where the promoter is heterologous with respect to the structural DNA sequence and adapted to cause sufficient expression of the encoded EPSPS enzyme to enhance the glyphosate tolerance of a plant cell transformed with the DNA molecule.

5,633,436

FEEDCROPS ENRICHED IN SULFUR AMINO ACIDS AND METHODS FOR IMPROVEMENTS

Christine I. Wandelt, Ardentown, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 129,721, Sep. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 29,339, Mar. 2, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 321,080

Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/82*

U.S. Cl. 800—205 **16 Claims**

7. A dicotyledonous plant transformed with a chimeric gene comprising the following elements operably linked in a 5' to 3' orientation; (a) a dicotyledonous seed-specific promoter, (b) an intracellular localization sequence, (c) the maize 10 kD zein coding region, and (d) a 3' non-coding sequence, wherein said chimeric gene causes an increase in total seed methionine in plant cells in which the gene is expressed as compared to untransformed plant cells.

5,633,437

GENE EXHIBITING RESISTANCE TO ACETOLACTATE SYNTHASE INHIBITOR HERBICIDES

Paul Bernasconi, Morgan Hill, and Alison R. Woodworth, Palo Alto, both of Calif., assignors to Sandoz Ltd., Basel, Switzerland

Filed Oct. 11, 1994, Ser. No. 321,356

Int. Cl.[6] C12N *15/52;15/82;15/29;* **A01H** *1/00;5/00*

U.S. Cl. 800—205 **18 Claims**

15. A plant wherein the growth and development of said plant is resistant to ALS inhibition by an ALS herbicide at levels which normally inhibit the growth and development of said plant wherein said resistance is conferred by a heterologous ALS with an amino acid sequence as described in SEQ ID No:2 or a modified ALS thereof wherein said modified ALS has about 90% or greater amino acid sequence similarity with the amino acid sequence of SEQ ID No.:2.

5,633,438

MICROSPORE-SPECIFIC REGULATORY ELEMENT

Chris Baszczynski, Urbandale; Eric Barbour, Des Moines, both of Iowa; Brian Miki, and Jiro Hattori, both of Ottawa, Canada, assignors to Pioneer Hi-Bred International, Des Moines, Iowa

Filed Nov. 22, 1994, Ser. No. 345,756

Int. Cl.[6] A01H *5/00;1/02;* **C12N** *15/29;15/82*

U.S. Cl. 800—205 **19 Claims**

14. A method of producing a male-sterile plant, comprising:

(a) constructing an expression vector comprising a microspore-specific regulatory element, a promoter, and a foreign gene, wherein said microspore-specific regulatory element comprises the nucleotide sequence of SEQ ID NO: 8,

wherein said microspore-specific regulatory element in conjunction with said promoter control the expression of said foreign gene, and wherein the product of said foreign gene disrupts the function of microspores, thereby producing a male-sterile plant.

5,633,439

EXPRESSION OF GENES IN TRANSGENIC PLANTS USING A CINNAMYL ALCOHOL DEHYDROGENASE GENE PROMOTER

Michael H. Walter, Filderstadt, Germany, assignor to Zeneca Limited, England

PCT No. PCT/GB93/01098, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO93/24638, PCT Pub. Date Dec. 9, 1993

PCT Filed May 27, 1993, Ser. No. 347,340

Int. Cl.[6] A01H *5/00;* **C12N** *15/11;15/82*

U.S. Cl. 800—205 **5 Claims**

1. A DNA construct for use in transforming plant cells which comprises an exogenous coding sequence under the control of upstream promoter and downstream terminator sequences, characterised in that the upstream promoter is a promoter of a cinnamyl alcohol dehydrogenase gene having a nucleotide sequence comprising the first 2765 nucleotides of SEQ ID NO:1.

4. Plants and plant cells transformed with a construct claimed in claim **1**.

5,633,440

P119 PROMOTERS AND THEIR USES

Pamela Dunsmuir, Piedmont, and Jamie S. Stott, Oakland, both of Calif., assignors to DNA Plant Technology Corporation, Oakland, Calif.

Filed Dec. 20, 1994, Ser. No. 359,696

Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/82;5/04*

U.S. Cl. 800—205 **22 Claims**

10. A transgenic plant comprising a tomato plant P119 promoter operably linked to a heterologous nucleic acid sequence.

5,633,441

PLANTS WITH GENETIC FEMALE STERILITY

Willy De Greef, Ghent; John Van Emmelo, Sint-Amandsberg, both of Belgium; Dulce E. De Oliveira, Rio de Janeiro, Brazil; Maria-Helena De Souza, Ghent, and Marc Van Montagu, Brussels, both of Belgium, assignors to Plant Genetic Systems, N.V., Ghent, Belgium

Continuation of Ser. No. 681,492, Apr. 4, 1991, abandoned. This application Dec. 22, 1994, Ser. No. 361,467

Claims priority, application European Pat. Off., Aug. 4, 1989, 89402224

Int. Cl.[6] A01H *5/00;* **C12N** *15/11;15/82*

U.S. Cl. 800—205 **43 Claims**

1. A female-sterile plant comprising a foreign DNA incorporated in the nuclear genome of its cells, wherein said foreign DNA comprises:

(a) a female sterility DNA encoding a first protein or polypeptide which, when produced in cells of said plant, kills or significantly disturbs the metabolism, functioning or development of said cells; and

(b) a first promoter which directs expression of said female-sterility DNA selectively in style cells, stigma cells or style and stigma cells of female reproductive organs of said plant, and which does not direct detectable expression of said female sterility DNA in the ovule or in other parts of said plant so that said plant remains male-fertile, said female sterility DNA being in the same transcriptional unit as, and under the control of said first promoter.

5,633,442

METHOD OF PRODUCING PATHOGEN-RESISTANT PLANTS

Jeff Schell; Jürgen Logemann; Guido Jach, all of Köln, Germany, and John Mundy, Copenhagen, Denmark, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.v., Germany

Continuation of Ser. No. 215,163, Mar. 21, 1994, abandoned, which is a continuation of Ser. No. 810,390, Dec. 19, 1991, abandoned. This application Jan. 18, 1995, Ser. No. 375,186

Claims priority, application Germany, Dec. 20, 1990, 40 40 954.6

Int. Cl.[6] C12N *15/09;15/29;* **C12P** *1/04;* **A01H** *1/00;5/00*

U.S. Cl. 800—205 **6 Claims**

1. A method of producing fungus-resistant plants comprising introducing a protein-synthesis inhibitor gene or a fusion product of the protein-synthesis inhibitor gene into the genotype of plants under the control of an active promoter, wherein the protein-synthesis inhibitor gene comprises the following DNA sequence:

SEQUENCE DESCRIPTION: SEQ ID NO. 1

		CTTAATAGCA GTCTTAGCTT				CATCTTGTCC TGCATTACAT		
CC	ATG Met −1	GCG Ala 1	GCA Ala	AAG Lys	ATG Met	GCG Ala 5		60
AAG Lys	AAC Asn	GTG Val	GAC Asp	AAG Lys 10	CCG Pro	CTC Leu	TTC Phe	
ACC Thr	GCG Ala 15	ACG Thr	TTC Phe	AAC Asn	GTC Val	CAG Gln 20	GCC Ala	108
AGC Ser	TCC Ser	GCC Ala	GAC Asp 25	TAC Tyr	GCC Ala	ACC Thr	TTC Phe	
ATC Ile 30	GCC Ala	GGC Gly	ATC Ile	CGC Arg	AAC Asn 35	AAG Lys	CTC Leu	156
CGC Arg	AAC Asn	CCG Pro	GCG Ala	CAC His	TTC Phe	TCC Ser	CAC His 45	
AAC Asn	CGC Arg	CCC Pro	GTG Val	CTG Leu 50	CCG Pro	CCG Pro	GTC Val	204
GAG Glu	CCC Pro 55	AAC Asn	GTC Val	CCG Pro	CCG Pro	AGC Ser 60	AGG Arg	
TGG Trp	TTC Phe	CAC His	GTC Val 65	GTG Val	CTC Leu	AAG Lys	GCC Ala	252
TCG Ser 70	CCG Pro	ACC Thr	AGC Ser	GCC Ala	GGG Gly 75	CTC Leu	ACG Thr	
CTG Leu	GCC Ala	ATT Ile 80	CGG Arg	GCG Ala	GAC Asp	AAC Asn	ATC Ile 85	300
TAC Tyr	CTG Leu	GAG Glu	GGC Gly	TTC Phe 90	AAG Lys	AGC Ser	AGC Ser	
GAC Asp	GGC Gly	ACC Thr	TGG Trp	TGG Trp	GAG Glu	CTC Leu 100	ACC Thr	348
CCG Pro	GGC Gly	CTC Leu	ATC Ile 105	CCC Pro	GGC Gly	GCC Ala	ACC Thr	
TAC Tyr 110	GTC Val	GGG Gly	TTC Phe	GGC Gly 115	GGC Gly	ACC Thr	TAC Tyr	396
CGC Arg	GAC Asp	CTC Leu 120	CTC Leu	GGC Gly	GAC Asp	ACC Thr	GAC Asp 125	

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SEQUENCE DESCRIPTION: SEQ ID NO. 1								
AAG Lys	CTG Leu	ACC Thr	AAC Asn	GTC Val 130	GCT Ala	CTC Leu	GGC Gly	444
CGG Arg	CAG Gln 135	CAG Gln	CTG Leu	GCG Ala	GAC Asp	GCG Ala 140	GTG Val	
ACC Thr	GCC Ala	CTC Leu	CAC His 145	GGG Gly	CGC Arg	ACC Thr	AAG Lys	492
GCC Ala 150	GAC Asp	AAG Lys	CCG Pro	TCC Ser	GGC Gly 155	CCG Pro	AAG Lys	
CAG Gln	CAG Gln	CAG Gln 160	GCG Ala	AGG Arg	GAG Glu	GCG Ala 165	GTG Val	540
ACG Thr	ACG Thr	CTG Leu	CTC Leu	CTC Leu 170	ATG Met	GTG Val	AAC Asn	
GAG Glu	GCC Ala 175	ACG Thr	CGG Arg	TTC Phe	CAG Gln	ACG Thr 180	GTG Val	588
TCT Ser	GGG Gly	TTC Phe	GTG Val 185	GCC Ala	GGG Gly	TTG Leu	CTG Leu	
CAC His 190	CCC Pro	AAG Lys	GCG Ala	GTG Val	GAG Glu 195	AAG Lys	AAG Lys	636
AGC Ser	GGG Gly	AAG Lys 200	ATC Ile	GGC Gly	AAT Asn	GAG Glu	ATG Met 205	
AAG Lys	GCC Ala	CAG Gln	GTG Val	AAC Asn 210	GGG Gly	TGG Trp	CAG Gln	684
GAC Asp	CTG Leu 215	TCC Ser	GCG Ala	GCG Ala	CTG Leu	CTG Leu 220	AAG Lys	
ACG Thr	GAC Asp	GTG Val	AAG Lys 225	CCT Pro	CCG Pro	CCG Pro	GGA Gly	732
AAG Lys 230	TCG Ser	CCA Pro	GCG Ala	AAG Lys	TTC Phe 235	GCG Ala	CCG Pro	
ATC Ile	GAG Glu	AAG Lys 240	ATG Met	GGC Gly	GTG Val	AGG Arg	ACG Thr 245	780
GCT Ala	GTA Val	CAG Gln	GCC Ala	GCC Ala 250	AAC Asn	ACG Thr	CTG Leu	
GGG Gly	ATC Ile 255	CTG Leu	CTG Leu	TTC Phe	GTG Val	GAG Glu 260	GTG Val	828
CCG Pro	GGT Gly	GGG Gly	TTG Leu 265	ACG Thr	GTG Val	GCC Ala	AAG Lys	
GCG Ala 270	CTG Leu	GAG Glu	CTG Leu	TTC Phe	CAT His 275	GCG Ala	AGT Ser	876
GGT Gly	GGG Gly	AAA Lys 280	TAGGTAGTTT			TCCAGGTATA		
CCTGCATGGG			TAGTGTAAAA			GTCGAATAAA		935
CATGTCACAG AAATAAATAA			AGTGACGGAC ACGTGTCACA			TGATATAAAT GAGTTACATA		995
TAAACAAATA CAGTTTA			AATAAATAAT			TAAAAATGTC		1032.

2. A method according to claim 1 wherein the fusion product of the protein-synthesis inhibitor gene further comprises a gene coding for a ligand permitting the specific attachment of fungal cells.

3. Plants and plant parts which have a genotype modified by any one of claims 1 or 2.

5,633,443

Patent Not Issued For This Number

5,633,444

SULFONAMIDE RESISTANCE GENES AND THEIR USE

Jean F. Guerineau, Dundee; Philip M. Mullineaux, Norwich, and Edgar W. Parnell, Odgar, all of United Kingdom, assignors to Rhone-Poulenc Agrochimie Limited, Lyons, Cedex, France

Continuation of Ser. No. 102,395, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 985,352, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 746,306, Aug. 14, 1991, abandoned, which is a continuation of Ser. No. 429,227, Oct. 31, 1989, abandoned. This application May 19, 1995, Ser. No. 444,420

Claims priority, application United Kingdom, Oct. 31, 1988, 8825402

Int. Cl.[6] **A01H** *4/00;* **C12N** *5/14*

U.S. Cl. 800—205 **21 Claims**

7. A transgenic plant exhibiting resistance to a sulfonamide or a salt thereof, which plant contains in its cells a chimaeric gene comprising (a) a plant promoter (b) a sul gene which encodes a modified DHPS conferring sulfonamide resistance, or a sequence having at least 70% homology thereto conferring sulfonamide resistance and which has a sequence encoding a transit peptide cleavable from the modified DHPS fused to the 5'-end of the resistance gene and (c) a plant polyadenylation/terminator sequence wherein (a), (b) and (c) are operably linked.

5,633,445

Patent Not Issued For This Number

5,633,446

MODIFIED *BACILLUS THURINGIENSIS* INSECTICIDAL-CRYSTAL PROTEIN GENES AND THEIR EXPRESSION IN PLANT CELLS

Marc Cornelissen, Heusden; Piet Soetaert, Laarne, both of Belgium; Maike Stam, Amstelveen, Netherlands, and Jan Dockx, Ghent, Belgium, assignors to Plant Genetic Systems, N.V., Brussels, Belgium

Continuation of Ser. No. 937,869, Dec. 16, 1992, abandoned. This application May 30, 1995, Ser. No. 453,104

Claims priority, application European Pat. Off., Apr. 18, 1990, 90401055

Int. Cl.[6] **A01H** *5/00;* **C12N** *5/04;15/32;15/82*

U.S. Cl. 800—205 **13 Claims**

1. A modified DNA sequence encoding a *Bacillus thuringiensis* Bt2 insecticidal crystal protein (ICP) or an insecticidally effective fragment thereof, which comprises the DNA sequence of SEQ ID No. 23 from nucleotide position 705 to nucleotide position 1016.

3. The modified DNA of claim 1, wherein said DNA is further modified by substituting for its ATG translation initiation site: AAAACCATGGCT.

7. The modified DNA of claim 3, wherein the native Bt2 codons 2 to 28 are deleted and the native Bt2 codons 29 to 31 are changed by replacing A and T nucleotides to corresponding G and C nucleotides encoding the same amino acids.

10. A chimeric gene for transforming a cell of a plant, comprising the following operably-linked DNA fragments in the same transcriptional unit:

(a) the modified DNA sequence of claim 7;

(b) a promoter capable of directing transcription of the modified DNA in a plant cell: and

(c) transcription 3' end formation and polyadenylation signals for expressing the modified DNA sequence in the plant cell.

13. A plant, comprising the chimaeric gene of claim 10 stably integrated into its genome.

5,633,447

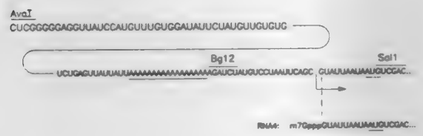
PLANT TISSUE COMPRISING A SUBGENOMIC PROMOTER

Paul G. Ahlquist, Madison, Wis., and Roy C. French, Lincoln, Nebr., assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Division of Ser. No. 296,080, Aug. 25, 1994, Pat. No. 5,466,788. This application Jun. 2, 1995, Ser. No. 458,927

Int. Cl.[6] **A01H** *1/06;4/00;* **C12N** *15/82*

U.S. Cl. 800—205 **6 Claims**



1. Plant tissue comprising a plant cell transformed to comprise a DNA segment comprising the nucleotide sequence of a (+) strand plant RNA virus subgenomic core promoter selected from the group consisting of tobamoviruses, tobraviruses, bromoviruses, cucumoviruses and alfalfa mosaic virus, wherein said (+) strand RNA virus comprises a consensus sequence selected from the group consisting of AUCUAUGUU and sequences having a single mismatch thereto, and further comprising an undeviating domain corresponding to the nucleotide sequence from a BstXI site to a BglII site of the cDNA corresponding to the RNA of FIG. 2, and wherein said activating domain is positioned 5' to said subgenomic core promoter sequence, and comprising a plant-expressible structural gene 3' to said subgenomic core promoter sequence, said plant-expressible structural gene being heterologous to the native genes of said plant tissue, and wherein said plant-expressible structural gene is expressed.

5,633,448

CHIMERIC GENE FOR THE TRANSFORMATION OF PLANTS

Michel Lebrun, Lyons; Bernard Leroux, Lozanne, and Alain Sailland, Lyons, all of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Division of Ser. No. 251,621, May 31, 1994, Pat. No. 5,510,471, which is a continuation of Ser. No. 846,211, Mar. 4, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,581

Claims priority, application France, Mar. 5, 1991, 91 02872

Int. Cl.[6] **A01H** *5/00;* **C12N** *15/12;15/82*

U.S. Cl. 800—205 **20 Claims**

1. A chimeric gene for conferring to plants an increased tolerance to glyphosate comprising, in the direction of transcription, a promoter region, a DNA sequence encoding a first transit peptide from a ribulose-1,5,-bisphosphate carboxylase small subunit, a DNA sequence encoding an N-terminal domain of a mature ribulose-1,5-bisphosphate carboxylase small subunit, a DNA sequence encoding a second transit peptide from a ribulose-1,5,-bisphosphate carboxylase small subunit, coding sequence for 5-(enolpyruvyl)shikimate-3-phosphate synthase and an untranslated polyadenylation signal.

10. A transformed plant cell, which contains a chimeric gene according to claim 1.

13. A transformed plant with improved glyphosate tolerance, which was obtained by regeneration of the cell according to claim 10.

5,633,449

INDUCTION OF RESISTANCE TO VIRAL DISEASES IN PLANTS

Milton Zaitlin, and Peter Palukaitis, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 197,096, Feb. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 894,064, Jun. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 491,473, Mar. 12, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 479,577

Int. Cl.[6] **A01H** *4/00;* **C12N** *15/82;5/14*

U.S. Cl. 800—205 **22 Claims**

1. A DNA molecule comprising:

a promoter region;

a structural gene encoding a replicase protein or polypeptide for a plant pathogenic virus which does not have a replicase read through portion, wherein said structural gene is operably linked to said promoter region; and

a 3' non-translated region which is operably linked to said structural gene and functions in plant cells to cause the termination of transcription.

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5,633,450

CHITINASE-PRODUCING PLANTS

Trevor V. Suslow, El Cerrito, Calif., and Jonathan D. G. Jones, Norwich, United Kingdom, assignors to DNA Plant Technology Corporation, Oakland, Calif.

Continuation of Ser. No. 358,901, Dec. 19, 1994, Pat. No. 5,554,521, which is a continuation-in-part of Ser. No. 930,970, Aug. 14, 1992, Pat. No. 5,290,687, which is a continuation of Ser. No. 550,253, Jul. 9, 1990, Pat. No. 5,374,540, which is a continuation-in-part of Ser. No. 888,033, Jul. 18, 1986, Pat. No. 4,940,840, which is a continuation-in-part of Ser. No. 593,691, Mar. 26, 1984, Pat. No. 4,751,081. This application Dec. 1, 1995, Ser. No. 566,347

Int. Cl.[6] A01H *5/00;* C12N *15/56;15/62;15/82;15/29*

U.S. Cl. 800—205 12 Claims

1. A transformed plant resistant to cold damage, said transformed plant containing a DNA sequence encoding for chitinase activity and said DNA sequence having been introduced into the plant by transformation under conditions whereby the transformed plant expresses chitinase in active form.

5,633,451

TRANSGENIC PLANTS HAVING A NUCLEIC ACID SEQUENCE ENCODING A DENDROIDES ANTIFREEZE PROTEIN

John G. Duman, South Bend, Ind., assignor to University of Notre Dame du Lac, Notre Dame, Ind.

Division of Ser. No. 485,359, Jun. 7, 1995. This application Dec. 8, 1995, Ser. No. 569,594

Int. Cl.[6] A01H *1/00;1/06;5/10;* A01G *13/00;* C12N *5/04;15/82*

U.S. Cl. 800—205 1 Claim

1. A plant entity consisting essentially of a stably transformed plant cell, seed or plant produced from the in vitro introduction of DNA sequences encoding a Dendroides antifreeze protein into a plant cell.

5,633,452

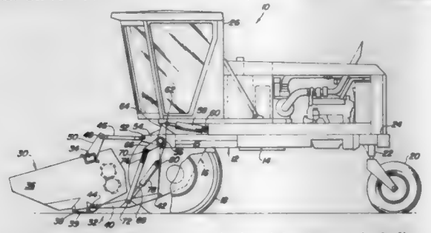
LOW PRESSURE WARNING FOR HYDRAULIC SYSTEM OF PLATFORM FLOAT SUSPENSION

Thomas D. Bebernes, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 29, 1996, Ser. No. 624,286

Int. Cl.[6] G01M *3/00;* A01D *34/28*

U.S. Cl. 73—37 7 Claims



1. In combination with an agricultural implement including a crop processing header suspended from a main frame of the implement for movement between a raised transport position and a lowered working condition by a float suspension including at least one single-acting float cylinder coupled to a accumulator in a closed hydraulic float pressure circuit, an electrohydraulic float pressure control valve means coupled to a source of fluid pressure and a sump and to said float pressure circuit and being responsive to electrical "increase" and "decrease" signals for respectively coupling the pump to the float pressure circuit for increasing the fluid pressure therein, and for coupling the sump to the float pressure circuit for decreasing the fluid pressure therein, an electrohydraulic control system for apprising an operator of the fact that float pressure in said float pressure circuit is below a minimum acceptable operating pressure, comprising: a programmable microprocessor including signal storing means for storing a preset electrical signal representative of a minimum acceptable float pressure and including a normally open electronic switch coupled to a grounded output; a warning signal control lead containing at least one warning device and being coupled between a source of electrical power and a first microprocessor input port connected to said electronic switch, with said warning device being energized only when said electronic switch is closed; a float pressure transducer means coupled between said float circuit and a second input port of said microprocessor and being operative for producing, and conveying to said microprocessor, an electrical signal representative of said float circuit pressure; a header position monitoring means coupled to said electronic switch; and said microprocessor including signal processing means coupled for effecting closure of said electronic switch only when said float pressure transducer produces an electrical signal representative of a pressure below said preset minimum acceptable pressure, and when said header position signal means produces an electrical header position signal indicating said header is in its working condition.

5,633,453

UNIVERSAL PENETRATION TEST APPARATUS AND METHOD

Phillip W. Johnson, Rochester, Minn., assignor to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Continuation-in-part of Ser. No. 291,745, Aug. 17, 1994, Pat. No. 5,467,639, which is a continuation of Ser. No. 4,839, Jan. 19, 1993, abandoned. This application Jun. 21, 1995, Ser. No. 493,277

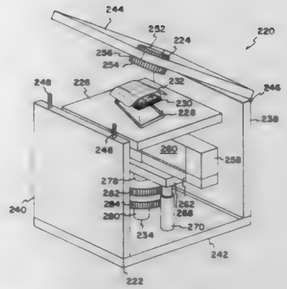
Int. Cl.[6] G01N *15/08*

U.S. Cl. 73—38 4 Claims

1. A universal penetration test apparatus for measuring resistance of a material to a challenge fluid, comprising:

an absorbent pad capable of absorbing the challenge fluid;

a platform for supporting the pad;



a rod having a top end and a base end, the base end being positionable directly above the pad, the material being positionable between the pad and the base end of the rod;

a frame for holding the rod; and

a screw assembly for compressing the pad and the material between the base end of the rod and the platform, the screw assembly including a substantially vertical screw and a first turning wheel mounted on the screw, wherein when the first turning wheel is rotated in a first direction, the platform moves vertically toward the base end of the rod, and when the first turning wheel is rotated in a second direction, the platform moves vertically away from the base end of the rod, the screw assembly also including a second turning wheel mounted on the screw for precisely controlling the location of the platform.

5,633,454

PINHOLE INSPECTING APPARATUS

Hiroshi Abe, Tokushima; Kazuhiko Ishio, Kusatsu; Yoshihiro Murakawa, Shiga, and Akira Yamamoto, Osaka, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

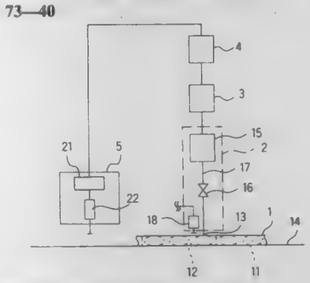
PCT No. PCT/JP95/00603, § 371 Date Nov. 1, 1995, § 102(e) Date Nov. 1, 1995, PCT Pub. No. WO95/27193, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 30, 1995, Ser. No. 537,916

Claims priority, application Japan, Apr. 4, 1994, 6-065926

Int. Cl.[6] G01M *3/04;3/20*

U.S. Cl. 73—40 4 Claims



1. A pinhole inspecting apparatus comprising:

a pallet for dischargeably containing a closed container filled with a gas, the pallet having a suction hole;

a gas leakage detecting unit adapted to be connected at an inspecting position to the suction hole for communication with the interior of the pallet, such that when a gas of the same kind as said gas in the closed container is present in the interior of the pallet, the gas leakage detecting unit generates an analog signal having a voltage corresponding to an amount of leakage of the gas from the closed container per unit time;

an A/D converter for converting the analog signal into a digital signal; and

a first arithmetic means for finding from the digital signal a slope of a regression line representing a relationship between a voltage corresponding to the magnitude of the signal and

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time, and calculating a difference between the value of the slope and a preliminarily inputted maximum slope value corresponding to the kind of gas in the closed container,

the first arithmetic means also for outputting an abnormality signal when the difference falls out of an allowable range.

5,633,455

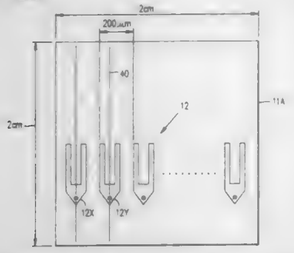
METHOD OF DETECTING PARTICLES OF SEMICONDUCTOR WAFERS

Calvin F. Quate, Stanford, Calif., assignor to Board Of Trustees Of The Leland Stanford, Jr. University, Stanford, Calif.

Continuation of Ser. No. 131,803, Oct. 5, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 470,658

Int. Cl.[6] H01J *37/00*

U.S. Cl. 73—105 **12 Claims**



1. A method of testing a semiconductor wafer or other flat body for the presence of loose particles, said method including the steps of:

(a) providing a substrate, said substrate including a plurality of cantilevers arranged in a selected pattern, each of said cantilevers having a tip located near a free end;

(b) providing a semiconductor wafer or other flat body;

(c) bringing said substrate and said wafer or other flat body into a juxtaposed relationship such that the tips of the cantilevers are near or in contact with a surface of the wafer or other flat body;

(d) causing relative motion between said substrate and said wafer or other flat body, said relative motion being in two dimensions and in a plane parallel to the surface of the wafer or other flat body such that individual tips of said cantilevers scan the surface of said wafer or other flat body in two dimensions;

(e) detecting the deflection of individual ones of said cantilevers; and

(f) using the deflection of individual ones of said cantilevers to identify the presence of loose particles on the surface of said wafer or other flat body.

5,633,456

ENGINE MISFIRE DETECTION WITH DIGITAL FILTERING

Douglas M. Stander, Grosse Pointe Woods, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 4, 1995, Ser. No. 511,125

Int. Cl.[6] G01M *15/00*

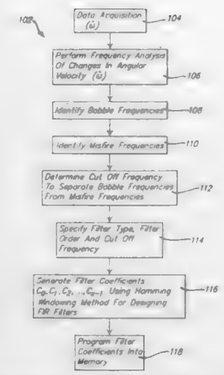
U.S. Cl. 73—116 **19 Claims**

1. An apparatus for detecting misfire in individual cylinders of an internal combustion engine in a motor vehicle, comprising:

means for sensing rotation of a crankshaft;

measuring means connected to the sensing means for determining changes in angular velocity corresponding to each of a plurality of cylinder firings;

frequency analysis means for analyzing a frequency response of the engine in a frequency domain and determining a cut-off frequency between misfire signals and noise related signals;



digital filtering means for digitally filtering out noise related signals from the determined changes in angular velocity as a function of the cut-off frequency; and

means for comparing an output of said digital filtering means with a threshold value to detect the occurrence of a misfire for a selected cylinder as a result of said comparison.

5,633,457

FUEL INJECTION CLEANING AND TESTING SYSTEM AND APPARATUS

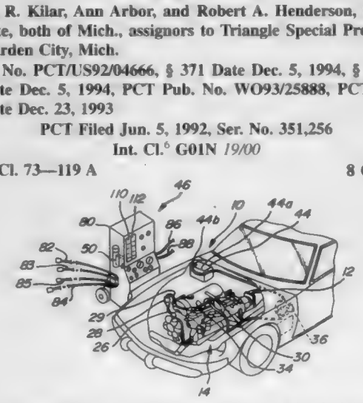
John R. Kilar, Ann Arbor, and Robert A. Henderson, Southgate, both of Mich., assignors to Triangle Special Products, Garden City, Mich.

PCT No. PCT/US92/04666, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/25888, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 5, 1992, Ser. No. 351,256

Int. Cl.[6] G01N *19/00*

U.S. Cl. 73—119 A **8 Claims**



1. An apparatus for cleaning and/or testing the fuel injection valve system of a vehicle engine, wherein said apparatus defines an independent fuel system attachable to the vehicle engine so as to temporarily replace the engine's fuel system, the apparatus comprising:

a fuel/chemical mixture tank having an outlet line and a return line in communication, respectively, with fuel inlet and outlet ports of the engine for communicating fuel to one of the fuel injectors;

fuel pump means, separate and apart from the vehicle engine, for pumping fuel/chemical mixture from said tank into the fuel inlet port of said engine;

a fuel filter interposed in said fuel line and between the mixture tank and the fuel pump;

a first sensor means, interposed between the pump and the filter, for detecting the fluid pressure drop across the filter during operation of the pump and generating a first signal;

a second sensor means, downstream of the pump, for detecting the fluid pressure at the inlet to the engine and generating a second signal; and

electronic control means for controlling the operation of the pump during operation of the engine being cleaned, said control means including

first circuit means, connected to the pump and responsive to said first signal, for operating the pump in a fuel feeding mode when the pressure drop is below a predetermined threshold and deactivating the pump when the pressure drop exceeds the predetermined threshold, and

second circuit means, connected to the pump and responsive to said second signal, for operating the pump in a fuel retracting mode whereby to draw the cleaner fluid back to the mixture tank via the outlet line, said first and second circuit means being connected in series with one another.

5,633,458

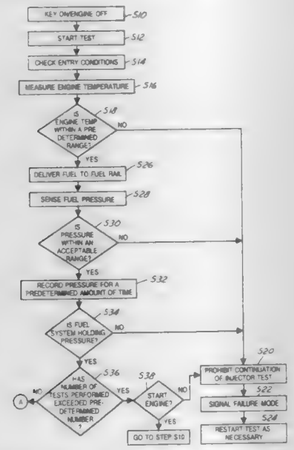
ON-BOARD FUEL DELIVERY DIAGNOSTIC SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Allen J. Pauli, Macomb Township; Patrick J. Shelly, Framington; Mark D. Leroux, Allen Park, and Thomas R. Melville, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 16, 1996, Ser. No. 586,115

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—119 A **19 Claims**



1. A diagnostic system for performing a diagnostic test on a fuel delivery system of an internal combustion engine while the engine is off, the fuel delivery system comprising: a plurality of fuel injectors in fluid communication with the engine for supplying fuel to the engine; a fuel rail in fluid communication with said injectors; a fuel delivery control means to selectively deliver fuel to said fuel rail; and, a pressure sensor in fluid communication with said fuel rail for sensing pressure in said fuel delivery system during normal operation of the engine, as well as during said diagnostic test, the diagnostic system comprising:

a controller means for performing said diagnostic test comprising:

a fuel delivery actuation means for actuating said fuel delivery control means;

a fuel injector actuation means for actuating at least one said injector for a predetermined time period;

a storage means for storing an acceptable fuel pressure drop range;

a comparison means for comparing a fuel pressure in said fuel delivery system sensed by said pressure sensor during said time period to said stored acceptable fuel pressure drop range;

a signaling means for signaling the results of said test comprising which of said injectors, upon actuation thereof, causes said fuel pressure in said fuel delivery system sensed during said time period to be outside said acceptable fuel pressure drop range; and,

a test prohibiting means for prohibiting a further test from occurring before requiring the engine to be started if a predetermined number of tests have been performed.

5,633,459

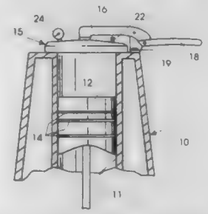
METHOD AND APPARATUS FOR TESTING PISTON RINGS

Otto M. Rodriguez, 8564 Timberlake Dr., Riverdale, Ga. 30296

Filed Feb. 29, 1996, Ser. No. 608,677

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—120 **8 Claims**



1. A method for determining whether or not piston rings in an engine are sealing adequately, said engine including at least one cylinder having a piston reciprocable therein, and a plurality of rings extending circumferentially of said piston for sealing said piston with respect to the wall of said cylinder, and a cylinder head for normally closing the upper end of said cylinder, said method comprising the steps of removing said cylinder head, sealing the upper end of said cylinder with a pressure cap having a valve therein, admitting fluid under pressure through said valve until a predetermined high pressure is reached, and monitoring the reduction in said high pressure for determining the seal between said piston and said wall of said cylinder.

5,633,460

OCEAN ENVIRONMENT MONITORING SYSTEM AND METHOD FOR CONTROLLING THE SAME

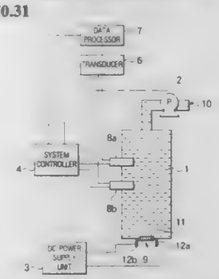
Kyoko Manmaru, and Tsugio Shimono, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 13, 1995, Ser. No. 501,807

Claims priority, application Japan, Jul. 14, 1994, 6-162241; Dec. 15, 1994, 6-311690; Jan. 17, 1995, 7-004863

Int. Cl.[6] G01D *21/00*

U.S. Cl. 73—170.31 **22 Claims**



1. An ocean environment monitoring system comprising: a sensor having a sensing portion thereof, a sensor chamber having a first and a second ports and receiving said sensing portion inside said sensor chamber, a pump for introducing seawater into said sensor chamber from said first port and discharging the seawater from said second port, a pair of electrodes, disposed in the vicinity of said first port, for electrolyzing the seawater to produce an

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antifouling substance included in seawater, and a power supply unit for applying between said pair of electrodes voltage for the electrolyzing.

5,633,461

MOUNTING ARRANGEMENT FOR ACCELERATION DETECTOR ELEMENT

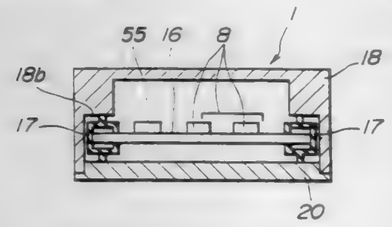
Shinobu Kakizaki, and Kimihisa Kasajima, both of Atsugi, Japan, assignors to Atsugi Unisia Corp., Japan

Division of Ser. No. 991,434, Dec. 16, 1992, Pat. No. 5,548,999. This application Jun. 6, 1995, Ser. No. 468,312

Claims priority, application Japan, Dec. 17, 1991, 3-332393

Int. Cl.[6] G01P *15/09;1/02*

U.S. Cl. 73—493 **1 Claim**



1. An acceleration sensor comprising:
a housing;
a bottom portion connected with said housing and cooperating with said housing to define a space therebetween;
a hard-type printed circuit board having a plurality of corners;
a detector chip mounted on said printed circuit board;
signal processing circuits mounted on said printed circuit board;
a plurality of elastic mount spacers provided at said plurality of corners of said printed circuit board, respectively;
each of said elastic mount spacers being formed with a notch receiving a respective one of said plurality of corners of said printed circuit board;
each of said mount spacers being disposed between said housing and said bottom portion and having upper and lower positioning nodes contacting said housing and said bottom portion, respectively, such that said plurality of mount spacers elastically support said printed circuit board within said space defined by said housing and said bottom portion.

5,633,462

METHOD AND APPARATUS FOR DETECTING THE CONDITION OF THE FLOW OF LIQUID METAL IN AND FROM A TEEMING VESSEL

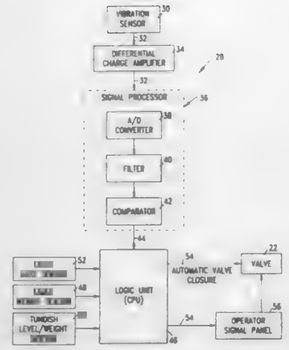
Lawrence J. Heaslip, Scarborough, and James D. Dorricott, Burlington, both of Canada, assignors to APA Systems, Lansing, Ill.

Filed Jul. 19, 1994, Ser. No. 277,409

Int. Cl.[6] G01H *11/00*

U.S. Cl. 73—649 **28 Claims**

1. An apparatus for detecting the condition of the flow of liquid metal in or from a teeming vessel comprising:
a sensor for measuring a desired flow condition of liquid metal flowing from a teeming vessel to output a reference signal corresponding to the desired flow condition, and for monitoring the status of the flow condition of the liquid metal flowing from the teeming vessel to output a sensor signal corresponding to the status of the flow condition;
a signal processor for comparing the sensor signal to the reference signal and outputting a comparison signal; and



a logic unit for receiving the comparison signal and for outputting a status signal indicative of the condition of the flow of the liquid metal in or from the teeming vessel.

5,633,463

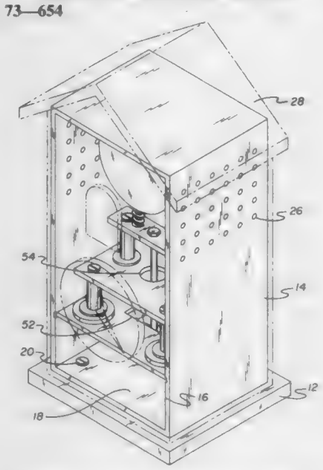
EARTHQUAKE DETECTOR

Attila Szasz, 12-33499 Marshall Rd., Abbotsford, BC, Canada

Filed Oct. 4, 1995, Ser. No. 539,194

Int. Cl.[6] G01V *1/18;* **G08B** *21/00*

U.S. Cl. 73—654 **4 Claims**



1. An earthquake detector for detecting earthquakes comprising, in combination:
a planar rectangular platform fixedly coupleable to a recipient surface for receiving vibrations generated as a result of an earthquake;
a rigid box-shaped housing having an open front, a bottom wall coupled to the platform, a back wall, and a pair of opposed and perforated side walls that are coupled to the top wall, bottom wall, and back wall;
a frame disposed within the housing, the frame having a central axis, an axially aligned planar rectangular horizontal rigid bottom shelf fixedly coupled between the side walls of the housing, an axially aligned planar rectangular horizontal rigid intermediate shelf located above and coupled to the bottom shelf, and an axially aligned planar rectangular horizontal rigid top shelf located above and coupled to the intermediate shelf, and wherein the bottom shelf has a rectangular axial bore disposed therethrough, the intermediate shelf has a circular axial bore disposed therethrough and a dimension smaller than that of the bottom shelf, and the top shelf has a dimension smaller than that of the intermediate shelf, and wherein the positioning of the shelves defines a generally pyramidic arrangement;
alarm means disposed within the housing at a location above the frame for sounding an alarm when vibrated at a level that exceeds about 3.0 on the Richter scale;
spring means coupled between the frame and the alarm means for transferring vibrations to the alarm means when the platform and frame are shaken; and
a rigid counterweight disposed within the housing for damping frame vibration, the counterweight having an upper end coupled to the top shelf, a central shaft portion extended downward through the bores of the shelves, a bumper coupled to the shaft portion at a location between the bottom shelf and the intermediate shelf, and a lower end with a bob secured thereto.

5,633,464

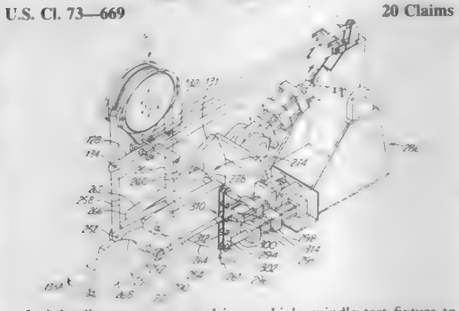
LOADING ASSEMBLY FOR A VEHICLE SPINDLE TEST FIXTURE

Steven R. Haeg, Shorewood; Paul J. Leska, Sr., Coon Rapids; Ricky L. Zieman, Chaska, and Joseph W. Daley, Minnetonka, all of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Continuation of Ser. No. 337,610, Nov. 10, 1994, Pat. No. 5,533,403. This application Feb. 20, 1996, Ser. No. 603,645

Int. Cl.[6] G01M *17/04*

U.S. Cl. 73—669 **20 Claims**



1. A loading apparatus used in a vehicle spindle test fixture to apply forces to a vehicle spindle having a vehicle spindle axis, the loading apparatus comprising:
a wheel adapter housing attachable to the vehicle spindle;
a pair of struts connected to the wheel adapter housing;
a bell crank operably connected to the struts remote from the wheel adapter housing; and
means for displacing the bell crank so as to displace the wheel adapter housing in a direction of displacement of the bell crank while simultaneously causing rotation of the bell crank based upon displacement of the bell crank in the direction of displacement to differentially move the struts to develop a moment on the wheel adapter housing about the vehicle spindle axis.

5,633,465

PIRANI PRESSURE SENSOR

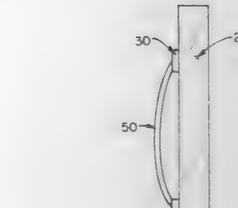
James Kaufmann, 19845 State Rte. P, Newburg, Mo. 65550; Mary G. Moss, 12901 County Rd. 3000, Rolla, Mo. 65401, and Terry L. Brewer, 17971 County Rd. 8440, Rolla, Mo. 65401

Filed Feb. 7, 1995, Ser. No. 384,826

Int. Cl.[6] G01L *21/12*

U.S. Cl. 73—755 **3 Claims**

1. A pirani pressure sensor comprising:
(a) an electrically non-conductive substrate;



(b) means for supplying an electric current affixed to the substrate;
(c) means for receiving an electric current affixed to the substrate and electrically isolated from the supply means; and
(d) an electrically conductive polymer sensor-heater bridge with a first end electrically connected to said supply means and a second end electrically connected to said receiving means, while avoiding contact with the substrate, said bridge is an ion-implanted polymer wherein the sensor can measure pressure between 10^5 to 760 TORR.

5,633,466

MAXIMUM VALUE STORAGE SENSOR

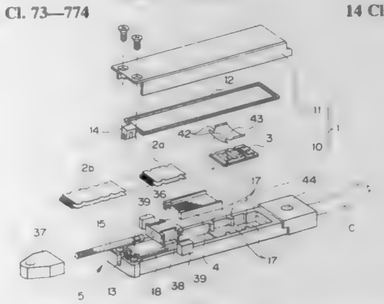
Hiroaki Yanagida, 3-19, Sasu-machi 1-chome, Chofu-shi, Tokyo; Junichi Yoshiike, Nagano-ken; Masato Ichikawa, Nagano-ken; Hirokazu Nakasone, Nagano-ken; Yohichi Kobayashi, Nagano-ken, and Reizi Saitoh, Nagano-ken, all of Japan, assignors to Hiroaki Yanagida, and Nagano Keiki Seisakusho, Ltd., both of Tokyo, Japan

Filed Mar. 25, 1996, Ser. No. 622,473

Claims priority, application Japan, Sep. 29, 1995, 7-252907; Sep. 29, 1995, 7-252908

Int. Cl.[6] G01B *7/16*

U.S. Cl. 73—774 **14 Claims**



1. A maximum value storage sensor for detecting maximum strains in a component member of structures, comprising:
a conductive body having;
a plurality of filamentary conductive elements arrayed in parallel with each having a given electrical resistance, and with each folded part of the conductive elements at the middle part arranged transversally in one line, and
a circuit which gives a correlative resistance change corresponding to the sequential cutoff of the conductive elements;
a cutting means for cutting off the conductive elements located on the the folded part of the conductive body;
a slider for moving the cutting means relative to the conductive body; and
a protective case for housing the conductive body, the cutting means, and the slider with watertightness.

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wherein the protective case is attached to an object component member in a structure so as to induce a relative movement against the conductive body in the slider corresponding to a strain exerted on the component member, the cutting means sequentially cuts off the conductive elements inside the conductive body corresponding to an amount of the relative movement, and the resistance of the conductive body in the cutoff state gives a maximum strain in the component member of the structure.

5,633,467

APPARATUS AND METHOD FOR NON-DESTRUCTIVE TESTING OF STRUCTURES

Peter O. Paulson, Calgary, Canada, assignor to Pure Technologies Inc., Calgary, Canada

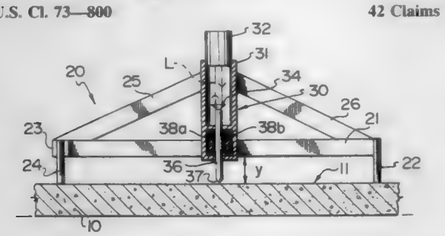
PCT No. PCT/CA94/00302, § 371 Date Dec. 1, 1995, § 102(e) Date Dec. 1, 1995, PCT Pub. No. WO94/29669, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 556,936

Claims priority, application Canada, Jun. 4, 1993, 2097781

Int. Cl.° G01L *11/24*

U.S. Cl. 73—800 **42 Claims**



1. A system for non-destructive testing of the load bearing characteristics of a structure, said system comprising:

an apparatus having a member (**21**) supported away from the surface (**11**) of the structure (**10**) to be tested by one or more supports (**22**, **24**) in contact with the structure;

measuring means (**30**) adapted to measure a quantity which varies with distance between the surface of the structure and a point on the said member remote from any of the said supports, said measuring means including

an interferometer (**32**);

reflecting means (**34**) which move responsively with deformations of the said surface;

said reflecting means and said interferometer together define at least one external optical path which varies with said quantity;

a probe (**36**) urged against the area of the structure to be tested, said probe supported so as to allow said probe to move responsively with deformations of the said area, wherein said reflecting means is attached to said probe, the probe being supported by said member by means of a low friction arrangement selected from the group consisting of:

bushings within a housing attached to said member;

a bendable arm attached to said member;

a flexible spring steel (**70**) attached to said member; and

a pair of pivot arms (**78**, **79**) pivotally connected to said probe, said pivot arms pivotally connected to a second member (**75**) rigidly connected to said support member; and,

means (**40**) for both applying a force on the structure and varying repetitively said force in a predetermined manner, at a location near the area to be tested.

5,633,468

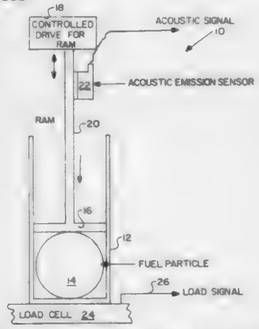
MONITORING OF FUEL PARTICLE COATING CRACKING

Thomas Powers, Lynchburg; Donald M. Stevens, Lovingston, and John E. Coulter, Lynchburg, all of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 13, 1995, Ser. No. 527,603

Int. Cl.° G01N *29/04*

U.S. Cl. 73—801 **5 Claims**



1. A method for acoustically inspecting the coating integrity of the outer layer of a nuclear fuel particle comprising the steps of:

providing a database of load vs. acoustic emission signals for various nuclear fuel particles which were subjected to loads resulting in the cracking of the fuel particles;

determining from the provided database a threshold load level after which cracking of the fuel particles occurs;

subjecting a fuel particle to a controlled load up to the threshold load level;

measuring acoustic output signals during the period when the load exceeds the threshold load; and

comparing the measured acoustic signals to provided database acoustic signals to determine the integrity of the fuel particle.

5,633,469

BONDING LOAD MEASURING DEVICE

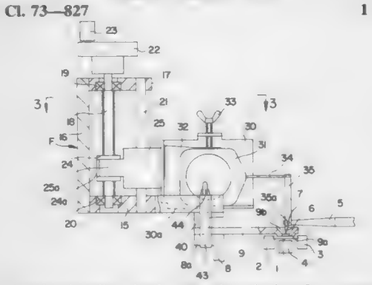
Iwao Takahashi, Musashimurayama, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Continuation of Ser. No. 279,295, Jul. 22, 1994, abandoned. This application Oct. 24, 1995, Ser. No. 547,274

Claims priority, application Japan, Jul. 26, 1993, 5-202485

Int. Cl.° G01N *19/04*

U.S. Cl. 73—827 **1 Claim**



1. A wire bonding load measuring device for measuring a pressing force for bonding a bonding wire to a connection means of a semiconductor device in a wire bonding machine, said device comprising: a frame body detachably coupled to said wire bonding machine; a screw shaft which rotatably is supported on said frame body so that said screw shaft is free to rotate; a turning member for turning said screw shaft by hand; a screw assembly which is screw-engaged with the screw shaft and caused to move up and down by a rotation of said screw shaft; a slider which moves upward and downward together with the screw assembly; a gauge holder fastened to said slider; a tension gauge detachably installed in said gauge holder in such a manner that said tension gauge can be freely installed and removed; a hook attached to a measuring lever of said tension gauge, said hook having an engagement part that is coupled to a bonding arm; and a mounting means for detachably mounting said frame body to said wire bonding machine:

whereby said pressing force for bonding said bonding wire of a capillary mounted on said bonding arm is measured by rotating said screw shaft.

5,633,470

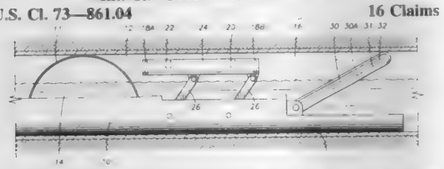
VELOCITY AND HOLDUP DETERMINATION METHOD FOR STRATIFIED GAS-LIQUID FLOW IN HIGHLY INCLINED CONDUITS

Shanhong Song, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Nov. 7, 1995, Ser. No. 556,736

Int. Cl.° G01F *1/68;* **G21B** *47/00*

U.S. Cl. 73—861.04 **16 Claims**



10. A method of determining volumetric flow rates of gas and liquid in a highly inclined conduit wherein said gas and said liquid comprise substantially stratified flow, said method comprising the steps of:

measuring a velocity of said gas;

measuring a level of said liquid within said conduit;

calculating a fractional amount of cross-sectional area of said conduit occupied by said gas and by said liquid;

calculating a velocity of said liquid; and

calculating said volumetric flow rates from said gas velocity measurement and from said calculated fractional amounts of said cross-sectional area and calculated liquid velocity.

5,633,471

PRESSURE SENSITIVE ELEMENT AND A STYLUS PEN WITH PRESSURE SENSITIVE FUNCTION

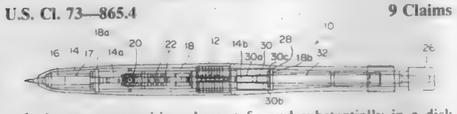
Yasuyuki Fukushima, Saitama, Japan, assignor to Wacom Co., Ltd., Saitama, Japan

Filed Feb. 22, 1995, Ser. No. 392,307

Claims priority, application Japan, Jan. 13, 1995, 7-021162

Int. Cl.° G01L *5/00*

U.S. Cl. 73—865.4 **9 Claims**



1. A pressure sensitive element formed substantially in a disk shape comprising:

a pressure sensitive member, in an annular plate shape,

a pressure transmitting member, in an annular plate shape, for transmitting pressure applied in the axial direction of the pressure sensitive element;

the pressure sensitive member being arranged coaxially with the pressure transmitting member along the axial direction; and

a support member for supporting the pressure sensitive member, the pressure sensitive member being between the support member and the pressure transmitting member, and being arranged coaxially with the pressure transmittable member along the axial direction.

the electrode having an annular plate shape.

the variable resistor being made of pressure sensitive conductive rubber,

the pressure sensitive conductive rubber including non-conductive elastomer, fine carbon spherical particles having a diameter of 1 to 20 μm and hollow elastic microspheres having a diameter of 10 to 150 μm, which particles and microspheres are both dispersed in the elastomer.

5,633,472

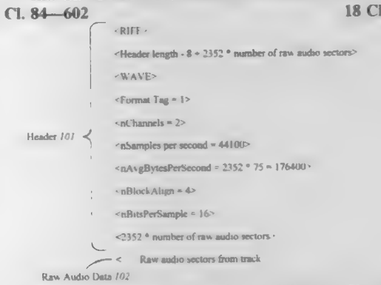
METHOD AND SYSTEM USING PATHNAMES TO SPECIFY AND ACCESS AUDIO DATA AT FIDELITY LEVELS OTHER THAN THE LEVEL AT WHICH THE DATA IS STORED

Frederick J. DeWitt, Kirkland, and Peter B. Stewart, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 21, 1994, Ser. No. 263,136

Int. Cl.° G01H *7/00;* **H03M** *7/00;* **G06F** *17/30*

U.S. Cl. 84—602 **18 Claims**



1. A method in a computer system for providing to a file system a specification of a parameter received from a user of the computer system, the computer system having an application computer program for receiving a pathname to a file from the user and for requesting the file system to perform a service with the file specified by the received pathname, the method comprising:

receiving a pathname having a directory specification that indicates the parameter to be provided to the file system, wherein no file exists in the file system with the created pathname;

sending the received pathname to the file system;

under control of the application computer program,

receiving the sent pathname; and

sending the received pathname to the file system; and

under control of the file system,

receiving the sent pathname;

determining the parameter indicated in the received pathname; and

using the parameter to control performing the service wherein a new parameter can be defined and provided to the file system without modifying the application computer program.

5,633,473

ELECTRONIC MUSICAL INSTRUMENT

Yasuhiko Mori; Yoshihiro Suzuki, and Iwao Hamaura, all of Tokyo, Japan, assignors to Korg Incorporated, Tokyo, Japan

Continuation of Ser. No. 79,777, Jun. 22, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 357,765

Claims priority, application Japan, Jun. 26, 1992, 4-169417; Sep. 16, 1992, 4-246804; Mar. 19, 1993, 5-060332

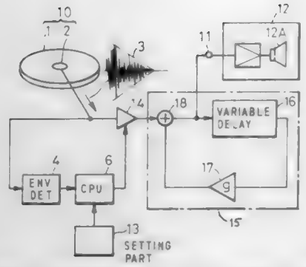
Int. Cl.° G10H *3/14;3/26;7/00*

U.S. Cl. 84—625 **20 Claims**

1. An electronic musical instrument adapted to permit changes in timbre, comprising:

signal source means including at least one natural mechanical vibratory means which vibrates to produce a plurality of

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frequency components over a wide frequency band when a shock is applied to said vibratory means by a person using the musical instrument, and at least one vibration sensor means which detects the vibration of said vibratory means and converts said frequency components into an electric shock signal having characteristics dependent upon the nature of the shock applied to said vibratory means by the person using the musical instrument; and

resonance circuit means which is supplied with said electric shock signal from said signal source means and resonates with selected ones of the frequency components in said electric shock signal to generate a resonance signal;

said resonance signal from said resonance circuit means being output as a sound signal of said electronic musical instrument.

5,633,474

SOUND EFFECTS CONTROL SYSTEM FOR MUSICAL INSTRUMENTS

Max L. Cardey, III, Riverside, Calif., assignor to Sound Ethix Corp., Riverside, Calif.

Continuation-in-part of Ser. No. 85,819, Jul. 2, 1993, abandoned, and Ser. No. 376,034, Jan. 20, 1995. This application Jan. 20, 1995, Ser. No. 376,033

Int. Cl.[6] G10H *1/02;5/00*

U.S. Cl. 84—663 **28 Claims**



1. A sound effects control system adapted to be used in connection with a musical instrument, said instrument generating an output signal for transformation into a musical sound, the system comprising:

a tactile controller mounted externally on said instrument so as to be in a raised positioned on the surface of said instrument, said controller being constructed from a compressible material which can be readily compressed by a musician through a predefined range of physical movement, said controller further comprising a fluid-filled lumen which, upon the compression of said controller, collapses in response to said pressure to define a fluid static pressure; and

a control box in communication with said controller so as to receive said static pressure as a control signal, said control box receiving said output signal from said instrument and modifying it in accordance with said control signal to generate a modified output signal for varying the sound effects of said musical instrument.

5,633,475

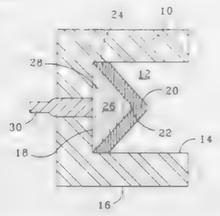
CIRCULATION SHAPED CHARGE

Manmohan S. Chawla, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Mar. 8, 1996, Ser. No. 613,128

Int. Cl.[6] F42B *1/02;12/10*

U.S. Cl. 102—306 **18 Claims**



1. An apparatus actuatable by a detonator to perforate a target, comprising:

a housing;

a recess defined by an inner housing surface within said housing, wherein said recess has an open end and a closed end;

a shaped liner positioned within said recess, wherein said liner has a base end facing said recess closed end and has an apex facing the open end of said recess, and wherein said liner defines an interior volume between said base end and said apex and defines an exterior volume between said liner and said inner housing surface; and

an explosive material, within said liner interior volume, which is activatable by the detonator to expand said liner through said exterior volume and against said inner housing surface to form a peripheral target perforating jet which exits the open end of said recess.

5,633,476

METHOD OF MAKING A PROPELLANT AND EXPLOSIVE COMPOSITION

Anthony Cioffe, 5050 Filtmore St., Hollywood, Fla. 33021

Division of Ser. No. 959,358, Oct. 13, 1992, Pat. No. 5,449,423. This application Jun. 7, 1995, Ser. No. 483,225

Int. Cl.[6] C06B *21/00*

U.S. Cl. 149—109.6 **10 Claims**

1. A process for the preparation of a propellant and explosive composition which process comprises (1) forming an intimate admixture of finely fractured nitrate-containing oxidizing agent and finely fractured potassium perchlorate, and (2) blending the intimate admixture from step (1) with an organic acid or salt thereof until a uniform and homogeneous mixture is obtained, wherein steps (1) and (2) are carried out at a temperature of between 20° C. to −20° C. and at a relative humidity of less than 40%.

5,633,477

ELECTRICALLY CONDUCTIVE PREPREG FOR SUPPRESSING CORONA DISCHARGE IN HIGH VOLTAGE DEVICES

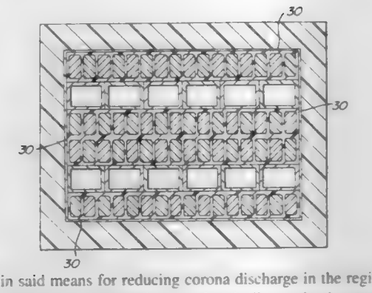
James D. B. Smith, Monroeville; Karl F. Schoch, Jr., Pittsburgh, both of Pa., and Franklin T. Emery, Orlando, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 16, 1994, Ser. No. 242,817

Int. Cl.[6] H01F *27/34*

U.S. Cl. 174—138 E **15 Claims**

15. A high voltage device comprising a first conductor; an insulator in close proximity to said first conductor, wherein a high electrical stress arises when a high voltage difference occurs between said first conductor and said insulator; and means for reducing corona discharge in a region of high electrical stress,



wherein said means for reducing corona discharge in the region of high electrical stress comprises an electrically conductive prepreg, said prepreg including a an electrically conductive fibrous felt saturated with a resin.

5,633,478

COMPOSITE ELECTRICAL INSULATOR AND METHOD OF MANUFACTURING SAME

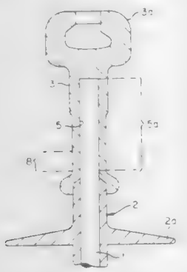
Shigeo Ishino, Niwa-Gun, Japan, assignor to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 210,765, Mar. 21, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 583,959

Claims priority, application Japan, Mar. 25, 1993, 5-066668

Int. Cl.[6] H01B *17/12*

U.S. Cl. 174—179 **9 Claims**



1. A composite electrical insulator comprising:

a rod comprised of a fiber-reinforced plastic material and having an end portion; and

a metal fitting including a sleeve portion having a bore into which said end portion of the rod is inserted, said metal fitting being fixedly secured to said rod provided in said sleeve portion by caulking the sleeve portion;

wherein a portion of the rod that extends along a caulked region of the sleeve portion is locally heated to form a stress-relieved zone in the rod.

5,633,479

MULTILAYER WIRING STRUCTURE FOR ATTAINING HIGH-SPEED SIGNAL PROPAGATION

Naohiko Hirano, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

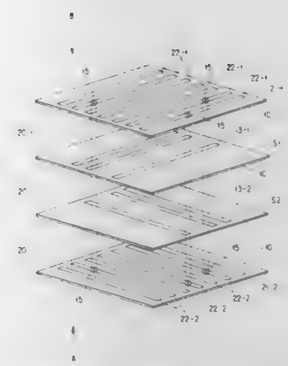
Filed Jul. 25, 1995, Ser. No. 506,518

Claims priority, application Japan, Jul. 26, 1994, 6-174236

Int. Cl.[6] H05K *1/02*

U.S. Cl. 174—255 **15 Claims**

1. A multilayer wiring structure for use in a semiconductor device, comprising:



a potential supply layer including a plurality of parallel strip-shaped conductors, each of which has a predetermined potential; and

a signal wiring layer provided on said potential supply layer, with an insulating layer interposed therebetween, said signal wiring layer including wires which are arranged in parallel with the parallel strip-shaped conductors.

5,633,480

PRINTED WIRING BOARD HAVING A COVER LAY LAMINATED ON A POLYIMIDE RESIN BASE FILM CONTAINING CONDUCTIVE CIRCUITS

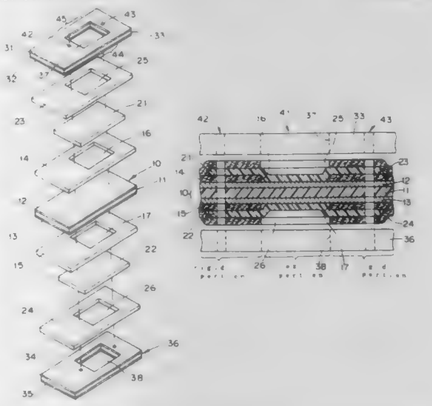
Hiromoto Sato, and Junzaburo Shirai, both of Saitama, Japan, assignors to CMK Corporation, Saitama, Japan

Filed Oct. 4, 1995, Ser. No. 539,336

Claims priority, application Japan, Oct. 4, 1994, 6-264653

Int. Cl.[6] H05K *1/02*

U.S. Cl. 174—255 **11 Claims**



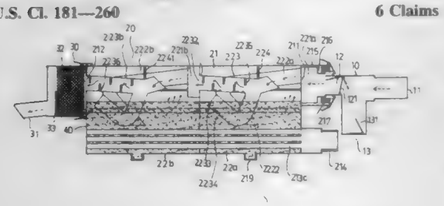
1. A printed wiring board comprising:

a basefilm having at least one conductive circuit formed thereon;

a cover lay laminated onto said basefilm in such a way that a single layer sheet of semirigid polyimide-containing resin material is placed on a surface of said basefilm, where said conductive circuit is provided, and is thermocompressed bonded thereto.

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5,633,481
EXHAUST PIPE CONSTRUCTION
Te-Kuei Chang, No. 2, Ave. 16, Lane 114, Yu Ren Road, Fung Yung, Taichung, Taiwan
Filed Oct. 20, 1995, Ser. No. 546,576
Int. Cl.[6] F01N *1/14*
U.S. Cl. 181—260 **6 Claims**



1. An exhaust pipe for a motor vehicle, said exhaust pipe comprising:

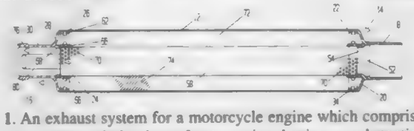
a connecting device disposed at a front end of said exhaust pipe, said connecting device is substantially a tee tube having a first port connected directly to an exhaust port of an engine compartment of the motor vehicle, a second port connected to an intake port of a filter tank, and a third port opening to the outside environment, said second port having an upright gate disposed therein for allowing unidirectional flow of exhaust into said filter tank, and said third port having a horizontal gate for permitting unidirectional flow of ambient air into said connecting device;

said filter tank disposed between said connecting device and a discharge device, said filter tank having a suitably sized space and being an enclosed structure, said filter tank further having said intake port at an upper portion of a front end thereof and a discharge port at a rear end thereof, said intake port connecting said connecting device while said discharge port connecting said discharge device, said space accommodating at least a filter unit and treated alkaline water of a predetermined amount, said front end of said discharge device being provided with a multiplicity of laterally oriented air vents running lengthwise of said filter tank for passage of ambient air into said filter tank device to cool the alkaline water, said filter unit having a collect chamber disposed at a front end thereof and two guide tubes and three fork tubes which are arranged in an alternate manner, said guide tubes and said fork tubes having inlets all disposed and positioned at a baffling frame which is mounted behind said collect chamber, said baffling frame being an L-shaped structure with a multiplicity of tiny holes, said guide tubes being substantially V-shaped and bent downwardly with outlets immersed in the alkaline water, said fork tubes being substantially Y-shaped and having horizontally disposed straight portions with outlets connected to said discharge port at the rear end of said filter tank, said fork tubes further having bent portions immersed in the alkaline water, said bent portions having a plurality of round holes at a lower part thereof such that said bent portions are filled with alkaline water, and said straight portions of said fork tubes further having a plurality of guide plates disposed at an upper wall and a lower wall thereof in an alternate manner; and

said discharge device disposed at a rear end of said exhaust pipe, said discharge device having a front end thereof connected to said filter tank and a plurality of round exhaust tubes at a lower portion of a rear end thereof for discharging exhaust, said discharge device having multiple screens of activated carbon disposed therein and a plurality of guide plates alternately arranged in an upper wall and a lower wall thereof, wherein

exhaust emitted from the engine compartment of the motor vehicle enters via said filter tank into said guide tubes of said filter unit of said filter tank and into the alkaline water where the exhaust is subjected to a first filtration and muffling; the exhaust then escapes into said fork tubes where said guide plates disposed along said straight portions may prolong travel of the exhaust and its sound wave and remove some of the toxic substances carried in the exhaust, and the exhaust subsequently enters said discharge device to be further filtered by the activated carbon and discharged to the outside environment via said exhaust tubes.

5,633,482
MOTORCYCLE EXHAUST SYSTEM
Craig Erion, Santa Ana, and Christopher Samhammer, Newport Beach, both of Calif., assignors to Two Brothers Racing, Inc., Santa Ana, Calif.
Filed Oct. 10, 1995, Ser. No. 540,467
Int. Cl.[6] F01N *7/18*
U.S. Cl. 181—282 **8 Claims**



1. An exhaust system for a motorcycle engine which comprises:

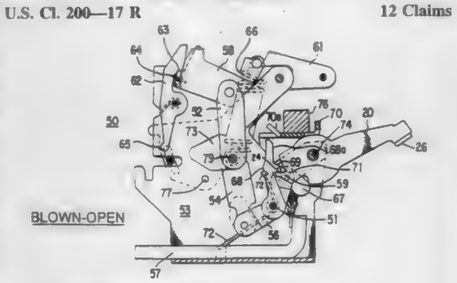
a. an outer tubular imperforate casing having a substantially elliptical cross section throughout its length with a ratio of minor to major axes from 0.70 to 0.85;

b. an inner tubular, perforate sleeve also having a substantially elliptical cross section throughout its length with substantially the same ratio of minor to major axes and concentrically received within said outer casing to form an elliptical annulus therebetween;

c. gas permeable, high temperature resistance inert packing disposed within said elliptical annulus;

d. single-piece inlet and outlet end caps, each having a sleeve with an integral elliptical flange having a dependent ellipsoidal skirt with the opposite ends of said outer casing received over and secured to said skirts, and with each of said end caps having inner support members with the opposite ends of said inner perforate sleeve received against said inner support members, thereby positioning said inner perforate sleeve in concentric alignment to said outer casing.

5,633,483
CURRENT LIMITING CIRCUIT BREAKER OPERATING MECHANISM
Clark L. Oster; Donald R. Venzke, and Eugene W. Wehr, all of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.
Continuation of Ser. No. 779,206, Oct. 18, 1991, Pat. No. 5,416,291. This application May 15, 1995, Ser. No. 440,848
Int. Cl.[6] H01H *3/00*
U.S. Cl. 200—17 R **12 Claims**



1. A circuit breaker comprising:

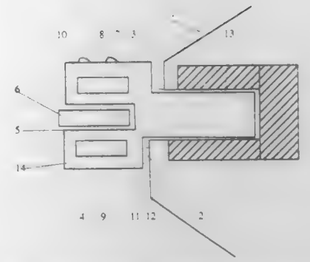
a frame;

a stationary contact;

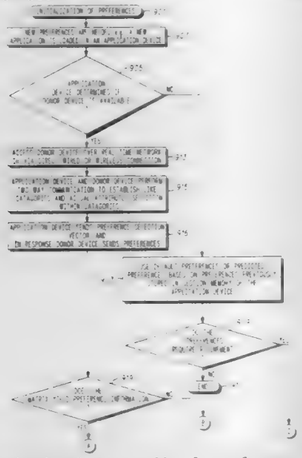
a movable contact;

a blade having a first end and a second end, said first end having said movable contact secured thereto, said blade being rotatable about a pin between a BLOWN OPEN position and a CLOSED position, wherein said movable contact is separated from said stationary contact when said blade is in the BLOWN OPEN position and said movable contact engages said stationary contact when said blade is in the CLOSED position; and

a catcher, pivotally coupled to said frame, being biased into overlapping engagement with said second end of said blade when said blade is in the BLOWN OPEN position.



5,633,484
METHOD AND APPARATUS FOR PERSONAL ATTRIBUTE SELECTION AND MANAGEMENT USING A PREFERENCE MEMORY
William F. Zancho, Hawthorn Woods, and David B. Spitulnik, Evanston, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 29, 1994, Ser. No. 366,209
Int. Cl.[6] G06K *5/00*
U.S. Cl. 235—380 **44 Claims**



1. An application device capable of a preference set-up, said application device comprising:

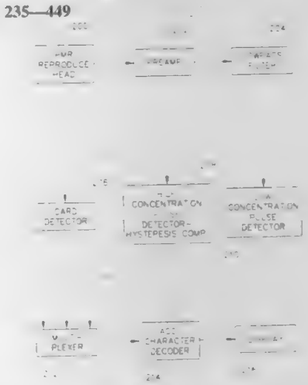
a port for coupling with a donor device having preferences; and

a controller operatively coupled to said port to access the donor device via the port to interrogate the donor device by sending a preference selection vector to the donor device identifying at least an environment of use and an application device type and to receive at least human senses preferences from the donor device in response to the preference selection vector.

5,633,485
ARRANGEMENT WITH A CARD FOR VALUE TRANSACTIONS
Gyorgy Endersz, Bergtorpstigen, Sweden, assignor to Telia AB, Farsta, Sweden
PCT No. PCT/SE94/00559, § 371 Date Mar. 22, 1996, § 102(e) Date Mar. 22, 1996, PCT Pub. No. WO95/02870, PCT Pub. Date Jan. 26, 1995
PCT Filed Jun. 9, 1994, Ser. No. 571,975
Claims priority, application Sweden, Jul. 14, 1993, 9302415
Int. Cl.[6] G06K *5/00*
U.S. Cl. 235—380 **20 Claims**

1. Arrangement with a card which can be used in initiating a value transaction and which can be read in card-reading equipment which provides information and/or cash in dependence on the initiation, and an adapter can be applied or allocated to the card, which adapter can be applied in a corresponding manner to the card in the card-reading equipment, and in that the adapter is arranged to provide an indication of whether or not the card-reading equipment is authentic and has the authority to service the card in question, characterized in that the adapter includes circuits operating with intelligence which wholly or partially participate in an authentication- or authority-determining procedure with respect to the cardreading equipment, the adapter is arranged so that it cannot be swallowed by the card-reading equipment or the terminal including the letter, the adapter comprises first stop surfaces which can interact with corresponding second stop surfaces on the terminal with the aim of making it impossible for the adapter to be drawn into the card-reading equipment and to be retained by the same.

5,633,486
APPARATUS FOR SENSING MAGNETIC FIELDS FROM A WIDE RANGE OF MAGNETIC MEDIA
Gregory A. Burg, San Diego, and Frederick R. Chamberlain, IV, Vista, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 19, 1995, Ser. No. 444,488
Int. Cl.[6] G06K *7/08*
U.S. Cl. 235—449 **7 Claims**



1. Apparatus for sensing magnetic fields from a wide range of magnetic media, comprising:

a magneto-resistive read head for producing a signal representative of stored magnetic data; and

a hysteresis comparator circuit for processing said signal produced by said magnetoresistive element.

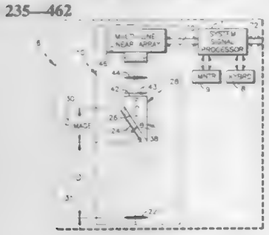
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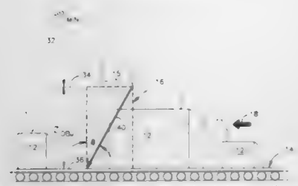
5,633,487

MULTI-FOCAL VISION SYSTEM

Lawrence E. Schmutz, Watertown, and Jeffrey Yorsz, Winchester, both of Mass., assignors to Adaptive Optics Associates, Inc., Cambridge, Mass.

Filed Dec. 15, 1995, Ser. No. 573,105
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 9 Claims





1. A machine vision system, for obtaining a focused optical image of an object appearing within a variable distance horizontal plane of an object field of the system comprising:

a) a camera means, having an optical axis, said camera means for providing a simultaneous plurality of line images, each one of said simultaneous plurality of line images having a field of view (FOV) of a transverse segment of the variable distance horizontal plane and each of said FOVs having a different object length, to provide a system object depth of field (Z_{obj}) having a composite FOV of the variable distance horizontal plane and having a vertical extent that is segment gradated over a range of said different object lengths into a plurality of different distance object focal planes, each said plurality, of different distance object focal planes providing an optical image of objects appearing therein, said camera means comprising;

i) a detector means, having a plurality of photodetector elements linearly arrayed in a plurality of detector lines, for receiving said optical image from said plurality of different distance object focal planes, each of said plurality of detector lines transducing said optical image from an associated one of said plurality of different distance object focal planes into an electrical data signal representative of said optical image appearing within said composite FOV at a distance proximate to one of said different distance object lengths associated with one of said plurality of different distance object focal planes;

ii) a fiber optic faceplate (FOF), located along said optical axis for transmitting the optical image to said detector means, comprising:

an image coherent waveguide having coaxial input and output ends, said input end being positioned in optical registration with said plurality of different distance object focal planes and having a receiving surface whose surface plane is angularly displaced from the variable distance horizontal plane to receive said optical image at said different object lengths therefrom, said output end being positioned in optical registration with said plurality of detector lines;

an optical grating structure mounted coaxially to said receiving surface and comprising a plurality of optically transparent plateau surfaces disposed along a stepped trajectory which is substantially parallel to said receiving surface, each of said plurality of optically transparent plateau surfaces being associated with one of said line images and with a different object length region of said receiving surface to thereby provide an optical signal interface between a related one of said plurality of different distance object focal planes and said corresponding object length region of said receiving surface; and

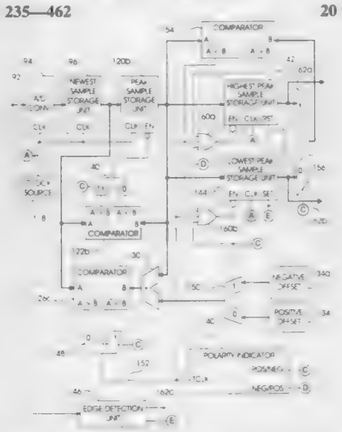
b) signal processing means, responsive to said electrical data signal from each of said plurality of detector lines, for processing to obtain therefrom an electrical data signal content representative of a focused optical image.

5,633,488

METHOD AND APPARATUS TO ENABLE THE HIGH SPEED EVALUATION OF BAR CODE INDICIA

Glenn S. Spitz, Northport, N.Y., assignor to Webscan, Inc., Northport, N.Y.

Filed Dec. 19, 1995, Ser. No. 575,097
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 20 Claims



1. A method for evaluating the quality of a bar code indicia by processing a scan reflectance profile signal representative of elements of the bar code indicia, the scan reflectance profile signal generated by scanning the bar code indicia, said method comprising the steps of:

a) detecting a first edge of the scan reflectance signal as the bar code indicia is being scanned, the first edge indicating the beginning of a first element of the bar code indicia;

b) sampling a portion of the scan reflectance signal representative of said element to produce a sequence of sample values;

c) processing said sequence of sample values of step b) as each sample value is produced to determine a highest positive peak sample value and a lowest negative peak sample value provided by said sequence of sample values associated with said element being scanned and sampled;

d) detecting a next edge of the scan reflectance signal indicating the end of said element and the start of the scanning and sampling of an adjacent element;

e) storing into a peak sample buffer memory said highest positive and lowest negative peak sample values determined in step c); and

f) repeating steps b), c), d) and e) for a plurality of adjacent elements that along with the first processed element form the bar code indicia;

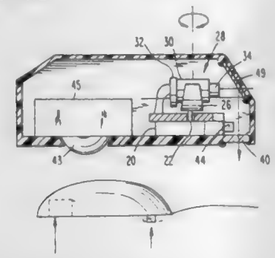
said highest positive peak and lowest negative peak sample values stored in step e) for each element scanned being accessible in said peak sample buffer memory for post-processing to determine at least one figure of merit associated with the quality of the bar code indicia.

5,633,489

COMBINATION MOUSE AND SCANNER FOR READING OPTICALLY ENCODED INDICIA

Paul Dvorkis, Stony Brook, and David Goren, Ronkonkoma, both of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Division of Ser. No. 310,747, Sep. 22, 1994, Pat. No. 5,508,504, which is a division of Ser. No. 100,220, Aug. 2, 1993, Pat. No. 5,369,262, which is a division of Ser. No. 892,889, Jun. 3, 1992, abandoned. This application Feb. 14, 1995, Ser. No. 388,701
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—472 21 Claims



1. An apparatus comprising:

a housing adapted for manual movement across a surface;

means for engaging the surface, said means for engaging being mounted in the housing and extending from a bottom surface of the housing;

movement detection electronics associated with said means for engaging for generating a housing movement signal proportional to movement of the housing across the surface;

a light emitter for emitting light through the bottom surface of the housing;

optical scanning means for automatically causing the light from the emitter to scan across a bar code located on an object surface, said bar code comprising bars and spaces;

a photodetector for sensing light reflected from the bar code located on said object surface and producing an electrical signal representative of the bars and spaces comprising said bar code on the object surface; and

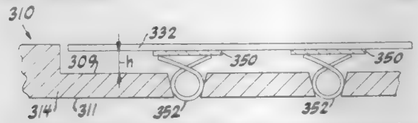
signal processing means for analyzing the bars and spaces represented by said electrical signal and providing a decoded bar code message.

5,633,490

CARD READER WITH SPRING CONTACTS

Gerald W. Vandenengel, Grafton, Mass., assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 342,467, Nov. 21, 1994, Pat. No. 5,517,011. This application Apr. 7, 1995, Ser. No. 418,197
Int. Cl.[6] G06K 19/06
U.S. Cl. 235—492 11 Claims



1. A card reader for reading information stored on a card, said reader comprising:

a housing having a contact surface, said contact surface having a plurality of apertures;

a reader circuit contained within said housing, said reader circuit having a plurality of contact pads; and

a plurality of electrical contacts positioned in said housing and at least partially extending into said apertures;

wherein each said electrical contact comprises a torsion spring having a conductive element that slidably engages one of said contact pads; and

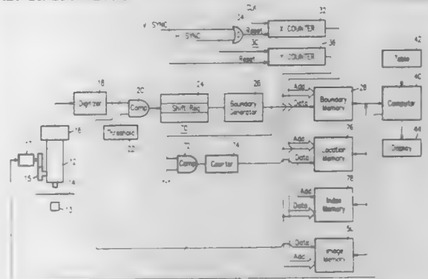
wherein each said torsion spring comprises a continuous conductive element having two linear portions joined by a coiled portion, said two linear portions forming an acute angle therebetween when said contact is in an uncompressed state.

5,633,491

METHOD AND APPARATUS FOR AUTOMATICALLY SELECTING THE BEST FOCAL POSITION FROM A PLURALITY OF FOCAL POSITIONS FOR A FOCUSING APPARATUS

Harvey L. Kasdan, Van Nuys, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Continuation of Ser. No. 374,227, Jan. 18, 1995. This application Aug. 15, 1996, Ser. No. 689,895
Int. Cl.[6] G01J 1/20; G03B 3/10
U.S. Cl. 250—201.3 16 Claims



1. A method of selecting the best focal position from a plurality of focal positions for a focusing means focusing on a field of view forming a plurality of different images of said same field of view, said method comprising the steps of:

a) forming a first electrical image of said field of view;

b) segmenting and digitizing said first electrical image to form a plurality of digitized signals, each digitized signal representative of a pixel in said first electrical image;

c) processing said plurality of digitized signals to determine the values of pixels of said first electrical image at locations defining an invariant optical property of said first electrical image;

d) reverting to steps (a–c) to determine the values of pixels of a second electrical image, different from said first electrical image, at locations defining an invariant optical property of said second electrical image; and

e) adjusting said focusing means in response to said values of pixels of said first and second electrical images determined to obtain the best focal position.

5,633,492

REAL TIME MONITORING OF CHANGES IN OBJECTS OR MEDIA

Petr Nikitin, and Anatolii Beloglazov, both of Moscow, Russian Federation, assignors to Ceram Optec Industries, Inc., East Longmeadow, Mass.

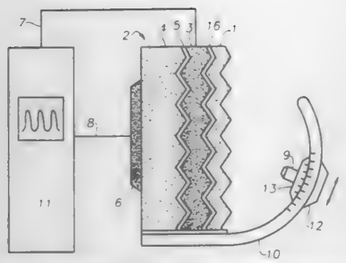
Filed Apr. 17, 1995, Ser. No. 422,805
Int. Cl.[6] H01J 40/14; G01J 1/04; G02B 6/00
U.S. Cl. 250—214 R 18 Claims

1. A method for measuring parameters of an external action on a medium or an object, which comprises the steps of:

a. specifying a reference relationship between a response signal and an external action on a volume of a sensitive material;

b. fabricating a composite structure which comprises a metal film deposited on a semiconducting substrate and said sensi-

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tive material is placed on a side of said metal film facing away from said semiconducting substrate;

c. creating an electrical circuit in said composite structure between said metal film and said semiconducting substrate;

d. illuminating said composite structure with electromagnetic radiation;

e. exciting a surface electromagnetic wave in said metal film;

f. creating a response signal in said composite structure as an electric signal which arises in a circuit between said semiconducting substrate and said metal film;

g. measuring said response signal;

h. comparing said response signal with said reference relationships to determine parameters of said external action acting on said sensitive material.

5,633,493

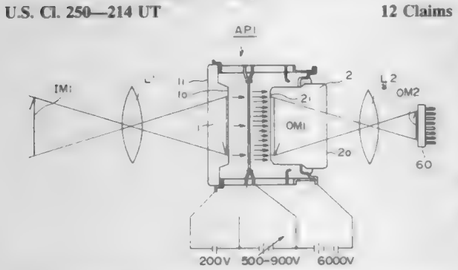
IMAGE TUBE HAVING A YAG CRYSTAL

Hideki Suzuki; Minoru Kondo; Yasushi Watase, and Yoshihito Suzuki, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed May 30, 1995, Ser. No. 453,983

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214 UT **12 Claims**



1. An apparatus for amplifying a light beam incident thereon to output the light beam, comprising:

(A) a housing having first and second openings;

(B) a transparent member for sealing the first opening, said transparent member having,

(a) a light incidence surface applied with an atmospheric pressure, onto which the light beam is irradiated, and

(b) a light exit surface opposing said light incidence surface, from which the light beam emerges;

(C) a photocathode, fixed on said light exit surface, for converting the light beam into electrons;

(D) an electron multiplier, opposing said photocathode, for multiplying the electrons incident thereon; and

(E) a YAG crystal member for sealing the second opening, said YAG crystal member comprising a YAG crystal as a single unitary solid and having

(a) an input surface opposing said electron multiplier and arranged in said housing, and

(b) an output surface opposing said input surface and located outside said housing, on which an atmospheric pressure is applied.

5,633,494

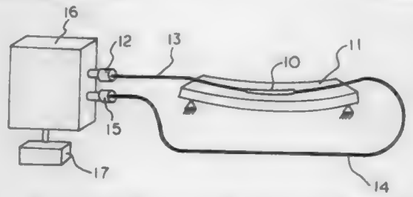
FIBER OPTIC BENDING AND POSITIONING SENSOR WITH SELECTED CURVED LIGHT EMISSION SURFACES

Lee Danisch, P.O.Box 21029, Fredericton, New Brunswick, Canada

Continuation-in-part of Ser. No. 234,953, Apr. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 915,283, Jul. 20, 1992, Pat. No. 5,321,257, which is a continuation-in-part of Ser. No. 738,560, Jul. 31, 1991, abandoned. This application Sep. 22, 1995, Ser. No. 532,327

Int. Cl.[6] H01J *5/16*

U.S. Cl. 250—227.16 **33 Claims**



1. A fiber optic bending and position sensor comprising a fiber optic light guide having a peripheral surface and having at least one curved light emission surface extending for part of the length of said light guide, said at least one curved light emission surface extending at said peripheral surface in a direction selected from (a) extending around said peripheral surface, (b) extending in an axial direction along said peripheral surface at a curved portion of said light guide and including means for injecting a light beam into an end of said light guide and means for detecting said light beam after it has passed the light emission surface zone.

5,633,495

PROCESS FOR OPERATING A TIME-OF-FLIGHT SECONDARY-ION MASS SPECTROMETER

Ewald Niehuis, Senden, Germany, assignor to ION-TOF GmbH, Muenster, Germany

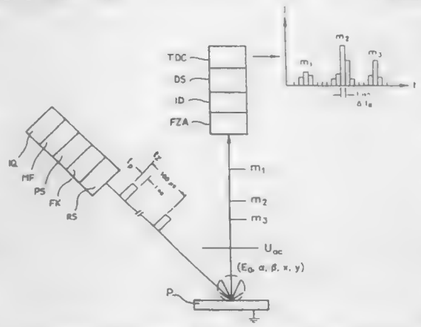
PCT No. PCT/EP95/01767, § 371 Date Feb. 9, 1996, § 102(e) Date Feb. 9, 1996, PCT Pub. No. WO95/31000, PCT Pub. Date Nov. 16, 1995

PCT Filed May 10, 1995, Ser. No. 578,646

Claims priority, application Germany, May 10, 1994, 44 16 413.0

Int. Cl.[6] H01J *49/40;37/252;* **G01N** *23/225*

U.S. Cl. 250—287 **3 Claims**



1. In a method of operating a time-of-flight secondary-ion mass spectrometer for the purpose of analyzing mass spectra wherein several finely structured ranges of mass appear in isolation and widely separated, and wherein

a) the surface of a sample of material is bombarded at regular intervals (cycle times t_z) with primary-ion pulses,

b) secondary ions of different mass are thereby released from the surface and are accelerated to the same level of energy.

c) their mass-dependent time t of flight over a path 1 is measured and their mass determined therefrom, the improvement wherein

d) every primary-ion pulse comprises several subsidiary pulses.

e) every subsidiary pulse is short enough to allow resolution of the fine-structured measurement ranges.

f) the interval t_B between subsidiary pulses is longer than the fine-structured measurement ranges are wide,

g) the number n of subsidiary pulses is selected to ensure that $n \cdot t_B$ is smaller than the distances between the fine-structured measurement ranges, and

h) the n spectra associated with the subsidiary pulses in each fine-structured measurement range are added together.

5,633,496

MASS SPECTROMETRY APPARATUS

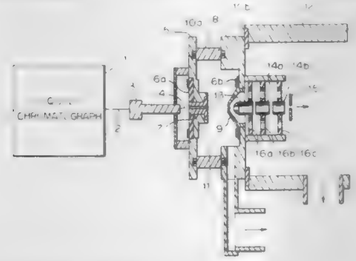
Minoru Sakairi, Kawagoe; Tadao Mimura, Katsuta; Yoichi Ose, Mito; Atsumu Hirabayashi, and Yasuaki Takada, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,767

Claims priority, application Japan, Mar. 17, 1994, 6-046722

Int. Cl.[6] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—288 **21 Claims**



7. A mass spectrometry apparatus comprising:

an ion source which ionizes a sample under atmospheric pressure and outputs the ionized sample;

a differential pumping region, provided with a skimmer, for receiving under vacuum ions in the ionized sample output form said ion source and outputting the received ions through said skimmer;

an ion accelerating region, having a plurality of ion accelerating electrodes, for accelerating under vacuum the ions output from said differential pumping region; and

a mass spectrometer for detecting and analyzing under vacuum the ions from said accelerating region,

wherein said plurality of ion accelerating electrodes are serially arranged between said skimmer and said mass spectrometer, each accelerating electrode having applied thereto a constant voltage which is different from other constant voltages applied to the other accelerating electrodes such that kinetic energy of the accelerated ions are continually increased toward the side of said mass spectrometer.

5,633,497

SURFACE COATING TO IMPROVE PERFORMANCE OF ION TRAP MASS SPECTROMETERS

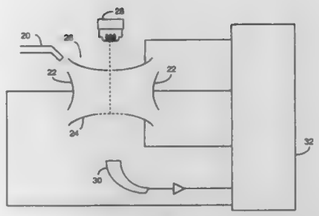
Robert D. Brittain, and Mingda Wang, both of Walnut Creek, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 3, 1995, Ser. No. 552,417

Int. Cl.[6] H01J *49/42*

U.S. Cl. 250—292 **9 Claims**

1. A system for analysis of a sample having constituents, said system comprising a detector having electrodes for defining an interior volume therein and for establishing desired electric fields within said detector interior volume, wherein said electrodes are exposed to said sample constituents and said electrodes comprise an electrical conducting material and an outer surface layer of an inert inorganic non-metallic material deposited on said electrodes.



5,633,498

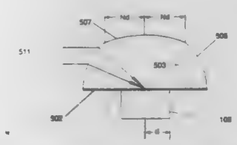
THERMODYNAMICALLY OPTIMAL INFRARED COLLECTOR WITH DIRECTIONAL REDUCTION OF CONCENTRATION

Joseph P. Savicki, Clinton, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 37,860, Mar. 29, 1993, Pat. No. 5,359,189. This application Sep. 14, 1994, Ser. No. 306,846

Int. Cl.[6] G01J *5/08*

U.S. Cl. 250—353 **8 Claims**



1. A collector for receiving infrared communications signals, comprising:

a concentrator for receiving and concentrating signals including infrared communications signals, the concentrator being made of a dielectric material which transmits infrared radiation and having a convex surface of a non-zero curvature which is substantially transparent to infrared radiation; and

infrared radiation detection means for receiving the concentrated infrared communications signals from the concentrator, the convex surface being such that any line which connects any part of the infrared radiation detection means to the surface intersects the surface at an angle less than the critical angle for the dielectric material and the convex surface including a more-curved portion and a less-curved portion, the less-curved portion having a non-zero curvature which is less than a non-zero curvature of the more-curved portion of the convex surface, whereby the concentrator concentrates infrared radiation which strikes the more-curved portion at a direction normal to the more-curved portion at a level of approximately N^2, where N is the index of refraction of the dielectric material, and concentrates radiation which strikes the less-curved portion from a direction normal to the less-curved portion at a level less than N^2.

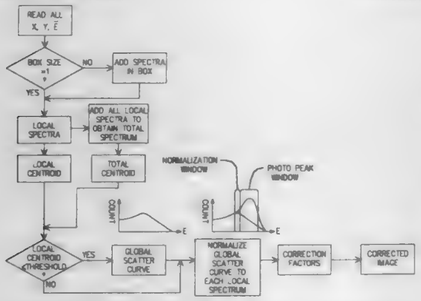
VOL 1198 ISS 4 MY 27 1997 UMI

5,633,499

SCATTER ELIMINATION TECHNIQUE AND APPARATUS IN RADIONUCLIDE EMISSION AND TRANSMISSION IMAGING IN A NUCLEAR CAMERA

Chun B. Lim, Moreland Hills; Barry D. Kline, Cleveland Heights, and Vitaliy Rappoport, Solon, all of Ohio, assignors to Trionix Research Laboratory, Inc., Twinsburg, Ohio

Filed Nov. 21, 1995, Ser. No. 561,273
Int. Cl.[6] G01T *1/17*
U.S. Cl. 250—363.07 **26 Claims**



1. A method for reducing scatter error in transmission or emission images, said method comprising:

collecting a planar photon image formed of counts collected in a matrix of pixels, each pixel including position coordinates and an energy spectrum for photons collected at said position coordinates;

dividing said image into a plurality of local areas, each local area including at least one pixel;

calculating a local energy centroid for each local area;

calculating a total energy centroid for the image;

using the spectra of local areas having respective energy centroids less than a known threshold percentage of the total energy centroid to estimate a local scatter correction factor for each local area; and

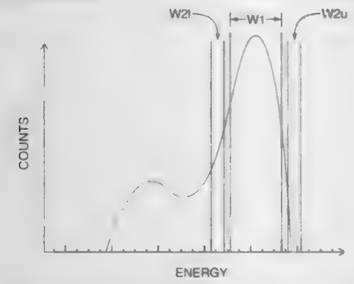
applying respective local scatter correction factors to said image.

5,633,500

SPLIT WINDOW SCATTER CORRECTION

Hugh T. Morgan, Highland Hts.; Gary G. Jarkewicz, Willoughby; Piotr J. Maniawski, Mayfield Hts., and Stephen D. Miller, Chagrin Falls, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Nov. 22, 1995, Ser. No. 561,936
Int. Cl.[6] G01T *1/161*
U.S. Cl. 250—363.07 **26 Claims**



1. A method of scatter correction for use with a gamma camera, the method comprising the steps of:

detecting gamma radiation falling within a first energy range;

producing a first count value indicative of the gamma radiation falling within the first energy range;

detecting gamma radiation falling within a second energy range, the second energy range being below the first energy range and separated in energy therefrom;

detecting gamma radiation falling within a third energy range, the third energy range being above the first energy range and separated in energy therefrom;

producing a second count value representative of the gamma radiation falling within the second and third energy ranges;

estimating, based on the second count value, a scatter count value representative of scattering radiation falling within the first energy range; and

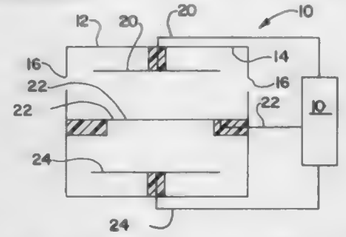
correcting the first count value based on the scatter count value.

5,633,501

COMBINATION PHOTOELECTRIC AND IONIZATION SMOKE DETECTOR

Peerouz Amleshi, Chicago, and Derrick J. Hesser, Hoffman Estates, both of Ill., assignors to Pittway Corporation, Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 475,066
Int. Cl.[6] G01T *1/185;* **G01N** *21/27*
U.S. Cl. 250—381 **21 Claims**



1. An ionization-type smoke detector comprising an ionization chamber with:

first and second spaced electrodes; and

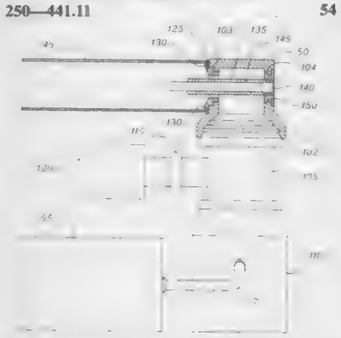
a third electrode, disposed between said first and second electrodes wherein said third electrode is formed of a conductive material and has a non-reflective surface.

5,633,502

PLASMA PROCESSING SYSTEM FOR TRANSMISSION ELECTRON MICROSCOPY SPECIMENS AND SPECIMEN HOLDERS

Paul E. Fischione, Export, Pa., assignor to E. A. Fischione Instruments, Inc., Export, Pa.

Filed Aug. 11, 1995, Ser. No. 515,271
Int. Cl.[6] H01J *37/18;37/30*
U.S. Cl. 250—441.11 **54 Claims**



1. A plasma processing apparatus for removing at least one of contamination and damage from at least one of transmission electron microscopy specimens and specimen holders, comprising:

(a) a plasma chamber into which a preselected process gas is flowed and into which at least one of a specimen and specimen holder are inserted;

(b) an oil-free vacuum system for evacuating said plasma chamber; and

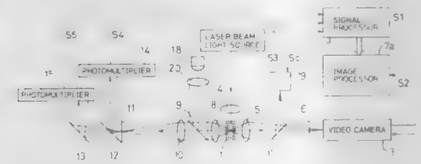
(c) an oscillating field generated adjacent said plasma chamber, said oscillating field and said preselected process gas combining to form a low energy, high frequency plasma within said plasma chamber.

5,633,503

PARTICLE ANALYZER

Tokihiro Kosaka, Kakogawa, Japan, assignor to TOA Medical Electronics Co., Ltd., Hyogo-ken, Japan

Filed Nov. 23, 1994, Ser. No. 346,268
Claims priority, application Japan, Nov. 26, 1993, 5-296936
Int. Cl.[6] G01N *21/64*
U.S. Cl. 250—458.1 **19 Claims**



1. A particle analyzer comprising:

a flow cell for enclosing a sample liquid containing particles in a sheathed flow to form a flat flow of the sample liquid;

exciting light source means for emitting light for exciting fluorescence to irradiate the particle in the flat flow;

an illumination light source for emitting illumination light to irradiate the particle in the flat flow;

a sensor for receiving the illumination light passing through the particle to capture an image of the particle;

monitoring means for determining whether two or more particles are passing through the flat flow imaged onto said sensor; and

capturing means for capturing a fluorescent image of the particle when the particle reaches a predetermined position of the flat flow.

10. A method of analyzing particles in a sample liquid comprising the steps of:

enclosing the sample liquid in a sheathed flow to form a flat flow having a first side and a second side orthogonal to said first side;

irradiating particles in the first side of the flat flow with exciting light;

irradiating particles in the flat flow with illuminating light;

imaging the illuminating light passing through the flat flow onto a sensor;

determining whether two or more particles are passing through the flat flow imaged onto said sensor; and

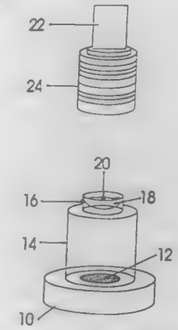
capturing an image of the second side of the flat flow including a fluorescent image of a particle irradiated by the exciting light when the particle reaches a predetermined position.

5,633,504

INSPECTION OF OPTICAL COMPONENTS

Theresa A. Collins, Park Ridge, and L. Lawrence Chapoy, Barrington, both of Ill., assignors to Wesley-Jessen Corporation, Chicago, Ill.

Filed Mar. 30, 1995, Ser. No. 413,327
Int. Cl.[6] G01N *21/64*
U.S. Cl. 250—461.1 **16 Claims**



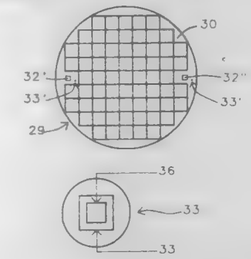
1. A method for inspecting a contact lens or intraocular lens, comprising irradiating the lens with radiation to induce fluorescence in or about the lens, detecting an image of the fluorescing area and analyzing the image for defects.

5,633,505

SEMICONDUCTOR WAFER INCORPORATING MARKS FOR INSPECTING FIRST LAYER OVERLAY SHIFT IN GLOBAL ALIGNMENT PROCESS

Wen-Jye Chung, Shuang-Shi, and Chu-Mei Lee, Chu-Dung, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Division of Ser. No. 536,478, Sep. 29, 1995, Pat. No. 5,545,570.
This application May 20, 1996, Ser. No. 650,666
Int. Cl.[6] H01L *23/544*
U.S. Cl. 250—491.1 **2 Claims**



1. A semiconductor wafer incorporates an inspection pattern on said semiconductor wafer for inspecting to determine the degree of alignment of a first device layer during manufacture of integrated circuits on a semiconductor substrate, comprising

a zeroth layer formed on said substrate patterned with global alignment marks and zeroth layer mother overlay inspection patterns formed in said zeroth layer.

a first layer on said substrate patterned with child overlay inspection patterns patterned in the same position as said zeroth layer mother inspection patterns.

whereby it is possible to determine the overlay shift of said first layer with said mother inspection pattern and said child overlay inspection pattern.

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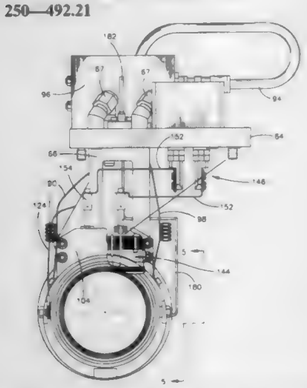
METHOD AND APPARATUS FOR IN SITU REMOVAL OF CONTAMINANTS FROM ION BEAM NEUTRALIZATION AND IMPLANTATION APPARATUSES

Julian G. Blake, Beverly Farms, Mass., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 503,299, Jul. 17, 1995, Pat. No. 5,554,854. This application Aug. 28, 1995, Ser. No. 519,708

Int. Cl.[6] H01J *37/36*

U.S. Cl. 250—492.21 **27 Claims**



1. A self-cleaning ion beam neutralization apparatus comprising a hollow body extending from support structure of an ion beam implantation system,

electron emitting means for emitting high energy electrons to an inner wall of said body to produce low energy secondary electrons or for extracting low energy electrons from a plasma in the interior of said body,

an elongated hollow member adjacent and electrically isolated from said body, and

cleaning means for creating a plasma glow discharge to clean contaminant material from said body and said elongated member.

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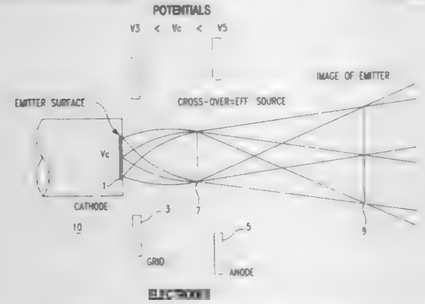
ELECTRON BEAM LITHOGRAPHY SYSTEM WITH LOW BRIGHTNESS

Hans C. Pfeiffer, and Werner Stickel, both of Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 19, 1995, Ser. No. 530,448

Int. Cl.[6] H01J *37/30*

U.S. Cl. 250—492.23 **18 Claims**



1. A projection E-beam system for writing a pattern on a wafer comprising:

an electron source and means for accelerating an electron beam along a system axis comprising an emitting cathode having an emitting cathode area and an accelerating anode that combine to transport a diverging initial electron beam having a current greater than 10 μA and having a brightness less than 10^3/cm^2sr from said emitting cathode toward a reticle carrying a reticle pattern in a plurality of reticle subfields, each having a subfield area;

means for directing said electron beam through an nth subfield in said reticle, whereby said beam is patterned with an nth subfield portion of said reticle pattern; and

magnetic focus means disposed along said system axis and intercepting said electron beam for projecting an image of said nth subfield carried by said electron beam on a wafer to form an nth wafer subfield corresponding to said nth subfield portion of said reticle pattern.

5,633,508

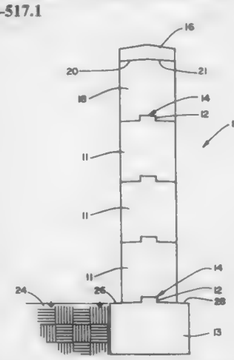
SECONDARY SHIELDING STRUCTURE

Dale J. Schleppenbach, St. Cloud, Minn., assignor to Cold Spring Granite Company, Cold Spring, Minn.

Filed Oct. 12, 1995, Ser. No. 541,247

Int. Cl.[6] G21F *1/02;3/04*

U.S. Cl. 250—517.1 **10 Claims**



1. A method of attenuating nuclear energy emitted from spent nuclear fuel, including the steps of:

providing a source of radiation;

providing a plurality of granite block sections;

forming a wall from the granite block sections which obstructs the source of radiation.

5,633,509

ENERGY SUBTRACTION PROCESSING METHOD AND APPARATUS

Hideya Takeo, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1996, Ser. No. 635,194

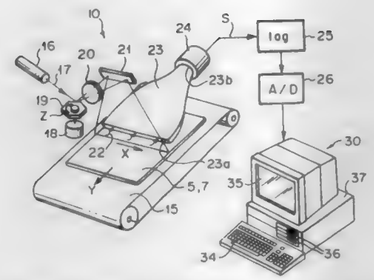
Claims priority, application Japan, Apr. 20, 1995, 7-094709

Int. Cl.[6] G01N *23/04*

U.S. Cl. 250—584 **40 Claims**

1. An energy subtraction processing method, comprising the steps of:

i) forming a plurality of radiation images of a single object respectively with a plurality of kinds of radiation having different energy distributions, the object being constituted of a plurality of tissues exhibiting different levels of radiation absorptivity with respect to the plurality of kinds of radiation having different energy distributions,



ii) obtaining a plurality of image signals respectively representing the plurality of the radiation images, each of the plurality of the image signals being made up of a series of image signal components,

iii) calculating an unsharp mask signal Lu, which corresponds to super-low frequency, from a single image signal, which is among the plurality of the image signals, or from an image signal, which represents the mean-level image of the plurality of the radiation images and is calculated from the plurality of the image signals,

iv) changing the values of parameters, which are used for a subtraction process, in accordance with the unsharp mask signal Lu, and

v) subtracting the image signal components of the plurality of the image signals from one another, which image signal components represent corresponding picture elements in the plurality of the radiation images, with the value of each of the parameters being thus changed for different picture elements in each of the plurality of the radiation images,

wherein the unsharp mask signal Lu represents the median value of the image signal values of all picture elements located within an unsharp mask, which is set in order to obtain the unsharp mask signal Lu.

17. An energy subtraction processing method, comprising the steps of:

i) forming a plurality of radiation images of a single object respectively with a plurality of kinds of radiation having different energy distributions, the object being constituted of a plurality of tissues exhibiting different levels of radiation absorptivity with respect to the plurality of kinds of radiation having different energy distributions,

ii) obtaining a plurality of image signals respectively representing the plurality of the radiation images, each of the plurality of the image signals being made up of a series of image signal components,

iii) carrying out a morphology operation on a single image signal Dorg, which is among the plurality of the image signals, or on an image signal Dorg, which represents the mean-level image of the plurality of the radiation images and is calculated from the plurality of the image signals, said morphology operation being carried out with Formula (1) or Formula (2) by using a structure element Bi, which is larger than a spatial fluctuation range of image signal values corresponding to an image portion representing an unnecessary tissue or noise in the image, and a scale factor λ, a morphology signal Dmor being obtained from said morphology operation,

$$Dmor = Dorg - \max_{i=1,\ldots,n} \{(Dorg \ominus \lambda Bi) \oplus \lambda Bi\} \quad (1)$$

wherein the expression $X \ominus \lambda Y$ represents that λ times of calculations for finding the Minkowski difference are carried out with the structure element Y on the image signal X, and the expression $X \oplus \lambda Y$ represents that λ times of calculations for finding the Minkowski sum are carried out with the structure element Y on the image signal X,

$$Dmor = Dorg - \max_{i=1,\ldots,n} \{(Dorg \oplus \lambda Bi) \ominus \lambda Bi\} \quad (2)$$

wherein the expression $X \oplus \lambda Y$ represents that λ times of calculations for finding the Minkowski sum are carried out with the structure element Y on the image signal X, and the expression $X \ominus \lambda Y$ represents that λ times of calculations for finding the Minkowski difference are carried out with the structure element Y on the image signal X,

iv) changing the values of parameters, which are used for a subtraction process, in accordance with said morphology signal Dmor having been obtained from said morphology operation, and

v) subtracting the image signal components of the plurality of the image signals from one another, which image signal components represent corresponding picture elements in the plurality of the radiation images, with the value of each of the parameters being thus changed for different picture elements in each of the plurality of the radiation images.

5,633,510

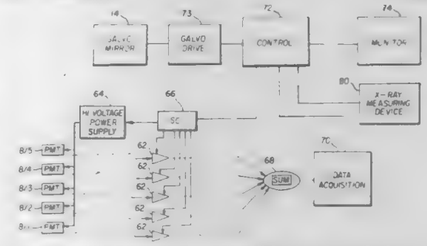
STORAGE PHOSPHOR READER CALIBRATION TECHNIQUE

Michael K. Rogers, Mendon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1995, Ser. No. 559,973

Int. Cl.[6] G03B *42/02*

U.S. Cl. 250—587 **4 Claims**



1. In a storage phosphor reader including a source of a beam of stimulating light, a scanner for repetitively scanning said beam of stimulating light in a line scan direction across a storage phosphor moved in a page scanning direction past said beam of light, and a plurality of photodetectors arrayed in a line scanning direction for converting light emitted by a scanned storage phosphor into an electrical image signal, the method of calibrating said storage phosphor reader comprising the steps of:

exposing a storage phosphor to a uniform field of x-ray radiation;

measuring the exposure value of said uniform field of x-ray radiation at the time of said exposing said storage phosphor with a transportable x-ray radiation measuring device which includes a phosphor for converting said x-ray radiation into a light signal, wherein said phosphor has a responsivity curve which is similar to the responsivity curve of said storage phosphor;

moving said storage phosphor in a page scan direction past said line scanning beam of stimulating light to produce an emitted light signal;

calibrating the signal channel of each of said plurality of photodetectors as a function of said measured x-ray radiation signal so that the image signal read from said storage phosphor by said plurality of photodetectors is accurate; and

measuring the signal produced by said plurality of photodetectors to determine the leading edge of the storage phosphor as taken in the page scan direction;

while overscanning the storage phosphor in a line scan direction, measuring the signal produced by said plurality of photodetectors to determine the front and rear edges of said storage

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phosphor and from said measurements, setting the start and end points of the oscillation of said mirror so that the traverse of said stimulating light on said storage phosphor begins at said front edge and ends at said rear edge;

thereafter, measuring the signal produced by each of said plurality of photodetectors to determine whether each is operating;

adjusting the signal channel of each of said plurality of photodetectors so that the signal produced by said plurality of photodetectors is substantially uniform across a line scan; and

determining a collector profile correction signal to be added to each line scan of a storage phosphor read by said reader.

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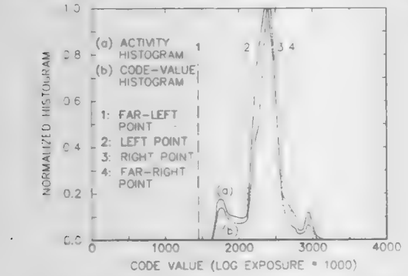
AUTOMATIC TONE SCALE ADJUSTMENT USING IMAGE ACTIVITY MEASURES

Hsien-Che Lee, Penfield; Lori L. Barski, Mendon, and Robert A. Senn, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,756

Int. Cl.[6] G03B *42/02*

U.S. Cl. 250—587 **22 Claims**



18. A method of extracting the important range of code values from an input digital image by computing image activity as a function of code value, comprising the steps of:

(a) processing the digital image on a line by line basis;

(b) calculating image activity at each pixel for each image line;

(c) accumulating the image activity for each code value from each image line to form a cumulative activity histogram as a function of code value; and

(d) locating the highest peak(s) of the activity histogram and one point on each side (the left and the right) of the peak(s) wherein the histogram height falls below certain thresholds; and

(e) extracting the range of code values between the left point and the right point, as identified in the previous step.

5,633,512

SEMICONDUCTOR DEVICE FOR VARYING THE MOBILITY OF ELECTRONS BY LIGHT IRRADIATION

Masahiro Okuda, and Hitoshi Oda, both of Sagamihara, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 704,267, May 22, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,516

Claims priority, application Japan, May 23, 1990, 2-133581; May 24, 1990, 2-134727

Int. Cl.[6] H01L *29/205*

U.S. Cl. 257—20 **66 Claims**

1. A semiconductor device for controlling a current, said device comprising:

a semiconductor member having a source unit and a drain unit; and

a channel unit through which electrons flow between said source unit and said drain unit, said channel unit comprising semiconductor layers including a quantum well layer having a conduction band containing an Γ band and an X band and a plurality of quantum energy levels, and barrier layers adjacent to said quantum well layer, each of said barrier layers having a conduction band containing an Γ band and an X band,

said quantum well layer and said barrier layers being formed such that electrons in said quantum well layer have a different mobility from electrons in said barrier layers, and

said quantum well layer further being formed such that an energy level of the Γ band is lower than that of the X band and said quantum well layer has a first quantum energy level of the Γ band and a second quantum energy level of the Γ band which is higher than the first quantum energy level, and said barrier layers further being formed such that an energy level of the Γ band therein is higher than that of the X band therein and the X band of said barrier layers has an energy level which is higher than the first quantum energy level of said quantum well layer but lower than the second quantum energy level of said quantum well layer,

said quantum well layer being formed so as to be responsive to light such that when light is irradiated onto said quantum well layer at a selected light intensity, a number of electrons in said quantum well layer make transitions from the first quantum energy level to the second quantum energy level and after that the transited electrons flow from said quantum well layer to said barrier layers, said number of transited electrons being in accordance with the selected light intensity and a current flowing through said channel unit varying in accordance with said number of transited electrons, whereby said current is controlled in accordance with the selected light intensity.

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DIAMOND FILM FIELD EFFECT TRANSISTOR

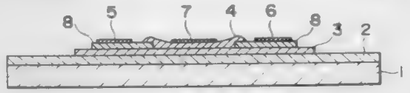
Hisashi Koyama, and Kozo Nishimura, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 24, 1993, Ser. No. 156,638

Claims priority, application Japan, Nov. 24, 1992, 4-313151

Int. Cl.[6] H01L *31/0312*

U.S. Cl. 257—77 **9 Claims**



1. A diamond film field effect transistor comprising:

an active layer formed of p-type semiconducting diamond having a p-type impurity concentration in a range between 10^{17}/cm^3 and 10^{20}/cm^3 and having a film thickness of 0.14 μm or less;

an insulating layer formed on said active layer; and

a gate electrode formed on said insulating layer.

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SEMICONDUCTOR LIGHT EMITTING DEVICE WITH LATTICE-MATCHING AND LATTICE-MISMATCHING

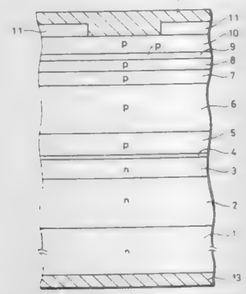
Masashi Shiraishi; Satoshi Ito, both of Kanagawa; Kazushi Nakano, Tokyo; Akira Ishibashi, Kanagawa; Masao Ikeda, Kanagawa; Hiroyuki Okuyama, Kanagawa; Katsuhiro Akimoto, Kanagawa; Tomonori Hino, Kanagawa, and Masakazu Ukita, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 299,655, Sep. 2, 1994, abandoned. This application Dec. 11, 1995, Ser. No. 570,376

Claims priority, application Japan, Sep. 7, 1993, 5-222566; Feb. 9, 1994, 6-015523; May 9, 1994, 6-095097

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—94 **3 Claims**



1. A semiconductor light emitting device comprising:

a substrate;

a first cladding layer on the substrate;

an active layer on the first cladding layer; and

a second cladding layer on the active layer;

wherein the first cladding layer and the second cladding layer are made of II/VI-compound semiconductors including at least one member of the group II elements from the group consisting of Zn, Hg, Cd, Mg and at least one member of the group VI elements from the group consisting of S, Se, Te, and wherein the first cladding layer and the substrate are substantially lattice-matched at a growth temperature due to a difference in thermal expansion coefficients between the first cladding layer and the substrate; and wherein

the first cladding layer and the substrate are lattice-mismatched at an ambient temperature.

5,633,515

SEMICONDUCTOR COMPONENT ARRANGEMENT FOR OVERVOLTAGE PROTECTION OF MOSFETS AND IGBTS

Josef-Matthias Gantioler; Alfred Porst, both of Munich; Jenoe Tihanyi, Kirchheim, and Hans Stut, deceased, late of Groebenzell, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 3, 1995, Ser. No. 398,126

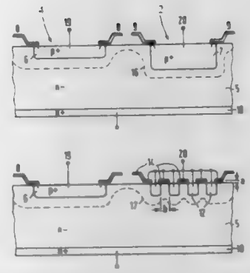
Claims priority, application Germany, Mar. 4, 1994, 44 07 279.1

Int. Cl.[6] H01C *27/02*

U.S. Cl. 257—140 **5 Claims**

1. Semiconductor component arrangement including a semiconductor body for overvoltage protection of semiconductor components controllable by field effect having a freewheeling diode connected thereto, comprising:

said freewheeling diode being integrated into said semiconductor body; and a voltage limiting diode integrated into said semiconductor body, said voltage limiting diode having a breakdown voltage that is lower than a breakdown voltage of said freewheeling diode, said diodes having separate anode terminals.



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LATTICE-MISMATCHED CRYSTAL STRUCTURES AND SEMICONDUCTOR DEVICE USING THE SAME

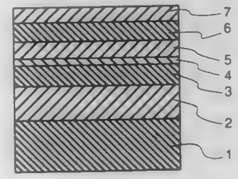
Tomoyoshi Mishima, Shiki; Katsuhiko Higuchi, Kokubunji; Mitsuhiro Mori, Moriya-machi; Makoto Kudo, Hachioji, and Chushiro Kusano, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1995, Ser. No. 506,193

Claims priority, application Japan, Jul. 25, 1994, 6-172252

Int. Cl.[6] H01L *31/0328*

U.S. Cl. 257—190 **32 Claims**



1. A lattice-mismatched crystal structure, comprising:

a substrate crystal;

a semiconductor buffer layer 1 μm thick or less on the substrate crystal; and

a semiconductor film having a lattice constant different from that of the substrate crystal in the direction parallel to a face of the substrate crystal;

wherein the buffer layer includes a plurality of first regions and a plurality of second regions formed in multilayer, the lattice constants of the first regions in a direction parallel to the substrate crystal face increasing toward the semiconductor film in a layer stacking direction;

wherein the first regions have a thickness sufficient to relax the lattice strain resulting from lattice mismatch with the substrate crystal;

wherein the second regions are formed on and in contact with the semiconductor-film-side of respective ones of the first regions, the lattice constants of the second regions in the direction parallel to the substrate crystal face being constant in the layer stacking direction, and

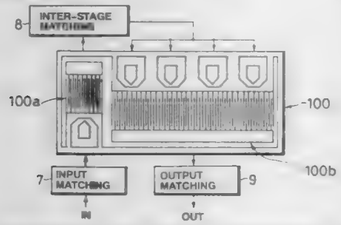
wherein the lattice constant of the buffer layer in the direction parallel to the substrate crystal face is continuous in the layer stacking direction.

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5,633,517
SEMICONDUCTOR DEVICE CONSTITUTING MULTI-STAGE POWER AMPLIFIER

Yasuo Saitoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 285,526, Aug. 4, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 571,034
Claims priority, application Japan, Aug. 5, 1993, 5-212082
Int. Cl.[6] H01L *29/80*
U.S. Cl. 257—277 **7 Claims**



1. A semiconductor device having a multi-stage power amplifier, comprising:

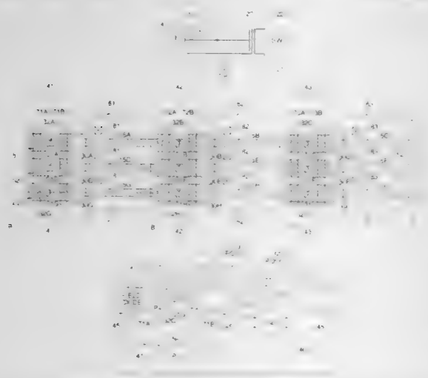
a plurality of transistors disposed on a chip, for forming said multi-stage power amplifier, and arranged such that an input stage with an input terminal, having at least one of said plurality of transistors, is aligned so that an input signal propagates along a first line aligned in a first direction, and an output stage with an output terminal, having at least two of said plurality of transistors, is aligned so that an output signal propagates along a second line aligned in a second direction opposite to said first direction, said second line being parallel to said first line; and

a ground metallization layer formed on said chip and short-circuited with a ground terminal of each of said transistors of said input stage and said output stage.

5,633,518
NONVOLATILE REPROGRAMMABLE INTERCONNECT CELL WITH FN TUNNELING AND PROGRAMMING METHOD THEREOF

Robert U. Broze, Santa Cruz, Calif., assignor to Zycad Corporation, Fremont, Calif.

Filed Jul. 28, 1995, Ser. No. 508,914
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—314 **30 Claims**



1. In an integrated circuit having a plurality of circuit nodes and a plurality of programmable interconnects, each programmable interconnect capable of connecting said circuit nodes responsive to a programmed state, each programmable interconnect comprising

a first MOS transistor having a first and second source/drain connected to a first and second circuit node respectively, a floating gate and a control gate for turning said first MOS transistor off and on responsive to charge on said floating gate; and

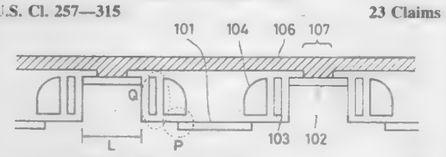
a tunneling device having a floating gate connected to said floating gate of said first MOS transistor and coupled to a programming/erase line through a tunneling oxide layer, a control gate capacitively coupled to said floating gate and to a floating gate of another tunneling device of another programmable interconnect, and means for controllably inhibiting tunneling through said oxide layer;

whereby said programmable interconnect is selectively programmable without programming said another programmable interconnect.

5,633,519
NON-VOLATILE FLOATING GATE SEMICONDUCTOR DEVICE

Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 957,095, Oct. 7, 1992, Pat. No. 5,350,937. This application Jun. 30, 1994, Ser. No. 268,448
Claims priority, application Japan, Oct. 8, 1991, 3-290720
Int. Cl.[6] H01L *29/788*
U.S. Cl. 257—315 **23 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a lower surface and a protrusion extending from the lower surface, said protrusion having a side surface;

a first impurity region formed in an upper portion of said protrusion;

a second impurity region formed within said lower surface of the semiconductor substrate adjacent to said protrusion;

a floating gate electrode adjacent to said side surface of the protrusion, said floating gate electrode being insulated from said protrusion by a first insulating layer interposed therebetween, said floating gate electrode and said first insulating layer extending from said first impurity region to and not beyond an intermediate portion of said side surface of the protrusion, said intermediate portion of the side surface being disposed between the lower surface of the semiconductor substrate and the upper portion of the protrusion; and

a gate electrode formed adjacent to said floating gate electrode with a second insulating layer therebetween, said gate electrode extending beyond a lower edge of said floating gate electrode between said first and second impurity regions.

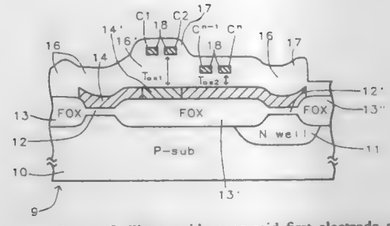
5,633,520
NEURON MOSFET WITH DIFFERENT INTERPOLYSILICON OXIDE

Chung-Cheng Wu, Toucheng, and Ming-Tzong Yang, Hsin Chu, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 299,266, Sep. 1, 1994, Pat. No. 5,554,545. This application Jun. 21, 1996, Ser. No. 667,609
Int. Cl.[6] H01L *27/108;29/76;29/788*
U.S. Cl. 257—315 **7 Claims**

1. A MOSFET device with a plurality of conductors capacitively coupled to a first polysilicon electrode, the device comprising:

a first electrode including a highly doped zone:



a thinner layer of silicon oxide over said first electrode and a thicker layer of silicon oxide over said highly doped zone of said first electrode;

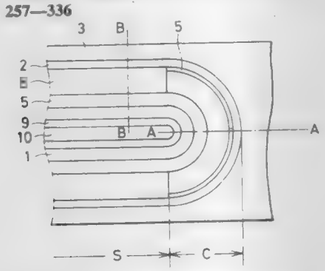
at least one first upper electrode over said first electrode on said thinner layer of silicon oxide; and

at least one second upper electrode over said first electrode on said thicker layer of silicon oxide.

5,633,521
ENHANCEMENT OF BREAKDOWN VOLTAGE IN MOSFET SEMICONDUCTOR DEVICE

Yukimasa Koishikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 3, 1996, Ser. No. 657,435
Claims priority, application Japan, Jun. 1, 1995, 7-135000
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—336 **8 Claims**



1. A MOSFET semiconductor device comprising a p-type substrate,

said p-type substrate including:

an n-type drain region;

an n⁻-type drain region located adjacent to said n-type drain region;

an n+-type drain layer located within said n-type drain region and at a surface of said p-type substrate;

a p-type top layer located adjacent to said n⁻-type drain region and at a surface of said p-type substrate;

an n+-type source region; and

a p+-type back gate,

a layout pattern constituted of said regions and layers including at least a pair of said regions and layers having elongated portions substantially parallel to each other and which change direction along said surface so as to form a curved portion,

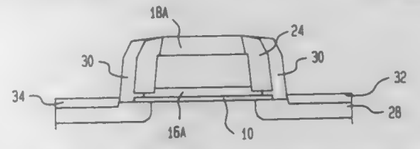
said n⁻-type drain region covering therein said p-type top layer therewith in an area proximate to said curved portions of said layout pattern,

said n-type drain region being formed so that said n-type drain region overlaps said p-type top layer in said elongated portions of said layout pattern and does not overlap said p-type top layer in said area proximate to said curved portions of said layout pattern.

5,633,522
CMOS TRANSISTOR WITH TWO-LAYER INVERSE-T TUNGSTEN GATE

Fernand Dorleans, Wappingers Falls; Liang-Choo Hsia, Stormville; Louis L. C. Hsu, Fishkill; Gerald R. Larsen, Cornwall, and Geraldine C. Schwartz, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 125,357, Sep. 21, 1993, abandoned, which is a continuation of Ser. No. 900,869, Jun. 18, 1992, abandoned. This application May 15, 1996, Ser. No. 648,457
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—344 **12 Claims**



1. An MOS transistor with an inverted-T refractory metal gate, comprising in combination:

a semiconductor substrate;

a gate insulating layer on said semiconductor substrate;

a first refractory metal layer formed on said insulating gate layer comprising a material formed to have a low density relative to the density of a second refractory metal layer;

said second refractory metal layer formed on said first refractory metal layer comprising said material formed to have a high density relative to said low density of said first refractory metal layer;

said first refractory metal layer extending laterally beyond said second refractory metal layer; and

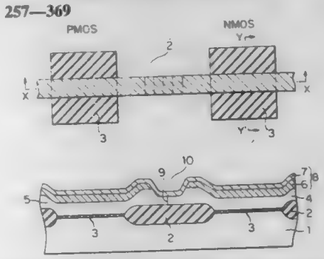
a source and drain region in said semiconductor substrate extending under said first refractory metal layer,

wherein said first refractory metal layer and said second refractory metal layer comprise a same material.

5,633,523
COMPLEMENTARY MIS SEMICONDUCTOR DEVICE OF DUAL GATE STRUCTURE HAVING A SILICIDE LAYER INCLUDING A THINNED PORTION

Selichi Kato, Kakogawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,825
Claims priority, application Japan, Apr. 28, 1994, 6-114762
Int. Cl.[6] H01L *23/48;29/76*
U.S. Cl. 257—369 **5 Claims**



1. A complementary MIS semiconductor device of a dual gate structure comprising:

a P-channel MIS transistor having a gate electrode of a P-type polysilicon layer, the p-channel MIS transistor including an active region;

an N-channel MIS transistor having a gate electrode of an N-type polysilicon layer, the N-channel MIS transistor including an active region;

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the polysilicon layers of both transistors being connected to each other directly or through an i-type polysilicon layer on a field oxide film for element separation; and

a continuous silicide layer formed on at least a portion of the polysilicon layers of both transistors; and

the complementary MIS semiconductor device being constructed such that a thickness of said silicide layer in a partial region on the field oxide film is thinner than that on the active region of each of the MIS transistors.

5,633,524

GATE ARRAY SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

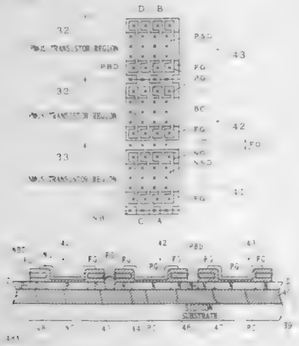
Kimio Ueda; Hiroyuki Morinaka, and Koichiro Mashiko, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 580,609

Claims priority, application Japan, Aug. 10, 1995, 7-204375

Int. Cl.[6] H01L *27/10;27/01;29/76*

U.S. Cl. 257—369 **20 Claims**



1. A gate array semiconductor, integrated device, comprising:

an insulating layer;

a semiconductor layer being formed on an upper major surface of said insulating layer;

N-type and P-type MOS transistors, having gate electrodes in gate length directions and gate width directions corresponding to a first direction and a second direction being perpendicular to said first direction respectively, being adjacently formed in said semiconductor layer and on its upper major surface through an isolation region;

said isolation region being a P-type layer being formed in said semiconductor layer along said first direction;

a P-type extended layer having one end surface being bonded to one end surface being perpendicular to said second direction of a channel region of said N-type MOS transistor and another end surface being bonded to one end surface being perpendicular to said second direction of said isolation region, and being formed in said semiconductor layer;

an N-type extended layer having one end surface being bonded to one end surface being perpendicular to said second direction of a channel region of said P-type MOS transistor and another end surface being bonded to another end surface being perpendicular to said second direction of said isolation region, and being formed in said semiconductor layer;

a first oxide film covering said semiconductor layer, said isolation region and said N-type and P-type MOS transistors;

a subsource line being formed on an upper major surface of said first oxide film along said first direction and being at a potential being lower than a source potential;

another subsource line being formed on a portion being in said upper major surface of said first oxide film, and being just above said isolation region along said first direction;

a second oxide film covering said subsource line and said another subsource line; and

a main source line being positioned above said another subsource line, being formed on an upper major surface of said second oxide film along said second direction, having a line width being set to be larger than a line width of said subsource line and being a potential being lower than said source potential,

said isolation region and said another subsource line being connected with each other through a contact portion being provided in said first oxide film,

said main source line and said subsource line being connected with each other through a contact portion being provided in said second oxide film,

said main source line and said another subsource line being connected with each other through another contact portion being provided in said second oxide film.

5,633,525

LATERAL FIELD EFFECT TRANSISTOR

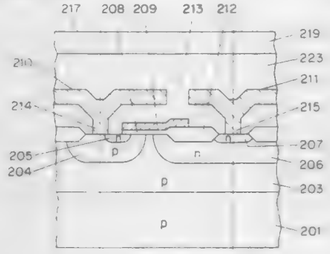
Akio Kitamura, and Naoto Fujishima, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1995, Ser. No. 551,353

Claims priority, application Japan, Nov. 11, 1994, 6-277294

Int. Cl.[6] H01L *29/74;29/76*

U.S. Cl. 257—381 **7 Claims**



1. A lateral field effect transistor comprising:

a semiconductor substrate;

a source region comprising source region stripes formed on said semiconductor substrate;

a drain region comprising drain region stripes formed on said semiconductor substrate and spaced laterally from said source region stripes;

a source electrode comprising a first source electrode layer connected to said source region via at least one source contact and a second source electrode layer straddling said source region stripes and said drain region stripes, said first source electrode layer and said second source electrode layer being separated by an inter-layer insulation film and connected via at least one source connection hole formed through said inter-layer insulation film; and

a drain electrode comprising a first drain electrode layer connected to said drain region via at least one drain contact and a second drain electrode layer straddling said source region stripes and said drain region stripes, said first drain electrode layer and said second drain electrode layer being separated by an inter-layer insulation film and connected via at least one drain connection hole formed through said inter-layer insulation film.

5,633,526

PHOTODIODE ARRAY AND METHOD FOR MANUFACTURING THE SAME

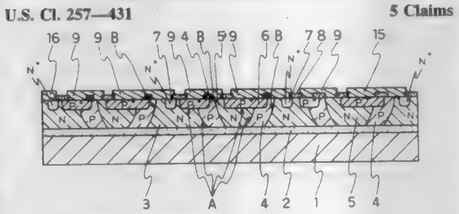
Koichi Kudo, and Yasuo Aki, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 272,311, Jul. 7, 1994. This application Apr. 24, 1995, Ser. No. 429,296

Claims priority, application Japan, Nov. 1, 1992, 4-303754

Int. Cl.[6] H01L *29/76;27/14;27/01*

U.S. Cl. 257—431 **5 Claims**



1. A photodiode array comprising:

an insulating film;

a semiconductor layer of a first conductivity type provided on said insulating film;

a positive electrode and negative electrode formed on said semiconductor layer; and

a plurality of pn junctions formed in series in said semiconductor layer between said positive and negative electrodes;

wherein said pn junctions are formed by a diffusion layer of a second conductivity type formed in said semiconductor layer and another diffusion layer of the first conductivity type formed in said diffusion layer, so as to terminate on said insulating film, and

wherein said pn junctions are formed concentrically and connected in series between said positive and negative electrodes.

5,633,527

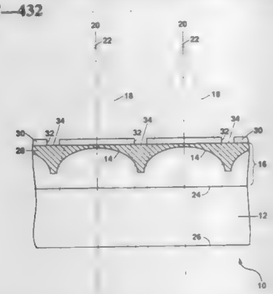
UNITARY LENS SEMICONDUCTOR DEVICE

Kevin L. Lear, Albuquerque, N.M., assignor to Sandia Corporation, Albuquerque, N.M.

Filed Feb. 6, 1995, Ser. No. 384,089

Int. Cl.[6] H01L *29/205;27/142;* **G02B** *6/42;* **H01S** *3/19*

U.S. Cl. 257—432 **50 Claims**



42. A unitary lens semiconductor device comprising:

(a) a transparent substrate having a semiconductor layer thereon; and

(b) a lens formed in the semiconductor layer below a substantially planar outer surface of the layer and further having a curved shape defined, at least in part, by a continuous or stepwise variation in composition of the layer in a direction normal to the outer surface of the layer.

5,633,528

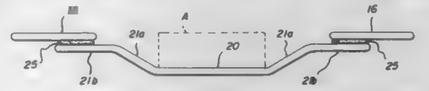
LEAD FRAME STRUCTURE FOR IC DEVICES WITH STRENGTHENED ENCAPSULATION ADHESION

Donald C. Abbott, Norton, Mass., and Raymond A. Frechette, North Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 248,800, May 25, 1994, Pat. No. 5,429,992. This application Apr. 10, 1995, Ser. No. 419,224

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **11 Claims**



1. A lead frame structure for manufacturing an IC device, comprising:

a lead frame base including a plurality of leads, said lead frame base having a die pad aperture, and at least one first tie bar portion which extends toward said aperture and

a die pad forming a mounting surface for receiving at least one chip, wherein said mounting surface is smaller than said at least one chip, such that perimeter surfaces of said at least one chip are substantially exposed when said at least one chip is mounted on said mounting surface, and including at least one second tie bar portion which extends from said mounting surface and corresponds to said at least one first tie bar portion, wherein said die pad is affixed to said lead frame base and said mounting surface is positioned in said aperture by an affixing portion between said at least one first tie bar portion and said corresponding at least one second tie bar portion and wherein said affixing portion is tape.

5,633,529

RESIN SEALING TYPE SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME

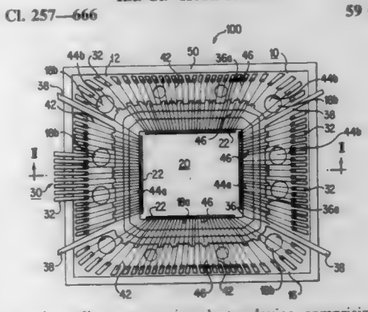
Tetsuya Otsuki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 461,442

Claims priority, application Japan, Jul. 13, 1994, 6-183854; Mar. 30, 1995, 7-098127

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **59 Claims**



1. A resin sealing type semiconductor device, comprising:

an element mounting member having an element mounting surface for mounting a semiconductor element, said semiconductor element bonded to said element mounting surface of said element mounting member;

a plurality of leads disposed on and insulated from said element mounting member, said plurality of leads being separated from said semiconductor element;

a frame lead disposed around a periphery of said semiconductor element and separated from said semiconductor element and said element mounting surface, said frame lead being continuous around said periphery of said semiconductor element;

a plurality of wires including at least one of first wires electrically connecting a first number of said leads to a first number

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of electrodes of said semiconductor element, second wires electrically connecting a second number of said leads to said frame lead, and third wires electrically connecting said frame lead to a second number of said electrodes of said semiconductor element; and

a resin sealing said element mounting member, said semiconductor element, said plurality of leads and said frame lead.

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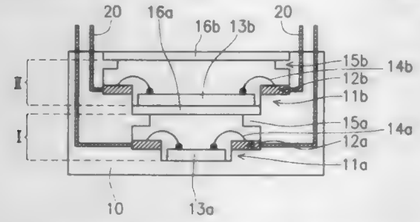
MULTICHIP MODULE HAVING A MULTI-LEVEL CONFIGURATION

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,555

Int. Cl.[6] H01L *23/02*

U.S. Cl. 257—685 **12 Claims**



1. A semiconductor multichip module configuration, comprising:

a module template having an interior portion and at least two chambers which communicate with each other and are arranged vertically in said interior portion;

a plurality of parallel pins extending outwardly from said module template;

a stage at the bottom of each chamber;

a plurality of leadframes formed over each stage and connected to predetermined ones of said parallel pins;

a support member formed around the upper end of each chamber;

at least two semiconductor chips having predetermined circuits and conductive pads, each chip being adhered to a respective one of said stages;

metal wires connecting said conductive pads of each chip with corresponding ones of said leadframes; and

a covering plate for each chamber sealed on its respective support member.

5,633,531

COMPRESSION GLASS LEAD-IN ARRANGEMENT

Wolfgang Hornig, Eckenhaid, Germany, and Walter Findl, Vinenna, Austria, assignors to Diehl GmbH & Co., Germany, and Electrovac, Fabrikation elektrotechnischer Spezialartikel Gesellschaft M.B.H., Austria

Continuation of Ser. No. 79,983, Jun. 18, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,578

Claims priority, application Germany, Jun. 18, 1992, 42 19 953.0

Int. Cl.[6] H01L *23/04;23/02*

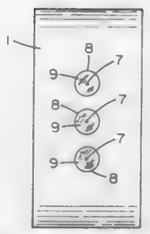
U.S. Cl. 257—699 **11 Claims**

1. A housing formed of a metal body and having an opening therethrough and a conductor extending through said opening, and having a lead-in arrangement comprising a glass bead sealing said opening wherein said conductor passes through said glass bead, wherein said lead-in arrangement is produced by:

(A)

(i) heating said metal body to a high temperature; and

(ii) placing said glass, in molten form, and said conductor in said opening such that said molten glass seals said opening and said conductor passes through said molten glass and



through said opening, wherein the high temperature to which said metal body is heated is at least as high as the temperature of said molten glass, and the temperature of said molten glass is less than or equal to the solidus temperature of the metal, wherein said glass has a coefficient of expansion which is lower than the coefficient of expansion of said metal, and said metal body is formed of a metal alloy comprising 0.1– 10% Ni, 0.1–12% Sn, and 0–0.4% Mn by weight, with the balance being Cu which possesses a hardening effect upon cooling, and

(B) cooling said metal body and said molten glass in said opening, at a rate which is less than the rate at which the expansion characteristic of glass is altered, and which is high enough to permit said metal to exhibit said hardening effect upon cooling.

5,633,532

SEMICONDUCTOR DEVICE INTERCONNECTION

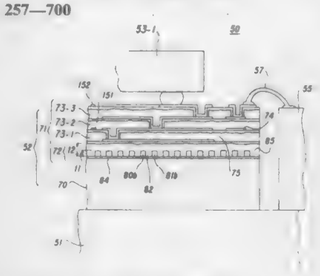
Tuyosi Sohara; Hirohisa Matsuki, and Toshiyuki Kuramochi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 21, 1995, Ser. No. 426,074

Claims priority, application Japan, Jun. 23, 1994, 6-142034

Int. Cl.[6] H01L *23/053*

U.S. Cl. 257—700 **8 Claims**



1. A semiconductor apparatus comprising:

a semiconductor element; and

a substrate having a substrate base and a thin-film multilayer interconnection layer formed on the substrate base, said thin-film multilayer interconnection layer having:

insulating layers; and

interconnection patterns, said insulating layers and said interconnection patterns being alternately layered;

wherein each of said insulating layers comprises:

a first insulating layer part substantially covering said interconnection pattern; and

a second insulating layer part provided directly on the first insulating layer part to substantially cover the first insulating layer part;

wherein said thin-film multilayer interconnection layer is in the absence of an empty space; and a surface of the second insulating layer part is more flat than that of the first insulating layer part, and each of said interconnection patterns is arranged on the surface of said second insulating layer part.

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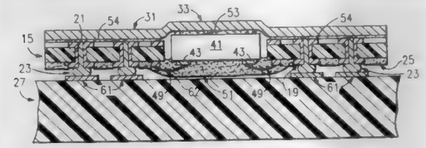
ELECTRONIC PACKAGE WITH THERMALLY CONDUCTIVE SUPPORT MEMBER HAVING A THIN CIRCUITIZED SUBSTRATE AND SEMICONDUCTOR DEVICE BONDED THERETO

Frank E. Andros, Binghamton; James R. Bupp, Endwell; Michael DiPietro, Vestal, and Richard B. Hammer, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 507,719, Jul. 26, 1995, Pat. No. 5,561,323. This application Jun. 27, 1996, Ser. No. 671,426

Int. Cl.[6] H01L *23/10;23/34*

U.S. Cl. 257—707 **26 Claims**



1. An electronic package comprising:

a substantially rigid, thermally conductive support member;

a thin, flexible circuitized substrate including a dielectric member having a first layer of circuitry positioned on a first surface thereof and a second layer of circuitry positioned on a second surface thereof opposite said first surface, said thin, flexible circuitized substrate including a plurality of conductive through-holes located within said dielectric member and interconnecting said first and second layers of circuitry, said thin circuitized substrate being directly bonded to said support member in an electrically insulative manner, including along the portion of said dielectric member having said plurality of through-holes therein;

a semiconductor device bonded to said support member in a thermally conductive manner at a location relative to said first and second layers of circuitry of said circuitized substrate, said semiconductor device including a surface having a plurality of electrical contact sites thereon for being electrically coupled to said first of said layers of said circuitry of said circuitized substrate, said contact sites and said first layer of circuitry of said thin circuitized substrate electrically coupled to said contact sites occupying a substantially coplanar relationship; and

a plurality of solder elements positioned on selected portions of said first layer of said circuitry and electrically coupled to said contact sites of said semiconductor device.

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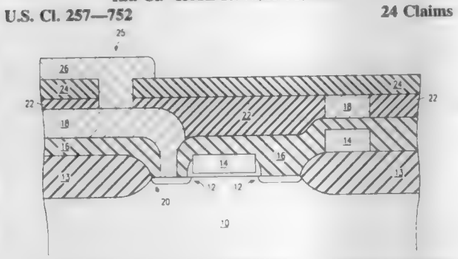
INTEGRATED CIRCUIT WITH ENHANCED PLANARIZATION

Alex Kalnitsky, Grenoble, France, and Yih-Shung Lin, Plano, Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 411,495, Mar. 28, 1995, abandoned, which is a division of Ser. No. 163,043, Dec. 6, 1993, Pat. No. 5,435,888. This application Jul. 15, 1996, Ser. No. 679,946

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—752 **24 Claims**



1. An integrated circuit manufactured by a method comprising the steps of:

(a.) providing a partially fabricated integrated circuit structure which has an uneven topography;

(b.) applying and curing spin-on glass, to form a first planarizing dielectric layer;

(c.) depositing dielectric material from the vapor phase, to form a second dielectric layer directly over said first layer;

(d.) applying and curing spin-on glass, to form a dielectric stack including a third dielectric layer directly over said first and second layers;

(e.) substantially removing said dielectric stack from high points of said partially fabricated structure while leaving said dielectric stack in other portions of said partially fabricated structure;

(f.) deposition of an interlevel dielectric;

(g.) etching holes in said interlevel dielectric in predetermined locations; and

(h.) depositing and patterning a metallization layer to form a desired pattern of connections, including connections through said holes.

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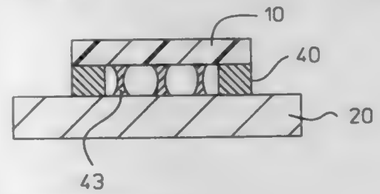
SPACING CONTROL IN ELECTRONIC DEVICE ASSEMBLIES

Clinton C. Chao, 51 Waterside Cir., Redwood City, Calif. 94065; Timothy V. Harper, 11260 West Hickory Hill Ct., Boise, Id. 83704; John C. Wynbeek, 10471 Pharlap Dr., Cupertino, Calif. 95014, and Eric S. Schneider, 3276 E. Boulder Hights, Boise, Id. 83712

Filed Jan. 27, 1995, Ser. No. 379,229

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—778 **9 Claims**



1. An apparatus comprising:

a substrate having a plurality of conductive pads;

an electronic device connected to the substrate; the electronic device having a plurality of solder humps on a surface, the electronic device being electrically and mechanically attached to the substrate such that at least one solder bump is in contact with one of the conductive pads of the substrate; and

a film spacer pedestal for controlling the spacing between the substrate and the electronic device, the pedestal physically attached to the substrate, the pedestal physically separated from the solder bumps, the pedestal having a substantially flat face, the flat face being in contact with the electronic device and the spacing being defined by the height of the pedestal.

5,633,536

PRESS CONTACT TYPE SEMICONDUCTOR DEVICE

Nobuhisa Nakashima, Fukuoka; Yuzuru Konishi, Tokyo, and Tokumitsu Sakamoto, Fukuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1995, Ser. No. 567,524

Claims priority, application Japan, Jun. 20, 1995, 7-153484

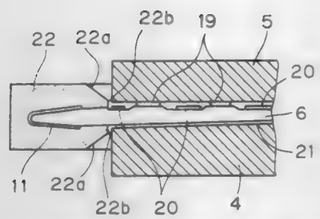
Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—785 **20 Claims**

1. A press contact type semiconductor device, comprising:

a semiconductor substrate, being provided with a P-N junction in its interior, having first and second major surfaces;

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a ring-shaped insulator being formed along an edge of the overall periphery and said first and second major surfaces of said semiconductor substrate;

a first heat compensator being in contact with said first major surface; and

a second heat compensator being in contact with said second major surface,

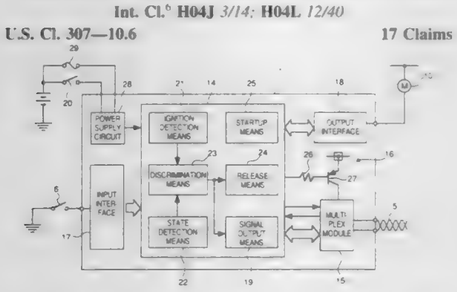
said insulator being provided on its inner periphery with an inner peripheral tapered portion and a vertical portion, being continuous to said tapered portion, forming an inner peripheral diameter and being substantially perpendicular to said semiconductor substrate.

5,633,537

MULTIPLEX TRANSMISSION APPARATUS

Yasuhiko Kurata, Higashihiroshima, and Yuichi Akiyama, Kure, both of Japan, assignors to Mazda Motor Corporation, and Naldec Corporation, Hiroshima, Japan

Filed Jul. 18, 1994, Ser. No. 274,717
Claims priority, application Japan, Jul. 19, 1993, 5-177965
Int. Cl.[6] H04J *3/14;* **H04L** *12/40*
U.S. Cl. 307—10.6 **17 Claims**



1. A multiplex transmission apparatus which comprises a plurality of communication nodes connected to each other via a multiplex transmission path, and a plurality of electrical components to be controlled by the plurality of communication nodes, each of the plurality of communication nodes being set in one of an operative state, an inoperative state, and an operable state, comprising:

first detection means for detecting an ON/OFF state of an ignition key switch;

means for monitoring operative/inoperative states of the electrical components;

means for setting a predetermined reference time in accordance with the monitoring result;

second detection means for detecting a change in state of the electrical components within the reference time; and

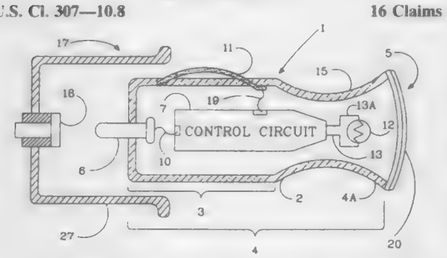
control means for, when the ignition key switch is in an OFF state, and it is detected that the state of the electrical components has not changed within the reference time, setting the communication node associated with control of the electrical components in the inoperative state.

5,633,538

ACTIVE AND ILLUMINATED INFORMATION MODULE FOR MOTOR VEHICLE CIGAR/CIGARETTE LIGHTER OR OTHER POWER RECEPTACLES

Gene A. Nickerson, 8523 N. 50th Pl., Paradise Valley, Ariz. 85253-2006

Filed Oct. 7, 1992, Ser. No. 957,155
Int. Cl.[6] B60L *1/00*
U.S. Cl. 307—10.8 **16 Claims**



1. In a cigarette lighter receptacle in a vehicle, said receptacle being shaped and dimensioned to seat removably a conventional vehicle cigarette lighter and including

a ground member, and

an electrical contact,

the improvement comprising an attachment adapted for manual insertion and removal from said receptacle and including

(a) a hollow body having

(i) a lower portion shaped and dimensioned to be seated in said receptacle, and

(ii) an upper portion;

(b) a light transmitting lens mounted in said upper portion;

(c) indicia formed on said lens such that said indicia is visible to a passenger in the vehicle when said lower portion is seated in said receptacle;

(d) a light source mounted inside said body, said light source when activated generating light which passes through said lens and outwardly from said body to illuminate said lens and said indicia;

(e) a control circuit mounted inside said body and connected to said light source;

(f) a first contact mounted on said body and, when said lower portion is seated in said receptacle, extending from said ground member to said circuit to electrically interconnect said ground member and said circuit;

(g) a second contact mounted on said body and, when said lower portion is seated in said receptacle, extending from said electrical contact of said receptacle to said circuit to electrically interconnect said electrical contact of said receptacle and said circuit;

said control circuit

including sensor means for monitoring the voltage in said first and second contacts to determine when the motor vehicle is started; and,

when said circuit determines that the motor vehicle is started, activating said light source to generate light to illuminate said lens.

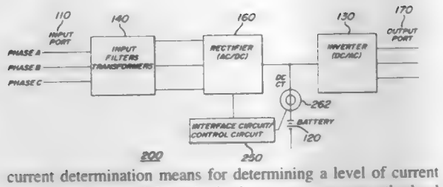
5,633,539

UNINTERRUPTIBLE POWER SUPPLY INPUT POWER WALK-IN

Frederick Tassitino, Jr., Wake Forest, N.C., assignor to Exide Electronics Corporation, Raleigh, N.C.

Filed Jan. 27, 1995, Ser. No. 379,344
Int. Cl.[6] H02J *7/00*
U.S. Cl. 307—64 **19 Claims**

19. An input power walk-in circuit for an uninterruptible power supply ("UPS") having an input port for receiving power, a backup power source, and an output port for providing power to a load, the circuit comprising:



current determination means for determining a level of current of power supplied from the backup power source to the load on the output port, including:

means including a current sensor for generating a current signal whose voltage level is representative of the level of current of the power supplied from the backup power source to the load on the output port, and

linear reduction means including a voltage divider circuit for linearly reducing the voltage level of the current signal generated by the current transformer; and

means for controlling a level of power supplied to the load on the output port from the input port as a function of the determined level of current of power supplied from the backup power source to the load on the output port so that the level of the power supplied to the load on the output port from the input port is gradually increased over a predetermined interval of time, including:

means for comparing the determined level of current of power supplied from the backup power source to the load on the output port to a desired level of current,

means for increasing a level of power supplied to the load on the output port from the input port if the determined level of current of power supplied from the backup power source to the load on the output port is greater than the desired level of current, and

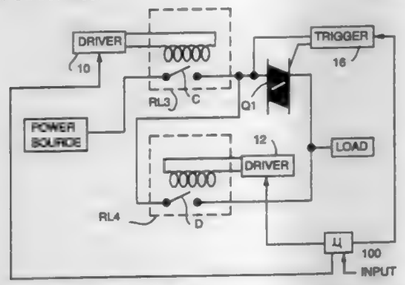
means for decreasing a level of power supplied to the load on the output port from the input port if the determined level of current of power supplied from the backup power source to the load on the output port is less than the desired level of current.

5,633,540

SURGE-RESISTANT RELAY SWITCHING CIRCUIT

James M. Moan, Allentown, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Jun. 25, 1996, Ser. No. 673,666
Int. Cl.[6] H02H *7/22*
U.S. Cl. 307—126 **26 Claims**



1. A switching circuit for switching power between a power source and a load, said switching circuit comprising:

(a) first and second electrically controllable switches connected in series to electrically connect and disconnect said power source and said load;

(b) a third electrically controllable switch connected in parallel with said series connected first and second electrically controllable switches;

(c) control means connected to said first, second and third switches; said control means being operable for sequentially closing said first, second and third switches in that order to connect said power source to said load;

(d) said control means being operable for thereafter opening said first and second switches and retaining said first and second switches open until an opening sequence is begun;

(e) said control means being further operable for reclosing said first switch and said second switch while said third switch remains closed to initiate an opening sequence;

(f) said control means being further operable for opening said third switch after reclosing said first and second switches during said opening sequence; and

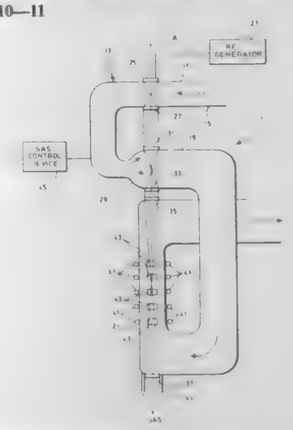
(g) thereafter reopening said first and second switches.

5,633,541

MAGNETOHYDRODYNAMIC ELECTRIC GENERATOR

James C. Hayes, Brossard, Canada, assignor to Hu L. Foo, Brossard, Canada

Filed Feb. 8, 1995, Ser. No. 385,708
Int. Cl.[6] H02K *44/00;* **G21D** *7/02*
U.S. Cl. 310—11 **16 Claims**



1. A magnetohydrodynamic (MHD) electric generator comprising:

(a) a S-shaped duct having one end acting as an inlet for a laser gas mixture fed under pressure at a temperature higher than 1100° C., said duct also having three spaced-apart portions that extend across and along a common axis,

the first one of said portions being close to the inlet and extending across the common axis, said first portion being devised to define a first laser-generating zone in which the laser gas mixture is made to laser, said first portion being also devised to form a first optical cavity comprising a first pair of opposite mirrors that are aligned with the common axis and adjusted to focus the coherent light that they collect, one of said mirrors of said first pair, viz. the one adjacent the second one of said portions, being a partial mirror to allow the coherent light generated and collected in the first zone to be transmitted toward the second one and third one of said portions along the common axis;

the second one of said portions being located past a divergent nozzle downstream of the first portion and also extending across the common axis, said second portion defining a second laser generating zone in which the laser gas mixture is made to laser by expansion, said second portion being also devised to form a second optical cavity comprising a second pair of opposite mirrors that are aligned with the common axis and adjusted to focus the coherent light that they collect, both of said mirrors of said second pair being partial mirrors to allow the coherent light collected in the first zone to enter the second zone and increase the coherent

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light collected in said second zone, and then the so-Increased coherent light to be transmitted to the third portion of the duct;

the third one of said portions being aligned with the common axis and oriented to face the first and second portions of said duct, said third portion being devised to form a third, axially elongated optical cavity comprising a third pair of mirrors that are aligned with the common axis and adjusted to focus the coherent light coming from the first and second zones into an axially positioned spot which ionized the gas mixture passing through said third portion and thus converting the same to a plasma, one of said mirrors of said third pair, viz. the one adjacent the second portion of the duct being a partial mirror to allow said coherent light to enter into the third portion;

a plurality of permanent magnets extending along said third portion of the duct, said magnets having positive and negative poles symmetrically positioned with respect to the common axis; and

a plurality of electricity collecting plates extending along said third portion of the duct, said plates being grouped in pairs symmetrically positioned with respect to the common axis so as to be perpendicular to both the gas mixture flowing through the third portion of the duct along the common axis and the magnets, each of said plates being connectable to a load and supporting a winding also connectable to said load.

whereby, in said third portion of the duct, electricity is generated in a very efficient manner by conventional magnetohydrodynamic action and simultaneously by Faraday effect.

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MINIATURE MOTOR

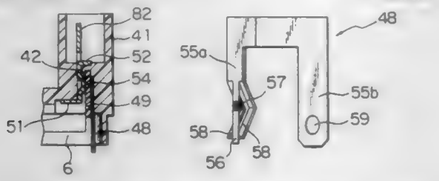
Toshiya Yuhi; Takahiro Ohtake; Masahiko Kato, and Ryouichi Someya, all of Chiba-ken, Japan, assignors to Mabuchi Motor Co., Ltd., Matsudo, Japan

Filed Jun. 10, 1994, Ser. No. 259,031

Claims priority, application Japan, Jun. 15, 1993, 5-143215; Apr. 11, 1994, 6-071860

Int. Cl.[6] H02K *11/00;* **H01R** *4/26;11/20*

U.S. Cl. 310—40 MM **6 Claims**



1. A miniature motor comprising a case made of a metallic material, formed into a bottomed hollow tubular shape, and having a permanent magnet fixedly fitted to the inner circumferential surface thereof, a rotor comprising an armature facing said permanent magnet and a commutator, and a case cap fitted to an open end of said case, and having brushes making sliding contact with said commutator and a pair of input terminals electrically connected to said brushes one of directly and via other electrically conductive members said rotor being rotatably supported by bearings provided on the bottom of said case and said case cap, characterized in that lanced structure formed from the group of a lanced and raised lug, and lanced and raised projections, are provided near tips of legs of a retaining member made of an electrically conductive material; retaining parts are formed by bending the tips of said retaining member legs to the same side as said lanced structure; and the size of a gap between a projection provided on a surface of said input terminals and a surface of said lanced structure of said retaining member in free state is made smaller than the thickness of a positive temperature coefficient resistor so that said positive temperature coefficient resistor can be inserted into said gap, and when said positive temperature coefficient resistor is moved in extracting direction, said lanced structure cuts into the surface of electrodes of said positive temperature coefficient resistor; a tip of said retaining member leg is formed into a fork shape by dividing into at least two prongs, with a lanced structure provided on any one prong, and a retaining part is formed by bending another prong to the same side as said lanced structure.

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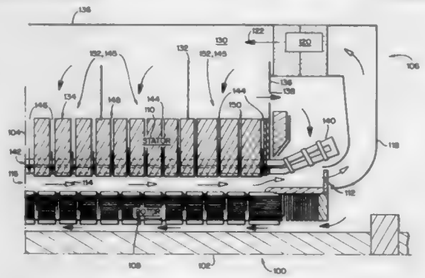
PRESSURE EQUALIZER AND METHOD FOR REVERSE FLOW VENTILATED ARMATURE IN POWER GENERATOR

Emil D. Jarczynski, Scotia; Rebecca A. Nold, Clifton Park, and William H. Boardman, IV, Burnt Hills, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Dec. 12, 1994, Ser. No. 353,867

Int. Cl.[6] H02K *9/00*

U.S. Cl. 310—59 **22 Claims**



1. An electromagnetic generator comprising:

a stator concentric to a rotor having stator core packets annularly arranged around the rotor, and radial stator ducts sandwiched between the stator core packets, each of the stator ducts extending radially inward from an outer stator surface to an inner stator surface proximate to the rotor,

wherein each stator duct has a cross-sectional duct area, and a distribution of cross-sectional duct areas for the ducts is substantially non-uniform across the length of the stator, and each duct has an duct inlet at the outer stator surface and a duct outlet at the inner stator surface, and

a cooling gas circulation flow wherein cooling gas enters the duct inlets at the outer stator surface, flows through the ducts to extract heat from the stator core packets, exits the duct outlets at the inner stator surface, passes through a gap between the inner stator surface and the rotor, and a cooling gas flow resistance between the inlet to each duct and a gas outlet from the gap is substantially uniform for all ducts.

5,633,544

WHEEL MOTOR

Naoya Toida; Yoshiaki Kotani; Yoshihiro Iijima; Junji Okuda, and Yoshihisa Hirose, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1994, Ser. No. 299,594

Claims priority, application Japan, Sep. 28, 1993, 5-264199

Int. Cl.[6] H02K *11/00*

U.S. Cl. 310—67 R **16 Claims**

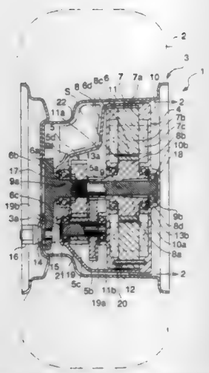
1. A wheel motor being installable on an object having a main body, comprising:

a wheel having an inner peripheral portion defining a central space therein:

an electric motor arranged in said central space of said wheel, for generating a rotating output for rotatively driving said wheel:

a gear reducer arranged in said central space of said wheel;

said electric motor including a housing fixed to said main body, a stator secured to said housing and having an inner periphery defining a central space therein; a rotor rotatably fitted in said central-space of said stator, for generating said rotating output



during rotation thereof, and an output shaft connected through said gear reducer to said rotor to be rotatively driven thereby, said output shaft being drivingly connected to said wheel, for transmitting said rotating output from said rotor through said gear reducer to said wheel, said gear reducer including a final stage gear having an axial through hole formed therein in coaxial relation to an axis of rotation of said final stage gear, and at least one reduction gear means interposed between said rotor and said final stage gear and disposed in eccentricity with said output shaft; and

an electric circuit arranged in said central space of said wheel and mounted at said housing of said electric motor so as to be separated from said gear reducer, for driving electric motor.

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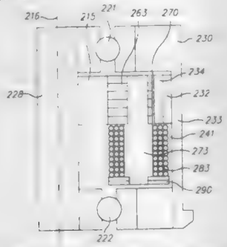
DISK DRIVE IN-HUB RADIAL-GAP SPINDLE MOTOR WITH COILS GENERATING AXIAL FIELDS

David W. Albrecht, and Michael A. Moser, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1995, Ser. No. 569,404

Int. Cl.[6] H02K *1/00;1/12*

U.S. Cl. 310—67 R **7 Claims**



1. A brushless direct current motor comprising:

a base;

a shaft having a central axis extending from and fixedly attached to the base;

a lower ring bearing having radially inner and outer races with its inner race fixedly attached to the shaft;

an upper ring bearing having radially inner and outer races with its inner race fixedly attached to the shaft, the upper and lower bearings being spaced apart a fixed distance along said central axis;

a hub mounted to the outer races of the lower and upper bearings and rotatable about a central rotational axis generally coincident with said central axis of the shaft, the hub having a radially outer hub rim, the outer hub rim, the shaft and the spaced-apart lower and upper bearings defining a generally annularly shaped cavity located between the shaft, the outer hub rim and the spaced-apart bearings;

a magnetically segmented ring magnet attached to and located radially inwardly of the outer hub rim within said cavity for generating magnetic fields in a generally radial direction;

a plurality of stator teeth circumferentially spaced around the rotational axis, each stator tooth having a radially outer face spaced from and located radially inwardly of the ring magnet so as to define a radial gap;

a like plurality of magnetically permeable posts, each post extending in an axial direction generally parallel to the rotational axis and being connected to a corresponding stator tooth;

a like plurality of conductive coils, each coil being wound around a corresponding post for generating a magnetic field in an axial direction through its corresponding post and its corresponding stator tooth when conducting electrical current;

a ring flux guide of magnetically permeable material interconnecting adjacent posts in a generally circumferential direction; and

a support disk attached to the shaft, the support disk being attached to and supporting said interconnected stator teeth, posts, coils and ring flux guide within said cavity; whereby magnetic flux from the ring magnet is directed radially inwardly across the radial gap to the face of a first stator tooth, axially through the post and coil on said first stator tooth, circumferentially by the ring flux guide to the post and coil on a second stator tooth adjacent said first stator tooth, axially through the post and coil on said second stator tooth, radially outwardly from the face of said second stator tooth across the radial gap to the ring magnet.

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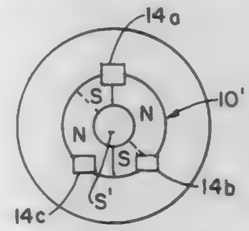
MAGNETIC SENSOR FOR SWITCHED RELUCTANCE MOTOR

Gary E. Horst, Manchester, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 30, 1993, Ser. No. 175,516

Int. Cl.[6] H02K *11/00;* **G01B** *7/30*

U.S. Cl. 310—68 B **17 Claims**



1. In a polyphase dynamoelectric machine having a stator assembly and a rotor assembly including a rotor shaft on which a rotor is mounted for rotation with respect to the stator, the improvement comprising sensing means for continuously sensing the position of the shaft and including a magnetic ring installed on the rotor shaft and rotatable therewith and a sensor for sensing changes in the magnetic field produced by the ring as it rotates with the shaft, the magnetic ring having a set of magnetic poles with the position of the circumference of the ring subtended by one of the poles being a greater portion of the circumference than that subtended by the other pole, the magnetic ring including at least one pole set for each rotor pole, each pole set subtending an equal portion of the ring circumference with one pole of each pole set subtending a larger segment of that portion of the circumference subtended by the pole set than the other pole with the larger pole segment subtending an arcuate segment equal to (0.70–0.55)(360/the number of rotor poles) and the smaller pole segment subtending an arcuate segment equal to (0.30–0.45)(360/the number of rotor poles), the machine having N phases where N is a positive

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integer greater than one, and the sensing means includes a plurality of sensors the number of which is a function of the number of machine phases.

5,633,547

MAGNETIC BEARING

Timothy A. Coombs, Cambridge, England, assignor to Rolls-Royce, plc, London, England

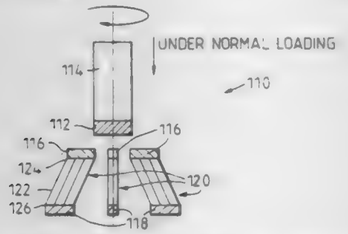
PCT No. PCT/GB95/00378, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/23298, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 23, 1995, Ser. No. 537,675

Claims priority, application United Kingdom, Feb. 24, 1994, 9403580

Int. Cl.[6] H02K *7/00*

U.S. Cl. 310—90.5 **16 Claims**



1. A magnetic bearing for supporting and allowing relative movement in a first directional sense between a first member and a second member, the magnetic bearing comprising first magnetic means mounted on the first member and second magnetic means mounted on the second member, the first and second magnetic means producing a magnetic field therebetween having a cross-sectional area to oppose loads which cause the first and second members to move relative to each other with directional components perpendicular to the first directional sense, and means arranged to change the cross-sectional area of the magnetic field between the first and second magnetic means when the magnitude of the load changes so as to control the stiffness of the magnetic bearing said relative movement of the first and second magnetic means having a directional component transverse to the direction of the load which causes the first and second members to move with directional components perpendicular to the first directional sense.

5,633,548

METHOD FOR SETTING UP A SUPERCONDUCTING BEARING DEVICE

Ryoichi Takahata, Nara, and Shoji Eguchi, Osaka, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 160,797, Dec. 3, 1993, abandoned, which is a division of Ser. No. 730,164, Jul. 16, 1991, Pat. No. 5,330,967. This application Oct. 17, 1995, Ser. No. 543,884

Claims priority, application Japan, Jul. 17, 1990, 2-188693; Dec. 18, 1990, 2-403263

Int. Cl.[6] B60L *13/04;* **H02K** *7/09*

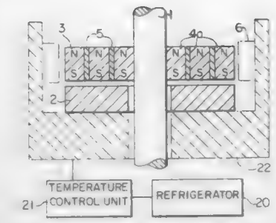
U.S. Cl. 310—90.5 **21 Claims**

1. A method for setting up a superconducting bearing device which has (1) a permanent magnet mounted on a rotor having a vertical axis of rotation and (2) a Type II superconductor disposed in a magnetic field of the permanent magnet, the permanent magnet being provided on the rotor so that rotation of the rotor does not alter a magnetic flux's distribution about the axis of rotation of the rotor, the method comprising:

(a) supporting the rotor by a positioning means, and spacing and positioning the rotor a distance from the Type II superconductor by the positioning means so as to permit a predetermined quantity of magnetic flux from the permanent magnet to penetrate the Type II superconductor, thereby magnetizing the Type II superconductor by the magnetic field of the permanent magnet;

(b) following said supporting, spacing and positioning step (a), moving the Type II superconductor to, and holding the Type II superconductor at, a temperature for realizing a Type II superconducting state, to pin all the penetrating magnetic flux as it is in the interior of the Type II superconductor so that the pinned magnetic flux distribution is symmetrical about the vertical axis of rotation of the rotor; and

(c) following said moving and holding step (b), releasing the rotor from the positioning means and allowing the rotor to move slightly downward by its own weight to be held in a stable position at which gravity is in balance with a magnetic force caused by the flux pinned to the interior of the superconductor.



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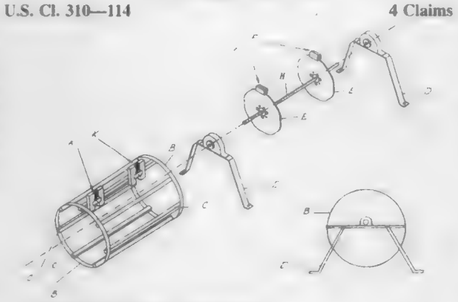
BRUSHLESS PULSE DRIVE MOTOR

Charles Jelinek, Jr., 109 Seven Oaks Dr., Pendleton, S.C. 29670

Filed Dec. 30, 1994, Ser. No. 366,731

Int. Cl.[6] H02K *16/00;16/02*

U.S. Cl. 310—114 **4 Claims**



1. A pulse drive motor comprising:

a rotor including at least a first disk having an outer edge;

a plurality of permanent magnets spaced evenly along said outer edge of said disk;

a plurality of electromagnetic stators, a respective of said stators being spaced from said disk;

each of said electromagnetic stators having a first stator side and a spaced second stator side defining a stator gap;

said permanent magnets being carried by said disk so that said magnets are carried through said stator gap as said disk rotate along a revolution thereby driving said motor;

at least one pick-up probe for sensing a permanent magnet and generating an electrical pulse for activating a respective for said electromagnetic status; and

wherein a respective of said electromagnetic stator includes a first side having a first stator charge and a second side having a second stator charge, a respective of said permanent magnet having a first rotor side having a first rotor charge of the same polarity as said first stator charge and said permanent magnet having a second rotor side having a second rotor charge of the same polarity as said second stator charge whereby a respective of said permanent magnet is repulsed when passing through said stator gap.

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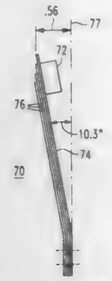
GROUND DETECTOR BRUSH

Robert J. Meehan, Chuluota, Fla., and Theodore R. Barbour, Cogan Station, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1995, Ser. No. 376,985

Int. Cl.[6] H02K *13/00;11/00*

U.S. Cl. 310—246 **14 Claims**



1. A ground detector brush, comprising:

a metal conductor having two sides, wherein the metal conductor extends at an angle parallel to its centerline when no forces are applied against the metal conductor;

a brush attached to one side of the metal conductor; and

at least two leaf springs located on the other side of the metal conductor, wherein the length of the leaf springs are offset one to another so that the length of a leaf spring adjacent to the metal conductor is longest and the length of each subsequent leaf spring adjacent to the metal conductor is successively smaller in length.

5,633,551

MACHINE WITH TRANSVERSE FLUX

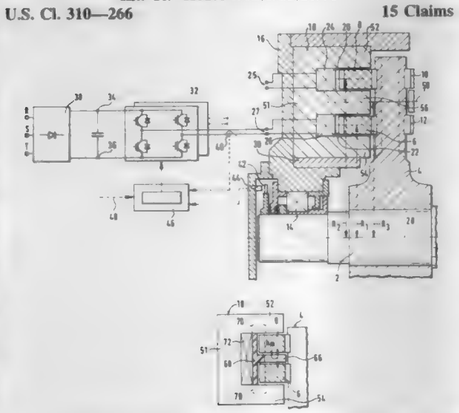
Herbert Weh, Wöhlerstrasse 20, Braunschweig, Germany

Filed Apr. 13, 1995, Ser. No. 421,505

Claims priority, application Germany, Apr. 15, 1994, 44 13 219.0

Int. Cl.[6] H02K *1/12;1/22;21/12*

U.S. Cl. 310—266 **15 Claims**



1. A transverse flux machine comprising a stator, a rotor and magnetic circuits wherein the flux of the magnetic circuits runs substantially across a direction of movement of the rotor,

said stator including a plurality of E-shaped pole elements arranged in side-by-side adjacent relation, each of said pole elements having a body, two spaced outer pole limbs and a central pole limb located between the outer pole limbs, said limbs having a common predetermined width, one of said pole limbs, alternately with the other pole limbs, being divided symmetrically across the direction of movement of the rotor into opposing limb parts, each of said limb parts having an outer side surface, said limb parts being offset in opposite directions along the direction of movement of the rotor, said pole elements being arranged within said machine such that the outer side surfaces of the limb parts of adjacent pole elements touch each other and cooperate with each other to define a central pole limbs which is offset from the other pole limbs, said outer and central pole limbs cooperating to define two spaced grooves respectively positioned between the respective limbs, each of said grooves including an annular two-phase winding which lies against a bottom surface of the respective groove,

said rotor having two spaced exciter members, said exciter members respectively being received within said grooves of said stator, said exciter members including permanent magnets arranged at a spacing in the direction of movement and alternating in their flux directions in the direction of movement of the rotor, said rotor further including soft iron elements arranged between the permanent magnets at a pitch corresponding to a pitch of the pole elements, said iron elements having a width corresponding to the width of the limbs of the pole elements, said permanent magnets being substantially cubic and lying with their flux direction substantially perpendicular to a plane extending through the pole surfaces of the pole elements adjoining the exciter members.

5,633,552

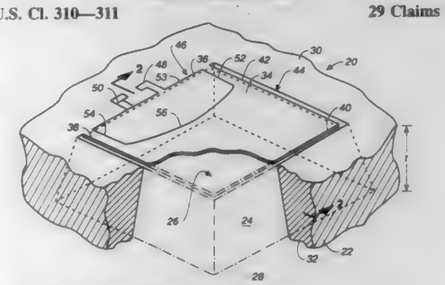
CANTILEVER PRESSURE TRANSDUCER

Seung S. Lee, Richmond; Richard M. White, and Albert P. Pisano, both of Berkeley, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 72,294, Jun. 4, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,046

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—311 **29 Claims**



1. A micromechanical device comprising:

a frame having an opening;

at least one cantilever structure attached to said frame over a portion of a perimeter of said opening and covering a majority of said opening; and

said cantilever structure including three adjacent sublayers designated first, second and third such that said second sublayer is adjacent to said first and third sublayers, said first and third sublayers formed of substantially the same first material and having about the same average stress, and said second layer formed of a second material and having a minimum stress and a maximum stress, the difference between said maximum stress and said minimum stress being less than the magnitude of the average stress of said first sublayer.

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5,633,553

VIBRATION DRIVEN MOTOR

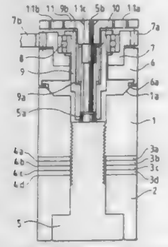
Ryuji Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 34,182, Mar. 18, 1993, Pat. No. 5,428,260, which is a continuation of Ser. No. 739,493, Aug. 2, 1991, abandoned. This application Apr. 4, 1995, Ser. No. 416,183

Claims priority, application Japan, Aug. 3, 1990, 2-206244; Aug. 6, 1990, 2-207762; Aug. 6, 1990, 2-207763; Aug. 6, 1990, 2-207764; Nov. 11, 1991, 3-2091

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—323 4 Claims



1. An apparatus including a movable element, said apparatus comprising:

a vibration member for generating a vibration therein in response to an applied electrical signal, said vibration member having a fixed axis;

an annular rotor arranged for rotation about the fixed axis of said vibration member, in sliding frictional contact with said vibration member to drive said annular rotor about the fixed axis by vibration generated in said vibration member;

a moving mechanism for moving said movable element; and

an annular output member arranged substantially coaxial with the fixed axis of said vibration member, for rotation about the fixed axis, in sliding frictional contact with said annular rotor, and located between said annular rotor and said moving mechanism for actuating the moving mechanism in response to rotation of said annular rotor, said annular output member being frictionally contacted to each of said annular rotor and said moving mechanism such that a frictional engagement force between said vibration member and said annular rotor is greater than a frictional engagement force between said output member and said annular rotor, and whereby rotation of said annular rotor by vibration in said vibration member is absorbed by sliding contact between said output member and said rotor when an over-load is applied to said movable element.

5,633,554

PIEZOELECTRIC LINEAR ACTUATOR

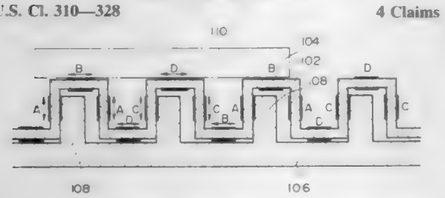
Takatoshi Kaji, Ohbu, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 65,360, May 24, 1993, abandoned. This application Dec. 30, 1994, Ser. No. 366,426

Claims priority, application Japan, May 29, 1992, 4-138184

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—328 4 Claims



1. A piezoelectric linear actuator which carries an article along a straight line, comprising:

a piezoelectric ceramic green sheet which is changeable in shape, said piezoelectric ceramic green sheet having an undulating surface when not driven and when driven, undulations of the undulating surface change shape;

a fixing base; and

electrodes disposed on said piezoelectric ceramic green sheet to constitute an electromechanical transducer element;

wherein a stationary part of said piezoelectric ceramic green sheet is permanently fixed on said fixing base; and

a non-stationary part of said piezoelectric ceramic green sheet is repetitively extended in a plane of said piezoelectric ceramic green sheet and contracted in said plane in order to directly linearly drive said article linearly across said undulating surface of the piezoelectric ceramic green sheet from a first point on the undulating surface to a second point on the undulating surface in the straight line by contact between said piezoelectric ceramic green sheet and said article.

5,633,555

MAGNETIC DRIVE ARRANGEMENT COMPRISING A PLURALITY OF MAGNETICALLY COOPERATING PARTS WHICH ARE MOVABLE RELATIVE TO ONE ANOTHER

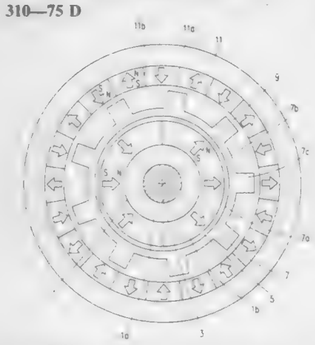
Bernd Ackermann, and Leo Honds, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1995, Ser. No. 391,734

Claims priority, application Germany, Feb. 23, 1994, 44 05 701.6

Int. Cl.[6] H02K *7/10;49/00*

U.S. Cl. 310—75 D 7 Claims



1. A magnetic drive arrangement comprising a rotor, a ring and a yoke magnetically cooperating with each other and movable relative to one another, one of said rotor, ring and yoke being connected to a drive shaft and another one of said rotor, ring and yoke being stationary, said rotor and ring having permanent magnets producing fields and said yoke having soft-magnetic flux-carrying parts which include an iron yoke part having teeth uniformly spaced along the circumference of the iron yoke part, characterised in that

a) permanent magnet structures are provided in the rotor and ring at both sides of the iron yoke part to generate magnetic fields at the sides facing the iron yoke part, which magnetic fields alternately exhibit north poles and south poles along the circumference of the iron yoke part,

b) the permanent magnet structures at one side of the iron yoke part exhibiting p_1 pairs of north and south poles, the iron yoke part having $Z_1=p_1\pm N$ teeth at the side facing this one side of the iron yoke part, N being an integer (N=1, 2, 3 . . .),

c) the permanent magnet structures at the other side of the iron yoke part exhibiting N pairs of north and south poles, the iron yoke part having no teeth at the side facing this other side of the iron yoke part.

5,633,556

DISCHARGE LAMP OF THE WATER COOLED TYPE

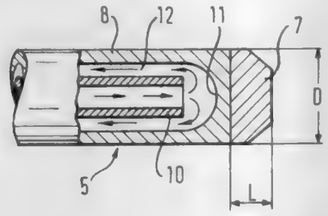
Kyosuke Fujina, Hyogo-ken; Shoichi Mayama, Himeji, and Katsuoki Miyasu, Hyogo-ken, all of Japan, assignors to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1995, Ser. No. 506,853

Claims priority, application Japan, Jul. 29, 1994, 6-196207

Int. Cl.[6] H01J *1/02*

U.S. Cl. 313—32 4 Claims



1. A discharge lamp of the water cooled type, comprising an anode having a body element formed of copper, a tungsten tip piece directly connected to a tip of the body element and a water cooling arrangement within the body element; wherein a maximum outer diameter of the tungsten tip piece is about equal to an outer diameter D (mm) of the body element; and wherein the relationship $0.2 \leq L/D \leq 0.5$ is fulfilled, where L is a thickness (mm) of the tungsten tip piece.

5,633,557

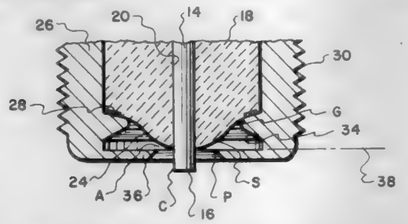
ANTI-FOULING SPARK PLUG

Maurice E. Lindsay, 114 Standard St., El Segundo, Calif. 90245

Continuation-in-part of Ser. No. 169,211, Dec. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 951,819, Sep. 28, 1992, abandoned. This application Jul. 14, 1995, Ser. No. 502,527

Int. Cl.[6] H01T *13/00*

U.S. Cl. 313—143 3 Claims



1. A spark plug for producing combustion within an internal combustion engine, said spark plug comprising:

an elongated housing having a sidewall terminating in an electrical ground ring at one end, said housing being tubular forming an internal chamber, said ground ring defining an enclosing exit opening located within a plane, the inner edge of said ground ring defining said enclosing exit opening being referred to as P, P being sharpened forming a pointed circular wall;

a center electrode mounted within said internal chamber, said center electrode having a tip, said center electrode being centrally located within said exit opening, said center electrode having a constant cross-sectional configuration along its entire longitudinal length, said tip being exteriorly spaced from said plane, said tip defined by an exterior ring referred to as C, P being the portion of said ground ring closest to C;

an insulator mounted about said center electrode and within said internal chamber, said insulator terminating in a core nose directly adjacent to said tip but spaced slightly therefrom, said core nose not projecting exteriorly of said plane, the circular portion of said core nose located closest to P is referred to as S, an annular air gap referred to as A is formed between S and P; and

said ground ring having an interior wall surface, a fire hole formed between said core nose and said interior wall surface, P being in alignment with said interior wall surface, P being located closer to C than said sidewall of said elongated housing at the point of connection with said core nose referred to as G, the electrical resistance of P to C being greater than the electrical resistance of C to S to A to P, P to C forming a path which is different than the path from C to S to A to P, the electrical resistance of C to S to A to P being less than the electrical resistance of C to S to G, the core nose forming a mounded surface which terminates at the plane.

5,633,558

COLOR CATHODE-RAY TUBE INCLUDING A SHADOW MASK HAVING HOLES ARRANGED WITH A MONOTONICALLY NON-DECREASING ARRANGEMENT PITCH

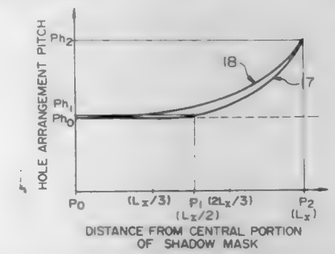
Mitsuru Watanabe, and Naoyuki Katoh, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1994, Ser. No. 214,278

Claims priority, application Japan, Mar. 19, 1993, 5-060432

Int. Cl.[6] H01J *29/07*

U.S. Cl. 313—402 18 Claims



1. A shadow mask for use in a color cathode-ray tube, said shadow mask comprising:

a metal plate in which a plurality of holes are formed for passage of electron beams therethrough in the color cathode-ray tube, said holes being arranged with a varying arrangement pitch, said varying arrangement pitch being monotonically non-decreasing from a central portion to two opposite peripheral portions of said shadow mask as viewed, in a first direction conforming with a horizontal direction in the color cathode-ray tube, at an arbitrary position on said shadow mask in a second direction perpendicular to said first direction;

wherein an increase of said varying arrangement pitch in said first direction is substantially zero in first regions from said central portion to intervening portions between said central portion and said two opposite peripheral portions of said shadow mask;

wherein an increase of said varying arrangement pitch in said first direction has a gradient not smaller than zero in second regions from said intervening portions toward said two opposite peripheral portions of said shadow mask;

wherein a distance between said central portion and each of said two opposite peripheral portions of said shadow mask is L_x;

wherein a distance between said central portion and each of said intervening portions is at least $L_x/2$ and not more than $2L_x/3$;

wherein said varying arrangement pitch at said central portion is Ph_0; and

wherein said varying arrangement pitch in said first regions is at least Ph_0 and not greater than 1.005 Ph_0.

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5,633,559

COLOR DISPLAY TUBE HAVING COLOR SELECTION STRUCTURE WITH ROUGH SURFACE

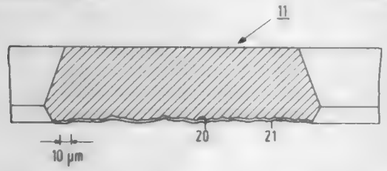
Theodoor C. A. Hens; Johannes M. A. A. Compen; Maria C. Van Uden, and Thomas D. M. Vrancken, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 509,263, Apr. 13, 1990, abandoned. This application Feb. 25, 1992, Ser. No. 842,724

Claims priority, application Netherlands, Apr. 13, 1989, 8900918; Nov. 22, 1989, 8902883

Int. Cl.[6] H01J *17/24*

U.S. Cl. 313—408 22 Claims



1. A colour display tube comprising an electron gun, a getter, a display screen and a colour selection structure which is arranged in front of the display screen and which has a surface with a longitudinal axis facing away from the display screen, characterized in that the surface is rough and a layer of getter material is applied to the rough surface.

5,633,560

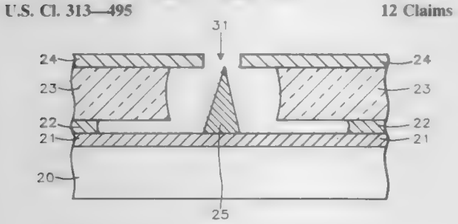
COLD CATHODE FIELD EMISSION DISPLAY WITH EACH MICROTIP HAVING ITS OWN BALLAST RESISTOR

Jammy C.-M. Huang, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 419,435, Apr. 10, 1995, Pat. No. 5,578,896. This application Aug. 27, 1996, Ser. No. 697,703

Int. Cl.[6] H01J *1/00*

U.S. Cl. 313—495 12 Claims



1. A cold cathode field emission display comprising:
an insulating substrate;
cathode columns for said display, formed of parallel, spaced conductors over said insulating substrate;
an electrically resistive layer between said columns and said substrate;
gate lines for said display, formed of parallel, spaced conductors, over, and at an angle to, and comprising a different material from, said cathode columns;
a dielectric layer between said cathode columns and said gate lines;
a plurality of openings, located at the intersections of said cathode columns and said gate lines, passing through said gate lines, said dielectric layer and said cathode columns, wherein the width of the gate line aperture is smaller than the width of the dielectric layer aperture and the width of the cathode line aperture is greater than the width of the dielectric layer aperture; and
a plurality of cone shaped field emission microtips, each centrally located within one of the openings, the base of each of said microtips being in contact with said electrically resistive layer and the apex of each microtip being in the same plane as that of said gate lines.

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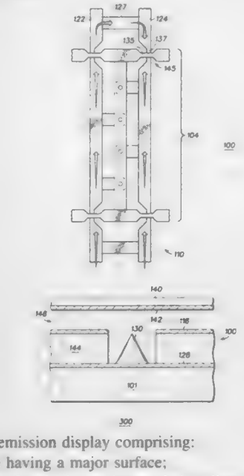
CONDUCTOR ARRAY FOR A FLAT PANEL DISPLAY

Dean Barker, Chandler, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Mar. 28, 1996, Ser. No. 623,034

Int. Cl.[6] H01J *1/02*

U.S. Cl. 313—497 9 Claims



7. A field emission display comprising:
a substrate having a major surface;
a plurality of cathode conductors being disposed on the major surface of the substrate, each of the plurality of cathode conductors having a first redundant conductive member, a second redundant conductive member being substantially parallel to the first redundant conductive member, and a conductive cathode connector extending between the first redundant conductive member and the second redundant conductive member, the conductive cathode connector having first and second opposed ends, the first opposed end of the conductive cathode connector being electrically connected to the first redundant conductive member, the second opposed end of the conductive cathode connector being electrically connected to the second redundant conductive member;
a dielectric layer formed on the plurality of cathode conductors;
a plurality of gate conductors being formed on the dielectric layer and overlying the plurality of cathode conductors thereby providing a plurality of intersections defining a plurality of sub pixels, each of the plurality of gate conductors having a first redundant conductive member and a second redundant conductive member being substantially parallel to the first redundant conductive member thereby defining a plurality of overlapping regions including an underlying segment of one of the plurality of cathode conductors and an overlying segment of one of the plurality of gate conductors, the plurality of gate conductors including a plurality of conductive gate connectors disposed at least one each at the plurality of gate conductors, each of the plurality of conductive gate connectors having first and second opposed ends, the first opposed end of the gate connectors being electrically connected to the first redundant conductive member of one of the plurality of gate conductors, the second opposed end of the gate connectors being electrically connected to the second redundant conductive member of the same one of the plurality of gate conductors;
a plurality of fusible links disposed one each at the plurality of overlapping regions;

a plurality of field emitters being disposed at least one each within the plurality of sub pixels, the at least one of the plurality of field emitters being electrically coupled to the cathode conductor and to the gate conductor of the sub pixel in which it is disposed; and
a face plate having a major surface opposing the plurality of field emitters and defining an evacuated chamber there between.

5,633,562

REFLECTION MODE ALKALI PHOTOCATHODE, AND PHOTOMULTIPLIER USING THE SAME

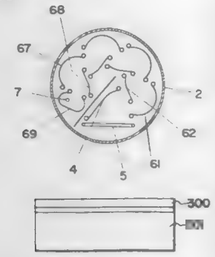
Kazuyoshi Okano; Takehiro Iida; Tetsuo Murata, all of Hamamatsu; Nobuharu Suzuki, Hamamatu; Hiroaki Washiyama, Hamamatu, and Yasushi Watase, Hamamatu, all of Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Continuation-in-part of Ser. No. 121,903, Sep. 16, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,288

Claims priority, application Japan, Feb. 2, 1993, 5-15530; Jun. 3, 1993, 5-133668

Int. Cl.[6] H01J *1/34;43/08*

U.S. Cl. 313—532 2 Claims



1. A photomultiplier comprising:
a reflection mode alkali photocathode, wherein said reflection mode alkali photocathode comprises:
a Ni substrate; and
a plurality of alkali metals and antimony disposed directly on said Ni substrate, wherein a deposition weight of said antimony is greater than 30 μg/cm^2 and less than 100 μg/cm^2.

5,633,563

GAS DISCHARGE TUBE WITH DISCHARGE SHIELDING MEMBER

Tomoyuki Ikedo; Yoshinobu Ito, and Ryotaro Matui, all of Hamamatsu, Japan, assignors to Hamamatsu Protonics K.K., Hamamatsu, Japan

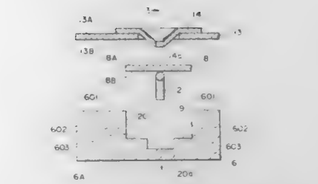
Filed Jul. 13, 1995, Ser. No. 502,009

Claims priority, application Japan, Aug. 31, 1994, 6-207715

Int. Cl.[6] H01J *17/04*

U.S. Cl. 313—614 18 Claims

1. A gas discharge tube, comprising:
an envelope for sealing a gas therein;
a hot cathode disposed in said envelope, for emitting thermoelectrons;
an anode disposed in said envelope, for receiving the thermoelectrons emitted from said hot cathode;
a focusing electrode disposed in said envelope, said focusing electrode having a focusing opening for converging and passing thermoelectrons which are emitted from said hot cathode and which are received by said anode; and
a discharge shielding member of an insulator having a front surface for supporting said focusing electrode at a predetermined position, said front surface of said discharge shielding member being defined by:



a first surface being in direct contact with said focusing electrode, for defining a position of said focusing electrode;
a second surface continued from said first surface, for defining a distance between said focusing electrode and said anode; and
a third surface continued from said second surface, said third surface being in direct contact with said anode, for defining a position of said anode,
wherein said second and third surfaces of said front surface of said discharge shielding member form a first depression for supporting and accommodating said anode.

5,633,564

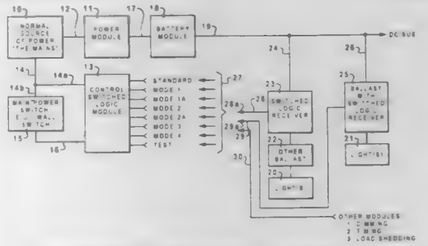
MODULAR UNINTERRUPTIBLE LIGHTING SYSTEM

M. Larry Edwards, 3311 22nd St., Apt. 15, Woodward, Okla. 73801; Allan A. Nostwick, 4625 N. 615th West, Huntington, Ind. 46750, and Roland O. Hildebrand, 1908 Windlea, Euless, Tex. 76040

Filed Jun. 1, 1995, Ser. No. 457,015

Int. Cl.[6] H05B *37/00*

U.S. Cl. 315—86 34 Claims



1. An uninterruptible lighting system comprising:
(a) A plurality of lights and a source of normal energizing electric power for said lights;
(b) Means including receiver means interconnected with each of said lights for conditioning said lights to any selected one of a plurality of states;
(c) Control means selectively conditionable to produce individual control signals individually representing said plurality of states;
(d) Control signal communication means interconnecting said control means and said receiver means for communicating said control signals from said control means to said receiver means; and
(e) Means including said receiver means effective when said source of normal energizing power is interrupted for severally

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conditioning said lights to states severally represented by selected ones of said plurality of states.

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ELECTRONIC FLASHER CIRCUIT

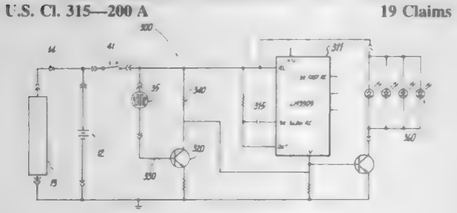
Roni Friedman, Petach Tikva; Chaim Chacham, Rishon Lezion, both of Israel; William F. Richardson, Jr., and Brian N. Raymond, both of East Haven, Conn., assignors to Interplex Solar, Inc., Flushing, N.Y.

Continuation-in-part of Ser. No. 905,513, Jun. 29, 1992, abandoned. This application Sep. 2, 1994, Ser. No. 300,727

Claims priority, application Israel, Dec. 18, 1991, 100406

Int. Cl.[6] H05B *37/00;* **F21L** *7/00;* **G09F** *13/00*

U.S. Cl. 315—200 A **19 Claims**



1. An electrical flasher circuit, comprising:

a rechargeable battery;

a solar panel coupled to the rechargeable battery;

a timer circuit coupled to the rechargeable battery and to the solar panel for producing an output voltage which changes periodically between an on state and an off state and is on during a minor portion of a period of said output voltage;

at least one lamp coupled to the timer circuit, and means for causing said at least one lamp to repeatedly flash between a visually perceptible on state and an off state in response to the output voltage;

the solar panel providing sufficient power to energize the timer circuit and to recharge the rechargeable battery when at least a predetermined threshold of light acts on the solar panel, and the rechargeable battery alone energizing the timer circuit for at least fifty hours when the rechargeable battery is fully charged in the absence of said light;

means including a light dependent resistor coupled to a transistor switch coupled to the timer circuit for permitting the timer to function only when an ambient light level falls below a predetermined threshold and said means preventing astable operation when the ambient light level fluctuates about the predetermined threshold, said light dependent resistor and said transistor switch being continuously energized by said solar panel for continuously monitoring said ambient light level, said means further comprising a reset circuit for disabling said at least one lamp when the light dependent resistor indicates that the ambient light level is below the predetermined threshold.

5,633,566

SHAPED PARABOLIC SIGNAL FOR DEFLECTION CORRECTION

Nancy D. Boettner, Indianapolis; John B. George, Carmel, and Ronald E. Fernsler, Indianapolis, all of Ind., assignors to Thomson Consumer Electronics Inc., Indianapolis, Ind.

Continuation of Ser. No. 351,999, Dec. 8, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 712,955

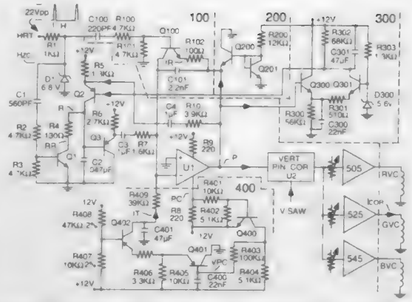
Claims priority, application United Kingdom, Mar. 24, 1994, 9405799

Int. Cl.[6] G09C *1/04;* **H01J** *29/70;* **H04N** *3/23*

U.S. Cl. 315—371 **15 Claims**

1. A deflection waveform corrector for a video display, said corrector comprising:

means for correcting pincushion distortion;



means for deflection correction signal generation coupled to said correcting means and generating a correction signal of substantially parabolic shape;

means coupled to said signal generator means for controllably adding a tilt component to said correction signal; and,

a waveform clipper coupled to said signal generator means for clipping said tilted correction signal towards a cuspate part of said parabolic shape to impart a non-parabolic shape to a first part of said correction signal.

5,633,567

DISPLAY DEVICE AND CATHODE RAY TUBE

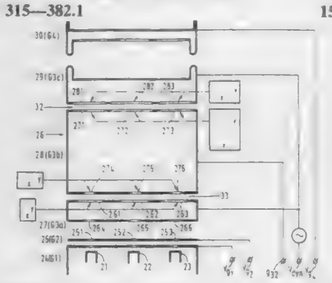
Tjerk G. Spanjer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1995, Ser. No. 434,104

Claims priority, application European Pat. Off., May 6, 1994, 94201264

Int. Cl.[6] H01J *29/58*

U.S. Cl. 315—382.1 **15 Claims**



1. A display device comprising: a cathode ray tube which comprises a display screen and a deflection unit for deflecting electron beams, the cathode ray tube including an in-line electron gun for generating three electron beams, said in-line electron gun comprising a main lens portion having means for generating a main lens field and a quadripolar field, and the electron gun has means for generating, in front of the main lens field, a pre-focusing lens field and a further quadripolar field, and the display device includes means for dynamically varying the intensity of the main lens field, the quadripolar field, the pre-focusing lens field and the further quadripolar field such that, in operation, the intensity of said four fields is dynamically varied by means of only one dynamic voltage, and wherein the combined dynamic lens action of the combination of the dynamic pre-focusing lens and the further quadripolar lens causes a dynamic change in beam diameter in both vertical (dBy) and horizontal (dBx) directions with the change in the horizontal direction being opposite to the change in the vertical direction, and the ratio dBx/dBy lies between 0.6 and 0.2.

5,633,568

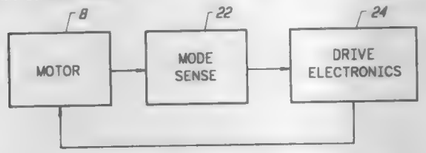
METHOD AND APPARATUS FOR DYNAMIC LOW VOLTAGE SPINDLE MOTOR OPERATION

John Dunfield, Santa Cruz, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 204,840, Mar. 1, 1994, and a continuation of Ser. No. 205,185, Mar. 1, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 481,817

Int. Cl.[6] G11B *21/08*

U.S. Cl. 318—254 **11 Claims**



1. A method for dynamic operation of a brushless N-phase DC motor, where N>3, wherein a first end of each phase is coupled to a source of operating voltage or ground by an associated drive switch, and each second end of each said phase is coupled via a mode switch to said source of operating voltage, comprising the following steps:

(a) when said motor has a rotational speed less than a predetermined run velocity, configuring said motor in line-to-line mode by series-coupling at least two of said N-phases to a source of operating voltage;

(b) when said motor has a rotational speed at least equal to said predetermined run velocity, configuring said motor in line-to-neutral mode by coupling fewer than two of said N-phases to said source of operating voltage configuring said motor between step (a) and step (b) by selectively changing the state of said mode switch and at least a chosen one of said drive switches;

(c) upon sensing a power-down or low voltage condition in said source voltage, reconfiguring drive electronics to said line-to-line operation; and

(d) connecting one of said series, pairs of windings and associated resultant back EMF to said motor, thereby delivering current from said spindle motor to said voice coil motor.

5,633,569

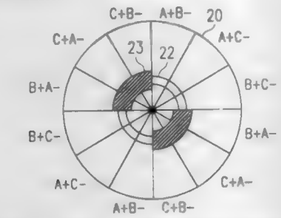
START-UP COMMUTATION METHOD FOR A ROTATING MAGNETIC STORAGE DEVICE WITHOUT BACK ROTATION

James E. Chloupek, Plano; William R. Krenik, Garland, both of Tex., and Michael G. Machado, Boulder, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 10, 1995, Ser. No. 402,275

Int. Cl.[6] H02P *6/22*

U.S. Cl. 318—430 **17 Claims**



1. A method of driving a motor without initial back rotation, comprising the steps of:

identifying a rest position of a storage medium using a magnetized pattern on the storage medium;

mapping the rest position of the storage medium to a motor drive sequence; and

driving the motor with the motor drive sequence mapped to the rest position, wherein the motor drive sequence ensures the motor does not experience back rotation at motor start-up.

5,633,570

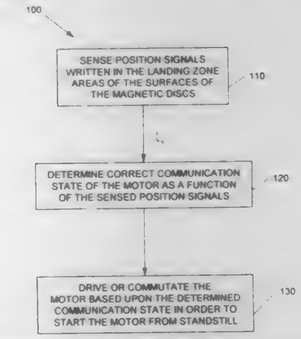
POSITION FEEDBACK CONTROL OF BRUSHLESS DC MOTORS FROM STANDSTILL

Andrew R. Motzko, Burnsville, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 12, 1996, Ser. No. 598,616

Int. Cl.[6] H02P *5/00;6/00*

U.S. Cl. 318—439 **14 Claims**



1. A method of starting a brushless DC motor from standstill in a magnetic data storage system, comprising:

sensing at least one motor position signal written in a landing zone area of at least one magnetic disc surface;

determining a commutation state of the motor as a function of the at least one sensed motor position signal; and

controlling the motor based upon the determined commutation state.

5,633,571

DEVICE FOR OPERATING A MOVABLE PART OF A MOTOR VEHICLE

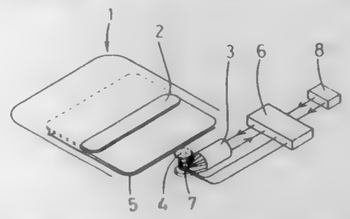
Johannes N. Huyer, Zandvoort, Netherlands, assignor to Vermeulen-Hollandia Octrooien II B.V., RX Haarlem, Netherlands

Filed Jul. 7, 1995, Ser. No. 499,324

Claims priority, application Netherlands, Jul. 8, 1994, 9401134

Int. Cl.[6] H02P *3/00;* **B60J** *7/043*

U.S. Cl. 318—468 **8 Claims**



1. A device for operating a movable part of a motor vehicle comprising an electric motor for driving the movable part, an adjusting element for setting a desired position for the movable part, an incremental position sensor for detecting the actual position of the moveable part, a counter operably coupled to the position sensor, the counter providing an output indicative of the actual position of the movable part, and an electronic control unit

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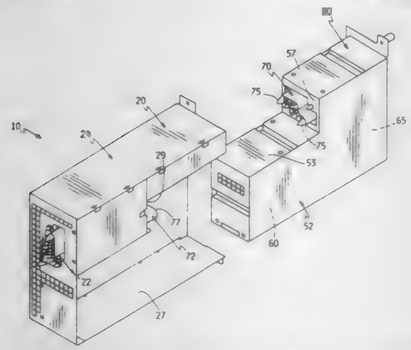
operably coupled to the adjusting element, the counter and the motor, the electronic control unit actuating the electric motor in order to move the movable part into the desired position, wherein the control unit comprises detection means for detecting at least one limit position of the movable part, at which the movable part is unable to travel further, wherein, when said limit position is reached, the control unit resets the counter to a predetermined reading which corresponds to said limit position.

5,633,572

BACK-UP POWER SUPPLY WITH REPLACEABLE BATTERY PACK

Steven W. Steele, Rochester; Vernon J. Kleve, Pine Island; Willard J. Olson, Rochester, and Gary A. Thompson, Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1995, Ser. No. 531,466
Int. Cl.[6] H01R *13/62*
U.S. Cl. 320—2 **20 Claims**



1. An apparatus for providing back-up power in an electronic system, the apparatus comprising:

(a) a fixed charger mounted in the electronic system, the charger including a charging circuit electrically coupled to the electronic system, a case housing the charging circuit, and a blind docking connector electrically coupled to the charging circuit; and

(b) a removable battery pack docked with the charger, the battery pack including a battery electrically coupled to the charging circuit through a blind docking connector mating with the connector on the charger and a case housing the battery to enclose the battery and thereby substantially restrict external access to the battery.

5,633,573

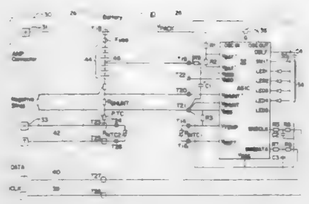
BATTERY PACK HAVING A PROCESSOR CONTROLLED BATTERY OPERATING SYSTEM

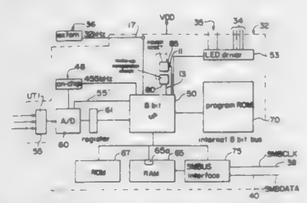
Duong van Phuoc, Eching; Rudi Wieczorek, Munich; Elmar Zeising, Haindlfing, all of Germany; Louis W. Hruska, Northboro, Mass.; Matthew P. Hull, Jamestown, R.I.; Alwyn H. Taylor, Wellesley Hills, and Daniel D. Friel, Woburn, both of Mass., assignors to Duracell, Inc., Needham, Mass.

Filed Nov. 10, 1994, Ser. No. 336,945
Int. Cl.[6] H01M *10/44;* **H01J** *7/00*
U.S. Cl. 320—5 **48 Claims**

1. A smart battery having a power management system capable of self powered operation, even when nominally fully discharged, said smart battery comprising:

(a) a plurality of rechargeable cells connected to a pair of terminals to provide electrical power to an external device





during a discharge mode and to receive electrical power during a charge mode, as provided or determined by said remote device;

(c) an analog means for generating analog signals representative of battery voltage, temperature and current at said terminals,

(d) a hybrid integrated circuit (IC) having an analog to digital convertor, a first clock and a microprocessor having a first algorithm for sampling the analog signals at a first period and converting them to digital signals representative of battery voltage, current and temperature; a second algorithm for sampling the analog signals at predetermined intervals of said first period when battery current has dropped below a predetermined value; and a third algorithm for disabling said analog to digital convertor, said first clock and said microprocessor when the battery voltage drops below a predetermined sleep mode value;

(e) a data memory defined within said hybrid IC for storing a plurality of calculated charge parameters, even when said battery is nominally fully discharged, said charge parameters including at least a learned full charge capacity and remaining capacity,

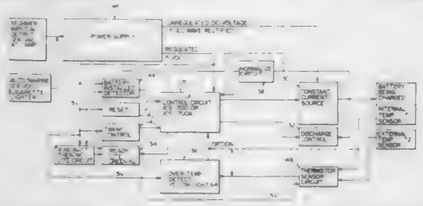
(f) a second clock means for initializing said first clock and said microprocessor during said first and said second algorithm, said clock means also initializing a comparator circuit for enabling a start signal for said microprocessor, said first clock and said analog to digital convertor whenever said battery voltage rises above a predetermined value.

5,633,574

PULSE-CHARGE BATTERY CHARGER

George E. Sage, 22002 Redmond-Fall City Rd., Redmond, Wash. 98053

Filed Jan. 18, 1994, Ser. No. 154,598
Int. Cl.[6] H02J *7/00;* **H01M** *10/46*
U.S. Cl. 320—21 **5 Claims**



1. A pulse-charge battery charger to automatically charge batteries and especially to charge nickel-cadmium batteries to keep them free from any unwanted memory effects, and all the user must do is to place a battery in this charger and remove it per his or her

convenience, and the status of the charging is known at any time by observing indicating lights, comprising:

a. a housing having a battery receiving volume, electrical contacts, and an additional volume to receive other components;

b. circuitry, inclusive of several circuits, electric and electronic components, arranged on a circuit board and installed in the housing; these several circuits and their electric and electronic components, in turn comprising:

i. a power supply circuit to receive either AC or DC low voltage power and to distribute both an unregulated voltage of full wave rectified low voltage DC power, and a regulated low voltage DC power;

ii. a U1 controller having self contained control circuits inclusive of a reset circuit;

iii. a battery installed detector circuit, detecting a battery voltage, connected to the regulated low voltage DC power of the power supply and to the U1 controller;

iv. a normalize circuit connected to the regulated low voltage DC power of the power supply and to the U1 controller to accommodate the charging of batteries having different numbers of cells;

v. a constant current source circuit connected to the unregulated DC low voltage of the power supply, the U1 controller, and the battery being charged, to insure the same constant amperage of the charging power;

vi. a discharge control circuit connected to the U1 controller, the normalize circuit, the battery installed detector circuit, and the battery being charged;

vii. a thermistor sensor circuit connected to a thermistor, the regulated low voltage DC power, and a battery overheat detection circuit, to detect whether or not a battery being charged has a built in thermistor, and if so this circuit sends a signal of any possible overheating directly from the thermistor in the battery to the battery overheat detection circuit; however, if the battery has no built in thermistor, then this circuit sends a signal of any possible overheating directly from a thermistor in this charger to the battery overheat detection circuit;

viii. the thermistor positioned directly in this charger to monitor temperatures of a battery;

ix. the battery overheat detection circuit connected to the thermistor sensor circuit, and to the regulated low voltage DC power;

x. a timing control circuit connected to the U1 controller, the regulated low voltage DC power, and a ready light circuit;

xi. the ready light circuit connected to the U1 controller, the timing control circuit, the regulated low voltage DC power, and a no battery then no light circuit;

xii. the no battery then no light circuit connected to the ready light circuit, the battery installed detector circuit, and the regulated low voltage DC power; and

xiii. a reset circuit connected to the battery installed detector circuit, the U1 controller, and the regulated low voltage DC power.

5,633,575

BATTERY RECLAIMER AND CHARGER

Carl E. Gali, 16725 N. Red Sunset Trail, Tucson, Ariz. 85737

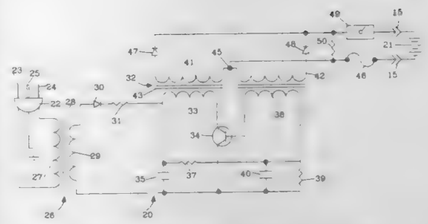
Continuation of Ser. No. 220,833, Mar. 31, 1994. This application Jan. 16, 1996, Ser. No. 586,981
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—21 **18 Claims**

1. A battery reclaimer, charger and maintainer circuit for removing current blocking deposits from plates of batteries utilizing liquid and jell electrolytes, comprising:

an output circuit including at least one battery to be reclaimed, maintained and recharged;

a D.C. voltage source providing a D.C. voltage for charging said battery connected to said output circuit;

an oscillator circuit, operating in the 2 to 10 megahertz range, for producing fast rise time voltage pulses;



a close coupled rf transformer, having ferrite ceramic cores, connecting the oscillator circuit to the output circuit in parallel with the D.C. voltage source; and

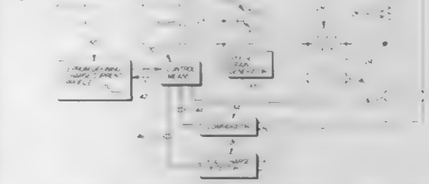
a rectifier circuit connected between the transformer and the output circuit, the rectifier circuit including a two diode rectifying circuit for producing a full wave positive voltage output pulse having an RF content corresponding to the natural frequencies of the electrolyte used in the battery being charged for removing current blocking deposits for the battery plates.

5,633,576

BATTERY CHARGING METHOD WITH STEPPED CURRENT PROFILE WITH OPERATING PARAMETER COMPENSATION AND ASSOCIATED CHARGER

Stephen D. Rose, Irvine; Joseph A. Cates, Lexington, both of Ky., and Jeffrey A. Rose, La Jolla, Calif., assignors to Premier Engineered Products, Inc., Winchester, Ky.

Continuation-in-part of Ser. No. 5,632, Jan. 19, 1993, Pat. No. 5,367,244. This application Nov. 21, 1994, Ser. No. 342,526
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—23 **16 Claims**



1. A method of charging a battery utilizing a variable charge current supply comprising the steps of:

applying a charging current to the battery from said charge current supply;

sensing battery voltage;

reducing said charging current when said battery voltage equals a target voltage such that said reduction in said charging current causes a decrease in said battery voltage;

maintaining said battery voltage not greater than said target voltage during said applying and reducing steps;

monitoring change in an operating parameter of the battery during the application of the charging current;

lowering said target voltage in proportion to and to compensate for the change in the parameter being monitored;

repeating said applying and reducing steps to provide a stepped current profile until said charging current is reduced to a minimum value;

continuing the steps of monitoring the operating parameter and lowering the target voltage;

applying said charging current at said minimum value after said reducing step until the battery is at full charge; and

detecting said full charge of the battery, and in response terminating application of said minimum value charging current.

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5,633,577
BATTERY CHARGING SYSTEM FOR ELECTRIC VEHICLES

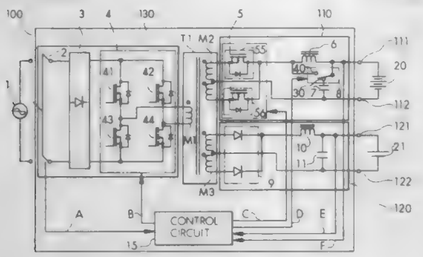
Hiroshi Matsumae, Obu; Yoshihiko Ooyama, Kariya, and Keiichiro Banzai, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 6, 1995, Ser. No. 467,999

Claims priority, application Japan, Jun. 6, 1994, 6-123958; Jul. 11, 1994, 6-158773

Int. Cl.[6] H02P *11/04*; **H02J** *9/00*

U.S. Cl. 322—37 **23 Claims**



1. A battery charging system comprising:

a main battery for driving a vehicle;

an auxiliary battery for driving an auxiliary device of the vehicle, the battery charging system charging the main battery and the auxiliary battery when a supply of electric power is received from a commercial AC power source;

a rectification circuit for rectifying electric power from the commercial AC power source;

a converter for converting the rectified electric power to AC input power;

a transformer to transform the AC input power, the transformer including an output winding having a first part to output first AC power and a second part to output second AC power;

a first output part, connected to the first part of the output winding of the transformer, to rectify the first AC power and to supply the first AC power to the main battery; and

a second output part, connected to the second part of the output winding of the transformer, to rectify the second AC power and to supply the second AC power to the auxiliary battery; and

a converting Circuit, included in the first output part, to convert, when the battery charging system does not receive the electric power from the commercial AC power source, electric power of the main battery to the second AC power to provide electric power from the main battery to the auxiliary battery through the first part and the second part of the output winding.

5,633,578
ELECTROSURGICAL GENERATOR ADAPTORS

Philip E. Eggers, Dublin, and Dennis J. Denen, Columbus, both of Ohio, assignors to Hemostatic Surgery Corporation, Georgetown, Cayman Islands

Continuation-in-part of Ser. No. 210,090, Mar. 17, 1994, Pat. No. 5,472,443, which is a continuation of Ser. No. 877,533, Jun. 7, 1991, abandoned. This application Jul. 15, 1994, Ser. No. 275,598

Int. Cl.[6] A61B *17/39*

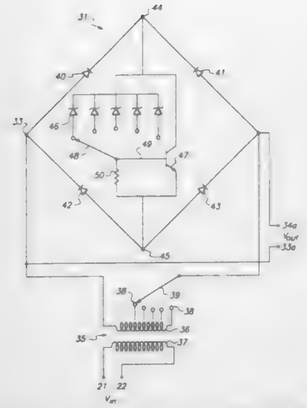
U.S. Cl. 323—301 **10 Claims**

1. An adaptor for coupling between an electrosurgical generator and a hemostatic bipolar surgical instrument, the adaptor comprising:

input terminals for coupling the adaptor to the electrosurgical generator;

output terminals for coupling the adaptor to the hemostatic bipolar instrument; and

a voltage limiting circuit coupled between the input terminals and the output terminals, the voltage limiting circuit including



first and second output nodes, the voltage limiting circuit accepting an input voltage waveform from the electrosurgical generator and supplying an output voltage waveform to the hemostatic bipolar instrument proportional to the input voltage waveform when the input voltage is less than or equal to a predetermined voltage value, the voltage limiting circuit shunting current between the first and second output nodes to supply a clipped output voltage waveform to the hemostatic bipolar instrument when the input voltage waveform exceeds the predetermined voltage value.

5,633,579
BOOST CONVERTER USING AN ENERGY REPRODUCING SNUBBER CIRCUIT

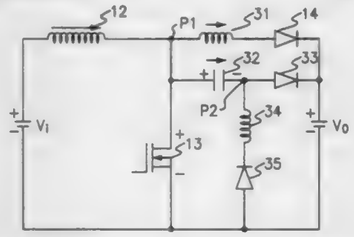
Marn G. Kim, Seoul, Rep. of Korea, assignor to Korea Telecommunication Authority, Rep. of Korea

Filed Jul. 21, 1995, Ser. No. 505,406

Claims priority, application Rep. of Korea, Jul. 21, 1994, 1994-17664

Int. Cl.[6] G05F *1/10*

U.S. Cl. 323—222 **3 Claims**



1. A boost converter having a first inductor connected between one terminal of an input portion for receiving an input signal and a first connection point, a first diode connected between said first connection point and one terminal of an output portion, and a switching device connected between said first connection point and the other terminal of said input portion, the other terminal of said input portion being connected to the other terminal of said output portion, said boost converter comprising:

a second inductor connected between said first connection point and an anode of said first diode; and

an unswitched resonant portion, comprising

a capacitor connected between said first connection point and a second connection point, for serving as a resonant capacitor;

a second diode having an anode connected to said second connection point and a cathode connected to a cathode of said first diode; and

a third inductor and a third diode connected in series between said second connection point and the other terminal of said input portion, said third inductor having one terminal connected to said second connection point and a second terminal connected to a third connection point, for serving as a resonant inductor, and said third diode having a cathode connected to said third connection point and an anode connected to the other terminal of said input portion.

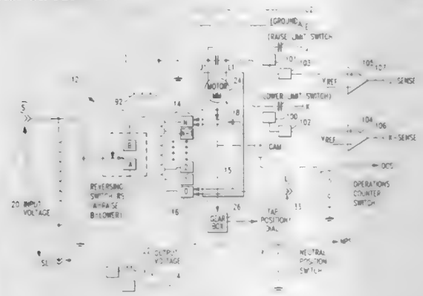
5,633,580
DIRECT LOAD CURRENT SENSING FOR PREDICTED REGULATOR TAP POSITION

John J. Trainor, Wake Forest; Carl J. Laplace, Raleigh, and William M. Thorsen, Jr., Wake Forest, all of N.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Jun. 29, 1995, Ser. No. 496,807

Int. Cl.[6] G05F *1/147*

U.S. Cl. 323—256 **6 Claims**



1. A transformer having a selectable winding ratio comprising:

a plurality of windings including a tap assembly which is positionable to incrementally change the winding ratio of the transformer;

an electric drive mechanically coupled to the tap assembly to selectively and incrementally position the tap assembly to effect incremental changes of the winding ratio, said electric drive producing a direction signal which is related to movement of said electric drive;

an up/down counter adapted to receive said direction signal, said up/down counter incrementing and decrementing respectively with respect to said direction signal;

a count signal generator coupled to the tap assembly for generating a count signal in response to a tap change; and

a digital processing circuit coupled to said up/down counter and said count signal generator, such that upon detecting a count signal from said count signal generator, said processor determines the direction of the tap change according to the value in said up/down counter when said count signal occurs, said processor thereby determining a new tap position.

5,633,581
FOCUSING VOLTAGE ADJUSTING CIRCUIT AND FLYBACK TRANSFORMER INSTALLING THE SAME

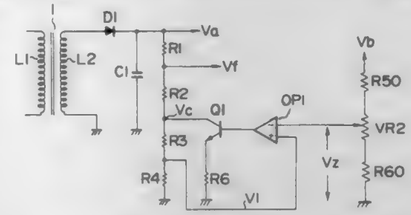
Yukio Takatori, Kasukabe, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 22, 1995, Ser. No. 392,167

Claims priority, application Japan, Feb. 22, 1994, 6-047761; Feb. 25, 1994, 6-053321; Feb. 25, 1994, 6-053322; Feb. 25, 1994, 6-053323

Int. Cl.[6] G05B *24/02*; **H04N** *3/22;3/26*; **G09G** *1/04*

U.S. Cl. 323—354 **18 Claims**



1. A focusing voltage adjusting circuit having a high voltage transformer, to produce and adjust a focusing voltage, comprising:

a rectifier circuit connected to a secondary coil of the high voltage transformer;

a series circuit of a first and a second resistor, electrically connected to the secondary coil of the high voltage transformer; and

first voltage applying means for applying a d.c. voltage to a terminal of the second resistor, the terminal being opposite to another terminal thereof connected to the first resistor, thus varying the d.c. voltage to adjust a focusing voltage appearing at a connection point of the first and second resistors.

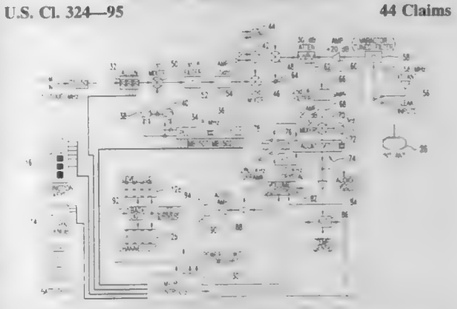
5,633,582
COMBINED SIGNAL LEVEL METER AND LEAKAGE DETECTOR

Dennis L. Orndorff, Greenfield, and Dennis W. Staley, Fillmore, both of Ind., assignors to Trilithic, Inc., Indianapolis, Ind.

Continuation of Ser. No. 74,888, Jun. 10, 1993, Pat. No. 5,493,210. This application Feb. 14, 1996, Ser. No. 601,194

Int. Cl.[6] H04B *1/26*; **G01R** *31/00*

U.S. Cl. 324—95 **44 Claims**



1. A combined signal level meter and leakage detector for a cable television system, comprising:

a CATV cable signal level input;

a CATV leakage signal antenna;

a heterodyne receiver circuit connected to said CATV cable signal level input and said CATV leakage signal antenna, said heterodyne receiver circuit having greater sensitivity for CATV leakage measurement than for CATV cable signal level measurement;

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a detector having an input connected to said heterodyne receiver circuit;

a processing and control circuit having an input connected to said detector; and

display means for displaying signal level information and leakage information corresponding to signals supplied to said CATV cable signal level input and said CATV leakage signal antenna circuit, respectively.

5,633,583

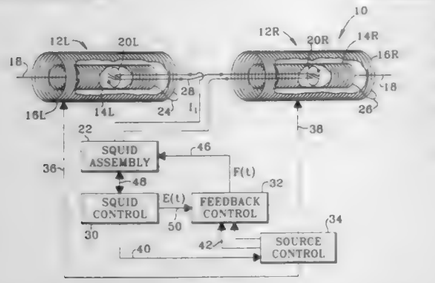
MAGNETIC TELESCOPE WITH ENHANCED NOISE SUPPRESSION

Walter N. Podney, San Diego, Calif., assignor to Gas Research Institute, Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 487,418

Int. Cl.[6] G01N *27/82;* **G01R** *33/035;* **G01V** *3/165*

U.S. Cl. 324—241 **11 Claims**



8. A magnetic telescope having enhanced noise suppression, the magnetic telescope having use in detecting a discontinuity in an underground article, the magnetic telescope comprising:

two pairs of source coils, each said source coil pair having an outer coil and an inner coil for producing a magnetic flux to illuminate the article, wherein said outer and inner coils produce magnetic flux capable of producing a minimal magnetic flux at known locations in the telescope;

a pair of gradiometers located substantially at said known locations, for picking-up magnetic flux appearing to originate from the discontinuity in the article;

an electric circuit coupled to said gradiometers for detecting the magnetic flux, achieving noise suppression by feeding back magnetic flux from said electric circuit to said detecting means in an amount which suppresses the noise, and identifying the discontinuity.

5,633,584

THREE-DIMENSIONAL DETECTION, DOSIMETRY AND IMAGING OF AN ENERGY FIELD BY FORMATION OF A POLYMER IN A GEL

Marek J. Maryanski; John C. Gore, and Robert Schulz, all of Guilford, Conn., assignors to Yale University, New Haven, Conn.

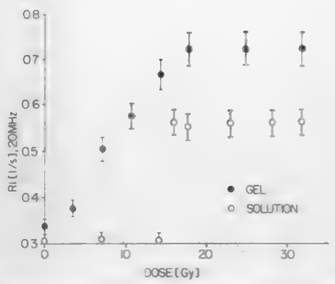
PCT No. PCT/US93/07392, § 371 Date Mar. 31, 1995, § 102(e) Date Mar. 31, 1995, PCT Pub. No. WO94/03826, PCT Pub. Date Feb. 17, 1994

Continuation-in-part of Ser. No. 925,550, Aug. 7, 1992, Pat. No. 5,321,357. This PCT application Aug. 6, 1993, Ser. No. 381,859

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—300 **25 Claims**

1. A method of detecting, measuring and displaying a non-uniform dose of radiant or mechanical energy by forming a visible and/or MRI visualizable permanent 3-dimensional image in a gel



which is representative of the 3-D distribution of the dose of the radiant or mechanical energy to which the gel is exposed, which comprises exposing a dimensionally stable gel which contains uniformly dispersed therein in storage stable form at least one monomer which is polymerizable in the gel by the radiant or mechanical energy, in a concentration effective when thus polymerized to produce a polymer in the gel which precipitates therefrom and/or which alters the NMR relaxation time of the solvent phase of the gel in any area thereof in which the polymer is formed, to a non-uniform dose of radiant or mechanical energy until a permanent image representative of that energy is formed in the gel.

5,633,585

MR METHOD FOR DETERMINING THE NUCLEAR MAGNETIZATION DISTRIBUTION BY MEANS OF A SURFACE COIL ARRANGEMENT

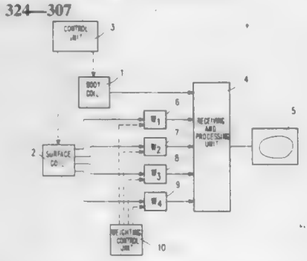
Michael Kuhn, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1995, Ser. No. 570,461

Claims priority, application Germany, Dec. 10, 1994, 44 44 061.8

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—307 **11 Claims**



1. An MR method for determining the nuclear magnetization distribution in an examination zone, in which sub-image data for a plurality of sub-images is acquired from a surface coil arrangement which comprises a respective plurality of surface coils, each having a locally inhomogeneous sensitivity function, MR superposition images being formed from said sub-image data by weighted summing, characterized in that prior to the formation of said MR superposition images, sub-images are formed and displayed, and weighting functions for sub-images containing artefacts are selected by a user in such a manner that sub-image areas containing artefacts are weighted less than sub-image areas without artefacts.

5,633,586

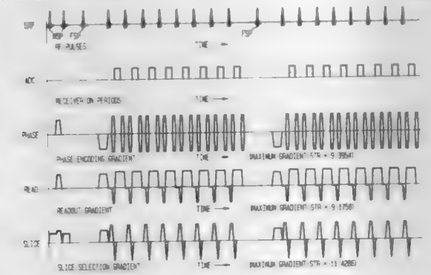
RAPID FAT- OR WATER-SUPPRESSED MULTISLICE MR PULSE SEQUENCE INCLUDING INITIAL PREPULSE

J. Paul Finn, Cranbury, N.J., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Feb. 29, 1996, Ser. No. 610,103

Int. Cl.[6] G01R *33/56;33/48*

U.S. Cl. 324—309 **4 Claims**



1. A method of rapidly conducting a fat-suppressed or blood-suppressed two-dimensional multislice MR study of a patient, comprising the following steps:

a) using at least one saturation prepulse to saturate all of the slices in a group of slices, thereby suppressing the fat or water signal in all such slices in the group;

b) reading out one line of MR data from each slice in the group, without using any other saturation prepulses until a line of MR data has been read out from each slice in the group; and

c) repeating steps a) and b) above until sufficient MR data has been acquired from all slices in the group.

5,633,587

MAGNETOSTATIC FIELD GENERATING MAGNET FOR USE IN AN MRI SYSTEM HAVING AN ACTIVE MAGNETIC SHIELD

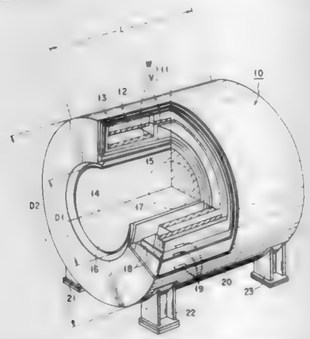
Tamiko Hirumachi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 12, 1996, Ser. No. 600,031

Claims priority, application Japan, Feb. 14, 1995, 7-025170

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—319 **13 Claims**



1. A magnetic field generating magnet comprising:

a first coil assembly having small-diameter coils and a large-diameter coil, for generating a main magnetic field in a predetermined area; and

a second coil assembly for generating a shield magnetic field for actively shielding a magnetic field leaking from the main magnetic field,

wherein each of the small-diameter coils and large-diameter coil of said first coil assembly is connected to said second coil assembly such that a direction of a current flow through the large-diameter coil of said first coil assembly is opposite to a direction of current flow through said second coil assembly, and the large-diameter coil of said first coil assembly is arranged near to or outside said second coil assembly.

5,633,588

SUPERCONDUCTING MAGNET APPARATUS USING SUPERCONDUCTING MULTILAYER COMPOSITE MEMBER, METHOD OF MAGNETIZING THE SAME AND MAGNETIC RESONANCE IMAGING SYSTEM EMPLOYING THE SAME

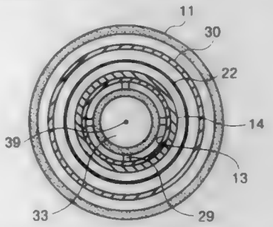
Takao Hommei, Hitachinaka; Yutaka Takuma, Tokyo; Hirotaka Takeshima, Ryugasaki; Hiroyuki Takeuchi, Kashiwa; Yoshiyuki Miyamoto, Abiko; Kiyoshi Fukutomi, Tokyo, and Hajime Kawano, Abiko, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,211

Claims priority, application Japan, Sep. 16, 1994, 6-222196; Sep. 16, 1994, 6-222198; Sep. 19, 1994, 6-223547; Sep. 19, 1994, 6-223548; Sep. 19, 1994, 6-223549; Sep. 19, 1994, 6-223552; Sep. 21, 1994, 6-226276; Sep. 21, 1994, 6-226277; Sep. 21, 1994, 6-226278; Sep. 21, 1994, 6-226825; Sep. 21, 1994, 6-226826; Oct. 26, 1994, 6-262359; Jun. 27, 1995, 7-160396

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—320 **35 Claims**



1. A superconducting magnet apparatus, comprising:

a cryostat vessel for containing therein coolant for realizing superconductivity;

magnetic flux generating means disposed within said cryostat vessel and including a NbTi/Nb/Cu superconducting multilayer composite member constituting a sustaining medium for holding a persistent current which generates a magnetic flux along a center axis of a predetermined magnetic field space; and

means for holding said magnetic flux generating means within said cryostat vessel.

5,633,589

DEVICE AND METHOD FOR LOCATING AN INGROUND OBJECT AND A HOUSING FORMING PART OF SAID DEVICE

John E. Mercer, 23401 94th Ave. South, Kent, Wash. 98031

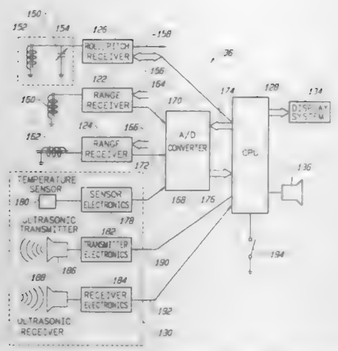
Continuation of Ser. No. 259,441, Jun. 14, 1994, Pat. No. 5,444,382, which is a continuation of Ser. No. 958,941, Oct. 9, 1992, Pat. No. 5,337,002, which is a continuation-in-part of Ser. No. 662,939, Mar. 1, 1991, Pat. No. 5,155,442. This application May 16, 1995, Ser. No. 442,481

Int. Cl.[6] G01V *3/11;3/165;* **H04B** *13/02*

U.S. Cl. 324—326 **18 Claims**

1. A method of locating a generally horizontally extending dipole magnetic field transmitter which is disposed underground within a particular vertical transmitter plane defined by its dipole axis and which generates a magnetic dipole field containing magnetic flux lines, each one of which extends from one end of the transmitter around to its opposite end and all of which are spaced

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from one another about the dipole axis of said transmitter, said method comprising the steps of:

(a) providing a locating receiver including an antenna arrangement and means for producing

(i) a first signal if any given one of said flux lines impinges said antenna configuration in a first way,

(ii) a second signal if any given one of said flux lines impinges said antenna arrangement in a second way, and

(iii) a third signal if any given one of said flux lines impinges said antenna arrangement in a third way;

(b) moving said locating receiver above the ground at a predetermined orientation and within a first vertical receiver plane transverse to the vertical transmitter plane containing the axis of said transmitter either ahead of or behind the transmitter with respect to its general direction of movement so as to cause said receiver to produce successively first, second and third signals at certain respective first, second and third locations within said first receiver plane;

(c) thereafter, again moving said locating receiver above the ground at said predetermined orientation and within a second vertical receiver plane transverse to the vertical transmitter plane containing the axis of said transmitter either ahead of or behind the transmitter with respect to its general direction of movement so as to cause said receiver to produce successively first, second and third signals at certain respective tint. second and third locations within said second receiver plane; and

(d) thereafter, still again moving said locating receiver above the ground within a third vertical receiving plane defined by said second locations within said first and second receiving planes so as to cause said receiver to produce first, second and third signals in a predetermined way which will establish a point above ground directly over the transmitter.

5,633,590

FORMATION RESISTIVITY MEASUREMENTS FROM WITHIN A CASED WELL USED TO QUANTITATIVELY DETERMINE THE AMOUNT OF OIL AND GAS PRESENT

William B. Vail, III, Bothell, Wash., assignor to ParaMagnetic Logging, Inc., Woodinville, Wash.

Continuation-in-part of Ser. No. 83,615, Jun. 28, 1993, Pat. No. 5,570,024, which is a continuation-in-part of Ser. No. 754,965, Sep. 4, 1991, Pat. No. 5,223,794, which is a division of Ser. No. 434,886, Nov. 13, 1989, Pat. No. 5,075,626, which is a continuation-in-part of Ser. No. 89,697, Aug. 26, 1987, Pat. No. 4,882,542, which is a continuation-in-part of Ser. No. 927,115, Nov. 4, 1986, Pat. No. 4,820,989. This application Mar. 17, 1994, Ser. No. 214,648

Int. Cl.[6] G01V *3/20*

U.S. Cl. 324—368 **10 Claims**

5. The method to determine the amount of oil present in a particular geological formation characterized as having a porosity, a salinity of any salt water present, a total resistivity, and a relative amount of oil and gas present, said geological formation being adjacent to a cased well, comprising the steps of:

(a) obtain information from within the cased well to determine the porosity of the geological formation; and

(b) obtain information from within the cased well to determine the salinity of any salt water present in the geological formation; and

(c) obtain information from within the cased well to determine the total resistivity of the geological formation; and

(d) use said porosity, water salinity, and total resistivity information in Archie's Equations to determine the total combined amount of oil and gas present in the geological formation; and

(e) obtain information from within the cased well to determine the relative amount of oil and gas present in the geological formation; and

(f) use said total combined amount of oil and gas present and said relative amount of oil and gas present to quantitatively determine the amount of oil in said geological formation.

5,633,591

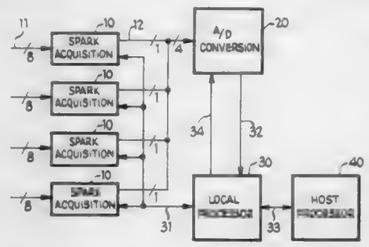
APPARATUS AND METHOD FOR MEASURING THE BREAKDOWN VOLTAGE BETWEEN TWO ELECTRODES SEPARATED BY A DIELECTRIC

William E. Childress, Norris, and William A. Griffith, Knoxville, both of Tenn., assignors to Gas Research Institute, Chicago, Ill.

Continuation of Ser. No. 229,695, Apr. 19, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 692,505

Int. Cl.[6] F02P *17/00;* **G01M** *15/00*

U.S. Cl. 324—399 **10 Claims**



1. An apparatus for measuring a breakdown voltage between two electrodes separated by a dielectric, the apparatus comprising:

sensor means for sensing a voltage across the two electrodes, the sensor means providing an output charge substantially indicative of the voltage across the two electrodes;

peak-hold means operably coupled to the sensor means for storing a charge substantially indicative of a total of the output charge provided by the sensor means prior to reaching the breakdown voltage between the two electrodes, the peak-hold means providing an output voltage substantially indicative of the stored charge as an output of the apparatus;

spark detection means operably coupled to the sensor means for detecting the occurrence of a spark through the dielectric and across the two electrodes; and

restrike clamping means for substantially precluding further transfer of charge from the sensor means to the peak-hold means for a pre-determined period of time subsequent to and in response to the detected occurrence of the spark.

5,633,592

CHARGE STATUS INDICATOR

Gerhard Lang, Altweilnau, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany

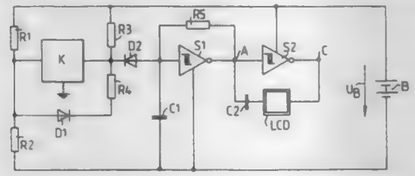
PCT No. PCT/EP93/03135, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/14079, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 9, 1993, Ser. No. 448,387

Claims priority, application Germany, Dec. 12, 1992, 42 41 975.1

Int. Cl.[6] G01R *31/36;13/40*

U.S. Cl. 324—433 **10 Claims**



1. A circuit arrangement for indicating the charge status of a battery in an electrical appliance comprising:

a voltage comparator with hysteresis for detecting a battery voltage of the battery,

an indicating device having a symbol printed thereon, the indicating device switched to an active condition when the voltage is above a first threshold voltage, the indicating device switched to a passive condition when the voltage is below a second threshold voltage with the absolute value of the first threshold voltage being greater than the absolute value of the second threshold voltage, the symbol being visible only when the indicating device is in the passive condition.

5,633,593

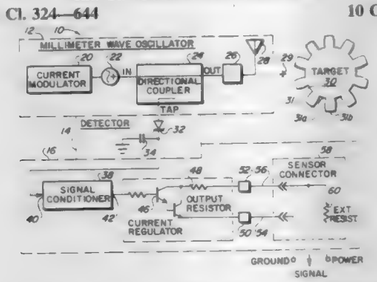
APPARATUS FOR SENSING PROXIMITY OF A MOVING TARGET

George D. Wolff, 2929 Dundee Rd., Winter Haven, Fla. 33884; Marshall E. Smith, Jr., P. O. Box 7, Eaton Park, Fla. 33840, and George T. Ruck, 6812 Bowerman West, Worthington, Ohio 43085

Division of Ser. No. 703,269, May 22, 1991, Pat. No. 5,459,405. This application May 31, 1995, Ser. No. 454,696

Int. Cl.[6] G01R *27/00;* **G01S** *13/04*

U.S. Cl. 324—644 **10 Claims**



1. An apparatus for sensing the position of a moving target, the apparatus comprising:

detecting means for detecting a distance signal representative of a range of distances between a reference point and a moving target;

maximum and minimum generating means responsive to said detecting means for generating a maximum distance range DC voltage signal representative of a maximum distance range value between a reference point and a moving target and for generating a minimum distance range DC voltage signal representative of a minimum distance range value between a reference pint and a moving target;

storing means responsive to the maximum distance range signal and the minimum distance range signal for storing the maximum and minimum distance range DC voltage signals during a predetermined time period;

range value generating means responsive to said storing means for generating a range value signal having an amplitude representative of a range value between the maximum distance range value and the minimum distance range value; and

output generating means responsive to the range value signal for generating an output signal representative of the distance between a reference point and a moving target when the amplitude of the range value signal exceeds a predetermined threshold.

5,633,594

DIFFERENTIAL TYPE CAPACITIVE SENSOR SYSTEM

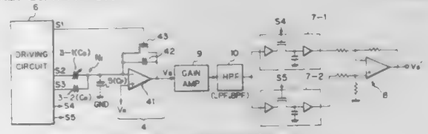
Hiroyuki Okada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 28, 1995, Ser. No. 563,486

Claims priority, application Japan, Nov. 28, 1994, 6-292859

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—679 **15 Claims**



1. A capacitive sensor system comprising:

first means for generating a first driving signal;

second means for generating a second driving signal opposite in phase to said first driving signal;

a sensor capacitor, connected to said first means, for receiving said first driving signal;

a reference capacitor, connected to said second means, for receiving said second driving signal;

a switched capacitor circuit, connected to said sensor capacitor and said reference capacitor, for generating a signal corresponding to a difference in capacitance between said sensor capacitor and said reference capacitor;

a first sample-and-hold circuit, connected to said switched capacitor circuit, for sampling and holding an output of said switched capacitor circuit when said first and second driving signals are high and low, respectively;

a second sample-and-hold circuit, connected to said switched capacitor circuit, for sampling and holding the output of said switched capacitor circuit when said first and second driving signals are low and high, respectively; and

a differential amplifier, connected to said first and second sample-and-hold circuits, for generating and output signal in response to a difference between outputs of said first and second sample-and-hold circuits.

5,633,595

IC ANALYSIS SYSTEM AND ELECTRON BEAM PROBE SYSTEM AND FAULT ISOLATION METHOD THEREFOR

Koshi Uedn, Machida; Akira Goishi, Kazo, and Masayuki Kuribara, Gyoda, all of Japan, assignors to Advantest Corporation, Tokyo, Japan

Division of Ser. No. 312,953, Sep. 30, 1994, which is a division of Ser. No. 181,584, Jan. 14, 1994, Pat. No. 5,528,156. This application Apr. 7, 1995, Ser. No. 418,418

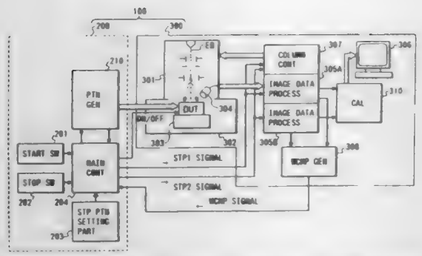
Claims priority, application Japan, Jul. 30, 1993, 5-190431; Jul. 30, 1993, 5-190449; Sep. 21, 1993, 5-257624

Int. Cl.[6] G01R *31/305*

U.S. Cl. 324—751 **2 Claims**

1. A method for specifying a failed portion of a device under test in a display image by an IC analysis system provided with an electron beam probe system which scans and irradiates the surface

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of said device under test, measures a quantity of secondary emission from each irradiated point and displays a surface potential distribution of said device under test, said method comprising the steps of:

A. turning OFF power supply to said device under test to thereby fix the logical level of a wiring conductor of said device under test to a logical low level;

B. holding OFF the power supply to said device under test and scanning and irradiating said device under test with an electron beam and acquiring first image data;

C. turning ON the power supply to said device under test;

D. holding ON the power supply to said device under test, providing a predetermined one of a series of test patterns to said device under test and, concurrently, scanning and irradiating said device under test with an electron beam and acquiring second image data;

E. creating image data of a difference between said first image data and said second image data; and

F. displaying said difference image data.

5,633,596

FIXTURELESS AUTOMATIC TEST EQUIPMENT AND A METHOD FOR REGISTRATION FOR USE THEREWITH

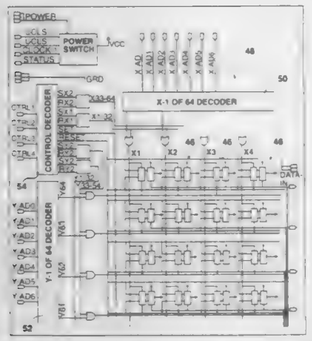
Avner Ilani, Kiron, Israel, assignor to Key Solutions Ltd., Kiron, Israel

Filed Jan. 9, 1995, Ser. No. 370,067

Claims priority, application Israel, Jan. 11, 1994, 107550/2; Jan. 11, 1994, 107550/3; Aug. 24, 1994, 107550/4

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—754 **17 Claims**



1. A method for registration between a test mattress of automatic test equipment and a workpiece under test, the method comprising the steps of:

(a) providing a reference point of the test mattress;

(b) providing a reference file of the workpiece, the reference file including X and Y co-ordinates of the elements of the workpiece relative to a reference point of the workpiece;

(c) determining an X-offset of the workpiece relative to the reference point of the test mattress;

(d) determining an Y-offset of the workpiece relative to the reference point of the test mattress;

(e) determining a placement angle of the workpiece relative to the test mattress;

(f) updating the X and Y co-ordinates of the elements of the workpiece in the reference file of the workpiece such that the X and Y co-ordinates are relative to the reference point of the test mattress; and

(g) testing the workpiece using said updated reference file of step (f).

5,633,597

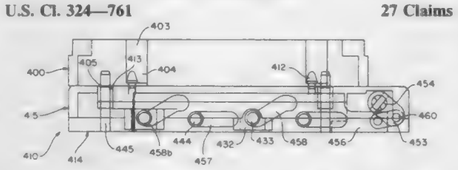
MICRO INTERFACE TECHNOLOGY SYSTEM UTILIZING SLIDE ENGAGEMENT MECHANISM

Jeffrey P. Stowers, Stanton; Paul D. Blackard, Waynesborok, and Randall C. Garman, Waynesboro, all of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

Continuation-in-part of Ser. No. 848,894, Mar. 10, 1992, Pat. No. 5,227,718, which is a continuation-in-part of Ser. No. 49,395, Apr. 21, 1993, Pat. No. 5,420,514, and a continuation-in-part of Ser. No. 320,514, Nov. 10, 1994, Pat. No. 5,576,631. This application Nov. 18, 1994, Ser. No. 344,575

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—761 **27 Claims**



15. A connection interface system for positioning and electrically connecting a testing device to a device under test for the testing device to exercise and test the device under test, said connection interface system comprising:

a receiver module electrically connected to the testing device and including at least one receiver electrical connector, said receiver module including:

a top frame;

a bottom frame, movable with respect to said top frame and operatively connected thereto, said bottom frame including at least one receiver electrical connector;

an engagement mechanism movably connected to said bottom frame and to said top frame and disposed therein, said engagement mechanism either engaging or disengaging said bottom frame with said top frame in response to an external stimulus to one of engage and disengage said at least one receiver electrical connector in said bottom frame to at least one test electrical connector facing opposite thereto with respect to said top frame; and

an integrated test adapter electrically connected to the device under test, coupled to said receiver module and including the at least one test electrical connector,

wherein when said engagement mechanism engages said bottom frame to said top frame, the at least one test electrical connector electrically engages with the at least one receiver electrical connector permitting the testing device to at least one of exercise and test the device under test.

5,633,598

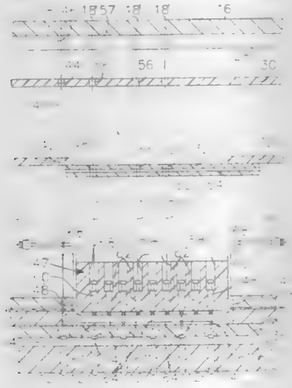
TRANSLATOR FIXTURE WITH MODULE FOR EXPANDING TEST POINTS

David R. Van Loan, Diamond Bar, and Mark A. Swart, Upland, both of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.

Continuation of Ser. No. 417,441, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 200,783, Feb. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 81,681, Jun. 23, 1993, abandoned. This application Feb. 1, 1996, Ser. No. 593,177

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—761 **6 Claims**



1. In a grid-type test fixture for testing a printed circuit board in which the grid fixture includes a grid base supporting spring-loaded test probes arranged in a grid pattern having a standard on-center spacing, the probes in the grid base being individually connected to corresponding electrical test circuits in an external automatic electronic test analyzer, and a translator fixture mounted between the grid base and the board under test, in which the translator fixture has vertically spaced-apart and parallel fixturing plates with holes drilled on patterns to support individual generally upright translator pins separately inserted into the holes of the fixturing plates for translating electrical connections between an off-grid pattern of test points in the board under test to the grid pattern of corresponding spring probes in the grid base, the improvement comprising a high density translator module for connecting to one or more regions of the board under test where test point density exceeds the standard on-center spacing of the probes in the grid base, the high density translator module including a grid pattern of feed-through spring probes contacting a first set of said translator pins which make contact with to certain test points in the high density region on the board, the feed-through spring probes on the translator module making normal spring contact with the grid pattern of standard spring probes in the grid base, the high density test module also including a second set of spring probes located between the rows and columns of feed-through probes, the second set of spring probes supporting a corresponding second set of translator pins for making contact with test points in the high density region of the board, the second set of translator pins separately inserted into the holes of the fixturing plates of the translator module, the second set of spring probes making contact with electrical test circuits within an electrical terminal means connected to and extending from the high density translator module to a peripheral region of the grid base for coupling to test circuit electronics in the electronic test analyzer without the need for increasing the test circuits in the test analyzer.

5,633,599

SEMICONDUCTOR INTEGRATED CIRCUIT WITH A TEST CIRCUIT FOR INPUT BUFFER THRESHOLD

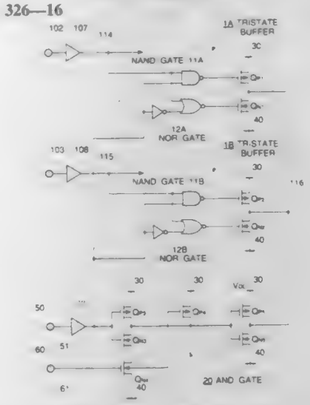
Shuji Kubota, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 31, 1995, Ser. No. 509,616

Claims priority, application Japan, Jul. 29, 1994, 6-177868

Int. Cl.[6] H03K *19/003*

U.S. Cl. 326—16 **8 Claims**



1. A digital semiconductor integrated circuit of the CMOS transistor structure having a plurality of input buffers, comprising:

a first logic gate provided for each of said input buffers, for outputting an output logic value determined by an output logic value of a corresponding input buffer, and

a second logic gate for designating a logic value to be outputted from said first logic gate, in accordance with an output logic determined by an external control signal,

an output node of said first and second logic gates being interconnected to the same signal line, so that when at least one of said plurality of input buffers outputs a logic signal different from a logic signal expected in response to an input signal applied from an external source and in accordance with said external control signal, the output logic values of said first and second logic gates become different from each other, whereby a signal collision occurs on said signal line, resulting in an increased power supply current.

5,633,600

OUTPUT BUFFER CIRCUIT HAVING A MINIMIZED OUTPUT VOLTAGE PROPAGATION

Yasuhiro Ohnishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,780

Claims priority, application Japan, Sep. 29, 1994, 6-235151

Int. Cl.[6] H03K *19/017*

U.S. Cl. 326—17 **4 Claims**

1. An output buffer circuit comprising:

an input terminal;

an output terminal;

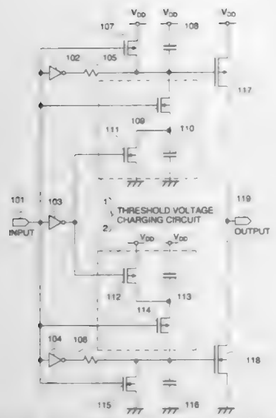
an output driving P-channel transistor having a drain electrode connected to said output terminal and a source electrode connected to a voltage supply line;

a capacitor having one end connected to a gate electrode of said output driving P-channel transistor, the other end of said capacitor being connected to said voltage supply line;

an inverter having an input connected to said input terminal and an output connected through a resistor to said one end of said capacitor;

a discharging P-channel transistor having a gate connected to said input terminal and connected in parallel to said capacitor, so that when a potential on said input terminal is brought to a

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low level for the purpose of turning off said output driving P-channel transistor, said discharging P-channel transistor is turned on so as to discharge said capacitor; and

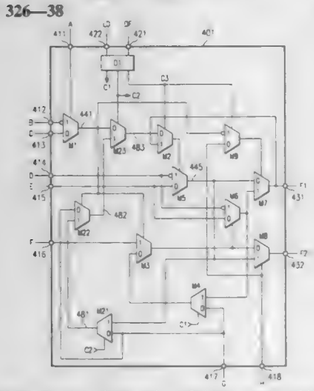
a threshold voltage charging circuit connected to said one end of said capacitor and controlled by said potential on said input terminal for rapidly charging said capacitor to a threshold voltage level of said output driving P-channel transistor when the potential on said input terminal is brought to a high level for the purpose of turning on said output driving P-channel transistor.

5,633,601

FIELD PROGRAMMABLE GATE ARRAY LOGIC MODULE CONFIGURABLE AS COMBINATIONAL OR SEQUENTIAL CIRCUITS

N. S. Nagaraj, Karntaka, India, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 10, 1995, Ser. No. 401,835
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—38 **19 Claims**



19. A logic module for use in a field programmable gate array integrated circuit comprising:

a plurality of input terminals, two output terminals, a plurality of logic elements, and an interconnection network interconnecting said input terminals, logic elements and output terminals, the logic elements being configurable to form preselected types of sequential and combinational logic functions in response to a plurality of control states; and

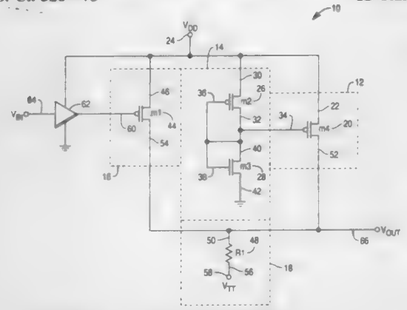
a decoder having a plurality of inputs connected to certain of said input terminals, wherein the decoder decodes said plurality of control states in response to signals placed on the decoder inputs such that the number of control states is greater than the number of decoder inputs.

5,633,602

LOW VOLTAGE CMOS TO LOW VOLTAGE PECL CONVERTER

Ikuo J. Sanwo, San Marcos; Joseph D. Russell, La Mesa, and Juei-Po Lin, La Jolla, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 14, 1995, Ser. No. 528,445
Int. Cl.[6] H03K *19/0185*
U.S. Cl. 326—73 **12 Claims**



1. A CMOS to ECL converter, comprising:

a constant current source for providing an initial current to sustain an ECL low logic level;

a voltage divider, coupled to the constant current source, for stabilizing the initial current provided from the constant current source, wherein the voltage divider is comprised of a complementary pair of MOS transistors;

a switchable constant current source, coupled to the constant current source, for providing an additional current to the initial current from the constant current source to sustain an ECL high logic level; and

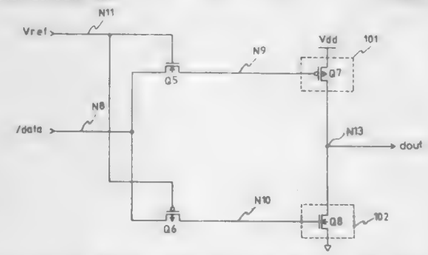
biasing means, coupled to the constant current source and the switchable constant current source, for providing a voltage offset to the initial current from the constant current source and the additional current from the switchable current source.

5,633,603

DATA OUTPUT BUFFER USING PASS TRANSISTORS BIASED WITH A REFERENCE VOLTAGE AND A PRECHARGED DATA INPUT

Jae J. Lee, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichon-kun, Rep. of Korea

Filed Dec. 26, 1995, Ser. No. 579,578
Int. Cl.[6] H03K *19/0185*
U.S. Cl. 326—83 **9 Claims**



1. A data output buffer circuit for a semiconductor device for transferring read cell data to peripheral circuits, comprising:

an input terminal for inputting the read cell data, wherein the data from said input terminal is initially precharged with half of a supply voltage;

first data transfer means for transferring the data from said input terminal when it has a first logic level;

second data transfer means for transferring the data from said input terminal when it has a second logic level;

high logic transfer means for transferring a high logic signal in response to an output signal from said first data transfer means;

low logic transfer means for transferring a low logic signal in response to an output signal from said second data transfer means; and

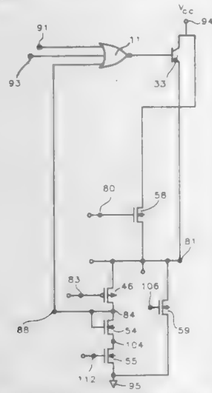
an output terminal for outputting the high logic signal from said high logic transfer means or the low logic signal from said low logic transfer means to the peripheral circuits.

5,633,604

MIXED MODE OUTPUT BUFFER CIRCUIT FOR CMOSIC

Tah-Kang J. Ting, Hsinchu, Taiwan, assignor to Etron Technology, Inc., Hsinchu, Taiwan

Division of Ser. No. 512,237, Aug. 7, 1995, Pat. No. 5,534,789. This application Jun. 13, 1996, Ser. No. 663,437
Int. Cl.[6] H03K *19/0948;19/082*
U.S. Cl. 326—85 **3 Claims**



1. A load detection and feedback circuit, comprising:

a V_{cc} voltage supply node;

a ground node;

an output voltage node;

an internal voltage node;

a interconnect node;

a modified OR-INVERT circuit having signal inputs, a feedback input, and an output;

an NPN bipolar transistor having a collector, a base, and an emitter wherein said collector of said NPN bipolar transistor is connected to said V_{cc} voltage supply node, said emitter of said NPN bipolar transistor is connected to said output voltage node, and said base of said NPN bipolar transistor is connected to said output of said modified OR-INVERT circuit;

a P channel metal oxide semiconductor field effect transistor having a drain, a gate, and a source wherein said source of said P channel metal oxide semiconductor field effect transistor is connected to said output voltage node and said gate of said P channel metal oxide semiconductor field effect transistor is connected to said interconnect node;

a first N channel metal oxide semiconductor field effect transistor having a drain, a gate, and a source wherein said drain of said first N channel metal oxide semiconductor field effect transistor is connected to said gate of said first N channel metal oxide semiconductor field effect transistor, to said drain of said P channel metal oxide semiconductor field effect transistor, and to said feedback input of said modified OR-INVERT circuit; and

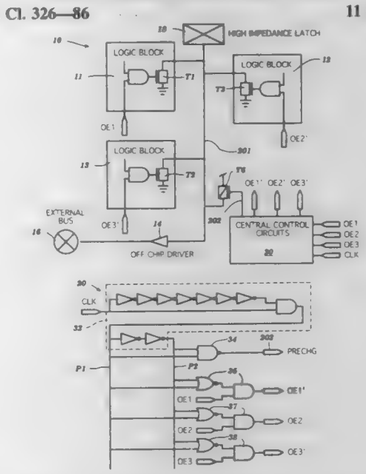
a second N channel metal oxide semiconductor field effect transistor having a drain, a gate, and a source wherein said drain of said second N channel metal oxide semiconductor field effect transistor is connected to said source of said first N channel metal oxide semiconductor field effect transistor, said gate of said second N channel metal oxide semiconductor field effect transistor is connected to said internal voltage node, and said source of said second N channel metal oxide semiconductor field effect transistor is connected to said ground node.

5,633,605

DYNAMIC BUS WITH SINGULAR CENTRAL PRECHARGE

Jeffrey S. Zimmerman, Essex Junction; John A. Fifield; Christopher P. Miller, both of Underhill, and Robert E. Busch, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1995, Ser. No. 450,764
Int. Cl.[6] H03K *19/0185;19/0944;19/096*
U.S. Cl. 326—86 **11 Claims**



9. A system for controlled write to a dynamic bus, comprising:

a) a writing device, coupled to the dynamic bus for writing data to the dynamic bus for writing data to the dynamic bus;

b) a precharge device, coupled to the dynamic bus for precharging the dynamic bus; and

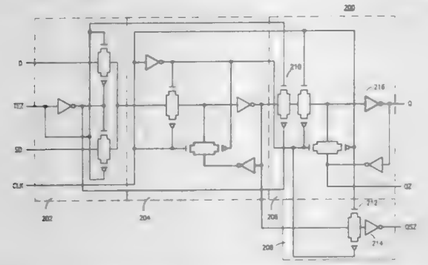
c) control means for controlling the precharge device to perform precharging the dynamic bus in a single phase of a clock cycle, and for controlling the writing device to perform writing of the data to the dynamic bus during the single phase of the clock cycle, said control means having a first input coupled to a clock signal line, a second input coupled to an output enable signal line, a first output coupled to said precharge device and a second output coupled to said writing device.

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5,633,606
SCAN FLIP-FLOP THAT HOLDS STATE DURING SHIFTING

Brian C. Gaudet; Rajendran Sharma, both of San Jose, and Ronald Pasqualini, Los Altos, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 450,970, May 25, 1995, abandoned. This application Jul. 20, 1995, Ser. No. 504,898
Int. Cl.[6] H03K *3/289*
U.S. Cl. 327—202 **6 Claims**



1. A scan flip-flop circuit that holds state during scan shifting, the scan flip-flop circuit comprising:

a multiplexer stage that responds to a logic state of a test enable control signal by providing a normal data input signal received at a normal data input node as the multiplexer stage output when the test enable control signal is in an inactive logic state and by providing a scan data input signal received at a scan input node as the multiplexer stage output when the test enable control signal is in an active logic state;

a master latch stage connected to receive and store the multiplexer stage output on periodic transitions of a clock signal provided to the master latch stage;

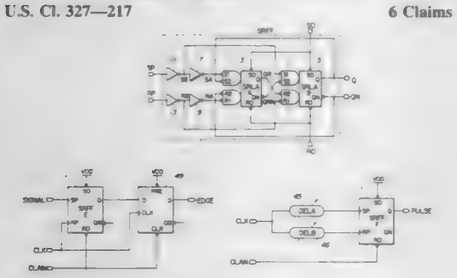
a slave latch stage that includes a slave latch gating element connected to the master latch stage and responsive to the test enable control signal such that a data value stored in the master latch stage is provided from a master latch output node to the slave latch stage on periodic transitions of the clock signal when the test enable control signal is in the inactive logic state and is blocked from the slave latch stage when the test enable control signal is in the active logic state; and

a dynamic scan latch element that passes data value stored in the master latch stage to a scan data output of the scan flip-flop circuit on periodic transitions of the clock signal when the test enable control signal is in the active logic state.

5,633,607
EDGE TRIGGERED SET-RESET FLIP-FLOP (SRFF)

Bruce Millar, Stittsville, Canada, assignor to Mosaid Technologies Incorporated, Kanata, Canada

Filed Apr. 28, 1995, Ser. No. 430,228
Int. Cl.[6] H03K *3/355;3/356*
U.S. Cl. 327—217 **6 Claims**



1. A timer comprising:

(a) first and second gated SR (set-reset) latches each including two pair of inputs S1, S2 and R1, R2 and a pair of outputs Q, QN,

(b) the Q output of the first gated SR latch being connected to the R2 input of the second gated SR latch, and the QN output of the first gated SR latch being connected to the S2 input of the second gated SR latch,

(c) the Q output of the second gated SR latch being connected to the S2 input of the first gated SR latch, and the QN output of the second gated SR latch being connected to the R2 input of the first gated SR latch,

(d) means for applying a delayed representation of a first pulse signal to the S1 input of the first gated SR latch and means for applying a delayed representation of a second pulse signal to the R1 input of the first gated SR latch,

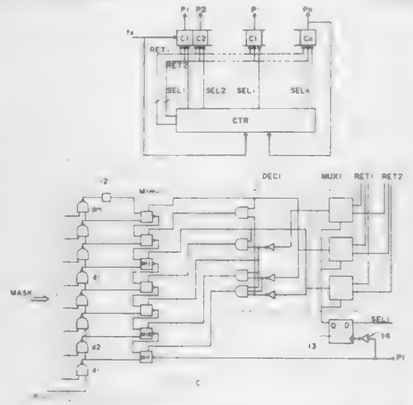
(e) means for applying an inverted representation of the first pulse signal to the S1 input of the second gated SR latch and means for applying an inverted representation of the second pulse signal to the R1 input of the second gated SR latch,

whereby output signals representing a differential between leading edges of the first and second pulse signals are provided at the outputs Q, QN of the second gated SR latch.

5,633,608
DIGITAL DELAY LINE

Jean-Luc Danger, Paris, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Sep. 15, 1994, Ser. No. 306,488
Claims priority, application France, Sep. 27, 1993, 93 11750
Int. Cl.[6] H03K *5/13;5/159*
U.S. Cl. 327—270 **19 Claims**



1. A digital delay line to supply from a periodic input signal n signals with the same period mutually phase-shifted by one n-th of the input signal period, including:

n cells each of which includes m delay elements in series, each output of a delay element being connected to an input of a multiplexer, each multiplexer having an output that is one of the n signals;

means for comparing the output phase of the n-th cell with the input signal phase to provide an error signal; and

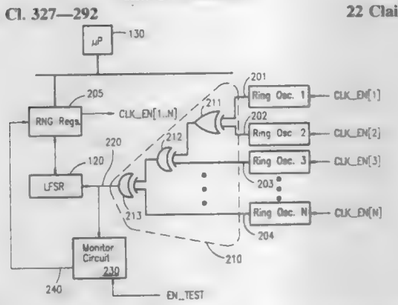
means for modifying the output of the multiplexer of one of the n cells in response to the error signal;

wherein each multiplexer is formed by m-1 two-input multiplexers of different rank, a two-input multiplexer with a highest rank receiving the outputs of the last two delay elements in series, and each respective two-input multiplexer of lower rank receiving the output of a two-input multiplexer having an immediately higher rank and the output of a delay element having a rank lower than the delay element processed by the two-input multiplexer of immediately higher rank.

5,633,609
CLOCK SYSTEM WITH INTERNAL MONITOR CIRCUITRY FOR SECURE TESTING

Richard L. Duncan, Bedford, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 30, 1995, Ser. No. 520,887
Int. Cl.[6] H03K *5/19*
U.S. Cl. 327—292 **22 Claims**



1. A clock system that is testable in a secure environment, the system comprising:

a plurality of separately enableable clock generator circuit modules, each of said clock generator circuit modules generating a separate clock signal when enabled;

combining circuitry that receives the separate clock signals from those clock generator circuit modules which are enabled and derives a derived clock signal therefrom; and

monitor circuitry that receives said derived clock signal, detects whether there are transitions in said derived clock signal, and provides a monitor indication signal that indicates a result of the detection; and

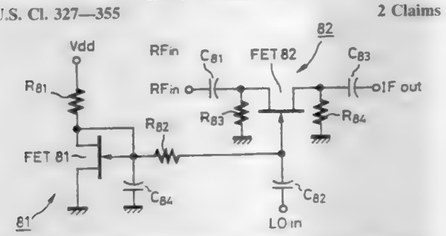
enabling and disabling means for selectively enabling separate combinations of at least one of said clock generator circuit modules and for sampling said monitor indication signal while each of said separate combinations of clock generator circuit modules is enabled,

wherein said clock system can be tested without providing the separate clock signals outside the clock system.

5,633,610
MONOLITHIC MICROWAVE INTEGRATED CIRCUIT APPARATUS

Itaru Maekawa; Takahiro Ohgihara, and Kuninobu Tanaka, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 179,048, Jan. 7, 1994, Pat. No. 5,486,787. This application Sep. 29, 1995, Ser. No. 536,245
Claims priority, application Japan, Jan. 8, 1993, 5-016795; Mar. 18, 1993, 5-085641; Mar. 29, 1993, 5-069976
Int. Cl.[6] G06G *7/14*
U.S. Cl. 327—355 **2 Claims**



1. A microwave semiconductor integrated circuit, comprising:

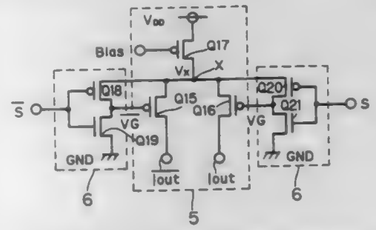
a mixer circuit formed of an active circuit element field effect transistor having its source-drain path connected between an RF input and IF output, a first resistor connected at an RF input side of the source-drain path to ground and a second resistor connected between an IF output side of the source-drain path to ground, and a gate of the mixing circuit connecting to a local oscillator as an input; and

a bias circuit comprising an enhancement mode field effect transistor having its source directly connected to ground, its gate connecting through a third resistor to the gate of the mixer circuit field effect transistor, the gate also connecting directly to the drain of the bias circuit field effect transistor, and a fourth resistor connecting the drain of the bias circuit field effect transistor to a power supply potential.

5,633,611
COMPLEMENTARY CURRENT SOURCE CIRCUIT

Hiroyuki Kohno, and Takahiro Miki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 557,713
Claims priority, application Japan, Jun. 6, 1995, 7-139493
Int. Cl.[6] H03K *17/687*
U.S. Cl. 327—543 **6 Claims**



1. A complementary current source circuit, comprising:

a current source comprising

at least one first transistor of a first conductivity type, having a first current electrode connected to a first power supply, a second current electrode and a gate to which a constant bias voltage is applied,

a first switching transistor having a first current electrode connected to said second current electrode of said first transistor and a second current electrode connected to a first current output terminal, controlled by a first driving signal which is generated in accordance with a first digital signal, and

a second switching transistor having a first current electrode connected to said second current electrode of said first transistor and a second current electrode connected to a second current output terminal, controlled by a second driving signal which is generated in accordance with a second digital signal;

a first driving circuit for generating said first driving signal to drive said first switching transistor; and

a second driving circuit for generating said second driving signal to drive said second switching transistor, wherein

a first potential as the high level of said first driving signal is lower than a potential of said first power supply if the first conductivity type is P type, and

a second potential as the low level of said first driving signal is higher than a ground potential if the first conductivity type is N type, wherein

said first driving circuit includes a first inverter circuit and said second driving circuit includes a second inverter circuit,

said first inverter circuit comprises a second transistor of the first conductivity type, having a source connected to said second current electrode of said first transistor, a drain for outputting said first driving signal and a gate, and

said second inverter circuit comprises a third transistor of the first conductivity type, having a source connected to said second current electrode of said first transistor, a drain for outputting said second driving signal and a gate.

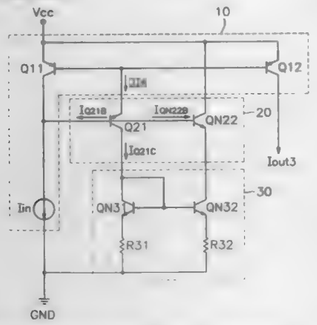
VOL 1198 ISS 4 MAY 27 1997 UMI

5,633,612

PRECISION CURRENT MIRROR CIRCUIT

Dong-Cheol Lee, Inchon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 29, 1995, Ser. No. 536,178
Claims priority, application Rep. of Korea, May 22, 1995, 95-12753
Int. Cl.[6] H03F 3/04
U.S. Cl. 330—288 15 Claims



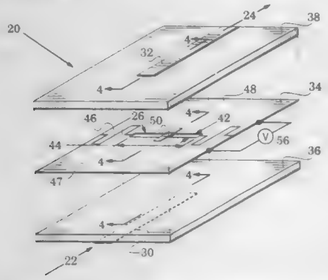
1. A precision current mirror circuit, comprising:
signal input/output means having a first current mirror of two transistors, the current of one of said transistors being the same as the current of the other of said transistors;
current control means having two different conductivity type transistors, for controlling the base currents of said transistors of said first current mirror of said signal input/output means;
current amplifying means for controlling the currents of said transistors of said current control means by amplifying the currents of said transistors of said current control means so that their base currents cancel each other.

5,633,613

MODULATOR-COUPLED TRANSMISSION STRUCTURE AND METHOD

Perry A. MacDonald, Culver City, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 22, 1995, Ser. No. 393,593
Int. Cl.[6] H01Q 13/08; H01P 5/00
U.S. Cl. 332—163 21 Claims



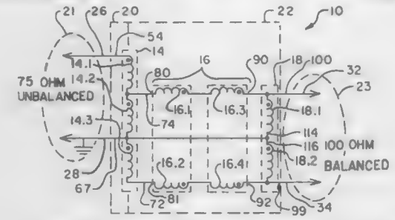
1. A modulator for modulating a microwave signal with a modulation signal, comprising:
an input signal member for receiving a microwave signal:
an output signal member;
a shield member positioned between said input and output signal members with each of said input and output signal members spaced from said shield member;
an aperture formed by said shield member and positioned to couple at least a portion of said microwave signal from said input signal member to said output signal member; and
a microwave variable impedance device which is responsive to a modulation signal and is positioned across said aperture to modulate said portion of said microwave signal as it passes through said aperture.

5,633,614

UNBALANCED TO BALANCED SIGNAL LINE COUPLING DEVICE

John E. Decramer, Marshall, Minn., assignor to BH Electronics, Inc., Burnsville, Minn.

Continuation of Ser. No. 358,739, Dec. 19, 1994, Pat. No. 5,495,212. This application Dec. 19, 1995, Ser. No. 574,494
Int. Cl.[6] H03H 7/42
U.S. Cl. 333—25 20 Claims



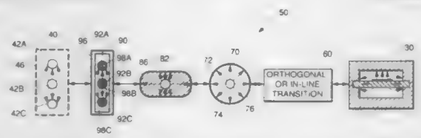
1. A coupling device for connection between an unbalanced signal line having a first characteristic impedance and a balanced signal line having a second characteristic impedance, the unbalanced signal line including a grounded conductor, the coupling device comprising:
a) a balun comprised of a pair of balun input leads, a pair of balun output leads, and a core, the input leads electrically connected to the unbalanced signal line, the balun configured for matching the first characteristic impedance to the second characteristic impedance and for providing a balanced signal at the output leads;
b) a common mode choke comprised of a core, a pair of windings having a pair of input ends and a pair of output ends, the input ends of the windings electrically connected to the balun output leads and the pair of output ends electrically connected to the balanced signal line by a pair of output signal lines; and
c) a common mode shunt comprised of a core, first winding with a first winding lead and an opposite first winding grounded lead, and a second winding with a second winding lead and an opposite second winding grounded lead, the first winding grounded lead and the second winding grounded lead electrically connected to the grounded conductor, the first winding lead and second winding lead connected to the output signal lines.

5,633,615

VERTICAL RIGHT ANGLE SOLDERLESS INTERCONNECTS FROM SUSPENDED STRIPLINE TO THREE-WIRE LINES ON MIC SUBSTRATES

Clifton Quan, Arcadia, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 26, 1995, Ser. No. 576,997
Int. Cl.[6] H01P 5/08
U.S. Cl. 333—33 22 Claims



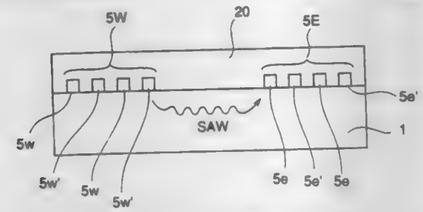
1. A microwave interconnection apparatus for providing RF interconnection between a suspended stripline transmission line and a three wire transmission line, comprising:
a coaxial line transition coupled to the suspended stripline transmission line, said coaxial line transition including a coaxial center conductor member and an outer conductor shield spaced from the center conductor;
a dielectric filled slabline transition having a first port adjacent a port of the coaxial line transition, the slabline transition including a dielectric member, a slabline center conductor member and an outer conductive shield member defining a cavity in which the dielectric member is disposed, the cavity having a generally rectilinear cross-sectional configuration;
wherein the coaxial outer conductor shield is adjacent the slabline shield member;
a three wire transmission line transition section having a first port in electrical communication with a second port of the slabline transition and including a middle wire and respective first and second ground wires flanking the middle wire, the ground wires in electrical contact with the outer shield member of the slabline transition.

5,633,616

THIN FILM SAW FILTER INCLUDING DOPED ELECTRODES

Seiki Goto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,831
Claims priority, application Japan, Oct. 7, 1994, 6-243686
Int. Cl.[6] H03H 9/64
U.S. Cl. 333—193 6 Claims



1. A surface acoustic wave (SAW) filter comprising:
a monocrystalline substrate having a surface;
an epitaxial piezoelectric layer having a surface and comprising a semiconductor material disposed on the surface of the substrate; and
first electrodes comprising parts of the piezoelectric layer at the interface between the substrate and the piezoelectric layer doped with a dopant impurity.

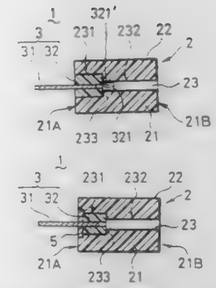
5,633,617

DIELECTRIC BANDPASS FILTER

Tatsuya Tsujiguchi, and Haruo Matsumoto, both of Kanazawa, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 2, 1995, Ser. No. 397,485
Claims priority, application Japan, Mar. 2, 1994, 6-032478
Int. Cl.[6] H01P 1/205
U.S. Cl. 333—206 28 Claims

1. A dielectric filter comprising:
a filter unit in which an electrode is formed at least on an inner peripheral surface of at least one hole extending in the axial direction in a parallelepiped-shaped dielectric member and on an outer peripheral surface in parallel with the hole to form an inner conductive member and an outer conductive member of a coaxial resonator;
a conductive terminal inserted into and mounted in the hole through an insert member made of dielectric material for input-output of signals:
said at least one hole having an insert portion having predetermined transverse dimensions for receiving the insert member at an opening portion of the hole;



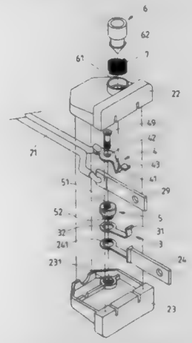
the hole also having a stepped portion between the insert portion and a non-insert portion contiguous with the insert portion, for engaging an end of the insert member adjacent the non-insert portion;
the insert member inserted into the insert portion being blocked from moving toward the non-insert portion by the stepped portion;
said insert portion having a length substantially equal to or greater than a length of said insert member, so that said insert member does not substantially project from said opening portion of said hole when said insert member is in said insert portion;
wherein said hole comprises a through-hole and said insert portion is formed at at least one opening of said dielectric member at an end of said through-hole;
wherein the electrode is formed on both end faces and over the entire surface of the outer peripheral surface in parallel with the hole, and the electrode is provided with a predetermined gap at the insert portion of the inner peripheral surface of said hole.

5,633,618

FUSELESS PLUG WITH SAFETY CIRCUIT BREAKER

Wen-Pin Chuang, No. 24, Lane 47, Diing Meei St., Hsing Chu, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,476
Int. Cl.[6] H01H 71/16;71/04;61/00
U.S. Cl. 337—56 5 Claims



1. A fuseless plug with safety circuit breaker, comprising a pair of power lines, an upper lid, a lower lid, a first and a second insertion pieces, a thermal reactive spring leaf, an electric conductive sheet, an insulator, a push button end a spring, wherein,
a first locating ring on said first insertion piece, a second locating ring on said thermal reactive spring leaf, said insulator and a hole on said electric conductive sheet are sequencially locked by a screw on a locking hole on said lower lid, one end of said electric conductive sheet is connected to one of said power lines, said fuseless plug is characterized in that:

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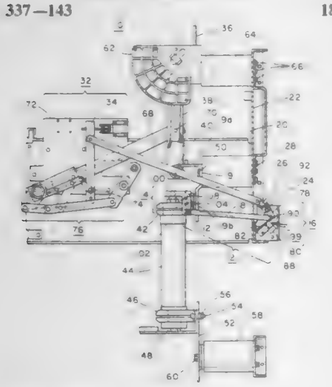
said thermal reactive spring leaf is made of an alloy of two kind of metal material, and is provided with an elastic hook which is bended inwardly; while said electric conductive sheet is down folded at the middle point thereof to form a V shaped portion for contacting the body of said thermal reactive spring leaf, and has on the external end thereof a flat sheet portion which can be engaged in said hook in a normal condition, and render said thermal reactive spring leaf to contact said electric conductive sheet, or contrarily, when temperature of the circuit is raised, said thermal reactive spring leaf will be moved away by virtue of the different temperature coefficents of the material of both side surfaces thereof to allow said electric conductive sheet to be moved upwardly to form a broken circuit; thereafter, a push button can be pushed down to again render said flat sheet portion to contact said thermal reactive spring leaf which now has recovered its original position, so that they can be electrically connected.

5,633,619

INTERLOCK ASSEMBLY FOR A FUSIBLE SWITCH HAVING AN OPERATING MECHANISM

Calvin L. Oetjen; Gordon O. Perkins, both of Murfreesboro, and Antanas V. Narusevicius, Brentwood, all of Tenn., assignors to Square D Company, Palatine, Ill.

Filed Jun. 5, 1995, Ser. No. 461,347
Int. Cl.[6] H01H *71/20*
U.S. Cl. 337—143 **18 Claims**



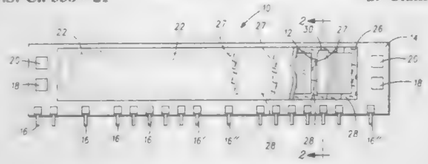
1. A fusible switch comprising:
a blade capable of conducting current:
a fuse electrically coupled in series with said blade and including an extender member therein which extends outwardly when said fuse blows due to an overload condition or a short circuit condition:
an operating mechanism coupled to said blade for moving said blade between an OPEN position wherein the blade does not conduct current therethrough and a CLOSED position wherein the blade conducts current therethrough; and
an interlock assembly coupled to said operating mechanism for actuating the operating mechanism to move said blade from the CLOSED position to the OPEN position when the extender member is extended outwardly in response to either an overload condition or a short circuit condition.

5,633,620

ARC CONTAINMENT SYSTEM FOR LIGHTNING SURGE RESISTOR NETWORKS

Bernhard Doerrwaechter, Oconomowoc, Wis., assignor to Microelectronic Modules Corporation, New Berlin, Wis.

Filed Dec. 27, 1995, Ser. No. 578,867
Int. Cl.[6] H01C *7/10*
U.S. Cl. 338—21 **29 Claims**



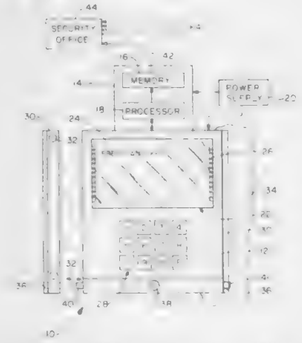
1. A lightning surge resistor network comprising:
a substrate:
a thick-film resistor deposited on said substrate; and
a cover overlying and being spaced a distance above said thick-film resistor so that said thick-film resistor is between said substrate and said cover.

5,633,621

EVACUATION ASSISTANCE LOCATOR

Michael S. McDonald, 458 Aintree Dr., Munroe Falls, Ohio 44243

Filed May 30, 1995, Ser. No. 452,687
Int. Cl.[6] G08B *5/00*
U.S. Cl. 340—286.01 **16 Claims**



1. An evacuation assistance locator for assisting emergency personnel in finding non-ambulatory individuals, comprising:
means for electronically inputting location information of non-ambulatory individuals:
memory for electronically storing the location information; and
means for electronically retrieving the location information by only authorized emergency personnel.

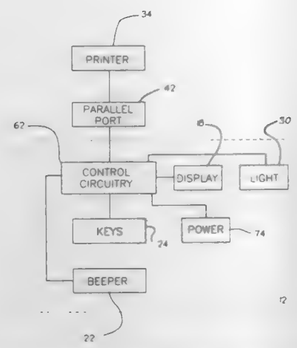
5,633,622

TRUCK DRIVER LOGGING DEVICE DISPLAYING A TIME LOG GRAPH

Robert L. Patterson, 14010 Hilldale Rd., Valley Center, Calif. 92082

Filed Mar. 14, 1996, Ser. No. 616,156
Int. Cl.[6] G08B *1/08*
U.S. Cl. 340—309.15 **13 Claims**

1. A new and improved trucker driver logging device comprising, in combination:
a compact housing having a lower portion with a top surface, a bottom surface, and a periphery formed therebetween defining



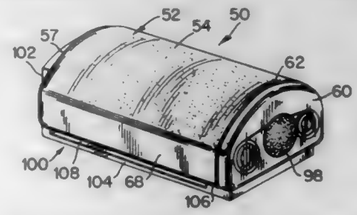
an interior space and further having an upper portion with a top surface, a bottom surface, and a periphery hingably coupled to a rear extent of the lower portion;
a display situated on the bottom surface of the upper portion, the display adapted to depict data pertinent to truck driving and further to display a time log graph, the time log graph comprising a plurality of rows, the rows including an off duty row for graphically displaying a time allotted to being off duty, a sleeper berth row for graphically displaying a time allotted to bathing and sleeping, a driving row for graphically displaying a time allotted to driving, an on duty row for graphically displaying a time allotted to not driving, and a miscellaneous row for graphically displaying a time allotted to miscellaneous duties, the time log graph further comprising a multiplicity of columns with vertically aligned tick marks depicted therein, each tick mark corresponding to a specific time within a twenty-four hour period;
a beeper positioned within the housing for producing an audio signal upon the actuation thereof;
an alphanumeric keypad situated on the top surface of the lower portion of the housing and adapted to allow the entry and depiction via the display of a name of a driver, an address of an office for which the driver works, an address of the home terminal of the driver, and a vehicle identification number corresponding to a truck of the driver;
a lighting means situated on the top surface of the lower portion of the housing adjacent to the keypad for allowing the entry of characters in the absence of ambient light;
a portable printer means with a top surface, a bottom surface, a front face, an arcuate rear face, and a pair of side edges defining an interior space, the portable printer means further including a generally rectangular recess for releasably receiving and coupling with the compact housing, the printer means further adapted to produce a hard copy of the information depicted on the display via a slit situated on the front face thereof, wherein coupling with the compact housing is facilitated by a parrallel port situated on a rear portion of the recess;
a pair of mile entry keys including a miles in key for entering and displaying a mileage of the truck at the beginning of the day and a miles out key for entering and displaying a mileage of the truck at the end of the day;
a plurality of duty buttons situated on the top surface of the lower portion of the housing, the duty buttons comprising an off duty key, sleep berth key, driving key, on duty key, and miscellaneous key, the duty buttons adapted to graph a line within the corresponding row between two of the tick marks thus displaying the specific time of the day allotted to the corresponding duty, whereby a beginning of the specific line in a row is generated merely by pressing the corresponding key at the beginning of the time allotted thereto and the end thereof is afforded by the subsequent depression of a different duty key; and
control means situated within the interior space of the lower portion of the housing and adapted to keep a current date and a current time, to automatically calculate and display the time graphically depicted for each duty, to automatically calculate and display a running weekly total of time entered during a present week for each duty, and to actuate the beeper at an end of a current day.

5,633,623

PERSONAL INDICATOR WITH LIGHT EMISSION MULTIPLYING MICROPRISM ARRAY

James P. Campman, P.O. Box 167, Transfer, Pa. 16154-0167

Filed Feb. 21, 1995, Ser. No. 391,011
Int. Cl.[6] G08B *5/00*
U.S. Cl. 340—321 **42 Claims**



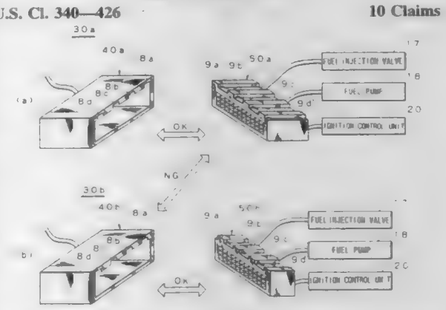
1. A personal safety device comprising: L.E.D. means for providing light, a power source for providing electrical power and coupled with the L.E.D. means, switch means for connecting the power source with the L.E.D. means; a case enclosing the L.E.D. means and power source, the case including a plastic overcap overlying the L.E.D. means; and a plastic sheet having a transparent microprism array and positioned between said overcap and the L.E.D. means with the microprism array facing the overcap, wherein the microprism array provides multiplication of light emitted by the L.E.D. means by displaying at the overcap a plurality of spaced concentrations of the light emitted by the L.E.D. means.

5,633,624

VEHICLE ANTI-THEFT SYSTEM

Susumu Maeda; Eiji Mutoh, and Shinichi Kubota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,907
Claims priority, application Japan, Sep. 22, 1994, 6-252701; Nov. 9, 1994, 6-299027
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **10 Claims**



1. In a vehicle control system comprising either a first type of engine control device which includes an anti-theft algorithm or a second type of engine control device containing no anti-theft algorithm, said system including a terminal device which exhibits a function necessary for engine control when said terminal device is electrically connected to either of said first and second types of engine control devices:

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the improvement comprising separable electrical connecting means for normally connecting said first type of engine control device to said terminal device.

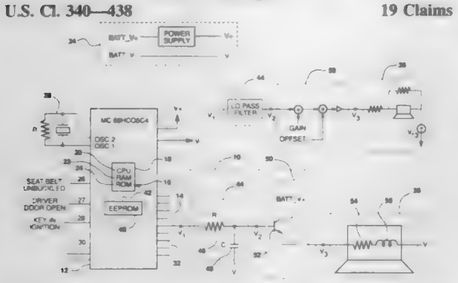
said connecting means being so arranged that it cannot normally connect said second type of engine control device to said terminal device.

5,633,625

ELECTRONIC CHIME MODULE AND METHOD

Guy J. Gaub, Clinton Township, and Ray M. Hallenbeck, Waterford, both of Mich., assignors to Saturn Electronics & Engineering, Inc., Auburn Hills, Mich.

Filed Mar. 20, 1995, Ser. No. 406,546
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—438 **19 Claims**



1. Chime generating circuitry, for use in a vehicle control system having a control means for monitoring the status of a vehicle condition, comprising:

(a) an oscillator circuit connected to a microcontroller;

(b) a microcontroller comprised of:

a microprocessor having a central processing unit, random access memory and read only memory,

a plurality of inputs for monitoring the status of a vehicle condition including a first input for receiving a seat belt unbuckled signal, a second input for receiving a door open signal, a third input for receiving a key in the ignition signal, fourth input for receiving a signal from an accessory, each of said inputs being operable to transmit said signals from said inputs to said microprocessor,

a single tri-statable output operable to generate a time-varying digital output signals, the tri-statable output having at least three states including an on-state, an off-state, and a high-impedance disconnect state, said high-impedance disconnect state being used to help generate a sinusoidal signal by repetitively holding the output signal at an intermediate level for a predetermined time period;

(c) a control circuit comprising:

a single stage low-pass filter circuit having an input receiving the digital output signal from said single tri-statable output and a first output for producing a first output voltage,

a buffer having an input and an output, said input receiving said first output voltage from said low-pass filter circuit, said buffer output being operable to drive a tone-generating device.

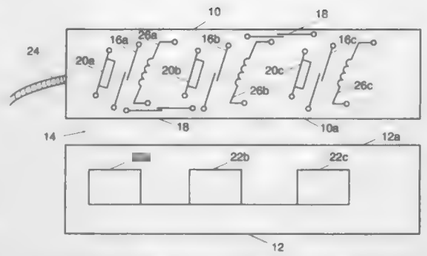
5,633,626

SELF-TESTING SECURITY SENSOR FOR MONITORING CLOSURE OF VAULT DOORS AND THE LIKE

Duane C. Cawthorne, Amarillo, Tex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1995, Ser. No. 520,634
Int. Cl.[6] G08B *13/08*
U.S. Cl. 340—545 **20 Claims**

1. A self-testing security device and monitoring system for closure monitoring, comprising:



a) a switch unit adapted to be mounted on a frame part for a moveable panel being monitored and comprising at least one magnetically biased switch connected to at least one electrical monitoring circuit, said switch unit switchable between first and second states;

b) a magnet means adapted to be mounted on the moveable panel being monitored, said magnet means comprising at least one magnet for enabling said switch unit to assume said first state when said moveable panel is closed with respect to said frame part and for causing said switch to assume said second state when said moveable panel is opened with respect to said frame part;

c) a self-testing means for magnetically simulating the effect of movement of the moveable panel from the closed position to the open position without any actual movement of said moveable panel so as to test the response of the system to movement of said moveable panel; and

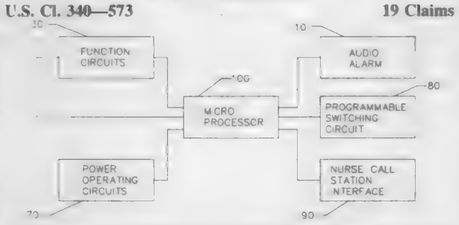
d) an alarm indicating means which is activated when said moveable panel being monitored is actually or simulated to be moved from the closed state to the opened state.

5,633,627

HARD-WIRED MONITORING SYSTEM FOR HOSPITAL BED OR SHORT TERM CARE PATIENTS

Paul F. Newham, San Antonio, Tex., assignor to Bed-Check Corporation, Tulsa, Okla.

Filed Sep. 23, 1994, Ser. No. 311,588
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **19 Claims**



1. A system connectible to an electrical power source for monitoring a short term care support device having a sensor thereon for detecting the presence of a patient on the device comprising:

a microprocessor;

first circuit means connected to said microprocessor and to the sensor for automatically initiating operation of said microprocessor upon detection by the sensor of the patient's presence on the device;

second circuit means connected to said microprocessor for providing an alarm upon demand by said microprocessor;

third circuit means connected to said microprocessor and adapted to be interfaced with a nurse call station for generating signals to the station upon demand by said microprocessor; and

fourth circuit means connected to said microprocessor for controlling said system in response to commands manually applied to said fourth circuit means,

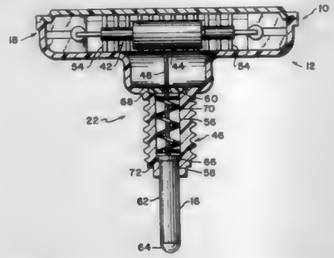
said microprocessor being responsive to a program means resident therein for activating said system to a "monitor" mode after a predetermined time delay following detection by the sensor of the patient's presence on the device.

5,633,628

WHEELSET MONITORING SYSTEM

Joseph M. Denny, Fairport; David W. Marcellus, Rochester, both of N.Y., and Gordon F. Quigley, North Andover, Mass., assignors to General Railway Signal Corporation, Rochester, N.Y.

Filed Jan. 3, 1996, Ser. No. 582,535
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—584 **26 Claims**



1. A thermal warning device for detection of a potential bearing failure in a wheel assembly comprising:

a housing having an insert portion for insertion into the wheel assembly;

a bore extending through said insert portion, said bore having a distal end; and

a temperature sensor, responsive to an elevated temperature indicative of the potential bearing failure, said temperature sensor being adjustably positioned through said distal end of said bore such that at least a portion of said temperature sensor is external to said bore;

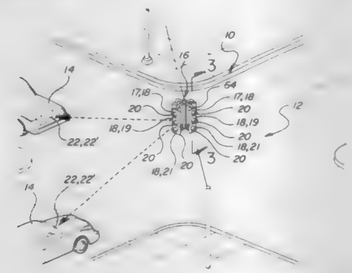
wherein said temperature sensor adjustably slides through said distal end of said bore to adjust to inner dimensions of the wheel assembly as said insert portion is inserted into the wheel assembly.

5,633,629

TRAFFIC INFORMATION SYSTEM USING LIGHT EMITTING DIODES

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Filed Feb. 8, 1995, Ser. No. 386,816
Int. Cl.[6] G08G *1/095*
U.S. Cl. 340—907 **73 Claims**



31. A traffic information system (**10**) for transmitting information to a remotely located target (**14**), said system (**10**) comprising:

traffic light means (**16**) for projecting light rays to a target (**14**), said traffic light means (**16**) including first light means (**17**) for projecting first light rays to the target (**14**) and second light means (**19**) for projecting second light rays to the target (**14**);

a transmitter (**20**) including means for illuminating said first light means (**17**) at a first frequency to transmit said first light rays from said first light means (**17**) at said first frequency and for illuminating said second light means (**19**) at a second frequency to transmit said second light rays from said second light means (**19**) at said second frequency;

a receiver (**22.22'**) including photodetector means (**88.88'**) for converting said first light rays into a first output signal of electric current having a first output frequency and for converting said second light rays into a second output signal of electric current having a second output frequency; and characterized by

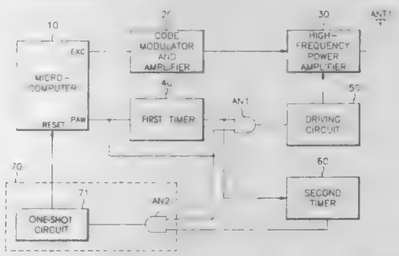
said receiver (**22.22'**) further including differential means (**92.92'**) for differentiating said first output frequency from said second output frequency to detect the presence of one of said first or second light rays.

5,633,630

WATCHDOG CIRCUIT OF VEHICLE TRACKING SYSTEM

Hyun-Chul Park, Ansan, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 19, 1991, Ser. No. 810,175
Claims priority, application Rep. of Korea, Jan. 29, 1991, 1991-1461
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—992 **25 Claims**



1. A watchdog circuit of a vehicle tracking system, comprising:

a microcomputer;

a code modulation and amplification circuit;

a high-frequency power amplifier;

a first timer for transmitting a first timed signal by counting during a time period for transmitting two frames of tracking data after receiving a power amplification control signal from said microcomputer;

a first logic gate for generating a transmission interruption control signal for said high-frequency power amplifier in response to said first timed signal counted during the time for transmitting two frames by said first timer and said power amplification control signal from said microcomputer;

a driving circuit for turning off said high-frequency power amplifier in response to said transmission interruption control signal from said first logic gate;

a second timer for transmitting a second timed signal for a frame transmission time after receiving said first timed signal counted during the time for transmitting two frames; and

a reset signal generator for generating a reset signal for resetting said microcomputer in response to said second timed signal counted for a frame transmission time by said second timer and said power amplification control signal from said microcomputer.

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5,633,631

BINARY-TO-TERNARY ENCODER

Timothy A. Teckman, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 27, 1994, Ser. No. 266,149
Int. Cl.[6] H03M 5/16; H03K 17/00
U.S. Cl. 341—58 38 Claims



1. A method for encoding binary data for transmission as ternary data over a serial link, the method comprising the steps of:

receiving binary data;

mapping the binary data into a binary code;

determining whether the ternary code is positive balanced:

determining whether the serial link has a positive direct current (DC) balance, by checking a state register, wherein the state register indicates that the serial link has the positive DC balance when the state register is in a first state, if the ternary code is positive balanced;

inverting the binary code if the serial link has the positive DC balance and the ternary code is positive balanced; and

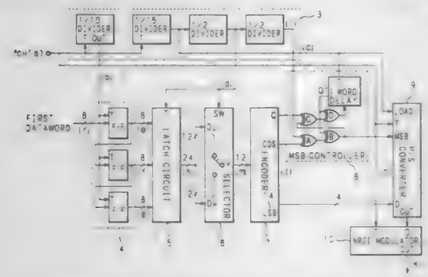
translating the binary code into the ternary code.

5,633,632

DATA CONVERSION METHOD AND APPARATUS IMBEDDING PILOT SIGNAL INTO CONVERTED DATA AND REDUCING ERROR PROPAGATION BETWEEN DATAWORDS

Kihei Ido; Masako Yamada; Hideaki Kosaka, and Masayuki Ohta, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 18,403, Feb. 17, 1993, abandoned.
This application Jan. 17, 1996, Ser. No. 592,588
Claims priority, application Japan, Feb. 19, 1992, 4-032077; Feb. 28, 1992, 4-043074
Int. Cl.[6] H03M 7/00
U.S. Cl. 341—58 53 Claims



9. A magnetic recording/reproducing apparatus for recording multiple kinds of data formed by dividing digital data into 12-bit datawords and then converting the 12-bit datawords into 14-bit codewords having a most significant bit (MSB) side and a least significant bit (the) side said data being stored in partitioned areas, comprising:

first means for converting digital data to codewords for recording on one or more areas within one track, the first means limiting the number of successive 0s between a 1 and another 1 in each said codeword to 4 or less within the codeword and to 2 or less at the MSB side of the codeword and to 1 or less at the LSB side of the codeword, codewords having a codeword digital sum (CDS) of 0 solely corresponding to each 12-bit dataword while for codewords having a CDS of +2 or −2, pairing the two codewords that differ only in MSB and which correspond to the 12-bit data, the two codewords being switched selectively by using polarity signals of the respective codewords; and

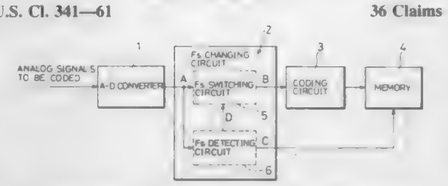
second means for converting digital data to codewords in the other areas in the same track, the second means limiting the number of successive 0s between a 1 and another 1 in each said codeword to 4 or less within the codeword and to 2 or less at the MSB side of the codeword and to 1 or less at the LSB side of the codeword, codewords having a codeword digital sum (CDS) of 0 solely corresponding to each 12-bit dataword, while for codewords having a CDS of +2 or −2, pairing the two codewords that differ only in MSB and which correspond to the 12-bit data, the two codewords being switched selectively by using polarity signals of the respective codewords, said second means appending at least one bit to each 14-bit codeword to form a pair of codewords one having a CDS of +1 and the other having a CDS of −1, with the number of successive 0s between a 1 and another 1 in the code sequence being limited to 4 or less, and one or the other of the pair of codewords being selected in accordance with the DSV control signal so as to produce a pilot signal.

5,633,633

CODEC APPARATUS

Takahiko Nakano, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1994, Ser. No. 245,861
Claims priority, application Japan, Jul. 19, 1993, 5-177857
Int. Cl.[6] H03M 7/00
U.S. Cl. 341—61 36 Claims



30. An apparatus for digitizing an analog signal, comprising:

a first circuit for sampling the analog signal at a first sampling frequency to produce a first digital signal;

a bandwidth detection circuit for detecting the bandwidth of the analog signal, said bandwidth detection circuit including,

a frequency bandwidth extractor for extracting at least first and second frequency bandwidths from the first digital signal, the first frequency bandwidth differing from the second frequency bandwidth,

a first power determining circuit for comparing the power in the first frequency bandwidth to the power in the second frequency bandwidth, and

a second power determining circuit for comparing the power in the second frequency bandwidth to the power in the whole bandwidth of the first digital signal;

a clock circuit for converting a first clock signal at the first sampling frequency to a second clock signal at a second sampling frequency based upon the comparisons of said first and second power determining circuits; and

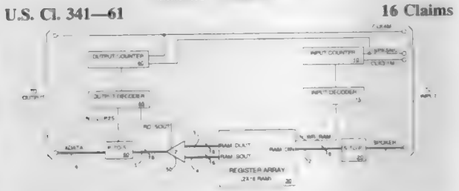
a second circuit for producing a second digital signal derived from the first digital signal output at intervals determined by the second clock signal.

5,633,634

DATA RATE CONVERSION CIRCUIT

Christopher A. Pawlowski, Phoenix, Ariz., assignor to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 29, 1995, Ser. No. 536,299
Int. Cl.[6] H03M 1/00
U.S. Cl. 341—61 16 Claims



1. A data rate conversion circuit for use in a data transmission system having first and second data systems, said first data system being operated to transmit a synchronization signal, a first clock signal, a second clock signal and first data having a first data pattern comprising a serial bit stream of consecutive data frames forming a span, each of said data frames having a predetermined number of channel words, each of said words having a predetermined number of bits, said first data further including a first data rate corresponding to said first clock signal, said second data system being operated to receive said second clock signal and data having a second data pattern and a second data rate corresponding to said second clock signal, said data rate conversion circuit comprising:

storage means having an input storage location;

said storage means further comprising a stuffed storage location containing a stuffed word of predetermined pattern;

write control means connected between said first data system and said storage means, operated to receive said first data and to consecutively write each channel word into said input storage location at a rate related to said first data rate; and

read control means connected between said storage means and said second data system, and operated to read said channel words from said input storage location and said stuffed word from said stuffed storage location at a rate related to said second data rate, said channel and stuffed words being read to form said second data pattern by periodically reading said stuffed word after a predetermined number of said channel words.

5,633,635

METHOD OF PROCESSING CODE FOR ERROR CHECKING AND CODE PROCESSING CIRCUIT

Takeo Ohishi, Yokohama, and Seiji Higurashi, Tokyo, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Sep. 27, 1994, Ser. No. 310,766
Claims priority, application Japan, Sep. 30, 1993, 5-268440
Int. Cl.[6] H03M 13/00
U.S. Cl. 341—94 5 Claims

2. A method of generating codes for error checking from first and second types of data trains, wherein said first type of data includes m symbols, said second type of data includes n symbols, and m and n are natural numbers and different each other, said method comprising the steps of:

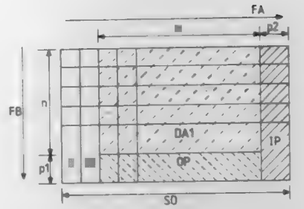
(a) generating first dummy data;

(b) generating second dummy data;

(c) attaching said first dummy data to said first type of data train to generate a first modified data train;

(d) attaching said second dummy data to said second type of data train to generate a second modified data train, wherein said first and second dummy data are generated such that a first data length of said first modified data train, which includes said first type of data train and said first dummy data, is equal to a second data length of said second modified data train, which includes said second type of data train and second dummy data; and

recording said first and second modified data trains on a recording medium, wherein recording regions of said recording medium are provided that correspond to said first and second dummy data.

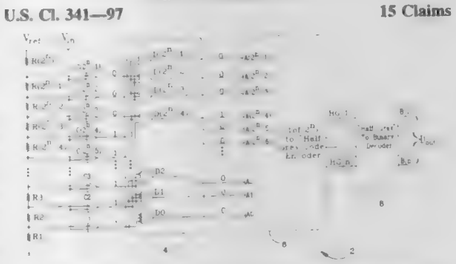


5,633,636

HALF-GRAY DIGITAL ENCODING METHOD AND CIRCUITRY

Hooman Reyhani, Bishopstown, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed Oct. 2, 1995, Ser. No. 537,995
Int. Cl.[6] H03M 7/16
U.S. Cl. 341—97 15 Claims



1. A digital coding circuit for use in an analog-to-digital converter (ADC) which receives an analog input signal and produces a digital output signal, comprising:

a decoder for producing an output of 2^n binary lines, with one active output line representing the amplitude of said ADC's analog input signal,

an encoder having 2^n input addresses for receiving said decoder output, with each active decoder output line activating a corresponding encoder address to produce an n-bit Half-Gray word at that address, said n-bit Half-Gray word (HG) having the bits:

$HG(i)=B(i)$ for $i=N$ and $i=N/2$

$HG(i)=B(i)\ XOR\ B(i+1)$ for $(N/2)<i<N$ and $0<i<(N/2)$

wherein B is an n-bit standard Binary word corresponding to the encoder address activated, N is the total number of bits in said Half-Gray word HG and is an even integer greater than 2, i is an individual bit and is an integer, and XOR is the exclusive-OR logic function, and

wherein the Half-Gray words of said encoder's activated addresses are combined to produce a single n-bit Half-Gray word output, reducing the ADC output errors due to multiple active decoder output lines that would otherwise arise in the absence of said encoder.

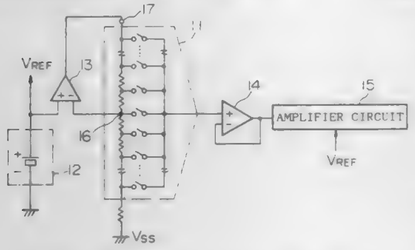
VOL 11 98 ISS 4 MY 27 1997 UMI

5,633,637

DIGITAL-TO-ANALOG CONVERTER CIRCUIT

Masao Noro, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 9, 1994, Ser. No. 353,116
Claims priority, application Japan, Dec. 14, 1993, 5-342570
Int. Cl.[6] H03M 1/66
U.S. Cl. 341—144 4 Claims



1. A digital-to-analog converter circuit comprising:

digital-to-analog converter means, which comprises a resistance string, consisting of a string of resistors connected in series, and a plurality of switches, for converting a digital input to an analog output;

reference-voltage producing means for producing a reference voltage whose level is not affected by a power-supply voltage; and

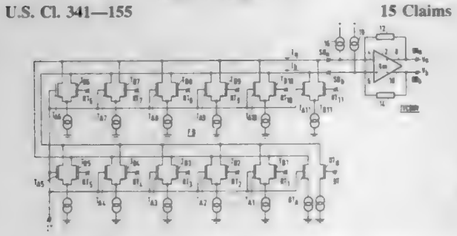
operational amplifier means having an inverting input and a noninverting input, wherein an output terminal of the reference-voltage producing means is connected with the noninverting input, while a center-tap terminal of the resistance string is connected with the inverting input, and an output terminal of the operational amplifier means is connected with a positive-power-supply terminal of the digital-to-analog converter means.

5,633,638

FOLDING STAGE FOR A FOLDING ANALOG-TO-DIGITAL CONVERTER

Arnoldus G. W. Venes, and Bram Nauta, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 5, 1995, Ser. No. 498,097
Claims priority, application European Pat. Off., Jul. 7, 1994, 94201958
Int. Cl.[6] H03M 1/00
U.S. Cl. 341—155 15 Claims



1. A folding stage for a folding analog-to-digital converter, the folding stage comprising:

an input terminal for receiving an input voltage to be folded;

reference means having a plurality of consecutive reference terminals for providing ascending different reference voltages;

a first summing node and a second summing node;

a plurality of differentially coupled transistor pairs, each one of the pairs comprising a current source, a first transistor having a first main electrode coupled to the current source and a control electrode coupled to the input terminal and a second transistor having a first main electrode coupled to the current source and a control electrode coupled to a respective one of the consecutive reference terminals, a second main electrode of the first transistor of consecutive transistor pairs being coupled alternately to the first summing node and the second summing node, and a second main electrode of the associated second transistor being coupled alternately to the second summing node and the first summing node,

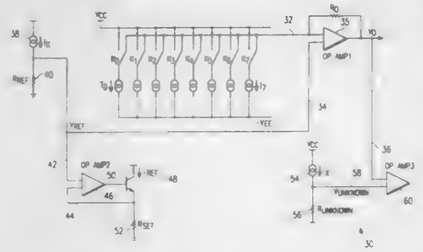
wherein the folding stage further comprises a dummy structure comprising a first current source, a first dummy transistor having a control electrode coupled to the input terminal, a first main electrode connected to the first current source and a second main electrode coupled to one of the first and second summing nodes, a second current source, and a second dummy transistor having a control electrode coupled to a bias voltage terminal, a first main electrode connected to the second current source and a second main electrode coupled to the other of the first and second summing nodes.

5,633,639

SUCCESSIVE APPROXIMATION ANALOG TO DIGITAL CONVERTER WITH AUTOMATIC OFFSET

Thomas L. Hopkins, Mundelein, Ill., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Nov. 30, 1994, Ser. No. 346,779
Int. Cl.[6] H03M 1/06
U.S. Cl. 341—161 22 Claims



1. A method for converting an analog value to a digital value with an offset having a given degree of accuracy using a successive approximation analog to digital converter, comprising the steps of:

measuring an analog value;

converting the analog value to a digital value using a successive approximation analog to digital converter; and

subtracting an offset value from the analog value to generate a digital conversion result representative of the analog value with respect to a measurement range, having a minimum value and a maximum value, wherein the offset value achieved by the successive approximation A/D converter is proportional to an external reference value.

5,633,640

METHOD AND APPARATUS FOR A DATA CONVERTER WITH A SINGLE OPERATIONAL AMPLIFIER

Todd L. Barker, Pflugerville, and Alan L. Westwick, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 5, 1994, Ser. No. 349,592
Int. Cl.[6] H03M 1/12
U.S. Cl. 341—163 21 Claims

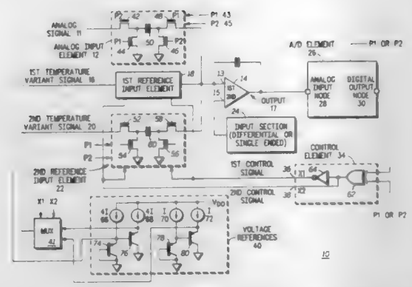
1. A data converter comprising:

an operational amplifier having a first input node, a second input node, and an output node;

an analog input element that operably couples an analog signal to the first input node;

first reference input element that provides, based on a control signal, a first signal to the first input node;

second reference input element that provides, based on the control signal, a second signal to the first input node; and



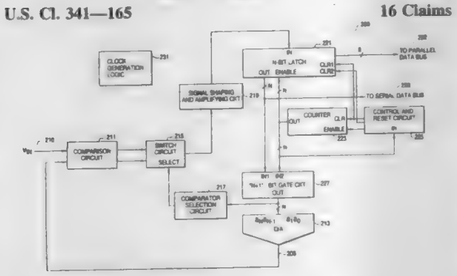
a control element that operably couples to the output node, wherein the control element generates the control signal responsive to the output node of the operational amplifier thereby forcing the first input node to be substantially electrically equivalent to the second input node.

5,633,641

ANALOG TO DIGITAL CONVERTER WITH CONTINUOUS CONVERSION CYCLES AND LARGE INPUT SIGNAL RANGE

Edward P. Coleman, Jr., Fairport, N.Y., assignor to PSC Inc., Webster, N.Y.

Continuation of Ser. No. 366,565, Dec. 30, 1994, Pat. No. 5,561,427. This application Jan. 4, 1996, Ser. No. 582,729
Int. Cl.[6] H03M 1/34
U.S. Cl. 341—165 16 Claims



13. A comparison circuit, comprising:

a first comparator having a first input port for receiving an input signal and a second port for receiving a reference signal, the first comparator having an output port for outputting a first comparison signal based on a result of comparing the input signal to the reference signal, the first comparator being an n-channel device;

a second comparator having a first input port for receiving an input signal and a second port for receiving the reference signal, the first comparator having an output port for outputting a second comparison signal based on a result of comparing the input signal to the reference signal, the second comparator being a p-channel device;

means for estimating whether the input signal is greater than or less than a predetermined value; and

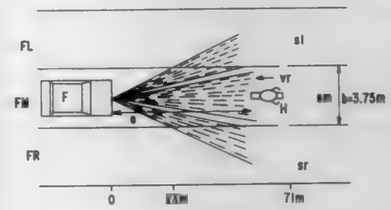
means for selecting one of the first comparison signal and the second comparison signal as a true comparison signal based whether the input signal is greater than or less than the predetermined value.

5,633,642

RADAR METHOD AND DEVICE FOR CARRYING OUT THE METHOD

Alfred Höss, Hamberg, and Wolfgang Schindler, Regensburg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 22, 1996, Ser. No. 651,564
Int. Cl.[6] G01S 13/93
U.S. Cl. 342—70 25 Claims



1. A radar method for vehicles employing at least one radar beam, which comprises:

determining object frequencies assigned to target objects per measurement cycle from maxima contained in a frequency spectra derived from the object frequencies in a digital signal processor, by:

separately subjecting digitized and recorded samples received during two modulation phases in each modulation cycle of mixed signals formed from transmitted and received signals to a fast Fourier transformation in successive measurement cycles per radar beam,

and including a modulation cycle formed from a rising and a falling modulation phase of the radar signal and a subsequent evaluation pause for received echo signals in each measurement cycle,

storing the object frequencies over a number of measurement cycles,

forming object tracks separated according to rising and falling modulation phases from the stored object frequencies for each target object,

describing a previous time-domain behavior of the object frequencies with the object tracks,

forming estimated values for the object frequencies to be expected in the next measurement cycle from a previous behavior of the object tracks,

calculating an error from the object frequencies and from the estimated values obtained from the object tracks, assigning object frequency pairs having the respectively smallest error to one another after the calculation of the error, and calculating correct values for a distance and a relative speed of at least one target object from the pairs,

determining and storing a data set containing distance and relative speed data for at least one target object,

filtering the distance and relative speed data,

determining a turn radius and a speed of the vehicle,

determining which target objects are located in a lane occupied by the vehicle by using the distance and the relative speed of the target object, as well as the speed and turn radius of the vehicle, and determining at least the most dangerous target object therefrom, and

alerting a driver of the vehicle if a predetermined indication threshold for the distance and the relative speed is exceeded.

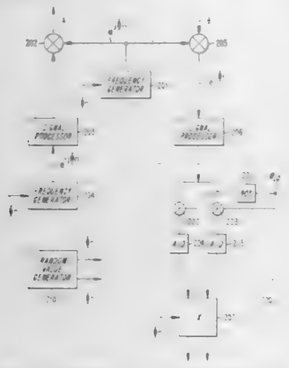
VOL 1198 ISS 4 MY 27 1997 UMI

5,633,643

METHOD AND DEVICE FOR SIGNAL-PROCESSING IN A RADAR SYSTEM

Lars I. Erhage, Göteborg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 13, 1996, Ser. No. 600,502
Claims priority, application Sweden, Feb. 14, 1995, 9500516
Int. Cl.[6] G01S 7/28
U.S. Cl. 342—159 18 Claims



1. A method for reducing, in a radar system, the influence of distortion, which has arisen in signals, in signal-generating and signal-processing parts of the radar system, comprising the steps of:

(a) applying a first phase rotation with a first phase rotation value to a first signal before a first signal-processing, as a result of which a second signal is formed;

(b) processing said second signal in said first signal-processing, as a result of which a third signal is created;

(c) phase-rotating said third signal with a second phase rotation which has the same value as said first phase rotation but the opposite sign, as a result of which a fourth signal is formed;

(d) emitting a transmission pulse, created by said fourth signal, reflecting said transmission pulse off targets or objects and receiving said transmission pulse by said radar system in the form of a fifth signal;

(e) applying a third phase rotation with a second phase rotation value to said fifth signal before a second signal-processing, as a result of which a sixth signal is formed;

(f) processing said sixth signal in said second signal-processing, as a result of which a seventh signal is created; and

(g) phase-rotating said seventh signal with a fourth phase rotation which has the same value as said third phase rotation, but the opposite sign.

5,633,644

PROCESS FOR MONITORING SHIP TRAFFIC AT SEA WHILE RECOGNIZING OIL SPILLS AND POTENTIAL SHIP COLLISIONS

Harald Schüssler, Daisendorf; Jörg Herrmann, Salem, and Manfred Langemann, Stetten, all of Germany, assignors to Dornier GmbH, Germany

Filed Jun. 27, 1996, Ser. No. 671,358
Claims priority, application Germany, Oct. 27, 1994, 44 38 325.8
Int. Cl.[6] G01S 3/02
U.S. Cl. 342—455 6 Claims

1. A system for monitoring ship traffic comprising:

a plurality of earth orbiting satellites, each having at least a synthetic aperture radar microwave sensor for observing the earth's surface, said satellites being deployed in staggered orbits whereby successive such satellites observe any particular point on the earth's surface at predetermined intervals;



a data processing center for receiving and processing data transmitted from said satellites concerning position of icebergs, oil spills and ships detected by said microwave sensors;

said data processing center also having means for receiving and processing information concerning position of ships in an area observed by said satellites;

said data processing center having means for correlating said information concerning position of said ships, icebergs, and oil spills to evaluate

a possibility of collisions between ships;

a possibility of collisions between ships and icebergs; and possible causes of oil spills; and

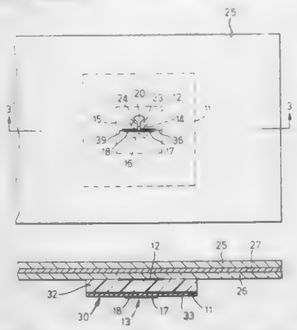
said data processing center also having means for transmitting warning signals to ships concerning said possibilities of collisions.

5,633,645

PATCH ANTENNA ASSEMBLY

Stephen R. Day, Wigan, England, assignor to Pilkington plc, United Kingdom

Filed Aug. 29, 1995, Ser. No. 520,396
Claims priority, application United Kingdom, Aug. 30, 1994, 9417401
Int. Cl.[6] H01Q 1/38
U.S. Cl. 343—700 MS 17 Claims



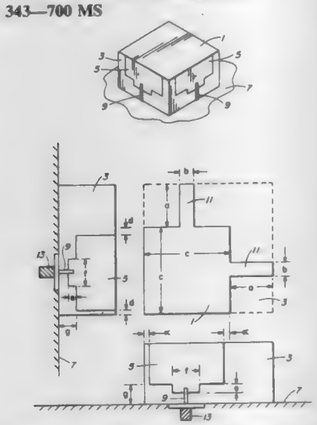
1. A laminar patch antenna comprising a ground plane element having opposing first and second faces, a first dielectric planar member adjacent the first face of the ground plane element, a patch radiator on a face of the first dielectric member remote from the ground plane element, a second dielectric planar member adjacent the second face of the ground plane element, and a transmission line circuit for feeding the antenna, which circuit is located on a face of the second dielectric member remote from the ground plane element, said ground plane element having a cross-shaped aperture formed by two intersecting slots to couple the transmission line circuit to the patch radiator, and said transmission line circuit comprising at least three linear conductors joined end to end at a junction overlying a centre of said cross-shaped aperture with each of said linear conductors overlying a respective sector between slots of said cross-shaped aperture, each of said linear conductors being one of a first type forming a feed line and a second type forming a stub projection providing an electrical impedance between said junction and the ground plane in a sector underlying the stub projection, wherein conductors overlying oppositely located sectors are of a same type and conductors overlying sectors adjacent a common slot are of a different type.

5,633,646

MINI-CAP RADIATING ELEMENT

Peter C. Strickland, Ottawa, Canada, assignor to CAL Corporation, Ottawa, Canada

Filed Dec. 11, 1995, Ser. No. 567,986
Int. Cl.[6] H01Q 1/38
U.S. Cl. 343—700 MS 23 Claims



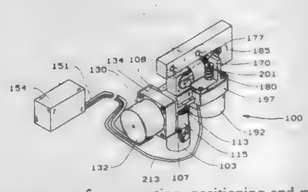
1. An antenna radiator comprising a rectangular conductive cap disposed over a top of a dielectric, the cap having an extension over a side of the dielectric, means for feeding energy to the radiator adjacent an end of the extension remote from the cap, a ground plane spaced from and parallel to the cap, below the dielectric, and a loading element extending from a side of the cap opposite said extension in the same plane as the cap, over the dielectric.

5,633,647

BASE SUPPORT FOR MOVABLE ANTENNA

John L. Tines, 1 Lakeside Green Dr., St. Louis, Mo. 63124

Continuation-in-part of Ser. No. 180,873, Jan. 11, 1994, Pat. No. 5,473,335. This application Jan. 23, 1995, Ser. No. 376,786
Int. Cl.[6] H01Q 3/00
U.S. Cl. 343—766 4 Claims



1. A base support for supporting, positioning and maintaining a desired positions of an antenna mounted on a stationary upright comprising;

a first stationary worm gear assembly having a tubular outer main bearing having first and second ends, a first worm gear on one of said first and second ends and a pair of opposed support legs on the other of said first and second ends for mounting said first worm gear assembly to a stationary upright;

a first base member rotatably attached to said first stationary worm gear assembly;

an inner main bearing between said first base member and first stationary worm gear assembly, said inner main bearing having a first bearing surface and a second bearing surface, said first bearing surface resting on said tubular outer main bearing and said second bearing surface abutting said first base member;

a worm gear assembly support means attached to said first base member;

a first motor driven worm assembly mounted on said first base member, said first motor driven worm assembly including a worm operatively connected to the worm gear of said first stationary worm gear assembly, said first motor driven worm assembly including a first stepping motor for driving said worm or said first motor driven worm assembly, said worm being mounted in tight intermeshing contact with the worm gear of said first stationary worm gear assembly, said worm having a bearing assembly at a first end, a second bearing assembly adjacent a midpoint of said worm and a third bearing assembly adjacent said stepping motor, said bearing assemblies disposed to prevent backlash between said worm and said first worm gear;

said first stepping motor, said first motor driven worm assembly, said first base member, and said worm gear assembly support means all being movable about the vertical axis of said first stationary worm gear assembly upon operation of said stepping motor;

a second stationary worm gear assembly mounted on said worm gear assembly support, said second stationary worm gear assembly having a tubular outer main bearing having first and second ends, a second worm gear on one of said ends, and a second pair of opposed support legs on the other of said first and second ends for mounting said second stationary worm gear assembly to said worm gear assembly support means;

a second base member rotatably attached to said second stationary worm gear assembly;

a second inner main bearing member between said second stationary worm gear assembly and said second base member having a first bearing surface and a second bearing surface, said first bearing surface resting on said second worm gear and said second bearing surface abutting said second base member;

antenna support means attached to said second base member;

a second motor driven worm assembly mounted on said second base member, said second motor driven worm assembly including a second worm operatively connected to the worm gear of said second worm gear assembly, said second motor driven worm assembly including a second stepping motor for driving the worm of the second motor driven worm assembly, said worm being mounted in tight intermeshing contact with the worm gear of said second stationary worm gear assembly, said second worm having a bearing assembly at a first end, a second bearing assembly adjacent a midpoint of said worm and a third bearing assembly adjacent said stepping motor, said bearing assemblies disposed to prevent backlash between said worm and said second worm gear;

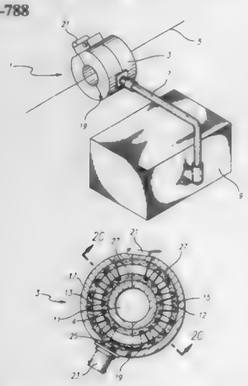
said second stepping motor, said second motor driven worm assembly, said second base member and said antenna support means all being movable about a horizontal axis of said second stationary worm gear assembly upon operation of said second stepping motor.

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5,633,648
RF CURRENT-SENSING COUPLED ANTENNA DEVICE

Joseph F. Fischer, Manhattan Beach, Calif., assignor to Fischer Custom Communications, Inc., Torrance, Calif.

Filed Jul. 28, 1995, Ser. No. 508,716
Int. Cl.[6] H01Q 7/08
U.S. Cl. 343—788 20 Claims

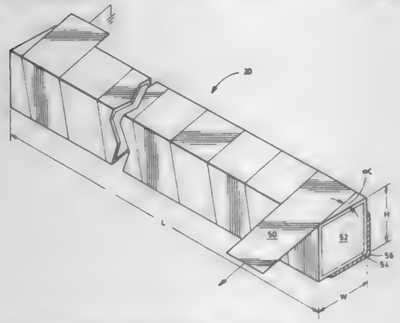


1. An RF current-sensing coupled antenna device for coupling energy, developed in a conductor intercepting an RF field, to the input of an RF receiver, said device comprising:
an outer conducting non-magnetic housing; and
a toroidal magnetic core having a central aperture;
a secondary winding wound about said core, said core and secondary winding mounted in and insulated from said housing;
wherein said device couples energy to the input of an RF receiver when placed in relation to the conductor such that the conductor serves as a primary winding having a length of at least 0.1 wavelength of the intercepted RF field.

5,633,649
RADAR SYSTEM AND COMPONENTS THEREFORE FOR TRANSMITTING AN ELECTROMAGNETIC SIGNAL UNDERWATER

Mario D. Grossi, Cambridge, Mass.; Mark A. Seferian, Tiverton, and Michael G. Soyka, Warren, both of R.I., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 80,251, Jun. 21, 1993, abandoned.
This application Jun. 22, 1995, Ser. No. 493,774
Int. Cl.[6] H01Q 11/08; 1/00
U.S. Cl. 343—895 16 Claims

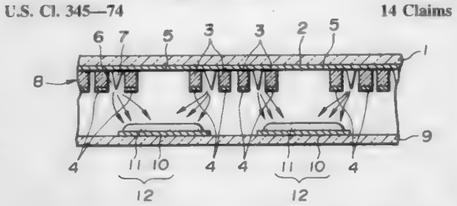


1. A magnetic dipole antenna comprising:
means for providing a magnetic moment for transmitting electromagnetic signals having a frequency less than 500 Hz comprising:
(a) a beam of dielectric material;
(b) a core having a permeability of at least 5000; and
(c) a conductive sheet wound in a helical pattern around the beam of dielectric material and the core, each winding of the helical pattern disposed adjacent an adjacent winding to provide a magnetic dipole.

5,633,650
FLAT-TYPE FLUORESCENT DISPLAY DEVICE

Takao Kishino; Shigeo Itoh; Tatsuo Yamaura; Teruo Watanabe; Kazuyoshi Ohtsu, and Masateru Taniguchi, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Continuation of Ser. No. 956,086, Oct. 2, 1992, abandoned.
This application Apr. 27, 1995, Ser. No. 429,468
Claims priority, application Japan, Oct. 3, 1991, 3-282009
Int. Cl.[6] G09G 3/22
U.S. Cl. 345—74 14 Claims



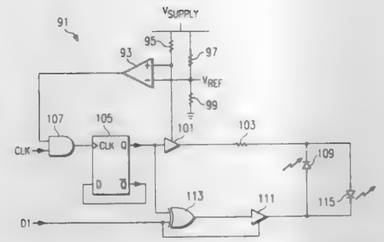
1. A fluorescent display device, comprising:
a front transparent cover having an outer surface and an inner surface;
a substrate having a substrate surface opposing said inner surface of said front transparent cover;
a plurality of field emission elements for emitting electrons, said plurality of field emission elements disposed on said inner surface of said front transparent cover;
a plurality of regions of phosphorescent material on said substrate, each of Said plurality of regions having an electron impingement surface facing the front transparent cover, said impingement surface for impingement by the electrons emitted by at least one of said plurality of field emission elements;
wherein each of said plurality of said field emission elements is offset from each of said plurality of regions of phosphorescent material, relative to said substrate surface, such that each of said plurality of regions of phosphorescent material is visible when viewed from outside said outer surface; and
whereby fluorescence propagating to said front transparent cover is generated by the impingement of the electrons on the electron impingement surface.

5,633,651
AUTOMATIC BIDIRECTIONAL INDICATOR DRIVER

Fernando D. Carvajal, McKinney, and Stephen C. Kwan, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 4, 1994, Ser. No. 334,501
Int. Cl.[6] G09G 3/32
U.S. Cl. 345—82 18 Claims

17. A bidirectional indicator driver circuit, comprising:
a driving buffer coupled to a polarity signal and having a current supply input;
an indicator device including a diode having anode and cathode terminals, one of said anode and cathode terminals being coupled to said driving buffer;
current sensing circuitry coupled to a voltage supply and to said driving buffer, operable for sensing when said driving buffer is driving current to said indicator device, and outputting a toggle signal when no current is being driven;

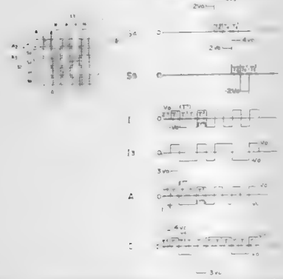


a polarity register having an input coupled to said toggle signal, and outputting said polarity signal, operable to invert said polarity signal in response to said toggle signal; and
a tristate buffer coupled to an input, said buffer being exclusively enabled responsive to a data input to transmit an inverted version of said polarity signal to the other of said anode and cathode terminals of said indicator device;
said bidirectional indicator driver circuit operable to drive said indicator device independent of which of said anode and cathode terminals is said one terminal and which is said other terminal, said polarity register changing state in response to said toggle signal until said indicator device is drawing current.

5,633,652
METHOD FOR DRIVING OPTICAL MODULATION DEVICE

Junichiro Kanbe, and Kazuharu Katagiri, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 320,230, Oct. 11, 1994, which is a division of Ser. No. 865,630, Apr. 9, 1992, Pat. No. 5,381,254, which is a continuation of Ser. No. 302,083, Jan. 26, 1989, abandoned, which is a continuation of Ser. No. 139,130, Dec. 28, 1987, abandoned, which is a continuation of Ser. No. 701,765, Feb. 14, 1985, abandoned. This application May 12, 1995, Ser. No. 440,345
Claims priority, application Japan, Feb. 17, 1984, 59-28274; Jul. 10, 1984, 59-143481
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—97 18 Claims

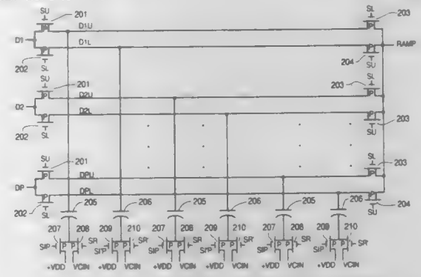


1. A driving method for driving an optical modulation device comprising: a plurality of picture elements arranged in the form of a matrix having a plurality of rows and a plurality of columns defined by the intersections of scanning electrodes arranged in rows and signal electrodes arranged in columns, and a chiral smectic liquid crystal, the picture elements in each row being selectively supplied with either a voltage for orienting the chiral smectic liquid crystal to one display state, or another voltage for orienting the chiral smectic liquid crystal to another display state, said driving method comprising the steps of:
applying a plurality of scanning selection signals each comprising a former voltage signal of a first voltage and a latter voltage signal of a second voltage different from the first voltage periodically to a particular one of the scanning electrodes to periodically select that particular scanning electrode;
applying data signals to the signal electrodes, each data signal comprising an information signal for selecting a display state of a picture element on the particular scanning electrode and each data signal having a waveform providing a pulse train of voltage applied to picture elements at intersections of scanning electrodes not receiving the scanning section signals and signal electrodes including at least one pulse having a pulse width shorter than that of the latter voltage signal, whereby the picture elements on the particular scanning electrode supplied with the former voltage signal are non-selectively erased into one display state and a selected picture element on the particular scanning electrode supplied with the latter voltage signal is changed into the other display state depending on the selected information signal, and a non-selected picture element on the particular scanning electrode supplied with the latter voltage signal is held in the one display state; and
applying the former voltage signal of a subsequent scanning selection signal to a scanning electrode selected subsequent to the particular scanning electrode during the period of applying the data signals for selecting the display states of the picture elements on the particular scanning electrode.

5,633,653
SIMULTANEOUS SAMPLING OF DEMULTIPLEXED DATA AND DRIVING OF AN LCD PIXEL ARRAY WITH PING-PONG EFFECT

James H. Atherton, Ringoes, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Aug. 31, 1994, Ser. No. 298,295
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—98 21 Claims



1. A data driver for a display, the data driver comprising:
means for providing a data signal from a data channel to a first data line and a second data line;
sample means for alternately sampling the data signal (1) from the first data line to produce and store a first sampled data signal during a first time period and (2) from the second data line to produce and store a second sampled signal during a second time period; and
data driver means for retrieving from the sample means, the first sample data signal during the second time period and the second sampled data signal during the first time period and for transferring a driving pulse corresponding to one of the first sampled data signal and the second sampled data signal to the display.

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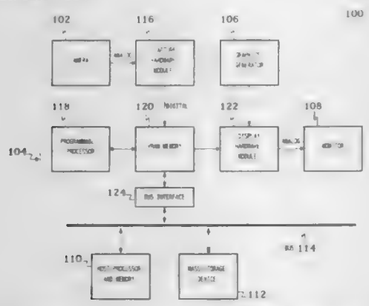
5,633,654

COMPUTER-IMPLEMENTED PROCESS AND COMPUTER SYSTEM FOR RASTER DISPLAYING VIDEO DATA USING FOREGROUND AND BACKGROUND COMMANDS

Howard J. Kennedy, Jr., Hamilton Square, N.J.; Josh Herman, Beaverton; Rich Gerber, Hillsboro, both of Oreg.; Dan Harwell, Upper Black Eddy; Gerald Cross, Philadelphia, both of Pa.; Judi Goldstein, Hillsboro, Oreg.; Terry Downs, Forest Grove, Oreg., and Mike Hawash, Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 152,347, Nov. 12, 1993, abandoned.
This application Mar. 16, 1995, Ser. No. 406,094
Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—114 10 Claims



1. A computer-implemented process for raster displaying two or more streams of video data on a monitor of a computer system, comprising the steps of:

(a) processing the two or more streams of video data by implementing a single background command list comprising one or more programmable background commands for each stream of video data using a single processor;

(b) processing the two or more streams of video data by implementing a single foreground command list comprising one or more programmable foreground commands for each stream of video data using the single processor, where the single processor implements the foreground command list only during a vertical blanking interval of the display raster of the monitor; and

(c) displaying the processed two or more streams of video data simultaneously in two or more windows on the monitor.

5,633,655

TELEVISION IMAGE PROCESSING APPARATUS

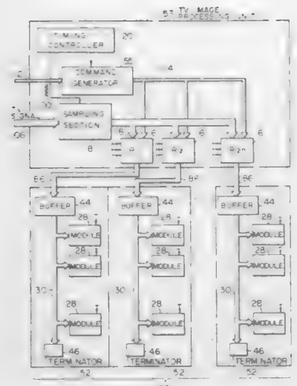
Zenichiro Hara, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 718,570, Jun. 20, 1991, abandoned.
This application Feb. 21, 1995, Ser. No. 390,946
Claims priority, application Japan, Jun. 22, 1990, 2-165126
Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—132 11 Claims

1. A television image processing system selectively connected to one of a plurality of types of displays, each type of display having at least one of a plurality of different resolution formats determined by the number of light emitting elements used therein and also by the arrangement of colors used therein, the light emitting elements being grouped into a plurality of blocks in the horizontal scan direction, the television image processing system assigning and outputting image data within one horizontal period to the respective blocks in said one display, and the television image processing system comprising:

(a) command output means, responsive to an external resolution format selection signal, for outputting a command signal representative of a selected one of the plurality of different resolution formats of the connected display as a function of the external resolution format selection signal;



(b) sampling means for receiving an analog color TV signal and for outputting digital image data for each of color components R, G and B; and

(c) at least one data array changing means, each for receiving the digital image data from said sampling means in parallel, each for changing a display array of said digital image data to a display array of data compatible with the display format selected by said command output means, the changed array of digital image data being then outputted to respective display blocks in said connected display, one corresponding to each of the at least one data array changing means, wherein each data array changing means includes a temporal storage device for digital image data to accommodate data transfer speed changes based upon selected resolution format,

each data array changing means, when forming an array of lower resolution format data, forms the array of lower resolution data directly by selectively filtering an array of higher resolution format data.

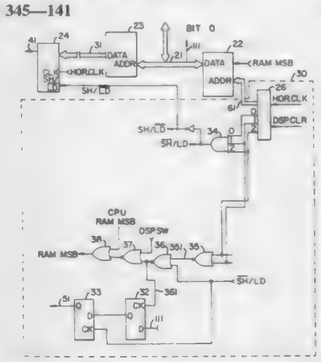
5,633,656

CONTROLLING APPARATUS FOR DISPLAY OF AN ON-SCREEN MENU IN A DISPLAY DEVICE

Hung-Chang Hsu, Hsing-Chuang, and Chyi-Cheng Lin, Taipei, both of Taiwan, assignors to Acer Peripherals, Inc., Taoyuan, Taiwan

Filed May 5, 1993, Ser. No. 57,286
Int. Cl.[6] G09G *5/22*

U.S. Cl. 345—141 18 Claims



1. An apparatus for controlling an on-screen menu, comprising:

a first data bus having a plurality of data lines including a least significant bit line, the first data bus being for transmitting display information to a character generator, the display information comprising alphanumeric data and attribute data relating to the on-screen menu:

a display buffer coupled to the first data bus for storing the display information, generating the alphanumeric data when a select signal is in a prescribed logic state, and generating the attribute data when the select signal is the complement of the prescribed logic state; and

a latch circuit coupled to the first data bus for generating the select signal, thereby causing the display buffer to generate the attribute data and the alphanumeric data at different times;

wherein all of the data lines of the first data bus are operable to transmit the alphanumeric data when the select signal is in the prescribed logic state, and all of the data lines of the first data bus are operable to transmit the attribute data when the select signal is the complement of the prescribed logic state.

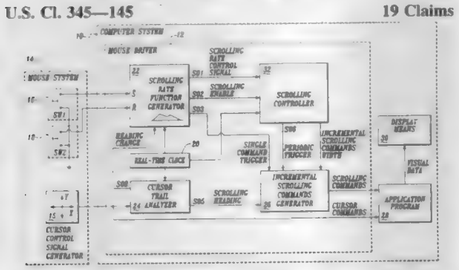
5,633,657

MOUSE DRIVER ARRANGEMENT FOR PROVIDING ADVANCED SCROLLING CAPABILITIES TO A CONVENTIONAL MOUSE

Fernando D. Falcón, Fray Justo Santa María de Oro 2511 10 B (1425), Buenos Aires, Argentina

Filed Oct. 11, 1994, Ser. No. 320,987
Int. Cl.[6] G09G *5/08;5/34*

U.S. Cl. 345—145 19 Claims



1. A mouse driver arrangement for improving interactive operation of a computer by an operator using a mouse, the computer including display means for displaying visual information to the operator, processing means for generating and managing the visual information, memory means for storing temporary data and at least one program running in the computer, and real-time clock means for providing synchronizing signals to the programs, the mouse including means for generating x-y incremental movement information for driving a cursor to any of a plurality of cursor positions on the display means for pointing to information entities displayed thereon, binary control means having a plurality of possible combined states for generating binary control information, and communication means for transmitting the movement information and the binary control information to the computer, said mouse driver arrangement comprising:

first processing means for capturing said x-y incremental movement information and said binary control information to generate cursor control signals for positioning said cursor on said display;

second processing means for storing said x-y incremental movement information as incremental coordinates of successive cursor positions measured at each of said synchronizing signals;

third processing means for analyzing said coordinates to detect a dominant direction amid a plurality of alternative direction options in movement of said cursor and setting a scrolling-direction status variable accordingly;

fourth processing means comprising a function generator for producing a time-varying output signal for scrolling-rate control, said output signal being dependent on said states of said binary control means according to a group of corresponding predefined variation laws; and

fifth processing means for generating incremental scrolling commands for scrolling said visual information at a rate according to the magnitude of said scrolling-rate control signal and in a direction according to said scrolling-direction status variable so that said entities can be moved over said display means at a plurality of velocities and in a plurality of directions under control of said operator by manipulation of said binary control means.

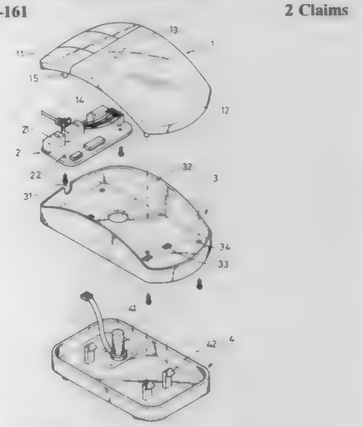
5,633,658

STRUCTURE OF MOUSE

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Rd., Taipei, Taiwan

Filed Jun. 17, 1996, Ser. No. 664,677
Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—161 2 Claims



1. A mouse comprising:

a top cover shell having a plurality of pivoted press keys at a front side thereof adapted for triggering a respective contact on a circuit board, a coupling device at a bottom side thereof, a downward rod defining a center axle hole, and a plurality of locating posts raised from the bottom side;

a circuit board adapted for connecting to a computer system by a cable thereof for controlling the movement of the cursor, having an operation circuit and an integrated circuit, a plurality of switches corresponding to the press keys of said top cover shell, and a plurality of locating holes respectively connected to the locating posts of said top cover shell by a respective screw;

a case-like intermediate shell having, an opening in the middle, which receives the downward rod of said top cover shell, a plurality of hook holes near a rear side thereof, and a plurality of screw holes respectively fixed to the coupling device of said top cover shell by screws; and

a bottom shell fitting over said intermediate shell at one side opposite to said top cover shell, having an upright index rod inserted through the opening of said intermediate shell and fitted into the center axle hole of the downward rod of said top cover shell and having a cable connected to the integrated circuit of said circuit board, and a plurality of upright hooks respectively hooked in the hook holes of said intermediate shell.

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5,633,659

DISPLAY UNIT HAVING A COORDINATE INPUT MECHANISM

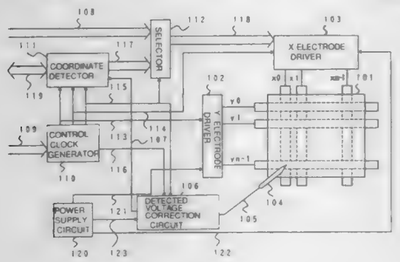
Tsutomu Furuhashi, Yokohama; Masaaki Kitajima, Hitachiota; Satoru Tsunekawa, Higashi-murayama; Hiroyuki Mano, Chigasaki; Shigeyuki Nishitani, Ebina; Tetsuya Suzuki, Chigasaki; Isao Takita, Fujisawa; Makiko Ikeda, Yokohama, and Tatsuzo Hamada, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 308,297

Claims priority, application Japan, Sep. 17, 1993, 5-231842

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—173 35 Claims



1. A display unit comprising:

a flat display comprising M×N display elements in a matrix consisting of M rows and N columns, M pieces of Y-electrodes each connected to each of the rows of the display elements, respectively, and N pieces of X-electrodes each connected to each of the columns of the display elements, respectively;

a detector for detecting, through an electrostatic capacity coupling, a voltage pulse applied to the column and row corresponding to a position on a display surface of said flat display with which said detector is in contact;

each of said display elements of said flat display being adopted to enter a display state when predetermined voltages are applied to both the Y- and X-electrodes connected to the display element;

a Y-electrode driver for applying a voltage pulse to the Y-electrodes in a row arrangement order in a display period;

an X-electrode driver for applying voltage pulses to the N pieces of X-electrodes with a voltage pulse application pattern specified in a given data string;

means for supplying to said X-electrode driver a data string for specifying a voltage pulse application pattern corresponding to a display pattern to be displayed on the N display elements on a row to which a voltage pulse is applied in a display period;

means for supplying L data strings for specifying L different voltage pulse application patterns to said X-electrode driver in order in a non-display period;

Y coordinate detection means for determining a Y coordinate of a position with which said detector is in contact in response to a Y-electrode to which a voltage pulse is applied at a point in time said detector detects the voltage pulse in a display period;

X coordinate detection means for determining an X coordinate of a position with which said detector is in contact in response to L detection values each indicating whether or not said detector detects a voltage pulse for each of the L voltage pulse application patterns applied to the N pieces of X-electrodes in response to L data strings in a non-display period; and

said L voltage pulse application patterns containing H voltage application patterns each for applying a voltage pulse to X-electrodes belonging to every other region in an X-electrode arrangement direction in 2×k equal regions into which the N pieces of X-electrodes are grouped according to the X-electrode arrangement with respect to H different arbitrary values k in the range of 1 to H (where H≦L).

5,633,660

INTEGRATED TOUCH SCREEN INPUT DEVICE

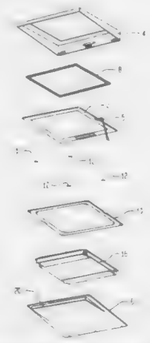
Peter K. Hansen, and Lars Kragh, both of Stamford, Conn., assignors to Trinitech Systems Inc., Stamford, Conn.

Continuation of Ser. No. 17,019, Feb. 12, 1993, abandoned.

This application Apr. 28, 1995, Ser. No. 430,887

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—173 6 Claims



1. A basically horizontally disposed touch screen input device comprising:

an upper housing portion;

a horizontally disposed lower housing portion;

a touch screen disposed between said upper housing portion and said lower housing portion, wherein said touch screen is horizontally disposed, said touch screen comprising:

a glass plate having a first side;

a transparent, electrically resistive coating on the first side of said glass plate; and

a contact sheet positioned adjacent said resistive coating on the first side of said glass plate, said contact sheet having a transparent conductive coating and having separator points so that said contact sheet is not in direct contact with said resistive coating, wherein the contact sheet contacts said resistive coating when pressure is applied to said contact sheet;

a foam gasket disposed between said contact sheet of said touch screen and said upper housing portion to prevent cracking and other damage to said touch screen;

a frame support means disposed between said touch screen and said lower housing portion;

means disposed between said glass plate of said touch screen and said frame support means for insulating said glass plate from said frame support;

a display means disposed between said frame support means and said lower housing portion; and

communication means for sending signals from said touch screen to an externally disposed computer means, and for receiving signals from said externally disposed computer means.

5,633,661

VIDEO DISPLAY CONTROL SYSTEM HAVING BLOCK WRITE WITH OPAQUE PATTERN CONTROL EXPANSION

Gary J. Morse, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,531

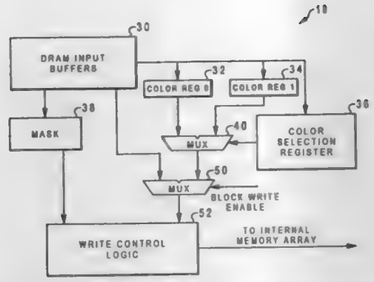
Int. Cl.[6] G06F *12/00*

U.S. Cl. 345—186 12 Claims

1. A video random access memory (VRAM) comprising:

an input buffer for receiving and holding video input information;

a first color register, coupled to said input buffer, for holding a first color value from said input buffer;



a second color register, coupled to said input buffer, for holding a second color value from said input buffer;

a gate multiplexor, coupled to said first color register and said second color register;

a color selection register, coupled to said input buffer and to said gate multiplexor, that uses a color selection information signal from said input buffer for gating which color value from said first color register or said second color register should be asserted;

a write control logic, coupled to said gate multiplexor, for writing said selected color value and;

a mask register containing a plurality of bits, coupled to said input buffer and to said write control logic, that, based upon data from said input buffer which determine a state of each of said plurality of bits, selects which pixel location from among a plurality of pixel locations corresponding to each of said plurality of bits shall be changed based on the color value selected by said color selection register as output by said write control logic.

5,633,662

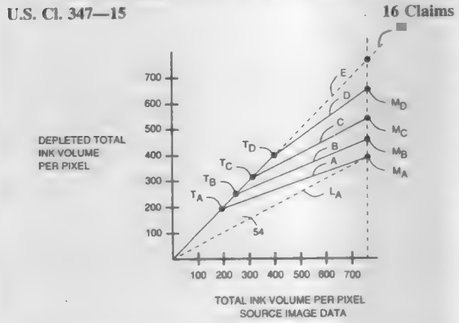
INK LIMITING IN INK JET PRINTING SYSTEMS

William J. Allen, Portland, Oreg., and Steven O. Miller, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 5, 1992, Ser. No. 926,264

Int. Cl.[6] B41J *2/205;29/393;2/21;* H04N *1/46*

U.S. Cl. 347—15 16 Claims



1. A method of controlling ink volume to improve quality of a printed image in a liquid ink printing system arranged to receive digital image data that specifies an ink volume for each one of multiple pixels, the printing system further arranged for printing an image responsive to the image data on to a printing medium, the method comprising the steps of:

selecting a threshold total ink volume;

selecting a maximum total ink volume greater than the threshold total ink volume;

determining from the digital image data an individual total ink volume associated with each one of the multiple pixels;

depleting the individual total ink volume for each one of the multiple pixels having an individual total ink volume greater than the selected threshold total ink volume, the total ink volume for each one of the multiple pixels being individually depleted by an amount according to the maximum total ink volume and proportional to the associated total ink volume forming a depleted total ink volume for each one of the multiple pixels that is less than or equal to the selected maximum total ink volume.

5,633,663

INK JET RECORDING METHOD AND APPARATUS

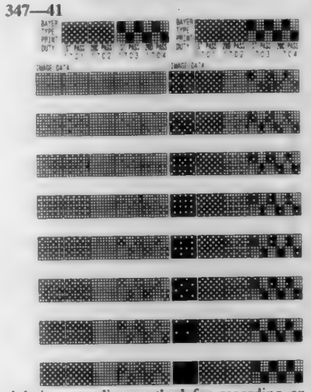
Miyuki Matsubara, Tokyo; Hiromitsu Hirabayashi, Yokohama; Shigeyasu Nagoshi, Kawasaki; Noribumi Koitabashi, Yokohama; Hitoshi Sugimoto, Kawasaki; Fumihiro Gotoh, Yokohama, and Masaya Uetuki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,298

Claims priority, application Japan, Mar. 31, 1992, 4-077410; Mar. 31, 1992, 4-077443; May 20, 1992, 4-127050; Jul. 3, 1992, 4-176970; Jul. 24, 1992, 4-198660; Jul. 24, 1992, 4-198683

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—41 27 Claims



1. An ink jet recording method for recording an image on a recording medium by performing a main scan by moving recording means, which comprises a plurality of recording elements for ejecting an ink, in a direction different from an alignment direction of said plurality of recording elements, and by performing a sub-scan in a direction different from a direction of the main scan by a predetermined amount, in which a predetermined area of the recording medium is completed by performing the main scan a plurality of number of times using in order a plurality of thinning masks including first and second masks to successively record thinned images according to the respective thinning masks, said method comprising the steps of:

providing the first thinning mask used in the main scan to record a part of all the pixels of a recordable area in a pixel arrangement of an m×n pixel group as a unit pixel group and to not record the remaining pixels, where m and n are positive integers and at least one is not less than 2;

moving the recording means in a forward direction, and during movement, recording, using the first thinning mask, a first thinned image on the predetermined area of the recording medium in a pixel arrangement thinned using the pixel group as a unit pixel group;

providing a second thinning mask used to record pixels thinned by the first thinning mask, in a pixel arrangement of the pixel group as a unit pixel group, a pixel arrangement of the second thinning mask and a pixel arrangement of the first thinning mask not overlapping each other; and

moving the recording means in a backward direction, and during the movement, recording, using the second thinning mask, a second thinned image on the predetermined area of the

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recording medium in a pixel arrangement thinned using the pixel group as a unit pixel group, the second thinned image and the first thinned image being recorded on positions different from each other, respectively, on the predetermined area of the recording medium.

5,633,664

METHOD OF INFLUENCING THE CONTACT ANGLE OF THE NOZZLE SURFACE OF INKJET PRINTHEADS

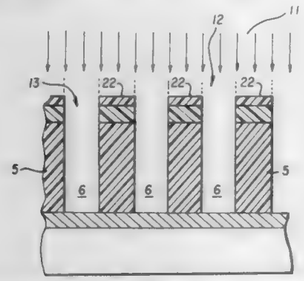
Behrooz Bayat, München, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1995, Ser. No. 380,898

Claims priority, application Germany, Mar. 8, 1994, 44 07 839.0

Int. Cl.[6] B41J *2/16; C08F 2/48*

U.S. Cl. 347—47 **7 Claims**



1. A method of influencing a contact angle of a planar nozzle of an inkjet printhead wherein the nozzle surface is provided with a polymer layer; said method comprising the sequential steps of:

covering the nozzle surface with a layer of channel formation material;

applying a high temperature resistant polymer solution to the nozzle surface to form a polymer layer;

opening nozzle ports in the polymer layer by means of a laser ablation mask process; and

modifying the polymer layer by UV laser light such that the contact angle is set between 0° and 130°.

5,633,665

INK JET RECORDING METHOD AND APPARATUS

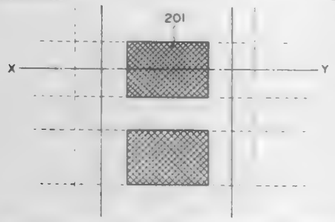
Hirokazu Komuro, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 77,031, Jun. 16, 1993, abandoned. This application Nov. 15, 1995, Ser. No. 559,252

Claims priority, application Japan, Jun. 16, 1992, 4-156962

Int. Cl.[6] B41J *2/07*

U.S. Cl. 347—63 **2 Claims**



1. An ink jet recording method wherein an ink is ejected through a plurality of ejection outlets, comprising the steps of:

providing a recording head having a plurality of heat generating resistors for producing thermal energy for ejecting a liquid and a single silicon substrate having a width not less than 30 mm and having a plurality of electrodes for supplying electric signals for driving the heat generating resistors at a recording density k, where k is measured in dots per mm, and a plurality of ink passages in association with said heat generating resistors;

applying, through a given said electrode, to at least one said heat generating resistor, the drive signal satisfying the following relationship;

$$W \times tp \times f \times k < 1.30 \quad w \times sec/pulse \times pulse/sec \times dots/mm,$$

where W is supplied electric power measured in watts, tp is a width of a driving pulse in seconds per pulse, and f is a driving frequency measured in pulses per second.

5,633,666

INK SUPPLY DEVICE

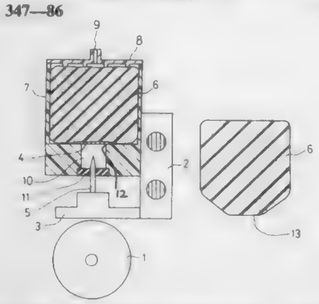
Hideaki Haigo, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 3, 1994, Ser. No. 237,054

Claims priority, application Japan, Jun. 18, 1993, 5-147475

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—86 **22 Claims**



1. An ink supply device for supplying ink to a print head, said ink supply device comprising:

an ink tank comprising ink supply means for supplying ink to the print head including an ink supply port provided in an inside surface of the ink tank; and

ink absorbing means for absorbing ink, said ink absorbing means being arranged in said ink tank,

wherein said ink absorbing means includes a projecting portion that projects toward said ink supplying means prior to arranging said ink absorbing means in said ink tank, and said projecting portion directly abutting and being compressed against said ink supplying means when said absorbing means is arranged inside said ink tank thus creating an area in the ink absorbing means that is more dense than other areas of the ink absorbing means that directly abuts the ink supply port so that ink absorbed in said ink absorbing means is drawn to the compressed projecting portion by capillary action and is directly funneled to the ink supply port.

5,633,667

INK CARTRIDGE FOR PRINTER

Hisashi Miyazawa, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 4, 1994, Ser. No. 334,719

Claims priority, application Japan, Nov. 5, 1993, 5-301151

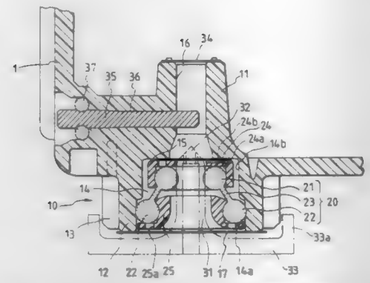
Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—86 **18 Claims**

1. An ink cartridge for mounting on an ink supply needle of a recording head, comprising:

an ink cartridge main body having a plurality of walls;

an ink supply port disposed in a wall of said ink cartridge main body and communicating from an interior to an exterior of



said ink cartridge for the flow of ink therethrough, said ink supply port defining a stepped insertion hole, said stepped insertion hole comprising a first portion having a first diameter and a second portion having a second diameter greater than said first diameter; and

a self-aligning ring mounted within said ink supply port and having an interior facing side and an exterior facing side, said self-aligning ring further comprising:

a first annular seal member on the interior facing side of said self-aligning ring and having an inner diameter less than an outer diameter of said ink supply needle;

a second annular seal member on the exterior facing side of said self-aligning ring and having an outer diameter greater than an inner diameter of said second portion of said stepped insertion hole of said ink supply port; and

a flexible connecting member coupling said first annular seal member and said second annular seal member to permit essentially lateral displacement of said first annular seal member relative to said second annular seal member in said ink supply port.

5,633,668

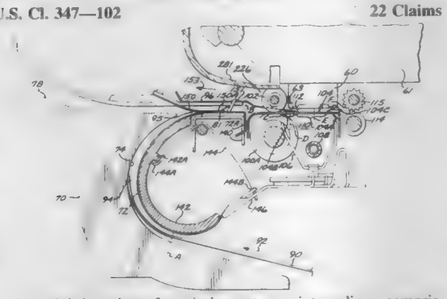
PAPER PRECONDITIONING HEATER FOR INK-JET PRINTER

William H. Schwiebert, Cardiff, and Damon W. Broder, San Diego, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 56,039, Apr. 30, 1993, Pat. No. 5,406,321. This application Dec. 21, 1994, Ser. No. 360,891

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—102 **22 Claims**



1. An ink-jet printer for printing onto a print medium, comprising:

a printhead for printing onto a printing medium, said printhead comprising means for ejecting droplets of ink onto a first surface of said medium at a print area in a controlled fashion;

means for advancing the print medium via a medium path to said print area during operations; and

a stationary preheater disposed along said medium path for preheating said medium before said medium reaches said print area to precondition said medium for printing operations, said stationary preheater comprising:

a flexible heating member defining a flexible heater surface, said member including flexible means for heating said heating surface; and

means for supporting said flexible heating member in a fixed, non-movable position along said medium path so that said surface presents a curved surface which is directly contacted by said medium as said medium is advanced along said medium path to said print area, said curved surface defining a portion of said medium path, and said medium is heated by direct contact with said curved heating surface.

5,633,669

IMAGE FORMING APPARATUS FOR SYNTHESIZING A DIFFERENTIAL PEAK SIGNAL AND AN IMAGE SIGNAL

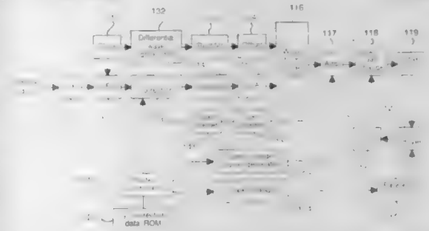
Yoshinobu Hada, Aichi-ken; Masaki Tanaka; Kazuyuki Fukui, both of Toyohashi, and Kouichi Etou, Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jan. 26, 1994, Ser. No. 187,346

Claims priority, application Japan, Feb. 1, 1993, 5-014595

Int. Cl.[6] B41J *2/385; 2/47; 2/39;* **G03G** *13/04*

U.S. Cl. 347—132 **23 Claims**



1. An image forming apparatus for forming an image with electrophotographic process, comprising:

a photoconductor;

an exposure device for exposing the photoconductor with a light beam;

a conversion device for converting image signals on a density of pixels of an image to be formed to a peak waveform which rises to a peak and substantially instantaneously thereafter decays from the peak, said peak waveform having said peak for each period of a predetermined number of pixels;

a detecting device for detecting a level of the peak received from said conversion device for each period;

an amplifier for amplifying the peak waveform based on the level of the peak detected for each period by said detecting device so as for the peak thereof to have a predetermined level; and

a driving device for driving the exposure device according to the peak waveform amplified by said amplifier.

5,633,670

THERMAL PRINTING APPARATUS AND METHOD THEREOF

Hee-gook Kwak, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 29, 1994, Ser. No. 235,519

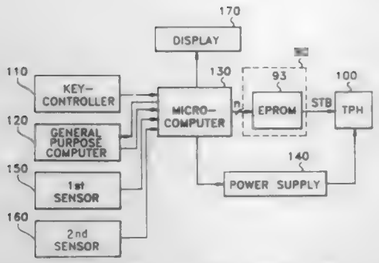
Claims priority, application Rep. of Korea, Apr. 29, 1993, 93-7299

Int. Cl.[6] B41J *2/36; 2/365*

U.S. Cl. 347—188 **22 Claims**

1. A thermal printer having a thermal print head, a printing medium, and a cartridge provided containing printing film having a thermally sublimatable dye deposited thereon, said printing medium and said printing film being selected among at least two kinds of printing media and printing films, the thermal printer performs printing by emitting heat in a pattern suitable for printing

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data on said printing medium in order to sublimate the dye deposited on said printing film, the thermal printer comprising:

first sensing means for sensing which of said at least two kinds of media is provided;

second sensing means for sensing which of said at least two kinds of printing film is provided;

means for storing heating energy amounts, each of said heating energy amounts corresponding to a specific combination of one of said at least two types of printing media and one of said at least two types of printing film;

means for selecting one of said stored heating energy amounts based on said sensings of said first sensing means and said second sensing means; and

heating energy controlling means for controlling a heating energy of said thermal print head in order to sublimate the dye deposited on said printing film, in accordance with said selected one of said stored heating energy amounts.

5,633,671

RECORDING METHOD AND APPARATUS MAINTAINING CONSTANT DENSITY BY ANTICIPATING TEMPERATURE CHANGES IN THE RECORDING HEAD

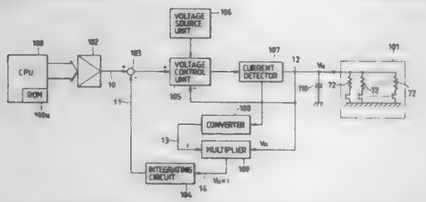
Youichi Watanabe, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 240,213, May 9, 1994, abandoned, which is a continuation of Ser. No. 3,956, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 632,644, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 420,018, Oct. 11, 1989, abandoned. This application Jan. 2, 1996, Ser. No. 582,013

Claims priority, application Japan, Oct. 13, 1988, 63-255937; Sep. 28, 1989, 1-250560

Int. Cl.[6] B41J *2/36*

U.S. Cl. 347—192 **45 Claims**



1. A recording apparatus in which a heat generating element at a recording means for recording generates heat and thereby effects image recording on a recording medium, comprising:

setting means for setting a reference voltage for driving said heat generating element to generate heat;

voltage outputting means for outputting a driving voltage of said heat generating element based on said reference voltage;

detecting means for detecting a signal corresponding to an amount of an electric power supplied to said heat generating element during said image recording;

accumulating means for accumulating said a value based on said signal corresponding to said amount of said electric power in a predetermined time period; and

control means for anticipating a temperature change of said recording means in accordance with said value and controlling said voltage outputting means to adjust an energy to be applied to said heat generating element.

5,633,672

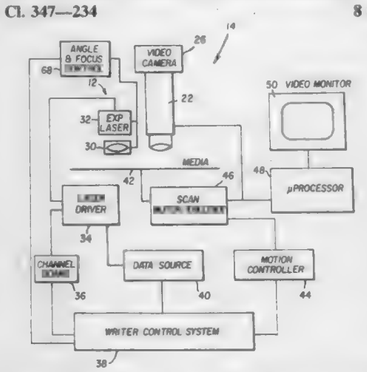
REAL-TIME CALIBRATION OF PROCESSLESS WRITER

Arnold Lungershausen, West Henrietta; Stephen C. Arnold, Honeoye Falls; Timothy M. Enders, and John R. Cardone, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 304,963, Sep. 13, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,418

Int. Cl.[6] B41J *2/47;2/435;* **G11B** *7/00;* **H04N** *1/23*

U.S. Cl. 347—234 **8 Claims**



1. Apparatus for writing an image having desired characteristics on a recording medium, the medium producing visible marks when exposed to radiation above a threshold level; said apparatus comprising:

a communication channel for carrying an information signal representing the image being written;

a writing head coupled to said channel and modulated by the signal for making marks representing the image on the recording medium in response to the signal, the image having the characteristics of line frequency, spatial resolution and tonal information and the marks having parameters of size, relative position and density, said writing head having means for adjusting the parameters for modifying the characteristics of the image represented by the marks;

a drive for producing relative movement in a direction between the recording medium and said writing head to establish a pattern of marks on the recording medium in the direction of the relative movement;

a calibration instrument mounted relative to said writing head for reading the marks directly after they have been written, analyzing the characteristics of the image produced by the pattern of marks continuously while the image is recorded and adjusting the parameters of the marks in real-time to cause the image to have the desired characteristic.

5,633,673

RECORDING SYSTEM

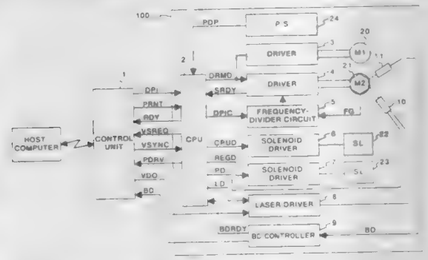
Kaoru Sato, Yokohama; Toshiyuki Itoh, Sagamihara; Akihisa Kusano, Kawasaki; Makoto Abe, Kashiwa; Toshihiko Inuyama, Fujisawa; Masanori Ishizu, Tokyo; Kazuhiko Okazawa, Kawasaki, and Junichi Kimizuka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 200,299, Feb. 23, 1994, abandoned, which is a continuation of Ser. No. 689,553, Apr. 23, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 337,561

Claims priority, application Japan, Apr. 24, 1990, 2-106600

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—240 **37 Claims**



1. A recording system comprising a printer unit in which recording density is capable of being changed over, and a control unit capable of sending a recording density changeover command to the printer unit via a prescribed interface, wherein said printer unit includes:

image forming means for forming an image on a recording medium;

changeover means for changing over the recording density of the image;

sensing means for sensing a recording operation in process in said printer unit;

receiving means for receiving the changeover command from said control unit;

delay means responsive to outputs from said sensing means and said receiving means for delaying, during execution of the recording operation, communication of the changeover command to said changeover means until the recording operation ends; and

responding means responsive to an output from said delay means for sending a reply signal to said control unit via said interface, said reply signal indicating that changeover of recording density is complete, whereby said control unit can recognize when the changeover of recording density has been performed in said printer unit.

5,633,674

HAND-HELD READING DEVICE FOR THE VISUALLY IMPAIRED

James Trulaske, and Daniel M. Meyer, both of St. Louis County, Mo., assignors to Vision Technology, Inc., Maryland Heights, Mo.

Filed Dec. 12, 1994, Ser. No. 353,801

Int. Cl.[6] H04N *7/18;9/47*

U.S. Cl. 348—63 **20 Claims**

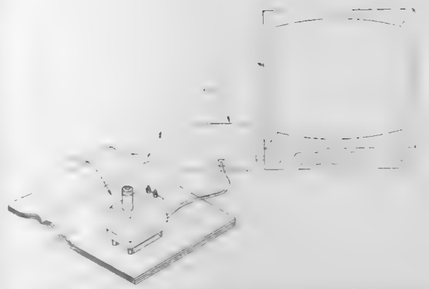
1. A magnifying device for magnifying an object and displaying the object on a monitor, the device including:

a hand held unit which, when used, is placed in close proximity to the object to be magnified, the hand held unit having

a housing including a top, a bottom, and side walls; said bottom defining an opening;

legs depending from the bottom;

rollers rotatably connected to the legs at a bottom end of the legs to facilitate movement of the hand held unit over the object;



a solid state camera housed in said hand held unit above said opening which converts an optical signal to an electrical signal, said camera including a lens, said lens being focusable, said camera being mounted to a mounting board, said mounting board defining an opening through which said camera lens extends;

a focusing control for focusing said camera lens, said focusing control including a focusing knob operable connected to said camera lens to move said camera lens to focus said camera, and a focusing rod which rotatably extends through said mounting board and said housing, said focusing knob being fixed to said rod externally of said hand held unit housing, a pulley fixed to a bottom of said focusing rod beneath said mounting board, and a band operatively engaging said pulley and said camera lens, such that when said focusing knob is rotated, said camera lens is rotated; and

a zoom control for altering the size of the image displayed on the monitor; and

a base unit, said hand held unit being electrically connected to said base unit to transmit the signal produced by said camera to said base unit, said base unit being connectable to the monitor to display the signal produced by the camera on the monitor.

5,633,675

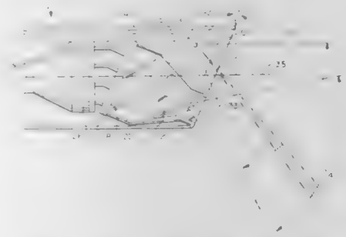
SHADOW PROBE

Dominick Danna, Syracuse, and Raymond A. Lia, Auburn, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation-in-part of Ser. No. 17,603, Feb. 16, 1993, abandoned. This application Jan. 10, 1995, Ser. No. 370,866

Int. Cl.[6] H04N *7/18;* **A62B** *1/04*

U.S. Cl. 348—65 **4 Claims**



1. A borescope having a compact imager head comprising:

an elongated cylindrical housing having a given wall thickness, a diameter (D), and a longitudinal axis;

said housing having a circular end face at its distal end that forms an angle θ with a plane perpendicular to said longitudinal axis, said angle being less than 90°;

an illumination window and an optic window mounted adjacent each other along a diameter of the end face;

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an imager having a flat recording surface, said imager being mounted behind the optic window to view a target image outside of said housing, said recording surface being parallel with said end face, said imager being positioned a predetermined distance behind the optic window to establish a region behind the illumination window of a shape and size to accommodate the distal end of a light carrying fiber bundle for illuminating a target within the viewing range of the imager without interfering with the target image;

shadow generating means associated with said light carrying fiber bundle to produce a contrasting shadow in a target plane;

display means connected to said imager for viewing and measuring the target image and a shadow image in the target plane; and

measuring means for measuring parameters of the target image and the shadow image on said display so that the attached size of the target can be determined, wherein the diameter (D) of the imager head is substantially expressed by the relationship $D=\cos\theta(OW+IW+2t)$;

where:

OW=the length of the optic window along the diameter of the end face;

IW=the length of the illumination window along the diameter of the end face; and

2t=twice the wall thickness.

5,633,676

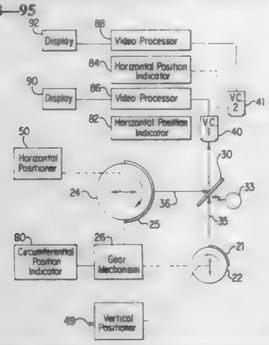
APPARATUS AND METHOD FOR MOUNTING PRINTING PLATES AND PROOFING

Richard E. Harley, New York, and Erik Mikkelsen, Selden, both of N.Y., assignors to E. L. Harley Inc., Brooklyn, N.Y.

Filed Aug. 22, 1995, Ser. No. 518,053

Int. Cl.[6] H04N *7/18;* **F23J** *3/00;* **B41F** *5/00;* **B41B** *11/00*

U.S. Cl. 348—95 **10 Claims**



1. A mounting apparatus, for mounting a printing plate on a plate cylinder in correspondence with a layout sheet, comprising:

a layout cylinder for accepting mounting of said layout sheet thereto;

a frame rotatably supporting said layout cylinder;

said frame including plate cylinder support means for rotatably supporting said plate cylinder with an axis thereof parallel to an axis of said layout cylinder;

a drive mechanism for synchronously rotating said plate and layout cylinders in opposite directions at equal circumferential displacement rates;

at least one partial mirror supported on said frame at a position proximate and parallel to said plate and layout cylinders to combine light traveling along first and second optical paths from corresponding locations on said plate and layout cylinders to form a superimposed image of said plate and layout cylinders viewable along a common optical path;

at least one video camera and video display;

said frame having camera support means for supporting said video camera at a position disposed along said common optical path to image said superimposed image;

said camera support means including sliding support means for permitting travel of said camera parallel to said axes of said plate and layout cylinders; and

positioning means for disposing said plate and layout cylinders relative to said partial mirror to effect substantially equal object distances from said plate and layout cylinders and substantial perpendicular alignment of virtual extensions of said first and second optical paths with axes of said plate and layout cylinders.

5,633,677

TELEVISION CAMERA APPARATUS

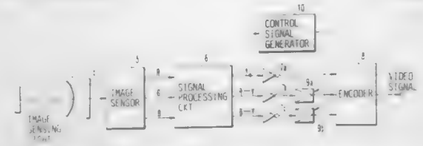
Tadashi Okino, and Kunio Ninomiya, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 906,025, Jun. 26, 1992, abandoned, which is a continuation of Ser. No. 618,046, Nov. 26, 1990, abandoned. This application Jun. 28, 1994, Ser. No. 267,182

Claims priority, application Japan, Nov. 30, 1989, 1-309328; Nov. 30, 1989, 1-309330; Jan. 23, 1990, 2-011850

Int. Cl.[6] H04N *9/235*

U.S. Cl. 348—229 **2 Claims**



1. An image pickup apparatus, comprising::

a) image pickup means for converting an optical image into an electrical signal;

b) processing means for producing a luminance signal and color-difference signals from the electrical signal outputted from said image pickup means;

c) a first inverting means for inverting a level of said luminance signal outputted from said processing means with respect to a predetermined level;

d) second inverting means for inverting a level of said color-difference signals outputted from said processing means with respect to predetermined levels;

e) a first variable gain amplifier means for amplifying said luminance signal inverted by said first inverting means;

f) modulation means for modulating said color-difference signals inverted by said second inverting means;

g) a second variable gain amplifier means for amplifying said color-difference signals modulated by said modulation means; and

h) mixing means for mixing outputs of said first and second variable gain amplifier means.

5,633,678

ELECTRONIC STILL CAMERA FOR CAPTURING AND CATEGORIZING IMAGES

Kenneth A. Parulski; Thomas A. Napoli, both of Rochester, and David M. Lewis, Waterport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1995, Ser. No. 574,756

Int. Cl.[6] H04N *5/30*

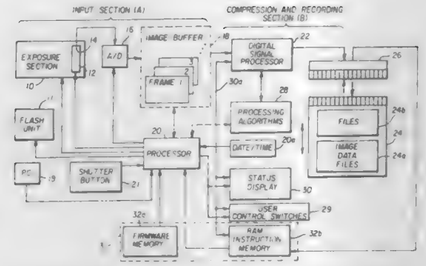
U.S. Cl. 348—232 **30 Claims**

1. An electronic camera for capturing images representing a variety of subjects, said camera comprising:

an image sensor for capturing the images;

a converter stage for converting the images into digital image data;

a memory for storing a plurality of categories providing classification of the images by subject;



a processor having the capability of assigning the plurality of categories to the images captured by the image sensor, each category providing subject classification of one or more images;

a user control for selecting one or more categories for the images before the images are captured by the image sensor; and

means for generating an output image signal comprising an image file including both the digital image data corresponding to the images and separate category data including the one or more categories selected by the user control, wherein the category data is separately accessible for each image apart from the image data.

5,633,679

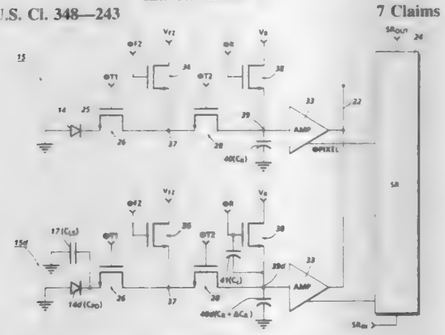
PHOTOSENSITIVE CHIP HAVING TRANSFER CIRCUITS WHICH COMPENSATE FOR SHIELDED TEST PHOTOSENSORS

Paul A. Hosier, Rochester, and Jagdish C. Tandon, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 19, 1995, Ser. No. 444,629

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—243 **7 Claims**



1. A photosensitive apparatus, comprising:

a channel for accepting video signals therethrough;

a first photosensor;

a first transfer circuit operatively disposed between the first photosensor and the channel, including a first reset node having a first reset capacitance associated therewith, the first reset node being adapted to store a charge related to an output signal from the first photosensor;

a second photosensor;

a light shield disposed over the second photosensor, preventing the second photosensor from receiving light;

a second transfer circuit operatively disposed between the second photosensor and the channel, including a second reset node having a second reset capacitance associated therewith, the second reset node being adapted to store a charge related to an output signal from the second photosensor, the second reset capacitance being not equal to the first reset capacitance.

5,633,680

FOCUS CONTROL DEVICE HAVING IMPROVED SENSITIVITY CHARACTERISTICS

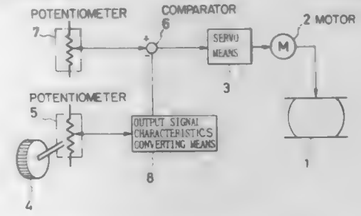
Keiji Kaneko; Shinya Yajima; Hiroyuki Kawamura, and Hiroshi Kato, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation of Ser. No. 160,284, Dec. 2, 1993, abandoned, which is a continuation of Ser. No. 772,773, Oct. 7, 1991, abandoned. This application Jan. 23, 1995, Ser. No. 376,686

Claims priority, application Japan, Oct. 8, 1990, 2-268487; Dec. 21, 1990, 2-412565

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—357 **6 Claims**



1. A focus control device comprising:

a first sensor means arranged to detect an extent of manipulation of a focus operating means to produce a lens displacement command signal;

a second sensor means arranged to detect a current position of a focusing lens within a focusing range of the lens to produce a signal indicative of a current lens position;

a comparator arranged to compare the output signals of said first and second sensor means to produce a servo control signal according to a difference between the two signals thereby to control the displacement of said focusing lens;

an output signal characteristics converting means for varying said servo control signal so that said focus operating means operates to focus the focusing lens on an object with a substantially linear response over an entire stroke range between the nearest and infinite ends of said focusing lens; and

an operation mode selector means for switching a mode of operation of said focus control device to and from a first operation mode in which the output signal of said first sensor means is imparted with said output signal characteristics by the output signal characteristics converting means, a second operation mode in which the output signal of said first sensor means is inverted after imparting said output signal characteristics thereto by said output signal characteristics converting means, and a third operation mode in which the output signal of said first sensor means is sent out bypassing said output signal characteristics converting means.

5,633,681

ELECTRICALLY CONTROLLED CAMERA POSITIONING SYSTEM

Larry K. Baxter, Gloucester; Daniel R. Phelps, Lynn; Anthony M. Duys, Newburyport, all of Mass., and Frank Labuski, Wells, Me., assignors to Picturetel Corporation, Danvers, Mass.

Filed Mar. 6, 1995, Ser. No. 398,546

Int. Cl.[6] H04N *5/225*

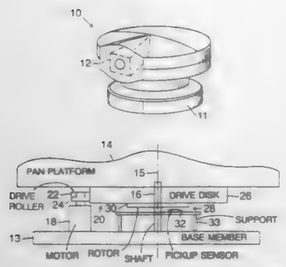
U.S. Cl. 348—373 **20 Claims**

1. A camera positioning system for rotating a video camera about at least one rotation axis, comprising:

a camera platform to which said camera is fixedly attached for axial rotation about said axis,

a motor mounted to a base, said motor for driving said camera platform to effect rotation of said platform about said axis and relative to said base,

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a drive for coupling said motor to said camera platform to effect rotation of said platform about said rotation axis,

an electrically driven capacitive sensor assembly for generating electrical position signals for determining a rotational position of said camera platform relative to said base, and

a feedback control circuit for using said position signals from said capacitive sensor assembly to control rotational positioning of said motor, resulting in rotating said camera to a desired camera position.

5,633,682

STEREOSCOPIC CODING SYSTEM

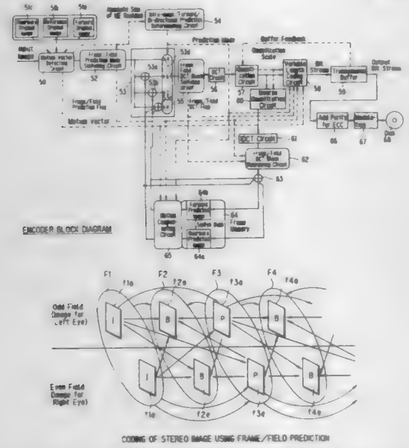
Katsumi Tahara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 327,364

Claims priority, application Japan, Oct. 22, 1993, 5-264511

Int. Cl.[6] H04N *7/32;13/00*

U.S. Cl. 348—384 **26 Claims**



1. An image signal coding method, comprising the steps of:

receiving a first image signal and a second image signal, said first and second image signals representing stereoscopic images perceived by left and right eyes;

producing a stereo image signal from said first and second image signals, said stereo image signal including frames, each of said frames having a first field corresponding to said first image signal and a second field corresponding to said second image signal;

dividing each of said frames of said stereo image signal into units of blocks;

selecting either a first prediction mode or a second prediction mode;

frame prediction encoding, when said first prediction mode is selected, each of said frames to produce a predictively coded signal;

field prediction encoding, when said second prediction mode is selected, said first and second fields of a frame using data from other first or second fields of a frame to produce said predictively coded signal;

orthogonally transforming the predictively coded signal to produce an orthogonally transformed signal;

quantizing the orthogonally transformed signal to produce a quantized signal; and

variable length coding the quantized signal.

5,633,683

ARRANGEMENT AND METHOD FOR TRANSMITTING AND RECEIVING MOSAIC VIDEO SIGNALS INCLUDING SUB-PICTURES FOR EASY SELECTION OF A PROGRAM TO BE VIEWED

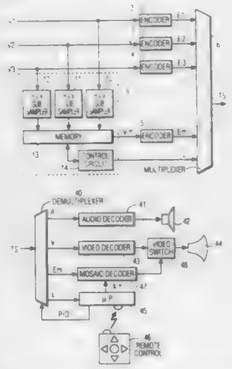
Jürgen F. Rosengren; Ronald W. Saeijs; Joanne H. Westerink; Michiel J. van der Korst, and Guy J. Roberts, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1995, Ser. No. 422,379

Claims priority, application European Pat. Off., Apr. 15, 1994, 94201053

Int. Cl.[6] H04N *7/58;5/445*

U.S. Cl. 348—385 **19 Claims**



1. A television transmitting system for transmitting a plurality of video signals via a common channel, each video signal having a program number, the television transmitting system comprising:

a mosaic generator tier generating a mosaic video signal comprising a plurality of sub-pictures, each sub-picture representing a corresponding one of said plurality of video signals, at least one of said sub-pictures constituting a non-real-time characterization of a television program conveyed by the corresponding one of said video signals;

a data linking generator for generating data linking the position of each sub-picture on a display screen with the program number of the video signal each sub-picture represents; and

a transmitter for transmitting said mosaic video signal and linking data through said common channel.

5,633,684

IMAGE INFORMATION COMPRESSION AND DECOMPRESSION DEVICE

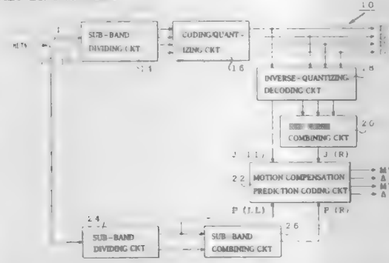
Yasuhiko Teranishi, Kanagawa-ken; Seiji Higurashi, Tokyo, and Mitsuo Harumatsu, Kanagawa-ken, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 28, 1994, Ser. No. 365,079

Claims priority, application Japan, Dec. 29, 1993, 5-352615

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—398 **6 Claims**



1. An image information compression device for compressing an image information by sub-band dividing an image signal and performing a motion compensation prediction coding, comprising:

sub-band division means for sub-band dividing an image signal corresponding to a unit of image into a plurality of band signals including a low frequency band signal;

sub-band combining means for sub-band combining said plurality of band signals excluding said low frequency band signal and obtaining a combined high frequency band signal having an identical number of pixels as that of said image signal and having said plurality of band signals excluding said low frequency band signal;

intra-plane coding means for intra-plane coding each of said plurality of band signals obtained by sub-band dividing said image signal;

first and second inter-plane motion compensation coding means for performing motion compensation coding for said low frequency band signal and said combined high frequency band signal respectively; and

selecting means for selectively enabling said inter-plane motion compensation means and said intra-plane coding means in response to said unit of said image.

5,633,685

METHOD AND APPARATUS FOR ENCODING AN IMAGE SIGNAL HAVING AN OBJECT BY USING AN EXTENSION-INTERPOLATION TECHNIQUE

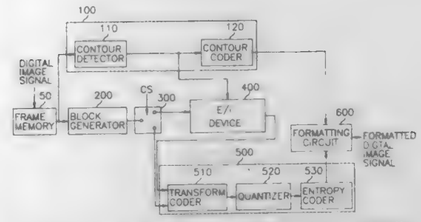
Soon-Jae Cho; Jae-Gark Choi; Si-Woong Lee; Yi-Han Kim; Seong-Dae Kim, all of Daejeon, and Hae-Mook Jung, Seoul, all of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 8, 1996, Ser. No. 629,173

Claims priority, application Rep. of Korea, Apr. 8, 1995, 95-8178

Int. Cl.[6] H04N *7/30;* **G06K** *9/00*

U.S. Cl. 348—420 **7 Claims**



6. An apparatus for encoding an image frame signal having an object, wherein the image frame signal consists of object pixels and background pixels, the object pixels being located within the object and the background pixels being located outside the object, said apparatus including:

(A) means for detecting a boundary of the object included in the image frame to generate a contour signal providing boundary information for tracing the object boundary;

(B) means for encoding the contour signal to generate a first encoded image frame signal;

(C) means for dividing the image frame into a plurality of processing blocks, each of the processing blocks having N ×N pixels, N being a positive integer;

(D) means for generating a control signal indicating whether or not a part of the object boundary exists in each of the processing blocks;

(E) means for dividing the processing blocks to a first and a second sets of processing blocks in response to the control signal, wherein a part of the object boundary exists in each of the processing blocks of the first set;

(F) means for converting each processing block of the first set to an extended processing block;

(G) means for encoding the extended processing blocks or the second set of processing blocks, to thereby produce a second encoded image frame signal; and

(H) means for formatting the first and the second encoded image signals,

wherein said means for converting comprises:

(F1) means for deciding either a horizontal or a vertical extension which has a priority based on a shape of the object pixels in each processing block of the first set;

(F2) means, in case the horizontal extension has the priority, for selecting a plurality of object rows, each of the object rows being a row of the processing block having at least one object pixels, and for each of the object rows, providing a first vector, each element of the first vector being a value of each object pixel included in said each object row, and in case the vertical extension has the priority, for selecting a plurality of object columns, each of the object columns being a column of the processing block having at least one object pixels, and for each of the object columns, providing a first vector, each element of the first vector being a value of each object pixel included in said each object column, to thereby provide L first vectors, L being an integer ranging from 0 to N and denoting a number of object rows or object columns;

(F3) means, for each first vector, for selecting an extension matrix among a multiplicity of predetermined extension matrices, based on a number of elements in said first vector and N, and multiplying the selected extension matrix to said each first vector, to thereby provide L extended first vectors, each of the L extended first vectors having N elements;

(F4) means, in case the horizontal extension has the priority, for providing a first extended processing block including L rows, each row having N pixels whose values are elements of each of the extended first vectors and, for each column of the first extended processing block, for providing an L-dimensional second vector, elements of the second vector being values of pixels included in said each column of the first extended block, and in case the vertical extension has the priority, for providing a first extended processing block including L columns, each column having N pixels whose values are elements of each of the extended first vectors, and, for each row of the first extended processing block, for providing an L-dimensional second vector, elements of the second vector being values of pixels included in said each row of the first extended block;

(F5) means for choosing an extension matrix among a multiplicity of the predetermined extension matrices based on the L and the N values;

(F6) means for multiplying the extension matrix chosen at means for choosing, to each of the second vectors, to thereby

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provide N extended second vectors, each of the N extended second vectors having N elements; and

(F7) means, in case the horizontal extension has the priority, for providing the extended processing block including N columns, each column having N pixels whose values are elements of each of the extended second vectors, and in case the vertical extension has the priority, for providing the extended processing block including N rows, each row having N pixels whose values are elements of each of the extended second vectors.

5,633,686

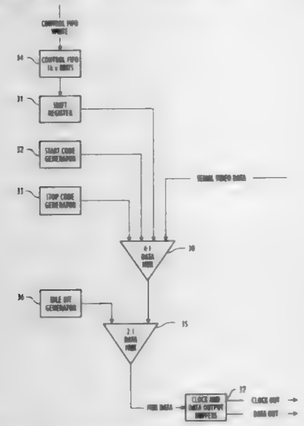
ADAPTIVE DIGITAL VIDEO SYSTEM

Scott T. Boden, 405 Coachwood, El Cajon, Calif. 92019

Filed Sep. 14, 1994, Ser. No. 305,906

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—441 **17 Claims**



1. A method of transmitting and receiving digital video image signals comprising the steps of:

(a) transmitting from at least one transmitting station video images, each image comprising a series of successively transmitted blocks of digitized information encoded in a predetermined format based on parameters of said images, wherein transmission of each block includes the steps of:

(a.1) transmitting a start code identifying the start of the transmitted block;

(a.2) transmitting a stop code spaced in time from the transmitted start code and identifying the end of the transmitted block;

(a.3) transmitting a plurality of successive video data words constituting digitally coded video information in an image signal;

(a.4) transmitting system data signals representing parameters of the video data words and system commands required at the receiving station to decode the encoded video data words, wherein the system data signal in successively transmitted blocks represent different video data parameters or system commands; and

(a.5) transmitting system control information signals identifying, in each transmitted block, the parameter or command represented by system data signals in that transmitted block;

wherein steps (a.3), (a.4) and (a.5) are positioned in time intermediate steps (a.1) and (a.2);

(b) receiving the transmitted blocks at a location remote from said transmitting station; and

(c) decoding the encoded video data words in the received blocks to reproduce said video images in an original state prior to said encoding in accordance with the parameters and commands represented by the system data signals in said received blocks and identified by the system control information in said received blocks;

wherein step (a) is characterized by said predetermined format and said parameters being selectively alterable to vary said encoding; and

step (c) is characterized by automatically adjusting said decoding in response to altering said format and parameters to accommodate the varied encoding of said video images.

5,633,687

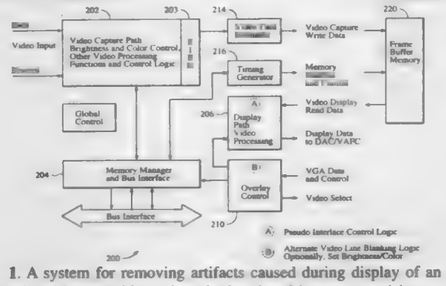
METHOD AND SYSTEM FOR PROVIDING AN INTERLACED IMAGE ON AN DISPLAY

Dhimant N. Bhayani, San Jose, and Phani Chandrupatla, Sunnyvale, both of Calif., assignors to C-Cube Microsystems, Milpitas, Calif.

Filed Oct. 23, 1995, Ser. No. 547,038

Int. Cl.[6] H04N *7/01;11/02*

U.S. Cl. 348—441 **26 Claims**



1. A system for removing artifacts caused during display of an interlaced image with motion, the interlaced image comprising an odd and an even field, the system comprising:

means for providing one of the odd and the even fields on every other line of the display;

means for providing a set of constant signal level lines to the remaining lines of the display;

means responsive to a timing signal from the display for shifting the location of the constant level lines by a scan line; and

means responsive to the shifting means for providing the other of the odd and the even field to the display.

5,633,688

IMAGE SUPERIMPOSING APPARATUS FOR SUPERIMPOSING THE ENCODED COLOR TELEVISON SIGNAL WITH THE EXTERNAL COMPOSITE VIDEO SIGNAL

Hae-min Choi, Kwacheon; Bong-hun Song, and Kwang-sik Choi, both of Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 19, 1995, Ser. No. 575,016

Claims priority, application Rep. of Korea, Dec. 19, 1994, 94-35080; Dec. 19, 1994, 94-35083; Dec. 19, 1994, 94-35084; Dec. 20, 1994, 94-35345

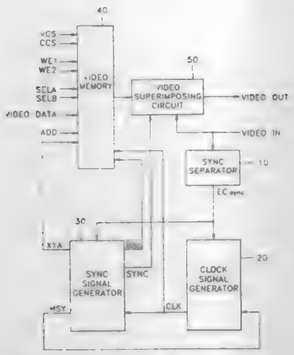
Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—584 **19 Claims**

1. An image superimposing apparatus comprising:

a synchronization separator for separating an external composite sync signal from an external composite video signal;

a clock signal generator for adjusting the frequency of a clock signal permitting the clock signal to be synchronized to an external sync signal according to a phase difference between a horizontal sync signal in the separated external composite sync signal and an internal horizontal sync signal, and for generating the adjusted clock signal;



a sync signal generator for generating an internal composite sync signal and a reproduction address signal, responsive to the adjusted clock signal from said clock signal generator;

a video memory for reading digital video information stored according to the reproduction address signal from said sync signal generator and writing the digital video information according to a writing address signal; and

a superimposing circuit for restoring the digital video information read from said video memory as an RGB signal, encoding said internal composite sync signal and said restored RGB signal as a color television signal, and superimposing the encoded color television signal with said external composite video signal for output.

5,633,689

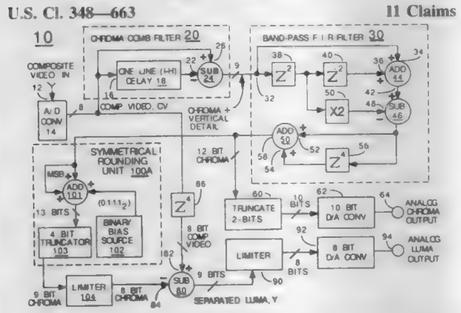
APPARATUS FOR SEPARATING A DIGITAL COMPOSITE VIDEO SIGNAL INTO COMPONENTS

Donald H. Willis; John A. Hague, and Greg A. Kranawetter, all of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 29, 1995, Ser. No. 580,725

Int. Cl.[6] H04N *9/78*

U.S. Cl. 348—663 **11 Claims**



1. Apparatus, for providing video component separation with a reduced tendency toward contouring, comprising:

a filter responsive to a digital composite video input signal supplied thereto for providing a separated chrominance component having more bits than said digital composite video input signal;

first means for symmetrically rounding said separated chrominance component for symmetrically reducing the number of bits thereof; and

second means for combining said digital composite video input signal with the symmetrically rounded chrominance component to form a separated luminance component.

5,633,690

AUTOMATIC GAIN CONTROL CIRCUIT OF A VIDEO PROCESSING SYSTEM AND METHOD THEREFOR

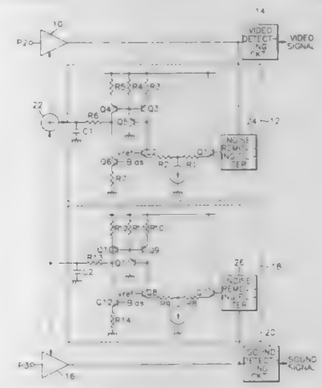
Doo-Chan Eum, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,905

Claims priority, application Rep. of Korea, Dec. 30, 1993, 31322.1993

Int. Cl.[6] H04N *5/52*

U.S. Cl. 348—678 **10 Claims**



1. An automatic gain control circuit of a video processing system comprising:

first gain control amplifying means receiving a video intermediate frequency signal, for amplifying said video intermediate frequency signal according to a sound gain control voltage thereby providing an amplified video intermediate frequency signal;

second gain control amplifying means receiving a carrier signal having a sound intermediate frequency signal and said video intermediate frequency signal, for amplifying said carrier signal by said sound gain control voltage and then providing the amplified carrier signal; and

sound gain control voltage detecting means receiving the amplified carrier signal from said second gain control amplifying means, for detecting the sound gain control voltage and then providing the detected sound gain control voltage.

5,633,691

STYLUS POSITION SENSING AND DIGITAL CAMERA WITH A DIGITAL MICROMIRROR DEVICE

James H. Vogeley; Arthur W. Vogeley, both of Yorktown, and Giles K. Davis, Newport News, all of Va., assignors to nView Corporation, Newport News, Va.

Filed Jun. 7, 1995, Ser. No. 483,585

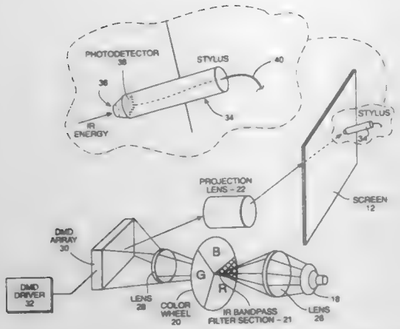
Int. Cl.[6] H04N *5/74*

U.S. Cl. 348—771 **30 Claims**

1. An apparatus for sensing position of a stylus relative to a projected image where a digital micromirror device (DMD) array is used for projecting said image upon a surface, said DMD array including a plurality of controllable pixel mirrors, said image created by directing light from a first light source onto said DMD array which controllably reflects said directed light through an optical system onto said surface, said image comprised of a plurality of sequentially projected frame images where there is a finite time duration between successive projected frame images, said apparatus comprising:

said stylus including a second light source;

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energizing means for scanning by selectively energizing said plurality of controllable pixel mirrors during said finite duration between successive projected frame images;

a detecting means for detecting the presence of light from said second light source; and

address means, responsive to said detecting means and said energizing means, for providing a stylus position output when said detecting means detects light from said second light source during said finite duration.

5,633,692

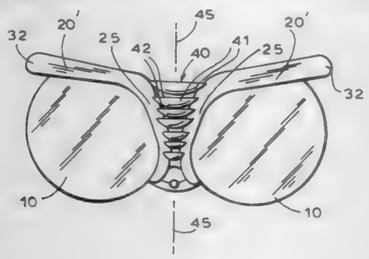
FACIAL PROTECTIVE WEAR, PARTICULARLY FOR PROTECTION FROM THE SUN

Linda Schleger, deceased, late of Elmhurst, N.Y.; Thomas Yang, Elmhurst, N.Y., and Adam Kaufer, Rockville Center, N.Y., assignors to The Estate of Linda Schleger, Kings Point, N.Y.

Filed Jan. 27, 1995, Ser. No. 379,887

Int. Cl.[6] G02C *7/10;5/08*

U.S. Cl. 351—44 **38 Claims**



1. Facial protective wear comprising:

a lens portion for disposition over each eye of a wearer;

a support frame for attaching each lens portion thereto;

temple bars coupled hingedly to respective outwardly extending portions of the frame, the temple bars being adapted to provide support on the wearer's ears;

a nose support disposed between the lens portions for supporting the facial protective wear on the wearer's nose; and

a nose protective portion disposed between the lenses, the nose protective portion comprising a plurality of horizontally disposed louvers arranged between the lenses.

5,633,693

CROSS-SPRING-JOINT FOR SIDE-PIECES OF SPECTACLES

Gian Carlo Bavaresco, Via Rimembranza, 16/A, Quero (BL), Italy

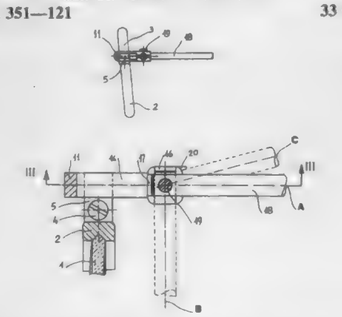
PCT No. PCT/EP93/01029, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/22705, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1993, Ser. No. 331,516

Claims priority, application Italy, May 5, 1992, BL92A0003

Int. Cl.[6] G02C *5/14;5/16;5/22*

U.S. Cl. 351—121 **33 Claims**



1. A cross-spring-joint for affixing a spectacles side piece to a spectacles frame, the cross-spring-joint including a fork spring having a first fork end, a second fork end, and a joint pin fitting through bore-holes in the first and second fork ends, the cross-spring-joint comprising:

a first groove provided in at least one of said first and second fork ends, said first groove defining a first longitudinal axis generally through said first groove, said first longitudinal axis being substantially perpendicular to a central axis of the joint pin;

a second groove provided in at least one of said first and second fork ends, said second groove defining a second longitudinal axis generally through said second groove, said second longitudinal axis being substantially perpendicular to said first longitudinal axis and said central axis of the joint pin;

the spectacles side piece being capable of location between the first and second fork ends in said first groove to define a first position of the spectacles side piece with respect to the spectacles frame, or in said second groove to define a second position of the spectacles side piece with respect to the spectacles frame, wherein the spectacles side piece can be rotated around the joint pin between said first and second positions, the first and second fork ends exerting a force on the spectacles side piece to bias the side piece into said first groove or said second groove.

5,633,694

OPHTHALMOMETRIC APPARATUS FOR GENERATING AN IMAGE OF A SELECTION AND A SURFACE OF AN EYEGROUND OF A SUBJECT

Toshifumi Mihashi; Satoru Niimura, and Katsuhiko Kobayashi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed Jul. 31, 1995, Ser. No. 509,337

Claims priority, application Japan, Jul. 31, 1994, 6-197853

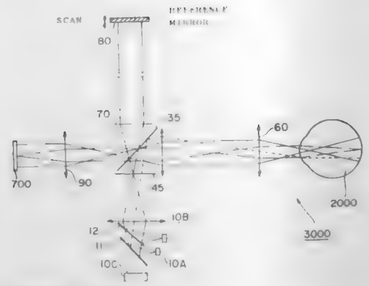
Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—211 **24 Claims**

1. An ophthalmometric apparatus for generating an image of a section and a surface of an eyeground of an eye of a subject having an ocular lens with a center portion and a peripheral portion, comprising:

an interference optical beam system having,

a first light source which emits a first light beam having a short coherence length,



a reference reflector,

a measuring optical system for leading the first light beam to the eyeground, said first light beam being reflected off the eyeground,

a reference optical system having an optical axis for leading the first light beam to the reference reflector, the reference reflector being movable along the optical axis of the reference optical system, said first light beam being reflected off the reference reflector, and

an interference signal forming device for forming an interference signal with the first light beam reflected from the measuring optical system and the first light beam reflected from the reference optical system; and

an eyeground image optical system having,

a second light source which emits a second light beam for illuminating the eyeground, the second light beam being reflected off the eyeground, and an eyeground image forming device for forming an eyeground image signal with the second light reflected from the eyeground.

5,633,695

BEAM STEERING OPTICAL SYSTEM AND METHOD AND OPHTHALMIC APPARATUS USING SAME HAVING SPACED APART IRRADIATION AND OBSERVATION PATHS

Gilbert T. Feke, Stoneham; Francois Delori, and Robert H. Webb, both of Lincoln, all of Mass., assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 515,067

Int. Cl.[6] A61B *3/10;3/00*

U.S. Cl. 351—221 **14 Claims**



1. A beam steering optical system having a system pupil, said system comprising:

an irradiating optical system producing at least one irradiating light beam for irradiating an object;

a two-sided rotatable mirror positioned to cover only a first portion of the system pupil and to reflect with a first surface the at least one irradiating light beam received from said irradiating optical system;

an objective lens positioned to receive the at least one irradiating light beam reflected from said two-sided rotatable mirror and to focus the at least one irradiating light beam on the object,

wherein said irradiating optical system, said two-sided rotatable mirror, and said objective lens together define an irradiation path for the at least one irradiating light beam;

a photodetector receiving at least one detecting light beam comprising the at least one irradiating light beam reflected by the object and then by a second surface of said two-sided rotatable mirror; and

beam redirecting means for redirecting one of the at least one irradiating light beam and the at least one detecting light beam,

wherein said irradiating optical system and said photodetector are positioned so that one of the following occurs:

the at least one irradiating light beam is reflected by the first surface of said two-sided rotatable mirror to said beam redirecting means which redirects the at least one irradiating light beam through a second portion of the system pupil not covered by said two-sided rotatable mirror and then through said objective lens to the object; and

the at least one detecting light beam reflected by the object passes through the second portion of the system pupil not covered by said two-sided rotatable mirror to said beam redirecting means, and is redirected by said beam redirecting means to the second surface of said two-sided rotatable mirror which reflects the at least one detecting light beam to said photodetector;

wherein said two-sided rotatable mirror steers both the at least one irradiating light beam and the at least one detecting light beam through the same angle when said two-sided rotatable mirror rotates,

wherein said objective lens, said two-sided rotatable mirror, and said photodetector together define an observation path for the at least one detecting light beam, and

wherein the irradiation path and the observation path are spaced from each other at least at the system pupil.

5,633,696

FILM ADVANCE MECHANISM FOR MOTION PICTURE APPARATUS

Leland R. Schmidt, 2092 Riverbirch Dr., Simi Valley, Calif. 93063

Continuation-in-part of Ser. No. 250,055, May 27, 1994, abandoned, which is a continuation of Ser. No. 4,511, Jan. 14, 1993, Pat. No. 5,341,182. This application Aug. 23, 1995, Ser. No. 518,463

Int. Cl.[6] G03B *1/00;1/52*

U.S. Cl. 352—184 **17 Claims**

1. A method for advancing film in a motion picture device, comprising the steps of:

providing a takeoff spool to supply film;

pivoting a flipper to form and release successive loops in the film at an entrance to an aperture position; and

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directing a flow of air onto the loop for blowing the loop across the aperture position and toward a film take-up spool.

5,633,697

PHOTOGRAPHIC PROCESSING APPARATUS

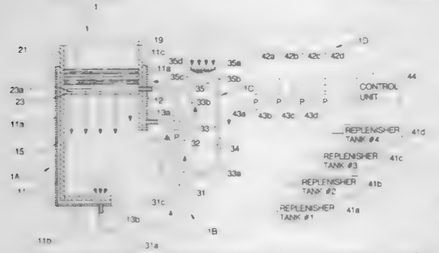
Togo Kinoshita, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Jan. 23, 1996, Ser. No. 590,287

Claims priority, application Japan, Jan. 23, 1995, 7-008235

Int. Cl.[6] G03D *3/02*

U.S. Cl. 396—626 **18 Claims**



1. A photographic processing apparatus for processing a continuous web of photographic material, said photographic processing apparatus comprising:

a processing tank unit having an inlet through which a processing solution is supplied and first and second outlets through which said processing solution is discharged, said processing tank unit holding the continuous web of photographic material;

first circulation means for circulating the processing solution through said processing tank unit, said first circulation means includes a first circulation conduit connected between said first outlet and said inlet and circulation pumping means connected to said first circulation conduit so as to force said processing solution to flow through said first circulation conduit;

second circulation means for circulating the processing solution through said processing tank unit, said second circulation means including a second circulation conduit connected between said first circulation conduit upstream from said circulation pumping means and said second outlet, said second circulation means further including replenisher vessel in said second circulation conduit for holding a mixture of the processing solution and a replenisher, said replenisher vessel being open to the atmosphere; and

replenisher supply means for supplying a fixed quantity of replenisher to said replenisher vessel.

5,633,698

EXPOSURE APPARATUS

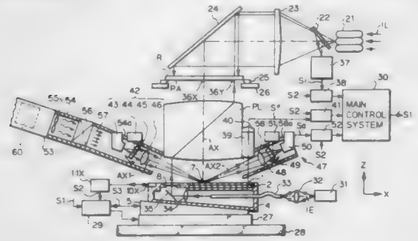
Yuji Imai, Saitama-ken, Japan, assignor to Nixon Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,118

Claims priority, application Japan, Dec. 12, 1994, 6-307613

Int. Cl.[6] H01L *21/30;* **G03B** *27/58;27/42*

U.S. Cl. 355—72 **14 Claims**



1. An exposure apparatus comprising:

a substrate holding portion for holding a photosensitive substrate including a surface;

a substrate stage for two-dimensional positioning of said photosensitive substrate via said substrate holding portion, said substrate stage including an upper surface; and

an exposure system for transferring a pattern on a mask to said photosensitive substrate by an exposing illumination light,

said substrate holding portion being provided in said substrate stage so that the portion of the upper surface of said substrate stage surrounding said photosensitive substrate is substantially flush with the surface of said photosensitive substrate.

5,633,699

STRUCTURE FOR MOUNTING A ROTARY MEMBER AND IMAGE FORMING APPARATUS USING SAME STRUCTURE

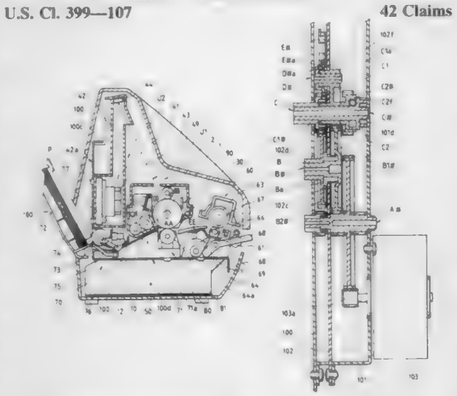
Tomoe Aruga; Yasuhito Hirashima; Akihiko Ikegami, and Yoshiro Koga, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,553

Claims priority, application Japan, Oct. 19, 1993, 5-261255; Sep. 30, 1994, 6-261674

Int. Cl.[6] G03G *15/00;21/00*

U.S. Cl. 399—107 **42 Claims**



1. A structure for mounting a rotary member, comprising:

at least two sheet members disposed in spaced opposition to each other;

a first support structure formed in one of said sheet members;

a second support structure formed in the other of said sheet members and facing said first support structure, each of said first and second support structures being one of a burring part and a projecting part; and

a rotary member formed with one an axial shaft or an axial bore on each side thereof, said rotary member being positioned between said sheet members and rotatably supported by said first and second support structures.

5,633,700

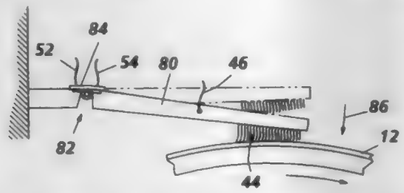
ACTUATOR FOR ACTUATING A SURFACE CONTACTING PROBE OF A CONTACTING ELECTROSTATIC VOLTMETER

Wilbur M. Peck, Rochester; Stanley J. Wallace, Victor, and Alan J. Werner, Jr., Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 331,448

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—73 **16 Claims**



1. An apparatus for sensing an electrostatic potential on a surface and generating a signal representative thereof for input to an electrostatic voltmeter, comprising:

an electroconductive brush formed of a plurality of conductive fibers;

a brush support member supporting a first end of the conductive brush fibers;

an electrical conductor, connected between the first end of the conductive brush fibers and the electrostatic voltmeter; and

actuating means, associated with said brush support member, for selectively moving said electroconductive brush into and out of contact with the surface.

5,633,701

CONDUCTIVE BRUSH CHARGING DEVICE

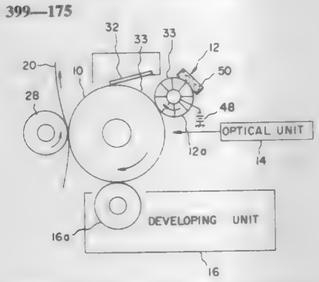
Sadaaki Yoshida, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 10, 1996, Ser. No. 630,602

Claims priority, application Japan, Jul. 27, 1995, 7-191976

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—175 **7 Claims**



1. A conductive brush charging device for charging a surface of an image forming member, comprising:

a conductive brush located so as to rotate in contact with said image forming member;

a voltage applying means for applying a given voltage to said conductive brush; and

a developer removing member formed of a porous material and located so as to be kept in surface contact with said conductive brush over an entire width thereof.

5,633,702

TRANSFER MATERIAL CARRYING MEMBER AND IMAGE-FORMING APPARATUS COMPRISING SUCH TRANSFER MATERIAL CARRYING MEMBER

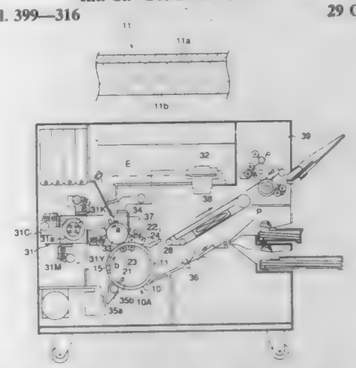
Yasuko Hayashi, Kawasaki, and Katsumi Aoki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1996, Ser. No. 598,426

Claims priority, application Japan, Feb. 10, 1995, 7-046325

Int. Cl.[6] G03G *15/01;15/16*

U.S. Cl. 399—316 **29 Claims**



1. A transfer material carrying member comprising at least two resin-containing layers, wherein the relative dielectric constant (E1) of the surface layer and the relative dielectric constant (E2) of the layer(s) other than the surface layer show a ratio (E1/E2) satisfying the following expression of

$$0.02 \leqq (E1/E2) \leqq 0.7.$$

5,633,703

IMAGE FORMING APPARATUS HAVING TRANSFER ROLLER AND SEPARATION BRUSH

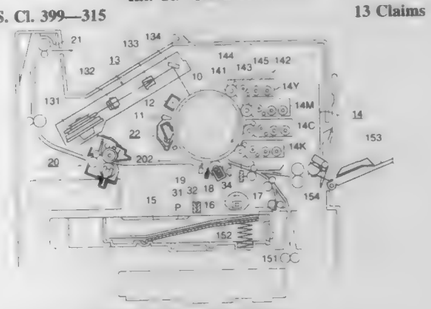
Shigeki Takenouchi, and Kazuhiko Sato, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Sep. 12, 1994, Ser. No. 304,394

Claims priority, application Japan, Sep. 16, 1993, 5-230478; Dec. 6, 1993, 5-305471; Mar. 31, 1994, 6-063887

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—315 **13 Claims**



1. An image forming apparatus comprising:

(a) a photoreceptor having a radius of curvature of more than 35 mm at a transfer position;

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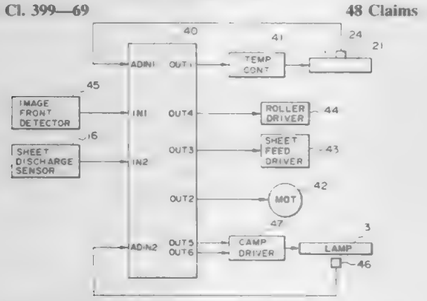
(b) a roller-shaped transfer device provided at the transfer position where said transfer device faces said photoreceptor, for transferring a toner image formed on said photoreceptor onto a recording sheet;
(c) a first power supply source for supplying a predetermined DC bias current onto said transfer device;
(d) a conductive brush-shaped separation device provided at a separation position downstream of the transfer position with respect to a conveyance direction of the recording sheet, where said separation device faces said photoreceptor, for separating the recording sheet from said photoreceptor; and,
(e) a second power supply source for supplying a variable DC bias voltage onto said separation device,
the said conductive brush-shaped separation device comprises:
a neutralizing electrode disposed at the separation position and connected with said second power supply source for separating a recording sheet from said photoreceptor;
insulation shielding means made of an electrically insulation material, having an opening which faces said photoreceptor and has a predetermined width with respect to the conveyance direction of the recording sheet at the separation position for surrounding and shielding said neutralizing electrode except for said opening;
an insulation member made of insulation material and disposed on a top portion of said insulation shielding means so as to connect two ends of said opening in the conveyance direction of the recording sheet and thereby to partially shield said opening;
a pair of rotating insulation rollers provided on both upper sides of said insulation shielding means, for regulating a distance between said photoreceptor and said neutralizing electrode by being brought into contact with said photoreceptor when said insulation shielding means is lifted up;
an insulation conveyance guide disposed on said insulation shielding means and formed at a tilting downward angle in the downstream of the conveyance direction of the recording sheet for guiding the recording sheet; and
a plurality of ribs provided on a top surface of said insulation conveyance guide, said plurality of ribs extending in the conveyance direction of the recording sheet, for guiding the recording sheet.

5,633,704

IMAGE FORMING APPARATUS HAVING FIXING MEANS ERROR DETECTION

Yoshihiko Suzuki, Tokyo, and Shokyo Koh, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 124,629, Sep. 22, 1993, which is a continuation of Ser. No. 658,235, Feb. 20, 1991, abandoned.
This application May 16, 1995, Ser. No. 441,954
Claims priority, application Japan, Feb. 20, 1990, 2-040233; Feb. 20, 1990, 2-040235
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—69 **48 Claims**



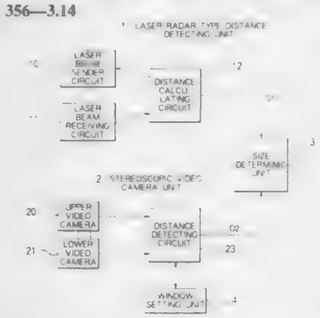
1. An image forming apparatus comprising:
image forming means for forming an unfixed image on a recording material after receiving an image formation start signal;
fixing means for heat-fixing the unfixed image on the recording material during a fixing operation, said fixing means including a heater for heating the unfixed image, said heater being controlled at a predetermined temperature during the fixing operation, and wherein power supply to said heater is started after production of the image formation start signal;
a temperature detecting element for detecting the temperature of said heater; and
abnormal condition detecting means for detecting an abnormality in accordance with an output of said temperature detecting element after the image formation start signal and before arrival of the recording material at said fixing means, and for producing an abnormality signal only when the abnormality is detected under circumstances where the output of said temperature detecting element upon start of the electric power supply to said heater indicates a temperature not higher than a predetermined level.

5,633,705

OBSTACLE DETECTING SYSTEM FOR A MOTOR VEHICLE

Yoshiaki Asayama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1995, Ser. No. 434,854
Claims priority, application Japan, May 26, 1994, 6-112798
Int. Cl.[6] H04N *7/18*; **G01C** *3/00*;*3/08*; **B60T** *7/16*
U.S. Cl. 356—3.14 **7 Claims**



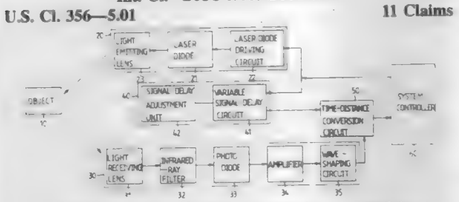
1. An obstacle detecting system for a motor vehicle, comprising:
(a) a laser radar type distance detecting unit for detecting a distance to an object existing in a path of said motor vehicle as viewed in a first direction in which said motor vehicle is running,
said distance detecting unit including:
(i) laser beam sending means (**10**) for sending out a laser beam while deflecting said laser beam in a second direction laterally transverse to said first direction;
(ii) echo light beam receiving means (**11**) for receiving an echo light beam resulting from reflection of said laser beam by said object; and
(iii) distance calculating means (**12**) for arithmetically determining a distance to said object on the basis of a temporal period intervening between the send-out of said laser beam and the reception of said echo light beam;
(b) an optical imaging unit including:
(i) optical imaging means (**20**, **21**) for picking up an image of an object located within a range swept by said laser beam;
(ii) window setting means (**4**) for presetting a plurality of windows at predetermined locations on an imaging plane of said optical imaging unit; and
(iii) distance detecting means (**23**) for detecting a distance to an object caught by said optical imaging unit at least within one of said windows; and
(c) object size determining means (**3**) for selecting a window corresponding to a distance value which is detected by said optical imaging unit and which coincides with a distance value calculated by said laser radar type distance detecting unit, to thereby determine a size of said object on the basis of the preset position of said selected window.

5,633,706

OPTICAL DISTANCE MEASUREMENT APPARATUS AND METHOD

Jung S. Cho, and Young B. Im, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Nov. 22, 1994, Ser. No. 345,787
Claims priority, application Rep. of Korea, Dec. 27, 1993, 93-29737; Dec. 27, 1993, 93-29740; Dec. 29, 1993, 93-30539; Dec. 29, 1993, 93-30540; Dec. 29, 1993, 93-30570
Int. Cl.[6] G01C *3/08*; **B60T** *7/16*
U.S. Cl. 356—5.01 **11 Claims**



1. An optical distance measurement apparatus, comprising:
system control means for controlling an entire operation of a system and for generating a drive signal;
light emitting means responsive to said drive signal for emitting a high-power pulse light beam for measurement of a distance to an object;
light receiving means for receiving a light beam reflected from the object and generating an output signal;
trigger signal generation means for generating a trigger signal indicative of a start time point for measurement of a light moving time; and
time-distance conversion means for measuring the light moving time in response to the trigger signal from said trigger signal generation means and said output signal from said light receiving means, and for converting the measured light moving time into a distance to the object;
wherein said trigger signal generation means includes a variable signal delay circuit for delaying the drive signal from said system control means for a desired time and for outputting the delayed drive signal as the trigger signal to said time-distance conversion means, and a signal delay adjustment unit for varying a time constant of said variable signal delay circuit to adjust the delay time thereof;
wherein said light emitting means includes:
a laser diode as a light source for producing the high-power pulse light beam;
a laser diode driving circuit for driving said laser diode in response to the drive signal from said system control means; and
a light emitting lens for focusing the fight beam from said laser diode to produce a focused light beam and for diffusing the focused light beam at a desired angle so as to direct a diffused light beam to the object.

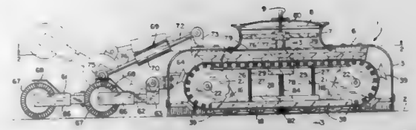
5,633,707

METHOD FOR NON-DESTRUCTIVE INSPECTION OF AN AIRCRAFT

Henry R. Seemann, 2420 N. 202 Pl., Seattle, Wash. 98133

Division of Ser. No. 63,464, May 18, 1993, Pat. No. 5,487,440.
This application Jan. 25, 1996, Ser. No. 591,393
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—35.5 **6 Claims**

1. A method for non-destructive inspection of an aircraft, comprising the steps of positioning a robot on the outer surface of an aircraft, mounting a surface sensor for movement on the robot and positioning the sensor in contact with the outer surface of the aircraft, maintaining the interior of the aircraft at a first pressure, moving the robot in a selected path of travel over said surface with said sensor riding on said surface and moving relative to said robot, tracking the movement of said sensor to provide a first continuous measurement of the spatial coordinates of said sensor, pressurizing the interior of the aircraft to a pressure greater than said first pressure, repeating the steps of moving the robot and tracking the movement of the sensor to provide a second continuous measurement of the spatial coordinates of the sensor, and comparing the first measurement with the second measurement to determine whether the spatial coordinates at any selected location on said aircraft outer surface are outside of a given tolerance.



5,633,708

APPARATUS FOR MEASURING REFRACTIVE INDEX

David A. Svendsen, "Ashdene" St. Giles Hill, Winchester, Hampshire S023 0HH, United Kingdom

PCT No. PCT/GB94/02412, § 371 Date May 3, 1996, § 102(e) Date May 3, 1996, PCT Pub. No. WO95/13529, PCT Pub. Date May 18, 1995
PCT Filed Nov. 3, 1994, Ser. No. 637,815
Claims priority, application United Kingdom, Nov. 8, 1993, 9322936
Int. Cl.[6] G01N *21/43*
U.S. Cl. 356—73.1 **12 Claims**

1. Apparatus for the measurement of optical properties of a quasi cylindrically symmetric transparent object, which apparatus comprises source means for providing a source of electromagnetic radiation, illumination forming means for forming an illuminating beam of electromagnetic radiation for illuminating the transparent object, region selecting means for selecting a localised radial region within the transparent object illuminated by the illuminating beam, region scanning means for scanning the localised radial region through a range of radial positions within the transparent object, reflection detecting means for detecting a reflected beam of electromagnetic radiation reflected out of the illuminating beam at the localised radial region, beam measuring means for measuring the component of the position of the point where the reflected beam leaves the transparent object along a direction parallel to an axis of rotational symmetry of the transparent object, supporting means which causes the illuminating beam, the reflected beam and an axis of rotational symmetry of the transparent object to lie in a measurement plane whose thickness is generally small compared with the radius of the transparent object, angle altering means for altering the angle of incidence of the illuminating beam on the transparent object within the measurement plane, control means for controlling the components of the apparatus such that the measurements are made at the required time and in the required sequence, and computing means for computing optical properties of the transparent object.

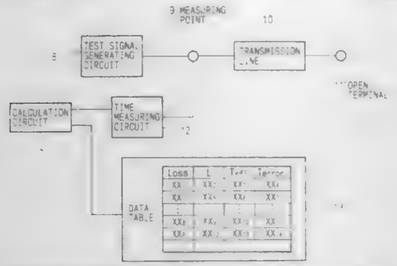
VOL 1198 ISS 4 MY 27 1997 UMI

5,633,709

PROPAGATION DELAY TIME MEASURING DEVICE

Toshiyuki Ohtaki, and Yu Sato, both of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1996, Ser. No. 687,036
Claims priority, application Japan, Aug. 11, 1995, 7-227085
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—73.1 **2 Claims**



1. A propagation delay time measuring device comprising:

a test signal generating circuit for generating a test signal and for supplying the test signal to a measuring point which is connected to one of terminals of a signal transmission line;

a time measuring circuit for receiving a signal waveform at the measuring point which indicates an waveform of the test signal supplied to one of the terminals of the signal transmission line and a waveform reflected by another terminal of the signal transmission line and returned to the measuring point, and for measuring a time when the test signal is supplied to the measuring point and a time when the reflected waveform is returned to the measuring point based on the signal waveform at the measuring point;

a data table for storing correct data made up of propagation delay time data and measurement error data which are obtained by a simulation of the signal transmission line; and

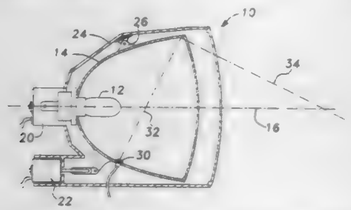
a calculation circuit for calculating a propagation delay time of the signal transmission line based on the times measured by the time measuring circuit and for correcting the calculated propagation delay time based on the data table.

5,633,710

SYSTEM FOR SELF-ALIGNING VEHICLE HEADLAMPS

Mohinder Kumra, Ann Arbor, and Michael F. Scherrer, Auburn Hills, both of Mich., assignors to EGS Inc., Dearborn, Mich.

Filed Oct. 4, 1995, Ser. No. 539,053
Int. Cl.[6] G01B *11/26*; B60Q *1/06*
U.S. Cl. 356—139.08 **17 Claims**



1. A system for self-aligning a headlamp of a vehicle, the system comprising:

at least one actuator which modifies an alignment of the headlamp in response to a control signal;

an infrared light source mounted to the headlamp to emit an infrared light beam toward a ground surface;

an optical sensor system oriented to sense a reflection of the infrared light beam from the ground surface, the optical sensor system having a plurality of optical sensors to sense a plurality of infrared light intensities from the reflection; and

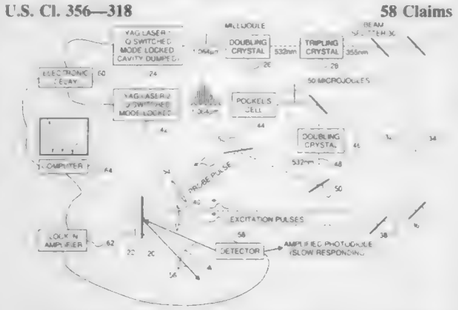
a control circuit operatively responsive to the optical sensor system to form the control signal for the at least one actuator, wherein the control signal acts to modify the alignment of the headlamp so that the infrared light intensities satisfy at least one predetermined condition consistent with a desired alignment of the headlamp to thereby automatically align the headlamp to the desired alignment.

5,633,711

MEASUREMENT OF MATERIAL PROPERTIES WITH OPTICALLY INDUCED PHONONS

Keith A. Nelson, Newton; Anil R. Duggal, Arlington, and John A. Rogers, Cambridge, all of Mass., assignors to Massachusettes Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 910,762, Jul. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 726,759, Jul. 8, 1991, abandoned. This application Dec. 5, 1994, Ser. No. 350,378
Int. Cl.[6] G01J *3/30*; G01N *21/00*
U.S. Cl. 356—318 **58 Claims**



1. An apparatus for measuring the properties of a sample of material, comprising:

a first, excitation source for producing excitation radiation adapted to impinge upon said sample of material, said excitation radiation comprising radiation composed of at least two component beams which interfere within said sample, each incidence of interference of said excitation radiation being sufficient to induce transient phonons in said material which give rise to a transient, time dependent periodic ripple morphology of alternating peaks and valleys on a surface of said sample,

a detection system for detecting said ripple morphology by diffraction of radiation including:

a second, probe source for producing probe radiation arranged to be diffracted by the periodic ripple morphology on the surface of said sample to form a diffraction signal which emerges on the same side of said sample as said probe radiation,

a detector for detecting the diffraction signal from said probe source radiation diffracted by said surface ripple morphology, and

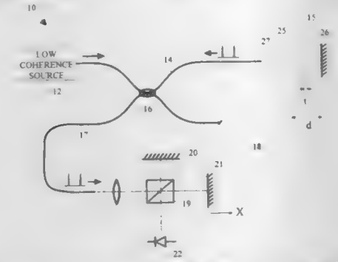
an analyzer for selectively analyzing said diffraction signal formed by said transient ripple morphology.

5,633,712

METHOD AND APPARATUS FOR DETERMINING THE THICKNESS AND INDEX OF REFRACTION OF A FILM USING LOW COHERENCE REFLECTOMETRY AND A REFERENCE SURFACES

Shalini Venkatesh, Santa Clara; Wayne V. Sorin, Mountain View, and Brian L. Heffner, Los Altos, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 28, 1995, Ser. No. 520,198
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 **10 Claims**



1. An apparatus for measuring the thickness and group index of a transparent film having top and bottom surfaces, said apparatus comprising:

means for generating a probe light signal from a low coherence light source and applying said probe light signal to said film;

a first reflector, said first reflector being partially transparent;

a second reflector, said film being positioned between said first and second reflectors, said probe light signal being applied to said film after passing through said first reflector, said second reflector reflecting a portion of said probe light signal leaving said film back toward said first reflector;

means for collecting light reflected back toward said first reflector; and

a receiver for receiving said collected light signal and for determining the time delay between light reflected from said top and bottom surfaces of said film from said collected light and for determining the change in optical path between said first and second reflectors when said film is placed between said first and second reflectors, said thickness and group index being determined from said time delay and said change in optical path.

5,633,713

METHOD AND SYSTEM FOR EVALUATING DISTRIBUTION OF ABSORPTION LIGHT AMOUNT IN OPTICAL LITHOGRAPHY

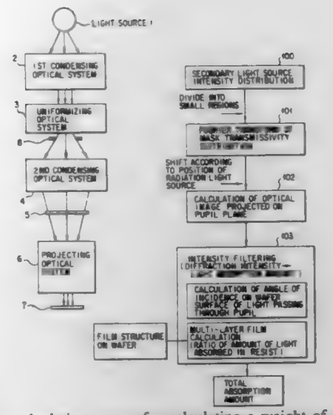
Satoshi Tanaka, Kawasaki, and Soichi Inoue, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1995, Ser. No. 578,427
Claims priority, application Japan, Dec. 27, 1994, 6-325567; Dec. 22, 1995, 7-334435
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—355 **15 Claims**

1. A system for evaluating a distribution of an absorption light amount in a resist, said system comprising:

diffractive light intensity distribution calculating means for calculating a diffractive light intensity distribution on a plane of a pupil of a projection exposing apparatus;

light absorption rate calculating means for calculating, on the basis of an incidence angle and a thin-film interference effect of each of diffractive light intensity components of said diffractive light intensity distribution passing through said pupil and being incident on a wafer surface of said projection exposing apparatus, a light absorption rate of each of the diffractive light intensity components in a resist of said projection exposing apparatus;



weight calculating means for calculating a weight of each diffractive light intensity component, on the basis of the light absorption rate of each diffractive light intensity component calculated by said light absorption rate calculating means;

multiplying means for multiplying each diffractive light intensity component of the diffractive light intensity distribution by the weight of each diffractive light intensity component calculated by said weight calculating means; and

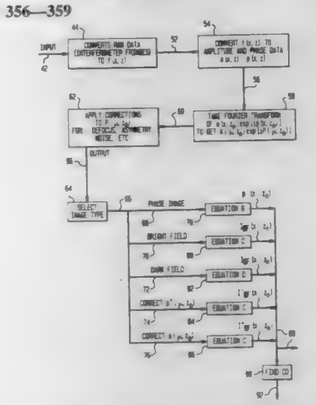
integrating means for integrating, in the plane of the pupil, each diffractive light intensity component multiplied with the weight obtained by said multiplying means, thereby obtaining an absorption light amount distribution in the resist.

5,633,714

PREPROCESSING OF IMAGE AMPLITUDE AND PHASE DATA FOR CD AND OL MEASUREMENT

Diana Nyyssonen, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1994, Ser. No. 359,225
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—359 **17 Claims**



1. An imaging system for a pattern on a substrate, comprising:

means for amplitude and phase imaging for narrow angle, single wavelength, polarized illumination in an interferometric microscope system,

said microscope system including a microprocessor providing signals derived from said amplitude and phase imaging,

means for deriving raw interferometer fringe data from said microprocessor,

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means for converting said fringe data into amplitude and phase data,
means for deriving the fourier transform of said amplitude and phase data,
means for applying corrections to said transformed data to provide corrected transformed data,
means for selecting image type and means for deriving an inverse transform from said corrected transformed data and means for processing to provide amplitude data, and phase image data as a first image output, and
means for bright field image processing to provide a second image output, and
means for dark field image processing to provide a third image output, and
means for processing of a value of a corrected phase image data to provide a fourth image output, and
means for processing of a corrected amplitude data to provide a fifth image output.

5,633,715

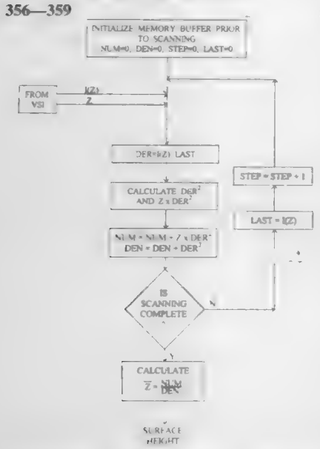
CENTROID APPROACH FOR ESTIMATING MODULATION PEAK IN BROAD-BANDWIDTH INTERFEROMETRY

Chiayu Ai, and Erik L. Novak, both of Tucson, Ariz., assignors to Wyko Corporation, Tucson, Ariz.

Continuation-in-part of Ser. No. 247,065, May 20, 1994, Pat. No. 5,471,303. This application May 19, 1995, Ser. No. 446,019

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—359 **17 Claims**



1. An interferometric profiling method wherein time-domain interferometric measurements are performed by illuminating though a microscope objective a test surface and a reference surface aligned in an optical path and by scanning in time each of a plurality of predetermined adjacent regions of the test surface to provide an interference pattern detected on a corresponding plurality of regions of a photosensitive surface, said method comprising the following steps:

(a) using a broad-bandwidth light source to illuminate the test surface and the reference surface while effecting a multi-step relative translation therebetween to produce a plurality of interference patterns and a corresponding plurality of irradiance signals on said photosensitive surface, such that an irradiance signal for each of said adjacent regions of the test surface is generated for a predetermined scanning position at each step of said relative translation and detected at said corresponding regions of the photosensitive surface;

(b) estimating a relative-translation position corresponding to a peak value of a modulation function associated with said irradiance signal for each of said adjacent regions of the test surface; and

(c) processing said relative-translation position to produce a topographic map of said test surface for on-line display;

wherein said step (b) comprises the step of calculating a centroid value for a predetermined converging function of a first-order derivative of said irradiance signal and using said centroid value as a relative-translation position corresponding to a peak value of said modulation function.

5,633,716

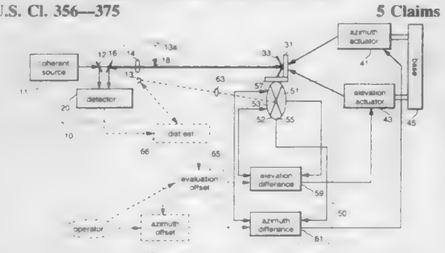
SELF-ALIGNING RETROREFLECTOR TARGET CARRIER

Nelson R. Corby, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1995, Ser. No. 574,016

Int. Cl.[6] G01B *11/00;11/26;11/02*

U.S. Cl. 356—375 **5 Claims**



1. A device for continuously determining changes in distance to a target reflector comprising:

a) a coherent light source for providing a monochromatic coherent light outgoing beam;

b) a target reflector located for receiving and reflecting the outgoing beam as a reflected beam;

c) a detection device located at a known location relative to the coherent source for calculating a relative distance traveled between the outgoing beam and reflected beam;

d) a landmark source for emitting light, located at a known location relative to the detection device.

e) a misalignment detector fixed with respect to the target reflector for receiving an image of the landmark source and determining an azimuth adjustment signal and an elevation adjustment signal indicating azimuth and elevation misalignment, respectively, between the target reflector and the coherent source;

f) an azimuth actuator coupled to the misalignment detector and the reflector for adjusting the azimuth orientation of the misalignment detector and the target reflector according to the azimuth adjustment signal; and

g) an elevation actuator coupled to the misalignment detector and the target reflector for adjusting the elevation orientation of the misalignment detector and the target reflector according to the elevation adjustment signal.

5,633,717

METHOD FOR MONITORING AND ADJUSTING THE POSITION OF AN OBJECT UNDER OPTICAL OBSERVATION FOR IMAGING

Roman Baldur, Quebec, Canada, assignor to Forensic Technology Wai Inc., Montreal, Canada

Filed Jun. 26, 1996, Ser. No. 672,263

Int. Cl.[6] G01B *11/14*

U.S. Cl. 356—375 **20 Claims**

1. A method of imaging a surface of a three-dimensional object by automatically manipulating a relative displacement and orientation between the surface of a three-dimensional object and a camera used for imaging said surface by imaging a plurality of segments thereof with a predetermined angular orientation between said surface at said segments and an optical axis of said camera, the method comprising the steps of:

a) manipulating said relative displacement and orientation along a predetermined scanning path;

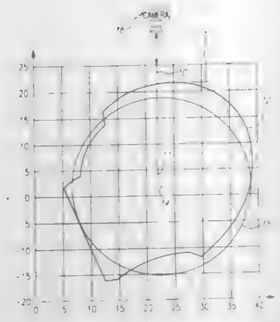
b) measuring a distance between said surface and said camera along said optical axis at a plurality of points over said scanning path;

c) determining a mathematical function approximating said surface over at least a portion of said scanning path;

d) calculating using said function desired relative displacements and orientations for said portion of said scanning path to obtain an imaging path, said predetermined angular orientation between said surface at said segments and an optical axis of said camera being on average better respected over said imaging path than over said scanning path;

e) manipulating said object through said relative displacement and orientation along said imaging path; and

f) imaging said segments of said surface at said angular orientation along said imaging path.



5,633,718

SURFACE CURVATURE MEASUREMENT

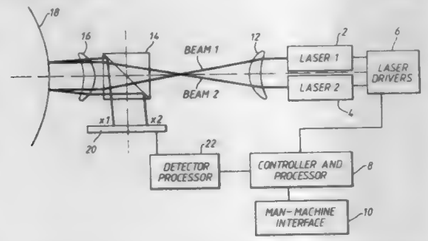
Kevin R. Manning, Totton, England, assignor to Roke Manor Research Limited, Hampshire, England

Filed Feb. 5, 1996, Ser. No. 597,085

Claims priority, application United Kingdom, Feb. 11, 1995, 9502710; Dec. 5, 1995, 9524883

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **9 Claims**



1. Apparatus for the measurement of the radius of curvature of a surface being at least partially reflective, comprising a source for generating at least first and second beams of electromagnetic radiation, which are parallel to each other and a known distance apart, first lens means for focusing said beams, a beam splitter positioned between said first lens means and said surface, second lens means positioned between said beam splitter and said surface, electromagnetic radiation detector means arranged to receive at least said first and second beams which are reflected from said surface via said second lens means and said beam splitter, and processing means for calculating said measurement in dependence upon the position of the reflected beams on the detector.

5,633,719

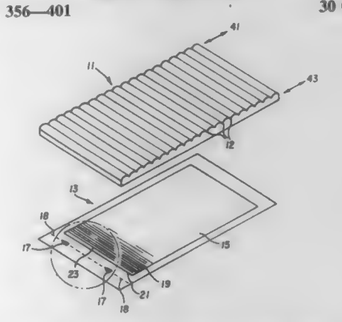
METHOD AND APPARATUS FOR ALIGNING A LENTICULAR OVERLAY WITH A LENTICULAR PRINT

Martin E. Oehlbeck, Rochester, and Stephen J. Hassall, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 28, 1994, Ser. No. 330,493

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—401 **30 Claims**



1. A lenticular print having two surfaces, comprising:

a) an image region on one of said surfaces containing a plurality of parallel image bundles of equal width, adjacent bundles having bundle junctures there between and being set at a pitch W; and

b) a two-dimensional fiducial indicium on one of said surfaces, said indicium having an alignment element disposed at a predetermined distance from any one of said bundle junctures, and wherein said fiducial indicium is at least as wide as two of said parallel image bundles.

5,633,720

STAGE MOVEMENT CONTROL APPARATUS AND METHOD THEREFOR AND PROJECTION EXPOSURE APPARATUS AND METHOD THEREFOR

Masato Takahashi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Toyko, Japan

Filed Nov. 22, 1995, Ser. No. 587,759

Claims priority, application Japan, Nov. 29, 1994, 6-294723

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—401 **6 Claims**

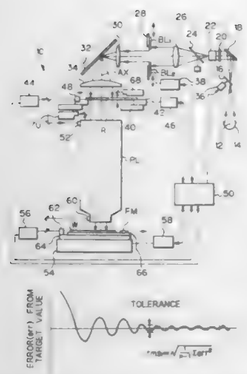
1. A stage movement control apparatus for controlling a position of a stage which is movable along a straight line or in two orthogonal axis directions, said apparatus comprising:

a position sensor for detecting a position of said stage;

a controller for controlling the position of said stage while monitoring an output of said position sensor; and

an arithmetic system for calculating a square root of an arithmetic mean of a square of an error between a target position

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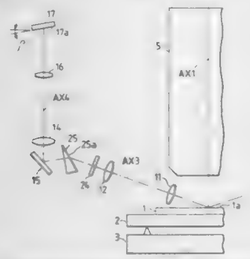
of said stage and a present position of said stage on the basis of the output of said position sensor during positioning of said stage.

5,633,721

SURFACE POSITION DETECTION APPARATUS

Hideo Mizutani, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 361,698, Dec. 22, 1994, abandoned, which is a continuation of Ser. No. 964,954, Oct. 22, 1992, abandoned. This application May 6, 1996, Ser. No. 643,765
Claims priority, application Japan, Oct. 30, 1991, 3-311758
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—401 26 Claims



1. A surface position detection apparatus for detecting a surface position of a surface to be detected and for improving the accuracy of position detection in a direction perpendicular to the surface, comprising:

a projection pattern formed on a first surface;

a projection optical system which projects a light beam from said first surface in an oblique direction onto said surface to be detected and forms an image of the pattern thereon;

a condensing optical system which condenses a light beam reflected by said surface to be detected, and forms an image of the pattern on a second surface; and

a detector system which receives a light beam emerging from said second surface and which photoelectrically detects the image of the pattern thereon,

wherein said first surface and said surface to be detected are arranged to satisfy a Scheimpflug condition in association with a principal plane of said projection optical system, and

said surface to be detected and said second surface are arranged to satisfy a Scheimpflug condition in association with a principal plane of said condensing optical system;

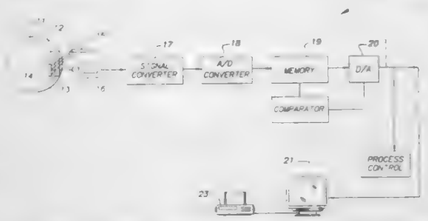
wherein said apparatus includes a deviation device, arranged on said second surface, which deviates the light beam emerging from said condensing optical system in a direction that reduces the angle of incidence of the emerging light beam on a light-receiving surface of the detector system, said deviation device including a wedge-shaped prism, said wedge-shaped prism being arranged so that an incident surface of said wedge-shaped prism is located on said second surface, and a relay optical system arranged between said second surface and said light-receiving surface of said detector system, which sets a conjugate relationship between said second surface and said light-receiving surface.

5,633,722

SYSTEM FOR COLOR AND SHADE MONITORING OF FABRICS OR GARMENTS DURING PROCESSING

Eric M. Wasinger, 16403 Ledge Way, San Antonio, Tex. 78232, and Otto Fanini, P.O. Box 773364, Houston, Tex. 77215-3364

Filed Jun. 8, 1995, Ser. No. 482,415
Int. Cl.[6] G01J *3/46*
U.S. Cl. 356—402 10 Claims



1. A shade and color analysis system for monitoring color and controlling the introduction of chemical decolorizing agents within a process vessel containing a liquid and an oxidizing or reducing process for decolorizing garments or fabrics in a closed chamber comprising:

means mounted outside said chamber for illuminating swatches or samples within said chamber;

means mounted outside of said chamber for scanning said illuminated swatches or samples including means for providing a composite electronic output signal comprising a luminance signal component, a chroma signal component and a carrier signal component;

means for separating said composite electronic output signal into said luminance signal component and chroma signal component;

means for analyzing said luminance signal component and said chroma signal component;

means for computing color data by comparing said chroma signal component and said luminance signal component with the color data having a tolerance limit stored in a memory means to detect changes in color and shade means for displaying a digitized image representative of the components of color values; and

means responsive to said color data for introducing said liquid and said oxidizing or reducing agents into said chamber.

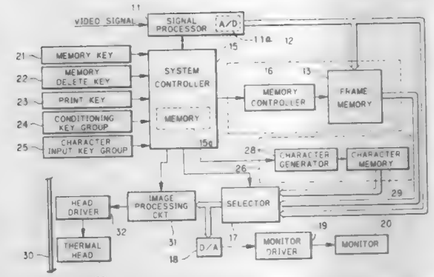
5,633,723

VIDEO PRINTER INCLUDING A DATA DELETION FEATURE INVOLVING MUTE DATA

Naoshi Sugiyama, and Toshiaki Fujimaki, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 29, 1994, Ser. No. 296,177
Claims priority, application Japan, Sep. 20, 1993, 5-233523
Int. Cl.[6] H04N *1/00;5/76;1/40;5/225*
U.S. Cl. 358—296 21 Claims

1. A video printer for making a hard copy of an image based on an analog video signal input to said video printer comprising:



a conversion device for converting said analog video signal into digital video data;

a memory for storing said digital video data;

an operation device for generating a memory delete command, to delete said digital video stored in said memory; and

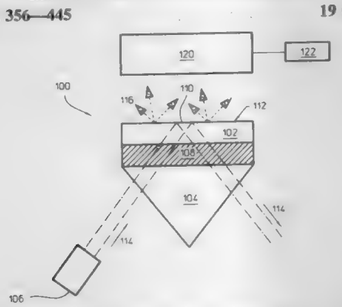
a control device for writing mute data, in response to said generated memory delete command, in all or a part of said memory to delete all or a part of said digital video data stored therein, thereby replacing all or a part of said image by a mute image.

5,633,724

EVANESCENT SCANNING OF BIOCHEMICAL ARRAY

David A. King, Palo Alto, Calif., and Jens-Peter Scher, Stuttgart, Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 29, 1995, Ser. No. 520,456
Int. Cl.[6] G01N *21/55;21/41;* G01B *9/02*
U.S. Cl. 356—445 19 Claims



1. An apparatus for detecting a target substance in a pixel array comprising:

(a) a light source to emit a light suitable for exciting the target substance;

(b) a total internal reflection (TIR) member having a TIR surface on which a pixel array is located, the light from the light source passing into the TIR member and is reflected by the TIR surface, the pixel array being within an evanescent field region at the TIR surface; and

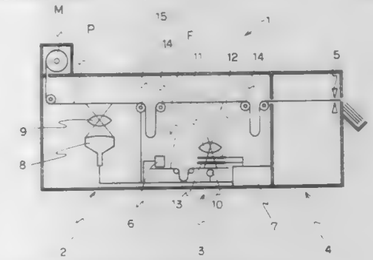
(c) a light detector for detection of light emitted from the pixel array as a result of evanescent excitation of the target substance.

5,633,725

PHOTO-PRINTING APPARATUS WITH SIMULTANEOUS CONTROL OF PROJECTION EXPOSURE UNIT AND DIGITAL EXPOSURE UNIT

Shigeki Nishida, and Toru Tanibata, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Feb. 4, 1994, Ser. No. 192,284
Claims priority, application Japan, Feb. 17, 1993, 5-027827
Int. Cl.[6] H04N *1/23;* G03B *27/72;27/52*
U.S. Cl. 358—302 6 Claims



1. A photo-printing apparatus comprising:

projection exposure means for projection-exposing an image formed on a film,

digital exposure means for exposing a digital image,

reader means for reading print size data and image data of one roll of film, and

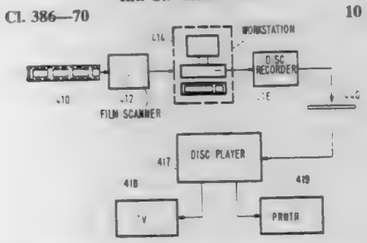
control means for calculating a digital exposure position on the basis of the print size data and image data read by the reader means, for conveying a first part of a continuous photosensitive material to a projection exposure position and a second part of the continuous photosensitive material to a digital exposure position, and for controlling printing operations of the projection exposure means to the first part of the continuous photosensitive material at the projection exposure position simultaneously with controlling printing operations of the digital exposure means to the second part of the continuous photosensitive material at the digital exposure position.

5,633,726

DIGITIZED PICTURE DISPLAY SYSTEM WITH ADDED CONTROL FILES

Josef M. K. Timmermans, Hasselt, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

PCT No. PCT/NL91/00168, § 371 Date Jul. 2, 1993, § 102(e) Date Jul. 2, 1993, PCT Pub. No. WO92/05652, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 13, 1991, Ser. No. 983,524
Claims priority, application European Pat. Off., Sep. 19, 1990, 90202487; Netherlands, Sep. 27, 1990, 9002110
Int. Cl.[6] H04N *5/781*
U.S. Cl. 386—70 10 Claims



1. A method of transferring picture information via a data base medium, comprising the steps of:

digitizing a plurality of pictures captured on a picture carrier using an opto-electronic device to form a corresponding plu-

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rality of respective picture files, where each picture has a respective orientation with respect to the picture carrier, and digitizing of each of the plurality of pictures is independent of the orientation of that picture on the picture carrier.

storing the respective picture files in a digital data base on the data base medium.

storing respective presentation control information including information related to said respective orientation for each of said picture files in the respective picture files, and

storing an additional presentation control information for each of said picture files in a separate control file on the data base medium.

5,633,727

CHARACTER IMAGE PROCESSING APPARATUS

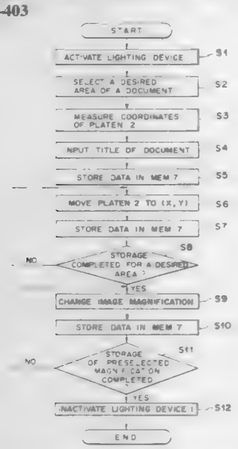
Isamu Shimoda, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,818, Jul. 16, 1992, abandoned. This application Jan. 11, 1995, Ser. No. 371,517

Claims priority, application Japan, Jul. 31, 1991, 3-214298

Int. Cl.[6] H04N *1/00:1/393;* **G03B** *27/52*

U.S. Cl. 358—403 **18 Claims**



17. An image processing apparatus, comprising:

camera means for photographing a document image;

display means for displaying the document image photographed by said camera means;

moving means for moving said camera means and the document image relatively to each other so as to cause said display means to display a desired area of the document image;

selection means for selecting a desired area of the document image displayed by said display means in accordance with the relative movement of said camera means and the document image by said moving means;

memory means for storing the desired area of the document image selected by said selection means and at least one other area of the document image located at the periphery of the desired area of the document image, with the at least one other area of the document image being photographed by said camera means in accordance with the relative movement of said camera means and the document image by said moving means, wherein said memory means stores the selected area of the document image and only one other area of the document image located at the periphery of the desired area of the document image when a large photographing magnification is selected; and

control means for controlling said display means to display the document image stored in said memory means.

5,633,728

IMAGE PROCESSING METHOD

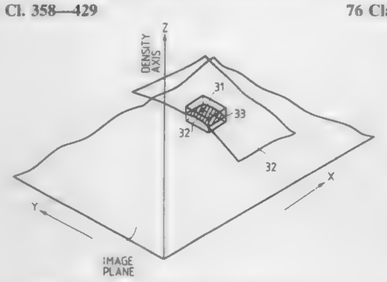
Masayoshi Tachihara, Chofu, and Akira Asai, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 169,528, Dec. 20, 1993, abandoned. This application Sep. 26, 1995, Ser. No. 534,163

Claims priority, application Japan, Dec. 24, 1992, 4-359277; Nov. 30, 1993, 5-300305

Int. Cl.[6] H04N *1/407:1/41:7/12*

U.S. Cl. 358—429 **76 Claims**



1. An image processing apparatus comprising:

input means for inputting multivalue image data representing an image;

deriving means for deriving, in a three-dimensional space having X-Y orthogonal coordinate system and a gray level axis perpendicular to X and Y axes separated by a plurality of rectangular solids, a volume ratio for one of the rectangular solids crossed by a curved surface representing a density distribution corresponding to the multivalue image data input by said input means; and

memory means for storing the volume ratio derived by said deriving means.

15. An image processing apparatus comprising:

input means for inputting dynamic image data representing a dynamic image;

deriving means for deriving, in a three-dimensional space having X-Y orthogonal coordinate system and a time axis perpendicular to X and Y axes separated by a plurality of rectangular solids, a volume ratio for one of the rectangular solids crossed by a surface of a solid representing a set of the dynamic image data input by said input means; and

memory means for storing the volume ratio derived by said deriving means.

5,633,729

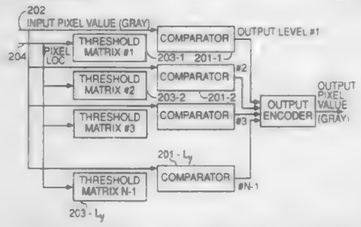
PROCESSES FOR MINIMIZING THE QUANTIZATION ERROR IN MULTI-LEVEL HALFTONE TRANSFER FUNCTIONS

Craig M. Smith, Tokyo, Japan, and Rodney L. Miller, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,324

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—456 **20 Claims**



1. A method for quantizing a given set of P normalized continuous mean preserving Tone Transfer Functions (TTFs), v_i with $1<=i<=P$, for a multilevel halftone system having a predetermined halftone cell size of P, for converting each member, x, of a set of input contone representative intensity values into a predetermined number of available micro output levels, L_y+1, comprising the steps of:

(a) dividing the range of possible input contone representative intensity values into T subintervals where $T=PL_y$;

(b) determining the values of the centers of the T-subintervals; and

(c) quantizing each of said normalized continuous mean preserving TTFs as a function of the values of the centers of the T-subintervals.

5,633,730

TELEMATIC TERMINAL WHICH PRODUCES AND EDITS MIXED MODE DOCUMENT

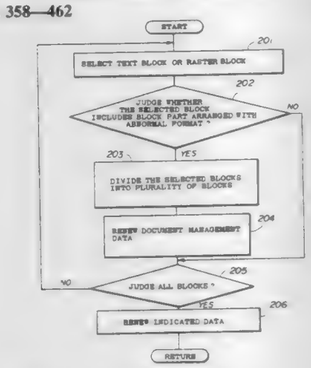
Nozomi Sawada, and Yukikazu Mori, both of Ebina, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 812,095, Dec. 23, 1991, abandoned. This application May 11, 1995, Ser. No. 439,555

Claims priority, application Japan, Dec. 26, 1990, 2-414032

Int. Cl.[6] H04N *1/40;1/387;1/00*

U.S. Cl. 358—462 **19 Claims**



1. A communication apparatus comprising:

text-block allocating means for initially setting an entire page of a mixed mode document as being occupied by a text block, in which text block characters may be arranged so that an operator may arrange characters of said entire page occupied by said text block;

raster-block forming means for forming a raster block in which figures may be arranged according to the operation performed by the operator onto said communication apparatus so that the operator may arbitrarily arrange the figures within the entirety of said page;

abnormal-format defining means for defining an area of either said raster block or said text block, said area comprising a respective one of the figures and characters with an abnormal format; and

discriminating means for discriminating said area defined by said abnormal-format defining means from the remaining area with the entirety of said page.

5,633,731

FACSIMILE APPARATUS WHICH STORES IMAGE DATA TO BE TRANSMITTED AND RECEIVED IMAGE DATA IN IMAGE MEMORY THEREOF

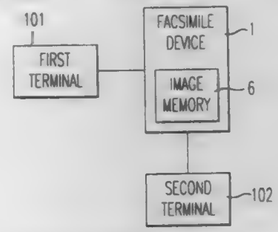
Koichiro Maemura, Isehara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 439,554, May 11, 1995, abandoned, which is a continuation of Ser. No. 127,117, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 767,816, Sep. 30, 1991, abandoned. This application May 3, 1996, Ser. No. 642,411

Claims priority, application Japan, Oct. 5, 1990, 2-267919

Int. Cl.[6] H04N *1/32;1/00*

U.S. Cl. 358—468 **18 Claims**



1. A communication apparatus, comprising:

memory means for storing a plurality of image data, each having a plurality of files supplied from a source terminal;

communicating means, coupled to said memory means, for communicating with a first terminal, via a transmission line, by executing a facsimile communication control procedure when the communication apparatus is called by the first terminal; and

control means for allocating a file identification value to each of the files of each image data stored in said memory means, said file identification value used to identify each file of each image data, and for controlling said memory means and said communicating means such that said communicating means transmits a designated file of said image data to the first terminal via the transmission line when a prescribed instruction including a specific file identification value allocated to said designated file is transmitted from the first terminal to the communication apparatus using a dual-tone multi-frequency signal, said control means comprising means for generating a table defining a relationship between the image data files and the file identification values allocated thereto, and indicating where the designated file of the image data is stored in said memory means;

wherein said communicating means includes means for receiving information indicating that the first terminal includes a confidential function and means for communicating the designated file using the confidential function; and

when said communicating means has succeeded in transmitting the designated file of the image data to the first terminal, said control means deletes the designated file from the memory means.

5,633,732

IMAGE READING APPARATUS HAVING A PARTITION MODULE BETWEEN AN IMAGE SENSOR MODULE AND A HEAT SOURCE

Haruo Ishizuka, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 845,959, Mar. 4, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 277,139

Claims priority, application Japan, Mar. 5, 1991, 3-062352

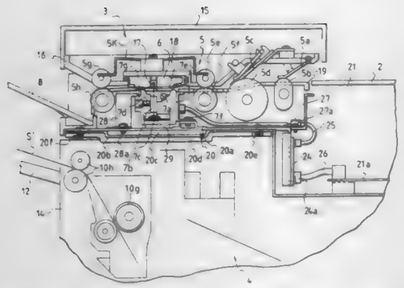
Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—474 **29 Claims**

1. An image reading apparatus comprising:

an image reading module;

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a heat source disposed adjacent said image reading module; and

a partition module disposed between said image reading module and said heat source and having at least two walls with a gap therebetween for thermally insulating said image reading module from said heat source.

5,633,733

ELECTRON FILM VIEWER SYSTEM

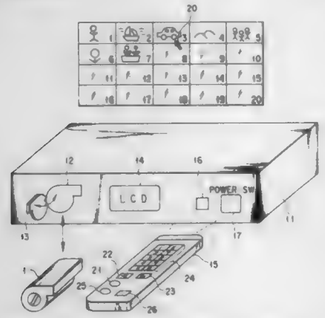
Azuma Miyazawa, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,186

Claims priority, application Japan, Sep. 5, 1994, 6-211200

Int. Cl.[6] G03F *3/10*

U.S. Cl. 358—527 **18 Claims**



1. An electronic film viewer system, equipped with a film cartridge with a processed film loaded therein in a way to have a magnetic track as a magnetic storage medium, for enabling frame images to be optically taken out of the film and displaying a converted image signal on display means, the electronic film viewer system comprising:

film feeding means for feeding the film;

image inputting means for optically taking images out of the film and for converting these images to image data;

information reading means for reading information on the images recorded on the magnetic track;

image memory means for storing the read image data and information on the image;

multi-image creating means for, when the read image data corresponding to a plurality of frames is stored in the image memory means, automatically performing one of the following two operations relating to a multi-image area creation, without external designation or setting by a user:

dividing a memory area necessary to display one display image area of the display means into a plurality of portions, sequentially storing each image data corresponding to one frame into a corresponding portion and automatically creating a multi-image area in the image memory means to allow images corresponding to the plurality of frames to be displayed, and creating a multi-image area in a way to have image data below the number of the portions construct said one display image area and storing the image data in the image memory means at a time; and

the display means including an encode function for creating an image based on the image data stored as a multi-image area in the image memory means, for displaying a plurality of frame images and frame numbers one image screen at a time.

5,633,734

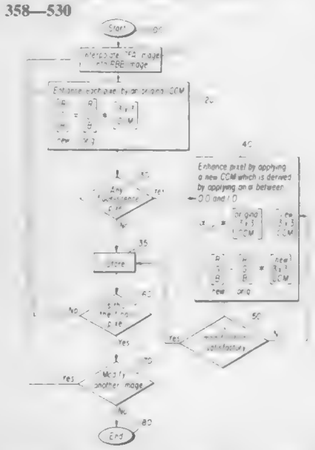
METHOD AND APPARATUS FOR MODIFYING A FLUORESCENT PORTION OF A DIGITAL IMAGE

George E. Lathrop, Dansville, and Todd A. Jackson, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 17, 1996, Ser. No. 635,092

Int. Cl.[6] H04N *1/56;1/62*

U.S. Cl. 358—530 **5 Claims**



1. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for modifying color of an image captured in a digitized, color form, the method comprising the steps of:

(a) sequentially modifying each portion of the image by a color matrix;

(b) determining when a portion of the modified image contains a predetermined fluorescent level; and

(c) further modifying only the portion of the image containing the predetermined fluorescent level by varying a fluorescent modification factor until a desired fluorescent level is obtained.

5,633,735

USE OF FRESNEL ZONE PLATES FOR MATERIAL PROCESSING

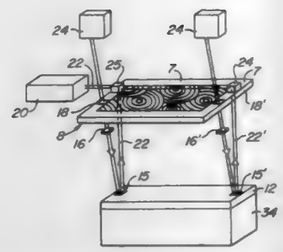
Robert O. Hunter, Jr., Rancho Santa Fe; Adlai H. Smith, San Diego; Clark C. Guest, San Diego, and Bruce B. McArthur, San Diego, all of Calif., assignors to Litel Instruments, San Diego, Calif.

Continuation-in-part of Ser. No. 940,008, Sep. 3, 1992, Pat. No. 5,362,940, which is a continuation of Ser. No. 612,212, Nov. 9, 1990, abandoned. This application Jan. 3, 1994, Ser. No. 177,356

Int. Cl.[6] G02B *5/32;27/44;* **G03H** *1/08;* **B23K** *26/00*

U.S. Cl. 359—15 **46 Claims**

11. An apparatus including a scanning beam of coherent light of selected frequency and a plate for scan by said beam of coherent light comprising in combination;



a plate for modulating in phase and amplitude of the coherent light incident upon said plate in the form of a plane wave;

said plate having a plurality of subapertures, each said subaperture including a computer generated hologram including optical features for generating upon incidence of said coherent light a working image at a distance from said plate;

means for scanning said plate with a beam of coherent light, said beam of light having a diameter greater than the largest subaperture with a fluence exceeding 1 millijoule per square centimeter and power exceeding 1 milliwatt per square centimeter, said means for scanning sequentially incident on said subapertures to produce sequentially said working images; and,

said working images having sufficient power to produce at a work piece an irreversible effect.

5,633,736

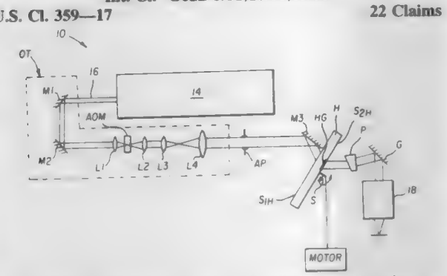
SCAN LENS AND AN OPTICAL SCANNER SYSTEM INCORPORATING TWO DEFLECTORS

John D. Griffith, and C. Benjamin Wooley, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1995, Ser. No. 412,404

Int. Cl.[6] G02B *5/32;26/10;11/06*

U.S. Cl. 359—17 **22 Claims**



1. A lens for projecting a beam of radiation moving along an optical path from front to rear, said lens comprising three groups of lens elements in order:

a negative group with a front-most lens element concave to the front;

a first positive group of lens elements having at least two positive power lens elements and no negative lens elements, the front most lens element of said first positive group having its strongest surface facing the rear; and

a second positive group of lens elements, said second positive group having stronger optical power than said first positive group, said second positive group including at least one positive meniscus lens component which is concave to the rear, wherein

$$-1.65 \leqq \frac{efl_1}{efl} \leqq -0.86,$$

$$0.60 \leqq \frac{efl_2}{efl} \leqq 1.36, \text{ and}$$

-continued

$$2.47 \leqq \frac{efl_3}{efl} \leqq 4.65,$$

where efl is the focal length of said lens, efl_1 is the focal length of said first negative lens group, efl_2 is the focal length of said first positive lens group and efl_3 is the focal length of said second positive lens group.

5,633,737

PROJECTION-TYPE COLOR LIQUID CRYSTAL DISPLAY HAVING TWO MICRO-LENS ARRAYS

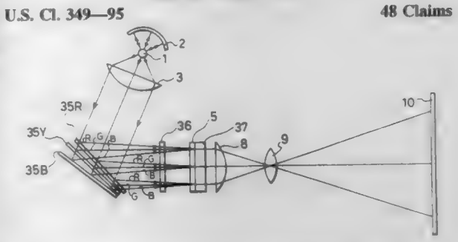
Naoyuki Tanaka; Takashi Shibatani, both of Tenri; Hiroshi Hamada, Nara, and Hiroshi Nakanishi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1994, Ser. No. 361,529

Claims priority, application Japan, Dec. 24, 1993, 5-328805

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—95 **48 Claims**



1. A projection-type color liquid crystal display comprising:

a white-light source for emitting a white-light beam;

light-beam dividing means for dividing the white-light beam into light beams consisting of a plurality of color rays having respectively different wavelength ranges;

a liquid crystal display element including a face whereon pixels corresponding to the respective color rays are regularly disposed, said liquid crystal display element being arranged so that the incident color rays are modulated and transmitted through the pixels;

a first micro-lens array for converging the color rays of the light beams onto corresponding pixel apertures in said liquid crystal display element, each color ray being allocated with respect to each wavelength range; and

a second micro-lens array for deflecting the light beams so that their respective principal rays are aligned in parallel with one another,

a focal distance of said first micro-lens array being designed so that focal points of the light beams that are released from said first micro-lens array are located in a vicinity of a light-releasing side of said second micro-lens array.

5,633,738

TFT SUBSTRATE HAVING SCANNING LINES OF METAL FILMS OF COLUMNAR CRYSTAL GRAINS

Yoko Wakui, Naka-gun, and Nobutake Konishi, Hitachioota, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,127

Claims priority, application Japan, May 27, 1994, 6-114935

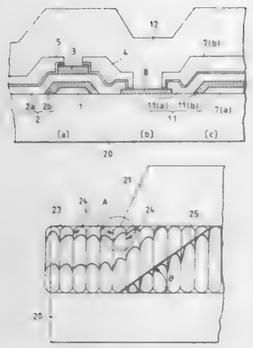
Int. Cl.[6] G02F *1/136;* **H01L** *29/04*

U.S. Cl. 349—46 **11 Claims**

1. A liquid crystal display comprising:

a first substrate provided with a plurality of scanning signal lines, a plurality of image signal lines arranged perpendicularly to the scanning signal lines, a plurality of thin-film transistors each formed at a respective cross-over point of the

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scanning signal lines and the image signal lines, and a plurality of pixel electrodes connected respectively to the thin-film transistors;

a second substrate disposed opposite to the lower substrate and provided with a common electrode opposite to the pixel electrodes; and

a liquid crystal layer sealed in a space formed between the first substrate and the second substrate;

the scanning signal lines being formed on the first substrate so as to form gate electrodes of the corresponding thin-film transistors, respectively, the scanning signal lines being metal films of columnar crystal grains, the columnar crystal grains being crystal grains of metal in the form of columns, the columns extending from the first substrate, and self-aligned oxide films being formed on the surfaces of the scanning signal lines.

5,633,739

COLOR LIQUID CRYSTAL DISPLAY DEVICE COMPOSED OF COLOR FILTER WITH A LAYER OF THREE PRIMARY COLOR ARRAY PATTERNS FABRICATED BY THERMAL DYE TRANSFER TECHNOLOGY

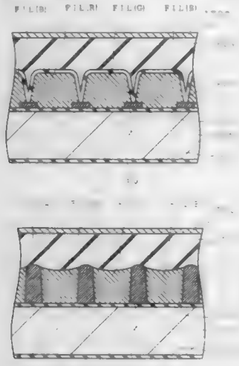
Shigeru Matsuyama, and Hiroaki Asuma, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,081

Claims priority, application Japan, Nov. 7, 1994, 6-272379

Int. Cl.° G02F *1/1335;1/1333;* **G03F** *9/00*

U.S. Cl. 349—106 **26 Claims**



1. A color liquid crystal display having a color filter substrate, comprising:

a black matrix deposited over a substrate;

a layer of three primary color patterns colored by thermal dye transfer technology;

a dye prevention area filling gaps between the color patterns; and

a transparent protective film formed over the color pattern layer and the dye prevention area;

wherein the protective film is a metal-containing organic silicon compound that can be hardened by light and heat.

5,633,740

CHIRAL SMECTIC LIQUID CRYSTAL DEVICE HAVING AT LEAST ONE ORIENTATION FILM DIVIDED INTO REGIONS WITH DIFFERENT UNIAXIAL ALIGNING TREATMENT

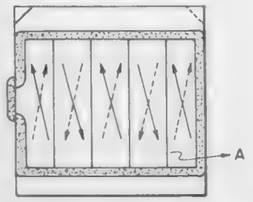
Masanobu Asaoka, Yokohama; Hideaki Takao, Sagamihara, and Makoto Kojima, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1994, Ser. No. 240,476

Claims priority, application Japan, May 10, 1993, 5-131038; May 10, 1993, 5-131039

Int. Cl.° G02F *1/1337*

U.S. Cl. 349—129 **5 Claims**



1. A liquid crystal device, comprising: a pair of substrates disposed in parallel and each provided with a transparent electrode, and a chiral smectic liquid crystal layer disposed between the pair of substrates so as to form smectic layers providing a smectic layer normal; wherein at least one of the substrates is provided with a uniaxial alignment control film which has been divided into a plurality of regions subjected to uniaxial aligning treatment in at least two different directions so that the direction of the uniaxial aligning treatment in each region is deviated at an angle from a projection of the smectic layer normal onto the substrate.

5,633,741

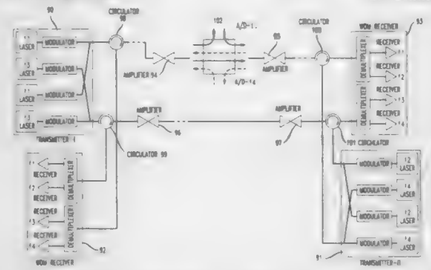
MULTICHANNEL OPTICAL FIBER COMMUNICATIONS

Clinton R. Giles, Morganville, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 23, 1995, Ser. No. 393,616

Int. Cl.° H04J *14/02;* **H04B** *10/16;* **H01S** *3/00*

U.S. Cl. 359—124 **19 Claims**



1. Optical fiber communications system for operation at a system wavelength, the system including at least two transmission lines, each line including a transmitter, a receiver and a span of fiber, in which the span includes at least one optical amplifier which compensates for a substantial part of fiber loss in the span,

the system providing for simultaneous operation of a set of at least four channels of channel wavelength values which together encompass the system wavelength, in which channel-to-channel wavelength spacing is ≦5 nm,

CHARACTERIZED IN THAT

each of the two lines transmits a set of channels bidirectionally, the set including two channels in a first transmission direction and two channels in the second transmission direction, and in which an optical amplifier simultaneously amplifies the entire set of channels.

5,633,742

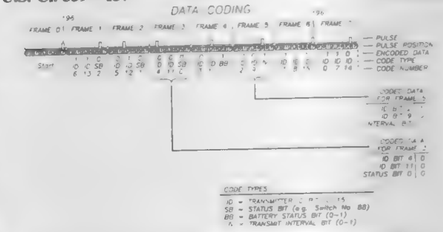
OPTICAL DATA COMMUNICATION AND LOCATION APPARATUS, SYSTEM AND METHOD AND TRANSMITTERS AND RECEIVERS FOR USE THEREWITH

Robert T. Shipley, Oakland, Calif., assignor to Fisher Berkeley Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 309,848, Sep. 21, 1994, abandoned. This application Sep. 21, 1995, Ser. No. 532,045

Int. Cl.° H04J *14/08*

U.S. Cl. 359—137 **50 Claims**



1. An optical data communication and location apparatus for at least one location in a facility comprising at least one receiver at said at least one location, a plurality of portable transmitters providing optical wireless data links with said receiver, each of said transmitters having a portable power supply with means for transmitting data packets over said optical wireless data links to said receiver, said means for transmitting data packets including means for generating a data code having a plurality of time frames, each of said time frames being divided into 2^n data time slots, each frame having therein exactly one pulse in one data time slot whereby in each frame there is encoded n-bits of binary data said receiver including means for sensing the presence of more than one said pulse in a frame and rejecting said data packet.

5,633,743

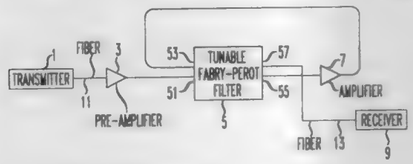
OPTICAL COMMUNICATIONS SYSTEM USING TUNABLE TANDEM FABRY-PEROT ETALON

Jean-Marc P. Delavaux, Wescosville, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 7, 1995, Ser. No. 553,209

Int. Cl.° H04B *10/12*

U.S. Cl. 359—173 **6 Claims**



4. An optical system comprising

a transmitter;

a preamplifier, said preamplifier having an input and an output;

an amplifier, said amplifier having an input and an output;

a tunable Fabry-Perot etalon having two optical paths through said etalon, said etalon having first and second inputs and first and second outputs, said first and second inputs being connected to the outputs of said preamplifier and said amplifier, respectively; said first output being connected to said amplifier;

a receiver; and

optical fibers optically connecting said transmitter and preamplifier and said receiver and said amplifier.

5,633,744

SUPPORTING APPARATUS FOR OPTICAL SCANNING APPARATUS

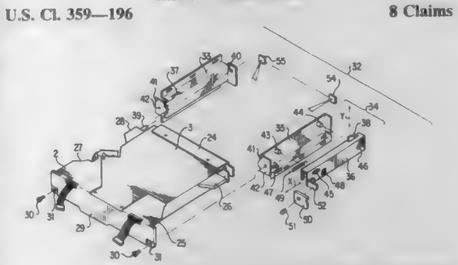
Tomohiro Nakajima, Machida, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,567

Claims priority, application Japan, Dec. 19, 1994, 6-314375

Int. Cl.° G02B *26/08*

U.S. Cl. 359—196 **8 Claims**



1. A supporting apparatus for an optical scanning apparatus, comprising:

an optical source which emits an optical beam;

a deflector which deflects the optical beam from the optical source;

a focusing lens which focuses the optical beam from the deflector;

an optical housing which is provided to house the optical source, deflector and the focusing lens;

a positioning device which supports the optical housing and positions the optical housing relative to a frame; and

an adjusting device which moves an end of the optical housing in a sub-scanning direction so that an inclination of the optical housing in the sub-scanning direction can be adjusted.

5,633,745

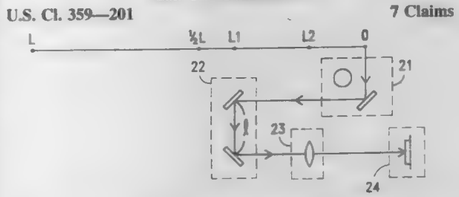
TO DRIVE THE OPTICAL SYSTEM INDEPENDENTLY BY CPU IN FLATBED SCANNERS

Daniel Chen; Alpha Tasy, and Kevin Chen, all of Hsinchu, Taiwan, assignors to Umax Data System Inc., Hsinchu, Taiwan

Filed Sep. 8, 1995, Ser. No. 524,938

Int. Cl.° G02B *26/08*

U.S. Cl. 359—201 **7 Claims**



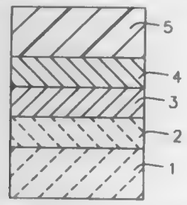
1. An optical system for a flatbed scanner, comprising:

a first optical unit to emit light onto a document and to reflect an image of said document;

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a second optical unit to receive the reflected light from said first optical unit and to reflect the reflected light;
a third optical unit to receive the reflected light from said second optical unit and to send out the reflected light; and
a fourth optical unit to receive the light from said third optical unit and to pick up the image from said document;
wherein said first optical unit, said second optical unit and said third optical unit are set independently to a distance relative to said fourth optical unit according to a chosen resolution, said first optical unit moving at a speed two times higher than a speed of said second optical unit.

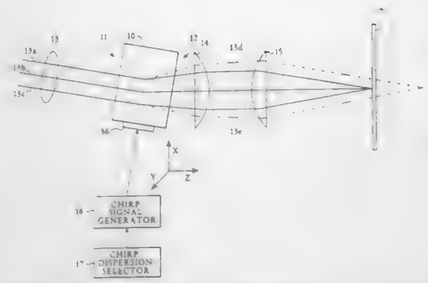
5,633,746
MAGNETO-OPTICAL RECORDING MEDIUM
Masahiko Sekiya, Hino, and Kiyoshi Chiba, Chofu, both of Japan, assignors to Teijin Limited, Osaka, Japan
Division of Ser. No. 80,391, Jun. 21, 1993, Pat. No. 5,492,773. This application May 22, 1995, Ser. No. 445,654
Claims priority, application Japan, Sep. 13, 1988, 63-227548; Oct. 4, 1988, 63-248990
Int. Cl.[6] G11B *5/66;5/74;11/00;* **B32B** *5/16*
U.S. Cl. 359—280 **18 Claims**



1. A magneto-optical recording medium, comprising:
a substrate
a magneto-optical recording layer above the substrate; and
a first metal protecting layer over the magneto-optical recording layer, the first metal protecting layer being made of a titanium alloy wherein said titanium alloy comprises at least one element of chromium and tantalum and is selected from the group consisting of:
i) a titanium alloy comprised of only titanium and 10 to 80 atom % chromium and is amorphous or crystalline, when crystalline, said titanium alloy having a lattice spacing of the [002] plane of no greater than 0.23320 nm;
ii) a titanium alloy comprised of only titanium and from 30 atom % up to 50 atom % tantalum and a lattice spacing of the [002] plane of no greater than 0.2320 nm; and
iii) a titanium alloy comprised of only titanium and from 20 to 80 atom % total of chromium and tantalum and a lattice of spacing of the [002] plane of no greater than 0.2320 nm.

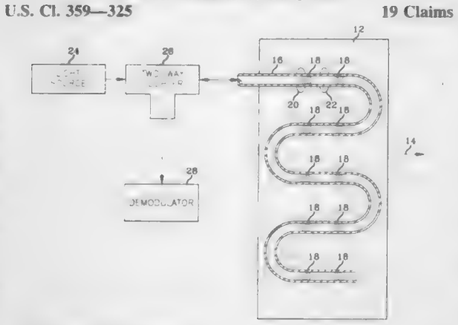
5,633,747
VARIABLE SPOT-SIZE SCANNING APPARATUS
Mehrdad Nikoonahad, Menlo Park, Calif., assignor to Tencor Instruments, Milpitas, Calif.
Filed Dec. 21, 1994, Ser. No. 361,135
Int. Cl.[6] G02F *1/33*
U.S. Cl. 359—312 **36 Claims**

8. An apparatus for deflecting a beam of light illuminating a spot on a surface, of the type having periodic and non-periodic features, comprising:
an acousto-optic deflector having an entrance aperture and an exit aperture, opposite the entrance aperture,
a linear FM signal generator electronically coupled to said acousto-optic deflector,
a chirp correction lens positioned proximate to said exit aperture,



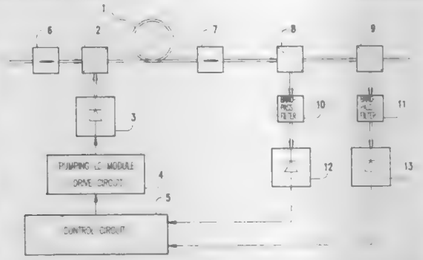
means, electronically coupled to said generator, for varying a dispersion rate of a linear FM signal in accord with the presence of periodic and non-periodic features, wherein the beam passes through the acousto-optic deflector from the entrance aperture to the exit aperture, illuminating a spot on the surface with the size of the spot varying in accordance with the dispersion rate.

5,633,748
FIBER OPTIC BRAGG GRATING DEMODULATOR AND SENSOR INCORPORATING SAME
Ignacio M. Perez, Prince Frederick, Md., and Thomas F. A. Bibby, Jr., Gilbert, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 5, 1996, Ser. No. 611,044
Int. Cl.[6] G02F *2/00;* **G01J** *4/00*
U.S. Cl. 359—325 **19 Claims**



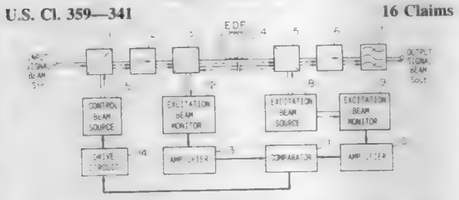
18. A sensor comprising:
a source of light consisting of a band of wavelengths;
an optical fiber arranged to conduct light from said source, the optical fiber having a core with at least two sensing Bragg gratings formed therein, each grating having grating lines spaced so that it reflects a selected subband of wavelengths within a band of wavelengths of the light incident thereon, the line spacing for each of said gratings being different from the line spacing for each of the other ones of said gratings, so that the subband of wavelengths reflected by each grating is different as a whole from the subband of wavelengths reflected by each of the other gratings;
means responsive to a measurand for inducing variations in the spacing of the lines of each of said gratings;
means comprising at least one tapped Bragg grating with grating lines, each tapped Bragg grating being arranged to scatter light reflected by at least one of the sensing Bragg gratings; and
light-detecting means, adjacent to each tapped Bragg grating, for detecting shifts in the pattern of the light scattered by each tapped Bragg grating, and thereby detecting variations in the spacing of the lines of the sensing Bragg gratings induced by the means responsive to the measurand.

5,633,749
OPTICAL FIBER AMPLIFIER HAVING LIGHT SURGE PREVENTING FUNCTION
Takashi Shibuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 30, 1996, Ser. No. 640,993
Claims priority, application Japan, May 12, 1995, 7-114401
Int. Cl.[6] H01S *3/00*
U.S. Cl. 359—341 **16 Claims**



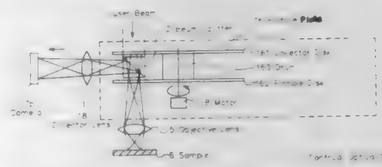
1. An optical fiber amplifier having a light surge preventing function, comprising:
pumping light output means for outputting pumping light;
light multiplexing means for multiplexing said pumping light with signal light;
an optical fiber connected to said light multiplexing means, for amplifying said signal light to thereby output therefrom amplified signal light;
first branching means for deriving light having a first wavelength from said amplified signal light;
second branching means for deriving light having a second wavelength from said amplified signal light;
first light receiving means for receiving said light having the first wavelength to detect first light intensity thereof;
second light receiving means for receiving said light having the second wavelength to detect second light intensity thereof;
comparing means for comparing the first light intensity detected by said first light receiving means with the second light intensity detected by said second light receiving means to thereby output a ratio of said first and second light intensity; and
pumping light control means for controlling said pumping light output means based upon said light intensity ratio.

5,633,750
OPTICAL FIBER AMPLIFIER
Seiji Nogiwa, Tokyo; Kazuo Aida, Yokohama, and Kiyoshi Nakagawa, Miura-gun, all of Japan, assignors to Ando Electric Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan
Filed Apr. 30, 1996, Ser. No. 641,218
Claims priority, application Japan, May 1, 1995, 7-107696
Int. Cl.[6] H01S *3/00*
U.S. Cl. 359—341 **16 Claims**



1. An optical fiber amplifier, comprising:
a rare-earth-doped optical fiber for amplifying a signal beam;
optical excitation means for supplying an excitation beam to said rare-earth-doped optical fiber for amplifying said signal beam;
first measurement means for measuring the power of said excitation beam when inputted to said rare-earth-doped optical fiber;
second measurement means for measuring the power of said excitation beam when outputted from said rare-earth-doped otpcial fiber;
calculation means for calculating the ratio between the power measured by said first measurement means and the power measured by said second measurement means;
control beam supply means for supplying a control beam which controls the gain of said rare-earth-doped optical fiber; and
control means for controlling the power of said control beam based on the results obtained by said calculation means.

5,633,751
CONFOCAL OPTICAL SCANNER
Takeo Tanaami, and Kenta Mikuriya, both of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan
Continuation of Ser. No. 344,143, Nov. 23, 1994, abandoned, which is a division of Ser. No. 942,156, Sep. 8, 1992, Pat. No. 5,428,475. This application Mar. 22, 1996, Ser. No. 626,014
Claims priority, application Japan, Oct. 31, 1991, 3-286112; Jan. 30, 1992, 4-15411; Jun. 9, 1992, 4-149320
Int. Cl.[6] G02B *21/06*
U.S. Cl. 359—368 **7 Claims**



1. In a confocal optical scanner comprising a pinhole plate defining a plurality of pinholes to scan light passing through said pinholes onto a sample, the improvement comprising
said pinhole plate comprising a collector disk on which a plurality of collector means are formed, a pinhole disk defining a plurality of pinholes, and means for connecting said collector disk and pinhole disk so that said pinholes are disposed at focal points of said plurality of collector means;
wherein said plurality of pinholes are formed in a plurality of lines outwardly extending from the center of said disk and in a plurality of substantially concentric rows extending outwardly from said center, wherein said rows are substantially spiral in shape, and wherein a first pitch between adjacent lines is substantially equal to a second pitch between adjacent rows as measured from the same pinhole;
wherein said first and second pitches are disposed to be equal when the center coordinate of each pinhole satisfies the following equation:

$$r_i = r_o + \theta_i \cdot m \cdot a/2\pi$$

$$\theta_i = [2\pi/(m \cdot a)][-r_o + \sqrt{r_o^2 + i \cdot m \cdot a^2/\pi}\ ].$$

wherein i=1,2,. . ., n, being the order from inside of the spiral, r_i=radius of ith pinhole; and r_o=innermost radius; θ_i=angle of ith pinhole; m=number of spirals; and a=pinhole pitch;
rotating means for rotating said pinhole plate at a constant speed; and
a branch optical system provided between said collector disk and said pinhole disk of said pinhole plate; wherein
light reflected from said sample is outputted after passing through said pinhole disk at a right angle direction from a light axis direction of said light inputted through said collector disk by being bent in its optical path by said branch optical system.

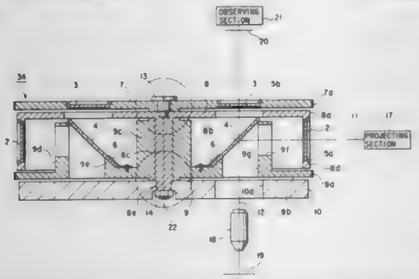
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5,633,752

OPTICAL SWITCHING APPARATUS FOR A REFLECTED FLUORESCENCE MICROSCOPE

Atsuhiro Tsuchiya, Akigawa, and Itaru Endo, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 504,322
Claims priority, application Japan, Jul. 27, 1994, 6-175321
Int. Cl.[6] G02B *21/06;21/00;7/02*
U.S. Cl. 359—390 14 Claims



1. An optical system switching apparatus for a reflected fluorescence microscope, comprising:

a first turret having a first rotation center axis and a plurality of first windows which are formed at an equal distance from the first rotation center axis and on which absorption filters are mounted, said first turret being rotatable about the first rotation center axis;

a second turret having a second rotation center axis and a plurality of second windows which are formed at an equal distance from the second rotation center axis and on which excitation filters are mounted, said second turret being rotatable about the second rotation center axis;

a third turret having a third rotation center axis and a plurality of mounting portions which are formed at an equal distance from the third rotation center axis and on which dichroic mirrors are mounted, said third turret being rotatable about the third rotation center axis; and

support means for supporting said first to third turrets to be rotatable independently of each other, and for optically aligning an arbitrary one of said excitation filters, an arbitrary one of said dichroic mirrors, and an arbitrary one of said absorption filters at respective rotational positions.

5,633,753

LOW-COST, LIGHT-WEIGHT, COMPACT BINOCULARS

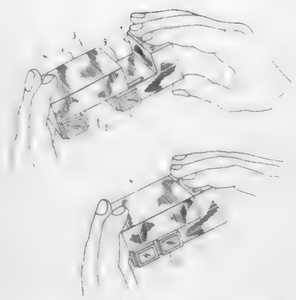
Stephen D. Fantone, Lynnfield, Mass.; Arthur P. Becker, New York, N.Y., and Benjamin A. Wells, Linclon, Mass., assignors to Mobi Corporation, Lynnfield, Mass.

Continuation of Ser. No. 238,309, May 5, 1994, abandoned.
This application Oct. 11, 1994, Ser. No. 320,920
Int. Cl.[6] G02B *23/00*
U.S. Cl. 359—412 32 Claims

1. A binocular optical system comprising:

a pair of separate housings each of which has an entrance aperture and an exit aperture; and

each of said housings having mounted therein an objective lens registered with said entrance aperture for forming an intermediate image of an object; an eyepiece registered with said exit aperture for observing said intermediate image, and a four-mirror system for providing a multiply folded optical path between said objective lens and eyepiece for inverting and reverting said intermediate image so that it appears upright and properly oriented right to left when observed through said eyepiece, each of said four-mirror systems having a two-mirror inversion section and a two-mirror reversion section where the inversion and reversion of the images in one of said housings is in reverse order with respect to the inversion and reversion of the images in the other of said housing so that said binocular system may be made compact in size.



5,633,754

INTEGRATED OPTICAL SYSTEM FOR ENDOSCOPES AND THE LIKE

Jan Hoogland, 8982 N. Applegate Rd., Grants Pass, Oreg. 97527

Filed Dec. 6, 1994, Ser. No. 351,481
Int. Cl.[6] G02B *23/00*
U.S. Cl. 359—434 8 Claims



1. An endoscopic optical system extending along an optical axis and having an object plane, and having at least a first image plane and a second image plane downstream from the object plane, said system comprising:

at least three spaced-apart groups of optical elements of uniform refractive index disposed serially along the optical axis between the object plane and the second image. plane for transferring an image from the object plane to the second image plane, each of said at least three groups having positive optical power and having at least one element, wherein each element in each of said groups has surfaces and each of said surfaces has a curvature, and the sum of the absolute values of the curvatures of all of said elements in said at least three groups is less than 1.5 when the length of said optical system is standardized to 100 units; and

means defining a location and a diameter of an entrance pupil at an entrance pupil plane which is positioned between the object plane and the nearest one of said three groups, the entrance pupil plane being spaced apart from said nearest one group by a distance equal to at least the diameter of the entrance pupil.

5,633,755

PROJECTION APPARATUS AND METHOD

Yuji Manabe, Kamakura; Kazuya Okamoto; Yutaka Iwasaki, both of Yokohama, and Yukiharu Okubo, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

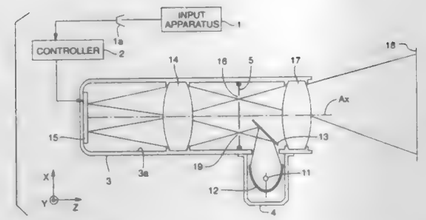
Filed Mar. 5, 1996, Ser. No. 611,304
Claims priority, application Japan, Mar. 8, 1995, 7-077328
Int. Cl.[6] G03B *21/28*
U.S. Cl. 359—443 14 Claims

1. A projection apparatus, comprising:

(a) a light source;

(b) a DMD having micromirrors;

(c) a projection optical system comprising a first lens group, an illumination stop, and an aperture stop; and



(d) a controller;

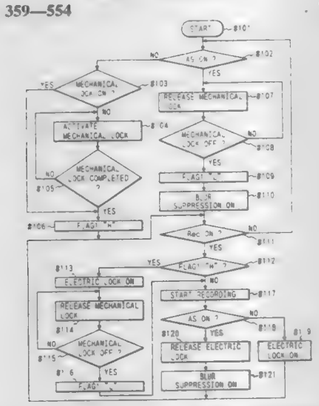
(e) wherein light from the light source passes through the illumination stop and first lens group to the DMD, and the controller individually controls the orientation of each micromirror of the DMD so that light impinging on the DMD is selectively reflected by any of the micromirrors through the first lens group toward either the aperture stop or the illumination stop.

5,633,756

IMAGE STABILIZING APPARATUS

Naoya Kaneda, Chigasaki, and Kazuhiro Noguchi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 404,852, Mar. 17, 1995, abandoned, which is a continuation of Ser. No. 968,314, Oct. 29, 1992, abandoned. This application Feb. 16, 1996, Ser. No. 600,649
Claims priority, application Japan, Oct. 31, 1991, 3-311448; Nov. 29, 1991, 3-339365
Int. Cl.[6] G02B *27/64*
U.S. Cl. 359—554 74 Claims



49. An image blur suppressing apparatus comprising:

an image blur suppressing device which operates to suppress image blur;

a first operation device which causes said image blur suppressing device to be inoperative by applying a mechanical force to said image blur suppressing device;

a second operation device which causes said image blur suppressing device to be inoperative by applying a non-mechanical force to said image blur suppressing device;

a switching device for switching said image blur suppressing device between an operational state and a non-operational state; and

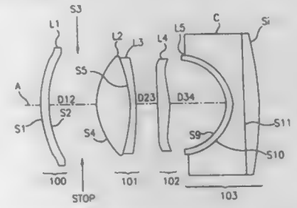
a control device which, during an information recording operation, changes an operational state of said second operation device independently from said first operation device in accordance with an operational state of said switching device.

5,633,757

PROJECTION LENS

Sung C. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 5, 1995, Ser. No. 369,124
Claims priority, application Rep. of Korea, Dec. 10, 1994, 1994/33620
Int. Cl.[6] G02B *3/00*
U.S. Cl. 359—650 25 Claims



1. A projection lens, comprising:

a first lens group, including a single lens convex to a screen, said first lens group having a positive optical power for eliminating a spherical aberration;

a second lens group having a positive optical power and including a positive element and a negative element having a dispersion different from that of the positive element;

a third lens group having a positive optical power on an optical axis thereof and having a meniscus shape concave to the screen at the optical axis and convex to the screen adjacent an outer extent of a clear aperture thereof; and

a fourth lens group having a negative optical power and being concave to the screen for compensating for field dependent aberrations, wherein said projection lens satisfies the condition:

$$0.32<D_{12}/f_0<0.42$$

where D_{12} denotes the distance between the first lens group and the second lens group and f_0 denotes the focal length of the entire projection lens, and wherein

$$0.11<f_0/f_1<0.14$$

$$0.91<f_0/f_2<0.95$$

$$0.21<f_0/f_3<0.25$$

$$-0.68<f_0/f_4<-0.62$$

where f_0 is the overall focal length of the projection lens, f_1 is the focal length of the first lens group, f_2 is the focal length of the second lens group, f_3 is the focal length of the third lens group, and f_4 is the focal length of the fourth lens group.

5,633,758

VARIABLE MAGNIFICATION LENS SYSTEM

Toshihiko Ueda, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 15, 1995, Ser. No. 529,164
Claims priority, application Japan, Sep. 21, 1994, 6-226134
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—679 14 Claims

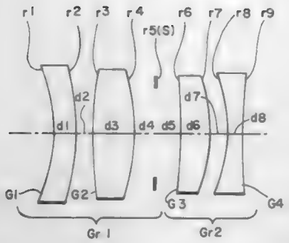
1. A variable magnification lens system, comprising from the object side:

a positive first lens unit including a negative first lens element and a positive second lens element, and

a negative second lens unit including a positive third lens element and a negative fourth lens element;

wherein, at variable magnification from an equal magnification state to an enlargement state, the overall lens system moves while the spacing between said two lens units is increased, and the distance between the object and the image remains constant;

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an aspherical surface is provided on at least one surface of the first lens unit and at least one surface of the second lens unit;

a concave surface is provided on the object side surface of the first lens element and on the image side surface of the fourth lens element; and

a following condition is fulfilled:

$$1.5<(f_I*f_{11})/(f_{II}*f_4)<2.5$$

where the following definitions obtain:

f_I: first lens unit focal length

f_{11}: first lens element focal length

f_{II}: second lens unit focal length

f_4: fourth lens element focal length.

5,633,759

ZOOM LENS SYSTEM

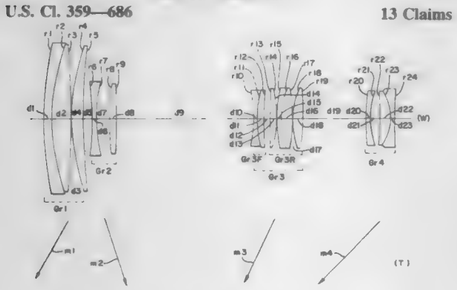
Hideki Nagata, Sakai; Soh Ohzawa, Toyonaka; Hiroyuki Matsumoto, Wakayama, and Masakuni Tai, Machida, all of Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan

Filed Sep. 15, 1995, Ser. No. 529,294

Claims priority, application Japan, Sep. 20, 1994, 6-224455; Sep. 20, 1994, 6-224456

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—686 **13 Claims**



1. A zoom lens system, comprising from an object side:

a first lens unit having a positive refractive power;

a second lens unit having a negative refractive power;

a third lens unit having a positive refractive power; and

a fourth lens unit having a negative refractive power,

wherein the first through fourth lens units move such that the distance between the first and second lens units increases and the distance between the third and fourth lens units decreases during zooming from the wide angle toward the telephoto end of the zoom range, and

wherein following conditions are fulfilled:

$$-0.3<\phi 1/\phi 4<-0.1$$

where

$\phi 1$ represents the refractive power of the first lens unit, and

$\phi 4$ represents the refractive power of the fourth lens unit.

5,633,760

ZOOM LENS

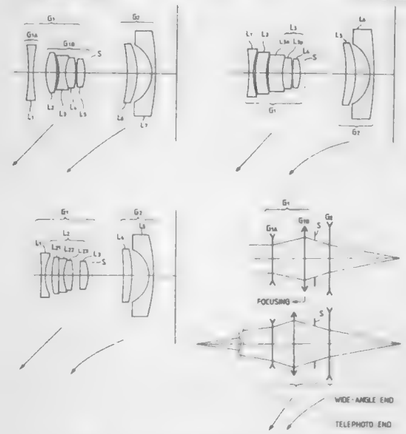
Atsushi Shibayama, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 379,928

Claims priority, application Japan, Feb. 3, 1994, 6-011879; Feb. 9, 1994, 6-015058; Feb. 22, 1994, 6-024539; Mar. 28, 1994, 6-057302

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—692 **47 Claims**



1. A wide-angle zoom lens comprising in the following order from the object side:

a first lens group having a positive refractive power, said first lens group consisting of, in the following order from the object side, a front lens subgroup which consists of a negative lens, and a rear lens subgroup which includes of at least one positive lens and at least one negative lens; and

a second lens group having a negative refractive power,

wherein an air gap between said first and second lens groups decreases upon zooming from a wide-angle end to a telephoto end, and said zoom lens satisfies the following conditions:

$$0.09 \leq D2/fW \leq 0.4$$

$$-0.6 \leq Q1 \leq 0.5$$

where fW is the focal length of the entire zoom lens at the wide-angle end, D2 is the air gap between said front and rear lens subgroups, and Q1 is the shape factor of said negative lens in said front lens subgroup, the shape factor Q1 being defined by Q1=(R2+R1)/(R2−R1), where R1 is the radius of curvature of an object-side lens surface of said negative lens in said front lens subgroup, and R2 is the radius of curvature of an image-side lens surface of said negative lens in said front lens subgroup.

5,633,761

LASER DIODE MODULE

Yuichirou Takashima; Kozo Yamazaki; Mitsuharu Ishii; Toshimitsu Kumagai, and Masanori Ohkawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 88,647, Jul. 9, 1993. This application Jun. 7, 1995, Ser. No. 475,506

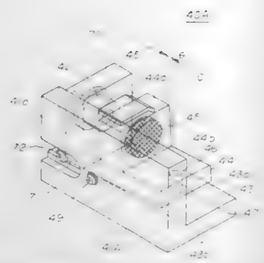
Claims priority, application Japan, Jul. 10, 1992, 4-183968

Int. Cl.[6] G02B *7/02*; **H01S** *3/02*

U.S. Cl. 359—811 **31 Claims**

1. A laser diode module comprising:

a base defining an upper planar mounting surface;



a laser diode supported by the base and emitting a laser beam along an optical axis parallel to the mounting surface;

a collimating lens supported by the base and disposed on the optical axis; and

a holder holding a corresponding one of the laser diode and the collimating lens and having a lower planar mounting surface received on the upper planar mounting surface of the base and selectively and adjustably movable along the optical axis relatively to the upper planar mounting surface of the base, and to the other of the laser diode and the collimating lens, to a position at a distance between the lens and the laser diode along the optical axis selected to minimize the beam size in one of horizontal and vertical directions relative to the optical axis.

5,633,762

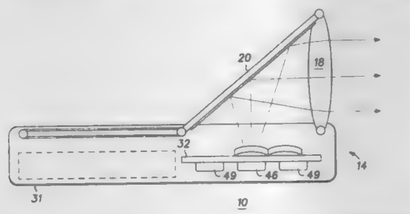
DUAL IMAGE MANIFESTATION APPARATUS WITH INTEGRATED ELECTRO-OPTICAL PACKAGE

Fred V. Richard, Scottsdale, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Oct. 23, 1995, Ser. No. 553,735

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—817 **32 Claims**



28. Dual image manifestation apparatus with an integrated electro-optical package comprising:

a housing;

a mounting structure positioned within the housing, including a plurality of terminals and mounting pads;

an image generator mounted on the mounting structure with a two dimensional array of light emitting devices formed thereon and cooperating to generate a complete real image, the light emitting devices being positioned in rows and columns to define all pixels of the real image and operably connected to connection/mounting pads adjacent outer edges of the image generator, the connection/mounting pads being physically and electrically attached to the terminals and mounting pads of the mounting structure;

a plurality of driver circuits mounted on the mounting structure and connected to the light emitting devices of the image generator through the terminals and mounting pads on the mounting structure;

a quasi-direct view image manifestation apparatus including at least one lens system positioned in overlying relationship to the mounting structure and the image generator, a slideably moveable front planar member and an attached optical element mounted to the front planar member and the housing, positioned substantially planar to the housing, to receive and magnify the real image and produce an easily viewable quasi-direct view; and

a virtual image manifestation apparatus including at least one lens system positioned in overlying relationship to the mounting structure and the image generator, the slideably mounted front planar member further comprising an optical element positioned in underlying relationship to the front planar member, and the optical element mounted to the front planar member and the housing, positioned substantially perpendicular to the housing, to receive and magnify the real image and produce an easily viewable virtual image.

5,633,763

LENS DRIVE MECHANISM USING AN ELECTRO-MECHANICAL TRANSDUCER

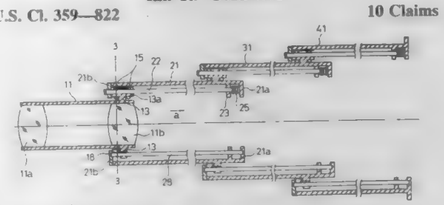
Shinichi Suzuki, Izumiootsu; Tetsuro Kanbara, Sakai; Minoru Kuwana, Osaka; Hitoshi Hagimori, Nara-Ken, and Junji Hashimura, Sakai, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jul. 6, 1995, Ser. No. 499,002

Claims priority, application Japan, Jul. 8, 1994, 6-179741

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—822 **10 Claims**



1. A lens driving apparatus, comprising:

a first lens support for supporting a lens;

a second lens support for supporting the first lens support;

a third lens support for supporting the second lens support for relative movement therebetween;

a driving member movably mounted in said third lens support;

a transducer mounted in said third support and coupled to said driving member for producing displacement of said driving member in a predetermined direction responsive to impressed driving pulses; and

a coupling member fixed to said second lens support and coupled to said driving member to transmit displacement of the driving member to the second lens support.

5,633,764

MAGNETIC TAPE RECORDING/REPRODUCING APPARATUS

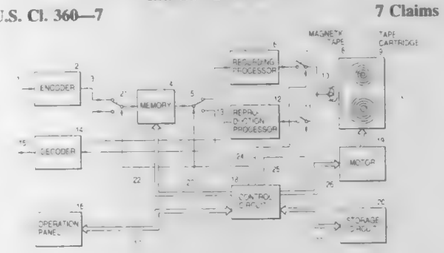
Haruo Ohta, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 28, 1994, Ser. No. 365,217

Claims priority, application Japan, Dec. 28, 1993, 05-334196

Int. Cl.[6] G11B *5/00*

U.S. Cl. 360—7 **7 Claims**



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1. A magnetic tape recording/reproducing apparatus for recording input data which are inputted sequentially at a first data rate onto a magnetic recording tape in a recording mode and reproducing the recorded data in a reproduction mode, comprising:

tape running means for running the magnetic recording tape from one position to another;

recording and reproducing means for recording the input data onto the magnetic recording tape at a data rate and for reproducing the recorded data from the magnetic recording tape in the reproduction mode;

data memory means, coupled to the recording and reproducing means, for temporarily storing therein the input data before being fed to the recording and reproducing means in the recording mode and for temporarily storing therein reproduced data from the recording and reproducing means in the reproducing mode; and

control means for controlling the tape running means, the recording and reproducing means and the data memory means to cooperate such that, in the recording mode, (1) the input data are continuously written into the data memory means at the first data rate and (2) the written data are intermittently read out from the data memory means and intermittently recorded onto the magnetic recording tape by automatically repeating (2a) a recording operation in which the written data are read out from the data memory means at a second data rate which is higher than the first data rate and recorded onto the magnetic recording tape and (2b) a first waiting operation in which the written data are not read out from the data memory means and not recorded onto the magnetic recording tape, and such that, in the reproduction mode, (3) the recorded data are intermittently reproduced from the magnetic recording tape and intermittently written into the data memory means by automatically repeating (3a) a reproducing operation in which the recorded data are reproduced from the magnetic recording tape and written into the data memory means at the second data rate and (3b) a second waiting operation in which the recorded data are not reproduced from the magnetic recording tape and not written into the data memory means and (4) the written data are continuously read out from the data memory means at the first data rate.

5,633,765

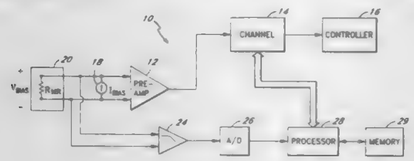
ADAPTIVE POLE-ZERO CANCELLATION FOR WIDE BANDWIDTH MAGNETORESISTIVE PRE-AMPLIFIER

Kingston Lin, Morgan Hill, and Bac V. Pham, San Jose, both of Calif., assignors to Samsung Electronics, Ltd., Suwon, Rep. of Korea

Filed Oct. 19, 1995, Ser. No. 545,417

Int. Cl.[6] G11B *5/09;5/02*

U.S. Cl. 360—46 **12 Claims**



1. An apparatus for the adaptive cancellation of at least a first pole frequency in a magnetoresistive (MR) head device, the apparatus comprising:

a preamplifier coupled to first and second terminals of said MR head, said preamplifier producing a first signal having said at least first pole frequency;

a differential amplifier coupled to said first and second terminals of said MR head, said differential amplifier producing a second signal indicative of a voltage across said MR head;

a processor, coupled to receive said second signal, for generating at least a first zero boost frequency using said second signal; and

a channel device, coupled to said preamplifier and to said processor, said channel device cancelling said at least first pole frequency using said at least first zero boost frequency.

5,633,766

MAGNETIC DISK STORAGE APPARATUS WITH PHASE SYNC CIRCUIT HAVING CONTROLLABLE RESPONSE CHARACTERISTICS

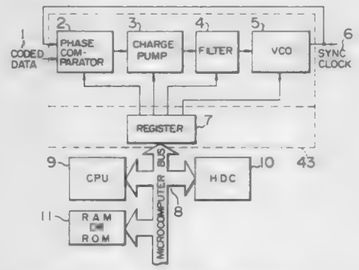
Kenichi Hase; Syoichi Miyazawa; Ryutaro Horita, all of Yokohama; Shinichi Kojima, Takasaki; Akihiko Hirano, Fujisawa, and Akira Uragami, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 177,694, Jan. 4, 1994, Pat. No. 5,404,250, which is a continuation of Ser. No. 603,294, Oct. 25, 1990, abandoned. This application Dec. 21, 1994, Ser. No. 360,426

Claims priority, application Japan, Oct. 30, 1989, 1-282748; Oct. 30, 1989, 1-282749; Apr. 19, 1990, 2-103313

Int. Cl.[6] G11B *5/09;15/04*

U.S. Cl. 360—51 **12 Claims**



1. A magnetic disk storage apparatus comprising:

a phase sync circuit for generating a read clock signal for controlling reading of data from a magnetic disk-type storage medium, the phase sync circuit having a controllable response characteristic;

means for generating an instruction for controlling the response characteristic of the phase sync circuit and outputting the instruction to a computer bus, the instruction being generated based on an access position on the magnetic disk-type storage medium at which data is to be read; and

means for receiving the instruction from the computer bus, storing the instruction, and outputting the instruction to the phase sync circuit to control the response characteristic of the phase sync circuit in accordance with the instruction;

wherein the phase sync circuit includes a phase-locked loop circuit including:

a phase comparator for receiving a pulse signal and a clock signal and comparing the pulse signal to the clock signal, the pulse signal being a data signal reproduced from the magnetic disk-type storage medium;

a charge pump connected to an output of the phase comparator, the charge pump having a gain which may be a controllable gain;

a filter connected to an output of the charge pump, the filter having a filter characteristic which may be a controllable filter characteristic; and

a voltage-controlled oscillator connected to an output of the filter for generating a clock signal and outputting the clock signal to the phase comparator; and

wherein the instruction generated by the generating means includes at least one of information for controlling the gain of the charge pump and information for controlling the filter characteristic of the filter.

5,633,767

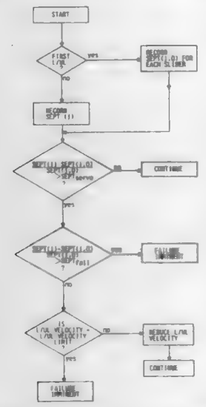
ADAPTIVE AND IN-SITU LOAD/UNLOAD DAMAGE ESTIMATION AND COMPENSATION

Zine-Eddine Boutaghou, Owatonna; Hal H. Ottesen, and Gordon J. Smith, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 469,253

Int. Cl.[6] G11B *5/09;* **G06F** *11/00*

U.S. Cl. 360—53 **9 Claims**



1. In a rigid disk data storage device having a rotating data storage disk and an actuator for supporting a transducer carrying slider in read/write confronting relation to said rotating disk and including a ramp structure for unloading the slider when pending read/write operations have been completed, a method for anticipating impending device failure comprising the steps of:

defining a series of tracks within which the slider achieves read/write cooperation with the confronting disk surface when the slider is being loaded from said ramp;

reading said series of tracks to enable sensing and recording of the number of read errors;

comparing the current number of sensed read errors encountered reading said series of tracks to the number of read errors sensed during a prior reading of said series of tracks following transducer loading;

identifying when the number of read errors sensed during the current reading of said series of tracks indicates that the corresponding slider/disk combination is approaching failure;

recording test data on said series of tracks at an increased linear density to increase the number of read errors encountered and recorded during a reading of said series of tracks;

classifying read errors, sensed and recorded during the step of reading said series of tracks subsequent to the loading of the slider from said ramp, in accordance with the type of read error and the error recovery procedure used to correct such read error; and

excluding from the error count, recorded for the purpose of identifying approaching device failure, selected types of read errors.

5,633,768

SHEET METAL FRAME CONSTRUCTION FOR A DISK APPARATUS

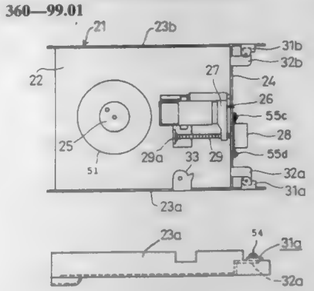
Takashi Watanabe, Ichikawa, Japan, assignor to TEAC Corporation, Japan

Continuation of Ser. No. 329,525, Oct. 26, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 723,668

Claims priority, application Japan, Oct. 27, 1993, 5-058055 U; Oct. 27, 1993, 5-058056 U; Oct. 27, 1993, 5-058057 U; Oct. 27, 1993, 5-058058 U

Int. Cl.[6] G11B *33/00*

U.S. Cl. 360—99.01 **6 Claims**



1. A frame construction for a disk apparatus into which a cartridge accommodating a recording medium is loaded, a driving unit for driving the recording medium loaded in the disk apparatus and a head carriage having a head for recording/reproducing information on/from the recording medium being provided in said frame construction, said frame construction comprising:

a frame body formed of a bent metal plate, said frame body having a base, at least one side plate and a back plate, said side plate and said back plate being bent perpendicularly to said base, said side plate and said back plate lying perpendicular to each other, said driving unit and said head carriage being mounted on said base;

said frame construction having a fixing member integrally formed with said frame body for connecting said side plate and said back plate so that said side plate and said back plate are fixed to each other, said fixing member comprising a first fixing portion comprising a portion of said side plate bent perpendicular to said side plate, and a second fixing portion comprising a portion of said back plate bent to extend substantially perpendicular to said first fixing portion, said first fixing portion and said second fixing portion having first and second planar parts, respectively, that overlap and contact each other such that said first and second planar parts are substantially parallel to one another, said first fixing portion being fixed to said second fixing portion at said first and second planar parts.

5,633,769

MAGNETIC DISC DRIVE DEVICE

Shinji Kinoshita; Mitsuru Ide, and Toru Kumagai, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed May 11, 1995, Ser. No. 439,220

Claims priority, application Japan, May 11, 1994, 6-123125; May 11, 1994, 6-123126; May 12, 1994, 6-123104

Int. Cl.[6] G11B *19/20*

U.S. Cl. 360—99.08 **16 Claims**

1. A magnetic disc drive device comprising:

a shaft;

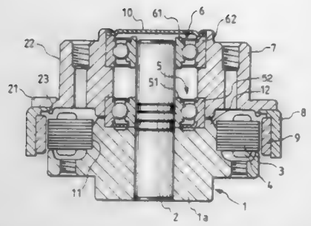
a frame;

a stator core arranged on said frame;

a hub arranged about said shaft;

a ball bearing, having an inner ring and an outer ring, for rotatably supporting the hub, said inner ring of the ball bearing being fixed on said shaft; and

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an opposed member, having an inner surface arranged to face an outer surface of said outer ring of the ball bearing, a gap being formed between said outer surface of said outer ring and said inner surface of said opposed member, the gap being defined in a passage connecting the inside of the ball bearing to the outside thereof, wherein said opposed member, the gap and said outer ring form a labyrinth structure.

5,633,770

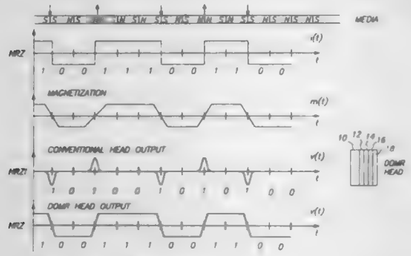
DIGITAL OUTPUT MAGNETORESISTIVE (DOMR) HEAD AND METHODS ASSOCIATED THEREWITH

Xiaodong Che, Sunnyvale, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Division of Ser. No. 239,243, May 6, 1994, Pat. No. 5,546,253. This application Jul. 27, 1996, Ser. No. 688,127

Int. Cl.[6] G11B *5/39;* **G01R** *33/02*

U.S. Cl. 360—113 **8 Claims**



1. A mass storage device comprising:

a magnetic recording medium comprising magnetic transitions stored thereon;

a magnetoresistive head supported in close proximity to said recording media comprising a layered structure deposited on a substrate, said layered structure comprising a pinned layer of magnetic material and a digital switching layer of magnetic material separated by a layer of nonmagnetic material, said pinned layer having a substantially fixed magnetization direction, said digital switching layer comprising first and second magnetization directions, said first magnetization direction being substantially parallel to said magnetization direction of said pinned layer after said head passes a first magnetic transition defined on the recording media, and said second magnetization direction being substantially antiparallel to said magnetization direction of said pinned layer after said head passes a subsequent magnetic transition defined on the recording media and manifesting a magnetic field polarity opposite in direction to that of said first magnetic transition; and

digital read channel electronics having an input connected to the head for receiving and processing a serial data stream put out by the head during relative movement between the magnetic recording medium and the head.

5,633,771

MAGNETORESISTANCE EFFECT TYPE HEAD AND SEPARATE RECORDING-REPRODUCING TYPE MAGNETIC HEAD

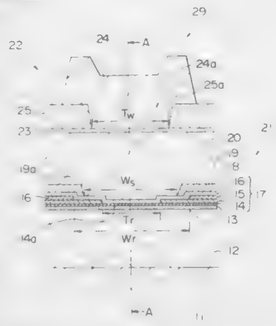
Hiroaki Yoda, Kawasaki; Atsuhito Sawabe; Hitoshi Iwasaki, both of Yokosuka; Naoyuki Inoue, Yokohama, and Akio Hori, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Sep. 28, 1994, Ser. No. 314,508

Claims priority, application Japan, Sep. 29, 1993, 5-242570; Mar. 15, 1994, 6-044426

Int. Cl.[6] G11B *5/265;5/29;5/127;5/33*

U.S. Cl. 360—121 **10 Claims**



1. A magnetoresistance effect type head comprising:

a substrate;

a lower shield layer formed on the substrate;

a lower magnetic gap-forming insulating film formed on the lower shield layer;

a magnetoresistance effect element provided on the lower magnetic gap-forming insulating film,

the magnetoresistance effect element comprising:

a magnetoresistance effect film formed on the lower magnetic gap-forming insulating film, the magnetoresistance effect film having end portions separated by a center portion functioning as a magnetic field responding part;

respective hard magnetic or antiferromagnetic films formed on the end portions of the magnetoresistance effect film, with a distance therebetween essentially having a value of Tr, and substantially aligned with the magnetic field responding part of the magnetoresistance effect film; and

respective leads formed on the hard magnetic or antiferromagnetic films, the leads being disposed with a distance of Wr therebetween,

an upper magnetic gap-forming insulating film formed over the magnetoresistance effect element,

an insulating layer formed on the upper magnetic gap-forming insulating film to insulate the leads, the insulating layer providing a trench having a bottom surface which is an exposed surface of the upper magnetic gap-forming insulating film and having a bottom width of Ws, and

an upper shield layer disposed to fill the trench of the insulating layer,

wherein the relation of Tr<Ws<Wr is satisfied.

5,633,772

DISK CARTRIDGE WITH FIBROUS CLEANING MEMBER HAVING SET DENSITY RATE OF CHANGE

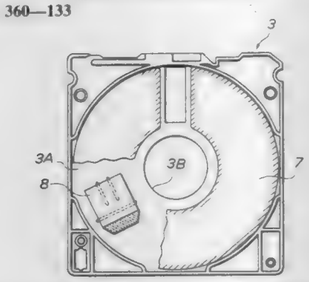
Hiroshi Ikeda, and Mami Murata, both of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,705

Claims priority, application Japan, Sep. 24, 1993, 5-238234; Jun. 14, 1994, 6-132204

Int. Cl.[6] G11B *23/03;23/50*

U.S. Cl. 360—133 **2 Claims**



1. A disk cartridge adapted to house a magnetic disk, said disk cartridge containing at least one cleaning member disposed therein for sliding engagement with the magnetic disk for the collection of debris from the surface thereof, said cleaning member adapted to minimize variations in torque on the magnetic disk and comprising a sheet-like fibrous nonwoven fabric comprising fibers having a thickness of 0.5 to 5 deniers; the quantity of the fibers used is 10 to 35 g/m ^{2}; the density of the nonwoven fabric is 0.05 to 0.10 g/cm^3 at a load of 4.4 gf/cm^2; the nonwoven fabric having a rate of change of the density over a load range of 0.1 to 4.4 gf/cm^2 of from 7.0×10^{-3} to 1.6×10^{-2} (g/cm^3)/(gf/cm^2).

5,633,773

OVERVOLTAGE PROTECTION FOR INPUT/OUTPUT CIRCUITS

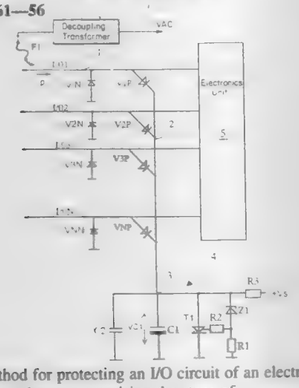
Seppo Suur-Askola, Riihimäki, Finland, assignor to Kone Oy, Helsinki, Finland

Continuation of Ser. No. 421,483, Apr. 13, 1995, abandoned. This application Jul. 30, 1996, Ser. No. 699,042

Claims priority, application Finland, Apr. 14, 1994, 941720

Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—56 **11 Claims**



1. A method for protecting an I/O circuit of an electronic circuit against overvoltages, comprising the steps of:

(a) connecting the I/O circuit of the electronic circuit to a current path comprising a first diode through which current flows when the voltage on the I/O circuit is a negative overvoltage;

(b) providing the I/O circuit of the electronic circuit with a second current path comprising a second diode connected in series to a time-delay circuit at a first node; the time delay circuit including a thyristor connected between the first node and ground and having a gate, a zener diode connected in series with a first resistance between the first node and ground, and a second resistance connected between the gate and a second node linking the zener diode and the first resistance, whereby the thyristor is fired by a time-delay in the time-delay circuit when the voltage on the I/O circuit is an a positive overvoltage, the current flowing through the current paths providing the overvoltage protection.

5,633,774

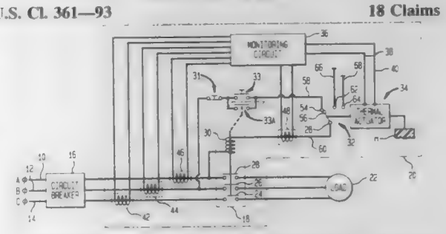
ELECTRONIC OVERLOAD RELAY POWER SOURCE

Roger L. Robertson, 4658 Pond Land, Marietta, Ga. 30625, and Bruno C. Doerwald, 4816 River Walk Ct., Duluth, Ga. 30136

Continuation of Ser. No. 201,755, Feb. 25, 1994, abandoned. This application Jul. 16, 1996, Ser. No. 683,118

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **18 Claims**



1. In a device for interrupting the flow of current in at least one power conductor, the device including an electronic control circuit and a contactor having a solenoid for opening at least one contact where the solenoid is energized when the contact is closed and current flows through the power conductor when the contact is closed, a current transformer consisting essentially of one winding magnetically coupled to a conductor, said conductor providing operating power to the solenoid, the solenoid being connected in series with the current transformer, the winding of the transformer being coupled to the control circuit to provide power to the control circuit, the control circuit determining when to open the one contact.

5,633,775

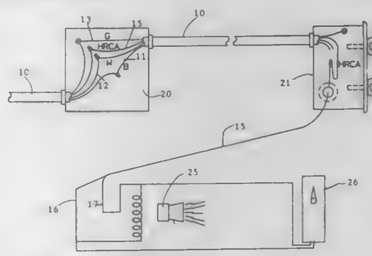
FIRE SENTRY POWER CABLE

David F. Scarelli, 193 Alpine Knoll, Fairport, N.Y. 14450

Filed May 14, 1996, Ser. No. 645,528

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—103 **2 Claims**



1. A power cable, including:

conductor wires encased in insulation;

a separate heat responsive cable encased in said insulation along the length of said conductor wires, said heat responsive cable including a pair of wires each coated with a heat sensitive

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dielectric material, said heat responsive cable including sections in which said wires are helically wound on each other, alternating with sections of straight wire to facilitate separation of ends of said wires upon cutting said cable:

said ends being adapted for connection to an alarm and to a main power switch in a normally open safety circuit;

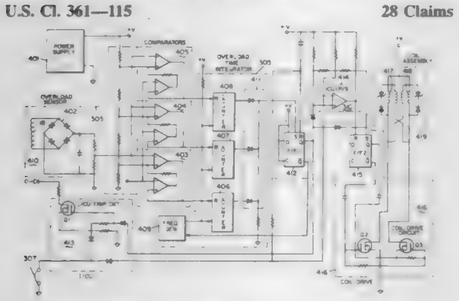
said dielectric material on said wound wires being subject to vaporization, in response to heat from a fault in said power cable, to connect said wound wires and close said safety circuit.

5,633,776

CIRCUIT BREAKER

Gheorghe J. Juncu, Fullerton; Steven V. Snead, and Dan M. Culbertson, both of Anaheim, all of Calif., assignors to Babcock, Inc., La Mirada, Calif.

Filed Jul. 24, 1995, Ser. No. 506,390
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—115 **28 Claims**



1. A circuit breaker comprising,

current sensing means for producing a sensor signal representative of a current value in a current path,

reference signal producing means for producing at least one reference signal,

comparator means for comparing said reference signal with said sensor signal,

said comparator means operative to produce an error signal when said sensor signal differs from said reference signal,

frequency generator means for producing a frequency signal,

counter means connected to said frequency generator means and to said comparator means,

said counter means operative to receive and count said frequency signal when said comparator produces said error signal,

said counter means operative to produce a counter signal when said counter means has counted a prescribed number of said frequency signals,

latch circuit means connected to said counter means to receive said counter signal and produce a first latch signal in response thereto,

logic circuit means connected between said counter means and said latch circuit means, and

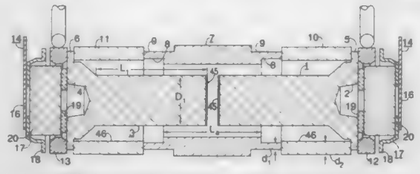
switch means connected to said latch circuit means to receive said first latch signal whereby said switch means is operated to interrupt said current path.

5,633,777

GAS-FILLED, THREE-ELECTRODE OVERVOLTAGE SURGE ARRESTER FOR LARGE SWITCHING CAPACITIES

Jürgen Boy, and Gerhard Lange, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 13, 1995, Ser. No. 542,850
Claims priority, application Germany, Oct. 13, 1994, 44 37 817.3; Nov. 30, 1994, 44 44 515.6
Int. Cl.[6] H02H *1/00*
U.S. Cl. 361—17 **10 Claims**



1. A gas-filled overvoltage surge arrester, comprising:

a) two cylindrical end electrodes being made of copper, each having a flange-like base, and axially opposing one another, wherein a cylindrical section (L_1, D_1) of each of the end electrodes has a volume of at least 60 mm^3, and an axial length (L_1) of the cylindrical section is smaller than 2.5-times its diameter (D_1);

b) a middle electrode being made of copper, surrounding the two end electrodes over one section of their axial length, wherein the middle electrode has a hollow cylindrical design; and

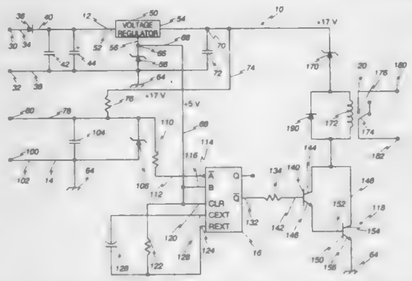
c) two hollow cylindrical insulators, each having a wall thickness of about 1 mm, and being disposed between the middle electrode and the bases of the end electrodes, wherein the middle electrode and the two hollow cylindrical insulators are soldered to one another at the front ends, an inner surface area of the middle electrode being provided in regions bordering the two insulators in each case with a radial graduation, and the middle electrode having a wall thickness (d_1) in the area of the soldered connection points, which amounts at the most to 60% of the wall thickness (d_3) of the insulators.

5,633,778

INFRARED SIGNAL INTERFACE FOR USE WITH BARRIER DOOR OPERATOR

James S. Chang, Arlington Heights, and Russell L. Powers, Willowbrook, both of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.

Continuation of Ser. No. 187,858, Jan. 28, 1994, abandoned. This application Jul. 31, 1995, Ser. No. 510,637
Int. Cl.[6] E05F *15/20*
U.S. Cl. 361—173 **6 Claims**



1. An infrared signal interface for translating infrared signals from an infrared obstacle detector into an edge detector obstacle signal for a barrier door operator having edge detector leads, comprising:

means for providing power to the infrared obstacle detector;

means for receiving pulsed infrared signals indicative of both proper functioning of the infrared obstacle detector and detection of no obstacle by the infrared obstacle detector;

timer means responsive to said infrared signal pulses for providing a missing pulse output signal when said infrared signal pulses are absent for a predetermined time; and

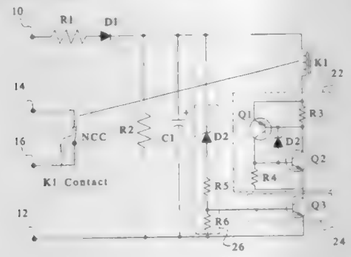
circuit closure means responsive to said missing pulse output signal for closing a current path between the edge detector leads of the barrier door operator.

5,633,779

RELAY CONTROL CIRCUIT AND METHOD FOR CONTROLLING A RELAY

David W. Knoble, Tupelo; Khosrow Jamasbi, Belden, both of Miss., and James V. Olson, Indianapolis, Ind., assignors to Thomas Lighting, Tupelo, Miss.

Filed May 1, 1995, Ser. No. 432,266
Int. Cl.[6] H01H *47/32*
U.S. Cl. 361—187 **15 Claims**



1. A relay control circuit for controlling a relay having a coil, comprising:

an input for receiving a control voltage signal;

a voltage storage element connected across said input, said voltage storage element developing a voltage level as a function of time in response to said control voltage signal;

a thyristor circuit, a switching element and the coil of the relay forming a series circuit that is connected in parallel to said voltage storage element;

a switch controller connected in parallel to said voltage storage element and also connected to said switching element;

responsive to said control voltage being received at said input, said switch controller activating said switching element to a conductive state at a first voltage level across said voltage storage element and said thyristor changing from a non-conductive state to a conductive state at a second voltage level across said voltage storage element, said first voltage level being less than said second voltage level;

responsive to said control voltage being removed from said input, said switch controller activating said switching element to a non-conductive state at a third voltage level across said voltage storage element thereby changing said thyristor from the conductive state to the non-conductive state thereof, said third voltage level being less than said second voltage level; and

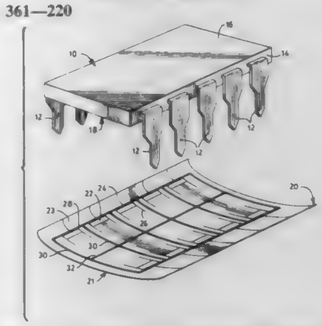
wherein said relay is energized at said second voltage level and is deenergized at said third voltage level.

5,633,780

ELECTROSTATIC DISCHARGE PROTECTION DEVICE

David V. Cronin, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 361,426, Dec. 21, 1994, Pat. No. 5,583,733. This application Apr. 18, 1996, Ser. No. 634,170
Int. Cl.[6] H01H *47/00*
U.S. Cl. 361—220 **6 Claims**



1. A method for fabricating an electrostatic discharge protection device for use with a semiconductor chip package of a type having a top surface and an opposite bottom surface and a plurality of lateral surfaces integral with said top and bottom surfaces where the semiconductor chip package has extending therefrom a plurality of connector pins disposed in a spaced apart relationship with respect to each other for insertion into a mating receptacle, said method comprising

stamping a base to form a plurality of apertures corresponding to the plurality of connector pins such that the at least one row of connector pins pass through the plurality of apertures and to form one or more cuts in the base transverse to the central axis of the base such that an area surrounding each of the plurality of apertures is free to move at an angle relative to a plane of the base;

depositing a conductive material on said base to provide electrical communication between outer portions of the plurality of apertures; and

shaping said base to have a resilient bias to urge the outer portions of the plurality of apertures into contact with the connector pins such that the electrostatic discharge protection device has an operative position for connecting a shunt across selected pins of the connector pins and has an inoperative position for disconnecting said shunt to provide electrical isolation between the connector pins where insertion of said semiconductor chip package into said mating receptacle moves the base into the inoperative position by overcoming the inward bias and removal of the semiconductor chip package from the mating receptacle automatically moves the base into said operative position.

5,633,781

ISOLATED SIDEWALL CAPACITOR HAVING A COMPOUND PLATE ELECTRODE

Katherine L. Saenger, Ossining, and David E. Kotecki, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,168
Int. Cl.[6] H01K *1/16*
U.S. Cl. 361—321.4 **49 Claims**

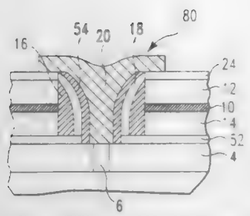
31. A capacitor structure, comprising:

a substrate having at least one layer of dielectric material thereon;

a first conductor on top of the substrate;

a first non-conductor on top of and in register with the first conductor, the first conductor and first non-conductor having a first opening formed therein;

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a second non-conductor on top of and in register with the first non-conductor

a second conductor, in electrical contact with the first conductor, formed on the sidewalls of the first opening;

a non-conductive sidewall spacer formed in the first opening and contacting the second conductor, the non-conductive sidewall spacer having a second opening formed therein; and

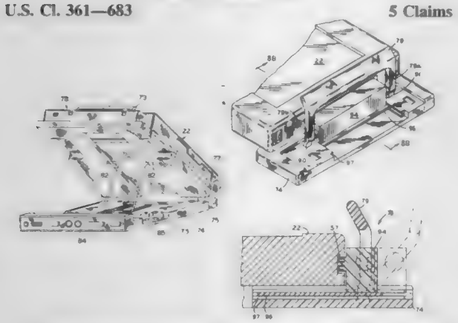
a third conductor formed in the second opening.

5,633,782

DOCKING STATION FOR A PORTABLE COMPUTER WITH A HINDGED SUPPORT FRAME AND MOVABLE RECEPTACLE ASSEMBLY

Walter A. Goodman, Binghamton; Charles R. Hatton, Endicott; John H. Sherman, Glen Aubrey, and Paul A. Wormsbecher, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 303,916, Sep. 9, 1994, Pat. No. 5,552,957.
This application Feb. 7, 1996, Ser. No. 597,965
Int. Cl.° H05K *7/00*
U.S. Cl. 361—683 **5 Claims**



1. A positioning structure for a portable computer comprising:

a base member;

a support frame hinged at one end to one end of said base member for supporting said portable computer, including at said one end a pair of right angle supports for bearing against corners of said portable computer, said support frame being positionable at a desired angle with respect to said base member;

a receptacle assembly mounted to an opposite end of said support frame, including a multiple pin receptacle which receives a corresponding connector of said computer, said receptacle being movable from a first non-engagement position to a second engagement position which forces said computer against said right angle supports; and

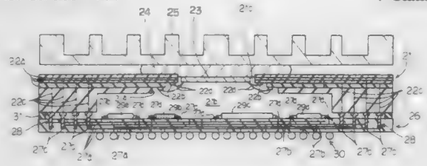
an input/output port on said base member connected to said receptacle for providing input/output functions for said portable computer.

5,633,783

MULTI-CHIP CERAMIC MODULE FOR MOUNTING ELECTRIC PARTS ON BOTH SUBSTRATE AND CAP CONNECTED THROUGH INTERCONNECTING PINS

Takesi Yamamoto, Kumamoto, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 29, 1995, Ser. No. 537,248
Claims priority, application Japan, Sep. 29, 1994, 6-235149
Int. Cl.° H05K *7/20*
U.S. Cl. 361—704 **7 Claims**



1. A multi-chip module comprising:

a first insulating substrate having a first surface, a second surface reverse to said first surface and an inner surface forming a hollow space open to said second surface, said hollow space having a first hollow sub-space open to said second surface and a second hollow sub-space narrower than said first hollow sub-space and contiguous to a central area of said first hollow sub-space;

a second insulating substrate having a third surface and a fourth surface reverse to said third surface, said third surface being connected to said second surface so as to close said hollow space therebetween;

a first wiring means formed at said first insulating substrate and having portions exposed to said second surface and portions exposed at said hollow space;

a second wiring means formed at said second insulating substrate and having portions exposed to said third surface and portions exposed to said fourth surface;

some of said portions of said first and second wiring means including contact pads;

at least one first electric part accommodated in said second hollow sub-space and electrically connected to said portions of said first wiring means exposed at said hollow space;

a plurality of input-and-output means provided on said fourth surface and connected to said portions of said second wiring means exposed to said fourth surface;

a plurality of conductive connecting means connected between said portions of said first wiring means exposed to said second surface and said portions of said second wiring means exposed to said third surface, said conductive connecting means including a plurality of interconnecting pins soldered to one of said first wiring means having portions exposed to said second surface and said second wiring means having portions exposed to one of said second surface and said third surface and respectively held in contact with respective contact pads of the other of said first wiring means and said second wiring means, one of said first insulating substrate and said second insulating substrate having a plurality of holes open to one of said third surface and said second surface, said respective contact pads being mounted in respective ones of said plurality of holes, said plurality of interconnecting pins being respectively inserted into said plurality of holes so as to be held in contact with said contact pads mounted in said plurality of holes, respectively; and

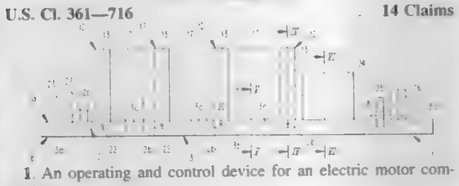
at least one second electric part mounted on said third surface and connected to said portions of said second wiring means exposed to said third surface.

5,633,784

APPARATUS FOR CONTROLLLING AND OPERATING AN ELECTRIC MOTOR, FOR EXAMPLE IN AN AUTOMOBILE

Joel Bouton, Eragny sur Oise, France, assignor to Automobiles Peugeot, Paris, and Automobiles Citroen, Neuilly sur Seine, both of France

Filed Feb. 23, 1995, Ser. No. 393,275
Claims priority, application France, Feb. 28, 1994, 94.02275
Int. Cl.° H05K *7/20*
U.S. Cl. 361—716 **14 Claims**



1. An operating and control device for an electric motor comprising:

a plurality of electrical elements;

a support supporting the plurality of electrical elements, the support including a metal part and an insulating part;

a network of conduits formed in the metal part conveying a cooling fluid to the electrical elements;

electrical links housed in the insulating part connecting the electrical elements to an energy source;

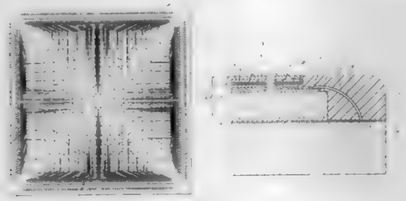
wherein the support has a substantially planar top support surface, and wherein the insulating part and the metal part both form a part of the top support surface.

5,633,785

INTEGRATED CIRCUIT COMPONENT PACKAGE WITH INTEGRAL PASSIVE COMPONENT

Robert H. Parker, Oakton, Va., and Richard J. Pommer, Canyon, Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Dec. 30, 1994, Ser. No. 367,460
Int. Cl.° H05K *1/16;* **H01L** *29/8605;29/92*
U.S. Cl. 361—766 **24 Claims**



1. A high-performance, high-density integrated circuit (IC) component package comprising:

an IC chip having a plurality of IC bond pads extending along an outer periphery of said IC chip;

an interconnect substrate bonded to said IC chip with a die attach, said interconnect substrate being mounted as an integral part of the component package and providing structural support to the component package, said interconnect substrate including:

a plurality of I/O surface pads arrayed across a surface of said interconnect substrate, said I/O surface pads being electrically connected to said IC bond pads via a plurality of traces internal to said interconnect substrate;

at least one layer comprising capacitive, resistive or inductive material integrally formed within said interconnect substrate, said at least one layer comprising capacitive material having a capacitance between 20 pF and 0.1 μF, said at least one layer comprising resistive material having a resistance between 25Ω and 200 kΩ, said at least one layer comprising inductive material having an inductance between 1 nH and 1,000 nH; and

distinguishable power and ground planes integrally formed within said interconnect substrate; and

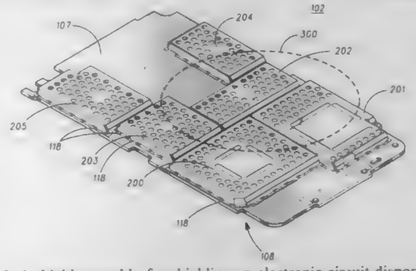
a plurality of wire bonds between said traces and said IC bond pads.

5,633,786

SHIELD ASSEMBLY AND METHOD OF SHIELDING SUITABLE FOR USE IN A COMMUNICATION DEVICE

Scott W. Matuszewski, Lake Zurich; Jin W. Lee, Buffalo Grove; John F. Hannon, Gurnee, and Martin J. Kimbell, Round Lake Beach, all of Ill., assignors to Motorola, Schaumburg, Ill.

Filed Aug. 21, 1995, Ser. No. 517,496
Int. Cl.° H05K *9/00*
U.S. Cl. 361—818 **20 Claims**



1. A shield assembly for shielding an electronic circuit disposed on a substrate, the shield assembly comprising:

a plurality of consecutive traces disposed on the substrate about the electronic circuit; and

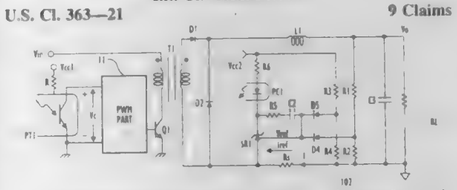
a first shield having a first plurality of consecutive leads for attachment to the plurality of consecutive traces, at least some of the first plurality of consecutive leads being attached to nonconsecutive ones of the plurality of consecutive traces.

5,633,787

SWITCH-MODE POWER SUPPLY WITH CONTROL OF OUTPUT SUPPLY VOLTAGE AND OVERCURRENT

Ui H. Song, Kyungi-do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 21, 1995, Ser. No. 505,736
Claims priority, application Rep. of Korea, Jul. 21, 1994, P94-17598
Int. Cl.° H02M *3/335*
U.S. Cl. 363—21 **9 Claims**



1. A switch-mode power supply having a switch-mode supply voltage conversion means for converting an input AC supply voltage into a DC supply voltage, the power supply comprising:

a first supply voltage conversion means for controlling said input AC supply voltage applied to said switch-mode supply voltage conversion means;

a second supply voltage conversion means for providing a converted supply voltage corresponding to a signal applied by said first supply voltage conversion means; and

a control means having a sensing means, coupled to said second supply voltage conversion means, for simultaneously sensing

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a converted output supply voltage level from said second supply voltage conversion means and an output supply current according to said converted output supply voltage level, said control means sensing said converted output supply voltage and said output supply current simultaneously or separately and providing a control signal corresponding to said converted output supply voltage and said output supply current, said control means being coupled to said first supply voltage conversion means and controlling said first supply voltage conversion means according to said control signal.

5,633,788

POWER CONVERTER CONTROL SYSTEM

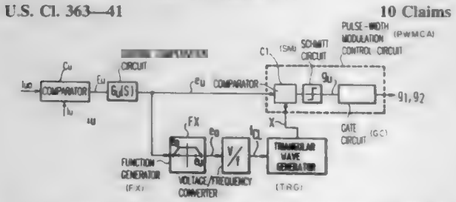
Shigeru Tanaka, and Kazutoshi Miura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 187,490, Jan. 28, 1994, abandoned. This application May 15, 1996, Ser. No. 648,396

Claims priority, application Japan, Feb. 4, 1993, 5-017267; Mar. 2, 1993, 5-041468

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—41 **10 Claims**



1. A control system for a pulse-width modulation controlled power converter, said power converter being composed of self-turn-off devices, said control system comprising:

voltage command value generating means for generating a voltage command value for an output of said power converter;

carrier wave generator means for generating a carrier wave with a frequency;

correction means for correcting said frequency of said carrier wave to generate as corrected carrier wave; and

gate pulse signal generating means for receiving a first signal and a second signal as two input signals and for comparing said first signal with said second signal to generate gate pulse signals to said self-turn-off devices for controlling said output voltage of said power converter based on a comparison result;

said voltage command value being taken as e ($-1 \leqq e \leqq +1$), and a level setting value being taken as E_a ($0 < E_a < 1$);

said gate pulse signal generating means receiving said voltage command value as said first signal and said carrier wave as said second signal when $-E_a \leqq e \leqq +E_a$; and

said gate pulse signal generating means receiving said voltage command value as said first signal and said corrected carrier wave as said second signal when $e < -E_a$ or $+E_a < e$.

5,633,789

FAILURE-FREE POWER SOURCE DEVICE

Takumi Kimura; Katsunori Akaba; Fumihiko Hiratsuka, and Takaaki Sato, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 344,673

Claims priority, application Japan, Nov. 24, 1993, 5-292310

Int. Cl.[6] H02H *7/10*

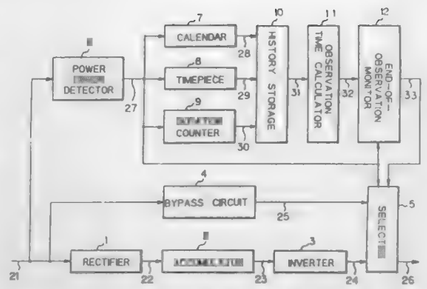
U.S. Cl. 363—50 **19 Claims**

1. A failure-free power source device comprising:

a rectifier for converting input AC power to first DC power;

an accumulator for accumulating said first DC power to prepare for a discharge at the time of a power failure, while outputting second DC power;

an inverter for converting said second DC power to AC power to thereby output an inverter signal;



power error detecting means for receiving said input AC power and for detecting an error in said input AC power and outputting a power error signal in response to said detection;

end-of-observation monitoring means, having means for receiving a sequential plurality of said power error signals, for outputting a switching signal in response to a power error signal received subsequent to said sequential plurality, and for terminating said switching signal in response to not receiving a further subsequent power error signal for an observation time duration, said observation time duration based on said received sequential plurality of said power error signals; and

selecting means for outputting, on receiving at least one of said power error signal and said switching signal, said inverter output as an AC output and for outputting, when neither said power error signal nor said switching signal appears, said input AC power as said AC output.

5,633,790

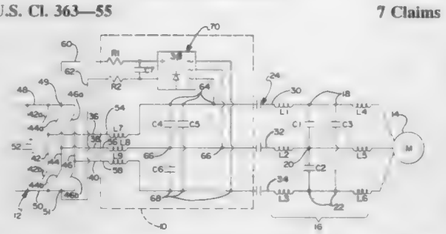
DV/DT LIMITING OF INVERTER OUTPUT VOLTAGE

David J. Gritter, Racine, and Jeffrey A. Reichard, Elm Grove, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 18, 1995, Ser. No. 374,013

Int. Cl.[6] H02P *5/34*

U.S. Cl. 363—55 **7 Claims**



1. A voltage limiting circuit for use with an inverter-driven induction motor system, said limiting circuit being electrically coupled between said inverter and motor and comprising:

a plurality of input lines for receiving an ac electrical signal from said inverter;

a plurality of inductors, at least one said inductor connected on each said input line;

a rectifier having a plurality of output lines adapted to return dc signals to said inverter; and

a plurality of capacitors connected in a delta configuration between said inductors and said rectifier.

5,633,791

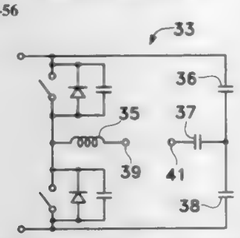
DOUBLE MODULATION CONVERTER

Franki N. K. Poon, Flat 17, 12/F, Chung Yew Building, No. 75, Kok Cheung Street, Tai Kok Tsui, Kowloon, Hong Kong, and Bryan M. H. Pong, Room 1616, Block D, Kornhill, Quarry Bay, Hong Kong

Filed Apr. 26, 1995, Ser. No. 427,876

Int. Cl.[6] H02H *7/122*

U.S. Cl. 363—56 **6 Claims**



1. A circuit for driving a power converter, the circuit comprising:

a first input terminal and a second input terminal for connection to a DC voltage source;

a first output terminal and a second output terminal for connection to a power converter;

a plurality of circuit control terminals for receiving a plurality of control waveforms which cause a bipolar stream of pulses to appear at the output terminals when a load is connected across the output terminals, the width and the amplitude of the pulses being modulated;

first and second switches, each switch having first and second switch terminals and a control terminal, the first switch terminal of the first switch being connected to the first input terminal, the second switch terminal of the second switch being connected to the second input terminal, the second switch terminal of the first switch being connected to the first switch terminal of the second switch;

a first output line connecting the first output terminal to the second switch terminal of the first switch;

a second output line connecting the second output terminal to the second switch terminal of the second switch;

a first circuit control terminal connected to the control terminal of the first switch;

a second circuit control terminal connected to the control terminal of the second switch;

the first and second switches periodically and alternately closing, the closure of the first switch causing a pulse having a first width and a first amplitude to appear across the output terminals, the closure of the second switch causing a pulse having a second width and a second amplitude to appear across the output terminals, the first and second widths being different in magnitude;

a capacitor and an inductor connected in series, the series combination being connected across the output lines.

5,633,792

PULSE WIDTH ROTARY INVERTER

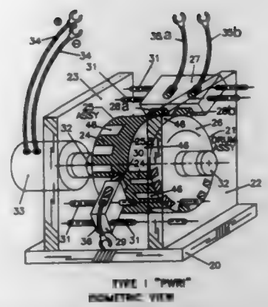
John C. U. Massey, 22262 Davenrich St., Toro Park/Salinas, Calif. 93908

Filed May 1, 1995, Ser. No. 432,060

Int. Cl.[6] H02M *7/60;* **H02K** *9/00*

U.S. Cl. 363—109 **5 Claims**

1. A rotary inverter capable of converting a D.C. power source of not less than one Kilowatt to an A.C. output power, by generating a variable pulse train electro-mechanically, and said rotary type inverter comprising a D.C. motor driven Pure Sine Wave generating rotating drum assembly which comprises a solid electrically insulating drum material; upon and around part of this drum is embedded a smooth electrically conductive surface with a specific contour or pattern cut, and this conductive shell is made up of a 360 degree slip ring in the center and two contiguous adjoining parts, each one covering 180 degrees of the said drum, and patterned with segments having each a specific circumferential width and also with each having a specific non-conducting smooth space between each segment; and riding over this said sine wave drum assembly are electrical brush collectors, one brush riding over the central slip ring, brings in the D.C. input source voltage, while the other two brushes, riding over the segmented surfaces, alternately collect and give out the A.C. output power.



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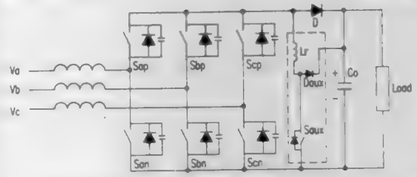
SOFT SWITCHED THREE-PHASE BOOST RECTIFIERS AND VOLTAGE SOURCE INVERTERS

Fred C. Lee, Blacksburg, Va., and Yimin Jiang, Plano, Tex., assignors to Center for Innovative Technology, Herndon; Virginia Tech Intellectual Properties, Inc., and Virginia Polytechnic Institute and State University, both of Blacksburg, all of Va.

Filed Jan. 23, 1995, Ser. No. 376,365

Int. Cl.[6] H02M *7/5387;7/217*

U.S. Cl. 363—127 **6 Claims**



1. A three-phase boost rectifier for converting a three-phase alternating current power supply to a direct current power supply, comprising:

a three-phase alternating current power input;

a switching bridge connected between said alternating power input and a direct current rail output, said switching bridge comprising a plurality of switches each having an anti-parallel diode associated therewith;

a direct current rail diode connecting said switching bridge and said direct current rail output, said direct current rail diode being faster than said anti-parallel diodes; and

an auxiliary circuit connected across said switching bridge for achieving zero-voltage-transition, said auxiliary circuit comprising:

a resonant inductor and an auxiliary diode connected in series across said direct current rail diode; and

an auxiliary switch having a first pole connected between said resonant inductor and said auxiliary diode and a second pole connected to ground.

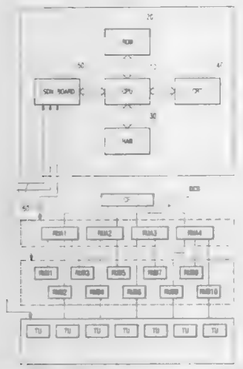
VOL 1198 ISS 4 MY 27 1997 UMI

5,633,794

DATA COMMUNICATION SYSTEM CAPABLE OF BYPASSING MALFUNCTIONING RELAY UNITS

Jing Yang, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, and Xing Inc., both of Nagoya, Japan

Filed Jan. 12, 1995, Ser. No. 371,745
Claims priority, application Japan, Jan. 12, 1994, 6-001673
Int. Cl.[6] H04Q *11/00*; **G06F** *9/00*
U.S. Cl. 364—140 **21 Claims**



1. A communication control unit for a data communication system having a network comprising a central facility, a plurality of relay units, and a plurality of terminal units, wherein bi-directional data communication is established between at least one of said central facility and each of said plurality of relay units, two of said plurality of relay units, and each of said plurality of relay units and each of said plurality of terminal units, and wherein at least one of said plurality of relay units relays down-stream data originated from said central facility to a designated terminal unit or up-stream data originated from said designated terminal unit to said central facility, the communication control unit comprising:

reception means for receiving traffic information from each of said plurality of relay units, said traffic information representative of a condition of data communication;

threshold value storage means for storing at least one predetermined threshold value, each predetermined threshold value corresponding to at least one of said plurality of relay units;

high-load determining means for comparing, for at least one of said plurality of relay units, said traffic information received through said reception means with a corresponding one of the at least one threshold value stored in said threshold value storage means and for determining whether the at least one relay unit is in a high-load condition;

detection means for detecting relay units and terminal units that are scheduled to send the data to a high-load relay unit which is determined by said high-load determining means to be in the high-load condition; and

setting means for setting at least one alternative relay unit for the high-load relay unit, said relay units and terminal units sending the data to said at least one alternative relay unit instead of said high-load relay unit.

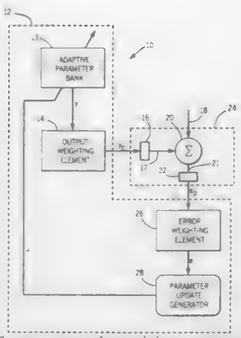
5,633,795

ADAPTIVE TONAL CONTROL SYSTEM WITH CONSTRAINED OUTPUT AND ADAPTATION

Steven R. Popovich, Stoughton, Wis., assignor to Digisonix, Inc., Middleton, Wis.

Filed Jan. 6, 1995, Ser. No. 369,925
Int. Cl.[6] G05B *13/02*; **H03B** *29/00*
U.S. Cl. 364—148 **45 Claims**

1. An adaptive tonal control system having a system input and a system output, the adaptive tonal control system comprising:



a plurality of actuators each receiving a correction signal and outputting a secondary input, the secondary inputs combining with the system input to yield the system output;

a plurality of error sensors sensing the system output, each error sensor generating an error signal that can be used to update adaptive parameters; and

an adaptive controller that outputs the correction signals, the controller having

an adaptive parameter bank that outputs a plurality of output signals in accordance with adaptive parameters,

a C model of a path between the output of the adaptive controller and the error sensors, the C model having an effective range and an effective null space, and

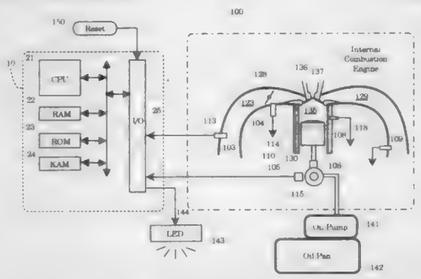
an output weighting element that inputs the output signals from the parameter bank and weights the output signals to generate correction signals which are constrained to diminish components in the effective null space of the C model.

5,633,796

METHOD AND APPARATUS FOR INFERRING ENGINE OIL TEMPERATURE FOR USE WITH AN OIL CHANGE INDICATOR

Michael J. Cullen, Northville, and Stephen B. Zulczyk, Novi, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 12, 1994, Ser. No. 353,605
Int. Cl.[6] F01M *11/00*
U.S. Cl. 364—424.035 **12 Claims**



9. In a vehicle which includes lubricating oil for lubricating engine components, an oil change indicator which provides an operator of the vehicle of the expiration of an oil change interval, and a means for generating an oil change reset signal which causes initiation of said oil change interval, a system for informing an operator of the vehicle of the expiration of said oil change interval, comprising, in combination:

means for initializing an oil quality value, which is indicative of the efficacy of said oil;

means for inferring the temperature of said oil as a function of a first value indicative of the rotational speed of the engine, a second value indicative of aircharge entering an intake manifold of the engine, and a third value indicative of engine coolant temperature; and

means for periodically altering, upon the passage of a variable number of engine revolutions, said oil quality value, comprising,

means, responsive to said oil temperature for generating an oil stress value which is indicative of a rate at which the oil degrades;

means for altering said oil quality value as a function of said oil stress value and a value indicative of said variable number of engine revolutions;

means for comparing said altered oil quality value to a predetermined quality value, which is indicative of a predetermined maximum oil life; and

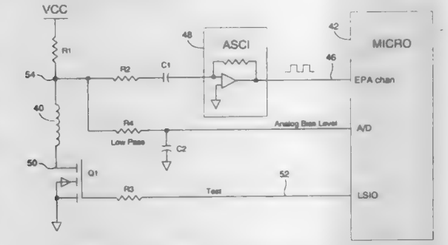
means for providing a first indication to said vehicle operator if said altered oil quality value indicates an effective oil life which is greater than an oil life indicated by said predetermined quality value.

5,633,797

METHOD AND SYSTEM FOR TESTING A WHEEL SPEED SENSOR INPUT CIRCUIT IN AN ABS AND/OR TC SYSTEM

Edward R. Hornback, Dexter, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Feb. 14, 1995, Ser. No. 388,556
Int. Cl.[6] G06F *11/00*
U.S. Cl. 364—424.034 **2 Claims**



2. A system for testing a wheel speed sensor input circuit including a wheel speed sensor in an ABS and/or TC system, the system comprising:

a) means for generating a test signal having a plurality of different frequencies within a range of frequencies;

b) means for coupling the test signal to the input circuit to cause the input circuit to generate a simulated wheel speed signal;

c) means for computing a plurality of simulated wheel speeds based on the simulated wheel speed signal; and

d) means for comparing each simulated wheel speed with its corresponding predetermined frequency of the test signal to determine if the wheel speed sensor input circuit is operating correctly wherein the test signal coupled to the input circuit causes a bias of the wheel speed sensor to alternate between high and low voltage levels at each of the plurality of different frequencies.

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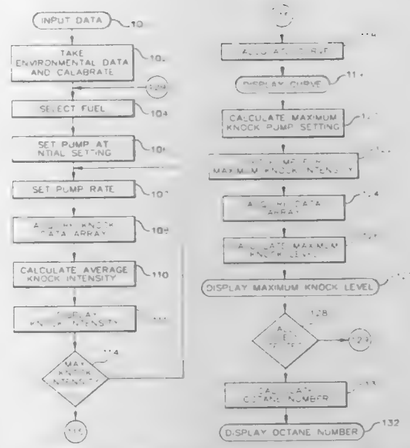
METHOD AND APPARATUS FOR MEASURING OCTANE NUMBER

Vance R. Kopp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 13, 1995, Ser. No. 423,074
Int. Cl.[6] G06F *19/00*; **G01N** *33/22*
U.S. Cl. 364—431.08 **5 Claims**

1. A computer implemented method for determining the octane number of a test fuel comprising the steps of:

(a) inputting data characterizing a first reference fuel and a second reference fuel into a computer;



(b) sending a first signal from said computer to a selector valve operationally connected to said computer so that upon receiving said first signal said selector valve changes to a first position in which said first reference fuel is introduced to a variable flow pump in fluid flow communication with an engine so that fluid introduced to said variable flow pump is introduced to said engine at a flow rate wherein said variable flow pump is operationally connected to said computer such that said computer can send a flow signal to said variable flow pump and thereby change said flow rate;

(c) determining the maximum knock level for said first reference fuel;

(d) sending a second signal from said computer to said selector valve so that upon receiving said second signal said selector valve changes to a second position in which said second reference fuel is introduced to said variable flow pump;

(e) determining the maximum knock level for said second reference fuel;

(f) sending a third signal from said computer to said selector valve so that upon receiving said third signal said selector valve changes to a third position in which a test fuel is introduced to said variable flow pump;

(g) determining the maximum knock level of said test fuel; and

(h) calculating a test fuel octane number for said test fuel by linear interpolation using said test fuel's maximum knock level, said first reference fuel's maximum knock level and said second reference fuel's maximum knock level; and

(i) displaying said test fuel octane number;

wherein said determining of each maximum knock level comprises:

sending a series of flow signals to change said fuel flow rate so that each fuel is delivered for combustion within said engine at a plurality of flow rates starting at a predetermined initial flow rate and changing the flow rate towards a flow rate that is likely to produce the maximum knock level;

sending, at each flow rate, a pressure signal from said engine to said computer wherein said pressure signal is representative of the rate of change of the cylinder pressure in said engine during the combustion of fuel within said engine;

acquiring at each flow rate a plurality of data arrays in response to said pressure signal wherein said plurality of data arrays contain data centered about the combustion part of the cycle of said engine;

calculating an average knock intensity from said plurality of data arrays for each flow rate;

comparing said average knock intensity for each flow rate, other than said initial flow rate, to said average knock intensity obtained for the previous flow rates to determine

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if a maximum average knock intensity for said plurality of flow rates has been found;

calculating thereafter a polynomial expression for the distribution of said average knock intensity for said plurality of flow rates;

calculating the maximum knock intensity value of said polynomial expression and obtaining a corresponding flow rate for the fuel;

adjusting said flow rate to said corresponding flow rate;

acquiring said plurality of data arrays for said corresponding flow rate; and

calculating a maximum knock level from said plurality of data arrays for said corresponding flow rate.

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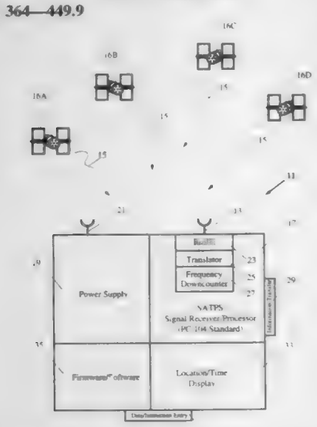
COMBINED PC/104 AND SATELLITE POSITIONING SYSTEM

William O. Dussell, Pescadero, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 69,142, May 28, 1993, abandoned. This application Aug. 12, 1994, Ser. No. 289,916

Int. Cl.[6] G01S *5/00*

U.S. Cl. 364—449.9 **4 Claims**



1. Apparatus for determining the present value of at least one Location Coordinate of an observer located in the vicinity of the Earth's surface, the apparatus comprising:

a PC/104/SATPS Card, that receives and processes Satellite Positioning System (SATPS) signals from one or more SATPS satellites, where the PC/104/SATPS Card is built according to the following standards:

the PC/104/SATPS Card provides at least one of 8-bit signal processing and 16-bit signal processing, and the Card complies with the I.E.E.E. P996 Standard for a personal computer bus and a card that includes this bus and a personal computer, with the following changes in the I.E.E.E. P996 Standard:

the physical size of the PC/104/SATPS Card is about 9 cm by 9.5 cm by 1.5 cm;

the PC/104/SATPS Card has a first bus connection group having about 64 electrical connection pins and a second bus connection group having about 40 electrical connection pins;

the PC/104/SATPS Card includes at least two signal processing modules that are self-stacking when assembled together, and each module consumes at most about 2 Watts of power; and

four electrical signals generated on the PC/104/SATPS Card each require a maximum of about 20 milliamps of drive current, and all other signals generated on the Card require drive currents of at most about 6 milliamps;

an SATPS antenna positioned on the PC/104/SATPS Card to receive SATPS signals from one or more SATPS satellites, with each signal being characteristic of a particular satellite, and to issue these signals as antenna output signals;

a radiofrequency downconverter positioned on the PC/104/SATPS Card to receive the antenna output signals, to convert the primary frequency of each of these signals to a selected lower frequency, and to issue these down-converted signals as downconverter output signals;

a programmed digital signal processor and associated memory positioned on the PC/104/SATPS Card to receive the down-converter output signals corresponding to each SATPS signal received by the antenna, to determine the present value of at least one Location Coordinate for the antenna, and to issue this Location Coordinate present value as a processor output signal; and

an information transfer module positioned on the PC/104/SATPS Card to receive the digital signal processor output signal and to transmit this output signal to an electronic device that is linked to the PC/104/SATPS Card, for further signal processing of the present value of at least one Location Coordinate for the antenna.

5,633,800

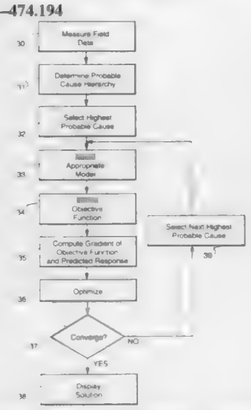
INTEGRATED MODEL-BASED REASONING/EXPERT SYSTEM DIAGNOSIS FOR ROTATING MACHINERY

Raymond J. Bankert, Clifton Park; Imdad Imam, Schenectady, and Harindra Rajiyah, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 21, 1992, Ser. No. 964,168

Int. Cl.[6] G07C *3/14*

U.S. Cl. 364—474.194 **9 Claims**



1. A method of diagnosing mechanical problems in rotating machinery, said method comprising the steps of:

measuring the actual response in the machinery to be diagnosed;

determining a probable cause of the mechanical problem based on the actual response;

selecting a model of the machinery based on the probable cause;

determining a predicted response from the model; and

modifying the model so that the difference between the predicted response and the actual response is minimized, thereby identifying the mechanical problem.

5,633,801

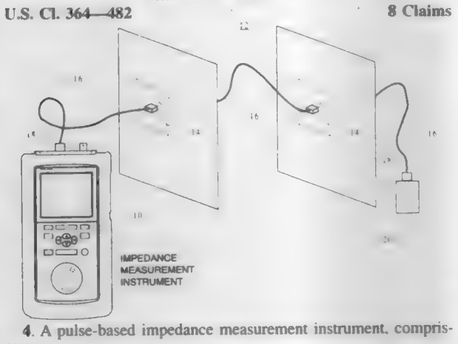
PULSE-BASED IMPEDANCE MEASUREMENT INSTRUMENT

Jeffrey S. Bottman, Seattle, Wash., assignor to Fluke Corporation, Everett, Wash.

Filed Oct. 11, 1995, Ser. No. 540,927

Int. Cl.[6] G01R *27/16*

U.S. Cl. 364—482 **8 Claims**



4. A pulse-based impedance measurement instrument, comprising:

(a) an instrument connector for coupling to a device under test;

(b) a pulse generator coupled to said instrument connector for repetitively generating stimulus pulses across said device under test;

(c) a digital sampling circuit coupled to said instrument connector for repetitively sampling a response signal from said device under test at selected time delays from said stimulus pulse and providing digital measurement values;

(d) an acquisition memory coupled to said digital sampling circuit for receiving said digital measurement values, said acquisition memory storing said digital measurement values in memory locations corresponding to said selected time delays to build a time record of said response signal;

(e) a microprocessor coupled to said acquisition memory to receive said time record, wherein said microprocessor:

performs a fast Fourier transform on said time record to obtain a frequency domain representation, and

calculates a set of complex impedance values of said device under test using said frequency domain representation and a set of calibration constants derived from measurements of a set of calibration resistors; and

(f) a display coupled to said microprocessor to visually display said set of complex impedance values.

5,633,802

APPARATUS AND METHOD FOR THREE-DIMENSIONAL POWERLINE DESIGNING

Philip G. Thompson, Temecula, Calif., and Timothy Pilgrim, Dublin, Ireland, assignors to Calligraphic Systems Limited, Dublin, Ireland

Continuation of Ser. No. 265,633, Jun. 24, 1994, Pat. No. 5,574,633, which is a continuation of Ser. No. 741,114, Aug. 5, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,572

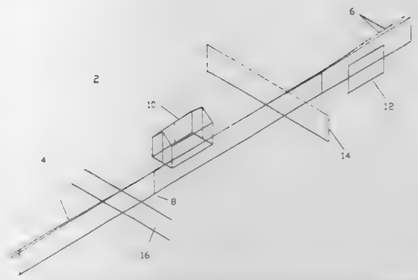
Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—483 **14 Claims**

1. A computerized apparatus for erecting and maintaining a powerline having a plurality of conductors, the apparatus comprising:

means for inputting position and condition data in three dimensions pertaining to a geographical position and a condition of components of the powerline erected at a powerline site; and

computing means for receiving said inputted three-dimensional position and condition data at the powerline site and determining, at the powerline site, in three dimensions, a tension of at least one of the powerline conductors based upon said inputted data and data stored in memory of said computing means relating to characteristics of said powerline conductor.



5,633,803

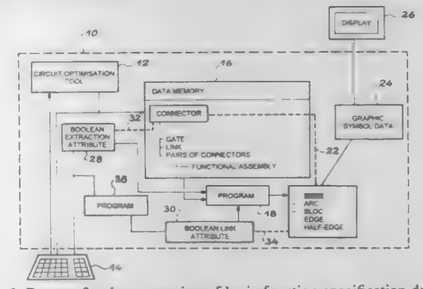
PROCESS FOR THE PROCESSING OF SPECIFICATION DATA OF LOGIC FUNCTIONS OF AN APPLICATION-SPECIFIC INTEGRATED CIRCUIT

Francois Silve, Le Cannet, France; Jean-Michel Fernandez, and Arnold Ginetti, both of Antibes, Belgium, assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 11, 1995, Ser. No. 526,811

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **7 Claims**



1. Process for the processing of logic function specification data of an application-specific integrated circuit (ASIC), which has gates, electrical connections between the gates and functional assemblies, the process comprising:

a) acquiring logic function specification data of the circuit, said data respectively relating to combinational or sequential gates, functional assemblies, connectors and links between connectors, the link data being associated with the connector data, and the connector data comprising:

1) data of input and output connectors of gates, with which are respectively associated the gate data,

2) data of pairs of internal/external, input and output connectors of functional assemblies, with which are respectively associated the functional assembly data and

3) data of input and output connectors of the circuit,

b) associating with each connector data item a Boolean attribute known as an "extraction" attribute able to respectively assume a first or so-called "true" value (1) and a second or so-called "false" value (0), the extraction attribute being determined in accordance with a representation rule or being chosen by a circuit designer, an identical attribute being respectively associated with the data of the connectors of the same gate and with the data of connectors of a same pair of connectors,

c) associating a so-called "node" identifier, which is different for each connector data item having a "true" Boolean extraction attribute, and associating an identical identifier with each connector data item either of a same gate, or of a same pair of connectors, said connector data item having a "false" Boolean attribute,

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d) associating a so-called "arc" link identifier with the data of connectors for which there is a link data item and which have different node identifiers.

e) forming maximum assemblies of connectors, which have different node identifiers and which have at least one arc identifier in common with one of the connectors of a maximum assembly and associating a so-called "block" identifier with all the connectors of the same maximum assembly.

f) associating a so-called "input half-edge" identifier with all the data of output connectors having a "true" extraction attribute and associating a so-called "output half-edge" identifier with all the data of input connectors having a "true" extraction attribute.

g) associating with each half-edge identifier a Boolean attribute known as a link attribute and able to assume a first or so-called "true" value and a second or so-called "false" value, the link attribute being determined in accordance with a representation rule or being chosen by a circuit designer.

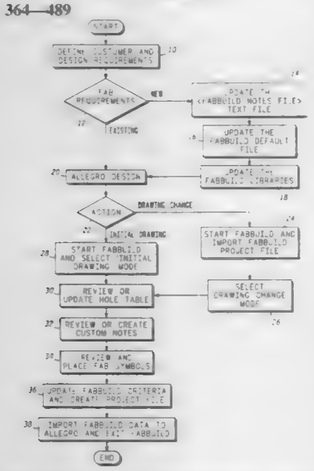
h) seeking couples of connectors of the same pair of connectors, or a same gate, such that the connectors of each couple of connectors respectively have a different block identifier, and a respectively input and output half-edge identifier having a "false" link attribute and association of a block edge identifier, respectively with each block having a connector of the couple of connectors.

5,633,804

METHOD FOR AUTOMATICALLY PRODUCING PRINTED WIRING BOARD FABRICATION DRAWINGS

Robert J. Bever, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1994, Ser. No. 359,113
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **28 Claims**



1. A method for producing PWB fabrication drawings comprising the steps of:

determining whether a PWB fabrication requirements, requested by a user, are new or existing;

obtaining design information for the PWB fabrication requirements, if the PWB fabrication requirements are existing;

producing PWB fabrication files, if the PWB fabrication requirements are new;

determining whether a PWB fabrication drawing changes is necessary;

obtaining project file information, if a drawing change is necessary;

generating new project file information;

updating a drill hole table with changes made to a drill hole of a PWB by the user;

extracting hole data from the drill hole table;

reading parameters of a drill hole from input from the user;

comparing the parameters of the drill hole with the hole data from the drill hole table; and

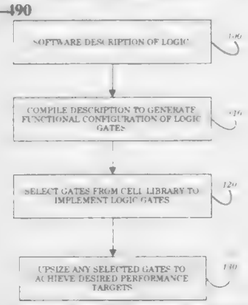
transferring the new project file information including the updated drill hole table for production of the PWB fabrication drawings.

5,633,805

LOGIC SYNTHESIS HAVING TWO-DIMENSIONAL SIZING PROGRESSION FOR SELECTING GATES FROM CELL LIBRARIES

Carl J. Simonsen, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1994, Ser. No. 315,425
Int. Cl.[6] G06F *15/00*
U.S. Cl. 364—490 **30 Claims**



1. A logic synthesis method having two-dimensional sizing progression for selecting a logic gate to be implemented within a circuit, comprising the steps of:

(a) determining a drive load and a desired performance for the logic gate;

(b) determining a group of gates restricted to a drive load range encompassing the determined drive load from a cell library by utilizing a look-up table that contains at least a minimum drive load and a maximum drive load corresponding to each gate of said group of gates; and

(c) selecting one gate from the group of gates to be used as the logic gate.

5,633,806

SEMICONDUCTOR INTEGRATED CIRCUIT AND METHOD OF DESIGNING SAME

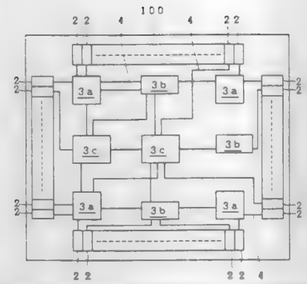
Terukazu Yusa; Kazuhiro Sakashita; Isao Takimoto; Takeshi Hashizume, and Tatsunori Komoike, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 80,789, Jun. 24, 1993, abandoned.
This application Jun. 21, 1995, Ser. No. 493,299
Claims priority, application Japan, Oct. 12, 1992, 4-272827
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 **31 Claims**

1. A method of designing a semiconductor integrated circuit, comprising the steps of:

(a) creating a macro cell library consisting of a plurality of macro cells, wherein each of said plurality of macro cells includes a plurality of predetermined logical functions and a plurality of logical functions in any macro cell in said library is different from a plurality of logical functions in any other cell in said library;

(b) designing a design architecture for a programmable logic block;



(c) fabricating said design architecture at a predetermined position of said semiconductor integrated circuit;

wherein said step of designing comprises the sub-steps of:

(1) retrieving a first one of said plurality of macro cells from said library and incorporating said first one of said plurality of macro cells into said design architecture;

(2) retrieving a second one of said plurality of macro cells from said library and incorporating said second one of said plurality of macro cells into said design architecture, wherein said second one of said plurality of macro cells is different than said first one of said plurality of macro cells;

(3) incorporating an access means for selectively accessing said programmable logic block into said design architecture;

(4) incorporating a control means for controlling which of said plurality of predetermined logical functions is performed by said programmable logic block into said design architecture; and

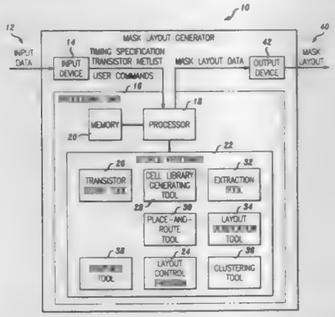
(5) incorporating a fixed logic function block into said design architecture, wherein said fixed logic function block provides a fixed logical function.

5,633,807

SYSTEM AND METHOD FOR GENERATING MASK LAYOUTS

John P. Fishburn, Murray Hill, N.J.; Craig R. Kemp, Topton, Pa.; Catherine A. Schevon, Philadelphia, Pa.; Todd R. Seigfried, Auburn, Pa.; Sanjiv Taneja, Berkeley Heights, Pa., and Yu-Chun Wu, Allentown, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 1, 1995, Ser. No. 431,585
Int. Cl.[6] G06F *15/00*
U.S. Cl. 364—491 **21 Claims**



1. An apparatus for generating a mask layout from input data, including a timing specification, the apparatus comprising:

memory and stored programs, including a plurality of mask layout tools having a cell library generation tool for generating a cell library of cell layouts from a cell netlist, a place-and-route tool for using the cell library to generate mask layout data, and a clustering tool for clustering the cell netlist; and

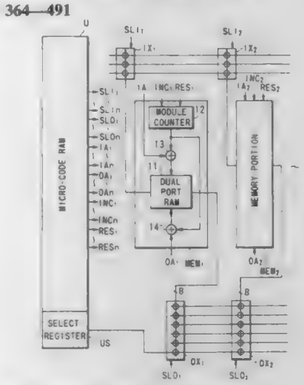
a processor operated by an automatic mask layout generation program for sequentially applying the plurality of mask layout tools, including an automatic transistor sizing tool, for sizing transistors to generate the cell netlist from the input data, and for generating, based on the input data and the cell netlist, the mask layout data corresponding to the mask layout, wherein the clustering tool clusters the cell netlist generated by the transistor sizing tool into a plurality of supercells for use by the cell library generation tool to generate the cell library.

5,633,808

DIGITAL SIGNAL PROCESSOR

Morito Morishima, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 105,409, Aug. 11, 1993, abandoned.
This application Jul. 1, 1996, Ser. No. 674,216
Claims priority, application Japan, Aug. 13, 1992, 4-216203
Int. Cl.[6] G06F *15/76*
U.S. Cl. 364—491 **7 Claims**



1. A digital signal processor comprising:

a plurality of first data buses;

a plurality of second data buses;

a plurality of operating means each of which performs a predetermined operation on data inputted thereto so as to carry out a parallel processing on input data as a whole, the plurality of operating means receiving input data from the first data buses and supplying operational results as output data to the second data buses;

a plurality of memory means for storing data received from the second data buses and for supplying data to the first data buses;

a plurality of first selector means, each first selector means being connected between an output of one of the memory means and the plurality of first data buses for allowing the output of the memory means to be selectively coupled to one or more of the first data buses so as to supply output data from the memory means to a desired one or more of said operating means as said input data, the plurality of first selector means operating in accordance with first select information;

a plurality of second selector means, each second selector means being connected between an input of one of the memory means and the plurality of second data buses for allowing the input of the memory means to be selectively coupled to one or more of the second data buses so as to supply desired output data from said operating means to the input of said memory means, the plurality of second selector means operating in accordance with second select information; and

a micro code read/write memory (RAM) for storing a plurality of micro code instructions, each of said micro code instructions containing control data including said first select infor-

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mation, said second select information, and a plurality of writing addresses and a plurality of reading addresses for said plurality of memory means, wherein

said micro code RAM supplies respective portions of the control data from a selected micro code instruction to said plurality of first selector means, said plurality of second selector means, and said plurality of memory means,

said micro code RAM selects micro code instructions in response to a signal generated within said digital signal processor, and

the plurality of micro code instructions stored in said micro code RAM can be added to, altered, and deleted from so as to provide a different plurality of micro code instructions containing different control data, to change couplings between the operating means and the memory means by changing contents of the micro code RAM.

5,633,809

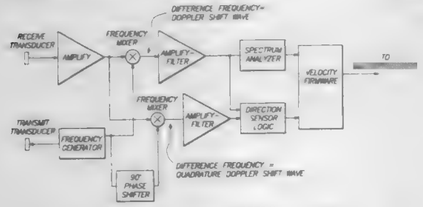
MULTI-FUNCTION FLOW MONITORING APPARATUS WITH AREA VELOCITY SENSOR CAPABILITY

Richard Wissenbach, Brockport, and Anthony Tavano, Niagara Falls, both of N.Y., assignors to American Sigma, Inc., Medina, N.Y.

Continuation of Ser. No. 547,718, Oct. 26, 1995, abandoned, which is a continuation-in-part of Ser. No. 219,097, Mar. 29, 1994, Pat. No. 5,506,791, which is a continuation-in-part of Ser. No. 954,288, Sep. 30, 1992, Pat. No. 5,299,141, which is a continuation-in-part of Ser. No. 612,832, Nov. 13, 1990, Pat. No. 5,172,332, which is a continuation-in-part of Ser. No. 455,981, Dec. 22, 1989, Pat. No. 5,091,863. This application Apr. 19, 1996, Ser. No. 635,054

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—510 **27 Claims**



1. A fluid velocity measurement device, comprising:

means for transmitting an ultrasonic signal throughout a channel in which fluid flows;

means for receiving a reflection of said ultrasonic signal, said reflected signal including signals which are shifted in frequency from said transmitted ultrasonic signal;

means for generating an electrical signal from said reflected ultrasonic signal;

first mixing means for mixing said reflected electrical signal with a signal having a frequency which is proportional to a frequency of said transmitted signal;

first filtering means for filtering an output of said first mixing means so as to pass an audio band signal representative of said frequency shifted signal;

means responsive to an output signal of said first filtering means, for substantially sequentially extracting energy levels therefrom at preselected frequencies within said audio band;

means for computing an average fluid velocity value from said extracted energy levels;

means for calculating a maximum velocity of fluid flow from said output signal of said first filtering means;

means for verifying said computed average fluid velocity value based upon said maximum fluid velocity calculation; and

means for reporting a value representing average fluid velocity in said channel based upon an output of said verifying means.

5,633,810

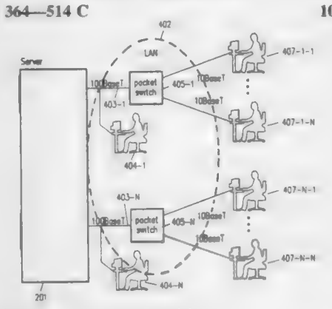
METHOD AND APPARATUS FOR DISTRIBUTING NETWORK BANDWIDTH ON A MEDIA SERVER

Kallol Mandal, Fremont, and Steven Kleiman, Los Altos, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 14, 1995, Ser. No. 572,648

Int. Cl.[6] H04L *12/28*

U.S. Cl. 364—514 C **10 Claims**



1. A video server system comprising:

a video server;

an interface protocol subnetwork;

a plurality of physical network interfaces coupled between said server and said interface protocol subnetwork; and

one or more destination systems, each including a physical network interface coupled to said interface protocol subnetwork,

wherein the bandwidth from each of said physical network interfaces coupled to said interface protocol subnetwork and associated with said server are combined as needed and assigned as needed in service to any one of said plurality of destination systems coupled to said interface protocol subnetwork.

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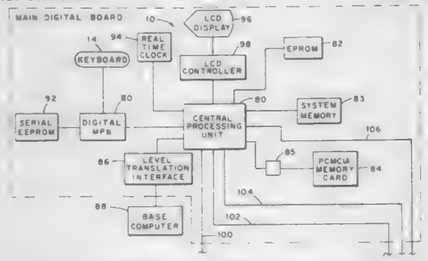
HAND HELD DATA COLLECTOR AND ANALYZER SYSTEM

Ronald G. Canada; Danny Simpson; Zbigniew Czyzewski, and Thomas E. Nelson, all of Knoxville, Tenn., assignors to Computational Systems, Inc., Knoxville, Tenn.

Filed Dec. 9, 1994, Ser. No. 355,208

Int. Cl.[6] H03F *1/26*

U.S. Cl. 364—576 **42 Claims**



1. A hand held vibration data collector and analyzer system for collecting, analyzing, and storing vibration data that is produced by and collected from a predetermined series of machines and for transferring data to a computer, comprising:

a vibration transducer for sensing vibration that is produced by the machines and for producing an analog vibration signal corresponding to the vibration;

a housing dimensioned and configured for being hand held;

a conditioning circuit mounted in said housing:

(a) for receiving and conditioning the analog vibration signal from the vibration transducer to produce a conditioned analog signal;

(b) including a fixed frequency analog anti-aliasing filter having a fixed upper cutoff frequency set at a desired frequency equal to the maximum vibration frequency of interest for producing the conditioned analog signal having a desired frequency range;

(c) including amplifiers for producing the conditioned analog signal at a desired amplitude;

(d) including an analog to digital converter (ADC) for receiving and sampling the conditioned analog signal to produce a digital signal, said fixed frequency analog anti-aliasing filter being disposed in the conditioning circuit so that all of the conditioned analog signal received by said ADC has been filtered by said fixed frequency analog filter and therefore all of said conditioned analog signal is subjected to the same fixed upper cutoff frequency;

a data processor mounted in said housing for processing the digital signal to produce desired digital data, said data processor including:

a transformer for selectively operating on the digital signal, performing a Fast Fourier Transform, and producing a frequency spectrum from the digital signal;

a selector for selecting and producing select data for storage from at least one of the digital signal and the frequency spectrum;

a keyboard mounted in said housing interfaced with said data processor for inputting commands and data to said data processor;

a display mounted in said housing interfaced with said data processor for displaying information to the user;

memory interfaced with the data processor for storing information including the select data; and

means for transferring information that is stored in said memory to the computer.

5,633,812

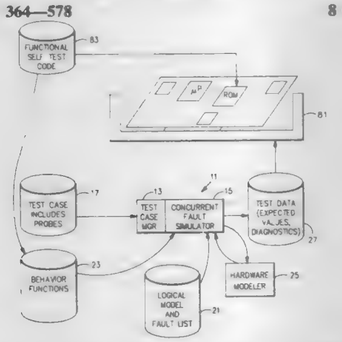
FAULT SIMULATION OF TESTING FOR BOARD CIRCUIT FAILURES

James S. Allen, Friendswood, Tex.; Theresa L. Meyer, Endicott, N.Y., and Kenneth D. Wagner, Columbia, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1992, Ser. No. 953,396

Int. Cl.[6] G06F *11/00*

U.S. Cl. 364—578 **8 Claims**



4. A method of simulating detection of faults in a digital circuit having functional self test code run by a processor in the circuit comprising the steps of:

defining a logical probe for nets to be measured, for conditions to be satisfied before a measurement of the nets can be made, and for providing a duration of a time-limited measurement window during which said measurement takes place;

simulating operation of the circuit including operation of the self test code for fault-free and a plurality of fault conditions;

monitoring for a satisfaction of the defined conditions to be satisfied before measurement can be made;

measuring values for the nets to be measured upon the satisfaction of the defined conditions during fault-free and faulty operation of the circuit;

comparing a fault-free net value to the net values measured for each of the faults simulated; recording the fault-free value; and

recording values different from the fault-free value together with a corresponding fault.

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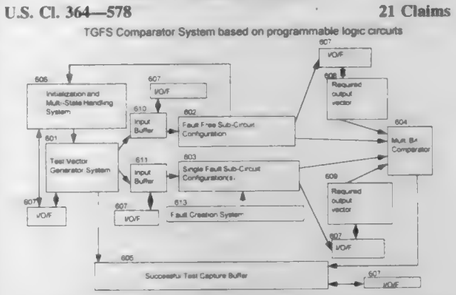
APPARATUS AND METHOD FOR AUTOMATIC TEST GENERATION AND FAULT SIMULATION OF ELECTRONIC CIRCUITS, BASED ON PROGRAMMABLE LOGIC CIRCUITS

Seshan R. Srinivasan, 1524 Condor Way, Sunnyvale, Calif. 94087

Filed May 4, 1994, Ser. No. 237,785

Int. Cl.[6] G06F *11/263;9/455*

U.S. Cl. 364—578 **21 Claims**



1. A programmable automatic test pattern generation and fault simulation (TGFS) apparatus comprising:

(a) a plurality of I/O/F messaging buses,

(b) a plurality of data storage devices,

(c) a plurality of data buffers,

(d) a plurality of programmable logic devices,

(e) a plurality of test vector generators,

(f) a plurality of multi-bit comparators,

Said I/O/F messaging buses serving as a memory means and time delay processor for, and located substantially between, said plurality of data storage devices, said plurality of data buffers, said plurality of programmable logic devices and said test vector generators.

5,633,814

NON-MODULO POWER OF 2 FREQUENCY DIVIDER

Krishnan Palaniswami, Austin, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Oct. 26, 1995, Ser. No. 548,676

Int. Cl.[6] G06F *7/52;* **H03K** *21/00*

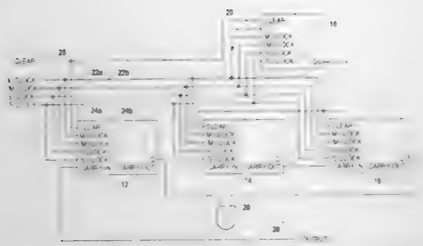
U.S. Cl. 364—703 **12 Claims**

1. A frequency divider circuit utilizing at least one clock signal and a clear signal, wherein the divider circuit divides the at least one clock signal by an odd value, the divider comprising:

a first adder for receiving the at least one clock signal and the clear signal, and having a carry-in input, and generating an adder output and carry-out output;

a second adder for receiving the at least one clock signal and the first adder cell carry-out output, and having a carry-in input and a clear input, and generating an adder output;

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a reset cell for receiving the at least one clock signal and the clear signal, and having an input and generating a reset output; and

logic for receiving selected adder outputs and generating a divider output when the odd value is reached;

wherein the first adder receives the divider output as its carry-in input, the second adder receives the carry-out output of the first adder as its carry-in input and the reset output as its clear input, and the reset cell receives the divider output as its input, wherein the clear signal causes the frequency divider to set the outputs of the first and second adders to a first state, and, in the absence of the clear signal, the frequency divider generates a divider output when the adder outputs of the first and second adders represent the odd value thereby setting the adder outputs of the first and second adders to a second state.

5,633,815

FORMATTER

William R. Young, Palm Bay, Fla., assignor to Harris Corp., Melbourne, Fla.

Division of Ser. No. 930,170, Aug. 14, 1992, Pat. No. 5,493,581. This application Jun. 7, 1995, Ser. No. 478,683

Int. Cl.[6] G06F *7/38;5/00*

U.S. Cl. 364—715.03 **16 Claims**

1. A formatter for serially formatting digital data, comprising:

an N bit most significant bit (MSB) to least significant bit (LSB) shifting shift register for receiving N bit input data, the shift register having a serial input;

a serial two's complementer operatively connected to the shift register for receiving the LSB first data from the shift register wherein the complementer performs two's complementatic, n on the data, and alternatively passing the data without two's complementing the data;

a serial rounder operatively connected to the output of the two's complementer wherein said rounder is selectably programmed to add 1 to the serial data, and alternatively passing the data without modifying the data, the serial rounder having an output connected to the serial input of the shift register;

a zero detector operatively connected to the shift register for detecting data equal to 0, wherein if the data is equal to 0 during a floating point conversion then all data bits are forced to zero else, the data is unaffected by the zero detector;

an exponent counter circuit operatively connected to the output of the serial rounder to compute an exponent in a floating point representation; and

a detection means operatively connected to said shift register for detecting the most positive two's complement number and forcing the resulting data to be the most positive number.

5,633,816

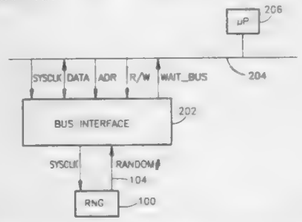
RANDOM NUMBER GENERATOR WITH WAIT CONTROL CIRCUITRY TO ENHANCE RANDOMNESS OF NUMBERS READ THEREFROM

William C. Wallace, Dallas, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 1, 1995, Ser. No. 523,002

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—717 **3 Claims**



1. A random number generator system for generating a sequence of random numbers, comprising:

a linear feedback shift register, that includes

shift register circuitry that holds a plurality of shift register bits and that, responsive to transitions of a periodic system clock signal, shifts said shift register bits, shifting out one of said shift register bits while shifting in a feedback bit whose value is provided at a feedback input of the shift register;

tap circuitry that generates the feedback bit; and

sampling circuitry that provides at least a portion of said shift register bits as one of said sequence of random numbers; and

interface circuitry that provides said one of said sequence of random numbers to a processor in response to a processor request signal being asserted, wherein the processor request signal is for requesting the sampling circuitry to provide a random number, said interface circuitry including wait control circuitry that receives said asserted processor request signal and that inserts wait states onto the processor bus if the asserted processor request signal occurs less than a minimum number of periods of the system clock signal from a previous asserted processor request signal.

5,633,817

FAST FOURIER TRANSFORM DEDICATED PROCESSOR

Geert Verhenne, Desselgem, and Peter Reusens, Laarne, both of Belgium, assignors to Alcatel N.V., Rijswijk, Netherlands

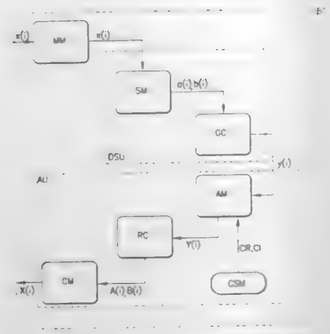
Filed Nov. 3, 1995, Ser. No. 552,916

Claims priority, application European Pat. Off., Nov. 7, 1994, 94203235

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—726 **10 Claims**

1. A Fast Fourier Transform dedicated processor (P), including a memory means (MM) to store an input data sequence (x(i)), a scrambling means (SM) to scramble said input data sequence (x(i)) thereby generating a plurality of scrambled data subsequences (a(i), b(i)), said scrambling means (SM) being coupled to an input of an arithmetic unit (AU), generating a Fast Fourier Transform output sequence (X(i)) from said scrambled data subsequences (a(i), b(i)), characterized in that to process a real said input data sequence (x(i)) said processor (P) additionally includes a data



generation circuit (GC) which is connected between said scrambling means (SM) and said arithmetic unit (AU) and is adapted to derive from pairs of said scrambled data subsequences (a(i), b(i)) a complex data sequence (y(i)), and that said arithmetic unit (AU) includes an arithmetic means (AM), a data regeneration circuit (RC) and a combinatorial means (CM), said arithmetic means (AM) being adapted to recursively execute Decimate In Time Fast Fourier Transform steps on said complex data sequence (y(i)) thereby generating an intermediate Fast Fourier Transform series (Y(i)), said data regeneration circuit (RC) being adapted to generate from said intermediate Fast Fourier Transform series (Y(i)) individual Fast Fourier Transform series (A(i), B(i)) of said pair of scrambled data subsequences (a(i), b(i)), and said combinatorial means (CM) being adapted to execute a final Decimate In Time Fast Fourier Transform step on said individual Fast Fourier Transform series (A(i), B(i)) to thereby provide said Fast Fourier Transform output sequence (X(i)).

5,633,818

METHOD AND APPARATUS FOR PERFORMING FLOATING POINT ARITHMETIC OPERATION AND ROUNDING THE RESULT THEREOF

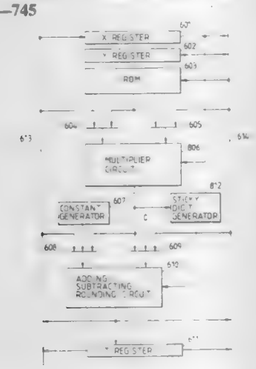
Takashi Taniguchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 219,560, Mar. 29, 1994, Pat. No. 5,434,809, which is a division of Ser. No. 12,220, Feb. 2, 1993, Pat. No. 5,313,415, which is a division of Ser. No. 596,116, Oct. 11, 1990, Pat. No. 5,212,661. This application May 8, 1995, Ser. No. 438,142

Claims priority, application Japan, Oct. 16, 1989, 1-268447

Int. Cl.[6] G06F *7/38;7/52;7/00*

U.S. Cl. 364—745 **4 Claims**



1. An apparatus for generating a sticky digit used in rounding an interim solution Yr into a final approximate solution Ye for an infinite precise solution Y determined by a function F according to Y=F(X) with respect to digital data X, the apparatus comprising:

means for generating a plurality of partial products from a given multiplicand and a given multiplier, wherein at least one of the given multiplicand and the given multiplier represents an interim solution Yr;

means for generating a sign inversion value from at least a lower part of a subtrahend to enable place matching, the sign inversion value expressed in a same format as a format of expression of the partial products, the subtrahend representing digital data X;

means for adding the partial products and the sign inversion value;

means for detecting which of the subtrahend and a product of the given multiplicand and the given multiplier is greater in response to a result of said adding by said adding means; and

a sticky digit generating means for generating a sticky digit in response to a result of said detecting by said detecting means.

5,633,819

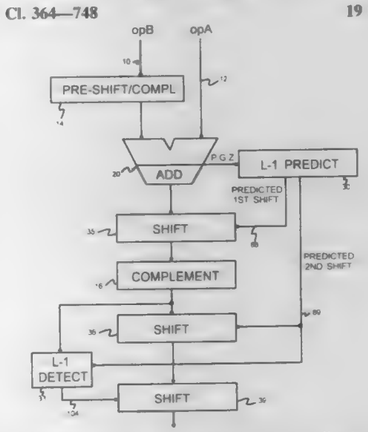
INEXACT LEADING-ONE/LEADING-ZERO PREDICTION INTEGRATED WITH A FLOATING-POINT ADDER

Cheryl S. Brashears, Cupertino; James S. Blomgren, San Jose, and Earl T. Cohen, Fremont, all of Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Filed Oct. 24, 1995, Ser. No. 547,396

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—748 **19 Claims**



1. A floating point adder for generating a normalized sum of a plurality of input operands, the floating point adder comprising:

a plurality of half-adder cells, each half-adder cell in the plurality of half-adder cells receiving a bit-position of each operand in the plurality of operands, each half-adder cell outputting a generate signal when at least two of the plurality of operands have a binary one for the bit-position, each half-adder cell outputting a propagate signal when at least one of the plurality of operands have a binary one for the bit-position;

carry-propagate means, receiving the generate and propagate signals from the plurality of half-adder cells, for outputting a sum of the plurality of operands, the carry-propagate means including means for propagating a carry input from adjacent lower-significance bit-positions to adjacent higher-significance bit-positions when the propagate signal is active, but not propagating the carry input when none of the generate and propagate signals input to the carry-propagate means is active;

a leading significant-bit predictor, receiving the generate and propagate signals from the plurality of half-adder cells, for generating a first prediction signal indicating a predicted position of the most-significant bit in the sum;

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a first shifter, receiving the sum from the carry-propagate means, for shifting the sum and outputting a shifted sum in response to the first prediction signal so that the most-significant bit in the sum is shifted to a more significant bit-position in the shifted sum;

a leading significant-bit detector, receiving the shifted sum, for determining the bit-position of a leading significant bit and outputting a final shift amount signal; and

final shift means, responsive the final shift amount signal, for shifting the shifted sum such that the leading significant bit is shifted to a most significant bit-position in the normalized sum,

whereby the leading significant-bit predictor predicts the bit-position of the leading significant bit from the generate and propagate signals.

5,633,820

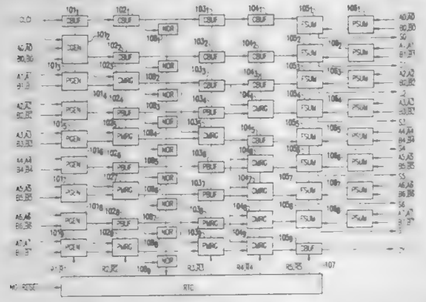
SELF-RESETTING CMOS PARALLEL ADDER WITH A BUBBLE PIPELINED ARCHITECTURE, TRI-RAIL MERGING LOGIC, AND ENHANCED TESTABILITY

Michael P. Beakes, Yorktown Heights, N.Y.; Barbara A. Chappell; Terry I. Chappell, both of Portland, Oreg.; Bruce M. Fleischer, Mount Kisco, and Thao N. Nguyen, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1995, Ser. No. 463,146

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—787 **12 Claims**



1. A parallel binary adder comprising an array of complementary metal oxide semiconductor (CMOS) circuit blocks arranged in a plurality of columns of evaluation logic and a column of reset logic, a first column of said evaluation logic comprising a carry generator circuit (CGEN) and a plurality of propagate/generate/zero (PGZ) generator circuits (PGEN) circuits each receiving least significant bits (LSBs) and a carry input, intermediate columns of buffer and merge logic blocks connected to said CGEN and PGEN circuits, followed by a column of final sum (FSUM) circuits, and a final column of partial sum (PSUM) circuits, said PSUM circuits receiving said first and second binary inputs and providing partial sum signals to said FSUM circuits, said FSUM circuits outputting a binary result, said merge logic blocks calculating a carry out of a most significant bit (MSB), each of said CGEN, PGEN, merge and FSUM circuits comprising a self-resetting logic block including a logic tree connected to an output inverter, a half-latch connected to the output inverter and resetting devices connected to outputs of the logic tree and the output inverter and responsive to timed reset signals, said adder further comprising a reset timing chain connected to the row reset logic and generating said timed reset signals, the evaluation logic implementing an adder bubble pipelined circuit logic architecture in which a bubble pipeline segment consists of a column of self-resetting circuit blocks allowing a fast cycle time and minimum delay for each block by using fast forward amplification of a leading edge of pulsed input signals followed by quick self-resetting of all nodes back to a standby state.

5,633,821

NONVOLATILE MEMORY DEVICE

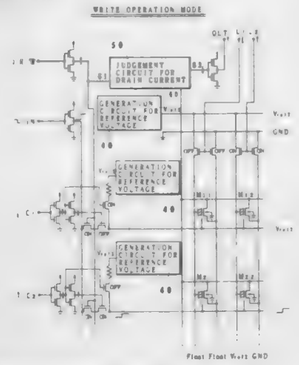
Kiyoshi Nishimura; Hideki Hayashi; Jun Muramoto; Takaaki Fuchikami, and Hiromi Uenoyama, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Japan

Filed Jan. 18, 1995, Ser. No. 374,221

Claims priority, application Japan, Jan. 18, 1994, 6-003796; Dec. 22, 1994, 6-319930

Int. Cl.[6] H01L *29/78*

U.S. Cl. 365—145 **19 Claims**



1. A nonvolatile memory device comprising:

a) a source region of a first conductive type and a drain region of a first conductive type.

b) a channel region of a second conductive type formed between the source and the drain regions.

c) a memory gate formed on the channel region and insulated from the channel region, a predetermined voltage being applied to said memory gate in at least a write operation.

d) a ferroelectric layer formed on the memory gate.

e) a control gate formed on the ferroelectric layer, and

f) a judgment circuit for detection of a drain current, connected to the drain region.

5,633,822

METHOD OF PROGRAMMING A NONVOLATILE FLASH-EEPROM MEMORY ARRAY USING SOURCE LINE SWITCHING TRANSISTORS

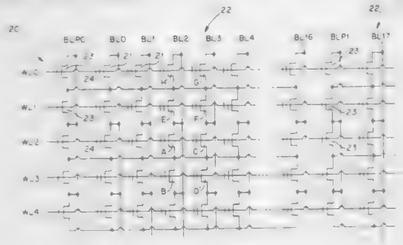
Giovanni Campardo, Bergamo; Giuseppe Crisenza, Trezzo Sull'Adda, and Marco Dallabora, Melegnano, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Division of Ser. No. 212,907, Mar. 15, 1994, Pat. No. 5,587,946. This application Jun. 2, 1995, Ser. No. 458,346

Claims priority, application European Pat. Off., Mar. 18, 1993, 93830110

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—185.02 **3 Claims**



1. A method for writing a flash-EEPROM memory array having a plurality of memory cells, comprising the steps of:

setting a selected word line to a first predetermined voltage,

setting a selected bit line to a second predetermined voltage less than said first predetermined voltage;

leaving nonselected bit lines floating;

setting nonselected word lines to a zero voltage; and

setting a source line corresponding to a selected memory cell which is connected to the selected bit line and the selected word line to a third predetermined voltage between said first and second predetermined voltages.

5,633,823

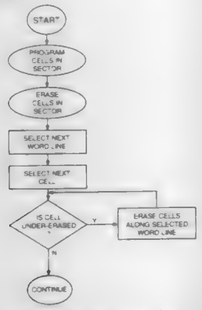
METHOD OF NARROWING FLASH MEMORY DEVICE THRESHOLD VOLTAGE DISTRIBUTION

Roger R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 1, 1994, Ser. No. 348,649

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.29 **17 Claims**



1. A method of erasing memory cells in a sector of a memory device, said sector having a plurality of word lines and a plurality of memory cells along each of said word lines, said method comprising:

erasing a group of said memory cells in said sector simultaneously;

subsequent to said step of erasing, reading a first cell of said group along a first word line to determine if said first cell is under-erased;

responsive to said first cell being under-erased, further erasing only those cells of said group which are along said first word line by applying a negative voltage to said first word line and, simultaneously a voltage greater than or equal to 0.0 volts to each word line of said plurality of word lines except said first word line.

5,633,824

FILE SYSTEM FOR FLASH MEMORY

Masato Onuki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 25, 1996, Ser. No. 621,506

Claims priority, application Japan, Mar. 30, 1995, 7-095819

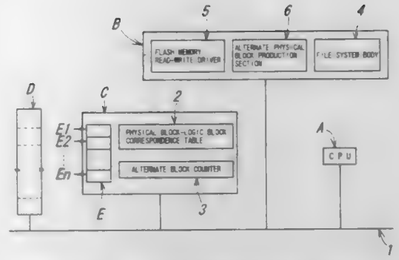
Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—185.33 **3 Claims**

1. A file system for a flash memory having a storage region which is divided into a plurality of physical blocks, said file system writing, into one of said physical blocks, contents of logic blocks which correspond to the one physical block, said file system comprising:

discrimination means for discriminating whether or not a re-write occurrence time number of each of said physical blocks exceeds a guaranteed re-write time number by which writing can be performed regularly;

searching means for searching, when the discrimination of said discrimination means reveals that the re-write occurrence time



number of any one of said physical blocks exceeds the guaranteed re-write time number, for a non-used alternate physical block which can be used in place of the one physical block; and

alternate physical block production means for copying described contents of the physical block, with which the re-write occurrence time number exceeds the guaranteed re-write time number, into the alternate physical block.

5,633,825

VOLTAGE GENERATING CIRCUIT IN SEMICONDUCTOR INTEGRATED CIRCUIT

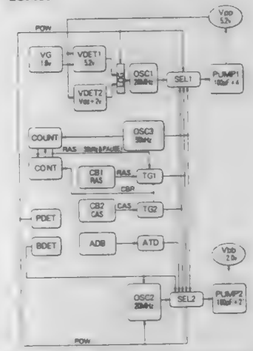
Toshiyuki Sakuta, Ome; Tomohiro Suzuki, Tsukuba, and Yuriko Iizuka, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan, and Texas Instruments, Inc., Dallas, Tex.

Continuation of Ser. No. 84,628, Jun. 30, 1993, Pat. No. 5,528,538. This application May 22, 1996, Ser. No. 651,515

Claims priority, application Japan, Jun. 30, 1992, 4-196605

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.09 **34 Claims**



1. A semiconductor integrated circuit comprising:

a first oscillating circuit outputting a first pulse signal having a first frequency;

a second oscillating circuit outputting a second pulse signal having a second frequency;

a third oscillating circuit outputting a third pulse signal having a third frequency which is lower than said first frequency and is lower than said second frequency;

a first selector having a first input terminal coupled to said first oscillating circuit for receiving said first pulse signal, a second input terminal coupled to said third oscillating circuit for receiving said third pulse signal and an output terminal;

a second selector having a first input terminal coupled to said second oscillating circuit for receiving said second pulse signal, a second input terminal coupled to said third oscillating circuit for receiving said third pulse signal and an output terminal;

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a first pumping circuit having an input terminal coupled to said output terminal of said first selector and an output terminal for outputting a first voltage; and

a second pumping circuit having an input terminal coupled to said output terminal of said second selector and an output terminal for outputting a second voltage.

5,633,826

SEMICONDUCTOR MEMORY WHEREIN A SIGNAL SELECTIVELY SUBSTITUTES A REDUNDANT MEMORY CELL LINK FOR A FAULTY ORDINARY MEMORY CELL LINK

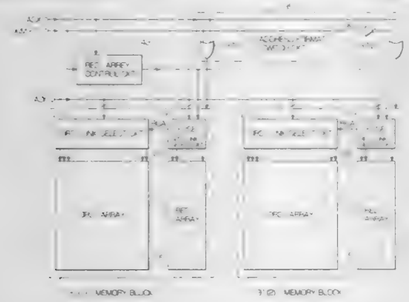
Shyuichi Tsukada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,261

Claims priority, application Japan, Nov. 22, 1994, 6-287728

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—200 **10 Claims**



1. A semiconductor memory device comprising an ordinary array comprising ordinary memory cells in a first plurality of ordinary links, a redundant array comprising redundant memory cells in redundant links for use as ones, a second plurality in number, of said ordinary links, a faulty address indicating circuit indicative of a faulty link, a redundant link selecting circuit including said faulty address indicating circuit to selectively activate a redundant circuitry activating signal and supplied with an ordinary link address signal indicative of a selected link among said ordinary links at a time to selectively select a substitution link among said redundant links for use in substitution for one of said ordinary links that is indicated as said faulty link, and an ordinary link selecting circuit responsive to said ordinary link address signal and to said redundant circuitry activating signal for selecting said selected link and none of said ordinary links when said redundant circuitry activating signal is not and is activated, respectively, wherein said redundant link selecting circuit is supplied with a predetermined signal selectively given first and second levels so as, when said predetermined signal is given said second level, to render said faulty address indicating circuit inoperative and to select said substitution link when said ordinary link address signal indicates said faulty link and so as, when said predetermined signal is given said first level, to activate said redundant circuitry activating signal for selection of said substitution link and to deactivate said redundant circuitry activating signal for selection of none of said redundant links when both of said faulty address indicating circuit and said ordinary link address signal indicate said faulty link and when neither said faulty address indicating circuit nor said ordinary link address signal indicates said faulty link, respectively.

5,633,827

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE ALLOWING CHANGE OF PRODUCT SPECIFICATION AND CHIP SCREENING METHOD THEREWITH

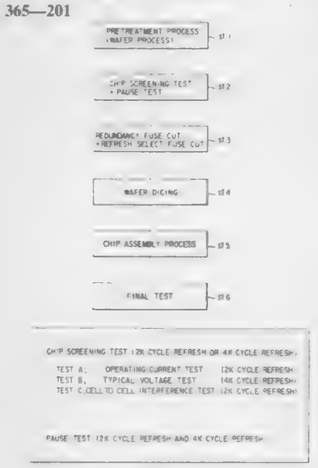
Kenji Numata, Yamato, and Masaki Ogihara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 935,174, Aug. 26, 1992, abandoned. This application May 5, 1995, Ser. No. 435,661

Claims priority, application Japan, Aug. 30, 1991, 3-219926; Aug. 20, 1992, 4-221694

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—201 **14 Claims**



1. A chip screening method comprising:

a step of testing semiconductor memory chips, the testing step including a screening test for determining whether semiconductor chips are acceptable, and a charge retention test for checking the charge retention of memory cells of said semiconductor memory chips; and

a step of setting the product specification of said semiconductor memory chips based on the result of the charge retention test.

5,633,828

CIRCUITRY AND METHODOLOGY TO TEST SINGLE BIT FAILURES OF INTEGRATED CIRCUIT MEMORY DEVICES

David C. McClure; Mark A. Lysinger, both of Carrollton; Frank J. Sigmund, Coppell, and John A. Michlowsky, Carrollton, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Aug. 24, 1995, Ser. No. 519,075

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—201 **40 Claims**

38. A structure for monitoring the bitline voltages of an integrated circuit memory device, comprising:

a memory cell of the integrated circuit memory device;

a bitline true connected to the memory cell;

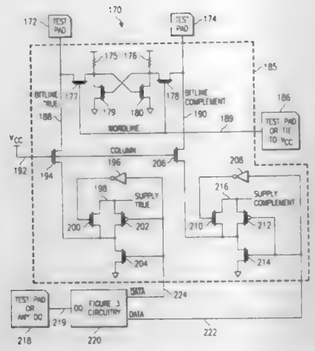
a bitline complement connected to the memory cell;

a wordline bus connected to the memory cell;

a first select device connected to the bitline true and controlled by a select bus connected to a first supply voltage;

a second select device connected to the bitline complement and controlled by the select bus;

a first driver connected to the first select device by a true bus and connected to a second test pad, wherein the first driver receives a data complement input signal and is controlled by a voltage supply true signal;



a second driver connected to the second select driver by a complement bus and connected to a third test pad, wherein the second driver receives a data true input signal and is controlled by a voltage supply complement signal;

a buffer circuit which provides the data complement input signal to the first driver and the data true input signal to the second driver;

a fourth test pad, wherein a signal on the fourth test pad is an input signal of the buffer circuit;

a pad connected to an output pin of the integrated circuit memory device;

a TTL (transistor-transistor logic) buffer connected to the pad, wherein a signal on the pad is an input signal of the TTL buffer;

a first inverter connected to the TTL buffer, which has an output signal of the TTL buffer as an input signal;

a passgate connected to the first inverter and controlled by the test mode signal

and a test mode complement signal, wherein the test mode signal and the test mode complement signal determine when an output signal of the first inverter will be inverted and presented as a first input signal to a first logic element also having the test mode signal as a second input signal and wherein the output signal of the first inverter passes through a latch comprised of a second inverter connected to a third inverter before being presented as the first input signal to the first logic element;

a second logic element having an output enable input signal, the test mode as an input signal, and an output signal;

a third logic element having the output signal of the second logic element as a first input signal, a write signal as a second input signal, and an output signal;

a first transistor, a second transistor, a third transistor, a fourth transistor, a fifth transistor, and a sixth transistor, wherein a gate of the first transistor and a gate of the sixth transistor are controlled by an output signal of the first logic element, a first terminal of the first transistor is connected to the first supply voltage, and a second terminal of the first transistor is connected to a first terminal of the second transistor and a first terminal of the third transistor; wherein a gate of the second transistor and a gate of the fourth transistor are controlled by the output signal of the TTL buffer; wherein a gate of the third transistor and a gate of the fifth transistor are controlled by the output signal of the third logic element; wherein a second terminal of the second transistor, a second terminal of the third transistor, a first terminal of the fourth transistor, a first terminal of the sixth transistor are connected to the data complement input signal; wherein a second terminal of the fourth transistor is connected to a first terminal of the fifth transistor; and wherein a second terminal of the fifth transistor and a second terminal of the sixth transistor are connected to a second supply voltage; and

a seventh transistor, an eighth transistor, a ninth transistor, a tenth transistor, an eleventh transistor, and a twelfth transistor, wherein a gate of the seventh transistor is connected to the output signal of the first logic element, the gate of the first transistor, the gate of the sixth transistor and a gate of the twelfth transistor; wherein a first terminal of the seventh transistor is connected to the first supply voltage; wherein a second terminal of the seventh transistor is connected to a first terminal of the eighth transistor and a first terminal of the ninth transistor; wherein a gate of the eighth transistor and a gate of the tenth transistor are controlled by an inverse signal of the output signal of the TTL buffer; wherein a gate of the ninth transistor and a gate of the eleventh transistor are controlled by the output signal of the third logic element; wherein a second terminal of the eighth transistor, a second terminal of the ninth transistor, a first terminal of the tenth transistor, and a first terminal of the twelfth transistor are connected to the data true input signal; wherein a second terminal of the tenth transistor is connected to a first terminal of the eleventh transistor; and wherein a second terminal of the eleventh transistor and a second terminal of the twelfth transistor are connected to the second supply voltage.

5,633,829

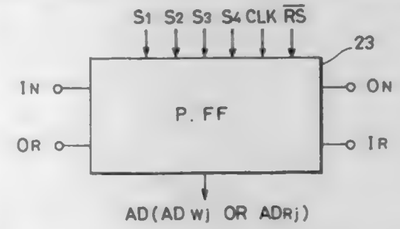
SERIAL ACCESS MEMORY DEVICE CAPABLE OF CONTROLLING ORDER OF ACCESS TO MEMORY CELL AREAS

Tetsuya Matsumura, and Masahiko Yoshimoto, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 489,946, Mar. 9, 1990, abandoned. This application Jul. 31, 1991, Ser. No. 739,786

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—221 **24 Claims**



1. A serial access memory device, comprising:

a memory cell array having a plurality of separately accessible memory cell areas; each said area having memory cells disposed therein to store data signals;

a plurality of access means respectively connected to corresponding memory cell areas for accessing data signals stored in memory cells of said respective memory cell areas;

a plurality of activating means each connected to a corresponding one of said plurality of access means and responsive to a clock signal for activating said corresponding one of said plurality of access means; and

select signal storing means for storing a selecting signal and generating a plurality of control signals determined by said selecting signal;

each said activating means comprising selective coupling means responsive to said control signals generated by said select signal storing means for selectively coupling at least two of said plurality of activating means in a predetermined configuration selected for successively activating at least two corresponding access means in response to said clock signal.

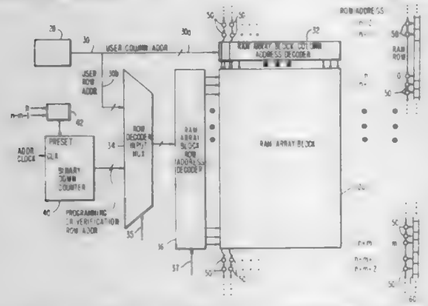
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5,633,830

RANDOM ACCESS MEMORY BLOCK CIRCUITRY FOR PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUIT DEVICES

Chiakang Sung, Milpitas; Wanli Chang, Saratoga; Joseph Huang, San Jose, and Richard G. Cliff, Milpitas, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Nov. 8, 1995, Ser. No. 555,106
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—221 **37 Claims**



1. Memory circuitry for inclusion on a programmable logic array integrated circuit device, which includes a plurality of logic signal conductors, comprising:

a plurality of programmable first memory cells;

interconnection circuitry for selectively interconnecting said first memory cells in a series such that each of said first memory cells is programmable from a preceding first memory cell in said series when said first memory cell is connected to said preceding first memory cell in said series;

a second programmable memory cell having an input terminal and an output terminal for selectively storing data applied to said input terminal and for subsequently outputting the data thus stored by said second memory cell; and

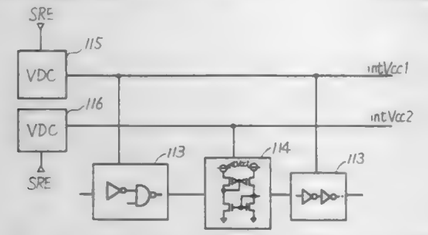
input switching circuitry for selectively connecting said input terminal to said interconnection circuitry at an intermediate point Which is between two adjacent ones of said first memory cells in said series and for alternatively connecting said input terminal to a first of said logic signal conductors.

5,633,831

SEMICONDUCTOR MEMORY DEVICE HAVING SELF-REFRESHING FUNCTION

Masaki Tsukude, and Kazutami Arimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 382,557, Feb. 2, 1995, Pat. No. 5,568,440. This application Feb. 27, 1996, Ser. No. 607,497
Claims priority, application Japan, Feb. 3, 1994, 6-11900; Mar. 15, 1994, 6-44369
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—222 **18 Claims**



13. A semiconductor memory device carrying out a normal operation and a self-refreshing operation based on an internal power supply voltage, comprising:

a CMOS circuit operating as a peripheral circuit;

an analog circuit operating as the peripheral circuit;

first internal power supply voltage supplying means provided corresponding to said CMOS circuit for supplying a first internal power supply voltage lower in said self-refreshing operation than in said normal operation; and

second internal power supply voltage supplying means provided corresponding to said analog circuit for supplying a second internal power supply voltage lower in said self-refreshing operation than in said normal operation.

5,633,832

REDUCED AREA WORD LINE DRIVING CIRCUIT FOR RANDOM ACCESS MEMORY

Vipul C. Patel; Kenneth A. Poteet, both of San Jose, and Chitranjan N. Reddy, Los Altos Hills, all of Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Sep. 26, 1995, Ser. No. 533,755
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—230.06 **21 Claims**



15. In a random access memory having a plurality of word lines, a word line driving circuit, comprising:

a driver circuit for each word line, said driver circuit including

a CMOS inverter having a first node coupled to a boost voltage, a second node coupled to a second supply voltage, a common gate forming a control node, and an output coupled to its respective word line,

a level shifter transistor of a first conductivity type having a source coupled to the boost voltage, a drain coupled to the control node, and a gate coupled to the word line;

a decoupling transistor for each driver circuit, each said decoupling transistor having a source connected to the control node of its respective driver circuit, the drains of said decoupling transistors being connected to a common decode node, a selected decoupling transistor coupling its respective control node to the common decode node in a select operation, each said decoupling transistor coupling its respective control node to the common decode node in a deselect operation; and

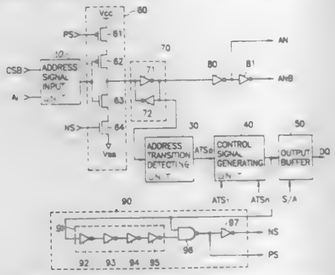
a decoder circuit intermediate the decode node and the second supply voltage, said decoder circuit coupling the decode node to the second supply voltage via at least one active device in response to a decoder address in the select operation, said decoder circuit coupling the decode node to a first power supply voltage in the deselect operation.

5,633,833

ADDRESS BUFFER FOR BLOCKING NOISE

Yeon-Joong Yoon, Inchon, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 18, 1995, Ser. No. 573,834
Claims priority, application Rep. of Korea, Jun. 30, 1995, 18702/1995
Int. Cl.[6] H03K 17/16; G11C 7/00
U.S. Cl. 365—230.08 **13 Claims**



1. An address buffer for blocking a noise comprising:

an address signal input means for receiving a chip selection signal and an address signal bit;

a clock inverter means for inverting or blocking a signal outputted from the address signal input means according to an NMOS control signal and a PMOS control signal;

a latch means for latching a signal outputted from the clock inverter means;

a first inverter for outputting an internal address signal to an address decoder by inverting a signal outputted from the latch means;

a second inverter for outputting an inverted internal address signal to the address decoder by inverting the internal address signal outputted from the first inverter;

an address transition detecting means for outputting an address transition detection signal according to the signal outputted from the latch means;

a control signal generating means for outputting a control signal generated by the signal outputted from the address transition detecting means to an output buffer; and

a clock inverter control signal generating means for outputting the NMOS and PMOS control signals to the clock inverter means by delaying the control signal outputted from the control signal generating means for a predetermined time and by logically operating the delayed signal and the control signal outputted from the control signal generating means.

5,633,834

SYNCHRONIZATION DEVICE FOR OUTPUT STAGES, PARTICULARLY FOR ELECTRONIC MEMORIES

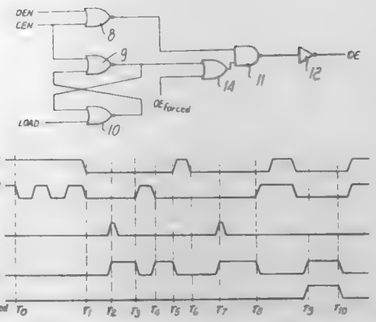
Luigi Pascucci, Sesto San Giovanni, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Nov. 17, 1995, Ser. No. 560,324
Claims priority, application European Pat. Off., Nov. 18, 1994, 94830538
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—233 **24 Claims**

1. A synchronization device for an output stage of an electronic memory comprising:

a first logic comparison circuit that produces a first confirmation signal based upon a comparison of an enable signal of the electronic memory and an enable signal of the output stage of the electronic memory;

a flip-flop circuit that produces a second confirmation signal, the flip-flop circuit being enabled by a data load signal and disabled by the enable signal of the electronic memory; and



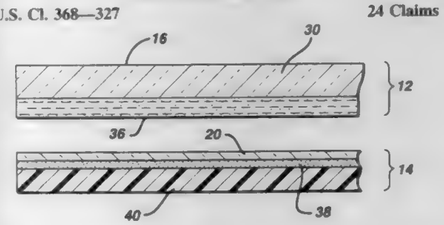
a second logic comparison circuit that produces an output signal that enables the output stage of the electronic memory based upon a comparison of the first and the second confirmation signals.

5,633,835

LONG TERM RAPID COLOR CHANGING TIME INDICATOR

David J. Haas, and Sandra F. Haas, both of Suffern, N.Y., assignors to Temtec, Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 45,552, Apr. 9, 1993, Ser. No. 955,469, Oct. 2, 1992, and Ser. No. 771,765, Oct. 4, 1991, said Ser. No. 955,469and Ser. No. 771,765, , each is a continuation-in-part of Ser. No. 602,120, Oct. 22, 1990, which is a continuation-in-part of Ser. No. 460,753, Jan. 4, 1990, Pat. No. 5,058,088, said Ser. No. 45,552is a continuation-in-part of Ser. No. 650,221, Feb. 4, 1991. This application Feb. 10, 1994, Ser. No. 197,631
Int. Cl.[6] G04B 17/00
U.S. Cl. 368—327 **24 Claims**



1. A time indicator that rapidly changes color after a specific time interval, comprising:

a base substrate with a dissolvable colored dye deposited on a first surface;

a dye impermeable barrier applied over and in contact with the dissolvable colored dye; and

a substrate having an adhesive on a first surface thereof, the substrate in adhesive contact with the dye impermeable barrier, the adhesive capable of dissolving the barrier in a predetermined time period;

wherein when the substrate and the base substrate are put into adhesive contact to activate the time indicator, the dye impermeable barrier prevents contact of the adhesive with the dissolvable colored dye and the adhesive coacts with the dye impermeable barrier to dissolve the barrier in the predetermined time interval, whereupon the adhesive contacts the dissolvable colored dye to dissolve the dye and permit the dye to migrate through the adhesive to cause a color change visible through the substrate in the predetermined time interval.

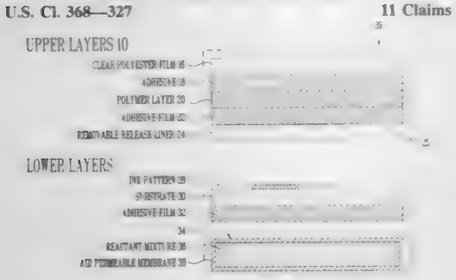
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5,633,836

ACCELERATED DEVELOPMENT TIME-DELAYED MESSAGE SYSTEM

Robert Langer, Newton; Mark E. Johnson, Allston, both of Mass., and Allan G. Sacks, Stamford, Conn., assignors to Noteworthy Products, Inc., Stamford, Conn.

Filed Dec. 4, 1995, Ser. No. 566,791
Int. Cl.[6] G04B *17/00*; **G01N** *31/22*
U.S. Cl. 368—327 **11 Claims**



1. A time-delayed message display system for displaying a message pattern of a colorant at a viewable surface against a contrasting background, the message pattern being viewable by reflected light at a predetermined time after activation of the message display system, said message display system having an essentially laminar, multilayer construction and comprising:

a) a source layer;

b) a migratable message agent supported on the source layer;

c) a viewable surface;

d) an opaque polymer film layer to overlie said source layer and to provide said viewable surface or to lie between said viewable surface and said source layer, said message agent being migratable through said opaque polymer film layer to said viewable surface; and

e) a release layer protecting said message agent from contact with said opaque polymer film layer, said release layer being removable to activate the system by initiating migration of said message agent through said opaque polymer film;

wherein arrival of said message agent at said viewable surface initiates development of a visible message pattern, said message display system further comprising:

f) a message development trigger acting to accelerate migation of said message agent through said opaque polymer film to promote said development of a visible message pattern; and

g) a trigger delay means to delay action of said message development trigger; whereby development of said visible message is accelerated and initiation of development is delayed by said trigger delay means.

5,633,837

AUTOMOBILE RADIO RECORDING SYSTEM

Zaidy L. Gantt, 2060 NW. 48th Ter., Condominium # 210, Fort Lauderdale, Fla. 33313

Filed Oct. 11, 1995, Ser. No. 541,124
Int. Cl.[6] H04H *9/00*
U.S. Cl. 369—7 **6 Claims**

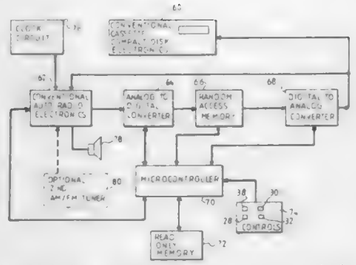
1. An automobile recorder, comprising:

a. a conventional automobile radio electronics circuit;

b. a conventional cassette recorder connected directly to receive the analog output of said radio electronics circuit;

c. an analog to digital converter in parallel with said cassette recorder directly connected to receive the analog output of said radio electronics circuit and has as its output a digitized version of said analog input, said analog to digital converter being normally blocked from receiving said radio circuit output;

d. a random access memory that stores said digitized version for later recording by said cassette recorder without time delay, wherein the input to said random access memory is the output of said analog to digital converter;



e. a digital to analog converter whose input is the digitized output of said random access memory, wherein said digital to analog converter has as its output the restored analog output of said automobile radio electronics circuit such that said analog output may be recorded onto said conventional cassette recorder at a later time;

f. a microcontroller to unblock said analog to digital converter to receive the analog output of said electronics circuit and to order and operate said conventional automobile radio electronics circuit, said conventional cassette recorder, said analog to digital converter, said random access memory, and said digital to analog converter, according to program instructions;

g. a read only memory that permanently stores said program instructions; and,

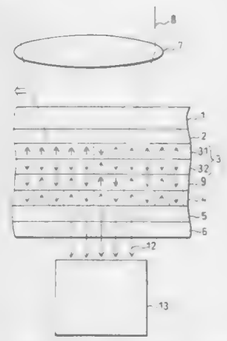
h. means comprising a multiplicity of controls under the control of a user that changeably enters said program instructions and initiates said microcontroller to unblock said analog to digital converter to permit recording by said cassette recorder the digitized version of the output of said radio circuit at a later time selected by said user.

5,633,838

MAGNETO-OPTICAL RECORDING MEDIUM HAVING TWO REPRODUCTION LAYERS AND A METHOD FOR REPRODUCING THEREOF

Junji Hirokane, Nara; Junichiro Nakayama; Michinobu Mieda, both of Shiki-gun, and Akira Takahashi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 3, 1996, Ser. No. 582,481
Claims priority, application Japan, Jan. 31, 1995, 7-013768
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **24 Claims**



1. A magneto-optical recording medium, comprising:

a recording layer having a recording magnetic domain where information is recorded in a perpendicular magnetization direction; and

a reproductive layer where its magnetization is reversed by a stray magnetic field generated from the recording magnetic domain,

wherein said reproductive layer includes:

a first reproductive layer where a stable magnetic domain width is larger than the recording magnetic domain width at room temperature and is smaller than the recording magnetic domain width at a higher temperature than a first critical temperature, said stable magnetic domain width is a minimum width in which the magnetic domain stably exists; and

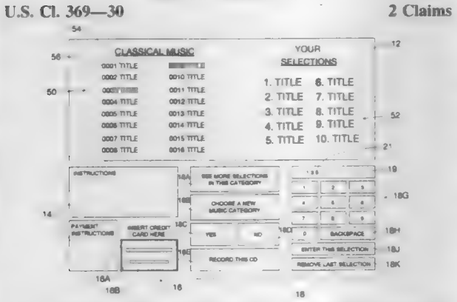
a second reproductive layer where a stable magnetic domain width is smaller than the recording magnetic domain width at room temperature and is larger than the recording magnetic domain width at a higher temperature than a second critical temperature that is set higher than the first critical temperature.

5,633,839

MUSIC VENDING MACHINE CAPABLE OF RECORDING A CUSTOMER'S MUSIC SELECTIONS ONTO A COMPACT DISC

Gregory Alexander, 120 D Klein Creek Ct., Carol Stream, Ill. 60188; David L. Volk, 301 Oakwood Ct., Clairton, Pa. 15025, and Steven D. Goldenbogen, 733 Broughton St., Pittsburgh, Pa. 15213

Filed Feb. 16, 1996, Ser. No. 602,461
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—30 **2 Claims**



1. A compact disk vending system for recording a customer's musical selections onto a compact disk, said compact disk vending system comprising:

a. a removable hard drive having available musical selections and titles of said available musical selections and codes for each of said available musical selections digitally stored thereon;

b. a microprocessor;

c. a random access memory;

d. said removable hard drive storing data in said random access memory as directed by said microprocessor, said removable hard drive retrieving data from said random access memory as directed by said microprocessor;

e. a read only memory;

f. said microprocessor acting upon instructions received from said random access memory and said read only memory;

g. a customer-accessible face;

h. a monitor on said face, said monitor controlled by said microprocessor, said monitor displaying a list of said available musical selections, said monitor displaying a list of the customer's musical selections;

i. a keyboard on said face, said keyboard providing input to said microprocessor;

j. said keyboard comprising a choose category button, said choose category button when pressed directing said microprocessor to control said monitor to display said available musical selections in a new category;

k. said keyboard comprising numerical keys;

l. a keyboard screen on said face, said keyboard screen displaying numbers corresponding to said numerical keys when said numerical keys are pressed;

m. said keyboard comprising an enter this selection key, said enter this selection key when pressed directing said microprocessor to compare said numbers displayed on said keyboard screen to said codes and to add said available musical selection corresponding to said code to said list of the customer's musical selections;

n. said keyboard comprising a remove last entry key;

o. said remove last entry key when pressed directing said microprocessor to remove the last of the customer's musical selections from said list of the customer's musical selections;

p. said keyboard comprising a record this CD button, said record this CD button when pressed directing said microprocessor to control said monitor to display a message prompting the customer to insert a payment card;

q. a card reader for retrieving electronic information from said payment card, said card reader inputting said information to said microprocessor;

r. a CD storage;

s. a CD writer and dispenser;

t. said CD writer and dispenser controlled by said microprocessor to retrieve a blank compact disk from said CD storage, record the customer's musical selections on said compact disk, and dispense said compact disk when said information from said payment card is received by said microprocessor.

5,633,840

METHOD OF SETTING AN INITIAL POSITION OF A PICKUP BASED ON DISK RECOGNITION AND A DISK PLAYER THEREFOR

Yeon-taek Han, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 13, 1995, Ser. No. 421,322
Claims priority, application Rep. of Korea, Apr. 13, 1994, 94-7751
Int. Cl.[6] G11B *3/90*; *17/22*
U.S. Cl. 369—32 **5 Claims**



1. An initial position setting method of a pickup based on disk recognition so as to position the pickup at a start position of a lead-in area of a disk loaded in a disk player, said loaded disk being one of a plurality of types of disk, each of said plurality of types of disk being characterized by having a lead-in area located a unique distance from the center of the disk, the initial position setting method comprising the steps of:

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positioning the pickup at a predetermined position of the disk loaded in the disk player, the predetermined position corresponding to a position between start positions of lead-in areas of respective types of disks:

reading signals from an area of the loaded disk corresponding to the predetermined position, the read signals containing information identifying the type of the loaded disk;

recognizing the type of the loaded disk based on the read signals; and

re-positioning the pickup to a start position of the lead-in area of the loaded disk based on the step of recognizing the type of the loaded disk.

5,633,841

OPTICAL DISC RECORDING/REPRODUCING APPARATUS HAVING AUTOMATIC PROTECTION OF PREVIOUSLY RECORDED DATA

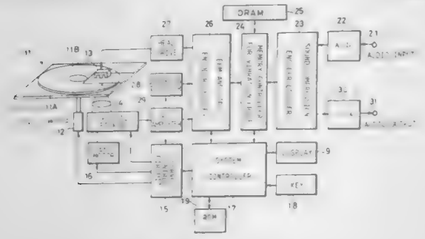
Teppei Yokota; Nobuyuki Kihara, and Junichi Aramaki, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 185,927, Mar. 1, 1994, abandoned. This application Apr. 24, 1995, Ser. No. 427,726

Claims priority, application Japan, May 25, 1992, 4-157411

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **8 Claims**



1. A disc recording/reproducing apparatus, comprising:

recording means, including a recording head, for storing compressed input digital data in a memory, reading a burst of said digital data from said memory, record said digital data to a data area on a disc, and recording position information of the recorded data in a lead-in area disposed on an innermost peripheral portion of said disc; and

reproducing means for reproducing data from said disc on the basis of said position information, storing the data in said memory, reading the data from said memory at a constant rate, expanding the data, and outputting the data,

record commanding means for commanding a start of record operation,

means for moving said recording head to a blank area on said disc responsive to said record position information and recording said input data in the blank area when said record commanding means commands a start of recording operation after the reproduction operation of said reproducing means has been stopped without intervening recording or reproducing of data.

5,633,842

DISK SELECTION CONTROL DEVICE FOR MULTIDISK PLAYER

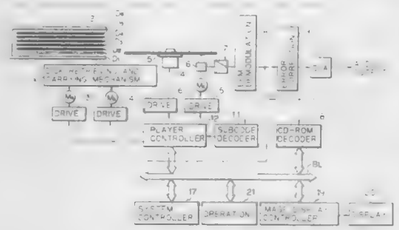
Junichi Nishida; Fumio Endo; Akira Hayama; Toshiyuki Kimura; Hitoshi Sato; Kiyoshi Furukawa, and Kenji Kaneko, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 26,072, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 653,266, Feb. 11, 1991, abandoned. This application Apr. 28, 1995, Ser. No. 431,396

Claims priority, application Japan, May 8, 1990, 2-119169

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **6 Claims**



4. A disk selection control device operating in a multidisk player, wherein said multidisk player houses a plurality of disks in a magazine, each of said plurality of disks having a lead-in area where indexing information is recorded, said indexing information including identification of a disk type, said device for selectively playing any one of said disks, the disk selection control device comprising:

retrieving means for retrieving each of said disks from a holding position in said magazine;

reading/storing means for reading and storing the indexing information of each of said plurality of disks;

disk position means for determining and storing disk holding position information indicative of said holding position of each of said disks in association with disk content identifying information and indexing information for the corresponding same one of said disks;

means for determining each of the plurality of disks as either a memory disk or a music disk based on the identification of a disk type in association with the disk holding position information;

storing means for storing the disk content identifying information indicative of disk content of the memory disk determined by said means for determining;

returning means for returning said disks to said holding position in said magazine;

means for receiving, in response to use input, a disk content selection command indicative of the content of a particular one of said disks, said receiving means selecting said particular one of said disks having content corresponding to said disk content selection command; and

means for determining which disk content identifying information of a particular disk corresponds to said disk content selection command, and for determining which particular disk holding position information is associated with said disk content identifying information of said particular one of disks, thereby selecting for playback the particular one of disks held at a disk holding position corresponding to said particular disk holding position information.

5,633,843

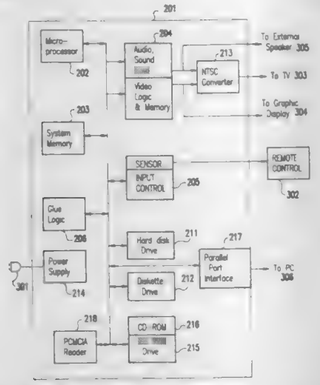
USER FRIENDLY COMPACT DISK (CD) READ ONLY MEMORY (ROM) PLAYER

Satish Gupta, Pleasantville; Kiyoshi Maruyama, Chappaqua; Steven E. Millman, Spring Valley; Chung-Wai Yue, Yorktown Heights, all of N.Y., and Halil B. Bakoglu, Montereno, Calif., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Jul. 24, 1995, Ser. No. 506,285

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **18 Claims**



1. A CD-ROM player which can install and execute programs on CD-ROM disks automatically, said programs being written for personal computers running a non-proprietary operating system, said CD-ROM player comprising:

a CD-ROM drive for receiving CD-ROM disks;

user interface means operable to prompt a user to insert a CD-ROM disk in the CD-ROM drive, said user interface means including an output to a video display for displaying program material played from a CD-ROM disk;

storage means for storing a database uniquely identifying CD-ROM disks storing programs written for personal computers; and

means for reading the CD-ROM disk inserted in the CD-ROM drive and for accessing said storage means to automatically identify and execute a correct sequence of commands to play a program stored on the CD-ROM disk.

5,633,844

OPTICAL PICKUP DEVICE WITH THREE BEAM TRACKING SERVO CONTROL USING OVAL BEAMS

Takanori Maeda, and Hajime Koyanagi, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,185

Claims priority, application Japan, Dec. 27, 1993, 5-330652

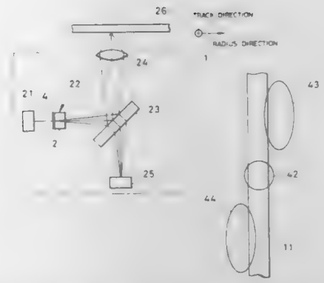
Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.23 **6 Claims**

1. An optical pickup device using a three-beam tracking servo system for writing or reading data from an optical information recording medium having a recording layer which changes from an original state to another state in response to a density of intensity of an irradiated light beam and a track being used for a tracking servo control system, comprising:

a first light spot irradiating means for irradiating a writing or reading light beam onto said recording layer to form a writing or reading spot having a first luminous flux density;

a second light spot irradiating means for irradiating two controlling light beams for said tracking servo control system onto said recording layer to form controlling spots which are radially displaced from each other on the recording layer by fractional track pitches;



each of said controlling spots having a major axis extending along the track and a minor axis, shorter than said major axis, extending perpendicular to the major axis;

each of said controlling spots having a second luminous flux density lower than said first luminous flux density and within a level which does not affect said original state of said recording layer;

an objective lens for collecting reflected lights from the recording medium; and

an optical detecting means for receiving the reflected lights from said writing or reading spot and said controlling spots on the recording medium.

5,633,845

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS HAVING REPRODUCING LIGHT BEAMS RADIATED ONTO REGIONS SITUATED BEHIND AND IN FRONT OF A SPOT FORMED BY A RECORDING LIGHT BEAM

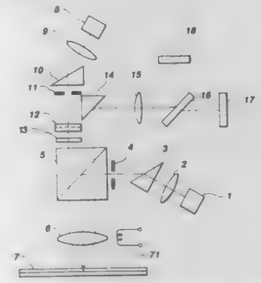
Toshio Horiguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,243

Claims priority, application Japan, Jan. 28, 1992, 4-013196

Int. Cl.[6] G11B *7/095*

U.S. Cl. 369—44.26 **16 Claims**



1. An optical information recording/reproducing apparatus, comprising:

a first light source for generating a recording light beam that illuminates an optical recording medium, for recording information;

a second light source for generating a reproducing light beam that illuminates said optical recording medium, and uses light reflected from the medium to reproduce recorded information;

an optical means located on a light path of said reproducing light beam so as to radiate said reproducing light beam originating from said second light source to a plurality of regions on said optical recording medium that include at least one track and at least one track guide on said optical recording medium, wherein said track contains a spot of a recording light beam originating from said first light source, said regions being

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situated behind and in front of said recording light beam spot relative to the direction of movement of said recording light beam; and

a tracking error signal generating means that uses light of said reproducing light beam reflected from said optical recording medium to generate a tracking error signal which helps said recording light beam to track a center portion of a recording track on said recording medium,

wherein said tracking error signal generating means includes a plurality of photodetector means that form an image from said optical recording medium onto which said reproducing light beam is radiated at positions on respective sides of a spot formed by said recording light beam, each said photodetector means being arranged so as to receive an image centered upon at least one said track guide in one of said regions; and

a tracking error signal calculating means for processing signals detected by said plurality of photodetector means and outputting a tracking error signal representing an amount of skew of said recording track at a position of said recording light beam spot.

5,633,846

POSITIONING DEVICE FOR OPTICAL DISC APPARATUS

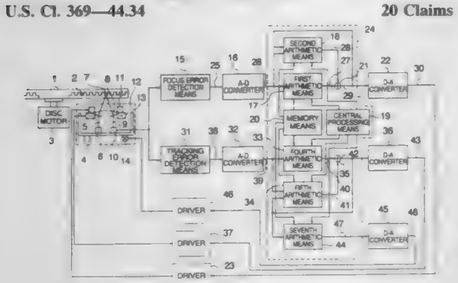
Atsushi Okuyama; Takashi Yoshida, both of Ibaraki-ken; Fujio Tajima, Tsuchiura; Masamichi Ito; Yasuhiro Mii, both of Ibaraki-ken; Masato Soma, and Hidehito Yamada, both of Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1996, Ser. No. 595,218

Claims priority, application Japan, Feb. 9, 1995, 7-021739

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.34 **20 Claims**



11. A positioning system of an optical disc apparatus according to the present invention comprising:

focus error detection means and tracking error detection means for respectively detecting a focus error signal as a focal shift of a light spot relative to an information recording surface of an optical disc and an off-track error of the light spot tracing the track on the optical disc;

light spot moving means for moving the light spot in a direction intersecting substantially perpendicularly to the optical disc surface and light spot radially moving means for moving the light spot substantially in the radial direction of the optical disc surface;

first digital arithmetic means for receiving the focus error signal and outputting a first control signal;

second digital arithmetic means for receiving said focus error signal and a third control signal, performing arithmetic operations of a disturbance observer and outputting a second control signal;

first adding means for adding said first control signal and said second control signal and outputting said third control signal;

drive means for driving the light spot moving means in a direction intersecting perpendicularly to the disc surface by said third control signal;

fourth digital arithmetic means for receiving said tracking error signal and outputting a fourth control signal;

fifth digital arithmetic means for receiving said tracking error signal and a sixth control signal and outputting a fifth control signal;

second adding means for adding said fourth control signal and said fifth control signal and outputting said sixth control signal;

seventh digital arithmetic means for receiving said sixth control signal and outputting a seventh control signal; and

radially driving means for driving the light spot radially moving means by the sixth control signal and the seventh control signal,

wherein said first and second digital arithmetic means perform arithmetic operations respectively at different sampling periods, and said fourth and fifth digital arithmetic means perform arithmetic operations at different sampling periods.

5,633,847

APPARATUS FOR RECORDING ON AND PLAYBACK FROM BOTH SIDES OF A DISK SHAPED RECORDING MEDIUM

Wataru Masuda, Hirakata, and Shigeo Shimada, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

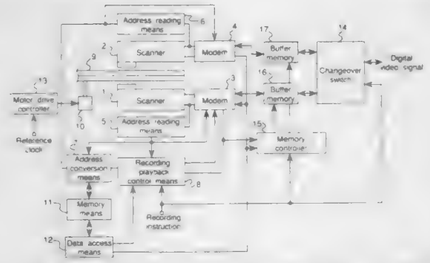
Division of Ser. No. 224,314, Apr. 7, 1994, Pat. No. 5,563,859.

This application Jul. 25, 1995, Ser. No. 506,565

Claims priority, application Japan, Apr. 7, 1993, 5-080493

Int. Cl.[6] G11B *5/09*

U.S. Cl. 369—48 **9 Claims**



1. An apparatus for simultaneous recording on and playback from opposite first and second surfaces of a disk-shaped recording medium having respective first and second information tracks, the first and second surfaces being divided into respective pluralities of first and second sectors, each sector having its own sector address, comprising:

a first scanner that scans the first information track on the first surface of said disk-shaped recording medium for recording and playback;

a second scanner that scans the second information track on the second surface of said disk-shaped recording medium for recording and playback;

a first modem that demodulates playback signals read by said first scanner and that modulates recording signals to output modulated recording signals to said first scanner;

a second modem that demodulates playback signals read by said second scanner and that modulates recording signals to output modulated recording signals to said second scanner;

a first address reading means that demodulates first sector addresses read by said first scanner;

a second address reading means that demodulates second sector addresses read by said second scanner;

an address conversion means that detects a positional relationship between the first sectors on the first surface and the second sectors on the second surface of said disk-shaped recording medium from the first and second sector addresses read by said first and second address reading means and converts the second sector addresses read by said second address reading means into converted second sector addresses according to a preset conversion rule which defines a manner of converting the second sector addresses into the converted second sector addresses based on said detected positional relationship; and

a recording-playback control means that individually outputs instructions for recording and playback to said first and second modems at specified sector addresses using the first sector addresses read by said first address reading means and the converted second sector addresses converted by said address conversion means.

5,633,848

METHOD AND APPARATUS FOR CLEANING AN OPTICAL DISK HEAD ON THE BASIS OF TIME ACCUMULATION

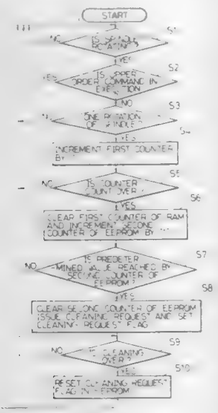
Takashi Masaki; Shigenori Yanagi, both of Kawasaki, and Manabu Yamamoto, Sayama, all of Japan, assignors to Fujitsu Limited, Kawasaki, and Nippon Telegraph & Telephone Co., Tokyo, both of Japan

Continuation of Ser. No. 111,084, Aug. 24, 1993, Pat. No. 5,471,451. This application May 12, 1995, Ser. No. 439,756

Claims priority, application Japan, Aug. 27, 1992, 4-228506

Int. Cl.[6] G11B *3/58*

U.S. Cl. 369—71 **6 Claims**



1. An optical disk apparatus comprising:

motor means for rotating and driving an optical disk medium;

optical head means for reading at least information from the optical disk medium rotated and driven by the motor means by projecting light thereon;

first counter means provided in a volatile memory;

second counter means provided in a non-volatile memory;

rotation time measuring means for measuring a rotation time of the motor means from a power-on of the apparatus to a power-off thereof and, upon a subsequent power-on of the apparatus, for measuring the motor rotation time by defining a measured value of the motor rotation time from a previous power-on period as an initial value and for accumulating motor rotation time from said subsequent power-on with said initial value, wherein said rotation time measuring means counts rotation pulses which are generated from the motor means by said first counter means, and each time an accumulation time value of said first counter means reaches a predetermined unit accumulation time value, said rotation time measuring means clears said first counter means and adds said unit accumulation time value of said first counter means to an accumulation time value of said second counter means, thereby updating said second counter means; and

cleaning management means for clearing said second counter means and transmitting a cleaning request signal from the optical disk apparatus to an upper apparatus to notify a necessity of cleaning the optical head means and for displaying when the accumulation time value of said second counter means reaches a predetermined value corresponding to a predetermined accumulation time at which a cleaning is necessary, and further for setting cleaning request flag information into said non-volatile memory.

5,633,849

DISK DRIVER HAVING A DUST PROOF REAR COVER FITTED ON A REAR WALL OF A FRAME UNIT

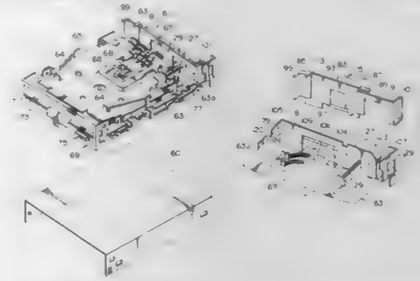
Makoto Konno; Hisateru Komatsu, and Takashi Watanabe, all of Tendou, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1995, Ser. No. 382,925

Claims priority, application Japan, Feb. 8, 1994, 6-014685

Int. Cl.[6] G11B *33/14*

U.S. Cl. 369—75.1 **10 Claims**



1. A disk drive comprising:

a frame unit having a rear wall formed integrally with a bottom plate made by press work from a plate, said rear wall having at least one opening portion comprising a hole or gap space, and a fixing member rearwardly extending from an edge of said opening portion for fixing a circuit board thereto, said rear wall having a rear cover mounted thereon for closing said opening portion to the environment;

a disk holder unit for receiving a disk, said disk holder unit being in said frame unit and driving said disk;

a carriage assembly including a recording and reproducing head for recording information on and reproducing information from said disk, said carriage being mounted at said rear wall of said frame unit; and

a stepping motor mounted on said rear wall for driving said carriage assembly forward and backward;

said circuit board extending from a position beneath said bottom plate and rearwardly beyond said rear wall, and said circuit board including a circuit for driving said recording and reproducing head and said stepping motor, and an electrical connector for connecting said circuit with external devices;

said rear wall including a wall engaging member, said wall engaging member comprising a notch or a hole; and

said rear cover including a cover engaging member for engaging with said wall engaging member when said cover is mounted on said rear wall;

whereby shifting of said rear cover in a direction along a surface of said rear wall is prevented and entry of dust into the equipment is prevented.

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5,633,850

OPTICAL DISC PLAYER HAVING AN APPARATUS FOR TRANSFERRING BOTH A DISC TRAY AND AN OPTICAL PICKUP

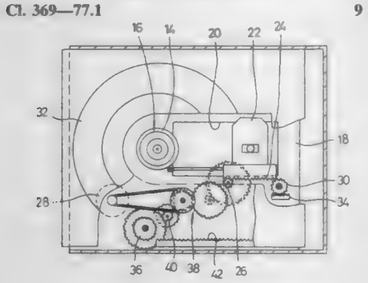
Kwang-Lim Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 580,444

Claims priority, application Rep. of Korea, Dec. 29, 1994, 94-38482

Int. Cl.[6] G11B *17/04*

U.S. Cl. 369—77.1 **9 Claims**



1. An optical disc player comprising:

a feeding motor for generating a motive power;

an optical pickup having a first rack gear at a side of a body thereof, and being installed to a feeding space on a deck plate;

a feeding pinion for receiving the motive power of said feeding motor by being brought into meshing engagement with said first rack gear to be rotated for permitting said optical pickup to move linearly;

an auxiliary gear rotatable on said deck plate for being brought into meshing engagement with said first rack gear when said optical pickup is in a stop mode to separate the first rack gear from the feeding pinion;

a tray feeding gear for receiving the motive power transmitted from said feeding motor to be rotated about its position on a front upper plane of said deck plate;

a tray having a second rack gear integrally formed at a side of said tray for being brought into meshing engagement with said tray feeding gear when said first rack gear is separated from said feeding pinion; and

an auxiliary rack gear integrally formed with said tray for being brought into meshing engagement with said auxiliary gear,

wherein said tray moves forward or backward by said auxiliary rack gear being meshed with said auxiliary gear,

said tray moving forward for said tray feeding gear to be brought into meshing engagement with said second rack gear and said feeding pinion to be separated from said first rack gear by a predetermined distance for idling during a feeding operation of the tray while the optical pickup is in a stop mode;

or said tray moving backward for said feeding pinion to be brought into meshing engagement with said first rack gear and for said tray feeding gear so as to be separated from said second rack gear by a predetermined distance for idling during the linear movement of the optical pickup.

5,633,851

A SCANNING DEVICE PRODUCING A FIRST AND A SECOND SCANNING SPOT WHICH MOVE IN DIFFERENT DIRECTIONS AND AN APPARATUS CONTAINING THAT DEVICE WHICH USES THE FIRST SPOT FOR READING AND/OR RECORDING AND THE SECOND SPOT TO MONITOR SUCH READING AND/OR RECORDING

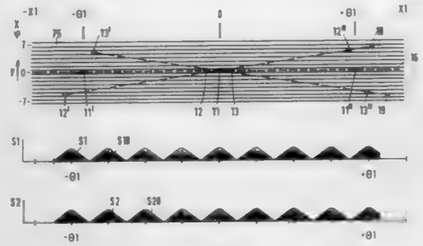
Josephus A. H. M. Kahlman, and Gerard E. Van Rosmalen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1994, Ser. No. 248,946

Claims priority, application Belgium, Dec. 15, 1993, 09301395

Int. Cl.[6] H01J *3/14*; G11B *7/20*

U.S. Cl. 369—112 **35 Claims**



27. A scanning device, comprising:

beam generating means for generating a first scanning beam and a second scanning beam for scanning a scanning surface of a record carrier, the first scanning beam and the second scanning beam forming a first scanning spot and a second scanning spot, respectively, on the scanning surface; and

scanning spot movement means for causing the first scanning spot and the second scanning spot to scan the scanning surface synchronously along a first scanning path and a second scanning path, respectively, which are non-parallel.

5,633,852

OPTICAL DATA RECORDING AND REPRODUCING APPARATUS INCLUDING CHROMATIC ABERRATION CORRECTION

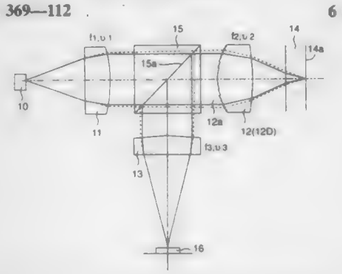
Koichi Maruyama, and Junji Kamikubo, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1995, Ser. No. 409,688

Claims priority, application Japan, Mar. 24, 1994, 6-053776; Jul. 13, 1994, 6-161015

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **6 Claims**



1. An optical data recording and reproducing apparatus, comprising;

a laser source;

a collimating lens having a positive power to collimate divergent laser beams emitted from said laser source; and

an objective lens adapted to converge the beams collimated by said collimating lens onto a data recording surface of a data recording medium; wherein,

said collimating lens is a single lens; and

said objective lens is provided with an over correction of chromatic aberration to reduce a back focal distance of said objective lens as a wavelength increases to thereby cancel a chromatic aberration of said collimating lens.

5,633,853

OPTICAL PICKUP WITH TWO OPTICAL SYSTEMS EACH GENERATES A LASER BEAM

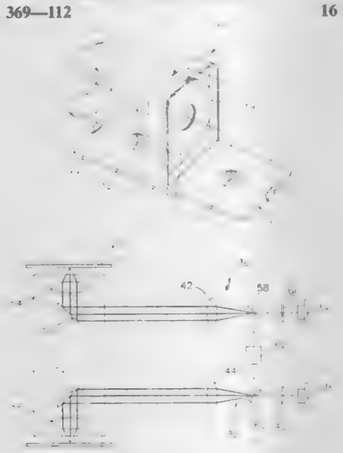
Yeon O. Kim, and Jun H. Park, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 28, 1995, Ser. No. 508,446

Claims priority, application Rep. of Korea, Jul. 29, 1994, 94-18672

Int. Cl.[6] G11B *17/08*; *7/00*

U.S. Cl. 369—112 **16 Claims**



13. An optical pickup device comprising:

a light source for generating a first and a second laser beams into a first direction for reading a first and a second optical disks, respectively;

a half mirror for transmitting said first and second laser beams into said first direction, and for reflecting incident light in a second direction which is opposite to said first direction into a third direction;

a first collimator lens for converting said first and second laser beams transmitted through said half mirror into a first and a second parallel lights, and for condensing incident light in said second direction to be directed to said half mirror in said second direction;

a rhomboid prism including a first reflecting surface for transmitting said first parallel light into said first direction, for reflecting said second parallel light into a fourth direction and for transmitting incident light from said second direction, and a second reflecting surface for reflecting said second parallel light in said fourth direction toward a fifth direction which is parallel to said first direction and for transmitting incident light in a sixth direction which is opposite to said fifth direction;

a first total reflecting mirror for reflecting said first parallel light toward said first optical disk, and for reflecting a first reflecting light from said first optical disk toward said rhomboid prism in said second direction;

a first object lens for condensing a second reflecting light reflected from said first total reflecting mirror, and for converting said first reflecting light from said first optical disk into a third parallel light;

a first light receiving device for receiving reflected light from said half mirror into said third direction;

a second total reflecting mirror for reflecting said second parallel light reflected in said fifth direction toward said second optical disk, and for directing a third reflecting light reflected from said second optical disk toward said rhomboid prism in said sixth direction;

a second object lens for condensing a fourth reflecting light reflected from said second total reflecting mirror, and for converting said third reflecting light from said second optical disk into a fourth parallel light;

a second collimator lens for condensing light reflected from said second total reflecting mirror, transmitted through said rhomboid prism and incident in said sixth direction; and

a second light receiving device for receiving light condensed by said second collimator lens.

5,633,854

METHODS AND APPARATUS FOR REPRODUCING DATA RECORDED ON AN OPTICAL RECORDING MEDIUM

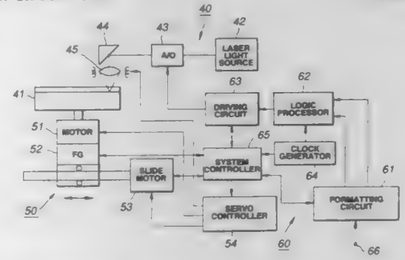
Hideyoshi Horimai, and Goro Fujita, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 133,113, Oct. 12, 1993. This application Aug. 17, 1994, Ser. No. 291,612

Claims priority, application Japan, Feb. 19, 1992, 4-069736; May 25, 1992, 4-157434; Jun. 18, 1992, 4-182847

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—124 **12 Claims**



1. An apparatus for reproducing data recorded on an optical recording medium, wherein data recorded on a succeeding track of the optical recording medium is generated by logical processing of input data with data recorded on a preceding recording track of the optical recording medium, comprising:

an optical head;

said optical head having a light source, an objective lens for converging a light beam radiated from said light source simultaneously over both the succeeding track and the preceding track of the optical recording medium, and light receiving means for receiving a return light beam incident thereon from said optical recording medium via said objective lens and in response to said return light beam, generating a plurality of output signals;

a plurality of differential amplifiers operative to generate differences between the plurality of output signals;

a discriminating circuit for discriminating recorded data based upon the differences between the plurality of output signals, the signal discriminating circuit operative to perform logical processing of the differences between the plurality of output signals, the logical processing of the differences between the plurality of output signals corresponding to the logical processing of the input data with the data recorded on the preceding recording track of the optical recording medium.

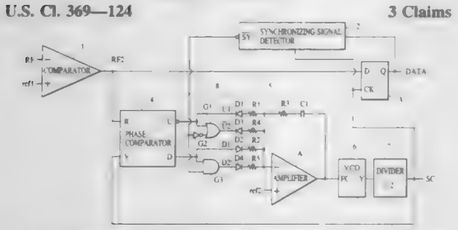
VOL 1198 ISS 4 MAY 27 1997 UMI

5,633,855

OPTICAL INFORMATION REPRODUCTION APPARATUS

Yuichi Naito, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 432,713, May 2, 1995, abandoned.
This application Dec. 19, 1995, Ser. No. 574,988
Claims priority, application Japan, May 11, 1994, 6-097430
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—124 3 Claims



1. An apparatus for reproducing information from an optical information recording medium comprising an area for recording a phase-locked-loop synchronizing signal and an area for recording data, and a specific signal recorded between the two areas, said apparatus comprising:

means for generating a reproduction signal by scanning the recording medium with an optical beam;

a specific-signal detector for detecting the specific signal from the reproduction signal;

a binary-conversion circuit for converting the reproduction signal to a binary signal;

a sampling-clock generating circuit for generating a sampling clock, synchronized with the binary reproduction signal; and

a reproduction circuit for reproducing information by sampling the binary reproduction signal with the sampling clock,

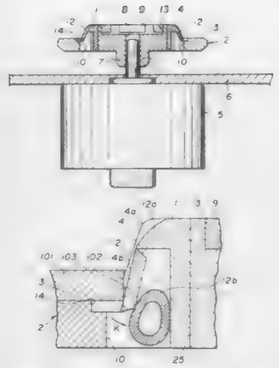
wherein said sampling-clock generating circuit comprises (i) a phase comparator for generating a phase-comparing signal by comparing a phase of the binary reproduction signal with that of the sampling clock, (ii) a low-pass filter comprising an amplifier into which the phase-comparing signal is inputted through two resistors which are connected to each other in series and which comprises a feedback circuit, (iii) a switch which is connected in parallel with one of said two resistors and is used as a non-continuity when said specific-signal detector detects the specific signal, and (iv) a voltage-controlled oscillator which generates the sampling clock, which has a frequency proportional to that of an outputted voltage of said low-pass filter.

5,633,856

DISC TABLE FOR DISC RECORDING/REPRODUCING APPARATUS AND METHOD FOR PRODUCING SAME

Hiroshi Mukawa, Tokyo, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 5,159, Jan. 15, 1993, abandoned.
This application Feb. 21, 1995, Ser. No. 391,461
Claims priority, application Japan, Jan. 24, 1992, 4-032932; May 26, 1992, 4-157300; Sep. 30, 1992, 4-285218
Int. Cl.[6] G11B 17/028;25/04
U.S. Cl. 369—270 7 Claims



1. A disc table comprising:

a table section;

a centrally located hub which is integral with said table section and which has a frusto-conical upper portion and a cylindrical lower portion, the cylindrical lower portion being rigid with said table section, said frusto-conical upper portion merging directly with the cylindrical lower portion;

disc retention means mounted on said hub and responsive to the movement of said disc moving down along said hub toward said table section for producing a force which biases said disc down onto said table section and retains it in position;

centering means including a plurality of centering segments which are integral with one another, which are equidistantly spaced about the hub, and which depend down from said upper portion and at an angle which is different from an angle of taper of said frusto-conical upper portion, said centering segments each having a free end which is located in a toridal recess formed in said table section about said lower portion of said hub, said centering segments being so constructed and arranged as to be flexible and to include means for providing said centering segments with an elasticity which is selected to allow said centering segments to be biased inwardly by an engagement with the disc as the disc is biased down toward said table section, solely under the influence of the force which is produced by said disc retention means, said centering segments being formed with hinges, and said elasticity providing means comprising a tubular elastic member disposed between said hub and inner surfaces of said centering segments which can be elastically deformed by the inward deflection of said centering segments about the hinges.

5,633,857

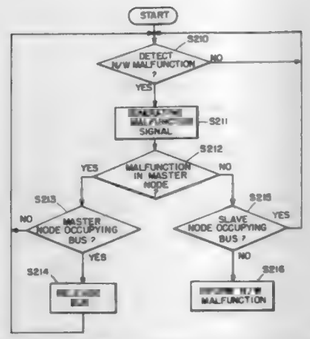
APPARATUS AND METHOD FOR CONTROLLING DATA TRANSMISSIONS IN A COMMUNICATION NETWORK

Chang-ho Kim, Kyunggi-do, and Eog-woo Choi, Seoul, both of Rep. of Korea, assignors to GoldStar Information & Communications, Ltd., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 396,421, Feb. 28, 1995, abandoned, which is a continuation of Ser. No. 89,236, Jul. 9, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 540,905
Claims priority, application Rep. of Korea, Jul. 15, 1992, 92-12576; Sep. 7, 1992, 92-16308; Nov. 30, 1992, 92-22865
Int. Cl.[6] H04L 12/40
U.S. Cl. 370—242 3 Claims

1. An apparatus for controlling data transmissions in a communication network which includes a plurality of nodes connected to a common bus, each of said nodes having a communication processor with a memory and bus control means associated with the processor for transmitting data from the processor to the network over the bus, said bus control means including a direct memory access controller (DMAC) for accessing parallel data in the memory, means for converting from parallel data to serial data or vice versa, a bus control module for generating a bus acknowledge signal and responding to a bus request signal from the processor and a bus asserting signal from said bus control means during data transmission, and a bus driver for connection with the bus for data transmissions, the apparatus comprising:

malfunction detect/control means provided in one of said nodes for detecting a malfunction in the network and generating a malfunction signal to said nodes including itself over the bus when the malfunction is detected;



malfunction detect means provided in each of the other nodes for receiving said malfunction signal from the malfunction detect/control means over the bus;

diagnosing means provided in every node, responding to the malfunction detect means for diagnosing whether the detected malfunction is occurred in its node; and

wherein in the malfunctioned node, said diagnosing means forces the processor to stop its operation for data transmissions and the malfunction detect means or the malfunction detect/control means also forces the bus control means to disconnect with the bus, thereby removing the malfunction in the network;

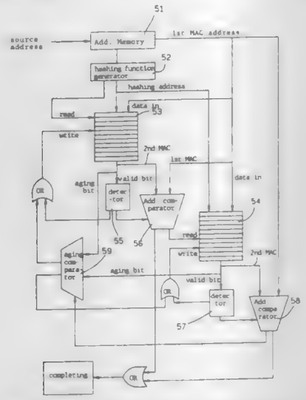
wherein, when said malfunction detect/control means continuously detects a malfunction in the network without receiving of a bus asserting signal, said malfunction detect/control means decides that the malfunction is occurred in the network itself and then produces an alarm to an operator of the network for repair thereof.

5,633,858

METHOD AND APPARATUS USED IN HASHING ALGORITHM FOR REDUCING CONFLICT PROBABILITY

Chung-Ju Chang; Lain-Chyr Hwang; Ray-Guang Cheng, and Ji-Hsiang Yu, all of Hsinchu, Taiwan, assignors to Accton Technology Corporation, Hsinchu, Taiwan

Continuation-in-part of Ser. No. 282,031, Jul. 28, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,704
Int. Cl.[6] H04J 3/24; G06F 13/00
U.S. Cl. 370—255 20 Claims



1. A method adapted to be used in hashing algorithm for reducing conflict probability, comprising the steps of:

receiving a first physical address of a frame;

generating a hashing address corresponding to said first physical address;

comparing a second physical address corresponding to said hashing address with said first physical address to determine if said first and said second physical addresses match with each other;

completing a packet calling process when said first and said second physical addresses match with each other, but going back to said comparing process when said first and said second physical addresses do not match with each other, to determine whether there is another second physical address corresponding to said hashing address and matching with said first physical address;

ending said packet calling process when a number of times that said comparing process is proceeded is greater than a reference value; and the resulting conflict probability is less than a designated value, which is substantially equal to

$$\frac{1}{2^n} \times \frac{2^{m-n}}{2^m} \times \frac{2^{m-n}-1}{2^m} \times \ldots \times \frac{2^{m-n}-(N-1)}{2^m},$$

wherein

m is the length of said first physical address;

n is the length of said hashing address;

2^m is the total number of said second physical addresses;

2^n is the number of hashing addresses to be held in a routing table; and therefore

$1/2^n$ is the probability that a specific address in the routing table is selected;

2^{m-n} is the number of physical addresses that hash to the same address in the routing table; and therefore

$$\frac{2^{m-n}}{2^m}$$

is the probability that an address hashes to a selected address in the routing table;

N is the total number of routing tables; and

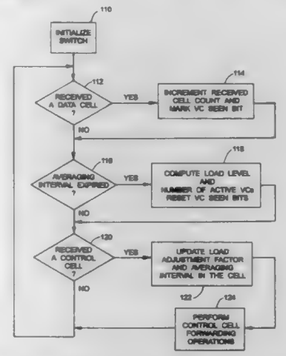
N−1 is number of a back-up routing table.

5,633,859

METHOD AND APPARATUS FOR CONGESTION MANAGEMENT IN COMPUTER NETWORKS USING EXPLICIT RATE INDICATION

Raj Jain, Upper Arlington; Shiv Kalyanaraman, and Ram Viswanathan, both of Columbus, all of Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Sep. 16, 1994, Ser. No. 307,375
Int. Cl.[6] H04Q 11/04
U.S. Cl. 370—234 36 Claims



1. A method adaptable for use in a computer network having at least one source and at least one destination between which data is transferred via a switch, the method comprising steps of:

determining the actual load level of the switch;

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receiving a control cell from the source in the switch, the control cell including a first load adjustment factor and being transmitted from the source at a first transmission rate;

determining a second load adjustment factor in accordance with the current load level and a first load adjustment factor;

sending the control cell including the second load adjustment factor to at least one of the source and the destination;

receiving the control cell at the at least one of the source and the destination;

sending the control cell to the source by the destination if received at the destination; and,

selectively adjusting the first transmission rate of the source to a second transmission rate in accordance with the second load adjustment factor.

5,633,860

RELIABLITY-CONTROLLED DATA RECEPTION IN RECEIVERS FOR TDMA MOBILE RADIO SYSTEMS

Franz-Josef Hagmanns, Backnang, Germany, assignor to ANT Nachrichtentechnik GmbH, Stuttgart, Germany

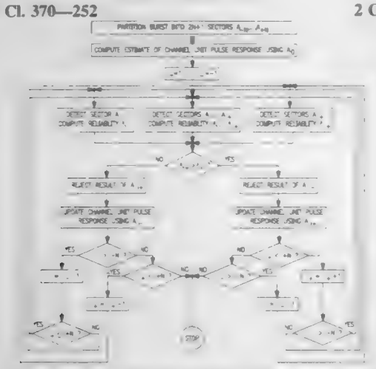
PCT No. PCT/DE94/00308, § 371 Date Aug. 28, 1995, § 102(e) Date Aug. 28, 1995, PCT Pub. No. WO94/24799, PCT Pub. Date Oct. 27, 1994

PCT Filed Mar. 19, 1994, Ser. No. 507,475

Claims priority, application Germany, Apr. 8, 1993, 43 11 604.3

Int. Cl.[6] H04L *25/30*

U.S. Cl. 370—252 **2 Claims**



1. A method for data detection of TDMA data bursts, which have a central test sequence (A_0), by determining the identification parameters of the transmission channel, wherein the following steps are carried out for one data burst in each case:

a) the two data segments between which the test sequence within the data burst is situated are respectively subdivided into N sectors;

b) a first channel unit pulse response is determined from the test sequence;

c) with the aid of the first channel unit pulse response, the data of the two sectors (A_{-1}, A_1) which immediately adjoin the test sequence in the forward and reverse directions, respectively, are determined as detection results;

d) the reliability of the detection result last determined in the forward direction is compared with the reliability of the detection result last determined in the reverse direction, the less reliable detection result is rejected and the further detection direction is fixed on that forward or reverse direction which corresponds to the direction in which —viewed from the test sequence—the more reliable detection result is situated;

e) the channel unit pulse responses of all sectors are updated with the aid of the more reliable detection result;

f) with the aid of the channel unit pulse responses determined in the previously processed sectors, the detection result of the following sector is determined in the fixed detection direction and, instead of the rejected detection result, a new detection result is detected in the opposite direction on the basis of the channel unit pulse responses of the previously processed sectors; and,

g) the steps d) to f) are repeated until the data of all the sectors are detected.

5,633,861

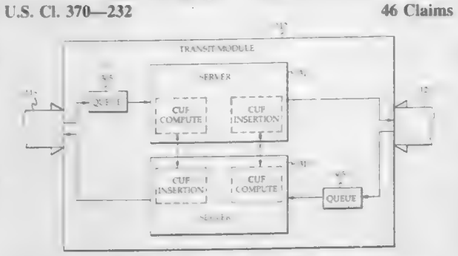
TRAFFIC MANAGEMENT AND CONGESTION CONTROL FOR PACKET-BASED NETWORKS

Raymond H. Hanson, Reston, Va.; Albert Lespagnol, Montigne Le Bretonneux, France; Tony Y. Mazraani, Fairfax, Va.; Barton J. Milburn, Haymarket, Va.; Jonathan B. R. White, Reston, Va., and Srinivas C. Dabir, Chantilly, Va., assignors to Alcatel Data Networks Inc., Ashburn, Va.

Continuation of Ser. No. 358,741, Dec. 19, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 585,265

Int. Cl.[6] H04J *3/14*; **H04L** *12/56*

U.S. Cl. 370—232 **46 Claims**



38. A method for traffic management and congestion control of packets traveling in a forward direction from a source node to a destination node on a virtual connection of a packet-based communications network, the method comprising the steps of:

transmitting the packets from the source node to the destination node on the virtual connection at a variable submission information rate (SIR);

measuring a channel utilization factor (CUF), which is directly related to the degree of utilization of network resources, during transmission of packets in said forward direction;

inserting said channel utilization factor in return packets travelling in a return direction from the destination node to the source node on the virtual connection; and

adjusting said submission information rate in response to said channel utilization factor contained in said return packets.

5,633,862

DTMF SIGNAL TRANSMISSION METHOD IN SINGLE FREQUENCY SIMULTANEOUS TRANSMITTING AND RECEIVING SYSTEM AND SINGLE FREQUENCY SIMULTANEOUS TRANSMITTING AND RECEIVING SYSTEM TRANSCEIVER CAPABLE OF TRANSMITTING DTMF SIGNAL

Kenichi Suzuki, Yokohama; Sakari Ohira, Sendai; Fujio Sumi, Tokyo, and Osamu Suzuki, Sayama, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo; Tohoku Electric Power Co., Inc., Miyagi-ken, and Fuji-Tekku Kabushiki Kaisha, Tokyo, all of Japan

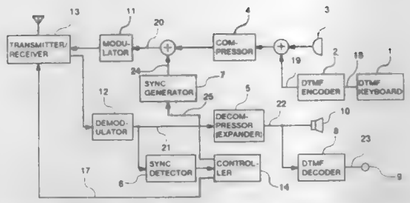
Filed Oct. 28, 1994, Ser. No. 330,676

Claims priority, application Japan, Oct. 29, 1993, 5-292549

Int. Cl.[6] H04B *1/56*

U.S. Cl. 370—280 **9 Claims**

1. In a transceiver for transmitting a speech signal by dividing the speech signal by a predetermined time interval and time-compressing transmission information into each of the divided intervals and allotting a remaining interval of the predetermined time interval caused by the time compression to the reception, and repeating the above process to attain the simultaneous transmission



and reception by using a single frequency for the transmission and reception, a method for transmitting a DTMF signal of the single frequency simultaneous transmission and reception radio communication system comprising the steps of:

storing selection information of the DTMF signal in a memory;

immediately reading out the DTMF signal selection signal and transmitting the DTMF signal when the selected DTMF signal is at a timing to complete the transmission within the compressed transmission time in the predetermined time interval; and

reading out the DTMF signal selection information stored in the memory in the compressed transmission time of the next predetermined time interval and transmitting the read DTMF signals in sequence when the transmission cannot be completed within the compressed transmission time of the current predetermined time interval.

5,633,863

ECHO CANCELER

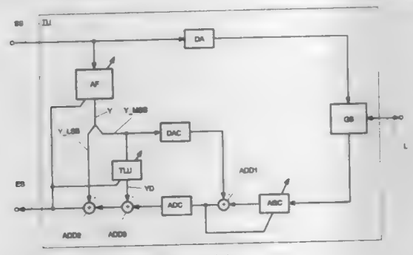
Peter Gysel, Zurich; Bruno Wenger, AU/ZH; August Kalin, Bonstetten, and Daniel Muller, Zurich, all of Switzerland, assignors to Siemens Schweiz AG, Zurich, Switzerland

Filed Jul. 6, 1995, Ser. No. 498,765

Claims priority, application Switzerland, Jul. 7, 1994, 02170/94; Jul. 7, 1994, 02171/94; Jun. 19, 1995, 01793/95; Jun. 23, 1995, 01852/95

Int. Cl.[6] H04B *3/23*

U.S. Cl. 370—290 **13 Claims**



1. A circuit arrangement comprising:

a send path carrying a send signal;

a receiving path carrying a received signal;

an adaptive filter;

an analog first adder;

a first digital/analog converter;

a transmission unit; and

a two line wire attached to the transmission unit,

wherein over the two line wire at least the send signal, the received signal and echo signal portions are transmitted, the send path and the received path are connected with the transmission unit and the send signal is transmitted to the adaptive filter for providing an estimated echo signal, the estimated echo signal transmitted through the first digital/analog converter to the first analog adder, located in the received path, for the reduction of an echo signal portion in the received signal,

wherein the first adder, viewed in a direction of transmission, is followed by an analog/digital converter and then by a digital second adder, and a first portion of the estimated echo signal being transmitted to the first adder and a second portion of the estimated echo signal being transmitted to the second adder, for the production of the received signal,

wherein means for full utilization of the dynamic range are provided for the analog/digital converter and therefore for the automatic adaptation to differing lengths of the two line wire,

the means for full adaptation to differing line lengths comprising:

a bit shift unit;

an amplifier unit; and

a received signal measuring unit, the bit shift unit being provided upstream of the second adder in the signal transmission direction; the amplifier unit being provided between the first adder and the analog/digital converter and the received signal measuring unit impressed with the received signal for the control of the bit shift unit and the amplifier unit.

5,633,864

COMMUNICATION SYSTEM COMPRISING AN ATM NETWORK AND A DEMULTIPLEXING DEVICE

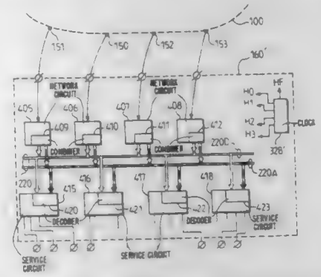
George Tibi, Fontenay aux Roses, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 268,703, Jun. 29, 1994, abandoned. This application May 13, 1996, Ser. No. 647,254

Claims priority, application France, Jun. 30, 1993, 93 08001

Int. Cl.[6] H04L *12/64*

U.S. Cl. 370—392 **14 Claims**



1. A communication system comprising an Asynchronous Transmission Mode ("ATM") network operatively connected to at least one demultiplexing device, said at least one demultiplexing device for transmitting, from a first access point of a plurality of access points to a plurality of second access points of said plurality of access points, information cells, said cells including a header portion comprising an identification of a destination service circuit to which said cells are to be transmitted and a data portion comprising a transmit payload, said at least one demultiplexing device comprising:

at least one input access operatively connected to said ATM network for receiving said cells;

a plurality of output accesses operatively connected to said second access points;

at least one network circuit, operatively connected to said at least one input access, comprising a header analyzing element;

a common data line operatively connected to said network circuit; and

a plurality of service circuits each operatively connected to said common data line and at least one of said plurality of output accesses,

wherein each said network circuit further comprises a routing table, operatively connected directly to said header analyzing element for producing a routing information signal upon a receipt of each information cell, the routing information signal including at least the identification of said

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destination service circuit that comprises the destination of the respective cell, and

said network circuit further comprising a combining element for transmitting, over the common data line, both the routing information signal and said cells,

wherein each of said plurality of service circuits comprises a decoding element and a plurality of service elements,

said decoding element for decoding the routing information signal and transmitting the respective cell to a service element of said plurality of service elements based on the routing information signal, wherein the respective cell is stored only once by said demultiplexing device in the service element.

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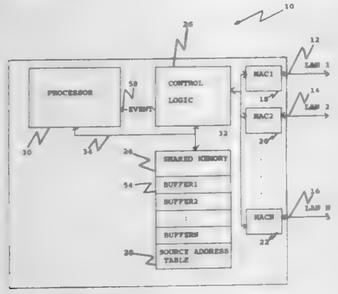
APPARATUS FOR SELECTIVELY TRANSFERRING DATA PACKETS BETWEEN LOCAL AREA NETWORKS

Phillip Short, Monrovia, Calif., assignor to Netvantage, El Segundo, Calif.

Continuation of Ser. No. 414,927, Mar. 31, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 688,236

Int. Cl.[6] **H04L** *12/46;12/56;* **H04Q** *11/04*

U.S. Cl. 370—412 **22 Claims**



1. A switching apparatus for selectively bidirectionally transferring data packets between a plurality of local area networks (LANs), wherein said data packets identify destination and source addresses, said apparatus comprising:

a first media access controller (MAC) configured for receiving, transmitting and buffering data packets to a LAN; said first MAC associated with a first LAN for receiving and buffering a first set of data packets from said first LAN;

a second MAC associated with a second LAN for receiving and buffering a second set of data packets to said second LAN;

a shared memory comprised of a plurality of buffers adapted for storing said data packets from said first and second sets;

control logic for selectively storing each said received data packet from said first and second sets into at least one selected buffer;

a single source address table common to said first and second LANs for associating said source addresses to each said LAN; and

a single processor executing a control program for forming said source address table in response to a single receive signal from said control logic and directing said control logic to discard or alternatively to transfer each stored data packet to a different LAN via its associated MAC according to the contents of said source address table and said stored data packets;

wherein said control logic comprises:

DMA control logic for bidirectionally transferring a plurality of bytes in bursts between said first and second MACs and said shared memory;

queue logic for forming a plurality of FIFO queue lists within said shared memory each containing a plurality of entries that are pointers to a plurality of said buffers within said shared memory; and

a state machine for controlling reception and transmission of data packets between said first and second LANs and said shared memory using said DMA control logic according to said FIFO queue lists.

5,633,866

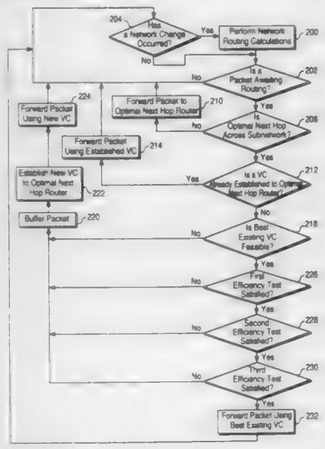
METHOD AND APPARATUS FOR ROUTING PACKETS IN NETWORKS HAVING CONNECTION-ORIENTED SUBNETWORKS

Ross W. Callon, Bedford, Mass., assignor to Bay Networks, Inc., Santa Clara, Calif.

Continuation of Ser. No. 560,047, Nov. 17, 1995, abandoned. This application Aug. 19, 1996, Ser. No. 700,313

Int. Cl.[6] **H04L** *12/46*

U.S. Cl. 370—397 **23 Claims**



1. A method for routing packets in a network having a connection-oriented subnetwork, a plurality of routers coupled to said connection-oriented subnetwork, and a plurality of established virtual circuits, said method comprising the steps of:

receiving a packet to be routed toward a packet destination;

identifying a best existing virtual circuit from said plurality of established virtual circuits;

determining whether said best existing virtual circuit is feasible for forwarding said packet toward said packet destination;

determining whether said best existing virtual circuit is efficient for forwarding said packet toward said packet destination;

forwarding said packet toward said packet destination using said best existing virtual circuit if said best existing virtual circuit is feasible and efficient; and

establishing a new virtual circuit across said connection-oriented subnetwork to an optimal next hop router and forwarding said packet toward said packet destination using said new virtual circuit if said best existing virtual circuit is not both feasible and efficient.

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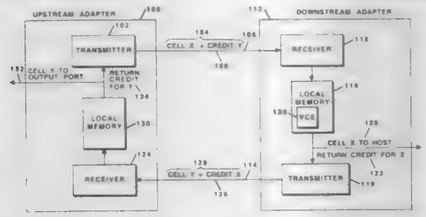
LOCAL MEMORY BUFFERS MANAGEMENT FOR AN ATM ADAPTER IMPLEMENTING CREDIT BASED FLOW CONTROL

Michael Ben-Nun, Jerusalem; Simoni Ben-Michael, Givat Zeev; Simcha Perl, Jerusalem, all of Israel, and Kadangode K. Ramakrishnan, Maynard, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1994, Ser. No. 269,984

Int. Cl.[6] **H04L** *12/56;* **G06F** *13/00*

U.S. Cl. 370—399 **26 Claims**



1. An asynchronous transfer mode (ATM) network device comprising:

a receiver portion, said receiver portion capable of receiving a plurality of ATM cells on one of a plurality of virtual circuits (VCs) from an upstream ATM switch;

a local memory, said local memory used to store the plurality of ATM cells;

means for managing said local memory using a plurality of queues;

means for assembling ATM cells into a plurality of packets;

means for transmitting said plurality of packets to a host memory; and

a transmitter portion, said transmitter portion having a means for indicating said transmitting of said packets from said local memory to said host memory to said upstream ATM switch.

5,633,868

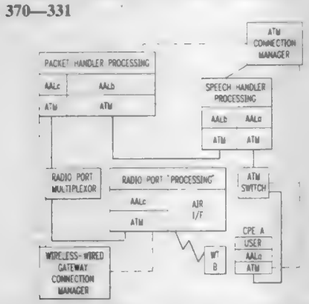
VIRTUAL CIRCUIT MANAGEMENT IN CELLULAR TELECOMMUNICATIONS

John H. Baldwin, Morristown, N.J.; Helen Chu, New York, N.Y.; Bharat T. Doshi, Holmdel, N.J.; Subrahmanyam Dravida, Somerset, N.J.; Sanjiv Nanda, Plainsboro, N.J., and Philip A. Treventi, Murray Hill, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 17, 1994, Ser. No. 323,956

Int. Cl.[6] **H04L** *12/56;12/66;* **H04B** *7/26*

U.S. Cl. 370—331 **4 Claims**



1. A method for establishing a downlink virtual circuit comprising:

receiving, at a radio port, a virtual circuit identifier from a wireless terminal;

attaching said virtual circuit identifier to an OA&M cell;

sending a set-reverse-VC message in said OA&M cell;

transmitting, from said radio port, said OA&M cell to a radio port manager over an uplink virtual circuit;

receiving said OA&M cell by a switch in said uplink virtual circuit;

reading said set-reverse-VC message; and

in response to said set-reverse-VC message, establishing said downlink virtual circuit in said switch.

5,633,869

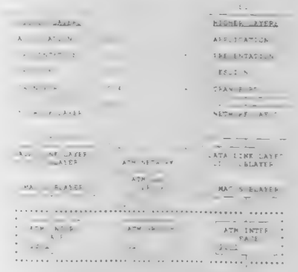
VIRTUAL NETWORK USING ASYNCHRONOUS TRANSFER MODE

John L. Burnett, Cupertino, and Peter Newman, Mountain View, both of Calif., assignors to Network Equipment Technologies, Inc., Redwood City, Calif.

Continuation of Ser. No. 944,682, Sep. 14, 1992, Pat. No. 5,444,702. This application May 25, 1995, Ser. No. 450,612

Int. Cl.[6] **H04L** *12/56;12/44*

U.S. Cl. 370—396 **34 Claims**



1. For a communication system including a plurality of ports where each port has a unique port address, where sending ports have sending port addresses, and where receiving ports have receiving port addresses, and where the communication system includes a plurality of stations where each station has,

a unique station address distinguishing the station from other stations,

a connection to one of said ports for communications between source stations at the sending ports and destination stations at the receiving ports,

packet means for providing packets for transferring information, said information including

a destination station address for addressing one or a group of said destination stations, and

packet converter means connected to said packet means for converting between packets and cells for transfers between stations;

an apparatus comprising:

connection means for connecting said sending ports to said receiving ports,

address resolution means for determining a particular one or more of said receiving port addresses corresponding to said destination station address, said address resolution means including multicast means for multicasting said destination station address from a particular one of said source stations to a group of said destination stations, said multicast means including,

response means for providing said particular one or more of said receiving port addresses corresponding to said destination station address, and

reply means for transmitting said particular one or more of said receiving port addresses to a sending port; and

connection management means connected to receive said one or more receiving port addresses from said address resolution means for requesting connections through said networking apparatus connecting said sending ports to said receiving ports whereby packets are transferred from source stations to destination stations by cell transfers.

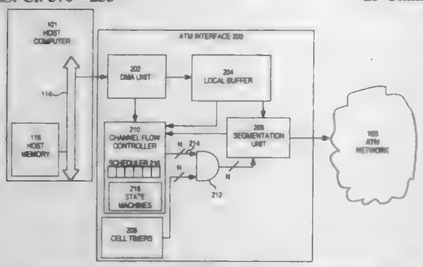
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5,633,870

METHOD AND APPARATUS FOR CONTROLLING DATA FLOW THROUGH AN ATM INTERFACE

Andre J. Gaytan, Union City, and Rasoul M. Oskouy, Fremont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 7, 1995, Ser. No. 499,197
Int. Cl.° H04J *3/16*
U.S. Cl. 370—235 **25 Claims**



1. An apparatus for controlling a flow of data between a host computer and a network, the apparatus comprising:

a local buffer for storing data to be transmitted onto said network;

a timer that corresponds to a channel, the timer being configured to generate cell transmit requests;

a channel flow controller coupled to said timer, said channel flow controller configured to generate an enable signal associated with said channel when said local buffer contains at least a first amount of data for said channel:

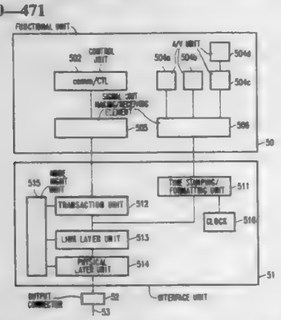
a segmentation unit coupled to said timer, said channel flow controller and said local buffer, said segmentation unit configured to respond to said cell transmit requests from said timer if and only if said channel flow controller is generating said enable signal, said segmentation unit configured to read data from said local buffer and to transmit said data in cells onto said network on said channel in response to said cell transmit requests from said timer.

5,633,871

SIGNAL PROCESSING SYSTEM

Rudolf H. J. Bloks, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1995, Ser. No. 496,352
Claims priority, application European Pat. Off., Jul. 5, 1994, 94201945; Jul. 7, 1994, 94201967
Int. Cl.° H04J *3/16;* **H04L** *12/40*
U.S. Cl. 370—471 **7 Claims**



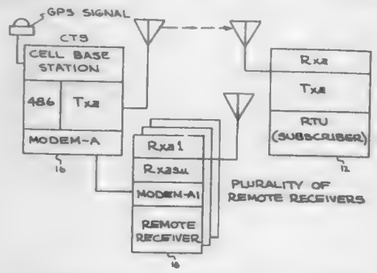
1. A signal processing system comprising a source apparatus coupled to a destination apparatus, the source apparatus being arranged for supplying the destination apparatus with a sequence of packets, each of said packets comprising a time-stamp, the destination apparatus comprising a clock; means for receiving the packets; means for detecting when a time-value of the clock corresponds to the time-stamp in a particular packet; and means for presenting data from that particular packet at an output, characterized in that the system comprises a bus operable according to a time-slot allocation protocol, the source apparatus comprising means for supplying the packets to the destination apparatus via the bus; and means for supplying a first and a second part of at least one of the packets in different time-slots, the destination apparatus comprises means for presenting data from the first part and second part together upon detecting when the time-value of the clock corresponds to the time-stamp in the at least one of the packets.

5,633,872

INTERACTIVE RADIO

Gilbert M. Dinkins, Herndon, Va., assignor to EON Corporation, Reston, Va.

Continuation-in-part of Ser. No. 257,336, Jun. 8, 1994. This application Sep. 29, 1994, Ser. No. 315,147
The portion of the term of this patent subsequent to Feb. 7, 2012, has been disclaimed.
Int. Cl.° H04B *7/185*
U.S. Cl. 370—312 **38 Claims**



1. An interactive radio broadcast data system comprising:

at least one low power mobile remote transmitter unit (RTU) located in at least one of a plurality of geographic zones of at least one geographic area.

a receive only station disposed within said at least one of said plurality of geographic zones for reception of transmissions from said at least one RTU located in said at least one of said plurality of geographic zones,

a central transmitting station (CTS) disposed within said at least one geographic area, said CTS communicatively coupled to said receive only station disposed within said at least one of said plurality of geographic zones, said CTS having data processing and transmission facilities for transmitting data to said at least one RTU and for receiving from said receive only station multiplexed synchronously related digital data messages of variable lengths, said data processing and transmission facilities including means for synchronizing said transmission facilities with a precision clock signal derived from an independent precision clock source, and

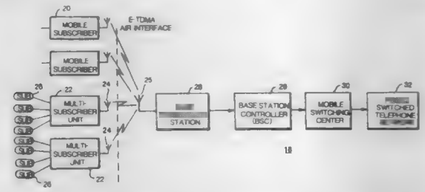
facilities in said CTS and said at least one RTU for handing off communications between said plurality of geographic zones when communicated signals deteriorate below a given threshold, said system operating in conjunction with a source of radio broadcast signals.

5,633,873

COMBINED FIXED AND MOBILE RADIO COMMUNICATION SYSTEM AND METHOD

Stanley E. Kay, Rockville; Pradeep Kaul, Darnestown, both of Md.; Michael I. Parr; Graham Avis, both of San Diego, Calif.; John E. Corrigan, III, Chevy Chase, Md.; Daniel Wendling, Darnestown, Md., and Ashok D. Mehta, North Potomac, Md., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 27,968, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 622,232, Dec. 6, 1990, Pat. No. 5,299,198, and Ser. No. 929,337, Aug. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 622,232. This application Sep. 13, 1995, Ser. No. 528,182
Int. Cl.° H04L *12/00*
U.S. Cl. 370—336 **13 Claims**



1. A combined system for communication of individual fixed and mobile telephone subscribers with a remotely located base station of a radio communication system, comprising:

a base station having a transceiver for receiving and transmitting signals including digital signals corresponding to speech spurts from and to subscriber locations;

a base station controller connected between the transceiver and a mobile switching center for performing speech coding and digital speech interpolation;

at least one mobile subscriber telephone having an antenna for radiating and collecting signals corresponding to speech spurts to and from the base station transceiver;

a multi-subscriber unit in a fixed location remote from the base station having an antenna for radiating and collecting digital signals corresponding to speech spurts for a plurality of different individual subscribers to and from the base station transceiver; and

a telephone for each of said plurality of different individual subscribers, said telephones being at fixed locations and wired electrically to the multi-subscriber unit.

5,633,874

AUTOMATIC RETRANSMISSION REQUEST

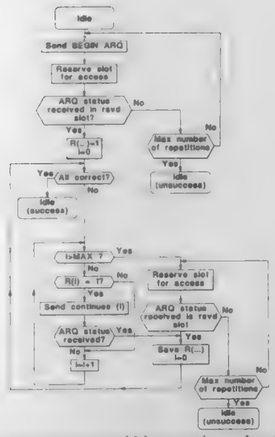
John W. Diachina, Garner, N.C.; Håkan C. Andersson, Ekerö, and Bengt Persson, Djursholm, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 147,254, Nov. 1, 1993. This application Oct. 31, 1994, Ser. No. 332,114
Int. Cl.° H04J *3/00*
U.S. Cl. 370—329 **11 Claims**

1. A method for obtaining a report on the status of frames comprising a message transmitted to a remote station, comprising the steps of:

transmitting said message to said remote station from a base station using layer **2** frames;

sending a status request to said remote station from the base station using a layer **2** bit which is distinct from layer **2** bits used to carry the message; and



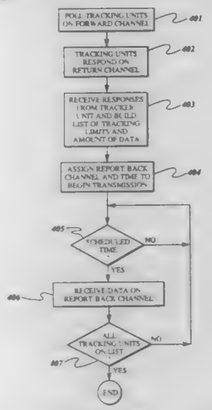
sending a status report to said base station, wherein said status request contains a second layer **2** bit which specifies whether the remote station should send the status report on a reservation basis or on a contention basis.

5,633,875

PROTOCOL AND MECHANISM FOR CENTRALIZED ASSET TRACKING COMMUNICATIONS

John E. Hershey, Ballston Lake, N.Y.; Amer A. Hassan, Cary, N.C., and Stephen M. Hladik, Albany, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1995, Ser. No. 487,735
Int. Cl.° H04J *13/02;* **H04B** *7/216*
U.S. Cl. 370—346 **10 Claims**



1. A method of communicating between a central station and a plurality of tracking units affixed to mobile assets, comprising the steps of:

polling, from the central station, each of said plurality of tracking units on a narrow band forward channel;

each of said tracking units responding to said narrow band forward channel only at a predetermined time;

each of said tracking units further monitoring a flag in said narrow band forward channel to estimate when to next receive said narrow band forward channel;

each of said plurality of tracking units responding to said polling on a narrow band return channel, each of said plurality of tracking units respectively including in its response data and

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an indication as to whether the respective tracking unit has additional data to transmit to the central station;

receiving responses and data from each of the plurality of tracking units at said central station;

compiling, at said central station, a list of tracking units which have additional data to transmit to said central station.

assigning a scheduled transmit time for each tracking unit having additional data to transmit;

transmitting, on said narrow band forward channel to each respective tracking unit having additional data to transmit, the scheduled transmit time to transmit said additional data; and

receiving data from said each respective tracking unit having additional data to transmit at the scheduled transmit times.

5,633,876

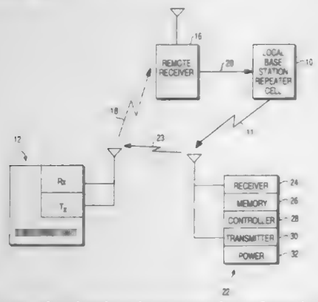
STORE AND FORWARD REPEATER

Gilbert M. Dinkins, Herndon, Va., assignor to Eon Corporation, Reston, Va.

Continuation-in-part of Ser. No. 966,414, Oct. 26, 1992, Pat. No. 5,388,101. This application Feb. 3, 1995, Ser. No. 383,806

Int. Cl.[6] H04B *3/36*

U.S. Cl. 370—315 **31 Claims**



1. An interactive data broadcast network configuration having a network hub switching center for routing communications to and from a plurality of subscriber units comprising:

subscriber units dispersed at various locations within a base station geographic area,

local base station repeater cell means for communicating with subscriber units within a local base station geographic area associated with said local base station repeater cell means by way of first data signals of variable lengths synchronously related to a base station broadcast signal and timed for multiplexed message transmission, said first data signals broadcast on a first carrier frequency, said local base station repeater cell means further comprising,

base station data processing and transmission means for transmitting to a set of said subscriber units contained within said local base station geographic area associated with said local base station repeater cell means, and

a receiver for receiving from a subset of said set of subscriber units second data messages of variable lengths broadcast on a second carrier frequency, said second data messages multiplexed and synchronously related to said first data signals of variable lengths to provide point-to-point communication between said local base station repeater cell means and said subset of said subscriber units,

store and forward repeater means for receiving said first data signals of variable lengths transmitted by said local base station repeater cell on said first carrier frequency and forwarding said first data signals of variable lengths to said subscriber units on a third carrier frequency, and

reception means for receiving and processing said second data signals broadcast at a low power on said second carrier frequency from said subscriber units, said reception means further comprising a local remote receiver disposed within one of a plurality of cell subdivision sites partitioned from said local base station geographic area associated with said local base station repeater cell means, said plurality of cell subdivision sites dispersed over said local base station geographic area, each of said local remote receivers adapted for receiving said low power second data signals from said subscriber units within range of said local remote receiver and forwarding said second data signals to said local base station repeater cell means.

5,633,877

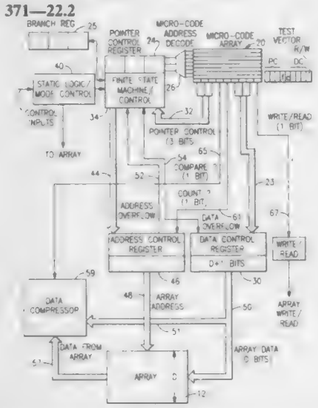
PROGRAMMABLE BUILT-IN SELF TEST METHOD AND CONTROLLER FOR ARRAYS

Philip G. Shephard, III, Round Rock, Tex.; William V. Huott, Holmes; Paul R. Turgeon, Woodstock, both of N.Y.; Robert W. Berry, Jr., Round Rock, Tex.; Gulsun Yasar, South Burlington, Vt.; Frederick J. Cox, Kirkland, Wash.; Pradip Patel, Poughkeepsie, and Joseph B. Hanley, III, Patterson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1995, Ser. No. 450,585

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.2 **18 Claims**



1. A built-in, on-chip test system for testing an array having data input ports, data output ports, and address ports, comprising in combination:

a data control register for generating and applying deterministic data patterns to the data input ports of said VLSI array;

an address control register for generating addresses for application to said array chip in coordination with said data control register;

a comparator for comparison of data inputted to said data input ports of said VLSI array from said data control register with data outputted from said data output ports of said VLSI array;

a memory array for storing a plurality of microcode control vectors, each vector including a data control register field, an address control register field, the microcode pointer control register field and a read/write enable control field;

a microcode pointer control register and finite state machine for means controlling said address control register, said data control register and said microcode pointer control register in response to said plurality of microcode control vectors and to an overflow feedback state of said data control register and said address control register.

5,633,878

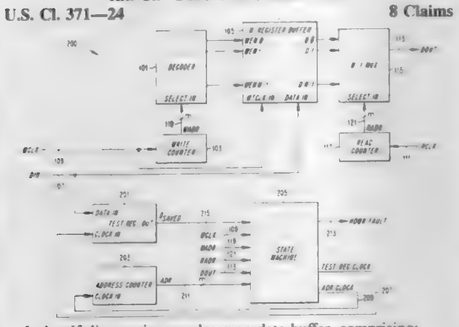
SELF-DIAGNOSTIC DATA BUFFERS

Mats Ernkell, Stockholm, and Stefan Sahl, Hägersten, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 20, 1995, Ser. No. 376,147

Int. Cl.[6] G11C *29/00*; **G06F** *11/00*

U.S. Cl. 371—24 **8 Claims**



1. A self-diagnostic asynchronous data buffer, comprising:

addressable storage means including:

a plurality of addressable storage cells;

data input means for receiving an input data value to be stored into one of the plurality of addressable storage cells;

means for generating a write address that identifies one of the plurality of storage cells into which the input data value is to be written during a next write operation; and

means for generating a read address that identifies one of the plurality of storage cells from which an output data value will be read during a next read operation;

means for generating a test address signal;

means for determining whether or not the test address signal equals the write address;

test storage means for storing the input data value during the next write operation when the test address signal equals the write address;

means for determining whether or not the test address signal equals the read address; and

means for comparing the value stored in the test storage means with the output data value during the next read operation when the test address signal equals the read address, and for asserting a hardware fault signal in response to a comparison indicating that the output data value is not equal to the value stored in the test storage means.

5,633,879

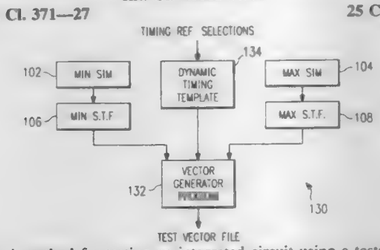
METHOD FOR INTEGRATED CIRCUIT DESIGN AND TEST

David J. Potts, Houston, Tex.; John Ribe, West Chicago, Ill.; Kevin L. Kornher, and Roger Griesmer, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 19, 1996, Ser. No. 591,256

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27 **25 Claims**



1. A method for testing an integrated circuit using a tester, the tester having internal periods for timing reference, the integrated circuit having one or more input ports, one or more output ports and a logic circuit disposed between the input ports and the output ports, wherein the tester applies an input signal to one or more of the input ports, the input signal being synchronous to the internal periods of the tester, such that, by the operation of the logic circuit, an output signal appears at one or more of the output ports, comprising the steps of:

selecting a first output port having a predetermined signal event that occurs at said first output port during a predetermined time range, said predetermined time range being determined with respect to said internal period; and

using said predetermined signal event as a timing reference for a test event of said integrated circuit, said test event occurring a predetermined time interval from said predetermined event.

5,633,880

RECEIVER PROVIDING MASKING OF AN ERROR IN A DIGITAL SIGNAL, AND A TRANSMISSION SYSTEM INCLUDING SUCH A RECEIVER

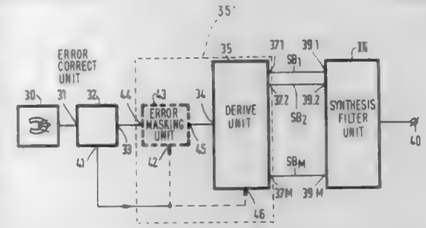
Gerardus C. P. Lokhoff, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 703,216, May 20, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 231,859

Claims priority, application Netherlands, Feb. 19, 1991, 9100285

Int. Cl.[6] H03M *13/00*

U.S. Cl. 371—31 **20 Claims**



10. A receiver, comprising:

receiving means for receiving a first digital signal representing a wide-band digital signal which has been encoded into sub-band signals which are each made up of successive signal blocks having a predetermined number of samples of that sub-band signal, the samples in the signal blocks of the sub-band signals having been quantized to produce quantized sub-band signals in the signal blocks;

error correction means for correcting errors in and converting the first digital signal into a second digital signal having signal information, which includes the quantized samples in the signal blocks and scale factor information relating to scale factors for the signal blocks, included in successive frames of the second digital signal;

control signal generating means for generating a control signal if an error exists in the signal information which could not be corrected by said error correction means, said control signal generating means being adapted to generate the control signal if an uncorrected error exists in a scale factor for a signal block of the signal information;

error masking means for replacing the scale factor having the uncorrected error with an extrapolated value from one or more scale factors belonging to one or more preceding signal blocks of the same sub-band signal as the signal block which has the scale factor having the uncorrected error if the control signal is generated;

derivation means for deriving the quantized samples in the signal blocks and the scale factor information relating thereto from the signal information, and producing replicated samples in the signal blocks which substantially correspond to the samples in the signal blocks of the sub-band signals; and

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synthesis filter means for constructing a replica of the wide-band digital signal in response to the replicated samples in the signal blocks.

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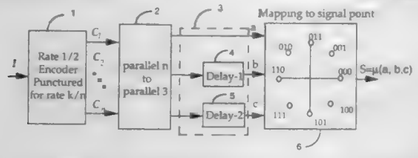
TRELLIS ENCODER AND DECODER BASED UPON PUNCTURED RATE ½ CONVOLUTIONAL CODES

Ephraim Zehavi, San Diego, and Jack K. Wolf, Rancho Mirage, both of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 23,788, Feb. 22, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,738

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—37.5 **36 Claims**



1. A method for encoding digital data for trellis modulation comprising the steps of:

receiving k input data bits;

encoding said k input data bits according to a first encoding format to provide n symbols;

converting said n symbols to provide said n symbols as a sequence of sets of at least three symbols;

delaying for a predetermined first duration a second symbol of each set of three symbols;

delaying for a predetermined second duration a third symbol of each set of three symbols; and

providing for modulation an interleaved symbol set including a first symbol of one of said sets of symbols with corresponding delayed second and third symbols of previous symbol sets.

5,633,882

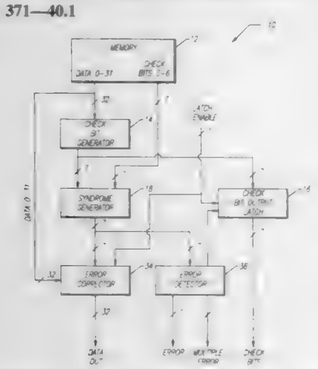
ERROR DETECTION AND CORRECTION CIRCUIT

Brendan J. Babb, Anchorage, Ak., and Steven B. Sidman, Vancouver, Wash., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 740,109, Aug. 5, 1991, abandoned. This application Mar. 11, 1996, Ser. No. 615,033

Int. Cl.[6] G06F *11/00:* **H03M** *13/00*

U.S. Cl. 371—40.1 **3 Claims**



1. An improved error detection and correction circuit comprising:

a check bit generator which receives a 32 bit data word and outputs 7 generated check bits in response thereto;

a syndrome generator which receives as inputs said 7 generated check bits from said check bit generator and 7 stored check bits and outputs 7 syndrome bits in response thereto;

an error detector which receives as input said 7 syndrome bits from said syndrome generator, decodes said 7 syndrome bits to detect an error or a multiple error in said 32 bit data word or in said 7 stored check bits, and outputs two single bits providing an indication of the presence of the error;

a check bit output latch which receives as inputs said 7 generated check bits from said check bit generator and selectively outputs said 7 generated check bits on the detection of the error in the 7 stored check bits for correcting stored check bit errors; and

an error corrector which receives as inputs said 7 syndrome bits from said syndrome generator and said 32 bit data word and outputs a corrected 32 bit data word.

5,633,883

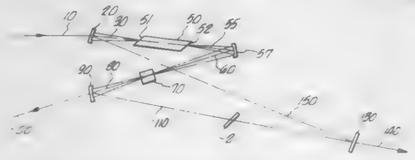
CONTINUOUSLY TUNABLE SOLID STATE ULTRAVIOLET COHERENT LIGHT SOURCE

Weiqiang Shi, and Warren S. Grundfest, both of Los Angeles, Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Continuation of Ser. No. 781,328, Oct. 18, 1991, Pat. No. 5,363,388. This application Mar. 17, 1994, Ser. No. 214,776

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **9 Claims**



1. An ultraviolet light source comprising:

a first pump light source comprising a laser,

a tunable laser driven by said first pump light source to provide a second light source,

a non-linear optical frequency mixing element optically coupled to said first pump light source and said second light source, said non-linear optical frequency mixing element phase matching the light received from said first pump light source and said second light source to produce light having a wavelength in the ultraviolet region.

5,633,884

SELF-SEEDING METHOD AND APPARATUS FOR DUAL CAVITY TYPE TUNABLE LASER UTILIZING DIFFRACTION GRATING

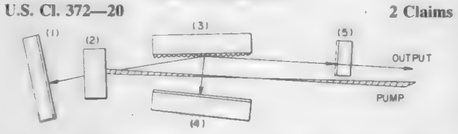
Jong-Min Lee; Byung-Heon Cha; Sung-Ho Kim, and Do-Kyeong Ko, all of Daejeon-Si, Rep. of Korea, assignors to Korea Atomic Energy Research Institute, Daejeon-si, and Korea Electric Power Corporation, Seoul, both of Rep. of Korea

Filed Mar. 1, 1995, Ser. No. 396,642

Claims priority, application Rep. of Korea, Nov. 15, 1994, 94-29936

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **2 Claims**



1. A self-seeding method for a dual cavity type tunable laser utilizing a diffraction grating, comprising: installing a diffraction grating in front of a wholly reflecting mirror; and

feeding a 0th and first diffracted beams of the diffraction grating and a laser gain medium with a partially reflecting mirror and a tuning mirror so as to form a dual cavity, thereby carrying out a self-seeding.

5,633,885

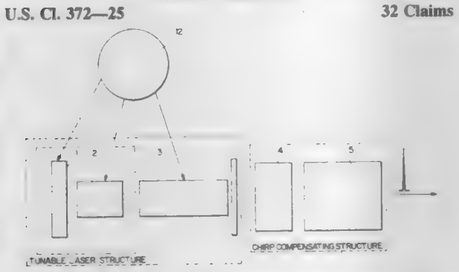
FREQUENCY CHIRP CONTROL AND COMPENSATION FOR OBTAINING BROAD BANDWIDTH ULTRASHORT OPTICAL PULSES FROM WAVELENGTH-TUNABLE LASERS

Almantas Galvanauskas, and Donald J. Harter, both of Ann Arbor, Mich., assignors to Imra America, Inc., Ann Arbor, Mich.

Filed Sep. 29, 1994, Ser. No. 312,912

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—25 **32 Claims**



1. An apparatus for compensating frequency chirp time-dispersion to obtain broad bandwidth ultrashort pulses, comprising:

a wavelength tunable-laser for generating frequency chirped pulses;

optical means arranged in an optical path of said wavelength-tunable laser, including means for compensating at least one order of frequency chirp time-dispersion.

5,633,886

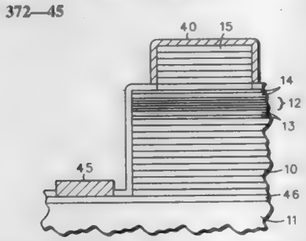
SHORT WAVELENGTH VCSEL WITH AL-FREE ACTIVE REGION

Jamal Ramdani, Gilbert; Michael S. Lebby, Apache Junction, both of Ariz., and Hsing-Chung Lee, Calabasas, Calif., assignors to Motorola, Schaumburg, Ill.

Filed Aug. 28, 1995, Ser. No. 520,061

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **24 Claims**



1. A short wavelength vertical cavity surface emitting laser comprising:

a substrate;

a first mirror stack of a first conductivity type positioned on the substrate, the first mirror stack being formed of a plurality of pairs of relatively high and low index of refraction layers;

a second mirror stack of a second conductivity type, the second mirror stack being formed of a plurality of pairs of relatively high and low index of refraction layers; and

an active region sandwiched between the first mirror stack and the second mirror stack, the active region being formed of a plurality of strained layers, alternate strained layers having equal and opposite crystallographic strain.

5,633,887

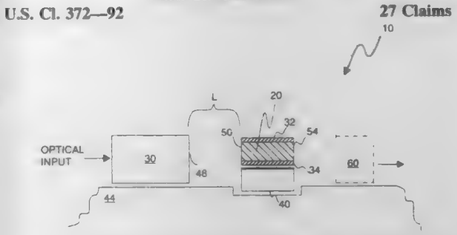
OPTICAL DEVICES USING AN EXTERNAL CAVITY SEMICONDUCTOR LASER

Russell W. Chung, San Diego, Calif., and Robert J. Weber, Boone, Iowa, assignors to Iowa State University Research Foundation, Inc., Iowa

Filed Nov. 4, 1994, Ser. No. 334,193

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—92 **27 Claims**



1. An optical amplifier device for amplifying input light comprising:

a body of semiconductor material having opposed front and rear facets, said body semiconductor material accepting said light through said front facet and amplifying said light during propagation thereof to said rear facet;

an optical element having a partially optically reflective surface positioned with the optically reflective surface a predetermined distance from one of said facets, said optical element being positioned such that a resonant optical cavity is formed between said partially optically reflective surface and said one facet; and

means for applying said input light to said front facet.

5,633,888

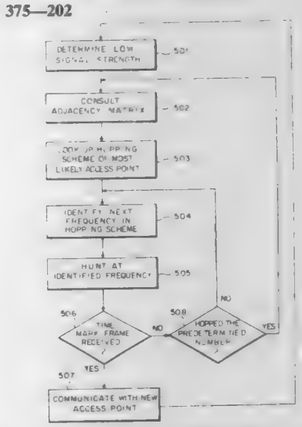
METHOD OF USING AN ACCESS POINT ADJACENCY MATRIX TO ESTABLISH HANDOFF IN A WIRELESS LAN

Brett B. Stewart, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 5, 1995, Ser. No. 461,984

Int. Cl.[6] H04L *27/30*

U.S. Cl. 375—202 **18 Claims**



1. A method of maintaining communication in wireless local area network (LAN) with an access point coverage topology in a

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dynamic environment, the LAN containing a plurality of access points and a plurality of active mobile devices, the method comprising the steps of:

(a) assigning a unique frequency hopping scheme to each of the access points;

(b) initiating a communication link between an active mobile device and a corresponding one of the access points, the communication link being in accordance with the frequency hopping scheme of the access point;

(c) determining, for the active mobile devices, a most likely frequency hopping scheme of an alternate access point by referring to an access point adjacency matrix, the alternate access point being different from the corresponding access point;

(d) attempting to establish a communication link between the active mobile device and the alternate access point in accordance with the most likely frequency hopping scheme; and

(e) returning to the adjacency matrix to obtain a next most likely frequency hopping scheme if the communication link is not established in step (d),

wherein steps (d) and (e) are repeated until the frequency hopping scheme of the alternate access point is obtained from the adjacency matrix and a communication link is established between the active mobile device and the alternate access point in accordance with its frequency hopping scheme.

5,633,889

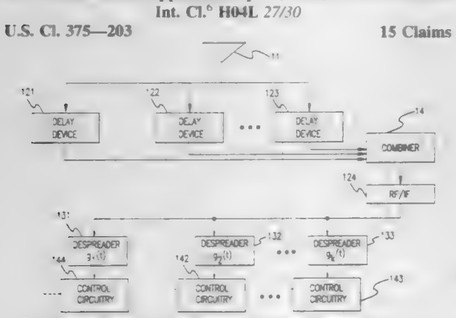
PHASED ARRAY SPREAD SPECTRUM SYSTEM AND METHOD

Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corp., Wilmington, Del.

Continuation of Ser. No. 266,769, Jun. 28, 1994, which is a continuation-in-part of Ser. No. 155,173, Nov. 22, 1993, Pat. No. 5,422,908. This application Apr. 1, 1996, Ser. No. 625,254

Int. Cl.[6] H04L *27/30*

U.S. Cl. 375—203 **15 Claims**



3. A phased array spread-spectrum system comprising:

means for receiving a plurality of spread-spectrum signals and a plurality of phased versions of the plurality of spread-spectrum signals;

means for delaying the plurality of spread-spectrum signals with respect to the plurality of phased versions of the plurality of spread-spectrum signals by a plurality of delays, thereby generating a plurality of delayed signals;

means for combining the plurality of delayed signals and the plurality of phased versions of the spread-spectrum signals, as a plurality of combined signals;

means for despreading the plurality combined signals as a plurality of despread signals;

means for generating a plurality of magnitude values from the plurality of despread signals;

means for storing a plurality of previous magnitude values and a plurality of present-magnitude values, generated from said generating means; and

means for comparing the plurality of previous magnitude values with the plurality of present-magnitude values, and for outputting a plurality of comparison signals, with said delaying means responsive to the plurality of comparison signals for changing the plurality of delays.

5,633,890

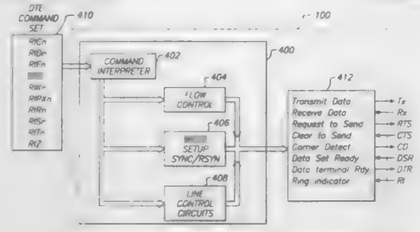
METHOD FOR INTELLIGENT DATA TERMINAL EQUIPMENT (DTE) DATA COMMUNICATION

Allam Z. Ahmed, Santa Clara, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Filed Feb. 24, 1994, Ser. No. 201,398

Int. Cl.[6] H04B *1/38*; **G06F** *15/00*

U.S. Cl. 375—219 **13 Claims**



1. In a data terminal equipment (DTE) device including, in intercommunication, a command interpreter block and a plurality of control blocks in communication with a digital communication equipment (DCE) device, a method of digital communication between the devices, comprising the steps of:

A. initiating the digital communication by transmitting within the DTE one command from a DTE command set to the command interpreter block, the DTE command set having no field reserved for data that is to be transmitted to another DTE;

B. decoding the command;

C. directing the decoded command from the command interpreter to one of the control blocks;

D. converting the decoded command into a signal representative of the decoded command; and

E. transmitting the signal from the control block to the DCE.

5,633,891

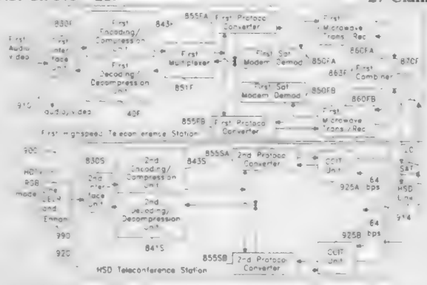
PORTABLE INTEGRATED SATELLITE COMMUNICATIONS UNIT

Mohammed S. Rebec, and Mihailo V. Rebec, both of Bristol, Ind., assignors to Trans Video Electronics, Inc., Bristol, Ind.

Division of Ser. No. 47,089, Apr. 16, 1993. This application Aug. 21, 1995, Ser. No. 487,509

Int. Cl.[6] H04B *1/38*

U.S. Cl. 375—219 **27 Claims**



2. A high speed teleconference station comprising:

interface means for receiving a first analog signal and outputting a first digital signal;

encoding/compressing means, coupled to said interface means, for encoding and compressing said first digital signal to produce a first compressed encoded signal;

multiplexing/demultiplexing means, coupled to said encoding/compressing means, for receiving and splitting said first compressed encoded signal into at least two split first compressed encoded signals;

at least two converting means, coupled to said multiplexing/demultiplexing means, for receiving a respective one of said at least two split first compressed encoded signals and respectively producing at least two first synchronous signals; and

at least two CCIT units, each coupled to a respective one of said at least two converting means, for receiving a respective one of said at least two first synchronous signals and respectively outputting at least two high speed first synchronous signals to a high speed data link.

5,633,892

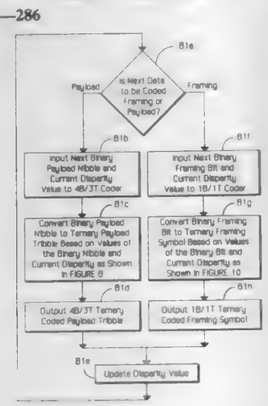
HYBRID LINE CODING METHOD AND APPARATUS USING 4B/3T ENCODING FOR PAYLOAD BITS AND 1B/1T ENCODING FOR FRAMING INFORMATION

Dale L. Krisher, Wake Forest, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 22, 1994, Ser. No. 279,197

Int. Cl.[6] H04L *25/49*

U.S. Cl. 375—286 **19 Claims**



1. A method, comprising the steps of:

(a) determining a next data bit and current disparity value signal to be coded is either (i) a binary framing bit and next executing a step (b) or (ii) a binary payload bit and next executing a step (c);

(b) converting the next binary framing bit and the current disparity value signal to a ternary framing symbol using a first encoding method;

(c) converting the next binary payload bit and the current disparity value signal to a ternary payload symbol using a second encoding method, providing an updated disparity value signal and repeating step (a).

5,633,893

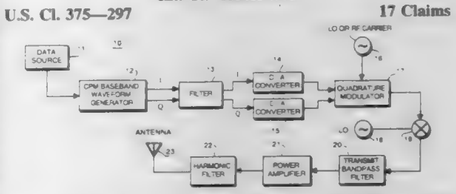
DIGITAL MODULATION METHOD WITH CONTROLLED ENVELOPE VARIATION

Ross W. Lampe, Raleigh, and Jyun-chen Chen, Chapel Hill, both of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Sep. 29, 1994, Ser. No. 313,599

Int. Cl.[6] H04K *1/02*

U.S. Cl. 375—297 **17 Claims**



1. A communications system including a plurality of radio transceivers with each transceiver comprising:

a receiver, and

a transmitter including:

a constant envelope waveform generator for creating a baseband signal having a constant amplitude;

a filter for limiting the bandwidth of the baseband signal to generate a filtered signal and thereby adding a controlled amount of amplitude modulation to the baseband signal; and

a nonlinear power amplifier for nonlinearly amplifying the filtered signal,

wherein the constant envelope waveform generator having a quaternary continuous phase frequency shift modulator employs a modulation index h=0.25 and samples each symbol four or eight times to limit a number of possible phase shift possibilities to 32 or 64, respectively.

5,633,894

CIRCUIT FOR MODULATING A SINUSOIDAL WAVEFORM SIGNAL USING DIGITAL PULSE SHAPING

Andrew H. Snelgrove; Anthoney V. Cirineo, and Eugene L. Law, all of Ventura, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1995, Ser. No. 378,753

Int. Cl.[6] H04L *27/12*

U.S. Cl. 375—307 **7 Claims**

1. A circuit for generating a carrier whose frequency is determined by a value manifested by a digital data signal, comprising:

a random access memory (RAM);

a main controller coupled to said random access memory for generating a first data word representative of a base frequency and a second data word representative of an offset frequency, said main controller controlling a transfer of said first and second data words from said main controller to said random access memory;

said main controller generating a manual load signal and a chip select signal;

an oscillator control circuit coupled to said random access memory and said main controller, said oscillator control circuit receiving said chip select signal, said manual load signal and said digital data signal;

numerically controlled oscillator means coupled to said oscillator control circuit;

said oscillator control circuit, responsive to said chip select signal, passing said digital data signal through said oscillator control circuit to said numerically controlled oscillator means;

said oscillator control circuit having direct access to said RAM and said numerically controlled oscillator means to allow said manual load signal to initiate a direct memory access transfer of said first and second data words from said oscillator control circuit to said numerically controlled oscillator means;

said numerically controlled oscillator means, responsive to said digital data signal and said first and second data words,

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selectively generating either a first sinusoidal waveform signal having a first frequency or a second sinusoidal waveform signal having a second frequency different from said first frequency in accordance with the value of said digital data signal.

5,633,895

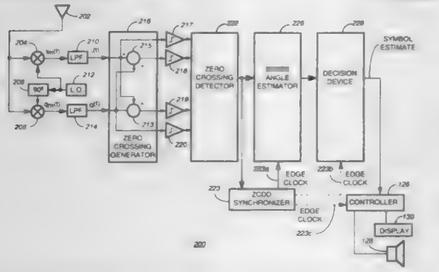
COMMUNICATION DEVICE WITH SYNCHRONIZED ZERO-CROSSING DEMODULATOR AND METHOD

Clinton C. Powell, II, Lake Worth; Edward K. B. Lee, Sunrise, both of Fla., and Hyuck M. Kwon, Wichita, Kans., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1995, Ser. No. 511,081

Int. Cl.[6] H04L *27/16*

U.S. Cl. 375—324 **20 Claims**



1. A communication device for receiving an information signal, comprising:

a first mixer for producing an in-phase component;

a second mixer for producing at least one out-of-phase component:

a multi-level detector for detecting the contents of the information signal using the in-phase and out-of-phase components, the detector comprising:

means for detecting the direction of instantaneous phase rotation at zero-crossings;

means for accumulating all the zero-crossings, and based upon a symbol edge clock signal received, estimating phase angle rotation of the information signal based upon all of the accumulated zero-crossings since a previous edge clock signal was received;

means for estimating a symbol transition time to generate an edge clock signal for transmission to said means for accumulating only when at least two, non-zero consecutive zero-crossing samples are detected in which the first sample is of one phase and the second sample is of the other phase; and

means for decoding the contents of the information signal from the estimated phase angle rotation.

5,633,896

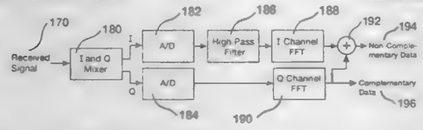
AM COMPATIBLE DIGITAL WAVEFORM DEMODULATION USING A DUAL FFT

Barry W. Carlin; Mark J. Dapper, both of Cincinnati, and Michael J. Geile, Loveland, all of Ohio, assignors to USA Digital Radio Partners, L.P., Linthicum, Md.

Filed Feb. 21, 1996, Ser. No. 604,276

Int. Cl.[6] H04L *27/06*; **H03D** *1/00*

U.S. Cl. 375—340 **12 Claims**



1. An apparatus for demodulating a composite signal, the composite signal including a first carrier signal amplitude modulated by an analog message signal and a second signal comprising a plurality of digitally modulated carriers, comprising:

means for separating the second signal into a third signal and a fourth signal, the third signal representing an in-phase component and the fourth signal representing a quadrature phase component of the composite signal;

first means coupled to receive the in-phase component for converting the in-phase component to an in-phase digital signal;

second means coupled to receive the quadrature component for converting the quadrature component to a quadrature digital signal;

a first fast Fourier transform means for extracting in-phase data from the in-phase digital signal; and

a second fast Fourier transform means for extracting quadrature data from the quadrature digital signal.

5,633,897

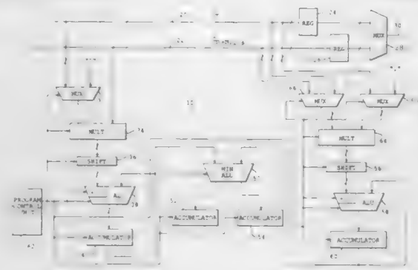
DIGITAL SIGNAL PROCESSOR OPTIMIZED FOR DECODING A SIGNAL ENCODED IN ACCORDANCE WITH A VITERBI ALGORITHM

Gerhard P. Fettweis, Dresden, Germany, and Mihran Touriguian, Hercules, Calif., assignors to Atmel Corporation, San Jose, Calif.

Filed Nov. 16, 1995, Ser. No. 558,745

Int. Cl.[6] H03D *1/00*; **H04L** *27/06*

U.S. Cl. 375—341 **12 Claims**



1. In a digital signal processor for decoding a received digital signal encoded in accordance with a Viterbi algorithm, wherein said digital signal processor calculates a first pair of binary signals C_{2n} and C_{2n+1} based upon a second pair of binary signals C_n and $C_{n+m/2}$, and a transitional signal, a, in accordance with

$$C_{2n}=\text{minimum } (C_n+a, C_{n+m/2}-a)$$

$$C_{2n+1}=\text{minimum } (C_n-a, C_{n+m/2}+a)$$

wherein the improvement to said digital signal processor comprising:

a first and a second data bus means for supplying simultaneously a first and a second plurality of binary signals, respectively;

a first and a second shifter means each for receiving simultaneously a first input signal, and for generating a third plurality of binary signals, respectively;

first means for supplying said first and said second plurality of binary signals as said first input signal to said first and said second shifter means, respectively;

a first and a second Arithmetic Logic Unit (hereinafter: "ALU") means, each for receiving a second and a third input signal and for generating an output signal, said output signal representative of said second input signal added to or subtracted by said third input signal;

second means for supplying said third plurality of binary signals from said first and second shifter means simultaneously as said third input signal to said first and second ALU means;

a first and a second accumulator means for receiving simultaneously said output signals from said first and second ALU means, respectively, for storing said output signals and for supplying same as said fourth input signals to said first and second ALU means, respectively;

minimum determining means for receiving said output signals from said first and second accumulator means, for comparing same, and for selecting the lesser of said output signals stored in said first and second accumulator means and for generating a fifth plurality of binary signals in response thereto; and

third accumulator means for receiving and for storing said fifth plurality of binary signals.

5,633,898

AUTOMATIC FREQUENCY CONTROL APPARATUS FOR FSK RECEIVER AND FSK RECEIVER INCLUDING THE SAME

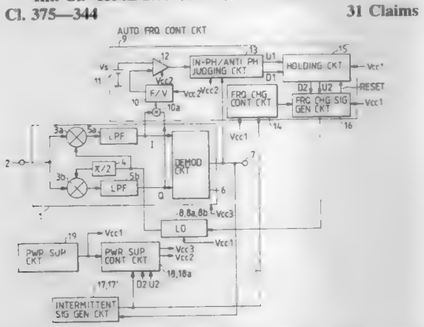
Takaaki Kishigami; Katsuaki Abe, both of Kawasaki; Masahiro Mimura; Makoto Hasegawa, both of Tokyo, and Katsushi Yokozaki, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 21, 1994, Ser. No. 360,648

Claims priority, application Japan, Dec. 22, 1993, 5-325068; Oct. 4, 1994, 6-240065

Int. Cl.[6] H04L *27/14;27/10;27/06;* **H03D** *3/18*

U.S. Cl. 375—344 **31 Claims**



1. An automatic frequency controlling circuit for a frequency shift keying receiver having a receiving and detection circuit for receiving and detecting an in-phase and quadrature signals using a frequency controlled local oscillation signal from a received frequency shift keying signal, a demodulator for demodulating said in-phase and quadrature signals and outputting mark and space data, and an intermittent signal circuit for generating an intermittent signal for an intermittent receiving operation of said frequency shift keying receiver, said automatic frequency controlling circuit comprising:

a local oscillator for generating said frequency controlled local oscillation signal;

a frequency to voltage converter for converting at least one signal of said in-phase and quadrature signals to a voltage signal;

a voltage comparator for comparing said voltage signal with a reference voltage;

a frequency deviation direction detection circuit for detecting whether a frequency deviation of said frequency controlled local oscillation signal from a carrier frequency of said received frequency shift keying signal is upwardly or downwardly in accordance with a result of said demodulator and an output of said voltage comparator to obtain a frequency deviation direction detection result;

a holding circuit for holding said frequency deviation direction detection result;

a frequency change control signal generation circuit for generating a frequency change control signal in response to said intermittent signal;

a frequency control signal generation circuit responsive to said frequency change control signal for generating a frequency control signal in accordance with an output of said holding circuit such that a frequency of said frequency controlled local oscillation signal is controlled toward said carrier frequency by a predetermined amount.

5,633,899

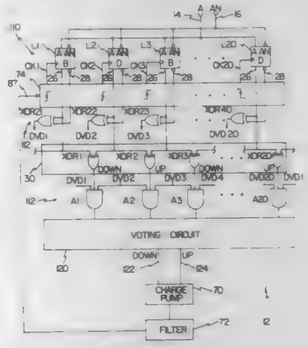
PHASE LOCKED LOOP FOR HIGH SPEED DATA CAPTURE OF A SERIAL DATA STREAM

Alan Fiedler, Palo Alto, Calif.; James R. Welch, Maple Grove, and Iain R. Mactaggart, Eden Prairie, both of Minn., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Feb. 2, 1996, Ser. No. 596,006

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **19 Claims**



1. A phase locked loop for locking on to a phase and frequency of a serial data stream, comprising:

a data input for receiving the serial data stream;

a multiple-bit latch having a plurality of designated data and boundary-detect latch elements, with each latch element comprising a latch input coupled to the data input, a sample clock input, and a latch output;

a multiple-stage voltage controlled oscillator having a voltage control input, a plurality of sample clock outputs, and an adjustable delay between each sample clock output, wherein each sample clock output is coupled to a corresponding sample clock input;

a phase detection circuit having phase detect inputs coupled to the latch outputs and having a phase control output; and

a feedback circuit coupled between the phase control output and the voltage control input.

5,633,900

METHOD AND APPARATUS FOR PRODUCTION OF RADIOACTIVE IODINE

Scott B. Hassal, 79 Bond Street North, Hamilton, Ontario, Canada

Filed Oct. 4, 1993, Ser. No. 130,726

Int. Cl.[6] G21G *1/06*

U.S. Cl. 376—189 **7 Claims**

1. A method of producing radioactive ^{125}I, which comprises:

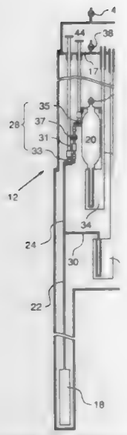
providing a moveable elongate enclosure having therein a lower irradiation chamber and an upper decay chamber connected in fluid flow relationship and in fixed position relationship with the lower irradiation chamber,

feeding ^{124}Xe from a source thereof exterior to said elongate enclosure to said irradiation chamber,

positioning said moveable elongate enclosure adjacent to a light water nuclear reactor core submerged in a pool for irradiating said ^{124}Xe in said irradiating chamber with neutrons to cause the formation of ^{125}Xe therefrom,

transferring irradiated gas by pumping from said irradiation chamber to said decay chamber free from neutron flux, and

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transferring said moveable elongate enclosure to a submerged location in said pool remote from said remote core and free from neutron flux for permitting ^{125}Xe to decay to form ^{125}I in said decay chamber.

5,633,901

PERMANENT POOL CAVITY SEAL FOR NUCLEAR REACTOR

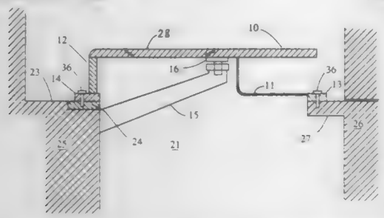
In-Yong Kim, Yoosung-Ku; Moon-Wook Lee; Gyu-Mahn Lee, both of Seo-Ku; Jeong-Ki Hwang, Yoosung-Ku; Tae-Myung Shin, Seo-Ku, and Beom-Shig Kim, Yoosung-Ku, all of Rep. of Korea, assignors to Korea Atomic Energy Research Institute, Daejeon-Si, Rep. of Korea

Filed Jul. 18, 1995, Ser. No. 503,615

Claims priority, application Rep. of Korea, Apr. 21, 1995, 95-9410

Int. Cl.^{6} G21C *13/028*

U.S. Cl. 376—203 **4 Claims**



1. A permanent pool cavity seal for a containment arrangement including a wall defining a refueling pool floor and a refueling pool cavity extending about a nuclear reactor vessel having an annular flange thereabout, said permanent pool cavity seal comprising:

an annular inner seal ring mounted on, and extending about, said nuclear reactor flange;

an annular outer seal ring mounted on, and extending about, said refueling pool floor;

an annular support ring upstanding from said outer seal ring,

an annular seal plate having its outer periphery sealingly connected to said support ring and its inner periphery disposed above and closely adjacent said inner seal ring;

a plurality of support arms disposed beneath said seal plate and extending radially from said refueling pool cavity wall to engage said seal plate at an intermediate transverse location of a bottom side thereof; and

an annular flexible seal operative to accommodate thermally induced axial and radial expansion and contraction of said nuclear reactor vessel with respect to said refueling pool cavity wall, said flexible seal having a cross-section of substantial J-shape and being disposed substantially completely beneath said seal plate, said flexible seal being sealingly weldedly attached about one peripheral edge to said bottom side of said seal plate and about its other peripheral edge to said inner seal ring.

5,633,902

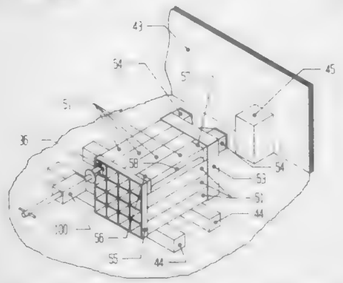
METHOD AND APPARATUS FOR DISMANTLING FUEL STORAGE RACKS

Robert L. Moscardini, Allison Park; Christopher P. Srock, and Peter F. Davin, both of Pittsburgh, all of Pa., assignors to U.S. Tool & Die, Inc., and Crouse Enterprises, Inc., both of Pittsburgh, Pa.

Filed Mar. 7, 1995, Ser. No. 399,489

Int. Cl.^{6} G21F *9/28*

U.S. Cl. 376—260 **15 Claims**



10. A method for dismantling a storage rack used to store nuclear fuel assemblies, said storage rack including a base joined to an array of tubular storage cells having fuel entry ends which are opposite to said base for a fuel assembly, said method including the steps of:

selecting a metal cutting saw having a cutter blade driven about an axis of rotation displaceable between an inoperative location and an operative location;

passing said metal cutting saw through the entry end of a selected tubular storage cell forming part of said storage rack to a site at a preselected space from said base;

energizing said metal cutting saw;

displacing said cutter blade from said inoperative location to an operative location causing said saw blade to cut into a wall segment of the selected storage cell; and

orbiting the rotational axis of said cutter blade about a path within the confines of the selected tubular storage cell to sever the remaining portion of the wall section of the selected cell from said base.

5,633,903

METHOD FOR DISMANTLING BULKY PARTS OF PRESSURE-VESSEL FITTINGS OF A NUCLEAR PLANT

Alban Dietrich, Hassloch, Germany, assignor to ABB Reaktor GmbH, Mannheim, Germany

Filed Dec. 18, 1995, Ser. No. 573,727

Claims priority, application Germany, Dec. 16, 1994, 44 45 168.7

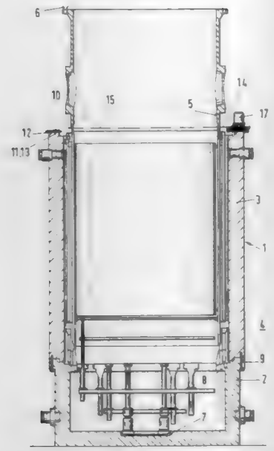
Int. Cl.^{6} G21C *19/00*

U.S. Cl. 376—260 **1 Claim**

1. A method for dismantling bulky parts of pressure-vessel fittings of a nuclear plant into transportable parts of smaller sizes, which comprises:

a) setting down a bottom part of an open transport container on a bottom of a water tank;

b) inserting a bulky part into the bottom part of the open transport container;



c) moving a casing part of the open transport container over the inserted bulky part like a sleeve until the casing part contacts the bottom part and the bulky part projects a predeterminable amount above an end surface of the casing part;

d) connecting the casing part to the bottom part;

e) supporting a separating device on the end surface of the transport container and fixing the separating device relative to the transport container; and

f) separating the bulky part above the end surface of the casing part with the separating device.

5,633,904

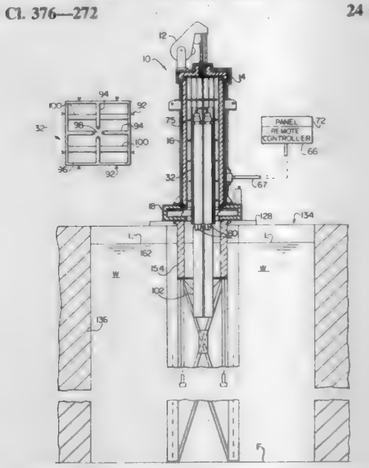
SPENT NUCLEAR FUEL (SNF) DRY TRANSFER SYSTEM

Bernard Gilligan, III, Norfolk; Clinton W. Stallard, III, Hampton; James E. Steinke, Smithfield, and Richard K. Feamster, Jr., Gloucester, all of Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Nov. 9, 1994, Ser. No. 336,503

Int. Cl.^{6} G21F *5/008*; **G21C** *19/32*

U.S. Cl. 376—272 **24 Claims**



1. A transfer container for the dry transfer of spent nuclear fuel assemblies comprising;

an elongated hollow body;

a sleeve for sliding within said body;

said sleeve including a plurality of compartments, each of said compartments for receiving a fuel assembly;

and means for lowering said sleeve at least partially from said body to a position over said fuel assemblies.

5,633,905

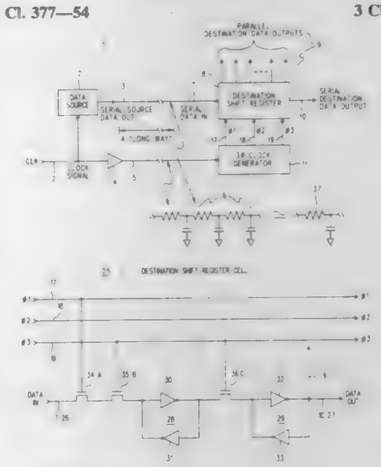
THREE PHASE CLOCKING FOR AN IC SHIFT REGISTER AT THE END OF A LONG SERIAL DATA PATH

Richard R. Brown, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 20, 1996, Ser. No. 667,156

Int. Cl.^{6} G11C *19/00*

U.S. Cl. 377—54 **3 Claims**



1. An integrated circuit comprising:

a source of digital data and an associated original dock signal both located within a first location within the integrated circuit;

a shift register located at a second location within the integrated circuit that is distant from the first location and that has a data input for receiving digital data and that also has respective inputs for receiving first, second and third phased clock signals;

a digital data path coupling the source of digital data to the data input of the shift register;

a three phase clock circuit located proximate the shift register and having a clock input for receiving the original clock signal, and also having first, second and third phased clock signal outputs at which are produced respective first, second and third phased clock signals coupled to the shift register, a transition in the original clock signal producing a subsequent delayed transition in the first phased clock signal, a subsequent doubly delayed transition in the second phased clock signal and a subsequent doubly delayed transition in the third phased clock signal, these subsequent transitions in the first and third phased clock signals being in the same direction and opposite that in the second phased clock signal, and each of these subsequent transitions being in their respective opposing directions when the transition in the original clock signal is in its opposite direction; and

an original clock signal path coupling the original clock signal to the clock input of the three phase clock circuit.

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5,633,906

X-RAY COMPUTED TOMOGRAPHY APPARATUS OF THE ELECTRON BEAM TYPE WITH ELECTRON BEAM INTENSITY MEASURING CAPACITY

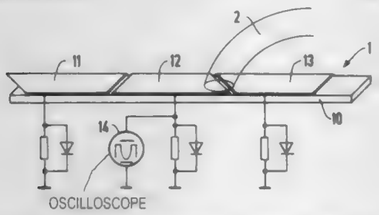
Erich Hell, Erlangen, and Manfred Fuchs, Nuremberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 10, 1996, Ser. No. 632,385

Claims priority, application Germany, Apr. 18, 1995, 195 14 332.9

Int. Cl.° H01J *35/30*

U.S. Cl. 378—10 **6 Claims**



1. In an x-ray computed tomography apparatus having an annular x-ray source surrounding an examination field, said x-ray source including a ring anode scanned by an electron beam generated by an electron gun for producing an x-ray beam rotating around said examination field, the improvement comprising:

said ring anode having, at least one location, at least two neighboring sub-anodes insulated from each other and separated by an insulating interspace; and

measuring means connected to said sub-anodes for measuring a charge distribution in said electron beam as said electron beam sweeps said interspace between said two sub-anodes.

5,633,907

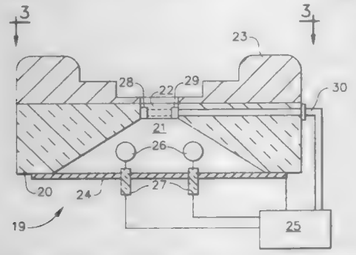
X-RAY TUBE ELECTRON BEAM FORMATION AND FOCUSING

Stephen W. Gravelle, Mequon; Steven D. Hansen, Port Washington, and Karl F. Sherwin, Waukesha, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Mar. 21, 1996, Ser. No. 619,386

Int. Cl.° H01J *35/06*

U.S. Cl. 378—121 **11 Claims**



1. An electron focusing cathode for x-ray tubes wherein a primary electric field is established between a cathode and a spaced anode, said cathode comprising in combination

(a) an insulating material cavity member having a large cavity therein and a small narrow exit passage leading from said cavity,

(b) a principal electrode on said cavity member to establish a primary electric field between said cathode and said anode.

(c) thermionic emissive cathode means to generate an electron cloud in said cavity.

(d) forcing field electrode means adjacent said thermionic emissive means and connected to a source of electrical negative biasing voltage with respect to said thermionic emissive means to move said electron cloud from said cavity through said narrow exit passage.

(e) opposite grid plate electrode means in said narrow exit passage and connected to a source of electrically negative biasing voltage with respect to said primary electric field cathode to change the cross-section of said electron cloud passing therebetween into said primary electric field.

5,633,908

PORTABLE MICRO-X-RAY-SPECTROMETER

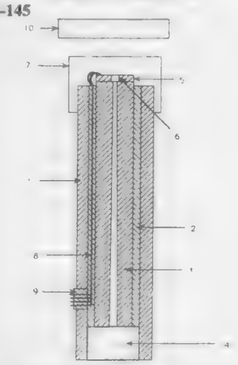
Anders Rindby, Göteborg, Sweden, and Panu Jalas, Helsinki, Finland, assignors to Metorex International Oy, Espoo, Finland, and X-ray Capillary Optics AB, Goteborg, Sweden

Filed Nov. 28, 1995, Ser. No. 563,661

Claims priority, application Sweden, Nov. 30, 1994, 9404149

Int. Cl.° G21K *1/06*

U.S. Cl. 378—145 **6 Claims**



1. Measuring element for portable micro-X-ray spectrometer comprising a radiation protected housing, at least one source of X-rays, a detector, a cooling part for the detector and means for activating the X-ray source and the detector, characterized in that, in order to advantageously guide the X-rays obtained by the X-ray source away from the radiation protected housing (**1**), at least one capillary tube (**3**) has been mounted in the X-ray source (**4**), said capillary tube (**3**), at the opposite end of the tube as seen from the X-ray source, being connected to a hole formed in the detector (**5**) for conducting the X-rays out of the radiation protected housing.

5,633,909

APPARATUS AND METHOD FOR GENERATING CALLS AND TESTING TELEPHONE EQUIPMENT

Todd M. Fitch, Sunnyvale, Calif., assignor to Centigram Communications Corporation, San Jose, Calif.

Continuation of Ser. No. 261,442, Jun. 17, 1994, abandoned. This application Mar. 28, 1995, Ser. No. 413,464

Int. Cl.° H04M *1/24:3/08;1/64*

U.S. Cl. 379—15 **28 Claims**

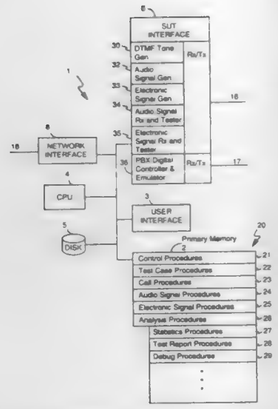
1. An apparatus for testing telephone equipment that includes a message storage memory, said apparatus comprising:

a memory configured to store procedures;

a communication channel configured to communicate with said telephone equipment;

DTMF tone generation circuitry and non-DTMF audio signal generation circuitry, said non-DTMF audio signal generation circuitry configured to generate a message to be stored in said message storage memory; and

a processor coupled to said memory, to said communication channel, to said DTMF tone generation circuitry and to said non-DTMF audio signal generation circuitry, said processor configured to execute said procedures stored in said memory and to engage in communication with said telephone equipment via said communication channel, said communication including said processor initiating a first call by sending first information to said telephone equipment via said communication channel, said first information including tones for instructing said telephone equipment to form a connection, tones for instructing said telephone equipment to switch to a requested mail box, and a delivered message for storage in said requested mail box, and said processor initiating a second call by sending second information to said telephone equipment via said communication channel, said second information including tones for instructing said telephone equipment to form a connection, tones for instructing said telephone equipment to switch to a requested mail box, and tones for instructing said telephone equipment to retrieve said message stored in said requested mail box as a retrieved message.



5,633,910

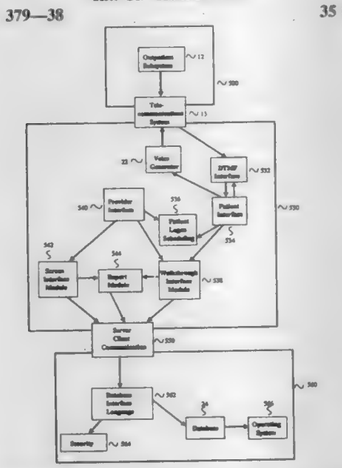
OUTPATIENT MONITORING SYSTEM

Kopel H. Cohen, 2362 Harbour Oaks Dr., Longboat Key, Fla. 34228

Filed Sep. 13, 1994, Ser. No. 305,108

Int. Cl.° H04M *11/00*

U.S. Cl. 379—38 **35 Claims**



1. A patient-initiated patient monitoring system, comprising:

a touch-tone telephone having a plurality of keys operated by a patient to generate DTMF tones, the DTMF tones representing a health condition of the patient, the patient utilizing the touch-tone telephone to initiate an interactive health care communication session at a time convenient to the patient by calling a central monitoring system; and

a central monitoring system coupled via a communications system to the touch-tone telephone for interacting with the patient during the interactive health care communication session, the central monitoring system not initiating communications with the patient and wherein such interactive health care communication sessions are initiated by the patient rather than the central monitoring system, the central monitoring system answering the call initiated by the patient at the touch-tone telephone, in response thereto the central monitoring system generating a plurality of questions concerning the health condition of the patient for the patient to answer using the plurality of keys of the touch-tone telephone, and storing answers to the plurality of questions for later retrieval, the central monitoring system including

a DTMF modem decoder receiving and decoding the DTMF tones generated by the patient using the touch-tone telephone and transmitted over the communications system to the central monitoring system,

a computer processor coupled to the DTMF modem decoder,

a voice generator coupled to the computer processor generating voice output under the control of the computer process, said voice output transmitted over the communications system to the touch-tone telephone,

a database coupled to the computer processor storing a patient record representing the health condition of the patient and storing the plurality of questions concerning the health condition of the patient,

wherein the computer processor retrieves the plurality of questions concerning the health condition of the patient from the database and causes the voice generator to generate voice output representing the plurality of questions, and

wherein the patient responds to the plurality of questions using the plurality of keys of the touch-tone telephone to generate DTMF tones representing the health condition of the patient, the DTMF tones decoded by the DTMF modem decoder, the computer processor storing information concerning the health condition of the patient in the patient record.

5,633,911

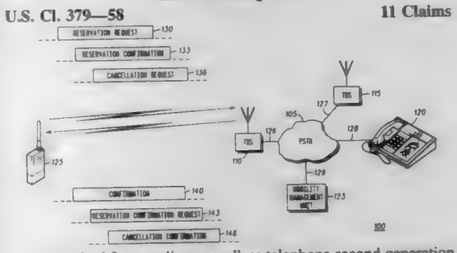
METHOD AND APPARATUS FOR RESERVING A TELEPHONE LINE IN A TELEPOINT COMMUNICATION SYSTEM

Wen K. Han; See W. Ng, both of Singapore, Singapore, and Prashanth M. L. Gowda, Fortworth, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 23, 1995, Ser. No. 376,726

Int. Cl.° H04Q *7/20*

U.S. Cl. 379—58 **11 Claims**



1. A method for coupling a cordless telephone second generation (CT-2) telepoint communication unit (TCU) to a CT-2 telepoint base station (TBS), wherein the CT-2 TBS is coupled to a public switched telephone network (PSTN) via a limited number of telephone lines, the method comprising the steps of:

a) generating and transmitting a signal from the TCU in response to user input;

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b) receiving at the TBS the signal and determining whether the signal is a call request or a telephone line reservation request; and

c) in response to receiving and determining the signal is a telephone line reservation request by the TBS, reserving at least one of the limited number of telephone lines, thereby providing the TCU exclusive use of the at least one of the limited number of telephone lines for incoming calls to the TCU.

5,633,912

MOBILE TELEPHONE USER INTERFACE INCLUDING FIXED AND DYNAMIC FUNCTION KEYS AND METHOD OF USING SAME

Kam-Cheong A. Tsoi, Westminster, Colo., assignor to U S West Advanced Technologies, Inc., Boulder, Colo.

Continuation of Ser. No. 460,782, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 89,146, Jul. 8, 1993, Pat. No. 5,425,077. This application Jun. 17, 1996, Ser. No. 664,876

Int. Cl.° H04Q *7/32*

U.S. Cl. 379—58 **14 Claims**



1. A user interface for use in a mobile telephone handset, comprising:

static visual display means for presenting the status of said mobile telephone and services accessible by said user;

dynamic visual display means for presenting a plurality of context sensitive function labels;

a first and a second class Of keys on one face of said handset;

said first class of keys including a plurality of fixed-label DTMF signaling keys in electrical communication with said static and dynamic visual display means; and

said second class of keys including a plurality of soft-label signaling keys in electrical communication with said static and dynamic visual display means such that a corresponding context sensitive function label is displayed adjacent to a corresponding soft label key, said soft-label keys operative to access a function indicated by said corresponding context sensitive function label.

5,633,913

METHOD FOR ESTABLISHING CONNECTION BETWEEN COMMUNICATION DEVICES

Reino Talarmo, Riihimäki, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/F193/00486, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO94/11997, PCT Pub. Date May 26, 1994

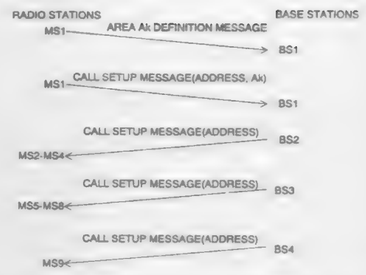
PCT Filed Nov. 17, 1993, Ser. No. 436,185

Claims priority, application Finland, Nov. 18, 1992, 925236

Int. Cl.° H04M *11/00*

U.S. Cl. 379—59 **19 Claims**

1. A method for establishing a connection from a first communication subscriber device having at least one identity and being



connected to a communication network comprising exchanges and/or base stations, to one or more second communication subscriber devices capable of moving to any area of the communication network, each second communication subscriber device being connected to the communication network, each second communication subscriber device having at least one identity that is independent of the current location of the respective second communication device, wherein the method comprises the following steps:

(a) defining a search area for the second communication subscriber devices, and an identification for the search area;

(b) sending from the first communication subscriber device to the communication network a call setup message containing the identification of the search area and the respective said identity of at least one of said second communication subscriber devices,

(c) paging by the communication network of at least one second communication subscriber device only in the search area defined by said search area identification,

(d) establishing a connection to the at least one second communication device provided with a respective said identity only if the at least one second communication device is located in said search area.

5,633,914

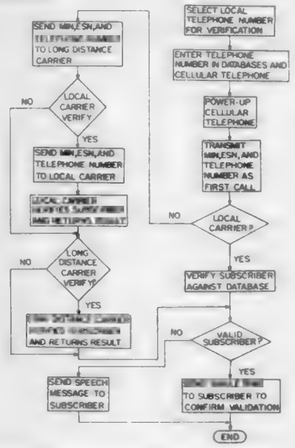
METHOD FOR FOILING CELLULAR TELEPHONE CLONING

Stephen P. Rosa, 12213 Mt. Albert Rd., Ellicott City, Md. 21042

Filed Aug. 22, 1995, Ser. No. 517,867

Int. Cl.° H04Q *7/38*

U.S. Cl. 379—59 **22 Claims**



1. A method for foiling cellular telephone cloning in a communications network servicing subscriber telephones, said communi-

cations network including a database and a computer, said method comprising the steps of:

(a) selecting for each subscriber telephone a local verification telephone number, other than the subscriber telephone number, for identifying said each subscriber telephone, in order to deceive prospective cloners that have intercepted communications from subscriber telephones from ascertaining authentication information;

(b) storing in said database said verification telephone number and an identification code for each subscriber telephone;

(c) transmitting from each subscriber telephone the verification telephone number and identification code of said each subscriber telephone to said communications network;

(d) verifying, by said computer, that said each subscriber telephone is a legitimate network subscriber by matching said transmitted verification telephone number to the verification telephone number stored in said database for said each subscriber telephone; and

(e) preventing said each subscriber telephone from placing calls via said network in the absence of verification of said each subscriber telephone as a legitimate subscriber in step (d).

5,633,915

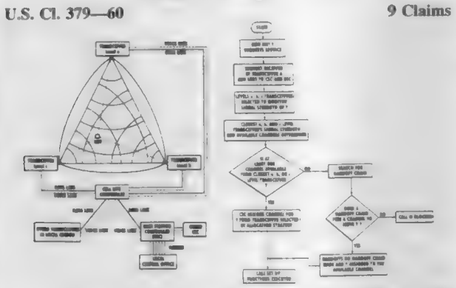
MULTILAYERED ARRANGEMENT FOR LOAD SHARING IN A CELLULAR COMMUNICATION SYSTEM

Cheng Yang, Plano, and David W. Matula, Dallas, both of Tex., assignors to Southern Methodist University, Dallas, Tex.

Filed May 16, 1995, Ser. No. 442,336

Int. Cl.° H04Q *7/22*

U.S. Cl. 379—60 **9 Claims**



1. A cellular communication system for communicating with mobile phones comprising:

a plurality of base stations, for communicating with said mobile phones, each of said base stations coupled to a plurality of transceivers, each of said plurality of transceivers defining a cell in which the transceiver selectively provides frequency channel assignments to said mobile phones within said cell, the cells being arranged in a cellular pattern, said transceivers covering a geographic service area and being partitioned such that respective cells form plural cellular layers of communication, each of the plural cellular layers substantially covering all of said geographic service area;

substantially all of the cells of each of the plural cellular layers overlapping a plurality of cells in each other cellular layer such that at least first and second transceivers from different cellular layers of the plural cellular layers selectively provide a frequency channel assignment to a requesting mobile phone requesting a frequency channel assignment within the geographic service area; and

a means to select between said at least first and second transceivers from the different cellular layers based on load balancing between said at least first and second transceivers such that a selected one of said at least first and second transceivers and a corresponding base station of said plurality of base stations provide said frequency channel assignment for said requesting mobile phone.

5,633,916

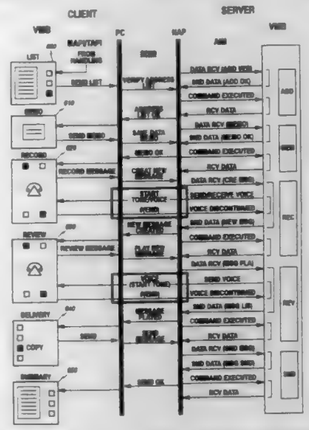
UNIVERSAL MESSAGING SERVICE USING SINGLE VOICE GRADE TELEPHONE LINE WITHIN A CLIENT/SERVER ARCHITECTURE

Bruce Goldhagen, Newtown Square; Frederick C. Kruesi, Exton; Gary P. Russell, King of Prussia; John Homan, Ephrata, and Edwin M. Elrod, Downingtown, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 30, 1994, Ser. No. 367,973

Int. Cl.° H04M *1/64*

U.S. Cl. 379—67 **16 Claims**



15. A server for use in a voice and data messaging system conforming to a client and server architecture, comprising:

(a) a first computer and a multi-applications platform (MAP) running on said first computer;

(b) means operatively coupled to said first computer for storing voice, data and facsimile messages;

(c) universal mailbox means for (1) visually indicating to a user, via a display device associated with a second, client computer operatively coupled to said server via a single telephone line, that voice and data messages have been delivered for said user and are being hold by said server; and (2) permitting said user to at least review, erase, or forward, via said second computer and said single telephone line, a selected one of said voice and data messages stored by said server;

wherein said universal mailbox means further includes means for performing the following functions:

(1) initialization, wherein said client outdials the server; the server recognizes an incoming call and connects the call; the server recognizes that the call is for a universal mailbox user; the server allocates a voice and data port to the user; the server outdials the client and sends a DTMF identifying code; the client receives the DTMF identifying code and initializes a client and server session, thereby permitting the user to perform message retrieval and message send functions;

(2) message summary, wherein the server gathers all messages associated with a user's mailbox;

(3) select and review selected message, wherein the server receives a current message from the client for playback over a voice channel, wherein the user is given prescribed message review handling options while the message is being played over the voice channel;

(4) update memo, wherein the server updates a memo field associated with the message, said memo field being placed in a database;

(5) create new message, wherein a new message is created when a record option is selected by the user; and

(6) send message, wherein a previously created message is sent to another user stretched at another client.

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5,633,917

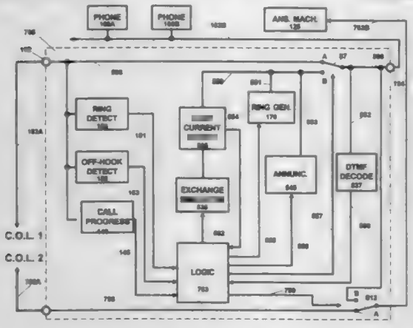
REMOTE-CONTROL TELEPHONE ANSWERING SYSTEM AND METHOD

Laurence S. Rogers, 15 Aspen Rd., Scarsdale, N.Y. 10583

Continuation-in-part of Ser. No. 342,093, Nov. 18, 1994, Pat. No. 5,579,377. This application Jun. 5, 1995, Ser. No. 462,633

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—74 **28 Claims**



1. A circuit for use with a telephone system, said system including a telephone line for coupling to a public telephone network, a telephone answering device coupled to said telephone line at a first location, and a telephone coupled to said telephone line at a second location remote from said first location, said telephone being of a type that is operable in a conventional way to (a) obtain a dial tone for initiating an outgoing telephone call upon causing the telephone line to be in an off-hook state and (b) transmit command signals over said telephone line, and said answering device being of a type that is operable in a conventional way to be (1) operatively connected to said telephone line in order to record a message received via said telephone line and to play back and couple to said telephone line said recorded message, and (2) remotely controlled by command signals received via said telephone network at least to play back said recorded message, said circuit comprising:

first means for causing said telephone line to be operatively connected to said telephone network in a default mode of operation of said circuit, said connection enabling said telephone and said answering device to operate in the aforesaid conventional ways;

second means responsive to a first command signal received from said telephone for causing said telephone line to be operatively disconnected from said telephone network;

third means for causing said answering device to be operatively connected to said telephone line, while said telephone line is operatively disconnected from said telephone network, such that said answering device is remotely controllable by command signals transmitted from said telephone to play back and couple to said telephone line said recorded message; and

fourth means for detecting and indicating to a user of said telephone, while said telephone line is operatively disconnected from said telephone network, the presence of an incoming telephone call directed to said telephone line from said telephone network;

whereby the user of said telephone may retrieve said recorded message from said answering device via said telephone, and be informed while retrieving said message of the presence of the incoming telephone call on said telephone line.

5,633,918

INFORMATION DISTRIBUTION SYSTEM

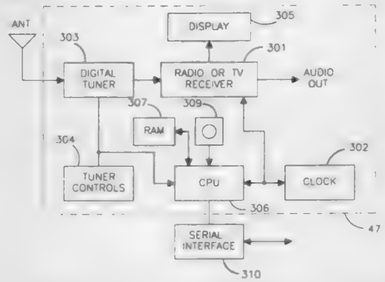
Roy J. Mankovitz, 18057 Medley Dr., Encino, Calif. 91316

PCT No. PCT/US94/08748, § 371 Date Feb. 2, 1996, § 102(e) Date Feb. 2, 1996, PCT Pub. No. WO95/04426, PCT Pub. Date Feb. 9, 1995

PCT Filed Aug. 3, 1994, Ser. No. 591,523

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—97 **2 Claims**



1. An automatic self contained interface unit for unattended control and connection of an information and retrieval system to an information receiver comprising:

means for connecting a telephone line to the information receiver;

means for receiving telephonic signals from the connected telephone line;

means for transmitting telephonic signaling tones on the connected telephone line;

means for placing the connected telephone line on hold;

a controller connected to the connecting means, receiving means, transmitting means and hold means, said controller including:

means for activating the controller at a predetermined time;

means for transferring a predetermined set of commands to the transmitting means for transmission as signaling tones for dialing the information and retrieval means on the telephone line and, upon answer, an information data string to the information and retrieval system for defining selective collection and transmission of specific information;

means for interactively interpreting signals received by the receiving means;

means responsive to a first signal from the interpreting means for activating the hold means;

means for transferring a command to the transmitting means for transmission to the information receiver; and

means responsive to a second signal from the interpreting means for deactivating the hold means thereby interconnecting the information receiver with the information and retrieval system;

a broadcast receiver having a controllable station tuner;

means for selecting the station to which the tuner is set;

a clock for designating current date and current time;

manual input means for issuing a store command;

a memory;

a second controller responsive to the selecting means, the clock, and the manual input means for storing in the memory data representative of the station to which the tuner is set, the current date, and the current time when a store command is issued; and

means for interfacing the second controller to the controller whereby station date and time data are stored as a portion of the predetermined set of commands.

5,633,919

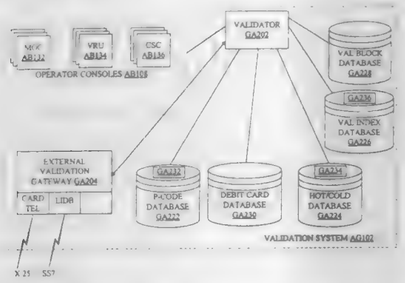
REAL-TIME BILLING SYSTEM FOR A CALL PROCESSING SYSTEM

Steven J. Hogan; Kristi T. Feltz; Douglas R. Murdock, and Eric M. Busch, all of Cedar Rapids, Iowa, assignors to LinkUSA Corporation, Cedar Rapids, Iowa

Division of Ser. No. 136,211, Oct. 15, 1993, Pat. No. 5,590,181. This application Jun. 6, 1995, Ser. No. 473,765

Int. Cl.[6] H04M *15/10;15/26;15/00*

U.S. Cl. 379—115 **14 Claims**



1. A billing system for a call processing system, the billing system comprising:

a rate file for storing rate information for a call received by the call processing system; and

a rating system configured to receive a billing information record associated with a call, calculating billing information from said rate information stored in said rate file, and storing said billing information in a toll file, said rating system further configured to receive a rate quote request that is sent by an operator console prior to completion of a call, calculating a rate quote from said rate information stored in said rate file, and sending said rate quote to said operator console.

5,633,920

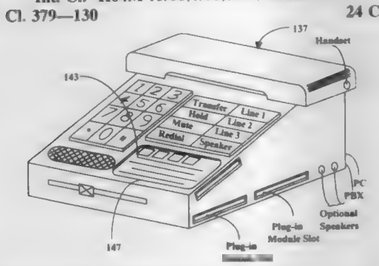
SMART PHONE

Dan Kikinis, Saratoga, and Pascal Dornier, Sunnyvale, both of Calif., assignors to Elonex I.P. Holdings, Ltd., London, England

Continuation of Ser. No. 195,123, Feb. 10, 1994, abandoned. This application Jan. 30, 1996, Ser. No. 593,547

Int. Cl.[6] H04M *15/00;1/00;3/00;* **G06K** *19/06*

U.S. Cl. 379—130 **24 Claims**



10. A business telephone system comprising:

a hand-held computer unit having a bus connector interface and a touch-screen input/display interface implemented on one surface;

a digital telephone having control circuitry coupled by a bus system to at least one docking bay adapted for docking the hand-held computer, the at least one docking bay having a physical window allowing a user access to the touch-screen input/display interface of the hand-held computer in docked position;

a phone line interface to the digital telephone;

a general-purpose computer; and

a serial communication link between the digital telephone and the general-purpose computer;

wherein a user controls the digital telephone through the touch-screen input/display interface of the hand-held computer.

5,633,921

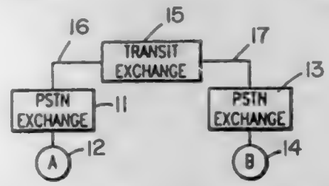
PROVIDING SPECIAL SERVICES TO A CALLER CONFIGURED AS A VIRTUAL CALLED PARTY

Lennart Söderberg, Enskede, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 247,316, May 23, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 615,581

Int. Cl.[6] H04M *7/10*

U.S. Cl. 379—207 **10 Claims**



1. A method for providing special subscriber service features within a telephone communication network which includes a pair of local end office exchanges to which one or more subscribers is connected as a calling or called party and a transit exchange coupled between said local end office exchanges, comprising the steps of:

receiving at the transit exchange, a call from calling party authorized to receive special subscriber features, the calling party connected to a certain local end office exchange;

subsequently receiving at the transit exchange an on-hook signal from said calling party;

completing a call from said transit exchange back to said calling party through the certain local end office exchange from which the calling party originally called to connect the calling party to the telephone communication network as a "virtual called party";

placing a call from said calling party as a virtual called party to an actual called party connected to another local exchange end office, the call completed through the transit exchange;

thereafter receiving at said transit exchange a first signal from either said calling party or actual called party, said first signal comprising a switch hook flash; and

recognizing within the transit exchange that said received first signal is indicative of the desire of the calling or actual called party to invoke one of a plurality of special subscriber service features.

5,633,922

PROCESS AND APPARATUS FOR RESTARTING CALL ROUTING IN A TELEPHONE NETWORK

Katherine G. August, Matawan, and Albert Friedes, East Brunswick, both of N.J., assignors to AT&T, Middletown, N.J.

Filed Dec. 29, 1995, Ser. No. 581,707

Int. Cl.[6] H04M *7/00;15/00;3/42*

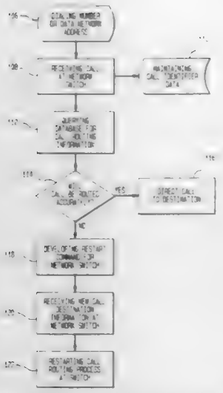
U.S. Cl. 379—220 **16 Claims**

1. A call routing process for routing a telephone call initiated by a caller through a switching network to a telephone number, comprising the steps of:

(A) storing call identifier information at a network switch;

(B) using at least the telephone number to query a database for call routing information;

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(C) determining in the database whether the telephone call will be routed to a destination actually desired by the caller;

(D) obtaining new call destination information in response to a determination that the telephone call will not be routed to the destination actually desired by the caller; and

(E) before the call is completed, restarting the call routing process at the network switch using the new call destination information, wherein said restarting includes the steps of

(i) routing the telephone call along a route toward a new destination which corresponds to the new call destination information,

(ii) forwarding the call identifier information with the telephone call along the route to the new destination, and

(iii) storing the call identifier information at the new destination.

5,633,923

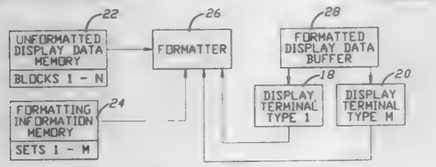
AUTOMATIC CALL DISTRIBUTION SYSTEM WITH DISPLAY DATA STORAGE COMPRESSION SYSTEM AND METHOD

Karla Kovarik, Naperville, Ill., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Nov. 12, 1992, Ser. No. 975,022

Int. Cl.[6] H04M *3/00*; **G09G** *5/00*; **H01J** *31/00*

U.S. Cl. 379—265 **20 Claims**



1. In an automatic call distribution system having a plurality of different types of display terminals for display of data relating to operation of the distributor, a display data storage compression system, comprising:

means for storing data in unformatted form for display at different types of display terminals associated with the automatic call distribution system;

means for storing formatting information relating to different types of formats associated with said different types of display terminals associated with the call distribution system; and

means for selectively using the formatting information to provide the stored data to the different types of terminals in the different formats respectively associated with the different types of display terminals.

5,633,924

TELECOMMUNICATION NETWORK WITH INTEGRATED NETWORK-WIDE AUTOMATIC CALL DISTRIBUTION

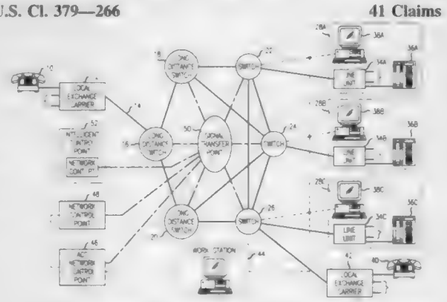
Steven T. Kaish, Bridgewater, N.J.; Eugene P. Mathews, Barrington, Ill.; Nigel G. Matson, Glen Gardner, N.J.; Carlos A. Perea, Bethlehem, Pa.; George J. Ryva, Colts Neck, N.J.; James B. Shepard, Pickerington, Ohio; Smita P. Sheth, Edison, N.J., and Robert J. Thornberry, Jr., Wheaton, Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 129,283, Sep. 30, 1993, abandoned.

This application Dec. 11, 1995, Ser. No. 570,138

Int. Cl.[6] H04Q *3/64*

U.S. Cl. 379—266 **41 Claims**



1. An automatic call distribution (ACD) network that supports the distribution of incoming calls to a plurality of agent communication terminals (ACTs) coupled to the network, whereby agents using associated ACTs answer incoming calls for which ACD service is provided, the ACD network comprising:

a first telecommunication switch that receives and holds one of said incoming calls;

a plurality of second destination telecommunication switches coupled between said first switch and ACTs for connecting said incoming calls to said ACTs;

an integrated control system coupled to said first and second switches for controlling the distribution of incoming calls among individual ACTs, the system including:

agent queue means for storing agent availability (AA) data indicative of the availability of each individual ACT to accept an incoming call;

call queue means for storing call waiting data for each incoming call that cannot be initially serviced; and

control node means coupled to said agent queue means and call queue means for selecting a specific ACT to accept said one call based on said AA data and call waiting data, said control node means sending routing instructions to the first switch at which the one call is held awaiting said routing instructions, said routing instructions causing said first switch to route the one call to one of said second switches that supports the selected ACT, said control node means also sending routing instructions that identify said selected ACT to the one of the second switches, whereby calls awaiting ACD service are handled on a network wide basis.

5,633,925

LOW LOSS TELEPHONE CIRCUIT

John Handford, Chester, and John Nelson, Merseyside, both of United Kingdom, assignors to GPT Limited, United Kingdom

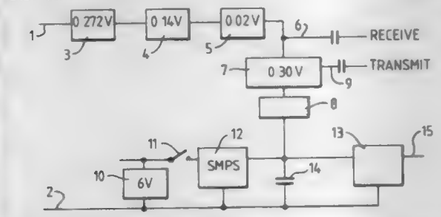
PCT No. PCT/GB93/01048, § 371 Date Dec. 20, 1994, § 102(e) Date Dec. 20, 1994, PCT Pub. No. WO93/25037, PCT Pub. Date Dec. 9, 1993

PCT Filed May 21, 1993, Ser. No. 341,576

Claims priority, application United Kingdom, May 22, 1992, 9211031

Int. Cl.[6] H04M *19/08*

U.S. Cl. 379—413 **8 Claims**



1. A telephone power strip-off circuit for recovering electrical power from a telephone line, comprising: a polarity guard subcircuit including a MOSFET bridge operated in an inverted mode, a line seize sub-circuit, a speech transformer sub-circuit, and a switched mode power supply connected in series across said telephone line, said speech transformer sub-circuit including a single, low impedance transformer with a low D.C. resistance primary winding, and a feedback circuit for making the low impedance transformer behave as a high impedance transformer, said feedback circuit being operative for increasing the A.C. impedance of the transformer by sensing flow of a first A.C. current in said primary winding of said transformer and, in response, causing flow of a second A.C. current in said primary winding to cancel the effect of said first current.

5,633,926

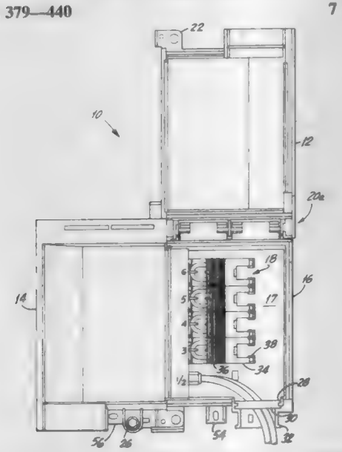
NETWORK INTERFACE ENCLOSURE

Robert J. Cannetti, Deer Park, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed Apr. 19, 1995, Ser. No. 425,186

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—440 **7 Claims**



1. A network interface enclosure adapted for mounting on a vertical surface, comprising:

(a) a base adapted to be secured to the vertical surface, the base having an upper portion;

(b) a cover adapted to be secured to the upper portion of the base, the cover being adapted to rotate upwardly about the upper portion of the base when the base is secured to the vertical surface;

(c) a detent mechanism formed of cooperating elements on the base and the cover for maintaining the cover in an open position after the cover has been rotated upwardly at least about 90° from a closed position;

(d) the detent mechanism includes (1) a slot formed between fingers that project from the upper portion of the base, the slot having upper and lower portions, (2) a pin on the cover adapted to be received in the slot on the upper portion of the base, (3) a stop located on the upper portion of the base, (4) a caming surface on the cover adapted to ride upon the stop on the upper portion of the base and (5) a notch on the caming surface of the cover adapted to receive the stop on the upper portion of the base;

(e) the slot, pin, stop and notch of the detent mechanism cooperating to allow the cover to move between the closed position and a first opened position and to hold the cover in the first opened position;

(f) whereby, when the cover is in the closed position, the caming surface on the cover rests on the stop on the upper portion of the base and the pin on the cover is retained in the upper portion of the slot formed between the fingers projecting from the upper portion of the base, as the cover is rotated upwardly, the caming surface on the cover rides along the stop on the upper portion of the base with the pin retained in the upper portion of the slot between the fingers projecting from the upper portion of the base, when the stop on the upper portion of the base reaches the notch of the caming surface on the cover, the cover shifts downwardly so that the stop on the upper portion of the base is retained in the notch of the caming surface on the cover and the pin on the cover is retained in the lower portion of the slot formed between the fingers projecting from the upper portion of the base thereby securing the cover in the first opened position.

5,633,927

VIDEO COPY PROTECTION PROCESS ENHANCEMENT TO INTRODUCE HORIZONTAL AND VERTICAL PICTURE DISTORTIONS

John O. Ryan, and Ronald Quan, both of Cupertino, Calif., assignors to Macrovision Corporation, Sunnyvale, Calif.

Division of Ser. No. 62,866, May 17, 1993. This application May 5, 1995, Ser. No. 435,575

Int. Cl.[6] G11B *15/087*; **H04N** *7/167*

U.S. Cl. 380—5 **12 Claims**



1. A method of defeating the effects of a video anti-copy process that adds pulses to blanking intervals of a video signal, comprising replacing a back porch portion of the video signal having an amplitude at blanking level with a signal having an amplitude below the blanking level.

5,633,928

KEY ESCROW METHOD WITH WARRANT BOUNDS

Arjen K. Lenstra, Basking Ridge; Peter M. Winkler, Madison, and Yacov Yacobi, Berkeley Heights, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

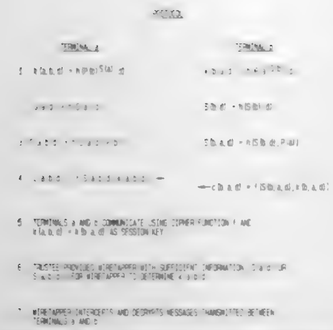
Filed Mar. 10, 1995, Ser. No. 402,176

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—21 **24 Claims**

3. A method for assuring limited privacy in a communications network, comprising the steps of:

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(a) sending a cipher message c=f(k,m) generated from a clear text message m via said network from a party a to a party b, said cipher message c including a common session key k of the parties a and b which is encrypted using a cipher function f and a cipher key which is derived from a secret key of the party a by the party a using a one way hash function;

(b) at least one trustee providing to a wiretapper terminal connected to said network sufficient information to permit said wiretapper terminal to decrypt said cipher message using said cipher key and obtain said session key without said wiretapper terminal obtaining said secret key of the party a;

(c) transmitting an information message via said network between said parties a and b, the message being encrypted using said cipher function f and said session key; and

(d) decrypting said information message transmitted between said parties a and b at said wiretapper terminal.

5,633,929

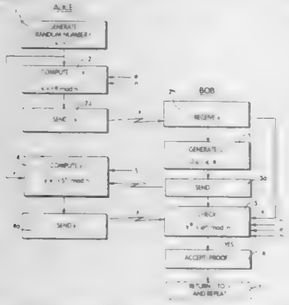
CRYPTOGRAPHIC KEY ESCROW SYSTEM HAVING REDUCED VULNERABILITY TO HARVESTING ATTACKS

Burton S. Kaliski, Jr., San Carlos, Calif., assignor to RSA Data Security, Inc, Redwood City, Calif.

Filed Sep. 15, 1995, Ser. No. 529,156

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—23 **20 Claims**



1. A method of preventing certificate harvesting in a public key escrow system with verification of escrow protocol between communicating members comprising:

sending by a sending member an escrow verification string containing the sending member's public escrow key but not containing a certificate; and

engaging in a proof of knowledge protocol with a receiving member to prove to the receiving member that said sending member has a valid certificate.

5,633,930

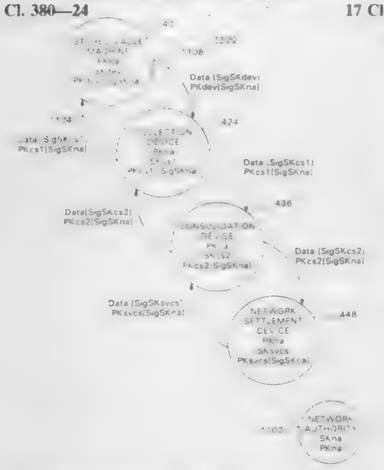
COMMON CRYPTOGRAPHIC KEY VERIFICATION IN A TRANSACTION NETWORK

Terry L. Davis, Scottsdale, Ariz.; James F. Russell, Hockessin, Del.; John W. Sears, Peoria, and Philip H. Trice, Phoenix, both of Ariz., assignors to Electronic Payment Services, Inc., Wilmington, Del.

Filed Sep. 30, 1994, Ser. No. 316,686

Int. Cl.[6] H04L *9/32*; **G06F** *17/60*

U.S. Cl. 380—24 **17 Claims**



1. A stored value transaction system comprising:

a plurality of value transferring devices including a value distributing device for distributing cash-equivalent value to a user and a value gathering device for gathering cash-equivalent value from a user, each value transferring device including a memory for storing value transfer information corresponding to each value transfer;

a collection device for performing a value information transfer transaction with at least one of the value transferring devices, the collection device for periodically receiving at least a portion of an accumulated amount of the stored value transfer information from the memory of at least one of the value transferring devices, the collection device including a memory for storing the received accumulated value transfer information;

a network consolidation device for performing a value information transfer transaction with the collection device, the network consolidation device for periodically receiving at least a portion of the stored value transfer information from the memory of the collection device, the consolidation device including a first memory for storing the received value transfer information, a processor for consolidating the received value transfer information into consolidated information, and a second memory for storing the consolidated information; and

a network settlement device for performing a value information transfer transaction with the consolidation device, the network settlement device being operatively coupled to the consolidation device for receiving at least a portion of the consolidated information from the second memory of the consolidation device, the network settlement device including a first memory for storing the received consolidated information, a processor for performing settlement according to at least a portion of the received consolidated information to produce settlement information, and a second memory for storing the settlement information;

each of the plurality of value transferring devices, the collection device, the consolidation device, and the network settlement device having a respective cryptographic verifier for providing a secure transaction determination during each respective value information transfer transaction, each respective value information transfer transaction occurring between a respective transferor and a respective transferee and being permitted in accordance with a transferor secure transaction determination by the respective transferor and in accordance with a transferee secure transaction determination by the respective transferee;

each cryptographic verifier including a plurality of encryption keys, each plurality of encryption keys having at least one common encryption key whereby the transferor secure transaction determination and the transferee secure transaction determination are made in accordance with the common encryption key.

5,633,931

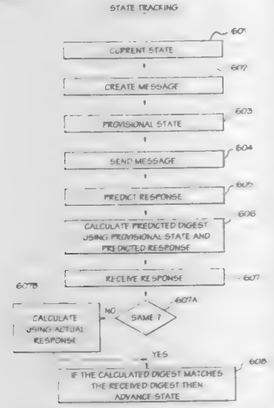
METHOD AND APPARATUS FOR CALCULATING MESSAGE SIGNATURES IN ADVANCE

Jimmy J. Wright, West Jordan, Utah, assignor to Novell, Inc., Orem, Utah

Filed Jun. 30, 1995, Ser. No. 497,311

Int. Cl.[6] H04L *9/30*

U.S. Cl. 380—25 **23 Claims**



12. A method for authenticating a message transmitted from a sender to a receiver, comprising the steps of:

a) generating at the sender a message signature at least partially derived from a message and a code held by both the sender and receiver;

b) sending from the sender to the receiver the message signature and a message;

c) generating at the receiver, prior to receiving the message signature and message from the sender, a predicted message signature that is at least partially derived from an expected message from the sender to the receiver and a code held by both the sender and receiver;

d) receiving at the receiver the message signature and message transmitted by the sender;

e) comparing at the receiver the predicted message signature with the received message signature; and

f) authenticating the message received by the receiver if the predicted message signature and the received message signature match.

5,633,932

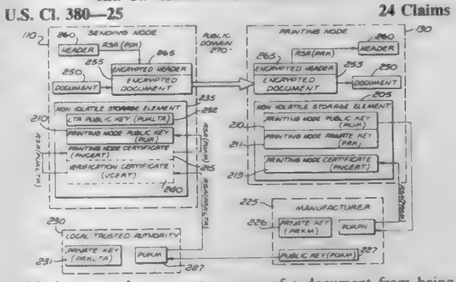
APPARATUS AND METHOD FOR PREVENTING DISCLOSURE THROUGH USER-AUTHENTICATION AT A PRINTING NODE

Derek L. Davis, Phoenix, and Lionel Smith, Queen Creek, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1995, Ser. No. 574,843

Int. Cl.[6] H04L *9/32*;*9/00*; **B41J** *29/54*

U.S. Cl. 380—25 **24 Claims**



16. A system that prevents a copy of a document from being output from a printing node until the printing node receives local authentication from an intended recipient of the document, the system comprising:

a communication link;

a sending node coupled to said communication link, said sending node includes a storage element which contains at least a public key associated with the printing node, said sending node utilizes said public key to encrypt both a header of the document and the document prior to transmission to the printing node via said communication link; and

the printing node coupled to said communication link, the printing node includes a storage element which contains at least a private key associated with the printing node, the printing node decrypts said header to obtain a confidentiality level of the document and prevents the document from being output until authentication that the recipient is physically proximate to the printing node when the confidentiality level exceeds a predetermined level.

5,633,933

METHOD AND APPARATUS FOR A KEY-MANAGEMENT SCHEME FOR INTERNET PROTOCOLS

Ashar Aziz, Fremont, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 258,272, Jun. 10, 1994, Pat. No. 5,588,060. This application Jul. 15, 1996, Ser. No. 680,438

Int. Cl.[6] H04L *9/30*

U.S. Cl. 380—30 **23 Claims**

1. In a computer network, a method for securely transmitting messages from a first node I to a second node J, said method comprising the steps of:

providing a first secret value i to node I;

keeping said first secret value i secret from nodes on said computer network other than I;

providing a second secret value j to node J;

keeping said second secret value j secret from nodes on said computer network other than J;

computing a first public value P_i using as input said secret value i;

computing a second public value P_j using as input said secret value j;

computing an implicit shared secret value SS, using as input said secret value i and said public value P_j;

deriving a key K_1 from said implicit shared secret value SS;

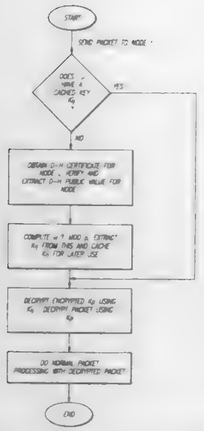
generating a second key K_2;

encrypting said second key K_2 with said key K_1;

encrypting said message with said second key K_2;

sending said encrypted second key K_2 and said encrypted message from node I to node J; and

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computing said implicit shared secret value SS, using as input said secret value j and said public value P_j.

5,633,934

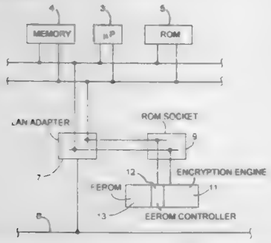
LOCAL AREA NEWORK ENCRYPTION DECRYPTION SYSTEM

John T. Hember, 412 Pickford Drive, Kanata, Ontario, Canada

Continuation of Ser. No. 164,961, Dec. 9, 1993, abandoned. This application Jun. 26, 1996, Ser. No. 670,438

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—50 **9 Claims**



1. A data encryption and/or decryption system comprising:

(a) means for storing encryption and/or decryption keys,

(b) an encryption and/or decryption processor for receiving data signals, for receiving said key or keys from the storing means, and for encrypting or decrypting the data signals in accordance with said key or keys,

(c) an output data bus for receiving the encrypted or decrypted signals from said processor,

(d) means for plugging said system into a read-only memory (ROM) socket of a computer for access to a source of said data signals and to said output data bus,

(e) said source of data signals being a ROM socket address bus accessible by a computer micro-processor, and said encrypted data signals being applied to said data bus, said output data bus being accessible to the computer microprocessor,

(f) a local area network (LAN) adapter system for connection to the computer containing said ROM socket, said ROM socket being a socket, designated for a boot ROM for the computer, in said LAN adapter system for booting the computer from the boot ROM of said LAN adapter,

whereby said data signals are received, and encrypted data signals are passed through said ROM socket.

5,633,935

STEREO ULTRADIRECTIONAL MICROPHONE APPARATUS

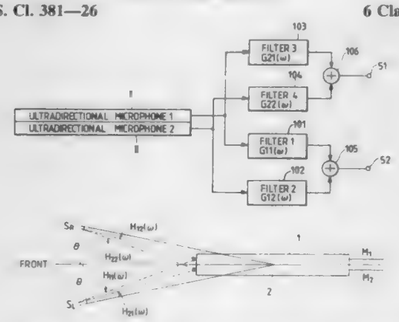
Takeo Kanamori, Hirakata; Junichi Tagawa, Osaka; Satoru Ibaraki, Osaka; Hiroki Furukawa, Osaka, and Kiminori Ono, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 11, 1994, Ser. No. 225,625

Claims priority, application Japan, Apr. 13, 1993, 5-085952; Oct. 14, 1993, 5-256776

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—26 **6 Claims**



1. A stereo ultradirectional microphone apparatus for detecting a sound to produce first and second stereo sound signals, comprising:

(a) a first ultradirectional microphone, having a first unidirectional characteristic, for detecting and converting said sound into a first sound signal, said first unidirectional characteristic having a first axis;

(b) a second ultradirectional microphone, having a second unidirectional characteristic which is substantially the same as said first ultradirectional microphone, for detecting and converting said sound into a second sound signal, said second unidirectional characteristic having a second axis; said first and second ultradirectional microphones being arranged side by side with a predetermined distance therebetween such that said first axis is directed in the same direction D in parallel to said second axis substantially;

(c) a first filter, having a first transfer characteristic, for frequency equalizing said first sound signal;

(d) a second filter, having a second transfer characteristic, for frequency equalizing said second sound signal;

(e) first summing means for summing outputs of said first and second filters to supply said first stereo signal;

(f) a third filter, having a third transfer characteristic, for frequency equalizing said first sound signal;

(g) a fourth filter, having a fourth transfer function, for frequency equalizing said second sound signal; and

(h) second summing means for summing outputs of said third and fourth filters to supply said second stereo signal, said first to fourth transfer characteristics being determined such that a first sensitivity in said first stereo signal in a first direction making a clockwise angle from said first axis is minimized and a second sensitivity in said second stereo signal in a second direction making a counterclockwise angle from said direction D is minimized.

5,633,936

METHOD AND APPARATUS FOR DETECTING A NEAR-END SPEECH SIGNAL

Stephen S. Oh, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

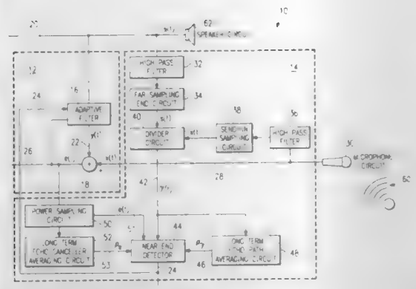
Filed Jan. 9, 1995, Ser. No. 369,956

Int. Cl.[6] H04B *3/20*

U.S. Cl. 381—66 **18 Claims**

18. A near-end speech detector, comprising:

(a) a far-end signal averager;



(b) a near-end signal averager;

(c) a divider with inputs coupled to said far-end signal averager and to said near-end signal averager;

(d) an echo-cancelled near-end signal averager;

(e) a comparator with inputs coupled to said divider and to said echo-cancelled near-end signal averager, said comparator comparing (i) an output of said divider with prior outputs of said divider and (ii) an output of said echo-cancelled near-end signal averager to prior outputs of said echo-cancelled near-end signal averager to indicating the presence or to indicated the absence of near-end speech in a near-end signal.

5,633,937

METHOD FOR PROCESSING SIGNALS

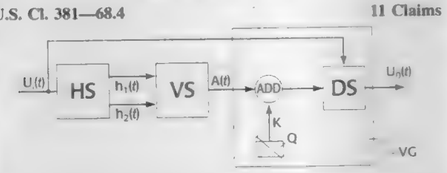
Zlatan Ribic, Vienna, Austria, assignor to Viennatone AG, Vienna, Austria

Continuation of Ser. No. 970,140, Nov. 2, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 265,694

Claims priority, application Austria, Nov. 13, 1991, 2245/91

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68.4 **11 Claims**



1. A method for processing analog audio signals for hearing aids, comprising the steps of:

generating two Hilbert signals $h_1(t)$ and $h_2(t)$ directly from an input signal $u_i(t)$;

generating a momentary amplitude signal A(t) by taking the square root of the sum of the squares of the two Hilbert signals $h_1(t)$ and $h_2(t)$, with the Hilbert signals having an energy spectrum equivalent to the input signal across the entire frequency range, said momentary amplitude signal A(t) having an amplitude proportional to the amplitude of the input signal $u_i(t)$; and

dividing a parallel input signal, which is the same as the input signal $u_i(t)$ used to generate the Hilbert signals, by the sum of the momentary amplitude signal A(t) and a constant signal K, in a feed forward configuration, to generate an output signal $u_o(t)$.

5,633,938

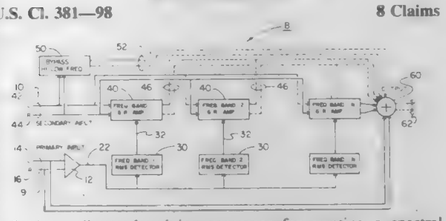
AUDIO TRACK MIXING PROCESSOR

Frederick E. Porter, III, 12 W. Sahuaro Vista, Tucson, Ariz. 85704

Filed Sep. 22, 1994, Ser. No. 310,308

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—98 **8 Claims**



1. An audio track mixing processor for creating a spectral diminution of a plurality of audio tracks in an input audio mix with respect to a selected audio track of the input audio mix, wherein the selected audio track within the input audio mix is designated as a primary audio track and the remaining audio tracks within the input audio mix are designated as a secondary audio track and a modified secondary audio track, wherein each audio track is formed of relative high frequency and mid-frequency and low frequency signals, comprising, in combination:

phonic conversion circuitry having a primary stereo input pair and a mono output port with the primary stereo pair including a left primary input and a right primary input for receiving a primary audio track in stereo and with the output port transmitting a detector activation signal in mono;

a plurality of consecutive tuned root mean square detectors, each root mean square detector having an input port and an output port, each input port coupled to the output port of the phonic conversion circuitry for receiving the detector activation signal therefrom, each output port of each root mean square detector transmitting a gain control signal at a value proportional to the root mean square value within its bandpass of the detector activation signal received at its input port;

a plurality of gain reduction amplifiers formed with bandpass filters tuned to a plurality of consecutive mid-frequency bands, each gain reduction amplifier tuned to a different mid-frequency band of the plurality of consecutive mid-frequency bands, each gain reduction amplifier associated with one of the plurality of root mean square detectors that is tuned to the same mid-frequency band, each gain reduction amplifier having a secondary stereo input pair, an input port, and an output pair, each secondary stereo input pair including a left secondary input and a right secondary input for receiving a secondary audio track, each input port coupled to the output port of the associated root mean square detector for receiving the gain control signal therefrom, and each output pair transmitting a secondary audio track with its mid-frequency signals modified by a gain that is based upon the value of the gain control signal received at the input port to thereby define a first modified secondary audio track;

a bypass filter formed of a stop band filter and having a bypass secondary stereo input pair and an bypass secondary stereo output pair with the bypass secondary stereo input pair including a left bypass secondary input and a right bypass secondary input for receiving a secondary audio track and with the bypass secondary stereo output pair transmitting a secondary bypass audio track containing only extreme high frequency and low frequency signals not transmitted by the gain reduction amplifiers to thereby define a second modified secondary audio track; and

summation circuitry having an input pair and a stereo output pair with the input pair coupled with the primary stereo input pair for receiving the primary audio track therefrom, coupled to the output pairs of the gain reduction amplifiers for receiving the plurality of first modified secondary audio tracks therefrom, and coupled to the output pair of the bypass filter for receiving the second modified secondary audio track therefrom, and with the stereo output pair transmitting a summed

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result of the primary audio track, the first modified secondary audio tracks, and the second modified secondary audio track to thereby define an output audio mix having a primary audio track and a secondary audio track wherein the secondary audio track of the output audio mix is dependent on the primary audio track thereof.

5,633,939

COMPANDER CIRCUIT

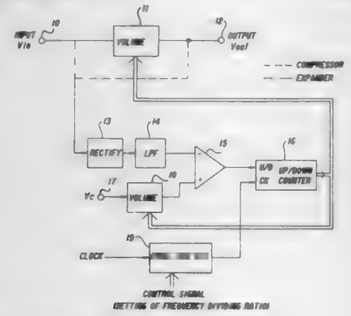
Kazuhiro Kitani; Yuji Segawa, and Kunihiko Gotoh, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 7, 1994, Ser. No. 319,721

Claims priority, application Japan, Dec. 20, 1993, 5-320439; Aug. 25, 1994, 6-201036

Int. Cl.[6] H03G *7/00*

U.S. Cl. 381—106 **30 Claims**



1. A compander circuit comprising:

first and second volume controllers;

a comparator which compares a compared voltage with a rectified and smoothed signal of an input signal of the compander circuit or an output signal of the first volume controller receiving the input signal, the compared voltage being an output signal of the second volume controller;

a counter which executes a count operation on an output signal of the comparator in synchronism with a first clock signal and controls gains of the first and second volume controllers on the basis of a counter value of the counter; and

means for variably controlling a frequency of the first clock signal applied to the counter by a predetermined control signal.

5,633,940

AUDIO AMPLIFIER ARRANGEMENT

Derk J. C. Wassink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 213,774, Mar. 16, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 639,810

Claims priority, application European Pat. Off., Mar. 19, 1993, 93200806

Int. Cl.[6] H03G *3/00;9/00*

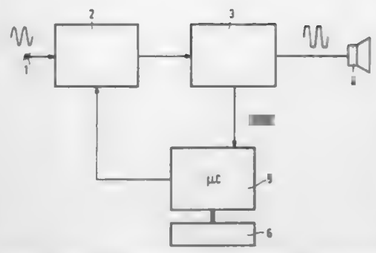
U.S. Cl. 381—107 **7 Claims**

1. An audio amplifier arrangement, comprising:

an input for receiving an audio signal;

a first amplifier stage for raising and lowering the signal strength of the received audio signal for at least a portion of the frequency spectrum of the audio signal;

an output amplifier stage for amplifying the signal from the first amplifier stage and wherein the output amplifier stage is overloaded when the signal from the first amplifier stage exceeds a particular limit by a predetermined amount;



detection means for detecting that the output amplifier stage is overloaded and for providing an overload detection signal; and

control means for causing the first amplifier stage to lower the strength of the received audio signal in response to the overload detection signal and for causing the predetermined amount to be increased by a particular degree upon the lowering of the signal strength of the received audio signal, such that the detection signal will only be generated a next time if the signal from the first amplifier stage exceeds the particular limit by the increased predetermined amount.

5,633,941

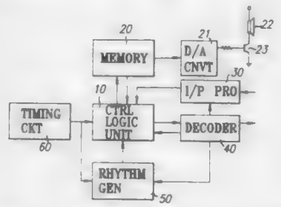
CENTRALLY CONTROLLED VOICE SYNTHESIZER

Chi-mao Huang, Toutiu, Taiwan, assignor to United Microelectronics Corp., Taiwan

Filed Aug. 26, 1994, Ser. No. 296,514

Int. Cl.[6] G09B *15/04*

U.S. Cl. 381—118 **2 Claims**



1. A centrally controlled voice synthesizer comprising

a memory which is preprogrammed with voice data, melody data, address data, and control data;

an input processor for receiving an external signal and outputting a triggering signal;

a clock generator for generating clock signals;

a logic control unit for receiving the clock signal from the clock generator, receiving the triggering signal from the input processor, and fetching the voice data, the address data, and the control data from the memory upon receipt of the triggering signal;

a decoder for decoding the data fetched from the memory via the logic control unit and generating a control signal;

a rhythm generator for outputting a rhythm signal to the logic control unit upon receiving the clock signal from the clock generator and the control signal from the decoder;

a digital-to-analog converter connected to the memory for converting digital voice or melody data from the memory to analog voice or melody signal; and

a transistor connected to the digital-to-analog converter for amplifying the analog voice signal and driving an external speaker to emit corresponding voice wherein the memory has the data therein separated into a section heading, a word heading, and a word data table, where the section heading defines a heading address, voice, triggering mode, and output control data.

5,633,942

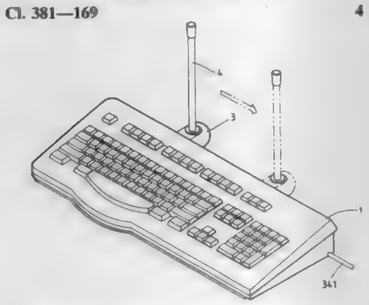
MICROPHONE MOUNTING STRUCTURE OF A KEYBOARD

Jay Terng, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Aug. 30, 1996, Ser. No. 705,804

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—169 **4 Claims**



1. A microphone mounting structure comprising:

a keyboard having a top cover shell defining a horizontal bottom chamber near a rear side thereof, and a plurality of equally spaced vertical locating grooves inside said horizontal bottom chamber;

a slide carrier slidably mounted in the horizontal bottom chamber of said keyboard, said slide carrier comprising a pair of vertical locating ribs bilaterally raised from a back side thereof and detachably forced into engagement with the vertical locating grooves of the top cover shell of said keyboard, an outward horizontal rib raised from a bottom of a front side thereof and stopping at a bottom edge of said top cover shell, a supporting block downwardly extending from said outward horizontal rib through which said slide carrier can be moved with the hand in a user's horizontal bottom chamber of said keyboard to shift said vertical locating ribs leftwards or rightwards between the vertical locating grooves of the top cover shell of said keyboard, a microphone holder mounting hole at said supporting block, and two locating holes spaced at an angle around said microphone holder mounting hole;

a microphone holder coupled to the supporting block of said slide carrier, said microphone holder comprising a mounting rod raised from one side and coupled to the microphone holder mounting hole of the supporting block of said slide carrier, a locating rib disposed adjacent to said mounting rod and forced into engagement with one locating hole of the supporting block of said slide carrier, and a plug hole spaced from said mounting rod at right angles and adapted for holding a microphone; and

a microphone mounted in the plug hole of said microphone holder and having an electric cord connected to a power supply.

5,633,943

AUDIO SYSTEM FOR A PERSONAL COMPUTER

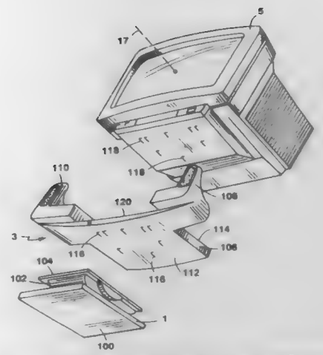
George R. Daniels, Spring, Tex.; Thor R. Halseth, Simi Valley, and Daniel R. Vehse, Oxnard, both of Calif., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 303,419, Sep. 9, 1994. This application May 25, 1995, Ser. No. 451,986

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—188 **2 Claims**

1. An audio module for use with a monitor that is supported by a pedestal at a mechanical interface and is removable from the pedestal at the interface, the pedestal permitting reorienting the monitor relative to the pedestal, the interface including an element on the monitor that mates removably with an element on the pedestal, the audio module comprising:



a base that includes two mating devices, one configured to mate with the interface element of the monitor, the other configured to mate with the interface element of the pedestal so that the module may be interposed between the monitor and the pedestal, the base configured to be held in a fixed position relative to the monitor, regardless of reorientation of the monitor relative to the pedestal;

two speakers mounted at opposite ends of the base; and

a microphone mounted at one end of the base.

5,633,944

METHOD AND APPARATUS FOR AUTOMATIC OPTICAL RECOGNITION OF ROAD SIGNS

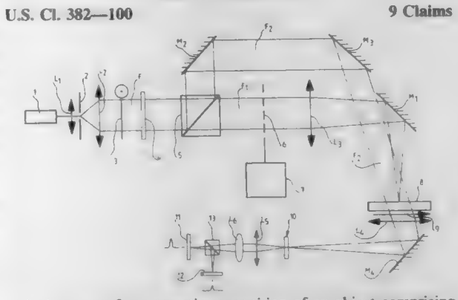
Laurent Guibert, Brest; Mondher Attia, Montrouge, and Alain Servel, Meudon, all of France, assignors to Automobiles Peugeot, Paris, and Automobiles Citroen, Neuilly Sur Seine, both of France

Filed Apr. 19, 1995, Ser. No. 424,084

Claims priority, application France, Apr. 19, 1994, 94 04654

Int. Cl.[6] G06K *9/74*

U.S. Cl. 382—100 **9 Claims**



1. A process for automatic recognition of an object comprising the steps of:

displaying on a screen an input image containing the image of the object to be recognized as well as images of reference objects;

causing a first laser beam to pass through this screen and an initial lens in order to focus the first laser beam on a modulator capable of recording an intensity spectrum;

illuminating the modulator with a second laser beam;

causing said second laser beam to pass through a second lens as the second laser beam leaves the modulator in order to produce a second spectrum supplied to a detection system; and

determining whether the image of the object to be recognized is identical to one of the images of reference objects based on the second spectrum;

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wherein the step of determining involves detecting correlation peaks of the various objects contained in the input image, within the focal plane of the second lens, in such a way that the presence of intensity peaks exceeding a predetermined threshold and offset with respect to the optical center of the image indicates that the image of the object to be recognized is identical to one of the images of reference objects; and

wherein the portion of the beam corresponding respectively to said intensity peaks are polarized differently, and wherein said portions are separated in polarization in order to send them onto different detectors.

5,633,945

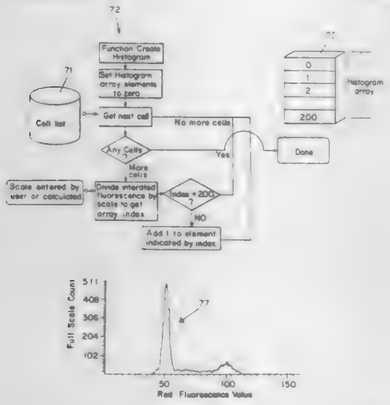
ACCURACY IN CELL MITOSIS ANALYSIS

Lee D. Kamentsky, Arlington, Mass., assignor to CompuCyte Corporation, Cambridge, Mass.

Filed Oct. 5, 1994, Ser. No. 318,233

Int. Cl.° G06K *9/36*

U.S. Cl. 382—129 **9 Claims**



1. A method of preparing an histogram of a sample of biological cells, with increased accuracy, comprising the steps of:

a) staining a testing sample of biological cells with a fluorescent dye which is taken up only by DNA within the individual cells within the sample;

b) using fluorescing means to excite the taken up dye within the cells, whereby light is emitted from the individual cells, in substantial proportion to the DNA content therewithin;

c) measuring the emitted light relative to the number of cells within the testing sample and relating the measured light to DNA content within said cells;

d) preparing an histogram of relative cell populations of said testing sample having different DNA contents;

e) modeling, for each of the cell populations with differing DNA contents, the relation of the number of cells, as determined by the Fluorescence measurements, with a DNA content of a specified value, as a signal function, relative to an error function, inherent in said measurements; and

d) deconvoluting the error function from the signal function with deconvolution means and correcting the histogram at each of the differing DNA contents populations to reflect substantially only the signal function.

5,633,946

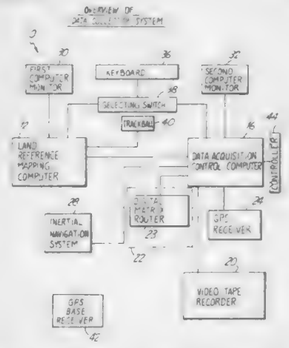
METHOD AND APPARATUS FOR COLLECTING AND PROCESSING VISUAL AND SPATIAL POSITION INFORMATION FROM A MOVING PLATFORM

Theodore M. Lachinski, Andover; Louis S. Ptacek, Mound; Paul M. Blais, St. Paul; Stephen Boggs, Fridley; John W. Longfellow, St. Paul, and Jeffrey M. Setterholm, Lakeville, all of Minn., assignors to Geospan Corporation, Plymouth, Minn.

Continuation of Ser. No. 246,303, May 19, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 550,553

Int. Cl.° G06K *9/00*

U.S. Cl. 382—103 **16 Claims**



1. A method for collection of visual and spatial position information from a moving platform, the method comprising:

obtaining spatial position data relating to spatial position and orientation of the moving platform;

obtaining video images from a plurality of video cameras carried by the moving platform at known positions and orientations with respect to the moving platform;

recording non-coplanar video images obtained at different times from the video cameras;

associating with each recorded video image an instantaneous spatial position and orientation of the video camera which produced the video image at the time that the video image was obtained, based upon the spatial position and orientation of the moving platform and the known position and orientation of the video camera with respect to the moving platform; and

determining location of an object shown in at least two of the recorded non-coplanar video images obtained at different times based upon a location of the object in each of those recorded images and the associated spatial positions and orientations of the video cameras which produced those video images.

5,633,947

METHOD AND APPARATUS FOR FINGERPRINT CHARACTERIZATION AND RECOGNITION USING AUTO CORRELATION PATTERN

Alastair Sibbald, Maidenhead, England, assignor to Thorn EMI PLC, London, England

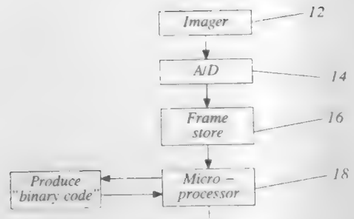
Continuation of Ser. No. 895,709, Jun. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 672,643, Mar. 21, 1991, abandoned. This application Oct. 12, 1994, Ser. No. 322,045

Int. Cl.° G06K *9/00*

U.S. Cl. 382—124 **18 Claims**

1. An apparatus for characterizing an image of a fingerprint under test to determine if the fingerprint under test matches a previously characterized fingerprint, the apparatus comprising:

a fingerprint image capturing means for generating an image of the fingerprint under test comprising a receiving surface



adapted to receive a surface of a finger bearing the fingerprint under test and an illumination device for illuminating said surface;

transducer means optically connected to said capturing means for receiving said image and for generating electrical signals representative of said image in response thereto;

storage means, connected to said transducer means, for storing said electrical signals as a binary image of the fingerprint;

replicating means for producing a replica of the binary image;

combining means for effectively overlying the replica on the binary image and generating an autocorrelation pattern having a displacement modulus equal to a fractional part of the mean fingerprint inter-ridge spacing and a displacement vector rotated through a vector argument in incremental steps;

sampling means for sampling each of a plurality of independent sectors of the autocorrelation pattern, constituting collectively substantially the entire pattern, at each incremental step to obtain a set of data indicative of the intensity variations for each said sector for the incremental steps of the vector argument; and

storing means for storing the sets of data.

5,633,948

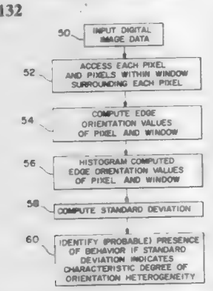
METHOD AND APPARATUS FOR DETECTING A DESIRED BEHAVIOR IN DIGITAL IMAGE DATA

W. Philip Kegelmeyer, Jr., 11755 Shadow Dr., Dublin, Calif. 94568

Continuation of Ser. No. 983,218, Nov. 30, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,474

Int. Cl.° G06K *9/00*

U.S. Cl. 382—132 **32 Claims**



1. An apparatus for detecting a desired behavior in digital image data comprising:

input means for inputting digital image data;

accessing means for accessing, for each of a plurality of pixels of the digital image data, digital image data of each pixel and pixels surrounding each of the plurality of pixels in predetermined window dimensions;

orientation means for computing edge orientation values of the accessed digital image data, for each of the plurality of pixels;

histogramming means for histogramming, for each of the plurality of pixels, the computed edge orientation values; and

detecting means for detecting a presence of the desired behavior in each of the plurality of pixels for which the orientation histogram indicates a characteristic degree of orientation heterogeneity.

5,633,949

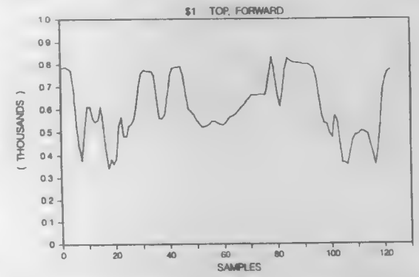
METHOD AND APPARATUS FOR CURRENCY DISCRIMINATION

Bradford T. Graves, Arlington Heights, and Douglas U. Mennie, Barrington, both of Ill., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

Continuation-in-part of Ser. No. 127,334, Sep. 27, 1993, Pat. No. 5,467,405, and Ser. No. 219,093, Mar. 29, 1994, abandoned, said Ser. No. 127,334is a continuation of Ser. No. 885,648, May 19, 1992, Pat. No. 5,295,196, which is a continuation-in-part of Ser. No. 475,111, Feb. 5, 1990, abandoned, said Ser. No. 219,093is a continuation-in-part of Ser. No. 127,334, Sep. 27, 1993, Pat. No. 5,467,405, which is a continuation of Ser. No. 885,648, May 19, 1992, Pat. No. 5,295,196, which is a continuation-in-part of Ser. No. 475,111, Feb. 5, 1990, abandoned. This application May 16, 1994, Ser. No. 243,807

Int. Cl.° G06K *9/00*

U.S. Cl. 382—135 **33 Claims**



1. An improved method of generating a master pattern corresponding to a given denomination for use in a discrimination system capable of discriminating among currency bills of different denominations, comprising the steps of:

generating a plurality of component patterns for a given denomination by scanning at least one genuine bill of said given denomination; and

generating a master pattern for said given denomination, said master pattern being derived from an average of said component patterns;

said component patterns representing analog variations in characteristic information detected from a genuine bill during scanning, said master pattern representing an average of analog variations of said characteristic information for said given denomination;

wherein said plurality of component patterns for a given denomination are generated by scanning a single genuine bill of said given denomination a plurality of times.

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5,633,950

METHOD OF IMAGE PROCESSING IN OPTICAL MEASURING APPARATUS

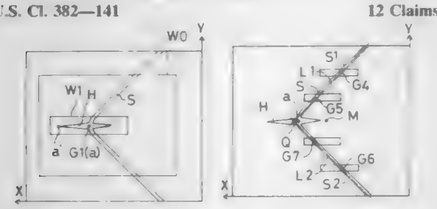
Naoji Yamaoka, and Koji Oda, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,238

Claims priority, application Japan, Dec. 28, 1993, 5-337616; Dec. 28, 1993, 5-337617; Dec. 28, 1993, 5-337618; Dec. 28, 1993, 5-337619

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—141 12 Claims



1. A method of image processing in an optical measuring apparatus which comprises a projector for radiating a slit light on a workpiece and an image sensing device for picturing an optical cutting image drawn by the slit light radiated on the workpiece, the optical cutting image on a screen of the image sensing device having a maximum portion in a direction of one of coordinate axes of the screen of the image sensing device, said method comprising:

setting predetermined windows in a plurality of positions of that one side portion of the optical cutting image which lies on one side, relative to said maximum portion, in a direction of the other of the coordinate axes of the screen;

calculating an equation of an image line which represents said one side portion from a position of center of gravity of image inside each of said windows which are set on said one side portion of the optical cutting image;

setting predetermined windows in a plurality of positions of that the other side portion of the optical cutting image which lies on the other side, relative to said maximum portion, in the direction of the other of the coordinate axes of the screen;

calculating an equation of an image line which represents said the other side portion from a position of center of gravity of image inside each of said windows which are set on said the other side portion of the optical cutting image;

obtaining from both said equations a position of a crossing point of the image line on said one side portion and the image line on said the other side portion;

wherein said method further comprises:

measuring a position of a front end point, in the direction of said one of the coordinate axes, of the image which appears on the screen of the image sensing device;

setting a first window which is oblong in the direction of said one of the coordinate axes such that said front end point is contained therein;

measuring a position of a center of gravity of image inside said first window;

setting second and third windows which are oblong in the direction of said the other of the coordinate axes at a position which is backwardly away by a predetermined length from said center of gravity of image inside said first window in the direction of said one of the coordinate axes to measure a position of said center of gravity of image inside each of said second and third windows;

obtaining a reference point which has a predetermined correlation with said centers of gravity of image inside said second and third windows, said predetermined windows being respectively set in a predetermined positional relationship with said reference point.

5,633,951

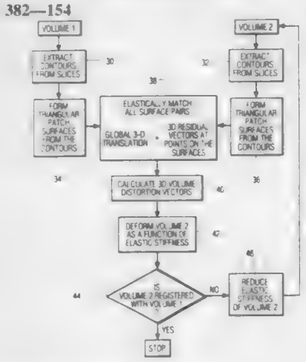
REGISTRATION OF VOLUMETRIC IMAGES WHICH ARE RELATIVELY ELASTICALLY DEFORMED BY MATCHING SURFACES

Mehran Moshfeghi, White Plains, N.Y., assignor to North America Philips Corporation, New York, N.Y.

Continuation of Ser. No. 992,982, Dec. 18, 1992. This application Jun. 7, 1995, Ser. No. 482,690

Int. Cl.[6] G06T *17/40*

U.S. Cl. 382—154 10 Claims



1. A 3D imaging method comprising:

a) scanning at least a region of an object with an imaging modality to obtain one of first and second relatively geometrically deformed three dimensional volumetric images containing voxels throughout said first and second volumetric images at positions corresponding to a three dimensional grid of lattice points, the other of said first and second images being available;

b) extracting a first surface from the first image by identifying spaced apart surface sample points lying on the first surface, said first surface delineating a feature of said object in said first image;

c) extracting a second surface from the second image by identifying spaced apart surface sample points lying on the second surface, said second surface delineating in said second image the same feature of said object as delineated by said first surface in said first image;

d) automatically, without input from an operator, determining a set of 3D surface point deformation vectors applicable to the respective sample points of one of the first and second surfaces which would register said sample points of said one surface with the other of said first and second surfaces;

e) automatically, without input from an operator, deriving a three dimensional volumetric set of 3D lattice point deformation vectors corresponding to said three dimensional grid of lattice points, each of said 3D lattice point deformation vectors being derived by applying a weighting function to said 3D surface point deformation vectors which are within a vicinity of said derived 3D lattice point deformation vector, said weighting function including a decay constant β which determines the effective size of said vicinity; and

f) automatically, without input from an operator, applying said three dimensional volumetric set of 3D lattice point deformation vectors to corresponding voxels throughout the entire volume of said three dimensional second image to elastically transform said three dimensional second image into a three dimensional compensated image,

wherein the spaced apart surface sample points lying on the first surface are vertex points of polygonal patches which tile the first surface, the spaced apart surface sample points lying on the second surface are vertex points of polygonal patches which tile the second surface, and said determining a set of 3D surface point deformation vectors is in response to a 3D force field and comprises the steps of:

g) for each vertex point on the first and second surfaces, determining a 3D displacement vector directed to a nearest patch of the other surface, so as to produce first and second sets of displacement vectors applicable to the vertex points of the first and second surfaces, respectively; and

h) determining said 3D force field as a function of said first and second sets of displacement vectors.

5,633,952

IDENTIFICATION OF A PARTICULAR COLOR IMAGE USING COLOR DISTRIBUTION, AND CIRCUITRY FOR SAME

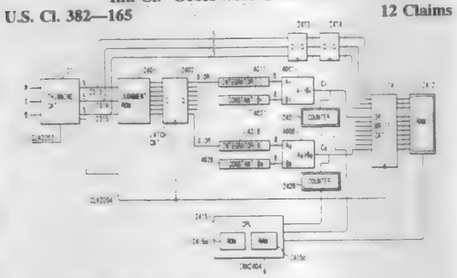
Kenichi Outa, Kawasaki; Masahiro Funada; Yoichi Takaragi, both of Yokohama, and Eiji Ohta, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 194,621, Feb. 7, 1994, abandoned, and Ser. No. 715,922, Jun. 14, 1991, abandoned. This application May 19, 1995, Ser. No. 446,557

Claims priority, application Japan, Jun. 22, 1990, 2-164905; Nov. 30, 1990, 2-330887; Nov. 30, 1990, 2-330891

Int. Cl.[6] G06K *9/00*; G03G *21/00*

U.S. Cl. 382—165 12 Claims



1. An image processing apparatus, comprising:

a) input means for inputting color image information of pixels representing an original image;

b) memory means for storing reference color information which represents a plurality of colors included in a predetermined color image, the predetermined color image including a predetermined color figure;

c) judging means for judging whether a color represented by the color image information input by said input means is one of the plurality of colors represented by said reference color information;

d) counting means for counting the number of different colors which are included in both the color image information input by said input means and the reference color information stored in said memory means;

e) discriminating means for discriminating whether the input image represented by the color image information includes the predetermined color image including the predetermined color figure or not in accordance with the number of different colors counted by said counting means; and

f) output means for outputting a discrimination result obtained by said discriminating means.

5,633,953

IMAGE PROCESSING APPARATUS HAVING IMPROVED COLOR-REPRODUCIBILITY OF COLOR IMAGE

Masahiro Kouzaki, Gamagoori, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 215,737, Mar. 22, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 543,146

Claims priority, application Japan, Mar. 24, 1993, 5-065195

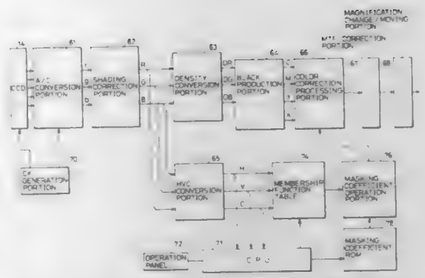
Int. Cl.[6] H04N *1/46*; G03F *3/08*

U.S. Cl. 382—167 4 Claims

4. An image processing apparatus, comprising:

input means for inputting an image signal;

first designation means for designating a first color;



second designation means for designating a second color;

storage means for storing membership functions, each of said membership functions indicating to what degree an image signal belongs to each of color regions corresponding to the colors designated by said first and second designation means;

determination means for determining the degree of belonging to each of said color regions for said input image signal, using said stored membership functions;

production means for producing a color conversion masking coefficient for converting the color designated by said first designation means into the color designated by said second designation means, based on said determined degree of belonging; and

processing means for conducting a color conversion processing to said input image signal, using said produced color conversion masking coefficient.

5,633,954

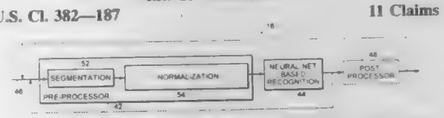
SYSTEM AND METHOD FOR CHARACTER RECOGNITION WITH NORMALIZATION

Amar Gupta, Cambridge; Maram V. Nagendraprasad, Amherst, and Patrick S. P. Wang, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 63,251, May 18, 1993, abandoned. This application Sep. 30, 1994, Ser. No. 316,718

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—187 11 Claims



1. A neural network-based character recognition system, comprising:

a receiver for receiving a first binary image of a plurality of characters;

a segmenter for separating the first binary image into a plurality of second binary images corresponding to the plurality of characters in the first binary image;

a normalizer for reducing variations among the plurality of characters by processing the second binary images, comprising:

a stroke adjuser for processing the second binary images to adjust strokes of the characters first to a one-pixel thickness and then to adjust the one-pixel thickness strokes to a second thickness which is substantially uniform and which is greater than the one-pixel thickness,

a size normalizer for processing the second binary images to proportionally adjust the overall size of the characters to a predetermined overall size, and

a slant correcter for processing the second binary images to reduce a slant with respect to a predetermined axis of the characters by using a binary search strategy which converges within a predetermined error margin; and

a neural network recognizer coupled to the normalizer for processing the stroke-adjusted, size-normalized, and slant cor-

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rected second binary images to determine which character is represented by each of the second binary images processed by the normalizer.

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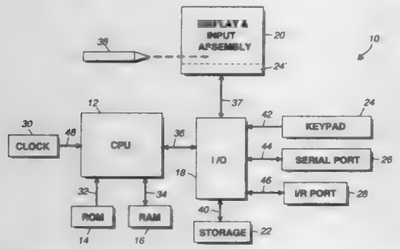
METHOD OF CONNECTING SHAPES ON A DISPLAY OF A COMPUTER SYSTEM

Radmilo Bozinovic, San José, and Giulia Pagallo, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Division of Ser. No. 180,559, Jan. 12, 1994, Pat. No. 5,452,371, which is a continuation-in-part of Ser. No. 1,122, Jan. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 889,216, May 27, 1992, abandoned, and Ser. No. 1,123, Jan. 5, 1993, abandoned. This application May 31, 1995, Ser. No. 456,247

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—187 **9 Claims**



1. A method for connecting an end point of an open shape to an object;

wherein both the open shape and the object are prepared by the interaction of a pointer with a display screen of a computer system; and

wherein the end point lies within a predefined distance of the object; and

wherein the open shape has a plurality of segments including an end segment, which end segment is a terminal portion of the open shape closest to said object; and

wherein said end segment is defined between said end point and an end segment point on the open shape;

the method comprising the following steps:

identifying a kink on the object, which kink is an intersection point on the object where the open shape will connect to the object; and

replacing the end segment with a connection segment drawn between said end segment point and said intersection point on said display screen.

5,633,956

VIDEO IMAGE PROCESSING

Michael Burl, Twickenham, United Kingdom, assignor to British Broadcasting Corporation, London, United Kingdom

PCT No. PCT/GB93/00402, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/17520, PCT Pub. Date Sep. 2, 1993

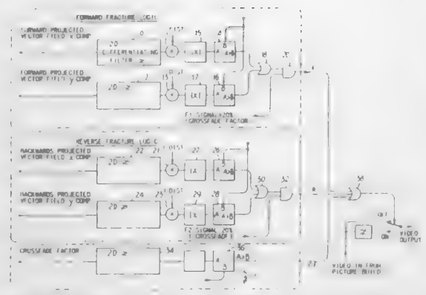
PCT Filed Feb. 26, 1993, Ser. No. 290,968

Claims priority, application United Kingdom, Feb. 26, 1992, 9204115

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—275 **11 Claims**

1. A method of improving a video image by detecting, and compensating for, discontinuities in a motion-compensated composite picture generated from a plurality of input fields, wherein the discontinuities arise from differential motions between adjacent areas of an input field, comprising the steps of:



assigning motion vectors to elementary areas of each of a plurality of input fields in a sequence of video images;

generating a shift field from a time projection of the motion vectors assigned to at least one of the plurality of input fields in the sequence of video images,

detecting transitions in displacement in the shift field between adjacent areas of the shift field, and

disguising, by use of a filter, any transition detected.

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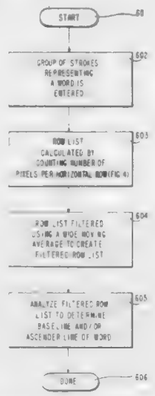
METHOD AND APPARATUS FOR DETERMINING POSITIONAL GUIDELINES OF HANDWRITTEN DATA

Tony Robinson, Palo Alto, Calif., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 16, 1994, Ser. No. 307,374

Int. Cl.[6] G06F *3/00*

U.S. Cl. 382—292 **32 Claims**



1. A device for positioning handwritten data on a display comprising:

a receiver for receiving input of handwritten data;

a display for displaying said handwritten data;

a data entry device for entering a handwritten block of said handwritten data;

a positional identifier for identifying a positional guideline for said handwritten block; and

a data positioner for positioning said handwritten block on said display based on said positional guideline of said handwritten block.

5,633,958

BASIC CELL FOR FIRING SPATIO-TEMPORAL PULSES AND PATTERN RECOGNITION UNIT USING THE SAME

Haruo Kato, Sapporo, Japan, assignor to Advantest Corp., Tokyo, Japan

Continuation of Ser. No. 211,299, Jun. 24, 1994, abandoned. This application May 17, 1996, Ser. No. 650,028

Claims priority, application Japan, Jul. 31, 1992, 4-205499; Jul. 31, 1992, 4-205500; Jul. 31, 1992, 4-205501; Sep. 9, 1992, 4-240614

Int. Cl.[6] G06K *9/54;* **H04N** *5/14*

U.S. Cl. 382—302 **9 Claims**



1. Pattern recognition equipment comprising a plurality of spatio-temporal pulse firing basic cells arranged in two dimensions, each of said spatio-temporal pulse firing basic cells including:

a time input port;

a plurality of space input ports;

a time output port;

a plurality of space output ports;

time data input means for inputting time input data a^t from said time input port at a timing t;

space data input port means for inputting space input data b_k from said plurality of space input ports at a timing t, where k=0, 1, . . . , u, and u is an integer;

calculating means for obtaining, from said time input data a^t and said space input data b_k, time output data a^{t+1} and space output data C_k, by logical operations defined by following expressions:

$a^{t+1} = Pa$, if $\Sigma b_k \leqq S$ and $a^t = Pd$, or

$\Sigma b_k < S$ and $a^t = Pa$.

Pd, if $\Sigma b_k \geqq S$ and $a^t = Pa$, or

$\Sigma b_k < S$ and $a^t = Pd$.

$c_k = q_e$, if $b_k = q_i$ and $a^t = Pa$, or

$b_k = q_e$ and $a_t = Pd$.

q_i, if $b_k = q_e$ and $a^t = Pa$, or

$b_k = q_i$ and $a^t = Pd$.

where Pa, Pd, q_e and q_i are binary constants, S is a threshold value of a predetermined integer equal to or greater than 1, and Σb_k represents summation of values b_k for k=0 to k=u;

time data output means for outputting, at next timing t+1, said time output data a^{t+1} from said calculating means to said time output port and for providing said time output data as the next time input data a^{t+1} to said time input port; and

space data output means for outputting said space output data C_k from calculating means to said space output ports, wherein said space input ports of each of said basic cells are each connected to said space output ports of one of a plurality of other basic cells, and said plurality of space output ports of said each basic cell are each connected to one of said plurality of other basic cells, thereby forming a spatio-temporal pulse generating means.

5,633,959

POLARIZATION STATE CHANGING APPARATUS AND POLARIZATION DEGREE MEASURING APPARATUS USING THE SAME

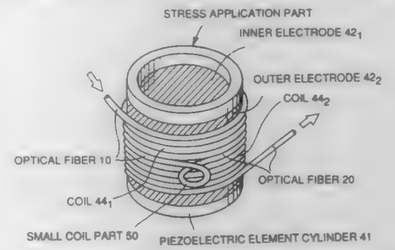
Shoji Niki, Saitama, and Eiji Kimura, Gyoda, both of Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Oct. 6, 1995, Ser. No. 540,052

Claims priority, application Japan, Oct. 11, 1994, 6-245371; May 9, 1995, 7-110521

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—11 **13 Claims**



1. A polarization state changing apparatus characterized in that comprising:

a first and a second polarization plane maintaining optical fibers;

a polarization plane changing part at which said first and second optical fibers are serially connected such that the optical axes X and Y of these optical fibers are mutually rotated at angle of 45 degrees in terms of the fiber axis; and

two stress application parts each of which applies stress to each of the optical fibers respectively and comprises a piezoelectric element cylinder and a power supply for driving said piezoelectric element cylinder;

wherein a predetermined length portion of said first optical fiber is wound around a first piezoelectric element cylinder and a predetermined length potion of said second optical fiber is wound around a second piezoelectric element cylinder, and the oscillating frequency and the generated voltage of said power supply are both variable.

5,633,960

SPATIALLY AVERAGING FIBER OPTIC ACCELEROMETER SENSORS

Nicholas Lagakos, Silver Spring, Md., and Joseph A. Bucaro, Herndon, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 590,651, Jan. 24, 1996. This application Sep. 25, 1996, Ser. No. 719,918

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—12 **18 Claims**

1. A sensor comprising:

an encapsulant; and

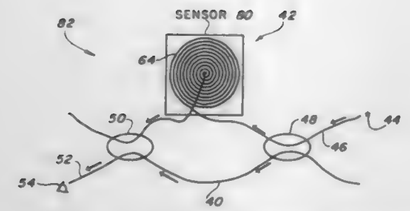
a fiber embedded in said encapsulant, said fiber including:

a light transmitting center portion,

a protecting layer, concentrically surrounding said center portion, for reducing the effect of environmental factors on said center portion, and

a stress preventing layer, concentrically surrounding said center portion, positioned between said protecting layer and said center portion, and having a Young's Modulus substan-

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tially lower than the Young's Modulus of said protecting layer, for preventing stress from being transferred from said protecting layer to said center portion,

wherein said embedded fiber is arranged in a pancaked spiral configuration in the encapsulant.

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SWITCHED OPTICAL INTERCONNECT

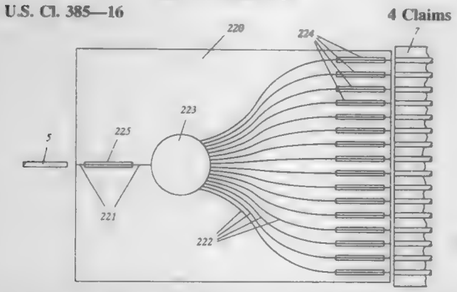
Paul A. Kirkby, Old Harlow; Piers J. G. Dawe, Sawbridgeworth, both of United Kingdom, and Ernst A. Munter, Kanata, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 26, 1995, Ser. No. 451,135

Claims priority, application United Kingdom, May 26, 1994, 9410544

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—16 **4 Claims**



1. A switched optical interconnect in which data is transmitted from one location to another via an optical space switch, which includes a plurality of optical amplifiers for performance of its switching function, each of which optical amplifiers is selectively energisable to convert it from an effectively non-transmissive state in which it is relatively highly absorbing to an effectively transmissive state in which it is substantially transparent or optically amplifying, in the form of wavelength shift keyed optical signals that are wavelength division multiplexed.

5,633,962

BIDIRECTIONAL OPTICAL SEMICONDUCTOR APPARATUS

Kazuhiko Kurata, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 12, 1994, Ser. No. 354,204

Claims priority, application Japan, Dec. 13, 1993, 5-311396

Int. Cl.[6] G02B *6/28*

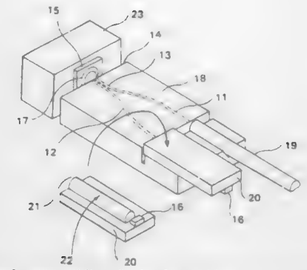
U.S. Cl. 385—24 **16 Claims**

4. An optical transmitting/receiving apparatus for bidirectional transmission, comprising:

means for sending out a first optical signal,

a first optical waveguiding body for guiding the first optical signal to a transmission path;

means for receiving a second optical signal,



a second waveguiding body for guiding said second optical signal from said transmission path;

a directional coupler in which said first and second optical waveguiding bodies are arranged close to each other so that mode coupling arise, a directional coupling section comprising a part of said directional coupler, approximately half as long as the full coupling length L of said directional coupler for a light having the wavelength of said first optical signal;

a filter, arranged at the end of said directional coupling section substantially vertically to said first and second optical waveguides, for reflecting at least a part of said first optical signal and transmitting at least a part of said second optical signal; and

means, arranged on the opposite side to said directional coupling section via said filter, for receiving said second optical signal;

wherein:

said first and second optical waveguiding bodies are first and second optical waveguides, respectively, formed on the same substrate; and

said directional coupling section consists of said first and second optical waveguides formed close to each other on said substrate.

5,633,963

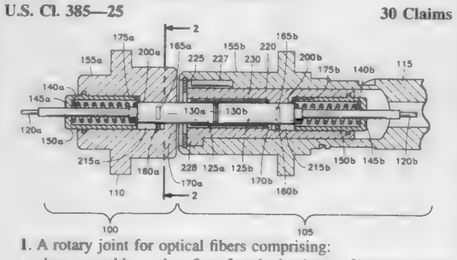
OPTICAL ROTARY JOINT FOR SINGLE AND MULTIMODE FIBERS

Robert Rickenbach, Thousand Oaks, and Gilbert F. Perleberg, Goleta, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 12, 1995, Ser. No. 571,143

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—25 **30 Claims**



1. A rotary joint for optical fibers comprising:

a plug assembly and a first ferrule having a fiber-entry end mounted coaxially therein;

a receptacle assembly and a second ferrule having a fiber-entry end mounted coaxially therein, wherein at least one of said plug-mounted ferrule and said receptacle-mounted ferrule is biased outwardly from a fiber entry-end of said ferrule; and

an alignment sleeve disposed over facing portions of said ferrules for optically connecting said first and second ferrules and maintaining said optical connection during rotation of one of said plug assembly and said receptacle assembly about an axis parallel to a longitudinal direction of said assembly relative to the other of said plug assembly and said receptacle assembly.

5,633,964

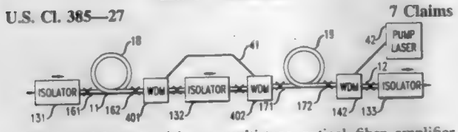
ARTICLE COMPRISING A MULTI-STAGE ERBIUM-DOPED FIBER AMPLIFIER

David J. DiGiovanni, Montclair; Gloria R. Jacobovitz-Veselka, Morganville, and Paul F. Wysocki, Scotch Plains, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 15, 1996, Ser. No. 601,928

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—27 **7 Claims**



1. An article comprising a multistage optical fiber amplifier having an input port and an output port, with a signal transmission path connecting said input and output ports; said signal transmission path comprises a first length of Er-doped optical fiber in an input amplifier stage, and a second length of Er-doped optical fiber in an output amplifier stage; and the multistage optical fiber amplifier further comprises means for coupling a pump radiation into said signal transmission path;

CHARACTERIZED IN THAT

the first length of Er-doped optical fiber is selected to have a numerical aperture of value NA_1, and the second length of Er-doped optical fiber is selected to have a numerical aperture of value NA_2, where NA_1 is greater than NA_2, with $(NA_1-NA_2)/NA_1>0.1$.

5,633,965

OPTICAL FIBRE BRAGG DISTRIBUTED GRATINGS

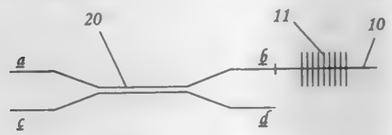
Terry Bricheno, Great Sampford; Alan Fielding, Bishop's Stortford, and Michael F. Grant, Harlow, all of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 7, 1994, Ser. No. 335,259

Claims priority, application United Kingdom, Nov. 10, 1993, 9323226

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **16 Claims**



9. An optical fiber amplifier having a signal input port, a signal output port, an optical pump source and a length of optically amplifying waveguide optically pumped by the optical pump source via a wavelength multiplexer, which multiplexer includes a 2×2 single mode tapered fused fiber coupler formed from two single mode optical fibers of substantially identical cross-section secured together in side-by-side contact over a length that includes sequentially a first portion where the fibers are drawn down to an extent providing substantially 3 dB mutual coupling between the two fibers at a signal wavelength optically amplified by the optically amplifying wavelength, and a second portion in which there is substantially no mutual coupling between the fibers and in which second portion substantially identical Bragg distributed gratings are formed in both fibers equidistant from said first portion, the periodicity of which gratings renders them spectrally selectively reflecting to light propagating in the two fibers at said signal wavelength.

5,633,966

METHOD OF FORMING REFRACTIVE INDEX DISTRIBUTION IN LIGHT TRANSMISSION PATH, AND OPTICAL FILTER AND METHOD OF USING THE SAME

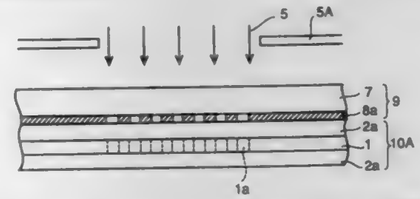
Hiroyuki Nakaishi, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 23, 1996, Ser. No. 593,033

Claims priority, application Japan, Apr. 7, 1995, 7-082360; Nov. 7, 1995, 7-288396

Int. Cl.[6] G02B *6/34;5/18;* **B05D** *5/06;* **G03G** *15/00*

U.S. Cl. 385—37 **46 Claims**



1. A method of forming a refractive index distribution in a light transmission path, comprising the steps of:

preparing a light transmission path including a core and a cladding layer;

applying a photosensitive material layer onto a surface of said cladding layer;

patterning said photosensitive material layer by photolithography thereby forming a mask pattern; and

irradiating said light transmission path with an X-ray through said mask pattern, thereby forming in said core a refractive index fluctuation distribution corresponding to said mask pattern.

37. An optical filter comprising:

a light transmission path including a core and a cladding layer, wherein said cladding layer has a thickness of not more than 50 μm; and

a fringy shielding pattern arranged periodically on a surface of said light transmission path.

5,633,967

WAVEGUIDE FIBER OPTICAL COUPLER

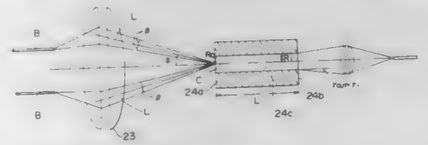
Koichi Haruta, Sodegaura, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 10, 1995, Ser. No. 419,601

Claims priority, application Japan, Apr. 11, 1994, 6-072068

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—50 **27 Claims**



1. A fiber optical coupler, comprising:

a plurality of first optical fibers;

a first lens for converging respective energy lights irradiated from said first optical fibers;

an optical waveguide, including a cavity having a circular cross-section for receiving said converged energy lights, a reflection surface surrounding said cavity, and apertures provided at both ends of said cavity;

a second lens for converging energy lights irradiated from said optical waveguide; and

a second optical fiber for receiving said converged energy lights from said second lens.

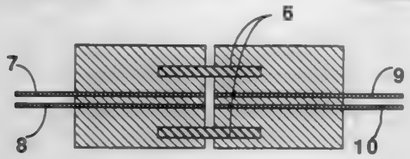
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5,633,968

FACE-LOCK INTERCONNECTION MEANS FOR OPTICAL FIBERS AND OTHER OPTICAL COMPONENTS AND MANUFACTURING METHODS OF THE SAME

Sang K. Sheem, P.O. Box 2141, Livermore, Calif. 94551

Continuation-in-part of Ser. No. 276,829, Jul. 18, 1994, abandoned. This application Mar. 3, 1995, Ser. No. 397,939
Int. Cl.[6] G02B *6/00;6/36*
U.S. Cl. 385—53 28 Claims



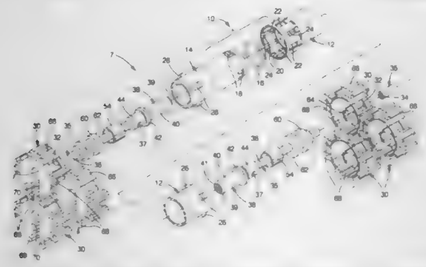
1. An optical interconnection means comprising:
a first optical component;
a first face-locking surface;
a second optical component;
and a second face-locking surface;
wherein the first face-locking surface and the second face-locking surface are substantially planar, and the first optical component is located on the first face-locking surface, and the first face-locking surface has a first type of surface feature, and the first type of surface feature has an unique positional relationship with respect to the first optical component; and the second optical component is located on the second face-locking surface, and the second face-locking surface has the second type of surface feature that matches to the first type of feature so as to be locked in position to the first type of surface feature when pressed against the first face-locking surface in a face-to-face fashion, and the second type of surface feature has the same unique positional relationship with respect to the second optical component; whereas precise optical alignment between the first optical component and the second optical component is achieved through the face-locking of the two surface features and their unique positional relationship with respect to the first and the second optical components.

5,633,969

AUTOMOTIVE FIBER OPTIC CABLE SPLICE

Kurt L. Jennings, Warren; James R. Cirillo, Youngstown, and John L. Jablonski, Masury, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 27, 1995, Ser. No. 534,366
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—62 13 Claims



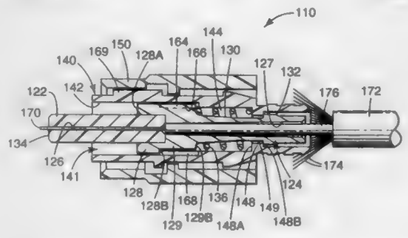
1. A fiber optic cable splice for connecting first and second fiber optic cables in an abutting connection, the splice comprising:
a casing with first and second ends, the casing encircling the first and second fiber optic cables;
first and second end caps generally at the first and second ends of the casing;
first and second ferrules positioned within the casing for aligning the first and second fiber optic cables generally adjacent the abutting connection of the first and second fiber optic cables;
first and second crimps radially gripping the first and second fiber optic cables, respectively, creating on each fiber optic cable a crimped region thereon; and
first and second seals radially sealing the fiber optic cables and sealing the fiber optic cables within the casing adjacent the respective first and second end caps, the first and second seals biasing the first and second fiber optic cables toward one another.

5,633,970

DEVICE WITH INTERNAL ASYMMETRICAL FEATURES FOR ROTATIONAL ALIGNMENT OF NON-SYMMETRICAL ARTICLES

Grieg A. Olson, Austin, Tex.; Daniel V. Attanasio, Clinton, Conn., and Nicholas A. Lee, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 23, 1995, Ser. No. 447,388
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—78 31 Claims



1. A connector subassembly for non-cylindrically symmetrical optical elements, comprising:
a holding member for an optical element having a polarization axis, wherein said holding member comprises a key; and
a housing comprising an interior surface and an exterior surface, said interior surface being adapted to receive the holding member and comprising at least two cooperative keyways each adapted to engage the key on the holding member, wherein said keyways on the interior surface of the housing are asymmetrically spaced about a longitudinal axis of the housing; wherein the key in the holding member engages one of said keyways on the interior surface of said housing to optimize the rotational alignment of the polarization axis of the fiber at a predetermined angle with respect to a rotational reference feature on the exterior surface of said housing.

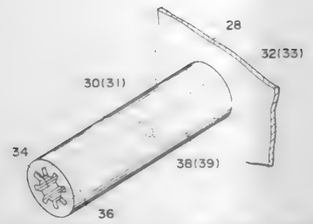
5,633,971

SLEEVE FOR RECEIVING AND HOLDING A FERRULE

Hiromi Kurashima, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 314,652, Sep. 29, 1994, Pat. No. 5,475,783. This application Sep. 20, 1995, Ser. No. 531,006
Claims priority, application Japan, Sep. 30, 1993, 5-245479
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—78 8 Claims

1. A sleeve for receiving and holding a ferrule provided on an end portion of an optical fiber, said sleeve having at least first and second portions and a substantially cylindrical shape, at least said second portion having an inner surface with a plurality of grooves formed therein, said plurality of grooves extending in a longitudinal direction of said sleeve and being circumferentially spaced to each other such that protuberant regions defined between adjacent



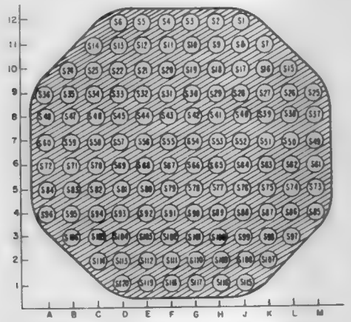
grooves of said plurality of grooves make contact with and support said ferrule, said inner surface of at least said second portion having a diameter that is substantially the same as that of said ferrule.

5,633,972

SUPERRESOLUTION IMAGING FIBER FOR SUBWAVELENGTH LIGHT ENERGY GENERATION AND NEAR-FIELD OPTICAL MICROSCOPY

David R. Walt, Lexington, and Paul Pantano, Everett, both of Mass., assignors to Trustees of Tufts College, Medford, Mass.

Filed Nov. 29, 1995, Ser. No. 564,488
Int. Cl.[6] G02B *6/06*
U.S. Cl. 385—116 11 Claims



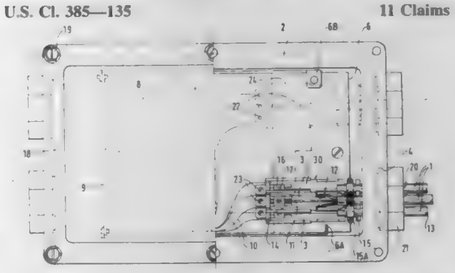
1. A superresolution imaging fiber comprising:
a preformed, unitary fiber optic array of predetermined configuration and dimensions comprised of a plurality of optical fiber strands disposed co-axially along their lengths and having two discrete optic array ends each formed of multiple optical fiber strand ends and strand end faces, wherein
(a) the first of said discrete optic array ends is formed of multiple optical fiber strand ends which collectively present a non-tapered, optic array end surface for the introduction and conveyance of light energy, and
(b) the second of said discrete optic array ends is formed of tapered multiple optical fiber strand ends of reduced thickness each of which presents a tapered strand end face limited in size to a range from about 2 nanometers to about 1,000 nanometers in diameter, said tapered multiple strand end faces collectively presenting a tapered optic array end surface;
an opaque metal coating covering said second tapered optic array end surface and overlaying said tapered multiple optical fiber strand end faces as a plurality of open-ended opaque metal tubes each having a size-limited end aperture ranging from about 2 nanometers to less than about 1,000 nanometers in diameter.

5,633,973

SPLICE BOX FOR SPLICING TOGETHER OPTICL-FIBER CABLES

Alain Vincent, Juilly, and Michel Milanowski, Anserville, both of France, assignors to Alcatel Cable Interface, Vrigne Aux Bois, France

Filed Dec. 7, 1995, Ser. No. 568,683
Claims priority, application France, Dec. 8, 1994, 94 14775
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—135 11 Claims



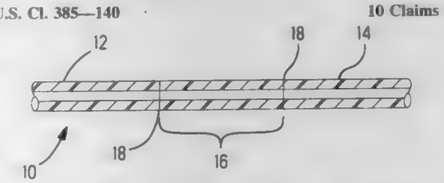
1. A splice box for splicing together optical-fiber cables, the splice box comprising:
a box body having side accesses for the cables;
fastening base-plates for removably fastening each one of the cables inside said box body; and
means for coiling fibers from the cables and for holding splice connections between the fibers,
wherein the cables are secured to said fastening base-plates before said fastening base-plates are inserted in the accesses and removably fixed inside said box body, and the fibers have free surplus lengths at a front end portion of said fastening base-plates, and
wherein each one of the accesses to said box body accepts a plurality of cables that are already secured to respective ones of said fastening base-plates, and said fastening base-plates comprise at least one flange for at least partially superposing said fastening base-plates on top of each other inside said box body and facing a common one of the accesses for receiving said plurality of cables.

5,633,974

ALL FIBER ATTENUATOR

Shin-Lo Chia, San Jose, Calif., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 313,648, Sep. 27, 1994. This application Mar. 31, 1995, Ser. No. 414,475
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—140 10 Claims



1. An optical attenuator, comprising a first optical fiber and a second optical fiber; and a solution doped optical fiber disposed between said first optical fiber and said second optical fiber and connected to said first optical fiber and said second optical fiber, said solution doped optical fiber being an attenuating optical fiber.

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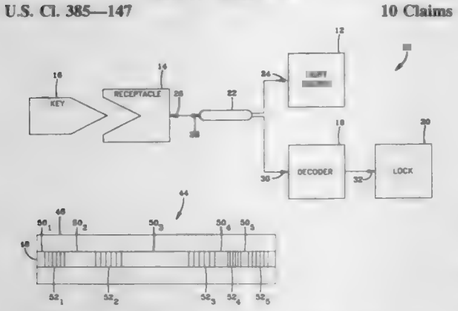
SECURITY SYSTEM RESPONSIVE TO OPTICAL FIBER HAVING BRAGG GRATING

Charles K. Gary, Palo Alto, and Meric Ozcan, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 14, 1995, Ser. No. 572,396

Int. Cl.[6] G02B *6/124*

U.S. Cl. 385—147 **10 Claims**



9. A system comprising:

(a) a light source having means for providing light along a predetermined path;

(b) a receptacle having a mouth with predetermined dimensions and a passageway having entrance and exit portions, said passageway located so as to intercept said light;

(c) a device insertable into said receptacle comprising;

(i) a carrier having an external portion with dimensions complementary to said mouth of said receptacle, and

(ii) a fiber optic located in said carrier so as to intercept said light at said exit portion of said passageway, said fiber optic having at least one reflective Bragg grating that reflects said intercepted light into a predetermined spectra pattern; and

(d) a decoder having means for receiving and decoding said reflected predetermined spectra pattern and comparing and generating an electrical signal when said predetermined spectra pattern matches a preselected pattern, wherein said decoder comprises:

(i) optics for receiving and focussing said reflected predetermined spectra pattern into a beam;

(ii) diffraction grating optics arranged to intercept and allow said focussed reflected predetermined spectra pattern to pass therethrough as output signals thereof at predetermined angles;

(iii) a linear detector array arranged to intercept said output signals of said diffraction grating and develop a corresponding binary output signal; and

(iv) comparison means for comparing said binary output signal against said preselected pattern represented by binary bits and generating said electrical signal when said binary output signal matches said preselected pattern.

5,633,976

IMAGE RECORDING APPARATUS AND ELECTRONIC STILL CAMERA

Hiroyuki Ogino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 984,504, Dec. 2, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,435

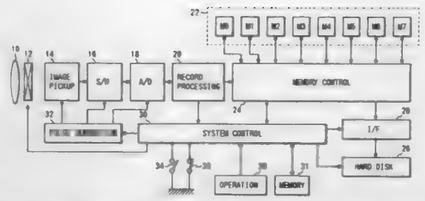
Claims priority, application Japan, Dec. 6, 1991, 3-323097

Int. Cl.[6] H04N *5/225*

U.S. Cl. 386—120 **24 Claims**

1. An image recording apparatus comprising:

temporary memory means for sequentially inputting image information for a plurality of image planes corresponding to the plurality of image planes one image plane by one image plane and temporarily storing the input image information;



recording means for recording the image information temporarily stored in said temporary memory means, into a recording medium in one of a continuous recording mode in which image information corresponding to the plurality of image planes are sequentially recorded, and a single recording mode in which image information corresponding to a single image plane is recorded;

recording mode instruction means for providing an instruction as to whether a recording operation of the image information by said recording means is executed in the continuous recording mode or in the single recording mode;

detecting means for detecting that an unused capacity of said temporary memory means reaches a predetermined value; and

control means for controlling a recording operation of said recording means so as to execute a continuous recording performance in the continuous recording mode until said detecting means detects that the unused memory capacity of said temporary means reaches said predetermined value and controlling the recording operation of said recording means so as to stop said continuous recording performance after said detecting means detects that the unused memory capacity of said temporary memory means reaches said predetermined value, when an instruction is provided by said recording mode instruction means that said recording means records the image information in the continuous recording mode.

5,633,977

PHOTOGRAPHED IMAGE REPRODUCING APPARATUS

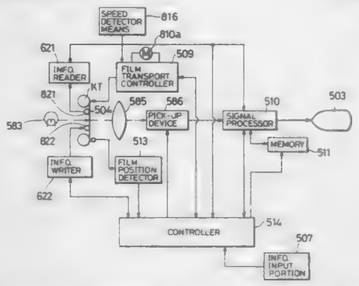
Manabu Inoue, Kobe, and Katsuyuki Nanba, Osakasayama, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1993, Ser. No. 95,679

Claims priority, application Japan, Jul. 27, 1992, 4-200028; Jul. 27, 1992, 4-200029; Jul. 27, 1992, 4-200030; Jul. 27, 1992, 4-200031; Dec. 14, 1992, 4-333331; Dec. 14, 1992, 4-333332

Int. Cl.[6] H04N *5/82;5/91;5/253*

U.S. Cl. 386—127 **31 Claims**



1. A reproducing apparatus for reproducing an image recorded on successive frames of a film having a storage medium which frame information for each frame is readable from and writable on, the frame information being located separately from the image and related to the image of each frame, the reproducing apparatus comprising:

a sensor for optically sensing the image on the film;

a reader which reads first frame information recorded on the storage medium;

a transporter which transports the film; and

a controller for controlling the sensor and reader so that the sensor senses the image when the film is transported in a first direction, and the reader reads said first frame information when the film is transported in a second direction which is opposite the first direction.

5,633,978

ELECTRICAL IMMERSION HEATER WITH REMOVABLE SELF-SUPPORTING CARRIER AND HOUSING

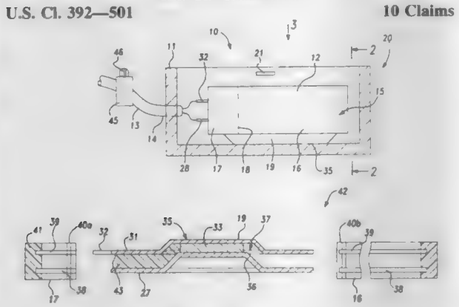
Marcel Hofsäss, Bodelschingstrasse 36, 75179 Pforzheim, Germany

Filed Feb. 16, 1995, Ser. No. 389,896

Claims priority, application Germany, Feb. 17, 1994, 44 05 040.2

Int. Cl.[6] H05B *3/78*

U.S. Cl. 392—501 **10 Claims**



1. Electrical immersion heater, adapted to heat liquids and/or to keep these at a selected temperature, comprising

a heating element made of a heater ceramic material, said heating element heating up in response to a current flowing therethrough and conveying heat to its surroundings,

a thermally conductive, electrically insulated housing means housing said at least one heating element and being in thermally conductive contact with said heating element,

two electrically conductive panels or plates clamping said at least one heating element therebetween, said current being supplied to said heating element via said panels or plates, said panels or plates being provided, in cross section, with a matching bump and a depression such that the space between said panels or plates can accommodate the heating element, and

a clamping device independent from said housing and squeezing said panels or plates and said at least one heating element together, at least one of said panels or plates being provided with an area which protrudes beyond the clamping device and functions as a heat contact surface, wherein the clamping device is designed as a self-supporting carrier in which the plates are inserted under tension, whereby at least a part of the plates protrude beyond the carrier.

5,633,979

SIGNAL PROCESSING SYSTEM INVOLVING A LEAST SQUARES METHOD

Maurice Bellanger, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 18, 1992, Ser. No. 977,934

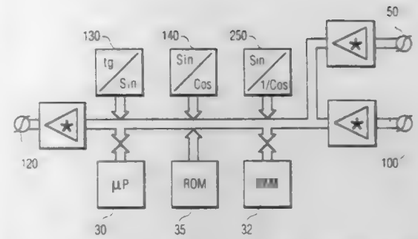
Claims priority, application France, Nov. 26, 1991, 91 14586

Int. Cl.[6] G11L *3/02;9/00*

U.S. Cl. 395—2.1 **23 Claims**

1. Signal processing system for implementing a least squares calculation, this system comprising:

an input for receiving a sample x(n+1) at an instant n+1,



another input for receiving at the instant a reference sample y(n+1),

calculation means for minimizing a signal e(n+1) that represents a difference between the received sample and the reference sample, the calculation means operating according to a least squares calculation that utilizes rotation matrices Q_a and Q_m, the matrices being related to trigonometric functions, the calculation means comprising normalizing means for normalizing the received samples relative to a function of their energy, and

memory means for storing a table of the trigonometric functions and for interacting with the calculating means which is for evaluating the trigonometric functions

wherein the normalizing means normalizes the received samples by a normalization factor $E_0^{1/2}(n+1)$, by determining an angle ψ and the factor $E_0^{1/2}(n+1)$, as a function of a previous factor $E_0^{1/2}(n)$ and the received sample, by resolving:

$$\begin{bmatrix} 0 \\ E_0^{1/2}(n+1) \end{bmatrix} = \begin{bmatrix} \cos\psi & -\sin\psi \\ \sin\psi & \cos\psi \end{bmatrix} \begin{bmatrix} x(n+1) \\ W^{1/2}E_0^{1/2}(n) \end{bmatrix}$$

where $W^{1/2}$ is an omission factor.

5,633,980

VOICE COVER AND A METHOD FOR SEARCHING CODEBOOKS

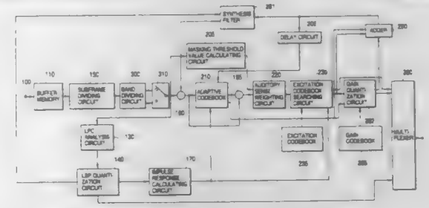
Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 355,313

Claims priority, application Japan, Dec. 10, 1993, 5-310522; Mar. 2, 1994, 6-032104

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.31 **48 Claims**



7. A voice coder comprising:

dividing means for dividing supplied discrete voice signals into first pre-set time length frames;

subframe generating means for generating subframes by dividing said frames into second pre-set time length divisions;

regenerating means for regenerating said voice signals for said subframes based on an adaptive codebook;

masking calculating means for calculating masking threshold values for each of said subframes from said voice signals based on auditory sense masking characteristics;

an auditory sense weighting means for calculating filter coefficients based on said masking threshold values and performing auditory sense weighting to a difference signal formed as a

VOL 1198 ISS 4 MY 27 1997 UMI

difference between a signal regenerated with said regenerating means and said voice signal based on said filter coefficients;

an excitation codebook which includes a plurality of code vectors; and

searching means for searching for a code vector in said excitation codebook that minimizes an error signal power between said auditory sense weighting means and the code vectors in said excitation codebook.

5,633,981

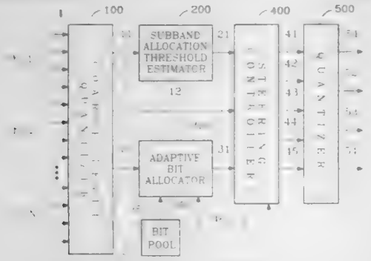
METHOD AND APPARATUS FOR ADJUSTING DYNAMIC RANGE AND GAIN IN AN ENCODER/DECODER FOR MULTIDIMENSIONAL SOUND FIELDS

Mark F. Davis, Pacifica, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Division of Ser. No. 927,429, Sep. 4, 1992, Pat. No. 5,583,962, which is a continuation-in-part of Ser. No. 804,976, Dec. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,896, Jan. 8, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,231

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.39 **12 Claims**



1. An encoder for encoding an input signal, said encoder comprising:

subband means for generating subband information for a plurality of subbands in response to said input signal,

means for representing said subband information in floating-point form comprising a plurality of exponents and a plurality of mantissas, each exponent associated with one or more mantissas,

means for generating modified subband information by adjusting either or both dynamic range and gain of said subband information by altering values of one or more of said exponents, and

means for assembling a representation of said modified subband information into a coded signal.

5,633,982

REMOVAL OF SWIRL ARTIFACTS FROM CELP-BASED SPEECH CODERS

Kalyan Ganesan, Germantown, Md.; Ho Lee, San Diego, Calif., and Prabhat Gupta, Germantown, Md., assignors to Hughes Electronics, Los Angeles, Calif.

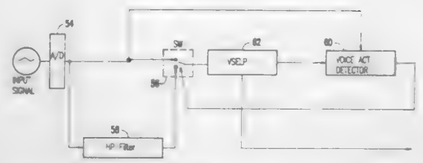
Continuation of Ser. No. 169,789, Dec. 20, 1993, abandoned. This application Oct. 21, 1996, Ser. No. 734,210

Int. Cl.[6] G10L *9/00;5/06*

U.S. Cl. 395—2.42 **15 Claims**

1. A system for combatting the effect of swirl artifacts created by low frequency components of an input signal in a code excited linear prediction (CELP) based encoder comprising:

a switch connected to receive an input signal, the input signal containing periodic and non-periodic signals;



a high pass filter also connected to receive the input signal and operable to remove low frequency components likely to cause the production of swirl artifacts from the input signal, the switch being controllable to selectively supply the input signal or an output of the high pass filter to the CELP based encoder; and

a detector connected to receive the input signal and information from the CELP based encoder and generate an output indicating the presence of periodic signals in the input signal, the detector controlling the switch to connect the ihput signal to the CELP based encoder when periodic signals are detected and to connect the output of the high pass filter to the CELP based encoder when non-periodic signals are detected;

wherein low frequency components likely to cause the production of swirl artifacts are alternately filtered from the CELP based encoder input signal to thereby prevent the production of swirl artifacts.

5,633,983

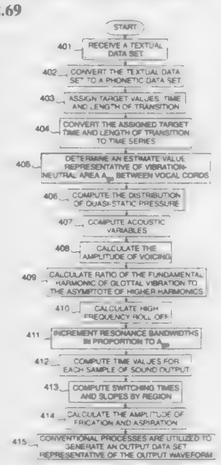
SYSTEMS AND METHODS FOR PERFORMING PHONEMIC SYNTHESIS

Cecil H. Coker, Chatham, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 13, 1994, Ser. No. 304,959

Int. Cl.[6] G10L *5/02*

U.S. Cl. 395—2.69 **20 Claims**



1. A processing system for generating an output data set for use in phonemic synthesis to produce patterns of transition from one speech excitation state to another, said output data set including a plurality of output data subsets, said processing system comprising:

means for receiving a textual data set, said textual data set including at least one textual data subset;

at least one memory storage device operable to store a plurality of processing system instructions; and

at least one processing unit for generating said output data set by retrieving and executing at least one of said processing unit instructions from said memory storage device, said processing unit operable to:

transform said received textual data set into a phonetic data set, said phonetic data set including a plurality of phonetic data subsets wherein each of said phonetic data subsets represents a particular speech state, said transformation modelling a number of acoustic parameters affecting the excitation sources of the vocal tract by deriving said parameters as nonlinear functions of a single excitation control variable; and

interpolate said phonetic data set as a function of the single excitation control variable to generate said output data set whereby said phonetic data subsets are combined to determine their collective contributions to each one of said output data subsets.

5,633,984

METHOD AND APPARATUS FOR SPEECH PROCESSING

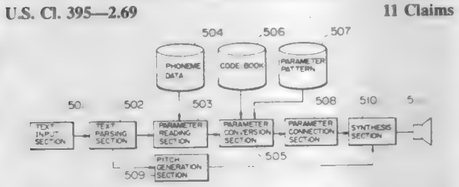
Takashi Aso; Yasunori Ohora, both of Yokohama, and Takeshi Fujita, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 944,124, Sep. 11, 1992, abandoned. This application May 12, 1995, Ser. No. 439,652

Claims priority, application Japan, Sep. 11, 1991, 3-231507

Int. Cl.[6] G10L *5/02;9/00;3/02*

U.S. Cl. 395—2.69 **11 Claims**



7. An apparatus for processing vocal information, comprising:

means for generating and storing vocal information comprising:

means for providing parameter data of phonemes, the parameter data including power data and spectrum data;

means for vector-quantizing the spectrum data to produce a plurality of parameter patterns;

means for storing the plurality of parameter patterns obtained by vector quantization of the spectrum data; and

means for storing positional information indicating the positions where the parameter patterns are stored and storing code information specifying the plurality of the parameter patterns corresponding to the positional information;

means for inputting text into said apparatus;

means for decomposing the text into phonemic series information;

means for reading out phoneme parameters from stored phoneme data in accordance with the phonemic series information, the phoneme parameters including spectrum information in the form of codes; and

means for converting the codes in the phoneme parameters into a pattern by selecting a pattern from the plurality of stored parameter patterns by referring to the stored positional information in accordance with code information of the read out phoneme parameters.

5,633,985

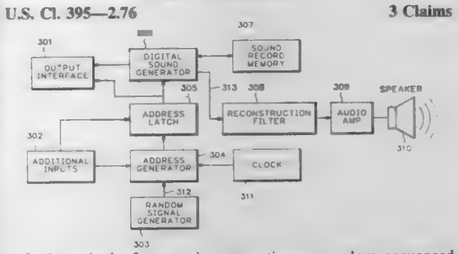
METHOD OF GENERATING CONTINUOUS NON-LOOPED SOUND EFFECTS

Frederick E. Severson, 945 SW Perfecta Ave., Beaverton, Oreg. 97005, and Patrick A. Quinn, 20195 SW Imperial Dr., Aloha, Oreg. 97007

Division of Ser. No. 160,609, Nov. 30, 1993, which is a continuation-in-part of Ser. No. 588,566, Sep. 26, 1990, Pat. No. 5,267,318. This application May 31, 1995, Ser. No. 443,893

Int. Cl.[6] G10L *3/00*

U.S. Cl. 395—2.76 **3 Claims**



1. A method of generating a continuous random sequenced sound of arbitrary duration and having predetermined head and tail sound segments, the method comprising the steps:

providing a group of sound segments including a head segment, a plurality of compatible middle segments and a tail segment;

responsive to a play signal, selecting and playing the head segment;

then selecting from and playing the middle segments as long as the play signal persists; and

responsive to a termination of the play signal, selecting and playing the tail segment, thereby providing a continuous sound having a duration coextensive with the play signal and beginning and ending with the head and tail sound segments, respectively.

5,633,986

METHOD FOR SETTING UP MEMORIES OF A FUZZY ELECTRONIC CONTROLLER

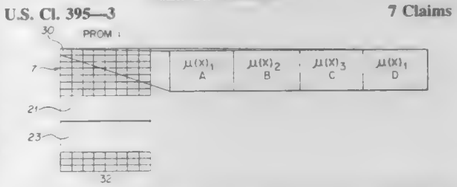
Gianguido Rizzotto, Civate; Rinaldo Poluzzi, Piazza Istriaz, and Andrea Pagni, Milan, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 983,802, Nov. 24, 1992, abandoned. This application Nov. 27, 1995, Ser. No. 563,788

Claims priority, application Italy, Nov. 27, 1991, MI91A3167

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—3 **7 Claims**



1. A method of operating a memory for a fuzzy logic electronic controller, comprising the steps of:

subjecting predetermined membership functions of logic variables to interference operations configured as IF-THEN rules including at least one front preposition portion and at least one rear implication portion;.

storing the front preposition portion in a first memory addressing area;

storing the rear implication portion in a second memory addressing area;

storing levels for a set of membership functions corresponding to a discrete value of a predetermined logic variable at consecutive locations in the memory; and

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providing sets of membership functions from the front preposition portion of the rules with two memory addresses each.

5,633,987

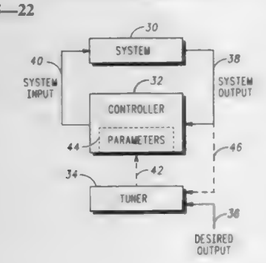
AUTO-SCALING CONTROLLER AND METHOD OF USE THEREFOR

Dan Teng, Wheeling, and Shay-Ping T. Wang, Long Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1994, Ser. No. 282,118

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **59 Claims**



28

1. In a controller, having a control input, for controlling a system to a desired output, the system having a time dependent system output, a controller operation based on a polynomial function having an order, a plurality of control coefficients and a corresponding plurality of polynomial terms, a method for tuning the controller, the method comprising:

a) calculating a value for each of the plurality of control coefficients by fitting the polynomial function to a plurality of control transfer characteristic data;

b) multiplying the values of the control coefficients by a scaling value;

c) computing an output error signal based on a difference between the time dependent system output and the desired output; and

d) tuning the scaling value using a descent-based optimization method to reduce the output error signal;

e) comparing the output error signal to an error threshold; and

f) increasing the order of the polynomial function based on the comparison between the output error signal and the error threshold by adding at least one new polynomial term and a corresponding at least one new control coefficient.

5,633,988

ADAPTATION METHOD FOR DATA PROCESSING SYSTEM

Sunao Takatori; Ryohei Kumagai; Koji Matsumoto, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Continuation of Ser. No. 528,319, May 25, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 989,503

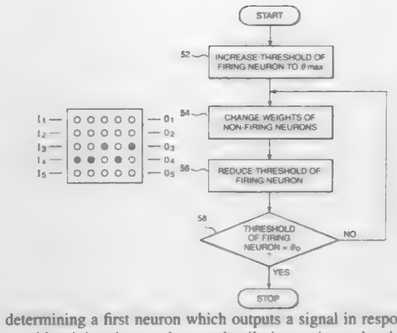
Claims priority, application Japan, Jun. 2, 1989, 1-140834; Jul. 3, 1989, 1-171704; Jul. 12, 1989, 1-179658; Sep. 29, 1989, 1-254712; Sep. 29, 1989, 1-254713; Sep. 29, 1989, 1-254714

Int. Cl.[6] G06F *7/16;15/18*

U.S. Cl. 395—23 **21 Claims**

1. A method for maximizing an efficiency of a data processing system receiving training data, said method comprising the steps of:

inputting said training data to said system, said system comprising a neural network having a plurality of neurons each of which is capable of outputting a signal when a weighted sum of inputs has a predetermined relationship to a threshold;



determining a first neuron which outputs a signal in response to said training data, and compulsorily increasing a threshold of said first neuron up to a maximum value;

determining a second neuron which did not output a signal in response to said training data, and adapting weights of said second neuron so that weights to be multiplied to inputs of the second neuron are increased when said threshold of said first neuron is increased; and

decreasing said threshold of said first neuron after adapting said weights of said second neuron, thereby adapting said neural network to provide an even ignition pattern without generating a local minimum.

5,633,989

ARTIFICIAL NEURAL CIRCUIT USING PULSE CODING

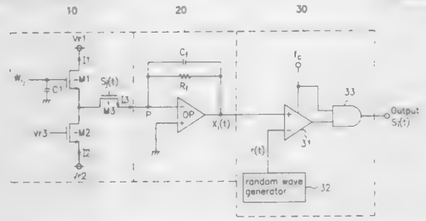
Jong-Han Shin, and Jong-Geon Shin, both of Seoul, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-Shi, Rep. of Korea

Filed Aug. 31, 1994, Ser. No. 298,286

Claims priority, application Rep. of Korea, Aug. 31, 1993, 93-17280

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—24 **4 Claims**



1. An artificial neural circuit in which an operating principal of a biological neuron is embodied, said circuit comprising:

a synapse circuit section for producing and absorbing a current signal proportional to a weight voltage signal upon an externally applied current signal being supplied;

said synapse circuit section including a first input terminal for receiving a first reference voltage; a second input terminal for receiving a second reference voltage; a third input terminal for receiving a third reference voltage; a fourth input terminal for receiving the weight voltage signal; a first transistor having drain and source connected to the first reference voltage and a junction point, respectively, and gate connected to the fourth input terminal; a second transistor having drain and source connected to the junction point and the second input terminal, respectively, and gate connected to the third input terminal; and a third transistor having drain and source connected respectively to the junction point and an output terminal of the synapse circuit section, and gate connected to an input terminal for receiving the externally applied current signal;

a neuron body circuit section for spacio-temporally integrating output signal of the synapse circuit section to produce an analog voltage signal; and

an axon hillock circuit for converting the analog voltage signal into a pulse train using a predetermined reference signal.

5,633,990

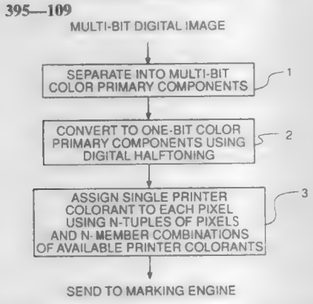
METHOD OF NON-OVERLAPPING COLOR PRINTING

Edward M. Housel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1996, Ser. No. 631,768

Int. Cl.[6] H04N *1/50;1/52*

U.S. Cl. 395—109 **7 Claims**



1. A multi color printing method employing a color printer capable of non-overlapping color printing using M colorants, where M is greater than two, comprising the steps of:

a) providing a digital color image having multi-bit color pixels;

b) separating the digital color image into three multi-bit color primary components;

c) converting each multi-bit component into a 1-bit component using a digital halftoning technique;

d) assigning a single printer colorant to each output image pixel based on the 1-bit color components by,

1) dividing the image into n-tuples, each pixel in an n-tuple having a unique designation N,

2) assigning N-member combinations of N−1 printer colorants and no colorant that appear as combinations of 1 -bit color components, and

3) setting an output to the Nth member of an N-member combination based on the corresponding combination of 1-bit color components; and

e) printing the image using the assigned colorants.

5,633,991

METHOD AND DEVICE FOR GENERATING A CHARACTER LINE OF UNIFORM WIDTH THROUGH CHARACTER SIZE CONVERSION

Mitsuhiro Hakaridani, Ikoma; Yutaka Shigi, Yamatokooriyama; Masako Nakanishi, Yoshino-gun; Minehiro Konya, Daito; Masayuki Fujisawa, and Hiroki Takaha, both of Yamatokooriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 17, 1994, Ser. No. 291,824

Claims priority, application Japan, Aug. 30, 1993, 5-213659; May 13, 1994, 6-099847

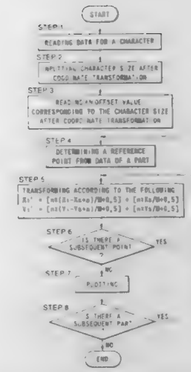
Int. Cl.[6] G06K *9/36*

U.S. Cl. 395—110 **10 Claims**

1. A method for generating a line of uniform width, which, in altering a size of an outline font defined by a dot sequence composing a character outline, comprises the steps of:

representing transformable coordinates of the dot sequence as coordinates relative to an optional reference point for transforming coordinates for altering a character size; and

transforming coordinates of the reference point, the relative coordinates of the dot sequence, and a predetermined offset



value by the use of an alteration ratio, thereby generating a character part having a line of uniform width through coordinate transformation for altering the size of character part having lines of different width within a specified range irrespective of original coordinates of the character part, wherein said predetermining step determines said predetermined offset value in accordance with character sizes before and after transformation, a range of line widths of a character part before transformation, said uniform width of the character part after transformation and the reference point in accordance with the following equations:

$$Xi'=[n\times(Xi-Xs+a)/M+0.5]+[n\times Xs/M+0.5]$$

$$Yi'=[n\times(Yi-Ys+a)/M+0.5]+[n\times Ys/M+0.5]$$

where

Xi—original X coordinates

Xs—X coordinate of reference point

Xi'—transformed X coordinate

n—altered data size

M—original data size

Yi—original Y coordinate

Ys—Y coordinate of reference point

Yi'—transformed Y coordinate

and [ ] indicates truncation.

5,633,992

LOW-LEVEL DIRECT CONNECT FOR PCL PRINTERS

Joel H. Gyllenskog, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 77,180, Jun. 15, 1993. This application May 31, 1996, Ser. No. 658,916

Int. Cl.[6] G06F *15/00*

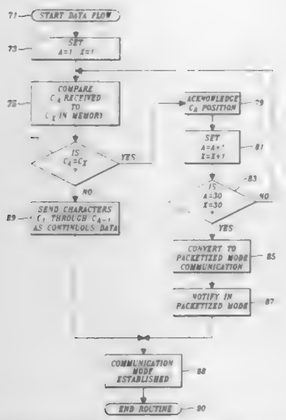
U.S. Cl. 395—114 **10 Claims**

6. A method for attempting to initiate a packetized communication mode between a host module and a receiving module, comprising the steps of:

selecting a sequence of data characters that when received by said receiving module, where said receiving module is able to operate in the packetized communication mode, indicates to said receiving module that said host module desires to initiate the packetized communication mode, said sequence of data characters interpreted as null data and ignored if received by said receiving module when said receiving module is operating in a current communication mode that is different from said packetized communication mode, and said receiving module is not able to operate in said packetized communication mode;

transmitting the sequence of data characters from the host module to the receiving module in said current communication mode; and,

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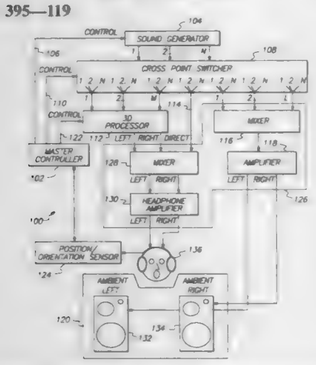
if said receiving module can operate in said packetized communication mode, responding to said sequence of data characters by communicating with the host module in said packetized communication mode, and if not able to operate in said packetized communication mode, continuing to communicate with the host module in said current communication mode.

5,633,993

METHOD AND APPARATUS FOR PROVIDING A VIRTUAL WORLD SOUND SYSTEM

William G. Redmann, Oak Park, Ill., and Kerry M. Perkins, Simi Valley, Calif., assignors to The Walt Disney Company, Anaheim, Calif.

Filed Feb. 10, 1993, Ser. No. 16,114
Int. Cl.[6] G09B *9/00*
U.S. Cl. 395—119 **17 Claims**



1. A method for delivering sounds in a virtual three-dimensional auditory environment complementing a virtual three-dimensional graphic world rendered by a computer graphic system, the rendition capable of being displayed to a viewer from viewpoints having specific positions and orientations within the virtual world, and said sounds being delivered to said viewer using a sound reproduction system having a programmable controller and sound channels of localized and non-localized types, the method comprising the steps of:

A. storing data representative of a plurality of sounds in the virtual world;

B. generating logical sound channel objects corresponding to virtual sound sources in the virtual world, said logical sound channel objects having first parameters for associating sound channels with said virtual sound sources, and second parameters for associating graphic objects in the virtual world with said virtual sound sources;

C. programming said controller with a script of events in the virtual world, said script comprising instructions to associate specified ones of said virtual sound sources with specified graphic objects or specified positions in the virtual world, said association differentiating localized virtual sound sources from non-localized virtual sound sources, and instructions directing specified ones of said sounds to be produced by specified ones of said localized and non-localized virtual sound sources;

D. programming said controller to respond to an instruction to associate a specified virtual sound source with a specified graphic object or position, said response including the steps of:

(a) determining whether a localized sound channel is allocated to the logical sound channel object corresponding to the specified virtual sound source;

(b) responsive to a determination that a localized sound channel is not allocated to the corresponding logical sound channel object, (i) attempting to allocate to the corresponding logical sound channel object a localized sound channel based on the availability of said localized type of sound channel; (ii) if said localized type of sound channel is unavailable, attempting to allocate a non-localized sound channel to the corresponding logical sound channel object based on the availability of said non-localized type of sound channel; and (iii) if a sound channel is available for allocation to the corresponding logical sound channel object, assigning a value identifying the sound channel to the first parameter of the corresponding logical sound channel object, thereby associating the specified virtual sound source with the allocated sound channel; and

(c) if the allocated sound channel is of the localized type, assigning a position to the allocated sound channel, said assigning of a position including, where said position is for a graphic object, using the second parameter of the corresponding logical sound channel object to associate the specified virtual sound source with the graphic object; and

E. programming said controller to respond to an instruction directing a specified virtual sound source to produce a specified sound, said response including the steps of:

(a) determining whether a sound channel is allocated to the logical sound channel object corresponding to said specified virtual sound source;

(b) responsive to a determination that a sound channel is not allocated to the corresponding logical sound channel object, (i) attempting to allocate to the corresponding logical sound channel object a non-localized sound channel based on the availability of said non-localized type of sound channel, and (ii) if a non-localized sound channel is available for allocation, assigning a value identifying the sound channel to the first parameter of the corresponding logical sound channel object, thereby associating the specified virtual sound source with the allocated sound channel; and

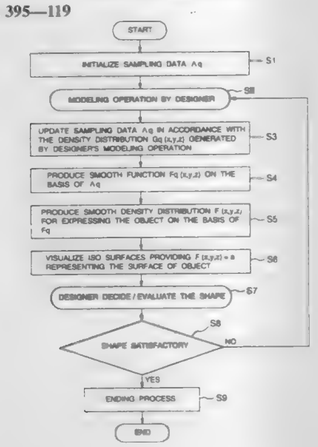
(c) if a sound channel is allocated to the logical sound channel object corresponding to the specified virtual sound source, processing the data representative of the specified sound to produce a signal representative of the specified sound and manipulating the sound system to deliver the specified sound to the viewer using the allocated sound channel and the signal representative of the specified sound.

5,633,994

COMPUTER AIDED MODELING TECHNIQUE FOR 3D FREE-FORM OBJECTS AND APPARATUS THEREOF

Hiroshi Kaizuka, Sagamihara, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 400,998
Claims priority, application Japan, Mar. 11, 1994, 6-067716
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—119 **11 Claims**



1. A method of modeling on a computer a three-dimensional free-form object, comprising the steps of:

defining a F(x,y,z) density function in a three-dimensional space;

determining a scalar value a such that for a set of x,y,z points a surface of said object is represented by F(x,y,z)=a, a space inside said object is represented by F(x,y,z)>a, and a space outside said object is represented by F(x,y,z)<a;

placing on a computer screen at a desired position and with a desired orientation a field generating primitive with a c(x,y,z) density function;

generating a Gq(x,y,z) density function by blending said c(x,y,z) density function with a Fq(x,y,z) density function, wherein q is an integer and said F(x,y,z) density function is comprised of a convex combination of Fq(x,y,z) density functions;

sampling a partial derivative of said Gq(x,y,z) density function at each point in a predetermined set of coordinate points to obtain sampling data Λq (where the

sampling data $\Lambda q=(\mu p(i,j,k)=\{1/(i!j!k!)\}\partial^{i+j+k} G_q(x_p, y_p, z_p)/\partial x^i\partial x^j\partial z^k | i+j+k=0, 1, \ldots, m, i\geqq 0, j\geqq 0, k\geqq 0$; all the points $P=(x_p, y_p, z_p)$ included in $\Xi q\}$) by sampling up to the mth-order partial derivative of the generated density distribution Gq(x,y,z) on the points included in a set Ξq having a finite number of points in the three-dimensional space;

updating said Fq(x,y,z) density function based on said sampling data;

displaying isosurfaces of said object to evaluate its shape represented by said F(x,y,z) density function which is comprised of a convex combination of said updated Fq(x,y,z) density functions;

altering the parameters of the c(x,y,z) density function while viewing said isosurfaces; and

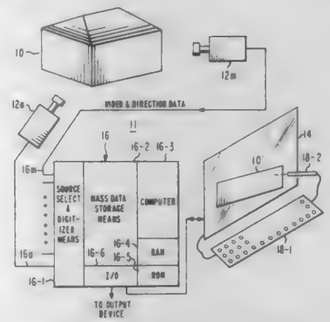
saving the sampling dam in memory when said displayed isosurfaces are satisfactory to the user.

5,633,995

CAMERA SYSTEM AND METHODS FOR EXTRACTING 3D MODEL OF VIEWED OBJECT

Richard A. McClain, Turnersville, N.J., assignor to Martin Marietta Corporation

Continuation of Ser. No. 717,766, Jun. 19, 1991, abandoned. This application Mar. 18, 1996, Ser. No. 618,075
Int. Cl.[6] G06T *17/00*
U.S. Cl. 395—119 **20 Claims**



1. A system for generating data representative of a three-dimensional object from a plurality of views of a scene including said object, and for displaying a view of said scene, said system comprising:

camera means for generating plural views of said scene, for generating data representative of said scene;

display and selection means coupled for receiving said data representative of said scene, for generating a display of said plural views, and for receiving, and converting into data, user inputs relating to the locations of vertices associated with said object, the identification of faces of said object associated with said vertices, and geometric constraints including, where applicable, line lengths, line directions, line parallelism, and point or vertex coincidence, for thereby generating user-processed scene data, said user inputs being subject to errors so that, in said user-processed scene data, the locations of said vertices and lines may not exactly correspond among said views;

processing means coupled to said camera means and to said display and selection means, for (a) processing said user-processed scene data by means of a dependency graph to reduce the number of said geometric constraints, (b) combining all said user-processed scene data relating to parameters of said scene and object into a single vector, and forming a single likelihood function from said vector, which likelihood function includes the locations and parameters of said camera means; (c) optimizing said likelihood function to obtain optimized data representing the most likely combination of said camera, vertex and line locations and parameters; and

display means coupled for receiving said optimized data, for displaying a two-dimensional representation of said three-dimensional object.

5,633,996

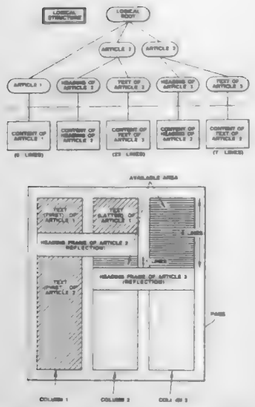
DEVICE AND METHOD FOR LAYOUT OF A STRUCTURED DOCUMENT USING MULTI-COLUMN AREAS

Naoki Hayashi; Kazuo Saito, and Minoru Ikeda, all of Yokohama, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Continuation of Ser. No. 956,046, Oct. 2, 1992, abandoned. This application Nov. 8, 1994, Ser. No. 336,324
Claims priority, application Japan, Oct. 2, 1991, 3-255576
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—774 **15 Claims**

1. A document layout processing device wherein a layout structure is generated corresponding to a logical structure of a docu-

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ment, the logical structure comprising a plurality of components, the document layout processing device comprising:

logical structure storing means for storing the logical structure of the document;

page format storing means for storing a page format having a plurality of columns;

document content storing means for storing document contents corresponding to each of the components of the logical structure stored in the logical structure storing means;

layout directive storing means for storing, corresponding to each of the components of the logical structure, layout directive information indicating as to whether a document content corresponding to each of the components of the logical structure is to be laid out in a single column or in a multi-column area that extends over plural columns;

content layout means for laying out the document content in one of the columns or in the multi-column area according to the logical structure stored in the logical structure storing means while referring to the layout directive information stored in the layout directive storing means;

current column storing means for storing a current column that is a column to which the document content is currently laid out; and

multi-column area generating means for generating a multi-column area that extends over columns including a current column if the layout directive information indicates that the document content be laid out within a multi-column area when laying out the document content by the content layout means.

5,633,997

USER INTERFACE FOR SPECTROMETER

Luther L. Barber, Needham; Mark L. Olson, Framingham, and Paul V. Carter, Brighton, all of Mass., assignors to Bio-Rad Laboratories, Cambridge, Mass.

Continuation-in-part of Ser. No. 333,955, Nov. 3, 1994, Pat. No. 5,579,462. This application May 30, 1995, Ser. No. 453,709

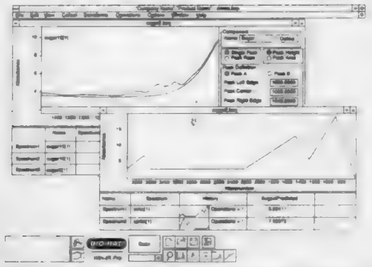
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—140 **21 Claims**

1. A method of displaying a plurality of data related to a plurality of spectra on a computer system, the computer system including a display and a memory, the method comprising the steps of:

retrieving a plurality of data related to a first spectrum and a plurality of data related to a second spectrum from the plurality of spectra from the memory;

displaying a user-selected set of data from the plurality of data related to the first spectrum including a spectrum trace for the first spectrum, in a first row of a spreadsheet on the display;



displaying a user-selected set of data from the plurality of data related to the second spectra including a spectrum trace for the second spectrum, in a second row of the spreadsheet on the display.

5,633,998

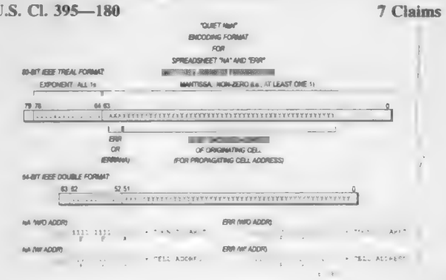
METHODS FOR COMPILING FORMULAS STORED IN AN ELECTRONIC SPREADSHEET SYSTEM

Roger Schlafly, 3720 Hardin Way, Soquel, Calif. 95073

Division of Ser. No. 205,922, Mar. 3, 1994, Pat. No. 5,471,612. This application Jul. 18, 1995, Ser. No. 503,894

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—180 **7 Claims**



1. In an electronic spreadsheet system having an IEEE-compliant floating-point unit, said floating-point unit having processor registers comprising sign, exponent, and mantissa bit fields, each field being arranged from a most-significant bit to a least-significant bit, a method for storing in the floating-point unit spreadsheet values representing industry-standard spreadsheet error (ERR) and not available (NA) values, the method comprising:

(a) reserving at least one bit of the mantissa field for distinguishing a spreadsheet value representing ERR from one representing NA, wherein said at least one bit is set high if the spreadsheet value represents ERR; and

(b) storing each spreadsheet value representing ERR and NA as an IEEE-compliant Not-a-Number (NAN) value in a register of the floating-point unit by:

(i) setting all bits in the exponent field of the register to high,

(ii) setting the most-significant bit of the mantissa field to high, and

(iii) setting said at least one bit to high if the spreadsheet value represents ERR.

5,633,999

WORKSTATION-IMPLEMENTED DATA STORAGE RE-ROUTING FOR SERVER FAULT-TOLERANCE ON COMPUTER NETWORKS

Richard F. Clowes, New York, and Fred W. Tims, Springfield Center, both of N.Y., assignors to Nonstop Networks Limited, New York, N.Y.

Continuation of Ser. No. 230,098, Apr. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 90,991, Jul. 13, 1993, which is a continuation of Ser. No. 610,181, Nov. 7, 1990, abandoned, and a continuation-in-part of Ser. No. 44,323, Apr. 7, 1993. This application Dec. 18, 1995, Ser. No. 573,865

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.04 **20 Claims**



1. A fault-tolerant computer network comprising:

a) a high availability permanent data-storage device maintaining a data image;

b) primary and secondary intelligent network hosts connected to and supporting said storage device;

c) multiple data-processing workstation connected in a local area network with both said hosts to access said data image maintained on said high-availability storage device via each said intelligent host independently; and

d) data-storage routing software loadable at said workstations and providing, for each said workstation, primary route addressing and secondary route addressing of said data image maintained on said high availability storage device via said primary or said secondary host respectively; wherein said data-storage routing software comprises:

i) monitoring means to monitor data storage activities output from said workstation onto said computer network and to detect failure to access said high-availability storage device via a respective one of said intelligent hosts and

ii) rerouting data access requests for said high-availability storage device via a respective other of said intelligent hosts hosting said dam storage device in response to said access failure detection;

whereby workstation access to said dam image maintained on said high-availability storage device can continue transparently to the user despite loss of functionality of one of said intelligent hosts.

5,634,000

POWER-FAIL RETURN LOOP

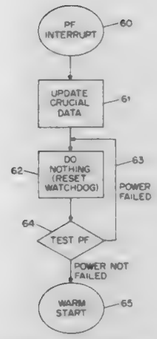
Philippe Wicht, Bulle, Switzerland, assignor to Ascom Autelca AG, Bern, Switzerland

Filed Jul. 31, 1991, Ser. No. 738,345

Int. Cl.[6] G06F *1/30*

U.S. Cl. 395—182.08 **12 Claims**

1. In a computer system having a processor, and program-containing nonvolatile memory, a first temporary power supply and a second temporary power supply, the first power supply powered by an interruptible source, the second power supply providing power for a time interval following interruption of the interruptible source and loss of power in the first power supply, signaling means for providing a first signal indicative of loss of power in the first power supply while the second power supply is providing power, and a second signal indicative of restoration of power in the first power supply, said processor and program comprising power-fail-control means including:



power fail responsive means responsive to the first signal, indicative of loss of power in the first power supply while the second power supply is providing power, for causing the processor to enter a power-down routine including steps in which the processor makes no further reference to the non-volatile memory and remains in said steps until loss of power from said second power supply; and

power restoration responsive means operative when the processor is in the power-down routine and responsive to the second signal indicative of restoration of power in the first power supply, for causing the processor to exit the power-down routine.

5,634,001

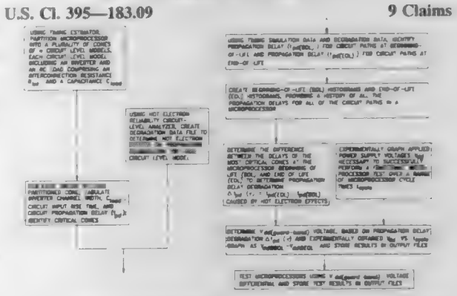
METHOD TO CALCULATE HOT-ELECTRON TEST VOLTAGE DIFFERENTIAL FOR ASSESSING MICROPROCESSOR RELIABILITY

Steven W. Mittl, Essex; David E. Moran, South Burlington; Timothy J. O'Gorman, Williston, and Kimball M. Watson, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 474,441

Int. Cl.[6] G01R *31/30;* **G06F** *11/25*

U.S. Cl. 395—183.09 **9 Claims**



1. A method of determining a guard band voltage differential, used in testing a microprocessor, which represents operating conditions which are anticipated at the end-of-life for the microprocessor, comprising the steps of:

(i) partitioning a microprocessor into a plurality of cones of n circuit level models;

(ii) creating a timing simulation data file containing timing simulation data representing timing operation for a circuit path for each of said circuit level models;

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(iii) creating a degradation data file containing degradation data representing hot-electron effects on propagation delay degradation for each of said circuit level models;

(iv) identify critical cones in the microprocessor having insufficient slack;

(v) using said timing simulation data and said degradation data. identify propagation delay for each of said circuit paths for said circuit level models at times corresponding to the beginning-of-life and end-of-life of the microprocessor;

(vi) determine a timing difference between propagation delay for said critical cones at the beginning-of-life and end-of-life of the microprocessor to calculate propagation delay degradation;

(vii) experimentally determine a range of applied power supply voltages necessary to successfully perform a functional test of the microprocessor over a corresponding range of microprocessor cycle times; and

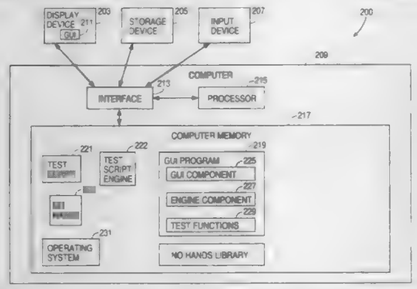
(viii) determine a guard band voltage differential based on said calculated propagation delay degradation and on said determined range of applied power supply voltages.

5,634,002

METHOD AND SYSTEM FOR TESTING GRAPHICAL USER INTERFACE PROGRAMS

George A. Polk, Sunnyvale; Vladimir G. Ivanovic, Palo Alto; Hans E. Muller, Saratoga; John S. Kern, Mountain View; Robert Jervis, Monte Sereno, and Rance DeLong, Los Gatos, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 31, 1995, Ser. No. 455,583
Int. Cl.° G06F *11/00*
U.S. Cl. 395—183.14 **19 Claims**



11. A method executable in a computer system for testing a graphical user interface program. the program including an engine component and a graphical user interface component, the computer system including a display device, a processor, and a memory, the memory including the program and a test function component, the method comprising the steps of:

selecting from a test script, a request to initiate execution of at least one test function from the test function component;

sending the request to the program;

in response to receiving the request, initiating execution of the test function identified in the request;

in response to execution of the test function, initiating execution of the graphical user interface component;

capturing data produced by the graphical user interface component; and

determining whether the captured data indicates that the graphical user interface component is performing properly,

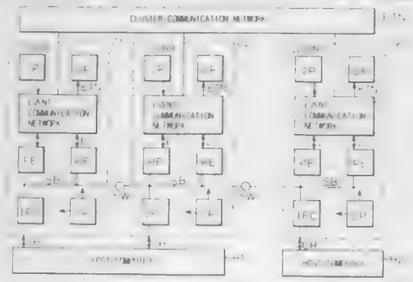
whereby the graphical user interface component is tested without initiating execution of the engine component.

5,634,003

LOGIC SIMULATION APPARATUS BASED ON DEDICATED HARDWARE SIMULATING A LOGIC CIRCUIT AND SELECTABLE TO FORM A PROCESSING SCALE

Minoru Saitoh, Kawasaki; Toshihide Sasaki, Shioya-gun; Hiroshi Tsukamoto, Shioya-gun; Michinori Yajima, Shioya-gun, and Hiroaki Komatsu, Kawasaki, all of Japan, assignors to Fujitsu Limited, and Fujitsu Automation Limited, both of Kawasaki, Japan

Continuation of Ser. No. 236,140, May 2, 1994, abandoned.
This application Oct. 24, 1995, Ser. No. 547,319
Claims priority, application Japan, Jul. 7, 1993, 5-167959
Int. Cl.° G06F *13/00*
U.S. Cl. 395—200.1 **18 Claims**



1. A logic simulation apparatus comprising dedicated hardware simulating a logic operation of at least one logic circuit, and connected to at least one host computer, said logic simulation apparatus comprising:

a plurality of clusters, each cluster comprising at least a communication network and a plurality of processor elements connected to each other through said communication network and forming a connection configuration, each of said plurality of clusters comprising:

an event communication network connecting the processor elements and transferring an event packet thereamong;

an input processor connected to said event communication network through a signal line and inputting said event packet;

an output processor connected to said event communication network through said signal line and storing a history of said event packet;

an interface controller connected to said at least one host computer through a channel and further connected to said processor elements through a system bus; and

a control processor operatively connected to said system bus for controlling an operation of each processor element; and

an upper communication network connecting said clusters;

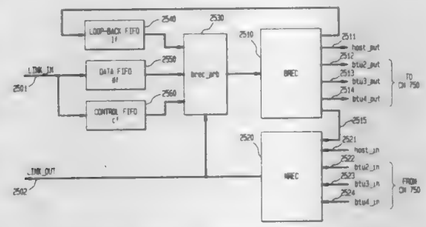
said at least one host computer being connect to at least one of the plurality of clusters, wherein the connection configuration among said plurality of clusters is changeable in accordance with a size of the logic operation being simulated, under instructions for configuration change generated by said at least one host computer wherein said connection configuration is changed in such a way that each cluster is selected to form a desired processing scale for simulation, all clusters are selected to form a plurality of cluster groups in accordance with the desired processing scale for simulation, and each cluster group is operated independently of each other; and wherein all clusters are selected to form one processing scale for simulation.

5,634,004

DIRECTLY PROGRAMMABLE DISTRIBUTION ELEMENT

Bhaskarpillai Gopinath, Watchung; David Kurshan, Sea Bright, and Zoran Miljanic, Highland Park, all of N.J., assignors to Network Programs, Inc., Piscataway, N.J., and Rutgers, The State University of New Jersey, New Brunswick, N.J.

Filed May 16, 1994, Ser. No. 243,578
Int. Cl.° G06F *15/173*
U.S. Cl. 395—200.02 **18 Claims**



1. A distribution element for interconnecting a host and incoming and outgoing links comprising

a crossbar matrix,

a termination unit, coupled to the host, the links, and said crossbar matrix, said termination unit incoming

a node receiver for receiving incoming host data from the host, for receiving incoming data from said crossbar matrix, and for transmitting outgoing link data to the outgoing link, and

a bridge receiver for receiving incoming link data from the incoming link, for transmitting outgoing host data to the host, for transmitting node data to said node receiver, and for transmitting outgoing data to said crossbar matrix,

said node receiver further arranged for receiving said node data from said bridge receiver,

said node receiver further arranged for transmitting bridge data to said bridge receiver and said bridge receiver further arranged for receiving said bridge data.

5,634,005

SYSTEM FOR AUTOMATICALLY SENDING MAIL MESSAGE BY STORING RULE ACCORDING TO THE LANGUAGE SPECIFICATION OF THE MESSAGE INCLUDING PROCESSING CONDITION AND PROCESSING CONTENT

Akira Matsuo, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 145,527, Nov. 4, 1993, abandoned.
This application Jun. 4, 1996, Ser. No. 658,015
Claims priority, application Japan, Nov. 9, 1992, 4-298839
Int. Cl.° G06F *13/00*
U.S. Cl. 395—200.02 **19 Claims**

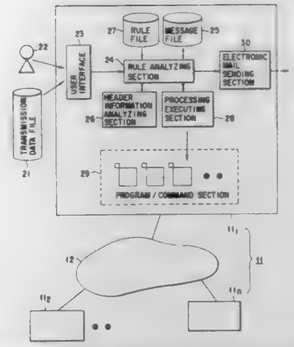
1. An automatic sending-message processing device applied to a computer network which is connected to a plurality of computer systems via communication media and capable of effecting message switching among said plurality of computer systems by use of an electronic mail system, comprising:

inputting means for permitting a user to input control information for mail message data to be sent;

rule storing means for storing a rule according to the language specification of a mail message and including a processing condition and a processing content identifying a process to be performed on the mail message data when the processing condition is satisfied;

rule creating means for permitting the user to create the rule stored in said rule storing means;

control information analyzing means for analyzing the control information of the mail message data;



interpreting means for collating the analyzed control information with the processing condition to interpret a process to be executed; and

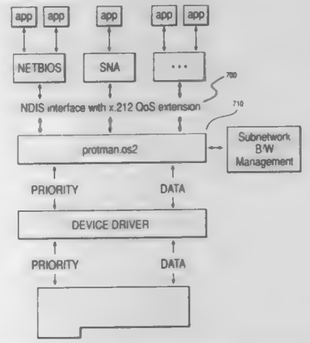
processing means for executing a process corresponding to the process interpreted by said interpreting means on the mail message data to be sent.

5,634,006

SYSTEM AND METHOD FOR ENSURING QOS IN A TOKEN RING NETWORK UTILIZING AN ACCESS REGULATOR AT EACH NODE FOR ALLOCATING FRAME SIZE FOR PLURAL TRANSMITTING APPLICATIONS BASED UPON NEGOTIATED INFORMATION AND PRIORITY IN THE NETWORK

Mark J. Baugher; John K. Bigler, and Mark R. Simpson, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 930,587, Aug. 17, 1992, abandoned.
This application Oct. 11, 1995, Ser. No. 540,923
Int. Cl.° G06F *15/16*; **H04L** *12/42*
U.S. Cl. 395—200.06 **19 Claims**



1. An apparatus for transmitting information through a network of interconnected computers, comprising:

(a) means for storing network information in each one of said interconnected computers indicative of the quality of service required for a plurality of transmitting applications within said computers, including a priority for information to be transmitted in a token ring protocol; and

(b) means, connected to said means for storing, for allocating a frame size for each one of said interconnected computers for said plurality of transmitting applications based on the information negotiated by a transport medium and said network of interconnected computers and the priority in said token ring protocol.

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5,634,007

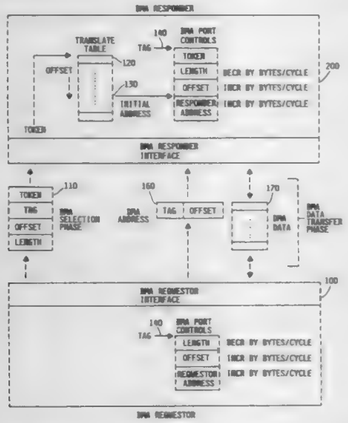
INDEPENDENT COMPUTER STORAGE ADDRESSING IN INPUT/OUTPUT TRANSFERS

Salvatore A. Calta, Highland; Robert B. Cook, Poughkeepsie, both of N.Y.; Fernando A. Luiz, Moute Sereno, Calif.; Gregory M. Nordstrom, Oronoco, Minn.; Martin W. Sachs, Westport, Conn., and Caryl A. Thorn, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 843,750, Feb. 28, 1992, abandoned. This application Mar. 2, 1995, Ser. No. 398,053

Int. Cl.[6] G06F *13/28;12/06*

U.S. Cl. 395—200.07 **20 Claims**



1. An apparatus for direct memory addressing via a direct memory access bus connected between a requestor device and responder device, comprising:

a) means for identifying a particular direct memory transfer operation in said requestor device and, in association therewith, means for creating a token value and an offset value in said requestor device, and means for creating a tag identifier in said requestor device, identified to said token value and offset value;

b) means for communicating said token value, said offset value and said tag identifier directly to said responder device, said responder device and said requestor device requiring no knowledge of the other's storage architecture or data organization, and means for recording said token and offset values in said responder device at a location identified by said tag identifier; and

c) means for selecting a local address in said responder device by using said token value and said offset value, and means for initiating said particular direct memory transfer operation by said requestor device transmitting said tag identifier directly to said responder device.

5,634,008

METHOD AND SYSTEM FOR THRESHOLD OCCURRENCE DETECTION IN A COMMUNICATIONS NETWORK

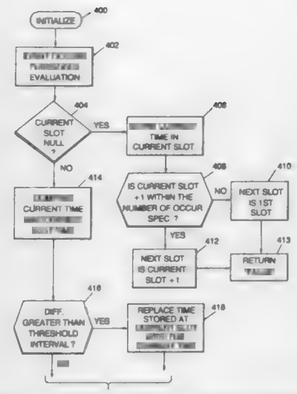
Nathan J. Gaffaney, and Jeffrey M. Weiner, both of Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 18, 1994, Ser. No. 276,746

Int. Cl.[6] G06F *7/02*

U.S. Cl. 395—200.11 **16 Claims**

1. A method for detecting a threshold occurrence of events in a communications network without use of any counter or timer devices, said communications network having at least one processor and containing a plurality of devices, comprising the steps of:



identifying, by a network operator, a resettable threshold condition to monitor for at least one selected device of said plurality of devices;

allocating locations in memory in said at least one processor based on the threshold condition to store a plurality of timestamp values corresponding to a time of occurrence of each event for said selected device, each allocated location having an associated sequential location number said allocated locations being linked together to form a circularly-linked list;

receiving a message from said selected device by said processor when said each event occurs;

comparing the time of occurrence value of each event with the contents of a current one of said allocated locations in memory; and

based on said comparing step, determining if the threshold condition has occurred.

5,634,009

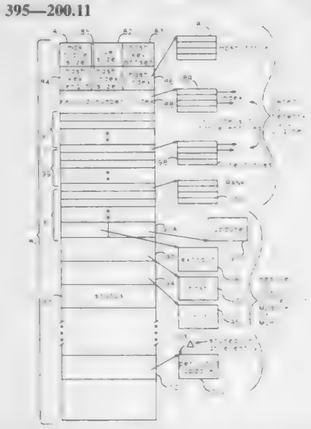
NETWORK DATA COLLECTION METHOD AND APPARATUS

Robin A. Iddon, Edinburgh; Peter F. Palmer, Midlothian; Richard McBride, Musselburgh, and John Briggs, Loanhead, all of United Kingdom, assignors to 3COM Corporation, Santa Clara, Calif.

Continuation of Ser. No. 130,317, Oct. 1, 1993, abandoned. This application Oct. 27, 1995, Ser. No. 549,323

Int. Cl.[6] G06F *15/163*

U.S. Cl. 395—200.11 **20 Claims**



1. A method of collecting network data from a computer network at a remote node having a processor, an operating system, a

network protocol module for communicating on the network in accordance with a predefined protocol, a management information base arranged in accordance with the protocol and having tables for storing the collected data and having corresponding functions for each table including a periodic update function and a network data engine, the method comprising the steps of:

(a) the network protocol module providing a description of the management information base to the network data engine, including providing a description of the tables and providing a pointer to the corresponding periodic update function;

(b) the network data engine receiving the description and constructing therefrom a control structure for each table;

(c) after step (b), the network protocol module monitoring the network and receiveing all packets passing therethrough;

(d) upon receiving a packet, the network protocol module passing the packet to the network data engine;

(e) the network data engine processing the packet in accordance with the control structure for each table;

(f) at predetermined intervals, the network data engine calling the periodic update function for each table to update the table in accordance therewith; and

(g) the network protocol module providing a record number index pointing to an index, the index having indices listed in the order of insertion of table entries of the tables.

5,634,010

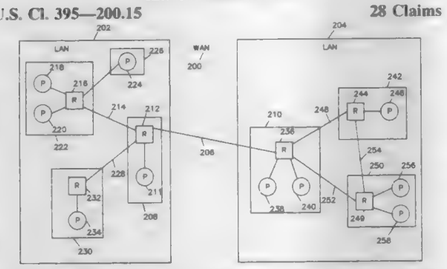
MANAGING AND DISTRIBUTING DATA OBJECTS OF DIFFERENT TYPES BETWEEN COMPUTERS CONNECTED TO A NETWORK

Larry A. Ciscon; James D. Wise, Jr., and Don H. Johnson, all of Houston, Tex., assignors to Modulus Technologies, Inc., Houston, Tex.

Filed Oct. 21, 1994, Ser. No. 327,019

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.15 **28 Claims**



1. A method of managing and distributing data objects of different types between a plurality of child processes running on a plurality of computers connected to a network, wherein said data objects each include data and properties associated with said data, wherein at least a subset of said properties are usable to indicate the types of data objects, wherein a child process runs on each of the plurality of the computers, and wherein a router process rims on each of the plurality of computers, each router process acting as an interface between its respective child process and the other router processes, the method comprising the steps of:

each router process storing connection information in a table for indicating how the router process is connected to its respective child process and to the other router processes;

each router process storing interest information in a table for indicating the types of data objects its respective mild process and the other router processes are interested in, wherein said interested information comprises one or more values of one or more of said properties of said data objects;

a first router process building a destination list based on said interest information and connection information stored in its respective tables in response to its respective child process transmitting a data object of a first type, said destination list specifying which other router processes are to receive said data object;

said first router process modifying said data object by adding said destination list to said data object; and

said first router process distributing said modified data object to the other router processes according to said destination list.

5,634,011

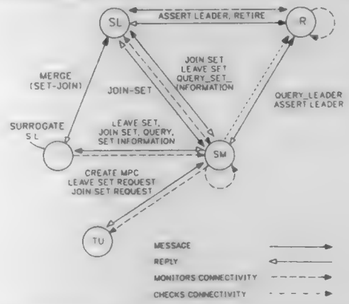
DISTRIBUTED MANAGEMENT COMMUNICATIONS NETWORK

Joshua S. Auerbach, Ridgefield, Conn.; John E. Drake, Jr., Pittsboro, N.C.; Prabandham M. Gopal, Wayne, N.J.; Elizabeth A. Hervatic, Apex, N.C.; Marc A. Kaplan, Katonah, N.Y.; Shay Kutten, Rockaway, N.J.; Marcia L. Peters, Pittsboro, N.C., and Michael J. Ward, New Haven, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 900,647, Jun. 18, 1992, abandoned. This application Aug. 21, 1995, Ser. No. 517,305

Int. Cl.[6] H01H *67/00*

U.S. Cl. 395—200.15 **6 Claims**



1. A communications network management system including a plurality of interconnected nodes, comprising:

communications control means for providing distributed administration of multicast communications network user sets utilizing a plurality of selectable controls including communication network user Set Manager control means, Set Leader control means and network Registrar control means;

management mode control means at each node of said network, communicating with each communications network user at said node and responsive to the dynamic communications requirements of said users for selecting the mode of operation of said communication control means to exercise said network user Set Manager control means, said Set Leader control means and said network Registrar control means so that said network has active at any time only one said network Registrar control means in said communications network, only one Set Manager control means per node in said network and only one said Set Leader control means per set of users.

means, including said Set Manager control means, for routing multicasting messages in the node in which that Set Manager Control means resides.

means, including said Set Leader control means, for modifying the membership in said set of users corresponding to said Set Leader means; and

means, including said Registrar control means, for insuring that there is only one of said Set Leader control means for each said set of users.

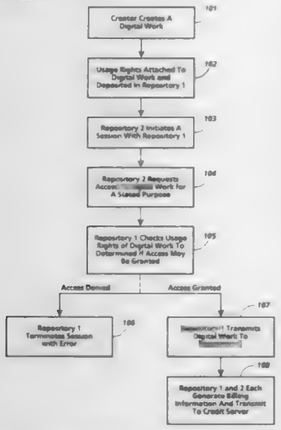
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5,634,012

SYSTEM FOR CONTROLLING THE DISTRIBUTION AND USE OF DIGITAL WORKS HAVING A FEE REPORTING MECHANISM

Mark J. Stefik, Woodside; Ralph C. Merkle, Sunnyvale, and Peter L. T. Pirolli, El Cerrito, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1994, Ser. No. 344,773
Int. Cl.[6] G06F *17/60*
U.S. Cl. 395—239 **16 Claims**



1. A system for controlling the distribution and use of digital works through a network, said system having a mechanism for reporting fees based on the distribution and use of digital works, said system comprising:

a digital work having attached usage rights, each of said usage rights for specifying how a digital work may be used or distributed, each of said usage rights specifying usage fee information, said usage fee information comprising a fee type and fee parameters which define a fee to be paid in connection with the exercise of said usage right;

a plurality of repositories, each of said repositories comprising:

an external interface for removably coupling to said network;

storage means for storing digital works having attached usage rights and fees;

requesting means for generating a request to access a digital work stored in another of said plurality of repositories, said request indicating a particular usage right;

processing means for processing requests to access digital works stored in said storage means and for generating fee transactions when a request indicates a usage right that is attached to a digital work and said usage right specifies usage fee information;

each of said plurality of repositories further removably coupled to a credit server, said credit server for recording fee transactions from said repository and subsequently reporting said fee transactions to a billing clearinghouse.

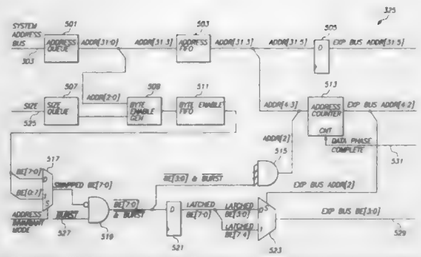
5,634,013

BUS BRIDGE ADDRESS TRANSLATOR

Brian A. Childers, Santa Clara, and Eric A. Baden, Sarotaga, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 3, 1995, Ser. No. 434,183
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 **18 Claims**

5. In a computer bus bridge for interconnecting first and second buses, the first bus having a first endian characteristic and the second bus having a second endian characteristic that is opposite that of the first endian characteristic, an apparatus for converting



first address and size signals received from the first bus during a first bus cycle into second address and data unit enable signals for transmission on the second bus during a second bus cycle, wherein each data unit enable signal is for alternatively designating presence or absence of a meaningful data unit, and wherein the first address comprises a low-order address portion and a remaining upper-order address portion, the apparatus comprising:

means for generating the data unit enable signals from the low-order address portion and the size signals of the first bus;

means for generating an address offset from the data unit enable signals; and

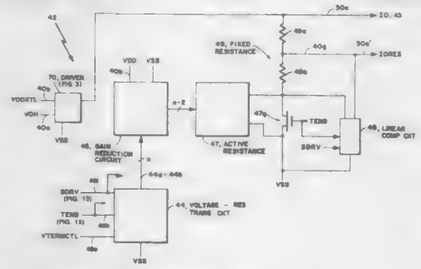
means for concatenating the remaining upper-order address portion of the first address, the address offset and a predetermined lower address portion for use as the second address.

5,634,014

SEMICONDUCTOR PROCESS, POWER SUPPLY VOLTAGE AND TEMPERATURE COMPENSATED INTEGRATED SYSTEM BUS TERMINATION

William B. Gist, Chelmsford, and Joseph P. Coyle, Leominster, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 79,515, Jun. 18, 1993, abandoned. This application Jul. 12, 1995, Ser. No. 501,388
Int. Cl.[6] H04M *7/04*
U.S. Cl. 395—280 **10 Claims**



1. A bus interface circuit, comprising:

an I/O cell, said I/O cell comprising:

a bus driver circuit having an output terminal;

a bus receiver circuit having an input terminal connected to the output terminal of the bus driver circuit;

termination means, responsive to a voltage reference signal representative of a desired impedance value of an external resistor, for providing a desired termination impedance value at the connection of the driver circuit and receiver circuit, including means, responsive to changes in said desired impedance value during operation, for accordingly adjusting said desired termination impedance; and

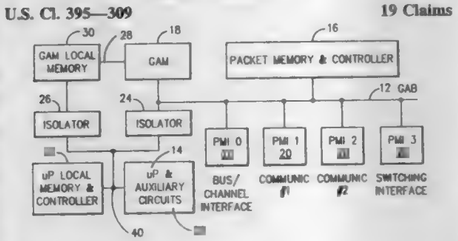
means, responsive to an activity level of said driver, for selectively enabling said termination means.

5,634,015

GENERIC HIGH BANDWIDTH ADAPTER PROVIDING DATA COMMUNICATIONS BETWEEN DIVERSE COMMUNICATION NETWORKS AND COMPUTER SYSTEM

Paul Chang, Peckskill; Gary S. Delp, Yorktown Heights; Hanafy E.-S. Meleis, Yorktown Heights; Rafael M. Montalvo, Yorktown Heights; David I. Seidman, New York; Ahmed N.-E.-D. Tantawy, Yorktown Heights, and Dominick A. Zumbo, White Plains, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 651,894, Feb. 6, 1991, Pat. No. 5,367,643. This application Oct. 4, 1994, Ser. No. 317,894
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—309 **19 Claims**



1. A generic high bandwidth adapter for a plurality of users of communication services, such as a plurality of communication networks or computer buses, comprising:

a. a generic adapter manager means, including a logic means for preparing future responses to anticipated requests for communication services, a generic adapter manager memory for storing the prepared future responses at specified addresses in the memory, and a generic adapter manager bus for carrying the requests for communication services, and responses to the requests for communication services;

b. a packet memory means for storing packet data in buffers;

c. a plurality of users of communication services, such as a plurality of communication networks or computer buses, with each user including a packet memory interface for sending a current request for communication services to the generic adapter manager means, such as a request for the receipt of data, a request for the transmission of data, and a request for a next buffer, and wherein each user of communication services sends a current request for communication services by executing a memory read operation which reads the prepared response at a specified address in the generic adapter manager memory;

d. said generic adapter manager means prepares future responses to anticipated requests for communication services, with the future responses being functions of the current requests for communication services, such as preparing a response for an anticipated request for a next buffer by a current request for a receipt of data, and storing the future responses at specified addresses in memory concurrently with the transmission of current responses to the users of communication services;

e. a generic adapter bus for connecting together said packet memory means, said generic adapter manager means, and the packet memory interfaces; and

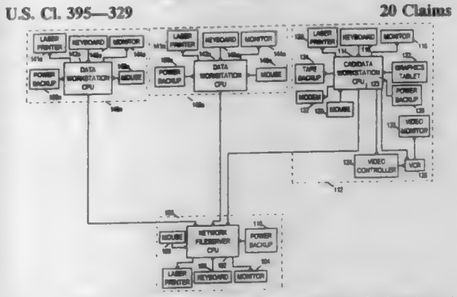
f. wherein said packet memory means includes a packet memory controller for interfacing with said generic adapter bus, and for isolating the packet memory means from requirements of the generic adapter bus such as parity generation and operations of reading data from and writing data into the packet memory means.

5,634,016

EVENT MANAGEMENT SYSTEM

Charles V. Steadham, Jr., Micanopy; Daniel D. Boccabella, Jr., Gainesville; Bradley C. Jones, Jacksonville; Matthew A. Fuller, Gainesville, and Jeffrey A. Lyons, West Palm Beach, all of Fla., assignors to Blade Software, Inc., Gainesville, Fla.

Filed Jan. 21, 1993, Ser. No. 2,359
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—329 **20 Claims**



1. A facility and event management system for use by hotels and entertainment producers in hotels and other facilities, comprising:

a first digital data processor for storing text information relating to the facility and the events to be held at that facility for which said facility and event management system is used;

a second digital data processor which is in communication with said first digital data processor for producing and storing computer aided design drawings using the text information stored in said first digital data processor; and wherein

said first and second digital data processors contain connecting means for translating changes to either of said stored text information and said computer aided design drawings whenever said computer aided design drawings or said stored text information are altered.

5,634,017

COMPUTER SYSTEM AND METHOD FOR PROCESSING ATOMIC DATA TO CALCULATE AND EXHIBIT THE PROPERTIES AND STRUCTURE OF MATTER BASED ON RELATIVISTIC MODELS

Ajaya K. Mohanty, Red Hook, and Farid A. Parpia, Lake Katrine, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 310,459, Sep. 22, 1994, Pat. No. 5,574,844. This application Jun. 21, 1996, Ser. No. 667,685
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—326 **8 Claims**

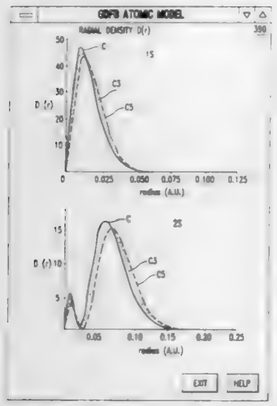
1. A computer apparatus for exhibiting the properties and structure of matter comprising:

a visual display unit;

a data entry device; and

a data processing system connected to said visual display unit and said data entry device, said data processing system having atomic structure program means for constructing relativistic mathematical atomic models, and a text/graphic interactive user interface having program selection means for displaying atomic properties and related calculation parameters on said visual display unit and for permitting a user to interact, via said data entry device, with said calculation parameters and to select said atomic properties to perform operations on said atomic structure program means to generate sets of values for said selected atomic properties, said sets of values each based on different degrees of relativistic effects, and said user inter

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face means further including a graphic display means for displaying graphical representations of said sets of values for said selected atomic properties on said visual display unit.

5,634,018

PRESENTATION SUPPORTING METHOD AND APPARATUS THEREFOR

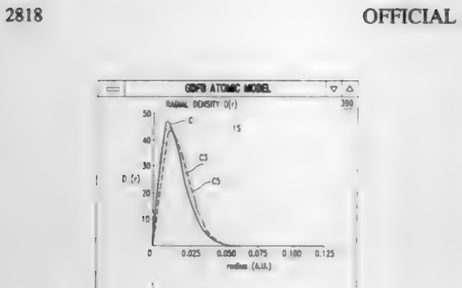
Koichiro Tanikoshi; Kimiya Yamaashi, both of Hitachi; Masayuki Tani, Katsuta; Shinya Tanifuji, Hitachi, and Hitoshi Yoshino, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 709,976, Jun. 4, 1991, abandoned. This application Sep. 12, 1994, Ser. No. 304,209

Claims priority, application Japan, Jun. 7, 1990, 2-147210; Jun. 15, 1990, 2-155193

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—329 **28 Claims**



9. A display assignment system for assigning mutually different predetermined presentation information to different groups of audience-site screens located at a common audience site so as to concurrently present different presentation information on said different groups of audience-site screens to each audience member when a presenter makes presentation by using said audience-site screens, said system comprising:

a presentation program apparatus for storing and supplying predetermined sequential presentation information corresponding to a presentation program and predetermined additional information, with each said additional information representing dynamically changing information corresponding to different sequential presentation points over time within said sequential presentation information, and wherein said additional information is dynamically changing supporting information related to a presentation on said presenter-site screen for supporting the presenter at said different sequential presentation points over time when presentation is made;

a plurality of display means each of which has a screen for displaying said presentation information;

a screen assignment means for issuing a command to assign a display of mutually different presentation information to different groups of said display means located at a common audience site on a basis of generation of a next sequential presentation information; and

a control means having a plurality of assignment deciding functions for assigning the display of said mutually different presentation information to different groups of said display means located at said common audience site in accordance with said command.

5,634,019

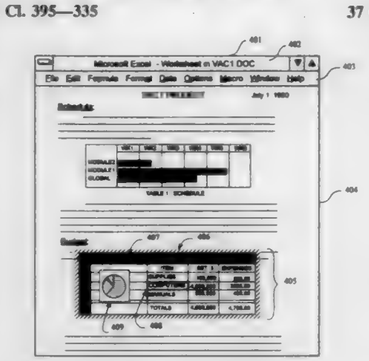
METHOD AND SYSTEM FOR IN-PLACE INTERACTION WITH CONTAINED OBJECTS

Srinivasa R. Koppolu; C. Douglas Hodges, both of Redmond; Barry B. MacKichan, Bainbridge Island, all of Wash.; Richard McDaniel, Pittsburgh, Pa.; Rao V. Remala, Woodinville, and Antony S. Williams, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 229,264, Apr. 15, 1994, which is a continuation-in-part of Ser. No. 984,868, Dec. 1, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,833

Int. Cl.[6] G06F *15/00;7/00*

U.S. Cl. 395—335 **37 Claims**



10. A method in a computer system for dynamically integrating server resources of a server application window environment with container resources of a container application window environment, each resource having a behavior, the method comprising:

initializing a list resources with server resources to be displayed when the containee object is activated;

requesting the container application to augment the list of resources with the container resources; and

after the container application has augmented the list, requesting the container application to display resources in the augmented list of resources

wherein when a displayed server resource is selected, the server application is requested to perform the behavior associated with the selected server resource and when a displayed container resource is selected, the container application is requested to perform the behavior of the selected container resource.

5,634,020

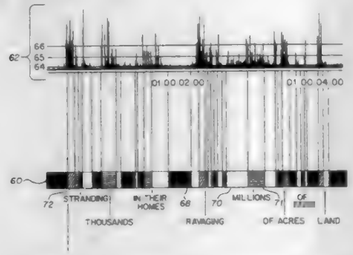
APPARATUS AND METHOD FOR DISPLAYING AUDIO DATA AS A DISCRETE WAVEFORM

Mark J. Norton, Bedford, Mass., assignor to Avid Technology, Inc., Tewsbury, Mass.

Filed Dec. 31, 1992, Ser. No. 997,716

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—339 **17 Claims**



1. An apparatus for facilitating computerized editing of audio data, the apparatus comprising:

means for selecting a portion of the audio data;

means for applying a smoothing operation to the selected portion of the audio data to obtain an average value for each sample;

means for comparing the average value for each sample to a threshold value to generate a discrete waveform representative of the selected portion of the audio data; and

means for displaying the discrete waveform on a video display as a plurality of bars of substantially equal height, each of the plurality of bars having a color selected according to a value of a corresponding sample of the audio data.

5,634,021

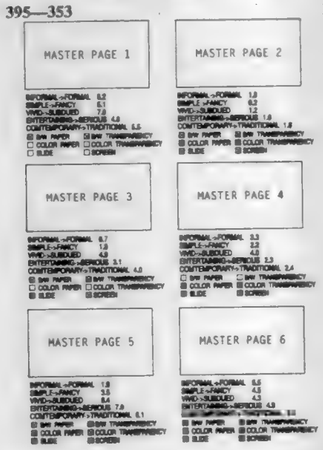
SYSTEM AND METHODS FOR GENERATION OF DESIGN IMAGES BASED ON USER DESIGN INPUTS

Daniel Rosenberg, San Jose, and Anne C. Way, Livermore, both of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Aug. 15, 1991, Ser. No. 746,733

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—353 **11 Claims**



1. In a computer system, a method for assisting a user in creating a design image comprising:

(a) storing a plurality of master images representing different types of design images, each of said master images being characterized by a plurality of pre-determined attributes;

(b) receiving user input specifying qualities desired by said user, for indicating a preferred design image type desired by said user;

(c) determining one or more of the master images whose attributes best match qualities desired by said user; and

(d) presenting to the user output associated with said determined one or more of the master images,

wherein said plurality of attributes include color, font, and layout attributes.

5,634,022

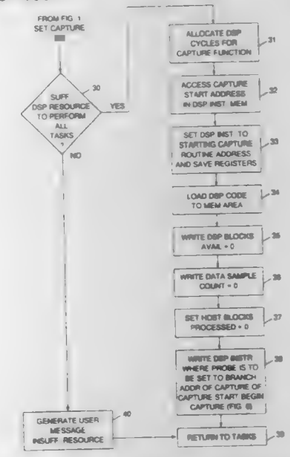
MULTI-MEDIA COMPUTER DIAGNOSTIC SYSTEM

William G. Crouse, and Malcolm S. Ware, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1992, Ser. No. 847,128

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—704 **9 Claims**



1. Means for diagnosing task execution malfunctions in a multimedia system comprising a host computer system, a display and a digital signal processor (DSP) for processing tasks, said means for diagnosing comprising:

means for determining whether invocation of a diagnostic task in said multi-media system will cause a processing overload on said DSP within the execution time of a given task whose execution by said DSP is to be diagnosed; and

means for accessing and modifying execution instructions for said task being diagnosed whenever a diagnostic task is invoked and no processing overload is determined to exist, said modification comprising insertion of a branch instruction in said DSP task execution instruction sequence for causing the execution of said task to branch to a diagnostic task instruction, for then executing said instruction and to return to said DSP task to complete real-time execution thereof before the ending of the execution time period of said DSP task.

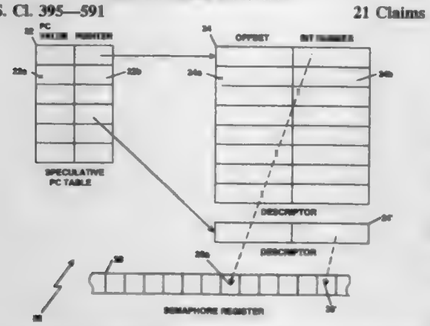
VOL 1198 ISS 4 MY 27 1997 UMI

5,634,023

SOFTWARE MECHANISM FOR ACCURATELY HANDLING EXCEPTIONS GENERATED BY SPECULATIVELY SCHEDULED INSTRUCTIONS

Michael C. Adler, Lexington; Steven O. Hobbs, Westford, and Paul G. Lowney, Concord, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1994, Ser. No. 270,184
Int. Cl.[6] G06F 9/30;15/16
U.S. Cl. 395—591 21 Claims



1. A method for handling an exception caused by a speculatively scheduled instruction which is executed within a computer program, said method comprising the steps of:

checking at a commit point of said speculatively scheduled instruction, a semaphore associated with said speculatively scheduled instruction; and

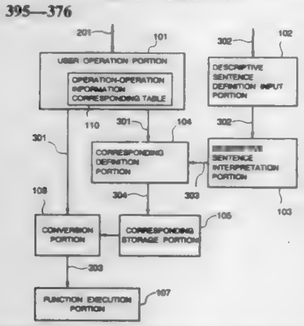
branching to an error handling routine if the semaphore indicates that an exception occurred when said speculatively scheduled instruction was executed.

5,634,024

DEFINITION EXECUTION SYSTEM FOR OPERATIONS AND FUNCTIONS IN COMPUTER SYSTEM

Tomoharu Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 10, 1995, Ser. No. 438,735
Claims priority, application Japan, May 18, 1994, 6-103653
Int. Cl.[6] G06F 9/00
U.S. Cl. 395—376 14 Claims



1. A definition execution system for operations and functions in a computer system comprising:

a user operation means for accepting an operation by a user with respect to an application program;

a descriptive sentence input means for inputting a descriptive sentence written in a natural language to represent a function corresponding to said operation;

a descriptive sentence interpretation means for interpreting said descriptive sentence to output a function instruction for realizing the function contained in said descriptive sentence represented in a program language of said application program;

a corresponding definition means for associating said operation and said function instruction to output corresponding information which indicates a corresponding relation between said operation and said function instruction;

a corresponding storage means for storing said corresponding information;

a conversion means for entering said operation received by said user operation means to select said function instruction corresponding to said operation according to corresponding information stored in said corresponding storage means; and

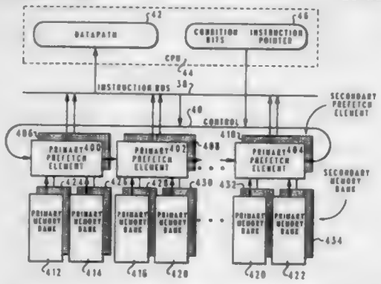
a function execution means for executing said function according to said function instruction selected.

5,634,025

METHOD AND SYSTEM FOR EFFICIENTLY FETCHING VARIABLE-WIDTH INSTRUCTIONS IN A DATA PROCESSING SYSTEM HAVING MULTIPLE PREFETCH UNITS

Mauricio Breternitz, Jr., Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 164,497, Dec. 9, 1993, abandoned. This application Apr. 18, 1994, Ser. No. 228,973
Int. Cl.[6] G06F 9/00
U.S. Cl. 395—383 16 Claims



1. A method for efficiently executing instructions in a central processing unit of a data processing system, said method comprising the steps of:

providing M primary prefetch elements for prefetching a primary portion of an instruction word;

providing M' secondary prefetch elements for prefetching a secondary portion of an instruction word;

coupling a group of N primary memory banks to each one of said M primary prefetch elements;

coupling a group of N' secondary memory banks to each one of said M' secondary prefetch elements;

sequentially storing said primary portions of a plurality of said instruction words in each group of N primary memory banks;

sequentially storing said secondary portions of a plurality of said instruction words in each group of N' secondary memory banks;

in response to a selected primary prefetch element receiving a prefetch token, sequentially fetching said primary portions of said plurality of instruction words from said group of N primary memory banks utilizing said selected primary prefetch element;

in response to a selected secondary prefetch element receiving a prefetch token, sequentially fetching said secondary portions of said plurality of instruction words from said group of N' secondary memory banks utilizing said selected secondary prefetch element;

only in response to said selected secondary prefetch element fetching said secondary portion of said instruction word, concatenating said primary portion of said instruction word with said secondary portion of said instruction word to form an extended instruction word comprising said primary portion of said instruction word and said secondary portion of said instruction word; and

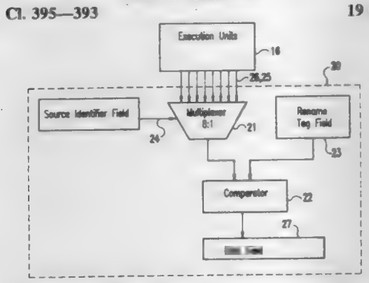
sequentially executing said fetched plurality of instruction words and extended instruction words utilizing said central processing unit in said data processing system.

5,634,026

SOURCE IDENTIFIER FOR RESULT FORWARDING

Jay G. Heaslip, and Miles G. Canada, both of Chittenden County, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1995, Ser. No. 440,033
Int. Cl.[6] G06F 9/28
U.S. Cl. 395—393 19 Claims



1. An apparatus for use with a system including a superscalar processor for simultaneously processing multiple instructions, a plurality of storing units each for storing a plurality of instructions and a plurality of results of said instructions, a plurality of execution units for executing said instructions and means for determining whether a first instruction of said plurality of instructions is dependent upon a result of a second instruction of said plurality of instructions; said apparatus comprising:

first storage means containing first identity information comprising an identity of a first storage unit of said plurality of storage units, said first storage means for storing said second instruction and said result;

second storage means containing second identity information comprising an identity of a first execution unit, said first execution unit for executing said second instruction;

means for associating said first storage means and said second storage means with said first instruction;

means for selectively receiving a plurality of specific results from said first execution unit based on said second identity information; and

means for comparing said plurality of specific results received by said means for selectively receiving with said first identity information, wherein said means for comparing directs said result to said first instruction to allow execution of said first instruction.

5,634,027

CACHE MEMORY SYSTEM FOR MULTIPLE PROCESSORS WITH COLLECTIVELY ARRANGED CACHE TAG MEMORIES

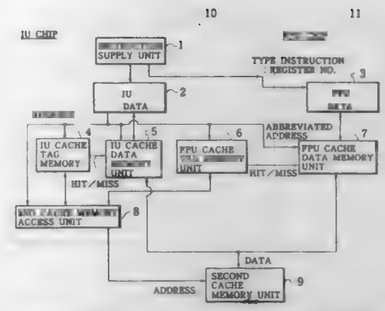
Mitsuo Saito, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1992, Ser. No. 979,806
Claims priority, application Japan, Nov. 20, 1991, 3-304317; Nov. 20, 1991, 3-304318; Nov. 20, 1991, 3-304319
Int. Cl.[6] G06F 12/02
U.S. Cl. 395—403 8 Claims

1. A cache memory system, comprising:

a plurality of processing units including a primary processing unit for carrying out a calculation of memory access addresses; and

a plurality of cache memory units provided in correspondence to said plurality of processing units, each one of said plurality of cache memory units including a cache tag memory unit for



determining a cache hit/miss in said each one of said plurality of cache memory units and a cache data memory unit for storing data for a respective one of said plurality of processing units, where the cache data memory unit of each one of said plurality of cache memory units is arranged in closer positional relation to the respective one of said plurality of processing units compared; with processing units other than the respective one of said plurality of processing units while all of the cache tag memory units of said plurality of cache memory units are collectively arranged in closer positional relation to the primary processing unit compared with processing units other than the primary processing unit;

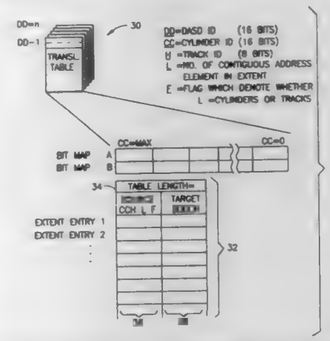
wherein when the cache data memory unit of one of said plurality of cache memory units stores a data required by another one of said plurality of cache memory units, the required data is transferred from the cache data memory unit of said one of said plurality of cache memory units to the cache data memory unit of said another one of said plurality of cache memory units.

5,634,028

COMPACT TRACK ADDRESS TRANSLATION MAPPING SYSTEM AND METHOD

James T. Brady, San Jose; Robert W. Shomler, Morgan Hill, and May N. Wone, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,696
Int. Cl.[6] G06F 12/02;12/10
U.S. Cl. 395—404 10 Claims



1. Computer apparatus for translating from one direct access storage device (DASD) address to another DASD address, each DASD address comprising a DASD device identifier (ID), a cylinder ID and a track ID, data being stored on e DASD from a start track and extending for an extent of addresses, comprising:

first processing means including at least one first DASD;

second processing means including at least one second DASD;

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means for enabling data communications between said first and second processing means;

memory associated with said first processing means for storing at least one translation table, one translation table for each first DASD coupled to said first processing means, each translation table including at least a first data value for each cylinder in said first DASD which indicates whether a corresponding cylinder contains a start of extent address, and if yes, at least one corresponding translation entry comprising a first portion and a second portion, said first portion including at least said start of extent address and a length of the extent of addresses associated with said start of extent address, said second portion including a start of extent address for an address span in said second DASD that corresponds to said first portion; and

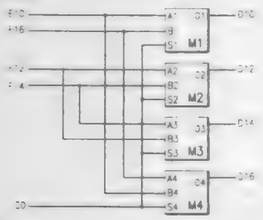
logic means in said first processing means and responsive to receipt of a first DASD address to determine from a translation table in said memory that corresponds to said first DASD whether a cylinder ID in said first DASD address is associated with a first data value indicating a presence of a start of extent value and if yes, finding a corresponding translation entry and from a second portion thereof, determining an address in said second DASD that corresponds to said first DASD address.

5,634,029

APPARATUS FOR INTERCHANGING FLOPPY DISKETTE DRIVE ASSIGNMENTS

Chih-Hsien Chen, Hsinchu Hsien, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 18, 1995, Ser. No. 529,733
Int. Cl.[6] H01H *9/00*
U.S. Cl. 395—404 **8 Claims**



1. A floppy diskette drive assignment interchanging apparatus for interchanging the drive assignments in a computer system, the floppy diskette drives having a drive data cable including a plurality of data lines, the interchanging apparatus comprising:

an interchange control logic for generating an interchange control signal, the interchange control signal signifying a requirement for drive letter assignment interchange when in a first state, and signifying no interchange when in a second state; and

an assignment interchange logic having a set of inputs connected to respective data lines of the plurality of data lines that require interchanging, and having a set of outputs for outputting signals corresponding to the set of inputs with an output assignment determined by the state of the interchange control signal,

wherein the assignment interchange logic outputs the data lines that require interchanging in an order that the first of the input data lines is assigned to the last of the outputs, the second of the input data lines is assigned to the second last of the outputs and likewise in a reversed order when the interchange control signal is in the first state; and

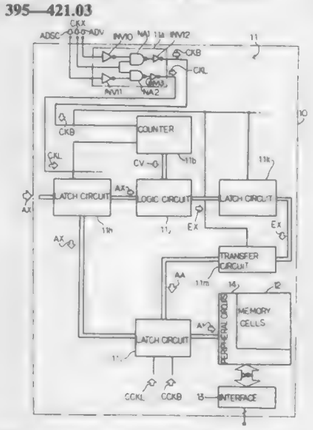
wherein the assignment interchange logic outputs the data lines that require interchanging in an order that the first of the input data lines is assigned to the first of the outputs, the second of the input data lines is assigned to the second of the outputs and likewise in a forward order when the interchange control signal is in the second state.

5,634,030

SEMICONDUCTOR MEMORY DEVICE FOR INCREMENTING ADDRESS AT HIGH SPEED IN BURST ACCESS

Masahito Nakano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 357,255
Claims priority, application Japan, Dec. 22, 1993, 5-323597
Int. Cl.[6] G06F *9/26;13/28*
U.S. Cl. 395—421.03 **5 Claims**



1. A semiconductor memory device comprising:

a) a plurality of memory cells for storing data bits;

b) peripheral circuits responsive to an internal address signal for selectively making said plurality of memory cells accessible; and

c) an address generating system operative to change an internal address represented by said internal address signal for sequential burst accesses, and having

c-1) a controlling circuit responsive to a first external control signal for changing a first control signal between a first level and a second level in synchronism with an external clock signal and to a second external control signal for changing a second control clock signal between a third level and a fourth level in synchronism with said external clock signal,

c-2) a first latch circuit responsive to said first control signal of said second level for storing an external address signal indicative of an external address,

c-3) a second latch circuit responsive to said first control signal of said second level for producing said internal address signal indicative of a first internal address from said external address, said second latch circuit storing said external address upon recovery of said first control signal to said first level,

c-4) a counter responsive to said first control signal of said second level for setting a count signal to a first value used for producing a second internal address, and changing said count signal at every change of said second control clock signal from said third level to said fourth level,

c-5) a calculated address producing circuit operative to produce a calculated address from said external address stored in said first latch circuit and the value of said count signal,

c-6) a third latch circuit responsive to said second control clock signal of said third level for storing said calculated address, and

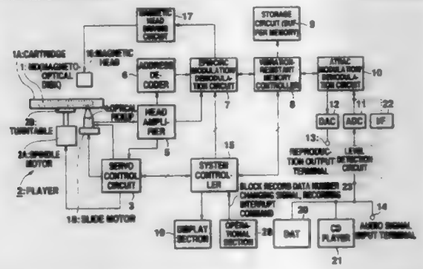
c-7) a transfer circuit responsive to said second control clock signal of said fourth level for transferring said calculated address from said third latch circuit to said second latch circuit, thereby causing said second latch circuit to change said internal address to said calculated address.

5,634,031

OPTICAL DISK SYSTEM HAVING TABLE-OF-CONTENTS INFORMATION DATA

Hiroto Sakuma, 19, Aza-shinokara, Ooaza-kaminodejima, Higashimura, Nishishirakawa-gun, Fukushima, 961-03, Japan

Filed Feb. 21, 1995, Ser. No. 391,550
Claims priority, application Japan, Mar. 4, 1994, 6-60043
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—438 **20 Claims**



11. An optical disk system comprising:

disk means having a user recording area and a user table-of-contents area;

input means for inputting at least one of a block record data, a table-of-contents information data, a command;

recording-reproducing means for recording-reproducing said block record data and said table-of-contents information data received from said input means;

storage means for storing said block record data and said table-of-contents information data; and

system control means for controlling the writing-reading of said table-of-contents information data into and out of the storage means, and the recording-reproducing of said data onto and from said disk means,

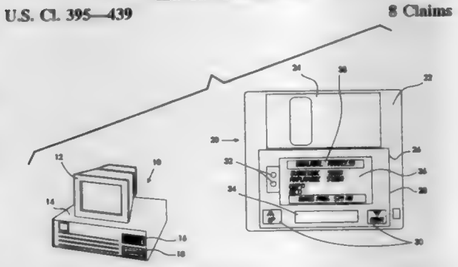
said recording including the recording of a temporary table-of-contents information data onto the user table-of-contents area of the disk means before said recording-reproducing means records the block record data onto the recording area of the disk means or the system control means receives the command produced by the input means.

5,634,032

DYNAMIC DIGITAL IDENTIFICATION OF STORAGE MEDIA

Fred T. Haddock, 3935 Holden Dr., Ann Arbor, Mich. 48103

Filed Jun. 7, 1995, Ser. No. 477,555
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—439 **8 Claims**



1. In a removable storage device of a type designed to be removably installed in a host computer for access by the host computer during use, the improvement comprising:

a storage medium for storage of digital information thereon disposed within said removable storage device;

a readout means disposed on said storage device, said readout means and said storage medium being inseparable from one another by virtue of each being disposed on said removable storage device;

a memory device disposed on said storage device having access means for reading and writing, said memory device and said storage medium being inseparable from one another by virtue of both being disposed on said removable storage device;

means coupled to said access means for writing data to said memory device for indicating the contents of said storage medium;

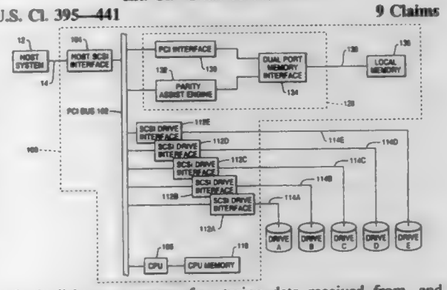
means coupled to said memory device and to said readout means for reading data stored in said memory device and supplying said data to said readout means, whereby information indicative of the contents of said storage medium is displayed without the need to install the removable storage device in said host computer.

5,634,033

DISK ARRAY STORAGE SYSTEM ARCHITECTURE FOR PARITY OPERATIONS SIMULTANEOUS WITH OTHER DATA OPERATIONS

John W. Stewart; Dennis E. Gates; Rodney A. DeKoning, and Curtis W. Rink, all of Wichita, Kans., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Dec. 16, 1994, Ser. No. 357,847
Int. Cl.[6] G06F *13/00;11/00*
U.S. Cl. 395—441 **9 Claims**



1. A disk array system for storing data received from, and providing stored data to, a host computer system; said disk array system comprising:

a first high speed local bus;

a first interface circuit connecting said first high speed local bus with said host computer system;

a plurality of disk drive members;

second interface circuit means connecting said plurality of disk drive members with said first high speed local bus;

a parity assist logic circuit connected to said first high speed local bus;

a local memory storage connected to said first high speed local bus;

a second high speed local bus connecting said parity assist logic circuit with said local memory storage;

wherein said parity assist logic circuit provides data via said second high speed local bus to said local memory storage required for calculation of parity data during disk array write operations, and wherein said parity assist logic circuit manipulates the data saved to said local memory storage via said second high speed local bus to determine parity during said disk array write operations; and

a processor connected to said first high speed local bus for controlling operation of said first interface circuit and said second interface circuit and said parity assist logic circuit via said first high speed local bus independent of said second high speed local bus, wherein said processor is simultaneously operable with said parity assist logic circuit.

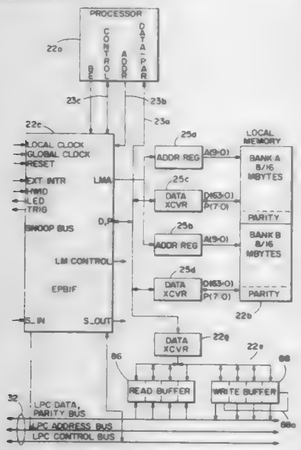
VOL 1198 ISS 4 MY 27 1997 UMI

5,634,034

ENHANCED PROCESSOR BUFFERED INTERFACE FOR MULTIPROCESS SYSTEMS

David J. Foster, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 917,246, Jul. 17, 1992, Pat. No. 5,485,594.
This application Jun. 1, 1995, Ser. No. 456,776
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—474 3 Claims



1. Interface apparatus for coupling to a microprocessor device, comprising:

input means for coupling to the microprocessor device for receiving address signal lines and control signal lines generated by the microprocessor device;

address decoding means, responsive to the received address signal lines, for determining if a microprocessor-generated memory access is directed to a private memory means, accessible only by the microprocessor device, or to a shared memory means that is accessible by the microprocessor device and by at least one other microprocessor device;

first output means, responsive to the address decoding means, for providing first address signal lines and first control signal lines to the private memory means in response to the microprocessor device generating a memory access to the private memory means;

second output means, responsive to the address decoding means, for providing second address signal lines and second control signal lines for coupling to the shared memory means in response to the microprocessor device generating a memory access to the shared memory means, and

control register means having bits that are settable by said microprocessor device, wherein

said first output means includes means, responsive to a state of at least one of the bits of said control register means, for selectively inserting zero, one or more wait timing states while providing the first address signal lines and the first control signal lines when accessing said private memory means; and wherein

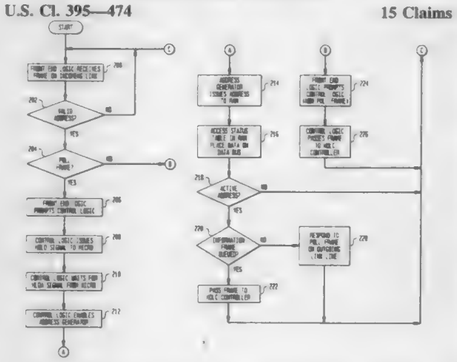
said second output means includes means, responsive to a state of at least one of the bits of said control register means, for selectively inserting zero, one or more wait timing states while providing the second address signal lines and the second control signal lines when accessing said shared memory means.

5,634,035

HDLC HARDWARE ENGINE AND SHARED MEMORY INTERFACE WITH ACCESS REQUEST/ ACKNOWLEDGEMENT CONTROL AND ADDRESSING SCHEME

Florin Gheorghiu, San Jose, and Catherine Nguyen, Milpitas, both of Calif., assignors to Siemens Business Communication Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 991,699, Dec. 16, 1992, abandoned.
This application Sep. 15, 1995, Ser. No. 528,754
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 395—474 15 Claims



1. In a data transmission system an apparatus for screening and analysis of a plurality of frames of a high level data link control (HDLC) protocol including an addressable random access memory (RAM) shared between a microprocessor and an HDLC controller, said apparatus comprising:

front end logic means, including an input port and an output port, for receiving said plurality of HDLC frames and verifying various data present in each of said plurality of frames, said data corresponding to predefined addresses and one of a plurality of frame types, with said front end logic means discarding HDLC frames having addresses differing from said predefined addresses, said plurality of frame types including poll frames, having polling data, and frames not including polling data, defining non-poll frames;

control logic means, coupled to both said front end logic and said RAM, for transmitting a bus request to said microprocessor upon sensing notification from said front end logic means of receipt of a poll frame and transmitting said non-poll frames directly to said HDLC controller;

a logic module coupled between said microprocessor and said RAM, with the logic module being operable to enable the control logic to retrieve data corresponding to a predefined address in the RAM, upon receipt of a hold acknowledge signal from said microprocessor; and

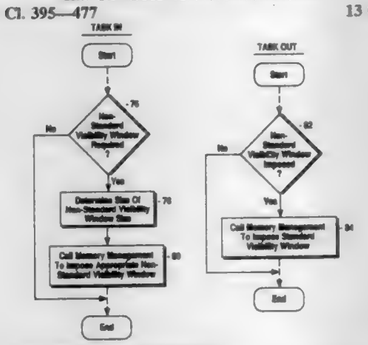
address generator means, coupled to said RAM, said control logic means and said front end logic means, for generating, in response to both a control signal received from said control logic and a frame address corresponding to a sensed HDLC frame present at said front end logic means and transmitted therefrom, an address corresponding to both said frame address and an address location in said RAM, with said address location having information stored therein indicative of a status of said poll frame, wherein said control logic means interprets said status and passes said poll frame to said HDLC controller if an information frame is queued for that address, otherwise said poll frame is passed to said front end logic means and output via said output port.

5,634,036

METHOD AND APPARATUS FOR PROTECTING MEMORY WITH VARIABLE VISIBILITY OF SEGMENT DESCRIPTOR TABLES

Clifton W. Laney, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 27, 1995, Ser. No. 394,843
Int. Cl.[6] G06F *12/00;12/02;9/26;9/34*
U.S. Cl. 395—477 13 Claims



1. A computer system comprising:

a) random-access-memory (RAM) for storing loaded program modules and associated data, including an operating system load module and a segment descriptor table,

the segment descriptor table when created having a first and a second plurality of segment descriptors describing memory segments of a first and a second memory type of the computer system,

the operating system having memory management functions that include a visibility window function for dynamically superimposing a first and a second visibility window over the content of the segment descriptor table, exposing the first plurality of segment descriptors for tasks being executed with a first memory configuration, and the first as well as at least a portion Of the second plurality of segment descriptors for tasks being executed with a second memory configuration, during operation;

b) a processor coupled to the memory for executing tasks; and

c) non-volatile storage coupled to the processor and memory storing program objects from which the loaded program modules are created, including the operating system.

5,634,037

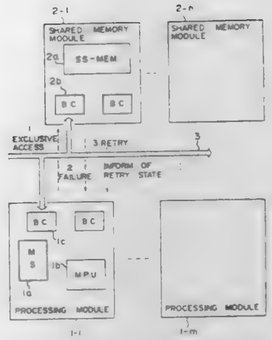
MULTIPROCESSOR SYSTEM HAVING A SHARED MEMORY WITH EXCLUSIVE ACCESS FOR A REQUESTING PROCESSOR WHICH IS MAINTAINED UNTIL NORMAL COMPLETION OF A PROCESS AND FOR RETRYING THE PROCESS WHEN NOT NORMALLY COMPLETED

Takatsugu Sasaki; Akira Kabemoto; Hirohide Sugahara, and Hajime Takahashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 24, 1994, Ser. No. 200,964
Claims priority, application Japan, Feb. 26, 1993, 5-038000
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—479 10 Claims

1. An exclusive control system provided in a system having a memory module and a plurality of processing modules sharing said memory module, each of said plurality of processing modules exclusively accessing said memory module while prohibiting other processing modules from accessing said memory module, said exclusive control system comprising:

determination means for determining whether or not a process executed in response to an access request from a processing module, among said plurality of processing modules, is normally completed in said memory module; and



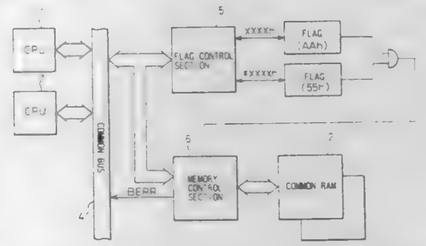
retry means, responsive to a determination by said determination means that the process executed in response to the access request is not normally completed, for retrying the process while maintaining a state in which other processing modules are prohibited from accessing said memory module.

5,634,038

COMMON MEMORY PROTECTION SYSTEM IN A MULTIPROCESSOR CONFIGURATION USING SEMAPHORE-FLAGS STORED AT COMPLEMENTARY ADDRESSES FOR ENABLING ACCESS TO THE MEMORY

Hiroyuki Saitoh, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 13, 1994, Ser. No. 322,345
Claims priority, application Japan, Mar. 17, 1994, 6-047484
Int. Cl.[6] G06F *12/16*
U.S. Cl. 395—490 6 Claims



1. A common memory protection system in an apparatus having a multiprocessor configuration in which a plurality of CPUs are connected to a common RAM via a common bus, the system comprising:

a flag control section for outputting two semaphore-flag signals showing each semaphore-flag condition when said CPU checks two semaphore-flags by accessing the corresponding two semaphore-flag addresses that have the complementary address values to each other; and

a memory control section that allows a CPU of a plurality of CPUs' to access any address in said common RAM via said common bus when receiving said semaphore-flag signals, both of which indicate that access to said common RAM is enabled, from said flag control section.

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5,634,039

METHOD AND MANAGEMENT SYSTEM FOR CONTROLLING, MONITORING AND REGULATING COMPLEX INDUSTRIAL PROCESSES IN PARTICULAR, SUCH AS IN A NUCLEAR POWER PLANT

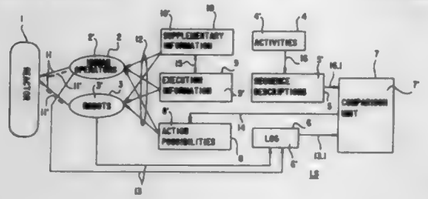
Lothar Simon, Wagenseilstr. 12, D-90482 Nürnberg, and Jochen Erdmann, Oberasbach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, and Lothar Simon, Nurernberg, both of Germany

Filed Feb. 1, 1995, Ser. No. 381,736

Claims priority, application Germany, Aug. 1, 1992, 42 25 469.8; Dec. 1, 1992, 42 40 242.5

Int. Cl.[6] G06F *17/00;* **G05B** *19/00*

U.S. Cl. 395—500 **25 Claims**



1. A method for controlling, monitoring and regulating processes in industrial plants, which comprises the steps of:

a) interacting at least one of robots provided as a computation program and human operators, with sensors and actuators being coupled to a process and procuring process information for influencing the process;

b) collecting information about how values of process parameters are developed and what actions are triggered by the robots and the human operators in a log, by recording both a history of plant performance and an action history in the log;

c) making up the log from events being created by noting down actions;

d) logically interlinking sets of conditions each pointing to a presence of one type of event in the log or defining such a type of event, by means of the situation types contained in sequence descriptions;

e) checking for the presence of an event type described by each condition of a situation type in the log, and using the logical linkages of the conditions to automatically make statements as to the possibility of corresponding actions in the current situation predetermined by the log, with the comparison unit;

f) supplying a set of specifications of activities:

f1) indicating what actions in what types of situations can be triggered, for referring the types both to the process history and the action history, and

f2) each specification containing one set of references to information on executing the actions being directed to at least one of the robots and the human operators; and

g) linking supplementary background information to execution information in such a way that at least one of the robots and the human operators reaches the background information while taking the execution information as a point of departure, and

h) comparing the types of situations with a current situation indicated by the applicable log, ascertaining if the current situation corresponds to a type of situation, and deriving action possibilities therefrom, in a comparison unit.

5,634,040

DATA COMMUNICATION APPARATUS AND METHOD HAVING CONCURRENT IMAGE OVERLAY FUNCTION

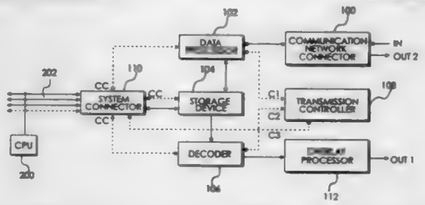
Sung-min Her; Yang-hun Choi; Dong-soo Choi, and In Kim, all of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 18, 1995, Ser. No. 574,346

Claims priority, application Rep. of Korea, Dec. 19, 1994, 94.35075

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—502 **15 Claims**



1. A data communication card installed in bus slot of a computer for performing both a data communication function and an image overlay function, comprising:

a network connector connected to a network terminal, for enabling transmission of data to a network;

a system connector connected to a central processing unit of the computer, for enabling transmission of data to and from the computer;

a decoder for decompressing compressed motion picture data in response to a computer control signal,

a transmission controller for generating a first control signal, a second control signal, and third control signal in response to computer control signals generated by the central processing unit of the computer;

a data processor response to said computer control signal and communicable with said network connector, for processing data received from the network in an asynchronous transfer mode for storage, and for processing stored data to be delivered to said network connector in the asynchronous transfer mode in response;

a shared storage device for storing data transferred between respective ones of said data processor, said decoder, and said system connector in dependance upon said first control signal, said second control signal, and said third control signal; and

an overlay processor for processing said decompressed motion picture data from said decoder and generating overlays for display by a video monitor.

5,634,041

RATIONALLY CLOCKED COMMUNICATION INTERFACE

Gill A. Pratt, Wellesley, and Stephen A. Ward, Chestnut Hill, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

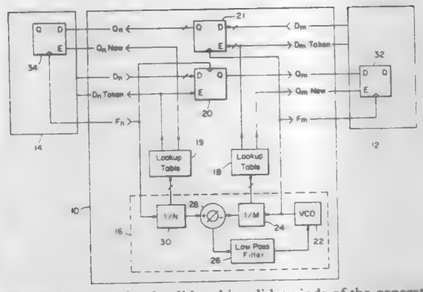
Filed Aug. 12, 1992, Ser. No. 929,879

Int. Cl.[6] G06F *1/12*

U.S. Cl. 395—553 **14 Claims**

12. A method for arranging communication between synchronous systems, each having clocks of unequal clock frequency, comprising the steps of:

synchronizing the clocks together to generate one clock from the other;



identifying predefined valid and invalid periods of the generated clock for communicating data between the systems, the valid and invalid periods being predefined according to a predetermined relationship between the synchronized clocks;

communicating data between the systems for valid periods; and

inhibiting communication between the systems for invalid periods.

5,634,042

DATA TRANSFER APPARATUS THAT COMPENSATES FOR DIFFERENTIAL SIGNAL DELAYS

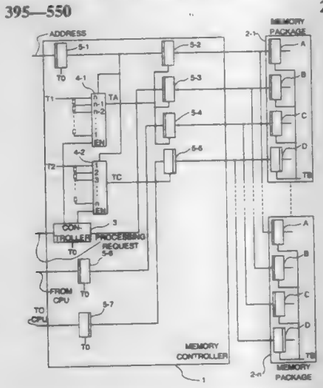
Kenji Kashiwagi, Minamiashigara; Sigeru Kaneko, Hadano, and Toshitsugu Takekuma, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo

Filed Dec. 28, 1994, Ser. No. 365,005

Claims priority, application Japan, Dec. 28, 1993, 5-334614

Int. Cl.[6] G06F *1/06;13/00*

U.S. Cl. 395—550 **23 Claims**



1. A data transfer apparatus for transferring data over a signal line to a plurality of data transfer destinations, comprising:

clock generating means for generating and outputting a plurality of clocks having different phases with respect to each other;

clock selecting means for receiving said plurality of clocks generated by said clock generating means, and for selecting one of said clocks for output therefrom; and

data sending means for receiving the selected clock and for sending the data according to the selected clock to one of said plurality of data transfer destinations.

5,634,043

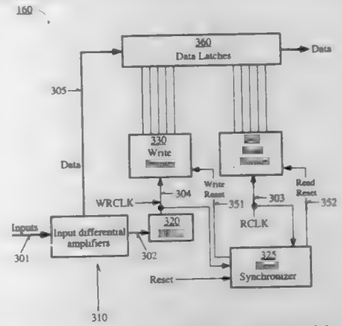
MICROPROCESSOR POINT-TO-POINT COMMUNICATION

Keith-Michael W. Self, Aloha; Craig B. Peterson; James A. Sutton, II, both of Portland; John A. Urbanski, Hillsboro; George W. Cox, Portland; Linda J. Rankin; David W. Archer, both of Beaverton, and Shekhar Y. Borkar, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 25, 1994, Ser. No. 295,556

Int. Cl.[6] G06F *1/10;1/12*

U.S. Cl. 395—558 **32 Claims**



1. A phase-tolerant communication scheme, comprising:

a first computing resource generating a first clock signal;

a first clock line coupled to the first computing resource for communicating the first clock signal from the first computing resource;

a first plurality of data lines coupled to the first computing resource for communicating data from the first computing resource; and

a second computing resource coupled to the first plurality of data lines and to the first clock line, the second computing resource generating a second clock signal with an unknown phase relationship to the first clock signal, the second computing resource comprising:

a first buffer coupled to the first plurality of data lines,

a first control circuit coupled to the first clock line that generates a first delayed clock signal in response to the first clock signal,

a first write pointer circuit coupled to the first clock line that generates a first write pointer in response to the first clock signal, and

a first read pointer circuit coupled to the first control circuit that generates a first read pointer in response to the first delayed clock signal;

wherein data from the first computing resource is stored in the first buffer according to the first write pointer and data is read from the first buffer according to the first read pointer.

5,634,044

CHARGE COUPLED DEVICE CONTROL MODULE

Young W. Lee, Orange; Sungwon Moh, Wilton, and Arno Muller, Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 29, 1994, Ser. No. 282,246

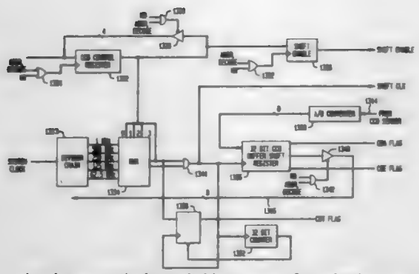
Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—559 **7 Claims**

1. An improved control system for controlling the operation of a charge coupled device, said operation of said charge coupled device being responsive to a shift clock signal of a given frequency and a shift enable signal, wherein said improvement comprises:

said control system having means for generating a plurality of shift clock signals, each of said shift clock signals having a different frequency, register means for storing a plurality of control bits corresponding to said plurality of shift clock

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signals, respectively, switching means for selecting one of said shift clock signals in response to the state of said control bits and directing said selected shift clock signal to said charge coupled device, and means for generating said shift enable signal and directing said shift enable signal to said charge coupled device concurrently with the presence of said selected shift clock signal.

5,634,045

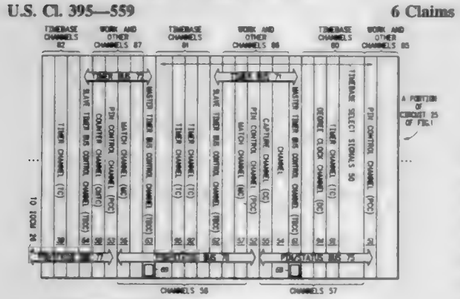
INTEGRATED CIRCUIT INPUT/OUTPUT PROCESSOR HAVING IMPROVED TIMER CAPABILITY

Vernon B. Goler, Austin; Gary L. Miller, Round Rock, and David Rivera, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1995, Ser. No. 555,456

Int. Cl.[6] G06F *13/40; 1/04*

U.S. Cl. 395—559 **6 Claims**



1. An apparatus comprising:

a first timer bus;

a second timer bus;

a plurality of timebase select signals;

a first timebase channel for providing a first timebase value, said first timebase channel being coupled to said plurality of timebase select signals;

a second timebase channel for providing a second timebase value, said second timebase channel being coupled to said plurality of timebase select signals;

a first timer bus control channel corresponding to said first timebase channel, the first timer bus control channel being used to select one of said first and second timebase channels, and if said first timebase channel is selected, for driving said first timer bus with the first timebase value, said first timer bus control channel being coupled to said first timer bus and to said plurality of timebase select signals;

a second timer bus control channel corresponding to said second timebase channel, the second timer bus control channel being used to drive said first timer bus with the second timebase value if said second timebase channel is selected, said second timer bus control channel being coupled to said first timer bus and to said plurality of timebase select signals;

a pin/status bus for providing pin and status information;

a pin control channel for controlling transfer of the pin and status information on said pin/status bus;

a first work channel, coupled to said first timer bus for receiving the first timebase value and coupled to said pin/status bus for receiving the pin and status information; and

a second work channel, coupled to said second timer bus for receiving a third timebase value and coupled to said pin/status bus for receiving the pin and status information.

5,634,046

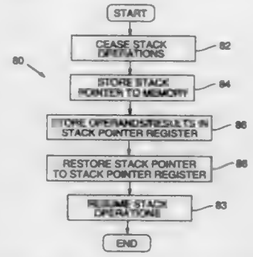
GENERAL PURPOSE USE OF A STACK POINTER REGISTER

Amit Chatterjee, Redmond; Stuart R. Patrick, Issaquah; Ralph A. Lipe, Woodinville; David N. Weise, and Raymond E. Endres, both of Kirkland, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Sep. 30, 1994, Ser. No. 316,632

Int. Cl.[6] G06F *9/06*

U.S. Cl. 395—568 **13 Claims**



2. In a processor having a stack pointer register and providing a plurality of privilege levels having separately allocated stack memory in a protected mode of operation, the processor operative to store a return address at a memory location indicated by a stack pointer in the stack pointer register within the stack memory allocated to a current privilege level on receiving an interrupt and further operative to switch the stack pointer in the stack pointer register when switching privilege levels, a method for general purpose use of the stack pointer register, comprising:

setting up an interrupt handler to execute at a first privilege level on the processor;

executing an application program comprising a plurality of instructions at a second privilege level other than the first privilege level on the processor, wherein executing the instructions of the application program comprises:

storing a stack pointer contained in the stack pointer register to a memory;

restoring the stack pointer from the memory to the stack pointer register; and

between the steps of storing and restoring the stack pointer, performing one or more operations for storing data other than the stack pointer in the stack pointer register, the operations excluding any stack operations;

whereby on receiving an interrupt in executing the application program between the steps of storing and restoring the stack pointer, the processor switches to the first privilege level and stores a return address of the application program on the stack allocated to the first privilege level, the method thereby avoiding corruption of the stack allocated to the second privilege level when the stack pointer register stores data other than the stack pointer and an interrupt occurs.

5,634,047

METHOD FOR EXECUTING BRANCH INSTRUCTIONS BY PROCESSING LOOP END CONDITIONS IN A SECOND PROCESSOR

Klaus J. Getzlaff, Schoenaich; Udo Wille, Holzgerlingen; Brigitte Roethe, Boeblingen; Wilhelm Haller, Remhshalden, and Hans-Werner Tast, Weil im Schoenbush, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

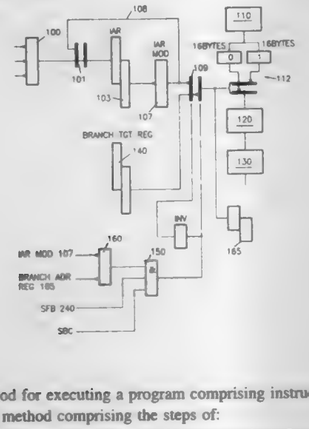
Continuation of Ser. No. 234,780, Apr. 28, 1994, abandoned.

This application Jun. 10, 1996, Ser. No. 699,074

Claims priority, application European Pat. Off., May 3, 1993, 931071104

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—588 **15 Claims**



1. Method for executing a program comprising instructions in a loop, said method comprising the steps of:

in a first processor, performing a first execution of said instructions and concurrently in a second processor, processing a loop end condition;

storing a branch target address in a branch target register and storing an address of a branch instruction in a branch address register, said branch target address being an address of a first instruction in the loop;

performing a subsequent execution of said instructions in said first processor, and while avoiding execution of said branch instruction, evaluation instead a branch condition in said first processor and, if the branch condition is fulfilled, detecting an end of the loop by comparing an effective address of a next instruction to be executed with contents of the stored address of the branch instruction;

passing the stored branch target address from said branch target register to said second processor for re-executing said instructions; and

executing said instructions until the branch condition is no longer fulfilled, and then addressing a next instruction outside of said loop; and wherein

said evaluating step comprises the steps of calculating an index value for the branch instruction, comparing the calculated index value with a branch condition value, and setting a successful branch indicator latch if the branch condition value is equal to the calculated index value; and said calculating step comprises the step of retrieving from an index register a previous value of the index value and adding to said previous value a value given in the branch instruction.

5,634,048

DISTRIBUTED DATABASE SYSTEM HAVING A CENTER SYSTEM WITH A LINK FILE AND A METHOD FOR RETRIEVING DATA FROM SAME

Tadamitsu Ryu, Yokohama; Toshio Takahara, Kawasaki; Shingo Hirono, Tokyo; Tohru Matsumoto; Gen Kakehi, both of Yokohama; Yoshio Mogi, Tochigi; Takanori Fukatsu, Kawasaki; Masao Tomita, Omiya, and Takashi Ohshiro, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

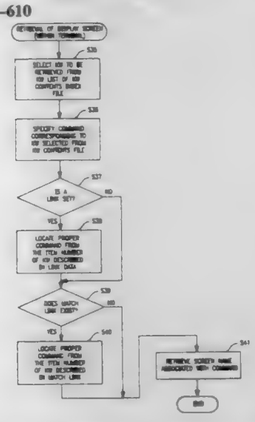
Continuation of Ser. No. 700,161, May 14, 1991, abandoned.

This application Mar. 13, 1995, Ser. No. 402,725

Claims priority, application Japan, Sep. 14, 1989, 1-239439; Oct. 12, 1989, 1-265571; Dec. 26, 1989, 1-337033; Dec. 27, 1989, 1-339368

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—610 **17 Claims**



1. A data retrieval method in a distributed database system comprising the steps of:

(a) associating commands defining attributes of database data with at least one keyword in each of a plurality of terminals connected to a center system;

(b) managing command names to which keywords are assigned in units of keywords in each of the terminals in dependence upon a keyword contents file in each of the terminals;

(c) managing in the center system a terminal number of terminals in which keywords are registered in units of keywords in dependence upon a keyword link file in the center system; and

(d) retrieving data in one of the terminals when a keyword is specified by locating a command name associated with a specified keyword in dependence upon one of a keyword contents file and a command name associated with a specified keyword located in the keyword contents file in the terminal specified by the terminal number located using the keyword link file.

5,634,049

METHOD AND APPARATUS FOR CONSTRUCTING A NEW DATABASE FROM OVERLAPPING DATABASES

John R. Pitkin, 18 Fayette St., Cambridge, Mass. 02139

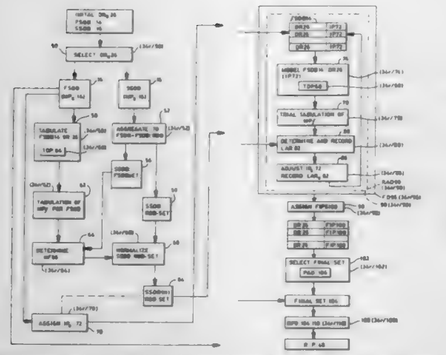
Filed Mar. 16, 1995, Ser. No. 405,815

Int. Cl.[6] G00F *7/00*

U.S. Cl. 395—613 **2 Claims**

1. A method for use in a data processing system for constructing a resultant database from a first database and a second database wherein data to appear in the resultant database is present in modified form in the first and second databases containing data records, the data processing system including a memory for storing the first, second and resulting databases, a processor for performing operations upon data records of the first, second and resulting

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databases and a plurality of procedures for controlling the operations of the processor, the method comprising the steps of:

selecting from the first database at least one construction property to be used in constructing the resultant database

wherein a construction property is a type of information represented in partly or wholly implicit form by values stored in the data records of the first database and in explicit form in the values stored second database and

wherein there is partial congruence of the at least one construction property between the first, second and resultant databases,

selecting from the first and second databases at least two modeling properties

wherein a modeling property is a type of information represented by values stored in the data records of the first and second databases and

wherein there is partial congruence of the at least two modeling properties between the first, second and resultant databases,

by operation of the processor operating under control of an inclusion probability procedure, assigning an inclusion probability to each of the data records of the first database containing the selected construction and modeling properties,

by operation of the processor operating under control of a modeling procedure,

constructing the modeling properties of the data records of second database containing the selected modeling properties,

modeling the modeling properties of the data records of the first database containing the selected modeling properties against the constructed modeling properties of the data records of the second database containing the selected modeling properties, and

comparing the modeled modeling properties of the data records of the first database and the constructed modeling properties of the second database, and

by operation of the processor operating under control of the inclusion probability procedure, adjusting the inclusion probability of each one of the data records of the first database containing the selected modeling properties in accordance with the comparison of the modeled modeling properties of the data records of the first database and the constructed modeling properties of the second database until an acceptable match is achieved between all the modeled modeling properties of the data records of the first and the constructed modeling properties of the second database, and

by operation of the processor operating under control of a resultant data record construction procedure, constructing data records of the resultant database from the finally selected data records of the first database using a probabilistic assignment operation in accordance with the final inclusion probabilities assigned to the plurality of data records of the first database to select the data records of the first database to be used in construction of the resultant database.

5,634,050

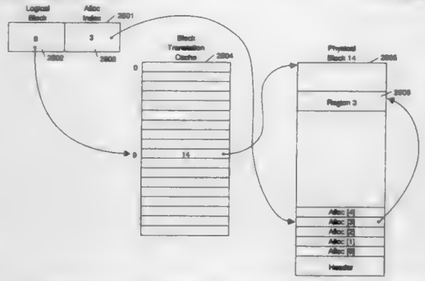
METHOD AND SYSTEM FOR FILE SYSTEM MANAGEMENT USING A FLASH-ERASABLE PROGRAMMABLE, READ-ONLY MEMORY

William J. Krueger, Redmond, and Sriram Rajagopalan, Bellevue, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 828,763, Jan. 29, 1992. This application Jun. 7, 1995, Ser. No. 473,763

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—616 **45 Claims**



1. A block-erasable, write-once, multiple-read memory device, the memory device having one or more blocks, comprising:

a data region area in each block, the data region area divided into a plurality of data regions for storing data; and

a block structure stored in each block, the block structure having a header and an allocation array, the header containing block-specific information, the allocation array containing an entry corresponding to each data region, each entry containing information relating to the corresponding data region.

5,634,051

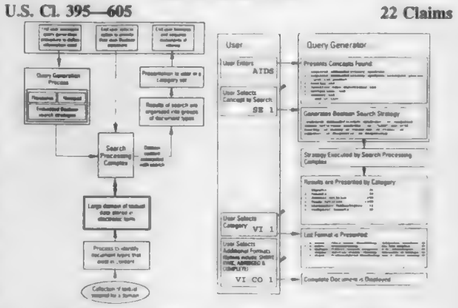
INFORMATION MANAGEMENT SYSTEM

William K. Thomson, Spring Valley, Ohio, assignor to Teltech Resource Network Corporation, Minneapolis, Minn.

Continuation of Ser. No. 144,767, Oct. 28, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 585,383

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—605 **22 Claims**



1. An information storage, searching and retrieval system for large domain archived data of various types comprising:

means for storing a large domain of data contained in multiple source records, at least some of the source records being comprised of individual documents of multiple document types;

means for searching at least a substantial portion of such data based on a search query to identify documents of multiple types responsive to the query; and

means for categorizing documents responsive to the query based on document type, including means for generating a summary of the number of documents responsive to the query which fall within various predetermined categories of document types.

5,634,052

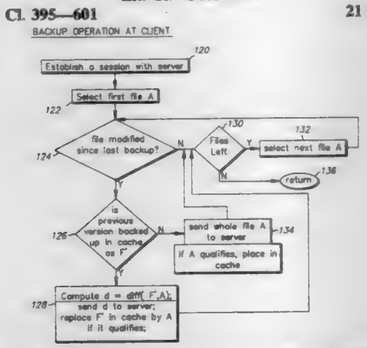
SYSTEM FOR REDUCING STORAGE REQUIREMENTS AND TRANSMISSION LOADS IN A BACKUP SUBSYSTEM IN CLIENT-SERVER ENVIRONMENT BY TRANSMITTING ONLY DELTA FILES FROM CLIENT TO SERVER

Robert J. T. Morris, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1994, Ser. No. 328,633

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—601 **21 Claims**



1. A method for reducing storage requirements and transmission loads in a client-server environment having a client and a backup subsystem, the backup subsystem comprising a backup server, a server backup program, a storage medium, and a copy of a versioned sequence of a file stored in the storage medium, said versioned sequence comprising a base version of said file and predetermined number of delta files, the client having a copy of the base version of said file stored in a client storage medium, the client and the server are connected to each other by a communication link, comprising the steps of:

establishing a backup session between the client and the backup server;

detecting a changed version of said file at the client;

differencing, using the client, the changed version of said file and the base version of said file at the client to create a delta file; and

transmitting said delta file, using said communication link, to the backup subsystem.

5,634,053

FEDERATED INFORMATION MANAGEMENT (FIM) SYSTEM AND METHOD FOR PROVIDING DATA SITE FILTERING AND TRANSLATION FOR HETEROGENEOUS DATABASES

William B. Noble, Santa Monica; Bhadra K. Patel, Anaheim, and Jenny K. Wang, Cerritos, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

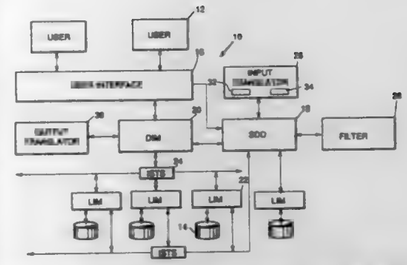
Filed Aug. 29, 1995, Ser. No. 521,340

Int. Cl.[6] G06F *17/30;15/16*

U.S. Cl. 395—604 **16 Claims**

1. A database controller for integrating data from a plurality of interconnected local databases to provide users with access to a virtual database, comprising:

a user interface for generating a global query to search said virtual data base, which has an associated global format, said global query including at least one data field from a set of commonly used data fields whose values are represented in an input format;



a smart data dictionary (SDD) that contains configuration data for each of said local databases including respective local formats for each of said commonly used data fields;

a selector for selecting the input format for generating the global query from one of said global and local formats;

an input translator that converts the value of said data field in said global query into local values in the respective local formats;

a data information manager (DIM) that generates local queries including said local values for said data field in response to said global query and in accordance with the respective configuration data;

a plurality of local information managers (LIMs) that execute the local queries to search for and retrieve from the respective local databases data that is associated with the local values of said data field, said LIMs passing the data back to the DIM where it is combined to present the requesting user with an integrated response; and

an output translator that converts the data passed back from said LIMs from their respective local formats into said input format so that the data can be combined to present the user with the integrated response.

5,634,054

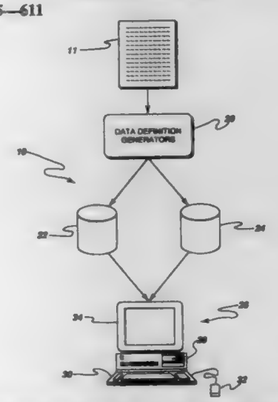
DOCUMENT-BASED DATA DEFINITION GENERATOR

Brion D. Sarachan, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 215,531, Mar. 22, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 503,296

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—611 **8 Claims**



1. A document-based data definition generator, comprising:

means for receiving a document-based data model having a plurality of tables located therein, each of the plurality of tables containing information describing an object, the information describing attributes of the object and their various characteristics, each table having a title, headings, and rows of

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data for each heading describing the characteristics of the attributes; means for locating a table within the document-based data model;

means for initializing a schema definition for the located table, the schema definition defining the attributes and the characteristics of the object;

means for identifying the table title and initializing an entity definition for the defined schema, the entity definition describing the object embodied in the table;

means for interpreting the attributes and information describing the various characteristics of the attributes listed in each table heading and table row;

means for adding the attributes and information in each table row; and

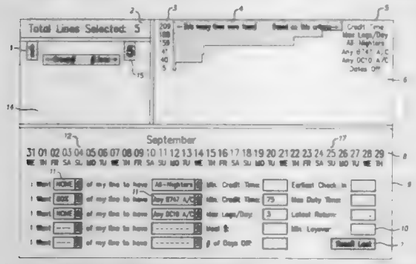
means for generating a data definition for the information in the table according to the defined schema, entity, and attributes.

5,634,055

METHOD FOR SELECTING ASSIGNMENTS

John C. Barnewall, Parker, Colo., and Walter D. Jourdan, Jr., Half Moon Bay, Calif., assignors to BidPlus, Inc., Las Vegas, Nev.

Filed Sep. 27, 1994, Ser. No. 313,006
Int. Cl.[6] G06F *17/30;17/21*
U.S. Cl. 395—614 **12 Claims**



1. A method for allowing employees to select and rank their preferred job assignments, comprising:

(a) creating a computer readable database with a record for each possible assignment, each record including more than six data elements which data elements each specify a characteristic of the assignment;

(b) receiving input from an employee at a computer terminal specifying a first set of criteria, searching the database for a first group of records whose data elements meet all the criteria, copying the first group of records to a memory;

(c) displaying to the employee information showing the number of records in the first group;

(d) receiving input from the employee at the computer terminal specifying a second set of criteria, searching the database for qualifying records whose data elements meet all the criteria, comparing the records to those already in the memory, and copying to the memory, as a second group of records, those qualifying records which are not already in the memory.

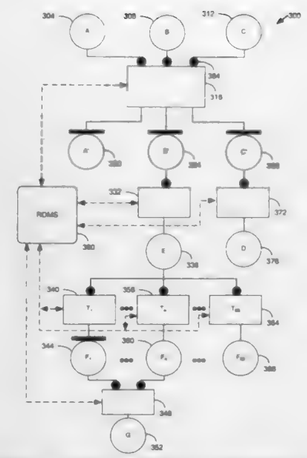
5,634,056

RUN TIME DEPENDENCY MANAGEMENT FACILITY FOR CONTROLLING CHANGE PROPAGATION UTILIZING RELATIONSHIP GRAPH

Andrea Casotto, Alameda, Calif., assignor to Runtime Design Automation, Sunnyvale, Calif.

Filed Oct. 6, 1995, Ser. No. 540,392
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—619 **19 Claims**

14. A computer readable medium containing program instructions for:



a) providing a run-time dependency management facility on a computer system, said run-time dependency management facility being effective to generate under computer control a graph indicating relationships among interrelated data files and software tools resident on the computer system;

b) determining under computer control that said change to data in at least one of said data files is not a significant change, in response to said changing; and

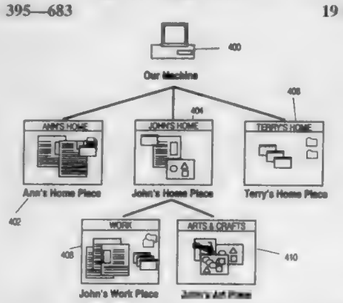
c) activating under computer control at least one propagation barrier in response to said determination, said propagation barrier being effective to prevent computer-implemented propagation of said change in said data file through at least one data file which is interrelated with said changed data file.

5,634,057

PLACE OBJECT DISPLAY SYSTEM HAVING PLACE OBJECTS SELECTED IN RESPONSE TO A USER IDENTIFIER

Robert D. Dickinson, Hayward, Calif., assignor to Object Technology Licensing Corp., Cupertino, Calif.

Continuation of Ser. No. 71,837, Jun. 3, 1993, abandoned.
This application Dec. 18, 1995, Ser. No. 573,734
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—683 **19 Claims**



1. In a computer system having a memory, processing means coupled to the memory, entry means coupled to the processing means, and a display device coupled to the processing means, a method comprising the steps of:

(a) storing in the memory a person class containing profile information for each user of the computer system;

(b) storing a plurality of user selectable place classes in the memory, each of the plurality of place classes having view data for generating a display representing a different predetermined physical location, workspace graphic data and a data structure for storing user profile information;

(c) receiving a user identifier associated with a user from the entry means in response to a user log-in request graphic generated by the processing means and displayed on the display device;

(d) instantiating a person object from the person class for the user with the user identifier;

(e) selecting one of the plurality of pre-defined place classes based on user profile information in the person object and instantiating a place object from the selected place class;

(f) storing profile information specific to the user in a data structure of the type specified by the place class from which the place object is instantiated;

(g) displaying on the display device the place object view data to generate a view of the predetermined physical location;

(h) displaying the workspace graphic associated with the predetermined physical location on the display device; and

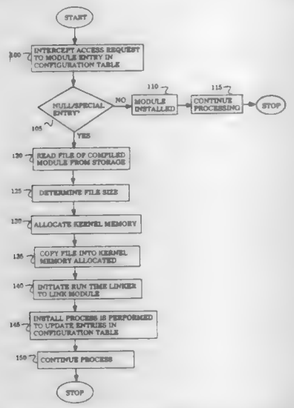
(i) displaying, in the workspace, workspace graphic data representing a first workspace object in the one pre-defined place class selected based on user profile information in the person object.

5,634,058

DYNAMICALLY CONFIGURABLE KERNEL

Tom Allen, Marlborough; Joseph E. Provino, Cambridge, and William F. Pittore, Lexington, all of Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 893,337, Jun. 3, 1992, abandoned.
This application Oct. 11, 1995, Ser. No. 540,875
Int. Cl.[6] G06F *9/445*
U.S. Cl. 395—712 **18 Claims**



13. In a computer system comprising resources such as a Central Processing Unit (CPU), memory and input/output means, an operating system which executes processes and utilizes the resources, the operating system comprising at least one module loaded into operating system memory and installed as part of the operating system, a process for dynamically configuring the operating system by loading the modules into operating system memory and installing the loaded modules on an as needed basis comprising the steps of:

when a requesting process issues a request to the operating system to access a requested module;

a module subsystem intercepting the request to access the requested module such that the request is temporarily not executed by the operating system, and

determining if the requested module has been loaded and installed into the operating system by determining if a module configuration table stored in operating system memory contains an entry for the requested module having a value indicative that the requested module has been loaded into the operating system memory and installed;

if the module has not been loaded into the operating system memory and installed into the operating system, loading the module comprising the steps of;

copying compiled module code of the requested module into the operating system memory such that the requested module is a loaded module, and

resolving all references between the loaded module and the at least one loaded and installed module,

installing the loaded module by providing references to the loaded module necessary for requests for access thereby indicating that the requested module has been loaded and installed, wherein the loaded module is now accessible, and

permitting the intercepted request for access to process; and

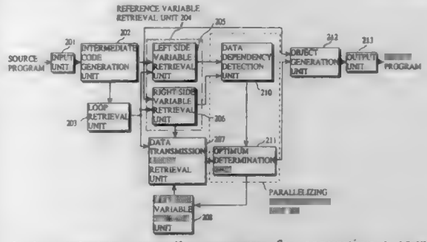
if the module has been loaded into the operating system memory and installed into the operating system, immediately executing the request for access to execute.

5,634,059

DEVICE AND METHOD FOR PARALLELIZING COMPILATION OPTIMIZING DATA TRANSMISSION

Koji Zaiki, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1994, Ser. No. 322,609
Claims priority, application Japan, Oct. 13, 1993, 5-255609
Int. Cl.[6] G06F *9/30;9/45*
U.S. Cl. 395—706 **20 Claims**



1. An optimizing compiler apparatus for converting a source program into an object program for use by a parallel computer, which optimizes a number of data transmissions between processing elements for a parallel computer made up of a plurality of processing elements, comprising:

intermediate code generation means for converting a source program into intermediate code;

loop retrieval means for retrieving loops from the intermediate code;

variable retrieval means for retrieving array variables on the left side and on the right side of the equation in each of the loops;

data dependency detection means for detecting whether there is data dependency which extends over iterations of the loop, based on the retrieved left side variable and right side variable;

left side variable storage means for storing information relating to array variables on a left side of an equation, being the array variables which should be distributed to every programming element for a program part coming before a loop, for a loop determined to have no data dependency;

data transmission count calculation means for calculating a data transmissions count generated when parallelizing the loop, based on the information for each right side variable, for the loop determined to have no data dependency;

parallelization determination means for determining a loop to be parallelized as a loop with the lowest data transmission count; and

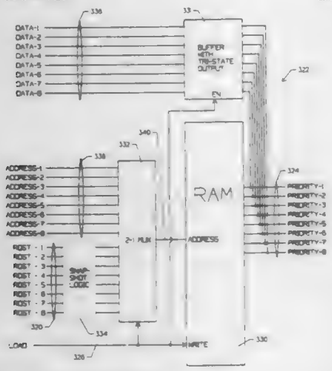
code generation means for generating the object code which parallelizes the determined loop.

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5,634,060
METHOD AND APPARATUS FOR HIGH-SPEED EFFICIENT BI-DIRECTIONAL COMMUNICATION BETWEEN MULTIPLE PROCESSOR OVER A COMMON BUS

Kevin F. Jennings, Novi, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 9, 1994, Ser. No. 287,878
Int. Cl.[6] G06F *13/362*
U.S. Cl. 395—729 **28 Claims**



13. An apparatus comprising:

a. shared resource;

b. a plurality of users coupled to said shared resource wherein said plurality of users share the shared resource; a plurality of resource request lines being provided by said plurality of users wherein each of said plurality of users provides at least one of said plurality of resource request lines; each of the plurality of users providing a plurality of information bits on corresponding ones of the plurality of resource request lines when the user desires access to said shared resource; the information bits having encoded therein the urgency of a corresponding one of the shared resource requests; and

c. a priority controller coupled to the plurality of resource request lines for granting priority to one of said plurality of users based upon the information bits received from the plurality of users.

5,634,061
INSTRUCTION DECODER UTILIZING A LOW POWER PLA THAT POWERS UP BOTH AND AND OR PLANES ONLY WHEN SUCCESSFUL INSTRUCTION FETCH SIGNAL IS PROVIDED

Atsushi Horie, Niza, and Tohru Utsumi, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 703,092, May 22, 1991, abandoned. This application Apr. 25, 1994, Ser. No. 232,405
Claims priority, application Japan, May 24, 1990, 2-132498; Apr. 26, 1991, 3-097579
Int. Cl.[6] G06F *11/32*
U.S. Cl. 395—750 **6 Claims**

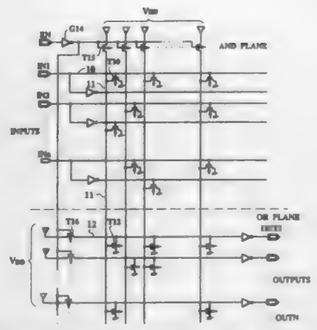
1. A data processing system, comprising:

instruction fetch means for executing a fetch operation to fetch an instruction to be executed and transmitting an enable signal of a first level indicating that the fetch operation has completed successfully and for transmitting the enable signal of a second level indicating that the fetch operation has failed;

a programmable logic array (PLA) for decoding the instruction transferred from the instruction fetch means,

said PLA comprising:

an AND plane having a plurality of input lines and a plurality of product term lines crossing the input lines;



an OR plane having the product term lines and a plurality of output lines crossing the product term lines;

a power source providing electrical power to the AND and OR planes; and

connection control means comprising a first control means and a second control means, the first control means being connected to the plurality of the product term lines in the AND plane, the second control means being connected to the plurality of the output lines in the OR plane, for controlling the supply of the electrical power to the AND and OR planes;

first register means for storing the enable signal of the first level transferred from the instruction fetch means indicating the successful completion of the fetch operation executed by the instruction fetch means and for transmitting the enable signal of the first level to the connection control means in the PLA; and

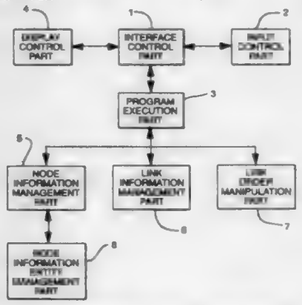
information processing means for executing an execution operation to execute the instruction decoded by the PLA,

wherein the connection control means supplies the electrical power from the power source to the AND plane and the OR plane to enter the PLA into an active state only when the PLA receives the enable signal of the first level transmitted from the first register means.

5,634,062
SYSTEM FOR MANAGING HYPERTEXT NODE INFORMATION AND LINK INFORMATION

Takeshi Shimizu; Takahiro Saito, and Osamu Nakamura, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1994, Ser. No. 325,142
Claims priority, application Japan, Oct. 27, 1993, 5-289761
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—762 **6 Claims**



1. A system for managing hypertext information composed of nodes holding information and of link information for each node defining the relations between each said node and other nodes so as to display the information held by each of said nodes in accordance with said link information, said system comprising:

node information storage means for managing said nodes and for storing the information held by said nodes;

link information management means for arranging said link information into an order defining relations between said nodes;

link order manipulation means for manipulating the order of said link information; and

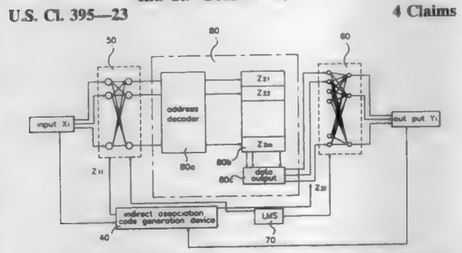
display control means for displaying said information held by the nodes in said node information storage means successively in accordance with the order of said link information;

wherein said link information management means stores individual items of said link information in a data constitution that may be put into a desired order, and wherein said link order manipulation means references, adds to, deletes and switches any of the individual items of said data constitution.

5,634,063
NEURAL NETWORK AND METHOD FOR OPERATING THE SAME

Seung K. Ahn; Bo H. Wang; Seok B. Ko, and Yoon K. Lee, all of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 112,364, Aug. 27, 1993, Pat. No. 5,493,632. This application Nov. 20, 1995, Ser. No. 560,636
Claims priority, application Rep. of Korea, Aug. 28, 1992, 15553/1992; Jan. 21, 1993, 761/1993
Int. Cl.[6] G06F *15/00;15/18*
U.S. Cl. 395—23 **4 Claims**



1. A method for operating a neural network comprising an input-side single layer perceptron, an output-side single layer perceptron and a location addressable memory, said method comprising:

performing a first learning procedure of generating indirect association codes, from given input data (X_i), wherein the input data is provided as binary data, and given output data (Y_i), as first intermediate states (Z_{1i}) linearly separable with respect to said given input data (X_i) and storing said indirect association codes as addresses of said location addressable memory, wherein said first learning procedure further comprises the steps of:

(a) arranging the given binary input data (X_i) in order of dimension;

(b) dividing the given binary input data (X_i) into two groups which have leftmost bits of 0 and 1, respectively, and defining one group consisting of the input data (X_i) whose first bits are 0, and as a set (A) and the other group consisting of the input data (X_i) whose first bits are 1, as a set (B);

(c) finding all elements of said set (A) whose complements are elements of said set (B), and if there is no complement (X_i^c) to be exchanged, finding all elements of the set (B) which are complements of virtual elements obtained by varying the elements of the set (A) by one bit and then storing the binary vectors obtained by the coding as the indirect association codes to be used as the addresses of the location addressable memory while exchanging the elements one by one, until all vectors of the input data (X_i) can be distinguished from one another;

(d) transferring elements (X_i) found at step (c) and elements (X_i^c) which are the complements of the elements (X_i) to the sets (B) and (A), respectively, and assigning 0 to all elements of the set (A) and 1 to elements of the set (B), as a coding; and

(e) completing said coding, if all vectors of the input data (X_i) can be distinguished from one another by binary vectors (g_i) obtained by the coding, and if not, repeating the coding, until all vectors can be distinguished from one another, and then storing the resultant binary vectors (g_i) as the indirect association codes to be used as the addresses of the location addressable memory;

performing a second learning procedure of generating indirect association codes, from said given input data (X_i) and output data (Y_i), as second intermediate states (Z_{2i}) linearly separable with respect to the given output data (Y_i) and storing said indirect association codes as contents of the location addressable memory, said contents corresponding to said addresses, respectively;

performing a third learning procedure of training said direct associations (X_i, Z_{1i}) generated with respect to said first intermediate states (Z_{1i}) and said direct associations (Z_{2i}, Y_i) generated with respect to said second intermediate states (Z_{2i}) by a least mean square learning process in said input-side single layer perceptron and said output-side single layer perceptron, respectively;

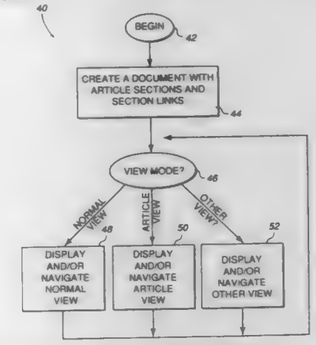
performing a first association procedure of outputting the first intermediate states (Z_{1i}) as the addresses of the location addressable memory by the input-side single layer perceptron, when the given input data (X_i) is applied to said neural network in its learned state; and

performing a second association procedure of applying, to said output-side single layer perceptron, the second intermediate states (Z_{2i}) as the contents stored in the location addressable memory and corresponding to the addresses, when the addresses are applied to the location addressable memory, so as to obtain desired outputs from the output-side single layer perceptron.

5,634,064
METHOD AND APPARATUS FOR VIEWING ELECTRONIC DOCUMENTS

John E. Warnock, Los Altos; William H. McCoy, San Francisco; Richard J. Cohn, Palo Alto, and Allan P. Padgett, Menlo Park, all of Calif., assignors to Adobe Systems Incorporated, San Jose, Calif.

Continuation of Ser. No. 304,680, Sep. 12, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 693,489
Int. Cl.[6] G06T *1/00*
U.S. Cl. 395—774 **37 Claims**



1. An electronic document viewer comprising:

a digital computer system including a digital processor, memory which includes memory storage locations accessible by said digital processor, a visual output device to generate a visual

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output derived, at least in part, from said digital processor, and an input device to generate an input that can be acted upon by said digital processor;

an electronic document stored in said memory and including at least one article, said document having a predetermined final format defining a particular appearance for said document and said article within said document, said document including article section information and section link information describing an ordering of article sections of an article such that said article sections can be accessed in a consecutive fashion;

mode means implemented on said digital computer system for determining one of a plurality of view modes including at least a normal view mode and an article view mode, wherein said view mode is selectable by a user of said digital computer system, and wherein said article view mode is a distinct, different view mode from said normal view mode;

normal view means implemented on said digital computer system for displaying at least a portion of said document on said visual output device in a normal view that displays the particular appearance of said document defined by said predetermined final format and provides document scrolling commands for scrolling the display of said document as a whole; and

article view means implemented on said digital computer system for displaying at least a portion of a selected article on said visual output device in an article view that displays the particular appearance of said selected article defined by said predetermined final format and provides article scrolling commands for the sequential viewing of consecutive article sections of said selected article based upon said section link information, said sequential article viewing being implemented only when said view mode is said article view mode, and said sequential article sections being accessed by said user entering an article scrolling command to view a consecutive article section.

5,634,065

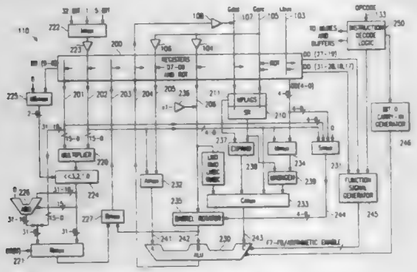
THREE INPUT ARITHMETIC LOGIC UNIT WITH CONTROLLABLE SHIFTER AND MASK GENERATOR

Karl M. Guttag, Sugar Land, Tex.; Keith Balmer, Bedford, England; Robert J. Gove, Plano, Tex.; Christopher J. Read, Houston, Tex.; Jeremiah E. Golston, Sugar Land, Tex.; Sydney W. Poland, Katy, Tex.; Nicholas Ing-Simmons, Huntingdon, and Philip Moyse, Bedford, both of England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 160,111, Nov. 30, 1993. This application Jun. 7, 1995, Ser. No. 475,134

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—716 **106 Claims**



1. A data processing apparatus comprising:

an arithmetic logic unit having first, second and third data inputs for multibit digital signals representing corresponding first, second and third input signals, and a function control input signal for receiving a function signal, said arithmetic logic unit generating at an output a multibit digital signal representing a mixed arithmetic and Boolean combination of said first, second and third inputs corresponding to said function signal, said mixed Boolean and arithmetic combination performing a Boolean function prior to performing an arithmetic function;

a first data source supplying a first multibit digital signal to said first data input of said arithmetic logic unit;

a second data source supplying a second multibit digital signal;

a shifting means having a data input connected to said second data source, a shift control input receiving a shift control signal, and a data output connected to said second data input of the arithmetic logic unit, said shifting means shifting said second multibit digital signal an amount corresponding to said shift control signal and supplying said shifted second multibit digital signal to said second data input of said arithmetic logic unit;

a third data source supplying a third multibit digital signal; and

a mask generator having a data input connected to said third data source and a data output connected to said third data input of said arithmetic logic unit, said mask generator generating a multibit digital mask corresponding to said third multibit digital signal.

5,634,066

INFORMATION PROCESSING APPARATUS

Mitsuru Takehara, and Marc Bookman, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 116,133, Sep. 2, 1993, abandoned. This application Jan. 17, 1996, Ser. No. 591,213

Claims priority, application Japan, Sep. 14, 1992, 4-271004

Int. Cl.[6] G06F *17/22*

U.S. Cl. 395—797 **12 Claims**

Language	Keyboard Entry	Character Key Transformation
UK	$	£
French	a	à â
	c	ç
	C	Ç
	e	é è ê ë
	.	; :
	o	ô ö
	u	ù û ü
German	a	ä
	A	Ä
	e	é
	o	ö
	O	Ö
	s	ß
	u	ü
	U	Ü

1. An information processing apparatus, comprising:

a plurality of manually operable character keys for inputting a set of characters of a first language;

a table for storing characters of a plurality of second languages corresponding to the individual characters of the first language;

a manually operable conversion key for converting a last one of said characters of said first language inputted by manual operation of one of the character keys into a corresponding character defined in one of said second languages corresponding to the last one of said characters of said first language;

display means for displaying characters; and

controlling means for causing said display means to display a character of the first language in response to manual operation of one of the character keys and referring, each time said conversion key is manually operated subsequently, to said table to progressively replace the character displayed on said display means with progressive ones of said corresponding characters of the second languages;

wherein the controlling means is programmable to alternately (1) cause the characters of all of said plurality of second languages to be progressively displayed responsive to said conversion key and (2) cause the characters of only one of said plurality of second languages to be progressively displayed responsive to said conversion key.

5,634,067

SYSTOLIC ARRAY PROCESSOR

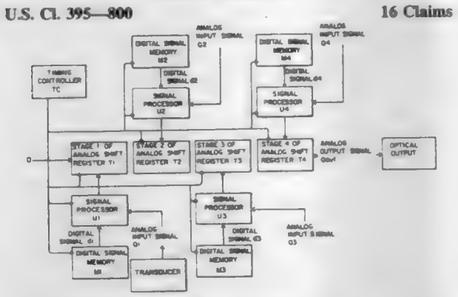
Yasuo Nagazumi, 14-20, Ootsuka 6-chome, Bunkyo-ku, Tokyo 112, Japan, assignor to G.D.S. Co., Ltd., and Yasuo Nagazumi, both of Tokyo, Japan

Filed Nov. 18, 1994, Ser. No. 344,650

Claims priority, application Japan, Nov. 18, 1993, 5-312640

Int. Cl.[6] G06F *7/52*

U.S. Cl. 395—800 **16 Claims**



1. A systolic array processor comprising:

a plurality of signal processors each of which receives one analog signal and one digital signal, performs signal processing on the analog signal and the digital signal and outputs a result of the signal processing as an analog output signal;

a shift register mesh, including at least two groups of shift registers, a first group of shift registers being arranged orthogonally to a second group of shift registers, each of the first group and second group of shift registers including plural analog shift registers arranged linearly, each analog shift register having a plurality of analog memories, each of which has an analog signal stored therein,

said shift register mesh adding the analog signal stored in each of the plurality of analog memories and an analog signal output from at least one specified signal processor among said plurality of signal processors and storing a result of each add operation in each of the plurality of analog memories, and sequentially shifting the added analog signal stored in each of the plurality of analog memories;

wherein the plurality of analog memories of each said analog shift register make up a charge transfer device; and

a timing controller for controlling the signal processing of said plurality of signal processors, the adding, and the shifting to control a shifting direction of said at least two groups of shift registers.

5,634,068

PACKET SWITCHED CACHE COHERENT MULTIPROCESSOR SYSTEM

Satyanarayana Nishtala, Cupertino; Zahir Ebrahim, Mountain View; William C. Van Loo, Palo Aito; Kevin Normoyle, San Jose; Leslie Kohn, Fremont, and Louis F. Coffin, III, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 31, 1995, Ser. No. 415,175

Int. Cl.[6] G06F *13/00*

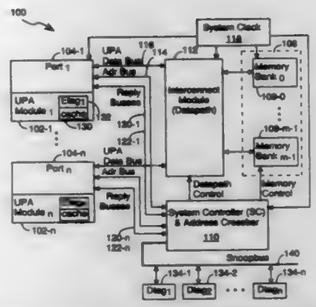
U.S. Cl. 395—800 **11 Claims**

1. A computer system, comprising:

a system controller;

a multiplicity of sub-systems coupled to the system controller;

a main memory coupled to said system controller; and



a datapath, coupled to said system controller, interconnecting said main memory and said sub-systems in accordance with interconnect control signals received from said system controller;

a plurality of said sub-systems comprising data processors, at least one of said data processors having a respective cache memory that stores multiple blocks of data and a set of master cache tags (Etags), including one Etag for each data block stored by said cache memory;

at least one of said sub-systems including a port that transmits and receives data as data packets of a fixed size equal in size to said each data block; said datapath and each said port having a datapath width smaller than said each data block;

said at least one of said data processors including a master interface, coupled to said system controller, for sending memory transaction requests to said system controller and for receiving cache access requests from said system controller corresponding to memory transaction requests by other ones of said data processors;

said system controller including memory transaction request logic for processing each said memory transaction request by a requesting one of said data processors, for determining which one of said cache memories and main memory to couple to the requesting data processor, for sending corresponding interconnect control signals to said datapath so as to couple the requesting data processor to said determined one of said cache memories and main memory, and for sending a reply message to said requesting data processor to prompt said requesting data processor to transmit/receive one data packet to/from said determined one of said cache memories and main memory.

5,634,069

ENCODING ASSERTION AND DE-ASSERTION OF INTERRUPT REQUESTS AND DMA REQUESTS IN A SERIAL BUS I/O SYSTEM

Gary D. Hicok, Mesa; David R. Evoy, Tempe; Gary A. Walker, Phoenix; Joseph A. Thomsen, Chandler; Lonnie C. Goff, Tempe, and Bruce E. Cairns, Scottsdale, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 187,960, Jan. 28, 1994, Pat. No. 5,475,854. This application Jul. 18, 1995, Ser. No. 503,795

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—800 **16 Claims**

2. A computing system comprising:

a first peripheral device;

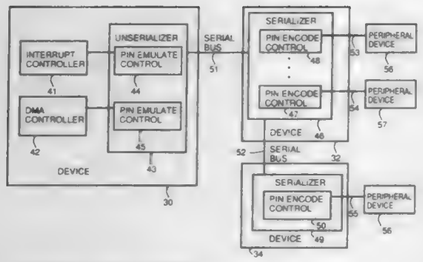
a first I/O device, the first device including

a first request pin coupled to the first peripheral device,

a serial out port, and

a serializer, coupled to the first request pin and to the serial out port, the serializer forwarding a first packet to the serial out port when the first peripheral device asserts a first request signal on the first request pin, and the serializer forwarding a second packet to the serial out port when the first peripheral device de-asserts the first request signal on the first request pin; and,

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a controller device, including

a first request controller,

a serial in port coupled to the serial out port of the first I/O device, the first packet and the second packet being forwarded from the serial out port of the first I/O device to the serial in port, and

an unserializer coupled to the first request controller and to the serial in port,

the unserializer asserting an emulated first request signal coupled to the first request controller upon receiving from the serial in port the first packet, and

the unserializer de-asserting the emulated first request signal coupled to the first request controller upon receiving from the serial in port the second packet.

5,634,070

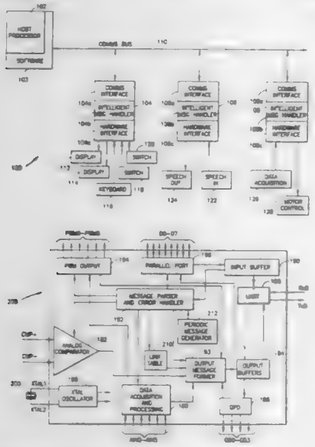
DISTRIBUTED PROCESSING SYSTEMS HAVING A HOST PROCESSOR AND AT LEAST TWO OBJECT ORIENTED PROCESSORS WHICH COMMUNICATE DIRECTLY WITH EACH OTHER

Jeffrey I. Robinson, New Fairfield, Conn., assignor to IQ Systems, Sandy Hook, Conn.

Filed Sep. 8, 1995, Ser. No. 525,949

Int. Cl.[6] G06F *9/06;9/22*

U.S. Cl. 395—800 **20 Claims**



1. A distributed processing system, comprising:

a) a host processor;

b) a message based communications link coupled to said host processor;

c) a first object oriented processor, said first object oriented processor having a first communications interface coupled to said message based communications link, a first intelligent message handler coupled to said first communication interface, and a first task-specific functionality coupled to said first intelligent message handler;

d) a second object oriented processor, said second object oriented processor having a second communications interface coupled to said message based communications link, a second intelligent message handler coupled to said second communication interface, a second task-specific functionality coupled to said second intelligent message handler, a linking table coupled to said second intelligent message handler, and a periodic message generator coupled to said second intelligent message handler; and

e) a high level command language, said high level command language including a first subset of commands to call on said first task-specific functionality, a second subset of commands to call on said second task-specific functionality, and a third subset of commands to call on said periodic message generator and said linking table, wherein

said host processor is programmed to call on said second object oriented processor using messages composed from said second subset of commands and transmitted via said message based communications link to access said second task-specific functionality of said second object oriented processor, and

said host processor is programmed to call on said linking table and said periodic message generator using said third subset of commands and said first subset of commands to direct said second object oriented processor to transmit a message to said first object oriented processor to call on said first task-specific functionality via said message based communications link.

5,634,071

SYNCHRONOUS PROCESSING METHOD AND APPARATUS FOR A PLURALITY OF PROCESSORS EXECUTING A PLURALITY OF PROGRAMS IN PARALLEL

Masami Dewa; Shigeru Nagasawa; Masayuki Ikeda; Haruhiko Ueno; Naoki Shinjo; Teruo Utsumi; Kazushige Kobayakawa; Kenichi Ishizaka, and Moriyuki Takamura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

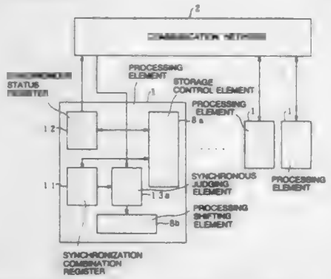
Continuation of Ser. No. 160,181, Dec. 2, 1993, abandoned.

This application Feb. 15, 1996, Ser. No. 601,705

Claims priority, application Japan, Dec. 18, 1992, 4-338502

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—800 **33 Claims**



1. A synchronous processing method for a plurality of processors each executing programs and transferring information between the plurality of processors, said method comprising the steps of:

each of said plurality of processors storing synchronization combination information, indicating a combination of a group of said plurality of processors to execute processes in a program in parallel and in synchronism, to a first register having a same number of bits as a number of said plurality of processors in said group and to a second register having a minimum number of bits necessary to distinguish each of said groups of processors from each other, such that a total number of bits of said first and second registers is less than a total number of said plurality of processors;

each of said plurality of processors storing synchronous status information indicating that a synchronization waiting status is reached when said respective processors complete one said process in said program corresponding to said group;

each of said plurality of processors transmitting said stored synchronous status information to said group of said plurality of processors through a communication device;

each of said plurality of processors in said group receiving said transmitted synchronous status information through said communication device;

each of said plurality of processors judging whether said processors in said group are in synchronism based on said received synchronous status information and said stored synchronization combination information; and

upon judging that said processors in said group are in synchronism, each of said plurality of processors in said group shifting to execute a successive process in said corresponding program, said group of processors thereby executing said processes in said program in parallel and in synchronism.

5,634,072

METHOD OF MANAGING RESOURCES IN ONE OR MORE COUPLING FACILITIES COUPLED TO ONE OR MORE OPERATING SYSTEMS IN ONE OR MORE CENTRAL PROGRAMMING COMPLEXES USING A POLICY

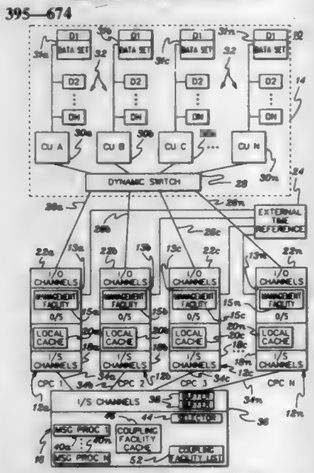
Ruth A. Allen, Poughkeepsie; Joseph S. Insalaco, Pleasant Valley; Kelly B. Pushong, Highland, and Michael D. Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 148,075, Nov. 1, 1993, abandoned.

This application Feb. 26, 1996, Ser. No. 607,053

Int. Cl.[6] G06F *12/12;13/38*

U.S. Cl. 395—674 **27 Claims**



1. A method to manage coupling facility resources (said resources) in a data processing system having one or more operating systems running on one or more processors coupled by one or more data transmission channels to one or more coupling facilities, said resources comprised of said one or more coupling facilities and one or more structures contained within said one or more coupling facilities, said method comprising the steps of:

using a policy stored in the data processing system for controlling said resources, said policy comprised of one or more active rules, current status of resource usage, and a pending policy; said active rules permit or disallow use of each of said one or more coupling facilities and define or disallow use of each of said one or more structures; said pending policy comprised of one or more pending rules;

identifying a set of changes by any of said operating systems comparing the said pending rules with the said active rules located in said policy;

modifying the said policy using the said set of changes to add, delete, or change active rules in said policy when the changes processed by the identifying step are found compatible with the active rules, and changes found incompatible with the active rules remaining pending for subsequent implementation; and

accessing by said one or more operation systems said active rules in said policy to allow users to obtain and release usage of said one or more structures contained within said one or more coupling facilities.

5,634,073

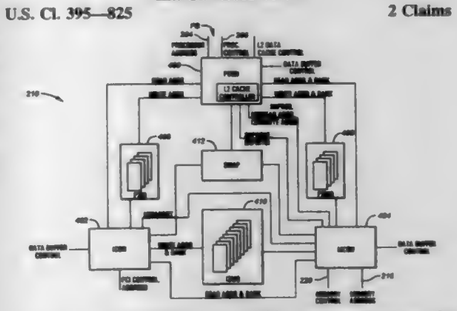
SYSTEM HAVING A PLURALITY OF POSTING QUEUES ASSOCIATED WITH DIFFERENT TYPES OF WRITE OPERATIONS FOR SELECTIVELY CHECKING ONE QUEUE BASED UPON TYPE OF READ OPERATION

Michael J. Collins; Gary W. Thome, both of Tomball; Michael P. Moriarty, Spring; Jens K. Ramsey, Houston, and John E. Larson, Katy, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 14, 1994, Ser. No. 324,246

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—825 **2 Claims**



1. A memory controller for use with a computer system, the computer system including a processor, an input/output bus, a bus master coupled to the input/output bus, and a main memory, the processor and bus master performing read and write operations to the main memory and the processor performing read and write operations to the input/output bus, the memory controller comprising:

an input/output bus write posting queue coupled to the processor and the input/output bus for the processor to perform input/output bus write operations, said input/output bus write posting queue being capable of posting at least two write operations;

a main memory write posting queue coupled to the processor and the main memory for the processor to perform main memory write operations, said main memory write posting queue being capable of posting at least two write operations;

a bus master write posting queue coupled to the input/output bus and the main memory for input/output bus to main memory write operations, said bus master write posting queue being capable of posting at least two write operations;

processor read control logic coupled between the processor and the input/output bus and configured to provide processor read operations to the input/output bus, said processor read control logic further coupled between the processor and the main memory and further configured to provide processor read operations to the main memory;

an arbiter coupled to said bus master write posting queue and to said processor read control logic, said arbiter being adapted to determine if the address of a processor read operation to the main memory is present in said bus master write posting queue and to delay provision of the processor read operation

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to the main memory until said address is not present in said bus master write posting queue;

bus read control logic coupled between the input/output bus and the main memory and configured to provide bus master read operations to the main memory; and

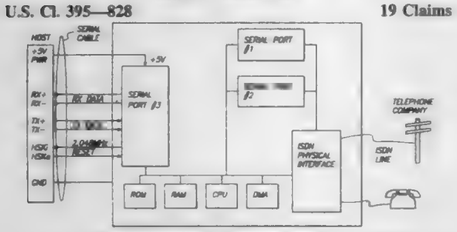
a data contents counter coupled to said processor to main memory write posting queue and to said bus read control logic, said data contents counter adapted to determine if said main memory write posting queue is empty and to delay provision of a bus master read operation to the main memory until said main memory write posting queue is empty.

5,634,074

SERIAL I/O DEVICE IDENTIFIES ITSELF TO A COMPUTER THROUGH A SERIAL INTERFACE DURING POWER ON RESET THEN IT IS BEING CONFIGURED BY THE COMPUTER

Mark Devon; John Lynch, both of San Jose, and James B. Nichols, San Mateo, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 7, 1993, Ser. No. 59,598
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—828 **19 Claims**



1. In a system comprising a computer and an I/O device connected to the computer through a serial interface by a serial cable no more than a few feet in length, a method of identifying the I/O device, comprising the steps of:

in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device; and

in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device.

5,634,075

BACKWARD COMPATIBILITY FOR PLUG AND PLAY SYSTEMS

Stephen A. Smith, Palo Alto; Suhas A. Shetty, Sunnyvale, and Daniel G. Bezzant, Pleasanton, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

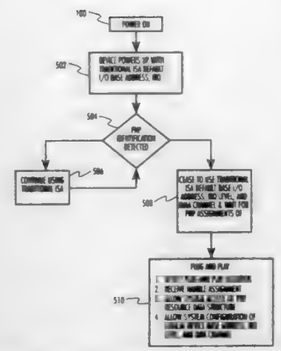
Filed Jan. 11, 1995, Ser. No. 371,304
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—829 **13 Claims**

1. A backward compatible plug and play device for adaptive use with a computer of either a PNP or a legacy non-PNP type having system data and address busses, said device being coupled to said computer system data and address busses, said device comprising:

first storage means, coupled to said computer system data bus, for storing an I/O address for the device, wherein said first storage means outputs a default I/O address upon power-up;

a DMA channel register, coupled to said computer system data bus, for storing a DMA channel value for the device, wherein said DMA channel register outputs a default DMA channel value upon power-up;

an interrupt level register, coupled to said computer system data bus, for storing an interrupt level value for the device, wherein said interrupt level register outputs a default interrupt level value upon power-up; and



control logic, coupled to said first storage means, said computer system address bus and said computer system data bus, wherein said control logic:

upon detecting activity on said computer system data bus characteristic of a computer system attempting to assign I/O addresses to a device, disables said device and allowes a computer system to write to said first storage means an I/O address;

upon detecting activity on said computer system data bus characteristic of a computer system attempting to assign DMA channel value to a device, allows a computer system to write to said DMA channel register a DMA channel value; and

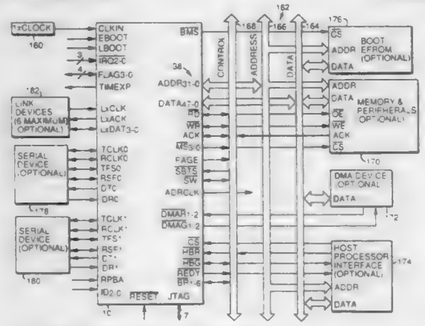
upon detecting activity on said computer system data bus characteristic of a computer system attempting to assign interrupt level value to a device, allows a computer system to write to said interrupt level register an interrupt level value.

5,634,076

DMA CONTROLLER RESPONSIVE TO TRANSITION OF A REQUEST SIGNAL BETWEEN FIRST STATE AND SECOND STATE AND MAINTAINING OF SECOND STATE FOR CONTROLLING DATA TRANSFER

Douglas Garde, Dover, and Mark A. Valley, Attleboro, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Oct. 4, 1994, Ser. No. 317,313
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—842 **8 Claims**



1. A digital signal processor comprising:

a core processor for performing digital signal computations;

a memory for storing instructions and data for the digital signal computations;

a memory bus interconnecting said core processor and said memory;

an external port for connection to an external DMA device on an external bus; and

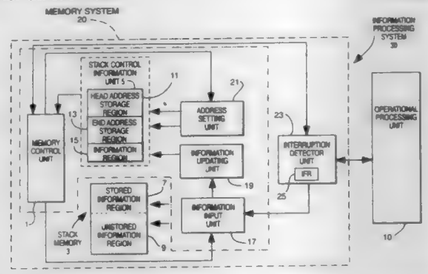
a DMA controller for controlling a DMA transfer between said external DMA device and said memory through said external port, said DMA controller comprising control means, including means responsive to a transition of a DMA request signal from said external DMA device between a first state and a second state for initiating the DMA transfer, means responsive to said DMA request signal being held by said external DMA device in said second state for placing the DMA transfer in a wait state and means responsive to a transition of said DMA request signal between said second state and said first state for completing the DMA transfer.

5,634,077

INFORMATION PROCESSING SYSTEM WITH CONTROL METHODS AND APPARATUS FOR INFORMATION STORAGE AND INTERRUPT REQUEST HANDLING SCHEME

Takayuki Yagi, Tokyo, and Yoichiro Takeuchi, Saitama-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 925,929, Aug. 7, 1992, abandoned. This application Jan. 9, 1995, Ser. No. 370,236
Claims priority, application Japan, Aug. 12, 1991, 3-201788
Int. Cl.[6] G06F *13/24;12/02*
U.S. Cl. 395—868 **4 Claims**



1. An information processing system including an operational processing system having a plurality of registers for executing an operational processing, and a storage system connected to the operational processing system for storing information stored in the registers, the storage system comprising:

interruption processing detector means for detecting whether an execution of interruption processing is requested in the operational processing system;

memory means having an information storing region organized in a stack structure, for storing the information stored in the registers into the information storing region;

input means for inputting the information stored in the registers into the information storing region of the memory means;

address data storing means for storing address data for a stored information region within the information storing region, wherein the stored information region stores the information from the registers and the address data includes an address of the register most recently stored into the information storing region; and

control means for controlling the input means to control inputting the information stored in the registers into the information storing region of the memory means according to the address data for the stored information region within the information storing region, and to suspend inputting the information stored in the registers into the information storing region prior to the completion of the storage of the information stored in all of the plurality of registers into the information storing region, when a request for the execution of interruption processing is detected by the interruption processing detector means.

5,634,078

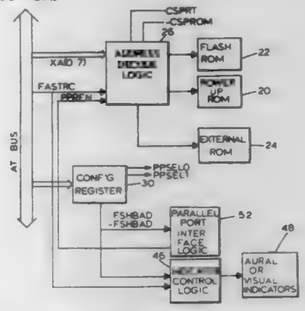
Patent Not Issued For This Number

5,634,079

SYSTEM FOR PROVIDING FOR A PARALLEL PORT WITH STANDARD SIGNALS AND A FLASH RECOVERY MODE WITH SECOND PREDETERMINED SIGNALS REDEFINING PARALLEL PORT WITH ALTERNATE FUNCTIONS

Clark L. Buxton, St. Joseph, Mich., assignor to Zenith Data Systems Corporation, Sacramento, Calif.

Filed May 15, 1992, Ser. No. 885,805
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—892 **11 Claims**



1. A control system for a computer system which includes a CPU, a flash read only memory (ROM) with basic input output instructions (BIOS) stored thereon and a standard parallel port connector, comprising:

a parallel port system having two modes of operation; a standard parallel port mode wherein in response to a first predetermined group of signals, said parallel port operates as a standard parallel port; and a flash recovery mode wherein said parallel port is responsive to a second predetermined group of signals to enable said CPU to execute the BIOS from an external device adapted to be connected to said parallel port in the event said flash ROM becomes corrupt to enable the computer to be booted while the corrupted flash ROM remains in-circuit;

means for providing said first predetermined group of signals to said parallel port system during said standard parallel port mode of operation wherein said first predetermined group of signals are standard parallel port signals; and

means for providing said second predetermined group of signals to said parallel port system during said flash recovery mode of

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operation, said second predetermined group of signals redefining a predetermined subset of said standard parallel port signals with alternate parallel port functions.

5,634,080

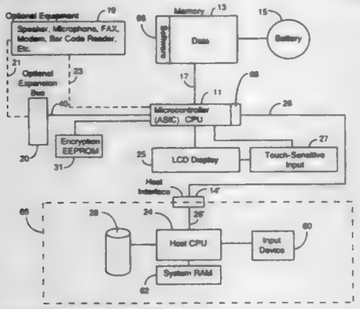
HAND-HELD PORTABLE COMPUTER HAVING AN ELECTROLUMINESCENT FLAT-PANEL DISPLAY WITH PIXEL ELEMENTS AT RIGHT ANGLES TO THE PLANE OF THE DISPLAY AND AN EXCITATION DIRECTION PARALLEL TO THE PLANE OF THE DISPLAY

Dan Kikinis, Saratoga; Pascal Dornier, Sunnyvale, and William J. Seiler, Scotts Valley, all of Calif., assignors to Elonex IP Holdings, Ltd., London, England

Continuation-in-part of Ser. No. 144,231, Oct. 28, 1993, and a continuation-in-part of Ser. No. 159,078, Nov. 29, 1993, which is a continuation-in-part of Ser. No. 97,946, Jul. 26, 1993, Pat. No. 5,278,730, which is a continuation of Ser. No. 905,480, Jun. 29, 1992, abandoned. This application Jul. 19, 1994, Ser. No. 277,154

Int. Cl.[6] G06F *13/00;19/00;* **H04M** *11/00*

U.S. Cl. 395—893 **13 Claims**



1. A digital assistant, comprising:

an enclosure for enclosing and supporting internal elements;

a local CPU within the enclosure for managing functions of the digital assistant;

a local memory connected to the local CPU by a bus the local memory for storing data and executable routines;

a power supply within the enclosure for supplying power to power-using elements of the digital assistant;

a flat-panel display operable by the local CPU and implemented on a surface of the enclosure;

input apparatus connected to the local CPU for providing commands and data to the digital assistant; and

a host interface comprising a host interface bus connected to the local CPU and to a first portion of a host interface connector at a surface of the enclosure, the host interface configured to directly connect the local CPU to a compatible bus structure of a host computer having a host CPU and a host memory, the host interface bus including address lines, data lines, and control signal lines, the control signal lines including read/write control signals and at least one memory control signal;

wherein the flat-panel display comprises a matrix of elongated electroluminescent cells substantially orthogonal to the plane of the flat-panel display, with individual cells having excitation electrodes along opposite elongated edges of the cells providing excitation voltage parallel to the plane of the flat-panel display.

5,634,081

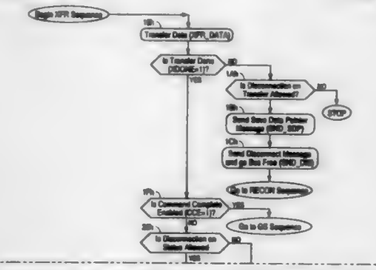
SYSTEM FOR STARTING AND COMPLETING A DATA TRANSFER FOR A SUBSEQUENTLY RECEIVED AUTOTRANSFER COMMAND AFTER RECEIVING A FIRST SCSI DATA TRANSFER COMMAND THAT IS NOT AUTOTRANSFER

Shahe H. Krakirian, Milpitas, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Filed Mar. 1, 1994, Ser. No. 205,002

Int. Cl.[6] G06F *13/00;13/42*

U.S. Cl. 395—894 **15 Claims**



1. A method of transferring data to a SCSI target device comprising:

(a) receiving in the SCSI target device a first SCSI data transfer command from a SCSI bus;

(b) disconnecting the SCSI target device from the SCSI bus before a data transfer for the first SCSI data transfer command has started, without waiting for a communication from a processor in said SCSI target device, upon determining in a disk controller integrated circuit of the SCSI target device that the first SCSI data transfer command is not an autotransfer command;

(c) deciphering in a processor of the SCSI target device the first SCSI data transfer command;

(d) receiving in the SCSI target device subsequent to said receiving said first SCSI data transfer command a second SCSI data transfer command from the SCSI bus;

(e) determining in a disk controller integrated circuit of the SCSI target device whether the second SCSI data transfer command is an autotransfer command and starting data transfer for the second SCSI data transfer command by the disk controller integrated circuit without waiting for a communication from said processor in the SCSI target device upon determining that said second SCSI data transfer command is an autotransfer command; and

(f) reconnecting the SCSI target device to the SCSI bus and performing the data transfer for the first SCSI command following completion of the data transfer for the second SCSI data transfer-command by the disk controller integrated circuit.

5,634,082

HIGH EFFICIENCY AUDIO CODING DEVICE AND METHOD THEREFORE

Osamu Shimoyoshi, and Kyoya Tsutsui, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 48,279, Apr. 14, 1993, abandoned. This application May 17, 1995, Ser. No. 443,033

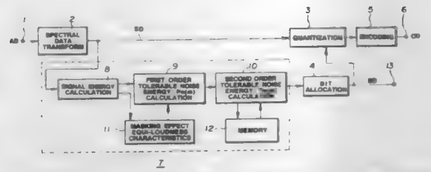
Claims priority, application Japan, Apr. 27, 1992, 4-131458

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.38 **22 Claims**

1. A high efficiency encoding device for audio signals comprising:

spectral data transforming means for transforming audio signals into spectral data from one predetermined time frame to another;



1

quantization means for dividing said spectral data into plural blocks and quantizing said spectral data by adaptive bit allocation for each of said blocks, thereby generating quantized signals;

encoding means for encoding said quantized signals;

allowable noise energy calculating means for calculating a first order and a second order allowable noise energy for each of said blocks, said block for which the first and second order allowable noise energies is being calculated being designated a current block, wherein the allowable noise energy calculating means further comprises:

signal energy calculating means for calculating signal energies for each of said blocks;

means for calculating the first-order allowable noise energy for the current block from the signal energies by utilizing characteristics of human auditory sense; and

means for calculating the second-order allowable noise energy for the current block by summing a weighted first-order allowable noise energy for the current block and a weighted second-order allowable noise energy for a previous block; and

bit allocation means for finding the allocation bit number based on the allowable noise energies as found by said allowable noise energy calculating means, wherein said spectral data is quantized by said quantization means based on said bit allocation number.

5,634,083

METHOD OF AND DEVICE FOR DETERMINING WORDS IN A SPEECH SIGNAL

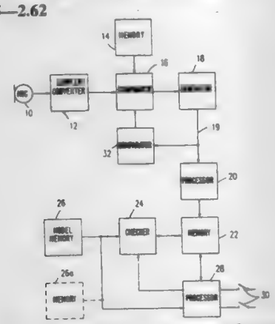
Martin Oerder, Herzogenrath, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 28, 1994, Ser. No. 203,105

Claims priority, application Germany, Mar. 3, 1993, 43 04 508.2

Int. Cl.[6] G10L *9/00;5/00*

U.S. Cl. 395—2.62 **14 Claims**



1. In a method of determining a sequence of words of a predetermined vocabulary in a speech signal, wherein the method includes the steps of:

sampling the speech signal at recurrent instants so as to produce a sequence of test signals;

comparing the test signals with different sequences of reference signals to generate scores, each sequence of reference signals representing a word of the vocabulary,

commencing the comparison anew with successive test signals, starting from the beginning of sequences of reference signals;

deriving, for each word end reached, a word result which comprises a reference to the beginning of the ended word, a word score, and a reference to the ended word;

deriving at least one sequence of words from the word results,

carrying out as far as the word end, and independently of any other comparison, each comparison that commences anew with the beginning of sequences of reference signals;

forming a new preliminary word string by joining each word which ends at an instantaneous test signal to each preliminary word string which ends directly before the beginning of that word;

combining the word score of each word with the score reached at the end of the preliminary word string so as to form a new score, most favorable new score being used as an initial score for a comparison newly started immediately thereafter, beginning with the different sequences of reference signals; and

successively outputting the words of at least one word string from the beginning.

5,634,084

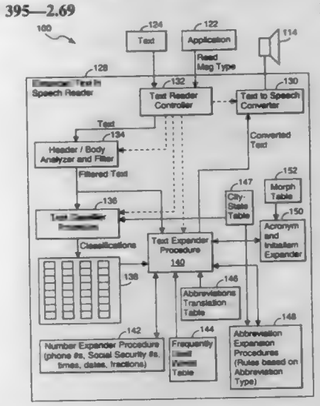
ABBREVIATION AND ACRONYM/INITIALISM EXPANSION PROCEDURES FOR A TEXT TO SPEECH READER

Bathsheba J. Malsheen, San Francisco; Gabriel F. Groner, Palo Alto, and Sandra F. Disner, Los Angeles, all of Calif., assignors to Centigram Communications Corporation, San Jose, Calif.

Filed Jan. 20, 1995, Ser. No. 376,732

Int. Cl.[6] G10L *5/00*

U.S. Cl. 395—2.69 **13 Claims**



1. A computer system for converting a text message into audio signals, including:

a text to speech converter that translates text into audio signals;

a text reader control procedure for receiving said text message, said text message having a sequence of words;

a classifier procedure, coupled to said text reader control procedure, that classifies specified words in said text message with regard to syntax, punctuation and membership in predefined classes of words, said predefined classes of words including numbers, measurement units, geographic designations, and date/time values; said classifier procedure generating classification values for said words in said text message; and

an abbreviation expanding procedure that receives said classification values and said text message, identifies abbreviation words in said text message that match predefined abbreviations and identifying a set of potential expansion values for each said identified abbreviation word, evaluates based on said classification values for words neighboring said identified words and in accordance with a predefined set of rules which, if any, of said potential expansion values is applicable, and

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substituting said potential expansion value for said identified abbreviation word when said evaluation yields a success value;

wherein said text reader control procedure includes instructions for receiving expansion values from said abbreviation expanding procedure, and passing to said text to speech converter for each word in said text message said expansion value, if any, generated by said abbreviation expanding procedure for said word.

2. A computer system for converting a text message into audio signals, including:

a text to speech converter that translates text into audio signals;

a text reader control procedure for receiving said text message, said text message having a sequence of words;

an acronym/initialism expanding procedure, coupled to said text reader control procedure, that identifies words in said text message that are acronyms and initialisms, parsing pronounceable syllables within said identified words and generating a substitute string comprising a sequence of units, each unit selected from the set consisting of a letter, number, pronounceable syllable and multiple letter identifier; said acronym/initialism expanding procedure including instructions for separating pronounceable syllables and individual letters not pronounceable as syllables from an identified word in said text message in accordance with predefined word parsing criteria;

wherein said text reader control procedure includes instructions for receiving said substitute strings from said acronym/initialism expanding procedure, and passing to said text to speech converter for each word in said text message said substitute string, if any, generated by said acronym/initialism expanding procedure.

5,634,085

SIGNAL REPRODUCING DEVICE FOR REPRODUCTING VOICE SIGNALS WITH STORAGE OF INITIAL VALVES FOR PATTERN GENERATION

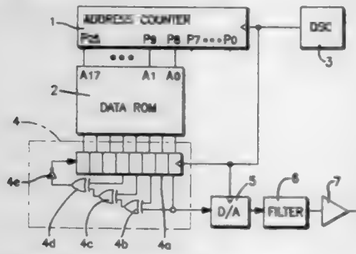
Shuichi Yoshikawa, Nara; Yasumoto Murata, Ikoma-gun, and Yuji Nishiwaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 798,723, Nov. 27, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,302

Claims priority, application Japan, Nov. 28, 1990, 2-332001; Mar. 11, 1991, 3-045200

Int. Cl.[6] G10L *5/02*

U.S. Cl. 395—2.75 **19 Claims**



1. A signal reproducing device comprising:

coded data extracting means for extracting transferred or recorded coded data one by one;

recurrence means for executing a recurrence equation as a function of initial values;

pattern generating means for sequentially giving the coded data extracted by said coded data extracting means as said initial values to said recurrence means, and for sequentially generating a pattern composed of a predetermined plurality of data for every initial value; and

reproduction data output means for sequentially outputting the patterns generated by said pattern generating means as reproduction data.

5,634,086

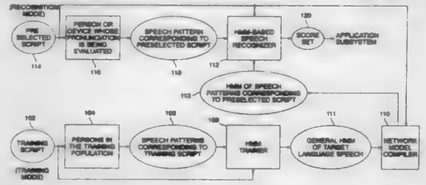
METHOD AND APPARATUS FOR VOICE-INTERACTIVE LANGUAGE INSTRUCTION

Dimitry Rtischev, Menlo Park; Jared C. Bernstein, Palo Alto; George T. Chen, Menlo Park, and John W. Butzberger, Foster City, all of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation of Ser. No. 32,850, Mar. 12, 1993, abandoned. This application Sep. 18, 1995, Ser. No. 529,376

Int. Cl.[6] G10L *3/00;5/06;9/00*

U.S. Cl. 395—2.79 **20 Claims**



1. A language instruction and evaluation method using an automatic speech recognizer which generates word sequence hypotheses and phone sequence hypotheses from input speech and a grammar model, wherein the input speech is speech spoken by the speaker in response to a prompting of the speaker to recite a preselected script, the method comprising the steps of:

generating a grammar model from the preselected script;

imbedding alt elements in the grammar model between words and sentences of the preselected script thereby forming an altered grammar model, the alt elements representing potential nonscripted speech and pauses;

generating an input hypothesis from the input speech using the automatic speech recognizer with the altered grammar model, wherein the input hypothesis comprises a subset of sequences of words and alts allowed by the altered grammar model;

parsing the input hypothesis into sequences identified as one of words found in the preselected script, nonscripted speech and silence, wherein alts in the input hypotheses are associated with the nonscripted speech and the silence;

evaluating the accuracy of the input speech based on a distribution of alts in the input hypothesis, the accuracy being a measure of how well the input speech corresponds with preselected script which the Speaker of the input speech was prompted to recite; and

outputting an indication of the accuracy of the input speech to the speaker, thereby informing the speaker of how well the speaker has recited the preselected script.

5,634,087

RAPIDLY TRAINABLE NEURAL TREE NETWORK

Richard J. Mammone, Bridgewater; Ananth Sankar, Plainsboro, and Kevin R. Farrell, Ocean Grove, all of N.J., assignors to Rutgers University, New Brunswick, N.J.

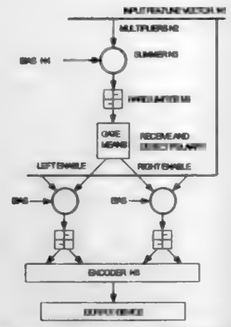
Continuation-in-part of Ser. No. 662,423, Feb. 28, 1991, abandoned. This application Nov. 29, 1993, Ser. No. 159,397

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—24 **61 Claims**

1. An electric neural tree network including:

a node including multipliers respectively receiving signals representing feature vector elements and signals representing weight vector elements to produce product signals, a summer to add the product signals with a bias signal and output a sum signal to a hard limiter, the hard limiter for outputting a preliminary output signal having a polarity;



gate means for enabling only one of a plurality of logic branches in response to the polarity of the preliminary output signal;

means for assigning, electrically connected to the one logic branch, to assign weight elements to a next weight vector to be used in a subsequent processing of the next weight vector; and

means for producing a label signal in response to the subsequent processing.

5,634,088

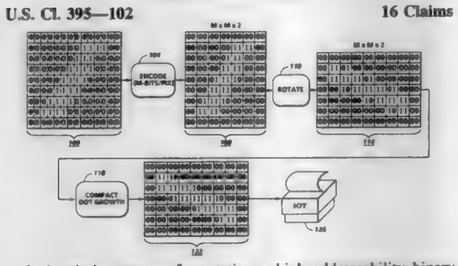
METHOD AND APPARATUS FOR ROTATION OF HIGH ADDRESSABILITY BITMAP IMAGES

Martin E. Banton, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1995, Ser. No. 551,602

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—102 **16 Claims**



1. A printing system for rotating a high addressability binary bitmap received for printing, the bitmap including an anamorphic two-dimensional array of input image signals, where a first resolution along a first dimension exceeds a second resolution along a second dimension, the printing system comprising:

an encoder for encoding the input image signals to produce a bitmap image that is represented by a regular two-dimensional array of multi-bit image signals having a resolution in both dimensions that is equivalent to the second resolution;

a first memory for storing the array of multi-bit image signals at the second resolution;

a rotation circuit for rotating the multi-bit image signals stored in said first memory with respect to the orientation of the input image so as to produce a rotated image at the second resolution;

a second memory for storing the image signals of the rotated image;

a compact dot growth circuit, operating on the multi-bit image signals stored in said second memory, for generating output signals, each output signal generated in response to a gray multi-bit image signal having an exposure pulse positioned in response to the states of the multi-bit signal and adjacent multi-bit image signals; and

an output engine for outputting an image representation in response to the high addressability signals generated by said compact dot growth circuit.

5,634,089

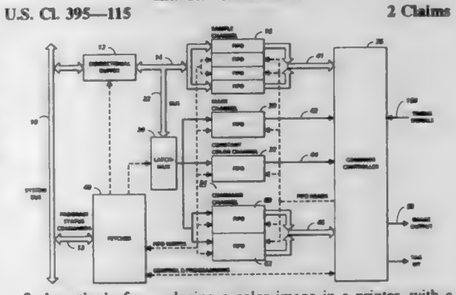
FULL COLOR IMAGE OUPUT TERMINAL INTERFACE

Christopher Kulbida, Fairport; Craig P. Ephraim, Pittsford, both of N.Y., and Russell R. Atkinson, Aptos, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 880,106, May 6, 1992, abandoned. This application Oct. 2, 1995, Ser. No. 538,055

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—115 **2 Claims**



2. A method of reproducing a color image in a printer, with a printer output controller, including the steps of:

receiving image data from an image data source, said image data defined in terms of pixels including a discrete color image information component representing a first color for a pixel and command information;

storing said discrete color image information into a first color image information latch, said color image information latch receiving data from said image data source corresponding to a color for a pixel, and outputting image information to an image output device;

storing said command information received from said image data source into a command information latch;

responsive to said command information stored in said command information latch, repetitively causing said color image information latch to output the same color image information for a plurality of pixels for a predetermined number of times prior to receiving new image information in regions of repetitive color image information content, whereby regions of identically colored pixels may be generated for output to said printer with a single receipt of color image information per color;

wherein regions of identically colored pixels generated for output to said printer with said single receipt of color image information per color for printing with said first color are non adjacent.

5,634,090

HOST BASED PRINTER HAVING AN IN-ADVANCE PRINTING MODE

Toshiki Narukawa, Kasugai; Norimichi Funahashi, Nisshin, and Hajime Usami, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 27, 1996, Ser. No. 671,494

Claims priority, application Japan, Jun. 27, 1995, 7-184791

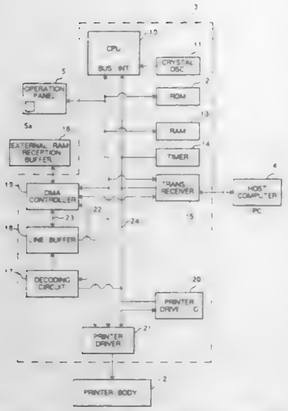
Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—115 **16 Claims**

1. A host based printer for use in combination with a host computer, comprising:

a reception buffer for receiving compressed image data and a page end code from said host computer, the page end code representing an end of the compressed image data on each page;

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a decoding circuit for decoding the compressed image data retrieved from said reception buffer and outputting dot image data;

a line buffer having a storage area for storing the dot image data output from said decoding circuit and outputting the dot image data;

printing means for printing dot images on a sheet of paper in accordance with the dot image data output from said line buffer, the dot images having a resolution defined by a printable dot number per a unit length;

print control means for controlling said print means;

first signal generating means for outputting a first signal to said print control means when said reception buffer receives the page end code, wherein said print control means controls said printing means to start printing when printing has not yet been started and to feed the sheet of paper when printing has already been started;

determining means for determining whether said reception buffer is in a first buffer-full state or in a second buffer-full state, the first buffer-full state being a state in which said reception buffer is full with the compressed image data and the page end code, the second buffer-full state being a state in which said reception buffer is full with the compressed image data without containing the page end code; and

second signal generating means for outputting a second signal to said print control means when said determining means determines that said reception buffer is in the second buffer-full state before start of printing, wherein said print control means controls said printing means to start printing in response to the second signal.

5,634,091

DIGITAL PAGE IMAGING SYSTEM

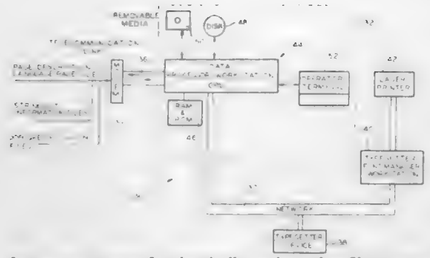
Gerald K. Sands, Crawfordsville, Ind.; Ilario J. Alvino, Naperville, Ill.; Dennis M. Beach, Crawfordsville, Ind.; Steve L. Coffman, Aurora; Charles A. Cornelius, Wheaton, both of Ill.; Glenn E. Dieckmann, Crawfordsville, Ind.; Linda M. Krause, Elmhurst, Ill.; Albert C. W. Loo, Chicago, Ill.; J. Thomas Shively, Hinsdale, Ill.; James L. Warmus, LaGrange, Ill., and Mary O. Bukowski, Elmhurst, Ill., assignors to R. R. Donnelley & Sons Company, Lisle, Ill.

Filed Jul. 30, 1991, Ser. No. 738,217

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—117 **30 Claims**

1. An imaging system for converting data representing a plurality of pages in a defined page description language format to produce files of imposed page data for imaging to film flats, comprising:



first memory means for electrically storing a data file representing a plurality of discrete pages in a defined page description language format;

second memory means for electrically storing press imposition data for a plurality of press deliveries each representing relative position of pages on an imposed flat;

selection means for selecting a single press delivery from the plurality stored in said second memory means;

programmed control means operatively associated with said first and second memory means and responsive to said selection means for converting data stored in said first memory means for a plurality of pages to a file of imposed page data for the selected press delivery; and

output means driven by said programmed control means for imaging a film flat using the imposed page data for the selected press delivery.

5,634,092

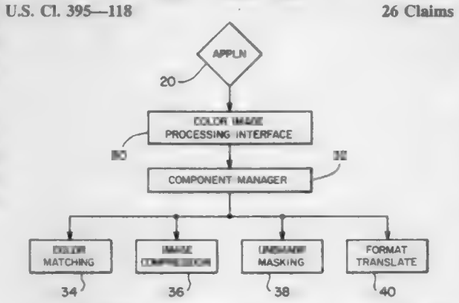
COLOR IMAGE PROCESSING SYSTEM WHICH PROVIDES MULTIPLE IMAGE PROCESSING OPERATIONS THROUGH A SINGLE INTERFACE

Michael Stokes, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 30, 1994, Ser. No. 312,918

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—118 **26 Claims**



1. In a computer, a system for providing a variety of image processing functions to graphic application programs, comprising:

a library containing a plurality of individual, dynamically loadable image processing programs, said individual programs including at least one color management system which converts color data pertaining to one computer input/output device into color data for a different input/output device, and at least one program that provides an image processing service that processes multiple picture elements of an image at a time;

an operating system for controlling the operation of said computer, said operating system including an interface which communicates with application programs running on said computer to receive requests from said application programs for image processing services; and

a dispatcher responsive to requests for image processing services received at said interface for loading selected ones of the programs in said library into the computer and causing the loaded programs to execute the requested services.

5,634,093

METHOD AND CAD SYSTEM FOR DESIGNING WIRING PATTERNS USING PREDETERMINED RULES

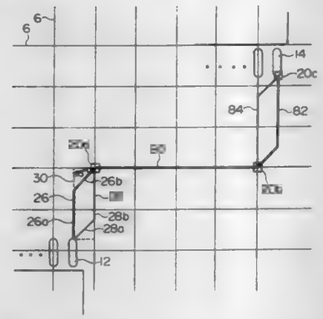
Tadashi Ashida, and Yoshiei Endou, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 826,463, Jan. 27, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 384,468

Claims priority, application Japan, Jan. 30, 1991, 3-009787

Int. Cl.[6] H01L *23/528*

U.S. Cl. 395—143 **18 Claims**



1. A method of designing a wiring pattern between two terminals to be connected thereby, by using a CAD system having an input device, a pointing device, and a display screen, comprising the steps of:

producing a first image signal identifying a beginning point on a display screen;

storing the first image signal in a storage device;

receiving a second image signal from the pointing device representing a designated point on the screen;

storing the second image signal in said storage device;

receiving a signal from the input device representing a predetermined angle; and

automatically generating on the screen a line pattern, designating an electrically conductive wiring path in a circuit design, between the beginning point and the designated point using said first and second stored signals and said predetermined angle, said line pattern having a selected one of the following configurations dependent upon the shape of the terminal:

a side segment drawn from the beginning point in one of vertical and horizontal directions and an oblique segment drawn at said predetermined angle relative to the horizontal direction from the designated point when the designated point is not in one of horizontal and vertical directions from the beginning point, the side and oblique segments of the line pattern meeting at a side of an imaginary rectangle having diagonal corners respectively located by the beginning point and the designated point, and

an oblique segment drawn at said predetermined angle relative to the horizontal direction from the beginning point when the designated point is not in one of horizontal and vertical directions from the beginning point, and a side segment drawn from the designated point in one of vertical and horizontal directions, the side and oblique segments of the line pattern meeting at a side of an imaginary rectangle having diagonal corners respectively located by the beginning point and the designated point.

5,634,094

TEXT PROCESSING APPARATUS

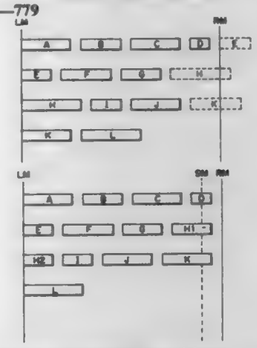
Hiroyuki Ueda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 109,456, Aug. 20, 1993, abandoned, which is a continuation of Ser. No. 674,304, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 260,024, Oct. 20, 1988, abandoned. This application Jun. 2, 1995, Ser. No. 460,759

Claims priority, application Japan, Oct. 23, 1987, 62-268851

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—779 **17 Claims**



1. A text processing apparatus comprising:

input means for entering a character train including characters;

memory means for storing characters entered by said input means;

display means for displaying characters stored in said memory means;

first control means for effecting a word wrap-around function on characters of a character train to be displayed by said display means;

designating means for designating hyphenation of the character train displayed by said display means after said first control means effects a word wrap-around function;

dividing means, in response to the operation of said designating means, for dividing a character train into a first portion to be displayed on one line and a second portion to be displayed on the next line when the character train exceeds a right margin of said display means after a word wrap-around function on the character train is performed; and

second control means for moving each of the first and second portions of the character train to execute the hyphenation operation designed by said designating means.

5,634,095

METHOD OF CONNECTING OBJECTS ON DIFFERENT NOTEBOOK PAGES

John S. Wang, Travis County, and Richard E. Berry, Williamson County, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 166,080, Dec. 13, 1993, abandoned. This application Feb. 2, 1996, Ser. No. 597,579

Int. Cl.[6] G06F *3/14*

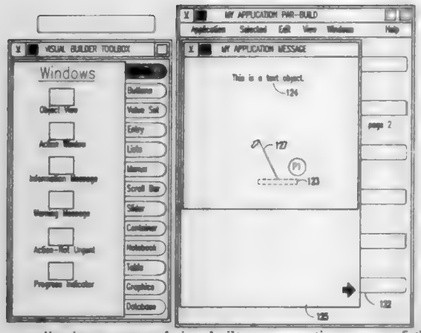
U.S. Cl. 395—326 **20 Claims**

1. A graphical aid method of linking objects on different pages of a visual program builder, said visual program builder having a selection made and a link mode, said method comprising the steps of:

displaying an application program builder window on a computer display, multiple pages in said window being used for building an application program, said window displaying a single page on which a portion of an application program is built using the visual application program builder;

responding to user inputs during building of an application program by placing objects which comprise portions of the

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application program being built on respective pages of the application program builder window;

responding to a user command to link objects on pages window by switching said visual program builder to said link mode of operation;

responding to a user selection of a source object on a first page in said window by generating a link line extending from the source object to a pointing cursor;

responding to a user tab to a second page in said window by displaying said second page with a target object; and

responding to a user selection of the target object by extending the link line to the target object, completing the logical link of the source object to the target object in the application program builder window, said logical link forming a part of the application program being built using said visual program builder.

5,634,096

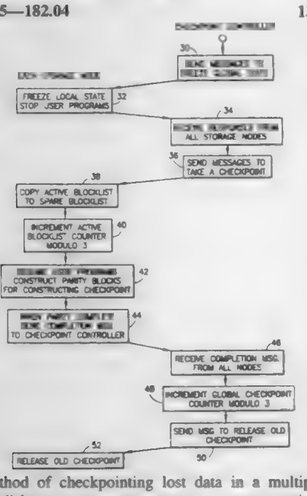
USING VIRTUAL DISKS FOR DISK SYSTEM CHECKPOINTING

Sandra J. Baylor, Ossining; Peter F. Corbett, Scarsdale; Blake G. Fitch, New Rochelle, and Mark E. Giampapa, Irvington, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1994, Ser. No. 332,156

Int. Cl.[6] G06F *11/10*

U.S. Cl. 395—182.04 **13 Claims**



1. A method of checkpointing lost data in a multiprocessor, distributed disk array computer system to protect against losing data, comprising:

providing a logical disk representing the data stored on one or more physical disks associated with each processor of the multiprocessor system;

assigning to each of the processors a set of virtual disks, the virtual disks being mapped via the logical disk to data storage locations on the physical disks;

designating one virtual disk in each set to be a user virtual disk, and updating the data stored in the user virtual disk when desired;

designating another of the virtual disks in each set to be a checkpoint virtual disk, the checkpoint virtual disks containing most recent checkpoint data and parity blocks for reconstructing the checkpoint data in the event of a physical disk failure;

designating another of the virtual disks in each set to be a constructing checkpoint virtual disk, the constructing checkpoint virtual disk containing data desired to be saved as checkpoint data;

constructing new parity blocks derived from the data desired to be saved as checkpoint data in the constructing checkpoint virtual disks;

when the new parity blocks have been constructed, assigning the constructing checkpoint virtual disks to be new checkpoint virtual disks, and assigning the checkpoint virtual disks to be spare virtual disks, or saving them as a finite sequence of checkpoints in additional virtual disks.

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VIRTUAL PATH CONNECTOR AND VIRTUAL PATH TRACING METHOD AND APPARATUS

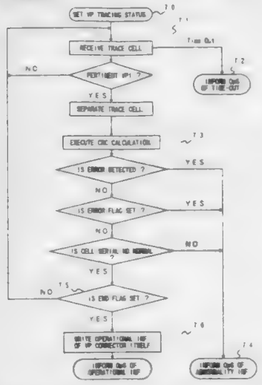
Yoshihiro Ashi; Toshihiko Fujita; Hiromi Ueda, all of Yokohama, and Haruhiko Matsunaga, Yokosuka, all of Japan, assignors to Hitachi, Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,643

Claims priority, application Japan, Mar. 6, 1992, 4-050059

Int. Cl.[6] G06F *11/00*; H04L *12/56*

U.S. Cl. 395—183.21 **17 Claims**



1. A virtual path (VP) connector in an asynchronous transfer mode (ATM) network system in which a plurality of VP connectors, for relaying ATM cells sequentially according to a VP between two VP terminators, are arranged, said VP connectors also relay a series of operation and maintenance (OAM) cells as ATM cells in which operational information is entered, said VP connector comprising:

detection means for detecting and taking in a rearmost OAM cell of the series of OAM cells which are relayed according to the VP between the two VP terminators based on an end flag which has been set in said rearmost OAM cell of the series of OAM cells by a preceding VP connector or a VP terminator of the two VP terminators with respect to the VP;

judgement means for judging whether sufficient area exists in said rearmost OAM cell detected by said detection means for entering operational information in said rearmost OAM cell;

OAM cell generating means for generating a new OAM cell when said judgement means judges that sufficient area does not exist for entering the operational information in said rearmost OAM cell detected by said detection means; and

operational information affixing means for, when said judgement means judges that sufficient area exists for entering the operational information in said rearmost OAM cell, entering the operational information in said rearmost OAM cell detected by said detection means, and relaying, according to the VP, said rearmost OAM cell in which said operational information has been entered,

wherein, when said judgement means judges that sufficient area does not exist for entering the operational information in said rearmost OAM cell, said operational information affixing means enters the operational information in said new OAM cell generated by said OAM cell generating means, sets an end flag in said new OAM cell generated by said OAM cell generating means, resets the end flag in said rearmost OAM cell detected by said detection means and relays, according to the VP, said rearmost OAM cell in which the end flag has been reset and said new OAM cell in which the operational information has been entered.

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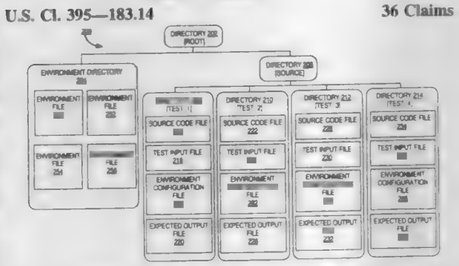
METHOD AND APPARATUS FOR ENVIRONMENT-VARIABLE DRIVEN SOFTWARE TESTING

Micheal E. Janniro, Mountain View; Robert B. Jervis, Monte Sereno, and Donald G. Miller, Jr., Los Altos, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Feb. 1, 1995, Ser. No. 384,318

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—183.14 **36 Claims**



1. An apparatus for performing a test on software in a computer system, wherein said computer system has an initial environment, the apparatus comprising:

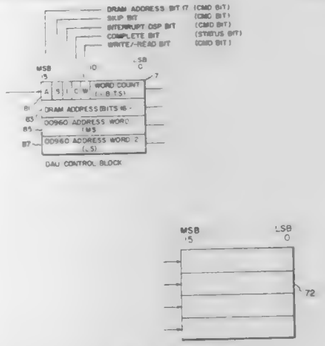
a storage device containing a test base, wherein the test base includes a

plurality of directories connected to form a hierarchical directory structure, the plurality of directories including a test directory corresponding to said test;

a processor coupled to said storage device;

a test engine executing on said processor; and

a plurality of environment configuration files stored in said plurality of directories.



1. A multi-processing system comprising:

a) host processor having a respective host data memory;

b) a second processor having a respective second data memory; said second processor being required to have data communication with said host processor;

c) a bus providing data communication between said host and second data memories, between said host processor and host data memory, and between said second processor and its second data memory;

d) a direct memory access (DMA) controller communicating with said bus and said second data memory for directing transfers of varied-length blocks of data, via said bus, between said host and second data memories on behalf of said second processor, said DMA controller operating in response to control information written to said second data memory by said second processor; said control information defining locations in both said host and second data memories between which said block of data is to be transferred, and the direction in which said block of data is to be transferred; said second processor being capable of writing additional control information to said second data memory while said DMA controller is directing transfer of said block of data; said additional control information defining transfer of one or more additional blocks of data between said host and second data memories; said DMA controller being capable of directing said transfers of both said block of data and said one or more additional blocks of data without having to have any direct communication with either of said host and second processors;

and further wherein said control information and said additional control information, respectively defining said transfers of said block of data and said one or more additional blocks of data, further comprise:

a) plural control blocks stored in said second memory, said control blocks defining storage locations in both said host and second data memories representing sources and destinations of said data block and said one or more additional data blocks that are to be transferred; and

b) a circular queue formed in said second data memory, said circular queue having pointer elements therein, one for each of said control blocks, with each of said pointer elements pointing to the location of the respective control block in said second memory; and wherein said second processor includes:

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c) means for writing information constituting said plural control blocks to said second data memory and for writing information constituting said pointer elements to said circular queue in said second data memory.

5,634,100

SYSTEM AND METHOD FOR EVENT PARAMETER INTERDEPENDENCE AND ADJUSTMENT WITH PEN INPUT

Stephen P. Capps, San Carlos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 7, 1995, Ser. No. 512,523
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—209 **20 Claims**



1. A computer implemented method for adjusting a bounds of an event, the bounds of the event defined by event parameters including an event start boundary, an event stop boundary, and an event duration, wherein the event start boundary and the event stop boundary may be tied to one another such that an event parameter interdependence exists, the method comprising the computer controlled steps of:

displaying an event adjustment window showing the event start boundary, the event stop boundary, and the event duration;

receiving an event adjustment input explicitly intended to modify a selected event parameter being a one of the event start boundary, the event stop boundary, and the event duration, whereby each non-selected event parameter may be implicitly intended to be modified;

modifying the selected event parameter in accordance with the event adjustment input;

modifying each non-selected parameter in accordance with the event parameter interdependence; and

displaying the event adjustment window showing the event start boundary, the event stop boundary, and the event duration as modified.

5,634,101

METHOD AND APPARATUS FOR OBTAINING CONSUMER INFORMATION

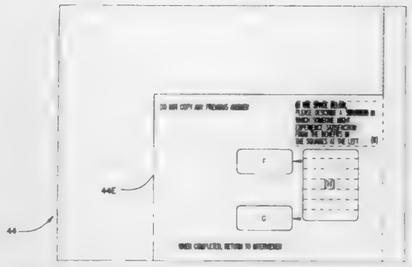
Robert A. Blau, Golden Valley, Minn., assignor to R. Alan Blau & Associates, Co., Minneapolis, Minn.

Continuation of Ser. No. 180,108, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 708,466, May 31, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,560
Int. Cl.[6] G06F *17/60*
U.S. Cl. 395—210 **9 Claims**

1. A method carried out on a programmed computer of obtaining product marketing information from consumers, the method comprising the steps of:

the programmed computer presenting a first page on a display apparatus, the first page providing descriptive product information to a consumer and querying the consumer to provide an open ended response specifying at least one advantage derived from the product information;

the programmed computer presenting a second page on the display apparatus, the second page listing the advantage provided by the consumer and querying the consumer to provide another open ended response specifying at least one benefit derived from the advantage previously provided by the consumer, the product information being concealed from the consumer at this time;



the programmed computer presenting a third page on the display apparatus, the third page listing the benefit provided by the consumer and querying the consumer to provide an additional open ended response specifying at least one situation in which a person might experience satisfaction from the benefit previously provided by the consumer, the product information and the advantage previously provided by the consumer being concealed from the consumer at this time;

the programmed computer storing the consumer responses, including categorizing the consumer responses into advantages, benefits, and situations and storing the categories of responses into memory electronically connected to the programmed computer;

the programmed computer searching the consumer responses stored in the memory for character strings and determining the frequency that each character string appears in each of the advantages, benefits and situations categories; and

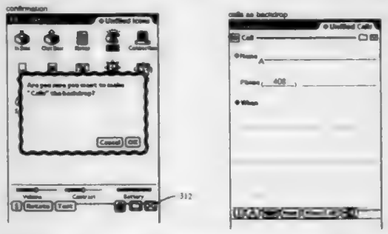
the programmed computer displaying on the display apparatus the frequency that at least some of the character strings stored in memory occur in each of the advantages, benefits and situations categories.

5,634,102

METHODS AND APPARATUS FOR A SELECTABLE BACKDROP

Stephen P. Capps, San Carlos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 7, 1995, Ser. No. 517,498
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—334 **17 Claims**



1. In a digital computer having a display screen, a method for executing an application program in a backdrop mode that makes said application program non-removable from said display screen, comprising:

designating said application program for execution in said back-drop mode, said application program being capable of being designated for execution in one of said back-drop mode and a non-backdrop mode;

executing said application program;

intercepting, using substitute subroutines external to said application program, selected data destined for said application program, thereby preventing said application program from responding to said selected data in a manner normally expected of said application program if said application program executes in said non-backdrop mode, said selected data including data for causing said application program to quit execution; and

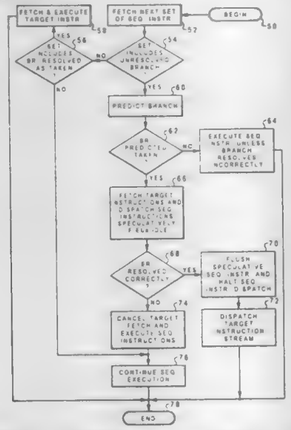
disabling a close option in said display screen to prevent a user of said digital computer from issuing a command to quit execution of said application program while said application program executes in said backdrop mode, wherein said method permits codes in said application program to remain substantially uncharged irrespective of whether said application program executes in said non-backdrop mode or in said backdrop mode.

5,634,103

METHOD AND SYSTEM FOR MINIMIZING BRANCH MISPREDICTION PENALTIES WITHIN A PROCESSOR

Carl D. Dietz, Frisco; Robert T. Golla, Plano, and Christopher H. Olson, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 9, 1995, Ser. No. 555,819
Int. Cl.[6] G06F *9/32*
U.S. Cl. 395—582 **18 Claims**



1. A method for executing instructions within a processor, said processor having a memory which stores a plurality of instructions arranged in a sequential order, wherein said processor has a predetermined maximum number of instructions that can be dispatched for execution during each processor cycle, said method comprising:

fetching a subset of said plurality of sequential instructions from said memory for execution by said processor;

determining whether said subset of said plurality of sequential instructions includes an unresolved branch instruction;

in response to a determination that said subset of said plurality of sequential instructions includes an unresolved branch instruction, predicting if a branch indicated by said branch instruction will be taken;

in response to said prediction, fetching at least one nonsequential target instruction indicated by said branch instruction from said memory;

determining whether or not said maximum predetermined number of instructions can be dispatched for execution during a processor cycle following said branch prediction from among sequential instructions preceding said branch instruction and said at least one target instruction without dispatching any sequential instructions which follow said branch instruction in said sequential order;

in response to a determination that said predetermined maximum number of instructions can be dispatched during said processor cycle following said branch prediction from among sequential instructions preceding said branch instruction and said at least one target instruction without dispatching any sequential instructions which follow said branch instruction, dispatching said predetermined maximum number of instructions for execution;

in response to a determination that said predetermined maximum number of instructions cannot be dispatched during said processor cycle following said branch prediction without dispatching any sequential instructions which follow said branch instruction, speculatively dispatching a sequential instruction which follows said branch instruction for execution;

in response to refutation of said branch prediction,

cancelling said fetch of said target instruction; and

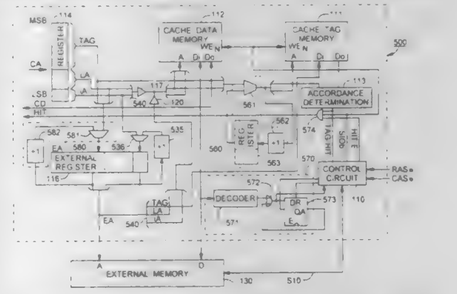
executing said sequential instruction which follows said branch instruction; wherein a performance penalty for a mispredicted branch is minimized.

5,634,104

CACHE MEMORY APPARATUS FOR READING DATA CORRESPONDING TO INPUT ADDRESS INFORMATION

Kazuhiko Maki, Tokyo, Japan, assignor to Oki Electric Industry Co. Ltd., Tokyo, Japan

Division of Ser. No. 295,685, Aug. 24, 1994. This application May 31, 1995, Ser. No. 455,029
Claims priority, application Japan, Feb. 28, 1992, 4-41774
Int. Cl.[6] G06F *12/12;13/00*
U.S. Cl. 395—403 **9 Claims**



1. A cache memory apparatus for reading data at a high speed corresponding to an input address information, the cache memory apparatus coupled to a main memory for storing a plurality of data each corresponding to a plurality of address information, each address information including a first address information and a second address information, and the cache memory apparatus having a first data group which is a part of the plurality of data, the cache memory apparatus comprising:

a first memory for storing a portion of said first address information corresponding to said first data group;

a second memory for storing a portion of said second address information corresponding to said first data group and said first data group;

a mis-hit circuit for outputting a first select information, said mis-hit circuit receiving said input address information, generating and storing a first updating information updated by the first select information, and selectively outputting either the first updating information or said first address information of the input address information as the first select information;

a first comparing circuit for comparing said first select information with said first address information stored in said first memory, said first comparing circuit determining whether the

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first select information is in accord or not with the first address information stored in said first memory;

a register for storing and outputting said first address information of said input address information and for storing second address information;

an updating circuit for outputting a second select information, the circuit receiving said input address information, generating a second updating information updated by the first address information of said input address information stored in said register, the updating circuit selectively outputting either said first address information or said second updating information as said second select information in accordance with a comparing result of said first comparing circuit; and

a decoding circuit for outputting an inhibiting signal inhibiting transfer of an address corresponding to said second updating information to said main memory in accordance with a data read from said main memory according to said second updating information.

5,634,105

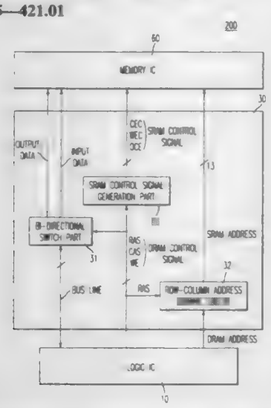
SEMICONDUCTOR MEMORY DEVICE TO INTERFACE CONTROL SIGNALS FOR A DRAM TO A SRAM

Kanji Mizuno, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,332

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—421.01 **8 Claims**



1. A RAM interface for receiving a control signal which controls a DRAM from a DRAM control device and applying the control signal to control a SRAM, comprising:

an address signal dividing means for dividing a serial row-column address signal from said DRAM control device into a row address signal and a column address signal wherein said address signal dividing means includes address signal latching means, a number of said address signal latching means being a same as a number of address lines,

and wherein said address signal latching means receive said serial row-column address signal and a RAS signal which instructs to fetch a row address signal, latch and output said row address signal at timing of said RAS signal while simultaneously outputting said serial row-column address signal as it presently is; and

a static RAM control signal generating means for receiving said control signal to generate a control signal which controls said SRAM, wherein said static RAM control signal generating means includes a delay circuit for controlling a timing of outputting said control signal.

5,634,106

POWER SAVING SYSTEM AND METHOD FOR REFRESHING A COMPUTER MEMORY BY SWITCHING BETWEEN INTERVAL REFRESH AND SELF-REFRESH OPERATIONS

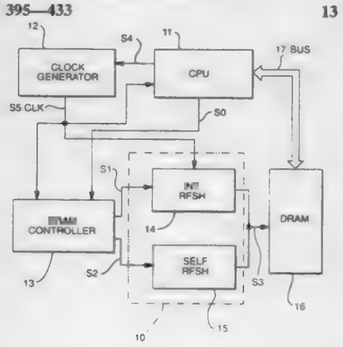
Katsumi Yaezawa, and Seiji Hinata, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 22, 1994, Ser. No. 361,680

Claims priority, application Japan, Dec. 24, 1993, 5-325517

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—433 **13 Claims**



1. A computer system comprising:

a CPU for providing system operation control signals including normal mode operation instruction and standby mode operation instruction signals;

a memory device for storing memory contents, the memory device requiring refreshing at a certain interval cycle;

a clock generator for supplying clock timing signals to elements of the system, including the CPU, the clock generator stopping the supply of clock timing signals when the CPU provides the standby mode instruction signal;

a memory control means for providing memory operation control signals including at least two kinds of memory refresh instruction signals, one of the kinds of memory refresh instruction signals being an interval refresh signal, to the memory device in accordance with the normal mode and standby mode operation instruction signals from the CPU, the memory control means providing a single first interval refresh signal to the memory device just before the time when the CPU changes from providing the normal mode operation instruction signal to the standby mode operation instruction signal and a single second interval refresh signal provided to the memory device just after the time when the CPU changes from providing the standby mode operation instruction signal to the normal mode operation instruction signal;

an interval refreshing means for executing an interval refresh operation of the memory device periodically in accordance with the clock timing signals while the CPU is providing the normal operation mode instruction signal to the memory control means; and

a self-refreshing means for executing a self refresh operation of the memory device when the CPU provides the standby mode instruction signal to the memory control means in order to enter a standby mode of system operation.

5,634,107

DATA PROCESSOR AND METHOD OF PROCESSING DATA IN PARALLEL

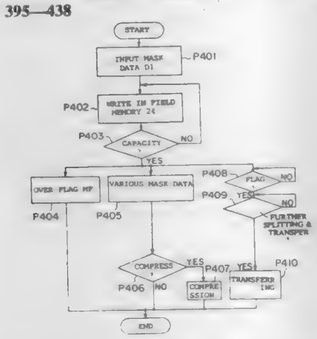
Masahiro Yumoto, and Kenichi Kobayashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 160,179, Dec. 2, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 540,029

Claims priority, application Japan, Dec. 3, 1992, 4-324374

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—438 **12 Claims**



8. A method of converting mask data for a semiconductor integrated circuit into exposure data in parallel, for use in a data processor including a plurality of data processing units connected to a data bus, each of said plurality of data processing units having a data storage allowable value and converting said mask data assigned to each data processing unit into said exposure data, and a controller connected to said data bus, for adjusting a computation share among said plurality of data processing units, said method comprising the steps of:

splitting a layout region of said semiconductor integrated circuit into a plurality of fields;

comparing an amount of mask data included in said plurality of fields with a data storage allowable value of said data processing units, respectively;

detecting data excess flag set up in said data processing unit to which said mask data are assigned;

further splitting only a field including said mask data into smaller fields if said amount of mask data exceeds said data storage allowable value; and

transferring said mask data included in said smaller fields to said data processing unit in which said data excess flag is not set up.

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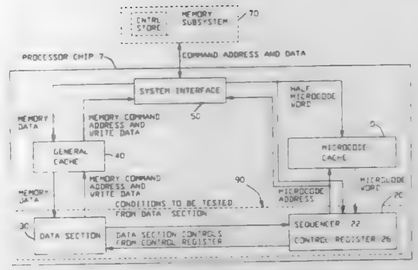
SINGLE CHIP PROCESSING SYSTEM UTILIZING GENERAL CACHE AND MICROCODE CACHE ENABLING SIMULTANEOUS MULTIPLE FUNCTIONS

Richard D. Freeman, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 159,683, Nov. 30, 1993. This application Jul. 2, 1996, Ser. No. 674,408

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—445 **4 Claims**



1. In a network wherein a single chip central processing module utilizes a system interface means to communicate with a main control store in a main memory subsystem, a multi-cache processing system comprising:

(a) said system interface means connected to said main memory subsystem and providing an interface to a general cache means and a microcode cache means, including:

(a1) a data staging register for receiving and conveying OP CODES of X bits and data words of X bits to said general cache means, and for receiving and conveying microcode words of 2X bits to said microcode cache means where X signifies 45 bits of data;

(a2) means to convey requests, from a processor means, for data words and for OP CODES, for transfer to said general cache means;

(a3) means to convey requests, to said main memory subsystem from said microcode cache means, for microcode words;

(b) said general cache means for holding said OP CODES and said data words for selection and execution by said processor means;

(c) said microcode cache means for holding frequently used microcode words accessible in one clock cycle to said processor means, and wherein each microcode word has multiple fields therein; wherein said microcode cache includes:

(a) address tag storage means for holding addresses of microcode words in a microcode word storage means;

(b) said microcode word storage means for holding frequently used microcode words;

(c) use sensing means to register addresses of less recently used microcode word addresses, including:

(c1) means to replace less recently used microcode word addresses and microcode words with more recently used microcode word addresses and microword;

(d) state machine control means for controlling the loading of microcode word addresses and microcode words in said address tag storage means and said microcode word storage means, and including:

(d1) means to generate a fetch command to said system interface means for transmission to said main memory subsystem when said processor means requests a microcode word not present (miss) said microcode cache means;

(d2) means to generate a freeze signal when a microcode cache miss occurs to stop said processor means until the missed microcode word is fetched from said main memory subsystem and placed in said control register means;

(d3) means to signal said sequencer means to convey the address of a missed microcode word to said address tag storage means to update said address tag storage means when the missed word has been fetched and placed in said microcode word storage means;

(d) said processor means for selecting an OP CODE from said general cache means to address a selected microcode word for execution of said OP CODE, and including:

(d1) means to utilize said multiple fields in said selected microcode word to perform multiple functions concurrently;

(d2) a control register means for receiving and holding said selected microcode word for execution of said OP CODE;

(d3) a data section unit holding multiple registers each of which can be concurrently activated by one of said multiple fields in said microcode word, each of said registers performing a specific processing function when activated;

(d4) sequencer means for generating the address of the microcoded word required to execute a selected OP CODE, said address microcode word being delivered to said control register means in one clock cycle;

(e) and wherein said system interface means, said general cache means, said microcode cache means and said processor means are all implemented on one single chip.

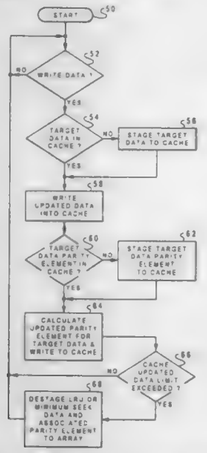
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5,634,109

METHOD AND SYSTEM FOR ENHANCED DATA MANAGEMENT EFFICIENCY IN MEMORY SUBSYSTEMS UTILIZING REDUNDANT ARRAYS OF DISK MEMORY DEVICES AND A NONVOLATILE CACHE

James C. Chen, San Jose; Joseph S. Glider, Palo Alto; Lloyd R. Shipman, Jr., San Jose, and Jesse I. Stamness, Los Altos Hills, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1994, Ser. No. 261,791
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—470 17 Claims



1. A method for enhanced data management in a memory storage subsystem which includes a nonvolatile cache and a redundant array of disk memory devices for storing a plurality of data segments and associated parity elements, said method comprising the steps of:

determining if a selected data segment and an associated parity element are present within said nonvolatile cache in response to an attempted update to said selected data segment;

staging said selected data segment and an associated parity element into said nonvolatile cache from said redundant array of disk memory devices in response to a determination that said selected data segment and an associated parity element are not present within said nonvolatile cache;

updating both said selected data segment and said associated parity element;

writing said updated selected data segment and said updated associated parity element into said nonvolatile cache; and

destaging a data segment and an associated parity element from said nonvolatile cache into said redundant array of disk memory devices only in response to a number of updated data segments within said nonvolatile cache exceeding a predetermined number wherein access performance degradation associated with redundant arrays of disk memory devices is minimized.

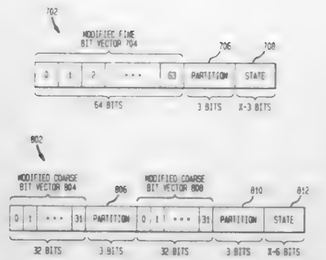
5,634,110

CACHE COHERENCY USING FLEXIBLE DIRECTORY BIT VECTORS

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Filed May 5, 1995, Ser. No. 435,463
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—472 17 Claims

5. In a node comprising at least a portion of main memory having a plurality of memory blocks, said node being part of a computer system having a plurality of partitions each comprising a plurality of nodes, a method for denoting nodes in which said memory blocks are cached, said method comprising the steps of:



(1) maintaining a directory comprising a plurality of entries, each entry associated with one or more of said memory blocks;

(2) maintaining an entry of said directory in a modified fine bit vector format when a memory block associated with said entry is cached in one or more nodes all of which are within a single partition of said computer system, said entry when maintained in said modified fine bit vector format comprising a partition field storing information identifying said single partition, and a modified fine bit vector field storing information identifying nodes in said single partition where said memory block is cached;

(3) maintaining said entry in a modified coarse bit vector format when said memory block is cached in multiple nodes distributed among P partitions of said computer system, P being greater than one, said entry when maintained in said modified coarse bit vector format comprising Q partition fields each storing information identifying one of said P partitions, and Q modified coarse bit vector fields each storing information identifying nodes in one of said P partitions where said memory block is cached; and

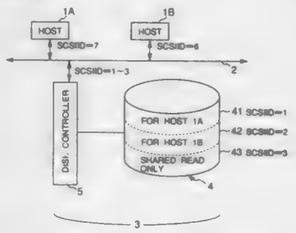
(4) dynamically switching in real time between at least said modified fine bit vector format and said modified coarse bit vector format, depending upon a current cache state of said memory block.

5,634,111

COMPUTER SYSTEM INCLUDING A DEVICE WITH A PLURALITY OF IDENTIFIERS

Takashi Oeda; Kiyoshi Honda, both of Yokohama; Naoto Matsunami, Fujisawa, and Minoru Yoshida, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 31,880
Claims priority, application Japan, Mar. 16, 1992, 4-058102
Int. Cl.[6] G06F *12/06*
U.S. Cl. 395—480 8 Claims



7. An external storage device which performs accessing in accordance with a device ID and a command transferred from a plurality of computers, said external storage device comprising:

division means for dividing a storage area of said external storage device into a plurality of partitions;

means for affording different device ID's to each of said partitions which have been divided;

means for selecting a partition which has been afforded a device ID corresponding to the device ID transferred from said computers; and

means for accessing said selected partition in accordance with a command transferred together with the device ID and for transferring a result of the access to said computers;

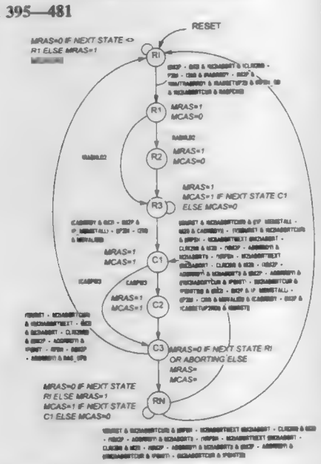
wherein each of the device ID's transferred to said external storage device from each of said plurality of computers differ from each other.

5,634,112

MEMORY CONTROLLER HAVING PRECHARGE PREDICTION BASED ON PROCESSOR AND PCI BUS CYCLES

Gary W. Thome, Tomball; Michael P. Moriarty, Spring, and John E. Larson, Katy, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 14, 1994, Ser. No. 324,112
Int. Cl.[6] G06F *12/06*
U.S. Cl. 395—481 27 Claims



1. A computer system comprising:

a memory formed of page mode DRAMs;

a processor performing read and write operations to the memory;

an input/output bus which can receive bus masters which access the memory, the bus masters performing read and write operations to the memory, the input/output bus including address, data, and control signals, wherein the control signals specify the type of operation independent from an address specified by the address signals;

a hard disk drive for storing information;

a hard disk drive connector coupled to said input/output bus and to said hard disk drive, said hard disk drive connector for coupling and conveying information between said hard disk drive and said input/output bus;

a keyboard connector coupled to said input/output bus, said keyboard connector for receiving keyboard information from a user and providing that keyboard information to said input/output bus; and

a memory controller for controlling operation of the DRAMs by providing row and column address strobe signals, including:

means for determining if the memory is in an idle state after completion of a memory operation;

means for storing a last type of operation performed by the memory prior to said idle state;

means for determining if the last type of operation performed was from a bus master on said input/output bus; and

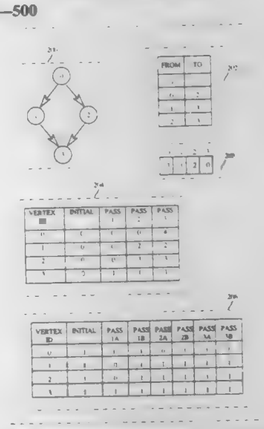
means for holding the row address strobe signal asserted during said idle state predictive of a page hit to said page mode DRAMs after said idle state if said last type of operation was from one of the bus masters on said input/output bus and was a predetermined type of operation as specified by the control signals independent from the address signals and otherwise setting the row address strobe negated during said idle state predictive of a page miss to said page mode DRAMs after said idle state if said last type of operation was from the one of the bus masters on said input/output bus and was not said predetermined type of operation as specified by the control signals independent from the address specified by the address signals.

5,634,113

METHOD FOR GENERATING A PREFERRED PROCESSING ORDER AND FOR DETECTING CYCLES IN A DIRECTED GRAPH USED TO REPRESENT SYSTEM COMPONENT CONNECTIVITY

John T. Rusterholz, Roseville, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 13, 1994, Ser. No. 354,336
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—500 23 Claims



10. A computer-implemented method for generating a processing order and for detecting cycles in a directed graph having an array of vertices and an array of arcs connecting pairs of vertices, wherein the array of vertices and the array of arcs may be randomly-ordered, and wherein each vertex represents a component in a system and each arc represents a logical relationship between a plurality of components in the system, each arc being defined by a starting vertex and an ending vertex, each vertex being assigned or unassigned to a position in a preliminary processing order array and being electronically marked as a leaf vertex or a non-leaf vertex, a parent vertex being the starting vertex and a corresponding child vertex being the ending vertex for any arc, comprising the steps of:

(a) initializing a next available position in the preliminary processing order array to the first position in the preliminary processing order array;

(b) initializing each vertex in the array of vertices to be unassigned to any position in the preliminary processing order array;

(c) electronically marking each vertex in the array of vertices as a leaf vertex;

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(d) traversing the array of arcs and electronically marking the starting vertex as a non-leaf vertex for each arc whose ending vertex is unassigned to any position in the preliminary processing order array;

(e) traversing the array of vertices and for each vertex that is unassigned to any position in the preliminary processing order array and electronically marked as a leaf vertex, incrementing said next available position and assigning the vertex to said next available position in the preliminary processing order array, and for each vertex that is unassigned to any position in the preliminary processing order array and electronically marked as a non-leaf vertex, electronically marking the vertex as a leaf vertex;

(f) indicating that a cycle exists in the directed graph when there are unassigned vertices remaining in the array of vertices and no vertices were assigned positions in the preliminary processing order array during said step (e);

(g) repeating said steps (d)–(f) if there are vertices in the array of vertices that are unassigned to any positions in the preliminary processing order array and no cycle was indicated in said step (f); and

(h) generating a final processing order array from the positions of the vertices in the preliminary processing order array such that each vertex in the array of vertices will be processed in a predetermined order.

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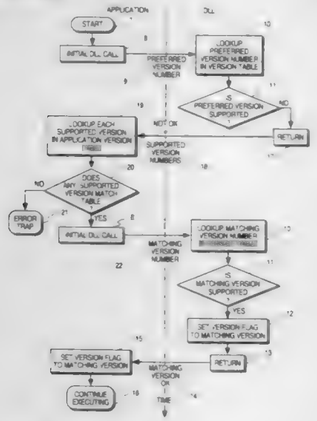
DYNAMIC LINK LIBRARY VERSION NEGOTIATION

Glen C. Shipley, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 154,269, Nov. 18, 1993, abandoned. This application Jul. 3, 1995, Ser. No. 498,006

Int. Cl.° G06F *9/45*

U.S. Cl. 395—500 **16 Claims**



1. A method of executing an application program and a Dynamic Link Library (DLL), comprising:

said application program making an initial call to said DLL to specify a preferred version number;

said DLL looking up said preferred version number in a supported version table, and, if found, returning to said application program a "preferred version OK" indication, and, if not found, returning to said application program both a "preferred version not supported" indication and at least one supported version number from said supported version table, said supported version table including a set of independent version numbers that said DLL supports;

said application program continuing its execution in response to said "preferred version OK" indication; and

said application program, in response to said "preferred version not supported" indication, comparing each said supported version number against each of a set of independent version numbers with which said DLL is compatible, said compatible version set being held in a compatible version table, and, if there is no match there between, performing an error trap operation, and, if there is a match there between, making an initial call to said DLL specifying as said preferred version number the version number of said match.

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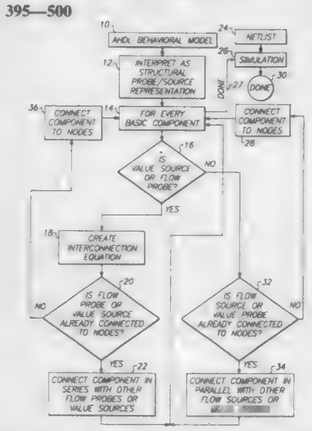
SYSTEM AND METHOD FOR BEHAVIORAL DESCRIPTION TRANSLATION

Daniel Fitzpatrick, Santa Clara, and Kenneth S. Kundert, Belmont, both of Calif., assignors to Cadence Design Systems, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 137,842, Oct. 15, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 355,058

Int. Cl.° G06F *17/00*

U.S. Cl. 395—500 **28 Claims**



2. A method for behavioral description translation of higher-level behavioral descriptions of a circuit to a lower-level specification for a circuit simulator system such that users treat voltages and currents symmetrically when formulating the higher-level behavioral description, the method comprising the steps of:

identifying all access functions in a higher-level behavioral description wherein said higher-level behavioral description describes voltages and currents symmetrically;

constructing a structural representation for each component in a circuit from identified access functions such that said structural representation contains a branch internal to said each component that describes behavior of said each component;

from the structural representations, performing the steps of:

collapsing all S-type branches connected in series between a pair of nodes into one new branch where voltage on the new branch is a sum of voltages of said all S-type branches; and

collapsing all P-type branches connected in parallel between another pair of nodes into one second new branch where current through the second new branch is a sum of currents of said all P-type branches;

from said first new and second new branches, generating a set of branch relationships describing said circuit;

combining the generated set of branch relationships to eliminate unnecessary branch relationships therefrom; and

providing said reduced relationship set to said circuit simulator system.

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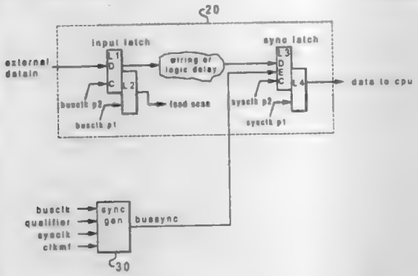
NON-INTEGER MULTIPLE CLOCK TRANSLATOR

Bruce W. Singer, Richmond, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1995, Ser. No. 413,641

Int. Cl.° G06F *1/12*

U.S. Cl. 395—551 **12 Claims**



1. A method of synchronizing data from an external clock frequency of an external clock to an internal clock frequency of an internal clock of an apparatus that is a non-integer multiple of the external clock frequency, the method comprising the steps of:

generating a series of sync pulses in a selected pattern, wherein the pattern is a function of the non-integer multiple;

latching synchronous data in the apparatus that is received at the external frequency; and

outputting the latched synchronous data from the apparatus in synchronization with the internal frequency, in response to the series of sync pulses.

5,634,117

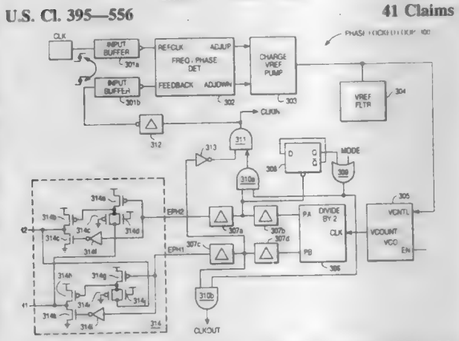
APPARATUS FOR OPERATING A MICROPROCESSOR CORE AND BUS CONTROLLER AT A SPEED GREATER THAN THE SPEED OF A BUS CLOCK SPEED

James W. Conary, Aloha, and Robert R. Beutler, Lake Oswego, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 778,575, Oct. 17, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,711

Int. Cl.° G06F *1/08*

U.S. Cl. 395—556 **41 Claims**



13. A microprocessor formed in a single integrated circuit chip for use in a computer system having a bus transferring data throughout the computer system including the microprocessor, wherein said microprocessor is clocked by an external clock signal at a first frequency, said microprocessor comprising:

a CPU core responsive to a core clock signal, said CPU core including a CPU executing instructions, an instruction-storage means for storing instructions, and a transfer means coupled to said CPU and said instruction-storage means for transferring instructions from the instruction-storage means to the CPU; and

bus controller means coupled to said CPU core and said bus for transferring data between said CPU core and said bus, wherein said CPU core and the bus controller means operate at a faster frequency than said bus and said external clock, and further wherein the bus is clocked with a bus clock signal having a pulse width equal to the pulse width of the core clock signal clocking the CPU core, wherein the bus controller means transfers data between said CPU core and said bus at the clock speed of said bus clock signal, while said CPU core and the bus controller means operate at the clock speed of said core clock signal.

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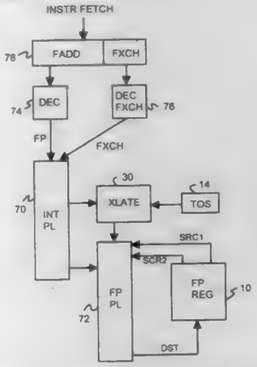
SPLITTING A FLOATING-POINT STACK-EXCHANGE INSTRUCTION FOR MERGING INTO SURROUNDING INSTRUCTIONS BY OPERAND TRANSLATION

James S. Blomgren, San Jose, Calif., assignor to Exponential Technology, Inc., San Jose, Calif.

Filed Apr. 10, 1995, Ser. No. 419,122

Int. Cl.° G06F *9/40*

U.S. Cl. 395—567 **20 Claims**



1. A processor for processing instructions including an exchange instruction, the exchange instruction for exchanging the contents of an exchange-destination register with the contents of an exchange-source register, the processor comprising:

a translation circuit which comprises:

destination translation means for translating a first destination-register specifier of a preceding instruction which precedes the exchange instruction, the first destination-register specifier being replaced with an exchange-source specifier that specifies a register as the exchange-source register, wherein the preceding instruction writes a result of an operation specified by the preceding instruction to the exchange-source register;

source translation means for translating a second source-register specifier of a following instruction which follows the exchange instruction, the second source-register specifier being replaced with the exchange-source specifier, wherein the following instruction reads the exchange-source register for a source operand; and

means for removing the exchange instruction from further processing by the processor when the destination translation means replaces the first destination-register specifier with the exchange-source specifier and the source translation means replaces the second source-register specifier with the exchange-source specifier,

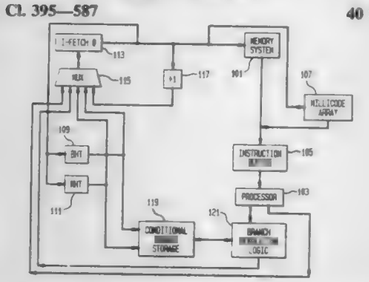
whereby a first half of the exchange instruction is processed by the preceding instruction and a second half of the exchange instruction is processed by the following instruction.

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5,634,119
COMPUTER PROCESSING UNIT EMPLOYING A SEPARATE MILLICODE BRANCH HISTORY TABLE

Philip G. Emma, Danbury, Conn.; Joshua W. Knight, III, Mohegan Lake, N.Y.; Thomas R. Puzak, Ridgefield, Conn.; James R. Robinson, Essex Junction, Vt., and A. James Van Norstrand, Jr., Round Rock, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1995, Ser. No. 369,441
Int. Cl.[6] G06F *9/32*
U.S. Cl. 395—587 **40 Claims**



1. In a computer processing system having memory mapped into at least a first and second region, said first region storing instructions belonging to a first instruction set architecture of said computer processing system and said second region storing instructions belonging to a second instruction set architecture of said computer processing system, wherein said first instruction set architecture includes at least one instruction that does not belong to said second instruction set architecture, wherein said at least one instruction belonging to said first instruction set architecture is implemented by a plurality of instructions belonging to said second instruction set architecture, and wherein said instructions belonging to said first instruction set architecture comprise at least one branch type instruction and said instructions belonging to said second instruction set architecture comprise at least one branch type instruction, a method of fetching instructions from said first and second regions of memory into an instruction buffer for execution by a processor unit, the method comprising the steps of:

in a first mode, fetching instructions belonging to said first instruction set architecture from said first region of memory into said instruction buffer according to data stored in a first branch history table associated with instructions belonging to said first instruction set architecture; and

in a second mode, fetching instructions belonging to said second instruction set architecture from said second region of memory into said instruction buffer according to data stored in a second branch history table associated with instructions belonging to said second instruction set architecture;

wherein said second branch history table is separate from said first branch history table.

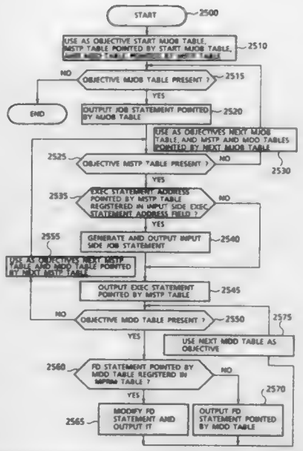
5,634,120
COMPUTER SYSTEM SUPPORTING UTILIZATION OF UTILITY FUNCTIONS APPLICABLE TO CONCURRENTLY EXECUTING JOBS BY MONITORING JOB EXCUTION CHARACTERISTICS AND DETERMINING ELIGIBLE JOB COMBINATIONS FOR UTILITY FUNCTION

Hirofumi Nagasuka, Yokohama; Yoshiaki Shinmura, Chigasaki, and Toshiaki Arai, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 19, 1993, Ser. No. 49,508
Claims priority, application Japan, Apr. 22, 1992, 4-102852
Int. Cl.[6] G06F *9/00*
U.S. Cl. 364—608 **11 Claims**

1. A computer system comprising:

first storage means for storing data files;



second storage means for storing job programs each of which is prepared for accessing said data files;

executing means for executing a plurality of said job programs parallelly or sequentially;

system monitoring means for monitoring said system, in accordance with job program executions performed by said executing means, so as to obtain, with respect to individual ones of said job program executions, a system operation status information including a job program name, a data file name to which said job program accesses, an access type representing whether the access to said data file is read access or write access, an access start time indicating when the access starts, an access end time indicating when the access is completed, and a record access order indicating order of accesses to respective records in said data file from said job program;

searching means fog searching a first and a second job programs to which a selected utility function is applicable, wherein said first and second job programs access a same file, said access type of said first job program indicates write access and said access type of said second job program indicates read access, said record access order of said first and second job program coincide with each other, and said access end time of said first job program is prior to said access start time of said second job program; and

outputting means for outputting a report identifying said retrieved pair of job programs.

5,634,121
SYSTEM FOR IDENTIFYING AND LINKING DOMAIN INFORMATION USING A PARSING PROCESS TO IDENTIFY KEYWORDS AND PHRASES

William J. Tracz, Owego, N.Y., and Eric C. Newton, Odenton, Md., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed May 30, 1995, Ser. No. 454,482
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—602 **7 Claims**

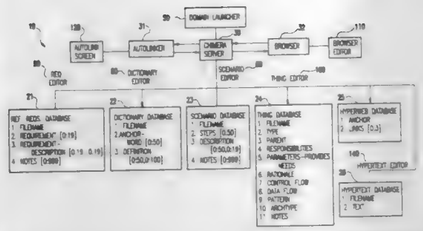
1. A method to identify and link together information in a computer domain comprising the steps of:

storing into a first database requirements for application programs in a domain;

storing into a second database definitions of key terms and key phrases relating to said domain;

storing into a third database program steps and step definitions for application programs in said domain;

storing into a fourth database objects, devices and program modules required by said program steps in said domain;



storing into a fifth database textual documentation describing the application programs in said domain;

invoking a parsing process to parse any or all of the first, second, third, fourth, and fifth databases in order to identify key words and phrases;

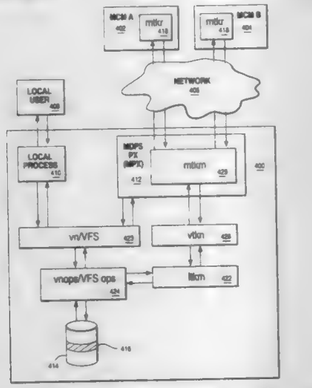
using said parsing process to establish links between said key words, said phrases and selected said first, second, third, fourth, or fifth databases;

using said links to traverse from any one of the said first, second, third, fourth, or fifth databases to any of the other said first, second, third, fourth, or fifth databases.

5,634,122
SYSTEM AND METHOD FOR MULTI-LEVEL TOKEN MANAGEMENT FOR DISTRIBUTED FILE SYSTEMS

Larry K. Loucks, and Amal A. Shaheen, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,858
Int. Cl.[6] G06F *13/376;12/06*
U.S. Cl. 395—608 **17 Claims**



1. A system for managing shared data in a data processing system, the system comprising:

first means for managing requests for authorization for a computer implemented process to perform an operation on shared data generated by a first means for requesting according to a first file system protocol;

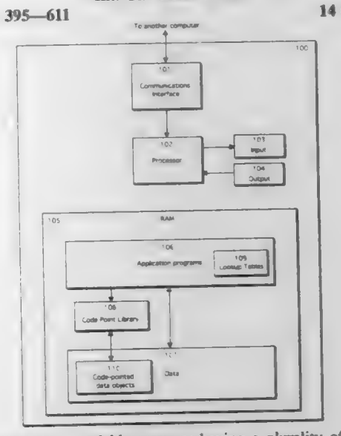
second means for managing requests for authorization for a computer implemented process to perform an operation on shared data generated by a second means for requesting according to a second file system protocol, said second means for managing including a second means for granting authorization tokens to a file system client in response to a client operation request;

first means for granting authorization tokens allowing an operation to be performed on said shared data, said means for granting being responsive to said first and second means for managing.

5,634,123
DATA MANAGEMENT USING NESTED RECORDS AND CODE POINTS

H. Richard Bennion, South Jordan, Utah, assignor to Park City Group, Inc., Park City, Utah

Filed Jul. 8, 1993, Ser. No. 88,788
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—611 **14 Claims**



1. A computer readable memory having a plurality of storage locations for storing a plurality of records on the computer readable memory, comprising:

at least one hierarchical storage structure including at least one first container record,

each first container record having a number of contiguous, first storage locations, selected one of the first storage locations forming:

a length field specifying a number of all storage locations of the first container record;

at least one data record each data record having a number of contiguous second storage locations at least one of the second storage locations forming a data field for storing data, and at least one of the second storage locations forming a length field specifying a number of contiguous second storage locations of the data record; and

at least one second container record having a number of contiguous third storage locations forming a hierarchical structure of other container records and data records;

each record including a code point field specifying whether the record is a container record or a data record and specifying at least one of a plurality of application programs for processing the record.

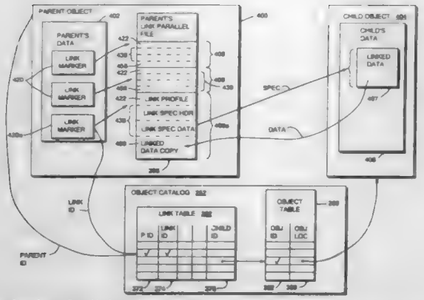
5,634,124
DATA INTEGRATION BY OBJECT MANAGEMENT

Dana Khoyi, Dracut; Marc San Soucie, Tyngsboro; Carolyn E. Surprenant, Dracut; Laura O. Stern, Woburn, and Ly-Huong T. Pham, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Billerica, Mass.

Continuation of Ser. No. 66,688, May 20, 1993, Pat. No. 5,421,012, which is a continuation of Ser. No. 938,928, Aug. 31, 1992, Pat. No. 5,226,161, which is a continuation of Ser. No. 681,435, Apr. 3, 1991, Pat. No. 5,206,951, which is a continuation of Ser. No. 88,622, Aug. 21, 1987, abandoned. This application May 25, 1995, Ser. No. 450,457
Int. Cl.[6] G06F *9/40;17/30*
U.S. Cl. 395—614 **3 Claims**

1. In a data processing system including objects for storing data, each object being of a type defined by the type of data stored in the object, and a processor for performing operations upon the data in the objects under the control of object managers, a data integration

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mechanism for linked integration of data from a first object into a second object, comprising:

(A) a plurality of object managers, each object manager controlling the processor for performing at least one operation upon a corresponding type of data, including

(a) an object manager corresponding to the second object and responsive to a user request for the insertion of linked data from the first object for inserting a link marker into the data in the second object, the link marker

indicating the location of the linked data in the second object, and

including a link identification identifying the link within the first object,

(b) object manager corresponding to the first object and responsive to a user request for the linked data for identifying the location and extent of the linked data within the first object,

(B) a link manager, including

(a) a link memory for storing information relating the link identification to an identification of the first object, and

(b) a data identification memory for storing information identifying the type, location and extent of the linked data, and

(c) an object manager table for storing information relating each type of object to at least one corresponding object manager, wherein

(C) the object manager corresponding to the second object is responsive to a request for an operation to be performed upon the linked data for

(a) reading the link identification from the link marker, and

(b) providing the link identification to the link manager,

(D) the link manager is responsive to the link identification for providing to the object manager corresponding to the second object

(a) the identification of the linked data from the link memory,

(b) an identification of an object manager corresponding to the linked data from the object manager table, and

(c) the information identifying the location and extent of the linked data from the data identification memory,

(E) the object manager corresponding to the second object is responsive to the identification of the object manager corresponding to the linked data for invoking the object manager corresponding to the linked data and passing to the object manager corresponding to the linked data an identification of the requested operation, the identification of the second object and the information identifying the linked data, and

(F) the object manager corresponding to the linked data is responsive to the identification of the requested operation, the identification of the second object and the information identifying the linked data for performing the requested operation on the linked data.

5,634,125

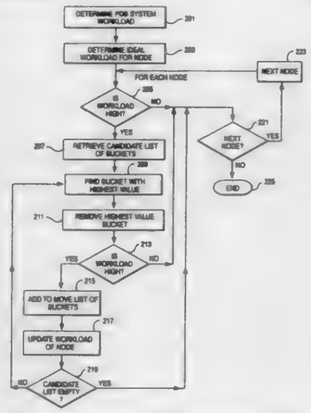
SELECTING BUCKETS FOR REDISTRIBUTING DATA BETWEEN NODES IN A PARALLEL DATABASE IN THE QUIESCENT MODE

Shih-Gong Li, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1993, Ser. No. 116,086

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—619 15 Claims



1. A method for determining which data stored in the nodes in a parallel database system to redistribute to a receiving node, comprising the steps of:

calculating an average workload for the nodes within the parallel database system;

determining a transmitting node having a workload which exceeds the average workload;

selecting redistributable data which when redistributed from the transmitting node to the receiving node will lower the transmitting node workload toward the average workload; and

redistributing the redistributable data from the transmitting node to the receiving node.

5,634,126

SOFTWARE PROGRAM STRUCTURE AND METHOD FOR MODULIZING THE OPERATIONS OF A TELECOMMUNICATIONS SYSTEM

Bror L. Norell, Älvsjö, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 112,809, Aug. 27, 1993, abandoned.

This application May 25, 1995, Ser. No. 451,072

Claims priority, application Sweden, Aug. 28, 1992, 9202488; Mar. 25, 1993, 9301000

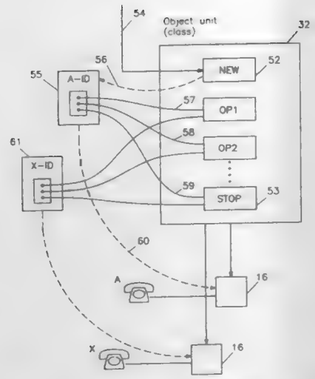
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—674 30 Claims

1. A method for modulizing the operations of a telecommunication system which includes a number of resources and software for controlling the individual resources and the manner in which these resources coordinate at a superordinate level, wherein the software is divided into object logic and control logic, comprising the steps of:

controlling respective individual resources using said object logic, which includes a number of object units, each of which represents a respective type of resource, and wherein a resource of one specific type can be used for a number of different purposes; and

controlling cooperation between corresponding resources using said control logic which includes a number of control cases, each of which in turn mutually combine a number of object



units in a superordinate fashion, irrespective of the manner in which an individual object unit is intended to influence its resource.

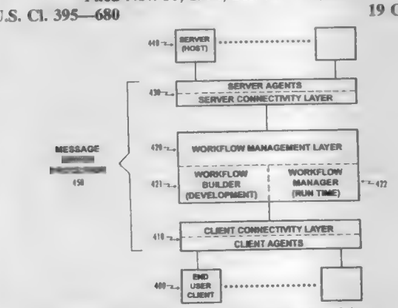
5,634,127

METHODS AND APPARATUS FOR IMPLEMENTING A MESSAGE DRIVEN PROCESSOR IN A CLIENT-SERVER ENVIRONMENT

Donald M. Cloud, Jamestown; Kevin F. Kelly, East Greenwich; David P. Bonaccorsi, Warwick, all of R.I., and Mark K. Weeks, Berkley, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 350,166

U.S. Cl. 395—680 19 Claims



1. A message driven client-server system comprising:

a. a plurality of sets of one or more client processes running on respective client processors, selectively generating request messages;

b. one or more server processes running on one or more host processors providing reply information;

c. a message driven processor for translating a request message from a client process into one or more units of work required to satisfy the request and for selectively sending a transaction request message to one or more server processes;

d. means for providing message based connectivity between one or more client processes and said message driven processor;

e. means for providing connectivity between the message driven processor and one or more server processes; and,

f. means for assembling reply information from a server process into one or more reply messages and sending the reply message to the client process which originated the request message;

whereby a message from a client processor is translated into units of work and transactions are selectively sent to the host processors and information retrieved is returned to the client in satisfaction of the request message.

5,634,128

METHOD AND SYSTEM FOR CONTROLLING ACCESS TO OBJECTS IN A DATA PROCESSING SYSTEM

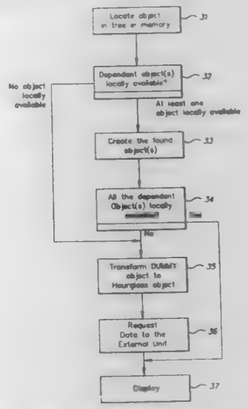
Massimo Messina, Rome, Italy, assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 126,463, Sep. 24, 1993, Pat. No. 5,471,619.

This application Jul. 27, 1995, Ser. No. 507,921

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—682 12 Claims



1. An article of manufacture for use in a computer system to control the access to objects in a data processing application capable of exchanging data with at least one external unit, the objects being hierarchically structured and each of the objects being either locally available or retrievable from an external unit, said article of manufacture comprising a computer readable storage medium having a computer program code embodied in said medium which may cause the computer to:

associate a counter with each object indicating whether there is at least one object dependent on the object;

append a dummy dependent object to each locally available object having at least one object dependent on the locally available object that is retrievable from an external unit;

select an object;

make accessible for a command accessing an object dependent on the selected object, an object dependent on the selected object that is locally available and locking the access to an object dependent on the selected object which is retrievable from an external unit; and

unlock the access to an object dependent on the selected object that is retrievable from an external unit when all related information has been retrieved from an external unit.

5,634,129

OBJECT ORIENTED SYSTEM FOR REPRESENTING PHYSICAL LOCATIONS

Robert D. Dickinson, Hayward, Calif., assignor to Object Technology Licensing Corp., Cupertino, Calif.

Continuation of Ser. No. 71,835, Jun. 3, 1993, abandoned.

This application Dec. 20, 1995, Ser. No. 575,241

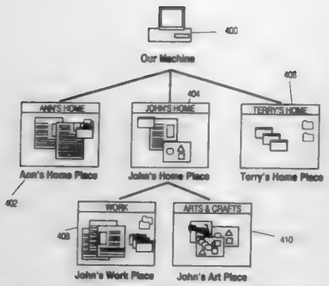
Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—683 24 Claims

1. A method for storing information relating to a physical location in a memory of a computer system having a display device, the method comprising the steps of:

(a) storing information defining a plurality of place classes in the memory, each of the plurality of place classes including: means for generating on the display device an image representative of a physical location; a data structure for holding information; a constructing function for constructing a place object from the respective place class; a plurality of inserting

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member functions, each of the plurality of inserting member functions inserting information for objects in the data structure; and a plurality of transferring member functions, each of the plurality of transferring member functions for transferring information identifying an object from a first place object to a second place object;

(b) executing the constructing member function to instantiate a first place object in the memory for one of the plurality of users, the first place object having a display presentation representing a first physical location;

(c) executing a first one of the plurality of inserting member functions to insert user preference information for the one user in the data structure of the first instantiated place object; and

(d) executing a second one of the plurality of inserting member functions to insert an application program which performs a function characteristic of the first physical location of the first place object so that the preference information inserted in the data structure by the first one of the plurality of inserting member functions is applied to the application program.

5,634,130

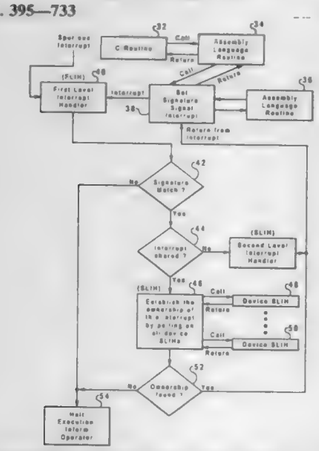
METHOD AND APPARATUS FOR SPURIOUS INTERRUPT DETECTION IN A DATA PROCESSING SYSTEM

Van H. Lee, Cedar Park, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 124,511, Sep. 20, 1993, abandoned. This application Oct. 16, 1995, Ser. No. 543,764

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—733 **15 Claims**



1. A method for detecting spurious interrupts in a data processing system, comprising:

storing an interrupt signature for an expected interrupt;

enabling interrupts by said data processing system;

invoking a first level interrupt handler to validate said stored interrupt signature upon receipt of an interrupt by said data processing system;

upon validation by said first level interrupt handler, invoking a single specific second level interrupt handler for validating said stored interrupt signature for any one of a plurality of interrupt sources shared by said single specific second level interrupt handler; and

returning said first level interrupt handler to validation of a subsequent interrupt following invocation of said single specific second level interrupt handler.

5,634,131

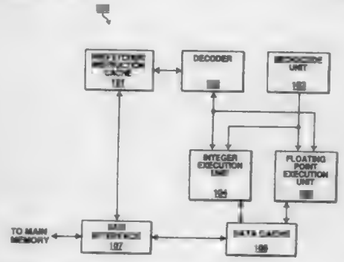
METHOD AND APPARATUS FOR INDEPENDENTLY STOPPING AND RESTARTING FUNCTIONAL UNITS

Eugene P. Matter, Folsom; Yahya S. Sotoudeh, Santa Clara, both of Calif., and Gregory S. Mathews, Boca Raton, Fla., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 973,077, Nov. 6, 1992, Pat. No. 5,392,437. This application Oct. 26, 1994, Ser. No. 329,244

Int. Cl.[6] G06F *1/32;1/04*

U.S. Cl. 395—750 **32 Claims**



1. An integrated circuit comprising:

a plurality of functional units each controlled by separate internally generated clock signal;

at least one functional unit of the plurality of functional units comprising

first circuitry that detects when the one functional unit is not in use, and

second circuitry, responsive to the first circuitry, that disables the one functional unit's clock signal when the one functional unit is not in use.

5,634,132

OPERATING SYSTEM INDEPENDENT SUPPORT FOR MIXED VOLTAGE DEVICES

John J. Pearce, 13413 Three Island Rd., Del Valle, Tex. 78617, and Leslie Thompson, 13245 Kerrville Folkway, Austin, Tex. 78729

Filed Jun. 23, 1995, Ser. No. 493,889

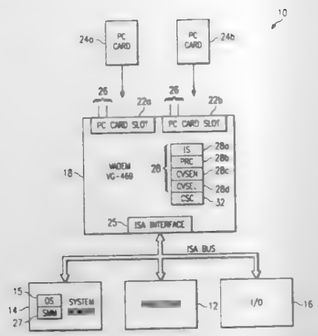
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750 **33 Claims**

1. In a computer comprising a processor electrically connected to a device capable of operation at more than one voltage level, a method of providing operating system independent support for said device, the method comprising:

causing said processor to enter system management mode ("SMM");

detecting a voltage requirement for said device;



setting a voltage level of said device to said detected voltage requirement; and

causing said processor to exit SMM.

5,634,133

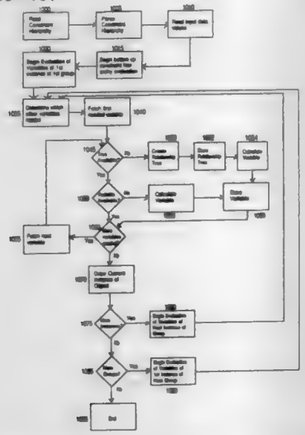
CONSTRAINT BASED GRAPHICS SYSTEM

Winslow B. Kelley, Natick, Mass., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 823,660, Jan. 17, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 272,950

Int. Cl.[6] G06T *11/20*

U.S. Cl. 395—764 **21 Claims**



1. In a spreadsheet application program, a method for graphically displaying spreadsheet cell data, said method comprising the steps of:

creating a graphic format within said spreadsheet application program using at least one instance of at least one graphical object for graphically representing said spreadsheet cell data; and

displaying said graphic format by operation of said spreadsheet application program; wherein said step of creating said graphic format comprises the steps of:

accepting user input, wherein said user input comprises a definition of said at least one graphical object end a specification of a respective number for quantifying instances desired of said at least one graphical object;

assigning an index for identifying each instance of said at least one graphical object;

receiving user entry, wherein said user entry comprises at least one user designated expression for designating a relationship between at least one attribute of each instance of said at least one graphical object, by means of said index, and said spreadsheet cell data; and

evaluating said expressions to determine said attributes of said instances of said at least one graphical object.

5,634,134

METHOD AND APPARATUS FOR DETERMINING CHARACTER AND CHARACTER MODE FOR MULTI-LINGUAL KEYBOARD BASED ON INPUT CHARACTERS

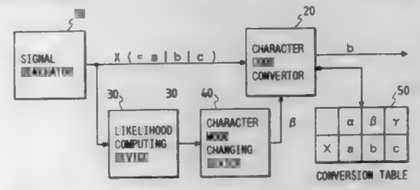
Hiroyuki Kumai; Jun Ito, both of Yokohama; Akira Nakajima; Yasumasa Matsuda, both of Tokyo-to; Shigeki Taniguchi, Hitachi; Hirobumi Kashiwa, Hitachi; Toyokazu Suzuki, Hitachi, and Masaki Kawase, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,236

Claims priority, application Japan, Jun. 19, 1991, 3-147117

Int. Cl.[6] G06F *17/21;3/14*

U.S. Cl. 395—798 **40 Claims**



1. A method of determining at least one character in response to a received signal representing at least one character of a plurality of characters generated by utilizing an input device including a keyboard having said plurality of characters corresponding to at least one of a plurality of languages, the signal being generated by selection of at least one of the character keys, said method comprising the steps, executed by a processing apparatus, of:

receiving said signal representing at least one character of said plurality of characters;

evaluating likelihood values corresponding to said signal,

wherein the step of evaluating includes assigning likelihood values for each of said plurality of characters represented by said signal and each of a plurality of character destinations represented by said signal, and effecting evaluation of the assigned likelihood values; and

selecting at least one character of said plurality of characters determined in accordance with the evaluated likelihood values.

5,634,135

MICROPROCESSOR WITH PRIORITY DETERMINATION AND PRIORITY BASED INSTRUCTION SELECTION

James F. Hollander, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 13, 1991, Ser. No. 813,314

Int. Cl.[6] G06F *9/30;9/38;9/46*

U.S. Cl. 395—800 **28 Claims**

1. A processor, comprising:

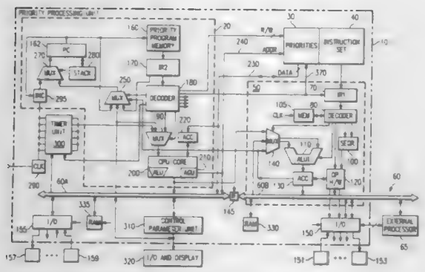
an instruction set memory operable to store a plurality of instructions representing an instruction set that are independent of order of execution;

a priority memory coupled to said instruction memory and operable to store a plurality of priority values corresponding to respective ones of the instructions;

an instruction execution unit coupled to said instruction set memory and operable to execute said instructions as a function of said priority values;

a priority processing unit coupled to said priority memory and operable to generate said priority values and to output said priority values to said priority memory.

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wherein said priority processing unit comprises:

a priority program memory operable to store a priority program operable to determine said priority values; and

a processing unit coupled to said priority memory and operable to execute said priority program to determine said priority values.

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DATA PROCESSOR AND METHOD OF CONTROLLING THE SAME

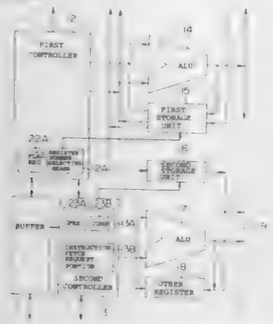
Toshiharu Ohshima, and Tatsumi Nakada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 186,648, Jan. 26, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,866

Claims priority, application Japan, Mar. 15, 1993, 5-054342

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—800 **10 Claims**



1. A method of controlling a data processor comprising:

a buffer for storing said branch instructions and a plurality of instructions;

a first controller for decoding instruction other than said branch instructions read from said buffer and controlling execution of said instruction other than said branch instructions;

a first storage unit having at least a plurality of registers for writing addresses and data required for execution of said plurality of instructions, and a register with a particular number assigned to one of said plurality of registers and for writing target addresses required for execution of said branch instructions therein, and having a plurality of write ports and read ports for selecting registers with numbers designated by said first controller;

a second storage unit connected to a particular read port of said plurality of read ports, for storing contents of a register read out into said particular read port temporarily;

a register number selecting means for controlling said particular read port so as to connect said register with said particular number to said second storage unit when said first controller is not using said particular read port;

a second controller for interpreting said branch instructions from said buffer to control execution of said branch instructions based on said target address stored in said second storage unit; and

a flag register for indicating whether said register number designated by said first controller coincides with particular register number into which said target address is written,

wherein branch control comprises the steps of:

selecting said register number designated by said first controller from said first storage unit by said write port in said first storage unit;

writing said target address into selected register number, detecting whether said designated number coincides with said particular number, and resetting said flag register if both numbers coincide with each other or if contents of said register with said particular number, by said first controller;

controlling said particular read port so as to connect said register with said particular number to said second storage unit unless said particular read port is being used by said instruction other than said branch instructions, by said register number selecting means;

controlling said flag register into a set state when contents of said register with said particular number is copied in said second storage unit, by said first controller; and

utilizing contents of said second storage unit as said target address by said second controller if said target address using said contents of a register in said first storage unit as said target address is detected and said register number designated by said target address coincides with said particular number and then a coincidence between said contents in said second storage unit and said contents of said register with said particular number is confirmed by said flag register.

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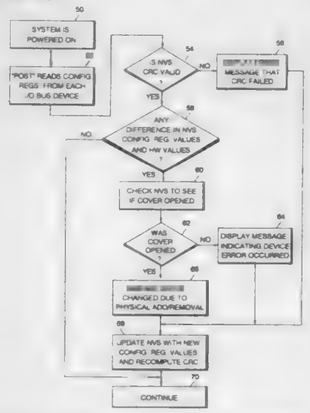
METHOD AND APPARATUS FOR UPDATING SYSTEM CONFIGURATION BASED ON OPEN/CLOSED STATE OF COMPUTER HOUSING COVER

Cynthia M. Merkin, and Stanley L. Merkin, both of Georgetown, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,700

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—830 **9 Claims**



5. A method of self-testing a system configuration in a data processing system comprising a central processing unit (CPU), memory and at least one device operated by the CPU, a housing for the system, and at least one housing cover openable for accessing said at least one device, the method comprising the steps of:

reading current configuration register values associated with said at least one device;

comparing said current configuration register values with corresponding configuration register values prestored in a non-volatile memory;

detecting whether said system has been reconfigured;

detecting whether said cover has been opened, wherein if said system has been reconfigured and said cover has been opened, it is presumed that said system reconfiguration was intentional, and further wherein if said system has been reconfigured and said cover has not been opened, it is presumed that said system reconfiguration was unintentional and a device error message is displayed;

updating configuration register values in said non-volatile memory with said current configuration register values.

5,634,138

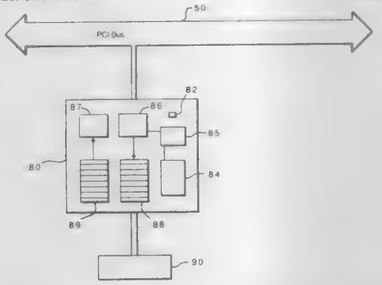
BURST BROADCASTING ON A PERIPHERAL COMPONENT INTERCONNECT BUS

Manickam Ananthan, Irvine, and Vi Chau, Laguna Niguel, both of Calif., assignors to Emulex Corporation, Costa Mesa, Calif.

Filed Jun. 7, 1995, Ser. No. 488,035

Int. Cl.[6] G06F *13/00;13/28;13/38*

U.S. Cl. 395—841 **10 Claims**



1. In a network having a plurality of devices connected to a bus, the bus having a transaction protocol that lacks a burst broadcast data transmission mode but does have a broadcast command cycle, the transaction protocol including at least one data phase, a method of transmitting data from an initiator device simultaneously to a plurality of other devices, comprising the steps of:

(i) capturing control of the bus with the initiator device;

(ii) setting a flag in each of the plurality of other devices by means of a broadcast command cycle to indicate commencement of a burst broadcast transaction and concurrently setting a flag in the initiator device to complete preparation for a burst broadcast transaction;

(iii) burst broadcasting data on the bus from the initiator device to each of the plurality of other devices simultaneously, wherein the burst broadcast of data can extend over a plurality of data phases; and

(iv) resetting the flag in each of the other devices by means of a broadcast command cycle, and concurrently resetting the flag in the initiator device to indicate termination of the burst broadcast transaction.

5,634,139

MICROPROCESSOR USING FEEDBACK MEMORY ADDRESS TO INTERNALLY GENERATE BUST MODE TRANSFER PERIOD SIGNAL FOR CONTROLLING BURST MODE DATA TRANSFER TO EXTERNAL MEMORY

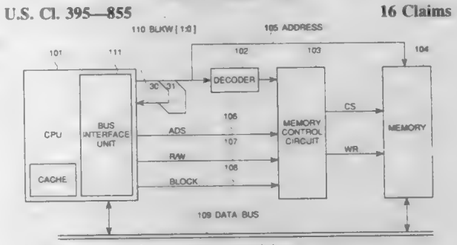
Kazuhiko Takita, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,088

Claims priority, application Japan, Apr. 26, 1994, 6-088908

Int. Cl.[6] G06F *13/28*

U.S. Cl. 395—855 **16 Claims**



1. A data processing system comprising:

a microprocessor having a burst mode transfer function and supplying an address for designating data;

a memory receiving said address supplied from said microprocessor to output data designated by the received address;

an address decoder receiving and decoding said address supplied from said microprocessor;

a memory control circuit receiving an output of said address decoder and control signals from said microprocessor, for controlling said memory; and

burst mode transfer period designating means which receives said address from said microprocessor and generates a burst mode transfer period designating signal from said address, independently of said memory control circuit, indicating a period of a burst mode transfer, so that at the time of said burst mode transfer, a synchronous burst mode transfer of said data from said memory is performed in accordance with the period of the burst mode transfer designated by said burst mode transfer period designating signal;

said microprocessor fetching said data transferred from said memory by the synchronous burst mode transfer.

5,634,140

CAMERA HAVING LEARNING FUNCTION

Masataka Hamada, Osakasayama; Masayuki Ueyama, Toyonaka; Kenji Ishibashi, and Hiroshi Ootsuka, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 307,150, Sep. 16, 1994, Pat. No. 5,572,278, which is a division of Ser. No. 145,510, Nov. 4, 1993, Pat. No. 5,374,984, which is a division of Ser. No. 797,960, Nov. 26, 1991, Pat. No. 5,285,231. This application Jul. 19, 1996, Ser. No. 684,138

Claims priority, application Japan, Nov. 29, 1990, 2-334414; Nov. 29, 1990, 2-334415; Nov. 29, 1990, 2-334416

Int. Cl.[6] G03B *5/00*

U.S. Cl. 396—49 **5 Claims**

1. A camera comprising:

a memory for storing automatic control data;

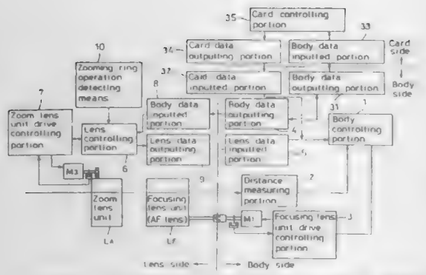
an automatic setting processor for determining automatic control values based on said automatic control data;

a manual setting processor for determining manual control values in accordance with manual operation;

a data changer for carrying out a learning function by changing said automatic control data in accordance with manual control values in response to an exposure control operation;

a mode selector for selecting single-shot or continuous-shooting modes; and

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a controller for controlling the data changer to perform different changing operations while in said single-shot mode and in said continuous-shooting mode.

5,634,141

VISUAL AXIS DETECTION DEVICE CAPABLE OF REDUCING DETECTION ERRORS DUE TO VARIATIONS OF EYES AMONG INDIVIDUALS

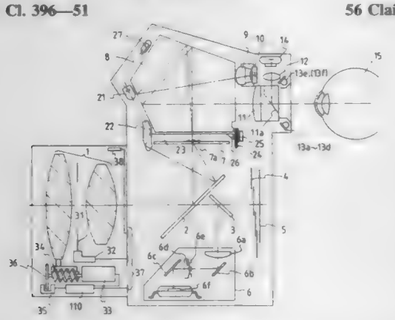
Akira Akashi; Akira Yamada; Yoshiaki Irie, all of Yokohama, and Akihiko Nagano, Ichihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,765, Sep. 7, 1993. This application May 16, 1995, Ser. No. 442,570

Claims priority, application Japan, Sep. 7, 1992, 4-262750; Oct. 29, 1992, 4-291500

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—51 **56 Claims**



1. A visual axis detection apparatus, comprising:

visual information detection means to detect the rotation angles of the optical axis of an eyeball of an observer, and detect the visual information of the observer with said rotation angles;

correction data storage means to store correction data for the correction of errors in the detected visual information;

individual variation data detection means to detect individual variation data related to the visual axis of the observer;

correction data updating means to update the correction data on the basis of new individual variation data to be detected by said individual variation data detection means and the correction data stored in said correction data storage means; and

visual axis calculation means to correct the detected visual information by using the correction data which are updated by said correction data updating means and stored by said correction data storage means.

5,634,142

CAMERA HAVING A VIBRATION CORRECTION LENS AND A METHOD FOR CORRECTING IMAGE VIBRATION

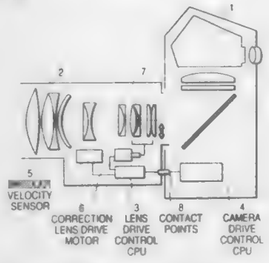
Kazuharu Imafuji, Kawasaki; Sueyuki Ohishi; Hiroshi Okano, both of Tokyo, and Susumu Sato, Chiba, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 6, 1994, Ser. No. 254,759

Claims priority, application Japan, Jun. 4, 1993, 5-160316

Int. Cl.[6] G03B *5/00*

U.S. Cl. 396—52 **24 Claims**



1. A camera having an image plane, comprising:

an optical lens system having a first optical axis and focusing the image on the image plane;

a vibration detection unit to detect an amount of vibration of the camera;

a movable lens;

a calculation unit to determine an amount of movement of the movable lens required to prevent vibration of an image on the image plane, based upon the amount of vibration detected by said vibration detection unit;

a memory unit to store position information indicative of a correlation between the position of best optical performance of said movable lens wherein an optical axis of the movable lens coincides with the first optical axis and a selected position; and

a lens drive unit to drive said movable lens to the position of best optical performance based upon stored position information and then to drive said movable lens based upon the amount of movement determined by said calculation unit.

5,634,143

CAMERA WITH IMPROVED POSITIONING OF VIBRATION DETECTION SENSORS

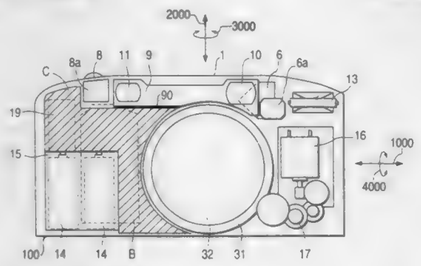
Yoshihisa Kitagawa, Kashiwa; Yoshio Imura, Kawasaki, and Hidenori Miyamoto, Urayasu, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 377,989, Jan. 25, 1995, abandoned. This application Aug. 28, 1996, Ser. No. 704,146

Claims priority, application Japan, Apr. 28, 1994, 6-092633

Int. Cl.[6] G03B *3/00;7/08*

U.S. Cl. 396—52 **19 Claims**



1. A camera comprising:

a camera body having an outer cover;

a lens barrel having a substantially cylindrical outer portion and being positioned on the camera body, the lens barrel dividing the camera body into a first portion and a second portion with the lens barrel between the first and second portions;

a rangefinding unit positioned in the camera body and being covered by the outer cover of the camera body, the rangefinding unit having a surface which has a portion adjacent to the circumference of the outer portion of the lens barrel,

a first space existing in the first portion of the camera body and having borders defined by the circumference of the outer portion of the lens barrel, the surface of the rangefinding unit and the outer cover of the camera body, where

an optical axis extends through the lens barrel and a plane passing through the optical axis divides the first space into first and second subspaces of substantially equal length in the optical axis direction,

the first subspace has borders defined by the surface of the rangefinding unit, the circumference of the outer portion of the lens barrel and the outer cover of the camera body, and does not extend beyond the surface of the rangefinding unit, and

the second subspace has borders defined by the bottom surface of the camera, the circumference of the outer portion of the lens barrel and the outer cover of the camera, and does not extend beyond the surface of the rangefinding unit;

a flash generation device positioned in the second portion of the camera body; and

a vibration detection sensor positioned in one of the first and second subspaces, wherein no vibration detection sensor is positioned in the second portion of the camera body, thereby reducing the effect on vibration detection of electrical noise generated by the flash generation device.

5,634,144

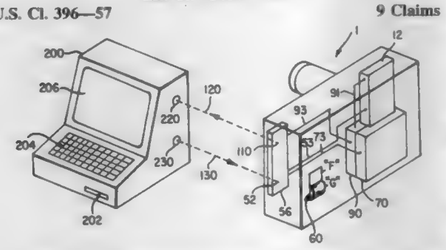
LIGHT BEAM COMMUNICATION METHOD AND SYSTEM FOR LINKING A CAMERA AND A COMPUTER

Edward C. Mauro, Rochester, and Constantine N. Anagnostopoulos, Mendon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 21,416, Feb. 23, 1993, abandoned. This application Jun. 29, 1994, Ser. No. 268,691

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—57 **9 Claims**



1. A light beam communication method for linking a camera and a computer, the method comprising the steps of:

providing an automated, electronic camera of the type having a charge-coupled device (CCD) area image sensor with associated image sensor clock driver, image sensor pixel signal processor and pixel signal storage, the camera further having a microprocessor and a non-volatile erasable electrically programmable read only memory (EEPROM) automatically controlling camera output functions in response to camera input functions, and having a microprocessor controlled light beam auto-focus system including a light beam emitter, a light beam sensor, and emitter light beam control circuit means and sensor light beam control circuit means associated therewith;

providing a mode selector selectably operable by a camera user to select a light beam communication mode for the light beam emitter and the light beam sensor;

adapting the emitter light beam control circuit means and the sensor light beam control circuit means of the light beam emitter and the light beam sensor to become enabled and operative in the light beam communication mode upon actuation of the microprocessor and EEPROM by an input signal applied thereto by the mode selector;

providing a computer of the type capable of interfacing with a user-supplied program, and having a keyboard and a display;

adapting the computer to provide a computer-based light beam emitter, a computer-based light beam sensor, and respectively associated control circuits, the computer-based light beam emitter capable of transmitting an information encoded light beam being spectrally matched to the camera light beam sensor, and the computer-based light beam sensor being spectrally responsive to an information encoded light beam transmitted by the camera light beam emitter;

positioning the camera and the computer so that the light beam transmitted by the computer is incident on at least a portion of the camera light beam sensor and the light beam transmitted by the camera is incident on at least a portion of the light beam sensor of the computer;

generating commands on the computer from the user-supplied program, including commands directing the camera to communicate to the computer image information related to information in the pixel signal storage and a status report about the camera's automatically controlling functions, and commands directing the camera's microprocessor and EEPROM to change selected ones of the camera's automatically controlling functions;

transmitting the commands via the computer light beam emitter as a coded light beam to the camera light beam sensor to actuate the microprocessor and EEPROM to respond to the commands;

receiving in the computer-based light beam sensor a coded light beam from the camera light beam emitter, the coded light beam including the response of the camera microprocessor to the commands;

displaying the camera response on the display for evaluation by the user; and

selecting by the mode selector the light beam auto-focus mode of the automated camera prior to using the camera.

5,634,145

APPARATUS FOR INSPECTING BLUR CORRECTION CAMERA, BLUR CORRECTION CAMERA, AND METHOD OF INSPECTING BLUR CORRECTION CAMERA

Sueyuki Ohishi, Tokyo, and Tadao Kai, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo

Filed Jan. 24, 1995, Ser. No. 377,512

Claims priority, application Japan, Mar. 18, 1994, 6-048482; Mar. 18, 1994, 6-048627

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—55 **6 Claims**

1. A blur correction camera comprising:

an optical axis changing unit to change an optical axis of a photographing optical system to correct a blur generated by a vibration;

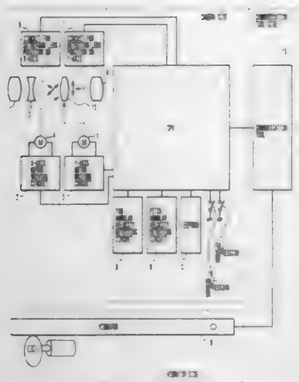
a displacement detecting unit to detect a displacement of said photographing optical system by said optical axis changing unit;

a maximum/minimum displacement detecting unit to identify maximum and minimum values of an output value from said displacement detecting unit;

an angular velocity detecting unit to detect an angular velocity caused by the vibration; and

a control unit to determine whether a blur correction function is normal based on the maximum and minimum values during operation of said optical axis changing unit upon application

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of a sinusoidal vibration having a predetermined angular amplitude in a detection direction of the angular velocity of said angular velocity detecting unit.

5,634,146

CAMERA WITH AUTOMATIC FLASH FUNCTION AND METHOD FOR CONTROLLING THE SAME

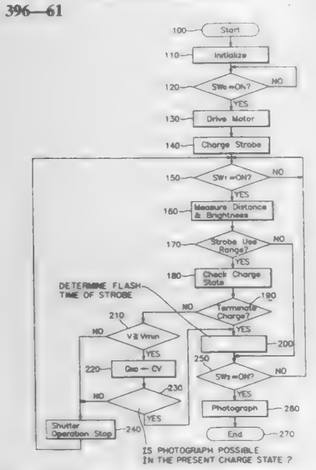
Bon-jeong Goo, Changwon-si, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Apr. 7, 1994, Ser. No. 224,306

Claims priority, application Rep. of Korea, Apr. 14, 1993, 1993-6234

Int. Cl.[6] G03B *15/02*

U.S. Cl. 396—61 **10 Claims**



10. A method for controlling a camera having an automatic flash function, the camera including a strobe, a first step release switch, and a second step release switch, the method comprising steps of:

applying power to the camera;

charging the strobe when the power is applied to the camera;

measuring a distance from an object to be photographed;

measuring an ambient brightness surrounding the object;

calculating an exposure amount in response to the distance measuring and brightness measuring steps when the first step release switch is activated;

determining whether the strobe should be used in accordance with the measured distance and the measured brightness to obtain a photograph with a suitable exposure;

checking a charge state of the strobe when the strobe should be used;

comparing a present charge voltage and a predetermined minimum charge voltage when the strobe is not completely charged;

calculating a brightness of the strobe in accordance with the measured distance and an F number in response to the comparing step;

setting a duration for a flash of the strobe when the photograph can be taken in the present charge state; and

carrying out the photography by flashing the strobe for the set duration when the second step release switch is activated.

5,634,147

DRIVE DEVICE FOR A CAMERA

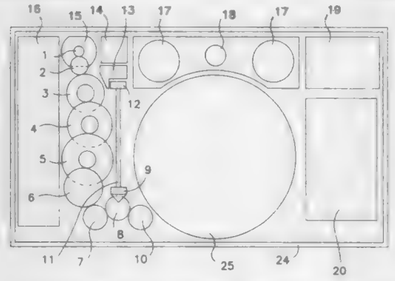
Kiyosada Machida, Urawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 2, 1996, Ser. No. 581,993

Claims priority, application Japan, Feb. 23, 1995, 7-059888

Int. Cl.[6] G03B *13/10*

U.S. Cl. 396—84 **7 Claims**



1. A drive apparatus for a camera having a lens barrel and a compartment for holding one of a spool and a cartridge, the compartment being positioned beside the lens barrel, the drive apparatus comprising:

a drive source which produces a drive force, the drive source being positioned between the compartment and the lens barrel at one of an upper and a lower end of the camera;

a first driven device;

a drive device which transmits the drive force of said drive source to the first driven device via a first transmission path, the drive device extending between the compartment and the lens barrel to the opposite side of the camera as the drive source;

a branch drive device, positioned between the compartment and the lens barrel at the opposite end of the camera as the drive source, said branch drive device coupled to, and branching from, said drive device along the first transmission path and receiving a drive force from said drive device; and

a second driven device, positioned between the compartment and the lens barrel at the same end of the camera as the drive source, which is driven by the branch drive device, via a second transmission path.

5,634,148

ZOOM APPARATUS FOR A CAMERA HAVING COUNT GENERATING MEANS AND COUNT MODIFYING MEANS FOR ENHANCING ACCURACY AT SELECTED FOCAL LENGTHS

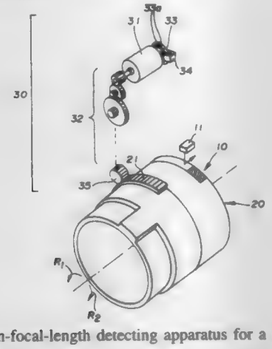
Keiji Kunishige, and Minoru Hara, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd, Tokyo, Japan

Continuation of Ser. No. 971,514, Nov. 3, 1992, abandoned. This application Oct. 20, 1994, Ser. No. 326,820

Claims priority, application Japan, Nov. 5, 1991, 3-288900; Jan. 31, 1992, 4-016677

Int. Cl.[6] G03B *13/18*

U.S. Cl. 396—86 **9 Claims**



1. A zoom-focal-length detecting apparatus for a camera, comprising:

driving means for zooming a photographing zoom lens;

non-contact type pulse generating means for generating pulse signals in accordance with operation of said driving means;

means for counting said pulse signals;

non-contact type signal generator means for generating a signal for setting a count value of said count means at first predetermined value when said zoom lens is at a wide-end setting reference position and for setting a count value of said count means when said zoom lens is at a tele-end setting reference position;

means for storing a number of pulse signals representing movement of the zoom lens between a wide end and a wide-end setting reference position and for storing a number of pulse signals representing movement of the zoom lens between a tele-end and said tele-end setting reference position; and

means for recognizing that said lens has moved to one of said wide end and said tele-end when a count of said pulse signals reaches said stored number responsive to generation of said setting signal.

5,634,149

CONTROL CIRCUIT AND METHOD FOR CONTROLLING THE OPERATION OF A CAMERA HAVING A B SHUTTER OPERATING MODE

Hyeon-Woo Jeong, Changwon-si, and Chang-Hoon Kim, Suwon, both of Rep. of Korea, assignors to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Jan. 4, 1996, Ser. No. 582,896

Claims priority, application Rep. of Korea, Jan. 6, 1995, 95-173; Aug. 25, 1995, 95-26641

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—89 **18 Claims**

1. A camera control circuit comprising, in combination:

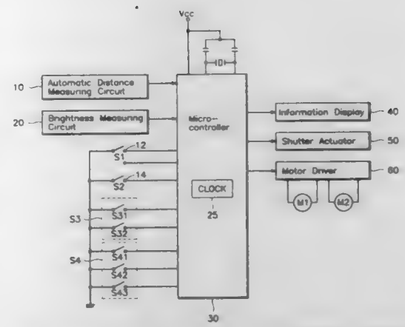
a mode selector accommodating user selection of a Bulb shutter camera mode of operation;

a light detector circuit for producing a signal representing ambient light of a scene to be photographed;

a microcontroller connected to the mode selector and the light detecting circuit for computing a film exposure time period based on the ambient light signal when the user selects the bulb shutter camera mode, the microcontroller including a clock for timing the computed exposure time period, the microcontroller generating a start signal to begin the computed exposure time period and an end signal at the expiration of the computed exposure time period;

a display connected to the controller for displaying the computed time exposure period; and

an actuator connected to the microcontroller for opening a camera shutter automatically in response to the start signal, retaining the camera shutter open during the computed exposure time period and closing the camera shutter automatically in response to the end signal.



5,634,150

COMPACT CAMERA WITH IMPROVED DISPLAY DEVICE AND MOUNTING BOARD LAYOUT

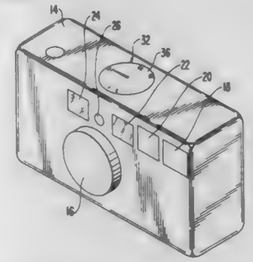
Yuji Katano, Kawasaki; Hiroshi Wakabayashi, Yokohama; Junichi Omi, Kawasaki, and Kiyosada Machida, Urawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 117,945, Sep. 8, 1993, abandoned. This application Sep. 14, 1995, Ser. No. 527,884

Claims priority, application Japan, Sep. 8, 1992, 4-239558; Oct. 1, 1992, 4-284998

Int. Cl.[6] G03B *17/18*

U.S. Cl. 396—106 **13 Claims**



1. A camera comprising:

(a) a camera body having an upper surface;

(b) a rangefinder device fixed to measure the distance to an object to be photographed, the rangefinder device including

(i) a light projection unit to project light toward the object to be photographed; and

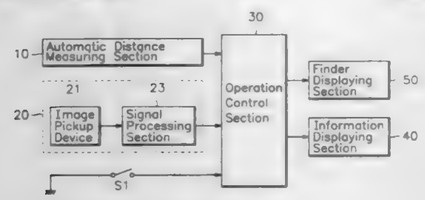
(ii) a light receiving unit, separated from the light projection unit by a space, to receive light reflected from the object to be photographed; and

(c) a display device fixed onto the upper surface of the camera body, wherein a portion of the display device extends from the upper surface of the camera body within the space separating the light projection unit and the light receiving unit and intersects a plane in which a top surface of the light projecting unit and light receiving unit lie;

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(d) a film reverse loading type of cartridge compartment incorporated into the camera body;
(e) a film windup spool compartment incorporated into the camera body;
(f) a photographic lens barrel having a portion with an upper end located in-between the film reverse loading type of cartridge compartment and the film windup spool compartment in the camera body; and
(g) a mounting board incorporated within the camera body and extending along the upper, inner side of the camera body above the film reverse type of cartridge compartment, the photographic lens barrel and the spool compartment.

5,634,151
AUTOFOCUSING OPERATION DISPLAY APPARATUS AND METHOD
Seong-Gon Kim, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea
Filed Dec. 7, 1995, Ser. No. 568,822
Claims priority, application Rep. of Korea, Dec. 8, 1994, 94-33297
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—106 **12 Claims**



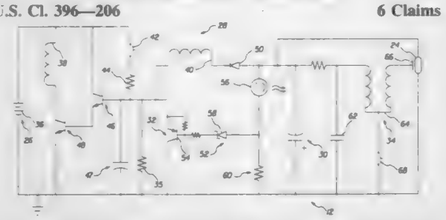
1. An autofocusing apparatus, comprising:
means for irradiating an infrared ray toward an object;
means for sensing a light beam corresponding to an image of said object and said infrared ray reflected off of said object;
means, coupled to said sensing means, for determining which portion of said object has been hit by said infrared ray in response to said light beam and said infrared ray; and
means for indicating to a user which portion of said object has been hit by said infrared ray, wherein the indicating means includes
a view finder through which the user can view the object, and
displaying means including a plurality of display icons, each display icon corresponding to a different portion of the object.

5,634,152
CAMERA WITH BUILT-IN FLASH
Minoru Kato, Kawasaki; Hiroshi Wakabayashi, Yokohama, and Kiyosada Machida, Urawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jan. 2, 1996, Ser. No. 582,179
Claims priority, application Japan, Jan. 24, 1995, 7-009159; Jan. 24, 1995, 7-009172
Int. Cl.[6] G03B *15/03*
U.S. Cl. 396—158 **10 Claims**

1. A camera having a camera body and with a built-in flash comprising:
a flash emitting portion;
a light emitting member positioned close to said flash emitting portion;
a light transmitting member provided at a front face side of the camera body so as to cover said flash emitting portion and said light emitting member; and
a protruding portion provided so as to be integral with said light transmitting member and adapted to be contacted by the camera-holding hand of the photographer in holding the camera body and to prevent said flash emitting portion and said light emitting member from being covered by said hand.

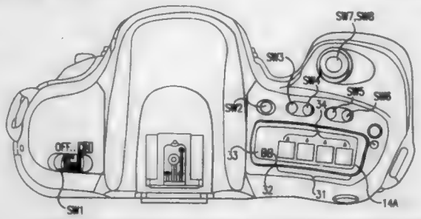


5,634,153
STATIC IMMUNITY FOR SINGLE TOUCH FLASH CHARGER CONTROL
Douglas W. Constable, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 21, 1995, Ser. No. 575,658
Int. Cl.[6] G03B *15/05;* **H05B** *37/00*
U.S. Cl. 396—206 **6 Claims**



1. An electronic flash device including an illumination element, an actuation circuit having a flash capacitor providing energy releasable to illuminate said element, and a self-oscillating charging circuit, having a transistor, for charging said capacitor, is characterized by:
a resistor located between a base of the transistor and ground for preventing the self-oscillating circuit from charging the capacitor when the flash device is exposed to a static electric charge.

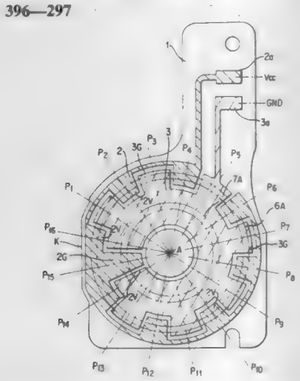
5,634,154
DISPLAY SYSTEM AND METHOD FOR A CAMERA
Nobuaki Sasagaki, and Takashi Saegusa, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jan. 25, 1995, Ser. No. 378,351
Claims priority, application Japan, Jan. 31, 1994, 6-025950
Int. Cl.[6] G03B *17/18;17/00*
U.S. Cl. 396—291 **14 Claims**



1. A display and selection system for selecting a control mode and for setting an operational parameter of a camera capable of operating in a plurality of control modes, the display and selection system comprising:

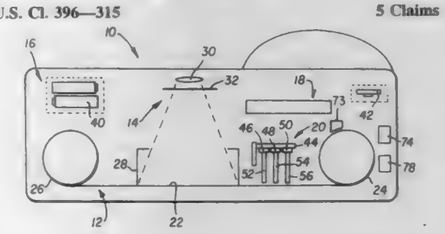
a plurality of switches for selecting control modes and setting operational parameters of the camera;
a display screen for displaying symbols and numerals indicative of control modes and operational parameters of the camera, the display screen having first and second display conditions and comprising:
a plurality of display blocks, each of the plurality of display blocks corresponding to and laterally adjacent at least one of the plurality of switches, and
a plurality of display indicators, at least one of the plurality of display indicators corresponding to each of the plurality of display blocks, each of the plurality of display indicators also corresponding to one of the plurality of switches and being located between said corresponding switch and said display block to indicate location of said corresponding switch; and
a control system for selecting the control mode of the camera when the display screen is in the first display condition, and for changing at least one operational parameter of the camera when the display screen is in the second display condition;
wherein a plurality of control mode symbols are displayed on the display screen when the display screen is in the first display condition, each control mode symbol being displayed on one of the plurality of display blocks, a control mode being selectable by operation of the switch corresponding to the display block displaying the control mode symbol; and
wherein at least one operational parameter is displayed on the display screen during the second display condition, the at least one operational parameter being changeable by operation of a switch corresponding to a display block on which the at least one operational parameter is displayed.

5,634,155
PHASE DETECTION ELECTRICAL CONNECTION DEVICE
Suminori Watanabe, Saitama-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Feb. 13, 1995, Ser. No. 387,073
Claims priority, application Japan, Apr. 21, 1994, 6-105055
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—297 **26 Claims**



26. A film feed position detecting device comprising:
a camera body;
a shutter assembly attached to a front side of said camera body; and
a phase detection device located in said camera body adjacent to a film winding portion of said camera, said phase detection device comprising:
a substrate having a first conductor pattern and a second conductor pattern formed on a surface of said substrate;
a contact having two contact terminals, said contact terminals being disposed to touch said surface on which said first conductor pattern and said second conductor pattern are formed;
said substrate and said contact being movable relative to each other, a first track being defined at locations where said substrate surface and a first one of said two contact terminals touch each other during relative movement of said substrate and said contact, a second track being defined at locations where said substrate surface and a second one of said two contact terminals touch each other during relative movement of said substrate and said contact;
said first conductor pattern having at least one first OFF pattern section that intersects both said first track and said second track, said two contact terminals simultaneously touching said first OFF pattern section when said substrate and said contact are in a first predetermined position relative to each other; and
said second conductor pattern having at least one second OFF pattern section that intersects both said first track and said second track, said two contact terminals simultaneously touching said second OFF pattern section when said substrate and said contact are in a second predetermined position relative to each other.

5,634,156
PRINTING EXPOSURE REFERENCE
Paul Teremy, Rochester; Dale F. McIntyre, Honeoye Falls, and Joseph A. Manico, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 15, 1994, Ser. No. 356,814
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—315 **5 Claims**



1. A camera including a mechanism for sequentially advancing photographic film to position successive frames in an exposure position; characterized in that:
the camera includes an internal illumination source and means for controlling said source to expose the film sequentially, interspersed with film movement, in a plurality of areas to produce an asymmetric pattern on the film, the relative position of the exposed plurality of areas to each other combined with the color and/or shape of the exposed areas indicating whether the film was exposed in a prewind or regular wind type camera, and/or whether the film was exposed in a left or right load camera.

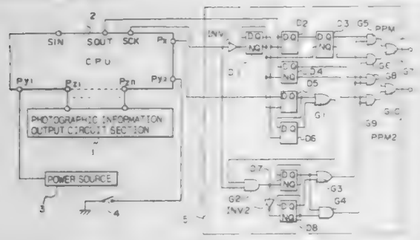
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5,634,157

INFORMATION RECORDING APPARATUS HAVING PARALLEL TO SERIAL AND PPM SIGNAL CONVERTERS

Norikazn Yokonuma, Yokohama; Hideo Hibino; Youichi Yamazaki, both of Kawasaki, and Kazuyuki Kazami, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 24, 1994, Ser. No. 328,765
Claims priority, application Japan, Oct. 26, 1993, 5-267145
Int. Cl.[6] G03B *31/00*
U.S. Cl. 396—319 **16 Claims**



1. An information recording apparatus capable of magnetically and separately recording a plurality of pieces of information on a magnetic medium, comprising:

an information output circuit which outputs a plurality of parallel data for said plurality of pieces of information;

a clock output circuit which outputs a reference clock;

a parallel to serial conversion circuit which converts said plurality of parallel data into one serial data based on said reference clock;

a PPM signal conversion circuit which is provided separately from said parallel to serial conversion circuit and converts said serial data which is output from said parallel to serial conversion circuit into a plurality of PPM signals based on said reference clock; and

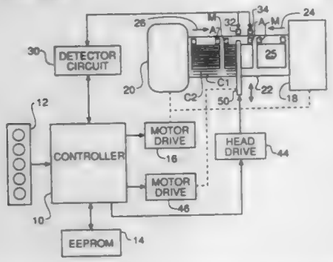
a plurality of magnetic recording devices which magnetically record said plurality of PPM signals on said magnetic medium, respectively.

5,634,158

MAGNETICS-ON-FILM, MULTI-TRACK IMAGE AREA INTERLEAVED RECORD/REPRODUCE SYSTEM

Russell D. Shon, San Diego; Wlodzimierz S. Czarnecki, Rancho Santa Fe, and Tomasz M. Jagielinski, Carlsbad, all of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1996, Ser. No. 661,536
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—320 **30 Claims**



1. A method of recording or reproducing first and second subsets of a photographic data set related to a photographic image frame of a filmstrip by means of a magnetic record/reproduce head array into or from parallel data tracks extending lengthwise of said filmstrip and arranged across said image frame in a magnetic recording layer formed on the photographic filmstrip, the method comprising the steps of:

recording or reproducing a first data sub-set associated with an image frame in a first sub-set of parallel data tracks on said magnetic layer in said image frame area as the filmstrip is transported past said magnetic record/reproduce head array; and

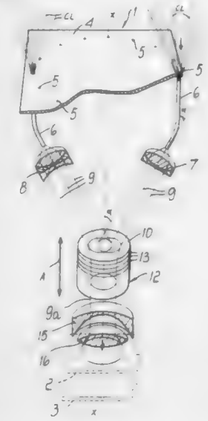
recording or reproducing a second data sub-set associated with said image frame in a second sub-set of parallel data tracks interleaved with said first set of parallel data tracks on said magnetic layer in said image frame area as the film is transported past said magnetic record/reproduce head array.

5,634,159

INTERFERENTIAL MULTISTEREOSCOPIC CAMERA WITH THREE-DIMENSIONAL EFFECT

Paolo Caregnato, Via Venturelli 2, 37128 Verona, Italy

Continuation of Ser. No. 194,966, Feb. 14, 1994, abandoned. This application May 28, 1996, Ser. No. 655,203
Claims priority, application Italy, Feb. 26, 1993, VR93A0016
Int. Cl.[6] G02B *3/00;* **G03B** *35/00*
U.S. Cl. 396—327 **11 Claims**



1. A camera provided with a compound lens and a diaphragm, the compound lens having an optical axis, the camera being adapted for receiving a hologram element in the form of one of a hologram film and a hologram plate for arrangement behind the diaphragm so as to be located on a plane which is normal to the optical axis of the compound lens, wherein said compound lens comprises:

a portion including a zone which does not transmit light and a distinct number of light inlets which transmit light;

a selected one of a doublet and a triplet for each light inlet of said light inlets adapted for collimating incoming light and for correcting any aberrations thereby providing a distinct number of homologous light rays; and

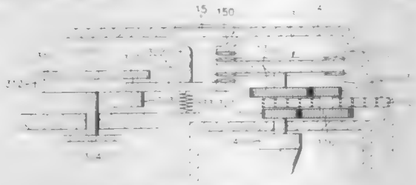
a merging system adapted for merging all the homologous light rays which leave the selected one of a doublet and a triplet for each light inlet into a single beam before the homologous light rays reach said plane of arrangement of said hologram element.

5,634,160

CAMERA FILM WINDING SYSTEM

Yang-jik Lee, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Continuation of Ser. No. 253,569, Jun. 3, 1994, abandoned. This application Feb. 15, 1996, Ser. No. 601,699
Claims priority, application Rep. of Korea, Nov. 11, 1993, 93.23914
Int. Cl.[6] G03B *1/00*
U.S. Cl. 396—395 **17 Claims**



1. A camera system having an integral film. comprising:

a shutter release mechanism operable when depressed to expose the film, the shutter release mechanism including a projection;

a winding means for automatically advancing the film by one frame after each photograph is taken; and

a control means, coupled to the winding means, for controlling the advancement of the film, said control means comprising a control cam for guiding the advancement of the film and having a control groove, said control means further comprising a shutter operation member having a hook projection normally engaging the control groove of the control cam to prevent the film from advancing, the shutter operation member further having a gear projection normally engaging the winding means;

wherein the projection of said shutter release mechanism selectively engages said winding means to prevent said winding means from advancing the film when said shutter release mechanism is depressed, and allows said winding means to advance the film when said shutter release mechanism is released; and

wherein said shutter release mechanism biases the hook projection of the shutter operation member to disengage the control groove of the control cam when said shutter release mechanism is depressed, and allows the hook projection to reengage the control groove after said winding means has advanced the film one frame when said shutter release mechanism is released.

5,634,161

SPROCKET MECHANISM FOR CAMERAS

Yeou-Fu Huang, Taichung, and Jong-Shing Lin, Feng Yuan City, both of Taiwan, assignors to Sinpo Optical Co., Ltd., Taichung County, Taiwan

Continuation-in-part of Ser. No. 525,020, Sep. 8, 1995, Pat. No. 5,585,877. This application Apr. 2, 1996, Ser. No. 626,376
Int. Cl.[6] G03B *1/00*
U.S. Cl. 396—398 **3 Claims**

1. A sprocket mechanism for cameras, comprising:

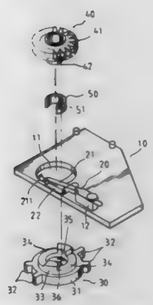
a positioning plate mounted on a housing of a camera, said positioning plate having a through hole for receiving a sprocket;

said sprocket, having a central annular hole for accommodating a transmission wheel;

said transmission wheel having a gear at an upper side thereof for engagement with a transmission gear set of a motor; said transmission wheel having a shaft which extends from a bottom side thereof and is sized slightly smaller than that of said central annular hole of said sprocket;

a resilient piece fitted onto said shaft, said resilient piece having a bottom side provided with a projection at one side thereof for insertably fixed onto said sprocket, wherein said sprocket is provided with two pairs of pawls spaced a suitable distance apart from one another and a raised annular portion on an upper side of a body thereof, said raised annular portion having two notches provided at predetermined positions;

and an electrical switch is mounted at a predetermined position adjacent to said positioning plate, said electrical switch consisting of an upper spring strip and a lower spring strip, said upper spring strip having a contact portion at a front end thereof projecting above an upper periphery of said through hole of said positioning plate so that it is in a corresponding relationship to said second spring strip, said contact portion of said upper spring strip being urged upwardly by said body of said sprocket so that said electrical switch is in an OFF state, an electrical signal being detected by a microprocessor for stopping said motor, determining whether a frame has been properly advanced and precisely positioned, and a counter is actuated to display the number of film frames used.

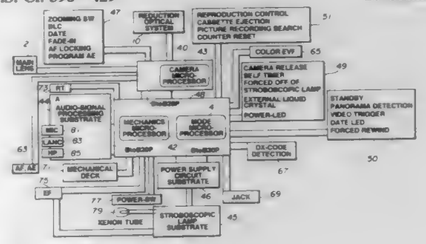


5,634,162

PROGRAMMED CONTROL OF VIDEO TRIGGER AND SHUTTER RELEASE IN COMPOSITE CAMERA

Etsurou Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1995, Ser. No. 546,488
Claims priority, application Japan, Nov. 4, 1994, 6-271123
Int. Cl.[6] G03B *29/00*
U.S. Cl. 396—429 **20 Claims**



16. A camera comprising:

a first camera unit;

a second camera unit;

first instruction means for controlling a photographing operation of said first camera unit;

second instruction means for controlling a photographing operation of said second camera unit; and

control means for cancelling an operation of said first instruction means when said first instruction means and said second instruction means have been consecutively operated within a predetermined time period.

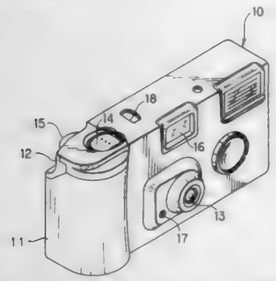
VOL 1198 ISS 4 MY 27 1997 UMI

5,634,163

LENS-FITTED PHOTO FILM UNIT

Kazuo Kamata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 18, 1996, Ser. No. 665,806
Claims priority, application Japan, Jun. 20, 1995, 7-153013
Int. Cl.[6] G03B 7/08;9/02;9/00;9/08
U.S. Cl. 396—458 12 Claims



1. A lens-fitted photo film unit pre-loaded with photo film, wherein an exposure is taken through an exposure opening upon depression of a shutter button from an initial, unpressed position to a full depressed position, said lens-fitted photo film unit comprising:

there being a halfway position in depression of said shutter button, determined between said initial, unpressed position and said full depressed position;

a power source switch, connected to a power source, and switched on upon movement of said shutter button to said halfway position;

a photometric circuit for receiving light of an object, and for generating a changeover signal when brightness of said object is a predetermined brightness or more, said photometric circuit being rendered effective when said power switch is switched on;

a changeover plate having a stop-down opening which is formed therein, and has a size smaller than said exposure opening, said changeover plate being movable between an inserted position and a retracted position, said stop-down opening of said inserted position being superposed on said exposure opening to intercept a periphery of said exposure opening, and said stop-down opening of said retracted position being away from said exposure opening, said changeover plate being in said retracted position while said exposure is taken if said power source is exhausted; and

a stop drive unit for moving only said changeover plate, said stop drive unit setting said changeover plate in said inserted position upon occurrence of said changeover signal and in response to movement of said shutter button to said full depressed position from said halfway position, said stop drive unit setting said changeover plate in said retracted position in absence of said changeover signal, said stop drive unit comprising:

a first spring for biasing said changeover plate toward said retracted position;

a retainer member, said retainer member movable as a result of depression of said shutter button, said retainer member holding said changeover plate in said inserted position when said shutter button is in said initial, unpressed position and when said shutter button is in said halfway position; said retainer member allowing said changeover plate to be moved by said first spring when said shutter button is in said full depressed position; and

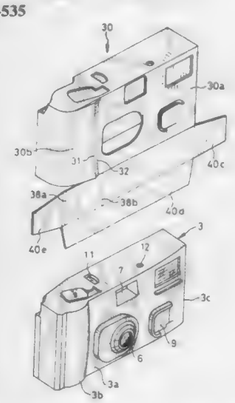
an electromagnet, said electromagnet being connected to said photometric circuit, said electromagnet contacting and holding only said changeover plate in said inserted position against said first spring in response to said changeover signal.

5,634,164

LENS-FITTED PHOTOGRAPHIC FILM UNIT SHAPED TO COMPENSATE FOR JACKET EXPANSION

Makoto Isozaki, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 13, 1995, Ser. No. 527,843
Claims priority, application Japan, Sep. 19, 1994, 6-223626; Oct. 14, 1994, 6-249533
Int. Cl.[6] G03B 17/02
U.S. Cl. 396—535 12 Claims



1. A lens-fitted photographic film unit comprising:

a unit body loaded with a roll of photographic film and equipped with a taking lens and an exposure mechanism;

a grip formed on a front side of said unit body;

an outer case of folded sheet material wrapping said unit body therein except said grip, and having a hole for exposing said taking lens to the outside; and

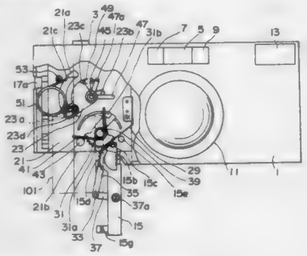
a convex front surface of said unit body formed adjacent to said grip, said convex front surface being curved in two orthogonal directions, said taking lens being disposed on the peak area of said convex front surface, so as to keep said outer case in contact with said unit body when said outer case swells out.

5,634,165

CAMERA WITH DEVICE TO PREVENT ACCIDENTAL DROPPING OF FILM CARTRIDGE

Yoshio Nakagawa, Sakai, and Kazuhiko Kojima, Kyoto, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 27, 1995, Ser. No. 562,995
Claims priority, application Japan, Dec. 2, 1994, 6-329358
Int. Cl.[6] G03B 17/02;17/26
U.S. Cl. 396—538 16 Claims



1. A film housing device comprising:

a cartridge bay into which a film cartridge is loaded;

a cover for covering an opening of said cartridge bay, wherein said cover is movable between a closed position, a partially open position, and full-open position;

a force applying device for applying force to a film cartridge loaded in said cartridge bay in a direction to eject the film cartridge out of said cartridge bay; and

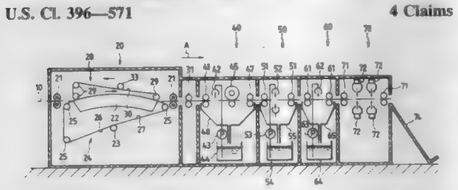
a prevention member for preventing the film cartridge from completely leaving said cartridge bay by contacting a leading edge of a film cartridge with respect to the direction of said force when said cover is at the partially open position, and enabling removal of the film cartridge when said cover is at the full-open position.

5,634,166

HEAT TREATMENT DEVICE FOR PRINTING FORM

Koji Furukawa, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 3, 1995, Ser. No. 552,570
Claims priority, application Japan, Nov. 21, 1994, 6-286813
Int. Cl.[6] G03D 7/00;13/00
U.S. Cl. 396—571 4 Claims



1. A heat treatment device for a printing form comprising:

a heating means for surface heating a photosensitive planographic printing form having a metal support;

an endless belt for covering the printing form to hold it between said endless belt and said heating means, and heating said printing form while transferring it longitudinally along said endless belt; and

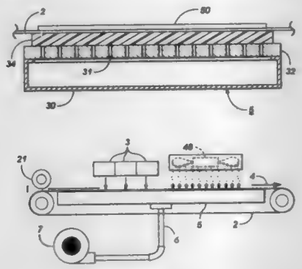
at least one tension roll for applying tension to said endless belt such that the pressure of said endless belt at a central portion of the printing form is greater than the pressure at lateral sides thereof.

5,634,167

CONSTRAINED FILM HEAT PROCESSOR AND METHOD OF DEVELOPING DIGITAL FILM USING RADIANT HEAT TRANSFER

Abu S. Islam, Mt. Vernon; Robert J. Kleckner, Yorktown Heights; Leo Chin, Bronx, all of N.Y.; Sandra Graveson, Waterbury, Conn., and Anthony A. Klein, Swampscott, Mass., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1995, Ser. No. 548,628
Int. Cl.[6] G03D 7/00
U.S. Cl. 396—579 13 Claims



1. An apparatus for processing film, comprising:

a film support and constraining device; and

a radiant heating device for developing the film on said film support and constraining device without contacting the film wherein said film support and constraining device comprises:

a vacuum source;

a plenum chamber adapted to be connected to said vacuum source;

a porous support surface connected to said plenum so that the film on said surface is held thereto by a vacuum wherein said porous support surface comprises:

a structural substrate; and

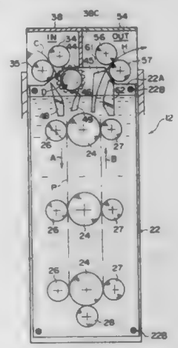
a smooth porous insulative layer between said structural substrate and the film.

5,634,168

PHOTOSENSITIVE MATERIAL PROCESSING APPARATUS

Nobuo Matsumoto, and Hisatsugu Torii, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1995, Ser. No. 558,871
Claims priority, application Japan, Jan. 25, 1995, 7-010088
Int. Cl.[6] G03D 3/08
U.S. Cl. 396—612 16 Claims



1. A photosensitive material processing apparatus in which a transport rack is provided and a photosensitive material is immersed into a processing tank filled with a processing solution such as a developing solution for processing said photosensitive material, said apparatus comprising:

an inlet guide section provided at an inlet section of said processing tank and adapted to contact said photosensitive material before immersion to feed said photosensitive material into said processing tank, said inlet guide section being removably provided on an upper portion of said transport rack; and

an outlet guide section provided at an outlet section of said processing tank and adapted to contact said photosensitive material after immersion to feed out said photosensitive material from said processing tank, said outlet guide section being provided on the upper portion said transport rack such that said outlet guide section is removable from said transport rack independent of said inlet guide section.

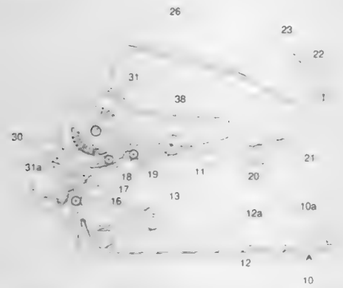
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5,634,169

MULTIPLE FUNCTION ENCODER WHEEL FOR CARTRIDGES UTILIZED IN AN ELECTROPHOTOGRAPHIC OUTPUT DEVICE

Raymond J. Barry, Lexington; Steven A. Curry, Nicholasville; Benjamin K. Newman; Gregory L. Ream, both of Lexington; Earl D. Ward, II, Richmond, and Phillip B. Wright, Lexington, all of Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Feb. 16, 1996, Ser. No. 602,648
Int. Cl.[6] G03G *15/08;15/00*
U.S. Cl. 399—12 **42 Claims**



1. A cartridge for an electrophotographic machine, comprising:
a sump for carrying an initial quantity of toner;
a shaft mounted for rotation in said sump, and a paddle mounted thereon in such a manner that when said shaft rotates, said paddle rotates therewith, into, through and out of engagement with toner carried within said sump;
an encoder wheel mounted on said shaft, externally of said sump; said encoder wheel positioned for mating coaction with a code wheel reader when said cartridge is in a home position in an electrophotographic machine; and
a torque sensitive coupling connected to said shaft for connection to a drive means in said machine, when said cartridge is installed in said machine, to effect rotation of said shaft, paddle and encoder wheel;
said encoder wheel configured for indicating, in conjunction with said coded wheel reader, one or more cartridge characteristics to said machine.

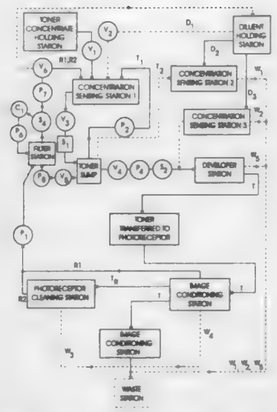
5,634,170

METHOD AND APPARATUS FOR SENSING AND CLEANING DEVELOPER FLUID

John F. Knapp, Fairport, and Nancy B. Goodman, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 24, 1996, Ser. No. 672,003
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—29 **20 Claims**

1. An apparatus for cleaning developer fluid having toner and diluent components comprising:
a filter for filtering the developer fluid;
a sensor for sensing the amount of toner in the developer fluid; and



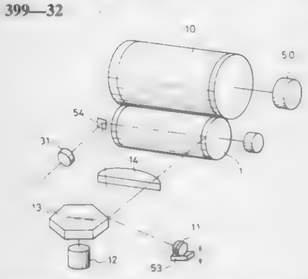
a recirculating system for recirculating the developer fluid through the filter when the sensor senses that the developer fluid contains more than a predetermined amount of toner.

5,634,171

IMAGE RECORDING APPARATUS AND IMAGE RECORDING METHOD

Hakaru Muto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 412,007
Claims priority, application Japan, Mar. 31, 1994, 6-063593
Int. Cl.[6] G03G *15/04*
U.S. Cl. 399—32 **20 Claims**



1. An image recording apparatus usable with a rotationally-driven image carrier and a photosensitive drum, said image record apparatus comprising:
position signal output means for outputting a position signal when the image carrier is at a predetermined rotational position and, in response to the output position signal, starting each of a plurality of color component image formations using each of a plurality of color components, respectively,
scanning means for scanning the photosensitive drum with a light beam modulated in accordance with an image signal;
beam detection signal generating means for generating a beam detection signal upon detection of the light beam at a predetermined position, so as to regulate a timing of the light beam modulation for each line of scan;
image transferring/superposing means for sequentially transferring and superposing on the image carrier a plurality of color component images formed on the photosensitive drum;
measuring means for measuring a time difference between the position signal and the beam detection signal for each of the plurality of color component images;

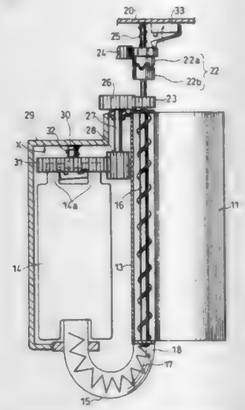
control means for controlling at least the rotation of the image carrier based on the time difference measured by said measuring means;
wherein the position signal comprises a pulse signal having a predetermined duration,
said measuring means measures the time difference between a front edge of the position signal and the beam detection signal,
said control means performs the control based on said time difference within a time period corresponding to said pulse signal, and
a detection member of a predetermined width is attached to the image carrier and said position signal output means detects the detection member and outputs as the position signal a pulse of a duration corresponding to the width of the detection member.

5,634,172

IMAGE FORMING APPARATUS COMPRISING A ROTATABLE WASTE TONER CONTAINER HAVING A LOCKING MECHANISM FOR LOCKING A DRIVE MECHANISM

Nobuo Manabe, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 28, 1996, Ser. No. 608,446
Claims priority, application Japan, Mar. 3, 1995, 7-044089
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—35 **22 Claims**



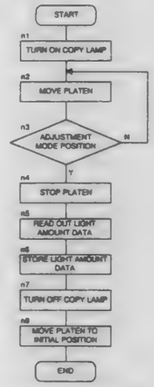
1. An image forming apparatus, comprising:
a waste toner container capable of being provided in a predetermined place;
a drive source;
a drive mechanism, driven by said drive source, for driving said waste toner container to rotate;
a locking mechanism for locking said drive mechanism not to drive said waste toner container by a mechanical self-operating system without using a signal when no waste toner container is provided in the predetermined place, and for releasing and thus allowing said drive mechanism to drive said waste toner container by a mechanical self-operating system without using a signal when said toner container is provided in the predetermined place; and
detecting means for outputting a detection signal upon locking a driving operation of said drive mechanism by said locking mechanism.

5,634,173

IMAGE FORMING APPARATUS CAPABLE OF CONTROLLING AMOUNT OF LIGHT OF LIGHT SOURCE

Naoyuki Kamei, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 14, 1995, Ser. No. 557,919
Claims priority, application Japan, Nov. 14, 1994, 6-279221
Int. Cl.[6] G03G *15/04*
U.S. Cl. 399—52 **4 Claims**



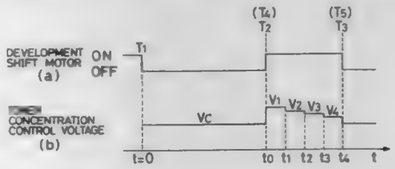
1. An image forming apparatus, comprising:
a light source exposing an original;
image forming means for forming an image based on light from said light source reflected from said original;
first light amount detecting means for detecting the amount of first light reflected from said original;
second light amount detecting means for detecting the amount of second light reflected from a black reference original having a reference density;
means, for correcting an output from said first light amount detecting means with an output from said second light amount detecting means, including a memory storing a relationship between correction data of said correcting means and driving voltage of said light source; and
means for controlling the amount of light of said light source with an output of said correcting means.

5,634,174

DEVELOPER APPARATUS HAVING TONER CONCENTRATION CONTROL

Shingo Mori; Takashi Nagashima; Hiroyuki Hamakawa; Kiyoaki Miyamoto, and Yukihiro Aikawa, all of Osaka, Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Mar. 1, 1996, Ser. No. 609,542
Claims priority, application Japan, Mar. 7, 1995, 7-046798
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—62 **12 Claims**



6. A developer apparatus comprising:
a developer unit having agitating means for agitating a developer containing a magnetic carrier and a non-magnetic toner;

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a toner concentration sensor which detects a toner concentration in the developer unit;

toner replenishing means for replenishing the toner into the developer unit according to an output of the toner concentration sensor; and

controlling means for controlling the agitating means so as to conduct an initial agitation of the developer when power is provided to the developer apparatus so as to turn the developer apparatus on and for periodically agitating the developer subsequent to the initial agitation of the developer; and said controlling means further comprising means for, when copying is performed during agitation, increasing the reference level from a predetermined value and then stepwisely returning the reference value to the predetermined value.

5,634,175

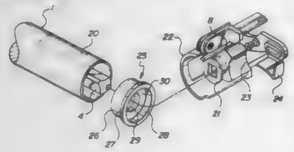
ELECTRICAL CONTACT DEVICE FOR DEVELOPER ROLLER OF TONER CARTRIDGE

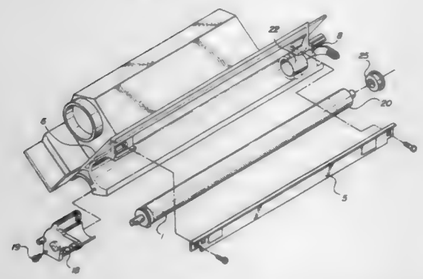
Steven Bruce Michlin, 5310 Bentley Ste. 105, West Bloomfield, Mich. 48322, and Randall F. Sell, Pontiac, Mich., assignors to Steven Bruce Michlin, West Bloomfield, Mich.

Filed Mar. 28, 1995, Ser. No. 411,934

Int. Cl.[6] G03G *15/06;21/00*

U.S. Cl. 399—90 **28 Claims**





1. An improved contact device for reliably providing a bias voltage to a developer roller of a toner hopper assembly, said improved contact device comprising:

a conductive cylindrical member for electrically connecting the developer roller with a electrical contact on the toner hopper assembly;

said conductive cylindrical member including an outer diameter sized to snugly fit with in the developer roller and contact an inner wall of the developer roller;

said conductive cylindrical member including an interior, a first end, and a second end; and

said interior including a region adjacent said first end with an inside diameter sized to fit over the electrical contact on the toner hopper assembly.

5,634,176

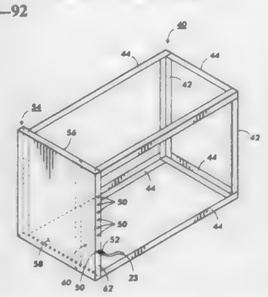
APPARATUS FOR DISTRIBUTING AIR FLOW IN A PRINTING MACHINE

Karl B. Ayash, Webester, and Thomas C. Hollar, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1995, Ser. No. 548,927

Int. Cl.[6] G03G *21/20*

U.S. Cl. 399—92 **8 Claims**



1. A printing machine of the type having a plurality of components for printing a document including:

an air source; and

a support member having a component mounted thereon, said support member being coupled to said air source and having output ports so that air flows from the output ports, said support member includes a cover defining a chamber connected to the output ports and having an input port connected to said air source and the chamber therein.

5,634,177

APPARATUS FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE WITH A NON-MAGNETIC TONER

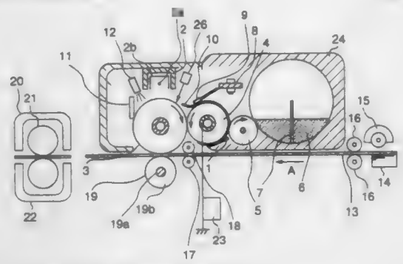
Hironori Taguchi, Saga-ken; Hiromitsu Shimazaki, Fukuoka-ken; Akihiro Tsuru, Kitakyushu; Kazuhiko Noda; Yoshihiro Gotou, both of Chikushino; Osamu Doi, Kitakyushu, and Hideki Yasuda, Kasuga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 7, 1996, Ser. No. 612,228

Claims priority, application Japan, Mar. 15, 1995, 7-056025; Sep. 20, 1995, 7-241153

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—103 **7 Claims**



1. A developing apparatus comprising:

a toner reservoir for holding a non-magnetic toner,

a toner supply roller including a substantially cylindrical supply surface for receiving the toner from the toner reservoir and electrifying the toner thereon,

an electrostatic latent image carrier including a latent image surface on which a latent image formed by an electrostatic voltage distribution thereon is developed by the toner transferred from the supply surface, and

a toner seal surface arranged adjacent to the toner supply roller to contact a remaining part of the toner on the supply surface after the latent image development so that the remaining part of the toner is taken into the toner reservoir,

wherein a disturbance of toner condition between the toner and toner seal surface is prevented and the disturbance of toner condition is prevented by providing a frictional coefficient between the toner seal surface and the toner which is lower than a frictional coefficient between particles of the toner.

5,634,178

GEAR UNIT, IMAGE FORMING APPARATUS AND GEAR UNIT MOUNTING METHOD

Yoshinori Sugiura; Jun Azuma, both of Kawasaki; Nobukazu Adachi, Yokohama; Takeshi Setoriyama, Toride; Chitose Tenpaku, Kawasaki; Noriyoshi Ishikawa, Yokohama; Tatsuo Hamada, Kawasaki; Yoshiro Tsuchiya, Yokohama; Takeshi Kubotn, Tama; Yoshiya Nomura, Tokyo; Akira Kuroda, Yokohama; Ken Murooka, Toride; Takeshi Sugita, Yokohama; Takeshi Niimura, Musashino, and Akira Yuza, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

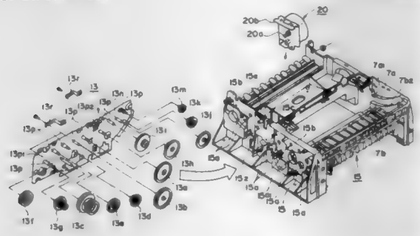
Continuation of Ser. No. 234,413, Apr. 28, 1994, abandoned.

This application Apr. 17, 1996, Ser. No. 633,347

Claims priority, application Japan, Apr. 28, 1993, 5-123165

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—110 **56 Claims**



1. A gear unit mountable to a frame of an electrophotographic image forming apparatus for forming an image on a recording material, said image forming apparatus including an image bearing member, image fixing means for fixing on the recording material a toner image formed on the image bearing member and transferred to the recording material from the image bearing member, and feeding means for feeding the recording material, said gear unit comprising:

an image bearing member driving gear for transmitting a driving force to the image bearing member;

an image fixing means driving gear for transmitting a driving force to the image fixing means;

a feed drive gear for transmitting a driving force to the feeding means; and

a supporting member for supporting integrally said image bearing member driving gear via a gear shaft, said image fixing means driving gear, and said feed drive gear, wherein when said gear unit is mounted to the frame of the image forming apparatus, an end of the gear shaft supporting said image bearing member driving gear is inserted into a hole of the frame, so that the gear shaft is supported by said supporting member and the frame.

5,634,179

CHARGING DEVICE AND IMAGE FORMING APPARATUS CONTAINING THE CHARGING DEVICE

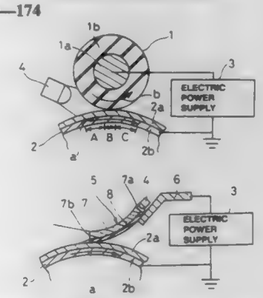
Yoshio Umeda, Kobe; Teruyuki Naka, Izumi; Toshiki Yamamura, Hirakata; Seiichi Suzuki, Katano, and Junichi Nawama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 7, 1994, Ser. No. 302,068

Claims priority, application Japan, Sep. 7, 1993, 5-221802; Sep. 7, 1993, 5-221804; Sep. 7, 1993, 5-221805; May 10, 1994, 6-095360

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—174 **35 Claims**



1. A charging device for charging a moving object comprising:

a charging member which contacts said object in a contacting region and charges the object in a separating region disposed in a downstream part from said contacting region in the moving direction of said object where surfaces of said charging member and said object move away from each other;

an electric power supply for applying a voltage to the charging member; and

a discharging restriction means for restricting the discharging between said charging member and said object in a closing region disposed in an upstream part from said contacting region where surfaces of said charging member and said object move closer to each other; wherein

said discharging restriction means comprises insulation particles provided in said closing region.

5,634,180

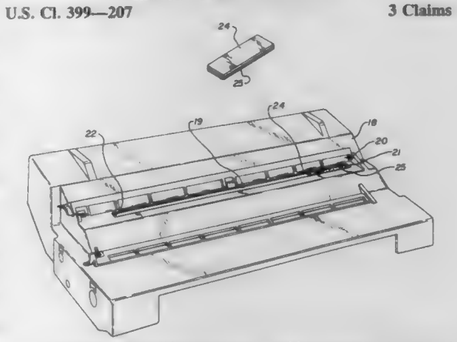
METHOD FOR BLOCKING UNWANTED LIGHT FROM A PHOTORECEPTOR DRUM

Steven Bruce Michlin, 5310 Bentley Ste. 105, West Bloomfield, Mich. 48322, and Steven R. Dixon, Allentown, Pa., assignors to Steven Bruce Michlin, West Bloomfield, Mich.

Filed May 4, 1995, Ser. No. 434,665

Int. Cl.[6] G03G *15/04;21/00*

U.S. Cl. 399—207 **3 Claims**



1. A method for modifying a toner cartridge assembly to prevent light emitted from a laser beam assembly on an imaging machine

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from hitting the non-print region of a photoreceptor drum in the toner cartridge assembly, the toner cartridge being of the type including an access slot for allowing light to contact the photoreceptor drum, the access slot including a first region corresponding to the nonprint region of the photoreceptor drum and a second region corresponding to a print region of the photoreceptor drum, and the cartridge including a cover with an underside and with a sidewall near the second region of the access slot, said method comprising:

covering the first region of the access slot by securing a non-transparent member to the cartridge over the first region of the access slot without covering the second region of the access slot;

securing the non-transparent member to the underside of the cover adjacent a first end of the access slot; and

positioning the non-transparent member by putting one end of a tool of set length against the side wall and laying the tool along the access slot, then putting the non-transparent member against an opposite end of the tool and securing the non-transparent member to the underside of the cover in position blocking the access slot adjacent the nonprint region of the photoreceptor drum.

5,634,181

DEVELOPING APPARATUS

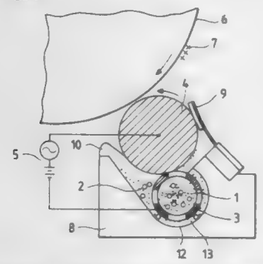
Hidekiyo Tachibana; Yutaka Toyoda; Masashi Kajimoto, and Mikio Yamamoto, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1994, Ser. No. 196,834

Claims priority, application Japan, Feb. 16, 1993, 5-026769

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—254 **20 Claims**



1. A developing apparatus for developing an electrostatic latent image on an electrostatic latent image holding body in a noncontact manner using a nonmagnetic toner carried on a toner carrying body disposed so as to confront the electrostatic latent image holding body, wherein

a nonmagnetic resin carrier is used as a carrier for the nonmagnetic toner;

a developer forward member is disposed so as to confront the toner carrying body with a gap interposed therebetween and so as to arrange a part of the surface thereof close to an inner wall surface of a frame of the apparatus, the developer forward member having a conductive surface and forwarding a developer composed of the toner and the resin carrier by stirring, the inner wall surface having a surface profile corresponding to a surface profile of the developer forward member; and

a voltage applying means applies such a voltage as to generate an electric field for attracting the toner in the developer toward the toner carrying body and attracting the resin carrier toward the developer forward member in an area where the toner carrying body confronts the developer forward member.

5,634,182

METHOD OF DEVELOPING ELECTROSTATIC LATENT IMAGE

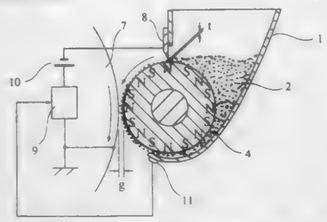
Masumi Asanae, Kumagaya, and Masahisa Ochiai, Fukaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jan. 22, 1996, Ser. No. 589,393

Claims priority, application Japan, Jan. 25, 1995, 7-009393; Apr. 4, 1995, 7-078777; Sep. 26, 1995, 7-247174

Int. Cl.[6] G03G *15/09*

U.S. Cl. 399—267 **6 Claims**



1. A method of developing an electrostatic latent image on a rotating image-bearing member with a magnetic developer, wherein

a magnetic developer containing an electrical insulating toner is attracted on a surface of a sleeveless developer-transporting roll and transported to a developing zone by the rotation of the sleeveless developer-transporting roll, the sleeveless developer-transporting roll consisting of an integrally molded cylindrical permanent magnet member having a plurality of magnetic poles on the surface thereof; and

the magnetic developer is brought into contact with the surface of the image-beating member to develop the electrostatic latent image while keeping the relationship between the peripheral speed Vm of the sleeveless developer-transporting roll and the moving speed Vp of the image-beating member within the range whereby $0.8 \leqq Vm/Vp < 1.2$.

5,634,183

IMAGE PRINTER

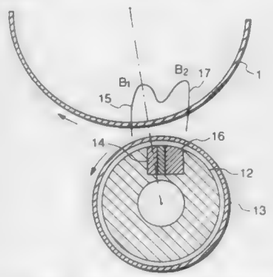
Yosuke Saito, Hitachinaka; Hirobumi Ouchi, Mito; Yasuo Kikuchi, Hitachinaka; Katsuhiro Akinaga, Hitachinaka, and Tomio Sugaya, Hitachinaka, all of Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1996, Ser. No. 608,154

Claims priority, application Japan, Mar. 3, 1995, 7-043965; Sep. 8, 1995, 7-230941

Int. Cl.[6] G03G *15/09*

U.S. Cl. 399—277 **3 Claims**



1. An image printer comprising a first developing unit having a first developing agent holding body rotatably supported, forming a magnetic brush composed of a developing agent containing a toner and a carrier in the peripheral portion of the first developing agent holding body, developing a first electrostatic latent image formed on a printing body using the magnetic brush to form a first toner image onto said printing body;

a second developing unit having a first developing agent holding body rotatably supported, forming a magnetic brush composed of a developing agent containing a toner and a carrier in the peripheral portion of the second developing agent holding body, developing a second electrostatic latent image formed on said printing body using the magnetic brush to form a second toner image onto said printing body holding said first toner image; wherein

two magnetic poles having the same polarity are provided adjacent to each other in a position facing said printing body of said second developing agent holding body provided in said second developing unit; development being performed under a condition satisfying the following formulas;

$B1 \leqq 1100$,

$1000 \leqq B2 \leqq 1200$,

$-300 \leqq B1 - B2 \leqq 0$.

where **B1** (gauss) is a magnetic flux density on the surface of said developing agent holding body of one magnetic pole of said magnetic poles arranged in the downstream side of the transmitting direction of said developing agent, and **B2** (gauss) is a magnetic flux density on the surface of said developing agent holding body of the other magnetic pole of said magnetic poles arranged in the upstream side of the transmitting direction of said developing agent.

5,634,184

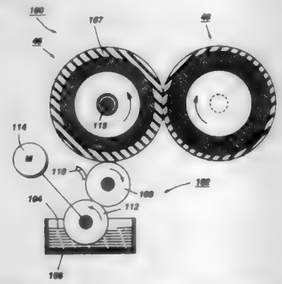
SINGLE ROLL RAM SYSTEM W/ROTATING WICK

Edul N. Dalal, Webster; Robert M. Jacobs, Ontario, and Alvin D. Kromm, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1995, Ser. No. 509,919

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—325 **12 Claims**



1. Apparatus for fusing toner images to a substrate, said apparatus comprising:

a heated fuser member;

a pressure member cooperating with said heated fuser member to apply pressure to a copy substrate passing therebetween;

a supply of release agent material;

a release agent management system for conveying release fluid from said supply of release agent material to one of said members;

said release agent management system comprising a member contacting said release agent material and another member contacting said one of said members, said member contacting said one of said members comprising a cylindrically shaped wick supported for rotation; and

means for effecting removal of contaminates from said member contacting said release agent material said means for effecting removal comprising means for imparting motion to said member contacting said release agent material.

5,634,185

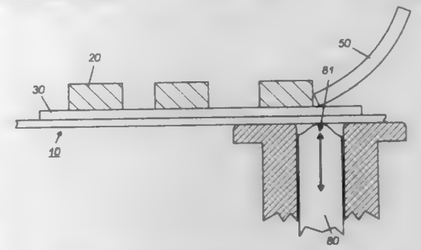
REMOVING TONER ADDITIVE FILMS, SPOTS, COMETS AND RESIDUAL TONER ON A FLEXIBLE PLANAR MEMBER USING ULTRASONIC VIBRATIONAL ENERGY

Nero R. Lindblad, Ontario, and David B. Montfort, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1996, Ser. No. 671,284

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—349 **18 Claims**



15. An apparatus for cleaning particles from a surface, comprising:

a housing;

a holder attached to said housing;

the surface, having multiple layers of toner additive particles thereon, said multiple layers including a first layer of toner additive particles and a second layer of toner additive located on said first layer of toner additive; and

a blade for removing particles from the surface, the surface capable of multiple layers of toner additive particles including said first layer of toner additive and said second layer of toner additive, said blade having one end coupled to said holder and a free end opposite thereto, said free end being in pressure contact with the surface having a minimal coefficient of friction therebetween enabling said free end to be in continuous slidable contact with the surface to remove said second layer from the surface, said blade comprising a blade body including a thermoplastic material having a Rockwell hardness ranging from about R 40 to about M 150.

5,634,186

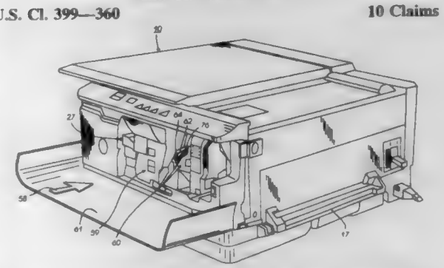
IMAGE FORMING MACHINE HAVING A VERIFIABLY OPENABLE SUMP SHUTTER ASSEMBLY

Luis M. Villalobos-Garcia; Jorge N. Pliego-Escalona; Miguel A. Carmona-Parra; Martin E. Villafana-Chiquito, and Alejandro Parra-Sánchez, all of Aguascalientes, Mexico, assignors to Xerox Corporation, Stamford, Conn.

Filed May 31, 1996, Ser. No. 656,493

Int. Cl.[6] G03G *15/03*

U.S. Cl. 399—360 **10 Claims**



1. An electrostatographic reproduction machine comprising:

(a) a movable image bearing member having an image forming surface;

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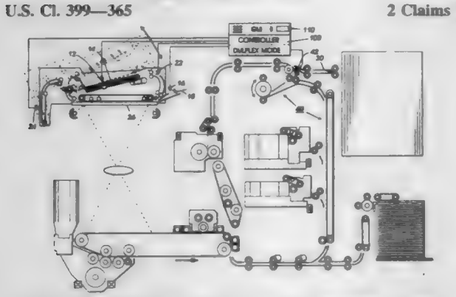
(b) image forming means including a development unit containing toner for developing an image formed on said image forming surface;
(c) transfer means for transferring a developed image from said image forming surface onto a copy sheet;
(d) cleaning means for removing residual toner from said image forming surface; and
(e) a residual toner collecting sump assembly removably loaded into the machine for receiving residual toner removed from said image forming surface, said residual toner collecting sump assembly including a frame defining an end visible cavity, a top wall defining a chamber for holding residual toner, a residual toner receiving opening through said top wall into said chamber, and a verifiably openable shutter assembly, said shutter assembly including a shutter plate being pivotably mounted on said top wall of said chamber in a closed position over said receiving opening, and being automatically movable pivotably from a non-visible closed position to an open and verifiably visible position within said end visible cavity when said residual toner collecting sump assembly is loaded into the reproduction machine.

5,634,187

AUTOMATIC SIMPLEX AND DUPLEX COPYING SYSTEM

Douglas A. Ross, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 29, 1996, Ser. No. 609,267
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—365 **2 Claims**



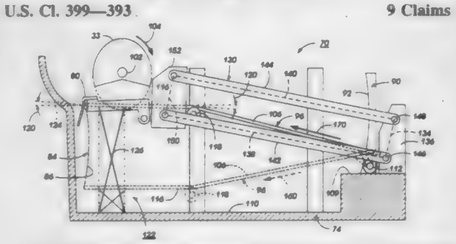
1. In a reproduction apparatus having plural different respective document inputs for inputting documents to be copied, including at least one document input normally used for copying single documents and another document input normally used for copying plural documents, said reproduction apparatus having a duplex copying path and providing a selection of simplex or duplex copying of documents from said document inputs onto one or both sides of copy sheets, respectively, the improvement comprising:
an automatic system for automatically selecting duplex copying whenever appropriate, to save copy sheets, including;
a controller programmed to automatically select between said simplex or duplex copying and connected to direct said copy sheets into said duplex copying path when said duplex copying is selected,
respective document input sensors at said respective plural different document inputs connected to provide control signals to said controller upon sensing a document at said respective document input,
said controller automatically selecting said duplex copying of said documents unless said document input sensor at a said document input normally used for copying single documents is providing a control signal to said controller upon sensing a document at said document input;
wherein said another document input normally used for copying plural documents is the input tray of an automatic recirculating document handler unit, and said document inputs normally used for copying single documents comprise a semiautomatic document input to said automatic recirculating document handler unit, and a manual document input provided by lifting said automatic recirculating document handler unit for which said respective document input sensor is a sensor for sensing said lifting of said automatic recirculating document handler unit.

5,634,188

REPRODUCTION MACHINE HAVING A HIGH CAPACITY CASSETTE TRAY ASSEMBLY

Donald E. Johnston; Bruce A. Winship, both of Rochester, and Richard C. Benton, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,228
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—393 **9 Claims**



1. A high capacity non-motorized sheet cassette tray assembly for supporting and positioning a stack of sheets for feeding reliably one at a time in a sheet using machine, the high capacity cassette tray assembly comprising:
(a) a cassette frame for removing and reinstalling into a sheet supply station of the sheet using machine, said cassette frame having a front end over which sheets are fed into the machine, and forward feed corner snubbers mounted to said front end;
(b) a liftable base plate mounted within said cassette frame for supporting a high capacity stack of sheets having a topmost sheet; and
(c) a constant angle lifting assembly having a rear end connected to said cassette frame, and a front end connected to said liftable base plate for lifting and supporting said base plate and a topmost sheet of a stack of sheets on said base plate, said constant angle lifting assembly including a pair of four-link parallelogram linkage mechanisms, each said linkage mechanism including a fixed position first link mounted to a rear end of said cassette frame, and a set of movable second, third and fourth links connected therefrom for movement relative to said first link, so that said base plate and a topmost sheet as lifted and supported, regardless of a number of sheets in the stack, have a continuously constant sheet feeding angle relative to a horizontal plane through said forward feed corner snubbers of said cassette frame.

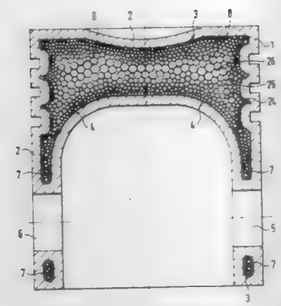
5,634,189

STRUCTURAL COMPONENT MADE OF METAL OR CERAMIC HAVING A SOLID OUTER SHELL AND A POROUS CORE AND ITS METHOD OF MANUFACTURE

Axel Rossmann, Karlsfeld, and Wilfried Smarsly, Grasbrunn, both of Germany, assignors to Mtu Motoren-Und Turbinen Union München GmbH, München, Germany

Filed Nov. 14, 1994, Ser. No. 339,394
Claims priority, application Germany, Nov. 11, 1993, 43 38 457.9
Int. Cl.[6] B22F *7/02*
U.S. Cl. 428—547 **11 Claims**

1. A structural component comprising an outer shell including external and internal shell portions spaced from one another in generally parallel relation, and a core within a space formed between said external and internal shell portions, said internal and external shell portions each being constituted of sintered, solid, powder particles, said core comprising sintered, hollow, bodies arranged in juxtaposed layers one on the next in approximately parallel relation between said internal and external shell portions, said hollow bodies having graduated increased diameters in said layers in a direction from an outer peripheral region of the core at said internal and external shell portions towards a center of the core, said hollow bodies in each of said layers being substantially of the same diameter and disposed in the respective layer approximately parallel to said internal and external shell portions.

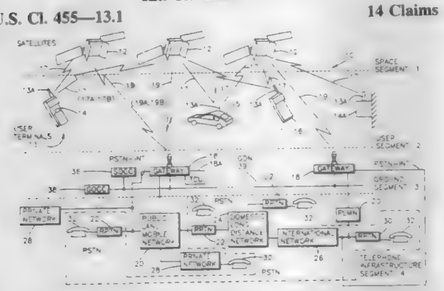


5,634,190

LOW EARTH ORBIT COMMUNICATION SATELLITE GATEWAY-TO-GATEWAY RELAY SYSTEM

Robert A. Wiedeman, Los Altos, Calif., assignor to Globalstar L.P., San Jose, Calif.

Filed Jun. 6, 1995, Ser. No. 465,938
Int. Cl.[6] H04B *7/185*
U.S. Cl. 455—13.1 **14 Claims**



1. A communication system, comprising:
at least first and second earth orbiting satellites individual ones of which comprise means for transceiving first communication signals with terrestrially located user terminals and for transceiving second communication signals with terrestrially located stations, said first communication signals being within a first band of frequencies and said second communication signals being within a second band of frequencies, said at least two earth orbiting satellites having first and second terrestrial coverage areas, respectively;
at least one terrestrial repeater station that is located within an overlapped region between said first and second terrestrial coverage areas, said at least one terrestrial repeater station being comprised of a first transceiver for receiving a first communication signal from a first one of said satellites associated with said first satellite coverage area and for transmitting said received first communication signal to a second one of said satellites associated with said second satellite coverage area, whereby a communication forward link is established between a first station located within said first satellite coverage area and a second station located within said second satellite coverage area;
wherein said at least one terrestrial repeater station is further comprised of a second transceiver for receiving a first communication signal from said second one of said satellites associated with said second satellite coverage area and for transmitting said received first communication signal to said first one of said satellites associated with said first satellite coverage area, whereby a communication return link is established between said first station and said second station.

5,634,191

SELF-ADJUSTING RF REPEATER ARRANGEMENTS FOR WIRELESS TELEPHONE SYSTEMS

Andrew Beasley, Vancouver, Canada, assignor to PCS Microcell International, Inc., Bridgetown, Barbados

Filed Oct. 24, 1994, Ser. No. 327,746
Int. Cl.[6] H04B *3/36*
U.S. Cl. 455—14 **12 Claims**



1. An RF repeater arrangement for a broadcasting a transmit signal from a base station to a mobile handset and for supplying a receive signal from the handset to the base station in a wireless telephone system, said RF repeater arrangement comprising:
a first RF repeater part interfacing with said base station;
at least one second RF repeater part spaced from said first RF repeater part;
said second RF repeater part having an antenna for exchanging the transmit and receive signals with said handset as radio signals; and
a signal conduit connecting said first RF repeater part to said second RF repeater part;
said first RF repeater part including a first level detector for detecting the signal level of the transmit **10** signal at said first RF repeater part, and a modulator for modulating the detected signal level as signal level data onto a carrier for transmission through said signal conduit to said second RF repeater part; and
said second RF repeater part comprising a signal level regulator for amplifying the transmit signal, a second level detector for detecting the level of the transmit signal amplified by said signal level regulator, **15** a demodulator for demodulating the signal data from said first RF repeater part, a control device for comparing the demodulated signal level and the signal level detected by said second level detector to provide a control output to said signal level regulator, and an antenna for broadcasting the transmit signal to the handset; and
said signal level regulator having a gain which is variable in accordance with said control output for **20** increasing the signal level detected by said second level detector in accordance with the level detected by the first level detector to thereby counteract attenuation of said transmit signal by said signal conduit.

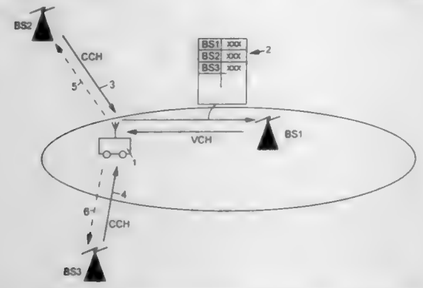
VOL 1198 ISS 4 MY 27 1997 UMI

5,634,192

MOBILE-ASSISTED HANDOFF TECHNIQUE

Paul S. Meche, Richardson; Donald V. Hanley, McKinney; Larry D. Chrisman, Plano, and Michael J. McCarthy, Dallas, all of Tex., assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 23, 1995, Ser. No. 393,348
Int. Cl.[6] H04Q 7/38
U.S. Cl. 455—33.2 13 Claims



1. A method of estimating handoff of a mobile in a mobile cellular communications system, the system comprising a mobile communicating with a serving base station, there also being a plurality of adjacent base stations transmitting signals, wherein the method comprises the steps of:

measuring by the mobile signals received from the adjacent base stations to give mobile signal measurements;

reporting the mobile signal measurements to the serving base station;

adjusting at least some of the reported mobile signal measurements to predict measurements that the adjacent base stations would make of signals received from the mobile, to give a set of predicted signal measurements and,

comparing at least the set of predicted signal measurements so as to select a preferred adjacent base station for a possible handoff.

5,634,193

METHOD OF LOCATING A MOBILE STATION IN A MOBILE TELEPHONE SYSTEM HAVING INDOOR AND OUTDOOR BASE STATIONS

Walter Ghisler, Upplands Väsby, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

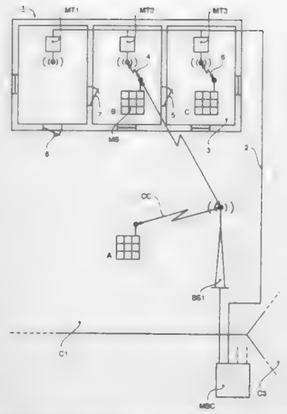
Continuation of Ser. No. 381,464, Jan. 31, 1995, abandoned, which is a continuation of Ser. No. 35,801, Mar. 23, 1993, abandoned. This application Apr. 26, 1996, Ser. No. 638,201
Claims priority, application Sweden, Mar. 24, 1992, 9200914
Int. Cl.[6] H04Q 7/22
U.S. Cl. 455—33.2 4 Claims

1. A method for handing off a mobile station from an outdoor base station to an indoor base station in a mobile telephone system with a plurality of cells intended for indoor and outdoor use, and comprising an external part-system for outdoor use which includes external base stations connected to a mobile switching center, and an internal part-system for indoor use and having internal base stations connected to the mobile switching center, said mobile telephone system being allocated a plurality of frequencies for radio channels, said method comprising the steps of:

specifying a predetermined number of said allocated frequencies as identification frequencies for said indoor base stations;

selecting unique frequency sets from among said identification frequencies, each set comprising at least two frequencies;

assigning one of the unique frequency sets to each indoor base station each of said indoor base stations being assigned different frequency sets, wherein said indoor base stations transmit on their respective unique frequency set;



measuring in said mobile station the signal strengths of said identification frequencies;

reporting a number of said identification frequencies having a signal strength above a first threshold to the mobile switching center;

comparing the reported frequencies with said unique frequency sets;

selecting an indoor base station when an agreement is found between at least a subset of the reported frequencies and at least a subset of the indoor base stations unique frequency set;

assigning said selected indoor base station a traffic channel from among the frequencies including said identification frequencies; and

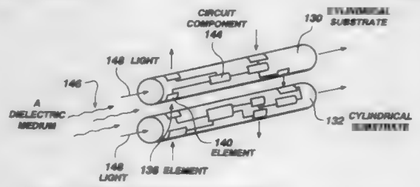
handing off said mobile station to said selected indoor base station, wherein said mobile station communicates with said indoor base station on said assigned traffic channel.

5,634,194

HIGH DENSITY, THREE-DIMENSIONAL, INTERCOUPLED CIRCUIT STRUCTURE

Stephen C. Jacobsen, Salt Lake City, Utah, assignor to Sarcos Group, Salt Lake City, Utah

Division of Ser. No. 114,132, Aug. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 816,628, Dec. 31, 1991, Pat. No. 5,269,882. This application Jun. 6, 1995, Ser. No. 466,227
Int. Cl.[6] H04B 10/12
U.S. Cl. 455—41 5 Claims



1. Circuit coupling apparatus comprising:

a plurality of elongate base elements arranged generally in a spaced-apart, parallel configuration;

a plurality of electrical components disposed on the base elements, said components including

at least one electric signal emitter means on at least one base element for producing a coupling electric signal whose magnitude varies in response to control signals,

means on said at least one base element for supplying control signals to said signal emitter means,

at least one coupling electric signal detector means on at least another base element disposed to intercept coupling signals

produced by the signal emitter means and for producing actuation signals representing the magnitude of coupling signals intercepted by the signal detector means, wherein said signal emitter means comprises an electric field emitter means, wherein said coupling signals comprise electric field signals, and wherein said signal detector means comprises electric field detector means,

means on said at least another base element for receiving the actuation signals; and

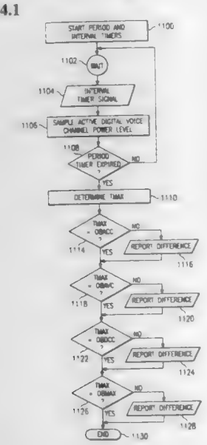
means for supplying a fluid dielectric medium to circulate between the field emitter means and field detector means, and means for selectively varying the dielectric constant of the dielectric medium to thereby vary the electric field coupling between the field emitter means and the field detector means.

5,634,195

SYSTEM AND METHOD FOR SETTING OF OUTPUT POWER PARAMETERS IN A CELLULAR MOBILE TELECOMMUNICATION SYSTEM

Francois Sawyer, Hubert, Canada, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 27, 1995, Ser. No. 411,426
Int. Cl.[6] H04B 7/26
U.S. Cl. 455—54.1 34 Claims



1. In a telecommunications system which includes one or more first transceiving devices and one or more second transceiving devices, said first and second transceiving devices communicating over one or more channels comprised of automatically regulated and non-regulated channels, a method of setting output power level parameters in one of said first transceiving devices comprising the steps of:

determining a maximum output power level used on one or more of said automatically regulated channels;

comparing said maximum output power level with set output power levels for one or more of said non-regulated channels; and

reporting discrepancies between said maximum output power level and said set output power levels for said one or more non-regulated channels.

5,634,196

RADIO CALL HISTORY LIST

George C. Alford, Plano, Tex., assignor to Uniden America Corporation, Ft. Worth, Tex.

Filed Oct. 19, 1994, Ser. No. 325,582
Int. Cl.[6] H04B 1/40
U.S. Cl. 455—54.2 17 Claims



1. A method of storing call history information in a memory in a radio system that identifies transmitted and received radio signals with call data messages, comprising the steps of:

receiving a call data message;

decoding a receive ID code from said call data message;

identifying a current group ID code that is linked to said receive ID code in an ID code memory being suitable for storing a plurality of receive ID codes, a plurality of transmit ID codes, and a plurality of group ID codes, wherein each one of said plurality of group ID codes is linked to at least one of said plurality of receive ID codes and at least one of said plurality of transmit ID codes;

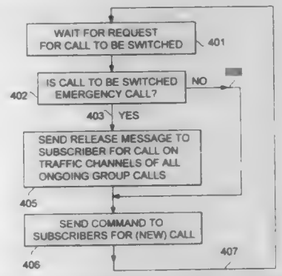
storing said current group ID code in a call history memory.

5,634,197

METHOD, MOBILE EXCHANGE, AND SUBSCRIBER STATION IN A MOBILE RADIO SYSTEM FOR ESTABLISHING A HIGH-PRIORITY CALL

Tapio Paavonen, Saarijärvi, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

PCT No. PCT/FI94/00348, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO95/05721, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 11, 1994, Ser. No. 416,731
Claims priority, application Finland, Aug. 12, 1993, 933576
Int. Cl.[6] H04B 1/00
U.S. Cl. 455—58.1 13 Claims



1. A method for establishing a high-priority individual call or group call to at least one subscriber in a mobile radio system participating in a first group call conducted on a given channel, the method comprising the steps of:

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sending a release message provided with an identifier of the subscriber participating in the first group call to whom it is desired to establish a high-priority individual call or high-priority group call and/or an identifier of the high-priority individual call or high-priority group call to be established on said channel to all subscribers engaged in the first group call,

receiving by the subscribers engaged in the first group call of said release message, detecting by said subscriber to whom it is desired to establish a high-priority individual call or high-priority group call, on the basis of said identifier included in the release message, that the release message is intended for said subscriber,

terminating by said subscriber of said subscriber's engagement in the group call, and

joining by said subscriber of said high-priority call on the basis of the high-priority call identifier received.

5,634,198

NATIONWIDE COMMUNICATION SYSTEM

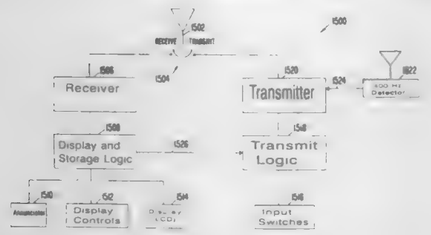
Dennis W. Cameron, Jackson, Miss.; Walter C. Roehr, Jr., Reston, Va.; Jai P. Bhagat, Jackson, Miss.; Masood Garahi, Madison, Miss.; William D. Hays, Jackson, Miss., and David W. Ackerman, Washington, D.C., assignors to Destineer Corporation, Jackson, Miss.

Division of Ser. No. 973,918, Nov. 12, 1992, Pat. No. 5,590,403. This application Feb. 13, 1995, Ser. No. 387,229

Int. Cl.[6] H04B *15/02*

U.S. Cl. 455—63 **6 Claims**

Mobile Transceiver



1. A mobile transceiver unit for transmitting messages to and receiving messages from a network comprising:

input means for allowing a user to input a user message to the unit;

transmitter means for transmitting a radio frequency signal including the user message from the mobile unit to the network;

receiver means for receiving radio frequency signals having a message from the network;

signal detector means for detecting a noise signal at approximately 400 Hz generated by an aircraft;

means for determining whether the detected noise signal exceeds a predetermined threshold; and

a circuit for disabling the transmitter means upon the determining means determining that the detected noise signal exceeds the predetermined threshold, thereby preventing unwanted radio frequency transmission.

5,634,199

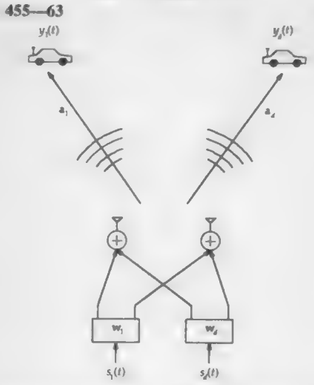
METHOD OF SUBSPACE BEAMFORMING USING ADAPTIVE TRANSMITTING ANTENNAS WITH FEEDBACK

Derek Gerlach, Columbus, Ohio; Arogyaswami Paulraj, Stanford, and Gregory G. Raleigh, El Grananda, both of Calif., assignors to Stanford University, Stanford, Calif.

Continuation-in-part of Ser. No. 46,631, Apr. 14, 1993, Pat. No. 5,471,647. This application Apr. 17, 1995, Ser. No. 424,662

Int. Cl.[6] H04B *15/00*

U.S. Cl. 455—63 **10 Claims**



1. A method for minimizing crosstalk in a wireless communications system comprising an array of transmitting elements and a set of receivers, the method comprising the steps of:

transmitting from the array to the receivers a set of transmitted signals chosen from the group consisting of a set of information signals and a set of probing signals, where the transmitting is in accordance with a set of initial weight vectors;

feeding back to the array a set of feedback signals, where each of the feedback signals is derived from the response at one of the receivers to the set of transmitted signals;

calculating from the set of feedback signals a set of new information weight vectors that minimize time-average crosstalk between the receivers and maximize time-average desired signal at each receiver; and

transmitting the set of information signals from the array to the receivers in accordance with the set of new information weight vectors.

5,634,200

ANTENNA DUPLEXER AND TRANSMITTING/RECEIVING APPARATUS USING THE SAME

Kazuto Kitakubo; Ryuji Oki, both of Tokyo; Shinichi Hirota, Kanagawa, and Sachio Iida, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 217,871, Mar. 25, 1994, abandoned. This application Jan. 30, 1996, Ser. No. 593,553

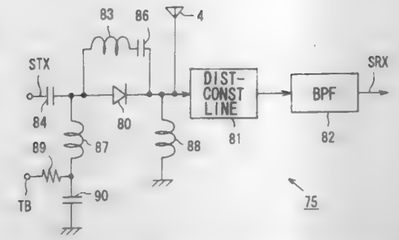
Claims priority, application Japan, Mar. 30, 1993, 5-096825

Int. Cl.[6] H04B *1/44;* **H01P** *1/10*

U.S. Cl. 455—82 **16 Claims**

1. An antenna duplexer for sharing one antenna to transmit a transmission signal and receive a reception signal, said transmission signal and said reception signal having different respective frequencies, comprising:

a high-frequency switching circuit for supplying said transmission signal to said antenna, said transmission signal having a first frequency in a first frequency band;



a delay circuit having a characteristic impedance and first and second ends for delaying a signal passing between said first and second ends for a predetermined delay period, said first end of said delay circuit being coupled to said one antenna; and

a band-pass filter coupled to said second end of said delay circuit for outputting said reception signal supplied by said antenna to a predetermined receiving circuit, said reception signal having a second frequency in a second frequency band nonoverlapping with said first frequency band, said band-pass filter having a reception impedance at said second frequency in said second frequency band which is matched to said characteristic impedance of said delay circuit and an increased impedance in said first frequency band so as to suppress components of said transmission signal in said first frequency band and to supply a reflected signal having a phase characteristic advanced by a predetermined phase advance period, said reflected signal being delayed by said predetermined delay period while passing through said delay circuit and said reflected signal exiting said delay circuit having a substantially zero degree phase shift from said transmission signal in said first frequency band,

wherein a sum of said predetermined delay of said transmission signal passing through said delay circuit and said predetermined delay of said reflected signal passing through said delay circuit is complementary to said predetermined phase advance period.

5,634,201

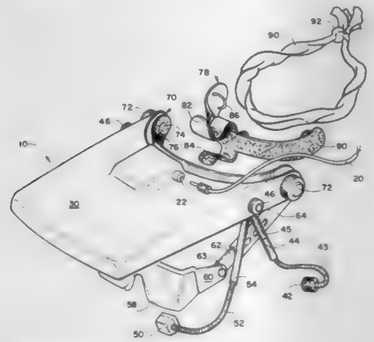
COMMUNICATIONS VISOR

Jonathon E. Mooring, 9944 Bon Nue Dr., El Cajon, Calif. 92021

Filed May 30, 1995, Ser. No. 453,787

Int. Cl.[6] H04B *1/08;* **A61F** *9/00*

U.S. Cl. 455—90 **12 Claims**



1. A communications visor comprising:

an elongated panel configured in the shape of a visor to be worn adjacent a person's forehead to shield a person's eyes from the sun, said panel having a front edge, a rear edge, a left edge, a right edge, a top surface and a bottom surface;

an elongated support member having a left end, a right end, a front surface, a rear surface, a top edge and a bottom edge; said rear surface having a concave curvature that faces rearwardly toward a person's forehead when it is worn; the respective left and right ends of said elongated support member being secured to the respective left and right edges of said elongated panel adjacent its rear end;

an elongated cloth member and means for securing said cloth member to said elongated support member so that said communications visor can be secured to the wearer's head; and

said means for securing said cloth member to said elongated support member comprises an elongated flexible strap, seperate from but releasably secured to said elongated cloth member, and having a front surface and a rear surface; hook and loop fastener material is secured to the rear surface of said elongated support member and hook and loop fastening material is secured to the front surface of said flexible strap to detachably secure said elongated flexible strap to the rear surface of said elongated support member.

5,634,202

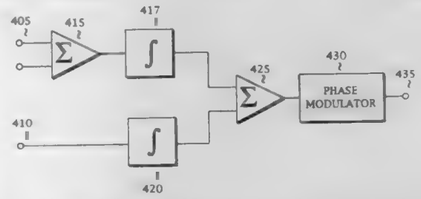
METHOD AND APPARATUS FOR INTEGRATING A PLURALITY OF ANALOG INPUT SIGNALS PRIOR TO TRANSMITTING A COMMUNICATIONS SIGNAL

Lawrence E. Connell, Naperville; Mark J. Callicotte, Oak Park, and Kenneth R. Haddad, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 9, 1993, Ser. No. 149,486

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—110 **13 Claims**



1. An apparatus for integrating a plurality of input signals to provide a frequency modulated signal, comprising:

a first integrator having a first pole frequency to integrate at least one input signal and provide a first integrated signal wherein said first integrator comprises a first switched capacitor integrator;

a second integrator having a second pole frequency different than the first pole frequency to integrate at least another input signal and provide a second integrated signal wherein said second integrator comprises a second switched capacitor integrator;

a summer operatively coupled to said first integrator and said second integrator to receive the first and second integrated signals and provide a composite integrated signal; and

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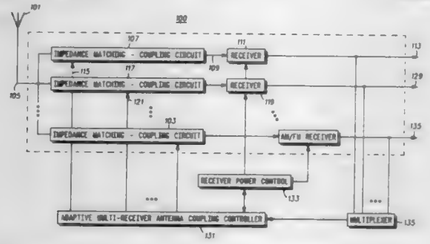
a phase modulator operatively coupled to said summer to receive the composite integrated signal from said summer and provide a frequency modulated signal.

5,634,203

ADAPTIVE MULTI-RECEIVER SHARED ANTENNA MATCHING SYSTEM AND METHOD

Sanjar Ghaem, Palatine, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 2, 1994, Ser. No. 299,981
Int. Cl.[6] H04B *17/02*
U.S. Cl. 455—134 **11 Claims**



5. An adaptive multi-receiver antenna matching method comprising the steps of:

providing an antenna;

operably coupling a plurality of receivers to the antenna, wherein a degree of coupling between each of the receivers and the antenna is alterable dependent on a plurality of degree of coupling signals each associated with a different one of the plurality of receivers;

providing a degree of coupling model; and

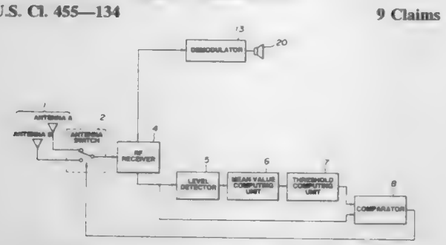
providing each of the plurality of degree of coupling signals in accordance with the provided degree of coupling model.

5,634,204

RADIO COMMUNICATION APPARATUS

Akira Takahashi, Oume, and Hironori Fujii, Hino, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 8, 1995, Ser. No. 525,166
Claims priority, application Japan, Sep. 9, 1994, 6-216228
Int. Cl.[6] H04B *17/02*
U.S. Cl. 455—134 **9 Claims**



1. A radio communication apparatus for use in a radio communication system, having a radio circuit, the apparatus comprising:

a first antenna connected with the radio circuit for receiving first and second signals, wherein the second signal is received more early than a time when the first signal is received;

a second antenna;

first detecting means for detecting a first level of the first signal and a second level of the second signal;

first average calculate means responsive to the first detecting means for calculating a first average level of a signal received by the first antenna from at least the first and second levels;

threshold level calculate means for calculating a threshold level by multiplying the average level by a first predetermined value, where the first threshold value is positive and smaller than 1;

first comparing means for comparing the first level with the threshold level; and

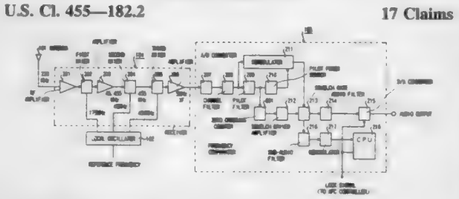
first control means responsive to the first comparing means for disconnecting the first antenna from the radio circuit and connecting the second antenna with the radio circuit when the first level is smaller than the threshold level.

5,634,205

RADIO EQUIPMENT BASED ON AFC SYSTEM WITH TEMPERATURE DETECTION AND METHOD OF AUTOMATIC FREQUENCY CONTROL

Yoshikazu Kurisu, Ichihara; Yojiro Tagawa, Narashino, and Ping Huang, Chiba, all of Japan, assignors to Uniden Corporation, Chiba, Japan

Filed Sep. 15, 1994, Ser. No. 305,966
Claims priority, application Japan, Apr. 19, 1994, 6-100187
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—182.2 **17 Claims**



1. Radio equipment based on AFC system comprising:

a local oscillator which oscillates at a local frequency used for generation of an IF signal;

a reference frequency oscillator which outputs a reference frequency to said local oscillator;

a receiver which receives an input signal from an antenna and which mixes the frequency from said local oscillator with said received input signal and outputs said IF signal;

a temperature detection sensor which detects a temperature value related to said reference frequency oscillator;

a memory for storing entries comprising a value of said reference frequency and a corresponding temperature value detected by said temperature detection sensor therein;

a frequency comparator adapted to detect a pilot signal from a base station in said IF signal and to output an unlock signal or a lock signal according to whether a pilot signal is detected;

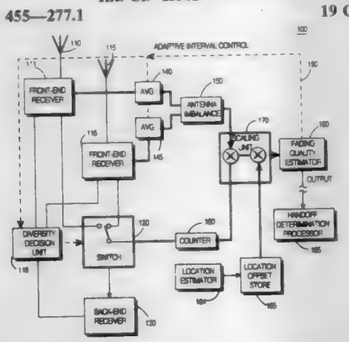
an AFC controller which locks the reference frequency when said pilot signal is detected or changes the reference frequency in accordance with said temperature value when said pilot signal is not detected.

5,634,206

METHOD AND APPARATUS FOR ESTIMATING A SIGNAL FADING CHARACTERISTIC

John D. Reed, Arlington; Frank P. O'Neill, Richland Hills, and Benjamin T. The, Ft. Worth, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 25, 1995, Ser. No. 450,326
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—277.1 **19 Claims**



11. A communications unit in a wireless communication system having at least a first branch including a first antenna and a second branch including a second antenna adapted for diversity reception of a signal, comprising:

a diversity selection switch coupled to the first and second branches;

a diversity selection counter coupled to the diversity selection switch adapted for counting a number of times the diversity selection switch switches between the first and second branches;

a branch imbalance estimator, coupled to the first and second branches, adapted for determining an imbalance measure between the first and second branches; and

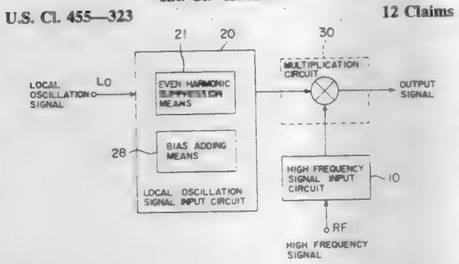
a fading quality estimator coupled to the branch imbalance estimator adapted for estimating a fading quality measure of the signal, wherein the fading quality estimator is further adapted for estimating the fading quality measure based on the number of times the diversity selection switch switches and the imbalance measure in a predetermined interval.

5,634,207

FREQUENCY CONVERTER CAPABLE OF REDUCING NOISE COMPONENTS IN LOCAL OSCILLATION SIGNALS

Takafumi Yamaji, Ichikawa; Hiroshi Tanimoto, Kawasaki, and Satoshi Arai, Musashino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 12, 1996, Ser. No. 600,115
Claims priority, application Japan, Feb. 13, 1995, 7-047774
Int. Cl.[6] H04B *1/26*
U.S. Cl. 455—323 **12 Claims**



1. A frequency converter capable of reducing a noise component in a local oscillation signal: comprising

a high frequency signal input circuit for inputting a high-frequency signal, for producing the high-frequency signal with bias voltage or current, and for outputting a bias-added high-frequency signal;

a local oscillation signal input circuit for inputting a local oscillation signal, and including at least bias adding means for outputting a bias-added local oscillation signal after adding the local oscillation signal with bias voltage or current, and even harmonic suppression means for suppressing a noise component having a frequency in the vicinity of a frequency which is multiple of even number of a local oscillation frequency of the local oscillation signal so as to output a bias-added and even-noise suppressed local oscillation signal in which noises having frequency of multiple of even number are reduced; and

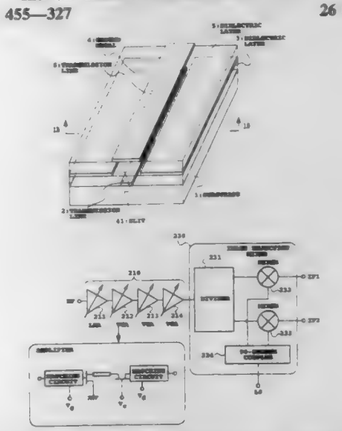
a multiplication circuit for inputting the bias-added high-frequency signal supplied from the high-frequency signal input circuit and the bias-added and even-noise suppressed local oscillation signal supplied from the local oscillation signal input circuit, and multiplying both the signals to output a product of the bias-added high-frequency signal and the bias-added and even-noise suppressed local oscillation signal.

5,634,208

MULTILAYER TRANSMISSION LINE USING GROUND METAL WITH SLIT, AND HYBRID USING THE TRANSMISSION LINE

Kenjiro Nishikawa; Ichihiko Toyoda; Tsuneo Tokumitsu, all of Yokosuka, and Kenji Kamogawa, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Mar. 26, 1996, Ser. No. 622,044
Claims priority, application Japan, Mar. 28, 1995, 7-069769
Int. Cl.[6] H04B *1/26*; **H01P** *3/08;5/12;5/16*
U.S. Cl. 455—327 **26 Claims**



26. An image rejection mixer which mixes a plurality of RF signals with local signals to output IF signals, the RF signals being obtained by dividing a received RF signal by a divider including two or more quarter-wavelength transmission lines with their one ends provided with said received RF signal and the other ends each outputting said plurality of RF signals, said divider comprising:

a substrate;

a first dielectric layer formed on said substrate;

a ground metal formed on said first dielectric layer;

a second dielectric layer formed on said ground metal;

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a first transmission line formed between said substrate and said first dielectric layer;

a second transmission line formed on said second dielectric layer; and

a slit formed in said ground metal,

wherein said substrate has a greater dielectric constant than said first dielectric layer, and said first transmission line and said second transmission line constitute said quarter-wavelength transmission lines of said divider.

5,634,209

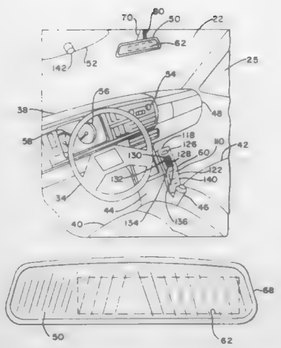
IN-VEHICLE RADIO ANTENNA

Dennis C. Prudhomme, Bloomingdale, and Eugene Propp, Evanston, both of Ill., assignors to Elden, Inc., Elmhurst, Ill.

Continuation-in-part of Ser. No. 406,111, Mar. 17, 1995. This application Aug. 28, 1995, Ser. No. 520,015

Int. Cl.[6] H05K *11/02*

U.S. Cl. 455—345 **10 Claims**



1. A radio antenna system for use in vehicles, comprising:

a vehicle antenna-housing connected to a vehicle;

a radio antenna secured to the vehicle antenna-housing at a location spaced from the trunk of the vehicle;

a radio operatively connected to said antenna, said radio being selected from the group consisting of an AM radio, an FM radio, and an AM/FM radio;

said radio antenna having substantially planar aligned outwardly-diverging antenna sections, each outwardly diverging antenna section having a cross section increasing stepwise towards a central portion of the antenna; and

said vehicle is selected from the group consisting of an automobile, station wagon, van, truck, jeep, taxicab, bus, motorcycle, all-terrain vehicle, road-grading equipment, backhoe, tractor, and an agricultural vehicle.

DESIGNS

MAY 27, 1997

379,407

BABY STOOL

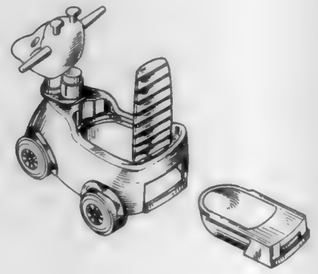
Pao-Yu Liu, 6F., 218, Ta-Tung Rd., Sec. 3, Shi-Chi Chen, Taipei Hsien, Taiwan

Filed Sep. 7, 1995, Ser. No. 43,588

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—351



379,408

CHAIR

Saul Feldberg, Don Mills, Canada, assignor to Global Upholstery Company, Downsview, Canadn

Filed Feb. 15, 1996, Ser. No. 50,368

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—366



379,409

RECLINING EXAMINATION CHAIR

Gary G. Schwaegerle, Cincinnati, and Gregory M. Crook, Columbus, both of Ohio, assignors to Reliance Medical Products, Inc., Mason, Ohio

Filed Mar. 7, 1996, Ser. No. 51,362

Term of patent 14 years

LOC (6) Cl. 06 - *01*

U.S. Cl. D6—367



379,410

FINGER RING DISPLAY HOLDER

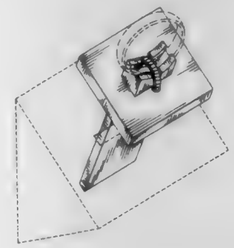
Felix A. Porcaro, Lincoln, R.I., assignor to Accessories Associates, Inc., Smithfield, R.I.

Filed Aug. 31, 1995, Ser. No. 43,327

Term of patent 14 years

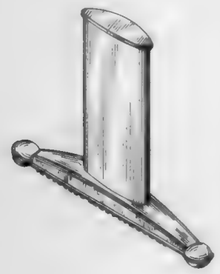
LOC (6) Cl. 20 - *02*

U.S. Cl. D6—466

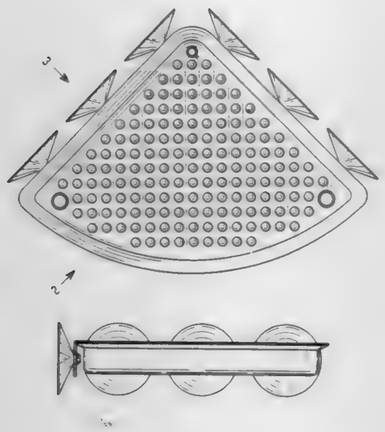


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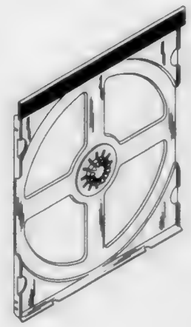
379,411
BASE FOR A TABLE
David R. Funk, Sheboygan, Wis., assignor to Krueger International, Inc., Green Bay, Wis.
Division of Ser. No. 34,260, Jan. 31, 1995, Pat. No. Des. 372,150. This application Feb. 14, 1996, Ser. No. 50,311
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—495



379,412
CORNER SHELF
James Hampshire, Solon, Ohio, assignor to InterDesign, Inc., Solon, Ohio
Filed Dec. 27, 1995, Ser. No. 48,383
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—574



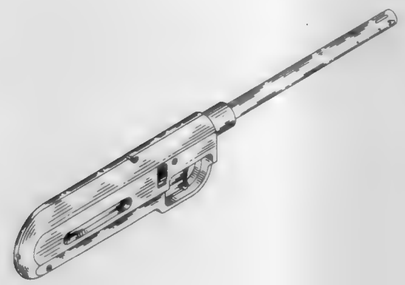
379,413
DISK-HOLDING INSERT FOR A STORAGE CASE FOR A COMPACT DISK
Kenneth P. Swanick, Lake Wales, Fla., assignor to Skaraborg Invest USA, Inc., Lake Wales, Fla.
Filed Jun. 7, 1995, Ser. No. 39,936
The portion of the term of this patent subsequent to Dec. 17, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—627



379,414
HANDLE END OF A FOOD SERVING UTENSIL
Patricia J. Horst, Rockford, Ill., assignor to P.J. Maxwell Co., Inc., Rockford, Ill.
Filed Jul. 17, 1995, Ser. No. 41,496
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—401.2



379,415
IGNITING APPARATUS
Arthur Mindle, Napa, Calif., assignor to U.S. Catalytic Corporation, Napa, Calif.
Filed Feb. 16, 1996, Ser. No. 50,371
Term of patent 14 years
LOC (6) Cl. 27 - *05*
U.S. Cl. D7—416



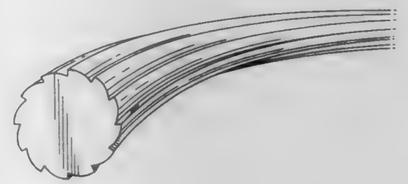
379,416
GARDEN STAKE
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Nov. 28, 1995, Ser. No. 47,195
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



379,417
STAKE FOR PLANTS OR TREES
Léandre Vachon, Thetford Mines, Canada, assignor to Plastiques D.S.D. Inc., Thetford Mines, Canada
Filed Feb. 1, 1996, Ser. No. 49,841
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1

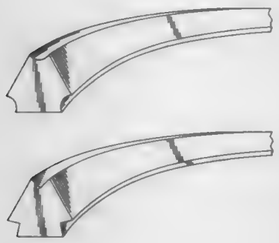


379,418
CUTTING LINE FOR A ROTATING LINE TRIMMER
David B. Skinner, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.
Division of Ser. No. 29,442, Oct. 6, 1994, Pat. No. Des. 365,734, which is a continuation-in-part of Ser. No. 834,520, Feb. 12, 1992, Pat. No. Des. 364,079. This application May 25, 1995, Ser. No. 39,264
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—8



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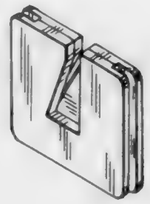
379,419
CUTTING LINE FOR A ROTATING LINE TRIMMER
David B. Skinner, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.
Filed Sep. 12, 1995, Ser. No. 43,776
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—8



379,420
WING NUT DRIVER
Joan Standlee, 418 Crofton Dr., Ocoee, Fla. 34761, and John T. Pelka, 8725 Kenmure Cove, Orlando, Fla. 32836
Filed Mar. 11, 1996, Ser. No. 51,477
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—70



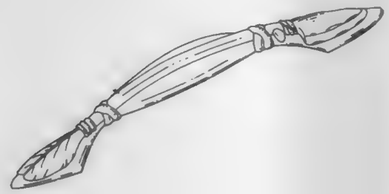
379,421
CORD CUTTER
Linda Friedman, Staten Island, N.Y., assignor to J. R. Duffy Inc., Great Neck, N.Y.
Filed Feb. 1, 1996, Ser. No. 49,865
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—98



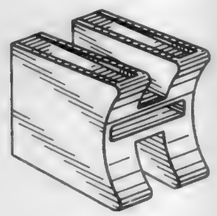
379,422
GARDEN TOOL SLEEVE
Michelle L. Yates, Shoemakersville, and Barry R. Albert, Dillsburg, both of Pa., assignors to True Temper Hardware Company, Camp Hill, Pa.
Filed Sep. 7, 1995, Ser. No. 43,583
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—107



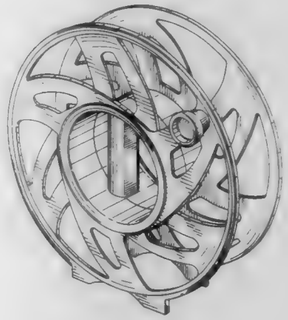
379,423
PULL
Gerald Caugh, Rockford; Kevin DeWald, Spring Lake, and Deborah Mattson, Plainwell, all of Mich., assignors to Belwith International, Grandville, Mich.
Division of Ser. No. 43,404, Sep. 1, 1995, which is a division of Ser. No. 15,019, Nov. 5, 1993, Pat. No. Des. 369,289. This application Nov. 22, 1995, Ser. No. 47,098
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—305



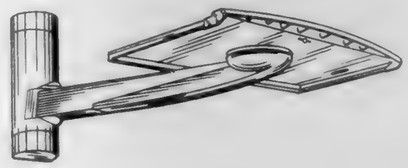
379,424
STANDOFF
Frederick E. White, Jr., Marietta, and Gary D. Hammon, Woodstock, both of Ga., assignors to Panduit Corp., Tinley Park, Ill.
Filed Jan. 25, 1996, Ser. No. 49,438
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



379,425
CORD REEL
Douglas Wright, Clermont, and Craig Stewart, Noblesville, both of Ind., assignors to Woods Industries, Inc., Carmel, Ind.
Filed Feb. 2, 1996, Ser. No. 49,892
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—359



379,426
SUPPORT FOR A TELEVISION AND AUDIO/VIDEO EQUIPMENT
Henricus H. Vogels, Eindhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands
Filed Dec. 20, 1995, Ser. No. 48,116
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—363



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BETWEEN THE STUDS SPRING GRIPS

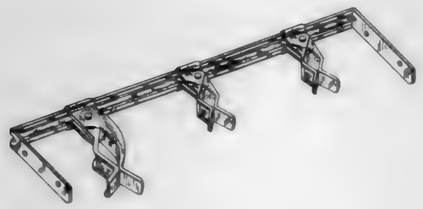
Kenneth Laga, Franklin, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.

Filed Mar. 6, 1996, Ser. No. 51,223

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—373



379,428

FREE TURNING SLEEVE FOR A LOCKING LUG NUT

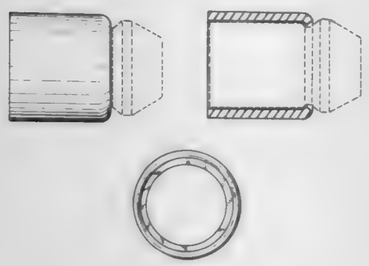
Tyler C. Fling, 715 Spring Dr., Walnut Creek, Calif. 94598

Filed Feb. 9, 1995, Ser. No. 34,667

Term of patent 14 years

LOC (6) Cl. 08 - *08*

U.S. Cl. D8—399



379,429

DISPENSER

Joern Weiss, Straubendardt-Langenalb, and Harry Landauer, Pforzheim, both of Germany, assignors to Lingner & Fischer GmbH, Buhl/Baden, Germany

Filed Aug. 24, 1995, Ser. No. 43,072

Claims priority, application Germany, Feb. 24, 1995, 2045600

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—447



379,430

ROSE-SHAPED JEWELRY CASE

Siri Siripreedabhakd; Somboon Siripreedapuk, both of 16 Soi Chokchai Ruammitr 18, Vibhavadi Rungsit Road, and Mayuree Vacharapong, 234 Moo 3, Soi Chokchai Ruammitr 18, Vibhavadi Rungsit Road, all of Samsennok Huaykwang, Bangkok THX

Filed Mar. 31, 1994, Ser. No. 20,704

Term of patent 14 years

LOC (6) Cl. 09 - *03*

U.S. Cl. D9—336



379,431

DOME LID FOR A CONTAINER

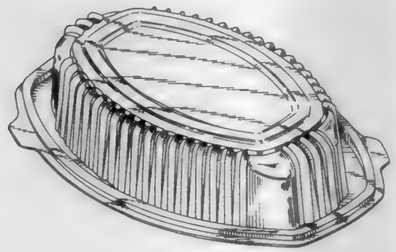
Raj K. Mangla, Pittsford, N.Y., assignor to Tenneco Packaging, Evanston, Ill.

Filed Mar. 13, 1996, Ser. No. 51,550

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—425



379,432

GROCERY BAGS HANDLE

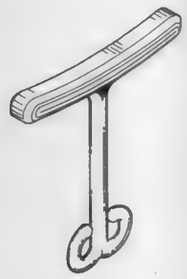
Luis A. Santini, Calle 1 #49, Hermanas Davala Bayamon, Puerto Rico

Filed Mar. 6, 1995, Ser. No. 35,751

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—434



379,433

AEROSOL OVERCAP

Robert J. Croft, New York, N.Y., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 21, 1996, Ser. No. 51,988

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—445



379,434

DISPENSING CAP

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661, and Gregory S. Burcham, Spruce Pine, Ala., assignors to Edward S. Robbins, III, Muscle Shoals, Ala.

Filed Apr. 10, 1996, Ser. No. 52,858

Term of patent 14 years

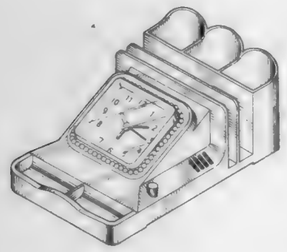
LOC (6) Cl. 09 - *07*

U.S. Cl. D9—449

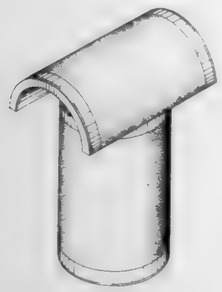


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379,435
MULTI-FUNCTION STATIONERY STAND AND CLOCK
Chin-Biau Hsu, Taichung Hsien, Taiwan, assignor to E Yeou Industrial Co., Ltd., Taichung Hsien, Taiwan
Filed Apr. 6, 1995, Ser. No. 38,788
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—2



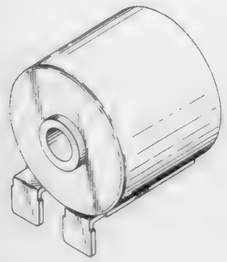
379,436
REFLECTOR FOR AN AIRPORT RUNWAY
Steve Palmer, 11854 El Camino del Diablo, Yuma, Ariz. 85367
Filed Mar. 22, 1995, Ser. No. 36,523
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—109



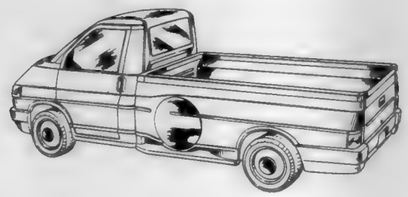
379,437
DISPOSABLE FLASHER UNIT
Roger J. Flaherty, Baystar International, Inc., 1609 E. Edinger, Bldg. B., Santa Ana, Calif. 92705
Filed Aug. 2, 1995, Ser. No. 42,169
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—114



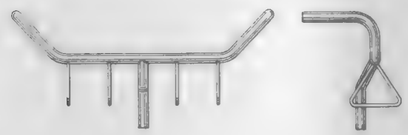
379,438
AUDIBLE SIGNAL FOR AN ALARM UNIT
Takahiro Sone, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka-ken, Japan
Filed Jun. 9, 1995, Ser. No. 40,110
Claims priority, application Japan, Dec. 21, 1994, 6-39070
The portion of the term of this patent subsequent to Sep. 24, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—116



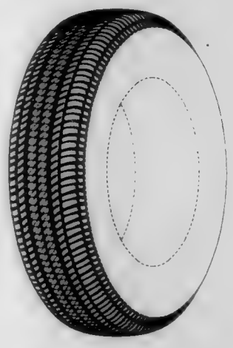
379,439
VEHICLE
Bunker H. Bradley, Mentone, Australia, assignor to Roll-On Vehicles Management Pty Limited, New South Wales, Australia
Filed Oct. 27, 1995, Ser. No. 45,721
Claims priority, application Australia, May 1, 1995, 1354/95
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—98



379,440
BICYCLE PARKING RACK
Merrill R. Denney, 19731 SW. 68th Ave., Tualatin, Washington County, Oreg. 97062
Filed May 8, 1996, Ser. No. 54,191
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—115



379,441
TIRE TREAD
William U. Villamizar, Mersch, Luxembourg; Richard Heinen, Habay-la-Neuve; Alain A. Z. S. Klepper, Bastogne, both of Belgium; Maurice Graas, Reichlange, Luxembourg, and Michel Constant, Bastogne, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 21, 1996, Ser. No. 50,645
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—141

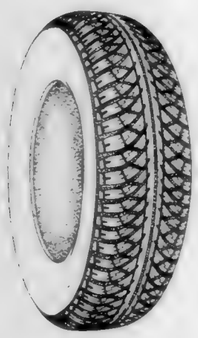


379,442
TIRE TREAD
Billy J. Ratliff, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 20, 1995, Ser. No. 48,143
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



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379,443
TIRE
Gernot Arendt, Tribuswinkel, and Paul Zeiner, Mauerback, both of Austria, assignors to Semperit Reifen AG, Traiskirchen, Austria
Filed Jun. 21, 1995, Ser. No. 40,535
Claims priority, application Austria, Dec. 21, 1994, MU-4748/94
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



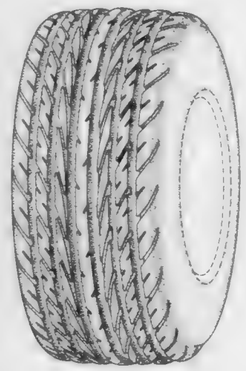
379,444
TIRE TREAD
Maurice Graas, Reichlange, and John C. M. Munster, Bridel, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 26, 1995, Ser. No. 41,890
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



379,445
TIRE TREAD
Efimia E. Rohweder, Uniontown; Frederick W. Miller, Akron; Michael A. Kolowski, Mogadore, and Stephanie C. Brown, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 25, 1995, Ser. No. 44,447
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



379,446
COMBINED TIRE TREAD AND SIDEWALL
David D. Hutson; Christopher P. Johenning, both of Akron; John J. Taube, Tallmadge, and Terry J. Waibel, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 11, 1995, Ser. No. 47,723
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



379,447
TIRE TREAD
Christian Labbe, Meix-le-Tige, and Claude Lardo, Walzing, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 14, 1995, Ser. No. 47,899
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



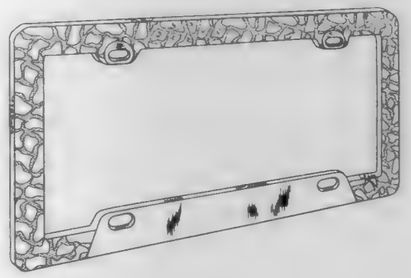
379,448
TIRE TREAD
Maurice Graas, Reichlange, Luxembourg, and Richard Heinen, Habay-la-Neuve, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 19, 1996, Ser. No. 51,819
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



379,449
TIRE TREAD
Maurice Graas, Reichlange, and John C. M. Munster, Bridel, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 26, 1995, Ser. No. 41,904
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151

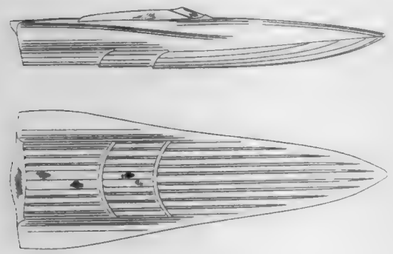


379,450
LICENSE PLATE HOLDER HAVING NUGGET ORNAMENTATION
Lawrence E. Clark, and Peter S. Reynolds, both of Miami, Fla., assignors to Quest Industries, Inc., Miami, Fla.
Filed Nov. 28, 1995, Ser. No. 47,167
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—193

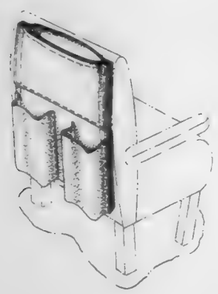


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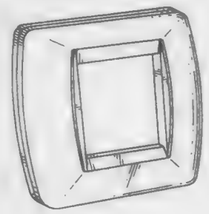
379,451
BOAT
Göran Mannerfelt, Trebackavägen 12, S-182 65 Djursholm, Sweden
Filed Mar. 26, 1996, Ser. No. 52,245
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—314



379,452
SEAT CADDY
Marlena N. Russell, 1915 Vine St., Chattanooga, Tenn. 37404, and Jeffery Lindsey, 1005 Fairmount Ave., Chattanooga, Tenn. 37405
Filed Jul. 6, 1995, Ser. No. 41,113
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—416



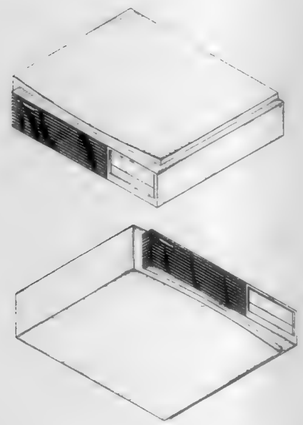
379,453
COMBINED FACE PLATE AND SUPPORTING STRUCTURE
Fabrizio Fabrizi, Bergamo, Italy, assignor to Bticino S.p.A., Italy
Filed Nov. 23, 1994, Ser. No. 31,376
Claims priority, application Italy, May 24, 1994, MI9400274
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—177



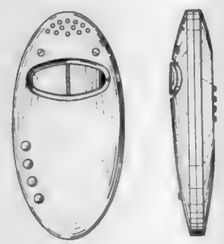
379,454
MULTIMEDIA TERMINAL HOUSING HAVING FOUR DIFFERENT COMPONENTS
Bernd Kruse, Altenbeken, and Udo Hesselbach, Bueren, both of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany
Filed Sep. 7, 1995, Ser. No. 43,559
Claims priority, application Germany, Mar. 7, 1995, M9502147.7
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



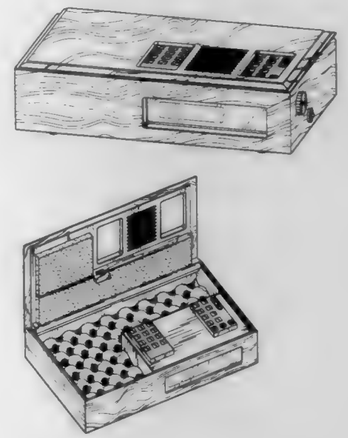
379,455
COMPUTER WORKSTATION
Tommy J. Searby, Fort Collins, Colo.; Iulius Lucaci, and Penny Yao, both of Portland, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 2, 1996, Ser. No. 50,583
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



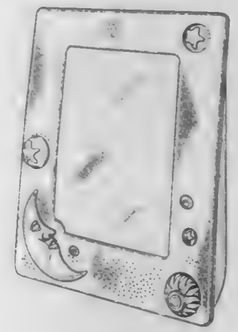
379,456
HAND-HELD ANALOG RECORDER
Scott W. Osiecki, Skaneateles, N.Y., assignor to Olympus America Inc., Melville, N.Y.
Filed Nov. 22, 1995, Ser. No. 46,985
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—167



379,457
COMBINED RADIO AND HANDGUN LOCKBOX
George A. Stout, Jr., 6790 W. Whiteland Rd., Bargersville, Ind. 46106
Filed May 4, 1994, Ser. No. 22,392
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—171

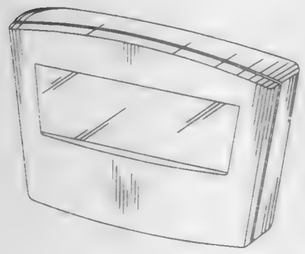


379,458
COMBINED ENVIROMENTAL SOUND MACHINE, NIGHT LIGHT AND PICTURE FRAME
Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed May 2, 1996, Ser. No. 53,960
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—168

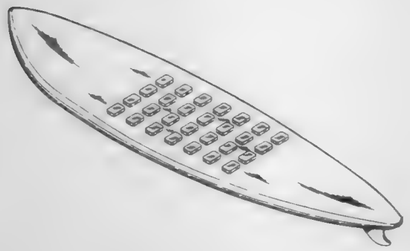


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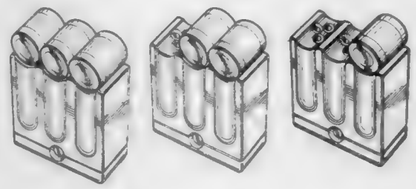
379,459
PAGER
Mark Biasotti, San Jose; Charles R. Lewis, Jr., Palo Alto; Michael J. Nuttall, Portola Valley, all of Calif.; John H. Schaffeld, New Vernon, and Jose A. Sosa, Hackettstown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,020
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—191



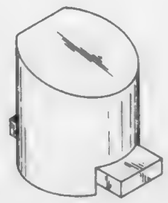
379,460
ELECTRONIC REMOTE CONTROL
J. Andrew Chang, 529 Manhattan Beach Blvd., Apt. A, Manhattan Beach, Calif. 90266, and John J. Bettino, 5023 Kenerson Dr., Fairfax, Va. 22032
Filed Mar. 9, 1995, Ser. No. 35,951
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—218



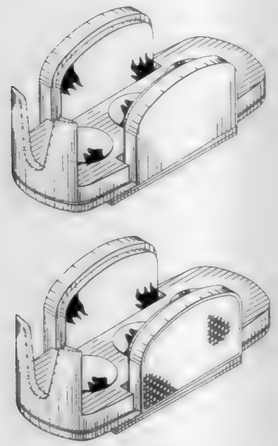
379,461
COMBINED MICROPHONES AND STAND
William M. Hartman, 76 Longwood Rd., Quincy, Mass. 02169
Filed Nov. 3, 1995, Ser. No. 45,951
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—227



379,462
DIAL BUTTON
Steve O. Mak, Leonardo; Bobbie J. Ridgely, Atlantic Highlands; Linda A. Roberts, Sea Bright, all of N.J.; John Stoddard, Hackney; Suzy Stone, St Albans, both of England, and Leslie G. Tudor, Glen Ridge, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Nov. 9, 1995, Ser. No. 46,217
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—247



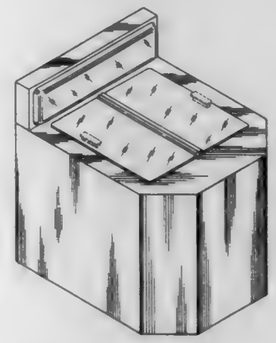
379,463
TELEPHONE HOLDER
Herbert Richter, Drosselweg 8, 75331 Engelbrand, Germany
Filed May 7, 1996, Ser. No. 54,170
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—253



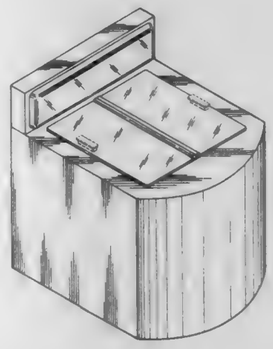
379,464
ROW CROP ROLLING SHIELD
Mark W. Bruns, Gibbon, Minn., assignor to May-Wes Manufacturing, Inc., Gibbon, Minn.
Filed Mar. 7, 1996, Ser. No. 51,262
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—29



379,465
ICE CREAM FREEZER MERCHANDISER
Richard H. Peterson, Jr., San Francisco, Calif., assignor to Dreyer's Grand Ice Cream, Inc., Oakland, Calif.
Filed Dec. 7, 1995, Ser. No. 47,573
The portion of the term of this patent subsequent to Dec. 10, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 15 - *07*
U.S. Cl. D15—84

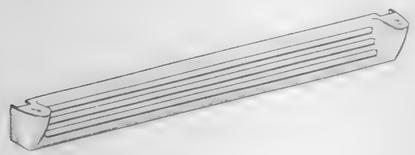


379,466
ICE CREAM FREEZER MERCHANDISER
Richard H. Peterson, Jr., San Francisco, Calif., assignor to Dreyer's Grand Ice Cream, Inc., Oakland, Calif.
Filed Dec. 7, 1995, Ser. No. 47,575
The portion of the term of this patent subsequent to Dec. 10, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 15 - *07*
U.S. Cl. D15—84

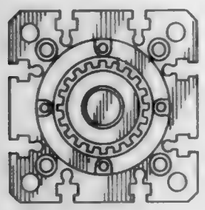


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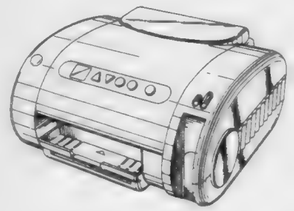
379,467
REFRIGERATOR GRILLE
Robert H. Martin, Columbus, and Charles D. Baker, Dublin, both of Ohio, assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Dec. 22, 1995, Ser. No. 48,267
Term of patent 14 years
LOC (6) Cl. 15 - *07*
U.S. Cl. D15—89



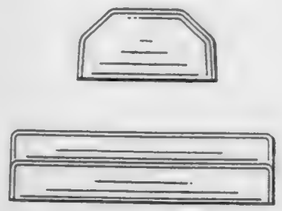
379,468
ELECTRIC ACTUATOR
Shigekazu Nagai, and Shuuzou Sakurai, both of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 15, 1996, Ser. No. 53,160
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—199



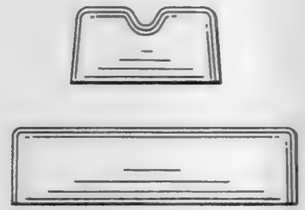
379,469
VIDEO PRINTER
Fujio Nobata, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Japan
Filed Nov. 14, 1995, Ser. No. 46,430
Claims priority, application Japan, May 16, 1995, 7-13580
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—50



379,470
SOLID INK STICK FOR A COLOR PRINTER
John B. Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed Apr. 18, 1996, Ser. No. 53,248
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



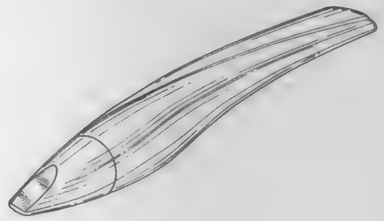
379,471
SOLID INK STICK FOR A COLOR PRINTER
John B. Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed Apr. 18, 1996, Ser. No. 53,250
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



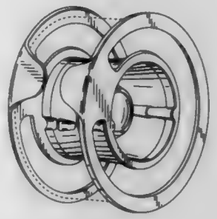
379,472
COMBINATION BALL-POINT PEN AND LOTTERY NUMBER CHOOSER
Peter M. Smith, 4319 Saltillo St., Woodland Hills, Calif. 91364
Filed May 28, 1996, Ser. No. 55,027
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—36



379,473
DISPOSABLE PAINT STYLUS
Vincent DeLorenzo, Scottsdale, Ariz., and Jeff Bisch, Santa Barbara, Calif., assignors to DMDN, L.L.C., Scottsdale, Ariz.
Filed Apr. 26, 1996, Ser. No. 53,667
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—55

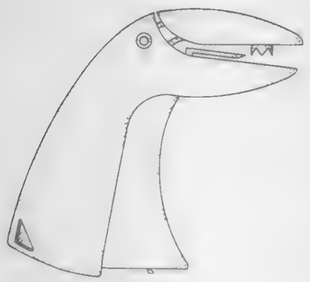


379,474
PROTECTOR FOR A ROLL OF TAPE
Joy A. Packard, Somerset, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 2, 1996, Ser. No. 48,820
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—69



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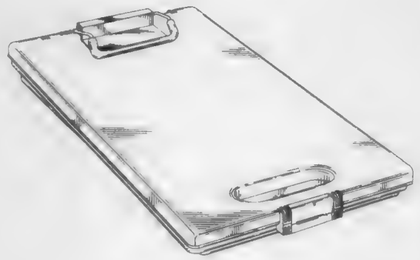
379,475
ONE-HOLE PUNCH
Robert J. Mangler, Wheeling, Ill., assignor to ACCO USA, Inc., Wheeling, Ill.
Filed Apr. 19, 1995, Ser. No. 37,765
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—72



379,476
TELEPHONE NUMBER INDEX
Chi F. Tsui, Chai Wan, Hong Kong, assignor to Fixtron Ltd., Virgin Islands (Br.)
Filed Feb. 7, 1996, Ser. No. 50,046
Claims priority, application United Kingdom, Aug. 8, 1995, 2049447
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—76

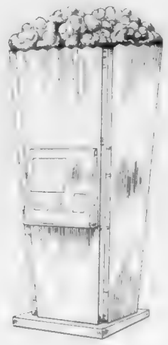


379,477
CLIPBOARD/STORAGE BOX
Ellis N. Shamoon, 2833 Park Bridge Ct., Dallas, Tex. 75219
Filed May 7, 1996, Ser. No. 54,140
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—88

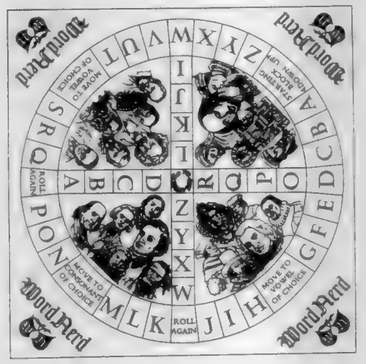


379,478
Patent Not Issued For This Number

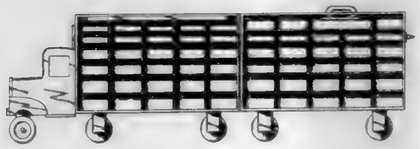
379,479
KIOSK
Thomas P. Leydon, Highlands Ranch, Colo., assignor to U S West, Inc., Englewood, Colo.
Filed Feb. 9, 1996, Ser. No. 50,148
Term of patent 14 years
LOC (6) Cl. 20 - *01*
U.S. Cl. D20—4



379,480
GAME BOARD
Glenn M. Cahilly, R.R. 1, Box 122-3, Roth Rd., Warren, Vt. 05674
Filed Sep. 5, 1995, Ser. No. 43,428
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—30



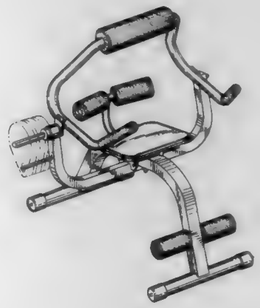
379,481
TOY TRUCK AND TRAILER
Merwyn R. Johnson, 6850 Ravine Ct., Newcastle, Calif. 95658
Filed Dec. 29, 1995, Ser. No. 48,496
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—140



379,482
OUTER BEING FIGURE
Alfred J. Giancola, 15 Harrison Pl., Farmington, N.Y. 11735
Filed Nov. 27, 1995, Ser. No. 50,536
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—166

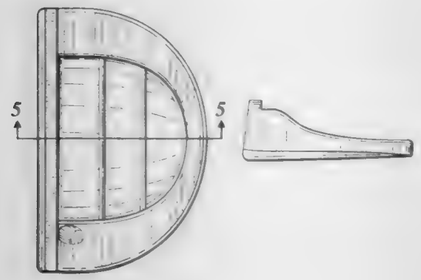


379,483
COMBINATION ABDOMINAL AND BACK EXERCISER
James L. England, Auburn, Ala.; Gary T. Fox, Winona, Tex.; Mark G. Hecox, and Randal S. Kretzler, both of Tyler, Tex., assignors to Roadmaster Corporation, Olney, Ill.
Continuation of Ser. No. 31,721, Dec. 5, 1994, abandoned.
This application Mar. 1, 1995, Ser. No. 41,681
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—195



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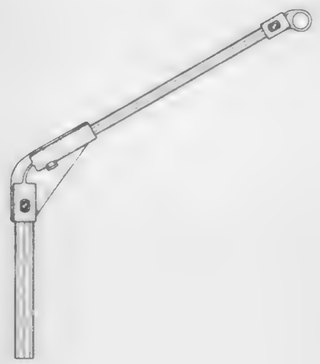
379,484
GOLF PUTTER HEAD
Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Mar. 25, 1996, Ser. No. 52,175
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



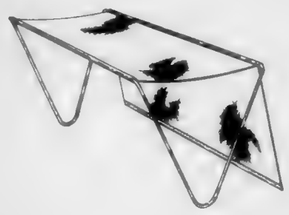
379,485
GOLF CLUB HEAD
Anthony Ragano, Roselle, Ill., assignor to Pro Select Inc., Elmhurst, Ill.
Filed Dec. 7, 1995, Ser. No. 47,572
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



379,486
MOBILE ARM ATTACHMENT FOR PORTABLE PLAYYARDS
John V. Mariol, 7746 Beechmont Ave., Cincinnati, Ohio 45255
Filed Nov. 13, 1995, Ser. No. 46,356
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—242



379,487
PORTABLE SHADE STRUCTURE
Harry G. Gale, Cheltenham, Australia, assignor to Gale Australia Pty. Ltd, Victoria, Australia
Filed Nov. 3, 1995, Ser. No. 49,019
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—253



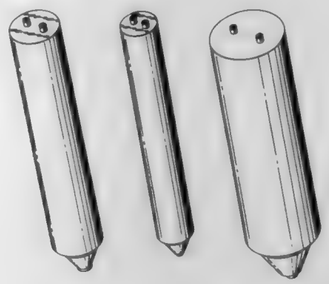
379,488
KNIFE
Gil Hibben, LaGrange, Ky., assignor to United Cutlery Corporation, Sevierville, Tenn.
Filed Nov. 28, 1995, Ser. No. 47,295
The portion of the term of this patent subsequent to Nov. 28, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 22 - *02*
U.S. Cl. D22—118



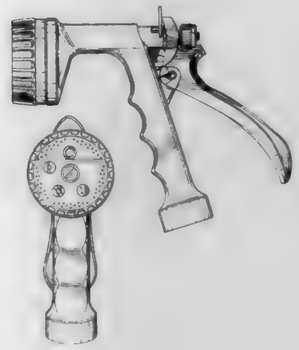
379,489
TRAP STAND
Craig E. Mally, 7025 NE. 62nd Ave., Altoona, Iowa 50009
Filed Apr. 15, 1996, Ser. No. 53,168
Term of patent 14 years
LOC (6) Cl. 22 - *06*
U.S. Cl. D22—119



379,490
LIQUID CHEMICAL TANK
Michael D. O'Dougherty, Maplewood, and Steven W. Claussen, Benson, both of Minn., assignors to C.A.P. Inc., Benson, Minn.
Filed Dec. 30, 1994, Ser. No. 32,918
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—208

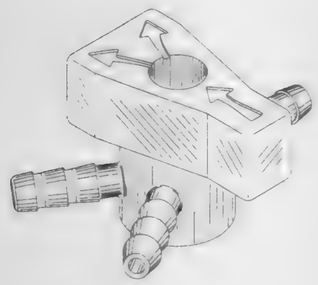


379,491
HOSE NOZZLE
John W. Goodin, Coto De Caza, Calif., assignor to L.R. Nelson Corporation, Peoria, Ill.
Filed Sep. 8, 1995, Ser. No. 43,653
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—226

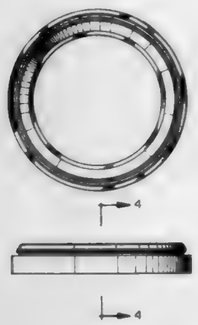


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379,492
STOP-COCK VALVE
Clarence L. Walker, Webster Groves; Frederick F. Schweitzer, Jr., Glencoe, and Alfredo E. Patag, St. Louis, all of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 230,657, Apr. 21, 1994, Pat. No. 5,443,453. This application Jun. 5, 1995, Ser. No. 39,731
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—233



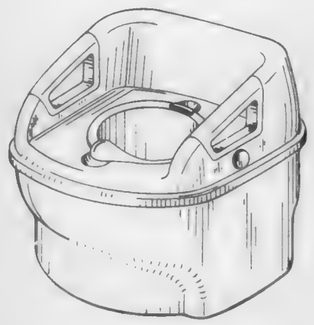
379,493
GASKET SEAL
Weston W. Woods, Houston, Tex., assignor to Greene, Tweed of Delaware, Inc., Wilmington, Del.
Filed Dec. 19, 1994, Ser. No. 32,478
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D23—269



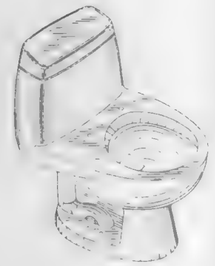
379,494
COMBINED BABY BATH AND TRAY
Robert C.D. van den Herik, Goudriaan, and Jan de Vries, Hilversum, both of Netherlands, assignors to Somé-vena Handelmaatschappij B.V., Netherlands
Filed Sep. 5, 1995, Ser. No. 43,664
Claims priority, application WIPO, Mar. 6, 1995, DM/032362; Jul. 21, 1995, DM/033600
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—278



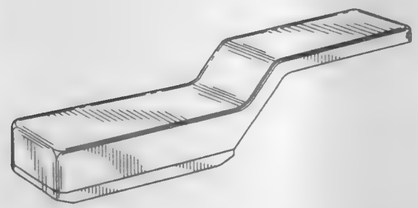
379,495
TOILET TRAINER
Ronald J. Sidman, Marstons Mills, and Ralph M. Nowak, Marblehead, both of Mass., assignors to The First Years Inc., Avon, Mass.
Continuation of Ser. No. 32,362, Dec. 16, 1994, abandoned. This application Sep. 20, 1995, Ser. No. 44,736
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—296



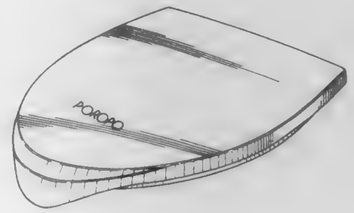
379,496
WATER CLOSET
Seijiro Kawamura; Minoru Tani, and Hisayasu Sakai, all of Kitakyushi, Japan, assignors to Toto Ltd., Fukuoka-ken, Japan
Filed Jul. 24, 1995, Ser. No. 41,751
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—301



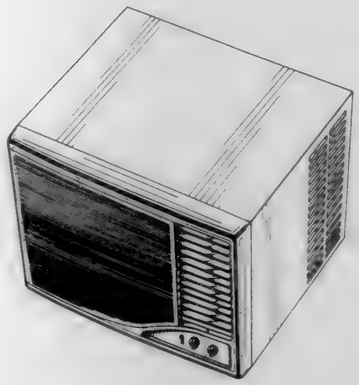
379,497
TOILET SEAT HANDLE
Jeff S. Renfro, P.O. Box 3863, Thousand Oaks, Calif. 91359, and Paul Thomas, 2468 Evergreen Ave., Salt Lake City, Utah 84109
Filed Apr. 18, 1996, Ser. No. 53,245
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—309



379,498
TOILET SEAT
Masahiro Matsunaga, Ube, Japan, assignor to MN Enjiniaringu Kabushiki Kaisha, Yamaguchi-ken, Japan
Filed Jun. 22, 1994, Ser. No. 24,880
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—311



379,499
AIR CONDITIONER
Hiromichi Yamada, Kawachinagano, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 22, 1996, Ser. No. 53,412
Claims priority, application Japan, Nov. 8, 1995, 7-33891
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—353

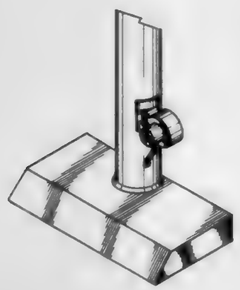


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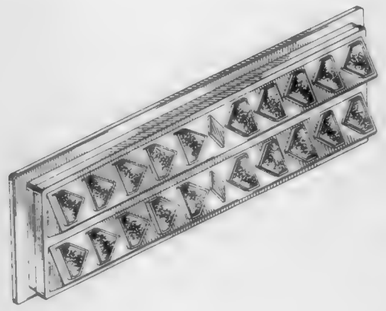
379,500
AIR FRESHENER DEVICE
Debra L. King, New York, N.Y., and Stephen B. Leonard, Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jun. 9, 1995, Ser. No. 40,125
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—367



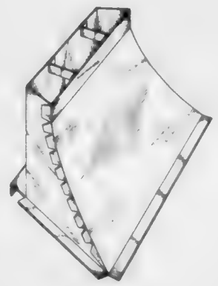
379,501
STOVE EXHAUST VENT
Frank Airosa, 1151 Richard Smith, Tulare, Calif. 93274, and Steve Rinker, 3724 Verde Vista, Visalia, Calif. 93277
Filed Jun. 22, 1995, Ser. No. 40,599
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—372



379,502
AIR DIFFUSER FOR DISCHARGE DUCTS OF AIR DISTRIBUTION SYSTEMS
David J. Landau, 3316 Griffin Rd., Fort Lauderdale, Fla. 33312
Filed Sep. 15, 1995, Ser. No. 44,075
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—392



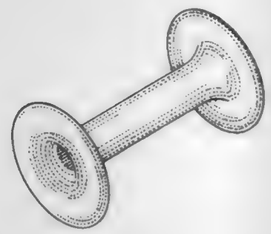
379,503
SMOKE CHAMBER
Fred Schukal, 27 Mildred Pl., No. Babylon, N.Y. 11717
Filed Mar. 13, 1996, Ser. No. 51,552
Term of patent 14 years
LOC (6) Cl. 23 - *99*
U.S. Cl. D23—403



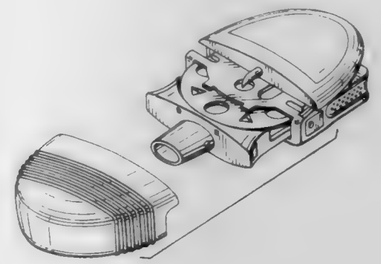
379,504
PROPHYLACTIC FOR LARYNGOSCOPE
David A. Crews, 3915 Hazel La., Greensboro, N.C. 27408, and Kay R. Huffstetler, 1701 Forest Valley Rd., Greensboro, N.C. 27410
Filed Sep. 24, 1992, Ser. No. 951,541
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—105



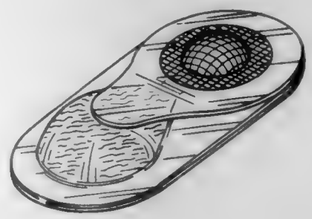
379,505
EAR WICK
Donald E. Doyle, 4105 Hospital Rd., Ste. 102-A, Pascagoula, Miss. 39581
Filed Jun. 20, 1994, Ser. No. 24,659
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—106



379,506
INHALER
Joan Maher, Dundrum, Ireland, assignor to Glaxo Group Limited, London, England
Filed Dec. 29, 1995, Ser. No. 48,476
Claims priority, application United Kingdom, Jul. 1, 1995, 2048538
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—110

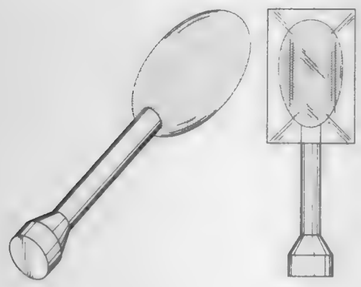


379,507
COMPACT APPLICATOR FOR A TOPICAL ASTRINGENT DISINFECTANT
Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forest, Calif.
Filed Oct. 4, 1994, Ser. No. 29,400
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—119

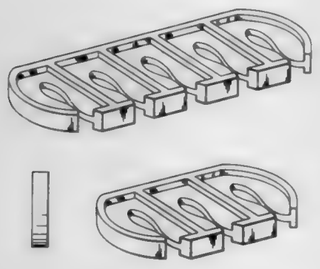


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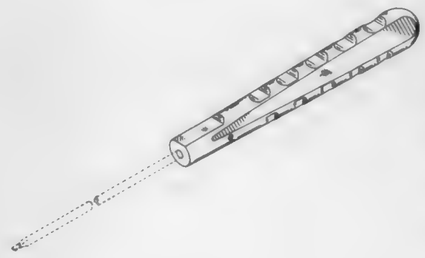
379,508
PACKAGED SWAB APPLICATOR
Abraham A. Hudson, and Ann-Marie Petros, both of 471 Chapple Lane, Broken Hill, NSW 2880, Australia
Filed Apr. 26, 1995, Ser. No. 38,128
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D24—119



379,509
MULTIPLE I.V. HOLDER
Steven C. Macko, P.O. Box 40458, Albuquerque, N.M. 87196
Filed Feb. 1, 1996, Ser. No. 49,831
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—128



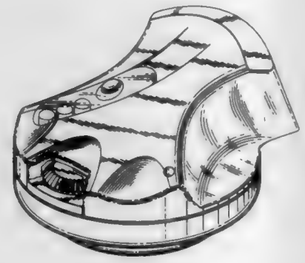
379,510
MEDICAL INSTRUMENT HANDLE
F. Barry Bays, Clearwater, Fla., assignor to Xomed Surgical Products, Inc., Jacksonville, Fla.
Filed Apr. 27, 1995, Ser. No. 38,142
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—133



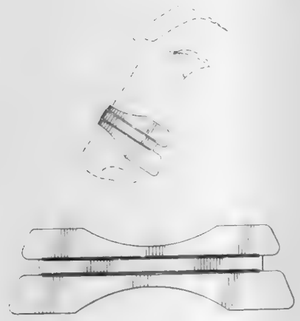
379,511
TOOL
Paul A. Von Stein, Flanders, N.J., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.
Filed Oct. 3, 1995, Ser. No. 44,922
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—133



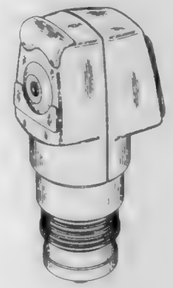
379,512
ERGONOMETRIC STETHOSCOPE CHESTPIECE
Alan P. Dieken, Oakdale; Edward J. Moe, St. Paul, both of Minn.; Joy A. Packard; Thomas J. Packard, both of Somerset, Wis.; Thomas A. Turgeon, Fridley, Minn., and Thomas W. Reeder, Asheville, N.C., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 11, 1996, Ser. No. 48,848
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—134



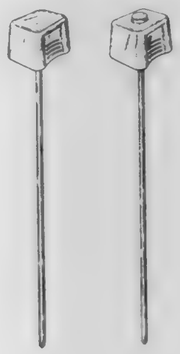
379,513
EXTERNAL NASAL DILATOR
Joseph V. Ierulli, 3926 SW. Water Ave., Portland, Oreg. 97201
Filed Dec. 26, 1995, Ser. No. 48,322
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—135



379,514
COMPACT TELESCOPING RETINOSCOPE
Deborah A. Laun, Syracuse; William E. Cleveland, Cortland, and Ervin Goldfain, Syracuse, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Oct. 28, 1994, Ser. No. 30,421
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—137

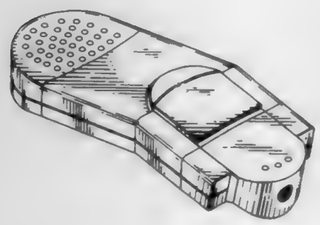


379,515
STYLET FOR A BONE MARROW BIOPSY NEEDLE
Stephen Kuehn, Franklin, Wis., and Terrence W. Snyder, Chenango Forks, N.Y., assignors to Baxter International Inc., Deerfield, Ill.
Filed Jun. 17, 1994, Ser. No. 24,604
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—146



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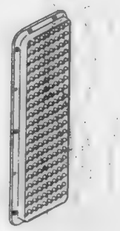
379,516
LANCET
Bryce Rutter, St. Louis, Mo., assignor to Bayer Corporation, Elkhart, Ind.
Filed Mar. 4, 1996, Ser. No. 51,125
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—146



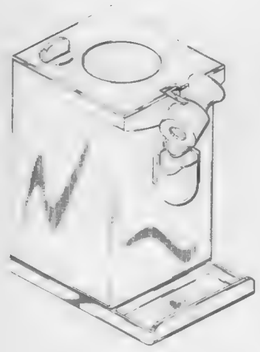
379,517
CHIN MUSCLES TONIFIER
Germano N. Wabafiyebazu, 280 Crichton Street, Suite 5, Ottawa, Ontario, Canada, assignor to Germano N. Wabafiyebazu, Ottawa, Canada
Filed Dec. 23, 1994, Ser. No. 32,687
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—200



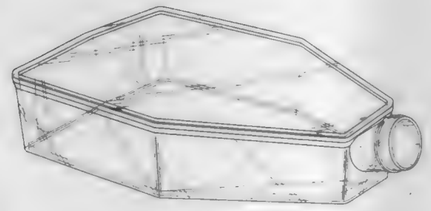
379,518
SCRATCH PAD FOR HUMANS
Jeffrey L. Bergman, and Ginny L. Bergman, both of 2131 Llewellyn Rd., Belleville, Ill. 62223
Filed Apr. 16, 1996, Ser. No. 53,086
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D24—211



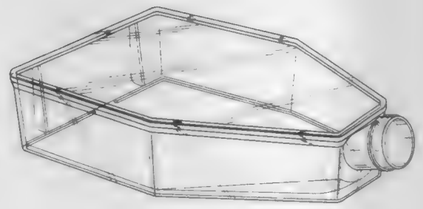
379,519
DISINFECTER FOR WRITING INSTRUMENTS
Stephen D. Carter, Stone Mountain, Ga., assignor to Calgene, Inc., Davis, Calif.
Filed Nov. 1, 1995, Ser. No. 49,018
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—217



379,520
TISSUE CULTURE FLASK
Timothy A. Stevens, Madison, and Edward Mussi, Hewitt, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed May 18, 1995, Ser. No. 39,001
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—224



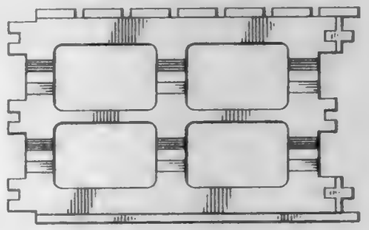
379,521
TISSUE CULTURE FLASK
Timothy A. Stevens, Madison, and Edward Mussi, Hewitt, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed May 18, 1995, Ser. No. 39,006
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—224



379,522
CAVE-LIKE ENCLOSURE
Christine Rushford, and Andy Rushford, both of 284 Rosario La., White Lake, Mich. 48386
Filed Oct. 11, 1995, Ser. No. 45,158
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—7

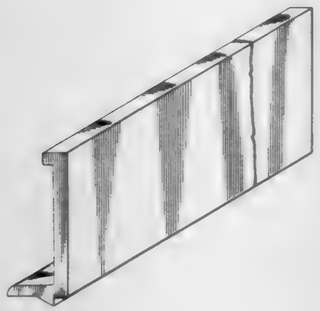


379,523
BUILDING BLOCK FOR CONSTRUCTION OR CHILDREN'S TOY
Tony Azar, 1038 Lesperance Road, Tecumseh, Ontario, Canada
Filed Mar. 25, 1996, Ser. No. 52,125
Claims priority, application Canada, Jan. 10, 1996, 1996-0057
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—118

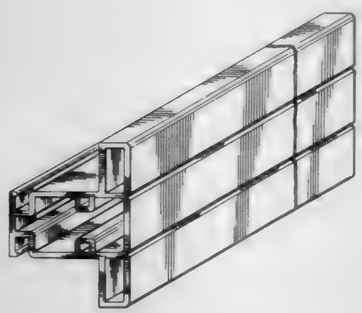


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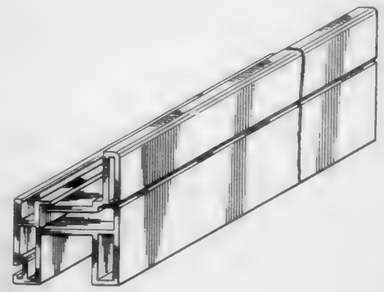
379,524
GLAZING STOP
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,390
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—119



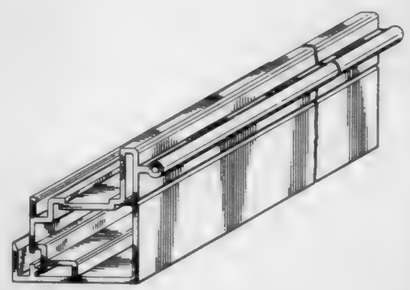
379,525
T-BAR
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Dec. 22, 1995, Ser. No. 48,251
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—122



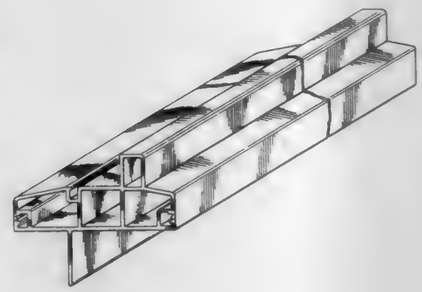
379,526
VERTICAL SLIDER STILE
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Dec. 20, 1995, Ser. No. 48,087
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—124



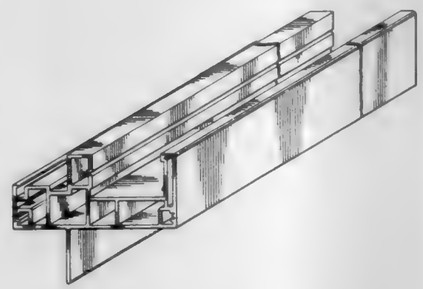
379,527
MEETING RAIL
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Dec. 20, 1995, Ser. No. 48,088
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—124



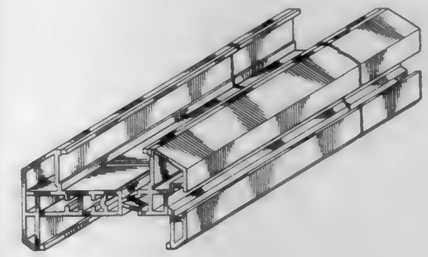
379,528
FIXED LITE FRAME
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Dec. 20, 1995, Ser. No. 48,089
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—124



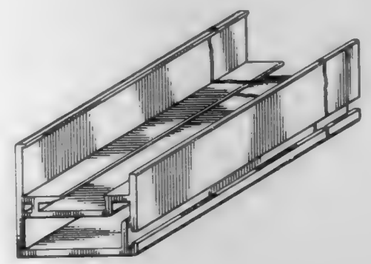
379,529
SINGLE HUNG SLIDER FRAME
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Dec. 20, 1995, Ser. No. 48,091
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—124



379,530
LIGHT FRAME
Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Concord, Canada
Filed Dec. 27, 1995, Ser. No. 48,391
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124

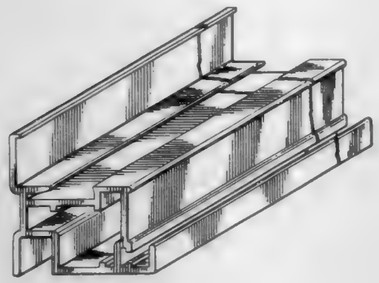


379,531
MEETING RAIL
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed May 30, 1996, Ser. No. 55,120
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124

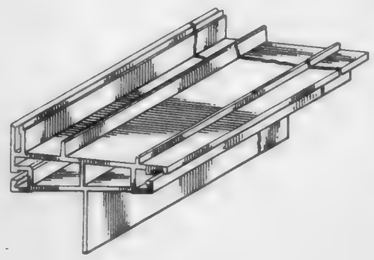


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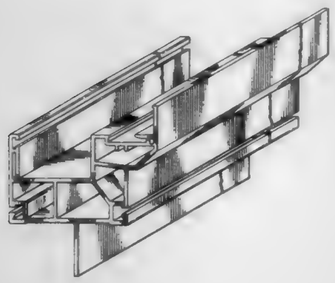
379,532
MULLION
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed May 31, 1996, Ser. No. 55,171
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



379,534
SILL
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Jun. 3, 1996, Ser. No. 55,315
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



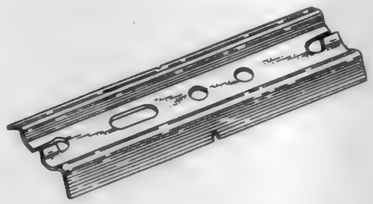
379,533
SLIDER FRAME
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed May 31, 1996, Ser. No. 55,198
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



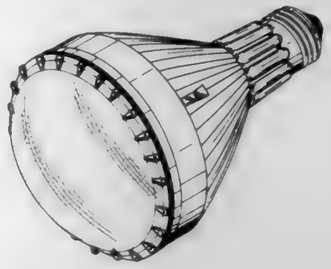
379,535
PATIO DOOR SILL COMPONENT
Raymond Dallaire, and Dominique Dallaire, both of Leavis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 21, 1996, Ser. No. 52,041
Claims priority, application Canada, Sep. 22, 1995, 1995-2145
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—125



379,536
CROSSARM FOR VINEYARD SUPPORT SYSTEM
Leon W. Pierce, Jr., 962 Goldenoak Way, Stockton, Calif. 95209
Filed Apr. 4, 1996, Ser. No. 52,588
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—134



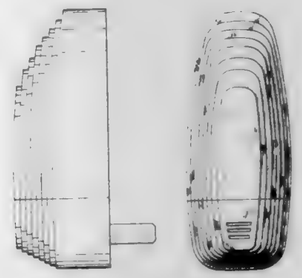
379,538
ELECTRIC PAR LAMP
Joseph P. Gallant, Lexington, Ky., assignor to Osram Sylvania Inc., Danvers, Mass.
Filed May 14, 1996, Ser. No. 54,442
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—2



379,537
MINIATURE ELECTRIC PAR LAMP
Joseph P. Gallant, and Peter R. Gagnon, both of Lexington, Ky., assignors to Osram Sylvania Inc., Danvers, Mass.
Filed May 14, 1996, Ser. No. 54,432
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—2

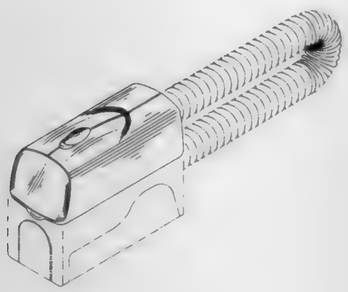


379,539
NIGHT LIGHT
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jan. 4, 1996, Ser. No. 48,565
Claims priority, application United Kingdom, Oct. 24, 1995, 2051388
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—26

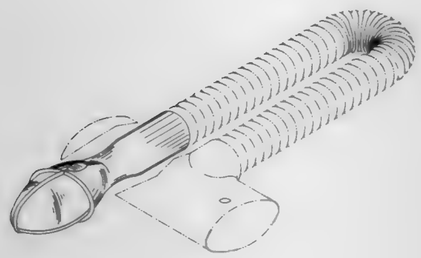


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379,540
HEAD FOR A FLEXIBLE FLASHLIGHT
Aaron Szymanski, Bristol, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,594
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



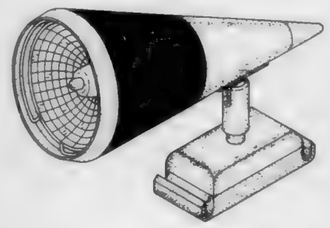
379,541
HEAD FOR A FLEXIBLE LIGHT
David W. Kaiser, North Haven, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,596
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



379,542
FLEXIBLE FLASHLIGHT
Teruaki Egashira, Osaka-fu, Japan, assignor to Sanyo Electric Co., Ltd., Osaka-Fu, Japan
Filed Feb. 7, 1996, Ser. No. 50,037
Claims priority, application Japan, Aug. 8, 1995, 7-23338
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



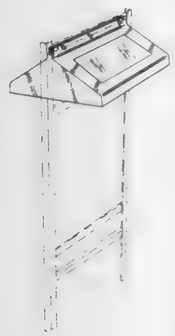
379,543
PROJECTION LAMP
Jung-Pin Lin, No. 327-1, Sec. 1, Ming-Shen N. Rd., Kwei Shan Village, Taoyuan Hsien, Taiwan
Filed Dec. 27, 1995, Ser. No. 48,362
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



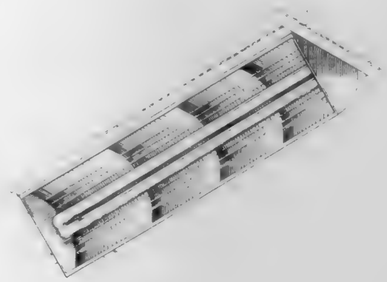
379,544
DESK LAMP
Atsushi Yumita, Saitama, and Naoto Ogimoto, Okayama, both of Japan, assignors to Yamagiwa Kabushiki Kaisha, Tokyo, and Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, both of Japan
Filed Apr. 5, 1995, Ser. No. 37,172
Claims priority, application Japan, Oct. 5, 1994, 6-30248
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—65



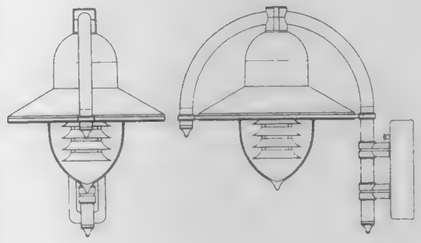
379,545
DEVICE FOR LIGHTING A SIGN
Jeanette Houghton, and Gary J. Houghton, both of 16 SW. 100, Oklahoma City, Okla. 73139
Filed Sep. 28, 1995, Ser. No. 44,806
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—67



379,546
RECESSED ADJUSTABLE LIGHT FIXTURE
Eugene Littman, Newburgh, N.Y., assignor to Lightron of Cornwall Incorporated, New Windsor, N.Y.
Continuation of Ser. No. 25,324, Jun. 29, 1994, abandoned.
This application Apr. 26, 1996, Ser. No. 53,700
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—74

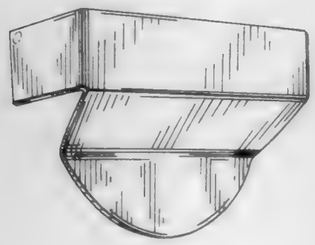


379,547
OUTDOOR LAMP
Angelo Tognu' , Lumezzane S. Apollonio, Italy, assignor to Garden Light S.R.L., Brescia, Italy
Filed Sep. 6, 1995, Ser. No. 43,524
Claims priority, application Italy, May 2, 1995, MI9500244
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—92

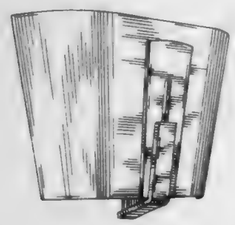


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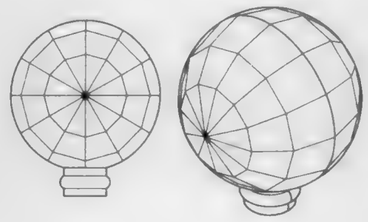
379,548
WALL MOUNTABLE LIGHT SHADE
Dennis E. Johnson, Grafton, Wis., assignor to SPI Lighting, Inc., Mequon, Wis.
Filed Oct. 4, 1995, Ser. No. 44,960
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—128



379,549
WALL MOUNTABLE LIGHT SHADE
Florentino M. Vargas, Jr., Cedarburg, Wis., assignor to SPI Lighting, Inc., Mequon, Wis.
Filed Oct. 4, 1995, Ser. No. 46,563
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—128



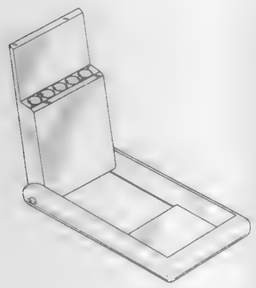
379,550
DECORATIVE DIFFUSER GLOBE FOR ENCLOSING A LIGHT BULB
Weiwu A. Kuo, 17915 Sky Park Clr. #G, Irvine, Calif. 92714
Filed Jun. 28, 1995, Ser. No. 40,925
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—131



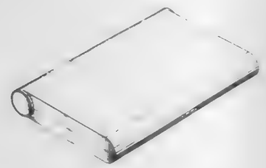
379,551
CIGAR HOLDER
George T. Hubbard, Rye, N.Y., assignor to Golfware, Inc., White Plains, N.Y.
Filed Apr. 29, 1996, Ser. No. 53,732
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—183

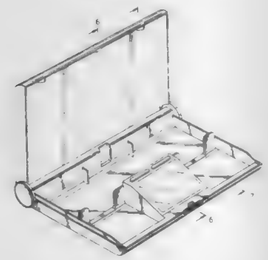


379,552
CIGAR BOX
Adorian Vokebe, 6130 Laird St., Oakland, Calif. 94605
Filed Apr. 22, 1996, Ser. No. 52,956
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—189

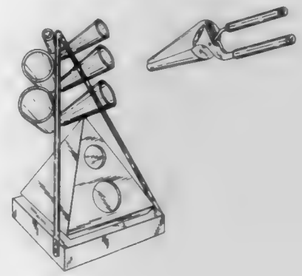


379,553
CONTAINER FOR SMOKING ARTICLES
John A. DiGianni, New York, N.Y., assignor to British-American Tobacco Company Limited, Middlesex, England
Filed Apr. 17, 1996, Ser. No. 53,222
Claims priority, application United Kingdom, Dec. 1, 1995, 2052469
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—189

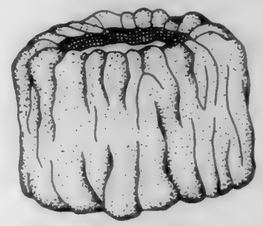




379,554
CURLING IRON AND STOVE COMBINATION
Osiris R. Landers, 2239 Burns, Detroit, Mich. 48214
Filed Nov. 29, 1994, Ser. No. 31,493
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—35

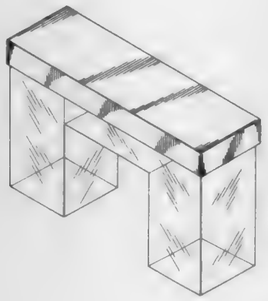


379,555
HAIR BAND
Nicola Fergusson, Santa Monica, Calif., assignor to Elasty, Inc., Los Angeles, Calif.
Filed Mar. 14, 1995, Ser. No. 36,150
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—41



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379,556
AQUARIUM
Bruce D. Stern, 9018 Jeff St., Bellflower, Calif. 90706
Filed Feb. 12, 1996, Ser. No. 50,240
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—101



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TO WHOM

PATENTS WERE ISSUED ON THE 27th DAY OF MAY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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ABB Flakt Oy: *See*—
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ABB Reaktor GmbH: *See*—
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ABB Research Ltd.: *See*—
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Abe, Hiroshi; Ishio, Kazuhiko; Murakawa, Yoshihiro; and Yamamoto, Akira, to Otsuka Pharmaceutical Factory, Inc. Pinhole inspecting apparatus. 5,633,454, Cl. 73-40.000.
Abe, Katsuaki: *See*—
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Abe, Makoto: *See*—
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Aberle, Steven C. Ground pocket support. 5,632,464, Cl. 248-530.000.
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Chang, Chung-Ju; Hwang, Lain-Chyr; Cheng, Ray-Guang; and Yu, Ji-Hsiang, 5,633,858, Cl. 370-255.000.
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Hsu, Hung-Chang; and Lin, Chyi-Cheng, 5,633,656, Cl. 345-141.000.
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Murthy, Keshava; Weeratunga, Gamini; Norris, Derek J.; Horne, Stephen; and Clive, Derrick L. J., 5,633,386, Cl. 548-266.600.
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Cameron, Dennis W.; Roehr, Walter C., Jr.; Bhagat, Jai P.; Garahi, Masood; Hays, William D.; and Ackerman, David W., 5,634,198, Cl. 455-63.000.
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Yen, Yeouchung; and Chen, Shih-Oh, 5,633,189, Cl. 438-600.000.
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Gordon, Steven J.; and Mansfield, Peter K., 5,632,205, Cl. 101-483.000.
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Meissner, Paul S.; Fuldner, Rebecca A.; and Adams, Mark D., 5,633,147, Cl. 435-69.100.
Adams, Nathan W.: *See*—
Berliner, David L.; Adams, Nathan W.; and Jennings-White, Clive L., 5,633,392, Cl. 552-530.000.
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Zajas, Paul J.; Zajas, Mary E.; Adams, Thomas P.; and Adams, Paulette, 5,632,050, Cl. 5-632.000.
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Aghajanian, Michael K.; Newkirk, Marc S.; Kennedy, Christopher R.; Kantner, Robert C.; Rocazella, Michael A.; Weinstein, Jerry G.; White, Danny R.; Schiroky, Gerhard H.; and Johnson, William B., to Lanxide Technology Company, LP. Method for in situ tailoring the component of ceramic articles. 5,633,213, Cl. 501-87.000.
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Carper, Kenneth E.; Leist, Alan R.; Lin, Tony Y.; Carper, George S.; and Agin, Thomas E., 5,632,063, Cl. 16-198.000.
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Cohen, Yigal, 5,633,254, Cl. 514-237.500.
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Mehrotra, Pankaj K.; Ahuja, Deepak P.; and Brooks, Holly S., 5,632,941, Cl. 264-656.000.

Ai, Chiayu; and Novak, Erik L., to Wyko Corporation. Centroid approach for estimating modulation peak in broad-bandwidth interferometry. 5,633,715, Cl. 356-359.000.

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Aida, Kazuo: *See*—
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849 5,632,284

CLASS 131
33 5,632,286
94 5,632,285
360 5,632,287

CLASS 132
75.5 5,632,288
116 5,632,289

CLASS 134
1.1 5,632,821
22.12 5,632,822

CLASS 135
24 5,632,290
116 5,632,291
145 5,632,292
5,632,293

CLASS 136
246 5,632,823

CLASS 137
1 5,632,294
3 5,632,295
43 5,632,296
73 5,632,297
102 5,632,298
111 5,632,299
269 5,632,300
296 5,632,301
312 5,632,302
360 5,632,303
595 5,632,304
613 5,632,305
625.64 5,632,306

CLASS 138
99 5,632,307

CLASS 139
28 5,632,308
196.2 5,632,309
383.A 5,632,310

CLASS 140
118 5,632,311
123.6 5,632,312

CLASS 141
18 5,632,313
104 5,632,314
329 5,632,315

CLASS 148
237 5,632,824
251 5,632,828
269 5,632,825
326 5,632,826
688 5,632,827

CLASS 149
109.6 5,633,476

CLASS 152
165 5,632,829

CLASS 156
64 5,632,830
73.3 5,632,831
89 5,632,834
5,632,942
99 5,632,835
111 5,632,836
172 5,632,837
180 5,632,838
194 5,632,839
196 5,632,840
245 5,632,841
268 5,632,842
275.5 5,632,843
290 5,632,844
304.2 5,632,845
308.4 5,632,846
344 5,632,847
346 5,632,848
446 5,632,849
472 5,632,850
494 5,632,851
503 5,632,852
578 5,632,853
646.1 ■1 5,022,961

CLASS 160
168.1 5,632,316
265 5,632,317
370.21 5,632,318

CLASS 162
4 5,632,856
5 5,632,857
30.1 5,632,858
49 5,632,859
177 5,632,860
358.1 5,632,861
368 5,632,862

CLASS 164
79 5,632,319
98 5,632,320
315 5,632,321
316 5,632,322
444 5,632,323
466 5,632,324
477 5,632,325

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529 5,632,326

CLASS 165

49 5,632,327
69 5,632,328
113 5,632,329
151 5,632,330
153 5,632,331
178 5,632,332
228 5,632,333
232 5,632,334

CLASS 166

105 5,632,335
402 5,632,336

CLASS 169

9 5,632,337
5,632,338
37 5,632,339
52 5,632,340
5,632,341

CLASS 172

21 5,632,342
111 5,632,344
112 5,632,345
443 5,632,346
552 5,632,343

CLASS 174

138 E 5,633,477
179 5,633,478
255 5,633,479
5,633,480

CLASS 175

4.54 5,632,348
393 5,632,349

CLASS 180

9.44 5,632,350
65.2 5,632,352
326 5,632,353
332 5,632,500
344 5,632,354
651 5,632,351

CLASS 181

260 5,633,481
282 5,633,482

CLASS 184

7.4 5,632,355
15.2 5,632,356

CLASS 187

200 5,632,357
410 5,632,358

CLASS 188

1.11 5,632,359
1.12 5,632,360
267 5,632,361
344 5,632,362

CLASS 192

45.1 5,632,363
64 5,632,364
70.25 5,632,365
84.1 5,632,366

CLASS 194

207 5,632,367

CLASS 198

471.1 5,632,368
525 5,632,369
587 5,632,370
781.1 5,632,371
813 5,632,372

CLASS 200

17 R 5,633,483

CLASS 201

25 5,632,863

CLASS 202

197 5,632,864

CLASS 203

6 5,632,865
12 5,632,866
78 5,632,867

CLASS 204

176 5,632,868
192.12 5,632,869
241 5,632,870
275 5,632,871
290 R 5,632,872
298.15 5,632,873
419 5,632,874
431 5,632,875
500 5,633,297
600 5,632,876
618 5,632,877

CLASS 205

70 5,632,878
104 5,632,879
210 5,632,880
781.5 5,632,881
783 5,632,882
784.5 5,632,883

CLASS 206

305 5,632,373
308.1 5,632,374
387.1 5,632,375
456 5,632,376
457 5,632,377
460 5,632,378
511 B1 4,971,202
541 5,632,379

CLASS 208

44 5,632,884

CLASS 209

7 5,632,380
44.1 5,632,381
173 5,632,382
517 5,632,383

CLASS 210

96.1 5,632,885
151 5,632,886
5,632,887
163 5,632,888
165 5,632,889
169 5,632,890
193 5,632,891
257.2 5,632,892
380.1 5,632,893
436 5,632,894
518 5,632,895
617 5,632,896
645 5,632,897
656 5,632,898
691 5,632,899
721 5,632,900
724 5,632,901
741 5,632,902
5,632,903
764 5,632,904
782 5,632,905
787 5,632,906
5,632,907

CLASS 211

10 5,632,384
26.1 5,632,385
59.1 5,632,387
74 5,632,388
85.7 5,632,386
187 5,632,389
195 5,632,390

CLASS 212

281 5,632,391
350 5,632,395

CLASS 215

247 5,632,396
382 5,632,397

CLASS 216

2 5,632,908
41 5,632,909
47 5,632,910

CLASS 219

89 5,632,911
110 5,632,912
121.6 5,632,913
121.71 5,632,914
121.82 5,632,915
121.85 5,632,916
420 5,632,918
494 5,632,919
497 5,632,917
707 5,632,920
750 5,632,921

CLASS 220

7 5,632,392
212.5 5,632,398
253 5,632,399
277 5,632,393
336 5,632,394
403 5,632,400
407 5,632,401
418 5,632,402
421 5,632,403
462 5,632,404
560 5,632,405
666 5,632,406
717 5,632,407

CLASS 221

15 5,632,408
45 5,632,409
79 5,632,410

CLASS 222

1 5,632,411
5,632,412
5,632,413
52 5,632,414
95 5,632,415
105 5,632,416
158 5,632,417
180 5,632,418
189.05 5,632,419
212 5,632,420
402.2 5,632,421

CLASS 223

89 5,632,422
91 5,632,423
112 5,632,424

CLASS 224

160 5,632,425
243 5,632,426
309 5,632,427
623 5,632,428
630 5,632,429

CLASS 226

149 5,632,430

CLASS 227

109 5,632,431
176.1 5,632,432
179.1 5,632,433

CLASS 228

121 5,632,435
5,632,436
177 5,632,437
180.5 5,632,438

CLASS 229

44.7 5,632,434
120.18 5,632,439
125.15 5,632,440

CLASS 232

17 5,632,441

CLASS 235

380 5,633,484
5,633,485
449 5,633,486
462 5,633,487
5,633,488
472 5,633,489
492 5,633,490

CLASS 237

2 B 5,632,442
12.3 C 5,632,443

CLASS 239

88 5,632,444
102.2 5,632,445
381 5,632,446
533.4 5,632,447
703 5,632,448

CLASS 241

34 5,632,449
100 5,632,450

CLASS 242

118.11 5,632,451
332.4 5,632,452
378.2 B1 5,094,396
385.1 5,632,453
530.2 5,632,454
538.3 5,632,455
541.5 5,632,456

CLASS 248

69 5,632,457
121 5,632,458
122.1 5,632,459
146 5,632,460
218.4 5,632,461
286.1 5,632,462
371 5,632,463
530 5,632,464

CLASS 249

16 5,632,922
47 5,632,923
111 5,632,924
115 5,632,925
121 5,632,926

CLASS 250

201.3 5,633,491
214 R 5,633,492
214 UT 5,633,493
227.16 5,633,494
287 5,633,495
288 5,633,496
292 5,633,497
353 5,633,498
363.07 5,633,499
5,633,500
381 5,633,501
441.11 5,633,502
458 1 5,633,503
461.1 5,633,504
491.1 5,633,505
492.21 5,633,506
492.23 5,633,507
517.1 5,633,508
584 5,633,509
587 5,633,510
5,633,511

CLASS 251

46 5,632,465
63.5 5,632,466
129.15 5,632,468
129.21 5,632,467

CLASS 252

62.2 5,632,927
67 5,632,928
299.01 5,632,929
301.36 5,632,930
378 R 5,632,931

CLASS 254

267 5,632,469
385 5,632,470

CLASS 257

20 5,633,512
77 5,633,513
94 5,633,514
140 5,633,515
190 5,633,516
277 5,633,517
314 5,633,518
315 5,633,519
5,633,520
336 5,633,521
344 5,633,522
369 5,633,523
5,633,524
381 5,633,525
431 5,633,526
432 5,633,527
666 5,633,528
5,633,529
685 5,633,530
699 5,633,531
700 5,633,532
707 5,633,533
752 5,633,534
778 5,633,535
785 5,633,536

CLASS 261

18.1 5,632,932
109 5,632,933
112.2 5,632,934
114.1 5,632,935

CLASS 264

2.5 5,632,936
30 5,632,937
39 5,632,938
40.5 5,632,939
46.4 5,632,940
72.15 5,632,944
103 5,632,943
210.2 5,632,945
212 5,632,946
243 5,632,948
255 5,632,949
274 5,632,950
509 5,632,951
516 5,632,952
656 5,632,941

CLASS 266

156 5,632,953

CLASS 267

64.11 5,632,471
140.13 5,632,472
164 5,632,473
226 5,632,474

CLASS 269

17 5,632,475

CLASS 270

52.19 5,632,476

CLASS 271

127 5,632,477
242 5,632,478
296 5,632,479

CLASS 273

121 R 5,632,482
148 R 5,632,483
292 5,632,485
5,632,486
5,632,487
293 5,632,488
304 5,632,489
350 5,632,490
407 5,632,491

CLASS 277

1 5,632,492
27 5,632,493
59 5,632,494
177 5,632,495

CLASS 280

30 5,632,496
47.35 5,632,497
79.11 5,632,498
246 5,632,499
508 5,632,501
689 5,632,502
707 5,632,503
716 5,632,504
737 5,632,505
743.1 5,632,506
751 5,632,507
781 5,632,508
795 5,632,509

CLASS 283

61 5,632,510
62 5,632,511

CLASS 285

321 5,632,512
322 5,632,513

CLASS 292

95 5,632,514
216 5,632,515
336.3 5,632,516
341.12 5,632,517

CLASS 293

103 5,632,518

CLASS 294

19.1 5,632,519

CLASS 296

24.1 5,632,520
65.1 5,632,521
100 5,632,522
223 5,632,523

CLASS 297

233 5,632,524
367 5,632,525
452.64 5,632,526

CLASS 299

100 5,632,527

CLASS 301

37.22 5,632,528
95 5,632,529

CLASS 303

22.1 5,632,530
113.4 5,632,531
116.1 5,632,532
122.05 5,632,533
152 5,632,534
186 5,632,535

CLASS 305

173 5,632,537
194 5,632,538

CLASS 307

10.6 5,633,537
10.8 5,633,538
64 5,633,539
126 5,633,540

CLASS 310

11 5,633,541
40 MM 5,633,542
59 5,633,543
67 R 5,633,544
5,633,545
68 B 5,633,546
75 D 5,633,555
90.5 5,633,547
114 5,633,549
246 5,633,550
266 5,633,551
311 5,633,552
323 5,633,553
328 5,633,554

CLASS 312

9.35 5,632,539
197 5,632,540
333 5,632,541
334.7 5,632,542
406 5,632,543

CLASS 313

32 5,633,556
143 5,633,557
402 5,633,558
408 5,633,559
495 5,633,560
497 5,633,561
532 5,633,562
614 5,633,563

CLASS 315

86 5,633,564
200 A 5,633,565
371 5,633,566
382.1 5,633,567

CLASS 318

254 5,633,568
430 5,633,569
439 5,633,570
468 5,633,571

CLASS 320

2 5,633,572
5 5,633,573
21 5,633,574
5,633,575
23 5,633,576

CLASS 322

37 5,633,577

CLASS 323

222 5,633,579
256 5,633,580
301 5,633,578
354 5,633,581

CLASS 324

95 5,633,582
241 5,633,583
300 5,633,584
307 5,633,585
5,633,586
319 5,633,587
320 5,633,588
326 5,633,589
368 5,633,590
399 5,633,591
433 5,633,592
644 5,633,593
679 5,633,594
751 5,633,595
754 5,633,596
761 5,633,597
5,633,598

CLASS 326

16 5,633,599
17 5,633,600
38 5,633,601
73 5,633,602
83 5,633,603
85 5,633,604
86 5,633,605

CLASS 327

202 5,633,606
217 5,633,607
270 5,633,608
292 5,633,609
355 5,633,610
543 5,633,611

CLASS 330

288 5,633,612

CLASS 332

163 5,633,613

CLASS 333

25 5,633,614
33 5,633,615

193 5,633,616
206 5,633,617

CLASS 337

56 5,633,618
143 5,633,619

CLASS 338

21 5,633,620

CLASS 340

286.01 5,633,621
309.15 5,633,622
321 5,633,623
426 5,633,624
438 5,633,625
545 5,633,626
573 5,633,627
584 5,633,628
907 5,633,629
992 5,633,630

CLASS 341

58 5,633,631
5,633,632
61 5,633,633
5,633,634
94 5,633,635
97 5,633,636
144 5,633,637
155 5,633,638
161 5,633,639
163 5,633,640
165 5,633,641

CLASS 342

70 5,633,642
159 5,633,643
455 5,633,644

CLASS 343

700 MS 5,633,645
5,633,646
766 5,633,647
788 5,633,648
895 5,633,649

CLASS 345

74 5,633,650
82 5,633,651
97 5,633,652
98 5,633,653
114 5,633,654
132 5,633,655
141 5,633,656
145 5,633,657
161 5,633,658
173 5,633,659
5,633,660
186 5,633,661

CLASS 347

15 5,633,662
41 5,633,663
47 5,633,664
63 5,633,665
86 5,633,666
5,633,667
102 5,633,668
132 5,633,669
188 5,633,670
192 5,633,671
234 5,633,672
240 5,633,673

CLASS 348

63 5,633,674
65 5,633,675
95 5,633,676
229 5,633,677
232 5,633,678
243 5,633,679
357 5,633,680
373 5,633,681
384 5,633,682
385 5,633,683
398 5,633,684
420 5,633,685
441 5,633,686
5,633,687
584 5,633,688
663 5,633,689
678 5,633,690
771 5,633,691

CLASS 349

46 5,633,738
95 5,633,737
106 5,633,739
129 5,633,740

CLASS 351

44 5,633,692
121 5,633,693
211 5,633,694
221 5,633,695

CLASS 352

184 5,633,696

CLASS 353

28 5,632,544
31 5,632,545
122 5,632,546

CLASS 355

72 5,633,698

CLASS 356

3.14 5,633,705
5.01 5,633,706
35.5 5,633,707
73.1 5,633,708
5,633,709
139.08 5,633,710
318 5,633,711
345 5,633,712
355 5,633,713
359 5,633,714
5,633,715
375 5,633,716
5,633,717
376 5,633,718
401 5,633,719
5,633,720
402 5,633,722
445 5,633,724

CLASS 358

296 5,633,723
302 5,633,725
403 5,633,727
429 5,633,728
456 5,633,729
462 5,633,730
468 5,633,731
474 5,633,732
527 5,633,733
530 5,633,734

CLASS 359

15 5,633,735
17 5,633,736
124 5,633,741
137 5,633,742
173 5,633,743
196 5,633,744
201 5,633,745
280 5,633,746
312 5,633,747
325 5,633,748
341 5,633,749
5,633,750
368 5,633,751
390 5,633,752
412 5,633,753
434 5,633,754
443 5,633,755
554 5,633,756
650 5,633,757
679 5,633,758
686 5,633,759
692 5,633,760
811 5,633,761
817 5,633,762
822 5,633,763

CLASS 360

7 5,633,764
46 5,633,765
51 5,633,766
53 5,633,767
99.01 5,633,768
99.08 5,633,769
113 5,633,770
121 5,633,771
133 5,633,772

CLASS 361

17 5,633,777
56 5,633,773
93 5,633,774
103 5,633,775
115 5,633,776
173 5,633,778
187 5,633,779
220 5,633,780
321.4 5,633,781
683 5,633,782
704 5,633,783
716 5,633,784
766 5,633,785
818 5,633,786

CLASS 362

16 5,632,547
103 5,632,548
108 5,632,549
123 5,632,550
249 5,632,551
396 5,632,552
410 5,632,553

CLASS 363

21 5,633,787
41 5,633,788
50 5,633,789
55 5,633,790
56 5,633,791
109 5,633,792
127 5,633,793

CLASS 364

140 5,633,794
148 5,633,795
424 034 5,633,797
424 035 5,633,796
431.08 5,633,798
449.9 5,633,799
474.194 5,633,800
482 5,633,801
483 5,633,802
488 5,633,803
489 5,633,804
490 5,633,805
5,633,806
491 5,633,807
5,633,808
510 5,633,809
514 C 5,633,810
576 5,633,811
578 5,633,812
5,633,813
608 5,634,120
703 5,633,814
715.03 5,633,815
716 5,634,065
717 5,633,816
726 5,633,817
745 5,633,818
748 5,633,819
787 5,633,820

CLASS 365

145 5,633,821
185.02 5,633,822
185.29 5,633,823
185.33 5,633,824
189.09 5,633,825
200 5,633,826
201 5,633,827
5,633,828
221 5,633,829
5,633,830
222 5,633,831
230.06 5,633,832
230.08 5,633,833
233 5,633,834

CLASS 366

208 5,632,554

CLASS 368

327 5,633,835
5,633,836

CLASS 369

7 5,633,837
13 5,633,838
30 5,633,839
32 5,633,840
5,633,841
5,633,842
5,633,843
44.23 5,633,844
44.26 5,633,845
44.34 5,633,846
48 5,633,847
71 5,633,848
75.1 5,633,849
77.1 5,633,850
112 5,633,851
5,633,852
5,633,853
124 5,633,854
5,633,855
270 5,633,856

CLASS 370

232 5,633,861
234 5,633,859
235 5,633,870
242 5,633,857
252 5,633,860
255 5,633,858
280 5,633,862
290 5,633,863
312 5,633,872
315 5,633,876
329 5,633,874
331 5,633,868
336 5,633,873
346 5,633,875
392 5,633,864
396 5,633,869
397 5,633,866
399 5,633,867
412 5,633,865
471 5,633,871

CLASS 371

22.2 5,633,877
24 5,633,878
27 5,633,879
31 5,633,880
37.5 5,633,881
40.1 5,633,882

CLASS 372

20 5,633,883
5,633,884
25 5,633,885
45 5,633,886
92 5,633,887

CLASS 374

102 5,632,555
138 5,632,556
148 5,632,557

CLASS 375

202 5,633,888
203 5,633,889
219 5,633,890
5,633,891
5,633,892
286 5,633,893
297 5,633,894
307 5,633,895
324 5,633,896
340 5,633,897
341 5,633,898
376 5,633,899

CLASS 376

189 5,633,900
203 5,633,901
260 5,633,902
5,633,903
272 5,633,904

CLASS 377

54 5,633,905

CLASS 378

10 5,633,906
121 5,633,907
145 5,633,908

CLASS 379

15 5,633,909
38 5,633,910
58 5,633,911
5,633,912
59 5,633,913
5,633,914
5,633,915
67 5,633,916
5,633,917
74 5,633,918
97 5,633,919
115 5,633,920
130 5,633,921
207 5,633,922
220 5,633,923
265 5,633,924
266 5,633,925
413 5,633,926
440 5,633,927

CLASS 380

5 5,633,927
21 5,633,928
23 5,633,929
24 5,633,930
25 5,633,931
5,633,932
5,633,933
50 5,633,934

CLASS 381

26 5,633,935
66 5,633,936
68.4 5,633,937
98 5,633,938
106 5,633,939
107 5,633,940
118 5,633,941
169 5,633,942
188 5,633,943

CLASS 382

100 5,633,944
103 5,633,946
124 5,633,947
129 5,633,945
132 5,633,948
135 5,633,949
141 5,633,950
154 5,633,951
165 5,633,952
167 5,633,953
187 5,633,954
5,633,955
275 5,633,956
292 5,633,957
302 5,633,958

CLASS 383

75 5,632,558

CLASS 384

283 5,632,559
447 5,632,560
458 5,632,561
536 5,632,562
564 5,632,563

CLASS 385

11 5,633,959
12 5,633,960
16 5,633,961
24 5,633,962
25 5,633,963
27 5,633,964
37 5,633,965
5,633,966
50 5,633,967
53 5,633,968
62 5,633,969
78 5,633,970
5,633,971
5,633,972
135 5,633,973
140 5,633,974
147 5,633,975

CLASS 386

70 5,633,726
120 5,633,976
127 5,633,977

CLASS 392

501 5,633,978

CLASS 395

2.1 5,633,979
2.31 5,633,980
2.38 5,634,082
2.39 5,633,981
2.42 5,633,982
2.62 5,634,083
2.69 5,633,983
5,633,984
5,634,084
2.75 5,634,085
2.76 5,633,985
2.79 5,634,086
3 5,633,986
22 5,633,987
23 5,633,988
5,634,063
5,633,989
24 5,633,987
5,634,087
102 5,634,088
109 5,633,990
110 5,633,991
114 5,633,992
115 5,634,089
5,634,090
5,634,091
118 5,634,092
119 5,633,993
5,633,994
5,633,995
140 5,633,997
143 5,634,093
180 5,633,998
182 04 5,633,999
5,634,096
182.08 5,634,000
183.09 5,634,001
183.14 5,634,002
5,634,098
183.21 5,634,097
200.02 5,634,004
5,634,005
200.06 5,634,006
200 07 5,634,007
5,634,099
200.1 5,634,003
200 11 5,634,008
5,634,009
200.15 5,634,010
209 5,634,011
210 5,634,100
239 5,634,101
280 5,634,012
5,634,013
5,634,014
309 5,634,015
326 5,634,017
5,634,095
329 5,634,016
5,634,018
334 5,634,102
335 5,634,019
339 5,634,020
353 5,634,021
376 5,634,024
383 5,634,025
393 5,634,026
403 5,634,027
5,634,104
404 5,634,028
5,634,029
421.01 5,634,105
421.03 5,634,030
433 5,634,106
438 5,634,031
5,634,107
439 5,634,032
441 5,634,033
445 5,634,108
470 5,634,109
472 5,634,110
474 5,634,034
5,634,035
477 5,634,036
479 5,634,037
480 5,634,111
481 5,634,112
490 5,634,038
500 5,634,039
5,634,113
5,634,114
5,634,115
502 5,634,040
550 5,634,042
551 5,634,116
553 5,634,041
556 5,634,117
558 5,634,043
559 5,634,044
5,634,045
567 5,634,118
568 5,634,046
582 5,634,103
587 5,634,119
588 5,634,047
591 5,634,023
601 5,634,052
602 5,634,121
604 5,634,053
605 5,634,051
608 5,634,122
610 5,634,048
611 5,634,054
5,634,123
613 5,634,049
614 5,634,055
5,634,124
616 5,634,050
619 5,634,056
5,634,125
674 5,634,072
5,634,126
680 5,634,127
682 5,634,128
683 5,634,057
5,634,129
704 5,634,022
706 5,634,059
712 5,634,058
729 5,634,060
733 5,634,130
750 5,634,061
5,634,131
5,634,132
762 5,634,062
764 5,634,133
774 5,633,996
5,634,064
779 5,634,094
797 5,634,066
798 5,634,134
800 5,634,067
5,634,068
5,634,069
5,634,070
5,634,071
5,634,135
5,634,136
825 5,634,073
828 5,634,074
829 5,634,075
830 5,634,137

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841 5,634,138
842 5,634,076
855 5,634,139
868 5,634,077
892 5,634,079
893 5,634,080
894 5,634,081

CLASS 396

49 5,634,140
51 5,634,141
52 5,634,142
5,634,143
55 5,634,145
57 5,634,144
61 5,634,146
84 5,634,147
86 5,634,148
89 5,634,149
106 5,634,150
5,634,151
158 5,634,152
206 5,634,153
291 5,634,154
297 5,634,155
315 5,634,156
319 5,634,157
320 5,634,158
327 5,634,159
395 5,634,160
398 5,634,161
429 5,634,162
458 5,634,163
535 5,634,164
538 5,634,165
571 5,634,166
579 5,634,167
612 5,634,168
626 5,633,697

CLASS 399

12 5,634,169
29 5,634,170
32 5,634,171
35 5,634,172
52 5,634,173
62 5,634,174
69 5,631,704
73 5,633,700
90 5,634,175
92 5,634,176
103 5,634,177
107 5,633,699
110 5,634,178
174 5,634,179
175 5,633,701
207 5,634,180
254 5,634,181
267 5,634,182
277 5,634,183
315 5,633,703
316 5,633,702
325 5,634,184
349 5,634,185
360 5,634,186
365 5,634,187
393 5,634,188

CLASS 401

[illegible] 5,632,564
202 5,632,565

CLASS 402

79 5,632,566

CLASS 403

3 5,632,567
328 5,632,568

CLASS 404

97 5,632,569
112 5,632,570

CLASS 405

19 5,632,571
81 5,632,572
111 5,632,573
179 5,632,574
184 5,632,575

CLASS 407

32 5,632,576

CLASS 408

57 5,632,577

CLASS 409

136 5,632,578
137 5,632,579
230 5,632,580

CLASS 411

48 5,632,581
82 5,632,582
[illegible] 5,632,583
182 5,632,584
441 5,632,585
552 5,632,586

CLASS 412

11 5,632,587

CLASS 414

225 5,632,588
339 5,632,589
404 5,632,590
445 5,632,592
462 5,632,591
541 5,632,593
746.7 5,632,594
795.6 5,632,595

CLASS 415

83 5,632,596
90 5,632,597
173.5 5,632,598

CLASS 416

42 5,632,599
198 A 5,632,600
223 B 5,632,601
226 5,632,602

CLASS 417

53 5,632,603
225 5,632,604
266 5,632,605
415 5,632,606
5,632,607
423.13 5,632,608
571 5,632,609

CLASS 418

55.2 5,632,610
5,632,611
55.4 5,632,612
63 5,632,613

CLASS 420

489 Re.35,521

CLASS 422

[illegible] 5,632,954
21 5,632,955
52 5,632,956
68.1 5,632,957
82.07 5,632,958
104 5,632,959
106 5,632,960
180 5,632,961
211 5,632,962

CLASS 423

24 5,632,963
210 5,632,964
274 5,632,965
484 5,632,966
578.1 5,632,967

CLASS [illegible]

1 49 5,632,968
1 69 5,632,969
9.61 5,632,970
49 5,632,972
61 5,632,973
66 5,632,974
70 16 5,632,976
70.17 5,632,977
78 05 5,632,979
78 08 5,632,981
78.31 5,632,980
85 1 5,632,982
5,632,983
85.4 5,632,984
93.461 5,632,987
94 64 5,632,986
139 1 5,632,989
178.1 5,632,990
5,632,991
185 1 5,632,988
186 1 5,632,992
194 1 5,632,993
198.1 5,632,994
282.1 5,632,995
401 5,632,996
5,632,997
5,632,998
411 5,632,999
422 5,633,000
423 5,633,001
426 5,633,002
434 5,633,003
438 5,633,004
440 5,633,005
441 5,633,006
443 5,633,007
448 5,633,008
5,633,009
5,633,010
451 5,633,011
5,633,012
489 5,633,014
490 5,633,015
649 5,633,016
701 5,632,975

CLASS 425

4 R 5,633,017
8 5,633,018
116 5,633,019
375 5,633,021
[illegible] 5,633,022
447 5,633,023
589 5,633,024

CLASS 426

62 5,633,025
77 5,633,026
96 5,633,027
99 5,633,028
565 5,633,029
573 5,633,030
590 5,633,031
618 5,633,032

CLASS 427

8 5,633,033
96 5,633,034
101 5,633,035
125 5,632,833
140 5,633,037
239 5,633,038
246 5,633,039
335 5,633,040
361 5,633,041
[illegible] 5,633,042
421 5,633,043
5,633,044
428 5,633,045
430.1 5,633,046
437 5,633,047
444 5,633,048
487 5,633,049
548 5,633,050

CLASS [illegible]

33 5,633,053
34.1 5,632,971
34.2 5,633,054
35.7 5,633,055
5,633,056
36.1 5,633,057
40.1 5,633,058
58 5,633,059
64.1 5,633,060
66.6 5,633,061
68 5,633,062
71 5,633,063
95 5,633,064
112 5,633,065
116 5,633,066
138 5,633,067
143 5,633,068
192 5,633,069
194 5,633,070
195 5,633,071
209 5,633,072
5,633,073
213 5,633,074
317.3 5,633,078
323 5,633,079
325 5,633,080
331 5,633,081
365 5,633,082
378 5,633,083
403 5,633,084
5,633,085
[illegible] 5,633,086
[illegible] 5,633,087
5,633,088
421 5,633,089
428 5,633,090
500 5,633,091
547 5,634,189
611 5,633,092
653 5,633,093
679 5,633,094

CLASS 429

1 5,633,095
7 5,633,096
94 5,633,097
104 5,633,098
194 5,633,099

CLASS 430

1 5,633,100
5 5,633,101
5,633,102
5,633,103
7 5,633,104
18 5,633,105
21 5,633,106
102 5,633,107
110 5,633,108
115 5,633,109
120 5,633,110
165 5,633,111
176 5,633,112
201 5,633,113
203 5,633,114
231 5,633,115
254 5,633,116
256 5,633,117
292 5,633,118
5,633,119
313 5,633,120
5,633,121
317 5,633,122
347 5,633,123
372 5,633,124
398 5,633,125
496 5,633,126
5,633,127
5,633,128

CLASS 431

79 5,632,614
288 5,632,615

CLASS 432

105 5,632,616
147 5,632,617

CLASS 433

19 5,632,618
57 5,632,619
102 5,632,620
192 5,632,621

CLASS 434

29 5,632,622
272 5,632,623
322 5,632,624

CLASS 435

4 5,633,130
6 5,633,129
5,633,131
5,633,132
5,633,133
5,633,134
5,633,135
5,633,136
5,633,137
5,633,138
5,633,139
7.1 5,633,140
7.2 5,633,141
7.23 5,633,142
26 5,633,143
38 5,633,144
69.1 5,633,145
5,633,146
5,633,147
5,633,148
5,633,149
69.5 5,633,150
69.6 5,633,151
134 5,633,076
172.3 5,633,152
5,633,153
5,633,154
5,633,155
5,633,156
5,633,157
189 5,633,158
194 5,633,159
228 H 5,633,209
262 5,633,163
266 5,633,164
287.1 5,633,165
325 5,633,161
384 5,633,162

CLASS 436

8 5,633,166
17 5,633,167
52 5,633,168
68 5,633,169
116 5,633,170
161 5,633,171
177 5,633,172

CLASS 438

16 5,633,173
23 5,633,176
30 5,633,175
5,633,182
32 5,633,193
46 5,633,192
53 5,632,854
66 5,633,203
234 5,633,181
258 5,633,185
264 5,633,184
5,633,186
275 5,633,187
285 5,633,183
288 5,633,178
301 5,633,177
318 5,633,179
358 5,633,180
396 5,633,188
404 5,633,190
448 5,633,191
475 5,633,174
600 5,633,189
614 5,633,204
618 5,633,198
620 5,633,201
642 5,633,199
645 5,633,207
653 5,633,196
5,633,200
662 5,633,195
665 5,633,036
668 5,633,197
669 5,633,210
699 5,633,208
714 5,632,855
760 5,633,211
763 5,633,202
773 5,633,212

CLASS 439

24 5,632,625
66 5,632,626
67 5,632,627
78 5,632,628
5,632,629
79 5,632,630
82 5,632,631
100 5,632,632
5,632,633
101 5,632,634
108 5,632,635
125 5,632,636
188 5,632,637
260 5,632,638
271 5,632,639
326 5,632,640
352 5,632,641
364 5,632,642
368 5,632,643
419 5,632,644
441 5,632,645
495 5,632,646
521 5,632,647
550 5,632,648
567 5,632,649
570 5,632,650
578 5,632,651
581 5,632,652
587 5,632,653
621 5,632,654
655 5,632,655
676 5,632,656
752 5,632,536

CLASS 440

6 5,632,657
49 5,632,658
88 5,632,659
89 5,632,660
93 5,632,661

CLASS 441

63 5,632,662

CLASS 442

131 5,633,077
187 5,633,075

CLASS 445

25 5,632,663
50 5,632,664
68 5,632,665

CLASS 451

5 5,632,666
41 5,632,667
42 5,632,668
54 5,632,669

CLASS 452

74 5,632,670
128 5,632,671
173 5,632,676

CLASS 454

121 5,632,672
5,632,673
182 5,632,674
264 5,632,675
329 5,632,677
366 5,632,678

CLASS 455

13.1 5,634,190
14 5,634,191
33.2 5,634,192
5,634,193
41 5,634,194
54.1 5,634,195
54.2 5,634,196
58.1 5,634,197
63 5,634,198
5,634,199
82 5,634,200
90 5,634,201
110 5,634,202
134 5,634,203
5,634,204
182.2 5,634,205
277.1 5,634,206
323 5,634,207
327 5,634,208
345 5,634,209

CLASS 463

36 5,632,679
5,632,680
44 5,632,681
45 Re.35,520

CLASS 464

111 5,632,682
144 5,632,683
179 5,632,684
183 5,632,685

CLASS 472

131 5,632,686

CLASS 473

137 5,632,687
198 5,632,688
241 5,632,484
279 5,632,689
282 5,632,690
292 5,632,691
317 5,632,692
318 5,632,693
336 5,632,694
341 5,632,695
365 5,633,322
386 5,632,696
483 5,632,480
563 5,632,481

CLASS 474

109 5,632,697
110 5,632,698
160 5,632,699
254 5,632,700
256 5,632,701

CLASS 475

170 5,632,702
211 5,632,703
248 5,632,704
341 5,632,705

CLASS 477

74 5,632,706

CLASS 482

8 5,632,707
52 5,632,708
105 5,632,709
127 5,632,710
147 5,632,711

CLASS 493

142 5,632,712
162 5,632,713

CLASS 494

53 5,632,714

CLASS 501

87 5,633,213
96.4 5,633,214
136 5,633,215

CLASS 502

66 5,633,216
439 5,633,217

CLASS 504

228 5,633,218
261 5,633,219

CLASS 507

117 5,633,220

CLASS 508

210 5,633,221
562 5,633,222

CLASS 510

159 5,632,978
303 5,633,223
444 5,633,224
475 5,633,225

CLASS 514

2 5,633,226
12 5,633,227
5,633,228
5,633,229
15 5,633,230
18 5,633,231
19 5,633,232
25 5,633,233
44 5,633,234
49 5,633,235
63 5,633,236
80 5,633,237
5,633,238
83 5,633,239
155 5,633,240
167 5,633,241
170 5,633,242
184 5,633,243
199 5,633,244
5,633,245
210 5,633,246
5,633,247
212 5,633,248
218 5,633,250
221 5,633,251
228 8 5,633,253
237.5 5,633,254
255 5,633,255
256 5,633,256
277 5,633,257
5,633,258
282 5,633,259
283 5,633,260
299 5,633,261
300 5,633,262
312 5,633,264
316 5,633,265
327 5,633,266
342 5,633,267
363 5,633,268
365 5,633,270
5,633,271
378 5,633,272
381 5,633,273
405 5,633,274
410 5,633,275
411 5,633,276
460 5,633,278
468 5,633,279
478 5,633,280
567 5,633,281
602 5,633,287
620 5,633,288
622 5,633,282
653 5,633,283
718 5,633,284
724 5,633,285

CLASS 521

51 5,633,289
54 5,633,290
64 5,633,291
112 5,633,292
118 5,633,293

CLASS 523

205 5,633,295
344 5,633,296

CLASS 524

5 5,633,298
14 5,633,299
55 5,633,300
100 5,633,301
262 5,633,302
268 5,633,303
284 5,633,304
296 5,633,305
[illegible] 5,633,306
460 5,633,307
474 5,633,286
537 5,633,308
538 5,633,309
555 5,633,310
589 5,633,328
719 5,633,313
767 5,633,314
[illegible] 5,633,315

CLASS 525

54.32 5,633,316
66 5,633,317
71 5,633,318
133 5,633,319
168 5,633,320
176 5,633,020
197 5,633,321
271 5,633,323
314 5,633,324
326.2 5,633,325
327.6 5,633,326
329.6 5,633,327
438 5,633,330
442 5,633,331
479 5,633,332

CLASS 526

64 5,633,329
65 5,633,333
202 5,633,334
273 5,633,335

CLASS 528

14 5,633,311
5,633,312
68 5,633,336
183 5,633,337
219 5,633,339
272 5,633,340
335 5,633,341
355 5,633,342
361 5,633,343
397 5,633,344

CLASS 530

311 5,633,263
317 5,633,345
5,633,346
324 5,633,347
350 5,633,348
364 5,633,349
381 5,633,350
391.1 5,633,351
399 5,633,352

CLASS 534

15 5,633,353
5,633,354
761 5,633,355

CLASS 536

1.11 5,633,356
18.5 5,633,357
5,633,358
18.6 5,633,359
22.1 5,633,360
23.1 5,633,361
5,633,362
5,633,363
5,633,364
24.1 5,633,365
24.3 5,633,366
24.31 5,633,367
28.4 5,633,368
28.5 5,633,369
103 5,633,370
123.1

CLASS 540

139 5,633,370

CLASS 544

105 5,633,371
159 5,633,372
279 5,633,373
322 5,633,374
336 5,633,375
360 5,633,376
370 5,633,377

CLASS 546

16 5,633,378
155 5,633,379
174 5,633,380
189 5,633,381
210 5,633,382
321 5,633,383

CLASS 548

209 5,633,384
228 5,633,385
251 5,633,387
266.6 5,633,386
305.7 5,633,388
318.5 5,633,389
365.4 5,633,390

CLASS 549

525 5,633,391

CLASS 552

530 5,633,392
613 5,633,393

CLASS 556

11 5,633,394

CLASS 558

159 5,633,395

CLASS 560

347 5,633,396

CLASS 562

17 5,633,397
410 5,633,399
430 5,633,400
506 5,633,401
608 5,633,402

CLASS 564

157 5,633,403
182 5,633,404
321 5,633,405
395 5,633,406
415 5,633,407
475 5,633,408

CLASS 568

49 5,633,409
443 5,633,410
654 5,633,411
833 5,633,412

CLASS 570

150 5,633,414
257 5,633,413

CLASS 585

12 5,633,415
324 5,633,416
475 5,633,417
513 5,633,418
522 5,633,419
525 5,633,420
660 5,633,421
671 5,633,422

CLASS 588

204 5,633,423
227 5,633,424
256 5,632,715

CLASS 600

16 5,632,716
106 5,632,717
160 5,632,718

CLASS 601

15 5,632,720
135 5,632,721

CLASS 602

18 5,632,722
19 5,632,723
5,632,724
26 5,632,725
36 5,632,726
47 5,632,727
59 5,632,731

CLASS 604

4 5,211,849
46 5,632,728
93 5,632,729
137 5,632,730
192 5,632,732
195 5,632,733
282 5,632,734
283 5,632,735
329 5,632,736
358 5,632,737
[illegible] 5,632,738

CLASS [illegible]

2 5,632,739
4 5,632,740
9 5,632,741
12 5,632,742
24 5,632,743
61 5,632,744
75 5,632,745
78 5,632,746
79 5,632,747
[illegible] 5,632,748
[illegible] 5,632,749
122 5,632,750
139 5,632,751
144 5,632,752
151 5,632,753
159 5,632,754
5,632,755
162 5,632,756
166 5,632,757
170 5,632,758
180 5,632,759
191 5,632,760
192 5,632,761
194 5,632,762
5,632,763
205 5,632,764
238 5,632,765

CLASS 607

5 5,632,267
5,632,766
89 5,632,767
[illegible] 5,632,768
104 5,632,769
122 5,632,770

CLASS 623

1 5,632,771
5,632,772
5 5,632,773
8 5,632,774
9 5,632,775
11 5,632,776
5,632,777
5,632,778
12 5,632,779

CLASS [illegible]

2 5,633,425
5,633,426
200 5,633,427
5,633,428
5,633,429
5,633,430
5,633,431
205 5,633,433
5,633,434
5,633,435
5,633,436
5,633,437
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01 :	5,632,282	5,632,416	5,632,982	5,633,486	5,633,920	5,632,402
	5,632,406	5,632,422	5,632,987	5,633,491	5,633,927	5,632,404
	5,632,417	5,632,426	5,632,992	5,633,497	5,633,929	5,632,464
	5,632,571	5,632,434	5,632,994	5,633,518	5,633,933	5,632,621
	5,632,710	5,632,437	5,633,008	5,633,535	5,633,948	5,632,689
	5,632,727	5,632,462	5,633,011	5,633,545	5,633,955	5,632,709
	5,632,788	5,632,465	5,633,012	5,633,552	5,633,957	5,632,803
	5,632,799	5,632,468	5,633,034	5,633,557	5,633,963	5,632,825
	5,633,168	5,632,486	5,633,053	5,633,568	5,633,968	5,632,940
02 :	5,633,882	5,632,487	5,633,057	5,633,583	5,633,974	5,633,133
04 :	5,632,147	5,632,545	5,633,061	5,633,598	5,633,975	5,633,183
	5,632,342	5,632,553	5,633,073	5,633,602	5,633,981	5,633,203
	5,632,436	5,632,555	5,633,076	5,633,606	5,633,998	5,633,233
	5,632,854	5,632,593	5,633,081	5,633,613	5,634,002	5,633,342
	5,632,909	5,632,599	5,633,088	5,633,615	5,634,012	5,633,905
	5,633,433	5,632,607	5,633,098	5,633,622	5,634,013	5,633,912
	5,633,538	5,632,628	5,633,102	5,633,648	5,634,021	5,634,055
	5,633,561	5,632,631	5,633,139	5,633,668	5,634,028	09 :	5,632,274
	5,633,575	5,632,643	5,633,141	5,633,686	5,634,035	5,632,375
	5,633,634	5,632,645	5,633,148	5,633,687	5,634,052	5,632,439
	5,633,715	5,632,656	5,633,149	5,633,696	5,634,053	5,632,449
	5,633,762	5,632,669	5,633,150	5,633,712	5,634,056	5,632,455
	5,633,804	5,632,680	5,633,153	5,633,724	5,634,057	5,632,655
	5,633,886	5,632,691	5,633,156	5,633,735	5,634,064	5,632,670
	5,633,930	5,632,700	5,633,165	5,633,742	5,634,068	5,632,915
	5,633,932	5,632,724	5,633,170	5,633,747	5,634,074	5,632,927
	5,633,938	5,632,725	5,633,179	5,633,765	5,634,075	5,632,972
	5,634,069	5,632,734	5,633,185	5,633,770	5,634,080	5,632,996
05 :	5,632,371	5,632,735	5,633,189	5,633,776	5,634,081	5,633,006
	5,632,460	5,632,746	5,633,209	5,633,792	5,634,084	5,633,227
06 :	Re.35,521	5,632,752	5,633,229	5,633,799	5,634,086	5,633,277
	5,632,046	5,632,754	5,633,279	5,633,802	5,634,092	5,633,376
	5,632,048	5,632,761	5,633,286	5,633,810	5,634,098	5,633,377
	5,632,124	5,632,762	5,633,354	5,633,813	5,634,100	5,633,411
	5,632,142	5,632,773	5,633,360	5,633,819	5,634,102	5,633,507
	5,632,253	5,632,774	5,633,365	5,633,830	5,634,108	5,633,565
	5,632,255	5,632,775	5,633,381	5,633,832	5,634,109	5,633,584
	5,632,270	5,632,829	5,633,392	5,633,865	5,634,110	5,633,660
	5,632,272	5,632,837	5,633,395	5,633,869	5,634,115	5,634,011
	5,632,283	5,632,873	5,633,406	5,633,870	5,634,118	5,634,044
	5,632,292	5,632,877	5,633,424	5,633,881	5,634,129	5,634,070
	5,632,293	5,632,881	5,633,425	5,633,883	5,634,131	5,634,119
	5,632,307	5,632,886	5,633,426	5,633,887	5,634,138	10 :	5,632,852
	5,632,318	5,632,889	5,633,437	5,633,890	5,634,158	5,632,949
	5,632,320	5,632,894	5,633,440	5,633,894	5,634,190	5,633,018
	5,632,329	5,632,898	5,633,450	5,633,897	5,634,201	5,633,100
	5,632,362	5,632,925	5,633,455	5,633,899	08 :	5,632,051	5,633,213
	5,632,379	5,632,957	5,633,474	5,633,909	5,632,263	5,633,218
	5,632,414	5,632,960	5,633,482	5,633,918	5,632,303	5,633,271

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	5,633,300		5,633,327		5,633,234		5,632,912		5,632,394		5,632,950
	5,633,344		5,633,399		5,633,748		5,632,917		5,632,396		5,632,966
	5,633,362		5,633,484		5,633,873		5,632,959		5,632,399		5,632,973
	5,633,436		5,633,501		5,633,914		5,633,171		5,632,409		5,633,003
12	5,632,071		5,633,504		5,633,960		5,633,219		5,632,466		5,633,041
	5,632,135		5,633,639		5,633,982		5,633,235		5,632,510		5,633,045
	5,632,141		5,633,778	25 :	5,632,072		5,633,264		5,632,548		5,633,046
	5,632,208		5,633,786		5,632,188		5,633,287		5,632,620		5,633,047
	5,632,220		5,633,839		5,632,205		5,633,313		5,632,647		5,633,066
	5,632,225		5,633,923		5,632,210		5,633,374		5,632,676		5,633,108
	5,632,275		5,633,949		5,632,554		5,633,456		5,632,690		5,633,116
	5,632,316		5,633,987		5,632,580		5,633,457		5,632,722		5,633,118
	5,632,400		5,633,993		5,632,584		5,633,458		5,632,732		5,633,119
	5,632,419		5,634,202		5,632,600		5,633,625		5,632,747		5,633,124
	5,632,497		5,634,203		5,632,603		5,633,629		5,632,857		5,633,126
	5,632,504		5,634,209		5,632,605		5,633,710		5,632,867		5,633,127
	5,632,566		5,094,396		5,632,692		5,633,796		5,632,869		5,633,167
	5,632,569	18 :	5,632,073		5,632,714		5,633,797		5,632,876		5,633,174
	5,632,591		5,632,080		5,632,731		5,633,885		5,632,903		5,633,195
	5,632,624		5,632,099		5,632,739		5,634,032		5,632,908		5,633,207
	5,632,659		5,632,136		5,632,758		5,634,060		5,632,938		5,633,217
	5,632,678		5,632,181		5,632,767		5,634,079		5,632,958		5,633,259
	5,632,707		5,632,197		5,632,800		5,634,175		5,632,968		5,633,280
	5,632,742		5,632,207		5,632,840		5,634,180		5,632,976		5,633,290
	5,632,759		5,632,313		5,632,991	27 :	5,632,122		5,632,977		5,633,301
	5,632,764		5,632,386		5,633,087		5,632,268		5,632,988		5,633,319
	5,632,765		5,632,389		5,633,113		5,632,387		5,633,027		5,633,348
	5,632,772		5,632,410		5,633,114		5,632,390		5,633,028		5,633,413
	5,632,860		5,632,448		5,633,129		5,632,438		5,633,058		5,633,449
	5,632,871		5,632,457		5,633,134		5,632,458		5,633,085		5,633,488
	5,632,887		5,632,499		5,633,161		5,632,498		5,633,103		5,633,489
	5,632,904		5,632,551		5,633,169		5,632,570		5,633,157		5,633,510
	5,632,979		5,632,579		5,633,192		5,632,575		5,633,164		5,633,511
	5,632,983		5,632,667		5,633,274		5,632,632		5,633,193		5,633,522
	5,633,009		5,632,677		5,633,298		5,632,729		5,633,221		5,633,533
	5,633,109		5,632,771		5,633,364		5,632,736		5,633,223		5,633,543
	5,633,137		5,632,816		5,633,369		5,632,766		5,633,236		5,633,628
	5,633,144		5,632,838		5,633,487		5,632,777		5,633,245		5,633,641
	5,633,180		5,633,273		5,633,490		5,632,849		5,633,246		5,633,672
	5,633,476		5,633,283		5,633,506		5,632,853		5,633,250		5,633,675
	5,633,550		5,633,306		5,633,528		5,632,866		5,633,265		5,633,676
	5,633,593		5,633,367		5,633,573		5,632,922		5,633,285		5,633,678
	5,633,661		5,633,373		5,633,649		5,632,946		5,633,326		5,633,679
	5,633,815		5,633,430		5,633,681		5,633,010		5,633,334		5,633,692
	5,633,837		5,633,451		5,633,695		5,633,049		5,633,343		5,633,700
	5,633,895		5,633,566		5,633,711		5,633,117		5,633,380		5,633,714
	5,633,910		5,633,582		5,633,753		5,633,123		5,633,391		5,633,716
	5,634,016		5,633,689		5,633,780		5,633,429		5,633,403		5,633,719
	5,634,099		5,633,891		5,633,836		5,633,453		5,633,405		5,633,729
13	5,632,123		5,634,091		5,633,866		5,633,464		5,633,415		5,633,734
	5,632,145	19 :	5,632,153		5,633,867		5,633,508		5,633,417		5,633,736
	5,632,368		5,632,212		5,633,945		5,633,570		5,633,498		5,633,775
	5,632,372		5,632,284		5,633,954		5,633,572		5,633,586		5,633,781
	5,632,514		5,632,496		5,633,972		5,633,614		5,633,653		5,633,782
	5,632,778		5,632,567		5,633,997		5,633,767		5,633,654		5,633,800
	5,632,846		5,632,671		5,634,014		5,633,946		5,633,741		5,633,809
	5,632,936		5,632,730		5,634,020		5,634,101		5,633,807		5,633,820
	5,633,064		5,633,363		5,634,023		5,634,113		5,633,868		5,633,835
	5,633,459		5,633,427		5,634,041	28 :	5,632,116		5,633,922		5,633,843
	5,633,774		5,633,428		5,634,049		5,632,657		5,633,924		5,633,875
	Re.33,620		5,633,431		5,634,058		5,632,844		5,633,928		5,633,889
15	5,633,357		5,633,438		5,634,076		5,633,779		5,633,964		5,633,917
16	5,632,715		5,633,452		5,634,124		5,634,198		5,633,983		5,633,926
	5,633,122		5,633,483		5,634,133	29 :	5,632,206		5,633,995		5,633,951
	5,633,200		5,633,919	26 :	5,632,060		5,632,401		5,634,004		5,633,990
	5,633,823	20 :	5,632,174		5,632,061		5,632,429		5,634,087		5,633,999
	5,633,992		5,632,343		5,632,065		5,632,674		4,971,202		5,634,007
17	5,632,077		5,632,720		5,632,092		5,632,701	35 :	5,632,045		5,634,015
	5,632,112		5,634,033		5,632,118		5,632,769		5,632,703		5,634,017
	5,632,117	21 :	5,632,062		5,632,166		5,632,791		5,633,527		5,634,034
	5,632,130		5,632,160		5,632,182		5,632,872	36 :	5,632,047		5,634,054
	5,632,131		5,632,169		5,632,183		5,632,907		5,632,058		5,634,072
	5,632,133		5,632,288		5,632,221		5,632,931		5,632,068		5,634,088
	5,632,150		5,633,576		5,632,224		5,633,130		5,632,093		5,634,089
	5,632,232		5,634,169		5,632,233		5,633,272		5,632,164		5,634,096
	5,632,241	22 :	5,632,113		5,632,237		5,633,372		5,632,235		5,634,121
	5,632,265		5,632,484		5,632,239		5,633,397		5,632,264		5,634,144
	5,632,420		5,632,750		5,632,240		5,633,407		5,632,276		5,634,153
	5,632,428		5,632,892		5,632,321		5,633,435		5,632,301		5,634,156
	5,632,444		5,632,952		5,632,328		5,633,465		5,632,330		5,634,167
	5,632,461		5,633,263		5,632,413		5,633,546		5,632,341		5,634,170
	5,632,475		5,633,420		5,632,485		5,633,647		5,632,412		5,634,176
	5,632,482	23 :	5,632,374		5,632,500		5,633,674		5,632,424		5,634,184
	5,632,695	24 :	5,632,059		5,632,503	30 :	5,632,091		5,632,427		5,634,185
	5,632,728		5,632,086		5,632,505		5,632,470		5,632,478		5,634,187
	5,632,786		5,632,098		5,632,506		5,633,402		5,632,544		5,634,188
	5,632,839		5,632,254		5,632,513	31 :	5,632,798		5,632,596	37	5,632,043
	5,632,842		5,632,407		5,632,517	32 :	5,632,175		5,632,598		5,632,076
	5,632,843		5,632,658		5,632,518		5,632,356		5,632,629		5,632,094
	5,632,893		5,632,708		5,632,529		5,632,418		5,632,630		5,632,137
	5,632,937		5,632,712		5,632,533	33 :	5,632,050		5,632,651		5,632,139
	5,632,948		5,632,717		5,632,535		5,632,108		5,632,681		5,632,146
	5,632,974		5,632,926		5,632,540		5,632,204		5,632,684		5,632,170
	5,632,975		5,632,956		5,632,573		5,632,294		5,632,688		5,632,184
	5,633,031		5,632,981		5,632,588		5,632,511		5,632,741		5,632,192
	5,633,036		5,632,984		5,632,589		5,632,608		5,632,745		5,632,216
	5,633,055		5,632,989		5,632,590		5,632,914		5,632,756		5,632,219
	5,633,056		5,633,000		5,632,592		5,632,921		5,632,794		5,632,234
	5,633,071		5,633,022		5,632,642	34 :	5,632,052		5,632,795		5,632,287
	5,633,091		5,633,025		5,632,673		5,632,090		5,632,822		5,632,626
	5,633,237		5,633,086		5,632,693		5,632,095		5,632,933		5,632,637
	5,633,240		5,633,147		5,632,751		5,632,302		5,632,934		5,632,649
	5,633,308		5,633,152		5,632,790		5,632,348		5,632,935		5,632,713

	5,632,782		5,633,496		5,633,136		5,632,583		5,634,006		5,633,876
	5,632,792		5,633,500		5,633,142		5,632,694		5,634,010		5,633,904
	5,632,793		5,633,578		5,633,151		5,632,616		5,634,025	53 :	5,632,074
	5,632,797		5,633,621		5,633,226		5,632,627		5,634,045		5,632,109
	5,632,802		5,633,859		5,633,228		5,632,650		5,634,065		5,632,151
	5,632,891		5,633,896		5,633,247		5,632,664		5,634,073		5,632,159
	5,632,905		5,633,969		5,633,251		5,632,687		5,634,095		5,632,199
	5,632,944		5,634,051		5,633,258		5,632,696		5,634,103		5,632,277
	5,633,019		5,634,199		5,633,293		5,632,733		5,634,112		5,632,280
	5,633,159		5,211,849		5,633,297		5,632,744		5,634,122		5,632,572
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